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Multi-Destination Trips and Tourism Statistics: Empirical Evidences in Sicily

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Abstract The knowledge of the actual magnitude and main features of tourism flows in a given destination is an essential prerequisite for the evaluation of tourism impacts and externalities. Indeed, many pleasure trips are often characterized by the visit to more than a single destination. Although the topic is well-documented in literature, the empirical results are limited to a few pioneering studies. The lack may be attributable to the failure of tourism organizations to collect data on multi-destination trip behaviour. This can be seen, for example, in the system of European statistics on tourism (according to the Council Directive 95/57 EC), where information on the average number of visited destinations within a single trip is not provided. This paper aims at discussing the main implications of multi-destination trips, both on tourism statistics and on destination management. It also proposes to describe the research design and main preliminary results of a survey on incoming tourism in Sicily. Some remarks dealing with the positive and negative impacts of unobserved tourism and of multi-destination trips are reported at the end.

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Keywords Multi-destination trip; tourists' behaviours; spatial movements; tourism statistics; border survey

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Introduction

By definition, tourism implies a movement of people from an origin to a destination, consequently, its analysis strongly depends on the way in which origin and destination are defined. Most of the theoretical models for the analysis of tourist behaviour and the main statistical sources, focus their attention on only two points of the trip: where tourists come from and their destination (Leiper, 1989). According to a simplified model of tourism mobility, official statistical sources use the concept of "main destination" in order to obtain the objective correspondence between where tourists come from and their destination. However, many pleasure trips imply visiting more than one single destination (inter-destinations) or several "attractions" within the same destination (intra-destination). The topic is well-documented in literature (Pearce and Elliot, 1983; Leiper, 1989; Pearce, 1995), mainly with reference to international movements. It is well known that international tourism statistics published by UNWTO are simply a collection of statistics produced by every single country, collected from more than 150 countries of the world by UNWTO and published in its annual volumes. Multi-destination trips at an international level (visits to more than one country during the same trip) can produce a bias if arrivals on collective accommodation establishments are used as a proxy of the number of international tourists. Similar considerations can be also made for different territorial scales, i.e. national, regional, and sub-regional scales.

Parroco and Vaccina (2005a) have underlined the matchlessness between data on arrivals of guests in collective accommodation establishments in a given region and the number of tourists in the same region. The main reasons are related to: a) the use of unofficial establishments (e.g. relatives' or friends' houses, unregistered rented houses and rooms, boats, etc.) for tourist purposes, which determines the so-called "unobserved tourism" (Vaccina et al., 2011), considering that information on this kind of flow is not included in official statistics on guest arrivals; b) the lack of information regarding guests' motivations, which does not allow the distinction between tourists and other guests; c) the so-called "double counting" effect of arrivals which occurs every time a tourist changes an accommodation establishment during a single trip, thus being registered more than once. These issues have many implications in the evaluation of tourism impacts, as will be

discussed in the conclusive section. However, it is already possible to identify two potential perspectives. On the one hand, a more realistic picture of the tourism magnitude in a given destination would provide the means to evaluate tourism impacts (both positive and negative) by considering its real dimension. On the other hand, the evaluation of the impacts that the different tourist segments (e.g. official vs. unofficial tourism, first-time visitors vs. repeaters, mono-destination vs. multi-destinations, etc.) produce in the destination from an economic, social, cultural and environmental perspective is even more complex and has only partially been addressed in the present work.

By considering the lack of empirical studies that treat the issue of multi-destination trips, this paper aims at providing an example of a survey design and questionnaire implemented in order to quantify the phenomenon (although only for incoming tourism), while analysing some of the main features of multi-destination trip behaviour in Sicily, the largest Italian island in the Mediterranean Sea. More precisely, the next section discusses some of the issues related to multi-destination trips, as it results from a literature review. Section 2 analyses the main implications of the multi-destination trips on tourism statistics, which determine various sources of bias by using guest arrivals as a proxy of the number of tourists. Section 3 describes, from an empirical point of view, the research design of a survey on incoming tourism in Sicily (co-funded by the Italian Ministry of University and Research) whose goal is to analyse (among other aspects) tourist mobility in the Island, and to quantify the impacts of tourism mobility in official tourism statistics. Some of the main preliminary results of the survey are presented in Section 4. Final comments and policy implications conclude this work.

1 Multi-Destination Trip Behaviour: Current Issues and Future Challenges

Tourism implies a movement of people in time and space, from their place of usual residence to a destination (or destinations). Surprisingly, the analysis of tourism mobility within one single destination and among several destinations has not been taken into account adequately, even though a deeper knowledge of tourism movements is an essential prerequisite for logistics and for the management of

the economic, social, and environmental impacts of tourism. Indeed, most of the models of pleasure trip behaviour are based on the hypothesis that tourists visit a single destination, even if this premise is rather unreliable. Several authors (Baxter and Ewing, 1981; Mings and McHugh, 1992; Tussyadiah et al., 2006) examined the behavioural structure of multi-destination tourism trips, by underlining the significant differences with mono-destination trips, from a behavioural and motivational perspective. However, the empirical studies on this topic are limited to a few pioneering studies (see Lau and McKercher 2007; Mings and McHugh 1992; Wu and Carson 2008).

