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# Public transport use in Australia's capital cities: Modelling and forecasting

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Bureau of Infrastructure, Transport and Regional Economics

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Multimodal

**Public transport use in Australia's capital cities: modelling and forecasting**



Bureau of Infrastructure, Transport and Regional Economics

**Public transport use in Australia's capital cities:  
Modelling and forecasting**  
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Bureau of Infrastructure, Transport and Regional Economics (BITRE)  
Department of Infrastructure and Transport  
GPO Box 501, Canberra ACT 2601, Australia

Telephone: (international) +61 2 6274 7210

Fax: (international) +61 2 6274 6855

Email: [bitre@infrastructure.gov.au](mailto:bitre@infrastructure.gov.au)

Website: [www.bitre.gov.au](http://www.bitre.gov.au)

# Foreword

Urban public transport is an important part of the transport task and effective public transport systems provide benefits for both the community and the environment. Public transport in Australia's capital cities has been undergoing a resurgence in the last decade. The factors are many and varied, and include population growth, increasing densities and rising road congestion. However, consumer responses to increased interest rates, increased food prices and increased petrol prices are the main reasons for the recent rapid growth in public transport patronage.

This report presents modelling and forecasting of urban public transport use in Australia's capital cities. The work brings together data for all Australian capital cities and puts public transport into the context of total passenger travel within our cities. The modelling and forecasting help provide an understanding of the forces shaping the demand for public transport in our cities.

This project was undertaken by Dr Afzal Hossain and Dr David Gargett, assisted by Dr David Cosgrove.

Gary Dolman  
Head of Bureau  
Bureau of Infrastructure, Transport and Regional Economics  
March 2013



# At a glance

From the end of the Second World War in 1945 to the late 1970s, Australian urban public transport (UPT) suffered a large decline in absolute terms, and much more in mode share terms, as car ownership and suburban development boomed.

This report models UPT in the period from the late 1970s - when the decline in UPT mode share started to bottom out. The aim has been to be able to develop models of UPT that would allow long-term forecasting of UPT demand to be made. These would then be available to inform policy decisions regarding UPT infrastructure planning, urban transport reform, urban form, congestion and road safety.

The basic finding of the modelling was that UPT's share of total passenger travel has been basically flat at about 10 per cent from the late 1970s to 2004. But from 2005 to 2010 the UPT share rose, due to lower UPT fares and constraints on household disposable income.

Forecasting using the models reveals that the rapid growth in UPT in the late 2000s is likely to slow. Nevertheless, even with lower growth rates, UPT demand should increase by about one third between 2010 and 2030, with implications for infrastructure provision and other policy issues associated with public transport in our cities.





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# Glossary of terms

<b>Base case</b>	A medium scenario that reflects the economic conditions as at 2010.
<b>Dead running</b>	Journeys by a bus where no passengers are being transported over specified routes. An example of dead running is journeys between the depot and the bus station.
<b>DIC</b>	Disposable Income Constraint – the cost of petrol, food, rent/ mortgage, and savings.
<b>Elasticity</b>	The percentage change in the dependent variable resulting from a one per cent change in the independent variable, all else held constant (Litman 2004). For example, a real fare elasticity of -0.4 means that each 1.0 per cent increase in transit fares, causes a 0.4 per cent reduction in ridership. So, a 10 per cent fare increase will cause ridership to decline by about 4 per cent.
<b>Estimate</b>	Outcomes of modelling using data from 1977–2010.
<b>Forecast</b>	Outcomes of modelling using data from 2011 –2030.
<b>GFC</b>	Global Financial Crisis, starting in late 2008.
<b>Household disposable income constraint</b>	A derivative of several cost factors, such as mortgage, rent, food, petrol and household savings.
<b>In-service kilometres</b>	In-service kilometres are the kilometres travelled by buses operating over their scheduled routes over a year, excluding 'dead running' kilometres. Aggregate in-service kilometres are affected by a number of variables, including the number of buses, frequency of services and length of services (BITRE 2009).
<b>'Larger capital cities'</b>	Sydney, Melbourne, Brisbane, Perth and Adelaide
<b>Predicted</b>	Both estimates and forecasts
<b>Saturating trend</b>	A flattening upward trend
<b>Significant effect</b>	A statistical effect that reached the 5 per cent level of significance.
<b>'Smaller capital cities'</b>	Canberra, Darwin and Hobart
<b>Time</b>	A variable that increases by 1 for every year
<b>Time squared</b>	The square of 'Time'
<b>Total metropolitan transport task</b>	The sum of the passenger transport task across all eight Australian capital cities



<b>Total transport task</b>	Total passenger-kilometres by both private vehicles and public transport vehicles.
<b>urban passenger task</b>	See 'total passenger task'
<b>Urban public transport</b>	Transport of passengers by bus, rail, tram and ferry within cities
<b>UPT</b>	Urban public transport

# Executive Summary

## Background

Shortly after World War II, Australian cities were grouped tightly around a core central business district, with spokes radiating outward along railway lines. Urban public transport (UPT) accounted for about 70 per cent of passenger-kilometres (pkm).

Post-war expansion of the motor vehicle fleet both coincided with, and contributed to, the transformation of our cities from tightly knit cores to sprawling suburbs. For example, by 1970, urban extent of Sydney was triple its 1945 size, and by 2005 was five times the size of Sydney in 1945.

Most of these massive expansions to our cities were serviced by the growing motor vehicle fleet. From 1945 to 1980, the level of total pkm performed by UPT actually fell in most Australian cities (Gargett 1990). The share of total pkm performed by UPT declined from 70 per cent after WWII, to about 10 per cent of urban pkm in 1980, and remained at about that level for 25 years. In the last decade however, UPT has been undergoing a resurgence as a result of lower real UPT fares and disposable income constraints that have encouraged a switch from private motor vehicles.

The key features of urban passenger transport trends in Australian capital cities include:

- Between 1900 and 2010, UPT journeys in Sydney, Melbourne Brisbane peaked just after WWII, and then declined gradually until 1980. Since 1980, public transport passenger journeys have increased. A rapid increase in UPT share during the 2000's was due to pressures on household budgets from interest rates, food prices, petrol prices and a desire by households to increase savings.
- In 1945, total metropolitan public transport patronage, the sum of all UPT transport modes across Australia, was 1915.6 million passenger journeys. In 1979 this Figure decreased to its lowest point of 992.6 million passenger journeys, before rising again to 1513.4 million passenger journeys by 2010.
- Between 1977 and 2010, the total estimated metropolitan UPT task increased from 10.1 billion passenger-kilometres (PKM) to 19.1 billion pkm, an average annual growth of 1.96 per cent,
- Among the five major capital cities, the share of UPT in the total passenger task (UPT plus private road vehicles) grew in Brisbane and Perth, while the shares in Sydney, Melbourne and Adelaide decreased at first and then returned to their 1977 share by 2010. Among three minor capital cities, the shares of UPT passenger task increased in Darwin and Canberra, but decreased in Hobart.

## Objectives of the study

The major objective of this study was to model the capital city UPT task in Australia between 1976–77 (hereafter referred to as 1977) and 2009–10 (hereafter referred to as 2010) and to provide long-term forecasts of these modelled estimates from 2010–11 (hereafter referred to as 2011) to 2029–30 (hereafter referred to as 2030). The aim was to provide information to assist policy-makers and planners in developing responses to projected future growth.

## Methodology

UPT patronage was modelled using a two-step process:

1. Model total per-person travel in each capital city, and
2. Model UPT's share of that travel.

Total UPT patronage is then the product of modelled total passenger travel times UPT's mode share.

Several methods and procedures were used to estimate and forecast UPT tasks in capital cities.

Total travel per person in each capital city was modelled as a function of a saturating trend, petrol price, unemployment and the on-going effect of the global financial crisis (GFC).

UPT's mode share was modelled as a function of a “disposable income constraint” variable and real UPT fares. The disposable income constraint variable is a derivative of several socio-economic factors, such as mortgage, rent and food costs, petrol prices and household savings.

Sensitivity analysis was also carried out to assess the possible effect of petrol prices, UPT fares and the on-going impact of the GFC on the future UPT tasks in all capital cities.

## Results

### *Modelling the urban public transport passenger task by capital city*

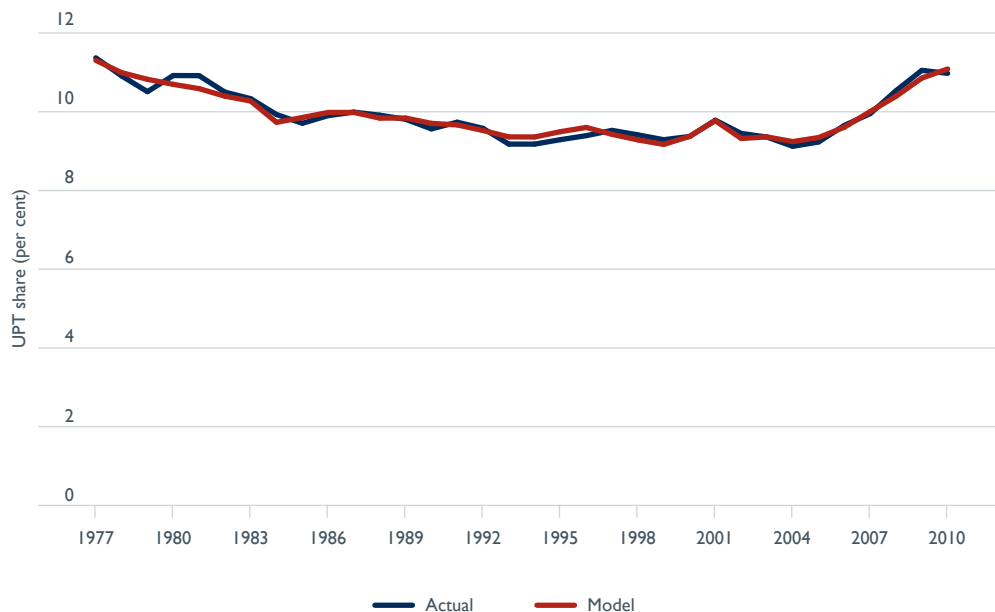
For each capital city, a model of UPT mode share was constructed, of the form:

$$\text{UPT mode share} = f(\text{real UPT fares, household disposable income constraint, GFC effects, and event/supply/trend dummies})$$

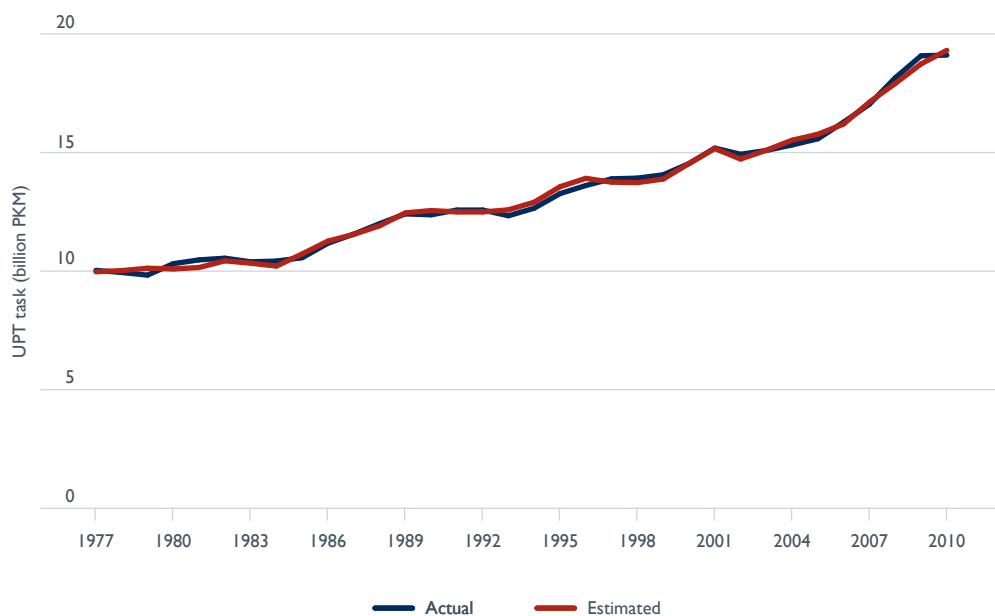
The disposable income constraint (DIC) variable is a composite of several factors, such as mortgage, rent and food costs, petrol prices and the level of household savings.

The UPT fare and DIC variables were the most important of the explanatory variables.

The models succeeded in explaining most of the variation in UPT mode share since 1977. Figure ES-1 shows the actual and modelled UPT mode share for metropolitan Australia.

**Figure ES-1** Actual and modelled UPT mode share, metropolitan Australia

Multiplying the predicted UPT mode share by the estimated total urban pkm gives the modelled aggregate UPT task. This is shown in Figure ES-2 along with the actual UPT task since 1977. The fit is good.

**Figure ES-2** Actual and modelled UPT task, metropolitan Australia

## Modelling the total passenger transport task by capital city

For each capital city, a model of total passenger-kilometres per person (pkmpp) was constructed of the form:

$$\text{pkmpp} = f(\text{saturation trend, petrol prices, unemployment, GFC and dummies})$$

The saturating trend was approximated with a combination of a linear upward trend (time) and an exponentially increasing negative effect (time squared). Both variables were frozen once saturation was reached. The saturating trend was the most important of the variables considered. Petrol prices, unemployment, the GFC and dummies simply served to explain small and varying perturbations below the saturating trend. Figure ES-3 shows the various components of the predicted and actual passenger-kilometres per person for metropolitan Australia.

**Figure ES-3** Actual and predicted components of passenger-kilometres per person, metropolitan Australia

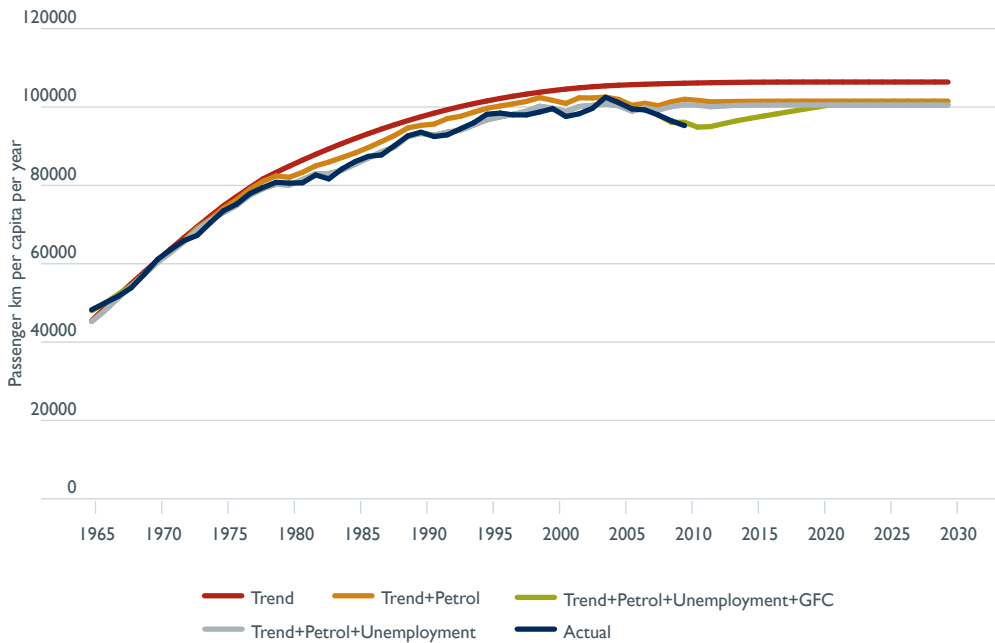
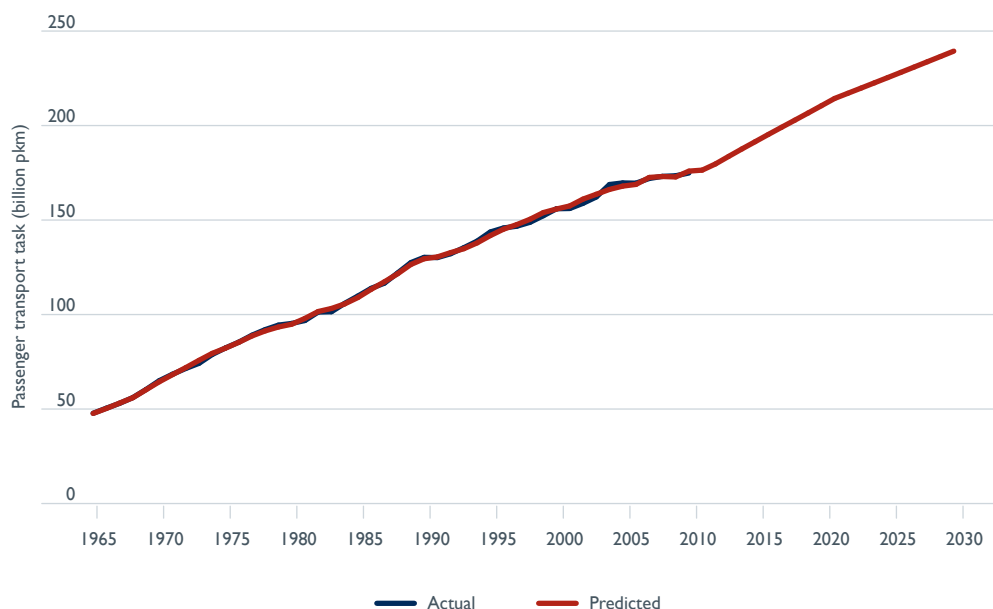


Figure ES-4 shows that the resulting prediction of the aggregate metropolitan Australia passenger-kilometre task lies very close to the actual series

**Figure ES-4** Actual and predicted aggregate passenger-kilometre task, metropolitan Australia



### Forecasts (2011–2030) of public transport passenger task by capital city

Forecasts of UPT mode share were made assuming constant real fares and a constant discretionary income constraint. (except for the GFC effect, which was assumed to wear off by 2020, with the result that the savings rate drops back to 3 per cent of GDP). The resulting forecast of UPT mode share is shown in Figure ES-5a for metropolitan Australia.

Forecasts of the total urban passenger task (UPT plus private vehicles) were made assuming petrol prices and unemployment would not change, while the GFC effect would wear off by 2020. Figure ES-5b shows the forecast for the aggregate passenger-kilometre task for metropolitan Australia. The recent (2005-2010) period of slow growth gives way to a period of rapid growth to 2020 as the GFC effect wears off. Thereafter growth returns to trend.

Multiplying the forecast aggregate task by the forecast UPT mode share gives the forecast for the UPT task to 2030. Under the basecase assumptions, the UPT task is forecast to grow by one third, from 19.1 billion pkm in 2010 to 25.3 billion pkm in 2030, as shown in Figure ES-5c. The average annual growth rate predicted for UPT over the next 20 years is thus 1.35 per cent per year.

Among five major capital cities, the share of the UPT passenger task is forecast to increase in Brisbane and Perth, while the shares are forecast to decrease in Sydney, Melbourne and Adelaide (see Table ES.1).

Irrespective of capital city, the UPT task is projected to grow at a slower pace than the historical growth rates.

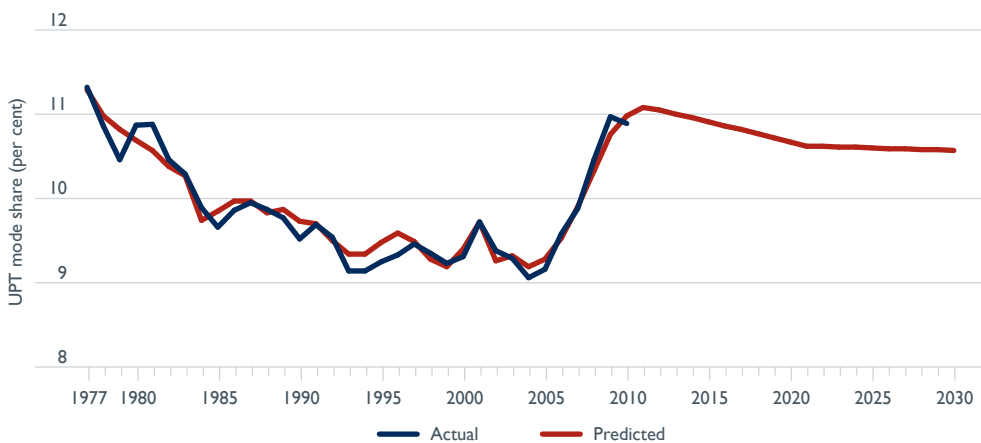
Sensitivity analyses indicated that only increased UPT fares had much effect on these base-case forecasts.

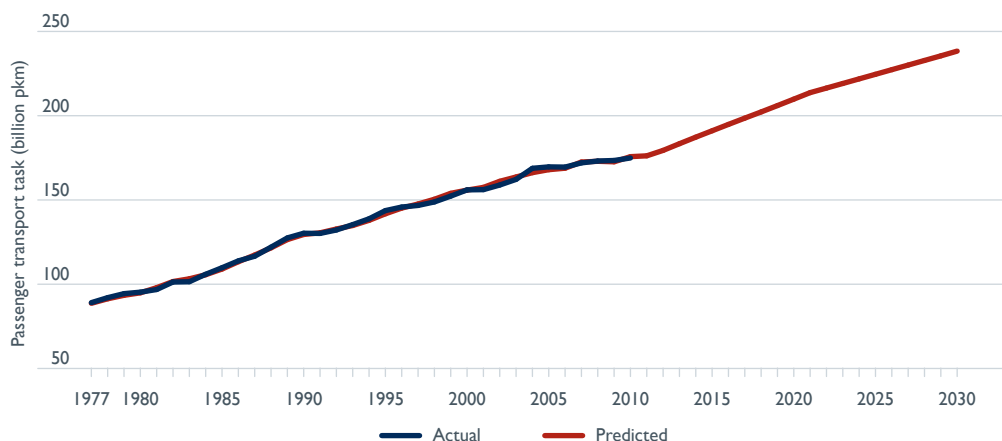
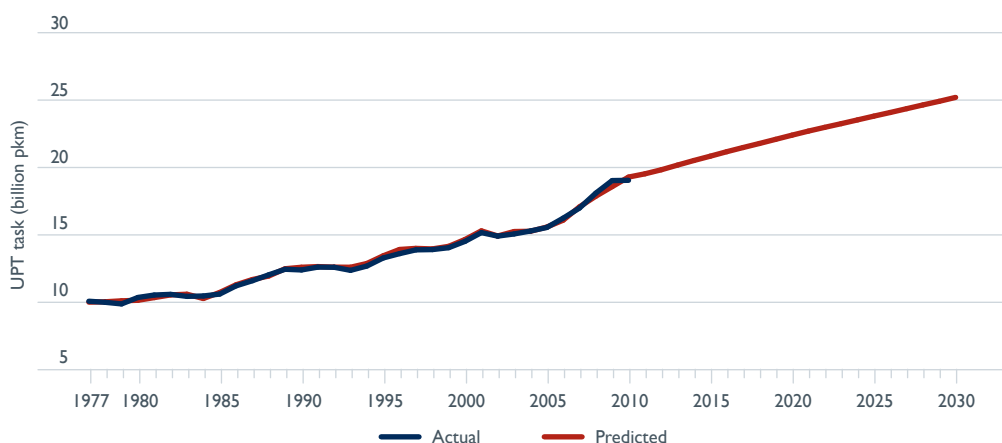
**Table ES.1** Forecasts of UPT passenger tasks (billion pkm) by capital city, 2011–2030

Capital city	UPT task (billion pkm)		Growth <sup>a</sup> (per cent)	UPT share (per cent)	
	2011	2030		2011	2030
Sydney	8.50	10.56	1.15	15.1	14.8
Melbourne	5.85	7.38	1.23	11.6	10.7
Brisbane	2.49	3.71	2.13	9.8	12.3
Adelaide	0.89	0.98	0.52	6.4	6.10
Perth	1.58	2.18	1.70	6.8	6.70
Hobart	0.09	0.1	0.86	3.5	3.50
Darwin	0.07	0.1	2.10	5.8	5.90
Canberra	0.26	0.33	1.31	5.3	5.30
All capitals	19.72	25.34	1.33	11.1	11.0

a Average annual growth rate of UPT task between 2011 and 2030.

**Figure ES-5a** Forecast UPT mode share, metropolitan Australia



**Figure ES-5b** Forecast aggregate passenger-kilometres, metropolitan Australia**Figure ES-5c** Forecast UPT task, metropolitan Australia

## Policy implications and conclusion

The forecasts suggest that demand for urban public transport in Australia should grow by about one-third over the 20 years from 2011 to 2030. This estimate of the future growth of the UPT task is useful for infrastructure planning, urban transport reform and energy-efficiency policy. The forecasts will assist local, state and federal government agencies, investors, transport regulators, public transport users and city planners to prepare for future transport growth in urban areas. The analyses will contribute to new and emerging policy issues in the areas of development of urban infrastructure, congestion amelioration and road safety.





# CHAPTER I

## Introduction

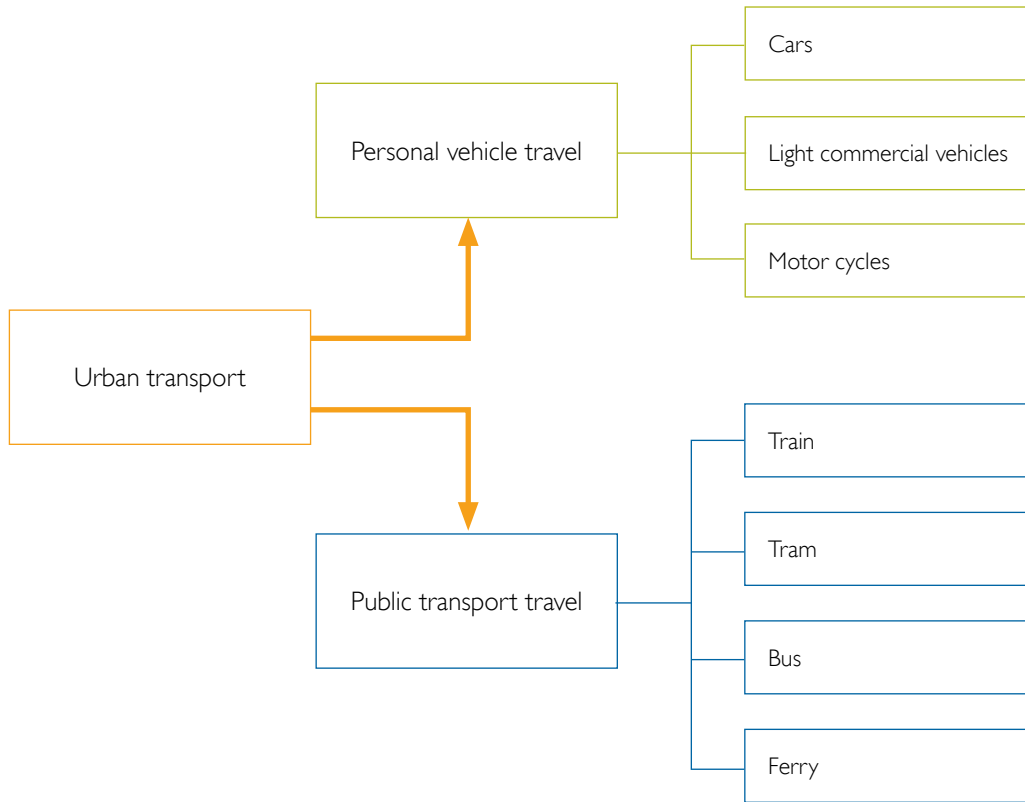
### 1.1 Background to the study

Australia is one of the most urbanised countries in the world. In 2011, around 65 per cent of the total estimated resident population (i.e. 14.5 million, out of 22.3 million) lived in capital cities (ABS 2012).

Private vehicle travel has been the growing mode of travel over the last 65 years. Urban public transport, once the dominant means of passenger transport around our capital cities (Gargett 1990, BTE 1999), now only accounts for approximately 10 per cent of total urban passenger travel. Yet despite its apparent low share of overall travel, UPT is still an essential component of urban transport systems, responsible for the majority of commuter trips to/from the CBDs of our major cities and providing specialist services for school children.

Urban public transport services in Australian cities are mostly by bus (bus and tram in Melbourne), with an important heavy rail share in Sydney and Melbourne, and a smaller rail share in Brisbane, Adelaide and Perth. Figure 1.1 shows the various components of road transport systems in Australia's capital cities.

**Figure 1.1** Breakdown of urban transport modes in Australia’s capital cities



## 1.2 Context of the study

BTRE has previously produced estimates of all-modes capital city passenger tasks (in pkm) from 1977–2004 (BTRE 2007), subsequently updated to 2008 (BITRE 2009a). These two studies also produced capital city passenger task forecasts up to 2020.

Recently, Cosgrove (2011) presented long-term time-series for the usage patterns of UPT compiled for each Australian capital city, covering more than a century from 1900–2010. Long-term historical estimates are important because they demonstrate how the share of total urban travel done by UPT has changed over time. Public transit was dominant through the early part of last century, accounting for more than half of total urban pkm until around 1950, before gradually losing market share to the growing popularity of private car travel.

For this study, the capital city passenger task data was assessed and long-term forecasts between 2010 and 2030 were developed using econometric models.

### 1.3 Objectives of the study

The major objectives of this study were:

1. to model capital city public transport task in Australia between 1976–77 (hereafter referred to as 1977) and 2009–10 (hereafter referred to as 2010) and
2. to produce long-term forecasts of these modelled estimates from 2010–11 (hereafter referred to as 2011) to 2029–30 (hereafter referred to as 2030).

### 1.4 Structure of the report

The structure of this report is shown below.

- Chapter 2 Chapter 2 presents the historical trend (1900–2010) in urban public transport passenger journeys for Sydney, Melbourne and Brisbane, and the long-term trend (1945–2010) in urban passenger transport task by personal vehicle and public transport for all capital cities, including growth rates and share of total task.
- Chapter 3 Chapter 3 presents modelling of the urban public transport share of the total passenger task in each capital city for 1977–2010. The parameters used in modelling include household disposable income constraint, UPT fares, GFC effect and dummies. The disposable income constraint variable is a derivative of factors such as mortgage, rent and food costs, petrol prices, and desired levels of household savings.
- Chapter 4 Chapter 4 outlines the methodology for modelling and forecasting the total urban passenger task. The forecast results for the total passenger transport tasks from 2011 to 2030 for each capital city are also detailed.
- Chapter 5 Chapter 5 describes the methodology for forecasting the UPT passenger task in the eight Australian capital cities between 2011 and 2030. It also provides 'base-case' forecasts of future trends for the UPT tasks in each capital city, as well as the sum of all capital cities.
- Chapter 6 Chapter 6 gives the results of sensitivity analyses that assessed the possible impact of high and low petrol prices, high UPT fares and ongoing effects from the GFC on future UPT tasks in all capital cities.
- Chapter 7 Chapter 7 discusses the results and makes concluding remarks.

The appendices to this report provide more detail on various aspects of the report:

- Appendix A Metropolitan public transport trips by capital city by transport mode, 1945–2010
- Appendix B Annual public transport trips per person by capital cities, 1945–2010
- Appendix C Public and private passenger transport task and shares by capital cities, 1977–2010
- Appendix D Personal vehicle and public transport task by type of vehicle, all capital cities, 1977–2010

- Appendix E Estimates of real fares by capital cities, 1977–2010
- Appendix F Estimates of household disposable income constraint by capital cities, 1977–2010
- Appendix G Modelling data by capital cities, 1977–2010
- Appendix H Actual and estimated urban public transport share and passenger task by capital city, 1977–2010
- Appendix I Regression data for forecasting total passenger task, capital cities, 1965–2010
- Appendix J Actual and predicted metropolitan passenger-kilometres per person, individual capital city and total capital cities, 1965–2030
- Appendix K Actual and predicted total transport task, urban public transport share and urban public transport task, capital cities
- Appendix L Sensitivity analysis data and calculated urban public transport task by capital cities.

## CHAPTER 2

# Long-term passenger transport tasks in Australian capital cities

### Summary

The key features of urban passenger transport trends in Australian capital cities are summarised below:

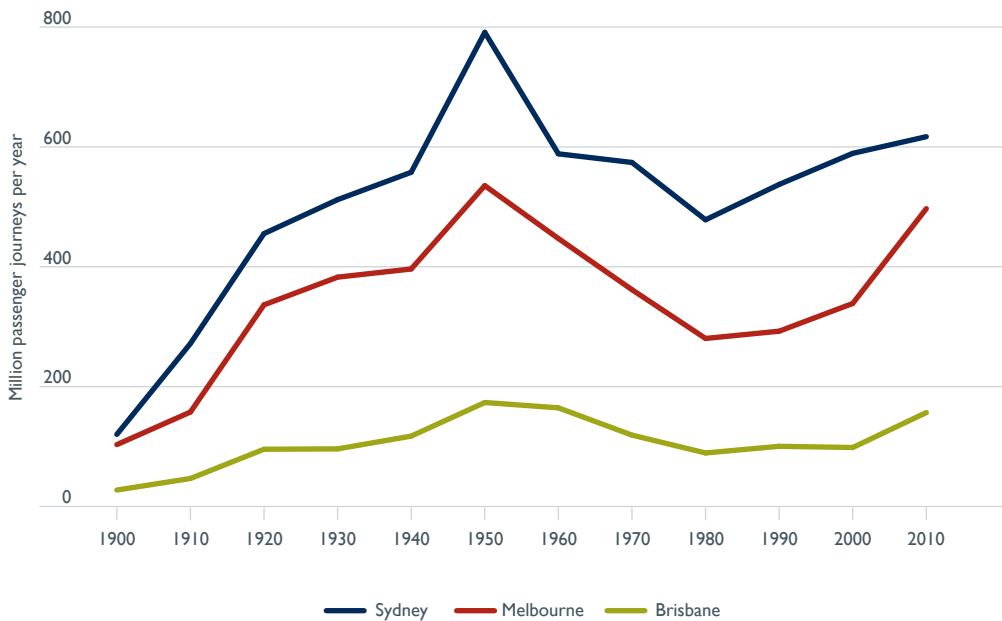
- Total passenger travel in capital cities, that is, travel by both private vehicle and public transport, has grown from 19.6 billion pkm in 1945 to 175 billion pkm in 2010, 9 times its former level.
- By contrast, the transport task by public transport vehicles increased from 13.6 billion pkm in 1945 to 19.1 billion pkm in 2010, only 1.4 times its former level.
- As a consequence, between 1945 and 2010, the personal vehicle share of the total passenger kilometres increased from 30.5 per cent to 89.1 per cent, while public transport's share decreased from 69.5 per cent to 10.9 per cent. By 2010, the passenger task by personal vehicles represented more than 90 per cent of the total passenger task in all capital cities except Sydney, where personal vehicles represented around 85 per cent.
- Most of the decline in UPT share happened between 1945 and the late 1970s. From then until 2004, UPT shares in most cities were unchanged, meaning that UPT was growing as fast as private vehicle travel.
- From 2005 to 2010, UPT has been undergoing a period of more rapid growth, leading to increased UPT shares in most cities.

## 2.1 Long-term patterns in urban public transport passenger trips, 1900–2010

Figure 2.1 shows the long-run pattern of urban public transport passenger trips in Sydney, Melbourne, and Brisbane since 1900. The number of passenger trips on public transport reached a peak in Sydney, Melbourne and Brisbane just after World War II. However, after the war, the growth shifted to private car ownership in the 1950s and continued to rise throughout the decades of the 1960s, 1970s and 1980s (Gargett 1990). This rise in private car ownership was accompanied by a corresponding shift away from the use of urban public transport in these three capital cities until the early 1980s.

This downward trend ended in the late 1970s and early 1980s and the use of urban public transport started to increase slowly. Rising petrol prices, increasing traffic congestion and parking problems, and (since 1985) increased prices of new automobiles contributed to a resumption of UPT growth.

**Figure 2.1** Long-run pattern of urban public transport passenger trips: Sydney, Melbourne and Brisbane, 1900–2010



Source: Gargett (1990) and BITRE estimates

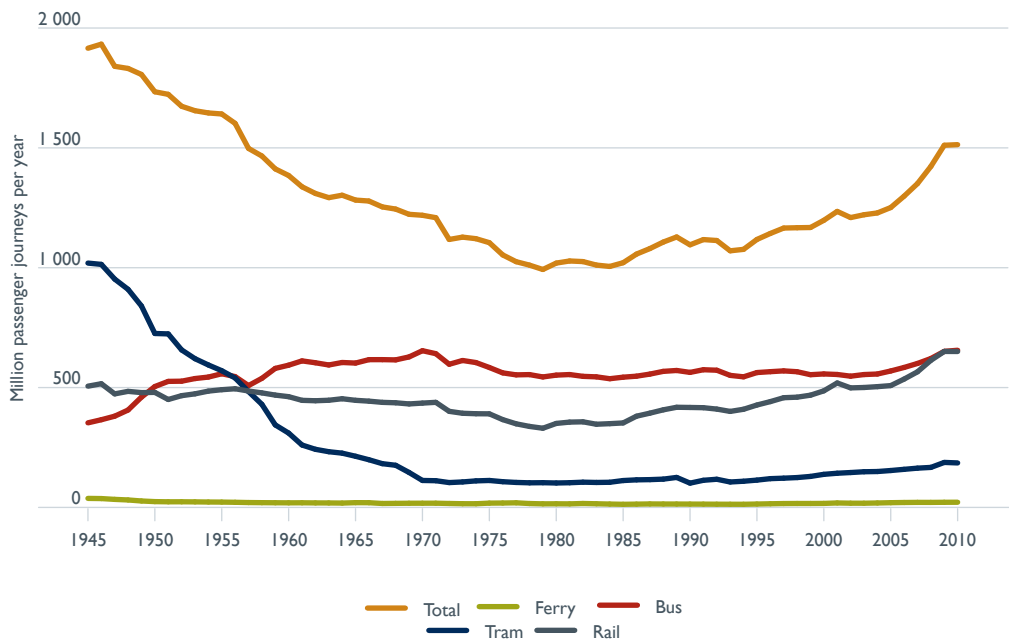
## 2.2 Public transport trips in metropolitan Australia, 1945–2010

This section presents data on metropolitan public transport trips in Australia between 1945 and 2010 by (a) transport modes and by (b) capital city. More detailed data on metropolitan public transport trips by capital city and transport modes and data on public transport trips per person by all capital cities during the same period is presented in Appendix A (see Table A.1).

## 2.2.1 By transport mode

Figure 2.2 shows metropolitan public transport patronage by millions of passenger trips by transport mode, as well as total metropolitan public transport patronage between 1945 and 2010. Figure 2.3 shows the average annual growth rates of total metropolitan public transport patronage and Figure 2.4 shows the share of metropolitan public transport trips by transport mode during the same period. The data underlying these three figures is in Table 2.1.

**Figure 2.2** Metropolitan public transport trips (million passenger trips) by transport mode, 1945–2010



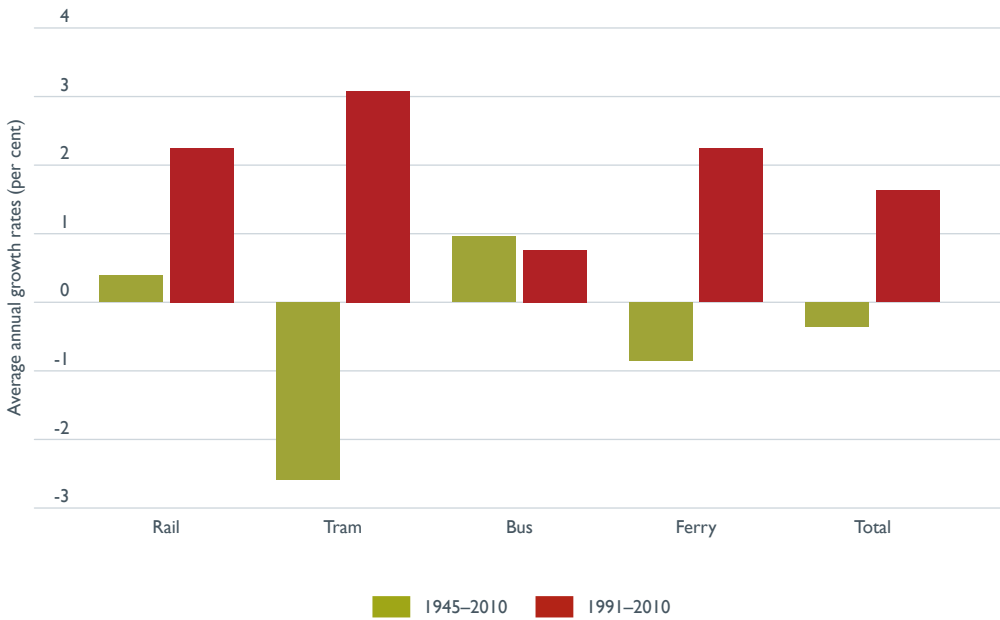
Source: BITRE estimates.

In 1945, total metropolitan public transport patronage for all transport modes was 1915.6 million passenger trips and it decreased to 1513.4 million passenger trips in 2010 (Figure 2.2 and Table 2.1). Among the various transport modes, bus transport patronage increased in the earlier years and then remained relatively unchanged until 2000, followed by an increase until 2010. On the other hand, rail transport patronage decreased in the earlier years and increased in recent years. There was a sharp fall in tram patronage until the early 1970s. However, tram patronage increased gradually from the late 1970s. Ferry patronage decreased slightly between 1945 and 2010.

Rail and bus shares of total metropolitan public transport trips increased between 1945 and 2010 (Figure 2.4 and Table 2.1). In 1945, the rail journey share was 47.4 per cent and it increased to 61.7 per cent in 2010. Similarly, the bus journey share increased from 13.2 per cent in 1945 to 33.6 per cent in 2010. Between 1945 and 2010, the tram share decreased sharply until the early 1970s and then increased marginally, while the ferry journey share declined slowly during this period.

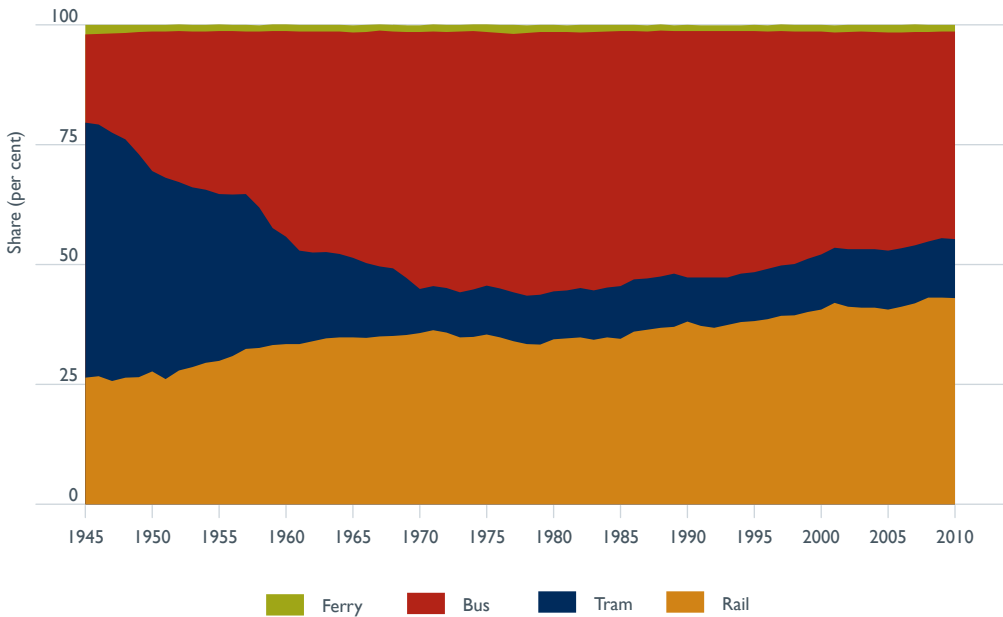


**Figure 2.3** Comparison of average annual growth rates (per cent) of metropolitan public transport trips by transport mode, 1945–2010 and 1991–2010



Source: BITRE estimates.

**Figure 2.4** Share (per cent) of metropolitan public transport trips by transport mode, Australia, 1945–2010



Source: BITRE estimates.

**Table 2.1** Metropolitan public transport patronage (million passenger trips) by transport mode, 1945–2010

Financial year	Million passenger journey					Share (per cent)				
	Rail	Tram	Bus	Ferry	Total	Rail	Tram	Bus	Ferry	Total
1945	505.8	1019.3	352.8	37.6	1915.6	26.4	53.2	18.4	2.0	100.0
1946	516.0	1013.9	365.8	36.9	1932.7	26.7	52.5	18.9	1.9	100.0
1947	473.6	952.5	380.6	33.5	1840.3	25.7	51.8	20.7	1.8	100.0
1948	484.2	909.7	406.3	31.1	1831.3	26.4	49.7	22.2	1.7	100.0
1949	479.0	840.3	460.1	26.8	1806.2	26.5	46.5	25.5	1.5	100.0
1950	479.9	725.6	504.3	24.2	1734.0	27.7	41.8	29.1	1.4	100.0
1951	450.2	723.9	525.8	23.4	1723.3	26.1	42.0	30.5	1.4	100.0
1952	466.2	657.1	526.6	23.5	1673.5	27.9	39.3	31.5	1.4	100.0
1953	473.8	620.5	537.6	23.1	1655.0	28.6	37.5	32.5	1.4	100.0
1954	485.2	594.3	543.8	22.5	1645.7	29.5	36.1	33.0	1.4	100.0
1955	491.1	570.4	557.6	22.2	1641.4	29.9	34.8	34.0	1.4	100.0
1956	495.0	540.0	545.8	21.4	1602.2	30.9	33.7	34.1	1.3	100.0
1957	485.6	483.5	508.3	20.3	1497.7	32.4	32.3	33.9	1.4	100.0
1958	477.8	430.0	538.5	19.8	1466.1	32.6	29.3	36.7	1.3	100.0
1959	468.6	344.2	580.0	19.4	1412.3	33.2	24.4	41.1	1.4	100.0
1960	462.0	310.1	593.4	19.1	1384.7	33.4	22.4	42.9	1.4	100.0
1961	446.7	260.3	611.3	19.3	1337.6	33.4	19.5	45.7	1.4	100.0
1962	445.0	242.4	603.5	18.8	1309.8	34.0	18.5	46.1	1.4	100.0
1963	447.1	232.4	594.2	18.6	1292.3	34.6	18.0	46.0	1.4	100.0
1964	453.4	226.4	604.6	18.1	1302.5	34.8	17.4	46.4	1.4	100.0
1965	446.8	213.4	602.2	19.8	1282.2	34.8	16.6	47.0	1.5	100.0
1966	443.3	198.9	616.4	19.6	1278.2	34.7	15.6	48.2	1.5	100.0
1967	438.3	182.5	616.5	16.4	1253.7	35.0	14.6	49.2	1.3	100.0
1968	436.5	175.8	615.5	16.9	1244.6	35.1	14.1	49.4	1.4	100.0
1969	431.7	145.8	627.8	17.4	1222.8	35.3	11.9	51.3	1.4	100.0
1970	435.2	112.4	653.8	17.5	1218.8	35.7	9.2	53.6	1.4	100.0
1971	438.4	111.4	641.4	17.6	1208.8	36.3	9.2	53.1	1.5	100.0
1972	400.8	103.6	597.2	16.4	1117.9	35.8	9.3	53.4	1.5	100.0
1973	392.8	106.3	613.0	15.4	1127.6	34.8	9.4	54.4	1.4	100.0
1974	390.8	110.7	604.3	15.3	1121.1	34.9	9.9	53.9	1.4	100.0
1975	390.4	112.4	583.7	17.9	1104.5	35.4	10.2	52.9	1.6	100.0
1976	366.3	107.3	561.3	18.3	1053.4	34.8	10.2	53.3	1.7	100.0
1977	348.8	104.2	553.0	19.2	1025.2	34.0	10.2	53.9	1.9	100.0
1978	337.9	102.6	554.1	16.2	1010.8	33.4	10.1	54.8	1.6	100.0
1979	330.3	103.1	544.3	14.9	992.6	33.3	10.4	54.8	1.5	100.0
1980	350.4	101.9	551.9	15.1	1019.3	34.4	10.0	54.1	1.5	100.0
1981	355.9	103.0	554.3	14.8	1028.1	34.6	10.0	53.9	1.4	100.0
1982	357.1	105.3	546.8	16.4	1025.6	34.8	10.3	53.3	1.6	100.0
1983	347.0	104.1	544.7	15.2	1011.0	34.3	10.3	53.9	1.5	100.0
1984	349.4	104.9	536.9	14.0	1005.3	34.8	10.4	53.4	1.4	100.0
1985	352.4	112.1	543.3	13.0	1020.8	34.5	11.0	53.2	1.3	100.0
1986	380.6	115.0	547.5	13.7	1056.9	36.0	10.9	51.8	1.3	100.0
1987	393.3	115.9	556.2	14.5	1079.9	36.4	10.7	51.5	1.3	100.0
1988	407.1	118.0	567.6	14.2	1107.0	36.8	10.7	51.3	1.3	100.0
1989	417.8	125.1	571.3	14.1	1128.3	37.0	11.1	50.6	1.2	100.0
1990	417.0	101.3	563.3	13.9	1095.5	38.1	9.2	51.4	1.3	100.0

continued

**Table 2.1** Metropolitan public transport patronage (million passenger journeys) by transport mode, 1945–2010 (*continued*)

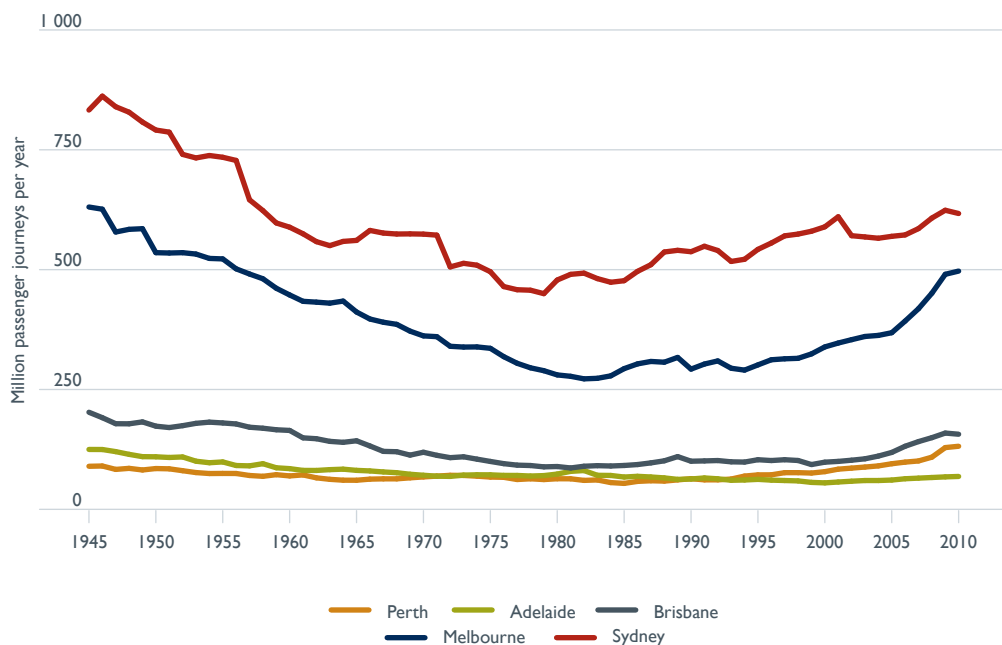
Financial year	Million passenger journey					Share (per cent)				
	Rail	Tram	Bus	Ferry	Total	Rail	Tram	Bus	Ferry	Total
1991	416.0	113.2	574.4	13.7	1117.4	37.2	10.1	51.4	1.2	100.0
1992	410.2	117.5	572.4	13.4	1113.5	36.8	10.5	51.4	1.2	100.0
1993	400.5	106.1	550.8	13.2	1070.5	37.4	9.9	51.4	1.2	100.0
1994	409.5	109.2	544.8	13.1	1076.6	38.0	10.1	50.6	1.2	100.0
1995	427.2	113.9	562.6	14.1	1117.9	38.2	10.2	50.3	1.3	100.0
1996	441.4	120.0	566.3	15.2	1142.9	38.6	10.5	49.5	1.3	100.0
1997	457.7	122.0	569.6	16.1	1165.5	39.3	10.5	48.9	1.4	100.0
1998	459.9	124.5	566.1	16.4	1166.8	39.4	10.7	48.5	1.4	100.0
1999	468.2	129.3	553.7	16.4	1167.7	40.1	11.1	47.4	1.4	100.0
2000	486.3	138.0	556.8	16.7	1197.8	40.6	11.5	46.5	1.4	100.0
2001	519.2	142.6	554.6	18.6	1234.9	42.0	11.5	44.9	1.5	100.0
2002	498.7	145.5	547.5	17.6	1209.2	41.2	12.0	45.3	1.5	100.0
2003	500.3	148.8	554.3	17.5	1220.9	41.0	12.2	45.4	1.4	100.0
2004	503.8	149.7	556.5	18.5	1228.5	41.0	12.2	45.3	1.5	100.0
2005	508.2	153.9	569.2	19.7	1251.0	40.6	12.3	45.5	1.6	100.0
2006	535.4	158.9	583.9	20.5	1298.6	41.2	12.2	45.0	1.6	100.0
2007	565.7	163.8	600.6	21.0	1351.0	41.9	12.1	44.5	1.6	100.0
2008	613.7	166.9	621.2	20.9	1422.6	43.1	11.7	43.7	1.5	100.0
2009	650.7	187.7	651.1	21.4	1510.9	43.1	12.4	43.1	1.4	100.0
2010	650.5	185.6	655.7	21.6	1513.4	43.0	12.3	43.3	1.4	100.0
Average annual growth rate (per cent)										
1945–2010	0.39	-2.59	0.96	-0.85	-0.36					
1991–2010	2.25	3.08	0.76	2.24	1.63					

### 2.2.2 By capital cities

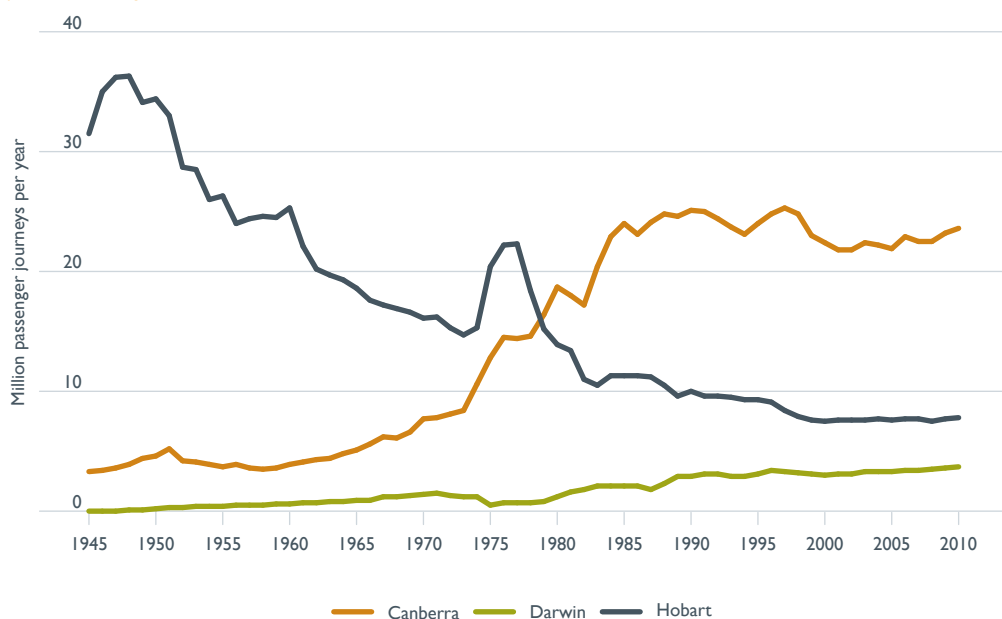
Figure 2.5 shows metropolitan public transport patronage by millions of passenger trips by capital city between 1945 and 2010. Figure 2.6 shows average annual growth rates and Figure 2.7 shows the city share of total metropolitan public transport trips during the same period. Data underlying these three figures is in Table 2.2 and Table 2.3.

**Figure 2.5** Metropolitan public transport patronage (million passenger trips) by capital city, 1945–2010

(a) Larger capital cities



(b) Smaller capital cities



Source: BITRE estimates (see Table 2.2).

Most capital cities (Sydney, Melbourne, Brisbane, Adelaide and Hobart) showed a decline in public transport trips between 1945 and 2010. However, metropolitan public transport trips were much higher in Sydney and Melbourne. In 1945, metropolitan public transport patronage

in Sydney was 832.9 million passenger trips and it decreased to 617.1 million passenger trips in 2010 (Figure 2.5a and Table 2.2). Similarly, metropolitan public transport trips in Melbourne were 630.6 million passenger trips in 1945 and decreased to 497.0 million passenger trips in 2010. However, metropolitan public transport trips were much lower in the smaller capital cities of Hobart, Darwin and Canberra (Figure 2.5b and Table 2.2).

There was a sharp increase in the public transport trips in Melbourne in recent years (see Figure 2.25a and Appendix A, Table A.1). This increase in public transport trips in Melbourne was mainly due to an increase in rail trips. From 2005 to 2010, the number of passenger trips on Melbourne’s heavy rail system grew by 51 per cent, from 145.1 million passenger trips to 219.3 million passenger trips (see Appendix A, Table A.1). A study by the Victorian Department of Transport (2008) highlighted many factors contributing to this growth, including high CBD employment growth and high petrol prices.

Over the period from 1945 to 2010, metropolitan public transport trips grew positively across the entire period only in Perth and Canberra (Figure 2.6 and Table 2.2). The average annual growth rate of total metropolitan public transport trips was negative, at -0.36 per cent per year. The capital city share of total metropolitan public transport trips between 1945 and 2010 increased in Perth and Canberra, while it decreased in Sydney, Adelaide and Hobart (Figure 2.7 and Table 2.3).

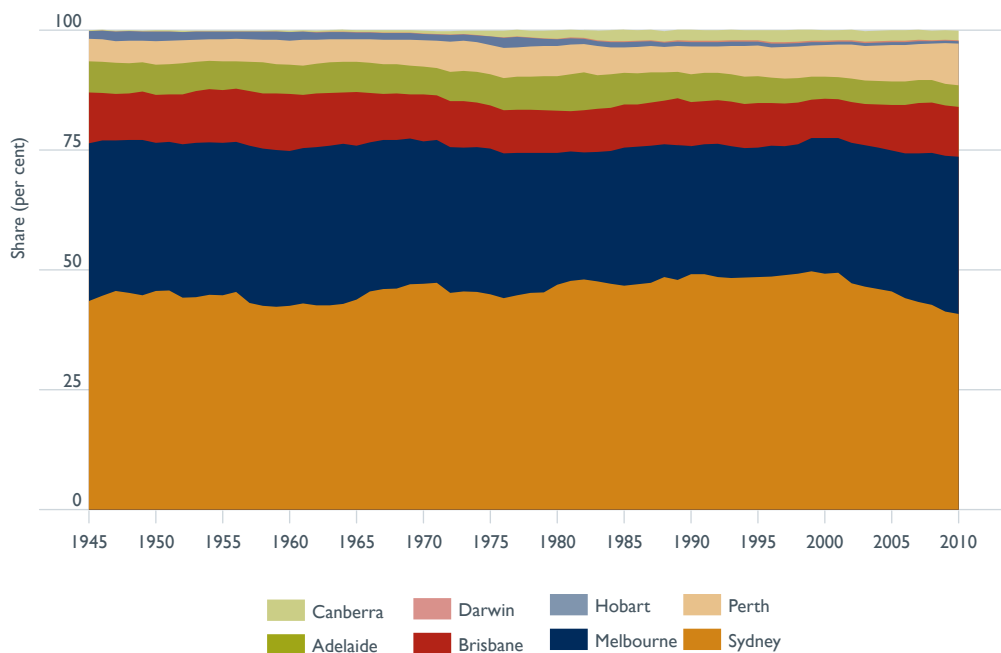
Capital city shares of total metropolitan public transport trips were very slow to change between 1945 and 2010, mainly because Sydney and Melbourne represented about 75 per cent of total metropolitan public transport trips.

**Figure 2.6** Average annual growth rates (per cent) of metropolitan public transport trips by capital city, 1945–2010



Note: Not calculated for Darwin, due to no data in the earlier period.

Source: BITRE estimates (see Table 2.2).

**Figure 2.7** Share (per cent) of metropolitan public transport trips by capital city, 1945–2010


Source: BITRE estimates (see Table 2.3).

**Table 2.2** Metropolitan public transport trips (million passenger trips) by capital city, 1945–2010

Financial year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1945	832.9	630.6	202.5	124.9	89.8	31.5	0.0	3.3	1915.6
1946	861.9	626.1	191.2	124.8	90.4	35.0	0.0	3.4	1932.7
1947	839.8	578.5	178.6	120.4	83.3	36.2	0.0	3.6	1840.3
1948	828.4	584.1	178.4	114.7	85.5	36.3	0.1	3.9	1831.3
1949	807.8	585.4	182.4	109.9	82.1	34.1	0.1	4.4	1806.2
1950	791.2	535.4	173.5	109.6	85.1	34.4	0.2	4.6	1734.1
1951	786.8	534.7	170.6	108.2	84.5	33.0	0.3	5.2	1723.4
1952	740.4	535.4	174.5	109.3	80.6	28.7	0.3	4.2	1673.5
1953	733.0	532.5	179.4	100.4	76.7	28.5	0.4	4.1	1655.0
1954	738.1	523.4	181.9	97.2	74.7	26.0	0.4	3.9	1645.7
1955	734.4	522.4	180.2	98.9	74.9	26.3	0.4	3.7	1641.4
1956	727.8	501.7	178.1	91.4	74.8	24.0	0.5	3.9	1602.2
1957	645.7	490.9	171.3	90.7	70.6	24.4	0.5	3.6	1497.6
1958	623.2	481.0	169.2	95.2	68.9	24.6	0.5	3.5	1466.2
1959	597.4	461.2	166.0	86.7	72.3	24.5	0.6	3.6	1412.3
1960	588.5	447.2	164.6	84.9	69.7	25.3	0.6	3.9	1384.7
1961	574.8	433.9	149.1	81.2	71.8	22.1	0.7	4.1	1337.6
1962	558.4	432.2	147.3	81.1	65.7	20.2	0.7	4.3	1309.9
1963	550.1	430.1	141.8	82.8	62.6	19.7	0.8	4.4	1292.2
1964	558.9	434.4	139.8	83.8	60.8	19.3	0.8	4.8	1302.5
1965	561.0	411.6	143.0	81.3	60.7	18.6	0.9	5.1	1282.3

continued

**Table 2.2** Metropolitan public transport journeys (million passenger journeys) by capital city, 1945–2010 (*continued*)

Financial year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1966	581.8	397.0	132.2	80.1	63.0	17.6	0.9	5.6	1278.2
1967	576.3	390.3	120.9	78.0	63.6	17.2	1.2	6.2	1253.7
1968	574.3	385.9	120.2	76.4	63.6	16.9	1.2	6.1	1244.6
1969	574.6	371.7	113.1	73.2	65.7	16.6	1.3	6.6	1222.8
1970	574.1	361.8	119.1	71.1	67.6	16.1	1.4	7.7	1218.8
1971	572.0	360.2	112.7	69.2	69.3	16.2	1.5	7.8	1208.8
1972	505.7	340.1	107.8	68.7	71.0	15.3	1.3	8.1	1117.9
1973	513.2	338.5	109.6	71.4	70.7	14.7	1.2	8.4	1127.6
1974	509.3	338.8	104.7	72.1	69.2	15.3	1.2	10.6	1121.1
1975	495.7	335.9	99.9	72.0	67.3	20.4	0.5	12.8	1104.4
1976	464.7	318.5	95.3	70.8	66.8	22.2	0.7	14.5	1053.4
1977	458.1	304.7	92.2	70.7	62.2	22.3	0.7	14.4	1025.2
1978	457.1	295.2	91.4	69.5	63.7	18.4	0.7	14.6	1010.8
1979	449.9	289.2	88.6	70.4	62.1	15.2	0.8	16.4	992.6
1980	478.4	280.4	89.3	73.6	63.8	13.9	1.2	18.7	1019.3
1981	490.2	277.5	86.3	79.2	63.7	13.4	1.6	18.0	1029.9
1982	492.7	272.2	89.9	80.9	60.4	11.0	1.8	17.2	1026.0
1983	481.3	273.3	91.1	71.0	61.3	10.5	2.1	20.4	1011.0
1984	473.7	278.4	90.4	70.7	55.8	11.3	2.1	22.9	1005.3
1985	476.9	293.5	91.5	67.4	54.1	11.3	2.1	24.0	1020.8
1986	496.4	303.4	93.4	68.9	58.3	11.3	2.1	23.1	1056.9
1987	510.3	308.5	96.9	67.5	59.6	11.2	1.8	24.1	1079.9
1988	536.8	306.9	101.2	65.6	58.9	10.5	2.3	24.8	1107.0
1989	540.3	316.9	110.0	62.5	61.4	9.6	2.9	24.6	1128.3
1990	537.4	292.5	100.4	63.3	63.9	10.0	2.9	25.1	1095.5
1991	548.8	303.1	101.0	65.5	61.5	9.6	3.1	25.0	1117.4
1992	539.9	309.6	101.8	63.7	61.5	9.6	3.1	24.4	1113.5
1993	517.1	294.3	99.1	60.6	63.2	9.5	2.9	23.7	1070.5
1994	521.6	290.4	98.6	61.2	69.4	9.3	2.9	23.1	1076.6
1995	542.3	301.3	103.5	62.5	71.9	9.3	3.1	24.0	1117.9
1996	555.5	312.0	101.8	60.9	72.0	9.1	3.4	24.8	1139.6
1997	570.5	314.0	103.5	60.1	76.5	8.4	3.3	25.3	1161.6
1998	574.2	315.0	101.9	59.3	76.5	7.9	3.2	24.8	1162.7
1999	580.1	324.2	93.4	56.2	75.7	7.6	3.1	23.0	1163.3
2000	589.3	338.8	98.4	55.2	78.6	7.5	3.0	22.4	1193.3
2001	610.3	346.9	100.0	57.0	83.8	7.6	3.1	21.8	1230.4
2002	570.8	353.9	102.5	58.7	86.0	7.6	3.1	21.8	1204.5
2003	568.2	360.6	105.4	60.1	88.2	7.6	3.3	22.4	1215.8
2004	565.5	362.8	111.1	60.1	90.6	7.7	3.3	22.2	1223.3
2005	569.5	368.4	118.7	61.1	95.1	7.6	3.3	21.9	1245.6
2006	572.4	392.7	131.6	63.8	98.5	7.7	3.4	22.9	1292.9
2007	585.6	418.5	141.3	65.1	100.9	7.7	3.4	22.5	1345.1
2008	607.6	450.8	149.5	66.4	108.8	7.5	3.5	22.5	1416.4
2009	623.9	490.3	159.1	67.7	128.8	7.7	3.6	23.2	1504.3
2010	617.1	497.0	156.7	68.6	131.6	7.8	3.7	23.6	1506.3
Average annual growth rate (per cent)	-0.46	-0.37	-0.39	-0.92	0.59	-2.12	7.92	3.52	-0.36

Note: Nd – Not determined due to no data in the earlier years.

Source: BITRE estimates.

**Table 2.3** Share (per cent) metropolitan public transport trips by capital city, 1945–2010

Financial year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1945	43.5	32.9	10.6	6.5	4.7	1.6	0.0	0.2	100.0
1946	44.6	32.4	9.9	6.5	4.7	1.8	0.0	0.2	100.0
1947	45.6	31.4	9.7	6.5	4.5	2.0	0.0	0.2	100.0
1948	45.2	31.9	9.7	6.3	4.7	2.0	0.0	0.2	100.0
1949	44.7	32.4	10.1	6.1	4.5	1.9	0.0	0.2	100.0
1950	45.6	30.9	10.0	6.3	4.9	2.0	0.0	0.3	100.0
1951	45.7	31.0	9.9	6.3	4.9	1.9	0.0	0.3	100.0
1952	44.2	32.0	10.4	6.5	4.8	1.7	0.0	0.3	100.0
1953	44.3	32.2	10.8	6.1	4.6	1.7	0.0	0.2	100.0
1954	44.8	31.8	11.1	5.9	4.5	1.6	0.0	0.2	100.0
1955	44.7	31.8	11.0	6.0	4.6	1.6	0.0	0.2	100.0
1956	45.4	31.3	11.1	5.7	4.7	1.5	0.0	0.2	100.0
1957	43.1	32.8	11.4	6.1	4.7	1.6	0.0	0.2	100.0
1958	42.5	32.8	11.5	6.5	4.7	1.7	0.0	0.2	100.0
1959	42.3	32.7	11.8	6.1	5.1	1.7	0.0	0.3	100.0
1960	42.5	32.3	11.9	6.1	5.0	1.8	0.0	0.3	100.0
1961	43.0	32.4	11.1	6.1	5.4	1.7	0.0	0.3	100.0
1962	42.6	33.0	11.2	6.2	5.0	1.5	0.1	0.3	100.0
1963	42.6	33.3	11.0	6.4	4.8	1.5	0.1	0.3	100.0
1964	42.9	33.4	10.7	6.4	4.7	1.5	0.1	0.4	100.0
1965	43.8	32.1	11.2	6.3	4.7	1.4	0.1	0.4	100.0
1966	45.5	31.1	10.3	6.3	4.9	1.4	0.1	0.4	100.0
1967	46.0	31.1	9.6	6.2	5.1	1.4	0.1	0.5	100.0
1968	46.1	31.0	9.7	6.1	5.1	1.4	0.1	0.5	100.0
1969	47.0	30.4	9.2	6.0	5.4	1.4	0.1	0.5	100.0
1970	47.1	29.7	9.8	5.8	5.5	1.3	0.1	0.6	100.0
1971	47.3	29.8	9.3	5.7	5.7	1.3	0.1	0.6	100.0
1972	45.2	30.4	9.6	6.1	6.3	1.4	0.1	0.7	100.0
1973	45.5	30.0	9.7	6.3	6.3	1.3	0.1	0.7	100.0
1974	45.4	30.2	9.3	6.4	6.2	1.4	0.1	0.9	100.0
1975	44.9	30.4	9.0	6.5	6.1	1.8	0.0	1.2	100.0
1976	44.1	30.2	9.0	6.7	6.3	2.1	0.1	1.4	100.0
1977	44.7	29.7	9.0	6.9	6.1	2.2	0.1	1.4	100.0
1978	45.2	29.2	9.0	6.9	6.3	1.8	0.1	1.4	100.0
1979	45.3	29.1	8.9	7.1	6.3	1.5	0.1	1.6	100.0
1980	46.9	27.5	8.8	7.2	6.3	1.4	0.1	1.8	100.0
1981	47.6	26.9	8.4	7.7	6.2	1.3	0.2	1.7	100.0
1982	48.0	26.5	8.8	7.9	5.9	1.1	0.2	1.7	100.0
1983	47.6	27.0	9.0	7.0	6.1	1.0	0.2	2.0	100.0
1984	47.1	27.7	9.0	7.0	5.6	1.1	0.2	2.3	100.0
1985	46.7	28.8	9.0	6.6	5.3	1.1	0.2	2.4	100.0
1986	47.0	28.7	8.8	6.5	5.5	1.1	0.2	2.2	100.0
1987	47.3	28.6	9.0	6.3	5.5	1.0	0.2	2.2	100.0
1988	48.5	27.7	9.1	5.9	5.3	0.9	0.2	2.2	100.0
1989	47.9	28.1	9.8	5.5	5.4	0.9	0.3	2.2	100.0
1990	49.1	26.7	9.2	5.8	5.8	0.9	0.3	2.3	100.0
1991	49.1	27.1	9.0	5.9	5.5	0.9	0.3	2.2	100.0

*continued*



**Table 2.3** Share (per cent) metropolitan public transport journeys by capital city, 1945–2010 (continued)

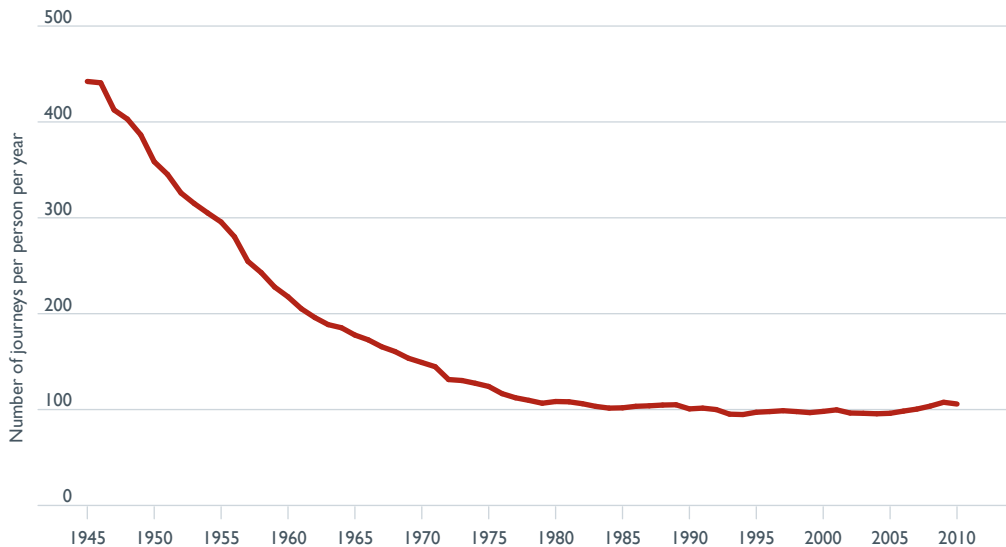
Financial year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1992	48.5	27.8	9.1	5.7	5.5	0.9	0.3	2.2	100.0
1993	48.3	27.5	9.3	5.7	5.9	0.9	0.3	2.2	100.0
1994	48.4	27.0	9.2	5.7	6.4	0.9	0.3	2.1	100.0
1995	48.5	27.0	9.3	5.6	6.4	0.8	0.3	2.1	100.0
1996	48.7	27.4	8.9	5.3	6.3	0.8	0.3	2.2	100.0
1997	49.1	27.0	8.9	5.2	6.6	0.7	0.3	2.2	100.0
1998	49.4	27.1	8.8	5.1	6.6	0.7	0.3	2.1	100.0
1999	49.9	27.9	8.0	4.8	6.5	0.7	0.3	2.0	100.0
2000	49.4	28.4	8.2	4.6	6.6	0.6	0.3	1.9	100.0
2001	49.6	28.2	8.1	4.6	6.8	0.6	0.3	1.8	100.0
2002	47.4	29.4	8.5	4.9	7.1	0.6	0.3	1.8	100.0
2003	46.7	29.7	8.7	4.9	7.3	0.6	0.3	1.8	100.0
2004	46.2	29.7	9.1	4.9	7.4	0.6	0.3	1.8	100.0
2005	45.7	29.6	9.5	4.9	7.6	0.6	0.3	1.8	100.0
2006	44.3	30.4	10.2	4.9	7.6	0.6	0.3	1.8	100.0
2007	43.5	31.1	10.5	4.8	7.5	0.6	0.3	1.7	100.0
2008	42.9	31.8	10.6	4.7	7.7	0.5	0.2	1.6	100.0
2009	41.5	32.6	10.6	4.5	8.6	0.5	0.2	1.5	100.0
2010	41.0	33.0	10.4	4.6	8.7	0.5	0.2	1.6	100.0

Source: BITRE estimates.

### 2.2.3 Annual urban public transport trips per person, 1945–2010

The main drivers of passenger travel in our cities are increases in population and increases in per capita daily travel (Cosgrove and Gargett 2007).

The average number of annual public transport trips per person for all capital cities is shown in Figure 2.8, with data on the number of annual public transport trips per person for individual capital cities as well as total capital cities provided in Appendix B (see Table B.1).

**Figure 2.8** Annual public transport trips per person, all capital cities, 1945–2010

Source: BITRE estimates.

Between 1945 and 2010, the average number of annual public transport trips per person for all capital cities reduced significantly, with patronage levels falling from 442 trips annually per person in 1945 to around 95 trips annually per person in 1994, and then increasing slightly to around 106 trips per person in 2010. These figures represent an overall average annual decline of 2.2 per cent between 1945 and 2010. Overall, there was a decline of 76 per cent in public transport trips during this period. This decline is mostly due to increasing car use, which may be associated with incomes growing faster than the costs of car use (ABS 2008c and ABS 2008d).

Similar reductions in public transport patronage were also observed internationally. For example, trips on Auckland's public transport system fell from 127 trips per person per year in 1960 to around 41 trips per person per year in 2006 (ARTA 2007), or a 68 per cent fall over the period.

## 2.3 Passenger transport task, personal vehicle travel and public transport travel, all capital cities, 1945–2010

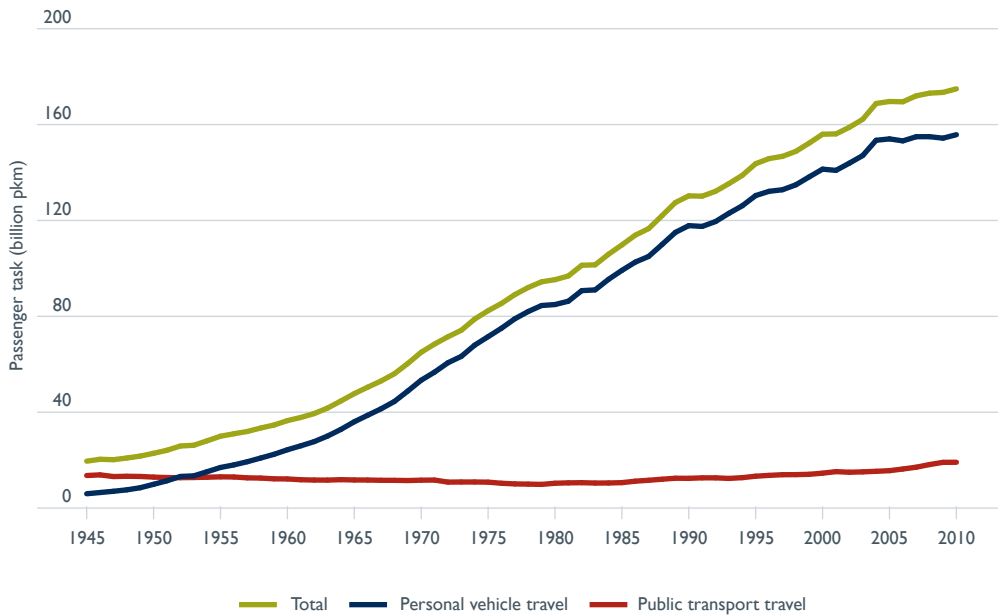
Cosgrove (2011) outlined long-term time-series for UPT usage patterns in terms of passenger-kilometres (pkm). The estimations were compiled for each Australian capital city from 1900 to 2010. This section details the long-term trends for the total metropolitan urban pkm transport task (the sum of both personal vehicle travel and public transport travel).

### 2.3.1 Total passenger transport task

Figure 2.9 shows the estimates of total passenger transport task, personal vehicle travel and public transport travel for all capital cities between 1945 and 2010. Figure 2.10 shows the

share of personal vehicle travel and public transport travel. The data underlying these figures is in Table 2.4.

**Figure 2.9** Passenger task (billion pkm), total personal vehicle travel and public transport travel, all capital cities, 1945–2010

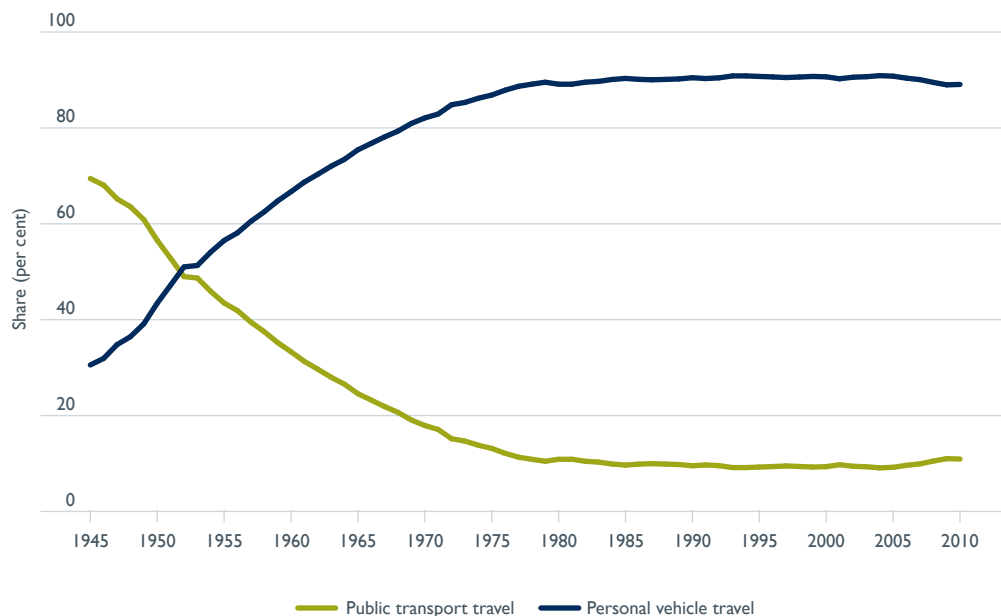


Source: BITRE estimates (see Table 2.4).

Total passenger travel in Australian capital cities has grown almost nine-fold over the last 65 years, from 19.6 billion pkm in 1945 to 174.9 billion pkm in 2010, an average annual growth of 3.4 per cent (Figure 2.9 and Table 2.4). Since the 1950s, most of the growth in this passenger travel has been by personal vehicle. In 1945, the total distance travelled in personal vehicles was 6.0 billion passenger km, increasing to 155.8 billion passenger km in 2010, an average annual growth rate of 5.1 per cent. In comparison, the public transport task increased slightly, with an average annual growth rate of 0.5 per cent (Figure 2.9 and Table 2.4).

Between 1945 and 2010, personal vehicle travel share increased from 30.5 per cent to 89.1 per cent. UPT share decreased substantially from 69.5 per cent to 10.9 per cent, although there has been an increase in the mode share in recent years (Figure 2.10 and Table 2.4). This 10 per cent mode share for UPT is for all-day travel. When commuting travel is considered alone, the share of UPT is about 16 per cent nationally (BITRE 2009a). Recent increases in UPT mode share are due to growth in UPT passengers rather than to changes in the rate of growth in total travel (BITRE 2009a).

**Figure 2.10** Passenger transport share (per cent), personal vehicle travel and public transport travel, all capital cities, 1945–2010



Source: BITRE estimates (see Table 2.4).

**Table 2.4** Passenger task (billion pkm) and share (per cent), total personal vehicle travel and public transport travel, all capital cities, 1945–2010

Financial year	Passenger task (Billion km)			Share (per cent)	
	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel
1945	5.98	13.59	19.57	30.5	69.5
1946	6.50	13.86	20.37	31.9	68.1
1947	7.02	13.16	20.19	34.8	65.2
1948	7.62	13.28	20.90	36.4	63.6
1949	8.49	13.20	21.69	39.1	60.9
1950	9.93	12.93	22.86	43.4	56.6
1951	11.39	12.74	24.13	47.2	52.8
1952	13.21	12.69	25.90	51.0	49.0
1953	13.45	12.76	26.21	51.3	48.7
1954	15.18	12.88	28.07	54.1	45.9
1955	16.95	13.04	29.99	56.5	43.5
1956	18.02	12.98	31.00	58.1	41.9
1957	19.34	12.62	31.96	60.5	39.5
1958	20.88	12.53	33.41	62.5	37.5
1959	22.44	12.21	34.65	64.8	35.2
1960	24.34	12.16	36.50	66.7	33.3
1961	25.98	11.83	37.81	68.7	31.3
1962	27.73	11.70	39.43	70.3	29.7
1963	30.05	11.68	41.73	72.0	28.0
1964	32.83	11.86	44.69	73.5	26.5

continued

**Table 2.4** Passenger task (billion pkm) and share (per cent), total personal vehicle travel and public transport travel, all capital cities, 1945–2010 (*continued*)

Financial year	Passenger task (Billion km)			Share (per cent)		
	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	
1965	36.02	11.73	47.75	75.4		24.6
1966	38.73	11.71	50.44	76.8		23.2
1967	41.42	11.60	53.02	78.1		21.9
1968	44.49	11.58	56.06	79.4		20.6
1969	48.84	11.50	60.34	80.9		19.1
1970	53.36	11.65	65.01	82.1		17.9
1971	56.73	11.70	68.43	82.9		17.1
1972	60.64	10.84	71.48	84.8		15.2
1973	63.30	10.89	74.19	85.3		14.7
1974	67.99	10.89	78.88	86.2		13.8
1975	71.51	10.83	82.34	86.8		13.2
1976	75.03	10.36	85.38	87.9		12.1
1977	78.98	10.09	89.07	88.7		11.3
1978	82.02	10.00	92.03	89.1		10.9
1979	84.52	9.89	94.41	89.5		10.5
1980	84.92	10.37	95.29	89.1		10.9
1981	86.31	10.53	96.84	89.1		10.9
1982	90.72	10.60	101.31	89.5		10.5
1983	91.03	10.45	101.48	89.7		10.3
1984	95.43	10.48	105.91	90.1		9.9
1985	99.17	10.62	109.79	90.3		9.7
1986	102.62	11.23	113.86	90.1		9.9
1987	104.99	11.61	116.60	90.0		10.0
1988	109.95	12.05	122.00	90.1		9.9
1989	115.03	12.46	127.49	90.2		9.8
1990	117.84	12.42	130.26	90.5		9.5
1991	117.51	12.62	130.13	90.3		9.7
1992	119.55	12.62	132.17	90.5		9.5
1993	122.99	12.38	135.37	90.9		9.1
1994	126.13	12.70	138.83	90.9		9.1
1995	130.39	13.31	143.69	90.7		9.3
1996	132.16	13.65	145.81	90.6		9.4
1997	132.81	13.93	146.74	90.5		9.5
1998	134.86	13.96	148.82	90.6		9.4
1999	138.18	14.10	152.28	90.7		9.3
2000	141.41	14.57	155.98	90.7		9.3
2001	140.89	15.22	156.11	90.2		9.8
2002	143.90	14.96	158.86	90.6		9.4
2003	147.08	15.12	162.20	90.7		9.3
2004	153.45	15.35	168.80	90.9		9.1
2005	154.03	15.61	169.64	90.8		9.2
2006	153.20	16.31	169.51	90.4		9.6
2007	154.94	17.06	172.00	90.1		9.9
2008	154.95	18.17	173.12	89.5		10.5
2009	154.33	19.09	173.43	89.0		11.0
2010	155.78	19.12	174.91	89.1		10.9
Average annual growth rate (per cent)	5.14	0.53	3.43			

Source: BITRE estimates.

Personal vehicle travel, particularly by car, is characterised by its immediate availability, lower travel time, its predictability, flexibility and more convenient door-to-door characteristics. In contrast, public transport (notably train, bus and ferry) is characterised by higher travel times, relative inflexibility, unpredictability (reliability) and disconnectedness (Hensher 2000).

In a survey conducted by the ABS, it was found that people who usually took public transport to their place of work or study reported a variety of reasons for using public transport in the capital cities (ABS 2008b). The reasons for using public transport were convenience, comfort and lower stress levels compared to other modes of travel. Other reasons included price or cost considerations and parking concerns. The survey also determined the reasons for not using public transport included inconvenience, discomfort, lack of privacy, the length of travel time, preferences for walking or cycling, and the need for passengers to use their own vehicle before, during or after work or study hours.

Mackett (2009) identified three factors that make reducing the level of car use difficult: lack of motivation, lifestyle, and difficulties in walking, cycling, and using public transport.

