



ROAD CONGESTION IN AUSTRALIA



Australian
Automobile
Association

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Foreword

Road congestion in Australia

Traffic congestion harms our quality of life, our economy and our environment.

Traffic jams push up emissions and air pollution—damaging public health and the environment.

Business costs rise and productivity declines when workers and goods are stuck in traffic. These costs end up being passed on to consumers, feeding into our rising cost of living.

Smart government investment can help reduce congestion. But we can only develop effective solutions for congestion if we have a strong understanding of the problem.

This report confirms what most people living in and around our capital cities know all too well— traffic congestion is a problem.

Billions of dollars have been invested in trying to improve congestion, but relief has been modest. In fact, congestion continues to worsen in some cities.

Since 2013, average driving speeds have declined in Australia's three largest cities—Sydney, Melbourne and Brisbane. On average, Australia's capital city CBD to airport routes have seen congestion increase by 7.3 per cent. Out of the 61 case study routes analysed, 70 per cent recorded a decline in travel time over this period.

Without decisive action, these congestion problems will only get worse and Australians will spend even more time in traffic.

In 2014–15, land transport congestion cost Australia \$18.7 billion¹. AAA research also found that in 2018–19, congestion costs are expected to exceed \$23 billion, which will be more than the value of all road-related expenditure.² Without major policy changes, congestion costs are projected to reach between \$30.6 and \$41.2 billion by 2030.³

The AAA *Road Congestion in Australia 2019* report is intended to help stimulate discussion and problem-solving so that Australia can develop smart measures to address traffic congestion.



Michael Bradley

Chief Executive
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Association

1 Productivity Commission 2017, *Shifting the Dial: 5 Year Productivity Review, Report No. 84* (2017), Canberra

2 Australian Automobile Association, *Infrastructure Funding Report Card* (2016), page 14.

3 Bureau of Infrastructure, Transport and Regional Economics, *Information Sheet 74: Traffic and congestion cost trends for Australian capital cities* (2015). The scenarios quoted are the Lower and Upper Baseline, respectively.



Introduction

Introduction

Overview

The AAA's *Road Congestion in Australia 2019* report evaluates the traffic speed performance of arterial road networks across all Australian capital cities.

The report uses GPS data provided by a leading global mapping company, HERE Technologies for the period 1 January 2013 to 31 December 2018. The traffic speed performance is evaluated across several measurements developed by economic consulting firm HoustonKemp.

The report measures:

- **Average speed:** The average speed across each road segment in the arterial road network.
- **AM and PM speed:** The average speeds recorded between 6am and 10am and 3pm to 7pm across each road segment in the arterial road network.
- **Percentage of speed limit (POSL):** A measure of congestion that compares the recorded average speed by the posted speed limit.
- **Percentage of free flow (POFF):** Another measure of congestion that compares the recorded average speed by a baseline speed recorded between 12am and 4am.
- **Variability:** Variability is inversely related to predictability and reliability. Highly variable average speeds reduce the reliability and predictability of journey time.

The percentage of speed limit is a useful medium to long-term congestion benchmark that reflects how infrastructure quality and investment affect road speed performance.

But acceleration and deceleration on the road network (stopping at traffic lights for example) and general road user behaviour mean it may not be possible to drive at the posted speed limit, even during periods with little traffic.

Therefore, the report also measures percentage of free flow. This is intended to measure the 'best' road performance that could be achieved without congestion. 2013 data is not available for this measurement, so the first available data point is for 2014.

The report also analyses performance along selected key routes in each capital city, including airport routes. While the comparative performance measurements provide an understanding of how city networks are performing overall, the key route analysis reveals how some routes are more congested than others.

By reporting on average speeds and congestion and providing analysis of key routes, this report will give deeper insights into how, where and when road performance is changing across the road network.

Understanding this report

This is the second congestion report released by the AAA using data from HERE Technologies. The first report, released in October 2018, analysed data from 1 January 2013 to 30 June 2018. This report includes new data for the last six months of 2018, plus revised data for the first half of 2018.

The performance measurements are for arterial roads in the Greater Capital City Statistical Areas (GCCSA), as defined by the Australian Bureau of Statistics. The GCCSAs are designed to represent the functional extent of each of the eight state and territory capital cities. They represent each city's labour market and draw upon Census *Journey to Work* data.

The performance measurements do not account for different configurations in road networks across Australia's capital cities. For example, the boundary does not account for variability of land use, population density and infrastructure availability.

Given the variability in network designs, some road performance indicators lend themselves more to inter-city comparisons than others. For example, variability and the measurements for congestion (percentage of free flow speeds and percentage of the speed limit) compare road performance against the capacity of the city's network. On the other hand, because cities have different speed limits and network configurations, average speeds are not appropriate for direct inter-city comparisons.

The report is most valuable for comparisons within each city and tracking the performance of individual road networks over time.

Key findings

National congestion measurements

There has been little change in the overall performance of the road network since 2013. While some cities have achieved small improvements in speeds and congestion, others have deteriorated. This indicates considerable variability in the performance of the road networks in and between each capital city.

Average speeds

Speeds in Melbourne, Sydney and Brisbane have deteriorated significantly since 2013.

Melbourne recorded the largest decline in average speeds among all capital cities—a reduction of 2.7 per cent since 2013.

Speeds in both Sydney and Brisbane fell by 1.4 per cent over the same period.

Brisbane was the only capital city to record a drop in average speeds between 2017 and 2018.

Adelaide recorded lower average speeds than every other capital city. Its average speed of 55.5 km/h is much slower than the capital city average of 65.2 km/h.

AM and PM speeds

Since 2013, AM speeds have declined by an average of 1.5 per cent across the three largest cities—Sydney, Melbourne and Brisbane.

Sydney has recorded the largest decline since 2013—a drop of 1.8 per cent.

Consistent with its decline in average speeds, Brisbane was the only capital city to record a fall in AM peak speeds between 2017 and 2018.

In Melbourne and Brisbane, PM speeds have declined but have remained relatively steady across other capital cities.

In Adelaide and Sydney, PM speeds were 9.5 km/h and 7 km/h slower than the capital city average of 64.6 km/h in 2018.

Percentage of speed limit

When measured against the percentage of speed limit, the worst congestion is in Melbourne, followed by Adelaide and Sydney.

On average, Melbourne drivers can drive at the posted speed limit just 78.3 per cent of the time.

Between 2013 and 2018, Adelaide recorded the largest deterioration in this measure. Its percentage of speed limit declined by 1.1 per cent to reach just 78.7 per cent, only slightly better than the Melbourne figures.

Brisbane was the only capital city to record a deterioration in this measure between 2017 and 2018.

Section One

Percentage of free flow speeds

When average speeds are measured against the percentage of free flow speeds, the most congested city is Sydney, followed by Perth and Melbourne.

The percentage of free flow results have been relatively stable across the capital cities. But consistency in these results can mask a deterioration in the road network, as the baseline free flow speeds (measured between 12am and 4am) have declined by an average of 4.1 per cent since 2013. Deteriorating free flow speeds can give cities misleadingly high performances in the percentage of free flow metric.

The overall deterioration in free flow speeds (shown below) clearly reveals that the underlying infrastructure, road quality and network configuration are not meeting road users' needs and are significantly impairing road performance. Not only is congestion hampering our road network—the network itself is also deteriorating.

Variability

The most variable road network is Melbourne's, closely followed by Sydney's.

On average the variability measurement shows some small improvement in the predictability of travel times, but the average figures mask considerable ranges in variability across each capital city.

For instance, the road performance between each capital city's CBD and its airport is highly variable, making travelling on these routes considerably more unpredictable than on most other routes.

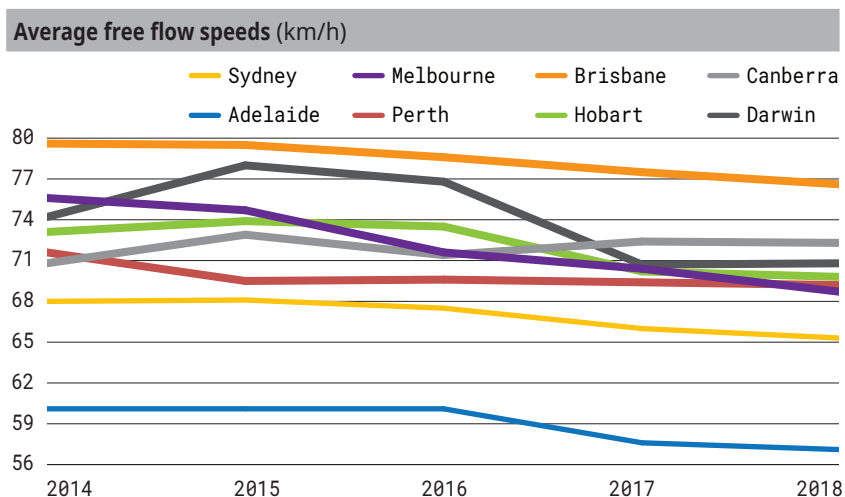
The capital city average variability is 22.5 per cent, while variability on the airport routes averages 27.7 per cent.

