PART II

INBOUND TOURISM STATISTICS COLLECTION. THE RESEARCH PROCESS

Most countries put a high priority on measuring the number of visitors crossing their borders from abroad, i.e. international flows or, in other words, inbound movement. Such visitors are an important source of revenue for most national governments. They stimulate national and local economies in the country, contribute to the increase of the Balance of Payments assets, often provide needed foreign exchange and help finance amenities which can also be enjoyed by the country's citizens.

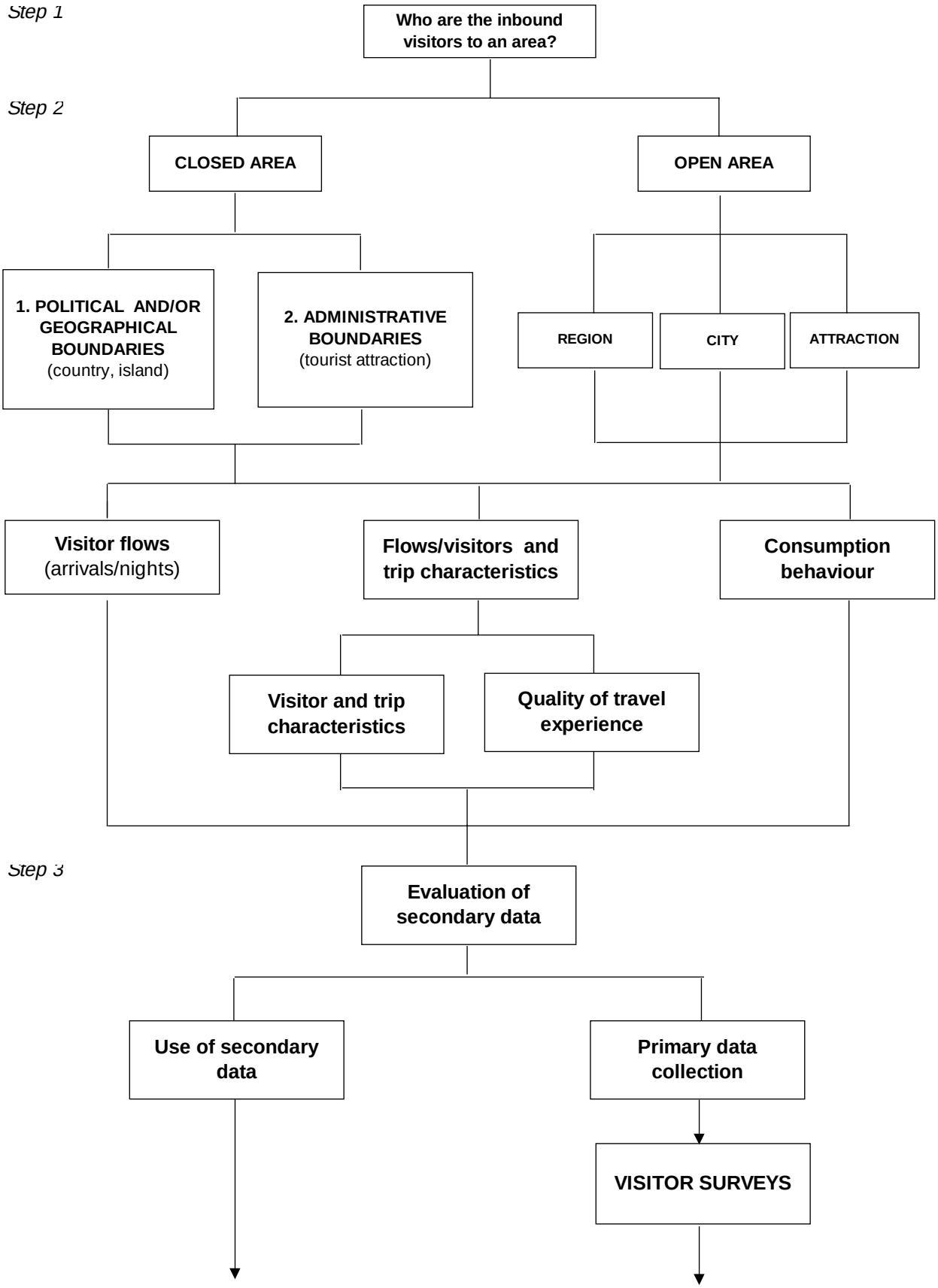
But it could be interesting to measure the inbound visitors (international and domestic) for a specific area, region, destination, attraction, etc. inside a country as well.

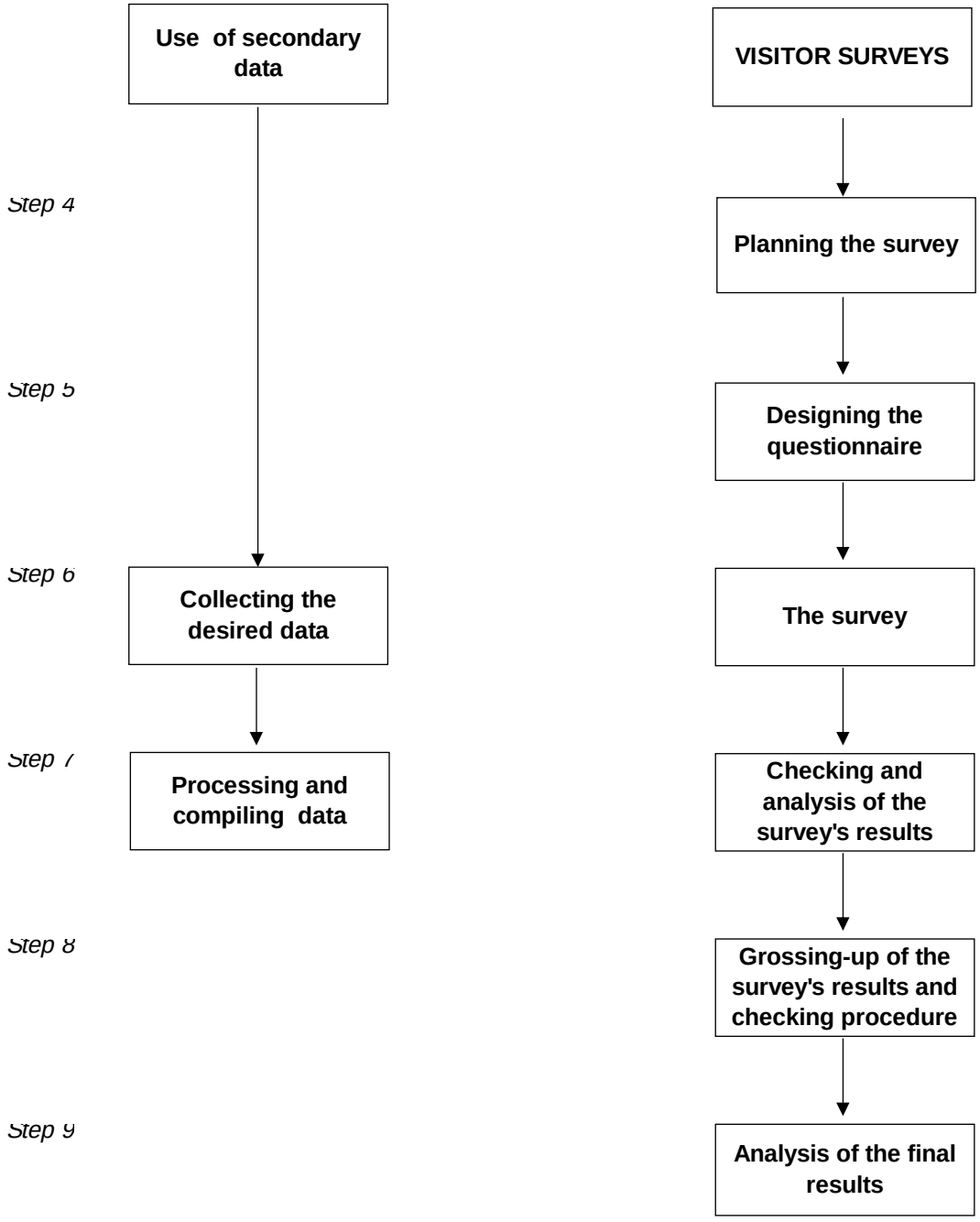
The information collected allows us to evaluate the economic, social and environmental impact of tourist flows in the area under study. It gives evidence of the pressure that local resources are subjected to and, consequently, suggests the best management and promotional strategies which may be adopted.

Generally speaking, the information about inbound tourism is crucial not only in estimating foreign exchange earnings, the balance of international payments and, in general, the economic impact of those visitors. It is also very useful in analysing the characteristics of both the visitors and the trip and studying their motivations and holiday behaviour. These elements are at the basis of suitable marketing strategies and management plans; statistics on inbound visitors are normally used to develop market segmentations, to design promotional campaigns and to evaluate these campaigns.

Chart 1 presents the logical and sequential process to be followed for collecting and compiling statistics on inbound visitors.

Chart 1 - Inbound tourism statistics collection. The research process




Use of secondary data
VISITOR SURVEYS
Step 4
Planning the survey
Step 5
Designing the questionnaire
Step 6
Collecting the desired data
The survey
Step 7
Processing and compiling data
Checking and analysis of the survey's results
Step 8
Grossing-up of the survey's results and checking procedure
Step 9
Analysis of the final results

1. Inbound visitors to an area. The main issue

Step 1

Who are the inbound visitors to an area?

Before starting any analysis on inbound visitors, it is necessary to define the purpose of the analysis.
For example, researchers may be interested in measuring and describing all international visitors entering a country or all visitors (international and domestic) going into a region, a city, a tourist site, etc.
Given the area, they can analyse:

- inbound visitors as a whole;
- inbound visitors as the sum of tourists and same-day visitors;
- inbound tourists or inbound same-day visitors only.

The choice influences the kind of information to be collected and, consequently, the kind of primary data collection to be implemented.

The aim is to carry out a method for the collection of inbound tourism statistics which is consistent with the recommendations of the European Council Directive 95/57 on the collection of statistical information in the field of tourism. According to the Directive "the collection of data on tourism demand shall cover national tourism, i.e. domestic tourism and outbound tourism" (art. 2). Since outbound statistics collected by country X record tourist flows provided by residents in country X travelling abroad, the volume of country X's tourist flows recorded by each country of destination has to be comparable with the counts made in each origin country. Considering the difficulty of doing this in a consistent way, it may be necessary to plan a procedure for the collection of inbound tourism statistics which is able, on the one hand, to ensure homogeneity of international flow statistics, whilst on the other hand, to complete the analysis when it must be carried out at different territorial levels.

But who is the visitor? What are the differences between an inbound international visitor and an inbound domestic visitor?

Who is the tourist? What are the differences between an inbound international tourist and an inbound domestic tourist?

Who is the same-day visitor? What are the differences between an international same-day visitor and an inbound domestic same-day visitor?

1.1. Definitions

According to the Eurostat definitions, we can define:

VISITOR

Any person travelling to a place other than that of his/her usual environment for less than twelve consecutive months and whose main purpose of travel is other than the exercise of an activity remunerated from within the place visited.

Inbound international visitor

A visitor travelling to a place outside his/her country of residence.

Inbound domestic visitor

A visitor travelling to a place inside his/her country of residence but outside his/her usual environment.

OVERNIGHT VISITOR or TOURIST

Visitor who stays at least one night in collective or private accommodation in the place or country visited (overnight visitor).

Inbound international tourist

A tourist who overnights in a place outside his/her country of residence.

Inbound domestic tourist

A tourist who overnights in a place inside his/her country of residence but outside his/her usual environment.

SAME-DAY VISITOR

A visitor who does not spend the night in collective or private accommodation in the place or country visited.

Inbound international same-day visitor

A same-day visitor who does not spend the night in the place visited, which is outside his/her country of residence.

Inbound domestic same-day visitor

A visitor who does not spend the night in the place visited, which is inside his/her country of residence but outside his/her usual environment.

As far as inbound international visitors and tourists are concerned, it is very important to count separately the 'ethnic' flows of the ***emigrants*** who return to their native countries for holidays.

They have to be registered separately because the characteristics of their trip (means of accommodation chosen, means of transport used, places visited, etc.) and their consumption behaviour are, generally, different from those of visitors and tourists native to other countries.

Furthermore, for inbound (international and domestic) visitors it is necessary to evaluate **same-day visitors** as well as **tourists** staying overnight in the area under study. Given their characteristics and consumption behaviour, they have a different impact — both in economic, environmental and social terms — on the local economy.

As far as ***same-day visitors*** are concerned, there are at least four different types of visitors to be taken into account according to the place they leave from and return to:

- ***True same-day visitor***, describing those who visit the tourist destination during the day leaving from and returning to their usual place of residence, inside the country or abroad. For example, a family living in Orlando (Florida) who visit Disneyland on Sunday and go back home on Sunday night (domestic) or a family living in San Diego who spend Sunday in Tijuana (Mexico).

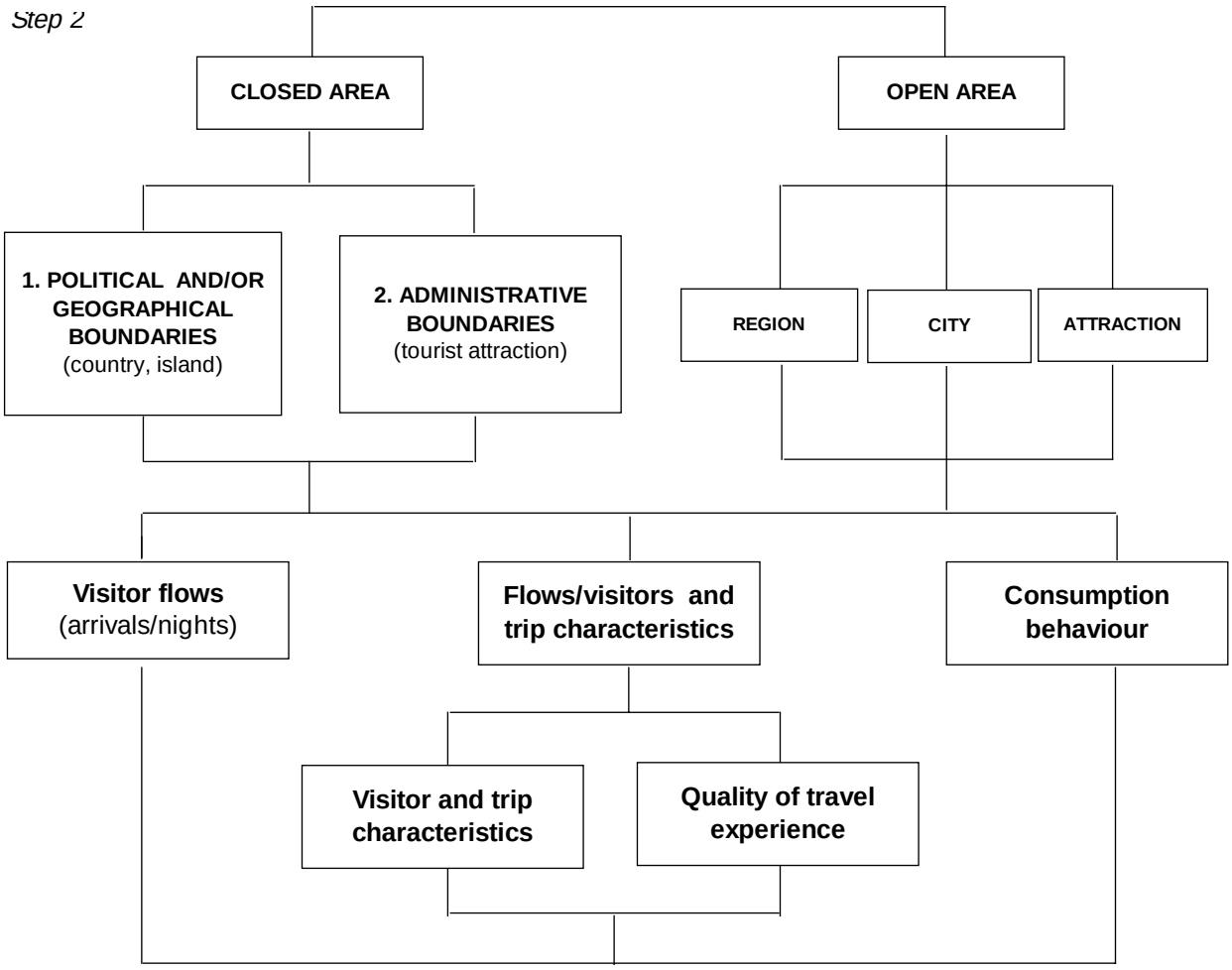
- ***Indirect same-day visitor***, describing those who visit the tourist destination leaving from and returning to (round trip) the same vacation site, where they are counted as overnight visitors. For example, a family who is spending the holiday in Palm Beach, near Miami, and decide to visit Disneyland or a family who is on vacation in San Diego and decide to spend a day (and not the night) in Mexico.

- ***In transit same-day visitor***, where those visiting the tourist destination leave from a (residence or vacation) site different from the (residence or vacation) site towards which they are directed, inside the same country or abroad. The visit may be a stopover as part of transit travel. For example, a group of friends making a tour of Florida and decides to visit Disneyland on their way from Jacksonville to Miami.

- ***False same-day visitor***, where visitors with a specific tourist destination as their principal vacation objective are lodging in the neighbourhood or in the surrounding area, either due to insufficient supply in the main destination or, more likely, to save money. For example, a couple of tourists whose main destination is Paris but who spend the night in St. Denis, which is in the Paris surroundings.

A different definition of tourist region corresponds to each type of same-day visitor, which is the different-sized area from which the visitor originates. In this area, tourist receipts and generally the economic, social and environmental impact that tourism generates depend strictly on the proximity to the main destination (see Step 9). The definition of the tourist area is very important for planning co-ordinated management policies and strategies.

2. Specification of data needs. The area and the information



When specifying the data needs, the researcher has to ask him/herself some questions which reflect the problems he/she will have to face in the research process:

The questions

⇒ What type of data are required and in how much detail?
⇒ Are the required data already available?
⇒ Can the data be obtained by putting statistics from current collections together?
⇒ Which surveys/collections that are already being carried out could be used to collect the required data?

⇒ What are the available financial and manpower resources?
⇒ What is the scope for compromise on data coverage, detail and quality?

These are the main issues which should be considered before the selection of the appropriate statistical collection methodology to be used.
The recommendations of the European Council Directive outline that the collection should "ensure that the results meet the necessary minimum accuracy requirements", and that "Member States shall take whatever measures they deem appropriate to maintain the quality and comparability of the results" (art. 4).

2.1. The area

Once the object of the analysis has been defined, it is necessary to identify the pattern of the area (closed or open; large or small) in which the analysis has to be carried out and the information to be collected.

Considering a **closed area**, there are three types of boundaries which define three different types of areas:

- *political* boundaries: e.g., a country;
- *geographical* boundaries: e.g., an island;
- a*rtificial* or *administrative* boundaries: a museum, a theme park, an archaeological area, etc. In this case, there is a control mechanism for entry and visitors have to pay a ticket for admission.

Considering an **open area**, this can be:

- a *macro-region*: e.g., Northern France;
- a *region*: e.g. the Ile de France (which includes Paris);
- a *tourist destination*: e.g. a town, a monument. Here there is not any sort of control mechanism and the persons visiting the site have to be counted physically.

As you can see in the following Chapter, different problems in the collection of tourism statistics may arise according not only to the *type* but also to the *size* of the area under study. You can deal with, for example, a large closed area (a country) or a small closed area (an island), or you can choose to analyse visitor characteristics and consumption behaviour in a large open area (a macro region) or in a small open area (a tourist attraction).