## **2.3.2 Passenger transport task by mode, personal vehicle travel and public transport travel, 1945–2010**

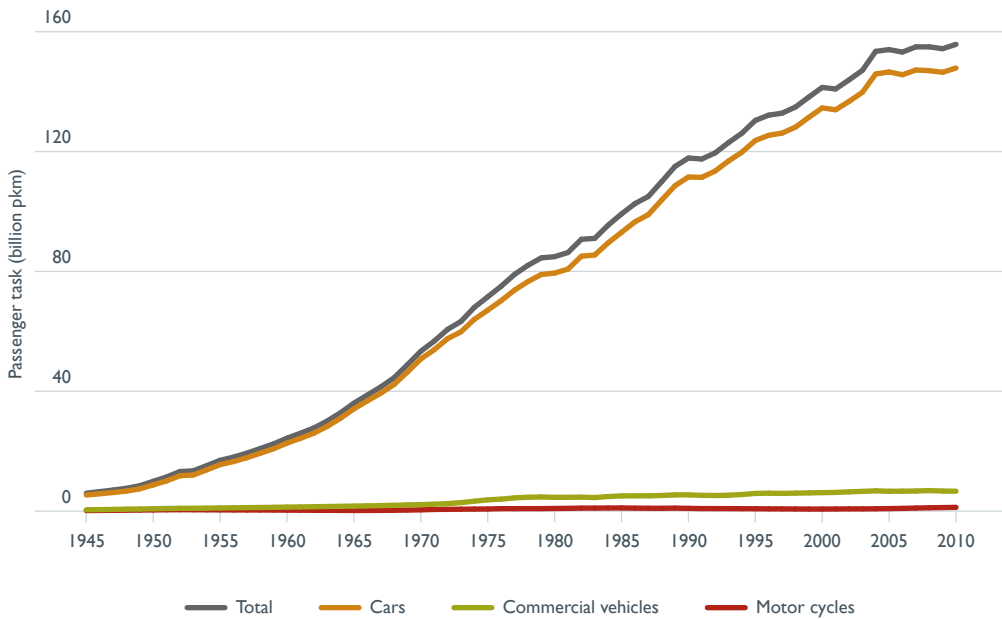
### **2.3.2.1 Passenger task by mode, personal vehicle travel**

Analysis of data on passenger tasks for personal vehicle travel in Australian capital cities between 1945 and 2010 showed that the car was the main mode of transport, followed by light commercial vehicles and motor cycles (Figure 2.11). Data for this figure is presented in Table 2.5.

In 1945, passenger travel by car was 5.4 billion pkm and increased to 147.9 billion pkm in 2010, an average annual growth of 5.2 per cent (Figure 2.11, Figure 2.12 and Table 2.5). Passenger transport travel by light commercial vehicles was 0.45 billion pkm in 1945 and increased to 6.64 billion pkm in 2010, an average annual growth of 4.2 per cent. Passenger transport travel by motor cycles was 0.17 billion pkm in 1945 and it increased to 1.26 billion pkm in 2010, an average annual growth of 3.1 per cent (Figure 2.11, Figure 2.12 and Table 2.5).

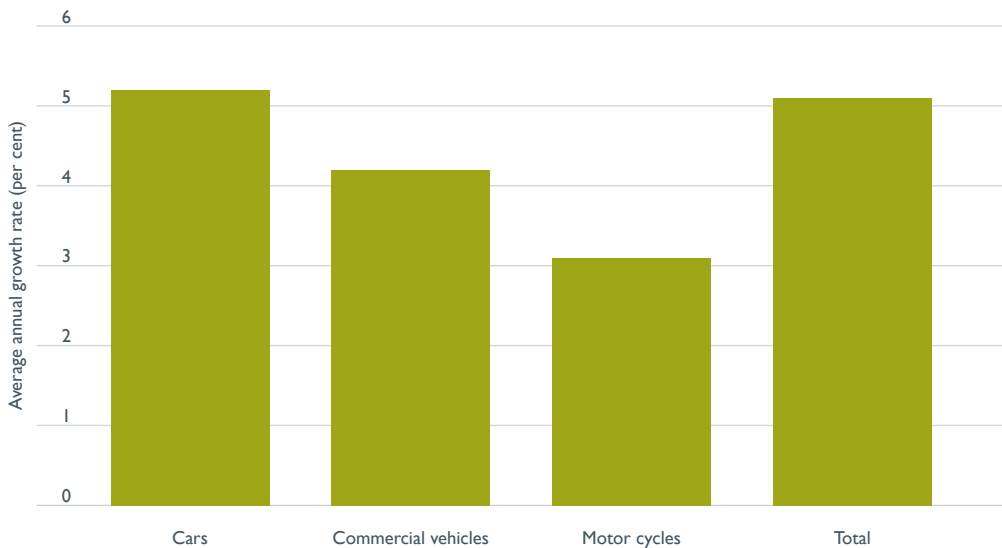
The strong growth in passenger travel by cars is linked to the dramatic increase in ownership of private cars (ABS 2005). In 1950, 769 000 cars and station wagons were registered cars (ABS 2005). This figure had increased to 12.3 million by 2010 (ABS 2011).

**Figure 2.11** Passenger task (billion pkm) by transport mode, personal vehicle travel, all capital cities, 1945–2010



Source: BITRE estimates (see Table 2.5).

**Figure 2.12** Average annual growth rate (per cent) of passenger task by transport mode, personal vehicle travel, 1945–2010



Source: BITRE estimates (see Table 2.5).

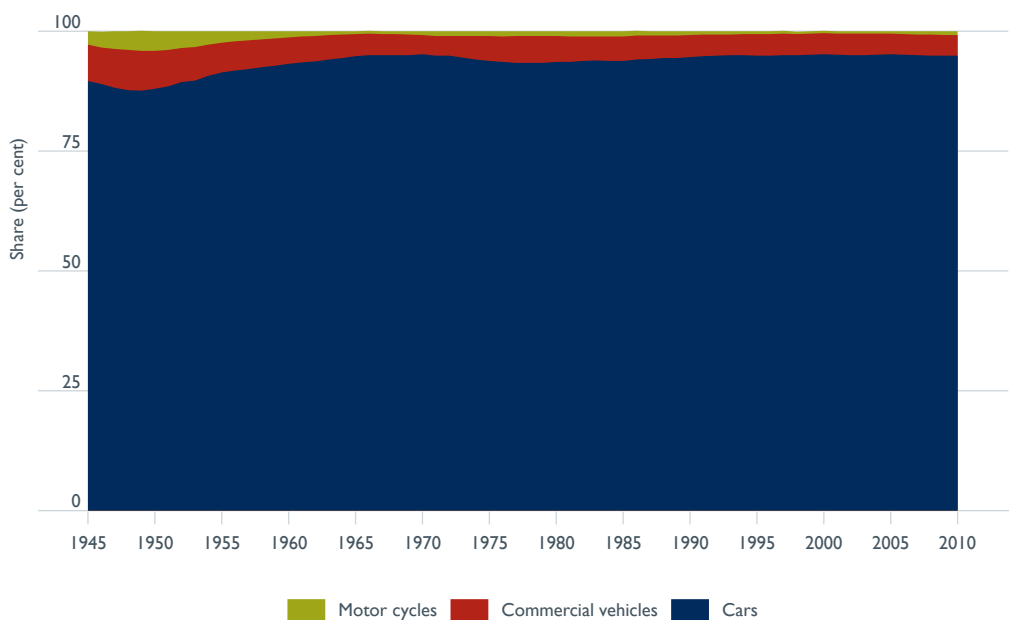
In Australia, car dependency has resulted in vehicle kilometres travelled increasing at a faster rate than population growth. Car dependency has created problems associated with high levels of traffic congestion, especially in the larger capital cities where infrastructure and public transport provision have not kept pace with growth rates (Commonwealth of Australia 2010).

Australia has the second highest level of car ownership per capita in the world. It has three to four times more road length per capita than Europe and seven to nine times more than Asia. Australia also has the third highest per capita rate of fuel consumption in the world. Perth, Adelaide and Brisbane are rated among the most car-dependent cities in the world, with Sydney and Melbourne close behind (Moving to Australia 2010).

BITRE (2012b) showed that car vehicle kilometres travelled (vkt) per person in Australia has saturated, and that the saturation effect is not only evident in Australia. For example, car ownership and use have also grown steadily in Great Britain over the last half a century, with only occasional interruptions to this long-term trend due to short periods of economic recession (Department of Transport 2008). However, the level of car use in Great Britain has stabilised (Le Vine et. al. 2009). Similar findings were also reported in the US and other industrialised nations (e.g. Puentes and Tomer 2008; Schipper 2009).

Among the private vehicle transport modes, car use in all Australian capital cities accounted for 90 per cent in 1945 and it increased gradually to 95 per cent in 2010 (Figure 2.13 and Table 2.6).

**Figure 2.13** Share (per cent) of passenger task by transport mode, personal vehicle travel, 1945–2010



Source: BITRE estimates (see Table 2.6).



**Table 2.5** Passenger task (billion pkm) by personal vehicle travel and public transport travel by transport mode, all capital cities, 1945–2010

Financial year	Personal vehicle travel				Public transport travel				
	Cars	Commercial vehicles	Motor cycles	Total	Rail	Tram	Bus	Ferry	Total
1945	5.36	0.45	0.17	5.98	6.46	5.02	1.80	0.32	13.59
1946	5.79	0.50	0.22	6.50	6.67	5.00	1.88	0.31	13.86
1947	6.20	0.57	0.26	7.02	6.21	4.71	1.97	0.28	13.16
1948	6.68	0.64	0.30	7.62	6.42	4.49	2.12	0.25	13.28
1949	7.43	0.70	0.35	8.49	6.41	4.15	2.43	0.21	13.20
1950	8.74	0.79	0.40	9.93	6.48	3.58	2.67	0.19	12.93
1951	10.08	0.87	0.44	11.39	6.17	3.58	2.81	0.18	12.74
1952	11.81	0.93	0.47	13.21	6.42	3.25	2.84	0.18	12.69
1953	12.06	0.94	0.45	13.45	6.60	3.05	2.93	0.18	12.76
1954	13.77	0.99	0.43	15.18	6.80	2.92	3.00	0.17	12.88
1955	15.50	1.05	0.41	16.95	6.97	2.80	3.10	0.17	13.04
1956	16.53	1.11	0.38	18.02	7.11	2.65	3.06	0.16	12.98
1957	17.82	1.16	0.37	19.34	7.21	2.36	2.90	0.15	12.62
1958	19.31	1.21	0.36	20.88	7.19	2.09	3.10	0.14	12.53
1959	20.82	1.27	0.35	22.44	7.06	1.64	3.36	0.14	12.21
1960	22.68	1.34	0.32	24.34	7.08	1.48	3.46	0.14	12.16
1961	24.29	1.40	0.30	25.98	6.89	1.23	3.57	0.14	11.83
1962	25.99	1.46	0.27	27.73	6.87	1.15	3.55	0.13	11.70
1963	28.26	1.53	0.25	30.05	6.92	1.10	3.52	0.13	11.68
1964	31.00	1.60	0.23	32.83	7.04	1.07	3.61	0.14	11.86
1965	34.13	1.67	0.22	36.02	6.95	1.01	3.63	0.14	11.73
1966	36.78	1.74	0.22	38.73	6.91	0.94	3.72	0.14	11.71
1967	39.34	1.84	0.24	41.42	6.84	0.87	3.75	0.13	11.60
1968	42.26	1.94	0.29	44.49	6.83	0.84	3.77	0.13	11.58
1969	46.42	2.08	0.34	48.84	6.76	0.71	3.89	0.14	11.50
1970	50.78	2.16	0.42	53.36	6.86	0.57	4.09	0.14	11.65
1971	53.86	2.31	0.55	56.73	6.95	0.56	4.05	0.14	11.70
1972	57.55	2.50	0.59	60.64	6.35	0.53	3.83	0.13	10.84
1973	59.83	2.83	0.64	63.30	6.25	0.54	3.97	0.13	10.89
1974	64.00	3.31	0.68	67.99	6.25	0.57	3.95	0.13	10.89
1975	67.05	3.75	0.71	71.51	6.28	0.58	3.85	0.12	10.83
1976	70.22	3.99	0.82	75.03	5.93	0.56	3.75	0.11	10.36
1977	73.74	4.42	0.82	78.98	5.68	0.54	3.74	0.12	10.09
1978	76.58	4.62	0.83	82.02	5.53	0.54	3.81	0.12	10.00
1979	78.97	4.72	0.83	84.52	5.41	0.54	3.81	0.12	9.89
1980	79.45	4.59	0.88	84.92	5.77	0.54	3.92	0.13	10.37
1981	80.77	4.61	0.92	86.31	5.86	0.55	4.00	0.13	10.53
1982	85.07	4.65	1.00	90.72	5.88	0.56	4.02	0.14	10.60
1983	85.48	4.53	1.01	91.03	5.69	0.55	4.07	0.13	10.45
1984	89.53	4.86	1.04	95.43	5.71	0.56	4.09	0.12	10.48
1985	93.03	5.07	1.06	99.17	5.72	0.62	4.17	0.11	10.62
1986	96.53	5.10	0.99	102.62	6.18	0.64	4.30	0.12	11.23
1987	98.93	5.10	0.96	104.99	6.39	0.65	4.44	0.13	11.61
1988	103.80	5.21	0.94	109.95	6.65	0.67	4.61	0.12	12.05
1989	108.61	5.41	1.00	115.03	6.89	0.70	4.75	0.12	12.46
1990	111.50	5.42	0.92	117.84	6.94	0.56	4.79	0.12	12.42

continued

**Table 2.5** Passenger task (billion pkm) by personal vehicle travel and public transport travel by transport mode, all capital cities, 1945–2010 (continued)

Financial year	Personal vehicle travel				Public transport travel				
	Cars	Commercial vehicles	Motor cycles	Total	Rail	Tram	Bus	Ferry	Total
1991	111.40	5.26	0.84	117.51	7.00	0.62	4.88	0.12	12.62
1992	113.50	5.21	0.84	119.55	7.02	0.62	4.86	0.12	12.62
1993	116.86	5.30	0.83	122.99	6.96	0.54	4.77	0.11	12.38
1994	119.80	5.53	0.81	126.13	7.20	0.54	4.85	0.11	12.70
1995	123.70	5.90	0.79	130.39	7.60	0.54	5.05	0.12	13.31
1996	125.43	5.98	0.75	132.16	7.84	0.55	5.14	0.12	13.65
1997	126.16	5.91	0.74	132.81	8.05	0.54	5.21	0.13	13.93
1998	128.15	6.00	0.71	134.86	8.02	0.54	5.28	0.12	13.96
1999	131.42	6.08	0.68	138.18	8.18	0.56	5.23	0.12	14.10
2000	134.57	6.16	0.69	141.41	8.52	0.60	5.33	0.12	14.57
2001	133.95	6.23	0.71	140.89	9.08	0.61	5.39	0.14	15.22
2002	136.72	6.43	0.75	143.90	8.84	0.62	5.37	0.13	14.96
2003	139.75	6.59	0.74	147.08	8.92	0.63	5.44	0.13	15.12
2004	145.90	6.77	0.78	153.45	9.10	0.63	5.49	0.13	15.35
2005	146.57	6.62	0.84	154.03	9.21	0.64	5.62	0.14	15.61
2006	145.64	6.65	0.91	153.20	9.73	0.66	5.78	0.14	16.31
2007	147.22	6.71	1.02	154.94	10.32	0.67	5.93	0.14	17.06
2008	147.01	6.84	1.11	154.95	11.21	0.69	6.14	0.14	18.17
2009	146.45	6.70	1.18	154.33	11.82	0.76	6.37	0.14	19.09
2010	147.89	6.64	1.26	155.78	11.80	0.75	6.43	0.15	19.12
Average annual growth rate (per cent)									
	5.24	4.21	3.13	5.14	0.93	-2.88	1.98	-1.18	0.53

Source: BITRE estimates.

**Table 2.6** Share (per cent) of passenger by personal vehicle travel and public transport travel by transport mode, all capital cities, 1945–2010

Year	Personal vehicle travel				Public transport travel				
	Cars	Commercial vehicles	Motor cycles	Total	Rail	Tram	Bus	Ferry	Total
1945	89.6	7.6	2.8	100.0	47.5	36.9	13.2	2.3	100.0
1946	89.0	7.6	3.3	100.0	48.1	36.1	13.6	2.2	100.0
1947	88.2	8.1	3.7	100.0	47.2	35.7	15.0	2.1	100.0
1948	87.7	8.4	3.9	100.0	48.3	33.8	16.0	1.9	100.0
1949	87.6	8.3	4.2	100.0	48.6	31.4	18.4	1.6	100.0
1950	88.0	7.9	4.1	100.0	50.2	27.7	20.7	1.5	100.0
1951	88.5	7.6	3.9	100.0	48.4	28.1	22.1	1.4	100.0
1952	89.4	7.1	3.5	100.0	50.6	25.6	22.4	1.4	100.0
1953	89.7	7.0	3.3	100.0	51.7	23.9	23.0	1.4	100.0
1954	90.7	6.5	2.8	100.0	52.8	22.6	23.3	1.3	100.0
1955	91.4	6.2	2.4	100.0	53.5	21.5	23.8	1.3	100.0
1956	91.8	6.1	2.1	100.0	54.8	20.4	23.6	1.2	100.0
1957	92.1	6.0	1.9	100.0	57.1	18.7	23.0	1.2	100.0
1958	92.5	5.8	1.7	100.0	57.4	16.7	24.7	1.2	100.0
1959	92.8	5.7	1.5	100.0	57.8	13.5	27.6	1.2	100.0
1960	93.2	5.5	1.3	100.0	58.3	12.1	28.5	1.1	100.0
1961	93.5	5.4	1.1	100.0	58.2	10.4	30.2	1.2	100.0
1962	93.7	5.3	1.0	100.0	58.7	9.8	30.3	1.2	100.0
1963	94.1	5.1	0.8	100.0	59.2	9.4	30.2	1.1	100.0

continued

**Table 2.6** Share (per cent) of passenger by personal vehicle travel and public transport travel by transport mode, all capital cities, 1945–2010 (*continued*)

Year	Personal vehicle travel			Public transport travel					
	Cars	Commercial vehicles	Motor cycles	Total	Rail	Tram	Bus	Ferry	Total
1964	94.4	4.9	0.7	100.0	59.3	9.1	30.5	1.1	100.0
1965	94.8	4.6	0.6	100.0	59.3	8.6	30.9	1.2	100.0
1966	95.0	4.5	0.6	100.0	59.0	8.1	31.8	1.2	100.0
1967	95.0	4.4	0.6	100.0	59.0	7.5	32.4	1.1	100.0
1968	95.0	4.4	0.6	100.0	59.0	7.2	32.6	1.2	100.0
1969	95.0	4.3	0.7	100.0	58.8	6.2	33.9	1.2	100.0
1970	95.2	4.0	0.8	100.0	58.9	4.9	35.1	1.2	100.0
1971	94.9	4.1	1.0	100.0	59.4	4.8	34.6	1.2	100.0
1972	94.9	4.1	1.0	100.0	58.6	4.9	35.3	1.2	100.0
1973	94.5	4.5	1.0	100.0	57.4	5.0	36.4	1.2	100.0
1974	94.1	4.9	1.0	100.0	57.4	5.2	36.3	1.2	100.0
1975	93.8	5.2	1.0	100.0	58.0	5.4	35.5	1.1	100.0
1976	93.6	5.3	1.1	100.0	57.3	5.4	36.2	1.1	100.0
1977	93.4	5.6	1.0	100.0	56.3	5.4	37.1	1.2	100.0
1978	93.4	5.6	1.0	100.0	55.3	5.4	38.1	1.2	100.0
1979	93.4	5.6	1.0	100.0	54.8	5.5	38.6	1.2	100.0
1980	93.6	5.4	1.0	100.0	55.7	5.2	37.8	1.2	100.0
1981	93.6	5.3	1.1	100.0	55.6	5.2	38.0	1.2	100.0
1982	93.8	5.1	1.1	100.0	55.5	5.3	37.9	1.3	100.0
1983	93.9	5.0	1.1	100.0	54.5	5.3	39.0	1.3	100.0
1984	93.8	5.1	1.1	100.0	54.5	5.4	39.0	1.1	100.0
1985	93.8	5.1	1.1	100.0	53.8	5.8	39.3	1.1	100.0
1986	94.1	5.0	1.0	100.0	55.0	5.7	38.2	1.1	100.0
1987	94.2	4.9	0.9	100.0	55.1	5.6	38.3	1.1	100.0
1988	94.4	4.7	0.9	100.0	55.2	5.5	38.3	1.0	100.0
1989	94.4	4.7	0.9	100.0	55.3	5.6	38.1	1.0	100.0
1990	94.6	4.6	0.8	100.0	55.9	4.5	38.6	1.0	100.0
1991	94.8	4.5	0.7	100.0	55.4	4.9	38.7	0.9	100.0
1992	94.9	4.4	0.7	100.0	55.6	4.9	38.5	0.9	100.0
1993	95.0	4.3	0.7	100.0	56.2	4.4	38.5	0.9	100.0
1994	95.0	4.4	0.6	100.0	56.7	4.2	38.2	0.9	100.0
1995	94.9	4.5	0.6	100.0	57.1	4.1	37.9	0.9	100.0
1996	94.9	4.5	0.6	100.0	57.4	4.0	37.7	0.9	100.0
1997	95.0	4.5	0.6	100.0	57.8	3.9	37.4	0.9	100.0
1998	95.0	4.4	0.5	100.0	57.4	3.9	37.8	0.9	100.0
1999	95.1	4.4	0.5	100.0	58.0	4.0	37.1	0.9	100.0
2000	95.2	4.4	0.5	100.0	58.5	4.1	36.6	0.8	100.0
2001	95.1	4.4	0.5	100.0	59.6	4.0	35.4	0.9	100.0
2002	95.0	4.5	0.5	100.0	59.1	4.2	35.9	0.9	100.0
2003	95.0	4.5	0.5	100.0	59.0	4.2	36.0	0.9	100.0
2004	95.1	4.4	0.5	100.0	59.3	4.1	35.7	0.9	100.0
2005	95.2	4.3	0.5	100.0	59.0	4.1	36.0	0.9	100.0
2006	95.1	4.3	0.6	100.0	59.7	4.0	35.4	0.8	100.0
2007	95.0	4.3	0.7	100.0	60.5	3.9	34.8	0.8	100.0
2008	94.9	4.4	0.7	100.0	61.7	3.8	33.8	0.8	100.0
2009	94.9	4.3	0.8	100.0	61.9	4.0	33.4	0.7	100.0
2010	94.9	4.3	0.8	100.0	61.7	3.9	33.6	0.8	100.0

Source: BITRE estimates.

### 2.3.2.2 Passenger task by mode, public transport travel

Analysis of data on passenger tasks for public transport travel in the Australian capital cities between 1945 and 2010 showed that rail was the main mode of public transport used (Figure 2.14). Data for this figure is in Table 2.5.

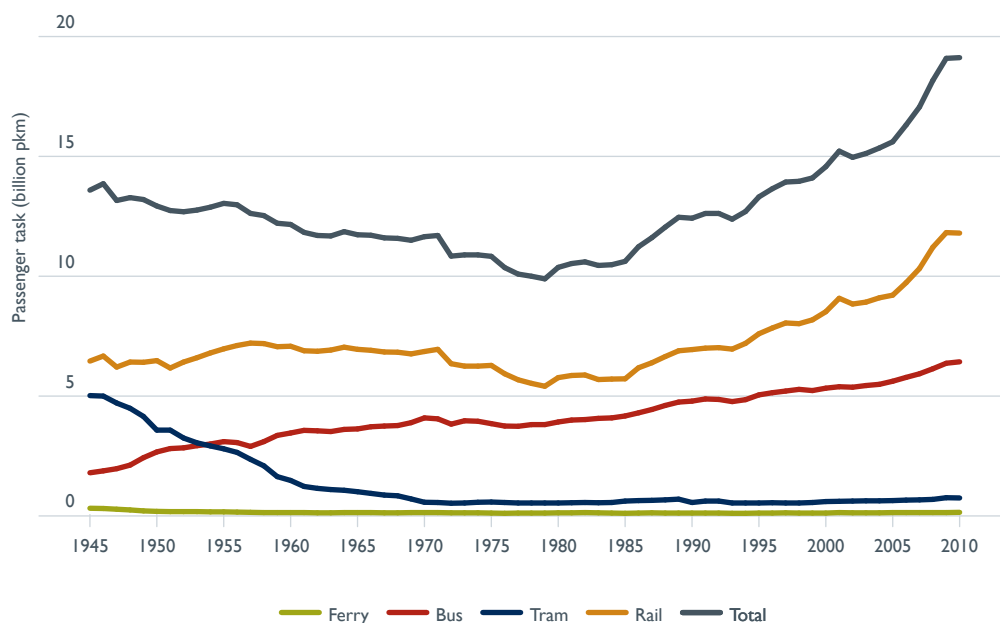
In 1945, passenger transport by rail was 6.5 billion pkm, increasing to 11.8 billion pkm by 2010, or an average annual growth of 0.9 per cent (Figure 2.14, Figure 2.15 and Table 2.5). Rail's UPT mode share was 47.5 per cent in 1945 and it increased to 61.7 per cent by 2010.

Passenger travel by bus increased gradually from 1.8 billion pkm in 1945 to 6.4 billion pkm by 2010, an average annual growth rate of 2.0 per cent. UPT mode share for buses also increased, from 13.2 per cent in 1945 to 33.6 per cent by 2010.

In the earlier years of the timeframe, trams were a more important form of public transport mode than buses. However, passenger travel by tram gradually declined until the 1970s and then remained relatively unchanged. Mode share decreased from 7.6 per cent to only 4.3 per cent by 2010.

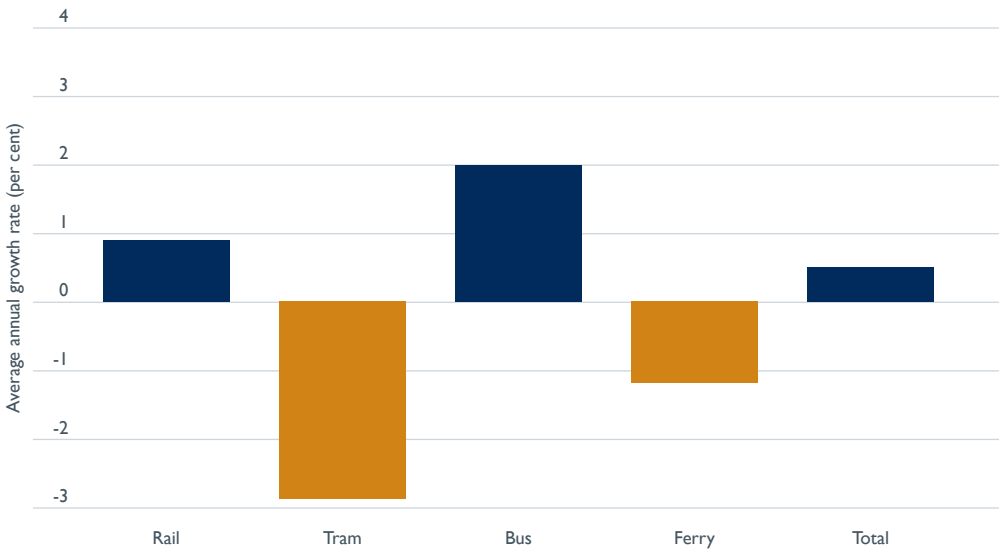
Passenger travel by ferry was the transport mode with lowest patronage. Between 1945 and 2010, average annual growth rates of passenger transport task by tram and ferry were negative (-2.9 per cent and -1.2 per cent, respectively) (Figure 2.15 and Table 2.5). Mode share for ferries decreased from 2.3 per cent in 1945 to 0.8 per cent by 2010 (Figure 2.16 and Table 2.6).

**Figure 2.14** Passenger task (billion pkm) by mode, public transport travel, all capital cities, 1945–2010



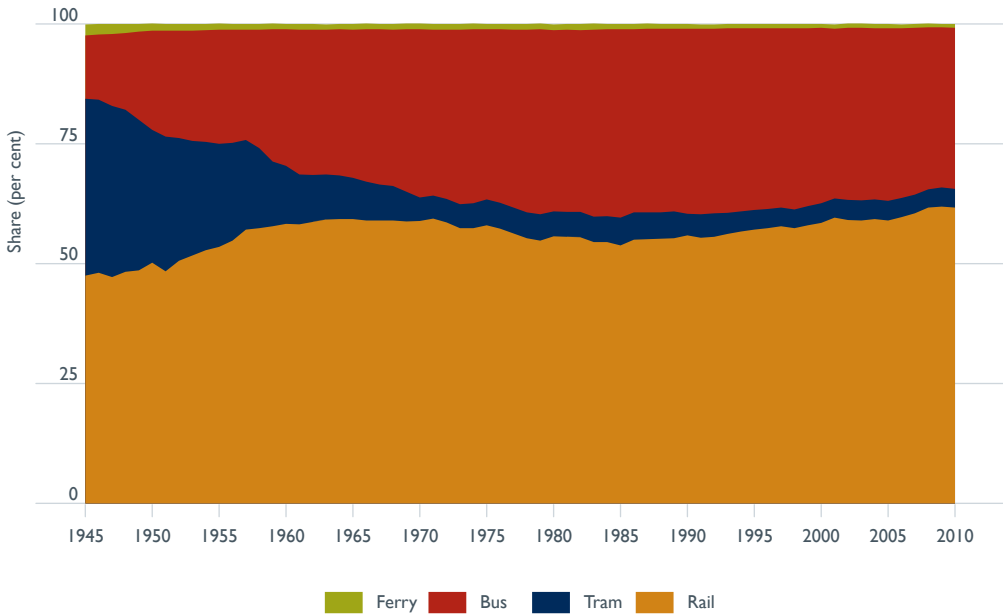
Source: BITRE estimates (see Table 2.5).

**Figure 2.15** Average annual growth rate (per cent) of passenger task by mode, public transport travel, 1945–2010



Source: BITRE estimates (see Table 2.5).

**Figure 2.16** Share (per cent) of passenger task by transport mode, urban public transport, 1945–2010



Source: BITRE estimates (see Table 2.6).

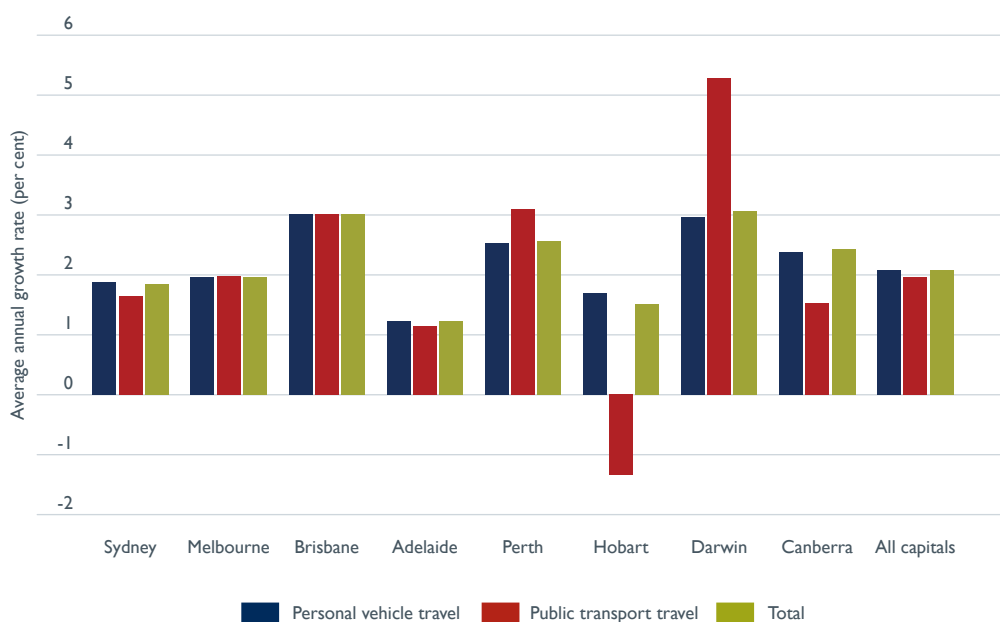
## 2.4 Passenger transport task, 1977–2010

### 2.4.1 By capital cities

Average annual growth rates of the passenger task for each capital city, as well as the total for capital cities between 1977 and 2010, are shown in Figure 2.17. Figure 2.18 to Figure 2.21 show the passenger transport task for each capital city during the same period. Data for these figures is in Appendix C, (Tables C.1 to Table C.4).

Between 1977 and 2010, personal vehicle travel grew fastest in Brisbane, Perth and Adelaide, while public transport travel grew faster in Darwin. Public transport travel fell in Hobart (Figure 2.17 and Tables C.1 to C.4).

**Figure 2.17** Average annual growth rates (per cent) of passenger transport task by capital cities, 1977–2010



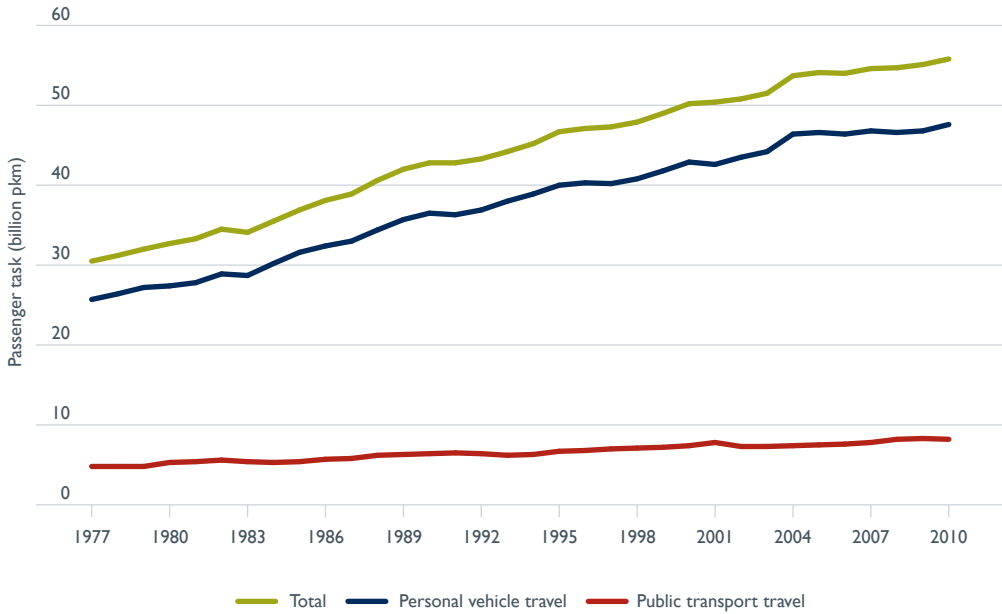
Source: BITRE estimates (see Appendix C, Tables C.1 to C4).

Sydney and Melbourne have similar levels of personal vehicle travel, but Sydney has higher UPT pkm travelled due, in part, to the longer rail distances per passenger on the Sydney rail system. Next in size, Perth and Brisbane also have similar overall motorised passenger travel, with Brisbane having more rail travel and less light vehicle travel. Adelaide has less travel than Perth and Brisbane, but it still has three times that of Canberra. Hobart and Darwin have the lowest travel levels, with only bus systems available for urban public transport.

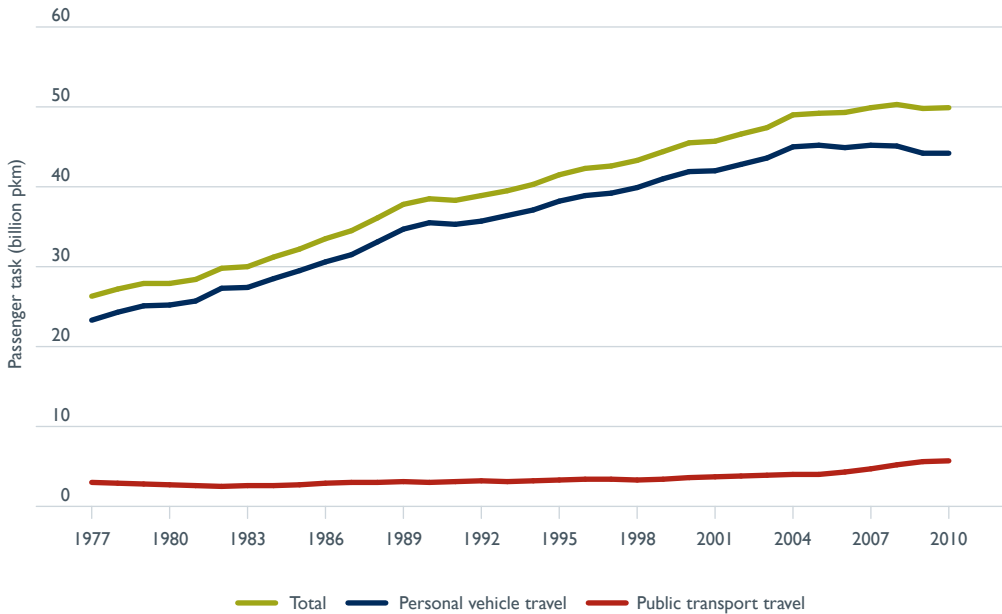
Passenger travel by personal vehicles represented more than 90 per cent of total travel in all capital cities, except Sydney where personal vehicle travel represented around 85 per cent (see Appendix C, Table C.1). However, the pattern of passenger transport task by both personal vehicle travel and public transport travel are very similar, although the magnitudes are different.

**Figure 2.18** Passenger transport task (billion pkm), personal vehicle travel and public transport travel, Sydney and Melbourne, 1977–2010

**Sydney**



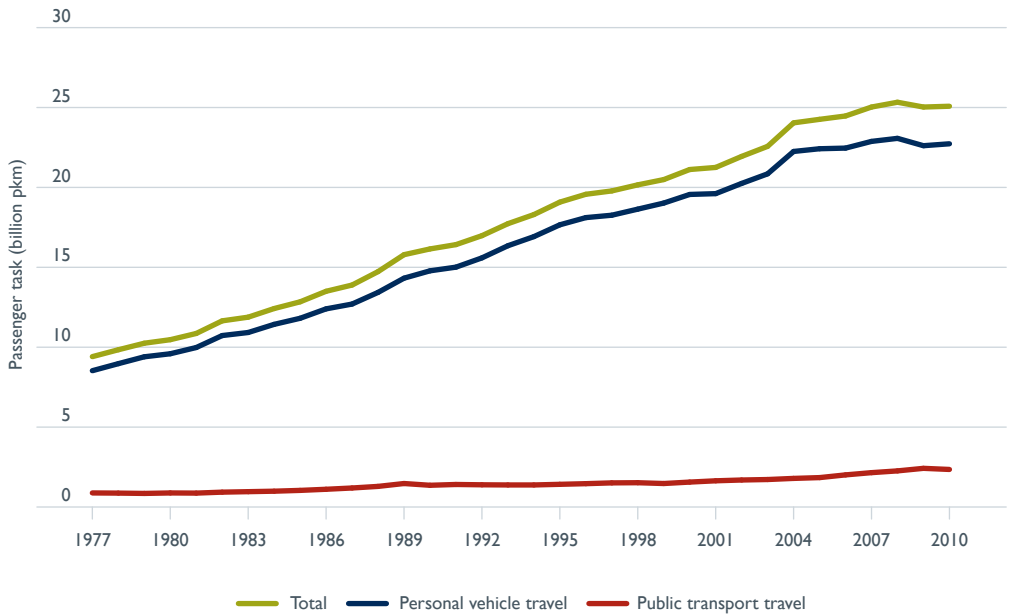
**Melbourne**



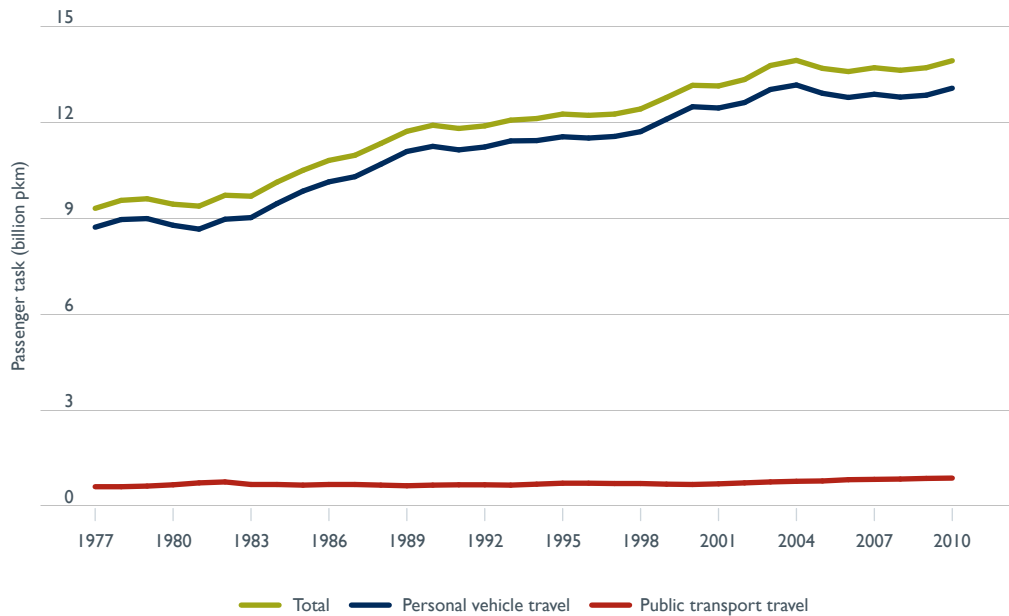
Source: BITRE estimates (see Appendix C, Table C.1).

**Figure 2.19** Passenger transport task (billion pkm), personal vehicle travel and public transport travel, Brisbane and Adelaide, 1977–2010

**Brisbane**



**Adelaide**

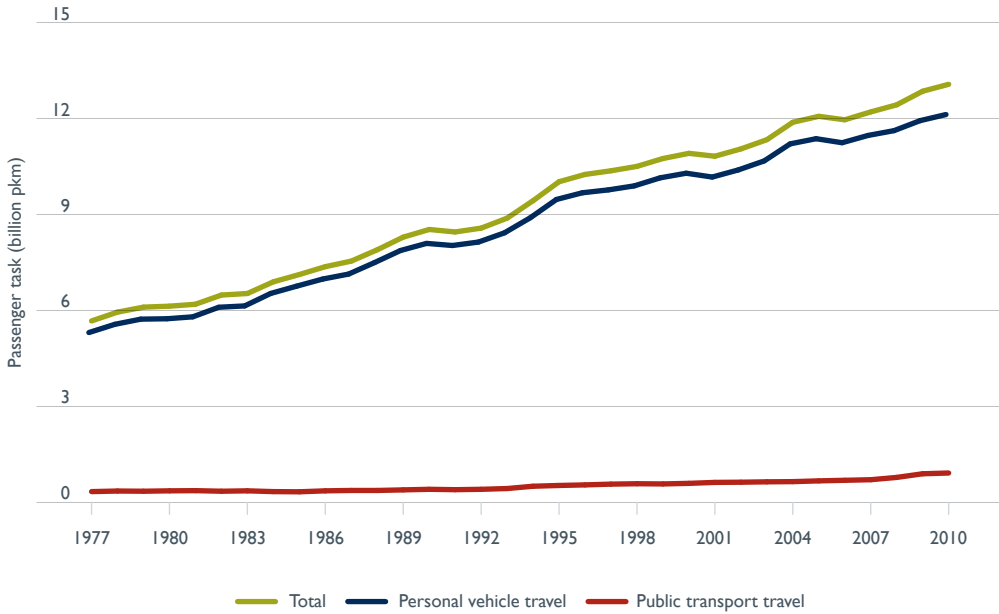


Source: BITRE estimates (see Appendix C, Table C.2).

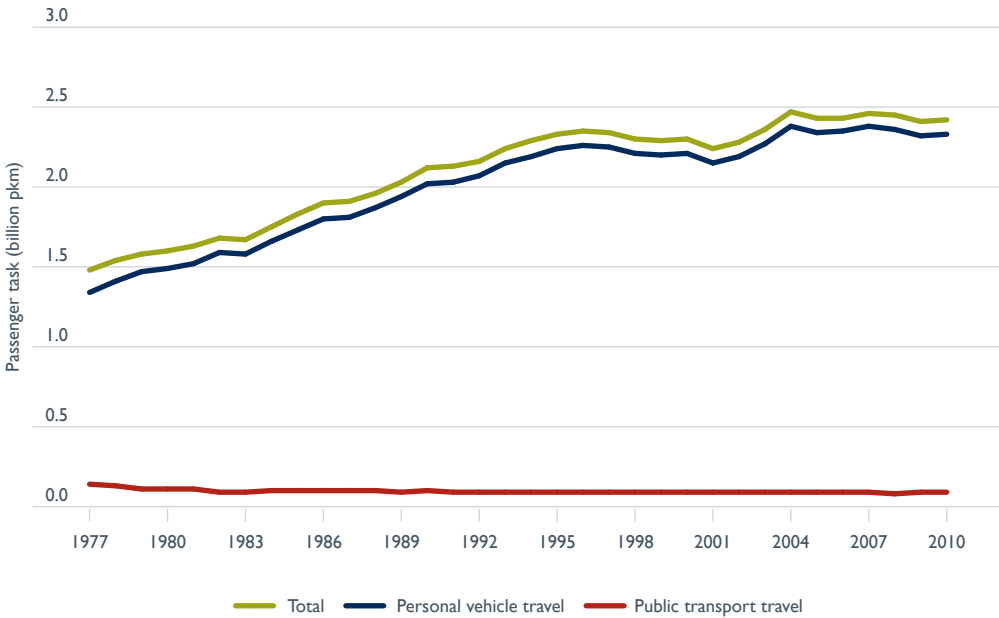


**Figure 2.20** Passenger transport task (billion pkm), personal vehicle travel and public transport travel, Perth and Hobart, 1977–2010

**Perth**



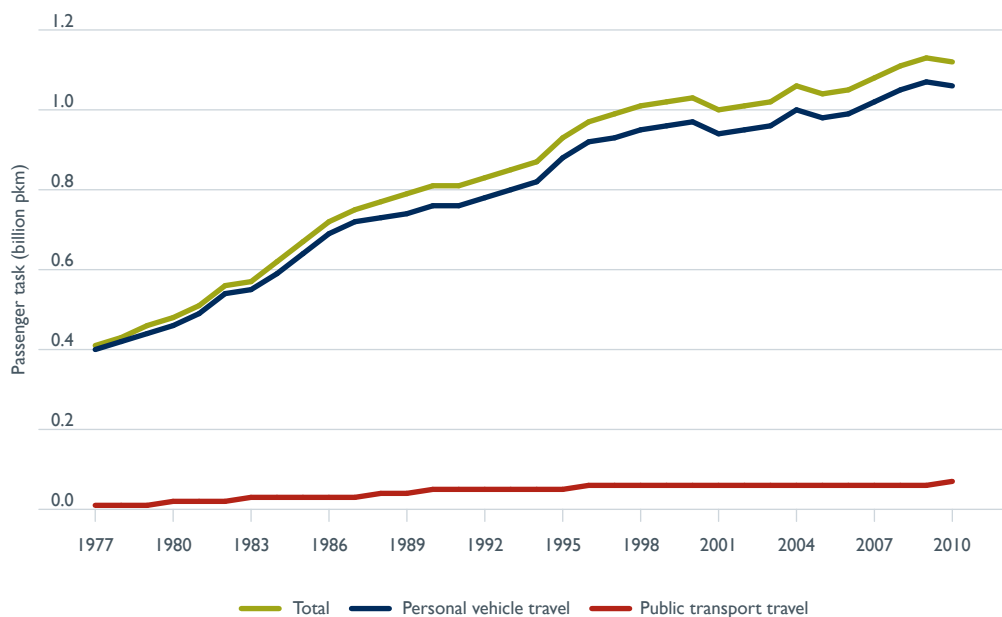
**Hobart**



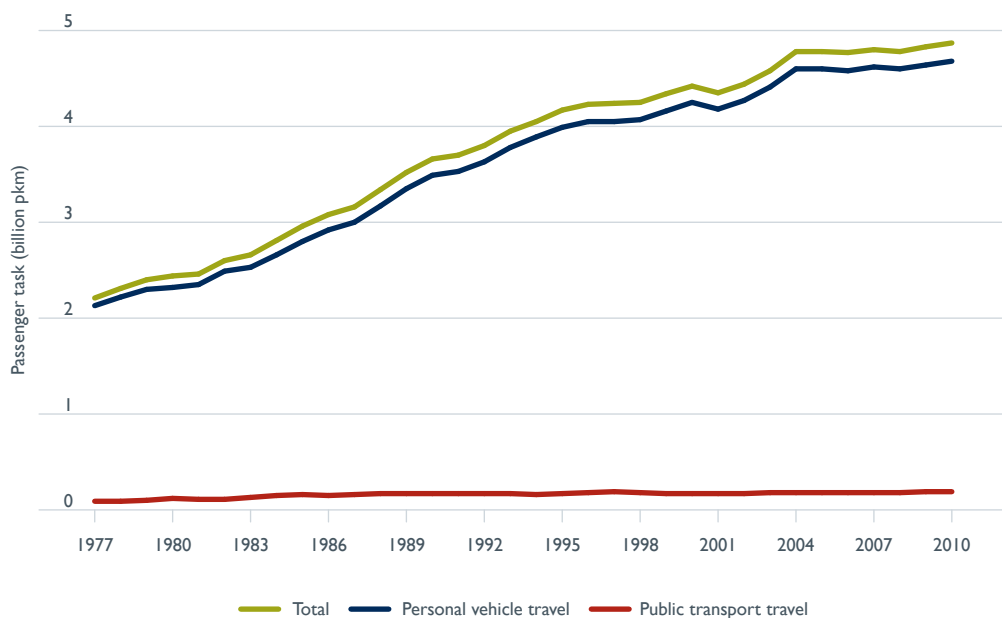
Source: BITRE estimates (see Appendix C Table C3).

**Figure 2.21** Passenger transport task (billion pkm), personal vehicle travel and public transport travel, Darwin and Canberra, 1977–2010

**Darwin**



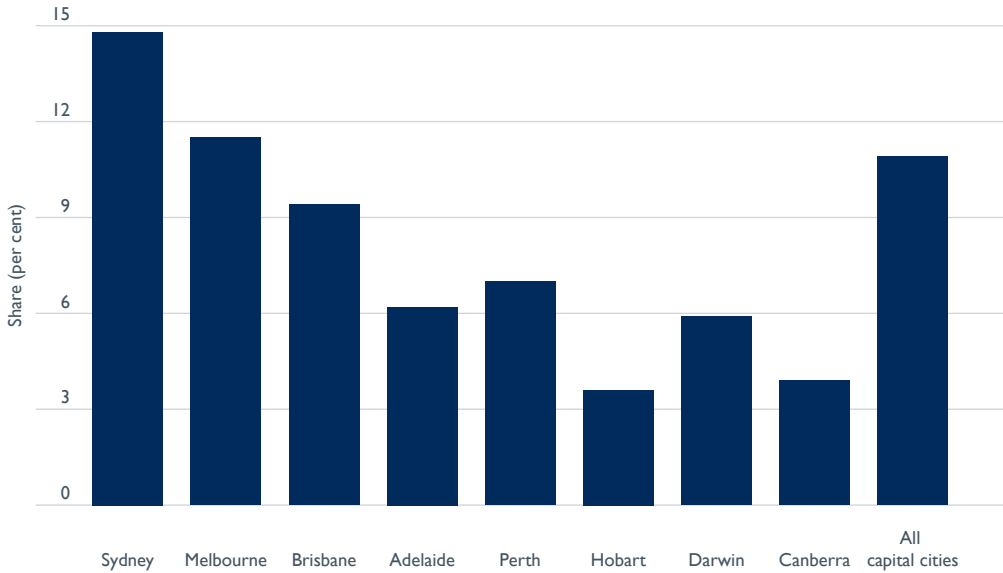
**Canberra**



Source: BITRE estimates (see Appendix C, Table C4).

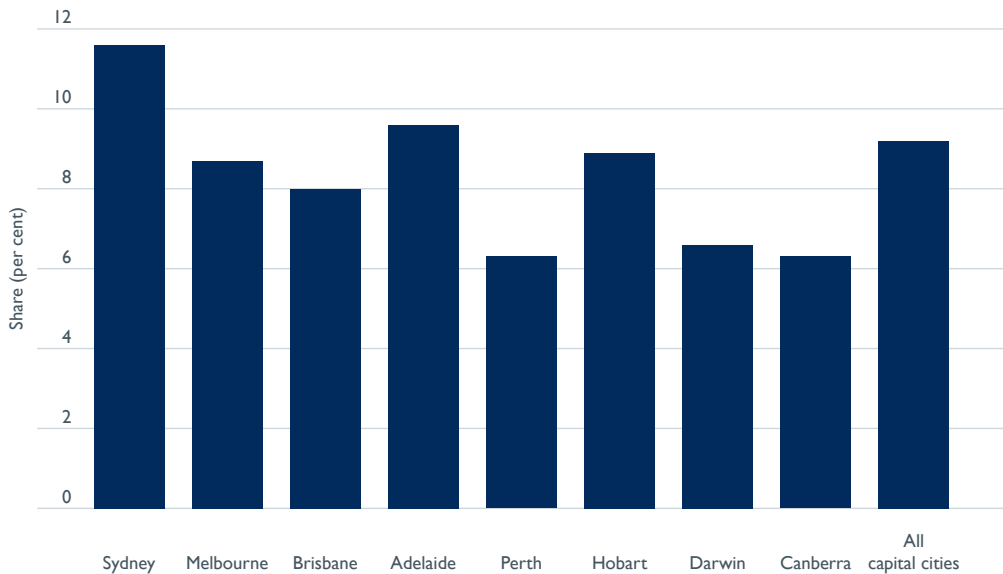
In 2010, Sydney had the highest usage of public transport of any capital city (14.8 per cent); followed by Melbourne (11.5 per cent); Brisbane (9.4 per cent); Perth (7.0 per cent); and Hobart (3.6 per cent). On average, approximately 11 per cent people used public transport in all capital cities (Figure 2.22).

**Figure 2.22** Share (per cent) of public transport usage by capital cities, 2010



Source: BITRE estimates.

**Figure 2.23** Percentage of households with no car, capital cities, 2006



Source: ABS (2006).

## 2.4.2 Passenger transport task by transport mode

This section presents data for the passenger transport task by transport modes, between 1977 and 2010. However, comparisons between and across cities should be undertaken with caution given that the cities have different transport systems and travel patterns. Brisbane, for

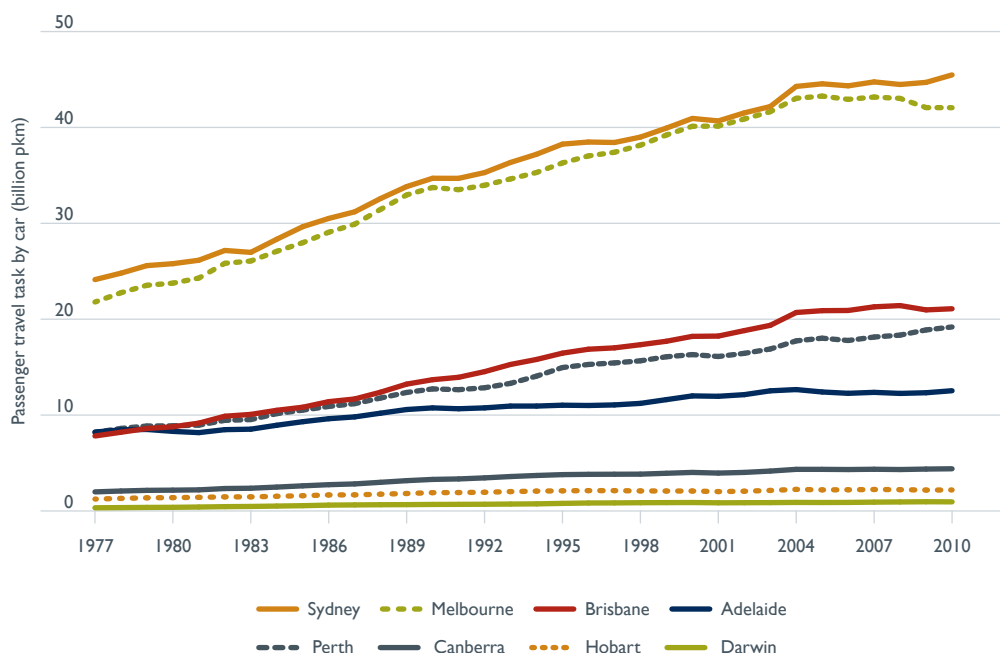
example, has an extensive bus, ferry and suburban train system, whereas Canberra is serviced only by a bus system.

### 2.4.2.1 Personal vehicle travel: car

Between 1977 and 2010, car travel was the dominant mode of transport for personal vehicle travel (more than 92 per cent of total personal vehicle travel in all capital cities except Darwin, which had more than 83 per cent). Data for car travel, as well as other personal vehicle travel modes (i.e. commercial vehicles and motorcycles), are presented in Appendix D (see Table D.1).

Car travel tasks were much higher in Sydney and Melbourne, followed by Brisbane, Adelaide and Perth, as shown in Figure 2.24.

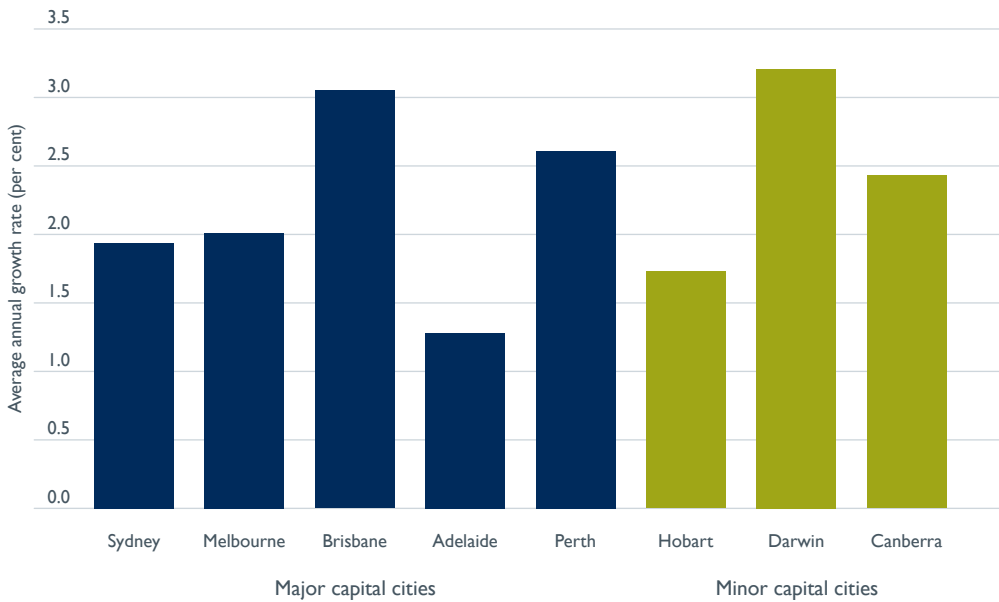
**Figure 2.24** Personal vehicle travel task by car (billion pkm), all capital cities, 1977–2010



Source: BITRE estimates.

Among the five larger capital cities, the average annual growth rate of car travel between 1977 and 2010 was highest in Brisbane (3.05 per cent); followed by Perth (2.61 per cent); and lowest in Adelaide (1.28 per cent) (Figure 2.25). Sydney and Melbourne had similar average annual growth rates during this period (1.94 per cent and 2.01 per cent, respectively). Among the smaller capital cities, Darwin had the highest average annual growth rate of car travel, followed by Canberra, with the lowest growth rate in Hobart (Figure 2.25).

**Figure 2.25** Average annual growth rate (per cent) of car travel, all capital cities, 1977–2010



Source: BITRE estimates.

### 2.4.2.2 Public transport travel: heavy rail and bus

Heavy rail is a public transport mode in Australia’s five larger capital cities; bus services are available in all eight capital cities. Data for these two modes, as well as other public transport modes (i.e. light rail, ferry), are presented in Appendix D (see Table D.2).

#### (a) *Public transport task by heavy rail: larger capital cities*

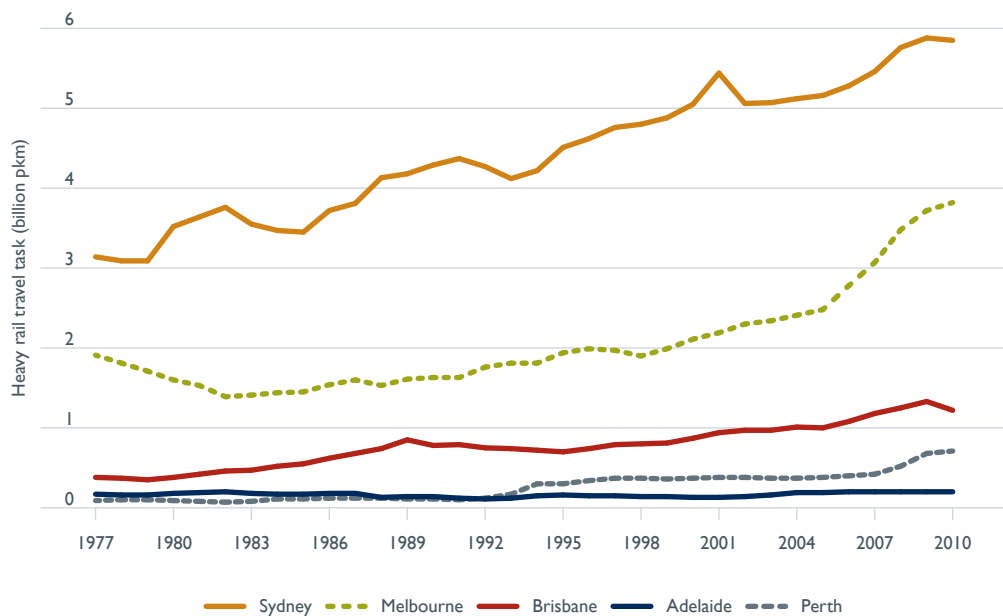
Among the five larger capital cities, total passenger kilometres travelled by heavy rail between 1977 and 2010 were the highest in Sydney, followed by Melbourne, Brisbane, Perth and Adelaide (Figure 2.26).

In Melbourne, there was a long-term decline in train trips until the early 1980s. Patronage gradually increased as a result of comfortable, new air-conditioned trains being introduced and the opening of the City Loop stations, with the last of the wooden-bodied ‘red rattler’ trains withdrawn in 1983 (Victorian Department of Transport 2012). The recession of the early 1990s caused rail patronage to decline in Melbourne, but it recovered quickly and continued to grow for the remainder of the decade. There was relatively modest growth in train patronage between 2000 and 2005, but in the second half of the decade a combination of population growth, employment growth, increasing petrol prices and pressure on household budgets created a strong period of growth (Victorian Department of Transport 2012).

The average annual growth rate of heavy rail travel between 1977 and 2010 was highest in Perth (6.41 per cent); followed by Brisbane (3.58 per cent); with the lowest average annual growth in Adelaide (0.54 per cent) (Figure 2.27). Sydney and Melbourne had similar average annual growth rates during this period (1.91 per cent and 2.13 per cent, respectively).

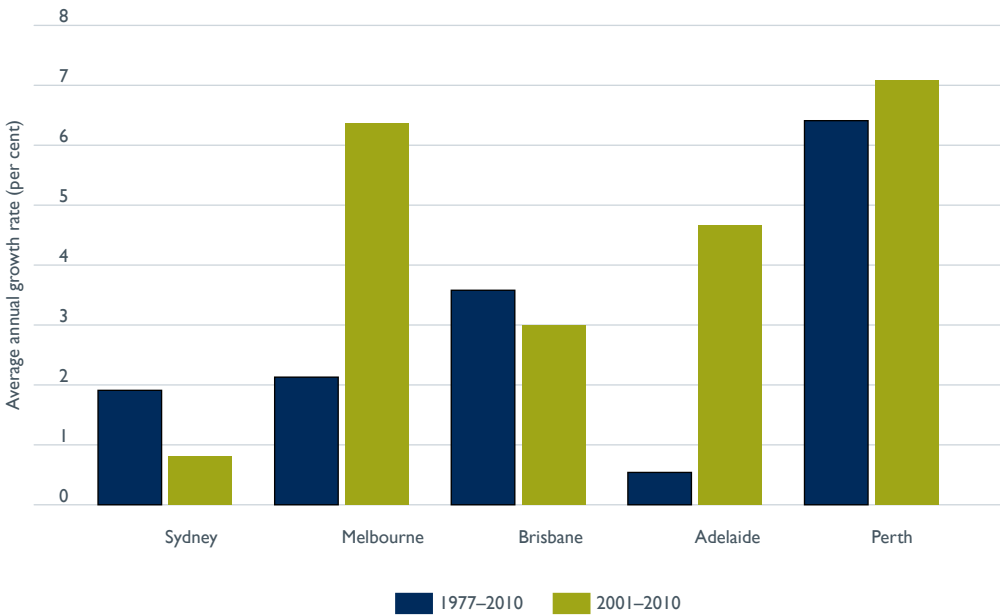
Figure 2.27 also compares average annual growth rates of heavy rail travel in the five larger capital cities between 1977–2010 and 2001–2010. During 2001–2010, heavy rail travel grew much faster in Melbourne, Adelaide and Perth.

**Figure 2.26** Public transport tasks (billion pkm) by heavy rail, larger capital cities, 1977–2010



Source: BITRE estimates.

**Figure 2.27** Comparison of average annual growth rates (per cent) by heavy rail, larger capital cities, 1977–2010 and 2001–2010

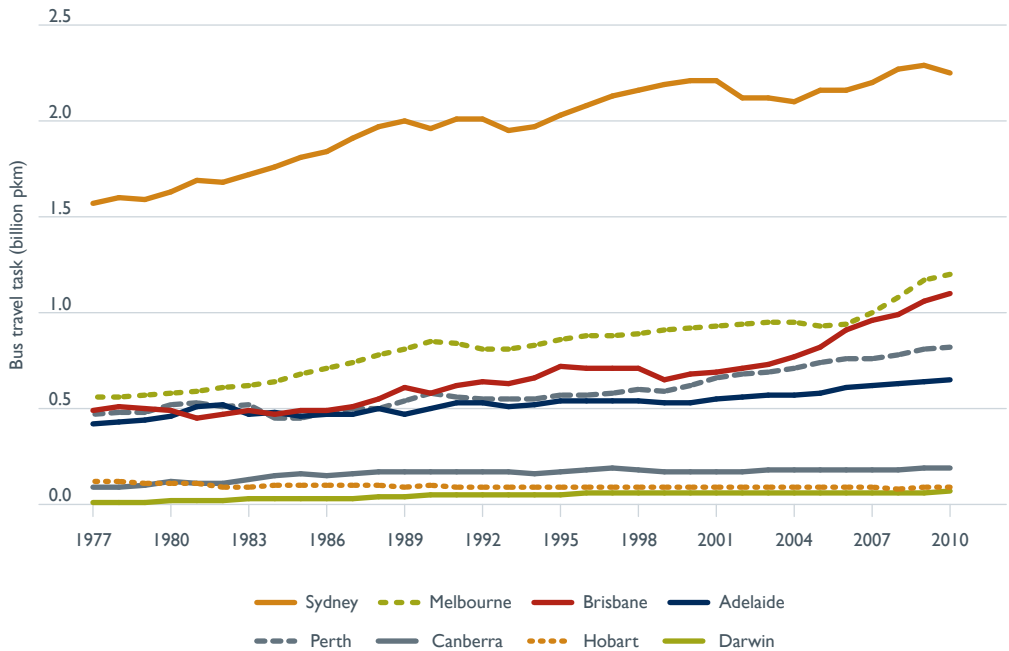


Source: BITRE estimates.

(b) *Public transport task by bus: all capital cities*

Although total bus boarding can be influenced by the degree of timetable integration between the various modes of public transport, bus passenger travel task between 1977 and 2010 was much higher in Sydney compared to other capital cities (Figure 2.28).

Figure 2.28 Bus transport passenger task (billion pkm), total capital cities, 1977–2010



Source: BITRE estimates.

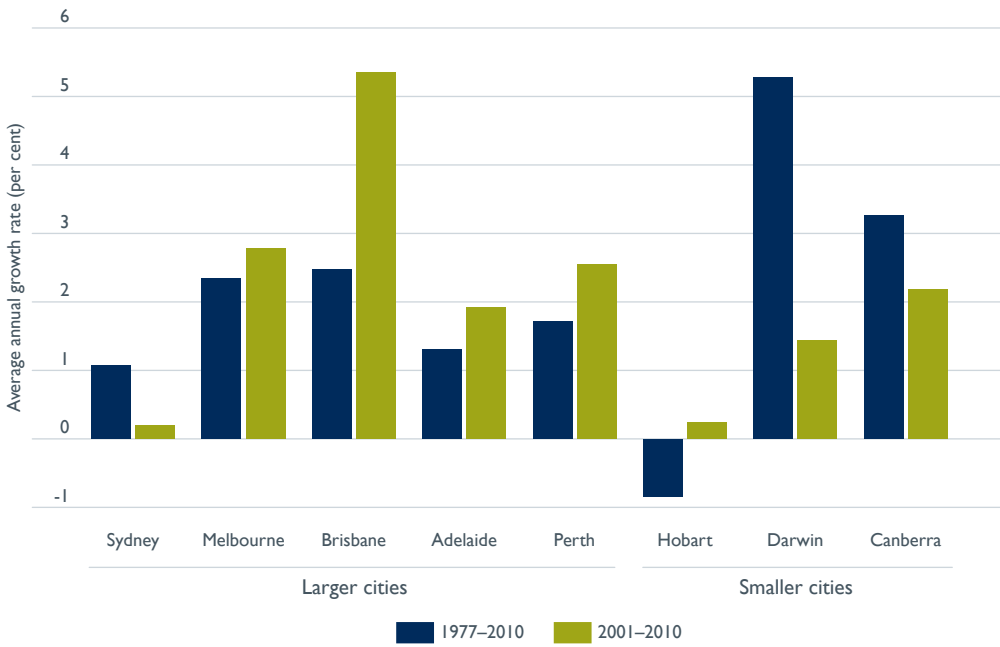
Among the five larger capital cities, the average annual growth rate of the bus passenger transport task between 1977 and 2010 was highest in Brisbane (2.47 per cent); followed by Melbourne (2.34 per cent); and was lowest in Sydney (1.08 per cent) (Figure 2.29). Among the smaller capital cities, Darwin had highest average annual growth rate of bus passenger transport task between 1977 and 2010, while Hobart experienced negative growth.

Since 2004, Brisbane and Melbourne experienced a sharp increase in bus pkm. The increase in bus passenger kilometres in Brisbane was due to the introduction of an integrated ticketing system in 2007 (TransLink 2007). Brisbane also relies significantly on an expansive bus network that use a system of dedicated bus ways, serviced by public and private operators. Brisbane's largest operator 'Brisbane Transport' is the corporate transport arm of Brisbane City Council. BITRE (2009b) also found that Brisbane recorded the highest growth (10.9 per cent) of in-service kilometres by buses between 2006 and 2007, followed by Melbourne (8.7 per cent).

The increase in bus passenger kilometres in Melbourne was enabled by extending bus operating hours, creating new bus routes, upgrading frequencies and extension or rerouting of some existing services (Victorian Department of Transport 2008; cited in BITRE 2009b).



**Figure 2.29** Comparison of average annual growth rate (per cent) by bus, all capital cities, 1977–2010 and 2001–2010



Source: BITRE estimates.

Figure 2.29 shows the average annual growth rates of bus passenger transport task in all eight capital cities in two periods: 1977–2010 and 2001–2010. During 2001–2010, the bus passenger transport task grew much faster in Brisbane and more slowly in Melbourne, Perth and Adelaide, while Sydney experienced slow growth during 2001–2010.

## CHAPTER 3

# Modelling urban public transport passenger task by capital cities, 1977–2010

### Summary

This chapter outlines the methodology and presents results of UPT mode share models for each of Australia's eight capital cities and also for the sum of all capital cities'. The key findings of this chapter are:

- The models relate UPT mode share to UPT fares, pressures on household budgets, and to various supply-side shocks (for example, the opening of the southern rail line in Perth).
- The models provide reasonably good predictions of UPT mode share across the different cities, generally accounting for about 90 per cent of the variation.
- The pattern of actual UPT share for the total of all capital cities is similar to the UPT share predicted by the model. Similarly, the pattern of the aggregate UPT task between 1977 and 2010 is largely as predicted by the model.
- The elasticities of the real UPT fares varied from  $-0.0762$  (Sydney) to  $-0.6484$  (Perth); an average for all capital cities was  $-0.3137$ . The fare elasticities are highly significant ( $p < 0.001$ ) for Melbourne, Brisbane, Adelaide, Perth and Canberra, while the elasticities for Sydney, Hobart and Darwin are insignificant ( $p > 0.05$ ). The average elasticity of the real UPT fares of the eight capital cities ( $-0.3137$ ) is lower than a published mean fare elasticity of  $-0.4$ , which is based on eleven Australian studies of urban public transport demand (Webster and Bly 1980).
- The elasticities of the disposable income constraint variable varied from  $0.0599$  (Darwin) to  $0.9587$  (Melbourne). The average 'household disposable income constraint' elasticity for eight capital cities was  $0.3855$ . The elasticities of disposable income constraint were highly significant for all capital cities ( $p < 0.001$ ), except Darwin and Canberra ( $p > 0.05$ ).

## 3.1 Background

Chapter 2 outlined the urban passenger transport task (pkm) in the eight Australian capital cities between 1977 and 2010. In this chapter, the focus shifts to considering UPT as a share of total urban passenger travel. Modelling was undertaken to explain 'UPT share'. UPT share is defined as the UPT task (pkm) as a percentage of the total transport task (pkm), i.e.:

$$\text{UPT share (per cent)} = (\text{UPT task} / \text{total transport task}) * 100$$

The determinants of the UPT task are important for understanding the needs for infrastructure development and investment as well as for congestion amelioration and road safety. Allsop (2008) stated that modelling transport systems has two main purposes:

1. to estimate features of an existing transport system and the way it is used that are difficult to observe
2. to estimate features of a transport system and the way it is used in circumstances that do not yet exist.

The parameters used in modelling UPT share include the household disposable income constraint and UPT fares. The disposable income constraint variable is a composite of several factors. These are costs of mortgage, rent, food, petrol and household savings.

## 3.2 Methodology

The data sources for each of these factors were:

- Nominal UPT Fare Index—sourced from the 'Urban Transport Fares' sub-index of the CPI (ABS 2012b)
- CPI sourced from the ABS *Consumer Price Index, Australia* publication (ABS 2012b)
- rents and house prices sourced from *Real estate market facts: a quarterly review of major residential property markets in Australia* (several issues) (Real Estate Institute of Australia)
- food prices sourced from the 'Food and Non-Alcoholic Beverages' sub-index of the CPI (ABS 2012b)
- petrol prices sourced BITRE (2012a)
- savings rates sourced from the *Australian National Accounts: National Income, Expenditure and Product* (ABS 2012c).

Modelling the urban public transport task in Australia's capital cities required two main variables: real fares and a disposable income constraint. How these two variables were calculated is described in Sections 3.2.1 and 3.2.2.

### 3.2.1 Calculation of the real UPT fare variable

The real UPT fare index for each capital city was calculated as follows:

$$\text{Real fare index} = \text{Nominal fare index} / \text{Consumer Price Index (CPI)} * 100$$

Nominal fares and CPI were indexed (1989–90 = 100). Estimates of the resulting real-fare indices for each capital city are provided in Appendix E.

### 3.2.2 Calculation of household disposable income constraint

Calculating the disposable income constraint variable used a number of different datasets, such as costs of petrol, food, rent and mortgage payments, savings rates and the CPI index.

The disposable income constraint in real \$/week/household for each capital city was calculated in three steps:

Step 1: Nominal weekly cost (nominal \$/week/household)

$$= PC + FC + ((RC + MC) / 2)$$

Step 2: Real weekly cost (real \$/week/household)

$$= (\text{Nominal weekly cost } (\$/\text{week/household}) / (\text{CPI} * 100))$$

Step 3: Weekly disposable income constraint (real \$/week/household)

$$= (\text{Real weekly cost } (\$/\text{week/household})) * (1 + SR / 100)$$

where

DIC = Disposable income constraint (real \$/week/household)

PC = Petrol cost (\$/week/household)

FC = Food cost (\$/week/household)

RC = Rent cost (\$/week/household)

MC = Mortgage cost (\$/week/household)

CPI = (GST/Medicare adjusted CPI)

SR = Savings rate (per cent).

Table 3.1 estimates the household disposable income constraint in real \$/week/household for Melbourne between 1977 and 2010, as an example. Estimates of disposable income constraint for each capital city, as well as all capital cities combined, are provided in Appendix F.

**Table 3.1** Estimates of weekly budget or disposable income constraint (real \$/week/household), Melbourne, 1977–2010

Year	Cost (\$/week/household)				Weekly cost (nominal \$/week/household)	GST/Medicare adjusted CPI	Weekly cost (real \$/week/household)	Savings rate (per cent)	DIC <sup>a</sup> (real \$/week/household)
	Petrol	Food	Rent	Mortgage					
1977	5.9	44	59	61	110	35	315	15.5	363
1978	7.0	49	63	65	120	38	312	15.1	359
1979	8.9	55	66	69	131	41	316	16.3	368
1980	12.4	62	69	75	147	46	321	15.1	370
1981	13.7	68	73	91	164	50	329	14.9	378
1982	14.3	74	79	110	184	55	333	14.3	381
1983	16.1	82	90	123	204	61	333	12.8	376
1984	18.9	88	100	124	219	66	332	14.4	380
1985	20.7	93	109	135	236	69	342	14.9	393
1986	22.5	100	120	172	268	75	359	12.6	404
1987	23.0	109	131	207	301	82	368	10.6	407
1988	23.5	115	142	213	316	88	360	8.2	389
1989	22.8	126	153	258	354	94	378	8.5	410
1990	26.0	136	165	318	403	102	397	9.2	434
1991	30.2	139	176	322	418	107	389	6.6	415
1992	29.1	142	178	292	407	110	370	5.2	389
1993	29.7	144	177	278	402	111	363	5.6	383
1994	29.9	146	179	275	403	113	357	6.8	381
1995	30.8	149	181	318	429	116	370	6.5	394
1996	31.9	155	185	346	452	120	376	7.0	402
1997	31.9	161	191	309	443	122	364	6.8	388
1998	31.1	163	199	284	436	122	358	5.2	377
1999	29.6	170	205	295	449	124	363	2.5	372
2000	34.6	175	211	329	479	127	377	3.5	391
2001	40.3	183	217	375	519	132	394	2.6	405
2002	37.0	193	223	364	523	135	387	2.5	396
2003	39.1	200	227	411	558	140	400	-0.1	399
2004	41.7	206	231	468	597	143	418	-1.1	414
2005	45.7	208	235	524	633	146	434	-1.0	430
2006	54.3	218	238	579	680	150	453	0.6	455
2007	55.0	231	245	662	740	154	480	3.8	498
2008	59.8	240	258	772	815	160	510	2.5	523
2009	55.6	251	275	815	852	163	523	7.6	563
2010	51.8	254	288	866	883	166	532	8.8	579

a Disposable income constraint.

Sources: BITRE estimates.

### 3.2.3 Modelling the UPT task

For estimation, the UPT share, real fares and the disposable income constraint were transformed into logarithmic values. City-specific event dummy variables were included for each capital city. For example, an 'Olympic Games' dummy was included for Sydney (2000–01); a 'recession' dummy was included for Melbourne (from 1988–89 to 1990–91); a 'bicentennial celebration' (Expo88) dummy was included for Brisbane (1987–88 and 1988–89); and a 'rail' dummy was used for Perth (to capture the effect of the opening of the southern rail line). Due

to lags in supply expansion, a specific 'SupplyLag' dummy was used for Melbourne and Perth. Different time trends were also used for Brisbane, Adelaide, Hobart and Darwin. Depending on the nature of data, specific 'year' dummies were also used for each capital city.

Separate models were estimated for each capital city due to fundamental differences in the nature of each city's UPT travel demands. The eight models have the following forms:

*For Sydney*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{OLYMDUM} + a4 * \text{DUM}_{(77-83)} + a5 * \text{DUM}_{(04-10)}$$

*For Melbourne*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{DUM}_{(77-81)} + a4 * \text{DUM}(\text{SupplyLag}) + a5 * \text{Mel-DUM}_{(89-91)}$$

*For Brisbane*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{BICENTDUM} + a4 * \text{TIME}$$

*For Adelaide*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{TIME} + a4 * \text{DUM}_{(81-85)}$$

*For Perth*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{RAILDUM} + a4 * \text{DUM}(\text{SupplyLag}) + a5 * \text{DUM}_{(89-91,97)}$$

*For Hobart*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{TIME} + a4 * \text{DUM}_{(77-81)}$$

*For Darwin*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{LnDIC} + a3 * \text{TIME}$$

*For Canberra*

$$\text{LnUPTS} = i + a1 * \text{LnRF} + a2 * \text{DUM}_{(77-82)} + a3 * \text{DUM}_{(96-98)}$$

where

LnUPTS = Log of UPT share in the capital city

i = Intercept

a1 ... a5 = Estimated coefficients

LnRF = Log of the real urban transport fare

LnDIC = Log of discretionary income constraint

OLYMDUM = Olympic dummy for Sydney

Mel-DUM = Recession dummy for Melbourne

BICENTDUM = Bicentennial celebration dummy for Brisbane

RAILDUM = Rail dummy (for Perth)

TIME = A time trend for Brisbane (77-78); Adelaide (77-10), Hobart (77-10) and Darwin (77-91, then kept same)

DUM (SupplyLag) = SupplyLag dummy (due to lag in supply expansion for Melbourne and Perth)

DUM = Year specific dummy, as mentioned in the equations.

The exact nature of the variables used for each capital city is set out in Appendix G (see Table G.1 to Table G.4), while Appendix H provides actual and estimated data for UPT share.

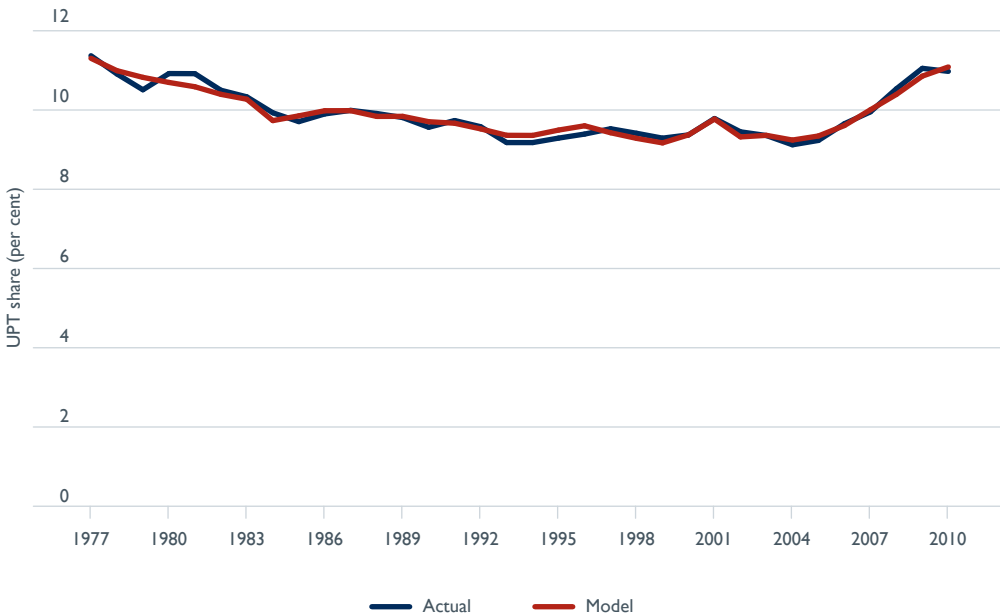
Using the equations from the regression analysis, the UPT task was estimated (modelled) and compared with the actual UPT task for each of the eight capital cities.

### 3.3 Modelling results

#### 3.3.1 Total capital cities

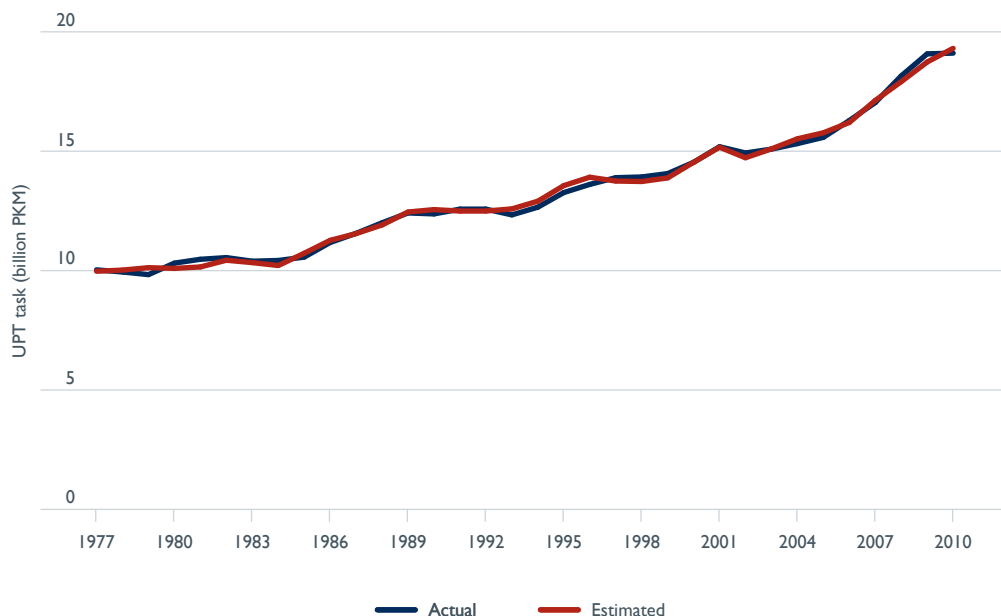
Figure 3.1 shows the model's estimate for the UPT share for all capital cities between 1977 and 2010. Figure 3.2 shows the actual and estimated UPT task in billion pkm during the same period. The estimates (both UPT share and task) were derived from an aggregation of the estimates of individual capital cities. The models used to drive these estimates are detailed below. Overall there is a downward trend in UPT mode share until 2004. After 2004, increasing pressure on household budgets and the effects of the GFC created an upward trend, which levelled out by 2010. The effects of the variables differ across capital cities.

**Figure 3.1** Actual and estimated UPT share (per cent), total capital cities, 1977–2010



Source: BITRE estimates.

**Figure 3.2** Actual and estimated UPT task (billion pkm), total (all) capital cities, 1977–2010



Source: BITRE estimates.

### 3.3.2 Individual capital cities

#### Sydney

Regression results for modelling the UPT share for Sydney are presented in Table 3.2. Actual and estimated UPT shares are shown in Figure 3.3, while actual and modelled UPT tasks (in terms of billion pkm) are shown in Figure 3.4.

As can be seen from Table 3.2, the results of the model show a significant effect for all independent variables, except real fares. The elasticity of the real fare variable for urban public transport in Sydney is estimated to be around  $-0.076$  (t-statistics  $=-2.019$ ;  $p = 0.0532$ ).

Basically, the UPT share is high, but flat (i.e. unresponsive), ranging from 14 to 15 per cent, except for the late 70s and early 80s (around 16 per cent). Therefore a dummy (dummy 77-83) was used to capture this high share. However, from 2004 onward, there was a slight upward movement in UPT share, which is due to the disposable income constraint (see Figure 3.3). In addition, due to the significant effect of the Olympic dummy ( $p = 0.0172$ ), the UPT task increased substantially in 2000–01, as shown in Figure 3.4.



**Table 3.2** Regression results for modelling UPT share (per cent), Sydney, 1977–2010

<i>SUMMARY OUTPUT</i>						
<i>Regression Statistics</i>						
Multiple R						0.881832
R <sup>2</sup>						0.777627
Adjusted R <sup>2</sup>						0.737918
Standard Error						0.022813
Observations						34
<i>ANOVA</i>						
	df	SS	MS	F	Significance F	
Regression	5	0.050959	0.010192	19.582957	2.28439E-08	
Residual	28	0.014572	0.000520			
Total	33	0.065531				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	1.560504	0.376454	4.145271	0.000284	0.789373	2.331636
Ln(Real fares)	-0.076237	0.037766	-2.018685	0.053190	-0.153596	0.001122
Ln(DIC)	0.242799	0.053830	4.510459	0.000106	0.132533	0.353065
Dummy (Olympic)	0.062220	0.024566	2.532755	0.017203	0.011899	0.112542
Dummy (77-83)	0.079840	0.018708	4.267721	0.000204	0.041519	0.118162
Dummy (2004on)	-0.057905	0.017926	-3.230171	0.003154	-0.094626	-0.021185

Since the coefficient of determination ( $R^2$ ) is only 0.78 (Table 3.2), the pattern of actual UPT share in Sydney is similar to the UPT share predicted by the model, as shown in Figure 3.3. Figure 3.4 shows that the pattern of the aggregate UPT task between 1977 and 2010 is largely as predicted by the model.

