



Tuesday 8th March 2022

ITE Webinar - COVID impacts in Australia/New Zealand

COVID-19 Impacts on Travel in Melbourne, Australia Monash PTRG Research Update

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STUDIES



Introduction

Behavior Shifts

Renorming Work from Home

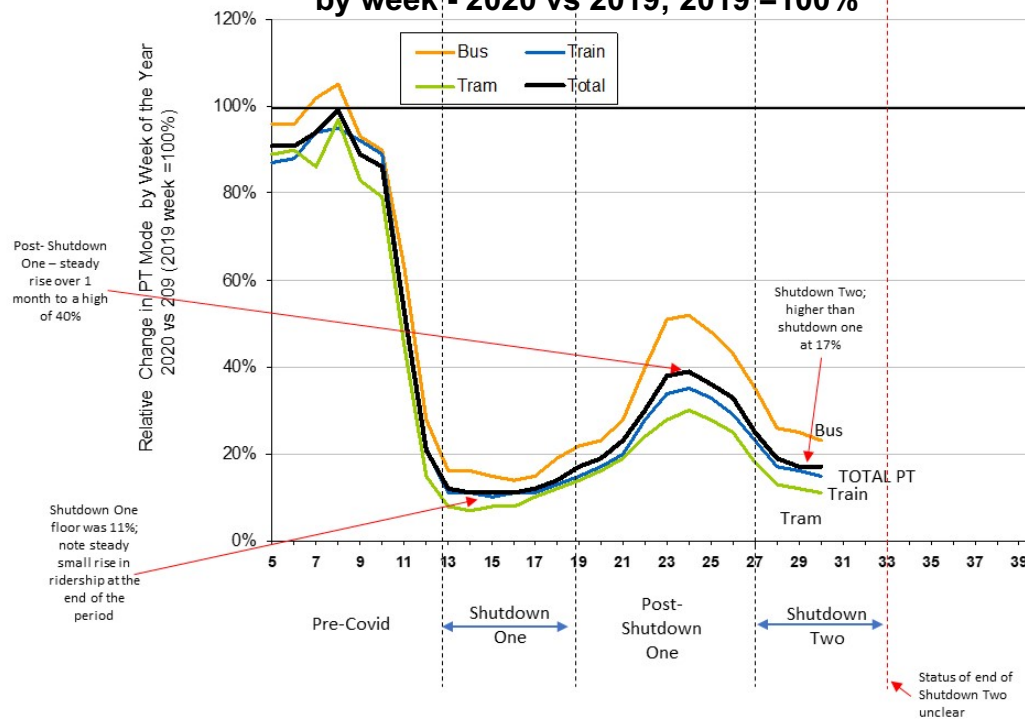
Transit Ridership Trajectories

Transit Ridership Recovery



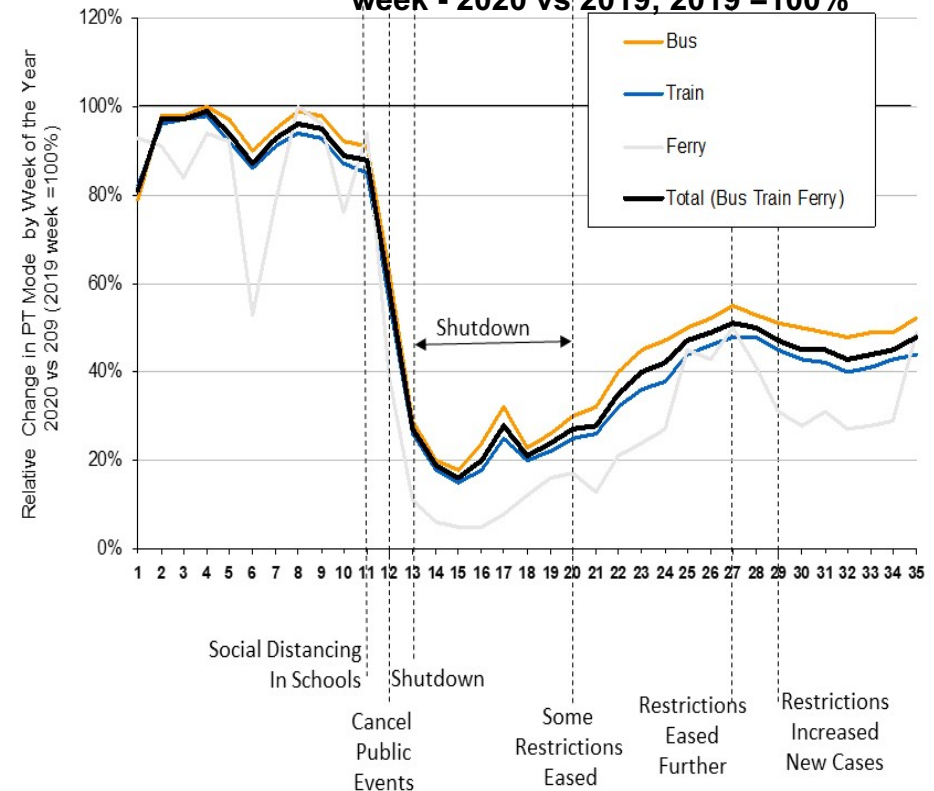
Melbourne & Sydney ridership fell during COVID-19 lockdowns then recovered a bit out of lockdowns, but were still very well below pre-Covid levels – bus has always done better than rail

Changes in MELBOURNE Total Public Transport Travel by Mode by week - 2020 vs 2019; 2019 =100%



- Note:**
- (1) Source: Department of transport 2020, Daily patronage estimates by mode, compared to baseline data, for February to July 2020
 - (2) Patronage baselines are based on monthly predictions for weekdays, Saturdays, Sundays and public holidays, derived from 2019 patronage estimates the same month and with a year on year growth rate applied. Baselines do not reflect fluctuations in patronage that occur throughout each month or week.

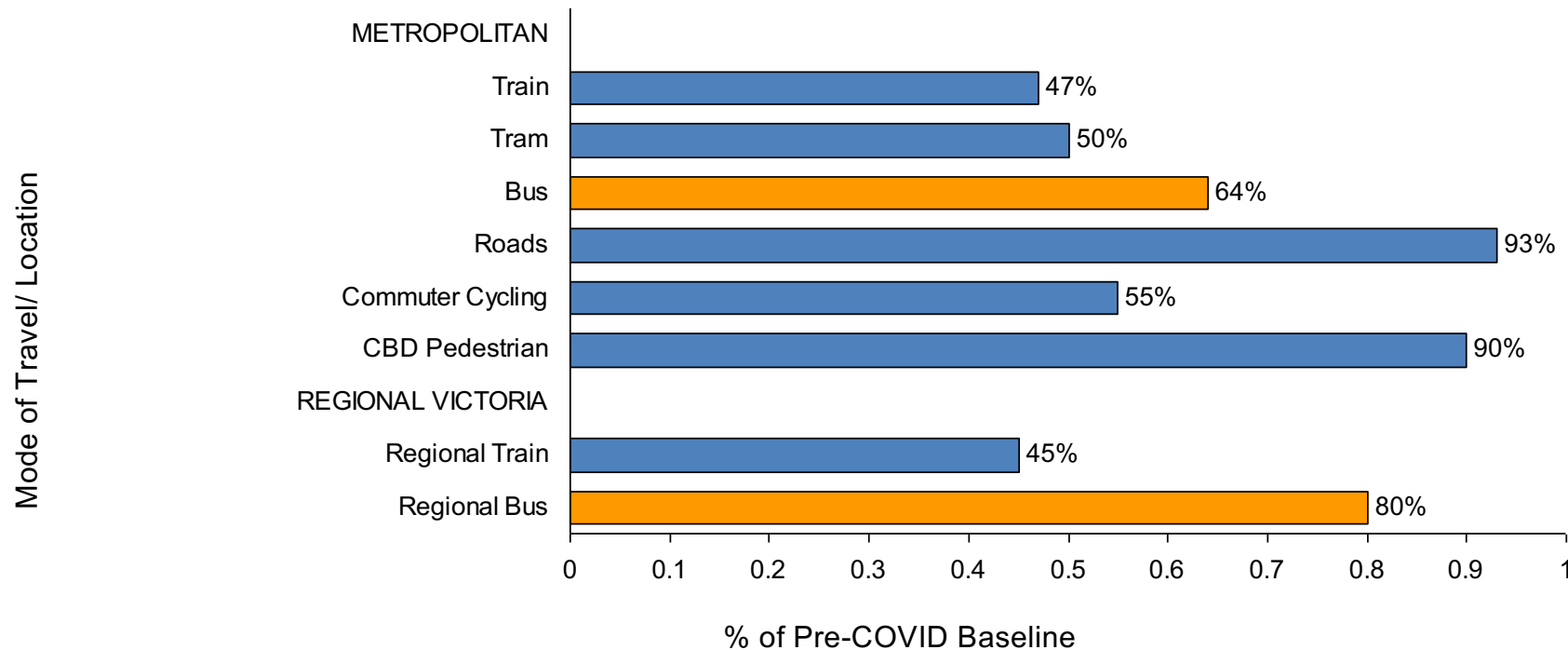
Changes in Sydney Total Public Transport Travel by Mode by week - 2020 vs 2019; 2019 =100%



Note: Data courtesy of the Transport for New South Wales
 Note: Light Rail and Metro not included as significant new service introduced in 2019 distorting effects pre-post Covid 19

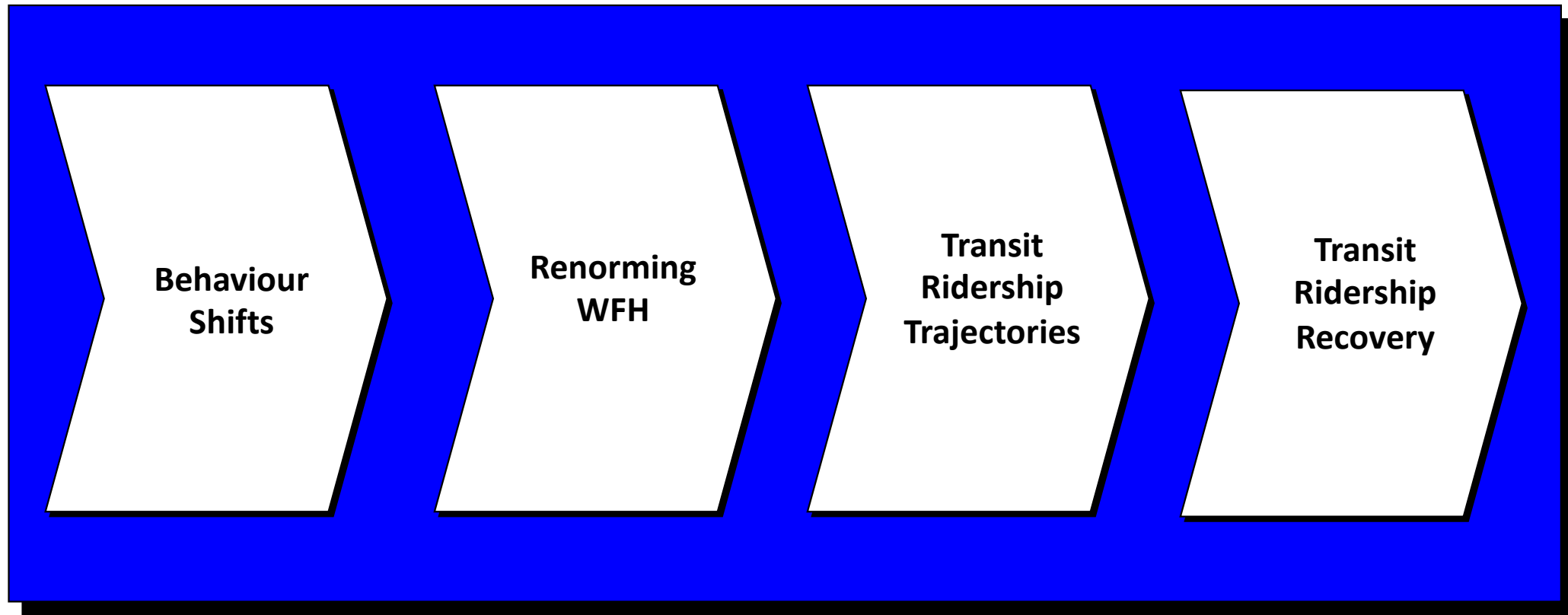
Metro PT is now at 52% baseline; bus has always been higher; particularly in regional Victoria – I will explain causes later in the presentation

