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Tourists' willingness to pay to improve sustainability and experience at destination

1. Introduction

Unlike other economic sectors, analysis of the tourism activity reveals products with a strong goods and services component of public provision. Therefore, public administrations of high tourism areas have found themselves obliged to offer certain goods and services (Page, 2009; Ritchie & Crouch, 2003) –which are essential to ensure the destination's competitiveness (Page & Connell, 2006)–, such as spatial planning, the provision of basic and/or tourism infrastructures, tourism promotion and tourism and cultural resource maintenance. Furthermore, the public administrations of regions where tourism activity is significant for the economy have declared certain financing problems (Puig, 2007).

In addition, numerous tourism destinations have focused on mass tourism, especially on the coasts, the so-called sun and beach tourism. This tourism development model has had a very negative impact on the territory, given that some of the economic benefits generated by the activity have been obtained at the expense of environmental and sociocultural balance (Drius et al., 2019), leading to an alarming degradation of the fragile environmental resources, especially coastal ones (López-Sánchez & Pulido-Fernández, 2014), resulting in a decreased appeal and competitiveness (Manning, 1999). For decades now, proposals have been offered for a more sustainable model (Garrido & López, 2010), evidencing signs of maturity (Perelli, 2011) and requiring greater adaptation to the tourists' needs.

Clearly, the typical tourist profile has changed considerably over recent years. Tourists today tend to be more complex and experienced and therefore, they demand more personalization, authenticity, and memorable experiences (Brandão, Breda & Costa, 2019). However, a growing concern exists amongst tourists with regard to potential environmental, social and cultural impacts caused by tourism activity (Pulido-Fernández & López-Sánchez, 2016). This new scenario demands a more dynamic role by the public sector, in an attempt to promote new and more sustainable growth strategies based on gradual differential competitive repositioning.

In addition to tourists' needs, the concept of sustainable development of tourism considers that the needs of the other participants shall also be met. This includes the resident population and the private

and public sectors, since all of the tourism dimensions (environmental, social and economic) should be sustainable (Pulido-Fernández, Andrades-Caldito & Sánchez-Rivero, 2015).

Therefore, this article aims to determine tourists' willingness to pay taxes and public fees that would permit the financing of policies to offer improved sustainability to the destination and would thereby improve the tourism experience. To achieve this objective, it is first necessary to identify and compare, via statistical techniques (logistic regression and decision trees), which sociodemographic variables and travel characteristics influence the tourists' willingness to pay. And second, it aims to determine, through the calculation of elasticity, the impact of a price increase (based on the creation of taxes and public fees linked to tourism activities) on tourism demand. The study was conducted in Andalusia, a highly touristic region of southern Spain, which received some 32.4 million tourists in 2019. An interview of 1,068 tourists was conducted at the region's main tourism departure points.

Based on the proposed objectives, a hypothesis was formulated, stating that certain sociodemographic variables and travel characteristics of tourists visiting Andalusia permit the identification of their willingness and level of payment, both to improve their experience in the destination and to offer a greater degree of sustainability to these destinations, with this demand being resistant to the moderate price increases resulting from the creation of taxes and/or public fees.

The results of this work may provide a new means of addressing the issues of sustainability and financing of tourism activity in consolidated tourism destinations by policymakers. To do so, it is necessary to determine the suitability of fiscal instruments linked to tourism activity from the demand perspective. In addition, the results may be useful for decision-making in other destinations where tourism activity plays a large role in the local economy.

2. Theoretical Framework

2.1 Tourism experience and sustainability

People have many motivations for travel; sometimes, tourism is based on a need to escape from one's everyday life (Lengkeek, 1996; Urry, 1990). And other times, the goal is to escape from personal problems (Iso-Ahola, 1982). Oftentimes, travelers are simply seeking the travel experience (Pulido-Fernández & Navarro, 2014), which they hope will be unique and satisfactory; serving as a sort of psychological compensation (Iso-Ahola, 1982) and thereby providing an improved quality of life for the individual (Binkhorst, 2008).

Distinct studies on tourism motivation have referred to push factors, which sustain the tourists' desires, as well as factors of attraction, related to destination characteristics (Frederik, Brunner-Sperdin & Stokburger-Sauer, 2016; Mohammad & Som, 2010). Once the tourist has made the decision and selected a specific destination, the goal is for the destination to offer a suitable experience (Pulido-Fernández & Navarro, 2014). The assessment of the experience, satisfactory or not, is a psychological result that is the consequence of a process in which the tourist compares the perceived benefits with their previous expectations (Albayrak & Caber, 2018).

According to Henkel, Henkel, Agrusa & Tanner (2006), the ability of a destination to attract tourists and for said tourists to spend time there, depends on whether the destination site is capable of relying on four key factors: accessibility, infrastructures and services, landscapes and local community. These factors influence both the selection of the destination and the attachment to the same and the tourist's expected behavior. Other authors, such as Luque-Martínez, Del Barrio-García, Ibáñez-Zapata & Rodríguez-Molina (2007), have highlighted the architectural resources and social conditions – perception of residents, safety and pollution–, while Zouni and Kouremenos (2008) focused on infrastructures, the socio-economic context and the distinct services offered –transport, accessibility, lodging, restaurants, cultural offering, etc–.

The tourist will perceive a destination as being attractive if it satisfies their needs (Mayo & Jarvis, 1982), through a prior offering of goods and services that can collectively form a memorable

experience in the destination (Cracolici & Nijkamp, 2008). The tourist's satisfaction, therefore, will be the direct consequence of the quality of service received or a broader concept based on emotions and pleasure (De Rojas & Camarero, 2008).

In addition, since the late 90s, changes have been observed in tourist travel habits and behavior patterns (Perelli, 2011). According to Machado & Hernández (2008, p.113), "the 21st century tourism vision projects us to consumers who are more informed, cultured and demanding, having a well-recognized environmental interest, seeking increased product authenticity, and permitting them to experience their leisure time in natural environments that are clean and well-maintained, enjoying their activities and living unforgettable experiences."

Numerous studies have been conducted on consumer behavior, suggesting the growing tourist awareness of the environmental, social and cultural impact generated by tourism (López-Sánchez & Pulido-Fernández, 2014). In addition to tourists, there is widespread academic, political and industrial consensus on the need for more sustainable tourism (Gössling, Scott, Hall, Ceron, Dubois, 2012), which requires the participation of all stakeholders involved.

According to Adongo, Taale & Adam (2018), tourism serves as a means of understanding the relationships between tourists and the other stakeholders, the responsibilities derived from each of these relationships, and the means of taking advantage of these relationships to offer an empathetic sustainability. The authors conceptualize sustainable development in tourism as a means of tourism in which the stakeholders experience strong positive feelings and a commitment to the local population's well-being, the preservation of natural resources and an improved tourism experience.

