

Foundation, Development Process, Current Status, and Prospects of Guizhou's Health and Wellness Industry and Rural Revitalization

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Abstract This paper focuses on Guizhou's health and wellness industry and rural revitalization, delving deeply into their foundational theories, historical evolution, current status, technological progress, future prospects, and points of contention. Through a comprehensive analysis of relevant references, it elaborates on the definition of the health and wellness industry and Guizhou's geographical advantages, reviews the background and implementation pathways of the rural revitalization strategy, and analyzes the mechanism for their synergistic development. It reviews the respective development trajectories of Guizhou's health and wellness industry and rural revitalization, as well as their integration process, analyzes the current status and market demand, the challenges faced, and the status of their integration. It explores the application of technological innovations, strategies for technology empowerment, and cases of technology integration, forecasts future development trends, plans, and paths for integrated development, and discusses contentious points such as benefit distribution, environmental protection, and policy coordination, aiming to provide comprehensive theoretical and practical references for the further development of Guizhou's health and wellness industry and rural revitalization.

Key words Guizhou Province, Health and wellness industry, Rural revitalization, Integrated development

0 Introduction

Health and Wellness, meaning health preservation, encompasses comprehensive health services ranging from prevention and treatment to rehabilitation. Especially under the current "silver tsunami", how to provide more scientific and humane health management and services for the elderly has become a problem that governments and enterprises worldwide are striving to solve. With the acceleration of the pace of modern life, people are facing increasing mental stress from work and family life, leading to a continuous growth in the number of sub-healthy individuals in China. *China Sub-Health Assessment and Intervention Industry Market In-depth Analysis and Development Trend Forecast Report (2024 – 2030)* released by Huaon Industry Research Institute shows that the market size of China's sub-health assessment and intervention industry in 2024 was approximately 11.76 billion yuan, a year-on-year increase of 17.92%, and it is projected that the industry size will grow to 13.9 billion yuan by 2025 (Fig. 1). With the increasing public awareness of health, people's attention to health and wellness is gradually strengthening. Against this backdrop, the health and wellness industry has emerged. Centered on providing health preservation services, it is a comprehensive industry integrating health, wellness, elderly care, medical care, tourism, and other fields^[1], dedicated to providing a better life experience for the general public. In recent years, the development models and path choices for the health and wellness industry have become a focus of attention in both academia and industry. On the one

hand, researchers are committed to exploring the connotation, formative elements, and development models of the health and wellness industry to reveal its internal mechanisms and patterns^[2]. On the other hand, the resource endowments and socio-economic development levels of different regions also provide diverse development paths and strategies for the health and wellness industry. For instance, how tea forest health and wellness industries develop by leveraging specific natural resources and cultural backgrounds^[2–3], how to re-evaluate the value of mountain resources and choose suitable industrial revitalization paths^[4], are all issues worthy of in-depth exploration; the application of the TCM-featured "prevention-treatment-rehabilitation" model in respiratory medicine^[5], and the application of AI/AR technology in elderly health and wellness fitness training^[6], all represent cutting-edge explorations in the health and wellness industry. As the health and wellness issues for the elderly in communities of old urban industrial areas become increasingly prominent, how to combine local characteristics to promote the industrialization and specialization of migratory elderly care has also become a research hotspot^[7]. However, the health and wellness issues in rural areas should not be overlooked either. Against the backdrop of rural revitalization, how to promote the high-quality development of rural health and wellness industries, how to explore paths for the integrated development of rural industries, and how to empower rural revitalization through cultural and tourism integration are all topics worthy of in-depth discussion^[8].

The report to the 19th National Congress of the Communist Party of China first proposed the rural revitalization strategy, emphasizing that industrial revitalization is the key, the core driver for modernizing agriculture and rural areas, the guarantee for the sustainable growth of farmers' income, and the core element for

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achieving rural revitalization^[9]. In 2020, Guizhou won the battle against poverty as scheduled, shaking off the problem of poverty that had plagued Guizhou for thousands of years. The regional social economy achieved high-quality development, and the people's happiness index has been rising year by year^[10]. After winning the battle against poverty, achieving comprehensive rural revitalization has become the new goal. The Third Plenary Session of the 20th Central Committee of the Communist Party of China pointed out that "it is necessary to coordinate new industrialization, new urbanization, and comprehensive rural revitalization" and "promote the common prosperity and development of urban and rural areas"^[11]. The rural revitalization strategy is a scientific development strategy proposed based on the actual national conditions, and it is also a long-term and arduous task^[12]. The health and wellness industry is a comprehensive manifestation of ecological environment resources such as sunlight, humidity, altitude, air quality, as well as municipal supporting facilities. It is a modern service industry encompassing various elements such as health and fitness, leisure travel and residence, and health preservation^[13].