Figure 3.3 Actual and modelled UPT share (per cent), Sydney, 1977–2010

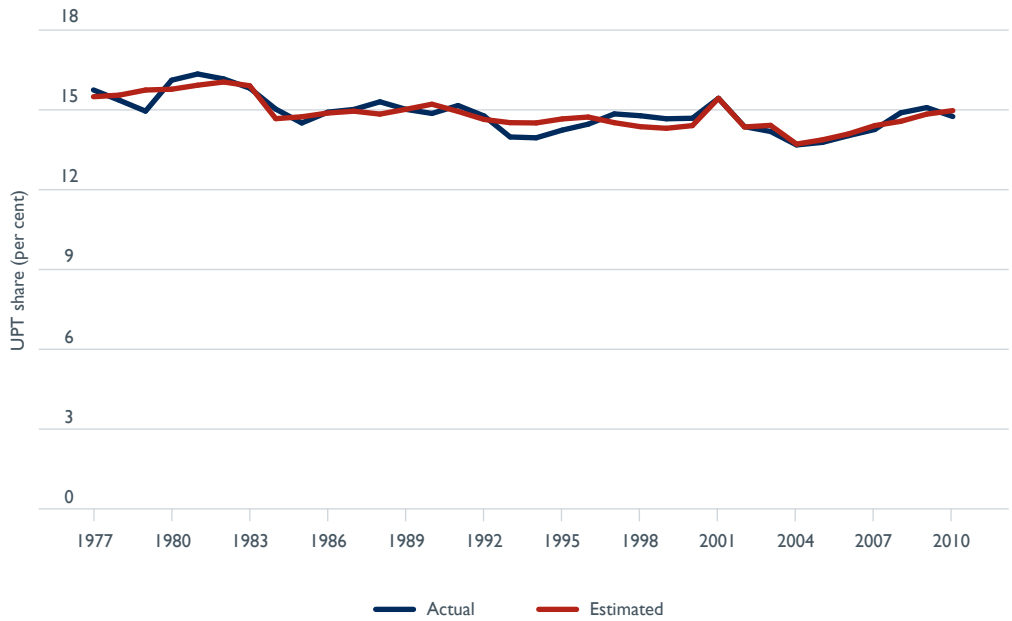
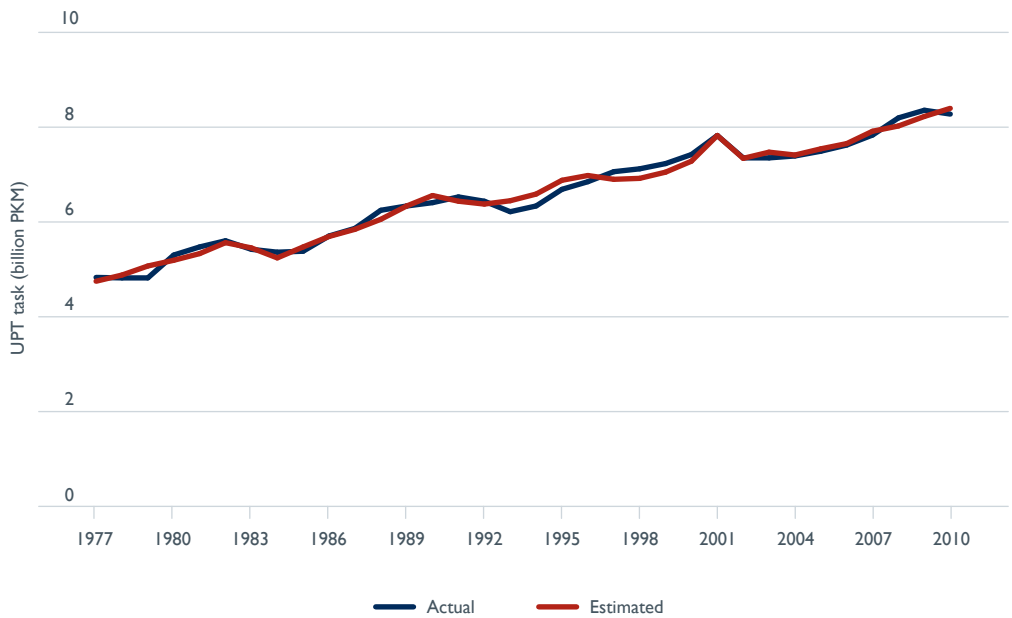


Figure 3.4 Actual and estimated UPT task (billion pkm), Sydney, 1977–2010



## Melbourne

Regression results for modelling Melbourne’s UPT share are presented in Table 3.3. Actual and estimated UPT shares are shown in Figure 3.5, while actual and modelled UPT tasks are shown in Figure 3.6.

The downward trend in UPT mode share for Melbourne since the 1940s ended in 1983, where the UPT share sat at around eight per cent. However, this trend masks changes in fares and the disposable income constraint that balanced, except recently from 2005, when the disposable income constraint saw demand rise. There was, however, a lag in supply expansion, so the major increases in UPT share happened from 2007 to 2009.

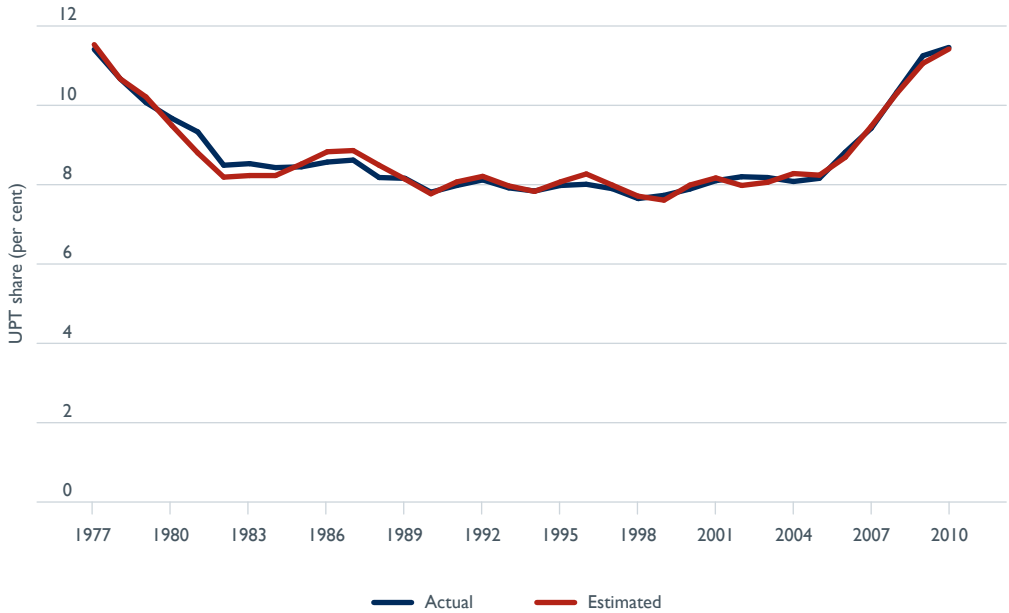
As can be seen from Table 3.3, the results of the model show highly significant effects ( $p = <0.001$ ) for all independent variables. The disposable income constraint coefficient for urban public transport in Melbourne is estimated to be around 0.959 (t-statistics = 21.931;  $p = <0.001$ ). This high elasticity is due to the large average annual growth of jobs in metropolitan Melbourne in recent years (1.5 per cent per annum between 2001 and 2006). Between 2001 and 2006, 19 per cent of jobs growth was in the city area and 53 per cent of jobs growth was in outer Melbourne (BITRE unpublished data).

**Table 3.3** Regression results for modelling UPT share (per cent), Melbourne, 1977–2010

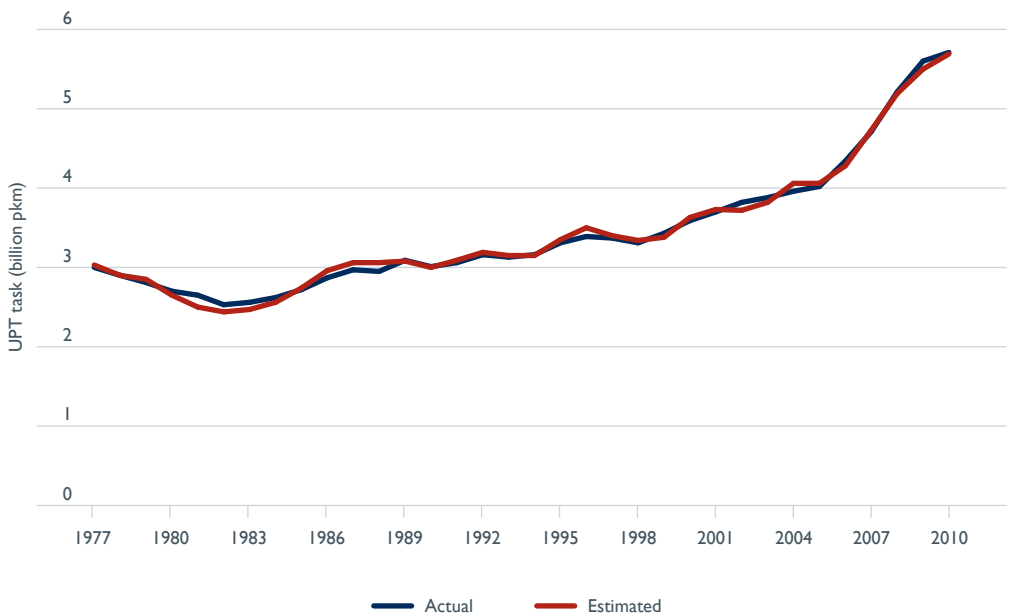
SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.984187					
R <sup>2</sup>	0.968624					
Adjusted R <sup>2</sup>	0.963021					
Standard Error	0.022972					
Observations	34					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	5	0.456165	0.091233	172.87926	3.83853E-20	
Residual	28	0.014776	0.000528			
Total	33	0.470941				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	-2.378016	0.241590	-9.843197	1.363E-10	-2.872891	-1.883142
Ln(Real fares)	-0.256858	0.040253	-6.381139	6.604E-07	-0.339311	-0.174404
Ln(DIC)	0.958689	0.043715	21.930556	3.57E-19	0.869143	1.048235
Dummy (77-81)	0.070610	0.004170	16.933815	3.033E-16	0.062069	0.079152
Dummy (SupplyLag)	-0.038000	0.015390	-2.469197	0.0199063	-0.069525	-0.006476
Mel-Dummy	-0.210015	0.023667	-8.873799	1.256E-09	-0.258494	-0.161536

Since the coefficient of determination ( $R^2$ ) is very high (0.97) (Table 3.3), the pattern of actual UPT share in Melbourne is very similar to the UPT share predicted by the model, as shown in Figure 3.5. Figure 3.6 shows that the modelling produced an accurate estimation of the aggregate UPT task in Melbourne between 1977 and 2010.

**Figure 3.5** Actual and modelled UPT share (per cent), Melbourne, 1977–2010



**Figure 3.6** Actual and estimated UPT task (billion pkm), Melbourne, 1977–2010



## Brisbane

Regression results for modelling Brisbane's UPT share are presented in Table 3.4. Actual and estimated UPT shares are shown in Figure 3.7, while actual and modelled UPT tasks are shown in Figure 3.8.

A negative time trend since the 1940s ended in 1979. As can be seen from Table 3.4, the results of the model show highly significant effects for real fares, the disposable income constraint, the bicentenary dummy and the time dummy (for all these variables,  $p = <0.001$ ). Fare elasticity is low, while the disposable income constraint elasticity is moderate (Table 3.4).

**Table 3.4** Regression results for modelling UPT share (per cent), Brisbane, 1977–2010

<i>SUMMARY OUTPUT</i>						
<i>Regression Statistics</i>						
Multiple R			0.93061446			
R <sup>2</sup>			0.86604328			
Adjusted R <sup>2</sup>			0.84756649			
Standard Error			0.03063225			
Observations			34			

<i>ANOVA</i>					
	df	SS	MS	F	Significance F
Regression	4	0.175926	0.043982	46.871958	2.97282E-12
Residual	29	0.027212	0.000938		
Total	33	0.203138			

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	-1.051893	0.323406	-3.252544	0.0029005	-1.713333	-0.390453
Ln(Real fares)	-0.104630	0.029968	-3.491427	0.0015592	-0.165920	-0.043339
Ln(DIC)	0.609949	0.054036	11.287893	3.945E-12	0.499433	0.720464
Dummy (Bicent.)	0.154385	0.028487	5.419543	7.908E-06	0.096123	0.212647
BNETime dummy	0.082403	0.015630	5.272219	1.19E-05	0.050436	0.114369

Note: Bicent. – Bicentenary.

The bicentenary effect is evident in 1987–88 and 1988–89, while the disposable income constraint is apparent in the expansion in UPT share from 2006 to 2009 (Figure 3.7). Since the coefficient of determination (R<sup>2</sup>) is high (0.87) (Table 3.4), the pattern of actual UPT share in Brisbane is similar to the UPT share estimated by the model, as shown in Figure 3.7. Figure 3.8 shows that the modelling also produced an accurate estimation of the aggregate UPT task in Brisbane between 1977 and 2010.

Figure 3.7 Actual and modelled UPT share (per cent), Brisbane, 1977–2010

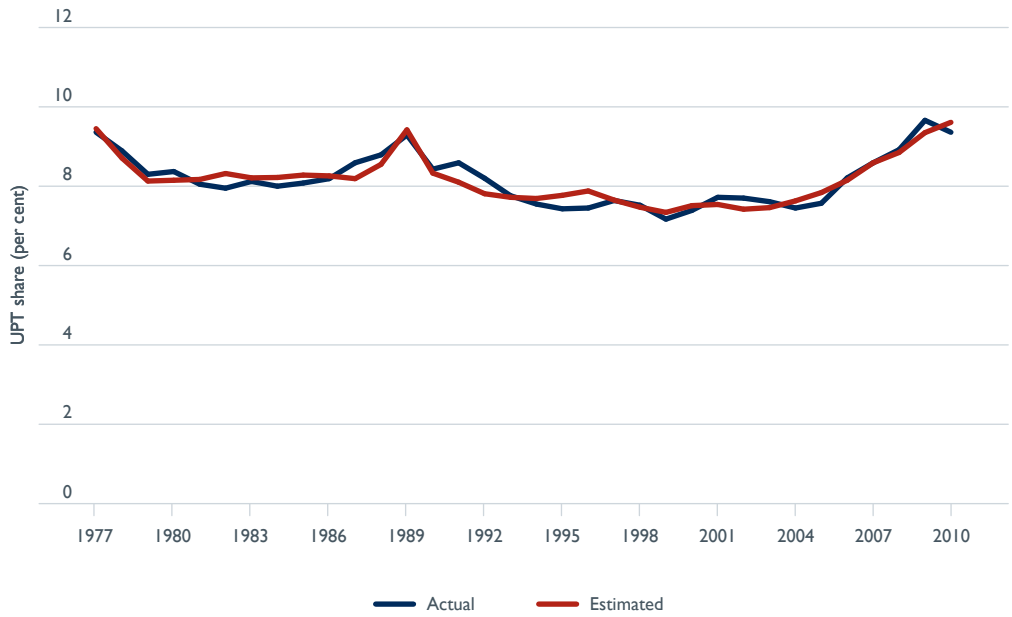
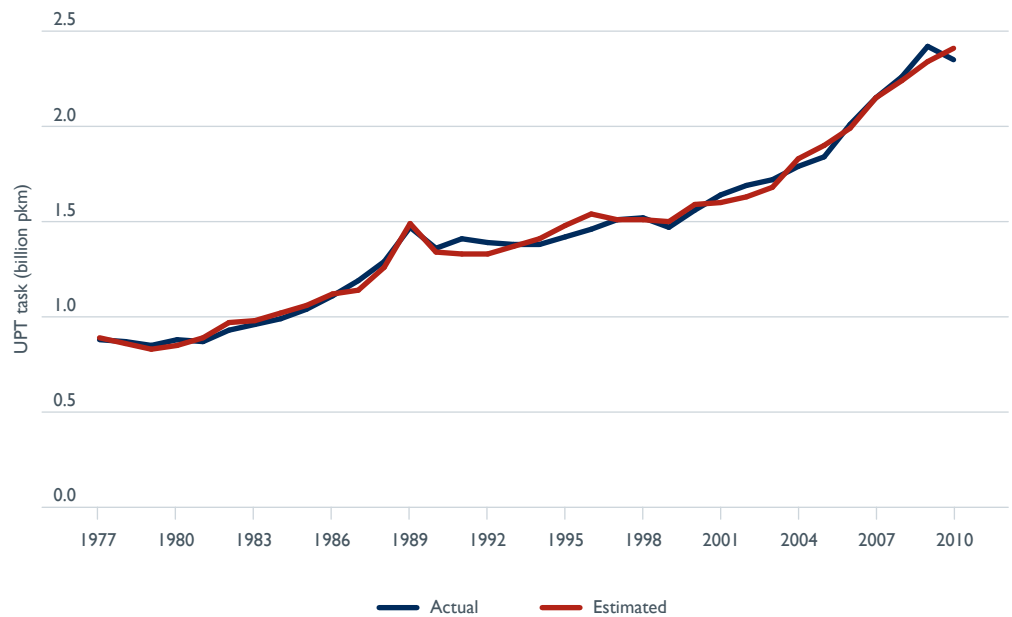


Figure 3.8 Actual and estimated UPT task (billion pkm), Brisbane, 1977–2010



## Adelaide

Regression results for modelling Adelaide's UPT share are presented in Table 3.5. Actual and estimated UPT shares are shown in Figure 3.9, while actual and modelled UPT tasks are shown in Figure 3.10.

The downward time trend in Adelaide has continued for most of the period. However, the trend of UPT share was interrupted by a brief upward movement in 1981–1985 and by the effect of a rising disposable income constraint in 2005–2009 (Figure 3.9).

As can be seen from Table 3.5, the results of the model show a highly significant effect for all independent variables. Both fare and disposable income constraint elasticities are moderate.

**Table 3.5** Regression results for modelling UPT share (per cent), Adelaide, 1977–2010

<i>SUMMARY OUTPUT</i>						
<i>Regression Statistics</i>						
Multiple R	0.934427					
R <sup>2</sup>	0.873153					
Adjusted R <sup>2</sup>	0.855657					
Standard Error	0.038452					
Observations	34					
<i>ANOVA</i>						
	df	SS	MS	F	Significance F	
Regression	4	0.295153	0.073788	49.905584	1.35839E-12	
Residual	29	0.042878	0.001479			
Total	33	0.338032				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	2.019781	0.599607	3.368508	0.0021496	0.793447	3.246115
Ln(Real fares)	-0.486665	0.076591	-6.354092	6.058E-07	-0.643311	-0.330019
Ln(DIC)	0.315601	0.077472	4.073759	0.0003273	0.157154	0.474049
ADL Time dummy	0.008192	0.002074	3.950227	0.0004579	0.003951	0.012434
Dummy (81-85)	0.149758	0.021063	7.109899	8.002E-08	0.106679	0.192837

Since the coefficient of determination ( $R^2$ ) is high (0.87) (Table 3.5), the pattern of actual UPT share in Adelaide is similar to the UPT share predicted by the model, as shown in Figure 3.9. Figure 3.10 shows that the modelling produces an accurate prediction of the aggregate UPT task in Adelaide between 1977 and 2010.

Figure 3.9 Actual and modelled UPT share (per cent), Adelaide, 1977–2010

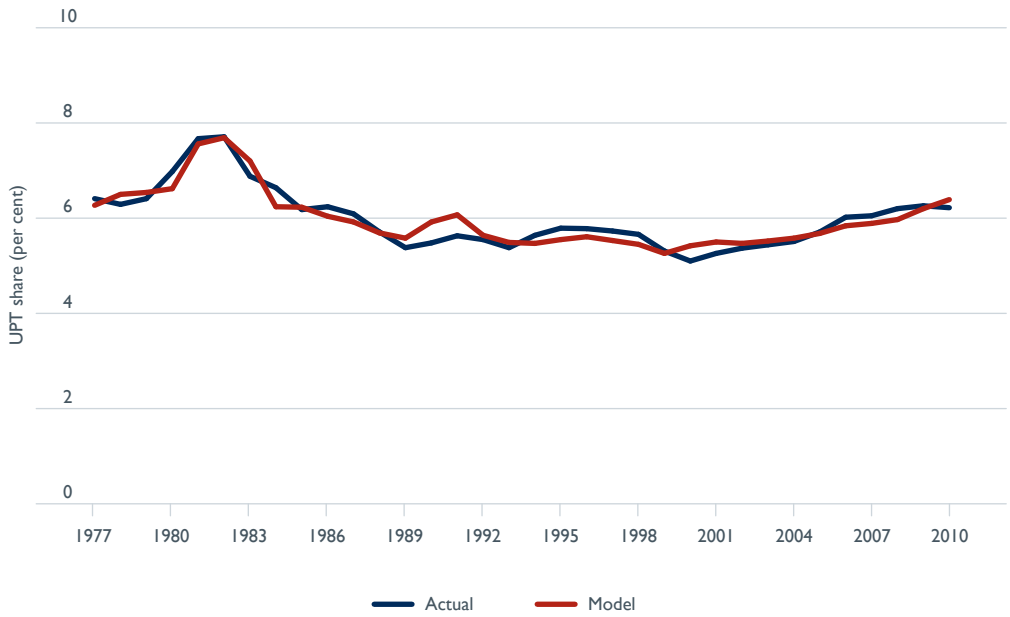
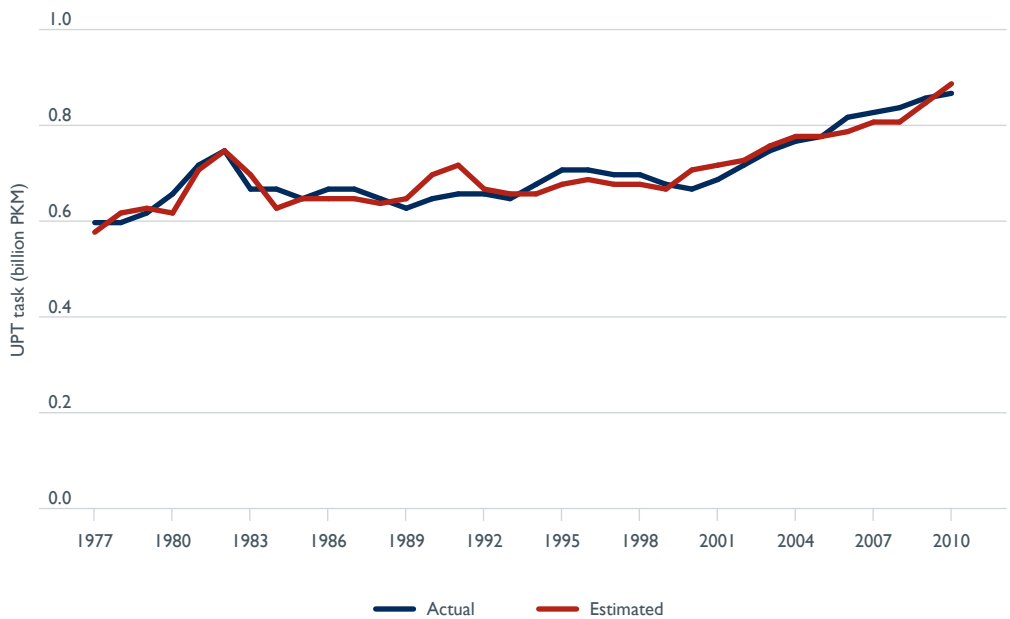


Figure 3.10 Actual and estimated UPT task (billion pkm), Adelaide, 1977–2010





## Perth

Regression results for modelling Perth's UPT share are presented in Table 3.6. Actual and estimated UPT shares are shown in Figure 3.11, while actual and modelled UPT tasks are shown in Figure 3.12.

As can be seen from Table 3.6, the results of the model show highly significant effects for all independent variables ( $p$ -value =  $<0.001$ ), except the SupplyLag dummy ( $p = <0.01$ ). Fare and the disposable income constraint elasticities are moderate, with the rising disposable income constraint coming into effect in period 2007–2009, flowing through to the UPT share (after a supply lag) in the period 2008–2009. The opening of the Joondalup line in 1992, which links the north-west to Perth's central business district, followed by an extension to Currabmine in 1993 created an increase in UPT share from 4.5 per cent to 5.5 per cent.

**Table 3.6** Regression results for modelling UPT share (per cent), Perth, 1977–2010

SUMMARY OUTPUT						
Regression Statistics						
Multiple R			0.962089			
R <sup>2</sup>			0.925616			
Adjusted R <sup>2</sup>			0.912333			
Standard Error			0.030973			
Observations			34			
ANOVA						
	df	SS	MS	F	Significance F	
Regression	5	0.334255	0.066851	69.685114	6.38203E-15	
Residual	28	0.026861	0.000959			
Total	33	0.361116				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	1.649667	0.443628	3.718582	0.0008889	0.740936	2.558397
Ln(Real fares)	-0.648373	0.057752	-11.226890	7.049E-12	-0.766673	-0.530074
Ln(DIC)	0.502933	0.058363	8.617381	2.307E-09	0.383383	0.622483
Dummy (Rail)	0.311236	0.023041	13.508063	8.688E-14	0.264039	0.358433
Dummy (SupplyLag)	-0.041417	0.014760	-2.806082	0.0090219	-0.071651	-0.011183
Dummy (89,90,97)	-0.101581	0.016755	-6.062565	1.547E-06	-0.135903	-0.067259

Since the coefficient of determination ( $R^2$ ) is very high (0.93) (Table 3.6), the pattern of actual UPT share in Perth is very similar to the UPT share estimated by the model, as shown in Figure 3.11. Figure 3.12 shows that the modelling also produced an accurate estimate of the aggregate UPT task in Perth between 1977 and 2010.

Figure 3.11 Actual and modelled UPT share (per cent), Perth, 1977–2010

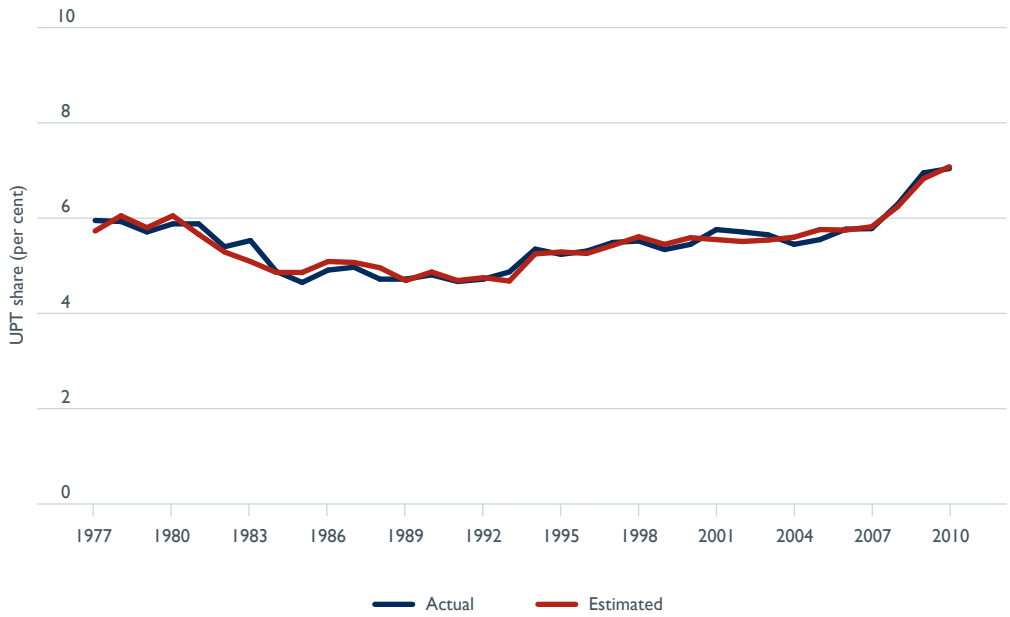
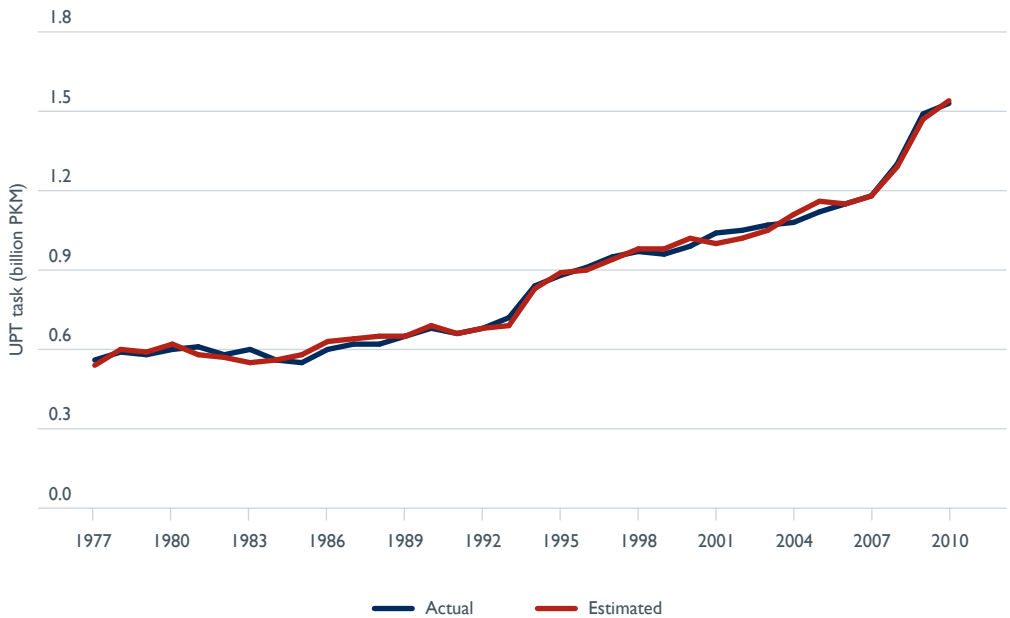


Figure 3.12 Actual and estimated UPT task (billion pkm), Perth, 1977–2010



## Hobart

Regression results for modelling Hobart's UPT share are presented in Table 3.7. Actual and estimated UPT shares are shown in Figure 3.13, while the actual and modelled UPT tasks are shown in Figure 3.14.

The downward time trend in the UPT share since the 1940s slowed in 1982, but continued through until 2010. The levelling off of UPT share since 2005 is due to the disposable income constraint increase balancing the continuing underlying downward time trend.

As can be seen in Table 3.7, the results of the model show highly significant effects for all independent variables ( $p = <0.001$ ), except real fares ( $p = <10$  per cent).

**Table 3.7** Regression results for modelling UPT share (per cent), Hobart, 1977–2010

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.989860					
R <sup>2</sup>	0.979822					
Adjusted R <sup>2</sup>	0.977039					
Standard Error	0.040268					
Observations	34					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	4	2.283414	0.570853	352.05818	4.00575E-24	
Residual	29	0.047023	0.001621			
Total	33	2.330436				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	1.697145	1.402497	1.210088	0.2360166	-1.171284	4.565574
Ln(Real fares)	-0.388857	0.217260	-1.789823	0.0839306	-0.833204	0.055490
Ln(DIC)	0.305290	0.100525	3.036947	0.0050138	0.099693	0.510887
HOBTime dummy	-0.011744	0.003805	-3.086118	0.0044307	-0.019527	-0.003961
Dummy (77-81)	0.145453	0.016531	8.798789	1.107E-09	0.111643	0.179263

Since the coefficient of determination ( $R^2$ ) is very high (0.98) (Table 3.7), the pattern of actual UPT share in Hobart is very similar to the UPT share estimated by the model, as shown in Figure 3.13. Figure 3.14 shows that the modelling produces an accurate prediction of the aggregate UPT task in Hobart between 1977 and 2010.

Figure 3.13 Actual and modelled UPT share (per cent), Hobart, 1977–2010

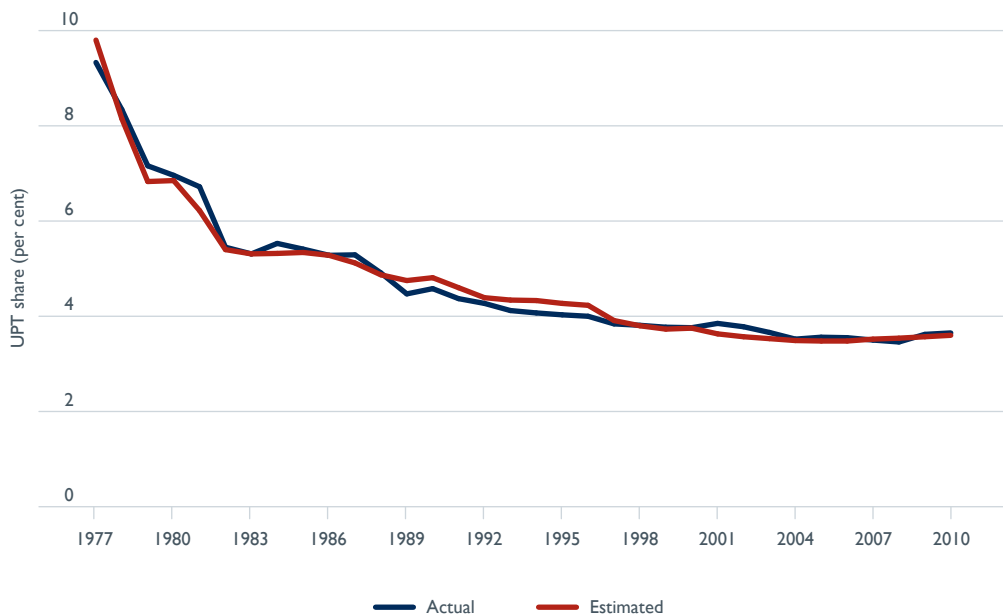
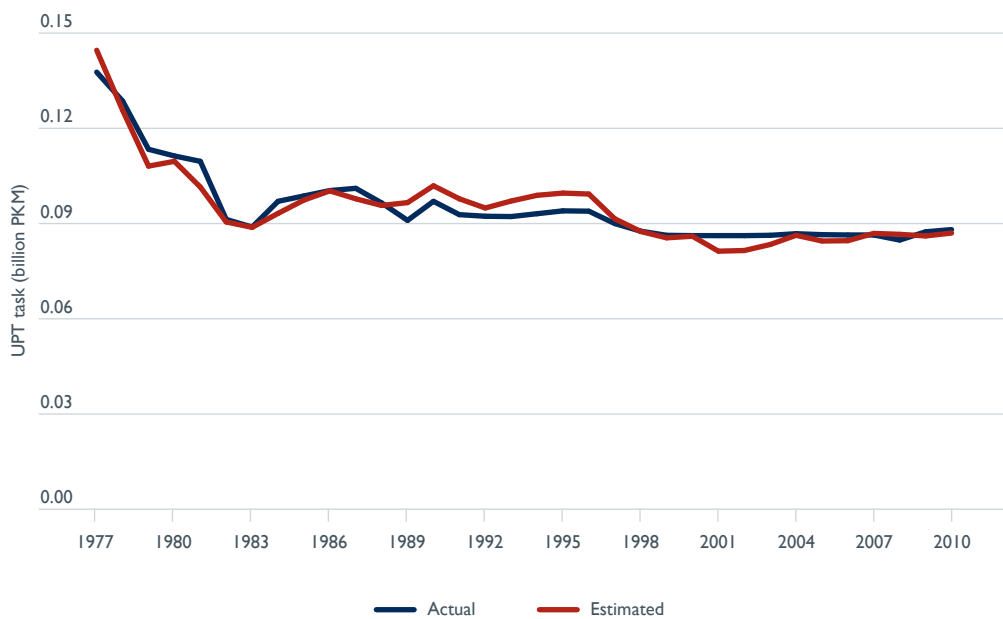


Figure 3.14 Actual and estimated UPT task (billion pkm), Hobart, 1977–2010



## Darwin

Regression results for modelling Darwin's UPT share are presented in Table 3.8. Actual and estimated UPT shares are shown in Figure 3.15, while actual and modelled UPT tasks are shown in Figure 3.16.

Between 1977 and 2010, the trend for UPT in Darwin can be broken into two distinct phases: an upward trend to 1991, and flat thereafter. This trend is modelled with a time trend turning off in 1991. The fluctuations around the trend are minor, and therefore fares and the disposable income constraint, while of the expected sign, are not significant (Table 3.8).

**Table 3.8** Regression results for modelling UPT share (per cent), Darwin, 1977–2010

<i>SUMMARY OUTPUT</i>						
<i>Regression Statistics</i>						
Multiple R			0.978897			
R <sup>2</sup>			0.958239			
Adjusted R <sup>2</sup>			0.954063			
Standard Error			0.045052			
Observations			34			
<i>ANOVA</i>						
	df	SS	MS	F	Significance F	
Regression	3	1.397154	0.465718	229.45848	8.9949E-21	
Residual	30	0.060889	0.002030			
Total	33	1.458043				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	1.221038	0.648107	1.884007	0.0692882	-0.102573	2.544650
Ln(Real fares)	-0.119794	0.079049	-1.515450	0.1401252	-0.281233	0.041645
Ln(DIC)	0.059936	0.096944	0.618248	0.5410775	-0.138051	0.257923
DRWTime dummy	0.048817	0.003048	16.016170	3.032E-16	0.042592	0.055042
Dummy (77-81)	0.145453	0.016531	8.798789	1.107E-09	0.111643	0.179263

Since the coefficient of determination ( $R^2$ ) is very high (0.96) (Table 3.8), the pattern of actual UPT share in Darwin is very similar to the UPT share estimated by the model, as shown in Figure 3.15. Figure 3.16 shows that the modelling produces a similar prediction of the aggregate UPT task in Darwin between 1977 and 2010.

Figure 3.15 Actual and modelled UPT share (per cent), Darwin, 1977–2010

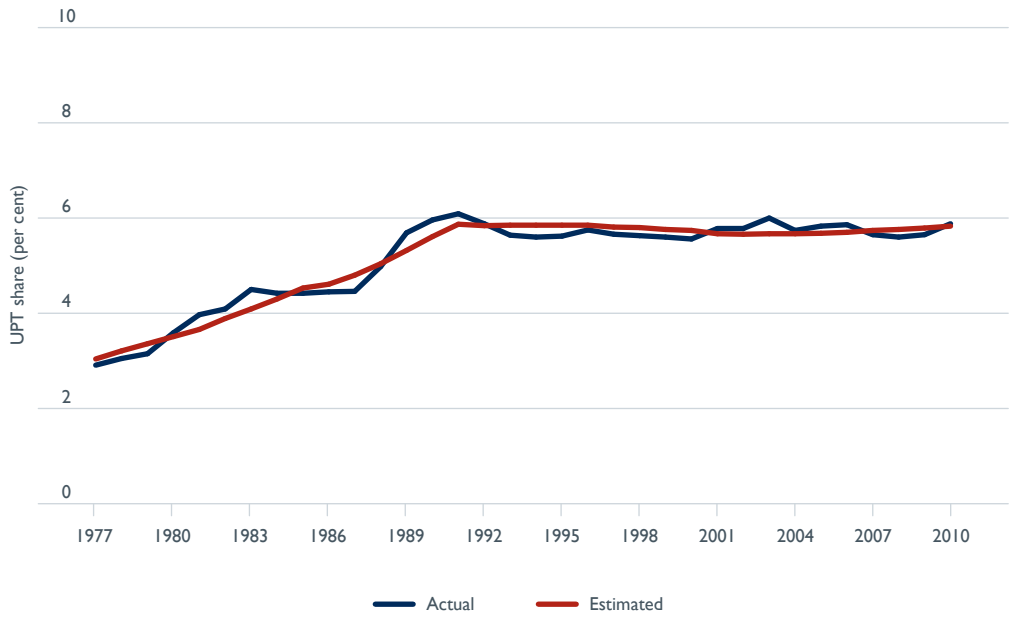
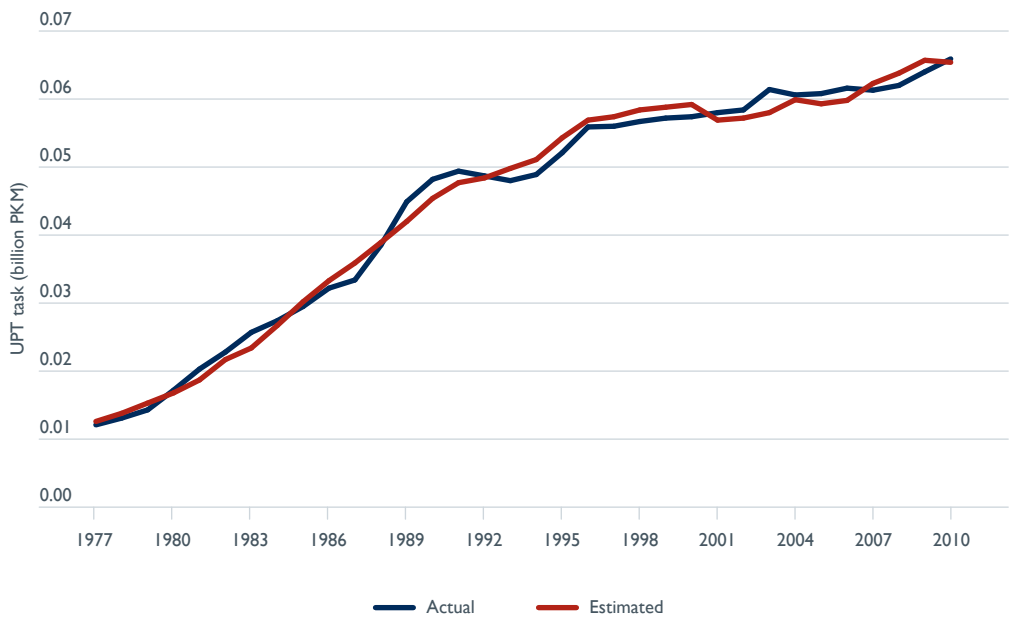


Figure 3.16 Actual and estimated UPT task (billion pkm), Darwin, 1977–2010



## Canberra

Regression results for modelling Canberra's UPT share are presented in Table 3.9. Actual and estimated UPT shares are shown in Figure 3.17, while actual and modelled UPT tasks are shown in Figure 3.18.

The share of UPT in Canberra has shifted twice: it shifted upward in 1983 from a low point in 1977–1982, and then upward again from 1996. The level of real fares was rising in the period 1977–1997. This increasing trend was matched by the decreasing UPT share, evident from 1985–1995. After 1997, fares were constant. After 1999, the underlying trend was flat. UPT share, however, slowly increased from 2005 due to the effect of a rising disposable income constraint.

As can be seen from Table 3.9, the results of the model show the highly significant effect for real fares. However, the fare elasticity is moderate. All other variables are highly significant ( $p < 0.001$ ), except the disposable income constraint ( $p = < 11$  per cent).

**Table 3.9** Regression results for modelling UPT share (per cent), Canberra, 1977–2010

<i>SUMMARY OUTPUT</i>						
<i>Regression Statistics</i>						
Multiple R	0.948171106					
R <sup>2</sup>	0.899028447					
Adjusted R <sup>2</sup>	0.888931291					
Standard Error	0.036234435					
Observations	34					
<i>ANOVA</i>						
	df	SS	MS	F	Significance F	
Regression	3	0.350702311	0.11690077	89.03779486	4.92619E-15	
Residual	30	0.039388028	0.001312934			
Total	33	0.390090339				
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	4.032879052	0.158818224	25.39304972	7.72915E-22	3.708528968	4.357229136
Ln (Real fares)	-0.54157778	0.0333225	-16.25261572	2.04142E-16	-0.609631403	-0.473524157
Dummy (77-82)	-0.233868645	0.019009681	-12.30260787	2.98732E-13	-0.272691592	-0.195045698
Dummy (96-98)	0.115309112	0.026166865	4.406684251	0.000123601	0.061869244	0.16874898

In spite of the coefficient of determination ( $R^2$ ) being relatively low (0.90) (Table 3.9), the pattern of actual UPT share in Canberra is quite similar to the UPT share estimated by the model, as shown in Figure 3.17. Figure 3.18 shows that the modelling produces a fairly accurate prediction of the aggregate UPT task in Canberra between 1977–2010.

Figure 3.17 Actual and modelled UPT share (per cent), Canberra, 1977–2010

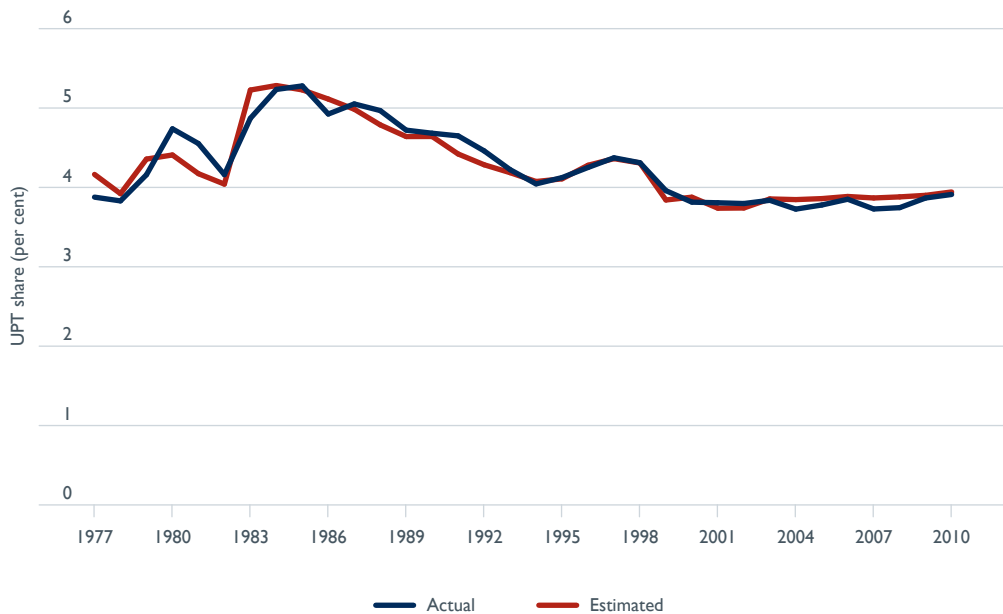
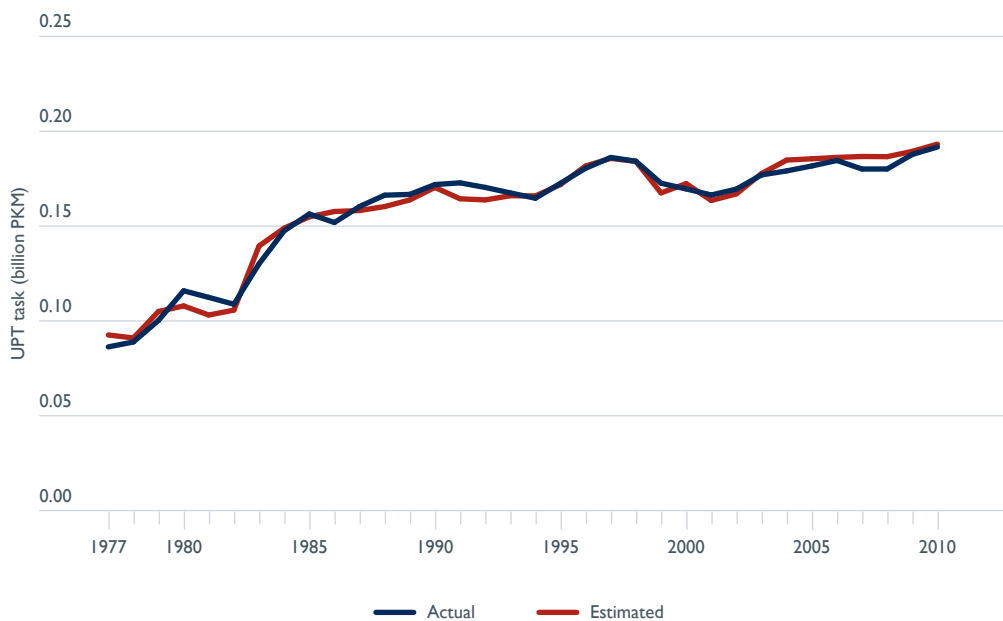


Figure 3.18 Actual and estimated UPT task (billion pkm), Canberra, 1977–2010



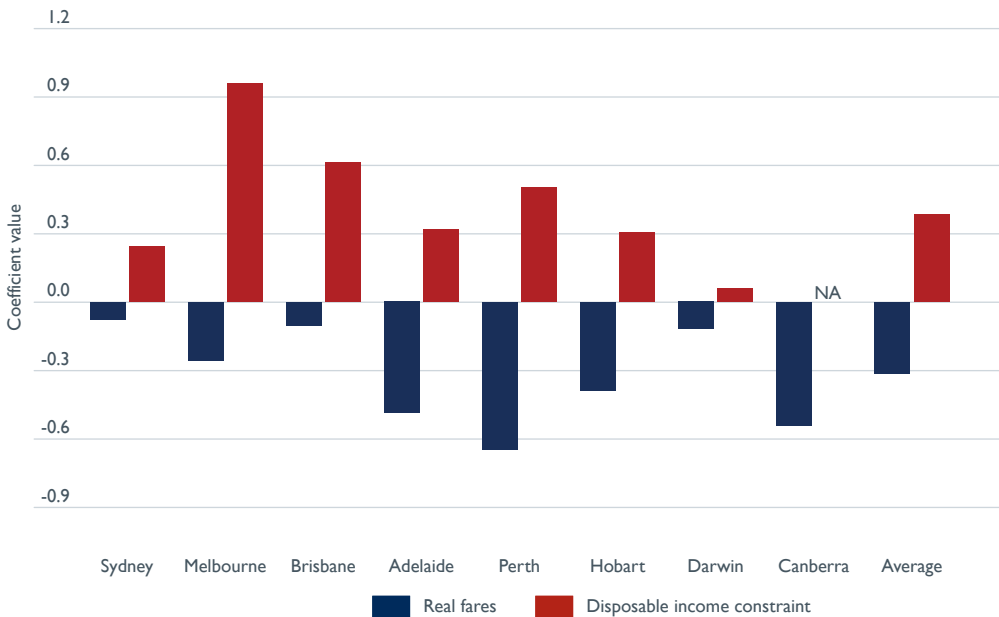


### 3.4 Real fare and disposable income constraint elasticities

This section compares the effects of real fares and the household disposable income constraint elasticities on the UPT shares in the various capital cities.

Because the regression equations are of a double-log form (see Table 3.2 to Table 3.9), the coefficients represent elasticities<sup>1</sup>. The elasticities of the real UPT fares varied from -0.0762 (Sydney) to -0.6484 (Perth); an average for all capital cities was -0.3137 (Figure 3.19 and Table 3.10). The elasticities of the real UPT fares are highly significant ( $p < 0.001$ ) for Melbourne, Brisbane, Adelaide, Perth and Canberra, while the elasticities for Sydney, Hobart and Darwin are insignificant ( $p > 0.05$ ).

**Figure 3.19** Coefficients of real fares and disposable income constraint, capital cities, 1977–2010



<sup>1</sup> Elasticity is defined as the percentage change in the dependent variable resulting from a one per cent change in the independent variable, all else held constant (Litman 2004). For example, a real fare elasticity of -0.4 means that each 1.0 per cent increase in transit fares, causes a 0.4 per cent reduction in ridership. So, a 10 per cent fare increase will cause ridership to decline by about 4 per cent.

**Table 3.10** Coefficients and t-statistics of real fares and disposable income constraint, capital cities, 1977–2010

Capital city	Real fares			Disposable income constraint		
	Coefficient	t-statistics	p-value	Coefficient	t-statistics	p-value
Sydney	-0.07624	-2.01869	0.05319	0.24280	4.51046	0.00011
Melbourne	-0.25686	-6.38114	0.00000	0.95869	21.93056	0.00000
Brisbane	-0.10463	-3.49143	0.00156	0.60995	11.28789	0.00000
Adelaide	-0.48667	-6.35409	0.00000	0.31560	4.07376	0.00033
Perth	-0.64837	-11.22689	0.00000	0.50293	8.61738	0.00000
Hobart	-0.38886	-1.78982	0.08393	0.30529	3.03695	0.00501
Darwin	-0.11979	-1.51545	0.14013	0.05994	0.61825	0.54108
Canberra	-0.54157778	-16.25261572	2.04142E-16	na	na	na
Average	-0.31374			0.38547		

Source: Table 3.2 to Table 3.9.

The average elasticity of the real UPT fares of the eight capital cities (-0.3137) (refer Table 3.10) is lower than the average fare elasticity of -0.4, which is based on eleven Australian studies of urban public transport demand cited in an earlier Transport and Road Research Laboratory (TRRL) report (Webster and Bly 1980). The influential review of public transport elasticities edited by Webster and Bly (1980) concluded that a reasonable rule of thumb for public transport fare elasticity was -0.3. This figure was widely acknowledged to be correct for much of the 1980s. However, towards the beginning of the 1990s, estimated fare elasticities increased slightly to somewhere in the range -0.3 to -0.4 or more (Hanly and Dargay 1999). International evidence was also cited in the TRRL report (Webster and Bly 1980). An average fare elasticity of -0.3 was reported for studies in Australia, France, Germany, Italy, the Netherlands, New Zealand, the UK and the USA. Hensher (2008) also compiled data from 40 publications, a number of which were reviews of the literature, and reported a mean estimate (elasticity) of -0.395 for fares, which is close to the -0.38 reported in Holmgren (2007) and other reviews, such as Goodwin (1992), Oum et. al. (1992) and Litman (2002).

The elasticities of the disposable income variables varied from 0.0599 (Darwin) to 0.9587 (Melbourne) (Figure 3.19 and Table 3.10). The elasticities of disposable income were highly significant for all capital cities ( $p < 0.001$ ), except for Darwin ( $p > 0.05$ ) and Canberra – where the variable was not used (Table 3.10). The average disposable income constraint elasticity for all eight capital cities combined was 0.3855 (moderate), ranging from 0.9587 (high) for Melbourne, to 0.0599 (low) for Darwin.



## CHAPTER 4

# Modelling and forecasting total passenger transport task by capital cities, 1965–2030

### Summary

This chapter describes methodologies for modelling the total passenger-kilometre task (for both private vehicles and public transport) for each capital city in Australia. It provides regression results and the results on modelling estimates (1965–2010) and forecasts (2011–2030). Some key findings include:

- Growth in total passenger transport per person showed a saturating trend from 1965 to 2010.
- Between 1977 and 2010, the total passenger transport task was much higher in Sydney and Melbourne and lower in Hobart, Darwin and Canberra.
- The total metropolitan passenger transport task — that is the sum of all capital cities — is forecast to increase from 176.4 billion pkm in 2011 to 239.4 billion pkm in 2030, an average annual growth rate of 1.62 per cent.
- The total passenger transport task was 48 billion pkm in 1965, increasing to around 175 billion pkm by 2010, an average annual growth rate of 2.93 per cent. However, from 2005 to 2010, growth slowed (to 0.6 per cent per annum), mainly due to the effect of the GFC experienced from late 2008.
- Between 2011 and 2030, the total passenger transport task is forecast to grow fastest in Brisbane (2.41 per cent per annum) and slowest in Adelaide (0.69 per cent per annum), assuming the effect of the GFC diminishes.
- Between 2011 and 2030, Melbourne, Brisbane and Perth are expected to increase their share of the total metropolitan passenger transport task, while shares are forecast to decrease in other capital cities, except Darwin where the share is forecast to remain unchanged.

## 4.1 Background

Accurate forecasts of the future transport tasks in our cities are important for forward planning, particularly because investments in infrastructure are expensive and can have long lead times in project delivery (Gaymer 2010).

This chapter presents modelling results and estimates (1965–2010) of the total passenger transport task (pkm for both private vehicles and public transport) in each capital cities in Australia. The term 'metropolitan' is the sum of all eight capital cities. Forecasts to 2030 are also presented.

## 4.2 Methodology for modelling (1965–2010) and forecasting (2011–2030) total passenger transport task

To get the total predicted urban pkm per person (pkmpp) for the period 1965–2010 and to create forecasts for the period 2011–2030, pkm per person (sum of both private vehicles and public transport) from 1965 to 2010 was used as a dependent variable in linear regression models. Several independent variables, such as pre-1978 time, time, time squared, petrol price, unemployment, GFC and dummies, were used for the regression analysis. The equations were of the form:

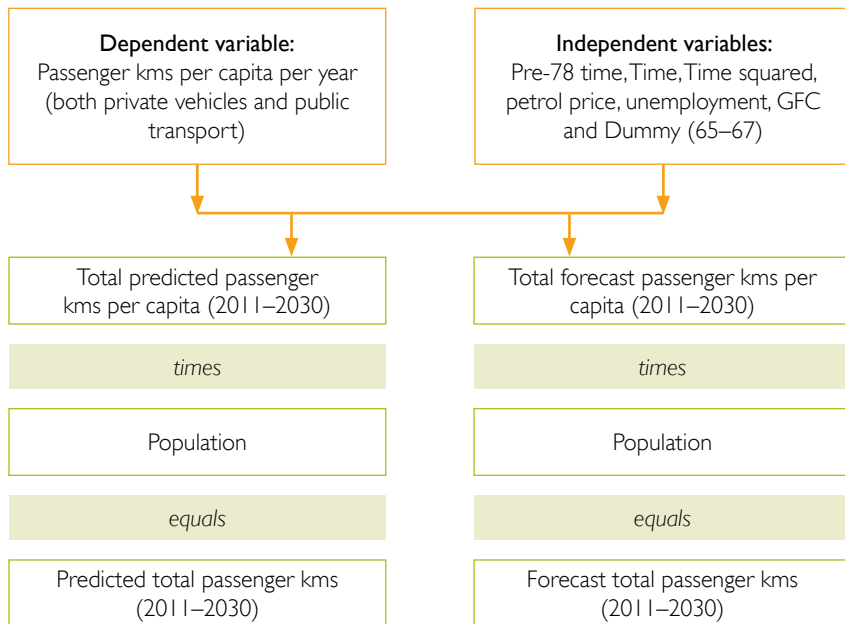
$$\text{Pkmp} = f(\text{pre-1978time, time, time squared, petrol, unemployment, GFC, dummies})$$

Raw data for dependent and independent variables for each capital is presented in Appendix I.

For the forecast of the total passenger task in cities between 2011 and 2030, the models assumed that petrol prices and unemployment would not change, while the GFC effect would wear off by 2020.

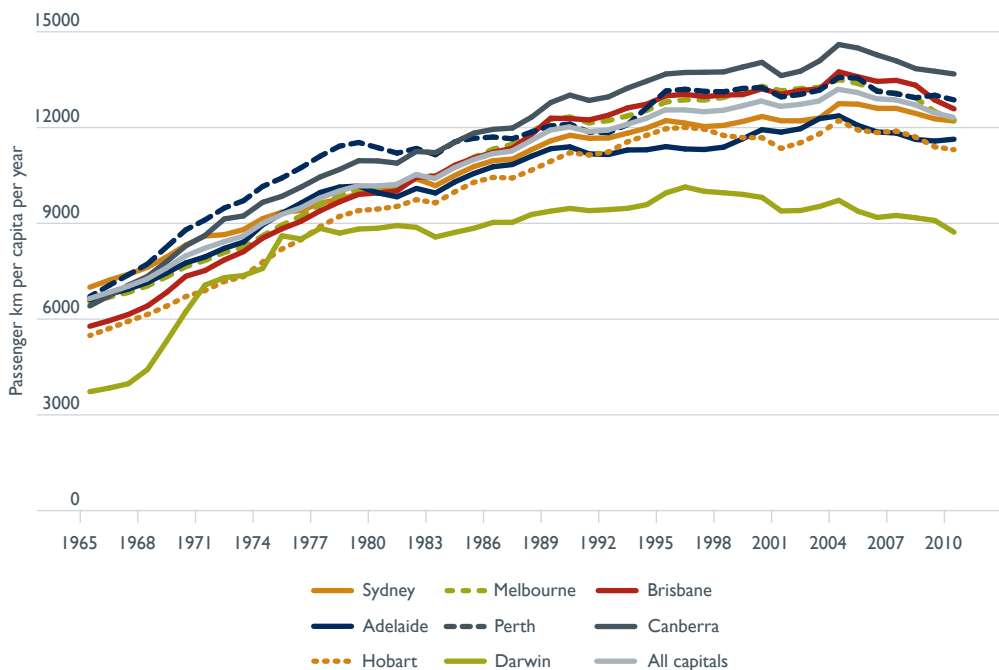
Figure 4.1 shows the schematic diagram for forecasting the total passenger transport task per capita.

**Figure 4.1** Schematic diagram showing steps for modelling and forecasting total urban passenger transport task



The patterns of total urban passenger kilometres per capita in the eight capital cities as well as metropolitan Australia over the last 45 years from 1965 to 2010 are shown in Figure 4.2.

**Figure 4.2** Patterns of total urban passenger kilometres per capita in Australian capital cities, 1965–2010



Fairly common to all individual capital cities is a period of faster growth in pkm from 1965 to 1978. This was taken into account in the regression analyses by including an extra 'time' trend that applies up to 1978 and is then turned off (by being held constant). For a short period from 1965–1967 higher levels of pkm per capita briefly occurred in all capital cities, except Perth. A dummy variable for this period was used in the analyses, and was important in allowing the 'time' and 'time squared' trends to concentrate on the period between 1967 and 2010.

Levels of unemployment and real petrol prices are important variables in determining the capital city passenger transport task. The unemployment rate and real petrol prices were kept constant in base case forecasting.

Further, the effect of the GFC on passenger levels is apparent in most states and territories (BITRE 2012a). This effect is independent of the effect associated with increased levels of unemployment, and has been modelled by a variable derived from the national consumer savings rate (a sudden increase in late 2008 and early 2009 taken to represent consumers' sudden switch to economizing, including economizing on travelling).

## 4.2.1 Total passenger transport task — Individual capital cities

### Sydney

The growth in the total passenger transport task per person in Sydney over the last 45 years, from 1965 to 2010, is shown in Figure 4.3, together with the saturating trend fitted to 2030.

Using the independent variables, a model was fitted to the data, as detailed in Table 4.1, and illustrated in Figure 4.4. Several independent variables showed significant effects. First is the gradual trend toward saturation, which was reached in 2005. Second is the GFC from late 2008. Third is unemployment. Figure 4.5 shows the components of the Sydney total passenger transport task per person forecast.

**Table 4.1** Regression results for predicting total passenger transport task per person, Sydney

<i>Regression Statistics</i>	
Multiple R	0.99763
R <sup>2</sup>	0.99527
Adjusted R <sup>2</sup>	0.99454
Standard Error	126.53472
Observations	46

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	6	131335820.9	21889303.48	1367.138506	1.00587E-43
Residual	39	624430.3938	16011.03574		
Total	45	131960251.3			

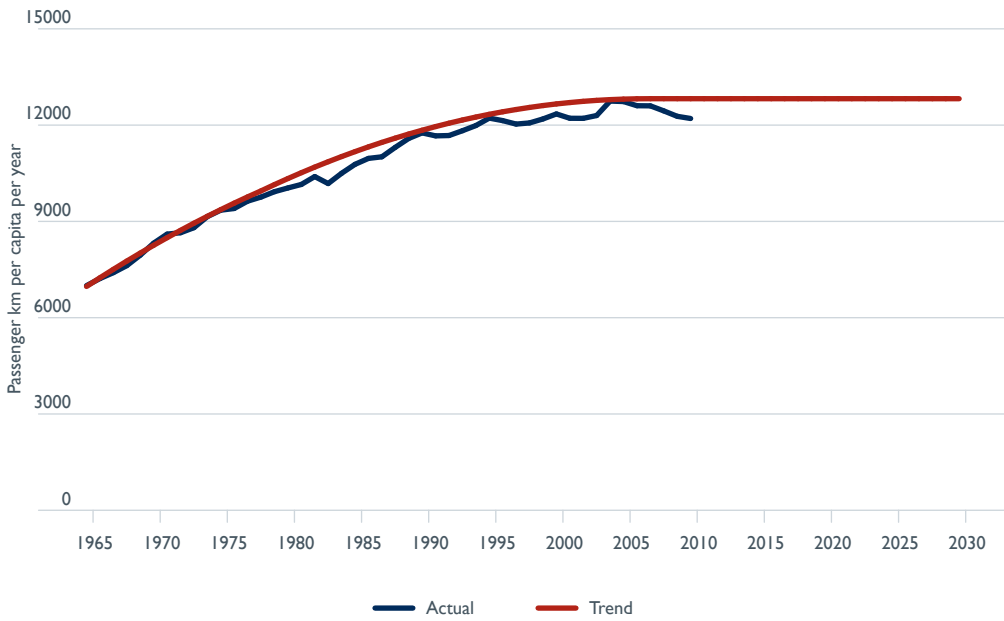
	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	6976.52358	169.37029	41.19095	9.21184E-34	6633.93983	7319.10732
Pre78time	-14.45298	19.24309	-0.75107	0.45712	-53.37581	24.46985
Time	295.15956	25.09283	11.76271	2.12629E-14	244.40452	345.91460
Timesq'd	-3.44124	0.45948	-7.48939	4.60471E-09	-4.37063	-2.51185
Petrol	-4.67216	3.29249	-1.41904	0.16383	-11.33186	1.98753
Unemployment	-42.16082	17.64286	-2.38968	0.02179	-77.84686	-6.47477
GFC	-44.21034	18.73138	-2.36023	0.02336	-82.09814	-6.32254

Using the forecast total pkm per person and multiplying it by a series of the Sydney population, a forecast aggregate total pkm level was derived up to 2030, as shown in Figure 4.6. The fit is good and the total urban passenger task in Sydney is forecast to grow by 1.26 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

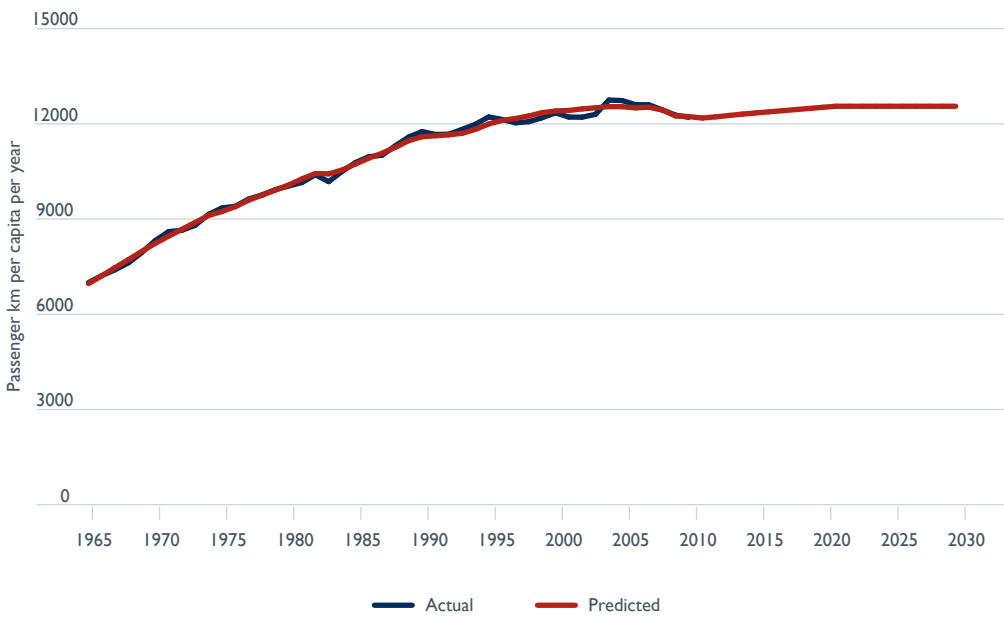
Data for these four figures are presented in Appendix J (see Table J.1 and Table J.2).



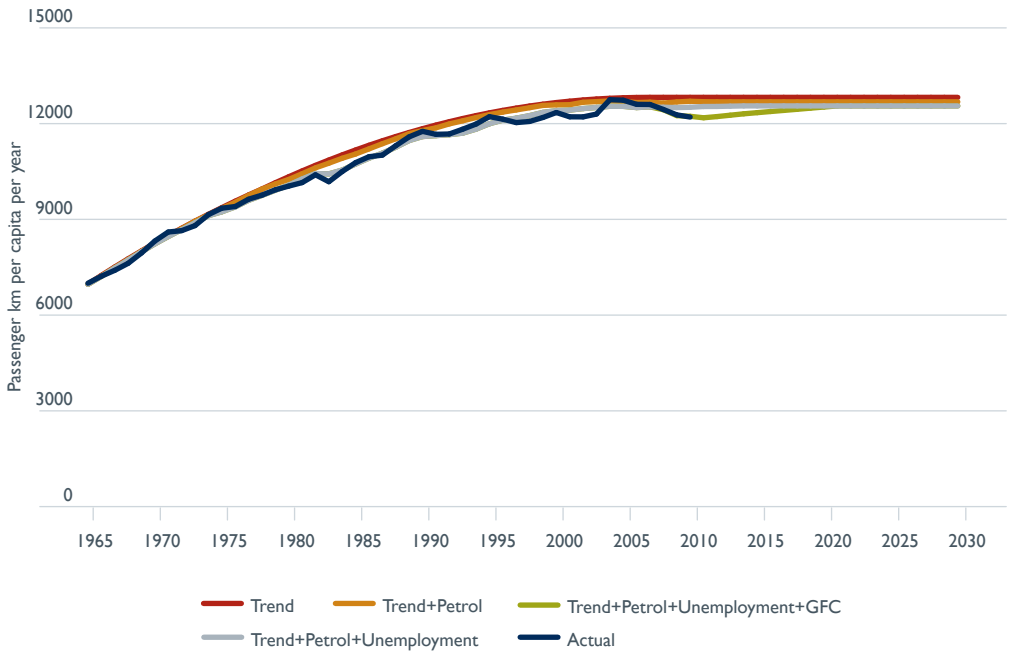
**Figure 4.3** Actual (1965–2010) and trend (1965–2030) of total passenger transport per person, Sydney



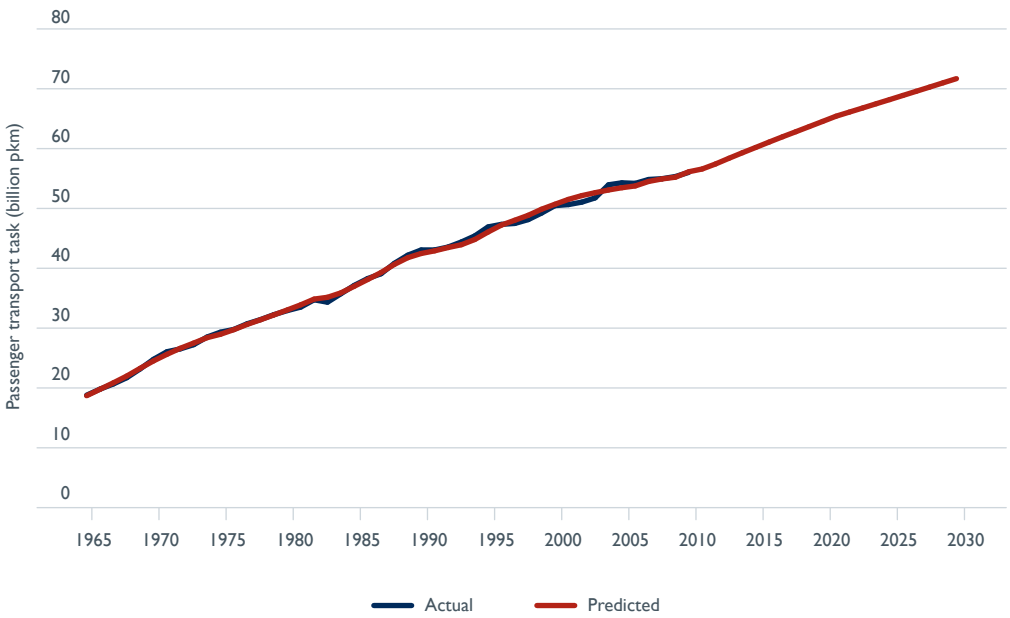
**Figure 4.4** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport per person, Sydney



**Figure 4.5** Components of predicted levels of total passenger transport task per person, Sydney, 1965–2030



**Figure 4.6** Aggregate total passenger transport task levels, Sydney, 1965–2030



## Melbourne

The growth in the total passenger transport task per person in Melbourne over the last 45 years, from 1965 to 2010, is shown in Figure 4.7, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.2 and illustrated in Figure 4.8. All independent variables showed significant effects. First is the gradual trend toward saturation. Second is the petrol price. Third is unemployment. Finally, the GFC is significant from late 2008. Figure 4.9 shows the components of the Melbourne total passenger transport task per person forecast.

**Table 4.2** Regression results for predicting total passenger transport task per person, Melbourne

<i>Regression Statistics</i>						
Multiple R			0.99923			
R <sup>2</sup>			0.99847			
Adjusted R <sup>2</sup>			0.99819			
Standard Error		94.19351951				
Observations			46			

<i>ANOVA</i>						
	df	SS	MS	F	Significance F	
Regression	7	219725510.8	31389358.69	3537.85797	1.946E-51	
Residual	38	337151.9265	8872.419118			
Total	45	220062662.8				

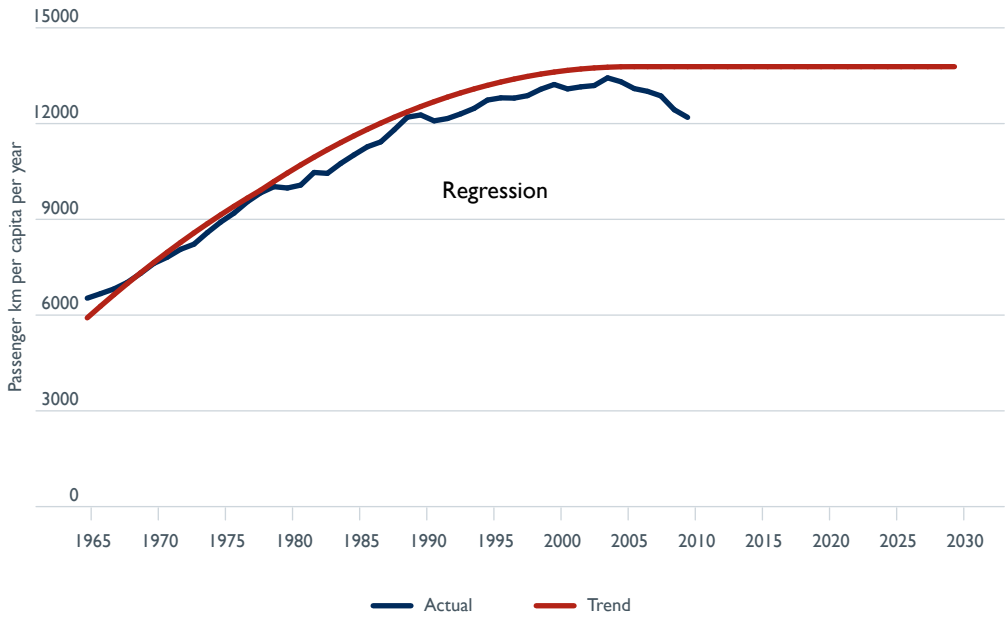
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	6272.22225	118.80346	52.79495	3.611E-37	6031.71722	6512.72728
Pre78time	-35.97793	15.11653	-2.38004	0.02243	-66.57974	-5.37612
Time	422.15057	17.94206	23.52855	2.9534E-24	385.82877	458.47237
Timesquared	-5.05025	0.31931	-15.81634	2.63759E-18	-5.69665	-4.40385
Petrol	-14.86308	2.16368	-6.86937	3.69644E-08	-19.24322	-10.48295
Unemployment	-45.38870	11.33210	-4.00532	0.00028	-68.32934	-22.44806
GFC	-136.78376	13.36356	-10.23558	1.7803E-12	-163.83687	-109.73064
Dummy (65–67)	233.64172	37.61824	6.21086	2.92552E-07	157.48758	309.79586

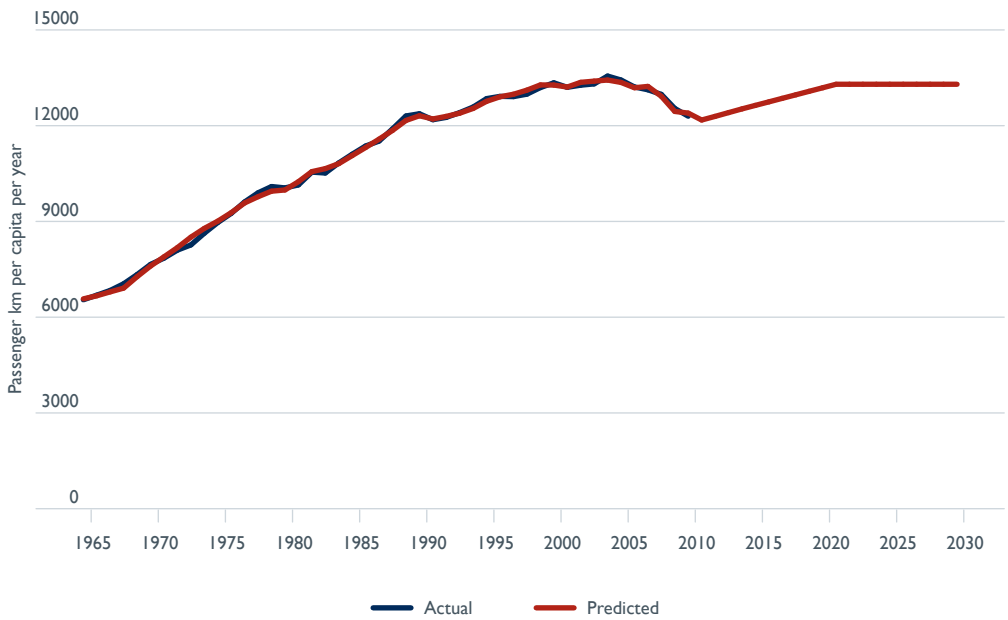
Using the forecast total pkm per person and multiplying it by a series of the Melbourne population, a series forecasting the aggregate total pkm levels in the city is derived up to 2030, shown in Figure 4.10. The fit is good and the total urban passenger task in Melbourne is forecast to grow by 1.67 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.3 and Table J.4).

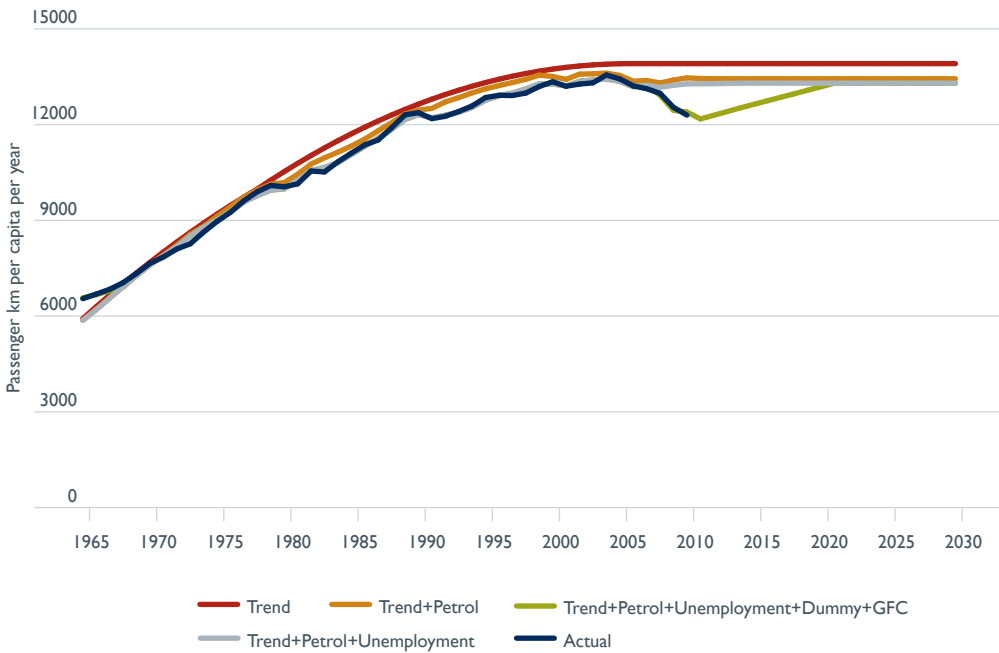
**Figure 4.7** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Melbourne



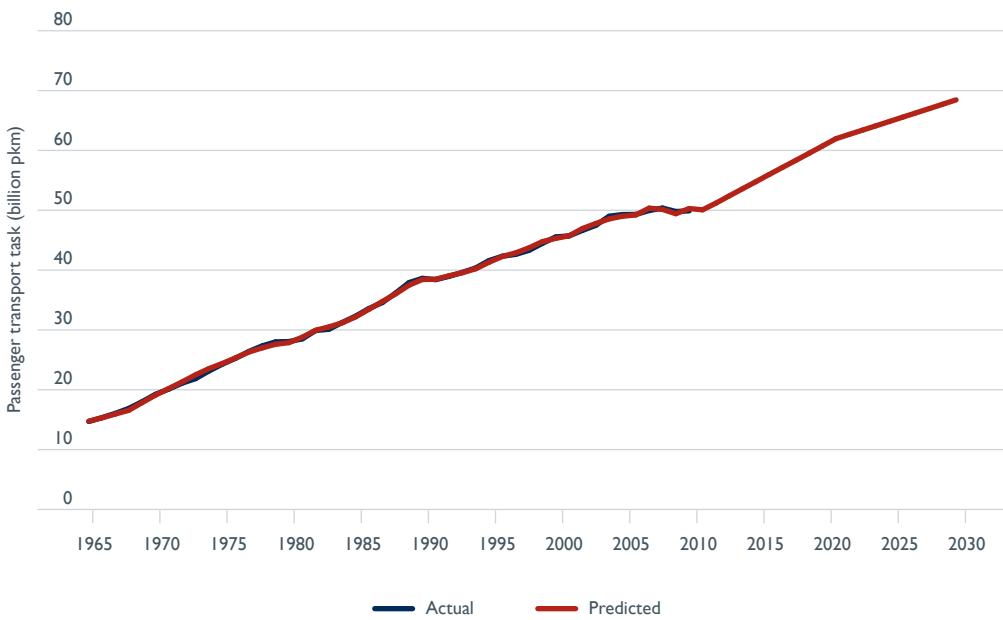
**Figure 4.8** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Melbourne



**Figure 4.9** Components of predicted levels of total passenger transport task per person, Melbourne, 1965–2030



**Figure 4.10** Aggregate total passenger transport task levels, Melbourne, 1965–2030



## Brisbane

The growth in the total passenger transport task per person in Brisbane over the last 45 years, from 1965 to 2010, is shown in Figure 4.11, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.3, and illustrated in Figure 4.12. All independent variables showed significant effects, except unemployment. First is the gradual trend toward saturation. Second is petrol price, and finally, the GFC from late 2008. Figure 4.13 shows the components of the Brisbane total passenger transport task per person forecast.

**Table 4.3** Regression results for predicting total passenger transport task per person, Brisbane

<i>Regression Statistics</i>	
Multiple R	0.99887
R <sup>2</sup>	0.99774
Adjusted R <sup>2</sup>	0.99733
Standard Error	126.69269
Observations	46

ANOVA					
	df	SS	MS	F	Significance F
Regression	7	269630317.4	38518616.78	2399.75852	3.05692E-48
Residual	38	609939.4691	16051.03866		
Total	45	270240256.9			

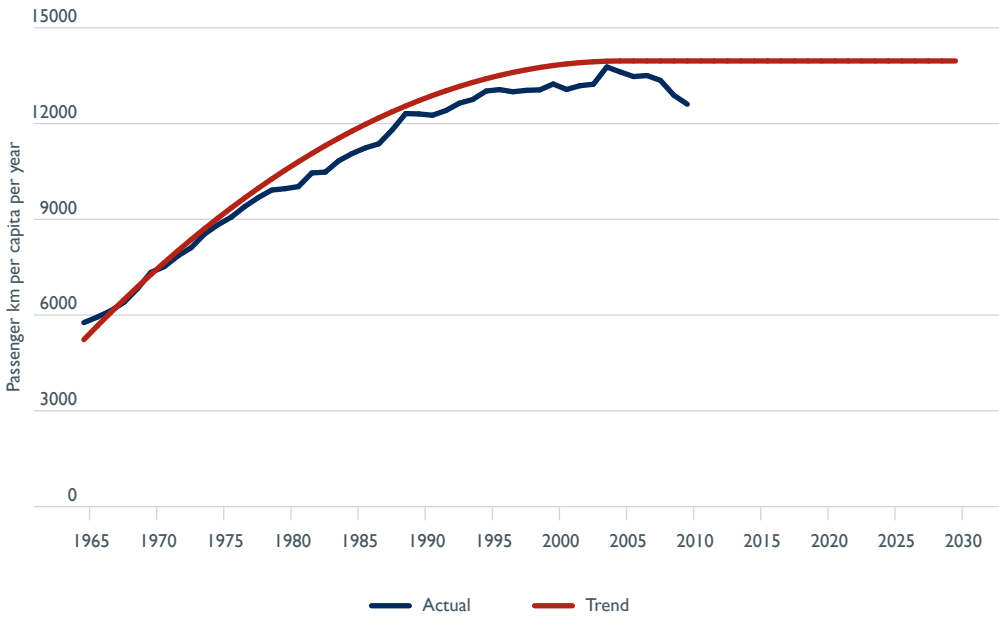
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	5420.56024	196.35529	27.60588	9.45203E-27	5023.05973	5818.06074
Pre78time	0.15743	21.84896	0.00721	0.99429	-44.07347	44.38834
Time	443.72389	31.42813	14.11869	1.06898E-16	380.10097	507.34681
Timesquared	-5.39368	0.56801	-9.49582	1.40926E-11	-6.54355	-4.24381
Petrol	-11.02722	3.36728	-3.27481	0.00226	-17.84393	-4.21051
Unemployment	-66.95965	21.02504	-3.18476	0.00289	-109.52262	-24.39668
GFC	-99.80661	21.37484	-4.66935	3.70845E-05	-143.07772	-56.53551
Dummy (65–67)	178.79083	54.81390	3.26178	0.00234	67.82588	289.75578

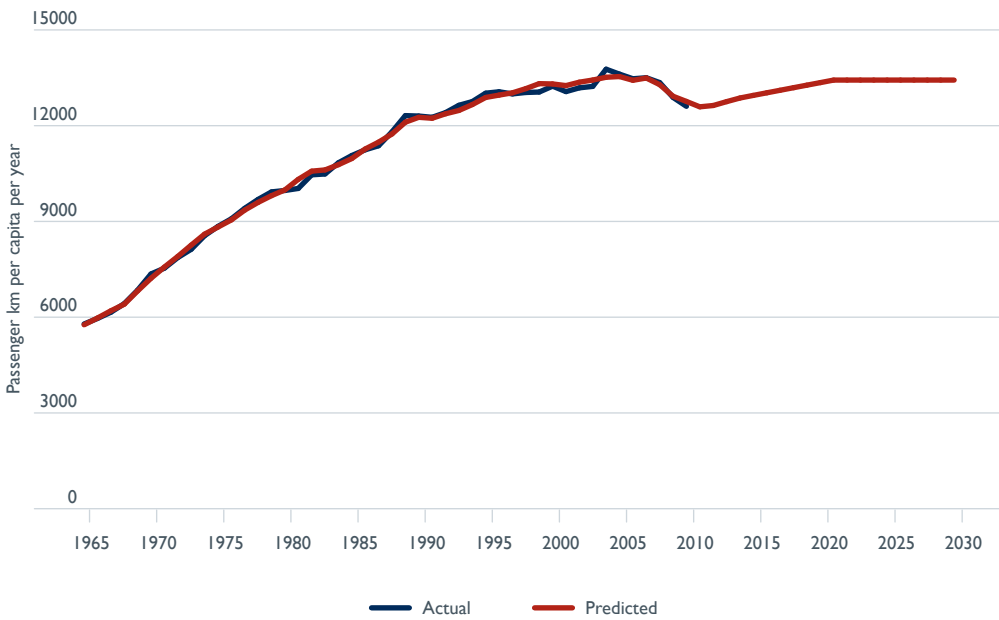
Using the forecast total pkm per person and multiplying it by a series of the Brisbane population, a forecast of the aggregate total pkm levels in the city is derived up to 2030 as shown in Figure 4.14. The fit is good and the total urban passenger task in Brisbane is forecast to grow by 2.41 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.5 and Table J.6).

