

## INTERNATIONAL DEMAND FOR NATURE-BASED TOURISM IN COSTA RICA: SOCIO-DEMOGRAPHIC AND TRAVEL INDICATORS

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*Demand for tourist activities related to natural spaces and wildlife has increased over recent years. This paper analyses the influence of socio-demographic and travel indicators on international demand for such tourism in Costa Rica. Using discrete choice models, a range of principal activities is studied: hiking, visits to volcanoes, observation of flora and fauna, bird-watching and canoeing. The results show the favourable influence on demand of variables such as family, travel with partners and country of origin, providing orientation for policies and strategies of the nature-based tourism in Costa Rica, as well as indicators for other countries interested in developing this sector.*

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**Keywords:** *nature-based tourism; international demand; activity; discrete choice model; Costa Rica*

JEL Classification: *L83, M1, O1*

### INTRODUCTION

In Costa Rica, nature-based tourism gained strength during the 1990s, and at present it maintains its relative position in the tourism sector (Instituto Costarricense de Turismo, ICT, 2009). Recently nature-based tourism has received greater attention in studies on the Costa Rican economy (Miller, 2008), although it has not been dealt with in detail.

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In the international context, over recent years increasing academic interest has been shown in tourism related to natural resources and wilderness areas (Kline, 2001). Several studies have focused on the tourist demand related to local nature parks and reserves (Lee et al., 2009).

Costa Rica has a significant tourist industry based on its public and private natural parks and reserves, and it is the most outstanding example within Latin America (Honey, 2003). Over 40% of international tourists to the country carry out activities related to nature-based tourism (ICT, 2009). The ICT surveys to international tourists point to the common practices of hiking, bird-watching, observation of flora and fauna, visits to volcanoes, canoeing and fishing. For the specific case of Costa Rica, a review of the literature on nature-based tourism shows that these activities have received scant attention regarding international tourist demand.

Based on 2008 ICT surveys, the present study aims to determine the influence of socio-demographic (gender, age, educational level, marital status, country of origin) and travel factors (previous visits to the country, travelling companions, main reason, visits to nature parks and reserves) on the international demand for nature-based tourism activities. The methodology consists of applying a discrete choice logit model based on the approximation of random utility.

The present analysis intends to contribute knowledge on tourist services which should be promoted in Costa Rica, and to recommend strategies that can help to meet demand and take full advantage of market opportunities.

The work is structured as follows: we present a review of the literature and the aims of the study; we then establish the method and analysis technique; subsequently we present the estimations and the main results; finally, we outline the conclusions and policy implications.

## **OVERVIEW AND OBJECTIVES OF THE STUDY**

Work activity and other routines associated with the lifestyle of modern society, especially in the western world, have given rise to increasing demand for different forms of international tourism which in many cases are outside the scope of traditional tourist circuits (Kline, 2001). Over recent decades, public concern for nature, ecology and the environment in general has created growing interest in those forms of tourism in which there is greater interaction with natural spaces (Karmakar, 2011). The nature-based tourism industry has accordingly

shown greater interest in studies on this sector (Curtin, 2010; Marzuki et al., 2011).

Nature-based tourism implies different concepts such as adventure tourism, eco-tourism or adventure travel (Sung, 2004). As far as adventure tourism is concerned, these activities can be said to involve physical and social risks (Cater, 2006), the search for intense, new experiences (Bentley & Page, 2008; Sung, 2004) and social interaction, thoughts and feelings, an escape from personal situations and routines (Galloway et al., 2008). From the ecological perspective, it responds more to the conservation of flora and fauna (Stem et al., 2003) or forest (Allam et al., 2010).

Nature-based tourism can be conceptualised as an industry of guided tours in natural surroundings, some of which require specialised equipment (Buckley, 2007). It can be understood as a link between nature and the tourist, who wishes to take advantage of the particularities of the natural surroundings (Buckley, 2007). Some recent studies have focused specifically on tourist demand for natural local reserves and parks (Lee et al., 2009), which offer a variety of activities.