Current Travel Demand Status – Friday 25th Feb 2022



(Source: Department of Transport – Daily Dashboard 28-02-2022)

This presentation updates PTRG research to understand the long term impacts of COVID-19 on travel in cities



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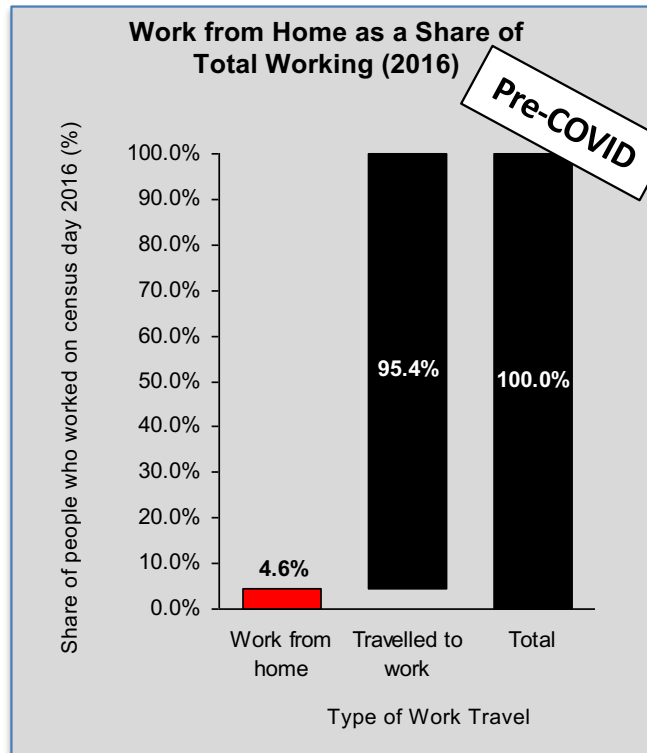


There are four KEY new travel behaviours which will affect POST-COVID travel

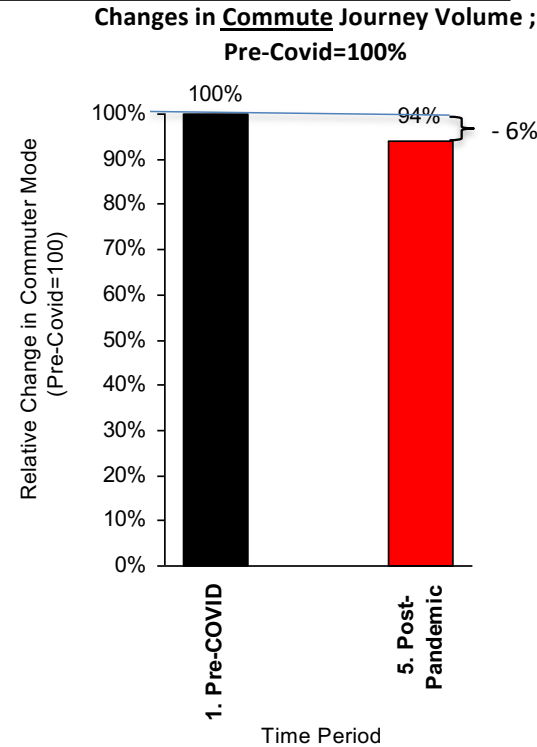
- 1. Commute Trip REDUCTIONS - due to increased WORK FROM HOME**
- 2. MODE SHIFT from Transit to Car Driving – due to INFECTION FEAR**
- 3. SPATIAL Variations in the Above**
- 4. SOCIO-ECONOMIC Variations in the Above**

POST COVID total work travel declines by 6% - mainly due to increased Work from Home (WFH) – the scale of shift is small (6%) because WFH is small as a share of work

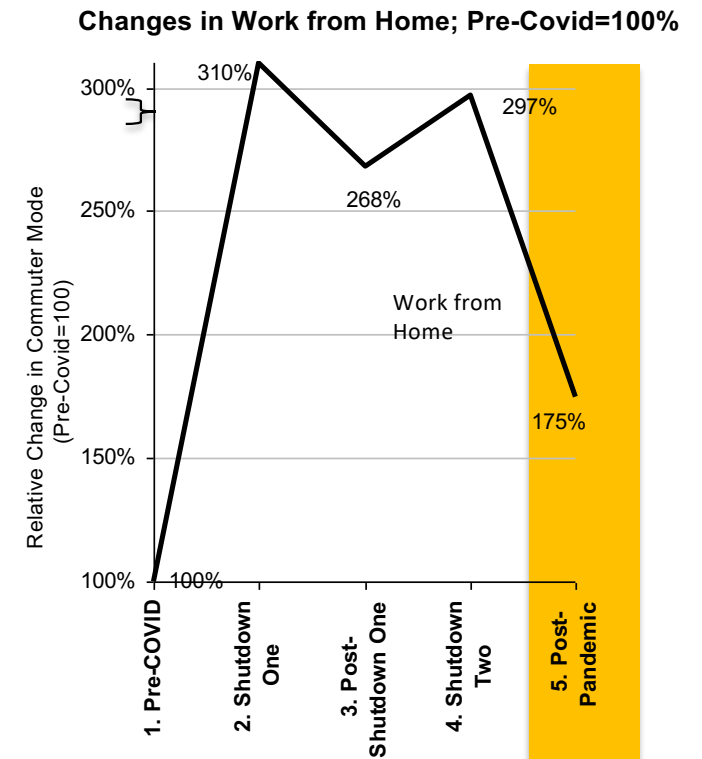
1. Commute Trip REDUCTIONS - due to increased WORK FROM HOME



Source: Australian Bureau of Statistics, 2016 Census Journey to Work

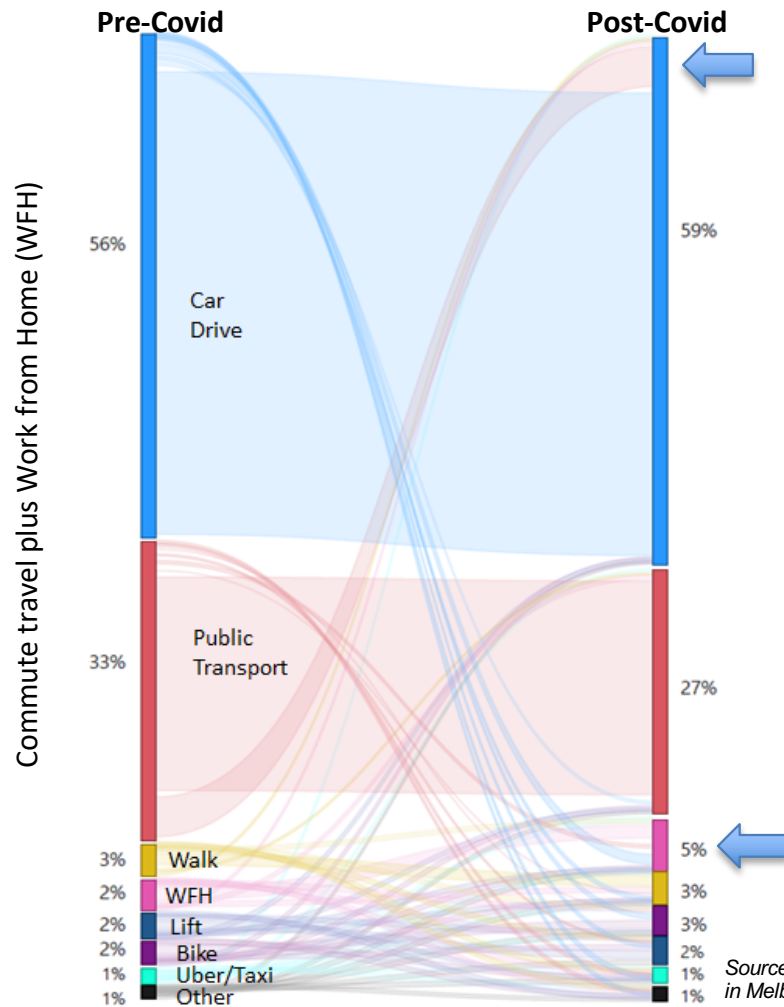


Source: Currie G, Jain T and Aston L (2021) "Evidence of a Post-COVID Change in Travel Behaviour - Self-Reported Expectations of Commuting in Melbourne" Transportation Research Part A Volume 153, November 2021, Pages 218-234

