



Australian Government

Department of Infrastructure and Regional Development

Bureau of Infrastructure, Transport and Regional Economics



A dozen facts about transport in Australia

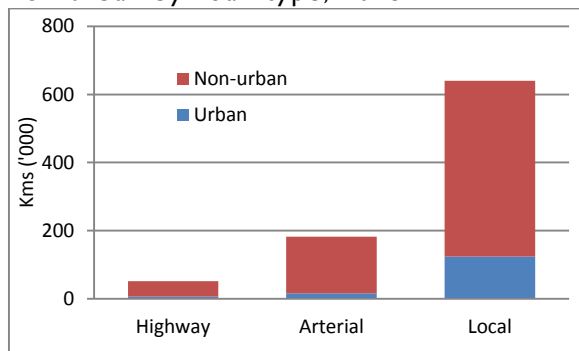
The purpose of this Information Sheet is to provide the reader with a quick source of basic facts about the Australian transport system. Beneath each fact there is the essential data (in figures and tables). If you need to know more, the sources are provided at the end of the paper.

1. How big is the transport network?

There are 874,500 kms of road in Australia. Seventeen percent is urban, the rest is non-urban. It is one of the world's most extensive with a per capita length twice as much as New Zealand and Canada. There are 33,300 kms of heavy rail in Australia and 291 kms of light rail. It is the seventh largest system in the world. There are 40 significant airports in Australia. Ten of these are international.

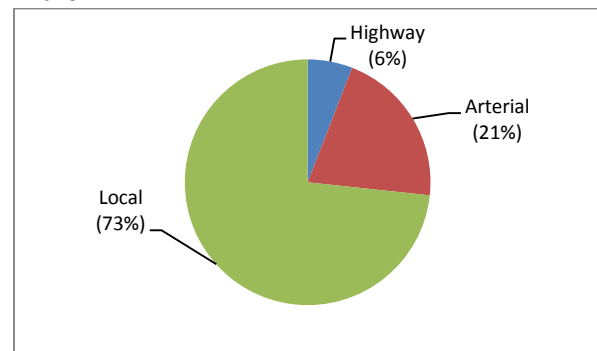
There are 37 ports in Australia with an annual throughput of over one billion dollars. The nation's exports are mainly through bulk ports with Port Headland the fifth largest port in the world measured by tonnage. Imports mostly come through capital city container ports. Melbourne is the largest in Australia and handles more than 2.5 million containers a year. It is 54 in the world's container ports rankings with Sydney at 66.

Figure 1: Total road length by urban and non-urban by road type, 2015



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table T 1.6, BITRE, Canberra.

Figure 2: Proportion of total road length by road type, 2015



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table T 1.6, BITRE, Canberra.

Table I: Route length open railway, Australia

	Route-length	
	Kilometres	Share (per cent)
Metropolitan	1 637	4.9
Non-metropolitan	31 706	95.1
Total	33 343	100.0

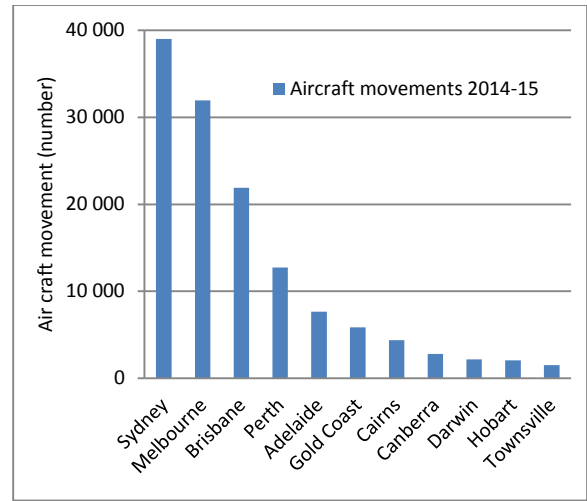
Sources: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table T 5.2a and BITRE (2012), Understanding Australia's urban railways, Report 131, Table 1, BITRE, Canberra.

Figure 3: Air passenger carried by top 10 city-pairs, March 2016



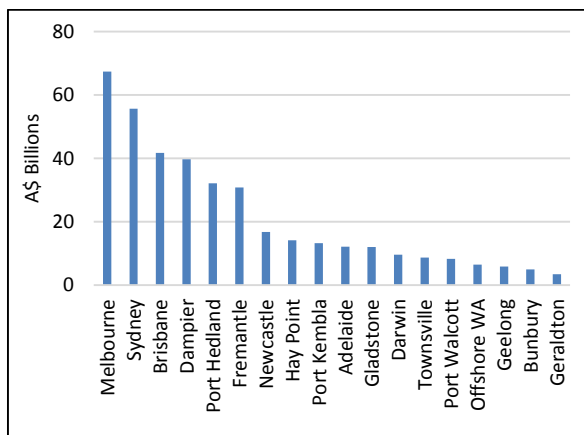
Source: BITRE (2016), Australian domestic Aviation Activity Monthly, March 2016, Canberra,

Figure 4: Aircraft movements by major airports, 2014-15



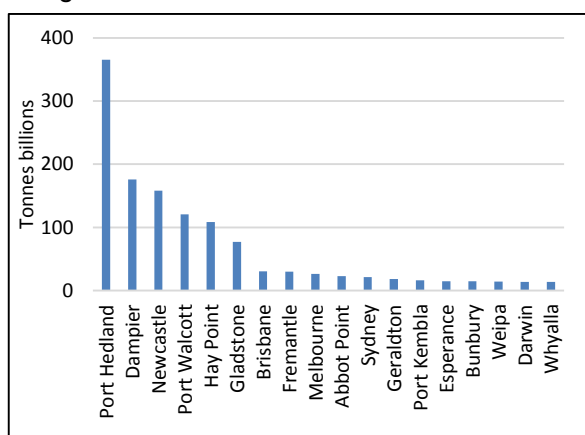
Source: BITRE (2015), Yearbook 2015: Australian infrastructure statistics, Table T 6.4B, Canberra.

