



# Coherence and consistency in tourism statistics: an overview

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## Introduction

1. There is a reciprocal relationship between integrated statistical information systems and basic statistics: the former state the basic statistics that are required for their implementation; the latter have to be produced using concepts, definitions, classifications that are determined by the reference frameworks that establish both the concepts and the tables of results. As a consequence, integrated systems stand as the centre of gravity for statistical work in all areas.
2. The [System of Tourism Statistics \(STS\)](#) constitutes such a system (see 1.1. to 1.5.) for which the new *International Recommendations for Tourism Statistics 2008* ([IRTS 2008](#)) and *Tourism Satellite Account: Recommended Methodological Framework 2008* ([TSA:RMF 2008](#)) hold as the updated reference frameworks: both documents share the same concepts, definitions and classifications and should be used as reference for the identification of data gaps and for the design of new statistical sources as well as for promoting coherence and consistency of available tourism statistical data.
3. Statistical data derived from different statistical procedures, administrative sources or obtained using different methodologies cannot usually be directly integrated into a system of information, but require the use of additional statistical techniques (adjustments, confrontations, reconciliations, validations, etc.) that are common practices for NSOs but that NTAs should also develop when in charge of the statistical production if tourism statistics are to be viewed as a system.
4. In the present paper, the concepts of coherence and consistency (defined widely in the next paragraphs) are used to refer to those statistical practices by which the available tourism statistical data are integrated, that is to say, made coherent and mutually consistent. In practice, *coherence* is achieved through the application of the same concepts, definitions and classifications, whereas *consistency* is achieved through the application of the same measurement rules in the entire STS.
5. “*Coherence* is defined as the adequacy of statistics to be combined in different ways and for various uses. When originating from different sources, and in particular from statistical surveys using different methodology, statistics are often not completely identical, but show differences in results due to different approaches, classifications and methodological standards. There are several areas where the assessment of coherence is regularly conducted: between provisional and final statistics, between annual and short-term statistics, between statistics from the same socio-economic domain, and between survey statistics and national accounts. The concept of coherence is closely related to the concept of comparability between statistical domains. Both coherence and comparability refer to a data set with respect to another. The difference between the two is that comparability refers to comparisons between statistics based on usually unrelated statistical populations and coherence refers to comparisons between statistics for the same or largely similar populations. Coherence can be generally broken down into “Coherence - cross domain” and “Coherence – internal”.”
6. “*Consistency* is defined as logical and numerical coherence. An estimator is called consistent if it converges in probability to its estimand as sample increases. Consistency over time, within datasets, and across datasets (often referred to as inter-sectoral consistency) are major aspects of consistency. In each, consistency in a looser sense carries the notion of “at least reconcilable”. For example, if two series purporting to cover the same phenomena differ, the differences in time of recording, valuation, and coverage should be identified so that the series can be reconciled. Inconsistency over time refers to changes that lead to breaks in series stemming from, for example, changes in concepts, definitions, and methodology. Inconsistency within datasets may

- exist, for example, when two sides of an implied balancing statement - assets and liabilities or inflows and outflows - do not balance. Inconsistency across datasets may exist when, for example, exports and imports in the national accounts do not reconcile with exports and imports within the balance of payments”.
7. In this paper the following statistical practices will be identified in relation with the measurement of tourism as an economic sector:
    - internal coherence and consistency of tourism statistics between:
      - A. Different data sets on demand side statistics
      - B. Tourism demand and supply statistics
    - external coherence and consistency:
      - C. Integration of tourism statistics in the TSA and thus with the National Accounts
      - D. Comparison of tourism statistics and the Balance of Payment “travel” and “passenger transport services” items.
  8. The objective common to all these cases should be to identify and explain differences, justify and document statistical adjustments in order to help users to avoid misunderstanding the process. Those that have never carried on such an exercise might tend to overlook how challenging these processes are, and might think that, as in each phase and for each variable, the utmost care has been taken to realize an accurate measurement, data should naturally be consistent and the required adjustments small.
  9. In most cases, when no checks have been done at any intermediate stages, and particularly when doing this exercise for the first time, many unsuspected inconsistencies will appear, that need to be corrected. This correction, if the process is to converge, has to be conducted in a logical way, and needs to take into consideration all the possible implications of the decision that are taken at each stage of the process: For example, when comparing data on demand and on supply, and if considering (first assumption) that the data on supply is more reliable than the data on demand, though finding that demand of accommodation services for instance is far lower than supply, this implies that demand for accommodation should be adjusted; new additional questions then need to be asked to which logical answers have to be provided: should this adjustment also be extended to other components of demand by visitors (second assumption); should the whole level be reviewed (third assumption), maintaining the observed structure of expenditure, or should only the consumption on accommodation be reviewed (other assumption?)? These kinds of issues need to be addressed and will be discussed in this annex though without providing ready-made answers as such answers do not exist.
  10. As a first general comment, it is necessary to study data and indicators at an aggregated level, as well as data within a certain detail: looking only at total expenditure, or expenditure by product classified according to COICOP for instance should not be sufficient, as these global data will provide no clue about the possible sources of differences. Adjustments made on the basis of global values will tend to be rather arbitrary; as a consequence, changes might be decided that will not provide an interesting input for understanding the behavior of visitors and although the resulting data will apparently be consistent, they might lack relevance and link with the reality they are supposed to represent. The same applies to physical indicators such as arrivals and overnights, which review should be associated with some logical analysis, and not be aligned on supply without any additional consideration, for instance on average expenditure per person per night.