Finally, the United Nations Environment Programme (UNEP, 2005) and the World Tourism Organization (UNWTO, 2005) declare that sustainable tourism takes into account current and future economic, social and environmental impacts, to satisfy the needs of visitors, local industry and host communities. Therefore, sustainable development in tourism should satisfy the distinct stakeholders (Adongo et al., 2018), creating economic opportunities, socio-cultural benefits and ensuring environmental preservation (Domínguez-Gómez & González-Gómez, 2017; Nickerson, Jorgenson & Boley, 2016). In other words, the destination should offer a satisfactory experience to tourists, maximizing profits for the private sector, generating development for the local community and guaranteeing environmental preservation and institutional sustainability (Ko, 2005; Moeller, Dolnicar & Leisch 2011; Pulido-Fernández et al., 2015)

2.2 Sustainability and tourism taxation

Sustainable tourism is, therefore, the result of the efficient management and use of resources to satisfy environmental, economic and socio-cultural needs of the current and future generations (Bramwell, Higham, Lane & Miller, 2017). Oftentimes, however, tourism activity negatively impacts the following three dimensions: economic, social and environmental (Aguiló, Barros, García & Roselló, 2004; McIntosh & Goeldner, 1990), leading to a debate on the sustainability of the tourism destinations and the difficulty of ensuring this sustainability without financial support (Hughes, 1995).

In the case of consolidated tourism destinations, one of the main goals is to seek new financing formulas that ensure a level of income that is in line with the increased financial effort made, given the volume of competencies to be assumed. Therefore, tax-based instruments have been created for tourism, since destinations can establish their own taxation systems. This is considered an effective tool to ensure competitiveness and sustainability and to minimize the negative impacts of tourism activity.

By creating taxes and/or public fees on tourism activities, public activity has often been used as an instrument to tackle certain problems derived from tourism development (Gooroochurn & Sinclair, 2003; Oom do Valle, Pintassilgo, Matias & André, 2012). Since its inception, this activity has been taxed to increase income, compensate for the costs of public provision of goods and services, correct

market flaws or negative externalities caused by the tourism activity (Gago, Labandeira, Picos & Rodríguez, 2009; Gooroochurn & Sinclair, 2005; Ponjan & Thirawat, 2016; Ryan, 2002), etc. In addition, taxation may serve other purposes, such as the creation of employment, the promotion of economic development, environmental protection, the promotion of the destination, etc (OECD, 2014).

Therefore, the need to distribute the costs associated with tourism has been justified by the creation of specific figures (Cetin, Alrawadieh, Dincer, Istanbulu & Ioannides, 2017) that are collected directly from the activity (Litvin, Crofts, Blackwell & Styles, 2006), and thereby ensure an extra-fiscal purpose, whose objective is to improve the product (Cetin et al., 2017) and, as a result, the tourism experience, such as by offering greater sustainability to the tourism destination. Therefore, tourism taxation serves as a corrective mechanism and a substitute for the hypothetical price of goods and services consumed by tourists (Gago et al., 2009; Pastor, 2016), having the objective of re-establishing the economic effectiveness of the destination (Clarke & Ng, 1993).

2.3 Willingness to pay, sociodemographic factors and travel characteristics

The financial insufficiency that characterizes consolidated tourism destinations has led to the growing debt of the same, caused mainly by investment expenses and the financing of some of the financial expenses within the current framework of the competencies assumed (Vallés, 2002). In a context of necessary goods and service provision by the public sector, Costa (2003) highlighted a major concern over the recurrent budgetary deficit of tourism destinations as a result of the expenses derived from the provision of tourism goods and services which exceed the income resulting from said activity for the public sector (Secretariat General for Tourism, 2008). This situation leads to decreases in the quality of local public services and the well-being of the local population. Therefore, the quality of tourism services is a determinant factor in the tourism experience (Cetin et al., 2017).

The main beneficiaries of tourism activity should be explored as well as, from a perception of equity, tourists' willingness to contribute to the creation, maintenance, improvement and enjoyment of the tourism experience, and the amount of the tourist payment and the recipient of the same. Therefore, Stapel (1972) defined the equity in a fee or price as the psychological perception of that which is just or correct. The concept of perceived equity is used in scientific literature on tourism to address the assignment of public resources (Buckley, 2003).

In the tourism sector, willingness to pay (WTP) has frequently been used as a means of estimating the value of non-marketable goods, based on assumptions of rational choice and maximization of usefulness (Reynisdottir, Song & Agrusa, 2008), with the literature focusing on identifying, in distinct contexts, both the factors determining said payment preference, as well as the amount that tourists are willing to pay (Chen, Zhang & Nijkamp, 2016). Furthermore, in accordance with Harrison (1992), the tourist's willingness to pay in a certain context does not differ from a consumer spending part of his/her money on the purchase of products or contracting recreational activities to increase consumer satisfaction.

Many studies have considered tourists' WTP in very distinct contexts, including tourist payment of an additional quantity (premium price) to improve product quality and/or the experience enjoyed at the destination (Bigné, Mattila & Andreu, 2008; Choong-Ki, Mjelde, Kim, Lee & Choi, 2019; Laarman & Gregersen, 1996; Mgxeakwa, Scholtz & Saayman, 2018; Miller, 2003; Veréb & Azevedo, 2019), natural attractions (Reynisdottir et al., 2008), recreational activities in the outdoors (Asafu-Adjaye & Tapsuwan, 2008), conservation and management of natural resources (Casey, Brown & Schuhmann, 2010; Piriyaapada & Wang, 2015), ecological tourism (Cheung & Jim, 2014; Hinnen, Hille & Wittmer, 2017), sustainable destinations (López-Sánchez & Pulido-Fernández, 2014), climate change (Araña, Carmelo, Moreno-Gil & Zubiaurre, 2013) and even to maintain or improve the quality of the tourism product (Laarman & Gregersen, 1996; Miller, 2003).

WTP is considered a dependent variable that is explained by a set of sociodemographic and psychographic factors (Choi, 2013; Jurado-Rivas & Sánchez-Rivero, 2019; Liu, Liu, Zhang, Qu & Yu, 2019; Rahimi, 2011; Reynisdottir et al., 2008; Seetaram, Song, Ye & Page, 2018) found (to a greater or lesser extent) in the tourist, as revealed in Table 1.

Table 1
Psychological and sociodemographic factors influencing the WTP.

Sociodemographic factors	Literature review
Income level	Garrod & Fyall (2000); More & Stevens (2000); Reynisdottir et al. (2008)
Nationality	Davis & Tisdell (1998); Reynisdottir et al. (2008); Schroeder & Louviere (1999)
Age	Daniere & Takahashi (1999); Kostakis & Sardanou (2011); Van Liere & Dunlap (1980)
Education level	Alves, Benavente & Ferreira (2014); Bowker, Cordell & Johnson (1999); Halkos & Matsiori (2012); Reynisdottir et al. (2008)
Gender	Arcury, Scollay & Johnson (1987); Kostakis & Sardanou (2011)
Profession	Rose, Kahle & Shoham (1995)
Psychographic factors	Literature review
Environmental awareness	Carlsson & Johansson-Stenman (2000); Reynisdottir et al. (2008)
Moral responsibility	Choi & Ritchie, (2014)
Transparency and public credibility	Juvan & Dolnicar, (2014); Polonsky, Grau & Garma (2010)

Source: Author's own creation.

