

Measuring Tourism Locally

Guidance Note Two: Local Economic Impact Modelling Approaches

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Editor: **Sean White**

Office for National Statistics

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Contacts

This publication

For information about the content of this publication, contact: Sean White
Tel: 01633 455687
Email: sean.white@ons.gsi.gov.uk

Other customer enquiries

ONS Customer Contact Centre
Tel: 0845 601 3034
International: +44 (0)845 601 3034
Minicom: 01633 815044
Email: info@statistics.gsi.gov.uk
Fax: 01633 652747
Post: Room 1.101, Government Buildings,
Cardiff Road, Newport, South Wales NP10 8XG
www.ons.gov.uk

Media enquiries

Tel: 0845 604 1858
Email: press.office@ons.gsi.gov.uk

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Guidance Note Two: Local Economic Impact Modelling Approaches

Sean White, Tourism Intelligence Unit

1. Introduction

This guidance note is produced as part of a series of notes by the Tourism Intelligence Unit at ONS with the aim of providing a consistent framework within which to measure and collect data on various facets of tourism activity. The guidance notes produced to date are:

- Guidance Note 1: Definitions of Tourism
- Guidance Note 2: Local Economic Impact Modelling Approaches
- Guidance Note 3: Undertaking Visitor Surveys
- Guidance Note 4: Tourism Benchmarking and Performance Indicators
- Guidance Note 5: Measuring the Supply Side of Tourism

This particular Guidance note concentrates on approaches to modelling the local economic impact of tourism and includes some general advice on modelling approaches and specific details on particular proprietary models in use in the UK. It is important that this framework is referred to by users when embarking on local economic modelling studies.

The guidance note is aimed at tourism or economic development officials in local government and destination management organisations or partnerships who are faced with estimating the economic impact of tourism in their local area. It will also be of use for regional tourism organisations.

The guidance notes produced by ONS refer to international recommendations on the collection of tourism information from the UNWTO, Eurostat and OECD.

The focus of this guidance note is to explore and identify:

- What is tourism and why is it difficult to measure?
- What sorts of data are required and why we want it?
- Why model and what type of model?
- Factors which need to be taken into account in the use of models
- Assessing the output of models
- Detailed assessment of data requirements

The DCMS's 1998 guide *Measuring the impact of tourism locally* provides some useful conceptual background on various approaches to measuring the impact of tourism locally. The aim of the DCMS guide was to “encourage good practice in the production and use of information covering the key aspects of any local tourism economy, so that tourism policy and operations can be run on data that are reliable and robust enough for the task in hand” (DCMS, 1998). This series of guidance notes from ONS seeks to update the DCMS guidance.

The need for local area information is not unique to tourism. The options available to provide local tourism data mirror what is done in other subject areas in order to build a local information system. Such systems call on a range of sources and experiences during their development and operation. They may involve building a ‘model’ of the subject of interest in the local economy, to produce estimates out of the statistical information that is available. Some data to feed the model may be derived locally, from surveys or other sources, including local administrative records. We might want to concentrate on collecting local data, rather than building a model, as the way of compiling the information needed for local tourism policy making.

The purpose of this guidance note, and the others in this series, is to encourage good practice in the production and use of information covering the key aspects of any local tourism economy, so that tourism policy and operations can be run on data that are reliable and robust enough for the task in hand. The purpose of these is to ensure good practice in the choice and subsequent delivery of local data. This includes striving for the use of standard variables and definitions for the main tourism concepts.

It is important that this guidance is seen in combination with the Partners for England Place Making Charter. The Charter promotes continuous quality improvement and provides a core set of principles (integrate; inform; innovate; invest and improve) to be championed by stakeholders in a destination - recognising that places are unique. By signing up an organisation is agreeing to champion excellent destination management in their area and identify where delivery responsibilities lie.

In summary the key aims of “Place making – a Charter for Destination Management” are:

- Awareness – to influence prioritisation by national and regional bodies, local authorities and businesses
- Clarity – roles and responsibilities of key players
- Focus – on destination management and place-shaping
- Partnership – encourage and foster collaboration in a fragmented sector
- Improvement - drive continuous quality improvement

The guidance notes produced here can contribute to this drive towards quality improvement and given the move towards localism these guidance notes on measuring tourism locally are particularly timely.

2. What is tourism and why is it difficult to measure?

The internationally agreed definition of tourism goes beyond the concept of tourists as being the same as holiday-makers, and indicates that that:

“Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes ... tourism refers to all activities of visitors, including over-night visitors and same day visitors.”
(UNWTO, OECD, Eurostat, International Recommendations on Tourism Statistics. 2009)

Issues exist concerning acceptable and practical definitions of a number of the elements referred to above. These are covered in detail in Guidance Note 1.

