

The Economic Impact of Tourism on Kaikoura

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This kind of research can only be carried out if those in the tourism industry, the general business sector, and the District Council provide comprehensive information, and I would like to thank those who assisted for their information and time. I hope that this report will lead to greater public understanding of the role of tourism in the district economy, and that this in turn will help the industry and thus in some measure repay respondents for their assistance.

Summary

Approximately 330 persons (Full-Time Equivalent - FTE) are employed directly in tourism. While almost 700 people in the district work in businesses that are wholly or partly tourism based, this figure is adjusted to reflect the part-time and seasonal nature of the work, and the fact that many businesses sell only part of their turnover to tourists.

Every job in tourism leads, on average, to a further 0.21 jobs elsewhere in the district economy. This flow-on effect is quite small, and reflects both the very limited business support infrastructure in Kaikoura and also the very low demand for external inputs in some businesses (such as homestay accommodation). The flow-on employment effects mean that in total approximately 400 FTE jobs are generated in the district by tourism. This excludes any jobs in social services (such as teaching) that might be lost if tourism (and hence employment) declined, and people emigrated from the district. Total employment in the Kaikoura district is believed to be around 1400 Full-Time Equivalent jobs (FTEs). Hence almost 30 per cent of all jobs depend either directly or indirectly on tourism. While tourism has generated a significant increase in employment, it has been brought about by growth in the volume of tourism, rather than by changes in the structure of the industry.

Total direct spending by visitors is estimated to be \$28 million per year. Flow-on effects of visitor spending increase total visitor-dependent spending (sales) in the district to an estimated \$36 million. However, the direct spending figure has a high error margin. An alternative measure of visitor expenditure was generated by surveying visitors to the town centre to find out the level of spend per visitor-day, and rating this up by total number of visitors to the town centre. The total established by this second method was \$21 million, but note that the figure excludes spending by those who did not come to the town centre. The two figures provide some support for each other and the results of this study suggest that either the number of tourists or the expenditure per tourist is greater than the visitor and traffic surveys suggest.

Value added¹ arising directly from tourist spending is estimated at \$12 million (including \$7 million of household income). These estimates are based on the estimates of turnover and the ratio of value added to turnover, and income to turnover, in the various industries. Again, the value added and household income estimation figures have a high error margin. Not only is the turnover figure approximate, but the ratios are also very approximate. The flow-on effects of visitor spending increase total visitor-dependent value added to \$16 million (including \$9 million of household income). Estimates of errors are calculated and included as Appendix 1.

The impacts reported above arise from the on-going operation of the existing tourist facilities. In addition, impacts arise from the expansion of the industry (by people working in construction, boat fit-out, etc.). It seems that expansion of the tourism industry is currently generating an additional \$4.4 million of output, 33 jobs (FTEs) and \$1.5 million in value added per year in the district. The addition of flow-on effects means that total impacts of expansion are to increase employment by 50 FTEs, output by \$6.5 million per year, and value

¹ This is the total of returns to land, labour and capital. Hence it includes wages and salaries, income of the self-employed, rents on land profits, and depreciation of capital.

added by \$2.5 million per year. This level of additional activity may continue for some years yet, even if the number of tourists does not continue to rise. Operators suggest that for Kaikoura to maintain market share, it will have to continue to upgrade the facilities it offers.

Many residents feel that tourism is forcing up rates by imposing large demands on infrastructure, particularly water and sewerage treatment. It is estimated here that in fact tourism is directly responsible for about ten per cent of peak demand for water and twenty-five per cent of peak demand from sewerage treatment. Primary processing (fish factory and dairy) are heavy users of water. These systems have to be designed to cope with both total demand and peak loads, and the seasonal nature of tourism raises the capacity requirement above what it would otherwise be. It is not part of this study to consider how such infrastructure should be funded. However, it is worth noting that the water and sewerage expansion costs seem relatively modest when compared with current operating costs.

Summary Table
Summary of Economic Impacts of Tourism in Kaikoura¹

	Direct Impacts	Multipliers (Type II)	Total Impacts
Employment (FTEs)			
Accommodation	86.0	1.18	101.0
Food	92.0	1.15	106.0
Retail	40.0	1.30	52.0
Activities	85.0	1.25	111.0
Other	23.0	1.17	27.0
Total	327.0	1.21 (implicit)	397.0
Output (\$m)			
Accommodation	4.6	1.41	6.5
Food	6.0	1.29	7.7
Other	17.2	1.28 (average)	22.2
Total	27.9	1.31 (implicit)	36.4
Value Added (\$m)			
Accommodation	3.1	1.30	4.0
Food	2.0	1.42	2.8
Other	6.7	1.42 (average)	9.5
Total	11.8	1.38 (implicit)	16.3
Household Income (\$m)			
Accommodation	1.7	1.30	2.2
Food	1.6	1.28	2.0
Other	3.5	1.37 (average)	4.8
Total	6.8	1.32 (implicit)	9.0

Notes: 1. Excludes impacts of capital expansion, which currently generates 50 jobs as well as \$6.5 million of output and \$2.5 million of added value annually.

Chapter 1

Overview: The Kaikoura Economy and the Importance of Tourism

1.1 Introduction

In recent years tourism has been one of the fastest growing sectors of the New Zealand economy, and has become particularly important in some smaller communities. What is uncertain is just how important the industry is, both in terms of its direct impacts and also its indirect and induced impacts². The original principal objective of this study was to estimate the relationship between such direct and indirect effects by surveying a sample of tourism businesses to find out their expenditure patterns, and to incorporate this information into a model of the regional economy and calculate appropriate multipliers³. These "multipliers" would then be applied to estimates of tourist direct expenditures to get total economic impacts of tourism.

It was originally expected that the estimates of direct expenditure would come from existing surveys of domestic and international visitor spending, but as the work progressed it became apparent that these surveys are so small that the number of respondents who have actually been to the region being studied is minuscule, and hence the behaviour of the sample is an unreliable guide to the behaviour of the visitor population as a whole. Hence it became necessary to calculate the direct expenditure by a survey of visitors to Kaikoura⁴, and to estimate total direct employment in tourism by undertaking a survey of all businesses in Kaikoura.

As the project progressed, it became apparent that there is a perception by residents that Kaikoura faces a need to undertake substantial upgrading of infrastructure (principally water and sewerage treatment), and that the need is primarily due to the growth of tourism. An attempt was made to measure the impact of tourism on the demand for these services so that both council staff and local residents are better informed when they debate these issues.

² These indirect and induced impacts arise from the spending by "tourist" businesses and their employees at other businesses. For example, a boating company buys fuel (an indirect effect) and hotel employees buy groceries for personal consumption (an induced effect).

³ The ratio of total (direct + indirect effects) to direct effects is usually termed the "multiplier". The multiplier is calculated by creating an inter-industry table for the region of interest. By definition, it is greater than 1, but it can range from 1.1 up to 5 or more. The low multipliers occur where an industry does not buy many inputs from elsewhere in the region, and this is obviously more likely where the region is small.

⁴ Estimates of expenditure from the Summertime Visitors to Kaikoura: Characteristics, Attractions and Activities (Report No. 3) were rated up to total tourist population expenditure by using traffic counts to estimate total visitor numbers (see Estimating the Number of Visitors to Kaikoura Over One Year by Developing a Vehicle Observation Method, Report No. 2).