11. The analysis should be developed step by step, looking at the different components of the differences, checking additional data sources (f.i. mirror statistics) and taking decisions in each of the steps, mainly if the precise sources involved in the estimations being compared are different. The analysis might require going back to earlier stages as, when developing the process, some assumption will have been made, that a further stage in the process of coherence and consistency might contradict. In such a case, it might be necessary to move back and follow a different path; for this reason, it is necessary to keep a complete record of the process of coherence and consistency that has been followed, in order to be able to modify and review the process at any particular stage.

#### **A. Different data sets on demand side statistics**

12. The estimation of tourism demand results from combining information on number of visitors, and trips, with their characteristics in terms of duration, purpose of visit, forms of accommodation used, belonging to a party or group, type of organization (package/no package) and expenditure (either total or average expenditure per day for some or all combinations of those characteristics), as well as the product breakdown of expenditure.
13. The different components that need to be reviewed in the comparison of sources are for instance:
  - number of visitors and trips;
  - distribution of those trips according to main related characteristics such as duration, purpose of trip, forms of accommodation, the belonging to a travel party or a travel group, the use or not of package, etc., individually for each characteristic and for a cross-classification of such characteristics;
  - average expenditure per visitor per day corresponding to each of these characteristics taken individually and cross-classified;
  - the product breakdown associated with this average expenditure.
14. Each form of tourism requires specific sources. Generally, what will possibly be available is the following:
  - For inbound tourism, information collected at the border and/or information collected at market accommodation establishment or at popular tourism sites;
  - For outbound tourism, information collected at the border and/or using a household survey;
  - For domestic tourism, information collected using a household survey and/or at market accommodation establishment or at popular tourism sites.
15. Each of these sources has strengths and weaknesses regarding the measurement of those components already mentioned in paragraph 13. In the following paragraphs, two complementary perspectives will be presented:
  - paragraphs 16 to 26 will highlight some characteristics of the sources used in each form of tourism; and
  - paragraphs 27 to 37 will focus on such components and related topics highlighting potential discrepancies between data sets derived from those sources.

**A.1. Estimation of inbound tourism using information collected at the border or information collected at market accommodation or popular tourism sites**

16. Variables associated with inbound tourism might be observed, either on the border, or at market accommodation or at popular tourism sites. In the latter cases, usually the characteristics of visitors at those places are observed, and those are extrapolated (with the required adjustments to account for difference in structure) to total flows observed principally on the border on arrival or estimated otherwise as the total number of visitors cannot be estimated using only information on visitors staying at market accommodation or visiting popular tourism sites.
17. As already mentioned, data derived from observation at market accommodation or from surveying visitors at popular tourism sites should be used with great caution, as they only cover specific subpopulations of the universe, which behavior will not correspond necessarily to the average, neither in level nor maybe even in trend. In many countries, staying with family and friends is the most common form of accommodation used when on tourism trips, and, as has often been observed, the behavior and the associated economic variables of those using this form of accommodation cannot be inferred directly from those observed for specific categories of visitors, which present important differences in most of the characteristics of visitors.
18. When comparing those data with those derived from observations made at the border, the comparison should only be made on their common scope (more precisely, and as border records should be supported in databases, checking coherence between different sources should only refer to common parts of the information collected in each of them); additionally, it should be recalled that duration of stay as defined in border statistics is different from duration of stay in a market establishment as during a same trip, a visitor might use various forms of accommodation (and stay at more than one of them); average expenditure per person per day obtained by surveying visitors during the trip might also be different from that estimated when the visitor is leaving the country visited as some purchases are often done by the visitors at the end of their stay.
19. Nevertheless, once all these differences have been taken care of, comparing number of visitors, tourism trips and main related characteristics in the different sources available might be an illustrative exercise of coherence if such information is statistically significant (which implies not only a minimal number of observations but also that data are already of sufficient quality to be considered usable).
20. Additionally, in some cases and circumstances, these might be the only available data on a current basis whereas, because of their cost and the difficulty of organization, surveys at the border are often collected only from time to time, and in the meantime, compilers have to do with such alternative sources.

**A.2. Estimation of domestic tourism using information collected using a household survey or at market accommodation or popular tourism sites**

21. Similarly, for resident visitors on domestic trips, two sources of information might be available: those derived from a household survey (either specifically designed for tourism analysis purposes or by means of a “tourism module” included in a household income/ expenditure type survey), and those collected at market accommodation or popular tourism sites (similar to the case of inbound tourism).



22. The differences have very similar reasons as previously described, though the situation is somewhat more complex, as the sample design of a household survey (and consequently, final results) might bias the number of residents taking trips within a short period of time.
23. In this case again, the results need to be screened very carefully for internal coherence, in particular regarding the ranking of average daily expenditure according to the different situations at least in terms of the main purpose of the trip and main type of accommodation used during the trip.

### **A.3. Estimation of outbound tourism using information collected at the borders and through household surveys**

24. A country might be using its immigration control at the border to estimate the flow of inbound and outbound travelers, and a border survey to qualify these travelers as visitors and the corresponding characteristics. In order to measure expenditure, a different type of survey might be used.
25. In addition, this country might have developed a household survey, through which the tourism behavior of residents (domestic and outbound) is being estimated; it might be a unique survey, in which both flows and expenditure have been observed, or it might also rely on two different procedures: one, more frequent, to measure flows and their characteristics and the other, less frequent, for expenditure.
26. Measuring outbound tourism, even if not a priority for all countries, provides the opportunity to check coherence between data obtained by border control data and visitor / household surveys. For instance:
  - if the data observed from the system of estimation at the border are considered as less reliable than those resulting from the household survey type of observation, should the compilers also consider that the reliability of the data concerning inbound tourism obtained using similar type of sources, also be put under scrutiny?
  - and what if as a result of the analysis, the data derived from the household survey are considered as less reliable, should this review, and the resulting adjustment (for instance an adjustment to the number of trips, of average expenditure, etc.) be also applied *ceteris paribus* to domestic tourism as well, as its measurement derives from the same instrument of observation?

