

Study on the Pattern and Differentiation Mechanism of Community Livelihood in a Scenic Area with Villages: a case of National 5A Tourist Scenic Spot in Southwest Mountainous Area

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Abstract:

Under the background of the rural revitalization strategy, the endogenous economic growth model of the scenic belt-village strategy as an essential way of livelihood development in the poor areas directly affects the effect of the peasant households to get rid of poverty. To understand the driving impact of tourist attractions on the surrounding communities, this paper is based on field research and in-depth interviews of the National 5A class tourist attractions in Puzhehei, southwest mountain area. The Sustainable Livelihood Framework is adopted to construct the evaluation index system, Livelihood Diversification Index, and Redundancy Analysis method for farmers' livelihood capital, analyzes the differentiation, effect, and influencing factors of community livelihood model driven by scenic spots. The results show that: the community livelihood model caused by scenic spots is divided into four types: non-travel, concurrent travel, combined travel, and exclusive travel. The living capital reserves of the premier travel community are abundant, but the residing stability is poor, and the function is not ideal. The concurrent travel and combined travel community's living capital reserves are plentiful, the living stability is good, and the procedure is perfect. The non-tourist community is short of capital reserves, and its livelihood is not stable and functional. The choice of community livelihood model is most affected by the entrance of the scenic spot and the distance of the nearest scenic area.

Keywords: *Livelihood model, Community, Livelihood capital, Differentiation mechanism, Scenic belt-village.*

I. INTRODUCTION

In the context of the rural revitalization strategy, 12 departments, including the China National Tourism Administration, the National Development and Reform Commission, and the Poverty Alleviation Office of the State Council, have jointly formulated the Rural Tourism Poverty Alleviation Project Action Plan, which proposes to explore a new model of poverty alleviation through tourism with “Scenic Belt Village”, the 4A and 5A scenic spots shall be encouraged to promote the development of key villages for poverty alleviation through tourism in the surrounding villages. As a model of precision poverty alleviation through tourism, the scenic belt village has a comprehensive impact on farmers, agriculture, and rural areas, and has become the focus of attention. The study on the rural livelihood driven by the scenic spots is beneficial to improving the tourism spatial structure of the scenic spots and the surrounding areas, and promoting the extension of the radiation range of the scenic spots and villages, it has important guiding significance for the region to realize precise poverty alleviation and comprehensive rural revitalization.

Livelihood Patterns are the sum of the various means of livelihood and means of livelihood that a particular group has gradually constructed and perfected in the course of its long-term interaction [1]. With the surrounding natural environment, farmers often change their livelihoods to adapt to the new man-land relationship, and their livelihood patterns to improve their living standards [2]. The division of farmer household’s livelihood pattern is the starting point of the research on farmer household’s livelihood differentiation [3]. At present, the academic circles have divided the livelihood pattern from many aspects such as livelihood strategy [4], development will [5], livelihood way [6], income ratio [7], and livelihood capital [8], etc. The natural geographical environment and the social and cultural background are very different, and the livelihood model has different regional characteristics. Scholars study the livelihood model based on the national [9], regional [10] and social space [11]. With the development of the practice of tourism poverty alleviation in “Scenic belt villages”, the potential development of scenic areas and surrounding villages is increasing [12]. Scenic spots and surrounding villages have become the focus of scholars’ research. Li Ying explored the economic efficiency of rural households’ participation in tourism under the model of “Scenic area with village” [13]. Zhang Yan and others set up the evaluation index system of residents’ satisfaction with poverty alleviation in scenic spots and villages [14]. Xu Shaogui and others probe into the spatial distribution of comprehensive efficiency, pure technical efficiency and scale efficiency of poverty alleviation led by scenic spots in border ethnic areas of Guangxi [15].

The Southwest Mountain sites has the highest poverty rate in the country. Compared with other areas, the livelihood of rural households in the mountain area faces more risks and uncertainties, and encounters more severe “Environmental vulnerability” and the “Social vulnerability” induced by it, the

modernization of the mode of livelihood is imminent. The model of “Scenic Belt Village” is generally regarded as an essential way to improve the livelihood of communities in southwest mountainous areas, and has been well verified in a lot of practice [16]. At present, scholars mainly focus on the study of livelihood patterns in a certain time-point scenic area or a specific community, based on economic, environmental and social effects of the assessment, less from the livelihood level to explore the scenic area with village, it is not clear about the unbalanced development and the differentiation mechanism of the surrounding communities driven by the scenic spots. This paper takes 20 communities around the National 5A class scenic spot in Puzhehei mountain area of southwest China as the research object, discusses the differentiation of the livelihood patterns of the surrounding communities under the influence of the scenic spot, analyzes the effects of different livelihood patterns and their influencing mechanisms, and puts forward corresponding suggestions, it is of guiding significance to poverty alleviation and prosperity of the villages in the southwest mountain scenic area.