1.2 Employment in Kaikoura (1986 - 1996)

The 1996 census reveals that in that year total employment was around 1,400 people in full-time equivalents. A breakdown by sector (see Table 1) shows that the major sources of employment are agriculture and fishing, dairy and fish processing, and the various services industries (which incorporate the various aspects of tourism). The usually resident district population is about 3,500, and this has been rising slowly over the last decade.

Table 1
Employment (Full-Time Equivalent)¹ by Sector: 1996 - 1986

Sector	1996	1991	1986
Agriculture	267	306	330
Restaurant and accommodation	180	105	99
Wholesale and retail trade	150	117	135
All other services	144	60	48
Not identified	138	9	27
Health and education	126	102	102
Construction	81	87	123
All other manufacturing	77	51	45
Fishing	69	81	93
Recreation and cultural services	60	31	12
Fish processing	42	36	45
Other transport	36	21	21
Business and professional services	21	36	27
Dairy process	18	18	21
Hunting, forestry and mining	15	9	24
Railways	15	33	66
Communications	6	9	48
Electricity, gas and water	3	12	9
Total	1386	1110	1266

Notes: 1. Measured as full-time plus half of part-time, as at census date (March of the various years). The number of persons employed at census date is between seasonal maximum and minimum. Consequently the census figures are likely to represent a reasonable annual average.

During the last decade, the structure of employment in Kaikoura district has changed significantly. There has been a small decline in employment in fishing (the shift to the quota system reduced the allowable catch while a shift away from small local vessels reduced the number of boats based at Kaikoura) and a large decline in employment on the railway (almost 66 jobs in 1986⁵ had reduced to only 15 jobs in 1996). The other dramatic decline has been in communications, where employment fell from forty-eight FTEs to only six FTEs. The decline in these industries has been accompanied by rapid growth in tourism, but because "tourism" is not defined as a separate industry, it is difficult to measure its growth accurately. The growth is seen in the increase in employment in wholesale and retail trade (up 12 per cent since 1986 and up 28 per cent since 1991), restaurants and accommodation (up 80 per cent since 1986), and recreation services (up 400 per cent since 1986 and up 100 per cent since 1991).

It has not been possible to determine accurately the number of people from the "declining" industries who have taken up jobs in tourism. In the survey of businesses, respondents were asked about their previous jobs, and less than ten per cent had come from the declining industries. A significant number had come from out of Kaikoura. Some of the larger businesses had a number of employees, and no attempt was made to find the occupational history of these people.

There is anecdotal evidence that many of the employees from communications and railways have retired and/or shifted away from the district. What has also presumably happened is that many of the younger people who would have got jobs in these industries had they still been operating, have got jobs in tourism instead.

1.3 Tourism Boom: Capital Growth and Infrastructure Demands

The growth of tourism has been most obvious in the day to day operations of the high profile operators such as Whale Watch, but during the last decade, there has also been a substantial injection to the district economy from the capital expenditure associated with the expansion of tourism. While much of this money has been spent out of the district (on buses, boats, and even on construction gangs when local tradespeople were not able to meet demand, or were deemed to be too expensive), there has still been substantial economic activity in the district resulting from this expansion. The impact of these capital expansions is not on-going and will decline as the industry begins to take the view that capacity is sufficient, and annual capital spending declines. This decline has probably already begun, but some operators expect to continue to make significant capital expenditures. Note that in some cases the investment is not so much to increase capacity as to improve the quality of the product, and hence to retain the number of visitors, and to persuade them to spend more while they are in Kaikoura.

⁵ Some of those spoken to in the town suggested that employment on the railways had been close to 200 in the early 1980s, but this seems unlikely. The 1981 census shows only 20 more people employed in the transport and communications sector than in 1986.

The Council has raised rates dramatically in recent years, and there is a public perception that much of the money is needed to fund water and sewerage treatment facilities, with the upgrades to these facilities being needed only because of the growth in visitor numbers. The true picture seems to be much more complex than this, and Section 3.3 of this report examines visitor use of infrastructure in more detail. While this issue was not part of the original terms of reference of this project, it has become clear that it is of enormous interest to many people, and so some preliminary work has been done in this area.

Chapter 2

Theory and Research Method

The objective of this research was to measure the level of economic activity (employment, output and value added) in Kaikoura arising both directly and indirectly from tourism, to assess the ratio of total to direct effects, and to see if this ratio appears to be changing over time.

This section contains definitions of terms used in this report, a summary of the way in which regional economic tables are developed and multipliers are calculated, and details of the surveys undertaken to get the data necessary to build an accurate tourism industry structure into the Kaikoura district economic model, and to estimate direct expenditure by visitors. The section also contains a discussion of the way in which tourism's demand for water and sewerage treatment facilities has been estimated. The section on the theory of economic impact models is brief, and assumes the reader has some prior understanding. Those who wish to know more should consult one of the numerous texts on the subject⁶.

2.1 Definitions

The following text lists a number of important concepts and their definitions.

Employment

Employment is work done by employees and self-employed persons, and is measured in Full-Time-Equivalent jobs (FTEs). A person working part-time all year is deemed to be equivalent to 0.5 FTEs. Where it was apparent that the part-time work was quite limited, and information was available on the approximate hours worked per week, the FTEs of a part-time job was based on 35 hrs per week per FTE. Hence ten hours per week is 0.3 FTEs.

Where work is seasonal, the conversion to FTEs is based on 12 months work per year. So a seasonal worker working full-time for six months per year is 0.5 FTEs, and a part-time seasonal worker working ten hours per week for four months is 0.1 FTEs.

Output

Output is the value of sales by a business. In the case of wholesale and retail trade, it is the total value of turnover (and not simply gross margins)⁷.

Value Added

Value added includes household income (wages and salaries and self-employed income), and returns to capital (including interest, depreciation and profits). It also includes all taxes.

⁶ For example, Richardson et al., (1972); Jensen & West (1982), Butcher (1985).

⁷ Care has to be taken in combining retail sales figures with employment per \$million of output from input - output tables. In these tables, output is generally defined as gross margin. By contrast, business statistics figures usually give employment per \$million of turnover.

Household Income

Household income is the gross income of households. It includes the income of self-employed persons. There is sometimes considerable uncertainty as to the proportion of business income that goes to households, especially for small businesses. In assessing this proportion, dividends and interest payments have been excluded. Conceptually they should be included, but it is difficult to be clear what proportions have gone to households. When estimating indirect economic impacts, one needs to know the increase in household income that occurs in the region. Where owners of business capital live out of the district, shares and interest do not form part of the district household income.

Direct Economic Impacts

The direct impact arises from the initial spending by visitors on the goods and services they want to consume. The direct employment is of people who produce and sell goods and services directly to tourists. The direct output is the value of purchases made by tourists. The direct value added is the value added in those businesses that sell direct to tourists.

Indirect Economic Impacts

The indirect impact arises from increased spending by businesses as they buy additional inputs so that they can increase production to meet visitor demand. This indirect effect can be envisaged as an expanding ripple effect. A tourist buys food and drink at a cafe. The cafe has to employ more staff and buy more bread, so the bakery output expands. The bakery has to employ more staff and buy more electricity, so the power company increases its output. The power company has to increase its maintenance, so it employs another person and spends more on a vehicle for that person. All the increased employment, output and value added (apart from that at the cafe) is the indirect effect. Note that indirect effects only include "upstream" effects (via buying more inputs), but do not include any stimulated development downstream. So although an expansion of activities may lead to more tourists and hence an expansion of accommodation, the extra accommodation is not included as a flow on effect of the activity, and hence is not included in the multiplier.

