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OBSERVATORY ON TOURISM FOR ISLANDS ECONOMY

Book of Full Papers

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Observatory on Tourism for Islands Economy

The Observatory on Tourism in the European Islands (OTIE), was founded in Palermo on 2 February 2007 by public institutions, Universities, Research Centers and other international organizations as a non-profit organization. It is the first observatory with the specific focus on island tourism and development and its main purpose is to draw up statistics surveys and realize researches in order to identify the current issues of Tourism in Islands. OTIE activities are all focused on updating the Databank on Insular Tourism, creating the Documentation Centre of the Islands, achieving studies and researches, organizing forums and seminars, and participating to the European projects of cooperation and social economic development. Thanks to the direct dialogue with the institutions, the companies and the centers of research on tourism, OTIE provides its support to the insular realities to devise strategic, operative and marketing plans on tourism by taking advantage of its wide network of contacts and a steady updated benchmark on insular tourism.

Since November 2017, The Observatory changes its nature, from an institution engaged in supporting the European islands to an institution aiming to support all the islands around the world, then becoming the Observatory on Tourism for Islands Economy (OTIE).

10th OTIE International Conference on Islands Tourism

The aim of the conference is to promote the scientific and technical exchange between international academics and experts on insular contexts in order to address efficient strategies to insular development by promoting a wide cooperation. The conference is one of the working step of the Islands Economy Working Group created in Brussels the last November, 27th . The scope of the IEWG, as well as that one of this conference is to promote the creation of an International Network of Island Contexts.

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OTIE SCIENTIFIC COMMITTEE

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Walking tourism in urban destinations: some preliminary results from a survey in Malaga with gps-based technologies

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Walking tourism; Tourism mobility; GPS-based technologies; urban tourism; Malaga.
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Abstract
Walking tourism in urban destinations can be defined as a sequence of day visits and/or a sequence of walking tours.
In this work, GPS tracking data on spatio-temporal behaviour of walking tourists in Malaga are reported as case study. Malaga is a booming tourist destination characterized by a city centre, particularly suitable for a pedestrian visit. From 22nd January to 19th March 2018 for a total period of 41 days, a survey was carried out with a specific protocol: 103 interviews were conducted and 101 GPS valid tracks were collected. Walking tourists were systematically sampled, starting from the population of all tourists staying in the surveying day at some selected hotels in the city centre. The approach was based on the use of GPS technology as a supplementary tool used in conjunction with the traditional questionnaire-based survey.
The survey has achieved three specific objectives; the analysis of:
- the most visited attractions and the characteristics of mobility of walking tourists in Malaga;
- the main routes taken by walking tourists during the visit of the city and the corresponding movement patterns;
- the factors that have significantly influenced the spatio-temporal behaviours of walking tourists within the city.

Introduction

Tourism is increasingly becoming more relevant in the economies of many countries. Therefore, the attention is aimed at getting to know in greater detail the tourist's behavior, his habits or his movements more and more. In the tourist-receptive landscape we know the identity of the guests, some socio-demographic data, but in reality, we do not have information on some aspects that would be extremely useful: for example, the knowledge of who the tourist really is, his habits, what he prefers to do, where he prefers to go, how much he is willing to spend and what he wants to buy.
The research carried out consists of a pilot survey that highlights the strong potential of the data obtained by fully exploiting the resources offered by the new technologies. This way it is possible to understand what to plan to improve the offer of tourist destinations, allowing decisions to be made in the light of empirical evidence and avoiding the risky tourism-commercial strategies.

This paper briefly presents the empirical survey which aimed to analyze the movement of tourists within the city centre of Malaga. It aimed to investigate in detail the mobility of tourists who have chosen the Andalusian city as a destination where to spend most of their holidays, through the support of GPS Tracking technology.
In order to implement the aforementioned research, during the time spent in Spain, we focused more on the phase of the project related above all to the collection of data in the examined tourist destination.: this way we took advantage of an approach based on the use of GPS technology as a supplementary tool to be used in conjunction with the traditional questionnaire-based survey.
The study of the mobility of tourists through the use of GPS technology, which monitors the real position of tourists and time spent in a particular place, is essential to analyze the demand and might help public institutions or private tourism operators to know and to get an immediate feedback on the movements and places most used by the tourists. This new technology has often been seen in a skeptical way by the tourist operators, as they think to know the movements and characteristics of the tourist (for example, sensing the most important areas where tourist flows are concentrated). We must remember that many visited areas help to create the tourist destination and are often real "discoveries" for the visitors who do not like to have everything programmed.
In addition, as pointed out in the case study of *"hotel location and tourist activity in cities"* (Shoval et al., 2011), the data collected thanks to the implementation of this survey methodology showed that the hotel position has a profound impact on tourist movements.
For this reason, to carry out the research, the movement of tourists has been monitored at two different accommodation facilities located almost on opposite sides of the city centre of Malaga.