Although the importance of knowing travel itineraries has been recognized for a long time (Leiper, 1989; Dietvorst, 1995; Fennell, 1996), relatively few studies have made an attempt to model spatial movements among several destinations and within the same destination. The main reasons for this lack are attributable to both the difficulties associated with the collection of information on multi-destination trips (Lew and McKercher, 2002), and on the lack of clarity on what is meant by "multi-destination" trip. As regards the collection of information, official statistics on tourism (at least in the European Union, according to the Council Directive 95/57 of the Council of the European Union 1995, now repealed by the Regulation 692/2011 of the European Parliament and of the Council, European Parliament 2011) do not provide any kind of information on multi-destination trips and on trip itineraries, either from the supply side (statistics on guest arrivals), or from the demand side (which focuses its attention mainly on the "main destination" visited). This means that in order to analyse the phenomenon, ad-hoc surveys need to be carried out.

As concerns the definition of "multi-destination" trip, the lack of clarity is attributable to the definition of the destination itself (Hwang and Fesenmaier, 2003). For example, whereas some authors (Mings and McHugh, 1992; Stewart and Vogt, 1997) focused their attention on the visits to the attractions within a destination, other authors (Oppermann, 1995) defined the term "destination" in a wider sense, by including the whole region. In addition, Leiper (1989) pointed out that in order to qualify a stop as a "visit" it is necessary for the tourist to spend some time in that destination, or that there is some specific tourist interest in that stop. In order to define a multi-destination trip, many studies have considered the overnights as a discriminating factor. This standpoint will be undertaken in the present

work and in the empirical research in Sicily described below. The importance of analysing multi-destination trip behaviour is also related to the relevance of this phenomenon for regional tourism development. The multi-destination vacation experience will require more time than the average stays and will attract mainly those who have active lifestyles and more discretionary time and income. Individual destinations will have the opportunity to explore new markets in a cost-effective manner and to develop a more competitive product. At a regional level, local tourism organizations can exploit the potential of profitable diversification and the rebranding of a destination/region. For these reasons, one of the key issues is related to the identification of factors affecting the choice of making a multi-destination trip. These are usually distinguished in: physical factors (related to the destination morphology and logistics); human factors (motivations, socio-economic features, etc.); time availability and budget. As concerns physical factors, some authors (Lue et al., 1996) have pointed out the importance of the "cumulative attractions" that in a multi-destination trip can arouse more interest than when each attraction is visited separately on different trips. This would imply that a set of destinations could attract more tourists when they are located close to each other than when they are distant and isolated. Accessibility also exerts a strong influence on a tourist's propensity to take a multi-destination trip. Regarding human factors, an initial distinction can be made between fully independent tourists and organized tourists, who tend to be more confined within their "environmental bubble" (Cohen, 1972), and undertake fixed itineraries. On the contrary, independent tourists tend to explore the destination more completely and have more opportunities to change itineraries during their trip. Moreover, motivational factors have also been recognized (Crompton, 1979; Lue et al., 1993) to have a great influence on tourist behaviour in terms of mobility inter- and intra-destination. Therefore, pleasure vacationers generally tend to visit more destinations than business travellers, but also people visiting friends and relatives (VFR) would have different behaviour, in terms of mobility, than other tourist categories. VFR tourists tend to spend more time with their family or friends, than visiting several destinations. Several authors (Oppermann, 1993; Letho et al., 2004; Wang, 2004) have pointed out some differences in terms of mobility behaviour between those who visit the destination for the first time and the so-called "repeated visitors". However, their findings are not the same. Those who are in the destination for the first time tend to visit the

more "classical" places; on the contrary, repeated visitors tend to explore secondary places (Lau and McKercher, 2007). Nevertheless, the propensity in making multi-destination trips is higher for the repeated visitors than for the first-time visitors (Wang, 2004).

Finally, all tourist movements are influenced by time availability and budget. In fact, time has a strong influence on spatial touristic movements toward a single destination and among several destinations (Chavas et al., 1989; Walsh et al., 1990; McKean et al., 1995). Time has both absolute and relative impacts on tourist behaviour. Indeed, the overall time spent for vacation is rather stable, with possible extensions or reductions related to the economic availability that the business cycles leave to consumers for pleasure activities. Nevertheless, given the same amount of time, significant differences emerge in the ways in which tourists choose to spend their time. Some tourists may decide to spend more time during the trip visiting many intermediate destinations, whereas others might decide to maximize their time spent in the main destination and minimize the time required to reach the destination itself. The means of transport chosen, and budget availability have an influence on the way in which vacation time is spent. Moreover, some people may choose to visit many destinations, whereas other people might decide to visit few destinations and spend more time in there. In a nutshell, the knowledge of the factors that affect tourists mobility is an essential prerequisite for the management and planning of tourism services from a demand-oriented perspective, according to the different segments of tourism demand.