Case study routes

Analysis of case study routes in Section 4 shows increasing congestion along every CBD to airport route since 2013, with the exception of Perth. Melbourne's airport route congestion has grown much worse, with the percentage of free flow falling 28.2 per cent. Congestion on the Sydney, Hobart and Brisbane airport routes also deteriorated significantly.







Average speeds along airport routes have also declined—with Melbourne's declining by 19 per cent—10 times the capital city route average. Sydney, Darwin, Hobart and Adelaide also recorded declines in average airport route speeds.

Other capital city case study routes had a wide range of results. Some routes' performances improved but others declined. Melbourne's Melbourne CBD to airport route had the largest increase in travel time during the AM period (3.3 minutes), while Adelaide's South to CBD route had the biggest decrease in travel time during the AM period (2.4 minutes).









National summary - 2018







DARWIN

	AVERAGE SPEED	70.9 KM/H 
	AM SPEED	71.0 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	94.8% 







PERTH

	AVERAGE SPEED	63.2 KM/H 
	AM SPEED	61.9 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	91.3% 

ADELAIDE

	AVERAGE SPEED	55.5 KM/H 
	AM SPEED	55.0 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	80.8% 







HOBART

	AVERAGE SPEED	67.1 KM/H 
	AM SPEED	66.7 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	84.3% 

















BRISBANE

	AVERAGE SPEED	73.2 KM/H 
	AM SPEED	71.9 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	82.4% 







SYDNEY

	AVERAGE SPEED	59.6 KM/H 
	AM SPEED	57.0 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	86.1% 

CANBERRA

	AVERAGE SPEED	69.0 KM/H 
	AM SPEED	67.9 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	97.5% 

MELBOURNE

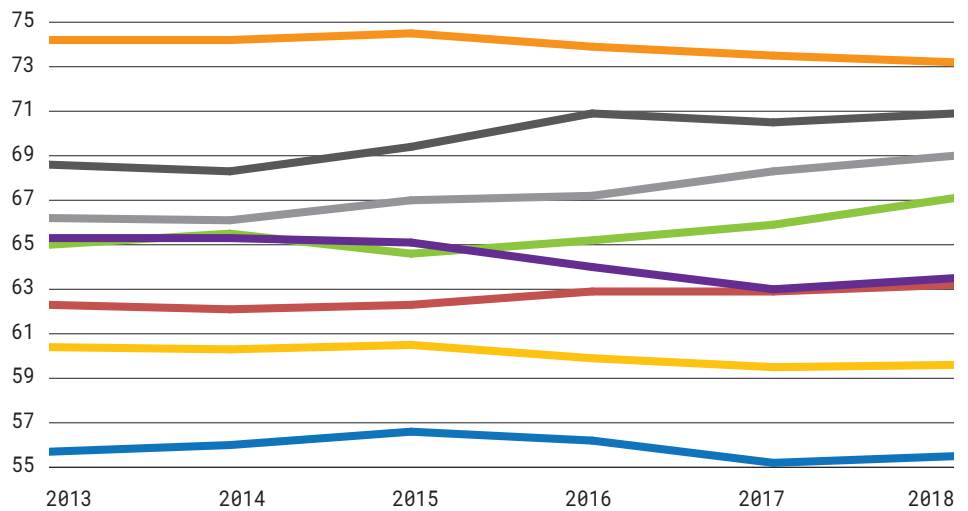
	AVERAGE SPEED	63.5 KM/H 
	AM SPEED	61.9 KM/H 
	CONGESTION ON AIRPORT ROUTES (POFF)	70.2% 

 = improved since 2013  = deteriorated since 2013

Section Two

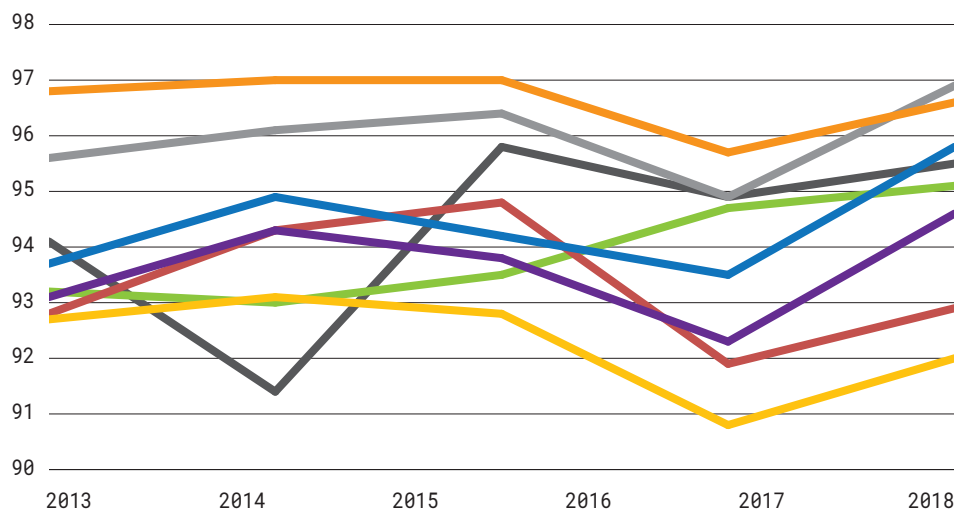
Average speed

City	Rank
Adelaide	8
Sydney	7
Perth	6
Melbourne	5
Hobart	4
Canberra	3
Darwin	2
Brisbane	1



Congestion—percentage of free flow

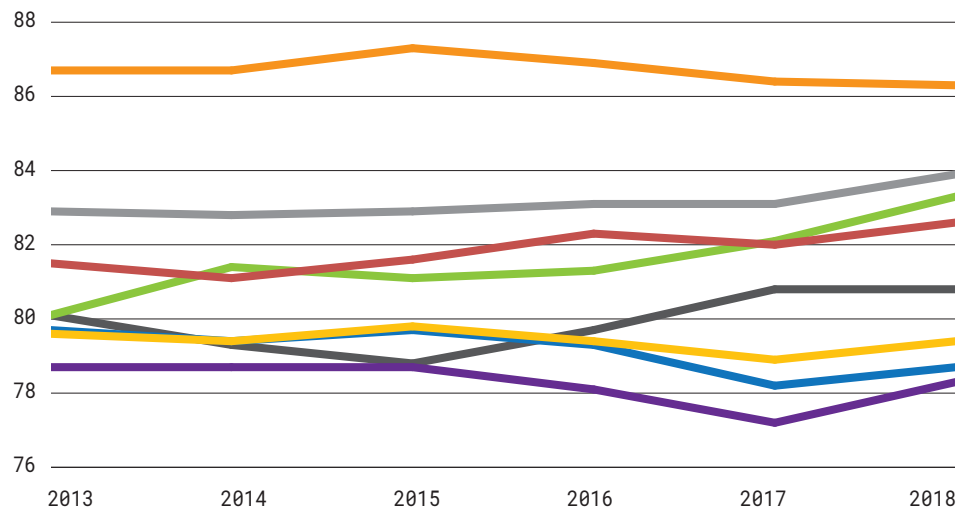
City	Rank
Sydney	8
Perth	7
Melbourne	6
Hobart	5
Darwin	4
Adelaide	3
Brisbane	2
Canberra	1



Section Two

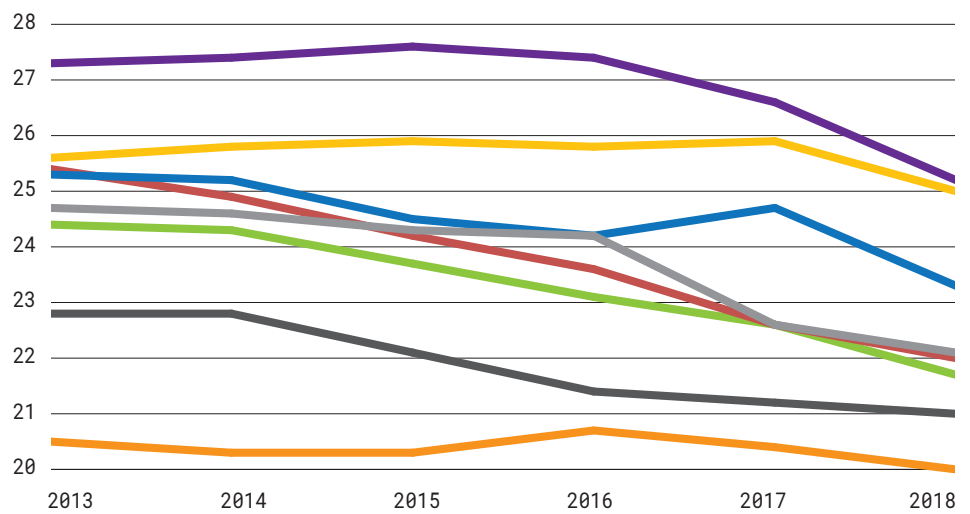
Congestion—percentage of speed limit

City	Rank
Melbourne	8
Adelaide	7
Sydney	6
Darwin	5
Perth	4
Hobart	3
Canberra	2
Brisbane	1



Variability

City	Rank
Melbourne	8
Sydney	7
Adelaide	6
Canberra	5
Perth	4
Hobart	3
Darwin	2
Brisbane	1



Section Three

City by city analysis

Sydney 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

1.4% SLOWER



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

24 SECONDS SLOWER



PERCENTAGE CHANGE IN VARIABILITY

0.6% LESS VARIABLE

Speeds

Sydney has the second slowest average speed across all capital cities. In 2018, the average speed was 59.6 km/h, almost 6 km/h below the capital city average of 65.2km/h. Since 2013, speeds have declined 1.4 per cent, but remained constant between 2017 and 2018.