II. MATERIALS AND METHODS

2.1 Study Area and Data Collection

Puzhehei 5A scenic spot is located in the Wenshan Zhuang and Miao Autonomous Prefecture of Qiubei County, Yunnan Province, with the geographical coordinates of 103°56'55"~104°8'18" E, 24°06'15"~24°11'42" N (Fig 1). The total area of the scenic spot is 388 km². In 2009, Puzhehei was approved by the China National Tourism Administration as a 4A class tourist attraction, and in 2016 it was selected as a national “Scenic belt village” tourism poverty alleviation demonstration project, the development of the scenic spots has multiple and comprehensive effects on the poor villages and the poor people in the surrounding areas, effectively helping the farmers to get rid of poverty and improve their quality of life. In 2019, the scenic spot received 5.853 million domestic tourists, with total tourism revenue of 524.918 million yuan, mainly from the two communities of Xianrendong and Puzhehei. There is a great imbalance in community development, therefore, this paper analyzes 20 communities around Puzhehei scenic spot, including Badaoshao, Chahuagou, Mudabai, Shanlinguoshu, Shiba, Tangfang, Wantang, Yadulaozhai, Yibudi, Zhongnahong, Hongxing, Zhibeishan, Baozipo, Luoshuidong, Shuiweiyang, Bailianshan, Pailong, Puzhehei and Xianrendong. This community tourism development time has before and after, the geographical location has the superiority and inferiority, the distance from the core scenic spot is far and near, the resource endowment is different, and the distribution is more uniform, which has certain representativeness.

To obtain more valuable data and ensure the authenticity and applicability of the study, the Participatory Rural Assessment Method was adopted as the primary survey method. In June 2019, the research group, together with the Puzhehei Management Committee and the nature reserve staff, conducted a preliminary survey on the case sites, and in August 2019 and August 2020, investigated the

livelihood status of farmers in 20 communities. It mainly adopts the methods of interviews with village cadres and household questionnaires. First, interview village cadres to determine the actual situation on the ground. The content of the interview is to investigate the development status of the village industry, the main source of income, the state of infrastructure, etc. Afterwards, stratified sampling and random sampling were used for selection. The interview time of each household questionnaire was about 1 hour. The questionnaire was designed mainly for farmers' primary livelihood conditions, and it was distributed on the spot and collected in the area. Six hundred twenty households were investigated, and 609 valid questionnaires were obtained, with an effective rate of 96.67%. Taking into account the fact that the China National Tourism Administration approved Puzhehei as a 4A class tourist attraction in 2009, the local government has tilted the resources of several villages represented by Xianrendong village to ensure the authenticity and difference of the data, 2006, which is less affected by the development of scenic spots, was chosen as the year of comparison. Because of the impact of the new coronavirus, the number of tourists dropped sharply in 2020, the data is not representative, so choose 2006 and 2019 data to study. In addition, this study includes 17 indicators of the livelihood capital of rural households in Puzhehei scenic spot, which mainly come from Wenshan Zhuang and Miao Autonomous Prefecture government statistical reports. The data of the distance between each community and the gate of the scenic spot, the reach of the nearest scenic area, the location of the Nature Reserve, the elevation, the slope, and the vegetation coverage are provided by: Puzhehei scenic spot management committee.

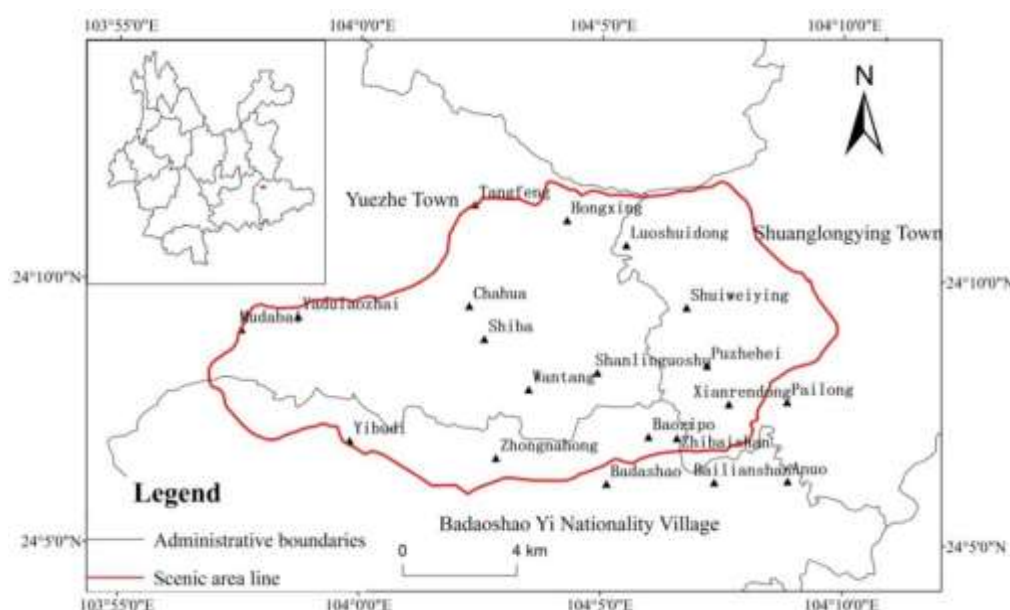


Fig 1: Puzhehei Scenic spots and case sites

2.2 Division of Community Livelihood Patterns

The means of livelihood of farmers in Puzhehei scenic spots include breeding, planting, tourism, employment, stable work and other productive activities. Because farmers do not rely on a single means of livelihood but rather diversify their livelihood according to their conditions to seek better development. This paper refers to the research results of Wang Yongjing [17] and Li Wenlong [18], according to the existing way of livelihood, the primary source of income and the proportion of the family, the farmer households are divided into five types: labor oriented, agricultural oriented, semi-labor and semi-agricultural, tourism oriented, combined travel. The mode of community livelihood is divided into four types: exclusive travel (more than 80% of the tourism-oriented of peasant households and the combined travel type of peasant households), combined travel (50% ~ 80% of the tourism-oriented of peasant households, and the combined travel type of peasant households), concurrent travel (11% ~ 49% of the tourism-oriented of peasant households and the combined travel type of peasant households), and non-travel (less than 10% of the tourism-oriented of peasant households and the combined travel type of peasant households). To ensure the rationality of the division of livelihood patterns, the types of farmers' livelihood, the pattern of community livelihood and the results of interviews with village cadres were cross-examined.

