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## Tourists' satisfaction vs. residents' quality of life in medium sized European cities: a conjoint analysis approach for cultural tourism's impact assessment

Patrizia RIGANTI

### Abstract

This paper discusses to what extent is possible to value in economic terms the positive and negative externalities brought by cultural tourism to heritage destinations, and which are the currently available valuation techniques for this purpose. It reports the scenario development of a conjoint analysis study on the city of Syracuse, Italy. It builds on this research to analyse the role economic valuation can play in the management of cultural destinations to limit the negative impacts brought by the tourism presence whilst spreading the positive ones in the region.

*Key words:* Conjoint analysis, cultural tourism, carrying capacity

### 1. Introduction

The tourism sector has seen important transformation in recent years. Tourism as a phenomenon has a long, though in the last few centuries it was an activity mainly belonging to the enlighten intelligentsia. During the XIX century we have witness a crucial transformation and tourism is now a mass phenomenon. It is one of Europe's largest economic sectors and features among the largest key industries of the 21st century. In particular, **cultural tourism** is one of the forms of tourism that is expected to witness the most important growth in the future. Cultural heritage, in both its built and un-built dimension, constitutes a form of economic capital bringing important flows of services, with tourism and its related economic activities being among the most relevant. Cultural heritage needs to be preserved in order to guarantee these associate flows of capitals. The development of appropriate strategies becomes therefore paramount.

Sustainable cultural tourism strategies have the potential to assist the conservation of local identities, embedded in their respective cultural heritage, while supporting economic growth. However, tourism in cultural sites can also bring negative impacts, which need to be analyzed and assessed. Economic valuation can support decision making in this sector.

This paper discusses the use of an economic valuation technique, **conjoint analysis**, to assess the non market impacts of tourism presence in small and medium sized European cities. It presents the methodological approach developed to this purpose within the EU funded project PICTURE (Pro-active management of the Impact of Cultural Tourism upon Urban Resources and Economies) and its application to the case of the city of Syracuse, Italy.

Conjoint analysis is a non market valuation technique frequently used to place a value on a good. Conjoint choice experiments were initially developed by Louviere and Hensher (1982) and Louviere and Woodworth (1983). It is a stated-preference method, in the sense that it asks individuals what they would do under hypothetical circumstances, rather than observing actual behaviors on marketplaces, simulating a hypothetical market and analysing stated preferences rather than observing actual market behaviour. In a typical conjoint analysis choice individuals are asked to

choose among alternative variants of a good described by a number of attributes. The alternatives differ from one another in the levels taken by two or more of the attributes. The technique assumes the choice between the alternatives is driven by the respondent's underlying utility.

This paper first discusses to what extent is possible to value in economic terms the positive and negative externalities brought by cultural tourism to heritage destinations, and which are the currently available valuation techniques. Then it focuses on how to manage destinations in a way to limit negative impacts whilst spreading the positive ones in the region. Then it reports the preliminary results of the conjoint analysis study on the city of Syracuse, Italy. In particular it looks at the marginal utility associated to attributes interpreting the **carrying capacity** of the site. Finally, the paper focuses on the potential and limitations of conjoint analysis studies for the above purposes.

Conjoint choice experiments have been widely used to value environmental and natural resources, and more recently cultural heritage. Previous research seems to confirm that the technique is flexible enough and can be successfully adapted to the assessment of policy strategies. The paper discusses the steps that should be considered when developing a conjoint choice experiment for similar purposes.

## 2. Cultural urban tourism

In many European cities, natural and cultural heritage plays a significant role in local economic development. The revenue provided by tourism is often the means by which cultural heritage contributes to a city's economy. Over the past 20 years, tourism has developed into an important factor on cities economic growth, and its impacts, both economic and environmental ones, need to be assessed within the context of sustainability. In Europe, tourism accounts for 5% of all jobs and 5% of all consumer expenditure and it is one of Europe's largest economic sectors featuring among the largest key industries of the 21st century. The World Tourism Organization estimates that the number of arrivals in Europe will double to 720 million tourists per year by 2020.

Tourists come to Europe, or travel between European destinations, for several reasons, and some times the distinction among different "types" of tourists is not so evident. In the choice of destination many concurrent preferences might be accounted for: sun and beach, leisure and entertainment, friends and family, and cultural attractors, in the form of tangible or intangibles, such as lifestyle or built cultural heritage are among the determinants in tourists' destination selection. Cultural built heritage is increasingly one of the most important reasons moving a tourist's choice. Many European destinations market themselves starting from their cultural assets and now **cultural urban tourism** is one of the forms of tourism that is expected to witness the most important growth in the future. This is being fuelled by changing patterns of tourism (more vacations, shorter stays), and the availability of cheap airfares.

Globalisation has played a pivotal role in the ways heritage assets are now accessed and experienced. More disposable income combined with extended leisure time has developed the mass tourism phenomenon; and now the challenge is to make cultural goods appreciated from several points of view. Many cultural tourists aim to have a learning experience while enjoying their destination. Not only their personal preferences, but also the way the site is managed and serviced, are at the basis of their destination's choice. The visit's experience and the information gathered during it are important, together with the information and services that tourists can get before traveling. As eticketing has become a crucial and fast growing service provided by airlines, many

other services would benefit from the development of new ways of empowering tourists using at the best the potential of information communication technologies (ICT).

