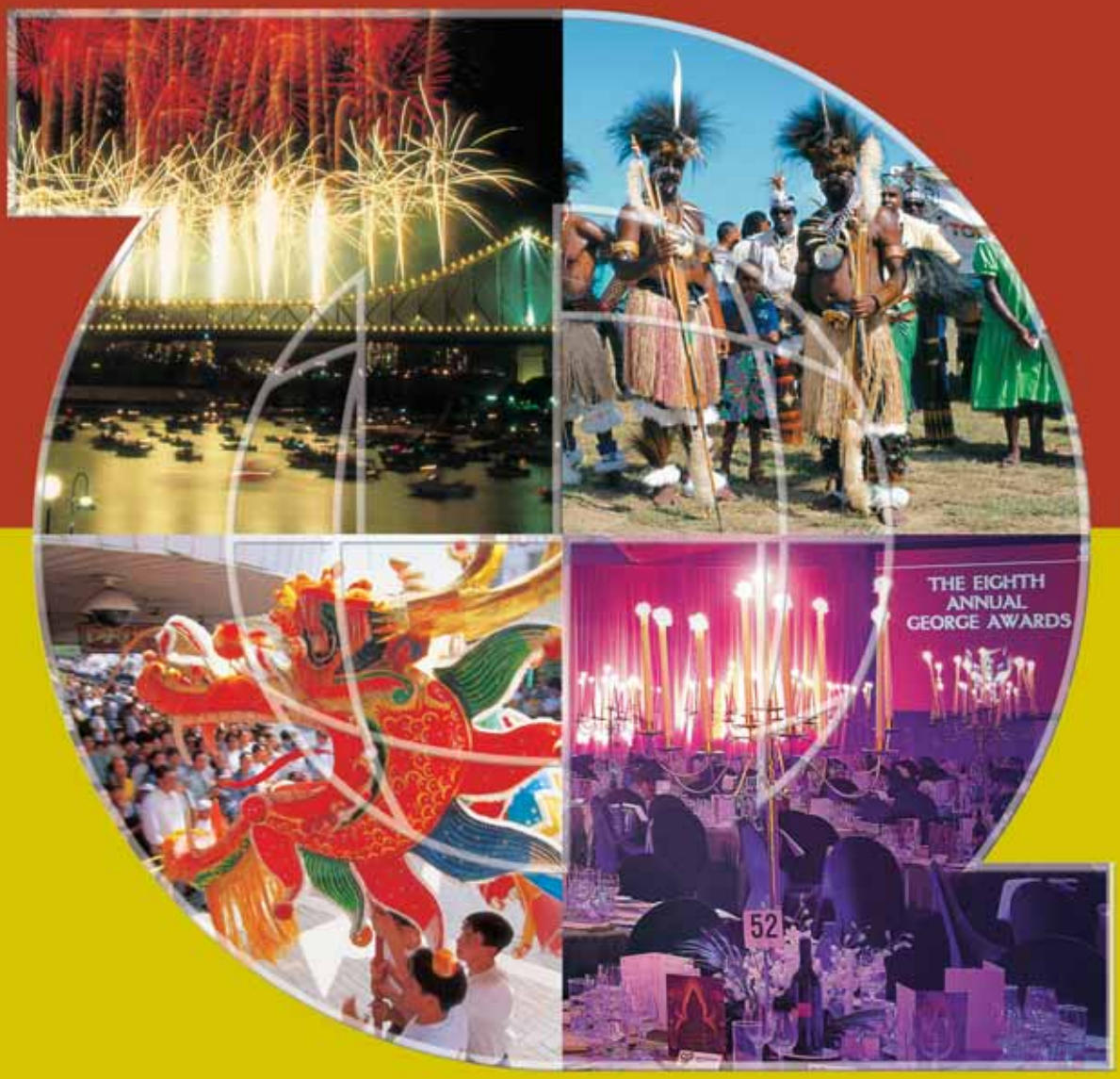
# economic evaluation of special events:

## A PRACTITIONER'S GUIDE




**Leo Jago and Larry Dwyer**

SUSTAINABLE
TOURISM
CRC

# Economic Evaluation of Special Events

## A PRACTITIONER'S GUIDE

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# EXECUTIVE SUMMARY

This guide highlights the importance of evaluating the performance of special events in order to ensure that they maximise their contribution to the host region. Although it is recommended strongly that events should be evaluated in a holistic fashion using techniques such as cost-benefit analysis, the focus of this guide is on the economic dimension of evaluation.

Despite the fact that the economic performance of events has been the key area of interest in evaluations over the past couple of decades, there has been so much variation in the methods used to undertake such analyses that it is almost impossible to make useful comparisons regarding the relative economic contributions of different events. The techniques chosen to assess the economic impact of events have often grossly overstated the impact by including expenditure that would have occurred irrespective of the event taking place. Excessive multipliers have also been used in many studies to further inflate the overall results.

This guide provides an overview of the different techniques that have been used to evaluate the economic performance of events, highlighting the advantages and disadvantages of these techniques as well as some of the difficulties that have been encountered in their application. There is also inclusion of a questionnaire that is recommended to more accurately collect expenditure data that are attributable to the event itself and there is detailed discussion of the sampling techniques that should be used to optimise the representativeness of the data collected.

Input-output (I-O) models and Computable General Equilibrium (CGE) models are the two main approaches to estimating the economic impact that an event may have on the host community. These two approaches are described and contrasted with the advantages and disadvantages of each being discussed. This discussion leads to the clear recommendation that CGE modelling should be used rather than I-O modelling in estimating the economic impact of an event.

Finally, in recognition of the fact that it is not always practicable to use a CGE model to estimate the economic impact of an event, there is discussion of an approximation that is proposed as a method for assessing the economic performance of an event when a CGE analysis is not practical. Such occasions may occur due to the fact that a CGE model is not available for the region under consideration or there are not the funds or expertise available for a CGE analysis. The approximation involves estimation of the direct inscope expenditure due to the event rather than calculating the economic impact itself. This allows one to compare the performance of the event rather than the manner in which the host economy operates. Whilst direct inscope expenditure is a core requirement for an economic impact study, it provides a relatively simple way to measure and compare events in relation to their economic performance. This is an important step forward and permits the comparison of the economic performance of a range of events.

Chapter 1

# INTRODUCTION TO EVENT EVALUATION

Special events provide important recreational opportunities for local residents and, in many destinations, they form a fundamental component of the destination's tourism development strategy. There are many types of special events and it is quite difficult to find an all-embracing definition. However, in this guide special events are defined as 'one-time or infrequently occurring events of limited duration that provide consumers with leisure and social opportunities beyond their everyday experience' (Jago & Shaw 1998, p.29). Although many regard special events as a recent phenomenon, they have in fact a very long history. The first Olympic Games in 776 BC is commonly regarded as the earliest example of a special event, and religious and cultural festivals held throughout the ages, were the original forms of what we know today as special events. Special events of different kinds have played an important role in the economic and social development of communities for many years.

Since the Second World War, there has been a substantial increase in the range of events worldwide, varying from single day fetes and fairs to major sporting and cultural festivals through to World Expos. The duration of these events range from a single day up to many months in the case of World Expos. During the 1990s, there was a massive increase in the number and type of special events. This growth was due largely to the emphasis being placed on regional economic development and destination marketing by many governments and tourism marketing organisations. Special events are seen to have the ability to produce a wide range of significant economic and social benefits for communities and regions, which helps to explain the reason that they have been so eagerly embraced by communities. Special events increase the opportunities for new expenditure within a host region by attracting visitors to the region. They also act to retain the expenditure of locals who, in the absence of local special events, would travel elsewhere in pursuit of leisure activities. Research also suggests that whilst the expenditure profile varies according to the type of event, special event tourists have higher than average daily expenditures than tourists (Getz 1994).

Special events influence both day trip and overnight visitation. As well as providing opportunities to increase direct expenditure at a destination, they can also contribute substantially to a destination's range of tourist attractions, facilitate media coverage for the destination, promote awareness of the destination for future visitation and lead to the construction of new facilities and infrastructure. The prominence given to special events by governments and tourism marketing organisations has resulted in some destinations seeking to specialise in the creation and hosting of special events. There is also a trend towards the construction of 'mega-venues' catering for conventions, trade shows, art and sporting events.

## The Importance of Event Evaluation

The proliferation of events, and event-producing agencies, has resulted in the need for the performance of events to be evaluated more stringently. Event managers and planners are now being called upon more often to prepare comprehensive post-event evaluations with detailed accounts of the impacts of the event. As many special events require financial assistance from governments and businesses in order to be staged, post-event evaluations are required by such agencies that need to assess the value of their investments. Evaluation is also required by event organisers who need to justify their activities to a diverse set of stakeholders, which includes sponsors, funding agencies, economic and tourism development agencies, special interest groups, and the community at large.

From the government perspective, there has been considerable pressure in recent years for policy to ensure the effective allocation of resources for which there is often great competition.

Many communities, destinations, and corporations have created permanent staff positions or agencies to promote, bid for, develop and coordinate the events sector for strategic reasons. In recent times, many state and local government bodies have created specialist events units for this purpose.

Whilst special events can result in positive economic impacts, they also have the potential to result in economic losses, create conflict within the host community, and tarnish the reputation of a destination, especially if they do not have strong local support. It is often with high expectations of economic and social gains that governments and communities embark on developing these events. However, there is a growing realisation that some of these events do not live up to these expectations. As such, there needs to be thorough evaluation of the costs and benefits they produce in order to justify the funding assistance they receive as well as to assess their overall impact.

## The Need for a Holistic Evaluation of Events

For an event to be truly successful over a long period of time, it is essential that its stakeholders adopt a holistic approach to impact evaluation across a range of economic, environmental and social criteria. The total impact of the event must consider both the costs and benefits of the event, as well as its positive and negative effects.

The costs and benefits of an event can be both tangible and intangible. The tangible effects are those that can be measured in terms of the amount of expenditure incurred or income earned. The intangible effects, however, are those that are harder to quantify or measure such as the capability of an event to help define a society's identity or develop local pride and talent. Intangible costs include environmental costs, such as the degradation of natural fauna, and social costs such as noise pollution, due to staging the event. Intangible benefits include the general excitement and pleasure that the community may gain from the event experience.

Equal emphasis must be placed on evaluating both the positive and negative impacts of a special event, across the range of economic, environmental and social criteria. This ensures that negative impacts are identified, and hopefully, remedied, and the positive effects are further developed, thus enabling the continuous improvement of the event. For example, the staging of the Australian Formula One Grand Prix in Albert Park may benefit a local bakery with visitor expenditure significantly increasing its sales. However, the negative impact experienced by local residents unable to purchase their regular daily bakery supplies must be given equal emphasis when evaluating the net impact of the Grand Prix on the local Albert Park region.

To maximise the effectiveness of evaluations, a consistent approach is crucial. Regular evaluations will enable a series of important questions to be answered, including:

- Was the event better this year than previous years in terms of economic, social and environmental impacts?
- Was additional employment generated in the local community?
- How do attendance numbers relate to other years and other events?
- Which areas need to be improved for the next event?
- What types of events should be developed and promoted?
- What types of events should receive government support?

## Economic Evaluation of Special Events and Problems Caused to Date

A full Cost Benefit Analysis (CBA) considers all economic, environmental and social factors in determining the overall impact of an event. Although the performance of events should be assessed from the multiple perspectives adopted in a CBA, the majority of event evaluations that have been undertaken to date have been restricted to economic evaluations. Economic evaluations of special events reveal important information about events to stakeholders and enable the new expenditure and employment created for the host region to be measured. The

methodology to undertake such evaluations has been available for many years and has undergone various refinements. It should be noted, however, that economic evaluations do not provide a complete picture of the event and could give misleading results.

In the past, a range of inconsistent, and at times inappropriate, methods have been used to measure the economic impacts of events. These methods have resulted in numerous cases where overly optimistic assumptions have been used and multiple-counting errors have been made. In some cases, economic impact studies have been prepared to justify event proposals or the development of events rather than to provide an impartial evaluation. Many of these studies have overstated the benefits and have failed to capture the true costs of staging the event. These types of studies prevent comparisons being made between events by governments and funding agencies, and make it difficult, if not impossible, to monitor the economic performance of an event over time.

The three key problems associated with the various methods used for evaluating the economic performance of special events (discussed further in the following chapters) are:

1. Inclusion of expenditure that is not new to the host region. For example, there have been many cases where the expenditure of local residents has been included, or the travel expenditure of visitors who would have come to the region irrespective of the event.
2. Over estimation of attendee numbers and their expenditure.
3. Inappropriate use of economic models which has led to multiple counting of the impact, thus inflating the final result.

In addition, there have been a number of presumptions made about the overall impact of events in the past, many of which are misleading and in some cases absolutely false. These include that:

- all special events create economic benefits;
- the construction of new facilities for mega-events is always a benefit;
- all visitors' expenditure is alike;
- events create a substantial increase in employment;
- all the expenditure of event-goers can be counted in calculating the economic benefit.

A number of these problems have been due to the fact that many evaluators had insufficient funds to more accurately estimate the numbers and characteristics of visitors. Furthermore, many of these problems have arisen because the authors of the economic evaluations have not used an approach based on sound economic principles. Although the correct approach to the economic evaluation of events has been in the literature for many years (see for example: Burns, Hatch & Mules 1986), and has undergone various refinements (Getz 1987; Crompton & McKay 1994; Crompton 1995; Dwyer & Forsyth 1997; Delpy & Li 1998; Crompton 1999; Mules 1999; Dwyer, Mellor, Mistilis & Mules 2000a), it appears that many who conduct these evaluations are not aware of the correct approach or choose to ignore it.

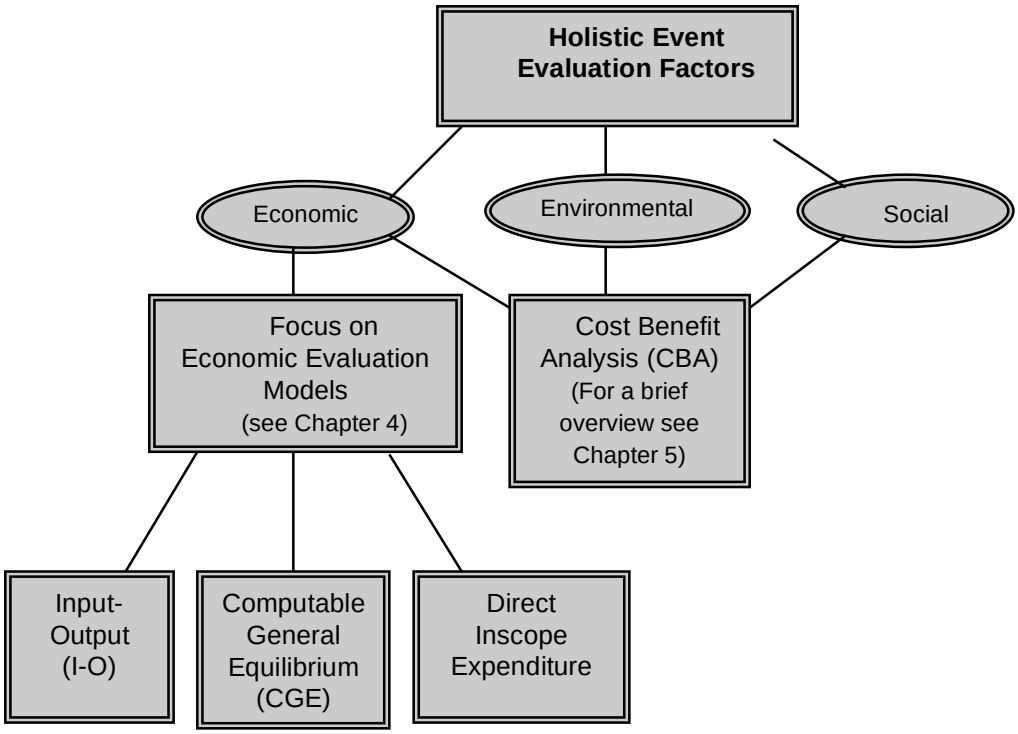
Jago and Sherwood (2005) undertook an evaluation of 105 economic impact studies that had been conducted between 1986 and 2003 in an attempt to identify similarities in the ways in which the economic impact of events had been measured. These studies were collected from all State and Territory governments around Australia. Whilst the analysis of this extensive range of reports provided some general trends as to patronage and visitor expenditure profiles, the fact that there was minimal consistency between reports in terms of the type of data that were collected and how data were analysed, reduced greatly the benefits that could be derived from this analysis (Jago & Sherwood 2005). If the economic impact of events is not assessed in a consistent fashion, the credibility of the results will invariably be questioned and the opportunity to benchmark the performance of one event against other events will be limited thus retarding improvement of the sector.

