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Evaluation of Recreation Benefit of Developing Rural Tourism in Traditional Villages: A Case Study of Kongbai Village

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Abstract: In recent years, natural scenery and cultural experience are the most attractive recreational activities for people, which makes simple, natural and leisurely rural tourism gradually welcomed by tourists. As the first batch of Chinese traditional villages, Kongbai Village has beautiful natural scenery, unique food and snacks, and traditional Miao culture has its own characteristics. In this study, travel cost method (TCM) and analytic hierarchy process (AHP) were used to estimate the recreational benefits of three tourism resources, namely, leisure agricultural resources, national history and culture, and local delicacies and snacks. In addition, this study uses TCM combined with conditional behavior (CB) to evaluate the impact of festival industry activities on recreation benefits. The results show that in the last five years, the average recreational benefit of tourists visiting Kongbai Village is 420 yuan per person, 856 yuan per person per year and 21.36 million yuan for the whole year. According to the calculation method of AHP weight value, the consumer surplus (CS) of leisure agricultural resources is 8.9712 million yuan, the CS value of national history and culture is 7.2624 million yuan, and the CS value of gourmet specialty snacks is 5.1264 million yuan. Assuming that there will be festivals in the coming year, the recreation benefit per person is 55 yuan, which is 1866 yuan per person per year and about 28.29 million yuan for the whole year. Compared with the empirical results in the last five years, the CS value increases by 32.44%. Therefore, if the rural leisure tourism is promoted in Kong.

1. Introduction

With the development of economy, the national income is increasing year by year. When people's material life is safe, more and more attention is paid to improving their spiritual life, and leisure activities have become an important part of people's life. The prevalence of national leisure tourism makes the central and local governments begin to attach importance to the promotion of tourism policies. In recent years, due to the social and economic development such as urbanization,

industrialization, popularization of automobiles and increase of income, many urban residents have a strong demand for leisure tourism in traditional villages and villages on weekends and holidays, which also stimulates the rise of rural tourism [1]. As early as 2016, the State Council promoted "vigorously developing leisure agriculture and rural tourism", integrating and mobilizing various resources such as national culture, natural landscape and agricultural products with local characteristics, and producing the effect of adding and multiplying resources. This policy hopes to activate the rural economy and enhance the rural leisure atmosphere.

Because the government has noticed the trend of leisure tourism and the change of tourist areas, it has changed from mobile mass tourism to fixed-point in-depth tourism. From the lively tourism of watching flowers to the tourism of natural ecology, cultural experience and cultural perception. From urban sightseeing tourism to agricultural tourism based on traditional villages, or "natural orientation" tourism of agricultural experience activities [2]. Kongbai Village has the characteristics of rural tourism such as "leisure agricultural resources", "national history and culture", "gourmet snacks" and "festival industrial activities", which has attracted many tourists in recent years. In addition, Kongbai Village, located in Xijiang Town, is one of the recommended index tourist attractions in Leishan County. In 2021, the number of tourists increased by 13.2% compared with the previous year, and the growth rate ranked second in the county, which shows the potential of Kongbai Village to develop rural leisure tourism.

Tourism benefits are not only to increase the total transaction volume in the tourist destination market, but also non-market financial benefits such as recreational benefits must be measured through the "non-market financial evaluation method". How much recreational benefits can the development of rural tourism activities in Kongbai Village bring to Kongbai Village? When Liu et al. [3] studied the recreation benefits of Beijing Olympic Forest Park, he analyzed the characteristics of multi-objective tourism in a single place by combining TCM with AHP. The purpose of this study is to find out the preference degree of tourists to tourism resources such as "leisure agricultural resources", "national history and culture" and "gourmet specialty snacks" in Kongbai Village, and to estimate their recreational benefits by this method.

In addition, in recent years, the holding of ethnic festivals has been regarded as a good medicine to revitalize local industries in ethnic areas and bring considerable economic benefits to local areas. In Qiandongnan Miao and Dong Autonomous Prefecture, large and small festivals held in various places can be seen from south to north all year round. There are also many festivals in Kongbai Village every year, some of which are held continuously (such as Youfang Festival, Miao Festival and Eating New Festival). Mntymaa et al. [4], Bernard et al. [5], He and, Wang [6] use CB to estimate the change of recreation benefits when tourism quality or environmental quality changes. Many studies use the TCM to evaluate the recreational benefits brought by festivals, but there are few in-depth studies on the comparison and influence of recreational benefits before and after festivals. This study will use the TCM combined with CB method to explore the differences between recreational benefits before and after festivals.

Therefore, this study will evaluate the overall recreational benefits of tourism resources in Kongbai Village by TCM. TCM and AHP are combined to estimate the recreational benefits of tourists to "leisure agricultural resources", "national history and culture" and "gourmet specialty snacks" in Kongbai Village. Finally, using TCM combined with CB, this paper discusses whether the festival activities affect tourists' willingness to travel to Kongbai Village, and evaluates the impact of festival industry activities on recreation benefits.

2. Literature Review

2.1 Definition and Resources of Rural Tourism

Modern people live a tense life and work under great pressure. They often stretch their bodies and minds and relax by tourism and leisure activities, especially rural tourism activities that are far away from the hustle and bustle and close to nature. In recent years, rural tourism has attracted a large number of tourists and become one of the popular tourism types. In the early days, Kongbai Village was mainly engaged in agricultural economic production activities, and less involved in the promotion of leisure activities. With the economic growth, the increase of national income, the prevalence of leisure atmosphere and the influence of high urbanization, people yearned for returning to simple rural life, so rural tourism gradually prevailed.

Sharpley [7], in his study of rural tourism, points out that rural tourism is a tourism product that specializes in rural areas and makes use of their regional attractions to provide multiple services. Tourists are engaged in rural leisure tourism, some of which may be to get close to nature and enjoy leisurely pastoral life [8]. Or in order to experience the simple rural life and know the local customs [9]. Or simply relieve stress and relax. Natural, beautiful and unique rural scenery makes rural areas more attractive [10]. Kongbai Village is a simple Miao traditional village with rich natural pastoral landscape and more than 200 years of traditional history and culture. This condition is in line with the characteristics of rural tourism and attracts tourists for vacation in recent years.

