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MAPPING WELLNESS TOURISM ACCOMMODATION WITH BIG DATA: A CASE STUDY OF PANZHIHUA, CHINA

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This study analyzes the tourism value chain and the accommodation industry ecosystem using big data. The research utilizes LocoySpider and comparable digital tools for data collection. Visualization and analysis facilitate clarification of the findings. By monitoring market trends with big data, the research demonstrates that wellness-oriented accommodations and homestays support local communities, elevate living standards, and ensure that industry growth aligns with aspirations for improved quality of life. The key results offer relevant insights for advancing wellness tourism environments and guiding sustainable tourism policies.

Keywords: *big data, visualization, wellness tourism, accommodation industry.*

КАРТОГРАФИЧЕСКИЙ АНАЛИЗ СРЕДСТВ РАЗМЕЩЕНИЯ ДЛЯ ВЕЛОТУРИЗМА НА ОСНОВЕ BIG DATA: НА ПРИМЕРЕ ГОРОДА ПАНЧЖИХУА, КИТАЙ

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В данном исследовании анализируется цепочка создания стоимости в сфере туризма и экосистема индустрии средств размещения с использованием больших данных. Для сбора данных используется LocoySpider и аналогичные цифровые инструменты. Визуализация и анализ облегчают уточнение результатов. Мониторинг рыночных тенденций с помощью больших данных демонстрирует, что ориентированные на оздоровительный туризм объекты размещения и гостевые дома поддерживают местные сообщества, повышают уровень жизни и обеспечивают соответствие роста отрасли стремлениям к улучшению качества жизни. Ключевые результаты предоставляют важные выводы для развития оздоровительного туризма и разработки политики устойчивого туризма.

Ключевые слова: *большие данные, визуализация, оздоровительный туризм, индустрия средств размещения.*

Introduction. In the digital era, big data refers to large sets of detailed information collected electronically, which is driving changes in tourism and accommodation. The integration of information through digitalization supports decisions and improves efficiency. Increasingly, accommodation providers analyze big data to better understand tourists, predict trends, and optimize resources. As public health concerns grow, more individuals are participating in wellness tourism, a sector characterized by the integration of leisure, wellness, and preventive care. As travelers increasingly emphasize well-being, destinations respond by offering tailored facilities and services. The role of accommodation is central in this trend, as it offers environments conducive to rest and rejuvenation. Panzhihua, located in southwestern China, offers favorable conditions for wellness tourism. The city experiences an annual average temperature of 19.2–20.6 °C and a moderate humidity of 60% [1–2]. In addition, more than 2,700 hours of sunshine make it the sunniest spot in Sichuan Province [2]. Built-up areas lie mostly at elevations of 1,000 to 1,500 meters above sea level [2]. Experts believe this altitude range supports metabolism and longevity.

Panzhihua is a mountainous city currently shifting to sustainable development. Wellness tourism drives this transformation. By reusing rural idle resources, developers can enrich tourism through homestays that foster wellness experiences. These homestays connect travelers with local culture and community while creating income for residents. When these factors combine, economic and social progress work together. This study uses big data visualization and analysis to reveal trends in Panzhihua's wellness accommodation sector. By comparing different types, the research highlights strengths, limitations, and potential directions for development.

Homestay and Traditional Accommodation. Operators define homestays as accommodations where unused rooms are rented to travelers, differing from traditional hotels, restaurants, and guesthouses. Operators integrate local culture, landscapes, and resources from agriculture, forestry, fishery, and animal husbandry, offering travelers a more authentic experience. Regions in China have developed the homestay industry, but some areas remain less advanced [3].

Traditional accommodation focuses on the service experience of living, typically referring to hotels. The word "hotel" comes from the French, originally describing a country villa where the nobility entertained guests. Today, modern hotels are categorized by tourism authorities and provide lodging, dining, and amenities for leisure, recreation, and shopping, creating comprehensive environments that enhance guest comfort [4].

Wellness Tourism. Wellness tourism is an emerging form. No universal definition exists yet. Wang Zhao (2009) notes wellness tourism involves travel to maintain or improve health, blending natural and cultural environments with leisure and recreation to support longevity, fitness, and rehabilitation [5].

The pursuit of health and wellness remains a persistent objective. As elderly care systems evolve in China, greater attention has been directed toward “sub-health” conditions, leading to increased interest in wellness tourism within social and market frameworks. This article reviews the strengths and weaknesses of the sunshine wellness tourism sector in Panzhihua and presents targeted recommendations to achieve sustainable development, improve infrastructure, and expand market reach [6].