Generally speaking, in the case of a closed or open tourist attraction, the analysis allows you to evaluate visitor flows as representative of the tourist pressure both on the tourist site and on the surrounding area (e.g. the city in which it is located).

Furthermore, it should be taken into account that **size** may be considered both in:

- *geographical terms*, as the width of the territory under study;
- *tourist and economic terms*, as the volume of tourist flows and consequently the tourist pressure which affects the area.

For example, an important tourist attraction with a control mechanism for entry (e.g. the Louvre Museum in Paris), may be considered a small closed area in geographical terms, as the space it occupies is limited. But since it hosts a large amount of visitors every year (e.g., let's suppose that almost 80% of tourists who visit Paris also visit the Louvre), it can be considered a large closed area in tourist and economic terms.

2.2. The information

As far as the information which has to be collected for economic, marketing and promotional purposes is concerned, the researchers may be interested in:

- counting inbound visitors (tourists/same-day visitors);
- counting inbound visitors and monitoring the characteristics of the visitor and the trip (age, socio-economic status, destination, means of transport used, etc.). At this stage, it can also be useful to evaluate the quality of the travel experience and consequently the level of satisfaction experienced by each visitor;
- studying consumption behaviour and the visitor's expenditure items.

2.2.1. Visitors flows

Counting visitors is useful if you only want to know the volume of people who visit the country or the area. In terms of cost-efficiency, it is not worth carrying out a specific survey just for this aim. So, it would be better to use secondary data provided by other sources.
In general, this counting is usually part of a more complex analysis of visitors (at entry/exit points or at popular tourist attractions); it is generally used in the grossing-up process or it would be aimed at quantifying the 'physical' tourist pressure in specific places (see Chapter 4).

2.2.2. Visitor and trip characteristics

Socio-economic data describing visitors are crucial for determining which segments of the visitor market are currently travelling to a country or, more generally, to an area. Studying the visitor and the trip characteristics, the visitors' opinions on the quality of the travel experience, his/her impressions of the area visited and the services offered is very important for public and private operators. Such data can suggest the optimal marketing mix to be used — advertising, public relations, personal selling and other promotional tools —, to attract more visitors of the same segment or to stimulate a differentiation in the demand. More generally, this information is fundamental for planning suitable policies for the management of demand and for the control and marketing of the supply.

The researcher has to choose the most important information on the visitor and the trip that helps him/her achieve the objectives of the survey (see Appendix A).

2.2.3. Visitor's consumption behaviour and economic impact

In addition, the National Tourist Administrations and their regional and local counterparts may be interested in measuring the expenses made by visitors and their impact on the national, regional or local economy. This evaluation allows them to estimate the tourism receipts and to focus on the target segments that return the highest net economic benefits to the residents of the area. These latter markets are the most profitable for the NTA or for other public organisations to seek to attract with marketing programs.

An important distinction has to be made between domestic and international tourist expenses.

The economic importance of *international inbound tourism expenditure* comes from the fact that, being similar to exports to the destination country, it has to be added *in toto* to the residents' final demand. This leads to the study of the expenditure behaviour of inbound international tourism as separate from that of domestic tourism.

Domestic inbound tourism expenditure denotes consumption made by domestic visitors inside the country of residence but outside their usual environment. It represents an increase in economic activity and a redistribution of national income. Thus, this expenditure includes two elements:

- an increase in production which would not otherwise have taken place;
- activities which would have taken place anyway, but which are transferred from one area (the origin area) to another (the destination area).

In many countries this latter element has the important effect of transferring income from richer areas of the country to less well-off areas.

The importance of collecting tourism expenditure statistics and the complexity of the collection procedure need a more in-depth description, which is given in the Annex at the end of this Chapter.

ANNEX TO CHAPTER 2
The collection of tourism expenditure

Definition

According to the literature available on this subject, the evaluation of the economic impact of tourism on the production system of a country starts from the analysis of the tourism expenditure behaviour of tourists on holiday in that country (demand-side approach).

The definition of tourism expenditure is closely linked to that of tourism consumption. *Tourism expenditure* is defined as "the total consumption expenditure made by a visitor or on behalf of a visitor for and during his/her trip and stay at the destination" (WTO, 1996). The word "destination" is construed broadly here to include any significant place visited on a trip. This definition presumes that:

1. the consumption of goods or services *may not necessarily* be by the visitor him/herself. While in most cases the consumption is by the visitor, in some cases the consumption is by a friend or relative, as in the case of a gift or a souvenir purchased by the visitor on the trip and given to someone else. This is the only exception to the general rule that the visitor must consume the product him/herself in order for it to be counted as tourism expenditure;
2. the expenditure *may not necessarily* be undertaken by the visitor him/herself. In the case of a group, such as a family, expenditure may be undertaken by one person, such as a parent, on behalf of another, such as a dependent child. The person undertaking the expenditure may or may not be accompanying the visitor. An example of the latter case is where the trip is being funded by the family in the case of a student on holiday alone, by the employer or some other body in the case of a business visitor.

Expenditure items and timing of collection

In general, before recording any visitor's expenditure, you have to take into account two important factors:

1. the *timing* of the expenditure, depending on whether these expenses are made in preparation for the trip, during the trip or after the trip;
2. the *items* which have to be included or excluded from tourism expenditure.

The various components making up tourism expenditure can be divided into three large groups:

- advance outlays necessary for the preparation and undertaking of the trip (*pre-trip expenditure*);
- expenses arising when travelling and at places visited (*on-trip expenditure*);
- travel-related outlays made in the country/place of residence after returning from a trip (*post-trip expenditure*).

Tourism expenditure is considered to occur at the time at which the visitor purchases a product, i.e. when he/she acquires legal title to the goods or, for lack of such a title, when a service is rendered.

Problems may arise when the visitor has purchased a package tour or international transportation from a tour operator or a company based in another country. In particular, he/she may apply to an operator which is resident abroad but has an office in the visitor's country of origin. For example, an English tourist who buys a package sold by the Nouvelles Frontieres' branch office in London.

According to the WTO, for the purchase of a package tour or international transportation to another country, the title is generally assumed to be acquired in the visitor's residence (origin) country.

Only those expenditures made on goods and services purchased for the trip but paid in advance ("pre-trip", e.g. transport, package tours, accommodation, travel insurance), and all the expenses met during the stay in the reference country ("on-trip") are of interest for studying the impact of travel on the national or local economy.
There is no possibility of evaluating expenses made after the trip; the tourist cannot know the amount in advance or he/she can only provide a rough estimate.

However, it should be noted that the definition of international inbound tourism expenditure excludes pre-trip expenditures on goods and services received in the home country, or rather (considering international comparison purposes) it only includes those expenditures which represent a transfer of expenditure from one economy (i.e., a

country) to another. For example, it includes a package tour purchased before the trip in the origin country (which implies remittances from local travel agencies to tourist operators of the destination country), but excludes personal expenditures made by the visitor for the trip (e.g. the purchase of a tourist guide). For other research purposes, however, it may be necessary to collect all expenditures relating to the trip, including expenditures on goods and services received in the home country. Where this is required, this expenditure should be identified separately.

In recording expenditure items, it should be taken into account that the level of detail reached in the data collection may also be different according to the *point of time* at which the researcher records the visitor's expenditures. Specifically, the researcher may decide he wants to know:

1. *all the expenses* met by the visitor *before and during the trip*. In this case the registration has to take place at the end of the trip before going back home (for international inbound visitors) or even after the trip when going back home (for domestic inbound visitors only);
2. *all the expenses* met by the visitor *before the trip* and those made *from departure to the time of the registration*;
3. *all the expenses* met by the visitor *before the trip* and those made *the day before the registration* (average daily expenditure).

There are advantages and disadvantages to all three methods. The first two call for the visitor's remembering all the expenses he/she has met. However, the advantage is that the average and total expenditure can be calculated from a larger number of items. The last method, which asks the visitor to remember the expenditure made the day before, can be applied more easily, especially in an open area.

The concept of tourism consumption encompasses a wide variety of expenditure items, ranging from the purchase of goods and services inherent to travel and stay to the purchase of small durable goods for personal use, souvenirs and gifts for family and friends.

To make the definition of tourism expenditure operational, strict rules about which items should or should not be included must be drawn up. This, however, is not easy for a number of reasons:

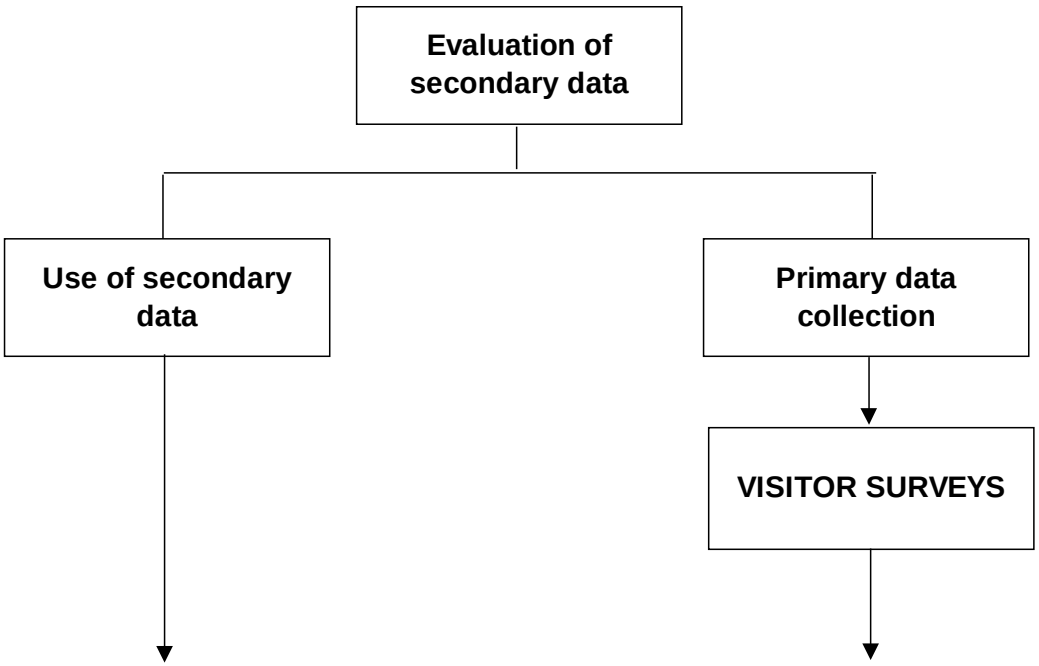
- the number and type of expenditures to be included in any particular collection may be influenced by the aims of the study. For example, the required scope may be different for someone collecting data to develop tourism economic accounts than for someone requiring market research information;
- strict rules about items' inclusion and exclusion would require the establishment of definitions which would involve some arbitrary distinctions;
- strict rules, covering all cases, would have to be highly complex;
- the rules may be too complex for respondents to be able to supply the data even when they understand them.

Given these difficulties, the best solution is to use existing international classifications (EUROSTAT and WTO) which outline a set of general guidelines able to minimise inconsistencies among collections and to ensure international comparability of data between countries.

Finally, other important elements to consider are the *means of payment* visitors use to purchase goods and services before, during and after the trip. The rapid growth of forms of payment alternative to currency (credit cards, traveller cheques, etc.) make the estimates carried out by the Central Bank more complex.

3. Choosing between secondary data and primary data collection

Step 3



Before undertaking any collection of data, it is essential to check whether the required data, or similar data, are already available. As stated in art. 5 of the European Council Directive, "Member States may, where appropriate, base the collection of the statistical information... on existing data, sources and systems".

The National Statistical Office and the National Tourism Administration are likely sources of such data. Other research agencies, e.g. universities and relevant international agencies, should also be investigated as possible sources.

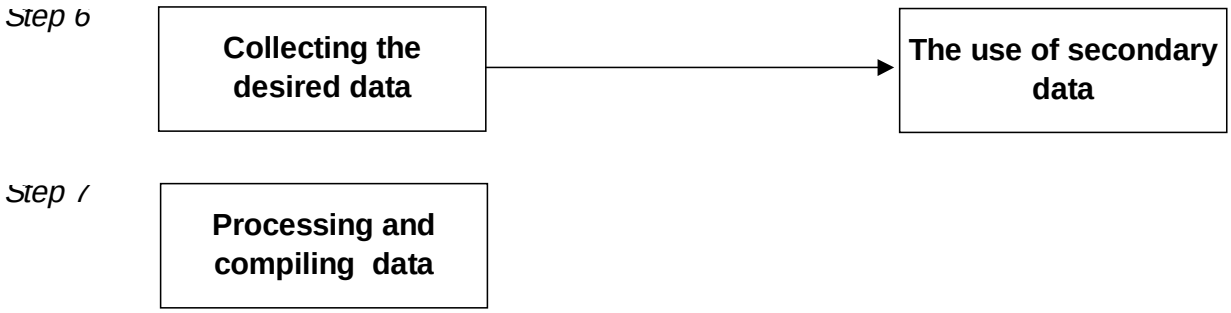
The general *advantages* of ***secondary data*** are that it is immediately available and at minimal cost.
The *disadvantages* are that:

1. such data usually provides limited and specific information, which often only partially matches the researcher's needs in that it is collected for purposes other than those for which he/she may use it;
2. there is no control over the coverage and quality of the data;
3. there is no control over the timing of the data;
4. the data may not be available in useful form, e.g. electronic database.

The most typical existing data available is:

- for a country, the information recorded by border control officials from the passports of departing or arriving inbound visitors for immigration control purposes, or collected through embarkation/disembarkation cards;
- for both a closed and an open area, the administrative and fiscal controls carried out at accommodation establishments;
- for a closed attraction, the counting of both free tickets and paid tickets (in some cases divided by category of visitor: e.g. students, retired persons, etc.), or the number of tolls or passenger taxes paid by visitors.

If the existing sources prove adequate to the interests of national and local authorities and operators, you can pass directly to Step 6 and collect the desired data, and then to Step 7 to process and compile it, following the same suggestions given in Paragraph 7.5.



If none of the existing sources proves adequate, then you will have to consider gathering primary data through a ***sample survey of inbound visitors***.
The main *advantages* of a sample survey are that it is specifically planned to provide all the information necessary for research purposes. If the general organisation of the survey (the survey plan, the questionnaire design, the checking and analysis of the survey's results, etc.) follow a specific and pre-coded methodology (see Steps 4 to 9), the information collected is usually reliable (compared to secondary data) and able to provide a valuable framework of visitor characteristics and consumption behaviour.

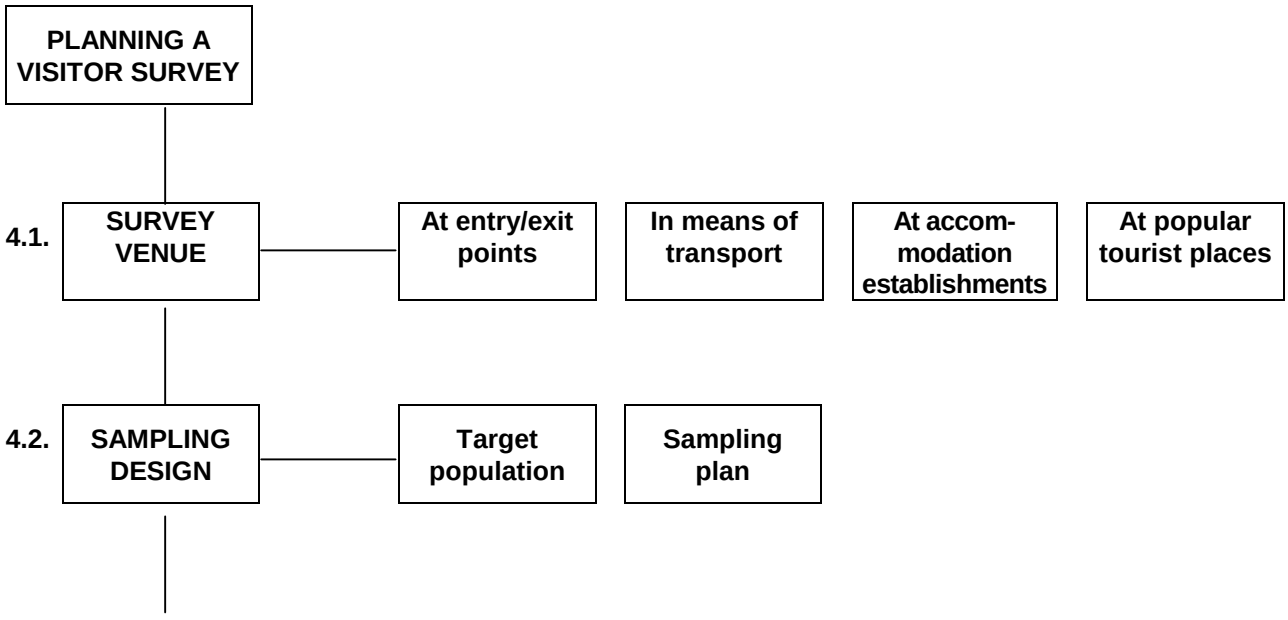
The *disadvantages* are that the survey is usually more expensive than using secondary data, in terms of money, staff and time. Given the target area and an acceptable level of data reliability, the researcher should choose from all the available alternatives the ones that allow the costs to be minimised.

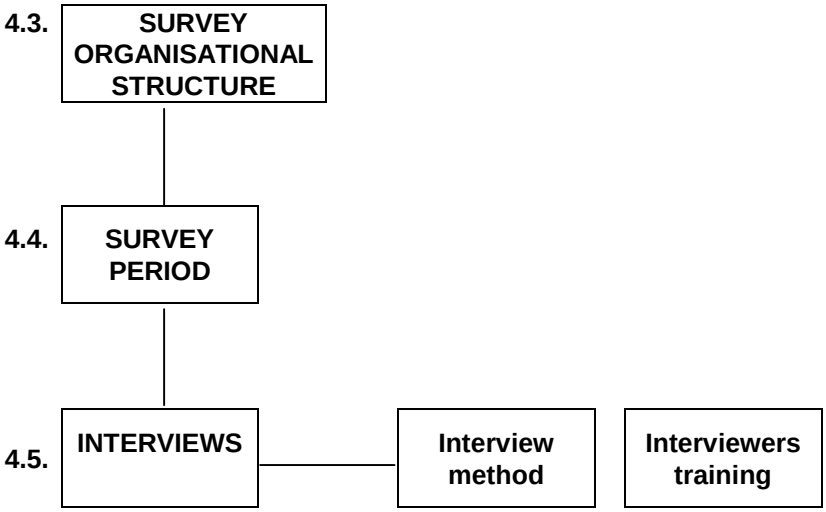
In this context, considering that a survey may be implemented for several purposes, a solution may be a joint project taking into account the interests and needs of different bodies, who could share the cost of the research. For example, a survey on visitor's consumption behaviour and expenditure items in a country, which is the most costly among visitor surveys, could be implemented by national statistical offices that develop both statistics on the balance of payments and on tourism demand and supply.

The relationship between survey's cost and data reliability will be thoroughly discussed in Step 4, when dealing with sampling design (the sample size).

4. Primary data collection. Planning a visitor survey

Step 4





The survey plan describes all the stages which characterise the survey organisation and implementation. It deals with all the aspects related to the choice of the survey venue, the definition of the target population and sample, the time period during which the survey will be carried out and the interview method.

The larger the survey size (both in geographical and tourist terms) and the higher the level of detail required in the analysis, the more sophisticated the survey plan and the general organisation of the survey.

In this context, it is most useful to talk about a ***flexible system of* surveys**, in that it may be necessary or convenient, considering the kind of area and the kind of information to be collected, to proceed with the organisation of one or more data collections.