Induced Economic Impact

The induced impact is the result of increased household income being spent, and leading to a further ripple effect of increased employment, output and income.

Flow on Effects/Upstream Impacts

The sum of indirect and induced effects is sometimes termed the flow on effects, or upstream impacts.

Downstream Impacts

Impacts which are not driven by an activity's demand for extra inputs, but which might arise as a result of a particular activity, are sometimes called the "Downstream impacts". An example in Kaikoura tourism would be where swimming with dolphins leads to an increased demand by visitors for accommodation and food. The accommodation and food is not an input into dolphin swimming, and hence is not an indirect or induced effect of dolphin swimming. It is a downstream effect.

Total Economic Impacts

The total Type I impact is the sum of the direct and indirect impacts, and a Type II impact is the sum of direct, indirect and induced impacts.

Multipliers

A Type I multiplier is the ratio of (direct + indirect) impacts to direct impacts, and a type II multiplier is the ratio of (direct + indirect + induced) impacts to direct impacts. The Type II multipliers include the impact of household spending and hence will always be greater than a Type I multiplier. Both multipliers will always be greater than 1 as some money is inevitably respent locally. Note that downstream effects (whether positive or negative) are not included in the multiplier, and must be calculated separately.

2.2 Principles of Multiplier Analysis

When visitors spend money on various services and goods, this generates direct employment, output, and value added. The businesses which sell to tourists use part of the money received to purchase goods and services from other local businesses, which as a result purchase more inputs than they otherwise would. These "business support" effects are generally termed "indirect" effects. To find out the scale of the indirect effects, one must examine the expenditure patterns of the tourism businesses. What do they buy, and from where do they buy it (in Kaikoura or out of Kaikoura)? This was done through the Expenditure Survey of Tourism Businesses (see Surveys, Section 2.6).

Businesses purchase not only goods and services, but also labour. The businesses pay for labour via either wages and salaries or drawings (by the owners of the business). The increase in household income arising from tourist spending leads to increased household expenditure, which further increases output, value added and employment in the Kaikoura economy. These additional effects generated by household spending are termed "induced" effects, and their extent depends of the proportion of household spending which is undertaken in the local economy. A number of householders were asked what proportion of their income was spent in Kaikoura (see Household Consumption Survey, Surveys, Section 2.6).

2.3 Generation of a Kaikoura District Economic Model

While one can question businesses in tourism to find out what they purchase, this gives only the first round of indirect impacts. To estimate the further impacts caused by the spending of businesses further down the chain, one has the option of surveying all those businesses as well (which is prohibitively expensive), or estimating the probable pattern of their expenditure on the basis of information that already exists about national average expenditure patterns of businesses of this type, and the regional location of businesses that supply those inputs. For example, if we know that one per cent of all retail costs is spent on plastic bags and we know that Kaikoura has no plastics factory, then we can assume that this one per cent of costs is imported into the region. If we know that on average three per cent of retail costs is spent on uniforms, and if we know that there are sufficient clothing factories in Kaikoura for the district to be fifty per cent self-sufficient in clothing, then we assume that 1.5 per cent of inputs are made locally, and a further 1.5 per cent of inputs are imported into the region.

All the information and assumptions are incorporated into a separately estimated district input-output model. This district model is generated using an existing national input-output model, information about the regional distribution of employment and output, and a relatively simply mathematical technique called GRIT⁸ (Generation of Regional Input-output Tables - which estimates the source of inputs into regional industries). This model is then adjusted by incorporating into it the survey data that have been gathered about the structure of actual tourism businesses in Kaikoura (see Expenditure Survey of Tourism Businesses, Survey, Surveys, Section 2.6), and the spending pattern of households (see Household Consumption Survey, Surveys, Section 2.6). The input-output model can be used to calculate the total effects on all sectors of an increase in output of any single sector. These total effects include the original effect and all the consequential rounds of indirect and induced effects. Note that it does not include downstream impacts (see definition of indirect impacts above).

The Kaikoura District economic model generated for this study is based on the national inter-industry model for 1990/91. While this national model is quite dated, a 1994/95 national model has just been produced, and will be used during the coming year to generate a new district model. The survey results will then be incorporated into that model and the results of this study updated. It is not expected that the results will be very different, principally because up-to-date district tourism industry survey data and census data have already been incorporated into the Kaikoura District model⁹.

The GRIT process uses district output by industry as its starting point. There is limited information currently available on regional output by industry, especially for a small region such as Kaikoura. Statistics NZ will not release highly disaggregated data on the grounds that to do so would breach commercial confidentiality of businesses supplying the data. The most detailed data that are available relate to employment as measured by the census. The process for estimating Kaikoura District output for each industry is as follows:

1. Take the best output distribution data that are available. In this case it is relatively old (1986/87) data, and is for a larger region (Canterbury);
2. Estimate the subsequent change in the Canterbury region's share of national output on the basis of the subsequent change in the region's share of national employment in that industry (comparing the 1986 and 1996 census data);
3. Estimate the Kaikoura District's share of Canterbury Region output on the basis of the district's share of regional employment (using 1996/97 census data).

⁸ Developed in Australia and widely used there and in New Zealand. See West et al. (1982), or Butcher (1985).

⁹ It may seem that even a 1994/95 model is very dated, but it is quite up-to-date as far as inter-industry models go, since a full model requires the collection of a large quantity of detailed data, much of which does not become available until one to two years after the year to which it refers. A more accurate 1996/97 model will not become available until late 1999.

Once this has been done, the District inter-industry table is estimated using the standard GRIT procedure¹⁰. It should be noted that the district input-output table shows employment that differs from actual employment in the district. This is so that estimates of changes in regional employment which flow from the expansion of industries reflect national average employment: output ratios rather than existing District ratios¹¹.

2.4 Estimates of Multipliers for Tourism

Once the survey information had been incorporated into the Kaikoura district model and the district model has been adjusted to reflect local consumption expenditure patterns, employment, output, value added and household income multipliers can be estimated using matrix algebra¹². Type II multipliers (which include induced effects) were calculated. It is clear that the increased direct household income from tourism stimulates household spending and hence economic activity in the district, and for this reason it seems appropriate that Type II multipliers be used to calculate total economic impacts of tourism.

2.5 Estimates of Direct Impacts and Total Impacts

Estimates of direct visitor spending were made by surveying visitors to find out how much they spend per day, and by rating this up by estimates of total visitor days (see Traffic Survey to Estimate Visitor Numbers; Survey of Visitor Spending, Surveys, Section 2.6). Alternative estimates of visitor spending were made by undertaking an employment census of tourism businesses (see Employment Census of Kaikoura Tourism Businesses, Surveys, Section 2.6), and undertaking a survey of tourism businesses to estimate ratios of output, value added, and household income per person employed (see Estimation of Output, Section 2.7 below). The ratios were multiplied by total tourism employment to produce estimates of direct output, direct value added and direct household income in tourism. The estimates of direct output produced by the two different methods were similar.