2.3 Method of Measuring Livelihood Capital

2.3.1 Indicators of measuring livelihood capital

The sustainability of a household's livelihood system is determined by the ability of these households to access livelihood assets and carry out livelihood strategies in dealing with the context of vulnerability [19]. The DFID sustainable livelihood framework proposes that livelihood capital includes natural capital, physical capital, human capital, financial capital and social capital [20]. Most scholars calculate livelihood capital according to this framework, but the above five dimensions of livelihood capital are put forward in the context of Western society, not necessarily applicable to all conditions [21]. Most of the existing rural tourism research frameworks for sustainable livelihood analysis are directly applied. The case study is not thorough enough. Considering the complexity of the ecological function of Puzhehei scenic spot, which is both a picturesque tourist spot and a nature reserve, the government departments have the choice to support the community, and the policy greatly influences the community development. Institutional capital mainly refers to public development policy, social insurance policy, and transfer payment policy [22], which determine the availability of resources and influence the exchange conditions and the choice of livelihood strategies among different types of capital [23]. The study is constructed as in Table I. There are 18 indexes in six capital forms.

TABLE I. The selection of livelihood capital index

CAPITAL TYPE	MEASURE INDEX
NATURAL CAPITAL	Per-household arable land area, arable land quality, per-household forestland area, per-household water area
HUMAN CAPITAL	The number of households, the number of labor force per household, the educational level of households
PHYSICAL CAPITAL	Housing type, housing area, household durable daily consumer goods
FINANCIAL CAPITAL	Per capita annual income, per capita income source type
SOCIAL CAPITAL INSTITUTIONAL CAPITAL	The degree of social connection, the number of cooperatives and enterprises, the number of Inns, the road in the village The location of nature reserves, the situation of education and training

2.3.2 Calculation of livelihood capital

Calculate the community livelihood capital of different livelihood models using the method of entropy. Because of the difference of dimension value, adopted order of magnitude, and range of change of index data, the standard approach is to measure the same value after data processing. The entropy value and weight of item j were calculated to get the value of livelihood capital.

$$Y_{ij} = \frac{X_{ij} - \min X_{ij}}{\max X_{ij} - \min X_{ij}} \quad (1)$$

$$P_{ij} = \frac{Y_{ij}}{\sum_{i=1}^m Y_{ij}} \quad (2)$$

$$e_j = - \frac{1}{\ln m \sum_{i=1}^m P_{ij} \ln P_{ij}} \quad (3)$$

$$W_j = \frac{1 - e_j}{\sum_{i=1}^n (1 - e_j)} \quad (4)$$

$$W = \sum_{i=1}^n W_{ij} P_{ij} \quad (5)$$

In the formula, X_{ij} is the i data in the category j index, P_{ij} is the i Standardization Score in the category j capital, e_j is the entropy value in the category j index, W_{ij} is the i weighting in the category j livelihood capital, and W is the livelihood capital value.

2.4 Livelihood Stability and Functionality

Function and stability are the critical characteristics of the livelihood model, which reflect the aspects of the livelihood model and the possibility of change, and are the crucial variables to describe the interaction of livelihood [24]. The income and Livelihood Diversity Index was standardized and divided into three intervals, including low-middle stage and high stage, and SPSS drew the livelihood function matrix. Livelihood stability can be expressed in terms of the livelihood diversification index, which is represented by the number of types of livelihood activities that farmers participate in, with each livelihood activity assigned a value of 1 and each livelihood activity participating in an increase of 1 in its livelihood diversification index, the average value of livelihood diversification index of farmers in different regions was obtained.

$$D = \frac{1}{n} \sum_{i=1}^n d_i \quad (6)$$

In the formula, d_i is the first livelihood diversification index, n is the number of farmers in the community, and D is the livelihood diversification index.

2.5 Redundancy Analysis

Redundancy Analysis (RDA) is a multivariate sorting method combining regression with Principal Component Analysis (PCA), which is an extension of PCA for multiple response variable regression, and can effectively evaluate the relationship between one or a group of variables and another group of multivariate indexes, showing multidimensional data structures in a visualized low-dimensional space[25]. As a research explanatory variable Matrix (usually environmental factor), RDA explains the response variable Matrix (usually species data) multivariate statistical method, which is widely used in the analysis of ecological and environmental science multivariate data. It also provides a new research method for the study of Metrology and Statistics [26].

In this study, the explanatory factors of the community livelihood model, Farmer Household Livelihood Type, were used as the response variable matrix, and the natural geographical factors of the community were used as the explanatory variables. The influence of geographical environment on community livelihood model is analyzed by Vegan package in R language.

$$RDA = rda(Y, X) \quad (7)$$

In the formula, Y is the response variable Matrix, and the explanatory factor was the labor-oriented,

agricultural-oriented, tourism-oriented, semi- labor, and semi-agricultural, combined travel peasant household. X is the illustrative variable matrix, and the explanatory factors were gate distance, nearest scenic spot distance, nature reserve location, altitude, slope, and vegetation coverage.

III. RESULT

3.1 Analysis of Community Livelihood Pattern

In 2006, Puzhehei's scenic spot began to take off. Due to the remote location and insufficient publicity in the region, there are few tourists, and it isn't easy to develop tourism and other industries. The primary means of livelihood of the residents in the local communities are farming, breeding, and going out to work. The main types of peasant households are agricultural-oriented, semi- labor and semi-agricultural, and the communities are non-tourist. With the establishment of the 4a-grade scenic spot and the rapid development of the tourism industry, the combination of community livelihood in scenic spots has gradually changed, mainly reflected in the significant reduction of traditional agricultural livelihood activities. There has been an increase in the number of new forms of livelihood based on tourism and tourism + laboring, tourism + farming, and by 2019 there were four different types of communities (Fig 2).