## The Purpose of This Guide

It is recognised that a holistic approach should be used in the evaluation of special events and there is a chapter later in this guide that discusses the recommended Cost Benefit Analysis (CBA) approach to event evaluation. However, this guide focuses on the economic evaluation of special events given the prominence and conflicting approaches that have been accorded to economic evaluation. The economic dimension is invariably quoted and so often abused, which is why this guide seeks to present a thorough critique of the economic evaluation of events and to recommend a standardised approach to this component of evaluation.

This guide is aimed at state and local government agencies, professional event organisers, event operators and sponsors of large and small events. It seeks to provide information on the economic evaluation of events in a way that is accessible to various audiences. Rather than getting heavily involved in economic theory, the guide provides overviews of relevant theory and refers readers to other texts if they wish to obtain more detail in particular areas. Figure 1 shows the focus of this guide.

**Figure 1: Focus of this guide**




In the next few chapters of this guide, there is an overview of economic evaluation and a comprehensive discussion of the data required to conduct an economic evaluation of an event and the way that these data can be collected. There are two key models that are used in the economic evaluation of special events, namely, input-output (I-O) and Computable General Equilibrium (CGE). Each approach is overviewed with the advantages and disadvantages of each being discussed. Recommendations as to how the economic evaluation of events should be conducted under different scenarios are then made followed by a discussion of an approximation that can be made to facilitate economic evaluation using direct inscope expenditure. The final chapter in the guide provides an overview of the recommended Cost Benefit Analysis (CBA) approach to event evaluation.

Table 1 shows the suggested users of this guide.

**Table 1: Suggested users of this guide**

| SUGGESTED USERS | REASONS FOR USE |
|---|---|
| **Government** | • To help determine whether special event tourists are more valuable than other categories of tourists<br>• To provide tools with which to evaluate and compare the economic impacts of particular events<br>• To assess the economic impacts of events against other opportunities for supporting economic development initiatives.<br>• To determine which event marketing strategies result in the greatest local economic benefits<br>• To determine the extent of support, if any, that should be given to particular events |
| **Event Organisers** | • To enable event organisers to confidently assess the economic impact of events<br>• To provide support for the development of sponsorship proposals and applications for funding |
| **Event Sponsors** | • To enable event sponsors to make economic comparisons of events against each other and against other sponsorship opportunities, which will assist them in their decisions as to which special events to support |
| **Host Community** | • To determine the types of events that make the greatest economic contribution to the host area<br>• To determine which event marketing strategies result in the greatest local economic benefits |

Chapter 2

# ECONOMIC EVALUATION OF SPECIAL EVENTS

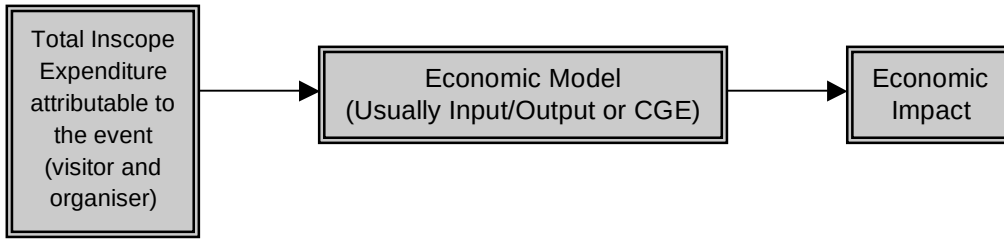
## Introduction to the Economic Evaluation of Special Events

Most of the economic evaluations of major events are economic impact studies rather than evaluation exercises, as they do not take into account the opportunity cost of resources used in staging the event. An evaluation exercise, such as a cost benefit study, would take into account the displacement of output and employment from an alternative use of resources deployed in the construction and operation phases of major events. Such displacement effects will be greater when the economy is operating near capacity and/or the event takes place in an area of rapid economic growth and development.

The economic impact of an event on a region is the net sum of the economic consequences of all of the cash inflows and outflows that occur because of the event. The first stage in undertaking an economic evaluation of an event is the identification of the direct cash flows into and out of the region that are directly attributable to the staging of the event. The total new expenditure that occurs as a result of an event is known as the 'inscope expenditure' as explained in the next section. This is used as the input to an economic model to determine the total flow-on consequences (indirect and induced) of this new direct expenditure. There are two types of economic models that are used, namely, Input-Output (I-O) and Computable General Equilibrium (CGE). These two approaches are described in Chapter 4 including a discussion of the advantages and disadvantages of each.

Figure 2 presents a diagrammatic representation of the manner in which the economic impact of an event is determined.

**Figure 2: The economic impact of an event**




The identification of the inscope expenditure to be used as the base component of the economic model is essential for any form of economic impact study. This expenditure is estimated via surveys of event participants including attendees, sponsors and organisers. Fundamental to the estimation of inscope expenditure, therefore, are the issues of sampling and crowd estimation, which are discussed in Chapter 3.

## Inscope Expenditure

This section seeks to provide some background on inscope expenditure and to identify the components that need to be measured in order to estimate the size of the inscope expenditure associated with an event. In order to achieve this, some initial discussion is required to establish the regional boundaries for an event. The chapter concludes with the presentation of a survey instrument that has been designed to capture the elements of inscope expenditure.

## Defining Inscope Expenditure

The fundamental ingredient needed to conduct an economic impact assessment of an event is an estimate of the 'new expenditure' that is generated by the event (Crompton 1995; Delpy & Li 1998; Mules 1999). The term 'new expenditure' or 'inscope expenditure' (Burns & Mules 1986) refers to expenditure that would not have occurred in the host region had the event not taken place. It includes the event-induced expenditure made by visitors, participants, organisers, sponsors, media, and all others as a result of the staging of the event. Overstatement of new or inscope expenditure has been a major factor in the gross over-estimation of the economic impact of many events.

## Setting the Boundaries of the Host Region for the Event

Prior to commencing a special event evaluation, it is essential that the geographical boundaries of the host region for the event be clearly defined. These boundaries will determine whether particular income and expenditure are new to the host region or are already within the region. These boundaries will enable the determination of who is a resident of the region and who is a visitor to the region, from which the identification of introduced expenditure can be made.

Although there is no specific manner in which the boundaries of the host region should be set, they usually relate to the town or region in which the event is held. If the evaluation is for the host state or, indeed, the nation as a whole, the boundaries will need to be set accordingly. The boundaries are normally determined by the organisation that has commissioned the economic impact assessment, and once the boundaries are set, they must be adopted consistently throughout the assessment exercise.

In some studies, there is the desire to determine the economic impact at two levels, perhaps on the host town at one level and on the host state at another level. This essentially entails two studies and will require the adoption of two sets of boundaries that must be used in a consistent manner in each stage of the study. For example, in evaluating the economic impact of the Australian Formula One Grand Prix that is held in Melbourne, there may be interest in assessing its impact on both the Melbourne region and on the state of Victoria. Although only one set of data would be collected, in the first instance the region would be defined by the geographical boundaries of Melbourne, and in the second part, the region would be defined as Victoria as a whole.

Once set, the boundaries provide the basis for distinguishing between local residents and visitors to the event. These boundaries also determine whether income received and expenditure made by event organisers and sponsors is within the region or outside. Clearly, the smaller is the host region, the greater is the number of attendees that will be defined as visitors to the region. In the aforementioned example relating to the Australian Formula One Grand Prix, in the first part of the study, a person living in Geelong, a provincial city in Victoria, and attending the event would be classed as a visitor to the Melbourne region. However, in the second part of the study, the same person would be classed as a local when the impact on Victoria as a whole is being assessed. If the event organiser purchased some equipment for the event from a supplier in Geelong, this expenditure would be classified as a leakage from the region in the first part of the study but included within the region in the second stage.

In summary, therefore, it is crucial that clearly defined boundaries for the host region are identified at the commencement of an economic impact assessment for the purpose of defining inscope expenditure and income. These boundaries must be identified prior to the collection of data and they must be made clear to those from whom data are being collected in the study so that they know into which category they fall.

## Determinants of Inscope Expenditure

There are several major determinants of inscope expenditure. These include: the number of visitors and their daily expenditure; types of visitors and types of events; trip duration; costs at the event location; and organiser/sponsor expenditure (Crompton 1995; Delpy & Li 1998; Crompton 1999).

### Numbers of Visitors

There is an obvious association between the number of visitors and their total injected expenditure. For a given average daily expenditure per visitor, the more visitors, the greater is the inscope expenditure. The number of accompanying persons of event spectators can also be quite substantial; it is estimated that accompanying persons add around 15-20% to event related expenditure in Australia (Dwyer, Mellor, Mistilis & Mules 2000a). Even though some of these accompanying persons may not attend the event itself, they will often spend money in the region and their expenditure should be included in the inscope expenditure.

### Types of Visitors and Types of Events

In Australia, overseas visitors to events have been estimated to spend, on average, 25% more per day than visitors from interstate (Dwyer, Mellor, Mistilis & Mules 2000b). Overseas visitors also tend to stay longer in the state hosting the event than do interstate visitors. A study of the purchasing behaviour of visitors to the 1996 Australian Formula One Grand Prix indicated that corporate visitors spent less time at an event but spent around 18% more per day than did other categories of visitor (National Institute of Economic and Industry Research 1996).

There is also some evidence that the visitors, whose prime motive was to attend a special event, spend more per day than the 'average' visitor to the destination. In a review of Australian event data, it was found that the average daily expenditure of visitors closely approximated the figure for business rather than holiday travellers to Australia (Dwyer et al. 2000b). There is also some evidence that different types of visitors have different average daily expenditure profiles. In motor racing events, the teams themselves and media visitors tend to have high daily expenditure profiles. Preliminary evidence from studies undertaken in Australia indicates that different types of events generate different levels of average daily expenditure. Motor racing and sporting events are more uniform in terms of their injected expenditure and they tend to have greater economic impacts than do art and cultural events (Dwyer et al. 2000b).

The data on spending patterns at different types of events by event visitors is too sparse to permit generalisations at this time. Further research is needed on the development of an appropriate typology for categorising events. Once this has been achieved, estimates of attendee expenditure by type of event can be undertaken to determine whether there are trends in aggregate expenditure levels associated with events of different types.

### Trip Duration

For a given level of average daily expenditure, the greater the duration of stay in an area, the greater the injected expenditure. Events differ in their duration. A review of events held in Australia over the past two decades indicated that the average duration of stay by visitors to different types of events ranged from 5.1 to 13.4 days. The exception was the Sydney Gay and Lesbian Mardi Gras which attracts visitors for 21.5 days on average (Marsh & Levy 1998). International visitors have tended to stay 9.5 days at the event destination while interstate visitors have tended to stay for 5.3 days (Dwyer et al. 2000b).

The inscope expenditure associated with special events will be greater when more event patrons take pre and post event tours. Pre and post event touring also has the potential to disperse the economic impacts of special events more widely throughout the destination.

#### Costs at the Host Destination

For any given event, the higher the local prices, the greater will be the expenditure injected into the host destination. However, if a destination develops a reputation for high prices (including costs of accommodation, food and beverage, transport, and entertainment), this may adversely affect its capacity to attract events in the longer term. Consequently, there is substantial pressure on destinations to maintain their price competitiveness (Dwyer, Mistilis, Forsyth & Rao 2000).

#### Organisers and Sponsors

Organiser and sponsor expenditure must be considered alongside visitor expenditure in estimating the inscope expenditure associated with a special event (Crompton 1995; Dwyer et al. 2000b). Sponsorship from local sources or from within the state is regarded as transferred expenditure unless there are reasons to believe that an additional injection of funds has resulted because of the event sponsorship. If a particular event was not staged, local sponsorship funds would usually be allocated to the sponsorship of other activities in the region.

Expenditure by organisers within the host region using income derived from outside the region and sponsorship funds from outside the region also represent injections of 'new money' into the host destination. Unfortunately, some economic impact studies neglect organiser/sponsor expenditure altogether despite the fact that its pattern may be very different from the spending pattern of the typical visitor. Neglecting this category of event related expenditure could result in a large underestimation of the economic impacts.

### Classifying Inclusions and Exclusions of Inscope Expenditure

As indicated earlier, inscope expenditure is defined as expenditure in the host region that would not have occurred had the event not been staged. It is derived from visitors to the region, organisers of the event, sponsors, funding agents, participants in the event, and exhibitors. It is 'new expenditure'. One must be careful, however, as not all expenditure that is made at an event is classed as 'new' or 'inscope expenditure'.

### Local Residents

Many early economic assessments of events included all expenditure that was generated by the event, irrespective of the origin of the money used to fund such expenditure. The expenditure of locals was included in these assessments on the basis that the expenditure made at the event would not have happened had the event not been staged. Clearly, this distorts the results and grossly overstates the economic impact of the event.

The reason that expenditure made by locals at an event should not be included in the assessment is that the money spent on the event by locals would likely have been spent on other goods and services within the host region if the event was not staged (Getz 1987; Crompton & McKay 1994; Crompton 1999). More specifically, it is assumed that expenditure by residents attending the event represents a transfer of expenditure either from one location to another (e.g. purchases of food at the event site instead of elsewhere in the region) or from one expenditure category to another (e.g. purchase of food at the event site instead of clothing items within the region). If the event was not to occur, the expenditure would still be undertaken and local businesses would still experience the demand. The distribution of the impact may be different, but the aggregate size would be much the same. Therefore, the expenditure made by locals at an event cannot be considered as new money to the region. Such

expenditure is usually referred to as 'transferred expenditure' and is ignored for purposes of economic impact assessment.

### Purpose of Visit

The expenditure of event attendees who reside outside the host region but were coming to the region anyway cannot be counted as inscope expenditure. As these visitors were going to be in the region anyway, it is assumed that their expenditure would have been made on other goods and services within the region had the event not been staged. These visitors are referred to as 'casuals' (Crompton 1995; Delpy & Li 1998). The exception to this is where a 'casual' spends more money in the destination than he or she otherwise would have spent. Any additional expenditure related to the event has economic impacts and is included in the inscope expenditure. This means that information must be collected from event attendees regarding the primary purpose of their visit to the region during which they attended the event.

If an event attendee was coming to the host destination anyway but extended the length of their trip to attend the event, the expenditure made on these additional days is 'new money' to the region and is included as inscope expenditure for purposes of economic impact assessment. Estimates of this expenditure can be obtained via a visitor expenditure survey, but it is difficult to obtain accurate data about what people would have spent in the absence of an event.

