Chapter 7   Planning and carrying out an economic impact study

7.1   Introduction

This chapter provides a brief summary of how to plan and carry out an economic impact study. In case you are reading it independently of the rest of the report, we repeat some definitions:

- The economic impact of a science center is the impact of the center's economic activity on a defined economic region over a specified time period.
- An economic impact study traces the flow and level of spending attributable to the science center's economic activity.
- The direct or primary economic impact of a science center refers to expenditure by the science center itself, plus expenditure in the region by those of its visitors who are not from the local region and whose primary reason for visiting the region was their visit to the science center.
- The secondary economic impact of a science center is a combination of indirect and induced impacts:
  - Indirect impact refers to 'supplier effects'—spending by the science center and its visitors injects new money into the local economy and stimulates the purchasing of goods and services to satisfy the needs of the center and its visitors.
  - Induced impact is the flow-on created by the combined effect of direct and indirect impacts—larger total wages and increased organisational revenues are, in part, returned to the local economy through further 'consumption' spending.
- The size of the secondary impact depends on the extent to which businesses and households in the region spend their 'extra' funds within the region.
- Multipliers describe the size of the secondary impacts—they are usually expressed as a ratio of total (direct + secondary) effects to direct effects. These need to be used with care—they are 'frequently misunderstood and misused' (two articles by Stynes—1997 and date unknown—discuss some of the common misuses).
- Fiscal impact on the local or wider economy (not explicitly addressed in this chapter) refers to changes in government revenues and expenditures, including tax payments and changes in demand for public services, which are generated as a result of the science center's activities.

Secondary impacts are estimated using a locally based economic model (e.g. an input–output table, which shows which goods and services are produced by each industry in the region, and how they are used). Input–output tables describe a region's economy at a particular time, and should not be used if the region's economy has changed significantly since the tables were developed. Multipliers can be estimated from input–output tables.

Some economists are sceptical about the validity and usefulness of multipliers and of secondary impact calculations in general, as they often ignore the costs of providing the extra goods and services, and take little or no account of possible negative impacts.

7.2   Stages in carrying out a study

To carry out an economic impact study, you need to:

- establish the scope of the study and any relevant constraints
- commission an external researcher or analyst if needed
- gather all the necessary information; collate and summarise any survey data
- combine organisational spending with relevant visitor spending to estimate the total direct impact
- identify the economic model to be used (if you also wish to consider secondary economic impacts) and any assumptions it makes about the local economy, and apply the relevant multipliers to the appropriate data to estimate the total economic impact

Figure 7-1 is a flowchart showing the key stages and decision-making steps involved. The following discussion expands on this diagrammatic outline.

Figure 7-1   Planning and carrying out an economic impact study
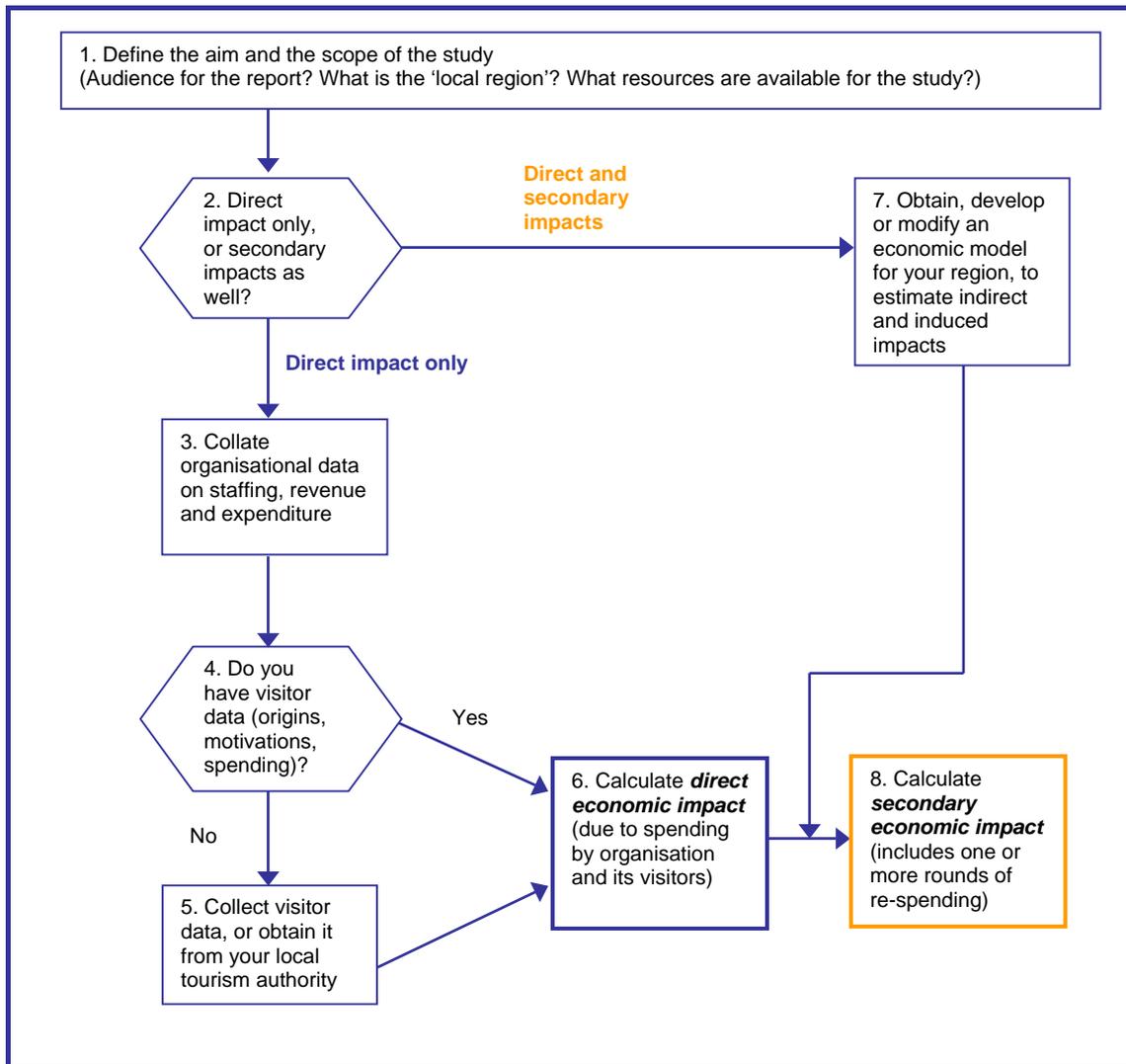
7.3   Defining the scope of your study

