Journal of Tourism Analysis: Revista de Análisis Turístico Vol. nº 29 2, Año 2022

Cómo citar este trabajo: De la Llave, A., Cerón Monroy, H., & Palmas Castrejón, D. Y., (2022). Analysis of the relationship between the establishment of Community Based-Tourism and multidimensional poverty reduction in rural households. *Journal of Tourism Analysis, (29) 2, 2022, 1-40.* https://doi.org/10.53596/jta.v29i2.417

Analysis of the relationship between the establishment of Community Based-Tourism and multidimensional poverty reduction in rural households

Análisis de la relación entre el establecimiento del Turismo de Base Comunitaria y la reducción de la pobreza multidimensional en hogares rurales

Aline Noyola de la Llave[1]
alinnllave@gmail.com
Hazael Cerón Monroy[2]
hazael.ceron@anahuac.mx
Yanelli Daniela Palmas Castrejón[3]
hashir04@hotmail.com

[1] Menéndez Pelayo International University (UIMP)/Ortega y Gasset University Research Institute (IUIOG)
[2] Research Professor at Anahuac University Mexico & Instituto Politécnico Nacional
[3] Facultad de Turismo y Gastronomía. Universidad Autónoma del Estado de México

Abstract

The aim of this document is to analyze the relationship between the establishment of Community Based Tourism (CBT) and multidimensional poverty reduction in rural households in Mexico. For this purpose, a study has been carried out through a sample of rural households at the national level, between the years 2008 and 2018, using a multinomial logit model. The data were obtained from databases of poverty of the National Council for the Evaluation of Social Development Policy, and from databases of the National Household

Recepción: 06.12.2021 Revisión: 02.09.2022 **Aceptación:** 16.09.2022 **Publicación:** 17.12.2022

Income and Expenditure Survey. The findings suggest that the CBT is a tourism governance model that contributes to multidimensional poverty reduction in rural households in Mexico, emphasizing that the greatest effect is shown on multidimensional extreme poverty. Advancing from a condition of multidimensional extreme poverty to one of multidimensional moderate poverty constitutes a titanic change, not only because people can increase their ability to satisfy their basic food needs and their well-being, but also because their conditions of vulnerability are reduced.

Key words: Community Based Tourism; multidimensional poverty reduction, rural households, tourism governance model, multidimensional extreme poverty, well-being.

Resumen

El objetivo de este documento es analizar la relación existente entre el establecimiento del Turismo de Base Comunitaria (TBC) y la reducción de la pobreza multidimensional en los hogares rurales de México. Para ello, se ha realizado un estudio a través de una muestra de hogares rurales a nivel nacional, entre los años 2008 y 2018, utilizando un modelo logit multinomial. Los datos se obtuvieron de las bases de pobreza del Consejo Nacional de Evaluación de la Política de Desarrollo Social y las bases de la Encuesta Nacional de Ingresos y Gastos en los Hogares. Los resultados revelan que el TBC es un modelo de gobernanza del turismo que contribuye a reducir la pobreza multidimensional en hogares rurales de México, haciendo énfasis en que el mayor efecto recae en la pobreza extrema multidimensional. El pasar de una condición de pobreza extrema multidimensional a una de pobreza moderada multidimensional constituye un cambio gigantesco para los hogares rurales, no sólo porque aumentan su posibilidad de satisfacer sus necesidades básicas de alimentación y con ello incrementan su bienestar, sino también porque se reducen sus carencias sociales y sus condiciones de vulnerabilidad.

Palabras clave: Turismo de Base Comunitaria, reducción de la pobreza multidimensional, hogares rurales, modelo de gobernanza del turismo, pobreza extrema multidimensional, bienestar.

1 Introduction

The tourism sector contributes 10.3 % to the global Gross Domestic Product (GDP), and concentrates 10.4 % of total employment worldwide (WTTC, 2020). Therefore, tourism is one of the leading sectors in the global economy, and it helps to generate well-being among the poorest and most marginalized sectors (Ashley & Mitchell, 2009; Scheyvens, 2007; Scheyvens & Russell, 2012). In countries like Mexico, where 43.9 % of the population lives in multidimensional poverty and 8.5 % lives in multidimensional extreme poverty (CONEVAL, 2020), tourism constitutes a path out of these conditions, especially for rural and indigenous communities (Espeso-Molinero et al., 2016). In 2020, 56.8 % of poor people at the national level belonged to the rural and indigenous population (CONEVAL, 2020).

Some forms of tourism, such Community Based Tourism (CBT), are more discussed in the literature when it comes to analyzing the fight against poverty (Gutiérrez-Pérez et al., 2014; Medina-Muñoz et al., 2016, Noyola-de la Llave et al., 2022). The CBT is a tourism governance model that has shown its effectiveness in poverty alleviation (Qian et al., 2017; Zapata et al., 2011) and it is considered as a good alternative to distribute economic benefits among communities (Eom et al., 2020). Basically, it is a sustainable strategy for tourism development (Okazaki, 2008), that produces benefits, as long as it is based on the active participation of local people. It involves working within a network and in a collaborative manner between interested parties (Reggers et al., 2016; Stoddart et al., 2020). It contributes to the rural economic development and the conservation of communal natural resources (Rozemeijer et al., 2001), while empowers communities and improves their sense of community belonging (Knight & Cottrell, 2016).

In Mexico, it has been demonstrated that the establishment of CBT has benefits for the development and well-being of marginalized and indigenous communities (Avila-Foucat & Rodríguez-Robayo, 2018; Taylor, 2017). Tourism is an important economic sector in the country that contributes 8.7 % to the GDP and employing 6 % of the workforce (INEGI, 2019). Despite Mexico is one of the most competitive Latin American tourist destinations (Guaita et al., 2021) and concentrates high levels of tourism (INEGI, 2022), little research has been conducted to analyze the relationship between the different tourism segments and their effects on poverty. The role of tourism in poverty reduction in the region is analyzed by Garza-

Rodriguez (2019), who confirms that for every 1 % increase in international tourism, there is also a growth of 0.46 % in household consumption per capita, therefore poverty decreases. In rural areas of Mexico Avila-Foucat (2002), research the determinants that contribute to the diversification of the rural households involved into wildlife tourism in the State of Oaxaca. She concludes that sustainable indicators such as community organization, ownership of communal land (ejido), social capital and community work (*tequio/faena*), improve local livelihoods. Other studies affirm that these traditional governance systems generate a higher sense of community and encourage the establishment of tourism as a tool of generating economical income in communities, and thus fight against poverty (Avila-Foucat & Rodríguez-Robayo, 2018; Magaloni et al., 2019).

Several recent studies have pointed out the importance of tourism in sustainable development of indigenous and rural communities of developing countries (Espeso-Molinero & Pastor-Alfonso, 2020; Morales et al., 2021; Reyes-Santiago et al., 2022). Others have analyzed the relationship between tourism and poverty reduction (Croes & Rivera, 2017; Fang et al., 2021; Kim et al., 2016; Raza & Shah, 2017), but there are very few studies that examined the multidimensional poverty focus in tourism (Puig-Cabrera & Foronda-Robles, 2020; Scheyvens & Hughes, 2019), and till date in the existing literature no attempt to analyze how tourism governance models, like CBT, reduce poverty in its multidimensional approach, which explores material and social deprivation through nine indicators: i) per capita income, ii) average educational lag in the household, iii) access to health services, iv) access to a social security system, v) number and quality of enclosed spaces in the household, vi) access to basic services in the household, vii) access to nutritious and quality food, viii) degree of social cohesion and ix) accessibility to a paved road (Alkire, 2015; Alkire & Foster, 2009; CONEVAL, 2018).

Therefore, this paper analyzes the relationship between the establishment of CBT and multidimensional poverty reduction in rural households. Studying this link is important to complete the gap already made with the multiple studies of the unidimensional poverty approach and those related with economic growth. This paper not only makes a first step towards filling those gaps in order to provide a conceptual model to analyze the relationship between Community Based Tourism and poverty in its multiple dimensions, but also it is the

first to distinguish among the categories of household poverty: extreme poor household, moderate poor household and non-poor household. This allows future research to undertake a multidimensional treatment of poverty as it links to tourism and its governance models. Furthermore, this approach can help both companies to make more informed decisions that contribute to reducing poverty in developing countries and governments to design and implement effective anti-poverty tourism policies, especially in rural areas.

The research findings highlight the potential of CBT as a sustainable tool of multidimensional poverty alleviation in developing countries and rural households of these regions. The results confirm that extreme poor households that implement the CBT governance model increase its probability to leave from this condition and move to moderate poverty, one category of multidimensional poverty where well-being is improved due to the reduction of social deprivation and the opportunity to have higher income. Moreover, it was found that when a household in moderate poverty engages in the CBT, it is more likely for it to fall into non-poverty than to remain poor. The fight against poverty through tourism and tourism governance models such as CBT requires understanding the different categories of poverty and exploring the Sen's capability approach as a framework to analyze poverty beyond income and relates it to dignity and human opportunities. The paper is divided into six sections including the introduction. In Section 2, we present the literature review. The data and method are explored in Section 3. The main results and the discussion are presented in Section 4 and 5. Lastly, the conclusions are drawn in Section 6.

2 Community Based Tourism

The relationship between tourism and poverty is discussed by several authors (Ashley et al., 2001; Ashley & Mitchell, 2009; Scheyvens, 2007). Essentially, the subject is studied from the Pro-Poor Tourism (PPT) approach, that uses tourism, in any of its forms, as an instrument to poverty reduction (Scheyvens & Russell, 2012). However, it has been demonstrated that CBT achieves a more effective poverty reduction in world tourist destinations (Gutiérrez-Pérez et al., 2014).