### Switched Expenditure

While many early studies on the economic impacts of events may have included all visitor expenditure (Lynch & Jensen 1983), this is not correct and leads to an overestimation of the impact of the event. Only expenditure by visitors for whom the event was the primary purpose of the visit should be included. In order to determine whether time switching has occurred, event visitors should be asked whether the timing of the visit was changed in order to coincide with the event. It is often the case that event attendees would have visited the region in which the event was staged, irrespective of the event, and simply adjusted the timing of their visit to coincide with the staging of the event. In such cases, this expenditure should not be attributed to the event. For example, a businessman living in Sydney has to visit Melbourne sometime during the year, and sets the time for his visit to be early November so that he can attend the Melbourne Cup. In this situation, the expenditure of the businessman during his visit to Melbourne should not be attributed to the Melbourne Cup as he would have visited Melbourne anyway. The Cup impacted upon the timing of his visit but it did not generate the visit. Given that this businessman was coming to Melbourne in any case, it is assumed that the money that he spent at the Cup would have been spent on other entertainment activities whilst in Melbourne if he came at a time when the event was not being staged.

The same principle applies to the expenditure of government and sponsors where it is often the case that expenditure attributed to an event would have occurred in any case but the timing was such that it was shifted to coincide with an event. If such expenditure was shifted to coincide with an event, it cannot be attributed to that event and should not be included in the inscope expenditure.

For example, in the lead up to the hosting of an Olympic Games for many host cities, capital expenditure on infrastructure is often listed in long range plans for the region but is brought forward to assist with the staging of the Games. In the McDermott Fairgray (2001) study of the America's Cup Defence in Auckland, capital expenditure by the Auckland City Council was brought forward from up to five years into the future because of the event. Such expenditure cannot be counted in the inscope expenditure, as it would have occurred anyway; the net effect has simply been a change in the timing of this expenditure.

The extent of 'time switching' may be expected to vary according to the tourism attractiveness of a destination. For the 1998 Gold Coast Wintersun Festival, the percentage the visitor time switching expenditure for the state was 24.2% (Fredline, Mules, Raybould &

Tomljenovic 1999). In a study of the Australian Motor Cycle Grand Prix at Phillip Island, time switchers were estimated to comprise 15% of interstate visitors and 35% of overseas visitors (National Institute of Economic and Industry Research 1989), with an overall weighted average of 16%. This figure is similar to estimates of time switching associated with the Adelaide Grand Prix in 1985 and 1988 (17% and 13%, respectively) (Price Waterhouse 1989).

### Retained Expenditure

There is one example of where the expenditure of residents and organisations located within the host region can be included within the inscope expenditure category. This is where the expenditure made would have occurred outside the region had the event been staged elsewhere.

An example of this phenomenon would be the expenditure of a Melbourne resident at the Australian Tennis Open Championship in Melbourne who would have visited Sydney and spent the money there had the Australian Tennis Open been staged in Sydney. Alternatively, a family living in Sydney may have purchased tickets to see the Olympic Games rather than spending the same money on an interstate holiday. The same principles apply to companies, where a local company may sponsor an event held in the area instead of spending sponsorship dollars outside the region.

Some researchers (see for example, Getz 1987) dispute the legitimacy of including retained expenditure for purposes of economic impact assessment of events on the grounds that it does not represent an injection of 'new money' into a destination. Whilst it is agreed that retained expenditure is certainly not 'new money', the fact that it stems an outflow of money has the same net impact on an economic evaluation and justifies its inclusion in the calculation of inscope expenditure. The major problem with retained expenditure, however, is in actually estimating its size. It is very difficult to obtain reliable information about what locals would have done in the absence of an event. For this reason, it is recommended that retained expenditure be ignored in the calculations of inscope expenditure. Whilst in most cases retained expenditure is not expected to be substantial, leaving it out of the calculations leads to a more conservative result.

### Crowding-Out Effects

In seeking to identify the expenditure that is included inscope, it is also important to account for expenditure leakages that occur when event related expenditure 'crowds out' expenditure that would otherwise have occurred in the destination. There are two components that need to be considered in this context:

1. Those potential visitors who are turned away because of the event;
2. Local residents who leave the region during the staging of the event.

Both of these components result in a loss of expenditure that would otherwise be spent within the region and thus must be seen as a cost of the event.

When the Olympic Games were held in Sydney during 2000, some international visitors elected not to visit Australia due to concerns regarding congestion and increased prices. If such visitors did not simply change the timing of their trip, but instead visited another destination, then the expenditure that these visitors would have made in the host destination is lost as a result of the Games.

Similarly, there are instances where local residents are prompted to leave the host region due to the staging of an event in that region. If this results in an extra trip out of the region, the expenditure made by such locals must also be counted as a loss due to the event. An example of this is where local residents on the Gold Coast leave the region during the Gold Coast Indy due to their concerns regarding noise, congestion and access to their residences. They take with them funds that would otherwise be spent on entertainment and the like in the host region and once again, this expenditure made outside the region must be considered as a cost of the event.

As it is virtually impossible to measure these costs in a convenient and reliable fashion, they are generally left out of the calculation of inscope expenditure. They can be seen as an offset against the aforementioned 'retained expenditure' which also tends to be left out of calculations.

### Direct Imports

'Direct imports of goods & services' represents a leakage out of the host economy to purchase event related products that are sourced outside the destination. The import content of final goods and services associated with expenditure on an event represents a leakage out of the host economy. In general, sub-regions of an economy have a higher overall propensity to import than the state as a whole since they tend to be less self-sufficient in producing goods and services for tourist needs. This observation reinforces the importance of selecting carefully the geographical area of the region under analysis. Direct imports should be subtracted from inscope expenditure. Table 2 summarises the inscope expenditure inclusions and exclusions.

**Table 2: Summary of inscope expenditure inclusions and exclusions**

| INCLUSIONS & EXCLUSIONS | INSCOPE EXPENDITURE | CONSIDERATIONS |
|---|---|---|
| **Expenditure of Visitors** | ✓ | If the special event was their primary reason to visit.<br>Only injection of 'new money' relevant. |
| **Switched Expenditure** | X | Except if there is additional expenditure due to the special event. |
| **Expenditure of Casuals** | X | Except if the casual visitor spends more in the destination due to the event. |
| **Retained Expenditure** | X | Where the expenditure would have occurred outside the region had the event been staged elsewhere.<br>This is very difficult to estimate and thus it is usually ignored. |
| **Organisers and Sponsors** | ✓ | If the money would not otherwise have been spent in the destination. |
| **Crowding out effects** | X | Difficult to estimate and are generally ignored. |
| **Direct Imports** | ✓ | Expenditure on event-related goods and services that are sourced outside the destination are subtracted directly from inscope expenditure. |

### Survey Instrument for the Identification of Inscope Expenditure

Data for visitors, spectators, participants, exhibitors, and the like are usually collected via questionnaires. An example of a questionnaire that is suitable to collect information from event attendees in order to identify inscope expenditure from this source is presented in Appendix A. Although self-complete mail return questionnaires have often been used in the past to collect data at major events, poor response rates diminish greatly the value of this methodology. It is strongly recommended that intercept interviews are used to collect the data in face-to-face mode or to provide a mechanism for collecting telephone numbers that can be used to conduct telephone interviews after the event.

Data relating to the organisers should also be collected at the end of the event and many of the same issues apply to the survey instrument that should be used. In particular, it is

imperative that new expenditure is identified clearly and any expenditure that is simply switched in time is identified.

## Summary

Inscope expenditure includes the new expenditure that is introduced to the host region because of the event taking place and incorporates the expenditure made by visitors, competitors, exhibitors, sponsors, officials, media, and organisers. Inscope expenditure is based on the concept of 'injected funds' and, therefore, does not include expenditure involving funds already in the host region or funds that would have flowed to the region at some stage irrespective of whether the event was staged.

Tables 3, 4 and 5 provide a framework for collating the data needed to calculate the total inscope expenditure for an event. The relevance of the columns will vary according to the jurisdiction adopted. For a regional perspective, columns 2, 3 and 4 of Table 3 are relevant to the determination of inscope expenditure and the economic impacts. For a state-wide perspective, column 2 becomes irrelevant for impact estimation.

**Table 3: Visitor expenditure framework**

| Expenditure Item | Source of Expenditure | | | | | | |
|---|---|---|---|---|---|---|---|
| | Expenditure from within region (1) | Intrastate Expenditure (outside region) (2) | Interstate Expenditure (3) | International Expenditure (4) | Switched Expenditure (5) | Direct Imports (6) | Visitor Inscope Expenditure (7) [(2) + (3) + (4) - (5) - (6)] |
| Accommodation | | | | | | | |
| Food & Beverages | | | | | | | |
| Event tickets | | | | | | | |
| Other entertainment | | | | | | | |
| Transport in the region | | | | | | | |
| Shopping | | | | | | | |
| Personal services | | | | | | | |
| Other | | | | | | | |
| TOTAL | | | | | | | |

**Table 4: Organiser expenditure framework**

| Expenditure Item | Expenditure in the Region (8) | Switched Expenditure (9) | Direct Imports (10) | Organiser Inscope Expenditure (11) [(8)-(9)-(10)] |
|---|---|---|---|---|
| **Accommodation** | | | | |
| **Food & Beverages** | | | | |
| **Event tickets** | | | | |
| **Other entertainment** | | | | |
| **Transport in the region** | | | | |
| **Personal services** | | | | |
| **Freight** | | | | |
| **Set-up costs** | | | | |
| **Marketing** | | | | |
| **Wages** | | | | |
| **Miscellaneous** | | | | |
| **TOTAL** | | | | |

**Table 5: Total inscope expenditure**

| Expenditure Item | Visitor Inscope (7) | Organiser Inscope (11) | Total Inscope (13) [(7)+(11)] |
|---|---|---|---|
| **Accommodation** | | | |
| **Food & Beverages** | | | |
| **Event tickets** | | | |
| **Other entertainment** | | | |
| **Transport in the region** | | | |
| **Shopping** | | | |
| **Personal services** | | | |
| **Other** | | | |
| **Freight** | | | |
| **Set-up costs** | | | |
| **Marketing** | | | |
| **Wages** | | | |
| **Miscellaneous** | | | |

Chapter 3

# REPRESENTATIVE DATA COLLECTION[1]

## Introduction to Representative Data Collection

The previous chapter explained the meaning and importance of inscope expenditure in determining the economic impact of a special event and a questionnaire suitable for collecting expenditure data from event attendees is presented in Appendix A. It is vital that expenditure data are collected from sufficient attendees in order to be confident that the data are representative of attendees overall. There must then be an estimate of the overall number of attendees at the event so that the total inscope expenditure can be calculated.

This chapter seeks to explain the principles of sampling and crowd estimation that are used to produce expenditure estimates. It discusses the importance of sample size and seeks to identify how to determine the optimal sample size for an economic impact study of a special event. It introduces the issues associated with estimating attendance at an event and the resulting effects these may have in misestimating the amount of inscope expenditure identified.

## General Principles

In estimating the economic impact of a special event on its host economy, it is necessary to have a good estimate of the expenditure by visitors who came to the host destination specifically for the event. These visitors would not have come to the host destination had the event not been staged there. Sample surveys are used widely to collect this information on expenditure and also to determine the origins of patrons, exhibitors, participants, and the like. Sample surveys are necessary because of the impracticality and high cost of intercepting every single relevant person to assess their reasons for attending the event and expenditure that resulted from such attendance.

The resulting sample is therefore used to estimate characteristics of the total population of attendees on variables such as the mean expenditure per person. Aggregate expenditure for each category of participant is then estimated by multiplying the mean expenditure obtained in the sample by an estimate of the total number of participants in that category (spectators, exhibitors, participants, media etc). Both the sampling process and the estimate of total attendance numbers are therefore critical in determining the size of the economic impact of the special event.

## Sampling

The two main statistical criteria for sample survey design are that the process be unbiased and efficient. In practice, one might add cost effectiveness as a desirable, and often necessary characteristic.

### Bias

The absence of bias is determined by random sampling, which ensures that all members of the target group (referred to as ‘the population’) have an equal chance of being selected in the sample. The term ‘representative’ is often used in this context; that is, the sample is representative of the total population.

Bias can occur if the attributes of a certain group imply that they are more or less likely than another group of being selected in the sample. An example would be door-to-door sampling on a Sunday morning when churchgoers are likely not to be at home. The survey results would be biased away from Sunday churchgoers and their characteristics.

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[1] This section was primarily written by Dr Trevor Mules.

When sampling at special events, techniques such as interviewing every tenth person past a certain point, or having interviewers spread out throughout the relevant site are rational ways of aiming for satisfactory randomness. It is important to remember, however, that statistically pure random sampling is rarely possible. There will always be some small biases in the sample, which result from practical considerations. For example, if there is loud music at one part of the site, interviewing is not likely to occur at this location, thereby tending to be biased against the people who enjoy that type of music.

### Efficiency

Efficiency is measured by the standard error of the sample mean and is a function of the underlying variability of the population, and of the sample size. Where the population can be easily segmented into groups or strata, selecting more members of the stratum with high variability and less from the group with low variability has the effect of reducing the overall standard error of the sample mean, compared with the situation where proportional sampling from each stratum is conducted.

The question of efficiency is really a question of how confident one can be that the sample mean is close to the true but unknown mean for the whole visitor population. This is often gauged by looking at the standard error of the estimate of the mean, expressed as a percentage of the mean itself. The standard error of the estimate of the mean is calculated as the standard deviation divided by the square root of the sample size. For further details, see any standard statistical text such as Kenkel (1996). Tourism Research Australia (formerly the Bureau of Tourism Research) urges caution in using standard errors in excess of 15% (see Johnson 2000). Since the standard error of the mean is inversely proportional to the square root of the sample size, the greater the sample size, the smaller the standard error percentage.

### The Importance of Sample Size for Expenditure Estimates

In most studies of special events, the researchers have little prior knowledge about the underlying variability of the population. Therefore, it is not possible to design a stratified sampling regime that would minimise the standard errors of the estimated sample means. The approach adopted must be a pragmatic one of aiming for the largest sample size possible within the budget and time constraints of the study. The larger the sample size, the greater will be the accuracy of the estimates that are derived. There are two reasons for this:

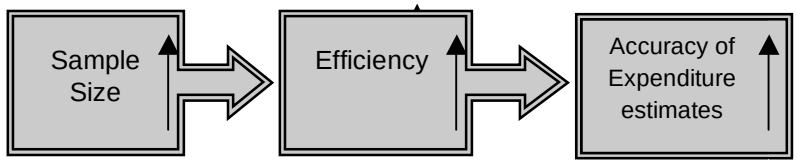
1. Larger samples have the effect of diluting the impact of an unusual respondent being included in the sample.
2. Larger samples produce greater confidence that the sample reflects the characteristics of the whole population of visitors to an event.

The mean of a sample is particularly sensitive to extreme values. Thus, the inclusion of an unusually profligate spender in the sample would tend to raise the mean unless countered by many spenders closer to the 'typical' level of expenditure. With an increase in sample size, the effects of these extreme values will be diminished by decreasing the standard error and a more efficient result will be obtained.

Once the sample mean has been calculated, this figure is then multiplied by the aggregate number of in-scope visitors (actual or estimated) in order to estimate the aggregate expenditure of all visitors (Aggregate inscope expenditure = Mean Expenditure per visitor from the sample * Aggregate number of inscope visitors).

Figure 3 shows the relationship between sample size and accuracy of expenditure estimates.

