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An Examination of the Spatial Distribution Patterns of National-Level Tourism and Leisure Districts in China and Their Underlying Driving Factors

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Abstract: In recent years, tourism and leisure districts have become a pivotal aspect of China's tourism development. Analyzing their spatial distribution characteristics and driving factors is essential for fostering comprehensive district tourism and promoting sustainable development, while also facilitating the profound integration of culture and tourism. This study undertakes a thorough investigation of the spatiotemporal patterns of national-level tourism and leisure districts in China, employing GIS spatial statistical analysis techniques, including the Average Nearest-Neighbor Index, Kernel Density Analysis, and Standard Deviation Ellipse. Additionally, this research identifies the principal driving factors affecting the spatial distribution of these districts through overlay analysis, buffer analysis, and geographic detectors. The findings reveal that (1) tourism and leisure districts exhibit a notable spatial clustering pattern, characterized by a predominance in the eastern regions and scarcity in the west, alongside a higher concentration in the south compared to the north, with a gradual decline in spatial density. (2) High-density tourism and leisure districts are predominantly located in the Yangtze River Delta and the Beijing–Tianjin–Hebei urban agglomerations, while regions of elevated density are situated in the southwest (notably in Sichuan, Chongqing, Guizhou, and Yunnan provinces). The centroids of the first to third batches of tourism and leisure districts have transitioned from southern to northern locations. (3) The population density factor exhibits the most substantial explanatory power regarding the distribution of tourism and leisure districts (q: 0.80528), followed by the added value of the tertiary industry (q: 0.53285), whereas the slope factor shows minimal influence (q: 0.00876). Furthermore, the distance to rivers of grade three and above, in conjunction with population density, constitutes the primary factor combination influencing the spatial configuration of tourism and leisure districts (q: 0.9101).

Keywords: tourism and leisure districts; spatial distribution; driving factors; China

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1. Introduction

Leisure tourism represents a fundamental demand for enhancing human life quality, optimizing economic structures, and fostering social and cultural prosperity [1]. National-level tourism and leisure districts (hereinafter referred to as leisure districts) are urban areas distinguished by unique cultural themes and regional characteristics, encompassing functions such as tourism, leisure, cultural engagement, and public services while adhering to specified criteria related to land area and annual visitor capacity. These districts are instrumental in attracting tourists, showcasing urban identities, stimulating local economies and

associated industries, and simultaneously preserving cultural heritage, thereby enhancing residents' quality of life. On one hand, they function as significant platforms for national image cultivation and cultural exchange, promoting international trade development [2]; on the other hand, with rising living standards and evolving consumer attitudes, leisure tourism has emerged as a pivotal sector in addressing the escalating demand for improved quality of life. However, factors such as variations in economic development levels and cultural recognition have constrained the growth of leisure tourism in China [3]. The development of tourism and leisure districts represents a crucial strategy for enriching the supply of high-quality tourism products and satisfying diverse tourism demands, as well as a key element in advancing the structural reform of the tourism supply side and achieving high-quality development [4]. Nevertheless, notable disparities persist in the development levels and spatial distribution of leisure districts across various regions in China [5]. Therefore, examining the spatial distribution of leisure districts and their influencing factors is essential for promoting coordinated regional development and optimizing the tourism industry's structure. This investigation not only enhances the overall well-being of residents but also provides vital strategic support for achieving sustainable regional development.

Examining the spatial distribution characteristics of tourism resources is essential for elucidating regional development disparities, capitalizing on regional strengths, and refining resource allocation and spatial configurations [6]. Spatial distribution predominantly denotes the positioning and derived spatial forms of geographical elements within a given space, often articulated through concepts of "spatial structure" and "spatial pattern" [7]. Spatial structure typically refers to the organizational morphology emerging from interactions among elements in a defined area, such as monocentric, polycentric, or concentric ring formations [8]. Conversely, spatial pattern encapsulates the distribution and configuration of ecological or geographical elements, characterized by clustering or dispersal. Theories including Central Place Theory, the Polarization-Diffusion Effect, and agglomeration economies and diseconomies introduce new frameworks for analyzing the spatial characteristics of tourism and leisure districts [9]. The clustering of tourism resources fosters economies of scale and cost efficiencies, and enhances the quality of tourism development. Additionally, evaluating clustered or dispersed spatial patterns of tourism resources better reveals the competitive advantages and regional strengths of tourism elements [10]. Presently, both patch elements (e.g., specific land use types) and point elements (e.g., scenic sites, rural leisure destinations, tourist attractions, and intangible cultural heritage resources) are utilized in this analysis [11–13]. However, quantitative analysis of the interactions between these elements remains limited. Geographic Information System (GIS) spatial analysis addresses this gap, offering robust quantitative tools for spatial pattern and distribution studies. For example, the Average Nearest-Neighbor Index assesses clustering but lacks effective planar visualization [14]. By contrast, Kernel Density Analysis, while quantitatively limited, provides valuable visual representations of density across regions [15]. Integrating the Average Nearest-Neighbor Index with Kernel Density Analysis enables a more holistic examination of the spatial distribution and clustering of tourism and leisure districts. Additionally, given the phased release of tourism and leisure districts in China, Standard Deviation Ellipse analysis effectively examines the shifts in their central locations, thereby revealing their national spatiotemporal evolution. Although prior studies have explored the spatial patterns of tourism and leisure districts at local, provincial, or watershed scales, regional disparity analyses on larger, particularly national, scales remain scarce. Moreover, existing research largely emphasizes static comparative analyses, with a limited focus on spatiotemporal dynamics. Thus, an in-depth investigation into the dynamic evolution of different tourism and leisure district phases holds notable academic and practical significance.

Investigating the driving factors of tourism and leisure districts is vital for advancing regional economic development, preserving cultural heritage, enhancing urban brand identity, improving residents' quality of life, and facilitating high-quality growth [16–18].

Existing scholarship on the driving forces behind tourism and leisure districts is predominantly divided into qualitative and quantitative studies. Qualitative research typically emphasizes the impacts of policy, culture, and social structures on tourism development, highlighting the pivotal roles of local governments and community engagement [19–21]. In contrast, quantitative studies frequently utilize methodologies such as multiple linear regression models and buffer zone analysis to evaluate the unidimensional influences of natural environmental and socioeconomic factors on spatial distribution [22–24]. Geographic detectors, as a statistical approach for elucidating the interrelationships among two-dimensional spatial elements, offer more reliable insights compared to conventional one-dimensional statistical analyses like linear regression and Ordinary Least Squares (OLS) models, effectively explaining the mechanisms governing geographical phenomena. Additionally, geographic detectors can investigate potential causal relationships by analyzing the spatial distribution coupling (interactivity) between variables [25,26]. Therefore, employing geographic detectors to examine tourism and leisure districts—exemplary geographic elements—provides a nuanced understanding of their spatial distribution driving factors. The emergence and distribution of tourism and leisure districts stem from the interplay of natural, social, and tourism resource endowments. As demands for enriched tourism experiences rise, the development of these districts faces heightened expectations. Accurately identifying the driving factors underlying this development is crucial for attaining high-quality growth. Despite the existing body of research that has advanced knowledge regarding indicator selection and methodological applications related to tourism development drivers, comprehensive and in-depth studies focusing on the specific driving factors of tourism and leisure districts remain limited. Consequently, the establishment of an indicator system that encompasses five dimensions—natural geography, socioeconomic conditions, transportation infrastructure, source market dynamics, and tourism resources—will facilitate a thorough assessment of both internal and external development conditions impacting tourism and leisure districts. Adopting this multidimensional comprehensive evaluation framework will enable a more scientific and systematic revelation of the driving factors of tourism district development, thereby providing a solid theoretical foundation for promoting the sustainable development of tourism and leisure districts.

In light of this, the objectives of this study are threefold: (1) to examine the spatial distribution characteristics of the first to third batches of tourism and leisure districts in China; (2) to analyze and compare the principal factors influencing the formation and development of these districts; and (3) to provide policy recommendations aimed at fostering the evolution of tourism and leisure districts toward enhanced quality and sustainability. An investigation into the spatial distribution characteristics and their influencing factors will aid in identifying underexploited areas of tourism potential, optimizing the rational allocation of tourism resources, mitigating resource wastage and overdevelopment, and formulating more targeted development strategies, ultimately augmenting the overall efficacy of the tourism industry.

2. Study Area and Data Sources

2.1. Overview of the Study Area

This study selects mainland China as the research area (Figure 1). Situated on the western edge of the Pacific Ocean in Eastern Asia, mainland China exhibits a complex and diverse topography characterized by a gradual elevation from west to east, forming a three-tiered plateau system. Mountain ranges, plateaus, and hills dominate the landscape, constituting approximately 67% of the total area, while basins and plains are relatively scarce, accounting for about 33%. The majority of mainland China falls within the East Asian monsoon zone, displaying significant monthly, annual, and interannual variations in temperature and precipitation. Specifically, the northwest region is primarily characterized by a temperate continental climate, whereas the northeast experiences a temperate monsoon climate. The southern regions predominantly exhibit a subtropical monsoon climate, with some areas in the far south showing tropical monsoon characteristics. Conversely, the

Tibetan Plateau in the northwest features a high-altitude cold climate. As of the end of 2023, the total population of mainland China reached approximately 1.406 billion. Among this population, the urban resident population numbered 932.67 million, reflecting an increase of 11.96 million compared to 2022, while the rural resident population stood at 477 million, marking a decrease of 14.04 million from the previous year. The urbanization rate of the resident population reached 66.16%, representing an increase of 0.94 percentage points from 2022. The population density is higher in the southeastern region, delineated by the Hu Huanyong Line, while the northwest exhibits a relatively lower density. In addition to the uneven distribution of population density, there are also significant disparities in regional economic development levels, with an overall pattern of higher development in the southeast and lower development in the northwest. Given the close relationship between national-level tourism districts and the economic and population distribution in China, this study categorizes mainland China into four major economic regions: eastern, central, western, and northeastern [27].