Total impacts are calculated by taking the multipliers estimated from the Kaikoura district economic model are applied to the estimates of direct employment, output, value added and household income to get estimates of total employment, output, value added and household income arising from tourism. By definition, the difference between total and direct effects is the indirect plus induced effect.

¹⁰ For a description of this, see Butcher (1985).

¹¹ For details of the reasons, see Butcher (1985) pps:6-10. In short, it is believed that any under-employment in a particular regional industry will not persist long-term, and it is likely that expansion will reflect national average technology rather than current local technology.

¹² Readers who wish to know more should consult a text on input - output models. Customised software (e.g., IO7) which undertakes the matrix manipulation is readily available.

2.6 Surveys

A number of surveys were undertaken to gather the data necessary to estimate regional economic impacts of tourism. Each is considered in the following list.

Traffic Survey to Estimate Visitor Numbers

A survey of vehicle numbers, vehicle origins, and occupancy rates was carried out in order to estimate total numbers of visitors to Kaikoura (see Estimating the Number of Visitors to Kaikoura Over One Year by developing a Vehicle Observation Method, Report No. 2). The estimates refer to the number of people who visit the central township area, and exclude those who may stop on the “northern strip” of State Highway 1 but do not enter the town centre.

Survey of Visitor Spending

Some 333 visitors were surveyed (see Summertime Visitors to Kaikoura: characteristics, Attractions and Activities, Report No. 3) to ascertain how much they had so far spent on their trip to Kaikoura (broken down by type of expenditure), how long they had stayed so far, and how long they expected to stay. This information was combined to estimate total spending per person per day, and was then multiplied by the estimated total number of visitor-days (from traffic survey) to get total annual visitor expenditure.

Employment Census of Kaikoura Tourism Businesses

A total of 133 businesses that sell directly to tourists were identified, and 128 of them were visited or spoken to by telephone. The owner of each business was asked how many people worked at the business, whether the work was full-time or part-time, and for how many months per year the work lasted. This information was combined to estimate total Full-Time Equivalent (FTE) jobs in the business. Each business was then asked to estimate what proportion of sales were directly to visitors, and the numbers were combined to estimate direct tourism employment.

One owner refused information and for this business, and for the other five businesses not contacted, an estimate of employment was made on the basis of other available information.

Expenditure Survey of Tourism Businesses

To estimate the indirect effects of tourism spending, it is necessary to know what inputs (including labour) tourism businesses purchase. Detailed expenditure data were sought from thirty-one tourism industry operators. Of these, six did not provide any data, (including one who had closed, one who claimed to be only involved in tourism in a minor way, one who had only been operating for six months and had insufficient data for inclusion in the sample, and three who were not willing to be surveyed). A further three respondents provided data based on their memory, but did not consult their accounts during the interviews and were not able to (or did not want to) answer some specific questions. Their information was included in the analysis, but was supplemented by estimates of likely expenditure breakdown for their business made on the basis of alternative information. Three of those interviewed provided data on employment and on their expenditure on goods and services within Kaikoura (which permits the estimation of regional employment multipliers), but refused to give information on actual output. For these businesses, estimates of output had to be made on the basis of information they did give and typical ratios of employment: output provided by other

operators in similar industries. Almost half of those interviewed were not prepared to provide information on profits and hence on total value added.

In all these cases an estimate of value added was made (on the basis of the value added: output ratios provided by other operators in similar industries). However, these estimates are clearly subject to a large margin of error.

In spite of these individual limitations, and the general reticence to disclose profits, the overall the level of co-operation was very high. The information gleaned, and ability to estimate across similar business, is believed to give a reasonably reliable picture of typical expenditure patterns of those involved in the industry. Four of the major activity operators were included in the survey (three gave most, or all, of the data that was requested), and data were also gathered from three smaller activities, two handcraft businesses, one retailer, four restaurants, and eleven accommodation providers (including three motels, three camping grounds, three backpackers, and two Bed and Breakfasts).

Household Consumption Survey

In a small non-diversified economy such as Kaikoura, induced impacts form a significant proportion of secondary economic impacts. It is therefore important to ensure that the estimates of the proportion of household spending being done in the area are realistic. For this reason, a number of those business owners interviewed were asked where they did their household spending.

2.7 Estimation of Output to Employment, Value Added to Employment and Household Income to Employment Ratios

The original intention was that the relationship between employment and these other parameters (output, value added and household income) would be estimated on the basis of a detailed analysis of the accounts of a sample of tourism businesses (which included most of the larger operators). These ratios could then be applied to the estimate of total local employment in tourism to estimate total output and value added in tourism businesses.

However, this approach was only partially successful because a number of larger operators refused to divulge detailed financial information, which they felt was commercially and personally sensitive. In such cases, estimates were made on the basis of the information that was provided by operators as well as averages for typical businesses of that sort ¹³.

¹³ National average turnover per employee is \$190,000 for retailing (non-durable goods), and \$71,000 for restaurants and accommodation. (Source: Business Activity Statistics). The latter figure is reasonably consistent with the figure (\$61,000) arrived at from the business survey done for this project. At a national level, average Value added is 13.4 per cent of retail non-durable sales and 37 per cent of restaurant and accommodation sales. However, our sample appeared to have a far higher-than-average value added ratio, principally because of the very high ratios for accommodation. Discussions with those experienced in the motel industry suggest that value added is typically around two thirds of sales, which is consistent with the figure we obtained by survey. Value added in manufacturing is typically around 35 per cent. However, handcrafted goods (which form a significant part of the manufacturing for tourism) and repairs (which form a significant part of the services) have value added: output ratios from 40 - 70 per cent. A figure of 55 per cent has been used in this analysis.

Obviously these estimates are subject to a considerable margin of error, and hence the figures provided here are approximations. A problem of interpretation arises in that many of the businesses are owner-operated, and the split of income between "profits" and "self-employed income" is necessarily rather arbitrary.

2.8 Estimation of Error Margins

Incomplete data from the survey of businesses have led to a number of errors. While some of these relate to the size of sample, other errors arise from the unwillingness of some interviewees to disclose information that is essentially personal and confidential. Although every effort has been made to avoid individual identification in the data reported here, (perceived) risks of individual identification are especially acute in a small community. Finally, because of individual variations in record keeping and recording, a limited number of interviewees have provided estimates of their local expenditure. These provide another potential source of error. All sources of error are identified, calculated and tabled in Appendix 1.

2.9 Estimate of Tourism Use of Infrastructure

The following procedure was used to estimate the demand imposed on infrastructure by tourists. The methods used for each of the two elements of infrastructure are listed below.

Sewerage Treatment

1. Estimate total demand by using the figures for sewage pumped at the final pumping station. This information is collected every two to three days. There is a problem in that rainwater gets into the sewer system, and this leads to an overstatement of the level of actual sewage pumped. The data were adjusted by removing any periods when the daily figures were more than 20 per cent above normal, and calculating a daily average for the month.
2. Estimate a base demand for the permanent population on the basis of total demand plus visitor demand. The seasonal pattern of visitors is known, and hence visitor demand can be estimated by simple regression analysis.
3. Calculate monthly visitor demand.