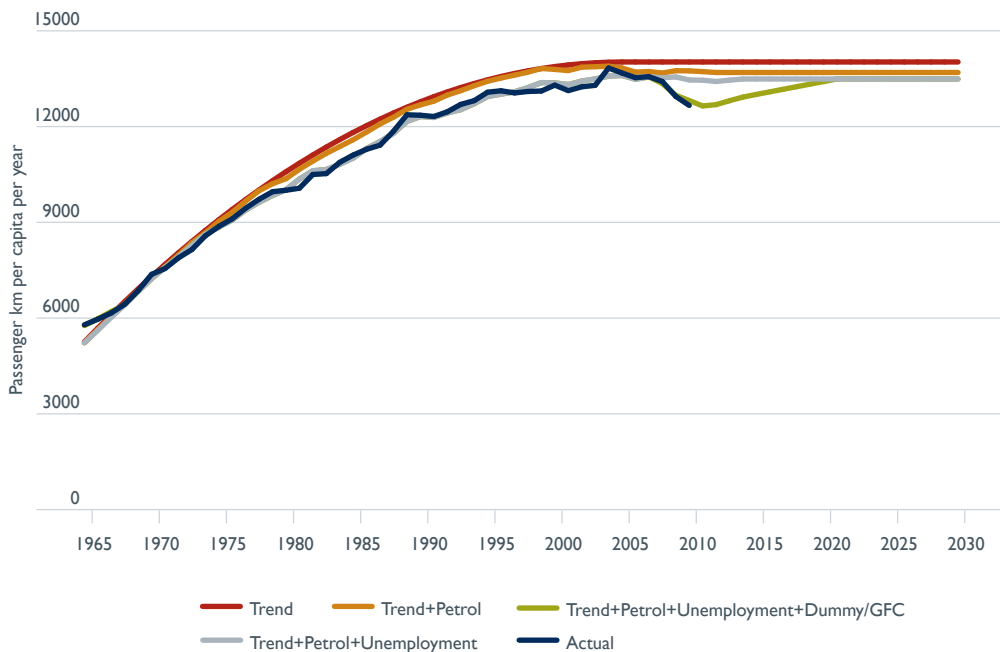
**Figure 4.11** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Brisbane



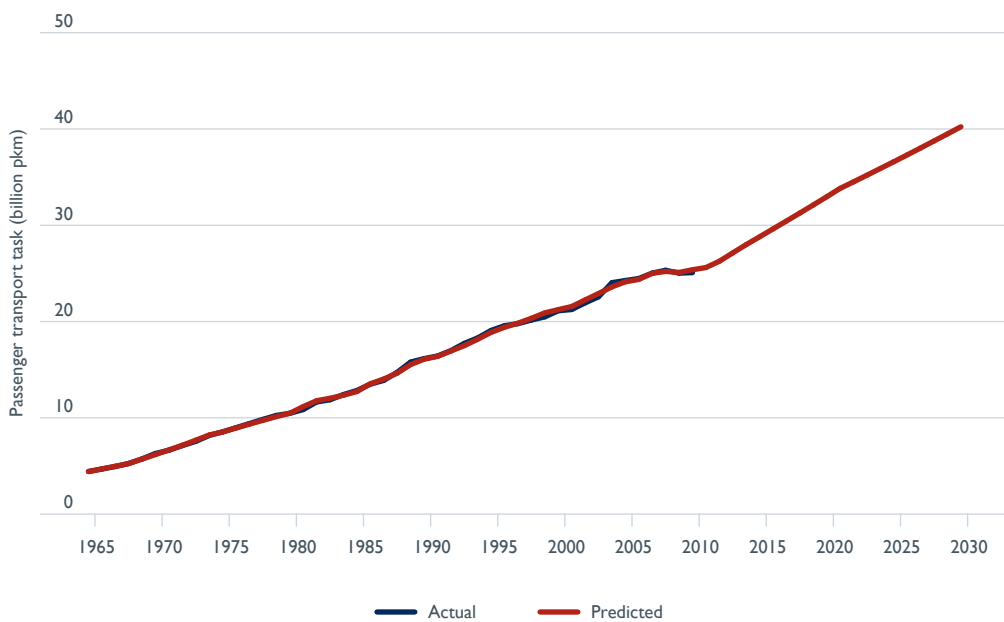
**Figure 4.12** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport per person, Brisbane



**Figure 4.13** Components of predicted levels of total passenger transport task per person, Brisbane, 1965–2030



**Figure 4.14** Aggregate total passenger transport task levels, Brisbane, 1965–2030





## Adelaide

The growth in the total passenger transport task per person in Adelaide over the last 45 years, from 1965 to 2010, is shown in Figure 4.15, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.4, and illustrated in Figure 4.16. All independent variables showed significant effects. First is the gradual trend toward saturation. Second is petrol price (from 1979 to the mid-1980s and more recently), and third, the GFC from late 2008. Unemployment caused total pkm per person to dip below trend in the 1983 and early 1990's recessions. Figure 4.17 shows the components of the Adelaide total passenger transport task per person forecast.

**Table 4.4** Regression results for predicting total passenger transport task per person, Adelaide

<i>Regression Statistics</i>						
Multiple R			0.99610			
R <sup>2</sup>			0.99221			
Adjusted R <sup>2</sup>			0.99077			
Standard Error		157.9484135				
Observations			46			

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	7	120694428.8	17242061.26	691.1282538	5.07224E-38
Residual	38	948012.6506	24947.70133		
Total	45	121642441.5			

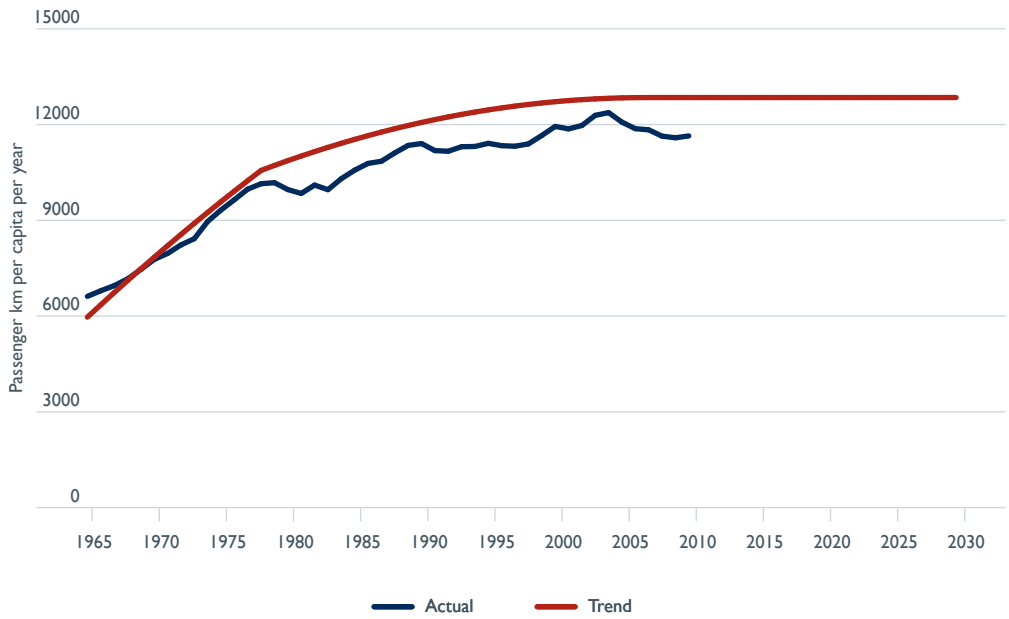
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	6462.59787	226.11303	28.58127	2.68018E-27	6004.85597	6920.33976
Pre78time	160.46884	24.79862	6.47088	1.28949E-07	110.26666	210.67103
Time	234.72738	36.32443	6.46197	1.32614E-07	161.19242	308.26234
Timesquared	-2.73611	0.66145	-4.13651	0.00019	-4.07516	-1.39707
Petrol	-17.54479	3.96807	-4.42149	7.93675E-05	-25.57774	-9.51184
Unemployment	-90.37167	25.45602	-3.55011	0.00105	-141.90468	-38.83866
GFC	-60.13097	27.82825	-2.16079	0.03708	-116.46630	-3.79563
Dummy (65–67)	246.03465	69.02480	3.56444	0.00100	106.30124	385.76805

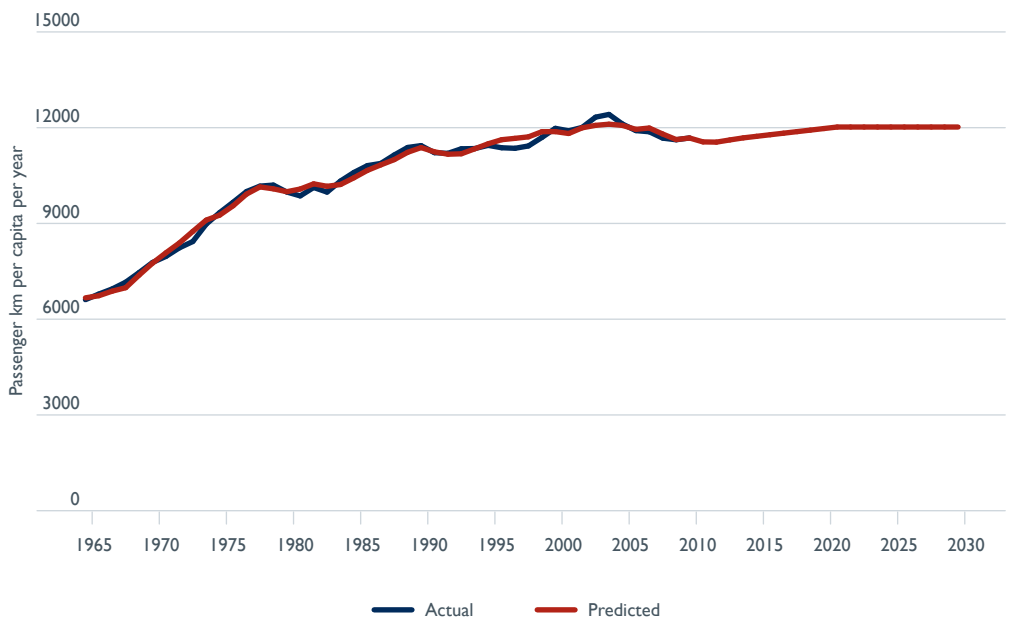
Using the forecast total pkm per person and multiplying it by a series of the Adelaide population, a forecast aggregate total passenger-kilometres in the city was derived up to 2030. This is shown in Figure 4.18. The fit is good and the total urban passenger task in Adelaide is forecast to grow by 0.69 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.7 and Table J.8).

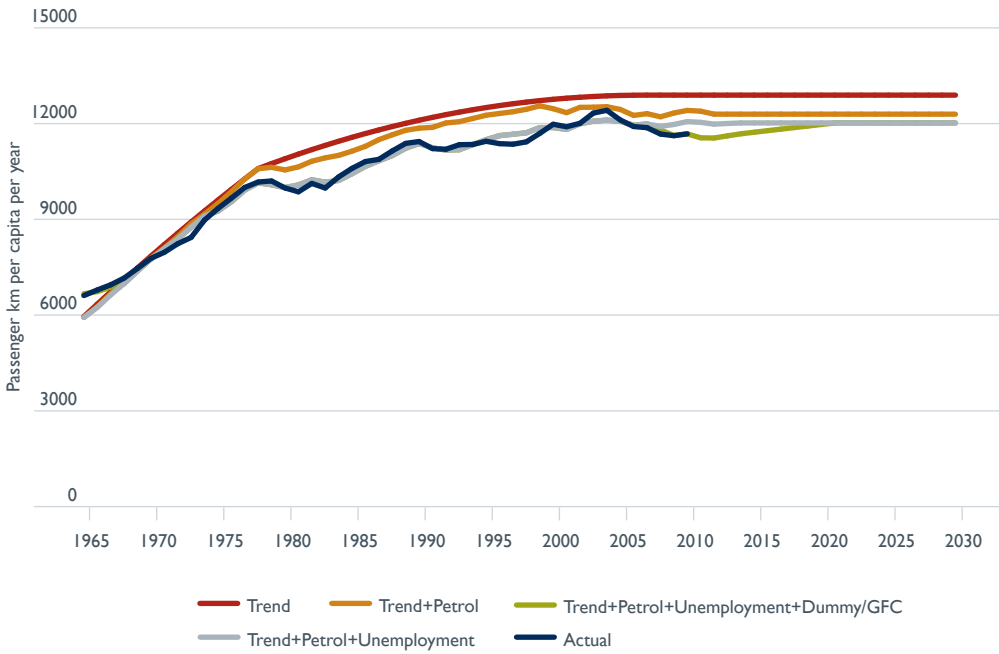
**Figure 4.15** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Adelaide



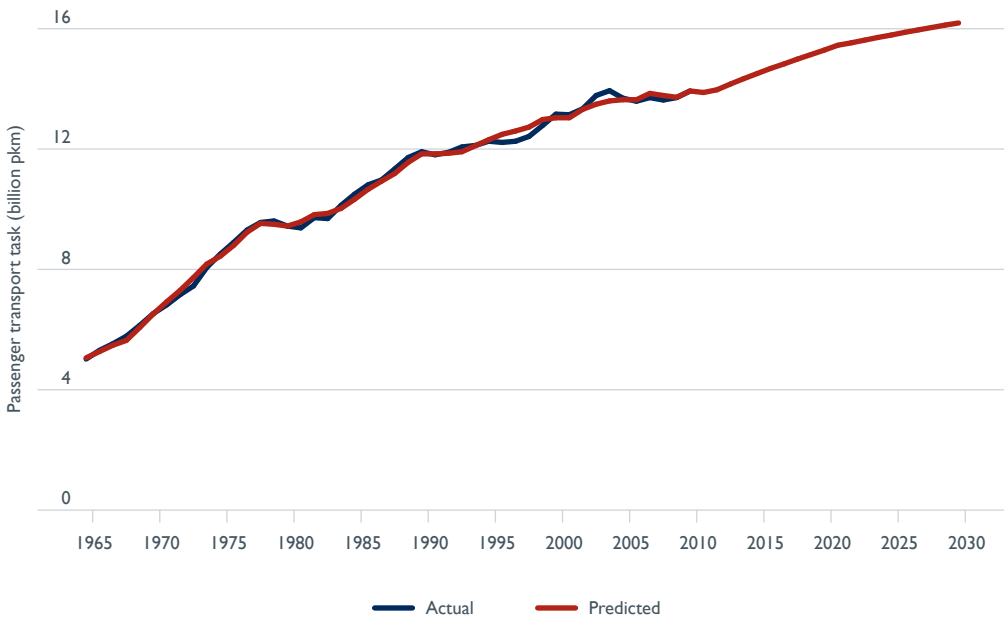
**Figure 4.16** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Adelaide



**Figure 4.17** Components of predicted levels of total passenger transport task per person, Adelaide, 1965–2030



**Figure 4.18** Aggregate total passenger transport task levels, Adelaide, 1965–2030



## Perth

The growth in the total passenger transport task per person in Perth over the last 45 years, from 1965 to 2010, is shown in Figure 4.19, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.5, and illustrated in Figure 4.20. All independent variables showed significant effects, except unemployment. First is the gradual trend toward saturation. Second is petrol price, and third, the GFC from late 2008. However, the Perth data is marked by a much higher growth trend from 1965 to 1978, after which there is a slowing in growth. Figure 4.21 shows the components of the Perth total passenger transport task per person forecast.

**Table 4.5** Regression results for predicting total passenger transport task per person, Perth

<i>Regression Statistics</i>	
Multiple R	0.99386
R <sup>2</sup>	0.98776
Adjusted R <sup>2</sup>	0.98587
Standard Error	220.8398936
Observations	46

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	6	153448103.4	25574683.9	524.3909839	1.11479E-35
Residual	39	1902040.086	48770.25863		
Total	45	155350143.5			

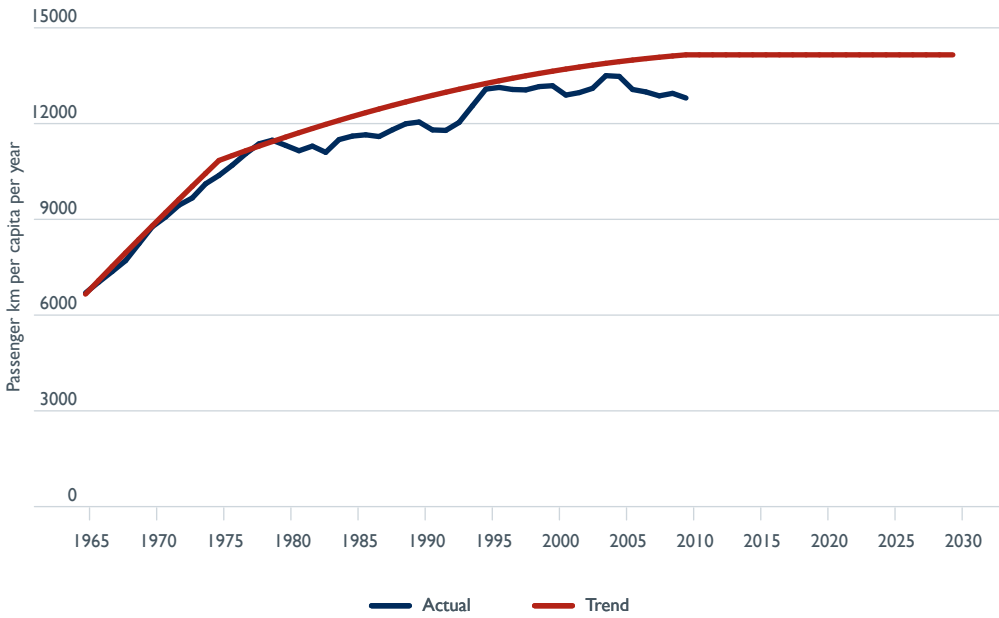
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	7350.16480	298.59527	24.61581	2.27325E-25	6746.19887	7954.13074
Pre78time	248.16335	35.08380	7.07345	1.69946E-08	177.19967	319.12704
Time	194.99323	42.56932	4.58060	4.65752E-05	108.88864	281.09781
Timesquared	-1.74804	0.79827	-2.18978	0.03459	-3.36270	-0.13338
Petrol	-23.63083	5.65967	-4.17530	0.00016	-35.07859	-12.18307
Unemployment	-33.19209	34.34669	-0.96638	0.33981	-102.66481	36.28064
GFC	-86.64545	38.39175	-2.25688	0.02969	-164.30011	-8.99080

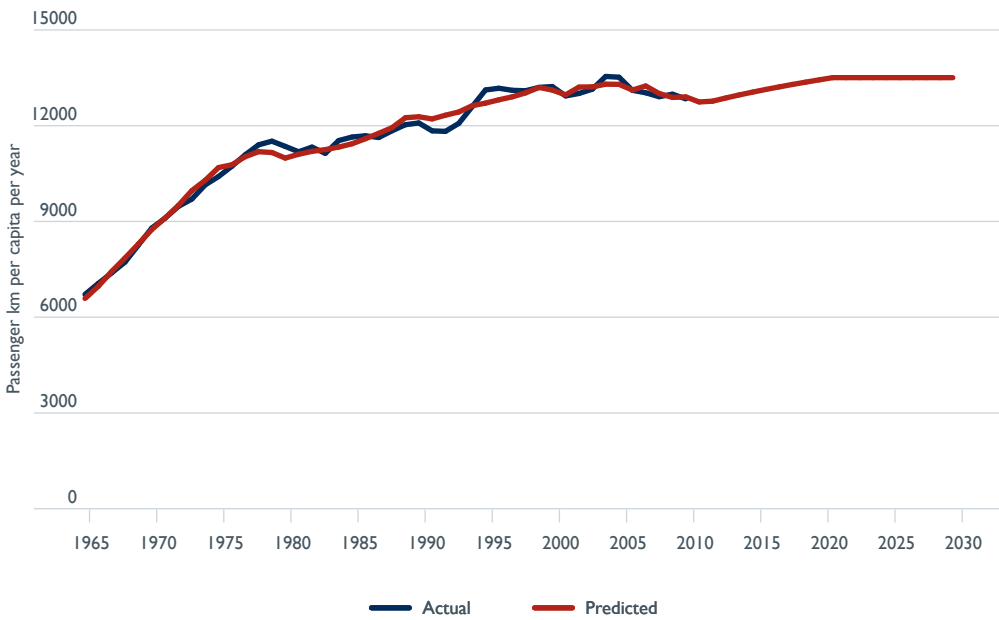
Using the forecast total pkm per person and multiplying it by a series of the Perth population, a forecast aggregate total pkm levels in the city was derived up to 2030. This is shown in Figure 4.22. The fit is good and the total urban passenger task in Perth is forecast to grow by 1.93 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.9 and Table J.10).

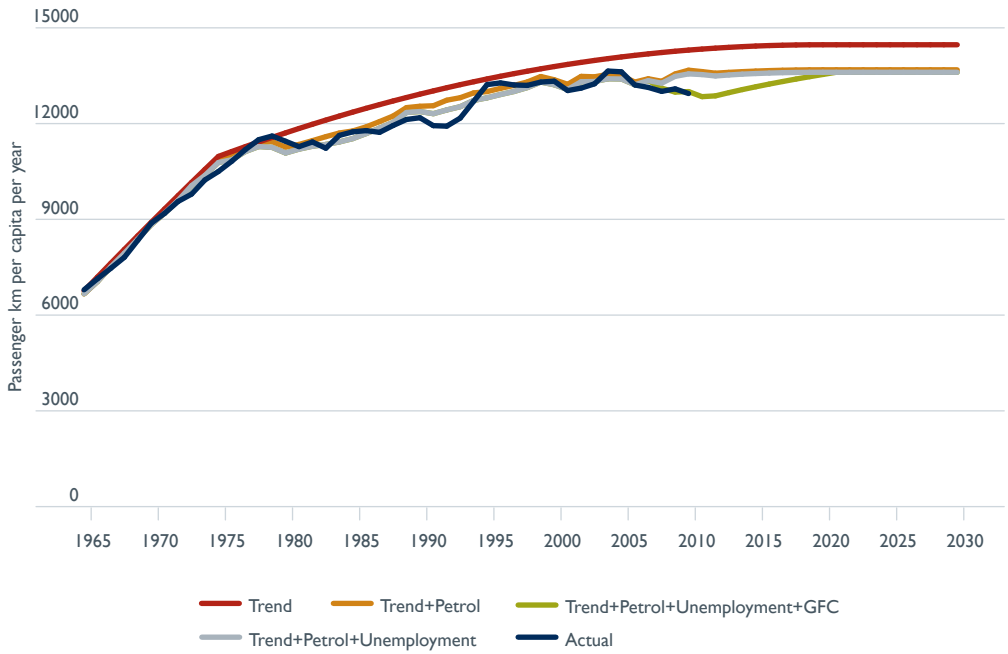
**Figure 4.19** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Perth



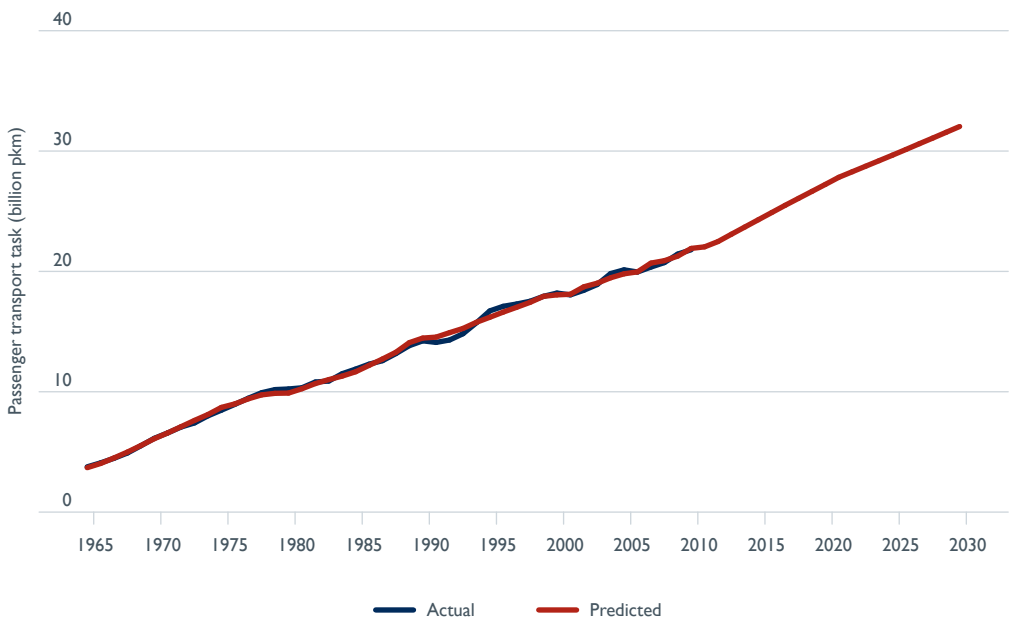
**Figure 4.20** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Perth



**Figure 4.21** Components of predicted levels of total passenger transport task per person, Perth, 1965–2030



**Figure 4.22** Aggregate total passenger transport task levels, Perth, 1965–2030



## Hobart

The growth in the total passenger transport task per person in Hobart over the last 45 years, from 1965 to 2010, is shown in Figure 4.23, together with the saturating trend fitted to 2030.

Using the independent variables<sup>2</sup> a model was fitted to the data, as detailed in Table 4.6, and illustrated in Figure 4.24. All independent variables showed significant effects. First is the gradual trend toward saturation. Second is petrol price (from 1979 to the mid-1980s and more recently), and third, the GFC from late 2008. Figure 4.25 shows the components of the Hobart total passenger transport task per person forecast.

**Table 4.6 Regression results for predicting total passenger transport per person, Hobart**

<i>Regression Statistics</i>	
Multiple R	0.99674
R <sup>2</sup>	0.99350
Adjusted R <sup>2</sup>	0.99250
Standard Error	179.5320183
Observations	46

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	6	192059351.2	32009891.87	993.116919	4.92979E-41
Residual	39	1257038.078	32231.74558		
Total	45	193316389.3			

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	4955.38038	216.83740	22.85298	3.43207E-24	4516.78533	5393.97542
Pre78time	45.36289	30.08588	1.50778	0.13967	-15.49155	106.21733
Time	359.34126	28.14968	12.76538	1.66349E-15	302.40315	416.27936
Timesquared	-4.49003	0.50818	-8.83545	7.54879E-11	-5.51793	-3.46213
Petrol	-12.49642	4.14193	-3.01705	0.00448	-20.87427	-4.11857
GFC	-69.28929	24.64891	-2.81105	0.00769	-119.14640	-19.43217
Dummy (65–67)	192.23429	54.59157	3.52132	0.00111	81.81242	302.65616

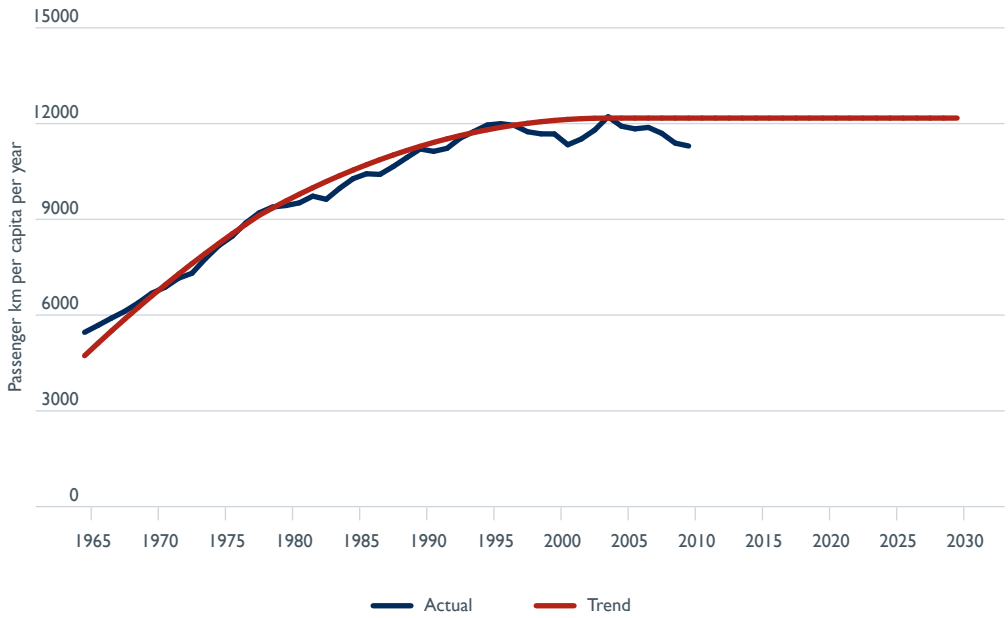
Note: The unemployment variable was not used.

Using the forecast total pkm per person and multiplying it by a series of the Hobart population, a forecast aggregate total pkm levels in the city was derived up to 2030. This is shown in Figure 4.26. The fit is good and the total urban passenger task in Hobart is forecast to grow by 0.97 per cent per annum between 2011 and 2030, assuming the GFC effect wears off.

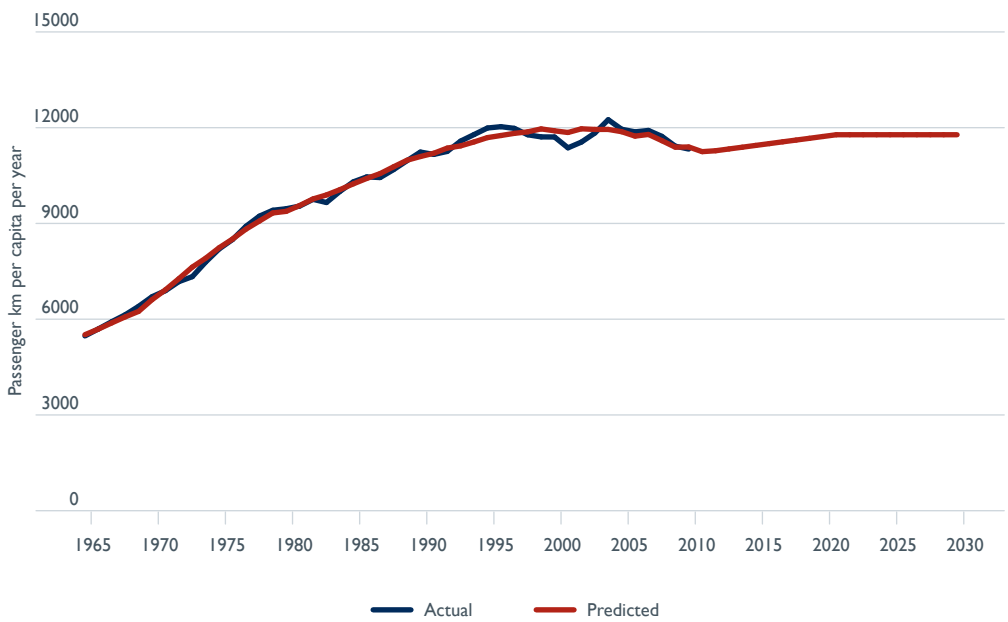
Data for these four figures are presented in Appendix J (see Table J.11 and Table J.12).

<sup>2</sup> The unemployment variable was not used in the regression.

**Figure 4.23** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Hobart

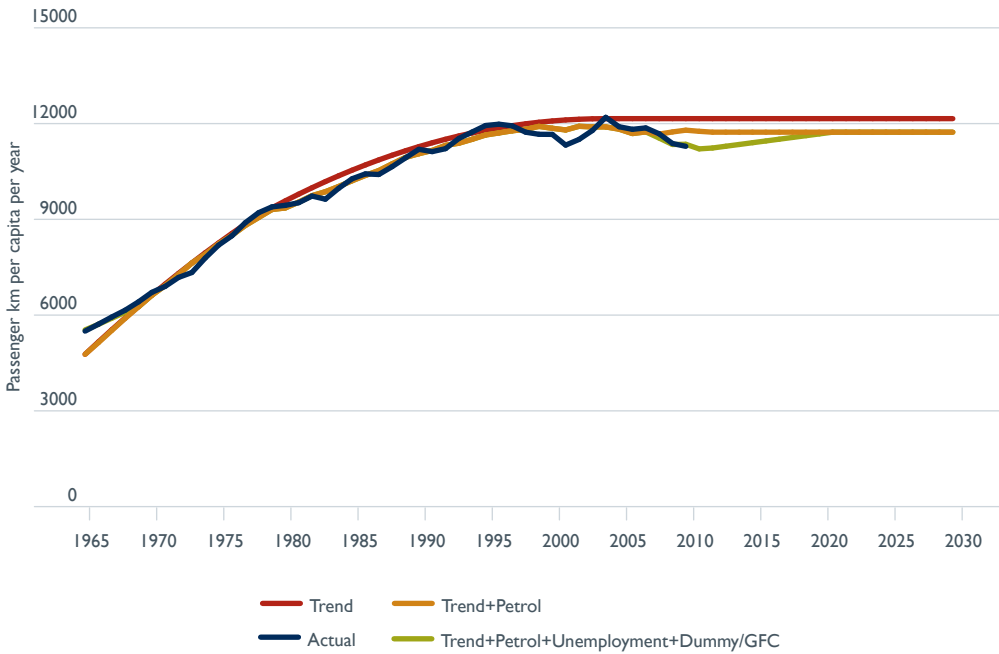


**Figure 4.24** Actual 1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Hobart

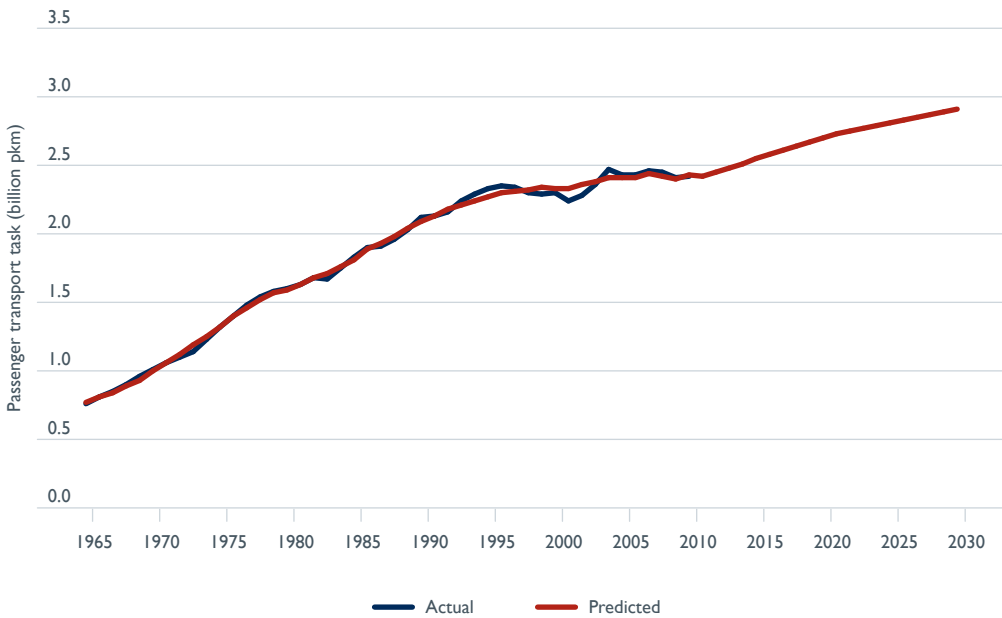




**Figure 4.25** Components of predicted levels of total passenger transport task per person, Hobart, 1965–2030



**Figure 4.26** Aggregate total passenger transport task levels, Hobart, 1965–2030



## Darwin

The growth in the total passenger transport task per person in Darwin over the last 45 years, from 1965 to 2010, is shown in Figure 4.27, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.7, and illustrated in Figure 4.28. All independent variables showed significant effects. First is the gradual trend toward saturation. Second is petrol price (from 1979 to the mid-1980s and more recently), thirdly unemployment, and finally, the GFC from late 2008. Overall, Darwin shows the most extreme break between pre- and post-1978 trends. There is a much higher trend between 1965 and 1978. After 1978, there is a marked slowing in trend growth. Figure 4.29 shows the components of the Darwin total passenger transport task per person forecast.

**Table 4.7** Regression results for predicting total passenger transport task per person, Darwin

<i>Regression Statistics</i>	
Multiple R	0.98893
R <sup>2</sup>	0.97799
Adjusted R <sup>2</sup>	0.97460
Standard Error	270.6642161
Observations	46

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	6	126957076.7	21159512.78	288.8311161	1.0129E-30
Residual	39	2857105.597	73259.11786		
Total	45	129814182.3			

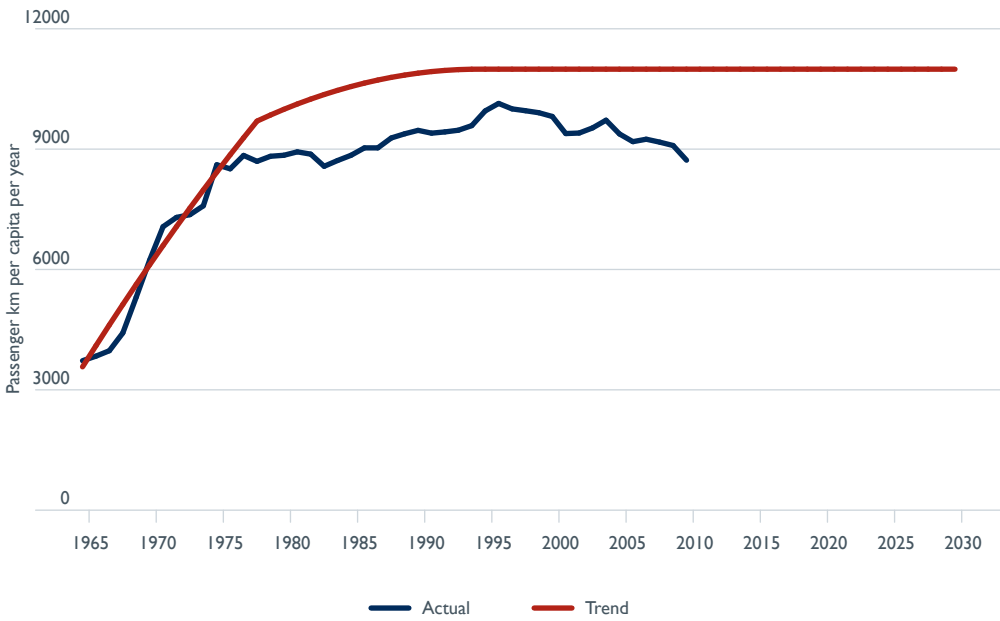
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	4849.81309	297.87988	16.28110	5.48958E-19	4247.29416	5452.33201
Pre78time	254.54282	57.06984	4.46020	6.76014E-05	139.10818	369.97746
Time	287.01038	81.97620	3.50114	0.00118	121.19786	452.82289
Timesquared	-4.68650	1.56741	-2.98997	0.00481	-7.85688	-1.51612
Petrol	-35.27604	6.09589	-5.78686	1.02403E-06	-47.60613	-22.94594
Unemployment	-119.85843	45.97333	-2.60713	0.01287	-212.84827	-26.86858
GFC	-85.63250	38.59886	-2.21852	0.03241	-163.70606	-7.55893
Dummy (65–67)	192.23429	54.59157	3.52132	0.00111	81.81242	302.65616

Using the forecast total pkm per person and multiplying it by a series of the Darwin population, a forecast of aggregate total pkm levels in the city was derived up to 2030. This is shown in Figure 4.30. The fit is good. The effect of Cyclone Tracy in late 1974 mainly shows in the subsequent temporary reduction in the population of Darwin, and shows up most starkly in the aggregate passenger level for 1975 (Figure 4.30). The forecast for the next two decades (2011–2030) is for the resumption of growth in total passenger travel, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.13 and Table J.14).

**Figure 4.27** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Darwin



**Figure 4.28** Actual (1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Darwin

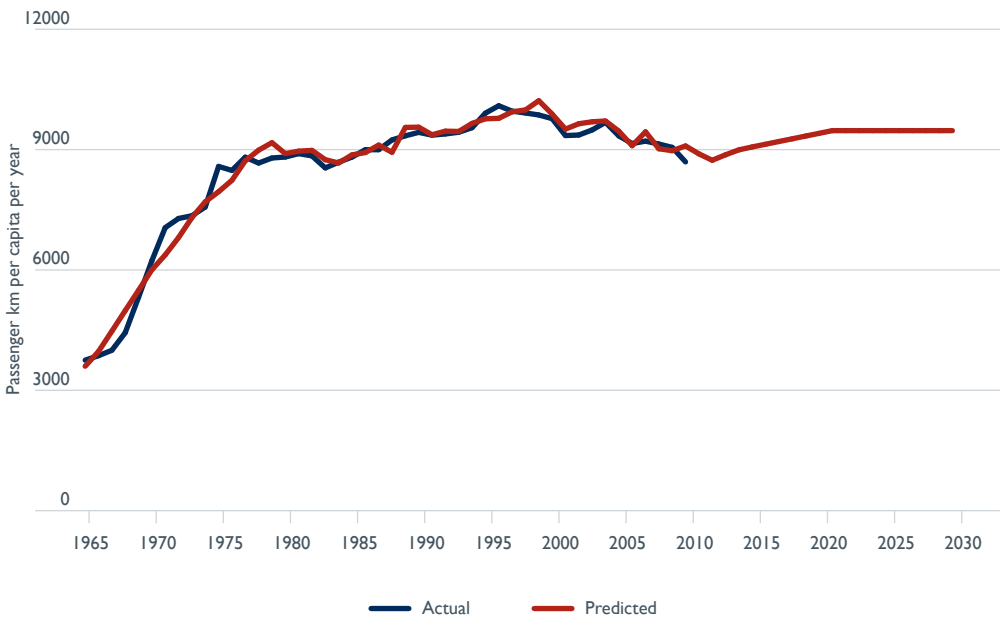


Figure 4.29 Components of predicted levels of total passenger transport task per person, Darwin, 1965–2030

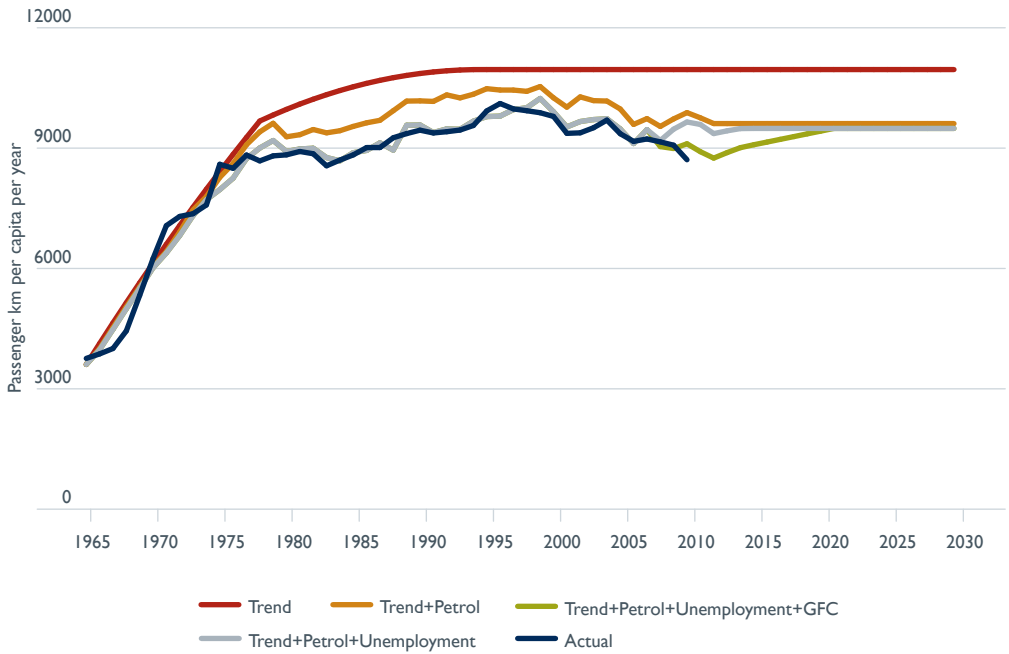
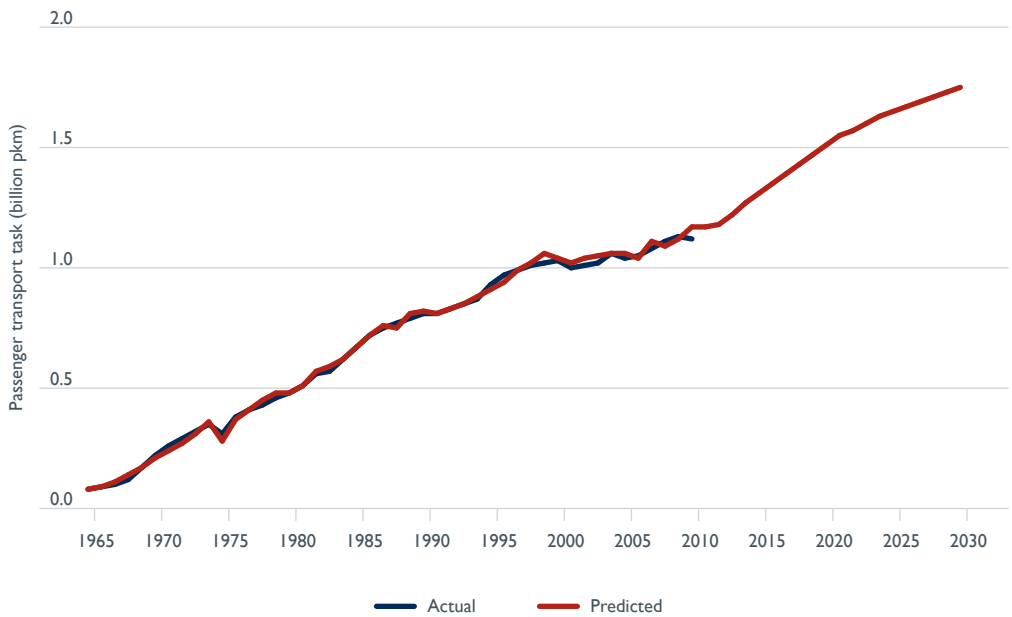


Figure 4.30 Aggregate total passenger transport task levels, Darwin, 1965–2030



## Canberra

The growth in the total passenger transport task per person in Canberra over the last 45 years, from 1965 to 2010, is shown in Figure 4.31, together with the saturating trend fitted to 2030.

Using all the independent variables, a model was fitted to the data, as detailed in Table 4.8, and illustrated in Figure 4.32. All independent variables showed significant effects, except unemployment, which does not reach significance. The first significant variable is the gradual trend toward saturation. Second is petrol price, and finally, the GFC from late 2008. However, the Canberra data is marked by a much higher growth trend from 1965–1978, after which there is a slowing in trend growth. Figure 4.33 shows the components of the Canberra total passenger transport task per person forecast.

**Table 4.8** Regression results for predicting total passenger transport per person, Canberra

<i>Regression Statistics</i>	
Multiple R	0.99836
R <sup>2</sup>	0.99672
Adjusted R <sup>2</sup>	0.99622
Standard Error	145.12857
Observations	46

<b>ANOVA</b>					
	df	SS	MS	F	Significance F
Regression	6	249721093.9	41620182.31	1976.051093	7.87742E-47
Residual	39	821429.727	21062.30069		
Total	45	250542523.6			

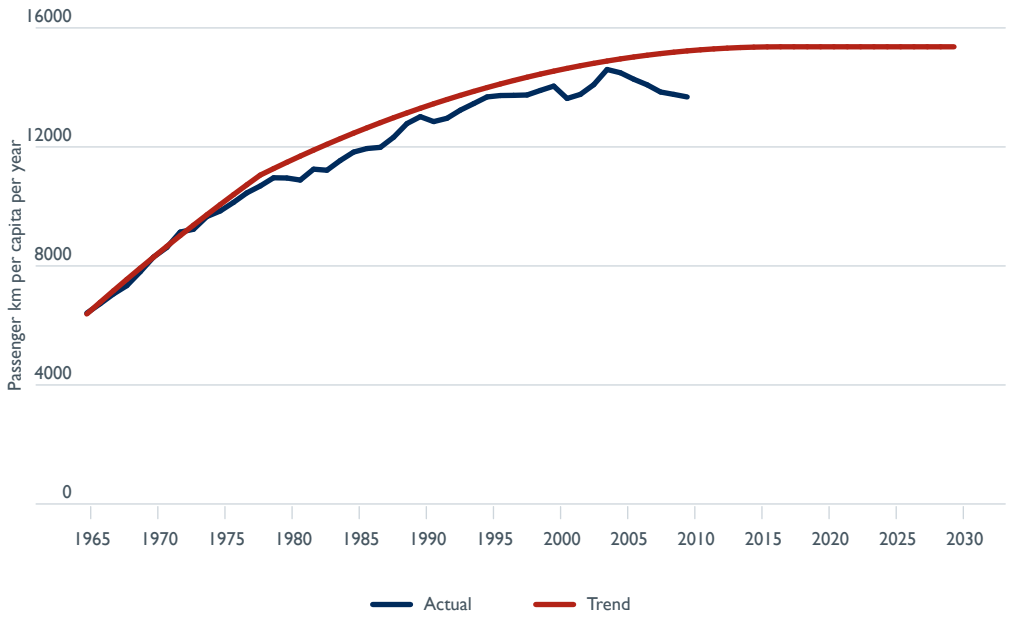
  

	Coefficients	Std. Error	t-Statistics	P-value	Lower 95%	Upper 95%
Intercept	7262.07310	187.94147	38.64008	1.05161E-32	6881.92560	7642.22061
Pre78time	100.82904	21.13557	4.77058	2.57602E-05	58.07831	143.57978
Time	300.78638	23.06336	13.04174	8.42239E-16	254.13634	347.43642
Timesquared	-2.83920	0.42247	-6.72055	5.19597E-08	-3.69372	-1.98468
Petrol	-25.92110	3.91170	-6.62656	7.00601E-08	-33.83326	-18.00894
Unemployment	-30.27763	22.40317	-1.35149	0.18433	-75.59232	15.03706
GFC	-115.90651	23.89712	-4.85023	2.00683E-05	-164.24300	-67.57002

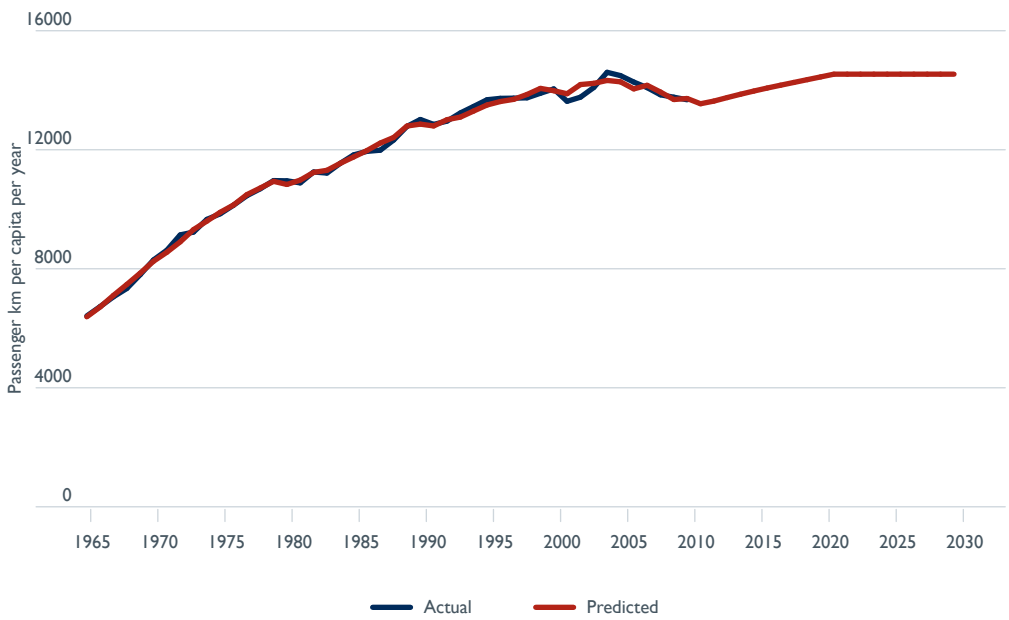
Using the forecast total pkm per person and multiplying by a series of the Canberra population, a series forecasting aggregate total pkm in the city is derived up to 2030. This is shown in Figure 4.34. The fit is good and the total urban passenger task in Canberra is forecast to grow by 1.35 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Data for these four figures are presented in Appendix J (see Table J.15 and Table J.16).

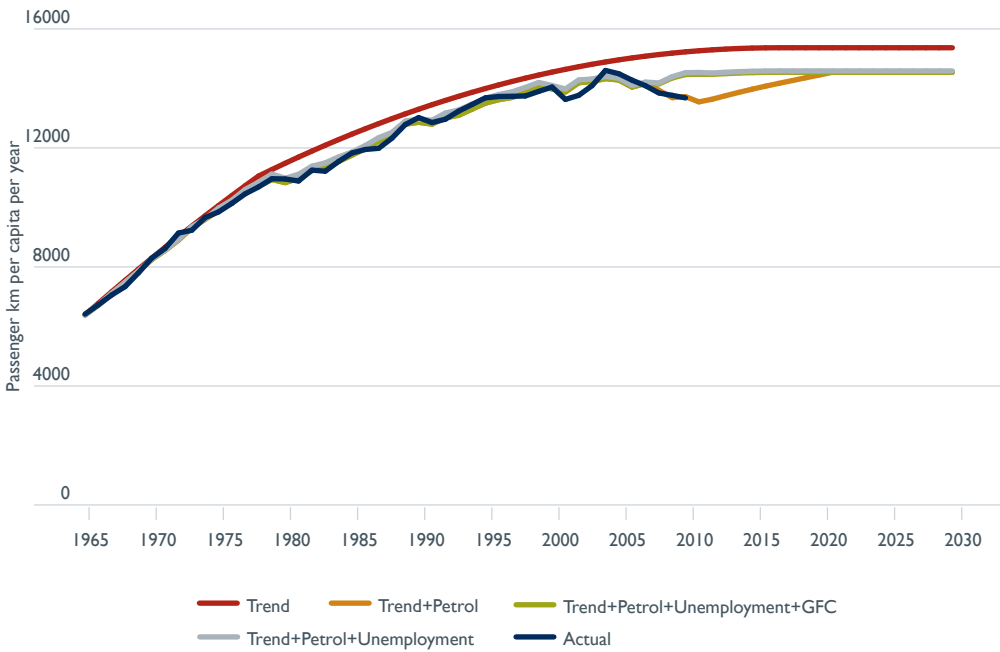
**Figure 4.31** Actual (1965–2010) and trend (1965–2030) of total passenger transport task per person, Canberra



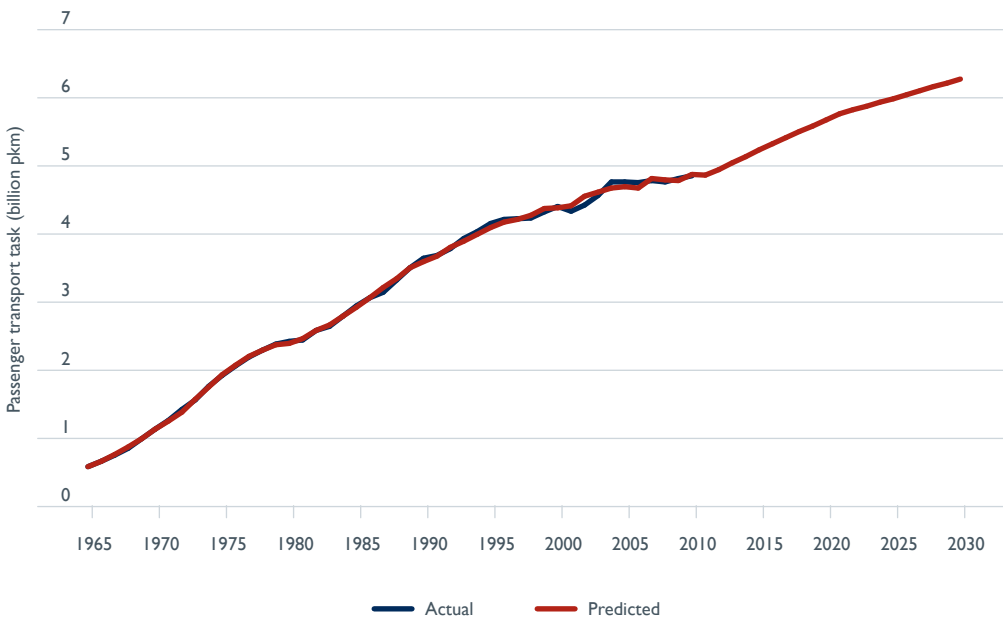
**Figure 4.32** Actual 1965–2010) and predicted (1965–2030) levels of total passenger transport task per person, Canberra



**Figure 4.33** Components of predicted levels of total passenger transport ask per person, Canberra, 1965–2030



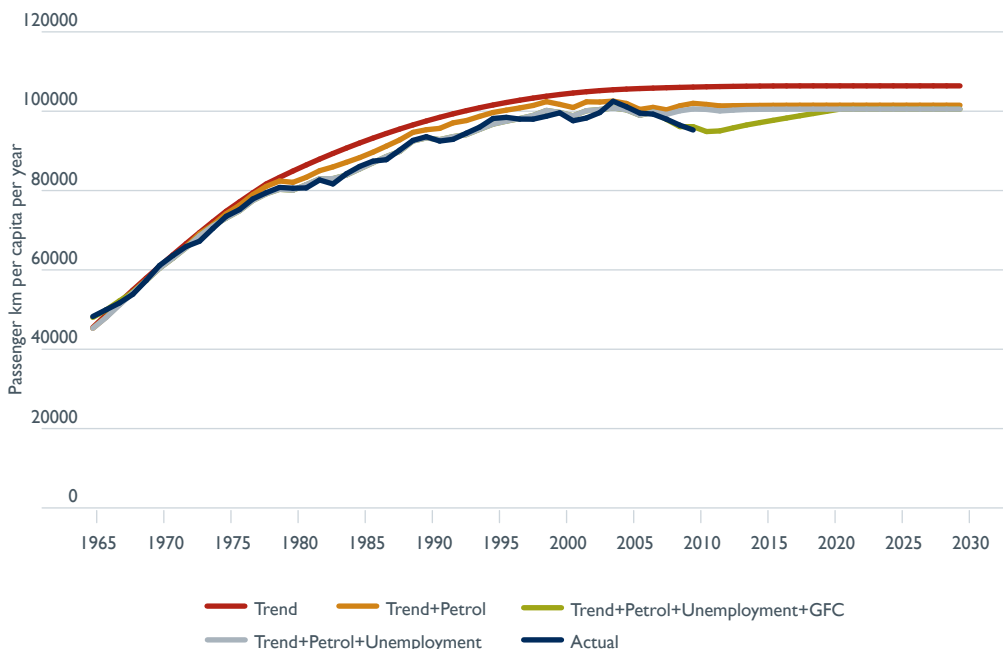
**Figure 4.34** Aggregate total passenger transport task levels, Canberra, 1965–2030



### 4.2.2 Total metropolitan passenger transport task

This section assembles various components of predicted levels of passenger task per person and data on the urban passenger transport task for all capital cities and presents data as ‘total metropolitan’ (see Figures 4.35 and 4.36).

**Figure 4.35** Components of predicted levels of passenger task per person, total (sum of all) capital cities, 1965–2030



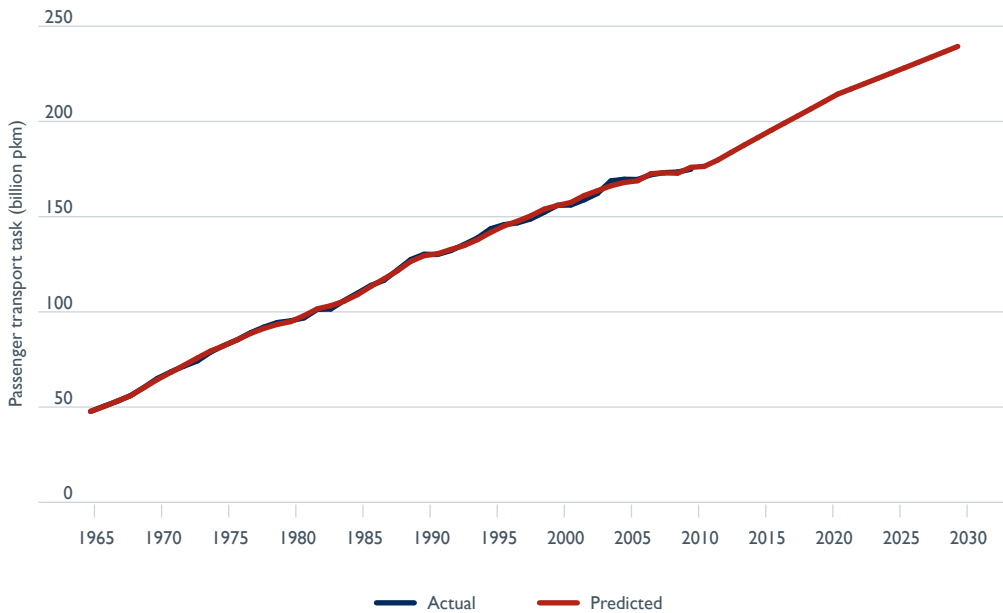
The various components of the predicted and forecast passenger-kilometres task per person for total capital cities showed the effects of variables on the growth trend (Figure 4.35). For example, unemployment lowered the level of passenger task per person, especially from late 1970s to 2010.

Using the sum of the forecast total passenger-kilometres for all the capital cities, a series forecasting ‘metropolitan’ total passenger-kilometre levels is derived up to 2030. This is shown in Figure 4.36. The fit is good and the total urban passenger task in metropolitan Australia is forecast to grow by 1.60 per cent per annum between 2011 and 2030, assuming the GFC effect diminishes.

Note that data for these four figures are presented in Appendix J (see Table J.17 and Table J.18).



**Figure 4.36** Aggregate total urban passenger task levels, total (sum of all) capital cities, 1965–2030



### 4.3 Results on total passenger transport task by capital cities: estimates (1977–2010) and forecasts (2011–2030)

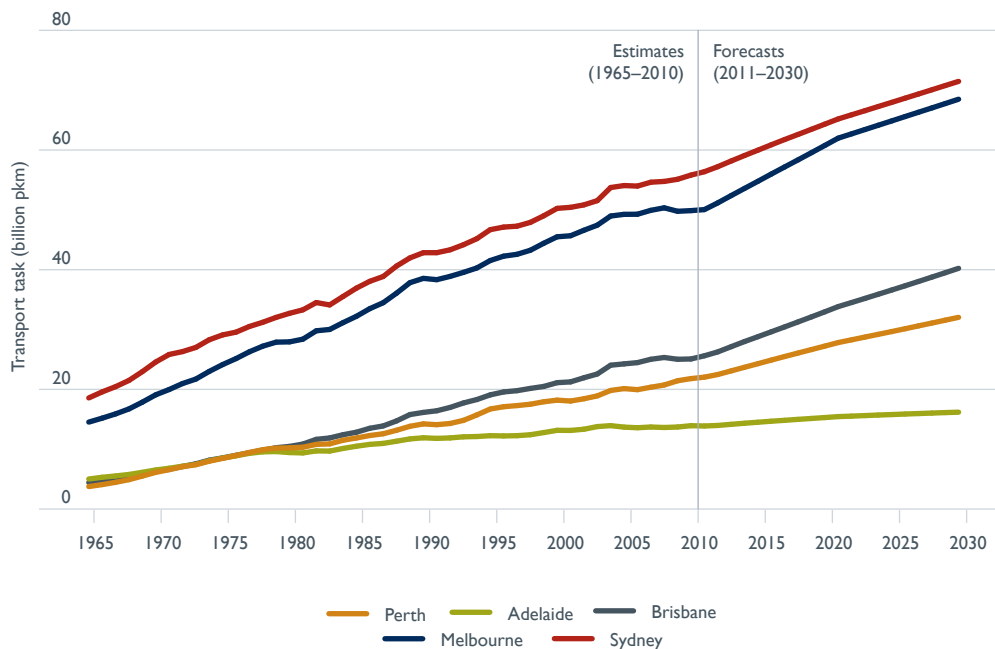
This section shows the results of the models' estimates of the total passenger transport task (1977–2010) as well as forecasts (2011–2030) the total urban passenger transport task for each capital city, as well as for the metropolitan urban passenger transport task.

#### 4.3.1 Individual capital cities

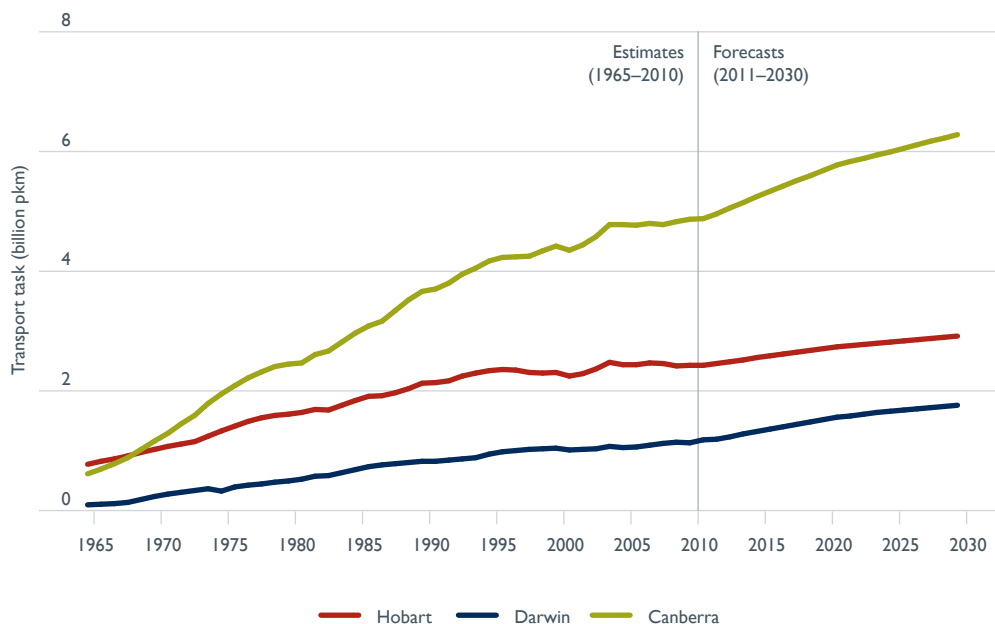
Figure 4.37 shows the forecasts (2011–2030) of the total urban passenger transport task for each capital city, as well as the estimates (1977–2010) for showing trends. Data for this figure is presented in Table 4.9.

**Figure 4.37** Estimates and forecasts of total urban passenger transport task, capital cities, 1977–2030

**(a) Major capital cities**



**(b) Minor capital cities**



Between 2011 and 2030, the total urban passenger transport task is forecast to grow from 56.4 billion pkm to 71.5 billion pkm in Sydney, from 50.0 billion pkm to 68.5 billion pkm in Melbourne, from 25.6 billion pkm to 40.2 billion pkm in Brisbane, from 13.9 billion pkm to 16.2 billion pkm in Adelaide and from 22.0 billion pkm to 32.0 billion pkm in Perth (Figure 4.37a and Table 4.9). The total urban passenger transport task is forecast to grow from 2.4 billion pkm to 2.9 billion pkm in Hobart, from 1.2 billion pkm to 1.8 billion pkm in Darwin and from 4.9 billion pkm to 6.3 billion pkm in Canberra during the same period (Figure 4.37b and Table 4.9).

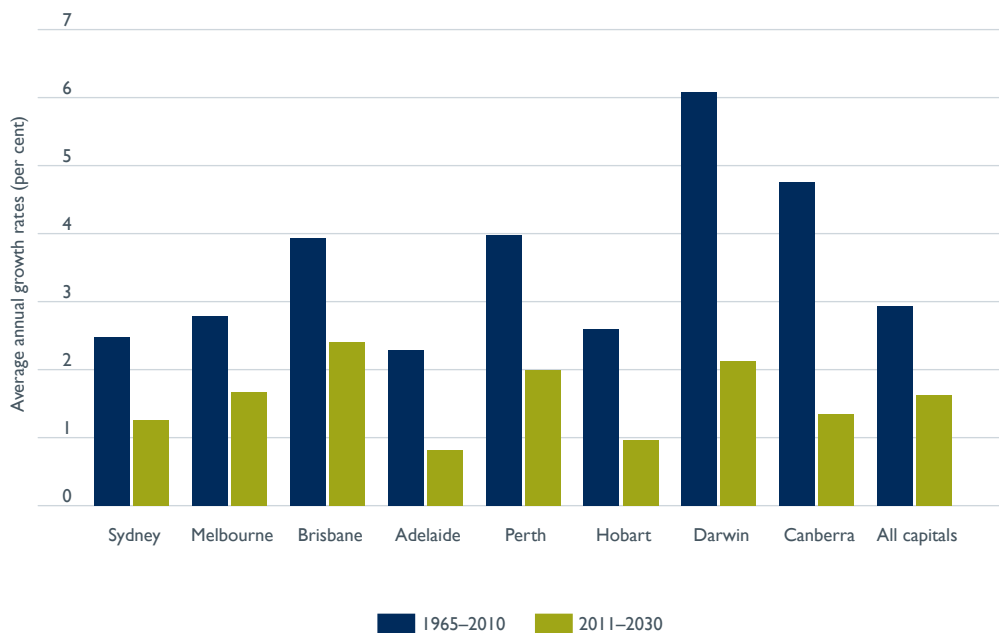
Between 2011 and 2030, among the five larger capital cities, the average annual growth rates of total urban passenger transport task are expected to be highest in Brisbane (2.41 per cent); followed by Perth (1.99 per cent); and lowest in Adelaide (0.82 per cent). Sydney and Melbourne will have average annual growth rates of 1.26 per cent and 1.67 per cent, respectively (Figure 4.38 and Table 4.9). Among three smaller capital cities, the average annual growth rate of total urban passenger transport task is expected to be higher in Darwin (2.12 per cent); followed by Canberra (1.35 per cent); and lowest in Hobart (0.97 per cent) (Figure 4.38 and Table 4.9).

Between 2011 and 2030, the city share of the total metropolitan passenger transport task is forecast to increase in Melbourne (from 28.4 per cent to 28.7 per cent); increase in Brisbane (from 14.5 per cent to 16.8 per cent); and increase in Perth (from 12.5 per cent to 13.4 per cent). Shares of the total passenger transport task are forecast to decrease in other capital cities, except Darwin where the share is forecast to remain unchanged (Figure 4.39 and Table 4.10).

Between 1977 and 2010, among the capital cities, total urban passenger transport tasks were much higher in Sydney and Melbourne, while total urban passenger transport tasks were much lower in Hobart, Darwin and Canberra (Figure 4.37 and Table 4.9).

Between 1977 and 2010, the average growth rates of total urban passenger transport task among the five larger capital cities show that Perth had the highest growth rate (3.98 per cent per annum), followed by Brisbane (2.93 per cent per annum), with the lowest growth rate in Adelaide (2.29 per cent per annum) (Table 4.9). The average annual growth rate of total urban passenger transport task in the three smaller capital cities was highest in Darwin (6.08 per cent per annum), followed by Canberra (4.76 per cent per annum) and lowest in Hobart (2.59 per cent per annum) (Table 4.9). The average annual growth rates of total urban passenger transport task for each of the eight capital cities, as well as for the total (sum of all) capital cities between 1977 and 2010, are shown graphically in Figure 4.38.

**Figure 4.38** Average annual growth rates (per cent) of estimates (1965–2010) and forecasts (2011–2030) of total urban passenger transport task, capital cities



Over the period (1977–2010), the city share of the total urban passenger transport task increased in Brisbane, Perth, Darwin and Canberra, while it decreased in Sydney, Melbourne, Adelaide and Hobart (Table 4.10).

**Table 4.9** Estimates and forecasts of total passenger transport task (billion PKM), capital cities, 1965–2030

Year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Estimates									
1965	18.57	14.53	4.43	5.02	3.76	0.76	0.08	0.60	47.75
1966	19.58	15.19	4.68	5.31	4.09	0.81	0.09	0.68	50.44
1967	20.45	15.90	4.94	5.53	4.47	0.85	0.10	0.77	53.02
1968	21.49	16.73	5.26	5.78	4.91	0.90	0.12	0.87	56.06
1969	22.96	17.86	5.74	6.14	5.51	0.96	0.17	1.01	60.34
1970	24.57	19.09	6.30	6.53	6.13	1.01	0.22	1.15	65.01
1971	25.83	19.97	6.64	6.82	6.58	1.06	0.26	1.28	68.43
1972	26.31	20.97	7.12	7.16	7.07	1.10	0.29	1.44	71.48
1973	27.01	21.72	7.56	7.45	7.41	1.14	0.32	1.58	74.19
1974	28.29	23.00	8.17	8.07	8.00	1.23	0.35	1.78	78.88
1975	29.10	24.14	8.55	8.51	8.47	1.32	0.31	1.94	82.34
1976	29.56	25.14	8.98	8.90	8.95	1.40	0.38	2.08	85.38
1977	30.51	26.28	9.41	9.31	9.46	1.48	0.41	2.21	89.07
1978	31.21	27.22	9.84	9.56	9.92	1.54	0.43	2.31	92.03
1979	32.03	27.89	10.25	9.61	10.18	1.58	0.46	2.40	94.41
1980	32.71	27.94	10.47	9.44	10.23	1.60	0.48	2.44	95.29
1981	33.29	28.39	10.86	9.38	10.33	1.63	0.51	2.46	96.84
1982	34.51	29.79	11.65	9.72	10.81	1.68	0.56	2.60	101.31
1983	34.11	30.01	11.88	9.69	10.89	1.67	0.57	2.66	101.48
1984	35.52	31.15	12.42	10.13	11.50	1.75	0.62	2.81	105.91
1985	36.92	32.21	12.84	10.50	11.88	1.83	0.67	2.96	109.79
1986	38.06	33.49	13.50	10.81	12.29	1.90	0.72	3.08	113.86
1987	38.86	34.48	13.89	10.97	12.58	1.91	0.75	3.16	116.60
1988	40.61	36.08	14.73	11.34	13.17	1.96	0.77	3.34	122.00
1989	41.97	37.83	15.79	11.72	13.83	2.03	0.79	3.52	127.49
1990	42.84	38.55	16.15	11.91	14.23	2.12	0.81	3.66	130.26
1991	42.84	38.33	16.42	11.81	14.10	2.13	0.81	3.70	130.13
1992	43.32	38.88	16.98	11.89	14.30	2.16	0.83	3.80	132.17
1993	44.17	39.55	17.73	12.07	14.82	2.24	0.85	3.95	135.37
1994	45.18	40.29	18.30	12.12	15.73	2.29	0.87	4.05	138.83
1995	46.69	41.53	19.08	12.26	16.72	2.33	0.93	4.17	143.69
1996	47.12	42.26	19.57	12.22	17.10	2.35	0.97	4.23	145.81
1997	47.27	42.57	19.78	12.26	17.29	2.34	0.99	4.24	146.74
1998	47.91	43.25	20.16	12.42	17.52	2.30	1.01	4.25	148.82
1999	49.01	44.42	20.49	12.78	17.93	2.29	1.02	4.34	152.28
2000	50.25	45.50	21.12	13.16	18.20	2.30	1.03	4.42	155.98
2001	50.42	45.67	21.25	13.14	18.05	2.24	1.00	4.35	156.11
2002	50.83	46.59	21.94	13.34	18.43	2.28	1.01	4.44	158.86
2003	51.54	47.44	22.57	13.78	18.91	2.36	1.02	4.58	162.20
2004	53.73	48.97	24.04	13.94	19.82	2.47	1.06	4.78	168.80
2005	54.06	49.25	24.26	13.69	20.13	2.43	1.04	4.78	169.64
2006	53.97	49.27	24.47	13.59	19.95	2.43	1.05	4.77	169.51
2007	54.62	49.92	25.03	13.71	20.36	2.46	1.08	4.80	172.00
2008	54.75	50.34	25.33	13.63	20.73	2.45	1.11	4.78	173.12
2009	55.11	49.76	25.03	13.71	21.44	2.41	1.13	4.83	173.43
2010	55.81	49.87	25.08	13.93	21.80	2.42	1.12	4.87	174.91

*continued*

**Table 4.9** Estimates and forecasts of total passenger transport task (billion PKM), capital cities, 1965–2030 (continued)

Year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Forecasts									
2011	56.37	50.04	25.61	13.88	22.04	2.42	1.17	4.88	176.41
2012	57.21	51.16	26.26	13.97	22.48	2.45	1.18	4.96	179.67
2013	58.16	52.38	27.13	14.16	23.09	2.48	1.22	5.06	183.68
2014	59.08	53.58	27.99	14.34	23.69	2.51	1.27	5.15	187.62
2015	59.97	54.77	28.80	14.51	24.29	2.55	1.31	5.25	191.45
2016	60.87	55.98	29.62	14.68	24.89	2.58	1.35	5.34	195.31
2017	61.75	57.17	30.44	14.83	25.49	2.61	1.39	5.43	199.10
2018	62.60	58.35	31.27	14.99	26.07	2.64	1.43	5.52	202.85
2019	63.46	59.55	32.11	15.14	26.65	2.67	1.47	5.60	206.64
2020	64.32	60.76	32.96	15.29	27.23	2.70	1.51	5.69	210.47
2021	65.19	61.98	33.83	15.45	27.82	2.73	1.55	5.78	214.33
2022	65.88	62.70	34.51	15.53	28.28	2.75	1.57	5.84	217.07
2023	66.57	63.42	35.20	15.62	28.74	2.77	1.60	5.89	219.82
2024	67.27	64.14	35.90	15.71	29.20	2.79	1.63	5.95	222.58
2025	67.96	64.86	36.60	15.79	29.66	2.81	1.65	6.00	225.35
2026	68.66	65.59	37.31	15.88	30.13	2.83	1.67	6.06	228.13
2027	69.36	66.31	38.03	15.96	30.61	2.85	1.69	6.12	230.93
2028	70.06	67.03	38.76	16.04	31.08	2.87	1.71	6.18	233.74
2029	70.77	67.76	39.49	16.12	31.56	2.89	1.73	6.23	236.55
2030	71.47	68.49	40.23	16.19	32.04	2.91	1.75	6.29	239.38
Average annual growth rate (per cent)									
1965–2010	2.48	2.78	3.93	2.29	3.98	2.59	6.08	4.76	2.93
2011–2030	1.26	1.67	2.41	0.82	1.99	0.97	2.12	1.35	1.62

**Table 4.10** Passenger transport share (per cent), capital cities, 1965–2030

Year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Estimates									
1965	38.88	30.42	9.29	10.51	7.87	1.60	0.17	1.26	100.00
1966	38.82	30.12	9.29	10.54	8.11	1.60	0.18	1.36	100.00
1967	38.57	29.99	9.31	10.44	8.44	1.60	0.19	1.46	100.00
1968	38.32	29.85	9.39	10.31	8.75	1.60	0.22	1.55	100.00
1969	38.05	29.60	9.52	10.17	9.13	1.58	0.27	1.67	100.00
1970	37.79	29.36	9.70	10.05	9.43	1.56	0.33	1.77	100.00
1971	37.74	29.18	9.70	9.97	9.62	1.54	0.38	1.87	100.00
1972	36.82	29.34	9.96	10.02	9.89	1.54	0.41	2.01	100.00
1973	36.40	29.28	10.19	10.05	9.99	1.54	0.42	2.13	100.00
1974	35.86	29.15	10.36	10.23	10.14	1.56	0.45	2.25	100.00
1975	35.34	29.32	10.39	10.34	10.28	1.60	0.37	2.35	100.00
1976	34.62	29.44	10.52	10.43	10.48	1.63	0.44	2.44	100.00
1977	34.26	29.50	10.56	10.46	10.62	1.66	0.46	2.48	100.00
1978	33.91	29.58	10.69	10.39	10.78	1.68	0.47	2.51	100.00
1979	33.93	29.55	10.86	10.18	10.79	1.68	0.48	2.54	100.00
1980	34.33	29.32	10.98	9.90	10.73	1.68	0.50	2.56	100.00
1981	34.38	29.31	11.21	9.68	10.66	1.68	0.53	2.54	100.00
1982	34.06	29.41	11.50	9.59	10.67	1.66	0.55	2.57	100.00
1983	33.61	29.57	11.71	9.54	10.73	1.65	0.56	2.62	100.00
1984	33.54	29.41	11.73	9.57	10.86	1.65	0.59	2.65	100.00
1985	33.62	29.33	11.70	9.56	10.82	1.66	0.61	2.69	100.00
1986	33.43	29.42	11.86	9.50	10.79	1.67	0.63	2.70	100.00
1987	33.32	29.57	11.91	9.41	10.79	1.64	0.64	2.71	100.00
1988	33.29	29.58	12.07	9.29	10.80	1.61	0.63	2.74	100.00
1989	32.92	29.68	12.39	9.19	10.85	1.60	0.62	2.76	100.00
1990	32.89	29.59	12.39	9.14	10.93	1.63	0.62	2.81	100.00
1991	32.92	29.45	12.62	9.07	10.83	1.63	0.62	2.85	100.00
1992	32.77	29.42	12.85	9.00	10.82	1.64	0.63	2.88	100.00
1993	32.62	29.21	13.10	8.92	10.95	1.65	0.63	2.92	100.00
1994	32.55	29.02	13.18	8.73	11.33	1.65	0.63	2.92	100.00
1995	32.49	28.90	13.28	8.53	11.64	1.62	0.65	2.90	100.00
1996	32.31	28.98	13.42	8.38	11.72	1.61	0.67	2.90	100.00
1997	32.21	29.01	13.48	8.36	11.78	1.60	0.67	2.89	100.00
1998	32.19	29.06	13.55	8.34	11.77	1.55	0.68	2.86	100.00
1999	32.18	29.17	13.45	8.39	11.77	1.50	0.67	2.85	100.00
2000	32.21	29.17	13.54	8.44	11.67	1.47	0.66	2.83	100.00
2001	32.30	29.25	13.61	8.41	11.56	1.43	0.64	2.78	100.00
2002	32.00	29.33	13.81	8.40	11.60	1.44	0.64	2.79	100.00
2003	31.78	29.24	13.91	8.49	11.66	1.45	0.63	2.83	100.00
2004	31.83	29.01	14.24	8.26	11.74	1.46	0.63	2.83	100.00
2005	31.87	29.03	14.30	8.07	11.87	1.43	0.62	2.82	100.00
2006	31.84	29.07	14.44	8.02	11.77	1.44	0.62	2.81	100.00
2007	31.76	29.03	14.55	7.97	11.84	1.43	0.63	2.79	100.00
2008	31.62	29.08	14.63	7.87	11.97	1.41	0.64	2.76	100.00
2009	31.78	28.69	14.43	7.91	12.36	1.39	0.65	2.79	100.00
2010	31.91	28.51	14.34	7.97	12.47	1.38	0.64	2.79	100.00

*continued*

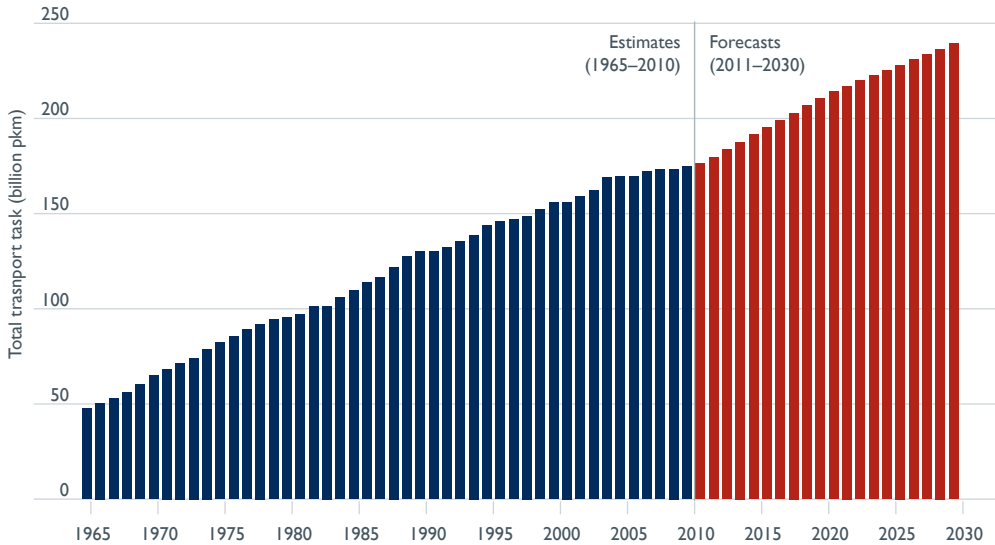
**Table 4.10** Passenger transport share (per cent), capital cities, 1965–2030 (*continued*)

Year	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Forecasts									
2011	31.95	28.37	14.52	7.87	12.49	1.37	0.67	2.76	100.00
2012	31.84	28.48	14.62	7.77	12.51	1.36	0.66	2.76	100.00
2013	31.66	28.52	14.77	7.71	12.57	1.35	0.67	2.75	100.00
2014	31.49	28.56	14.92	7.65	12.63	1.34	0.68	2.75	100.00
2015	31.33	28.61	15.04	7.58	12.69	1.33	0.68	2.74	100.00
2016	31.17	28.66	15.17	7.51	12.75	1.32	0.69	2.73	100.00
2017	31.01	28.71	15.29	7.45	12.80	1.31	0.70	2.73	100.00
2018	30.86	28.76	15.41	7.39	12.85	1.30	0.70	2.72	100.00
2019	30.71	28.82	15.54	7.33	12.90	1.29	0.71	2.71	100.00
2020	30.56	28.87	15.66	7.27	12.94	1.28	0.72	2.70	100.00
2021	30.42	28.92	15.78	7.21	12.98	1.28	0.72	2.70	100.00
2022	30.35	28.88	15.90	7.16	13.03	1.27	0.72	2.69	100.00
2023	30.29	28.85	16.01	7.11	13.07	1.26	0.73	2.68	100.00
2024	30.22	28.82	16.13	7.06	13.12	1.25	0.73	2.67	100.00
2025	30.16	28.78	16.24	7.01	13.16	1.25	0.73	2.66	100.00
2026	30.10	28.75	16.36	6.96	13.21	1.24	0.73	2.66	100.00
2027	30.04	28.71	16.47	6.91	13.25	1.23	0.73	2.65	100.00
2028	29.98	28.68	16.58	6.86	13.30	1.23	0.73	2.64	100.00
2029	29.92	28.64	16.69	6.81	13.34	1.22	0.73	2.64	100.00
2030	29.86	28.61	16.81	6.77	13.39	1.22	0.73	2.63	100.00



### 4.3.2 Total (sum of all) capital cities

**Figure 4.39** Estimates (1965–2010) and forecasts (2011–2031) of total passenger transport task, sum of all capital cities



In 1965, the total passenger transport task totalled 47.8 billion pkm and it increased to around 174.9 billion pkm by 2010 (Figure 4.39 and Table 4.9). Over the last 45 years, the urban passenger transport task has grown at an average annual rate of 2.93 per cent per year. This growth has been driven by increases in population, vehicle ownership, increasing incomes and urban decentralisation. However, during the last decade (2001–2010), the growth slowed to an average annual growth rate of 1.14 per cent per year. This slower growth is mainly due to the effect of the GFC experienced in 2008–09.

The total passenger transport task is forecast to increase by more than 35 per cent over the next two decades, from 176.4 billion pkm in 2011 to 239.4 billion pkm in 2030 (Figure 4.39 and Table 4.9). The average annual growth rate over this period is forecast to be 1.62 per cent per year. Catering for this forecast increase in the total passenger transport task in capital cities will present a significant challenge within urban areas.