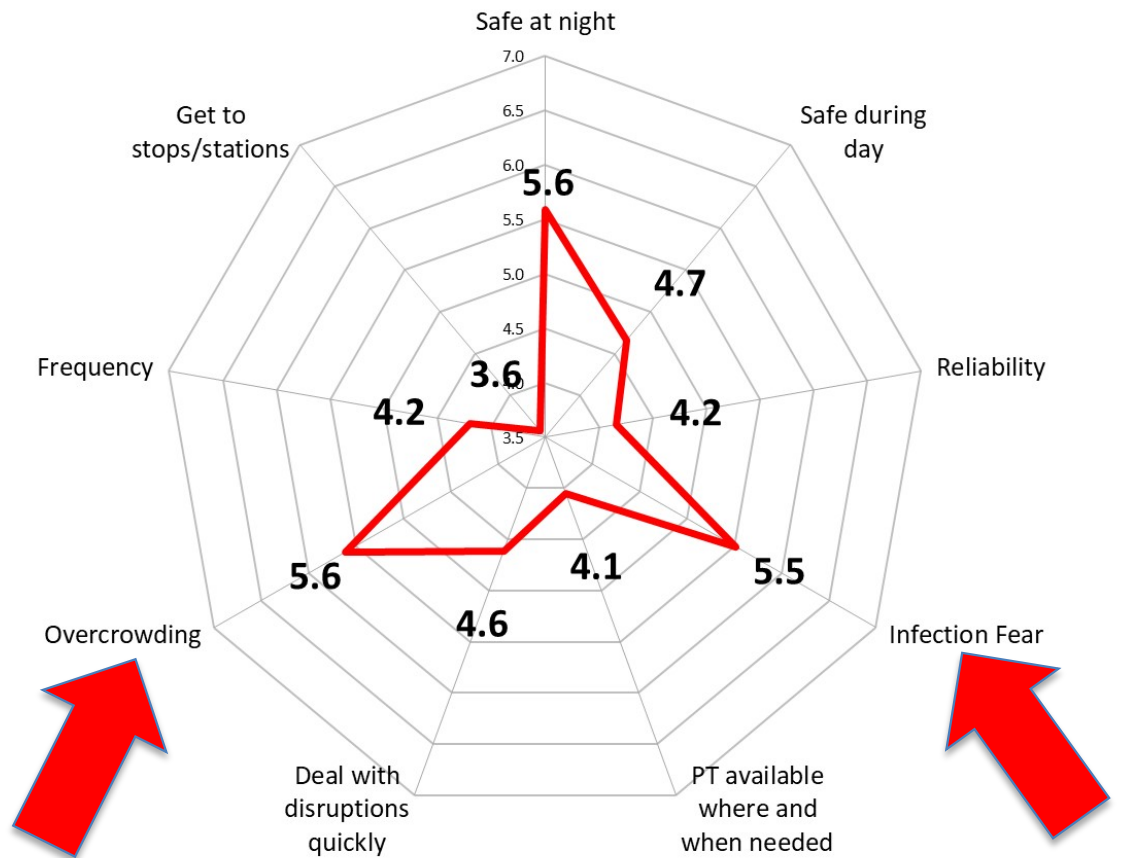


POST COVID work travel has a mode shift from transit to car-drive – this is caused by ‘residual infection fear’ related to Crowding concerns; new user priorities

2. MODE SHIFT from Transit to Car Driving – due to INFECTION FEAR



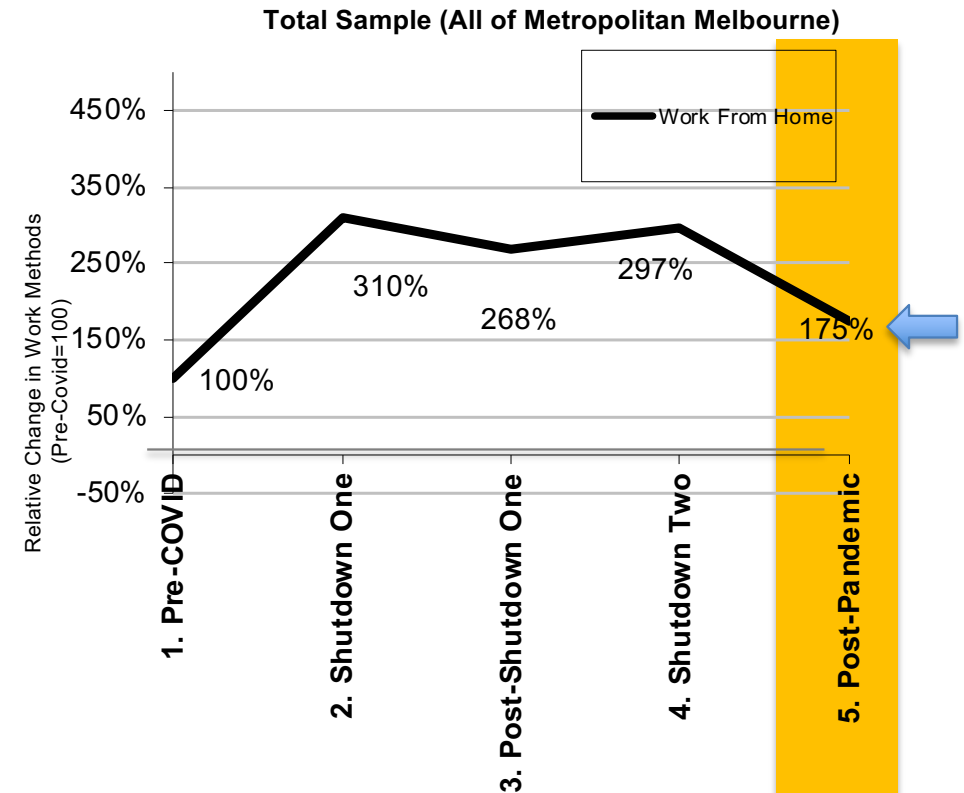
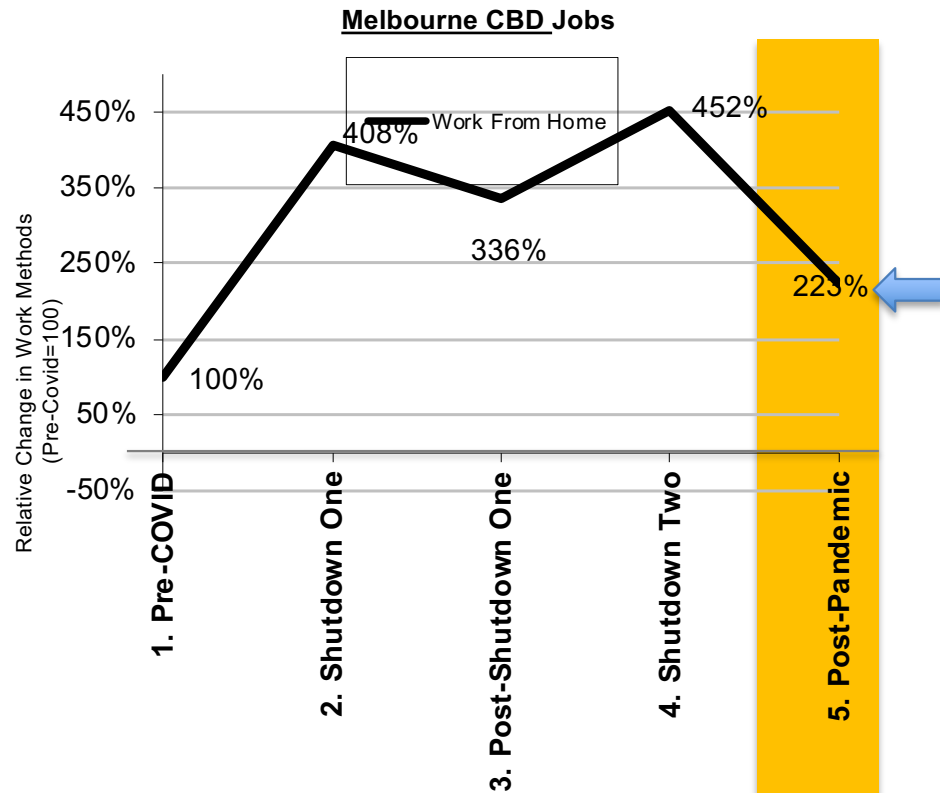
Perceived Concerns About Public Transport – Performance Rating



Source: Currie G, Jain T and Aston L (2021) "Evidence of a Post-COVID Change in Travel Behaviour - Self-Reported Expectations of Commuting in Melbourne" *Transportation Research Part A* Volume 153, November 2021, Pages 218-234

Work from Home is MUCH more common for CBD workers; whos WFH is expected to more than double (+123%) compared to pre-covid, much higher than for Melb as a whole (+75%)

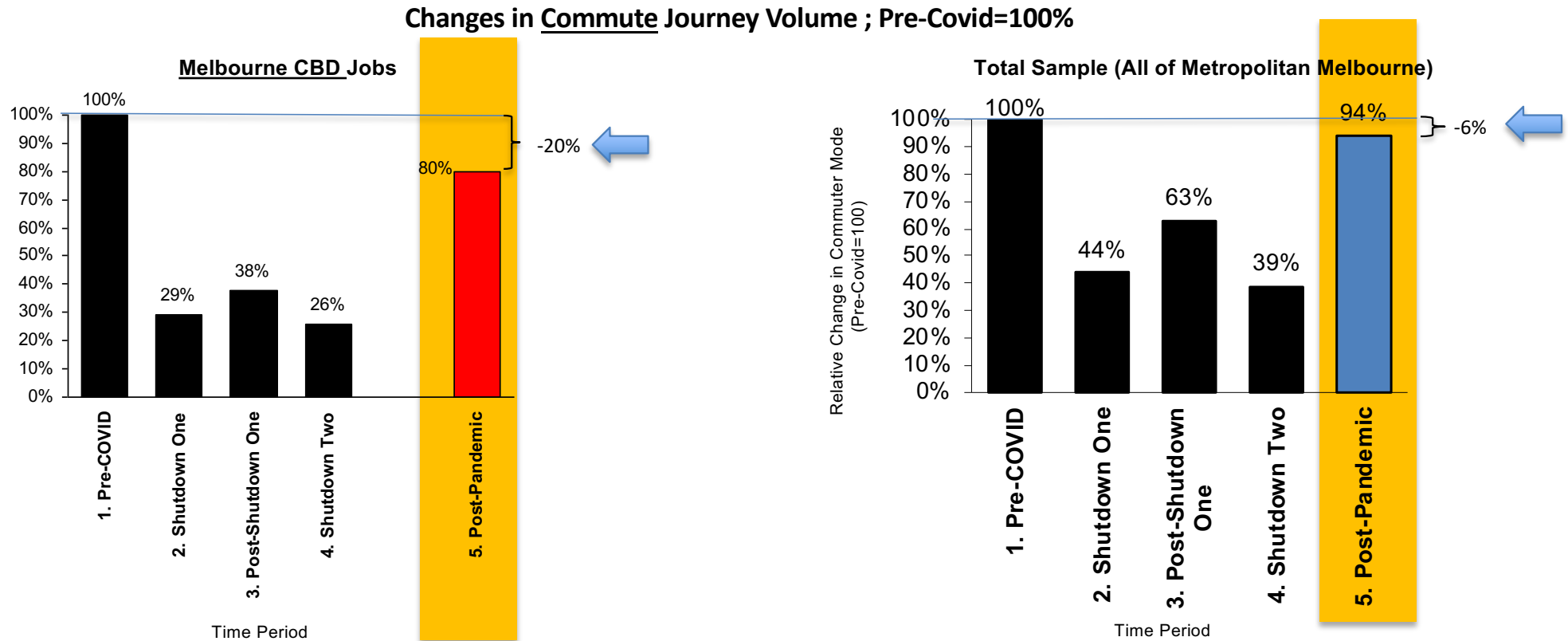
3. SPATIAL Variations in COVID Behaviours



Source: Currie G, Jain T and Aston L (2021) "Evidence of a Post-COVID Change in Travel Behaviour - Self-Reported Expectations of Commuting in Melbourne" Transportation Research Part A Volume 153, November 2021, Pages 218-234

Respondents say CBD COMMUTE will reduce more than the rest of Melbourne; Post Pandemic a 20% decline in CBD COMMUTE is self estimated - much larger than for Melbourne as a whole (6%)

