

VISUAL ANALYSIS ON THE CURRENT SITUATION AND REGIONAL DISPARITIES OF TOURISM ECONOMIC DEVELOPMENT IN YUNNAN PROVINCE

Received Date: 2025, December 6

Revised Date: 2026, May 7

Accepted Date: 2026, May 31

Lizhen Li*

Nirote Sinnarong**

Ke Nunthasen**

Kittawit Autchariyapanitkul***

ABSTRACT

With the implementation of the "Strong Tourism Province" strategy, Yunnan's tourism economy has grown continuously, with tourism revenue and tourist arrivals reaching new peaks. However, significant spatial disparities and structural imbalances exist across its 16 regions. Using panel data from 2010 to 2023, this paper constructs an indicator system covering economic output, cultural resources, and transportation infrastructure. Through visualization, the study analyzes Yunnan's tourism development status and regional disparity characteristics. The findings show that while overall tourism volume grows steadily, regional development gaps are significant and widening-Kunming, Dali, and Lijiang remain high-development zones, while Nujiang, Diqing, and Dehong are relatively underdeveloped. Using K-means clustering, the paper classifies regions into three types and proposes targeted policy recommendations. The results provide empirical evidence for differentiated tourism strategies and a reference for coordinated regional tourism development.

Keywords: Yunnan Province, Tourism Economy, Regional Disparities, Visual Analysis.

* PhD student, Faculty of Economics, Maejo University Academic Year 2025

** Faculty of Economics, Maejo University

Corresponding author e-mail: Kittawit_a@mju.ac.th

INTRODUCTION

As a vital engine of China's economic growth, China's 14th Five-Year Plan for Tourism Development explicitly sets the goals of deepening culture-tourism integration and building a strong tourism country. Yunnan Province, endowed with abundant natural landscapes, distinctive ethnic cultures and favorable climatic conditions, has become a key component of China's tourism economy.

In 2023, Yunnan recorded 1.042 billion tourist visits and 1.44 trillion yuan in tourism revenue, ranking second nationally in tourism revenue scale. Yet its 16 regions face notable regional tourism development imbalances (Zhong, Zhu, Li, Zhou & Tie, 2022, pp. 63-65): Kunming, Dali and other core regions lead the industry (Kunming contributed 30% of revenue in 2023), while Nujiang, Diqing, and Dehong contribute less than 3% due to economic, transportation and resource development constraints. These multi-dimensional disparities (tourism revenue, resource endowments, ethnic culture, transportation) hinder the coordinated development of Yunnan's tourism industry.

Regional tourism disparities have become a research hotspot in tourism studies at home and abroad, exerting a significant impact on economic and social development (Gyurkó, Bujdosó, Rahmat & Dávid, 2024, pp. 21-33; Micić, 2018, pp. 167-173). Domestic scholars have analyzed the spatial pattern characteristics of tourism in regions such as the Yangtze River Economic Belt (Huang, Zhang & Shi, 2023, pp. 110-122; Li & Ma, 2024, pp. 128-137; Zhang, Zhang, Qiao & Tian, 2024, pp. 470-480). Meanwhile, some scholars have taken Yunnan Province as the research object, conducting in-depth investigations into the spatiotemporal evolution patterns of its tourism economic development and regional disparities (Chen, 2022, pp. 89-96; Fan, He, Li & Zhao, 2026, pp. 132-146; Wu, Wang & Ming, 2023, pp. 35-43). Scholars use the Theil index to analyze intra-regional and inter-regional disparities (Huang, Zhang & Shi, 2023, pp. 110-122; Yang, Xuan & Yang, 2025, pp. 93-105) and apply K-means clustering for multi-dimensional classification research-for instance, Liao, Yu & Lin (2024, pp. 31-46) took 298 cities in China as the research object and divided the sample cities into three types of groups (development-restricted, steady-progress, and comprehensive radiation types) using this algorithm. Meanwhile, they also adopt GIS heat maps, choropleth maps and other methods to visualize spatial patterns (Lu & Ming, 2018, pp. 28-37).

Economic geography emphasizes that regional tourism development exhibits spatial heterogeneity and uneven distribution, often forming a core-periphery structure driven by

differences in resource endowment, transportation accessibility, and economic foundation (Krugman, 1991, pp. 483-499). Existing studies on tourism economic disparities in Yunnan mostly rely on static indicators or descriptive statistics, lacking a multi-dimensional analytical framework that incorporates long-term dynamics (2010-2023), particularly the changes in regional disparities following the opening of high-speed railways and the COVID-19 pandemic. To fill this gap, this study, grounded in economic geography theories, adopts a multi-dimensional framework combined with visualization and regional typology to reveal the spatial and structural disparities of Yunnan's tourism economy.