Water

1. Obtain information on total water demand from council records.
2. Obtain information from all commercial premises with meters, and use this to estimate water demand by all premises of this type (e.g., hotels, retail, etc.). Rate figures to take account of level of use that is for visitors. For accommodation where water meters are in place, water usage is assumed to be 100 per cent for visitors. The data were converted to usage per bed per year. For accommodation where no data are available, demand is estimated on the basis of number of beds (sourced from the Kaikoura Visitor's Centre brochure) and the water usage per bed in metered accommodation.
3. An estimate was made for water use in public places.

Chapter 3

Direct Tourism Impacts

3.1 Direct Tourism Employment

As described in Section 2 of this report, all tourism businesses were asked how many people they employ as a result of visitor spending. Table 3 shows the results (by industry group). The first four columns show total employment in businesses that sell all or part of their production directly to tourists, and column five adjusts these totals for the part-time nature of some jobs and the fact that many businesses target non-tourist markets as well. It is estimated that some 327 FTE jobs are generated directly in tourism.

Table 2
Employment in Industries Servicing Tourism

Industries	All year		Seasonal		Full-Time Equivalent ¹	
	Full-Time	Part-Time	Full-Time	Part-Time	Tourism ²	Total ²
Accommodation	63	69	10	24	93	180
Restaurants	75	29	52	41	85	
Activities	56	26	35	16	85	60
Retail Trade	92	27	4	6	40	150
Manufacturing	15	7	2	2	16	138
Other	28	2	6	0	7	858
Total (FTEs)	329	160	109	89	327	1386

- Notes:
1. Full-time equivalent is adjusted both for the hours per week worked and also for the proportion of the output that is sold to visitors to Kaikoura.
 2. "Tourism" is average for 1997/98 year, and is based on a census of tourism businesses in Kaikoura. "Total" is at March 31 1996, and is from Statistics New Zealand "Census of Population & Dwellings"

The final column of Table 2 shows total employment as revealed by the 1996 census. This suggests that at March 1996, there were a total of 1,386 FTE jobs in the district. There will probably have been more jobs created since then, because tourism has certainly expanded over the intervening two years. However, there has been a further loss of employment in other areas (e.g., fish processing). The census also probably understates the average number of jobs throughout the year, because it is after the summer peak (although before the winter dip). Hence it is estimated that there are currently around 1,400 jobs (FTE) in Kaikoura District. If that is the case, then tourism is directly responsible for around a quarter of all jobs in the district.

3.2 Direct Output, Value Added and Household Income in Tourism

As described in Section 2.7, estimates of output and value added were made on the basis of surveys to establish visitor spending and to establish the relationship between employment and both output and added value. On the basis of these surveys, it is estimated that visitors spend approximately \$28 million per year in Kaikoura, and that this is associated with added value of approximately \$12 million and household income of \$6.7 million. The estimates of direct output, value added and household income are shown in column three of Table 3. Note that it has been necessary to amalgamate some industries to preserve confidentiality of respondent's answers.

Visitor spending assessed on the basis of the survey of visitor expenditure and the estimated number of visitors was \$21 million (see column 4 of Table 3). However, this does not cover all spending by visitors, since the "number of visitors" assessed in the traffic survey includes only those visitors who enter the centre of Kaikoura, and excludes those who simply stop on the "northern strip" of State Highway 1. This method of estimating expenditure has a high margin of error, especially when the sample is broken up into a large number of subgroups and analysis demonstrated the sensitivity of the result to weighting the sample sub-groups to reflect the size of the different groups (length of stay and domestic/international visitors). The survey appears to have had a significant bias towards international visitors, who spend more than domestic visitors. There seems to be considerable understatement of visitor spending on accommodation, and this may have reflected the fact that many visitors pay for accommodation at the completion of their stay, and would not know their probable expenditure when they were surveyed. The difference between the two figures (\$21 million + spending by visitors who do not come to the city centre, and \$28 million by all visitors) is within the margins of error, but it seems likely that the estimates of either total visitor numbers or expenditure per visitor are too low. For the reasons listed above the estimates of \$28 million, based on the business survey, is regarded as the more reliable.

Table 3
Direct Employment, Output and Value Added in Kaikoura Tourism¹

	Sample (Business Survey)	District Total Involved in Tourism		Visitor Expenditure Survey ⁵
		Project Census ²	Project Estimate	
Accommodation				
Employment (FTEs)	21	86	86 ³	2,500
Output (\$000)	1.1	-----	4,600 ³	
Value Added (\$000)	-----	-----	3,100 ⁴	
Household Income (\$000)	-----	-----	1,700 ⁴	
Cafes, Restaurants and Bars				
Employment (FTEs)	40	92	92 ³	6,800
Output (\$000)	2,600	-----	6,000 ³	
Value Added (\$000)	-----	-----	2,000 ⁴	
Household Income (\$000)	-----	-----	1,600 ⁴	
Retailing				
Employment (FTEs)	0	39.7	125 ³	3,100
Output (sales \$000)	-----	-----	15,600 ³	
Value Added (\$000)	-----	-----	5,800 ⁴	
Household Income (\$000)	-----	-----	2,700 ⁴	
Activities			(sectors combined to preserve confidentiality)	8,100
Employment (FTEs)	72	85.1		
Output (\$000)	-----	-----		
Value Added (\$000)	-----	-----		
Household Income (\$000)	-----	-----		
Manufacturing and Services				
Employment (FTEs)	4	23.3	23 ³	included in retailing
Output (\$000)	260		1,600 ⁴	
Value Added (\$000)	-----		1,000 ⁴	
Household Income (\$000)	-----		800 ⁴	
District Totals				
Employment (FTEs)	137	327	327	21,000
Output (\$000)	10,600	-----	<u>27,900</u>	
Value Added (\$000)	-----	-----	11,800	
Household Income (\$000)	-----	-----	6,700	

- Notes:
1. Excludes 33 jobs, \$4.4 m output, and \$1.5 m value added as a result of increases in capital base.
 2. Employment is FTE, adjusting for part-time work and sales to non-tourists.
 3. For retail, output is based on national employment: sales ratios multiplied by surveyed total employment. For other sectors, output is based on surveyed output per employee multiplied by total employment.
 4. Estimates of value added and household income are based on limited survey data, supplemented by estimates based on discussions with operators and on national average value added: output and household income: output ratios for the relevant industries. All value added and household income figures have very high error margins (estimated to be of the order of plus or minus 30 per cent).
 5. See Summertime Visitors to Kaikoura: Characteristics, Attractions and Activities, Report No. 3, and Estimating the Number of Visitors to Kaikoura Over One Year by Developing a Vehicle Observation Method, Report No. 2).

3.3 Visitor Impact on Water and Sewerage Treatment Facilities

3.3.1 Sewerage Treatment

Total demand for sewerage treatment is estimated to be 132 pump-hours per month + 1.4 hrs per thousand visitors (measured at the visitor centre¹⁴). This implies that visitor demand is up to 50 pump-hours per month during the seasonal peak in January, which is equivalent to just over one quarter of total demand at this time. However, it is clear that the estimate is subject to a high margin of error¹⁵.

