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The Travel Cost Method Applied to the Valuation of the Historic and Cultural Heritage of the Castile-León Region of Spain.

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Abstract: Heritage and culture are two important components of the leisure sector. This leads to the question of how such non-market goods may be valued. In this paper we have opted for the travel cost method, widely used in the valuation of natural assets, to estimate the demand curve. Using this method, it was possible to calculate the consumer surplus value of four different cultural goods or services in the Castile-León region of Spain. The four features studied included a cultural artistic event, a village comprising an historic ensemble, a museum located in a provincial capital and a cathedral.

1. Introduction

In view of the difficulty involved in defining cultural heritage, and in order to provide a point of reference from which to contemplate the magnitude of this sector, let us begin by offering the definition given by Harvey (1997). Harvey defines *cultural heritage* as the entire set of goods, real property, tangible and intangible assets, privately-owned property, property pertaining to public and semi-public institutions, church property and national assets which have great historic, artistic, scientific and cultural value and which, therefore, are worthy of preservation by nations and peoples, serving as permanent features of a people's identity down through the generations. These heritage and cultural goods range from such architectural, historic and artistic treasures as monuments, buildings and historic ensembles, to moveable assets such as works of art, crafts, documents, literary works and bibliographic resources, ethnological treasures and archeological remains, and even include such non-physical features as oral traditions, unwritten languages, etc.

Culture and heritage play a vital role in the development of the individual and the collective development of a people. In addition to providing cultural, aesthetic and spiritual satisfaction, culture and heritage are of interest in terms of economics. Many features of cultural heritage may be classified as public goods, and despite the fact that there are insufficient public resources to guarantee their maintenance and preservation, cultural and heritage goods provide certain benefits and externalities to the areas in which they are located. Culture (and related activities) not only creates significant economic flows, but may also be used as a means of transforming certain geographic areas, and therefore forms part of many local and regional economic development strategies. The desire to create a balance such that the enjoyment by individuals does not jeopardize the maintenance and preservation of cultural and heritage goods has given rise to a number of political measures being taken at the national and international levels.

Additionally, greater cultural awareness, the rise in economic levels, the great amount of free time available today, and the improvement in transportation and communication have all favored an increase in the consumption of cultural goods. Nevertheless, the main reason for the strong increase in the demand for cultural products which has been observed recently must be sought in the so-called *leisure culture*. Recreation has an important place in the value hierarchy of individuals today,

while work is viewed as a necessary means of meeting one's needs ('needs' understood in the widest sense of the word). This is not to say that one avoids work completely, dedicating oneself exclusively to the enjoyment of free time. The ways in which free time is spent, however, and the portion of income which people spend on leisure activities have changed significantly with respect to earlier periods.

Among the various uses of free time, cultural tourism has taken on great importance, having passed from being an activity of the elite minority to something which has become frequent and commonplace. In addition to raising an individual's level of education and forming part of his recreational activity, cultural tourism is a source of wealth and job creation. The profitability of this type of tourism does not center on the admittance fee—which in many cases is zero—but rather on the commercialization of products related to the visit, and on the economic benefits to the area in which the site is located.

A brief analysis of cultural and heritage goods will show that, with the exception of works of art, which have a very specific market, many historic and cultural assets have no market on which they may be exchanged. These assets, then, also lack price. The use of cultural and heritage goods, for example, may create externalities which affect the enjoyment or welfare of other people, depending on whether positive or negative effects are produced, without regard to whether a fee is charged for their use. Many cultural and heritage goods are public in nature; since they are goods which are offered to everyone, no one may be excluded from using them. For this reason, they are non-market goods.

In any case, the unavailability of information with regard to the value of cultural and heritage goods does not mean that, for the consumer, they have no value. It is therefore natural that an attempt should be made to estimate the value in some way. This value, which we shall attempt to express monetarily, may be a use value or a non-use value. *Use value* derives from the use of the good. A *non-use value* may be an *option value* (i.e., the value for individuals who have not visited the site but who wish to have the opportunity to do so in the future) or an *existence value* (i.e., the value attributed to the good by those persons who have neither visited the site nor plan to do so, but who view the existence of the site in a positive light). Estimating the value of these types of goods is not an easy task, though considerable work using a variety of methods has been

done in the area of environmental goods, which share a certain similarity with cultural and heritage goods. These methods include the hedonic price method, the method of contingent valuation and the travel cost method. Despite much work on perfecting these methods, each has a number of problems associated with it, and all may be criticized both for the basic premise they take and the analytical techniques they employ.[1] Nevertheless, they constitute the only valid means by which useful information may be gathered and provided to the administrators of these goods to help them make reasonable decisions with regard to their use.

In this paper, we intend to reflect on the travel cost method of estimating value and the problems with the method. We will then apply the method to four features of the culture and heritage of the Castile-León region of Spain. Concluding comments will be made in the final section of the paper.