2 Main Implications of Multi-Destination Trips on Tourism Statistics

The limits of the official statistical sources on tourism, although they have never been adequately analysed, have already been pointed out by several authors, both at an international (Leiper, 1989; Pearce, 1995; Lickorish, 1997; Volo and Giambalvo, 2008), and at a national, regional, and subregional level (Parroco and Vaccina, 2005b; Tomaselli and Vaccina, 2006; Volo, 2010). While the topic is too wide to be addressed in the present work (it would require a detailed analysis of both demand- and supply-side tourism surveys made by the national and international organizations) we want to point out the biases created if multi-destination trips are

not adequately taken into account. As mentioned before, tourism statistics usually deal with two points of travel: origin and destination, ignoring the possibility that a single tourist may visit more than one destination. For the most part, when guest arrivals in accommodation establishments are used as a proxy of the number of tourists in a given region, the aggregation process made by summing all the arrivals recorded in different destinations (e.g. municipalities) will produce a bias (Parroco and Vaccina, 2005a). This is the so-called "double counting" effect. The higher the territorial level (e.g. country) and the greater the propensity of tourists to take multi-destination trips, the greater will be the double counting effect. Consequently, it is impossible to measure tourism demand through tourism supply. For example, Lickorish (1997) has pointed out that in 1990 UNWTO reported a total of visitors to Europe from the US at over 15 million, whereas the European Travel Commission (ETC), by using the US Government departure figures, gave a total under 7 million. Both the estimates were correct, but ETC records visitors as individuals making a trip around Europe, whereas WTO gives a total of frontier crossings, so that one individual visitor touring through a number of countries may be counted several times. In order to partially compensate for this problem, some authors (Pearce and Elliot, 1983; Leiper, 1989) have suggested the use of several indexes for the analysis of the international "tourism systems". These indexes are mostly based on the comparison between demand- and supply-side information. The so-called Main Destination Ratio (MDR) (Leiper, 1989) is defined as the percentage of arrivals in a given destination by tourists who consider that place as the main or only destination in a trip, to the total arrivals in that destination (Leiper, 1989, pg. 533). This approach is drawn on data collected at two points in each tourism system: the generating point, where trips begin and the destination, where tourists visit. However, this approach has some limits, while the estimates derived from the demand-side statistics (at least in most of the European countries), given their sampling nature, have a good degree of precision at a regional level, it does not allow the analysis of multi-destination trips at a subregional level. Still, whereas the demand-side surveys record all types of establishments used by tourists during their trip, the supply-side surveys collect information only regarding so-called "official establishments" (provided on a commercial basis), which in many cases only represent a small amount of the total potential supply in a given destination (e.g. second houses, boats, friends' or relatives' houses, etc.). This generates the

so-called "unobserved tourism" (Vaccina et al., 2011), given by the use of unofficial accommodation establishments for tourism purposes. Moreover, "double counting" affects also the meaning of one of the most used tourism indicators: the average length of stay, given by the ratio between presences (nights spent in collective establishments) and arrivals. This indicator is often seen as a proxy of the duration of the trip. This interpretation is often incorrect since, for example, a decrease in the average length of stay can be determined by an increase in the number of destinations visited, rather than by a reduction of the duration of the trip.

3 The Research Design of the Survey on Incoming Tourism in Sicily

Considering the deficiencies in the official tourism statistics described above, a research group at the University of Palermo, composed mainly of social statisticians, planned a survey covering the whole of Sicily thanks to co-funding by the Italian Ministry of University and Research. The survey aimed at quantifying the real magnitude of tourism in the island by trying to estimate two of the main biases related to statistics on guest arrivals: the double counting effect, and the so-called "unobserved tourism", given by the use of unofficial accommodation establishments for tourism purposes (Vaccina et al., 2011).

An initial problem in tourism surveys is related to the mobile nature of tourists. A large body of literature is related to the methods and techniques used to analyse mobile populations. These are generally included in the wider term of hard-to-reach populations (Muhib et al., 2001; Magnani et al., 2005) or difficult-to-reach populations (Mecatti, 2004), mobile (Kalton, 1991; Kalsbeek, 2003), rare and elusive (Kalton and Anderson, 1986; Kalton, 2009; Sudman et al., 1988), or hidden (Magnani et al., 2005) populations. Although there is not a widespread, accepted definition of the categories mentioned above, immigrants, homosexuals, homeless, and other similar categories of individuals are usually defined as hard-to-reach populations, and they are studied with sampling methods capable of dealing with the problems associated with their sampling. A distinctive feature of all these populations (including tourists) is given by the absence of a complete list of the population units. Moreover, they are often mixed, and not immediately

recognizable, with other units (e.g. in tourism with residents or with other travelers), which make their selection both more difficult and more expensive.