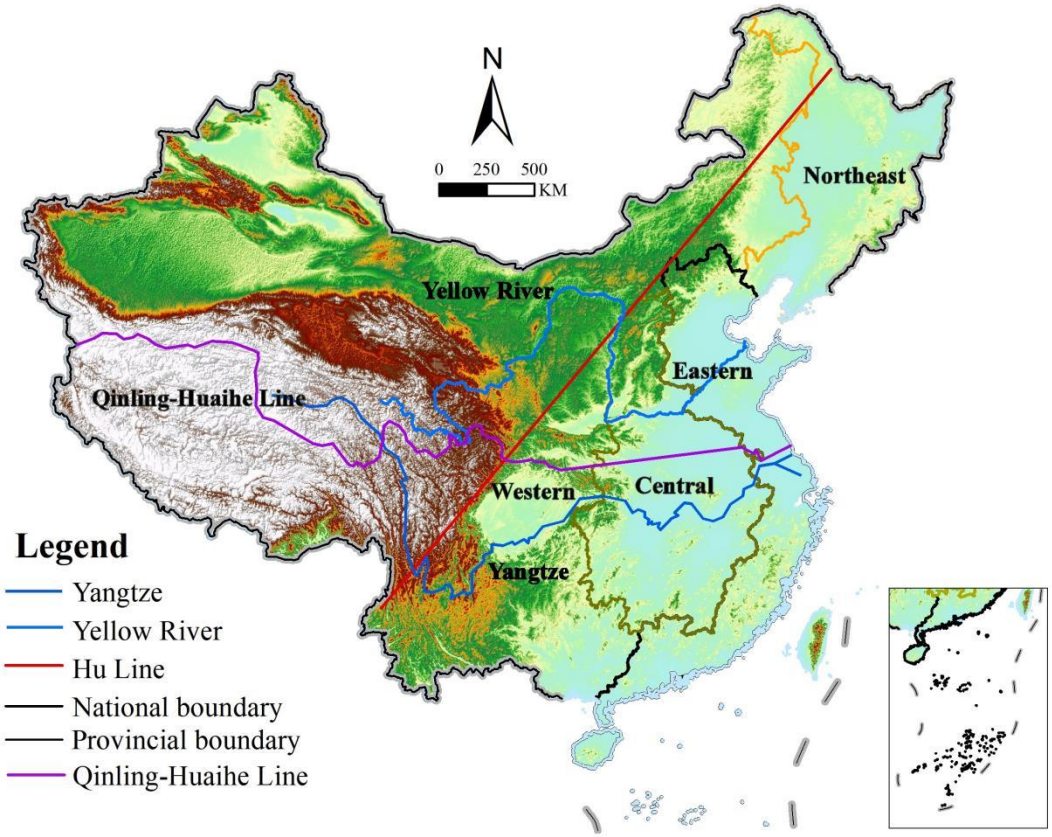

Figure 1. Distribution of the four major regions in China.

2.2. Data Sources

The data essential for this study comprise three categories: vector data, raster data, and statistical data. Specifically, the statistical data concerning national-level tourism and leisure districts in China are sourced from the directories of three batches of such districts released by the National Development and Reform Commission and the Ministry of Culture and Tourism in 2022 and 2023, encompassing a total of 164 districts. Due to challenges in data acquisition, this study excludes the regions of Hong Kong, Macau, and Taiwan. Comprehensive details regarding the methods of data processing, utilization, and sources are delineated in Table 1.

Table 1. Data source and usage.

Data Type	Name	Purpose	Origin or Source
Vector data	Vector point location data for tourism and leisure districts	Analyze the spatial distribution characteristics of tourism and leisure districts in China	Ministry of Culture and Tourism of the People's Republic of China [28]
	Base map of administrative boundaries of China	-	Natural Resources Standard Map Service Website [29]
	River system	Analyze the distance between tourism and leisure districts and river systems	National Catalogue Service For Geographic Information [30]
	National highway	Analyze the distance between tourism and leisure districts and national highways	Open Street Map, OSP [31]
	Vector point location data for 5A-level scenic spots	Explore the driving factors influencing the distribution of tourism and leisure districts	Ministry of Culture and Tourism of the People's Republic of China [32]
	Location data for national cultural heritage protection units and location data for famous historical and cultural cities in China	Explore the driving factors influencing the distribution of tourism and leisure districts	National Cultural Heritage Administration [33]
Raster data	DEM	Analyze terrain	Geospatial Data Cloud [34]
Statistical data	Per capita GDP (USD), per capita disposable income of urban residents (USD), per capita consumption expenditure of urban residents (USD), urbanization rate (%), culture, tourism, sports, and media (USD), value-added of the tertiary industry (USD), highway mileage (km), highway passenger volume (ten thousand people), population density (people per square kilometer)	Explore the driving factors that influence the distribution of tourism and leisure districts	National Bureau of Statistics of China, Statistical yearbooks of various provincial administrative regions, and statistical bulletins on national economic and social development [35]

3. Research Methods

This study is structured into two principal components: first, an analysis of the spatial distribution characteristics of tourism and leisure districts; and second, an exploration of their driving factors. Initially, the Average Nearest-Neighbor Index, Kernel Density Analysis, and Standard Deviation Ellipse are employed to determine the spatial distribution characteristics of national-level tourism and leisure districts in China, along with the centroid shifts observed across different batches. Subsequently, the geographic detector model is utilized to analyze the interactions among various driving factors, thereby identifying both primary and secondary influences on the tourism and leisure districts in China.

3.1. Spatial Distribution Characteristics

3.1.1. Average Nearest-Neighbor Index

The Average Nearest-Neighbor Index serves as an effective measure for assessing the spatial scale of agglomeration among tourism and leisure districts in China [36]. This method involves calculating the distances between the centroids of each tourism and leisure district and those of their nearest neighbors nationwide, subsequently determining the average of these nearest-neighbor distances. This average is then compared to the theoretical nearest distance (i.e., the expected value under a random distribution) to ascertain whether the districts demonstrate agglomeration characteristics. The analysis is conducted using the "Analyzing Patterns" tool within the "Spatial Analyst Tools" of ArcGIS 10.8, as illustrated by the following calculation formula:

$$R = \bar{r}/r_j r_j = 1/2\sqrt{n/A} = 1/2\sqrt{D} \quad (1)$$

In Equation (1), R denotes the nearest-neighbor index, $\bar{r}$ represents the actual nearest-neighbor distance, r_j indicates the theoretical nearest-neighbor distance, n refers to the number of leisure tourism districts, A signifies the area of the region, and D represents the point density. When $R = 1, \bar{r} = r_j$, the leisure tourism districts are distributed randomly; if $R < 1, \bar{r} < r_j$, this indicates a propensity for clustering among the districts; conversely, if $R > 1, \bar{r} > r_j$, the districts display a tendency toward a uniform distribution.

3.1.2. Kernel Density Analysis

Kernel Density Analysis is a non-parametric technique utilized to estimate the probability density function of a random variable, offering a clear visualization of the aggregation and dispersion levels, as well as the spatial clustering characteristics of tourism and leisure districts [37]. This analysis is performed using the "Density Analysis" tool within the "Spatial Analyst Tools" of ArcGIS 10.8, applying point data from the three batches of tourism and leisure districts. The formula employed in this analysis is as follows:

$$f(x) = \frac{1}{nh}\sum_{i=1}^{n} k\left(\frac{x - x_i}{h}\right) \tag{2}$$

In Equation (2), $\left(\frac{x-x_i}{h}\right)$ denotes the kernel function, h represents the bandwidth, and $x - x_i$ indicates the distance from the leisure tourism district x to the measurement point x_i. An elevated kernel density value $f(x)$ corresponds to an increased distribution density within the tourist leisure district, whereas a reduced kernel density value $f(x)$ reflects a lower distribution density.

3.1.3. Standard Deviation Ellipse

The Standard Deviation Ellipse delineates the centroid, major and minor axes, and rotation angle of a dataset by calculating its standard deviation and covariance matrix, thereby elucidating the spatial distribution characteristics and orientation of tourism and leisure districts in China [38]. This analysis is performed using the "Standard Deviational Ellipse" tool within ArcGIS 10.8, concentrating on the migration pathways of centroids from the first to third batches of tourism and leisure districts, with the objective of uncovering shifts in the developmental focus of these districts. The long axis indicates the distribution direction of the tourism and leisure districts, while the short axis represents the range of their distribution. A more pronounced disparity between the long and short axes signifies a clearer directional spatial pattern; conversely, a lesser disparity suggests diminished directionality. By examining the rotation angle, further insights into the spatial distribution patterns and characteristics of tourism and leisure districts can be attained. The calculation formula is as follows:

$$\begin{gathered}\tan\theta = \frac{\left(\sum_{i=1}^{n}\widetilde{x}_i^{\,2} - \sum_{i=1}^{n}\widetilde{y}_i^{\,2}\right) + \sqrt{\left(\sum_{i=1}^{n}\widetilde{x}_i^{\,2} - \sum_{i=1}^{n}\widetilde{y}_i^{\,2}\right)^2 + 4\left(\sum_{i=1}^{n}\widetilde{x}_i\widetilde{y}_i\right)^2}}{2\sum_{i=1}^{n}\widetilde{x}_i\widetilde{y}_i} \\ \sigma_x = \sqrt{2}\sqrt{\frac{\sum_{i=1}^{n}\left(\widetilde{x}_i\cos\theta - \widetilde{y}_i\sin\theta\right)^2}{n}}; \sigma_x = \sqrt{2}\sqrt{\frac{\left(\sum_{i=1}^{n}\widetilde{x}_i\cos\theta - \widetilde{y}_i\sin\theta\right)^2}{n}}\end{gathered} \tag{3}$$

In Equation (3), x_i and y_i represent the central coordinates of each spatial unit within the study area; θ denotes the angle of the ellipse; and x_i and, y_i indicate the coordinate deviations of each spatial unit's central coordinates from the regional centroid; and σ_x and σ_y represent the standard deviations of the ellipse along the and axes, respectively.

3.2. Driving Factors

3.2.1. Construct the Driving Factor Index System

The formation and distribution of tourism and leisure districts are shaped by various factors, including natural environments, socioeconomic conditions, and tourism resources. Firstly, natural geographic conditions have a direct impact on the environmental quality, climatic suitability, and attractiveness of landscapes within these districts. Areas with favorable locations, pleasant climates, and distinctive features are more adept at attracting visitors. Factors such as topography and hydrological conditions not only influence the visitor experience but also determine the feasibility of development and the necessity for ecological preservation [39]. Secondly, the level of socioeconomic development serves as a foundation for tourism and leisure district growth. Regions with robust economies typi-

cally boast superior infrastructure, a diverse service sector, and higher consumer spending power, all of which support the establishment and operation of these districts [40]. Thirdly, transportation accessibility plays a critical role in visitor attraction. A well-connected transportation network—encompassing air, rail, and road—enhances the ease of access to these districts [41]. Fourthly, the scale and composition of the source market dictate the potential visitor demographic. Analyzing the source market enables districts to optimize resource allocation and tailor leisure activities to meet diverse visitor needs, thus maximizing appeal and increasing visitor satisfaction and return rates [42]. Lastly, tourism resources are the cornerstone of these districts, determining their uniqueness and competitive edge. Districts rich in tourism resources can offer varied experiences that promote visitor retention and expenditure. Evaluating these resources allows districts to emphasize their core attractions, strengthening their competitive advantages [43].