Research Scope. This study focuses on Panzhihua City, located in the southernmost part of Sichuan Province, China (Figure 1). Panzhihua covers a total area of 7,440 km², including a built-up area of 54.6 km². Administratively, the city consists of three districts—East District, West District, and Renhe District—and two counties, Yanbian County and Miyi County. Geographically, Panzhihua lies between latitudes 26°05′–27°21′ N and longitudes 101°08′–102°15′ E. It occupies a strategic position at the junction of Sichuan and Yunnan provinces in southwestern China. It sits at the confluence of the Jinsha and Yalong Rivers.

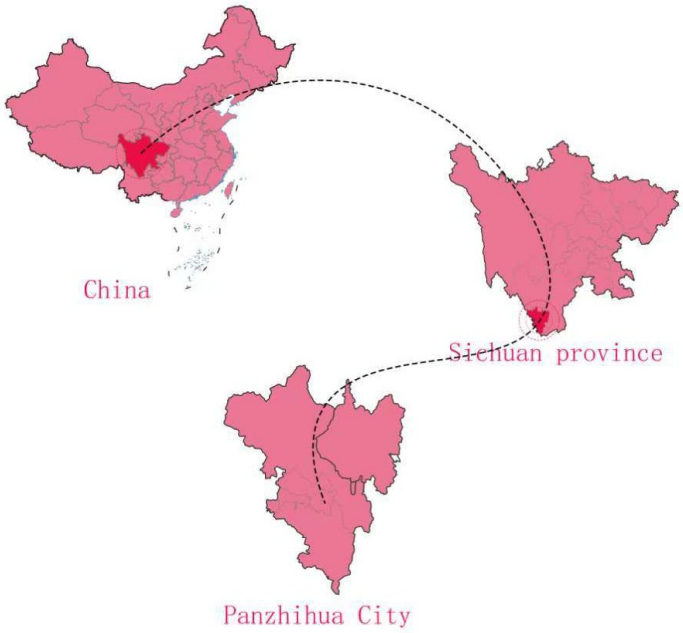

Figure 1. – Location Map of Panzhihua City

The research is mainly carried out by network survey [7], and data is collected by statistical and sampling survey. Big data on homestays and hotel accommodations in Panzhihua is sourced from online travel platforms such as TravelGo, Ctrip, and Tujia. Web-scraping tools, including LocoySpider and Houyi Collector, facilitate this process.

Data Analysis. Homestay. Data on homestays in Panzhihua were obtained from the official Tujia website, which listed 1,338 online listings. Most of these homestays are renovated residential buildings, and at least 70% offer short-term rental services.

Distribution.

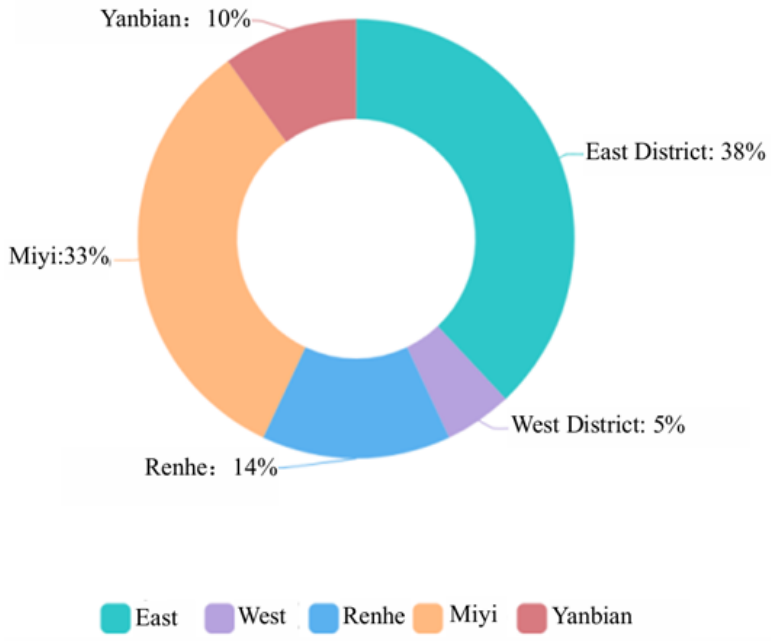

Figure 2. – Distribution of Homestays in Panzhihua

According to Tujia data, homestays are unevenly distributed across the city. East District hosts the largest proportion at 38%, followed by Miyi at 33%, Renhe at 14%, Yanbian at 10%, and West District at only 5%. Figure 2 illustrates that homestays are primarily concentrated in the East District and Miyi. This distribution reflects the fact that East District serves as the economic and political center of Panzhihua, while Miyi functions as the cultural and tourism hub. These two districts currently enjoy superior development in various aspects compared to the other districts and counties. However, the and key transportation hubs, such as the South Railway Station, have been completed and put into operation. Consequently, Renhe District presents significant potential for future homestay investment and development.

