Victoria/Australia is in the midst of the biggest transport infrastructure investment program in history

The Victorian Government is investing **$70 billion** in major transport infrastructure and smart technology projects underway to build more capacity on existing networks and fund improvements across road, rail and port.

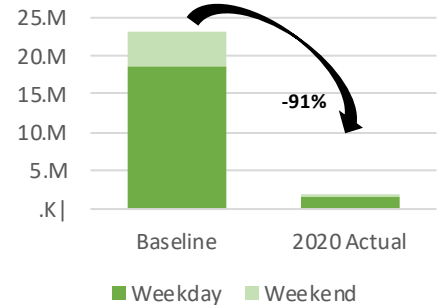Australia Net Annual Historical Migration
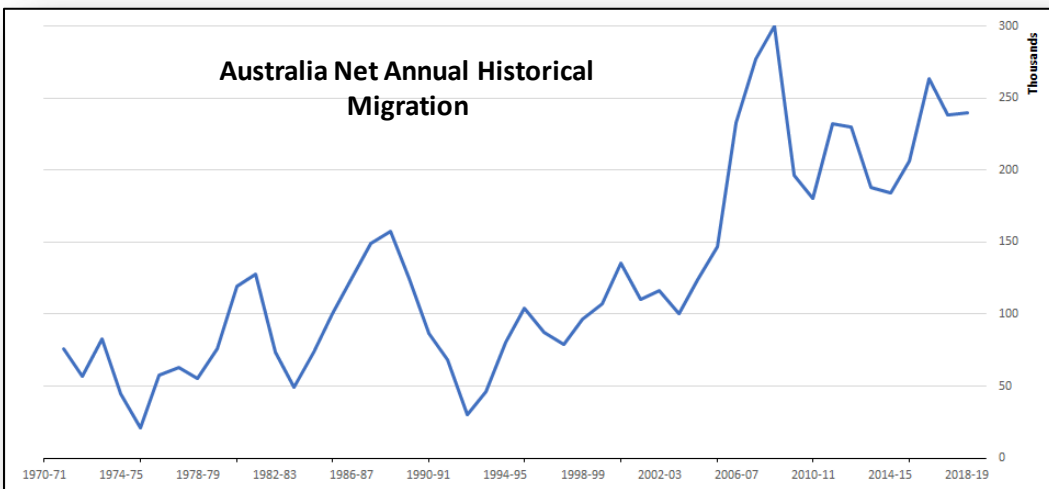
- High Capacity Metro Trains
- Melbourne Airport Rail Link
- Suburban Rail Loop
- Fast Rail to Geelong
- Regional Network Development Plan
- Port Rail Shuttle
- The Metro Tunnel
- Level crossing removals
- West Gate Tunnel
- North East Link
- Regional Rail Revival

Major road and rail projects[1]

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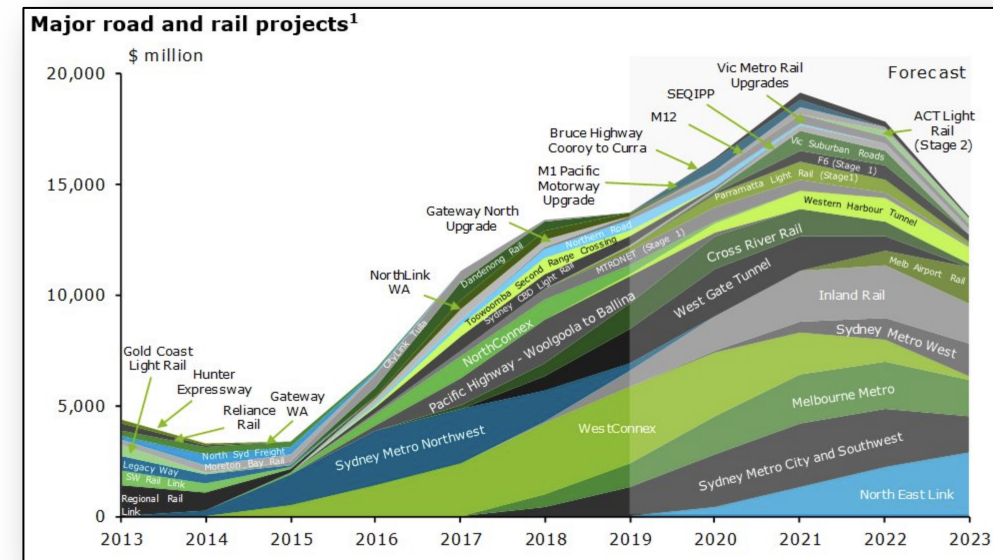
Then Covid-19 happened……do we need infrastructure investment? – in Victoria, it's the $70 Billion question

