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Valuing Nature Attributes by the Tourists – Are there Socio-Demographic Differences?

**Paulo Oliveira
Pedro Telhado Pereira**

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Paulo Oliveira

Universidade Nova de Lisboa
e CESNova, CEEAplA and ILID

Pedro Telhado Pereira

Universidade da Madeira (DGE)
e CEEAplA

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RESUMO/ABSTRACT

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This research studies if there are different valuations of nature attributes due to different socio-demographic characteristics of the individuals. We use the case of the Natural Park of Madeira and the valuation of its different attributes by the tourists to test if there are differences due to gender, age, education, and nationality; we control by the duration and number of previous visits to the destination. We use a probit model to see how socio-demographic characteristics of the tourists and different aspects of the trip affect the valuation given to 24 aspects of the Park and its organization. We conclude that males tend to value 12 of the aspects less and do not value any more than females. Age does not seem to affect the way individuals value the different aspects; the exception is the WC, which is more valued by the elderly. More educated people tend to value less the organizational aspects of the park and the services provided. British visitors value more than tourists from other nationalities 10 of the 24 aspects of the Park, while Germans tend to value less the services provided by the Park.

Keywords: natural aspects; evaluation; socio-demographic characteristics; Madeira Island; Natural Park.

Paulo Oliveira
CESNova
Universidade Nova de Lisboa
Edifício FCSH-ID, 3º piso, sala 3.14
Av. de Berna, 26 C
1069-061 Lisboa

Pedro Telhado Pereira
Departamento de Gestão e Economia
Universidade da Madeira
Campus da Penteada
9000-390 Funchal

Valuing nature attributes by the tourists – are there socio-demographic differences? – Paulo Oliveira (CESNova, CEEAplA and ILID) and Pedro Telhado Pereira (Universidade da Madeira, CEPR, IZA and CEEAplA)

Mailing Address:

Pedro Telhado Pereira, Universidade da Madeira, DGE, Campus da Penteadá, 9000-390 Funchal, Portugal

Tel: 00 351 291 705043

Fax: 00 351 291 705040

Email ppereira@uma.pt

Paulo Oliveira – Researcher at CESNova

Pedro Telhado Pereira – Full Professor at Universidade da Madeira

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Abstract

This research studies if there are different valuations of nature attributes due to different socio-demographic characteristics of the individuals. We use the case of the Natural Park of Madeira and the valuation of its different attributes by the tourists to test if there are differences due to gender, age, education, and nationality; we control by the duration and number of previous visits to the destination. We use a probit model to see how socio-demographic characteristics of the tourists and different aspects of the trip affect the valuation given to 24 aspects of the Park and its organization. We conclude that males tend to value 12 of the aspects less and do not value any more than females. Age does not seem to affect the way individuals value the different aspects; the exception is the WC, which is more valued by the elderly. More educated people tend to value less the organizational aspects of the park and the services provided. British visitors value more than tourists from other nationalities 10 of the 24 aspects of the Park, while Germans tend to value less the services provided by the Park.

Keywords: natural aspects; evaluation; socio-demographic characteristics; Madeira Island; Natural Park.

I - Introduction

In an earlier paper (Oliveira and Pereira, 2008) we concluded that socio-demographic characteristics influenced the way individuals value different

aspects of the tourism destination at the time of their choice, in particular, the Madeira Island destination. Landscape and climate were the most valued aspects (more than 80% of the tourists considered them as having an above average importance in their decision to visit the island), but we showed that British visitors value more the climate and less the landscape than do the tourists of other nationalities. Females valued landscape more than males.

