

Impacts of COVID-19 on travel in Perth

Some preliminary insights

Highlights

- 53% reduction in the number of trips made by households per week across Australia
- 32% of employed workers working from home across Australia
- In Perth, in the course of one month (March 2020), there was an almost 40% reduction in vehicles moving in and out of the Perth CBD, recovering to a 20% reduction in early May
- Patronage declined by more than 80% from early March to late April but picking up to 40% of pre-COVID patronage by the end of May

The COVID-19 disruption to travel

We are fortunate not having experienced any major outbreaks of COVID-19 in Western Australia. While jobs have been lost, we are working and learning from home more and socialising less, overall transport demand has decreased significantly. We take a preliminary look, here, at the rapid change in travel trends in Perth in response to the COVID-19 disruptive change and offer some insights for longer term transport planning consideration.

A dream come true for congestion?

In a few short weeks, the virus achieved what transport planners could only dream of: a drastic reduction in car travel and congestion. Travel demand management (TDM) measures have been proposed by planners since at least the mid-90s to reduce single occupancy car travel, with the aim of reducing congestion. This in turn defers the need for costly road infrastructure, with added benefits of increased road network system reliability and improved air quality with positive health and productivity outcomes (Babb et al., 2014). Despite these best efforts, travel by car has remained dominant at around 70% across Australia - until March 2020. Across Australia, there was a 53% reduction in the number of trips made by households per week, down from 17 to 8 trips per week (Beck & Hensher, 2020).

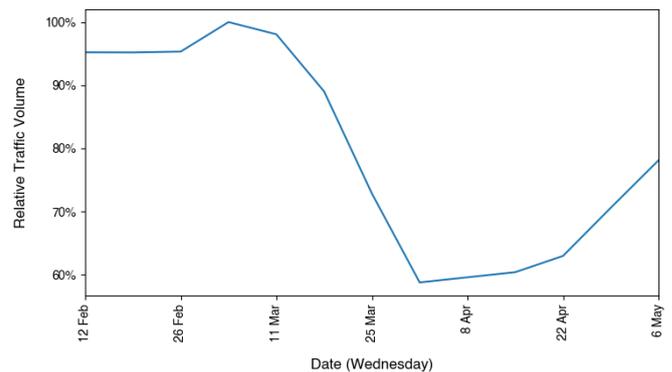


Figure 1. Total traffic volume on key roads in and out of the wider Perth CBD area (*All day*, Wednesdays) expressed as a proportion of pre-COVID-19 volumes (12 February 2020) (Data source: Main Roads WA)

In Perth, the number of vehicles moving in and out of the wider Perth CBD area over the whole day, decreased by almost 40% during March (Figure 1). The greatest decline in traffic volume (>50%) was experienced on Mounts Bay Road in both directions, likely exacerbated by a reduction in university (UWA) traffic. The lowest decline was on the Mitchell Freeway, both south- and north-bound (Figure 2). There was little difference between all day volume changes and the morning peak (Figure 3).

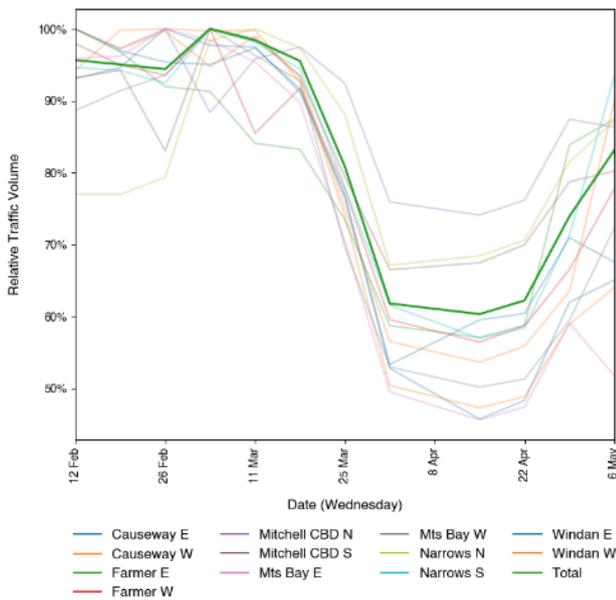


Figure 2 Traffic volumes on key roads in and out of the wider Perth CBD area (All day, Wednesdays) expressed as a proportion of pre-COVID-19 volumes (12 February 2020) (Data source: Main Roads WA network operations traffic data)

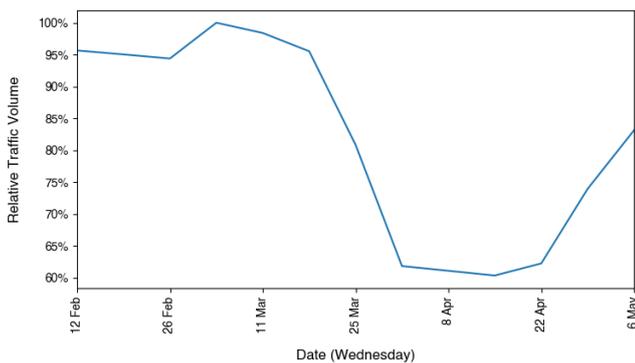


Figure 3 Total traffic volume on key roads in and out of the wider Perth CBD area (AM peak Wednesdays) expressed as a proportion of pre-COVID-19 volumes (12 February 2020) (Data source: Main Roads WA)

