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Expenditure and Stay Behaviour of Naturebased Visitors: The Case of Costa Rica

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1.SUMMARY

With this study, we estimate two equations in order to understand the main factors explaining expenditure and stay patterns of international tourists arriving to the country. In particular, we test for the role played by time and budget restrictions, socio-economic features of visitors, destination characteristics, and previous knowledge of the country. In doing so, we are able to compute the cross-elasticity emerging between expenditure and stay duration. All these findings help us to improve the knowledge on visitor's behaviour arriving to a nature-based tourist place, obtaining interesting conclusions for destination management in a sustainable basis for this type of locations.

Key Words

Tourism, Destination, Expenditures, Visitors.

2. ABBREVIATIONS

ICT: Costa Rican Tourism Institute

OECD: Organisation for Economic Co-operation and Development

UNWTO: United Nations World Tourism Organization



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4. Introduction

Tourism industry shows an important development in Central America in recent years, with annual growth of tourist's arrivals being around 7% between 1995-2013, and the volume of visitors increasing from 2.6 to 7.9 million. Moreover, according to UNWTO prospects, 14 million people are expected to arrive in 2020 to the region, and 22 million in 2030 (UNWTO, 2014). Nature-based tourism is highly extended in this area. Green forest and wildlife richness act as a principal resource attracting worldwide visitors to the region, which has become one of the main natural reserves of the biosphere in the planet. In this study we get deeper understanding of the particularities of visitors coming to a nature-based tourist destination. Building on a survey of more than 14,000 questionnaires for years 2009-2011, we investigate the behaviour of tourists coming to a salient country of the region, Costa Rica.

The research is divided into four chapters. After this brief introduction, the second section provides a descriptive analysis of international tourism in Costa Rica. The third section includes the econometric analysis of the daily expenditure and stay duration of tourists, discussing the main findings of the model. Finally, the fourth section concludes.

5. Analyzing the profile of tourists visiting Costa Rica

The database employed along this study is provided by the Costa Rican Tourism Institute (ICT) by developing annual surveys to tourists that leave the country through the Juan Santamaria International Airport. Details of the survey can be found at: (http://www.visitcostarica.com/ict/paginas/modEst/estudios_demanda_turistica.asp?ididioma=1).

The descriptive analysis of tourists visiting Costa Rica in 2009-2011 let us see that the most common visitor is the leisure one (70% of the sample), followed by the business tourist and those Visiting Friends & Relatives (VFR), with 20% and 10%, respectively. The average stay of tourist is of about 9 nights, whereas the range of 1 to 10 nights accumulates up to 67% of the sample, 86% if we include 1 to 15 nights.

The analysis of the trip characteristics shows that 61% of the sample has visited Costa Rica for the very first time, 13% of tourists for 1-2 times yet, and 14% between 3-5 times. The number of tourists visiting Costa Rica 11 to 30 times account for 25% of the sample, indicating high levels of loyalty to this destination. Tourist use to travel alone in 43% of the cases, with friends in 24% of them, and with the family in 14%. In terms of the organization of the travel, the bulk of tourists decided to organize the journey by their own, either at their home country (40%), or once being at Costa Rica (27%). Tourist packages are also relevant as a way of travel organization (30%). Regarding the type of accommodation employed, and given that the trip of the tourist use to include several stages, we find that most tourists use the hotel/cabin/camping accommodation (83%), stay at friends and relatives' houses (20.5%), rented houses (3.5%), or at their own houses (2.2%). Regarding the number of stages done by the tourists, we see the predominance of two-stage/stops travels in 38% of cases, followed by those visiting just one single place or doing 3 stages, each one representing the 17% of the sample.

For analysis of the activities, and considering that the same tourist use to be engaged in several of them along the trip, Table 3 shows that the most pursued activity is that of sun-and-sand (64%), followed by observation of wildlife (49%), hiking (47%), and visiting the volcanos (44%). Other activities are somewhat doing shopping (38%), canopy (30%), thermal baths (23%), and cultural tourism (12%). Moreover, the most visited tourist spots in the country seem to be Volcano Arenal (30%), Manuel Antonio Park (20%), Poas Volcano (12%) or Tortuguero village (10%). Reviewing the most

visited areas, and considering that tourists visit several of them while on holidays, the most visited areas are those of the Central Valley (79%), the Northern Region (28%), Middle Pacific (25%), North Guanacaste (16%), South and North Caribbean (12% both) and Puntarenas (11%).