Non-tourist communities, including Badaoshao, Chahuagou, Mutabai, Shanlinguoshu, Shiba, Langfang, Wanting, Yadulaozhai, Yibudi, and Zhongnahong, accounted for the highest proportion, reaching 50%, mainly to labor-oriented, agricultural-oriented, semi- labor and semi-agricultural peasant households, the main means of livelihood to agriculture and migrant workers. The concurrent travel community, including Hongxin, Zhibeishan, Baozipo, Luoshuidong, and Shuiweiying, accounted for 25%. In this type of community, the primary means of subsistence for farmers is to engage in agriculture during busy periods, to engage in tourism during leisure periods. Women and the elderly in the family take advantage of the favorable geographical conditions to participate in tourism operations, such as selling special agricultural products such as Lotus seeds and Lotus leaf tea on the roadside, and young and middle-aged people engage in activities such as boating and driving horse-drawn carriages. 15% of the communities are combined travel, including Anuo, Bailianshan, and Pailing. The prominent peasant households are combined travel, and the primary mode of living is tourism. Because it is close to the core area of the scenic spot, the environment is beautiful, and the number of tourists is large, the central unit of the family to open a hotel and actively participate in the work of the scenic spot. The exclusive travel community, including Puzhehei and Xianrendong, accounted for the lowest, 10%. The proportion of tourist-oriented and combined travel farmers in Xianrendong is as high as 100%, and Puzhehei is 84.62%. Both communities are family-based hostels, the young and middle-aged years to participate in the work of the scenic spot, for the scenic spot regular employment of security personnel, transportation

personnel, cleaning personnel.

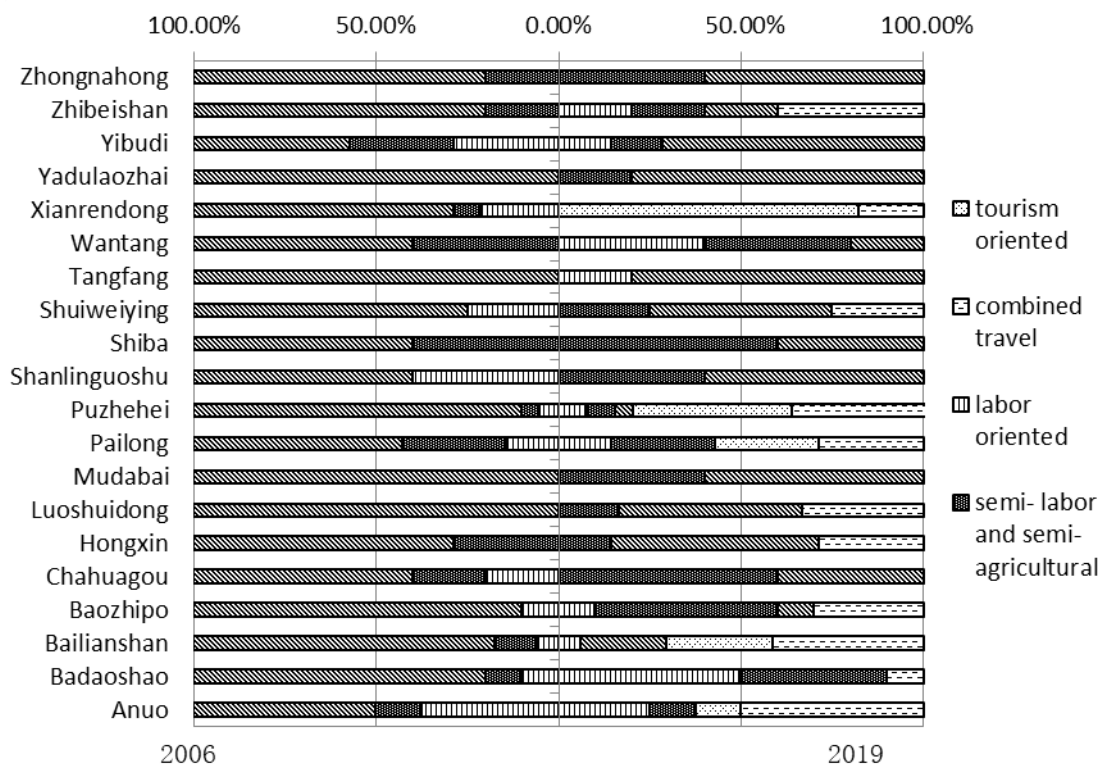


Fig 2: Dynamic map of rural household s livelihood mode in communities under the development of scenic spots

3.2 Changes of Community Livelihood Capital in Different Livelihood Patterns

Livelihood Patterns reflect the development of local social productive forces, and unique livelihood patterns give rise to specific livelihood capital. Based on the classification of community livelihood models in 2019 and the comparison of the same community livelihood capital status in 2006, a paired sample t-test was conducted to analyze the changes of livelihood capital driven by tourist attractions (Table II).