2. The travel cost method

One way to solve the problem of calculating the value an individual places on a given attraction—irrespective of its nature and regardless of whether an entry fee is charged—is by attributing the cost of travel from the visitor's point of origin to the site. This approach was first suggested to the U.S. National Parks Service by Hotelling (1947). The Parks Service had charged several leading economists of the day with developing some method by which the existence of national parks could be valued. Of all the responses it received, only Hotelling's was based on sound economic principles. The methodology was subsequently developed by Clawson and Knetsch (1966). The Water Resources Council recommended in 1979 that the approach be used to evaluate projects in the United States. Since then, numerous works have been published on the valuation of environmental resources using this method.[2]

2.1 *Theoretical framework*

The measure of the use value of a cultural or heritage good implies that a microeconomic model explaining the behavior which leads an individual to decide to visit a site must be identified. The aim of the travel cost method is to provide a measure

[1] See Azqueta (1996) y Azqueta y Pérez (1996)

[2] In Spain, applications of the approach may be seen in Campos et al.(1996), Garrido et al. (1996), Loureiro and Albiac (1994), Pérez y Pérez et al. (1996), and Riera et al. (1994).

of the use value of a recreation site by establishing a demand curve based on users' utility maximization.

Let U(v,x) be the quasi-concave utility function of a representative consumer, where v is the number of visits to a given site and x is a vector of goods consumed at a given price vector, p. Each visit to the site has a cost, c.

The consumer has an income: $Y = Y_0 + wt_w$ (1)

where Y_0 = non-labor income

w = wage rate

t_w = work hours

likewise, the consumer has a certain amount of time: $T_0 = t_w + vt_v$ (2)

where t_v = time spent on visit

The user of the good must maximize its utility subject to time and income restrictions. The basic model implies that individuals are free to choose between work and recreation, in which case the opportunity cost of time is equal to the wage rate. In this manner, the utility function U(v,x) may be maximized subject to the following restrictions:

$$Y = cv + px$$
$$T_0 = t_w + vt_v$$

Bearing in mind the following relationships:

$$Y = cv + px = Y_0 + wt_w$$
$$Y_0 + w(T_0 - vt_v) = cv + px$$
$$Y_0 + wT_0 - v(wt_v + c) - px = 0$$

the problem may be rewritten as:

$$\max_{v,x} \{U(v, x) + \lambda(Y_0 + wT_0 - v(wt_v + c) - px)\} \quad (3)$$

The first order condition is: $\frac{dU}{dv} - \lambda(wt_v + c) = 0$

and making:

$c^* = wt_v + c$ (total cost of visit)

$Y^* = Y_0 + wT_0$ (maximum income)

The demand function may be expressed as: $v = f(Y^*, p, c^*)$

As the reader will note, this is an indirect valuation method which uses the cost of travel necessary to make the visit as an estimate of the value of the cultural recreational activity. Naturally, the greater the distance, the greater the cost of travel, which translates into fewer visits from points which are farthest away from the site.

The travel cost method has fundamentally been developed along two lines: the zonal travel cost method and the individual travel cost method. The former was applied by Clawson and Knetsch (1966), who assumed that users would react to an admittance fee as if it were an increase in the cost of travel. In the zonal travel cost method, a sample of visitors to a given point of interest is taken. The information from this sample is then grouped according to distance traveled from the point of origin to the site. The dependent variable is the rate of visits per capita for each zone. Clawson and Knetsch used concentric zones (Figure 1), though in later studies it was observed that by defining zones according to areas of population or other geographic units, official census figures could be used to obtain more precise calculations.

By calculating the average cost of the trip and the percentage of visits for each zone, as many value pairs may be obtained as there are zones. A graphic representation of the two variables gives a downward-sloping curve, which we shall call the *basic demand curve* (Figure 2).

Figure 1

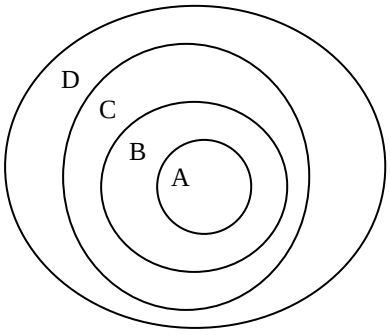
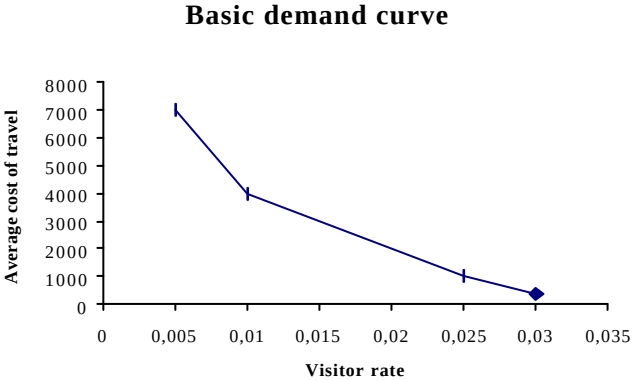