3. SPATIAL Variations in COVID Behaviours

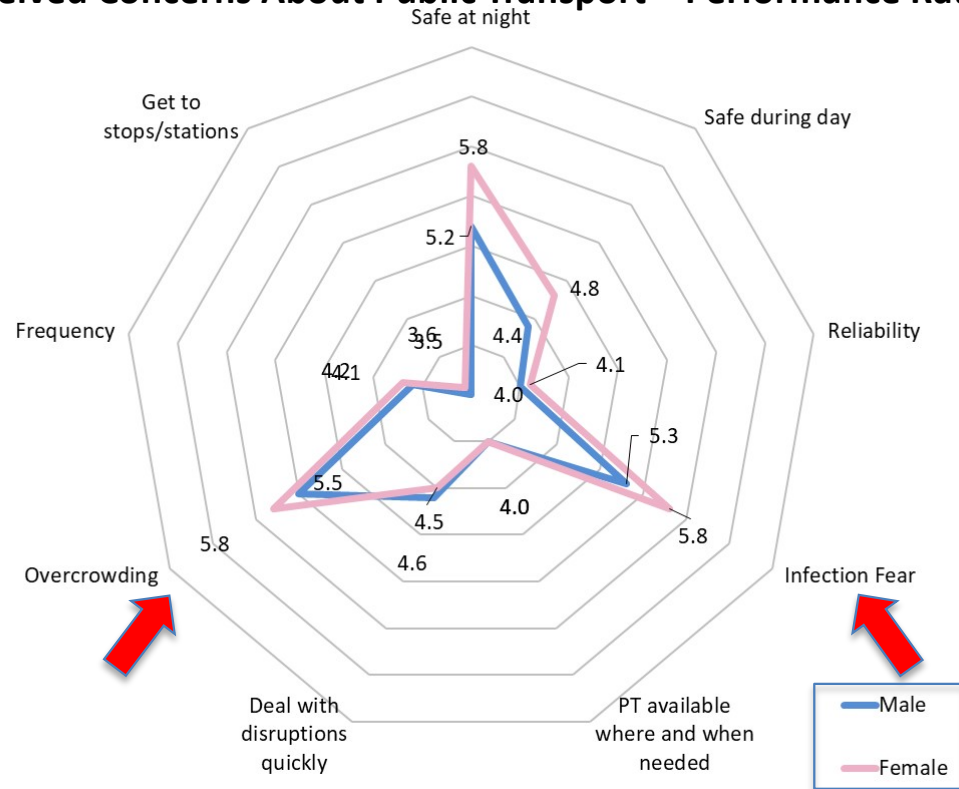


Source: Currie G, Jain T and Aston L (2021) "Evidence of a Post-COVID Change in Travel Behaviour - Self-Reported Expectations of Commuting in Melbourne" *Transportation Research Part A* Volume 153, November 2021, Pages 218-234

Infection Fear is Gender Biased. Work from Home shifts are larger for White Collar workers and High Income Groups

4. SOCIO-ECONOMIC Variations in COVID Behaviours

Perceived Concerns About Public Transport – Performance Rating



Socio-Economic Patterns of COVID Behavior Change

- ▶ Female respondents demonstrated slightly higher post pandemic commute reductions than male respondents
- ▶ Income was found to have significant variations in post pandemic commute volume (Kruskal Wallis Test, $H(7) = 48.328$, $P=0.000$).
 - In general higher income groups self-report significantly higher reductions in commuting post-pandemic compared to their commuting before COVID
 - income '\$1,870-\$3,200'; -22.6% and income '\$3,200 or more'; -23.9%.
 - Lower income groups (<\$1,870) between -0.36% and -3.5% for cohorts with larger samples).
- ▶ We also found a statistically significant difference in post pandemic commuter reductions for white collar workers (Mann Whitney U test, $U=62846$, $P=0.000$).
 - White collar workers had an average -12.5% reduction in commute volume after the pandemic while
 - other workers had an average of -2.8%.

Why is current/future bus ridership less affected? – because COVID ridership impacts affect bus much less than rail

Influence of COVID-19 Ridership Drivers by Transit Mode

Covid Ridership Driver	Rail	Tram	Bus
Commuters – work from home increase	***	***	*
Infection Fear – crowding impact	***	***	*
CBD travel Reduction	***	***	*
Reduced travel – high income groups	***	***	*



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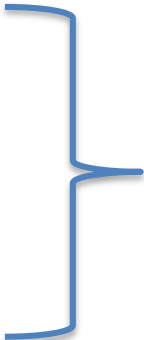

Transit Ridership Trajectories

Transit Ridership Recovery



In a disruption, travel behaviour changes in different ways; often termed the “R”s – including RENORMING

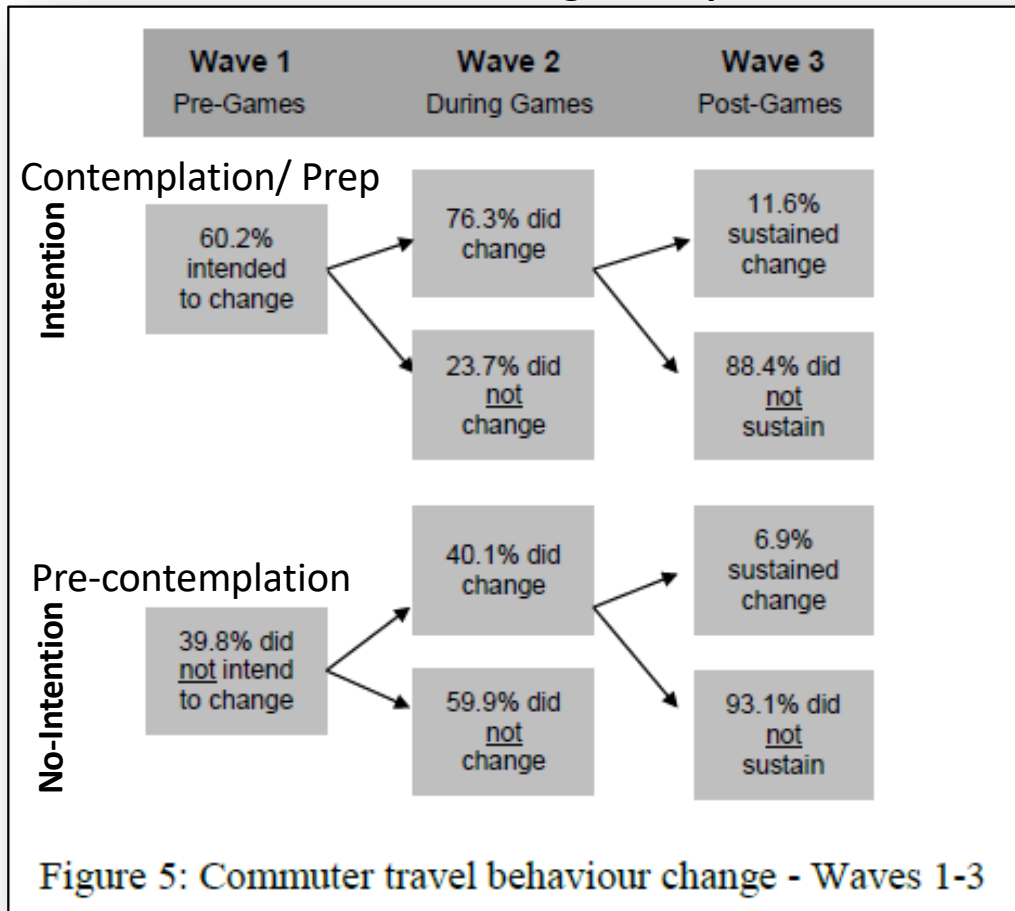
Travel Adaptions Associated with Disruptive Events

Re mode	Switch from public transport to active travel or car		Habitual Behaviour
Re duce	Work/socialise/conduct appointments from home		
Re locate	Move trip destination: e.g. localisation of activity		
Re duce	Reduced ability to participate in activities		
Re duce	No need to travel to work		
Re norm	Changing normative mobility and travel practices		New Behaviour

*Based on Marsden, G, Anable, J, Chatterton, T, Docherty, I, Faulconbridge, J, Murray, L, Roby, H & Shires, J 2020, 'Studying disruptive events: Innovations in behaviour, opportunities for lower carbon transport policy?', *Transport Policy**

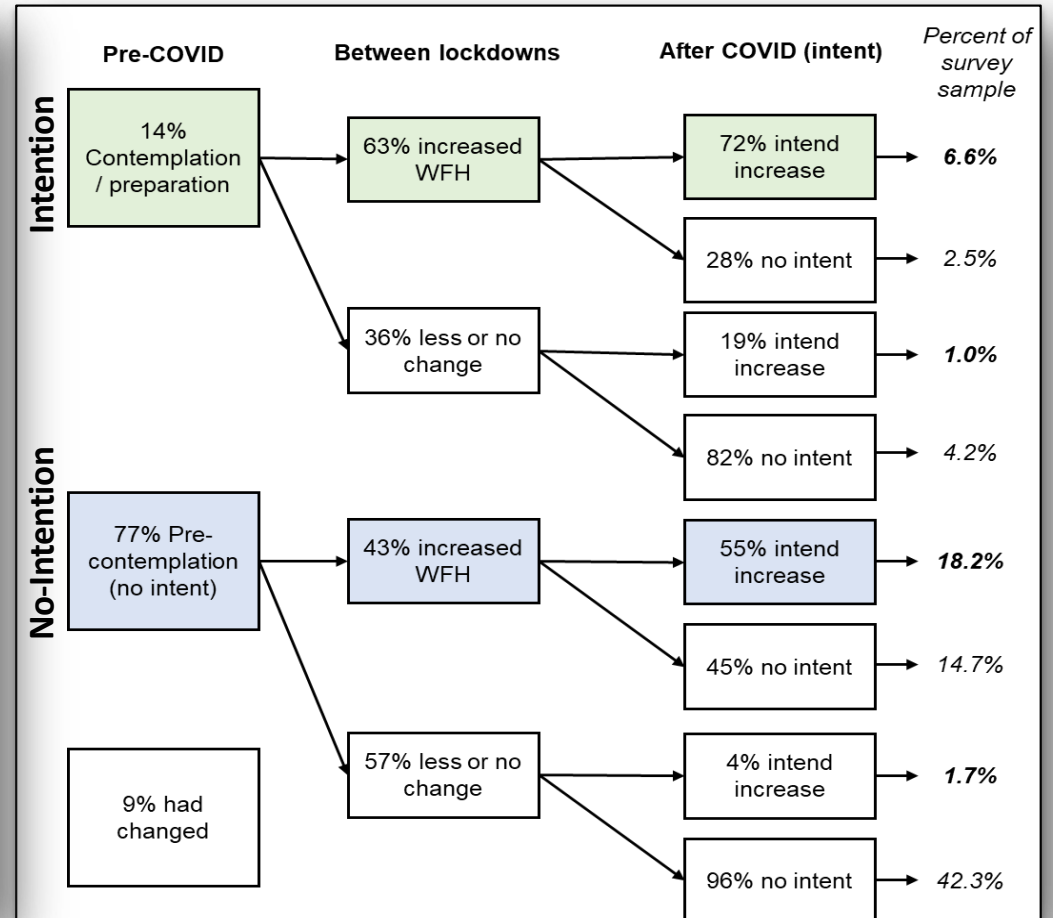
Intention to change travel can predict future travel behaviour; it works for COVID-19 as it did for other major travel disruptions...

London 2012 TDM Program Impacts



Source: Parkes et al (2016).