Under the development of scenic spots, the total amount of capital shows an increasing trend. The total capital in the four types of communities is an exclusive travel community, combined travel community, concurrent travel community, non-travel community. The total capital of the non-tourist community increased by 0.1681, with an increase of 200.02%. The total capital of the concurrent travel community increased by 0.2568, with a rise of 310.89%. The real wealth of the combined travel

community increased by 0.2615, with an increase of 248.27%, the total amount of capital for exclusive travel community increased by 0.2469, an increase of 105.47%. Because of the exemplary primary conditions, the increased proportion is the smallest in the exclusive travel community and the biggest in the non-travel community. Based on the analysis of the living capital in different types of communities, it is found that the physical capital, financial capital, social capital, and policy capital increase significantly in non-tourist communities. Although non-tourist communities are not involved in tourism activities, the government supports them in other areas, such as poverty subsidies, industrial assistance, electricity, road construction, and cooperatives to help the residents escape poverty and become rich. The material capital, financial capital, social capital, and policy capital increased significantly in the concurrent travel community. In recent years, the government's tourism development strategy has shifted from exclusive travel and combined travel communities to the surrounding areas. Through participation in tourism development, farmers can increase their income, increase their financial capital and improve their material conditions. There was a significant decrease in natural capital in the combined travel community and a significant financial and social capital increase. The land in the core scenic area of Puzhehei is challenging to meet the needs of tourism development. The land is confiscated from the neighboring communities, which leads to the reduction of the cultivated land area, the decrease of the quality, the decrease of the reserves of the natural capital—the increase of the opportunities of tourism operation by the newly-built tourism facilities. The human capital, physical capital, and financial capital increased significantly in the exclusive tourism community. Tourism Development has increased economic income, farmers to expand the hotel management to take the initiative to rebuild the housing and improve the financial capital and physical capital. Due to the distance from junior high school to junior high school, the first rich community has increased investment in education.

TABLE II. Statistics of community livelihood capital in different types of livelihood patterns

CAPITAL TYPE	YEANON-TRAV	CONCURRENT	COMBINED	EXCLUSIVE
	R	EL	TRAVEL	TRAVEL
NATURAL CAPITAL	2006	0.0136	0.0271	0.0208
	2019	0.0120	0.0332	0.0186
	sig	0.0880	0.4180	0.0414*
HUMAN CAPITAL	2006	0.0230	0.0161	0.0070
	2019	0.0264	0.0207	0.0139
	sig	0.1210	0.1630	0.1670
PHYSICAL CAPITAL	2006	0.0176	0.0145	0.0189
	2019	0.0547	0.0382	0.0417
	sig	0.0000**	0.0270**	0.0510
FINANCIAL	2006	0.0101	0.0064	0.0069
				0.0087

CAPITAL	2019	0.0408	0.0403	0.0503	0.0385
	sig	0.0000**	0.0000**	0.0180*	0.3280
SOCIAL CAPITAL	2006	0.0164	0.0186	0.0380	0.0406
	2019	0.0641	0.0647	0.0838	0.1878
INSTITUTIONAL CAPITAL	sig	0.0010**	0.0200**	0.0280**	0.1060
	2006	0.0014	0.0000	0.0097	0.1163
TOTAL CAPITAL	2019	0.0522	0.1423	0.1499	0.1597
	sig	0.0270**	0.0010**	0.0770	-
TOTAL CAPITAL	2006	0.0821	0.0826	0.1013	0.2341
	2019	0.2502	0.3394	0.3582	0.4810
	sig	0.0000**	0.0020**	0.0360*	0.0050*

* Significant on 0.05, ** Significant on 0.01

3.3 The Difference of Community Livelihood Capital in Different Livelihood Patterns

Livelihood capital is the most important guarantee for farmers to resist risks and reduce their livelihood vulnerability. It can accurately describe the livelihood capacity of farmers. One-way Anova was used to analyze the livelihood capital of four livelihood patterns in Puzhehei scenic spot in 2019.

Natural capital (0.211), human capital (0.612), financial capital (0.614), $F > 0.05$, physical capital (0.028), social capital (0.020), policy capital (0.012), $F < 0.05$, shows that there is no significant difference in natural capital, human capital and financial capital, but a significant difference in material capital, social capital and policy capital. Further analysis of physical capital shows no significant difference between non-tourist and combined travel communities. Those two livelihood patterns have a substantial difference with concurrent travel community and exclusive travel community. The further analysis of social capital shows that there is no significant difference among the non-tourist community, concurrent travel community, and combined travel community. Still, there is a considerable difference with the exclusive travel community. The social capital of the exclusive travel community is superior to the other three kinds of community. Further analysis of policy capital shows a significant difference between the non-tourist community and concurrent travel community, combined travel community, and exclusive travel community. There is no significant difference among the three types of community, the policy capital of the non-tourism community is lower than that of the other three types of the tourism community. Based on the analysis of the total capital, there are significant differences between the non-tourist community and the other three communities. The total capital of the non-tourist community is smaller than that of the other three community's shows that tourism business activities can promote the total amount of livelihood capital.

3.4 Livelihood Stability

The stability of livelihood refers to the abrupt change of livelihood pattern, which is not easily affected by risk. It is the guarantee for farmers to maintain the current state. In 2006, the average value of the livelihood diversification index was 1.40. The farmers with the highest level of livelihood diversification were engaged in three kinds of livelihood activities: planting, breeding, and going out for work. In 2019, the average value of the livelihood diversification index was 1.74, concurrent travel community >combined travel community >non-travel community >exclusive travel community. The concurrent travel community and the combined travel community's farmers engaged in four kinds of livelihood activities: planting, breeding, going out to work, and tourism. Overall livelihood stability increased between 2006 and 2019.