The *main survey* is aimed at providing the data for which the whole research has been carried out. It allows researchers to collect both basic and optional information on the visitor and the trip. Basic and optional questions are defined according to the researcher's needs (see Chapter 5 and Appendix B). The optional questions may go into more detail about the information already asked (e.g. more facts about the journey) or they may collect further information (e.g. additional questions on tourist expenditure). It may be necessary to carry out such a survey at different sites located in the same closed or open area or in different areas (closed and/or open). For example, considering a country, a survey at entry/exit points can be matched with a survey at accommodation establishments (or at popular tourist attractions), this latter carried out in the country as a whole or in the main tourist regions (open area). This organisation can be adopted when large areas, either in the physical sense (territorial range) or in the tourist-economic sense (high tourist flows), are investigated. It improves the analysis of tourism demand, capturing more types of visitors (e.g. not only international but also domestic), and allows different information to be studied more thoroughly (e.g. more details about tourist expenditure items).

But before implementing this survey, it is necessary to select the appropriate sample size, i.e. to determine a sample which is truly representative of the target population under study. Statistically speaking, this means to select a number of facts which allow you to study the characteristics of the population you are interested in, by respecting the level of accuracy and precision stated a priori.

If no information is available (e.g. secondary data provided by official sources) a *preliminary or pilot survey* may be a valid help (see 4.2.2.2., the sample size). Apart from sample size determination, a preliminary survey should, in any case, be carried out just before starting the main survey, to test both the whole survey planning and the questionnaire design (see Chapter 5).

Furthermore, the main survey may be supported by two *supplementary surveys* in the following cases:

1. no data is available on total volume of visitor flows or it does not meet the researcher's needs or is not reliable;
2. the probability of each visitor being interviewed and the consequent representativeness of the sample have to be estimated and verified.

In the first case, the supplementary survey is usually carried out at the same time of the main survey; in the second case, when secondary data is not available, it coincides with the preliminary survey used for determining the sample size.
In more detail, the two supplementary surveys can be described as follows.

The first one counts systematically all the people passing through the collection point, also during non-sampled periods. It provides an estimate of the size of the target population useful for the grossing-up of the main survey's results. The survey may be conducted by installing an automatic recording mechanism (electronic eye). But, whenever the installation costs or the location of the collection point make the use of the electronic eye impossible (that is the most common situation), the survey is usually conducted by an interviewer, who manually records on suitable forms all the people passing through the collection point. As this is done only during sampled periods, it is then necessary to select a suitable method for expanding the results in order to calculate the size of the reference population.

The second survey tests the representativeness of the sample interviewed against the tourist population visiting the area under study. It may happen that: a) not all visitors in the area pass through the collection point; b) some visitors who pass may do this more than once and so have a higher probability of being interviewed than others. This is particularly true in the case of an open tourist attraction. Given these elements, that survey should be carried out at the main access points to the area (car and coach terminals, railway stations, and so on). Here visitors are asked whether they have gone through the central surveying point or not and, in the latter case, how many times they have done so. This "passage rate" may be calculated for every segment of demand researchers are interested in analysing (e.g. by origin, length of stay, etc.).

To sum up, independent of the kind of area under consideration (closed or open) and according to user needs and information available, the basic system of surveys should consist of three or four surveys which can be carried out in different areas or venues (Chart 2):

- a *preliminary survey* for testing the survey plan and the questionnaire design;
- the *main survey* for data collection on visitor flows and characteristics;
- one or two *supplementary surveys:* the first one aimed at determining the probability of a visitor being interviewed (and then the appropriate sample size, when no other information is available); the second one aimed at measuring the volume of visitor flows.

Parts III and IV give both an in-depth description of such a system of surveys and an example of the application to a closed and an open area.

So, it is clear that, depending on the number of surveys to be carried out, the number of sites where they are conducted and the kind of visitors to analyse, a different structure of the survey system will be arranged and, consequently, a different combination of the questionnaire(s) used. For the questionnaire design, see Paragraph 5.3. and Appendix B.

The flow charts illustrated in Appendix B for the design of the questionnaire suggest the basic and optional questions with regard to the four main categories of information that may be collected (see Paragraph 5.2.). Depending on how the research has to be carried out and on the different survey combinations, the questionnaire to be used may be composed by putting together the forms and, within these, the basic and optional questions, in various ways. Generally, however, the organisational process follows the same logical structure and is explained in the next Paragraphs.

Chart 2 - User needs and information available. The system of surveys

USER NEEDS	INFORMATION ON VISITOR FLOWS	
	Available data	**Not available or unreliable data**
• determination of the sample size	No survey	Preliminary survey [1]
• testing of the survey plan	Preliminary survey	Preliminary survey
• data collection in one or more venues (open and/or closed)	Main survey	Main survey
• counting of visitor flows	No survey	Supplementary survey
• evaluating the probability of the visitor being interviewed	Supplementary survey	Supplementary survey [1]

[1] In these cases it is possible to carry out only one survey which allows researchers to collect both kinds of information.

4.1. Choosing the survey venue

Once you have decided to carry out a visitor survey or a system of surveys, you have to choose where to conduct it/them, according to the area investigated (closed or open) and the information to be collected. This choice influences the sampling design, the organisational structure and, in some cases, the interview method directly. As we will discuss later on, the definition of the target population and the sampling plan depends on the survey venue. For example, the sampling selection method adopted (e.g. the number of visitors to be interviewed, the site of the interview, the time of the interview, etc.) changes according to where the visitor may be contacted.

There are four alternative and/or complementary survey venues where interviews can be conducted among inbound visitors:

- at entry/exit points (by road, air, sea and railway);
- on means of transport;
- at accommodation establishments;
- at popular tourist places.

The *diary method* is not suitable for inbound visitors in that it allows data to be collected only on outbound domestic visitors (and particularly expenditure data). This method involves identifying visitors before or at the beginning of their trip, and asking them to complete a diary during their trip recording details of their daily expenditures.

The choice of any one or a combination of the other four methods has to be based on the following four elements.

The choice of the survey venue for the main survey

a. the ultimate use of such estimates;
b. operational convenience;
c. level of accuracy desired (reliability of outcomes) and
d. resources available (survey cost).

The best survey is one that meets all of these aims and makes optimal use of the available production means. In practice, this goal is never met, because the survey process is a human operation and errors are possible at each stage. The survey results include every imperfection of the process. Therefore, the quality of the survey can be measured as the degree of approximation between the best feasible survey results and the results actually achieved.

The different methods along with their relative merits and demerits in meeting specific objectives will be discussed in Parts III and IV.

Considering the *ultimate use of such estimates* and the *level of accuracy desired* (points a. and c. above), the choice depends on:

1. the kind of area in which you want to analyse visitor flows (closed or open; large or small);
2. the visitor you want to investigate (tourist, same-day visitor or both);
3. the kind of information you want to collect and how detailed it should be.

As far as the *kind of area* is concerned, in a large closed area (such as a country) a survey at entry/exit points and on means of transport may be the most appropriate, taking into account that the larger the country the more difficult (and probably more expensive it will be) to have a reliable evaluation of international visitor flows at a sample of registered establishments or of popular tourist places.

In the case of an island (either an independent country or a part of a country), the small size usually allows you to choose between interviewing visitors at entry/exit points (on means of transport) or during their stay (at

accommodation establishments or at popular tourist places). In the first case, you will probably contact visitors (tourist/same-day visitor) while they are entering or leaving the area. In the second case, they are interviewed just before leaving the accommodation or the attraction. Generally speaking, a survey at entry/exit points or on means of transport is usually preferable as it provides complete data on tourists and same-day visitors visiting the island. When the island is so far away from the mainland to discourage same-day visits, the results obtained from a survey at entry/exit points or at accommodation establishments are very similar.

As regards a single attraction, you can opt for a survey at the popular tourist place itself; in this case you will probably contact visitors (tourists/same-day visitors) on their trip in order to know their characteristics, whilst the volume of visitor flows recorded by means of ticket control may represent an estimate of the tourist pressure which affects the single attraction.

In large or small open areas (e.g. a region, a city, etc.) a survey at accommodation establishments or at popular tourist places is the best solution.

In general, a survey at a closed or open popular tourist place can be used to monitor the single attraction itself, or it may be representative of the tourist pressure which affects all the surrounding area (this is true above all for the most important attractions, which are usually visited by all first-time tourists and same-day visitors).

The suggestions given here may be considered as a standard guide: the choice of the survey venue may be modified according to the real size of the area under study. For example, in the case of a small country the same solutions shown for an island may be applied. Chart 3 summarises the kind of survey venue recommended for each type and size of area under study.

Chart 3 - The suggested survey venue according to the kind of area

Area / Survey venue	CLOSED AREA			OPEN AREA		
	LARGE	SMALL		LARGE	SMALL	
	Country	Island	Attraction	Region	City	Attraction
At entry/exit points	YES	YES	NO	NO	NO	NO
On means of transport	YES [1]	YES	NO	NO	NO	NO
At accommodation establishments	NO	YES	NO	YES	YES	NO
At popular tourist places	NO	YES	YES	YES	YES	YES

[1] In the case of a country, the survey at entry/exit point may be combined with a Survey in means of transport for specific means (e.g. rail transport) (See Part III).

As far as the *kind of visitor* is concerned, the analysis of total inbound visitors (tourists + same-day visitors), or same-day visitors only, requires a survey at border crossings, on means of transport or at popular tourist places. On the other hand, a survey at accommodation establishments is only useful for measuring tourists in registered accommodation.

Finally, considering the *kind of information* to be collected, if you are interested in counting inbound visitors and you wish to measure the volume and the characteristics of inbound visitor flows (age, socio-economic status, destination, means of transport, etc.), the choice depends on how much information you want to collect and, consequently, on how long it takes to interview each person. In general, a border survey (closed area) or a survey at tourist attractions (open area) will be the best solution; but if your interest is in a detailed estimate of tourists' expenditure, a survey at accommodation establishments is recommended (Chart 4).

Chart 4 - The suggested survey model according to the kind of information to be collected

Area / Information	CLOSED AREA			OPEN AREA		
	LARGE	SMALL		LARGE	SMALL	
	Country	Island	Attraction	Region	City	Attraction
Volume of visitor flows	EXIT	EXIT or TRANS	PLACE	PLACE or ACCOM	PLACE or ACCOM	PLACE
Visitor and trip characteristics	EXIT	EXIT or TRANS	PLACE	PLACE or ACCOM	PLACE or ACCOM	PLACE
Quality of travel experience	EXIT	EXIT or TRANS	PLACE	PLACE or ACCOM	PLACE or ACCOM	PLACE

Expenditure behaviour	EXIT	EXIT or TRANS	PLACE	PLACE or ACCOM [1]	PLACE or ACCOM [1]	PLACE

Note:
EXIT = survey at entry/exit points
TRANS = survey in means of transport
ACCOM = survey at accommodation establishments
PLACE = survey at popular tourist places
[1] The last survey provides a detailed estimate of expenditure met by tourists only.

All these issues will be discussed in-depth when we operatively analyse each specific combination of visitor and area of analysis (see Parts III and IV).

Generally speaking, it is important to get permission from the companies or authorities managing the survey venues before conducting the survey. As we will see later on, their co-operation is a basic condition not only in carrying out the survey but also in obtaining reliable results. In some cases, transportation or lodging personnel may be helpful in handing out and collecting the questionnaires.

As mentioned at the beginning, the study of inbound tourism in a country usually represents the first stage of analysis carried out by a national tourist administration. In countries where this analysis is already developed, public and private organisations may be interested in collecting data on inbound tourism (both international and domestic) in specific closed or open areas within the country (a island, a region, a popular tourist site, etc.). So it is necessary to arrange a suitable methodology, considering that, in most cases, there is no secondary data available, or it is not reliable.

Furthermore, the complete opening of frontiers within the EC will transform every country into a European region and so the same methodology used for an open area inside a country has to be applied.
However, it should be taken into account that the administrative and regulatory systems prevalent in a country may not permit the use of some of the methods described above to measure inbound tourism, or they may not permit the collection of complete information on inbound visitors both in a closed and in an open area.

The choice of any particular method and of the kind of information to be collected for a statistical programme on inbound tourism is, thus, restricted by their admissibility in terms of cost and organisation.

In general, the national and local tourist administrations may not have the required statistical equipment and resources to undertake statistically complex surveys. In some cases, a statistical programme on inbound tourism may not even exist. Nevertheless, these administrations are obliged to obtain reliable statistics on inbound tourism to guide their own activities and their policy and actions on tourism at national and local level. The development of a statistical programme consistent with the general system of statistical administration in a phased manner is, therefore, unavoidable.

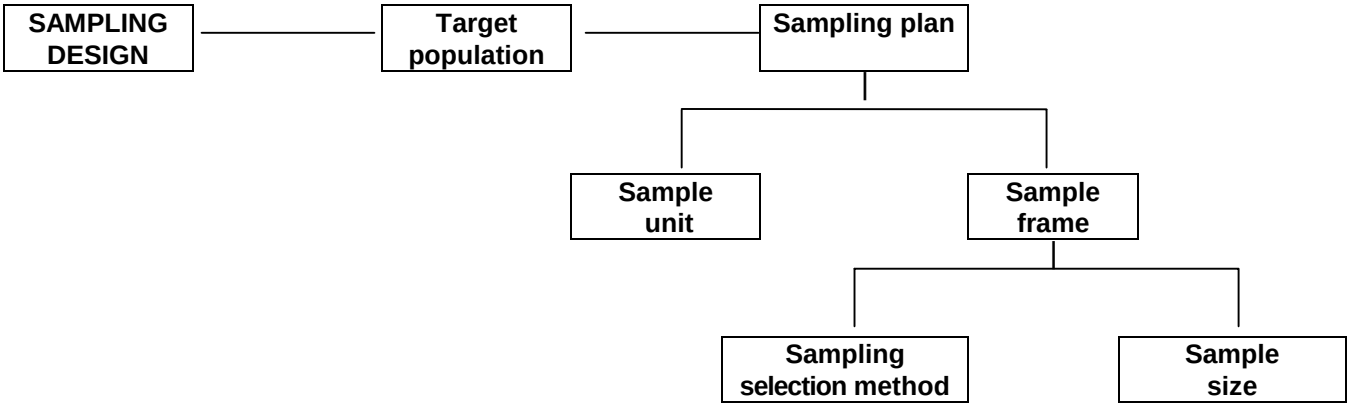
As far as the type of information to be collected is concerned, the primary interest at the initial stages of development of inbound tourism is in the number of people entering the area. A fairly simple method for obtaining such statistics is to use secondary data (e.g., information recorded by border officials or for administrative controls, in the case of a country; data collected through previous surveys, in the case of an open attraction) or, if it is not available, to carry out a specific survey (e.g. counting visitors while going out of the country or the attraction). The national and local tourist administrations may take up such surveys at the first stage of their development of a statistical programme on inbound tourism.

As mentioned in Section 2.2.1., counting is usually part of a more complex analysis of visitors. The second stage is therefore represented by the analysis of visitor profile (age, socio-economic status, etc.) and travel characteristics (length of stay, type of accommodation chosen, etc.), while the last stage consists of the evaluation of visitor consumption behaviour, according to type of visitor (tourist, same-day visitor) and expenditure items. In the last two cases, suitable information may be obtained by conducting a visitor survey.
So we can identify three different stages representing the different steps in the evolution of a national or a local statistical programme, which can be applied both to a closed and an open area:

Data collection. The different stages of analysis

- Basic stage: measurement of visitor flows.
- Intermediate stage: analysis of visitor profile and travel characteristics, evaluation of travel experience.
- Advanced stage: evaluation of visitor consumption behaviour.

4.2. The sampling design



Given the site where you are going to contact visitors, the sampling design is a set of specifications which define the target population and the sampling plan. It identifies the whole process for obtaining a sample which provides consistent and reliable information on the population you want to analyse.

4.2.1. The target population

Your first step here is to specify the population from which you will draw your sample in order to measure and describe visitors. Ideally, in the case of inbound visitors, the target population should be defined as all people (international and domestic visitors) who enter the area under study for tourism purposes: leisure, visiting friends and relatives, business and professional, health treatments, religion and pilgrimage and other (see Appendix A1).
The ideal target population perfectly agrees with the concepts and definitions of the statistical system. In reality, the target population from which the sample is drawn does not necessarily meet all demands of the ideal population. In practice, it will often suffer from both undercoverage and overcoverage. So here we refer to the target or frame population as the population which reflects the survey objectives[1].

4.2.2. The sampling plan

The sampling plan describes the methodology you have to follow in order to select a sample that is truly representative of the population you have just identified, i.e. a sample whose results may be extended to the target population by respecting the level of accuracy and precision stated a priori. In plain language, the sampling plan describes "the activity of selecting a few from the total and using characteristics of the few to estimate the characteristics of the total. How the selection of the few is done largely determines the accuracy of the estimates derived from the sample" (Cannon, 1994).

4.2.2.1. The sample unit

Since "tourism is primarily a demand-side oriented concept, i.e. oriented by those persons engaging in tourism. These persons are called visitors" (Eurostat, "Community Methodology on Tourism Statistics"), the statistical unit for the collection and presentation of tourism statistics is usually the *visitor* (which includes tourists and same-day visitors). This general rule also applies to tourism expenditure statistics. However, there are situations when the collection unit is more appropriately the *travel party*. This is the case when the group's expenditure is from a common pool, and an individual member's expenditure cannot be separately identified. For example, a family group where a parent is responsible for the finances of the whole group's expenditure.
The person usually interviewed is the head of the travel party (family or group of friends) travelling together and with collective spending during the trip.

[1] In statistical literature, this population is also denoted as the *survey population*, so as to distinguish it from the ideal target population.

This method is used to calculate daily average expenditure per visitor.

4.2.2.2. The sample frame

The sample frame is a complete list of sampling units to be included in the actual sample or a list of instructions indicating how to select them. In the second case it is used to draw the sample for the survey.

For the sake of cost-efficiency, it is important that the sample frame is representative of all the elements which characterise the population selected for study, that is the target population, and only this population. This relationship is crucial for accurately inferring the characteristics of the population from the characteristics of the sample.

Kish (1965) mentions three problems associated with a sampling frame:

- *incomplete frames*. For example, samples of visitors to attractions may cover only a part of total visitors (e.g. a sample of visitors during peak seasons may not be representative of visitor profiles during 'shoulder' months or the off-peak season);
- *clusters of elements*. With questions asked to groups of visitors, i.e. family groups, doubts may arise that answers provided by one member of the group, perhaps a parent, may reflect the cluster opinions (visitor group);
- *blank foreign elements.* This occurs when sampling units included in the sample are not present in the original population. For example, a survey might include large numbers of visitors travelling by coach because on the day of the survey a series of coach parties were present.

The sample frame as a list of instructions on how to select the sample includes two stages: the choice of the sampling selection method and, consequently, the determination of the sample size.

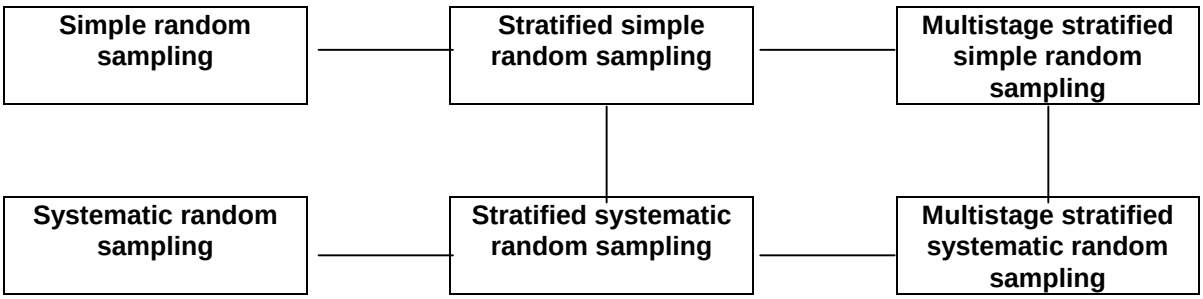
4.2.2.3. The sampling selection method

The sample selection method describes the mechanical selection of a sample according to the chosen design. The most common method is ***simple random sampling***, where every member of the target population has a known, non-zero chance of being included in the sample (Chart 5).