3.3.2 Water

Demand for water by accommodation providers was estimated to be 54 m³ per bed-year¹⁶ (which is reasonably consistent with a typical household demand of approximately 1 m³ per day - given that accommodation probably has an occupancy rate of 60 per cent, and few motel guests wash their car or water the garden etc.). This suggests that total demand by accommodation is 47,000 m³ per year. Use at restaurants and hotels is estimated to be 21,000 m³ per year, while an allowance has been made for use in public areas (including toilets) of 30,000 m³ per year. This gives total tourism use of 98,000 m³ per year. This can be allocated to critical water usage months according to data on the seasonal pattern of tourism as shown in Table 4.

There are no time-series data on total community water use available from the Council. Accurate measurement is only available for April/May 1998. We can assume considerably higher use in January/February, and it could be of the order of 4,000 - 5,000 m³ per day. If this were the case, then even at peak times, tourism water demand is probably only ten to twelve per cent of total demand. Primary processing (fish factory, dairy factory, etc.) alone uses almost as much water as all of tourism.

Table 4
Monthly Water Usage by Tourism

Month	Monthly Share of Annual Visitors (%)	Tourism Use (m ³)	
		Per month	Per day
December	13.6	13,300	430
January	15.9	15,600	500
February	13.4	13,100	470
March	12.3	12,100	390
Year		98,000	
Total Community	April/May average		3,200

¹⁴ While the visitor centre only catches part of the visitor numbers, this does not affect the estimate of visitor-related demand. For example, if the visitor centre catches only one quarter of the total visitors and we used the total number of visitors to estimate the equation, the pump hours per 000 total visitors would only be $1.4/4 = 0.35$.

¹⁵ (R² of the equation was 0.4, which implies that only 40 per cent of the observed variation in pumping hours is explained by the variation in visitor numbers).

¹⁶ This is an upper limit, because the campground usage was part of the data set used to estimate usage per bed, but the "number of beds" at the camp grounds excludes camp sites.

3.3.3 Costs of Infrastructure in Proportion to District Council Spending

Tourism accounts for possibly 25 per cent of peak sewerage treatment demand (there is considerable uncertainty regarding this estimate) and ten per cent of peak water demand. This is far less than many ratepayers seem to believe. Indications are that upgrading of the sewer and water systems may cost of the order of \$1 - 2 million (no firm figures are available at present). If this is spread over a 30-year lifetime with an annual real interest rate of five per cent, the annual cost should be of the order of \$80,000 - 160,000. Much of this could be recovered by appropriate user charges (particularly for water, where it is feasible to meter all users), and the balance could be two to four per cent of general rates.

There has also been discussion of other "public costs of tourism", principally the marina, roading, and town parking and landscaping. While users rather than general ratepayers meet the marina operating costs, the capital cost was met from dedicated reserves - which could potentially have been used elsewhere.

Some residents argue that developments undertaken to cater for tourists should be met by those involved in tourism, and cross-subsidies by ordinary residents should be stopped. However, it needs to be appreciated that tourist operators already pay for some of the services, and other tourism-demanded services are not as costly as ratepayers seem to think. Moreover, the cross subsidies come from general rates and almost 30 per cent of all employment in the district (and probably a higher percentage of employment in the township) depends on tourism. If there is real concern about cross-subsidies, then a better target may be water, where direct charges (which can be easily recovered through meters) account for only 20 per cent of costs, and the other \$350,000 per year is funded through a rate which is independent of use.

It would be useful if the Council were to undertake some further work in this area to try and specify more exactly what is being spent to cater for tourism. However, it seems very likely that the benefits of tourism (in terms of employment and value added) are very widely spread, and a general rate is not as big a cross-subsidy as some seem to believe.

3.4 Impact of Increases in Capital

Growth in Tourism is accompanied by an increase in capital, particularly in accommodation and commercial building, but also in other construction and in activities such as boat building and fitout. Information from tourism businesses suggests that expansion of the tourism industry is currently generating an additional 33 jobs (FTEs), plus \$4.4 million of output and \$1.5 million in value added per year in the district. This level of additional activity may continue for some years yet, even if the number of tourists does not continue to rise. Operators suggest that for Kaikoura to maintain market share, it will have to continue to upgrade the facilities it offers.

3.5 Conclusion

Visitors to Kaikoura spend approximately \$28 million per year in the district. This expenditure leads directly to 327 jobs, \$11.8 million of value added, and \$6.7 million of household income. On top of this is the activity arising from capital expansion, which is estimated at 33 jobs, \$4.4 million of output and \$1.5 million of added value. Surveys of visitor numbers and spend per visitor suggest a somewhat lower figure for total output, but it seems likely that the surveys understate either expenditure per visitor or number of visitors. While the growth of tourism has placed pressure on local infrastructure, particularly water and sewerage treatment, it is probably responsible for about twenty-five per cent of peak sewerage treatment demand and ten per cent of peak water demand. The costs of replacing these services is possibly of the order of \$1 - 2 million, and the proportion of this capital cost which is not covered by user charges might be of the order of two to four per cent of total rates.

Chapter 4

Multipliers and Total Tourism Impacts

4.1 Survey Results

As one might expect, the limited range of manufacturing and service enterprises in Kaikoura means that businesses do not spend a lot of money in the district. While some businesses have a strong policy of supporting local retailers, other do much of their buying out of the District. In any case, the goods are almost invariably produced out of the District. Most services are purchased locally, and there has been some increase in the use of local services (e.g., boat maintenance and fitout).

The proportion of household consumption goods and services brought locally varied significantly, but the majority of people brought most of their food and entertainment (primarily dining out) locally, and got vehicle and household repairs done locally. They purchased only a small proportion of their clothing and household durables locally (although several mentioned that this proportion was rising), and holidays were generally outside the District. Average proportions of purchases made locally were estimated at around 70 per cent, compared with the 86 per cent figure generated by the GRIT process. The Kaikoura District input - output table was adjusted to incorporate the figure of 70 per cent.

4.2 Estimates of Multipliers for Tourism

Once the basic GRIT-generated district model had been "enhanced" by incorporating the business expenditure and consumption expenditure survey information, employment, output, value added and household income multipliers were estimated. Given the error margins associated with the estimates of direct value added and household income, the value added and household income multipliers are also subject to wide margins of error.

Multipliers based on this enhanced table are given in Table 5 for the three major industry groups of activities, food and beverages, and accommodation (columns 1 - 3). Employment multipliers range from 1.15 to 1.3, and total employment impacts range from 15.7 - 25.3 jobs per \$million of direct visitor expenditure. Output multipliers range from 1.29 to 1.41. Value added multipliers range from 1.27 to 1.48, and total value added ranges from 0.47 to 0.86 of direct visitor expenditure. Household income multipliers range from 1.28 - 1.39, and total household income ranges from 0.33 to 0.47 of direct visitor expenditure.

The interpretation of the figures in Table 5 (using accommodation as an example) is as follows:

Output:	Every \$1 m of visitor spending has flow on effects of \$0.41 million, and the total increase in District output is \$1.41 m.
Employment:	Every \$1 million of annual spending increases employment directly by 21.5 FTEs, and flow on effects generate a further 3.8 FTEs so that in total 25.3 FTEs are created. The ratio of total to direct employment effects is 1.18.
Value Added:	Every \$1 million of direct expenditure increases value added directly by \$0.67 m , and flow on effects increase value added by a further \$0.19 million so that in total valued added increases by \$0.86 million. The ratio of total to direct value added effects is 1.30.
Household Income:	Every \$1 million of direct expenditure increases household income directly by \$0.36 million, and flow on effects increase household income by a further \$0.11 million, so that in total household income increases by \$0.47 million. The ratio of total to direct household income effects is 1.39.