Rural tourism can bring many economic benefits to local areas, such as increasing local job market, promoting sustainable utilization of environment and driving local prosperity and development. Before developing rural tourism, we must have a full understanding of local resources, including local natural environment, cultural characteristics and traditional industries. Based on the existing sightseeing resources in Kongbai Village and the classification of rural tourism resources in the past, this study divides the rural tourism resources in Kongbai Village into "leisure agricultural resources", "national history and culture", "local gourmet snacks" and "festival industrial activities", so as to explore tourists' preference for tourism resources and recreational benefits in Kongbai Village.

2.2 Recreation Demand and Its Related Literature Discussion

2.2.1. Travel Cost Method

The resources of the natural environment provide people with the function of releasing stress and stretching their body and mind. People are often satisfied by engaging in recreational activities in the natural resource system (called "utility" in economics), the utility depends on the service quality provided by the characteristics of natural resources and the amount and quality of consumers' own recreational activities. Therefore, the satisfaction generated by tourists from the experience of tourism resources activities can be called recreational benefits.

Tourism resources belong to non-market goods, which do not have their market prices like ordinary goods or commodities. Therefore, when tourists engage in tourism activities, the benefits generated from tourism resources cannot be directly calculated by monetary value, so they must be evaluated by the method of replacing market value. Common evaluation methods include TCM, hedonic price method (HPM), contingent evaluation method (CVM) and so on. Tourists who go to Kongbai Village to engage in rural tourism mainly lie in experiencing rural tourism trips, such as participating in experience activities, visiting historical sites and ancestral halls, and tasting special snacks. Therefore, this study aims at the use value of tourism resources in Kongbai Village, and evaluates its recreational benefits by TCM.

The TCM was first proposed by economist Hotelling in 1947 to evaluate the value of non-market goods. Clawson [11] established a travel cost model based on the basic theory to evaluate the recreational benefits of a specific tourist place, which has been widely used by many scholars in the benefit evaluation of outdoor recreational places. The basic assumption of the TCM is that the travel cost spent by tourists to leisure places or sightseeing places can be used to measure their willingness to pay. That is to say, by observing the travel costs of tourists, such as transportation costs, admission expenses, accommodation expenses and shopping expenses, the tourism demand function can be estimated [12,13]. Based on this, the consumer surplus of tourists is calculated, and the recreational benefits of non-market resources are estimated. There are quite a wide range of types of tourism resources evaluated by TCM, including leisure farms, ecological protection areas, recreational attractions, festivals and industrial activities, cultural assets and so on. This study will take Kongbai Village as an example, and evaluate its recreation benefits by using TCM, so as to understand the overall economic benefits of rural leisure tourism development in Kongbai Village, and provide reference for policy departments and social organizations to carry out cost-benefit analysis before and after promoting relevant policies.

2.2.2. Analytic Hierarchy Process

The AHP was developed by Satty [14], a professor at the University of Pittsburgh. AHP is mainly used in uncertain situations and decision-making problems with multiple evaluation criteria. It systematizes complex problems, decomposes them hierarchically from different levels, and comprehensively evaluates them according to the quantified results [15]. AHP analysis method can collect evaluators' opinions by comparing hierarchical pointer items in pairs, and obtain the relative weight of each index through model analysis, which is suitable for empirical evaluation. Its application range is wide, such as economic consumption behavior, industrial engineering field, health medicine application, and evaluation index scheme [8]. As for tourism, it focuses on the evaluation of tourism indicators, the suitability of tourism development sites and the attractiveness of tourism sites [11]. Traditional TCM can only evaluate the recreational benefits of a single tourist destination, but can not solve the characteristics of multi-destination or multi-objective tourism. However, there are few related literatures on the economic benefits evaluation of multi-objective tourism of a single tourist destination [16].

Kongbai Village has beautiful natural scenery and rich ethnic minority features, and has many unique tourist attractions, which is suitable for developing multi-objective tourism. In this study, the existing tourism resources in Kongbai Village and the classification of rural tourism resources in the past related studies are reviewed, the rural tourism resources in Kongbai Village are divided into four items: "leisure agricultural resources", "national history and culture", "local gourmet snacks" and "festival industrial activities". Using the AHP to establish the hierarchical structure, compare the paired factors, obtain the relative weight of various resources, and further use the TCM to estimate the recreational benefits of various resources, so as to understand the preference degree of tourists for rural tourism resources in Kongbai Village.

2.2.3. Conditional Behavior

Environmental resources have use value and non-use value. TCM can be used to estimate the recreation benefit of tourism resources, but it can not directly evaluate the recreation value when the environmental quality changes. TCM is often combined with CVM to evaluate the non-use value of environmental resources. Shen Hanli [17] believes that the CVM needs to ask respondents about the price they are willing to pay or the amount of compensation they are willing to accept under a certain hypothetical market. Their actual behavior or attitude has not changed at all, while CB is to explore

the expected behavior of respondents under certain assumptions, which can be used to estimate the change of behavior or non-market wealth use level. Therefore, we can estimate the change of recreation benefit when the quality of tourism or environment changes by using CB method.

From the above literatures, it can be found that the research on tourism or environmental quality improvement by using CB method is quite extensive, including the value evaluation of forest park eco-tourism resources, the improvement of leisure tourism quality, the improvement of environmental quality of tourist destinations, or the hypothetical situation is more real than the hypothetical situation of tourism times change. Kongbai Village holds a number of festivals every year, hoping to inherit culture (Miao Festival, Traveler Festival) or enhance local industrial economy (Traveler Festival, Eating New Festival). Traditional ethnic villages hold various festivals combined with rural industries, hoping to enhance rural popularity, attract tourists to travel and increase local economic benefits. Most of these studies use the TCM to evaluate the economic benefits brought by festival activities, but there is no in-depth study on the comparison and influence of recreation benefits before and after holding activities. In addition to establishing the recreation demand of tourists to Kongbai Village by using the TCM, this study combines the CB method to assume a situation: whether the festival activities increase the number of tourists visiting Kongbai Village, so as to understand whether the tourism resources of "festival industry activities" affect the change of the overall recreation benefit of Kongbai Village.

3. Overview of Study Area

3.1 Natural Environment and Human History

Kongbai Village is located on the half slope of Leigong Mountain in the east corner of Xijiang Town, Leishan County, Qiandongnan Miao and Dong Autonomous Prefecture, Guizhou Province. It belongs to Xijiang Town, Leishan County, Guizhou Province, 12 km away from Xijiang Town and 55 km away from Leishan County. It is between 108 11 '39 "-108 14' 12" east longitude and 26 33 '45 "-26 30' 30" north latitude, with a total area of 9.23 km^2.