Buhalis (2003) discusses about ICT application to the Tourism industry, in particular the digitisation of all process and value chains. So far the major application is given by the way travel services have conquered the cyberspace. Tourists are now offered customer tailored services for most of the aspects related to their tourism experience, especially travel and accommodation. More and more customers prefer the Internet option to the more traditional travel agent one. This is part of the phenomenon described as E-tourism. For sure cultural urban tourism could immensely benefit from the development of these technologies and services to enhance ex ante and ex post visit experience. Such development could increase substantially tourism flows in the future. More and more European destinations might face issues relating to the excessive presence of tourists.

Cultural heritage assets act as attractors of tourists' flows, thus representing a local capital which has the capacity to act as a **catalyst** for local economies. Cultural tourism has a multiplier effect on the economy, and when appropriately managed it can promote the economic growth of other sectors, such hotels, restaurants, crafts, etc. Unfortunately, this has not always been the case for many European destinations, in particular for those who have attracted substantial numbers of tourists, usually defined as mature destinations. Many of these "traditional" tourist destinations have witness unsustainable growth of tourists' flows and this had impacts on the quality of life of residents. Some cities like Venice, Paris and Amsterdam, to mention a few, are object of excessive attention, and in need to manage differently their tourist flows. Being highly in demand, they need to modify the tourist offer, creating alternative tourist routes.

Some heritage sites can be overwhelmed by tourists' presence, especially day trippers who visit the site without contributing substantially to the local economy, whilst some others have the potential of creating an attractive offer that has not been developed, as yet. From an economic point of view one has to find a balance between the demand and supply side of the tourism market in these regions. Regional strategies should be developed aiming to create a balance at the supply side, in order to minimize the negative externalities brought by excessive numbers of tourists and spread more evenly the tourists' flows with their benefits. A first step becomes to study the economic impacts of tourists' presence, understanding the environmental and social impacts brought by extreme situations of congestion, and using sites carrying capacity as a possible management tool. In other words, one needs to devise tourism strategies that are sustainable from a social and economic point of view.

**Figure 1** shows a diagram representing some of the essential aspects that a sustainable cultural tourism strategy should account for.

In order to be sustainable, a tourism strategy should preserve the **physical integrity** of the built environment acting as cultural attractor, enhance the quality of **tourism' experience** with the aim to encourage return visits and to transform day trippers into resident tourists, and finally account for **residents' quality of life**.

Economists can use different tools to help achieving this goal. First of all, non *market evaluation techniques* could be used to assess how residents perceive the presence of tourism, and how this affects their utility function. Market based analysis could be used to assess the impacts of tourism on related economic sectors, while monitoring tourists' visit satisfaction in order to deploy strategies to attract both returning tourists and new investments in the tourist sector. To this purpose, fiscal and economic incentives could be used. Finally, in order to avoid congestion phenomena, carrying

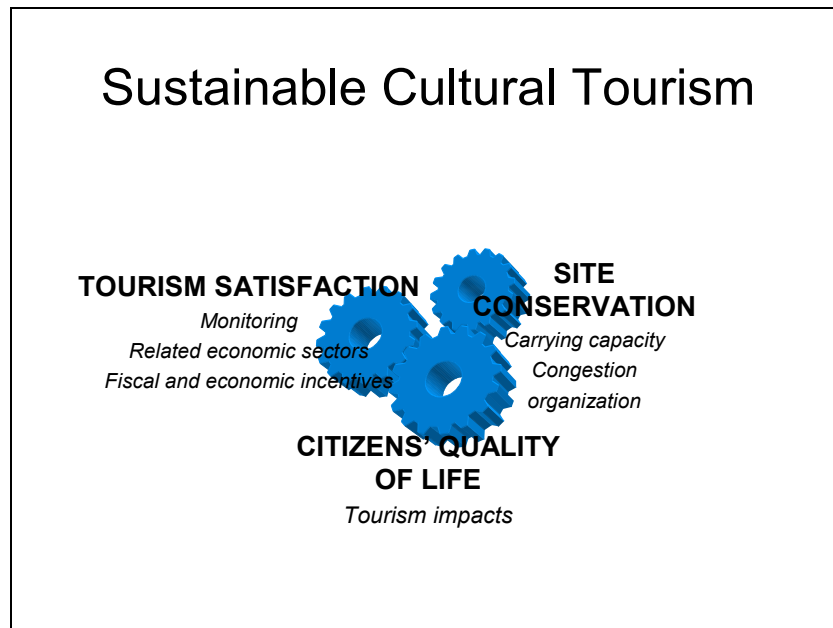


Fig 1: The dimensions of sustainable cultural tourism

capacity indicators could be used to manage tourism flows and to preserve the physical integrity of the site, accounting for the issues of conservation and physical preservation of the initial “stock”, hence the cultural capital. How we measure carrying capacity of a site is a debated issue, and in this paper we actually focus on the potential of using non market valuation techniques to achieve this purpose. The following section discusses congestion and carrying capacity issues into some details.

