



**Australian Government**  
**Department of Resources, Energy and Tourism**  
**Tourism Research Australia**

## **Tourism's Contribution to the Australian Economy, 1997–98 to 2010–11**



ISBN 978-1-921812-99-6

Tourism Research Australia  
Department of Resources, Energy and Tourism  
GPO Box 1564  
Canberra ACT 2601  
ABN 46 252 861 927

Email: [tourism.research@ret.gov.au](mailto:tourism.research@ret.gov.au)  
Web: [www.ret.gov.au/tra](http://www.ret.gov.au/tra)

Publication date: April 2012

	This work is licensed under a <a href="https://creativecommons.org/licenses/by/3.0/au/">Creative Commons Attribution 3.0 Australia licence</a> . To the extent that copyright subsists in third party quotes and diagrams it remains with the original owner and permission may be required to reuse the material.
This work should be attributed as <i>Tourism's Contribution to the Australian Economy, 1997–98 to 2010–11</i> , Tourism Research Australia, Canberra.	
Enquiries regarding the licence and any use of work by Tourism Research Australia are welcome at <a href="mailto:tourism.research@ret.gov.au">tourism.research@ret.gov.au</a>	

## Contents

<b>Contents</b> .....	<b>iii</b>
<b>Executive summary</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>1</b>
What has changed from the previous report? .....	1
What is the 'direct' economic contribution of tourism? .....	1
What is the 'indirect' economic contribution of tourism?.....	2
Total contribution.....	2
<b>Analysis</b> .....	<b>3</b>
Economic measures.....	3
Tourism's contribution to GDP, GVA and employment.....	3
Direct and indirect tourism GVA by industry .....	7
Indirect GVA in 'All other industries'.....	8
Growth in total tourism GVA, by industry .....	9
Industry share of total tourism GVA.....	11
Tourism employment by industry .....	13
Indirect employment in 'All other industries' .....	16
Tourism multipliers .....	16
Tourism multipliers over time .....	17
<b>Conclusion</b> .....	<b>18</b>
<b>References</b> .....	<b>19</b>
<b>Appendices</b> .....	<b>20</b>
Appendix A: Methodology for calculating indirect contribution.....	20
Appendix B: Input-output multipliers and tourism multipliers .....	22
Appendix C: Calculation of indirect contribution .....	25

## Tables

Table 1: Definition of tourism characteristic and connected products .....	1
Table 2: Relationship between GVA and GDP.....	3
Table 3: Summary, tourism's direct and indirect contribution to the Australian economy	6
Table 4: Tourism GVA by industry, 2010–11 .....	8
Table 5: Industry share in total tourism GVA (%) .....	12
Table 6: Direct and indirect employment in the tourism industry, 2010–11.....	14
Table 7: Total (direct and indirect) employment in tourism ('000 persons) .....	15
Table 8: Tourism industry multipliers (2010–11) based on 2006–07 input-output tables .....	23
Table 9: Indirect contribution - TRA calculations .....	25

## Figures

Figure ES1: Tourism's contribution to the Australian economy, 2010–11 .....	vi
Figure 1: Direct and indirect share of tourism GVA, GDP and employment.....	4
Figure 2: Annual growth in total tourism GDP and Australian GDP .....	5
Figure 3: Tourism indirect GVA in 'All other industries', 2010–11 .....	9
Figure 4: Average annual growth in GVA, tourism and all industries, 1997–98 to 2010–11.....	10
Figure 5: Direct and indirect employment growth in the tourism industry, 1997–98 to 2010–11, ('000) .....	14
Figure 6: Tourism employment in 'All other industries', 2010–11 .....	16
Figure 7: Relationship between tourism product share and tourism output multiplier ...	17

## Executive summary

This report provides estimates on tourism's indirect and total economic contribution in the Australian economy. It complements the latest estimates of tourism's direct contribution from the Australian Bureau of Statistics' Tourism Satellite Account (TSA) (ABS Cat No 5249.0) and presents a complete picture of the Australian tourism industry's contribution to the economy. This report presents these results for the period 1997–98 to 2010–11.

Apart from an additional year's results, this report also reflects revisions in the time series estimates that were derived from data source updates in the compilation of the TSA.

## Key findings

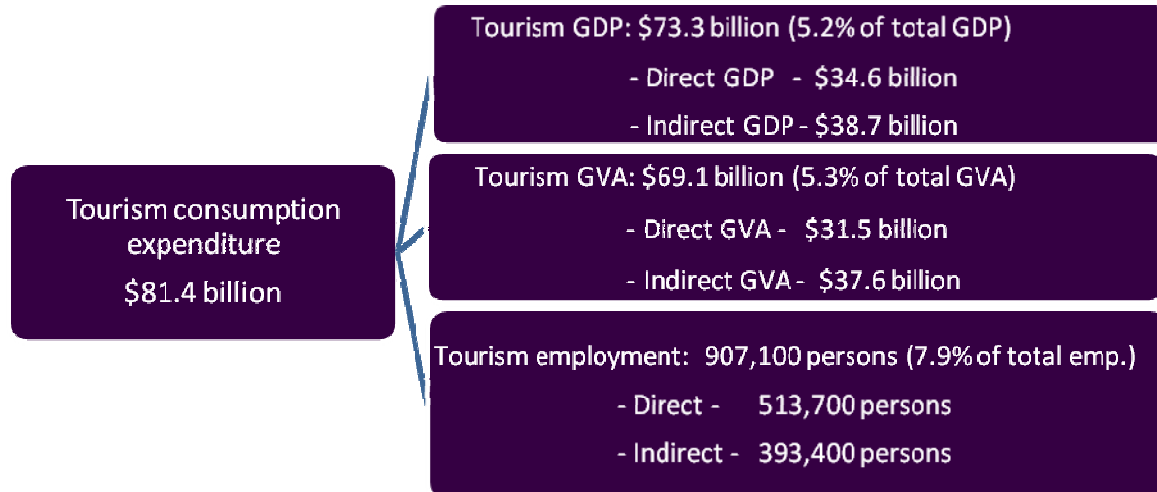
When combining the direct and indirect tourism components, in 2010–11 (**Figure ES1**):

- Tourism's contribution to Australian gross domestic product (GDP) was \$73.3 billion, or 5.2 per cent share of the Australian economy.
- Total tourism gross value added (GVA) was \$69.1 billion, representing a 5.3 per cent share of the Australian economy.
- In Australia, tourism directly and indirectly employed 907,100 persons, representing 7.9 per cent of total Australian employment. Total tourism GDP rose at an average annual rate of 4.0 per cent between 1997–98 and 2010–11. This growth was lower than the 6.9 per cent annual growth in GDP for the national economy.
- Tourism's resilience is reflected by its recovery from the impacts of the global financial crisis of 2008–09. Tourism's GDP grew by more than 2.5 per cent annually during 2009–10 and 2010–11 after declining 0.3 per cent during 2008–09.
- Tourism's total output multiplier was valued at 1.92<sup>1</sup>. This means that for every dollar tourism earns directly in the Australian economy, it value adds an additional 92 cents to other parts of the economy. At 1.92, tourism's total multiplier is larger than other important industries such as *Mining* (1.67), *Retail trade* (1.81) and *Education and training* (1.38).
- Tourism is a labour intensive industry, providing direct and indirect employment to Australia's workforce. Tourism's direct employment share of 4.5 per cent was higher than many other important industries such as *Mining* (1.9 per cent), *Electricity, gas, water and waste water services* (1.3 per cent) and *Wholesale trade* (3.6 per cent).

---

<sup>1</sup> Tourism multiplier value measures the increase in the production of intermediate inputs in the economy (indirect contribution) resulting from a unit increase in consumption of tourism goods and services by the visitors. A high value of this multiplier indicates that a higher indirect value is created in the economy.

Figure ES1: Tourism's contribution to the Australian economy, 2010–11



Sources: Direct contribution, ABS Cat. No.5249; Indirect contribution, TRA calculations

## Introduction

This report is the fourth in the series that measures the broader 'indirect' and 'total' value of tourism's contribution to the Australian economy. This edition provides estimates for the indirect economic contribution of tourism between 1997–98 and 2010–11. These estimates complement the Australian Bureau of Statistics' (ABS) direct contribution estimates from the 2010–11 edition of the Tourism Satellite Account (TSA), released December 2011. Together, the estimates present a picture of the full value of tourism to the Australian economy.

### What has changed from the previous report?

In addition to providing additional estimates for 2010–11, this report also contains a revision in the time-series estimates derived from revisions undertaken by the ABS in its source data.

### What is the 'direct' economic contribution of tourism?

The direct economic contribution of tourism to the Australian economy, as represented by the ABS' TSA<sup>2</sup>, is generated where a direct physical or economic relationship exists between the visitor and producer of the good or service.