### **A.4. Miscellaneous cases**

27. The following paragraphs refer to potential discrepancies between different data sets derived from those sources already mentioned. Other sources of discrepancies might also be present and this paper will enrich as national experiences are progressively added to the present version.

#### *Global scope*

28. Depending on the data source that is used, the actual scope of trips might be different:
  - In the case of observation at the border, not all border posts might be covered; in particular, international visitors crossing land borders will often not be observed as accurately than those traveling by air; additionally, in many countries national non-residents are also often omitted from measurement of inbound visitors;

- In many countries, household surveys only cover the urban population, grouped in the major cities; population living in small towns or in rural areas are systematically excluded. In certain circumstances though, this might not be too worrisome, because they usually travel less than the rest of the population; additionally, counting all trips and determining their characteristics present specific challenges in the case of domestic tourism;
- Surveys at market accommodation only cover visitors that use this form of accommodation for their stay; and duplication might also happen in the case of visitors using more than one of such accommodation in the period of reference;
- Surveys at popular tourism sites only cover those visiting such sites, and might also count more than once those that visit various of such sites in the period, and omit those that do not (a frequent situation in the case of nationals residing abroad...);
- As had been observed previously, relating trips with specific periods of time might not be totally consistent among forms of tourism and with supply to visitors.

### *Children and travel parties*

29. The treatment of children and of travel parties might not be homogeneous among these different sources. In most cases, children under a certain age are not interviewed at all, and the age limits might vary among sources. Nevertheless, they might be visitors, usually, but not always, accompanying adults of their own family. It is necessary to check whether they are taken into consideration in the same way in the calculations, for instance, if some calculations use the equivalent scales and others do not.
30. If not managed with care, travel parties might also generate inconsistencies in the measurements, in particular, in the case of household surveys, if the travel party is made of persons belonging to different households and the travel party is considered as a statistical unit.

### *Classification of visitors*

31. Statistics derived from observations at the border might classify visitors, either according to their country of nationality, or according to their country of residence. It is recommended to use the country of residence criterion, but it is not always the case, and in particular, some specific kinds of visitors might be omitted or not well apprehended, in particular nationals residing abroad, as Immigration authorities, often in charge of the procedure, have no direct interest in observing this particular subpopulation.
32. In the case of statistics collected at market accommodation or at popular tourism site, it might happen also that nationality is collected instead of country of residence, and those that are not well classified have often to do with nationals that are non-residents, or foreign residents, that is, when nationality and residence do not coincide.
33. In the case of information derived from household surveys, if its design is based on administrative records (such as voting lists for instance), foreign residents or young adults recently independent might also be systematically omitted, generating a systematic bias in the estimation.

### *Particularities of the trips*

34. **Duration of trips:** the value of this variable might be different, according to the sources used:
- At the border, usually, what will be measured is the difference between the date of entry and the date of departure (or the date of departure and the date of reentry); nevertheless, in some cases, it will be only the expected duration of the stay (or of the absence) if based on declaration at entry (or departure);
  - In the case of household survey, what will be measured is the duration of the absence from the place of residence, which might differ from the previous measurement for the time that is required to get or arrive from the border crossing, an interval that might even include overnights in other parts of the country of residence of the traveler;
  - At market accommodation establishments, what will be reported will be the duration of stay, which might not coincide with the duration of the trip as visitors might use multiple accommodation facilities while on trips;
  - At popular tourism site, what will be measured will be the expected duration of the trip, as the trip is not over when the visitor is observed.
35. **Place of accommodation**
- At the border, the information collected, mainly when through an immigration officer and upon arrival, might be biased, in particular for visitors that have not totally decided on their place of stay. When interviewed on departure, care should be taken that all forms of accommodation actually used (if more than one) be reported;
  - In household surveys, this information should be reliable if the different forms of accommodation, as asked in the questionnaire, are easily identifiable by the visitors;
  - At market accommodation, those using more than once this form of accommodation will be over-represented while those not using this form of accommodation will not be included;
  - At popular tourism site, only what has actually happened until this moment will be reported with accuracy.

### *Recall biases and other biases*

36. Depending on the different sources of information used, there will be biases in the information collected that compilers should be aware of:
- Information collected at the border: as information is collected when the visitor returns to the country or leaves it, the moment (especially at land borders) is not the best one to ask him/her about the particularities of his/her trip and the associated expenditure;
  - The same might occur at popular tourism site, in which the visitor is in the plan of visiting, and being asked about his/her trip and expenditure might rather upset him/her, and induce incorrect information;
  - In the two other circumstances, (household survey and market accommodation), but depending on how the survey is conducted (direct interview, questionnaire left to be filled, CATI, etc.), there will be more time to review the conditions of the trip and the associated expenditure; regarding expenditure, in the case of market accommodation, the trip is not over, and many expenditure (in particular shopping) might have been left for the last moment;

in the case of household surveys, depending on the period of reference, biases may happen, both on the trips themselves and on expenditure; on the other hand, recalling actual amounts spent might be easier, as it is possible to consult receipts, credit card slips, etc., though conscious or unconscious biases might also occur when it appears that too much money has been spent, or spent on “immoral” items.

- Unfrequent purchase of high value items will usually not be well captured through surveys, and alternative measurements should be considered (for instance, special survey at jewelries, or at art galleries, etc.)