CBT is an approach that proposes coexistence between the local community and tourists (Harris, 2009). It is a management model based on community participation (Murphy, 1985; Murphy & Murphy, 2004), that achieves an improvement in livelihoods (Qian et al., 2017) and

provides the opportunity to allocate equal distribution of benefits among community members (Qian et al., 2016). It is also an approach that promotes community tourism development through the conservation of natural and cultural resources (Hiwasaki, 2006), since currently one of the main challenges is to achieve the insertion of sustainability in the community, not only from the local perspective, but also from respect to tourist consumption (Pelegrín et al., 2022; Velázquez-Castro et al., 2020; Merli et al., 2019).

Some authors refer to "sustainable" CBT as the one that must incorporate environmental, social, economic and cultural aspects (Sriyani, 2022; He et al., 2021; Guaita et al., 2019). Other authors mention that the CBT sphere is sustainable from its original conception and planning because it includes strengthening the natural, social, cultural, economic, institutional, and technological communities, so that rural communities can diversify their activities by adopting sustainability in order to lessen or reduce negative impacts on fragile environments (Dendup et al., 2022; Pasanchay & Schott; 2021; García et al., 2021). In this sense, the addition of the word "sustainability" is a pleonasm, therefore an epistemic dialogue in this topic is required.

What has been clear is that in rural areas, where CBT can be developed, tourism contributes to diversify local economies, helps to supplement income; and promotes local development to make proper use of all available resources (natural, cultural, and social) (Mokgalo & van der Merwe, 2022; Knollenberg et al., 2021; Cáceres-Feria et al., 2021; Mayaka et al., 2019). Moreover, tourism governance models contribute to strengthens and competitiveness of tourism destinations (Noyola-de la Llave et al., 2017), which is vital for economic development and for overcoming long-term tourism crises (Guaita et al., 2021). Through income generation, job creation, business start-ups, and a development of infrastructure and basic services generated by tourism, residents of vulnerable regions increase their possibilities of escaping poverty and extreme poverty (Spenceley & Meyer, 2012; Yu et al., 2019); especially if there is an active participation of the community and work is done to empower the poorest people (Zielinski et al., 2020).

Despite the benefits of CBT, this kind of tourism does not always have advantages (Blackstock, 2005; Zapata et al., 2011). The tourism industry is prone to favor those who

actively participate in it and marginalize certain sectors of the community that do not have the same decision-making power (Taylor, 1995). Thus, identifying the impact of CBT on poverty reduction is required to guide tourism policy and to evaluate strategic actions to fight against poverty.

So far, most studies rely on a quantitative approach to explore the relationship between CBT and poverty reduction. Qian et al. (2016), make a comparison between two governance systems in China, based on in-depth interviews and questionnaires at the household level. They identified that CBT has larger economic, ecological, and social benefits than Lease Operation Tourism (LOT). Qian et al. (2017), confirmed these results when they analyzed the livelihoods under the CBT and LOT models. Through the use of scale and indexing methods, fifteen indicators were studied that incorporate several assets: natural, physical, human, social and financial capital. According to their findings, 90 % of the indicators in the CBT model have higher weighted values than the ones in the LOT. Therefore, CBT is a more effective tourism governance model in the fight against poverty. Xiao et al. (2019), use a probit model to analyze the impact of rural coastal tourism on the livelihood strategies of farmers' households in a region in China. They confirmed that the participation of farmers in this tourism niche is very low, so diversification should be encouraged.

In Mexico, there is still no research that relates the concrete effects of CBT on multidimensional poverty reduction. Taylor (2017), studies the implementation of the CBT model in the Ek'Balam project in the Yucatan Peninsula, and she observes the impact on the well-being of indigenous communities. Through her study, she concludes not only that establishment of the CBT decreased the migration of young people, but also increased the number of people dedicated to making handicrafts. This has generated economic growth, maintaining the conservation of cultural heritage. Avila-Foucat & Rodríguez-Robayo (2018), explore the determinants of household diversification in coastal communities in Oaxaca. Through two models, multiple linear regression, and binomial logistic regression, they confirm that determinants of the diversification of a household engaged in wildlife tourism are: (1) the average age of the members of the household, (2) their environmental awareness, (3) the characteristics of the land, (4) the membership or participation of the members of the household in an organization (cooperative) and (5) government transfers. Their research

shows that this tourism governance model contributes to satisfying the basic needs of the communities under study.

In sum, the literature review reveals the lack of studies that explore the relationship between multidimensional poverty and tourism governance models, such as the CBT. Studies promoted from this perspective will help improve decision-making in tourism, and they will guide the establishment of public policies in vulnerable regions and developing countries, such as Mexico.

3 Data and method

The data for this study were obtained from the National Household Income and Expenditure Survey (ENIGH), and from the poverty databases published by the National Council for the Evaluation of Social Development Policy (CONEVAL), an institution created to evaluate social policy and measure poverty in Mexico.

The ENIGH survey contains information on incomes and expenses in Mexican households, as well as the socioeconomic conditions of the population. It is representative in both rural and urban areas, at national and regional levels. In consequence, it is possible to disaggregate the information by region and focus the study at the rural level. The main sociodemographic and economic characteristics of households are obtained from the information provided by the household heads, as they are responsible and, in most cases, they constitute the main economic support of the household (INEGI, 2018b).

On the other hand, the CONEVAL database is used to identify the poverty levels in rural households in Mexico. CONEVAL uses the ENIGH survey and its Socioeconomic Conditions Module (MCS) to estimate multidimensional poverty levels in Mexico, which are published biannually.

The study was carried out using pooled data of rural households at the national level, during the period 2008-2018 obtained specifically from the ENIGH (INEGI, 2018a).

3.1 Econometric model

The methodology consists of a cross-sectional data analysis based on a multinomial logistic regression model (MNLM), whose main objective is to identify the effects of CBT on multidimensional poverty alleviation in rural Mexico, controlled by other variables.

The MNLM are simultaneous binary logit estimates that allow us to predict how individual variables affect the probability of observing a given result (Long & Freese, 2001). The MNLM is used due to the nature of the dependent variable, since it is categorical (3 categories), indeed, it is a simple extension of binary logistic regression. A probit or logit regression model with a dichotomous dependent variable (poor and non-poor) could also have been generated, but the multivariate model is a better method because it allows for more than two categories of the dependent variable (Alayande, 2018). Another alternative method could be discriminant function analysis, nevertheless, this requires three assumptions to be met normality, linearity, and homoscedasticity (Starkweather & Moske, 2011).

The MNLM constitutes the main multivariate approach to study the dynamics of poverty (Baulch & Vu, 2011). The MNLM is a discrete choice model that has been used to analyze and identify the higher returning livelihood strategies in rural households, including tourism, in order to reduce rural poverty in less developed countries (Paudel Khatiwada et al., 2017).

The MNLM does have an important assumption which could be a limitation if it is not met. The model requires independence among the dependent variable categories (Starkweather & Moske, 2011; Fernández-Ramos et al., 2016) which "states that the odds ratio for one category in the MNLM model is independent of the odds ratios for other categories" (Greene, 2003). Therefore, the model can be estimated when the categories can be reasonably dissimilar as is our study. Another limitation that must be solved is multicollinearity among the explanatory variables. Specifically, multicollinearity should be evaluated with simple correlations among these variables (Starkweather & Moske, 2011). The model is attractive because its independent variables can be either dichotomous (i.e., binary) or continuous (i.e., interval or ratio in scale).

In this research, the MNLM is used to empirically analyze the household's main drivers of being multidimensional poor explained by CBT and factors as: (1) whether some paid work associated with tourism is carried out in the household; (2) whether community work is

carried out and (3) whether it is easy to access to support networks in order to make improvements in the locality.

The model considers rural household's multidimensional poverty as a dependent variable classified in three categories: (1) extreme poor (considered as the base category of the model), (2) moderate poor and (3) not poor, according to CONEVAL's classification. Rural communities are localities with less than 2,500 inhabitants (CONEVAL, 2018). CONEVAL developed the multidimensional measurement of poverty based on Amartya Sen's capability's theory and the Multidimensional Poverty Index created by James Foster and Sabina Alkire. CONEVAL defines people in multidimensional poverty as those who have incomes below the poverty threshold by income, and whose social rights are not guaranteed, at least one of them. The population living in poverty is classified in three groups: i) population in extreme poverty, which has an income below the poverty-income threshold, and at least three social deprivations; ii) population in moderate poverty, and iii) the non-poor and non-vulnerable population who does not present social deprivation and has an income above the poverty-income threshold (CONEVAL, 2010). The methodology developed by CONEVAL is appropriate to guarantee a dissimilarity among the categories of the dependent variable.

This analysis constructs the econometric model with the rural household's multidimensional poverty as dependent variable, and CBT and other typical independent variables that are taken from the literature described in Table 1. The studies developed by Flores-Amador et al. (2015), Qian et al. (2016, 2017), Avila-Foucat & Rodríguez-Robayo (2018), Fernández-Ramos et al. (2016), Fierros & Mora (2022), and Cerón & Yúnez-Naude (2015); contributed significantly to support the variables introduced in the model.