Against this backdrop, this study focuses on revealing the spatial disparities and structural characteristics of regional tourism economic development in Yunnan Province, rather than pursuing strict causal identification among variables. While advanced econometric models have advantages in causal inference, they still have certain limitations in intuitively depicting regional heterogeneity and spatial imbalance. As a complementary analytical approach, data visualization excels in directly and clearly presenting differences in tourism development levels, distribution patterns, and structural characteristics across regions. It can transform abstract data into perceivable spatial patterns through line charts, heat maps, and other forms-an advantage that econometric models cannot easily replace. However, in existing regional tourism research, visual analysis of intra-provincial disparities in multi-ethnic provinces remains relatively underdeveloped. Accordingly, this study adopts the data visualization method to fill the gaps in existing research from a spatial intuitive perspective and provide a new analytical lens for interpreting regional tourism economic imbalance.

The research contributions of this paper are as follows: 1) Theoretical contribution: Taking Yunnan as a case, a multi-dimensional indicator system is constructed, and visualization methods are integrated to reveal the characteristics of tourism development imbalance, enriching the research path of regional tourism disparities. 2) Methodological contribution: Visual analysis is integrated with regional classification to improve the practicality and interpretability of the research, providing a reference paradigm for tourism spatial classification. 3) Practical contribution: The spatiotemporal disparities of tourism development in Yunnan's 16 regions are clarified, three development types are classified, and targeted policies are proposed, offering practical references for tourism development in Yunnan and similar multi-ethnic resource-based provinces.

RESEARCH OBJECTIVES

Based on the aforementioned research framework, this paper proposes the following research objectives: 1) To sort out the overall development trend of Yunnan's tourism industry and identify its phased changes and fluctuation characteristics; 2) To construct a multi-dimensional indicator system and reveal the spatial distribution differences of tourism development by applying visual analysis methods; 3) To analyze the structural differences of various regions in terms of economic foundation, resource endowments and transportation accessibility; and 4) To classify the types of tourism development and put forward targeted policy recommendations.

CONCEPTUAL FRAMEWORK

To clarify the analytical logic of this study, a conceptual framework (Figure 1) is constructed to illustrate the relationships among key variables and regional tourism economic disparities in Yunnan Province. Regional tourism economic performance, measured by total tourism revenue and tourist arrivals, is influenced by multiple dimensions, including regional economic base (per capita GDP and local fiscal expenditure), population scale, resources and cultural endowments (4A+ scenic spots, ethnic minorities, and annual average temperature), and infrastructure (high-speed rail accessibility). Rather than aiming to establish strict causal relationships, this framework emphasizes how these factors jointly shape the spatial and structural patterns of tourism development. Visual analysis is employed as an analytical lens to reveal regional heterogeneity and disparities, thereby strengthening the theoretical interpretation of tourism economic imbalance across regions.