### 3. Congestion and carrying capacity of sites

As discussed above, tourism can provide opportunities for local and regional development but as it grows, it exerts pressures on environmental and cultural resources and in many cases alters the social and economic structures, characteristics, and quality of life in tourist destinations (Coccosis and Mexa, 2004). From generating revenue and increasing employment opportunity to degradation of natural and built heritage, tourism impacts are diverse and prevalent. Towns and cities struggle with balancing tourism development when maintaining the quality of life for residents. If unaddressed, the negative impacts of tourism can affect the very basis for tourist attraction and activity. Therefore, cities and towns must decide how much tourism is acceptable – a challenging decision as it can depend on a countless number of economic, social, political, and environmental factors.

Historic towns, for example, attract tourists with their built cultural heritage, urban amenities, lifestyle and cultural traditions as well as cultural events. Carrying capacity issues in this context center around impacts such as congestion of facilities, traffic, urban land use change and waste management (Coccosis et al., 2001). In order to understand the role that carrying capacity can have in tourism management, we need first to have a closer look to the issue of congestion. In fact, congestion appears in a site when the carrying capacity “threshold” for that site has been trespassed.

#### *Congestion of sites*

**Table 1. Indicators Related to Tourist Congestion (WTO)**

<b>Level of Tourism</b>
Total tourist numbers (mean, monthly, peak) (categorized by their type of activity) Ratio of local population to tourists (peak/off-peak) Ratio of local population to annual number of tourists.
<b>Density and Use Intensity</b>
Number of tourists per square meter of the site (per square kilometre of the destination) – mean number/peak monthly average/peak day Density counts for vehicle use of site Ratio of number of vehicles per parking space
<b>Stress on Site and Facilities Capacity</b>
Percent of total capacity used (average and peak)
<b>Reaction to Crowding</b>
Percent of tourists who believe that the destination is too crowded (exit questionnaire) Perception of local residents who believe it is too crowded (local questionnaire)
<b>Local Satisfaction</b>
Number of complaints by local residents Local satisfaction level with tourism and with specific components of tourism (local questionnaire)

Source: WTO, (2004)

Tourism congestion at destinations and particularly at natural and cultural sites can cause an accumulation of impacts, resulting for instance, in a major reduction in the visitors' enjoyment and appreciation of the site. The presence of congestion can bring adverse impacts on conservation programs for the site, can cause damage to flora fauna, scenic views, physical fabric or special values of the place, increase litter and pollution, strain the capacity of local infrastructure, and diminish the efficiency of tourism services. All this can reduce the opportunities for visitors to spend money locally and generate considerable stress on the local community through competition for local services.

In order to assess the extent to which a site suffers from congestion recent studies (WTO.2004) have developed a number of indicators of congestion at cultural sites. Indicators like the ratio of local population to tourists during peak and off-peak seasons, the number of tourists per square meter of the site, or the percent of tourists who believe that the destination is too crowded when questioned using an exit questionnaire, are among the most commonly used. Table 1 reports some of them into categories, while table 2 shows possible other ways to directly measure congestion.

From an economic point of view we can refer to the following definition of congestion:

“Congestion has occurred when either the utility of one person diminishes due to the presence or behavior of other persons, or when the costs of doing and activity increase due to the presence of other persons” (Jakus and Shaw, 1997)

This is expressed by equation (1)

$$U_{ij} = \bar{U}(x_{ij}, \beta) + \varepsilon_{ij} \quad (1)$$

where  $x_{ij}$  includes various site-specific congestion-related attributes, e.g.

**Table 2: Measuring congestion**

<b>Possible Measures of Congestion</b>
Number of people per unit of space (site-specific)
Number of encounters with others during experience (site/time-specific)
Ratio of number of tourists to local residents (peak and off-peak)
<b>Attributes of Congestion</b>
Length of time waited in line to enter site
Length of time waited in traffic to park at destination
Noticeable increase in litter/pollution
Increased noise levels
Decreased privacy

Source: WTO, (2005)

- *Time waited in line or in traffic*
- *Number of people/unit of space*
- *Excess waste/rubbish*

The level of perceived congestion varies according to the nature of the good and the motivation of the visitor. To this extent the valuation of the economic impacts of congestion needs to account for the heteroscedasticity in the preferences' distribution within the sample. Table 2 lists some indicators of congestion that more frequently are reported in case of congestions, and could be considered "attributes" expressing the level of congestion at a specific site.

As a disutility, congestion may cause problems for returning tourists, who might be discouraged in doing so. Similarly, it brings negative externalities to residents, who find then more difficult to appreciate the economic benefits brought by the tourists' presence. The analysis of carrying capacity can then help develop appropriate strategies.