#### *Frequency of observation and periods of reference*

37. For each of the above mentioned sources, the frequency of observation and the periods of reference of the data that has been collected might be different, and this needs to be taken into consideration when comparing the data.

- Surveys at the border: in some countries, surveys at the border are not collected during a complete year but only during specific intervals of time, considered for instance as typically peak or low seasons; for the remaining periods, an estimation is made based on some form of combination of the data corresponding to these seasons; in some countries, observations (in particular of expenditure) are only made from time to time, and those observations are extrapolated to other periods, based on assumptions regarding the stability of expenditure ratios at constant price associated with specific characteristics of visitors and trips;
- Household surveys: issues relating to recall biases associated with large periods of references for reporting trips have already been mentioned (see IRTS Compilation Guide chapter 3 Box 3.9: *A research of the effect of expanding the period of reference to report tourism trips: the case of Spain*); in this case also, because of their elevated cost, surveys are infrequent, and estimating trips and their associated expenditure in circumstances different from those in which some behavior was observed (for instance, some downturn of the economic context) might be risky; lighter ones, using CATI technology have the inconvenience that the data provided by individuals are difficult to check, and can only be quite global;
- Surveys at market accommodation and at popular tourism sites: these surveys might be held more frequently than those previously described as they are cheaper, and their statistical design is also simpler; their possible biases have already been mentioned; but they might be used to provide some general trend of those trips that belong to their scope.

#### **A.5. Additional checks**

38. Additional checks are also possible: in the case of outbound/inbound tourism, a reasonable way for validating the accuracy of data is to check coherence with inbound/outbound tourism data for a selected number of those countries that would qualify as main destination/origin countries for the country's outbound/inbound visitors (mirror statistics).

39. Once sources have been compared, it is also necessary to validate the internal consistency of the information derived from the processing of the aggregated data. Compilers should review the information using consistency checks, and ensure that the data present a logical organization, that corresponds to expectations. Association among the different characteristics should also be reviewed: visitors on business trips should prefer staying at hotels or other organized form of

accommodation, will stay at higher standard accommodation establishments, usually stay alone in their rooms, so that their average expenditure per person per day will be higher, with a higher incidence of accommodation, while those coming to visit family and friends should tend to prefer staying with family or friends will have a lower expenditure on accommodation, and have a lower average expenditure per day; etc.. Those coming for study should have a larger duration of stay than other types of visitors. Those coming for meetings and congresses on the other hand should have shorter lengths of stay.

40. The results can also be compared with that of other countries of similar tourism characteristics. Logical data should always be preferred; unexpected rankings should have an explanation and might lead to a critical review of sources.

## **B. Tourism demand and supply statistics**

### **B.1. Adjusting the presentation of demand side data**

41. Once the level and structure of tourism expenditure has been established, the vector that has been obtained should be compared with supply. The coherence and consistency can refer to tourism expenditure, tourism consumption, or even to the wider scope of total tourism demand (including gross fixed capital formation and tourism collective consumption): in each case the challenges will have different levels of complexity. For the time being, this paper will focus exclusively on the coherence and consistency process of tourism expenditure estimated from the demand side and supply side statistics.
42. First of all, expenditure data in terms of COICOP (as derived from demand side statistics) have to be converted in terms of the CPC classification, or into any other derived national classification that is of current use in the national basic supply side statistics or in the National Accounts. This is a pre-condition for the reconciliation exercise. Tourism characteristic products, whether internationally or country specifically determined, should be explicitly presented, separately from the other products consumed by visitors.
43. This conversion is not totally straightforward, and it might be necessary, initially, to begin with certain assumptions (for instance, looking at structures used in countries with similarities in tourism activity), ask for ideas from stakeholders, and other initiatives that could be considered adequate. Such process might identify some type of adjustments that could be envisaged.
44. This challenge is related, not only to the fact that a functional classification (that of COICOP) is different from a classification based on the nature of the products (a CPC base classification), but also to the fact that has already been mentioned that usually (and this is the recommended procedure), visitors will report primarily in terms of amounts paid to different providers rather than on specific products. Some examples should be borne in mind:
  - in the case of accommodation, visitors will report the whole bill paid to hotels that will include all items charged (rooms, eventually food if all is not included in the plan, laundry, phone, etc...), but this will also happen for other products consumed by visitors, in particular for goods, when using information coming from credit or debit cards (electronic prints); as previously mentioned, what hotels charge to visitors might not strictly correspond to what they report as income in their accounting statements, as the payments might include indirect taxes (VAT, head taxes), and service charges that accrue to employees and that some businesses consider as income of the employee's fund or even do not take into consideration at all (small businesses in particular);

- additionally, visitors might include in their expenditure the voluntary (or not so voluntary) tips they have paid in hotels, restaurants, taxis, etc. which usually are not reported on supply side statistics (but should legitimately be included so that the value of supply should be adjusted...);
  - it has been already mentioned that in tourism statistics, reservation services should be treated following the “net valuation” approach ([IRTS 2008, 6.50](#) and [TSA:RMF 2008, 3.21 to 3.24](#)), irrespective of the transactor that actually is charged for the service. This is not how visitors see their expenditure and not always how suppliers of the services sold through their intermediation present their accounts; a correction should be made on the basis of what the national practice is for domestic and outbound tourism, and on the basis of what is supposed to be the practice at international level in the case of inbound tourism;
  - in the case of visitors traveling on a package, its unbundling, even when its product components are identified, is a tricky issue, that involves various assumptions on the shares of the different components within the total, as well as estimating the share corresponding to resident vs. non-resident providers, an estimation that adds some level of uncertainty to the estimation of tourism expenditure, and possibly the need to adjust the underlying assumptions as the system is progressively put in place.
45. The variables to be analyzed should not only refer to values, but also to non-monetary indicators. It is typically the case of accommodation in which number of guests, number of overnights, etc. will also need to be compared; the same occurs in the case of car rentals in which the number of vehicles and the day-vehicle rented will also need to be reviewed for consistency. Nevertheless, in this comparison, the observations regarding the lack of consistency between demand and supply side information in assigning flows of visitors to the different periods of time might need to be taken into consideration.
46. Finally, it should be recalled that part of the expenditure of visitors on outbound trips is to be considered as part of domestic tourism expenditure.