In the case of **repeated sampling** — where each unit may be observed more than once (e.g. visitors passing along a street in a famous art city) —, each unit included in the universe has the same probability of being selected. For example, if we consider a population of N units and the required sample size is n<N, the chance for each unit to be chosen is equal to 1/N at each selection step.

More generally, in the case of **unrepeated sampling** (e.g. visitors to a museum, tourists in an accommodation establishment), the total probability of a unit being included in the sample is constant. Referring to the former example, the total probability is equal to n/N.

Chart 5 - Probability sampling. The common selection methods



The main advantage of this method, in comparison with systematic random sampling (see further on) is that it allows for measuring the accuracy of the selected sample, that is the variability of the estimates among all possible samples you can draw. The error you make in selecting only a sub-set of the population units is called *sampling error*.

The common measure of this sampling error is called *standard error* and is statistically defined as the square root of the sum of the square deviation of each possible sample estimate (sample mean) from the population parameter to be estimated (spread or distribution of values). An example may help to explain this concept.

Sampling error and confidence interval

Suppose you have a population composed of four holiday-makers u_1, u_2, u_3, u_4 of different nationalities; let's say, u_1 is German (G), u_2 is French (F), u_3 is German (G) and u_4 is Spanish (S). Thus the probability P of drawing a German is 0.5 (2/4), which can be seen as the proportion in which the characteristic G is present within the population.
Now suppose you draw a sample of two elements from the target population. There are six possible samples and each of them has a different probability of including a German holiday-maker:

Samples	Nationalities	Probability of G
(u_1, u_2)	(G, F)	0.5
(u_1, u_3)	(G, G)	1
(u_1, u_4)	(G, S)	0.5
(u_2, u_3)	(F, G)	0.5
(u_2, u_4)	(F, S)	0
(u_3, u_4)	(G, S)	0.5
	Total probability of G	0.5

If we assign a value of 1 to each German element and a value of 0 to each non-German element, we can interpret the probability of G related to each sample as the sample mean p (that is, the sum of the sample values divided by the number of values), as appears in the following Table:

Samples	Sample values	Sample means (p)
(u_1, u_2)	(1, 0)	0.5
(u_1, u_3)	(1, 1)	1
(u_1, u_4)	(1, 0)	0.5
(u_2, u_3)	(0, 1)	0.5
(u_2, u_4)	(0, 0)	0
(u_3, u_4)	(1, 0)	0.5
	Population mean (P)	0.5

The *sampling error* is evaluated through the *mean squared error (MSE)*, defined by the mathematical formula:

$$MSE = \frac{PQ}{n}\frac{N-n}{N-1} \qquad (1)$$

where:
n = sample size
N = population size
P = proportion in which the characteristic under study (G) appears in the target population
Q = 1-P
The expression PQ is the variance of the target population in the cases in which the population elements can only take value 0 or 1.

The square root of this figure is called *standard deviation of the sample mean* (std):

$$std = \sqrt{MSE} \qquad (2)$$

Substituting values in formula (1) we get:

$$MSE = \frac{0.5 * 0.5}{2} \frac{4-2}{4-1} = \frac{0.25}{3} = 0.083$$

and from formula (2):

$$std = \sqrt{MSE} = 0.29$$

In our example, the population is known, hence we can list all possible samples which can be drawn from it. However, in real surveys, the population is unknown, so this procedure is generally impossible to follow. The information available about the target population is usually represented by just one sample. In this case the mean squared error and the standard deviation of the sample mean have to be estimated from the values of that specific sample.

Following the same example shown above, suppose you do not know the actual proportion P in which the characteristic G appears in the target population and you choose one sample of two elements, let's say the fourth of the above list (u_2, u_3). The proportion p in which the characteristic G appears in this sample (i.e. the sample mean) is 0.5, which is identical with the unknown population mean.
In this case estimating the standard deviation of the sample mean is a two-step operation. First of all we estimate the unknown population variance PQ by the sample variance s^2, defined as:

$$s^2 = \frac{n}{n-1} pq \qquad (3)$$

where:
n = sample size
p = proportion in which the characteristic under study (G) appears in the chosen sample
q = 1-p

Next, we substitute this figure for the unknown value of PQ in the above formula of MSE (1) getting the formula for the sample estimate of MSE:

$$MSE\hat{} = \frac{s^2}{n} \frac{N-n}{N-1} \qquad (4)$$

The sample estimate of the standard deviation of the sample mean therefore is:

$$std\hat{} = \sqrt{MSE\hat{}} \qquad (5)$$

Substituting values in formulas (3), (4) and (5) we obtain:

$$s^2 = \frac{2}{1} * 0.5 * 0.5 = 0.5$$

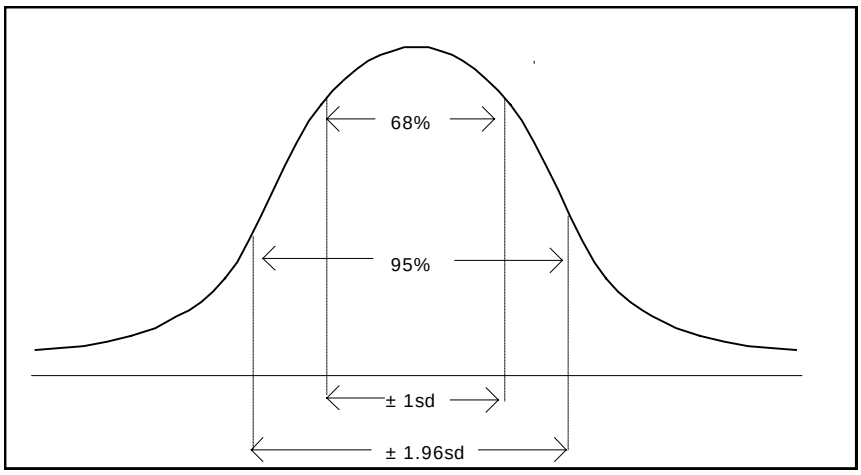
$$MSE\hat{} = \frac{0.5}{2} \frac{4-2}{4-1} = \frac{0.5}{3} = 0.167$$

$$std\hat{} = \sqrt{MSE\hat{}} = 0.41$$

which represents the sampling error, i.e. the error you make in choosing the fourth sample.

The determination of the standard deviation of the sample mean allows for calculating a *confidence interval*, that is a range of values within which, given a sample, the actual population mean lies with a known probability.
This is an application of the celebrated Central Limit Theorem: if the sample size is high, then the sample value of the mean can be thought of as a number drawn at random from a normal distribution.
A *normal distribution* is characterised by its central tendency and dispersion: sample scores cluster around a mean value, expressed by the arithmetic mean (the sum of all the observations divided by the number of observations), and are included in a range which goes from a minimum to a maximum value (dispersion).
Any normal distribution has the following property (see figure below):

- 68% of values will lie within the mean plus or minus the value of 1 multiplied by the value of the standard deviation of the mean;
- 95% of values will lie within the mean plus or minus the value of 1.96 multiplied by the value of the standard deviation of the mean;
- 99% of values will lie within the mean plus or minus the value of 2.6 multiplied by the value of the standard deviation of the mean.



This means that, if we choose one sample, we will have a *confidence level* (a probability) of 68% that the actual population mean lies within the interval which goes from the value of one standard deviation below the sample mean to the value of one standard deviation above the sample mean. The probability rises if the interval considered becomes larger. We will have a confidence level of 95% that the actual population mean lies within the sample mean plus or minus the value of 1.96 multiplied by the standard deviation; and a probability of 99% that the actual population mean lies within the sample mean plus or minus the value of 2.6 multiplied by the standard deviation:

p - (1 * std^) < P < p + (1 * std^)	68% confidence level	(6)
p - (1.96 * std^) < P < p + (1.96 * std^)	95% confidence level	(7)
p - (2.6 * std^) < P < p + (2.6 * std^)	99% confidence level	(8)

These critical scores (1, 1.96, 2.6) are obtained from normal distribution tables, given by all statistics textbooks. Such tables assign to each possible probability value its relative score and allow for calculating the intervals related to every possible confidence level.

To simplify, in our example the sample size is 2: this value is not high enough to apply the property of the normal distribution. Let's suppose, however, we wish to apply it to calculate the three confidence intervals with the values obtained above; we should substitute the value 0.5 for p and the value 0.41 for std^ in formulas (6), (7) and (8).
Calculating confidence intervals in the case in which the sample size is very small, besides being theoretically wrong, is of no use: the intervals we would obtain are very large and give no information at all about the target population mean P (in fact, we already know by definition that P lies between 0 and 1).

This example is only meant to be a very basic introduction to the concept of random samples and confidence intervals. For further information on the procedure to follow for estimating unknown population values in many different cases see an appropriate statistics textbook. The basic concept is that, given any random sample drawn from a population, the mean of the population will be in a region of the sample mean within definite limits. The confidence interval associated to those limits defines the probability that this happens.

Usually, the larger the sample size, the smaller the sampling error and, consequently, the narrower the corresponding confidence interval. So, in order to reduce the sampling error, you can increase the sample size which, at the maximum limit, can equal the target population. But as the standard error is a function of a square root, increasing the sample size (e.g. doubling it) does not result in a comparable decrease in the sampling error. A better solution would be to keep the original sample size and improve the efficiency of the estimate by stratifying the population (Cannon, 1994).

An alternative to simple random sampling is ***systematic random sampling***. In this case, you have to create a list of all units in the universe and then select "one out of every so many on the list in a predetermined, systematic fashion. The selection is made by dividing the number of units in the universe by the sample size" (Cannon, 1994). Following the former example, we select every $(N/n)^{th}$ unit on the list once a randomly selected starting-point is chosen (this is called *sampling rate*). For example, if the number of units in the universe is 100 and the sample size is 10, the sample is selected by taking 1 out of every 10 units on the list. The proper procedure would be to randomly select a number between 1 and 10 as a random start and then select every 10^{th} unit on the list. In many areas of tourism research this is a common method of carrying out a survey. For example, it may be used in a survey at entry/exit points or at popular tourist places where you select every n^{th} visitor who crosses either the border or an imaginary line at airport or seaport lounges or while going out of a museum, an exhibition, etc. The principal advantages of this technique are its simplicity and precision. It is easier to draw a sample and often easier to execute it without mistakes than in simple random sampling.

However, for systematic sampling to be an acceptable alternative to simple random sampling, researchers have to be sure that the units in the universe are arranged in a nearly random order. In the case of a cyclical phenomenon, this method may cause distortions and so must be avoided. For example, consider the manager of a 200-unit hotel who wants to select a sample of 20 units and interview their occupants to learn more about the characteristics of hotel guests. The manager selected the sample by listing all the hotel rooms in room-number order and then drawing a 1 in 10 sample. In this case, let's suppose that all the rooms with number ending in "0" are luxury suites, while all the rooms ending in "5" are very small, inexpensive rooms. Depending on the random start chosen, the manager could have a sample of all luxury suites, a sample of all single rooms, or a sample that included neither of them. Although these results may also be obtained by using simple random sampling, in this situation systematic random sampling guarantees that the sample will not be representative as long as the unit are arranged by room number (Cannon, 1994).

The ***stratified simple random sampling*** (see Chart 5) is the most appropriate selection method for inbound visitors. It consists of:

1. dividing the target population into small sub-populations according to a given characteristic (e.g. country of residence), so that the units within each group present the same value of that characteristic (e.g. all German visitors, all French visitors, etc.);
2. making each group as dissimilar as possible;
3. placing the units within each group together on a list before selecting the sample and then;
4. drawing a random sample from each group.

In statistical terms, this methodology consists of dividing the target population N into mutually exclusive, exhaustive and homogeneous sub-populations, called *strata*, N_h. The division is made on the basis of one or more stratification characteristics (h), that are assumed to affect the trend and the pattern of visitor flows (e.g. country of residence, purpose of trip, means of accommodation chosen, seasonality, etc.). "Stratification overcomes the problem of the uniqueness of certain elements within the universe but does require a prior knowledge of the key characteristics of the elements" (Cannon, 1994). The choice of the characteristics depends on the purpose for which stratified sampling is applied. Some reasons for stratification are:

- to increase precision;
- to produce estimates with a specified precision for separate strata or for sub-populations consisting of more than one stratum;

- to control fieldwork efficiently;
- to use different frames for different parts of the population.

As we will discuss below, the problem of the *optimal allocation* of the total sample size to each of the strata depends on precision and cost. If overall precision of the estimates is fixed, then the sample size may be allocated to the strata in a way that the total costs are kept to a minimum. On the other hand, if the total cost is fixed then the overall precision has to be maximised.

If each stratification characteristic presents different levels, the number of strata is equal to the product of the number of levels each characteristic has. Subsequently, a simple random sample of visitors is drawn independently from each sub-population. The final sample is therefore composed of as many sub-samples as the number of strata. For example, if two stratification characteristics, country of residence and accommodation establishments, are chosen and are subdivided respectively into European and Non-European countries, and hotel and non-hotel accommodation, the final sample is composed of 2*2 = 4 sub-samples: European visitors staying in hotels, European visitors staying in non-hotel accommodation; Non-European visitors staying in hotels; Non-European visitors staying in non-hotel accommodation.

Stratified random sampling allows the researcher to obtain estimates of the characteristic under analysis (and referred to the target population) that are more efficient than those given by simple random sampling[2]. Another version most used in tourist research is the ***stratified systematic random sampling*** (Chart 5). In this case — after having divided the target population N into a number of strata N_h and drawn a sample of size n_h from each N_h — we select, within each strata N_h, every $(N_h/n_h)^{th}$ unit on the list, once a randomly selected starting-point is chosen. The probability of extraction, $f_h=n_h/N_h$, is equal to the inverse of the sample rate.
Referring to the former example, suppose we consider a target population N of 1 000 visitors divided into two sub-populations according to nationality (European, Non-European) and type of accommodation establishments (hotel, non-hotel):

Characteristics	Hotel	Non-hotel	Total
European	N_{11} = 400	N_{12} =100	N_E = 500
Non European	N_{21} = 300	N_{22} =200	N_{NE} = 500
Total	N_H = 700	N_{NH} = 300	N = 1 000

Then we take a sample of 100 people, drawing a sub-sample from each of the four sub-sets. Suppose that the sub-samples are selected by taking 1 out of every 10 units on each list (N/n=10)[3]. The proper procedure would be to randomly select a number between 1 and 10 as a random start and then select every 10^{th} unit on each list. Consequently, the probability of extraction is equal to 1/10 for each sub-sample and the sample will be selected by drawing 40 units from N_{11}, 10 units from N_{12}, 30 units from N_{21} and 20 units from N_{22}.

In practice, when dealing with large populations, such as tourist populations, the researcher rarely knows the right size of each sub-group. He/she may have information on the total number of visitors by nationality (N_E and N_{NE}) or by accommodation establishments (N_H and N_{NH}), but not, for example, on how many European visitors stay in hotels. In this case, he/she carries out a supplementary survey in order to gather further information on the sub-populations. However, this method may be very expensive. A good alternative may be to choose the most important characteristic on which you have reliable information, e.g. nationality, to select an accurate sample and then to use it also for analysing the distribution of the other characteristic under study.

A further specification of stratified sampling is represented by the ***multistage stratified random sampling***, which is recommended when dealing with very large populations of which you do not know the real size or whose size varies over time (this is usually the case of the tourist population). It consists of identifying two or more populations which respect a sort of hierarchical order. For example, in a survey at entry/exit points or at accommodation establishments, a two-stage random sampling can be drawn, where the first stage is represented by the type of

[2] This method is more efficient the more homogeneous the units are and the more different the sub-populations are. In other words, stratified random sampling is recommended when the value of the standard deviation inside the sub-populations is low and that between the sub-populations is high. The more homogeneity inside the subsets the better the efficiency of the estimates related to the variables considered.

[3] In statistical literature, this is called *proportional allocation* of the sample size among the strata. It consists of applying to each stratum the total sampling rate (100/1 000).

border crossings (air, road, rail, sea) or by the type of accommodation establishments (hotel and non-hotel) and the second stage by the visitors to be interviewed.

A multistage sample is usually stratified in the first stage, randomly or systematically; for example, in the case of a border survey, a stratification may be made considering a sub-sample of means of transport (vehicles, railway coaches, aeroplanes and boats/ships) at each type of border crossing considered. For a survey at accommodation the stratification is represented by the different type and categories of establishments (5 star hotels, 4 star hotels, ..., camping sites, tourist villages, etc.) at each of the tourist resorts considered.

This choice is due to the fact that it is more convenient to stratify these populations than the population of primary units. The information needed to stratify the population is easily available and reliable for the first stage units; the stratification of the other stages affects the efficiency of the estimates more than the stratification of the target population. It is worth applying this method "only if the gain in estimates precision from stratification more than offsets the loss in precision due to the reduction in the size of the main sample" (Cochran, 1977).

As discussed above, the choice of the sampling selection method depends on the survey venue or the location where the survey will be carried out. For example, the stratification characteristics are usually different if you choose an entry/exit point survey or an accommodation survey (see Parts III and IV).

4.2.2.4. The sample size

The choice of the optimal sample size depends above all on the trade-off between the maximum efficiency and quality of the data to be collected and the available resources — in terms of money, staff and time — for collecting these data (Cannon, 1994).
In detail, *precision* and *costs* are the two elements which play a fundamental role in the selection of theS sample size.

Precision

If precision is the most important factor, researchers will try to minimise the costs, once the desired level of estimates' accuracy and reliability, and consequently of the allowable error, has been fixed. The determination of the optimum sample size depends on the sampling selection method chosen: the more efficient this method is, the smaller the size of the sample should be. In detail, according to statistical theory, once the precision of the estimate has been fixed, the sample size needed to ensure this precision is lower for stratified random sampling than for non-stratified sampling.

Costs

Often the sample size is decided by the total budget. In this case, researchers have to ensure the maximum level of precision (and the minimum level of the standard error) given the limited funds available. If the type of information required at an acceptable level of statistical reliability can only be obtained at a cost well beyond the money available, other alternatives have to be explored: for example, increasing funds; reducing the reliability requirements; collecting information from another, or existing, source; or deciding that the information was not really needed anyway.

In statistical terms, if researchers know the size of the target population but have no information on the distribution of the characteristic under study inside the same population (e.g. the number of tourists out of the total visiting a country who travel on a package tour), the literature shows that the formula for calculating the sample size is (Ryan, 1995, et al.):

$$n = \frac{NPQ}{\frac{(N-1)E^2}{K^2} + PQ} = \frac{K^2 NPQ}{(N-1)E^2 + K^2 PQ} \qquad [1]$$

where:
n = sample size
N = population size
P = proportion in which the characteristic under study appears in the population (share of tourists travelling on a package tour)
Q = 1-P

E = allowable error, i.e. the maximum error accepted in estimating the characteristic under study [4]
K = Normal score based on desired confidence level

When the size of the population is not known either, the formula becomes:

$$n = \frac{K^2 PQ}{E^2} \qquad [2]$$

An application of formula [1], which implies an evaluation of sample size based both on data quality and costs, is provided in the following example.
As shown in Table 1, with a fixed confidence level of 95% (K = 1.96), the simulation of the sample size has been made for different ranges of the target population and different values of the allowable error E for the most unfavourable case (P = Q = 0.5)[5].
The sample size chosen by the researchers for each range would be that corresponding to a level of error E which ensures a better relationship between the desired data quality and the available budget.