There is no such thing as a tourism industry but it is major sector made up of many individual component Industries. For example: The airline and other transport industries; hotel and other accommodation industries; leisure and entertainment industries, and so on. Indirectly it involves and affects many other industries in the economy such as: Agriculture; Retail; Building; and Finance.

Within the tourism industries - transportation, accommodation, entertainment, retail, catering, and other activities (see guidance note 1 for more detail) - each has developed its own definitions, classifications and methodologies for data collection. The result is that there is little commonly understood or commonly usable communication of tourism statistics. Most attempts at the defining of tourism have revolved around the definition of the user - the so-called “tourist”. Each industry again describes the tourist user differently as guest, customer, passenger, visitor, client, and so on. Furthermore, in each of these industries tourism represents only part of the use of available capacity.

Because of this lack of understanding of tourism, the value and volume of its demand can be underestimated which can limit the full analysis of demand potential and consequent development. The best source of information on the pattern of tourism activity in the local area will come from a well conducted visitor study. See guidance note 3 for more detail on conducting visitor surveys. Such studies require substantial investment of resources, and therefore local authorities and others will normally wish to assess what information is already available before considering the need for a study.

Information on the levels and characteristics of tourism activity is available from a range of information sources at national and local level.

2.1 National Data Sources

There are a number of national surveys undertaken by Government and its agencies which provide information at national, regional and county levels (and equivalent). These include:

- The United Kingdom Tourism Survey (UKTS)
- The International Passenger Survey (IPS)
- The Various surveys of day visitors, the last being the English Leisure Visits Survey 2005
- National and regional occupancy surveys (for example, the England Occupancy Survey)
- Survey of Visits to Visitor Attractions

- Eventia surveys of business and conference activity
- ONS data on the supply side of tourism
- Ad-hoc analyses of particular topics of interest produced by the national tourist boards and regional development agencies and/or regional tourism offices.

National surveys do not normally report below county level because of limitations on accuracy arising from the size of the sample and/or methodology used

2.2 Regional and local data

- The known stock of accommodation
- Information on the number of visits to visitor attractions and details of events are collected at the regional level and often by local authorities as well. However, visitor numbers will include local users as well as tourists and excursionists from outside the area
- The number of visits to Tourism Information centres is available from TIC operators, although a proportion of such visits will be by local residents
- Information on traffic flows and car park usage may also feed into developing a picture of the seasonal variation in leisure and tourism activity

Collectively these indicators can help to begin to build a picture of tourism activity in any particular area.

2.3 Local Surveys

Local visitor surveys can provide valuable information on the visitor profile in an area. In particular they can distinguish between tourists staying in the area and day visits from home or holiday accommodation outside (or within) the area. They can also collect a wide spectrum of information, including accommodation used, activities undertaken, group and personal characteristics and spending patterns. In conjunction with methodology to measure changes in volume over the year, they can provide an accurate description of the volume and value of tourism within the local area.

3. What data do we want?

First of all, establish your needs for local data. What are you trying to do, and why? How will information feed into your tourism policy development and tourism operations?

The first step to measuring the local impact of tourism should be to draw up a “user requirement”. This will establish your needs for local data and state the overall aim and specific objectives for the work. It makes sound business sense only to require information to meet these needs and which is accessible, verifiable, reliable, testable, and comparable with other information produced for the service industries and for tourism elsewhere. There are six key criteria, which should be addressed in drawing up any user requirement, these are listed in Box 1.

Box 1 Criteria to use in assessing the user requirement

Box 1 Criteria to use in assessing the user requirement

- a) Reliability: how accurate do you want the information to be for the purpose to which it will be put? There are two main aspects to accuracy, precision and bias, which we consider below;
- b) Timeliness, or how soon you want the information to be available following actual events;
- c) Participative, to involve those who will provide as well as those who will use the information;
- d) Cost: what is affordable, including the internal staff and other resources that you will need to support this work?
- e) Comparability: is part of your requirement to make comparisons with other local areas, or with regional or national total?
- f) Frequency: is the information required continuously, meaning, say, every year or every month? It may be as important to assess change over time as it is to estimate the level of tourism during a given period.

Although information on local tourism may be required for a range of purposes, the starting point has to be an assessment of the volume and value of tourism activity in the area.

3.1 Volume and value

The volume of tourism in any particular area will depend on the capacity of the area represented by the stock of facilities and infrastructure available to the tourist, and the level of use made by visitors (as opposed to local resident use) of that stock. It will be helpful therefore to consider the supply of tourism facilities available at a given point together with the use made of the facilities (tourism demand).