Development Pattern. The heat map from Ctrip (Figure 3) shows that homestay development in Panzhihua began relatively late, with only a few dozen establishments before 2017. Following the city brand of Panzhihua as a health preservation tourism city, homestays experienced rapid growth, increasing by 15.3% in 2017 and reaching over 1,000 listings by 2019. The heat map also highlights the spatial distribution of homestays, with the majority concentrated in the East District and Miyi. These districts were the first to develop homestays, suggesting their market capacity may approach saturation soon.

Figure 3. – Homestay Distribution in Panzhihua in 2017, 2018 and 2019

Price Analysis. Homestays in Panzhihua are generally moderately priced, with rates ranging from RMB 66 to above RMB 1,000 per night. Among these, 75 homestays are priced between RMB 200–300, 72 between RMB 100–200, and 37 between RMB 300–400 (Figure 4). Panzhihua's homestay pricing is diverse, with the majority targeting mid-budget travelers. A smaller segment caters to high-spending visitors, primarily located in key tourist areas, and offers enhanced infrastructure and premium services.

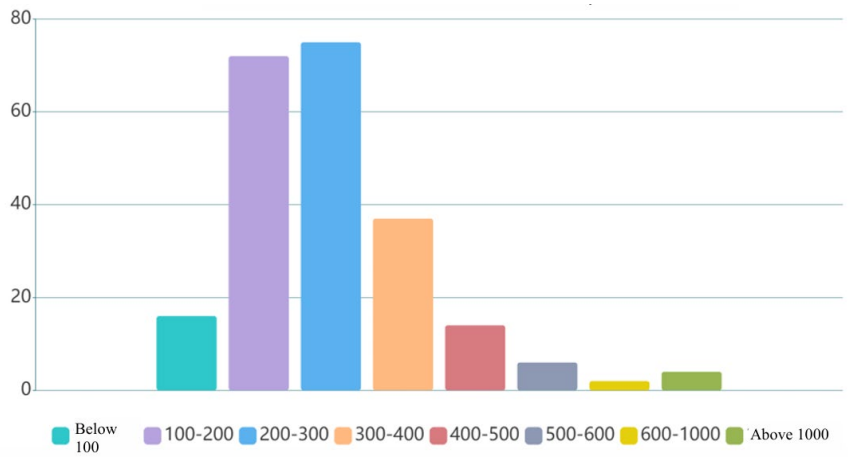

Figure 4. – Price Distribution of Homestays in Panzhihua

Number of Rooms. Since most homestays are converted from residential buildings, they typically contain one to three rooms, accommodating three to five guests. The smallest homestay offers one room with one bed for two persons, whereas the largest contains five rooms with seven beds, capable of hosting up to 13 guests (Figure 5).