Figure 5: Selected Australian seaports by value of international trade, 2014



Sources: BITRE analysis of AVS International Cargo Statistics.

Figure 6: Selected Australian seaports by weight, 2014



Sources: BITRE analysis of AVS International Cargo Statistics.

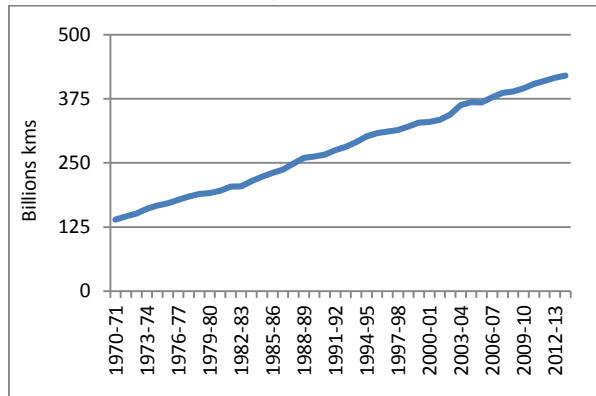
2. How far do we travel?

On an average day in 2013-14, Australians travelled more than 1.15 billion kilometres on the passenger network (all modes). In other words, on an average day in 2013-14 each Australian travelled 49 kilometres.

3. Is this increasing?

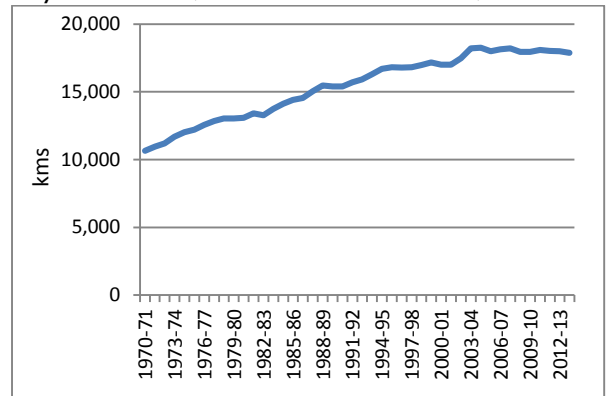
Yes. There are two factors that determine the rate of increase: vehicle kilometres travelled (VKT) per capita and population growth. Throughout most of the twentieth century, both increased rapidly until around 2004 when VKT per capita began to flatten as travel demand became saturated. However, Australia has one of the highest rates of population growth in the developed world and passenger demand on the road and rail network is increasing by around 1.5 per cent per year.

Figure 7: Total passenger travel by all modes, 1970-71 to 2013-14, Australia



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table 3.1, BITRE, Canberra.

Figure 8: Annual vehicle-kilometres travelled by all modes, 1970-71 to 2013-14, Australia

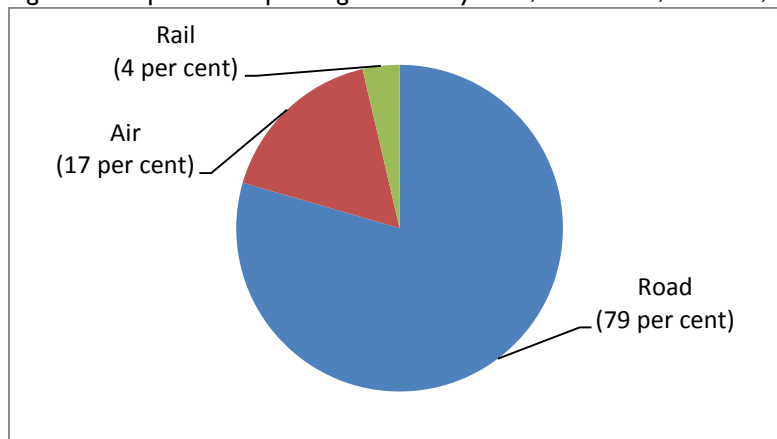


Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Tables 3.1 and 11.5a, BITRE, Canberra.

4. How do we travel?

In 2013-14, 70 per cent of passenger travel is done on the road network in the nation's 18 million registered vehicles, while air handled 17 per cent. Rail carried four per cent. Fifty five per cent of surface travel is done in capital cities, a figure that has scarcely changed for 40 years.