Consequently, the establishment of an indicator system encompassing five dimensions —natural geography, socioeconomic status, transportation infrastructure, source market characteristics, and tourism resources—facilitates a comprehensive evaluation of the internal and external development conditions affecting tourism and leisure districts [44–47]. This multidimensional evaluation framework provides a more scientific and systematic approach to assessing the driving factors of these districts. Furthermore, by adhering to principles of scientific rigor, comprehensiveness, and accessibility, and integrating existing research while utilizing the kernel density of national-level tourism and leisure districts as the dependent variable, this study develops an indicator system comprising 15 factors as independent variables across the aforementioned dimensions to analyze the spatial distribution influences on tourism and leisure districts (Table 2).

Table 2. Index system of influencing factors of spatial distribution of tourism and leisure districts in China.

Driving Factors	Indicator Name	Index Interpretation	Unit
Physical geography [39]	Altitude	Provincial average elevation (X1)	m
	Terrain	Provincial average Slope (X2)	°
	River system	The nearest average distance between the tourism and leisure districts and the water system above the third level (X3)	km
Social economy [40]	Per capita economic development level	GDP per capita (X4)	USD
	Disposable income	Per capita Disposable Income of urban residents (X5)	USD
	Household consumption power	Per capita Consumption expenditure of urban residents (X6)	USD
	Urbanization level	Urbanization rate (X7)	%
	Government support	Culture, Tourism, Sports and Media Expenditure (X8)	USD
	Tertiary industry economic development level	Value-added of Tertiary Industry (X9)	USD
Traffic level [41]	Graded highway mileage	Highway mileage by province (X10)	km
	Highway passenger volume	Highway passenger volume by Province (X11)	Thousands of people
Tourist market [42]	Population size	Population density (X12)	Thousands of people
	Distance of tourist source	Average distance between tourist and leisure districts and the nearest administrative city (X13)	km
Tourism resources [43]	High A class scenic spot	Number of 5A scenic spots (X14)	Piece
	Cultural resources	Total number of China's famous historical and cultural cities and national cultural relics protection units (X15)	Piece

3.2.2. Overlay Analysis Method

The overlay analysis method encompasses the process of intersecting and superimposing various spatial feature layers utilizing ArcGIS 10.8 to generate new spatial datasets [48]. This study will implement the overlay analysis method to attribute characteristics to tourist leisure districts in China, thereby laying the groundwork for assessing the influence of pertinent driving factors. Specifically, the point feature layer representing the spatial locations of these districts will be overlaid with polygon feature layers that encapsulate

regional attributes such as topography, economy, transportation, population, and tourism resources—including DEM, per capita GDP, urbanization rate, cultural tourism, sports and media, the added value of the tertiary sector, national highways, population density, distance to administrative centers, 5A scenic spots, and cultural resources. This approach will yield a new point feature layer for tourist leisure districts that preserves the original X and Y coordinate attributes while simultaneously integrating the attributes of the polygon features, such as DEM and per capita GDP.

(1) Natural Geography

Utilizing an overlay analysis of China's topographic elevation map in conjunction with the spatial distribution of 164 tourist leisure districts, this study examines the elevation characteristics associated with the three major steps. China's elevation is subsequently categorized into four intervals, with 500 m, 1000 m, and 2000 m designated as critical thresholds. Detailed statistical analyses are then performed on the distribution quantities and dynamic changes in both the overall and the first to third batches of tourist leisure districts within each elevation interval.

(2) Economic Level and Source Markets

This research employs the natural breaks method (Jenks) to categorize per capita GDP, urbanization rate, cultural tourism, sports and media, the added value of the tertiary industry, and population density across Chinese provinces into five distinct categories. Building upon this classification, comprehensive statistics are compiled regarding the distribution quantities of tourist leisure districts within the provinces exhibiting the highest rankings.

3.2.3. Buffer Analysis

Buffer analysis is primarily utilized to investigate the spatial characteristics of point, line, and polygon features within a designated buffer radius. This method systematically extends a set of features based on defined distance criteria, with the objective of determining their spatial extent [49]. In the present study, buffer analysis tools are employed to analyze river systems classified above Level III at buffer distances of 5 km, 10 km, and 15 km; national highways at 10 km, 20 km, and 30 km; and provincial capitals and general administrative cities at 80 km and 40 km, respectively. By conducting an overlay analysis between the point features of tourism and leisure districts and the generated buffers surrounding rivers, national highways, and administrative cities, the study quantifies the number of tourism and leisure districts within the specified buffer radii. This methodology aims to elucidate distribution patterns and identify the layout characteristics within the buffer zones of rivers, major highways, and administrative cities, thereby clarifying the relationships between tourism and leisure districts and these geographic features. The calculation formula for determining the buffer size for specific points is as follows:

$$p = \{ x \| d(x, A) \leq r \} \tag{4}$$

In Equation (4), r represents the buffer radius, d denotes the Euclidean distance from point x to point A, and P indicates the buffer zone of feature A.

3.2.4. Geographic Detectors

In geographic detectors, factor detection quantifies the extent to which individual driving factors account for the target variable, whereas interaction detection elucidates the impact of interactions among various factors on the target variable [25]. This methodology has the potential to clarify the responsiveness of the spatial distribution characteristics of tourism and leisure districts to these influencing factors. In this study, the "Create Fishnet" tool within ArcGIS 10.8 is employed to systematically partition China into 30 km × 30 km grid cells, allowing for the extraction of the number of tourism and leisure districts and pertinent geographic feature values within each cell. This approach facilitates the establishment of an analytical database for assessing the factors influencing the spatial distribution

of tourism and leisure districts across China. The kernel density value of tourism and leisure districts is designated as the target variable, enabling an examination of the mechanisms that affect their spatial distribution characteristics, with the calculation formula as follows:

$$q = \left(N\sigma^2 - \sum_{h=1}^{L} N_h \sigma_h^2 \right) / N\sigma^2 \quad (5)$$

In Equation (5), q ($0 \leq q \leq 1$) represents the detection value that indicates the degree to which a specific metric influences the density of tourism and leisure districts. A value of q approaching 1 signifies a higher explanatory power of the metric concerning the spatial distribution characteristics of these districts, while a value nearer to 0 suggests a diminished explanatory capacity. L denotes the number of classifications for the h category of influencing factors, whereas N_h and N represent the counts of units for the h category and the corresponding density values of tourism and leisure districts, respectively. Additionally, σ_h^2 and σ^2 reflect the variances associated with the h category of influencing factors and the density values of tourism and leisure districts.

4. Research Analysis

4.1. Spatial Pattern and Evolution Characteristics of Tourism and Leisure Districts

4.1.1. Spatial Distribution Characteristics

In terms of both distribution and quantity, tourism and leisure districts in China manifest a spatial distribution pattern characterized by a predominance in the eastern regions, a scarcity in the west, a higher concentration in the south, and a lower prevalence in the north (Figure 2). Significant regional disparities are apparent along the Hu Huanyong Line, with the number of tourist leisure districts in the southeastern region considerably surpassing that in the northwestern region. Specifically, the southeastern half encompasses a total of 133 tourist leisure districts, accounting for 81.10% of the overall total, while the northwestern half comprises only 31 districts, representing 18.9%, thereby underscoring a marked "greater prevalence in the east and lesser in the west" characteristic. In the north–south comparison, delineated by the "Qinling-Huaihe Line", the southern region features 91 tourist leisure districts, constituting 55.49%, whereas the northern region includes 73 districts, accounting for 44.51%, clearly illustrating the trend of "greater prevalence in the south and fewer in the north".

4.1.2. Spatial Agglomeration Characteristics

The Average Nearest-Neighbor Index for the first to third batches of tourism and leisure districts in China is consistently less than 1, indicating a clustered spatial distribution of these districts (Figure 3). Moreover, the Z-scores for both the first and second batches are below -1.96, signifying a statistically significant clustering pattern (Figure 3). Specifically, the Average Nearest-Neighbor Index for the first batch is 0.830 (<1), with a Z-score of -2.396, reflecting a notable clustering distribution; the second batch exhibits an Average Nearest-Neighbor Index of 0.834 (<1) and a Z-score of -2.399, also indicating significant clustering. In contrast, the third batch presents an Average Nearest-Neighbor Index of 0.895 (<1) and a Z-score of -1.462, which indicates only a mild clustering pattern. Consequently, the overall trend in clustering intensity across the batches is as follows: first batch > second batch > third batch, suggesting a decline in clustering degree from the first to the third batch of tourism and leisure districts.

The high-density zones of tourism and leisure districts, exhibiting a maximum value of approximately 0.14×10^{-3}, are predominantly situated to the southeast of the Hu Huanyong Line, encompassing regions such as the eastern Beijing–Tianjin–Hebei urban agglomeration, the Yangtze River Delta urban cluster, and Chongqingmbox(Figure 4(1a)). In terms of quantity, Jiangsu Province, Zhejiang Province, and the Xinjiang Uygur Autonomous Region each contain the highest number of tourism and leisure districts, totaling nine, followed by Chongqing with eight and Fujian Province with seven (Figure 4(1b)). For the first batch, high-density areas (0.3617×10^{-4}) are primarily concentrated in the

Yangtze River Delta urban agglomeration and Chongqing (Figure 4(2a)). The provinces with the highest counts—Sichuan, Chongqing, Jiangsu, Zhejiang, Fujian, and Xinjiang—each host three districts (Figure 4(2b)). The second batch showcases high-density regions (0.3686×10^{-4}) mainly located within the Yangtze River Delta urban cluster and Chongqing (Figure 4(3a)). Xinjiang, Jiangsu, and Zhejiang each comprise three tourism and leisure districts (Figure 4(3b)). In the third batch, high-density areas (0.2829×10^{-4}) are predominantly identified in the Yangtze River Delta urban agglomeration (Figure 4(4a)), with Xinjiang, Chongqing, Jiangsu, and Zhejiang each exhibiting three districts (Figure 4(4b)).