The sector of the Costa Rican tourist industry based on public and private parks and nature reserves is the most significant one in Latin America (Place, 2001; Honey, 2003). The country is divided into 12 ecological zones which are home to almost 5% of world biodiversity. Over a quarter of the country's surface area is dedicated to 25 national parks (12.23% of national territory), 58 wildlife sanctuaries (3.53% of national territory), 32 protected areas (3.06% of national territory), 15 swamplands (1.53% of national territory), 11 forestry reserves (4.47% of national territory), 8 biological reserves (0.42% of national territory) and 11 areas of natural conservation which include rainforests, cloud forests and dry forests.

As indicated above, data from the ICT surveys to international tourists highlights these six nature-based activities: 1) hiking/trekking, 2) bird-watching, 3) observation of flora and fauna, 4) visits to volcanoes, 5) canoeing and 6) fishing. Average empirical probabilities of these activities indicate the international tourist's order of preference. The average values for each activity over the period 2000-2008 denote the following levels of preference: 1 = 45%, 2 = 35%, 3 = 46%, 4 = 46%, 5 = 27% and 6 = 7%.

Some studies on nature-based tourism in Costa Rica have focused on observation of flora and fauna (Laarman & Perdue, 1989) or on the general attraction of certain rural spaces (Jackiewicz, 2005). There is a clear lack of specific studies on this topic in Costa Rica. The prime goal

for the present work is to provide an analysis of demand for nature-based tourism, since this sector is increasing importance in the Costa Rican tourism sector.

On the whole, studies on tourist demand have represented one of the main issues of research in the area (Sung, 2004). In recent years there has been greater interest in the use of microeconomic data from surveys (Collins & Tisdell, 2002; Alegre & Pou, 2004) with empirical applications which are therefore closer to theoretical models of consumption (Heckman, 2001). Concerning micro-data, carrying out surveys in the holiday destination is a common practice when the aim is to analyse tourist satisfaction levels, expenditure, repetition rates (Sayed, 2010) or the reasons for choosing a particular destination.

Tourist demand is frequently analysed from the perspective of ability to pay and of the attributes of tourist products and destinations (Yoon & Uysal, 2005). Nevertheless, the tastes and preferences of international tourists with the ability to pay are modelled by factors such as age (Glover & Prideaux, 2009; Lehto et al., 2008; Opperman, 1995; Woodside & Pitts, 1976), educational level (Meric & Hunt, 1998), gender (Kattiyapornpong & Miller, 2008; Khan, 2011), health, marital status, family (McGehee et al., 1996; Nickerson & Jurowski, 2001) and region of origin and socialization, among others (Pouta et al., 2009). Demand capacity, *ceteris paribus*, works as a necessary mechanism, but in itself is not sufficient, to make these factors work (Markides et al., 1990).

Truong and King (2009) analyse a range of socio-demographic factors and travel factors in relation to the attributes of Vietnam and the visits of Chinese tourists, finding that these factors go a long way to explaining the tourists' perception, their satisfaction and intention to return. Sung (2004) carries out a cluster analysis, finding that women, especially professional and married women, prefer moderate or light nature-based tourism. Moreover, this segment is found to be willing to travel with family and/or friends and favours novelty. Families show a high preference for this type of nature-based tourism and Central America is among their favourite destinations.

Age, educational level and the other factors mentioned previously can have a positive, negative or neutral influence on tourist demand (Curtin, 2010; Pouta et al., 2009). Teaf and Turpin (1996) determine that age, as well as physical condition, is a limiting factor in the tourist's decision on holiday choices. These variables help to explain and predict tourists' preferences, given a set of restrictions on demand (Lee et al., 2001; Cordell, 2004; Kattiyapornpong & Miller, 2008). Lee et al. (2001) suggest that age, the female gender and socio-economic conditions imply

disadvantages which behave as a source of inequality. Nevertheless, Khan (2011) found that women are not more constrained in travel for leisure than men. Lehto et al. (2008) determine that the observation of flora and fauna and bird-watching are not of preference for 'Baby Boomers' (40-60 age group) or the 'Silent Generation' (over 60 age group).

In terms of tourist management, these factors constitute a reason to create incentives for each market segment (Glover & Prideaux, 2009). However, the literature review reveals that these dimensions have received scant attention as regards demand when considering a range of services or activities in this sector. Consequently the second goal of the present study is to detect the socio-demographic and the travel factors which influence the demand behaviour for individual activities of nature-based tourism, as this may prove useful not only in the context of Costa Rica, but also for other areas where this type of tourism can be relevant.