A review of the sampling and selection techniques for hard-to-reach populations can be found in several contributions (Kalton, 1991; Muhib et al., 2001; Kalsbeek, 2003; Kalton, 1993; Kalton and Anderson, 1986; Kalton, 2009; Kakinami and Conner, 2010), and the chosen solutions range from non-probabilistic (e.g. snowball, respondent driven, targeted sampling, etc.) to probabilistic (Time-Location Sampling - TLS) methods. Time-location sampling is used to take a sample from a population in which: a) a sampling frame is not available; and b) the places where the population units can be found are known (Karon, 2005, pg. 3180). The knowledge of the locations where the population units can be found reduces sampling costs, given the special nature of the population, which is rare, elusive, mobile, etc. TLS (also known as venue sampling) is a probabilistic method used to recruit members of a target population at specific times in set venues. The sampling framework consists in venue-day-time units (VDT) – also known as time-location units – that represent the potential universe of venues, days and times. For example, a VDT unit could be a defined period of four hours on a Monday in a specific venue. The fieldwork team identifies a range of time-location units in order to locate the members of the target population through interviews and key informants, service providers, and members of the target population. Then, the team visits the venues and prepares a list of VDT units that are considered potentially eligible on the basis of checking the number of the present people.

For the survey on incoming tourism in Sicily, a complex sampling design was adopted. The units of interest were represented by Italian (not resident in the island) and foreign tourists leaving the island at the end of their vacation. In this way, it was possible to collect direct information (from the demand-side) related to the whole period spent in the island, by minimizing the recall bias (if compared to the more common telephone surveys generally used in the demand-side tourism surveys). A detailed description of the sampling design is contained in De Cantis et al. (2010). Given the insularity of Sicily, according to the TLS design, almost all the places where it is possible to leave the island were selected: the airports of Palermo, Catania, and Trapani, the ports of Palermo and Catania, and the Strait of Messina (only the two airports of the two small islands Pantelleria and Lampedusa were not included in the survey). The periods covered by the survey were selected according

to the official data on the tourist flows in the island: spring, summer, and autumn, during which more than the 80% of the "official" tourists flows are concentrated (De Cantis et al., 2011). By integrating the official data from different statistical sources (tourism statistics from the demand side and from the supply side, daily air passengers, daily ferries leaving the Straits, etc.), unequal first-stage unit selection probabilities of the Venue-Day-Time (VDT) units were determined. For the second stage units, a pseudo-probabilistic approach was adopted, through a systematic selection of the units in the days and places previously selected, according to strict rules given to the interviewers. Adequate estimation procedures were used to make an inference on the main relevant parameters, by also using calibration techniques and complex estimators, such as ratio estimators and post-stratified estimators (Levy and Lemeshow, 2008).

The research instrument was represented by a questionnaire of 29 items. The questionnaire was divided into different sections: filter questions, organization of the trip, motivations and expectations, type of holiday (sun, sea and sand; cultural, etc.), mobility, expenses, satisfaction. The specific section of the questionnaire related to the collection of information on tourism mobility is presented in Table 1. In this section, the tourist was asked to specify all the destinations (municipalities) that he/she visited during his/her trip, with at least one overnight stay. For each destination visited, he/she was asked to specify the number of nights spent, and the type of accommodation establishment used, in order to be able to distinguish between the official and the unofficial establishments. Through this section it was possible to relate the information collected with the two aspects of interest: tourism mobility and unobserved tourism.

4 Main Preliminary Results

According to the sampling design described in the previous section, between the summer of 2009 and the spring of 2010, a total of 3,935 tourists leaving Sicily at the end of their trip were interviewed, Sicilians and other travelers (non-tourists) were excluded from the sample. As stated above, two of the main topics of interest were related to the analysis of tourism mobility and to the quantification of unobserved tourism. The above-mentioned TLS design implementation was treated

Table 1: Questionnaire section on tourism mobility

Destinations visited	Nights spent	Type of establishment									
		01. Rural facilities	02. Holiday or work camp	03. Hotels and similar establishments	04. Camping	05. Bed and Breakfast	06. Youth Hostel	07. House/Room rented	08. Relatives or friends house	09. Second home	10. Other (specify)
		□	□	□	□	□	□	□	□	□	...
		□	□	□	□	□	□	□	□	□	...
		□	□	□	□	□	□	□	□	□	...
		□	□	□	□	□	□	□	□	□	...

as a two-stage stratified sampling design with unequal selection probabilities for the first-stage units, and with constant selection probabilities for the second-stage units. The first-stage units were constituted by the combination of places, days and hours, i.e. Venue-day-time units (VDT, i.e. primary sampling units: PSU). Let M be the total number of VDT. The second-stage units were constituted by the tourists that were selected within the first-stage units through a systematic selection procedure. An integration of the official data coming from different statistical sources was used: tourism surveys from the demand side (Istat, 2011b), from the supply side (Istat, 2011a), data collected by the Bank of Italy on international tourism (Bank of Italy, 2011), data on daily air passengers and on daily ferries leaving the Strait. The first-stage units selection probabilities of the VDT units (for the i-th location, and the j-th time) were consequently determined (i.e. $P_{i,j}$).

