Australian Government
Department of Infrastructure, Transport, Regional Development and Communications
Bureau of Infrastructure and Transport Research Economics

Freight route performance under COVID-19

At a Glance

The Australian community's response to the COVID-19 pandemic led to large reductions in urban commuter traffic in Australian capital cities from late-March and early-April as many firms and schools shutdown or requested staff to work from home. Freight traffic did not reduce but, due to reduced congestion, has experienced lower and more predictable travel times on the freight network, helping to maintain supply chains during the pandemic.

The figures in this paper compare estimated travel times for selected routes in the five mainland state capitals for the weeks starting the 6th of January, the 24th of February and the 20th of April.

For most routes there is a clear pattern.

- The early January period is in the height of the summer school holidays, when urban congestion is less significant, and consequently freight vehicle travel times were relatively constant over the day and the interquartile range was relatively narrow, so there was a fair amount of certainty about how long a trip would take.
- By late February, as holidays had ceased and students returned to school, distinct morning and/or afternoon peak periods had emerged, so the median trip took longer and the expected travel time was more uncertain.
- By late April, following the closure of many schools and workplaces in late March, these peak periods had become less pronounced or had disappeared altogether, and expected times and uncertainty were either comparable with or improved relative to early January.

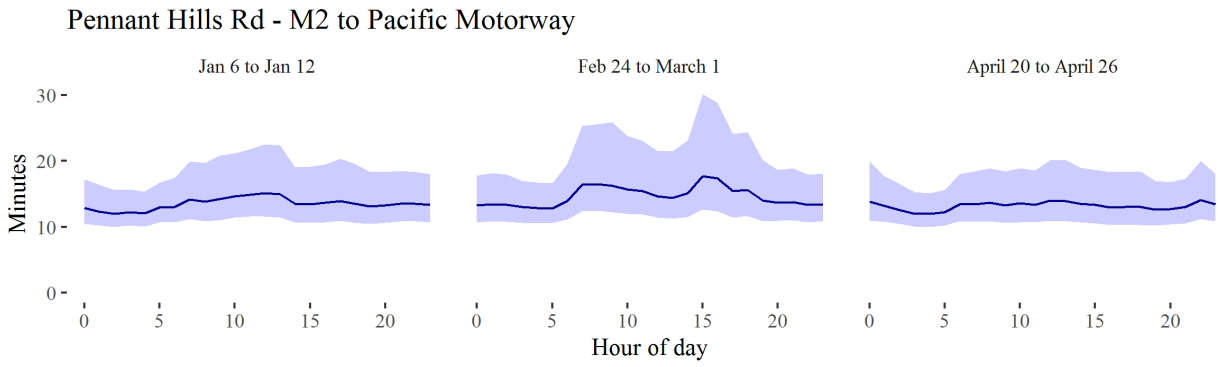
Selected Routes

This paper shows routes selected from Australia's major cities, including some which are heavily used by both passenger and freight vehicles, and some which are only lightly used by commuter traffic. The former demonstrate more variation over the three periods shown.

In each figure the dark blue lines show the median expected time, and the light blue band the interquartile range. The interquartile range shows the range of times a vehicle might expect for the middle 50 per cent of journeys. The narrower the band, the more certainty a firm can have about how long the journey will take. Increased certainty makes it easier to provide deliveries at agreed times.