### ***Tourism Carrying Capacity***

Though there is no universally accepted definition nor a standardized procedure for assessing it, carrying capacity remains an important tool used in ensuring sustainable tourism development. Within the literature on recreational carrying capacity, all definitions of carrying capacity incorporate two central aspects: the biophysical component, relating to the integrity of the resource base, and the behavioral component, reflecting the quality of the recreational experience. The concept of recreational carrying capacity has diffused into studies of tourism due to a rising concern for the negative impacts of tourism. One school of thought describes *tourism capacity* as the ability of a destination to absorb tourism before negative impacts of tourism are felt by the host community (O'Reilly, 1986). Another school of thought considers tourism capacity as the level beyond which tourist flows will decline because certain capacities, as perceived by the tourists themselves, have been exceeded resulting in a diminished quality of experience (Saveriades, 2000). In either case, the idea of tourism carrying capacity implies a limit or control of the number, frequency, and/or flow of visitors at a designated site or region to minimize unwanted or avoidable impacts and sustain the integrity of the destination or resource. This consideration has brought to the definition of *social carrying capacity*.

Saveriades (2000) has conveniently defined social carrying capacity as the maximum level of use (in terms of number and activities) that can be absorbed by an area without an unacceptable decline in the quality of visitor experience and with out an unacceptable adverse impact on the local society. The challenge of establishing and evaluating social carrying capacity is exacerbated by the

fact that it is based, in part on human attitudes and preferences, which are difficult to measure and cannot be done so objectively. Survey based methodology can play an important role in eliciting such attitudes and preferences to shed insight on visitor satisfaction. An economic approach to determine social carrying capacity suggests that visitor satisfaction declines as use level increases which results in a diminishing marginal satisfaction with an increasing number of users implying that it is possible to define an optimum level or *threshold* beyond which satisfaction begins to decline.

The difficulty in measuring attitudes lies in the fact that those which can be measured might never be manifested in action because of attitudes may adapt and change over time and they are sure to vary across individuals. However, stated preference methodology to some extent is capable of addressing this challenge. The following section discusses this issue.

#### **4. Assessing impacts of cultural tourism**

The economic impacts related to the presence of tourists can be assessed in various ways. For sure and input/output analysis can help understand the multiplier effect that the tourism sector can have on the other economies. This can help developing strategies aiming to diversify the products to avoid an excessive tourism biased economy. These impacts leave a trace in the market and can be regulated by market mechanisms.

The economic assessment of positive and negative externalities brought by cultural tourism to heritage destinations is more complex, since by definition they are not visible in the market. Non market valuation techniques belonging to the stated preferences' family, such as the conjoint analysis approach described in this paper can help for this purpose. Which impacts need to be assessed is then one of the valuation issues the research has to face. If the objective is to assess "thresholds" for carrying capacity, we believe that it is important to look at the negative impacts determined by a congestion scenario and then see people's preferences to avoid them.

Impacts will vary according to the different types of congestion that can be registered in the site. According to WTO (2004), one can distinguish among:

- *Permanent congestion* – occurring when the site experiences large and continuing levels of visitation or overcrowding (example Louvre Museum, Paris)
- *Fluctuating congestion* – occurring when there are well-marked periodical events that generate significant tourism or visitor activity within relatively short periods of the year
- *Physical Congestion* – referring to physical crowding, when "too many people" or vehicles, or both, are present in a defined place at one time.

Applied stated preference methodology research addressing congestion is limited in that it focuses largely on the effects of congestion on the welfare gained from recreational experiences (Cecchetti and Smith, 1973 and 1976; Dorfman, 1984; Fisher and Krutilla, 1972; Freeman and Haveman, 1977; Jakus and Shaw, 1997; McConnell, 1988; Boxall et al., 2003). These studies clearly suggest that the utility gained from a recreation experience can vary with varying levels of congestion. One of the few studies that expand this phenomenon into the cultural sphere uses conjoint analysis to estimate the cost of congestion posed to the marginal visitor to the British Museum, suggesting that congestion can have a significant effect on the welfare gain associated with experiencing goods of a cultural nature (Maddison and Foster, 2003). The following subsection describes in general the

conjoint analysis approach whilst sec 5 presents how this approach has been developed for the case study in Syracuse.

#### 4.1 The conjoint analysis approach

To assess people's preferences, two main approaches can be used: one can look at the way people have behaved in the market, or look at the way people state they would behave in a future (hypothetical) market. The first class of methodologies goes under the name of revealed preferences techniques, while the second one is known as stated preferences methods. Other ways of assessing preferences can be obtained through techniques applying multiattributes theory. Conjoint analysis is a survey-based technique used to place a value on a good. It is a stated-preference method, in the sense that it asks individuals what they would do under hypothetical circumstances, rather than observing actual behaviors on marketplaces.

Usually, one can infer how much individuals value a good by observing the amount of this good that is exchanged on the market and its price. However, most public goods, such as environmental resources or cultural heritage sites, are typically *not* exchanged on regular markets, making it impossible to observe prices and quantities. To circumvent this problem, economists have resorted to special techniques for estimating the value of environmental quality changes, or other products that are not as yet on the market.