For the second stage units, a pseudo-probabilistic approach was adopted, through a pseudo-systematic selection of the units in the days and locations selected, according to strict rules given to the interviewers (De Cantis and Ferrante, 2011). After the survey, ex-post information on number of passengers within each VDT selected unit were asked to official authorities and managers of the different locations selected (e.g. GESAP s.p.a. for Palermo Airport, SAC s.p.a. for Catania Airport, AirGEST Trapani Airport, and the Port Authorities for the ports of Palermo, Catania, and Messina). After considering the information on the number of people travelling in each VDT selected, a monthly estimate of the proportion of incoming tourists and of other travelers categories was used in order to determine the number of tourists within each VDT selected (i.e. second-stage unit population), and, subsequently, the second-stage unit selection probabilities ($\pi_{h|i,j}$, i.e. the probability of selecting the h-th tourist within the selected $VDT_{i,j}$) (for a more detailed description on the auxiliary information, see De Cantis and Ferrante 2011). Once obtained the set of $y_{h,i,j}$, values (where Y is the variable of interest), a direct estimator of Hansen-Hurwitz class was implemented by the following (for simplicity, stratification is ignored):

$$\hat{Y} = \frac{1}{m}\sum_{i=1}^{s}\sum_{j=1}^{t_i}\sum_{h=1}^{n_{i,j}}\frac{y_{h;i,j}}{\pi_{i,j}\pi_{h|i,j}} = \frac{1}{m}\sum_{i=1}^{s}\sum_{j=1}^{t_i}\frac{1}{P_{i,j}}\frac{N_{i,j}}{n_{i,j}}\sum_{h=1}^{n_{i,j}}y_{h;i,j} = \sum_{i=1}^{s}\sum_{j=1}^{t_i}\sum_{h=1}^{n_{i,j}}w_{i,j}y_{h;i,j}$$

where m represents the number of first stage units included in the sample; for each $VDT_{i,j}$ selected, $n_{i,j}$ represents the number of second stage units included in the sample, among the total $N_{i,j}$ units; finally, $w_{i,j} = N_{i,j}/(mP_{i,j}n_{i,j})$ represents the final sampling weights. According to this estimator, the direct formula for standard error is given by the following expression:

$$SE(\hat{Y}) = \sqrt{\frac{1}{m(m-1)}\sum_{i=1}^{s}\sum_{j=1}^{t_i}\left(\frac{\frac{N_{i,j}}{n_{i,j}}\sum_{h=1}^{n_{i,j}}y_{h;i,j}}{P_{i,j}} - \hat{Y}\right)^2}$$

Moreover, it is particularly interesting that, for this specific sampling design (two-stage sampling with unequal first-stage unit probabilities with replacement) the standard error does not depend on the second stage sampling design. Table

Table 2: Distribution of incoming tourists interviewed by number of visited destinations in Sicily (with at least one overnight) (summer-autumn 2009; spring 2010)

Number of visited destinations	Tourists	%
1	2,683	68.18
2	567	14.41
3	318	8.08
4	195	4.96
5	74	1.88
6 or more	98	2.49
Total	**3,935**	**100.00**

2 reports the distribution of people interviewed in relation to the number of destinations visited during their trip in Sicily. From the analysis of data reported in Table 2, it is possible to observe that about the 32% of interviewed people visited more than one destination during their trip in Sicily. Estimates were obtained with the R *Survey* package (Lumley, 2010) by implementing a two-stage cluster design (the same results were obtained through SAS *Surveymeans* procedure, see Levy and Lemeshow 2008). A total number of incoming tourists in Sicily, during the periods of interests equal to 2,602,586 were estimated, with a standard error equal to 102,979. The average number of visited destinations was equal to 1.64 with a standard error of 0.04. However, there is another bias in official statistics on guest arrivals described above: unobserved tourism. In order to quantify the relevance of the phenomenon, in the mobility section of the questionnaire, the different types of accommodation establishments used by tourists were distinguished in two main categories: official establishments, and unofficial establishments. The official establishments category included: hotels, residences, camping, rural facilities, holiday and work camps, bed and breakfasts, youth hostels; whereas unofficial establishments were: second houses, rented houses or rooms, relatives' and friends' houses, and a residual category which includes boats, free campsites, and other unofficial establishments.

In order to stress the relevance of both the double-counting effect and unobserved tourism, Table 3 reports the distribution of the number of visits and the number of the nights spent in each establishment, by the tourists interviewed. By

analysing the data in Table 3, it is possible to observe that the 3,935 tourists interviewed made about 6,500 visits in Sicily with at least one overnight stay (actually the total visits were 6,509, but 24 visits didn't indicate the type of establishment chosen). However, only a portion of these visits (65% – 4,237 over 6,485) would emerge from official statistics on guest arrivals. In the remaining 35% of the visits, tourists used unofficial establishments, appear in official statistics on guest arrivals. The 3,935 tourists spent about 38 thousands nights in Sicily, with an average trip length in Sicily of about 9.8 nights (38,644 over 3,935). 43% of the total nights were spent in official establishments and about 57% in unofficial establishments.