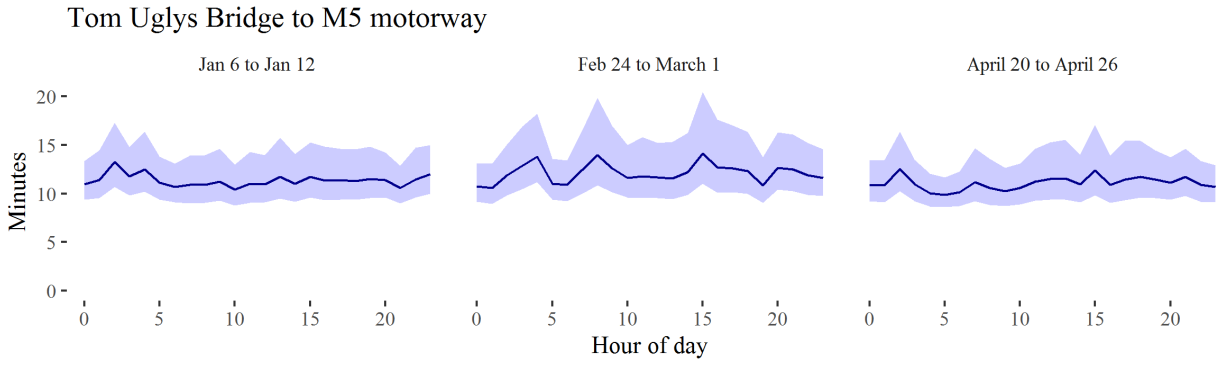
Sydney

Pennant Hills Road



This route connects the M2 Motorway in Northern Sydney to the Pacific Motorway heading North to Newcastle and Brisbane. It is an important link for both passenger and freight traffic for both journeys within Sydney, and between cities. By late February distinct morning and afternoon peaks had appeared with longer and more uncertain travel times than in January. In particular travel times at the 3rd quartile were over 2.3 times as long as those at the 1st quartile, making trip planning difficult. By late April, however, these peaks had disappeared and travel times were comparable to early January.

Princes Highway and Georges River Road

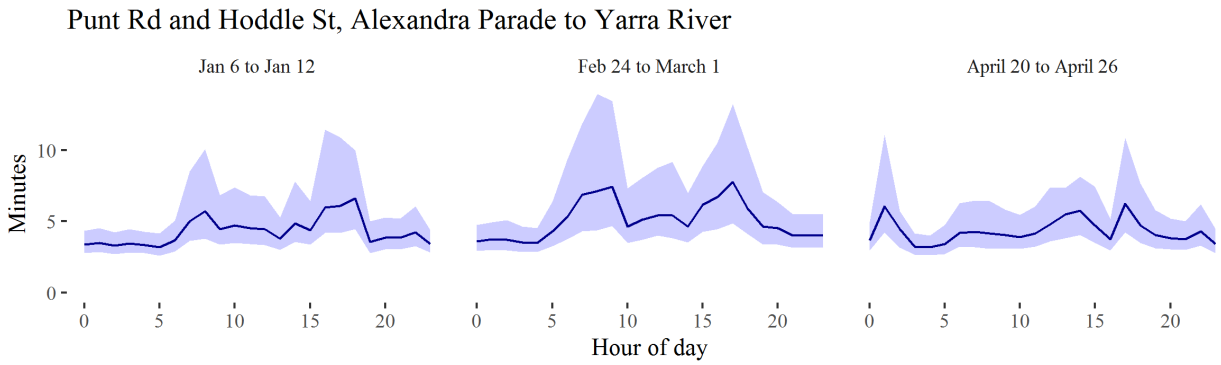


This route in Southern Sydney follows the Princes Highway from where it crosses the Georges River North to Georges River Road and then to the M5 motorway. It connects the Southern regions of Sydney and the Illawarra to the Sydney orbital network. From January to late February median journey times in the morning peak increased around 20 per cent, from 12 to 15 minutes, and the

3rd quartile had increased 29 per cent from 15 to 21 minutes. By the end of April, however, these times had fallen to slightly below their early January levels.