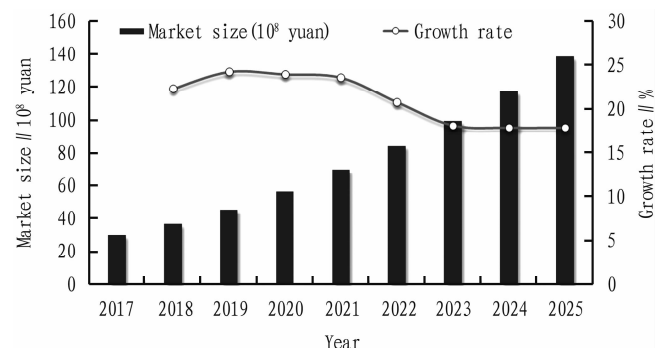


Fig. 1 Market size of China's sub-health assessment and intervention industry in 2025 (www.huaon.com)

Guizhou boasts a pleasant climate, abundant forest resources, high-quality ecological environment, convenient transportation, diverse dual-purpose food-medicine plants, and a rich folk-ecological health culture, giving it unique advantages for developing the forest health and wellness industry^[14]. The proposal of the rural revitalization strategy has pointed the way and direction for Guizhou's development and provided more development opportunities and space. How to seize this historic opportunity and propel the health and wellness industry to a new level has become a key focus of Guizhou Province's economic development planning. This paper will provide a comprehensive review of research on the integrated development paths of Guizhou's health and wellness industry and rural revitalization. It aims to delve into the foundational theories, historical evolution, current status, technological progress, future prospects, and points of contention for both, forecast the future development trends of the health and wellness industry, and provide comprehensive theoretical and practical references for the further development of Guizhou's health and wellness industry and rural revitalization.

1 Foundational theories of Guizhou's health and wellness industry and rural revitalization

1.1 Guizhou's geographical advantages Leveraging its unique geographical advantages, Guizhou has built an irreplaceable, comprehensive advantage network for the development of its health and wellness industry. Most areas of Guizhou are located in the sub-plateau golden health preservation zone at an altitude of about 1 000 m. In terms of climate resources, Guizhou has an average annual temperature of about 15 °C, with average summer temperatures only ranging from 22 °C to 25 °C, making it a veritable "summer resort paradise" and a "natural air conditioner". At the same time, with an average annual relative humidity of about 80%, it has no severe cold in winter nor scorching heat in summer, offering extremely high physical comfort, perfectly meeting the needs for chronic disease recuperation and health preservation for all ages. Guizhou is also rich in high-quality ecological resources. The province's forest coverage rate is as high as 62.81%, earning it the title "Green Heart". The content of negative oxygen ions in the air far exceeds that of cities by dozens of times, making it a natural "forest oxygen bar" and a "sacred place for lung cleansing". The proportion of excellent water quality remains stable at over 98%, with mountain springs densely distributed, clear, cool, and sweet. Guizhou also possesses diverse and unique geological landforms, shaping natural wonders such as the Huangguoshu Waterfall and Zhijin Cave. Their magnificent landscapes inherently possess the power to heal the mind. Abundant geothermal resources have given rise to high-quality hot spring clusters in places like Xifeng and Shiqian, rich in mineral elements, which have significant auxiliary therapeutic effects on conditions such as arthritis and skin diseases^[15]. Furthermore, located on a stable geological plate with no recorded destructive earthquakes and generally controllable geological disaster risks, Guizhou provides a solid safety foundation for building health and wellness communities for the entire life cycle. Due to its abundant natural resources and cultural characteristics, Guizhou Province has become a new highland for the development of the health and wellness industry^[16]. Guizhou's geographical location, coupled with increasingly developed transportation, allows it to connect well with surrounding areas and facilitates attracting visitors from within and outside the province. This provides a solid foundation and broad space for the development of the health and wellness industry, making it an ideal place for its development.

1.2 Policy background and implementation pathways of the rural revitalization strategy The rural revitalization strategy was proposed against the backdrop of socialism with Chinese characteristics entering a new era, where the imbalance between urban and rural development became the principal social contradiction^[17-18]. Since the strategy was proposed at the 19th National Congress of the Communist Party of China, it has received widespread attention. In 2019, the central government of China issued documents on the rural revitalization strategy, listing Guizhou as a key focus area. The Guizhou Provincial Government also formula-

ted the *Implementation Opinions of the Guizhou Provincial People's Government on the Rural Revitalization Strategy*. Rural revitalization not only requires development to lay the foundation but also requires governance to guide the direction. Comprehensive results show that both development and governance exhibit an upward trend, but the upward trend of development is more pronounced. Coupling coordination analysis reveals that the C-value (coupling degree) between development and governance is good, the T-value (comprehensive evaluation index) fluctuates considerably, the D-value (coordination degree) fluctuates with the T-value, and the coupling coordination degree is significantly correlated with the evaluation value of rural revitalization.

Regarding implementation pathways, the first is to build a coupling coordination system for rural development and governance through organizational isomorphism, clarify the responsibilities of various actors, and promote synergistic development; the second is to tilt resources to increase the supply of elements related to rural development and governance, such as increasing investment in rural infrastructure construction, education, medical care, *etc.*; the third is to optimize operational mechanisms and explore coupling coordination pathways suitable for rural development and governance, such as promoting the integrated development of rural industries and strengthening rural ecological environment protection, to achieve comprehensive revitalization of the rural economy, society, and ecology.