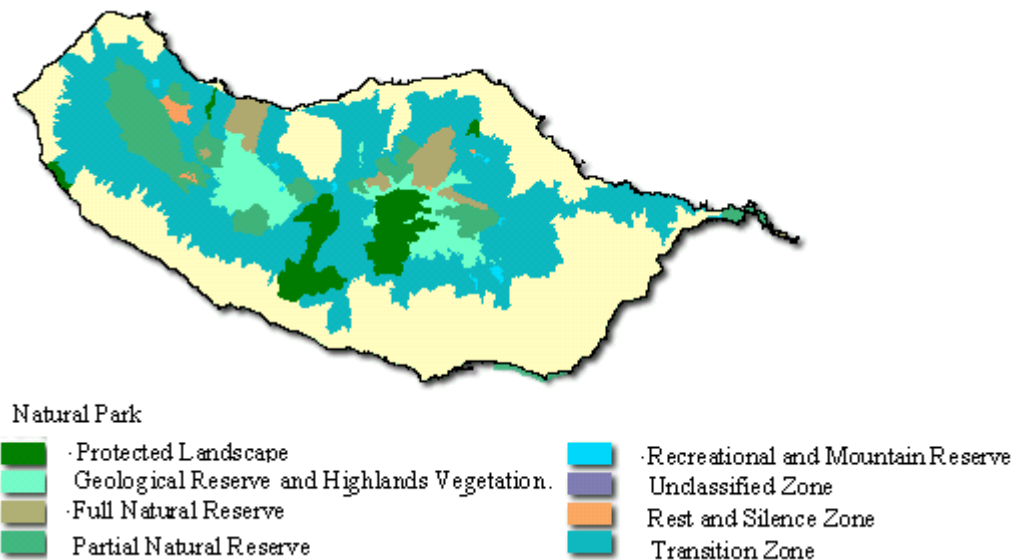
The differentiator factor of the Madeira destination seems to be the authenticity of its nature (Oliveira, 2005), that the Natural Park preserves. In this study we examine the valuation given by tourists to different aspects of the Park, seeking to determine if socio-demographic characteristics influence the valuation.

Together with the results obtained in the paper mentioned above, the current findings should be taken into account when marketing the destination, as segmentation is essential in any marketing strategy (Tocquer and Zins, 1999, Litvin, 2007).

The structure of the paper is as follows. In the first section the empirical application to the case of the Natural Park of Madeira is presented. The second part is a short literature review. In the third part the study methods are presented, and the data are described. In the fourth part the estimation procedure is explained and in the fifth part our results are shown. The paper ends with some concluding remarks.

II - Empirical application to the case of the Natural Park of Madeira

The Natural Park of Madeira was created in 1982 in order to preserve the island's natural heritage. It includes some species in danger of extinction side by side with well preserved human habitats. Some of its fauna and flora are unique, including the Laurisilva forest. "The Laurisilva of Madeira is an outstanding relict of a previously widespread laurel forest type. It is the largest surviving area of laurel forest and is believed to be 90% primary forest." (<http://whc.unesco.org/en/list/934>). The forest is classified as a World Heritage site (for the importance of biodiversity in the attraction of a Park, see Neuvonen et al., 2010). Due to the island's volcanic origin, mountain ranges can be found (with the highest peak at 1,862 meters) and their beauty is impressive. The Natural Park of Madeira covers about two thirds of the island's territory, as can be seen in the map below.



Source: Atlas do Ambiente Digital – Instituto do Ambiente

The Park is managed by the Park Service (Serviço do Parque Natural da Madeira - SPNM), a department of the Regional Secretary of Environment and

Natural Resources. It seeks to implement the environmental policy of the Regional Government (as a Portuguese Autonomous Region, Madeira has its own Government). The SPNM includes a division of Park Rangers (Vigilantes da Natureza), a police service that enforces the law in the Park, keeps it clean, supervises the use of the paths and develops programs to maintain the biodiversity. The Park Rangers also educate the population for the importance of ecological behavior in the Park.

Madeira Island is a mature tourism destination with more than one million visitors in 2008, declining by around 10% in 2009. The economy of Madeira is based on the tertiary sector, with a high weight of Public Administration and Tourism. In 2008 Tourism (hotels and restaurants) accounted for around 7.4% of GDP and about 12.7% of employment in the island, while the national averages were 4.2% and 6.4%.

Some tourists come to Madeira almost every year, and some of these come more than once a year for short visits. But how do they value the different aspects of one of the most important assets of the island: its natural park? And what is the relationship between the evaluation made and the personal characteristics? These two questions have not been addressed until now.

III – Literature Review

The influence of socio-demographic characteristics of individuals on their perception of the tourism experience and appreciation of nature has often been addressed in the literature. Here we provide a review that demonstrates the lack of consensus in findings. There are some studies where the influence of

personal characteristics is not significantly different from zero, as in McKercher and Cross (2007) (except for age), or in Shultz, Pinazzo and Cifuentes (1998), and Jim and Chen (2006).