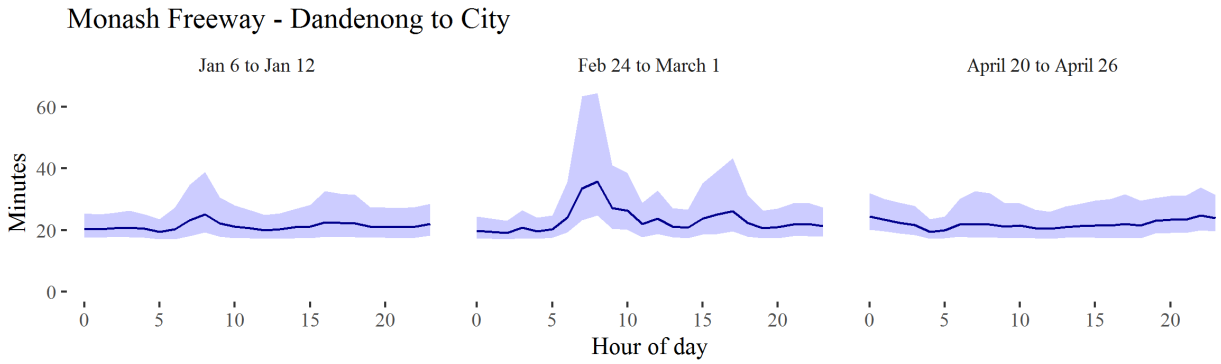
Melbourne

Hoddle Street and Punt Road



The route covers Hoddle St and Punt Rd travelling south from Alexandra Parade, skirting the East of the Melbourne CBD, to the Yarra River. Although short, congestion means that freight vehicles travelling on this route faced high variability in travel times even in early January – travel times at the 3rd quartile were 8 minutes longer or 3 times as much as the 1st quartile. By late February travel times at the 3rd quartile in the morning peak were nearly 15 minutes, or three times those at the 1st quartile. By late April, however, the 3rd quartile in the morning peak was only 6 minutes, which was 10 minutes less than in February, 6 minutes less than early January and only twice as long as the 1st quartile.

Monash Freeway

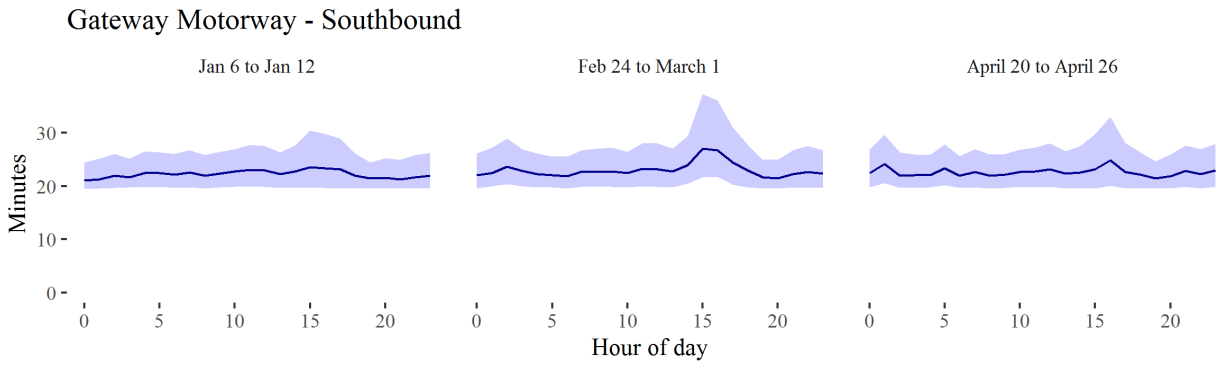


This route follows the Monash Freeway from Dandenong in South East Melbourne to the Melbourne CBD. It is used both by passenger traffic and by freight vehicles moving from industrial areas to the rest of the city and interstate. Even in January travel times were relatively uncertain with travel times at the 3rd quartile almost twice travel times at the 1st quartile. By late February however median travel times were comparable those at the 3rd quartile in January, and those at the 3rd quartile were over an hour – over three times as long as in non-peak periods. By late April

however both morning and afternoon peaks had disappeared and median travel times were roughly 20 minutes at all times.