The direct contribution is primarily focused on the immediate effect of expenditure made by visitors. For example, an increase in the number of visitors staying overnight in hotels directly affects sales in the hotel sector. The 'direct' effects are the sales and associated changes in payments for:

- wages and salaries
- taxes
- supplies and services.

Products and services produced by tourism industries are categorised as 'tourism characteristic' or 'tourism connected' depending upon the level of reliance on tourism (**Table 1**).

**Table 1: Definition of tourism characteristic and connected products**

Tourism characteristic products	Tourism connected products
<ul style="list-style-type: none"><li>• Represent an important part of tourism consumption, <i>or</i> a significant proportion of the sales are to visitors</li><li>• Must account for at least 10% of total tourism consumption, <i>and/or</i> at least 25% of the total output of the product is consumed by visitors</li></ul>	<ul style="list-style-type: none"><li>• Consumed by visitors, but are not considered as tourism characteristic products</li><li>• These products or industries are important for estimating the flow-on effect of the increase in the demand for tourism characteristic products</li></ul>

Source: ABS Cat. No. 5249.0

<sup>2</sup> The Tourism Satellite Account (TSA) estimates the value of tourism within the national accounting framework. A satellite account allows an expansion of the national account for selected areas of interest while maintaining the concept and structures of the core National Accounts methodology.

## What is the 'indirect' economic contribution of tourism?

The indirect economic contribution from tourism comes from other industries that are not in direct contact with visitors. However, they are required to produce goods and services to satisfy demand for tourism products and services from the industries that are in direct contact with visitors. Therefore, the flow-on—or 'indirect' effects—are the changes in supply that result from spending of the tourism industry's receipts on goods and services from other industries. For example:

- A visitor purchases a meal from a hotel,
  - the hotel purchases vegetables and meat from a food supplier
  - the food supplier purchases these from a farming company
  - the farming company 'purchases' labour and transport to deliver produce to market, etc.

The chain of businesses that supply goods and services to the hotel industry represent successive rounds of indirect effects, eventually linking tourism to other producing sectors of the economy.

TRA estimates the economic impact of these indirect effects to complement the direct effects that are reported in the TSA, and to provide a more complete picture of the economic contribution of tourism. (Refer to **Appendix A** for detail on the input-output methodology used in deriving the indirect contribution of tourism on output and employment.)

## Total contribution

This report presents the total contribution (direct and indirect) of tourism in Australia over a fourteen year period, 1997–98 to 2010–11. A number of countries, including New Zealand, Spain, Austria, Israel and Morocco use the total approach to reflect the full contribution of tourism<sup>3</sup>. Australia and New Zealand are the only countries where a full set of indirect estimates (tourism indirect GVA, tourism indirect GDP and tourism indirect employment) are derived. New Zealand's Tourism Satellite Account (2011) reported that in the year ended March 2011, tourism's full contribution<sup>4</sup> was 8.6 per cent to New Zealand 's GDP; \$NZ6.9 billion (or 3.8 per cent) directly and \$NZ8.8 billion or (4.8 per cent) indirectly. Tourism also employed a full-time equivalent of 179,800 employees (or 4.9 per cent of total employment in New Zealand). Of the total employment, around 92,000 were employed directly and 88,000 indirectly.

Similar to the TSA (2011), estimates in this report are provided in nominal terms unless stated otherwise, with results presented in combination with the direct contribution reported in the 2010–11 TSA. The analysis provides total contribution estimates for tourism GDP, tourism GVA (by industry) and tourism employment.

---

<sup>3</sup> Information compiled from: [http://statistics.unwto.org/sites/all/files/pdf/tsa\\_data.pdf](http://statistics.unwto.org/sites/all/files/pdf/tsa_data.pdf)

<sup>4</sup> Statistics New Zealand (2011), when emphasising the importance of estimating the full impact of tourism, states that, "Direct value added does not measure the full impact of tourism on the New Zealand economy because it is limited to those businesses that have a direct relationship with tourists. Additional value added comes from tourism through the production of the intermediate inputs used in the production of goods and services sold to tourists, although there is no direct relationship between the producer of the intermediate inputs and the tourist. This additional value added is known as indirect value added".



## Analysis

### Economic measures

#### *Tourism's contribution to GDP, GVA and employment*

GVA and GDP are primary measures for tracking an economy's economic performance. GDP is a measure of the total value of output in an economy, and is measured in three ways: income; expenditure and by production (or industry). The GVA is part of the production series, based on the sum of all industries' contribution or value add, that is the market value of output from individual industries, less the costs of goods and services (other than the consumption of fixed capital) used in the production of the output.

The production measure of GDP is the sum of individual industry value added plus net taxes (such as GST and excise duties on fuel etc) on products<sup>5</sup> (refer **Table 2**)

Where

GDP (production) = GVA + Net taxes on products (taxes less subsidies)

GVA = Compensation of employees + gross operating surplus + other taxes on production

**Table 2: Relationship between GVA and GDP**

	Direct contribution (\$ billion)
Output <sup>6</sup>	81.4
GVA	31.5
Taxes on products	3.1
GDP	34.6

Source: ABS Cat. No. 5249.0

According to the latest TSA (2011), the market value of output from tourism (tourism consumption at basic prices) was \$81.4 billion in 2010–11, an increase of 2.2 per cent over 2009–10. The direct GDP contribution of the tourism industry was \$34.6 billion in 2010–11, an increase of 2.5 per cent over 2009–10. Tourism GVA, or net income generated by the industry, amounted to \$31.5 billion, an increase of 2.2 per cent from 2009–10.

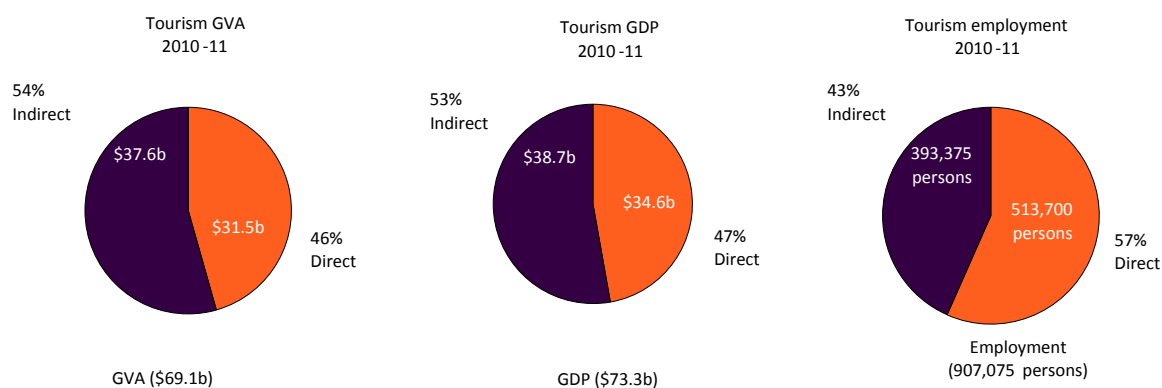
In 2010–11, the industry indirectly contributed a further \$38.7 billion of GDP and \$37.6 billion of GVA (**Figure 1** and **Table 3**). The indirect GDP and GVA contribution by the tourism industry accounted for 2.8 per cent each of the national GDP and GVA respectively. Combining direct and indirect contributions, tourism contributed \$73.3 billion to total GDP in 2010–11, an increase of around \$1.9 billion (or by 2.7 per cent) from 2009–10.

---

<sup>5</sup> Gross value added (GVA) is more commonly used as a measure of economic activity at the industry level than the GDP measure, because taxes on products are not uniform across industries and therefore inclusion of taxes may distort the economic analysis. GVA figures therefore provide a direct comparison of the economic value added by different industries. GVA figures can also be compared between countries.

<sup>6</sup> Output is tourism consumption at basic prices, which is the visitor expenditure at purchaser prices (price paid by the visitor to the seller) not including taxes, margins and imports plus imputed value of non-market goods and services consumed by visitors.

**Figure 1: Direct and indirect share of tourism GVA, GDP and employment**



Sources: Direct impact is from ABS Cat. No. 5249.0, and indirect impact from TRA model

Tourism directly and indirectly contributed around 5.3 per cent to total GVA. Tourism's direct measure contributed around 2.4 per cent, while another 2.9 per cent is estimated to be tourism's indirect contribution. Tourism's total contribution to Australia's GDP peaked at 7.9 per cent in 2000–01, mainly due to the economic benefits of the Sydney Olympic Games and price increases associated with the introduction of the Goods and Services Tax (GST).

TRA estimates that tourism directly and indirectly employed an estimated 907,100 persons in 2010–11. This represented 7.9 per cent of total employment in Australia. In contribution terms, tourism directly contributed 4.5 per cent of the Australian workforce in 2010–11, unchanged from 2009–10. The indirect contribution of tourism to total employment is estimated by TRA to be 3.4 per cent (or 393,400 persons) in 2010–11.