Gender appears to be important in Kinnaird and Hall (1996), education in Petrosillo et al. (2007) and Fabiani (1985), nationality in Mykletun et al. (2001), gender, age, and education in Tomićević, Shannon and Milovanović (2010).

In the case of Greek National Parks, Machairas and Hovardas (2005) showed that the willingness to pay is significantly higher for females and increases with age and education. In the case of Korean National Parks, Lee and Han (2002) conclude that the use value of some of the parks is higher for females and more educated people, while it is lower with age.

In the case of Madeira, Barros and Machado (2010) showed that socio-economic characteristics and nationality explain the length of stay.

Taking these findings into consideration, we test the influence of gender, age, education, and nationality as socio-demographic variables in the evaluation of the characteristics of the Natural Park, controlling for the characteristics of the trip: length of stay and number of previous stays.

From this review of the literature we expect females to value more natural aspects of the Park than males do.

IV - Study Methods

In a first phase 158 persons were interviewed by Paulo Oliveira for a parallel study about the Natural Park of Madeira (Oliveira, 2009) and its relationship with tourism demand and supply. From these interviews and the

analysis of tourist publications about Madeira he gathered 24 aspects of the Natural Park to be evaluated by the tourists.

In a second phase 1,517 tourists were surveyed (sampling error of 2.5% and confidence interval of 95%) either at the airport (1,098) or at two nature oriented hotels (364 at the Hotel Jardim Atlântico and 55 at Hotel São Roque do Faial). The tourists were randomly selected (see Oliveira and Pereira, 2008, for details).

Tourists responded to a questionnaire written in Portuguese, Spanish, French, German, and English. The survey took place in March/April 2005 (the months with around 9% of the total yearly number of tourists) at the airport and from May to October 2005 at the hotels.

From these we selected the individuals who visited the Natural Park (568). Of these 52% were female, 10.2% were aged below 30 (Age_2), 24.8% were aged 31 to 45 (Age_3), 41.2% were aged 46 to 60 (Age_4) and 23.8% were older than 60 (Age_5). 33.3% had fewer than 12 years of education (Education_3), 18.5% had 13 to 15 years of education (Education_4); 17.1% had 16 to 17 years education (Education_5) and 29.8% had more than 18 years of education (Education_6). 74.3% were departing from their first visit to Madeira (NVisits_1), 12.2% from the second (NVisits_2) and 13.5% from the third or more (NVisits_3). 10.1% stayed for less than a week (DVisit_6), 53.5% stayed for a week (DVisit_7) and 36.4% stayed for more than a week (DVisit_8). 4.9% were Portuguese (por), 19.84% English (eng), 37.15% were German (ger), 1.8% were Spanish (spa), 4.2% were French (fre) and 32.0% had other nationalities.

The tourists were asked to respond on a scale of 1 to 5 (1- very bad importance to 5 – very good) regarding 24 aspects of the Natural Park. (“How do you classify the following aspects in the Natural Park of Madeira (NPM)?”).

For each aspect we create a new variable that takes the value 1 if the aspect is valued good or very good and zero otherwise. As some of the tourists that visited the Park do not classify some of the aspects the number of valid answers varies from aspect to aspect. The results were as follows:

Table I – Tourists who classified as Good or Very Good

	N. valid answers	% of good or very good
Landscape	420	95.95
Flora	421	94.30
Fauna	396	65.15
Mountains	411	94.16
Waterfalls	392	79.59
Lagoons	315	53.33
Rivers	358	66.48
Serenity of the local	381	85.83
Areas of the Park	342	72.81
Limits of the Park	270	51.85
Codes of Protection	262	58.40
Services of the Natural Park of Madeira	273	54.95
Park Ranger Service	298	65.44
Nature Preservation	360	71.67
Cleanliness	395	69.37
Accessibility	350	65.71
Protection on the paths / Security	344	56.98
Paths	376	72.87
WC	359	46.24
Information booths	328	39.63
Signs	364	34.34
Centers for interpretation of Nature	314	33.44
Cafeteria	339	45.13
Restaurant	330	49.39

The five aspects valued most are landscape, flora, mountains, serenity of the local, and waterfalls. All these natural aspects of the Park were valued as good or very good by more than 80% of the tourists. The three less valued have to do with information: Information booths, signs, and centers for interpretation of Nature. These infrastructure aspects of the Park were valued less than good by more than 60% of the tourists.

