Bio-based and Applied Economics 8(1): 63-74, 2019
DOI: 10.13128/bae-8146

Full Research Article

Assessing Price Sensitivity of Forest Recreational Tourists in a Mountain Destination

Gianluca Grilli[1,2]

[1] Economic and Social Research Institute, Sir John Rogerson's Quay, D02 Dublin, Ireland
[2] Trinity College Dublin, Dublin, Ireland

Abstract. Despite the large use of the travel cost method as estimation technique for the demand for forest recreation, information on price elasticity is only seldom reported. In this way, it is hard to understand if a large consumer surplus could be reflected in income opportunities for the local populations, because it is unknown whether the number of annual trips will decrease as a consequence of price changes. This is particularly relevant in remote rural areas, where few other opportunities for additional earnings are available. This contribution attempts to fill this gap, estimating price elasticities for two different specifications of the cost for travel; a first specification includes cost for travel only, while the second comprise on-site expenditures (such as food and accommodation). Data were collected by means of a questionnaire survey administrated to a sample of local visitors and analysed with a Poisson model. Results suggest that visitors have different sensitivities to distance travelled and to expenses locally sustained, the first being more elastic.

Keywords. Travel cost, forest recreation, price elasticity, Carpathians, rural development.

JEL codes. C21, D61, Q26.

1. 1. Introduction

A community-based destination may obtain several benefits from the development of an integrated tourism strategy, including the increase in work places, stimulus to local entrepreneurship and income generation (Hearne and Salinas, 2002). The development of nature-based forms of tourism may represent an effective strategy to balance the social, economic and environmental spheres of the sustainability (Bhuiyan *et al.*, 2016).

To understand the strengths and the potentialities of the territory as a tourist destination, decision makers should be aware of the benefits that people obtain from the local resources (Faccioli, 2011; Tempesta and Thiene, 2000). A typical technique used to evaluate recreational benefits is the travel cost model (TCM), which estimates consumer surplus (CS) per trip as a measure of the individual recreational benefit. CS represents

Corresponding author: gianluca.grilli@esri.ie

ISSN 2280-6180 (print)
ISSN 2280-6172 (online)

the difference between what the individual actually pays for the trip and the maximum amount he/she was willing to pay for the same trip. A large CS suggests that the forest-tourism sector (e.g. local hotels and restaurants) and forest managers could increase prices and obtain higher remuneration, because the willingness to pay of the tourists is (on average) larger than the current cost (Hanley and Barbier, 2009). However, this information is not enough to design effective policies, because it does not consider the sensitivity of tourists to price changes, i.e. the price elasticity. When tourists are price-sensitive, higher prices could result in a decrease of the number of annual trips (or shorter trips), with no benefits for the local population (Levin and Milgrom, 2004). In the literature there are plenty of contributions dealing with the estimation of CS for forest recreation but elasticity is rarely estimated, so that the margin for additional earnings is uncertain. Despite recreational benefits have been broadly studied, information on price elasticity for forest-based recreation is rare in the literature. To the best of my knowledge, the paper by Simões *et al.* (2013), which illustrates a case study in Portugal, is the only recent contribution providing the estimation of price elasticity. While this study is interesting for Mediterranean forests, results could be hardly generalized to other areas, for example mountain forests and northern European forests, because they are different in terms of tourists profile and tree species composition.

In this paper, I expand the study of price elasticity for forest-based recreation, using a mountain area as case study and two different specifications of the cost for travel. In the first specification, the travel cost depends only on the distance travelled, while in the second all the self-reported costs sustained for the trip are included. In this way, it is possible to distinguish between sensitivity to distance travelled and to expenses inside the location. Elasticity informs about how price could be used to increase revenues from a single tourist without the risk to decrease the total number of visitors. Therefore, this study is useful not only to raise the question on the importance of elasticity as a policy measure to consider but also for managers and local entrepreneurs to develop an effective management of the destination.