Table 1: Tourist profile, trip characteristics, tourist spots and areas of the country most visited

<u>Tourist Profile</u>					
Gender		Age		Marital Status	
Female	38.8%	under 25 age	10.6%	Single man/woman	44.7%
Male	61.2%	de 25 a 34 age	35.7%	Married m/w	49.1%
		de 35 a 44 age	22.7%	Others	6.2%
		de 45 a 54 age	17.3%		
		Over 55 age	13.7%		
Level of Education		Country(Residence)			
Primary/Sec.	14.9%	USA	34.5%		
Bachelor/Diploma	63.3%	Canada	7.3%		
Master/Doctor	21.8%	Central America	11.0%		
		Rest of Latin Amrc.	16.9%		
		Caribbean	1.1%		
		Europe	29.2%		
<u>Trip Characteristics</u>					
First visit		Arrivals for quarter		Arrivals per year	
	41.40%	1st. quarter	21.8% 22.0%	2009	36.3%
		2nd. quarter	27.5%	2010	44.0%
		3rd. quarter		2011	19.7%
		4th. quarter	28.7%		
Company during the trip		Previous visits to the destination		Travel Arrangements	
Alone	43.4%	1-2	13.2%	Package source	15.1%
Family	14.5%	3-5	14.6%	CR Package	1.4%
Friends	14.6%	6-10	6.8%	By my own	40.5%
Couple	24.1%	11-30	25.0%	By my own at CR	27.0%
Work mates	3.4%			My company	15.0%
				Another institution	1.0%

Accommodation		Number of steps (visited places)		Activities	
Hotel/Cabin	83.4%	0 stages- 1 visit	16.8%	Sun and Beach	63.8%
Rent house	3.4%	1 stage - 2 visits	38.5%	Hiking	47.0%
Family house	20.5%	2 stages- 3 visits	16.7%	Volcanos	43.9%
Own house	2.2%	3 stages- 4 visits	11.0%	Wildlife	49.3%
		4 stages- 5 visits	8.6%	Birds seeing	36.9%
		5 stages- 6 visits	5.7%	Shopping	38.2%
		6 stages- 7 visits	2.8%	Canopy	29.8%
				Thermalism	23.9%
				Culture	12.1%
				MICE	5.3%
<u>Main tourist points</u>		<u>Most visited areas</u>			
Volcano Arenal	30.0%	Central Valley	79.0%		
Manuel Antonio	20.0%	Northern Area	28.0%		
Volcano Poas	12.0%	Pacífico Mid	25.0%		
Tortuguero	10.0%	Guanacaste North	16.0%		
Cahuita	6.0%	Caribbean Sea	12.0%		
Volcano Irazú	5.5%	Puntarenas	10.7%		
Corcovado	2.5%	South Pacific	5.2%		
		Guanacaste South	4.6%		
		Puerto Limón	1.9%		

6. Factors determining expenditure and stay behaviour of tourists visiting Costa Rica

Along this section we estimate the main factors explaining the expenditure and stay duration patterns of international visitors coming to Costa Rica. According to Bahar et al. (2008) there is still no consensus among researchers on how to confront the study of the variable "tourist spending." Some authors employ the average annual expenditure per tourist as the unit of analysis, using time series data on total expenditures and number of arrivals (Song and Witt, 2000). This type of studies traditionally focus on forecasting some variables related to the tourism sector, such as the number of tourist arrivals or the total expenditure, providing in this way relevant information for managing the destination. By the contrary, other authors employ a micro-focus when analysing the expenditure pattern of tourists by using survey data. This type of studies explain the daily expenditure pattern of tourists by taking into account the personal characteristics of visitors, what allow them to understand the factors underlying the consumption behaviour of tourists (Pol, et al, 2006; Juaneda and Aguilo, 2000).

Moreover, some researchers seek to characterize the type of tourists according to their total expenditure along the trip, accounting for the so-called “size of the party”, purpose of the visit, or stay duration at destination (Jang, et al., 2004; Kozak 2001). In the present study we will focus on understanding the daily tourist expenditure building on survey data. Our data set contains information on individual tourist profiles, the type of selected holidays (organization, accommodation used, number of stages, places visited, company, etc) and activities developed while on travel. We will employ OLS modeling strategy correcting for some estimation bias arising in the model, such as colinearity or heteroskedasticity.

Regarding the academic literature explaining the length of stay of a tourist, the original contributions of Fleischer and Pizam (2002) and Alegre and Pou (2006) employed discrete choice models, logit and tobit respectively, to quantify the probability of tourists to stay a certain number of days at one particular destination. The authors approached the study of stay duration by intervals of time, i.e. a weekend, an entire week, two weeks, a month, etc. This methodological approach although interesting as a seminal contribution has the disadvantage of being limited in terms of results for tourism destination management, where companies may be more interested in understanding factors underlying stay duration of tourist by single days, where they can construct the necessary intervals of time. In this way, other authors begin to apply a complementary approach in the analysis of tourist stay, introducing models of duration or survival analysis, which identify the factors that influence the duration of an event such as the tourist's stay at destination (Gokovali et al., 2007). Duration models have become commonplace in studies of stay, being applied in the analysis of new products in the industry such as island-visiting tourism, golf tourism or low-cost travel (Barros, Butler and Correia, 2009; Martinez-Garcia and Raya, 2008; Menezes, Moniz and Vieira, 2008). In this study we will employ a new modeling strategy for stay duration, by using count-data models, as this methodology would allow us to predict the stay of tourists by single days (Cameron and Trivedi, 1998).