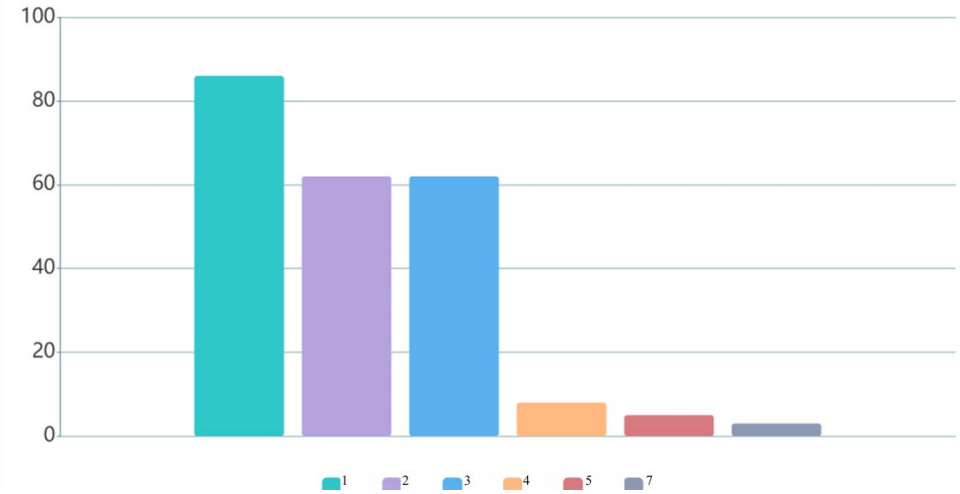

Figure 5. – Number of Rooms of Homestays in Panzhihua

Ratings. Overall, homestay ratings in Panzhihua are positive, though they exhibit considerable polarization. Most homestays fall within the 4.6–5.0 range, with the lowest rating being 1.0 and the highest 5.0. Notably, 92 homestays have received a perfect 5.0 rating (Figure 6).

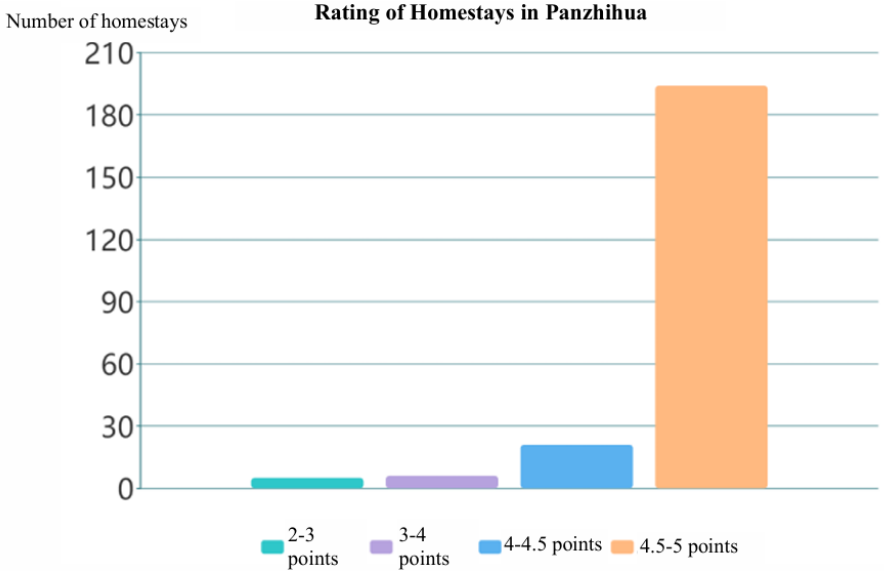

Figure 6. – Rating Distribution of Homestays in Panzhihua

Hotel. Hotel analysis in this study is primarily based on Ctrip data. According to the data, Panzhihua currently has 549 hotels listed online.

Distribution. Hotels in Panzhihua are unevenly distributed across the city. Nearly half (49%) are located in the East District, followed by Miyi at 23%, the West District and Renhe at 12%, and Yanbian at 4% (Figure 7).

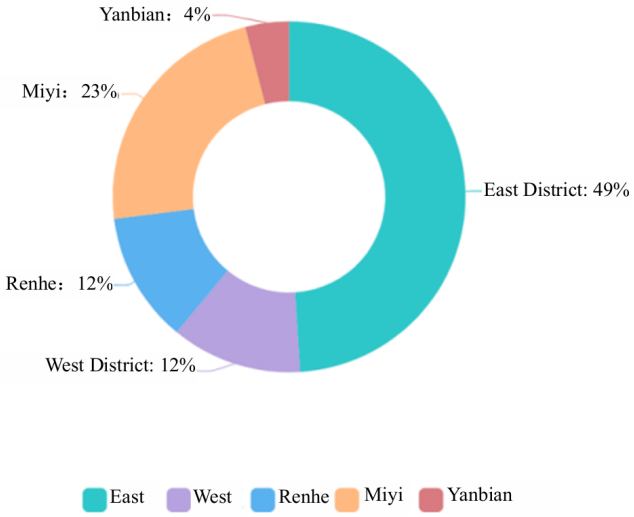

Figure 7. – Distribution of Hotels in Panzhihua

Development Pattern. Panzhihua's first hotel was established in 1994 via online platform. Hotel growth was slow until 2005, with establishments concentrated solely in the East District. After 2005, the number of hotels in the East District increased rapidly and began expanding into the West District and Renhe. Between 2010 and 2015, hotel development accelerated significantly, with a notable trend toward the Renhe District. Post-2015, growth slowed, though East District and Renhe remained the primary areas of development (Figure 8).