3. Total trips during shutdown (millions)

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Monash Global Executive MBA

Saturday 11th July 2020
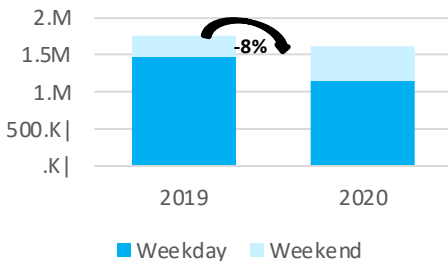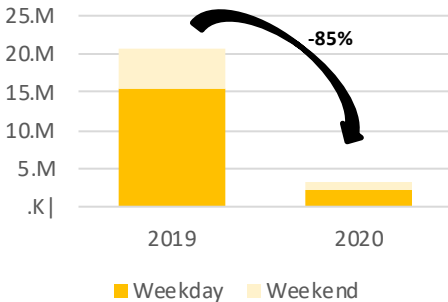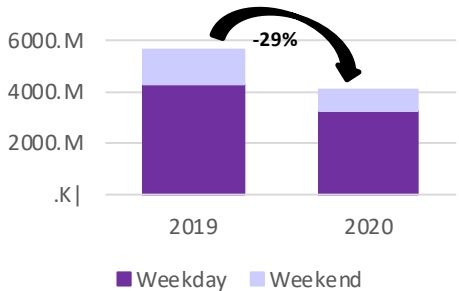
Covid-19 Long Term Travel Impacts Study
EARLY FINDINGS – SHORT FORM

Prof Graham Currie FTSE, Dr Taru Jain, Laura Aston

Public Transport Research Group

Monash Institute of Transport Studies

Monash University, Australia

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TRANSPORT
STUDIES

Most travel behaviour [research] is habitual – but research has measured how DISRUPTIONS affect short and long term travel ; much of this is relevant to understanding Covid-19 Impacts

1. Evidence – Major Disruption Impacts on Long Term Travel

- Humans like routine! We ignore or undervalue alternatives that aren't habitual (Goodwin 1977).
- Disruptions cause a routine to be broken and alternatives to be discovered or re-evaluated more rationally
- When public transport is compromised, most riders shift to private car (Nguyen-Phuoc et al. 2018, Exel and Rietveld 2001)

Disruptions Explored in Travel Behaviour Research

Personal health concerns	Security threats	Planned disruptions	Unplanned disruptions	Economic crises
SARS (2003) MERS (2012)	9/11 Terror attacks (2001) London, Madrid bombings 2005	Major events (London Olympics) Infrastructure works	Natural disasters Infrastructure fault Strikes	Global financial Crisis e.g. 2007
Fear/dread avoidance Social distancing	Fear/dread avoidance	Availability of options changes Encouragement to change travel	Availability of options changes Unknown duration	Long duration Macro/structural impacts Reduced latent demand

SARS/9-11 Safety shocks had big transit ridership impacts but recovery within 3-6 months of crisis start – no suggestion of residual long term fear impact (but these events were relatively short term)

Impact of historical crises on urban transit ridership

Effect of safety crises – 9/11

- Average weekday ridership, Bay Area Rapid Transit (BART)
- Average daily ridership, Taipei Metro
- Monthly ridership, Port-Authority Trans-Hudson (PATH)