Similarly, tourism's share of total employment (7.9 per cent) was higher than the tourism share of industry GVA (5.3 per cent), because tourism is more labour intensive than many other industries<sup>7</sup>.

In 2010–11, total tourism employment rose around 12,700 (3.8 per cent), with increased employment of 6,600 (2.7 per cent) in directly tourism-related industries and 6,100 (5.2 per cent) in industries related indirectly to tourism. Total tourism employment increased at an average annual rate of 2.7 per cent between 1997–98 and 2010–11, faster than the growth in direct tourism employment (of 1.6 per cent) over the same period.

In summary, in 2010–11:

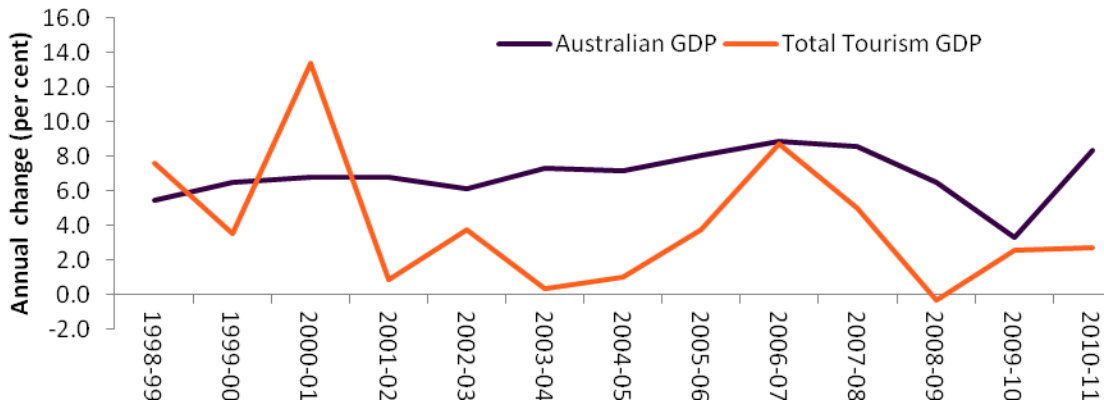
- total tourism GDP was worth \$73 billion, representing a 5.2 per cent share of the Australian economy
- total tourism GVA was worth \$69 billion, representing a 5.3 per cent share of the Australian economy

<sup>7</sup> A business is labour intensive if labour accounts for the largest proportion of all inputs to the business outputs.

- total tourism employment (persons employed) was 907,100 persons, representing 7.9 per cent of Australia’s labour force.

Total tourism has more year-to-year fluctuations in GDP growth than Australian GDP. In 2010–11, total tourism GDP increased by around 2.7 per cent, which reflects a continued recovery, after severe downturn associated with the global financial crisis in 2008–09. Over the longer period between 1997–98 and 2010–11, total tourism GDP rose at an annual average rate of 4.0 per cent, while Australian GDP increased by a stronger rate, averaging 6.9 per cent annually over the same period (refer **Figure 2**).

**Figure 2: Annual growth in total tourism GDP and Australian GDP**



Source: ABS Cat. No. 5249.0, 2009–10

**Table 3: Summary, tourism's direct and indirect contribution to the Australian economy**

	1997/ 98	1998/ 99	1999/ 00	2000/ 01	2001/ 02	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11
<b>Direct contribution</b>														
Tourism GDP (\$m)	18,342	19,707	20,396	24,214	25,036	26,259	26,560	27,077	28,229	30,517	32,428	32,784	33,742	34,595
Share of national (%)	3.1	3.2	3.1	3.4	3.3	3.3	3.1	2.9	2.9	2.8	2.8	2.6	2.6	2.5
Tourism GVA (\$m)	18,560	19,917	20,622	22,073	22,860	24,000	24,247	24,696	25,806	27,873	29,560	29,924	30,802	31,495
Share of national (%)	3.4	3.5	3.4	3.4	3.3	3.3	3.1	2.9	2.8	2.8	2.7	2.6	2.6	2.4
Tourism employment ('000)	415.9	428.0	435.1	451.4	459.2	462.9	462.3	470.5	475.3	478.1	491.4	493.6	500.2	513.7
Share of national (%)	4.9	4.9	4.9	5.0	5.0	4.9	4.8	4.8	4.7	4.6	4.6	4.5	4.5	4.5
<b>Indirect contribution</b>														
Tourism GDP (\$m)	25,712	27,706	28,694	31,456	31,090	31,962	31,835	31,925	32,972	36,002	37,399	36,820	37,633	38,692
Share of national (%)														2.8
Tourism GVA (\$m)	25,282	27,236	28,209	30,502	30,164	31,010	30,884	30,975	32,005	34,939	36,296	35,749	36,541	37,557
Share of national (%)														2.9
Tourism employment ('000)	4.7 226	4.8 244	4.6 252	4.7 305	4.4 304	4.2 312	3.9 314	3.7 321	3.5 332	3.5 358	3.3 373	3.1 368	3.0 374	393
Share of national (%)														3.4
<b>Total contribution</b>	2.6	2.8	2.8	3.4	3.3	3.3	3.3	3.3	3.3	3.4	3.5	3.4	3.4	
Tourism GDP (\$m)	44,054	47,413	49,090	55,670	56,126	58,221	58,395	59,002	61,201	66,519	69,827	69,604	71,375	73,287
Share of national (%)														5.2
Tourism GVA (\$m)	43,842	47,153	48,831	52,575	53,024	55,010	55,131	55,671	57,811	62,812	65,856	65,673	67,343	69,052
Share of national (%)														5.3
Tourism employment ('000)	8.1 642	8.2 672	8.0 687	8.1 756	7.7 763	7.5 775	7.0 776	6.6 792	6.3 807	6.3 837	6.1 865	5.6 862	5.6 874	907
Share of national (%)														7.9

Sources: Direct contribution from ABS Cat. No. 5249.0, 2010-11, and indirect contribution derived by TRA

## **Direct and indirect tourism GVA by industry**

Tourism comprises many supplying industries. Each industry's contribution to tourism varies depending upon how closely these industries are related to tourism. Some of the industries interact heavily with visitors such as *Cafés, hotels and restaurants*.

Other industries work in the supply line to the tourism industry such as *Manufacturing, Agriculture, Forestry and fishing* and the *Wholesale trade* industries, which interact with tourism more indirectly.

Tourism's indirect contribution to GVA is larger than its direct contribution. In 2010–11, of the total GVA (\$69.1 billion) contribution of the tourism industry, 46 per cent was contributed directly and 54 per cent indirectly.

Tourism has a GVA multiple of 1.2<sup>8</sup>, based on the ratio of tourism indirect value added and direct value added. A multiple value greater than one indicates the industry's indirect contribution to tourism was larger than its direct contribution. In 2010–11, tourism generated \$38 billion worth of GVA indirectly to the Australian economy, in addition to its direct contribution of \$32 billion.

The *Ownership of dwellings, Accommodation and food services, Retail trade, Arts and recreation, Education and training* and *Air, water and other transport services* industries had direct contact with visitors, therefore had a larger direct contribution.

These industries also generated some indirect value added. For example, most of the services provided by a restaurant are by direct contact, but the services of a cook and other persons in preparing food (cutting, cleaning and setting the tables etc) are considered indirect.

Excluding *Ownership of dwellings*, four industries collectively contributed more than three quarters of total direct GVA in 2010–11 (**Table 4**):

- *Accommodation and food services* – \$10.5 billion (33 per cent of total GVA)
- *Air, water and other transport services* – \$4.8 billion (15.4 per cent of total GVA)
- *Retail trade* – \$3.9 billion (12.5 per cent of total GVA)
- *Education and training* – \$2.4 billion (7.6 per cent of total GVA).

A large part of the total flow-on effect of visitor consumption tourism products and services is felt in other industries that are not directly related to tourism.

This contribution is mainly represented by '*All other industries*', where more than 90 per cent of total GVA contribution was indirect.

---

<sup>8</sup> GVA multiple is the ratio of indirect GVA to direct GVA and is not a multiplier. Indirect GVA for tourism is calculated using the ratio of Industry GVA to Gross Output from input-output tables and multiplying this ratio to the indirect output relating to tourism in an industry.

**Table 4: Tourism GVA by industry, 2010–11**

Industry	Direct value added	Indirect value added	Indirect value added multiple (M)	Total value added= direct value added* (1+M)
	\$ million		Ratio	\$ million
Accommodation and food services	10,453	447	0.0	10,900
Rail transport	434	126	0.3	560
Road transport	954	1,074	1.1	2,028
Motor vehicle hire and lease	687	2,001	2.9	2,688
Air, water and other transport	4,839	2,490	0.5	7,329
Travel agency and tour operator services	1,501	2,771	1.8	4,272
Arts and recreation services	1,321	181	0.1	1,502
Retail trade	3,925	1,158	0.3	5,083
Education and training	2,409	237	0.1	2,646
Ownership of dwellings	2,920	0	0.0	2,920
All other industries	2,051	27,042	13.2	29,093
<b>Total tourism industry</b>	<b>31,495</b>	<b>37,557</b>	<b>1.2</b>	<b>69,052</b>

Sources: Direct impact is from ABS Cat. No. 5249.0, and indirect impact from TRA model

### ***Indirect GVA in 'All other industries'***

'All other industries' are a grouping of industries that by nature or activity are not considered tourism-related, but are nonetheless affected by rises and falls in tourism. For example, increasing visitor numbers to cafés and restaurants increases demand for flour from grain processing industries; this in turn increases grain production by the agricultural industry.