## CHAPTER 5

# Forecasting the public transport passenger task, capital cities, 2011–2030

### Summary

This chapter describes the methodology used in this report for forecasting the UPT passenger task in capital cities between 2011 and 2030. It also provides forecast results, which are base case forecasts of future trends for UPT passenger task in each capital city, as well as for the sum of all capital cities. Estimates of the UPT passenger task between 1977 and 2010 are also presented for comparison purposes, to show the accuracy of the model for estimating. Several key findings emerged including:

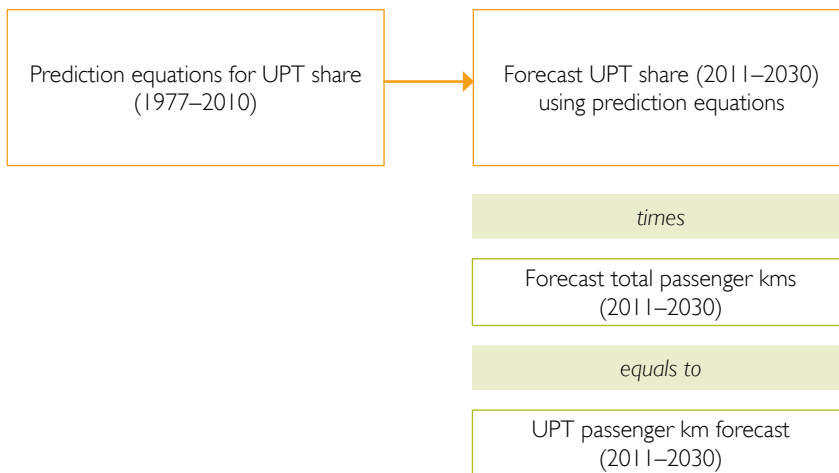
- Between 2011 and 2030, the total UPT passenger task is forecast to grow from 19.71 billion pkm to 25.34 billion pkm, an average annual growth rate of 1.33 per cent.
- Among the five larger capital cities, the UPT passenger task is forecast to grow fastest in Brisbane, followed by Perth, Melbourne, Sydney and Adelaide.
- Among the three smaller capital cities, the average annual growth rate of the UPT passenger task is expected to be highest in Darwin (1.78 per cent) followed by Canberra (1.04 per cent) and Hobart (0.73 per cent).
- Among the five larger capital cities, the city share of the total metropolitan UPT passenger task is forecast to increase in Brisbane and Perth, while the shares are forecast to decrease in Sydney, Melbourne and Adelaide. Among the three smaller capital cities, the city shares of the total metropolitan UPT passenger task will remain largely unchanged.

## 5.1 Methodology for forecasting UPT tasks

Forecasts of the volume of passengers that will be using public transport form an important base for policy development. This section describes the methodologies used for forecasting the UPT task for each capital city in Australia between 2011 and 2030. The total metropolitan UPT task is calculated as the sum of all eight capital cities.

Forecast UPT shares between 2011 and 2030 were obtained from the predicted equations for UPT share (1977–2010) combined with real fares unchanged. The disposable income constraint (DIC) components were also assumed not to change. The exception was the GFC. The effects of the GFC were assumed to wear off by 2020 and the savings rate to decline to 3 per cent of GDP. This resulted in a decrease in the DIC and a decrease in UPT share across most cities. The resulting forecast UPT shares were then multiplied by total forecast pkm (2011–2030), which gave the UPT task forecasts in passenger kilometres. The schematic diagram for forecasting the UPT passenger task between 2011 and 2030 is shown in Figure 5.1.

**Figure 5.1** Schematic diagram showing steps for forecasting the urban public transport (UPT) passenger task in capital cities



Forecasting the UPT task can be calculated from the following equation:

$$UPT_{Forecast} = Task_{Forecast} * UPT_{Share} / 100$$

where  $UPT_{Forecast}$  = UPT passenger task (billion pkm)

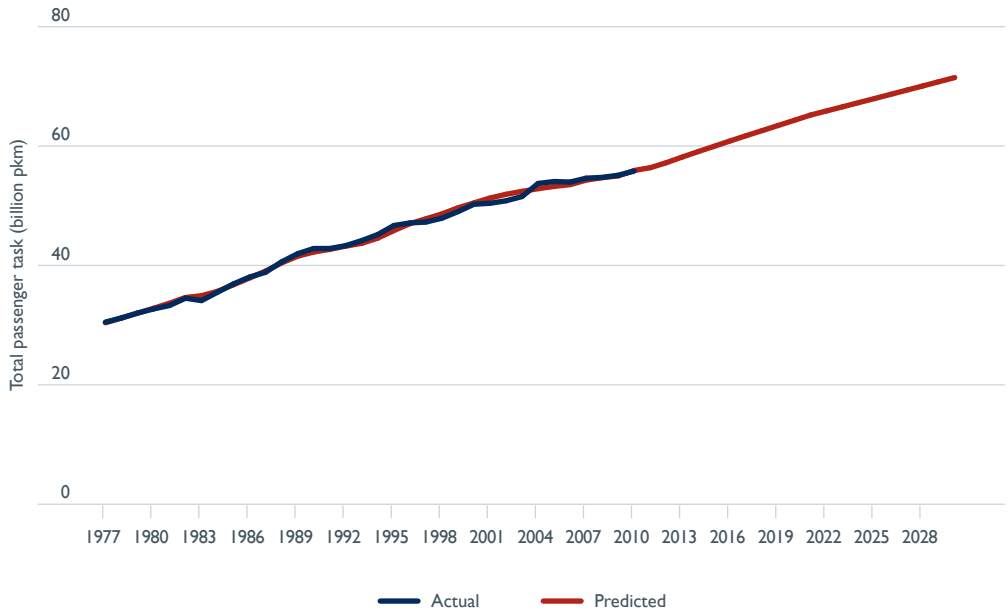
$Total_{Forecast}$  = Total passenger task (billion pkm)

$UPT_{Share}$  = UPT share (per cent).

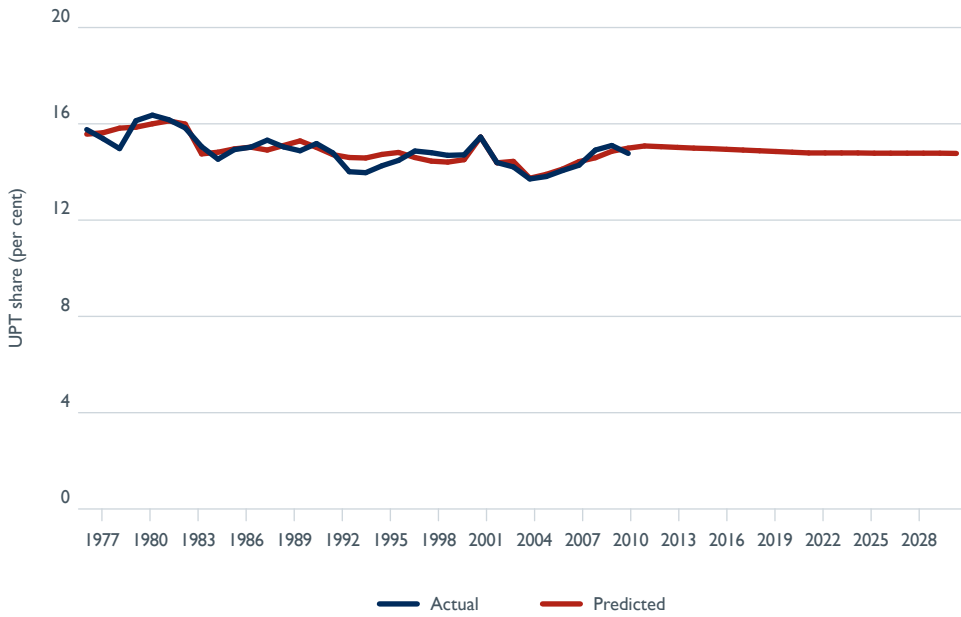
The actual and predicted (modelled) Total passenger task, UPT share and UPT pkm fit well in each capital city, as shown in Figure 5.2 to Figure 5.9. Data for these figures are presented in Appendix K (see Table K.1 to Table K.8).

**Figure 5.2** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Sydney

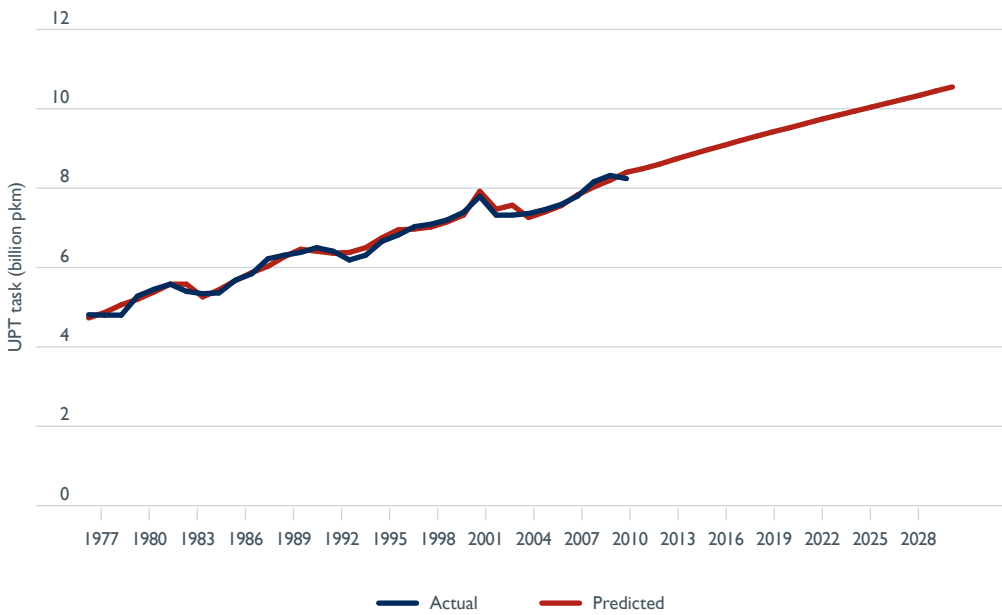
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



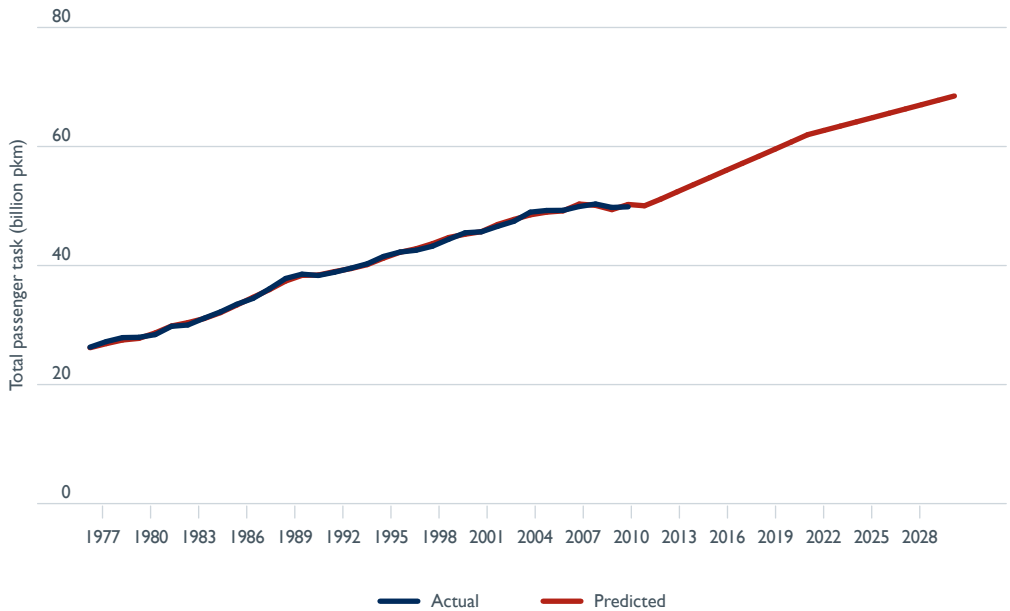
(c) UPT passenger task (billion PKM)



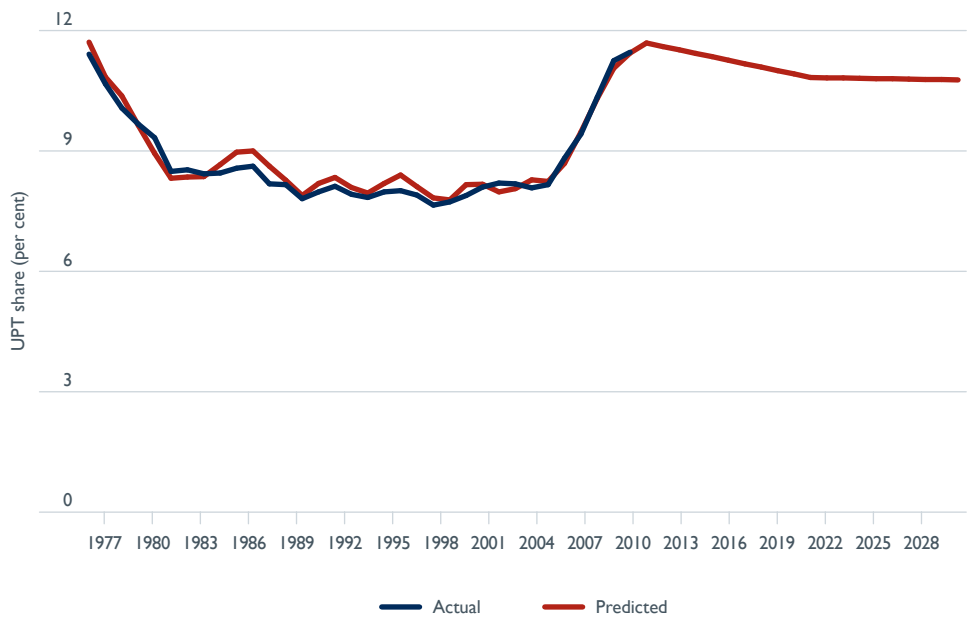
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.3** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Melbourne

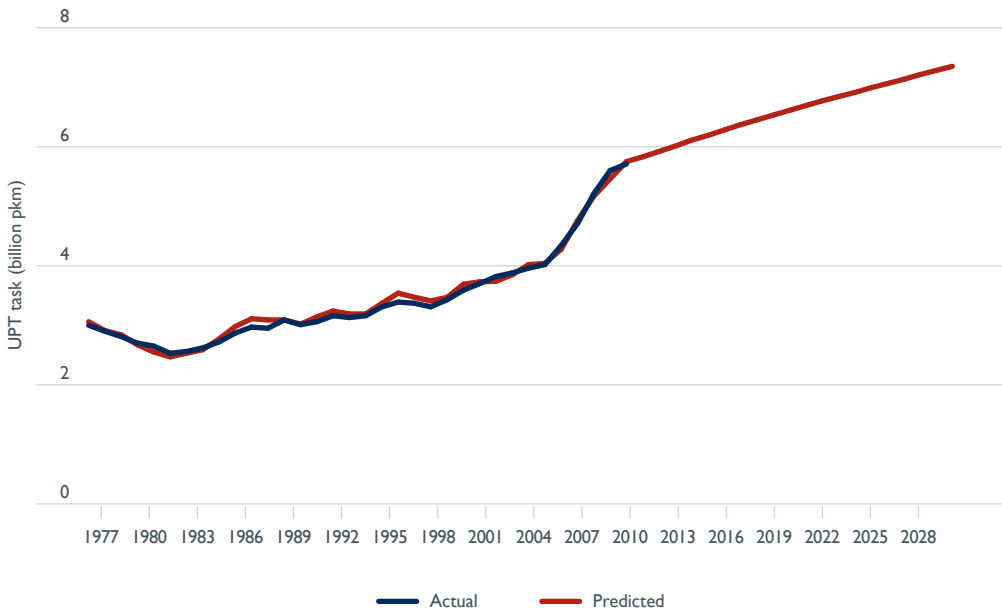
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



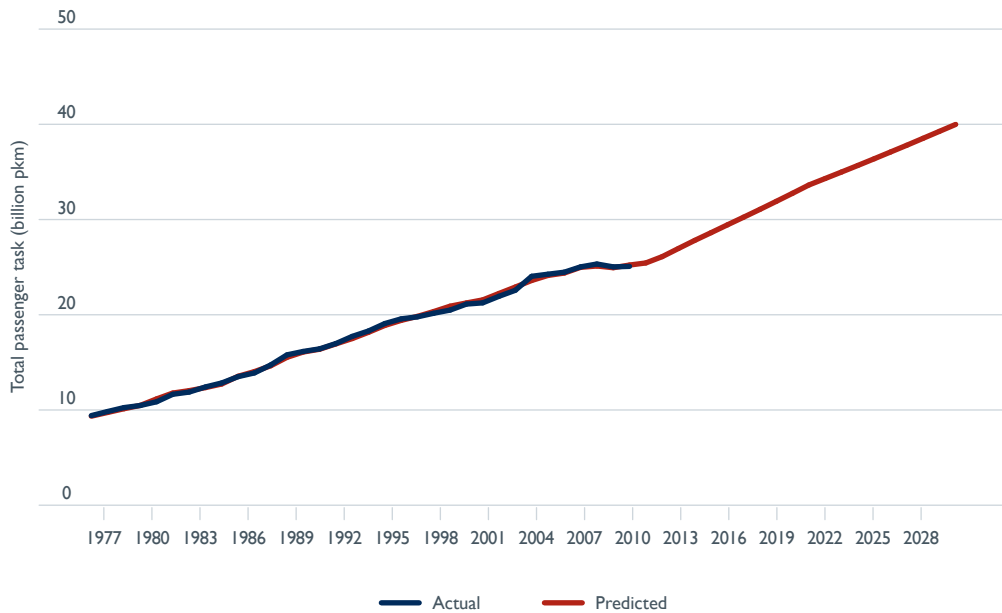
(c) UPT passenger task (billion PKM)



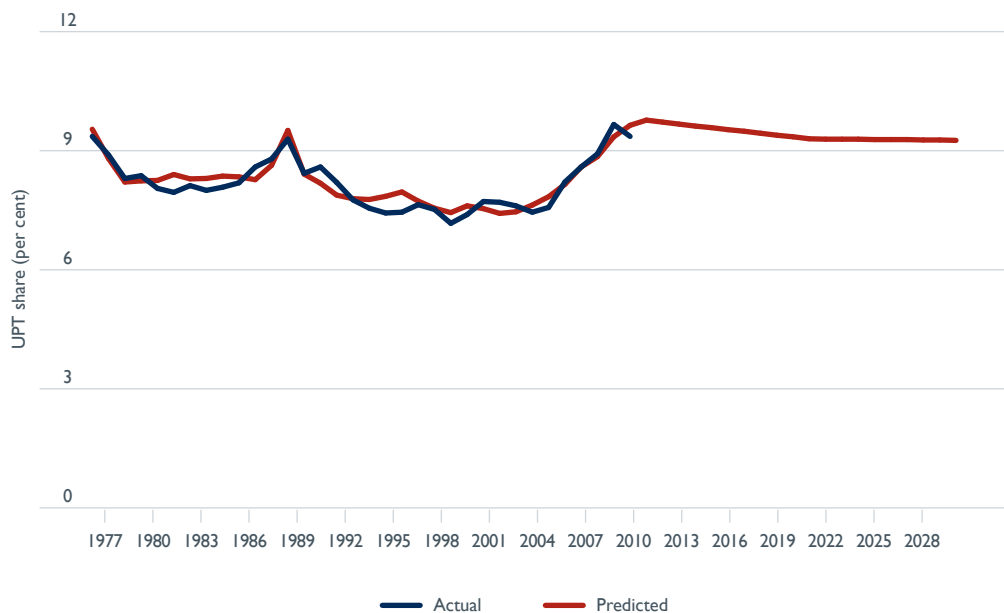
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.4** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Brisbane

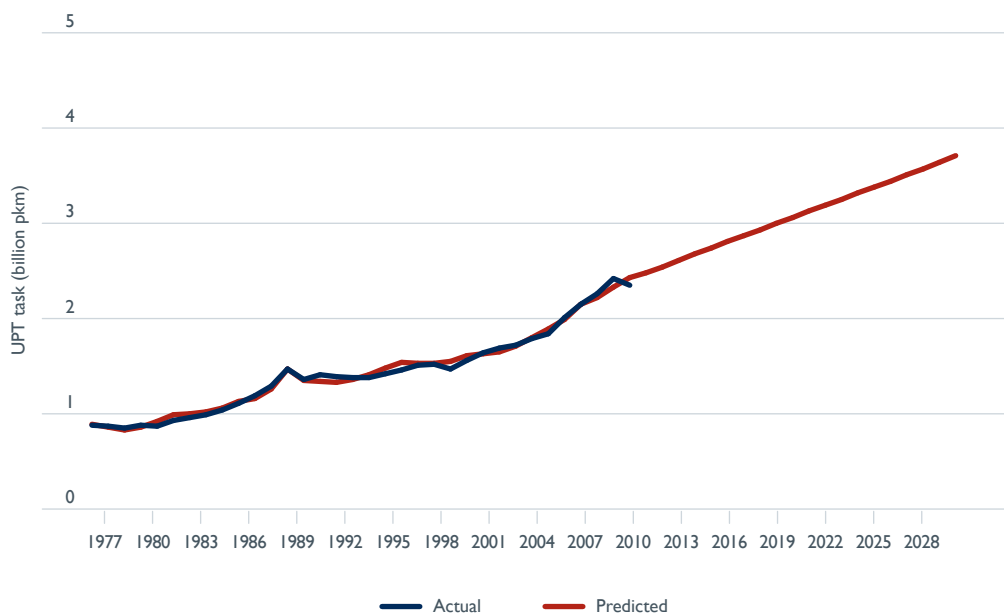
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



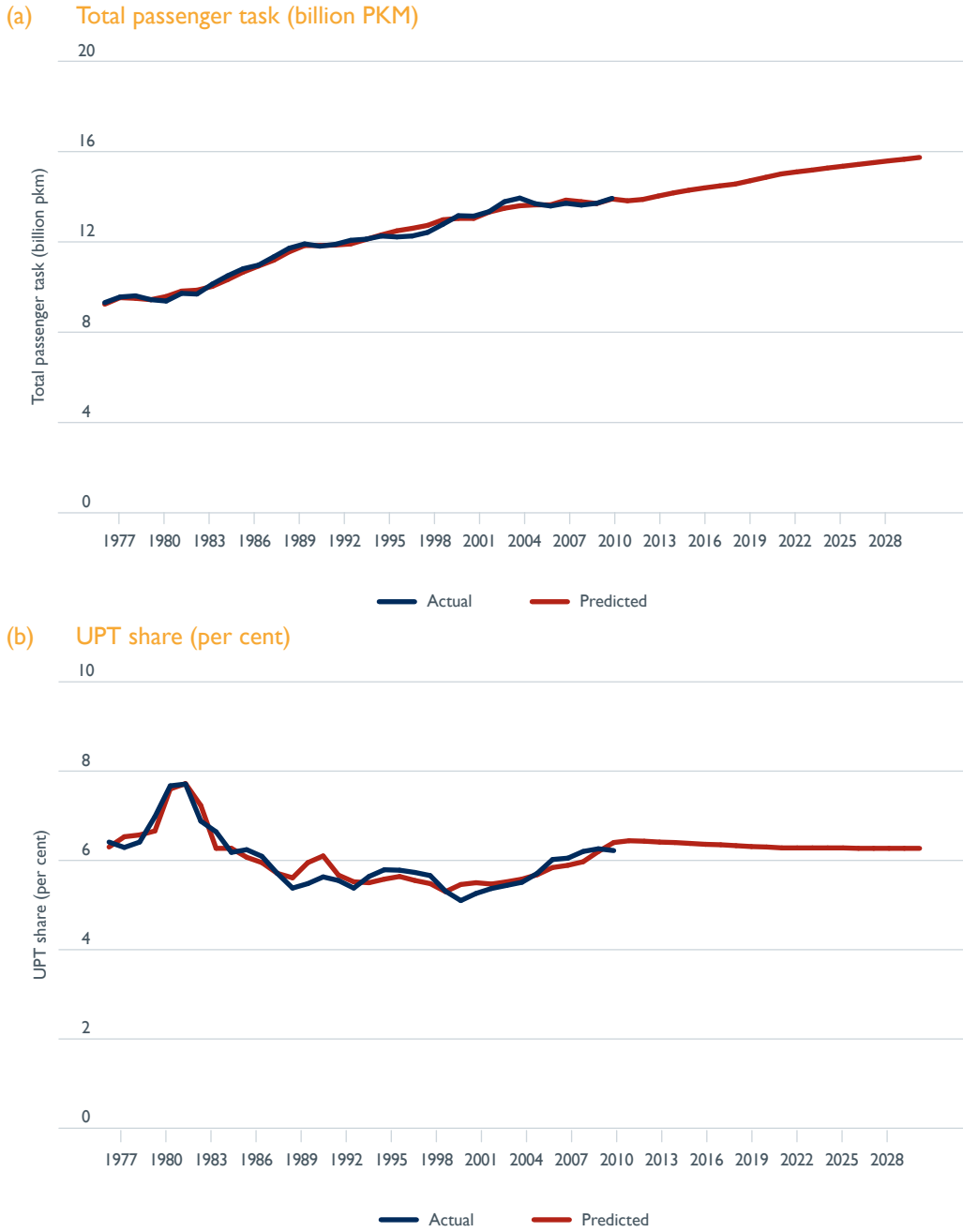
(c) UPT passenger task (billion PKM)



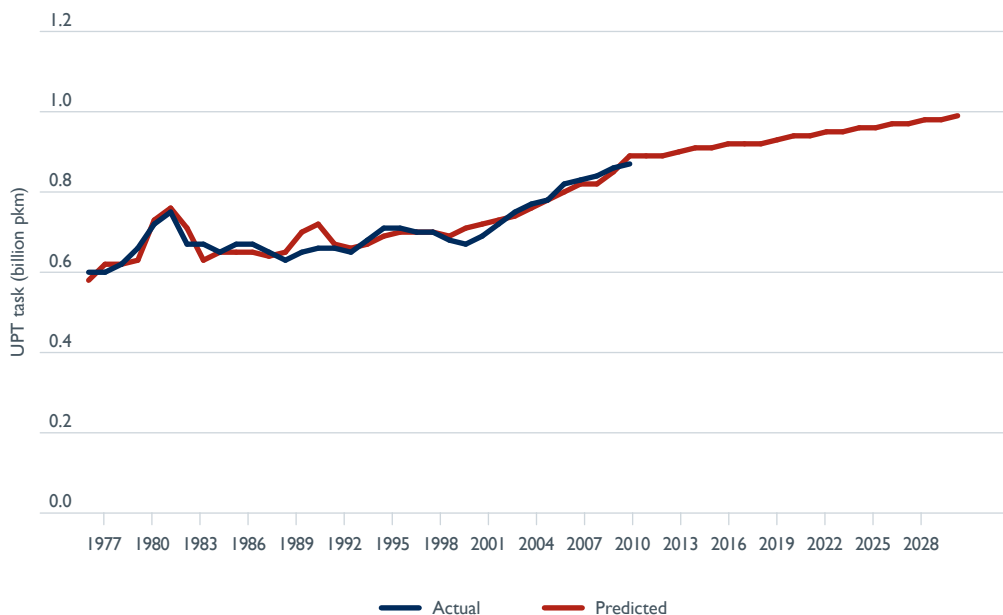
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.



**Figure 5.5** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Adelaide



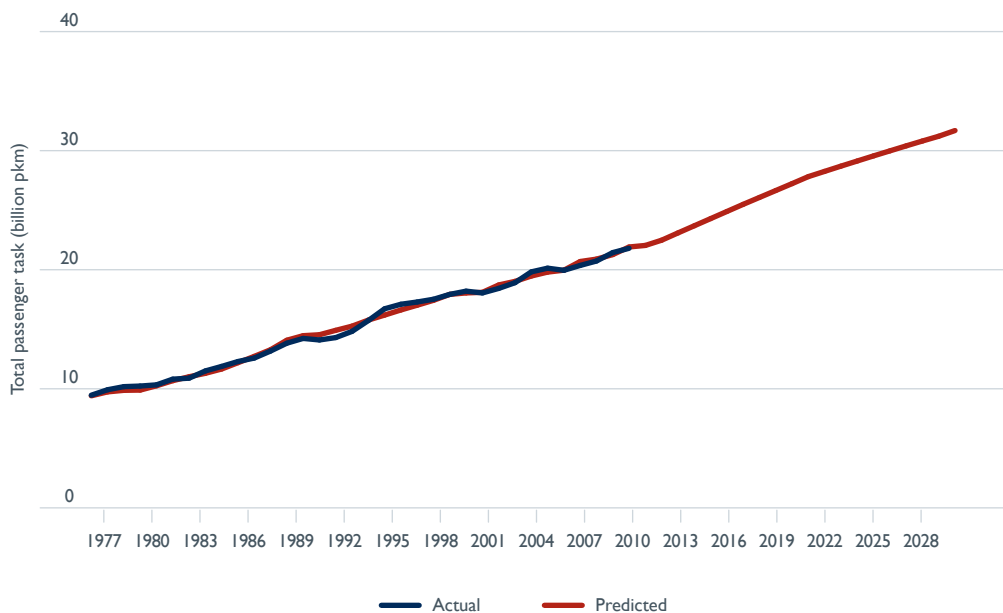
(c) UPT passenger task (billion PKM)



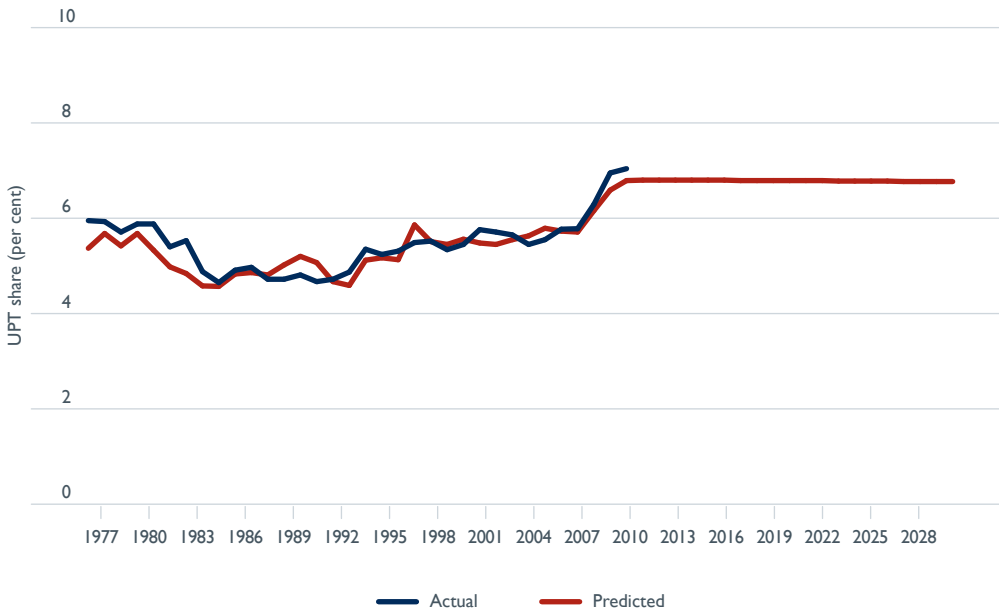
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.6** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Perth

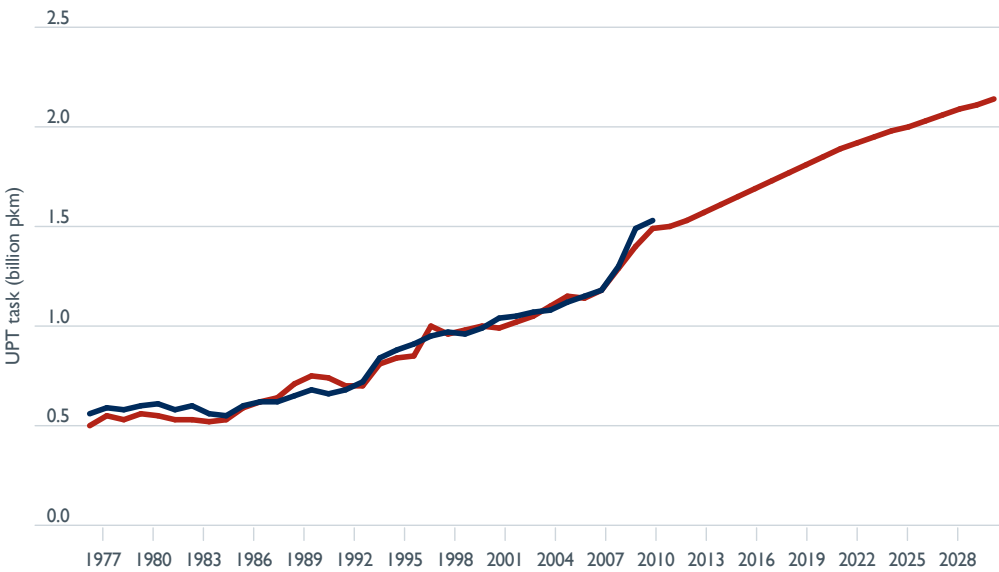
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



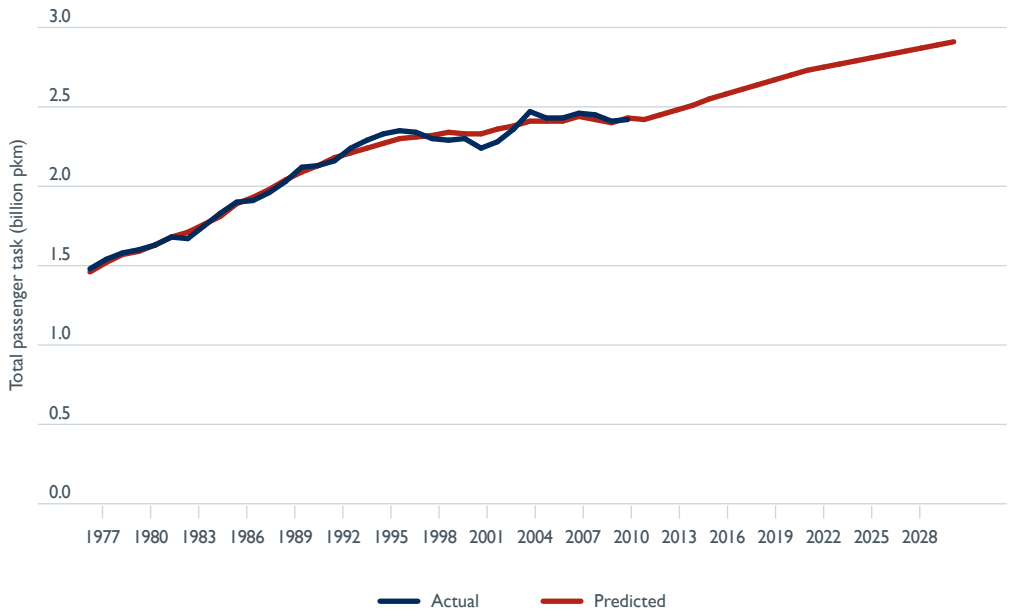
(c) UPT passenger task (billion PKM)



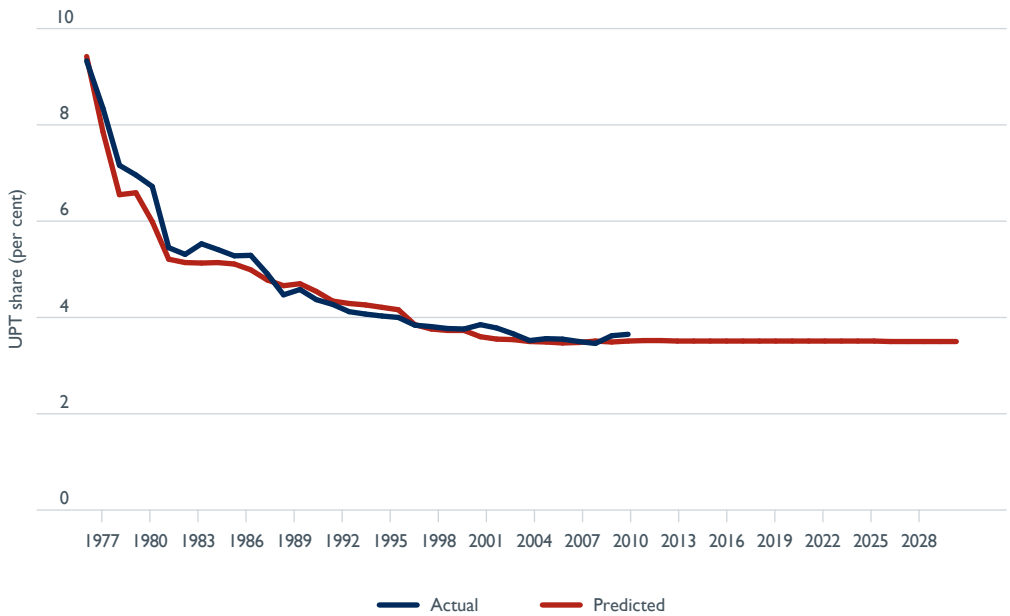
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.7** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Hobart

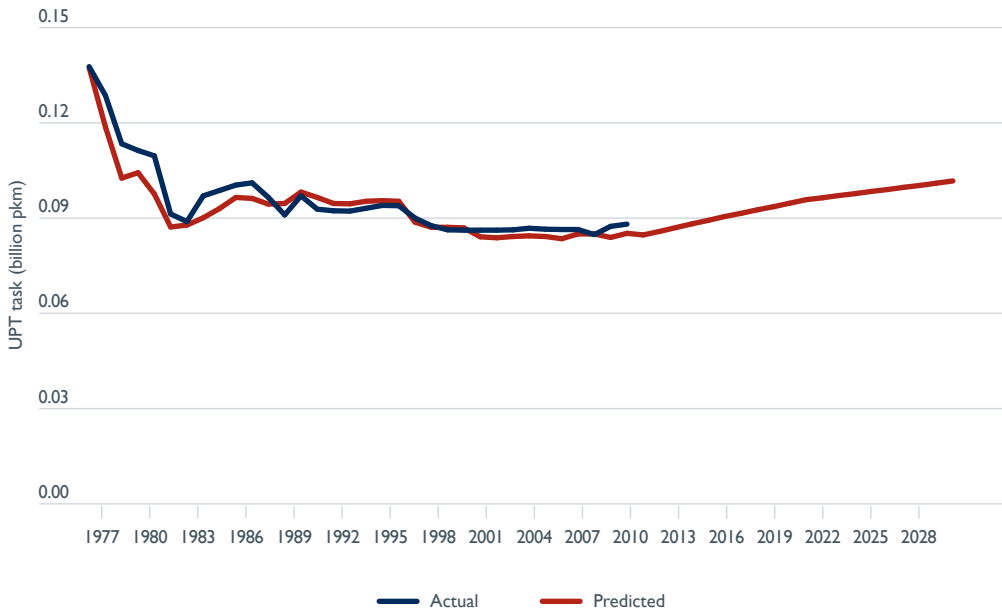
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



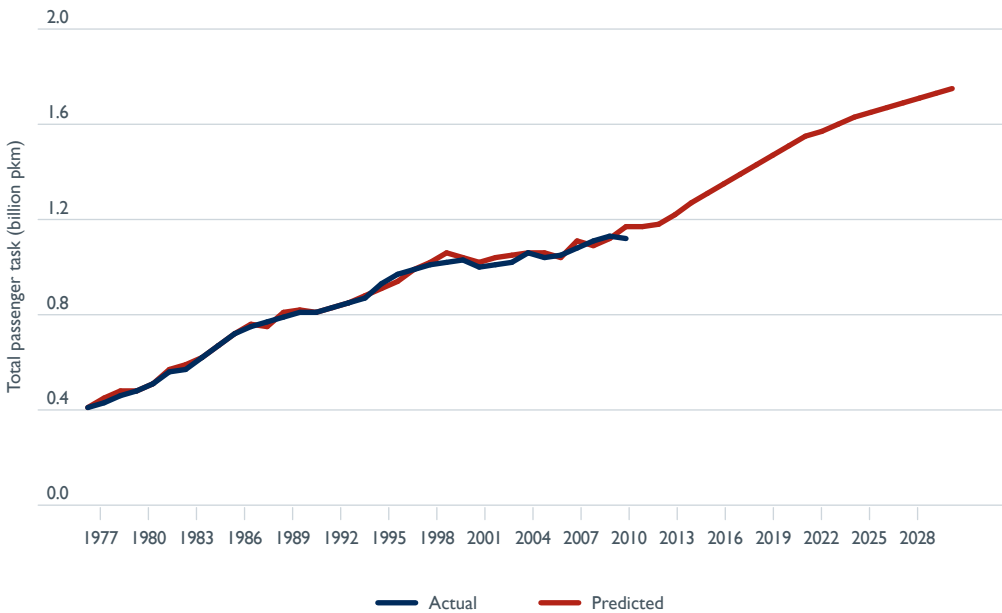
(c) UPT passenger task (billion PKM)



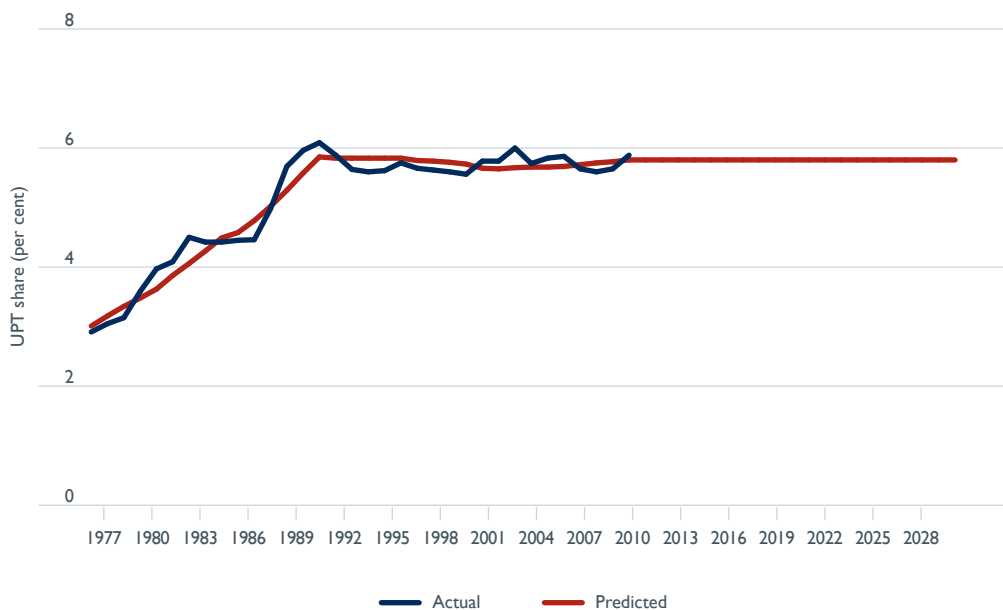
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.8** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Darwin

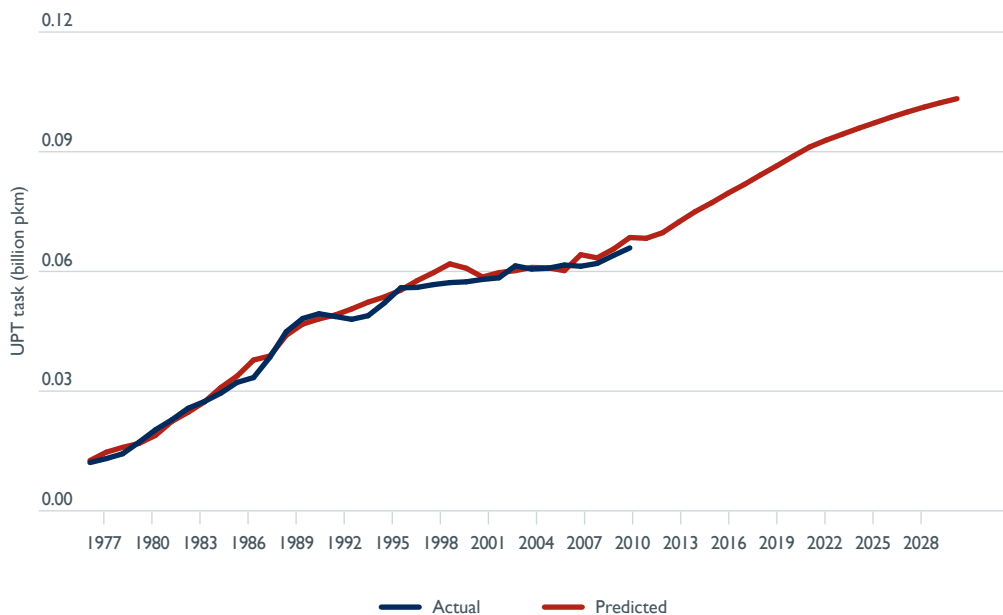
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



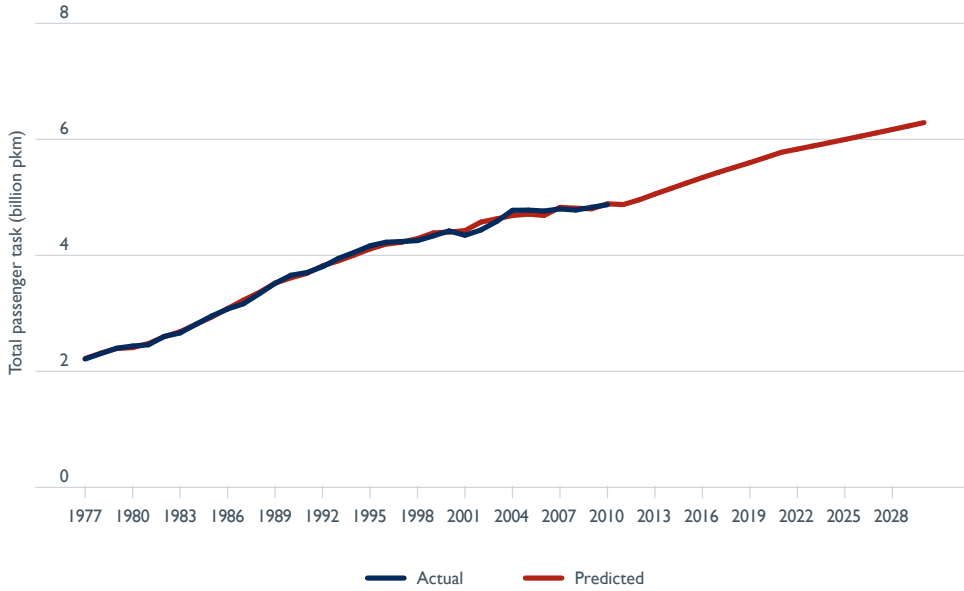
(c) UPT passenger task (billion PKM)



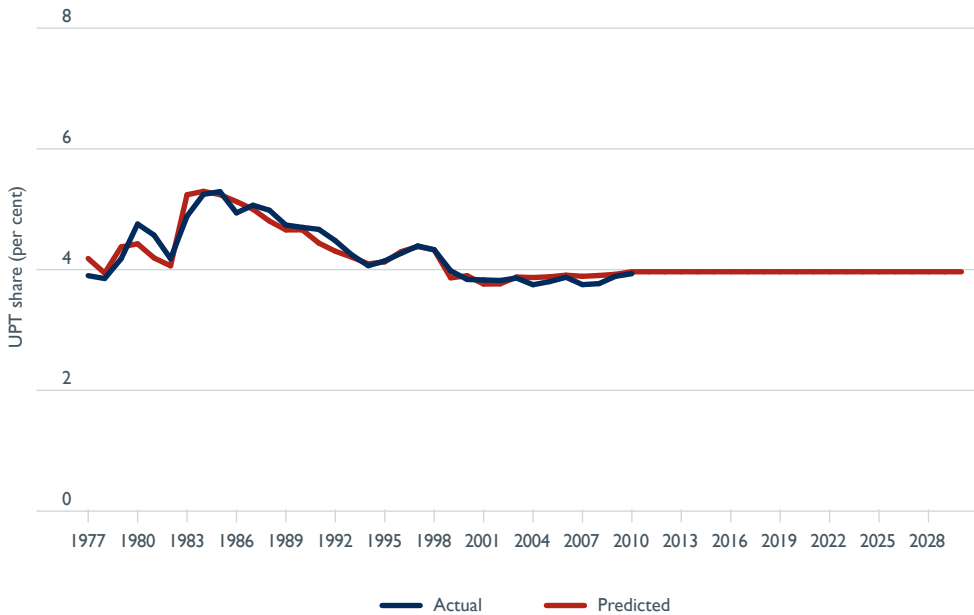
Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.9** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, Canberra

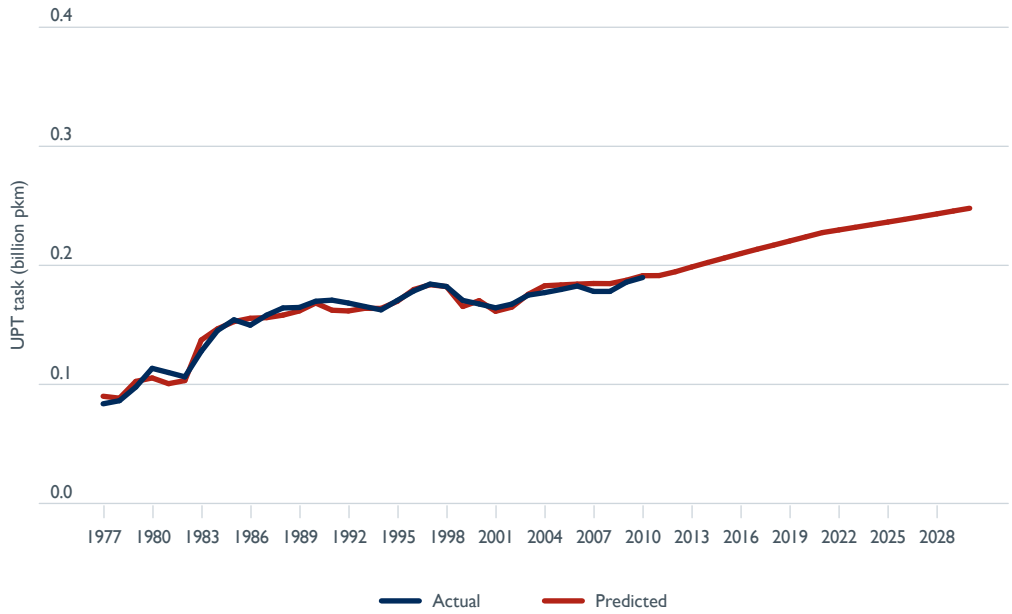
(a) Total passenger task (billion PKM)



(b) UPT share (per cent)



(c) UPT passenger task (billion PKM)

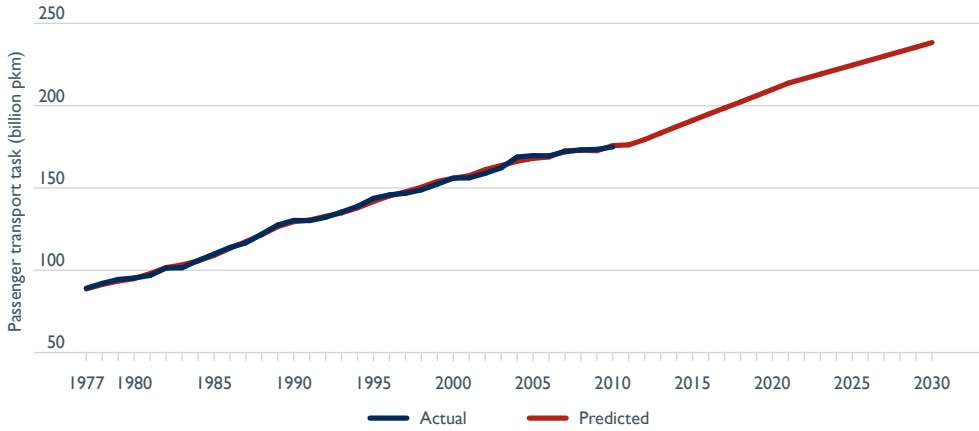


Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

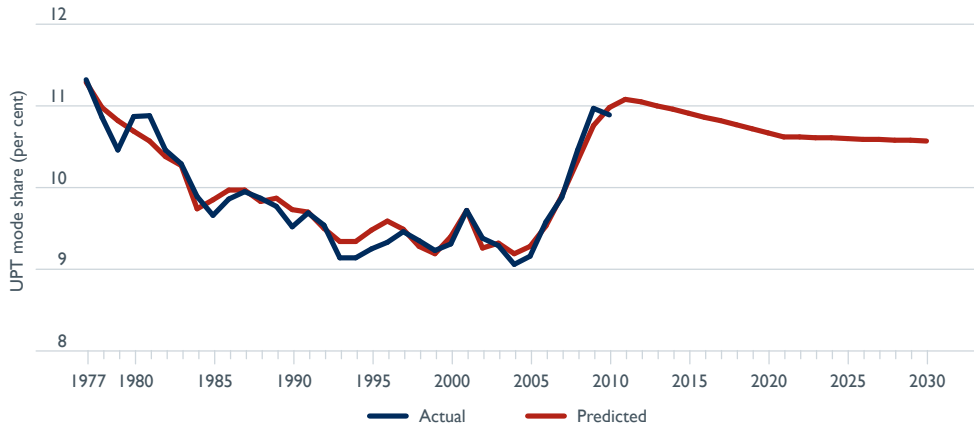


**Figure 5.10** Actual (1977–2010) and predicted (2011–2030) total passenger task, UPT share and UPT task, metropolitan Australia

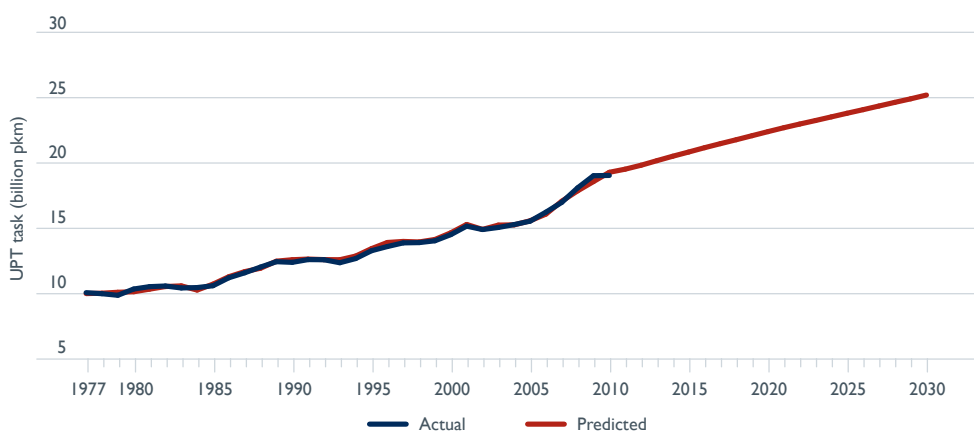
**(a) Total passenger task (billion pkm)**



**(b) UPT Share (per cent)**



**(c) UPT passenger task (billion pkm)**



## 5.2 UPT passenger task, estimates (1977–2010) and forecasts (2011–2030)

This section examines the forecasts (2011–2030) of the UPT passenger tasks for each of the eight capital cities as well as the total metropolitan Australia task.

### 5.2.1 Individual capital cities

Figure 5.11 shows the forecasts (2011–2030) of the UPT for the eight capital cities, as well as the modelled estimates (1977–2010) for showing trends and demonstrating the reliability of the model. Data for this figure is presented in Table 5.1.

Between 2011 and 2030, the UPT passenger task in the larger capital cities is forecast to increase from:

- 8.49 billion pkm to 10.55 billion pkm in Sydney
- 5.83 billion pkm to 7.35 billion pkm in Melbourne
- 2.48 billion pkm to 3.71 billion pkm in Brisbane
- 0.89 billion pkm to 0.99 billion pkm in Adelaide
- 1.50 billion pkm to 2.14 billion pkm in Perth (Figure 5.10a and Table 5.1).

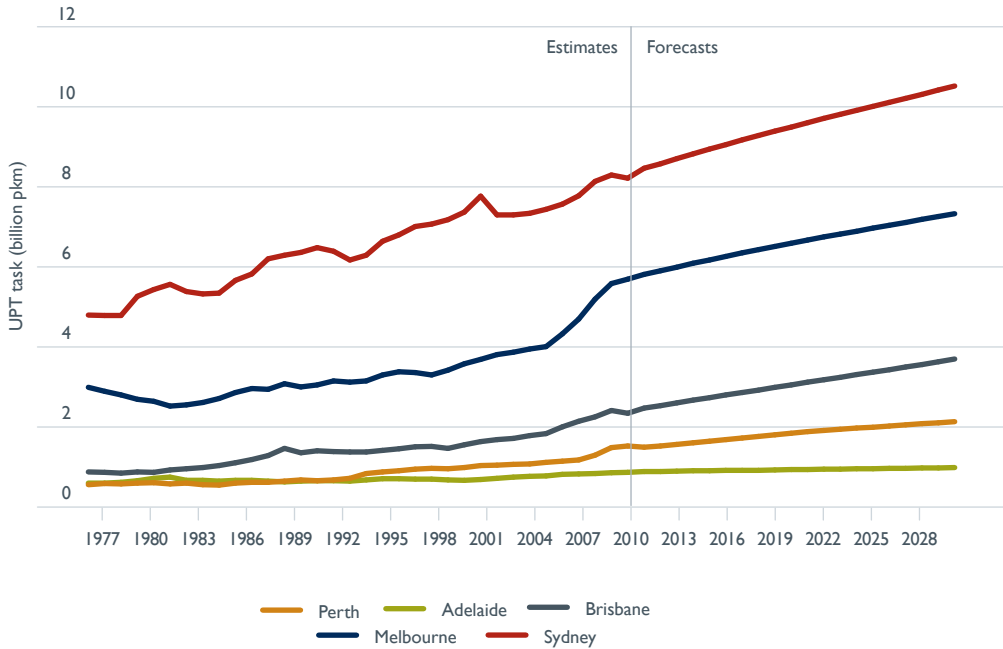
In the three smaller capital cities, the UPT passenger task is forecast to grow from:

- 0.08 billion pkm to 0.10 billion pkm in Hobart
- 0.07 billion pkm to 0.10 billion pkm in Darwin
- 0.26 billion pkm to 0.33 billion pkm in Canberra. (Figure 5.10b and Table 5.1).

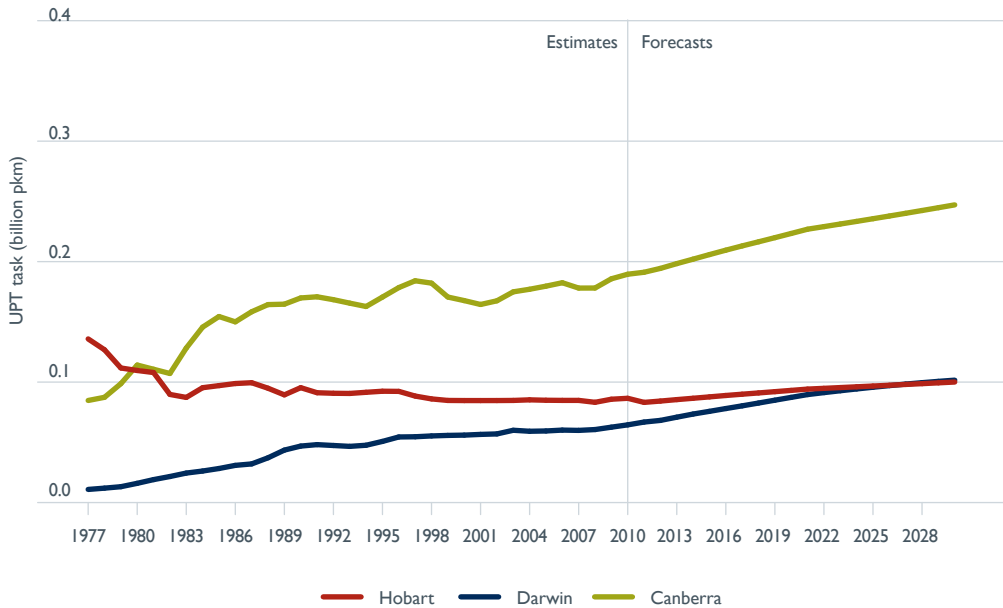
Between 2011 and 2030, among the five larger capital cities, the average annual growth rate of the UPT passenger task is expected to be highest in Brisbane (2.14 per cent); followed by Perth (1.90 per cent); and lowest in Adelaide (0.55 per cent). Sydney and Melbourne will have average annual growth rates of 1.15 per cent and 1.23 per cent respectively (Table 5.2 and Figure 5.11). Among the three smaller capital cities, the average annual growth rate of UPT passenger task is expected to be higher in Darwin (2.20 per cent); followed by Canberra (1.34 per cent); and lowest in Hobart (0.97 per cent). The average annual growth rates of UPT passenger task for each of the eight capital cities, as well as sum of all capital cities, from 2011–2030 are shown in Figure 5.12.

**Figure 5.11 UPT passenger task, estimates (1977–2010) and forecasts (2011–2030), capital cities**

**(a) Larger capital cities**



**(b) Smaller capital cities**



Source: Table 5.1.

Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Table 5.1** UPT passenger tasks (billion PKM), individual capital city and total (sum of all) capital cities, 1977–2030

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Estimates									
1977	4.81	3.00	0.88	0.60	0.56	0.14	0.01	0.09	10.08
1978	4.80	2.90	0.87	0.60	0.59	0.13	0.01	0.09	10.00
1979	4.80	2.81	0.85	0.62	0.58	0.11	0.01	0.10	9.88
1980	5.28	2.70	0.88	0.66	0.60	0.11	0.02	0.12	10.36
1981	5.45	2.65	0.87	0.72	0.61	0.11	0.02	0.11	10.54
1982	5.58	2.53	0.93	0.75	0.58	0.09	0.02	0.11	10.59
1983	5.40	2.56	0.96	0.67	0.60	0.09	0.03	0.13	10.44
1984	5.34	2.62	0.99	0.67	0.56	0.10	0.03	0.15	10.47
1985	5.36	2.72	1.04	0.65	0.55	0.10	0.03	0.16	10.61
1986	5.68	2.87	1.11	0.67	0.60	0.10	0.03	0.15	11.22
1987	5.84	2.97	1.19	0.67	0.62	0.10	0.03	0.16	11.60
1988	6.22	2.95	1.29	0.65	0.62	0.10	0.04	0.17	12.04
1989	6.31	3.09	1.47	0.63	0.65	0.09	0.04	0.17	12.45
1990	6.38	3.01	1.36	0.65	0.68	0.10	0.05	0.17	12.40
1991	6.50	3.06	1.41	0.66	0.66	0.09	0.05	0.17	12.61
1992	6.41	3.16	1.39	0.66	0.68	0.09	0.05	0.17	12.60
1993	6.19	3.13	1.38	0.65	0.72	0.09	0.05	0.17	12.37
1994	6.31	3.16	1.38	0.68	0.84	0.09	0.05	0.16	12.69
1995	6.66	3.31	1.42	0.71	0.88	0.09	0.05	0.17	13.29
1996	6.82	3.39	1.46	0.71	0.91	0.09	0.06	0.18	13.61
1997	7.03	3.37	1.51	0.70	0.95	0.09	0.06	0.19	13.89
1998	7.09	3.31	1.52	0.70	0.97	0.09	0.06	0.18	13.91
1999	7.20	3.43	1.47	0.68	0.96	0.09	0.06	0.17	14.05
2000	7.39	3.59	1.56	0.67	0.99	0.09	0.06	0.17	14.52
2001	7.79	3.70	1.64	0.69	1.04	0.09	0.06	0.17	15.17
2002	7.32	3.82	1.69	0.72	1.05	0.09	0.06	0.17	14.91
2003	7.32	3.88	1.72	0.75	1.07	0.09	0.06	0.18	15.07
2004	7.36	3.96	1.79	0.77	1.08	0.09	0.06	0.18	15.29
2005	7.46	4.02	1.84	0.78	1.12	0.09	0.06	0.18	15.55
2006	7.59	4.34	2.01	0.82	1.15	0.09	0.06	0.18	16.24
2007	7.80	4.71	2.15	0.83	1.18	0.09	0.06	0.18	16.99
2008	8.16	5.21	2.26	0.84	1.30	0.08	0.06	0.18	18.10
2009	8.32	5.60	2.42	0.86	1.49	0.09	0.06	0.19	19.03
2010	8.24	5.71	2.35	0.87	1.53	0.09	0.07	0.19	19.05
Forecasts									
2011	8.49	5.83	2.48	0.89	1.50	0.08	0.07	0.19	19.53
2012	8.60	5.92	2.54	0.89	1.53	0.09	0.07	0.20	19.83
2013	8.73	6.01	2.61	0.90	1.57	0.09	0.07	0.20	20.18
2014	8.85	6.11	2.68	0.91	1.61	0.09	0.07	0.20	20.52
2015	8.97	6.19	2.74	0.91	1.65	0.09	0.08	0.21	20.84
2016	9.08	6.28	2.81	0.92	1.69	0.09	0.08	0.21	21.17
2017	9.20	6.37	2.87	0.92	1.73	0.09	0.08	0.22	21.48
2018	9.31	6.45	2.93	0.92	1.77	0.09	0.08	0.22	21.78
2019	9.42	6.53	3.00	0.93	1.81	0.09	0.09	0.22	22.09
2020	9.52	6.61	3.06	0.94	1.85	0.09	0.09	0.23	22.40
2021	9.63	6.69	3.13	0.94	1.89	0.10	0.09	0.23	22.70
2022	9.74	6.77	3.19	0.95	1.92	0.10	0.09	0.23	22.98
2023	9.84	6.84	3.25	0.95	1.95	0.10	0.09	0.23	23.25
2024	9.94	6.91	3.32	0.96	1.98	0.10	0.10	0.24	23.53
2025	10.04	6.99	3.38	0.96	2.00	0.10	0.10	0.24	23.81
2026	10.14	7.06	3.44	0.97	2.03	0.10	0.10	0.24	24.08
2027	10.24	7.13	3.51	0.97	2.06	0.10	0.10	0.24	24.36
2028	10.34	7.21	3.57	0.98	2.09	0.10	0.10	0.24	24.64
2029	10.45	7.28	3.64	0.98	2.11	0.10	0.10	0.25	24.91
2030	10.55	7.35	3.71	0.99	2.14	0.10	0.10	0.25	25.20

Source: BITRE estimates.

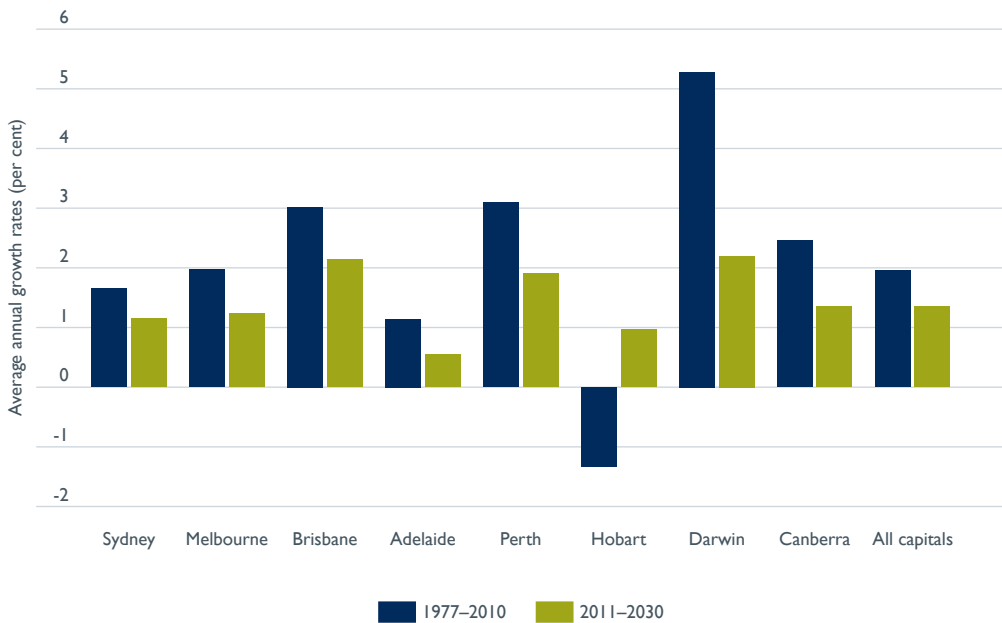
**Table 5.2** Average annual growth rates (per cent) of UPT passenger task, estimates (1977–2010) and forecasts (2011–2030), capital cities, 2011–2030

Period	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1977–2010	1.65	1.97	3.02	1.14	3.09	-1.34	5.28	2.45	1.96
2011–2030	1.15	1.23	2.14	0.55	1.90	0.97	2.20	1.34	1.35

Source: BITRE estimates.

Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Figure 5.12** Average annual growth rates (per cent) of UPT passenger task, estimates (1977–2010) and forecasts (2011–2030), capital cities



Source: Table 5.2.

Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

Between 2011 and 2030, the city share of the total metropolitan UPT passenger task is forecast to increase in Brisbane (from 12.6 per cent to 14.6 per cent) and Perth (from 8.0 per cent to 8.6 per cent). Shares are forecast to decrease in Sydney (from 43.1 per cent to 41.7 per cent); Melbourne (from 29.7 per cent to 29.1 per cent); and Adelaide (4.5 per cent to 3.9 per cent) (Table 5.3). On the other hand, the city shares of the UPT passenger task will be more or less similar in the smaller capital cities.

Over the historical period (1977–2010), the city share of the total metropolitan UPT passenger task increased in Brisbane, Perth, Darwin and Canberra, while it decreased in Sydney, Adelaide and Hobart. Hobart experienced a sharp decline, from 1.4 per cent to 0.5 per cent (Table 5.3). Melbourne experienced a flat UPT city share during this period.

**Table 5.3** City share (per cent) of the eight capital city UPT passenger task, estimates (1977–2010) and forecasts (2011–2030), capital cities

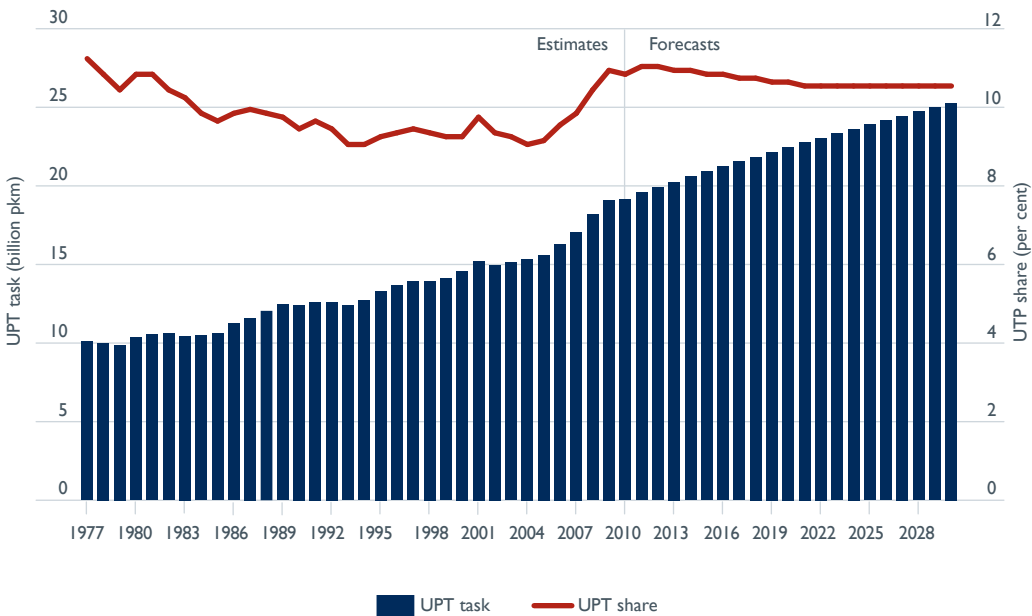
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
Estimates									
1977	47.7	29.7	8.7	5.9	5.6	1.4	0.1	0.9	100.0
1978	48.0	29.0	8.7	6.0	5.9	1.3	0.1	0.9	100.0
1979	48.5	28.4	8.6	6.2	5.9	1.1	0.1	1.0	100.0
1980	50.9	26.1	8.5	6.4	5.8	1.1	0.2	1.1	100.0
1981	51.7	25.1	8.3	6.8	5.8	1.0	0.2	1.1	100.0
1982	52.7	23.9	8.7	7.1	5.5	0.9	0.2	1.0	100.0
1983	51.7	24.5	9.2	6.4	5.8	0.9	0.2	1.2	100.0
1984	51.0	25.1	9.5	6.4	5.4	0.9	0.3	1.4	100.0
1985	50.6	25.7	9.8	6.1	5.2	0.9	0.3	1.5	100.0
1986	50.6	25.6	9.9	6.0	5.4	0.9	0.3	1.4	100.0
1987	50.4	25.6	10.3	5.8	5.4	0.9	0.3	1.4	100.0
1988	51.7	24.5	10.8	5.4	5.2	0.8	0.3	1.4	100.0
1989	50.7	24.8	11.8	5.1	5.2	0.7	0.4	1.3	100.0
1990	51.4	24.3	11.0	5.3	5.5	0.8	0.4	1.4	100.0
1991	51.6	24.2	11.2	5.3	5.2	0.7	0.4	1.4	100.0
1992	50.8	25.0	11.1	5.2	5.4	0.7	0.4	1.4	100.0
1993	50.0	25.3	11.1	5.3	5.8	0.7	0.4	1.4	100.0
1994	49.8	24.9	10.9	5.4	6.6	0.7	0.4	1.3	100.0
1995	50.1	24.9	10.7	5.3	6.6	0.7	0.4	1.3	100.0
1996	50.1	24.9	10.7	5.2	6.7	0.7	0.4	1.3	100.0
1997	50.6	24.2	10.9	5.1	6.8	0.6	0.4	1.3	100.0
1998	51.0	23.8	10.9	5.0	7.0	0.6	0.4	1.3	100.0
1999	51.2	24.4	10.5	4.8	6.8	0.6	0.4	1.2	100.0
2000	50.9	24.7	10.7	4.6	6.8	0.6	0.4	1.2	100.0
2001	51.3	24.4	10.8	4.6	6.9	0.6	0.4	1.1	100.0
2002	49.1	25.6	11.3	4.8	7.1	0.6	0.4	1.1	100.0
2003	48.6	25.8	11.4	5.0	7.1	0.6	0.4	1.2	100.0
2004	48.2	25.9	11.7	5.0	7.1	0.6	0.4	1.2	100.0
2005	48.0	25.9	11.8	5.0	7.2	0.6	0.4	1.2	100.0
2006	46.7	26.8	12.4	5.0	7.1	0.5	0.4	1.1	100.0
2007	45.9	27.7	12.7	4.9	6.9	0.5	0.4	1.1	100.0
2008	45.1	28.8	12.5	4.7	7.2	0.5	0.3	1.0	100.0
2009	43.8	29.4	12.7	4.5	7.8	0.5	0.3	1.0	100.0
2010	43.3	30.0	12.3	4.5	8.1	0.5	0.3	1.0	100.0
Forecasts									
2011	43.5	29.8	12.7	4.6	7.7	0.4	0.3	1.0	100.0
2012	43.4	29.8	12.8	4.5	7.7	0.4	0.4	1.0	100.0
2013	43.3	29.8	12.9	4.5	7.8	0.4	0.4	1.0	100.0
2014	43.1	29.8	13.1	4.4	7.9	0.4	0.4	1.0	100.0
2015	43.0	29.7	13.2	4.4	7.9	0.4	0.4	1.0	100.0
2016	42.9	29.7	13.3	4.3	8.0	0.4	0.4	1.0	100.0
2017	42.8	29.7	13.4	4.3	8.1	0.4	0.4	1.0	100.0
2018	42.7	29.6	13.5	4.2	8.1	0.4	0.4	1.0	100.0
2019	42.6	29.6	13.6	4.2	8.2	0.4	0.4	1.0	100.0
2020	42.5	29.5	13.7	4.2	8.3	0.4	0.4	1.0	100.0
2021	42.4	29.5	13.8	4.2	8.3	0.4	0.4	1.0	100.0
2022	42.4	29.4	13.9	4.1	8.3	0.4	0.4	1.0	100.0
2023	42.3	29.4	14.0	4.1	8.4	0.4	0.4	1.0	100.0
2024	42.2	29.4	14.1	4.1	8.4	0.4	0.4	1.0	100.0
2025	42.2	29.3	14.2	4.0	8.4	0.4	0.4	1.0	100.0
2026	42.1	29.3	14.3	4.0	8.4	0.4	0.4	1.0	100.0
2027	42.0	29.3	14.4	4.0	8.5	0.4	0.4	1.0	100.0
2028	42.0	29.3	14.5	4.0	8.5	0.4	0.4	1.0	100.0
2029	41.9	29.2	14.6	3.9	8.5	0.4	0.4	1.0	100.0
2030	41.9	29.2	14.7	3.9	8.5	0.4	0.4	1.0	100.0

Source: BITRE estimates.

### 5.2.2 Total metropolitan UPT passenger task

Over the next 20 years, the total UPT passenger task is forecast to grow from 19.59 billion pkm to 25.28 billion pkm, with an average annual growth rate of 1.35 per cent (Figure 5.13 and Table 5.4). This forecast increase in the UPT task is largely due to the projected population growth in the capital cities. However, the UPT task as a share of the total passenger transport task is forecast to decline slightly, from 11.1 per cent in 2011 to 10.6 per cent in 2030. Forecast UPT shares between 2011 and 2030 were obtained from the predicted equations for UPT share (1977–2010) assuming unchanged real fares. The disposable income constraint components were also assumed not to change. The exception was the GFC. The effects were assumed to wear off by 2020, causing the savings rate to decline. This resulted in a decrease in the DIC and a decrease in UPT share across most cities.

**Figure 5.13** UPT passenger task and UPT share as total public transport task, sum of all capital cities, 1977–2030



Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

**Table 5.4** UPT passenger task, UPT share as total public transport task and total population, sum of all capital cities, 1977–2030

Year	UPT task (billion pkm)	UPT share (per cent)	Population ('000)
Estimates			
1977	10.08	11.3	9 121
1978	10.00	10.9	9 217
1979	9.88	10.5	9 299
1980	10.36	10.9	9 390
1981	10.54	10.9	9 500
1982	10.59	10.5	9 650
1983	10.44	10.3	9 775
1984	10.47	9.9	9 885
1985	10.61	9.7	10 012
1986	11.22	9.9	10 205
1987	11.60	10.0	10 378
1988	12.04	9.9	10 553
1989	12.45	9.8	10 719
1990	12.40	9.5	10 860
1991	12.61	9.7	10 980
1992	12.60	9.5	11 111
1993	12.37	9.1	11 214
1994	12.69	9.1	11 324
1995	13.29	9.3	11 472
1996	13.61	9.4	11 638
1997	13.89	9.5	11 766
1998	13.91	9.4	11 893
1999	14.05	9.3	12 035
2000	14.52	9.3	12 182
2001	15.17	9.8	12 353
2002	14.91	9.4	12 510
2003	15.07	9.3	12 667
2004	15.29	9.1	12 814
2005	15.55	9.2	12 976
2006	16.24	9.6	13 163
2007	16.99	9.9	13 393
2008	18.10	10.5	13 643
2009	19.03	11.0	13 937
2010	19.05	10.9	14 225
Forecasts			
2011	19.53	11.1	14 426
2012	19.83	11.1	14 628
2013	20.18	11.0	14 848
2014	20.52	11.0	15 062
2015	20.84	10.9	15 278
2016	21.17	10.9	15 495
2017	21.48	10.8	15 705
2018	21.78	10.8	15 910
2019	22.09	10.7	16 117
2020	22.40	10.7	16 324
2021	22.70	10.6	16 532
2022	22.98	10.6	16 742

*continued*



**Table 5.4** UPT passenger task, UPT share as total public transport task and total population, sum of all capital cities, 1977–2030 (*continued*)

Year	UPT task (billion pkm)	UPT share (per cent)	Population ('000)
2023	23.25	10.6	16 952
2024	23.53	10.6	17 163
2025	23.81	10.6	17 375
2026	24.08	10.6	17 588
2027	24.36	10.6	17 802
2028	24.64	10.6	18 016
2029	24.91	10.6	18 231
2030	25.20	10.6	18 447
Average annual growth rate (per cent)			
2001–2010	2.57		1.58
1977–2010	1.96		1.36
2011–2030	1.35		1.30

Note: Data from 1977 to 2010 are estimates, while from 2011 to 2030 are forecasts.

## CHAPTER 6

# Sensitivity Analysis

### Summary

Due to uncertainty in future petrol prices, UPT fares and the effect of the GFC, this chapter outlines the results of a sensitivity analysis that analysed the possible impact of high and low petrol prices, high UPT fares and persistent effects of the GFC on the future UPT tasks in all capital cities as well as the total metropolitan UPT transport task.

Results of the sensitivity analyses indicate that:

- The total metropolitan UPT task over 2011–2030 would slightly increase under a 'low petrol price' scenario and slightly decrease under the 'high petrol price' and 'ongoing GFC effect' scenarios, compared to the base case scenario. This result would also be true for all capital cities, but the magnitude and trend would vary.
- The only significant change in predicted UPT task would come under the 'high UPT fares' scenario. The UPT tasks in Melbourne, Adelaide, Perth, Hobart and Canberra under the 'high UPT fares' scenario show a large decrease compared to the base case.
- The size of the UPT task depends on two components: the total passenger task in the capital city and UPT's share of this total task. Paradoxically, the decrease in the total passenger task with a high petrol price outweighs the increase in UPT's share with a high petrol price, which results in a slightly lower UPT task with high petrol price, and a slightly higher UPT task with a low petrol price.

## 6.1 Background

The forecasts of future trends (2011–2030) for UPT passenger tasks in each capital city in Chapter 5 were obtained from:

1. the equations for UPT share (1977–2010) and assumed constant independent variables (i.e. the household disposable income constraint<sup>3</sup> and real fares)
2. the total passenger task equations (1977–2010) and assumed constant petrol prices and unemployment, plus an assumption that the GFC effect would fade by 2020.

These forecasts are considered to be base case scenarios. The base case is defined as a medium scenario that reflects the economic conditions as at 2010.

<sup>3</sup> The household disposable income constraint is a derivative of several cost factors, such as mortgage, rent, food, petrol and household saving.

The aim of this chapter is to examine how the future UPT tasks might vary due to fluctuations in petrol prices, UPT fares and a persistent GFC effect. Therefore, a sensitivity analysis was carried out to assess the possible impact of these scenarios on the UPT passenger tasks in each capital city.

## 6.2 Methodology

The sensitivity analysis consisted of four alternative scenarios. These four scenarios are based on increases and decreases in petrol prices and real UPT fares, as well as an ongoing GFC effect. The assumptions considered under the alternative scenarios were:

- Scenario 1: 'high petrol price' — Australian-level real petrol price rises from \$1.27 per litre in 2010 to \$2.04 per litre in 2030.
- Scenario 2: 'low petrol price' — Australian-level real petrol price falls from \$1.27 per litre in 2010 to \$1.05 per litre in 2030.
- Scenario 3: 'high UPT fares' — assumed to increase by 50 per cent until 2030, from 2010 base, making the fares higher than in the base case.
- Scenario 4: 'ongoing GFC effect' — was assumed to persist for the whole forecast period.

A 'low UPT fare' scenario was not considered due to the already low cost recovery of UPT expenditures by governments.

The high and low petrol prices to 2030 for each capital city were generated from the Australian real petrol price, presented in BITRE Report 128 (BITRE 2012b). The real petrol price for Australia was derived using USDA forecasts of real exchange rates (USDA ERA 2011). Excise was assumed to remain constant in nominal terms at the 2011 estimated amount, with inflation assumed to average 2.8 per cent per year (Deloitte Access Economics 2011). Sales tax rates were held constant at estimated 2011 values (for details, see BITRE 2012b).

Data for the assumptions and for the calculated UPT passenger tasks under the various scenarios and the base case for each capital city is in Appendix L (see Table L.1 to Table L.8).

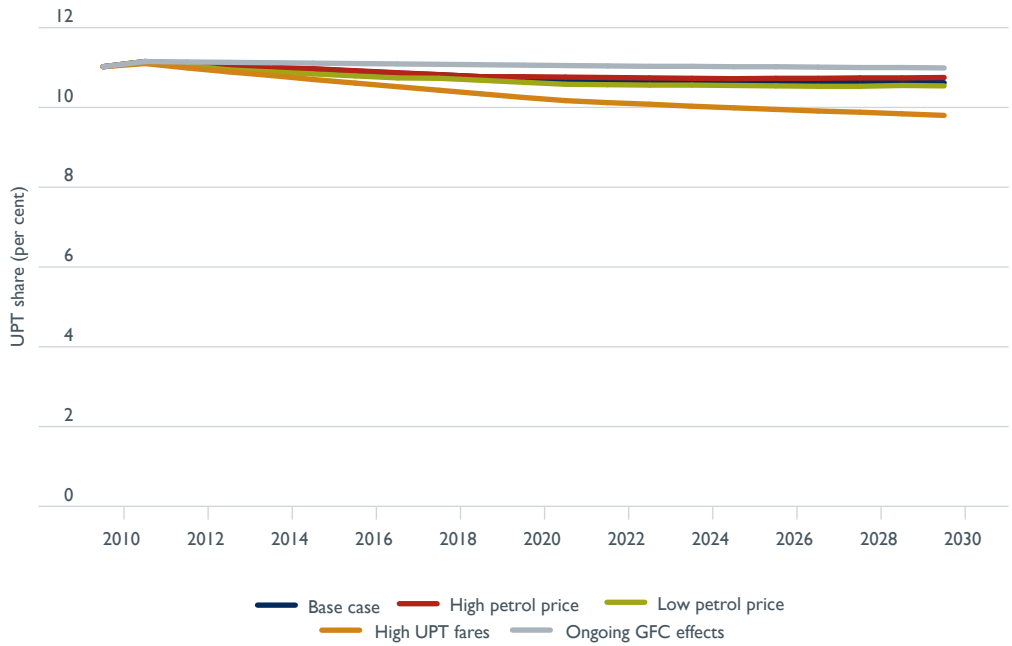
The results of the sensitivity analysis are presented Section 6.3.

## 6.3 Results

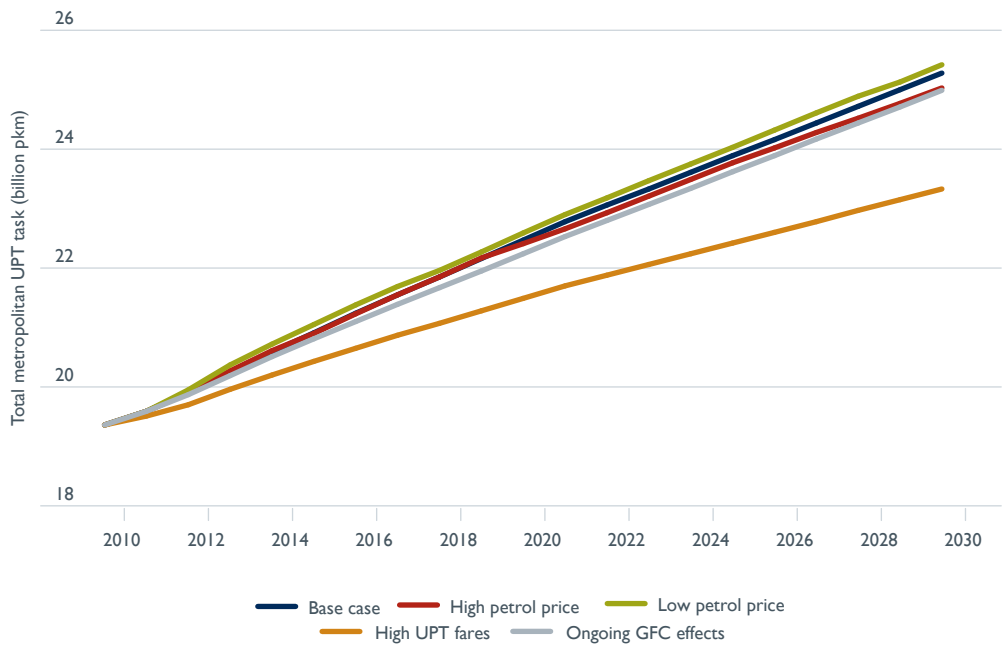
### 6.3.1 Total metropolitan task

The predicted UPT share and the total metropolitan UPT task for each of the five scenarios until 2030 are shown in Figure 6.1 and Figure 6.2. The data underlying Figure 6.2 is presented in Table 6.1. UPT tasks by scenarios for total capital cities in Figure 6.1 and Table 6.1 are the sum of all capital cities. Table 6.1 also provides data for the change in UPT tasks from base case in 2030 as well as average annual growth rates between 2011 and 2030 for the various scenarios.

**Figure 6.1** Total UPT share (per cent) by scenarios, all capital cities, 2010–2030



**Figure 6.2** Total metropolitan UPT task (billion PKM) by scenarios, all capital cities, 2010–2030



Results of the sensitivity analysis indicated that, compared to the base case, the total UPT tasks in all capital cities between 2011 and 2030 would be slightly higher under the 'low petrol price' scenario, slightly lower under the 'high petrol price' and the 'ongoing GFC effect' scenarios and substantially lower under the 'high UPT fares' scenario (Figure 6.1 and Figure 6.2). This implies that the total metropolitan UPT tasks would increase by 0.14 billion pkm under the 'low petrol price' scenario over the next 20 years compared to the base case, but would experience lower growth under the other scenarios (Table 6.1).