Walking Tourism
Mentioning the title of the book of the Policy Studies Institute, "*Walking is Transport*" (Hillman and Whalley, 1979), indeed, walking is by far the most important form of transport in the world, also applied to travel at the destination. It also has the lowest environmental footprint. In reality, it is the form of travel that is consistently undervalued by transport and tourism planners in terms of planning, funding and provision. Walking is defined in relation to tourism as a trip made on foot, where the choice of mode is made mainly for recreation, relaxation or as a form of geotourism to exploit places where earth-science features can be explored (Pralong, 2007). In some cases, walking is simply a means to physical exertion. It represents a conflation of physical exercise (Roberson and Babic, 2009), social engagement (Kyle and Chirk, 2004) and access to different places of interest (Markwell et al, 2004). However, there is no set formula regarding the balance between these elements. There is another dimension to consider; walking allows access to other forms of transport as part of an overall journey (from originating to receiving destination, or whilst at the destination).
This form of walking can be split as follows (Dickinson & Lumsdon, 2010, p.122):

- **Walking holidays**, where the main reason is to walk for most days and for most of the day between accommodation points, either on a linear or circular route. The main purpose of the holiday is to explore a destination on foot.
- **Holiday walking**, where walking is one of the several activities carried out by the tourist; walking may account for one or two days of a stay.
- **Day walking**, where the main purpose is to explore a destination area. The main activity of the day visit will be walking, although it might include stops for refreshment, sightseeing or to visit an attraction.

There is also a further subdivision: **independent walking** and **guided walking**, which take place in either an urban, rural or mixed context. The self-guided market is very important in

tourism, and the internet has opened a wide range of opportunities and an associated form of communal branding. The importance of walking in relation to mass tourism, especially in city destinations, is under-estimated and under-researched (Gehl, 1987). Walking in cities is an integral part of slow travel, and there is much that researchers need to learn about the interface between the tourist and the peculiarities of urban locations which make them places where the tourist wants to walk. Definitely, walking tourism in urban destinations can be defined as a sequence of day visits and/or a sequence of walking tours, where walking is a choice to access the urban experience and to maximize tourism satisfaction.

Statistical Survey Tools: Questionnaires and GPS

With the aim to analyse the daily path of walking tourists, the statistical tools used to carry out the pilot survey conducted in Malaga were questionnaires and GPS devices. In particular, two questionnaires were drawn up, one for opening and one for closing. Opening and closing questionnaires were admistered before the walking visit and after the visit, respectively.

The first part of the opening questionnaire focused on the collection of socio-demographic data: -main reason for staying in the city of Malaga; - gender (sex); -country of residence; -age group; -education: generally higher levels of education correspond to different choices (from booking the accommodation to the choice of the itinerary, up to the travel expense); -group of subjects who are sharing the stay in the city (in order to understand how many people have shared the experience we have gathered data on); -number of the group; -focus on the group (if the holiday is shared with partners, children, parents, friends, business partners or with no one).

The remaining part of the opening questionnaire focused on the detection of different aspects: -if it is the first visit to the tourist destination; -the initial opinion on Malaga; -information about destination; -the vehicle used to reach the tourist resort; -the number of nights spent in Malaga.

The closing questionnaire, on the other hand, focused on gathering information regarding the tourist visit. Some tourist attractions have been selected, the best-known ones, and the tourist was asked if he /she visited them or not. The remaining part of the closing questionnaire focused on the detection of different aspects: -the main vehicle used for city visit; - general satisfaction of the visit; -the modality of getting information about the attractions visited; -the intention to return to the destination; -the intention to recommend the destination to friends and relatives; -items of expenditure (in euros) on the day-visit by the whole group; -the professional position; -the Total Annual Household Income (for all members of the household).