1.3 Synergistic development mechanism of Guizhou's health and wellness industry and rural revitalization There exists a close synergistic development mechanism between Guizhou's health and wellness industry and rural revitalization. The rural health and wellness industry can attract urban tourists with high spending power to rural areas, increase rural economic income, and promote rural revitalization^[16]. Based on the ecological economic theory that "lucid waters and lush mountains are invaluable assets", the advantages of the rural ecological environment can be transformed into economic development advantages^[19]. From 2017 to 2021, Guizhou Province's GEP (Gross Ecosystem Product) showed an upward trend, amounting to 2.08 to 2.54 times the GDP of the same year^[20]. This indicates that utilizing the rural ecological environment to promote the value transformation of ecological products is a viable path for rural revitalization, while also providing an ecological foundation for the health and wellness industry. In practice, the integrated development of ecotourism and the sports health industry is a significant manifestation^[21]. With the growth of people's consumption demands and the popularization of transportation, ecotourism has become a fashionable leisure choice. Promoting the integration of ecotourism and the sports health industry can enrich the content of rural industries, improve the industrial structure, promote rural economic development, aid rural revitalization, and also expand the development space for the health and wellness industry. Furthermore, focusing on the coordination between sustainability and health-related living environment factors, and prioritizing their research and development within ru-

ral revitalization, can promote balanced economic growth, cultural inheritance, and reduce urban migration. This creates a favorable development environment for the health and wellness industry, enabling the synergistic advancement of both.

2 Historical evolution of Guizhou's health and wellness industry and rural revitalization

2.1 Development process of the health and wellness industry

The development journey of Guizhou's health and wellness industry is a path of strategic transformation from ecological awakening to industrial rise, having gone through three stages: early exploration, rapid development, and high-quality advancement.

2.1.1 Early exploration stage (2007 – 2015). In 2007, the Guizhou Provincial Party Committee and Provincial Government proposed the "Environment as the Foundation for Provincial Development" strategy, laying the groundwork for the development of the health and wellness industry. In 2012, Guizhou took the lead in proposing the guiding of economic and social development with the concept of ecological civilization. In 2013, Guizhou was approved to build one of the first National Ecological Civilization Pilot Zones, and the health and wellness industry began to receive attention as an important part of ecological civilization construction. At this time, early health and wellness projects like Chishui Swan Castle were launched through investment attraction, creating pilot tourism and wellness residences leveraging high-altitude forest resources, which became a "summer retreat paradise" for visitors from Sichuan and Chongqing^[22]. However, the industry had not yet formed a systematic plan and remained in a stage of spontaneous exploration. In 2015, Guizhou Province issued the *Opinions on Several Policy Measures to Support the Development of the Health and Wellness Industry*, clearly positioning the goal of building an "internationally renowned livable and wellness destination" and promoting the development of the health and wellness industry.

2.1.2 Rapid development stage (2016 – 2020). In 2016, the Guizhou Provincial Government issued the *Healthy Guizhou 2030 Planning Outline*, proposing the development of the health and wellness industry. Forest health and wellness was included in the provincial government work report for the first time and remained a policy focus for seven consecutive years; the *Implementation Opinions on Accelerating the Integration of Medical and Elderly Care* was issued, pioneering the inclusion of forest health and wellness projects in medical insurance reimbursement nationwide. In 2017, the Guizhou Provincial Department of Civil Affairs and other departments jointly released the *Implementation Opinions on Promoting Medical-Nursing Integration Work*, driving the development of medical-nursing integration. In 2018, the General Office of the Guizhou Provincial People's Government issued the *Guizhou Province Health and Wellness Industry Development Plan (2017 – 2025)*, further clarifying the development goals and tasks for the health and wellness industry. In 2019, the contracted investment amount for the health and wellness industry in Guizhou reached 11.28 billion yuan. In June 2020, the Guizhou Health and Well-

ness Industry Association was established. In the same year, Guizhou successively formulated and issued two local standards, including the *Guizhou Province Forest Health and Wellness Base Construction Specifications*, and two measures, including the *Guizhou Provincial Forest Health and Wellness Base Evaluation Measures*, taking a leading position nationwide in standards development. On August 17, 2020, the "Colorful Guizhou · Resort and Wellness Destination" 2020 Summer Resort Tourism Theme Promotion Event was held in Guangzhou. Guizhou's tourism promotion slogan shifted from "Summer Capital" to "Wellness Destination".

2.1.3 High-quality advancement stage (2021-present). In 2021, the Guizhou Health and Wellness Industry Association was established, and the province's first public undergraduate vocational university for health and wellness—Guiyang Health and Wellness Vocational University—was inaugurated. In 2021, the Guizhou Provincial Development and Reform Commission issued the provincial capital construction preliminary work expense plan, prioritizing support for integrated health and health and wellness industry projects. In 2023, the health and wellness industry was included in the Guizhou Provincial Government Work Report for the first time, clearly stating the focus on developing six major industries: summer retreat wellness, medicinal wellness, hot spring wellness, sports wellness, travel residence wellness, and forest wellness. It aims to build a first-class domestic resort and wellness destination and establish the "Wellness in Guizhou" brand. In the same year, the *Guizhou Provincial People's Government Work Report* proposed accelerating the development of the health and wellness industry, building a first-class domestic resort and wellness destination, and establishing the "Wellness in Guizhou" brand. Guizhou is also vigorously implementing the "Strengthening the Provincial Capital" action, promoting Guiyang and Gui'an to become a gathering place for headquarters economy of the health and wellness industry in the western region, building a number of demonstration bases for the development of the health and wellness industry, and creating health and wellness industry brands with influence domestically and even internationally.