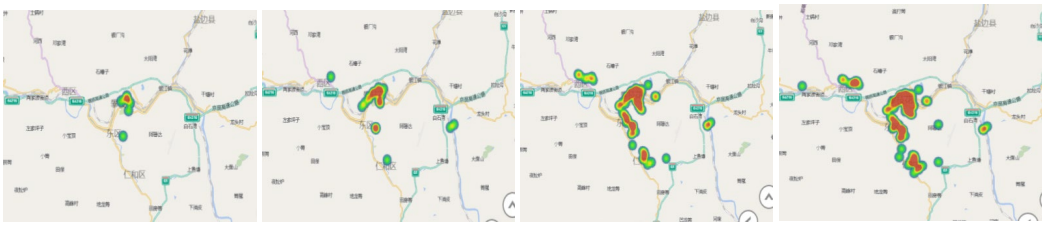

Figure 8. – Heat Maps of Hotel Distribution in Panzhihua (2005, 2010, 2015, 2020)

Price. Hotel prices in Panzhihua are generally affordable, with most rooms priced below RMB 200. The lowest recorded price is RMB 54.5, and the highest is RMB 649 (Figure 9).

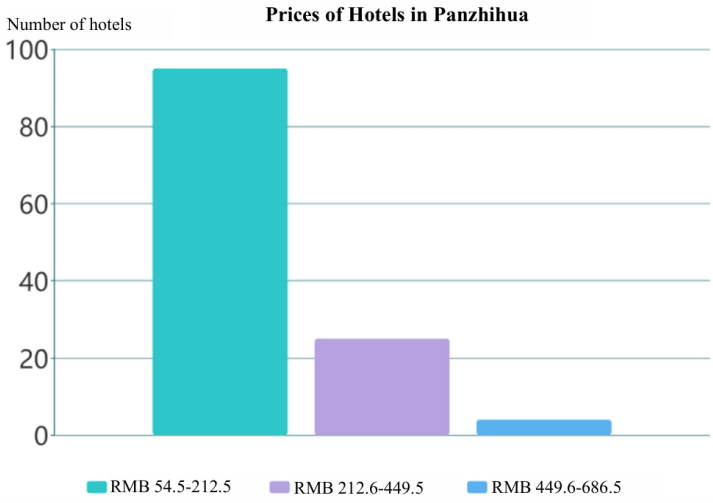

Figure 9. – Price Distribution of Hotels in Panzhihua

Number of Rooms. Most hotels have between 20 and 60 rooms, with 30–40 being the most common. The smallest hotel has 12 rooms, while the largest offers 227 rooms (Figure 10).

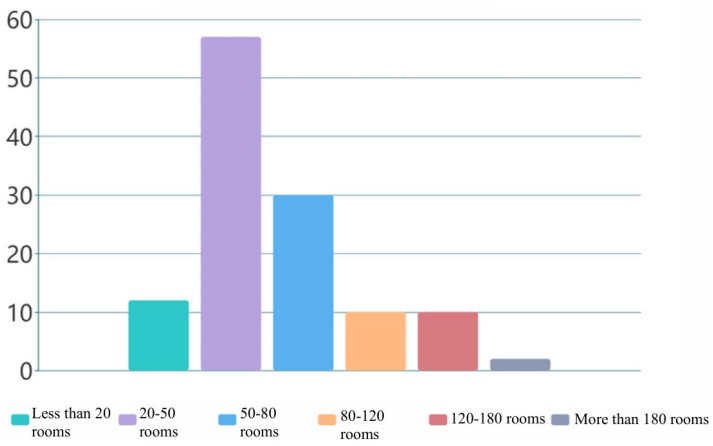

Figure 10. – Number of Rooms of Hotels in Panzhihua

Ratings. Overall, hotels in Panzhihua receive high ratings, with only two hotels falling in the low rating range of 2–3 points. The lowest rating recorded is 2.4, and the highest is 4.9 (Figure 11).