Table 3: Visits, overnight stays and average duration of visit by accommodation category, from 3,935 interviews to incoming tourists in Sicily, summer and autumn 2009, spring 2010

Accommodation establishment category		**Visits**	**Overnight stays**	**Average duration of visit**
Official establishments	Rural establishments	152	589	3.88
	Holiday camps	24	200	8.33
	Hotels	2,615	11,071	4.23
	Camping	377	1,183	3.14
	Bed and Breakfast	1,023	3,359	3.28
	Youth hostels	46	129	2.80
Unofficial establishments	House or room rented	461	4,607	9.99
	Relative and friends houses	1,354	12,587	9.30
	Owned houses	307	4,502	14.66
	Other unofficial establishments	126	417	3.31
	Total	**6,485**	**38,644**	**5.96**

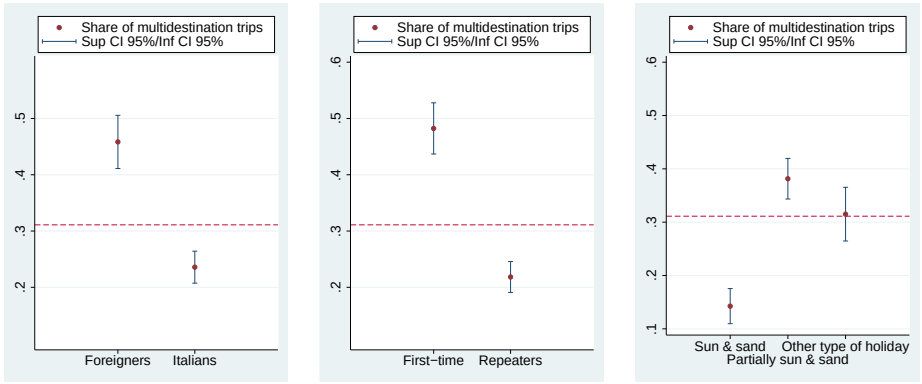
It is useful to stress how the ratio between nights spent in each establishment category and the visits made on the same category produces an index – the average length of stay – which has a different meaning from the average length of the trip, given by the ratio between the total number of nights spent and the number of tourists. As a result, the average length of stay should be interpreted as a measure of the length of the stay or, more exactly, as a synthetic measure of the average

length of stay in *each* accommodation establishment category. It is noticeable that this index varies among the different establishment categories, with higher values for unofficial establishments, and lower values for official ones.

Table 4: Estimates of incoming tourism in Sicily in terms of arrivals and overnight stays in official and unofficial establishments, summer and autumn 2009, spring 2010

Variable of interest	Estimate	Standard Error
Official arrivals	2,695,256	187,493
Unofficial arrivals	1,541,493	79,923
Official overnight stays	10,361,903	548,806
Unofficial overnight stays	15,346,341	887,097

The estimates of unobserved tourism both in terms of arrivals and overnight stays, and of their standard errors, are reported in Table 4. It can be observed that about 36% of the arrivals (2,695,256 over 4,236,749) and about 60% (15,346,341 over 25,708,244) of the overnight stays were made in unofficial establishments. The relatively low values of the standard errors stress the robustness of the results and enhance the relevance of unobserved tourism in the island. These results can be further improved, for example, by using post-stratification techniques (Levy and Lemeshow, 2008), with the information available on official arrivals and overnight stays. It is also possible to start exploring some of the factors that may be related to multi-destination trip behaviour, as suggested by the brief literature review presented in section 2. Subgroup estimates of the share of tourists making a multi-destination trip in Sicily were calculated, and in Figure 1, the subgroup estimates are reported in relation to: (a) tourists' nationality, (b) first-time vs repeated visitors, and (c) type of holiday. It can be observed that given an overall value around the 31% (and a standard error of 0.01), the share of tourists making a multi-destination trip in Sicily is higher for foreign tourists than for Italians (43.84% vs 23.59%, Figure 1.a), and this difference is significant, as can be observed analysing the confidence intervals. This could also be due to the distance of the destination (Sicily) from the country of origin. Since long-distance trips to destinations require investing resources for such purposes as transport, lodging and food, it is more



(a) (b) (c)

Figure 1: Estimates of the share of multi-destination trips in Sicily in relation to some specific market segments

likely for tourists to visit several destinations rather than to take separate trips to single principal destinations (Lue et al., 1993).