In the field of walking tourism, GPS technologies allow for the collection and the analysis of accurate information related to the experiences of walking tourists, in terms of attractions visited, time spent on each attraction, the most well-beaten path, use and type of transportation mode, and so on. This information is essential in order to improve the management of services and provide a positive experience at any given destination.

Although research employing GPS technology for the analysis of tourist mobility is relatively recent (see Spangenberg, 2014, for an overview of field of studies using GPS-based tracking methods), the number of publications appearing in peer-reviewed journals and book chapters, one book (Shoval & Isaacson, 2010), and one review chapter (Shoval, Isaacson, & Chhetri, 2014) all demonstrate the relevance of this topic to the tourism research agenda. Many factors have contributed to this growth of studies relating to tourist mobility and activities using GPS technology: First, the public availability of GPS, at least since 2000 when the US Department of Defense's system opened up the system to individuals and business enterprises across the world (Shoval & Isaacson, 2007b, p. 146), and second, the market availability of GPS devices at relatively low prices and reduced dimensions (for a detailed description and comparison of

different GPS devices, see Hallo et al., 2012). Third, several studies have demonstrated a high degree of willingness to participate in GPS-based surveys. This is probably due to the fact that tourists are provided with a device, which is re-collected at the end of the day; thus, they generally feel no personal invasion of privacy (Shoval, McKercher, Ng, & Birenboim, 2011). Almost all the research using GPS technology applied to tourism are in agreement in recognising that the best results are produced when different methods are employed in parallel, as they complement each other effectively (Pettersson & Zillinger, 2011; Zakrisson & Zillinger, 2012). Most of the research into walking tourism is based on traditional questionnaire-based surveys (Brida, Bukstein, & Tealde, 2015; Brida, Fasone, Scuderi, & Zapata-Aguirre, 2014; Cessford & Dingwall, 1994; Chase & McKee, 2003), which provide detailed but static information regarding the motivation of tourists and their experiences at their destination. When the aim of the survey is related to an analysis of the behaviour of tourists at their destination, further information, such as patterns of movement, the distance travelled, and attractions visited, is required. With the aim of overcoming these limitations, the authors of this paper would like to propose an approach based on the use of GPS technology for the analysis of cruise tourists' behaviour at their destination. Similar to previous studies (Edwards & Griffin, 2013; McKercher et al., 2015; Zakrisson & Zillinger, 2012), the use of GPS technology is suggested as a supplementary tool to be used in conjunction with the traditional questionnaire-based survey.

Defining research aims is an initial and fundamental step in the implementation of any survey. Research into analysing the behaviour of walking tourists with GPS technology can have various aims. Given the lack in the literature of information relating to the behaviour of tourists at the destination, GPS technology offers a powerful tool for analysing mobility behaviour. A knowledge of the movements of tourists can be useful from several perspectives, including transportation planning and, more generally, the management of tourism services. Moreover, it is possible to investigate various aspects regarding the experiences of tourists at the destination as a function of their observed behaviour. Aspects of this include the level of satisfaction of the whole visit, or in relation to specific attractions; the intention to revisit the destination or to recommend the destination to friends and relatives; the level of expenditure as a function of a given mobility pattern; etc.

An analysis of GPS tracking data usually involves the processing of a large quantity of information due to the fact that GPS devices are able to produce a pair of coordinates every 10 seconds or less. If we consider an average amount of 8 hours spent by a walking tourist at his/her destination, this would result in more than 2.8 thousand observations per individual.

Since GPS devices produce very accurate information over a very short time period, outliers can be produced in certain cases, such as closed areas, urban canyons, and the like (Stopher, 2004). Consequently, the first step in data analysis involves removing invalid data points and replacing them with various imputation techniques if necessary. Several approaches can be undertaken to detect outlier observations (Erenoglu & Hekimoglu, 2010; Třasák & Štroner, 2014). One basic approach is to consider the distance between consecutive observations since the so-called urban canyon effect (due to a loss of signal) often determines sudden jumps in position.

Data and methods

To carry out the research, the movement of tourists has been monitored at two different accommodation facilities located almost on opposite sides of the city centre of Malaga. Being able to get in touch with the accommodations and receiving answers quickly was not easy, while it was not difficult to collaborate with them. Although the facilities are both close to the centre, they are located in different areas; they are also hotels belonging to different categories and offering heterogeneous services.