The principal explanatory variable CBT is estimated with the interaction of two variables: 1) a dummy that represents whether at least one member of the household works in tourism, and 2) a dummy that represents whether at least one member of the household performs half-hour or more weekly community work in the home. The CBT variable is the product of these two dummy variables previously explained. It takes the value 1 if at least one member of the household works in tourism and simultaneously performs community work, and 0 if

otherwise. In Mexico the CBT is mainly developed in rural localities (Flores-Amador et al., 2015).

To determine if a household can be considered as tourism household (household with at least one member engaged in tourism), the classification of the Tourism Satellite Account of Mexico (CSTM) and International Recommendations for Tourism Statistics of the UNWTO (INEGI, 2013; UNWTO, 2010), were used. These documents present a list of tourism characteristic and related activities.

The information relative to community work and social networks were obtained from ENIGH (INEGI, 2018a). To be considered as a community work/*tequio* or *faena* household, a threshold of half an hour a week of community work is established, because it corresponds to the average at the national level. This variable considers the time spent doing unpaid work, with the aim of transforming the community and maintaining common infrastructures, such as road repair, public works or cleaning rivers and local spaces. Cooperation in society, understood as a capacity to organize and improve the living conditions, is a manifestation of social capital, as well as the degree of associationism and cooperation in the rural environment, that determine the ability of rural households to adopt livelihood strategies other than agricultural activity (Salgado-Nieto, 2019).

The access to social networks variable considers the perception of people about how easy it to acquire support, reciprocity and/or accompaniment to obtain money, work, health care and cooperation to make improvements in the community. In this variable, the opinion of household head is valued, but if he is not available, the one provided by some other family member is considered.

Furthermore, to determine if a household can be considered as an agricultural household (households with at least one member engaged in agricultural activities), the criteria of the North American Industry Classification System (INEGI, 2018c) were used. This document presents a list of agricultural activities.

Following the literature, in the analysis we will include household-level sociodemographic information we account for the sex, age and education level of the household head, as well as the region where the household is located. The regional variables North Region, Northeast

Region, Western Region, Central Region, Gulf Region, Southern Region and Southeast Region, which are the names of socioeconomic regions of Mexico.

The MNLM regression model is as follows.

$$Pr\ (Y_{it} = j) = \Phi(\beta_0 + \beta_1(tourism\ hh_{it}) + \beta_2(community\ work_{it}) + \beta_3(CBT_{it}) + \lambda X_{it} + u_{it})$$

Where:

$CBT_{it} = tourism\ hh_{it} * community\ work_{it}$

X_{it}= vector of control variables in the model (sex, age and education of the household head, access to social networks, agricultural household, and region)

u_{it}= the random error.

$Pr\ (Y_{it} = j)$ represents the probability that the household "i" in the year "t" falls into one of the three poverty categories: extreme poor, moderately poor, and not poor. This probability is explained by a logistic function ($\Phi(*)$), that depends on explanatory variables.

In order to rule out the presence of multicollinearity between explanatory variables, an evaluation with simple correlations was estimated (Starkweather & Moske, 2011). The results are presented in a correlation matrix where all the coefficients are less than 0.6 (see Appendix 1).

The results of MNLM are difficult to interpret, and they are usually accompanied by the marginal effects, that represent the marginal change in the dependent variable that results from a change in the independent variable. In particular, the marginal change is represented by the product of the estimated coefficient with the value of the accumulated density evaluated in the value of interest of the independent variable (Dow & Endersby, 2004).

In order to obtain the marginal effects, it is necessary to estimate a regression model using a base category (Fernández-Ramos, et al., 2016). In this research, results 1 and 3 were the base categories. Therefore, the marginal effects of the three possible outcomes of the dependent variable (extreme poor, moderate poor, and non-poor) were obtained for each of the base categories (extreme poor and non-poor). The STATA.16 software estimates the MNLM and its marginal effects; and provides warnings in case the explanatory variables are collinear.

Table 1. Description of variables

Variable name	Metrics	Literature review
Dependent variable		
Multidimensional poverty	Variable that takes three different values according to the category of poverty: 1 = Extreme poor household (base category) 2 = Moderate poor household 3 = Non-poor household	Garza-Rodriguez et al. (2010) analyze chronic and transitory poverty in Mexico, by categorizing the households into poor and non-poor. Fernandez-Ramos et al. (2016) used the poverty status of the household with four levels in Mexico.
Explanatory variables		
Characteristics of the household head		
Sex of household head	A binary variable that takes the value 1 if the household head is male, and 0 if female.	Most studies use this variable as a control (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Fernández-Ramos et al., 2016; Cerón & Yúnez-Naude, 2015; Garza-Rodriguez et al., 2010).
Age of household head	Age of household head in years.	Most studies use this variable as a control (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Fernández-Ramos et al., 2016; Cerón & Yúnez-Naude, 2015; Garza-Rodriguez et al., 2010).
Education level of household head	Six binary variables with following education levels: 1 = No education. 2= Elementary school incomplete. 3= Elementary school or low middle school incomplete. 4 = Middle school complete or low high school incomplete 5 = High school complete.	Education is an important barrier for the poor to have the possibility to dedicate themselves to tourism (Fierros & Mora, 2022; Mora & Van Gameren, 2021; Adiyia et al., 2017)

	6 = Bachelor school complete or incomplete	
Characteristics of the household		
Tourism household	A binary variable that takes the value 1 if at least one member of the household is engaged in tourism and 0 if none is.	Tourism generates a positive impact on the income of rural and urban households (Njoya & Seetaram, 2018; Núñez et al. 2021). The CSTM uses a methodology that classifies tourism activities under different codes (INEGI, 2018c).
Community work/*tequio* or *faena*	A binary variable that takes the value 1 if at least one member of the household does a minimum half-hour or more weekly community work, and 0 if otherwise.	Community work known as *tequio* or *faena* is an expression of social capital and the participation of household members in community improvements (Avila-Foucat & Rodríguez-Robayo, 2018; Flores-Amador et al., 2015). *Tequio* allows them to solve coordination problems and to sanction those people who refuse to collaborate with activities that promote the well-being of the community (Magaloni et al., 2019).
Community Based Tourism	A binary variable that takes the value 1 if at least one member of the household is engaged in tourism and simultaneously does community work and 0 if otherwise.	The construction of this variable is the contribution of this research. It is the interaction between the variables tourism household and community work.
Access to social networks	A binary variable that takes the value 1 if a member of the household has access to social networks, and 0 if otherwise.	Social networks are phenomena linked to the degree of social cohesion (CONEVAL, 2018). The more access to social networks (close friends and relatives), the lower the poverty of households (Fierros & Avila Foucat, 2017; Barbieri & Mahoney, 2009; Mushongah & Scoones, 2012)
Agricultural household	A binary variable that takes the value 1 if at least one member of the household works in agricultural activities and 0 if none does.	Working in agricultural activities increases the probability to be in poverty (Fierros & Mora, 2022; Cerón & Yúnez-Naude, 2015). The agricultural activities are classified with code 11 of the NAICS, adapted to the household version (INEGI, 2007).

Region	Seven binary variables that take the value 1 if the household is located in the following regions, and 0 if otherwise: 1 = North region: Chihuahua, Coahuila, Nuevo León, Durango, San Luis Potosí, Zacatecas, Aguascalientes. 2 = Northeast region: Baja California, Baja California Sur, Sinaloa, Sonora 3 = Western region: Nayarit, Jalisco, Colima, Michoacán. 4 = Central region: Mexico City, Guanajuato, Hidalgo, Puebla, Querétaro, Estado de México, Morelos, Tlaxcala. 5 = Gulf region: Tamaulipas, Veracruz, Tabasco. 6 = Southern region: Guerrero, Oaxaca, Chiapas. 7 = Southeast region: Campeche, Yucatán, Quintana Roo.	Regional household conditions have a direct impact on poverty levels (Mora & García; 2021; Cerón & Yúnez-Naude, 2015; Taylor et al., 2008).

Source: own elaboration

4 Results

The multinomial logit results whose coefficients can be interpreted as marginal effects (dy/dx) (percentage points) for discrete changes are presented in Table 2. These findings represent the probability that a rural household in Mexico has a condition of extreme multidimensional poverty, moderate multidimensional poverty, or non-poverty, considering explanatory variables and controls specified in Table 1.

Table 2. Results of the estimation of the MNLM

Explanatory variables	Extreme poor household	Moderate poor household	Non-poor household
	dx/dy	dx/dy	dx/dy
Characteristics of the household head			
Sex of household head	0.00412*	-0.000420	-0.00370
Age of household head	-0.00208***	-0.00154***	0.00361***
Education of household head level 2	-0.0779***	-0.0144***	0.0923***
Education of household head level 3	-0.133***	-0.0525***	0.186***
Education of household head level 4	-0.166***	-0.0806***	0.246***
Education of household head level 5	-0.192***	-0.174***	0.367***
Education of household head level 6	-0.213***	-0.309***	0.522***
Characteristics of the household			
Tourism household	-0.111***	-0.0483***	0.159***
Community work	0.0229***	-0.00175	-0.0211***
Community Based Tourism	-0.0413**	-0.00421	0.0455***
Access to social networks	-0.0220***	-0.0229***	0.0449***
Agricultural household	0.0654***	0.0819***	-0.147***
Region 2	-0.0354***	-0.100***	0.136***
Region 3	-0.000874	-0.0243***	0.0252***
Region 4	0.00975***	0.0534***	-0.0631***
Region 5	0.0732***	0.0806***	-0.154***
Region 6	0.174***	0.0921***	-0.266***
Region 7	0.0268***	0.0164***	-0.0432***
Observations	103,148	103,148	103,148

p < 0.01, ** p < 0.05, * p < 0.10.