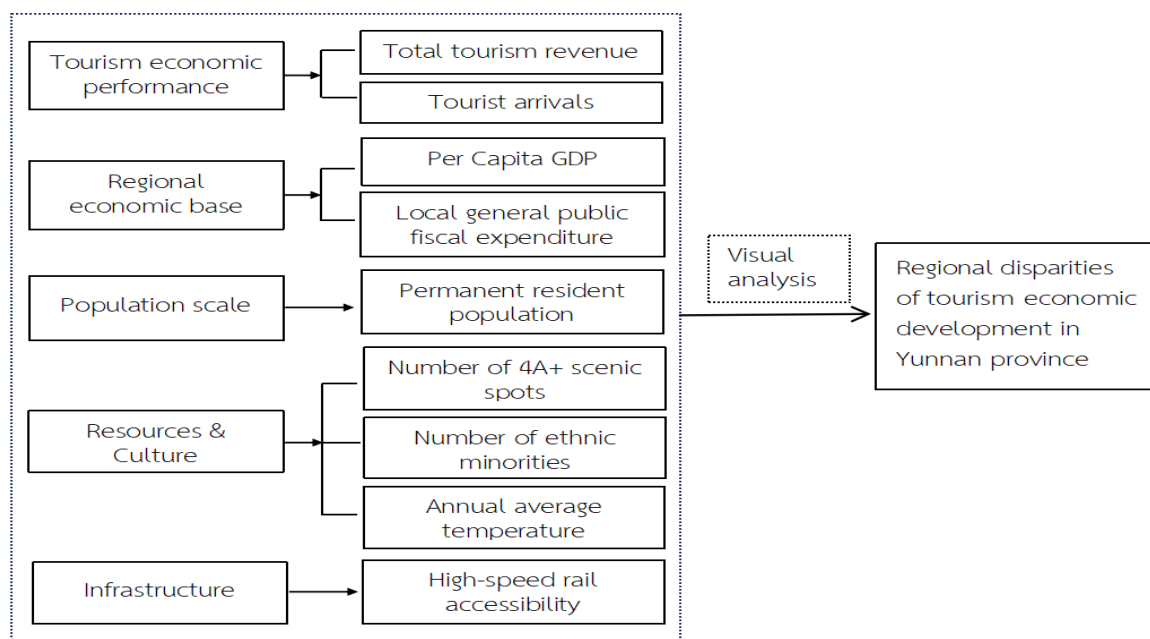


Figure 1 Conceptual framework

Construction of a multi-dimensional indicator system

Based on the above conceptual framework, a multi-dimensional indicator system is developed as shown in Table 1.

Table 1 Multidimensional indicator system for tourism development in Yunnan Province

Dimension Category	Specific Indicator	Unit	Data Source	Function Description
Tourism economic performance	Total tourism revenue	Yuan (100 million)	Yunnan Provincial Statistical Yearbook	Measures tourism industry scale and economic output
	Tourist Arrivals	10,000 tourist visits	Yunnan Provincial Statistical Yearbook	Reflects tourism activity and attractiveness
Regional economic base	Per Capita GDP	Yuan	Yunnan Provincial Statistical Yearbook	Indicates economic level and consumption capacity
	Local general public fiscal expenditure	Yuan (100 million)	Yunnan Provincial Statistical Yearbook	Represents government investment in public services and infrastructure

Table 1 (Continued)

Dimension Category	Specific Indicator	Unit	Data Source	Function Description
Population scale	Permanent resident population	10,000 persons	Yunnan Provincial Statistical Yearbook	Indicates population support base and service pressure for tourism
Resources & Culture	Number of 4A+ scenic spots	Pieces	Yunnan Provincial Department of Culture and Tourism	Indicates quality tourism resource endowment
	Number of ethnic minorities	Types	Yunnan Provincial Statistical Yearbook	Shows cultural diversity and ethnic tourism potential
	Annual average temperature	°C	Yunnan Provincial Statistical Yearbook	Reflects tourism comfort and climatic appeal
Infrastructure	High-speed rail accessibility	Binary variable (1=opened, 0=not opened)	China Railway Customer Service Center (12306.cn), official announcements of local governments	Measures transportation convenience and mobility

DATA AND RESEARCH METHODS

Data sources

All research data are sourced from national and provincial official statistical yearbooks and official websites of relevant government departments including culture, tourism and transportation, with all data cross-verified against official public announcements and mainstream media information.

Research scope

This study takes 16 regions in Yunnan Province as the research objects, specifically including Kunming, Qujing, Yuxi, Baoshan, Zhaotong, Lijiang, Pu'er, Lincang, Chuxiong, Honghe, Wenshan, Xishuangbanna, Dali, Dehong, Nujiang and Diqing; the research period is from 2010 to 2023.

Data processing and analysis methods

The analytical methods employed in this paper are as follows:

1. Descriptive analysis: Aggregating 2010-2023 Yunnan core tourism data, it uses line/bar charts to show tourism trends and phased features, focusing on growth changes/fluctuations from external factors (e.g., epidemic) for a macro view.
2. Time series analysis: By plotting development trend charts and sub-prefecture line charts, the spatiotemporal evolution characteristics and regional disparities of tourism economic development in Yunnan Province as a whole and its various regions are demonstrated.
3. Analysis of "Static Spatial Distribution + Dynamic Gap Evolution": The Theil index is employed to quantify regional tourism disparities, with the formula:

$$T = \sum_{i=1}^n \left(\frac{Y_i}{Y} \right) \ln \left(\frac{Y_i / Y}{P_i / P} \right)$$

where Y_i denotes tourism revenue of region i , Y is total tourism revenue of Yunnan Province, P_i represents the population of region i , and P is the total provincial population. A larger Theil index value indicates greater regional disparity.