There are 282 households in Kongbai Village, of which 78 make silver ornaments. The annual income of silver ornaments in the village is over 1.5 million yuan, and the per capita annual income is 25,000-28,000 yuan. The village retains relatively complete traditional customs, such as sacrifice, marriage, funeral, costumes, singing and dancing, embroidery, batik, textile, etc., and has exquisite forging skills of Miao silversmiths, forming a unique group of Miao silversmiths. The silver ornaments produced are often sold to Guangxi and other Miao branch areas, with a wide range of services, and even exported to Europe, America, Thailand, Japan and other countries and regions. In 1994, Kongbai Village was named "Hometown of Kongbai Silver Jewelry Art in Leishan County" by Guizhou Provincial Department of Culture because of its excellent silver jewelry processing skills. In the first batch of national intangible culture lists in 2006, the silver ornaments of control worship, which represent the forging skills of Miao silver ornaments, are also among them. In 2008, Guizhou Provincial Cultural Relics Bureau took Kongbai Silversmith Village as the first pilot village of "Village Cultural Landscape Protection and Development Project". In 2012, the National Housing and Urban-Rural Development Bureau identified Kongbai Village as the first batch of traditional Chinese villages.

3.2. Sightseeing Resources in Kongbai Village

3.2.1. Leisure Agriculture Resources (LAR)

There are many agricultural tourist attractions in Kongbai Village. For example, in 2006, it was selected as one of the demonstration areas of "Rice-Fish Symbiosis Ecosystem", and in 2010, it was selected as the "Traditional Leisure Agriculture Area" of "Top Ten Agriculture-Tourism Combination Villages" in Qiandongnan Prefecture, providing agricultural tourism experience activities. And it is rich in ecological resources. For example, "Leigong Mountain Vertical Natural Belt" is a large-scale mountain tourism activity, and there are rare subtropical virgin forests and rare and endangered organisms in the world, forming a typical and unique subtropical forest system species gene bank. There are also many "farmhouses", and the fruits and vegetables produced have been rated as high-quality agricultural products by Guizhou Agriculture and Rural Bureau, which are well received by consumers. The fishing of rice flower fish in Kongbai Village is mainly located in terraced fields around the village. Besides producing rice, many terraced fields are devoted to promoting industrial culture education, which often attracts an endless stream of tourists during the harvest season of rice flower fish.

3.2.2. National History Culture (NHC)

Kongbai Silversmith Village is a typical Miao village in Leigong Mountain area. The site selection and construction skills of its residential buildings have well preserved the traditional construction ideas and technologies of dry-bar residential buildings in southern China, and play an important role in studying the relationship between residential buildings and natural environment and social environment.

As a typical Miao village, the silversmith village still retains rich intangible cultural heritage of Leishan Miao, such as sacrifice, festival, wedding, funeral, costume, song and dance, embroidery and so on. It accumulates the traditional village governance structure in which "village elders" manage secular life and "drum Tibetan heads" take charge of spiritual life, which reflects the survival wisdom of harmonious coexistence between man and nature created by Miao ancestors in Leigongshan area. Up to now, Kongbai Village still continues to take making Miao silver ornaments as its main economic source, which has important reference value for studying the production technology, evolution and types of Miao silver ornaments, and is also an important basis for studying Miao spiritual beliefs and social relations. At the same time, the unique natural conditions provide a good ecological environment for the survival and reproduction of various creatures. The agricultural cultural heritage of rice-fish symbiosis is still an important mode of production for villagers, a microcosm and living fossil of Chinese farming culture for thousands of years, and constitutes the foundation of intangible cultural heritage of villages.

3.2.3. Local Speciality Delicacies (LSL)

The unique "Long Table Banquet" in Kongbai Village can feel the warm folk customs of Miao family at the "Long Table Banquet". The long table banquet is the highest standard of Miao's hospitality banquet. The long table is filled with fragrant Miao dishes, drum hidden meat, fried bacon with folded ears, cold bracken and sour soup fish. Ciba is also one of Miao's characteristic cultures. Ciba is used to entertain distinguished guests during holidays and ancestor worship. It is also a Miao custom to entertain guests with Ciba. On the annual Miao Festival, every household is playing Ciba to entertain distant guests. Miao people in Kongbai Village love to eat insects, and the "Miao Insect Collection" is made of wine insects, bamboo insects, grasshoppers and bee pupae.

3.2.4. Festival Industry Activities (FIA)

Industrial cultural activities can not only activate local economic benefits, but also provide leisure and recreation opportunities, promote the development of agricultural tourism, increase tourists' leisure benefits and bring social benefits. Miao Festival, Eating New Festival and Tour Festival are representative festivals in Kongbai Village.

The Miao Festival in Kongbai Village was held on Chen (Dragon) Day after millet was collected and put into warehouse in November. In the first few days of the Miao Year, every household should clean up the house and actively prepare for the New Year's goods, such as making glutinous rice cakes, brewing rice wine, making tofu, making bean sprouts, and generally killing pigs or buying pork.

Eating New Festival, also known as "Tasting New Festival", is usually held on the first "Mao (Rabbit) Day" in June of the lunar calendar. When the villagers prepared to eat the new festival, they all came to their own fields and went down to the fields to pick corn. After picking and returning home, the seedling bracts will be tied up and placed at home to worship the statues. Then take out already cooked glutinous rice and rice wine, peeled garlic, chickens, ducks and "complete fish" to worship ancestors. Eating a new festival will also hold colorful cultural and recreational activities. Every year, Lusheng can only be danced after eating a new festival.

The "Traveler" in the Traveler Festival, also known as "Friends", is a form of social interaction and entertainment for young Miao men and women in Kongbai Village. Miao boys and girls often make friends, find objects or pour out love through such activities. Young men and women can take advantage of the festival to rest, and the "travelers" sing songs and love each other. Young men and women gather here, and the scene is very lively.

4. Establishment of Theoretical and Empirical Models

4.1. Research Framework

This study adopts TCM and AHP to evaluate the recreation benefit, and combines CB to study the influence and change of tourists' recreation benefit when they travel to Kongbai Village, assuming that there are festivals, and finally analyzes the investigation results. The research framework is shown in Figure 1.