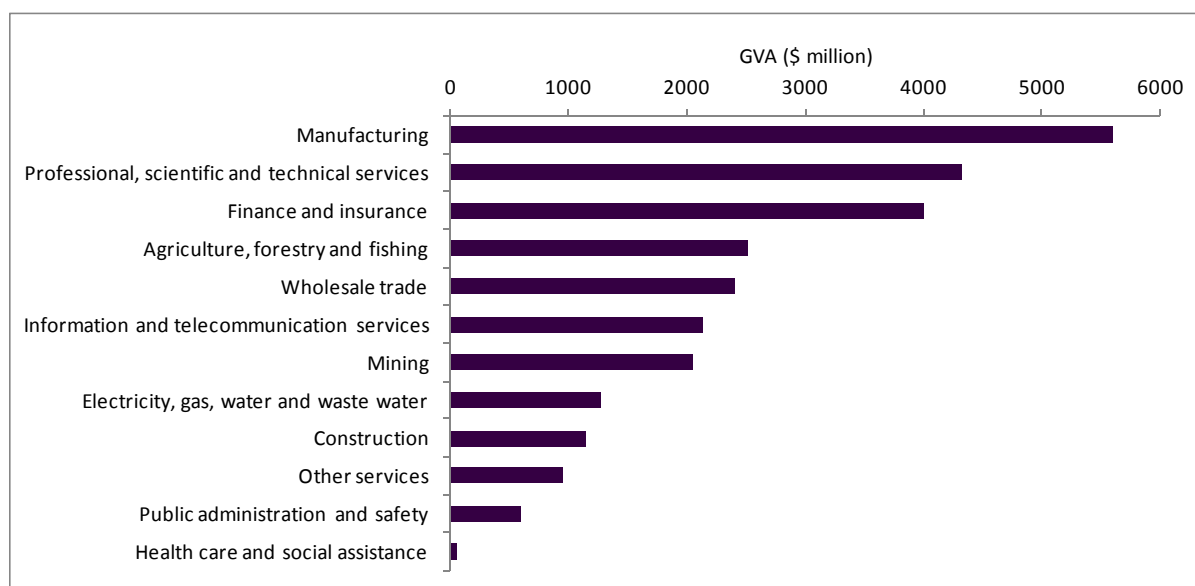
Disaggregation of the \$27.0 billion of indirect tourism GVA in *All other industries* in 2010–11 is presented in **Figure 3**. More than half (51 per cent) of total tourism GVA in this category occurred in three industries, namely:

- *Manufacturing* (\$5.6 billion)
- *Finance and insurance services* (\$4.0 billion)
- *Professional, scientific and technical services* (around \$4.3 billion).

Additionally, a third of total tourism GVA was contributed by:

- *Agriculture, forestry and fishing* (\$2.5 billion)
- *Wholesale trade* (\$2.4 billion)
- *Information and telecommunication services* (\$2.1 billion)
- *Mining* (\$2.0 billion).

**Figure 3: Tourism indirect GVA in 'All other industries', 2010–11**



Source: Derived from TRA model

### **Growth in total tourism GVA, by industry**

Total tourism industry GVA grew at an average annual growth rate of 3.6 per cent between 1997–98 and 2010–11, compared to 7.0 per cent average annual growth in the whole economy (**Figure 4**). In Australia, two industries (*Mining* and *Professional, scientific and technical services*) grew at double digit rates (12.7 and 10.0 per cent, respectively) between 1997–98 and 2010–11. These industries together constituted 16.1 per cent of total GVA in Australia.

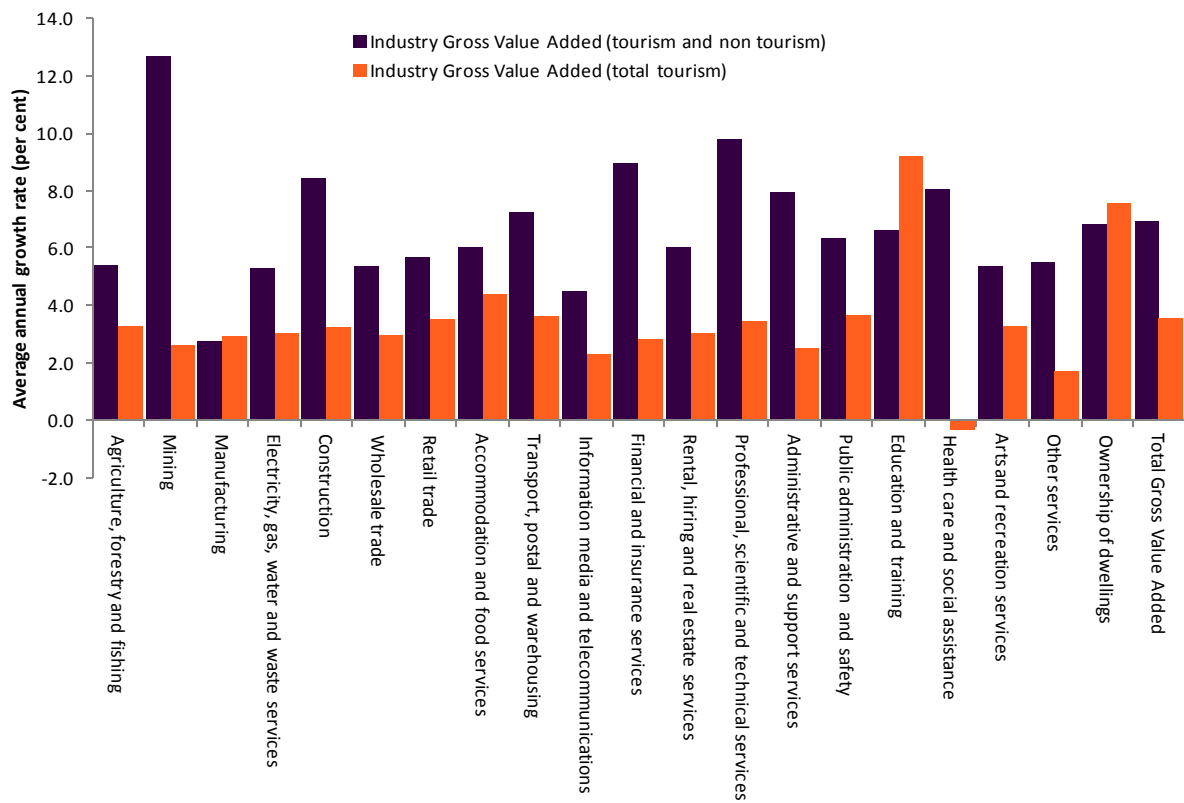
On the other hand, among tourism industries, only the *Education and training* industry achieved an average annual GVA growth of 9.2 per cent. However, this industry represented only a small 3.8 per cent share in total tourism GVA in 2010–11.

Around a third (31 per cent) of tourism’s total GVA was shared among two main industries in 2010–11, namely:

- *Accommodation and food services* (15.8 per cent)
- *Transport, postal and warehousing* (15.2 per cent).

These industries achieved an average annual tourism GVA growth of 4.4 per cent and 3.6 per cent respectively. These rates were much lower than the growth rates achieved by these industries at total GVA levels. Growth in total GVA for *Accommodation and food services* and *Transport, postal and warehousing* was 6.1 per cent and 7.3 per cent respectively, indicating that the non-tourism component showed much stronger growth than the tourism component of each industry.

Figure 4: Average annual growth in GVA, tourism and all industries, 1997–98 to 2010–11



Sources: Derived by TRA using total GVA and direct contribution estimates from ABS Cat. No. 5249.0, 2010–11, and indirect estimates by TRA



### **Industry share of total tourism GVA**

Over the years, industry share in the total tourism GVA varied, depending upon changes in visitor types and their numbers and the price and quantity of tourism products and services demanded (**Table 5**). For example, the share of *Accommodation and food services* industry increased from 14.2 per cent in 1997–98 to 15.8 per cent in 2010–11 due to an increase in visitor numbers. Between 2000–01 and 2010–11, inbound and domestic visitor nights increased 8.7 per cent (or 38 million) (Tourism Forecasting Committee 2011). The *Education and training* industry increased its share in tourism GVA from 1.9 per cent in 1997–98 to 3.8 per cent in 2010–11, due to an increase in short-term student visitors to Australia in recent years. Short-term visitor arrivals for education<sup>9</sup> to Australia rose at an average annual rate of 8.0 per cent between 1997–98 and 2010–11.