One such technique is the method of contingent valuation, which directly asks individuals how much they are prepared to pay for specified changes in environmental quality or a future programme.<sup>1</sup> The willingness to pay (WTP) for the proposed change in environmental quality (or for obtaining a public good) is the amount of money that can be subtracted from a person's income at the higher level of environmental quality for him to keep his utility unchanged, and is the theoretically correct measure of the value individuals place on the change. Contingent valuation, has been used to value cultural resources (Pollicino and Maddison, 2001; Riganti and Willis, 2002). Noonan (2003) summarizes the empirical literature on contingent valuation of cultural goods concluding that the methodology, when rigorously applied to cultural heritage, can produce important information for management policies.

Conjoint choice is a variant of contingent valuation where people are asked to choose between hypothetical commodities described by attributes. This exercise requires people to make tradeoffs between attributes, one of which is typically the cost of the commodity to the respondent. Both contingent valuation and conjoint choice are stated preference methods, in that they rely on individuals reporting what they say they would do under hypothetical circumstances. This makes them particularly suited to assess situation *in fieri*, that cannot be assess with other market techniques, since preferences have not been elaborated as yet.

Conjoint analysis is a technique widely used in market analysis to estimate the value that consumers associate with features/attributes of particular products (Moore et al, 1999). It is an essential marketing tool when the objective is to assess people preferences for products that are not yet on the market (Lee et al, 2004). Companies use conjoint analysis to form benefit segments and make design tradeoff decisions among various possible features of the product. This is an invaluable market tool that has proven very successful in helping forecast how costumers will welcome a product and to help companies develop a consumer oriented approach.

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<sup>1</sup> See Mitchell and Carson (1989) for a comprehensive survey of the theory and practice of contingent valuation.



From a pure market analysis' standpoint, conjoint analysis can be used, for instance, to help design product platforms by bringing together demand-side forecasting methods with supply-side cost estimates. In this way it is possible to compare sales and profit-maximizing designs. There has been considerable interest in the use of conjoint analysis to develop optimal product configurations, i.e., designs forecast to maximize sales or profits for a given competitive setting. Conjoint analysis is therefore used to enhance firms' competitiveness. Conjoint choice experiments were initially developed by Louviere and Hensher (1982) and Louviere and Woodworth (1983). Louviere and Hensher (1982) apply the technique to forecast the choice of attendance at various types of international exhibitions. Though coming directly from market analysis theory, conjoint choice experiments have been widely used to value environmental and natural resources.

In a typical *conjoint choice* question, we show respondents a set of alternative representations of a good, expressed by a number of features, or attributes, and ask them to pick their most preferred. The alternatives differ from one another in the levels taken by two or more of the attributes. In these sense, one can see that conjoint analysis has the capability to incorporate multiattribute theory, whilst still providing very simplified results that use money as a proxy for the weight people associate to different attributes. Through appropriate statistical modeling of the responses to the choice questions, it is possible to estimate the marginal value of each attribute (see following section). In addition, if the "do nothing" or status quo option is included in the choice set, it is possible to estimate the full value (the willingness to pay, or WTP) of any alternative of interest.

The conjoint choice approach has the advantage of simulating real market situations, where consumers face two or more goods characterized by similar attributes, but different levels of these attributes, and must choose whether they would buy one of the goods or none of them. Another advantage is that the choice tasks do not require as much effort by the respondent as in rating or ranking alternatives.

## **5. Conjoint analysis study in Syracuse**

This section reports on an application of conjoint analysis to the case of the city of Syracuse, Italy, in order to assess the negative and positive non market impacts brought by the presence of tourism in the city.

In the effort to better understand the benefits tourism can have on a local economy, choice experiment methodology becomes practical with its ability to shed light on the value of public preferences for natural and cultural goods. Understanding tourist preferences and choice behavior for example, can be of particular use in marketing a city as a tourist destination. Conjoint analysis has been applied in a number of studies in tourism and recreation research as a technique to describe and predict tourist choice behavior. Examples range from tourists' choice of hiking trails (Leiber and Fesenmaier, 1984) to sun and sea (Haider and Ewing, 1990), recreation (Louviere and Timmermanns, 1992), and urban (Dellaert et al., 1995) tourist destinations as well as other applications of conjoint analysis evaluating the preferences and behavior related to tourism and recreation (Cosper and Kinsley, 1984; June and Smith, 1987; Toy et al, 1989; Carmicheal, 1992; Mackenzie, 1992).

Preferences have been regarded as one of the major factors that explain traveler behavior at the destination (Suh and Gartner, 2004). Many models related to traveler behavior have been presented



Fig 2: Cultural Heritage in Syracuse

in the tourism literature over the past 30 years. Generally speaking, these studies focus on tourist preferences and behavior related to the destination selection as well as the tourism experience and together they provide a framework on which the use of conjoint analysis to evaluate tourist-related choice behavior is based also in our case study. In fact, the mentioned literature served as a baseline to develop the research scenario for the city of Syracuse's conjoint analysis application.

### ***The research agenda***

The town of Syracuse is home to approximately 127,000 permanent residents where agriculture, fishery, and local craftsmanship have historically dominated the local economy. The local tourism sector has only recently experienced significant expansion. The town possesses a large number of architectural and archaeological goods which distinguish its cultural tourism offer from many other similar-sized European cities. Impressive remains from the Greek and Roman period, together with splendid examples of baroque architecture make the city of Syracuse one of the most important cultural assets in southern Italy.