Speeds during the AM peak period have declined by 1.8 per cent since 2013, while PM speeds have shown a slight improvement since 2016. Compared to other capital cities, Sydney's AM/PM peak speeds were the second lowest in 2018. Speeds in both peak periods are 7 km/h below the capital city average.

Congestion

Sydney's congestion is the worst in the country when measured against the percentage of free flow speeds. Congestion increased between 2014 and 2017. There was a slight improvement between 2017 and 2018, but this should be treated with some caution as benchmark free flow speeds have also declined.

The percentage of speed limit metric shows a similar trend. Using this metric, Sydney congestion declined between 2014 and 2017, while improving slightly in 2018. Overall, Sydney's congestion is almost the same as it was in 2013.

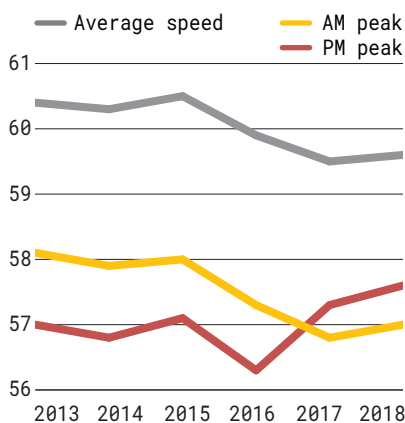
Variability

Sydney's road network is the second most variable among all capital cities.

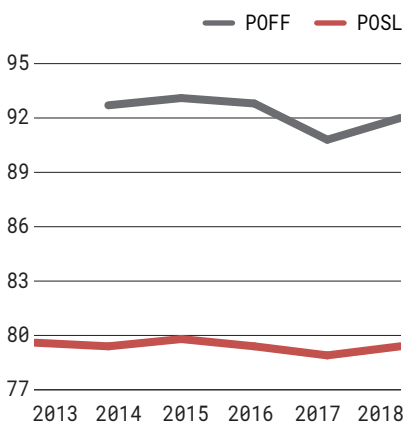
At 25.0 per cent, its variability is well above the capital city average of 22.5 per cent.

Sydney's variability rating has ranged between 25.9 per cent and 25 per cent over the last five years.

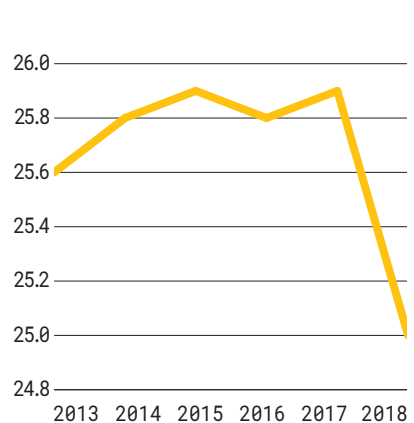
Average speeds v peak speeds (km/h)



Congestion: POFF v POSL (%)



Variability of travel time (%)



Section Three

Melbourne 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

 **2.7%** SLOWER



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

 **46** SECONDS SLOWER



PERCENTAGE CHANGE IN VARIABILITY

 **2.1%** LESS VARIABLE

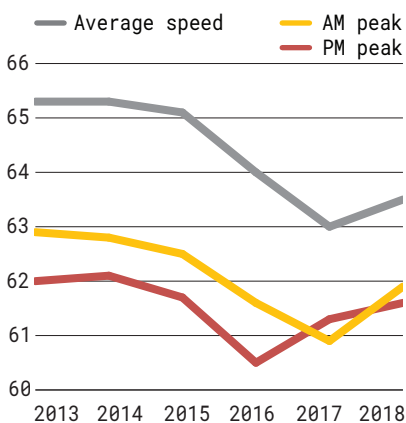
Speeds

Melbourne's average speeds have declined more than any other capital city's since 2013. The decline has occurred mainly since 2015. In 2013, Melbourne's average speeds were above the capital city average but in 2018 they were almost 2 km/h below the average of 65.2 km/h.

Speeds during the AM peak period have also declined. Since 2013, AM speeds have slowed 1.7 per cent, falling to 61.9 km/h.

PM speeds are lower than they were in 2013, despite an improvement since 2016.

Average speeds v peak speeds (km/h)

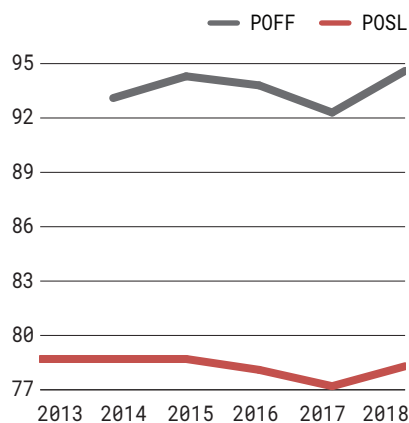


Congestion

When measured against percentage of free flow speeds, Melbourne congestion increased between 2014 and 2017 but improved in 2018. However, this improvement should be treated cautiously, as the benchmark free flow speeds also declined in 2018.

Measured against the percentage of speed limit, Melbourne has the worst congestion in the country. The percentage of speed limit in Melbourne declined from 78.7 per cent in 2013 to a low of 77.2 per cent in 2017. In 2018, it increased to 78.3 per cent, but still remained below the 2013 measurement.

Congestion: POFF v POSL (%)

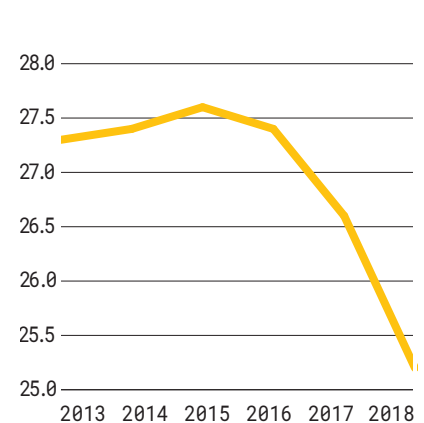


Variability

Melbourne's road network has the most variable speeds among all capital cities.

There has been some improvement since 2013, but its variability measure is 25.2 per cent, well above the capital city average of 22.5 per cent.

Variability of travel time (%)



Section Three

Brisbane 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

 **1.4%** SLOWER



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

 **20** SECONDS SLOWER



PERCENTAGE CHANGE IN VARIABILITY

 **0.5%** LESS VARIABLE

Speeds

Brisbane's average speeds continue to decline. Despite recording higher speeds than other capital cities, Brisbane was the only capital city to record a decline in average speeds between 2017 and 2018.

Speeds during the AM peak period have declined more than PM peak speeds. AM peak speeds have reduced 1.7 per cent since 2013, while PM peak speeds have remained relatively constant at 72 km/h. Consistent with overall average speeds, Brisbane was the only capital city to record declines in peak period speeds between 2017 and 2018.

Congestion

When measured against percentage of free flow speeds, Brisbane congestion became worse between 2015 and 2017 but improved marginally between 2017 and 2018. Despite the marginal improvement in 2018, Brisbane's percentage of free flow speed is lower than it was in 2014, indicating no improvement in congestion over the period.

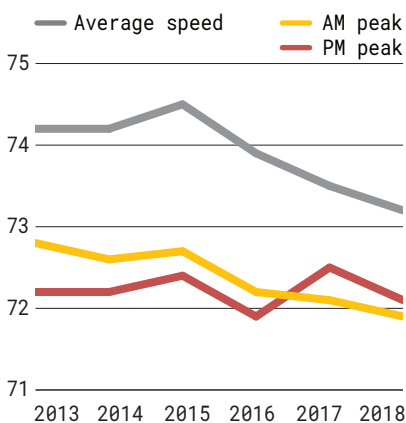
When considered against percentage of speed limit, Brisbane congestion worsened between 2013 and 2018. In fact, Brisbane was the only capital city to record worsening congestion under the percentage of speed limit metric in 2018.

Variability

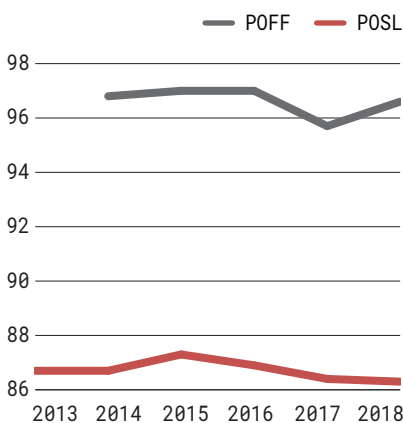
The variability of Brisbane's road network worsened between 2013 and 2016.