Figure 9: Proportion of passenger travel by road, rail and air, 2013-14, Australia

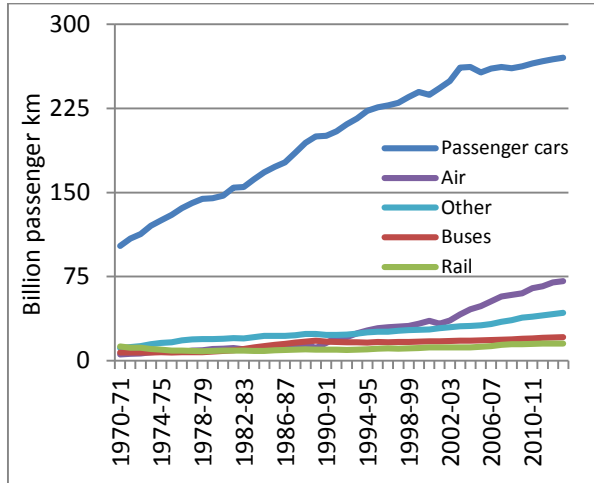


Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table T 3.1, BITRE, Canberra.

5. Are we changing how we travel?

Our travel patterns have been generally stable since the 1970s. The major change is that the proportion travel done by air has increased by 13 per cent and that done by car and intercity rail has decreased by the same amount indicating that more people are heading to the airport when it comes to longer journeys. Urban transport mode share has hardly changed in 40 years. Eighty percent of urban passenger kilometres are done by car and ten percent is done by mass transit. Travel by commercial vehicles and motorcycles make up the other ten percent.

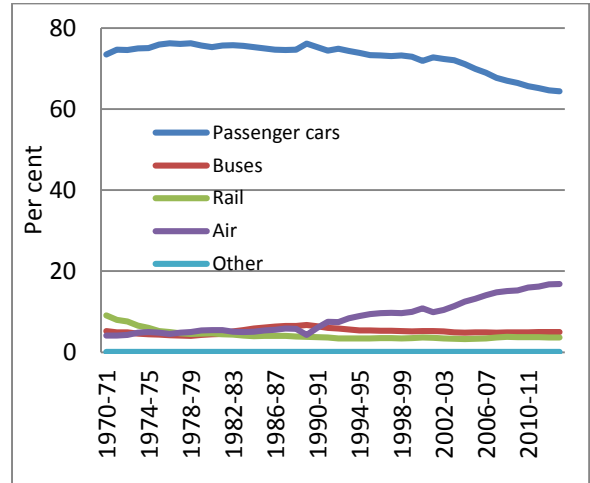
Figure 10: Total passenger travel by transport mode, 1970-71 to 2013-14, Australia



Note: Other includes on-business use of light commercial vehicles, motorcycles etc.

Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table 3.1, BITRE, Canberra.

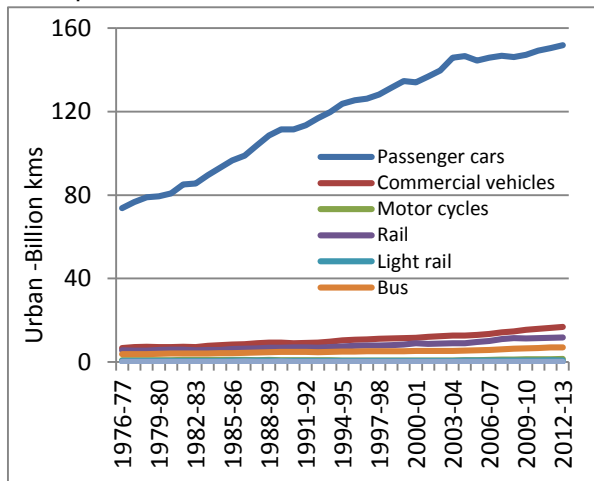
Figure 11: Mode share of passenger travel, 1970-71 to 2013-14, Australia



Note: Other includes on-business use of light commercial vehicles, motorcycles etc.

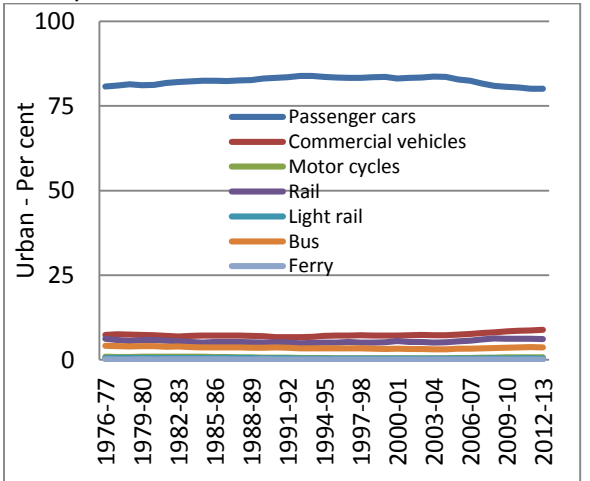
Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table 3.1, BITRE, Canberra.

Figure 12: Total urban passenger travel by transport mode, 1970-71 to 2013-14



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table 3.1i, BITRE, Canberra.

Figure 13: Mode share of urban passenger travel by transport mode, 1970-71 to 2013-14

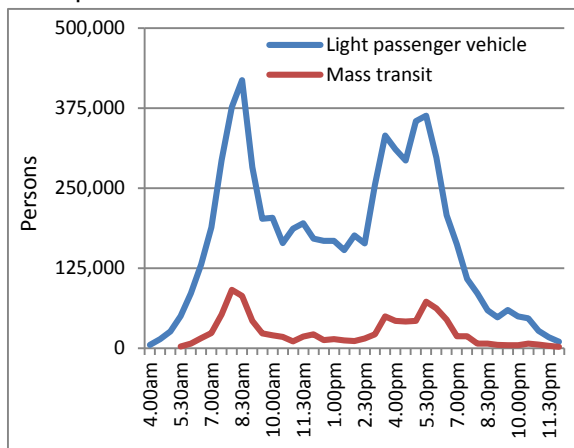


Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table 3.1i, BITRE, Canberra.