The study area is the Beskid Zywiecki range, a mountainous area in the southern Poland, located in the Silesian Voivodeship. The area is in the Carpathians, the highest mountain chain of the central Europe, comprehending Poland, Ukraine, Romania, Slovakia and the Czech Republic. Understanding the tourists' demand, its elasticity and the benefits that people obtain from visiting the Beskid may contribute in raising the awareness of the role that tourism may play for local development, stimulating an integrated tourism strategy (Mirani and Farahani 2015).

2. Materials and Methods

2.1 The Study Area

Beskid is the traditional name that it is used to identify some portions of the Carpathian Mountains. The Beskid Zywiecki range is a territory of about 60.000 ha of the Silesian region (southern Poland) composed by three forest districts: Jeleśnia, Ujsoły and Węgierska Górka (49°23'42"–49°38'54"N; 18°58'29"–19°27'16"E). The area includes 31,000 ha of Landscape Park, out of which around 30,000 are included in the Natura 2000 net-

work, and the Babia Gora biosphere reserve is included in the UNESCO natural heritage list. Beskid Zywiecki has a vast forested territory, forests represent the main natural ecosystem and tourists use to visit the area for nature-based activities. The main tourists´ activities are trekking, sightseeing and sport practising but surrounding villages include other attractions such as churches and castles (i.e. Żywiec castle and Sucha Beskidzka).

2.2 Data

A questionnaire survey was implemented to collect the necessary information for the TCM. Questionnaires were hand-delivered in some strategic places within the destination (hotels, restaurant and main places of interest) in summertime with the help of local workers and forest managers and collected after one month. The sample is unlikely to be perfectly random, because completing the questionnaire is potentially subject to selection bias. The outcome could be described as convenience sampling, which is a limitation that must be considered when interpreting the results. Nonetheless, data does provide policy-relevant information and insights on the local forest use. The questionnaire is part of a broader research and it was divided in three section: section A contained questions about tourist characteristics, which was used to collect data for the TCM and for general features of the tourists. Section B was designed in order to investigate people´s preferences about a series of environmental issues, including mixed forests and ecosystem services. Section C cellected socio-economic characteristics and it was included at the end of the questionnaire, in order to reduce fatigue effects in compiling the most important questions. The present paper discusses the results of section A, interacted with socio-demographic variables obtained in section C. In order to collect data for the TCM, people were asked to state their place of origin and the distance from the destination. The questionnaire included also questions on the main holiday motivations.

The number of collected questionnaires was 145, out of which 142 were compiled enough to allow the application of the TCM. The size of our sample is small but it is comparable to other studies, as travel cost model estimation is less data demanding compared to stated preference surveys (Champ *et al.*, 2003). As an example, Curtis (2002) surveyed a sample of 118 anglers for a travel cost estimation of salmon angling for the whole Ireland. Englin *et al.* (1997) used a sample of 120 respondents for the estimation of the recreational benefits of four American states (New York, Vermont, Maine and New Hampshire).

Table 1 shows the descriptive statistics of the sample. Surveyed tourists were 55% females and 45% males. Respondents were mostly below 50 years old with a relatively high education, in fact, more than 50% of the sample had at least a bachelor degree. Despite the high level of education, which is usually connected with an income higher than the average, most of the people declared a low-income. This apparent odd result may be due to the fact that most of the people are young, so they are still student or at their first job experience, as the age structure of the sample shows. The mean travel cost for reaching the destination was assessed to be 40.8 PLN, while the average daily expenditure for additional goods and services (i.e. meals, accommodation) 128.5 PLN.

The average number of night overstay derived from the sample has been proved to be 5.5 per trip. Through the questionnaire, it was possible to collect information regarding the main holiday motivation of the tourists visiting Beskid Zywiecki. The questionnaire

Table 1. Socio-demographic characteristics of the respondents.