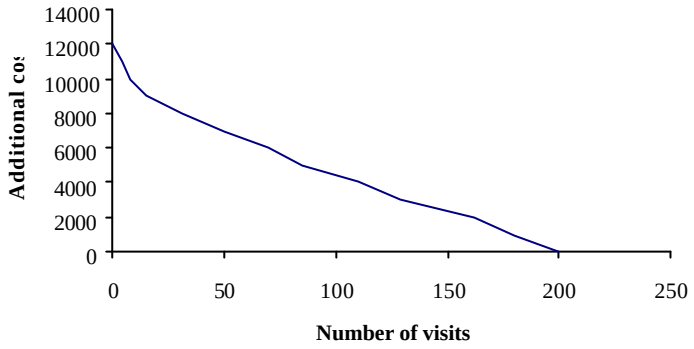
Figure 2



Based on the previous data, a *final demand curve* may be constructed, which represents the variation in the number of visits as the cost of travel goes up. This may be done by simply making a linear interpolation of the increased costs on the basic demand curve. Once the final demand curve is constructed (Figure 3), the area under the curve gives the consumer surplus, which we intend to calculate as an aggregate value of consumption.

Figure 3

Demand curve



Developed subsequently to the zonal travel cost method outlined above, the individual travel cost method is based on individual visits to a site. This method attempts to estimate the demand for recreational goods for each individual at a given site. In this case, the dependent variable is the number of visits made to the site by each individual, meaning that the cost of travel may vary from one person to another even where the point of origin is the same. By aggregating the individual demand functions, an aggregate demand function may be derived.[3]

2.2. *Problems in the application of the travel cost method*

Clawson and Knetsch pointed out some of the practical problems which arise when using the travel cost method to make empirical estimates. For instance, the demand to visit a given site depends not merely on the its distance from the point of origin, but also on budget and time constraints. These, in turn, are related to an individual's employment conditions. Additionally, difficulties arise in assigning costs to multiple sites visited on the same trip. A summary of these problems appears below.

[3] For more detail on this application, see Brown and Navas (1973) and Gum and Martín (1974).

(i) Travel time

The opportunity cost of time is the value of the best alternative activity that a person might engage in (e.g., working at a second job, playing a sport, participating in an organization, etc.) instead of spending the time on a recreational trip. What this indicates is that the cost of the activity being valued ought to comprise not just the cost of the trip itself, but also the opportunity cost of the time utilized and alternative uses of time. Consequently, it must be borne in mind that not considering the value of time implies that the consumer surplus will be underestimated. The fact that many people work a fixed schedule and have certain days off on which they are unable to work (e.g., weekends, holidays, vacation time) helps to overcome this problem somewhat. Such persons are unable to choose between work and leisure, meaning that, in these cases, it is not possible to value the time spent on the trip in monetary terms as an opportunity cost.

Some work has been done with regard to this question in which the cost of time has been considered as a proportion of an individual's wage rate and added to the other costs of the trip (Cesario and Knetsch 1970). The choice of this proportion, however, may be arbitrary. Similarly, the time invested in a trip may occasionally represent not a cost, but a benefit. This would be the case when a person chooses a specific route in order to enjoy the landscape, making the trip itself one more part of the recreational experience (Walsh, Sanders and McKean 1990).

(ii) Multi-purpose trips

One of the difficulties which arises in estimating the cost of travel lies in the fact that, very often, a visit to a site forms part of a larger route and is therefore not the sole objective of the trip. In such cases, the difficulty lies in determining what part of the estimated cost of travel should be assigned to the specific site under study. We must confess that, at present, there is no generally accepted solution to this problem.

It would seem reasonable to think of the cost of travel as the sum of each of the visits made on the trip. Several solutions to the problem outlined above have been offered along these lines, among them: using only the cost of travel from the stop prior to the site in question (Smith 1971); assigning a part of the total cost to each of the destinations and calculating a demand function for each (Haspel and Johnson 1982);

distributing costs according to the time that each visitor spends at each of the sites; and lastly, redefining the site of the visit as the set of sites in the multi-purpose visit (Mendelsohn et al. 1992). None of these suggestions is entirely convincing, however.

It also happens that when the total cost is divided among a number of destinations, the assigned cost goes down considerably, so that a person who lives near the site may pay significantly more than another who lives farther away, but who has made a multi-purpose trip. This contradicts the basic principle that demand is inversely related to price.

(iii) Substitute sites

The question of substitute sites gives rise to the controversy over whether such sites exist for cultural and historic features. Clearly, these types of goods are unique, and for those persons most interested in the cultural aspect of the visit, there is unlikely to be any substitute. Others, however, would have no difficulty in choosing an alternate destination, whether it be cultural or not, making substitution between goods a possibility. In this regard, the most appropriate alternative to include in the study would seem to be the nearest site having similar characteristics (Freeman 1993). With regard to the technical aspects of including the prices of substitute sites, however, two equally unsatisfactory situations arise: on the one hand, if all the prices are included in the model, there is a risk of high correlation between the price variables, which normally translates into unstable estimates of the elasticities; on the other hand, omitting the prices produces bias, though the estimates of the price elasticities are stable (Caulkins et al. 1986).