On the supply side, it may be helpful to classify the area by type, in order to make comparisons with areas of a similar type. On the demand side, it may be helpful to define main catchment areas for inbound tourism and to classify these areas. One suitable classification is the Office for National Statistics classification of local and health authorities of Great Britain, in which families, groups and clusters of areas are presented.

We have mentioned day visits as part of tourism but they are one of the most difficult aspects of tourism to define and to measure. We recommend that the definition that best captures the 'outside usual environment' concept underlying all of tourism is that day visits are:

- visits taken for leisure or business purposes, and
- lasting for three or more hours away from home, and
- not undertaken on a regular basis.

Tourism leisure day visits defined in this way are a minority of all the leisure day trips that people take. Recent data from a pilot day visit survey undertaken in 2009 suggests that tourism day visits represent 30% of total reported leisure day trips, with many 'day trips' either lasting less than three hours, or taken regularly, or both.

Day visitors to an area are defined on a different basis from this in the context of the Standard Spending Assessment. For SSA purposes, length and regularity of visit are not measured directly: it is those day visits into an area (e.g. local authority area) made by people from outside that are counted as contributing to the enhanced population. This confirms that you must determine why you need statistical information on day visitors before collecting the data.

3.2 Economic

Indicators of the economic effects of tourism activity in the local area are likely to include estimates of local income, jobs and business linkages. The direct measurement of tourism activity, especially of tourism expenditure, presents only a partial picture of the economic impact of the tourism activity in an area.

- The gross direct economic impact of tourism is the total value of tourism spending in the area. This covers tourism spending in hotels, restaurants, shops, taxis, or any business that receives visitor expenditure directly. The net direct impact however needs to take into account the value of goods and services that are imported into the area in order to supply the tourist with goods and services.
- indirect effects arise from the generation of economic activity by subsequent rounds of expenditure (e.g. as hotels purchase food and drinks from local suppliers and use the services of local laundries, builders, banks, utility companies etc) Not all these effects will arise in the local area since some of this expenditure will go to suppliers elsewhere in the region or nationally.
- induced effects arise from the spending of income accruing to local residents from wages and profits during the direct and indirect rounds
- leakages of expenditure out of the local economy: such as savings and taxation, as well as the costs of imports of goods and services from outside the area already mentioned above
- opportunity costs: to take into account the cost of using scarce resources for tourism as opposed to alternative uses, as for example spending on the provision of tourist information centres, car parking and other facilities used by visitors. (and when tourism substitutes one form of expenditure and economic activity for another, this is known as the displacement effect).
- investment activity arising from capital investment in new facilities for visitors by private or public sectors (which also involve some consideration of opportunity costs.)

These are complex issues. Employment effects are similarly difficult to measure precisely, but one simple approach is to track employment in 'tourism related industries' (see appendix 5 and guidance note 5).

3.3 Social

As with economic and environmental impacts, the effects of tourism activity on local communities can bring benefits and disadvantages. These include:

- local employment both directly and indirectly
- increased range of local facilities and services which would not otherwise exist
- increased congestion and intrusion arising from visitors, mainly impacting during particular times of the year.

3.4 Environmental

Increasingly, local authorities and other interested bodies are concerned with measuring the impact on the environment of visitor activities. This is a difficult area for the tourism sector to manage. The environmental and cultural heritage of destinations are often what make that area attractive to tourists in the first place. There needs to be a promotion of sustainable tourism that can be defined as;

“tourism that meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future”. (UNWTO, 2008)

Rather than being a type of product, sustainable tourism is an ethos that underpins all tourism activities. As such, it is integral to all aspects of tourism development and management rather than being an add-on component.

Therefore we need to assess impacts which can be both beneficial and harmful, and can include:

- support from visitors for the conservation and presentation of ‘heritage’ features from historic castles to landscape or nature conservation sites where visitors are charged for entry or other services such as car parking.
- damage to sites or footpath networks arising from over use or badly managed use. Such damage is often limited in extent and seriousness but nevertheless should be addressed where it occurs.
- pollution generated by the tourism industry, such as emissions and waste generated by the tourism related industries.

The measurement of activity by area and by mode of transport can therefore be an essential element in monitoring impact and the effects of policy and management decisions.

The effects of tourism activity will vary depending on the relative scale of visitor activity vis a vis the normal level of activity generated by local residents and other economic activities. The impact is also likely to vary substantially by season of the year. Monitoring community effects may require additional surveys of residents to ascertain changing perceptions of tourism activity and impacts over time, which can be related to changes in the actual level and pattern of tourism activity.