Source: own elaboration based on ENIGH 2008, 2010, 2012, 2014, 2016 and 2018 data.

4.1 CBT

The results of the multinomial logit model reveal that rural households that implement the CBT governance model increase their probability of belonging to the non-poor category by a 4.5 %, compared to rural households that are not engaged in tourism and do not carry out community work (*tequio* or *faena*). The estimated coefficients also suggest that developing the CBT model reduces the probability of a household of being extremely poor by 4.1 %, compared to households that do not carry out this pro-poor tourism model. These findings show that the CBT improves the economic conditions of rural households, given that moving from extreme poverty, with the greatest level of deprivation, to moderate poverty (where social deprivation is reduced, access to services is improved, and income is higher) or non-poverty constitute a significant change in the well-being of families. Therefore, the results are consistent with the literature that demonstrates that the CBT governance model contributes to the fight against poverty in rural areas and improves local livelihoods (Qian et al., 2017; Taylor, 2017; Zapata et al., 2011).

4.2 Tourism household

Furthermore, the findings suggest that households with at least one member engaged in tourism decrease their probability of being extremely poor by 11.1 %, in comparison to households where none of its members work in the tourism sector. The effect is similar for moderate poverty: if at least one member of the household is engaged in tourism, the probability of the household of being moderately poor decreases by 4.8 %, compared to households where none of its members work in tourism. It is also observed that households where at least one member works in tourism increase their probability of being non-poor by 15.9 %, compared to households that do not work in the tourism sector. These results are consistent with previous research, which reveals that households dedicated to tourism generate higher salaries and they strengthen their livelihood strategies, allowing them to reduce their vulnerability and poverty (Adiyia et al., 2017; Njoya & Seetaram, 2018).

4.3 Community work/*tequio* or *faena*

Households with at least one member performing at least half of hour a week of community work; are 2.2 % more likely to be extremely poor compared to households whose members

do not perform *tequio*-related work. Community work or *tequio* does not have a significant effect on the probability of a household of being moderately poor. In addition, households where at least one its members dedicate at least half an hour a week to community work decrease their probability of being non-poor by 2.1 % compared to households where communal tasks are not performed. This is most probably, when conditions of deprivation are experienced, productive hours are used for subsistence activities and not for tasks related to communal work.

4.4 Easy access to social networks

Rural households that perceive have easy access to social networks decrease their probability of being extremely poor by 2.1 % compared to households that do not perceive such support. This perception of the ease of access to social networks has a similar effect in moderate poverty: the probability of belonging to this category decreases by 2.2 % compared to households that do not perceive that it is it easy to obtain support from their community. Furthermore, the ease of accessing to social networks increases the probability of being non-poor by 4.4 %. The findings coincide with studies that affirm that the easier it is for people to access to social capital, the greater the probability that they escape from poverty (Avila-Foucat & Rodríguez-Robayo, 2018).

4.5 Sex of household head

If the household head is engaged in tourism and he is a male, the probability of the household of being extremely poor is 4.1 % higher than those that have a woman as the head of the family, and she works in tourism. If the head of the family is a male dedicated to tourism, the probability of the household of being non-poor decrease by 6.3 % compared to those households headed by a woman who works in tourism. This is most likely since tourism is a sector that generates many job opportunities for women in developing countries (Croes & Rivera, 2015). Also, it could be due to the existence of public policies whose aim is the empowerment and the increase of well-being of rural women, through the sale of handicrafts, food, souvenirs and through their inclusion in productive projects, where they can generate and distribute a greater income at home (Taylor, 2017).

4.6 Age of household head

The results indicate that for each additional year of the household head, the probability of the household to not belong to any category of multidimensional poverty increases. These results are similar to the findings reporting that having an older household head increases the probability of leaving from chronic poverty in Mexico (Garza-Rodriguez et al., 2010).

4.7 Educational level of the head of the household

The estimates also show that the higher the level of education of household head, the lower the probability for a household to be extremely poor, in comparison with the households whose household head have no education. If the household head has 5 and 6 level education -complete or incomplete-, the probability of the household of falling into extreme poverty decreases by 21.3% and by 19.3%. If the household head has upper level 2 education completed, household's poverty decreases, in comparison to the households whose head does not have any kind of education.

These effects are similar for the moderate poverty category, where it is observed that if the head of the household has completed tertiary education, the probability of being moderately poor decreases by 30.9 % and by 17.4 % if the head of the household has completed upper secondary school, compared to the households whose head have no education.

One of the most important results is observed in the quadrant of non-poor households: if the household has a literate head, its probability of being non-poor decrease is 52.2 %, compared to households whose head do not have any kind of education. These results are consistent with previous studies showing that if the head of a household has completed bachelor's education, the probability of escaping multidimensional poverty significantly increases in rural areas of Mexico (Fernández-Ramos et al., 2016; Garza-Rodriguez et al., 2010).

4.8 Agricultural household

The results also show that for households with at least one member engaged in agricultural activities, their probability of being in extreme poverty increases by 6.5 % compared to households whose members are not employed in the agricultural sector. The fact that at least one member of the household is employed in the agricultural sector increases the probability of being moderately poor by 8.1 % compared to those households that are not

engaged in agricultural activities. The same effect is observed in the non-poor dimension, where performing agricultural work decreases the probability of the household of being non-poor by 14.7 %. This may be due to the fact that agricultural activities are not very efficient, and they are insufficient to subsistence in rural environments (Mora & Cerón, 2015).

4.9 Economic region

The economic region where the household is located has a significant relationship with the probability of being multidimensionally poor. Households located in the Northwest Region decrease their probability of being extremely poor by 3.5 % compared to households in the North Region, while households in the South Region increase their probability of being extremely poor by 17.3 % compared to the North Region. As shown in the results, a household located in the Central Region increases by 0.9 % the probability of being extremely poor and by 5.3 % the probability of being moderately poor compared to households located in the Northern Region. The results also suggest that living in the Yucatan Peninsula increases the probability of being extremely poor by 2.6 % and of being moderately poor by 1.6 % compared to households located in the Northern Region. The evidence also shows that living in the Yucatan Peninsula decreases the probability of being non-poor by 4.3 % with respect to households located in the Northern Region of the country. These findings are in line with information from CONEVAL (2019), which confirms that the greatest challenges to fight against poverty are focused in the south and southeast of the country, regions that present poverty rates between 50 % and 80 %.

5 Discussion

The results of this study suggest that there is a relationship between the CBT governance model and the multidimensional poverty reduction in rural areas. Particularly, this effect is greater for extreme poverty. The data also shows that tourism is a powerful tool that benefits the poor, especially those in the most vulnerable and precarious conditions. In this context, there are several issues to be discussed.

First, one of the major findings of this study is the fact that rural households in extreme poverty that implement a CBT governance model decrease their probability of being extremely poor. This is one of the most severe forms of poverty, and individuals in this

condition are not able to satisfy their basic food needs. Furthermore, they are more vulnerable and prone to suffer the deprivation of political, participatory, civil, and social freedoms (Sen, 2000). These results support the argument that tourism is more valuable for the poor at the lowest levels of economic development (Croes, 2014). It also coincides with the findings of Croes & Rivera (2017), who reveal that the distributive effects of tourism are visible in the income received by households in rural and urban areas, although they observe that the greatest benefit is channeled to the lowest levels of poverty.

Therefore, tourism constitutes an opportunity for people living in extreme poverty not only to achieve the capacity to generate income, but also to escape from a condition of deprivation of their social and human rights.

Second, the CBT variable analyzed in this study reveals that households that implement this form of pro-poor tourism increase their probability of being non-poor. This confirms what was argued by Qian et al. (2017), who show that CBT not only contributes to improving local livelihoods in rural areas in China, but also to rural poverty-fighting policy of the country. The results are also in line with Zapata et al. (2011), who conclude that CBT with bottom-up approach is more effective against poverty than other approaches, and that it is also effective in the seeking of benefits for local economic development. It also coincides with the findings of Taylor (2017), who states that CBT not only contributes to generate income for communities, but also boosts local employment, especially for women in the tourism sector.

Third, the results show that there is a relationship between the CBT variable, i.e., the fact that at least one member of the household is engaged in tourism and simultaneously in community work, and the probability of the household to improve from being moderately poor to non-poor; that is, when a household that is in a situation of moderate poverty engages in the CBT, it is more likely for it to fall into non-poverty rather than to remain poor. In this sense, the literature on CBT has not obtained answers around this specific kind of poverty. However, studies on poverty and tourism show that moderate poverty is less sensitive to the improvement of livelihoods than extreme poverty (Croes & Rivera, 2017). The jump from moderate poverty to non-poverty is less significant in comparison to the giant leap from extreme poverty to lower intensities of poverty. People in extreme poverty require greater capabilities to get out from their deprivation conditions; however, belonging to the group of

people in moderate poverty can be associated with improved livelihoods, since this people have access to food security, they have more opportunities to reach subordinate work opportunities, they perceive income above the welfare line and their social deprivation is lower (CONEVAL, 2013).

Fourth, rural households in extreme and moderate poverty that are engaged in agricultural activities are more likely to remain poor; however, when these households engage in tourism activities, the probability of being extremely and moderately poor decreases significantly. Mora and Cerón (2015), demonstrate that agricultural activity is insufficient for the subsistence of rural households in Mexico; therefore, diversification towards non-agricultural and efficient activities constitutes a path out of poverty. In this regard, the results demonstrate that, unlike agricultural activities, tourism is an escape route from multidimensional poverty for rural households.