Pre-outbreak = 100

September 2001

Part of PATH did not reopen till mid-2003

>50% drop in urban transit in Bay Area post 9/11

Months before/after 9/11
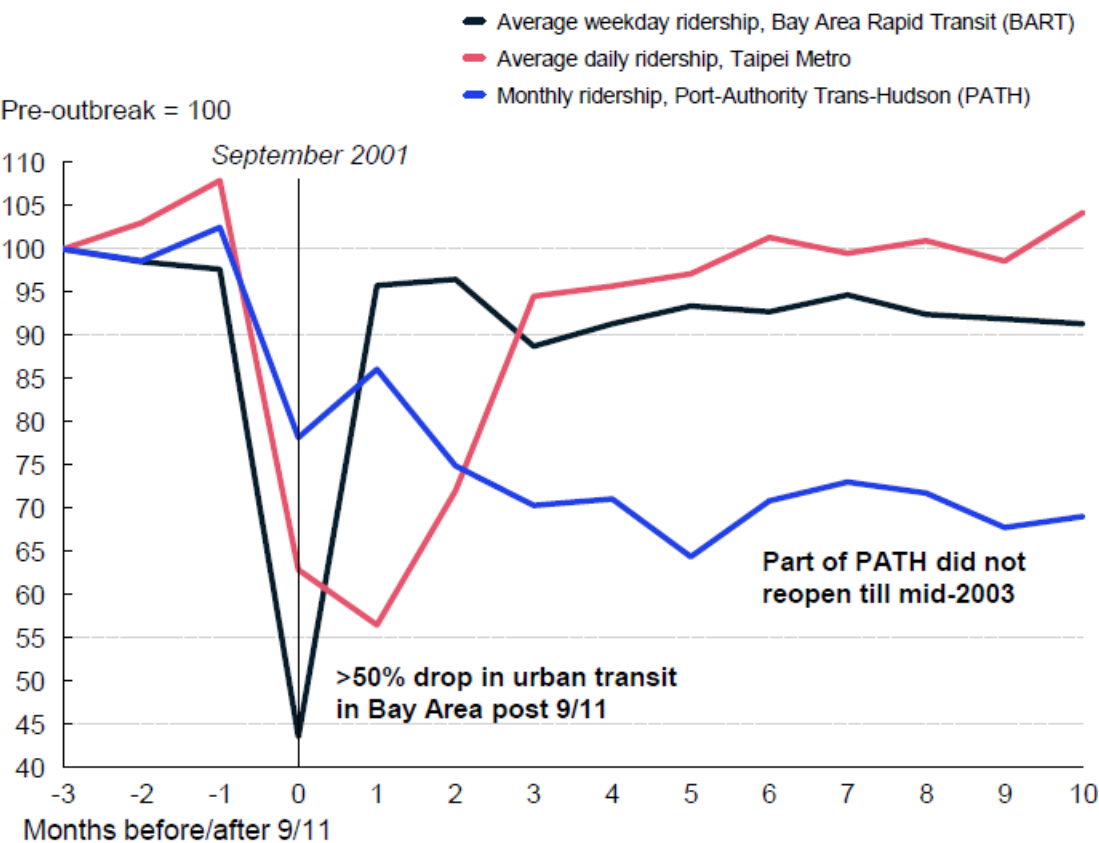
Effect of health crises – SARS 2003

- Average daily ridership, Taipei Metro
- Monthly ridership, public transportation Hong Kong[1]

Pre-outbreak = 100

Start of outbreak (April 2003)