3.5 Why do we want the data?

Tourism data is used in a variety of settings but four major categories of user needs can be identified:

- Advocacy, Planning and Public Awareness
- Marketing
- Investment, Operations and Management
- Manpower, Education and Training

Data is required at the national or “macro” level to establish the economic environmental and social impact of tourism and will have a bearing on policy development, tax, legislation, exchange rate changes, investment development, and strategic planning by Central Government. Such data

disaggregated to the local or “micro” level may be suspect as, equally, may be the variability arising from the lack of standards of accuracy of local variable inputs. In the main, such information is better generated at the local level for local government and local private sector use, although this, too, can be suspect on occasion.

Tourism is essentially a local or “micro” phenomenon. The strength of attractions at the local level combine to build a synergistic whole. It is at this level that the greatest difficulties exist. Most information stems from disaggregated information or from demand side survey work which can lead to underestimation of the value, volume and impact of tourism.

4. Why model and what type of model?

There are two main options when faced with choosing a modelling approach to measuring the economic impact of tourism at the local/regional level: either to use a branded model; or to commission a specific ad hoc study from an appropriate university or organisation. A branded model will probably cost less than a primary research model but will still provide exclusive results. On the other hand, an ad hoc model can be created to answer a wider range of explicit economic questions in the study area, and may also be used to forecast changes.

If the information you require is to measure tourism trends, branded models will deliver this. However, local circumstances may warrant the likely additional costs of an ad hoc study.

Local survey data can fill gaps in knowledge but many local authorities can only afford such surveys on an occasional basis. A modelling approach may be helpful in this case to overcome the information gap.

4.1 Roles and types of models

The role of a model approach is to provide the following information or services:

- Monitor trends
- Reflect the nature of local tourism
- Identify local peaks/troughs
- Help decision making and forecasting
- Evolve with local tourism industry

The DCMS report of 1998 on Measuring the Local Impact of Tourism highlights three types of model that we may employ to undertake an assessment of tourism's local economic impact: These are exemplar approaches, mathematical models and statistical models. Appendix One details these different approaches.

Economic impact models provide:

- estimates of the volume and value of tourism activity including day visitors within an area
- estimates of income generated and employment supported by visitor expenditure.

To produce these estimates, impact models identify three main effects.

- Direct effect – from visitor spending in first-line businesses.

- Indirect effect – from direct businesses buying from their suppliers and so on down the supply chain.
- Induced effect – from the wages earned in businesses in direct and indirect receipt of visitor spending.

Models generally include visitor and business surveys to establish the direct effect. Indirect and induced effects are estimated by using models that apply multipliers to the known direct spending data. See Appendix Two for more detail on these effects.

4.2 Visitor expenditure flows

Visitor expenditure affects businesses, employees, the self-employed, local authorities and government because spending in one local business gets passed on to other local businesses and also ends up, in part, as taxes. However, inevitably, some of this expenditure will 'leak' out of the area due to spending in non-local shops and/or on non-local products.

Although there is leakage outside the area at every stage of the spending model, the key to local economic success and a foundation for sustainable tourism is retaining as much expenditure in the area as possible.

4.3 Job creation

The number of jobs supported by visitor expenditure is estimated by using data on the volume and value of visitor and business spending, applying model multipliers, and validating the results against published labour statistics.

Models can be used to estimate local area information in a way that is robust enough for the purposes required. Most models rely on information about the supply of accommodation and demand information on overnight and day visits. Information is usually defined as either the 'supply' or the 'demand' side to differentiate between the product available and the subsequent market effect.

The information needed by model engineers is usually available from existing data or previous studies. The model may use some proxy information from similar surveys and there may be a need for completely new surveys.

4.4 Practical considerations

A local tourism information system needs to be based on sound and agreed definitions with a clear statement of those aspects of tourism that are included and those that are excluded. Tourism, according to the internationally agreed definition, is not restricted to trips involving at least one night away from home. Day visits are an important part of tourism but pose their own set of questions when considered as part of the local tourism information system. Visits to friends and relatives also need to be considered, as do business and work-related trips.

We recommend some key variables and standard definitions that should be used regardless of the type of local information system in use. In particular we recommend reference to Guidance Note 1 of this series when considering the definitions of tourism.

4.5 Factors which need to be taken into account in the use of models

You should ask some fundamental questions before undertaking an economic impact study in your area:

- Why do you want the information?
- What existing information could contribute to a study?
- How do you carry out a study?
- What should you consider before you finally decide?
- Who needs to know or who is the audience?

However, there are also two other important issues:

- Given you may wish to sustain the research over a number of years have you identified funding partners
- What data is available, or can you realistically collect (in terms of your time and participation from businesses)?