Table 5
Tourism Impacts and Multipliers in the Kaikoura District

	Enhanced GRIT Model Adjusted¹ to Reflect Survey Data			Basic GRIT Model²		
	Accomm- odation	Food	Activities	Retail^{3,4}	Food and Accomm- odation	Recreation Activities
Output Multiplier						
Direct	1.00	1.00	1.00	1.00	1.00	1.00
Indirect	0.22	0.16	0.17	0.30	0.37	0.35
Induced	0.9	0.13	0.14	0.21	0.17	0.20
Multiplier (Type II)	1.41	1.29	1.32	1.51	1.54	1.55
Employment Impacts						
Direct (FTEs/\$m)	21.5	17.6	12.1	14.2	14.4	11.9
Indirect	2.2	1.3	2.3	2.3	3.2	3.5
Induced	1.6	1.2	1.3	1.9	1.6	1.9
Total (FTEs/\$m)	25.3	20.1	15.7	18.4	19.2	17.3
Multiplier (Type II)	1.18	1.15	1.30	1.30	1.33	1.45
Value Added						
Direct : Output ratio	0.67	0.33	0.59	0.53	0.37	0.44
Indirect	0.09	0.07	0.08	0.15	0.16	0.17
Induced	0.10	0.07	0.07	0.10	0.09	0.10
Total : Output ratio	0.86	0.47	0.74	0.78	0.62	0.71
Multiplier (Type II)	1.30	1.42	1.27	1.48	1.68	1.60
Household Income						
Direct : Output ratio	0.36	0.26	0.26	0.34	0.27	0.33
Indirect	0.07	0.04	0.07	0.09	0.10	0.10
Induced	0.04	0.03	0.03	0.06	0.04	0.06
Total: Output ratio	0.47	0.33	0.36	0.49	0.41	0.49
Multiplier (Type II)	1.39	1.28	1.37	1.40	1.50	1.48

- Notes:
1. The survey data were incorporated into the district table (generated by the GRIT process and adjusted to reflect where household consumer spending takes place), and multipliers were then calculated from this expanded and adjusted table.
 2. The multipliers were obtained direct from the GRIT-based district table (unadjusted for consumption locations), and do not take account of the survey data.
 3. Figures are based on national average employment output ratios for gross margins, not turnover.
 4. Employment: Output ratios are in 1990/91 prices

4.3 Comparison of Multipliers

The purpose of undertaking survey work is to ensure that the district economic model derived for Kaikoura reflects the expenditure patterns of businesses more accurately than does the basic GRIT model. There has always been concern about the accuracy of multipliers from basic GRIT tables, especially where analysts assume that they can apply employment multipliers for an apparently similar industry directly to some estimates of direct employment for the project they are reviewing. This study provides an opportunity to compare impacts and multipliers from a survey-enhanced GRIT table with multipliers for similar industries calculated from a basic GRIT table. Table 5 (columns 4 and 5) shows basic GRIT district model multipliers for food and activities (directly comparable industry with that which was surveyed) and for recreation (a similar industry to the activities which were surveyed). The results of the comparison are shown in Table 6.

Table 6
Comparisons of Impacts From a Basic GRIT Table and From a Survey-Enhanced GRIT Table

Industry	Survey-Enhanced GRIT	Basic GRIT	Variation (%) Basic: Enhanced
	Activities	Recreation	
Direct Emp./\$m ²	12.1	11.9	- 2
Total Emp./\$m ²	15.7	17.3	+ 10 ¹
Emp. Multiplier	1.3	1.45	+12 ¹
Direct Value Added	0.59	0.44	- 25
Total Value Added	0.74	0.71	- 4 ¹
Value Added Mult.	1.27	1.60	+ 28 ¹
Output Multiplier	1.32	1.55	+ 17
	Accommodation and Food (average)	Food and Accommodation	
Direct Emp./\$m ²	19.3	14.4	- 25
Total Emp./\$m ²	22.4	19.2	- 14 ¹
Emp. Multiplier	1.16	1.33	+ 15 ¹
Direct Value Added	0.48	0.37	- 23
Total Value Added	0.64	0.62	- 3 ¹
Value Added Mult.	1.37	1.68	+ 26 ¹
Output Multiplier	1.34	1.54	+ 15

- Notes: 1. The error in total employment estimates resulting from multiplying surveyed employment (or value added) by the GRIT-based district multiplier.
2. Employment: Output ratios are at 1990/91 prices

A comparison of the impacts and multipliers derived from the basic GRIT model with the impacts and multipliers from the enhanced GRIT model suggests that using basic GRIT direct ratios to estimate direct effects, or applying Basic GRIT multipliers to survey estimates of direct impacts to estimate total impacts, can give estimates of total impacts that are significantly different (differences range from two to twenty-eight per cent) from estimates of total impacts. However, applying basic GRIT total ratios to surveyed direct expenditure gives results which are reasonably similar (differences range from three to 14 per cent) to results from a survey-enhanced GRIT model.

Table 6 suggests that if one were not able to incorporate survey data into a regional model, the best way to estimate employment and value added arising from tourism is to apply total employment: output ratios (or total value added: output ratios) to direct sales to tourists. This gave results closer to those based on survey data (differences of three to fourteen per cent) in the above cases than did applying GRIT-based multipliers to survey-based direct employment or direct value added figures (differences of twelve to twenty-eight per cent).

4.4 Changes in Multipliers Over Time

Multipliers for specific industries can be expected to change over time, particularly in a small region where an industry is expanding rapidly. This is because the industry growth makes it viable for support industries to establish. For example, a boat repair service may establish to support the marine-based industries, or a laundry may establish to support the accommodation industry. Two lines of enquiry were pursued to see whether there has been an increase in Kaikoura-based industry support during the last decade. The first was to ask the businesses who provided detailed financial data whether there had been a change in the location of their purchases during the last decade, and the second was to use information on changes in district self-sufficiency over the last decade to see whether the multipliers could be expected to change.

Half of all respondents had been in business for three years or less, (and half of these people had set up new businesses, while the other half had taken over existing businesses). This meant that only half of the samples were able to answer questions about changes in the source of inputs. Of those who could answer, the general impression given was that there has been little change in the source of inputs, although mention was made of greater use of local repair services. Other people mentioned a slow growth in professional business services, but in some cases this was provided by people coming in from outside for a few days per week or month (which does not really count as local employment). In a few cases, there was evidence of reduced local supply (e.g., restaurants buying in some fish from outside rather than using local fish). What was mentioned by a number of people was a change in the availability of consumer choices, particularly for such things as restaurants and retail shopping. Hence tourism has led to increased choice for local consumers.

The review of long term changes in employment patterns does also not suggest any change in local support industries. For example, GRIT-based multipliers for restaurants and hotels have not changed over the last decade.

The lack of increase in support facilities is not surprising given that the total number of people employed in Kaikoura has changed little in the last decade. The increase in tourism has been offset by the decline in railways and fishing. Thus while tourism has generated a significant increase in employment, it has been brought about by the growth in the volume of tourism and its substitution for jobs lost elsewhere (see Table 3, p.17), other than by changes in the structure of the industry per se.