Guizhou's health and wellness industry has traversed a path from ecological awakening to systematic planning, completing the leap from a single recuperative function to a six-in-one ("medical-care-health-management-tourism-food") industrial cluster. Its core experiences lie in: ensuring direction through policy continuity (e.g., inclusion in the government work report for 7 years), activating resources through ecological capitalization (transforming the 62.81% forest coverage rate into health and wellness capital), and reconstructing value distribution through urban-rural integration. In the future, empowered by the new State Council Document No.2 and the rise of the silver economy, Guizhou is evolving from a "Mountain Park Province" to a "National Wellness Paradise", becoming a vivid practical model of "lucid waters and lush mountains are invaluable assets".

2.2 Implementation progress of rural revitalization in Guizhou Guizhou has made certain progress in rural revitaliza-

tion. In terms of utilizing the ecological environment, based on the "Two Mountains" theory, it actively explores pathways to transform ecological advantages into economic advantages^[19]. By rationally planning rural ecological resources and developing industries such as eco-agriculture and eco-tourism, rural economic income has been increased. For example, in 2022, the added value of Guizhou's big health industry reached 105 billion yuan, creating employment for 1 million people; the output value of the entire forest health and wellness industry chain accounted for 52.85% of the total forestry output value. There are 480 homestays around Wanfenglin, among which the Class A homestay, Fengxi Banshan Inn, has driven a doubling of village-level tourism income. Leveraging the national influence of "Village Super League" ("Cun Chao") and "Village Basketball Association" ("Cun BA"), Qianlongnan Prefecture plans the "Village Doctor" ("Cun Yi") and "Village Wellness" ("Cun Yang") brands. It integrates 30 medical-nursing integration institutions and the Dong Township Big Health Ecological Wellness Park (investment of 812 million yuan) to attract visitors from the Guangdong – Hong Kong – Macao Greater Bay Area and provide services such as ethnic medicine conditioning and health interventions.

In terms of infrastructure construction, investment in rural transportation, water and electricity supply, communications, and other infrastructure has been increased, improving rural production and living conditions. At the same time, emphasis is placed on the protection of the rural ecological environment, strengthening the management and protection of water resources, land resources, etc.^[23]. For example, Zerong Town transformed from the "Guizhou Gravel Valley" into a "National Civilized Village and Town". By constructing 2 048 water cellars and pollution prevention and control projects, it achieved a 100% compliance rate for water sources. However, rural revitalization in Guizhou also faces some challenges, with some deep-seated challenges yet to be overcome. For instance, some projects rely on policy "blood transfusion" (subsidies); Zhongshan District needed to spend 1.3 million yuan to plan a comprehensive forest health and wellness route, highlighting insufficient independent operational capacity; there is a shortage of professionals in ethnic medicine health and wellness, constraining service standardization and brand premium.

Guizhou, using its lucid waters and lush mountains as the backdrop, ethnic culture as the soul, and policy innovation as the engine, has reshaped rural value by using the health and wellness industry to bridge the chain of "ecological resources—product transformation—common prosperity for urban and rural areas". In the future, it is necessary to strengthen the cultivation of market entities and the talent "hematopoietic" mechanism (internal training/generation), promote the upgrading of "village-branded" initiatives from a regional phenomenon to a national benchmark, and truly achieve the leap from a "Mountain Park Province" to a "World Health and Wellness Destination".

2.3 Integration process of the health and wellness industry and rural revitalization The integration of Guizhou's health and

wellness industry and rural revitalization is a multi-faceted process. Initially, the development of the two was relatively independent, but as the understanding of the comprehensive utilization of rural resources and the diversification of health needs deepened, the trend of integration gradually emerged. During the development of ecotourism, health and wellness elements began to be integrated, such as setting up health and wellness facilities at rural tourism sites and providing services like health check-ups and Traditional Chinese Medicine (TCM) physiotherapy, achieving the initial integration of ecotourism and the health and wellness industry^[21]. The integration process of Guizhou's health and wellness industry and rural revitalization also includes cultural and tourism aspects, which is evident in studies on the coordinated development of Guizhou's tourism industry and rural industries. Promoting folk culture tourism and combining it with the large health industry well illustrates how cultural assets and health services can be developed synergistically to promote rural revitalization^[24]. At the same time, leveraging the advantages of the rural ecological environment to develop characteristic health and wellness projects, such as forest health and wellness and hot spring health and wellness, has both promoted the development of the health and wellness industry and stimulated rural economic growth, achieving synergy with rural revitalization. For instance, Guizhou has abundant, widely distributed, and high-quality hot spring resources. Some villages rely on local hot spring resources to develop hot spring health and wellness resort projects, attracting a large number of tourists and driving the development of surrounding villages^[25]. This approach not only promotes the development of local tourism but also enriches the health and wellness services available to rural residents. Furthermore, initiatives in the digital economy are also crucial, including efforts to bridge the digital divide and promote the integration of rural industries through digital resources and rural land certification. These measures support the development of the health and wellness industry by optimizing resource allocation and service provision in rural areas^[26]. The integration of digital technologies improves the accessibility and efficiency of medical services, promoting sustainable rural revitalization.

The integrated development of Guizhou's health and wellness industry and rural revitalization is inseparable from policy support. According to the *Outline of the 14th Five-Year Plan (2021 – 2025)*, it explicitly emphasizes developing industrial clusters in the secondary and tertiary sectors in rural areas, highlighting the importance of integrating the health and wellness sector into broader rural revitalization efforts. This strategic initiative aims to promote coordinated industrial growth to support rural development goals. Similarly, the Thirteenth Five-Year Plan emphasized the importance of improving the well-being, medical services, and related industries for residents in rural areas, advocating for the relocation of related industries from urban areas and their integration into the rural environment. This indicates that the government is using policies to promote the utilization of the health and wellness industry as a vital component of rural economic restructuring. Re-

search on the development logic and promotion pathways of rural ecological industries (including the health and wellness sector) further indicates that these industries play a significant role in addressing ecological and environmental problems and promoting sustainable development^[27]. The development of rural ecological industries is seen as an effective way to achieve the dual goals of ecological balance and economic vitality.