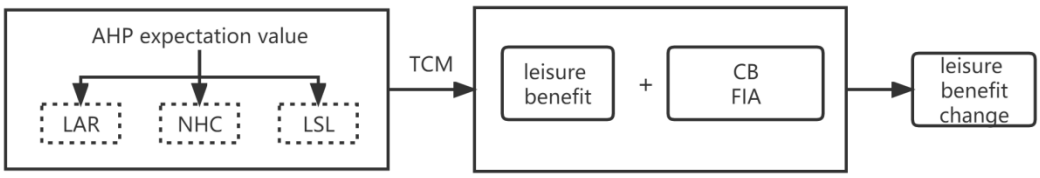

Figure 1: Research framework

4.2. Establishment of Theoretical Model

4.2.1. Basic Model of TCM

In economics, consumers' demand for a commodity is based on consumers' pursuit of the maximum utility of their consumption under limited budget constraints. If recreation and leisure are regarded as a commodity, the economic benefits can be evaluated by using the travel method, and the total travel cost of consumers to various recreation places can reflect the price of their activities to

tourist destinations. Assuming that tourists choose tourism and other goods and pursue their utility maximization, their consumer behavior patterns are as follows:

$$MaxU(Z, X) \tag{1}$$

$$Y = TC \times Z + Px \times Z \tag{2}$$

Among them, Z: the number of tourists visiting recreational places. X: Consumption of other commodities. Y: Visitors' income. TC: The total cost of each visit to a recreation place. Px: Prices of other commodities.

In the empirical study, besides the tourism cost, the variables affecting tourism demand may also include the socio-economic characteristics of tourists, so the recreation demand function of tourists to Kongbai Village can be obtained as follows:

$$Ti = f(TCi, Yi, SEi) \tag{3}$$

Among them, it represents the number of trips made by the i bits tourist to Kongbai Village. TCi: Represents the travel cost of the i bits tourist visiting Kongbai Village. Yi: Represents the income level of the i bits tourist. SEi: Represents the socio-economic background of the 1st visitor.

Most of the research on recreation demand takes field samples as the research object, and field sampling will lead to sample selection errors, such as truncation and non-negative integer problems. Truncated Posson regression model (TOPIS) is the better choice for evaluation research in literature. However, tourists who often participate in recreational activities have a high probability of being interviewed, which is prone to endogenous stratification. Kastenholz et al. [18] suggests using On-Site Poisson model, which can solve the problems of sample data truncation and endogenous stratification at the same time. On-Site Poisson likelihood function model is as follows:

$$\ln L = \sum_{i=1}^{N} \left[z_i \beta (x_i - 1) - e^{x,\beta} - \ln(x_i - 1)\lambda \right] \tag{4}$$

Among them, x_i : if it is the number of visits of the i bits visited tourist. λ: it is the average and variance of random variables. β: and it is the parameter vector.

Recreation benefit refers to the psychological satisfaction of consumers' recreation desires or needs in the process of participating in recreation activities, which is usually evaluated by consumer surplus. The concept of consumer surplus is the difference between the willing price of goods paid by tourists to recreation places and the actual price paid. According to Shrestha et al. [19], the CS of the first tourist i can be expressed as:

$$CS_i = \int_{c^0}^{\infty} e^{\beta_0 + \beta_1 c} dc = \left[\frac{e^{\beta_0 + \beta_1 c}}{\beta_1} \right]_{c \to c^0}^{e \to \beta} = -\frac{X_i}{\beta_i} \tag{5}$$

Among them, C represents the travel cost and the number of trips obey the exponential demand function, $x = e^{\beta_0 + \beta_1 c}$. β_0 represents a constant term; β_1 Estimation coefficient representing the cost of tourists' travel type; c^0 represents Indicates the current travel cost.

4.2.2. Analytic Hierarchy Process

AHP is mainly used in multi-attribute decision making analysis, which decomposes complex problems into various elements, and then divides them into groups to form hierarchical structural relations. Then, the elements in the same group are compared with each other to calculate their relative weights. This study sums up three tourism resources: "leisure agricultural resources", "national

history and culture" and "gourmet specialty snacks", establishes hierarchical structure and compares them in pairs. Compare the elements of the matrix in pairs according to Satty [19], as follows:

$$A=\begin{bmatrix} 1 & a_{af} & a_{ah} \\ 1/a_{af} & 1 & a_{fh} \\ 1/a_{ah} & 1/a_{fh} & 1 \end{bmatrix} \tag{6}$$

In the formula, a_{ij} represents the elements of pair comparison, a represents leisure agricultural resources, h represents national history and culture, and f represents delicious food and snacks. The eigenvalues and eigenvectors of pairwise comparison matrix are obtained by the decision analysis software (Super Decision), and the consistency ratio C.R. (C.R.≤ 0.1) is detected. Then the relative weight value is obtained by the analysis and calculation of the decision analysis software (Super Decision) and Excel 2010. Finally, the recreation benefits of three tourism resources are estimated respectively, and the calculation methods of recreation benefits are as follows:

$$CS = CS \times a\% + CS \times h\% + CS \times f\%,\ \ a\% + h\% + f\% = 100\% \tag{7}$$

In the formula, it (CS) indicates the recreation benefit of the whole year, $a\%$ represents the weight value of leisure agricultural resources, $h\%$ represents the weight value of national history and culture, $f\%$ represents and the weight value of gourmet specialty snacks.

4.2.3. Conditional behavior

TCM can estimate the recreation benefit of tourism resources, but it can not directly evaluate the recreation value when the environmental quality changes. Combined with CB method, a hypothetical question is put forward for tourists, and then the change of recreation benefit can be evaluated. Whether "the holding of festival activities" can improve the demand for recreation efficiency, this study sets this hypothetical situation as a variable, and establishes the recreation demand function of tourists to Kongbai Village as follows:

$$T_{CB} = f(TC_{CB}, Y_{CB}, SE_{CB}) \tag{8}$$

It(T_{CB}) indicates the number of trips to Kongbai Village in the coming year "if you know the information of festival activities". TC_{CB} indicates the travel cost of tourists visiting Kongbai Village. YC_{CB} indicates the personal income level of tourists. SE_{CB} indicates the socio-economic background of tourists. If tourists increase their visits "if they know the information of festival activities", their consumer surplus can be expressed as CS_{CB}, and the increased recreational benefits due to the holding of festival activities are:

$$CS_j = CS_{CB} - CS_i \tag{9}$$

Among them, it(CS_{CB}) indicates the recreational benefits of tourists coming to Kongbai Village when festivals are held. CS_i indicates the recreational benefits of tourists visiting Kongbai Village when non-festival activities are held. CS_j indicates the recreational benefits increased by tourists visiting Kongbai Village during the festival activities (Figure 2).