**Table 6.1** Total metropolitan UPT task (billion PKM) by scenarios, all capital cities, 2010–2030

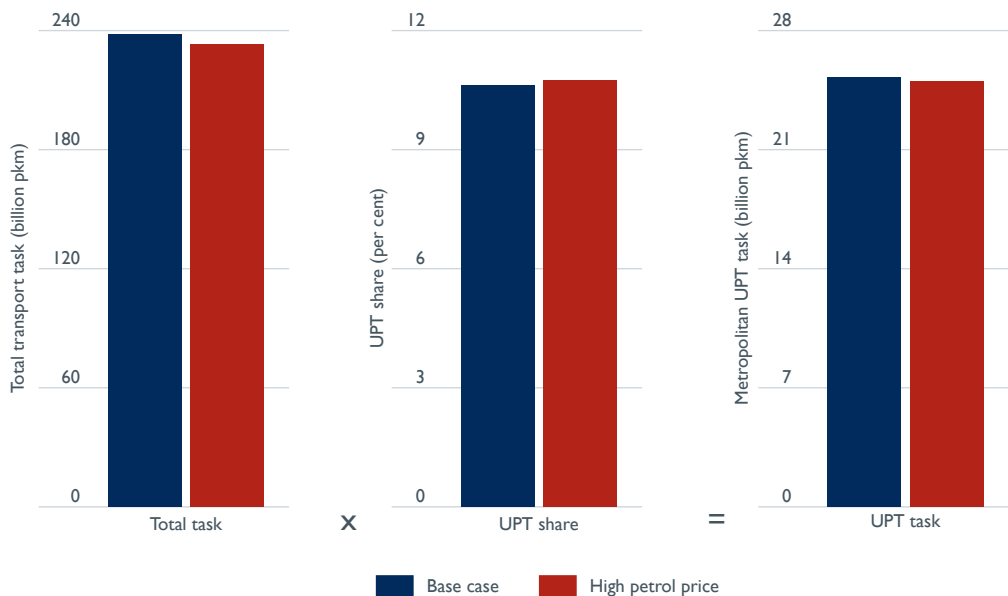
<i>Total metropolitan UPT task (billion PKM) by scenarios</i>					
Year	Base case (Scenario 1)	High petrol price (Scenario 2)	Low petrol price (Scenario 3)	High UPT fares (Scenario 4)	Ongoing GFC effect (Scenario 5)
2010	19.36	19.36	19.36	19.36	19.36
2011	19.59	19.59	19.59	19.51	19.59
2012	19.90	19.91	19.95	19.70	19.87
2013	20.25	20.27	20.37	19.96	20.19
2014	20.59	20.61	20.72	20.20	20.51
2015	20.91	20.90	21.05	20.43	20.81
2016	21.24	21.23	21.38	20.65	21.10
2017	21.55	21.55	21.69	20.87	21.39
2018	21.85	21.85	21.96	21.07	21.67
2019	22.16	22.17	22.27	21.28	21.95
2020	22.47	22.41	22.59	21.49	22.24
2021	22.78	22.66	22.90	21.70	22.53
2022	23.06	22.93	23.18	21.88	22.80
2023	23.33	23.21	23.47	22.06	23.07
2024	23.61	23.49	23.75	22.24	23.34
2025	23.89	23.77	24.03	22.42	23.62
2026	24.16	24.02	24.32	22.60	23.89
2027	24.44	24.28	24.61	22.78	24.17
2028	24.72	24.52	24.89	22.97	24.44
2029	25.00	24.77	25.13	23.15	24.71
2030	25.28	25.03	25.42	23.33	24.99
Change in UPT task (billion PKM) from 'Base case' scenario, 2030		-0.25	0.14	-1.95	-0.29
Change in UPT task (per cent) from 'Base case' scenario, 2030		-1.00	0.53	-7.70	-1.13
Average annual growth rates (per cent), 2011–2030		1.35	1.30	1.38	1.29

The total metropolitan UPT task under the base case is forecast to increase to 25.28 billion pkm. Total metropolitan UPT tasks over the forecast period (2011–2030) would:

- decrease by 1.00 per cent to 25.03 billion pkm under the 'high petrol price' scenario
- increase by 0.53 per cent to 25.42 billion pkm under the 'low petrol price' scenario
- decrease by 7.70 per cent to 23.33 billion pkm under the 'high UPT fares' scenario
- decrease by 1.13 per cent to 24.99 billion pkm under the 'ongoing GFC effect' scenario (Table 6.1).

The size of the metropolitan UPT task depends on two components: the total passenger task in the city and the UPT's share of this total task. Paradoxically, the decrease in total passenger task with a high petrol price outweighs the increase in UPT's share with a high petrol price. The result is a slightly lower UPT task with high petrol price, and a slightly higher UPT task with a low petrol price. The effect of high petrol price on the size of the UPT task for total capital cities in 2030 is shown in Figure 6.3. Similar petrol price effects are also apparent in the high and low petrol price scenarios for all individual capital cities.

**Figure 6.3** Effects of high petrol price on the size of the UPT task, total capital cities, 2030



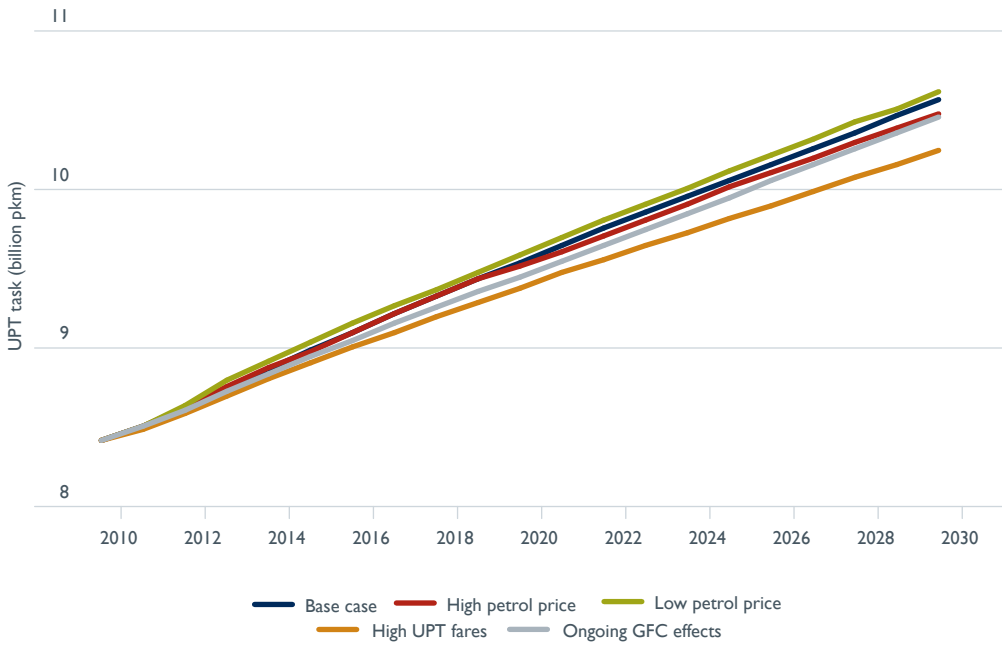
### 6.3.2 By capital city

Sensitivity analyses by capital city show a very similar pattern, but different magnitudes and trends, as seen in Figure 6.4 to Figure 6.7. The data for these figures is in Appendix L (see Table L.1 to Table L.8).

In each capital city, the UPT task under the 'low petrol price' scenario would increase slightly, while under all other scenarios, the UPT task would shrink. However, the total UPT task in Melbourne, Adelaide, Perth, Hobart and Canberra under the 'high UPT fares' scenario would show a large decrease compared to other scenarios, including the base case.

Figure 6.4 UPT task (billion PKM) by scenarios, Sydney and Melbourne, 2010–2030

Sydney



Melbourne

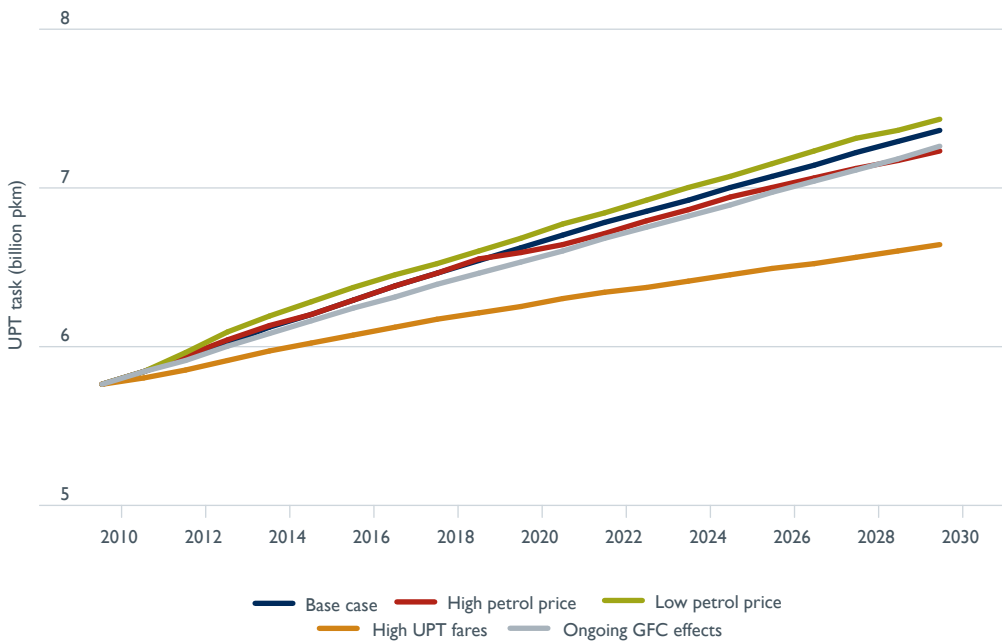
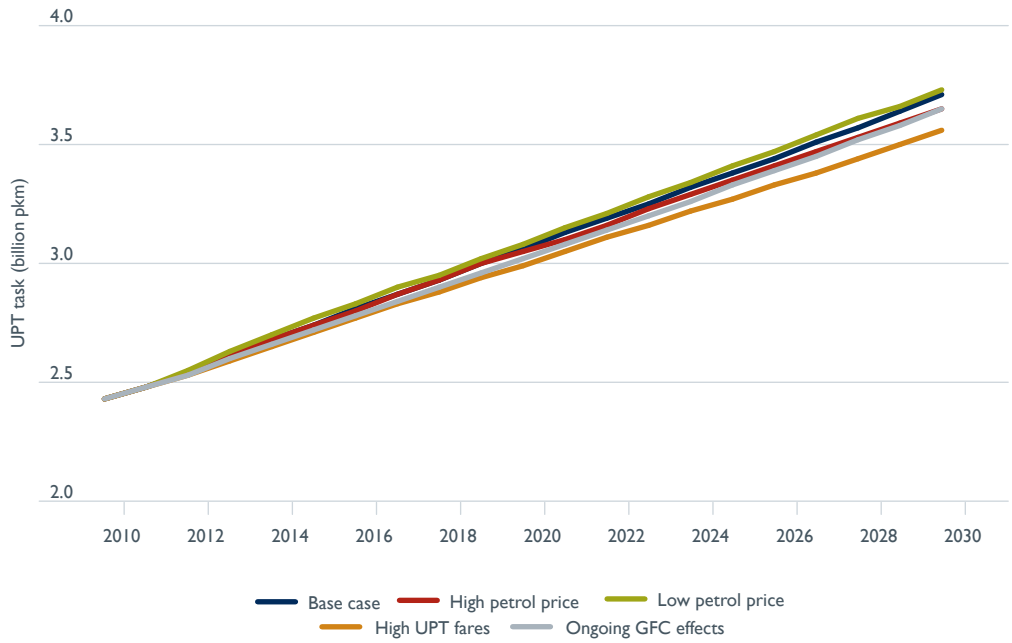
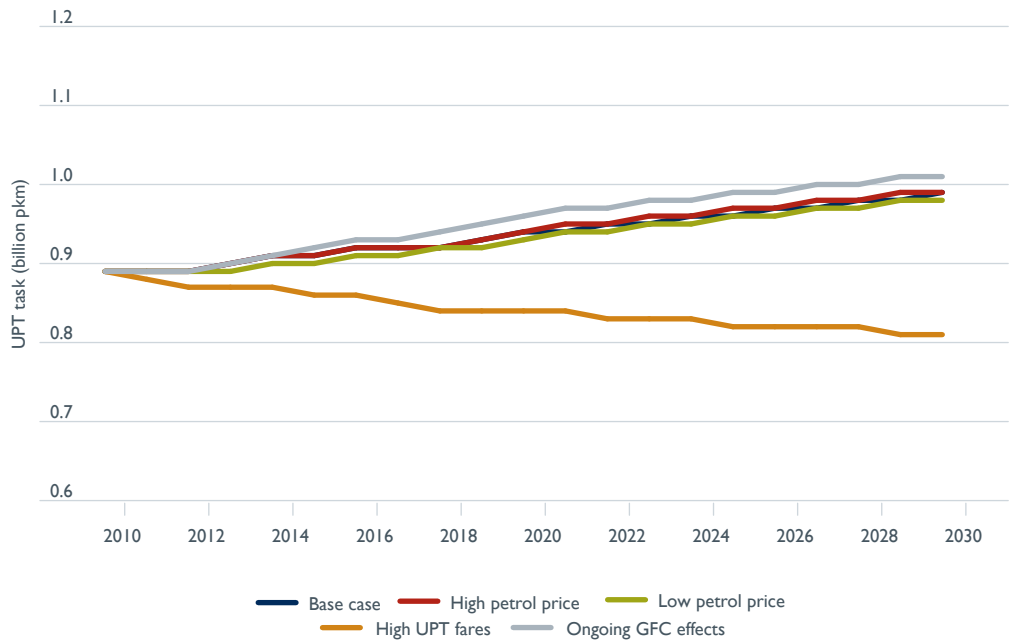


Figure 6.5 UPT task (billion PKM) by scenarios, Brisbane and Adelaide, 2010–2030

Brisbane



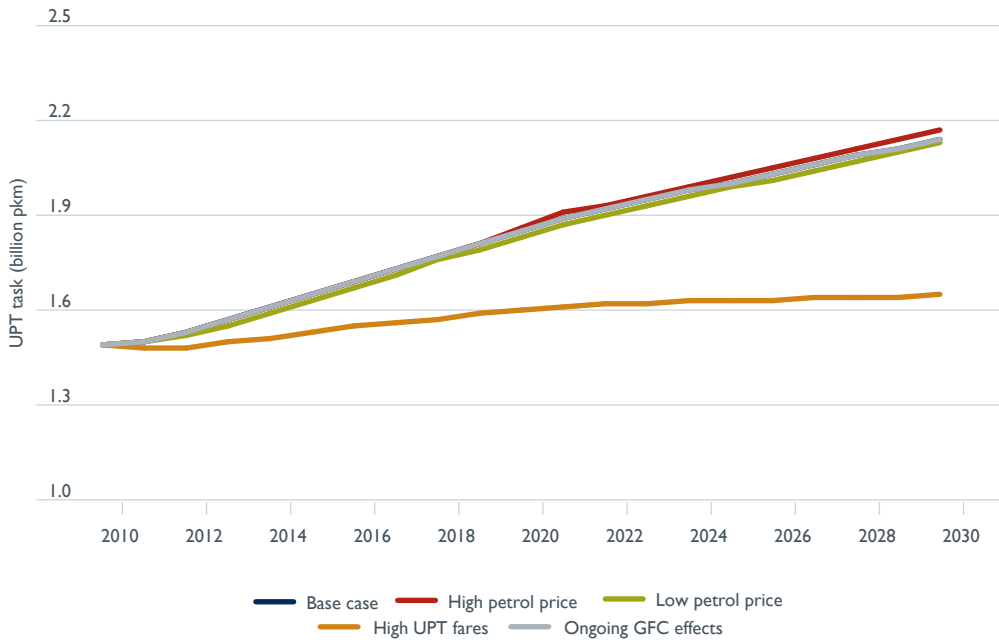
Adelaide





**Figure 6.6** UPT task (billion PKM) by scenarios, Perth and Hobart, 2010–2030

**Perth**



**Hobart**

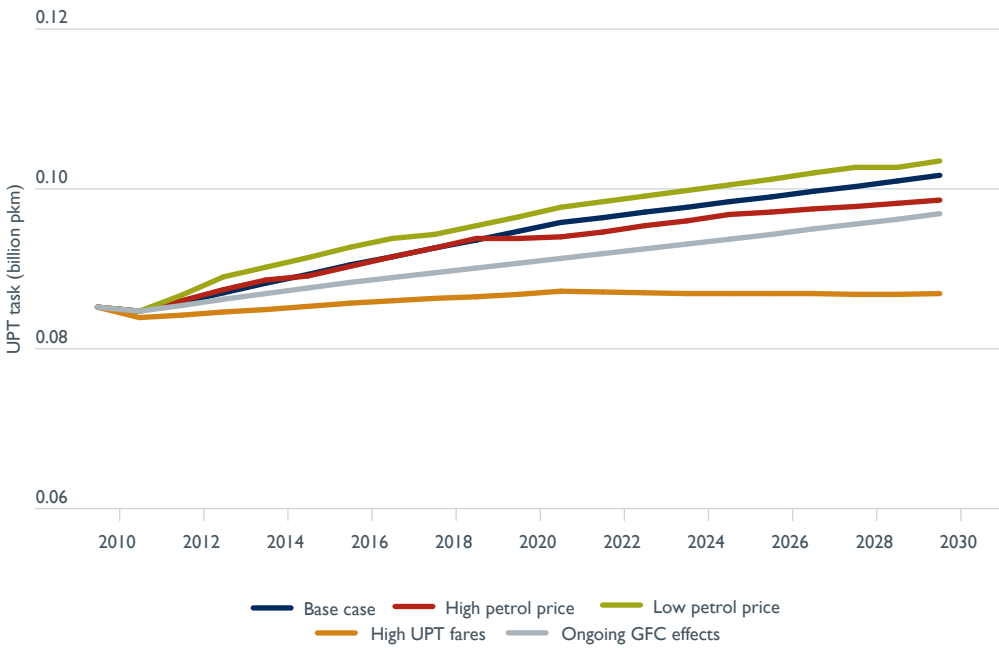
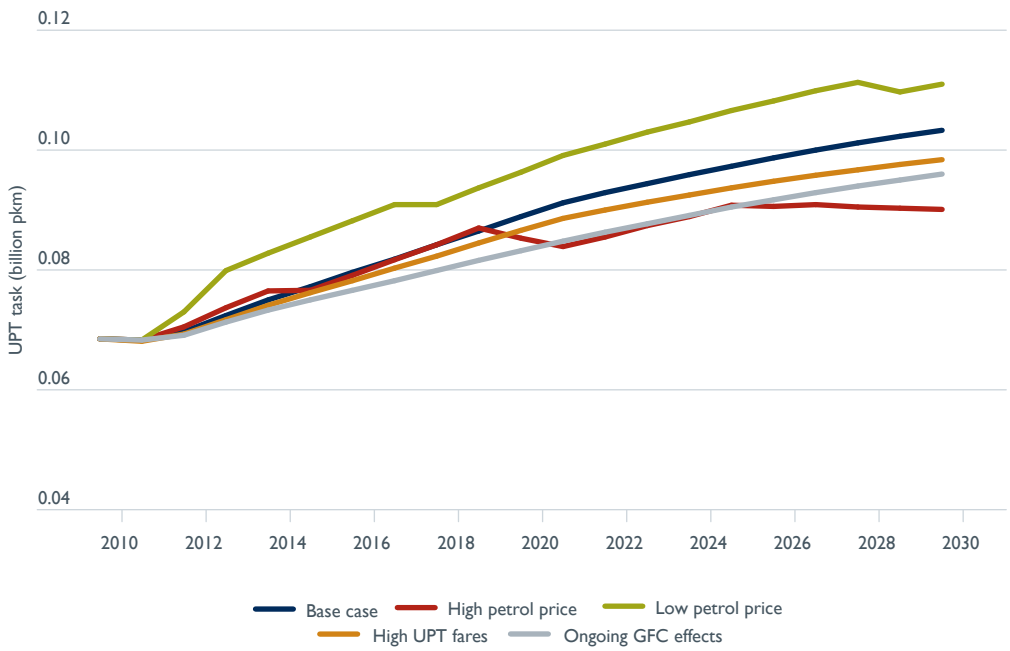


Figure 6.7 UPT task (billion PKM) by scenarios, Darwin and Canberra, 2010–2030

Darwin



Canberra

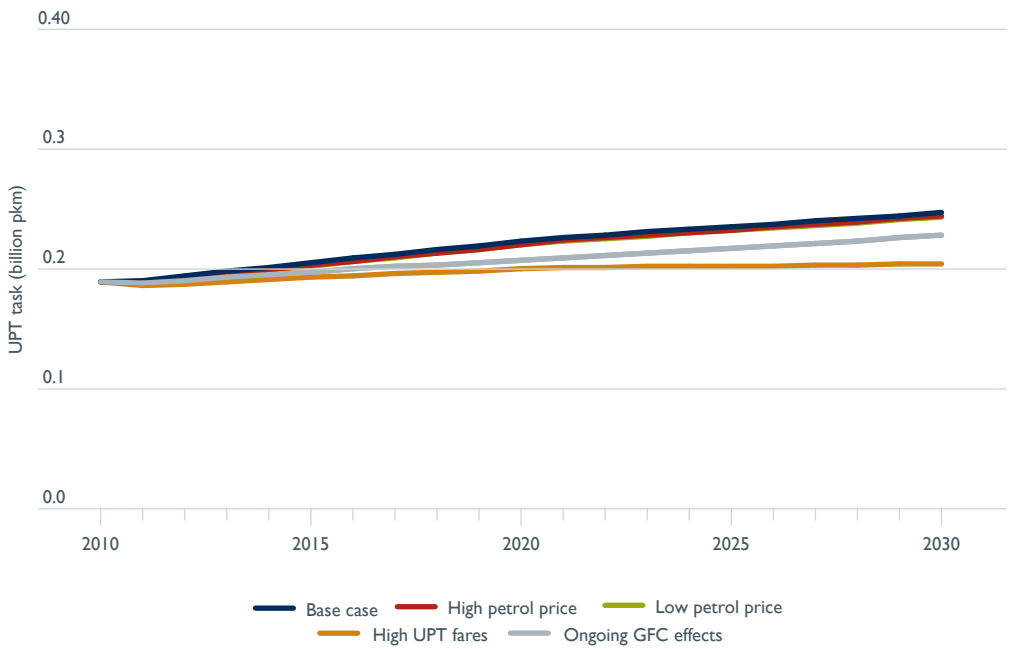


Table 6.2 presents the change in UPT tasks from the base case, shown as both absolute figures and percentage by scenarios in 2030. Generally, the change in UPT tasks under the various scenarios would be greater in the smaller capital cities.

**Table 6.2** Change in UPT tasks (amount and percentage) by scenarios from ‘Base case’, 2030

Capital city	Scenarios				Ongoing GFC effect (Scenario 5)
	Base case (Scenario 1)	High petrol price (Scenario 2)	Low petrol price (Scenario 3)	High UPT fares (Scenario 4)	
<i>Change in UPT task (billion PKM) from ‘Base case’ scenario</i>					
Sydney	10.55	10.46	10.60	10.23	10.44
Melbourne	7.35	7.22	7.42	6.63	7.25
Brisbane	3.71	3.65	3.73	3.56	3.65
Adelaide	0.99	0.99	0.98	0.81	1.01
Perth	2.14	2.17	2.13	1.65	2.14
Hobart	0.10	0.10	0.10	0.09	0.10
Darwin	0.10	0.09	0.11	0.10	0.10
Canberra	0.25	0.25	0.25	0.21	0.23
All capitals	25.28	25.03	25.42	23.33	24.99
<i>Change in UPT task (per cent) from ‘Base case’ scenario</i>					
Sydney		-0.82	0.47	-3.04	-1.04
Melbourne		-1.78	0.96	-9.89	-1.47
Brisbane		-1.48	0.66	-4.10	-1.60
Adelaide		0.85	-0.51	-17.91	2.39
Perth		1.28	-0.67	-23.12	0.00
Hobart		-3.07	1.76	-14.59	-4.72
Darwin		-12.77	7.50	-4.74	-7.07
Canberra		-1.06	-1.37	-17.00	-7.56
All capitals		-1.00	0.53	-7.70	-1.13

## CHAPTER 7

# Discussions and concluding remarks

### 7.1 Background

This chapter summarizes the modelling and long-term forecasting results of UPT use in Australia's capital cities. Modelling was undertaken on UPT from 1977–2010, while forecasts were undertaken from 2011–2030.

The major objectives of this study were:

- to model capital city public transport tasks in Australia between 1977 and 2010
- to produce long-term forecasts of these modelled estimates from 2011–2030.

### 7.2 Methodology

A number of methods and procedures were developed to estimate and forecast UPT tasks. The models are specified in terms of household disposable income constraints and real fares. A disposable income constraint variable was used that was a derivative of several costs, such as mortgage, rent, food, petrol and household savings.

Due to uncertainty of future petrol prices, UPT fares and the GFC effect, sensitivity analyses were carried out to examine the possible effects of these drivers on future UPT tasks.

### 7.3 Results of the study

The methods used in the study to model and forecast the UPT task in the capital cities were complex, but the ultimate results are important to various researchers and policy makers. Briefly, the key results are:

1. Modelling the UPT passenger task by capital cities between 1977 and 2010 showed that the overall trend across all capital cities in Australia was a downward drift in UPT mode share until 2004. After 2004, increasing household cost constraints and the effects of the GFC imparted an upward trend in the UPT mode share, which levelled out by 2010. The effects of various drivers of demand differ across capital cities. However, the pattern of actual UPT share in all capital cities is quite similar to the UPT share predicted by the models. Similarly, the aggregate levels of the UPT passenger tasks between 1977 and 2010 are roughly as predicted by the models.

2. Estimates (1977–2010) of the public transport passenger task by capital city showed that total estimated metropolitan UPT task increased at an average annual growth rate of 1.96 per cent, rising from 10.1 billion pkm to 19.1 billion pkm, a total increase of 9.0 billion pkm. Among the five larger capital cities, the UPT share of the total passenger task grew in Brisbane and Perth, while the share decreased in Sydney, Melbourne and Adelaide. Among the three smaller capital cities, the UPT shares increased in Darwin and Canberra, but decreased in Hobart.
3. UPT forecasts (2011–2030) showed that the total metropolitan UPT passenger task is forecast to grow from 19.6 billion pkm to 25.3 billion pkm, giving a forecast UPT task growth of 5.7 billion pkm. This figure equates to an average annual growth rate of 1.35 per cent. Among the five larger capital cities, the city share of the total metropolitan passenger task is forecast to increase in Brisbane and Perth, while the city share is forecast to decrease in Sydney, Melbourne and Adelaide. Among the three smaller capital cities, the city share will be more or less unchanged.
4. The sensitivity analysis showed that the level of the UPT task in metropolitan Australia over 2011–2030 would increase slightly under a 'low petrol price' scenario and decrease slightly under a 'high petrol price' and an 'ongoing GFC effect' scenario, compared with the base case. However, the major decrease would be associated with a 'high UPT fares' scenario. These trends were also apparent in each capital city, but the magnitudes and the trends were different.

## 7.4 Potential use of the UPT task data

UPT in Australia's capital cities has been undergoing a resurgence for the last half decade. The modelling presented in this report shows that this higher growth was as a result of population growth, lower UPT fares and increasing household disposable income constraints. The forecasting done using the models also shows that this higher growth rate is unlikely to persist. Nevertheless, the base-case forecast still has UPT demand growing by about one-third over the 20 years from 2010 to 2030.

The results of the research have a wide range of potential uses. It is important for policymakers across the country, including local, state and federal government agencies, investors, transport regulators and city planners, to understand the drivers of future UPT growth.

Although UPT comprises only a small component of total city passenger transport, the results of this research may assist in developing policies for areas such as infrastructure planning, urban transport reform and energy efficiency policy. The results can also provide insight into new and emerging policy issues relating to the development of urban infrastructure, congestion amelioration and road safety.

## APPENDIX A

# Metropolitan public transport journeys by capital city by transport mode, 1945–2010

This Appendix provides data on metropolitan public transport journeys in terms of million passenger journeys by capital city by transport mode between 1945 and 2010.

**Table A.1 Metropolitan public transport journeys (million passenger journeys) by capital city by transport mode, 1945–2010**

Financial year	Sydney					Melbourne				Brisbane				
	Rail	Tram	Bus	Ferry	Total	Rail	Tram	Bus	Total	Rail	Tram	Bus	Ferry	Total
1945	237.0	404.6	159.8	31.5	832.9	197.1	294.1	139.4	630.6	31.2	159.7	8.1	3.6	202.5
1946	249.9	413.2	167.9	30.9	861.9	197.4	289.5	139.2	626.1	30.6	147.0	10.0	3.7	191.2
1947	243.1	390.2	179.0	27.5	839.8	171.1	269.2	138.2	578.5	27.4	135.8	11.7	3.7	178.6
1948	245.8	364.1	193.6	24.9	828.4	183.9	263.1	137.2	584.1	23.2	132.1	19.3	3.8	178.4
1949	245.9	309.8	231.1	20.9	807.8	177.2	273.8	134.5	585.4	26.1	125.6	26.7	4.0	182.4
1950	240.0	271.1	262.0	18.2	791.2	186.6	210.1	138.7	535.4	25.7	115.2	28.4	4.1	173.5
1951	251.0	250.3	268.0	17.5	786.8	144.1	244.1	146.5	534.7	27.3	108.4	30.7	4.3	170.6
1952	241.7	216.9	264.3	17.5	740.4	168.1	222.6	144.6	535.4	28.4	108.2	33.5	4.4	174.5
1953	251.6	207.3	257.3	16.9	733.0	169.1	212.4	151.0	532.5	29.2	107.9	37.7	4.6	179.4
1954	258.2	200.8	262.8	16.3	738.1	171.0	209.8	142.6	523.4	29.5	106.5	41.3	4.7	181.9
1955	260.0	189.4	269.2	15.8	734.4	174.0	207.6	140.8	522.4	29.7	101.9	43.8	4.8	180.2
1956	264.4	172.6	275.6	15.2	727.8	171.9	211.7	118.1	501.7	29.7	97.0	46.5	4.9	178.1
1957	253.0	142.6	235.9	14.2	645.7	173.0	205.0	112.8	490.9	28.8	89.8	47.6	5.1	171.3
1958	244.2	114.1	251.1	13.8	623.2	173.2	196.4	111.3	481.0	28.5	85.3	50.2	5.2	169.2
1959	239.7	68.3	275.9	13.5	597.4	168.8	184.3	108.1	461.2	28.4	81.8	50.5	5.3	166.0
1960	240.0	45.0	290.4	13.1	588.5	163.3	177.9	106.0	447.2	27.5	80.0	51.7	5.4	164.6
1961	239.0	11.0	311.6	13.3	574.8	154.6	172.0	107.2	433.9	24.6	73.7	45.2	5.6	149.1
1962	238.0	0.0	307.7	12.7	558.4	157.0	167.3	107.9	432.2	22.9	72.7	46.0	5.7	147.3
1963	242.0	0.0	295.4	12.7	550.1	156.5	162.7	110.9	430.1	22.4	67.1	46.7	5.5	141.8
1964	248.0	0.0	297.8	13.0	558.9	157.0	160.5	116.9	434.4	22.5	63.4	49.0	4.9	139.8
1965	246.0	0.0	301.8	13.2	561.0	153.2	147.9	110.5	411.6	22.3	63.0	51.3	6.4	143.0
1966	242.0	0.0	326.7	13.2	581.8	152.5	140.6	103.9	397.0	23.2	56.0	46.7	6.2	132.2
1967	240.0	0.0	323.3	13.0	576.3	149.5	131.9	108.9	390.3	23.7	48.5	45.6	3.1	120.9
1968	238.1	0.0	323.1	13.2	574.3	149.5	127.6	108.8	385.9	24.1	46.3	46.4	3.4	120.2
1969	233.2	0.0	328.1	13.3	574.6	148.4	119.0	104.3	371.7	25.8	25.0	58.5	3.8	113.1
1970	236.3	0.0	324.3	13.4	574.1	148.2	110.7	102.8	361.8	26.3	0.0	89.0	3.8	119.1
1971	238.8	0.0	319.8	13.5	572.0	147.6	109.8	102.8	360.2	27.6	0.0	81.2	3.8	112.7
1972	205.9	0.0	286.8	13.0	505.7	140.7	102.0	97.5	340.1	30.2	0.0	74.6	3.0	107.8
1973	200.0	0.0	300.5	12.8	513.2	137.6	104.7	96.3	338.5	30.5	0.0	76.9	2.2	109.6
1974	198.0	0.0	298.8	12.5	509.3	135.7	109.3	93.9	338.8	32.0	0.0	70.6	2.1	104.7
1975	195.2	0.0	289.5	11.0	495.7	137.9	111.1	86.9	335.9	34.8	0.0	63.2	1.9	99.9
1976	185.4	0.0	270.0	9.2	464.7	127.1	106.1	85.3	318.5	32.4	0.0	60.8	2.0	95.3
1977	181.1	0.0	266.6	10.4	458.1	118.4	102.9	83.5	304.7	29.3	0.0	61.5	1.4	92.2
1978	177.8	0.0	268.4	11.0	457.1	111.8	101.3	82.1	295.2	27.5	0.0	62.6	1.3	91.4
1979	177.6	0.0	260.9	11.4	449.9	106.6	101.1	81.5	289.2	25.8	0.0	61.4	1.3	88.6
1980	201.3	0.0	264.4	12.7	478.4	100.8	98.9	80.7	280.4	28.0	0.0	59.9	1.4	89.3
1981	207.9	0.0	269.6	12.8	490.2	97.4	100.1	80.0	277.5	30.3	0.0	54.6	1.4	86.3
1982	214.9	0.0	263.4	14.4	492.7	89.0	102.4	80.8	272.2	32.4	0.0	56.1	1.4	89.9
1983	202.8	0.0	265.3	13.2	481.3	91.4	101.3	80.6	273.3	33.1	0.0	56.5	1.5	91.1
1984	198.1	0.0	263.4	12.2	473.7	94.4	102.1	81.9	278.4	35.8	0.0	53.3	1.3	90.4
1985	197.0	0.0	268.5	11.5	476.9	97.5	109.4	86.6	293.5	37.4	0.0	53.1	1.0	91.5
1986	214.9	0.0	269.5	12.1	496.4	102.9	112.4	88.1	303.4	40.3	0.0	52.0	1.1	93.4
1987	222.1	0.0	275.5	12.7	510.3	106.0	113.3	89.2	308.5	43.0	0.0	52.7	1.2	96.9
1988	243.1	0.0	281.5	12.3	536.8	100.1	115.6	91.2	306.9	45.0	0.0	54.9	1.3	101.2
1989	243.9	3.5	280.7	12.2	540.3	105.7	118.9	92.4	316.9	49.4	0.0	59.4	1.2	110.0
1990	248.3	3.5	273.6	12.1	537.4	107.1	95.6	89.9	292.5	43.3	0.0	56.0	1.1	100.4
1991	250.6	3.4	282.7	12.1	548.8	106.9	107.6	88.6	303.1	42.1	0.0	57.8	1.1	101.0
1992	243.2	3.4	281.7	11.6	539.9	109.0	112.0	88.6	309.6	40.1	0.0	60.5	1.2	101.8
1993	232.3	3.4	270.1	11.3	517.1	106.1	100.9	87.3	294.3	39.4	0.0	58.3	1.4	99.1
1994	236.6	3.4	270.7	11.0	521.6	101.1	104.0	85.3	290.4	38.4	0.0	58.7	1.6	98.6
1995	250.4	3.4	276.7	11.9	542.3	105.5	108.6	87.2	301.3	37.0	0.0	64.7	1.8	103.5
1996	256.1	4.0	282.8	12.5	555.5	109.3	114.1	88.5	312.0	39.2	0.0	60.5	2.2	101.8
1997	263.8	4.7	288.9	13.0	570.5	112.7	115.4	85.8	314.0	41.5	0.0	59.5	2.5	103.5
1998	265.6	5.4	290.5	12.7	574.2	113.1	117.2	84.7	315.0	41.5	0.0	57.4	2.9	101.9
1999	269.5	5.8	292.0	12.7	580.1	118.4	121.6	84.2	324.2	41.0	0.0	49.3	3.2	93.4
2000	278.7	6.2	291.6	12.8	589.3	125.4	129.8	83.5	338.8	42.4	0.0	52.6	3.4	98.4
2001	302.6	6.7	286.6	14.4	610.3	130.5	133.9	82.4	346.9	44.7	0.0	51.8	3.6	100.0
2002	276.4	6.3	274.5	13.6	570.8	135.4	137.2	81.3	353.9	45.4	0.0	53.7	3.5	102.5
2003	273.4	6.2	275.1	13.5	568.2	138.3	140.6	81.7	360.6	46.2	0.0	55.7	3.5	105.4
2004	273.3	5.1	273.1	14.0	565.5	139.8	142.5	80.5	362.8	48.1	0.0	59.0	4.0	111.1
2005	270.3	6.5	278.6	14.0	569.5	145.1	145.3	78.0	368.4	48.6	0.0	65.0	5.2	118.7
2006	273.7	5.7	279.0	14.0	572.4	162.4	151.1	79.2	392.7	53.1	0.0	72.6	5.9	131.6
2007	281.3	6.5	283.7	14.1	585.6	178.6	154.9	85.0	418.5	57.9	0.0	77.2	6.3	141.3
2008	295.9	6.0	291.7	14.0	607.6	201.2	158.3	91.3	450.8	61.7	0.0	81.3	6.4	149.5
2009	304.8	7.0	297.8	14.3	623.9	213.7	178.1	98.5	490.3	65.1	0.0	87.4	6.6	159.1
2010	302.9	7.0	292.5	14.7	617.1	219.3	175.6	102.1	497.0	59.7	0.0	90.6	6.4	156.7

(continued)

**Table A.1** Metropolitan public transport journeys (million passenger journeys) by capital city by transport mode, 1945–2010 (continued)

Financial year	Adelaide				Perth					Hobart					Darwin	Canberra
	Rail	Tram	Bus	Total	Rail	Tram	Bus	Ferry	Total	Rail	Tram	Bus	Ferry	Total	Bus	Bus
1945	22.7	84.2	18.0	124.9	15.6	50.4	22.4	1.5	89.8	2.3	26.3	1.9	1.1	31.5	0.0	3.3
1946	21.0	85.0	18.8	124.8	14.7	50.8	23.4	1.4	90.4	2.4	28.4	3.1	1.0	35.0	0.0	3.4
1947	17.8	83.4	19.3	120.4	11.9	45.4	24.5	1.4	83.3	2.3	28.6	4.3	1.0	36.2	0.0	3.6
1948	17.4	76.8	20.5	114.7	11.9	46.1	26.2	1.4	85.5	2.2	27.6	5.6	1.0	36.3	0.1	3.9
1949	16.6	71.9	21.5	109.9	10.9	36.7	33.6	0.9	82.1	2.4	22.5	8.2	1.0	34.1	0.1	4.4
1950	15.7	71.4	22.5	109.6	9.6	35.4	39.2	0.9	85.1	2.4	22.5	8.6	1.0	34.4	0.2	4.6
1951	15.6	68.7	23.8	108.2	9.9	31.9	41.9	0.7	84.5	2.3	20.4	9.3	1.0	33.0	0.3	5.2
1952	16.6	67.8	24.9	109.3	9.0	26.0	45.0	0.7	80.6	2.4	15.6	9.8	0.9	28.7	0.3	4.2
1953	16.1	57.9	26.5	100.4	5.5	20.4	50.2	0.6	76.7	2.4	14.6	10.4	1.1	28.5	0.4	4.1
1954	16.1	50.1	31.0	97.2	7.8	15.7	50.7	0.5	74.7	2.5	11.4	11.1	1.0	26.0	0.4	3.9
1955	15.5	47.3	36.2	98.9	9.4	13.4	51.7	0.5	74.9	2.5	10.9	11.9	1.1	26.3	0.4	3.7
1956	15.1	39.8	36.6	91.4	11.5	11.1	51.8	0.4	74.8	2.4	7.9	12.8	0.8	24.0	0.5	3.9
1957	16.0	33.2	41.5	90.7	12.5	5.5	52.2	0.4	70.6	2.3	7.4	14.1	0.5	24.4	0.5	3.6
1958	16.4	24.6	54.3	95.2	13.4	2.8	52.3	0.4	68.9	2.1	6.9	15.4	0.3	24.6	0.5	3.5
1959	15.7	4.2	66.8	86.7	13.9	0.1	57.9	0.4	72.3	2.1	5.5	16.6	0.2	24.5	0.6	3.6
1960	16.0	3.0	65.9	84.9	13.2	0.0	56.2	0.4	69.7	2.0	4.2	18.8	0.3	25.3	0.6	3.9
1961	14.6	2.6	64.0	81.2	12.0	0.0	59.6	0.2	71.8	1.9	1.1	18.9	0.3	22.1	0.7	4.1
1962	14.2	2.5	64.4	81.1	11.3	0.0	54.2	0.2	65.7	1.6	0.0	18.4	0.2	20.2	0.7	4.3
1963	14.0	2.5	66.3	82.8	10.9	0.0	51.4	0.2	62.6	1.3	0.0	18.2	0.2	19.7	0.8	4.4
1964	14.3	2.5	67.0	83.8	10.3	0.0	50.3	0.2	60.8	1.2	0.0	18.1	0.0	19.3	0.8	4.8
1965	14.3	2.4	64.5	81.3	9.9	0.0	50.6	0.2	60.7	1.1	0.0	17.4	0.0	18.6	0.9	5.1
1966	14.7	2.3	63.2	80.1	9.7	0.0	53.0	0.2	63.0	1.1	0.0	16.5	0.0	17.6	0.9	5.6
1967	14.6	2.1	61.3	78.0	9.5	0.0	53.9	0.3	63.6	1.0	0.0	16.3	0.0	17.2	1.2	6.2
1968	14.4	1.9	60.1	76.4	9.6	0.0	53.7	0.3	63.6	0.9	0.0	16.0	0.0	16.9	1.2	6.1
1969	13.7	1.8	57.7	73.2	9.8	0.0	55.5	0.3	65.7	0.8	0.0	15.8	0.0	16.6	1.3	6.6
1970	13.3	1.7	56.1	71.1	10.2	0.0	57.0	0.4	67.6	0.7	0.0	15.4	0.0	16.1	1.4	7.7
1971	13.2	1.6	54.4	69.2	10.6	0.0	58.3	0.4	69.3	0.6	0.0	15.5	0.0	16.2	1.5	7.8
1972	12.6	1.6	54.5	68.7	10.8	0.0	59.8	0.4	71.0	0.6	0.0	14.7	0.0	15.3	1.3	8.1
1973	13.1	1.6	56.7	71.4	11.1	0.0	59.2	0.4	70.7	0.6	0.0	14.0	0.1	14.7	1.2	8.4
1974	13.3	1.4	57.4	72.1	11.3	0.0	57.4	0.5	69.2	0.5	0.0	14.6	0.2	15.3	1.2	10.6
1975	12.2	1.3	58.5	72.0	10.0	0.0	56.9	0.4	67.3	0.3	0.0	15.5	4.7	20.4	0.5	12.8
1976	12.3	1.2	57.3	70.8	9.1	0.0	57.2	0.4	66.8	0.0	0.0	15.5	6.7	22.2	0.7	14.5
1977	12.2	1.3	57.2	70.7	7.8	0.0	54.0	0.4	62.2	0.0	0.0	15.3	7.0	22.3	0.7	14.4
1978	11.9	1.3	56.3	69.5	8.9	0.0	54.5	0.4	63.7	0.0	0.0	14.9	3.5	18.4	0.7	14.6
1979	11.6	2.0	56.8	70.4	8.7	0.0	53.0	0.4	62.1	0.0	0.0	13.4	1.8	15.2	0.8	16.4
1980	13.1	3.0	57.6	73.6	7.2	0.0	56.1	0.4	63.8	0.0	0.0	13.3	0.6	13.9	1.2	18.7
1981	13.8	2.9	62.5	79.2	6.5	0.0	56.8	0.4	63.7	0.0	0.0	13.2	0.2	13.4	1.6	18.0
1982	14.7	2.9	63.3	80.9	6.1	0.0	53.8	0.5	60.4	0.0	0.0	10.9	0.1	11.0	1.8	17.2
1983	12.9	2.8	55.3	71.0	6.8	0.0	54.1	0.5	61.3	0.0	0.0	10.4	0.1	10.5	2.1	20.4
1984	12.4	2.8	55.5	70.7	8.7	0.0	46.6	0.5	55.8	0.0	0.0	11.2	0.1	11.3	2.1	22.9
1985	11.8	2.7	52.9	67.4	8.7	0.0	44.9	0.5	54.1	0.0	0.0	11.2	0.1	11.3	2.1	24.0
1986	12.8	2.6	53.5	68.9	9.8	0.0	48.0	0.5	58.3	0.0	0.0	11.2	0.1	11.3	2.1	23.1
1987	12.5	2.6	52.4	67.5	9.7	0.0	49.4	0.6	59.6	0.0	0.0	11.1	0.1	11.2	1.8	24.1
1988	9.5	2.4	53.7	65.6	9.4	0.0	48.8	0.6	58.9	0.0	0.0	10.4	0.1	10.5	2.3	24.8
1989	10.1	2.7	49.8	62.5	8.8	0.0	52.0	0.6	61.4	0.0	0.0	9.6	0.0	9.6	2.9	24.6
1990	10.0	2.2	51.1	63.3	8.4	0.0	54.9	0.6	63.9	0.0	0.0	10.0	0.0	10.0	2.9	25.1
1991	8.9	2.2	54.3	65.5	7.6	0.0	53.4	0.5	61.5	0.0	0.0	9.5	0.0	9.6	3.1	25.0
1992	8.4	2.1	53.3	63.7	9.6	0.0	51.3	0.5	61.5	0.0	0.0	9.6	0.0	9.6	3.1	24.4
1993	9.1	1.8	49.8	60.6	13.6	0.0	49.1	0.5	63.2	0.0	0.0	9.5	0.0	9.5	2.9	23.7
1994	10.5	1.8	48.9	61.2	22.9	0.0	46.0	0.5	69.4	0.0	0.0	9.3	0.0	9.3	2.9	23.1
1995	10.9	2.0	49.6	62.5	23.4	0.0	48.1	0.4	71.9	0.0	0.0	9.3	0.0	9.3	3.1	24.0
1996	10.8	1.9	48.2	60.9	25.9	0.0	45.6	0.5	72.0	0.0	0.0	9.1	0.0	9.1	3.4	24.8
1997	10.7	1.9	47.5	60.1	29.0	0.0	46.9	0.6	76.5	0.0	0.0	8.4	0.0	8.4	3.3	25.3
1998	10.5	1.9	46.9	59.3	29.2	0.0	46.7	0.6	76.5	0.0	0.0	7.8	0.0	7.9	3.2	24.8
1999	10.3	1.9	44.0	56.2	28.9	0.0	46.3	0.5	75.7	0.0	0.0	7.6	0.0	7.6	3.1	23.0
2000	10.3	1.9	43.0	55.2	29.5	0.0	48.6	0.5	78.6	0.0	0.0	7.5	0.0	7.5	3.0	22.4
2001	10.2	2.0	44.8	57.0	31.2	0.0	52.0	0.6	83.8	0.0	0.0	7.6	0.0	7.6	3.1	21.8
2002	10.5	2.0	46.2	58.7	31.0	0.0	54.5	0.5	86.0	0.0	0.0	7.6	0.0	7.6	3.1	21.8
2003	11.0	2.0	47.1	60.1	31.4	0.0	56.3	0.5	88.2	0.0	0.0	7.6	0.0	7.6	3.3	22.4
2004	11.5	2.2	46.5	60.1	31.1	0.0	59.0	0.5	90.6	0.0	0.0	7.7	0.0	7.7	3.3	22.2
2005	11.5	2.1	47.5	61.1	32.7	0.0	61.9	0.5	95.1	0.0	0.0	7.6	0.0	7.6	3.3	21.9
2006	12.1	2.1	49.6	63.8	34.1	0.0	63.9	0.5	98.5	0.0	0.0	7.6	0.0	7.7	3.4	22.9
2007	12.1	2.4	50.6	65.1	35.8	0.0	64.6	0.5	100.9	0.0	0.0	7.7	0.0	7.7	3.4	22.5
2008	12.2	2.6	51.6	66.4	42.6	0.0	65.7	0.5	108.8	0.0	0.0	7.4	0.0	7.5	3.5	22.5
2009	12.4	2.6	52.7	67.7	54.7	0.0	73.6	0.5	128.8	0.0	0.0	7.7	0.0	7.7	3.6	23.2
2010	12.1	3.0	53.5	68.6	56.4	0.0	74.8	0.5	131.6	0.0	0.0	7.8	0.0	7.8	3.7	23.6

Source: BITRE estimates.





## APPENDIX B

# Annual public transport journeys per person by capital cities, 1945–2010

Appendix B presents data on the number of annual public transport trips per person for individual Australian capital cities as well as all total capital cities between 1945 and 2010.

**Table B.1** Public transport journeys per person per year by capital cities, 1945–2010

Financial year	Number of public transport journeys per person per annum								
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	All capitals
1945	471.2	485.0	450.8	296.7	310.3	383.7	0.0	200.8	442.2
1946	482.7	477.1	418.7	291.0	307.0	415.1	0.0	197.6	440.8
1947	464.2	433.6	383.3	274.7	274.4	418.6	5.4	194.1	412.5
1948	453.1	430.8	371.8	254.1	273.0	410.4	8.7	183.1	402.9
1949	432.1	420.7	366.9	235.6	250.6	374.8	14.8	190.6	386.4
1950	411.6	372.4	336.7	225.3	246.1	362.5	26.5	177.7	358.5
1951	399.5	358.9	319.8	215.5	234.2	329.1	30.7	190.5	345.2
1952	369.3	347.0	315.8	211.7	214.8	275.6	33.4	147.4	325.9
1953	360.8	335.6	314.7	189.5	196.4	265.7	35.5	132.1	314.8
1954	357.0	319.5	310.0	178.8	184.3	237.9	37.5	118.8	305.0
1955	346.7	308.4	299.3	176.3	178.9	235.2	37.5	104.3	295.6
1956	335.5	286.3	288.7	157.0	172.8	209.3	37.5	102.9	280.2
1957	290.3	272.1	269.8	151.0	158.8	203.7	37.5	88.2	254.6
1958	273.4	258.9	260.5	154.5	151.1	202.9	37.5	77.3	242.8
1959	256.3	241.0	250.1	137.0	154.6	194.1	38.8	71.4	227.8
1960	246.6	226.8	243.2	130.8	145.9	196.5	38.8	68.6	217.6
1961	236.1	215.1	213.1	121.4	146.0	169.7	38.8	65.2	205.1
1962	224.1	209.5	206.3	118.6	129.3	151.8	37.1	60.2	196.0
1963	216.3	203.5	194.4	117.2	118.7	145.9	42.4	57.1	188.6
1964	215.4	200.3	186.7	114.5	111.6	140.6	42.3	56.3	185.3
1965	211.5	185.4	186.3	106.9	108.4	133.2	43.2	54.2	177.7
1966	214.5	174.7	167.9	102.2	108.5	124.7	39.7	54.7	172.7
1967	208.6	167.7	150.4	97.7	105.0	120.1	46.1	56.5	165.5
1968	203.7	162.4	146.4	94.5	100.2	115.8	44.1	51.4	160.5
1969	198.9	152.4	134.6	88.8	98.5	111.3	42.3	51.2	153.5
1970	194.5	144.9	138.7	84.4	97.0	106.7	40.7	55.4	149.1
1971	190.6	141.3	127.7	80.7	95.9	105.7	41.3	52.3	144.7
1972	166.2	131.2	118.9	78.8	95.1	99.2	32.6	51.1	131.3
1973	167.3	128.6	117.5	80.6	92.6	94.2	27.2	49.0	130.3
1974	164.7	126.9	109.2	80.0	87.8	97.0	25.7	57.6	127.4
1975	159.3	124.5	102.8	78.7	82.8	127.2	14.0	65.1	124.1
1976	147.8	116.9	95.8	76.6	80.2	135.3	14.9	70.5	116.6
1977	144.6	111.2	91.5	75.7	73.0	134.6	14.1	67.8	112.3
1978	143.0	107.1	89.2	73.7	73.4	110.1	14.8	67.8	109.6
1979	139.4	104.4	84.9	74.5	70.4	90.3	15.5	74.7	106.6
1980	146.9	100.6	84.0	77.7	70.9	82.2	22.2	84.1	108.4
1981	149.5	98.9	78.8	83.1	69.1	78.1	28.0	79.5	108.1
1982	148.4	96.1	79.6	84.0	63.4	63.6	28.9	74.4	106.1
1983	143.6	95.5	79.2	72.9	62.8	60.6	31.5	85.8	103.3
1984	140.0	96.5	77.7	71.8	56.1	64.3	29.3	93.9	101.5
1985	139.2	100.9	77.5	67.8	53.1	63.7	27.8	96.1	101.8
1986	143.0	102.6	76.4	68.7	55.5	62.1	26.8	89.7	103.4
1987	144.6	102.7	77.8	66.7	55.2	60.9	22.2	91.4	103.9
1988	149.5	100.9	79.6	64.2	53.0	56.8	27.7	91.5	104.7
1989	149.1	102.7	84.2	60.5	53.5	51.9	34.4	89.3	105.0
1990	147.5	93.6	75.0	60.6	54.4	53.1	33.3	89.3	100.7
1991	149.4	96.0	73.9	62.0	51.7	50.2	35.9	86.7	101.5
1992	145.5	97.3	72.9	59.8	50.9	50.0	34.8	83.1	100.0
1993	138.5	92.0	69.2	56.7	51.6	49.3	31.9	79.6	95.2
1994	138.4	90.4	67.3	57.1	55.7	48.0	31.8	76.7	94.8
1995	141.9	92.9	69.1	58.2	56.6	47.7	33.2	78.7	97.2
1996	143.1	95.0	66.5	56.5	55.6	46.6	35.5	80.6	97.9
1997	145.2	94.9	66.6	55.4	58.1	42.9	33.4	82.1	98.8
1998	144.7	94.2	64.5	54.4	57.3	40.1	31.6	80.2	97.9
1999	144.3	95.9	58.2	51.2	55.9	38.9	29.6	73.8	96.8
2000	144.8	99.0	60.3	50.1	57.3	38.2	28.5	71.1	98.1
2001	147.8	99.9	60.1	51.4	60.1	38.6	29.0	68.2	99.7
2002	137.1	100.4	60.3	52.6	60.8	38.6	29.2	67.6	96.4
2003	135.6	100.8	60.4	53.6	61.4	38.2	30.7	68.8	96.1
2004	134.2	100.1	62.3	53.4	62.0	38.1	30.7	67.8	95.6
2005	134.2	100.1	65.2	53.9	64.0	37.4	29.9	66.5	96.1
2006	133.7	104.9	70.8	55.7	64.9	37.3	29.7	68.5	98.4
2007	134.8	109.6	74.3	56.1	64.7	37.1	29.1	66.5	100.5
2008	137.5	115.5	76.6	56.6	67.7	35.7	28.8	66.3	103.6
2009	138.5	122.7	79.4	57.0	77.6	36.5	28.7	68.4	107.6
2010	134.7	122.0	76.6	57.1	77.5	36.6	29.1	68.5	105.8

Source: BITRE estimates.

## APPENDIX C

# Public/private passenger transport task and shares by capital cities, 1977–2010

This Appendix provides underlying data presented as figures in Chapter 2 (see Figures 2.10 to 2.14) which is passenger transport task in terms of billion pkm and average annual growth rates and shares as per cent for each of the eight capital cities between 1977 and 2010.

**Table C.1** Public/private passenger transport task and share, Sydney and Melbourne, 1977–2010

Financial year	Sydney						Melbourne					
	Passenger task (billion pkm)			Share (per cent)			Passenger task (billion pkm)			Share (per cent)		
	Personal vehicle travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total
1977	25.7	4.8	30.5	84.2	15.8	100.0	23.3	3.0	26.3	88.6	11.4	100.0
1978	26.4	4.8	31.2	84.6	15.4	100.0	24.3	2.9	27.2	89.3	10.7	100.0
1979	27.2	4.8	32.0	85.0	15.0	100.0	25.1	2.8	27.9	89.9	10.1	100.0
1980	27.4	5.3	32.7	83.9	16.1	100.0	25.2	2.7	27.9	90.3	9.7	100.0
1981	27.8	5.4	33.3	83.6	16.4	100.0	25.7	2.6	28.4	90.7	9.3	100.0
1982	28.9	5.6	34.5	83.8	16.2	100.0	27.3	2.5	29.8	91.5	8.5	100.0
1983	28.7	5.4	34.1	84.2	15.8	100.0	27.4	2.6	30.0	91.5	8.5	100.0
1984	30.2	5.3	35.5	85.0	15.0	100.0	28.5	2.6	31.2	91.6	8.4	100.0
1985	31.6	5.4	36.9	85.5	14.5	100.0	29.5	2.7	32.2	91.5	8.5	100.0
1986	32.4	5.7	38.1	85.1	14.9	100.0	30.6	2.9	33.5	91.4	8.6	100.0
1987	33.0	5.8	38.9	85.0	15.0	100.0	31.5	3.0	34.5	91.4	8.6	100.0
1988	34.4	6.2	40.6	84.7	15.3	100.0	33.1	3.0	36.1	91.8	8.2	100.0
1989	35.7	6.3	42.0	85.0	15.0	100.0	34.7	3.1	37.8	91.8	8.2	100.0
1990	36.5	6.4	42.8	85.1	14.9	100.0	35.5	3.0	38.5	92.2	7.8	100.0
1991	36.3	6.5	42.8	84.8	15.2	100.0	35.3	3.1	38.3	92.0	8.0	100.0
1992	36.9	6.4	43.3	85.2	14.8	100.0	35.7	3.2	38.9	91.9	8.1	100.0
1993	38.0	6.2	44.2	86.0	14.0	100.0	36.4	3.1	39.5	92.1	7.9	100.0
1994	38.9	6.3	45.2	86.0	14.0	100.0	37.1	3.2	40.3	92.2	7.8	100.0
1995	40.0	6.7	46.7	85.7	14.3	100.0	38.2	3.3	41.5	92.0	8.0	100.0
1996	40.3	6.8	47.1	85.5	14.5	100.0	38.9	3.4	42.3	92.0	8.0	100.0
1997	40.2	7.0	47.3	85.1	14.9	100.0	39.2	3.4	42.6	92.1	7.9	100.0
1998	40.8	7.1	47.9	85.2	14.8	100.0	39.9	3.3	43.3	92.3	7.7	100.0
1999	41.8	7.2	49.0	85.3	14.7	100.0	41.0	3.4	44.4	92.3	7.7	100.0
2000	42.9	7.4	50.2	85.3	14.7	100.0	41.9	3.6	45.5	92.1	7.9	100.0
2001	42.6	7.8	50.4	84.6	15.4	100.0	42.0	3.7	45.7	91.9	8.1	100.0
2002	43.5	7.3	50.8	85.6	14.4	100.0	42.8	3.8	46.6	91.8	8.2	100.0
2003	44.2	7.3	51.5	85.8	14.2	100.0	43.6	3.9	47.4	91.8	8.2	100.0
2004	46.4	7.4	53.7	86.3	13.7	100.0	45.0	4.0	49.0	91.9	8.1	100.0
2005	46.6	7.5	54.1	86.2	13.8	100.0	45.2	4.0	49.2	91.8	8.2	100.0
2006	46.4	7.6	54.0	85.9	14.1	100.0	44.9	4.3	49.3	91.2	8.8	100.0
2007	46.8	7.8	54.6	85.7	14.3	100.0	45.2	4.7	49.9	90.6	9.4	100.0
2008	46.6	8.2	54.7	85.1	14.9	100.0	45.1	5.2	50.3	89.7	10.3	100.0
2009	46.8	8.3	55.1	84.9	15.1	100.0	44.2	5.6	49.8	88.8	11.2	100.0
2010	47.6	8.2	55.8	85.2	14.8	100.0	44.2	5.7	49.9	88.5	11.5	100.0
Average annual growth rate (per cent)												
	1.9	1.6	1.8				2.0	2.0	2.0			

Source: BITRE estimates.

**Table C.2** Public/private passenger transport task and share, Brisbane and Adelaide, 1977–2010

Financial year	Brisbane						Adelaide					
	Passenger task (billion pkm)			Share (per cent)			Passenger task (billion pkm)			Share (per cent)		
	Personal vehicle travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total
1977	8.5	0.9	9.4	90.6	9.4	100.0	8.7	0.6	9.3	93.6	6.4	100.0
1978	9.0	0.9	9.8	91.1	8.9	100.0	9.0	0.6	9.6	93.7	6.3	100.0
1979	9.4	0.9	10.3	91.7	8.3	100.0	9.0	0.6	9.6	93.6	6.4	100.0
1980	9.6	0.9	10.5	91.6	8.4	100.0	8.8	0.7	9.4	93.0	7.0	100.0
1981	10.0	0.9	10.9	92.0	8.0	100.0	8.7	0.7	9.4	92.3	7.7	100.0
1982	10.7	0.9	11.7	92.1	7.9	100.0	9.0	0.7	9.7	92.3	7.7	100.0
1983	10.9	1.0	11.9	91.9	8.1	100.0	9.0	0.7	9.7	93.1	6.9	100.0
1984	11.4	1.0	12.4	92.0	8.0	100.0	9.5	0.7	10.1	93.4	6.6	100.0
1985	11.8	1.0	12.8	91.9	8.1	100.0	9.9	0.6	10.5	93.8	6.2	100.0
1986	12.4	1.1	13.5	91.8	8.2	100.0	10.1	0.7	10.8	93.8	6.2	100.0
1987	12.7	1.2	13.9	91.4	8.6	100.0	10.3	0.7	11.0	93.9	6.1	100.0
1988	13.4	1.3	14.7	91.2	8.8	100.0	10.7	0.6	11.3	94.3	5.7	100.0
1989	14.3	1.5	15.8	90.7	9.3	100.0	11.1	0.6	11.7	94.6	5.4	100.0
1990	14.8	1.4	16.1	91.6	8.4	100.0	11.3	0.7	11.9	94.5	5.5	100.0
1991	15.0	1.4	16.4	91.4	8.6	100.0	11.1	0.7	11.8	94.4	5.6	100.0
1992	15.6	1.4	17.0	91.8	8.2	100.0	11.2	0.7	11.9	94.4	5.6	100.0
1993	16.4	1.4	17.7	92.2	7.8	100.0	11.4	0.6	12.1	94.6	5.4	100.0
1994	16.9	1.4	18.3	92.4	7.6	100.0	11.4	0.7	12.1	94.4	5.6	100.0
1995	17.7	1.4	19.1	92.6	7.4	100.0	11.5	0.7	12.3	94.2	5.8	100.0
1996	18.1	1.5	19.6	92.6	7.4	100.0	11.5	0.7	12.2	94.2	5.8	100.0
1997	18.3	1.5	19.8	92.4	7.6	100.0	11.6	0.7	12.3	94.3	5.7	100.0
1998	18.6	1.5	20.2	92.5	7.5	100.0	11.7	0.7	12.4	94.3	5.7	100.0
1999	19.0	1.5	20.5	92.8	7.2	100.0	12.1	0.7	12.8	94.7	5.3	100.0
2000	19.6	1.6	21.1	92.6	7.4	100.0	12.5	0.7	13.2	94.9	5.1	100.0
2001	19.6	1.6	21.3	92.3	7.7	100.0	12.4	0.7	13.1	94.7	5.3	100.0
2002	20.3	1.7	21.9	92.3	7.7	100.0	12.6	0.7	13.3	94.6	5.4	100.0
2003	20.9	1.7	22.6	92.4	7.6	100.0	13.0	0.7	13.8	94.6	5.4	100.0
2004	22.2	1.8	24.0	92.6	7.4	100.0	13.2	0.8	13.9	94.5	5.5	100.0
2005	22.4	1.8	24.3	92.4	7.6	100.0	12.9	0.8	13.7	94.3	5.7	100.0
2006	22.5	2.0	24.5	91.8	8.2	100.0	12.8	0.8	13.6	94.0	6.0	100.0
2007	22.9	2.2	25.0	91.4	8.6	100.0	12.9	0.8	13.7	94.0	6.0	100.0
2008	23.1	2.3	25.3	91.1	8.9	100.0	12.8	0.8	13.6	93.8	6.2	100.0
2009	22.6	2.4	25.0	90.3	9.7	100.0	12.9	0.9	13.7	93.7	6.3	100.0
2010	22.7	2.3	25.1	90.6	9.4	100.0	13.1	0.9	13.9	93.8	6.2	100.0
Average annual growth rate (per cent)												
	3.0	3.0	3.0				1.2	1.1	1.2			

Source: BITRE estimates.

**Table C.3** Public/private passenger transport task and share, Perth and Hobart, 1977–2010

Financial year	Perth						Hobart					
	Passenger task (billion pkm)			Share (per cent)			Passenger task (billion pkm)			Share (per cent)		
	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total
1977	8.9	0.6	9.5	94.1	5.9	100.0	1.3	0.1	1.5	90.7	9.3	100.0
1978	9.3	0.6	9.9	94.1	5.9	100.0	1.4	0.1	1.5	91.7	8.3	100.0
1979	9.6	0.6	10.2	94.3	5.7	100.0	1.5	0.1	1.6	92.8	7.2	100.0
1980	9.6	0.6	10.2	94.1	5.9	100.0	1.5	0.1	1.6	93.0	7.0	100.0
1981	9.7	0.6	10.3	94.1	5.9	100.0	1.5	0.1	1.6	93.3	6.7	100.0
1982	10.2	0.6	10.8	94.6	5.4	100.0	1.6	0.1	1.7	94.6	5.4	100.0
1983	10.3	0.6	10.9	94.5	5.5	100.0	1.6	0.1	1.7	94.7	5.3	100.0
1984	10.9	0.6	11.5	95.1	4.9	100.0	1.7	0.1	1.8	94.5	5.5	100.0
1985	11.3	0.6	11.9	95.3	4.7	100.0	1.7	0.1	1.8	94.6	5.4	100.0
1986	11.7	0.6	12.3	95.1	4.9	100.0	1.8	0.1	1.9	94.7	5.3	100.0
1987	12.0	0.6	12.6	95.0	5.0	100.0	1.8	0.1	1.9	94.7	5.3	100.0
1988	12.6	0.6	13.2	95.3	4.7	100.0	1.9	0.1	2.0	95.1	4.9	100.0
1989	13.2	0.7	13.8	95.3	4.7	100.0	1.9	0.1	2.0	95.5	4.5	100.0
1990	13.5	0.7	14.2	95.2	4.8	100.0	2.0	0.1	2.1	95.4	4.6	100.0
1991	13.4	0.7	14.1	95.3	4.7	100.0	2.0	0.1	2.1	95.6	4.4	100.0
1992	13.6	0.7	14.3	95.3	4.7	100.0	2.1	0.1	2.2	95.7	4.3	100.0
1993	14.1	0.7	14.8	95.1	4.9	100.0	2.1	0.1	2.2	95.9	4.1	100.0
1994	14.9	0.8	15.7	94.6	5.4	100.0	2.2	0.1	2.3	95.9	4.1	100.0
1995	15.8	0.9	16.7	94.8	5.2	100.0	2.2	0.1	2.3	96.0	4.0	100.0
1996	16.2	0.9	17.1	94.7	5.3	100.0	2.3	0.1	2.3	96.0	4.0	100.0
1997	16.3	0.9	17.3	94.5	5.5	100.0	2.3	0.1	2.3	96.2	3.8	100.0
1998	16.6	1.0	17.5	94.5	5.5	100.0	2.2	0.1	2.3	96.2	3.8	100.0
1999	17.0	1.0	17.9	94.7	5.3	100.0	2.2	0.1	2.3	96.2	3.8	100.0
2000	17.2	1.0	18.2	94.6	5.4	100.0	2.2	0.1	2.3	96.2	3.8	100.0
2001	17.0	1.0	18.1	94.2	5.8	100.0	2.2	0.1	2.2	96.1	3.9	100.0
2002	17.4	1.1	18.4	94.3	5.7	100.0	2.2	0.1	2.3	96.2	3.8	100.0
2003	17.8	1.1	18.9	94.3	5.7	100.0	2.3	0.1	2.4	96.3	3.7	100.0
2004	18.7	1.1	19.8	94.6	5.4	100.0	2.4	0.1	2.5	96.5	3.5	100.0
2005	19.0	1.1	20.1	94.5	5.5	100.0	2.3	0.1	2.4	96.4	3.6	100.0
2006	18.8	1.2	20.0	94.2	5.8	100.0	2.3	0.1	2.4	96.5	3.5	100.0
2007	19.2	1.2	20.4	94.2	5.8	100.0	2.4	0.1	2.5	96.5	3.5	100.0
2008	19.4	1.3	20.7	93.7	6.3	100.0	2.4	0.1	2.4	96.5	3.5	100.0
2009	20.0	1.5	21.4	93.1	6.9	100.0	2.3	0.1	2.4	96.4	3.6	100.0
2010	20.3	1.5	21.8	93.0	7.0	100.0	2.3	0.1	2.4	96.4	3.6	100.0
Average annual growth rate (per cent)												
	2.5	3.1	2.6				1.7	-1.3	1.5			

Source: BITRE estimates.

**Table C.4** Public/private passenger transport task and share, Darwin and Canberra, 1977–2010

Financial year	Darwin						Canberra					
	Passenger task (billion pkm)			Share (per cent)			Passenger task (billion pkm)			Share (per cent)		
	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total	Personal vehicle travel	Public transport travel	Total	Private transport travel	Public transport travel	Total
1977	0.40	0.01	0.41	97.1	2.9	100.0	2.13	0.09	2.21	95.9	4.1	100.0
1978	0.42	0.01	0.43	96.9	3.1	100.0	2.22	0.09	2.31	95.9	4.1	100.0
1979	0.44	0.01	0.46	96.9	3.1	100.0	2.30	0.10	2.40	95.6	4.4	100.0
1980	0.46	0.02	0.48	96.4	3.6	100.0	2.32	0.12	2.44	95.0	5.0	100.0
1981	0.49	0.02	0.51	96.0	4.0	100.0	2.35	0.11	2.46	95.6	4.4	100.0
1982	0.54	0.02	0.56	95.9	4.1	100.0	2.49	0.11	2.60	95.6	4.4	100.0
1983	0.55	0.03	0.57	95.5	4.5	100.0	2.53	0.13	2.66	94.8	5.2	100.0
1984	0.59	0.03	0.62	95.6	4.4	100.0	2.66	0.15	2.81	94.4	5.6	100.0
1985	0.64	0.03	0.67	95.6	4.4	100.0	2.80	0.16	2.96	94.3	5.7	100.0
1986	0.69	0.03	0.72	95.6	4.4	100.0	2.92	0.15	3.08	94.7	5.3	100.0
1987	0.72	0.03	0.75	95.5	4.5	100.0	3.00	0.16	3.16	94.6	5.4	100.0
1988	0.73	0.04	0.77	95.0	5.0	100.0	3.17	0.17	3.34	94.6	5.4	100.0
1989	0.74	0.04	0.79	94.3	5.7	100.0	3.35	0.17	3.52	94.9	5.1	100.0
1990	0.76	0.05	0.81	94.0	6.0	100.0	3.49	0.17	3.66	95.0	5.0	100.0
1991	0.76	0.05	0.81	93.9	6.1	100.0	3.53	0.17	3.70	95.0	5.0	100.0
1992	0.78	0.05	0.83	94.1	5.9	100.0	3.63	0.17	3.80	95.2	4.8	100.0
1993	0.80	0.05	0.85	94.4	5.6	100.0	3.78	0.17	3.95	95.4	4.6	100.0
1994	0.82	0.05	0.87	94.4	5.6	100.0	3.89	0.16	4.05	95.6	4.4	100.0
1995	0.88	0.05	0.93	94.4	5.6	100.0	3.99	0.17	4.17	95.5	4.5	100.0
1996	0.92	0.06	0.97	94.3	5.7	100.0	4.05	0.18	4.23	94.8	5.2	100.0
1997	0.93	0.06	0.99	94.3	5.7	100.0	4.05	0.19	4.24	94.6	5.4	100.0
1998	0.95	0.06	1.01	94.4	5.6	100.0	4.07	0.18	4.25	94.6	5.4	100.0
1999	0.96	0.06	1.02	94.4	5.6	100.0	4.16	0.17	4.34	94.9	5.1	100.0
2000	0.97	0.06	1.03	94.4	5.6	100.0	4.25	0.17	4.42	95.0	5.0	100.0
2001	0.94	0.06	1.00	94.2	5.8	100.0	4.18	0.17	4.35	95.0	5.0	100.0
2002	0.95	0.06	1.01	94.2	5.8	100.0	4.27	0.17	4.44	95.0	5.0	100.0
2003	0.96	0.06	1.02	94.0	6.0	100.0	4.41	0.18	4.58	94.9	5.1	100.0
2004	1.00	0.06	1.06	94.3	5.7	100.0	4.60	0.18	4.78	95.0	5.0	100.0
2005	0.98	0.06	1.04	94.2	5.8	100.0	4.60	0.18	4.78	94.9	5.1	100.0
2006	0.99	0.06	1.05	94.1	5.9	100.0	4.58	0.18	4.77	94.7	5.3	100.0
2007	1.02	0.06	1.08	94.3	5.7	100.0	4.62	0.18	4.80	94.9	5.1	100.0
2008	1.05	0.06	1.11	94.4	5.6	100.0	4.60	0.18	4.78	94.8	5.2	100.0
2009	1.07	0.06	1.13	94.4	5.6	100.0	4.64	0.19	4.83	94.7	5.3	100.0
2010	1.06	0.07	1.12	94.1	5.9	100.0	4.68	0.19	4.87	94.6	5.4	100.0
Average annual growth rate (per cent)												
	2.97	5.28	3.07				2.38	3.27	2.42			

Source: BITRE estimates.





## APPENDIX D

# Personal vehicle and public transport task by type of vehicle, all capital cities, 1977–2010

This appendix provides personal vehicle travel and public transport travel task by type of vehicle and average annual growth rates for each of the eight capital cities between 1997 and 2010.

**Table D.1** Personal vehicle transport task (billion PKM) by transport mode, capital cities, 1977–2010

Year	Sydney				Melbourne				Brisbane				Adelaide			
	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total
1977	24.13	1.33	0.24	25.70	21.79	1.29	0.20	23.28	7.82	0.56	0.14	8.53	8.23	0.38	0.11	8.72
1978	24.80	1.37	0.24	26.41	22.76	1.36	0.20	24.31	8.21	0.61	0.14	8.97	8.46	0.38	0.11	8.96
1979	25.59	1.40	0.25	27.23	23.54	1.36	0.19	25.09	8.60	0.66	0.14	9.40	8.50	0.39	0.11	8.99
1980	25.79	1.37	0.27	27.44	23.76	1.28	0.19	25.24	8.78	0.65	0.15	9.59	8.30	0.37	0.11	8.78
1981	26.15	1.40	0.29	27.84	24.29	1.25	0.19	25.74	9.16	0.66	0.16	9.98	8.17	0.37	0.11	8.66
1982	27.17	1.44	0.32	28.92	25.83	1.23	0.20	27.26	9.88	0.68	0.17	10.73	8.48	0.36	0.12	8.97
1983	26.97	1.41	0.33	28.71	26.07	1.17	0.20	27.45	10.07	0.68	0.17	10.92	8.53	0.36	0.12	9.02
1984	28.34	1.50	0.34	30.17	27.08	1.24	0.21	28.53	10.50	0.76	0.17	11.43	8.94	0.40	0.12	9.46
1985	29.65	1.56	0.34	31.55	27.98	1.29	0.21	29.48	10.82	0.81	0.18	11.81	9.31	0.42	0.12	9.85
1986	30.51	1.55	0.31	32.38	29.07	1.35	0.20	30.62	11.40	0.83	0.17	12.40	9.62	0.41	0.11	10.14
1987	31.20	1.52	0.29	33.01	29.91	1.39	0.20	31.51	11.68	0.85	0.17	12.70	9.81	0.40	0.10	10.30
1988	32.59	1.53	0.27	34.39	31.46	1.47	0.20	33.13	12.39	0.86	0.18	13.43	10.20	0.39	0.10	10.69
1989	33.83	1.55	0.27	35.66	32.96	1.57	0.22	34.75	13.23	0.89	0.21	14.32	10.58	0.41	0.10	11.09
1990	34.70	1.52	0.24	36.47	33.74	1.59	0.20	35.54	13.69	0.89	0.20	14.78	10.75	0.41	0.09	11.25
1991	34.69	1.44	0.21	36.34	33.51	1.56	0.19	35.27	13.94	0.87	0.20	15.01	10.66	0.41	0.08	11.14
1992	35.29	1.42	0.20	36.91	33.97	1.56	0.19	35.73	14.53	0.86	0.21	15.59	10.75	0.40	0.08	11.23
1993	36.35	1.43	0.20	37.98	34.63	1.59	0.20	36.42	15.28	0.87	0.21	16.35	10.94	0.41	0.07	11.42
1994	37.20	1.48	0.20	38.87	35.30	1.64	0.20	37.13	15.80	0.92	0.20	16.92	10.94	0.42	0.07	11.43
1995	38.26	1.58	0.19	40.03	36.30	1.71	0.20	38.21	16.46	1.01	0.19	17.66	11.03	0.44	0.07	11.55
1996	38.48	1.63	0.18	40.29	37.03	1.65	0.20	38.88	16.87	1.07	0.17	18.11	11.00	0.45	0.07	11.51
1997	38.43	1.63	0.18	40.24	37.41	1.59	0.20	39.21	17.01	1.09	0.17	18.26	11.06	0.43	0.06	11.56
1998	38.99	1.66	0.17	40.82	38.15	1.59	0.20	39.94	17.34	1.14	0.16	18.64	11.22	0.43	0.06	11.71
1999	39.93	1.72	0.16	41.81	39.21	1.60	0.19	40.99	17.70	1.17	0.15	19.02	11.61	0.43	0.06	12.10
2000	40.94	1.76	0.16	42.86	40.12	1.60	0.19	41.91	18.21	1.20	0.15	19.56	12.00	0.43	0.06	12.49
2001	40.68	1.79	0.16	42.63	40.14	1.63	0.20	41.97	18.24	1.22	0.16	19.61	11.96	0.42	0.06	12.45
2002	41.52	1.82	0.17	43.52	40.88	1.67	0.21	42.77	18.81	1.28	0.17	20.25	12.13	0.43	0.06	12.62
2003	42.18	1.87	0.16	44.22	41.64	1.71	0.21	43.55	19.36	1.33	0.16	20.85	12.53	0.44	0.06	13.03
2004	44.28	1.91	0.17	46.36	43.04	1.75	0.22	45.01	20.70	1.37	0.17	22.25	12.66	0.44	0.07	13.17
2005	44.55	1.86	0.18	46.59	43.27	1.72	0.24	45.23	20.89	1.35	0.18	22.42	12.41	0.43	0.07	12.91
2006	44.34	1.85	0.20	46.39	42.93	1.73	0.26	44.93	20.91	1.35	0.20	22.46	12.27	0.43	0.08	12.78
2007	44.75	1.85	0.22	46.82	43.17	1.75	0.29	45.22	21.29	1.37	0.22	22.88	12.37	0.43	0.08	12.88
2008	44.48	1.87	0.23	46.59	43.03	1.79	0.32	45.13	21.42	1.41	0.24	23.07	12.26	0.44	0.09	12.79
2009	44.70	1.84	0.25	46.79	42.07	1.75	0.34	44.17	20.97	1.38	0.26	22.61	12.33	0.43	0.10	12.85
2010	45.48	1.82	0.27	47.56	42.06	1.74	0.36	44.16	21.09	1.37	0.28	22.73	12.54	0.42	0.10	13.07
Average annual growth rate (per cent)																
	1.94	0.95	0.36	1.88	2.01	0.90	1.90	1.96	3.05	2.72	2.02	3.02	1.28	0.37	-0.13	1.23

(continued)

**Table D.1** Personal vehicle transport task (billion PKM) by transport mode, capital cities, 1977–2010 (continued)

Year	Perth				Hobart				Darwin				Canberra			
	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total	Cars	Commercial vehicles	Motor cycles	Total
1977	8.19	0.60	0.10	8.90	1.24	0.09	0.01	1.34	0.33	0.06	0.01	0.40	1.99	0.11	0.02	2.12
1978	8.61	0.63	0.10	9.33	1.31	0.09	0.01	1.41	0.35	0.06	0.01	0.42	2.08	0.11	0.02	2.21
1979	8.86	0.64	0.10	9.60	1.37	0.10	0.01	1.47	0.37	0.07	0.01	0.44	2.15	0.12	0.02	2.29
1980	8.88	0.64	0.11	9.62	1.39	0.09	0.01	1.49	0.38	0.07	0.01	0.46	2.17	0.11	0.03	2.31
1981	8.95	0.65	0.11	9.72	1.42	0.10	0.01	1.52	0.41	0.07	0.01	0.49	2.20	0.12	0.03	2.35
1982	9.45	0.65	0.13	10.22	1.47	0.10	0.01	1.59	0.45	0.07	0.01	0.54	2.34	0.12	0.03	2.49
1983	9.53	0.62	0.13	10.29	1.47	0.10	0.01	1.58	0.47	0.07	0.02	0.55	2.37	0.12	0.03	2.52
1984	10.15	0.65	0.14	10.94	1.53	0.12	0.01	1.66	0.51	0.07	0.02	0.59	2.49	0.13	0.04	2.65
1985	10.52	0.67	0.14	11.32	1.59	0.12	0.01	1.73	0.55	0.07	0.02	0.64	2.62	0.13	0.04	2.79
1986	10.90	0.65	0.13	11.69	1.67	0.12	0.01	1.80	0.61	0.07	0.01	0.69	2.74	0.13	0.04	2.91
1987	11.19	0.63	0.13	11.95	1.68	0.11	0.01	1.81	0.63	0.07	0.01	0.72	2.82	0.14	0.03	2.99
1988	11.78	0.63	0.13	12.55	1.75	0.11	0.01	1.87	0.65	0.07	0.01	0.73	2.99	0.14	0.03	3.16
1989	12.36	0.67	0.14	13.18	1.82	0.11	0.01	1.94	0.66	0.07	0.01	0.74	3.16	0.14	0.04	3.34
1990	12.73	0.69	0.13	13.55	1.91	0.11	0.01	2.02	0.68	0.07	0.01	0.76	3.29	0.14	0.03	3.47
1991	12.65	0.67	0.11	13.44	1.92	0.10	0.01	2.03	0.69	0.07	0.01	0.76	3.34	0.14	0.03	3.52
1992	12.85	0.67	0.11	13.62	1.95	0.10	0.01	2.07	0.70	0.07	0.01	0.78	3.45	0.14	0.03	3.62
1993	13.31	0.69	0.10	14.10	2.02	0.11	0.01	2.15	0.72	0.07	0.01	0.80	3.59	0.15	0.03	3.77
1994	14.06	0.73	0.09	14.89	2.07	0.12	0.01	2.19	0.74	0.07	0.01	0.82	3.70	0.15	0.03	3.87
1995	14.96	0.80	0.09	15.84	2.10	0.12	0.01	2.24	0.79	0.08	0.01	0.88	3.79	0.16	0.03	3.98
1996	15.28	0.83	0.09	16.19	2.12	0.12	0.01	2.26	0.83	0.08	0.01	0.92	3.82	0.16	0.03	4.01
1997	15.44	0.81	0.09	16.34	2.12	0.12	0.01	2.25	0.84	0.08	0.01	0.93	3.83	0.16	0.02	4.01
1998	15.66	0.81	0.08	16.55	2.09	0.12	0.01	2.21	0.86	0.08	0.01	0.95	3.84	0.16	0.02	4.02
1999	16.08	0.81	0.08	16.97	2.08	0.12	0.01	2.20	0.87	0.08	0.01	0.96	3.93	0.16	0.02	4.11
2000	16.31	0.81	0.08	17.21	2.08	0.12	0.01	2.21	0.88	0.08	0.01	0.97	4.02	0.16	0.02	4.20
2001	16.11	0.81	0.09	17.01	2.02	0.12	0.01	2.15	0.85	0.08	0.01	0.94	3.95	0.16	0.02	4.13
2002	16.44	0.84	0.09	17.38	2.06	0.12	0.01	2.19	0.86	0.09	0.01	0.95	4.02	0.16	0.03	4.21
2003	16.89	0.87	0.09	17.85	2.14	0.12	0.01	2.27	0.87	0.09	0.01	0.96	4.16	0.17	0.03	4.35
2004	17.74	0.90	0.10	18.74	2.25	0.13	0.01	2.38	0.89	0.09	0.01	1.00	4.34	0.17	0.03	4.54
2005	18.02	0.88	0.11	19.01	2.20	0.12	0.01	2.34	0.88	0.09	0.01	0.98	4.34	0.17	0.03	4.53
2006	17.78	0.89	0.12	18.80	2.21	0.13	0.01	2.35	0.89	0.09	0.01	0.99	4.32	0.17	0.03	4.51
2007	18.14	0.91	0.14	19.18	2.24	0.13	0.01	2.38	0.92	0.09	0.01	1.02	4.35	0.17	0.03	4.55
2008	18.34	0.93	0.15	19.43	2.22	0.13	0.01	2.36	0.94	0.10	0.01	1.05	4.32	0.17	0.04	4.53
2009	18.88	0.91	0.16	19.95	2.18	0.13	0.02	2.32	0.96	0.09	0.01	1.07	4.37	0.17	0.04	4.58
2010	19.19	0.90	0.17	20.27	2.19	0.13	0.02	2.33	0.95	0.09	0.02	1.06	4.40	0.17	0.04	4.61
Average annual growth rate (per cent)																
	2.61	1.23	1.75	2.53	1.73	1.14	1.89	1.69	3.21	1.37	1.82	2.97	2.43	1.33	2.07	2.38

**Table D.2** Public transport travel task (billion PKM) by transport mode, capital cities, 1977–2010

Year	Sydney					Melbourne				Brisbane			
	Heavy rail	Light rail	Bus	Ferry	Total	Heavy rail	Light rail	Bus	Total	Heavy rail	Bus	Ferry	Total
1977	3.14	0.00	1.57	0.10	4.81	1.91	0.53	0.56	3.00	0.38	0.49	0.00	0.88
1978	3.09	0.00	1.60	0.11	4.80	1.81	0.53	0.56	2.90	0.37	0.51	0.00	0.87
1979	3.09	0.00	1.59	0.11	4.80	1.71	0.53	0.57	2.81	0.35	0.50	0.00	0.85
1980	3.52	0.00	1.63	0.12	5.28	1.60	0.52	0.58	2.70	0.38	0.49	0.00	0.88
1981	3.64	0.00	1.69	0.12	5.45	1.53	0.53	0.59	2.65	0.42	0.45	0.00	0.87
1982	3.76	0.00	1.68	0.14	5.58	1.39	0.54	0.61	2.53	0.46	0.47	0.00	0.93
1983	3.55	0.00	1.72	0.13	5.40	1.41	0.53	0.62	2.56	0.47	0.49	0.00	0.96
1984	3.47	0.00	1.76	0.12	5.34	1.44	0.54	0.64	2.62	0.52	0.47	0.00	0.99
1985	3.45	0.00	1.81	0.11	5.36	1.45	0.60	0.68	2.72	0.55	0.49	0.00	1.04
1986	3.72	0.00	1.84	0.12	5.68	1.54	0.62	0.71	2.87	0.62	0.49	0.00	1.11
1987	3.81	0.00	1.91	0.12	5.84	1.60	0.63	0.74	2.97	0.68	0.51	0.00	1.19
1988	4.13	0.00	1.97	0.12	6.22	1.53	0.65	0.78	2.95	0.74	0.55	0.00	1.29
1989	4.18	0.01	2.00	0.12	6.31	1.61	0.66	0.81	3.09	0.85	0.61	0.00	1.47
1990	4.29	0.01	1.96	0.12	6.38	1.63	0.53	0.85	3.01	0.78	0.58	0.00	1.36
1991	4.37	0.01	2.01	0.12	6.50	1.63	0.59	0.84	3.06	0.79	0.62	0.00	1.41
1992	4.27	0.01	2.01	0.11	6.41	1.76	0.59	0.81	3.16	0.75	0.64	0.00	1.39
1993	4.12	0.01	1.95	0.11	6.19	1.81	0.51	0.81	3.13	0.74	0.63	0.00	1.38
1994	4.22	0.01	1.97	0.11	6.31	1.81	0.51	0.83	3.16	0.72	0.66	0.00	1.38
1995	4.51	0.01	2.03	0.11	6.66	1.94	0.51	0.86	3.31	0.70	0.72	0.01	1.42
1996	4.62	0.01	2.08	0.12	6.82	1.99	0.52	0.88	3.39	0.74	0.71	0.01	1.46
1997	4.76	0.01	2.13	0.12	7.03	1.97	0.52	0.88	3.37	0.79	0.71	0.01	1.51
1998	4.80	0.01	2.16	0.11	7.09	1.90	0.52	0.89	3.31	0.80	0.71	0.01	1.52
1999	4.88	0.02	2.19	0.11	7.20	1.99	0.53	0.91	3.43	0.81	0.65	0.01	1.47
2000	5.05	0.02	2.21	0.11	7.39	2.11	0.56	0.92	3.59	0.87	0.68	0.01	1.56
2001	5.44	0.02	2.21	0.13	7.79	2.19	0.58	0.93	3.70	0.94	0.69	0.01	1.64
2002	5.06	0.02	2.12	0.12	7.32	2.30	0.59	0.94	3.82	0.97	0.71	0.01	1.69
2003	5.07	0.02	2.12	0.12	7.32	2.34	0.60	0.95	3.88	0.97	0.73	0.01	1.72
2004	5.12	0.02	2.10	0.12	7.36	2.41	0.60	0.95	3.96	1.01	0.77	0.01	1.79
2005	5.16	0.02	2.16	0.12	7.46	2.48	0.61	0.93	4.02	1.00	0.82	0.01	1.84
2006	5.28	0.02	2.16	0.12	7.59	2.78	0.62	0.94	4.34	1.08	0.91	0.02	2.01
2007	5.46	0.02	2.20	0.12	7.80	3.07	0.63	1.00	4.71	1.18	0.96	0.02	2.15
2008	5.76	0.02	2.27	0.12	8.16	3.48	0.65	1.08	5.21	1.25	0.99	0.02	2.26
2009	5.88	0.02	2.29	0.12	8.32	3.72	0.71	1.17	5.60	1.33	1.06	0.02	2.42
2010	5.85	0.02	2.25	0.13	8.24	3.82	0.70	1.20	5.71	1.22	1.10	0.02	2.35
Average annual growth rate (per cent)													
	1.91	nd	1.08	0.74	1.65	2.13	0.83	2.34	1.97	3.58	2.47	5.79	3.02

(continued)

**Table D.2** Public transport travel task (billion PKM) by transport mode, capital cities, 1977–2010 (continued)

Year	Adelaide				Perth			Hobart			Darwin	Canberra
	Heavy rail	Light rail	Bus	Total	Heavy rail	Bus	Total	Bus	Ferry	Total	Bus	Bus
1977	0.17	0.01	0.42	0.60	0.09	0.47	0.56	0.12	0.02	0.14	0.01	0.09
1978	0.16	0.01	0.43	0.60	0.10	0.48	0.59	0.12	0.01	0.13	0.01	0.09
1979	0.16	0.01	0.44	0.62	0.10	0.48	0.58	0.11	0.01	0.11	0.01	0.10
1980	0.18	0.02	0.46	0.66	0.09	0.52	0.60	0.11	0.00	0.11	0.02	0.12
1981	0.19	0.02	0.51	0.72	0.08	0.53	0.61	0.11	0.00	0.11	0.02	0.11
1982	0.20	0.02	0.52	0.75	0.07	0.51	0.58	0.09	0.00	0.09	0.02	0.11
1983	0.18	0.02	0.47	0.67	0.08	0.52	0.60	0.09	0.00	0.09	0.03	0.13
1984	0.17	0.02	0.48	0.67	0.11	0.45	0.56	0.10	0.00	0.10	0.03	0.15
1985	0.17	0.02	0.46	0.65	0.11	0.45	0.55	0.10	0.00	0.10	0.03	0.16
1986	0.18	0.02	0.47	0.67	0.12	0.48	0.60	0.10	0.00	0.10	0.03	0.15
1987	0.18	0.02	0.47	0.67	0.12	0.50	0.62	0.10	0.00	0.10	0.03	0.16
1988	0.13	0.02	0.50	0.65	0.12	0.50	0.62	0.10	0.00	0.10	0.04	0.17
1989	0.14	0.02	0.47	0.63	0.11	0.54	0.65	0.09	0.00	0.09	0.04	0.17
1990	0.14	0.02	0.50	0.65	0.11	0.58	0.68	0.10	0.00	0.10	0.05	0.17
1991	0.12	0.02	0.53	0.66	0.10	0.56	0.66	0.09	0.00	0.09	0.05	0.17
1992	0.11	0.01	0.53	0.66	0.12	0.55	0.67	0.09	0.00	0.09	0.05	0.17
1993	0.12	0.01	0.51	0.65	0.17	0.55	0.72	0.09	0.00	0.09	0.05	0.17
1994	0.15	0.02	0.52	0.68	0.30	0.55	0.84	0.09	0.00	0.09	0.05	0.16
1995	0.16	0.01	0.54	0.71	0.30	0.57	0.88	0.09	0.00	0.09	0.05	0.17
1996	0.15	0.01	0.54	0.71	0.34	0.57	0.91	0.09	0.00	0.09	0.06	0.18
1997	0.15	0.01	0.54	0.70	0.37	0.58	0.95	0.09	0.00	0.09	0.06	0.19
1998	0.14	0.01	0.54	0.70	0.37	0.60	0.97	0.09	0.00	0.09	0.06	0.18
1999	0.14	0.01	0.53	0.68	0.36	0.59	0.96	0.09	0.00	0.09	0.06	0.17
2000	0.13	0.01	0.53	0.67	0.37	0.62	0.99	0.09	0.00	0.09	0.06	0.17
2001	0.13	0.01	0.55	0.69	0.38	0.66	1.04	0.09	0.00	0.09	0.06	0.17
2002	0.14	0.02	0.56	0.72	0.38	0.68	1.05	0.09	0.00	0.09	0.06	0.17
2003	0.16	0.02	0.57	0.75	0.37	0.69	1.07	0.09	0.00	0.09	0.06	0.18
2004	0.19	0.02	0.57	0.77	0.37	0.71	1.08	0.09	0.00	0.09	0.06	0.18
2005	0.19	0.02	0.58	0.78	0.38	0.74	1.12	0.09	0.00	0.09	0.06	0.18
2006	0.20	0.02	0.61	0.82	0.40	0.76	1.15	0.09	0.00	0.09	0.06	0.18
2007	0.20	0.02	0.62	0.83	0.42	0.76	1.18	0.09	0.00	0.09	0.06	0.18
2008	0.20	0.02	0.63	0.84	0.52	0.78	1.30	0.08	0.00	0.08	0.06	0.18
2009	0.20	0.02	0.64	0.86	0.68	0.81	1.49	0.09	0.00	0.09	0.06	0.19
2010	0.20	0.02	0.65	0.87	0.71	0.82	1.53	0.09	0.00	0.09	0.07	0.19
Average annual growth rate (per cent)												
	0.54	2.58	1.31	1.14	6.41	1.71	3.09	-0.84	nd	-1.34	5.28	3.27

Note: Different capital cities have different transport modes. Darwin and Canberra have only bus as public transport mode.