Category	Profile	N	%	Mean	Median	St. Dev.	Min	Max
	0 -1500	39	29.9					
	1500-2500	42	30					
	2500-3500	20	14.3					
Income (PLN)	3500-4500	19	13.6	2.74	2	1.77	1	7
	4500-5500	6	4.3					
	5500-6500	3	2.1					
	6500+	11	7.9					
	0 - 30	47	33.6					
	30-40	29	20.7					
Age	40-50	33	23.6	2.38	2	1.32	1	5
	50-60	22	15.7					
	60+	9	6.4					
	Primary	9	6.4					
	High sc.	60	42.9					
Education	Bachelor	21	15	2.85	3	1.08	1	5
	Master	43	30.7					
	PhD	7	5.0					
Gender	Male	63	45.0	0.55	1	0.5	0	1
	Female	77	55.0					
Household		140		3.40	3	1.75	0	10

contained a list of six typical holiday motivation in mountain areas (Kozak, 2002) with the possibility to add other options. Two people indicated working as a motivation for their overstay, so they were excluded from the sample. Each respondent could mark more than one motivation. Table 2 shows that the most cited activity is walking in the mountains (59.3 % of the sample), followed by ecotourism and visiting relatives. This result may indicate that the main source of recreation is nature, in particular forests, which are the main natural element, with its biodiversity.

Table 2. Holiday motivation declared by respondents.

Holiday Motivation	Frequency	%
Visiting relatives	30	21.4
Museums	7	5
Walking	83	59.3
Sport practising	15	10.7
Ecotourism	40	13.57
Sightseeing	19	5.7

2.3 The Travel Cost Method

The TCM is an evaluation technique, frequently used to value the recreational benefit of particular site (Herath and Kennedy, 2004; Hill *et al.*, 2014), proposed by Harold Hotelling for the first time in 1947 (H. Hotelling, 1949) and then refined by Clawson and Knetsch (Clawson M. and Knetsch J. L., 1966). The method assumes that the costs sustained by visitors for visiting the site may approximate the value of their recreational experience (Willis and Garrod, 1991). Another basic idea of the method is that people are travel cost-sensitive, meaning that the higher is the cost (and the longer is the dis-

tance travelled) and the smaller is the number of trips they make. The demand function is integrated with socio-economic characteristics and sometimes with environmental and site-specific considerations. The resulting demand curve models the number of trips to the recreational site as a function of the cost sustained for the travel and other characteristics:

$$Y_i = f[(TC_i, I_i, h_i(D_i, V_i, S_i)]$$

Where Y_i is the number of trips of the individual i, TC_i is the cost that the individual i per round-trip, I_i is the individual income while h_i is a vector of visitor-specific characteristics. *h*i may include information about alternative sites (S_i), study site (V_i) and socio-demographic characteristics (D_i). The dependent variables I used in this paper are (1) the number of trips done in the last year and (2) the number of trips in the last 5 years. These take only non-negative values, so count data models are the most common approaches for the analysis (Hellerstein, 1991), in particular the Poisson and negative binomial (NB) regressions.

The theoretical framework for the use of the Poisson model for modelling recreational demand was provided by Hellerstein and Mandelsohn (Hellerstein and Mendelsohn, 1993). The authors state that the choice whether visiting or not a site can be described with a binomial distribution, converging to a Poisson as the number of trips increase. The Poisson distribution for the number of trips y is

$$\Pr[Y=y] = \frac{e^{-\mu} \cdot \mu^{y}}{y!} \quad Y= 1,2,\ldots.n$$

Where μ is the rate parameter. The Poisson distribution can be used in regression by explicating the relation between the mean parameter μ and the vector of *x* regressors. The usual approach is to use an exponential mean parametrization:

$$\mu_i = \exp(x'\beta) \qquad i= 1,2...,n$$

Where x is the matrix of regressors and β the coefficients. The Poisson regression is estimated through the maximum likelihood method, as all generalized linear models. The Poisson model is equi-dispersed, meaning that the mean is equal to the variance. In many cases data are over-dispersed, i.e. the variance is larger than the mean. When data are over-dispersed and the sample is truncated the Poisson model returns inconsistent estimates and a NB model should be used, as it adds an extra parameter controlling for overdispersion. The presence of overdispersion was tested with a log-likelihood ratio test that failed to reject the hypothesis of over-dispersion returning a non-significant p-value. The suitability of the Poisson model for this case was also enforced when a NB model was tested, as the α parameter was not significant. For this reason, the following analyses continued with a Poisson model.