The trend of community livelihood diversity index is different for different livelihood patterns. The Livelihood Diversity Index of the non-tourist community was 1.43 before scenic spot development and 1.69 after, with an increase of 0.27. After paired sample T-test, $\text{sig} = 0.000 < 0.05$, the livelihood stability increased obviously. However, due to the small variety of agricultural activities and non-participation in tourism activities, the increase in livelihood stability is less than that of concurrent travel and combined travel communities. The index of livelihood diversification of the concurrent travel community was 1.35 before scenic spot development and 1.83 after development, with an increase of 0.48 and $\text{sig} = 0.000 < 0.05$. The index of livelihood diversification of combined travel community was 1.36 before scenic spot development and 1.95 after development, with an increase of 0.59 and $\text{sig} = 0.011 < 0.05$. These two types of communities, while maintaining their pre-livelihood activities, carry out tourism projects including boating, horse-drawn carriage, and management, resulting in a significantly more significant increase in the index of diversification than non-tourist communities. The exclusive travel community's livelihood diversification index is 1.32 before scenic spot development and 1.28 after development. The decrease is 0.06, the $\text{sig} = 0.105 > 0.05$, the stability of livelihood decreases slightly, due to the residents of the exclusive travel community from planting, breeding, migrant workers, and other means of livelihood to include hotels, hotels, such as single tourism management, resulting in a decline in risk tolerance (Fig 3).

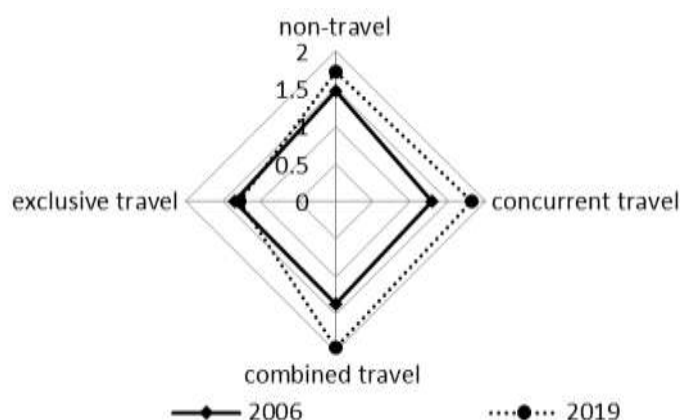


Fig 3: Comparison of community livelihood diversity in different types of livelihood patterns

3.5 Livelihood Functionality

Since the quality of life is affected by income, this paper represents the function of farmers' income. The higher the income level is, the better the effect of the position of livelihood is. In 2006, most non-tourist communities were located in the low-low, middle-low, low-middle area of livelihood diversity and income level. The livelihood functionality is not ideal, and there is a need to increase both the diversity of livelihoods and the level of income. Livelihoods were more functional in 2019 than in 2006. The non-tourist community is located in the low-middle, middle-low area of livelihood diversity and income level. The concurrent and combined travel communities are located in the middle-middle area of livelihood diversity and income level. The exclusive travel community is located in the low-high area of livelihood diversity and income level. The function of the livelihood of the concurrent travel and combined travel communities is relatively ideal. The development of the pattern of livelihood and income level is balanced. The function of the livelihood of the non-travel and the exclusive travel communities is not ideal. The non-travel type community needs to increase its income, and the exclusive travel type community needs to increase its diversity of livelihood. At present, there is no ideal high-state community (Fig 4).

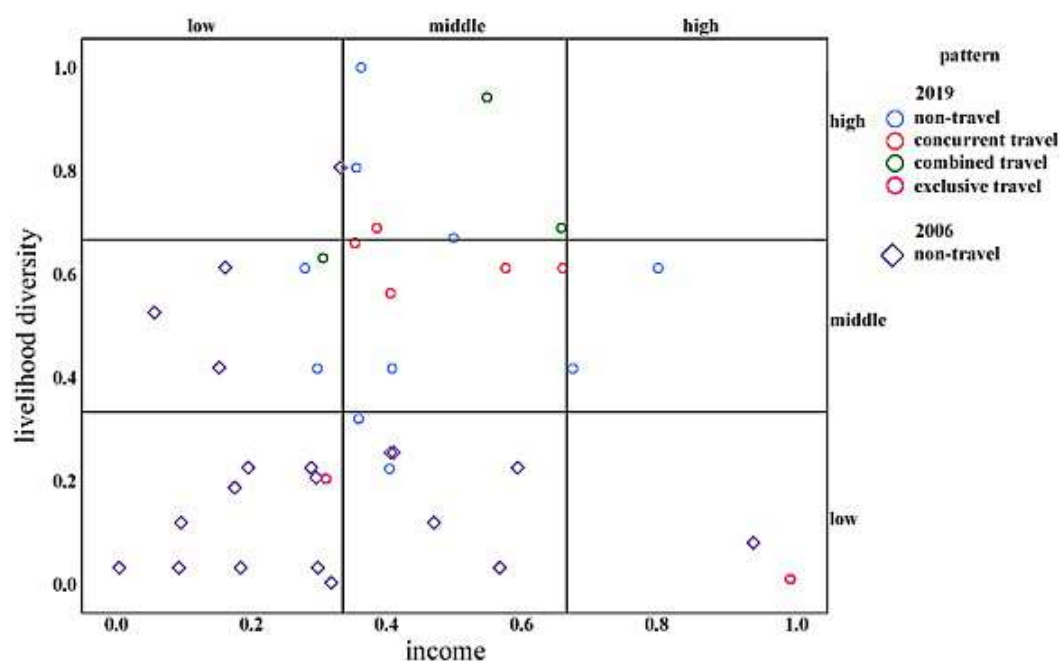


Fig 4: Functional community livelihood matrixes for different types of livelihood models

3.6 Analysis on Geographical Factors of Community Livelihood Pattern Differentiation

Human activities are ultimately attributed to the role of geographical factors, geographical factors, and livelihood model to explore the relationship between explanatory factors is crucial. RDA1 and RDA2 accounted for 87.94%, 67.44%, and 20.49% for the first and second weight axes. Using the replacement test method in Monte Carto, this paper examines the significance of geographic factors in the interpretation of livelihood patterns. The distance from the entrance to the scenic spot is very significant in understanding community livelihood patterns. The distance from the nearest scenic area is effective in the interpretation of community livelihood patterns. Other factors were weak but powerful.