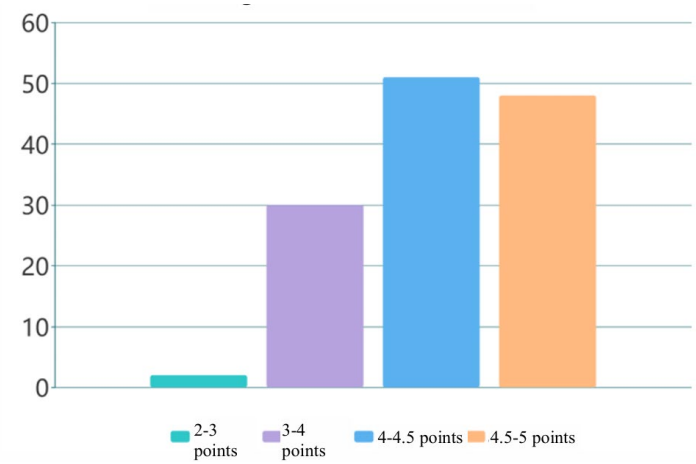

Figure 11. – Ratings of Hotels in Panzhihua

Comparison Between Homestays and Traditional Accommodation in Panzhihua. Both homestays and hotels are primarily concentrated in the East District and Miyi, reflecting the city's economic, cultural, and tourism hubs. The majority of homestays and hotels are priced between RMB 100 and RMB 300, targeting mid- to low-budget tourists. Spatial distribution differs. homestays are least common in the West District, whereas hotels are least common in Yanbian. Renhe District hosts more homestays than hotels, suggesting emerging development opportunities. In Development stage, homestays are in a rapid growth phase, while hotels have reached market saturation, showing a slowing trend. A small portion of homestays are premium-priced, catering to high-spending tourists, whereas most hotels remain moderately priced.

Compared with traditional hotels, homestays often depart from standardized decoration styles, instead incorporating local culture, natural landscapes, and surrounding environments, resulting in rich regional characteristics and creativity. Homestays provide a distinctive spatial and experiential environment for tourists, which is generally absent in conventional hotels.

Conclusion. The accommodation industry in Panzhihua remains dominated by traditional hotels, but as health preservation tourism grows, homestays are emerging as a key development trend. Positioned as a major node on the Great Shangri-La tourist route, Panzhihua benefits from convenient transportation, proximity to major scenic spots, and a superior natural ecological environment, all of which provide strong foundations for the expansion of health preservation tourism and homestays.

Tourism development is driven by information and analytics. Big data enables accurate market positioning, allowing stakeholders to identify target tourists and optimize services and experiences. By analyzing real-time data on tourist behavior and preferences, big data can enhance clustering in the health preservation tourism industry, optimize operational links, and promote standardization. It facilitates market-responsive product design, ensuring offerings align with consumer needs [8]. Data sharing enables investors to select suitable operational models (household-based, cooperative, or hybrid), thereby improving efficiency and market visibility. Big data also enables risk prediction and management, minimizing negative impacts on the tourism industry and supporting decision-making.

By leveraging local resources, homestays can create unique industrial chains, promote employment, and improve living standards [9]. Idle rural houses can be renovated and professionally managed to generate economic value, increase residents' income, and enrich tourists’ experiences. Interior spaces should be optimized for functionality and wellness, reflecting principles of health preservation. Homestay development should respect ecological limits, integrate with local environments, and follow sustainable design principles. Planning must consider ecological carrying capacity, restoration measures, and the promotion of green tourism behaviors, thereby supporting harmonious coexistence between tourism, residents, and nature. Homestays should highlight traditional culture and health preservation heritage, enhancing local identity and national cultural confidence. Tourism products and routes should be designed around geographical and cultural contexts, integrating folk, ecological, and artistic culture to form a distinctive local industrial chain [10]. Use of traditional materials and architectural elements can further reinforce cultural features. A multi-dimensional cooperative system among government, hosts, and tourists should be established [11]. Big data platforms can monitor market dynamics and enable e-commerce and live-streaming sales. This integrated approach ensures a sustainable, market-responsive homestay ecosystem that meets health preservation and tourism needs.

Limitations and Further Research Directions. This study, focusing on Panzhihua City, relies mainly on online big data from platforms such as TravelGo, Ctrip, and Tujia, which may omit offline tourists and unregistered accommodations, potentially introducing sampling bias. The analysis covers 2017–2020, so trends may be temporarily affected by events such as COVID-19. Additionally, qualitative assessments of homestay experience and cultural integration depend on online reviews and literature, which may be subject to bias, and the socio-economic impacts of homestays are not quantitatively measured. Future research could expand data sources to include surveys and government statistics, conduct longitudinal and comparative studies across regions, integrate AI and GIS technologies for real-time monitoring, and assess environmental sustainability to support more robust, generalizable insights into health preservation tourism and accommodation development.

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