6. Why do we travel like this?

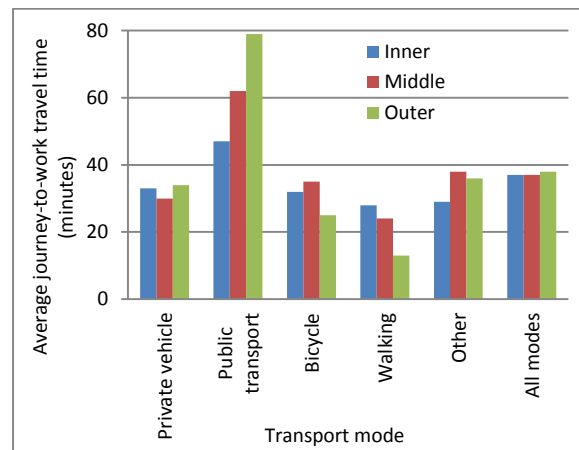
Urban passenger transport is influenced by three main forces; spatial efficiency, network access and peaking loads. Rail is especially efficient in its use of space. A single rail line operating at peak efficiency can move as many people as a ten lane freeway. This means trains are the best mode where space is most limited such as inner cities and peak hour traffic. Their ability to handle peaking loads such as the morning peak is vital to the functioning of the network. The downside is that access to the rail network is poor compared to cars. To use rail (or bus) without costly mode switching, people have to live within walking distance of the station and their destination. This is why car travel is the dominant mode for passenger travel in lower density parts of the city and outside peak hours.

Figure 14: Number of people travelling on weekdays by private vehicles and public transport, 2012-13, Melbourne



Source: Redrawn from Victorian Integrated Survey of Travel & Activity 2012-13 (<https://public.tableau.com/profile/dedjtr#!/vizhome/VISTA2012-13-Travelbytimeofday>).

Figure 15: Average journey-to-work travel time, 2012-13, Melbourne

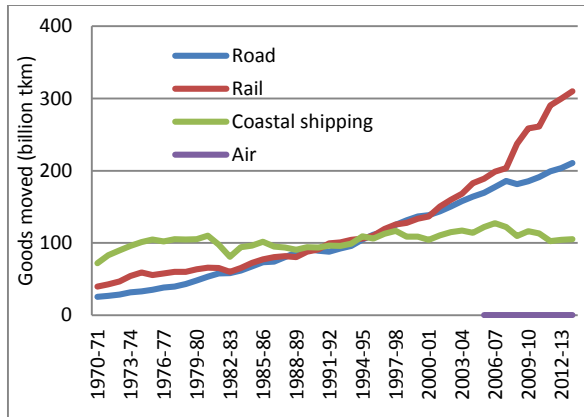


Source: Victorian Department of Transport (2013), Victorian Integrated Survey of Travel and Activity, <www.dtpli.vic.gov.au/transport/research-anddata/statistics/victorian-integrated-survey-of-travel-and-activity#data>.

7. What about freight?

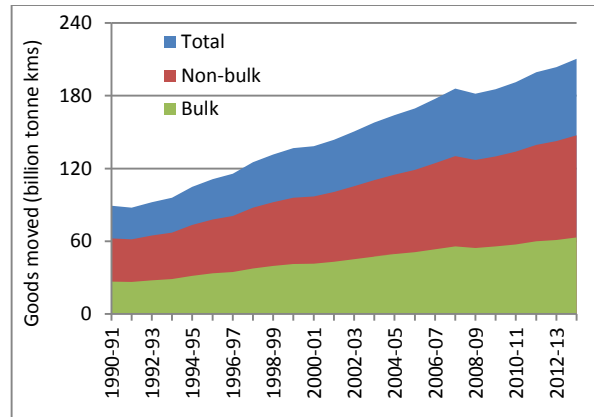
On an average day, nearly 5 million tonnes of freight are moved within Australia. Trucks move around 70 per cent (by weight) and dominate the non-bulk task. Rail moves 28 per cent and is stronger in bulk transport. The remaining two per cent is mainly coastal shipping with negligible amounts of domestic freight carried by air. It is important to note that goods moved by rail (and coastal shipping) travel longer distances and thus rail freight has the highest share (by tonne-kilometre or tkm). Since 2002-03, rail freight share overtook road freight share. In 2013-14, rail freight share was 49 per cent, while road freight share was 33.5 per cent. Freight moved by air is a very small component of total freight moved (around 0.4 billion tkm).

Figure 16: Total domestic freight (bulk and non-bulk) by transport mode, 1970-71 to 2013-14, Australia



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics 2015, Figure T 2.1c, BITRE, Canberra.

Figure 17: Total bulk and non-bulk domestic freight, 1970-71 to 2013-14, Australia

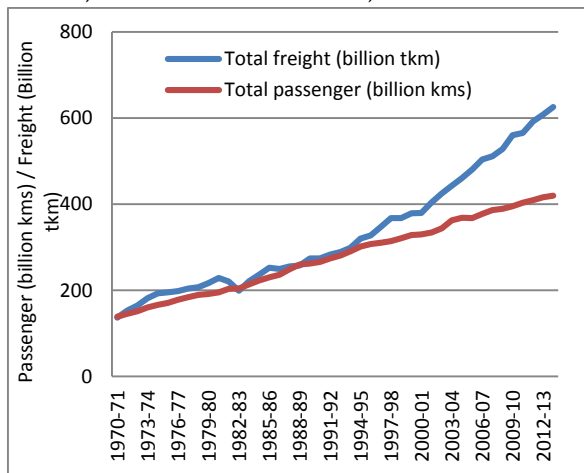


Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics 2015, Tables T 2.1a and T 2.1b, BITRE, Canberra.