Months before/after outbreak
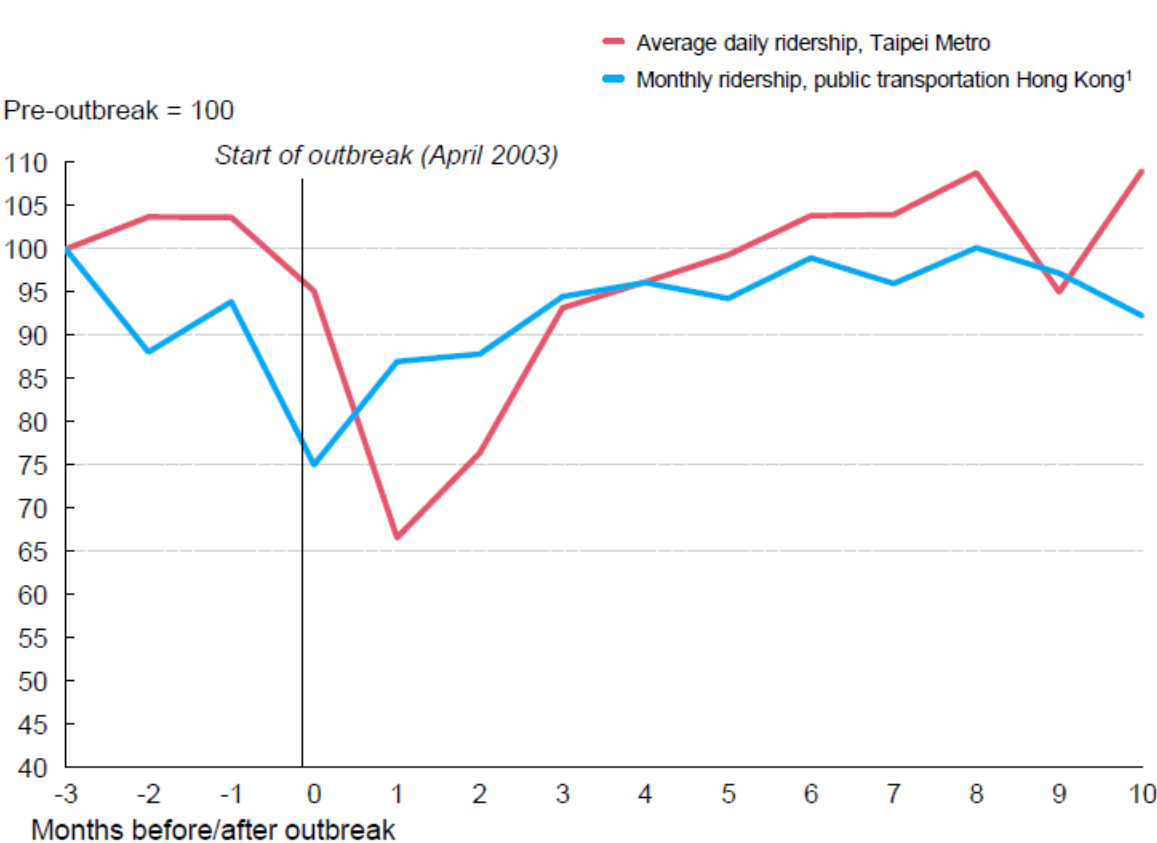
1. Includes various modes of transportation, such as bus, rail, and ferry; does not include taxi

McKinsey & Company   8

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A <u>NEW</u> framework has been developed to explore COVID-19 DISRUPTION and how it might impact travel – using the 4 stages of Covid-19

Pre-Covid-19 Travel	Covid-19 Shutdown	Post-Shutdown	Post-Pandemic Long Term

Long Term focus is when the Virus is no longer contagious

Impacts are explored at three levels; behavioural research focusses on the MICRO scale using surveys ; MACRO and MESO effects are explored using secondary evidence

The 'Monash' Framework - An Integrated Framework of Factors Influencing Travel Behavior Before, During and After the Covid-19 Crisis.