4. GIS spatial visualization analysis: Based on QGIS tools, spatial distribution maps of the tourism economic development level in the 16 regions are plotted, including those for tourism revenue, high-speed railway distribution, and regional classification.
5. Analysis of regional development models: To identify structural heterogeneity in regional tourism economic development, K-means clustering is applied based on multi-dimensional indicator performance. Eight core indicators are selected from the indicator system (Table 1), and Z-score standardization is applied to eliminate dimensional effects. The number of clusters k is determined using the Silhouette coefficient method. By comparing Silhouette values under different k settings, the optimal clustering solution is selected to balance intra-cluster similarity and inter-cluster differentiation. The final clustering is implemented in Python, classifying Yunnan's 16 regions into distinct tourism development types, which provides a basis for differentiated development strategies.

RESULTS

1. Analysis of the current situation of Yunnan's tourism economic development

This paper takes total tourism revenue and tourist arrivals as the core indicators, and plots a double-line chart (Figure 2) based on the data from 2010 to 2023 to intuitively present the overall growth trend and phased fluctuation characteristics of Yunnan's tourism industry. Figure 2 shows that Yunnan's tourism economy has maintained an overall upward momentum while exhibiting the dual characteristics of phased progression and short-term fluctuations, which can be divided into four specific stages: steady growth from 2010 to 2015, accelerated expansion from 2016 to 2019, an adjustment period under the impact of the COVID-19 pandemic from 2020 to 2022, and entry into a stage of rapid growth driven by recovery and rebound starting in 2023. Two key time nodes have exerted a profound impact on the trend changes: the opening of Yunnan's first high-speed railway in 2016 and the outbreak of the global COVID-19 pandemic in 2020.



Figure 2 Trend chart of total tourism revenue and tourist arrivals in Yunnan Province from 2010 to 2023

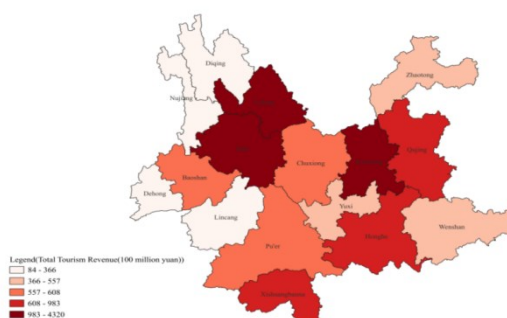


Figure 3 Heat map of tourism revenue in various regions of Yunnan Province in 2023

2. Visual analysis of regional disparities

This section uses multi-dimensional indicators for visualization and combines the Theil Index to quantify regional gap evolution, systematically depicting Yunnan's tourism economy imbalance and emphasizing the need for gap governance.

2.1 Spatial distribution pattern and evolution trend of tourism economy By plotting the tourism revenue heat map, the spatial differentiation characteristics of tourism development across Yunnan's 16 regions are intuitively presented. Figure 3 shows that the spatial pattern of Yunnan's tourism revenue in 2023 is irregularly distributed geographically: Kunming, Lijiang and Dali are core hotspots with tourism revenue exceeding 100 billion yuan, forming a sharp contrast

with peripheral regions such as Nujiang and Diqing. Notably, Lijiang and Dali, along with Nujiang and Diqing, are all located in northwestern Yunnan, yet there exists a huge disparity in their tourism development levels, which indicates that such regional differences are jointly shaped by the interaction of multiple factors.

To explore the evolutionary characteristics of the tourism economy, this study visualizes the evolutionary trends of tourism revenue across Yunnan's 16 regions based on data from 2010 to 2023, and analyzes their gradient differentiation characteristics using the Theil Index.

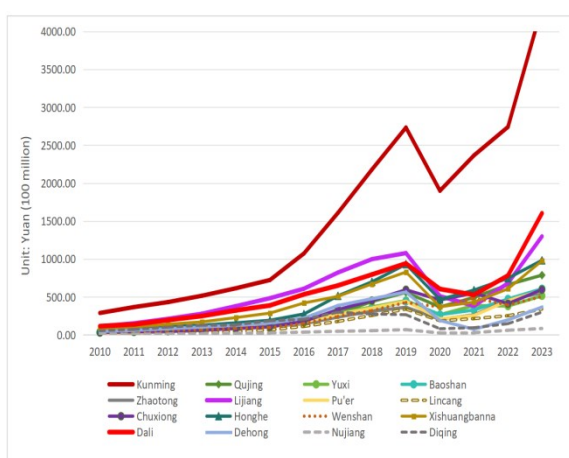


Figure 4 Evolution trend of tourism revenue in 16 regions of Yunnan Province (2010-2023)