## METHODS

### Discrete choice models

From the point of view of consumer theory, the decision to purchase a certain type of good or service depends mainly on the consumer's preferences. From among the different combinations of goods or services available, the consumer (tourist in this case) will choose the combination that provides the greatest utility (McFadden, 1974; Manski, 1977). If there are only two alternatives to choose from, this is a binary choice model. The tourist can choose between combination of goods  $i$  or combination of goods  $j$ . The probability of a tourist choosing option  $i$  is  $P(i) = P(U_i \geq U_j)$  and the probability of option  $j$  is  $P(j) = 1 - P(i)$ . If it is assumed that the tourist's indirect utility functions are random and can be expressed as the sum of one deterministic part and one random part, the probability of option  $i$  can be written as:

$$(1) \quad P(i) = P(U_i \geq U_j) \quad P(i) = P(V_i + \varepsilon_i \geq V_j + \varepsilon_j) = P(V_i - V_j + \varepsilon_i - \varepsilon_j \geq 0)$$

And, expressing the deterministic part as a linear function of a group of variables:

$$(2) \quad P(i) = P(\beta'_i x - \beta'_j x + \varepsilon_i - \varepsilon_j \geq 0 \mid x) = P(\beta' x + \varepsilon_i - \varepsilon_j \geq 0 \mid x)$$

The probability of choosing option  $i$  therefore depends on the value of variables  $x$ , which define the deterministic part of the indirect utility function, and on the specification of the random term. Choosing a logistic distribution for the random term leads to the specification of a discrete choice logit model:

$$P(i) = e^{\beta'x} / (1 + e^{\beta'x}) \quad (3)$$

In the tourist choice model, the consumer chooses whether or not to consume tourism services. It is assumed that the tourist considers a service or activity to be more useful if he/she chooses it and *vice versa*, i.e. the decision not to choose a certain activity implies that it is more useful not to do so.

The basic hypothesis behind the model presented is that the decision to demand a touristic activity (nature-based activity) depends partly on the socio-demographic and travel factors of visitors. The non-random component that determines the decision is composed of the variables that reflect these characteristics of the international tourist (age, educational level, marital status, travelling alone, visits to nature parks and reserves, etc.).

Given the non-linear specification of the probability in terms of the explanatory variables, to analyse the results of the estimation, the effects on the odds probability are discussed when one of the explanatory variables is modified. The odds are defined as the ratio of the probability of the occurrence of an event when compared with the probability of the opposite occurring:

$$odds_i = P(i) / [1 - P(i)] \quad (4)$$

Logarithms are used to obtain the *logits* or *log-odds*, which are specified as a linear function of the predictors:

$$\log-odds_i = \log (P(i) / [1 - P(i)]) = \beta_0 + \beta'_k x_k \quad (5)$$

Given the specification of the *logit*, the equation can also be re-written in terms of the odds:

$$P(i) / [1 - P(i)] = e^{\beta_0 + \beta'_k x_k} \quad (6)$$

For the explanatory variable  $k$ , term  $e^{\beta_k}$  is the factor by which the odds are increased when independent variable  $k$  goes up by one unit. If  $\beta_k$  is positive, factor  $e^{\beta_k}$  will be above the unit, implying an increase in the odds<sub>*i*</sub> (i.e. a positive effect for choosing an activity *i*). If  $\beta_k$  is negative, the factor will be below the unit, implying a decrease in the odds<sub>*i*</sub> (i.e. a negative effect for choosing an activity *i*).

### Empirical application

For the purposes of this research the ICT database is used, based on the results of the survey for 2008. This was conducted to a sample of  $n = 1,550$  international tourists over the age of 18, who departed from Juan Santamaría Airport. Sixty-two of the questionnaires were disregarded as incomplete, leaving a final sample of 1,488. The sampling shows a confidence level of 95% and a margin of error of 2.8% (ICT, 2009).