The *Transport services* industry's share in tourism industry GVA reached the 1997–98 levels after peaking at 15.8 per cent during 2006–07, indicating a fall in the prices of transport services due to increased competition between airlines. Australian domestic airfare index (in June 2011 prices) declined by 23.3 per cent between June 2007 and June 2011 (BITRE 2012). The share of total tourism GVA in all other industries remained unchanged during this period.

---

<sup>9</sup> Compiled from TRA CD-MOTA database

**Table 5: Industry share in total tourism GVA (%)**

<b>Tourism industries</b>	<b>1997/ 98</b>	<b>1998/ 99</b>	<b>1999/ 00</b>	<b>2000/ 01</b>	<b>2001/ 02</b>	<b>2002/ 03</b>	<b>2003/ 04</b>	<b>2004/ 05</b>	<b>2005/ 06</b>	<b>2006/ 07</b>	<b>2007/ 08</b>	<b>2008/ 09</b>	<b>2009/ 10</b>	<b>2010/ 11</b>
Agriculture, forestry and fishing	3.8	3.9	3.9	4.0	3.9	3.9	3.8	3.7	3.8	3.8	3.7	3.6	3.6	3.7
Mining	3.3	3.3	3.3	3.7	3.4	3.4	3.1	3.0	2.9	3.3	3.1	3.1	3.0	3.0
Manufacturing	8.8	8.8	8.8	8.8	8.6	8.6	8.4	8.4	8.4	8.3	8.2	8.1	8.0	8.1
Electricity, gas, water and waste services	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8
Construction	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Wholesale trade	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.5	3.5	3.4	3.4	3.5
Retail trade	7.4	7.2	7.4	7.4	7.8	7.9	7.9	8.0	7.9	7.8	7.7	7.7	7.6	7.4
Accommodation and food services	14.2	14.9	14.7	14.4	14.9	14.9	14.8	15.1	15.3	15.4	15.9	15.7	15.6	15.8
Transport, postal and warehousing	15.1	14.8	14.8	15.2	14.8	15.2	15.3	15.3	15.5	15.8	15.4	15.3	15.2	15.2
Information media and telecommunications	4.5	4.4	4.3	4.2	4.1	4.1	4.1	3.9	3.9	3.8	3.8	3.8	3.8	3.8
Financial and insurance services	6.5	6.4	6.5	6.4	6.4	6.3	6.3	6.3	6.3	6.2	6.2	6.2	6.3	5.9
Rental, hiring and real estate services <sup>(a)</sup>	6.8	6.8	6.9	6.7	6.9	6.9	6.9	7.2	7.4	7.3	7.5	7.9	8.2	8.2
Professional, scientific and technical services	6.4	6.3	6.3	6.3	6.2	6.2	6.2	6.1	6.1	6.0	6.0	5.9	5.9	6.3
Administrative and support services	7.4	7.2	7.2	6.8	6.9	6.8	6.8	6.7	6.9	6.6	6.6	6.5	6.4	6.4
Public administration and safety	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9
Education and training	1.9	2.0	2.2	2.4	2.8	2.7	3.1	3.3	3.2	3.2	3.4	3.9	3.9	3.8
Health care and social assistance	1.5	1.4	1.3	1.2	1.1	1.2	1.1	1.0	0.9	0.8	0.9	0.9	0.9	0.9
Arts and recreation services	2.2	2.2	2.1	2.3	2.1	2.1	2.3	2.3	2.1	2.0	2.0	2.1	2.2	2.2
Other services	2.1	1.9	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6
<b>Total tourism GVA (direct and indirect)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources: Direct value added from ABS Cat. No. 5249.0, 2010–11, and indirect value added derived by TRA

<sup>(a)</sup> *Renting, hiring and real estate services* also includes *Ownership of dwellings*

## **Tourism employment by industry**

Applying a strict definition for tourism employment is problematic as employees in tourism-related industries generally provide services to visitors and non-visitors. To overcome this problem, the TSA provides estimates for tourism employment by applying tourism GVA ratios from the benchmark year to ABS Labour Force Survey estimates for tourism-related industries (see **Appendix A** for further details). By applying this method, the TSA reports that the tourism industry directly employed 513,700 persons in 2010–11.

Tourism's total contribution to the Australian labour force is estimated at 907,100 persons for 2010–11 (with an additional 393,400 persons indirectly linked to the tourism value chain, **Table 6**). The indirect employment increases by a multiple of 0.8<sup>10</sup>, indicate that an additional job created directly in the tourism industry will create 0.8 jobs indirectly in the economy.

For the *Accommodation, cafés and restaurants* industry, direct employment accounted for 95 per cent (232,000 persons) of total tourism employment in the industry in 2010–11. Similarly, direct employment accounted for 90 per cent of total tourism employment each in the *Education and training* industry and *Arts and recreation* industry; and 77 per cent (99,000 persons) in *Retail trade* industries. In *All other industries*, 91 per cent (or 261,000 persons) of total tourism-related employment was indirect.

Six industries collectively accounted for 68 per cent of total tourism generated employment:

- *Accommodation, cafés and restaurants* - 244,400 (27 per cent of total)
- *Retail trade* - 128,000 employees (14.1 per cent of total)
- *Air and water transport plus road and rail transport* - 107,700 (11.9 per cent of total)
- *Travel agency and tour operator services* - 68,000 (7.5 per cent of total)
- *Education and training* - 38,100 (4.2 per cent of total)
- *Arts and recreation services* - 34,600 (3.8 per cent of total).

The remaining 32 per cent (or 286,200) of total tourism employment was generated in *All other industries*.

---

<sup>10</sup> Employment multiple is created by dividing direct employment by indirect, but in the model, the indirect employment is generated from the tourism indirect output using output multiplier. This indirect output is then multiplied by the ratio of total employment per unit of gross output in an industry from the input-output table.

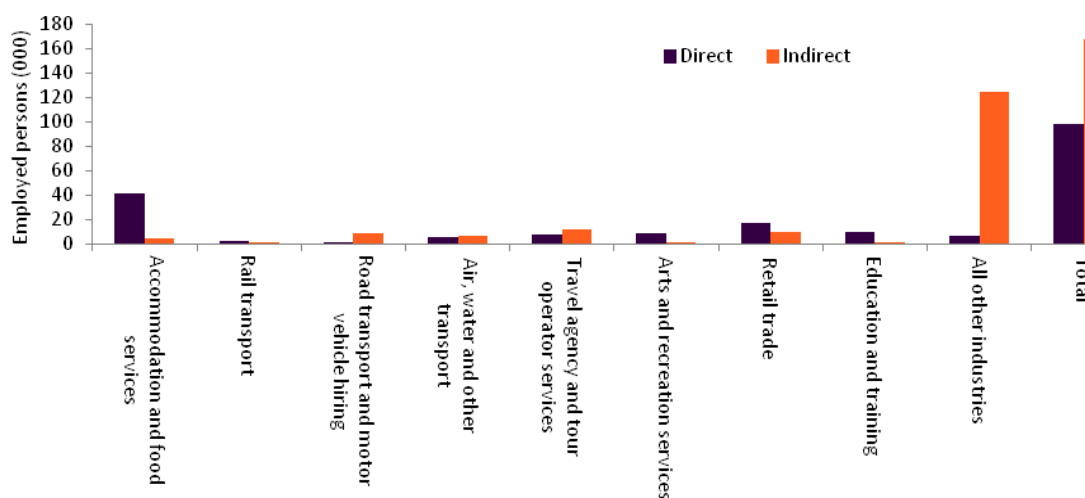
**Table 6: Direct and indirect employment in the tourism industry, 2010–11**

	Direct employment (a)	Indirect employment (b)	Tourism indirect employment multiple (b)/(a) = (c)	Total tourism employment = direct employment*(1+E)
	'000	'000	Ratio	'000
Accommodation and food services	232.4	12	0.1	244.4
Rail transport	4.5	1.0	0.2	5.5
Road transport and motor vehicle hiring	19.7	26.5	1.3	46.2
Air, water and other transport	36.4	19.6	0.5	56.0
Travel agency and tour operator services	31.9	36.5	1.1	68.4
Arts and recreation services	31.0	3.6	0.1	34.6
Retail trade	99.0	28.9	0.3	127.9
Education and training	34.2	3.9	0.1	38.1
All other industries	24.8	261.4	10.5	286.2
<b>Total tourism employment</b>	<b>513.9</b>	<b>393.4</b>	<b>0.8</b>	<b>907.3</b>

Sources: Direct employment from ABS Cat. No. 5249.0, 2010–11; and indirect employment results derived by TRA

Growth in the contribution of main tourism industries to total tourism employment has been mixed (**Figure 5** and **Table 7**). Total tourism employment added 265,000 persons (98,000 directly and 168,000 indirectly) to the Australian workforce between 1997–98 and 2010–11. *Accommodation and food services* industry added around 46,000 persons; *Retail trade* 27,000 (17,000 persons employed directly and 10,000 persons employed indirectly); while *Travel agency and tour operator services* added 19,000 persons (7,000 persons direct and 12,000 persons indirect). During this period, employment in the tourism industry grew at an average annual rate of 2.7 per cent; a rate higher than the 2.3 per cent for total employment in the economy.