(iv) Other costs to include

In calculating the cost of travel, there are inevitable expenses which must be taken into account. These include transport costs, as well as admittance charges and parking fees (if any). Regarding transport costs, there is some controversy over whether fuel costs are the only expense of this type which should be considered, or whether expenses for lubrication, tires, and other vehicle maintenance costs should also be included. Although some research has been done taking into account only fuel costs on the one hand and fuel and other vehicle maintenance costs on the other hand, the final cost which should be considered is that which consumers perceive as such when they decide to make the trip.

Other expenses are more dubious or difficult to calculate. Such is the case with expenditures on meals and accommodation, which on occasions are themselves part of the recreational experience. These costs should not be considered in absolute terms; rather, it is the additional cost that is produced upon making the trip which should be considered (i.e., the difference between the cost of eating at home and the expense of dining in a restaurant).

(v) The effect of visit length

Variation in the length of visits may also cause difficulties, since the amount of time one spends at a site affects the cost of travel and the utility derived therefrom. Generally, people who travel from greater distances spend more time at the site in order to recover the high cost of the trip as a whole. One solution to the problem of representing stays of varying lengths is to treat each of the visits separately according to duration, and to calculate a different demand curve for each of the durations observed.

(vi) Site quality and congestion

The quality of cultural and historic sites is highly variable. While some sites have been magnificently preserved and are outstandingly run, others have been neglected and are in a state of disrepair; in some cases, resources may simply not be available for their preservation. Site quality is a deciding factor in an individual's choice of destination.

Congestion is a problem which affects the quality of the visit. A site is congested when the number of visitors is such that other visitors cannot gain access, or where the utility of the marginal user is diminished because of the presence of a great number of other visitors. Price as a means of rationing at these sites is less than effective, as they tend to have admittance fees which are very small or zero. It has been shown that in cases of congestion, demand is underestimated, and the travel cost method gives an estimate of consumer surplus below true value (Wetzel 1977).

3. Application to four examples of cultural and heritage goods in Castile-León

The travel cost method has frequently been used in the valuation of natural assets. In this paper, however, the method has been applied in a rather different context. The Autonomous Community of Castile-León in Spain contains a variety of historic and

cultural heritage features. For the purposes of this paper, four of these features were elected for study. Each site is quite different from the other; furthermore, none of the sites figures among the most typically studied cases in their category. The four features include a cultural artistic event, a village comprising an historic ensemble, a museum located in a provincial capital, and a cathedral representing an exceptional example of a historic monument.

The travel cost method may be applied in a variety of ways. In this case, we have opted for the method which classifies data according to the visitors' zones of origin. The information for this paper was obtained from a questionnaire survey which formed part of a larger research project entitled: "Estudio de la Cultura y el Patrimonio Histórico de Castilla y León como factor de Desarrollo Económico Regional: Valoración Económica e Implicaciones para la acción pública."[4]

The four sites chosen for study are representative of the cultural and heritage features available in Castile-León. A brief outline of their principle characteristics appears below:

- A cultural artistic event. The Iberian Organ Festival in the Tierra de Campos region of the province of Palencia has a tradition of some twenty years. The church organs in the region (specifically, the towns of Abarca, Autillo and Capillas de Campos) are unlike other European organs, a fact which prevents certain pieces from being played on them. Research and recovery efforts led by the famed organist Francis Chapelet have resulted in a series of Iberian organ concerts being held. The increasing popularity of this event caught our attention, and led us to undertake a valuation of the benefits it provides.

- A village comprising an historic ensemble. The small town of Urueña in the province of Valladolid is a walled ensemble located some fifty kilometers from the capital city of Valladolid. Constructed in the thirteenth and fourteenth centuries, the city walls have admirably preserved and are almost completely intact. An additional attraction in the village is the Joaquín Díaz Ethnographic Center. Located in the

[4] Financed by the Junta de Castilla y León (Department of Education and Culture).

Museum of Campanas, the center offers an exhibit of the traditional tools and instruments used in Castile-León. Urueña receives little attention in tourist and cultural brochures and, as we observed in the preparation of this paper, is primarily known due to its proximity to the highway leading from Madrid to La Coruña.

- A museum located in a provincial capital. The Museum of Burgos, which is situated in the Casa Miranda in the capital city of Burgos, is characterized by the diversity of its contents. These range from archeological remains to a collection of fine arts. The museum is also famous for the modern techniques it uses.

- A cathedral. The Cathedral of Palencia is one of the most important monuments in the city. Begun in 1321, the cathedral was built over a Romanesque church dating from the thirteenth century. Dedicated to San Antolín, the Patron Saint of the city, the gothic cathedral is characterized by the magnificence and gracefulness of its architecture. Artists who have left their mark on the cathedral include Rodrigo Gil de Hontañón, Gil de Siloé, Simon of Cologne, Juan de Flandes, Juan de Valmaseda and Pedro Berruguete.