When data are collected on-site, there are two other characteristics of the sample that should be considered, truncation and endogenous stratification, for which both Poisson and Nb models can be corrected (Shaw, 1988). Truncation occurs because people with zero trips are not surveyed. Endogenous stratification is instead related to the higher probability of sampling frequent visitors compared to tourists with only few trips in the

timeframe. Englin and Shonkwiler (1995) showed that a Poisson model can be corrected for both truncation and endogenous stratification simply replacing the response variable *y* with *y-1*. The model was all estimated using STATA 12 (StataCorp 2011). After the estimation of the econometric model, CS and elasticities can be derived. The CS per trip is estimated with the following formula:

$$CS = \frac{-1}{\beta_{tc}}$$

Where β_{tc} is the parameter associated with the travel cost variable. Elasticity of the demand to the cost of travel (e_p) is computed in this way:

$$e_p = \frac{\partial E(\mu)}{\partial X_{tc}} \frac{X_{tc}}{} = \beta_{tc} X_{tc}$$

Where X_{tc} is the travel cost variable and μ the mean of the distribution.

Table 3 describes more in details the variables considered, together with the description and the expected effects. The fuel cost per round-trip was estimated by asking respondents the travelled distance from their starting point to the place where the interview took place. Then the travel distance (in km) was multiplied per a cost per km of 0.4 PLN, which is the average cost per km available in the official statistics. The number of days spent in the destination and socio-economic variables, including gender, education, occupation, income, education and number of people in the household represent the other covariates and were also collected through the questionnaires (section C).

Table 3. List of the explanatory variables used in the travel cost.

Variable	Code	Description	Expected effect*
Tc	PLN/Trip	(Fuel) cost per round-trip	-
Tc_complete	PLN/Trip	Average cost of one day including food, accommodation and other expenses	-
N_days	Integer number	Average Number of days per each trip	-
Income	Classes from 1 to 7	1 represent the poorest class, 7 the reachest	+
Gender	0 1	Male female	-
Age	1 0	Older than 60 Otherwise	+/-
Education	Classes from 1 to 6	1 is elementary education, 6 is for PhD holders	+
household	Integer number	Number of people in the household	+
Employed	1 0	Full-employed Otherwise	-

* Expected relationship between the explanatory variables and the number of individual trips.

3. Results and discussions

The TCM results are summarized in Table 4 and Table 5, showing the econometric model and the welfare analysis, respectively. The cost of travelling towards the destination has a negative sign as expected and it is highly significant (p value lower that 0.001) in all the specified models, indicating that the number of visits decrease as the distance (and related cost) increase. The coefficient for *TC_expense* is also negative.

The number of days of each trip has a negative sign suggesting that people making longer trips have fewer annual visits. Age is also negatively connected with the likelihood of visiting the Zywiec area, so young people contribute more to tourism and recreational activities. The income variable has a positive coefficient, therefore annual visits increases with higher incomes. Income shows a very high significance (1% confidence level), which is not common in TCM studies (Martínez-Espiñeira and Amoako-Tuffour, 2008). The gender variable has a negative sign; since the male tourists were coded as 0 and females as

Table 4. Results of the different Poisson.

	Poisson
Tc	-0.0213***
	(0.00205)
Tc_complete	-0.000460**
	(0.000192)
N_days	-0.0164**
	(0.00769)
Age60more	-0.250**
	(0.119)
Gender	-0.542***
	(0.0929)
Employed	-0.266***
	(0.101)
Education	0.161***
	(0.0519)
Household	0.0630**
	(0.0299)
Income	0.0610***
	(0.0131)
Constant	1.517***
	(0.197)
Observations	142
AIC	974.3
BIC	1003.8
LL	-477.13

Standard errors in parentheses
* *P<0.10* ** p<0.05 *** p<0.01

Table 5. Marginal consumer surplus and elasticity derived from the different models.