In summary, the integration of Guizhou's health and wellness industry with rural revitalization has received support from national policies. These policies emphasize industrial agglomeration, ecological sustainability, cultural tourism, digital transformation, and comprehensive evaluation systems. These measures collectively aim to build a sustainable, healthy, and vibrant rural economy that aligns with broader development goals^[28].

3 Current status of Guizhou's health and wellness industry and rural revitalization

3.1 Industrial status and market demand The health and wellness industry is an emerging sector that combines various elements such as health, wellness, leisure, and tourism, offering people a new lifestyle. Currently, Guizhou's health and wellness industry exhibits a diversified development trend.

3.1.1 Medical services. In terms of medical services, the quantity and quality of hospitals are continuously improving, but compared with developed regions, high-quality medical resources are still relatively insufficient^[1]. For example, looking at the national distribution of high-quality medical resources, Guizhou lags behind places like Beijing and Shanghai in terms of the number of Class III Grade A hospitals. In the early stages, medical resources were relatively scarce, and infrastructure construction needed improvement, but Guizhou's abundant natural resources provided potential conditions for nurturing the health and wellness industry. With economic development and increased emphasis on health, the health and wellness industry gradually took off. In the healthcare field, the construction and development of hospitals have continuously advanced, ranging from reforms in public hospitals to explorations of public-private partnership hospitals, providing medical security for the health and wellness industry^[29]. For instance, research on hospitals of different ownership types found that mixed-ownership hospitals perform better in incentive mechanisms and organizational development, helping to improve the quality of medical services and meet health and wellness demands. At the same time, related industries such as TCM are also developing continuously. Guizhou possesses abundant TCM resources; TCM has unique advantages in health preservation, and its development adds distinctive content to the health and wellness industry. Furthermore, with people's pursuit of healthy lifestyles, the integration of outdoor sports and health service industries is gradually emerging, injecting new vitality into the health and wellness industry^[30]. However, the development process also faces challenges, such as the relative shortage of high-quality medical resources and the gap compared to developed regions, which constrains the

high-end development of the health and wellness industry.

3.1.2 Tourism health and wellness. Driven by strong government promotion and its own resource advantages, Guizhou's tourism health and wellness industry has achieved significant development results and has now become one of the province's pillar industries. Guizhou Province has developed various tourism health and wellness products, such as ecotourism and folk culture wellness, attracting many tourists. The Guizhou Provincial Party Committee and Provincial Government strongly support the health and wellness industry, having issued a series of policy documents that provide clear policy guidance for the development of the tourism health and wellness industry. For example, the 14th *Five-Year Plan of Guizhou Province for Culture and Tourism Development* proposes building 50 health and elderly care bases by 2025 and promoting the construction of urban health and wellness communities. Guizhou Province has begun to establish a scale for its health and wellness industry, having created ten major health and wellness resort tourism bases, such as the Qingyan Ancient Town Health and Wellness Resort Tourism Base in Guiyang, the Chishui River Valley Health and Wellness Resort Tourism Base in Zunyi, and the Panzhou Nianjiang Mountain National Forest Health and Wellness Resort Tourism Base in Liupanshui, covering 9 prefectures/cities within the province. Additionally, it possesses a rich variety of health and wellness products, covering multiple formats such as forest wellness, hot spring wellness, TCM wellness, and sports wellness. For instance, Jianhe Hot Spring attracts numerous tourists for recuperation and vacation with its high-quality hot spring water and profound hot spring culture; Danzhai Wanda Town organically integrates Miao culture with health and wellness extended stays, allowing tourists to enjoy wellness services while experiencing folk customs.

Although Guizhou's health and wellness industry has achieved remarkable development results, there are still some shortcomings in its integration with rural revitalization. Currently, most health and wellness tourism attractions launched in Guizhou feature ecological tours, summer retreats, and natural "oxygen bars" as their main characteristics. However, the consumption services offered by these health and wellness tourism projects are homogeneous. The services and supporting facilities at wellness bases are relatively outdated, failing to fully meet tourists' comprehensive and diverse lifestyle needs such as accommodation, entertainment, dining, and shopping.

Infrastructure also requires improvement. Although transportation development in Guizhou has seen significant progress in recent years, basically achieving expressway access to every county and road access to every village, the convenience of transportation infrastructure for health and wellness tourism remains inadequate due to Guizhou's unique topography. One-stop access is not achievable, and the overall infrastructure still needs further enhancement to provide convenient services for tourists. Furthermore, there is an issue of insufficient supply of high-quality wellness products. For example, the 2020 sampling survey results

showed that Guizhou's tourism satisfaction index was 85.52, an increase of 1.20 compared to the same period last year. However, among the secondary indicators, the satisfaction index for tourism elements was only 85.07^[31], a weak factor in the tourist satisfaction evaluation system. Regarding hot spring wellness tourism development, the province has 264 sites spread across 72 counties, possessing excellent resources like Xifeng Hot Spring, Shiqian Hot Spring, and Jianhe Hot Spring^[31]. Yet, none of the existing hot spring wellness bases meet the five-star hot spring enterprise standards.