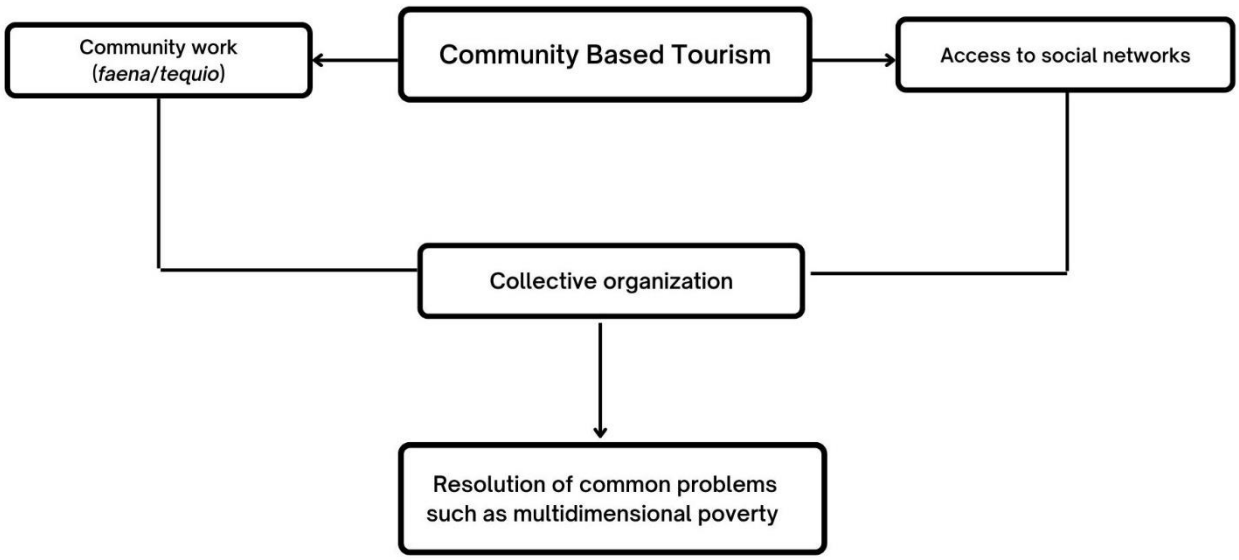
Fifth, our empirical findings are consistent with the ones of Avila-Foucat & Rodríguez-Robayo (2018), who show that factors such as social cohesion, performing community work under the figure of *tequio*, being part of an organization and owning farmland, are related to livelihood diversification and improved well-being. Magaloni et al. (2019), show that traditional governance mechanisms such as *tequio*, allow coordinating communities in activities that promote well-being. These results are also consistent with the findings of Avila-Foucat (2002), who confirms that social cohesion is an important indicator related to sustainable development and that it allows community management of local resources.

In summary, our findings demonstrate that CBT is a sustainable tourism governance model related with improved rural household welfare and multidimensional poverty alleviation, particularly for the poorest and most vulnerable.

Another finding of this study is the conceptual model developed to analyze the relationship between Community Based Tourism and multidimensional poverty reduction in rural households in less developed countries. This model defines CBT as a sustainable governance model (Qian et al., 2017; Qian et al., 2018), which is integrated by traditional governance mechanisms characteristic of Mexican rural communities: community work known as *tequio* or *faena* and access to social networks to obtain cooperation among households. Through the development of capabilities, this collective organization model

enables communities to solve common problems such as multidimensional poverty that not only considers income lines; but also, other dimensions that affect human well-being. Figure 1 presents this conceptual model, which could be applied in different developing regions such as Latin America and Asia, where income generating activities require community cooperation and social organizations among households (Modrego & Berdegué, 2015). These forms of organization are transferred to tourism which is an income generating activity, resulting in the CBT; and CBT helps to reduce poverty in different dimensions.

Figure 1. Conceptual model to analyze the relationship between Community Based Tourism and multidimensional poverty reduction



Source: own elaboration

6 Conclusions

This study provides a conceptual model to analyze the relationship between Community Based Tourism and poverty in its multiple dimensions by showing, on the one hand, the strong empirical relationship between establishing the CBT governance model and the probability that rural households who live in multidimensional poverty can escape from this condition, especially poor people who live on multidimensional extreme poverty situations, on the other, a new way to analyze and measured the effects of tourism and its governance models in poverty alleviation and sustainable development in rural areas of developing countries. The evidence of this study suggest that income is not enough to understand and

eradicate poverty, consequently, we propose that theoretical and empirical studies dealing with this issue should attempt to analyze the multidimensional nature of poverty where multiple categories affect community development and well-being, conceived as the freedom of people to live a dignified, fulfilling life with opportunities to achieve their valued states. Thus, the multidimensional approach of poverty on tourism literature should consider income, access to quality food, health services, education, social security, basic services in the household, degree of social cohesion, accessibility to a paved road and other dimensions that could be incorporated into poverty measurements.

The evidence found in this study indicates that establishing the CBT governance model is related to an increase in the probability that people who live in multidimensional extreme poverty can escape from this condition, which is one of the most severe forms of poverty; this fact indicates that they can move into the multidimensional moderate poverty category, which not only increases access to social development rights (such as adequate and nutritious food, health, education, and the right to decent housing), but also increases the probability to generate an income above the poverty threshold by income in rural areas. Considering one of the major dilemmas of poverty and its link to tourism is the difficulty for the extreme poor to gain direct benefits from tourism (Scheyvens & Hughes, 2019), the evidence of this paper must be regarded as an achievement to improve tourism studies and its role as a sustainable tool, to fight against multidimensional poverty.

Our data shows that the fact that a member of the household is engaged in tourism is associated with an increase in the probability of rural households to escape from multidimensional extreme and moderate poverty. This supports previous research findings on the importance of tourism as a tool for community sustainable development and of well-being for communities. Specifically, evidence from this study shows that CBT is an effective sustainable tool of poverty reduction in rural households of developing countries which concentrate high levels of multidimensional poverty and multidimensional extreme poverty. The positive relationship between the two phenomena is possible because tourism provides opportunities to live a life of freedom that goes beyond income, under conditions of a well-developed governance model.

This research provides unprecedented information that can help in the company decisions and the design of national, regional and local public policies on multidimensional poverty and tourism, and in its monitoring. This is important because having the population classified according to categories of poverty makes it possible to have differentiated tourism policy instruments that serve society according to the depth of poverty. This information also contributes to ensure that decision-making in the tourism sector includes a social and human rights approach, by providing poverty estimates that incorporate these dimensions.

The study expands theoretical and methodological knowledge of CBT and its effects on the welfare of rural communities. Theoretical knowledge is improved because this research provides a conceptual model to analyze the relationship between implementing CBT and poverty reduction. This model can be tested in future research through a more in-depth literature review about sustainable tourism governance models and poverty in its multiple dimensions. In this sense, we could observe that governance mechanisms such as cooperation and coordination through the *tequio* or *faena*, the ease of access to cooperation networks in the community, and participation in the improvement of communal aspects associated with tourism, are components of the CBT that play an important role in the fight against multidimensional poverty. In terms of methodological contributions, the study uses an econometric model that considers the different categories of multidimensional poverty and its link with the CBT governance model. Thus, it set a precedent to boost more complex research, supported by other types of models and other databases, to strengthen future results.

Although one of the limitations of this article is that the findings only allow us to analyze the relationship between the implementation of the CBT and the multidimensional poverty reductions in rural households in Mexico from 2008 to 2018, the literature consulted allows us to reinforce the data and generate more robust arguments around the empirical results. We consider that these findings open a debate about a topic that should be analyzed in depth through quantitative and, above all, qualitative analyses that could give accurate results about the perception of poverty in the communities that implement the CBT.

Another limitation was, that we could not analyze the model at the regional level, because the databases used in this study were not designed to analyze tourism and, therefore, when reproducing the model at the local level, the number of observations is significantly reduced. Therefore, we must emphasize on the need of develop databases that give us more data about the contributions of the tourism sector to rural and urban well-being.

7 References

Adiyia, B., Vanneste, D., & Van Rompaey, A. (2017). The poverty alleviation potential of tourism employment as an off-farm activity on the local livelihoods surrounding Kibale National Park, western Uganda. *Tourism and Hospitality Research,* 17(1), 34–51. https://doi.org/10.1177/1467358416634156

Alayande, S. A. (2018). The application of multinomial regression analysis to heritage tourism. *African Journal of Hospitality, Tourism and Leisure,* 7(3), 1–14. https://bit.ly/3xQctf7

Alkire, S., & Foster, J. (2009). Counting and Multidimensional Poverty Measurement. In *OPHI Working Paper Series* 32, Oxford University.

Alkire, S. (2015). Capability Approach and Well-being Measurement for Public Policy. In *OPHI Working Paper Series* 94, Oxford University.

Ashley, C., Boyd, C., & Goodwin, H. (2000). Pro-poor tourism: Putting poverty at the heart of the tourism agenda. *Natural Resource Perspectives*, 51, 1-6. No. 51). https://bit.ly/2Z2Wwlp

Ashley, C., Roe, D., & Goodwin, H. (2001). *Poor tourism strategies: Making tourism work for the poor. A review of experience* (Pro-Poor Tourism Report No. 1) The Russell Press. https://bit.ly/ 3d0Rdev

Ashley, C., & Mitchell, J. (2009). *Tourism and Poverty Reduction Pathways to Prosperity*. Routledge.