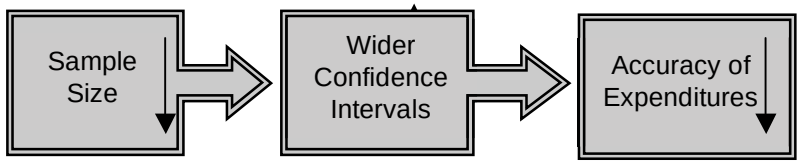
**Figure 3: The relationship between sample size and accuracy of expenditure estimates**




## The Confidence Interval

The *representativeness* of the estimated results is dependent upon a particular sample result being close to the true mean of all visitors to the event. Using statistical methods, it is possible to provide a range within which some confidence can be held about the true mean. This range is called a confidence interval, and is usually expressed as '95% confidence that the true mean lies between *a* and *b*'. For example, after analysing the sample data collected at an event, one may be able to be 95% confident that the mean daily expenditure figure lies between $189 and $252. In relation to the aggregate expenditure, the wider the confidence interval, the less certain the researcher can be about the true value of the event and the less use the sample is for evaluation purposes. In statistical methods, the confidence interval depends upon the absolute sample size; in general, the smaller the sample size, the wider the confidence interval (see Figure 4).

**Figure 4: The effect of the confidence interval**

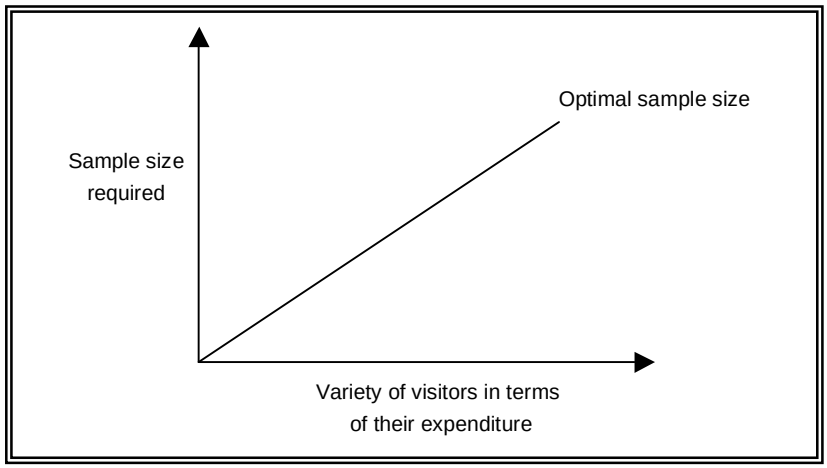



In order to save money, event managers and organisers are often under pressure to reduce sample sizes in event research. The profit imperative and competitive bidding process of consultancies may also lead to an inadequate sample size in order to stay within the budget allocated to the evaluation.

## The Optimal Sample Size for an Economic Impact Study

The optimal sample size for an economic impact study varies with the type of visitors to the event and the cost of surveying. The more varied are the visitors in terms of their expenditure profiles, the greater should be the sample size (see Figure 5). Thus, at events for which there are quite diverse patrons in terms of their expenditure patterns, larger sample sizes will be required to obtain a more accurate assessment of the mean expenditure than would be necessary at events for which patrons were more homogenous in relation to their spending.

**Figure 5: Optimal sample size**




An event manager who decides to undertake an economic impact study should not choose a research team for the job based on cost alone. The cheapest bidder will most likely be planning to use a smaller sample and, therefore, will yield the least reliable result. In the first instance, and without any prior knowledge of the variability of patrons' behaviour, a rough rule of thumb would be to aim for a sample size of 1,000. Over time, as more is learnt about the event, this may be reduced or expanded depending upon the knowledge obtained in earlier studies. For many smaller events, however, it is recognised that it is rarely feasible to obtain large samples due to resource constraints. It is important that the samples be as large as possible and that the increased error range resulting from small samples be acknowledged.

An Example

At the 2001 Canberra V8 Super Car Race, some 711 patrons were surveyed. However, only 132 of these were inscope visitors, that is, visitors to Canberra whose prime reason for the visit was to attend the event. In 2002, cut-backs in the research funds available for the event meant that only 489 patrons were interviewed, of whom 68 were inscope.

In 2001, the mean expenditure per head of the visitors whose prime reason was attending the V8 Race was $308.95. Total expenditure in Canberra by this group was estimated by multiplying $308.95 by 11,422, the latter being the estimated number of patrons to the event who were visitors to Canberra and whose prime purpose of visit was to attend the event (this figure was estimated using ticket sales and data from the survey).

The resultant estimate of aggregate expenditure of $3,528,827 was heavily dependent upon the mean attendee expenditure from the sample of $308.95. Most studies of events present their results as if numbers like $308.95 are parameters of the population of all visitors to the event. In point of fact, they are really *estimates*. As such, it is worth emphasising that if the sample was to be repeated, its very randomness would almost guarantee a different result. If the sample was to be repeated several times, several estimates would be obtained.

In the V8 Super Car Race example above, the 95% confidence interval for mean expenditure was between $261.02 and $356.88, with the interval for aggregate expenditure being between $2,981,370 and $4,076,283.

To illustrate the importance of the confidence interval and using the earlier example of Canberra's V8 Super Car Race, 95% confidence intervals for expenditure for both the 2001 and 2002 studies of the event have been calculated. Apart from sample size differences, there were consistencies between the two years' studies so as to provide continuity for event

managers and planners. Table 6 shows lower and upper confidence intervals for in-scope visitor expenditure.

The 2001 study with a sample size of 711 estimated total expenditure of $3.529 million by visitors who had visited Canberra for the event. The 95% interval was from $2.981 million to $4.076 million, which is narrow enough to have some degree of faith in the point estimate of $3.529 million.

However, for the 2002 event, with a sample size of only 489, the total interval would have been from $4.114 million to $6.184 million. Here the upper limit is almost 50% higher than the lower limit and the width appears to be too wide to be of use to the managers of the event, or to public decision makers.

**Table 6: Confidence intervals for visitor expenditure, Canberra's V8 Super Car race**

| | **2001 Race** | | **2002 Race** | |
|---|---|---|---|---|
| **Sample size** | 711 | | 489 | |
| **In-scope sample** | 132 | | 68 | |
| | **Lower Limit** | **Upper Limit** | **Lower Limit** | **Upper Limit** |
| **Mean expenditure per visitor ($)'** | 261.02 | 356.88 | 322.30 | 484.56 |
| **Total expenditure $'000** | 2,981 | 4,076 | 4,114 | 6,184 |

## Crowd Estimation

Many events are ticketed or record the number of attendees that enter the designated areas, which simplifies greatly the issue of estimating the total population of attendees. However, even for these events, there are potential difficulties that can lead to incorrect estimates of the total attendance figure. At events where gate-counts are used, the figures that are provided really reflect the number of attendances rather than the number of attendees as a single attendee may enter the venue a number of times and thus be counted multiple times. The true attendee number in this instance would be the number of attendances divided by the average number of attendances per attendee.

For events that involve a number of venues or sub-events, the number of tickets sold will not necessarily represent the number of attendees as attendees may purchase tickets to more than a single sub-event. In attempting to calculate the total number of attendees, it is necessary to divide the total number of tickets sold by the average number of events attended per person.

## Estimating Attendance Using Box Office Data

Where the event organisers have a formal measure of box-office revenue, the 'best measure' of the number of individuals attending a Special Event will be obtained by dividing the box-office revenue by the average ticket spend. The advantage of this process is that the ticket revenue is an audited figure not based on guesswork. It should be noted that where the sampling frame or sample data contains some degree of error (including the extent of sampling error itself - see the discussion below), using this constraint might provide an underestimation of attendances.

### Mixed Event (Free and Ticketed Activities)

In the case of an event with both free and ticketed activities, the survey process, undertaken with an appropriate sampling frame, would capture information about attendees who attended only ticketed events, those who attended only free events and those who attended both. Where the survey asks about expenditure on tickets - some may have a zero (attended only free events), some may have full ticket expenditure, and others a mixture of full price and free event balance. Therefore, the overall average ticket spend would be lower than would occur if the zero responses were excluded.

To overcome this problem for 'mixed events', it is important to collect data in the survey to indicate the number of free and ticketed events that each respondent attended. This will enable a calculation of the average amount spent on tickets and thus permit an estimate of the total attendance to be made, as illustrated in the following example.

An Example

Suppose a particular event had ticket revenue of $2 million. Further, suppose the survey reveals that 25% of people who were surveyed attended only ticketed events, and spent an average of $100 on tickets, while 25% attended only free events. The remainder attended some free events and some ticketed events, with an average ticket spend of $70. On this basis, average spend on tickets and estimated attendance is calculated as:

*Average spend on tickets* (25% * 100) + (25% * 0) + (50% * 70) = **60**

*Estimated attendance* 2,000,000 / 60 = **33,333**

### Other Methods of Attendance Estimation

#### Proportional Occupancy

This process involves knowing the seating capacity of a venue, and estimating the proportion of seats filled at various performances. It relies on judgment and observation and can be a relatively arbitrary approach.

#### Hotel Occupancy

Hotel occupancy figures will give an indication of the numbers of visitors using commercial accommodation. This can be combined with additional information obtained from a survey (e.g. what proportion of individuals used hotel or motel accommodation during their visit/attendance). This approach offers some degree of formal estimation, but requires careful interpretation of the survey data.

#### Access to Additional Revenue Information

Many retail and food service operators can provide expert opinion as to average consumption/sales levels per person - from extensive commercial experience. Therefore, trading information of concessions associated with the event may be used to get an estimate of attendance. Of course, such a process can be affected by the number of concessions in place, the types of products on sale, and the weather during the course of the event. This procedure tends to be drawn upon by event organisers, but could not be considered to be sufficient for evaluation work.

Sometimes it is possible to collect data on transport movements in the region of the event. That is, data on car movements, additional passengers arriving by train, bus and plane may be available that can help provide an estimate of attendance numbers.

### Aerial Survey

Raybould, Mules, Fredline and Tomljenovic (2000) produced aggregate attendance estimates at a free open-air festival using aerial survey techniques (i.e. aerial photographs and counts). This approach would also need to be supplemented by survey information (such as average length of time spent at the site) and is only suitable for a single outdoor site.

## Multiple Attendance and Sampling Frame Bias and their Impacts on Attendance and Expenditure Estimation

Multiple attendances can introduce sampling bias into the process of estimating the number of individuals attending a special event. A difference exists between 'attendees' and the number of 'attendances' and often the figures provided by organisers will count multiple attendances by individual attendees over the various days of the event as multiple attendees, thereby inflating the results. Arts and music festivals can include a number of different performances, and sporting events often run over multiple days. Therefore, the number of attendances does not represent the number of individuals involved. As indicated earlier, attendances must be 'factored down' to the number of individuals by dividing by the average number of attendances per person.

The complication is that different groups (and specifically visitors versus local attendees) will often have different patterns of attendance. Therefore, in factoring survey information up to the population level, the model must include an adjustment to the proportions of attendance 'bias'. That is, the audience survey base has to be weighted for differing probability of responder selection. Otherwise, the survey information will be biased towards those who attend multiple times.

The issue arises because the more times an individual attends performances at an event, the greater the probability that they will be approached to take part in the survey. There is a higher probability that an individual who attends more events will be approached and/or receive and subsequently provide a survey response - even with the use of a screening question to determine if the individual had already been approached or been surveyed. For many events, those who are coming from furthest away (such as interstate and international visitors) will likely attend more days of the event in order to justify their trip. This means that such higher spending attendees will have a greater chance of being sampled in the survey, which has the potential to distort the results.

Although this issue has been recognised in a number of event studies, such as the 1992 Adelaide Festival (Centre for SA Economic Studies 1992) and 1996 Adelaide Festival (Market Equity 1996), it has not been fully explored, nor has it received appropriate attention in the literature. An example to demonstrate the consequences of this aspect for the reader is contained in Appendix B.

If an event is held on multiple days, it is important to sample attendees on each day of the event in order to reduce bias. For example, if an event was held over a seven day period but surveying was only done on the weekend days, this could bias the results. At weekends, there often tend to be more visitors from outside the region and thus estimating the event population characteristics based on data collected only at the weekend would tend to overstate the number of attendees from outside the region. This shows why it is important to sample across the entire duration of the event.

### Other Sampling Frame Issues

The earlier discussion covers a small proportion of the issues involved in selecting and interpreting sampling frames for the evaluation of special events. There is a range of other issues that need to be considered in terms of selecting the appropriate sample size relating to the sample frame.

For example, a possible approach would be to use proportional sampling in order to reduce standard error estimates of overall expenditure particularly for the relevant groups of visitors as opposed to locals. This may entail, for example, setting targets of 400 visitors and 400 locals in the sample. In order to use such methods, there must be an alternative estimate of underlying attendances by sub-group, because if proportional sampling is used, the sample itself cannot be used to obtain this information. One process suggested is to obtain ticketing information. If ticket sellers identify the origin of purchasers, this database would become a secondary information source. In practice, however, this approach is not particularly useful as ticketing systems do not consistently contain such data. Further, it is possible that locals will make purchases on behalf of visiting friends and relatives. In the 2003 Rugby World Cup held in Australia, for example, it appears that many overseas residents purchased tickets to the event through friends and family members in Australia in order to enhance their chances of success of obtaining tickets and to reduce the ticket price.

Sometimes the experience and knowledge of the event organiser may suggest that the proportion of in-scope visitors attending the event may be very small compared with local residents. However, it is the expenditure by such visitors that drives the economic impact. A complete random sample would be inappropriate because it would contain only a small number of inscope respondents. This problem can be rectified by setting targets for the number of inscope visitors in the sample, sometimes known as quota sampling. The overall sample is then deliberately non-random, but in terms of estimating inscope expenditure, it has a lower standard error than a random sample would have.

### Recommendations for Sampling and Crowd Estimations

The key recommendations flowing from this discussion are identified in Table 7.

**Table 7: Key recommendations for sampling and crowd estimation**

| Estimations | Recommendations |
|---|---|
| **Sample Size** | • Should be based upon the variability of patron behaviour.<br>• Should not be based on the size of the event.<br>• Should be at least 1,000 for most events with major motor sports events requiring closer to 2,000 because of greater underlying variability in average expenditure. Sample sizes can be reduced over time as variability becomes more clearly defined. |
| **Crowd Estimation** | • Attention must be paid to the mix of ticketed and non-ticketed events and a calibration done using ticketed numbers. |
| **Weighting Factors** | • When making inferences from the sample to the population, weighting factors should be used which take account of the mix of different types of event patrons (e.g. international vs, interstate), and their respective expenditures, and attendance frequencies. |

Chapter 4

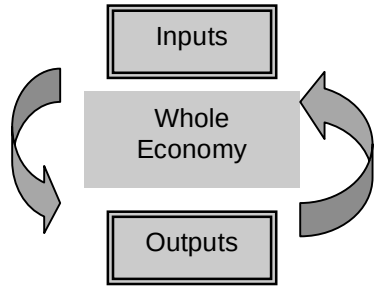
# THE MULTIPLIER PROCESS

Appropriate sampling techniques must be applied in order to estimate the level of inscope expenditure made by event attendees. The inscope expenditure of visitors and organisers/sponsors stimulates economic activity and creates additional business turnover, employment, household income and government revenue in the host community (Crompton 1995). This ripple effect in an economy is termed a 'multiplier' by economists. The initial injection of money has *direct, production induced and consumption induced* impacts on the local economy.

Direct impacts relate to the allocation of the visitor expenditure to different industry sectors. The secondary impacts, which relate to the ripple effect of additional rounds of re-circulating the initial expenditure injection of visitors, are of two types: indirect (production induced) and induced (consumption induced) impacts.

