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Travel Cost Model for an Agrifarm Specialised in Horse Riding Activities

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Anotace

Agroturistika přináší turistům cenný kontakt s přírodou. K ocenění takového kontaktu, potažmo i agroturistiky, se používá řada metod, včetně metody cestovních nákladů, která je využita v provedeném výzkumu. Konkrétně je využit model jednoho rekreačního místa, který je aplikován na farmách zabývajících se hipoturistikou. Na farmách však hipoturistiku a aktivity spojené s jezdectvím nevyužívají pouze turisté, kteří jsou na farmě ubytováni, ale také turisté, kteří jsou ubytováni v okolí a hipoturistiku využívají jako doplňkovou aktivitu ke své rekreaci. Z tohoto důvodu jsou odvozeny dva modely cestovních nákladů, jeden pro turisty a druhý pro návštěvníky. Výsledky výzkumu ukazují, že cestovní výdaje mají negativní vliv na počet uskutečněných návštěv, čímž je potvrzena ekonomická teorie. Výsledky výzkumu také prokazují podobných vliv parametrů na počet uskutečněných návštěv v obou modelech, kromě parametru vzdělání.

Klíčová slova

Agroturistika, metoda cestovních nákladů, model jednoho regračního místa, hodnota rekreace.

Abstract

Agritourism, as a form of tourism, brings tourists a valuable contact with nature. To assess such a value, several methods can be used. One of these methods is the travel cost method, which is used in conducted research. Especially, a single site model is applied to recreation in a farm specialised in horse riding activities. It is not only tourists staying in the farms that take part in horse riding activities, these are also visitors staying in other places and coming to farms for horse riding as an accompanying activity to their recreation. Therefore, two separate travel cost models are estimated, for tourists and for visitors. Results show that the parameter of travel costs has a negative influence on the number of visits, which confirms the economic theory. The parameters involved in the estimated models for visitors and tourists show similar tendencies, except for the parameter of education.

Keywords:

Agritourism, travel cost method, single-site model, recreational value.

Introduction

The concept of agritourism has been discussed in a variety of contexts in the international literature for last two decades and many definitions have arisen. Even the term “agritourism” is not used in a uniform way in the literature. Researchers use such terms as agritourism (Wall, 2000; Iakovidou, 1997), farm tourism (Ollenburg, Buckley, 2007; Roberts, Hall, 2001), or farm-based tourism (Evans, Ilbery, 1989) for tourism activities conducted on farms. Flanigan et al. (2014) points out that the definitions often correspond with the topics being studied and analysed. Philip et al. (2010) identifies three key debates that relate to the way of how agritourism has been defined. These debates include also the discussion whether the product is based on the working farm or on the nature of contact that visitors have with agriculture or on the authenticity of visitors’ agricultural experience.

Benefits of agriculture are well documented in literature, especially concerning the benefits for providers and farmers (Barbier et al., 2008; Branth and Haugen, 2007; Fisher, 2006, Nickerson et al., 2007, McGehee, 2007). Also benefits for local communities via sales taxes, local employment, stimulation of local business activities and overall country preservation are documented (Saxena et al.,

2007; Sharpley, 2007, Veeck et al., 2006). However, the benefits for consumers (visitors, tourists) are rarely documented.

Therefore, the research presented in this paper focuses on studying the value of agritourism for visitors. To study this value, there are several approaches, including the travel cost method which is applied in this paper. The travel cost method was established by Harold Hotelling in 1947. This method supposes that there exists a relation between the utility of being in a destination and the cost of its consumption (Seják, 1999). It supposes that if a visitor wants to visit a destination and has the utility, he/she has to travel to that destination (Melichar, Ščasný, 2004). Travel cost is a price which the visitor is willing to pay for utility of recreation in the destination. The relation between travel costs and the number of visits enables to determine the demand function. The economic theory supposes that with an increase in travel costs, visitors/tourists tend to decrease their number of visits to the destination (Dvořák, 2007). The number of visits is determined by several factors, including socio-economic characteristics, substitute destinations, recreational experience, or environmental characteristics of the destination (Melichar, Ščasný, 2004). Parson (2003) distinguishes two travel costs models: the single site model and the random utility model. The random utility model takes the visitors' choice of destination into consideration. It does not assess the destination as a whole, unlike the single site model. The single site model enables to assess recreational functions of the whole recreation. It considers the number of visits as a dependent variable and socio-economic and other variables as independent variables (Haab and McConell, 2002).