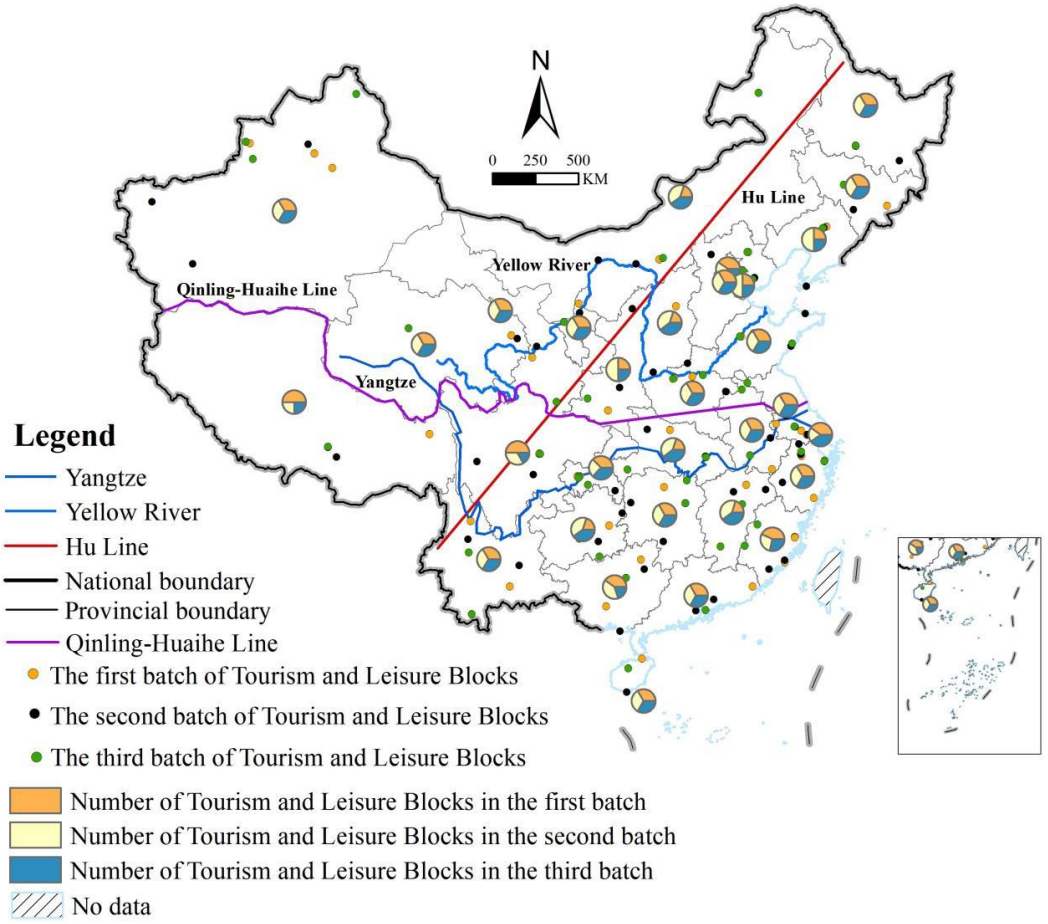

Figure 2. Spatial distribution of tourism and leisure districts in China.

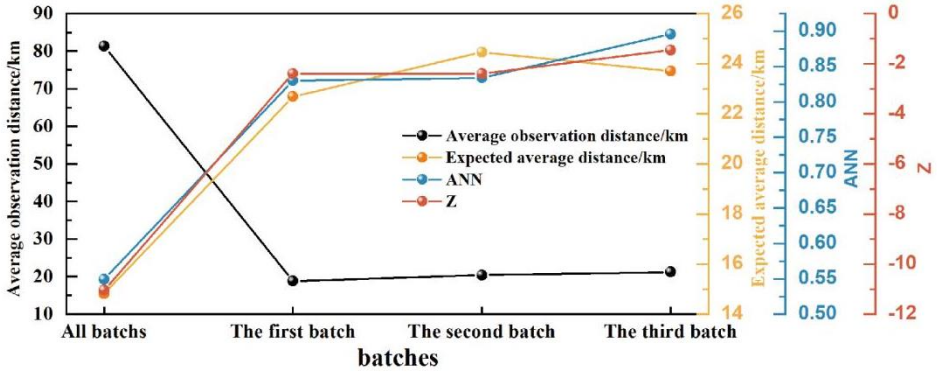

Figure 3. Average Nearest-Neighbor Index of Chinese tourist and leisure districts.

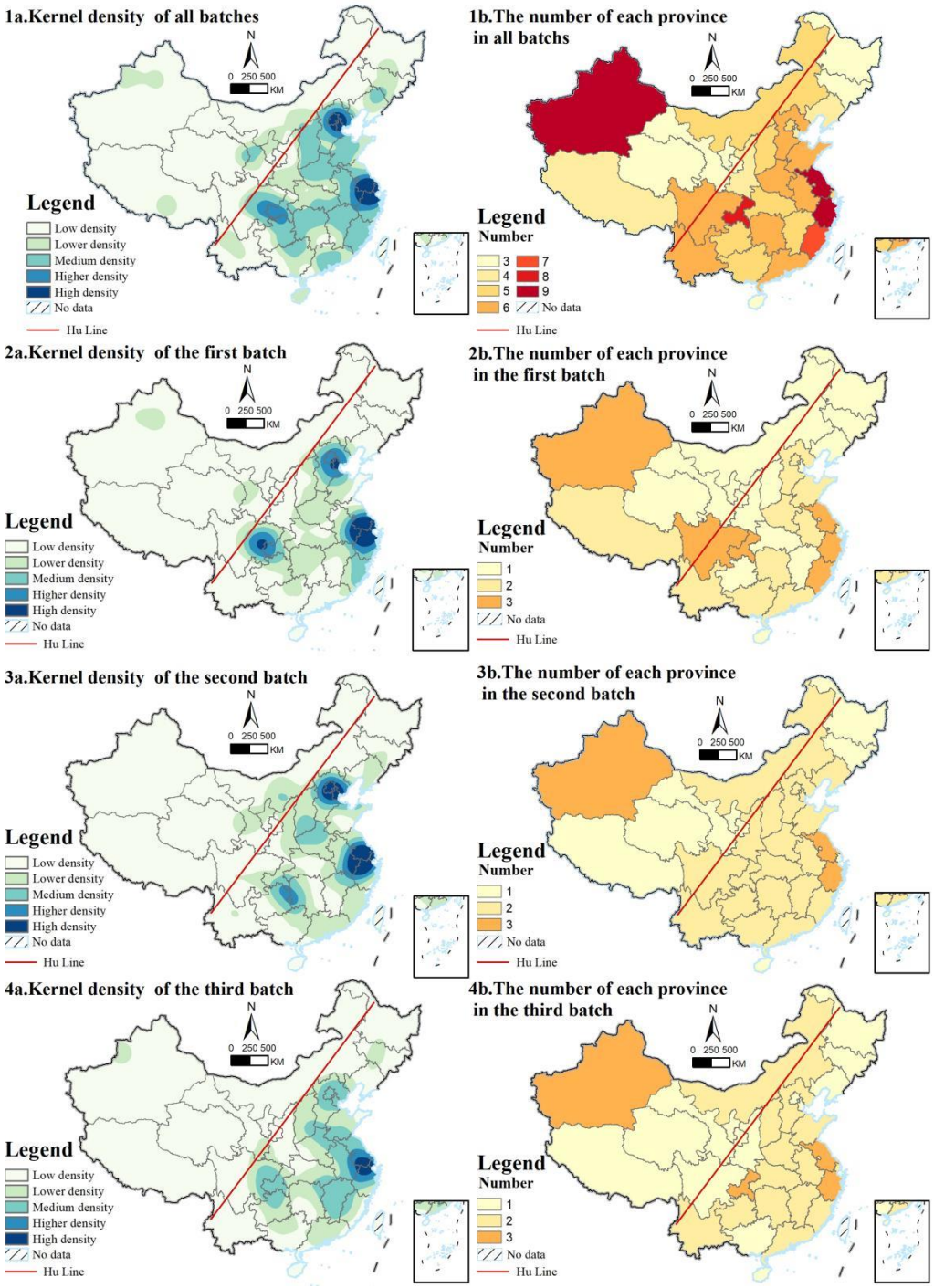

Figure 4. Density and quantity of tourism and leisure districts in China.

4.1.3. Trajectory of Centroid Shift

The centroid migration trajectories of the first, second, and third batches of tourism and leisure districts in China display a pronounced trend of movement from south to north (Figure 5). Notably, the centroids of all three batches are situated in Nanyang, located in the southwestern region of Henan Province (61°17′65″ E–60°64′19″ E, 36°48′21″ N–40°90′87″ N) (Table 3). Upon analyzing the variations in the length of the major axis, it is evident that the trajectory for the first to third batches adopts an east–west orientation, predominantly situated on the eastern side of China, thereby forming a bow-shaped distribution pattern. The overall length of the minor axis measures 1059.42 km, with the

distribution range initially expanding before subsequently contracting from the first to the third batch.