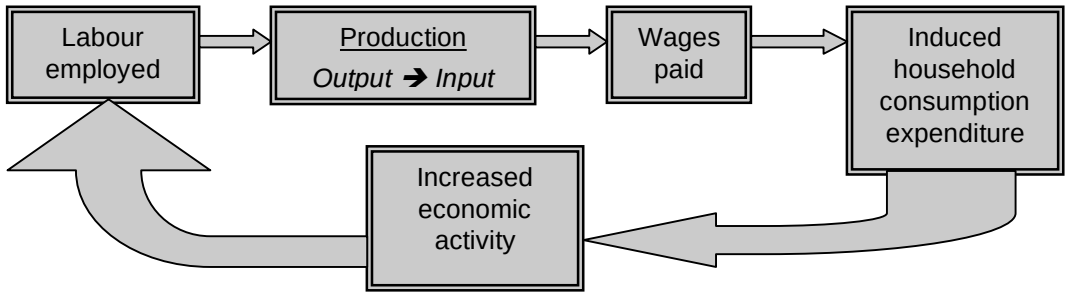
Indirect (production induced) impacts arise when the firms, which make sales to visitors purchase inputs from other business operators. These other businesses, in turn, purchase inputs from other firms and so on. Figure 6 shows the production induced effect.

**Figure 6: The production induced effect**




Consumption induced impacts arise when employees who reside within the jurisdiction, spend their increased (disposable) wages and salaries on goods and services from businesses within the area, and when owners of businesses that expand sales as a result of the event spend their profits in the region. At each stage of the production process there will be labour employed and wages paid. The wages are part of household income in the economy, and give rise to induced household consumption expenditure. Figure 7 shows the consumption induced effect.

**Figure 7: The consumption induced effect**



The assumed stable relationships between inputs and outputs for each sector are usually measured in dollars of output. Using these ratios for all sectors of the economy, the production and consumption induced effects can be converted to value added terms. Since the sum of all value added in a state is equal to Gross State Product (GSP), the induced effects can also be measured in terms of contribution to GSP. The induced or flow-on effects are sometimes called 'multiplier effects' since the initial impact has a multiplied effect on GSP.

Suppose an event visitor buys a meal in a restaurant. Part of the cost of the meal will go to wages to the waiters and chefs and profits to the owner. The remainder will cover the purchase of inputs from other industries – such as food, electricity, the printing of menus, and rental of the premises. Some of these purchases will be from local suppliers whilst others will be imported from outside the region. Local suppliers in turn will buy inputs from other suppliers and so on. Further, the recipients will spend their increases in income. For example, the chef will purchase goods and services from her wages, which sets in motion another chain of expenditure. In this way, expenditure made by an event visitor not only provides a stimulus to the economy via the production linkages, but also via the consumption induced effect. This may also be measured in terms of GSP, and added to the production-induced effect to obtain the total GSP impact on the economy resulting from the initial stimulus.

## Leakages

The funds from the initial direct expenditure keep circulating around the economy until they leave the economy as a leakage. The main forms of leakage that act to reduce the size of the multiplier are taxes, savings and imports. Each of these results in funds being taken out of the host economy, at least temporarily in the case of savings and tax, mean that fewer dollars are left to create subsequent flow-on effects.

### Savings by Households or by Businesses (Retained Earnings)

Some of the direct household income (wages and salaries) received by local residents may not be spent in the local economy. Rather, some of it may be saved in which case it contributes nothing further to local economic stimulus. Savings may improve the local economy's long-term ability to finance capital expansion, but that is a different issue to the one of short-term gain in GSP.

### Taxes

In a similar manner, taxes result in funds being removed from the economy, at least in the short term. They decrease the spending ability of the taxpayer, both personal and corporate and thus prevent these funds from being able to contribute to further economic stimulus. Taxes include income taxes applicable to income earners, company taxes, sales taxes, Goods and Services Tax, property taxes and license fees.

### Imports

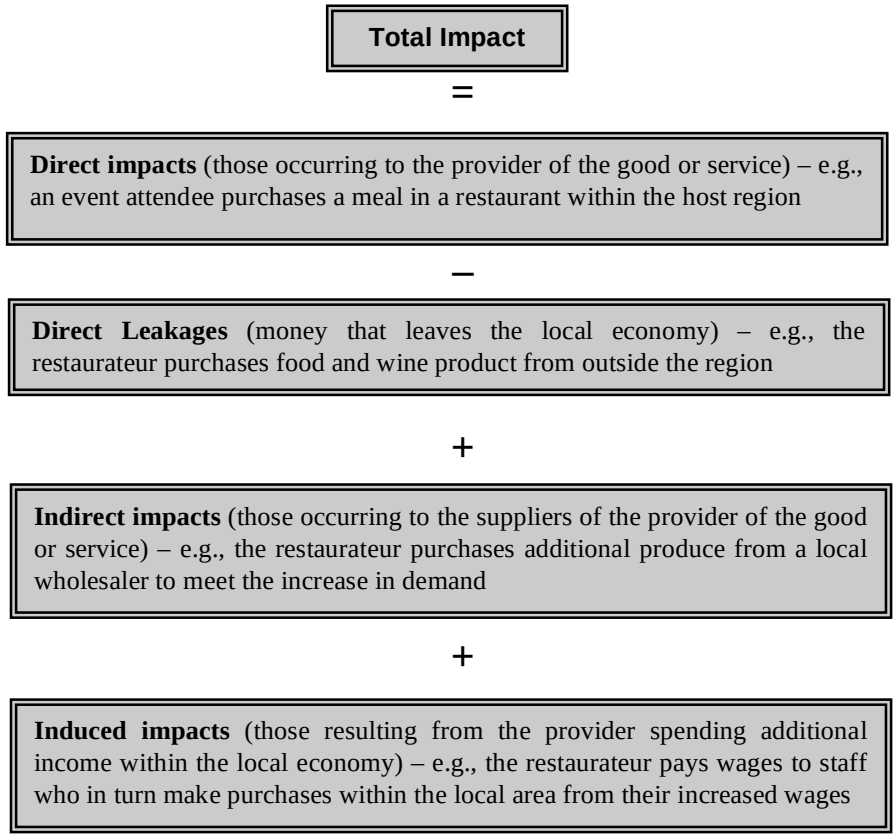
The import content of final goods and services associated with expenditure on an event represents a leakage out of the host economy. In the case of non-local government and other non-local leakages, the direct revenue leaks out of the area and thus does not contribute any stimulus to the jurisdiction economy. For example, if a visitor buys some clothing at a shop, it is possible that the clothes have been imported from outside the area. In this case, the profits go to owners likely to reside outside the area. The measure of the impact of visitor spending on the regional economy should be net of the cost of imported inputs used in making those sales. The proportion of visitor spending on items produced outside the host region does not increase demand for the services of local residents.

## The Economic Impact of an Event

For any given level of expenditure on an event, the increment to value-added and employment in the region will vary according to which particular industries are the recipients of the direct expenditure. Some industries have much higher multipliers than others. Direct expenditure allocated to each industry (hotels, restaurants, transport etc.) can be multiplied according to the relevant sector multiplier value to yield an impact estimate both in aggregate and by industry segment (Price Waterhouse 1989).

The effect of the tourist spending on GSP can be estimated using an economic model that identifies and quantifies the linkages between different sectors of the local economy and linkages with other regions. The value of the 'multiplier' will depend on the type of model employed. The total impact of an injection into the economy is summarised in Figure 8.

**Figure 8: Total impact of an injection into the economy**




## Deriving the Value of 'Multipliers'

Multipliers measure the economic impact of an injection of spending into an economy, including any flow-on effects. They are the ratio of total impact (on output, household income, value added, or employment) to the original expenditure impact or shock (Multiplier = Total Impact / Direct Expenditure).

The higher the multiplier, the larger the effect of a given expenditure injection on the local economy. The process of estimating economic impact is done via a model of the host economy, which incorporates, either explicitly or implicitly, multipliers for different types of expenditure. The stronger are the links between tourism and other sectors within a destination,

the greater will be the value of the multiplier. The larger is the defined area geographically, the greater the scope for goods and services to be sourced within that area, thus increasing regional income and value added and employment for a given amount of injected expenditure. Multiplier values for a region within the state, given greater leakages of expenditure, will generally be lower than those for the state economy as a whole. The multiplier effect is weakened by leakages and interactive effects.

### Leakages

Several types of leakages act to reduce the economic impacts of events. Many studies have ignored the issue of whether the money spent at an event stays in the local economy. For example, money spent by visitors on hotel rooms, rental cars, and restaurants owned by business chains do not increase the welfare of people in the local economy but, rather, accrue to stockholders of the business. Delpy and Li (1998) highlight a form of leakage which they refer to as 'VIP switching'. This refers to the proportion of entertainment dollars distributed to catering and special event companies rather than to local eating and drinking establishments. As the event profile increases, so too does the demand for corporate hospitality and entertainment services. These tend to be sourced from larger urban, rather than regional areas, and thus may increase the size of the leakage from regional events.

### Interactive Effects

Unless there is significant excess capacity in tourism related industries, the primary effect of an injection of expenditure into an area is to alter the industrial structure of the economy rather than to generate a large increase in aggregate economic activity. Its effect will thus show up as a change in the *composition* of the economy rather than as a net addition to activity. Key mechanisms, which determine the size of the economic impacts resulting from increased tourism demand, include: factor supply constraints; real exchange rate appreciation; and current government economic policy (Dwyer, Forsyth, Madden & Spurr 2000).

The type of model employed in an impact assessment will determine the size of multipliers that underpin the estimates of changes in output, value added, and employment resulting from the staging of a special event. These multipliers can be based on either an Input-Output model, or a Computable General Equilibrium model. These two types of models are discussed in the next sections.

## Input-Output Models

The multipliers used to estimate impacts on output, income, and employment are invariably based on Input-Output (I-O) models (Crompton 1999). I-O models estimate the increase in economic activity associated with a change, such as an event, by calculating the increase in output directly, and adding the extra output in related industries, such as supplier industries. An I-O model for an economy sets out the relationships between inputs per unit of output for each industry sector. Each of the supplying sectors will in turn require inputs from other sectors, ultimately involving the whole production system in the economy. Value is added to each input which then becomes the output of the other sector and so on. I-O models can show the flow-on impacts on the economy of an increase in the final demand for goods and services, for example, the impact of increased expenditure due to the staging of a special event. The model treats these production relationships as being constant in the short run, allowing the measurement of the effects of a change in the regional economy through production of each sector, employment in each sector and income generated in each sector. This process continues and money is circulated around the economy until it eventually leaks away through retained earnings, taxes and imports (Fletcher 1994).

I-O models are based on a set of assumptions that includes (Briassoulis 1991; Fletcher 1994):

- All inputs and resources are supplied freely and no resource constraints exist. These resources are effectively assumed to be not used elsewhere; they do not come from other industries, and do not result in reductions in output elsewhere.
- Prices and costs remain fixed as economic activity expands. This excludes changes in factor and product prices with any consequent effects on employment and industry output.
- There are constant proportions between inputs and output, between labour and output, and between value added and output. That is, any change in output of an industry will lead to proportional changes in the quantities of its intermediate and primary inputs and these responses stay constant in the face of changing prices. This precludes 'interactive effects' of the type identified above which could lead to contraction of output and employment in certain industry sectors.

### Types of I-O Multipliers

Multipliers can be decomposed into the initial, production-induced and consumption-induced effects of the initial stimulus. There are two types of multipliers based on I-O models. These are referred to as Type I and Type II multipliers. Type I multipliers include production induced effects but exclude consumption-induced effects. Type II multipliers include both production-induced and consumption-induced effects. Using Type II multipliers, the 'multiplier effect' is the sum of all production-induced effects and consumption-induced effects of the initial stimulus. Consumption flow-on effects should not be included, as they wrongly assume no resource constraints. Thus Type 1 multipliers are the preferred measure.

I-0 multipliers for the Australian economy can be derived from the Australian Bureau of Statistics publication Cat No 5209.0. The Bureau does not calculate multipliers, but publishes sufficient data to enable them to be calculated using either spreadsheet software, or I-O dedicated software such as GRIMP (West 1986). Four commonly used multipliers are:

1. *output multiplier:* a measure of the effects of an exogenous change in final demand on the output of industries in the economy
2. *income multiplier:* income earned by households because of additional output
3. *value added multiplier:* value added at factor cost due to the change in output (i.e. wages, salaries and supplements earned by households plus gross operating surplus of business)
4. *employment multipliers:* employment generated as a result of increased output.

Although output multipliers have often been used to estimate the economic impacts of events, they give greatly inflated results. Output multipliers involve the multiple counting of economic activity at the various stages of production of a final good or service and have often been employed by event organisers interested in claiming the maximum economic contribution possible from the staging of an event. Value added multipliers do not double count changes in economic activity and are the preferred measure (Burns et al. 1986).

The following simple example is presented to illustrate the difference between these two types of multipliers. In the production of bread, grain is converted into flour, which is then mixed with other ingredients and baked into bread by the baker. Using output multipliers, the final output would be the sum of the output at the grain stage plus the output at the flour stage plus the output of the final product. Adopting this approach results in grain being counted at the first, second and third stages of production and the flour being counted at the second and third stages. Using value added multipliers, the grain is counted at the first stage, the added value in going from grain to flour at the second stage, and the added value in going from flour and other ingredients to bread in the third stage. Clearly, the value added multipliers give a much lower result than is obtained using output multipliers.

### Employment Multipliers

The levels of direct employment associated with inscope expenditure can be multiplied according to the relevant employment multipliers for each industry to determine the corresponding increments to employment generated by additional event-related expenditure. An employment multiplier derived from an I-O table measures the direct, indirect and induced effect of an extra unit of visitor expenditure on employment at the destination. Several studies have used employment multipliers derived from I-O tables for this purpose (KPMG 1996; The National Centre for Studies in Travel and Tourism 1989).

Caution needs to be exercised, however, in the use of employment multipliers from I-O models since they tend to exaggerate the amount of employment generated (Crompton 1995). The underlying reason is that I-O tables assume a constant proportional relationship between sales turnover and the level of employment. However, different firms, according to the nature and scale of their business, have different marginal propensities to employ labour in the context of increased sales. A major event represents a period of peak demand for firms in the hospitality and tourism industry, and generally, such firms operate with some unused capacity. The peak in demand would simply use up that surplus capacity. Extra shifts, more rostered hours, and overtime are all likely to be used, rather than hiring new staff, as firms adjust to the short-term increase in demand. Thus, in many firms, staffing levels may be relatively insensitive to changes in turnover, while other firms may seek better utilisation of those currently employed (e.g. provision of overtime, weekend work).

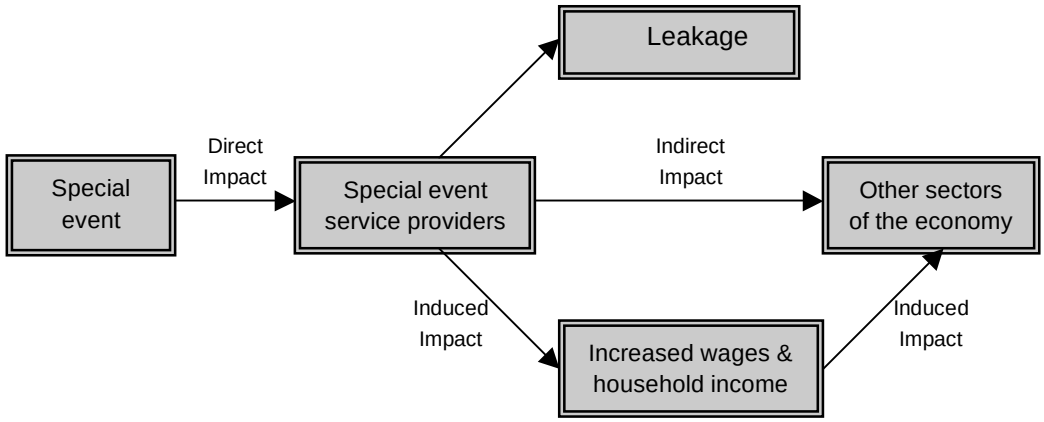
In the I-O modelling of events, the employment effects are a reflection of an assumed fixed relationship between the production of goods and services and the employment of labour in that production. In the business world, however, this relationship is quite flexible, and Faulkner (1993) argues that the short-term nature of events means that any employment effects, if they occur at all may be small and are likely to be short lived. Special events are not likely to generate lasting employment effects because of their ‘one off’ or short-term nature (Delpy & Li 1998), and thus the use of employment multipliers based on input-output tables is problematic.