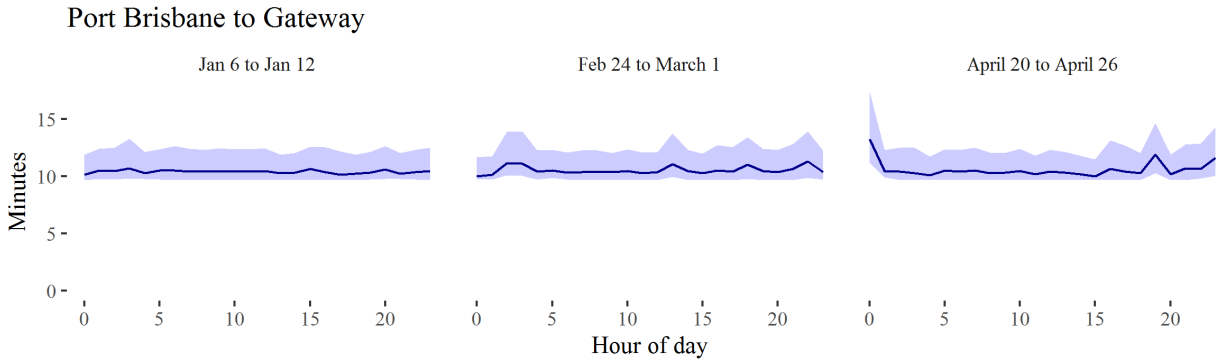
Brisbane

Gateway Motorway



This route follows the Gateway Motorway in Brisbane heading South from Nudgee to the Logan Motorway and is a major route for both freight and passenger vehicles between Northern and Southern suburbs of Brisbane. Journey times in the afternoon increased by over 3 minutes (14 per cent) at the median and by over 6 minutes (20 per cent) at the 3rd quartile between January and April. Travel times improved in April but were still slightly higher than in January.

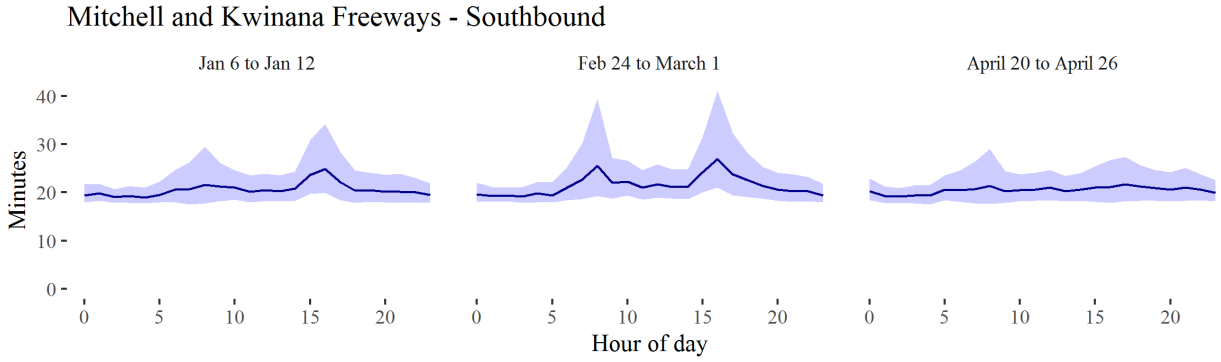
Port Drive



On this route from the Port of Brisbane to the Gateway Motorway travel times were little changed throughout the period. This route has comparatively little commuter traffic relative to freight vehicles when compared to other routes. This helps demonstrate the variation in other routes is caused by changes in passenger vehicle numbers.