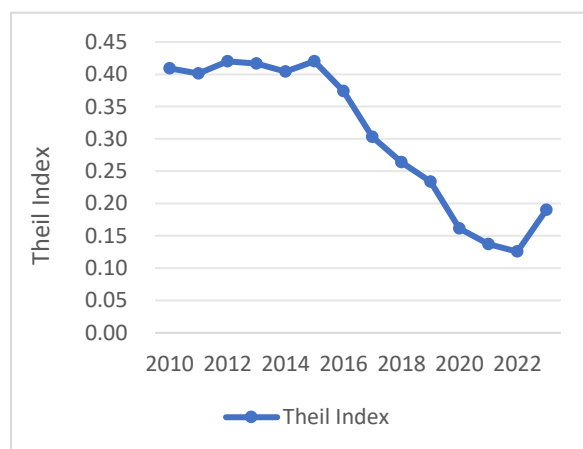


Figure 5 Trend of theil index of tourism revenue in Yunnan Province (2010-2023)

As shown in Figure 4, the tourism revenue of Yunnan's 16 regions exhibits prominent gradient differentiation characteristics: Kunming takes the leading position with tourism revenue exceeding 400 billion yuan, closely followed by Lijiang, Dali and other regions; Qujing, Yuxi and other regions maintain steady growth, while Nujiang, Diqing and other regions remain at a low level all the time. The tourism revenue trend lines of the 16 regions have become stratified and diverged over time, forming a pattern of "top leadership, middle catch-up and bottom lag", which reflects the continuous expansion of regional gaps; the short-term fluctuations caused by the impact of the COVID-19 pandemic in 2020 have further highlighted the resilience differences across different development tiers.

Based on the analysis of the Theil index trend in Figure 5, 2016 marks a critical turning point: prior to that year, the income curves of various groups overlapped significantly, with the Theil index remaining stable, indicating a small overall relative disparity; after 2016,

the curves became distinctly stratified and the absolute gap widened, yet the Theil index showed a "first decline then fluctuation" pattern. Influenced by within-group variations, the trend of relative disparity grew more complex.

The above analysis indicates that the regional disparities in Yunnan's tourism economy are characterized by the coexistence of gradient solidification and dynamic gaps, with a notable imbalance in development momentum between core and peripheral regions, making the advancement of coordinated regional development an urgent necessity.

2.2 Analysis of the differential characteristics of core dimension indicators Based on the 2023 cross-sectional data, this section reveals the gradient difference characteristics of regional tourism development conditions from the following core dimensions.

1) Economic Foundation Conditions: Significant disparities exist in regional economic development levels and fiscal expenditure intensity. Yuxi, Kunming, and Chuxiong rank top three in per capita GDP (peaking at 112,900 yuan), while underdeveloped regions such as Zhaotong and Dehong have a per capita GDP of less than 50,000 yuan, with a more than twofold gap between the highest and lowest. Meanwhile, Diqing and Nujiang have relatively small fiscal expenditure scales, and inadequate fiscal guarantees have constrained investment in tourism supporting facilities.

2) Resource and Cultural Conditions: As shown in Figure 6, resource endowments present a pattern of "core enrichment and peripheral scarcity"-Dali and Honghe each have over 20 4A+ scenic spots, while Nujiang has fewer than 5; Kunming and Honghe are home to 9 ethnic minority groups, compared to only 2 in Chuxiong. Such resource gaps directly impact tourism attractiveness.

3) Transportation Infrastructure Conditions: As illustrated in Figure 7, there is an obvious "transportation gap" in peripheral areas of the province. Four regions-Diqing, Nujiang, Dehong, and Zhaotong-have not yet opened high-speed rail, forming a stark contrast to the "full high-speed rail coverage" in core regions (e.g., Kunming and Dali). Insufficient transportation accessibility has become a major bottleneck for tourism development in peripheral areas.

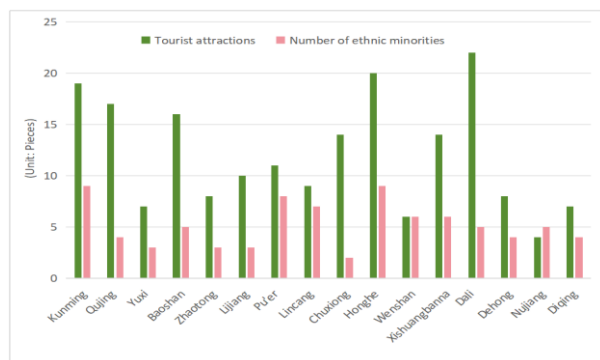


Figure 6 Differences in resources and cultural foundations coverage in Yunnan

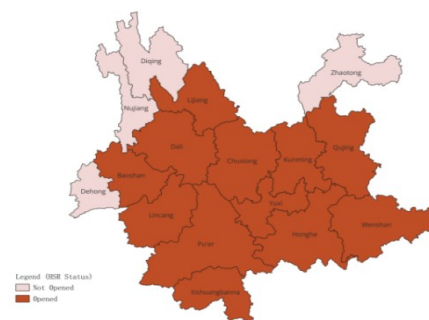


Figure 7 High-Speed rail coverage in Yunnan (2023)