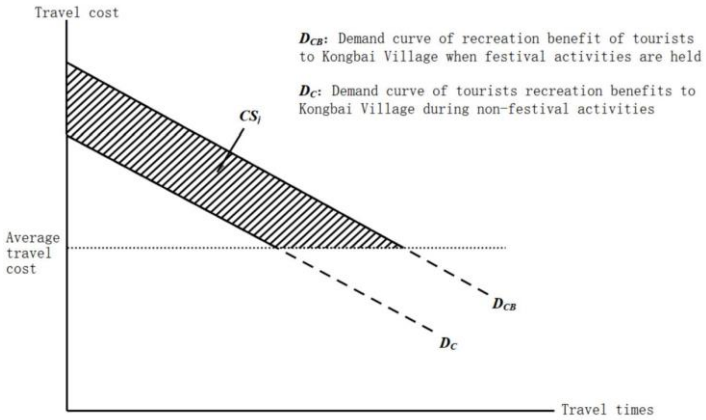

Figure 2: Recreation benefit demand curve under different environments

4.4. Questionnaire Design

The questionnaire content of this study is divided into four parts, The first part is "tourists' travel behavior", including the number of tourists visiting Kongbai Village in the last year, the time spent from departure to Kongbai Village, the means of transportation used, the time spent staying, the way of traveling, whether they made a special trip, the favorite season to visit Kongbai Village, various expenses, and individual and overall satisfaction with various tourism resources in Kongbai Village. In addition, in order to understand tourists' preference for tourism resources in Kongbai Village, tourists are invited to circle the expected values of tourism resources in Kongbai Village, compare paired factors by AHP, and calculate the weights of various resources. The second part is the "hypothetical situation", including whether you have heard or participated in the festival activities held by Kongbai Village, the number of trips to Kongbai Village in the coming year during the non-festival activities, and the change of the number of trips to Kongbai Village in the coming year if you know the information of the festival activities. The third part, "Personal socio-economic background", includes tourists' place of residence, gender, age, marital status, occupation, education level and disposable income.

Questionnaire survey is adopted in this study. The survey objects are tourists who are actually engaged in recreational activities in Kongbai Village and are over 18 years old. Samples are selected by random sampling on the spot. Tourists who are willing to fill out the questionnaire are invited to fill in the questionnaire survey. In order to be more accurate, a brief explanation of the questionnaire is given one by one, and they are taken back immediately after filling out. The survey time is from November 17, 2021 to May 18, 2022, and the survey sites are recreational attractions with a large number of tourists, including non-genetic inheritance centers, leisure agriculture areas, Lusheng Yard and so on.

5. Empirical model and variable setting

Based on the above research framework and theoretical model, and considering the tourism characteristics and actual experience of tourists to Kongbai Village, this study sets various variables to estimate the recreational benefits of Kongbai Village. In addition to the travel cost variables in the theoretical model, monthly expenditure, education level, occupation, marital status, income level and socio-economic variables. In addition, according to the results of the questionnaire, it is found that tourists have their preference for recreation in different seasons, so it increases: respondents like the season of traveling to Kongbai Village. Satisfaction research is an important aspect of leisure and

recreation research, and satisfaction after tourism in Kongbai Village is also one of the empirical model variables. Try to find out whether these variables affect the number of tourists visiting Kongbai Village. In this study, the empirical models of tourism demand are divided into:

$$T = f(TC, SPRING, WINTER, TOTAL, SAT, HEARD, JOIN, WOR, BUSS, TEA, FRE, SER, STAY, EDU, PAY) \tag{10}$$

$$T_i = f(TC, SPRING, WINTER, TOTAL, SAT, HEARD, JOIN, WOR, BUSS, TEA, FRE, SER, STAY, EDU, PAY) \tag{11}$$

$$T_j = f(TC, SPRING, WINTER, TOTAL, SAT, HEARD, JOIN, WOR, BUSS, TEA, FRE, SER, STAY, EDU, PAY) \tag{12}$$

Among them, T is the number of trips to Kongbai Village in the last year. T_i for the number of trips to Kongbai Village without festivals in the coming year. T_j for the respondents, "if they know the information of festival activities", the number of trips to Kongbai Village in the coming year. TC is the travel costs for respondents. $SPRING$, $WINTER$ is the favorite season for respondents to travel to Kongbai Village. $TOTAL$ is the on-site expenses for respondents traveling in Kongbai Village. SAT is the overall satisfaction of respondents after traveling to Kongbai Village. $HEARD$ is the interviewees have heard of festivals in Kongbai Village. $JOIN$ respondents have participated in festivals in Kongbai Village. WOR, $BUSS$, TEA, FRE, SER for the interviewee's occupation. $STAY$ for the interviewee's stay in Kongbai Village. EDU is the education level of the interviewee. PAY is the average annual SPSS 22.

6. Questionnaire Survey and Analysis of Empirical Results

From November 17, 2021 to May 18, 2022, this study conducted a field investigation and visit to the non-genetic exhibition area, leisure agriculture area, drum collection field and other tourist attractions in Kongbai Village. A total of 300 questionnaires were sent out, and all of them were recovered. After deducting 12 questionnaires with incomplete and unreasonable answers, the total number of valid samples was 288. According to "tourists' travel behavior" and "tourists' personal socio-economic background", the statistical analysis is as follows:

6.1. Tourist Behavior

The distance from the place of residence or the last tourist destination to Kongbai Village is 101-150 kilometers, accounting for 47.44%, 51-100 kilometers accounting for 35.3%, 151 kilometers or more accounting for 13.01%, 31-50 kilometers accounting for 4.3%, and the average travel distance is 76.49 kilometers.

In terms of one-way travel time to Kongbai Village, those within 1.5 hours are the most, accounting for 58.7% of the respondents, followed by those within 1 hour, accounting for 27.4%, those within 1 hour, accounting for 5.4%, and those over 1.5 hours, accounting for 2.5%, with an average one-way travel time of 1.37 hours. It can be seen that the tourists who visit Kaili Village are mainly in Kaili City or neighboring counties and cities, and there are few long-distance tourists. In terms of the use of transportation, self-use vehicles account for the largest proportion, accounting for 79.6%, followed by public transportation and sightseeing bus, accounting for 12.8% and 7.6% respectively. It can be seen that most respondents use self-use vehicles as their main means of transportation for tourism.