The sample identified 1,735 cases for reasons of 1) holidays, leisure, sport and pleasure, including weddings and honeymoons and 2) visits to friends and relatives. Table 1 shows the percentage of those tourists who undertook at least one of the activities described in the previous section. The last row of this table indicates the percentage of those tourists who demanded at least one of these activities.

**Table 1** Percentage of interviewees choosing nature tourism activities

| Tourism activities             | %    |
|--------------------------------|------|
| Hiking                         | 61.0 |
| Visits to volcanoes            | 50.1 |
| Observation of flora and fauna | 49.7 |
| Bird-watching                  | 44.4 |
| Canoeing                       | 36.0 |
| Nature tourism (total)         | 81.5 |

Each tourist activity has a particular likelihood of demand, and so they constitute the dependent variables of this study. In this way, the dependant variable used in the econometric estimation is a dichotomous variable with a value of one if the activity has been done and zero if not.

Each demand of activity is determined by a series of explanatory variables which can be either socio-demographic or travel factors (Table

2), according to the structure of the survey, which follows the guidelines of the Organization of International Tourism (OIT).

**Table 2** Description of explanatory variables

| Socio-demographic                  |  |
|------------------------------------|--|
| Gender                             | Male or female   |
| Age                                | Four ranges: under 30, 30-39, 40-49, 50 or over, as well as those who do not know or do not wish to respond.   |
| Level of education                 | Three levels: secondary education or a lower level, university degree and postgraduate degree.   |
| Marital status                     | Single, married, divorced or widowed.  |
| Origin                             | Country, continent or geographical region from which the international tourist comes. 5 categories included: USA, Europe, Canada, Central America and the Caribbean, and others. |
| Travel conditions                  |  |
| First visit to Costa Rica          | Dichotomous variable. Percentage.  |
| Travelling companions              | Four groups: with a partner, with family, with friends or travelling alone.  |
| Reason for travelling              | Two blocks: a) holiday, leisure, sport and pleasure, and b) visiting family and friends.   |
| Visits to parks or nature reserves | Percentage of tourists interested in the nature of Costa Rica (i.e. ecologists, naturalists, scientists, etc.).  |

Table 3 shows the percentage of interviewees in the sample according to these variables.

**Table 3** Percentage of tourists according to the type of explanatory variables

| <b>Socio-demographic variables (%)</b> |      |   |      |
|--|------|---|------|
| <b>Gender</b>                          |      | <b>Civil status</b>                         |      |
| Male                                   | 62.3 | Single                                      | 29.5 |
| Female                                 | 37.7 | Married                                     | 63.0 |
| <b>Age</b>                             |      | Divorced or widowed                         | 4.8  |
| Under 30                               | 18.2 | Don't know / Don't answer                   | 2.7  |
| 30-39                                  | 17.0 | <b>Region of origin</b>                     |      |
| 40-49                                  | 19.7 | US  | 59.8 |
| 50 and over                            | 43.9 | Europe                                      | 19.0 |
| Don't know / Don't answer              | 1.3  | Canada                                      | 11.1 |
| <b>Educational level</b>               |      | Latin America and Caribbean                 | 7.6  |
| Secondary or less                      | 17.7 | Other countries                             | 2.5  |
| University                             | 56.3 |   |      |
| Postgraduate                           | 24.4 |   |      |
| Don't know / Don't answer              | 1.5  |   |      |
| <b>Travel indicators (%)</b>           |      |   |      |
| <b>First visit to Costa Rica</b>       |      | <b>Reason for travel</b>                    |      |
| Yes                                    | 65.5 | Holidays, leisure, sports, pleasure         | 88.2 |
| No                                     | 34.5 | Visit to relatives and friends              | 11.8 |
| <b>Travelling companions</b>           |      | <b>Visits to natural parks and reserves</b> |      |
| With a partner                         | 32.7 | Yes   | 67.0 |
| With family                            | 31.6 | No  | 33.0 |
| Alone                                  | 19.0 |   |      |
| With friends                           | 16.7 |   |      |

## ESTIMATIONS AND RESULTS

In order to simplify the explanation of results, only those *log-odds* with a value of  $p \leq 0.05$  are considered (Table 4).