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In order to ensure a random selection of the units, a pseudo-systematic sampling procedure can be implemented. This could be made by selecting one unit for every k tourists crossing a real or imaginary line, immediately on breakfast time, taking into account the estimated number of hotel guests and GPS device availability.
Whilst performing the survey, it is important to ensure the anonymity of answers given and the related GPS tracks, and to remind every sampled hotel guest to return the GPS device on terminating their visit.
The sample of individuals interviewed is characterized by subjects who stayed in the accommodation facilities for different reasons (holiday, business reasons, visit to friends or relatives, etc.).
For the planning of the surveys, a special register was created to write down a series of information to support data collection [the date of detection, the code of the GPS device delivered to the tourist, the tourist identification code, the name of the hotel, the tourist's room number, the Time Start (start of survey and delivery time of the GPS) and, finally, the Time End (survey term, which coincides with the return of the tourist to the accommodation and with the recovery of the device).
Considering that the research had to be carried out between the months of January and March, the survey took place between 22nd January 2018 and 19th March 2018. The following dates were identified: 22nd, 23rd, 25th, 27th, 28th, 31st January 2018; 1st, 2nd, 3rd, 5th, 6th, 7th, 8th, 9th, 10th, 12nd, 13rd, 15th, 16th, 17th, 19th, 20th, 21st, 22nd, 26th, 27th, 28th February 2018 and 1st, 2nd, 3rd, 5th, 6th, 7th, 8th, 9th, 13rd, 14th, 15th, 17th, 18th and 19th March 2018.
As previously mentioned, the survey phase involved the administration of an opening questionnaire and the delivery of a GPS device, from which the tracks have been extracted. When the tourist returned to the facility, a closing questionnaire was administered.
The time slot identified to meet the tourist was in the morning, from 9:00 to 11:30, near the breakfast room where the tourist who had already finished breakfast was gently stopped. In a very short time the tourist was asked if he was interested in taking part in the survey, whose purpose was explained straight afterwards. At this stage, the tourist was also asked whether it was the last day in the structure, as the guest could have not take part in the survey if he had to check out the same day; in this case the interview was suspended and the GPS was not delivered .
Then we proceeded with the first questionnaire and the GPS device was delivered, together with the relevant information regarding the final delivery phase of the device. The closing questionnaire had to be completed at the hotel reception at the end of the visit. This implied the support of the reception, which had to be ready to receive the GPS and to provide the tourist with the closing questionnaire to be filled in when he came back to the hotel. In addition, having no names, if the tourist had left the structure, there was the risk of losing the GPS device.
As the survey was anonymous, in order to avoid the possible loss of GPS, only the customer's room number was registered: this way, the privacy of the guest was not undermined. The room number was communicated only to the reception operators so that the client could remember to return the device when giving the room key back to the reception at the end of his visit. .
This strategy let us work quickly, with the unfortunate loss of only two GPSes out of twelve devices available throughout the period of the survey.

Concise results

From 22nd January 2018 to 19th March 2018, for a total of 41 days of data collection, a pilot survey was conducted with the aim of exploring the spatio-temporal behaviours of tourists

visiting Malaga; 103 interviews were administered and 101 GPS tracks were collected (in only two cases, GPS tracks were lost).

Figure 1. Map of Malaga with the position of two hotels where the survey was conducted

The survey was carried out mainly at Novotel Suites (70 interviews out 103, 68%) compared to Hotel del Pintor (Figure 1) for logistical reasons. The 66.0 % of tourists had never been to Malaga and 34.0 % had already been at least once to the city (for details, see Table 1). Regarding the reason they stayed in the city of Malaga, it turned out that 92.2% was in Malaga to spend a holiday, 4.9% was in the city for business reasons and 2.9% to visit relatives or friends. The group sizes (people sharing the same travel experience) are also reported in Table 1. The majority of tourists moved in pairs, i.e. 63.1%, while only 3.9% moved with a number of people equal to 5 or more. The average group size was therefore 2.6. Most of the tourists moved with partner, that is 82.5%, but also a 20.4% with sons and daughters and 11.7% with friends. The average party size was therefore 2.6 .

With reference to the age of participants, six classes were identified: the age classes with the highest frequency were : 56-65 years, with a percentage of 28.2, and 36-45 years and 46-55 years (both with 21.4%).