Conventional Travel Behaviour Influences

- Lifestyle Choices
- Mobility Choices
- Travel Choices

Pre-Covid-19 Travel | Covid-19 Shutdown | Post-Shutdown | Post-Pandemic Long Term

Long Term focus is when the Virus is no longer contagious

COVID-19 Pandemic and Shutdown

Scale of Influence

C-19 Impacts

MICRO
- Home isolation
- Travel restrictions
- Illness
- Increased Work from Home
- Increased tele-working/ socialising
- Different use of travel modes
- More localized familiarity
- Increased home deliveries
- Infection fear
- Reduced transport budget
- Housing choice change

MESO
- School/Uni/ shop closures.
- Changes to the transport system

MACRO
- Temporary business shutdown
- Industry shutdown/ Unemployment
- International Trade Shutdown
- Tourism Shutdown
- Industrial restructuring (automation, virtual workplaces)

Research Approach

Surveys primarily focussed on Micro issues

Analysis of Secondary Evidence

Note: This framework is developed by the research team from a review of previous research literature and also from a workshop with staff from the Victorian Department of Transport

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C-19 Travel Impacts – 1. Online Interview Survey – Shutdown Phase

- Objective:
  - provide qualitative detailed <u>narratives</u> of how <u>C-19 shutdown</u> has <u>impacted the lives</u> of respondents and to provide <u>inputs to long term forecasting</u> of impacts.

- Aims:
  a. Understand <u>personal experiences of C-19 Shutdown</u> on life, work and travel – notably differences between pre-shutdown and shutdown (in their words)
  b. Ask for respondents <u>personal views</u> on how life, work and travel might change in a <u>post-C-19 shutdown</u> – will anything have changed? (in their words)
  c. <u>Explore specific issues which might affect long term travel</u> with respondents (in their words)

- Approach
  - Targetted 18 interviews - 40 mins - online/by phone

Table 1 – Sample Frame – Online Interviews

Personal Income	Regions of Melbourne								
	Inner			Middle			Outer		
	Age			Age			Age		
	Low*	Medium	High	Low	Medium	High	Low	Medium	High
Low	1^2	-	1	1^2		1	1^2		1
Medium	1	1^2		1	1^2		1	1^2	
High		1	1^2		1	1^2		1	1^2

*No surveys are undertaken of anyone aged under 18
²Respondents who used Public Transport in Melbourne equal to and also more frequently than 1-2 days a week

Completed in March/April 2020

Interviews explore 4 issue sets – Pre-Shutdown , Shutdown, Post-Pandemic and Specific Issues which might affect long term travel (from the Monash framework)

DISCUSSION GUIDE – Areas for Questioning

A. Pre - Shutdown
i. Weekday activities
ii. What did you do (work, study, retired etc)
iii. How did you get around

B. Shutdown
i. [OPEN] How affected
ii. How affected activities
iii. How affected getting around

C. Post - Pandemic
i. [OPEN How do you expect what you do and how you get around will change when the virus has gone?
ii. How affected activities
iii. How affected getting around
iv. Will C-19 change getting around in future; why. how

D. Exploring Specific Long Term Impact Issues (The Monash Framework)

Working from Home
i. During shutdown - WFH? Doing More?
ii. Post Shutdown – how will this change number of times Why?

Tele-Video Conferencing
i. During shutdown - Involved for work, study social? Doing More?
ii. Post Shutdown – how will this change number of times Why?

Travel Modes
i. During shutdown changed how get around ? Doing More?
ii. Post Shutdown – how will this change getting around, How? Why?

D. Exploring Specific Long Term Impact Issues **CONTINUED**

Local Travel
i. During shutdown – activities more local? What? How do you get around?
ii. Post Shutdown – will you do more local activities - Why?

Home Deliveries
i. During shutdown – had more? What? Why?
ii. Replaced out of home travel?
iii. Post Shutdown – how will this change deliveries - Why?

Residual Public Transport Fear
i. [OPEN] After shutdown – will you use PT?   Why?
ii. When infection risk gone – will you have concerns about infection on PT in future? How will this affect PT use? Why?

Impact of Lower Income
i. After shutdown – will income be less? Why?
ii. How will this affect going to activities?
iii. How will this affect how you get around?

Car Ownership
i. After shutdown – will the C-19 Crisis affect how you own and use a car? How? Why?

Residential Housing/Location
i. After shutdown – will the C-19 Crisis affect where you want to live? Where? Why?

Post-Pandemic; EVERY respondent said they would do activities and travel the same way they did Pre-Pandemic

C. Post - Pandemic

How do you expect what you do and how you get around will change when the virus has gone?