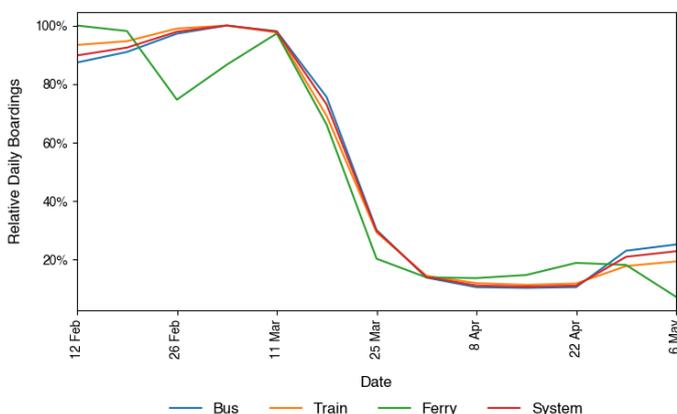


Figure 4 Total number of SmartRider daily boardings (Wednesdays) as a proportion of pre-COVID-19 patronage (12 February 2020) across Perth during COVID-19 peak period (Data source: Public Transport Authority)

PT patronage down too!

Whereas traffic volumes decreased by close to 40%, public transport patronage in Perth declined by more than 80% from early March to late April (Figure 4).

Train travel was slightly worse affected than bus travel with the Mandurah and Fremantle lines the worst affected and the Armadale line, the least affected (Figure 5).

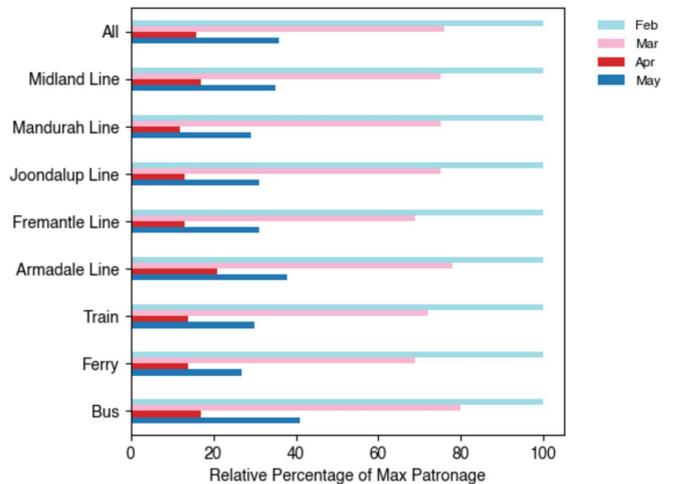


Figure 5 Total monthly number of SmartRider boardings expressed as a proportion of pre-COVID-19 patronage (12 February 2020) during COVID-19 peak period (Data source: Public Transport Authority)

Signs of recovery

Since mid-April, traffic volumes started picking up again until in early May, total all day traffic in and out of the CBD was only 20% down on pre-COVID levels (Figure 1). Public transport patronage only started showing a slight turn towards recovery in late April (Figure 4). By early May, while traffic volumes were back up to 80% of pre-COVID volumes, patronage had only recovered marginally to just less than 20% of pre-COVID numbers. By the end of May, recovery improved to 40% of pre-COVID patronage (Figure 5).

Full recovery?

By far, the majority of people feel most comfortable with using private vehicle travel if required to travel (Beck & Hensher, 2020). In addition, if social distancing requirements were implemented on public transport, this would translate into a capacity reduction to about 30% of the original capacity. Together, these two factors could potentially result in car travel increasing, captured from public transport, to above pre-COVID levels, at least in the medium term. This could lead to worse congestion than before and underutilisation of costly existing and expanding public transport infrastructure.

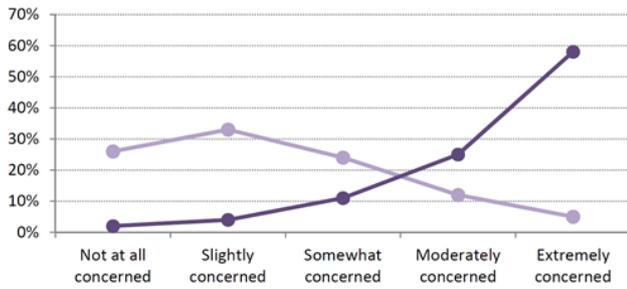


Figure 6 Level of concern about hygiene on public transport before (lighter shade) and after (darker shade) COVID-19 onset (Source: Beck & Hensher 2020, pg. 8)

A big driver - working from home?