V - Estimation Procedure

The dependent variable is discrete, taking the value one if the aspect was classified as good or very good and zero otherwise. We therefore use a probit estimation.

Start by defining an unobserved index function Y^* as:

$$Y^* = X\beta + \varepsilon$$

and assume:

$$Y = 0 \text{ if } Y^* < k_1,$$

$$Y = 1 \text{ if } k_1 \leq Y^*$$

where k_1 is a "cut off point" to be estimated.

Then, the conditional probabilities $\Pr(Y=0 | X)$, $\Pr(Y=1 | X)$ can be written as

$$\Pr(Y=0 | X) = \Pr(X\beta + \varepsilon < k_1) = \Pr(\varepsilon < -X\beta + k_1) = F(-X\beta + k_1),$$

$$\Pr(Y=1 | X) = \Pr(X\beta + \varepsilon > k_1) = \Pr(\varepsilon > -X\beta + k_1) = 1 - F(-X\beta + k_1),$$

where F is the cumulative distribution function of residual ε . In the Probit model, we assume that the residual ε has the standard normal distribution $N(0,1)$. Thus, F is the cumulative function of $N(0,1)$.

We then use the maximum likelihood procedure to obtain the results.

VI – Estimation Results

In table II (at the end of the paper) we present the direction and significance of results of the ordered probit estimation. The comparison individual is a female, aged below 30, with 12 or fewer years of education, on her first visit to Madeira, staying less than a week and of a nationality not mentioned above.

In the table the symbols have the following meaning:

p – positive coefficient and significantly different from zero at 10% level;
pp – positive coefficient and significantly different from zero at 5% level; ppp – positive coefficient and significantly different from zero at 1% level;

n – negative coefficient and significantly different from zero at 10% level; nn – negative coefficient and significantly different from zero at 5% level; nnn – negative coefficient and significantly different from zero at 1% level;

all – all individuals classified the aspect as good or very good.

We divide the 24 aspects into four categories:

- 1) Natural aspects: Landscape, Flora, Fauna, Mountains, Waterfalls, Lagoons, Rivers, Serenity of the local.
- 2) Organizational aspects: Areas of the Park, Limits of the Park, Codes of Protection.

- 3) Working of the Service that manages the Park: Services of the Natural Park of Madeira, Park Ranger Service, Nature Preservation, Cleanliness.
- 4) Infrastructures in the Park: Accessibility, Protection on the paths / Security, Paths, WC, Information booths, Signs, Centers for interpretation of Nature, Cafeteria, Restaurant.

Starting with the natural aspects, males value 6 aspects (Landscape, Flora, Fauna, Waterfalls, Lagoons, Rivers) out of 8 significantly less than females. Age, education, duration or number of visits does not seem to greatly influence the way individuals classify the different natural aspects. Nationality is an influence, as all the Spanish visitors classify “Good or Very Good” 4 (Landscape, Flora, Mountains and Waterfalls) out of the 8 natural aspects, the Portuguese 2 (Mountains and Waterfalls), and the French 2 (Landscape and Flora). Germans value more 3 natural aspects (Landscape, Mountains, and Serenity of the local) than the tourists of other nationalities, the British two (Mountains and Serenity of the local). The French value less the Fauna.

In terms of the organizational aspects of the Park, only nationality seems to influence the responses, as all other variables influence the valuation of at most 1 of the 3 categories. In terms of nationalities, the British value more the areas and the limits of the Park than do tourists from other nationalities.

The valuation of the management of the Park is influenced by gender, education, and nationality. Males value less 3 (Services of the Natural Park of Madeira, Park Ranger Service, Nature Preservation) out of the 4 aspects than do females. More educated people value less all of the aspects of management, and

the British value more 3 aspects (Park Ranger Service, Nature Preservation, and Cleanliness).