**Figure 5: Direct and indirect employment growth in the tourism industry, 1997–98 to 2010–11, ('000)**



Sources: Direct employment from ABS Cat. No. 5249.0, 2010–11; and indirect employment results derived by TRA

**Table 7: Total (direct and indirect) employment in tourism ('000 persons)**

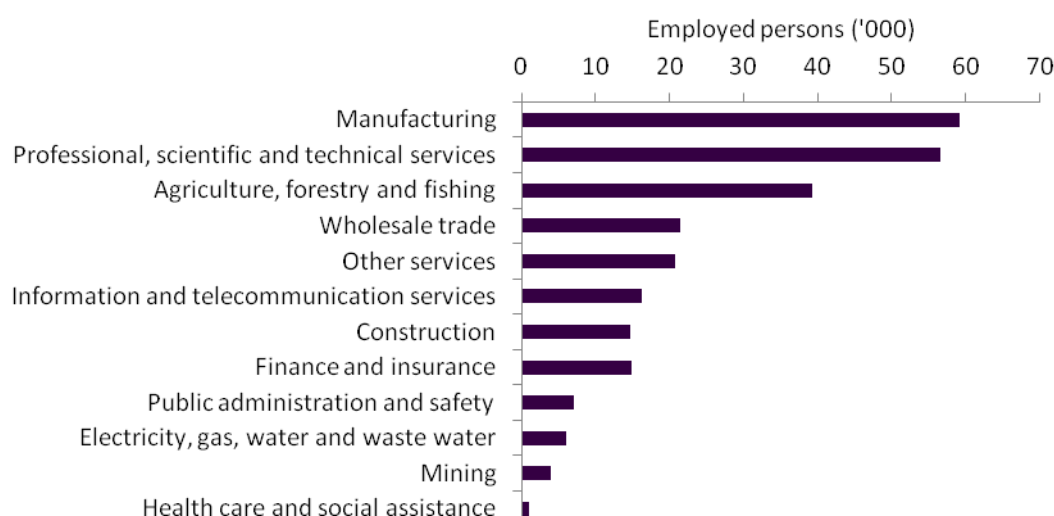
	1997/ 98	1998/ 99	1999/ 00	2000/ 01	2001/ 02	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11
Accommodation and food services	198.8	204.1	210.0	221.7	225.0	224.3	220.3	225.5	222.7	225.6	227.8	228.4	237.3	244.4
Rail transport	3.4	3.2	2.9	3.2	2.8	3.1	3.3	3.3	3.6	3.4	3.6	5.2	5.4	5.5
Road transport and motor vehicle hiring	36.6	38.5	39.0	40.7	41.5	41.9	43.7	42.0	43.0	45.9	47.6	48.0	46.9	46.2
Air, water and other transport	44.8	46.5	48.4	52.0	50.2	48.2	48.5	49.7	52.7	53.7	54.8	55.4	53.8	56.0
Travel agency and tour operator services	49.3	51.5	50.9	52.1	52.1	51.3	51.5	53.9	57.4	60.9	66.6	63.6	67.7	68.4
Arts and recreation services	25.0	26.4	26.9	27.5	29.3	30.4	31.3	31.9	32.9	32.0	33.1	34.3	33.7	34.6
Retail trade	101.3	106.2	107.9	109.5	112.5	119.1	119.4	121.7	121.9	122.9	127.3	125.9	123.9	127.9
Education and training	27.2	28.3	28.7	29.4	30.4	31.4	32.9	31.6	33.3	33.3	35.2	35.7	36.7	38.1
All other industries	155.2	166.8	172.5	220.3	219.0	224.9	225.1	232.1	239.8	258.8	268.6	264.8	269.0	286.2
<b>Total</b>	<b>641.8</b>	<b>671.7</b>	<b>687.1</b>	<b>756.3</b>	<b>762.8</b>	<b>774.6</b>	<b>776.0</b>	<b>791.8</b>	<b>807.2</b>	<b>836.5</b>	<b>864.6</b>	<b>861.4</b>	<b>874.3</b>	<b>907.3</b>

Sources: Direct employment from ABS Cat. No. 5249.0, 2010–11; and indirect employment results derived by TRA

### Indirect employment in All other industries

In 2010–11, 261,400 persons were employed in *All other industries*. More than half of total tourism-related indirect employment in this category occurred in *Manufacturing* (59,100 persons); *Professional, scientific and technical services* (56,600 persons); and *Agriculture, forestry and fishing* (39,200 persons). Around 21,000 persons were employed each in *Wholesale trade* and *Other services industries*, whereas *Information and telecommunication services* employed 16,300 persons and *Finance and insurance* and *Construction* industries each employed around 15,000 persons (**Figure 6**).

**Figure 6: Tourism employment in All other industries, 2010–11**



Source: Derived using TRA model

### Tourism multipliers

The concept of indirect (and total) contribution to the Australian economy fully values tourism's supply chain. This is different to the concept of total and indirect multipliers, which reflects the economy-wide impacts on other sectors of the Australian economy.

Care should be used in using multipliers as they are a measure of average effects, not marginal effects, and consequently do not take account of economies of scale, unused capacity or technological changes (ABS 1995).

The calculation for the indirect contribution of tourism requires output multipliers. These are sourced from ABS' input-output tables (ABS Cat. no. 5209.0.55.001). Details on the output multipliers used in this analysis are presented in **Table 8** in **Appendix C**, and are from the latest available input-output data for 2006–07, released in December 2010.

An application of these multipliers to the direct tourism consumption expenditure in Australia in 2010–11 provides tourism multiplier values for indirect output in **Appendix D**.

Using this methodology, tourism's output multiplier for 2010–11 is valued at 1.92<sup>11</sup>, which means for every dollar tourism earns directly in the Australian economy, it value

<sup>11</sup> Tourism output multiplier changes every year depending upon the proportion of consumption expenditure by the visitors. For 2009–10 the tourism output multiplier value was 1.91 which was lowest in the series since 1997–98.

adds an additional 92 cents to other parts of the economy. At 1.92, tourism’s multiplier is larger than mining (1.66), retail trade (1.81) and education and training (1.38). TRA’s calculation for the tourism total output multiplier is also slightly higher than calculated by Access Economics (2011) at 1.84.

Using the same methodology, tourism’s total employment multiplier is valued at 11.7, with an indirect employment multiplier value of 4.11.

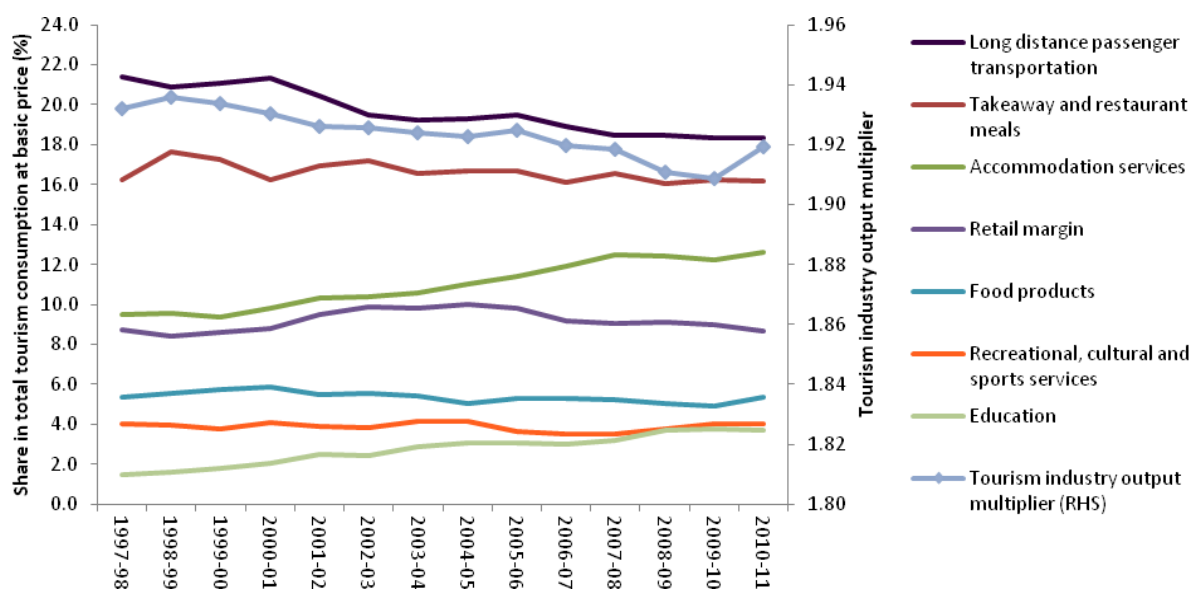
When applying both multipliers, a one per cent increase of tourism direct consumption expenditure of \$81 billion (\$810 million) in 2010-11, generated an output of \$750 million (in nominal terms) outside tourism and increased employment of 3,100 persons outside tourism.