The RDA sorting diagram can visually describe and reflect the impact of geographical factors on the interpretation and degree of impact. The vector length of the impact factor in Fig. 5 indicates the degree of correlation between the impact factor and the explanatory variable. The longer the vector, the greater the correlation, and vice versa. The angle between the two influence factors is related to the direction of change. There is no correlation at a right angle when the hook is acute, and there is a negative correlation at an obtuse angle. The distance from the entrance of the scenic spot, the distance from the nearest picturesque location, the slope, and the explanatory factors of the livelihood pattern are more correlated. The distance from the entrance to the scenic spot, the distance from the nearest scenic spot, the gradient,

and the vegetation coverage rate were positively correlated with agricultural-oriented peasant households. With the increase of the distance from the entrance to the scenic spot, the distance from the nearest scenic spot, the vegetation coverage rate, and the slope, the probability of the agricultural oriented peasant household increased, and the likelihood of the community developing into the non-tourist community increased. There was a positive correlation between labor-oriented peasants' homes and nature reserves' location, elevation, and vegetation coverage. With the increase of vegetation coverage and slope gradient, the probability of labor-oriented peasant households increases. When the peasant households are located in the core area of the nature reserve, agricultural planting and tourism management are limited, and migrant workers become the only choice, there is a greater chance of developing into a non-tourist community. The semi- labor and semi-agricultural peasant households are located between the agricultural oriented peasant households and the labor-oriented peasant households, which are positively correlated with the distance from the entrance to the scenic spot, the distance of the nearest scenic spot, the location of the nature reserve, the altitude, the slope, and the vegetation coverage. The type of tourism-oriented peasant household is very similar to the kind of combined travel peasant household. It is positively related to the distance of the entrance of the scenic spot, the length of the nearest scenic area, the location of the nature reserve, the altitude, the slope, and the vegetation coverage. The distance from the gate of the scenic spot, the distance from the nearest scenic spot, and the gradient are more relevant. The closer to the entrance of the scenic spot and the closest scenic spot, the flatter the slope has a greater chance to develop into a tourist-oriented and combined travel peasant household, the more excellent the opportunity to the exclusive travel community.

The distance from the entrance to the scenic spot and the distance from the nearest scenic spot can be seen as the main geographical driving factors of the differences of community livelihood patterns, and the slope, vegetation coverage, the location of the nature reserve, and altitude are the secondary factors. The closer to the entrance to the scenic spot and the nearest scenic spot, the flatter the slope, the more tourism-oriented and combined travel peasant households, the more likely it is to develop into the exclusive travel community. The farther away from the entrance of the scenic spot and the nearest scenic spot, the closer it is to the core area of the nature reserve, the higher the slope and the higher the altitude, the higher probability of the agricultural oriented peasant household, the labor-oriented peasant households, and the semi- labor and semi-agricultural peasant household (Table III and Fig 5).

TABLE III. RDA analysis of livelihood pattern and influencing factors

FACTOR	RDA1	RDA2	RDA3	RDA4	RDA5	F	P
DISTANCE FROM THE ENTRANCE TO THE SCENIC SPOT	0.0055	-0.011	-0.015	0.012	0.026	10.504	0.001
	1	7			0		0
DISTANCE FROM THE NEAREST SCENIC SPOT	0.022	0.029	0.072	0.000	0.017	43.136	0.026

THE LOCATION OF THE NATURE RESERVE	0.21470.26390.1284 ^{-0.326} ₀ 0.29090.4303 ^{0.781} ₀
SLOPE	0.0196 ^{-0.063} ₅ ^{-0.034} ₇ ^{-0.024} ₈ ^{-0.090} ₂ 0.9775 ^{0.373} ₀
ALTITUDE	-0.592 ^{-3.990} ₉ ^{-0.477} ₇ ^{-0.183} ₉ ^{-0.183} ₂ 1.4405 ^{0.217} ₀
VEGETATION COVERAGE	0.67180.8296 ^{-4.078} ₆ 0.8156 ^{-5.410} ₉ 0.6514 ^{0.607} ₀