During the last decade, the Municipality of Syracuse has developed a series of integrated and composite programs aimed at sustainable development many of which target tourism, preserving cultural heritage and regenerating the built environment but it has yet to develop an overall cultural tourism strategy or management plan for the Town of Syracuse. Nonetheless the city faces already congestion phenomena, especially during the summer seasons. The historic centre of the city, the Ortigia Island, recently regenerated, is attracting more and more tourists and local residents start feeling the consequences of this presence.

The major objective of the research was to better understand and assess the economic impacts of cultural tourism on a small European city such as Syracuse. For this purpose, usually one can focus on estimating economic impacts of cultural tourism reflected in market transactions (i.e. sales and purchases) using partial equilibrium analysis or input-output (I/O) methodology. Similarly a Conjoint Analysis (CJ) can estimate the economic value of impacts not ordinarily reflected in market transactions that affect the quality of life for host community members and the quality of the tourist experience (i.e. tourism congestion). Together, the outcomes of these two analyses paint a more complete picture of the total economic impacts (market and non-market) cultural tourism can

have on a region or community. From this consideration, we decided to develop a questionnaire instruments that might capture both elements at the same time.

Despite their synchrony there is little evidence in the literature of I/O and CJ having ever been implemented jointly indicating that to do so is somewhat of a novel approach. Yet given the economic nature of the two analyses, they share in common much of the data needed to carry out the case study making the development of such a questionnaire a useful attempt.

In a conjoint analysis study the first and most delicate challenge is to define an appropriate valuation scenario, which will constitute the basis for the definition of the alternatives to be presented to respondents. In our case, we needed to know how residents perceived the presence of tourists in the city of Syracuse, and how tourists perceived the quality of their experience. It was important to understand which attributes would be considered most relevant by tourists and residents and see if there was any form of overlapping among them. In particular, we wanted to understand if signs of congestions were perceived and how much they were valued in monetary terms. In order to develop an appropriate survey instrument, we organized focus groups with residents and interviews with to select the attributes to be used in the articulation of the alternatives.

### ***Focus Groups***

A series of 4 focus groups were conducted in Syracuse in May and June 2005 to understand the major issues surrounding tourism congestion and most importantly, to identify the attributes of congestion used to describe the hypothetical scenario for the conjoint analysis. To gain perspective of how tourism and subsequent congestion affects the quality of life for host community members, focus groups were made up of local residents and individuals who are employed or in some way involved professionally in the local tourism sector. As it was not possible to conduct a focus group with tourists, a pre-test questionnaire was implemented near local tourist attractions to gain an understanding of how tourists perceive tourism congestion and how it affects the quality of their visit experience.

Each focus group was organized around a specific theme, with a number of questions and individual “exercises” preceding the general discussion. In the first focus group we wanted to understand how residents would perceive the presence of tourists in Syracuse, and which problems they would link to it. Similarly we wanted to gather information on their perception of the benefits of this presence. The second focus group was organized with residents working in the tourism sector and after having discussed the positive and negative impacts of tourism presence, issues of congestion were discussed. The third and fourth focus group were mainly dedicated to congestion issues in general and in Syracuse, in order to agree on a list of attributes defining tourism congestion in Syracuse.

Residents defined in a consistent manner some issues linked to the presence of tourists which they perceived as a negative externality. Among them: congestion due to traffic in tourist areas; the lack of parking dedicated to tourist buses, with often unpleasant visual consequences, acoustic and environmental pollution; increase in the cost of life, lack of services; competition for everyday services; problems with the sewerage system during peak season. On the other hand, most of the focus groups’ participants welcomed the presence of tourists, despite the congestion problems, did not regard their number being in excess of the capacity of Syracuse, and seemed aware of the economic benefits brought by them. The number of tourist related jobs was considered a very positive feature.

The tourists’ questionnaire mirrored in its content and structure the issues prepared for the different focus groups. The aim of the questionnaire was to identify a list of attributes defining the overall



Fig 3: Welcome screen

tourists' experience. Most tourists complained for the lack of dedicated parking slots, for the lack of services, of signage and the long queues for toilets or to enter some sites at certain times. They also expressed disappointment in having the entrance to sites restricted for different reasons. Some complained for the presence of rubbish, but very few seemed concerned with the physical preservation of the site. Most tourists would come to Syracuse in groups, and spend relatively little time in the city, with consequences on the economic benefits to the city. However, the increase and improvement in the hotel rooms offer, especially bed and breakfast type, seemed to have transformed in recent years day trippers in more residential tourists.

The gathered information formed the basis for the choice questions section of the questionnaire; that is the different alternatives that either residents or tourists were asked to choose from. Two different version of the questionnaire, one to be administrated to tourists and another one to residents were developed after the focus group.

### ***Survey Development***

A single survey instrument was developed to jointly implement I/O and CJ analyses. While I/O requires data for tourists only, CJ requires data from both tourist and local residents. To accommodate the needs of both analyses, we envisaged a desired sample of 500 respondents to be split into two sub-samples of 250 tourists and 250 local residents.