## **B.2. Adjusting the presentation of supply side data**

47. Similarly, the presentation of supply side data will need to be adjusted, mostly if data derive from general purpose surveys, or surveys not specifically designed within the conceptual framework of tourism statistics. A specific case is that of comparing annual and short-term statistics directly from annual or monthly surveys, and those coming from the Supply and Use tables of National Accounts, that might coincide or not: all these sources should be analyzed, in particular if the link between them is not clearly stated by compilers.
48. Industries should be classified according to the classification proposed in the [IRTS 2008](#), in which tourism characteristic industries are specifically highlighted and the recommended tourism classification should be applied.
49. As previously mentioned, the “net valuation” principle should be applied to reservation services and reservation activities, a principle that frequently is not applied in national compilations of services statistics, in particular in the case of travel agencies, which principles of recording are not always adjusted to homogeneous standards.
50. When relevant, the associated non-monetary indicators should be also tabulated, into as much detail as possible.



### **B.3. The case of accommodation**

51. Because of the particularity of accommodation services for visitors for which most of the supply is acquired by visitors, it is recommended to initiate and focus the reconciliation of demand with supply on these products. Additionally, accommodation data (both the aggregate product and its different components) are usually available in most countries.
52. The comparison should encompass both non-monetary indicators and values and should be based on the assumption that 90% or more of the supply of accommodation services should presumably be consumed by visitors. Both if this apparent percentage is higher than 100% or if it is lower than 90% should be a concern.
53. Global values, detailed values and global and detailed non-monetary indicators (number of stays/guests; number of overnights), all of them should be compared to see which seem relatively similar, and which present major differences within the accepted range. The UNWTO Compendium of Tourism Statistics includes a selected number of basic data and indicators that could be used for such purpose.
54. First of all, it is necessary to check that similar kinds of classification of products are used for supply, demand and the different forms of demand (inbound tourism and domestic tourism): if it is not the case, an intermediate classification should be proposed where comparisons might be made (short term solution), and in the long term, plans should be drawn on how to improve the procedure and unify classifications.
55. If stays and overnights seem similar, but values are different, then it might be an issue of unit value, and the explanation might be on what is or not included on the one side (demand) or the other (supply): tips, service charge, taxes, additional purchases, etc., or on the unbundling of packages. All the elements that might factor in have to be detailed, and the effects of proposed changes simulated.
56. If unit values seem acceptably similar, but stays and overnights are very different, then it might be that on the one side or the other, there is an under- or over-valuation of the flow, consequence of the statistical method used (for instance, it might happen that there is an implicit bias in the procedure).
57. If nothing seems similar (neither unit values, nor monetary indicators, etc.), then it is necessary to sit the inter-institutional platform together to find a way out of this situation. Particularly in the case in which national accountants have not yet developed a Supply and Use table, this situation might happen (as no systematic reconciliation has ever been developed on macroeconomic data, so that they might be inconsistent from start).
58. It should then be necessary to look at other available information, for instance at household consumption, (budget household survey: consumption of hotel services by resident households), data managed by tourism related business associations, other countries with similarities, etc. in order to look for clues that would provide some guidance.

### **B.4. The case of passenger transportation**

59. Once accommodation has been reconciled, other products should be considered, mainly tourism characteristic products such as passenger transportation, food and beverage serving services, and others.

60. Regarding passenger transportation, what should be compared will depend on the level of disaggregation that is available, both in terms of supply and of demand, and on the importance of a given mode of transport in an economy; this importance is highly related with the size of the country and the current use of each mode of transport. For instance, railways, international, interstate bus transportation or water transportation do not exist in all countries on a similar relative scale.
61. It will be necessary to treat separately international transport from local transport as their intensities of use by visitors are not comparable. Additionally, in the case of international transport, foreign providers have also to be considered, from which information is often more difficult to obtain.
62. Additionally, frequently, surveys measuring expenditure of international tourism (inbound and outbound) either do not measure expenditure on international transport at all, or do not provide all the necessary information to assign this expenditure, either to a resident to resident transaction (part of domestic tourism expenditure), to a non-resident to non-resident transaction (excluded from the measurement from the point of view of the country visited) or to a non-resident to resident transaction (part of inbound or outbound tourism expenditure) because of the existence of interlining and codesharing.
63. For this measurement, it will be necessary to collaborate with Balance of Payments compilers and use as a source a common estimation of the international passenger carriage item, and identify which part of it corresponds to inbound and outbound tourism expenditure, and which to other travelers or to other types of operations.
64. If in the case of accommodation, it is reasonable to estimate that 90% or more of output is consumed by visitors, it is much more difficult to propose any percentage in the case of transportation or of any other tourism characteristic product as many may be acquired within the usual environment of the consumer: case of transport for instance, if the definition of the usual environment is relatively ample and if people currently travel large distances between home and work or study or within their life routine; case of food and beverage serving services if people working or studying away from home currently take meals outside their homes, etc.