3.1.3 Market demand. With the improvement in living standards and the enhancement of health awareness, the demand for health and wellness products and services continues to grow. In particular, the demand for high-end, personalized wellness services is becoming increasingly prominent, such as premium health check-ups and customized wellness plans. Simultaneously, the arrival of an aging society has also increased the market demand for elderly care wellness, shifting from basic daily care to higher-level needs such as health care, cultural entertainment, and emotional well-being. However, Guizhou's health and wellness industry still has some shortcomings in meeting market demand, such as the need to improve the standardization of products and services, insufficient brand influence, making it difficult to satisfy consumers' demand for high-quality wellness services.

3.2 Current status and challenges of rural revitalization in Guizhou Rural revitalization in Guizhou has achieved phased results. The rural economic structure has been continuously optimized, with rapid development in industries such as specialty agriculture and rural tourism, increasing farmers' income. Rural infrastructure and public service levels have significantly improved, with transportation and communication becoming more convenient, and education and medical conditions enhanced. For example, in some villages, the development of specialty agricultural product cultivation and processing has formed industrial chains, promoting economic development.

However, rural revitalization also faces numerous challenges. First is the issue of industrial development sustainability; some rural industries are significantly affected by market fluctuations and lack risk resilience. Second is talent shortage; the outflow of young and middle-aged labor from rural areas, coupled with a lack of professionals who understand technology and management, constrains industrial upgrading and innovative development. Third, ecological and environmental protection pressures persist. How to balance ecological conservation with development and utilization during economic growth is an urgent problem to solve^[23]. For instance, in some areas developing rural tourism, the increase in tourists has led to issues like environmental pollution, affecting the sustainable development of the villages.

3.3 Current status of integration between the health and wellness industry and rural revitalization In the process of rural revitalization in Guizhou, the health and wellness industry has played a unique and crucial role. The two mutually promote and

develop synergistically, achieving significant results. During the advancement of rural revitalization, various regions in Guizhou have actively explored integration models between the wellness industry and other industries, forming a diversified industrial development pattern. Some areas combine wellness with eco-agriculture, develop under-forest economy, and plant economic crops such as medicinal herbs. This not only protects the ecological environment but also provides abundant natural resources for the wellness industry. Simultaneously, Guizhou's wellness industry also encompasses multiple fields such as medical care, leisure vacations, and cultural experiences. For instance, in the first quarter of 2024, Guiyang's health and pharmaceutical industry completed investments of 592 million yuan, had 53 enterprises starting production and 52 industrial enterprises above designated size, achieved a total output value of 1.248 billion yuan, an added value of 914 million yuan, paid taxes of 59 million yuan, and received 147 000 tourists. In terms of infrastructure integration, rural transportation, accommodation, and other infrastructure meet the needs of local residents while also serving the development of the wellness industry effectively. Regarding the integration of medical and health services, rural medical and health institutions have been continuously improved, providing basic medical security for the wellness-seeking population. Currently, Guizhou's rural revitalization and wellness industry development have achieved initial results. Infrastructure in many villages has been improved, the industrial structure has been continuously optimized, farmers' incomes have increased, and the ecological environment has been protected and enhanced.

However, some problems still exist during the integration process. For example, industrial integration lacks depth and breadth, and a complete industrial chain has not yet been formed; there is still a gap in infrastructure and services in meeting high-end wellness demands; the policy support system needs further improvement to promote more efficient integrated development of both. Each county should start from its changed comparative advantages and seize the historical opportunity of resource value re-evaluation. As the stage of economic development and the principal social contradictions change, the value of mountainous resources is undergoing significant changes, with original comparative disadvantages transforming into comparative advantages. Changes in the value of mountainous agricultural resources provide new space for the development of specialty agricultural products and the realization of agriculture's multiple functions. Changes in the value of non-agricultural industrial resources in mountainous areas provide new opportunities for the development of rural leisure tourism wellness industries, traditional crafts, and eco-friendly environment industries. Simultaneously, efforts in reform and innovation should be intensified in areas such as land and property rights systems, talent recruitment, and business model reshaping to provide institutional guarantees for fully unlocking the potential value of mountainous resources^[4]. In the future, Guizhou will continue to deepen the rural revitalization strategy, promote the deep integration of

the wellness industry with agriculture, culture, tourism, and other industries, create more distinctive wellness brands, and make greater contributions to achieving comprehensive rural revitalization and high-quality development.

4 Technological progress in Guizhou's health and wellness industry and rural revitalization

4.1 Technological innovation and application in the health and wellness industry

Wellness medical space design has been an important research direction in recent years, primarily focusing on how to enhance the quality of the medical environment through spatial design, thereby providing patients with a better rehabilitation experience^[32]. Guizhou's health and wellness industry is continuously exploring technological innovation and application. In the field of medical technology, it actively introduces and applies advanced diagnostic and therapeutic technologies to improve the level of medical services. For example, some hospitals have introduced digital diagnostic and therapeutic equipment, enhancing the accuracy and efficiency of disease diagnosis. Simultaneously, the application of Health Technology Assessment (HTA) in Guizhou is gradually gaining attention. Although facing challenges such as slow development of related disciplines and the lack of independent authoritative institutions, it plays a significant role in areas like medical insurance system reform and drug formulary development^[33].