**Nature tourism:** Five variables were determined as having the ability to influence significantly the decision to carry out at least one of nature tourism activities. Four of these variables come under the travel conditions heading and one under the socio-demographic heading.

**Table 4** Determinants of nature tourism activities<sup>a</sup>

| <b>Socio-demographic</b>              | <b>Log-odds</b> | <b>Travel</b>                           | <b>Log-odds</b> |
|---------------------------------------|-----------------|---|-----------------|
| <b>Nature tourism</b>                 |                 |   |                 |
| Postgraduate studies                  | 1.96            | Travelled in family                     | 3.14            |
|                                       |                 | Travelled with partner                  | 1.70            |
|                                       |                 | Previous visits to Costa Rica           | 0.40            |
|                                       |                 | Did not visit nature parks and reserves | 0.05            |
| <b>Hiking</b>                         |                 |   |                 |
| Postgraduate studies                  | 1.65            | Travelled in family                     | 1.49            |
| Europe                                | 1.58            | Previous visits to Costa Rica           | 0.52            |
|                                       |                 | Did not visit nature parks and reserves | 0.20            |
| University                            | 1.47            |   |                 |
| Married                               | 1.40            |   |                 |
| Divorced or widowed                   | 0.55            |   |                 |
| <b>(Table 4 continuation)</b>         |                 |   |                 |
| <b>Visits to volcanoes</b>            |                 |   |                 |
| Latin America and Caribbean           | 3.21            | Travelled with friends                  | 1.99            |
|                                       |                 |   |                 |
| Gender (female)                       | 1.64            | Travelled in family                     | 1.81            |
| Europe                                | 1.61            | Travelled with partner                  | 1.70            |
| Age (10 years)                        | 1.24            | Previous visits to Costa Rica           | 0.67            |
|                                       |                 | Did not visit nature parks and reserves | 0.05            |
| Canada                                | 0.69            |   |                 |
| <b>Observation of flora and fauna</b> |                 |   |                 |
| Europe                                | 2.53            | Travelled in family                     | 1.61            |
| Other countries                       | 2.31            | Previous visits to Costa Rica           | 0.54            |
| University                            | 1.63            | Did not visit nature parks and reserves | 0.24            |

|                             |      |   |      |
|-----------------------------|------|---|------|
|                             |      | reserves                                |      |
| Canada                      | 1.40 |   |      |
| Gender (female)             | 1.37 |   |      |
| Age (10 years)              | 1.13 |   |      |
| Divorced or widowed         | 0.55 |   |      |
| <b>Bird-watching</b>        |      |   |      |
| Europe                      | 2.27 | Travelled with partner                  | 2.07 |
| Canada                      | 1.69 | Travelled in family                     | 2.07 |
| Postgraduate studies        | 1.63 | Previous visits to Costa Rica           | 0.62 |
|                             |      | Did not visit nature parks and reserves |      |
| Age (10 years)              | 1.12 |   | 0.28 |
| <b>Canoeing</b>             |      |   |      |
| Age (10 years)              | 0.83 | Travelled in family                     | 2.59 |
| Canada                      | 0.64 | Travelled with partner                  | 1.56 |
|                             |      | Did not visit nature parks and reserves |      |
| Europe                      | 0.48 |   | 0.42 |
| Latin America and Caribbean | 0.16 | Visits to relatives and friends         | 0.41 |
|                             |      | Previous visits to Costa Rica           | 0.26 |

*<sup>a</sup> The results are based on log-odds estimations (data available upon request)*

The tourist travelling in family would be 3.14 times more likely to demand at least one of the nature-based activities than when travelling “alone”. This result is hardly surprising, since it has already been contrasted in several studies on tourism (Curtin, 2010). It may be influenced by the presence of minors (Nickerson & Jurowski, 2001). It can also be seen that when tourists “travel with a partner” the demand for nature-based activities is 70% more likely than when travelling “alone”.

The variables “previous visits to Costa Rica” and “did not visit nature parks and reserves” reflect that tourists had no intention of demanding nature-based tourism. When tourists have been to the country before, their inclination to try nature-based activities is 60% less than for tourists visiting for the first time. Consequently, tourists visiting for the first time are more likely to demand this type of tourism during their stay than those coming for the second time.