### **C. Integration of tourism statistics in the TSA**

65. Once the coherence and consistency between tourism demand and supply statistics have been set, the next step is to determine which values need to be consistent (usually this process intends to unify original values but it could also try to define an acceptable range instead). The point then is to decide or find out whether this change with relationship to the values that had been proposed initially would also induce other changes in other elements of supply or of demand.
66. For instance, if stays at market accommodation as well as overnights are modified in the demand side, does that mean that the total number of visitors (trips) is maintained, and the proportion of those using market accommodation is modified; or that the structure is maintained and the whole account is modified; or any combination of these two possible extreme assumptions? This needs to be discussed, and the assumptions behind the decision that is taken clearly formulated, so that the interinstitutional platform might discuss the topic, and, more importantly still, that this decision might be maintained in the future to insure consistency, at least while new sources of information appear and new circumstances are identified.



67. For instance, in the case of supply, it might affect the occupancy rate, the grossing up of the survey data, value added, employment, etc. of specific segments of supply, and this needs to be clarified.
68. In the case of products other than accommodation, usually, if tourism demand is modified, it should not affect importantly supply as tourism demand usually represent a smaller percentage of supply, unless it is notoriously too high or too low, but basically other components of demand and their adjustment will need to find an explanation.
69. Once these coherence and consistency initiatives have been completed, the next step is to integrate these data into the TSA. This might require a second round of adjustment: the following text refers to Canada and explains how Statistics Canada does it (Demi Kotsovos *"Tourism Satellite Account: Reconciling supply and demand and integration with National Accounts"*, 2013).
70. For tourism statisticians the following paragraphs might be of interest as they highlight that this second round of adjustments might be also due to the way TSA is related and linked to the National Accounts. For clarity, explanation will start from NA to TSA and then, back again to tourism statistics.
71. The TSA is the unifying framework for national Systems of Tourism Statistics but at the same time should be satellite to the National Accounts of a country, that is, its links to the National Accounts should be at both levels: that of concepts / definitions / classifications and that of tables and aggregates. The conceptual consistency has been one of the major concerns when setting up the internationally recommended TSA conceptual framework so that countries, if applying strictly the international framework, should have no major difficulties in complying with this consistency. Nevertheless, when turning to the concrete setting up of the data, in many countries, this might not be necessarily the case, mostly at the beginning of the process, but should be a medium or long term objective of all the process. It is important to understand why.
72. As the National Accounts are supposed to include the measurement of all economic transactions that occur among residents of an economy, and between residents and non-residents, all tourism transactions should be included also and properly accounted for.
73. Nevertheless, the proper measurement of transactions related to tourism will depend on their macroeconomic importance, on the availability of data and on the resources, human and financial, that the team in charge of the compilation of the National Accounts might be willing to dedicate to this specific domain, and all the more so that tourism is not explicit and isolated within the classical presentation of National Accounts. Because of its trans-sectional nature, tourism is not visible as such within the National Accounts System.
74. One of the challenges when setting up TSA tables 1-6, is to understand in detail how the Supply and Use table of the National Accounts of the country deal with intermediate consumption by resident agents in the rest of the world (an import) that occurs in a way similar to mode 2 of GATS mode of supply, that is defined as consumption abroad: this import occurs when the consumer is who displaces himself to the place where consumption takes place: this is typically the case of visitors on business trips, that consume abroad goods and services, and for which part of their expenditure (principally on accommodation and local transport) is treated as an intermediate consumption of the business that employs them. This service is not brought into the national economy to be used there, as is the case of other types of consumption of imported goods and services, but it is the consumer that goes abroad in order to acquire it.

75. In the Supply and Use Tables of the National Accounts as recommended by [SNA 1993](#) and [SNA 2008](#), detailed household final consumption expenditure by product refers to the final consumption expenditure of resident and non-resident households within the domestic economy, whereas such clarification is not made in the case of the intermediate consumption of other transactors. If transactions in the central core of the supply and use tables refer to economic transactions that occur in the economic territory, all adjustments that take into consideration acquisition by residents in other territories to be consumed there should appear outside the core of the Supply and Use table, in the adjustment lines called “consumption of resident households abroad” (balanced by an equivalent import value) and “consumption of non-resident households in the economic territory” (balanced by an equivalent export value). Nevertheless, the numerical example brought by [SNA 1993](#) and [SNA 2008](#) does not seem to allow for intermediate consumption to be included under this heading that only seems to correspond to final consumption expenditure by households. The question is then to find out how the country sorts out the problem posed by “intermediate consumption of resident producers abroad”, in particular in the case of accommodation, for which this consumption assigned to intermediate consumption by businesses might represent a significant part of consumption by residents abroad.
76. If countries apply directly what seems to be the [SNA 2008](#) recommendation, then, first of all, in principle, for each product in the supply and use table, household final consumption expenditure represents (theoretically) the final consumption expenditure of households (residents and non-residents) in the economic territory, which is derived from the final consumption expenditure of resident households (observed through household surveys) adding direct final consumption expenditure of non-resident households in the economy, and deducting direct final consumption expenditure of resident households abroad (the “territorial adjustment”). What happens to the consumption abroad that National Accounts considers as intermediate consumption? How countries answer to this question will define (in part) how outbound tourism consumption is integrated within the System of National Accounts.
77. This example shows that, although conceptually, all TSA data are already embedded within the National Accounts, and its compilation should in theory only correspond to “undigging” the hidden information and presenting it differently, in particular when recording a certain number of transactions in a net form instead of gross (case of reservation services, including travel agency services) in fact, if a real compilation of a TSA is being done, not as only showing how tourism is perceived in the National Accounts, but as the unifying framework of the System of Tourism Statistics, it is necessary for TSA compilers to proceed from the beginning, using data from the System of Tourism Statistics, constructing demand (provisional estimation of tables 1 to 4), supply (table 5) and coherence and consistency the flows and the values (table 6), in a way that is very similar to the setting up of a Supply and Use Tables.
78. If in this exercise, the data on supply that are used are statistically different from those that figure in the Supply and Use tables of the National Accounts, tourism statisticians will need to have thorough discussions with National Accounts compilers to review together the reasons of the differences, and see whether a way out exists. The same in the case of consumption: is intermediate consumption of tourism characteristic products (accommodation services, food and beverage serving services, etc.) that appears in the Supply and Use table consistent with the measurement of business tourism expenses in the System of Tourism Statistics, etc.?
79. Because the techniques to be used in framing the TSA are very similar to those used in setting up a Supply and Use table (in which supply and demand are to be progressively reconciled), it is recommended that the compilation of the TSA be developed as a specific project under the responsibility of the entity and unit in charge of the compilation of the National Accounts.