If a destination offers a suite of events across the year, the employment opportunities are increased. Under these circumstances, a preferred way to estimate the direct employment generated is to undertake a survey of businesses, which provide goods and services to event organisers and visitors.

I-O models can help to estimate the impact of a major event on wage income in the host economy. This is a better measure of the labour impact of the event than employment, in a situation where businesses respond to the short-term demand peak by rostering existing workers on for extra hours. However, the political imperative will usually require some estimate of employment impact, and as such it is better to describe the jobs as being ‘sustained’ rather than ‘created’. Thus, a broad indication of the (full-time equivalent) employment impact of a special event can be obtained by dividing the economic impact by average weekly earnings, and then dividing this figure by 52 (weeks); this method has been used in some Australian studies (South Australian Tourist Commission 1996).

A summary of production induced effects, consumption induced effects and leakages in determining the economic impact of special events is presented in Figure 9.

**Figure 9: Flows from event expenditure**




### Reported Advantages of I-O modelling

The I-O model has been the most commonly used method for analysing the impact of special events on the economy. Its popularity is due largely to the following factors (Mules 1999):

- a large set of economic relationships are encapsulated into one simple matrix equation, making the model easy to use;
- over 30 years of research into methods of estimating the parameters of the model has resulted in low cost and effective estimation methods which may be applied at both the state and sub-state regional level; and
- results are easily interpreted and communicated to policy makers.

## Computable General Equilibrium Modelling[2]

### Flexible Assumptions of CGE Models

An alternative approach to deriving multipliers is based on computable general equilibrium (CGE) models. CGE models have increasingly been used, especially in Australia, the UK, the US and Canada, to simulate the economic impacts of a variety of changes, across several sectors (Dwyer, Forsyth, Spurr & Ho 2005). CGE modelling is based around a mathematical specification of key relationships within the economy (what determines levels of supply, demand etc), and is calibrated to real data to ensure that the model provides a good representation of the economy. With a comprehensive model of the economy which incorporates businesses, governments and consumers, it is possible to analyse the economy-wide impacts of changes in tourism spending, changes in subsidies or taxation, and other policy and market changes (Ennew 2003).

CGE models have a high degree of empirical content in the form of detailed commodity flows, labour market data and national accounts data. They include more general specifications of the behaviour of consumers, producers and investors, than those allowed in I-O models, thus permitting specific models to be calibrated to actual conditions in a particular economy (McDougall 1995). CGE models consist of a set of equations, characterising the production, consumption, trade and government activities of the economy, which are solved

[2] This section is heavily indebted to research undertaken by the STCRC Economic Modelling Team (Larry Dwyer, Peter Forsyth, Ray Spurr and Thiep Van Ho. The results of this research can be found in several publications including: Dwyer et al. 2000; Dwyer, Forsyth & Spurr 2003, 2004, 2005, 2006; Dwyer, Forsyth, Spurr & Ho 2005)

simultaneously. There are four types of equations (Blake, Durbarry, Sinclair & Sugiyarto 2001):

1. equilibrium conditions for each market ensure that supply is equal to demand for each good, service, factor of production and foreign currency;
2. income-expenditure identities ensure that the economic model is a closed system;
3. behavioural relationships give economic agents' reactions to changes in prices and incomes, determining consumers' demand for each good and service;
4. production functions determine how much is produced for any given level of factor utilisation.

The number of equations and degree of detail to which the economic activities are examined, such as the number of production sectors, factor types and consumer demands, depend upon the availability of data for the economy in question.

An advantage of CGE models over I-O models is that they can make specific assumptions about the availability of factors of production, such as to what extent their supply can be increased, and to what extent there is an excess supply of some factors (as with unemployment of labour). The behaviour of agents in a CGE model is assumed to be sensitive to changes in relative prices as well as quantity variables. CGE models can make explicit assumptions about government policy settings, and can incorporate a more realistic set of economy wide constraints on the supply side of the economy (e.g. constraints on the expansion of accommodation and skilled labour to meet additional event related demand). CGE models can estimate the impacts of increased tourism demand under a range of alternative macroeconomic scenarios, allowing for detailed inter-industry analysis together with supply side constraints and an active price mechanism (Dixon, Parmenter, Sutton & Vincent 1982; McDougall 1995; Dixon & Parmenter 1996; Adams & Parmenter 1999; Dwyer et al. 2000).

The development of CGE modelling has provided economists with an alternative approach to analysing the impact of tourism and one which has the same ability as I-O analysis to highlight the inter-sectoral linkages without being restricted to fixed prices and wages. Moreover CGE modelling has the additional advantage of being able to simulate the impacts on tourism of different policy changes. CGE models are particularly useful for tourism analysis and policy, given their multi-sectoral bases and ability to examine a wide range of actual and potential scenarios. In contrast to the I-O approach, CGE models can take account of the interrelationships between tourism, other sectors in the domestic economy, foreign producers, and consumers. The modelling can be tailored to alternative conditions, such as flexible or fixed prices, various exchange rate regimes, differences in the degree of mobility of factors of production, and different types of competition. CGE tourism models are particularly helpful to policy makers, who can use them to provide guidance about a wide variety of 'What if?' questions, arising from a wide range of domestic or international shocks or policy scenarios that could be considered. In addition to greater accuracy in estimation, CGE models may also provide a greater understanding of the nature of the impact of external shocks and policy changes (Ennew 2003).

CGE models provide a highly useful and flexible framework to examine the impacts of increased visitor expenditure associated with a special event.

### CGE and Event Impact Assessment

For purposes of estimating the economic impacts of an injection of 'new money' into an economy such as might be associated with an event, CGE models can:

- allow for the resource constraints on land, labour and capital that generally are present in an economy and which can limit changes in economic activity due to an event-related increase in the final demand for goods and services. For example, the events sector will need to expand output to meet increased demand by employing additional labour, land, capital, plant and equipment. The constraints are perhaps most evident,

however, in the case of labour which has some skills component. Some of these may be in limited supply, e.g. specific labour skills or workers for particular shifts or locations.

- recognise that relative prices may change due to an event, causing businesses to change the composition of their inputs. When there are capacity constraints, the prices on inputs and wages will increase in the face of an increase in demand, and the net impact of output and jobs from the increase in demand is much less than the initial injection of spending. These price rises will limit the extent of economic expansion associated with the event, and may even lead to contractions in economic activity in some sectors. In the presence of labour shortages, expansion in final demand associated with an event will increase the demand for labour, raising wage rates and reducing the demand for labour elsewhere. Further, increased land values due to tourism development will impact on the costs of other industries.
- recognise the behaviour of the government budget sector as having relevance for the estimated economic impacts of an increase in tourism expenditure associated with an event. For example, if additional infrastructure spending by government is required to support a special event, such as expenditure on stadia, roads and airport landing facilities, there will be a positive effect on spending but it must be financed. This may moderate the growth in private consumption associated with the event leading to downward pressure on the output of consumption-oriented industries.

Unlike I-O models, CGE models estimate the negative effects of injected expenditure in a region as well as the positive effects. These negative influences can be just as large as the positive influences, and, in certain cases, even larger (Adams & Parmenter 1992, 1999; Dwyer et al. 2005). The primary result of a change in tourism (or any other economic change) is a change in the *pattern* of economic activity. There may be a net *increase* in economic activity but this is not necessarily the case (Dwyer et al. 2000). A CGE model is needed to identify and assess this change in economic activity.

Since CGE models represent world best practice in assessing the economic impacts of changes in tourism expenditure (Dwyer, Forsyth & Spurr 2004), the technique has been argued to be no less relevant to estimating the economic impacts of events (Dwyer, Forsyth & Spurr 2005; 2006). In economic policy discussion generally, the CGE technique has almost completely supplanted I-O analysis. I-O modelling is rejected in most other areas of economic evaluation as a result of the simplistic assumptions upon which the latter is based. Indeed, event evaluation by tourism researchers and consultants is one of the few areas left in which I-O based multiplier models are still used for evaluation and policy advice purposes.

### Additional Benefits of CGE Models in Event Impact Assessment

The following sections list and discuss briefly some of the benefits of the CGE approach to event impact estimation.

#### Multi State Events

Some large events, such as the Olympic Games and Rugby World Cup, are held across several states or regions in economies (and now, across more than one country as is the case for World Cup Soccer). This gives rise to a pattern of flows of visitors both into, and out of, the states hosting the event. It is a simple matter for a multi-regional CGE model to take account of these flows and estimate the net impact of the event on state and national economies. I-O models focus on a single area and the expenditure injected into it, and thus they cannot handle easily multi-state events.

#### Taxation Revenue

A higher-level government outside of the area in which an event is being staged may be interested in the implications of the event on state and national tax revenues. Changes in the

patterns of expenditure brought about by the event give rise to increases and decreases in tax revenues because different aspects of economic activity are taxed differently. Furthermore, changes in tax revenues lead to changes in government spending and tax rates, which in turn, influence economic activity. These effects are captured in CGE models. Since I-O models do not estimate the negative impacts on expenditure and activity, they cannot be used to estimate the net effects on tax revenue.

### Subsidies

Events are often subsidised by governments, being financed from government revenue or as a result of reductions in other government spending. These changes have implications for economic activity and jobs in the state and beyond. Subsidies can be modelled using CGE models and the implications of these subsidies for economic activity can be estimated. This can be done by making assumptions about how the government subsidies are financed, be it from increased taxes, increased public debt or decreased spending on other goods and services. In each of these cases, financing the subsidies will have a negative impact on economic activity. I-O models are not able to model subsidies.

### Relevance of the Jurisdiction

In the discussion thus far, the role of government has been largely neglected. A government deciding whether or not to provide financial or other forms of support to an event may wish to have background information that is not obtainable unless a CGE model is employed to forecast the impacts.

To make informed decisions about events policy, governments may need to know the answers to questions such as: how much will the event add to economic activity and jobs after accounting for inter-industry effects?; is the event likely to produce net economic benefits, and if so, how much is it worth subsidising?; and, to what extent do the benefits of the event come at a cost to other jurisdictions?

Thus, a local council might undertake an economic impact study to determine whether to support a festival in the town or to finance road construction. If the perspective of the local government is taken, it is only the local effects of the event that are relevant. However, where a state or federal government is contemplating financial support for an event, it will be interested not just in the impact in the local area, but also the impacts on the state and/or nation. The impact on economic activity in the state as a whole cannot be determined from a local I-O analysis. An event may increase economic activity substantially within a local area but its net impact on the economic activity within the state will normally be much less, and conceivably negative. The impact on national output will be even less again and it is more likely to be negative. Local impact studies will not provide public sector decision-makers with sufficient guidance as to whether they should support local events financially or otherwise, since they will also need to know the overall state-wide impacts. Likewise, national governments will be interested in the impacts of events or projects on activity in the nation, not just the impact in particular states or regions.

For these reasons, the perspectives on an event from the local, state and national levels will be quite different. An event may be highly attractive to a rural city, though only of marginal or negative benefit to a state. Notwithstanding this, a state government may be prepared to subsidise the event, even though it is basically shifting, rather than creating economic activity and jobs. This could be so if a region is depressed, and the state government wishes to provide a stimulus for the local economy. For this to be worthwhile, the event must be assessed in comparison with other forms of stimulus as there may be ways in which the same funds could generate a greater impact on local economic activity, or a similar impact without as large a negative impact on other parts of the state. If so, it would be more effective to subsidise these alternatives rather than the event. Such decisions should be taken in full awareness of who will

be the winners and losers within the state, both in regional and industry terms. The losers might well be other depressed regions, or industries, within the state. Where an event receives financial support from the state government, assessment of the state-wide effects is critical.

### Criticisms of CGE in the Economic Impact Assessment of Special Events

While even the strongest advocates of I-O would generally agree that the CGE approach to economic impact estimation is conceptually superior, a number of criticisms are levelled at the use of CGE modelling in the event domain. The main criticisms or constraining statements are as follows:

- CGE Models are not needed for other than very large events;
- CGE Models are not necessary for events held in regional areas;
- The choice of economic model does not matter since adjustments can be made to I-O results to make them more realistic;
- CGE models require too many assumptions, which makes them too complex to use; and
- CGE models are costly and are often not available in various regions.

On the basis of such arguments, I-O analysis is often selected as the preferred approach over CGE modelling in event evaluation. These claims are considered in detail by Dwyer et al. (2006) and rejected. A brief discussion of these criticisms is listed below as well as some discussion on any qualifications that may need to be made.

### Size of Event

It is sometimes claimed that CGE modelling is appropriate for calculating the impacts of large events, but that it is not suitable for calculating the impacts of small events and that I-O can be used in this context (Mules 1999). Underpinning this claim is the view that the economy-wide market effects addressed in the CGE model do not occur for smaller events.

In response, it can be stated that small events have much the same types of impact as large events, and they work through the economy in exactly the same way. Strictly, any size event will have interactive effects that must be accounted for in calculating impacts. Small changes can be analysed using CGE analysis just as readily and correctly as large changes. Thus, in principle, CGE analysis should be used for events irrespective of their size.

### Location of the Event

Some claim that I-O models can be used to estimate the impacts of events in areas that are separate from the main centre of the economy such as in rural towns and cities. It is argued that the key assumptions which I-O analysis makes, namely, that resource constraints do not limit the expansion of economic activity by very much, may be approximately met in regional areas well removed from cities (Hunn & Mangan 1999; Mules 1999). The fact that CGE models are rarely available in more remote regions at the present time is used to further support this argument. At least three qualifications, however, must be made prior to supporting the use of I-O models in these settings.

First, even in remote areas, the assumptions of I-O analysis may not be met - some key inputs cannot be expanded readily, if at all. In a restricted local area, such as a rural town, the displacement effects are likely to be greater than in a larger centre of economic activity. Consider accommodation: an event will increase demand for accommodation and the local accommodation supply may be tightly constrained. With the increased demand associated with the event, prices may increase, and other potential visitors may go elsewhere. I-O analysis is not able to identify these effects and will thus tend to overestimate the size of the economic impact, unless the resource constraints are allowed for by making downward adjustments to the estimated impacts.

Second, while economic activity, including household incomes, within the area may increase, some of this will have only a peripheral impact on the local economy. As was stated in the earlier discussion of 'leakages', labour and services from outside the region will often be brought in during the event. This will count as increased economic activity within the area even though it will not have any real impact on the area since the incomes earned will be mainly spent outside the local economy.

Third, I-O analysis is not appropriate to estimate the local effects of an event, which takes place within a major centre of economic activity, such as a provincial city. Here, the resource constraints will be critical as the resources needed in the area hosting the event will be drawn from other parts of the city. In this situation, the local effects are generally meaningless because the existing resource constraints and feedback effects will lead to negative impacts on activity in other parts of the regional economy.