3. Cluster Analysis of Regional Types of Tourism Economy in Yunnan

Based on eight multi-dimensional indicators standardized by Z-score, this study adopts the K-means clustering method and uses the Silhouette Coefficient to select the optimal k-value-tests show that the coefficient reaches its maximum (0.58) when k=3, with optimal intra-cluster cohesion and inter-cluster differentiation. Therefore, the 16 regions are classified into three types of tourism development (see Table 2). The clustering results corroborate the regional disparities identified earlier: the Core Leading type and the Basic Weak type differ markedly in tourism revenue, transportation conditions, and other aspects, while the Potential Growth type reveals a "core-potential-weak" gradient pattern, rather than a simple polarization.

Table 2 Classification of Tourism Development Types in 16 Regions of Yunnan Province

Type	Representative Regions	Cluster Centers (key indicators, standardized mean values)	Feature Description
Core Leading Type	Kunming, Dali, Lijiang	Total tourism revenue: 1.42; Per capita GDP: 0.15; Public fiscal expenditure: 0.65; Number of 4A+ scenic spots: 0.96; High-speed rail accessibility: 0.58	With high tourism revenue, prominent resource endowments, unique tourism resources, strong transportation accessibility, and significant brand effects, they constitute the "core engine" of
Potential Growth Type	Qujing, Yuxi, Honghe, Chuxiong, Baoshan, Pu'er, Xishuangbanna	Total tourism revenue: -0.17; Per capita GDP: 0.32; Public fiscal expenditure: 0.01; Number of 4A+ scenic spots: 0.41; High-speed rail accessibility: 0.58;	Abundant resources, notable advantages in cultural and natural endowments, diverse ethnic minority cultures, good development potential, and full high-speed rail coverage; yet insufficient tourism brand effect, low recognition outside the

Table 2 (Continue)

Type	Representative Regions	Cluster Centers (key indicators, standardized mean values)	Feature Description
Basic Weak Type	Zhaotong, Lincang, Wenshan, Dehong, Nujiang, Diqing	Total tourism revenue: -0.51; Per capita GDP: -0.62; Public fiscal expenditure: -0.22; Number of 4A+ scenic spots: -0.99; High-speed rail accessibility: -0.96;	Located at the provincial edge, with a weak economic foundation, limited financial support, overall severely deficient high-speed rail accessibility, underdeveloped infrastructure, small population scale, relatively scarce tourism resources, and tourism development still highly

To visualize the spatial distribution of these types, this study uses QGIS to generate a classification map (Figure 8), illustrating the geographical pattern of each type across Yunnan.

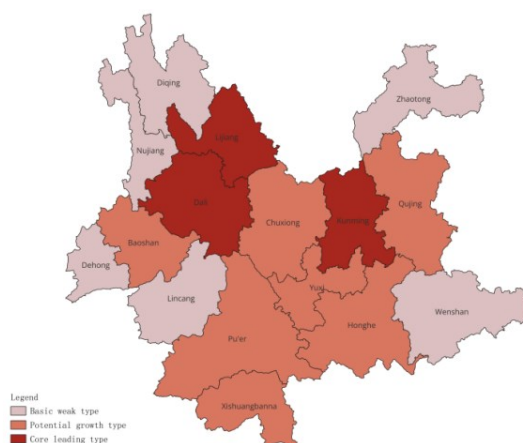


Figure 8 Classification of Tourism Development Types in 16 Regions of Yunnan Province

DISCUSSION

This study adopts the K-means clustering method combined with multi-dimensional indicator visualization to classify the 16 regions in Yunnan Province into three types of tourism development models.

First, the research follows the analytical approach of "quantitative clustering supplemented by qualitative analysis". The K-means algorithm conducts a quantitative analysis of the similarities among various regions in terms of tourism economic performance, resource endowments and infrastructure conditions, effectively reducing subjectivity; meanwhile, it

incorporates contextual factors such as the uniqueness of ethnic cultures, making the classification results more consistent with the governance reality of the border multi-ethnic areas in Yunnan.