80. Recognizing the limitations in the measurement of tourism both from the demand and from the supply side, it is often the case that, after a solid work on tourism statistics, compilers find out that both the part corresponding to demand and that corresponding to supply are not totally adequately taken into consideration within the National Accounts of the country.
81. Compilers face two possibilities: either to adjust the tourism statistics to the existing National Accounts, with the danger of providing a distorted image of tourism in the economy, and the risk that distorted data might lead to wrong decisions: or to acknowledge the differences, explain them, and postpone the full integration to a further date, in which the National Accounts will be reviewed, either as an adjustment to the existing ones, or within the compilation of a new series of Accounts and a recalculation of some or all of its components, within which the tourism components will be taken into consideration as part of the adjustment.
82. The second solution is by far the best one, although it would not allow calculating strictly and right away the share of tourism in the economy in a proper way, because of the lack of total consistency in the measurements of tourism related variables and of the National Accounts. Nevertheless, in the future, it would make it possible for tourism to be taken into account more seriously and to be recognized, from the very beginning of the compilation of the National Accounts, to bring its view on the consumption corresponding to visitors.

**D. Comparison of tourism statistics with the Balance of Payment “travel” and “passenger transport services” items**

83. The Balance of Payments presents itself as a set of partially reconciled accounts (errors and omissions closing the gap) that represents all transactions between residents and non-residents: as a consequence, it encompasses inbound and outbound tourism expenditure. These are embedded in the “travel” and “passenger transport services” items and therefore, both items are often used as a first approximation to the value of outbound and inbound tourism expenditure especially for international comparability purposes. This is the assumption used in the case of the *UNWTO Compendium of Tourism statistics*.
84. Nevertheless, there are many differences between Balance of Payments measurements and that of international tourism that have been extensively discussed in [IRTS 2008, Chapter 8, Section B “Tourism and balance of payments”](#).
85. Balance of Payment and tourism statistics refer largely to similar populations: visitors are a subset of travelers which is the population to which the “travel” item relates. Therefore, expenditure by travelers and those by visitors need to be observed consistently.
86. In compiling the Balance of Payments, the process followed is that for each item, and often autonomously, the best estimate is sought. Until recently, the recommendation was to estimate the “travel” item using the International Transaction Recording System (ITRS) whereas passenger transport was estimated using information collected from carriers.
87. Presently, as most countries have eased the restrictions regarding the holding and use of foreign currencies, and because many transactions by individuals are now performed using a variety of forms of payments, among which international credit and debit cards that are not covered by traditional IRTS, the following four sources are recommended and could be used and combined to measure travel expenditure: One approach measures instruments used to pay for travel. Besides cash and travellers checks, the most common instruments are credit and debit cards, and prepaid

tours and advances. Another approach measures the flows of travellers at the borders and the types of goods and services they acquire. A third approach uses partner country data, and a fourth one uses a data model.

88. When applying the new BPM6 recommendations, Balance of Payments compilers will be facing the need to break down the “travel” item as follows:

1.A.b.4 Travel

1.A.b.4.1 Business

1.A.b.4.1.1 *Acquisition of goods and services by border, seasonal, and other short-term workers*

1.A.b.4.1.2 *Other*

1.A.b.4.2 Personal

1.A.b.4.2.1 *Health-related*

1.A.b.4.2.2 *Education-related*

1.A.b.4.2.3 *Other*

*For both business and personal travel*

1.A.b.4.0.1 *Goods*

1.A.b.4.0.2 *Local transport services*

1.A.b.4.0.3 *Accommodation services*

1.A.b.4.0.4 *Food-serving services*

1.A.b.4.0.5 *Other services*

*Of which: 1.A.b.4.0.5.1 Health services*

*1.A.b.4.0.5.2 Education services*

The new breakdown “*For both business and personal travel*” is suggested as a “supplementary item”.