Another important factor related to multi-destination behaviour, stressed by academic literature, is the distinction between first-time and repeated visitors. Figure 1.b suggests that first-time visitors are more likely to make a multi-destination trip in the Island, compared to repeaters (48.23% vs 21.84%). Wang (2004) has suggested that this could be due to a loyalty process of repeaters with specific places in the visited destination, although this phenomenon would require a more detailed analysis. Finally, if we consider the type of holiday taken by tourists (Figure 1.c), those who came to Sicily for a sea and sand holiday, are more likely to visit a single destination (only the 14.25% made a multi-destination trip), whereas those who went on only a partial sea and sand holiday, or who took a different type of holiday (cultural tourism, eco-tourism, etc.) were more inclined to take a multi-destination trip (38.15% and 31.51% respectively). People, in fact, tend to make a multi-destination trip to satisfy various benefits that are often hard to be achieved in a single destination (Lue et al., 1993; Tideswell and Faulkner, 1999). The purpose of travel has been used as an important explanatory variable for multi-

destination choice, since multi-destination travel becomes prevalent when tourists seek multiple benefits (Tideswell and Faulkner, 1999).

While postponing to a future work the implementation of multivariate models for a more detailed analysis of the factors affecting multi-destination trip behaviour in Sicily, it seems useful to explore the main travel itineraries followed by the tourists sampled in Sicily. As described in the previous section, the questionnaire section on mobility allowed us to also collect information on the destinations (municipalities) visited by tourists (with at least one overnight stay). Although we cannot be sure that the list of destinations is the sequence the tourists followed (since no strict instructions were given to the interviewers and the interviewed in this sense), the information is very important and it allows us to reconstruct the main travel itineraries followed by tourists in Sicily, and to differentiate between them in relation to specific segments of the tourism demand (single-destination, two-destinations, etc.). In order to analyse the tourist itineraries, based only on the sampling results, the occurrences of the destinations were "counted" thanks to SPAD textual analysis software (Coheris, 2011), in relation to the different number of destinations visited (one destination, two destinations, and so on). A important initial result is related to the number of municipalities visited by tourists in Sicily. The tourists interviewed, in fact, visited 68% of the 390 Sicilian municipalities at least once. The municipalities with the highest number of visits were Palermo (the capital of the Region), Catania (534 visits), Syracuse (423 visits), Taormina (423), Agrigento (343) and Cefalú (315). Although these results could also be derived from official tourism statistics, the way in which the different destinations in Sicily are combined in tourism trips is unknown. Table 5 reports the ten most frequent itineraries followed by the tourists interviewed, and in Figure 2 some of the two-destinations paths are traced, in order to give an initial idea of tourist mobility in Sicily.

At first glance, from the analysis of Table 5 and Figure 2, it appears that the most frequent itineraries seem to be characterized by relatively nearby destinations. However, this issue will require a more specific analysis by taking into account also for the means of transport used, and for other demand and supply-side determinants. Future steps of the analysis could be related to the analysis of different tourist behaviour in relation to the number of destinations visited and to other supply and demand-side factors. However, although the analysis of tourist paths is complex

Table 5: Main tourist itineraries of incoming tourists in Sicily, according to the number of visited destinations

Pos.	Two-destinations paths	Freq.	Pos.	Three-destinations paths	Freq.	Pos.	Four-destinations paths	Freq.
1	Palermo Agrigento	95	1	Palermo Agrigento Syracuse	32	1	Agrigento Syracuse Taormina Palermo	12
2	Palermo Cefalu	80	2	Taormina Catania Syracuse	23	2	Catania Aeolian Islands (2 islands) Etna	3
3	Catania Syracuse	77	3	Agrigento Syracuse Taormina	20	3	Catania Syracuse Agrigento Palermo	3
4	Taormina Syracuse	69	4	Palermo Agrigento Catania	19	4	Letojanni Palermo Agrigento Lipari	3
5	Syracuse Agrigento	68	5	Aeolian Islands (3 islands)	17	5	Palermo Cefalu Agrigento Taormina	3
6	Taormina Catania	57	6	Catania Syracuse Agrigento	14	6	Agrigento Palermo Noto Syracuse	2
7	Catania Palermo	50	7	Palermo Taormina Syracuse	12	7	Catania Porto Empedocle Palermo Noto	2
8	Palermo Taormina	49	8	Palermo Catania Syracuse	11	8	Catania Syracuse Agrigento San Vito Lo Capo	2
9	Palermo Syracuse	46	9	Palermo Cefalu Agrigento	9	9	Catania Syracuse Messina Palermo	2
10	Aeolian Islands (2 islands)	37	10	Cefalu Palermo Taormina	9	10	Cefalu Palermo Syracuse Ragusa	2

and the different segments of tourism demand need to be taken into account, this apparently simple information offers several different insights for a deeper knowledge of tourist behaviour in Sicily.