But since 2016, there has been a slight improvement of 0.7 per cent.

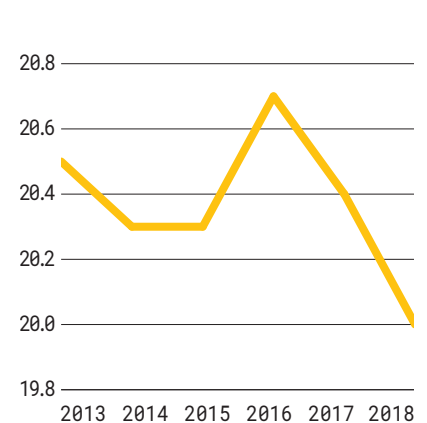
Average speeds v peak speeds (km/h)



Congestion: POFF v POSL (%)



Variability of travel time (%)



Section Three

Canberra 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

4.2% FASTER

Speeds

Average speeds in Canberra have improved every year since 2013. In 2018, average speeds were 69 km/h, 4 per cent higher than the 2013 average speeds.

AM and PM speeds have also improved. AM speeds improved from 65.3 km/h in 2013 to 67.9 km/h in 2018, while PM speeds improved from 65.6 km/h in 2013 to 68.5 km/h in 2018.



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

66 SECONDS FASTER

Congestion

Measured against the percentage of free flow speeds, congestion in Canberra deteriorated between 2015 and 2017 but improved almost 2 per cent between 2017 and 2018.

When considered against the percentage of speed limit, congestion has reduced by 1 per cent since 2013, and Canberra is now the second-least congested city.



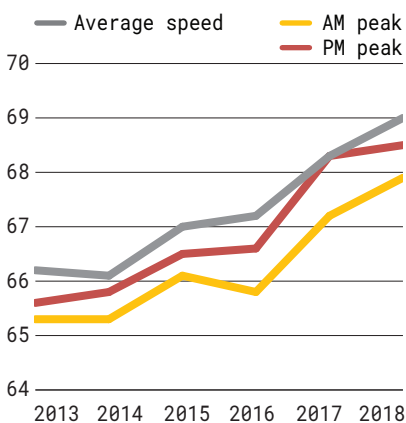
PERCENTAGE CHANGE IN VARIABILITY

2.7% LESS VARIABLE

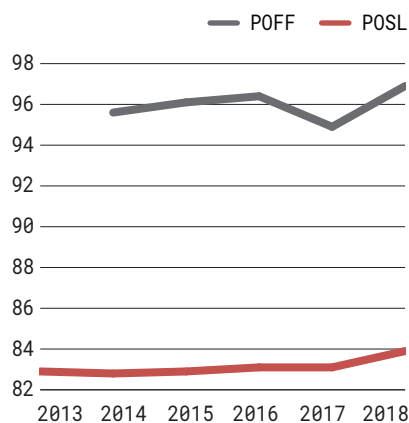
Variability

The variability of Canberra's road network has remained relatively constant between 2013 and 2016, but reduced in 2017 and again in 2018. Variability has reduced 2.7 per cent since 2013.

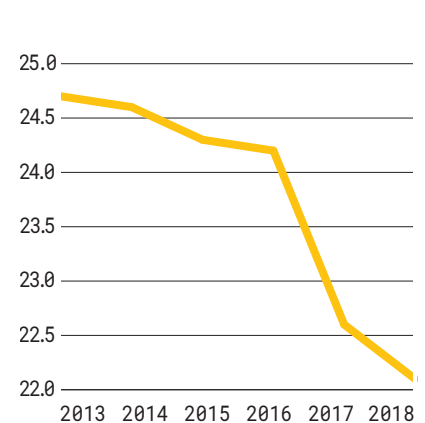
Average speeds v peak speeds (km/h)



Congestion: POFF v POSL (%)



Variability of travel time (%)



Section Three

Adelaide 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

0.4% SLOWER



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

7 SECONDS SLOWER



PERCENTAGE CHANGE IN VARIABILITY

2% LESS VARIABLE

Speeds

Adelaide recorded the lowest average speeds among all capital cities. Average speeds improved between 2014 and 2016 but declined in 2017 and 2018. Average speeds are now at 55.5 km/h, almost 10 km/h below the capital city average of 65.2 km/h.

AM and PM speeds are similarly well below capital city averages. AM speeds were 55 km/h in 2018, compared to the capital city average of 64.2 km/h, while PM speeds were 55.1 km/h, compared to the capital city average of 64.6 km/h.

Congestion

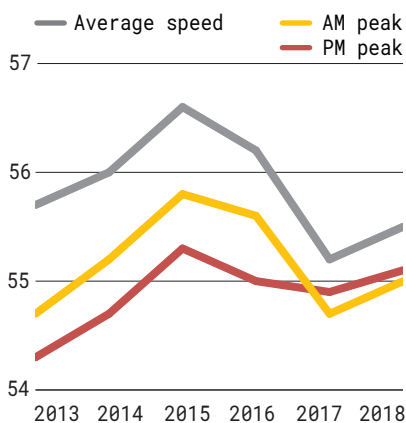
When measured against percentage of free flow speeds, congestion in Adelaide deteriorated between 2015 and 2017 but improved in 2018 by more than 2 per cent. This improvement should be treated cautiously, as the benchmark free flow speeds (recorded between 12am and 4am) also declined.

When considered against percentage of speed limit, Adelaide is the second most congested city, behind Melbourne. In 2018, Adelaide recorded a percentage of speed limit of 78.7 per cent, 1.1 per cent below 2013, and 3.0 per cent below the capital city average of 81.7 per cent.

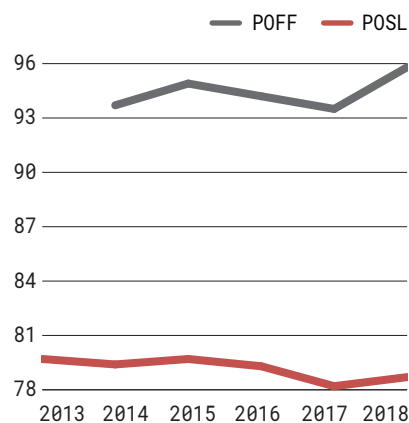
Variability

The variability of Adelaide's road network has improved by 2.0 per cent since 2013 to 23.3 per cent. However, it is still more variable than the capital city average of 22.5 per cent.

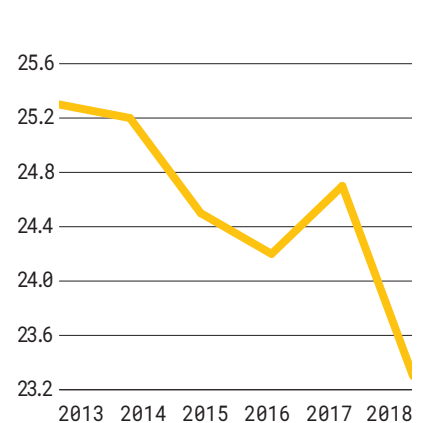
Average speeds v peak speeds (km/h)



Congestion: POFF v POSL (%)



Variability of travel time (%)



Section Three

Perth 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

1.4% FASTER

Speeds

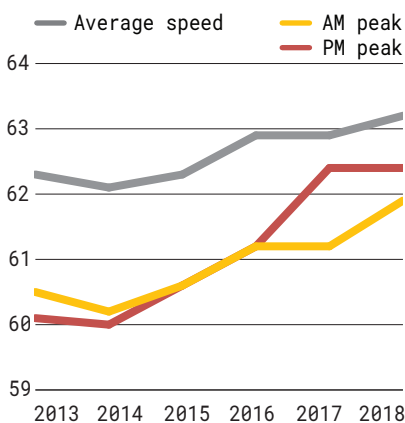
Perth's average speeds have improved slightly since 2013.

However, they remain below the capital city average of 65.2 km/h and are the third lowest among capital cities.

AM speeds were 61.9 km/h in 2018, below the capital city average of 64.2 km/h.

PM speeds were 62.4 km/h, compared to the capital city average of 64.6 km/h.

Average speeds v peak speeds (km/h)



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

23 SECONDS SLOWER

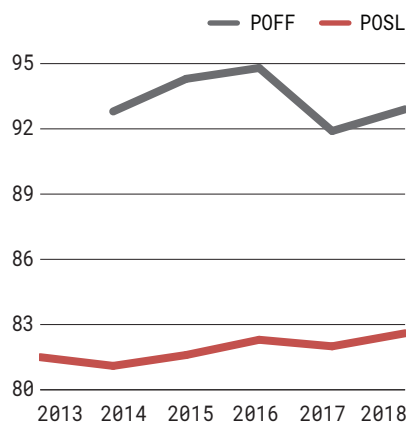
Congestion

When measured against percentage of free flow speeds, Perth's congestion deteriorated between 2015 and 2017 but improved in 2018.