Model	Tc	Tc_complete
CS per visit (PLZ)	47	2173
CS per year (PLZ)	216	9996
CS per visit (€)	10	480
CS per year (€)	46	2208
elasticity	-.12	-.90

1, the coefficient states that males are more likely to visit the Beskid Zywiecki range. People in full employment are less likely to visit the study area, maybe because of less availability of time. Personal education is another important variable for describing tourism in the Beskid Zywiecki range, it has a positive and significant coefficient. Tourists seem to be more willing to visit as their education increase. Finally, the household variable has positive relationship with the number of visits, suggesting that larger household are more likely to visit. A possible explanation for this result could be that the Beskid is a destination for families with children.

We now move to the conventional welfare and policy measure, i.e. CS and elasticity, that are calculated from the coefficients of the cost variables. It is important to remember that, in order to extrapolate the welfare measures from truncated models, it has to be assumed that non-visitors have the same demand function as the visitors (Hellerstein, 1991). Welfare measures are summarized in 5. The Polish currency (PLZ) was converted into € using an average exchange rate of 4.50 PLZ per Euro for 2014 (i.e. when the survey was undertaken). The CS per visit using only the cost of travel (labelled 'Tc' in Table 5) is what is typically shown in TCM studies and it is estimated to be 10€ per visit. This result is comparable to other studies. For example, Grilli *et al.* (2014) investigated recreation in mountain areas through a meta-analysis of studies, achieving a mean value of about 11 € per visit and an upper bound of 112€ per visit. The value is also lower than the one found by Getzner in the Tatra Mountains (Getzner, 2010), which represent the most important destination within the Carpathians and therefore with a higher recreational potential. The CS per year is calculated multiplying the CS per one visit by the average number of trips of the sample, which is 4.6 per year.

Calculating CS using the total expenses sustained in the destination is less common in the forest recreation literature while it is more popular in the study of consumptive activities, such as fishing or hunting. This study assessed a CS per visit of about 480€ per day, which is comparable to that of fishing (Curtis, 2002; Curtis and Breen, 2017) and lower than natural park tourism in the United States (Martínez-Espiñeira and Amoako-Tuffour, 2008).

In addition to CS, what is interesting to notice is the elasticity of the demand. The demand appears to be inelastic in the first model (-0.12), suggesting that the number of visit is expected to make only minor variations when the cost for travel (mainly related to fuel) changes. At a practical level an increase of 10% of the average cost for travel would cause an average decrease of 0.05 trips per year. If the cost for travel doubles the number of annual trips decreases by only 0.55 (one trip less every two years).

When *in-situ* expenses are also considered in the computation of the travel cost, the estimated elasticity becomes -.90. According to the conventional definition the demand is still considered inelastic but it is closer to one, which is the conventional threshold for the price elasticity of the demand to become elastic. This means that a 10% increase in the average cost of the trip causes a decrease of trips of 0.8, almost one per year. In the remote case that the average cost of travel doubles, people would do 4 trip less per year, i.e. they would not visit anymore.

3.1 Implications

Although information derived from a convenience sampling should be read with care, this study provides useful information to policy-makers. Mountain villages all over the world are facing problems connected with depopulation and the necessity to assure sources of income for the inhabitants. Valorising the local natural resources for tourism may be an effective strategy to allow additional income generation. Local communities might obtain larger profit from tourism (in terms of expenditures locally sustained for food, accommodation, technical equipment etc…) either increasing the number of annual visitors or increasing average prices. With respect to the first option, the close Silesian district is one of the most populated areas in Poland and represents an interesting basin of potential visitors, which could be reached with more intense marketing activities (Vogt *et al.*, 2018). The recent literature on tourism planning suggests that tourism development is perceived positively by local communities (Coccossis, 2017; Muresan *et al.*, 2016) but raising the number of tourists is likely to increase relevant environmental impacts (Lake *et al.*, 2017; McCombes *et al.*, 2015), therefore visitor management is fundamental to preserve the environment (Gios and Clauser, 2009).

The second option to increase local incomes is to raise local prices. The high CS suggests that visitors would be willing to pay more than current amounts for a single visit because they obtain a large benefit from visiting Beskid Zywiecki. On the other hand, the elastic demand indicates that the number of annual trips could be lower if prices will be too high. Therefore, the net effect of raising prices will be uncertain. Such evidences suggest that there is not a unique strategy to develop the territory and decision makers should obtain as much information as possible to undertake an effective planning.