The explanatory variables in our expenditure and stay duration models include budget and time constraints of the tourists in vacations, socio-demographic characteristics of visitors, the attributes of the destination and places visited, characteristics of the trip, and the activities developed on the trip. Along the study we will be testing the following working hypotheses:

Hypothesis 1: Tourist spending and stay duration are influenced by the time and budget constraints of visitors (Nicolau and Más, 2005).

Hypothesis 2: Tourist spending and stay are influenced by the activities undertaken at the destination (Garcia Sanchez et al, 2013; Woodside and MacDonald, 1994).

Hypothesis 3: Tourist spending and stay of individuals are influenced by sociodemographic profile characteristics of visitors (Barros and Correia, 2007).

Hypothesis 4: Tourist spending and stay of individuals are influenced by trip characteristics (Rodrigues, Correia and Kozak, 2011).

Hypothesis 5: Tourist spending and stay of individuals are influenced by the place of the visit (García Sánchez et al, 2013).

Hypothesis 6: Tourist spending and stay of individuals highly influence each other (Alegre and Pou, 2006).

In general terms, the empirical models defined in the following subsections pursue to test the validity of these six working hypotheses.

6.1 Explaining the daily spending of international tourists visiting Costa Rica

We will estimate the expenditure function by employing a pooled Ordinary Least Squares (OLS) method. In addition, the correction proposed by White (1980) is applied in the estimation, controlling for the possible presence of heteroskedasticity. Such correction ensures the good performance of the coefficients obtained for the model parameters, as well as better overall fit of the empirical model. The empirical model takes the form:

$$\ln Y_i = \beta_0 + \beta_k X_{ki} + \varepsilon_i$$

where $\ln Y_i$ is the natural log of real daily expenditure per tourist, X_{ki} is the vector of explanatory variables, and ε_i is the error term. Given the logarithmic nature of the model, we will get elasticities from the estimation results. The set of explanatory variables for the expenditure function includes the following covariates:

a) Variables regarding the profile of the tourist visiting Costa Rica:

- *Purpose of the visit*: leisure, business, visiting friends and relatives (VFR).
- *Gender*: Female, male.
- *Age*: Under 25 years, 25-34 years, 35-44 years, 45-54 years, more than 55 years.
- *Civil State*: Single, married, other (divorced, widowed, etc).
- *Education*: Primary + Secondary, University degree, Master-Doctorate studies.
- *Origin of the tourist (country of residence)*: USA, Canada, Central America, rest of Latin America, Caribbean, Europe, rest of the world.
- *Annual earnings*: In thousands of \$US.

b) Trip characteristics of the tourist visiting Costa Rica:

- *First visitor or not*.
- *Quarter of the visit*: 1st-2nd-3rd-4th quarters.
- *Year of visit*: 2009, 2010, 2011.
- *Previous knowledge of the destination*: Number of previous visits 1-2 previous visits, 3-5 visits, 6-10 visits, more than 10 visits.
- *Stay duration*: Number of nights spent on the whole trip.
- *Stages on the trip*: number of places visited along the trip.
- *Organization of the trip*: By tour package or travel agency (in their home country or in Costa Rica), by themselves (independent travel arrangements from your home country and once in Costa Rica), organized by your company, or by other institutions (university, church, etc.).
- *Type of accommodation used*: Hotel/cabin/camping, rented home, VFR house, own house.

c) Activities:

Sun and Beach	Shopping	Visiting National Parks
Hiking	Canopy	Wildlife

Birds Seeing	Thermal bath	MICE (Meetings, Incentives, Conferences and Exhibitions)
Visiting Volcanos	Cultural Tours	

- *The most visited points by tourists:* Include Arenal Volcano, Cahuita, Manuel Antonio, Totuguero, Poas Volcano, Irazu Volcano and Corcovado. These are the most visited points of the country.

- *Zones or areas of the country visited:* It includes all regions of the country, namely, Central Valley, North and South Guanacaste, Puntarenas Golf, Middle and South Pacific, North Caribbean, Puerto Limon, northern Area and Monteverde.

Figure 1: Tourism Planning Units (UPT) in Costa Rica



The analysis needs a reference category in order to avoid perfect colinearity problems. Our reference category is then defined as "a leisure tourist, who comes for the first time to the country, in the first quarter of the year, comes with job colleagues, the trip has been organised by other institutions (university, etc.), stays at a hotel/cabin/camping, male, aged over 55 years, other civil state than married or single, with tertiary level of studies (master degree or doctorate), and from European origin".

Results of estimation are included in table 2. Specification of the whole model appears to be good, with the joint model showing a significant F-test, and the R-squared fit is of 0.55. In general, the most important factors explaining daily expenditure of tourists regarding the profile are the origin of the tourist and the age. From trip characteristics, the type of organization of the visit, type of accommodation, company while travelling. From activities, doing shopping and canopy increase the daily spending of tourists. Finally, the places increasing spending of tourists are those of Corcovado, Pacific Ocean (South and North), and North Zone. Length of stay is perhaps the most important variable leading daily spending, together with the mode of organizing the trip by the tourist.