In 2018, congestion levels were almost the same as the levels of 2013, indicating no improvement in congestion over the period.

When considered against percentage of speed limit, Perth's congestion has been improving slightly since 2016.

Congestion: POFF v POSL (%)



PERCENTAGE CHANGE IN VARIABILITY

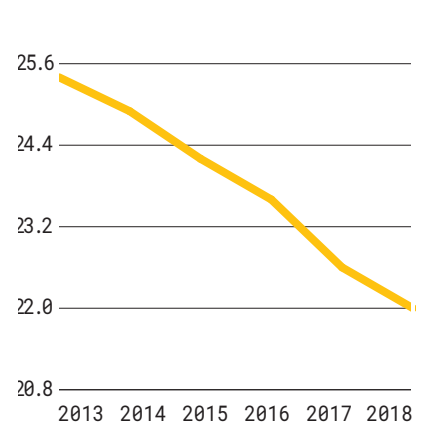
3.3% LESS VARIABLE

Variability

The variability of Perth's road network has reduced 3.3 per cent since 2013 to 22.0 per cent, slightly better than the capital city average of 22.5 per cent.

This change indicates that Perth's speeds are more reliable than five years ago.

Variability of travel time (%)



Section Three

Hobart 1 January 2013 to 31 December 2018



PERCENTAGE CHANGE IN AVERAGE SPEEDS

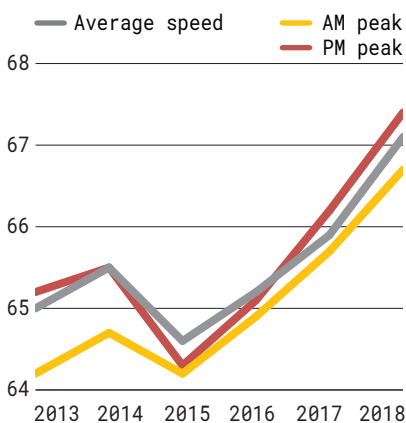
3.2% FASTER

Speeds

Hobart's average speeds declined between 2013 and 2015, but they have improved in the years since. Average speeds in 2018 were 3.3 per cent higher than in 2013. Hobart has the third fastest average speeds among capital cities.

AM and PM peak speeds have followed a similar trend to overall average speeds. AM and PM speeds remained relatively constant between 2013 and 2016 before improving in 2017 and 2018. PM speeds are marginally higher than AM speeds.

Average speeds v peak speeds (km/h)



TRAVEL TIME LOSS/GAIN FOR 30km TRIP

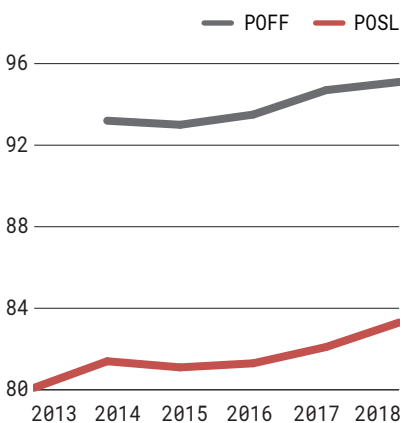
23 SECONDS SLOWER

Congestion

The percentage of free flow speeds in Hobart indicates a small improvement in congestion. Congestion remained relatively static between 2013 and 2016, before improving in 2017 and 2018. Overall, Hobart is the fifth most congested capital city.

The percentage of speed limit measurement shows a similar trend to the percentage of free flow. Using this metric, congestion improved in 2017 and 2018 after three years of no improvement.

Congestion: POFF v POSL (%)



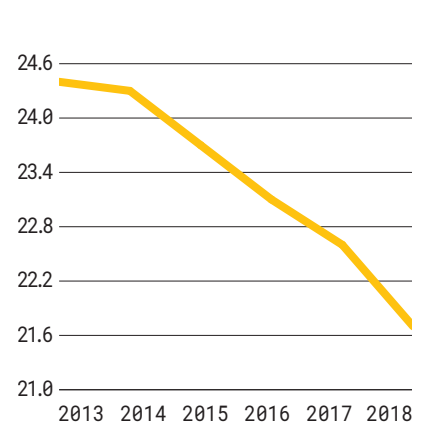
PERCENTAGE CHANGE IN VARIABILITY

2.8% LESS VARIABLE

Variability

Hobart's speeds are more reliable than five years ago. Since 2013, the variability of Hobart's road network has reduced by 2.8 per cent to 21.7 per cent.

Variability of travel time (%)



Section Three

Darwin 1 January 2013 to 31 December 2018



**PERCENTAGE CHANGE
IN AVERAGE SPEEDS**

3.3% FASTER



**TRAVEL TIME LOSS/GAIN
FOR 30km TRIP**

50 SECONDS FASTER



**PERCENTAGE CHANGE
IN VARIABILITY**

1.7% LESS VARIABLE

Speeds

Darwin's average speeds declined in 2013 and 2014 before improving between 2015 and 2018. Average speeds in 2018 were 3.3 per cent higher than in 2013. Darwin has the second fastest capital city average speeds.

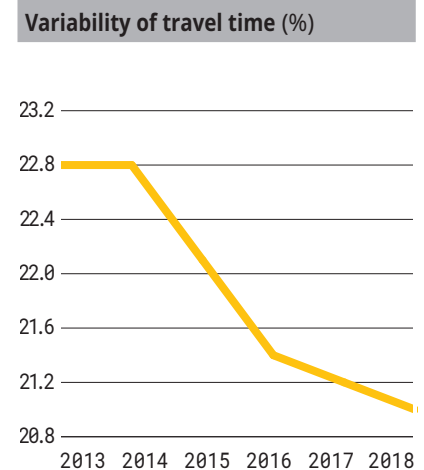
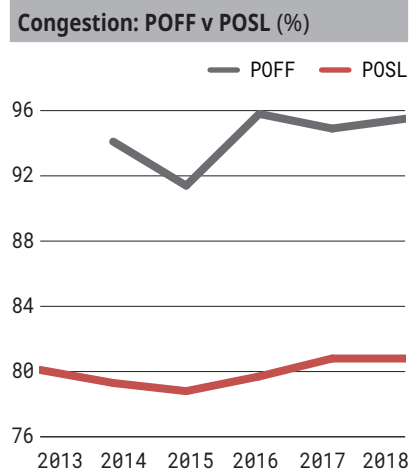
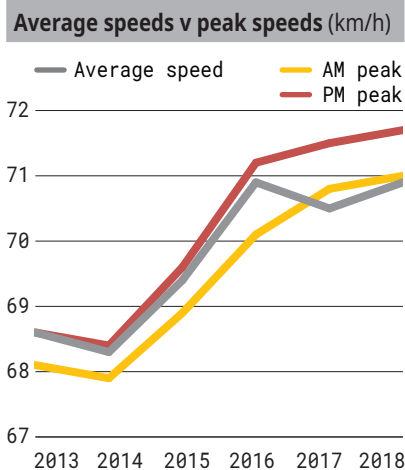
Its AM and PM speeds have improved by 4.2 per cent and 4.5 per cent since 2013—the largest improvement among all capital cities.

Congestion

When measured against the percentage of free flow speed, Darwin's congestion deteriorated between 2014 and 2015. Since then, congestion has improved. Using the percentage of speed limit metric, congestion has barely improved since 2013.

Variability

The variability of Darwin's road network has reduced 1.7 per cent since 2013 to 21.0 per cent. Darwin has the second least variable network among capital cities.



Section Four

Case study journeys

Overview

The capital city results help us understand how city networks are performing overall. But users of the road network know some routes are more congested than others.

In this section, several 'case study' routes have been selected for tracking over time. The results track road performance from 1 January 2013 to 31 December 2018.

These are major transit routes based on net migration flows drawn from journey to work data.⁴

Some variations to the migration flows identified in the journey to work data have been used to ensure a range of transit routes are covered.

Airport routes are also analysed because they are likely to directly affect a city's productivity as they often form 'pinch points' in the road network. Unreliable travel to airports compromises access to key markets and restricts economic growth.

Airport routes

Average speeds

Speeds on capital city airport routes decreased by 1.9 per cent on average since 2013.

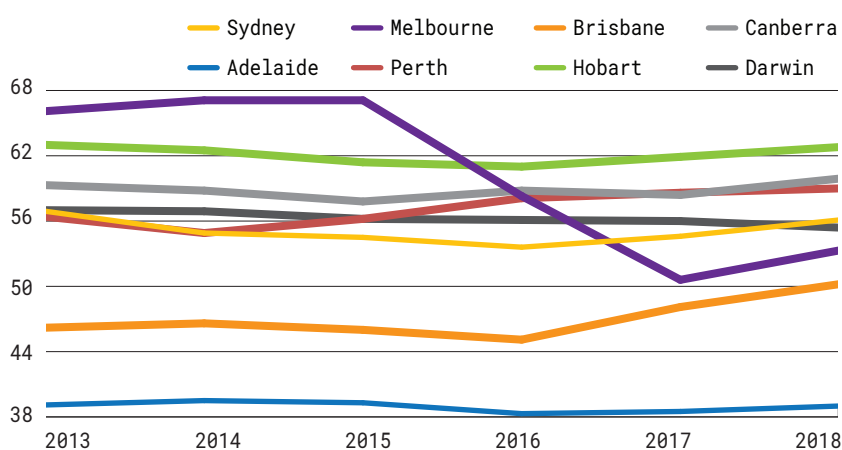
Speeds between the Melbourne CBD and Tullamarine Airport slowed significantly—down 19.3 per cent since 2013—far more than on any other route.