### Tourism multipliers over time

The output multiplier value for the tourism industry may change depending upon the composition of tourism products consumed by visitors and the total multiplier value of the industries producing these products. The tourism industry output multiplier value seems to be influenced by three main products: *Long distance transport*; *Takeaway and restaurant meals*; and *Accommodation services*. These three products constituted around half of the total tourism consumption in 2010–11.

As can be seen in **Figure 7**, the tourism industry output multiplier value was highest at 1.93 in 1997-98, but declined to 1.91 in 2009–10. This was consistent with the decline in the share of *Long distance transport* consumption expenditure, which declined from 21.4 per cent in 1997–98 to 18.3 per cent in 2010–11. The share of *Takeaway and restaurant meals* expenditure remained steady at 16.2 per cent, whereas *Accommodation services* share rose from 9.5 per cent in 1997–98 to 12.6 per cent in 2010–11. In 2010–11, the multiplier value improved slightly from 1.91 in 2009–10 to 1.92—derived mainly by an increase in *Accommodation services* consumption—while the share of *Long distance transport* expenditure remained unchanged.

**Figure 7 Relationship between tourism product share and tourism output multiplier**



Source: Derived from ABS unpublished data

## Conclusion

This report provides estimates on the total contribution of tourism to Australian GDP, GVA and employment for the period 1997–98 to 2010–11. The report highlights tourism's role in Australia's economic growth and its performance as compared to other industries. Importantly:

- Tourism is vital in terms of its contribution to Australia's GDP and employment. More than 5 per cent each of Australia's GVA and GDP and around 8 per cent of total employment is contributed by tourism.
- Tourism's indirect contribution to the economy is higher than that of other industries, mainly the *Mining* and *Retail trade*. The benefits of the tourism industry are far reaching, and significant for the economic growth of all sectors within Australia.
- Tourism's contribution to the Australian labour force is larger than that of *Mining*. This shows that while *Mining* is important for Australia's economic growth, tourism is crucial for Australia's social and economic growth.

Despite its significant contribution to the economy, the tourism industry is at a disadvantage in terms of investment and innovation when compared with other industries, especially *Mining*. For the tourism industry to achieve its potential, it is important that investment increases, particularly with regard to innovation aimed at improving tourism industry's productivity that is important for achieving tourism's potential and smoothing potential imbalances in the industries.



## References

Access Economics (2011, completed 2010), *The 2020 tourism industry stretch goal (now called the 2020 Tourism Industry Potential)*, implications and imperatives, consultancy report for the Department of Resources, Energy and Tourism, Access Economics, Canberra.

Australian Bureau of Statistics 2011, *Australian National Accounts, Tourism Satellite Accounts*, 2010–11, Cat No. 5249.0, ABS, Canberra.

Australian Bureau of Statistics 1995, *Information Paper: Australian National Accounts – Introduction to Input-output Multipliers*, Cat No. 5246.0, ABS, Canberra.

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2012, *Aviation Statistics*, Canberra.

Statistics New Zealand (2011), *Tourism Satellite Account: 2011*. Wellington: Statistics New Zealand

Tourism Forecasting Committee, *Forecast 2011 Issue 2*, Tourism Research Australia, Canberra.

United Nations Statistical Division, Statistical Office of the European Communities, Organisation for Economic Co-operation and Development, World Tourism Organization, *Tourism Satellite Account: Recommended Methodological Framework, 2008*, Luxemburg, Madrid, New York, Paris: United Nations.

## Appendices

### Appendix A: Methodology for calculating indirect contribution

The indirect contribution model developed and implemented by TRA uses relationships derived from the latest available Input-Output (I-O) table for year 2006–07 from the ABS. The model assumes that from 1997–98 to 2010–11 the industry structure of the Australian economy remained consistent with 2006-07 input-output tables.

This also means that the model produces estimates based on the supply and demand relationships generated by the 2006–07 Input-Output tables. It does not take into account any year-to-year variation in supply and demand ratios. This assumption holds in terms of recently revised supply-use tables for the whole time-series based on *Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC 2006)*.

Direct and indirect effects are measured in terms of three key economic indicators: tourism GDP, tourism GVA and tourism employment. It is difficult to directly measure employment in tourism because employees in tourism-related industries generally provide services to both visitors and non-visitors. The TSA measures direct tourism employment by applying the tourism GVA ratio in the benchmark year to the ABS Labour Force Survey estimates for tourism-related industries in subsequent years.

This method assumes that the employment generated by tourism is directly proportional to value added generated by tourism in the benchmark year. While this might not be strictly accurate, the method provides a way of apportioning total industry employment between servicing demands of visitors and non-visitors.

Tourism industry GVA ratios are used for generating employment estimates for the subsequent years until a new benchmark is produced using revised estimates in terms of supply-use tables, service industry surveys and other new information. Employment estimates presented in this report are based on the 2006–07 benchmark year.

#### *The model*

The Australian TSA measures the direct effects of tourism activity. This is the activity of those businesses which directly supply a product to a visitor (tourist). For example, it includes a hotel providing accommodation to a visitor, or a retailer selling a souvenir to a visitor. When a visitor buys a meal in a restaurant, the direct tourism demand is the price of the meal.

However, it does not include the indirect effects of tourism, which is of considerable interest. These are the up-stream effects of tourism demand on businesses which provide goods and services to the tourism industry. The indirect tourism demand generated from the supply of a meal to a visitor, for example, begins with the production of intermediate inputs used by the restaurant (e.g. the production of meat and vegetables used to make the meal, electricity for cooking etc). Producers of these inputs have no direct relationship with the visitor.

Indirect tourism demand is calculated through input-output analysis. This analysis provides a breakdown of the supply and demand of commodities in the Australian economy.

Input-output is based on a fundamental identity which equates supply and demand as follows:

Let, in a simple production function form,  $t_{ij} = At_i + f_i$

where:  $t$  = total outputs of industry sectors

$A$  = inter-industry coefficients

$f$  = final demand for outputs of the industry sectors

Solving the input-output model:

$$t = At + f$$

$$t - At = f$$

$$(I-A)t = f$$

$$t = (I-A)^{-1} f$$

where  $(I-A)^{-1}$ , is the Leontief inverse, or input-output inverse/multiplier.

TRA uses the following mathematical relationships to estimate indirect tourism contribution:

$$\text{Indirect output} = [(I-A)^{-1} - I] F$$

$$\text{Indirect employment} = E [(I-A)^{-1} - I] F$$

$A$  = a matrix (coefficient) derived from the I-O table. This table contains data on the flow of goods and services in the economy (e.g. who buys what, and who produces what)

$I$  = Identity matrix (ones in the diagonal and zeros elsewhere)

$(I-A)$  = matrix calculated by subtracting the coefficient matrix ( $A$ ) from the identity matrix ( $I$ )

$(I-A)^{-1}$  = An inverse matrix showing by what factor (row) industry sells goods and services to (column) industry because of change in final demand

$F$  = Tourism expenditure

$E$  = Employment

The model uses input coefficients generated by econometric equations that predict input purchases based on an economy's characteristics. Output from the model includes total industry output, employment, and value-added for all industries in the Australian economy. Total industry output is defined as the value of production by industry per year. Employment represents total wages and salaried employees for both full-time and part-time workers.

Total value added is defined as:

- all income paid to workers by employers
- self-employed income
- interests
- rents
- royalties
- dividends
- profit payments
- excise and sales taxes paid by individuals to businesses.

## Appendix B: Input-output multipliers and tourism multipliers

### *Input-output multipliers:*

A multiplier reflects the flow-on effect on output or employment, due to a unit increase in the output of a given industry which results from increased demand for a particular commodity. They are not tourism specific multipliers, but can be used to discuss the multiplier effect of increases in consumption expenditure in tourism characteristic industries.

Input-output multipliers are summary measures used for predicting the total impact on all industries, in an economy of changes in demand for the output of any one industry. The multipliers describe average effects, not marginal effects, and consequently do not take account of economies of scale, unused capacity or technological changes (ABS 1995).

Industry multipliers provide the basis for calculating tourism's indirect effects, derived from the latest available input-output data from the ABS: the 2006-07 input-output tables published in late 2010.