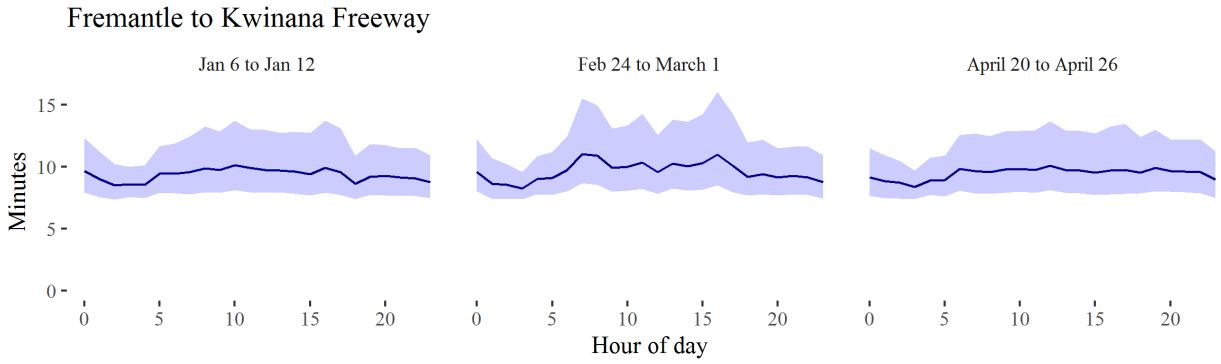
Perth

Mitchell Freeway and Kwinana Freeway



This route follows the Mitchell and Kwinana Freeways in Perth, travelling South from the interchange with the Reid Highway to the Canning Highway interchange. It is a major route for both freight and passenger vehicles. In January there were recognisable peak periods but by Late February these had become highly distinct. Median travel times in these peak periods were 5 minutes (25 per cent) longer than at less congested times and travel times at the 3rd quartile were around 20 minutes (100 per cent) longer than those at the 1st quartile. By late April uncertainty at peak periods had reduced considerably and median travel times were more consistent throughout the day than they had been in January.

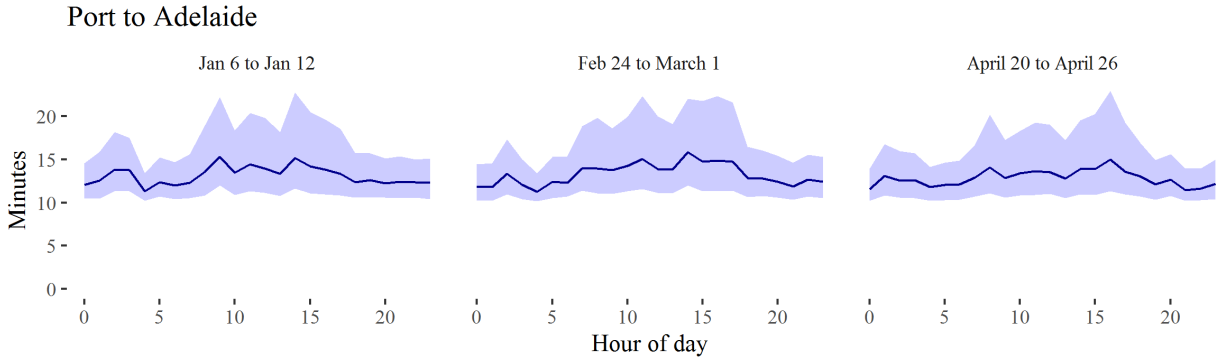
Stirling Highway and Leach Highway



This route in Perth follows the Stirling Highway and Leach Highway from the Swan River at Fremantle to the Kwinana Freeway. It is used by freight traffic from the port at Fremantle and by suburban traffic. By late February there were distinct morning and afternoon peaks where median travel times had increased roughly 10 per cent, and 3rd quartile times by 25 per cent compared to January or to non-peak periods. By late April however, travel times were similar to those in early January.

Adelaide

Port River Expressway and North South Motorway



This route follows the Port River Expressway and North South Motorway from Port Adelaide to Hindmarsh, just West of the Adelaide CBD. Like Port Drive in Brisbane this route shows relatively little change throughout the 4 months although it carries commuter traffic from the Northern suburbs of Adelaide.

About the BITRE freight telematics program

This paper is built on data from the BITRE telematics project. This project transforms GPS traces from private road freight firms into data about Australia's road freight industry and road freight network to help government, the industry and other interested parties. This data covers levels of activity, performance of the network including congestion, speeds and travel times, and use of rest areas among other things. The project uses BITRE's independently developed Yulo framework (Green and Mitchell, 2018). By tracking the entirety of vehicles' journeys it can generate data on more parts of the road network than is practical using conventional means such as fixed cameras or pneumatic tubes.

References

Green, R and Mitchell, D, 2018, 'Adapting truck GPS data for freight metrics', Presented at the Australian Transport Research Forum, Darwin, ATRF 2018 Paper 18.

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Use of the Coat of Arms

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