The last three age classes represent about 3/4 of the whole sample.

As for the country of residence, as we can see from Table 2, we are faced with a sample consisting mainly of residents in the United Kingdom (28.2%), while the Spanish people follow with a percentage of 10.7%. We are in any case in the presence of a very varied sample from the point of view of the country of residence, however most of them come from of European countries (88.3%).

Considering socio-cultural aspects of the sample, education level of the respondents is high, in average. It is noted that 67.9% of the sample has a high level of education, that is the Masters of Art (MA) or Master of Science (MS) or Bachelor degree. 25.2% was graduated at high-school and only 1.9% had the primary school education .

In the first section of the questionnaire, socio-demographic data were analyzed, while in the second part the tourists' behavior was investigated in relation to how they visited the city of Malaga with respect to the research variables. The first section (opening questionnaire) was given at the time of the first contact with the tourist; the second section (closing questionnaire) was self-compiled by the tourists instead, when the GPS was returned at the end of the day.

Table 1. Opening and ending questionnaires: descriptive statistics (n=103)

VARIABLE	CATEGORIES	%	VARIABLE	CATEGORIES	%
Hotels	Novotel Suites Hotel del Pintor	68.0 32.0	**Education**	Elementary High-School Bachelor Master of Arts (MA) or Master of Science (MS) P.H.D. or more	1.9 25.2 67.9 4.9
First visit	Yes No	66.0 34.0	**Degree of satisfaction**	Very satisfied Satisfied No opinion Somewhat dissatisfied Dissatisfied	58.1 39.8 1.1 1.10
Gender	Male Female	54.4 45.6	**Intention of returning**	Yes No	94.6 5.4
Age group	18-35 26-35 36-45 46-55 56-65 66 or more	0 12.6 21.4 21.4 28.2 16.5	**Willingness to recommend**	Yes No	97.8 2.2
Party size	1 2 3 4 5 or more	4.9 63.1 17.5 10.7 4.0	**Job type**	Employed Self-employed Unemployed Retired Student Other	54.9 22.0 1.1 20.9 0 1.1
Main motivation	Holidays Business reasons Visit to friends/relatives	92,2 4,9 2,9	**Total Annual Household Income**	<10.000 € 10,001 – 20,000 € 20,001 – 30,000 € 30,001 – 40,000 € 41,001 – 50,000 € 51,000 – 60,000 € > 60,001 €	2.4 3.6 4.8 16.7 22.6 13.1 36.9

Table 2. Country of residence (n=103)

COUNTRY OF RESIDENCE	%
UK	28.2
Spain	10.7
Belgium	6.8
Italy	6.8
Ireland	4.9
Holland	4.9
Sweden	4.9
Germany	3.9
Switzerland	3.9
Other European Countries	12.3
Non-European countries	11.7
Missing	1.0

In addition to the individual GPS tracks analysis, tourists have been asked about attractions visited, in order to observe their behavior within the city and to check if there was a correspondence between what they actually did (and GPS tracks showed), and what they said or remembered they did (it turned out that in some cases there was no perfect match). This also highlights a number of weaknesses. Sometimes the tourists said they did not visit a place even though they actually did. The main reason for that is a lack of information or signage: . many tourists pass near the attraction but they do not know what they are looking at. Another aspect investigated is the movement through the city, and it emerged that tourists move mainly on foot (75.7%), starting from the accommodation facilities that are both located very near to the city centre , while the bus is the most used mean of transport for the longest itineraries (9.7 %).

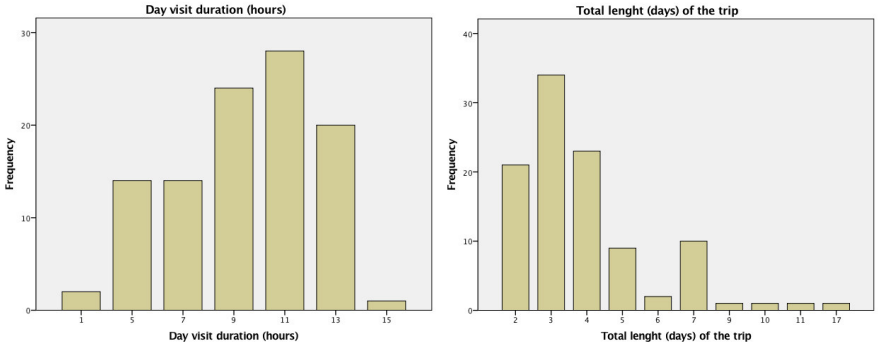
Table 3. Company type and main visited attractions