In terms of infrastructures, we see that more educated people value less 4 (WC, Information booths, Signs, Restaurant) out of 9 infrastructure aspects. The Germans value less 5 aspects (Information booths, Signs, Centers for interpretation of Nature, Cafeteria, Restaurant) than do tourists from other nationalities. The British value more 3 aspects (Accessibility, WC, Cafeteria).

VII – Conclusions

The importance of natural environments and their authenticity in the development of the countries and regions has a long tradition in the economic literature (see Pereira, 1983, and Reisinger and Steiner, 2005, for the importance of authenticity). Madeira as a tourism destination has lived up to the image of a natural environment destination, as most tourists that visited its Natural Park value the natural aspects as Good or Very Good.

Almost all tourists (more than 94%) considered as Good or Very Good aspects such as Landscape, Flora, and the Mountains. More than 2 out of 3 tourists considered as Good or Very Good all the natural aspects of the Park with the exception of Fauna (65.2%) and Lagoons (53.3%).

Males value less the natural aspects than do females. Nationality also seems to influence the way tourists value the natural aspects of the Park.

Education influences the way the tourists appreciate the management of the Natural Park, as more educated people seem to be more strict about giving

the classification of Good or Very Good; the same with Male tourists. In the opposite direction, British visitors seem to be less strict.

Infrastructures is where tourists are more critical about the quality they found. Six out of 9 aspects queried were classified as less than Good by the majority of tourists. The tourists were extremely critical about the information infrastructures, as more than 60% considered them below the Good standard. Germans were the ones that were most critical of the infrastructures they found in the Park. However, nature tourism in Madeira is associated with the beauty of the landscape and tourists confirmed this is their perception.

The results show how different characteristics of the tourists influence the value that they attribute to different aspects of the Natural Park of Madeira. Gender makes the difference in the valuation of the natural aspects of the destination and if we accept Tocquer and Zins' (1999) claim that the family decision process concerning vacations changes during the lifecycle, then gender differences on the valuation can be extremely important. The travel decision seems to be taken by the wife when the couple is 45 to 60 years of age, so the female effect in the appreciation of the characteristics of the island can be a positive asset when marketing the destination.

“The search for authenticity as an element differentiator of the tourist product” (Oliveira, 2005) must go hand-in-hand with the quality of infrastructures, something does not seem to be happening on the island. Almost all tourists recognize the quality of the natural aspects, but the majority of them do not rate the infrastructures as good or very good.

Young generations have access to the possibilities of consumption abroad whereas older generations have the opportunity to enjoy it only at later stages of

their lives (Baptista, 2005), but their valuation of the quality of the destination does not seem to be different from the one of their elders. This seems to suggest that Madeira's natural beauty is ageless.

In the case of Madeira, the nuclei mix of attractions (Hinch and Highman, 2001) that the tourist wishes to experience includes nature, landscape, flora, climate, and hiking, and they are satisfied with what they find and enjoy the destination.

In this study we confirmed that gender and nationality seem to play a central role concerning the way people feel and see nature.

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Table II – Estimation results

		male	Age_3	Age_4	Age_5	Education_4	Education_5	Education_6	NVisits_2	NVisits_3	DVisit_7	Dvisita_8	por	eng	ger	spa	fre
Natural	Landscape	nn	all									pp			p	all	all
	Flora	nn						p								all	all
	Fauna	nnn															nnn
	Mountains									nnn	p		all	p	p	all	
	Waterfalls	nn											all			all	
	Lagoons	nnn					nn										
	Rivers	nn															
	Serenity of the local														ppp	pp	
Organizational	Areas of the Park	n												p			
	Limits of the Park										n			ppp			
	Codes of Protection							nn	nnn	ppp						all	
Management	Services of the Natural Park of Madeira	nnn					nn										
	Park Ranger Service	n				nnn	nnn			nnn				pp			
	Nature Preservation	nn						nnn						pp			
	Cleanliness						nn							p			
Infrastructures	Accessibility								nn					pp			
	Protection on the paths / Security																
	Paths																
	WC				pp		nn	nn						pp			
	Information booths	nn					n								n		all
	Signs						nn					nnn			nnn		
	Centers for interpretation of Nature														nn		
	Cafeteria													pp	nn	all	
Restaurant	nnn						nn			nn				nnn			