If tourists did not visit natural parks and reserves on their first trip to the country, they are also less likely to demand nature-based tourism in subsequent visits, compared to those who did visit such places. The *log-odds* = 0.05 indicates that tourists who did not visit such places are 95%

less likely to practice nature-based activities than those who did. Thus, nature tourism is preferred by tourists who have already visited natural parks and reserves in the country.

Tourists with “postgraduate studies” are 1.96 times more likely to practice at least one of the nature-based activities than those with “secondary studies or less”.

**Hiking.** Tourists with “postgraduate studies” are 65% more likely to practice hiking than those with “secondary studies or less”. In the case of tourists “travelling in family”, they are 49% more likely to demand walking activities than those travelling alone. Regarding the area of origin of tourists, their marital status and university education, the model predicts that the variables “Europe”, “married” and “University” have the greatest influence on tourists’ intention to demand this activity. A European tourist is 58% more likely to practice hiking activities than one from the US.

There is 40% more likelihood that married tourists will demand hiking activities than single ones, and tourists with university education are 47% more likely to demand them than those with secondary education or less. “Divorced” or “widowed” tourists show scant interest in this type of activity. Indeed, they are 55% less likely to go hiking than single tourists.

Those tourists returning to the country were 48% less likely to demand hiking activities than those visiting for the first time. Tourists who did not visit nature reserves were 80% less likely to demand hiking activities than those who did.

**Visits to volcanoes.** Among the variables which favoured this demand, four are of socio-demographic type and three are linked to travel factors. Although the origin of the tourist is not a factor of influence on the whole, the variable “Latin America and the Caribbean” has a significant positive influence on this demand (*log-odds* = 3.21). Tourists from this region are much more likely to visit volcanoes than those from the US. They are also 1.6 times more likely to do so than European tourists. It should be highlighted that tourists from Latin America and the Caribbean only account for 7.6% of interviewees, compared to 13% in the case of US tourists and 40% European. European tourists show a similar level of interest for this activity and for walking, which may imply that they combine these activities when practising nature-based tourism.

Tourists travelling in family or with a partner are 81% and 70% more likely, respectively, to carry out this activity than those travelling alone. “Gender” does influence visits to volcanoes. Women are 64% more likely to carry out these visits than men. The “Age” factor is not very

favourable for the demand for this activity, particularly for groups of over 30 years of age.

Tourists coming from Canada, those who have visited the country previously and those who did not visit nature parks and reserves, have the most negative influence on the likelihood of this activity.

**Observation of flora and fauna.** Nine variables are seen to be significant in the analysis, and among the favourable ones those of socio-demographic type predominate. "Europe" and "other countries" show the highest favourable influence, followed by "University" and "travelling in family". Although the tourist's country of origin was not significant in the overall analysis of nature tourism, it is interesting that this factor has a high influence on the observation of flora and fauna.

The indicator shows that in comparison to tourists from the US, those from Europe and "other countries" are 2.53 and 2.31 times more likely, respectively, to demand this activity. European tourists are the most likely to demand observation of flora and fauna, with 92% more likelihood than visits to volcanoes and 95% more likelihood than walking activities. Canadian tourists also show a high level of interest in this activity, and there is 40% more likelihood that they demand this activity than US tourists.

Tourists from the "University" segment are 63% more likely to choose this activity than those with only "secondary education or less".

The "Gender" variable shows that women are 37% more likely to carry out activities of observation of flora/fauna than men. The "Age" variable shows that as age increases it does not induce a significant favourable change on this activity, and the same is true for the variables of travel factors.

**Bird-watching.** The variables of travel factors are not seen to have a significant positive impact on bird-watching in the case of tourists who "have visited the country previously" (*log-odds* = 0.62) or who "do not visit nature parks and reserves" (*log-odds* = 0.28). Nevertheless, "travelling with a partner" and "travelling in family" show a high likelihood (*log-odds* = 2.07) that tourists will demand this activity. Both variables denote greater preference for this activity than "travelling alone".