Table 1: Determination of the sample size for different ranges of the population size and different values of allowable error

Error (E)	1%	2%	5%	8%	10%
Population (N)					
1 000	906	706	278	130	88
2 500	1 984	1 225	333	142	92
5 000	3 288	1 622	357	146	94
10 000	4 899	1 936	370	148	95
25 000	6 939	2 191	378	149	96
50 000	8 057	2 291	381	150	96
100 000	8 762	2 345	383	150	96
150 000	9 026	2 363	383	150	96
200 000	9 164	2 373	384	150	96
250 000	9 249	2 378	384	150	96
500 000	9 423	2 390	384	150	96
750 000	9 483	2 393	384	150	96
1 000 000	9 513	2 395	384	150	96

Of course, in the case where you have additional reliable information on P (from supplementary surveys, for example), you can use it.

The sample size has to be proportionate to the size of the target population and, specifically, to the size of the smallest sub-populations or *strata* which present the characteristic(s) the researcher wants to measure. Statistically speaking, this means that the sample size has to be determined by observing the spread of each characteristic within the corresponding stratum, so as to be sure that the estimates obtained respect the level of accuracy and precision stated in advance.
The size of each single sub-set may be derived from administrative records, such as embarkation/ disembarkation forms, border controls, counting of tickets at tourist attractions, etc., or from supplementary surveys. If this is the case, the optimum sample size is determined as the sum of a number of sub-samples, each one representing a characteristic to be analysed, calculated as a proportion of the sub-populations. The term of reference for the determination of sub-samples size is provided by the characteristic which is present in the smallest segment of the target population.

For example, many researchers place the highest priority on analysing the characteristics of annual visitors by country of residence and purpose of trip. If they know from prior information the proportion of total visitors in a year made up by the smallest segment to be investigated, they can determine roughly the total number of completed interviews needed. For example, if they know that business visitors (purpose of trip) from France to their country make up 4 percent of total visitors, and that they need to obtain at least 200 completed interviews to make a useful analysis of this smallest segment, then the total number of completed interviews for the year will be equal to 200/0.04 = 5 000.

[4] E is the absolute error. However, it is also important to take into account the relative error you can make in estimating the characteristic, which is equal to: |P^ -P|/P, where P^ is the estimate of the characteristic under study.

[5] A similar procedure has been applied by the Istituto Nacional de Estatistica of Portugal in their survey at border crossing points.

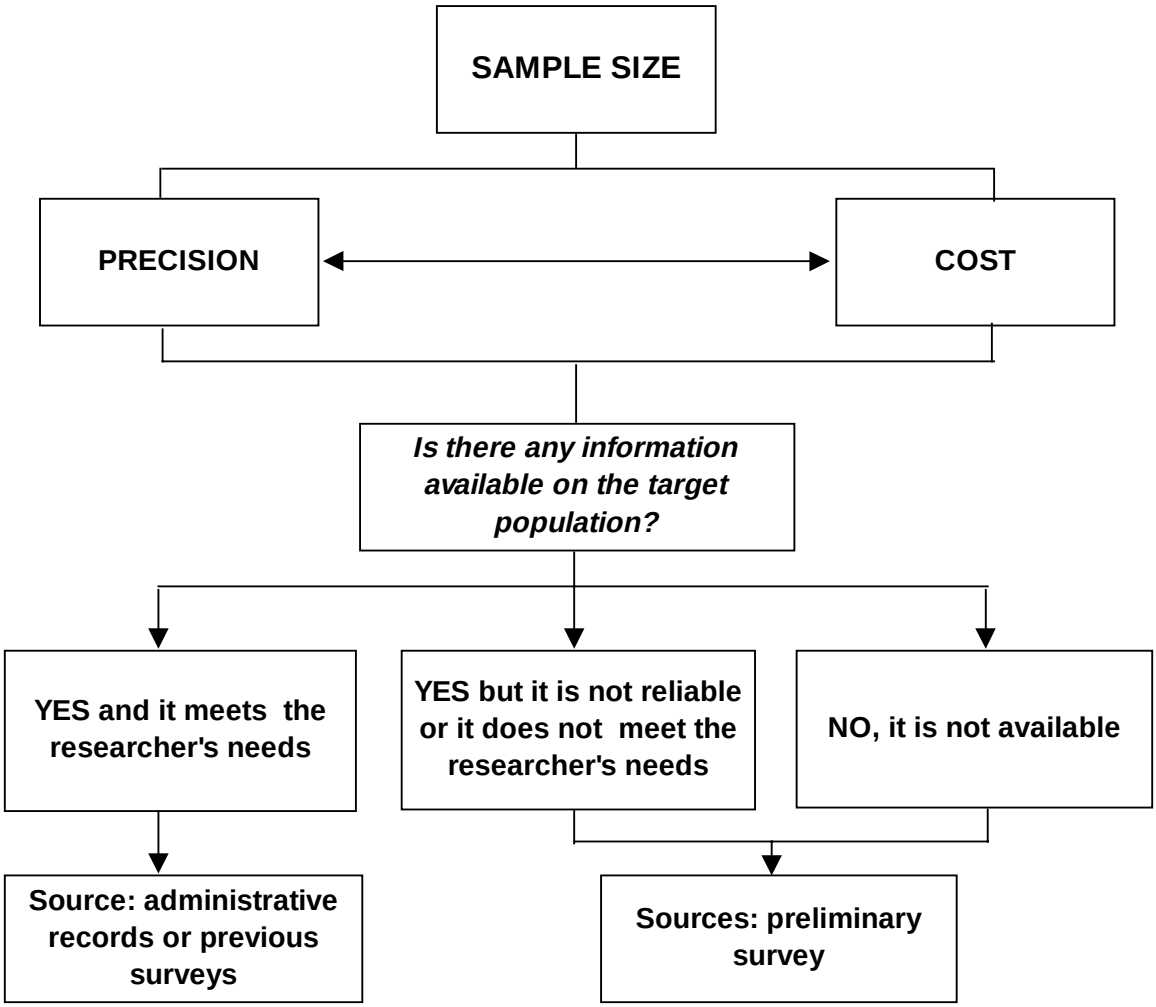
However, the following cases may occur (Chart 6):

- the available information is not reliable or it does not satisfy the researcher's needs (e.g. data on the total population but not on the sub-populations);
- there is no information available.

In these two cases, the optimum sample size may be obtained by carrying out a preliminary survey on a small sample for testing the likelihood of interviewing a visitor who has the characteristics the researcher wants to analyse. That means measuring the frequency of one or more characteristics inside the target population.
This survey may also be used for balancing and grossing-up the results of the main survey (see Chapter 4).

When the researchers have no available funds for supplementary surveys, it is, however, possible to provide a general reference for the sample size which ensures the representativeness of the sample, according to the level of detail required. For example, if researchers are only interested in the characteristics of total inbound visitors to the country, then a sample of 1 500 to 2 000 completed interviews for the year would be correct. If they would rather analyse the specific features by main purpose of visit (e.g. leisure, business, etc.), or the seasonal variations of visitor flows by country of residence and by demographic characteristics, a larger sample for the year is needed (e.g. 6 000 to 7 000 completed interviews).

Chart 6 - The determination of the sample size



Non-response

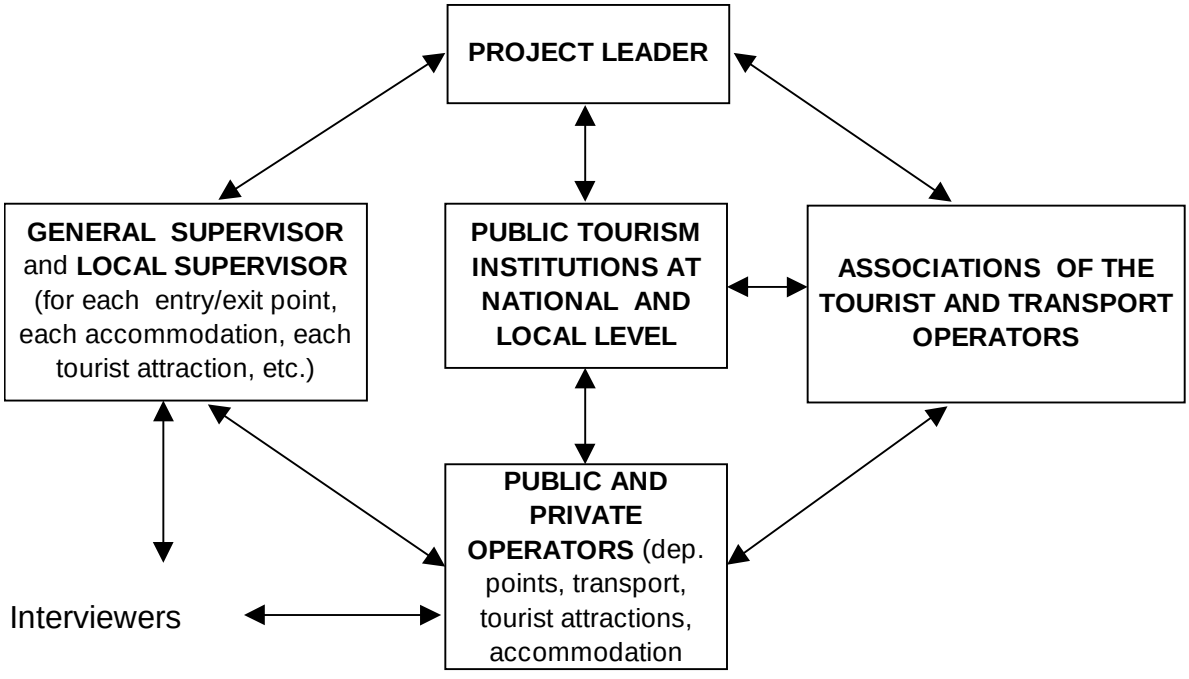
Above, we indicate the approximate number of completed interviews you need. The stress on 'completed' is due to the fact that the chosen sample size must be adjusted for *anticipated non-response*.

The non-response rate is the probability that one or more visitors included in the sample refuse to answer the questionnaire. This situation introduces at least two flaws into the survey process. Firstly, those failing to respond may differ systematically from the respondents and the survey will consequently be biased. Secondly, non-response implies increased costs necessary in locating additional respondents, in printing and distributing extra questionnaires and, in the case of direct surveys, in using interviewers.

The level of non-response depends on how the survey is conducted.
In surveys carried out by mail, when each person can decide freely whether to answer or not, the rate of response is generally around 15-20 percent.

As for a direct survey, an on-going check can allow the interviewer to quickly substitute non-respondents with other persons (see 4.5.1. about the interview method) so as to attain the number of interviews stated at the beginning. A response rate of less than 60-70 percent casts serious doubts on the reliability and validity of the survey's results (WTO indicates 75%). In general, the researcher should divide the optimum sample size by the percentage response expected, based on earlier surveys or on expert judgement. The result is the number of questionnaires that should be distributed during the year. For example, if the optimum sample size is 4 500, but you expect only 60 percent responses, then about 7 500 (4 500/0.6) questionnaires should be distributed or interviews carried out to get the 4 500 completed ones.

4.3. The survey organisational structure



After choosing the survey venue, it is very helpful to draw up the organisation plan, in order to have a clear framework of the people involved in the survey and of their tasks and duties. This plan provides references for people to whom operators and interviewers may refer if some problems arise during the survey.
The diagram above suggests a hypothesis of an organisation plan.

The project leader may be a public institution (e.g. the National Tourist Administration) or another body in charge of the research (e.g. a private research centre). For instance, we can consider a visitor survey ordered by the NTA

from a national market research Centre. The people in charge of the Centre and of the public institution discuss together the needs the latter has in terms of tourism statistics and decide the type of survey (the system of surveys) to be carried out, according to the information to be collected and to the cost of such collection. Once the choice has been made, the project leader, in co-operation with the customer, organises all the phases of the research process, from the survey planning (step 4) to the carrying out and analysis of the results (step 9). This organisation also requires the co-operation of the operators directly involved in the survey as well as of public and private associations.

More details about the organisation plan are given in Part III for a closed area and in Part IV for an open area.

4.4. The survey period

In order to maximise the probability of obtaining an exhaustive framework of the target population, the survey should be planned over a year. Then this period has to be divided into sub-periods taking into account the seasonality which characterises visitor flows. Note, in fact, that seasonality affects visitors' characteristics and consumption behaviour and it is one of the main stratification variables used in stratified random sampling.
The timing of the interview, i.e. the time to contact the visitor during his/her trip, depends on the information the researcher wants to collect.

As far as travel characteristics, opinions on trip and consumption behaviour are concerned, it would be better to wait until the end of the trip (e.g. when the visitor is leaving the country, the accommodation establishment, etc.) since these characteristics may change during the holiday. As for the visitor's characteristics, they can be analysed at any time.

Considering specifically tourism expenditure, the choice to record it at the end of the trip, just before the tourist's departure (at accommodation establishments) or on his/her way back home (at exit points), allows researchers to have complete information on all the expenses made during the travel and to overcome, or significantly reduce, *recall problems*. In fact, previous research has indicated that the visitor's ability to remember the expenditure he/she has met declines as the period between the time the expenditure was made and the time of the interview lengthens. In general, it can be expected that the reliability of data based on recall decreases as the length of time since the expenditure was incurred increases. The effect of recall difficulties is usually, but not necessarily, that expenditure is underestimated. The two main levels of difficulty are:

- recalling correctly the amount and details of expenditure undertaken during the trip, and
- recalling the details of these trips such as places visited and accommodation and means of transport used.

4.5. The interviews

4.5.1. Specifying the interview method

There are three alternative data collection methods available for inbound visitors.
The most preferable is to conduct *personal face-to-face interviews among departing visitors*. This encourages high response rates (see Section 4.2.2.4. about sample size) and gives maximum assistance to respondents in understanding questions. However, this approach is the most expensive in terms of interviewer's time, and limits the number of completed interviews per interviewer in departure lounges or in other locations (e.g. hotel hall, etc.) where visitors are waiting to depart or are in transit. So it is necessary to recruit an adequate number of people in order to maximise the interview rate over a specific time period (e.g. in an hour). Furthermore, the success of the interview strongly depends on the environment in which it takes place. For example, weather conditions are crucial in the case of outdoor interviews; bad or cold weather may affect the willingness of the interviewees to co-operate in the survey and, consequently, the level of response rate and the quality of the information collected.

The next most preferable method is that interviewers *greet potential respondents*, determine if they qualify as inbound visitors, ask for their co-operation and hand them a questionnaire to complete. All questionnaires should be picked up by the same interviewers before the visitors leave the venue. This method can be used, for example, at accommodation establishments or at popular tourist attractions; the questionnaire is handed out on the tourist's

arrival and the interviewer picks it up just before his/her departure. Interviewers have to keep careful count of the questionnaires handed out so they can compute response rates.

The least preferable interview method is to hand questionnaires to potential respondents and *ask them to complete the forms and mail them back* or give them back to a common collection point arranged in the same place. The advantage is that this method is cheaper than the previous two. You only have to print the questionnaires, to pay some people to hand them out and, in the first case, to provide respondents with envelopes and stamps for reply.

The disadvantage is that it ensures very low response rates since visitors often lose the questionnaire or forget to mail or give it back. Another common situation is that they accept the questionnaire at first and then throw it away.

If this method is employed, you should consider promising a reward or incentive for returned questionnaires (e.g. a prize-winning contest planned among those who have mailed back the questionnaire).

However, it has to be taken into account that also when visitors give back the questionnaire, you are not able to verify the reliability of the answers included (e.g. characteristics of the visitor and the trip, etc.) directly.

The choice of one of these methods depends on an evaluation of quality/costs for the results the researcher wishes to achieve.

4.5.2. Recruiting and training interviewers

Since one of the key-factors of interviewing is communication, the interviewers selected have to be able to approach respondents considerately. They should have a kind attitude and use polite expressions in order to create a friendly atmosphere and put the interviewee at his/her ease.
They have to interview visitors effectively and to help them to understand questions, solving their doubts rapidly and listening carefully to their responses. Of course, an ability to speak one or more of the languages they are likely to encounter (considering international inbound visitors) is clearly an advantage.
The recruiting and training of interviewers is crucial since people selected have to fulfil their role ("interviewer role behaviour": see O'Muircheartaigh (1976b)) in every situation. The interviewer training must include:

- a thorough analysis of the questionnaire enabling them to answer whatever questions the respondents may ask them. For the respondents, the interviewers represent the researchers who have planned the questionnaire. It is as if they were the researchers, so they have to be sure of what to say and to answer;
- how to locate, identify, contact, greet and qualify respondents;
- how to interview them;
- how to record responses;
- how to end the interviews.

Above all, it is necessary to instruct interviewers on why it is so important to follow instructions and procedures for interviewing. They must respect the sampling plan (the location of the survey, the number of interviews to be made, etc.) and before taking any decision they should ask their supervisor (see Section 4.3.). For this, it may also be useful to provide them with a handy brochure where they can find all the instructions on how to carry out the survey and an exhaustive explanation of each question.

The interviewers should also be able to minimise the intrusive effect of personal factors, such as his/her age, sex, social class, religion and opinions ("extra-role characteristics")(O'Muircheartaigh, 1976b), which in some cases may seriously bias the attitude of the respondent. Furthermore, nothing in his/her words or manner should imply criticism, surprise, approval or disapproval. He/she should maintain a plain and friendly tone of voice and a careful way of listening, so as to increase the respondent's interest in co-operating.

A random and unexpected control of interviewers during their job is in any case advisable.

5. Designing the questionnaire

Step 5

QUESTIONNAIRE	Questions	Form(s) design	Use of Eurostat and WTO definitions	Answers coding	Planning the editing

The questionnaire is the data collection instrument used in sample surveys to gather information from sample units. It is the package that presents the questions and ultimately contains a record of responses. The questionnaire also includes 'coding aids' that assist the process of data entry into a computer program.
The design of the questionnaire is a critical step in the survey planning. You may have made an optimum sampling plan, chosen the best location and trained a team of skilled interviewers, but if the questionnaire is not well planned the survey has a high chance of failure. The representativeness of responses in comparison with the primary objectives will be very low and the results collected will not be reliable.

As stated by Ryan (1995), "successful questionnaire design must therefore include consideration of:

1. the subject matter of the questions;
2. the lay-out and design of the questionnaire;
3. the actual wording and sequence of questions;
4. the underlying theoretical constructs with reference to both the nature of the investigation and the methods of analysis to be used".

Very often discussions on questionnaire planning concentrates on the first three points whereas they neglect the fourth item. The kind of survey to be carried out and, consequently, the methodology to be implemented represent the basis on which the questionnaire has to be constructed.
As for the formulation and the layout of the questionnaire, either on paper or on a computer screen, the following points have to be considered.

The questionnaire design. Main elements

- a *broad introduction* for the interviewee, which shows the why, how and when of data collection;
- *ease of interpretation*: the questionnaire has to be clear, understandable and concise;
- *motivation*: the questionnaire has to be interesting, attractive and readable;
- *guidance* (flow): the logical development of the matter from section to section and from question to question aids both interest and consistency of reply.

Ease of interpretation, motivation and guidance should also characterise the introductory letter (if arranged) and any other accompanying material.
Given these premises, there are six phases to follow.

The questionnaire design. The planning

1. Providing clear instructions for the interviewer and the interviewee.
2. Focussing on the questions according to purpose, clearly and concisely.
3. Ordering questions to encourage correct and objective answers.
4. Using Eurostat and WTO definitions and classifications.
5. Specifying answers coding.
6. Planning the editing.