Speeds on Darwin's CBD-airport route declined by 2.9 per cent and Sydney's declined by 1.5 per cent.

Brisbane and Perth recorded improvements in average speeds between 2013 and 2018.

Adelaide recorded the lowest average speeds of just 39 km/h in 2018—well below the capital city average of 54.5 km/h.

Airport: Average speeds (km/h)



Airport route details

City	Average speed (km/h)	Average AM peak speed (km/h)	Average PM peak speed (km/h)	Percentage of free flow	Variability	Total change in average speed 2013–2018	Travel time loss/gain for 2013–2018 (minutes)
Sydney	56.1	47.8	54.5	86.1%	26.2%	-1.5%	+0.3
Melbourne	53.3	51.4	52.7	70.2%	34.6%	-19.3%	+5.0
Brisbane	50.2	48.8	51.0	82.4%	29.8%	+8.7%	-1.6
Canberra	59.9	58.6	58.7	97.5%	20.5%	+1.0%	-0.1
Adelaide	39.0	38.0	38.5	80.8%	30.3%	-0.2%	+0.0
Perth	59.0	56.3	57.2	91.3%	26.7%	+4.6%	-0.7
Hobart	62.8	60.0	63.9	84.3%	29.1%	-0.3%	+0.1
Darwin	55.4	55.2	55.1	94.8%	24.7%	-2.9%	+0.4

⁴ Journey to work in Australia: accessed at: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2071.0.55.001~2016~Main%20Features~Feature%20Article:%20Journey%20to%20Work%20in%20Australia~40>

Section Four

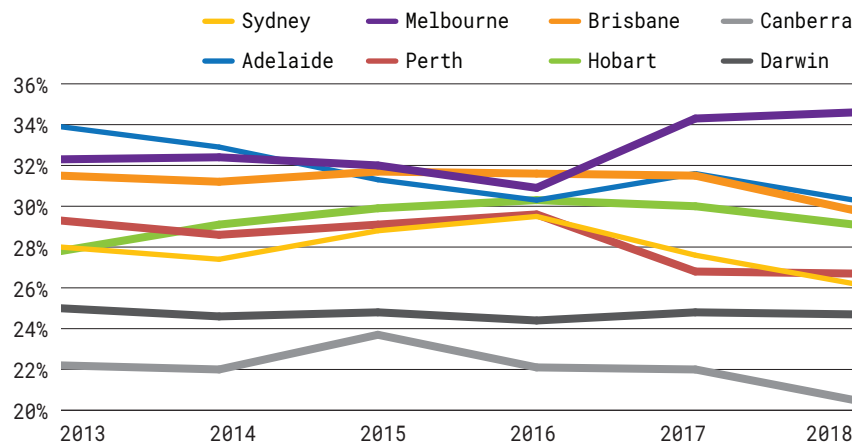
Variability

Most airport routes were more unreliable than capital city averages.

The drive between Tullamarine Airport and Melbourne CBD was the most variable—at 34.6 per cent—making it less reliable than any other route in Australia. The Adelaide, Brisbane and Hobart airport routes were also unreliable.

The most reliable airport route was Canberra's, followed by Darwin's.

Airport: Variability (%)



Congestion

Congestion has increased along almost all airport routes. Using the percentage of free flow measurement, congestion on these routes has worsened by an average of 7.3 per cent since 2013.

The Melbourne CBD-airport route is clearly the most congested, with a 70.2 per cent percentage of free flow measurement in 2018.

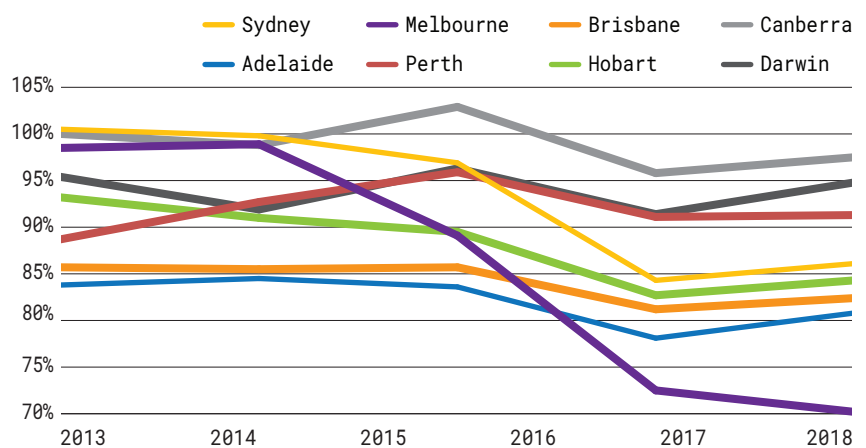
The next most congested airport route is Adelaide's, with a measurement of 80.8 per cent in 2018. Canberra's airport route was the least congested.

Congestion on Melbourne's airport route increased by 28.2 per cent since 2013. Sydney (14.4 per cent) and Hobart (8.9 per cent) also had big increases in airport route congestion.

Brisbane, Adelaide, Canberra and Darwin have all recorded increases in airport route congestion since 2013.

Congestion along Perth's airport route improved between 2013 and 2015, but deteriorated by 4.5 per cent between 2015 and 2018.

Airport: Congestion—percentage of free flow (%)



Section Four

Key routes: changes between 1 January 2013 and 31 December 2018

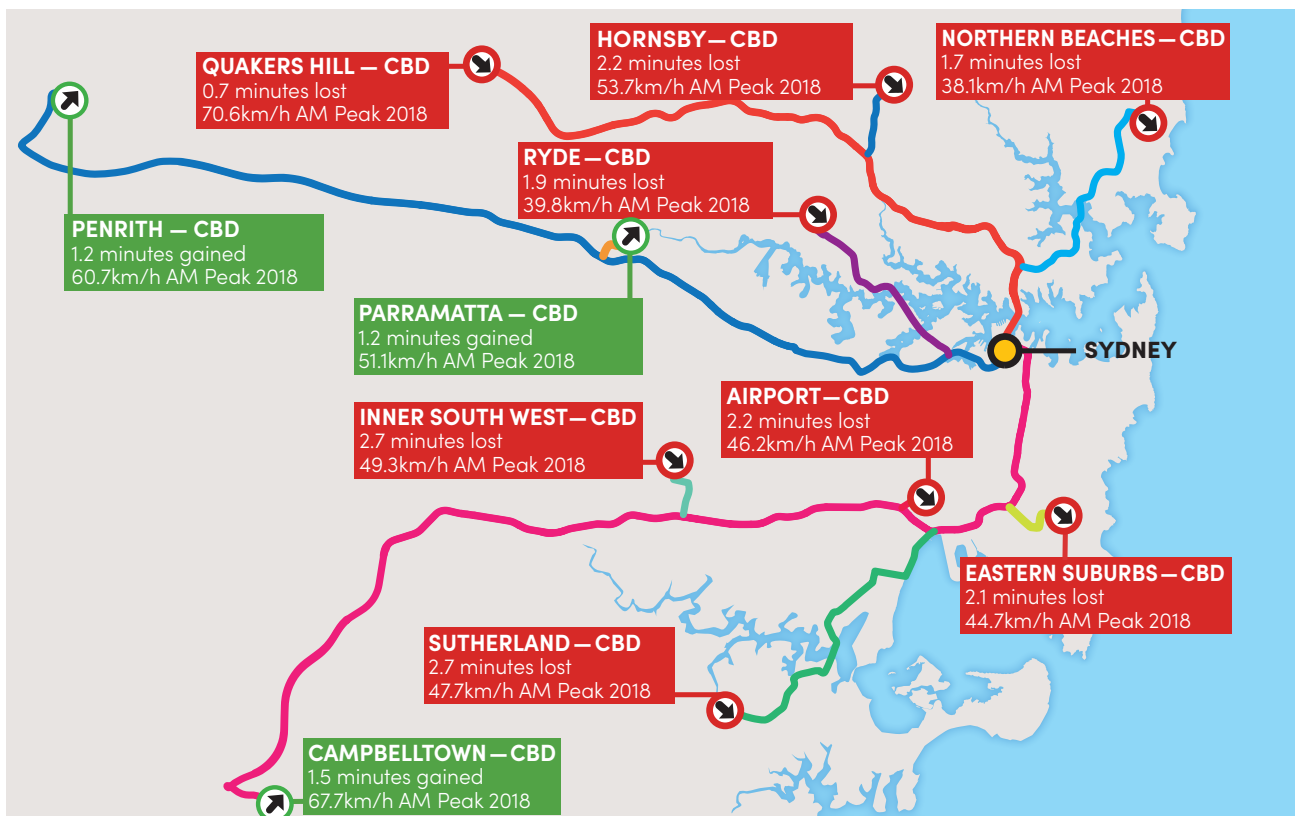
This section sets out the results of speed trends across key routes in every capital city.