In terms of health and wellness service technology, information technology is utilized to enhance service quality and efficiency. For example, by establishing a health management information system, the health data of wellness-seeking populations is monitored and analyzed in real-time, providing a basis for personalized services. Furthermore, in the field of TCM wellness technology, efforts are strengthened to inherit and innovate traditional TCM techniques, developing a series of distinctive TCM wellness products and services, such as herbal fumigation, acupuncture, and massage. For instance, Mou Qichun^[6] proposed an elderly wellness fitness training system based on Artificial Intelligence (AI) and Augmented Reality (AR) technologies. This system uses the Microsoft Kinect motion-sensing device to capture elderly exercise data and employs an AI posture recognition algorithm to evaluate and score movements in real-time, aiming to enhance the effectiveness of rehabilitation training for the elderly through technological means. The rational application of new health and wellness service technologies in Guizhou's wellness industry can effectively improve the quality and efficiency of wellness services.

4.2 Technology empowerment strategies in rural revitalization

Technology empowerment strategies play a significant role in rural revitalization. The application of digital technologies brings new opportunities for rural industrial development. For example, promoting distinctive rural products through e-commerce platforms increases product visibility and market sales, thereby boosting rural economic development. Simultaneously, utilizing internet technology to develop smart agriculture enables precise management of

agricultural production, improving agricultural efficiency and quality.

In terms of rural environmental governance, environmental protection technologies are applied to improve the rural ecological environment. For instance, advanced sewage treatment technologies and waste disposal technologies are adopted to address rural environmental pollution issues. Furthermore, technological innovation drives the integrated development of rural industries, such as integrating eco-agriculture with tourism and the wellness industry, using technological means to create distinctive rural tourism products, and enhancing the added value of rural industries.

4.3 Case studies of technology integration in the wellness industry and rural revitalization Taking a certain village as an example: after experiencing the 2008 Wenchuan earthquake, it implemented a Health Information Technology (HIT) project (the "Healthy Wenchuan Plan"). This project provided a natural experiment opportunity for studying technology integration^[34]. Through the application of the HIT system, the village achieved significant results in medical services. For both inpatient and outpatient samples, the HIT system promoted accessibility to medical services, increased doctor referrals, encouraged medical utilization within the county; alleviated patients' financial burden in certain expenditure categories; and improved patient satisfaction with the quality of medical services. However, an issue of increased patient waiting time for hospital registration also emerged. This case demonstrates that technology integration has a positive role in enhancing the wellness industry and rural medical services. However, during implementation, local actual conditions must be fully considered, and potential problems must be addressed to achieve better integration outcomes. Another example: some villages leverage their ecological environment advantages and combine technological means to develop forest wellness industries. By establishing intelligent monitoring systems, forest environmental indicators are monitored in real-time, providing tourists with scientific wellness recommendations. Simultaneously, using internet platforms for promotion attracts more tourists. This achieves the integration of ecological resources and technology, promoting the synergistic development of the wellness industry and the rural economy.

5 Future prospects for Guizhou's health and wellness industry and rural revitalization

5.1 Development trends and opportunities in the health and wellness industry As people's health needs continue to evolve, the health and wellness industry will expand its service scope. Beyond traditional medical and wellness services, areas like mental health and rehabilitation care will receive increased attention. In the future, Guizhou's health and wellness industry is expected to exhibit trends of diversification and premiumization. Simultaneously, the market for high-end wellness services will further expand, with consumer demand for high-quality, personalized wellness products driving the industry towards premium development.

Guizhou's health and wellness industry faces numerous oppor-

tunities. First is policy support; the government's emphasis on the big health industry and the introduction of relevant policies will provide strong guarantees for the development of the wellness industry. Second is market demand growth; with an aging population and increased health awareness, the market demand for wellness will continue to expand. Third is technological advancement; developments in information technology, biotechnology, *etc.*, will provide technological support for innovation in the wellness industry. For example, the application of big data and artificial intelligence in health management will enhance service precision and efficiency.

5.2 Future planning for rural revitalization in Guizhou Guizhou's future rural revitalization plan emphasizes comprehensive development focusing on thriving businesses, eco-friendly habitats, civilized rural ethos, effective governance, and prosperous living. In terms of industry, it will further optimize the rural industrial structure, cultivate and strengthen characteristic advantageous industries such as specialty agriculture, rural tourism, and rural e-commerce, promote industrial integration, and enhance industrial competitiveness. It will strengthen rural ecological environmental protection, build eco-friendly and livable villages, and achieve harmonious coexistence between humans and nature.

In building a civilized rural ethos, it will inherit and promote excellent traditional culture, fostering civilized rural customs, good family traditions, and simple folkways. It will strengthen the rural governance system, improve governance capacity, and ensure rural social harmony and stability. Through measures such as promoting farmers' employment and entrepreneurship and increasing farmers' income, it aims to achieve the goal of prosperous living, continuously enhancing farmers' sense of gain and happiness.