While working from home has been widely promoted as a TDM strategy over the past two decades (Allen et al., 2015), uptake has not been large. In 2013/14, only 5% of workers were classified as ‘home workers’ (Wooden & Fok, 2013) with 17% of Australians were found to work “some” hours from home (Dockery & Bawa, 2014). A more recent analysis in Western Australia found the average home-working rate was 3.4% of all employees, but with variation by occupation. Administrative workers (6.3%), managers (5.0%) and professionals (4.8%) had the greatest proportions of home-workers (Babb et al, 2017).

The COVID disruption has seen significant increases. Even after accounting for job losses, an increase of 32% of Australian employed workers working from home has been observed according to a sample study (Beck & Hensher, 2020). The number of respondents working zero days from home fell from 71% to 39%, and the number working five days a week from home increased from 7% to 30% (Beck & Hensher, 2020). This is confirmed by Google’s COVID-19 Community Mobility Report (9 May 2020) which indicates a 23% decrease in workplace visits from the pre-COVID baseline across Australia (Figure 7). For WA, the decrease in workplace visits was 17%.

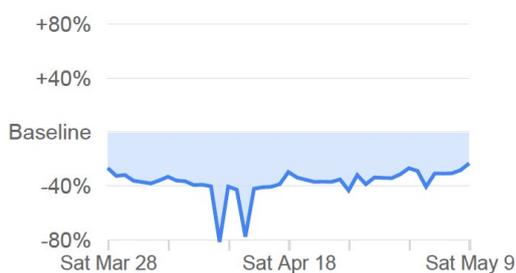


Figure 7 Number of visits to workplaces across Australia expressed as a proportion of the baseline (median during period 3 January to 6 February) (Source: Google’s COVID-19 Community Mobility Report, 9 May 2020)

Increase in other home-based activities

In WA, in contrast to the proportional decline from the baseline in visits to workplaces (17%), retail and recreation (14%), parks (20%) and transit stations (43%), there was a compensating increase in “residential” visits of 9% (Figure 8), indicating a rise in home-based activities.

A 22% increase in visits to grocery stores and pharmacies also occurred (Google’s COVID-19 Community Mobility Report, 9 May 2020).



Figure 8 Number of residential visits in WA expressed as a proportion of the baseline (median during period 3 January to 6 February) (Source: Google’s COVID-19 Community Mobility Report, 9 May 2020)

Other household activities becoming home-based during COVID-19, include education and on-line shopping as a result of the rapid switch to online learning (at school and tertiary institutions) and increases in online shopping and delivery. This ‘package’ of home-based activities, including working from home, has impacted travel patterns and should all be considered as part of the solution to reduce car travel (De Vos, 2020).

Transport policy challenges

The lockdown period provides a unique natural experiment to build new knowledge on these issues, on the back of actual experience, and develop approaches to perpetuate and mainstream some of the more positive behaviours and outcomes, in particular for employers, employees, transport infrastructure provision and for macro-economic benefits. For example, less travel on roads in peak hours, deferring the need for new infrastructure, also with productivity benefits.

A considerable challenge is a decline in public transport use and the possibility that patronage will not return to pre-COVID levels for some time due to health concerns and lower capacity levels due to social distancing requirements. It also means that congestion levels will increase significantly as road-based travel captures public transport riders. There are implications too of reduced revenue generation from public transport use and consequently, escalating subsidy requirements from the public purse.

Solution spaces

A promising option to keep car travel lower is **working from home**. This does not require than everyone who can work from home, works from home all the time but could be achieved in different forms including, staggered or rotation working arrangements, dual working from home and at work eg. going to the office two days a week.

Even a 10% reduction in the number of vehicles on the road – a quarter of what was achieved in the height of the restrictions and equivalent to typical school holiday conditions – would be sufficient to have a marked positive effect on congestion levels.

Almost half of those employed stated that their work can be done from home (Beck & Hensher, 2020). There are challenges to working from home, and future research will need to explore those challenges along with potential benefits in order to support the government, employers and employees working together to make working from home a viable long-term proposition (Beck & Hensher, 2020).

The way in which wider and sustained working from home practices manifest in reorganising transport patterns is clearly needed for the study of post COVID-19 cities. The biggest economic impact will be due to changes to **peak travel** (Corpuz, 2011), mainly because peak periods experience the highest levels of congestion and the level of transport supply is determined by servicing the peak. However, from a public administration point of view – whilst reduced congestion can relieve or delay expenditure on road infrastructure – it also exposes the operational budget of the public transport system to a loss in revenue on its most lucrative services.

References

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Beck & Hensher (2020) call for “a robust debate about another long held transport objective; peak spreading. Enabled by the potential staggering of work hours, both private and public transport systems could become less “peaky”, requiring less road and rail infrastructure to service the peaks, rather extending accessibility and quality to more of the population.

Prior to the COVID-19 mega-disruption, policy-makers were preparing for the disruption of advanced **technologies**. Solutions necessitated and enabled in a way by COVID-19 need to be integrated with the autonomous, electric, connected, sharing and demand responsive revolution.

It is timely and necessary to understand how the traditional packages of TDM measures, enjoying limited success, fragmented and uncoordinated, can be revived and integrated with new technologies and experiences, to achieve a transport system that is sustainable economically, socially and environmentally.