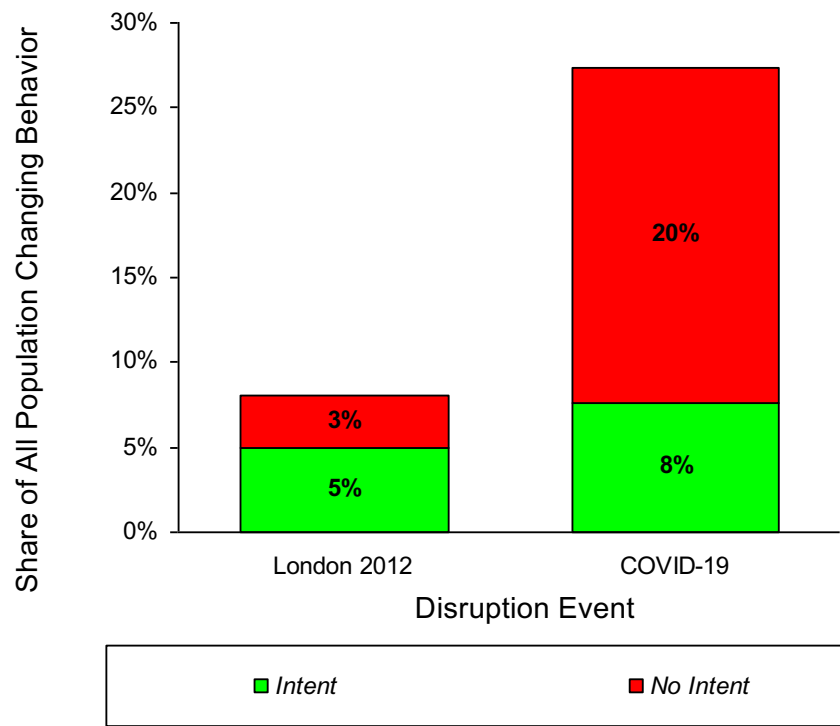
Monash COVID-19 WFH Travel Impacts Research



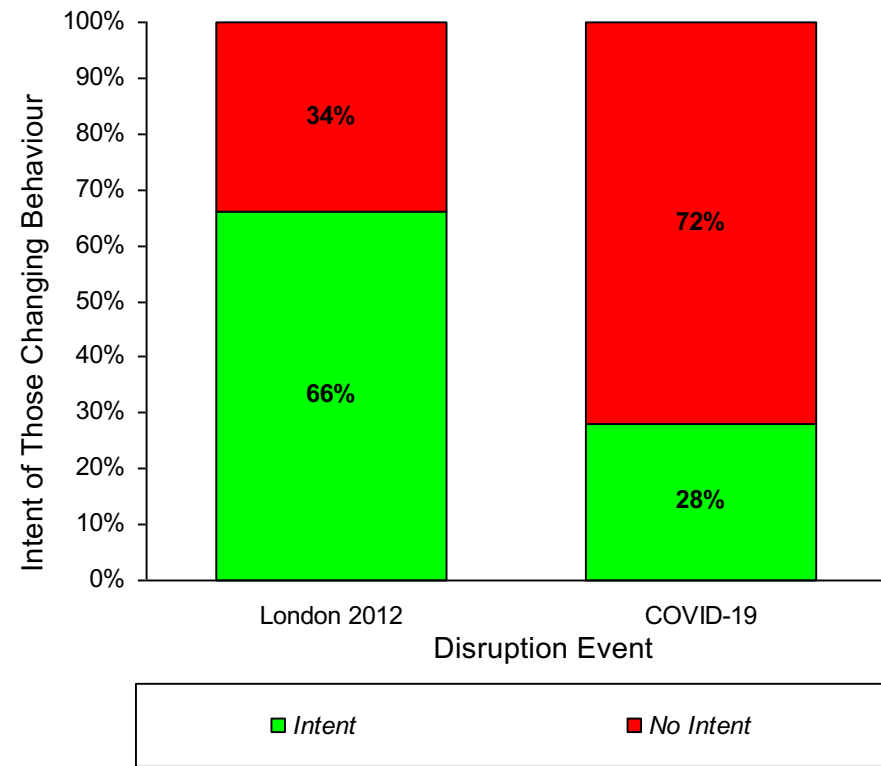
Source: Preliminary results Monash Research 2022

...but with COVID-19 behaviour shifts are bigger and most shifts occur without intent – suggesting a **RENORMING** of behaviour

Change in Behavior

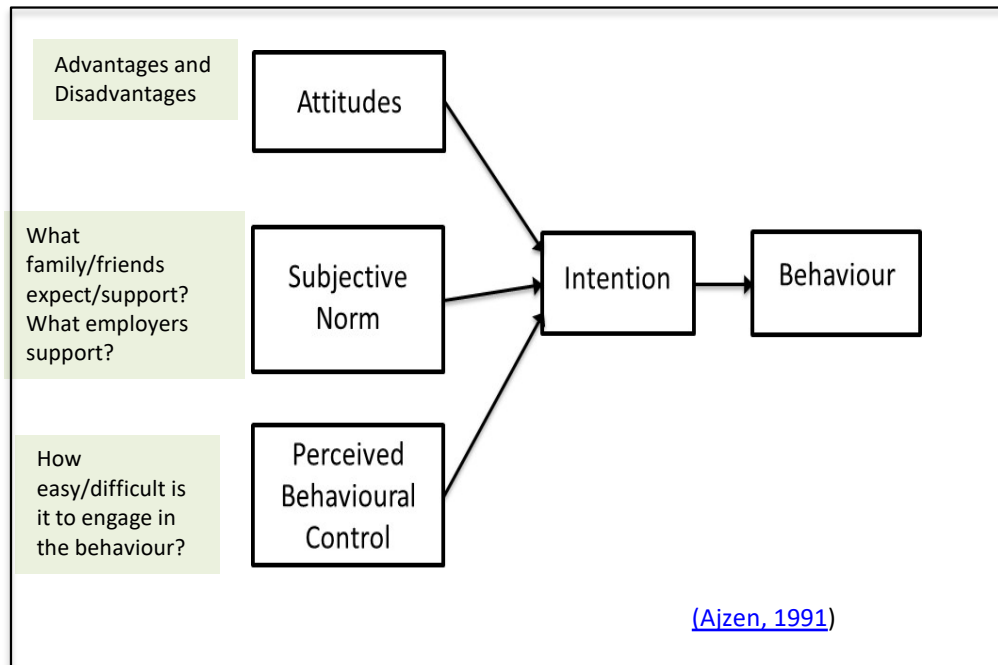


Prior Intent for Those Changing Behavior



This hypothesis matches our findings on WFH post COVID using the Theory of Planned Behaviour – Norms are very influential

Theory of Planned Behaviour



Post COVID-19 WFH Intention

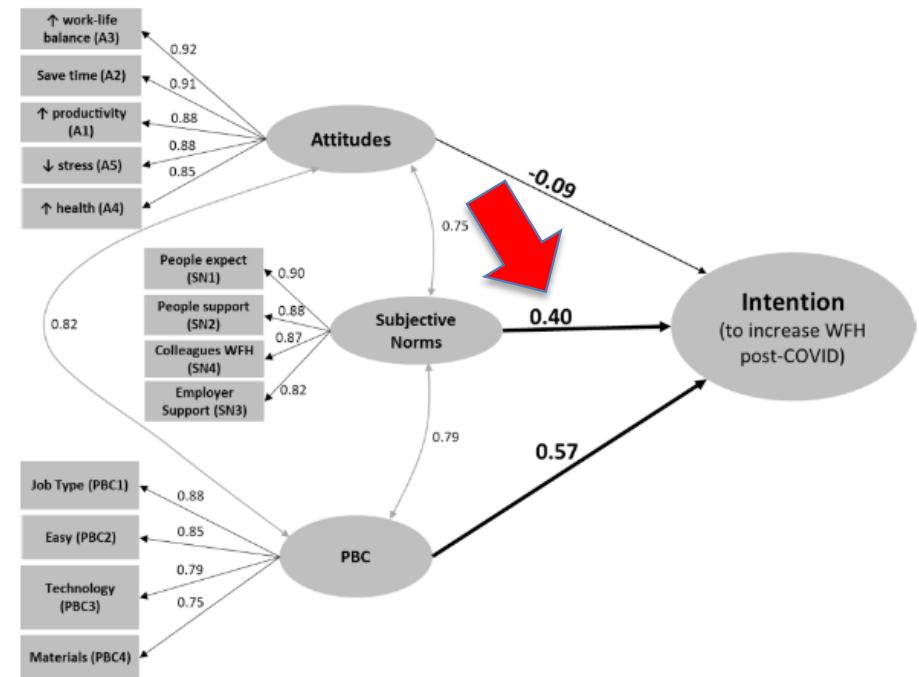


Fig. 5a. Group A SEM Output - for respondent who did not WFH pre-COVID (n = 986).

Source: Jain T Currie G and Aston L (2022) "COVID and Working from Home: Long-term Impacts and Psycho-social Determinants" TRANSPORTATION RESEARCH PART A Volume 156, February 2022, Pages 52-68

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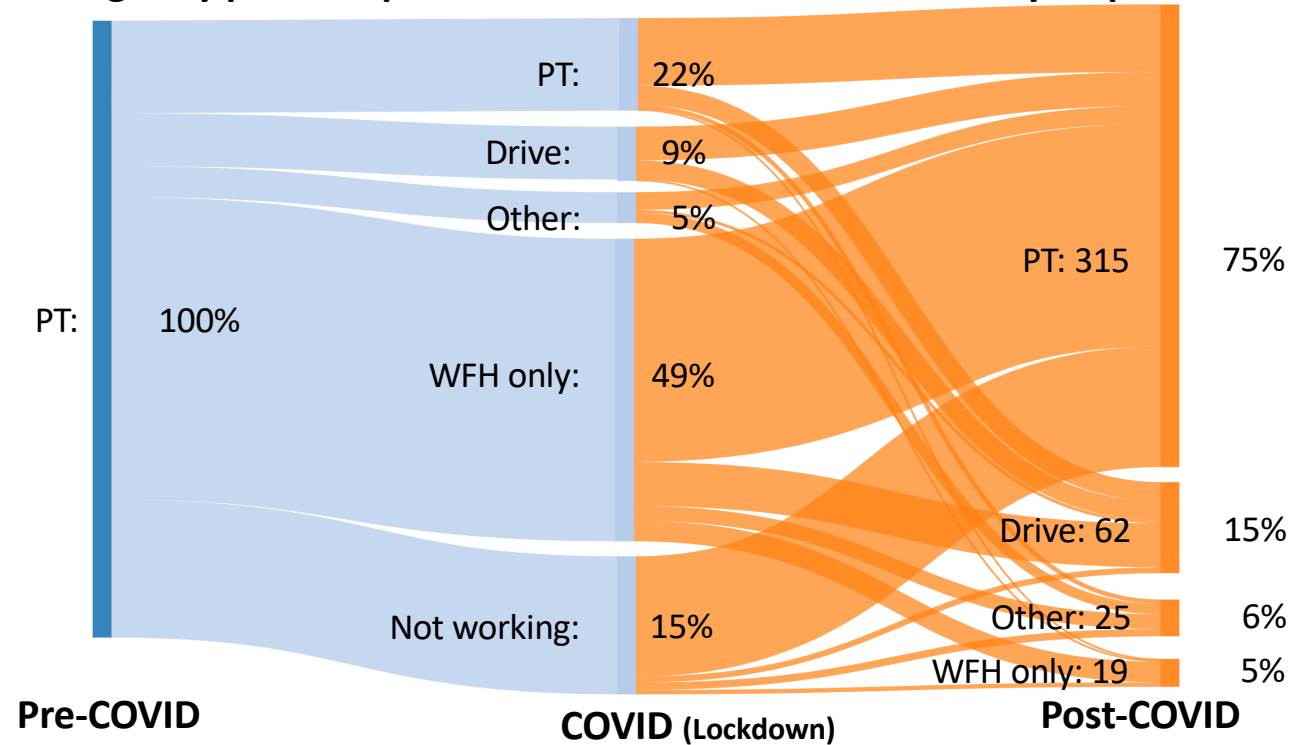