In terms of tourists' stay time in Kongbai Village, 2-3 hours is the most, accounting for 36.8% of the respondents, followed by 1-2 hours and 3-4 hours, accounting for 31.3% and 16.2% respectively,

with an average stay time of 3.2 hours. Among the ways of tourists traveling to Kongbai Village, family travel is the most, accounting for 65.6% of the respondents, followed by friends traveling together, accounting for 24.3%, and others such as group travel and individual tourists are 5.8% and 1.7% respectively. It can be seen that most tourists travel with family or friends. The favorite season for tourists to visit Kongbai Village is autumn, accounting for 54.7% of the respondents, followed by summer, winter and spring, accounting for 27.8%, 10.4% and 7.1% respectively, which may be because Kongbai Village is rich in rice field fish in autumn, so the seasonal sightseeing characteristics of this village attract tourists to visit.

Tourists' spending on traveling to Kongbai Village includes DIY experience of silver ornaments, purchase of silver ornaments, agricultural products, gourmet snacks and other expenses. The total spending is the largest within 500 yuan, accounting for 51.4% of the respondents, followed by 501-1000 yuan, accounting for 20.8% of the respondents, spending 1001-1500 yuan accounting for 10.3%, 1501-2000 yuan accounting for 9.5%, 2001-2500 yuan accounting for 3.8%, 2501-3000 yuan accounting for 2.3%, and spending more than 3001 yuan accounting for 2.1%.

This study will control the three tourism resources of Baicun: leisure agricultural resources, national history and culture, and delicious food and snacks. In the questionnaire, we will design a pair of comparison questions, and ask tourists to circle the relative importance of attracting two resources after comparison. Then, according to the collected valid questionnaire data, the eigenvalues and eigenvectors of the paired comparison matrix are obtained by decision analysis software, and the consistency ratio $C.R.$ ($C.R. \leq 0.1$) is detected. Finally, using SPSS 22 software analysis and calculation, we get the weight value of three resources. Among them, the weight value of leisure agricultural resources is the highest (0.42), followed by gourmet snacks (0.34), and the third is historical sites and culture (0.24).

When tourists visit Kongbai Village, the overall satisfaction with various tourism resources is "satisfied", accounting for 82.4% of all respondents, followed by "very satisfied" and "average", accounting for 14.3% and 2.9% respectively, which shows that tourists have a high evaluation of the overall sightseeing resources of Kongbai Village.

In the recent year, tourists visited Kongbai Village once, accounting for 60.3% of the respondents, followed by twice and three times, accounting for 11.5% and 5.2% respectively, with an average number of visits of 2.75. During the non-festival period in the coming year, tourists are expected to visit once, accounting for 40.4%, followed by twice, accounting for 29.6%, and three times, accounting for 8.4%, with an average number of visits of 2.8 times; As for the information of festival activities in the coming year, visitors are expected to visit twice, accounting for 31.4%, followed by one and three, accounting for 19.6% and 14.3% respectively, with an average of 3.34 visits. According to the comparison of the number of visits between "non-festival activities" and "if there are festival activities" in Kongbai Village in the coming year, It is found that the holding of festivals can attract tourists to increase their visits. Compared with the number of tourists visiting Kongbai Village in the next year, if there are no festivals, the tourists' willingness to revisit will be reduced, and the proportion of not visiting again is as much as 9.5%. It can be seen that holding more festivals in Kongbai Village will help improve tourists' willingness to revisit.

6.2. Individual Socio-Economic Background of Visitors

Among the tourists interviewed, there are 167 women, accounting for 57.99% of the total sample, and 121 men, accounting for 42.01%. The proportion of female respondents is higher than that of men. In terms of age distribution, respondents are over 61 years old, accounting for 31.8% of the total sample, 26.11% of 51-60 years old, 19.64% of 41-50 years old, 12.8% of 31-40 years old, 8.2% of 21-30 years old, and under 20 years old. Among the tourists interviewed, the proportion of married

people is higher than that of single people, with married people accounting for 76.6% of the total sample and single people accounting for 23.4%. The survey results show that the respondents' travel mode is family travel, and according to the observation of on-site visit, there are many cases of parent-child travel, so the proportion of married people is higher than that of single people.

In terms of occupation, the respondents are engaged in public education, accounting for 26.76%, retirees accounting for 22.14%, service industry accounting for 15.56%, industry accounting for 12.78%, commerce accounting for 9.5%, free industry accounting for 7.34%, students accounting for 4.58% and agriculture accounting for 1.34%. The proportion of college or university graduates is the highest, accounting for 42.8% of the respondents, 38.65% of high school vocational schools, 13.5% of junior high schools, 3.12% of primary schools and below, and 1.93% of graduate students or above.

In terms of SPSS 22 per family, the proportion of respondents is 40,000-50,000 yuan, accounting for 22.11%, 30,000-40,000 yuan accounting for 16.2%, 50,000-60,000 yuan accounting for 16.2%, 20,000-30,000 yuan accounting for 13.5%, 60,000-70,000 yuan accounting for 11.3%, 10,000-20,000 yuan accounting for 9.2% The per capita SPSS 22 of respondents' families is 37,112 yuan, which is slightly higher than the national average SPSS of 2,235,128 yuan in 2021 announced by the National Bureau of Statistics. Those with higher incomes may have higher willingness to arrange leisure travel.

6.3. Results of Empirical Analysis

In this study, TCM, AHP and CB are adopted to establish a recreation demand model to further evaluate the recreation benefits of tourists visiting Kongbai Village. Taking "On-Site Poisson Model" as an empirical model, And using SPSS 22 software to estimate by the maximum likelihood method, The results show that the significant variables affecting the number of tourists visiting Kongbai Village include: travel cost (TC), spring (SPRING), winter (WINTER), on-site cost (TOTAL), overall satisfaction (SAT), having heard of festivals (HEARD), having attended festivals (JOIN), marital status (MARRY), industry (WOR), business (BUSS), public education (TEA), free industry (FRE), service industry (SER), education level (EDU), stay time (STAY), personal expenditure (PAY) and other variables, which are explained as follows (Table 1):