The latter is particularly important:

- is there time to recruit businesses, collect the data and ensure that businesses respond on a regular basis
- do you have influence on the businesses to complete and return the necessary data forms

4.6 Key determinants of success or failure

The success of an economic model relies on the input of reliable information and good model design. The following factors may need to be considered in discussion with model owners before starting the study.

4.7 Defining the area

Since most visitors are unaware when they cross local authority boundaries, it may be more difficult to measure economic impact. For example, visitors to the Cotswolds may be able to recall spending money there, but may not be able to recall in which of the three Cotswold counties they spent it.

Do not assume that visitors' knowledge of local geography will recall reliable information on where they spent their money. This is an even greater problem when using postal surveys carried out after a visit.

Visitors can typically underestimate some types of expenditure, particularly travel where they do not take into account fuel costs etc.

4.8 Reliability of surveys

To obtain missing or to provide up-to-date information, it may be necessary to commission or undertake new surveys. The company offering the model may carry out this work as part of its contract.

Quantitative surveys may be used to determine the origin, age and status of the respondent, mode of travel, amount and type of spending, and places visited. Some qualitative answers may also be sought to indicate the appeal of the area and likelihood of return visits. As with any survey, to get meaningful answers, the right questions have to be asked. Try to look at other surveys conducted by your organisation or partners and speak with your colleagues regarding lessons learned. Alternatively, the organisation may choose to design its own or use one devised by the model engineer.

Most surveys rely on sampling techniques that measure a sample of people and deduce a total from that evidence. Commercial models may use this approach and should choose techniques that provide an acceptable level of confidence in their results.

Because surveys provide the baseline data on visitor activities which create the economic impact in an area, it may be preferable to appoint a professional survey organisation that can validate its results. Try to integrate your visitor survey work with your economic impact studies so that the economic impact study can fully benefit from this local dataset.

5. Assessing model outputs

Models can typically be used to generate the following types of information:

- Revenue generated from tourism
- Tourist numbers and tourist days
- Employment supported by tourism
- Traffic generated by tourists

It is important to note that any model even one built up entirely from locally collected data as in an exemplar approach is unlikely to provide a completely accurate picture of tourism activity in the area.

Given the dynamic nature of tourism activity with constantly changing numbers of people moving in and out of the area, even major well conceived and implemented surveys will only provide an approximation of activity at the time of the survey. In practice, only areas where accurate counts of movement across the boundaries are available – such as islands which can only be reached by a limited number of ferry services – are likely to be able to claim a high level of accuracy in measuring tourism activity.

Therefore in considering the output of any model, it is important to identify possible sources of error and assess their potential significance in affecting the likely accuracy of the model estimates. An initial issue is the degree to which the working of the model reflects the real life, i.e. do the linkages in the model reflect actual linkages in activity. For instance, a model might assume that seasonal variation in car parking volumes or visits to Tourist Information Centres are solely the result of variations in tourism activity, whereas they may also reflect variations in local use of the same

facility which has a different seasonal pattern. Models may accurately reflect the number of tourists staying in the area and the volume of day visitors into the area, but may not take account of visits outside the area by holiday makers staying in the locality.

All models depend on information from national and/or local surveys. A number of factors need to be considered in assessing the robustness of the information generated from such surveys and some of these are highlighted in Box 2.

Box 2 **Survey robustness considerations**

- The accuracy of the universe being included in the survey. Surveys seeking data from a resident population or passengers entering a country by air and sea can generally be relatively confident that they have an accurate count of people. Other survey universes may not be so easy to identify. Thus the total amount of accommodation available in an area is often difficult to identify given that some establishments such as informal camp sites or casual B&B accommodation may move in and out of the market.
- The degree to which the response to any survey is representative of the universe. Any survey may be subject to bias. That is, it may be that the way in which the estimate was produced will ensure that it is bound to be some distance away from the true (but unknown) value. A classic example of bias was the early use of surveys conducted over the telephone, which led to results biased in favour of the more affluent sections of society. Another example is the relative frequency with which different types of tourist are likely to be caught in on-street surveys, with business tourists and people visiting friends and relatives normally substantially under-represented compared to holidaymakers. Bias can not usually be measured, but we need to look out for the possibility that it is present, for example by examining any non-response patterns in surveys
- Another aspect of accuracy is the precision of the estimate. One way of thinking of this is to realise that repeating a statistical survey on a different sample of people, drawn from the same population, will invariably give a numerically different result. There are ways of measuring this inherent variability in statistical data, usually reported in terms of the standard error of the estimate. (This is why small differences in opinion poll results are sometimes described as having no statistical significance).
- The accuracy of the information supplied by survey respondents can also sometimes be a cause of uncertainty. In some cases this can arise as a result of imperfections of memory, such as those arising as a result of the length of time since the event on which information is being sought took place. In other cases, there may be reluctance to give an accurate response because of fears of confidentiality, or because information is not recorded accurately.