COMPANY TYPE	YES %	NO %	MAIN ATTRACTIONS VISITED	YES %	NO %
Alone	4.9	95.1	Port of Malaga, Muelle Uno	58.4	41.6
Partner	82.5	17.5	Malaga Cathedral	46.0	54.0
Sons/daughters	20.4	79.6	La Malagueta Beach	40.2	59.8
Friends	11.7	88.3	Picasso Museum	33.7	66.3
Family and relatives	5.8	94.2	Alcazaba	32.6	67.4
Parents	1.9	98.1	Castle of Giblalfaro	20.9	79.1
Business Partners	1.9	98.1	Picasso Birthplace Museum	14.9	85.1
			Carmen Thyssen Museum	5,8	94.2

Regarding the professional position, the majority of the tourists (48.5%), claim to be an employed worker; followed by self-employed workers with 19.4% and retired with 18.4%; only one respondent (1%) claims to be unemployed. Another interesting element can be the analysis of the tourists' income, in order to know the economic condition of the interviewee. 30.1% claims to receive an annual household income of over € 60,000, 18.4% an income between € 40,001 and € 50,000. Only 8% of respondents said they receive an income lower

than € 30,000; so it is clear that the economic condition of the tourists examined is quite good.
As for the experience related to the visit, it appears that most of the tourists were satisfied (35.9%) or very satisfied (52.4%), as a consequence, , they were keen to come back later to the city of Malaga and to recommend the destination to friends and relatives.
In general, the data evidence that the tourists' nights spent for the total holiday range from 2 to a maximum of 17 days and that the average stay is 3.9 days. On the other hand , as regards the duration of the daily visit, expressed in hours, we can see that for the majority of tourists, the visit lasts from 9 to 13 hours, as shown in the Figure 2.

Figure 2. Day visit duration (hours) and total length (days) of the trip



Conclusion

Walking tourism consists in holiday and day visits where recreational walking is a significant part of the visit. Otherwise, in a more poetic perspective, we can say that walking tourism is a way to explore our world (destination) *one step at a time*. Moreover, walking tourism is a way to experience communities and cities, and at the same time, it is a sustainable mode of movement in urban destinations because it represents an environmentally friendly solution. Further, it constitutes a direct way to explore most of cultural attractions and immaterial heritage, representing a good occasion to come into contact with residents' lives and local behaviors, too.
Some following trends are also likely to stimulate the growth in the interest for walking activities: demographic changes in tourists' characteristics and the increasing interest in specific segments as senior tourism; a growing interest in health (with an increasing awareness that walking is an ideal form of exercise and promotes good health) and in the environmental issues (where walking is seen as a 'green' activity, compatible with the conservation of the countryside).
However, space-time mobility of walking tourists at destination is a rather poorly investigated phenomenon. On the contrary, the increasing availability of GPS-based technologies to collect and analyze information regarding movements of people, is a relevant opportunity for researchers to assess the impact of tourism in urban destinations.
Although several papers discuss the models and the patterns of spatial behaviours, and analyze the factors affecting the mobility of walking tourists, the integration of GPS tracking data with traditional survey instruments (e.g. face-to-face interview, self-administered questionnaire) within a adequate sample design, represents, in our opinion, a good opportunity to elaborate new models and theories about time-spatial behaviours of tourist; and at the same time, it represents a profitable possibility: to test empirically these models; to study specific patterns; to specify factors affecting tourism mobility and, finally, to study specific markets segments of walking tourists.

The pilot survey here briefly presented, has achieved three specific objectives; the analysis of:

- the most visited attractions and the characteristics of mobility of walking tourists in Malaga;
- the main routes taken by walking tourists during the visit of the city and the corresponding movement patterns;
- the factors that have significantly influenced the spatio-temporal behaviours of walking tourists within the city.

However, in this (first) contribution only some concise results are presented and commented and more attention is given to the description of the survey settings . A deeper analysis will be necessary to take into account some further remarks. Thus, the potential offered by tracking data opportunely merged with data deriving from traditional data collection tools, is really high an opportunity for decision makers and destination managers.

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