Table 2: Function of daily spending of international tourists visiting Costa Rica

DAILY EXPENDITURE	Coef.		s.e.	t-stat	P>t
Istay	-0,5122	***	0,0521	-9,84	0,000
Istay_sq	-0,0399	**	0,0123	-3,24	0,001
Income	0,0198	**	0,0057	3,46	0,001
Business_tourist	0,0813	*	0,0337	2,41	0,016
VFR_tourist	-0,1682	***	0,0297	-5,66	0,000
First_visit	-0,0007		0,0256	-0,03	0,979
Year_2011	0,0298		0,0207	1,44	0,150
Year_2010	0,0322		0,0167	1,93	0,054
Quarter2	-0,0792	***	0,0196	-4,05	0,000
Quarter3	-0,1155	***	0,0184	-6,27	0,000
Quarter4	-0,0994	***	0,0186	-5,35	0,000
Alone	-0,0467		0,0377	-1,24	0,215
Family	-0,2777	***	0,0431	-6,45	0,000
Friends	-0,1167	**	0,0422	-2,76	0,006
Couple	-0,2093	***	0,0416	-5,03	0,000
Prev_visits12	-0,0407		0,0286	-1,42	0,154
Prev_visits35	0,0080		0,0274	0,29	0,771
Package_ORIG	-0,3268	***	0,0644	-5,07	0,000
Package_CR	-0,2482	**	0,0741	-3,35	0,001
OWN_ORIG	-0,5255	***	0,0628	-8,36	0,000
OWN_CR	-0,5900	***	0,0633	-9,33	0,000
ENTERP	-0,0889		0,0637	-1,40	0,163
House_rent	0,1826	***	0,0360	5,07	0,000
House_own	-0,1439	**	0,0527	-2,73	0,006
House_VFR	-0,3298	***	0,0238	-13,89	0,000
Female	-0,0937	***	0,0130	-7,20	0,000
Age_until25	-0,2901	***	0,0303	-9,56	0,000
Age_25_34	-0,1055	***	0,0225	-4,69	0,000

Age_35_44	-0,0188	0,0229	-0,82	0,410
Age_45_54	0,0191	0,0231	0,83	0,409
Single	-0,0388	0,0301	-1,29	0,197
Married	0,0193	0,0294	0,66	0,511
Bachelor	-0,0060	0,0153	-0,39	0,696
Primary + secondary	-0,0438	* 0,0221	-1,98	0,048
USA	-0,0217	0,0186	-1,17	0,243
Canada	0,0337	0,0258	1,30	0,192
CentralAmerica	0,0378	0,0279	1,35	0,176
Rest of LA	0,2279	*** 0,0239	9,54	0,000
Caribbean	-0,0332	0,0745	-0,45	0,656
Sun_beach	-0,0023	0,0186	-0,12	0,902
Hiking	0,0043	0,0162	0,26	0,792
Volcanos	0,0053	0,0204	0,26	0,794
Wildlife	0,0138	0,0180	0,77	0,441
Birds seeing	0,0087	0,0166	0,53	0,598
Shopping	0,0727	*** 0,0132	5,49	0,000
Canopy	0,0966	*** 0,0145	6,65	0,000
Thermalism	0,0234	0,0174	1,35	0,178
Cultural	-0,0322	0,0202	-1,60	0,111
Mice	-0,0427	0,0320	-1,33	0,182
National_parks	0,0262	0,0228	1,15	0,249
Park_2	0,0300	0,0216	1,39	0,165
Park_3	0,0104	0,0230	0,45	0,651
Arenal	0,0022	0,0216	0,10	0,919
Cahuita	-0,0934	** 0,0269	-3,48	0,001
Manuel Antonio	0,0004	0,0214	0,02	0,985
Tortuguero	-0,0104	0,0317	-0,33	0,743
Volcano Poas	0,0047	0,0232	0,20	0,840
Corcovado	0,1285	** 0,0423	3,04	0,002
Volcano Irazu	-0,0184	0,0296	-0,62	0,535
Central Valley	-0,0671	*** 0,0176	-3,81	0,000
Guanacaste North	0,0523	** 0,0180	2,90	0,004
Guanacaste South	-0,0285	0,0277	-1,03	0,304
Puntarenas Golf	-0,0235	0,0197	-1,19	0,233
Pacific Mid	0,0729	*** 0,0179	4,07	0,000
Pacific South	0,0551	0,0303	1,82	0,069
Northern Caribbean	0,0426	0,0303	1,41	0,160
Puerto Limón	0,0202	0,0440	0,46	0,646
Northern Area	0,0488	* 0,0203	2,41	0,016
Monteverde	-0,0562	** 0,0199	-2,83	0,005
<u>_cons</u>	<u>6,2866</u>	<u>*** 0,1225</u>	<u>51,34</u>	<u>0,000</u>