Go back to normal

No get back to normal

Will drift back into same as we used to

I'll travel by public transport again

Not much change

Go back to normal

It will all be the same; don't expect to change anything

Go back to normal

Just go back to normal

Will soon go back to how it was

Go back to how it was before the virus came about

Expect it will go back to normal

Note: Yellow boxes report specific answers from a respondent in their own words

Post-Pandemic; EVERYONE using public transport Pre-Pandemic said they would use public transport Post-Pandemic; Infection concerns remain BUT don't influence expected travel

D. Exploring Specific Long Term Impact Issues

Post Pandemic will you use public transport?

Yes

Yes

Yes no problem with it

Yes will use public transport

Yes I would

Im not scared to use public transport ; I use trams even now

Yes

See no reason why not; yes

Yes I have no choice

D. Exploring Specific Long Term Impact Issues

Post Pandemic will you have concerns about infection on public transport?

Majority – No concern – some noted concern

No more than usual; we have the annual flu concern but not a problem
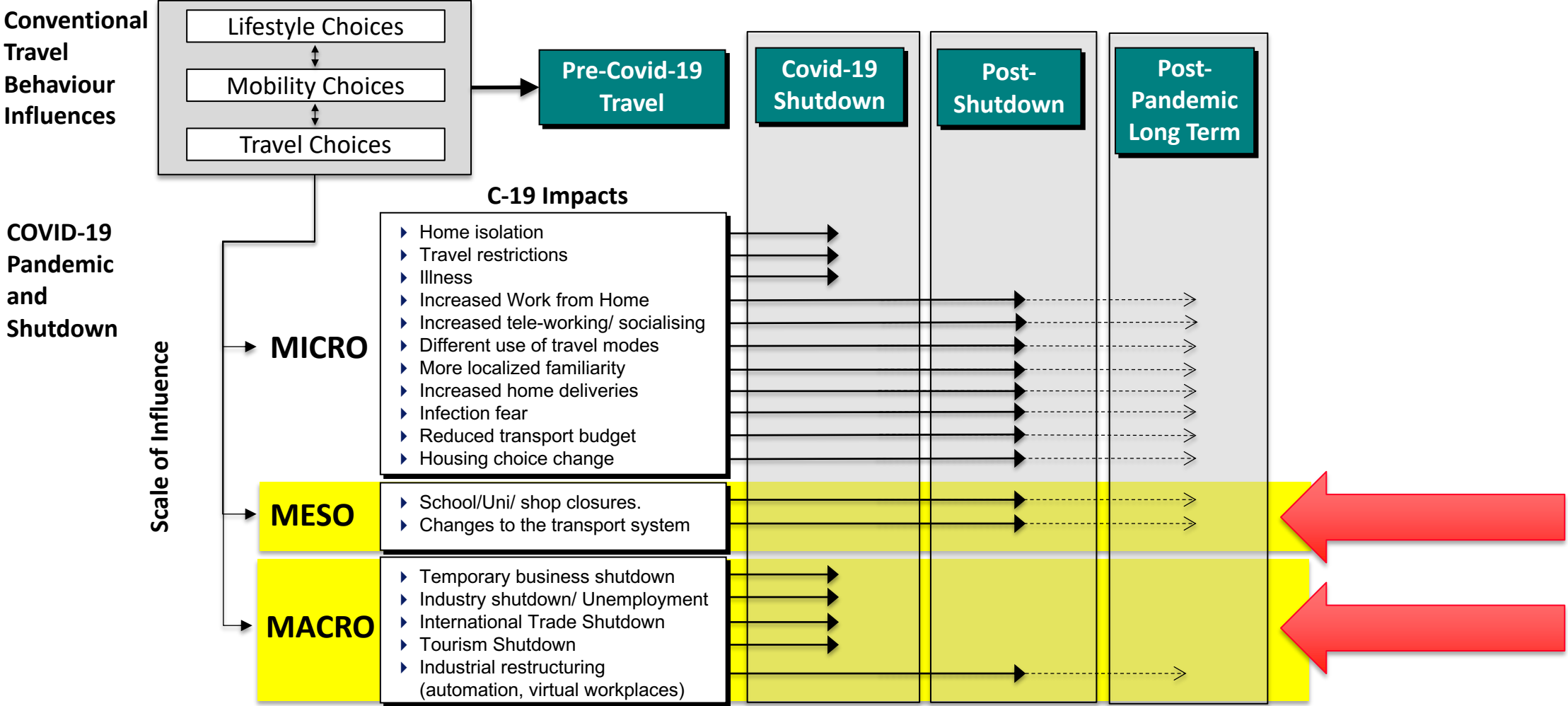
A little apprehensive but no not real concerns; have to have a bit of confidence when things go back; ill be careful; get a flu shot