Due to the complex nature of the conjoint questions, face-to-face interviews were chosen as the most practical survey implementation mode. A computer interface was developed for the questionnaire so that it could be administered easily and consistently across locations. This option also eliminates the need for the additional step of data entry. Fig 3 presents the welcome screen of the computer administered questionnaire, which is the same for both resident and tourist.

The questionnaire is articulated into 4 main sections; the first on attitudes and behavior the second presenting the hypothetical choice questions, the third on tourists expenditures or residents activities and the last one on respondents' characteristics.

**Syracuse Cultural Tourism Survey**

Section 1 - Introduction    Section 2 - Cultural Heritage in Syracuse

**Choice 1**

Attribute	Alternative A	Alternative B
 New bus parking lot	Yes	No
 Upgrade sewerage system	Minimum	Sufficient
 Delays in everyday activities due to presence of tourists	30 Minutes	60 Minutes
 Increase in tourism jobs	600 Jobs	0 Jobs
 Air quality improvement (number of days when EU standards are not met)	10 Days	0 Days
 Cost (vehicular city tax)	10€	5€

1) Your choice     Alternative A     Alternative B

Back    Continue

Fig 4 : Example of Resident's choice

**Syracuse Cultural Tourism Survey**

Section 1 - Introduction    Section 2 - Cultural Heritage in Syracuse

**Choice 1**

Attribute	Alternative A	Alternative B
 New bus parking lot	Yes	No
 Queuing at toilets	0 Minutes	5 Minutes
 Queuing at site entrances	15 Minutes	30 Minutes
 Improvement of tourist information services	Sufficient	Minimum
 Reduce in visibility and/or use of cultural goods	50%	0%
 Cost (hotel room)	10€	5€

1) Your choice     Alternative A     Alternative B

Back    Continue

Fig 5 : Example of Tourist's choice

Potential respondents who fit the sample criteria and consent to participate are first asked a series of questions related to their opinions about tourism and their level of participation in cultural heritage preservation activities. This helps to distinguish between those who are actively engaged in cultural heritage preservation and those with an affinity towards cultural heritage and those who are not culturally inclined.

The following section of the survey sets up the hypothetical scenarios for the conjoint analysis. This section varies depending on whether the respondent is a resident or a tourist. As revealed in the focus groups, residents experience tourism congestion differently than do tourists. The scenario for residents describes a hypothetical situation using attributes of tourism congestion that affect the quality of their daily lives (Fig 4). The scenario presented to tourists is site-specific and uses attributes of tourism congestion that affect the quality of their visit experience. (Fig 5) In each case respondents are presented with a set of two hypothetical alternatives described by a list of attributes

that vary across alternatives and are asked to choose the one they most prefer. In each alternative, one of the attributes is price. This imposes a real cost forcing respondents to make an economic trade-off in making their preferred choice – a central component of the conjoint analysis. Following the choice scenarios is a series of questions asking respondents about the nature of their preferences for the alternatives and how they perceive site capacity limits and thresholds, for example, the length of time they would be willing to wait in line to access a site without deciding to leave and go elsewhere.

The third section of the survey is designed to elicit tourist expenditure and travel activity during their visit to the case study city. This section also elicits opinions about a variety of aspects of their experience. This section was designed primarily to collect data for the input-output analysis; however responses to key questions are used to create variables that capture differences in travel behavior across respondents.

The last section is designed to elicit demographic and socio-economic data required for both analyses to capture the expected heterogeneity of respondents' economic behavior.

The survey instrument so defined implies a statistical analysis that is described as follows.

***Theoretical Model (Random Utility Model)***

To motivate the statistical analysis of responses to conjoint choice experiment questions, we assume that the choice between the two alternatives is driven by the respondent's underlying utility. The respondent's utility can be broken down into two components, the first of which can be determined and is a function of the attributes of the alternatives, individual characteristics and a set of unknown parameters to be estimated. The second component is an error term that captures what cannot be observed. Formally stated, the Random Utility Model (RUM),

$$(1) \quad V_{ij} = \bar{V}(x_{ij}, \beta) + \varepsilon_{ij}$$

generally expresses that the respondent  $i$ 's utility for attribute  $j$  depends on a vector of attributes,  $x$  (that vary across alternatives and individuals), and an error term,  $\varepsilon$  that captures individual and alternative-specific factors that influence utility, but are not observable to the researcher.

$x$  can be further broken down into attributes of the alternative ( $x$ ) and individual characteristics ( $z$ )

$$(2) \quad V_{ij} = \bar{V}(\beta_1 x_{ij} + \beta_2 z_{ij}) + \varepsilon_{ij}$$

where,  $\beta_1$  represents the marginal utility of the attributes  $x$  of alternative  $j$ , as described in the conjoint choice experiment question.