In order to verify that these six steps are carried out correctly, it is a good idea to pre-test the questionnaire through a pilot survey (see Step 6).

5.1. Providing clear instructions

The survey respondent needs to be instructed on:

- the purpose of the survey;
- how to answer the questions;
- which questions to answer, and
- if it is a self-administered questionnaire, how to return the form to the processing centre.

Such instructions should appear at the very beginning, in the body of the form or questionnaire where helpful, and at the end, where necessary. They should be phrased in relatively simple language, avoiding specialised words and abbreviations. Of course, the language that the respondent is likely to be most comfortable with should be used.

It is necessary to bear in mind that the respondent's participation in the survey is voluntary; therefore, if such instructions are not extremely clear he/she will be less motivated to answer the questionnaire and this will seriously affect the response rate.

5.2. Focussing on the questions according to purpose

Every question included in the questionnaire should support the overall purpose of the survey and must relate to the respondent's ability to provide data.

Moreover, each question should address a single, specific topic. When two or more topics are addressed in a single question, respondents are often confused and researchers cannot tell which topic is being addressed.
Plain words and an appealing, easy and direct language should be used. This implies avoiding technical terms and too formal expressions as well as ambiguity. As the purpose of any question is to communicate a certain exact meaning, which should be understood by each respondent in the same way, clearness is essential to avoid any misunderstanding. A typical example, in the English language, is given by the three modal verbs *might*, *could* and *should*, which are often used as synonyms, despite their different meanings.

Furthermore, questions should not be "dealing", i.e. suggest a desired answer. They should not contain words with an emotional meaning (e.g. positive or negative) and abbreviations which may be unfamiliar to respondents.
There are several reasons for keeping the questions as brief as possible. The longer the question, the more difficulty the respondent has in focussing on it. Short questions are easier for both the interviewer and the respondent to understand. Long questions are more likely to lack focus and clarity. Finally, long questions often lead to long questionnaires, which tire the respondents and increase the chance of non-response.

There are four main categories of information on inbound visitors usually collected through a survey:

- the *visitor characteristics* (country of residence, age, socio-economic status, etc.);
- the *trip characteristics* (package tour or not, main purpose, means of transport, etc.);
- *opinions and impressions on trip/stay/resorts visited, etc.*;
- *expenditure behaviour*.

We will discuss below the organisation of the forms and consequently the order in which such issues should be dealt with in the questionnaire (see 5.3. and Appendix B).
In general, within all the questions which may be asked for each category it is important to distinguish some key-questions, some optional questions and some check-questions.

Key- questions

The key-questions or basic questions are those which focus immediately on the basic information you are interested in collecting about respondents. For example, if you want to know the characteristics of visitors and their trip, some key-questions are: the purpose and the organisation of the trip (individual or package tour), the means of transport used to reach the destination, the means of accommodation chosen and the primary destination visited.

Optional questions

These questions allow you to collect further information on inbound visitors for each category shown above. For example, if you want to further your knowledge of the characteristics of the trip, you can also ask the other destinations visited, the length of stay at these destinations, the activities undertaken during the visit, etc.

Including optional questions is advisable if you want to collect data on some specific issues only, such as the characteristics of the visitor and the trip. On the other hand, if you are interested in collecting information on all four aspects listed above, including consumption behaviour, it is more appropriate to include basic questions only. The aim is not to make the questionnaire too weighty for the respondent to complete.

Check-questions

Check-questions are those which allow researchers to check some responses already given by interviewees. Check-questions usually have the same meaning as other questions. For example, analysing the characteristics and the expenditure behaviour of visitors, you can include first of all a question on the kind of accommodation chosen, divided into category (5 star hotels, 4 star hotels, ..., campsites/tourist villages, etc.) and then repeat this distinction when you ask the respondent to indicate how much he/she has spent for the accommodation. These questions are very useful when inputting responses into the computer program (first step of the run edit checks).

If there is also a need to filter out certain categories of respondents — for example, you may be interested in distinguishing migrants from visitors or tourists from same-day visitors, who usually have different characteristics and holiday behaviour — such questions, named **filter questions**, should be placed at the very beginning of the questionnaire.

5.3. The form(s) design

There are no rules of form(s) design which are universally valid, but in general it may be helpful to obey the following.

The form(s) design. Main rules

1. Avoid abbreviations.
2. Be as specific as possible and feasible.
3. Be specific about the reference frame: time and place, units, things to be excluded or included.
4. Avoid double-barrelled questions (two in one).
5. Choose closed questions rather than open questions.
6. Provide separate forms (and the whole questionnaire) with clear titles.
7. Make clear where to find instructions.
8. Put explanatory notes and instructions as close as possible to where they may be needed (as close to the questions as possible).
9. Use layout to enhance important concepts, instructions, etc.
10. Use layout for a clear 'picture' of what is required.
11. Avoid as much as possible questions that the respondent will not perceive as relevant and avoid other excesses.
12. Number the questions in a logical way.

All these rules together should make completion of the form(s) by the respondent as "enjoyable" as possible. How the rules are put into practice depends furthermore on the method used for the data collection. For example, the rules can differ for data collection by mail or through face-to-face interviews.

As far as closed or open-ended questions are concerned, although the former may imply a loss of qualitative information, they give an advantage in terms of efficiency and speed. Closed questions are more apt to communicate the same reference frame to all respondents and consequently to collect a standardised, comparable answer.

As for the organisation of the form(s), difficulties encountered by respondents and their adverse reactions to individual questions reduce response rates and the reliability of the replies given. It is important to minimise the

response burden, not only in terms of time and money but also in terms of the respondent's perception. A response burden policy should explicitly involve the latter aspect, because in the end it is perception which is, more than workload, decisive in the respondents' willingness to co-operate.

It is possible to reduce these negative effects by placing questions in an order that puts the interviewee at his/her ease, encouraging him/her to be careful and record his/her response accurately. As mentioned above in Section 5.2., there are four main categories of information you can collect through a visitor survey, which refer to visitor characteristics, trip characteristics, opinions and impressions on trip/stay/resorts visited and expenditure behaviour.

Consequently, questions should be grouped by issue: for example, those on visitor characteristics are placed together but separate from questions on the characteristics of trip or on the consumption behaviour.

Also in this case no rule is universally valid, but in general there are some suggestions which may be useful.
Questions that are difficult but not disagreeable, such as long lists or ranking of choices, should be placed near the beginning of the questionnaire. Questions that might be offensive to some respondents, such as about age and income, should be placed at the end of the form. The questions which are most important to the researcher should be placed near the beginning in the case the respondent tires and ends the interview. Remember to keep the number of questions and their wording as brief as possible.

However, the order also depends on the different information you are interested in. If you want to collect data on the visitor and his/her trip, it would be better to put general questions (such as country of residence and nationality) at the very beginning and personal questions (such as the family income) at the end. If you want to analyse the consumption behaviour, it is advisable not to put these questions at the beginning of the questionnaire, even if they are quite difficult to complete. In this way, the interviewer has time enough to put the visitor, who is usually reluctant to indicate his/her expenses, at his/her ease.
As mentioned at the beginning of this Chapter, in addition to the form(s) containing questions it is important to include:

- a letter which introduces the survey and its aims;
- an introductory page in which the interviewer writes down the date and time of the interview, the location of the interview and three code-numbers identifying:
  - the interviewer him/herself;
  - the kind of survey venue (e.g. border crossings in a survey at entry/exit points, type of accommodation in a survey at accommodation establishments, etc.);
  - the single survey venue (e.g. a specific border crossing point or a specific hotel).

These code-numbers are very useful in the checking phase when you have to control the consistency of responses.

5.4. Using Eurostat and WTO definitions and classifications

Eurostat has designated specific definitions of many tourism-related terms and a list of tourism-related classifications[6]. Similar information is implemented by WTO's publications whose peculiarity is the in-depth presentation of tourist expenditure definitions.

Use these concepts and classifications where appropriate to your survey to allow valid comparisons with other surveys and to avoid confusing definitions and classifications (see Appendix A).

5.5. Specifying answer coding

Coding is the process of assigning values (codes) to various alternative answers to survey questions. Numerical codes should be printed alongside close-ended or structured answers on the questionnaire (precoding), to facilitate data entry and processing (postcoding).

[6] See for example the *Community Methodology on Tourism Statistics*, Eurostat (1998).

The precoding of questions may imply the use of different scales. In questions concerning visitor and trip characteristics (for example, the age of the respondent or the means of transport used), a progressive code-number is put for each age class or for each means of transport listed.

Code-number

What means of transport did you use to reach the country/region?

- Private car 1
- Rental car 2
- Coach 3
- Train 4
- Plane 5
- Other (specify) 6

In questions referring to opinions on trip, the Likert scale is the most common solution. The respondents are asked to rate some tourist services on a scale which ranges from 1=very poor to 5=very good.

Likert scale

From your experience in this region/resort, how would you rate the following local aspects?
(1 is for very poor, 5 for very good)

	1	2	3	4	5
• Cleanliness of public areas					
• Safety					
• Health services					
• People's friendliness					
• Airport facilities					

After data collection, analysts assign codes to answers to open-ended or unstructured questions, so they can be better entered into the computer and tabulated (for more details, see 7.1.). The codes and the answers to which they correspond are kept in a 'code list', which is either printed or in the computer.

If the interviewee refuses to answer a question, it is appropriate to use a specific code-number to identify the non-response. The same applies to the case in which the respondent is willing to answer but has little or no knowledge to do it. For example, considering the evaluation of the services provided by the tourist resort, he/she may have not experienced some of them so he/she is not able to express an opinion. For a distinction between a valid answer and a non-response see Section 7.2.

5.6. Planning the editing

At this stage, researchers should establish editing procedures to ensure that the survey's results are complete, correct and appropriate. They are used for the examination of data for the purpose of error detection.
The planning is done when designing the questionnaire because it is at this stage that the researcher has to select some control mechanism of responses (e.g. check-questions).

The procedures are then applied after the collection of questionnaires and involve reviewing completed forms to determine whether they are suitable for data entry.

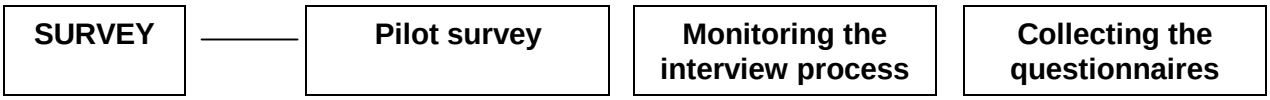
The most common checks are:

- *completeness checks*: questionnaires with mostly illegible answers or where most questions are not answered should be excluded from processing;

- *range/valid values checks*: after the survey data have been entered, researchers should run "edit checks" to find incorrect or inappropriate responses (see 7.4.). Analysts may want to set upper or lower limits according to common sense (such as no more than 10 in a family travel party or no more than 50 overnight leisure trips in a year). Responses outside these limits are highlighted by the computer and examined by the researcher for possible exclusion from tabulations;
- *relational/arithmetic checks*: they show the presence of inconsistencies between answers related to one another. For example, the interviewee may list a length of stay of four nights but indicate accommodation for seven nights.

6. The survey

Step 6



Once Steps 4 and 5 are completed, you have all you need to carry out the survey. The organisation of the survey is as fundamental as a correct questionnaire design in guaranteeing the most efficient and valid results.

6.1. The pilot survey

As discussed in Chapter 4, before conducting the main survey it is crucial to test the survey planning and the questionnaire design through a preliminary or pilot survey.

The pilot survey is a rehearsal of all the elements of the survey before its actual performance and it is meant to give a clear insight into costs and effects of the data collection process and of the data quality. This survey is the basis for final decisions on the general survey conditions and on the basic question of whether to proceed with conducting the survey or not. Experience from the pilot survey will not only lead to final modifications in the questionnaire or in other general survey conditions, but may also lead to a reduction in the level of expected output, both in terms of content and purpose.

In practical terms, interviewers contact a sub-sample of qualified respondents at the chosen venues and interview them as if this were the final survey.

The results of the pilot survey should be analysed and the interviewers should be asked about confusing or offensive questions and anything else about the survey process and the questionnaire that should be improved to obtain valid responses and high response rates.

This therefore suggests non-response rates that can be expected once the actual survey is completed. This is critical in determining how many respondents to contact and questionnaires to distribute.

As mentioned in Chapter 4, a carefully conducted pilot survey can also indicate the variance of important mean values, and assist in determining the appropriate size of the sample drawn for the final survey (see also 4.2.2.4. about the sample size).

Finally, the processing and analysis plans and the grossing-up procedure (see Steps 7, 8 and 9) should also be tested through the pilot survey. The data entry personnel should process the completed forms and attempt to print out analytical tables. This will help remove any flaws in the data entry system and the processing programs.

6.2. The interviews and the monitoring of the interview process

Once the pilot survey has been carried out and all the suitable revisions to the survey process have been made, you are ready to conduct the final survey.

As mentioned above, interviewers should carefully select respondents according to the sampling plan and endeavour to obtain completed questionnaires from each one. If they encounter problems for which they are not prepared, they should contact their supervisors for solutions.

Supervising the interviewers includes monitoring the interview process and checking the results. Supervisors should accompany each interviewer during his/her first few trials to provide solutions to problems that arise. Thereafter, they should visit the interviewers periodically throughout the interview period (even 'incognito'), ensuring an on-going control of the survey.

During the interview period, daily checking of completed questionnaires is recommended. The supervisor should evaluate each interviewer's output in each of four areas:

- *Legibility*: are all responses to all questions readable?
- *Intelligibility*: are responses to open-ended questions intelligible?
- *Completeness*: are all questions answered?
- *Consistency*: are all answers recorded in a given questionnaire consistent with one another?

An example of the last point is where a respondent records an average length of stay of three nights in the destination country but indicates four nights spent in the type of accommodation chosen. Or he/she states total expenditure in the country as $1 000 but the itemised accounting totals $1 200.

Given this situation, the supervisor should consult with each interviewer daily, to bring up and solve problems in the above areas and to answer interviewer questions and requests for additional guidance.

6.3. Collecting the questionnaires

At the end of each day of interviewing, supervisors should collect all questionnaires from interviewers.

First of all, they should check that the interviewers have completed the front page of the form with information identifying the date, time and location of the interview, etc.

Secondly, they should verify that the questionnaires are all completed.

Then, they should mark each form with a progressive identifying number on the front page (see Section 5.3). This number should be entered during data entry as part of the questionnaire results, along with the other codes and information included on the front page. This procedure permits analysts to return to the original questionnaire if there is a recognisable data entry error.

There should be a definite and secure process for conveying the completed questionnaires to the data entry staff.

The completed questionnaires should be kept until it is clear that all usable information has been faithfully recorded from them. Thereafter, they should be destroyed as part of the process of ensuring confidentiality.

7. Checking and analysis of the survey's results

Step 7

CHECKING AND ANALYSIS OF THE SURVEY'S RESULTS	Postcoding and reviewing of responses	Problem solving	Transferring data to computer	Running edit checks	Producing tables

Survey research projects are undertaken for the purpose of obtaining data that, when tabulated and analysed, will yield information useful to the NTAs or other organisations. Steps 7, 8 and 9 list the components of processing and analysing the responses, expanding the sample's results up to the population and studying the final results, which are the final steps to be addressed in this Manual.

7.1. Postcoding and reviewing of responses

As discussed in Section 5.5., coding provides either a number code for each response on the questionnaire (precode) or a code given by analysts to open-ended responses after the survey (postcode). Analysts should examine all open-ended responses at this point and assign each to a group containing responses which are similar but whose category is significantly different from the others.

Editing is the review of responses to identify errors or points of confusion, trying to remedy them before data entry. When designing the questionnaire, researchers should establish editing procedures to ensure survey results will be correct or appropriate (see 5.6.). Some missing data or incomplete answers can be accepted. However, if there is a substantial number of wrong responses or missing answers in a questionnaire, it should be discarded. For example, questionnaires lacking responses to basic questions or which are unreadable are normally excluded from data entry.

7.2. Problem solving

There are two common problems which arise during the editing phase. The first one concerns non-response and may affect both information on visitor/trip and expenditure data. The second one exclusively affects the consumption behaviour of inbound visitors and refers to the breakdown of package tours.

7.2.1. Non-response

A problem which is crucial for the representativeness of the sample is the way non-response to one or more questions included in the questionnaire is dealt with. The reasons for missing data, and consequently the methodological approach to solve it, may be different according to the different interview method implemented: face-to-face interviews, indirect interviews, etc. (see Section 4.5.1.). In direct interviews the most common reasons for non-response are the unwillingness of the interviewee to answer some questions or his/her impossibility to do so because of lack of information. In indirect interviews — e.g. when interviewers hand out the questionnaire and ask visitors to complete it by themselves — great attention has also to be paid to the questionnaire design (see 5.3.). Poorly worded or cryptic questions may easily cause some misunderstanding and therefore non-response.

In all cases, missing data implies an error (*non-sampling error*, see Chapter 8) in the data processing phase, as it causes a distortion in the estimate of the variable the missing question represents (e.g. the visitor's education level or the visitor's expenditure for a specific item).

The purpose of statisticians is therefore to find an efficient and cheap method to fill these gaps, by using different kinds of information.

First of all, it is helpful to distinguish between **qualitative information** — that related to the characteristics of visitors and their trip (age, profession, average length of stay, etc.) and to visitor's opinions and impressions on their journey — and **quantitative information**, such as expenditure items. Furthermore, both qualitative and quantitative information can be separated into those questions for which there should be an answer so as to ensure the consistency of the questionnaire (*key-questions*, such as age, number of people in the travel party, travel and accommodation expenses. See Section 5.2.) and those supplementary questions for which a non-response is acceptable (e.g. use of public transport during the holiday, recreational activities undertaken during the stay and related expenditure).

As mentioned above, if the visitor leaves a blank, there may be two main reasons:

- the visitor does not answer because he/she has nothing to say. For example, considering a question about the means of transport used to reach the attraction, he/she could have arrived on foot so he/she leaves a blank. For expenditures, he/she could not meet any expense for a specific item so he/she fills spaces with '0' or 'N/A'. In both cases this is a valid answer (*zero response*) which is used, in the latter case, for the calculation of daily average per capita expenditure;
- the visitor refuses to answer questions on his/her characteristics, travel, opinions or a specific expenditure item or he/she leaves blanks. This is a *non-response*. As we will see below, the solution of the problem can be

easier when the non-response is to questions for which an answer is expected (e.g. accommodation expenses).