Second, this study verifies and extends the traditional "core-periphery" analytical perspective. Consistent with the findings of Zhong, Zhu, Li, Zhou & Tie (2022, pp. 63-65) and Chen (2022, pp. 89-96), its conclusions confirm the long-term leading position of core regions such as Kunming and Dali, as well as the lagging development characteristics of northwestern Yunnan and border areas, reflecting the persistent and stable core-periphery structure in Yunnan's tourism economy. However, unlike existing studies that adopt analytical approaches based on static single indicators or factor-based descriptions (Wu, Wang & Ming, 2023, pp. 35-43), this study identifies a distinct category of "Potential Growth" regions. These regions boast prominent advantages in resource endowments yet have failed to transform such resources into economic outcomes due to structural constraints.

Furthermore, the three-type framework advances existing research by shifting the explanation of regional disparities from a single "resource determinism" to a more comprehensive "resource-transportation-culture" coupling mechanism. The results indicate that even regions endowed with outstanding natural or cultural resources may continue to lag behind when constrained by insufficient transportation accessibility, fragmented tourism organization systems, or weak market-oriented operational capacity. In contrast, core regions benefit from the synergistic interaction among high-speed rail accessibility, mature tourism markets, and strong cultural branding.

Compared with studies conducted in other provinces and major economic belts (Zhang, Zhang, Qiao & Tian, 2024, pp. 470-480), the Yunnan case further highlights the importance of contextual factors such as ethnic cultural characteristics and spatial accessibility in shaping tourism development trajectories. In addition, uneven digital development may serve as an implicit reinforcing mechanism of regional disparities. Digital platforms, online marketing, and smart tourism systems can enhance destination visibility and service efficiency; however, these benefits tend to concentrate in regions with stronger institutional capacity and more developed infrastructure. As a result, digitalization may amplify the advantages of Core Leading regions while providing limited short-term support to Basic Weak areas.

The strong synergistic effect observed in Dali-where the "Feng Hua Xue Yue" cultural IP is effectively integrated with high-speed rail networks and digital promotion channels-illustrates how multiple factors jointly shape tourism economic performance in Yunnan's multi-ethnic

and border context. Supported by both clustering results and empirical observations, this multi-factor explanation offers a more nuanced understanding of regional tourism disparities than analyses based on single quantitative or qualitative approaches (Huang, Zhang & Shi, 2023, pp. 110-122).

CONCLUSION

1. Conclusion and Findings

Taking 16 regions in Yunnan Province as the research objects, this study systematically analyzes the regional disparities in tourism economy using a combined approach of "multi-dimensional indicator visualization + K-means clustering". The core results are as follows:

- 1) Yunnan's tourism economy has maintained sustained growth, accounting for a relatively high proportion of the province's GDP.
- 2) Significant regional development disparities exist, with the gap widening slowly.
- 3) Three development models are identified through clustering: 1) Core Leading Type (Kunming, Dali, Lijiang), characterized by strong branding effects and high transportation accessibility; 2) Potential Growth Type (Qujing, Yuxi, etc.), which possess abundant natural and cultural resource endowments but face structural constraints in transforming these advantages into stable tourism performance; 3) Basic Weak Type (Zhaotong, Lincang, etc.), where limited transportation accessibility and weak economic foundations have long constrained tourism development. This study breaks through the traditional "core-periphery" perspective and expands the interpretation of tourism disparities to a "resource-transportation-culture" coupling mechanism.

2. Policy Implications and Recommendations

Combining the research results with Yunnan's actual conditions, recommendations are proposed from the dual dimensions of "provincial-level overall planning + regional-specific implementation". At the provincial level: Focus on the four key directions of "service quality improvement, safety guarantee, integrated cultural and tourism development, and regional coordination", improve the tourism supervision and coordination mechanism, and promote the construction of an all-for-one tourism brand. This aligns closely with Yunnan's efforts to develop the cultural-tourism IP "A Life Called Yunnan", offering practical support for such brand development.

At the regional level, differentiated policy recommendations are proposed as follows:

Core Leading Regions (Kunming, Dali, Lijiang): Focus on high-end cultural experience, smart tourism, MICE and international tourism to drive the upgrading of tourism formats toward high value-added and integrated development; build a unified digital operation platform and create new cultural and tourism carriers to address product homogenization. Meanwhile, drawing on the mature experience of the Kunming-Dali-Lijiang Tourism Corridor, strengthen the radiation and driving role, and realize regional resource sharing and market integration through resource integration and the development of intercity tourist routes.