Data were collected primarily during the vacation period from July 15, 1998 through August 15, 1998. A second sample was taken in the period October 1-15. Though the second sample was significantly smaller than the first, there were no appreciable differences with regard to tourism in the two periods. For this reason, the data from the two periods were used jointly. As it is an open site, data collection in the town of Urueña was rather more difficult to carry out. The questionnaire surveys were distributed at the Museum of Campanas; however, not all of the tourists who visit the village necessarily visit the museum. For this reason, data collection was uninterrupted from July 15, 1998 through October 15, 1998.

3.1. *Zones of origin*

The zones of origin were defined as follows:

- *Bordering zone*: included those provinces of Castile-León contiguous to the location of the site in question.

- *Central zone*: included all of the non-bordering provinces of Castile-León, as well as the Autonomous Communities of Aragon, La Rioja, Navarre, Cantabria, Asturias, Galicia, Extremadura and Madrid, and the provinces of Toledo, Ciudad Real, Cuenca and Guadalajara.
- *Peripheral zone*: included the Autonomous Communities of Catalonia, Valencia, Murcia and Andalusia, and the province of Albacete.
- *Non-peninsular zone*: included the Balearic and Canary Islands, the cities of Ceuta and Melilla and the rest of Europe, not including Russia.

The Iberian Organ Festival and the town of Urueña receive less attention outside their immediate areas than the Museum of Burgos and the Cathedral of Palencia. For this reason, a *local zone* was added in the two former cases. In the case of Urueña, data from the peripheral and non-peninsular zones were considered jointly due to the scarcity of visitors from these two zones.

3.2. *Data collection*

Information on the Iberian Organ Festival was collected over the period in which the event was held. Attendees were given the questionnaire at the beginning of the concert. Willing respondents returned the questionnaire at the end of the concert. The number of valid surveys after eliminating those that did not give enough information to calculate the cost of travel was 300.

The Iberian Organ Festival is something of a tradition in Tierra de Campos; nevertheless, it is essentially a local event. This is due both to the location of the organs and to the level of publicity the concerts receive. Slightly more than half of concert attendees came from towns in the immediate vicinity. For this reason, an additional zone was added to the classification system. This additional zone comprised all of those *towns located within forty kilometers of Abarca de Campos.*

In Urueña, the survey questionnaires were available in the Ethnographic Museum to anyone willing to participate. It should be emphasized that the Urueña study may be somewhat biased due to the fact that the tourists who visit the walls and historic ensemble do not always visit the museum. Applying the travel cost valuation method required that a slight change be made to classification of zones of origin laid out in the

general methodology. The number of valid surveys collected in Urueña was 130, the fewest of all the sites. Tourists in Urueña came primarily from the province of Valladolid, or were in transit on the Madrid-La Coruña highway nearby. For this reason, a local zone comprising *the province of Valladolid* was added. Furthermore, in view of the scarcity of visitors from the two most distant zones, it was thought advisable to create a single zone from the combined data of the two.

In Burgos, information was collected with the help of museum staff. Surveys were given to visitors at the entrance to the museum and collected at the exit. Burgos is a city of unquestionable cultural appeal, and this image is promoted in countless national and international tourist brochures. The museum, therefore, receives visitors from numerous points of origin. It was observed that foreign tourism had a certain degree of representation; however, information regarding foreign tourism was limited, since foreign tourists often did not know Spanish and were unable to complete the questionnaire. The number of valid surveys was 294.

In the study on the Cathedral of Palencia, we were aided by a very efficient survey agent, whose help on the essential questions resulted in the exclusion of only one of the 191 surveys collected.

Maps of the zones for the four studies appear in Figures 4-7.

Figure 4 (Iberian Organ Festival)

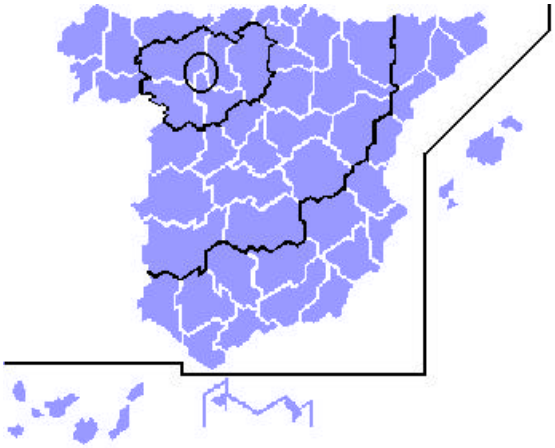


Figure 5 (Urueña)