The analysis provides a geographic picture of speed performance on major AM peak routes in each of these cities.

Sydney

Eight of the eleven routes in Sydney recorded a decline in travel time. The CBD to Hornsby, Airport and Inner South West routes lost between 1.4 and 1.7 minutes during the AM peak period.

In contrast, people living in Parramatta and Campbelltown gained an additional 1.4 to 2.0 minutes when travelling to the CBD in the AM peak period.



Section Four

Melbourne

There were no performance improvements across any of Melbourne's key AM peak routes. The Airport route to the Melbourne CBD has had the greatest increase

to average trip times, adding an additional 3.3 minutes to the trip, while trip times on the Dandenong and Epping to CBD routes both became 3.1 minutes longer.



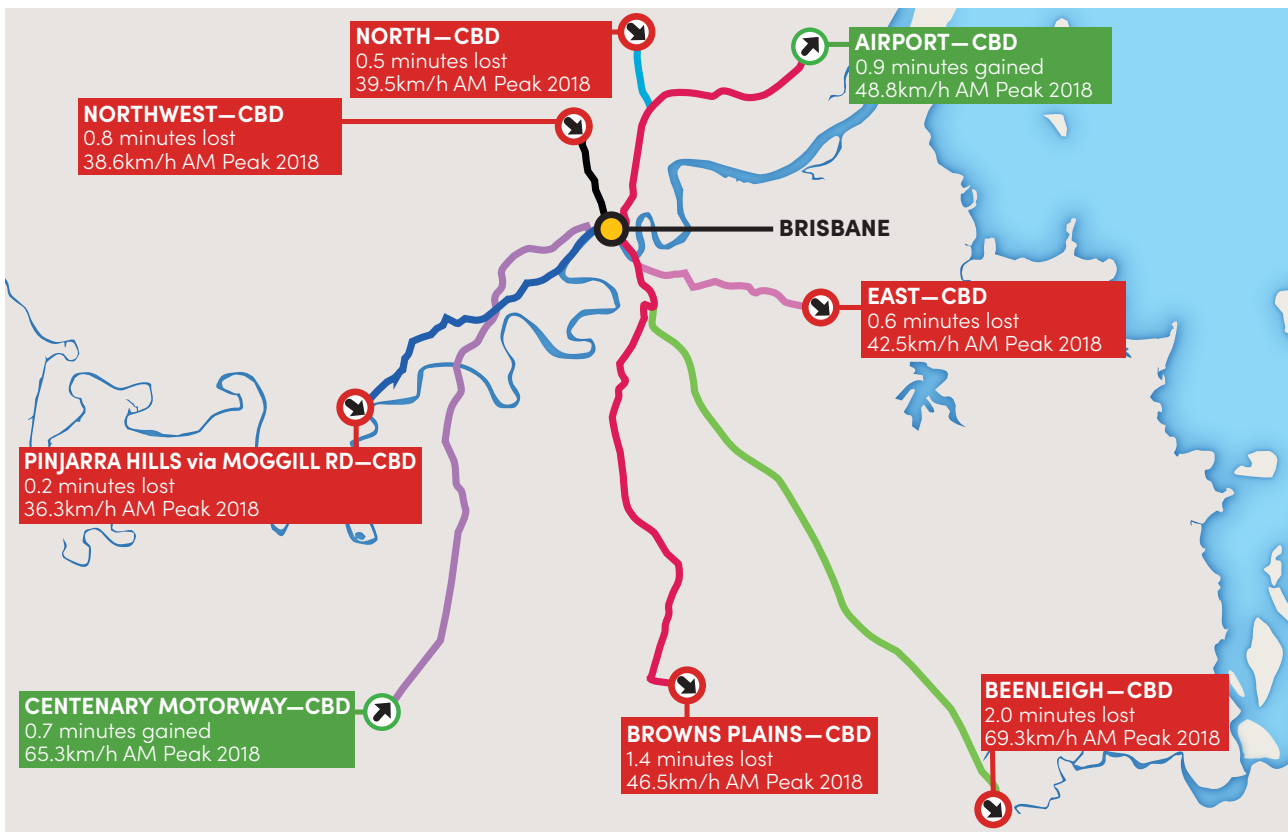
Section Four

Brisbane

Six of the eight key routes in Brisbane recorded worsening travel times.

The Beenleigh to CBD route was among Brisbane's most congested routes, with an average 2.0 minutes lost in the AM peak from 2013 to 2018. Similarly, motorists travelling from

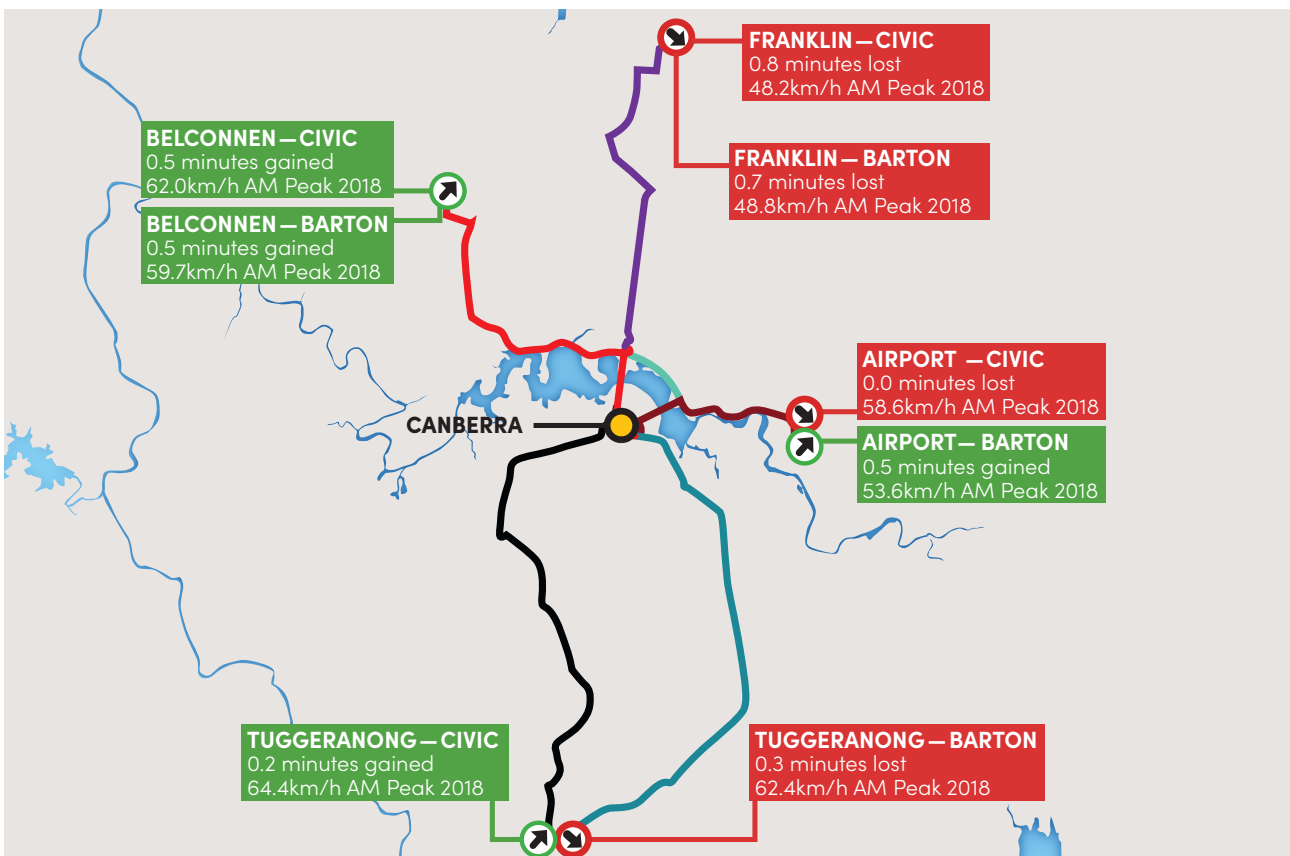
Brown Plains to CBD or Northwest to CBD lost between 1.4 to 0.8 minutes in AM peak periods. The Airport to CBD route gained an additional 0.9 minutes and the Centenary Motorway to CBD gained an additional 0.7 minutes in the AM peak period.