The socio-demographic variables, with the exception of "Age", are favourable for the demand for this activity. European tourists stand out in their demand for nature-based tourism when compared to US tourists. Bird-watching is the second most popular activity for European tourists. Nevertheless, they would be 26% more likely to observe flora and fauna

than to observe birds in particular. It can also be seen that bird-watching is 40% more popular among Canadian than US tourists.

“Postgraduate studies” indicates a preference for bird-watching similar to that for hiking (which may also indicate a relative degree of complementarity). As “Age” increases, on the other hand, it has less and less favourable influence on demand for this activity.

**Canoeing.** Of the nine variables which have a favourable influence on this activity, only two are among the travel indicators. Tourists “travelling in family” are 2.59 times more likely to practice canoeing than those “travelling alone”.

Also, canoeing was 56% more popular among tourists “travelling with a partner” than among those travelling alone. Regarding the influence of socio-demographic variables, the results indicate that “Age” is a key factor for practising canoeing, since as age increases by 10 years, demand falls by 10%.

The negative impact of the tourists’ region of origin is also relevant. Tourists from Canada, Europe and Latin America and the Caribbean show considerably less interest in this activity than US tourists, who are the ones who demand this activity most.

## **CONCLUSIONS AND POLICY IMPLICATIONS**

This study has focused on the specific case of Costa Rica, where nature-based tourism is of particular economic relevance due to the system of natural parks and the wide range of activities on offer. There is also a general lack of research literature on tourism in this country.

Among the most relevant results of the present study we should highlight the finding that nature-based tourism is of great interest to international tourists who travel accompanied. For instance, when travelling in family, canoe, bird-watching and visits to volcanoes are among the activities with most likelihood of demand. When travelling with a partner, tourists are more likely to demand bird-watching and visits to volcanoes. Educational level is another important factor. Tourists with university and postgraduate studies show a significant interest in activities such as hiking and bird-watching.

In this context it is also interesting to highlight the tourists’ area of origin as a determining factor in demand for certain activities. While tourists from Latin America and the Caribbean show a high preference for visits to volcanoes, those from Europe wish to observe flora and fauna, and birds in particular. Tourists from “other countries” also show a high degree of interest in flora and fauna. Nevertheless, this group represents a

low percentage of the tourists interviewed, indicating the need for a promotional campaign for tourism to Costa Rica in those countries.

In addition, the weak policy of investment and promotion of nature tourism to Costa Rica is patently clear from the results obtained on the segment of tourists who have practised one of the activities studied (34.5%). To this factor we should add the 33% of tourists who had not visited nature parks or reserves, and who would be unlikely to demand any type of nature-based tourism. This suggests the need for policies and actions that promote the many attributes of Costa Rica's biodiversity among these two significant groups of tourists. This could be achieved, for instance, by developing programmes on the diversification of supply and improving the general conditions in areas where nature-based activities can take place.

The tourists' age is another variable which should be paid close attention in a strategy focusing on nature-based tourism. For example, almost 44% of the interviewees were over 50 years of age and these tourists show little inclination towards visits to volcanoes, observation of flora/fauna, bird-watching and canoeing. Given this scenario, it may be necessary to organize other activities which may prove more popular among this age group.

From the point of view of a competitive, sustainable strategy for nature-based tourism, female tourists constitute an interesting market segment. Together with the segments of tourists that travel in the company of family, partners, spouses and friends, they show preference for visits to volcanoes and the observation of flora/fauna.

On the whole, the results obtained may be useful to orientate management and policies in the sector under study. While this research work is limited to the context of nature-based tourism in the specific country of Costa Rica, given the diversity of activities under study and the characteristics of this tourist sector as a reference in Central America and on a wider international scale, we consider that the findings are of interest for those regions or countries that offer similar tourism possibilities. For instance, the evidence of interest in biodiversity and natural spaces on the part of certain sections of the population and of tourists from different areas may be an indicator for the development of tourist management in countries that tend to protect and promote their nature reserves and resources.

The particular characteristics of natural spaces in Latin America and in other parts of the world, may present common elements which allow the adoption of similar policies to those which have proved successful in Costa Rica. However, it is not enough to base a tourism strategy on the

natural resources of the country alone. As the present study shows, additional actions are required to exploit the favourable factors, both of social nature and of travel factors of international tourists, in order to boost demand for nature-based tourism activities.

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