Potential Growth Regions (Qujing, Yuxi, etc.): Efforts should be made to transform resource advantages into marketable tourism products. On the one hand, relying on the foundation of "natural resources + ethnic culture", develop featured formats such as cross-border experience and eco-wellness tourism through digital marketing. On the other hand, deepen the integration of heritage protection and tourism development, learn from the model of the Honghe Hani Terraces, promote the integration of "cultural interpretation-community participation-experiential tourism", build distinctive cultural and tourism brands, and achieve branding and sustainable development.

Basic Weak Regions (Zhaotong, Lincang, etc.): Increase fiscal investment to improve infrastructure and accelerate the construction of an efficient and convenient transportation system. For the complex alpine and canyon terrains in Nujiang, Diqing and other areas, scientifically evaluate and advance the construction of rapid transportation networks to break the bottleneck of "geographical marginalization". Meanwhile, based on ecological sensitivity, prioritize small-scale, high-value niche markets and develop "ecology+adventure" tourism experiences, balancing ecological protection and income growth.

SUGGESTION

Although this study provides valuable insights, it still has certain limitations. Future research can be expanded in three aspects. First, enrich the data dimension by incorporating indicators such as environmental protection investment, the number of star-rated hotels, and tourist satisfaction that reflect sustainability and carrying capacity, and integrate social media or other big data sources with official statistics. Second, conduct inter-provincial horizontal comparison studies to learn from the experiences of other provinces. Third, future research

could further examine the sensitivity of tourism disparity measures to external shocks, such as the COVID-19 pandemic.

BIBLIOGRAPHY

- Chen, X. Q. (2022). Regional differences and coordination of tourism economy in Yunnan. *Journal of Qujing Normal University*, 41(3), 89-96.
- Fan, Y., He, C., Li, W., & Zhao, X. (2026). Coupling coordinated development between inbound tourism and regional economy: A case study of Yunnan province. *Acta Scientiarum Naturalium Universitatis Pekinensis*, 62(1), 132-146.
<https://doi.org/10.13209/j.0479-8023.2025.065>
- Gyurkó, Á., Bujdosó, Z., Rahmat, A. F., & Dávid, L. D. (2024). Characterisation of Hungary's regional tourism and economic performance between 2004 and 2022 in the light of EU funding. *Geographica Pannonica*, 28(1), 21-33.
<https://doi.org/10.5937/gp28-48906>
- Huang, G., Zhang, S., & Shi, P. (2023). Regional differences and influencing factors of the tourism economy in Chengdu-Chongqing economic circle under the goal of common prosperity. *Journal of Southwest University Natural Science Edition*, 45(12), 110-122.
- Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy*, 99(3), 483-499.
- Li, J., & Ma, Y. (2024). An application study of exploratory spatial data analysis (esda) in regional tourism economic differentiation and policy formulation. *Journal of Southwest University Natural Science Edition*, 46(11), 128-137.
- Liao, Y. Y., Yu, C. P., & Lin, C. P. (2024). The type and path selection of tourism industry development from the perspective of configuration: An exploration based on machine learning methods. *Tourism Tribune*, 39(9), 31-46.
- Lu, B. Y., & Ming, Q. Z. (2018). Temporal and spatial evolution of regional tourism economy development in Yunnan Province, China. *Journal of Shaanxi Normal University (Natural Science Edition)*, 46(6), 28-37.
- Micić, J. (2018). Tourism development and regional disparities in Serbia. *R-Economy*, 4(4), 167-173.

- Wu, J. L., Wang, L., & Ming, Q. Z. (2023). Spatial differentiation characteristics and obstacle factor identification of high-quality tourism in Yunnan Province. *Journal of Wenshan University*, 36(5), 35-43.
- Yang, X. P., Xuan, W. Y., & Yang, G. X. (2025). On coordinated development of provincial tourism in Chinese section of the Silk Road Economic Belt. *Scientific and Technological Management of Land and Resources*, 42(1), 93-105.
- Zhang, P. Y., Zhang, L. W., Qiao, H. F., & Tian, L. (2024). Spatio-temporal evolution and regional differences of high-quality development of China's tourism economy: from the perspective of new development concept. *Journal of Central China Normal University (Natural Science Edition)*, 58(4), 470-480.
- Zhong, M. T., Zhu, S. Y., Li, Q. W., Zhou, H. B., & Tie, J. (2022). Research on regional disparities and countermeasures of tourism economy in Yunnan province. *Tourism Overview*, 2022(8), 63-65.