Chapter 5

Total Impacts of Tourism in Kaikoura

The direct impacts of tourism (Table 3) are combined with the tourism multipliers generated from the survey-enhanced GRIT district model (Table 5) to generate estimates of total tourism employment, output and value added impacts in Kaikoura District. These are summarised in Table 7.

Employment

On the basis of the information collected by survey, it is estimated that direct employment in tourism (including a share of employment in businesses who sell only part of their output to tourists) is 327 FTEs. Many more people than this work in tourism, but in many cases only part of the sales are to tourists, and in other cases the work is only seasonal and/or part-time.

Applying the estimated employment multipliers to the estimates of 327 direct FTE jobs in tourism, it appears that a total of 397 jobs are created in Kaikoura as a result of tourism. Hence every direct tourism job generates approximately 0.21 other jobs elsewhere in the district. A comparison of indirect and induced impacts suggests that almost half of this additional activity arises as a result of increased household spending by those working in the industry.

Figures from the March 1996 census suggest that, at the time, there were some 1,400 jobs in the district (FTEs). Given that this date is between the seasonal peak and trough for tourism, this may be a reasonable estimate of average employment during the year. If this is so, then about 23 per cent of all jobs in the District depend directly on tourism, and almost 30 per cent depend directly or indirectly on tourist spending.

Output

It is estimated that visitors to Kaikoura spend (increase district output by) approximately \$28 million per year in the district. Flow on effects increase the total tourism-dependent output in the district to \$36 million per year.

Value Added and Household Income

Visitor spending generates directly almost \$12 million of value added per year in Kaikoura. A rough estimate suggests that approximately \$7 million of this is gross household income. The inclusion of flow-on effects means that total tourism-dependent value added rises to approximately \$16 million per year, with almost \$9 million of this being gross household income.

Capital Expansion

The capital expansion being undertaken over recent years has generated approximately 50 jobs, \$6 million in output per year and \$2.5 million in added value per year.

Table 7
Summary of Economic Impacts of Tourism in Kaikoura District¹

	Direct Impacts ²	Multipliers (Type II) ³	Total Impacts
Employment (FTEs)			
Accommodation	86.0	1.18	101.0
Food	92.0	1.15	106.0
Retail	40.0	1.30	52.0
Activities	85.0	1.25	111.0
Other	23.0	1.17	27.0
Total	327.0	1.21 (implicit)	397.0
Output (\$m)			
Accommodation	4.6	1.41	6.5
Food	6.0	1.29	7.7
Other ⁴	17.2	1.28 (average)	22.2
Total	27.9	1.31 (implicit)	36.4
Value Added (\$m)			
Accommodation	3.1	1.30	4.0
Food	2.0	1.42	2.8
Other ⁴	6.7	1.42 (average)	9.5
Total	11.8	1.38 (implicit)	16.3
Household Income (\$m)			
Accommodation	1.7	1.30	2.2
Food	1.6	1.28	2.0
Other ⁴	3.5	1.37 (average)	4.8
Total	6.8	1.32 (implicit)	9.0

- Notes:
1. Excludes 50 jobs, \$6 m output, and \$2.5 m value added as a result of increases in capital base.
 2. Direct effects from Table 3.
 3. Multipliers from Table 4. Multipliers for "other" are a weighted average of multipliers for those industries included.
 4. Output, value added and household income for retailing, activities, and other industries are aggregated to preserve confidentiality.

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Appendix 1

Error Margins

The survey of businesses has several potential sources of error, which are discussed below.

A.1 Source of Errors

A1.1 Direct Impacts

Employment

There was almost a complete census of businesses to get employment figures, and so the sampling errors were minimal.

Output

The sampling errors for direct output were greater since a number of firms did not give accurate output data, and since total output was based on employment: output ratios, which varied significantly across the sample. Information was acquired from businesses representing approximately 90 per cent of the activities sector's expenditure, but some did not provide exact output data. Given that either information on turnover was provided, or reasonable data were available to make an estimate of turnover for most of the major activities, the margin of error in this group is expected to be plus or minus 20 per cent. The output figure for accommodation is less accurate, principally because there was such a wide variation in output per job amongst those interviewed. About one third of the sector was surveyed. However, the output is believed to be accurate to within 30 per cent. Expenditure on food is believed to be accurate to within the same margin. Sales in retail trade are probably accurate to within 40 per cent. The figures are based on national average employment: output ratios, and there are likely to be significant regional variations. In addition, proprietors were making informed guesses about the proportion of turnover that was purchased by visitors. Their estimates could have been wrong.

Value Added

Data were collected for only 20 per cent by value of the activity sector and about 15 per cent of accommodation and food. Margins of error could easily exceed 50 per cent.

A1.2 Multipliers

The error in multipliers arises from sampling errors and from inaccuracies in the basic GRIT table for the District. The vast majority of impacts arise either from first round impacts or consumption-induced impacts. So long as these impacts are correctly estimated from respondents accounts, then other inaccuracies in the GRIT-based District table are not significant in estimating downstream output changes. However, any inaccuracy in employment: output ratios in the downstream industries will flow directly into employment estimated, and these ratios could be in error by up to 30 per cent. Errors can not be formally calculated, but it is believed that the downstream output impacts are probably accurate to within 20 per cent, employment to within 30 per cent, and value added to within 50 per cent.

A.2 Size of Errors

Direct Impacts:

Employment \pm 5% (sampling) (all sectors)

Output:

Activities - 20%

Food and Accommodation - 30%

Retail - 40 %

Value added -50% (sampling and poor data)

Downstream Impacts:

Output - sampling errors plus 30% estimation errors

Employment - 5% sampling errors plus 30% estimation errors

Value added - 50% sampling errors plus 50% estimation errors

Table A.1
Employment Error Margins

Sector	Direct FTEs	Error		Indirect FTEs	Error		Total FTEs	Error FTEs
		%	FTEs		%	FTEs		
Accommodation	86	5	4	15	35	5	101	9
Food and Beverages	92	5	5	14	35	5	106	10
Activities	85	5	4	26	35	9	111	13
Other	64	5	3	16	35	6	80	9
Total	327	5	16		35	25	398	41

Table A.2
Output Error Margins

Sector	Direct \$m	Error		Indirect \$m	Error		Total \$m	Error \$m
		%	\$m		%	\$m		
Accommodation	4.6	30	1.4	1.9	50	1.5	6.5	2.9
Food and Beverages	6.0	30	1.8	1.8	50	1.4	7.8	3.2
Activities	8.1	20	1.6	2.6	45	1.2	10.7	2.8
Other	9.1	40	3.6	2.2	60	1.3	11.3	4.9
Total	27.9		8.4	8.5		5.4	36.4	13.8

Table A.3
Value Added Error Margins

Sector	Direct \$m	Error		Indirect \$m	Error		Total \$m	Error \$m
		%	\$m		%	\$m		
Accommodation	3.1	50	1.5	0.9	75	0.7	4.0	2.2
Food and Beverages	2.0	50	1.0	0.8	75	0.6	2.8	1.6
Activities	4.8	50	2.4	1.2	75	0.9	6.0	3.3
Other	1.9	50	1.0	1.6	75	1.2	3.5	2.2
Total	11.8	50	5.9	4.5	75	3.4	15.7	9.3