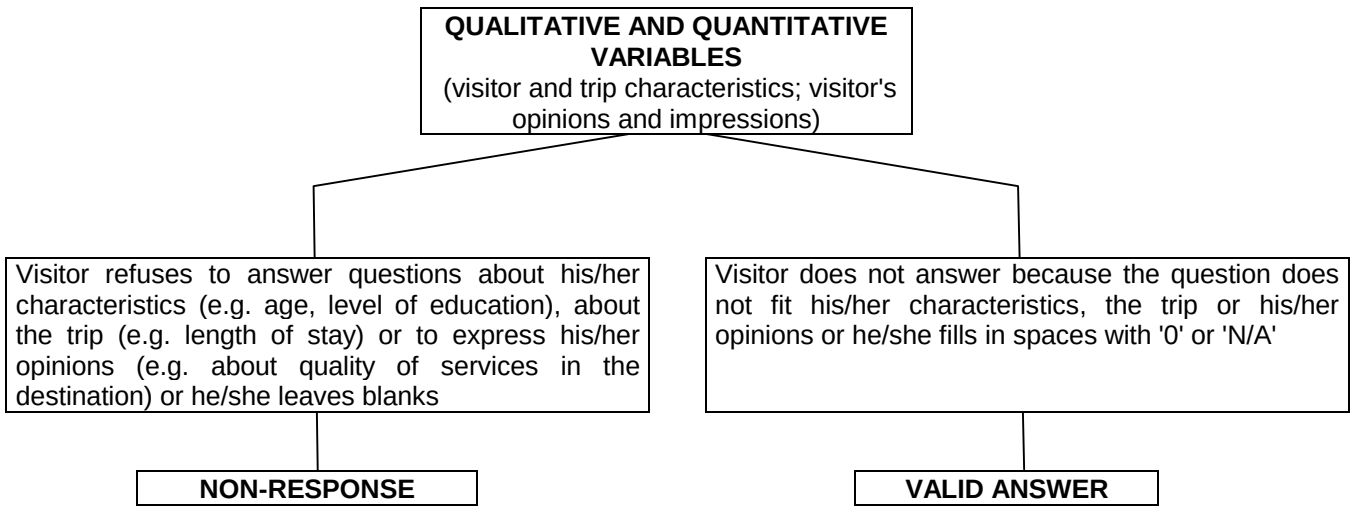
In the case of a direct interview, the researcher may verify the reasons for non-response by asking the interviewers. In the case of a mail survey and, more generally, of indirect interviews, the best solution would be to re-interview a sub-sample of interviewees (e.g. by phone), in order to verify the share of wrong responses. Even this method does not ensure a precise measure of response errors. However, the check on significant gaps between actual and previous responses represents an important information, above all if it is carried out during the pilot survey.

In detail, as far as **qualitative variables** are concerned, there is generally no other information which can substitute the missing data. However, there are no reasons to think that the characteristics of non-respondents and of their trip are significantly different from those of the respondents.

According to the so called *hot-deck* inputting methods (Rubin, 1983; Kalton and Kasprzyk, 1986), a case with similar characteristics to the case whose missing value is to be inputted may be selected at random, and its value on the variable under study may be used instead.

A better solution is replacing the missing value with a mean value calculated on homogeneous sub-groups of visitors having a number of characteristics in common with non-respondents: the data derived from the respondents of each sub-group are applied to the non-respondents of the same group (Chart 6a).

Chart 6a - Non-response to qualitative and quantitative questions. Possible solutions



Possible solutions:

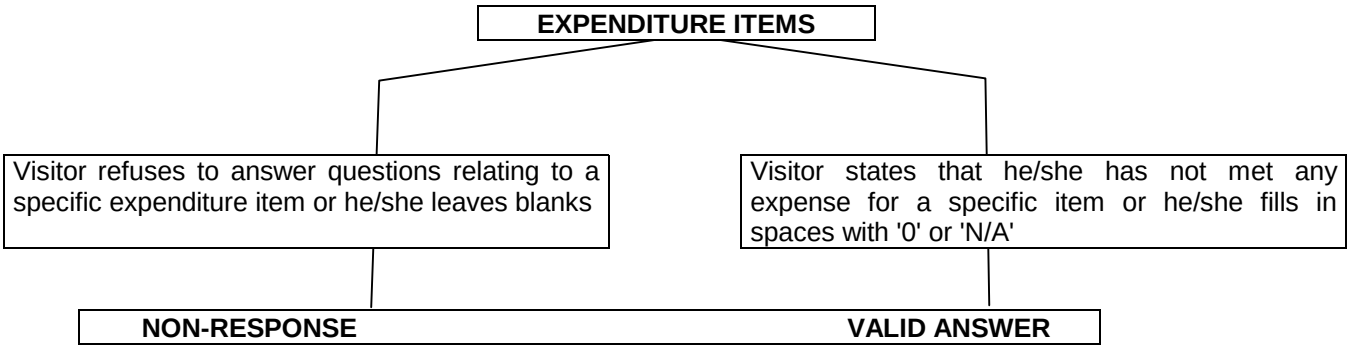
- *replacing the missing value by selecting a respondent visitor* which has the same characteristics of non respondent visitor, *at random*;
- *replacing the missing value with a mean value* calculated on homogeneous sub-groups of respondent visitors having a number of characteristics in common with non-respondents (e.g. country of origin, type of tourism, etc.).

The same procedures apply to **quantitative variables**, such as expenses met by the visitor.
Considering specifically **expenditure items**, in the case of non-response the missing value may be replaced (Chart 6b):

1. *by drawing another answer*, for the same specific item, *at random*;
2. *by using a mean value* obtained calculating the average expenditure for that specific item from the total sample interviewed or from a particular sub-sample, which has the same characteristics as those of the

visitor whose non-response is being looked at (e.g. the same country of residence, means of transport used, purpose of trip, etc.);
3. *by using a regression model* to predict the variable whose values are missing. This procedure may be applied when some variables included in the questionnaire can be used as proxy of that questionnaire which has data missing. However, it can be very complicated because different cases usually have different patterns of missing values and some averaging over regression is required.

Chart 6b - Non-response to expenditure questions. Possible solutions



Possible solutions:

1. *Replacing the missing value by drawing another answer*, for the same specific item, *at random*.

2. *Replacing the missing value with a mean value* obtained by calculating the average expenditure for that specific item from total sample interviewed, from a particular sub-sample or from data provided by other sources.
   Examples. *Key questions.*
   Accommodation expenses: price-lists of hotels, campsites and rented dwellings; information from hotel operators, campsite operators and estate agencies.
   Transport expenses: average expenditure calculated from a particular sub-sample of interviewees, who have the same characteristics (country of origin, means of transport used, etc.) as non-respondent tourist.

3. Using a *regression model*.

Focussing on basic expenditure items, such as accommodation and transport expenses, the mean value may also be calculated taking into account other possible sources of information.
In detail, for *accommodation expenses*, it is possible to refer to the price-lists of hotels, campsites and rented dwellings, or to use information given by hotel operators, campsite operators and estate agencies. For *transport expenses*, it is worth using the average expenditure calculated from a particular sub-sample of interviewees, who have the same characteristics (country of origin, means of transport used, etc.) as a non-respondent visitor.

7.2.2. The package breakdown

One of the key questions regarding the trip characteristics is about whether the visitor has bought a package tour from a travel agent or not and, if so, which goods and services are included in the package. This information is of crucial importance when the researcher is also interested in analysing the expenditure met for the package and for its various components. This is seen as a pre-trip expenditure but has an economic effect at local level (remittances by the agents to the operators at the destination).

There are two main points to be considered:

1. the *type of the package*: package travel, package accommodation, package holiday or package tour;
2. the *composition of the package*: mono or multiproduct, mono or multidestination.

With reference to the type of package:

- *package travel*: the visitor purchases the return travel to the holiday resort from a travel agent;
- *package accommodation*: the visitor applies to a travel agent to book the accommodation in the holiday destination or to organise the whole stay in the resort (accommodation, meals, local tours, local transport, etc.)(mono or multiproduct);
- *package holiday* or *package tour:* the visitor purchases an inclusive tour which includes transport, accommodation and other services consumed in the holiday destination (multiproduct).

While in the first two cases the visitor is usually able to indicate the expenditure met for each item (except in the case of a trip which includes other destinations besides the one where the interview takes place, or of a multiproduct stay which includes other goods and services besides accommodation, similar in structure to the "all-inclusive" package), it is in the third case that he/she has some problems in breaking down the expenditure.

Package holidays or package tours include a number of tourist products which are purchased by the visitor as a single entity. Such packages are usually, but not necessarily, comprised of transport and accommodation, but may also include meals, coach tours, car hire, admission tickets to theatres and attractions or any other product of interest to a tourist. There is one single charge for the whole package, which is usually cheaper than the total cost of the items included if purchased separately by the visitor. Package tours may or may not include an overnight stay, and may only involve a day trip which would include, for example, a tour plus meal and admission fee to an attraction.

For statistical and analytical purposes, the expenditure made for the package tour can be shown as either a single product, i.e. the package, or as a mix of a number of separate products, e.g. accommodation, transport, tour, etc.

Generally, visitors have no information on how much of their expenditure on a package should be allocated to its component items. So a method to estimate this breakdown has to be found.

The most common method is the *allocation in proportion to non-package expenditures on each component items by separate, homogeneous sub-groups of visitors* (WTO, 1996).

In detail, proportional allocation of the total cost of the package to the different component items is made, for the same items, on the basis of expenses met by tourists who have not bought a package. In other words, you calculate the weight of each of these items on the overall expenditure of the individual tourist, and these percentages are applied to the total expenditure for the package. To increase the accuracy of the results, the method can be applied to sub-groups of individual visitors who are homogeneous — according to country of origin and means of transport used — with the organised tourists for whom you intend to breakdown the package. The assumption is, for example, that the consumption behaviour of an English package tourist who travels by plane is similar to that of a fellow-countryman who plans his own holiday and who also travel by plane. An example may clarify the application of the WTO method. Along with this, a modification to the method is proposed, which experience has shown to be more correct from an operational point of view.

We consider two cases: the first is a tourist who buys a package which only includes travel and accommodation; the second is a tourist who buys a package which includes more products or destinations (within the same country or in more than one country).

Case 1: package tour including transport and accommodation

Consider four tourists who come from the same country and use the same means of transport to reach the holiday destination. The first three are individual tourists while the fourth one purchases a package tour. Their total expenditures are as follows (US$):

Tourist	Package (P)	Transp. exp.(T)	Accomm. exp.(A)	Length of stay (days)
A	-	500	500	5
B	-	530	1 500	17
C	-	470	2 000	20
D	1 000	-	-	5

P = T + A

The average daily per capita expenditure for accommodation is equal to US$ 95.24 [(500+ 1 500+2 000)/(5+17+20)].

In detail, the WTO method includes:

- the calculation of total expenditure made by all 'non-package' tourists for each item included in the package (transport and accommodation);
- the calculation of the share of each expenditure item in the total expenditure made by non-package tourists;
- the breakdown of the package into several items according to the shares calculated above.

WTO method (US$)	Proposed method (US$)
Average daily expenditure for transport of 'non-package' tourists $T = \frac{500}{5} + \frac{530}{17} + \frac{470}{20} = 154.68$ Average daily expenditure for accommodation of 'non-package' tourists: $A = \frac{500}{5} + \frac{1\ 500}{17} + \frac{2\ 000}{20} = 288.23$ therefore (given 442.91= 154.68+288.23): $Tp = t = 1\ 000\frac{154.68}{442.91} = 349.23$ and $Ap = a = 1\ 000\frac{288.23}{442.91} = 650.77$ Tp + Ap = P and the average daily expenditure for accommodation is equal to: 650.77/5 = 130.15 US$.	Average daily per capita expenditure for transport of 'non-package' tourists $T = \frac{500 + 530 + 470}{3} = 500$ Average daily per capita expenditure for accommodation of 'non-package' tourists (multiplied by the length of stay of the 'package' tourists): $A = \frac{1}{3}(\frac{500}{5} + \frac{1\ 500}{17} + \frac{2\ 000}{20})5 = 480.39$ therefore (given 980.39= 500+480.39): $Tp = t = \frac{1\ 000}{980.39}500 = 510$ and $Ap = a = \frac{1\ 000}{980.39}480.39 = 490$ Tp + Ap = P and the average daily per capita expenditure for accommodation is equal to 490/5=98 US$.

The alternative solution suggested here takes into account the fact that, considering a package which only includes travel and accommodation, once the means of transport has been chosen, the travel cost is the same whatever the length of stay at the destination, whilst the accommodation expenses are directly proportional to the average length of stay. Consequently, the expenditure resulting from the breakdown of a package is different from those calculated before. In particular, the travel expenses are higher whilst the accommodation expenses are lower.

Case 2: the multiproduct or multidestination package

In the case of a multiproduct package, which includes the purchase of other goods and services in addition to travel and accommodation, the same method should be implemented. In detail, the frequency of the other expenditure items included in the package has been calculated (in particular, recreational activities, local tours, souvenirs, etc.) taking into account their share of the overall expenditure of the non-package tourist. Information on what the package includes may also be recorded from tour operators and travel agencies. This information can also be very useful for:

- the breakdown of package travel which includes other routes in addition to the travel to the destination in which the tourist has been interviewed;
- the breakdown of package tour which includes other destinations (within the same country or in more than one country) in addition to that in which the tourist has been interviewed.

These can be the cases with international inbound tourists coming from countries far away from the country of holiday destination (let's think of Non-European tourists who make a European tour which includes all the main capitals: London, Rome, Paris, etc.).

7.3. Transferring data to the computer

People entrusted with transferring the information from the completed questionnaires to the computer should be well-trained in data entry on the computer equipment available and be instructed in the design of the data record. Researchers familiar with the survey should be available to answer questions during this process.

When data from a survey is to be processed by computer, it is necessary to design the *data record* for recording the information from the data collection instrument (the questionnaire). A data record is simply one data card, or one line of a computer file, or one row in a spreadsheet that can contain all of the information from a single completed data collection instrument, or "case".

A *data field* is the space in the data record devoted to inputting the answer to one question. A field must be long enough to accommodate the possible answers to a question. In designing the record format, the assistance of a computer processing expert should be sought, to ensure that the data is recorded in a manner which facilitates computer processing.

It would also be very useful to ask a computer expert to produce a specific program for inputting questionnaires. In its simplest form, it could be a sort of 'electronic questionnaire' which reproduces each question included in the original form and provides a specific data field for inputting the response (or the corresponding code).
This choice could be costly but it has the advantage of allowing a considerable reduction in data-entry errors, thank also to the planning of run edit checks.

However, at this stage a strict co-operation between the programmer and the researcher who has designed the questionnaire is necessary.

7.4. Running edit checks

These checks were outlined in Step 5 and are designed to identify wrong responses which are keyed into the computer because of errors in the completion of the questionnaire which were not checked before, and also to identify errors made at the data entry stage.

There are two types of checks (see 5.6). One is when the computer program automatically checks for deviations from the format established for data entry. This happens either when too few or too many facts are entered for a given question, or it occurs in the case of check-questions, which allow researchers to check some responses already given by interviewees (see Section 5.2.). For example, the respondent claims to stay in a 4 star hotel, with bed and breakfast, and then, when specifying the expenses, indicates the price of a stay in a 4 star hotel, with half board. In this case, the computer program automatically highlights the discrepancy (e.g. by displaying a warning phrase).

The second type of edit check looks for deviations from the range allowed in the questionnaire. These ranges are established by the researcher to identify responses which are clearly wrong. They cover valid responses, such as only two acceptable codes for gender, and reported ages only below 150 years.

Whenever the edit checks identify wrongly entered data, the researcher should review the case by looking at the original questionnaire and choose whether to accept the answer, correct it, or exclude it from further processing.

7.5. Producing tables

The analysis of the sample survey results represents the first stage of a three-stage process which includes the grossing-up of the survey's results and the evaluation of the final results on the target population
(see Steps 8 and 9).

The production of these tables is therefore recommended as the prelude to the final analysis. This allows the researcher to verify the balance of the sample, i.e. the existence of discrepancies between the sample of questionnaires collected and the initial sampling plan.

The tables may be drawn up by common Windows programs or with specific statistical programs.

There are three types of tabular presentation of survey data. The *frequency tables* describe the results for each question in terms of the number and percentage of respondents giving each response. The objective is to provide a quick review of the most common and least common answers to each question. Table 2 just shows an example.

The first column lists the categories of responses, and the second column indicates the codes assigned to each category. The third column shows the actual number of responses for each length of stay category.
The fourth column, 'Percentage', highlights the percentage of all respondents in each duration category. Note that 'No answer' is included along with the numerical duration responses. On the other hand, the fifth column, 'Adjusted percentage', shows the percentage of responses in each category, ignoring non-responses. This assumes that respondents who did not answer this question have a length of stay distribution identical to those who did provide answers.

The final column shows the cumulative percentage, ignoring 'no answer' responses. This allows us to make quick observations, such as that more than half of the respondents stayed less than four nights.

Table 2: Example of a Frequency Table

Question 4. ***How many nights did you spend in country X during this trip?***					
Category	**Code**	**Frequency**	**Percentage**	**Adjusted percentage**	**Cumulative percentage**
no overnight stays	1	200	15.7	16.0	16.0
1 to 3 nights	2	650	51.2	52.0	68.0
4 to 7 nights	3	200	15.7	16.0	84.0
8 to 14 nights	4	150	11.8	12.0	96.0
15 to 28 nights	5	30	2.4	2.4	98.4
29 nights or more	6	20	1.6	1.6	100
no answer	9	20	1.6	-	-
Total		1 270	100	100	100

The other type of tabular presentation of survey results is the *cross-tabulation*.

This demonstrates the relationship between the answers to two or more questions in the survey. The objective is to show whether or not the answer to one question depends on the answer of another question.

The following table provides an example.

Table 3: Example of a cross-tabulation Table

Question 4. ***How many nights did you spend in country X during this trip? as percentage of question 10: What is your gender?*** **(percent values)**				
Category/Gender	**Code**	**Q.10. 1. Male**	**Q. 10. 2. Female**	**Total percent**
no overnight stays	1	4	20	10
1 to 3 nights	2	9	30	15
4 to 7 nights	3	20	20	20
8 to 14 nights	4	5	5	5
15 to 28 nights	5	13	0	10
29 nights or more	6	39	15	30
no answer	9	10	10	10
Total		100%	100%	100%

This example shows that there is a relationship between gender of traveller and length of stay: men stay for longer periods than women. If there was no relationship, then the percentages in the male and female rows would approximate the total percentages in the last column.

There are as many possible cross-tabulation tables as there are the number of questions multiplied by the number of questions less one. Some of the more interesting cross-tabulations for inbound international visitors are by country of residence, purpose of visit, length of stay, season of the year, type of accommodation, means of transport and visitor characteristics.

As far as quantitative data (e.g. expenditure items) is concerned, it can also be useful to calculate a *mean table*. For each question included in the questionnaire (e.g. daily expenditure for accommodation, food and drinks, etc.), it presents the total number of respondents, the average response rate, the standard deviation from the mean and the minimum and maximum values it can assume.

Table 4: Example of a Mean Table

Variables	No. of respondents	Mean (US$) [1]	Standard Deviation (US$)	Minimum value (US$)	Maximum value (US$)
Hotel accommodation	250	92.36	31.23	35.72	174.54
Food and drink [2]	170	16.88	16.31	0.77	87.22
Souvenirs	120	6.27	6.32	0.11	33.00

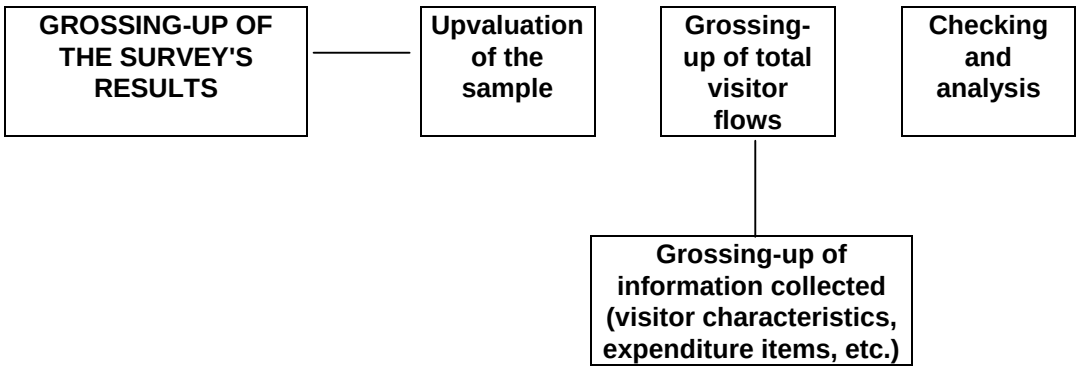
[1] The mean represents the average daily per capita expenditure per item.
[2] The item includes expenses in restaurants, bars, shops, etc.