An advantage of the travel cost method is that it uses measurable variables rather than subjective respondents' opinions, as contingent valuation methods do. It is based on the real rather than hypothetical respondents' behaviour. Of course, there are also limits related to the travel cost method. This method assumes a recreational place as the only destination; however tourists often visit more destinations in the region. It measures only the useful value of a destination, it does not enable to assess any non-useful values. Visitors often travel in groups, and problems arise while dividing costs per person. Other problems are connected with the assessment of cost related to vehicle amortisation. The travel cost method struggles with assessing travel costs for a visitor coming by bicycle or on foot. The agreement on assessing time cost as an opportunity cost does not exist among researches (Boarman, 2001, Ward and Loomis, 1998, Dvořák, 2007).

Even if there is a number of limits of the travel cost method, it is used in literature by research for assessing the recreational value and it is considered to be a suitable instrument (e.g. Balkan, Kahn, 1988; Herald, Kennedy, 2004; Chen, Hong, 2004).

As already mentioned above, the paper studies the value of agritourism. According to a literature survey, the single site model is suitable for conducted research, therefore this model is applied. The research is focused on visitors coming to agrifarms in the Šumava Mountains, especially those providing horse riding. Besides assessing recreation, the research aims to determine the demand function. Agrifarms provide horse riding both for tourist staying in the farm, and for those just coming to do this activity. The paper distinguishes these two groups.

Materials and methods

In order to determine the value of recreation of agrifarms specialised in horse riding in the Šumava Mountains, the visitors/tourists survey needed to be conducted. Tourists are considered to be those accommodated in the farm, visitors are considered to be those staying in other places and coming for horse riding only as an accompanying activity. Accordingly, two single site travel cost models were estimated.

Respondents' survey

The data set was based on a respondents' survey conducted in June – September 2014 in agrifarms in the Šumava Mountains. Respondents were defined, according to research needs, as all participants coming for horse riding activities. Respondents were asked questions in face-to-face interviews in order to ensure that they understood all questions asked. Tourists/visitors were asked about their place of stay, travel cost to get for horse riding, income, and personal characteristics (gender, age, education). In total, 425 questionnaires were processed.

Single site models

Regarding the predefined aims, the single site model was applied. A linear single site model, according to Parson (2003), has the following general function:

$r = f(tc_r, tc_s, y, z)$,

where r represents the number of visits by an individual to the destination for certain period, tc_r are total travel costs to the destination including travel expenses, entrance fee, and other costs; tc_s is a vector of travel cost of substitute destinations; y is a vector of individual income, and z is a vector of socio-economic characteristics. Concerning travel costs to substitute destinations, empirical studies do not often take travel cost to substitute destinations into consideration, because respondents' do not consider travelling to other destinations (Creeel, Loomis, 1990). The Poisson regression was applied, as a suitable method which is used in similar studies. (Parodi, Bottarelli, 2006).

The data gathered from visitors' surveys was adjusted to fit Parson's model, travel costs per person were determined and travel time costs for getting to and from the destination were assessed. Travel times to get to and from the destination were assessed as 2/5 of visitor's hourly wage (see Cesario, 1976). For an unbiased model, working time hours are considered to be 40 working hours per week. An average hourly wage was computed from the mean of the income interval (see Špaček, Antoušková, 2013). The fee for horse riding is included in travel cost in the estimated models (Seják, 1999).

Subsequently, two travel cost models were developed, one related to tourists staying in the farm, the other one related to visitors coming only for horse riding activities. The dependent variable in developed models is the number of visits; independent variables are age, education, income, gender, accompaniment of children. Developed models were tested by Akaike criteria, and coefficients were predicted by using the maximum likelihood method. Variables used in the estimated models are characterised in table 1.