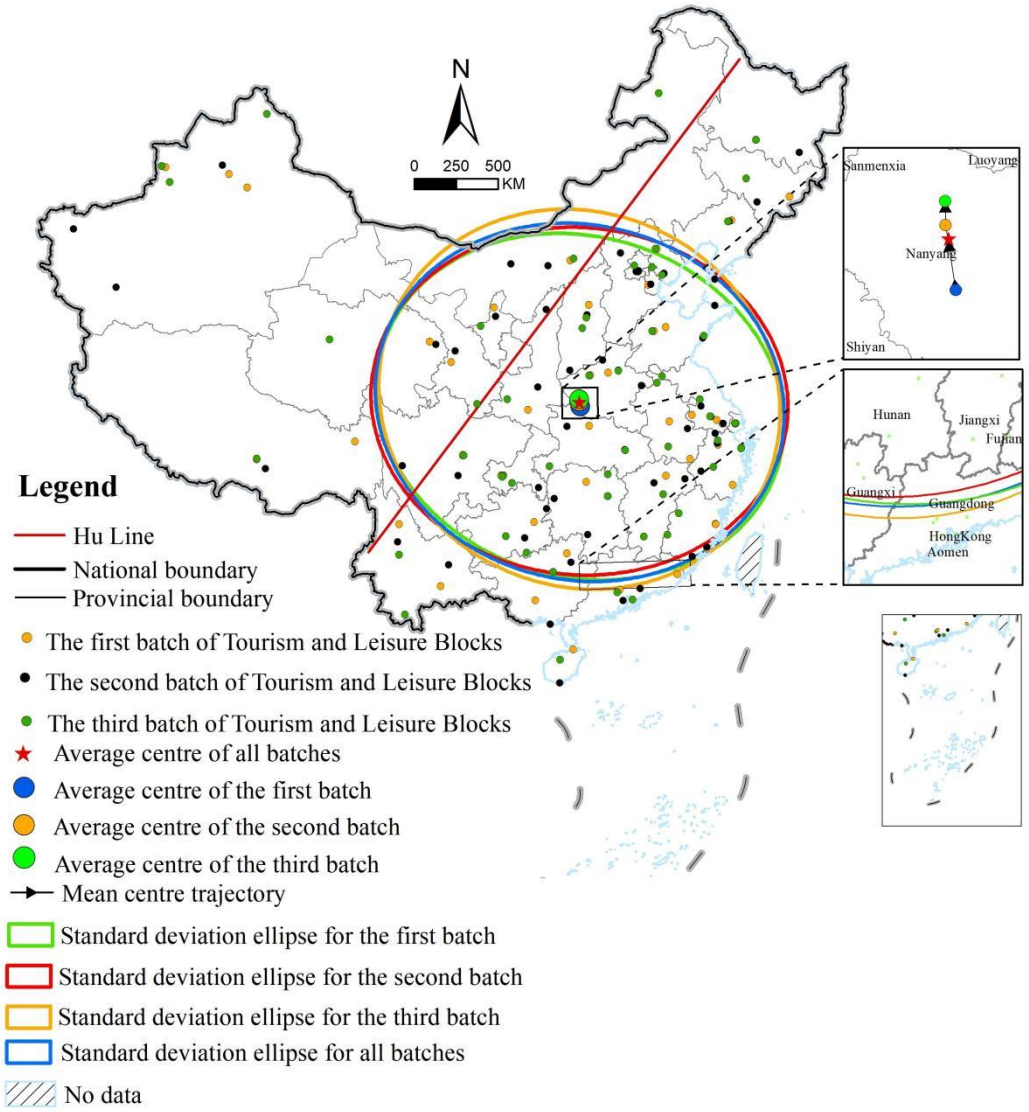

Figure 5. Standard Deviation Ellipse and centroid changes in tourism and leisure districts in China.

Table 3. Ellipse parameter of standard deviation of Chinese tourist leisure districts.

Batch	Length/km		Angle/°	Centroid Coordinates	
	X-Axis	Y-Axis		Longitude	Latitude
All batches	1230.86	1059.42	103.71	60°82′84″ E	39°03′71″ N
First batch	1234.06	1015.76	106.31	61°17′65″ E	36°48′21″ N
Second batch	1247.57	1036.84	95.43	60°67′21″ E	39°71′73″ N
The third batch	1218.55	1114.03	115.92	60°64′19″ E	40°90′87″ N

In terms of spatial rotation angle changes, the orientation of the generated ellipse indicates an overall rotation angle of 103.71° across the first to third batches. This angle decreases from 106.31° in the first batch to 95.43° in the second batch, before rising again to 115.92° in the third batch. Notably, the distribution direction of the third batch of tourist leisure districts exhibits the most pronounced trend from northwest to southeast.

4.2. Factors Influencing the Distribution of Leisure Tourism Districts

4.2.1. Physical Geography

(1) Elevation

The tiered topography and diverse geomorphology of China profoundly influence the geographical distribution of tourism and leisure districts. In areas with elevations ranging from 0 to 500 m, the number of tourism and leisure districts accounts for over 66% of the total across all batches (Figure 6a, Table 4). This prevalence can be attributed to the accessibility, climatic comfort, and well-developed infrastructure in these regions, facilitating the thriving of such districts. As elevation increases, the overall number of districts, particularly from the second batch, gradually rises within the 500 to 2000 m range, driven by the unique natural landscapes that attract visitors. However, once elevations surpass 2000 m, there is a significant decline in the number of tourism and leisure districts, with the third batch comprising only 3.77%. At this altitude, complex terrain, inadequate infrastructure, and the need for ecological conservation restrict development. Notably, both the first and third batches exhibit a decreasing trend in quantity as elevation increases. Overall, the formation and distribution of tourism and leisure districts reflect the intricate interplay between China's distinctive natural environment and cultural factors.

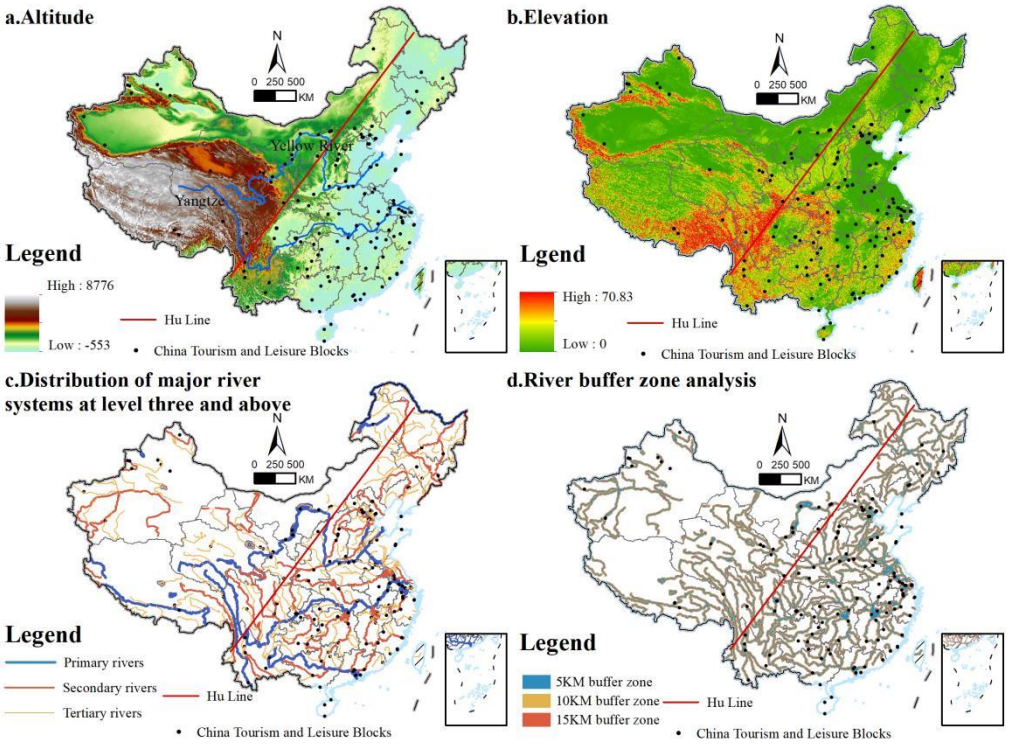

Figure 6. The spatial relationship between tourism and leisure districts and elevation, slope, and river system.

(2) Slope

The first to third batches of tourist leisure districts are primarily concentrated in regions with a slope of 0 to 5° (Figure 6b). Within this range, the total number of tourist leisure districts is 156, constituting 95.12% of all districts. Conversely, only eight districts are located in areas where the slope exceeds 5°, representing a mere 4.88% of the total. This observation underscores that tourist leisure districts are predominantly found in regions with slopes less than 5°. In contrast, the distribution of districts in areas with slopes greater than 5° is markedly sparse, with their numbers diminishing progressively as slope steepness increases.

Table 4. Distribution number of tourist and leisure districts in different elevation intervals (units).

Batch \ Elevation (m)		0–500	500–1000	1000–2000	Over 2000
All batches	Quantity (Piece)	116	19	20	9
	Proportion (%)	70.73	11.59	12.20	5.49
First batch	Quantity (Piece)	40	6	4	4
	Proportion (%)	74.07	11.11	7.41	7.41
Second batch	Quantity (Piece)	41	3	10	3
	Proportion (%)	71.93	5.26	17.54	5.26
The third batch	Quantity (Piece)	35	10	6	2
	Proportion (%)	66.04	18.87	11.32	3.77

(3) River Systems

Tourism and leisure districts in China are predominantly situated within the 0–15 km range of tiered rivers (Figure 6d). Specifically, the number of districts within the 15 km buffer zone reaches 115, accounting for 70.12% of the total; within the 10 km buffer zone, there are 108 districts, representing 65.85%; and within the 5 km buffer zone, 89 districts are recorded, comprising 54.27% of the total. This clearly indicates that the highest concentration of districts is found within the 15 km buffer zone, suggesting that tourism and leisure districts are primarily established within a distance of 15 km from rivers. Although there is a gradual decrease in the number of districts from the 15 km to the 5 km buffer zones, the number within the 5 km range still exceeds half of the total, thereby maintaining a substantial proportion. Consequently, river systems serve as vital carriers of local culture and play a pivotal role in the formation and development of tourism and leisure districts, with their spatial distribution closely aligned with waterways, reflecting a tendency for districts to be established in proximity to water.

4.2.2. Social Economy

Socio-economic factors serve as key external drivers for the spatial distribution and development of tourism and leisure districts in China. Regions such as Beijing–Tianjin, Inner Mongolia, Jiangsu–Zhejiang–Shanghai, Fujian, and Guangdong exhibit relatively high per capita GDP, with a combined total of 50 tourism and leisure districts, representing 30.49% of the national total (Figure 7a). Additionally, areas with elevated urbanization rates—such as Beijing–Tianjin, Guangdong, Zhejiang, Liaoning, Chongqing, Fujian, and Inner Mongolia—host 54 tourism and leisure districts, accounting for 32.93% (Figure 7b). Furthermore, expenditure in the cultural, tourism, sports, and media sectors is particularly high in Beijing, Hebei, Jiangsu–Zhejiang–Shanghai, Shandong, Guangdong, and Sichuan, with the associated districts numbering 52, constituting 31.71% (Figure 7c). In terms of value added by the tertiary industry, regions such as Guangdong, Jiangsu, Shandong, Zhejiang, Beijing, Shanghai, Sichuan, and Henan also report 52 tourism and leisure districts, reflecting another 31.71% (Figure 7d).

Notably, the value added by the tertiary industry displays pronounced spatial differentiation, predominantly concentrated in the economically developed eastern coastal regions. Despite its relative economic underdevelopment, Xinjiang boasts a significant number of tourism and leisure districts due to its rich historical culture and unique customs, highlighting the complexity of tourism distribution. Higher per capita consumption expenditure and disposable income among urban residents correlate with greater tourism willingness and purchasing power. Thus, per capita GDP and urbanization rate serve as vital economic development indicators, facilitating the formation of tourism and leisure districts, while governmental expenditures in related fields provide foundational support for their development. In summary, the local economic context is intricately linked to the spatial distribution of tourism and leisure districts, directly influencing their growth and evolution.