As indicated in Table 1, some authors have considered psychographic factors as explanatory in willingness to pay. However, for the purposes of this study, all of the collected factors have not been directly included in the previous table –only considering those factors related to transparency and public credibility–, with this narrowed listing being a noted limitation of the work. In contrast, as López-Sánchez & Pulido-Fernández (2017) noted, some other travel characteristics (purpose of the travel, duration of stay, repetition of the visit, travel companions, type of lodging, professional category) fail to appear in the literature explaining WTP; although they are considered by researchers to be explanatory variables in tourism spending.

In addition, in the area of economy of tourism, the price of the non-marketable goods has been the subject of study (Piriapada & Wang, 2015; Reynisdottir et al., 2008), using the WTP, both to compensate for negative externalities generated by the activity, as well as to obtain certain marginal benefits (Seetaram et al., 2018). The establishment of taxes and public fees related to tourism activity may lead to increased prices and an increase in public collection derived from the creation of these figures. However, the effects on welfare are unclear. While many studies have highlighted that the implementation of tax figures is not appropriate (Divisekara, 2001; Durbarry & Sinclair, 2001; Hiemstra & Ismail, 1992), other studies recommend that they be established (Blake, 2000; Bonham, Fujii & Mak, 1992; Gooroochum & Sinclair, 2005). In any case, the loss (or not) of welfare depends on the elasticity of the demand for each tourism product (Tisdell, 1983), making it possible to reduce the negative effects of taxes and/or public fees if appropriately imposed (Clarke & Ng 1993), if the tourist understands and/or agrees with both the purpose and the benefits of the same (Williams, Vogt & Vittersø, 1999) and of transparency and public credibility (Juvan & Dolnicar, 2014).

3. Methodology

Economically speaking, the objective of this study is to determine the willingness of tourists to establish taxes and/or public fees that permit the financing of policies to offer increased sustainability to the destination and to simultaneously improve the tourism experience. The study was conducted in Andalusia, a consolidated tourism destination that, in 2019, welcomed a total of 32,476,854 tourists, of which 12,633,644 were foreigners (IECA, 2020). This is a clear example of the sun and

beach tourism specialization –without prejudice to the importance of the region’s cultural, rural, health and other tourism types–.

To achieve the study objective, which, on the one hand, is to identify the sociodemographic variables and travel characteristics that influence tourists’ willingness to pay, and, on the other hand, to determine the impact of a price increase resulting from the establishment of taxes and/or public fees linked to tourism activity on tourism demand, the means of obtaining the data is detailed below, including a specification of the statistical models that were applied.

3.1 Data collection

Given the impossibility of identifying the study subjects (all tourists visiting Andalusia), a probability sample was carried out, in which the sole selection criteria is having spent at least one night in any of the Andalusian destinations.

The sampling process has been approached through a Time Location Sampling (TLS) design, as in De Cantis & Ferrante (2011). TLS attempts to recruit respondents in places and times where they would be reasonably expected to gather. The sampling framework consists of venue-day-time units (VDT) –also known as time-location units– which represent the potential universe of venues, days and times. The units of interest were represented by tourists leaving Andalusia, where we collected information related to the entire period of time spent in Andalusia. As for the TLS design, we have selected all airports and the three high-speed train stations in Andalusia. The period covered by the survey was July to October, during which a large percentage of tourists visiting Andalusia are concentrated. The specific TLS implementation was treated as a two-stage stratified sampling design with unequal selection probabilities for the first-stage units, and with constant selection probabilities for the second-stage units. Finally, first-stage units included a combination of places, days and hours and the second-stage units were made up of tourists who were selected within the first stage units through a systematic selection procedure.

More specifically, 1068 interviews were conducted on tourists. After eliminating interviews with incomplete data, the sample consisted of 983 interviews (sampling error: 3.1%; confidence level 95%; $p = q = 0.50$). As Table 2 reveals, the total distribution of interviews conducted was based on the tourist’s point of departure from Andalusia criteria (Andalusian airports and Andalusian high-speed train stations), maintaining the proportionality in the number of interviews with respect to the total number of passengers received in both transport means.

Table 2
Distribution of interviews by port of departure.

	Total travelers	Proportion	Interviews
Total plane and train passengers	38,259,350	1.00	1068
Traffic of Andalusian plane passengers	28,693,606	0.75	801
Malaga airport	19,021,704	0.66	531
Seville airport	6,380,465	0.22	178
Almeria airport	992,043	0.03	28
Jerez airport	1,133,621	0.04	32
Granada-Jaen airport	1,126,389	0.04	31
Algeciras heliport	31,129	0.00	1
Cordoba airport	8255	0.00	0
Total number of (high speed) train travelers in Andalusia	9,565,744	0.25	267
Seville	4,384,100	0.46	122
Malaga	3,191,800	0.33	89

Source: Author's own creation based on AENA (2019) data and information provided by Renfe, upon request, on the 28th of March 2019 (JCA file -0331-2019).

1068 interviews were conducted (of the total interviewed, 10.2% of the tourists reside in Andalusia, 40.3% in another part of Spain, 34.7% in the European Union and 14.8% in the rest of the world) and consisted of two blocks of questions:

- A first block, classifying tourists based on sociodemographic variables (income, age, education level, gender, etc) and travel characteristics (travel companions, duration of stay, purpose of the travel, frequency of visit, type of lodging, place of origin, professional activity, occupational group, etc).
- A second block related to the tourism experience in Andalusia (possibility of improving the experience, WTP both to improve the experience and to contribute to an improved sustainability of the destination and maximum amount that they are willing to pay).

3.2 Logistic regression

Logistic regression models are commonly used to build a model from a linear predictor of the probability of the occurrence of an event (Kostakis, & Sardianou, 2011; López-Sánchez & Pulido-Fernández, 2017). In this study, it was proposed that this type of regression model be used in order to predict the probability of a positive WTP. The multivariate logistic model (or logit) expresses the probability that the tourist is willing to pay, based on sociodemographic variables and travel characteristics that serve as independent variables (Greene, 1997).

The logistics model expresses the odds (defining the odds as the ratio between the probability of a tourist being willing to pay and the probability of a tourist not being willing to pay) as an exponential function of the independent variables:

$$\frac{p}{1-p} = e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n} \quad (1)$$

Where p is the probability of being willing to pay and X_i ($i=1, 2, \dots, n$) are the independent variables (demographic characteristics and travel characteristics). The β_i are the regression coefficients, to be estimated in the analysis. Note that an equivalent way of writing the equation is:

$$\frac{p}{1-p} = e^{\beta_0} e^{\beta_1 X_1} e^{\beta_2 X_2} \dots e^{\beta_n X_n} \quad (2)$$

So, the unit increase of a specific factor X_i –or the presence of a factor with respect to the absence in the case of dichotomous factors–, multiplies the odds by the value. Thus, the significant influence of a factor is measured in terms of the variation produced in the odds. For the quantification of the goodness of fit provided by the model, the probability of the results of the sample are studied, assumptions of the estimated parameters and plausibility.