We are researching where transit ridership has gone – and where will future ridership come from

Inclusion criteria

- ▶ Working pre- & post-COVID:
 - Full time,
 - Part time, or
 - Casual
- ▶ PT user pre-COVID

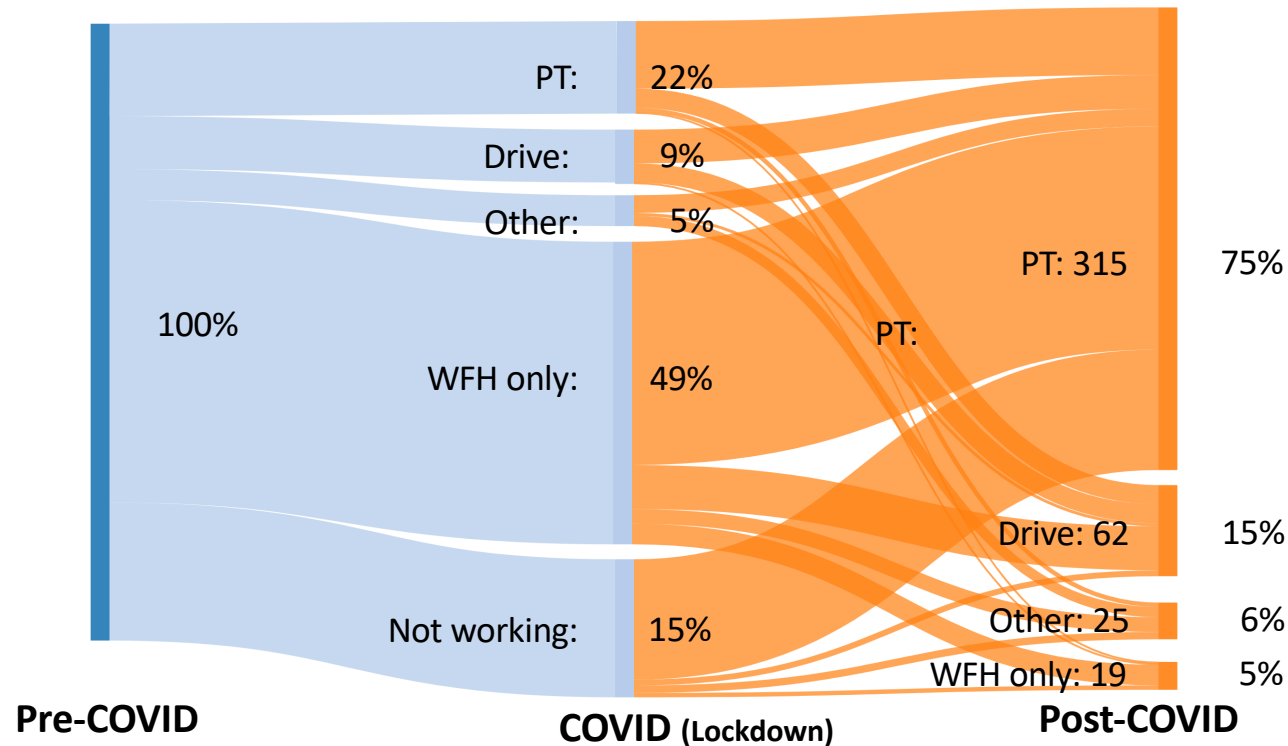
Travel changes by pre- and post-COVID workers who commute by PT pre-COVID



Source: Preliminary results Monash Research 2022

Currently; most of the pre-Covid PT market are WFH (49%), Not working (15%) or driving (9%); 22% are still using PT

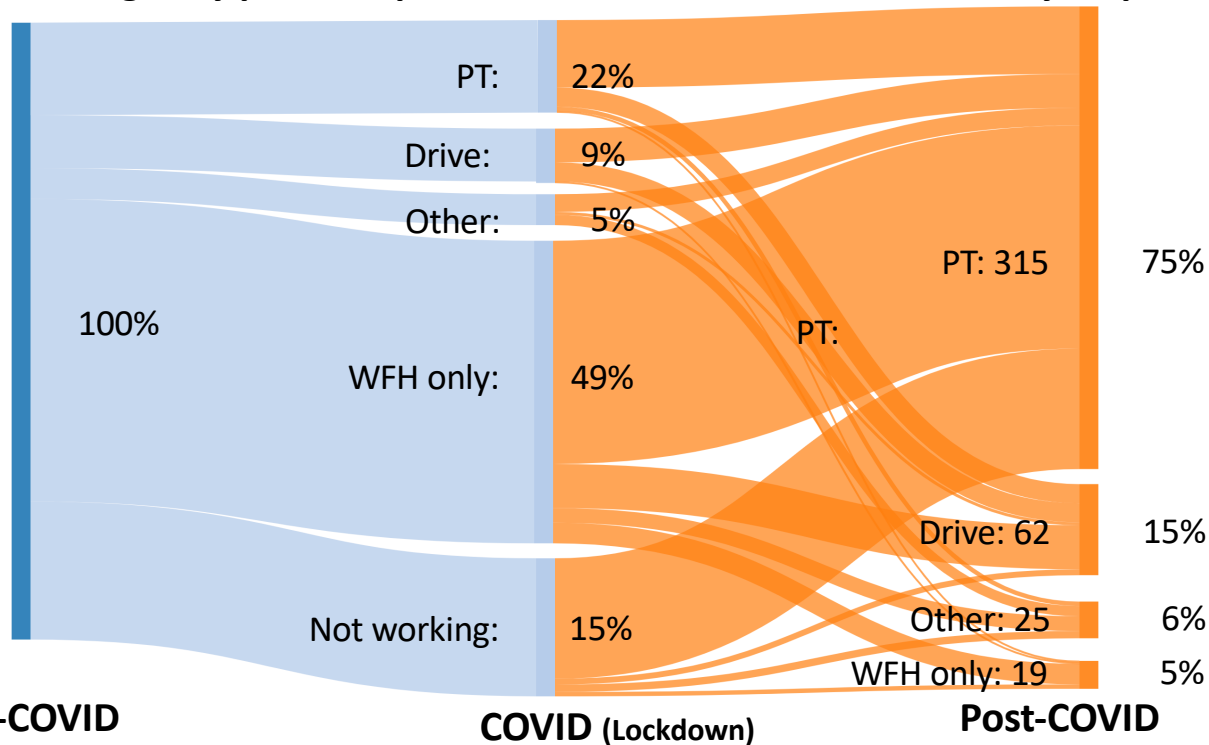
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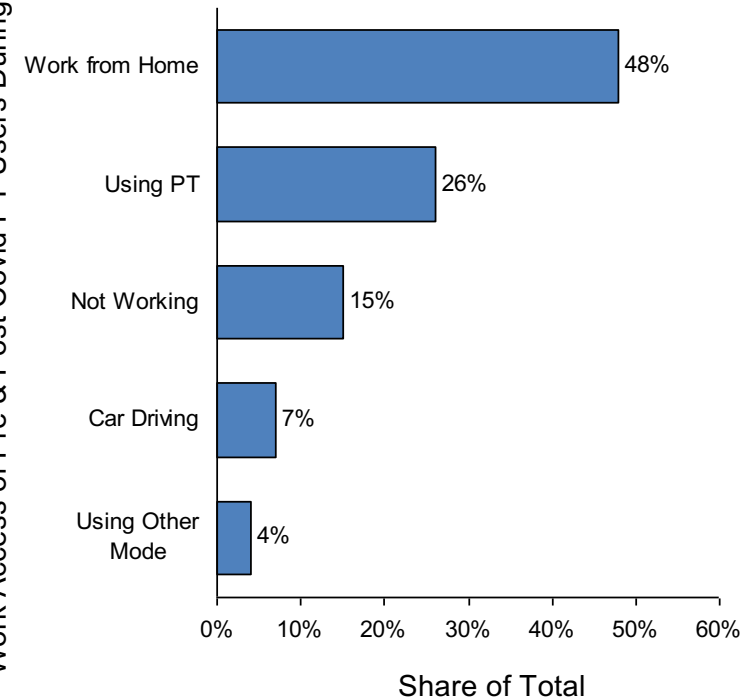
Source: Preliminary results Monash Research 2022

Post-COVID the Mkt will grow from 22% (now) to 75% pre Covid levels – Expected future ridership is currently WFH (48%) using PT (26%) out of work (15%) or using other modes

Travel changes by pre- and post-COVID workers who commute by PT pre-COVID



What is the Future PT Market Doing Now During COVID-19



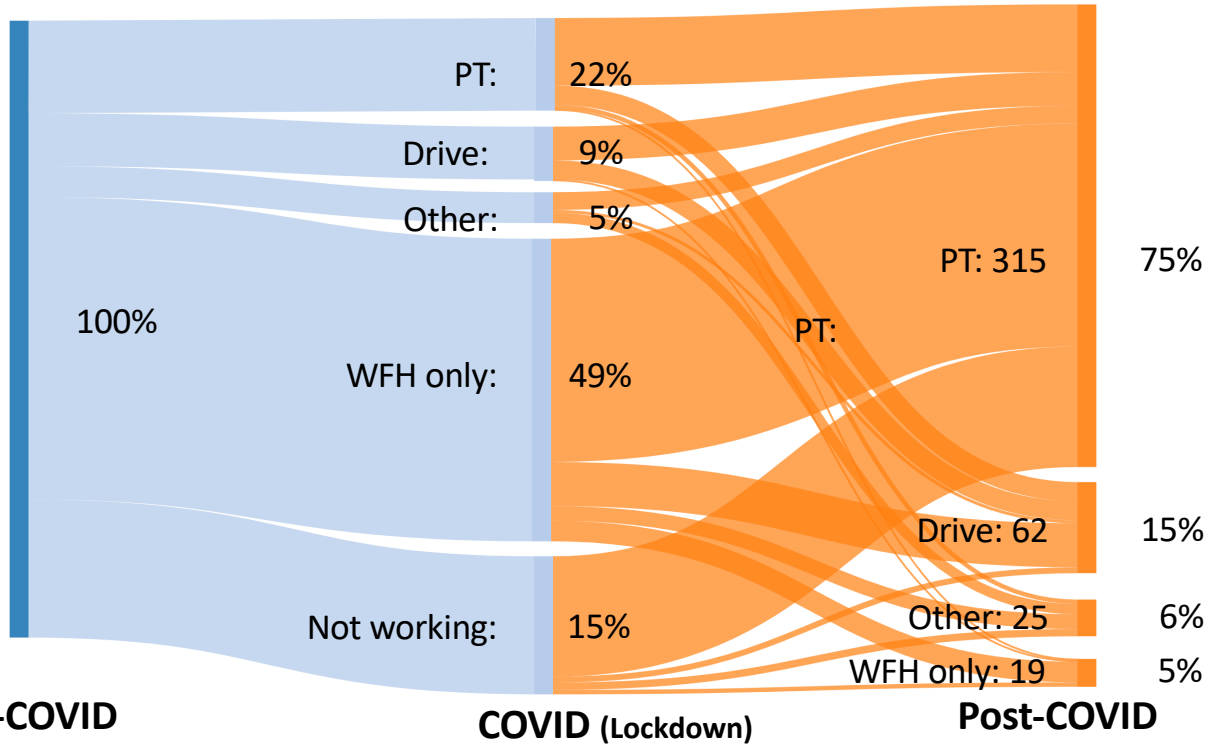
Source: Preliminary results Monash Research 2022