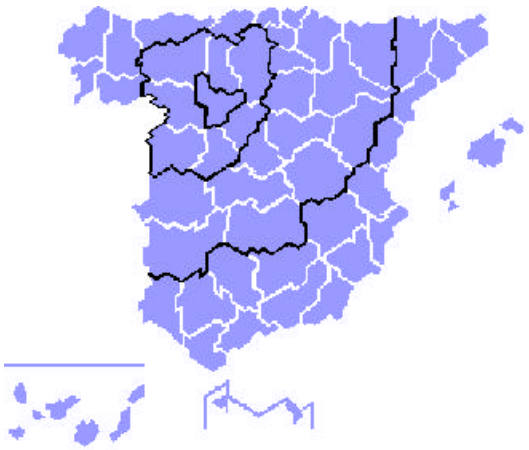


Figure 6 (Museum of Burgos)

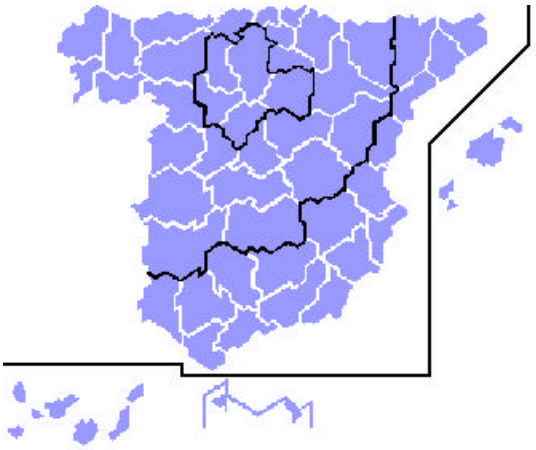
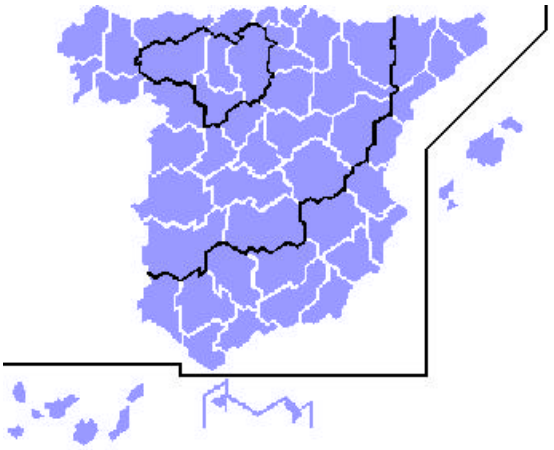


Figure 7 (Cathedral of Palencia)



3.3. *Calculation of travel cost*

In this study we have focused primarily on transport costs, since the surveys provided little information on other types of expenses (meals, accommodation, purchases, etc.). To calculate the cost of travel, a differentiation was made between tourists who traveled by land and those who traveled by air or sea. In the case of those who traveled by land, it was essential to know the distance traveled. Cost per kilometer was taken to be 24 Spanish pesetas, as this is the travel allowance figure used by the State Administration office. This figure includes fuel costs, vehicle maintenance and depreciation, insurance, taxes, and other expenses. The formula used to calculate the *cost of travel* must take into account the round-trip cost, the length of the trip and, where the trip is made in a private vehicle, the number of vehicle occupants:

$$Cost\ \ of\ \ travel\ =\ \frac{Distance\ \ in\ \ km.\ x\ \ 2\ \ x\ \ 24}{(N^{o}.\ \ of\ vehicle\ occupants\ )\ \ x\ \ (length\ \ of\ \ \ trip\ \ in\ \ \ days)} \qquad (4)$$

The cost of travel for tourists who traveled by plane or boat was essentially calculated according to the fees charged by Iberia airlines and Transmediterránea ferry lines. Ground transportation costs for these tourists were calculated from the point of landing to the site in question as previously outlined, and added to the costs for travel by air or sea.

3.4. *Calculation of visits per capita*

Visits per capita for each of the zones were obtained by dividing the number of visitors from a zone (n_i) by the population of that zone (N_i). In this paper, this variable

has been expressed per 10,000 inhabitants. Population figures were taken from official National Statistics Institute data for 1996, the latest figures available.

3.5. *Demand curves*

As previously stated, there are two phases to the derivation of the demand curves. First, the basic demand curve is calculated using the points corresponding to the average cost of travel and the visit rate per 10,000 inhabitants. Table 1 shows these values for the four studies; in Figures 8-11 a logarithmic scale is presented to better compare the four studies.