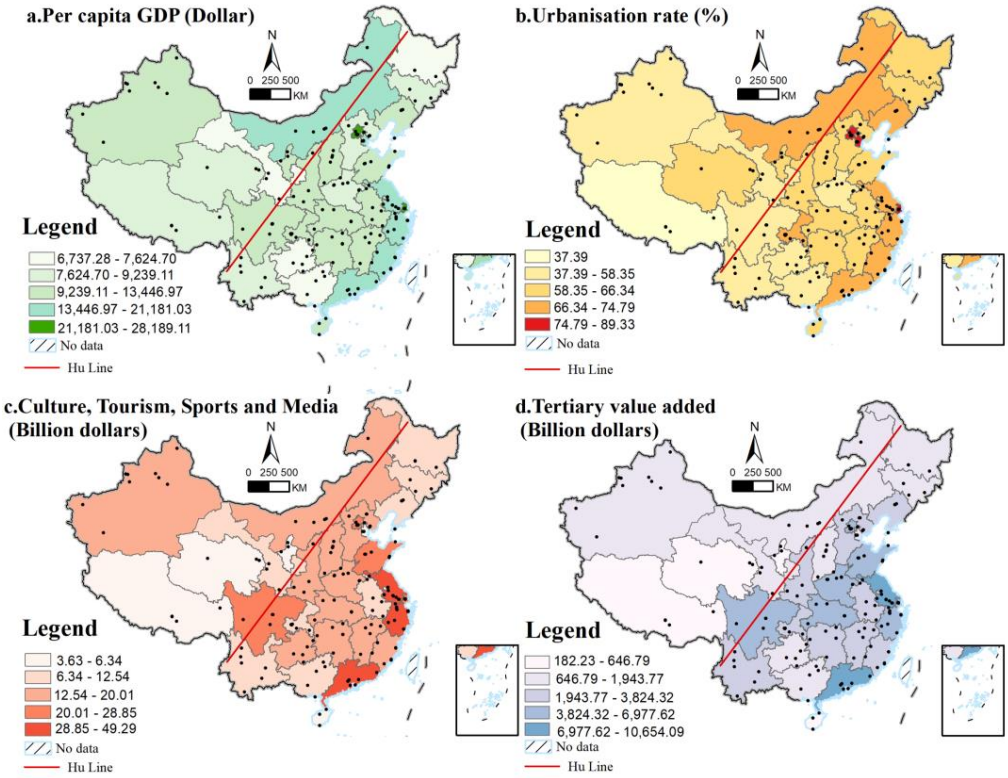

Figure 7. The spatial relationship between tourism and leisure districts and social economy.

4.2.3. Traffic Level

The first to third batches of tourism and leisure districts are predominantly concentrated within a 30 km buffer zone along national highways (Figure 8). Specifically, the number of districts within the 10 km buffer zone is 140, accounting for 85.37% of the total; within the 20 km zone, there are 145 districts, representing 88.41%; and within the 30 km zone, the total reaches 151 districts, constituting 92.07%. The level of transportation significantly influences the spatial layout of these districts, as the expansion of national highway mileage enhances accessibility and fosters regional interconnected development. Furthermore, passenger volume on national highways serves as an indicator of potential visitor numbers, providing valuable market insights for managers to formulate more effective marketing strategies. Consequently, tourism and leisure districts are frequently concentrated in areas with convenient transportation, particularly within the 10 km buffer zone of national highways.

4.2.4. Tourist Market

(1) Population Density

The development of the first to third batches of tourism and leisure districts demonstrates a synergistic relationship with population density (Figure 9a). Among the top ten provinces by population size—namely, Guangdong, Shandong, Henan, and Jiangsu—there are a total of 60 tourism and leisure districts, representing 36.59% of the overall total, which indicates a significant density of distribution and a high level of development. In contrast, the lower population densities in Tibet and Qinghai correspond to a markedly reduced number of tourism and leisure districts compared to other regions. Residents in high-density areas constitute the primary source of visitors during holidays and leisure periods, thereby creating additional commercial opportunities. Population density is identified as a critical factor influencing the spatial distribution of these districts, with high-density areas typically exhibiting well-developed transportation networks that facilitate economic interactions with adjacent regions. Collectively, these elements propel the development

of tourism and leisure districts, further highlighting the intricate relationship between population dynamics and regional commercial activities.

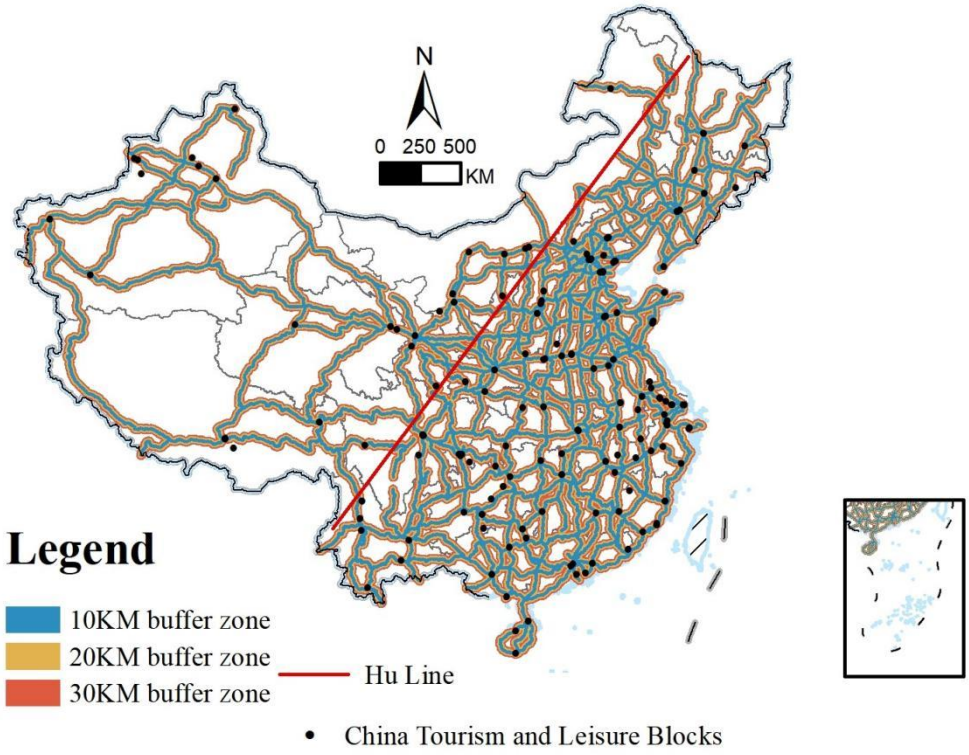

Figure 8. Superposition analysis diagram of tourist leisure districts and national highway buffer zone.

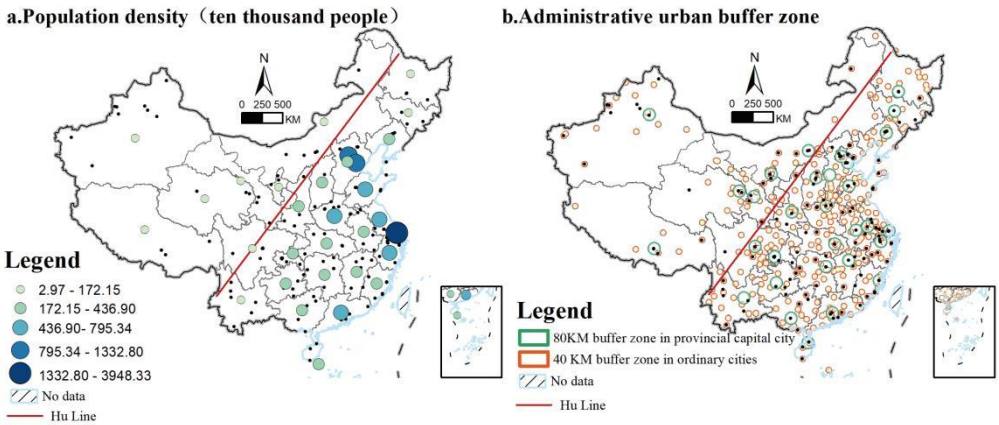

Figure 9. The spatial relationship between tourist leisure districts and tourist source market factors.

(2) Proximity to Administrative Cities

The first to third batches of tourism and leisure districts are predominantly situated within buffer zones extending 80 km from provincial capitals and 40 km from ordinary administrative cities (Figure 9b). Notably, within the 80 km buffer of provincial capitals, there exist 73 tourism and leisure districts, constituting 44.51% of the total; conversely, within the 40 km buffer of ordinary administrative cities, the count rises to 87, representing 53.05%. This observation underscores the significant influence of proximity to administrative cities on the distribution of tourism and leisure districts. Furthermore, these districts are generally located within the radiative reach of provincial and prefectural cities, primarily concentrated in suburban locales. Such a phenomenon reinforces the pivotal role of regional core cities and highlights the significance of their potential visitor market size.

4.2.5. Tourism Resources

(1) 5A Scenic Areas

Chongqing and Hebei exhibit the highest proportions of 5A scenic areas, with eight and six corresponding tourist leisure districts, respectively, positioning them among the nation's leaders (Figure 10a). Further analysis indicates a significant overlap between tourist leisure districts and high-value clusters of 5A scenic areas, particularly in the adjacent regions of Jiangsu, Zhejiang, and Shanghai, where the density of tourist leisure districts substantially exceeds that of other provinces (Figure 10b). Consequently, the quantity of 5A-rated scenic areas is intricately connected to the spatial distribution of tourism and leisure districts.