Therefore, the following statistic was used: -2 log-likelihood (-2LL); if -2LL is zero, the fit is perfect. Another goodness of fit measure is Nagelkerke's R^2 coefficient, which is an interpretation of the % of variance that is explained. In parallel, the Hosmer-Lemeshow test contrasts the calibration of the model, that is, the degree to which the predicted probability adjusts to reality.

3.3. Decision tree

Given the limitations found in the logistic regression models in terms of over adjustment with collinearity, if we do not consider the interaction between the endogenous variables, it will be convenient to compare and complement the regression technique with the so-called decision tree regression, for classification purposes, to explain the categories of the response variable. A decision tree is a type of supervised learning algorithm that is used for classification and regression tasks in complex databases. In addition, decision trees take into account the interaction relationship between the explanatory variables, via conditioning (Hothorn, Hornik & Zeileis, 2006). In this specific case, it corresponds to an econometric regression analysis between the willingness to pay (an exogenous variable) and certain sociodemographic variables and travel characteristics (endogenous ones).

The advantages of the decision trees include a clarification of the results, the understanding of the interaction between the variables and their potential application to massive data. In this work, conditional inference decision trees are used (Hothorn et al., 2006), presenting advantages as compared to the classic decision trees.

Conditional inference decision trees estimate the relationship between variables through a recursive partition in an area of conditional inference. The algorithm functions as follows (Molnar, 2013):

- 1) It tests the null hypothesis of independence between the explanatory variables and the explained variable through a permutation test for each explanatory variable. The partitioning process ends if the null hypothesis cannot be rejected. Alternatively, the variable having the greatest association is selected and this association is measured using the p-value of a partial test between each explanatory variable and the explained variable. The one with the lowest p-value is selected.
- 2) A binary partition is made for the selected variable.
- 3) Steps 1) and 2) are recursively repeated.

The implementation used for step 1 is based on the permutation test developed by Strasser and Weber (1999). The stop criterion in step 1 is based on the p-value adjusted by the Bonferroni method.

3.4. Elasticity of the demand

To measure the impact of a price increase due to the establishment of taxes and/or public fees on the demand of tourists visiting Andalusia, the price-demand elasticity was calculated.

Where Q is the demand and P the price; elasticity of the demand is E_d , corresponding to a mathematical operation given by the following expression:

$$E_d = \frac{dQ/Q}{dP/P} = \frac{dQ}{dP} \times \frac{P}{Q}. \quad (1)$$

Mathematically, the expression (1) measures the percentage variation of the demand with respect to a percentage variation in the price of the demanded product. This calculation corresponds to a curve and a value will be obtained as the price increases. However, for the previous calculation, a theoretical curve that relates demand to price is necessary. However, for pairs of sampling points, relating prices and demands, permits the calculation of elasticity based on the following estimation that is known for the mean point:

$$E_d = \frac{(Q_2 - Q_1)/(Q_2 + Q_1)/2}{(P_2 - P_1)/(P_2 + P_1)/2}, \quad (2)$$

Where the pairs (P_i, Q_i) , $i=1,2$, represent the price and the demand in the situation i , $i=1,2$. Therefore, the elasticity based on the mean point measures the variation in the demand upon increasing the price from P_1 to P_2 . The use of the mean point permits a symmetrical interpretation. Based on the previous expressions, it may be deduced that the elasticity values will normally be negative, given that, based on the classic law of demand, an increased price corresponds to a lower demand.

Finally, it should be noted that payment percentage over the budget is a new variable that is calculated via the following expression:

$$\% \text{ Budget} = \frac{\text{Additional amount}}{\text{Budget}} \times 100. \quad (3)$$

4. Results

Of a total of 1068 tourists interviewed (using a Likert scale from 1 to 7), 904 (84.7%) declared that there is room for improvement in their Andalusian tourism experience –values 5, 6 and 7 on the Likert scale–, while the remaining 15.3% believe that their experience cannot be improved –values 1, 2 and 3 on the Likert scale–. As seen in Table 3, observing the correlations (Spearman’s Rho) between the room for improvement of the tourism experience and the options by which they could be improved, it was concluded that the improvement of the infrastructures, in general, is the option that most conditions the opinion that it is necessary to improve the tourism experience –having the highest correlation, coefficient 0.405–, that is, infrastructure improvement is the most relevant of the 4 proposed factors.

Table 3
Options for improving the tourism experience.

	Valid N	Mean	Standard des.	Minimum	Median	Maximum	Correlations
How much could the tourism experience that you are enjoying be improved?	1068	5.61	1.25	1.00	6.00	7.0	
General infrastructure (public transport, safety, cleanliness, crowding, traffic, etc)	904	5.55	1.32	1.00	6.00	7.0	.405
Touristic infrastructure (preservation and maintenance of tourism attractions, emblematic buildings, the environment, etc)	904	5.45	1.40	1.00	6.00	7.0	.218
Tourism services (cultural and leisure offering, tourism lodging, tourist information services, Internet connection, etc)	904	5.63	1.29	1.00	6.00	7.0	.259
Wellbeing of the population (safety, cleanliness, waste collection, public service provision, etc)	904	5.36	1.51	1.00	6.00	7.0	.235

Source: Author’s own creation.

In addition, and in order to determine the willingness to pay by the tourist, the following question was asked to the 1068 tourists making up the sample: Would you be willing to pay an additional quantity, both to improve your tourism experience (more and better infrastructures, public services, tourism services and increased wellbeing of the resident population) and to improve the sustainability of the destination (to minimize the negative impact of tourism activity, such as waste generation, contamination, congestion in tourism interest sites, saturation in certain services, environmental, heritage and architectural degradation, preservation of local traditions and culture, increase of the

cultural and artistic offering, more and better economic opportunities for the local population and companies? Of the interviewed individuals, 75.3% would be willing to pay a certain additional amount in order to improve their tourism experience (more and improved infrastructures, public and tourism services), to minimize the negative impacts of the tourism activity (waste generation, pollution, overcrowding in sites of touristic interest, saturation of certain services, environmental, patrimonial and architectural degradation, etc) and to expand upon the cultural and artistic offerings. The remaining 24.7% believed that the additional payment would only serve to increase the entity's income, that the entity will spend money as it deems most useful and that nothing will change. As for the amount that tourists are willing to pay, 75% of those interviewed (804) were willing to pay to improve the tourism experience, with 5.16€ ($\pm 2.00\text{€}$) being the mean maximum daily amount that they would be willing to pay.

4.1 Factors relevant to the WTP, regarding taxes and/or public fees

4.1.1 Identification via the binary logistic regression

To identify which factors are relevant to WTP with respect to taxes and/or public prices that permit the financing of policies that will offer improved destination sustainability and that will simultaneously improve the tourism experience, a prediction model has been calculated, on a random sub-sample of 90% of the total sample, subsequently validated on the remaining 10%.

Table 4

Logit model for variables relevant to willingness to pay.