The symbol of travel cost (TC) is negative, which means that the less travel cost is spent, which makes tourists increase the number of trips to Kongbai Village, which is in line with theoretical expectations and the same as the previous empirical research results of recreation benefits (Duan et al., 2019; Lu Xiaoli et al., 2017; Mao Yong, 2009). The symbol of SPRING is positive, and the symbol of WINTER is negative. It is presumed that the climate in spring is comfortable and pleasant, which is suitable for outdoor leisure activities, which increases tourists' willingness to travel to Kongbai Village, and the climate in winter is cold, which reduces the number of tourists traveling. The symbol of TOTAL is negative, which means that the more tourists spend on site, the less they visit Kongbai Village. It is speculated that the reason may be that tourists have met their expenses in food, accompanying gifts and other tourism-related expenses once when traveling to Kongbai Village, so the more they spend, the less they travel. The symbol of overall satisfaction (SAT) is positive, which means that the higher the satisfaction with the overall tourism resources of Kongbai Village, the more times tourists travel to Kongbai Village. Previous studies by Li Junhong, Chen Jizhong [20], Li Junhong and Huang Jinhuang [21] have also obtained the same results. The higher the satisfaction with tourism resources, the more tourists visit. The symbol of HEARD is positive, which means that tourists who have heard of festivals such as Miao Festival, Tour Festival and Eating New Festival in Kongbai Village visit Kongbai Village more often. The symbol of JOIN is positive, which represents tourists who have participated in festivals such as Miao Festival, Tour Festival and Eating New Festival in Kongbai Village before, and they travel to Kongbai Village more often. This study found that tourists who have heard or participated in festivals in tourist destinations will increase the number

of tourists visiting the destination. It is speculated that festivals may be unique, which attracts tourists to increase their willingness to visit. Therefore, enriching the content of festival activities and strengthening the marketing of festival activities will increase the recreational benefits of activities.

The symbol of marital status (MARRY) is negative, which means that single people travel less to Kongbai Village, while married people travel more to Kongbai Village. This result is the same as that of Liang Mengdan [22] who studied the recreational benefits of Hongguang Town. It may be because married people attach importance to parent-child and family travel, so they will increase the number of leisure trips. The symbols of industry (WOR), commerce (BUSS), public education (TEA), free industry (FRE) and service industry (SER) are positive, which means that tourists whose occupations are industry, commerce, public education, free industry and service industry visit Kongbai Village more often. The symbol of education level (EDU) is negative, which means that the higher the education level of tourists, the less the number of trips to Kongbai Village. Past studies on tourism demand have also achieved the same results [23-24], may be because in recent years, the more educated tourists, the longer their working hours and the less leisure travel time. The sign of residence time (STAY) is negative, which is inconsistent with expectations. It is speculated that the longer tourists stay in Kongbai Village, the more scenic spots they have visited, and the number of trips in one year is relatively small. Although the result of personal expenditure (PAY) variable is not significant, the symbol is negative, which is the same as expected. It means that the more tourists with per capita disposable income, the less the proportion of consumption expenditure on tourism, and the relative number of trips.

The estimation of recreational benefits usually takes consumer surplus (CS) as the evaluation method, which refers to the difference between the willing price and the actual price paid by tourists to recreational places. The calculation of economic benefits of rural tourism in Kongbai Village is as follows:

$$CS_f = -(T_t / C_f) \tag{13}$$

$$CS_{st} = -(\frac{T_t}{C_f}) \times T_t \tag{14}$$

$$CS_t = CS_s \times N \tag{15}$$

CS_s represents the consumer surplus value per person per time. CS_{st} represents the consumer surplus value per person per year. T_t indicates the number of trips in the whole year. C_f represents the travel cost factor. CS_t represents the consumer surplus value for the whole year. N indicates the number of tourists throughout the year.

Based on the calculation method of AHP weight value, the weight values of leisure agricultural resources, national history and culture, and gourmet specialty snacks are obtained. The estimation methods of consumer surplus of three tourism resources are as follows: leisure agricultural resources value $CS = CS_t \times 0.42$, national history and culture value $CS = CS_t \times 0.34$, and gourmet specialty snacks value $CS = CS_t \times 0.24$.

CS_s represents the consumer surplus value per person per time. CS_{st} represents the consumer surplus value per person per year. T_t indicates the number of trips in the whole year. C_f represents the travel cost factor. CS_t represents the consumer surplus value for the whole year. N indicates the number of tourists throughout the year.

Table 1: Calculation results of tourism demand model in Kongbai Village

	Number of visits in the five year NUMBER	If there is no number of visits to the event in the coming year, VIST	In the coming year, it is assumed that there will be the number of visits to the event, FVIST
ONE	0.925 (2.421)**	1.124 (2.663)***	1.435 (3.884)***
TC	-0.001 (-3.415)***	-0.001 (-4.663)***	-0.001 (-3.774)***
SPRING	0.356 (3.742)***	0.474 (4.352)***	0.355 (3.863)***
WINTER	-0.385 (-3.231)***	-0.364 (-2.452)***	-0.256 (-2.632)***
TOTAL	-0.0002 (-3.240)***	-0.0002 (-4.135)***	-0.0001 (-3.555)***
SAT	0.263 (3.242)***	0.216 (2.445)**	0.187 (2.452)**
HEARD	0.363 (2.341)**	0.367 (2.258)**	0.373 (2.325)**
JOIN	0.963 (12.114)***	0.774 (9.863)***	0.663 (9.545)***
MARRY	-0.452 (-4.447)***	-0.556 (-4.945)***	-0.414 (-4.425)***
WOR	0.853 (7.853)***	0.893 (8.268)***	0.674 (7.423)***
BUSS	0.452 (3.126)***	0.345 (2.264)***	0.273 (1.964)**
TEA	0.463 (3.742)***	0.456 (3.587)***	0.442 (3.889)***
FRE	0.343 (1.964)**	0.424 (2.531)**	0.275 (1.697)*
SER	0.294 (2.236)**	0.389 (2.784)***	0.224 (1.879)*
EDU	-0.093 (-6.563)***	-0.088 (-5.904)***	-0.074 (-5.563)***
STAY	-0.063 (-2.632)**	-0.053 (-2.166)**	-0.046 (-2.476)**
PAY	-0.149 (-.563)	-0.396 (-.224)	-0.209 (-1.245)
Log likelihood function	-742.073	-730.972	-766.415
Chi squared	500.342	456.234	392.868
Degrees of Freedom	16	16	16
Average Mean	3.42	3.21	4.32
Sample number (person)	288	288	288

Note: * ,** ,*** denotes significance at 90%, 95% and 99% reliability levels, respectively.