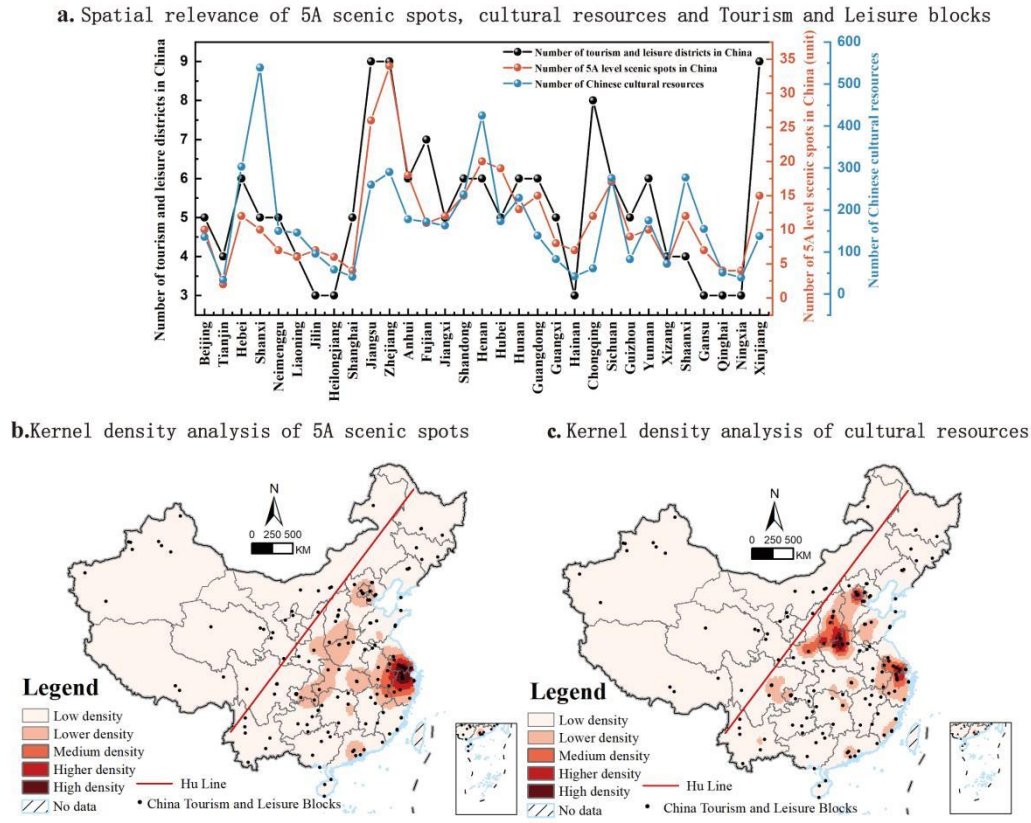

Figure 10. The spatial relationship between tourism leisure districts and tourism resources.

(2) Cultural Resources

The eight provinces ranking highest in cultural resource abundance—namely Jiangxi, Shanghai, Liaoning, and Tianjin—collectively encompass 35 tourism and leisure districts, which constitute 21.34% of the national total. This correlation highlights the profound impact of cultural resources on the distribution density of these districts. Observational data indicate a significant overlap between regions exhibiting high densities of tourism and leisure districts and two key cultural resource hubs: the Jiangsu–Zhejiang–Shanghai interface and the Beijing–Tianjin urban agglomeration (Figure 10c). Furthermore, these districts often showcase pronounced cultural themes and regional distinctiveness, with abundant cultural resources fostering the development of unique tourism brand identities that enhance both visibility and attractiveness. The integration of "tourism and leisure + culture" has become a prevailing trend, promoting synergistic interactions between distinctive cultural resources and tourism leisure districts, thus collectively propelling the advancement of the cultural tourism sector.

4.2.6. Comparison of Driving Factors

The influence of various driving factors on the spatial distribution of tourist leisure districts exhibits significant variability (Figure 11). Analysis reveals that population density (X12) possesses the highest q-value, followed by the added value of the tertiary industry (X9), per capita consumption expenditure of urban residents (X6), and tourism resources (X15), all exceeding a q-value of 0.4, indicating their markedly greater impact compared to other factors. The order of influence is as follows: q(X12) > q(X9) > q(X6) > q(X15) > q(X8) > q(X4) > q(X1) > q(X14) > q(X11) > q(X7) > q(X3) > q(X13) > q(X5) > q(X2).

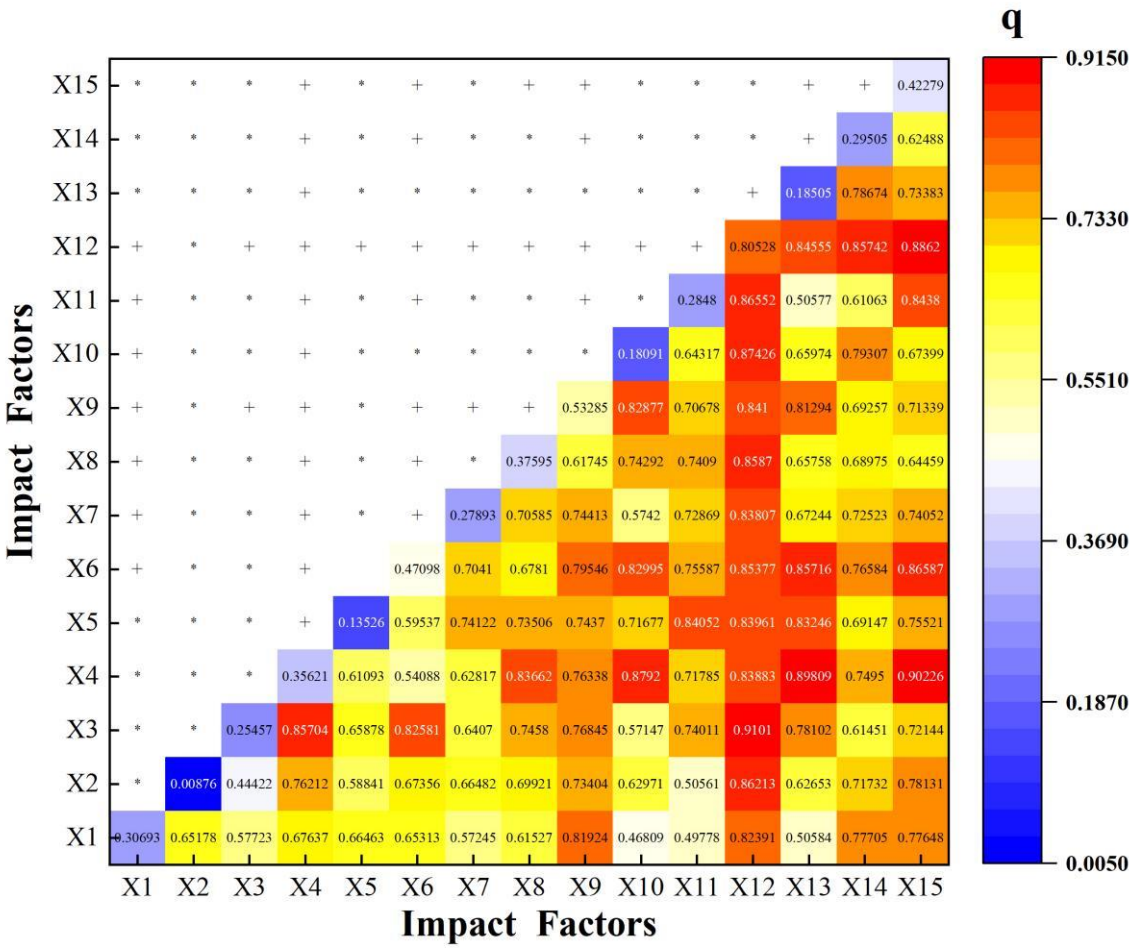

Figure 11. Detection results of driving factors interaction in China's tourism and leisure districts. Note: X1: elevation; X2: slope; X3: the nearest distance from the river system; X4: per capita GDP; X5: per capita disposable income of urban residents; X6: per capita consumption expenditure of urban residents; X7: urbanization rate; X8: culture, tourism, sports, and media expenditure; X9: added value of tertiary industry; X10: grade highway mileage; X11: highway passenger volume; X12: population density; X13: distance from administrative city center; X14: 5A scenic distance; X15: cultural resources (the total number of national cultural relics protection units and the number of historical and cultural cities in China). * indicates nonlinear enhancement q (Xi ∩ Xj) > (Xi + Xj); + indicates two-factor interaction enhancement q (Xi ∩ Xj) > Max (Xi, Xj).

In terms of interaction effects, the combinations of these factors demonstrate a non-linear enhancement characteristic on the distribution of tourist leisure districts, where the interaction of any two factors exceeds the effects of the individual factors, highlighting a synergistic enhancement. Specifically, the interaction of population density (X12) with other factors demonstrates the strongest influence, followed by the added value of the tertiary industry (X9), with the urbanization rate (X7) occupying the third position. This

suggests that population density is a critical determinant in the spatial distribution of tourism resources. Notably, the interaction between proximity to level three or higher water systems and population density is particularly significant, with interaction values of 0.9101 for per capita GDP and 0.9023 for cultural resources. This suggests that the attractiveness of tourist leisure districts is jointly determined by the source market and geographic location, while the complementarity of economic and cultural resources also plays a crucial role.

5. Discussion

5.1. Comparison with Other Countries

France, Spain, the United States, and Italy rank among the world's top five tourist destinations alongside China, each leveraging their rich cultural heritage, natural beauty, and well-developed tourism infrastructure to attract global travelers. However, notable differences exist in spatial distribution characteristics and driving factors.

5.1.1. Relationship Between Regional Distribution and Economic Development Levels

China's national-level tourism and leisure districts are primarily concentrated in economically developed eastern coastal regions, while western and inland areas are relatively sparse, reflecting the unevenness of regional economic development. Similarly, the United States exhibits a comparable distribution pattern, with major tourism and leisure areas concentrated along the East and West Coasts and in metropolitan hubs such as New York, Los Angeles, and Las Vegas, while the Midwest is less represented. In contrast, France, Spain, and Italy have a more balanced distribution of tourism and leisure districts, attributable to their smaller land areas and lesser regional economic disparities. Notably, small to medium-sized cities, especially those rich in historical and cultural significance, often emerge as important tourism destinations [50].

5.1.2. Layout Based on Cultural and Historical Resources

China shares a high degree of similarity with European countries (France, Italy, and Spain) in this aspect. Many of China's national-level tourism and leisure districts are grounded in rich historical and cultural resources, exemplified by areas such as Nanluoguxiang in Beijing and Hefang Street in Hangzhou. Similarly, cities like Rome and Florence in Italy, Paris and Provence in France, and Seville and Barcelona in Spain feature districts rooted in historical relics and cultural traditions, serving as major tourist attractions. In contrast, American tourism districts are more reliant on modern culture, entertainment industries, and shopping centers, with landmarks such as Times Square in New York and the casino district in Las Vegas exemplifying this trend [51].

5.1.3. Integration of Commercial and Tourism Functions

In the integration of tourism and commercial functions, both China and the United States exhibit high levels of commercialization in their national-level tourism districts, which serve not only as tourist attractions but also as shopping, dining, and entertainment hubs. This characteristic is evident in locations such as Disney World and Hollywood Boulevard in the U.S. European countries like France, Italy, and Spain, while some districts also incorporate commercial elements, tend to place greater emphasis on cultural and historical values as their core attractions. This results in a lower degree of commercialization, thereby preserving more traditional cultural atmospheres [52].