Number of obs:10498

R-squared = 0.557

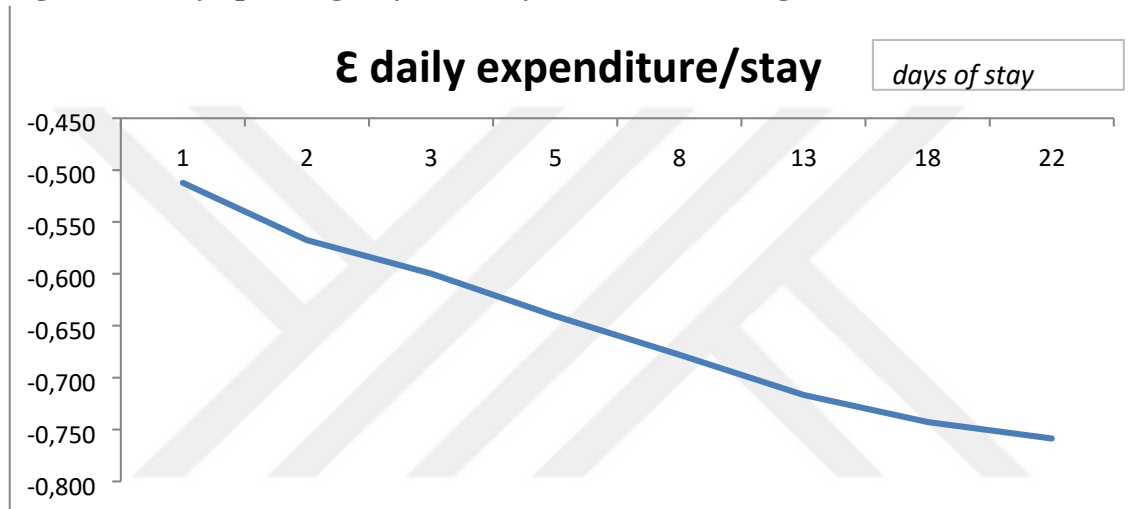
F(71,10426)=158.32

Prob > F = 0.0000

p<0.05; ** p<0.01; *** p<0.001

After analyzing the determinants of the daily expenditure of the tourists visiting Costa Rica, we compute the "expenditure-stay elasticity" related to these visits in figure 2. Such a concept is measuring the percentage change that a study variable (daily expenditure in this case) shows in response of a percentage change in some of its determinants variables (tourist stay in this case).

Figure 2: Daily-spending/stay elasticity of tourists visiting Costa Rica



ε daily expenditure/stay		
-0,512	Stay of tourist (night) 1	daily expenditure for (US\$) 793
-0,567	2	521
-0,600	3	373
-0,641	5	212
-0,678	8	146
-0,717	13	107
-0,743	18	77
-0,759	22	60

In general we can see that the, negative, elasticity of daily expenditure increases when the stay is further from 3-4 nights. The attached table shows higher detail on this

interpretation of the spending-stay elasticity. Thus, for both 1 and 2 days, the elasticity is in the range of -0.5, for stays of 3-5 days it goes to -0.6, between 8 and 13 days to 0.7, and more than 13 days at around -0.75. This means that when the stay goes increasing, the daily expenditure falls in the interval of [-50%, -75%], depending on the segments of the stay where the tourist is located. In any case, tourists with superior stays to 15 days greatly reduce their daily spending in comparison with those that stay for 13 days, 8 or 5 days, and more significantly from those staying for just 1 to 3 days. The elasticity table is showing in general the existence of differing type of holiday time for those staying 1-3 days, 1-2 weeks and more than 2 weeks. In this way it seems to be interesting to recommend differentiated marketing policies in coping with these differing groups of tourists and related income levels.

In general terms, the analysis of spending by tourists has allowed us to accept (not reject) the six working hypotheses previously defined. In this regard, tourist profile (origin, age), and trip characteristics (organization of travel, purpose of visit, type of accommodation) appear to be very relevant variables leading the expenditure of tourists (Hypotheses 3 and 4). The length of stay is the most important determinant of spending (Hypothesis 6). The other three hypotheses do not show that relevance in explaining the expenditure of tourists, although we cannot reject them. In this way, budget and time constraints matter for spending of tourists (H1), as well as the place of visit (H5) and activities developed while travelling (H2), but coefficients shown by the estimates are much lower than those of the preceding covariates.

6.2 A function for the duration of stay of international tourists visiting Costa Rica

In this subsection the determinants of the duration of stay of tourists in Costa Rica are estimated. The international tourism industry is currently facing major changes, one of the most notable being the reduction in the length of stay of tourists in traditional destinations. For example there has been, in the Spanish case, and according to the Hotel Occupancy Survey of INE for Spain (INE-EOH) a decrease in the average stay accumulated 18% of the tourists since 1999 (22% in foreign tourists and 6 % in national). The situation is not unique to Spain, being an important characteristic shared by many European and international destinations today. Therefore, the analysis of stay is a relevant topic to study (UNWTO 2013).

The aim of this part of the investigation is therefore directed to understand those factors influencing the length of stay of tourists. The methodology employed is based on applying count-data models, as the variable to be analyzed (stay) takes nonzero positive integer values (Cameron and Trivedi, 1998). We employ the truncated at zero version of the model, since the stay variable does not include null values, given that to be defined as a tourist there must be at least one overnight stay at destination. The hypotheses to be tested are in this case similar to those of the expenditure model (H1-H6), as well as the set of explanatory variables (X_i), despite our dependent variable is now the duration of stay in number of days. Table 3 includes the results of the truncated Poisson model, showing a general significance of the model. However, when we run the appropriate tests we reject the null hypothesis of overdispersion in the model. In this sense we decide to estimate a Negative Binomial model truncated at zero, with results shown in Table 4.