Variable	Description
Number of visits	Number of visits in the period (September 2013 – August 2014)
Costs	Total travel expenses spent on coming to the farm per person
Gender	1 - man, 0 - woman
Age	a - 1 (0-14 years), 0 (other) b - 1 (25-34 years), 0 (other) c - 1 (35-44 years), 0 (other) d - 1 (45-54 years), 0 (other) e - 1 (55-64 years), 0 (other) f - over 65 years of age
Children	Number of children accompanying the respondent
Education	a - 1 (elementary), 0 (other) b - 1 (high school), 0 (other) c - university
Economic activity	a - 1 (employed), 0 (other) b - 1 (not employed), 0 (other) c - not economically active
Income (a-k)	Net income of the household a - 1 (CZK 0-10,000), 0 (other) b - 1 (CZK 10,001-20,000), 0 (other) c - 1 (CZK 20,001-30,000), 0 (other) d - 1 (CZK 30,001-40,000), 0 (other) e - 1 (CZK 40,001-50,000), 0 (other) f - 1 (CZK 50,001-60,000), 0 (other) g - 1 (CZK 60,001-70,000), 0 (other) h - 1 (CZK 70,001-80,000), 0 (other) i - 1 (CZK 80,001-90,000), 0 (other) j - 1 (CZK 90,001-100,000,-Kč), 0 (other) k – CZK 100.001 and more

Sourse: author´s elaboration

Table 1: Description of variables.

Results

Visitors coming to farms for horse riding activities were predominantly local people (60.2%). Tourists coming to farms were mostly accommodated in other places than in the farm they come to (86.4%). Visitors' travel distance to the farm was usually up to 10 km (48.3%), 63.2% of visitors travel up to 15 km, 74.4% of visitors travel up to 20 km, and 83.4% of visitors travel up to 30 km. Tourists live predominantly up to 100 km far from the farm (76.3%).

Gender characteristics correspond to the normal population distribution (men 48%, women 62%), however the farm visitors were families (20.6%), or an adult person accompanying child/children (13.9%). Children were mostly 10 – 15 years old (60.3%), 23.1% of children were adolescent, 26.6% of children were younger than 10 years old.

Tourists accommodated in farms

Tourists coming to the farm were predominantly living up to 100 km far from the farm (76.3%), 89.7% of tourists lived up to 200 km, and 96.3% of tourists lived up to 250 km. Tourists spent on average 3.87 hours on their way to the farm and back to the place of their residence. Tourists spent on average CZK 369 on the travel there and back per person. The conducted travel cost model shows that the statistically significant variable of cost has a negative influence on the number of visits. Compared to the reference category, a negative influence is seen for incomes exceeding CZK 50,000, economic activity, and age category 55-64 years, however these variables are not statistically significant. Estimated parameters indicate that visitors in the age of 0 – 34 years increase the number of visits compared to visitors older than 65 years of age more than twice. Visitors in another age category also increase the number of visits compared to visitors older than 65 years. Visitors with elementary and high school education are more likely to come more often than visitors with university degree (exp{β}, the coefficient for visitors with elementary education being 1.28; exp{β} for visitors with high school education being 1.47). Visitors having their family income up to CZK 50,000 are more likely to increase the number of visits than visitors with incomes exceeding CZK 100,000; especially those with an income of CZK 10,001 - 30,000 having the highest exp{β} coefficients over 2.35. The parameters of the estimated model are characterised in table 2.