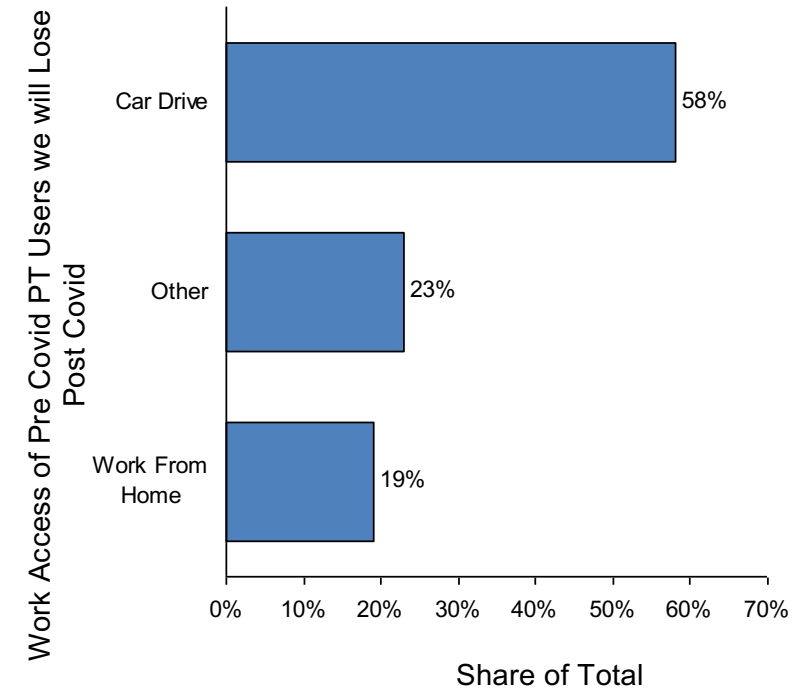
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Another Perspective – Post COVID we lose ~25% of our pre-Covid PT market; 58% will drive, 19% WFH; the rest using other modes

Travel changes by pre- and post-COVID workers who commute by PT pre-COVID



Where are the PT Users we will Lose in Future Going to Go Post-Covid



Source: Preliminary results Monash Research 2022



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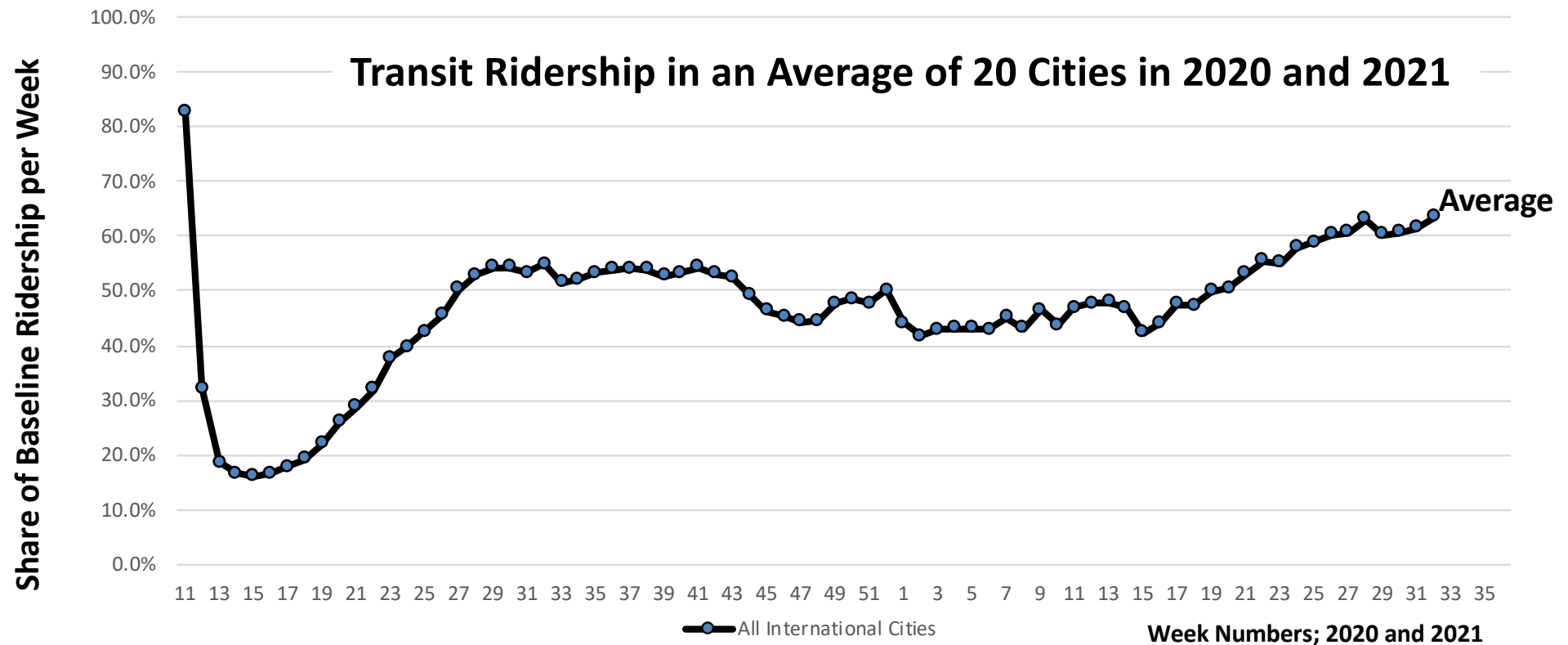
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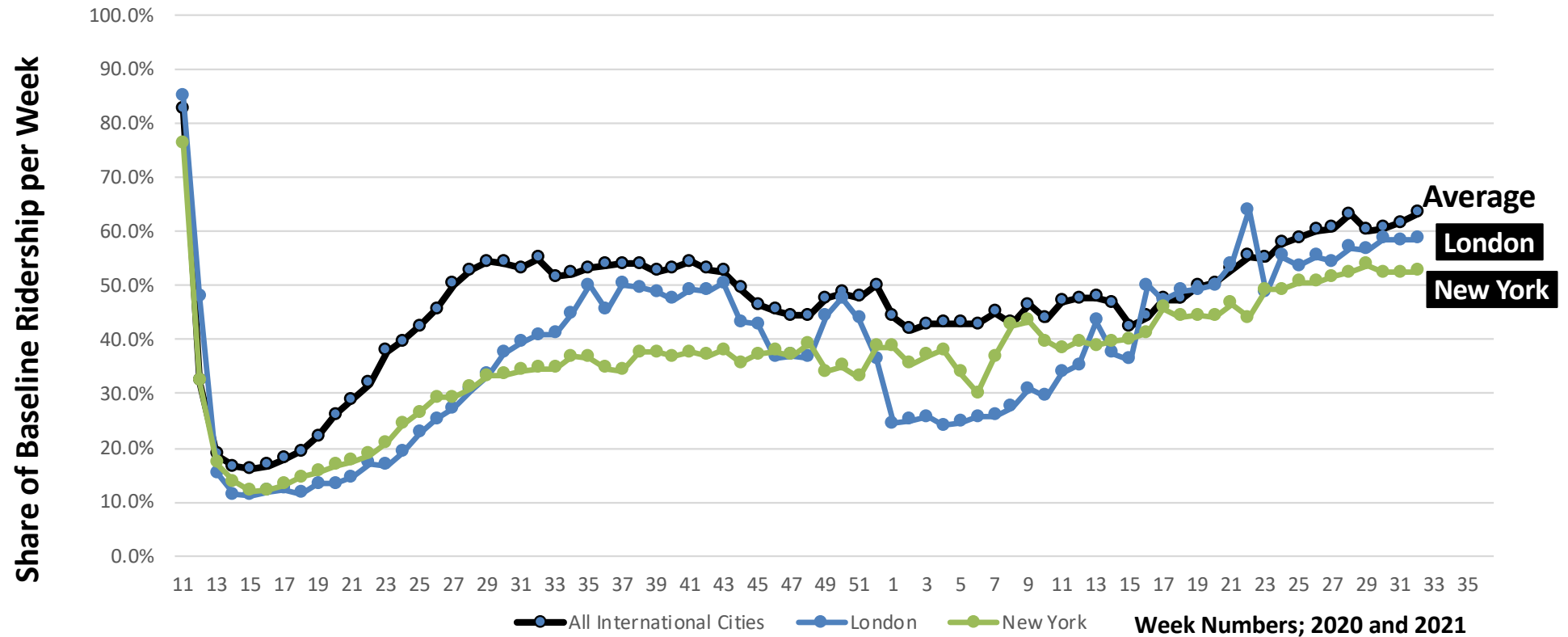


City Transit ridership fell, recovered then slightly declined from early 2020; from 2021 a slow recovery is underway