For example, \$1.0 million worth of increase demand in the *Accommodation and food services* industry will require \$2.0 million worth of goods and services to be produced throughout the economy generating around 16 jobs. This increase in output in the economy will increase tourism related output in *Accommodation and food services* industries by \$591,000 (tourism consumption ratio being 29.5%) and will increase total tourism employment by 6 persons, of which 1.3 persons employment being indirect (refer **Table 8**).

**Table 8: Tourism industry multipliers (2010–11) based on 2006–07 input-output tables**

Industries	Total tourism consumption (\$ million) at basic price	Output multipliers*	tourism Consumption ratio	Share weighted consumption (Col.B*Col.C)	Indirect output (\$ million)	Total Emp. Multipliers*	Share weighted Tourism Employment (Col.C*Col.F*1000)	Indirect emp. Multipliers*	Share weighted indirect tourism employment (Col.C*Col.H*1000)
Columns	A	B	C	D	E	F	G	H	I
Agriculture, forestry and fishing	823.5	1.957	0.010	0.020	4931	0.011	0.111	0.005	0.046
Mining	0.0	1.664	0.000	0.000	2923	0.003	0.000	0.002	0.000
Meat and dairy	2120.5	2.518	0.026	0.066	2100	0.011	0.274	0.008	0.203
Other food	1514.3	2.301	0.019	0.043	2180	0.010	0.182	0.006	0.114
Beverages and tobacco	1959.5	2.136	0.024	0.051	1071	0.007	0.176	0.005	0.132
Textiles	42.3	2.067	0.001	0.001	123	0.008	0.004	0.005	0.003
Clothing and footwear	11.5	1.795	0.000	0.000	48	0.013	0.002	0.004	0.001
Wood	108.7	2.131	0.001	0.003	257	0.010	0.014	0.005	0.007
Printing and publishing	204.1	1.879	0.003	0.005	1431	0.009	0.022	0.004	0.010
Petroleum and coal	2798.3	1.598	0.034	0.055	2660	0.002	0.075	0.002	0.053
Chemicals	272.2	2.049	0.003	0.007	923	0.006	0.020	0.004	0.015
Rubber and plastic	171.3	1.928	0.002	0.004	810	0.007	0.015	0.004	0.008
Non-metallic mineral	151.8	2.132	0.002	0.004	428	0.007	0.012	0.004	0.008
Basic metal	358.7	2.151	0.004	0.009	483	0.003	0.015	0.002	0.011
Fabricated metal	244.7	2.141	0.003	0.006	1356	0.007	0.021	0.004	0.012
Transport equipment	714.7	2.028	0.009	0.018	1987	0.008	0.070	0.004	0.038
Other machinery and equipment	345.6	1.927	0.004	0.008	800	0.008	0.033	0.004	0.015
Miscellaneous manufacturing	33.8	2.039	0.000	0.001	127	0.012	0.005	0.004	0.002
Electricity	0.0	1.994	0.000	0.000	1336	0.004	0.000	0.003	0.000
Gas	0.0	1.469	0.000	0.000	182	0.005	0.000	0.002	0.000
Water supply and waste collection	0.0	1.713	0.000	0.000	664	0.006	0.000	0.003	0.000
Construction	0.0	2.330	0.000	0.000	3137	0.009	0.000	0.005	0.000
Wholesale trade	2323.0	1.946	0.029	0.056	4636	0.008	0.226	0.004	0.119
Retail trade	7931.5	1.809	0.097	0.176	1732	0.018	1.725	0.004	0.381
<b>Accommodation and food</b>	<b>24062.1</b>	<b>2.000</b>	<b>0.295</b>	<b>0.591</b>	<b>1001</b>	<b>0.016</b>	<b>4.679</b>	<b>0.005</b>	<b>1.337</b>

<b>services</b>									
Road transport	2321.1	1.791	0.029	0.051	2020	0.009	0.260	0.004	0.104
Rail transport	829.0	1.836	0.010	0.019	180	0.007	0.068	0.003	0.032
Air, space, water and other transport	14357.4	2.032	0.176	0.358	1102	0.007	1.316	0.004	0.749
Postal and warehousing	616.2	1.812	0.008	0.014	4068	0.008	0.058	0.004	0.029
Information media and telecommunications	1271.2	1.888	0.016	0.029	3959	0.007	0.116	0.004	0.064
Financial and insurance services	94.1	1.479	0.001	0.002	4958	0.004	0.005	0.002	0.002
Ownership of dwelling	1239.5	1.395	0.015	0.021	0	0.001	0.021	0.001	0.021
Rental, hiring and real estate services	6.7	1.900	0.000	0.000	4047	0.007	0.001	0.004	0.000
Professional, scientific and technical services	2746.8	1.939	0.034	0.065	8222	0.010	0.343	0.005	0.156
Administrative support services	0.0	1.845	0.000	0.000	5554	0.011	0.000	0.004	0.000
Public administration and safety	3164.1	1.689	0.039	0.066	854	0.010	0.386	0.003	0.123
Education and training	840.0	1.376	0.010	0.014	311	0.014	0.148	0.002	0.019
Health care and social assistance	3525.8	1.308	0.043	0.057	60	0.015	0.670	0.002	0.065
Arts and recreation services	3960.5	1.927	0.049	0.094	448	0.012	0.606	0.004	0.219
Other services	269.2	1.798	0.003	0.006	1753	0.013	0.044	0.004	0.012
<b>Total</b>	<b>81434.0</b>		<b>1.000</b>	<b>1.919**</b>	<b>74861.6</b>		<b>11.722**</b>		<b>4.106**</b>

Source: Model results from 2006-07 input-output tables

\*Generated from the input-output tables

\*\* The total tourism multiplier (sum of share weighted output, employment and indirect employment)

## Appendix C: Calculation of indirect contribution

All other estimates on indirect GVA, indirect taxes on products and indirect employment are generated using the ratio of these indicators to gross output of an industry from the latest input-output table. The ratios are then multiplied to the output of an industry relating to tourism derived above using the output multiplier. The indirect GVA, and employment presented in the TSA are added to TRA indirect GVA and employment estimates.

The aggregation of industry level estimates on indirect GVA, taxes on products and employment provide us with the total value of indirect GVA and employment. The derivation of these estimates is shown in **Table 9**.

**Table 9: Indirect contribution - TRA calculations**

Items	Formula	Direct (a)	Indirect (b)	Total (a) + (b)	Indirect effect multiples (b)/(a)
Indirect tourism output (\$ billion)	= $\Sigma$ (total consumption*indirect output multiplier)	81.4	$81.4*0.92 = 74.9$	152.8	-
GVA (\$ billion)	= $\Sigma$ (Indirect industry output from tourism *ratio of industry GVA to gross output) + indirect GVA from TSA	31.5	$74.9*0.44=32.9+4.6 = 37.5$	69.0	$37.5/31.5 = 1.19$
Taxes on products (\$ billion)	= $\Sigma$ (Indirect industry output from tourism *ratio of industry taxes on products to gross output) + indirect taxes on products from TSA	3.1	$74.9*0.00959 = 0.718+0.417 = 1.135$	4.235	-
GDP (\$ billion)	Indirect GVA + indirect net taxes on products	$31.5+3.1 = 34.6$	$37.5+1.135=38.6$	73.2	-
Employment ('000)	$\Sigma$ (Indirect industry output from tourism*ratio of industry employment on products to gross output) + indirect employment from TSA	513.7	$74.9*0.0045 = 334.4+59.0=393.4$	907.1	$393.4/513.7 = 0.765$

\*Represents multiplication

<sup>a</sup> For individual industry, direct output and their share in total tourism output is provided in **Appendix A**

<sup>b</sup> This is calculated from the input-output table and the indirect output multiplier is equal to total multiplier minus 1. The total tourism output multiplier is **1.919**

<sup>c</sup> TSA also generate estimates on indirect estimates of tourism GVA and output. This represents the cost to retailers of domestically produced goods sold directly to visitors, for example, most of the services provided by a restaurant are by direct contact but the services of a cook and other persons in preparing food (cutting, cleaning and setting the tables etc) are considered indirect. This category also includes wholesale and transport margins supplied domestically.

<sup>d</sup> Derived by TRA using relationships from TSA

<sup>e</sup> These ratios are directly derived from input-output table (Table 5, ABS Cat. No. 5209.0.55.001)

As shown in the above table, the total tourism consumption expenditure of \$81.4 billion by visitors in 2010–11, generated an indirect output of \$74.9 billion (in nominal terms) using a total multiplier value of 1.919<sup>12</sup> (indirect output multiplier will be total multiplier minus one).

An application of these multipliers to the tourism consumption expenditure share in Australia in 2010–11 provides us with tourism industry multiplier values for indirect output. While the total multiplier value provides a measure of total effect (direct and indirect) due to tourism demand, the indirect multiplier reflects the indirect creation of economic activities due to per unit increase in visitor consumption expenditure.

---

<sup>12</sup> Details on indirect output multiplier are provided at **Appendix B**