Term	Estimate (B)	Std. Error	Sig.
Intercept	1.863	0.395	0.000**
Costs	-0.003	0.015	0.001**
Age a	0.949	0.206	0.067*
Age b	0.876	0.232	0.097*
Age c	0.570	0.245	0.067*
Age d	0.588	0.195	0.205
Age e	-0.452	0.201	0.456
Education a	0.249	0.207	0.004**
Education b	0.389	0.105	0.032**
Economic activity a	-0.378	0.095	0.775
Economic activity b	-0.489	0.194	0.132
Income a	0.589	0.067	0.156
Income b	0.903	0.589	0.019**
Income c	0.855	0.394	0.006**
Income d	0.071	0.295	0.004**
Income e	0.001	0.351	0.001**
Income f	-0.589	0.032	0.057
Income g	-0.342	0.054	0.255
Income h	-0.872	0.369	0.235
Income i	-0.898	0.333	0.139
Income j	-0.790	0.253	0.146

Note: *Statistical significance $\alpha < 0.1$

Source: Author's own calculation **Statistical significance $\alpha < 0.05$;

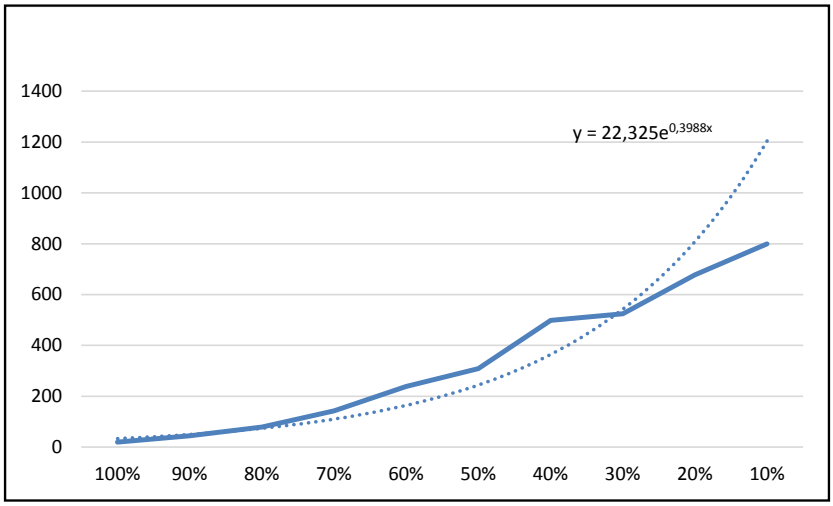
Table 2: Single site travel cost model for tourists.

The demand function reflecting the relation between the number of tourists and their travel costs representing their willingness to pay for recreation is seen in figure 1, which indicates that only 10% of tourists pay over CZK 800 per person and trip. Tourists come on average 1.24 times to the farm for the studied period (one year).

Visitors staying in other places than the visited farm

Almost one half of visitors coming for horse riding activities live within 10 km from the farm, including both local people and tourists not living on the farm. Tourists usually come for horse riding once or twice during their stay (70.3%). For 18.6% of tourists, the farm with horse riding was a reason for coming to the region for recreation. The other 81.4% of tourists came to the region for other purposes, and horse riding was only an accompanying activity during their stay. Local people come for horse riding regularly (75.8%), 15.9% of local people come irregularly and 8.3% visited the farm for the first time.

The time needed to get to the farm and back



Source: Author's own calculation

Figure 1: Tourists' demand function.

to the place of accommodation or place of living is 37.8 minute on average. Travel costs spent on getting there and back are on average CZK 50.4 per person.

The estimated travel cost model shows that the variable of travel cost is statistically significant and has a negative influence on the number of visits, similarly as it was proven for tourists. Age is also a statistically significant parameter in the estimated model, proving that visitors in all age categories (0 – 64 years) are more likely to increase the number of visits than visitors over 65 years of age. Especially visitors in the age of 0 – 34 years are more than 2.3 times more likely to come than visitors over 65 years of age. The parameter of education has an opposite relation to the number of visits than it was estimated for tourists, the parameter is positive, which indicates that visitors with university education are more likely to conduct more visits than visitors with elementary or high school education, even though the parameter of elementary education is not statistically significant. The parameter of economic activity shows that visitors who are not economically active are more likely to come for more times to the farm for horse riding than other visitors (both employed and unemployed). The parameter of income shows that visitors with family income to CZK 100,000 are more likely to conduct more visits than visitors with incomes exceeding CZK 100,001, however only one of the studied income categories is statistically significant (see table 3).