Thus there are potential sources of error in any model. In some cases it is possible to give an indication of the possible range through such techniques as the standard error of an estimate, whereas in other cases such measurements are not applicable. An awareness of the possible sources and an assessment of their significance is however essential in making judgements on the robustness and suitability of model outputs as a basis for policy development.

Look carefully at the different kinds of solutions that are on offer to help you build a local tourism information system. There are products known as local area “models” but we all need to be careful in understanding what is meant by a model. A model is essentially a set of equations and relationships to help us determine the local impact of tourism given a number of pieces of input information, but these are not necessarily exact mathematical relationships such as those that apply in physical laws. You will need to understand the variability that is inherent in local area models and try to determine the limits of uncertainty. The aim should be to produce data that are fit for the purpose to which you are putting them.

Firstly, the results should satisfy the question, ‘Why do we want this information?’ The results need to be interpreted and used to serve the following:

- Promote to council members and officers to demonstrate the importance of tourism locally and the importance of tourism research.
- Circulate the information to the local tourism industry and to encourage continued/future participation in business surveys and to demonstrate that the data they supply is fully utilised and valued.
- Make the data readily available to agencies, other departments and local businesses to enable wider usage; eg in planning applications.
- Provide a basis for trend analysis, performance monitoring and decision making.

Most models will not only provide data, but a commentary and interpretation of the findings. This should assist the client in identifying strengths and weaknesses of its tourism offer and highlight areas where action can be taken to reinforce a sustainable economy.

The information obtained for a local audience of local authority and tourism business interests will also contribute to the regional and national sustainable tourism indicators that recognise the value of such information. The results of the study will contribute to a knowledge bank for access by the many departments in local authorities that are involved with, or affected by tourism. To maintain a high profile for tourism, publicise good news stories about tourism’s economic impact. Do this both within your organisation and in the local area.

Organising an event to present study findings to local politicians, council officers in other departments, local tourism businesses and relevant local, sub regional and regional organisations can be a useful exercise as it allows questions to be raised and wider support for tourism to be generated.

6. A Detailed Assessment of Inputs to the Modelling Approach

6.1 Stock of Tourist Accommodation

When available, use can be made of all known establishments. These listings usually are in the form of computer print-outs showing the name and address of each establishment and its number of rooms and beds. There are separate reports for self-catering and camping establishments and for group accommodation such as youth hostels and university residences. The computer print-outs are incomplete and require to be checked against tourist guides, Yellow Pages in some cases, and any information available for local tourism Executives and TIC's. The establishments require to be categorised according to size and type so as to identify business use, special characteristics such as coach parties or patronage by golfers, or grading scheme classification. The analysis is then extended to encompass months of opening so that the seasonal pattern of bed stock availability is clear. (No comprehensive list of accommodation is nationally available; therefore, you need to consult all sources to ensure that your local list of accommodation is as comprehensive as possible and this should be done at least annually).

6.2 Occupancy Percentages

Occupancy percentages are obtained from the England Occupancy Survey or from bespoke commercial occupancy surveys. The occupancy percentages obtained can be applied to the bed stock each month to establish the tourist nights, which should be done for each category of accommodation.

6.3 VFR (Visiting Friends and Relatives) or SFR (Staying with Friends And Relatives)

The size of the local population needs to be established and its ethnic and other characteristics considered. National surveys, such as UKTS can be used as a guide to the pattern of VFR, but the attractiveness of the District as a leisure destination must be taken into account when setting the incidence of VFR visiting at the District level.

6.4 Day Visiting

Extensive listings can be accessed of all known tourist attractions and events, including sporting events and festivals. Traffic count data can be obtained from highway authorities and other organisations, such as the National Parks, which can contribute to the overall day visitor analysis. Past surveys should be obtained and comparison made with similar surveys elsewhere. Special features of a District must be considered. Any other sources of information should be sought, such as trends in enquiries at TIC's. On the basis of the above, estimates of day visiting can be made. Wherever possible, figures for one District should be compared and corroborated by comparison with the results of other Districts of like nature. Preferably, day visitor numbers should be reviewed monthly. It must be noted that the production of estimates of day visitor numbers at the local area must be treated with the utmost care because of the nature of this type of visitor and the wide use of varying definitions.

6.5 Tourist Days and Tourist Numbers

Length of stay is relevant in order to estimate numbers of tourists. This information can be gleaned from occupancy surveys. Comparisons can be usefully made with national surveys for benchmarking.