Based on the calculation method of AHP weight value, the weight values of leisure agricultural resources, national history and culture, and gourmet specialty snacks are obtained. The estimation methods of consumer surplus of three tourism resources are as follows: leisure agricultural resources value $CS = CS_t \times 0.42$, national history and culture value $CS = CS_t \times 0.34$, and gourmet specialty snacks value $CS = CS_t \times 0.24$.

According to the above statistical results, the calculated results are shown in table 2, the average recreation benefit of rural tourism in Kongbai Village from 2017 to 2021 is 420 yuan per person, and the CS value per person per year is 1424 yuan . According to the five-year average number of tourists in Kongbai Village of Leishan County Culture and Tourism Bureau, the annual CS value is about 21.36 million yuan. According to the calculation method of AHP weight value, the CS value of leisure agricultural resources is about 8.9712 million yuan, the CS value of national history and culture is about 7.2624 million yuan, and the CS value of gourmet specialty snacks is about 5.1264 million yuan.

Assuming that there will be no festivals in the coming year, the recreation benefit of rural tourism in Kongbai Village is 271 yuan per person, and the CS value per person per year is 856 yuan. Calculated by 15,000 tourists a year, the annual CS value is about 12.87 million yuan. According to the calculation method of AHP weight value, the CS value of leisure agricultural resources is about 5,405,400 yuan, the CS value of national history and culture is about 4,375,800 yuan, and the CS value of gourmet specialty snacks is about 3,088,800 yuan.

Assuming that there will be festivals in the coming year, the recreation benefit of rural tourism in Kongbai Village is 556 yuan per person, and the CS value per person per year is 1886 yuan. Calculated by 15,000 tourists a year, the annual CS value is about 28.29 million yuan. According to the calculation method of AHP weight value, the CS value of leisure agricultural resources is about 11.8818 million yuan, the CS value of national history and culture is about 9.6186 million yuan, and the CS value of gourmet specialty snacks is about 6.7896 million yuan.

Compared with the above research results, if there are no festivals in Kongbai Village in the coming year, tourists' willingness to revisit will be reduced, and the annual recreation benefit will be reduced by 39.75% compared with the average situation in the last five years. Assuming that festivals will be held in the next year, the annual recreation benefit will increase by 32.44% compared with the average situation in the last five years. Whether there are festivals or not in the coming year, the difference in recreation benefits is as high as 15.42 million yuan. The results show that the promotion of rural leisure tourism in Kongbai Village, assuming that it can join the festival activities, will attract tourists to travel and increase the recreational benefits throughout the year.

Table 2: Comparison of recreation benefits under three kinds of festival activities in Kongbai Village

	The last five years	If there is no number of visits to the event in the coming year	In the coming year, it is assumed that there will be the number of visits to the event
CS_s	420	271	556
CS_{st}	1424	856	1886
CS_t	21360000	12870000	28290000
LAR *CS*	8971200	5405400	11881800
NHC *CS*	7262400	4375800	9618600
LSL *CS*	5126400	3088800	6789600

7. Conclusions and Discussions

7.1. Conclusion

In this study, TCM is used to evaluate the overall recreation benefit of tourism resources in Kongbai Village, and combined with AHP, the recreation benefit of three tourism resources in Kongbai Village, namely, "leisure agricultural resources", "national history and culture" and "local gourmet snacks", is estimated respectively. In addition, using TCM and CB, this paper evaluates the influence of festival industry activities on recreation benefits.

According to the survey results, the recreational benefits of rural tourism in Baicun in recent five years are controlled. The CS value per person is 420 yuan, and the CS value per person per year is 1,224 yuan. Calculated by 15,000 tourists a year, the annual CS value is about 21.36 million yuan.

In terms of recreational benefits of three tourism resources, the empirical results show that the CS value of leisure agricultural resources is the highest, followed by national history and culture, and the third is gourmet snacks. The "leisure agricultural resources" and "national history and culture" in Kongbai Village are often combined with festivals and are familiar to tourists, so the total CS value accounts for 76% of the overall recreational benefits. However, during the visit, many tourists expressed their expectation for the delicious food and snacks in Kongbai Village, but the relevant information available for consultation in the local area was insufficient. It is suggested that local governments or non-governmental organizations can strengthen food publicity and food experience, attract tourists with the characteristics of local food specialty snacks, improve the quality and efficiency of sightseeing, and attract more tourists.

If there are no festivals in Kongbai Village in the coming year, compared with the average of the past five years, the average number of individual trips to Kongbai Village will decrease. If there are festivals, the average number of tourists traveling will increase. Therefore, the development of rural tourism in Kongbai Village, combined with local industries or festivals with cultural characteristics, will attract tourists to visit Kongbai Village again. In the coming year, if tourists know that there are festivals, the annual recreation benefits will increase by about 32.44% compared with the last five years. Whether there are festivals or not, the annual recreation benefit value is more than doubled. Therefore, the development of rural tourism in Kongbai Village, assuming that it can continuously promote the holding of festivals, will attract tourists to travel and increase the recreational benefits throughout the year.

7.2. Discussion

At present, there are quite a few empirical studies on the application of CB method at home and abroad, most of which discuss the scheme of improving the quality of tourism environment or put forward hypothetical situations, and compare the changes of tourism times between real and hypothetical situations; This study compares the recreational benefits of festivals or not, and proves that festivals can greatly improve the recreational benefits of rural tourism and contribute to the development of rural tourism.

In this study, TCM combined with AHP was used to evaluate the individual recreational benefit value of three tourism resources: "leisure agricultural resources", "historical sites and culture" and "delicious food and snacks" in Kongbai Village. Furthermore, the TCM and CB are combined to compare the impact of festivals on tourism benefits, so as to measure the recreational benefits of tourists visiting Kongbai Village, which is an appropriate and effective evaluation method.

In recent years, Leishan County has vigorously developed sightseeing and promoted the sightseeing characteristics of "regional ethnic and ecological conservation". Some traditional villages have the same rural tourism characteristics as Kongbai Village. This study has not considered the

problem of "alternative places", and whether it affects the recreational benefits is worth studying in the future. From the empirical results, we know that Kongbai Village has the sightseeing potential to develop rural tourism, and the holding of festivals can really enhance tourists' willingness to revisit Kongbai Village and increase the recreational benefits throughout the year. How much recreational benefits can be brought by various festivals such as Miao Festival, Tour Festival and Eating New Festival held in Kongbai Village every year, which can be further studied, analyzed and compared in the future.

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