	Sig.	Exp(B)	95% CI for EXP(B)	
			Lower	Upper
AGE: under 18 (Ref. cat.)	.000			
18 to 24	.154	3.362	.636	17.789
25 to 34	.024	7.050	1.288	38.570
35 to 44	.019	7.673	1.390	42.362
45 to 54	.007	10.457	1.889	57.898
55 to 64	.003	13.643	2.441	76.250
over 65	.528	1.760	.304	10.189
COMPANIONS: Family (Ref. cat.)	.003			
Friends	.228	.743	.458	1.204
Alone	.001	.152	.050	.457
LODGING: Hotel lodging (Ref. cat.)	.053			
Camping	.502	.751	.326	1.731
Hostel	.082	.541	.271	1.081
Tourism apartment	.353	.762	.429	1.353
Others	.005	.387	.200	.747
INCOME: Less than 12,000€ (Ref. cat.)	.000			
12,001 € to 15,000 €	.839	.912	.376	2.214
15,001 € to 20,000 €	.067	2.209	.946	5.159
20,001 € to 25,000 €	.000	4.189	1.933	9.080
25,001 € to 30,000 €	.013	2.660	1.233	5.737
30,001 € to 35,000 €	.001	4.784	1.894	12.085
35,001 € to 40,000 €	.000	9.445	3.159	28.236
40,001 € to 50,000 €	.000	20.912	4.330	101.005
Over 50,000 €	.007	9.203	1.842	45.974
BUDGET €	.000	1.023	1.013	1.033
Constant	.000	.043		

Source: Author's own creation.

The area under the curve (AUC) of the training sample reaches a value of 0.880, which may be considered optimal, given that the values of AUC that are close to 1 or 0 indicate that the test is adequate or not adequate, respectively; while values close to 0.5 indicate that the usefulness of the test is no better than chance. The AUC of the validation sample reached a value of 0.839, which can also be considered optimal.

Sensitivity, specificity, VP+, VP-, both for the training sample (90.3%, 61.8%, 88.1%, 67.0%), as well as the validation sample (89.8%, 60.5%, 89.2%, 61.9%), confirm that the prediction model is excellent, transposable and has high-quality indices (>85% in the detection of positive WTP and >60% in the detection of negative WTP).

So, the factors that were found to be relevant in the WTP with regard to taxes and/or public fees that permit the financing of policies that would offer increased sustainability to the destination and simultaneously improve the tourism experience are: age, travel companions, type of lodging, income and daily budget for the travel (note that any range of age over 18 and any income category that exceeds 12,000€ will have a higher WTP, since the Exp B are greater than 1). Factors such as gender, education level, purpose of the trip and professional category were relevant in the WTP in a prior bivariate analysis. Yet, subsequently, when included in the prediction model in which all of the factors acted together, they were found to be irrelevant. Other factors such as the duration of the stay, frequency of the visit and place of origin were not found to be relevant in either analysis.

The model has an optimal R2 of 52.5%. The Hosmer-Lemeshow test revealed a Chi² value of 5.819 and a p-value of 0.667 (the Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05); therefore, the model adequately fits the data.

4.1.2 Confirmation via decision trees

Decision trees were used to expand the identification of the factors relevant in WTP, with regard to taxes and/or public fees that permit the financing of policies to provide increased destination sustainability and to improve the tourism experience.

Therefore, the sociodemographic variables and travel characteristics of a total of 1068 tourists interviewed were measured, as defined in the previous section. For this, a bivariate study was conducted, revealing that 85 tourist interviews were missing some data with reference to the variables of this model.

In this case, the study focuses only on those individuals having all measured variables. With the database (983 individuals) training and validation sets were created. The training set was created by 90% of the database, with the decision trees being applied to the training set. These techniques shall be validated afterward with the validation set (10% remaining of the database).

Table 5 shows the coding of the relevant variables. Figure 1 shows the decision tree for the WTP variable with respect to taxes and/or public fees that would permit the financing of policies to offer improved destination sustainability and simultaneously improve the tourism experience, through the variables with the most significant association: income, budget, studies, age and gender.

Table 5

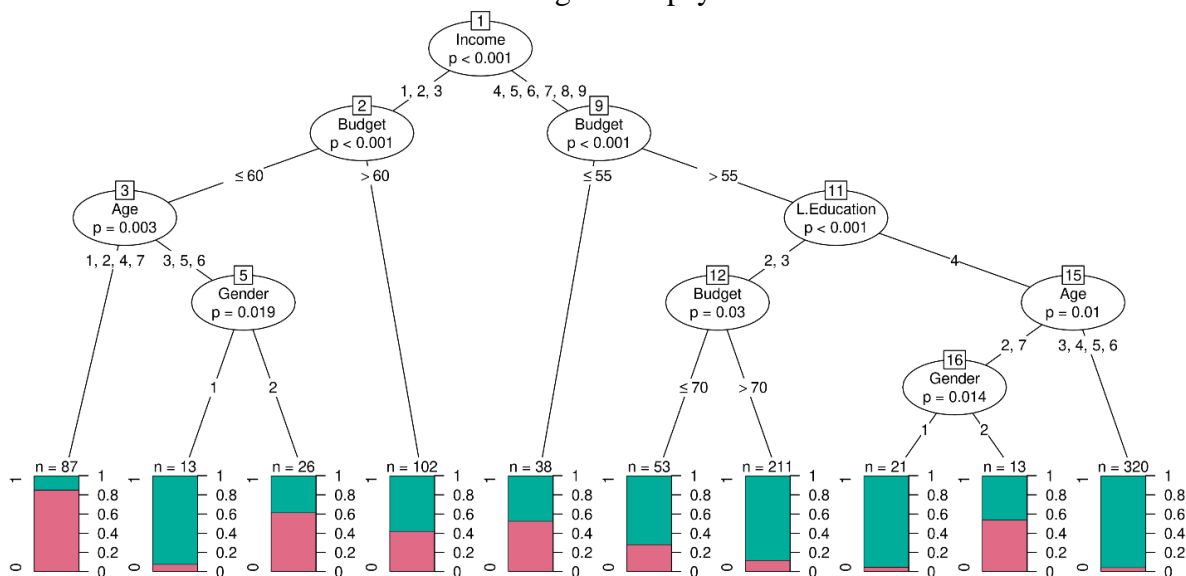
Coding of the relevant variables in decision trees.

Variable	Coding
Income (thousands of euros)	1 (less than 12), 2 (between 12 and 15), 3 (between 15 and 20), 4 (between 20 and 25), 5 (between 25 and 30), 6 (between 30 and 35) 7 (between 35 and 40), 8 (between 40 and 50), 9 (over 50)

Age (years)	1 (under 18), 2 (between 18 and 24), 3 (between 25 and 34), 4 (between 35 and 44), 5 (between 45 and 54), 6 (between 55 and 64), 7 (over 65)
Gender	1 (male), 2 (female)
Education	1 (no education), 2 (primary school), 3 (high school), 4 (higher education)
Budget (euros)	*continuous

Source: Author's own creation.

Figure 1
Decision tree variables relevant to the willingness to pay.



Source: Author's own creation.