(Steps 1 and 2 in Figure 7-1)

What is the purpose of doing the study and the context in which it will be carried out?

- How will it fit with other research or with existing information? Will it form part of an ongoing program of research? Will the results be used for a particular purpose?
- If the results of the study will be used to support a case for funding, the nature of the funding sought may influence your choice of 'local region': e.g. state government grants vs city or county government grants; or, for a private funding source, is there a particular region of interest?
- What is the prevailing view among key stakeholders about the validity and use of economic impact studies that use input–output models or industry multipliers to estimate secondary impacts?

When you have explored these 'context' issues, consider what information already exists and what you would need to collect through new research.

- What visitor data does your institution hold? What information could you obtain from other organisations, such as a local tourism authority? What visitor data would need to be collected through new surveys?
- Are there existing economic models, input–output tables or accepted industry-based multipliers for assessing secondary economic impacts, or would they need to be created for your study? Do you have access to individuals or organisations that could generate this information?
- If you need to generate new information, are resources available to do this? Are there other local organisations that would be interested in some or all of this information, and be willing to share the cost of collecting it?

- Or does your study need to be a more modest one in order to be feasible?

With this background, you can answer three key questions to define the scope of your study:

- What is the region for which you want to assess your institution's impact?
- What time period will the study cover?
- Will you explore only the direct impact, or extend the study to estimate indirect and induced impacts as well?

7.4 Direct impact of your institution's spending

(Step 3 in Figure 7-1)

The direct economic impact of your institution's spending is described in terms of the number of full-time equivalent jobs provided for local residents, the salaries paid to these people (providing household income which they can spend on goods and services in the region), and the value of non-salary payments to people and businesses in the region.

Your institution's records will provide information on:

- total number of staff—full time, part time and voluntary—and the corresponding full-time equivalent staff numbers for paid and voluntary staff
- total staffing expenditure: salaries and wages paid and all employee benefits (overtime, bonuses, employer's superannuation and insurance contributions, occupational pensions, expenses)
- other operational expenditure
- capital expenditure.

Payments to people, businesses or organisations outside your region do not contribute to the region's economy. If possible, these should be excluded from your calculations.

Some economic impact studies include an estimate of the value provided to the community by their volunteers, based on total volunteer hours multiplied by an average hourly wage for the type of work done by the volunteers.

7.5 Direct impact of expenditure by visitors to your institution

(Steps 4 and 5 in Figure 7-1)

Chapter 5.2 of this report discusses the types of information about visitors and their spending patterns needed to calculate the direct impact of their expenditure on your region's economy, and possible sources of this information. Briefly, you need to know:

- how many of your visitors are from outside your local region
  — from your own postcode surveys along with ticket sales, or as part of wider-ranging visitor surveys
- for how many of these out-of-region visitors was the visit to your science center the only or primary motivator for visiting the region
  — from your own surveys or from data held by your local tourism authority
- how the out-of-region visitors are divided among day visitors and those staying one or more nights in the region and, for the latter, the length of their stay in the region
  — from your own surveys or from data held by your local tourism authority
- spending patterns for the two groups of visitors (day visitors and holidaying visitors): what they spend money on (for example travel within the region, accommodation, food, retail purchases, visits to other attractions) and how much they spend
  — from your own surveys or from data held by your local tourism authority.