Avila-Foucat, V. S. (2002). Community-based ecotourism management moving towards sustainability, in Ventanilla, Oaxaca, Mexico. *Ocean & Coastal Management,* 45, (8) 511–529. https://doi.org/10.1016/S0964-5691(02)00083-2

Avila-Foucat, V. S., & Rodríguez-Robayo, K. J. (2018). Determinants of livelihood diversification: The case wildlife tourism in four coastal communities in Oaxaca, Mexico. *Tourism Management*, 69, 223–231. https://doi.org/10.1016/j.tourman.2018.06.021

Barbieri, C. & Mahoney, E. (2009). Why is Diversification an Attractive Farm Adjustment Strategy? Insights from Texas Farmers and Ranchers. *Journal of Rural Studies*, 25(1), 58-66. https://doi.org/10.1016/j.jrurstud.2008.06.001

Baulch, B. and Vu, H.D. (2011). Poverty dynamics in Vietnam, 2002 to 2006. In Baulch, B. (Ed.). *Why Poverty Persists: Poverty Dynamics in Asia and Africa*. (pp. 219-254). Edward Elgar Press, Cheltenham.

Blackstock, K. (2005). A critical look at community based tourism. *Community Development Journal*, 40 (1), 39–49. https://doi.org/10.1093/cdj/bsi005

Cáceres-Feria, R., Hernández-Ramírez, M., & Ruiz-Ballesteros, E. (2021). Depopulation, community-based tourism, and community resilience in southwest Spain. *Journal of Rural Studies*, 88, 108-116. https://doi.org/10.1016/j.jrurstud.2021.10.008

Cerón, M. H., & Yúnez-Naude, A. (2015). Diversificación en la economía rural hacia actividades no agropecuarias y sus impactos en pobreza y desigualdad. [Diversification of the rural economy towards non-agricultural activities and their impact on poverty and inequality] In Yúnez-Naude, F. Rivera, MA Chávez, J.J Mora y J.E Taylor (Coords.). *La economía del campo mexicano: tendencias y retos para su desarrollo [The rural economy of Mexico: trends and challenges for its development, México]*, El Colegio de México, Mexico.

CONEVAL. (2010). *Evolución y determinantes de la pobreza de las principales ciudades de México 1990-2010* [Evolution and determinants of poverty in the main cities of Mexico 1990-2010]. Consejo Nacional de Evaluación de la Política de Desarrollo Social [National Council for the Evaluation of Social Development Policy]. https://bit.ly/371WRJA

CONEVAL. (2013). *Caracterización de hogares en pobreza extrema y carencia alimentaria en los municipios definidos por la Cruzada Nacional contra el hambre en 2013* [Characterization of households in extreme poverty and food deprivation in the

municipalities defined by the National Crusade against Hunger in 2013]. Consejo Nacional de Evaluación de la Política de Desarrollo Social [National Council for the Evaluation of Social Development Policy]. https://bit.ly/ 2Nhfhi8

CONEVAL. (2018). *Metodología para la medición multidimensional de la pobreza en México. Tercera edición* [Methodology for the multidimensional measurement of poverty in Mexico. Third edition.] Consejo Nacional de Evaluación de la Política de Desarrollo Social [National Council for the Evaluation of Social Development Policy]. https://bit.ly/ 3pgpwRq

CONEVAL. (2019, August). *10 años de medición de pobreza en México, avances y retos en la política social* [10 years of poverty measurement in Mexico, advances and challenges in social policy]. Comunicado de Prensa No. 10. Consejo Nacional de Evaluación de la Política de Desarrollo Social [National Council for the Evaluation of Social Development Policy]. https://bit.ly/ 3aSPu8i

CONEVAL. (2020). *Medición de la pobreza. Pobreza en México* [Poverty measurement. Poverty in Mexico]. Consejo Nacional de Evaluación de la Política de Desarrollo Social [National Council for the Evaluation of Social Development Policy]. https://bit.ly/31mQCQf

Croes, R., & Vanegas, M. (2008). Cointegration and causality between tourism and poverty reduction. *Journal of Travel Research*, 47(August), 94–103. https://doi.org/10.1177/0047287507312429

Croes, R. (2014). The role of tourism in poverty reduction: An empirical assessment. *Tourism Economics,* 20(2), 207–226. https://doi.org/10.5367/te.2013.0275

Croes, R., & Rivera, M. A. (2015). *Poverty alleviation through tourism development. A comprehensive and integrated approach*. CRC Press.

Croes, R., & Rivera, M. A. (2017). Tourism's potential to benefit the poor: A social accounting matrix model applied to Ecuador. *Tourism Economics*, 23(1), 29–48. https://doi.org/10.5367/te.2015.0495

Dendup, N., Tshering, K., & Choda, J. (2022). Community-Based Tourism as a Strategy for Building Climate Resilience in Bhutan. In *Climate Change and Community Resilience*

(pp. 387-398). Springer, Singapore.

Dow, J. K., & Endersby, J. W. (2004). Multinomial probit and multinomial logit: A comparison of choice models for voting research. *Electoral Studies*, 23 (1), 107–122. https://doi.org/10.1016/S0261-3794(03)00040-4

Edouard, F. (2010). *Gobernanza en la tenencia de la tierra y recursos naturales en América Central* [Governance of land tenure and natural resources in Central America]. Documento de Trabajo Sobre La Tenencia de La Tierra, 18. Organización de las Naciones Unidas para la agricultura y la alimentación. http://bit.ly/ 3jBW32Q

Eom, T., Han, H., & Song, H. J. (2020). Discovering the perceived attributes of CBT destination travelers in South Korea: A mixed method approach. *Tourism Management*, 77(104013). https://doi.org/10.1016/j.tourman.2019.104013

Espeso-Molinero, P., Carlisle, S., & Pastor-Alfonso, M. J. (2016). Knowledge dialogue through Indigenous tourism product design: a collaborative research process with the Lacandon of Chiapas, Mexico. *Journal of Sustainable Tourism*, 24(8–9), 1331–1349. https://doi.org/10.1080/09669582.2016.1193188

Espeso-Molinero, P., & Pastor-Alfonso, M. J. (2020). Governance, community resilience, and indigenous tourism in Nahá, Mexico. *Sustainability (Switzerland)*, *12*(15). https://doi.org/10.3390/su12155973

Fang, J., Gozgor, G., Paramati, S. R., & Wu, W. (2021). The impact of tourism growth on income inequality: Evidence from developing and developed economies. *Tourism Economics*, *27*(8), 1669–1691. https://doi.org/10.1177/1354816620934908

Fernández-Ramos, J., Garcia-Guerra, A. K., Garza-Rodriguez, J., & Morales-Ramirez, G. (2016). The dynamics of poverty transitions in Mexico. *International Journal of Social Economics*, 43(11), 1082–1095. https://doi.org/10.1108/IJSE-04-2015-0084

Fierros, G. I., & Avila-Foucat, V. S. (2017). Medios de vida sustentables y contexto de vulnerabilidad de los hogares rurales de México [Sustainable Livelihoods and Vulnerability in Rural Mexican Households] *Problemas del desarrollo*, 48(191), 107-131. Retrieved from http://probdes.iiec.unam.mx

Fierros, G. I., & Mora, R. J. (2022). Drivers of Livelihood Strategies: Evidence from Mexico's Indigenous Rural Households. *Sustainability*, 14, 7994. https://doi.org/10.3390/su14137994

Flores-Amador, C., Zizumbo Villareal, L., & Cruz Jiménez, G. (2015). Organización comunitaria y turismo en dos comunidades del estado de Hidalgo, México [Community organization and tourism in two communities in the state of Hidalgo, Mexico]. *Teoría y Praxis*, 11(17), 71–101. https://doi.org/10.22403/UQROOMX/TYP17/03

García G., Serrano- Barquín, Palmas, D. & Ramirez- Hernández, O. (2021). Turismo comunitario y patrimonio cultural desde la percepción de los habitantes. Una revisión bibliohemerográfica [Community tourism and cultural heritage from the perception of the inhabitants. A bibliohemerographic review]. *Gran Tour: Revista de Investigaciones Turísticas*, (23), 181-199. Retrieved from http://eutm.es/grantour/index.php/grantour/article/view/213

Garza-Rodriguez, J., Gonzalez-Martinez, M., Solis-Santoyo, L., Quiroga-Lozano, M., & Yarto-Weber, G. (2010). Chronic and transient poverty in Mexico: 2002-2005. *Economics Bulletin*, 30(4), 3188–3200. https://bit.ly/3dgISSF

Garza-Rodriguez, J. (2019). Tourism and poverty reduction in Mexico: An ARDL cointegration approach. *Sustainability*, 11(3), 845. https://doi.org/10.3390/su11030845

Greene, W. (2003). *Econometric Analysis*. Prentice Hall.