### Adjusting the Results of I-O

It has been claimed that differences between the estimates of economic impact derived using the two techniques (I-O and CGE) are fairly small for most events and that adjustments can be made to the I-O results in recognition of any such differences. Some advocates of I-O have suggested that the economic impact result obtained using an I-O model is 10-15% less conservative than the result obtained using a CGE model and thus a percentage adjustment can be made at the end of the evaluation. The problem with any such 'rule of thumb' adjustment is that it ignores the information lost to the analyst and clients by using I-O instead of CGE modelling. This information includes those industries negatively impacted upon as a result of event related expenditure, both in the host region and outside it, as well as the extent of gains and losses of GSP, real output and employment in other regions. The particular industries affected and the extent of expansions or contractions depends on the industrial structure of the host economy. Such information may well be critical to event assessment. Depending on the types of effects projected, this information may well determine the willingness of governments to support the funding for some events (as well as sponsorship from interstate, depending on the projected industry effects elsewhere).

### The Assumptions of CGE

It is sometimes claimed that too many assumptions are required in the use of CGE analysis to assess event impacts (Hunn & Mangan 1999). This claim must be heavily qualified.

CGE models are more comprehensive and incorporate more markets and processes, hence more assumptions must be made. These involve how markets work, how taxes are levied, how production is structured, and how consumers behave. These assumptions are based on available empirical work, and they are chosen to give the best practical representation of the economy. I-O analysis makes fewer assumptions than does CGE analysis, but the assumptions it does make about production processes are highly stylised, and open to criticism. In effect, I-O analysis avoids making assumptions about how the rest of the economy works by simply ignoring it.

A major strength of CGE analysis is that its assumptions can be varied and the sensitivity to them tested. Unlike the assumptions of the typical I-O model, the implications of which are rarely conveyed to stakeholders, the assumptions of CGE analysis can be identified, varied, and analysed for their realism. The fact that CGE simulations can be undertaken using different assumptions, the realism of which can be discussed and debated, provides a transparency to the assessment process that rarely exists in I-O modelling.

### Cost and Availability

CGE models are sometimes criticised as being too time consuming and expensive to build (Hunn & Mangan 1999; Mules 1999). Cost considerations may be an important practical

consideration but CGE modelling techniques and software systems are now routinely available, and the data should be assessed in terms of its importance for the question being investigated rather than just in terms of the ease of data mobilisation (McDougall 1995).

It does cost more to develop a CGE model from the beginning, but in many cases, it is unnecessary to do this. In Australia, several CGE models, national and regional, have been developed, with more models being under construction. Research Centres have developed models that can be readily used, and most of the main economic consulting firms have their own models or have access to a model. Some state treasuries in Australia are spending considerable sums in developing their own CGE models, but this is in order to have substantial in-house expertise with which to examine a very wide range of issues (tax, industry policy, major projects), and not just for tourism. Assuming that a CGE model and an I-O model are available, the cost of analysing a change with them would be much the same; most of the cost is in preparing the inputs and in interpreting the outputs, not in developing or running the model.

Estimating the economic impacts of a single event may not justify the expense of constructing a new CGE model if no suitable model already exists. In a small regional economy or sub-state region, relative prices can be assumed to be set outside such economies, which are typically very open to commodity, and factor flows and face no external account constraint. In these circumstances, the range of mechanisms encompassed by a CGE model, over and above those included in an I-O model, may not be of much practical importance. In such cases I-O analysis can be employed to estimate economic impacts as long as its assumptions and deficiencies are acknowledged. It must be recognised, of course, that the positive impacts cannot be extrapolated to the wider national or even state levels.

## Examples of CGE Models Used in Event Impact Assessment

A CGE model was recently employed to estimate the economic impacts of the Sydney Olympics (Arthur Andersen / CREA 1999). The model enabled estimates to be made of the economic impact of the event on New South Wales and Australia for each of the pre-event, event year and post event phases. Results indicated that in the post event phase (to 2006), New South Wales would suffer reductions in real GSP, real consumption and employment, while nationally, there would be a reduction in real consumption and employment.

A recent study by the STCRC compared the results of using CGE and Input-Output modelling to estimate the economic impacts of a special event. Two types of events were selected for study, namely, a large event located in a capital city, and a small event located in a country area. For the large event, the expenditure data were based on data collected for the Australian Formula One Motor Cycle Grand Prix 2000. For the small event, the expenditure data were based on data collected for the Motorcross event held in Benalla, Victoria, 2001. The project team estimated the economic impacts of each event on the New South Wales and Australian economies, and on the economy of the Rest of Australia using both a CGE and I-O model. The I-O model used was that contained within the CGE model developed by the STCRC economic modelling group (Dwyer et al. 2005).

For illustrative purposes, the comparison for the large event is shown here. The expenditure data fed into the I-O and CGE models included the total injected expenditure associated with visitation and administration of the event from interstate and overseas sources ($51.25 million). Expenditure injected from interstate sources was $29.5 million, while expenditure injected from overseas was $22.7 million. In a similar fashion to the manner in which visitor expenditure was allocated to the main industry sectors, injected organiser expenditure was also allocated to these categories.

Table 8 contains estimated impacts of the event that injects $51.25 million into the New South Wales economy. The impacts are distinguished according to the model used (I-O and

CGE) and the impact on the host state (NSW), the rest of Australia (RoA) and the nation as a whole (Aus).

For New South Wales, the assumed host state, the I-O model yields much larger multiplier values, and thus correspondingly larger projections of event impacts on output, Gross State Product (GSP), and employment than the CGE model. In the Input-Output analysis, the addition to output was estimated at $112 million and the net change to GSP was estimated at $38.9 million. By contrast, the estimated impact on state GSP using the CGE model was only $56.7 million and $19.4 million, respectively. The two models give different employment projections also. The projected increase in employment using an Input-Output model is 521 (full time equivalent) jobs in the state and 592 jobs throughout Australia. Using a CGE model the projected employment effects are 318 jobs and 129 jobs respectively.

The two models also differ regarding the magnitude and, in some cases the direction of the impacts on Australia as a whole, and RoA, of changes in output, GSP, and employment associated with the event. For RoA, the models differ in respect of whether the impacts are positive or negative.

The I-O model also projects greater impacts on real output and GDP in Australia than in New South Wales while, in contrast, the CGE model projects smaller changes in Australia than in the state. Differences here are due to reduced output, GSP and employment in RoA associated with the event, which are projected outcomes of the CGE but not the I-O model. The negative impacts on other states come about because of (a) the switch of expenditure from the RoA into New South Wales as interstate visitors attend the event, and (b) the increase in demand for resources, such as labour, bidding resources away from other states, reducing economic activity in them.

The I-O model projects positive impacts on all industries that indirectly serve tourist needs, while the CGE model indicates that certain industries contract their output and employment due to 'crowding out' effects. These crowding out effects reduce economic activity in the host state, or interstate, or both. While not shown here for space considerations, the industries most adversely affected, within the host state and nationally, include export oriented and import competing industries such as Water Transport, Motor vehicles, metal products, Chemicals, Mineral ore, Black coal, Agriculture, Textiles, clothing and footwear and Other manufacturing (Dwyer et al. 2005).

The comparison reveals substantial differences between the estimated impacts depending on the type of model used. Similar results were obtained in comparing the economic impacts derived using CGE and I-O modelling for the smaller Motorcross event that was held in a regional area (Benalla, Victoria). While further comparisons of events may be useful, there is little reason to believe that the types of differences noted for the event would not exist for other events also.

**Table 8: I-O and CGE output, GSP and employment multipliers for NSW and RoA, for a large event held in NSW (Shock = $51.25 million)**

| Macro variables | NSW (I-O) | RoA (I-O) | Aus (I-O) | NSW CGE | RoA CGE | Aus CGE |
|---|---|---|---|---|---|---|
| **Change in real output ($million)** | 112.0 | 8.1 | 120.1 | 56.7 | -32.2 | 24.5 |
| **Change in real GSP/GDP ($million)** | 38.9 | 4.4 | 43.3 | 19.4 | -10.6 | 8.8 |
| **Change in employment (number of jobs)** | 521 | 71 | 592 | 318 | -189 | 129 |
| **Output multiplier** | 2.2 | 0.16 | 2.3 | 1.2 | -0.3 | 0.9 |
| **GSP/GDP (or Value added multipliers)** | 0.8 | 0.09 | 0.8 | 0.4 | -0.2 | 0.3 |
| **Employment multiplier (per million dollar)** | 10.2 | 1.4 | 11.6 | 6.2 | -3.7 | 2.5 |

### Summary: CGE Vs I-O in Event Impact Assessment

The conclusions of the above discussion are summarised in Table 9.

**Table 9: I-O vs CGE comparison of positive factors**

| Input-Output | CGE |
|---|---|
| 1. Relatively easy to use<br>2. The ABS publishes a national model and much of the required data<br>3. Cost effective<br>4. Easy interpretation & explanation of results<br>5. Considers effects of initial 'shock' as well as flow on impacts on the economy<br>6. Effective means of analysis at the local level only if inputs can be readily expanded | 1. Sophisticated and can be constructed using different levels of detail<br>2. Economy wide analysis allows for the reality of resource constraints and the existence of other markets<br>3. Enables comparison between events and a calculation of their relative costs and benefits<br>4. Interactive effects between different industries are considered<br>5. Negative impacts are accounted for<br>6. Useful in analysing large scale events and events in urban areas<br>7. Fiscal implications observed<br>8. State and federal governments' interest beyond local impacts requires a CGE analysis<br>9. Implications of subsidies to support events can only be modelled using CGE analysis |

### Net Economic Benefits

The changes in economic activity (such as in GDP), which are estimated to flow as a result of an event, are often described as the 'economic benefits' of the event (see, for example, Ingerson & Westerbeek 1999). Although this may just be loose talk, it often makes events look more attractive than they really are. When a study estimates that 'benefits' of $100m will flow as a result of an event that can be staged provided that it receives a $10m subsidy, it looks like a very attractive proposition. However, it may actually be a very poor deal, because 'benefits' may not mean what they seem.

Economic impacts, such as the change in GDP resulting from an event, are not the same thing as the economic benefits which arise. The impact on GDP is a *gross* measure of the change in value of output as a result of an event. This addition to output normally requires additional inputs, of land, labour and capital, to enable it to be produced. These inputs have a cost, and this cost must be deducted from the change in value of gross output if a measure of the net economic gain is to be made (Dwyer & Forsyth 1993). When allowance is made for this, a change in gross output, of say $100m, might give rise to a *net* economic benefit of something much less, such as $5-10m. Thus, a subsidy of $10m to secure an event, which adds $100m to GDP, might not be worthwhile.

Economic impact studies usually measure the gross expenditure from an event. Some measure the increase in GSP, usually through a simple I-O model. Both approaches ignore important costs, measure only gross benefits, and overstate the net benefit from special events. I-O models, and many CGE models, do not produce, as part of their normal outputs, measures of net economic benefit. They typically report changes in the gross value of output, as measured by GDP or GSP. They do not subtract the additional cost of factors needed to produce this additional output. CGE models, however, can be constructed to do this. Some are constructed with an explicit measure of economic welfare, which forms an integral part of the model (Dixon, Picton & Rimmer 2002). Alternatively, a standard model can be adapted to produce an estimate of net benefits, as part of its output, that is, the cost of additional inputs is subtracted from the value of the additional output. This latter approach has been used in the tourism CGE project supported by the STCRC, the results of which were reported above. The net benefit to New South Wales from hosting the Grand Prix type event, which brought an additional $51.3million in spending into the state, is estimated to be $4.7 million. This is much less than the addition to GSP of $19.4million. The net benefit to Australia from this event is estimated to have been $1.7 million, which is very much less than the change in GDP of $8.8 million (Dwyer et al. 2005).

### Recommended Approach

Overall, therefore, it is recommended that CGE modelling be used for the economic evaluation of special events rather than I-O modelling. CGE modelling is more advanced and will produce results that are more reflective of the true impact of an event, including the possible situation where an event has an overall negative impact on the economy because the negative impacts of the event on other sectors exceed the positive impact on the tourism industry. I-O modelling is always positive as these downsides in other sectors cannot be handled. When CGE modelling is used, however, it is critical that the assumptions used in the CGE analysis are clearly listed so that the results can be interpreted as clearly, the final figure depends heavily on the assumptions that are made.

### An Approximation

Although CGE modelling is the recommended approach to assessing the economic impact of special events, it will not always be practical to employ a CGE model. Reasons for this could include the fact that there may not be a CGE model available for the region under consideration. CGE models are not generally available for regions below state level. In some event evaluations, the budget available to undertake the assessment may not be sufficient to cover the cost of constructing a CGE model. Despite this, however, there is increasingly the expectation that some form of economic assessment should be undertaken. Often such assessments have been undertaken using I-O models as these are generally more readily available and require less expertise to operationalise.

As discussed earlier, there has been substantial abuse of multipliers in the past that has led to the gross overstatement of economic impact. As a consequence, many government treasuries will now not even consider impact results that utilise I-O multipliers, even if they are value-

added multipliers that are generally much less than one. Clearly, there is little value in undertaking an event evaluation for which the relevant state treasury will not accept the results. In order to overcome this complication, it is recommended that 'direct inscope expenditure' be used as the basis to measure economic performance of the event to the host region.

Whilst this approach does not measure the actual economic impact of the event, it does measure the level of new funds that are attracted to the region as a result of the event, which provides the injection for subsequent flow-on impacts in the local economy. Direct inscope expenditure can be a basis for comparing the economic performance of an event over time as well as between events without becoming sidetracked by the debate over which multiplier to use. A further benefit of this approach is that economic impact analysis can be done subsequently if required, given that a direct inscope expenditure figure is the fundamental starting point for any economic impact study irrespective of whether a CGE or I-O model is used. Discussions were held with representatives from most state and territory treasuries in the preparation of this guide and there was general support for measuring direct inscope expenditure as the basis for comparing the relative economic performance of events. The questionnaire presented in Appendix A can be used to estimate the direct inscope expenditure of an event.

A state or territory could use CGE modelling to compare the economic impact of government support for events versus other sectors or projects that government could consider. Once a decision is made to provide a pool of funds to the event sector based on this approach, the key issue is then to decide which particular events to support and to what level. This is where Direct Inscope Expenditure can be used to compare quite simply the economic performance of one event with another and thus underpin government decisions as to which events to support as higher priorities. When the economic impacts of events are compared, it is often more a function of a comparison between the workings of the host economies rather than of the events themselves. Using Direct Inscope Expenditure as the basis to compare events overcomes this problem.

Chapter 5

# HOLISTIC EVALUATION: THE WAY FORWARD

Although the focus of this guide has been on the economic evaluation of events (see Figure 1), the importance of assessing the more holistic impacts of events rather than simply relying on economic dimensions should be stressed again. Events have important impacts on the quality of life of local residents and these must be measured and evaluated in order to ensure the longevity of events in any given region. Similarly, the environmental impacts of events can be quite substantial and need to be assessed. Other impacts, such as business leveraging and destination image building are also very important for many events and should be assessed if one is to understand the total impact of an event.

In a somewhat belated recognition of the need for a more holistic evaluation of events, quite a deal of work has been done in recent years attempting to develop standardised measures for non-economic impacts of events. There is still substantial work that is needed in these areas before a comprehensive framework can be agreed upon. In particular, there is much work required to actually weave together the results of the different components of event evaluation into a single framework so that overall assessments can be made. The work of Fredline, Raybould, Jago and Deery (2004) provides an early attempt to put such a framework together. It used independent scales to measure the economic, social and environmental impacts of an event and then used the area of a graphical representation of the measures to provide an overall assessment of the event impact. Cost benefit analysis is a more traditional approach to assessing the overall impact of an event.