4. Conclusions

Forest recreation is a valuable activity and the economic relevance should be carefully monitored. In this paper an investigation of recreational values of mountain forests was presented using a case study located in the Polish Carpathians, with a focus on price elasticity because this policy measure is not often considered. A travel cost model based on the Poisson regression has been estimated using two different cost variables, the first capturing only the cost of travel and the second including also the cost for food and accommodation incurred on site. The estimated consumer surplus of 480€ suggested that there is space for local operators to increase prices and revenues, however the estimated price elasticity of -.90 suggests that visitors are sensitive to local expenditures and therefore local prices

should be fixed with care, because they may cause a decrease in the number of annual visitors. There is a trade-off between the number of visitors and the expenditures they sustain in the territory, therefore local managers wishing to obtain higher revenues can hardly increase both and should carefully evaluate their preferred management strategy.

Being aware that a single case study is not enough to draw general conclusions, this study would like to raise the issue and encourage other researchers to further investigate price sensitivity in future recreational studies.

5. Acknowledgements

The present paper has been realized with the financial contribution of the European COST Action EuMIXFOR - FP1206 (http://www.mixedforests.eu/). The author wishes to acknowledge the local forest districts, for the help in delivering the questionnaires, in particular to Jaroslav Jonkisz. The author wishes also to personally thank Prof. Jerzy Lesinski, for his help in translating the questionnaire and for his useful suggestions in writing the manuscript.

6. References

Bhuiyan, M.A.H., Siwar, C., and Ismail, S.M. (2016). Sustainability Measurement for Ecotourism Destination in Malaysia: A Study on Lake Kenyir, Terengganu. *Social Indicators Research* 128: 1029–1045. doi:10.1007/s11205-015-1068-5

Champ, P.A., Boyle, K.J. and Brown, T.C. (2003). *A Primer on Nonmarket Valuation, The Economics of Non-Market Goods and Resources*. Springer Netherlands, Dordrecht. doi:10.1007/978-94-007-0826-6

Clawson M., and Knetsch J. L. (1966). *Economics of outdoor recreation*.

Coccossis, H. (2017). Sustainable Tourism and Carrying Capacity: A New Context 19–30. doi:10.4324/9781315240817-10

Curtis, J. (2002). Estimating the demand for Salmon angling in Ireland. *Econ. Soc. Rev. (Irel)* 33: 319–332.

Curtis, J. and Breen, B. (2017). Irish coarse and game anglers' preferences for fishing site attributes. *Fisheries Research* 190: 103–112. doi:10.1016/j.fishres.2017.01.016

Englin, J., Lambert, D. and Shaw, W.D. (1997). A Structural Equations Approach to Modeling Consumptive Recreation Demand. *Journal of Environmental Economics and Management* 33: 33–43. doi:10.1006/jeem.1996.0976

Englin, J. and Shonkwiler, J., 1995. Estimating social welfare using count data models: an application to long-run recreation demand under conditions of endogenous stratification and truncation. *The Review of Economics and Statistics* 77: 104–112. doi:10.2307/2109996

Faccioli, M. (2011). Youth's perception of tourism impact: Policy implications for Folgaria (Italy). *International Journal of Tourism Policy* 4: 1–35. doi:10.1504/IJTP.2011.046710

Getzner, M. and Policy, I. (2010). Ecosystem services, financing, and the regional economy: A case study from Tatra National Park, Poland. *Biodiversity Conservation* 11: 56–61.

Gios, G. and Clauser, O. (2009). Forest and tourism: economic evaluation and management features under sustainable multifunctionality. *iForest-Biogeosciences and Forestry* 2: 192–197. doi:10.3832/ifor0514-002

Grilli, G., Paletto, A. and De Meo, I. (2014). Economic Valuation of Forest Recreation in an Alpine Valley. *Baltic Forestry* 20: 167–175.