If you have very few visitors from outside your local region, it may not be worth gathering this data! However, if out-of-region visitors are a significant proportion of your audience, then gathering or estimating this data is more likely to be worth the resources required: you can use the data to develop a reasonable estimate of the 'new' money that visitors bring to your region.

7.6 Total direct economic impact

(Step 6 in Figure 7-1)

The total direct economic impact of your institution on your region's economy is the sum of the amounts resulting from the previous two steps: (a) the direct impact of your institution's own employment and spending patterns plus (b) that portion of spending by visitors from outside the region that can be attributed to your institution.

7.7   Finding a suitable economic model

(Step 7 in Figure 7-1)

As the case studies introduced in Chapter 6 (and described in Appendix 7) indicate, input–output tables have been developed in many regions to describe the flow of goods and services among industries within specific regions at certain times. However, some of these are not directly applicable to science centers or even to the broader category of 'museums', and may need modification. For example, Brand et al (2000; Case study 2 in Appendix 7) modified an existing model to separate museums from a broader industry category labelled 'recreation and welfare'; and Australia's Cultural Ministers' Council has published input–output tables showing 'libraries, museums and the arts' as a single industry (Australian Bureau of Statistics 2001) and used these to derive 'indicative' multipliers for 'libraries and museums'—multipliers that 'should be treated with caution'.

Potential sources of relevant economic models include universities, tourism authorities, and government departments of statistics and their tourism satellite accounts (in which interrelationships between economic sectors are worked out to develop a standard contribution of tourism to each economic sector).

7.8   Indirect and induced impacts, and overall economic impact

(Step 8 in Figure 7-1)

If you are estimating indirect and induced impacts using an existing, customised or newly developed economic model, the model or multipliers derived from it will need to be applied to relevant direct impact data to yield an estimate of the total economic impact of your institution's activities—the sum of the direct, indirect and induced impacts.

7.9   New or expanding institutions

Case studies 6, 8 and 9 in Appendix 7 provide examples of how institutions that have newly opened, or are undertaking or considering a significant change in their operations, have approached the economic impact question.

7.10 Points to consider

Stynes (1997) lists several key pieces of advice that he offers to people who ask about the economic impacts of tourism—advice that probably applies just as much to science center impact studies:

- A good estimate of the number of out-of-region visitors is vital.
- These visitors should be divided into distinct groups with distinct spending patterns—in this case, day visitors and overnight visitors.
- Most of the effort in the study should be focused on estimating the direct economic impacts of visitors' spending, as multiplier effects are often not nearly as important or as accurate.
- If multipliers are used, they must be well understood and used correctly. (For local impacts of tourism, Stynes usually recommends multipliers between 1.0 and 1.5, noting that a multiplier of 1.0 corresponds to direct impact only.)

Stynes also discusses a range of approaches to carrying out an economic impact study, from the 'quick and dirty' approach that relies mostly on expert judgement to determine activity, spending and multipliers, through to more rigorous studies that gather primary visitor data and use formal economic models. He points out that the cost of a study will depend on the size and scope of visitor activity to be considered, the size and complexity of the study region, and the amount of primary data to be gathered (and the level of detail and accuracy desired). Computer-based spending and regional economic models are increasingly available, but technical expertise for designing studies and analysing results can still be costly.

Weisbrod and Weisbrod (1997) list 'seven deadly sins of economic impact analyses carried out for facilities or projects':

- confusing the economic role (gross effect) of a facility with its net economic impact on the economy of a region
- adding together different measures of the same change (e.g. changes in business sales and personal income)
- confusing study areas (e.g. neighbourhood, city-wide, state and national effects)
- confusing time periods (e.g. immediate and eventual effects on economic growth)
- assuming that a facility's capacity and its actual level of activity are the same
- applying multipliers in situations where they do not apply

- ignoring market effects on wages and land/building costs, which can also affect the economic competitiveness of a region.

Other points to consider:

- Some researchers query the credibility and usefulness of multipliers (see discussion above and in Chapter 5.3).
- Local economic information is critical if you are estimating indirect or induced impacts (results and multipliers are not necessarily transferable from one location or institution to another).
- If yours is not the only major attraction in the region, then it may be difficult to work out how much spending by out-of-region visitors can be attributed to your institution (see case studies 3 and 5 in Appendix 7 for some approaches to this).

7.11 Impacts that are not readily quantifiable

Many reports on economic impact studies include reference to activities undertaken by the institution being studied that are considered to have an economic impact in its region, even where this impact cannot be readily quantified. Chapter 5.4 gives a variety of examples, based on information provided by participants in our survey. These include contributing to neighbourhood redevelopment, attracting tourists, providing an educational resource, promoting research and innovation, offering opportunities to specific sectors of the community, providing a meeting place, and being a source of pride for the local community. Identifying and describing such activities can only add weight to a science center's case for support.

Case study 7 in Appendix 7 outlines one institution's approach to putting dollar figures against two key activities in this category—providing free admission and offering reduced-fee admission to school groups.