6.6 Rates of Daily Expenditure

Tariff information can be obtained from tourist guides and checked by telephone research so as to establish levels of discounting from rack rates. In some cases it is vital to consider the use of different tariffs for weekdays and for weekends. Assumptions regarding expenditure by tourists on food and drink, leisure and recreation, shopping and transport, can be made on the basis of local research, where known. Figures should be compared with national surveys and corroborated by comparison with assumptions for different districts. There are different rates for each category of tourist. In addition, propensity to spend time outwith the District should be considered and the rates of daily expenditure reduced so as to avoid double counting revenue. Inflows of day visitors and their attendant expenditure levels also require to be considered.

6.7 Indirect Revenue

Indirect and induced revenue are gauged by the use of multipliers. These multipliers are derived from research undertaken either within the district concerned or in comparable districts elsewhere. Research is required to synthesise multiplier studies so as to ensure that multipliers applied to a particular district are as close a match as possible.

6.8 Multipliers

The concept of the multiplier is based upon the recognition that the various sectors which make up the economy are interdependent. That is, in addition to purchasing primary inputs such as labour or imported goods, each sector will purchase intermediate goods and services produced by other establishments within the local economy. Thus, any change in the level of tourist expenditure, by visitors from outside the local economy, will not only affect the industry which produces that final good or service, but also that industry's suppliers, the supplier's suppliers, and so on. It must be noted that the use of "multipliers" is not a precise science, and it is recommended that, where used at the local level, they should be listed separately. See Appendix Three.

6.9 Traffic Implications

Methods of transport must be considered for each type of tourist. These assumptions can be drawn from national survey work and local surveys, where available. Party size is obtained from survey work in order to establish approximate numbers of people per car.

6.10 Employment

For accommodation, reference should be made to the numbers and types of accommodation establishments. From surveys the numbers of core staff per type and size of establishment can be calculated. In most models, programmes can be set to adjust the core staff in accordance with occupancy percentages above certain thresholds. This takes account of the times when temporary or part-time staff will be required. Employment deriving from tourist expenditure upon food and drink, recreation and leisure, shopping and transport, can be based upon multipliers. Again, reference should be made to multiplier studies undertaken elsewhere. However, these multipliers must be adjusted in accordance with local wage rates, levels of rent, and other factors pertinent to the district in question. At the end of the year, employment figures should be reviewed in total for the year so as to take account of the fact that tourist expenditure in peak months will subsidise, to some extent, the level of employment out of season. In addition, comparison can be made with

figures available from a number of sources, e.g. NOMIS (National Online Management Information System) which will require careful and selective interrogation, and use.

Tables 1 and 2 below highlight key inputs into the modelling process from a supply and demand perspective.

Table 1: The Supply Side of Tourism

Supply Side items	Key variables
Stock of tourism accommodation	Number of establishments on reference dates (eg open peak/low seasons) Capacity (number of bed places or units)
Visitor attractions	Number open on reference dates
Tourist services	Number of tourism information centres, information points, accommodation booking agencies, travel agencies and tour operators
Resident Population	At reference dates; may be used to estimate the number of inbound visits to friends and relatives in the area. source: ONS mid year estimates

Table 2: The Demand Side of Tourism

Demand Side Items	Key Variables
Inbound trips to the area by people resident outside the UK	By month of departure from area, length of stay, purpose of visit, home location, main mode of transport used to reach area, transport used within area, main type of accommodation used while in area
Trips within the area by people resident within the UK	By month, length of stay away from home, purpose of visit, transport used within area, main type of accommodation used while away from home
Day Visits	Based on trips outside the usual environment lasting more than 3 hours and not taken regularly, Day Trips from a holiday base may also be recorded.
Arrivals at tourism accommodation	By month, type of accommodation; separately for overseas, other inbound and domestic arrivals Refer to Appendix Four for categories of accommodation
Nights spent at tourism accommodation	By type of accommodation; separately for overseas, other inbound and domestic arrivals
Occupancy rates	Separately for hotels (and similar establishments) and for other collective accommodation establishments
Tourism spending	In total in the area, and for main components (accommodation, travel, catering, admission charges, other), separately for package trips and for all other trips
Inbound tourists (people not trips)	Profiles such as sex, age, life cycle, socio economic group
Domestic Tourists (people not trips)	Profiles such as sex, age, life cycle, socio economic group

Appendices

Appendix One Types of Model

Exemplar Approach

A model solution could take the form of an exemplar, that is, a generic, off-the-shelf solution which is then applied locally. For example, this could be a package of instructions of how to collect good tourism data using surveys of visitor numbers, traffic flows, arrivals in accommodation establishments and other key elements of information. While such an approach may give a blueprint, it is clear that considerable effort needs to be mounted locally, and costs incurred, in order to obtain local data of adequate quality.