8. Is freight transport increasing?

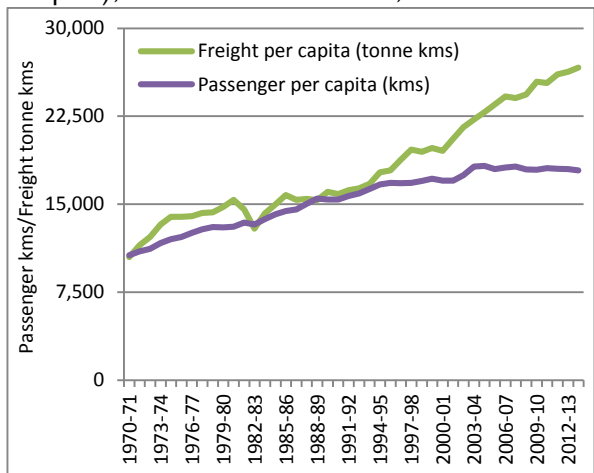
Freight transport is increasing at a much faster rate than passenger transport. Road freight, for example, has doubled in the last 20 years. Much of our freight involves international trade, with container movement through ports growing at more than six per cent a year and bulk freight at ports growing by nearly 4 per cent per annum.

Figure 18: Total freight and passenger travel, 1970-71 to 2013-14, Australia



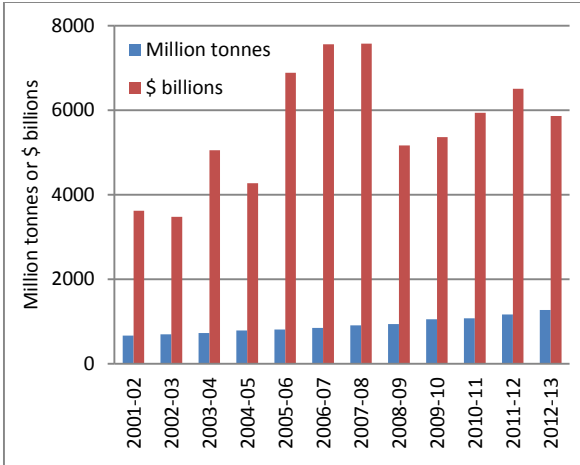
Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Tables T 2.1c, T 3.1 and Figure T2, BITRE, Canberra.

Figure 19: Total freight and passenger (per capita), 1970-71 to 2013-14, Australia



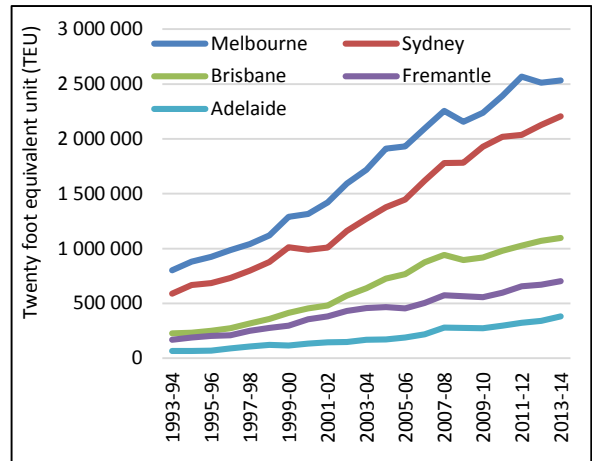
Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Tables I 1.5c, T 2.1c and T 3.1, BITRE, Canberra.

Figure 20: Shipping cargo loaded (including exports) and cargo discharged (including imports) at Australian ports



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, table 7.4a, Table 7.4b and ABS Customized data.

Figure 21: Containers exchanged, selected Australian ports, 1993-94 to 2013-14

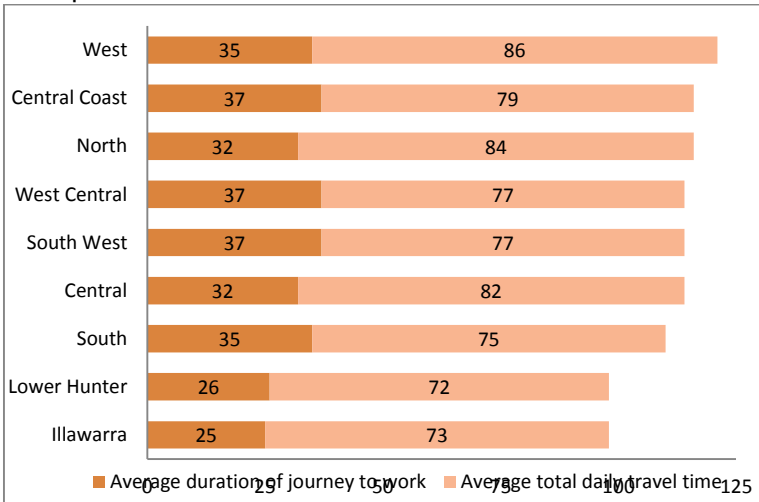


Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Tables T 7.7, BITRE, Canberra.