Guaita Martínez, J. M., Martín Martín, J. M., Salinas Fernández, J. A., & Mogorrón-Guerrero, H. (2019). An analysis of the stability of rural tourism as a desired condition for sustainable tourism. *Journal of Business Research*, *100*(March), 165–174. https://doi.org/10.1016/j.jbusres.2019.03.033

Guaita Martínez, J. M., Serdeira Azevedo, P., Martín Martín, J. M., & Puertas Medina, R. M. (2021). Key factors in tourism management to improve competitiveness in Latin America. *Academia Revista Latinoamericana de Administración*. https://doi.org/10.1108/ARLA-07-2021-0131

Gutiérrez-Pérez, F. J., Medina-Muñoz, D. R., & Medina-Muñoz, R. D. (2014). Turismo y alivio de la pobreza: una revisión de la literatura académica [Tourism and poverty alleviation:

a review of the academic literature]. *Tourism & Management Studies*, 10(2), 104–115. https://bit.ly/ 372ENit

Harris, R. W. (2009). Tourism in Bario, Sarawak, Malaysia: A case study of pro-poor Community-based Tourism integrated into community development. *Asia Pacific Journal of Tourism Research*, 14(2), 125–135. https://doi.org/10.1080/10941660902847179

Hiwasaki, L. (2006). Community-Based Tourism: A pathway to sustainability for Japan's protected areas. *Society & Natural Resources*, 19(8), 675–692. https://doi.org/10.1080/08941920600801090

He, J., Huang, Z., Mishra, A. R., & Alrasheedi, M. (2021). Developing a new framework for conceptualizing the emerging sustainable community-based tourism using an extended interval-valued Pythagorean fuzzy SWARA-MULTIMOORA. *Technological Forecasting and Social Change*, 171, 120955. https://doi.org/10.1016/j.techfore.2021.120955

INEGI. (2007). ENOE. *Sistema de Clasificación de América del Norte (SCIAN). Versión hogares* [ENOE. North American Classification System (SCIAN). Households version]. Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography]. https://bit.ly/ 2NdA1aE

INEGI. (2013). *Sistema de Cuentas Nacionales de México. Cuenta satélite del turismo de México. Fuentes y metodologías* [System of National Accounts of Mexico. Tourism Satellite Account of Mexico. Sources and methodologies]. Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography]. https://bit.lyl/ 3q96wWc

INEGI. (2018a). *Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH). 2018 Nueva serie.* [National Household Income and Expenditure Survey (ENIGH). 2018 New series]. Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography]. https://bit.ly/2LJ55yK

INEGI. (2018b). *Encuesta Nacional de Ingresos y Gastos de los Hogares 2018. ENIGH. Nueva Serie. Diseño conceptual* [National Household Income and Expenditure Survey 2018.

ENIGH. New Series. Conceptual design]. Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography]. https://bit.ly/ 2Z7KDdK

INEGI. (2018c). *Sistema de Clasificación Industrial de América del Norte 2018 (SCIAN 2018).* [North American Industry Classification System 2018 (NAICS 2018)]. Instituto Nacional de Estadística y Geografía [National Institute of Statistics and Geography]. https://bit.ly/ 2Z2BPG8

INEGI. (2019). *Banco de Información Económica* [Economic Information Bank]. https://bit.ly/ 3jEenZ9

INEGI. (2022). *Encuestas de Viajeros Internacionales 2022, Encuesta de Viajeros Fronterizos, datos al mes de marzo.* [International Traveler Surveys 2022, Border Traveler Survey, march data]. https://bit.ly/3Ar0N61

Kim, N., Song, H., & Pyun, J. H. (2016). The relationship among tourism, poverty, and economic development in developing countries: A panel data regression analysis. *Tourism Economics*, *22*(6), 1174–1190. https://doi.org/10.1177/1354816616669038

Knollenberg, W., Arroyo, C. G., Barbieri, C., & Boys, K. (2021). Craft beverage tourism development: The contributions of social capital. *Journal of Destination Marketing & Management*, 20, 100599. https://doi.org/10.1016/j.jdmm.2021.100599

Knight, D. W., & Cottrell, S. P. (2016). Evaluating tourism-linked empowerment in Cuzco, Peru. *Annals of Tourism Research*, 56, 32–47. https://doi.org/10.1016/j.annals.2015.11.007

Long, S. J., & Freese, J. (2001). *Regression models for categorical dependent variables using Stata*. Stata Press Publication.

Magaloni, B., Díaz-Cayeros, A., & Ruiz Euler, A. (2019). Public good provision and traditional governance in indigenous communities in Oaxaca, Mexico. *Comparative Political Studies*, 52(12), 1841–1880. https://doi.org/10.1177/0010414019857094

Martínez, J. M. G., Martín, J. M. M. M., Fernández, J. A. S., & Mogorrón-Guerrero, H. (2019). An analysis of the stability of rural tourism as a desired condition for sustainable tourism. *Journal of Business Research*, 100, 165-174. https://doi.org/10.1016/j.jbusres.2019.03.033

Mayaka, M., Croy, W. G., & Cox, J. W. (2018). Participation as motif in community-based tourism: a practice perspective. *Journal of Sustainable Tourism*, 26(3), 416–432. https://doi.org/10.1080/09669582.2017.1359278

Mayaka, M., Croy, W. G., & Cox, J. W. (2019). A dimensional approach to community-based tourism: Recognising and differentiating form and context. *Annals of Tourism Research*, 74, 177–190. https://doi.org/10.1016/j.annals.2018.12.002

Medina-Muñoz, D. R., Medina-Muñoz, R. D., & Gutiérrez-Pérez, F. J. (2016). The impacts of tourism on poverty alleviation: an integrated research framework. *Journal of Sustainable Tourism*, 24(2), 270–298. https://doi.org/10.1080/09669582.2015.1049611

Merli, R., Preziosi, M., Acampora, A., & Ali, F. (2019). Why should hotels go green? Insights from guests experience in green hotels. *International Journal of Hospitality Management*, 81, 169-179. DOI: https://doi.org/doi:10.1016/j.ijhm.2019.04.022

Modrego, F., & Berdegué, J. A. (2015). A Large-Scale Mapping of Territorial Development Dynamics in Latin America. *World Development*, *73*, 11–31. https://doi.org/10.1016/j.worlddev.2014.12.015

Mora, J.J., & Cerón, M.H. (2015). Diversificación de ingresos en el sector rural y su impacto en la eficiencia: evidencia para México. [Income diversification in the rural sector and its impact on efficiency: evidence from Mexico]. Cuadernos de Desarrollo Rural, 12(76), 57. https://doi.org/10.11144/Javeriana.cdr12-76.disr

Mora, R. J., & García, M. F. (2021). Internet access and poverty reduction: Evidence from rural and urban Mexico. *Telecommunications Policy*, 45(2), 102076. https://doi.org/10.1016/j.telpol.2020.102076

Mora, R. J. & Van Gameren, E. (2021). The impact of remittances on food insecurity: Evidence from Mexico. World Development, 140, 105349. https://doi.org/10.1016/j.worlddev.2020.105349

Mokgalo, L., & van der Merwe, P. (2022). A revised CBT strategy for Botswana: Reflections from experiences of the ban on trophy hunting. *Cogent Social Sciences*, 8(1), 2081109. https://doi.org/10.1080/23311886.2022.2081109

Morales, A., Calvo, S., Guaita Martínez, J. M., & Martín Martín, J. M. (2021). Hybrid forms of

business: Understanding the development of indigenous social entrepreneurship practices. *Journal of Business Research*, *124*(May 2020), 212–222. https://doi.org/10.1016/j.jbusres.2020.11.060

Murphy, P. E. (1985). *Tourism. A community approach* (1a ed.). Methuen & Co. Ltd.

Murphy, P. E., & Murphy, A. E. (2004). *Strategic management for tourism communities. Bridging the gaps* (C. Cooper, C. M. Hall, & D. Timothy (eds.)). Channel View Publications. *https://doi.org/10.21832/9781873150856*

Mushongah, J., & Scoones, I. (2012). Livelihood change in rural Zimbabwe over 20 years. Journal of Development Studies, 48(9), 1241-1257. https://doi.org/10.1080/00220388.2012.671474

Njoya, E. T., & Seetaram, N. (2018). Tourism contribution to poverty alleviation in Kenya: A dynamic computable general equilibrium analysis. *Journal of Travel Research*, 57(4), 513–524. https://doi.org/10.1177/0047287517700317

Noyola-de la Llave, A., Cerón-Monroy, H., and Magdaleno-Galván, M. (2017). Alternativas de gestión pública para el sector turístico. El caso de Nuevo León, México [Public management alternative for the tourism sector The case of Nuevo León, Mexico]. *Teoría y Praxis*, 13(22), 35–62. https://doi.org/10.22403/UQROOMX/TYP22/02

Noyola-de la Llave, A., Palmas Castrejón, Y. D. y Cerón Monroy, H. (2022). Medición de la pobreza en la literatura turística mexicana [Measuring poverty in mexican tourism literature]. *Investigaciones Turísticas* (24), pp. 126-152. https://doi.org/10.14198/INTURI2022.24.7

Núñez, J. C. G., Fuentes, L. R. R., & Cerón, M. H. (2021). The determinants of tourism expenditure in Mexican households: applying a model of logistic regression. *International Journal of Tourism Policy*, 11(4), 311-334.

Okazaki, E. (2008). A Community-Based Tourism model: Its conception and use. *Journal of Sustainable Tourism*, 16(5), 511. https://doi.org/10.2167/jost782.0

Pasanchay, K., & Schott, C. (2021). Community-based tourism homestays' capacity to advance the Sustainable Development Goals: A holistic sustainable livelihood perspective. *Tourism Management Perspectives*, 37, 100784.