## APPENDIX E

# Estimates of real fares by capital cities, 1977–2010

Real fare indices for each of the eight capital cities have been calculated from nominal fare indices which were adjusted with Consumer Price Index (CPI), using the simple equation:

Real fare index = Nominal fare index / Consumer Price Index (CPI) \* 100

In this exercise, nominal fares and CPI were indexed (1989–90 = 100).

Estimates of real fare indices for each of the eight capital cities are provided in this Appendix (see Table E.1).



**Table E.1** Estimates of real fare indices by capital cities, 1977–2010

Year	Sydney			Melbourne			Brisbane			Adelaide		
	Fares	CPI	Real fares	Fares	CPI	Real fares	Fares	CPI	Real fares	Fares	CPI	Real fares
1977	26.0	34.3	75.7	34.3	34.4	99.6	27.2	35.4	77.0	22.6	35.1	64.3
1978	26.8	37.4	71.8	37.1	37.9	98.0	28.6	38.7	73.9	23.4	38.5	60.7
1979	28.1	40.6	69.3	39.5	40.8	96.9	31.2	41.9	74.5	25.7	41.4	62.1
1980	32.9	44.9	73.3	44.7	44.9	99.4	36.0	45.9	78.3	28.2	45.5	61.8
1981	38.0	49.3	77.1	54.1	49.1	110.2	42.5	50.2	84.8	33.0	49.7	66.3
1982	42.5	54.3	78.4	61.7	54.2	113.8	45.2	55.6	81.4	42.2	54.9	76.8
1983	50.5	60.8	83.1	64.2	60.3	106.5	54.7	61.7	88.6	46.5	61.4	75.7
1984	55.8	64.4	86.6	71.8	64.9	110.7	61.1	66.1	92.4	58.9	65.8	89.5
1985	61.5	67.0	91.7	74.2	67.8	109.4	65.5	69.2	94.7	64.3	68.9	93.3
1986	65.9	72.7	90.7	77.6	73.6	105.5	73.7	74.8	98.6	65.9	74.7	88.3
1987	72.0	79.5	90.6	86.1	80.5	106.9	80.5	81.2	99.2	76.2	81.5	93.4
1988	77.2	85.5	90.2	92.4	86.4	106.9	85.1	86.9	97.9	87.1	87.0	100.2
1989	89.8	92.5	97.2	93.8	92.3	101.6	92.8	93.0	99.8	101.1	93.3	108.3
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	112.1	104.9	106.8	116.9	105.8	110.5	109.3	104.9	104.1	99.4	106.2	93.6
1992	117.7	106.7	110.3	131.9	108.1	122.0	115.4	107.0	107.9	116.1	108.9	106.5
1993	122.2	107.7	113.5	141.6	108.9	130.0	120.2	108.5	110.9	126.1	111.2	113.4
1994	125.3	109.2	114.8	151.1	111.1	136.0	125.0	110.6	113.0	131.3	113.4	115.8
1995	127.9	113.0	113.2	156.6	114.1	137.2	131.2	114.7	114.3	135.0	116.9	115.5
1996	134.4	118.7	113.3	158.7	118.4	134.0	134.2	119.1	112.7	139.7	121.2	115.2
1997	144.4	120.4	120.0	161.6	119.9	134.8	143.6	121.0	118.7	144.2	122.3	117.9
1998	147.1	120.5	122.0	165.8	119.8	138.4	148.1	121.6	121.8	146.9	121.6	120.8
1999	147.2	122.5	120.2	168.0	120.9	138.9	153.0	122.9	124.5	160.3	123.2	130.1
2000	159.9	125.4	127.5	171.4	124.1	138.0	156.6	125.0	125.3	160.9	126.3	127.4
2001	175.2	133.2	131.5	189.2	131.6	143.7	182.9	132.4	138.1	169.7	133.5	127.1
2002	181.7	137.2	132.4	197.9	135.3	146.2	191.0	136.3	140.1	175.4	137.2	127.9
2003	185.3	141.1	131.3	202.1	139.7	144.7	191.4	140.7	136.0	180.7	142.7	126.7
2004	196.6	144.1	136.4	211.6	142.8	148.1	196.0	144.8	135.3	188.2	147.0	128.0
2005	199.5	147.7	135.1	220.1	145.7	151.1	194.6	148.5	131.1	193.7	150.4	128.8
2006	204.5	152.1	134.5	227.8	150.2	151.6	204.1	153.2	133.2	200.5	155.2	129.2
2007	211.8	156.2	135.5	234.7	154.2	152.2	213.7	158.3	135.0	217.0	159.2	136.3
2008	221.9	160.9	138.0	242.7	159.6	152.0	223.6	164.8	135.7	229.6	164.4	139.6
2009	226.0	164.1	137.7	247.0	162.8	151.7	230.2	168.1	137.0	232.8	167.7	138.8
2010	226.0	167.3	135.0	247.0	166.1	148.7	230.2	171.4	134.3	232.8	171.1	136.1

(continued)

**Table E.1** Estimates of real fare indices by capital cities, 1977–2010 (*continued*)

Year	Perth			Hobart			Darwin			Canberra		
	Fares	CPI	Real fares	Fares	CPI	Real fares	Fares	CPI	Real fares	Fares	CPI	Real fares
1977	29.5	34.8	84.7	25.3	35.4	71.3	30.2	36.9	82.0	22.3	34.9	63.8
1978	30.0	38.6	77.8	29.7	38.9	76.3	31.7	40.2	78.9	27.1	38.1	71.2
1979	35.0	41.7	84.0	34.1	41.9	81.3	34.6	43.5	79.7	30.0	41.2	72.9
1980	35.9	45.6	78.7	36.1	46.2	78.1	39.9	48.1	83.0	32.5	45.6	71.4
1981	43.9	49.6	88.5	40.9	50.4	81.2	47.2	52.7	89.6	39.4	50.0	78.9
1982	54.8	55.1	99.4	52.5	55.5	94.6	47.5	58.5	81.1	46.2	55.3	83.6
1983	63.0	60.7	103.8	57.7	61.5	93.9	52.0	64.8	80.3	49.9	61.9	80.5
1984	72.5	65.0	111.5	59.8	65.5	91.3	53.4	68.5	77.9	52.2	66.1	78.9
1985	76.7	67.5	113.6	61.0	68.6	88.9	55.0	71.1	77.4	55.8	69.3	80.4
1986	78.0	72.9	107.0	66.8	74.6	89.5	77.5	77.0	100.7	63.1	75.3	83.8
1987	86.2	80.2	107.5	76.7	81.9	93.6	88.5	83.9	105.5	71.7	81.6	87.8
1988	92.5	85.9	107.7	87.5	88.0	99.5	92.9	89.8	103.5	82.5	87.3	94.5
1989	95.2	92.3	103.2	97.3	93.5	104.1	95.5	94.2	101.4	93.2	93.1	100.1
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	106.9	105.1	101.8	109.5	104.9	104.4	105.2	105.7	99.5	114.9	105.1	109.3
1992	118.7	105.9	112.1	117.7	107.1	109.8	109.6	108.0	101.5	124.7	107.8	115.7
1993	121.0	106.2	113.9	118.7	108.5	109.4	109.7	109.5	100.2	132.3	109.5	120.8
1994	131.7	108.5	121.3	119.2	111.7	106.7	111.9	111.5	100.3	141.4	111.4	126.9
1995	138.2	112.3	123.1	125.2	115.2	108.7	116.2	114.7	101.3	143.9	115.1	125.0
1996	146.8	116.7	125.7	130.1	119.6	108.8	121.5	119.5	101.7	155.3	120.3	129.1
1997	150.6	118.3	127.4	152.3	121.4	125.5	130.0	121.6	106.9	167.9	121.2	138.6
1998	163.8	118.0	138.8	154.2	121.3	127.1	130.0	121.3	107.2	170.7	120.4	141.8
1999	170.8	120.1	142.2	154.5	122.5	126.1	136.8	122.4	111.8	171.6	121.5	141.3
2000	172.4	122.9	140.2	154.8	124.8	124.0	145.9	124.2	117.5	172.6	124.2	138.9
2001	187.3	129.6	144.5	173.3	132.0	131.3	170.6	130.9	130.3	195.8	131.9	148.5
2002	190.3	133.1	143.0	175.1	134.7	130.0	172.4	133.7	128.9	200.6	135.2	148.3
2003	193.0	136.8	141.1	179.1	139.1	128.8	174.1	136.8	127.3	196.1	139.7	140.4
2004	196.7	139.6	140.9	187.3	142.6	131.3	176.6	138.7	127.3	202.1	143.4	141.0
2005	198.7	144.0	138.0	193.7	147.1	131.6	181.1	141.8	127.8	205.5	146.7	140.1
2006	203.8	150.1	135.8	204.6	151.8	134.7	187.7	146.5	128.1	210.2	151.9	138.4
2007	211.1	156.1	135.3	210.2	155.7	135.0	192.0	152.9	125.5	218.3	156.4	139.6
2008	221.4	161.7	136.9	216.6	160.3	135.1	197.3	158.3	124.7	224.7	162.0	138.7
2009	225.4	164.9	136.7	223.1	163.5	136.4	201.5	161.4	124.8	227.1	165.2	137.4
2010	225.4	168.2	134.0	223.1	166.8	133.7	201.5	164.6	122.4	227.1	168.5	134.7

Note: For both fares and CPI, 1989-90 = 100 (indexed).

Source: BITRE estimates.



## APPENDIX F

# Estimates of household disposable income constraint by capital cities, 1977–2010

This Appendix provides estimates of disposable income constraint (or real weekly budget cost in dollars per week per household) for each of the eight capital cities as well as all capital cities between 1977 and 2010. The methodology for calculating disposable income constraint is provided in Chapter 3 (see Section 3.2.2).

**Table F.1** Estimates of petrol and food cost (\$/week/household) by capital cities, 1977–2010

Year	Petrol cost (\$/week/household)									Food cost (\$/week/household)								
	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST
1977	6.4	5.9	7.0	5.9	6.3	7.0	7.1	7.1	6.3	45	44	45	45	46	46	50	46	45
1978	7.0	7.0	7.5	6.7	6.9	8.3	8.4	7.7	7.0	49	49	50	50	52	51	55	51	50
1979	9.0	8.9	9.5	8.5	8.6	8.9	9.0	9.9	8.9	55	55	55	55	58	58	61	57	55
1980	11.8	12.4	12.4	11.8	11.9	12.4	12.5	13.0	12.1	64	62	64	62	65	66	70	65	63
1981	13.2	13.7	13.2	13.6	13.6	14.2	14.3	14.4	13.4	70	68	71	68	71	72	78	72	70
1982	14.4	14.3	14.9	14.9	15.6	15.9	16.0	15.6	14.6	76	74	77	74	78	78	86	77	76
1983	16.7	16.1	16.1	16.4	16.6	18.3	17.2	17.7	16.5	82	82	85	81	85	85	93	84	83
1984	18.8	18.9	18.6	19.2	18.7	20.8	19.7	19.6	18.9	89	88	91	87	91	92	99	91	89
1985	21.3	20.7	20.2	20.4	20.5	22.2	21.5	21.2	20.8	93	93	96	92	96	98	103	96	94
1986	22.5	22.5	21.2	21.7	22.3	24.3	22.7	22.8	22.3	100	100	103	99	103	105	109	102	101
1987	22.9	23.0	21.4	21.7	23.8	26.8	22.7	23.4	22.8	108	109	111	107	111	114	117	108	109
1988	23.5	23.5	22.7	22.7	25.0	27.4	25.0	25.4	23.6	114	115	115	113	117	122	123	113	115
1989	22.6	22.8	22.2	23.8	24.5	27.4	25.3	24.0	23.1	125	126	125	123	128	130	132	123	126
1990	26.8	26.0	25.2	26.3	27.9	29.9	28.4	27.3	26.5	135	136	133	129	136	138	139	132	134
1991	30.4	30.2	27.8	29.2	30.4	31.5	30.6	31.7	30.0	139	139	138	134	142	142	145	136	139
1992	29.2	29.1	26.5	28.5	29.2	30.4	30.1	30.7	28.9	143	142	141	137	146	146	147	141	142
1993	30.2	29.7	27.3	30.6	30.0	32.5	32.2	32.2	29.8	145	144	143	141	148	149	151	143	144
1994	30.0	29.9	26.9	30.9	29.9	32.8	32.4	32.1	29.8	148	146	147	144	150	154	156	147	147
1995	30.4	30.8	27.2	31.3	32.4	32.2	32.9	32.1	30.5	151	149	150	148	154	158	158	152	151
1996	31.8	31.9	28.3	32.5	33.2	33.8	34.1	33.4	31.7	157	155	155	152	159	162	162	157	156
1997	32.4	31.9	28.5	32.4	32.9	33.9	35.0	33.8	31.9	162	161	158	156	165	166	167	161	161
1998	31.8	31.1	28.0	31.4	32.1	34.3	35.3	32.6	31.2	165	163	162	158	167	168	171	165	164
1999	30.6	29.6	26.4	30.1	30.6	32.9	33.7	31.8	29.8	172	170	167	165	174	173	175	170	170
2000	35.8	34.6	31.6	35.2	35.6	38.3	38.9	37.1	34.9	175	175	170	168	177	176	176	172	174
2001	41.0	40.3	36.4	40.7	40.7	42.3	44.5	42.1	40.2	184	183	179	176	183	184	186	182	182
2002	37.5	37.0	34.1	37.4	37.5	39.1	40.9	38.6	37.0	193	193	191	184	194	192	192	193	192
2003	39.9	39.1	35.9	39.6	40.4	42.0	42.8	41.0	39.3	200	200	198	192	200	199	198	199	199
2004	42.5	41.7	38.5	42.4	42.3	45.0	45.6	43.5	41.8	206	206	204	200	204	205	205	206	205
2005	47.1	45.7	42.7	46.7	45.7	49.6	49.7	47.2	46.0	209	208	207	204	209	209	208	210	208
2006	54.6	54.3	51.1	54.8	53.8	57.6	57.6	56.0	54.1	220	218	218	216	219	217	218	219	218
2007	54.8	55.0	51.8	54.4	54.4	56.3	59.3	56.4	54.5	234	231	232	229	231	229	230	231	232
2008	59.8	59.8	56.4	59.4	59.3	61.2	62.0	62.4	59.0	239	240	239	239	241	237	239	238	239
2009	55.1	55.6	52.3	55.0	53.9	57.6	56.0	60.2	54.8	251	251	250	251	252	250	251	251	251
2010	51.0	51.8	50.3	51.0	50.4	53.2	53.1	55.5	51.2	255	254	255	257	256	255	256	253	255

Source: BITRE estimates.

**Table F.2** Estimates of rent and mortgage cost (\$/week/household) by capital cities, 1977–2010

Year	Rent cost (\$/week/household), from CPI									Mortgage cost (\$/week/household)								
	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST
1977	51	59	68	53	70	83	129	73	59	66	61	50	52	52	53	66	60	60
1978	56	63	75	58	77	90	142	81	64	71	65	54	56	56	57	71	65	64
1979	62	66	82	63	81	94	150	84	69	76	69	56	59	59	60	75	67	68
1980	68	69	86	67	83	97	153	85	73	88	75	61	64	65	66	83	73	76
1981	75	73	91	72	88	101	161	87	78	114	91	75	78	80	80	102	91	95
1982	82	79	101	80	95	109	182	96	86	146	110	94	94	98	97	124	113	118
1983	91	90	114	90	104	116	202	107	96	168	123	109	106	110	108	140	128	134
1984	95	100	122	100	110	123	206	117	103	172	124	111	109	109	108	139	134	136
1985	102	109	128	109	115	130	217	133	111	186	135	120	122	116	115	147	150	148
1986	113	120	133	119	127	141	232	151	122	235	172	149	155	142	143	180	192	186
1987	126	131	139	127	147	152	235	165	134	284	207	175	187	166	170	211	230	223
1988	145	142	147	137	162	164	257	176	148	296	213	174	188	165	169	210	232	229
1989	167	153	162	148	175	169	260	187	163	371	258	204	219	198	195	251	273	279
1990	179	165	177	158	190	176	272	199	175	449	318	249	264	238	230	302	327	339
1991	186	176	186	168	193	183	283	212	183	442	322	251	265	235	227	299	324	337
1992	189	178	190	175	190	190	300	227	187	394	292	228	238	209	202	266	293	302
1993	190	177	191	176	190	195	301	239	188	371	278	216	225	196	191	251	281	286
1994	191	179	192	176	194	197	303	241	189	366	275	215	220	196	189	251	278	282
1995	193	181	193	177	200	199	304	238	191	426	318	253	249	232	221	296	321	328
1996	201	185	194	177	202	201	312	233	195	469	346	281	266	259	240	332	349	359
1997	209	191	196	179	204	203	323	231	200	425	309	255	234	236	212	302	308	324
1998	217	199	197	183	208	204	328	228	206	391	284	235	210	218	191	279	278	297
1999	226	205	199	188	211	202	335	227	212	397	295	242	214	224	194	283	283	305
2000	233	211	200	192	215	202	339	232	217	439	329	262	229	244	210	308	306	335
2001	243	217	204	197	220	206	335	243	224	492	375	290	249	272	227	339	337	376
2002	251	223	209	203	224	211	335	258	230	467	364	272	229	255	207	312	311	357
2003	254	227	215	210	227	218	337	270	235	529	411	306	251	279	223	333	338	401
2004	258	231	224	217	232	227	342	287	240	606	468	358	284	312	253	361	385	458
2005	262	235	234	223	238	235	351	301	246	681	524	402	323	351	291	394	434	514
2006	267	238	247	231	246	245	365	309	252	759	579	449	365	403	331	436	487	574
2007	275	245	262	239	265	258	391	322	262	864	662	519	425	495	390	508	570	660
2008	292	258	284	250	295	271	421	345	280	995	772	620	511	606	470	601	682	774
2009	314	275	311	264	329	284	473	371	302	1046	815	675	560	666	515	662	742	825
2010	331	288	325	275	346	296	521	388	318	1106	866	738	615	736	566	735	808	883

Source: BITRE estimates.

**Table F.3** Estimates of weekly nominal cost (\$/week/household) and GST/Medicare adjusted CPI by capital cities, 1977–2010

Year	Weekly cost (nominal \$/week/household)										GST/Medicare adjusted CPI									
	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST		SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST	
1977	110	110	112	103	113	121	154	120	110		35	35	36	36	35	36	37	35	35	
1978	120	120	122	114	126	133	169	132	121		38	38	39	39	39	40	41	39	39	
1979	133	131	133	124	137	144	183	143	133		41	41	43	42	42	43	44	42	42	
1980	153	147	150	139	151	160	200	157	150		46	46	47	46	46	47	49	46	46	
1981	178	164	167	157	168	177	223	175	170		50	50	51	51	50	51	54	51	50	
1982	204	184	190	176	190	197	255	197	192		55	55	56	56	56	56	59	56	55	
1983	228	204	212	196	208	216	281	220	214		62	61	63	62	62	62	66	63	62	
1984	241	219	226	210	219	228	291	237	228		65	66	67	67	66	67	70	67	66	
1985	259	236	240	228	232	242	306	259	244		68	69	70	70	69	70	72	70	69	
1986	297	268	265	258	260	271	338	297	277		74	75	76	76	74	76	78	77	75	
1987	336	301	289	286	291	302	363	329	310		81	82	82	83	82	83	85	83	82	
1988	358	316	298	298	306	316	381	342	327		87	88	88	88	87	89	91	89	88	
1989	416	354	330	330	339	340	413	378	369		94	94	95	95	94	95	96	95	94	
1990	475	403	372	366	378	371	454	423	418		102	102	102	102	102	102	102	102	102	
1991	484	418	384	379	387	379	467	436	429		107	107	107	108	107	107	107	107	107	
1992	464	407	376	372	374	373	460	432	416		108	110	109	111	108	109	110	110	109	
1993	455	402	374	372	371	375	460	436	411		109	111	110	113	108	110	111	111	110	
1994	456	403	377	373	375	380	465	439	412		111	113	112	115	110	114	113	113	112	
1995	491	429	400	392	403	400	491	463	441		115	116	117	119	114	117	117	117	116	
1996	524	452	421	406	423	417	518	481	465		121	120	121	123	119	122	121	122	121	
1997	511	443	412	395	418	408	514	464	455		122	122	123	124	120	123	124	123	122	
1998	501	436	406	386	412	400	510	451	447		122	122	124	124	120	123	123	122	122	
1999	514	449	414	395	422	404	518	456	458		125	124	126	126	123	125	125	124	125	
2000	547	479	433	414	442	420	539	479	485		128	127	128	129	126	128	127	127	128	
2001	593	519	463	440	470	443	567	514	523		133	132	132	134	130	132	131	132	132	
2002	589	523	466	438	471	440	557	516	523		137	135	136	137	133	135	134	135	136	
2003	631	558	495	462	493	462	576	544	556		141	140	141	143	137	139	137	140	140	
2004	681	597	533	492	518	489	602	586	596		144	143	145	147	140	143	139	143	143	
2005	728	633	568	525	550	521	631	625	634		148	146	149	150	144	147	142	147	147	
2006	788	680	617	568	598	563	676	673	685		152	150	153	155	150	152	147	152	152	
2007	858	740	674	616	666	610	739	733	748		156	154	158	159	156	156	153	156	156	
2008	942	815	747	678	751	669	812	814	826		161	160	165	164	162	160	158	162	161	
2009	986	852	796	718	804	707	875	868	869		164	163	168	168	165	164	161	165	165	
2010	1025	883	837	753	847	740	937	907	906		167	166	171	171	168	167	165	169	168	

Source: BITRE estimates.

**Table F.4** Estimates of weekly real cost (\$/week/household) and savings rate (per cent) by capital cities, 1977–2010

Year	Weekly cost (real\$/week/household)									Savings rate
	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST	(per cent)
1977	314	315	310	289	320	336	412	339	313	15.5
1978	315	312	310	290	321	337	415	340	313	15.1
1979	324	316	314	295	323	338	413	341	319	16.3
1980	336	321	321	301	325	340	410	339	326	15.1
1981	356	329	327	310	333	345	417	345	338	14.9
1982	370	333	337	316	339	349	429	352	347	14.3
1983	369	333	339	314	338	345	427	349	346	12.8
1984	368	332	337	314	332	343	418	352	344	14.4
1985	380	342	341	325	338	347	424	367	354	14.9
1986	402	359	349	340	351	358	432	388	371	12.6
1987	416	368	351	345	357	363	426	396	380	10.6
1988	412	360	338	337	350	353	418	386	373	8.2
1989	443	378	350	348	361	358	432	399	393	8.5
1990	468	397	366	360	372	365	447	416	411	9.2
1991	454	389	360	351	362	356	435	409	401	6.6
1992	428	370	346	336	348	343	420	394	381	5.2
1993	416	363	340	329	344	340	413	392	373	5.6
1994	411	357	336	324	340	335	410	387	368	6.8
1995	428	370	343	330	353	342	421	396	381	6.5
1996	434	376	348	330	357	343	427	394	385	7.0
1997	418	364	335	317	348	330	416	377	372	6.8
1998	409	358	329	312	344	324	414	369	366	5.2
1999	410	363	329	313	343	322	413	367	368	2.5
2000	426	377	338	321	351	329	424	377	380	3.5
2001	445	394	350	330	363	335	433	390	395	2.6
2002	430	387	342	319	354	326	416	381	385	2.5
2003	447	400	352	324	361	332	421	390	397	-0.1
2004	472	418	368	335	371	343	434	408	415	-1.1
2005	493	434	383	349	382	354	445	426	431	-1.0
2006	518	453	403	366	398	371	461	443	452	0.6
2007	549	480	426	387	426	392	483	469	479	3.8
2008	586	510	454	413	464	417	513	502	512	2.5
2009	601	523	473	428	487	433	542	525	528	7.6
2010	612	532	488	440	504	444	569	538	540	8.8

Source: BITRE estimates.



**Table F.5** Estimates of disposable income constraint or weekly budget (real \$/week/household) by capital cities, 1977–2010

Year	Weekly budget (real\$/week/household)								
	SYD	MEL	BRN	ADL	PER	HOB	DRW	CBR	AUST
1977	363	363	358	334	370	388	476	391	362
1978	363	359	356	334	370	388	478	392	360
1979	377	368	365	343	376	393	481	396	371
1980	387	370	370	346	375	392	472	390	375
1981	409	378	376	356	383	397	479	396	388
1982	423	381	385	361	388	399	490	402	396
1983	416	376	382	354	381	389	481	394	390
1984	421	380	385	360	380	392	478	403	394
1985	436	393	391	373	389	399	487	422	407
1986	452	404	393	382	395	403	486	437	417
1987	460	407	388	381	395	402	471	438	420
1988	446	389	366	365	379	382	452	417	403
1989	481	410	379	377	392	388	468	433	426
1990	511	434	399	393	406	399	488	454	449
1991	484	415	384	375	386	379	464	436	427
1992	450	389	364	353	366	360	441	415	401
1993	439	383	359	348	363	359	436	414	394
1994	439	381	358	345	363	357	438	413	393
1995	456	394	365	351	376	364	448	422	405
1996	465	402	372	353	382	367	457	421	412
1997	446	388	358	339	371	353	444	403	398
1998	430	377	346	329	362	341	435	388	385
1999	420	372	337	321	352	330	424	376	377
2000	441	391	350	332	364	341	439	390	393
2001	457	405	359	338	372	344	444	400	406
2002	440	396	350	327	362	334	427	391	394
2003	447	399	351	323	360	331	420	389	396
2004	467	414	364	331	367	340	430	404	411
2005	488	430	379	345	378	351	441	422	427
2006	521	455	405	368	400	373	464	445	454
2007	570	498	442	401	443	407	501	486	497
2008	600	523	465	423	476	428	526	515	524
2009	647	563	509	461	524	465	583	565	568
2010	666	579	531	479	548	483	620	586	588

Source: BITRE estimates.

## APPENDIX G

# Modelling data by capital cities, 1977–2010

This appendix presents modelling data for each of the eight capital cities (Tables G.1 to G.4) between 1977 and 2010. Due to the nature of the data, urban public transport (UPT) share, real fares and disposable income constraint were transformed into logarithmic values for the regression analysis. In addition, different dummies were used, depending on the capital city. Note that passenger transport task in terms of billion PKM and shares as per cent for each of the eight capital cities between 1977 and 2010 are provided in Appendix C (see Tables C.1 to C.4).

**Table G.1** Data used for regression analysis, Sydney and Melbourne, 1972–2010

Year	Sydney						Melbourne					
	Log of			Dummy			Log of			Dummy		
	UPT share	Real fares	DIC	Olympic	1977–83	2004on	UPT share	Real fares	DIC	Time	Supply-Lag	Mel-Dummy
1977	2.76	4.33	5.89	0	1	0	2.43	4.60	5.90	5	0	0
1978	2.73	4.27	5.89	0	1	0	2.37	4.60	5.88	4	0	0
1979	2.71	4.24	5.93	0	1	0	2.31	4.59	5.91	3	0	0
1980	2.78	4.29	5.96	0	1	0	2.27	4.57	5.91	2	0	0
1981	2.79	4.35	6.01	0	1	0	2.23	4.60	5.94	1	0	0
1982	2.78	4.36	6.05	0	1	0	2.14	4.70	5.94	0	0	0
1983	2.76	4.42	6.03	0	1	0	2.14	4.73	5.93	0	0	0
1984	2.71	4.46	6.04	0	0	0	2.13	4.67	5.94	0	0	0
1985	2.68	4.52	6.08	0	0	0	2.13	4.71	5.97	0	0	0
1986	2.70	4.51	6.11	0	0	0	2.15	4.70	6.00	0	0	0
1987	2.71	4.51	6.13	0	0	0	2.15	4.66	6.01	0	0	0
1988	2.73	4.50	6.10	0	0	0	2.10	4.67	5.96	0	0	0
1989	2.71	4.58	6.18	0	0	0	2.10	4.67	6.02	0	0	1
1990	2.70	4.60	6.24	0	0	0	2.06	4.62	6.07	0	0	1
1991	2.72	4.67	6.18	0	0	0	2.08	4.61	6.03	0	0	1
1992	2.69	4.70	6.11	0	0	0	2.09	4.70	5.96	0	0	0
1993	2.64	4.73	6.09	0	0	0	2.07	4.80	5.95	0	0	0
1994	2.64	4.74	6.08	0	0	0	2.06	4.87	5.94	0	0	0
1995	2.66	4.73	6.12	0	0	0	2.08	4.91	5.98	0	0	0
1996	2.67	4.73	6.14	0	0	0	2.08	4.92	6.00	0	0	0
1997	2.70	4.79	6.10	0	0	0	2.07	4.90	5.96	0	0	0
1998	2.69	4.80	6.06	0	0	0	2.04	4.90	5.93	0	0	0
1999	2.69	4.79	6.04	0	0	0	2.04	4.93	5.92	0	0	0
2000	2.69	4.85	6.09	0	0	0	2.07	4.93	5.97	0	0	0
2001	2.74	4.88	6.12	1	0	0	2.09	4.93	6.00	0	0	0
2002	2.67	4.89	6.09	0	0	0	2.10	4.97	5.98	0	0	0
2003	2.65	4.88	6.10	0	0	0	2.10	4.99	5.99	0	0	0
2004	2.62	4.92	6.15	0	0	1	2.09	4.97	6.02	0	0	0
2005	2.63	4.91	6.19	0	0	1	2.10	5.00	6.06	0	1	0
2006	2.64	4.90	6.26	0	0	1	2.18	5.02	6.12	0	1	0
2007	2.66	4.91	6.35	0	0	1	2.24	5.02	6.21	0	1	0
2008	2.70	4.93	6.40	0	0	1	2.34	5.03	6.26	0	0	0
2009	2.71	4.93	6.47	0	0	1	2.42	5.02	6.33	0	0	0
2010	2.69	4.91	6.50	0	0	1	2.44	5.02	6.36	0	0	0

Note: DIC – Disposable income constraint.

Source: BITRE estimates.

Table G.2 Data used for regression analysis, Brisbane and Adelaide, 1972–2010

Year	Brisbane					Adelaide				
	Log of			Dummy		Log of			Dummy	
	UPT share	Real fares	DIC	Bicent.	Time	UPT share	Real fares	DIC	Time	1981–85
1977	2.24	4.34	5.88	0	2	1.86	4.16	5.81	1	0
1978	2.18	4.34	5.88	0	1	1.84	4.16	5.81	2	0
1979	2.12	4.30	5.90	0	0	1.86	4.11	5.84	3	0
1980	2.12	4.31	5.91	0	0	1.94	4.13	5.85	4	0
1981	2.09	4.36	5.93	0	0	2.04	4.12	5.88	5	1
1982	2.07	4.44	5.95	0	0	2.04	4.19	5.89	6	1.5
1983	2.09	4.40	5.95	0	0	1.93	4.34	5.87	7	1
1984	2.08	4.48	5.95	0	0	1.89	4.33	5.89	8	0.5
1985	2.09	4.53	5.97	0	0	1.82	4.49	5.92	9	0.5
1986	2.10	4.55	5.97	0	0	1.83	4.54	5.95	10	0
1987	2.15	4.59	5.96	0	0	1.81	4.48	5.94	11	0
1988	2.17	4.60	5.90	0.5	0	1.74	4.54	5.90	12	0
1989	2.23	4.58	5.94	1	0	1.68	4.61	5.93	13	0
1990	2.13	4.60	5.99	0	0	1.70	4.68	5.97	14	0
1991	2.15	4.61	5.95	0	0	1.73	4.61	5.93	15	0
1992	2.10	4.65	5.90	0	0	1.71	4.54	5.87	16	0
1993	2.05	4.68	5.88	0	0	1.68	4.67	5.85	17	0
1994	2.02	4.71	5.88	0	0	1.73	4.73	5.84	18	0
1995	2.00	4.73	5.90	0	0	1.76	4.75	5.86	19	0
1996	2.01	4.74	5.92	0	0	1.75	4.75	5.87	20	0
1997	2.03	4.72	5.88	0	0	1.75	4.75	5.83	21	0
1998	2.02	4.78	5.85	0	0	1.73	4.77	5.80	22	0
1999	1.97	4.80	5.82	0	0	1.67	4.79	5.77	23	0
2000	2.00	4.82	5.86	0	0	1.63	4.87	5.80	24	0
2001	2.04	4.83	5.88	0	0	1.66	4.85	5.82	25	0
2002	2.04	4.93	5.86	0	0	1.68	4.84	5.79	26	0
2003	2.03	4.94	5.86	0	0	1.69	4.85	5.78	27	0
2004	2.01	4.91	5.90	0	0	1.71	4.84	5.80	28	0
2005	2.02	4.91	5.94	0	0	1.74	4.85	5.84	29	0
2006	2.10	4.88	6.00	0	0	1.79	4.86	5.91	30	0
2007	2.15	4.89	6.09	0	0	1.80	4.86	5.99	31	0
2008	2.19	4.91	6.14	0	0	1.82	4.91	6.05	32	0
2009	2.27	4.91	6.23	0	0	1.83	4.94	6.13	33	0
2010	2.24	4.92	6.28	0	0	1.83	4.93	6.17	34	0

Note: DIC – Disposable income constraint.

Source: BITRE estimates.

**Table G.3** Data used for regression analysis, Perth and Hobart, 1972–2010

Year	Perth						Hobart				
	Log of			Dummy			Log of			Dummy	
	UPT share	Real fares	DIC	Rail	SupplyLag	1989-90, 1997	UPT share	Real fares	DIC	Time	1977-81
1977	1.78	4.34	5.91	0	0	0	2.23	4.27	5.96	1	3
1978	1.78	4.34	5.91	0	0	0	2.12	4.27	5.96	2	2
1979	1.74	4.30	5.93	0	0	0	1.97	4.34	5.97	3	1
1980	1.77	4.31	5.93	0	0	0	1.94	4.40	5.97	4	1
1981	1.77	4.36	5.95	0	0	0	1.91	4.36	5.98	5	0.5
1982	1.69	4.44	5.96	0	0	0	1.69	4.40	5.99	6	0
1983	1.71	4.40	5.94	0	0	0	1.67	4.55	5.96	7	0
1984	1.59	4.48	5.94	0	0	0	1.71	4.54	5.97	8	0
1985	1.54	4.53	5.96	0	0	0	1.69	4.51	5.99	9	0
1986	1.59	4.55	5.98	0	0	0	1.66	4.49	6.00	10	0
1987	1.60	4.59	5.98	0	0	0	1.67	4.49	6.00	11	0
1988	1.55	4.60	5.94	0	0	0	1.59	4.54	5.95	12	0
1989	1.55	4.58	5.97	0	0	1	1.50	4.60	5.96	13	0
1990	1.57	4.60	6.01	0	0	1	1.52	4.65	5.99	14	0
1991	1.54	4.61	5.96	0	0	1	1.47	4.61	5.94	15	0
1992	1.55	4.65	5.90	0	0	0	1.45	4.65	5.89	16	0
1993	1.58	4.68	5.90	0	0	0	1.42	4.70	5.88	17	0
1994	1.68	4.71	5.89	0.5	0	0	1.40	4.69	5.88	18	0
1995	1.66	4.73	5.93	0.5	0	0	1.39	4.67	5.90	19	0
1996	1.67	4.74	5.94	0.5	0	0	1.39	4.69	5.91	20	0
1997	1.70	4.72	5.92	1	0	1	1.35	4.69	5.87	21	0
1998	1.71	4.78	5.89	1	0	0	1.34	4.83	5.83	22	0
1999	1.67	4.80	5.86	1	0	0	1.33	4.84	5.80	23	0
2000	1.70	4.82	5.90	1	0	0	1.32	4.84	5.83	24	0
2001	1.75	4.83	5.92	1	0	0	1.35	4.82	5.84	25	0
2002	1.74	4.93	5.89	1	0	0	1.33	4.88	5.81	26	0
2003	1.73	4.94	5.89	1	0	0	1.30	4.87	5.80	27	0
2004	1.70	4.91	5.91	1	0	0	1.26	4.86	5.83	28	0
2005	1.71	4.91	5.93	1	0	0	1.27	4.88	5.86	29	0
2006	1.75	4.88	5.99	1	1	0	1.27	4.88	5.92	30	0
2007	1.75	4.89	6.09	1	2	0	1.25	4.90	6.01	31	0
2008	1.84	4.91	6.17	1	1	0	1.24	4.91	6.06	32	0
2009	1.94	4.91	6.26	1	0	0	1.29	4.91	6.14	33	0
2010	1.95	4.92	6.31	1	0	0	1.29	4.92	6.18	34	0

Note: DIC – Disposable income constraint.

Source: BITRE estimates.

Table G.4 Data used for regression analysis, Darwin and Canberra, 1972–2010

Year	Darwin				Canberra				
	Log of		DIC	Time	Log of		DIC	Dummy	
	UPT share	Real fares			UPT share	Real fares		1977-82	1996-98
1977	1.07	4.41	6.17	1	1.36	4.16		1.5	0
1978	1.12	4.41	6.17	2	1.35	4.16		1.5	0
1979	1.15	4.37	6.18	3	1.43	4.27		1	0
1980	1.28	4.38	6.16	4	1.56	4.29		1	0
1981	1.38	4.42	6.17	5	1.52	4.27		1	0
1982	1.41	4.50	6.19	6	1.43	4.37		1	0
1983	1.50	4.40	6.18	7	1.59	4.43		0	0
1984	1.49	4.39	6.17	8	1.66	4.39		0	0
1985	1.49	4.35	6.19	9	1.67	4.37		0	0
1986	1.49	4.35	6.19	10	1.60	4.39		0	0
1987	1.49	4.61	6.16	11	1.62	4.43		0	0
1988	1.61	4.66	6.11	12	1.61	4.47		0	0
1989	1.74	4.64	6.15	13	1.56	4.55		0	0
1990	1.78	4.62	6.19	14	1.55	4.61		0	0
1991	1.81	4.61	6.14	15	1.54	4.61		0	0
1992	1.77	4.60	6.09	15	1.50	4.69		0	0
1993	1.73	4.62	6.08	15	1.45	4.75		0	0
1994	1.72	4.61	6.08	15	1.40	4.79		0	0
1995	1.73	4.61	6.11	15	1.42	4.84		0	0
1996	1.75	4.62	6.12	15	1.45	4.83		0	0.5
1997	1.73	4.62	6.10	15	1.48	4.86		0	1
1998	1.73	4.67	6.08	15	1.47	4.93		0	1
1999	1.72	4.67	6.05	15	1.38	4.95		0	0
2000	1.72	4.72	6.08	15	1.34	4.95		0	0
2001	1.75	4.77	6.10	15	1.34	4.93		0	0
2002	1.75	4.87	6.06	15	1.34	5.00		0	0
2003	1.79	4.86	6.04	15	1.35	5.00		0	0
2004	1.75	4.85	6.06	15	1.32	4.94		0	0
2005	1.76	4.85	6.09	15	1.34	4.95		0	0
2006	1.77	4.85	6.14	15	1.35	4.94		0	0
2007	1.73	4.85	6.22	15	1.32	4.93		0	0
2008	1.72	4.83	6.26	15	1.33	4.94		0	0
2009	1.73	4.83	6.37	15	1.36	4.93		0	0
2010	1.77	4.83	6.43	15	1.37	4.92		0	0

Note: DIC – Disposable income constraint.

Source: BITRE estimates.



## APPENDIX H

# Actual and estimated urban public transport share and passenger task by capital city, 1977–2010

This appendix presents actual and predicted urban public transport task as a proportion of total transport task (per cent) as well as actual and modelled urban public passenger task (billion PKM) for metropolitan Australia (Table H.1) and also as for each capital city (Table H.2 to Table H.5) between 1977 and 2010. Data in Table H.1 was presented graphically in Figure 3.1 and Figure 3.2 (see Chapter 3), while data in Table H.2 to Table H.5 was shown graphically in Figures 3.3 to 3.18 (see Chapter 3).



**Table H.1** Actual and estimated UPT share (per cent) and passenger task (billion PKM), all capital cities, 1977–2010

Year	UPT share (per cent)		UPT Task (billion PKM)	
	Actual	Estimate	Actual	Estimate
1977	11.32	11.27	10.09	10.03
1978	10.87	10.94	10.00	10.08
1979	10.47	10.75	9.89	10.18
1980	10.88	10.68	10.37	10.15
1981	10.88	10.58	10.53	10.21
1982	10.46	10.37	10.60	10.49
1983	10.29	10.24	10.45	10.39
1984	9.89	9.72	10.48	10.27
1985	9.67	9.80	10.62	10.78
1986	9.87	9.94	11.23	11.32
1987	9.96	9.95	11.61	11.60
1988	9.88	9.81	12.05	11.96
1989	9.78	9.80	12.46	12.50
1990	9.53	9.66	12.42	12.60
1991	9.70	9.64	12.62	12.54
1992	9.55	9.50	12.62	12.54
1993	9.15	9.31	12.38	12.63
1994	9.15	9.31	12.70	12.95
1995	9.26	9.44	13.31	13.60
1996	9.36	9.55	13.65	13.95
1997	9.49	9.40	13.93	13.79
1998	9.38	9.27	13.96	13.77
1999	9.26	9.15	14.10	13.92
2000	9.34	9.34	14.57	14.57
2001	9.75	9.74	15.22	15.20
2002	9.42	9.30	14.96	14.76
2003	9.32	9.33	15.12	15.13
2004	9.09	9.20	15.35	15.55
2005	9.20	9.30	15.61	15.80
2006	9.62	9.58	16.31	16.23
2007	9.92	9.96	17.06	17.15
2008	10.50	10.37	18.17	17.93
2009	11.01	10.84	19.09	18.75
2010	10.93	11.03	19.12	19.32

Source: BITRE estimates.

**Table H2** Actual and estimated UPT share (per cent) and UPT task (billion PKM), Sydney and Melbourne, 1977–2010

Year	Sydney				Melbourne			
	UPT share (per cent)		UPT Task (billion pkm)		UPT share (per cent)		UPT Task (billion pkm)	
	Actual	Model	Actual	Model	Actual	Model	Actual	Model
1977	15.76	15.51	4.81	4.73	11.41	11.53	3.00	3.03
1978	15.38	15.57	4.80	4.86	10.67	10.67	2.90	2.90
1979	14.97	15.76	4.80	5.05	10.07	10.21	2.81	2.85
1980	16.13	15.79	5.28	5.17	9.67	9.49	2.70	2.65
1981	16.36	15.94	5.45	5.31	9.33	8.80	2.65	2.50
1982	16.17	16.06	5.58	5.54	8.49	8.19	2.53	2.44
1983	15.83	15.92	5.40	5.43	8.53	8.23	2.56	2.47
1984	15.05	14.69	5.34	5.22	8.43	8.23	2.62	2.56
1985	14.53	14.76	5.36	5.45	8.45	8.52	2.72	2.74
1986	14.93	14.90	5.68	5.67	8.57	8.83	2.87	2.96
1987	15.03	14.97	5.84	5.82	8.62	8.86	2.97	3.06
1988	15.32	14.86	6.22	6.03	8.18	8.49	2.95	3.06
1989	15.04	15.04	6.31	6.31	8.16	8.14	3.09	3.08
1990	14.88	15.23	6.38	6.53	7.81	7.77	3.01	3.00
1991	15.18	14.96	6.50	6.41	7.98	8.07	3.06	3.09
1992	14.79	14.66	6.41	6.35	8.12	8.21	3.16	3.19
1993	14.01	14.54	6.19	6.42	7.92	7.97	3.13	3.15
1994	13.97	14.53	6.31	6.56	7.84	7.83	3.16	3.15
1995	14.26	14.68	6.66	6.85	7.98	8.07	3.31	3.35
1996	14.48	14.75	6.82	6.95	8.01	8.27	3.39	3.50
1997	14.87	14.54	7.03	6.87	7.90	7.99	3.37	3.40
1998	14.80	14.39	7.09	6.89	7.65	7.71	3.31	3.34
1999	14.69	14.33	7.20	7.02	7.73	7.61	3.43	3.38
2000	14.71	14.43	7.39	7.25	7.89	7.99	3.59	3.63
2001	15.45	15.45	7.79	7.79	8.10	8.17	3.70	3.73
2002	14.39	14.38	7.32	7.31	8.20	7.98	3.82	3.72
2003	14.21	14.44	7.32	7.44	8.18	8.06	3.88	3.82
2004	13.71	13.74	7.36	7.38	8.08	8.28	3.96	4.06
2005	13.81	13.90	7.46	7.51	8.16	8.24	4.02	4.06
2006	14.06	14.12	7.59	7.62	8.82	8.69	4.34	4.28
2007	14.28	14.43	7.80	7.88	9.42	9.47	4.71	4.73
2008	14.91	14.59	8.16	7.99	10.34	10.31	5.21	5.19
2009	15.10	14.86	8.32	8.19	11.25	11.06	5.60	5.50
2010	14.77	14.99	8.24	8.36	11.46	11.42	5.71	5.69

Source: BITRE estimates.

**Table H.3** Actual and estimated UPT share (per cent) and UPT task (billion PKM), Brisbane and Adelaide, 1977–2010

Year	Brisbane				Adelaide			
	UPT share (per cent)		UPT Task (billion pkm)		UPT share (per cent)		UPT Task (billion pkm)	
	Actual	Model	Actual	Model	Actual	Model	Actual	Model
1977	9.36	9.46	0.88	0.89	6.41	6.23	0.60	0.58
1978	8.89	8.69	0.87	0.86	6.29	6.30	0.60	0.62
1979	8.30	8.14	0.85	0.83	6.41	6.64	0.62	0.63
1980	8.37	8.20	0.88	0.85	6.98	6.64	0.66	0.62
1981	8.05	8.23	0.87	0.89	7.67	7.76	0.72	0.71
1982	7.95	8.26	0.93	0.97	7.71	7.56	0.75	0.75
1983	8.12	8.27	0.96	0.98	6.88	6.97	0.67	0.70
1984	8.00	8.23	0.99	1.02	6.64	6.67	0.67	0.63
1985	8.08	8.26	1.04	1.06	6.18	6.18	0.65	0.65
1986	8.19	8.26	1.11	1.12	6.24	6.14	0.67	0.65
1987	8.59	8.16	1.19	1.14	6.09	5.99	0.67	0.65
1988	8.79	8.53	1.29	1.26	5.71	5.78	0.65	0.64
1989	9.29	9.43	1.47	1.49	5.38	5.66	0.63	0.65
1990	8.43	8.28	1.36	1.34	5.48	5.53	0.65	0.70
1991	8.59	8.10	1.41	1.33	5.63	5.78	0.66	0.72
1992	8.20	7.82	1.39	1.33	5.55	5.98	0.66	0.67
1993	7.76	7.73	1.38	1.37	5.38	5.58	0.65	0.66
1994	7.55	7.70	1.38	1.41	5.64	5.42	0.68	0.66
1995	7.43	7.76	1.42	1.48	5.79	5.44	0.71	0.68
1996	7.45	7.84	1.46	1.54	5.78	5.52	0.71	0.69
1997	7.64	7.68	1.51	1.51	5.73	5.52	0.70	0.68
1998	7.52	7.49	1.52	1.51	5.66	5.46	0.70	0.68
1999	7.17	7.36	1.47	1.50	5.31	5.40	0.68	0.67
2000	7.39	7.50	1.56	1.59	5.10	5.28	0.67	0.71
2001	7.72	7.60	1.64	1.60	5.26	5.43	0.69	0.72
2002	7.70	7.42	1.69	1.63	5.37	5.45	0.72	0.73
2003	7.61	7.42	1.72	1.68	5.44	5.47	0.75	0.76
2004	7.45	7.60	1.79	1.83	5.51	5.60	0.77	0.78
2005	7.57	7.77	1.84	1.90	5.71	5.69	0.78	0.78
2006	8.21	8.10	2.01	1.99	6.02	5.84	0.82	0.79
2007	8.59	8.50	2.15	2.15	6.05	6.04	0.83	0.81
2008	8.92	8.94	2.26	2.24	6.20	6.04	0.84	0.81
2009	9.66	9.64	2.42	2.34	6.26	6.20	0.86	0.85
2010	9.36	9.39	2.35	2.41	6.22	6.36	0.87	0.89

Source: BITRE estimates.

**Table H.4** Actual and estimated UPT share (per cent) and UPT task (billion PKM), Perth and Hobart, 1977–2010

Year	Perth				Hobart			
	UPT share (per cent)		UPT Task (billion pkm)		UPT share (per cent)		UPT Task (billion pkm)	
	Actual	Model	Actual	Model	Actual	Model	Actual	Model
1977	5.95	5.73	0.56	0.54	9.33	9.80	0.14	0.14
1978	5.93	6.05	0.59	0.60	8.34	8.15	0.13	0.13
1979	5.71	5.80	0.58	0.59	7.16	6.83	0.11	0.11
1980	5.88	6.05	0.60	0.62	6.96	6.85	0.11	0.11
1981	5.88	5.66	0.61	0.58	6.72	6.22	0.11	0.10
1982	5.40	5.29	0.58	0.57	5.45	5.40	0.09	0.09
1983	5.53	5.09	0.60	0.55	5.31	5.31	0.09	0.09
1984	4.88	4.86	0.56	0.56	5.53	5.32	0.10	0.09
1985	4.65	4.86	0.55	0.58	5.41	5.34	0.10	0.10
1986	4.91	5.09	0.60	0.63	5.28	5.28	0.10	0.10
1987	4.97	5.07	0.62	0.64	5.29	5.12	0.10	0.10
1988	4.72	4.96	0.62	0.65	4.91	4.87	0.10	0.10
1989	4.72	4.69	0.65	0.65	4.47	4.75	0.09	0.10
1990	4.81	4.87	0.68	0.69	4.58	4.81	0.10	0.10
1991	4.67	4.69	0.66	0.66	4.37	4.60	0.09	0.10
1992	4.72	4.75	0.68	0.68	4.27	4.39	0.09	0.09
1993	4.87	4.68	0.72	0.69	4.12	4.34	0.09	0.10
1994	5.35	5.25	0.84	0.83	4.07	4.33	0.09	0.10
1995	5.24	5.29	0.88	0.89	4.03	4.27	0.09	0.10
1996	5.31	5.26	0.91	0.90	4.00	4.23	0.09	0.10
1997	5.49	5.43	0.95	0.94	3.84	3.91	0.09	0.09
1998	5.52	5.61	0.97	0.98	3.81	3.80	0.09	0.09
1999	5.34	5.45	0.96	0.98	3.77	3.73	0.09	0.09
2000	5.45	5.59	0.99	1.02	3.76	3.75	0.09	0.09
2001	5.76	5.55	1.04	1.00	3.85	3.63	0.09	0.08
2002	5.71	5.51	1.05	1.02	3.78	3.57	0.09	0.08
2003	5.65	5.54	1.07	1.05	3.66	3.53	0.09	0.08
2004	5.45	5.60	1.08	1.11	3.52	3.49	0.09	0.09
2005	5.55	5.76	1.12	1.16	3.56	3.48	0.09	0.08
2006	5.77	5.75	1.15	1.15	3.55	3.48	0.09	0.08
2007	5.78	5.82	1.18	1.18	3.50	3.52	0.09	0.09
2008	6.29	6.24	1.30	1.29	3.46	3.54	0.08	0.09
2009	6.95	6.83	1.49	1.47	3.62	3.57	0.09	0.09
2010	7.04	7.08	1.53	1.54	3.65	3.60	0.09	0.09

Source: BITRE estimates.

**Table H.5** Actual and estimated UPT share (per cent) and UPT task (billion PKM), Darwin and Canberra, 1977–2010

Year	Darwin				Canberra			
	UPT share (per cent)		UPT Task (billion pkm)		UPT share (per cent)		UPT Task (billion pkm)	
	Actual	Model	Actual	Model	Actual	Model	Actual	Model
1977	2.91	3.04	0.01	0.01	3.90	4.18	0.09	0.09
1978	3.05	3.21	0.01	0.01	3.85	3.94	0.09	0.09
1979	3.15	3.36	0.01	0.02	4.18	4.38	0.10	0.11
1980	3.59	3.51	0.02	0.02	4.75	4.43	0.12	0.11
1981	3.97	3.66	0.02	0.02	4.57	4.19	0.11	0.10
1982	4.09	3.89	0.02	0.02	4.18	4.06	0.11	0.11
1983	4.50	4.09	0.03	0.02	4.89	5.24	0.13	0.14
1984	4.42	4.30	0.03	0.03	5.25	5.30	0.15	0.15
1985	4.42	4.53	0.03	0.03	5.29	5.24	0.16	0.15
1986	4.45	4.61	0.03	0.03	4.94	5.13	0.15	0.16
1987	4.46	4.80	0.03	0.04	5.07	5.00	0.16	0.16
1988	4.98	5.04	0.04	0.04	4.98	4.80	0.17	0.16
1989	5.69	5.32	0.04	0.04	4.74	4.66	0.17	0.16
1990	5.96	5.61	0.05	0.05	4.70	4.66	0.17	0.17
1991	6.09	5.87	0.05	0.05	4.67	4.44	0.17	0.16
1992	5.88	5.84	0.05	0.05	4.48	4.30	0.17	0.16
1993	5.64	5.85	0.05	0.05	4.24	4.21	0.17	0.17
1994	5.60	5.85	0.05	0.05	4.07	4.10	0.16	0.17
1995	5.62	5.85	0.05	0.05	4.14	4.13	0.17	0.17
1996	5.75	5.85	0.06	0.06	4.27	4.30	0.18	0.18
1997	5.66	5.81	0.06	0.06	4.39	4.38	0.19	0.19
1998	5.63	5.80	0.06	0.06	4.33	4.33	0.18	0.18
1999	5.60	5.76	0.06	0.06	3.98	3.86	0.17	0.17
2000	5.56	5.74	0.06	0.06	3.84	3.90	0.17	0.17
2001	5.78	5.67	0.06	0.06	3.83	3.76	0.17	0.16
2002	5.78	5.66	0.06	0.06	3.82	3.76	0.17	0.17
2003	6.00	5.67	0.06	0.06	3.86	3.88	0.18	0.18
2004	5.74	5.67	0.06	0.06	3.75	3.87	0.18	0.18
2005	5.83	5.68	0.06	0.06	3.80	3.88	0.18	0.19
2006	5.86	5.70	0.06	0.06	3.87	3.91	0.18	0.19
2007	5.65	5.74	0.06	0.06	3.75	3.89	0.18	0.19
2008	5.60	5.76	0.06	0.06	3.77	3.90	0.18	0.19
2009	5.65	5.79	0.06	0.07	3.89	3.92	0.19	0.19
2010	5.88	5.83	0.07	0.07	3.93	3.96	0.19	0.19

Source: BITRE estimates.

## APPENDIX I

# Regression data for forecasting total passenger task, capital cities, 1965–2010

This appendix provides raw regression data for forecasting the total (private plus public) motorised passenger transport task for each capital city between 1965 and 2010.

**Table I.1** Regression data for forecasting total (private plus public) motorised passenger task, Sydney, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol	Unemployment	GFC
1965	6 999	1	1	1	48.30	1.48	0
1966	7 219	2	2	4	51.06	1.72	0
1967	7 403	3	3	9	50.79	1.84	0
1968	7 622	4	4	16	51.34	1.89	0
1969	7 947	5	5	25	50.12	1.79	0
1970	8 322	6	6	36	49.08	1.77	0
1971	8 604	7	7	49	50.78	1.75	0
1972	8 646	8	8	64	49.37	2.23	0
1973	8 804	9	9	81	46.67	2.67	0
1974	9 149	10	10	100	50.17	2.14	0
1975	9 350	11	11	121	51.50	4.05	0
1976	9 402	12	12	144	54.40	4.87	0
1977	9 631	13	13	169	49.14	5.18	0
1978	9 759	14	14	196	47.59	6.13	0
1979	9 926	14	15	225	54.48	6.16	0
1980	10 042	14	16	256	64.66	5.68	0
1981	10 151	14	17	289	65.52	5.34	0
1982	10 397	14	18	324	63.25	5.72	0
1983	10 179	14	19	361	67.89	9.42	0
1984	10 499	14	20	400	69.20	10.29	0
1985	10 778	14	21	441	73.61	8.95	0
1986	10 963	14	22	484	70.94	8.36	0
1987	11 012	14	23	529	66.25	8.54	0
1988	11 308	14	24	576	61.90	7.76	0
1989	11 585	14	25	625	54.22	6.64	0
1990	11 758	14	26	676	59.26	5.93	0
1991	11 665	14	27	729	65.25	7.26	0
1992	11 675	14	28	784	61.55	9.47	0
1993	11 825	14	29	841	62.18	10.60	0
1994	11 986	14	30	900	60.06	10.07	0
1995	12 218	14	31	961	58.00	8.31	0
1996	12 140	14	32	1 024	58.11	7.45	0
1997	12 032	14	33	1 089	59.09	7.64	0
1998	12 068	14	34	1 156	58.05	7.35	0
1999	12 192	14	35	1 225	54.67	6.71	0
2000	12 348	14	36	1 296	62.21	5.76	0
2001	12 213	14	37	1 369	70.21	5.52	0
2002	12 211	14	38	1 444	61.98	6.16	0
2003	12 299	14	39	1 521	64.13	5.85	0
2004	12 749	14	40	1 600	64.35	5.47	0
2005	12 734	14	41	1 681	70.56	5.22	0
2006	12 604	14	42	1 764	80.93	5.20	0
2007	12 600	14	43	1 849	78.84	4.98	0
2008	12 443	14	43	1 849	84.68	4.59	1.8
2009	12 274	14	43	1 849	77.49	5.67	5.7
2010	12 206	14	43	1 849	72.78	5.95	6.4

**Table I.2** Regression data for forecasting total (private plus public) motorised passenger task, Melbourne, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol price	Unemployment	GFC	Dummy 65–67
1965	6 542	1	1	1	48.21	1.48	0	3
1966	6 685	2	2	4	50.32	1.72	0	2
1967	6 833	3	3	9	50.32	1.84	0	1
1968	7 040	4	4	16	50.16	1.89	0	0
1969	7 326	5	5	25	49.44	1.79	0	0
1970	7 642	6	6	36	49.45	1.77	0	0
1971	7 838	7	7	49	51.82	1.75	0	0
1972	8 087	8	8	64	51.89	2.23	0	0
1973	8 248	9	9	81	48.94	2.67	0	0
1974	8 613	10	10	100	51.73	2.14	0	0
1975	8 946	11	11	121	49.62	4.05	0	0
1976	9 230	12	12	144	47.99	4.71	0	0
1977	9 587	13	13	169	44.83	4.77	0	0
1978	9 871	14	14	196	46.51	5.46	0	0
1979	10 066	14	15	225	53.23	5.56	0	0
1980	10 023	14	16	256	67.83	5.80	0	0
1981	10 115	14	17	289	67.63	5.83	0	0
1982	10 514	14	18	324	62.83	5.89	0	0
1983	10 486	14	19	361	65.63	8.11	0	0
1984	10 800	14	20	400	68.80	8.62	0	0
1985	11 071	14	21	441	70.54	7.26	0	0
1986	11 327	14	22	484	69.77	6.47	0	0
1987	11 480	14	23	529	65.30	6.52	0	0
1988	11 859	14	24	576	61.10	5.97	0	0
1989	12 262	14	25	625	54.55	5.14	0	0
1990	12 331	14	26	676	57.33	4.63	0	0
1991	12 145	14	27	729	64.06	8.01	0	0
1992	12 218	14	28	784	60.37	10.65	0	0
1993	12 367	14	29	841	60.40	11.40	0	0
1994	12 540	14	30	900	58.70	11.44	0	0
1995	12 802	14	31	961	57.96	9.31	0	0
1996	12 872	14	32	1 024	58.18	8.43	0	0
1997	12 864	14	33	1 089	58.17	8.76	0	0
1998	12 941	14	34	1 156	56.93	8.19	0	0
1999	13 145	14	35	1 225	53.26	7.45	0	0
2000	13 294	14	36	1 296	60.39	6.60	0	0
2001	13 154	14	37	1 369	69.89	6.02	0	0
2002	13 220	14	38	1 444	61.92	6.34	0	0
2003	13 260	14	39	1 521	63.55	5.73	0	0
2004	13 504	14	40	1 600	63.70	5.45	0	0
2005	13 381	14	41	1 681	69.29	5.55	0	0
2006	13 164	14	42	1 764	81.56	5.24	0	0
2007	13 077	14	42	1 764	80.17	4.78	0	0
2008	12 933	14	42	1 764	85.28	4.46	1.8	0
2009	12 496	14	42	1 764	79.09	5.11	5.7	0
2010	12 255	14	42	1 764	74.65	5.60	6.4	0



**Table I.3** Regression data for forecasting total (private plus public) motorised passenger task, Brisbane, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol price	Unemployment	GFC	Dummy 65–67
1965	5 776	1	1	1	49.43	1.48	0	3
1966	5 949	2	2	4	51.31	1.72	0	2
1967	6 144	3	3	9	51.71	1.84	0	1
1968	6 412	4	4	16	53.30	1.89	0	0
1969	6 836	5	5	25	52.06	1.79	0	0
1970	7 342	6	6	36	51.18	1.77	0	0
1971	7 522	7	7	49	53.36	1.75	0	0
1972	7 854	8	8	64	53.28	2.23	0	0
1973	8 112	9	9	81	50.47	2.67	0	0
1974	8 538	10	10	100	53.48	2.14	0	0
1975	8 828	11	11	121	51.80	4.05	0	0
1976	9 066	12	12	144	54.65	5.03	0	0
1977	9 395	13	13	169	51.29	5.60	0	0
1978	9 673	14	14	196	49.12	6.81	0	0
1979	9 908	14	15	225	55.49	6.92	0	0
1980	9 952	14	16	256	66.27	6.58	0	0
1981	10 016	14	17	289	63.85	6.03	0	0
1982	10 442	14	18	324	63.81	6.00	0	0
1983	10 468	14	19	361	64.33	8.99	0	0
1984	10 819	14	20	400	66.25	9.72	0	0
1985	11 046	14	21	441	67.33	9.99	0	0
1986	11 225	14	22	484	64.70	9.11	0	0
1987	11 351	14	23	529	60.35	9.64	0	0
1988	11 786	14	24	576	58.51	8.98	0	0
1989	12 294	14	25	625	52.59	7.12	0	0
1990	12 281	14	26	676	55.51	6.88	0	0
1991	12 241	14	27	729	59.38	9.05	0	0
1992	12 387	14	28	784	55.49	9.79	0	0
1993	12 617	14	29	841	55.65	10.25	0	0
1994	12 733	14	30	900	52.91	9.83	0	0
1995	12 996	14	31	961	50.84	8.55	0	0
1996	13 040	14	32	1024	51.13	8.94	0	0
1997	12 973	14	33	1089	51.48	9.21	0	0
1998	13 018	14	34	1156	50.38	8.68	0	0
1999	13 032	14	35	1225	46.75	8.01	0	0
2000	13 215	14	36	1296	54.82	7.72	0	0
2001	13 045	14	37	1369	62.73	7.94	0	0
2002	13 163	14	38	1444	56.64	7.94	0	0
2003	13 208	14	39	1521	57.88	7.16	0	0
2004	13 746	14	40	1600	58.08	6.08	0	0
2005	13 591	14	41	1681	63.64	4.94	0	0
2006	13 447	14	41	1681	75.19	4.79	0	0
2007	13 479	14	41	1681	73.62	3.99	0	0
2008	13 328	14	41	1681	77.97	3.68	1.8	0
2009	12 864	14	41	1681	71.37	4.38	5.7	0
2010	12 585	14	41	1681	71.78	5.70	6.4	0

**Table I.4** Regression data for forecasting total (private plus public) motorised passenger task, Adelaide, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol price	Unemployment	GFC	Dummy 65–67
1965	6 604	1	1	1	45.46	1.48	0	3
1966	6 779	2	2	4	48.54	1.72	0	2
1967	6 939	3	3	9	47.50	1.84	0	1
1968	7 148	4	4	16	48.58	1.89	0	0
1969	7 448	5	5	25	47.86	1.79	0	0
1970	7 762	6	6	36	47.57	1.77	0	0
1971	7 950	7	7	49	49.80	1.75	0	0
1972	8 217	8	8	64	50.13	2.23	0	0
1973	8 413	9	9	81	47.21	2.67	0	0
1974	8 954	10	10	100	49.43	2.14	0	0
1975	9 313	11	11	121	50.07	4.05	0	0
1976	9 635	12	12	144	48.05	4.92	0	0
1977	9 968	13	13	169	43.87	5.31	0	0
1978	10 137	14	14	196	44.19	6.34	0	0
1979	10 169	14	15	225	50.46	7.49	0	0
1980	9 953	14	16	256	63.70	7.57	0	0
1981	9 832	14	17	289	66.54	7.70	0	0
1982	10 094	14	18	324	64.39	7.87	0	0
1983	9 950	14	19	361	66.06	9.86	0	0
1984	10 295	14	20	400	68.90	10.11	0	0
1985	10 562	14	21	441	68.44	9.24	0	0
1986	10 774	14	22	484	66.51	8.38	0	0
1987	10 842	14	23	529	61.05	8.77	0	0
1988	11 104	14	24	576	58.49	8.64	0	0
1989	11 339	14	25	625	56.28	7.66	0	0
1990	11 397	14	26	676	57.90	6.77	0	0
1991	11 176	14	27	729	61.62	8.50	0	0
1992	11 156	14	28	784	58.60	10.84	0	0
1993	11 298	14	29	841	60.83	11.13	0	0
1994	11 305	14	30	900	59.35	10.52	0	0
1995	11 404	14	31	961	57.43	9.90	0	0
1996	11 330	14	32	1 024	57.86	9.12	0	0
1997	11 313	14	33	1 089	58.02	9.24	0	0
1998	11 386	14	34	1 156	56.66	9.56	0	0
1999	11 650	14	35	1 225	53.14	8.98	0	0
2000	11 934	14	36	1 296	60.52	7.96	0	0
2001	11 857	14	37	1 369	69.57	7.25	0	0
2002	11 963	14	38	1 444	61.76	7.13	0	0
2003	12 282	14	39	1 521	62.87	6.32	0	0
2004	12 367	14	40	1 600	63.05	6.10	0	0
2005	12 068	14	41	1 681	68.64	5.58	0	0
2006	11 863	14	42	1 764	79.68	4.87	0	0
2007	11 827	14	43	1 849	76.74	5.01	0	0
2008	11 629	14	43	1 849	82.24	4.81	1.8	0
2009	11 578	14	43	1 849	75.59	5.42	5.7	0
2010	11 636	14	43	1 849	70.94	5.33	6.4	0

**Table I.5** Regression data for forecasting total (private plus public) motorised passenger task, Perth, 1965–2010

Year	PKM per person	Pre-75 time	Time	Time squared	Petrol	Unemployment	GFC
1965	6 707	1	1	1	49.21	1.48	0
1966	7 053	2	2	4	51.09	1.72	0
1967	7 385	3	3	9	49.54	1.84	0
1968	7 727	4	4	16	49.80	1.89	0
1969	8 262	5	5	25	49.31	1.79	0
1970	8 797	6	6	36	48.08	1.77	0
1971	9 109	7	7	49	50.49	1.75	0
1972	9 480	8	8	64	50.64	2.23	0
1973	9 709	9	9	81	47.95	2.67	0
1974	10 156	10	10	100	52.29	2.14	0
1975	10 420	11	11	121	49.79	4.05	0
1976	10 744	11	12	144	51.60	4.80	0
1977	11 105	11	13	169	46.92	5.00	0
1978	11 419	11	14	196	45.32	5.83	0
1979	11 534	11	15	225	50.88	7.00	0
1980	11 369	11	16	256	64.12	7.11	0
1981	11 200	11	17	289	66.50	5.92	0
1982	11 347	11	18	324	67.14	6.73	0
1983	11 150	11	19	361	67.30	8.90	0
1984	11 553	11	20	400	67.85	9.93	0
1985	11 664	11	21	441	70.34	8.73	0
1986	11 704	11	22	484	69.98	7.82	0
1987	11 649	11	23	529	67.87	7.70	0
1988	11 862	11	24	576	65.35	7.50	0
1989	12 053	11	25	625	58.75	6.05	0
1990	12 108	11	26	676	61.42	6.45	0
1991	11 859	11	27	729	65.04	9.00	0
1992	11 843	11	28	784	61.86	10.72	0
1993	12 095	11	29	841	62.61	9.98	0
1994	12 622	11	30	900	60.08	8.59	0
1995	13 148	11	31	961	62.10	7.36	0
1996	13 201	11	32	1 024	61.40	7.29	0
1997	13 136	11	33	1 089	60.94	7.23	0
1998	13 123	11	34	1 156	59.63	6.76	0
1999	13 228	11	35	1 225	55.52	6.77	0
2000	13 255	11	36	1 296	62.83	6.19	0
2001	12 960	11	37	1 369	71.74	6.42	0
2002	13 037	11	38	1 444	63.92	6.55	0
2003	13 172	11	39	1 521	67.06	5.91	0
2004	13 573	11	40	1 600	66.14	5.71	0
2005	13 549	11	41	1 681	70.10	4.70	0
2006	13 136	11	42	1 764	80.78	3.99	0
2007	13 059	11	43	1 849	78.40	3.23	0
2008	12 935	11	44	1 936	83.53	3.29	1.8
2009	13 014	11	45	2 025	75.49	3.77	5.7
2010	12 867	11	46	2 116	72.01	4.98	6.4

Note: Pre-75 time was used and Dummy 65-67 was not used.

**Table I.6** Regression data for forecasting total (private plus public) motorised passenger task, Hobart, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol price	GFC	Dummy 65–68
1965	5 485	1	1	1	48.04	0	4
1966	5 704	2	2	4	49.95	0	3
1967	5 930	3	3	9	49.78	0	2
1968	6 144	4	4	16	49.29	0	1
1969	6 407	5	5	25	49.32	0	0
1970	6 707	6	6	36	48.57	0	0
1971	6 895	7	7	49	51.62	0	0
1972	7 177	8	8	64	50.98	0	0
1973	7 332	9	9	81	48.32	0	0
1974	7 789	10	10	100	51.67	0	0
1975	8 195	11	11	121	50.52	0	0
1976	8 489	12	12	144	52.91	0	0
1977	8 901	13	13	169	51.56	0	0
1978	9 217	14	14	196	54.12	0	0
1979	9 401	14	15	225	52.29	0	0
1980	9 448	14	16	256	65.93	0	0
1981	9 531	14	17	289	68.22	0	0
1982	9 741	14	18	324	67.99	0	0
1983	9 642	14	19	361	73.58	0	0
1984	9 987	14	20	400	75.05	0	0
1985	10 286	14	21	441	74.63	0	0
1986	10 440	14	22	484	74.52	0	0
1987	10 420	14	23	529	74.89	0	0
1988	10 667	14	24	576	69.92	0	0
1989	10 944	14	25	625	64.69	0	0
1990	11 214	14	26	676	65.89	0	0
1991	11 141	14	27	729	67.38	0	0
1992	11 234	14	28	784	63.55	0	0
1993	11 556	14	29	841	66.25	0	0
1994	11 760	14	30	900	63.96	0	0
1995	11 964	14	31	961	60.03	0	0
1996	12 005	14	32	1 024	60.98	0	0
1997	11 953	14	33	1 089	61.00	0	0
1998	11 753	14	34	1 156	61.91	0	0
1999	11 687	14	35	1 225	58.48	0	0
2000	11 684	14	36	1 296	66.54	0	0
2001	11 346	14	37	1 369	73.20	0	0
2002	11 525	14	38	1 444	65.86	0	0
2003	11 806	14	39	1 521	68.56	0	0
2004	12 222	14	40	1 600	68.85	0	0
2005	11 925	14	40	1 600	74.49	0	0
2006	11 844	14	40	1 600	85.51	0	0
2007	11 888	14	40	1 600	81.37	0	0
2008	11 703	14	40	1 600	86.95	1.8	0
2009	11 397	14	40	1 600	81.56	5.7	0
2010	11 308	14	40	1 600	77.09	6.4	0

**Table I.7** Regression data for forecasting total (private plus public) motorised passenger task, Darwin, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol	Unemployment	GFC
1965	3 726	1	1	1	46.37	1.48	0
1966	3 839	2	2	4	49.95	1.72	0
1967	3 975	3	3	9	49.78	1.84	0
1968	4 417	4	4	16	49.29	1.89	0
1969	5 311	5	5	25	49.32	1.79	0
1970	6 234	6	6	36	48.57	1.77	0
1971	7 067	7	7	49	51.62	1.75	0
1972	7 298	8	8	64	50.98	2.23	0
1973	7 366	9	9	81	48.32	2.67	0
1974	7 587	10	10	100	51.67	2.14	0
1975	8 610	11	11	121	50.52	4.05	0
1976	8 509	12	12	144	52.91	4.57	0
1977	8 843	13	13	169	51.56	4.40	0
1978	8 695	14	14	196	54.12	4.87	0
1979	8 822	14	15	225	52.29	5.10	0
1980	8 847	14	16	256	65.93	4.57	0
1981	8 932	14	17	289	68.22	4.48	0
1982	8 875	14	18	324	67.99	5.41	0
1983	8 572	14	19	361	73.58	6.67	0
1984	8 716	14	20	400	75.05	7.80	0
1985	8 846	14	21	441	74.63	7.01	0
1986	9 031	14	22	484	74.52	7.27	0
1987	9 031	14	23	529	74.89	6.22	0
1988	9 278	14	24	576	69.92	9.76	0
1989	9 382	14	25	625	64.69	6.55	0
1990	9 468	14	26	676	65.89	6.54	0
1991	9 398	14	27	729	67.38	8.02	0
1992	9 429	14	28	784	63.55	8.63	0
1993	9 471	14	29	841	66.25	8.07	0
1994	9 586	14	30	900	63.96	7.14	0
1995	9 953	14	31	961	60.03	7.33	0
1996	10 139	14	31	961	60.98	6.96	0
1997	10 003	14	31	961	61.00	5.58	0
1998	9 957	14	31	961	61.91	4.92	0
1999	9 907	14	31	961	58.48	3.99	0
2000	9 814	14	31	961	66.54	4.42	0
2001	9 388	14	31	961	73.20	5.63	0
2002	9 401	14	31	961	65.86	6.66	0
2003	9 529	14	31	961	68.56	5.45	0
2004	9 721	14	31	961	68.85	5.20	0
2005	9 379	14	31	961	74.49	5.68	0
2006	9 186	14	31	961	85.51	5.49	0
2007	9 247	14	31	961	81.37	3.80	0
2008	9 174	14	31	961	86.95	4.43	1.8
2009	9 090	14	31	961	81.56	3.64	5.7
2010	8 724	14	31	961	77.09	3.45	6.4

**Table I.8** Regression data for forecasting total (private plus public) motorised passenger task, Canberra, 1965–2010

Year	PKM per person	Pre-78 time	Time	Time squared	Petrol	Unemployment	GFC
1965	6 413	1	1	1	47.47	1.48	0
1966	6 728	2	2	4	49.61	1.72	0
1967	7 058	3	3	9	49.37	1.84	0
1968	7 337	4	4	16	49.93	1.89	0
1969	7 800	5	5	25	49.87	1.79	0
1970	8 297	6	6	36	48.75	1.77	0
1971	8 622	7	7	49	51.18	1.75	0
1972	9 138	8	8	64	51.03	2.23	0
1973	9 232	9	9	81	48.19	2.67	0
1974	9 659	10	10	100	51.27	2.14	0
1975	9 847	11	11	121	50.76	4.05	0
1976	10 136	12	12	144	53.35	4.83	0
1977	10 456	13	13	169	52.35	5.09	0
1978	10 687	14	14	196	55.35	5.98	0
1979	10 963	14	15	225	53.30	7.51	0
1980	10 955	14	16	256	66.90	6.34	0
1981	10 886	14	17	289	69.82	5.83	0
1982	11 252	14	18	324	67.06	6.34	0
1983	11 216	14	19	361	70.31	7.72	0
1984	11 544	14	20	400	69.96	6.50	0
1985	11 827	14	21	441	70.76	4.86	0
1986	11 946	14	22	484	69.21	4.96	0
1987	11 985	14	23	529	65.68	5.36	0
1988	12 326	14	24	576	65.29	5.02	0
1989	12 785	14	25	625	56.88	4.87	0
1990	13 017	14	26	676	60.05	5.18	0
1991	12 851	14	27	729	67.65	5.68	0
1992	12 962	14	28	784	63.82	6.80	0
1993	13 236	14	29	841	65.19	7.34	0
1994	13 456	14	30	900	62.78	7.03	0
1995	13 680	14	31	961	60.01	6.94	0
1996	13 727	14	32	1 024	59.95	7.17	0
1997	13 733	14	33	1 089	60.98	7.69	0
1998	13 745	14	34	1 156	59.44	7.25	0
1999	13 899	14	35	1 225	57.09	5.98	0
2000	14 044	14	36	1 296	64.85	5.21	0
2001	13 628	14	37	1 369	72.96	4.72	0
2002	13 766	14	38	1 444	64.65	4.53	0
2003	14 092	14	39	1 521	66.58	4.26	0
2004	14 602	14	40	1 600	66.22	3.84	0
2005	14 492	14	41	1 681	71.17	3.49	0
2006	14 274	14	42	1 764	83.12	3.26	0
2007	14 088	14	43	1 849	81.09	2.96	0
2008	13 846	14	44	1 936	84.34	2.57	1.8
2009	13 765	14	45	2 025	78.05	2.92	5.7
2010	13 680	14	46	2 116	74.51	3.53	6.4



## APPENDIX J

# Actual and predicted metropolitan traffic per person, individual capital city and total capital cities, 1965–2030

This appendix provides actual traffic per person, predicted components, and actual and predicted levels of passenger traffic task for each capital city as well as total (sum of all) capital cities between 1965 and 2030.

The details of predicted variables use to estimate passenger traffic task in terms of kilometres per person are as follows:

1. Trend = Trend
2. + Petrol = Trend+Petrol
3. + Petrol+Unemployment = Trend+Petrol+Unemployment
4. + Petrol+Unemployment+GFC = Trend+Petrol+Unemployment+GFC
5. Actual = Actual.