Hotelling, H. (1949). Letter to the National Park Service (Dated 1947), An Economic Study of the Monetary Evaluation of Recreation in the National Parks.

Hanley, N. and Barbier, E. (2009). *Pricing Nature: Cost-benefit Analysis and Environmental Policy*. Edward Elgar Publishing.

Hearne, R.R. and Salinas, Z.M. (2002). The use of choice experiments in the analysis of tourist preferences for ecotourism development in Costa Rica. *Journal of Environmental Management* 65: 153–163. doi:10.1006/jema.2001.0541

Hellerstein, D. and Mendelsohn, R. (1993). A Theoretical Foundation for Count Data Models. *American Journal of Agricultural Economics* 75: 604–611. doi:10.2307/1243567

Hellerstein, D.M. (1991). Using Count Data Models in Travel Cost Analysis with Aggregate Data. *American Journal of Agricultural Economics* 73: 860–866. doi:10.2307/1242838

Herath, G. and Kennedy, J. (2004). Estimating the economic value of Mount Buffalo National Park with the travel cost and contingent valuation models. *Tourism Economics* 10: 63–78. doi:10.5367/000000004773166529

Hill, R., Loomis, J., Thilmany, D. and Sullins, M. (2014). Economic values of agritourism to visitors: a multi-destination hurdle travel cost model of demand. *Tourism Economics* 20: 1047–1065. doi:10.5367/te.2013.0323

Kozak, M. (2002). Comparative analysis of tourist motivations by nationality and destinations. *Tourism Management* 23: 221–232. doi:10.1016/S0261-5177(01)00090-5

Lake, P., Thushara, W., Thomas, T., Dinil Sony, C. and Kuruvila, E.C. (2017). Rapid Environmental Impact Assessment of Eco-tourism in. Int. Res. J. Eng. Technol.

Levin, J. and Milgrom, P. (2004). Introduction to Choice Theory. Microeconomics 1–25.

Martínez-Espiñeira, R. and Amoako-Tuffour, J. (2008). Recreation demand analysis under truncation, overdispersion, and endogenous stratification: An application to Gros Morne National Park. *Journal of Environmental Management* 88: 1320–1332. doi:10.1016/j.jenvman.2007.07.006

McCombes, L., Vanclay, F. and Evers, Y. (2015). Putting social impact assessment to the test as a method for implementing responsible tourism practice. *Environmental Impact Assessment Review* 55: 156–168. doi:10.1016/J.EIAR.2015.07.002

Muresan, I., Oroian, C., Harun, R., Arion, F., Porutiu, A., Chiciudean, G., Todea, A., Lile, R., Muresan, I.C., Oroian, C.F., Harun, R., Arion, F.H., Porutiu, A., Chiciudean, G.O., Todea, A. and Lile, R. (2016). Local Residents' Attitude toward Sustainable Rural Tourism Development. *Sustainability* 8: 100. doi:10.3390/su8010100

Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science* 325: 419–22. doi:10.1126/science.1172133

Shaw, D. (1988). On-site samples' regression: Problems of non-negative integers, truncation, and endogenous stratification. *Journal of Econometrics* 37: 211–223. doi:10.1016/0304-4076(88)90003-6

Simões, P., Barata, E. and Cruz, L. (2013). Using count data and ordered models in national forest recreation demand analysis. *Environmental Management* 52: 1249–1261. doi:10.1007/s00267-013-0119-4

Tempesta, T. and Thiene, M. (2000). Benefits and costs of tourism and outdoor recreation in the Natural Park of the Ampezzo Dolomites (Veneto-Italy). Paper presented at the International Conference on Agritourism and Rural Tourism. A Key Option for the Rural Integrated and Sustainable Development Strategy. Perugia, pp. 21–22.

Vogt, C.A., Lindblom, J. and Lindblom, J. (2018). A critical review of consumer trends in tourism and destination marketing. In The Routledge Handbook of Destination Marketing, Routledge, pp. 289–299. doi:10.4324/9781315101163-23

Willis, K. and Garrod, G. (1991). An individual travel-cost methof of evaluating forest recreation. *Journal of Agricultural Economics* 1: 33–42.