Mathematical Models

A rather different kind of model applies mathematical formulae to the information that we do have available in order to determine some local information. For example, we might say that there should be a mathematical relationship between the home population in an area and the number of in-bound tourists who come to visit friends and relatives (VFR) in the area. Both VFR and population numbers are available for a region so we could apply the same relationship to the known population in a local area. However, this of course assumes that the relationship applies equally across all areas within the region and we may feel that this is not the case, for example because of demographic differences or differences in the attractiveness of particular areas as tourism destinations.

Statistical Models

A third class of models are called statistical models because they acknowledge that the relationships are not exact but are subject to error. In the example above, the relationship between population size and the number of inbound VFR trips might then depend on the region and on other factors, some of which we should be able to identify explicitly and others that can only be taken account of as an error term in the equation. One of the main features of any statistical model is that there is uncertainty about the information that it produces. We need to be aware that there is uncertainty and use methods to reduce it to within acceptable and defined limits

Appendix Two Direct, Indirect and Induced Effects

Direct effect

The starting point for determining tourism economic impact is measuring the volume and value of tourism. The direct spending categories that are collated to provide the data for the three main national tourism expenditure surveys are shown below. These same categories provide the basis for measuring tourism spending in the local area.

Indirect effect

Front-line businesses such as hotels and restaurants buy supplies and services to satisfy visitor needs so suppliers experience the indirect effect of visitor spending. There are several layers of indirect effect from tourism spending. Each one diminishes in importance further down the supply chain. Businesses make the initial purchasing decisions that determine what visitors will buy. If a front-line accommodation business decides to buy local products wherever possible, the visitor will by default also buy mainly local goods.

Induced effect

The wages and profits earned by employees and business owners employed in, or operating, tourism-oriented enterprises, or indirectly via these front-line businesses, induce economic impact.

Appendix Three**Multipliers for employment estimates**

To measure the cumulative effects of original spending, multipliers are used to assess the link between direct visitor spending and its subsequent impact on turnover and wages in supply chain businesses. The employment multiplier demonstrates the direct, indirect and induced effects of changes in visitor spending on local employment including self-employment.

Most multipliers used by economists are well established and come from extensive use. While multipliers are essential in delivering output information, errors in input data on visitor spending will be multiplied when arriving at estimates of the indirect, induced and employment effects of that spending.

It would be a mistake to use the results from one area and apply them to another, as supply and demand-side data is unique to each area.

This is an important point, as there is often considerable variation between the local profile/pattern of tourism between neighbouring districts.

Appendix Four Accommodation categories for statistical purposes

This listing is based on the list used in the EU Directive on tourism statistics and may therefore provide a framework for the comparison of data when a breakdown by type of accommodation is required (eg of stock, arrivals, visitor nights, occupancy rates).

1. Hotels and similar establishments:

1.1 Hotel/motel

1.2 Guest house

1.3 Farmhouse or other private house offering at least bed & breakfast

2. Tourist campsites:

2.1 Camping site (exclusively or predominantly tents)

2.2 Site for touring caravans

3. 'Holiday dwellings' (European phrase) meaning:

3.1 Holiday camp (self catering/service)

3.2 Holiday village

3.3 Site with static caravans (owned by operator)

4. Other collective accommodation

4.1 Youth hostel

4.2 University/school offering tourism accommodation

4.3 Marina

4.4 Establishment reserved for specified types of visitor (workers, students etc)

4.5 Specialised health care or religious/spiritual establishment

5. Private accommodation:

5.1 Rented self-catering accommodation

5.2 Secondary residence (houses, caravans, pitches and moorings)

5.3 Homes of friends or relatives

5.4 Other types of accommodation

Note that private accommodation is not usually measured on the supply side. Tourism arrivals and occupancy rates will invariably only be available at most for hotels, campsites and holiday dwellings. Bedspaces are taken as four to a camping pitch.

Appendix Five: International definition of tourism related industries defined on the basis of SIC07 codes (5Digit).

Industry	SIC 2007 code	Industry	SIC 2007 code
Railway passenger transport.	49100	Transport Equipment Rental	77110
Road Passenger transport	49320		77341
	49390		77351
Water Passenger transport	50100	Sporting and recreational activities	77210
	50300		92000
Air Passenger transport	51101		93110
	51102		93199
Accommodation for Visitors	55100		93210
	55201		93290
	55202	Country-specific tourism characteristic activities	82301
	55209		82302
	55300	Cultural Activities	90010
	55900		90020
Food and beverage serving activities	56101		90030
	56102		90040
	56103		91020
	56210		91030
	56290		91040
	56301		
	56302		
	68209		
	68320		

Sources: Eurostat, OECD and UNWTO

References

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