## Cost Benefit Analysis

Cost Benefit Analysis (CBA) is an evaluation technique based primarily on the notions of 'scarce resources' and 'opportunity cost'. It was developed because of the need to look 'economy-wide' for the range of economic, social and environmental impacts of an event. With any project or policy decision having multiple dimensions, CBA does not rely on any single dimension such as the economic perspective. In today's climate, where increasing importance is placed on environmental, cultural and health aspects, this 'economy-wide' or holistic approach to analysis is critical. By measuring the overall costs and benefits and the aggregate impact of all aspects, CBA is thus widely used in a variety of industry sectors to evaluate an assortment of measures, such as health policy initiatives, tourism strategies, and public and private sector investments. Cost-benefit analysis is a valuable tool to provide information and support decision-making (Dwyer & Forsyth 1993; Boardman, Greenberg, Vining & Wemer 2001; ACT Auditor General 2002).

When resources are limited and there are alternative uses for them, CBA attempts to provide a framework for determining their best use. It seeks to measure the cost of a project or proposal against the loss of opportunity of doing something else with those resources, that is, the 'opportunity cost'. In other words, it measures the value of the best alternative, and the opportunity cost(s) refers to the value of the next best alternative(s) that must be foregone.

For example, government sponsorship for a program necessarily entails it relinquishing something else, since its resources are limited. A government tourism department, with its restricted funding can either subsidise a 'Special Events' program or a 'Marketing Promotion' program. If it chooses the 'Special Events' program, then the cost of giving up the 'Marketing Promotion' program is an opportunity cost, which could include reduced visitation and associated expenditure to the destination in the future. CBA identifies these opportunity costs and helps decision makers choose one option in preference to another. The opportunity cost of allocating funds to one program is the most valuable alternative foregone.

The standard approach is to identify costs and benefits that are directly attributable to the project, quantify costs and benefits, apply an appropriate discount rate to future cash flows to calculate net present value, conduct sensitivity tests for uncertainty, and then consider equity issues and intangibles. Cost-benefit analysis attempts to measure all major costs and benefits associated with a project. This approach is more encompassing than methodologies confined to measuring net economic benefits. CBA expresses the costs and benefits in dollar amounts as a convenient measuring tool. The difference between the total benefits and total costs is the net benefit of the project. The net benefit can be compared across different projects (ACT Auditor General 2002).

### Applying CBA to Special Events

CBA is a useful tool for measuring and comparing the benefits of a special event with the costs related to that event, and its use was recommended in 1986 by Burns, Hatch and Mules. However, it has not been widely used because it is more difficult to employ than simpler and more narrowly based economic assessments.

A major reason for undertaking a CBA is to ensure a consistent approach to evaluation that enables comparison of different options. A CBA should measure all effects, costs and benefits of an event. While the benefit of an event may be the impact on production levels, thereby primarily benefiting operators, the costs, such as traffic congestion and noise levels, could be on the wider community. An event is considered a success if the sum of benefits exceeds the sum of the costs of that event; in short, if the community as a whole benefits from the event.

CBA provides a framework, which can be applied in a straightforward manner to events. It is a matter of identifying and valuing the costs and benefits, which accrue as a result of the event, as comprehensively as is feasible. Some of these benefits and costs can be measured directly, including benefits to patrons, and the environmental costs of staging the event (such as noise and traffic congestion). If intangible objectives, such as ‘publicising the region’ or ‘promoting community pride’ are considered important to the project, then a means of assessing their ‘worth’ should be determined and the best way to pursue them should be carefully considered. In considering intangibles, attention should be given to the impact on the community (such as who is affected and how) and the likelihood of the full impact being realised. Where there is good reason to believe that prices paid or received do not represent true opportunity costs (e.g. where the event is provided with the use of valuable land free of charge), shadow prices should be used. ‘Shadow pricing’ refers to changes made to nominal prices to reflect real costs (Boardman et al. 2001). With information about the net economic benefits from the event, funding and support agencies can make informed decisions about the event. If the net benefits are positive, support for the event can be justified. It is also possible to assess the level of subsidy that is appropriate, if subsidies or tax concessions are required for the event to proceed.

An Example: CBA of a Car Race Event

The ACT Auditor General, in a review of the V8 Car Races in Canberra, provided a useful overview of the types of costs and benefits that would be included in a CBA of that event. The main types of costs and benefits associated with the car race were the direct financial flows to Australian Capital Tourism Corporation (ACTC) (expenses paid and revenue received), and other direct costs and benefits such as the benefits from interstate tourist spending. The relevant items are summarised here (ACT Auditor General 2002, pp. 15-31).

## Net Direct Financial Costs

The net direct financial cost is the expense (current and capital) met by ACTC, less revenue received by ACTC from sources other than Government. The Government subsidy to ACTC is funded by taxpayers and thus is not revenue generated by the event.

The (current) costs of conducting the races are opportunity costs - what has been paid to attract resources away from their next best alternative use. Capital costs are treated as expenses in the year in which they are incurred. The residual value of the capital stock at the end of the project is counted as a benefit.

In respect of revenues, the price consumers pay for a good reflects their marginal willingness to pay. Therefore, ticket revenue received by ACTC reflects the value of the race to paying spectators. The GST revenue raised on ticket sales is not included as a benefit because it accrues to the Federal Government.

## *Other Direct and Indirect Net Benefits*

Benefits are generated from:

1. Interstate tourist expenditure
2. Consumer surplus, and
3. Intangibles such as civic pride and publicity value.

1. A CBA estimates the benefits to the destination from additional visitor spending and not just the gross expenditure of visitors. The actual benefit from a dollar of visitor spending is difficult to determine. It has been estimated that, in the ACT, a dollar of interstate visitor spending translates into an increase of 71 cents in GSP. This represents the benefit of the additional dollar spending only if it is assumed that the resources used to produce the goods and services purchased have no alternative use. Since this is unrealistic, the 71 cent estimate is an upper bound to the benefits accrued per dollar of additional visitor spending.

2. **Consumer Surplus** – measures the gain to local residents who attend the event. It is the difference between the amount residents would be willing to pay for a ticket and what they actually pay.

3. **Intangible Benefits** – the two main intangible benefits for the car race are considered to be publicity for the ACT and enhanced civic pride in the city by the community.
   Media coverage of the race may result in a general increase in tourism in the future. Given the difficulty of quantifying this, the Audit estimated how many tourists would need to be attracted to justify the net cost of the race (i.e., the financial cost less direct and indirect benefits). Several estimates were made, based on different assumptions regarding the additional tourism and benefits to the local community resulting from the additional expenditure. It was concluded that large numbers of future tourists additional to those who come for the race must be attracted for the race to break-even on economic grounds.
   It is very likely that a race car event will not enhance civic pride or provide 'warm glow' benefits to all residents. Indeed, many residents oppose such events on various grounds. The Audit concludes that the net overall effect on civic pride is likely to be very small and will not outweigh the costs of the race to the ACT resident community.

4. **Intangible costs** – the main intangible costs comprise road congestion and noise costs. Estimation of the time lost due to road works to set up the V8 Super car race circuit requires information on the extent of traffic delays, the number of people affected, and the duration of the disruption. To estimate the costs of road congestion, the cost of travellers time must also be imputed, together with an estimation of the extra

running costs of cars and additional pollution while in traffic jams. The Audit concluded that such costs were small compared to the direct expenses associated with the event.

Estimating the cost of additional noise nuisance generated by the event is also difficult. The cost of noise can be estimated from how much people are willing to pay to avoid it and economic techniques are available to estimate this (Boardman et al. 2001). The Audit concluded that noise cost associated with the race is likely to be small.

Other costs are also difficult to estimate. These would include the value of time of ACTC and other public service staff who work on the project but not full time. Also omitted are the additional costs generated by taxes to meet the financial costs of the race. These include administrative costs incurred by government in assessing and collecting the taxes and compliance costs incurred by taxpayers. As the Auditor notes, taxes impose economic costs, or 'excess burden' because they induce individuals to consume a less desirable bundle of goods and services than they otherwise would purchase. The more the tax changes behaviour, the greater the excess burden.

As a result of the CBA, the ACT Auditor General concluded that the V8 super car races created net costs for the Australian Capital Territory in both 2000 and 2001. This was despite the estimation of positive impacts on the region using traditional I-O analysis.

## Conclusion

If policy decisions are to advance overall economic welfare, it is 'net benefits' that should be compared to the cost of the event. If a $1.0 million subsidy is needed to make the event happen, and there are no other costs or benefits, the net benefit from increased economic activity will need to be at least $1.0 million (and the change in GSP or GDP probably much bigger than this) for the subsidy to be worthwhile. If subsidising events is to be regarded as an investment to produce benefits, it should be judged according to cost benefit criteria.

It is valuable to undertake rigorous and systematic cost-benefit analysis, even if it is difficult to estimate some costs and benefits with precision. Judgement must be used, but it is useful to put those judgements within a rigorous framework to make clear the assumptions and judgements made and to compare alternatives. Even if some costs and benefits cannot be assigned a dollar value, it ensures these factors are considered in the decision-making process.

# APPENDIX A: QUESTIONNAIRE TO COLLECT EXPENDITURE OF EVENT ATTENDEES

### Examples of questions suitable for collecting economic data from event patrons

**Q1. Where do you usually live?**

Post Code ☐☐☐☐

Shire of the Event (**'*the region*'**) 1 → go to Q3

| | |
|---|---|
| Melbourne | 2 |
| Other Victoria | 3 |
| Interstate | 4 |
| International | 5 |

(please specify)

……

**Q2. How many nights do you intend to stay in the '*the region*' during this visit?**

Nights ☐☐

**Q3. What is your estimated expenditure in '*the region*' during this visit?**

**Please include all spending made by you or likely to be made by you and all members of your family.** Remember to include all payments made by cheque, bankcard and credit cards. Include your best estimates if you are unsure of exact amounts.

a) **Accommodation?** (include prepaid) (if unable to estimate please specify type of room, name of hotel, motel, caravan park, camping ground etc. and length of stay)

$A ☐☐☐☐

……

b) **Meals, food and drinks not included in your accommodation bill?**

*$A* ☐☐☐☐

c) **Event tickets?** (include advance Bookings)

A$ ☐☐☐☐

d) **Other entertainment costs?** (eg. If going to other tourist attractions not connected to the event eg. museum)

$A ☐☐☐☐

e) **Transport in '*the region*'?** (eg. taxi fares, petrol, vehicle repairs, car hire)

$A ☐☐☐☐

f) **Personal services?** (eg. hairdressing, Laundry, medical)

$A ☐☐☐☐

g) **Any other expenditure?** (eg. films, gifts, books, wine, souvenirs, clothing, toiletries)

A$ ☐☐☐☐

**Q4. How many people does all of this expenditure cover?**

Adults ☐ Children [Children are defined as under 15] ☐

**If resident of '*the Region*' go to Finish.**

**THE FOLLOWING QUESTIONS ARE ABOUT YOU ONLY (THAT IS, DO NOT CONSIDER OTHER MEMBERS OF YOUR TRAVELLING PARTY).**

**Q5. Would you have come to the '*the region*' this year had The Event *not* been held?**

| | |
|---|---|
| Yes | ☐ 1 → go to Q6 |
| No | ☐ 2 → Finish |
| Don't know | ☐ 3 → Finish |

No - Someone who would not otherwise have come, was drawn to 'the region' because of the event, i.e. would otherwise have made 0 visits to 'the region' this year.

**Q6. If you were coming to *'the region'* in any case this year, was your visit an *additional* visit especially for the event? By additional we mean you came on an extra visit because of the event.**

| | |
|---|---|
| Yes | ☐ 1 → Finish |
| No | ☐ 2 → go to Q7 |

*Yes - Someone who was intending to make multiple (more than 1) visits to 'the region', made 1 extra visit to 'the region' because of the event.*

**Q7. Since you were coming to *'the region'* in any case at this time of year, did you extend your stay because of the event?**

| | |
|---|---|
| Yes | ☐ 1 → go to Q8 |
| No | ☐ 2 → Finish |

*Yes – Someone who is only making 1 visit to 'the region' at this time of the year **not specifically** for the event but stayed longer because of the festival, e.g. accidental tourist, travelling salesman, visiting a relative.*

**Q8. How many more nights did you stay?**

| | | |
|---|---|---|
| | | *Nights* |

# APPENDIX B: SAMPLING OF DIFFERENT ATTENDEE CATEGORIES

Consider an example of a multi-performance event with 10,000 total attendances, which is known from ticket sales or turnstile counts. The (unknown) average attendance is 2.15 events per individual, and the unknown number of people attending is 10,000/2.15 = 4,651.

Suppose that international visitors attend on average 5 performances, interstate visitors 2.5 performances and local residents 1.5 performances. Assume also that these numbers are accurately estimated by the sample. Suppose also that the unknown proportional breakdown of attendees is 10% from overseas, 30% from interstate and 60% local. International and interstate visitors have a higher chance of being selected in the sample than their respective proportions in the numbers of attendees, because of the fact that they attend more events than the overall average.

Using the rules of joint probability, the probability of individual *i* being a survey respondent is therefore $[1-(1-k)^{Zi}]$ where $z_i$ is the number of events attended by group i, and k is the probability of an individual being surveyed.

To consider the implications for our example, consider a target survey of 5% of the attendance at any given performance. The number of people surveyed from each of our sub-population groups would be:

| | |
|---|---|
| International | 10% of 4651 x $[1-(1-.05)^{5}]$ = 105 |
| Interstate | 30% of 4651 x $[1-(1-.05)^{2.5}]$ = 167 |
| Local | 60% of 4651 x $[1-(1-.05)^{1.5}]$ = 207 |

or, 21.9%, 34.9% and 43.2% respectively which clearly differ from the 10%, 30% and 60% proportions of their true but unknown representation.

The example indicates that international visitation would be 119% overstated, interstate visitation 16.3% overstated and local 'participants' would be 18% understated with this pattern assuming that all patrons attended the same number of performances.

The average number of attendances overall would be estimated as .219 x 5+.349 x 2.5+.432 x 1.5 = 2.615. Overall attendance would be 10,000/2.615 = 3823 which is underestimated by 18%. International visitors would be estimated as 21.9% of 3,823 = 837 instead of the correct number of 465, and interstate visitor numbers would be estimated at 34.9% of 3,823 = 1334 instead of the correct 1395. If it was assumed that international visitors spent an average of $1,000 per person, and interstate visitors spend $500 per person, total tourism expenditure would be 29% overstated.

The differences involved in attendance patterns in this numerical example are likely to be on the extreme side, but the direction of the implication is clear. To generalise, the estimated proportional attendance in a given survey group will be based on the following weight adjustment (Burgan & Mules 2001):

$$\rho_j = p_j[1-(1-k)^{Za}] \div [1-(1-k)^{Zj}]$$

where $\rho_j$ is the proportion of people in group j in the underlying population, $p_j$ is the proportion of the sample in group $j$, $k$ is the proportion of attendances approached in the survey base, $Z_a$ is the average attendance for the whole population and $Z_j$ is the average attendance of those in group $j$.

This adjustment gives $\rho_j$ as the correct proportion of any particular group, such as internationals, at an event where the sample proportion, $p_j$ has been biased by the propensity of that group to have multiple attendances.

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# economic evaluation of special events

This guide highlights the importance of evaluating the performance of special events in order to ensure that they maximise their contribution to the host region. Although it is recommended strongly that events should be evaluated in a holistic fashion using techniques such as cost-benefit analysis, the focus of this guide is on the economic dimension of evaluation.

Also provided is an overview of the different techniques that have been used to evaluate the economic performance of events, highlighting the advantages and disadvantages of these techniques as well as some of the difficulties that have been encountered in their application. There is also inclusion of a questionnaire that is recommended to more accurately collect expenditure data that are attributable to the event itself and there is detailed discussion of the sampling techniques that should be used to optimise the representativeness of the data collected.

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