9. Are we commuting longer?

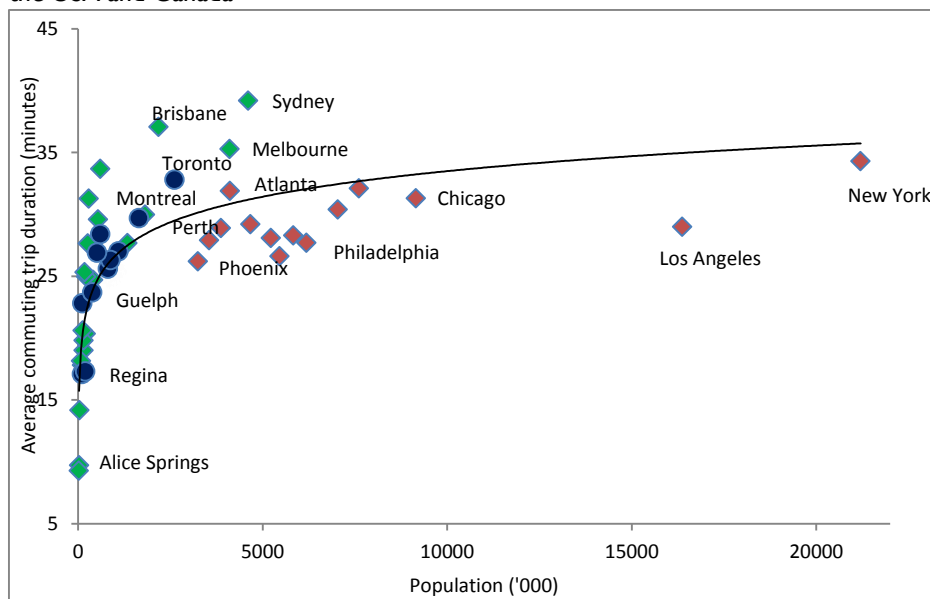
As cities increase in size, commuting times rise until they reach about 35 minute for a one way commute - the Marchetti's constant and then stabilize. Australian cities generally have longer average commuting times than US or Canadian cities of similar sizes.

Figure 22: Average duration of journey to work and average total daily travel time, 2012-13, Sydney Greater Metropolitan Area



Source: BTS (2014) 2012/13 Household Travel Survey Summary data.

Figure 23: Relationship between population and average commuting trip duration, selected cities in Australia, the USA and Canada



Note: The co-efficient of regression (R^2) is 0.65.

Sources: For Australian cities, BITRE (2016) Lengthy Commutes in Australia, Report 144, BITRE, Canberra.

For USA cities, Gordon P and Lee B (2015) Spatial structure and travel: trends in commuting and non-commuting travels in US metropolitan areas, Chapter 6, In: Handbook on Transport and Development (Edited by Hickman R, Givoni M, Bonilla D and Banister D), Edward Elgar Publishing, Cheltenham, UK.

For Canadian cities, Statistics Canada (2011), National Household Survey and 2011 Census.

10. How do we pay for transport?

There is not a direct link between transport related revenue and expenditure in Australia. Rather, transport related taxes and charges go into general revenue and transport expenditure comes from the same source.

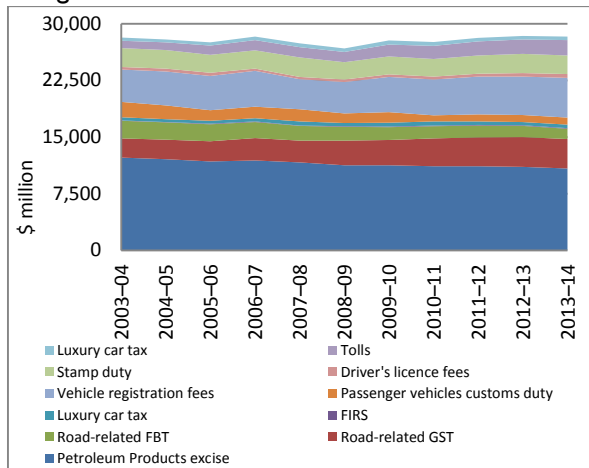
Road related revenue includes registration, license fees and vehicle related taxes, tolls and fuel excise. A major challenge for road transport agencies around the world is that revenue from fuel excise is falling due to more fuel efficient vehicles and the increasing penetration of electric vehicles into the fleet. Heavy vehicles do more damage to roads and this is assessed annually by the National Transport Commission¹ who sets the fees and charges for heavy vehicles accordingly.

Passenger rail and most bus systems are funded by a mixture of fare box revenue (around 25%) and subsidies by state and territory taxpayers. Freight rail charging is usually separated into above and below rail. The owners of the freight pay the rolling stock owner who then pays a portion of this to the rail network owner.

In 2013-14, governments spent \$26.8 billion on roads and \$8.9 billion on rail.