Table 3: Function of stay duration of international tourists visiting Costa Rica

Truncated Poisson regression model Truncation
point: 0

		<u>s.e.</u>	<u>z-stat</u>	<u>STAY</u>	<u>IRR</u>
	<u>P>z</u>				
ldayexp	1,1113	*** 0,0241	4,86	0,0000	
ldayexp_sq	0,9497	*** 0,0024	-20,18	0,0000	
Business_tourists	1,0377	* 0,0187	2,06	0,0400	
VFR_tourists	0,9951	0,0115	-0,43	0,6690	
First_visit	0,9359	*** 0,0075	-8,22	0,0000	
Year_2011	0,9436	*** 0,0090	-6,07	0,0000	
Year_2010	0,9425	*** 0,0070	-7,92	0,0000	
Q2	0,9891	0,0098	-1,11	0,2680	
Q3	0,9648	*** 0,0092	-3,75	0,0000	
Q4	0,9766	* 0,0093	-2,48	0,0130	
Alone	1,0856	** 0,0285	3,13	0,0020	
Family	0,9760	0,0274	-0,87	0,3870	
Friends	0,9908	0,0276	-0,33	0,7400	
Couple	0,9798	0,0271	-0,74	0,4610	
Package_ORIG	0,8623	*** 0,0326	-3,92	0,0000	
Package_CR	0,9412	0,0422	-1,35	0,1760	
OWN_ORIG	0,8427	*** 0,0312	-4,62	0,0000	
OWN_CR	0,8284	*** 0,0308	-5,06	0,0000	
ENTERP	0,9629	0,0365	-1,00	0,3180	
House_rent	1,4025	*** 0,0209	22,66	0,0000	

House_own	1,2067	*** 0,0241 9,41	0,0000
House_VFR	1,0587	*** 0,0100 6,03	0,0000
Female	1,0034	0,0067 0,51	0,6090
Age_until 25	0,9081	*** 0,0127 -6,91	0,0000
Age_25_34	0,8870	*** 0,0099 -10,79 0,0000	
Age_35_44	0,9086	*** 0,0103 -8,44	0,0000
Age_45_54	0,9359	*** 0,0111 -5,59	0,0000
Single	0,9518	*** 0,0131 -3,59	0,0000
Married	0,9430	*** 0,0126 -4,38	0,0000
Bachelor	1,0559	*** 0,0091 6,29	0,0000
Primary+secondary	1,1038	*** 0,0122 8,96	0,0000
USA	0,8037	*** 0,0071 -24,62 0,0000	
Canada	0,9247	*** 0,0118 -6,12	0,0000
CentralAm	0,7728	*** 0,0119 -16,77 0,0000	
RestLA	0,9709	** 0,0108 -2,64	0,0080
Caribbean	0,8662	*** 0,0289 -4,30	0,0000
Sun_Sand	1,2028	*** 0,0110 20,16	0,0000
Hiking	1,0493	*** 0,0085 5,92	0,0000
Volcanos	1,0170	0,0103 1,67	0,0950
Wildlife	1,0562	*** 0,0096 5,99	0,0000
Birds_seeing	0,9977	0,0085 -0,26	0,7910
Shopping	1,0331	*** 0,0072 4,69	0,0000
Canopy	1,0327	*** 0,0082 4,04	0,0000
Thermalism	1,0309	** 0,0092 3,40	0,0010
Cultural	1,0397	*** 0,0100 4,04	0,0000
MICE	0,9720	0,0203 -1,36	0,1720
National_parks	1,0788	*** 0,0116 7,08	0,0000
Arenal	0,9896	0,0097 -1,07	0,2860
Cahuita	1,0827	*** 0,0132 6,50	0,0000
Manuel_antonio	0,9940	0,0099 -0,60	0,5470
Tortuguero	0,9776	0,0149 -1,49	0,1360
Volcano_Poas	0,9999	0,0107 -0,01	0,9910
Corcovado	1,0987	*** 0,0226 4,58	0,0000
Volcano_Irazu	1,0507	*** 0,0142 3,66	0,0000
Central_Valley	0,9444	*** 0,0081 -6,65	0,0000
Guanacaste_North	1,1080	*** 0,0094 12,06	0,0000
Guanacaste_South	1,1523	*** 0,0148 11,07	0,0000
Puntarenas_Golf	1,1271	*** 0,0106 12,77	0,0000
Pacific_Mid	1,0736	*** 0,0097 7,89	0,0000
Pacific_South	1,1596	*** 0,0169 10,16	0,0000
Northern_Caribbean	1,0864	*** 0,0158 5,71	0,0000
Puerto_Limon	1,1140	*** 0,0224 5,37	0,0000
Northern_Area	1,0520	*** 0,0109 4,88	0,0000
Monteverde	1,0585	*** 0,0102 5,88	0,0000