Table 1. Data on average cost of travel and visits per capita

Iberian Organ Festival	**C_i = Average cost**	**n_i = No. of visitors**	**N_i = Population**	**$P_i = (n_i/N_i)*10{,}000$**
Within 40 km.	453	158	103,840	15.21571649
Bordering zone	1,246	75	1,641,676	0.45685019
Central zone	2,697	45	16,638,092	0.02704637
Peripheral zone	3,451	14	18,790,501	0.00745057
Non-peninsular zone	13,850	8	543,825,891	0.00014711
		300	581,000,000	
Walled ensemble of Urueña				
Valladolid	707	56	490,205	1.14237921
Bordering zone	1,152	16	1,925,443	0.08309776
Central zone	4,526	50	15,967,960	0.03131270
Peripheral zone	36,385	8	562,616,392	0.00014219
		130	581,000,000	
Museum of Burgos				
Bordering zone	800	49	1,261,468	0.38843633
Central zone	3,321	125	17,122,140	0.07300489
Peripheral zone	5,908	101	18,790,501	0.05375056
Non-peninsular zone	8,652	19	543,825,891	0.00034938
		294	581,000,000	
Cathedral of Palencia				
Bordering zone	1,344	46	1,538,041	0.299081754
Central zone	3,861	74	16,845,567	0.043928471
Peripheral zone	8,995	56	18,790,501	0.029802292
Non-peninsular zone	12,425	14	543,825,891	0.000257435
		190	581,000,000	

Basic demand curves (logarithmic scale)

Figure 8

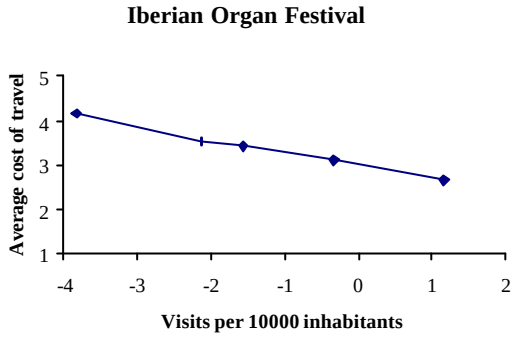


Figure 9

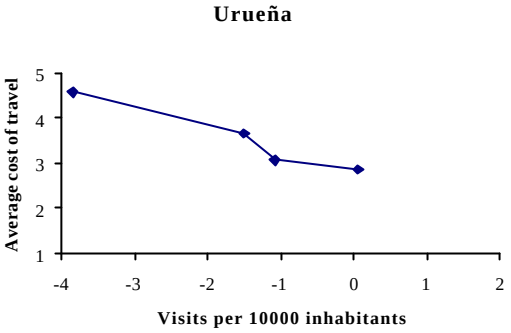


Figure 10

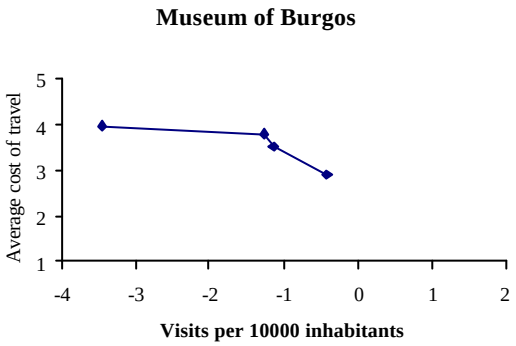
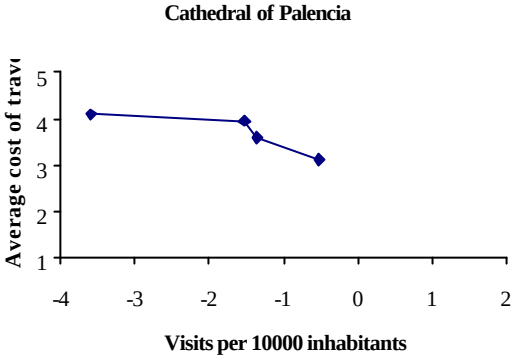


Figure 11



In the case of the Iberian Organ Festival, the percentage of visits from the 40-kilometer zone around Abarca de Campos is much higher than the rest of the zones. The P_i values fall rapidly as distance from the first zone is increased, emphasizing once again that this cultural event receives limited publicity. More than half of the concert attendees who completed the survey came from the zone nearest the event site.

The demand curve for Urueña does not show such marked differences; nevertheless, it is surprising to note that there were fewer visits from the bordering zone than from the central zone. Because the ensemble is neither well-known nor well-publicized, the majority of visitors came from Valladolid, with visits from the central zone being second-highest in number.

The curves for Palencia and Burgos show certain similarities with one another. In both cases, the visit rate for the zone nearest the site in question is not as great as for the Iberian Organ Festival and the town of Urueña. For the central and peripheral zones,

the decline is smoother; the non-peninsular zone shows the greatest drop, which is feature common to all four studies.

To analyze how demand would change if the cost of travel were increased, one could simply make a linear interpolation on the line defined by the points forming the basic demand curve. Graphically representing on a pair of Cartesian axes the number of visits in absolute terms (the X axis) and the additional cost (the Y axis) gives the various demand curves for the four features under study, as represented in Figures 12-15. The consumer surplus is derived by calculating the area under the curve. This is shown in Table 2.