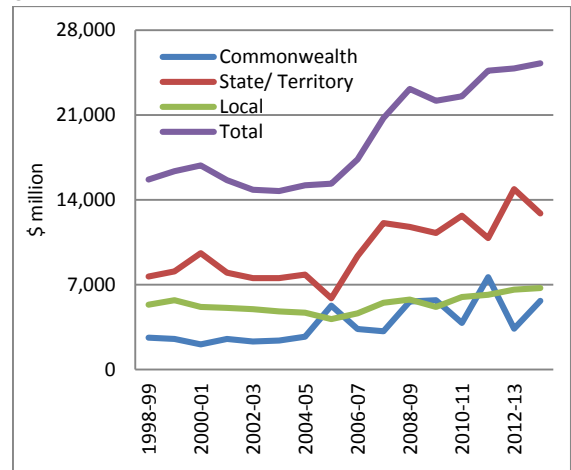
¹ National heavy vehicles charges, set by the Transport and Infrastructure Council based on recommendations from the National Transport Commission aim to recover the capital and regulatory expenditure as well as road wear costs (approximated by maintenance expenditure) attributable to heavy vehicles.

Figure 24: Selected road-related taxes and charges



Note: Constant 2013-14 prices, adjusted by ABS Consumer Price Index).
 Source: BITRE (2015), Yearbook: Australian Infrastructure Statistics, Drawn from Table T 1.4, BITRE, Canberra.

Figure 25: Road-related expenditure by level of government

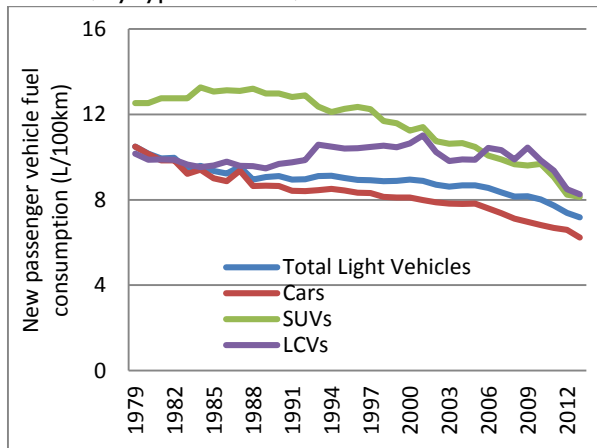


Note: Constant 2013-14 prices, adjusted by ABS Consumer Price Index).
 Source: BITRE (2015), Yearbook: Australian Infrastructure Statistics, Drawn from Tables T 1.2e and T 1.4, BITRE, Canberra.

1.1. Is transport becoming more energy efficient and causing less emissions?

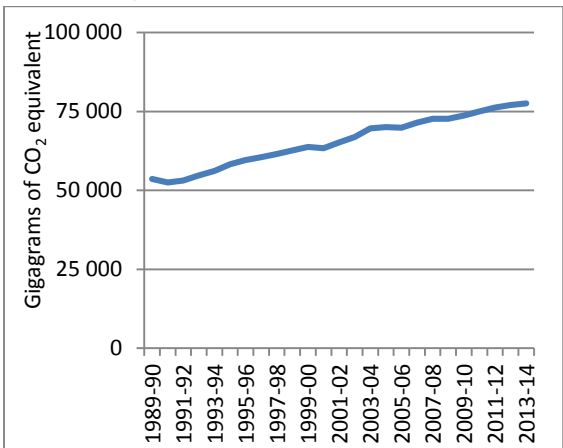
Yes. If you drove an average car out of the showroom in 1979 you would have expected its fuel consumption to be around 10L/100km. Today your car would be nearly 50 per cent more powerful than the 1979 model but could expect a little over 7L/100km. Fuel consumption trends are strongly downward. Transport is emitting less greenhouse gases per kilometre but total transport demand is rising faster. This means that emissions are rising by around one per cent per year. Since the turn of the last century, nitrous oxide and methane levels have been falling.

Figure 26: Rated National Average Fuel Consumption by Australian new passenger vehicles, by type of vehicle, 1979–2013



Source: BITRE (2015), New passenger vehicle fuel consumption trends, 1979 to 2013, Information Sheet 66, Redrawn from Figure 2b, BITRE, Canberra.

Figure 27: Total road transport direct greenhouse gas (carbon dioxide equivalent) emissions, 1989-90 to 2013-14, Australia



Source: BITRE (2015), Yearbook 2015: Australian Infrastructure Statistics, Table T 9.5, BITRE, Canberra.

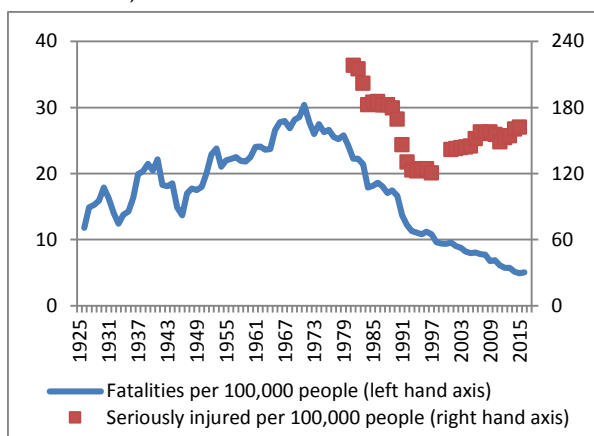
12. Is transport safety improving?

Transport safety in Australia is really a story about roads. More than 1,150 people died on the nation's roads in 2014 compared to just 36 from trains, ships and aircraft combined.

The rate of road fatalities per 100,000 people has declined dramatically in Australia since 1970. Injury rates are more difficult to measure, but the data we have suggests that after a period of decline, the rate started to rise around the turn of the century. This indicates that the chances of being killed on the road are vastly less than it was forty years ago, but the probability of being seriously injured has risen since around 2000.