As you can see in Table 4, the third column shows the average daily per capita expenditure met by the respondents for each item. The fourth column indicates the range in variation of the majority of responses. This means that, for example, daily expenses for hotel accommodation are included in a range from 7.35 US$ (92.36-25.01) and 117.37 US$ (92.36+25.01).

The last two columns indicate the minimum and the maximum expenditure data reported by respondents. In some cases, these latter values can be stated by the researchers in advance to avoid inconsistencies (for example, an expense of 2 000 US$ for an overnight stay in hotel. See answer coding, Section 5.5.). The average values can be calculated including or ignoring non-responses. In the example, the average value calculated for each item excludes non-responses.

8. Grossing-up of the survey's results and checking procedure

Step 8



Once you have recorded and input the questionnaires, and made a preliminary analysis of the survey's results, you need to control that the responses are correct and respect the level of accuracy stated in the sampling plan.
In any sample survey you can face two basic type of errors: sampling errors and non-sampling errors.

The **sampling errors** are associated with the fact that the sample used was only one of a large number of possible same-size samples that could have been selected. Although these errors have to be taken under control

in the sampling phase (see Section 4.2.2.3.: the sampling selection method), it may result that the visitors really interviewed do not represent an adequate coverage of the population under study.

For example, you can obtain completed interviews from too many air visitors and not enough from land visitors (in an entry/exit point survey) or from too many hotel guests and not enough from other collective accommodation guests (in a survey at accommodation establishments). In this case, your final sample will not be representative of all inbound visitors, according to the sampling plan drawn at the beginning. So you have to weight your sample to match the target population on specific characteristics, before further processing or analysing. The support of an expert statistician during the balancing process would be advisable.

But the errors made do not only depend on the selected sample; a sampling survey consists of a number of steps which involve a large number of operations as well as several people, such as interviewers, interviewees, supervisors, analysists and data processers.

The **non-sampling errors** identify the multifold, and often uncontrollable, errors which can occur during the planning, organisation and implementation of the survey (Steps 4, 5, 6, and 7). Although they have already been dealt with in the appropriate Sections, here they are summarised for purpose of clarity.

In fact, even if they should be monitored during the whole survey process, it may happen that they become evident only in the analysis of the survey's results, and so it is necessary to solve them before proceeding with the up-valuation and the grossing-up.

Unlike sampling errors, these errors are independent of the consistency of the data collection, i.e. they can also arise in accurately drawn samples.

This means that they generally cannot be reduced by increasing the sample size, as discussed for sampling errors (see 4.2.2.3., the sampling selection method). Consequently, in large samples their influence on the survey's results may be larger than sampling errors. This forces researchers to find an optimum allocation of the total budget between the funds allotted to the reduction of the sampling error (mainly through an increase in the sample size) and those assigned to the measurement and control of non-sampling errors (Cicchitelli et al., 1992).

Murthy (1967) identified three main categories of non-sampling errors:

- *Specification errors*, due to an incorrect specification of the population under study and of the information to be collected, or to a specification which does not meet the purpose of the survey.
- Checking *errors*, which deal with the organisation of the data collection.
- *Tabulation errors*, which usually arise during the data analysis.

Specification errors mainly occur during the definition of the target population and the sampling frame and the design of the questionnaire (Steps 4 and 5). The selection of an incomplete list of sampling units from which to draw the sample can modify the probability of inclusion of each population unit (see Section 4.2.2.2.: incomplete frames). On the other hand, given the sample frame, questions not perfectly focused on the purpose of the survey, poorly worded questions, cryptic instructions, missing information, etc. are all causes for specification errors. "Regardless of how well a sample is selected, the results of the survey are not going to be accurate if the questions are not properly phrased" (Cannon, 1994).

Checking errors refer to the organisation, implementation and control of the interviews (Steps 6, 7). Badly trained interviewers, who fail to follow the general guidance stated by the researchers in approaching the interviewee; bad working of some technical equipment used for counting visitors (e.g. electronic eye: see Part IV, Chapter 8); interviewees' misunderstanding, lack of memory or unwillingness to answer which may result in missing or wrong answers; lack of control by supervisors. These are the most common checking errors. About non-response, a thorough analysis of possible causes and solutions is given in Chapter 7, Section 7.2.

Finally, **tabulation errors** identify the errors made in checking and analysing the survey's results (Step 7), i.e. in coding questions and planning editing checks, in transferring data to the computer, in data processing, in producing tables and diagrams, etc.

In recent years, many methods have been implemented with the objective of reaching a better control of non-sampling errors, with particular regard to measurement errors. Nevertheless, the problem is very complex and an effective and efficient solution applicable to all types of surveys is still to be found. As stated by Cochran (1977),

improvements in this field are slow and very expensive, because such errors not only depend on the object of the survey, but also on human factors.

However, once you have corrected sampling errors and other distortions coming, for example, from missing data or from data processing, you can expand the sample results up to the target population, in order to obtain an estimation of the total number of inbound visitors in the area under study, of their characteristics and (if surveyed) of their consumption behaviour and economic impact.

The up-valuation of the sample and the grossing-up methodology vary greatly according to the kind and the size of the area under study (closed or open; small or large).

8.1. The up-valuation of the sample

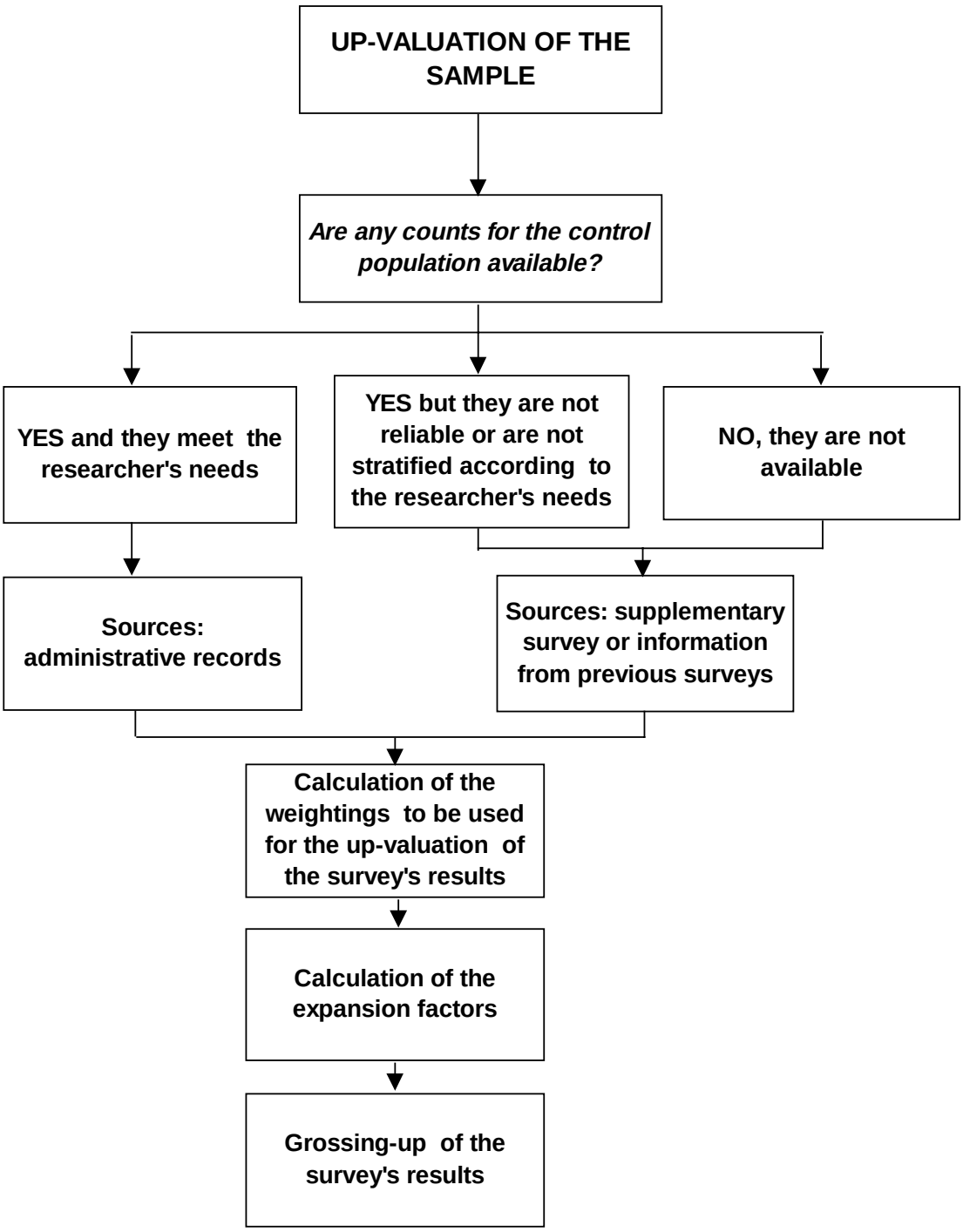
The up-valuation procedure is important for balancing the sample results according to the sampling plan previously arranged and, consequently, according to the composition of the target population.
As for the determination of the sample size, the methodology used for the adjustment of the sample results depends on the information available for the target population.

The following three situations may occur (Chart 7):

1. the researcher has accurate information on the target population (usually through complete counts or "census" on all visitors);
2. the counts are not reliable or they do not meet the researcher's needs (e.g. they are incomplete);
3. the counts are not available.

The first case is more common in closed areas (e.g. a country) where there is some control mechanism for entry.
Information about the inbound visitors' population that may be available from administrative records (embarkation/disembarkation forms, registrations by operators of collective accommodation, etc.) generally provide data on total visitor/tourist flows or on visitors/tourists by country of residence, by departure point, by major means of transport (aeroplane, railway, car, boat/ship), by length of stay and by month of departure.
For example, considering a survey at entry/exit points, if 70 percent of the sample is composed of air visitors, but a census count indicates that only 40 percent of the actual inbound visitors arrive and depart by air, than it is necessary to adjust the sample to approximate this distribution. This process will produce factors that are used to weight each case so that it represents its appropriate proportion of the target population. In the above examples, each answer provided by an air visitor should receive a weighting of 0.40/0.70=0.57.

Chart 7 - Up-valuation of the sample and grossing-up of the survey's results. The logical process



The completed questionnaires of other types of visitors (e.g. land visitors) would receive different weightings depending on these relationships.

If data on inbound visitors does not meet the researcher's needs or it is not available at all — as may happen in an open area (e.g. a public tourist site, such as a church, a street, etc.) —, it would be appropriate to conduct some supplementary surveys in order to calculate the weightings to be applied to the results of the main survey. The supplementary survey may be conducted during or just after the main survey or it may occur at the same time as

the pilot survey (see Chapter 4), when the researcher decides to use this collection to determine the sample size.

8.2. The grossing-up of the survey's results

Once the re-weighting procedure has been carried out, the next step consists of expanding the sample results up to the target population, in order to obtain an estimation of the total number of inbound visitors, of their characteristics and (if surveyed) of their consumption behaviour and economic impact on the area under study (Chart 7).

The evaluation of the experience of different countries has also stressed how the method for estimating the expansion factors changes according to the type of area under study (closed or open) and the kind of survey conducted (e.g. a survey at entry/exit points rather than a survey at accommodation establishments). In large closed areas (such as a country), researchers may carry out a survey at entry/exit points or on means of transport, while in a small area, such as an island, they can also opt for a survey at accommodation or at popular tourist places. In single attractions with some sort of control mechanism for entry (museums, exhibitions, etc.) the survey is usually organised in the same place, while in large or small open areas (e.g. a region, a city, etc.) researchers may implement a survey at accommodation establishments or at tourist sites. The latter survey is the best solution for getting accurate information on both tourists and same-day visitors, while a survey at accommodation establishments provides data on volume, characteristics and consumption behaviour of tourists only. In the case of a region, however, it should be taken into account that both surveys involve a sophisticated organisation, considering the need to select a representative sample of tourist places or of hotel and non-hotel accommodation.

Given the monitored area, the aim of the **grossing-up methodology** is to know volume estimates of total visitors for each visitor characteristic, in addition to percentage breakdowns provided by the sample results. The expansion method involves calculating an *expansion factor* for each respondent having a certain characteristic, from complete counts of visitors. Once the researcher has done this, each response represents the behaviour of a corresponding group in the target population rather than just the sample in terms of visits, nights spent, expenditure and other measures of visitor activity.

The more the expansion factors can be estimated for homogenous sub-groups in terms of characteristics (e.g. tourists by nationality, or better tourists by nationality, purpose of the trip and socio-economic profile, instead of total tourists, and so on) the more the grossing-up procedure will be successful in giving reliable results. We will give just one example to demonstrate the importance of segmenting the monitored population as much as possible.

The government of Turkey knows from administrative counts that about 100 000 Italian residents arrived as visitors in 1994. Its survey of 10 000 departing inbound visitors identified 250 respondents who live in Italy, of which 230 were leisure visitors. The expansion factor for Italian visitors is equal to: 100 000/250=400. Multiplying the leisure visitor respondents by the expansion factor (400*230) provides an estimate of 92 000 leisure visitors from Italy for the year[7]. As you can see, we do not know the real number of Italian tourists who choose Turkey for leisure purposes; so we have to calculate the expansion factor using a proxy, taken from the total number of visitors coming from Italy, whatever the main purpose of visit is.

If only the total number of international visitors is known, and nothing more about their country of origin or other characteristics, then the expansion factor has to be computed from this. If Turkey hosted 6 million inbound international visitors in 1994, then the expansion factor for each international respondent to the survey would be 6 000 000/10 000 = 600. In this case, the number of Italian leisure visitors is 600* 230 = 138 000[8].

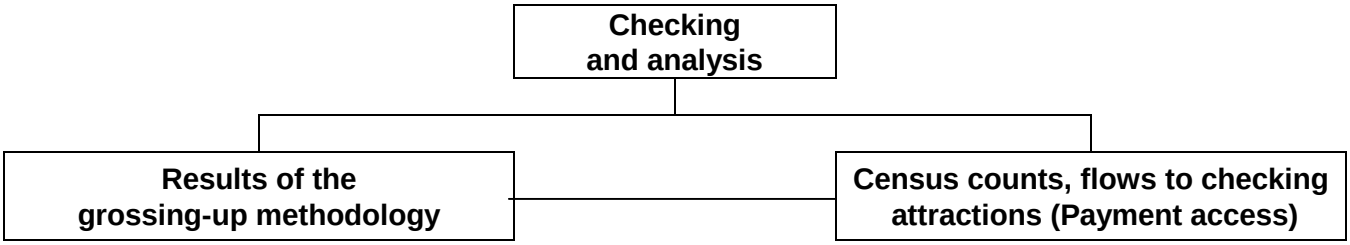
[7] Statistically speaking, the proper procedure implies calculating the relative frequency of the characteristic under study and applying it to the population. Given 230/250=0.92 the sampling estimate of Italian leisure visitors on total Italian visitors interviewed (which indicates that out of every 100 Italian visitors, 92 are leisure visitors), the total number of Italian leisure visitors in a year is obtained by multiplying 0.92 for the total number of Italian visitors recorded by official counts. The result is the same as that shown in the text: the method we have used allows us to highlight the calculation and the value of the expansion factors.

[8] In this case the relative frequency is 230/10 000=0.023, and the total number of Italian leisure visitors in a year is equal to 0.023*6 000 000=138 000.

When no information is available (e.g. survey at tourist attractions), as discussed above for up-valuation of the sample, the expansion factor must be calculated by combining the results of supplementary surveys.

In Part III and Part IV different methods for the up-valuation and the grossing-up of the survey's results are discussed as far as closed areas and open areas are concerned. In particular, Part III describes the case of a large and a small closed area (a country and a single attraction), given the most common situation when administrative records provide only partial information. Part IV shows the case of a large and a small open area (a region and a city), when there is no available information for balancing and grossing-up the survey's results or when this information may be partially available. We should stress that both methods may be applied, with suitable adjustments, to other combination area-survey.

8.3. Checking and analysis of the grossing-up procedure



Having expanded the sample results up to the target population, it is important to control that the final results are coherent with the real size of the population under study.

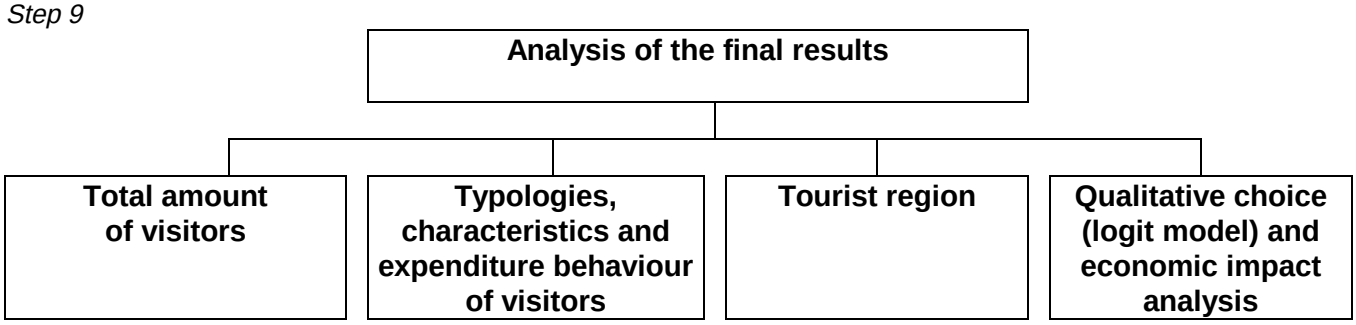
The control is based on the same data used for the calculation of the weightings in the grossing-up procedure. They derive from official sources, such as census counts and administrative records (embarkation/ disembarkation cards, registrations by hotel and non-hotel operators, volume of tickets sold, etc.), or from previous or supplementary surveys.

This information allows researchers to verify not only the volume of visitors (tourists/same-day visitors) in a given area but also, in some cases, the main characteristics of the visitor and the trip (e.g. country of residence, means of transport used, length of stay, etc.). In the case of an open area (such as a region or a city) where information may only be obtained by specific surveys, it may also be helpful to refer to some official data about the use of other services connected to tourism, such as transport services, electric power, rubbish production, etc. An increase in the use or in the production of one or more of these services during the year (or during a specific period of the year in comparison, for example, with the previous year), may be representative of a growth in visitor flows.

However, this data only provides indications for estimating the total volume of visitor flows and, in the case of electric power and rubbish production, of tourist flows.

9. Analysis of the final results

Step 9



Once the procedure described so far has been completed, you can produce final frequency tables and cross-tabulations similar to tables produced for the sample, but with absolute estimates rather than sample percentages.

In addition to the total visitor analysis in terms of types, characteristics and habits, at this stage you can also study other relevant aspects linked to inbound tourism. With regard to the destination you are monitoring, you could, for example, define the tourist region from which each type of visitor, and in particular of same-day visitors, originates. As mentioned above, in this area tourist receipts and, more generally, the economic, social and environmental impact of tourism depend on the proximity to the main destination.

Furthermore, if your interest is in investigating the main characteristics of the visitors with respect to their origin and socio-economic profile, their preferences and their holiday decisions, then a qualitative choice model should be implemented. One purpose of such models is to determine the probability that an individual with a given set of attributes will make one choice rather than another. More generally, a relationship between a set of attributes describing an individual and the probability that the individual will make a given choice is found.

But if your interest is in studying the identity and the structure of the tourism industry and in measuring its role in the whole production system, then aggregated or disaggregated economic impact models (Keynesian multipliers or multisectoral-multiregional input-output models) should to be carried out starting from tourism expenditure estimates.