Section Four

Canberra

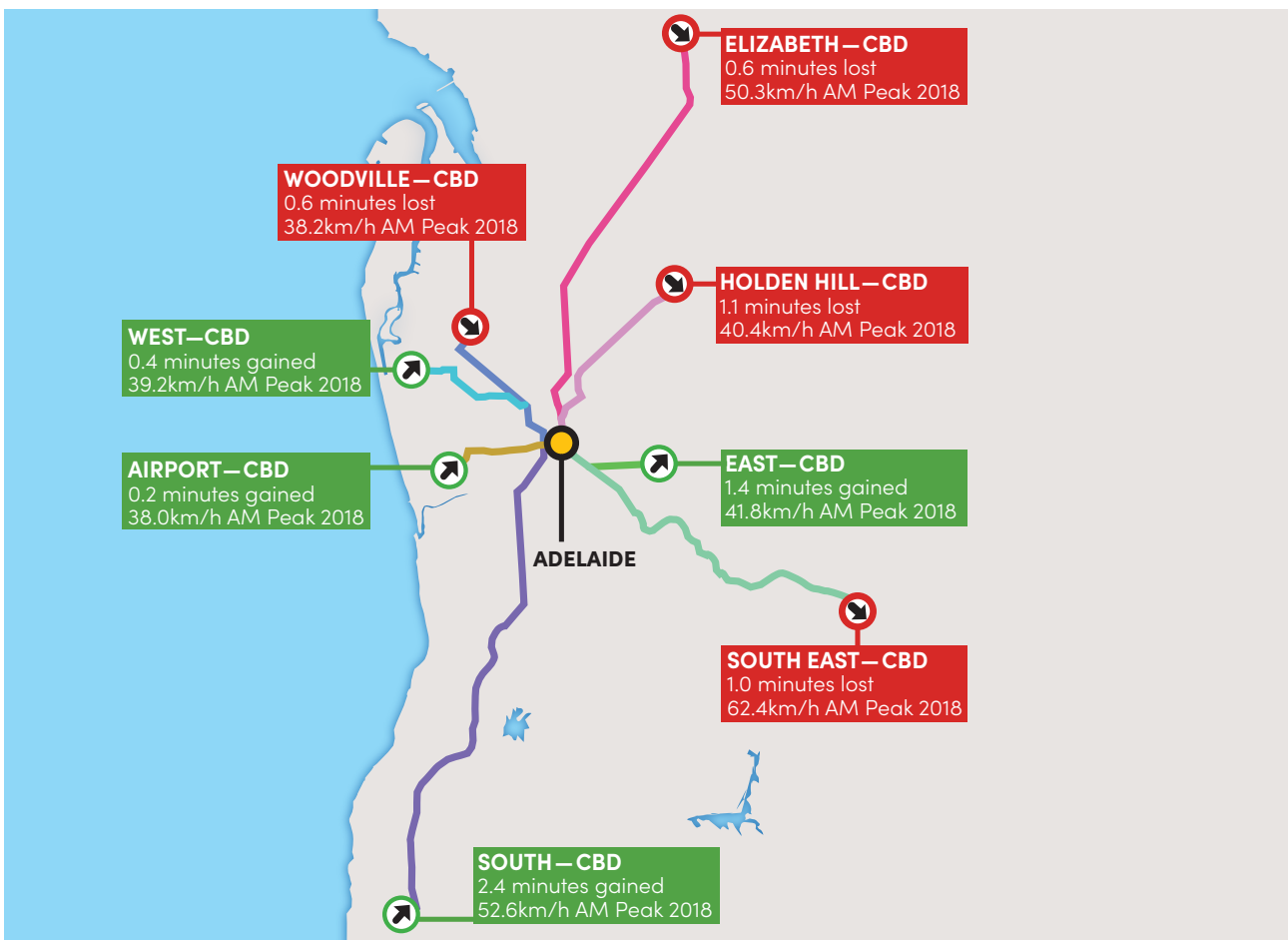
In Canberra, travel on the Franklin-Barton and Franklin-Civic routes became 0.7 and 0.8 minutes slower on average, but people travelling from Belconnen to Civic gained 0.5 minutes during AM peak periods.



Section Four

Adelaide

The largest travel-time losses were on the Holden Hill-CBD route with 1.1 minutes lost between 2013–2018. In contrast, people travelling on the South-CBD route gained an average of 2.4 minutes in AM peak periods from 2013–2018.



Section Four

Perth

The North East to the CBD route had the worst deterioration in trip time—2.3 minutes. The second largest decline was on the North East to CBD route with 2 minutes lost.

The airport to CBD route improved by 1.4 minutes. There were marginal improvements along the south east to CBD and Fremantle to CBD routes.

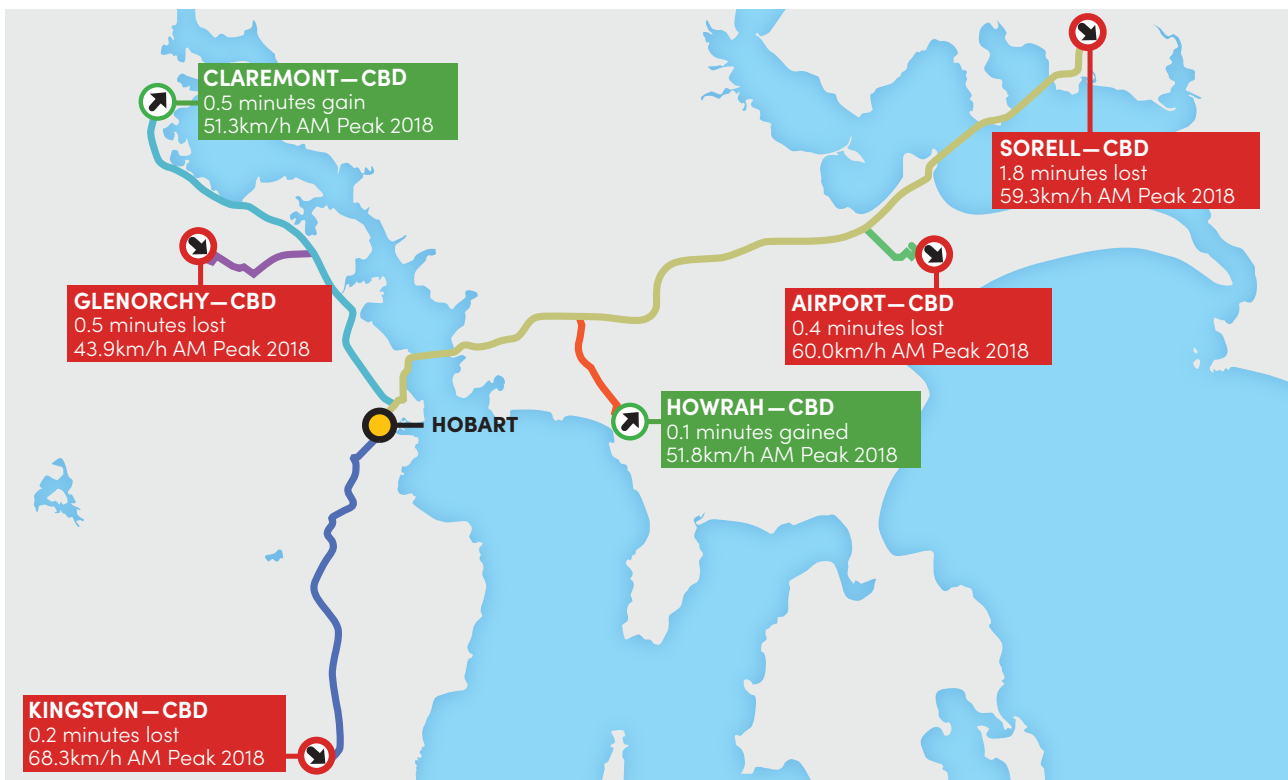


Section Four

Hobart

The Sorell to Hobart CBD route had the greatest increase in travel time—motorists lost an average of 1.8 minutes in AM peak time. The Glenorchy to CBD route lost an average 0.5 minutes and the Airport

to CBD route became 0.4 minutes slower. However, the Claremont to Hobart CBD route posted a travel time gain of 0.2 minutes and there was also a marginal gain along the Howrah to CBD route.



Section Four

Darwin

The Darwin North to CBD route had the worst increase in travel time—an average 0.7 minutes lost in AM peak periods from 2013 to 2018. The Darwin North to CBD routes also had a slower travel time, with an

average of 0.6 minutes added to the trip. The Litchfield to CBD route had a quicker travel time, with motorists gaining an additional 0.5 minutes on average.



Section Five

About the data

HoustonKemp uses data from HERE Technologies to produce hourly road performance metrics for all roads in Australia. These data can be reported for any road, collection of roads, point-to-point routes, or geographic areas (for example, local government area or capital city). This enables an analysis of trends in traffic speed, free flow speeds, and the prevalence of speeding. The data can also provide insights on congestion hot-spots, how traffic incidents and road changes affect traffic speeds, and overall road performance.

The GPS data is provided for a road link (the length of road between any two intersections). It is available for every local and arterial road across Australia, from 1 January 2013 to yesterday, and for every 15-minute period. The data's granularity and length of history provides rich insights to inform trends analysis down to specific road segments. HERE uses information collected from a variety of devices, including vehicle sensor data, smartphones, portable navigation devices, road sensors and connected cars.

Endnotes

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