	19,0232	_cons *** 1,2709 44,09
N	10498	
ll	-29753	
LR chi2(64)	21070	
Prob > chi2	0.0000	
Pseudo R2	0.2615	

*p<0.05,**p<0.01,***p<0.001

H0: Variance=Mean (overdispersion tests)

Deviance goodness-of-fit: 18566.87

Prob>chi2(10433): 0.0000

Pearson goodness-of-fit: 20331.62

Prob>chi2(10433): 0.0000

Table 4 shows that the Chi-2 test at the bottom of the table reject again the equidispersion hypothesis (χ^2_0) on the distribution of tourists' stay. The significance of the model is high for joint and individual variables, while the results are presented in terms of *Incidence Rates Response (IRR)*. The interpretation of the IR for dummy variables of the model with various categories (age, gender, etc) shows the percentage change in the variable defined regarding the category of reference, that is the same that in the expenditure model. For continuous variables (expenditure, tourist spots, geographical zones cards, holiday activities) the coefficient is directly read. In both cases one have to subtract one point value to the coefficient in order to get the marginal effect of the covariate on stay duration. Coefficients above one show an increasing expectancy of stay duration of tourists at Costa Rica, while below one show a decreasing one. Factors that seem to increase expectancy of stay in regards to the profile of tourist seem to be those of origin of the tourist, age, and level of studies. Daily expenditure also influences the stay duration, in an endogenous relationship with stay, as we have seen in the previous section. From trip characteristics, the most important variables are those of purpose of the visit, type of accommodation, and organization of the trip. Finally, the place of visit is also important, given the distance from the starting point of the trip, that uses to be the capital of the country, San Jose, and activities (sunand-sand, and visiting national parks).

Table 4: Function of stay duration of international tourists visiting Costa Rica

Truncated negative binomial regression model

Truncation point: 0

Dispersion = mean

ESTANCIA	IRR	s.e.	z-stat	P>z
ldayexp	1,1185	*** 0,0353	3,55	0,000
ldayexp_sq	0,9482	*** 0,0034	-14,79	0,000
Business_tourists	1,0224	0,0249	0,91	0,363
VFR_tourists	0,9919	0,0165	-0,49	0,626
First_visit	0,9385	*** 0,0105	-5,65	0,000
Year_2011	0,9502	*** 0,0128	-3,80	0,000
Year_2010	0,9435	*** 0,0099	-5,53	0,000
Q2	0,9949	0,0139	-0,37	0,713
Q3	0,9621	** 0,0129	-2,88	0,004
Q4	0,9797	0,0131	-1,53	0,126
Alone	1,0723	* 0,0354	2,11	0,035
Family	0,9646	0,0347	-1,00	0,317
Friends	0,9826	0,0350	-0,49	0,622
Couple	0,9677	0,0342	-0,93	0,352
Package_ORIG	0,8680	** 0,0442	-2,78	0,005
Package_CR	0,9473	0,0582	-0,88	0,378
OWN_ORIG	0,8413	** 0,0419	-3,47	0,001
OWN_CR	0,8223	*** 0,0412	-3,91	0,000
ENTERP	0,9643	0,0486	-0,72	0,471
House_rent	1,4118	*** 0,0319	15,28	0,000
House_own	1,2261	*** 0,0359	6,97	0,000
House_VFR	1,0626	*** 0,0145	4,46	0,000
Female	1,0027	0,0094	0,29	0,771
Age_until 25	0,9052	*** 0,0181	-4,99	0,000
Age_25_34	0,8919	*** 0,0139	-7,35	0,000
Age_35_44	0,9140	*** 0,0145	-5,65	0,000
Age_45_54	0,9347	*** 0,0155	-4,08	0,000
Single	0,9427	** 0,0185	-3,00	0,003
Married	0,9366	** 0,0179	-3,43	0,001
Bachelor	1,0562	*** 0,0125	4,61	0,000
Primary+secondary	1,1068	*** 0,0172	6,54	0,000
USA	0,8029	*** 0,0100	-17,57	0,000
Canada	0,9262	*** 0,0170	-4,19	0,000
CentralAm	0,7620	*** 0,0156	-13,27	0,000
Rest of LA.	0,9606	* 0,0151	-2,56	0,011
Caribbean	0,8609	** 0,0391	-3,30	0,001
Sun_Sand	1,2081	*** 0,0150	15,18	0,000
Hiking	1,0519	*** 0,0121	4,40	0,000
Volcanos	1,0188	0,0146	1,30	0,195
Wildlife	1,0546	*** 0,0136	4,13	0,000