5.1.4. Combination of Natural Resources and District Development

Many of China's national-level tourism and leisure districts are located near natural scenic areas, such as West Lake in Hangzhou and Guilin, effectively integrating natural resources with leisure district development. Similarly, American tourism districts, particularly those around the Grand Canyon and Yellowstone National Park, rely heavily on natural landscapes. In Italy, regions like Tuscany and the Alps, as well as France's Côte d'Azur, also exemplify the fusion of natural beauty with cultural and leisure tourism.

Conversely, Spain tends to focus more on urban historical and cultural tourism, with fewer instances of natural landscapes integrated with leisure districts [53].

5.1.5. Regional Coordinated Development and Policy Promotion

In recent years, China has progressively promoted tourism development in central and western regions through policy guidance, focusing on distinctive districts in areas such as Guizhou and Yunnan. In the United States, federal policy support, coupled with state autonomy in resource management, has facilitated the development of tourism resources in parts of the Midwest. In contrast, the tourism sectors in France, Italy, and Spain are more mature, with policies primarily aimed at protection and maintenance rather than large-scale regional development [54].

In summary, the distribution of China's national-level tourism and leisure districts resembles that of the United States, characterized by a concentration of large cities and an east–west imbalance, while policies gradually foster development in inland areas. Compared to France, Italy, and Spain, China's districts exhibit a higher degree of commercialization, whereas European countries leverage their historical and natural resources, showcasing a more balanced and culturally preserved distribution of leisure districts.

5.2. Policy Implication

The spatial distribution of China's tourism and leisure districts is shaped by a multifaceted combination of natural geography, socioeconomic conditions, transportation infrastructure, tourist source markets, and available tourism resources. These combined influences not only result in disparities in visitor experience and economic outcomes but also impose pressures on social culture and the ecological environment, thus constraining the overall sustainability of the tourism industry. Our findings indicate that economically developed regions typically benefit from favorable geographic conditions and well-established transportation networks, corresponding to a relatively higher concentration of tourism and leisure districts. Additionally, the spatial arrangement of these districts plays a crucial role in fostering regional economic coordination and enhancing residents' quality of life. To facilitate the continued development of tourism and leisure districts, with a focus on both economic and regional perspectives, we outline several strategies for both developed and underdeveloped regions.

In developed regions, national-level tourism and leisure districts are predominantly concentrated in major cities and key areas (e.g., the Yangtze River Delta, the Beijing–Tianjin–Hebei urban agglomeration, and the Chengdu–Chongqing cluster). These areas, characterized by high population density, economic vitality, efficient transportation, and comprehensive infrastructure, provide an advantageous foundation for the establishment and growth of tourism and leisure districts. However, this uneven spatial distribution may lead to an over-concentration of resources in select regions, leaving others underdeveloped. Consequently, it is essential to implement policies promoting balanced regional development, encouraging governments to support underdeveloped areas through financial incentives such as subsidies and tax relief, thereby facilitating more equitable resource allocation across regions. Moreover, promoting industrial synergies is vital, as the integration of tourism and leisure districts with local industries (e.g., culture, agriculture, and handicrafts) can create diversified industrial chains, enhancing overall economic performance. In developed regions, national-level tourism and leisure districts offer residents and tourists a wide range of leisure and tourism opportunities, satisfying the growing demand for high-quality living. However, as urbanization progresses, the pressure on urban space intensifies, posing challenges to the continued development of tourism and leisure districts (as seen in Beijing and Chongqing). Therefore, integrating tourism and leisure district planning into urban renewal strategies is recommended, utilizing urban regeneration projects to incorporate tourism elements through the renovation of old districts and the use of vacant spaces. This approach can increase both the number and quality of tourism and leisure districts. Additionally, policies that encourage community participation should be

enhanced, enabling local residents to actively engage in the planning and management of tourism districts, enriching their cultural significance, and fostering stronger community cohesion, ultimately creating districts with distinct local identities [55].

In underdeveloped regions, while national-level tourism and leisure districts are less prevalent, they possess substantial potential for growth (e.g., Heilongjiang and Jilin provinces). These regions often boast abundant natural and cultural resources but are hindered by limited transportation and infrastructure, restricting the development of tourism and leisure districts. To address these challenges, prioritizing infrastructure development is essential, with increased investments in transportation, utilities, and communication systems to improve accessibility and convenience. Additionally, policies that promote the unique resources of these areas should be implemented, encouraging local governments to leverage distinctive natural and cultural assets to develop tourism districts with strong local character, attracting more visitors. Furthermore, the promotion of ecotourism in underdeveloped regions (e.g., Gansu, Qinghai, and Ningxia provinces) is crucial, emphasizing environmental conservation and service quality improvements to attract eco-conscious tourists while ensuring sustainable economic growth. Lastly, expanding vocational training initiatives is necessary to improve local residents' skills in tourism services, enhancing their employability and incomes and providing a skilled workforce to support the development of tourism and leisure districts.

Moreover, the establishment of a dynamic monitoring mechanism is essential for timely adjustments to planning processes, ensuring the sustained and healthy growth of tourism districts. Encouraging innovation will also help prevent homogenization and foster the development of unique district brands. These measures collectively aim to promote a balanced development of tourism and leisure districts, facilitating resource sharing and mutual prosperity across regions.

5.3. Limitations of the Study

This study presents several limitations. First, in terms of data acquisition and processing, constraints related to data sources and timeliness may result in findings that do not comprehensively reflect the most current and detailed conditions of national-level tourism and leisure districts. Second, methodological limitations arise from the complexities inherent in spatial analysis techniques and the examination of driving factors. While these techniques contribute to revealing spatial distribution characteristics, their effectiveness may be influenced by factors such as the study area, sample size, and the interactions among variables, leading to uncertainties in the results. Additionally, the scope of the research may be geographically and typologically limited, failing to capture the full diversity and variability of all national-level tourism and leisure districts. In terms of the theoretical framework and empirical analysis, existing studies may not fully encompass the complexities associated with the spatial distribution and driving factors of national-level tourism and leisure districts, and empirical analyses may be constrained by the sample size and representativeness. Finally, the policy recommendations and practical guidance derived from the research findings may encounter challenges in real-world applications, as factors such as the policy environment and resource conditions could significantly affect their actual effectiveness.

6. Conclusions

This study investigates 164 national-level tourism and leisure districts in China using spatial analysis techniques such as the Average Nearest-Neighbor Index and Kernel Density Estimation to analyze their spatial distribution. Additionally, buffer analysis, overlay analysis, and the geographical detector method are employed to uncover the driving factors influencing this distribution. The main conclusions are as follows:

(1) Spatial Distribution of Tourism and Leisure Districts: China's tourism and leisure districts demonstrate a spatial pattern with a higher concentration in the southeast and lower density in the northwest, as well as a greater number in the south compared

to the north. Specifically, 81.10% of districts are situated in the southeastern half of the country, while the northwest accounts for only 18.9%. Similarly, 55.49% of districts are found in southern regions, compared to 44.51% in northern areas. Eastern regions lead in tourism development, especially within the Yangtze River Delta and Beijing–Tianjin–Hebei urban clusters. The geographical center of these districts lies in Nanyang, Henan Province, though it has gradually shifted northward across the three batches of district designation, with the range of distribution initially expanding and then contracting.

(2) Influencing Factors on the Distribution of Tourism and Leisure Districts: Several factors significantly impact the spatial distribution of these districts. Most districts are located in low-altitude regions (0–500 m), accounting for 66% of the total, and are situated on relatively flat terrains (0–5° slope), encompassing 95.12% of all districts. Additionally, districts tend to be near major rivers (within 15 km) and national highways (within 10 km). Regions with higher economic development, such as the Beijing–Tianjin–Hebei, Yangtze River Delta, and Chengdu–Chongqing urban clusters, contain more tourism districts, especially those close to administrative centers (within 80 km of provincial capitals and 40 km of ordinary cities). Population size and the richness of tourism resources are also key factors in the distribution of these districts, particularly in Jiangsu, Zhejiang, and Shanghai.

(3) Varying Influence of Different Driving Factors on Spatial Distribution: Population density, the added value of the tertiary industry, urban residents' per capita consumption expenditure, and cultural resources are the main driving factors behind the spatial distribution of tourism and leisure districts. The interaction between population density and the tertiary industry's added value is particularly significant.

The study calls for region-specific policy measures to foster the balanced and high-quality development of tourism and leisure districts, considering the differing conditions of developed and underdeveloped areas. In developed regions, the focus should be on rational resource allocation and industrial linkage, while in underdeveloped regions, efforts should prioritize infrastructure improvements and the development of distinctive resources to enhance both the number and quality of tourism districts. Furthermore, emphasis should be placed on urban renewal and community engagement to enrich the cultural significance and cohesion of these districts, thereby offering diverse leisure and tourism opportunities. These policy recommendations aim to contribute to the sustainable development of national-level tourism districts, promoting regional economic coordination and improving residents' quality of life.

Author Contributions: S.S. and H.P.: methodology, software, data curation, writing—original draft; L.N.: software, data curation; Z.Z. and Q.X.: conceptualization, funding acquisition, writing—review and editing; S.S. and H.P.: investigation, validation; Z.Z.: proofreading. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement: The majority of the datasets used in this study are publicly available and can be accessed through public repositories. All data repositories used are cited in the main text. The spatial vector data come from the Natural Resources Standard Map Service website (http://211.159.153.75/download.html?superclassName=%25E4%25B8%25AD%25E5%259B%25BD%25E5%2585%25A8%25E5%259B%25BE%25EF%25BC%2588%25E8%258B%25B1%25EF%25BC%2589, accessed on 29 August 2024). The DEM comes from the geospatial data cloud platform (https://www.gscloud.cn/sources/index?pid=302&ptitle=DEM%20%E6%95%B0%E5%AD%97%E9%AB%98%E7%A8%8B%E6%95%B0%E6%8D%AE&rootid=1, accessed on 29 August 2024). The river system comes from the national geographic information resource directory service system (https://www.webmap.cn/commres.do?method=result100W, accessed on 30 August 2024). The national high-

way comes from The Open Street Map, OSP (https://openmaptiles.org/languages/zh/#0.55/0/0, accessed on 30 August 2024). These websites allow open access.

Conflicts of Interest: The authors declare no conflicts of interest.

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