Table 2. Consumer surplus

Iberian Organ Festival	41,400
Walled ensemble of Urueña	45,300
Museum of Burgos	195,000
Cathedral of Palencia	118,500

Demand curves

Figure 12

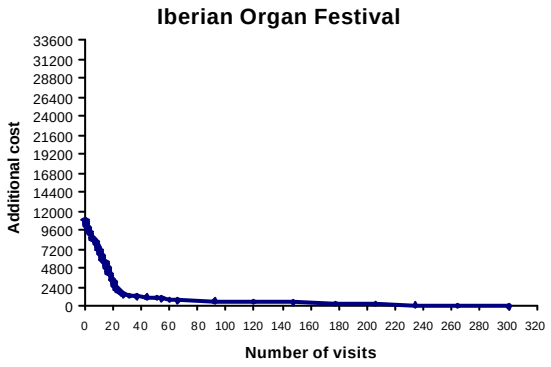


Figure 13

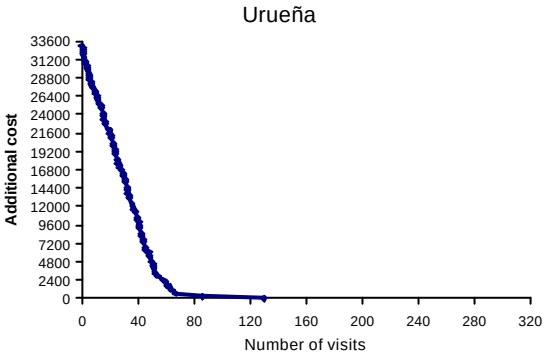


Figure 14

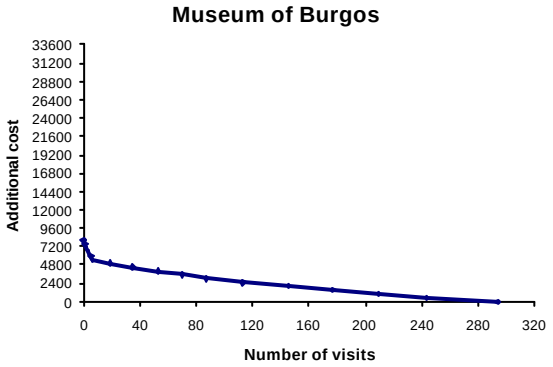
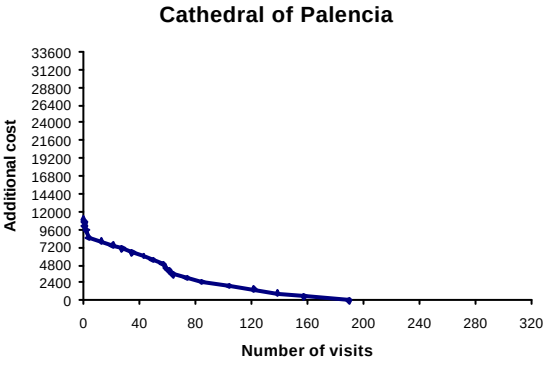


Figure 15



4. Conclusion

One of the main criticisms of the model is the lack of precision with regard to the information on the cost of travel. In the preparation of this paper, it was observed that survey respondents were reluctant to answer questions about expenses on accommodations, meals, purchases, etc. Where respondents did answer such questions, it was difficult to assign a part of the cost to the specific visit under study, since one does not generally spend an entire day on a single cultural or tourist attraction but rather visits other sites and takes part in other activities.

We have also noted how one of the basic principles of the travel cost method (i.e., the greater the distance, the greater the cost, and the lower the visitor rate) falls apart in the case of Urueña. Since Urueña is better connected by road to the central zone than to the bordering zone, more visitors came from the former than from the latter.

Subjectivity was a factor in choosing the zones, which may have biased the results. The direction of the bias is difficult to determine. The variance in the visit rate for each of the zones may be due to significant differences in the ways in which they were constructed. This heterocedasticity translates into a loss of precision with regard to the estimates. Furthermore, the existence of substitute sites will naturally affect demand, since the visit rate in such cases will depend not merely on the cost of travel but also on the possibility of choosing sites which provide the consumer with the same level of utility.

The consumer surplus results are interesting, despite all the criticism which may be made of the travel cost method. Leaving aside for a moment the absolute figures, which must be taken with some reservation due to the aforementioned weaknesses, it is possible to compare orders and make observations on the most relevant characteristics of the demand curve. In the case of our study, for example, it may be concluded that the amount the consumer is willing to pay to see the Museum of Burgos is approximately five times greater than what he is willing to pay to attend the Iberian Organ concerts. Note that a calculation of simple indices based on the greater of the consumer surpluses would give the following results:

Table 3. Indices based on the consumer surplus for the Museum of Burgos

	Surplus	Indices
Iberian Organ Festival	41,400	0.21
Walled ensemble of Urueña	45,300	0.23
Museum of Burgos	195,000	1.00
Cathedral of Palencia	118,500	0.61

The meaning of these indices is clear. The willingness to pay to see the Cathedral of Palencia is 61% of the value attributed to the Museum of Burgos. In the case of Urueña, this figure is 23%, while tourists are willing to pay 21% of the value attributed to the museum to attend the Organ Festival.

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