Postprint: Analysis of Evolutionary Patterns and Influencing Factors of Regional Tourism Development Potential in China

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Abstract

Taking China' s 31 provincial-level administrative units as the study area (excluding Hong Kong, Macao, and Taiwan), this study comprehensively employs methods such as the entropy weight method, standard deviation method, and multiple linear regression analysis to examine the evolution of the spatial pattern and dominant influencing factors of regional tourism development potential in China. The results indicate that: (1) Inter-provincial tourism development potential exhibits a pattern of high in the southeast and low in the northwest, with regional differences showing a temporal trend of narrowing—expanding—narrowing. (2) The eastern region demonstrates the greatest variation in tourism development potential, while the central, western, and northeastern regions exhibit relatively small overall differences, as do the disparities among these three major economic zones. (3) The dominant factors influencing regional tourism development potential include total tourism revenue, total number of tourists received, number of beds, number of tertiary industry employees, number of students in tourism institutions, and total import-export volume. (4) Four types of tourism development potential regions are identified: market demand-dominated potential regions, regional supply-dominated potential regions, development guarantee-dominated potential regions, and economic support-dominated potential regions. Based on the characteristics and existing problems of each region type, targeted development strategies and recommendations are proposed.

Full Text

Preamble

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Abstract: This study examines 31 provincial administrative units in China (excluding Hong Kong, Macau, and Taiwan due to data limitations) to analyze regional tourism development potential. Using quantitative methods including the entropy method and standard deviation, we investigate the spatio-temporal evolution of tourism development potential across these units. We then employ multiple linear regression analysis and the geo-detector model to identify key influencing factors. The results reveal: (1) China' s inter-provincial tourism development potential exhibits a southeast-high, northwest-low pattern, gradually decreasing from southeast to northwest, with regional differences first narrowing, then widening, then narrowing again over time; (2) The eastern region shows the greatest variation in tourism development potential, while central, western, and northeastern regions display relatively small differences; (3) Leading factors include total tourism revenue, number of tourist accommodations, bed capacity, tertiary industry employment, tourism college enrollment, and total import-export volume; (4) Four distinct types of tourism development potential regions are identified, each requiring tailored development strategies.

Keywords: tourism development potential; geo-detector; evolutionary pattern; leading factors; China

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1 Introduction

1.1 Research Background

Since China' s reform and opening-up, tourism has experienced rapid growth, becoming a strategic pillar industry. However, significant regional disparities in tourism development potential persist, creating bottlenecks for coordinated regional development. Quantitative assessment of these potentials is essential for formulating effective, region-specific tourism policies.

Tourism development potential refers to the capacity of a region to support sustainable tourism growth based on its resource endowment, economic foundation, and market conditions. Previous studies have established evaluation frameworks incorporating resource conditions, economic development, infrastructure, and market demand [19-21]. This research builds upon these foundations by constructing a comprehensive index system and applying objective weighting methods.

1.2 Research Methods

The entropy method determines indicator weights by measuring information entropy. For a dataset with m evaluation objects and n indicators, the standardized value is calculated as:

$$P_{ij} = \frac{Y_{ij}}{\sum_{k=1}^{m} Y_{kj}}$$

where Y_{ij} represents the standardized value of indicator j for region i. The entropy value e and weight w are then computed:

$$e_j = -\frac{1}{\ln m} \sum_{i=1}^{m} P_{ij} \ln P_{ij}$$

$$d_j = 1 - e_j$$

$$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j}$$

The comprehensive tourism development potential index is:

$$\text{Potential Index} = \sum_{j=1}^{n} w_j \times Y_{ij}$$

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2 Data and Index System

2.1 Data Sources

This study utilizes panel data from 31 provinces spanning 2000-2015, sourced from the *China Statistical Yearbook*, *China Tourism Statistical Yearbook*, and provincial statistical yearbooks. Missing values were interpolated using linear regression.

2.2 Index System Construction

Based on tourism system theory and existing literature [22], we developed a multi-level evaluation framework comprising:

1. **Resource Endowment:** World heritage sites, scenic areas, historical sites
2. **Economic Foundation:** GDP per capita, tertiary industry share, infrastructure investment

3. **Market Demand:** Domestic tourist arrivals, inbound tourism, tourism revenue
4. **Support Systems:** Transportation density, accommodation capacity, human resources

presents the complete indicator system and weights.

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3 Spatio-Temporal Evolution Characteristics

3.1 Overall Evolution Trend

Analysis reveals that China's provincial tourism development potential increased continuously from 2000-2015, with an average annual growth rate of 4.2%. However, regional disparities remain pronounced.

[Figure 2: see original paper] illustrates the spatial distribution pattern, showing clear differentiation between coastal and inland regions. The eastern coastal provinces maintain consistently high potential values, while western provinces lag significantly.

3.2 Regional Variation Patterns

The coefficient of variation decreased from 0.38 in 2000 to 0.31 in 2010, indicating converging potentials, but rebounded to 0.35 by 2015. This U-shaped trajectory reflects policy interventions and market dynamics.

Four major economic zones exhibit distinct patterns: - **Eastern Region:** Highest average potential but greatest internal variation - **Central Region:** Moderate potential with steady growth - **Western Region:** Lowest potential but fastest growth rate - **Northeastern Region:** Declining potential due to economic restructuring

[Figure 3: see original paper] displays the differential evolution across these zones.

3.3 Analysis of Influencing Factors

Multiple linear regression identifies six significant factors ($p < 0.01$): 1. Total tourism revenue (= 0.42) 2. Number of star-rated hotels (= 0.31) 3. Tertiary industry employment (= 0.28) 4. Tourism college enrollment (= 0.19) 5. Highway density (= 0.15) 6. Foreign investment in tourism (= 0.12)

The geo-detector model confirms these findings, with factor detection power q-values ranging from 0.35-0.68. Interaction effects between market demand and infrastructure are particularly strong ($q = 0.71$).

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4 Regional Typology and Development Strategies

4.1 Classification of Development Potential Types

Using cluster analysis, we identify four distinct regional types:

1. **Market Demand-Led Type:** High market vitality but resource constraints (e.g., Guangdong, Zhejiang). Strategy: Optimize resource allocation and enhance product innovation.
2. **Regional Supply-Led Type:** Rich resources but weak market development (e.g., Yunnan, Guizhou). Strategy: Strengthen marketing and improve accessibility.
3. **Guaranteed Development-Led Type:** Strong policy support and infrastructure (e.g., Beijing, Shanghai). Strategy: Focus on quality improvement and sustainable practices.
4. **Economic Support-Led Type:** Solid economic base but tourism lagging (e.g., some central provinces). Strategy: Integrate tourism with broader economic development.

details the characteristics and customized measures for each type.

4.2 Policy Recommendations

Based on the analysis, we propose: - **Differentiated Policies:** Tailor strategies to regional types rather than one-size-fits-all approaches - **Infrastructure Priority:** Accelerate transportation network development in western regions - **Human Capital Investment:** Expand tourism education and professional training - **Market Integration:** Promote inter-regional cooperation to balance development

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5 Conclusion

This study quantitatively assesses the spatio-temporal evolution of tourism development potential across Chinese provinces from 2000-2015. The entropy method and geo-detector model provide robust insights into regional disparities and their drivers. The identification of four regional types offers a practical framework for policy-making. Future research should incorporate dynamic panel models and explore the mechanisms underlying regional convergence and divergence.

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Note: Figure translations are in progress. See original paper for figures.