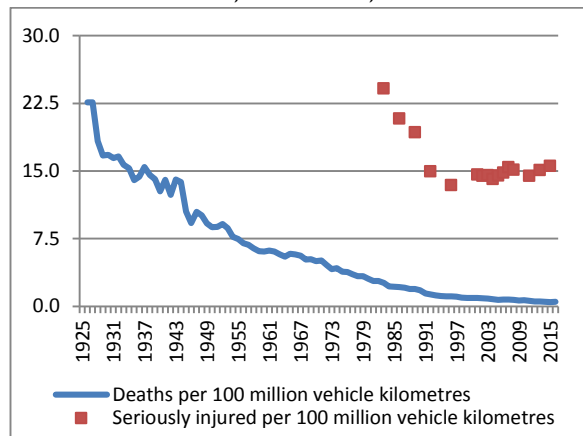
While the number of young people involved in serious road crashes is trending down, they are still overrepresented compared to other age groups. Similarly, the accident rate in regional-remote areas is also trending down, but remains well above the average.

Figure 28: Road fatalities and serious injuries, 1925-2015, Australia



Source: Updated Road Deaths in Australia 1925-2008, Information Sheet 38, BITRE, Canberra.

Figure 29: Road deaths and serious injuries per vehicle kilometre, 1925-2015, Australia



Source: Updated Road Deaths in Australia 1925-2008, Information Sheet 38, BITRE, Canberra.

Want to know more?

BITRE Publication		Link
COMMUTING		
Lengthy commutes in Australia	Report 144	http://bitre.gov.au/publications/2016/rr_144.aspx
Population growth, jobs growth and commuting flows—a comparison of Australia's four largest cities	Report 142	http://bitre.gov.au/publications/2013/report_142.aspx
Population growth, jobs growth and commuting flows in South East Queensland	Report 134	http://bitre.gov.au/publications/2013/report_134.aspx
Population growth, jobs growth and commuting flows in Sydney	Report 132	http://bitre.gov.au/publications/2012/report_132.aspx
Population growth, jobs growth and commuting flows in Melbourne	Report 125	http://bitre.gov.au/publications/2011/report_125.aspx
Population growth, jobs growth and commuting flows in Perth	Report 119	http://bitre.gov.au/publications/2010/report_119.aspx
Australia's commuting distance: cities and regions	Info Sheet 73	http://bitre.gov.au/publications/2015/is_073.aspx
FREIGHT		
Road freight estimates and forecasts in Australia: interstate, capital cities and rest of state	Report 121	http://bitre.gov.au/publications/2010/report_121.aspx
Interstate freight in Australia	Report 120	http://bitre.gov.au/publications/2010/report_120.aspx
Freight Measurement and Modelling in Australia	Report 112	http://bitre.gov.au/publications/2006/report_112.aspx
Freightline 1	Statistical Report	http://bitre.gov.au/publications/2014/freightline_01.aspx
Freightline 2	Statistical Report	http://bitre.gov.au/publications/2014/freightline_02.aspx
Freightline 3	Statistical Report	http://bitre.gov.au/publications/2015/freightline_03.aspx
Australian road freight estimates: 2014 update	Info Sheet 62	http://bitre.gov.au/publications/2014/is_062.aspx
RAIL		
TrainLine 1	Statistical Report	http://bitre.gov.au/publications/2012/train_001.aspx
TrainLine 2	Statistical Report	http://bitre.gov.au/publications/2014/train_002.aspx
TrainLine 3	Statistical Report	http://bitre.gov.au/publications/2015/train_003.aspx
Rail Freight Performance Indicators 2007–08	Statistical Report	http://bitre.gov.au/publications/2010/arfpi_2007_08.aspx
STATISTICAL YEAR BOOK		
Australian infrastructure statistics—Yearbook 2015 and Key Australian infrastructure statistics booklet 2015	Statistical Report	http://bitre.gov.au/publications/2015/yearbook_2015.aspx
ENERGY		
Road vehicle-kilometres travelled: estimation from state and territory fuel sales	Report 124	http://bitre.gov.au/publications/2011/report_124.aspx
State and Capital City vehicle kilometres travelled, 1990–2012	Info Sheet 44	http://bitre.gov.au/publications/2012/is_044.aspx
New passenger vehicle fuel consumption trends, 1979 to 2013	Info Sheet 66	http://bitre.gov.au/publications/2014/is_066.aspx
SAFETY		
Impact of road trauma and measures to improve outcomes	Report 140	http://bitre.gov.au/publications/2014/report_140.aspx
Cost of road crashes in Australia 2006	Report 118	http://bitre.gov.au/publications/2010/report_118.aspx
Road Deaths in Australia 1925-2008	Info Sheet 38	http://bitre.gov.au/publications/2010/is_038.aspx
Road Safety Statistics	Statistical Report	http://bitre.gov.au/statistics/safety/index.aspx

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Prepared by Dr Afzal Hossain and Warwick Jones. For further information on this publication please contact bitre@infrastructure.gov.au

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Department of Infrastructure and Regional Development
Bureau of Infrastructure, Transport and Regional Economics (BITRE)
GPO Box 501, Canberra ACT 2601, Australia

Phone: (international) +61 2 6274 7210

Fax: (international) +61 2 6274 6855

Email: bitre@infrastructure.gov.au

Website: www.bitre.gov.au