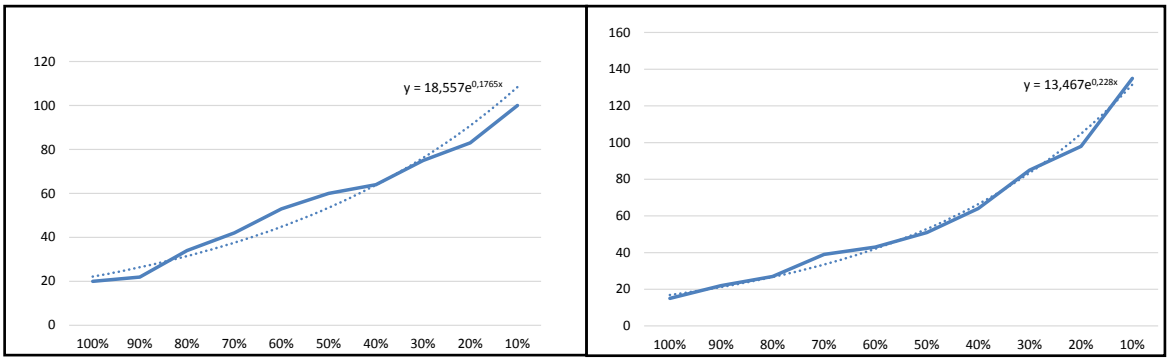
Term	Estimate (B)	Std. Error	Sig.
Intercept	4.835	0.394	0.000**
Costs	-0.014	0.145	0.000**
Age a	0.876	0.012	0.035**
Age b	0.841	0.098	0.003**
Age c	0.208	0.145	0.021**
Age d	0.380	0.203	0.076*
Age e	0.378	0.061	0.098*
Education a	-0.589	0.034	0.103
Education b	-0.893	0.063	0.063*
Economic activity a	-0.034	0.095	0.065*
Economic activity b	-0.295	0.194	0.031**
Income a	0.498	0.067	0.102
Income b	0.357	0.452	0.212
Income c	0.295	0.432	0.125
Income d	0.235	0.343	0.182
Income e	0.948	0.325	0.205
Income f	0.084	0.205	0.146
Income g	0.874	0.056	0.076*
Income h	0.487	0.301	0.253
Income i	0.274	0.311	0.118
Income j	0.003	0.298	0.149

Note: *Statistical significance $\alpha < 0.1$

Source: Author's own calculation **Statistical significance $\alpha < 0.05$;

Table 3: Visitors' single site model.

The tourists coming spent on average CZK 54.3 per person to get to the farm and back to the place of stay. The demand function revealed that there



Source: Author's own calculation

Figure 1: Tourists' demand function.

were only less than 10% of tourists paying more than CZK 135 (see figure 2). The demand function of local people shows that these visitors pay lower travel costs than tourists do.

Conclusion

Conducted research and the estimated travel cost model of tourists and visitors show that travel costs have negative influence on the number of visits to the farm, which confirms the general economic theory. However, estimated parameters in the model do not correspond to findings in other international studies. This is particularly evident for the parameter of age. Tintian (2009) confirms that the age is a parameter increasing the number of visits. Nevertheless, the conducted models show an opposite relation. This might be explained by a relatively high number of children and adolescents coming for horse riding activities. On the other hand, the lower number of visits is by tourists and visitors in the age category over 65, which confirms the conclusion of Wang, Norma and McGuire (2005). Also the parameter of income cannot unequivocally confirm the conclusions of other studies.

The travel cost models of visitors and tourists indicate similar tendencies for the estimated parameter, except for the parameter of education. Tourists with university education are less likely to conduct multiple visits than tourists with other education, which can be explained by the low age of tourists on average. Conversely, visitors with a university degree are more likely to conduct multiple visits, which may be explained by a higher average age of visitors.

Even though not all the results obtained from the estimated model confirm findings in related studies, the results distinguishing tourists and visitors are a valuable source for ongoing research activities.

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