As seen in Figure 1, the root node contains the income variable, which is the one that best groups in terms of association (dependence) to the WTP variable. In general, willingness to pay has a direct relationship with income and budget. It should be noted that, based on these two variables, there is an interaction with gender, age and education level.

Similarly, the tree clearly shows the effect of gender on certain extreme groups, with men having a greater likelihood of paying. Therefore, men between the ages of 25 and 54, with budgets of less than or equal to 60€ and with low incomes, have a high likelihood of paying, while females having these same conditions have a low likelihood.

It is also observed that, in general, the youngest are grouped with the oldest, for low and high incomes, and tend to collectively have a low willingness to pay. It is also important to note that education level influences for high incomes, with university graduates having a higher willingness to pay. Otherwise, apart from the previously mentioned exceptions, the likeliness to pay is very closely associated with the income of the individuals and the budgets that they manage.

In this case, the prediction capacity of the tree is measured using the ROC curve and the area under the curve (AUC). For the training set, AUC=0.8515, whereas for the validation set, AUC=0.8186. It should be recalled that for the logistic regression, an AUC=0.88 is obtained in the training set and an AUC=0.839 in the validation set. To verify whether or not statistical differences exist between the two techniques (logistic regression and decision trees), a contrast should be carried out for the hypothesis of differences in ROC curves, which shall be discarded, recommending the use of a decision tree, given the simplicity of its implementation and the simple results interpretation.

4.2 Determination of the amount to pay for taxes and/or public fees

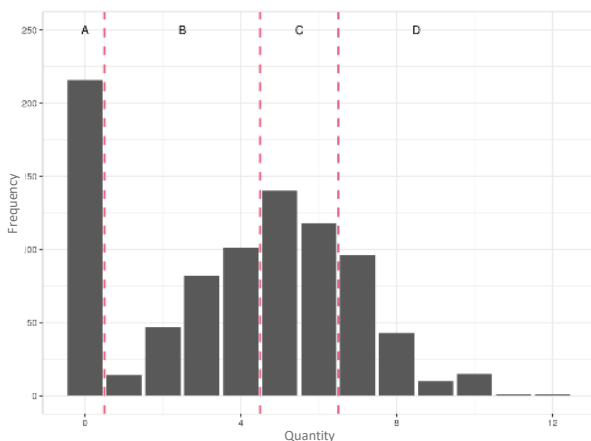
Having analyzed the willingness to pay variable, we now examine how much tourists are willing to pay for taxes and/or public fees that permit the financing of policies that would offer greater sustainability to the destination and simultaneously improve the tourism experience. Therefore, decision trees have also been used. To achieve this objective, the following categories have been created:

- Category A: individuals that are unwilling to pay, or that are willing to pay 0 euros (216 individuals).
- Category B: individuals that are willing to pay between 1 and 4 euros (249 individuals).
- Category C: individuals that are willing to pay 5 or 6 euros (252 individuals).
- Category D: individuals that are willing to pay over 6 euros (167 individuals).

This division has been used, since it divides the sample according to the approximate quartiles of the distribution of the willingness to pay variable, using the value of zero euros as a discreet value (see Figure 2).

Figure 2

Bar graph of the amount to pay.



Source: Author's own creation.

This variable has been represented via a bar graph since the amount that tourists are willing to pay has been discretized. In the bar graph, we find that the value 0 euros is overvalued; so, all tourists who are unwilling to pay are included in this category. It is also observed that the distribution of the quantity to be paid is slightly asymmetric to the right, as analyzed later in the elasticity analysis. It should be noted that the average of the WTP, conditioned to those who are willing, is 5.16 euros. An analysis of the quantity that tourists are willing to pay has been proposed, using a decision tree that attempts to explain the four previously defined categories. The database has been filtered in order to eliminate the WTP variables and the amount which, evidently, will fully explain the defined categories. Therefore, Table 6 shows the coding of the relevant variables and Figure 3 reveals the corresponding decision tree.

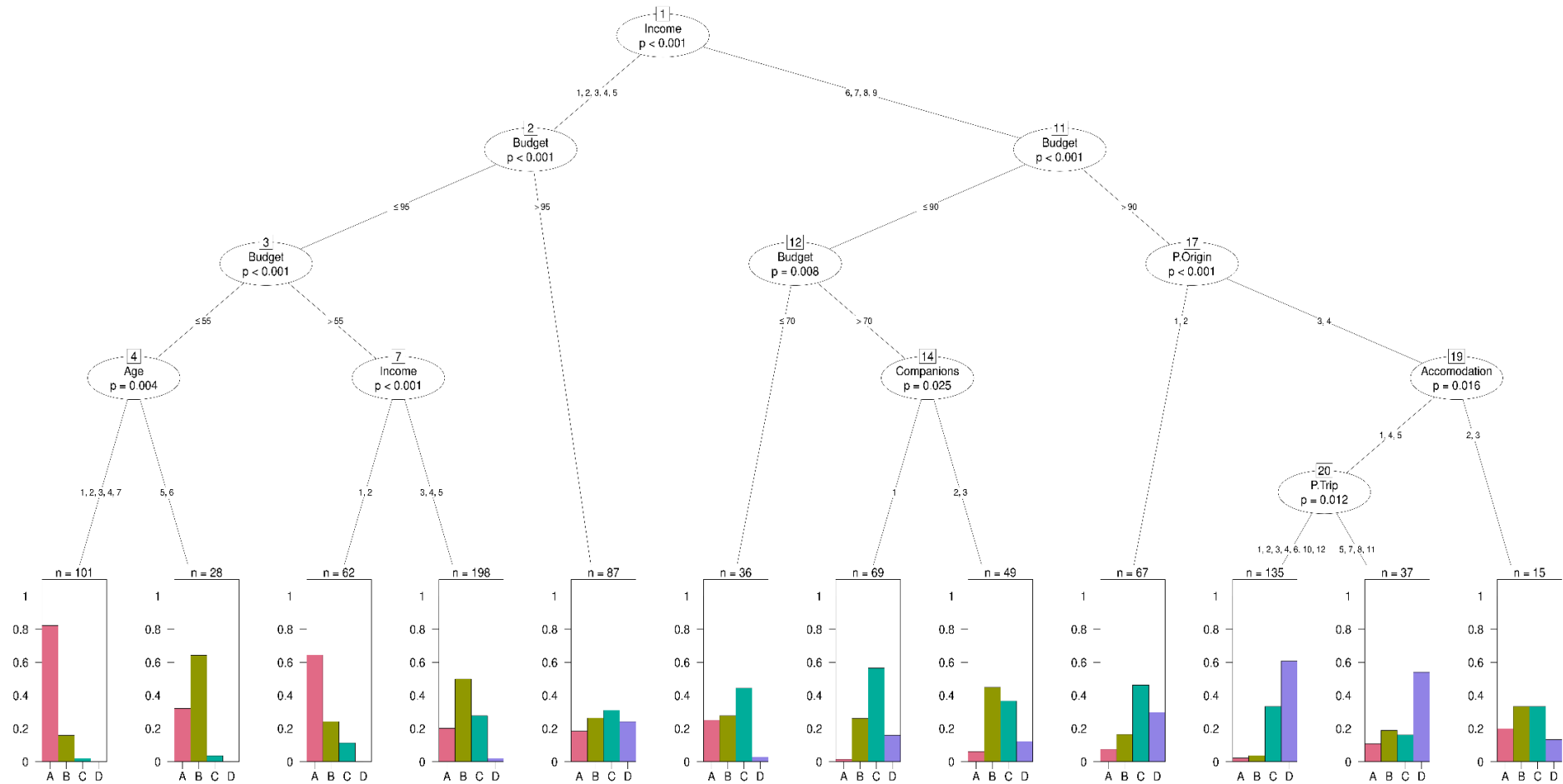
Table 6

Coding of relevant variables in decision trees by amount to pay.