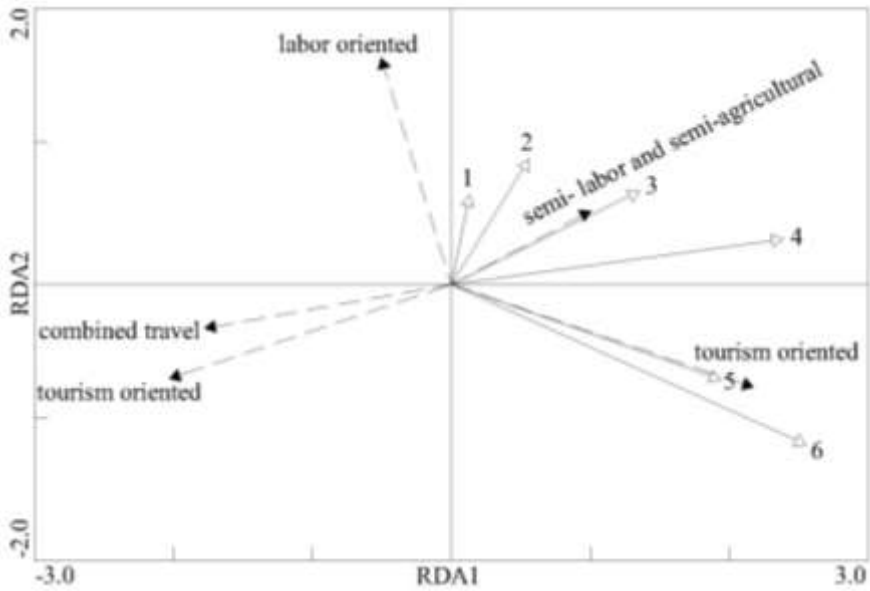


Fig 5: Redundancy analyses of livelihood model explanatory factors and geographical factors
1: the location of the nature reserve, 2: altitude, 3: vegetation coverage, 4: distance from the nearest scenic spot, 5: slope, 6: distance from the entrance to the scenic spot

IV. DISSCUSSION AND CONCLUSION

4.1 Discussion

The differentiation of the livelihood pattern of Yunnan Puzhehei National 5A tourist scenic spot reflects the problem of the transformation of the traditional livelihood model driven by tourism in southwest mountain areas. It is found that both livelihood stability, livelihood function, and livelihood capital have been improved, which validates the conclusion that scenic spot can promote the development of livelihood of surrounding communities and is beneficial to the accumulation and

promotion of livelihood capital [27]. In the process of livelihood transformation, peasant households can fully play the prominent role and participate in the development of tourism, using local resources and their assets to seek a reasonable livelihood pattern, the resulting tourism industry is sustainable, the improvement in living conditions is sustainable, and the differentiated livelihood pattern is a sustainable livelihood model, such a livelihood pattern is of practical significance to promote the coordinated development of rural economy, society and ecological environment and increase the income of poverty-stricken households.

Which of the four livelihood patterns is most suitable for the development of the southwest mountain community? From the perspective of livelihood capital, the three new tourism livelihood patterns have more advantages than the traditional non-tourism livelihood pattern, which is in line with the conclusion that the overall level of tourism-based livelihood pattern is better than that of non-tourism livelihood pattern [28]. From the perspective of livelihood stability and function, the livelihood stability of the concurrent travel and combined travel pattern community is higher than that of the non-travel pattern community and higher than that of the exclusive travel pattern community, the living function of the pattern of both concurrent travel and combined travel pattern community is better than that of non-travel and exclusive travel pattern community which is not consistent with the conclusion that the livelihood stability is positively related to the livelihood capital [29]. The most abundant living capital reserves are advantages of specialized management, have the lowest living stability, and an imbalance of function. In 2020, under the influence of the new crown epidemic, the number of tourists decreased sharply. This had a significant impact on the peasant household of the exclusive travel livelihood pattern. For the peasant households with both concurrent travel and combined travel livelihood pattern, the income of tourism management has decreased dramatically, but they can live utilizing working and farming. The impact on the community in a non-travel way is not apparent. In the face of sudden disasters, livelihood stability shows its importance. How to balance the livelihood stability and specialization of farmers is still the focus of livelihood research.

The government has been highly concerned about the livelihood of rural households, which has invested a large amount of workforce, material and financial resources in improving the living standards of rural households. It is essential to understand how the three new livelihood patterns come into being when it is known that the three new livelihood models positively affect the livelihood of peasant households in southwest mountainous areas. Some scholars believe that the livelihood model depends on the individual's ability to move and develop [30], and this study finds that geographical factors determine the possibility of tourism development, especially in a geographically isolated area such as the southwest mountainous region. The main driving factors of community livelihood pattern differentiation can be seen from a distance between the entrance, and the scenic spot, which is coupled with the rural household's livelihood pattern is linked to the geographical resource condition and spatial location by He

Renwei [31]. As the decisive factor of the differentiation of livelihood patterns, Geographical Environment has been neglected in the static background for a long time. This study validates the conclusion that different livelihood patterns under other geographical conditions are different [32], and geographical location significantly affects livelihood patterns [33], it has particular practical value for formulating a reasonable rural tourism policy.

4.2 Conclusion

The study shows that the differentiation of the livelihood pattern of the Yunnan Puzhehei National 5A tourist scenic spot reflects the problem of the transformation of the traditional livelihood pattern in the southwest mountain areas driven by tourism, and verifies that the scenic spots can cause the development of the livelihood of the surrounding communities, the model of community livelihood is divided into four types: non-travel, concurrent travel, combined travel, and exclusive travel livelihood pattern. From the perspective of livelihood capital, four livelihood models have increased livelihood capital, three new tourism livelihood patterns than the traditional non-tourism livelihood pattern have more advantages. From the perspective of livelihood stability and function, different livelihood models have their advantages and disadvantages. The livelihood stability of the concurrent travel and combined travel livelihood patterns is higher than that of the non-travel and exclusive travel communities. The living function of both concurrent travel and combined travel livelihood patterns is better than that of non-traveling and exclusive travel communities. Geographical factors determine the possibility of tourism development. The distance between the entrance of the scenic spot and the nearest scenic spot can be seen as the main driving factors of community livelihood pattern differentiation. Diversification of the community livelihood model is an inevitable phenomenon in rural revitalization. The government should promote the transition of the livelihood model according to the main driving factors of various livelihood patterns and promote rural economic development.

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