As long as risk has gone ill be ok

Note: Yellow boxes report specific answers from a respondent in their own words
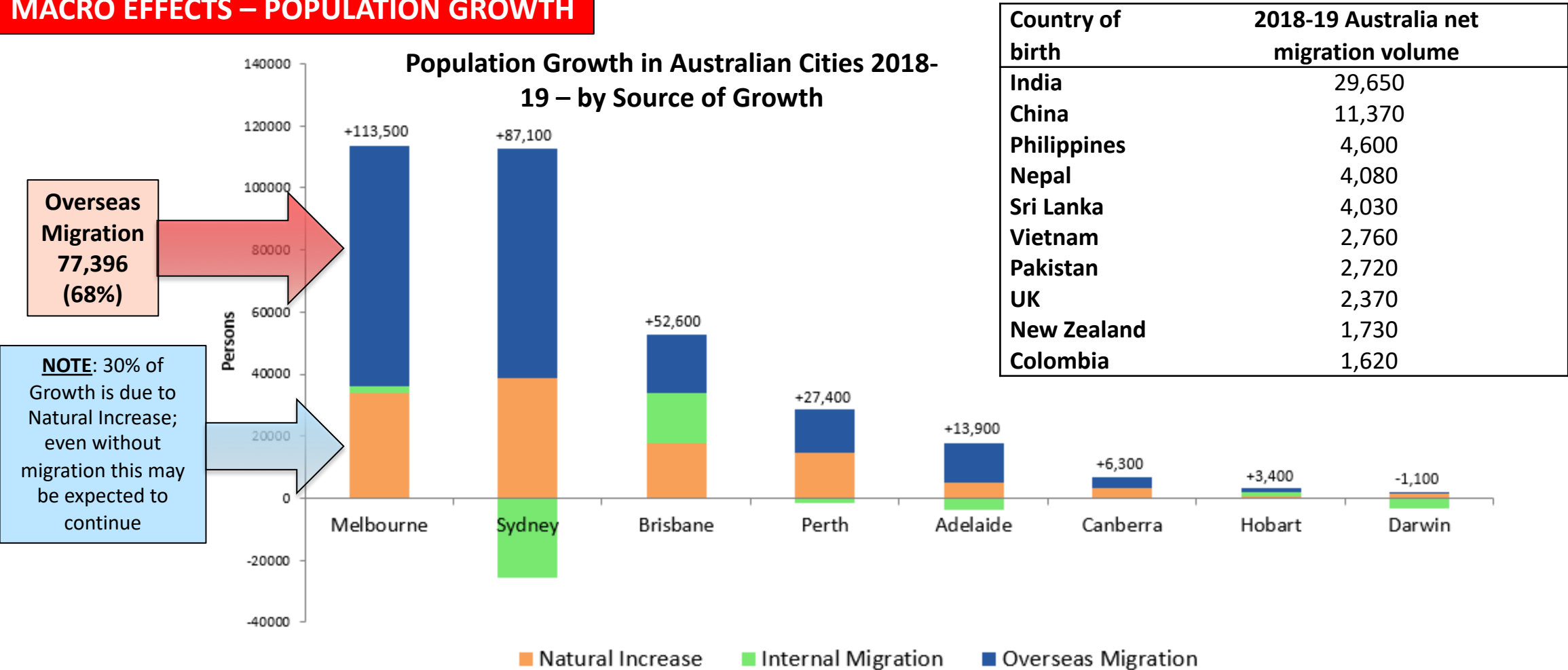
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Note: This framework is developed by the research team from a review of previous research literature and also from a workshop with staff from the Victorian Department of Transport