89. These categories do not match totally with the classification principles used, neither for demand (derived from COICOP), nor for supply and a TSA framework, in which the classification is derived from CPC.
90. The table that follows points at certain aspects of discrepancies that compilers should bear in mind when comparing data and integrating processes. When discussing information from the demand side (and this will be the most current perspective), the differences originate first of all in the fact that tourism demand side statistics stick to a functional classification of expenditure, to be closer to the informer, and second to the differences in the way travel agency services and package tours are treated.
91. It should be observed that, once the difference in coverage has been taken care of, the difference in those treatments might generate differences in the corresponding levels of both credit and debit transactions, although without affecting their difference.
92. Nevertheless, the scope of travel and visitors expenditure will be affected not only by the fact that there are travelers that do not qualify as visitors, but also due to specific measurement issues.
93. Collaboration between tourism statisticians and BOP compilers is already in place between the UNWTO and the IMF, and the international recommendations for the compilation of inbound and outbound tourism expenditure on the one hand, a responsibility of the UNWTO, and the recommendations for the compilation of the “travel” and “passenger transport service” items on the other hand, a responsibility of the IMF, are being made totally consistent. The *Balance of*

*Payments and International Investment Position Manual (BPM6) Compilation Guide*, will provide updated guidelines for the measurement of these items that will be totally consistent with those to be found in this paper, and should be consulted also by tourism statisticians.

### Examples of divergence in Classifications of different items according to different classification principles

When speaking of Balance of Payments, it will be implicit that reference is made to international tourism (inbound or outbound); in the case of tourism expenditure by purpose and TSA, it refers to all forms of tourism.

Description	Tourism expenditure by purpose	Balance of Payments	TSA
Ticket on international airline, bus line or train (inbound: on national airline; outbound: on foreign airline)*	v. International transport (gross valuation)*	International passenger carriage (gross valuation) if no special invoice is made to traveler for travel agency services. If a separate invoice is made to traveler, this invoice is included in BoP (travel: services) if a resident to non-resident transaction*	3. or 4. or 5. 6. Railway, road, water, Air passenger transport services (net valuation); The value corresponding to travel agency services will be treated according to the nature (resident to non resident) of the relationship as domestic or outbound tourism expenditure*
Package bought abroad by an inbound visitor	Broken down in its components and each part separately considered and classified as corresponds as non-resident to resident transactions	If fare on a resident carrier, portion corresponding to Fares will be included in international passenger carriage; (including, eventually fees payable by carrier to travel agency); all the rest of the value of services provided in country of reference treated as intermediate consumption of non-resident packager: not in travel	Broken down in its components and each part separately considered and classified as corresponds as non-resident to resident transactions
Package bought in the country by an outbound visitor	Broken down in its components and each part separately considered and classified as corresponds as non-resident to resident transactions	If fare on a non-resident carrier, portion corresponding to Fares will be included in international passenger carriage; (including, eventually fees payable by carrier to travel agency); all the rest of the value of services provided abroad treated as intermediate consumption of resident packager: not in travel	Broken down in its components and each part separately considered and classified as corresponds as non-resident to resident transactions
Tolls paid by a visitor travelling on road	iv. local transport	Travel: services	Other non-tourism characteristic product
Gas paid by a visitor travelling on road	iv. local transport	Travel: goods	Other non-tourism characteristic product
Car rental paid by a visitor	iv. local transport	Travel: services	7. Transport equipment rental
Payment of laundry within the hotel bill	ii. accommodation	Travel: services	Other non-tourism characteristic product
Bar services invoiced within the hotel bill	ii. accommodation	Travel: food and drinks	2. Food and beverage serving services
Food purchased by a visitor for him/her to prepare	iii. food and drink	Travel: goods	Other non-tourism characteristic product
Purchase of sport equipment to use on the trip (f.i. skis)	vi. recreation, culture and sporting products	Travel: goods	Other non-tourism characteristic products

Description	Tourism expenditure by purpose	Balance of Payments	TSA
Purchase of handicrafts in country visited	vii. shopping	Travel: goods	Either country-specific tourism characteristic good or other non-tourism characteristic product
Medical services	viii. others (if relevant: health)	Travel: health services	Either country-specific tourism characteristic service or other non-tourism characteristic product
Drugs	viii. others (if relevant: health)	Travel: goods	Other non-tourism characteristic product
Tuition in a university (short course)	viii. others (if relevant: education)	Travel: education services	Either country-specific tourism characteristic service or other non-tourism characteristic product
Study materials	viii. others (if relevant: education)	Travel: goods	Other non-tourism characteristic product
Purchase of newspaper	viii. others	Travel: goods	Other non-tourism characteristic product

The difference in treatment of taxes and other fees included in the value of a ticket (for instance airport taxes) is not discussed here.

94. This is another reason why the interinstitutional platform should include, not only TSA and National Accounts compilers but also the compilers of the “travel” and “international passenger carriage” items so that methods of estimation be totally consistent and coordinated in the field, and as a consequence, values will be consistent too.
95. In the meanwhile, the compilation of tourism statistics using relevant statistical sources might bring some new lights for some countries on the “travel” and “passenger carriage” items that frequently have been accepted as true without further discussion.

<p>Some issues that have clear implications for tourism statistics might still require further review:</p> <ul style="list-style-type: none"> <li>• The treatment of commissions and fees paid to travel agencies by travel services providers. In this case, Balance of Payments recommends a gross measurements whereas a net measurement is recommended when passengers pay this fee directly; in tourism statistics, a net measurement is recommended in all cases so that the treatment is always homogeneous, and the accounts of travel agencies may be given an interpretation;</li> <li>• The treatment of payments among airlines for codesharing and interlining needs to be clarified, and the treatment of these payments among airlines as transactions need to be determined in terms of types of services provided;</li> <li>• The use of “miles”. This is only a means of payment, that does not influence on the value of the service provided, but only on how it is paid for: it is not a “travel” issue, and the ticket should be valued for its market value;</li> <li>• How, within a ticket covering both international and domestic transportation, separate the two segments, as one part has to do with international passenger carriage while the other is part of “travel”?? How, within a ticket covering both transportation by a resident carrier and transportation by a non-resident carrier, separate the two segments as they will require to be treated differently?</li> </ul>
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