Variable	Coding
Companions	1 (family), 2 (friends), 3 (alone)
Accommodation	1 (hotel), 2 (camp site), 3 (hostel), 4 (tourism apartment), 5 (others)
Place of origin	1 (Andalusia), 2 (Spain), 3 (European Union), 4 (rest of the world)
Purpose of the trip	1 (sun/beach), 2 (interior), 3 (cultural), 4 (family), 5 (golf), 6 (health and wellbeing), 7 (meetings and congresses), 8 (nautical), 9 (cruise ship), 10 (nature), 11 (wine/gastronomy), 12 (languages), 13 (snow)

Source: Author's own creation.

Figure 3
Decision tree for the quantity variable.



Source: Author's own creation.

Once again, the income and budget variables appear as the root and first branches of the tree, indicating that they are the variables having a larger association with the quantity to be paid by the tourists. In addition, the tree structure has changed with respect to the WTP variable. Now, new explanatory variables appear for the individual's behavior in terms of paying an additional quantity: origin, companions, accommodation and purpose of the trip. This is because these variables tend to distinguish between tourists having a distinct intensity of WTP.

As shown with the WTP variable, younger individuals and those who are retired appear to be the least willing. As for age, it is curious to note that, of the sub-group with low incomes and budgets, individuals aged 45 to 64 are willing to pay between 1 and 4 euros. Finally, observing the tree, companions, purpose of trip and accommodation all influence in clear groupings. As for companions, there is a divide between alone and accompanied, with respect to the purpose that is somewhat linked to elite tourism. On the one hand, there is golf, nautical, congresses and gastronomy and rest. Finally, accommodation also has an influence on groups in the high budget, dividing between camp sites and hostels and the others.

4.3 Elasticity of demand with respect to price increases derived from the establishment of taxes and/or public fees

As indicated above, a total of 804 interviewed tourists (75.28%) revealed a positive WTP, while 264 (24.72%) revealed a negative WTP. The literal interpretation of this data suggests a decrease in tourist inflow of approximately 25% in the face of a supposed price increase. As for the maximum quantity that tourists (who are willing) will pay, Table 7 offers a statistical summary.

Table 7

Statistical summary of additional quantity and of the payment percentage over the budget.

	N	Average	Stan. Dev.	Min.	Max.	Bias	Kurtosis	Conf. Int. (95%)	
Additional quantity	804	5.16	2	1	15	3.74	2.51	5.02	5.30
Payment percentage over the budget	804	5.56	1.97	1	18.18	9.23	17.00	5.42	5.70

Source: Author's own creation.

It has been verified that the values do not have a bell-shaped distribution. The actual distribution tends to be asymmetrical to the right, reflecting the fact that over 50% of the values have scores that exceed the mean value. This indicates the existence of groups of tourists, quite uncommon, having a high willingness to pay. In addition, a somewhat high kurtosis reveals atypical values in the tails, once again suggesting the existence of tourists with a high willingness to pay.

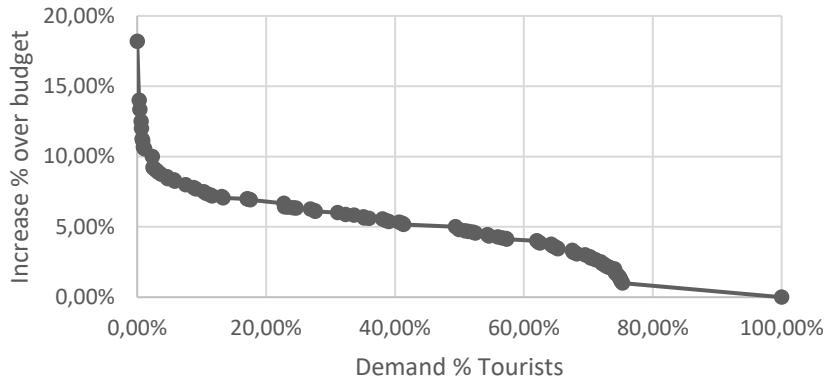
Finally, it should be noted that the payment percentage over the budget is a new variable expressed in (3). Observing the bias (reference between -2 and 2) and the kurtosis (reference between -2 and 2) it may be verified that the values do not follow a bell-shaped distribution. This distribution tends to be very asymmetric to the right; therefore, over 50% of the values will have scores that are higher than the mean value. This data once again indicates the existence of quite atypical groups that have a high willingness to pay with regard to their budget. This data is in line with the study presented in the same Table for the additional quantity, but with a greater asymmetry for the budget.

In addition, a very high kurtosis reveals atypical values in the tails, once again offering evidence of the existence of groups of tourists with a high willingness to pay. Finally, we note that values exceeding 12% budget increase begin to reveal anomalies as compared to the 'regular behavior'.

Figure 4 demonstrates the effect of a price increase over the percentage of the budget. The accumulated percentage of tourists lost due to a supposed rise by percent of budget –considered the asset price– is presented. In mathematical terms, the percentage calculation consists of graphing the percentiles of the variable while taking into account that the 'zero percent' value accumulates 24.72% of the tourists.

Figure 4

Curve of demand vs. % tourists vs. increase % budget.



Source: Author's own creation.

Figure 4 is a quite real approximation of the demand curve. It may be observed that the values change in the ordinate axis represent tourists who permit a similar rise with respect to their budget, i.e, with respect to how they acquire the product. In Table 8, the elasticity calculation is shown for the demand curve given in Figure 4, considering the expression (2). The intervals in the first row show a percentage rise in the price from the first interval value to the second. For example, the 4-5 interval indicates that a rise of 1% in the payment percentage over the tourist's budget, from 4% and up to a maximum limit of 5%, implies an elasticity of -1.02.

Table 8

Demand curve elasticities.

Percentage increase in price by intervals	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-10	10-12	12-14	14-18
Demand elasticity	-0.14	-0.02	-0.16	-0.34	-1.02	-2.50	-3.79	-5.84	-4.71	-6.19	-5.20	-7.70

Source: Author's own creation.

As expected, all values are negative, since an increase in the percentage value of the budget always leads to a decrease in demand. On the other hand, until approximately 5% of the budget increases, elasticity has an absolute value that is lower than 1, indicating a relatively inelastic demand. Theoretically, a very moderate increase in budget would not have devastating consequences. In this case, it should be noted that the tourist group with a null WTP, in practice, would permit a slight price increase. Obviously, the data only include intent. On the other hand, as of a 5% increase, elasticity is greater than the absolute value of 1, indicating a relatively elastic demand.