We assume that the respondent chooses the alternative in the choice set resulting in the highest utility. Because the observed outcome of each choice task is the selection of one out of  $K$  alternatives, the appropriate econometric model is a discrete choice model that expresses the probability that alternative  $k$  is chosen. Formally,

$$(3) \quad \Pr(k \text{ is chosen}) = \Pr(V_k > V_1, V_k > V_2, \dots, V_k > V_K) = \Pr(V_k > V_j) \quad \forall j \neq k,$$

If the error terms  $\varepsilon$  are independent and identically distributed and follow a standard type I extreme value distribution, the probability that respondent  $i$  picks alternative  $k$  out of  $K$  alternatives is:

$$(4) \quad \Pr(k) = \frac{\exp(\mathbf{w}_{ik} \boldsymbol{\beta})}{\sum_{j=1}^K \exp(\mathbf{w}_{ij} \boldsymbol{\beta})}$$

where  $\mathbf{w}_{ij} = \begin{bmatrix} \mathbf{x}_{ij} \\ C_{ij} \end{bmatrix}$  is the vector of the attributes of alternative  $j$ , including cost  $C$ , and  $\boldsymbol{\beta}$  is equal to  $\begin{bmatrix} \beta_1 \\ -\beta_2 \end{bmatrix}$

The full log likelihood function of the conditional logit model is:

$$(5) \quad \log L = \sum_{i=1}^n \sum_{k=1}^3 y_{ik} \cdot \log \Pr(i \text{ chooses } k),$$

where  $y_{ik}$  is a binary indicator that takes on a value of 1 if the respondent selects alternative  $k$ , and 0 otherwise.

The marginal price of each attribute is computed as the negative of the coefficient on that attribute, divided by the coefficient on the cost variable. The willingness to pay for the chosen alternative is computed as:

$$(6) \quad WTP_i = \frac{\mathbf{x}_i \hat{\boldsymbol{\beta}}}{\hat{\beta}_2},$$

### **Discussion**

The above constitutes the theoretical framework necessary for data analysis. As discussed in previous sections, several case studies have been developed in literature to assess how people would value attributes of congestion. The Syracuse case study theoretical framework has been developed under the proven assumption that choice experiments are within the capability of respondents and that an appropriate framing of the survey is incentive compatible. The difficulties linked with the nature of the questionnaire have been simplified by using a computer interface capable of making the interview more immediate and shorter in time.

If valuing congestion attributes is within the scope of a conjoint analysis exercise, assessing the carrying capacity of the site is more complicated. This was one of our challenges. As discussed, congestion is achieved when carrying capacity thresholds are passed. Considering this, we decided to capture a carrying capacity level of some of the attributes presented in the alternatives by asking open ended questions on, for instance, how long respondents (residents in this case) would be willing to wait for a parking slots before going to park somewhere else. We chose 2 attributes for residents and tourists. Their estimates once compared to the estimates obtained through the conjoint choice experiment, should give an indication of the acceptable levels of those attributes, implicitly becoming a proxy for a ‘‘carrying capacity’’ value of the same attributes.

At time of writing the data are being collected, so at this stage we cannot comment on the final results. Pre-tests have shown that the developed scenarios are meaningful to respondents and that a conjoint analysis approach seems to be appropriate to assess future tourism strategies expressed by a discrete number of attributes. Some of the attributes identified during the focus groups correspond to the ones codified by WTO in their guidebook on tourism congestion management

(2004). It becomes clear that assessing the marginal value of these features can suggest more acceptable and valuable tourism strategies. More research is needed in this direction to compare results and generalise conclusions.

## **6. Concluding remarks**

This paper presents the conceptual framework at the basis of an application of conjoint analysis to the city of Syracuse, Italy, to study tourism congestion and carrying capacity issues. The general aim of this research is to understand the preferences of local residents and tourists for alternative ways of managing cultural goods. For this purpose we developed a conjoint analysis approach using a survey instrument capable to gather data to develop also an input output matrix. In the Syracuse case study, we aimed to discover what tourists are willing to trade off between the quality of their experience and the sustainable management of the cultural good and what residents are willing to trade off between the quality of life (in terms of how the cultural good effects their daily lives) and the sustainable management of the good.

From a management perspective, the issue of site congestion is of particular interest as it affects both the quality of the tourist experience and the quality of life for local residents and has direct and indirect impacts on the quality of the good. Managers of cultural goods are faced with the challenge of maximizing the quality of experiencing the goods without diminishing the quality of life for residents or the value of the good itself. An understanding of how individuals value various aspects of their experience can help prioritize and optimize their management decisions.

This paper reports on the research phases needed to develop an appropriate valuation scenario to be used in the conjoint analysis approach. In order to have a correct picture on how sustainable is the current tourism strategy in Syracuse; we developed two versions of the same questionnaire, one for tourists and the other for residents. Focus groups held for residents and interviews with tourists showed that only one attribute of the choice experiment was significantly overlapping for the two samples: the issue of bus parking. Therefore the two valuation scenario focuses on different features of a possible management strategy. This information could potentially be a good indicator of sustainability for tourism managers in the city of Syracuse. The economic values associated to these features are proxy for the level of desirability of each attribute. Since each valuation scenario is composed by attributes expressing both negative and positive externalities, an assessment of the results has the potential to inform managers also on remediation activities for the negative impacts brought by tourism.

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