**Table J.1** Actual traffic per person and predicted components, Sydney, 1965–2030

Year	Passenger km per person per year				Actual
	Trend	+ Petrol	+ Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	6 973	6 966	6 966	6 966	6 999
1966	7 244	7 223	7 213	7 213	7 219
1967	7 507	7 488	7 473	7 473	7 403
1968	7 764	7 742	7 725	7 725	7 622
1969	8 013	7 997	7 984	7 984	7 947
1970	8 256	8 245	8 233	8 233	8 322
1971	8 492	8 473	8 462	8 462	8 604
1972	8 721	8 709	8 677	8 677	8 646
1973	8 944	8 944	8 894	8 894	8 804
1974	9 159	9 143	9 115	9 115	9 149
1975	9 367	9 345	9 237	9 237	9 350
1976	9 569	9 533	9 390	9 390	9 402
1977	9 764	9 752	9 596	9 596	9 631
1978	9 951	9 947	9 751	9 751	9 759
1979	10 147	10 110	9 913	9 913	9 926
1980	10 335	10 251	10 074	10 074	10 042
1981	10 517	10 429	10 266	10 266	10 151
1982	10 692	10 614	10 435	10 435	10 397
1983	10 859	10 760	10 425	10 425	10 179
1984	11 020	10 915	10 544	10 544	10 499
1985	11 174	11 048	10 734	10 734	10 778
1986	11 322	11 208	10 918	10 918	10 963
1987	11 462	11 370	11 073	11 073	11 012
1988	11 595	11 524	11 260	11 260	11 308
1989	11 722	11 687	11 469	11 469	11 585
1990	11 841	11 783	11 595	11 595	11 758
1991	11 954	11 867	11 624	11 624	11 665
1992	12 060	11 991	11 654	11 654	11 675
1993	12 159	12 087	11 702	11 702	11 825
1994	12 251	12 189	11 827	11 827	11 986
1995	12 337	12 284	11 996	11 996	12 218
1996	12 415	12 361	12 110	12 110	12 140
1997	12 486	12 428	12 169	12 169	12 032
1998	12 551	12 498	12 250	12 250	12 068
1999	12 609	12 571	12 351	12 351	12 192
2000	12 660	12 587	12 406	12 406	12 348
2001	12 703	12 593	12 423	12 423	12 213
2002	12 741	12 669	12 472	12 472	12 211
2003	12 771	12 689	12 505	12 505	12 299
2004	12 794	12 711	12 543	12 543	12 749
2005	12 810	12 699	12 541	12 541	12 734
2006	12 820	12 660	12 503	12 503	12 604
2007	12 823	12 672	12 525	12 525	12 600
2008	12 823	12 645	12 514	12 435	12 443
2009	12 823	12 679	12 502	12 250	12 274
2010	12 823	12 701	12 512	12 229	12 206

*continued*

**Table J.1** Actual traffic per person and predicted components, Sydney, 1965–2030  
continued

Year	<i>Passenger km per person per year</i>				Actual
	Trend	+ Petrol	+ Unemployment	+Petrol +GFC	
Forecasts					
2011	12 823	12 687	12 536	12 183	
2012	12 823	12 683	12 538	12 220	
2013	12 823	12 683	12 547	12 264	
2014	12 823	12 683	12 555	12 307	
2015	12 823	12 683	12 555	12 343	
2016	12 823	12 683	12 555	12 379	
2017	12 823	12 683	12 555	12 414	
2018	12 823	12 683	12 555	12 449	
2019	12 823	12 683	12 555	12 485	
2020	12 823	12 683	12 555	12 520	
2021	12 823	12 683	12 555	12 555	
2022	12 823	12 683	12 555	12 555	
2023	12 823	12 683	12 555	12 555	
2024	12 823	12 683	12 555	12 555	
2025	12 823	12 683	12 555	12 555	
2026	12 823	12 683	12 555	12 555	
2027	12 823	12 683	12 555	12 555	
2028	12 823	12 683	12 555	12 555	
2029	12 823	12 683	12 555	12 555	
2030	12 823	12 683	12 555	12 555	

**Table J.2** Actual and predicted levels of passenger traffic task (billion PKM), Sydney, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	18.57	18.48
1966	19.58	19.56
1967	20.45	20.64
1968	21.49	21.77
1969	22.96	23.06
1970	24.57	24.30
1971	25.83	25.40
1972	26.31	26.41
1973	27.01	27.28
1974	28.29	28.18
1975	29.10	28.75
1976	29.56	29.52
1977	30.51	30.40
1978	31.21	31.18
1979	32.03	31.99
1980	32.71	32.82
1981	33.29	33.67
1982	34.51	34.63
1983	34.11	34.93
1984	35.52	35.67
1985	36.92	36.77
1986	38.06	37.90
1987	38.86	39.07
1988	40.61	40.43
1989	41.97	41.55
1990	42.84	42.25
1991	42.84	42.69
1992	43.32	43.24
1993	44.17	43.71
1994	45.18	44.58
1995	46.69	45.84
1996	47.12	47.00
1997	47.27	47.81
1998	47.91	48.63
1999	49.01	49.65
2000	50.25	50.48
2001	50.42	51.29
2002	50.83	51.92
2003	51.54	52.41
2004	53.73	52.86
2005	54.06	53.24
2006	53.97	53.54
2007	54.62	54.29
2008	54.75	54.71
2009	55.11	55.00
2010	55.81	55.91

*continued*

**Table J.2** Actual and predicted levels of passenger traffic task (billion PKM), Sydney, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		56.37
2012		57.21
2013		58.16
2014		59.08
2015		59.97
2016		60.87
2017		61.75
2018		62.60
2019		63.46
2020		64.32
2021		65.19
2022		65.88
2023		66.57
2024		67.27
2025		67.96
2026		68.66
2027		69.36
2028		70.06
2029		70.77
2030		71.47

**Table J.3** Actual traffic per person and predicted components, Melbourne, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Unemployment	+Petrol +Unemployment+GFC	
Estimates (Actual and predicted)					
1965	5 920	5 869	5 869	6 570	6 542
1966	6 291	6 209	6 198	6 666	6 685
1967	6 652	6 570	6 554	6 788	6 833
1968	7 002	6 923	6 905	6 905	7 040
1969	7 343	7 275	7 261	7 261	7 326
1970	7 674	7 605	7 592	7 592	7 642
1971	7 994	7 890	7 878	7 878	7 838
1972	8 305	8 200	8 166	8 166	8 087
1973	8 605	8 544	8 490	8 490	8 248
1974	8 895	8 793	8 763	8 763	8 613
1975	9 175	9 104	8 988	8 988	8 946
1976	9 445	9 399	9 252	9 252	9 230
1977	9 705	9 705	9 556	9 556	9 587
1978	9 955	9 930	9 750	9 750	9 871
1979	10 231	10 106	9 921	9 921	10 066
1980	10 496	10 155	9 959	9 959	10 023
1981	10 752	10 413	10 216	10 216	10 115
1981	10 752	10 413	10 216	10 216	10 115
1982	10 997	10 730	10 530	10 530	10 514
1983	11 233	10 924	10 623	10 623	10 486

continued

**Table J.3** Actual traffic per person and predicted components, Melbourne, 1965–2030 (continued)

Year	Passenger km per person per year					Actual
	Trend	+ Petrol	+ Petrol + Unemployment	+ Unemployment + Petrol	+Petrol +GFC	
1984	11 458	11 102	10 778	10 778	10 778	10 800
1985	11 673	11 291	11 029	11 029	11 029	11 071
1986	11 878	11 507	11 281	11 281	11 281	11 327
1987	12 073	11 768	11 540	11 540	11 540	11 480
1988	12 258	12 016	11 812	11 812	11 812	11 859
1989	12 432	12 288	12 122	12 122	12 122	12 262
1990	12 597	12 411	12 268	12 268	12 268	12 331
1991	12 751	12 465	12 169	12 169	12 169	12 145
1992	12 896	12 665	12 249	12 249	12 249	12 218
1993	13 030	12 799	12 349	12 349	12 349	12 367
1994	13 154	12 948	12 496	12 496	12 496	12 540
1995	13 268	13 073	12 718	12 718	12 718	12 802
1996	13 372	13 174	12 859	12 859	12 859	12 872
1997	13 466	13 268	12 938	12 938	12 938	12 864
1998	13 550	13 370	13 066	13 066	13 066	12 941
1999	13 624	13 498	13 228	13 228	13 228	13 145
2000	13 687	13 456	13 224	13 224	13 224	13 294
2001	13 741	13 368	13 162	13 162	13 162	13 154
2002	13 784	13 530	13 309	13 309	13 309	13 220
2003	13 817	13 539	13 346	13 346	13 346	13 260
2004	13 840	13 560	13 380	13 380	13 380	13 504
2005	13 854	13 490	13 306	13 306	13 306	13 381
2006	13 857	13 311	13 140	13 140	13 140	13 164
2007	13 857	13 331	13 182	13 182	13 182	13 077
2008	13 857	13 255	13 120	12 874	12 874	12 933
2009	13 857	13 347	13 183	12 403	12 403	12 496
2010	13 857	13 413	13 227	12 351	12 351	12 255
Forecasts						
2011	13 857	13 394	13 231	12 136	12 136	
2012	13 857	13 386	13 233	12 249	12 249	
2013	13 857	13 386	13 242	12 366	12 366	
2014	13 857	13 386	13 248	12 482	12 482	
2015	13 857	13 386	13 249	12 592	12 592	
2016	13 857	13 386	13 249	12 701	12 701	
2017	13 857	13 386	13 249	12 811	12 811	
2018	13 857	13 386	13 249	12 920	12 920	
2019	13 857	13 386	13 249	13 030	13 030	
2020	13 857	13 386	13 249	13 139	13 139	
2021	13 857	13 386	13 249	13 249	13 249	
2022	13 857	13 386	13 249	13 249	13 249	
2023	13 857	13 386	13 249	13 249	13 249	
2024	13 857	13 386	13 249	13 249	13 249	
2025	13 857	13 386	13 249	13 249	13 249	
2026	13 857	13 386	13 249	13 249	13 249	
2027	13 857	13 386	13 249	13 249	13 249	
2028	13 857	13 386	13 249	13 249	13 249	
2029	13 857	13 386	13 249	13 249	13 249	
2030	13 857	13 386	13 249	13 249	13 249	

**Table J.4** Actual and predicted levels of passenger traffic task (billion PKM), Melbourne, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	14.53	14.59
1966	15.19	15.15
1967	15.90	15.79
1968	16.73	16.41
1969	17.86	17.70
1970	19.09	18.96
1971	19.97	20.07
1972	20.97	21.18
1973	21.72	22.36
1974	23.00	23.40
1975	24.14	24.26
1976	25.14	25.20
1977	26.28	26.19
1978	27.22	26.88
1979	27.89	27.49
1980	27.94	27.76
1981	28.39	28.67
1982	29.79	29.84
1983	30.01	30.40
1984	31.15	31.09
1985	32.21	32.08
1986	33.49	33.36
1987	34.48	34.66
1988	36.08	35.94
1989	37.83	37.40
1990	38.55	38.35
1991	38.33	38.40
1992	38.88	38.98
1993	39.55	39.49
1994	40.29	40.15
1995	41.53	41.25
1996	42.26	42.22
1997	42.57	42.82
1998	43.25	43.67
1999	44.42	44.71
2000	45.50	45.26
2001	45.67	45.69
2002	46.59	46.90
2003	47.44	47.75
2004	48.97	48.52
2005	49.25	48.97
2006	49.27	49.18
2007	49.92	50.33
2008	50.34	50.11
2009	49.76	49.39
2010	49.87	50.26

*continued*

**Table J.4** Actual and predicted levels of passenger traffic task (billion PKM), Melbourne, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		50.04
2012		51.16
2013		52.38
2014		53.58
2015		54.77
2016		55.98
2017		57.17
2018		58.35
2019		59.55
2020		60.76
2021		61.98
2022		62.70
2023		63.42
2024		64.14
2025		64.86
2026		65.59
2027		66.31
2028		67.03
2029		67.76
2030		68.49

**Table J.5** Actual traffic per person and predicted components, Brisbane, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	5 244	5 215	5 215	5 751	5 776
1966	5 672	5 622	5 606	5 963	5 949
1967	6 089	6 034	6 010	6 189	6 144
1968	6 495	6 423	6 395	6 395	6 412
1969	6 890	6 832	6 811	6 811	6 836
1970	7 275	7 226	7 207	7 207	7 342
1971	7 649	7 576	7 558	7 558	7 522
1972	8 012	7 940	7 890	7 890	7 854
1973	8 364	8 323	8 243	8 243	8 112
1974	8 705	8 631	8 587	8 587	8 538
1975	9 036	8 980	8 808	8 808	8 828
1976	9 356	9 268	9 031	9 031	9 066
1977	9 665	9 615	9 339	9 339	9 395
1978	9 963	9 937	9 580	9 580	9 673
1979	10 250	10 154	9 790	9 790	9 908
1980	10 527	10 311	9 970	9 970	9 952
1981	10 792	10 604	10 300	10 300	10 016
1982	11 047	10 859	10 557	10 557	10 442
1983	11 292	11 098	10 595	10 595	10 468
1984	11 525	11 310	10 759	10 759	10 819
1985	11 748	11 521	10 951	10 951	11 046
1986	11 959	11 761	11 250	11 250	11 225
1987	12 160	12 010	11 464	11 464	11 351
1988	12 351	12 221	11 719	11 719	11 786
1989	12 530	12 466	12 088	12 088	12 294
1990	12 699	12 602	12 241	12 241	12 281
1991	12 857	12 717	12 211	12 211	12 241
1992	13 004	12 907	12 351	12 351	12 387
1993	13 140	13 042	12 455	12 455	12 617
1994	13 265	13 197	12 639	12 639	12 733
1995	13 380	13 335	12 862	12 862	12 996
1996	13 484	13 436	12 936	12 936	13 040
1997	13 577	13 525	13 007	13 007	12 973
1998	13 659	13 619	13 138	13 138	13 018
1999	13 731	13 731	13 294	13 294	13 032
2000	13 792	13 703	13 285	13 285	13 215
2001	13 842	13 666	13 233	13 233	13 045
2002	13 881	13 772	13 340	13 340	13 163
2003	13 909	13 787	13 407	13 407	13 208
2004	13 927	13 802	13 494	13 494	13 746
2005	13 934	13 748	13 516	13 516	13 591
2006	13 934	13 620	13 399	13 399	13 447
2007	13 934	13 638	13 470	13 470	13 479
2008	13 934	13 590	13 443	13 263	13 328
2009	13 934	13 662	13 469	12 900	12 864
2010	13 934	13 658	13 375	12 737	12 585

*continued*



**Table J.5** Actual traffic per person and predicted components, Brisbane, 1965–2030  
(continued)

Year	Passenger km per person per year				Actual
	Trend	+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
		<i>Forecasts</i>			
2011	12 823	12 687	12 536	12 183	
2012	12 823	12 683	12 538	12 220	
2013	12 823	12 683	12 547	12 264	
2014	12 823	12 683	12 555	12 307	
2015	12 823	12 683	12 555	12 343	
2016	12 823	12 683	12 555	12 379	
2017	12 823	12 683	12 555	12 414	
2018	12 823	12 683	12 555	12 449	
2019	12 823	12 683	12 555	12 485	
2020	12 823	12 683	12 555	12 520	
2021	12 823	12 683	12 555	12 555	
2022	12 823	12 683	12 555	12 555	
2023	12 823	12 683	12 555	12 555	
2024	12 823	12 683	12 555	12 555	
2025	12 823	12 683	12 555	12 555	
2026	12 823	12 683	12 555	12 555	
2027	12 823	12 683	12 555	12 555	
2028	12 823	12 683	12 555	12 555	
2029	12 823	12 683	12 555	12 555	
2030	12 823	12 683	12 555	12 555	

**Table J.6** Actual and predicted levels of passenger traffic task (billion PKM), Brisbane, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	4.43	4.41
1966	4.68	4.70
1967	4.94	4.97
1968	5.26	5.25
1969	5.74	5.72
1970	6.30	6.19
1971	6.64	6.67
1972	7.12	7.15
1973	7.56	7.68
1974	8.17	8.22
1975	8.55	8.53
1976	8.98	8.94
1977	9.41	9.35
1978	9.84	9.74
1979	10.25	10.13
1980	10.47	10.48
1981	10.86	11.16
1982	11.65	11.78
1983	11.88	12.03
1984	12.42	12.35
1985	12.84	12.73
1986	13.50	13.54
1987	13.89	14.03
1988	14.73	14.64
1989	15.79	15.53
1990	16.15	16.09
1991	16.42	16.38
1992	16.98	16.94
1993	17.73	17.50
1994	18.30	18.16
1995	19.08	18.88
1996	19.57	19.41
1997	19.78	19.83
1998	20.16	20.34
1999	20.49	20.90
2000	21.12	21.24
2001	21.25	21.56
2002	21.94	22.24
2003	22.57	22.91
2004	24.04	23.60
2005	24.26	24.13
2006	24.47	24.38
2007	25.03	25.01
2008	25.33	25.21
2009	25.03	25.10
2010	25.08	25.38

*continued*

**Table J.6** Actual and predicted levels of passenger traffic task (billion PKM), Brisbane, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		25.61
2012		26.26
2013		27.13
2014		27.99
2015		28.80
2016		29.62
2017		30.44
2018		31.27
2019		32.11
2020		32.96
2021		33.83
2022		34.51
2023		35.20
2024		35.90
2025		36.60
2026		37.31
2027		38.03
2028		38.76
2029		39.49
2030		40.23

**Table J.7** Actual traffic per person and predicted components, Adelaide, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	5 951	5 923	5 923	6 661	6 604
1966	6 338	6 256	6 235	6 727	6 779
1967	6 720	6 656	6 624	6 870	6 939
1968	7 096	7 013	6 976	6 976	7 148
1969	7 466	7 396	7 368	7 368	7 448
1970	7 831	7 767	7 741	7 741	7 762
1971	8 191	8 087	8 063	8 063	7 950
1972	8 545	8 435	8 368	8 368	8 217
1973	8 894	8 835	8 728	8 728	8 413
1974	9 237	9 140	9 080	9 080	8 954
1975	9 575	9 466	9 234	9 234	9 313
1976	9 907	9 834	9 524	9 524	9 635
1977	10 234	10 234	9 888	9 888	9 968
1978	10 555	10 550	10 111	10 111	10 137
1979	10 711	10 595	10 052	10 052	10 169
1980	10 861	10 513	9 963	9 963	9 953
1981	11 005	10 607	10 046	10 046	9 832
1982	11 144	10 784	10 207	10 207	10 094
1983	11 277	10 888	10 131	10 131	9 950
1984	11 405	10 966	10 186	10 186	10 295
1985	11 528	11 097	10 396	10 396	10 562
1986	11 645	11 248	10 625	10 625	10 774
1987	11 757	11 455	10 797	10 797	10 842
1988	11 863	11 606	10 960	10 960	11 104
1989	11 963	11 746	11 188	11 188	11 339
1990	12 059	11 813	11 335	11 335	11 397
1991	12 148	11 837	11 203	11 203	11 176
1992	12 233	11 974	11 129	11 129	11 156
1993	12 311	12 014	11 142	11 142	11 298
1994	12 385	12 113	11 297	11 297	11 305
1995	12 453	12 215	11 454	11 454	11 404
1996	12 515	12 269	11 580	11 580	11 330
1997	12 572	12 324	11 623	11 623	11 313
1998	12 623	12 399	11 669	11 669	11 386
1999	12 669	12 507	11 829	11 829	11 650
2000	12 710	12 417	11 832	11 832	11 934
2001	12 745	12 294	11 773	11 773	11 857
2002	12 774	12 460	11 950	11 950	11 963
2003	12 798	12 465	12 027	12 027	12 282
2004	12 817	12 480	12 063	12 063	12 367
2005	12 830	12 395	12 025	12 025	12 068
2006	12 837	12 209	11 903	11 903	11 863
2007	12 840	12 263	11 944	11 944	11 827
2008	12 840	12 166	11 866	11 757	11 629
2009	12 840	12 283	11 927	11 585	11 578
2010	12 840	12 365	12 017	11 633	11 636

*continued*

**Table J.7** Actual traffic per person and predicted components, Adelaide, 1965–2030  
(continued)

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Forecasts					
2011	12 840	12 340	11 993	11 512	
2012	12 840	12 248	11 937	11 505	
2013	12 840	12 248	11 958	11 573	
2014	12 840	12 248	11 974	11 637	
2015	12 840	12 248	11 975	11 686	
2016	12 840	12 248	11 975	11 735	
2017	12 840	12 248	11 975	11 783	
2018	12 840	12 248	11 975	11 831	
2019	12 840	12 248	11 975	11 879	
2020	12 840	12 248	11 975	11 927	
2021	12 840	12 248	11 975	11 975	
2022	12 840	12 248	11 975	11 975	
2023	12 840	12 248	11 975	11 975	
2024	12 840	12 248	11 975	11 975	
2025	12 840	12 248	11 975	11 975	
2026	12 840	12 248	11 975	11 975	
2027	12 840	12 248	11 975	11 975	
2028	12 840	12 248	11 975	11 975	
2029	12 840	12 248	11 975	11 975	
2030	12 840	12 248	11 975	11 975	

**Table J.8** Actual and predicted levels of passenger traffic task (billion PKM), Adelaide, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	5.02	5.06
1966	5.31	5.27
1967	5.53	5.48
1968	5.78	5.64
1969	6.14	6.07
1970	6.53	6.52
1971	6.82	6.92
1972	7.16	7.30
1973	7.45	7.73
1974	8.07	8.18
1975	8.51	8.44
1976	8.90	8.80
1977	9.31	9.24
1978	9.56	9.53
1979	9.61	9.50
1980	9.44	9.44
1981	9.38	9.58
1982	9.72	9.82
1983	9.69	9.86
1984	10.13	10.03
1985	10.50	10.33
1986	10.81	10.66
1987	10.97	10.93
1988	11.34	11.19
1989	11.72	11.56
1990	11.91	11.84
1991	11.81	11.84
1992	11.89	11.86
1993	12.07	11.91
1994	12.12	12.11
1995	12.26	12.31
1996	12.22	12.49
1997	12.26	12.60
1998	12.42	12.73
1999	12.78	12.98
2000	13.16	13.04
2001	13.14	13.04
2002	13.34	13.32
2003	13.78	13.49
2004	13.94	13.60
2005	13.69	13.64
2006	13.59	13.64
2007	13.71	13.85
2008	13.63	13.78
2009	13.71	13.72
2010	13.93	13.93

*continued*

**Table J.8** Actual and predicted levels of passenger traffic task (billion PKM), Adelaide, 1965–2030 (*continued*)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		13.88
2012		13.97
2013		14.16
2014		14.34
2015		14.51
2016		14.68
2017		14.83
2018		14.99
2019		15.14
2020		15.29
2021		15.45
2022		15.53
2023		15.62
2024		15.71
2025		15.79
2026		15.88
2027		15.96
2028		16.04
2029		16.12
2030		16.19

**Table J.9** Actual traffic per person and predicted components, Perth, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	6 671	6 579	6 579	6 579	6 707
1966	7 109	6 973	6 965	6 965	7 053
1967	7 544	7 444	7 432	7 432	7 385
1968	7 975	7 869	7 855	7 855	7 727
1969	8 402	8 308	8 298	8 298	8 262
1970	8 826	8 761	8 751	8 751	8 797
1971	9 246	9 124	9 115	9 115	9 109
1972	9 663	9 538	9 513	9 513	9 480
1973	10 077	10 015	9 975	9 975	9 709
1974	10 487	10 322	10 300	10 300	10 156
1975	10 893	10 788	10 702	10 702	10 420
1976	11 048	10 900	10 790	10 790	10 744
1977	11 199	11 162	11 045	11 045	11 105
1978	11 347	11 347	11 203	11 203	11 419
1979	11 491	11 360	11 177	11 177	11 534
1980	11 632	11 188	11 001	11 001	11 369
1981	11 770	11 269	11 122	11 122	11 200
1982	11 903	11 388	11 213	11 213	11 347
1983	12 034	11 514	11 268	11 268	11 150
1984	12 160	11 628	11 348	11 348	11 553
1985	12 284	11 692	11 452	11 452	11 664
1986	12 404	11 821	11 611	11 611	11 704
1987	12 520	11 987	11 781	11 781	11 649
1988	12 633	12 160	11 960	11 960	11 862
1989	12 742	12 425	12 273	12 273	12 053
1990	12 848	12 468	12 303	12 303	12 108
1991	12 950	12 484	12 235	12 235	11 859
1992	13 049	12 658	12 352	12 352	11 843
1993	13 145	12 736	12 454	12 454	12 095
1994	13 236	12 887	12 651	12 651	12 622
1995	13 325	12 928	12 733	12 733	13 148
1996	13 410	13 030	12 837	12 837	13 201
1997	13 491	13 122	12 931	12 931	13 136
1998	13 569	13 231	13 055	13 055	13 123
1999	13 643	13 402	13 227	13 227	13 228
2000	13 714	13 300	13 144	13 144	13 255
2001	13 782	13 157	12 993	12 993	12 960
2002	13 845	13 406	13 238	13 238	13 037
2003	13 906	13 392	13 245	13 245	13 172
2004	13 963	13 471	13 330	13 330	13 573
2005	14 016	13 430	13 324	13 324	13 549
2006	14 066	13 228	13 145	13 145	13 136
2007	14 112	13 331	13 273	13 273	13 059
2008	14 155	13 252	13 192	13 036	12 935
2009	14 195	13 482	13 406	12 912	13 014
2010	14 231	13 600	13 484	12 929	12 867

*continued*



**Table J.9** Actual traffic per person and predicted components, Perth, 1965–2030  
(continued)

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Forecasts					
2011	14 231	13 556	13 462	12 769	
2012	14 231	13 506	13 418	12 794	
2013	14 231	13 532	13 450	12 895	
2014	14 231	13 554	13 476	12 991	
2015	14 231	13 572	13 495	13 079	
2016	14 231	13 587	13 510	13 164	
2017	14 231	13 598	13 522	13 244	
2018	14 231	13 606	13 529	13 322	
2019	14 231	13 611	13 534	13 395	
2020	14 231	13 612	13 535	13 466	
2021	14 231	13 612	13 535	13 535	
2022	14 231	13 612	13 535	13 535	
2023	14 231	13 612	13 535	13 535	
2024	14 231	13 612	13 535	13 535	
2025	14 231	13 612	13 535	13 535	
2026	14 231	13 612	13 535	13 535	
2027	14 231	13 612	13 535	13 535	
2028	14 231	13 612	13 535	13 535	
2029	14 231	13 612	13 535	13 535	
2030	14 231	13 612	13 535	13 535	

**Table J.10** Actual and predicted levels of passenger traffic task (billion PKM), Perth, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	3.76	3.69
1966	4.09	4.04
1967	4.47	4.50
1968	4.91	4.99
1969	5.51	5.53
1970	6.13	6.10
1971	6.58	6.58
1972	7.07	7.10
1973	7.41	7.62
1974	8.00	8.11
1975	8.47	8.70
1976	8.95	8.99
1977	9.46	9.41
1978	9.92	9.74
1979	10.18	9.87
1980	10.23	9.89
1981	10.33	10.25
1982	10.81	10.68
1983	10.89	11.01
1984	11.50	11.30
1985	11.88	11.66
1986	12.29	12.19
1987	12.58	12.72
1988	13.17	13.28
1989	13.83	14.08
1990	14.23	14.46
1991	14.10	14.54
1992	14.30	14.91
1993	14.82	15.26
1994	15.73	15.77
1995	16.72	16.19
1996	17.10	16.62
1997	17.29	17.02
1998	17.52	17.43
1999	17.93	17.93
2000	18.20	18.05
2001	18.05	18.10
2002	18.43	18.72
2003	18.91	19.02
2004	19.82	19.47
2005	20.13	19.80
2006	19.95	19.96
2007	20.36	20.69
2008	20.73	20.89
2009	21.44	21.27
2010	21.80	21.91

*continued*

**Table J.10** Actual and predicted levels of passenger traffic task (billion PKM), Perth, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		22.04
2012		22.48
2013		23.09
2014		23.69
2015		24.29
2016		24.89
2017		25.49
2018		26.07
2019		26.65
2020		27.23
2021		27.82
2022		28.28
2023		28.74
2024		29.20
2025		29.66
2026		30.13
2027		30.61
2028		31.08
2029		31.56
2030		32.04

**Table J.11** Actual traffic per person and predicted components, Hobart, 1965–2030

Year	Passenger km per person per year			Actual
	Trend	+ Petrol	+ Petrol + Unemployment	
Estimates (Actual and predicted)				
1965	4 755	4 755	5 485	5 524
1966	5 146	5 123	5 704	5 699
1967	5 529	5 507	5 930	5 892
1968	5 902	5 886	6 144	6 079
1969	6 266	6 250	6 407	6 250
1970	6 622	6 615	6 707	6 615
1971	6 968	6 923	6 895	6 923
1972	7 305	7 269	7 177	7 269
1973	7 634	7 630	7 332	7 630
1974	7 953	7 908	7 789	7 908
1975	8 263	8 232	8 195	8 232
1976	8 565	8 504	8 489	8 504
1977	8 857	8 813	8 901	8 813
1978	9 141	9 065	9 217	9 065
1979	9 370	9 317	9 401	9 317
1980	9 590	9 367	9 448	9 367
1981	9 801	9 549	9 531	9 549
1982	10 003	9 754	9 741	9 754
1983	10 197	9 878	9 642	9 878
1984	10 381	10 043	9 987	10 043
1985	10 556	10 224	10 286	10 224
1986	10 722	10 392	10 440	10 392
1987	10 880	10 544	10 420	10 544
1988	11 028	10 755	10 667	10 755
1989	11 167	10 959	10 944	10 959
1990	11 298	11 075	11 214	11 075
1991	11 419	11 177	11 141	11 177
1992	11 531	11 338	11 234	11 338
1993	11 635	11 407	11 556	11 407
1994	11 729	11 530	11 760	11 530
1995	11 815	11 665	11 964	11 665
1996	11 891	11 730	12 005	11 730
1997	11 959	11 797	11 953	11 797
1998	12 017	11 844	11 753	11 844
1999	12 067	11 936	11 687	11 936
2000	12 107	11 876	11 684	11 876
2001	12 139	11 824	11 346	11 824
2002	12 161	11 939	11 525	11 939
2003	12 175	11 919	11 806	11 919
2004	12 180	11 920	12 222	11 920
2005	12 180	11 849	11 925	11 849
2006	12 180	11 711	11 844	11 711
2007	12 180	11 763	11 888	11 763
2008	12 180	11 694	11 703	11 569
2009	12 180	11 761	11 397	11 366
2010	12 180	11 817	11 308	11 373

*continued*

**Table J.11** Actual traffic per person and predicted components, Hobart, 1965–2030  
(continued)

Year	Passenger km per person per year			Actual
	Trend	+ Petrol	+ Petrol + Unemployment	
Forecasts				
2011	12 180	11 781		11 227
2012	12 180	11 754		11 255
2013	12 180	11 754		11 311
2014	12 180	11 754		11 366
2015	12 180	11 754		11 422
2016	12 180	11 754		11 477
2017	12 180	11 754		11 533
2018	12 180	11 754		11 588
2019	12 180	11 754		11 643
2020	12 180	11 754		11 699
2021	12 180	11 754		11 754
2022	12 180	11 754		11 754
2023	12 180	11 754		11 754
2024	12 180	11 754		11 754
2025	12 180	11 754		11 754
2026	12 180	11 754		11 754
2027	12 180	11 754		11 754
2028	12 180	11 754		11 754
2029	12 180	11 754		11 754
2030	12 180	11 754		11 754

**Table J.12** Actual and predicted levels of passenger traffic task (billion PKM), Hobart, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	0.76	0.77
1966	0.81	0.81
1967	0.85	0.84
1968	0.90	0.89
1969	0.96	0.93
1970	1.01	1.00
1971	1.06	1.06
1972	1.10	1.12
1973	1.14	1.19
1974	1.23	1.25
1975	1.32	1.32
1976	1.40	1.40
1977	1.48	1.46
1978	1.54	1.52
1979	1.58	1.57
1980	1.60	1.59
1981	1.63	1.63
1982	1.68	1.68
1983	1.67	1.71
1984	1.75	1.76
1985	1.83	1.81
1986	1.90	1.89
1987	1.91	1.93
1988	1.96	1.98
1989	2.03	2.04
1990	2.12	2.09
1991	2.13	2.13
1992	2.16	2.18
1993	2.24	2.21
1994	2.29	2.24
1995	2.33	2.27
1996	2.35	2.30
1997	2.34	2.31
1998	2.30	2.32
1999	2.29	2.34
2000	2.30	2.33
2001	2.24	2.33
2002	2.28	2.36
2003	2.36	2.38
2004	2.47	2.41
2005	2.43	2.41
2006	2.43	2.41
2007	2.46	2.44
2008	2.45	2.42
2009	2.41	2.40
2010	2.42	2.43

*continued*

**Table J.12** Actual and predicted levels of passenger traffic task (billion PKM), Hobart, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		2.42
2012		2.45
2013		2.48
2014		2.51
2015		2.55
2016		2.58
2017		2.61
2018		2.64
2019		2.67
2020		2.70
2021		2.73
2022		2.75
2023		2.77
2024		2.79
2025		2.81
2026		2.83
2027		2.85
2028		2.87
2029		2.89
2030		2.91

**Table J.13** Actual traffic per person and predicted components, Darwin, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	3 573	3 573	3 573	3 573	3 726
1966	4 100	3 974	3 946	3 946	3 839
1967	4 619	4 499	4 456	4 456	3 975
1968	5 127	5 024	4 975	4 975	4 417
1969	5 627	5 523	5 486	5 486	5 311
1970	6 117	6 039	6 005	6 005	6 234
1971	6 597	6 412	6 380	6 380	7 067
1972	7 069	6 906	6 817	6 817	7 298
1973	7 531	7 462	7 320	7 320	7 366
1974	7 983	7 796	7 718	7 718	7 587
1975	8 426	8 280	7 972	7 972	8 610
1976	8 860	8 629	8 260	8 260	8 509
1977	9 284	9 101	8 752	8 752	8 843
1978	9 699	9 426	9 020	9 020	8 695
1979	9 850	9 642	9 208	9 208	8 822
1980	9 992	9 302	8 933	8 933	8 847
1981	10 125	9 354	8 995	8 995	8 932
1982	10 247	9 485	9 014	9 014	8 875
1983	10 361	9 401	8 779	8 779	8 572
1984	10 465	9 454	8 697	8 697	8 716
1985	10 560	9 563	8 901	8 901	8 846
1986	10 646	9 653	8 959	8 959	9 031
1987	10 722	9 716	9 148	9 148	9 031
1988	10 789	9 958	8 966	8 966	9 278
1989	10 846	10 200	9 593	9 593	9 382
1990	10 894	10 205	9 599	9 599	9 468
1991	10 933	10 192	9 408	9 408	9 398
1992	10 962	10 356	9 499	9 499	9 429
1993	10 982	10 280	9 491	9 491	9 471
1994	10 992	10 372	9 694	9 694	9 586
1995	10 993	10 512	9 811	9 811	9 953
1996	10 993	10 478	9 822	9 822	10 139
1997	10 993	10 477	9 986	9 986	10 003
1998	10 993	10 445	10 033	10 033	9 957
1999	10 993	10 566	10 266	10 266	9 907
2000	10 993	10 282	9 930	9 930	9 814
2001	10 993	10 047	9 550	9 550	9 388
2002	10 993	10 306	9 686	9 686	9 401
2003	10 993	10 211	9 735	9 735	9 529
2004	10 993	10 201	9 755	9 755	9 721
2005	10 993	10 001	9 499	9 499	9 379
2006	10 993	9 613	9 132	9 132	9 186
2007	10 993	9 759	9 482	9 482	9 247
2008	10 993	9 562	9 209	9 055	9 174
2009	10 993	9 752	9 494	9 006	9 090
2010	10 993	9 910	9 674	9 126	8 724

continued



**Table J.13** Actual traffic per person and predicted components, Darwin, 1965–2030  
(continued)

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Forecasts					
2011	10 993	9 779	9 612	8 927	
2012	10 993	9 634	9 382	8 765	
2013	10 993	9 634	9 451	8 903	
2014	10 993	9 634	9 508	9 028	
2015	10 993	9 634	9 512	9 101	
2016	10 993	9 634	9 512	9 169	
2017	10 993	9 634	9 512	9 238	
2018	10 993	9 634	9 512	9 306	
2019	10 993	9 634	9 512	9 375	
2020	10 993	9 634	9 512	9 443	
2021	10 993	9 634	9 512	9 512	
2022	10 993	9 634	9 512	9 512	
2023	10 993	9 634	9 512	9 512	
2024	10 993	9 634	9 512	9 512	
2025	10 993	9 634	9 512	9 512	
2026	10 993	9 634	9 512	9 512	
2027	10 993	9 634	9 512	9 512	
2028	10 993	9 634	9 512	9 512	
2029	10 993	9 634	9 512	9 512	
2030	10 993	9 634	9 512	9 512	

**Table J.14** Actual and predicted levels of passenger traffic task (billion PKM), Darwin, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	0.08	0.08
1966	0.09	0.09
1967	0.10	0.11
1968	0.12	0.14
1969	0.17	0.17
1970	0.22	0.21
1971	0.26	0.24
1972	0.29	0.27
1973	0.32	0.31
1974	0.35	0.36
1975	0.31	0.28
1976	0.38	0.37
1977	0.41	0.41
1978	0.43	0.45
1979	0.46	0.48
1980	0.48	0.48
1981	0.51	0.51
1982	0.56	0.57
1983	0.57	0.59
1984	0.62	0.62
1985	0.67	0.67
1986	0.72	0.72
1987	0.75	0.76
1988	0.77	0.75
1989	0.79	0.81
1990	0.81	0.82
1991	0.81	0.81
1992	0.83	0.83
1993	0.85	0.85
1994	0.87	0.88
1995	0.93	0.91
1996	0.97	0.94
1997	0.99	0.99
1998	1.01	1.02
1999	1.02	1.06
2000	1.03	1.04
2001	1.00	1.02
2002	1.01	1.04
2003	1.02	1.05
2004	1.06	1.06
2005	1.04	1.06
2006	1.05	1.04
2007	1.08	1.11
2008	1.11	1.09
2009	1.13	1.12
2010	1.12	1.17

*continued*

**Table J.14** Actual and predicted levels of passenger traffic task (billion PKM), Darwin, 1965–2030 (continued)

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		1.17
2012		1.18
2013		1.22
2014		1.27
2015		1.31
2016		1.35
2017		1.39
2018		1.43
2019		1.47
2020		1.51
2021		1.55
2022		1.57
2023		1.60
2024		1.63
2025		1.65
2026		1.67
2027		1.69
2028		1.71
2029		1.73
2030		1.75

**Table J.15** Actual traffic per person and predicted components, Canberra, 1965–2030

Year	Trend	<i>Passenger km per person per year</i>			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	6 385	6 385	6 385	6 385	6 413
1966	6 778	6 723	6 716	6 716	6 728
1967	7 166	7 117	7 106	7 106	7 058
1968	7 548	7 484	7 472	7 472	7 337
1969	7 924	7 862	7 852	7 852	7 800
1970	8 294	8 261	8 252	8 252	8 297
1971	8 659	8 563	8 555	8 555	8 622
1972	9 018	8 926	8 903	8 903	9 138
1973	9 371	9 353	9 317	9 317	9 232
1974	9 719	9 620	9 601	9 601	9 659
1975	10 061	9 976	9 898	9 898	9 847
1976	10 397	10 245	10 144	10 144	10 136
1977	10 728	10 601	10 492	10 492	10 456
1978	11 053	10 849	10 713	10 713	10 687
1979	11 271	11 120	10 938	10 938	10 963
1980	11 484	10 980	10 833	10 833	10 955
1981	11 691	11 112	10 980	10 980	10 886
1982	11 892	11 385	11 238	11 238	11 252
1983	12 088	11 496	11 308	11 308	11 216
1984	12 278	11 695	11 544	11 544	11 544
1985	12 463	11 859	11 757	11 757	11 827
1986	12 641	12 078	11 973	11 973	11 946
1987	12 814	12 342	12 225	12 225	11 985
1988	12 982	12 520	12 413	12 413	12 326
1989	13 143	12 899	12 797	12 797	12 785
1990	13 299	12 973	12 861	12 861	13 017
1991	13 450	12 927	12 800	12 800	12 851
1992	13 594	13 170	13 010	13 010	12 962
1993	13 733	13 274	13 097	13 097	13 236
1994	13 867	13 470	13 302	13 302	13 456
1995	13 994	13 669	13 504	13 504	13 680
1996	14 116	13 793	13 621	13 621	13 727
1997	14 232	13 882	13 694	13 694	13 733
1998	14 343	14 033	13 858	13 858	13 745
1999	14 448	14 198	14 062	14 062	13 899
2000	14 547	14 096	13 984	13 984	14 044
2001	14 640	13 980	13 882	13 882	13 628
2002	14 728	14 283	14 191	14 191	13 766
2003	14 810	14 315	14 231	14 231	14 092
2004	14 887	14 401	14 329	14 329	14 602
2005	14 958	14 343	14 283	14 283	14 492
2006	15 023	14 099	14 045	14 045	14 274
2007	15 082	14 211	14 166	14 166	14 088
2008	15 136	14 181	14 148	13 939	13 846
2009	15 184	14 392	14 348	13 688	13 765
2010	15 227	14 526	14 464	13 722	13 680

continued

**Table J.15** Actual traffic per person and predicted components, Canberra, 1965–2030 (continued)

<i>Passenger km per person per year</i>					
Year	Trend	+ Petrol	+ Petrol + Unemployment	+Unemployment +Petrol +GFC	Actual
Forecasts					
2011	15 263	14 534	14 473	13 546	
2012	15 294	14 516	14 470	13 635	
2013	15 320	14 541	14 495	13 753	
2014	15 340	14 561	14 515	13 866	
2015	15 354	14 575	14 529	13 973	
2016	15 362	14 583	14 537	14 074	
2017	15 365	14 586	14 540	14 169	
2018	15 365	14 586	14 540	14 262	
2019	15 365	14 586	14 540	14 355	
2020	15 365	14 586	14 540	14 447	
2021	15 365	14 586	14 540	14 540	
2022	15 365	14 586	14 540	14 540	
2023	15 365	14 586	14 540	14 540	
2024	15 365	14 586	14 540	14 540	
2025	15 365	14 586	14 540	14 540	
2026	15 365	14 586	14 540	14 540	
2027	15 365	14 586	14 540	14 540	
2028	15 365	14 586	14 540	14 540	
2029	15 365	14 586	14 540	14 540	
2030	15 365	14 586	14 540	14 540	

**Table J.16** Actual and predicted levels of passenger traffic task (billion PKM), Canberra, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	0.60	0.60
1966	0.68	0.68
1967	0.77	0.78
1968	0.87	0.89
1969	1.01	1.01
1970	1.15	1.15
1971	1.28	1.27
1972	1.44	1.40
1973	1.58	1.59
1974	1.78	1.77
1975	1.94	1.95
1976	2.08	2.09
1977	2.21	2.22
1978	2.31	2.31
1979	2.40	2.39
1980	2.44	2.41
1981	2.46	2.48
1982	2.60	2.60
1983	2.66	2.68
1984	2.81	2.81
1985	2.96	2.94
1986	3.08	3.08
1987	3.16	3.23
1988	3.34	3.36
1989	3.52	3.52
1990	3.66	3.61
1991	3.70	3.69
1992	3.80	3.82
1993	3.95	3.91
1994	4.05	4.01
1995	4.17	4.11
1996	4.23	4.19
1997	4.24	4.23
1998	4.25	4.29
1999	4.34	4.39
2000	4.42	4.40
2001	4.35	4.43
2002	4.44	4.57
2003	4.58	4.63
2004	4.78	4.69
2005	4.78	4.71
2006	4.77	4.69
2007	4.80	4.83
2008	4.78	4.81
2009	4.83	4.80
2010	4.87	4.89

*continued*

**Table J.16** Actual and predicted levels of passenger traffic task (billion PKM), Canberra, 1965–2030 *(continued)*

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		4.88
2012		4.96
2013		5.06
2014		5.15
2015		5.25
2016		5.34
2017		5.43
2018		5.52
2019		5.60
2020		5.69
2021		5.78
2022		5.84
2023		5.89
2024		5.95
2025		6.00
2026		6.06
2027		6.12
2028		6.18
2029		6.23
2030		6.29

**Table J.17** Actual traffic per person and predicted components, total (sum of all) capital cities, 1965–2030

Year	Trend	Passenger km per person per year			Actual
		+ Petrol	+ Petrol + Unemployment	+Petrol +Unemployment +GFC	
Estimates (Actual and predicted)					
1965	45 473	45 266	45 996	48 011	42 766
1966	48 679	48 103	48 583	49 895	44 252
1967	51 824	51 315	51 584	52 205	45 736
1968	54 909	54 365	54 446	54 381	47 703
1969	57 932	57 443	57 466	57 309	50 929
1970	60 895	60 519	60 489	60 397	54 397
1971	63 797	63 049	62 905	62 933	56 712
1972	66 638	65 922	65 511	65 602	58 721
1973	69 419	69 105	68 300	68 598	59 886
1974	72 138	71 353	70 952	71 072	62 655
1975	74 797	74 171	73 036	73 073	65 315
1976	77 147	76 312	74 879	74 894	66 722
1977	79 436	78 984	77 569	77 481	68 984
1978	81 665	81 050	79 345	79 192	70 242
1979	83 321	82 404	80 399	80 315	71 389
1980	84 917	82 067	80 181	80 099	71 141
1981	86 453	83 337	81 455	81 473	71 132
1982	87 927	84 999	82 935	82 949	72 921
1983	89 341	85 959	82 772	83 007	72 021
1984	90 694	87 113	83 841	83 898	74 226
1985	91 986	88 296	85 506	85 444	75 794
1986	93 217	89 668	87 057	87 008	76 970
1987	94 388	91 194	88 447	88 572	77 350
1988	95 497	92 759	89 757	89 844	79 524
1989	96 546	94 669	92 474	92 489	81 699
1990	97 535	95 329	93 417	93 277	82 361
1991	98 462	95 667	92 792	92 828	81 335
1992	99 329	97 059	93 476	93 580	81 669
1993	100 135	97 639	94 245	94 096	82 909
1994	100 880	98 706	95 665	95 435	84 229
1995	101 564	99 680	97 042	96 742	86 201
1996	102 196	100 270	97 768	97 493	86 449
1997	102 777	100 823	98 300	98 144	86 054
1998	103 306	101 438	98 822	98 913	86 238
1999	103 783	102 410	99 944	100 193	87 052
2000	104 210	101 718	99 489	99 681	87 905
2001	104 585	100 929	98 362	98 841	86 243
2002	104 908	102 365	99 710	100 124	86 760
2003	105 180	102 316	100 303	100 416	87 841
2004	105 401	102 546	101 118	100 815	90 262
2005	105 575	101 956	100 418	100 343	89 192
2006	105 710	100 451	99 112	98 979	87 674
2007	105 820	100 968	99 929	99 805	87 377
2008	105 917	100 345	99 194	97 927	86 288
2009	106 005	101 358	99 725	96 109	85 081
2010	106 083	101 988	100 062	96 101	83 954

continued



**Table J.17** Actual traffic per person and predicted components, total (sum of all) capital cities, 1965–2030 (continued)

<i>Passenger km per person per year</i>					
Year	Trend	+ Petrol	+ Petrol + Unemployment	+Unemployment +Petrol +GFC	Actual
Forecasts					
2011	106 120	101 705	88 675	94 869	
2012	106 151	101 334	88 307	95 033	
2013	106 176	101 385	88 512	95 797	
2014	106 196	101 427	88 679	96 523	
2015	106 210	101 459	88 722	97 123	
2016	106 218	101 483	88 745	97 706	
2017	106 221	101 497	88 759	98 278	
2018	106 221	101 505	88 767	98 845	
2019	106 221	101 509	88 771	99 408	
2020	106 221	101 510	88 772	99 968	
2021	106 221	101 510	88 772	100 527	
2022	106 221	101 510	88 772	100 527	
2023	106 221	101 510	88 772	100 527	
2024	106 221	101 510	88 772	100 527	
2025	106 221	101 510	88 772	100 527	
2026	106 221	101 510	88 772	100 527	
2027	106 221	101 510	88 772	100 527	
2028	106 221	101 510	88 772	100 527	
2029	106 221	101 510	88 772	100 527	
2030	106 221	101 510	88 772	100 527	

**Table J.18** Actual and predicted levels of passenger traffic task (billion PKM), total (sum of all) capital cities, 1965–2030

Year	Passenger task (billion pkm)	
	Actual	Predicted
Estimates (Actual and predicted)		
1965	47.75	47.67
1966	50.44	50.30
1967	53.02	53.13
1968	56.06	55.98
1969	60.34	60.21
1970	65.01	64.43
1971	68.43	68.21
1972	71.48	71.92
1973	74.19	75.77
1974	78.88	79.47
1975	82.34	82.23
1976	85.38	85.30
1977	89.07	88.68
1978	92.03	91.35
1979	94.41	93.42
1980	95.29	94.88
1981	96.84	97.96
1982	101.31	101.60
1983	101.48	103.21
1984	105.91	105.62
1985	109.79	109.00
1986	113.86	113.34
1987	116.60	117.32
1988	122.00	121.57
1989	127.49	126.49
1990	130.26	129.52
1991	130.13	130.49
1992	132.17	132.76
1993	135.37	134.83
1994	138.83	137.90
1995	143.69	141.78
1996	145.81	145.18
1997	146.74	147.60
1998	148.82	150.42
1999	152.28	153.94
2000	155.98	155.85
2001	156.11	157.46
2002	158.86	161.08
2003	162.20	163.63
2004	168.80	166.20
2005	169.64	167.96
2006	169.51	168.85
2007	172.00	172.55
2008	173.12	173.03
2009	173.43	172.81
2010	174.91	175.89

*continued*

**Table J.18** Actual and predicted levels of passenger traffic task (billion PKM), total (sum of all) capital cities, 1965–2030 *(continued)*

Year	Passenger task (billion pkm)	
	Actual	Predicted
Forecasts		
2011		176.41
2012		179.67
2013		183.68
2014		187.62
2015		191.45
2016		195.31
2017		199.10
2018		202.85
2019		206.64
2020		210.47
2021		214.33
2022		217.07
2023		219.82
2024		222.58
2025		225.35
2026		228.13
2027		230.93
2028		233.74
2029		236.55
2030		239.38

## APPENDIX K

# Actual and predicted total transport task, urban public transport (UPT) share and UPT task, capital cities

This appendix provides actual and predicted total passenger task, urban public transport (UPT) share and UPT task for each eight capital cities as well as total capital cities. These data have been presented as figures in Chapter 5 (refer section 5.2).

**Table K.1** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Sydney

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	30.51	30.40	15.76	15.57	4.81	4.73
1978	31.21	31.18	15.38	15.63	4.80	4.87
1979	32.03	31.99	14.97	15.82	4.80	5.06
1980	32.71	32.82	16.13	15.86	5.28	5.20
1981	33.29	33.67	16.36	16.00	5.45	5.38
1982	34.51	34.63	16.17	16.12	5.58	5.58
1983	34.11	34.93	15.83	15.99	5.40	5.58
1984	35.52	35.67	15.05	14.75	5.34	5.26
1985	36.92	36.77	14.53	14.82	5.36	5.44
1986	38.06	37.90	14.93	14.96	5.68	5.67
1987	38.86	39.07	15.03	15.03	5.84	5.87
1988	40.61	40.43	15.32	14.91	6.22	6.03
1989	41.97	41.55	15.04	15.10	6.31	6.27
1990	42.84	42.25	14.88	15.29	6.38	6.46
1991	42.84	42.69	15.18	15.02	6.50	6.41
1992	43.32	43.24	14.79	14.72	6.41	6.36
1993	44.17	43.71	14.01	14.60	6.19	6.38
1994	45.18	44.58	13.97	14.58	6.31	6.50
1995	46.69	45.84	14.26	14.73	6.66	6.75
1996	47.12	47.00	14.48	14.81	6.82	6.95
1997	47.27	47.81	14.87	14.60	7.03	6.97
1998	47.91	48.63	14.80	14.45	7.09	7.02
1999	49.01	49.65	14.69	14.41	7.20	7.15
2000	50.25	50.48	14.71	14.51	7.39	7.32
2001	50.42	51.29	15.45	15.45	7.79	7.92
2002	50.83	51.92	14.39	14.38	7.32	7.47
2003	51.54	52.41	14.21	14.44	7.32	7.57
2004	53.73	52.86	13.71	13.74	7.36	7.26
2005	54.06	53.24	13.81	13.90	7.46	7.40
2006	53.97	53.54	14.06	14.12	7.59	7.56
2007	54.62	54.29	14.28	14.43	7.80	7.83
2008	54.75	54.71	14.91	14.59	8.16	8.03
2009	55.11	55.00	15.10	14.86	8.32	8.20
2010	55.81	55.91	14.77	14.99	8.24	8.40
Forecasts						
2011		56.37		15.08		8.49
2012		57.21		15.05		8.60
2013		58.16		15.02		8.73
2014		59.08		14.99		8.85
2015		59.97		14.97		8.97
2016		60.87		14.94		9.08
2017		61.75		14.91		9.20
2018		62.60		14.88		9.31
2019		63.46		14.85		9.42
2020		64.32		14.82		9.52
2021		65.19		14.79		9.63
2022		65.88		14.79		9.74
2023		66.57		14.79		9.84
2024		67.27		14.79		9.94
2025		67.96		14.78		10.04
2026		68.66		14.78		10.14
2027		69.36		14.78		10.24
2028		70.06		14.78		10.34
2029		70.77		14.78		10.45
2030		71.47		14.77		10.55

Source: BITRE estimates.

**Table K.2** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Melbourne

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	26.28	26.19	11.41	11.71	3.00	3.06
1978	27.22	26.88	10.67	10.84	2.90	2.91
1979	27.89	27.49	10.07	10.37	2.81	2.84
1980	27.94	27.76	9.67	9.64	2.70	2.67
1981	28.39	28.67	9.33	8.94	2.65	2.55
1982	29.79	29.84	8.49	8.32	2.53	2.47
1983	30.01	30.40	8.53	8.35	2.56	2.53
1984	31.15	31.09	8.43	8.36	2.62	2.59
1985	32.21	32.08	8.45	8.66	2.72	2.77
1986	33.49	33.36	8.57	8.97	2.87	2.98
1987	34.48	34.66	8.62	9.00	2.97	3.11
1988	36.08	35.94	8.18	8.62	2.95	3.09
1989	37.83	37.40	8.16	8.27	3.09	3.09
1990	38.55	38.35	7.81	7.89	3.01	3.02
1991	38.33	38.40	7.98	8.19	3.06	3.14
1992	38.88	38.98	8.12	8.34	3.16	3.24
1993	39.55	39.49	7.92	8.09	3.13	3.19
1994	40.29	40.15	7.84	7.95	3.16	3.19
1995	41.53	41.25	7.98	8.19	3.31	3.37
1996	42.26	42.22	8.01	8.40	3.39	3.54
1997	42.57	42.82	7.90	8.11	3.37	3.47
1998	43.25	43.67	7.65	7.83	3.31	3.41
1999	44.42	44.71	7.73	7.78	3.43	3.47
2000	45.50	45.26	7.89	8.16	3.59	3.69
2001	45.67	45.69	8.10	8.17	3.70	3.73
2002	46.59	46.90	8.20	7.98	3.82	3.74
2003	47.44	47.75	8.18	8.06	3.88	3.85
2004	48.97	48.52	8.08	8.28	3.96	4.02
2005	49.25	48.97	8.16	8.24	4.02	4.04
2006	49.27	49.18	8.82	8.69	4.34	4.28
2007	49.92	50.33	9.42	9.47	4.71	4.76
2008	50.34	50.11	10.34	10.31	5.21	5.17
2009	49.76	49.39	11.25	11.06	5.60	5.46
2010	49.87	50.26	11.46	11.44	5.71	5.75
Forecasts						
2011		50.04		11.69		5.83
2012		51.16		11.60		5.92
2013		52.38		11.52		6.01
2014		53.58		11.43		6.11
2015		54.77		11.35		6.19
2016		55.98		11.26		6.28
2017		57.17		11.17		6.37
2018		58.35		11.09		6.45
2019		59.55		11.00		6.53
2020		60.76		10.92		6.61
2021		61.98		10.83		6.69
2022		62.70		10.82		6.77
2023		63.42		10.82		6.84
2024		64.14		10.81		6.91
2025		64.86		10.80		6.99
2026		65.59		10.80		7.06
2027		66.31		10.79		7.13
2028		67.03		10.78		7.21
2029		67.76		10.78		7.28
2030		68.49		10.77		7.35

Source: BITRE estimates.

**Table K.3** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Brisbane

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	9.41	9.35	9.36	9.54	0.88	0.89
1978	9.84	9.74	8.89	8.80	0.87	0.86
1979	10.25	10.13	8.30	8.21	0.85	0.83
1980	10.47	10.48	8.37	8.24	0.88	0.86
1981	10.86	11.16	8.05	8.25	0.87	0.92
1982	11.65	11.78	7.95	8.40	0.93	0.99
1983	11.88	12.03	8.12	8.29	0.96	1.00
1984	12.42	12.35	8.00	8.30	0.99	1.02
1985	12.84	12.73	8.08	8.36	1.04	1.06
1986	13.50	13.54	8.19	8.34	1.11	1.13
1987	13.89	14.03	8.59	8.27	1.19	1.16
1988	14.73	14.64	8.79	8.63	1.29	1.26
1989	15.79	15.53	9.29	9.51	1.47	1.47
1990	16.15	16.09	8.43	8.41	1.36	1.35
1991	16.42	16.38	8.59	8.18	1.41	1.34
1992	16.98	16.94	8.20	7.88	1.39	1.33
1993	17.73	17.50	7.76	7.79	1.38	1.36
1994	18.30	18.16	7.55	7.77	1.38	1.41
1995	19.08	18.88	7.43	7.85	1.42	1.48
1996	19.57	19.41	7.45	7.96	1.46	1.54
1997	19.78	19.83	7.64	7.73	1.51	1.53
1998	20.16	20.34	7.52	7.55	1.52	1.53
1999	20.49	20.90	7.17	7.44	1.47	1.55
2000	21.12	21.24	7.39	7.61	1.56	1.61
2001	21.25	21.56	7.72	7.54	1.64	1.63
2002	21.94	22.24	7.70	7.42	1.69	1.65
2003	22.57	22.91	7.61	7.46	1.72	1.71
2004	24.04	23.60	7.45	7.63	1.79	1.80
2005	24.26	24.13	7.57	7.84	1.84	1.89
2006	24.47	24.38	8.21	8.15	2.01	1.99
2007	25.03	24.98	8.59	8.59	2.15	2.15
2008	25.33	25.12	8.92	8.85	2.26	2.22
2009	25.03	24.94	9.66	9.35	2.42	2.33
2010	25.08	25.22	9.36	9.64	2.35	2.43
Forecasts						
2011		25.44		9.77		2.48
2012		26.10		9.72		2.54
2013		26.96		9.67		2.61
2014		27.81		9.62		2.68
2015		28.62		9.58		2.74
2016		29.44		9.53		2.81
2017		30.25		9.49		2.87
2018		31.07		9.44		2.93
2019		31.91		9.39		3.00
2020		32.76		9.35		3.06
2021		33.63		9.30		3.13
2022		34.31		9.29		3.19
2023		34.99		9.29		3.25
2024		35.68		9.29		3.32
2025		36.38		9.28		3.38
2026		37.09		9.28		3.44
2027		37.80		9.28		3.51
2028		38.53		9.27		3.57
2029		39.26		9.27		3.64
2030		39.99		9.26		3.71

Source: BITRE estimates.

**Table K.4** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Adelaide

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	9.31	9.24	6.41	6.30	0.60	0.58
1978	9.56	9.53	6.29	6.53	0.60	0.62
1979	9.61	9.50	6.41	6.57	0.62	0.62
1980	9.44	9.44	6.98	6.66	0.66	0.63
1981	9.38	9.58	7.67	7.60	0.72	0.73
1982	9.72	9.82	7.71	7.72	0.75	0.76
1983	9.69	9.86	6.88	7.23	0.67	0.71
1984	10.13	10.03	6.64	6.27	0.67	0.63
1985	10.50	10.33	6.18	6.27	0.65	0.65
1986	10.81	10.66	6.24	6.07	0.67	0.65
1987	10.97	10.93	6.09	5.95	0.67	0.65
1988	11.34	11.19	5.71	5.71	0.65	0.64
1989	11.72	11.56	5.38	5.61	0.63	0.65
1990	11.91	11.84	5.48	5.95	0.65	0.70
1991	11.81	11.84	5.63	6.10	0.66	0.72
1992	11.89	11.86	5.55	5.67	0.66	0.67
1993	12.07	11.91	5.38	5.52	0.65	0.66
1994	12.12	12.11	5.64	5.50	0.68	0.67
1995	12.26	12.31	5.79	5.58	0.71	0.69
1996	12.22	12.49	5.78	5.64	0.71	0.70
1997	12.26	12.60	5.73	5.55	0.70	0.70
1998	12.42	12.73	5.66	5.48	0.70	0.70
1999	12.78	12.98	5.31	5.30	0.68	0.69
2000	13.16	13.04	5.10	5.46	0.67	0.71
2001	13.14	13.04	5.26	5.50	0.69	0.72
2002	13.34	13.32	5.37	5.47	0.72	0.73
2003	13.78	13.49	5.44	5.52	0.75	0.74
2004	13.94	13.60	5.51	5.58	0.77	0.76
2005	13.69	13.64	5.71	5.68	0.78	0.78
2006	13.59	13.64	6.02	5.84	0.82	0.80
2007	13.71	13.85	6.05	5.89	0.83	0.82
2008	13.63	13.78	6.20	5.97	0.84	0.82
2009	13.71	13.70	6.26	6.20	0.86	0.85
2010	13.93	13.90	6.22	6.40	0.87	0.89
Forecasts						
2011		13.82		6.44		0.89
2012		13.88		6.43		0.89
2013		14.03		6.41		0.90
2014		14.17		6.40		0.91
2015		14.29		6.38		0.91
2016		14.39		6.36		0.92
2017		14.48		6.35		0.92
2018		14.56		6.33		0.92
2019		14.71		6.31		0.93
2020		14.86		6.30		0.94
2021		15.01		6.28		0.94
2022		15.10		6.28		0.95
2023		15.18		6.28		0.95
2024		15.27		6.28		0.96
2025		15.35		6.28		0.96
2026		15.43		6.27		0.97
2027		15.51		6.27		0.97
2028		15.59		6.27		0.98
2029		15.66		6.27		0.98
2030		15.74		6.27		0.99

Source: BITRE estimates.



**Table K.5** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Perth

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	9.46	9.41	5.95	5.37	0.56	0.50
1978	9.92	9.74	5.93	5.68	0.59	0.55
1979	10.18	9.87	5.71	5.42	0.58	0.53
1980	10.23	9.89	5.88	5.68	0.60	0.56
1981	10.33	10.25	5.88	5.33	0.61	0.55
1982	10.81	10.68	5.40	4.98	0.58	0.53
1983	10.89	11.01	5.53	4.84	0.60	0.53
1984	11.50	11.30	4.88	4.58	0.56	0.52
1985	11.88	11.66	4.65	4.57	0.55	0.53
1986	12.29	12.19	4.91	4.83	0.60	0.59
1987	12.58	12.72	4.97	4.86	0.62	0.62
1988	13.17	13.28	4.72	4.81	0.62	0.64
1989	13.83	14.08	4.72	5.02	0.65	0.71
1990	14.23	14.46	4.81	5.20	0.68	0.75
1991	14.10	14.54	4.67	5.07	0.66	0.74
1992	14.30	14.91	4.72	4.67	0.68	0.70
1993	14.82	15.26	4.87	4.59	0.72	0.70
1994	15.73	15.77	5.35	5.12	0.84	0.81
1995	16.72	16.19	5.24	5.17	0.88	0.84
1996	17.10	16.62	5.31	5.13	0.91	0.85
1997	17.29	17.02	5.49	5.86	0.95	1.00
1998	17.52	17.43	5.52	5.51	0.97	0.96
1999	17.93	17.93	5.34	5.45	0.96	0.98
2000	18.20	18.05	5.45	5.56	0.99	1.00
2001	18.05	18.10	5.76	5.48	1.04	0.99
2002	18.43	18.72	5.71	5.45	1.05	1.02
2003	18.91	19.02	5.65	5.55	1.07	1.05
2004	19.82	19.47	5.45	5.63	1.08	1.10
2005	20.13	19.80	5.55	5.79	1.12	1.15
2006	19.95	19.96	5.77	5.73	1.15	1.14
2007	20.36	20.69	5.78	5.71	1.18	1.18
2008	20.73	20.89	6.29	6.16	1.30	1.29
2009	21.44	21.27	6.95	6.59	1.49	1.40
2010	21.80	21.91	7.04	6.79	1.53	1.49
Forecasts						
2011		22.04		6.80		1.50
2012		22.48		6.80		1.53
2013		23.09		6.80		1.57
2014		23.69		6.80		1.61
2015		24.29		6.80		1.65
2016		24.89		6.80		1.69
2017		25.49		6.79		1.73
2018		26.07		6.79		1.77
2019		26.65		6.79		1.81
2020		27.23		6.79		1.85
2021		27.82		6.79		1.89
2022		28.26		6.79		1.92
2023		28.70		6.78		1.95
2024		29.13		6.78		1.98
2025		29.56		6.78		2.00
2026		29.98		6.78		2.03
2027		30.40		6.77		2.06
2028		30.81		6.77		2.09
2029		31.21		6.77		2.11
2030		31.69		6.77		2.14

Source: BITRE estimates.

**Table K.6** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Hobart

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	1.48	1.46	9.33	9.42	0.14	0.14
1978	1.54	1.52	8.34	7.85	0.13	0.12
1979	1.58	1.57	7.16	6.55	0.11	0.10
1980	1.60	1.59	6.96	6.59	0.11	0.10
1981	1.63	1.63	6.72	5.99	0.11	0.10
1982	1.68	1.68	5.45	5.21	0.09	0.09
1983	1.67	1.71	5.31	5.14	0.09	0.09
1984	1.75	1.76	5.53	5.13	0.10	0.09
1985	1.83	1.81	5.41	5.14	0.10	0.09
1986	1.90	1.89	5.28	5.11	0.10	0.10
1987	1.91	1.93	5.29	4.99	0.10	0.10
1988	1.96	1.98	4.91	4.78	0.10	0.09
1989	2.03	2.04	4.47	4.66	0.09	0.09
1990	2.12	2.09	4.58	4.70	0.10	0.10
1991	2.13	2.13	4.37	4.54	0.09	0.10
1992	2.16	2.18	4.27	4.34	0.09	0.09
1993	2.24	2.21	4.12	4.29	0.09	0.09
1994	2.29	2.24	4.07	4.26	0.09	0.10
1995	2.33	2.27	4.03	4.21	0.09	0.10
1996	2.35	2.30	4.00	4.16	0.09	0.10
1997	2.34	2.31	3.84	3.85	0.09	0.09
1998	2.30	2.32	3.81	3.76	0.09	0.09
1999	2.29	2.34	3.77	3.73	0.09	0.09
2000	2.30	2.33	3.76	3.73	0.09	0.09
2001	2.24	2.33	3.85	3.60	0.09	0.08
2002	2.28	2.36	3.78	3.55	0.09	0.08
2003	2.36	2.38	3.66	3.54	0.09	0.08
2004	2.47	2.41	3.52	3.50	0.09	0.08
2005	2.43	2.41	3.56	3.49	0.09	0.08
2006	2.43	2.41	3.55	3.47	0.09	0.08
2007	2.46	2.44	3.50	3.48	0.09	0.08
2008	2.45	2.42	3.46	3.51	0.08	0.08
2009	2.41	2.40	3.62	3.49	0.09	0.08
2010	2.42	2.43	3.65	3.51	0.09	0.09
Forecasts						
2011		2.42		3.52		0.08
2012		2.45		3.52		0.09
2013		2.48		3.51		0.09
2014		2.51		3.51		0.09
2015		2.55		3.51		0.09
2016		2.58		3.51		0.09
2017		2.61		3.51		0.09
2018		2.64		3.51		0.09
2019		2.67		3.51		0.09
2020		2.70		3.51		0.09
2021		2.73		3.51		0.10
2022		2.75		3.51		0.10
2023		2.77		3.51		0.10
2024		2.79		3.51		0.10
2025		2.81		3.51		0.10
2026		2.83		3.50		0.10
2027		2.85		3.50		0.10
2028		2.87		3.50		0.10
2029		2.89		3.50		0.10
2030		2.91		3.50		0.10

Source: BITRE estimates.

**Table K.7** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Darwin

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	0.41	0.41	2.91	3.01	0.01	0.01
1978	0.43	0.45	3.05	3.18	0.01	0.01
1979	0.46	0.48	3.15	3.34	0.01	0.02
1980	0.48	0.48	3.59	3.48	0.02	0.02
1981	0.51	0.51	3.97	3.63	0.02	0.02
1982	0.56	0.57	4.09	3.86	0.02	0.02
1983	0.57	0.59	4.50	4.06	0.03	0.02
1984	0.62	0.62	4.42	4.27	0.03	0.03
1985	0.67	0.67	4.42	4.49	0.03	0.03
1986	0.72	0.72	4.45	4.58	0.03	0.03
1987	0.75	0.76	4.46	4.78	0.03	0.04
1988	0.77	0.75	4.98	5.02	0.04	0.04
1989	0.79	0.81	5.69	5.29	0.04	0.04
1990	0.81	0.82	5.96	5.58	0.05	0.05
1991	0.81	0.81	6.09	5.85	0.05	0.05
1992	0.83	0.83	5.88	5.83	0.05	0.05
1993	0.85	0.85	5.64	5.83	0.05	0.05
1994	0.87	0.88	5.60	5.83	0.05	0.05
1995	0.93	0.91	5.62	5.83	0.05	0.05
1996	0.97	0.94	5.75	5.83	0.06	0.06
1997	0.99	0.99	5.66	5.79	0.06	0.06
1998	1.01	1.02	5.63	5.78	0.06	0.06
1999	1.02	1.06	5.60	5.76	0.06	0.06
2000	1.03	1.04	5.56	5.73	0.06	0.06
2001	1.00	1.02	5.78	5.66	0.06	0.06
2002	1.01	1.04	5.78	5.65	0.06	0.06
2003	1.02	1.05	6.00	5.67	0.06	0.06
2004	1.06	1.06	5.74	5.68	0.06	0.06
2005	1.04	1.06	5.83	5.68	0.06	0.06
2006	1.05	1.04	5.86	5.69	0.06	0.06
2007	1.08	1.11	5.65	5.72	0.06	0.06
2008	1.11	1.09	5.60	5.75	0.06	0.06
2009	1.13	1.12	5.65	5.77	0.06	0.07
2010	1.12	1.17	5.88	5.80	0.07	0.07
Forecasts						
2011		1.17		5.80		0.07
2012		1.18		5.80		0.07
2013		1.22		5.80		0.07
2014		1.27		5.80		0.07
2015		1.31		5.80		0.08
2016		1.35		5.80		0.08
2017		1.39		5.80		0.08
2018		1.43		5.80		0.08
2019		1.47		5.80		0.09
2020		1.51		5.80		0.09
2021		1.55		5.80		0.09
2022		1.57		5.80		0.09
2023		1.60		5.80		0.09
2024		1.63		5.80		0.10
2025		1.65		5.80		0.10
2026		1.67		5.80		0.10
2027		1.69		5.80		0.10
2028		1.71		5.80		0.10
2029		1.73		5.80		0.10
2030		1.75		5.80		0.10

Source: BITRE estimates.

**Table K.8** Actual and predicted total passenger task (billion PKM), UPT share (per cent) and UPT task (billion PKM), Canberra

Year	Total task (billion pkm)		UPT share (per cent)		UPT task (billion pkm)	
	Actual	Predicted	Actual	Predicted	Actual	Predicted
Estimates						
1977	2.21	2.22	3.90	4.18	0.09	0.09
1978	2.31	2.31	3.85	3.94	0.09	0.09
1979	2.40	2.39	4.18	4.38	0.10	0.11
1980	2.44	2.41	4.75	4.43	0.12	0.11
1981	2.46	2.48	4.57	4.19	0.11	0.10
1982	2.60	2.60	4.18	4.06	0.11	0.11
1983	2.66	2.68	4.89	5.24	0.13	0.14
1984	2.81	2.81	5.25	5.30	0.15	0.15
1985	2.96	2.94	5.29	5.24	0.16	0.15
1986	3.08	3.08	4.94	5.13	0.15	0.16
1987	3.16	3.23	5.07	5.00	0.16	0.16
1988	3.34	3.36	4.98	4.80	0.17	0.16
1989	3.52	3.52	4.74	4.66	0.17	0.16
1990	3.66	3.61	4.70	4.66	0.17	0.17
1991	3.70	3.69	4.67	4.44	0.17	0.16
1992	3.80	3.82	4.48	4.30	0.17	0.16
1993	3.95	3.91	4.24	4.21	0.17	0.17
1994	4.05	4.01	4.07	4.10	0.16	0.17
1995	4.17	4.11	4.14	4.13	0.17	0.17
1996	4.23	4.19	4.27	4.30	0.18	0.18
1997	4.24	4.23	4.39	4.38	0.19	0.19
1998	4.25	4.29	4.33	4.33	0.18	0.18
1999	4.34	4.39	3.98	3.86	0.17	0.17
2000	4.42	4.40	3.84	3.90	0.17	0.17
2001	4.35	4.43	3.83	3.76	0.17	0.16
2002	4.44	4.57	3.82	3.76	0.17	0.17
2003	4.58	4.63	3.86	3.88	0.18	0.18
2004	4.78	4.69	3.75	3.87	0.18	0.18
2005	4.78	4.71	3.80	3.88	0.18	0.19
2006	4.77	4.69	3.87	3.91	0.18	0.19
2007	4.80	4.83	3.75	3.89	0.18	0.19
2008	4.78	4.81	3.77	3.90	0.18	0.19
2009	4.83	4.80	3.89	3.92	0.19	0.19
2010	4.87	4.89	3.93	3.96	0.19	0.19
Forecasts						
2011		4.88		3.96		0.19
2012		4.96		3.96		0.20
2013		5.06		3.96		0.20
2014		5.15		3.96		0.20
2015		5.25		3.96		0.21
2016		5.34		3.96		0.21
2017		5.43		3.96		0.22
2018		5.52		3.97		0.22
2019		5.60		3.97		0.22
2020		5.69		3.97		0.23
2021		5.78		3.97		0.23
2022		5.83		3.97		0.23
2023		5.89		3.97		0.23
2024		5.94		3.97		0.24
2025		6.00		3.97		0.24
2026		6.06		3.97		0.24
2027		6.11		3.97		0.24
2028		6.17		3.97		0.24
2029		6.23		3.97		0.25
2030		6.29		3.97		0.25

Source: BITRE estimates.



## APPENDIX L

# Sensitivity analysis data and calculated UPT task by capital cities

This Appendix presents the assumptions made and the calculated urban public passenger (UPT) tasks, for the five scenarios for each of Australia's capital cities.

Details of the assumptions and five scenarios are given earlier (see Chapter 6).

**Table L.1** Assumptions made and UPT task by scenarios, Sydney

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	123.5	123.5	123.5	135.0	8.8	8.40	8.40	8.40	8.40	8.40
2011	132.5	132.5	132.5	138.4	8.0	8.49	8.49	8.49	8.47	8.49
2012		127.2	112.1	141.8	8.0	8.60	8.61	8.62	8.57	8.59
2013		124.5	87.6	145.1	8.0	8.73	8.74	8.78	8.68	8.71
2014		123.6	86.7	148.5	8.0	8.85	8.86	8.90	8.79	8.82
2015		136.0	85.2	151.9	8.0	8.97	8.96	9.02	8.89	8.93
2016		135.2	84.4	155.3	8.0	9.08	9.08	9.14	8.99	9.03
2017		132.9	83.0	158.6	8.0	9.20	9.20	9.25	9.08	9.14
2018		132.3	96.6	162.0	8.0	9.31	9.31	9.35	9.18	9.24
2019		130.2	95.0	165.4	8.0	9.42	9.42	9.46	9.27	9.34
2020		150.9	94.4	168.8	8.0	9.52	9.50	9.57	9.36	9.43
2021		169.4	92.9	172.1	8.0	9.63	9.59	9.68	9.46	9.53
2022		169.0	92.3	175.5	8.0	9.74	9.69	9.79	9.54	9.63
2023		166.4	90.9	178.9	8.0	9.84	9.79	9.89	9.63	9.73
2024		166.1	90.3	182.3	8.0	9.94	9.89	9.99	9.71	9.83
2025		163.5	88.9	185.6	8.0	10.04	10.00	10.10	9.80	9.93
2026		170.1	88.4	189.0	8.0	10.14	10.09	10.20	9.88	10.04
2027		174.2	87.0	192.4	8.0	10.24	10.18	10.30	9.97	10.14
2028		180.7	86.5	195.8	8.0	10.34	10.28	10.41	10.06	10.24
2029		185.9	99.0	199.2	8.0	10.45	10.37	10.49	10.14	10.34
2030		191.0	98.0	202.5	8.0	10.55	10.46	10.60	10.23	10.44

**Table L.2 Assumptions made and UPT task by scenarios, Melbourne**

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	125.0	125.0	125.0	148.7	8.8	5.75	5.75	5.75	5.75	5.75
2011	131.5	131.5	131.5	152.4	8.0	5.83	5.83	5.83	5.79	5.83
2012		126.3	111.3	156.2	8.0	5.92	5.93	5.95	5.84	5.90
2013		123.5	86.9	159.9	8.0	6.01	6.03	6.08	5.90	5.99
2014		122.7	86.1	163.6	8.0	6.11	6.12	6.18	5.96	6.07
2015		134.9	84.6	167.3	8.0	6.19	6.19	6.27	6.01	6.15
2016		134.2	83.8	171.0	8.0	6.28	6.28	6.36	6.06	6.23
2017		131.9	82.4	174.8	8.0	6.37	6.37	6.44	6.11	6.30
2018		131.3	95.8	178.5	8.0	6.45	6.45	6.51	6.16	6.38
2019		129.2	94.3	182.2	8.0	6.53	6.54	6.59	6.20	6.45
2020		149.8	93.7	185.9	8.0	6.61	6.58	6.67	6.24	6.52
2021		168.1	92.2	189.6	8.0	6.69	6.63	6.76	6.29	6.59
2022		167.8	91.6	193.3	8.0	6.77	6.70	6.83	6.33	6.67
2023		165.2	90.2	197.1	8.0	6.84	6.78	6.91	6.36	6.74
2024		164.9	89.6	200.8	8.0	6.91	6.85	6.99	6.40	6.81
2025		162.3	88.2	204.5	8.0	6.99	6.93	7.06	6.44	6.88
2026		168.8	87.7	208.2	8.0	7.06	6.99	7.14	6.48	6.96
2027		172.8	86.4	211.9	8.0	7.13	7.05	7.22	6.51	7.03
2028		179.3	85.9	215.7	8.0	7.21	7.11	7.30	6.55	7.10
2029		184.5	98.2	219.4	8.0	7.28	7.16	7.35	6.59	7.17
2030		189.6	97.3	223.1	8.0	7.35	7.22	7.42	6.63	7.25

**Table L.3** Assumptions made and UPT task by scenarios, Brisbane

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	126.0	126.0	126.0	134.3	8.8	2.43	2.43	2.43	2.43	2.43
2011	134.0	134.0	134.0	137.6	8.0	2.48	2.48	2.48	2.48	2.48
2012		128.7	113.4	141.0	8.0	2.54	2.54	2.55	2.53	2.53
2013		125.9	88.6	144.4	8.0	2.61	2.61	2.63	2.59	2.60
2014		125.0	87.7	147.7	8.0	2.68	2.68	2.70	2.65	2.66
2015		137.5	86.2	151.1	8.0	2.74	2.74	2.77	2.71	2.72
2016		136.8	85.4	154.4	8.0	2.81	2.80	2.83	2.77	2.78
2017		134.4	83.9	157.8	8.0	2.87	2.87	2.90	2.83	2.84
2018		133.8	97.6	161.1	8.0	2.93	2.93	2.95	2.88	2.90
2019		131.7	96.1	164.5	8.0	3.00	3.00	3.02	2.94	2.96
2020		152.6	95.5	167.9	8.0	3.06	3.05	3.08	2.99	3.02
2021		171.3	93.9	171.2	8.0	3.13	3.10	3.15	3.05	3.08
2022		171.0	93.4	174.6	8.0	3.19	3.16	3.21	3.11	3.14
2023		168.3	91.9	177.9	8.0	3.25	3.23	3.28	3.16	3.20
2024		168.0	91.3	181.3	8.0	3.32	3.29	3.34	3.22	3.26
2025		165.4	89.9	184.6	8.0	3.38	3.35	3.41	3.27	3.33
2026		172.0	89.4	188.0	8.0	3.44	3.41	3.47	3.33	3.39
2027		176.1	88.0	191.4	8.0	3.51	3.47	3.54	3.38	3.45
2028		182.7	87.5	194.7	8.0	3.57	3.53	3.61	3.44	3.52
2029		188.0	100.1	198.1	8.0	3.64	3.59	3.66	3.50	3.58
2030		193.2	99.1	201.4	8.0	3.71	3.65	3.73	3.56	3.65



**Table L.4 Assumptions made and UPT task by scenarios, Adelaide**

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	123.0	123.0	123.0	136.1	8.8	0.89	0.89	0.89	0.89	0.89
2011	129.5	129.5	129.5	139.5	8.0	0.89	0.89	0.89	0.88	0.89
2012		124.4	109.6	142.9	8.0	0.89	0.89	0.89	0.87	0.89
2013		121.6	85.6	146.3	8.0	0.90	0.90	0.89	0.87	0.90
2014		120.8	84.8	149.7	8.0	0.91	0.91	0.90	0.87	0.91
2015		132.9	83.3	153.1	8.0	0.91	0.91	0.90	0.86	0.92
2016		132.2	82.5	156.5	8.0	0.92	0.92	0.91	0.86	0.93
2017		129.9	81.1	159.9	8.0	0.92	0.92	0.91	0.85	0.93
2018		129.3	94.4	163.3	8.0	0.92	0.92	0.92	0.84	0.94
2019		127.2	92.8	166.7	8.0	0.93	0.93	0.92	0.84	0.95
2020		147.5	92.3	170.1	8.0	0.94	0.94	0.93	0.84	0.96
2021		165.5	90.8	173.5	8.0	0.94	0.95	0.94	0.84	0.97
2022		165.2	90.2	176.9	8.0	0.95	0.95	0.94	0.83	0.97
2023		162.7	88.8	180.3	8.0	0.95	0.96	0.95	0.83	0.98
2024		162.4	88.3	183.7	8.0	0.96	0.96	0.95	0.83	0.98
2025		159.8	86.9	187.1	8.0	0.96	0.97	0.96	0.82	0.99
2026		166.2	86.4	190.5	8.0	0.97	0.97	0.96	0.82	0.99
2027		170.2	85.0	193.9	8.0	0.97	0.98	0.97	0.82	1.00
2028		176.6	84.6	197.3	8.0	0.98	0.98	0.97	0.82	1.00
2029		181.7	96.8	200.7	8.0	0.98	0.99	0.98	0.81	1.01
2030		186.7	95.8	204.1	8.0	0.99	0.99	0.98	0.81	1.01

**Table L.5** Assumptions made and UPT task by scenarios, Perth

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	123.0	123.0	123.0	134.0	8.8	1.49	1.49	1.49	1.49	1.49
2011	132.3	132.3	132.3	137.3	8.0	1.50	1.50	1.50	1.48	1.50
2012		127.0	111.9	140.7	8.0	1.53	1.53	1.52	1.48	1.53
2013		124.2	87.4	144.0	8.0	1.57	1.57	1.55	1.50	1.57
2014		123.4	86.6	147.4	8.0	1.61	1.61	1.59	1.51	1.61
2015		135.7	85.1	150.7	8.0	1.65	1.65	1.63	1.53	1.65
2016		135.0	84.3	154.1	8.0	1.69	1.69	1.67	1.55	1.69
2017		132.7	82.8	157.4	8.0	1.73	1.73	1.71	1.56	1.73
2018		132.0	96.4	160.8	8.0	1.77	1.77	1.76	1.57	1.77
2019		130.0	94.8	164.1	8.0	1.81	1.81	1.79	1.59	1.81
2020		150.6	94.2	167.5	8.0	1.85	1.86	1.83	1.60	1.85
2021		169.1	92.7	170.8	8.0	1.89	1.91	1.87	1.61	1.89
2022		168.7	92.1	174.2	8.0	1.92	1.93	1.90	1.62	1.92
2023		166.1	90.7	177.5	8.0	1.95	1.96	1.93	1.62	1.95
2024		165.8	90.1	180.9	8.0	1.98	1.99	1.96	1.63	1.98
2025		163.2	88.7	184.2	8.0	2.00	2.02	1.99	1.63	2.00
2026		169.8	88.2	187.6	8.0	2.03	2.05	2.01	1.63	2.03
2027		173.8	86.8	190.9	8.0	2.06	2.08	2.04	1.64	2.06
2028		180.3	86.4	194.3	8.0	2.09	2.11	2.07	1.64	2.09
2029		185.5	98.8	197.6	8.0	2.11	2.14	2.10	1.64	2.11
2030		190.7	97.8	201.0	8.0	2.14	2.17	2.13	1.65	2.14

**Table L.6** Assumptions made and UPT task by scenarios, Hobart

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	130.5	130.5	130.5	133.7	8.8	0.085	0.085	0.085	0.085	0.085
2011	139.3	139.3	139.3	137.1	8.0	0.085	0.085	0.085	0.084	0.085
2012		133.7	117.8	140.4	8.0	0.086	0.086	0.087	0.084	0.085
2013		130.8	92.1	143.8	8.0	0.087	0.087	0.089	0.085	0.086
2014		129.9	91.2	147.1	8.0	0.088	0.089	0.090	0.085	0.087
2015		142.9	89.6	150.4	8.0	0.089	0.089	0.091	0.085	0.088
2016		142.1	88.7	153.8	8.0	0.090	0.090	0.093	0.086	0.088
2017		139.7	87.2	157.1	8.0	0.092	0.092	0.094	0.086	0.089
2018		139.0	101.5	160.5	8.0	0.093	0.093	0.094	0.086	0.089
2019		136.8	99.8	163.8	8.0	0.094	0.094	0.095	0.087	0.090
2020		158.6	99.2	167.2	8.0	0.095	0.094	0.097	0.087	0.091
2021		178.0	97.6	170.5	8.0	0.096	0.094	0.098	0.087	0.091
2022		177.7	97.0	173.8	8.0	0.096	0.095	0.098	0.087	0.092
2023		174.9	95.5	177.2	8.0	0.097	0.095	0.099	0.087	0.092
2024		174.6	94.9	180.5	8.0	0.098	0.096	0.100	0.087	0.093
2025		171.9	93.4	183.9	8.0	0.098	0.097	0.101	0.087	0.094
2026		178.7	92.9	187.2	8.0	0.099	0.097	0.101	0.087	0.094
2027		183.0	91.4	190.6	8.0	0.100	0.098	0.102	0.087	0.095
2028		189.9	90.9	193.9	8.0	0.100	0.098	0.103	0.087	0.096
2029		195.4	104.0	197.2	8.0	0.101	0.098	0.103	0.087	0.096
2030		200.8	103.0	200.6	8.0	0.102	0.099	0.103	0.087	0.097

**Table L.7** Assumptions made and UPT task by scenarios, Darwin

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	124.3	124.3	124.3	122.4	8.8	0.068	0.068	0.068	0.068	0.068
2011	131.8	131.8	131.8	125.4	8.0	0.068	0.068	0.068	0.068	0.068
2012		126.6	111.5	128.5	8.0	0.070	0.071	0.073	0.069	0.069
2013		123.8	87.1	131.5	8.0	0.072	0.074	0.080	0.072	0.071
2014		123.0	86.3	134.6	8.0	0.075	0.077	0.083	0.074	0.073
2015		135.3	84.8	137.7	8.0	0.077	0.077	0.086	0.076	0.075
2016		134.5	84.0	140.7	8.0	0.080	0.079	0.088	0.078	0.077
2017		132.3	82.6	143.8	8.0	0.082	0.082	0.091	0.080	0.078
2018		131.6	96.0	146.8	8.0	0.084	0.084	0.091	0.082	0.080
2019		129.5	94.5	149.9	8.0	0.087	0.087	0.094	0.084	0.082
2020		150.1	93.9	153.0	8.0	0.089	0.085	0.096	0.087	0.083
2021		168.5	92.4	156.0	8.0	0.091	0.084	0.099	0.089	0.085
2022		168.2	91.8	159.1	8.0	0.093	0.085	0.101	0.090	0.086
2023		165.6	90.4	162.1	8.0	0.094	0.087	0.103	0.091	0.088
2024		165.3	89.8	165.2	8.0	0.096	0.089	0.105	0.093	0.089
2025		162.7	88.4	168.3	8.0	0.097	0.091	0.107	0.094	0.090
2026		169.2	87.9	171.3	8.0	0.099	0.091	0.108	0.095	0.092
2027		173.3	86.6	174.4	8.0	0.100	0.091	0.110	0.096	0.093
2028		179.7	86.1	177.4	8.0	0.101	0.091	0.111	0.097	0.094
2029		184.9	98.5	180.5	8.0	0.102	0.090	0.110	0.098	0.095
2030		190.1	97.5	183.6	8.0	0.103	0.090	0.111	0.098	0.096

**Table L.8** Assumptions made and UPT task by scenarios, Canberra

Year	Assumptions					UPT task (billion PKM)				
	Petrol price (cents/litre)			High UPT fares (cents)	Ongoing GFC effect	Petrol price			High UPT fares	Ongoing GFC effect
	Base	High	Low			Base	High	Low		
2010	127.5	127.5	124.5	134.7	8.8	0.19	0.19	0.19	0.19	0.19
2011	133.0	133.0	132.3	138.1	8.0	0.19	0.19	0.19	0.19	0.19
2012		112.5	127.1	141.5	8.0	0.20	0.19	0.19	0.19	0.19
2013		87.9	124.3	144.8	8.0	0.20	0.20	0.20	0.19	0.20
2014		87.1	123.5	148.2	8.0	0.20	0.20	0.20	0.19	0.20
2015		85.5	135.8	151.6	8.0	0.21	0.21	0.21	0.20	0.20
2016		84.7	135.1	155.0	8.0	0.21	0.21	0.21	0.20	0.20
2017		83.3	132.8	158.3	8.0	0.22	0.21	0.21	0.20	0.20
2018		96.9	132.1	161.7	8.0	0.22	0.22	0.22	0.20	0.21
2019		95.4	130.0	165.1	8.0	0.22	0.22	0.22	0.20	0.21
2020		94.7	150.7	168.4	8.0	0.23	0.22	0.22	0.20	0.21
2021		93.2	169.2	171.8	8.0	0.23	0.23	0.23	0.20	0.21
2022		92.7	168.8	175.2	8.0	0.23	0.23	0.23	0.20	0.21
2023		91.2	166.2	178.5	8.0	0.23	0.23	0.23	0.20	0.22
2024		90.6	165.9	181.9	8.0	0.24	0.23	0.23	0.20	0.22
2025		89.2	163.3	185.3	8.0	0.24	0.24	0.23	0.21	0.22
2026		88.7	169.9	188.6	8.0	0.24	0.24	0.24	0.21	0.22
2027		87.3	173.9	192.0	8.0	0.24	0.24	0.24	0.21	0.22
2028		86.9	180.5	195.4	8.0	0.24	0.24	0.24	0.21	0.23
2029		99.4	185.7	198.7	8.0	0.25	0.24	0.24	0.21	0.23
2030		98.4	190.8	202.1	8.0	0.25	0.25	0.25	0.21	0.23

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