This behavior is quite typical in tourism, since tourism assets have many substitute goods and a strong increase in price may lead to a decrease in demand. In these cases, the market tends to lower (and not raise) prices in order to increase earnings. Therefore, in response to a price increase, tourists would be expected to accept a very moderate increase, in line with the description of the question.

5. Discussion and conclusions

Considering that tourism is an activity oriented to demand and that the price variable is one of the main factors when selecting a destination –due to the numerous alternatives capable of satisfying the same tourist motivations–, destination managers must know the tourism demand's willingness to pay in advance, as well as the sensitivity of the tourism demand in the case of a hypothetical implementation of fiscal instruments tied to the tourism activity.

This would permit destination managers to make an estimate with regards to the economic valuation resulting from the distinct resources and tourist attractions, mainly of public provision, such as determining the suitability of the creation of fiscal instruments. The implementation of taxes and/or public fees without first performing an analysis of the main stakeholder of the tourism activity may make this implementation an unpopular measure for tourists, leading them to opt for alternative destinations and causing a subsequent decline in the resulting destination tourism flows.

The results of this study confirm the initial hypothesis, which established that certain sociodemographic variables and travel characteristics of tourists visiting Andalusia permit the identification of their willingness to pay and the amount that they would pay, both to improve their experience in the destination and to offer increased sustainability, with this demand being sensitive to the price increase resulting from the creation of taxes and/or public fees.

Clearly, not all tourists traveling to Andalusia are willing to pay to improve their tourism experience, or to contribute to increased sustainability in Andalusia, as a tourism destination; in fact, one out of every four tourists interviewed demonstrated their rejection to pay any tax and/or public fee imposed by the tourism activity. Therefore, in light of this results, it is possible that this situation may be due to a lack of trust, information and/or transparency in terms of public management and the ultimate destination of the collected quantities, as stated in other past works, such as those by Juvan and Dolnicar (2014) or Polonsky et al. (2010).

The sociodemographic factors found to be determinant in willingness to pay coincide with the conclusions of past works (Garrod & Fyall, 2000; More & Stevens, 2000; Reynisdottir et al., 2008); that is, the income variable is the one that best groups in terms of association to the willingness to pay variable, as found by other studies that concluded that tourists with lower income levels were more sensitive to price changes (More & Stevens, 2000; Reiling, Cheng, & Trott, 1992). Therefore, the income variable, along with daily budget, have an interaction with the other variables that have been found to be determinant; specifically, gender (Arcury et al., 1987; Kostakis & Sardianou, 2011), age (Daniere & Takahashi, 1999; Kostakis & Sardianou, 2011; Van Lier & Dunlap, 1980) and education level (Alves et al., 2014; Bowker et al., 1999; Halkos & Matsiori, 2012; Reynisdottir et al., 2008).

Based on the previously mentioned sociodemographic factors and travel characteristics, after applying the logistic regression, five variables were selected, having at least one significant category (age, companion, type of accommodation, income and daily budget). When applying the decision tree, five variables were also found. Both techniques eliminated frequency, origin and stay as explanatory variables and found that age, budget and income were predictive variables. And both coincide in that retired and young individuals fit into one same category that is characterized by an unwillingness to pay.

As for the amount that tourists are willing to pay as a result of the establishment of taxes and/or public fees that will increase product price, the income and budget variables have the greatest association with the amount to be paid. However, unlike the willingness to pay variable, and in accordance with López-Sánchez & Pulido-Fernández (2017), there are new explanatory variables of tourist behavior in terms of paying an additional amount, including: origin, companions, accommodation and purpose of the trip. As for the place of origin variable, it is reasonable to assume that the willingness to pay an additional amount is greater for those individuals who have traveled to Andalusia from other regions, traveling greater distances.

Second, as for the sensitivity analysis of the demand with respect to an increase in prices caused by the establishment of taxes and/or public fees, the calculation of elasticity highlights the sensitivity and heterogeneity of the demand of tourists visiting Andalusia in light of a hypothetical price increase.

Therefore, the refusal to pay by 24.72% of the interviewees, suggests a decrease in tourist flows visiting Andalusia of almost 25% in the face of an eventual price increase. However, with an increase of approximately 5% of the daily budget per tourist, elasticity has an absolute value of less than 1, indicating a relatively inelastic demand. Therefore, theoretically, a very moderate increase in budget, up to this percentage, would not have significant consequences on the arrival of tourists. This is in line with past studies (Williams et al., 1999) that have shown that if individuals agree with the purpose of the payment, they are more likely to accept payment policies.

The results, both on willingness to pay of tourists visiting Andalusia as well as factors determining this willingness to pay and sensitivity of the tourism demand, would permit responsible policies to determine if the necessary starting points exist to establish appropriate fiscal instruments that would permit the financing of public policies through which real progress towards sustainable management of tourism destinations could begin. Therefore, a real change that is focused on sustainability requires that major changes take place, both in attitudes and activities of the stakeholders, as well as in the identity of the very tourism destination, establishing strategies of repositioning by investing in innovation and differentiation of the offer, which translates into memorable experiences in the destination, generates greater socioeconomic profitability for the same, and consolidating leadership over time as a unique, differentiated and responsible destination.

Therefore, communication policies should be considered prior to establishing taxes and public fees related to tourism activity, to ensure their acceptance by tourists visiting Andalusia, having the ultimate objective of implementing strategies to improve both sustainability and the tourism experience of the individuals visiting Andalusia.

This study has certain limitations such as the lack of interviews conducted in other ports of departure, distinct from those analyzed, such as highway transport. The time period during which the interviews were completed by the tourists did not extend to a full calendar year and none of the questions included the identification of certain psychographic factors, such as environmental awareness and moral responsibility, which could have enriched this work.

An attempt was made to control conformity and social desirability bias, with the following considerations being kept in mind during the tourist interviews: a) the interviewer emphasized the search for completely sincere responses, b) questions were worded neutrally, with no type of orientation as to which response may be better or worse, c) the option of not responding was included in the case in which the interviewee was uncomfortable with the question, d) the study considers the

amount of payment variable, which plays a controlling role on desirability, since assessing the amount of payment allows us to quantify this desire and e) at all times, anonymity is guaranteed. However, conformity and social desirability bias are clearly difficult to control and may ultimately affect the study's internal validity.

Interviews were conducted when the tourist completed his/her travel; they were not carried out in any other moments, such as the start of the trip or during the course of the same. In addition, only one variable was measured: willingness to pay (WTP) to contribute to an increased destination sustainability and to improve the destination experience. Therefore, two questions could have been formulated to independently measure WTP, one for the improved sustainability and the other for the improved tourism experience.

The final study limitation related to the belief that WTP is a dependent variable that reflects intentions and not actual payment behavior.

Finally, as future lines of research, it would be interesting to explore willingness to pay by tourist cluster, examining it by groups of individuals with similar characteristics. Also, tourists' willingness to pay for specific taxes and/or public fees may be examined.

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