5 Policy Implications and Conclusions

Despite being rather well-investigated both from a theoretical perspective and in relation to the main factors affecting tourist mobility, multi-destination trip behaviour still lacks empirical applications in relation to the different geographical contexts (international, national, regional, and subregional). Before discussing some of the main implications of tourist mobility from a marketing and a management point of view, an important preliminary issue to underline is the direct link among tourism statistics, multi-destination trips, and the quantification of the actual magnitude of tourism. Both statistics from the supply-side and from the demand-side do not take multi-destination trip phenomenon into account adequately, so they are biased, although this bias is also difficult to quantify. The aim of the empirical survey described above was to provide an initial measure of this bias from a quantitative point of view. However, the correction of official statistics is only the first step. In the analysis of tourism mobility (inter and intra-destinations), multi-destination trip behaviour needs to be taken into account, within appropriate theoretical models. Many of the issues related to the analysis of tourism demand and of its segmentation should not ignore the number and the types of destinations visited during a single trip by tourists. For tour operators, for example, the strategy of packaging

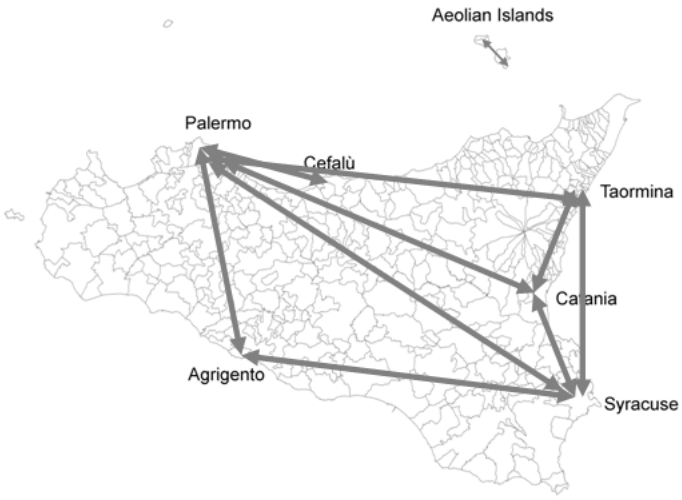


Figure 2: Some of the main tourists itineraries in Sicily

destinations is not new, but a deeper knowledge of the factors affecting the multi-destination choice could help to provide tour packages that would take into account the different segments of the tourism demand adequately. Multi-destination trips have also important consequences for destinations and public authorities. Tourists might combine new destinations with existing ones. Therefore, the choice of the kind of destination to be developed must be made along with the consideration of the destination combination. The choice then relies on the characteristics of the new destination compared with the existing destinations. Knowledge of the main travel itineraries and of the hierarchical systems of the different destinations (main destinations, secondary destinations, etc.) is an essential prerequisite for the adequate implementation of destination marketing and management policies. From a mesoeconomic and macroeconomic perspective, the features of tourist mobility have important implications also for the transport, logistic planning and management and, more in general, for the adequate provisioning of tourism services.

With reference to Sicily, tourism seems to be strongly concentrated in few main destinations that are the most frequent stops. However, there are many secondary

destinations and an accurate analysis could help the process of regionalization of Sicily according to a demand-oriented approach. Finally, by comparing the information on the number of destinations visited, and on the number of presences in unofficial establishments with official accommodation statistics, it will be possible to obtain a more reliable picture of the tourism phenomenon in the region.

The evaluation of the positive and negative impacts on tourism, on different perspectives (economic, social, cultural and environmental) is difficult without adequate information on tourism flows, both from the quantitative (actual magnitude) and the qualitative point of view (segmentation of tourism flows). This work aimed at underlining the deficiencies and the main problems affecting accommodation statistics, when used as a proxy of tourism flows for destination management purposes. However, it is possible to make some considerations about the specific externalities that can derive from the two phenomena of interest: unobserved tourism and multi-destination trips. As regards unobserved tourism, several studies found that residents benefiting from tourism have a higher level of support for it (Tosun, 2002), and this could be the case of people renting rooms or houses for tourism purposes. Beyond the more classical negative impacts stressed by academic literature for tourism activity in general (e.g. crowding of public services, cultural commercialization, higher crime rate, prostitution and gambling, see Lindberg and Johnson 1997), the negative impacts of unobserved tourism are related to the tourism market itself. Unofficial establishments in fact compete in the tourism market, without bearing many of the costs (e.g. taxes). Other negative impacts may be related to increased housing prices for residents and more generally in a rivalry between tourists and residents for the use of destination resources. On the other hand, the tourism movements (both among several destinations, and within a single destination) generate both positive and negative impacts. The latter are related to the overcrowding of public transport and to a subsequent increase in price levels. However, to ensure an adequate provisioning of tourism resources, the policy makers, aware of the multi-destination phenomenon, could orient their efforts to a better management of transport services, by also taking tourists' needs into account. These improvements could positively affect residents, too.

To sum up, the empirical study described in the present work has allowed us to achieve a primary aim of the quantification of two important phenomena: multi-destination trips and unobserved tourism. Future research could improve additional

methodological and empirical aspects. From the methodological perspective, it is important to improve the sampling design to make it more suitable for observing the tourism phenomenon and implementing the probabilistic techniques of unit selections. Moreover, from the methodological point of view, the development of new research instruments for the collection of information on multi-destination trip is still a challenging issue. From an empirical perspective, same-day travelers still represent a less-explored phenomenon, even if it is equally important for tourism policies. On the other hand, tourism activities by residents (in Sicily) would certainly have different characteristics (also in terms of mobility and unobserved tourism), and its analysis, which requires appropriate sampling design, techniques, and tools, needs to be adequately planned.

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