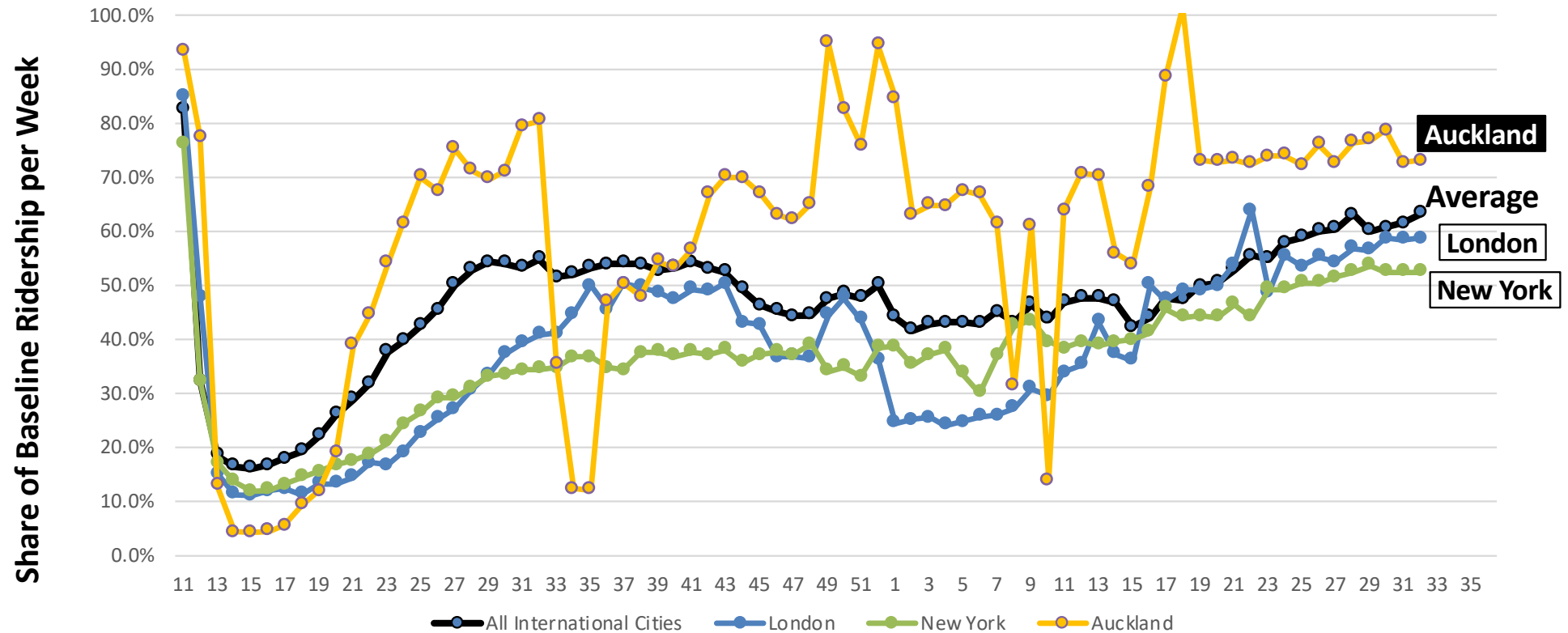
Source: Data courtesy of UITP; cities include Vienna, Oslo, London, Montreal, Madrid, Auckland, Pilsen, New York, Kayseri, Barcelona, Berlin, Vancouver, Chicago, Ottawa, Stockholm, Jersey City, Dijon, Warsaw, Reenes, Toronto

London/New York – Poor Pandemic Containment Cities who Rely on Vaccination – have underperformed but are in a recovery trend



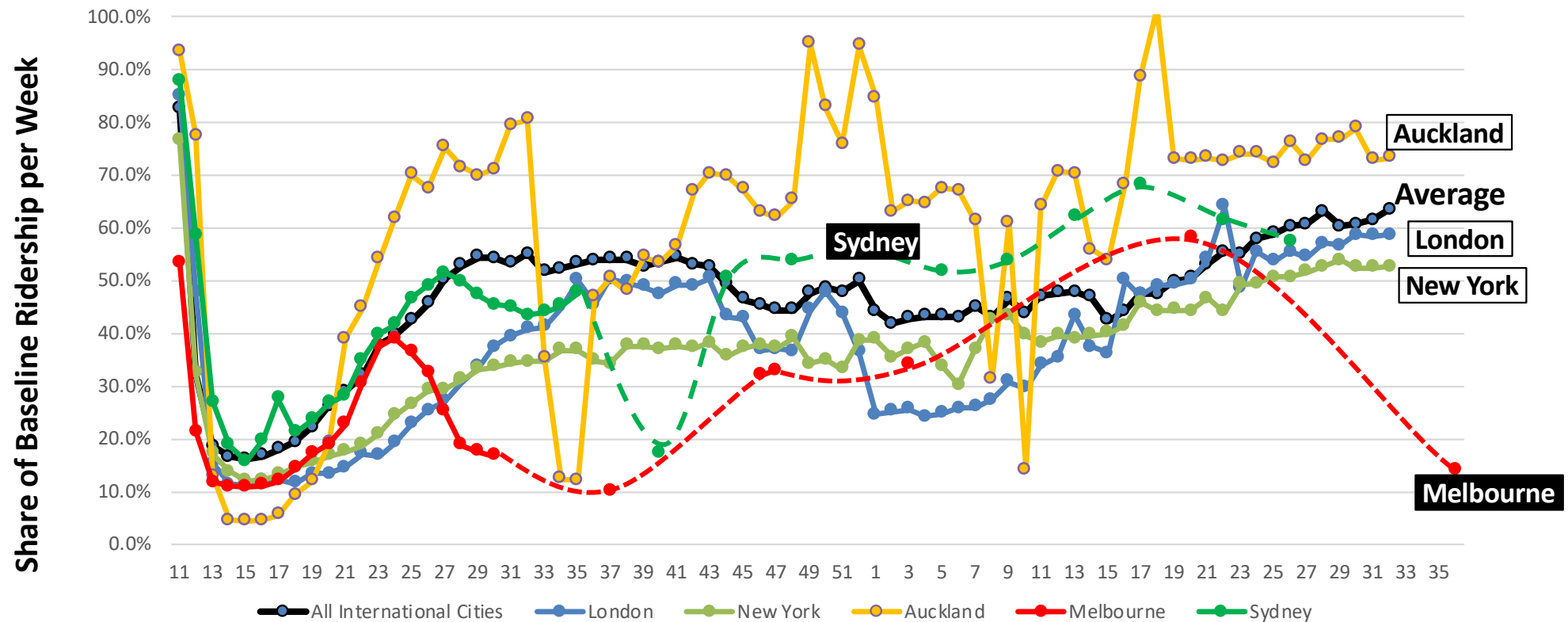
Source: Data courtesy of UITP

Auckland – A Strong ‘Lockdown and Eradicate’ City – has better performance during eradication; and poor during lockdown – but is also on a recovery path



Source: Data courtesy of UITP

Sydney/Melbourne – also Lockdown/Eradicate – have a generally similar performance



Source: Data courtesy of UITP

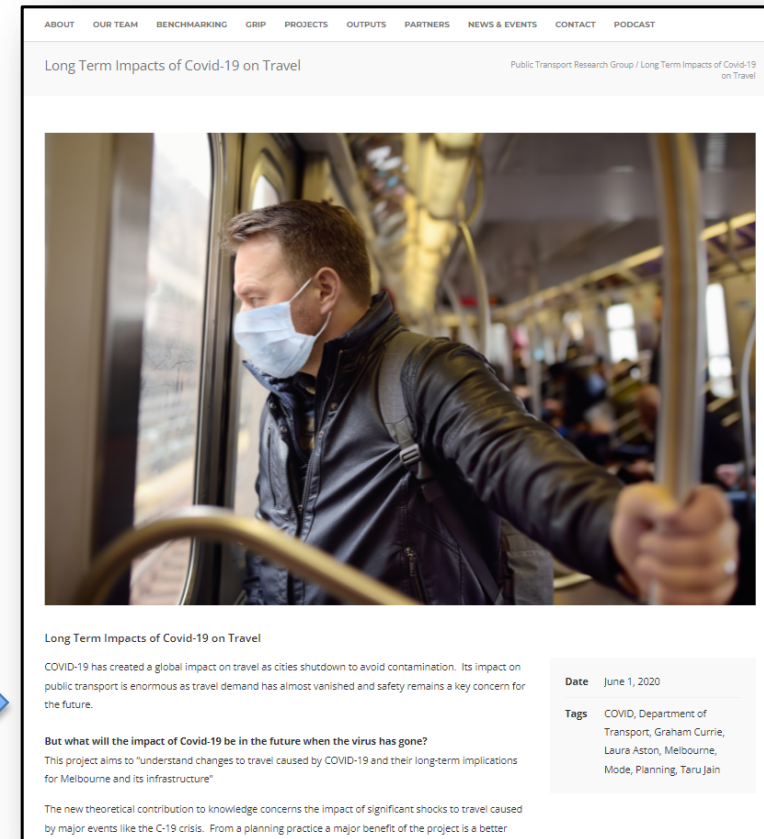
Monash COVID-19 Research has been made OPEN ACCESS; free to assist industry

■ Published papers in top journals:

- Currie G, Jain T and Aston L (2021) "[Evidence of a Post-COVID Change in Travel Behaviour - Self-Reported Expectations of Commuting in Melbourne](#)" Transportation Research Part A Volume 153, November 2021, Pages 218-234
- Jain T Currie G and Aston L (2022) "[COVID and Working from Home: Long-term Impacts and Psycho-social Determinants](#)" Transportation Research Part A Volume 156, February 2022, Pages 52-68

■ PTRG Monash website for COVID-19 Travel Research:

<http://publictransportresearchgroup.info/portfolio-item/covid-19-long-terms-impacts/>

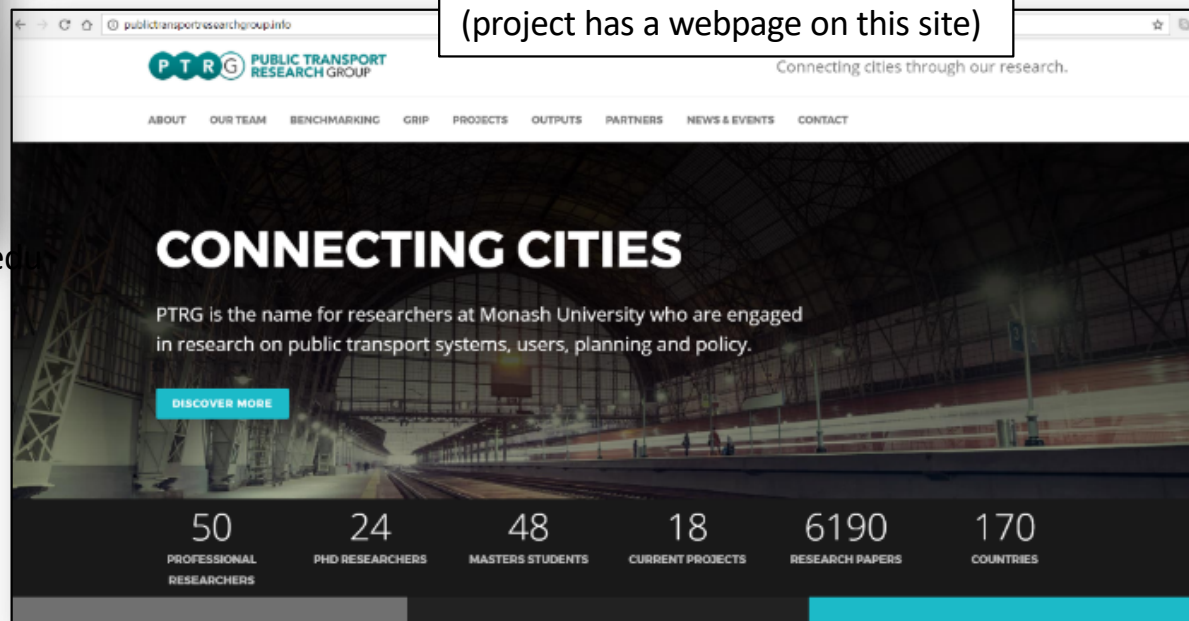


Please reach out for more information



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Researching Transit



RT5 – Long term
impact of COVID-
19 on Travel
Behaviour