Birds_seeing	0,9983		0,0122	-0,14	0,887
Shopping	1,0328	**	0,0101	3,30	0,001
Canopy	1,0320	**	0,0117	2,78	0,005
Thermalism	1,0352	**	0,0133	2,70	0,007
Cultural	1,0371	**	0,0144	2,64	0,008
MICE	0,9859		0,0262	-0,54	0,592
National_parks	1,0824	***	0,0164	5,24	0,000
Arenal	0,9866		0,0139	-0,96	0,340
Cahuita	1,0860	***	0,0199	4,49	0,000
Manuel_antonio	0,9973		0,0143	-0,19	0,852
Tortuguero	0,9779		0,0218	-1,00	0,315
Volcano_Poas	1,0032		0,0154	0,21	0,835
Corcovado	1,0997	**	0,0340	3,07	0,002
Volcano_Irazu	1,0434	*	0,0206	2,16	0,031
Central_Valley	0,9479	***	0,0115	-4,42	0,000
Guanacaste_North	1,1131	***	0,0138	8,65	0,000
Guanacaste_South	1,1525	***	0,0224	7,32	0,000
Puntarenas_Golf	1,1274	***	0,0156	8,67	0,000
Pacific_Mid	1,0769	***	0,0138	5,77	0,000
Pacific_South	1,1707	***	0,0254	7,27	0,000
Northern_Caribbean	1,0885	***	0,0231	3,99	0,000
Puerto_Limon	1,1175	***	0,0334	3,71	0,000
Northern_Area	1,0558	***	0,0156	3,66	0,000
Monteverde	1,0563	***	0,0149	3,89	0,000
cons	19,1140	***	1,8089	31,18	0,000
Inalpha	2.410718		.0296924		

alpha	.0897508	.00269
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Likelihood-ratio test of alpha=0: chibar2(01) = 3065.20

Prob>=chibar2 = 0.000

N	10498
ll	-28220
AIC	56573.56
LR chi2(64)	8192.66
Prob > chi2	0.0000
Pseudo R2	0.1268

* p<0.05; ** p<0.01; *** p<0.001

In general, results are consistent with those obtained by other studies from the stay duration analysis (Barros et al, 2009; Gokovali et al, 2007; Alegre and Pou, 2006). Stay expenditure elasticity remains negative (inverse relationship), and the duration of stay of the tourists being related to the type of travel planned by visitors. For example, those tourists staying around the capital use to stay for short periods of 2-3 days,

spending higher amount daily as we have seen previously. Visitors arriving to more distant places in the South of the country (Pacific South, Guanacaste South, or Corcovado Park) spend more time and enlarge their stay duration. Budget restrictions also influence the duration of the stay, with longer stays associated to tourists organizing the travel by themselves, coming alone, and arriving from closer countries with cheaper travel costs (American countries). Some type of activities (sun and sand, wildlife, national parks), tourist profiles linked to less time restrictions (older age), and trip characteristics (leisure versus business trips) clearly influence the duration of stay as shown by results of the model. In general all these results lead to accept (not rejecting) working hypotheses H1 to H6, with H3 (origin of tourist), H4 (organization of travel, type of accommodation) and H5 (places of visit) appearing to be the most important ones in determining the duration of the stay of tourists visiting Costa Rica.

7. Conclusions

Managing a tourism destination is always a complex task. Availability of information regarding the visitors and their behaviour is of paramount relevance in order to help the managers to take the necessary decisions. In the case of a nature-based destination this is even more relevant, given the special characteristics of these destinations. In this study we have pursued to provide this type of information for the case of Costa Rica, an increasingly visited destination in Central America sharing all these particularities. The analysis has been divided into two parts, each one estimating the factors that determine the daily expenditure and the duration of stay of international tourists arriving to this destination.

The expenditure function has revealed differences in the level of daily spending of tourists according to their stay behaviour (1-3 days versus more than 2 weeks of stay). Particularly, estimation results have shown that variables associated with the socioeconomic profile of tourists (age, origin), and mainly those linked to the characteristics of the trip (accommodation used, travel organization, company and purpose of the visit) are the main factors leading spending of tourists. To a lesser extent the activities on the trip (shopping, canopy) and the place visited also determine the daily expenditure of tourists. Obviously major days of stay result in a reduction of daily expenditure, with increasing negative estimated elasticity for larger stays.

Regarding the results of the stay duration function we have seen that the primary factors influencing that variable are once more those of the profile of visitor (origin, age) and trip characteristics (purpose and organization of the trip). In this case, the place of visit and activities on the trip acquire higher relevance in explaining the dependent variable of stay duration. Arriving to more distant places, and certain type of vacational activities (sun-and-sand, visiting national parks) are closely linked to larger stays of tourists.

The main conclusion arising from the results is the existence of differing segments of tourists inside the full flow of visitors arriving to the country. These include shortstayers showing the highest spending per day, and perhaps the lower environmental impact given their low distance movements, and the longer-stayers, that move around the country and turn to be more aware of the nature-related richness characterising this country. In this way, the latter visitors would be able to come back to their origin countries and spreading the word on the salient destination features. As a result, the managers of the country as a tourism destination would have to seek for the combination of length of stay-daily tourist spending that can result in a total tourist income being optimal to the country, not only in economic terms but also in terms of sustainability of the destination. Such an approach will result pivotal for a country where tourism is largely based on the presence of renewable natural resources, largely focused on a nature-based tourism.

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