5.3 Integrated development pathways for the wellness industry and rural revitalization The development of regional health and wellness industries in China cannot simply apply the "wellness +" concept. It requires distinguishing regional specific conditions, building on public wellness as the industrial foundation, and developing in an orderly pyramid-shaped manner from basic to high-end. Simultaneously, it is recommended to establish a health and wellness insurance system as soon as possible, strengthen the training of skilled personnel for the wellness industry, utilize big data for precise targeting of wellness needs, and promote the healthy development of regional wellness industries^[2]. To achieve deep integration between Guizhou's wellness industry and rural revitalization, the following pathways can be pursued: First, it is necessary to strengthen planning guidance by formulating a unified development plan that clarifies the goals, tasks, and priorities of integrated development, promoting rational resource allocation. Second, it is necessary to enhance industrial synergy by further promoting the deep integration of ecotourism, specialty agriculture, and the wellness industry, building a wellness industry chain with Guizhou characteristics. For example, it is necessary to develop a wellness food industry using agricultural products as raw materials, and a wellness tourism industry based

on rural landscapes. Wellness tourism is a new type of tourism that has gradually emerged in recent years. It combines elements such as health, wellness, leisure, and tourism, offering tourists a completely new travel experience. As people's focus on health and quality of life increases, the demand for wellness tourism is also growing. Different regions explore and implement wellness tourism development strategies based on their own resources and characteristics to attract more tourists and promote local economic development. Third, it is necessary to improve infrastructure and service levels by increasing investment in rural infrastructure such as transportation, accommodation, and healthcare, enhancing service quality to meet the needs of the wellness industry's development. Fourth, it is necessary to strengthen talent cultivation and recruitment by training a group of professionals who understand both the wellness industry and rural development, providing intellectual support for integrated development. Through these pathways, the mutual promotion and coordinated development of the wellness industry and rural revitalization can be achieved.

6 Controversial issues in Guizhou's health and wellness industry and rural revitalization

6.1 Benefit distribution issues between the wellness industry and rural revitalization In the development of Guizhou's health and wellness industry and rural revitalization, benefit distribution is a key contentious issue. As the wellness industry develops in rural areas, it involves the interests of multiple stakeholders including the government, enterprises, and villagers. For example, in the development of some wellness projects, enterprises, driven by profit maximization, may allocate a disproportionately low share of benefits to villagers in their cooperation, leading to low participation enthusiasm among villagers. Meanwhile, the government plays a guiding and regulatory role in industrial development. How to ensure that the benefits generated by policy support are fairly and reasonably distributed among all stakeholders is a problem that needs solving. Unreasonable benefit distribution may trigger conflicts, affecting the sustainable development of the industry and the advancement of rural revitalization. Therefore, it is necessary to establish a scientific and reasonable benefit distribution mechanism, clarifying the rights and obligations of each stakeholder, safeguarding the interests of all parties, and promoting the coordinated development of the wellness industry and rural revitalization.

6.2 Balancing environmental protection and wellness industry development Balancing environmental protection and wellness industry development is another significant point of contention. The development of the wellness industry relies on a sound ecological environment; however, the industrial development process may exert pressure on the environment. For instance, the influx of large numbers of tourists may lead to problems such as increased waste and ecological damage in rural areas. Globally, the environmental impact of the healthcare industry, such as greenhouse gas emissions and scarce water resource usage, accounts for

1% to 5% of the total global impact, and in some countries even exceeds 5%^[35]. In Guizhou, overdevelopment of the wellness industry may disrupt the local ecological balance and affect its sustainable development. However, if environmental protection is overly emphasized, restricting industrial development, it would also hinder rural economic growth and the progress of rural revitalization. Therefore, a balance must be found between the two. By establishing stringent environmental standards and sustainable development plans, and adopting eco-friendly technologies and measures, a win-win situation for both environmental protection and wellness industry development can be achieved.

6.3 Policy coordination challenges between the wellness industry and rural revitalization Policy coordination between Guizhou's wellness industry and rural revitalization faces numerous challenges. Currently, a series of policies have been introduced for both the wellness industry and rural revitalization, but these policies may suffer from inconsistencies and incompatibilities. For example, regarding land policies, land use for wellness industry projects may conflict with rural land planning; in terms of funding support policies, the allocation and usage standards for funds related to wellness industry and rural revitalization projects may be inconsistent. Additionally, there is a lack of effective communication and coordination in policy formulation and implementation among different departments, leading to inadequate policy implementation. Poor policy coordination will affect the efficiency and effectiveness of industrial development and rural revitalization. Therefore, it is necessary to strengthen communication and collaboration among policy-making departments, establish a policy coordination mechanism, conduct integrated planning and adjustment of relevant policies, ensure policy consistency and synergy, and provide strong policy support for the integrated development of the wellness industry and rural revitalization.

7 Conclusion

As a comprehensive and interdisciplinary field, the health and wellness industry offers rich research content and broad prospects. Guizhou Province possesses unique geographical advantages, providing a solid foundation and vast space for the development of the wellness industry. Guizhou's wellness industry has progressed from ecological awakening to systematic planning, undergoing three stages: early exploration, rapid development, and high-quality development. By leveraging the advantages of the rural ecological environment and developing distinctive wellness projects, an initial integration with the rural revitalization strategy has been achieved. This has not only promoted the development of the wellness industry but also stimulated rural economic growth, realizing synergy with rural revitalization. Looking ahead, as people's pursuit of health and quality of life continues to rise, the wellness industry will embrace greater development space. However, issues such as how to ensure the sustainability of the wellness industry and how to improve service quality also require further research and exploration by scholars and the industry. In summary, as a

comprehensive and interdisciplinary field, the health and wellness industry has vast prospects for research and development, deserving continuous attention and investment from all stakeholders.

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