Paudel Khatiwada, S., Deng, W., Paudel, B., Khatiwada, J., Zhang, J., & Su, Y. (2017). Household livelihood strategies and implication for poverty reduction in rural areas of central Nepal. *Sustainability*, 9(4), 612. https://doi.org/10.3390/su9040612

Pelegrín Naranjo, L.; Pelegrín Entenza, N.; Vázquez Pérez, A. An Analysis of Tourism Demand as a Projection from the Destination towards a Sustainable Future: The Case of Trinidad. *Sustainability,* 2022, (14), 5639. https://doi.org/10.3390/ su14095639

Puig-Cabrera, M., & Foronda-Robles, C. (2020). The Phenomenon of Tourism Poverty Trap: Is It Possible that Tourism Breaks the Vicious Circle of Poverty in Emerging Destinations? *Journal of Poverty*, *24*(4), 334–353. https://doi.org/10.1080/10875549.2020.1716916

Qian, C., Sasaki, N., Shivakoti, G., & Zhang, Y. (2016). Effective governance in tourism development – An analysis of local perception in the Huangshan mountain area. *Tourism Management Perspectives*, 20, 112–123. https://doi.org/10.1016/j.tmp.2016.08.003

Qian, C., Sasaki, N., Jourdain, D., Kim, S. M., & Shivakoti, P. G. (2017). Local livelihood under different governances of tourism development in China – A case study of Huangshan mountain area. *Tourism Management*, 61, 221–233. https://doi.org/10.1016/j.tourman.2017.01.006

Raza, S. A., & Shah, N. (2017). Tourism growth and income inequality: does Kuznets Curve hypothesis exist in top tourist arrival countries. *Asia Pacific Journal of Tourism Research*, *22*(8), 874–884. https://doi.org/10.1080/10941665.2017.1343742

Reggers, A., Grabowski, S., Wearing, S. L., Chatterton, P., & Schweinsberg, S. (2016). Exploring outcomes of community-based tourism on the Kokoda Track, Papua New Guinea: a longitudinal study of Participatory Rural Appraisal techniques. *Journal of Sustainable Tourism*, 24(8–9), 1139–1155. https://doi.org/10.1080/09669582.2016.1145229

Reyes-Santiago, M. del R., Méndez-García, E., & Sánchez-Medina, P. S. (2022). A Mixed Methods Study on Community-Based Tourism as an Adaptive Response to Water Crisis in San Andrés Ixtlahuaca, Oaxaca, Mexico. *Sustainability*, 14(10), 5933.

https://doi.org/10.3390/su14105933

Rozemeijer, N., Gujadhur, T., Motshubi, C., van den Berg, E., & Flyman, M. V. (2001). *Community-based tourism in Botswana: The SNV experience in three community-tourism projects.* SNV Botswana. https://doi.org/ 3qasqrP

Salgado-Nieto, U. (2019). Medios de vida en los hogares rurales de México: el impacto de la migración internacional [Livelihoods in rural households in Mexico: the impact of international migration]. *Equidad y Desarrollo*, 1(34), 9–34. https://doi.org/10.19052/eq.vol1.iss34.1

Scheyvens, R. (2007). Exploring the tourism-poverty nexus. *Current Issues in Tourism*, 10(2–3), 231–254. https://doi.org/10.2167/cit318.0

Scheyvens, R., & Russell, M. (2012). Tourism and poverty alleviation in Fiji: comparing the impacts of small- and large-scale tourism enterprises. *Journal of Sustainable Tourism*, 20(3), 417–436. https://doi.org/10.1080/09669582.2011.629049

Scheyvens, R., & Hughes, E. (2019). Can tourism help to "end poverty in all its forms everywhere"? The challenge of tourism addressing SDG1. *Journal of Sustainable Tourism*, *27*(7), 1061–1079. https://doi.org/10.1080/09669582.2018.1551404

Sen, A. (2000). Social exclusion: Concept, application, and scrutiny. *In Social Development Papers. Asian Development Bank*; Social Development Papers, Issue June. https://bit.ly/ 3tNPAXd

Spenceley, A., & Meyer, D. (2012). Tourism and poverty reduction: theory and practice in less economically developed countries. *Journal of Sustainable Tourism*, 20(3), 297–317. https://doi.org/10.1080/09669582.2012.668909

Sriyani, G.T.W. (2022). Impact of Community-Based Tourism Projects' Empowerment on the Adoption of Sustainability Practices by Community Tourism Entrepreneurs in Sri Lanka. *Wayamba Journal of Management*, 13(1), pp.114–141. http://doi.org/10.4038/wjm.v13i1.7555

Starkweather, J., & Moske, AK. (2011). *Multinomial Logistic Regression*. Retrieved from https://it.unt.edu/sites/default/files/mlr_jds_aug2011.pdf

Stoddart, M. C. J., Catano, G., Ramos, H., Vodden, K., Lowery, B., & Butters, L. (2020). Collaboration gaps and regional tourism networks in rural coastal communities. *Journal of Sustainable Tourism*, 28(4), 625–645. https://doi.org/10.1080/09669582.2019.1694526

Taylor, G. (1995). The community approach: does it really work? *Tourism Management*, 16(7), 487–489. https://doi.org/10.1016/0261-5177(95)00078-3

Taylor, J., Adams, R., Mora, R. J. & López, F. A. (2008). Remittances, inequality and poverty: Evidence from rural Mexico. In DeWind, J., & Holdaway, J (Eds). *Migration and development within and across borders: Research and policy perspectives on internal and international migration*. IOM.

Taylor, S. R. (2017). Issues in measuring success in community-based Indigenous tourism: elites, kin groups, social capital, gender dynamics and income flows. *Journal of Sustainable Tourism*, 25(3), 433–449. https://doi.org/10.1080/09669582.2016.1217871

UNWTO. (2010). *International Recommendations for Tourism Statistics 2008* (No. 83; M). World Tourism Organization.https://bit.ly/ 2Z7M4Js

Velázquez-Castro, Judith Alejandra, Cruz-Coria, Erika, Ramírez-Godínez, Juan, & Vargas-Martínez, Elva Esther. (2020). Consumo Sustentable en Turismo: Una aproximación a su estado del conocimiento. [Sustainable consumption in tourism: an approach to its state of knowledge]. *AD-minister,* (37), 57-84. Epub August 20, 2021.https://doi.org/10.17230/ad-minister.37.3

WTTC. (2020). *Economic impact reports*. World Travel & Tourism Council. https://bit.ly/ 3jEIDUT

Xiao, Y., Luo, D. & Yin, K. (2019). Change of farmers' household livelihood strategies based on the coastal rural tourism background. *Journal of Coastal Research*, 83(Special Issue), 225–228. https://doi.org/10.2112/SI83-036.1

Yu, L., Wang, G., & Marcouiller, D. W. (2019). A scientometric review of pro-poor tourism research: Visualization and analysis. *Tourism Management Perspectives*, 30, 75–88. https://doi.org/10.1016/j.tmp.2019.02.005

Zapata, M. J., Hall, C. M., Lindo, P., & Vanderschaeghe, M. (2011). Can community-based tourism contribute to development and poverty alleviation? Lessons from Nicaragua. *Current Issues in Tourism*, 14(8), 725–749. https://doi.org/10.1080/13683500.2011.559200

Zielinski, S., Kim, S., Botero, C., & Yanes, A. (2020). Factors that facilitate and inhibit community-based tourism initiatives in developing countries. *Current Issues in Tourism*, 23(6), 723–739. https://doi.org/10.1080/13683500.2018.1543254

Appendix 1.

Correlation Matrix for explanatory variables included in MNLM

Explanatory Variables	Sex of household head	Age of household head	Education of household head level 2	Education of household head level 3	Education of household head level 4	Education of household head level 5	Education of household head level 6	Tourism household	Community work	Community Based Tourism	Access to social networks	Agricultural household	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
Sex of household head	1																	
Age of household head	-0.138	1																
Education of household head level 2	-0.029	0.281	1															
Education of household head level 3	-0.001	0.016	-0.253	1														
Education of household head level 4	0.020	-0.249	-0.298	-0.322	1													
Education of household head level 5	0.039	-0.167	-0.162	-0.175	-0.205	1												
Education of household head level 6	0.040	-0.106	-0.193	-0.209	-0.245	-0.133	1											
Tourism household	0.022	-0.039	-0.048	0.003	0.050	0.038	-0.011	1										
Community work	0.025	-0.003	0.022	0.011	-0.030	-0.024	0.015	-0.006	1									
Community Based Tourism	0.016	-0.016	-0.019	0.008	0.016	0.011	-0.003	0.500	0.247	1								
Access to social networks	0.020	-0.001	-0.016	0.003	0.004	0.004	0.036	-0.001	0.051	0.012	1							
Agricultural household	0.140	0.055	0.191	0.048	-0.097	-0.110	-0.169	-0.103	0.026	-0.049	0.018	1						
Region 2	-0.007	-0.015	-0.027	-0.003	0.004	0.033	0.031	-0.010	-0.014	-0.008	0.035	-0.041	1					
Region 3	-0.007	0.014	0.021	0.004	-0.021	-0.011	-0.002	0.004	0.017	0.005	0.037	0.027	-0.146	1				
Region 4	-0.013	0.006	-0.043	0.017	0.018	-0.003	0.003	0.012	-0.001	0.006	-0.040	-0.062	-0.230	-0.216	1			
Region 5	-0.007	-0.002	0.015	-0.010	-0.011	0.018	-0.005	-0.008	0.004	-0.003	-0.015	0.011	-0.122	-0.115	-0.181	1		
Region 6	-0.003	0.005	0.046	-0.003	-0.064	-0.014	-0.035	0.001	0.029	0.008	-0.019	0.142	-0.123	-0.116	-0.182	-0.097	1	
Region 7	0.016	-0.036	0.011	-0.023	0.006	0.012	-0.003	0.063	0.008	0.031	-0.034	0.015	-0.124	-0.116	-0.183	-0.098	-0.098	1

Note: All correlations are lower than 0.600.