MACRO IMPACT POPULATION GROWTH -Pre-Covid Melbourne growth was driven by immigration (mainly from India, China etc) caused by the relative popularity of Australia as a place to work/live

MACRO EFFECTS – POPULATION GROWTH

Population Growth in Australian Cities 2018-19 – by Source of Growth

Country of birth	2018-19 Australia net migration volume
India	29,650
China	11,370
Philippines	4,600
Nepal	4,080
Sri Lanka	4,030
Vietnam	2,760
Pakistan	2,720
UK	2,370
New Zealand	1,730
Colombia	1,620

Overseas Migration 77,396 (68%)

NOTE: 30% of Growth is due to Natural Increase; even without migration this may be expected to continue

Melbourne +113,500
Sydney +87,100
Brisbane +52,600
Perth +27,400
Adelaide +13,900
Canberra +6,300
Hobart +3,400
Darwin -1,100

■ Natural Increase ■ Internal Migration ■ Overseas Migration

Source: Australian Bureau of Statistics 2019, 3218.0 - Regional Population Growth, Australia, 2018-19
Australian Bureau of Statistics 2020, Net overseas migration by Country of birth, State/territory by Reference period - Financial years, 2004-05 to 2018-19, 3412.0 - Migration, Australia, 2018-19, accessed 10 June 2020

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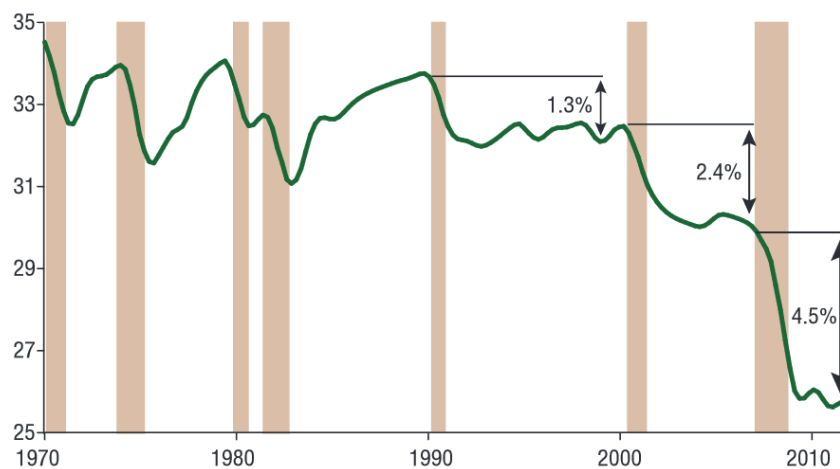
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MACRO IMPACT EMPLOYMENT - Historical shocks have increased already declining unskilled work ; but shows a recovery in total employment in all cases – a decade recovery timeframe is likely

MACRO EFFECTS - EMPLOYMENT

Chart 6: Routine Jobs Declined Considerably in Past Three Recessions

Routine employment per capita (percent)

NOTE: Shaded bars indicate National Bureau of Economic Research dated recessions.

SOURCE: Adapted with permission from "The Trend Is the Cycle: Job Polarization and Jobless Recoveries," by Nir Jaimovich and Henry E. Siu, National Bureau of Economic Research, NBER Working Paper no. 18334, August 2012.

http://www.dallasfed.org/assets/documents/research/eclett/2014/el1405.pdf
Source: Prof Simon Wilke Dean, Monash Faculty of Business and Economics

Figure 3.7: Even with JobKeeper, Australia may face the worst unemployment rate since the Great Depression
Unemployment rate since federation, with our three projected scenarios
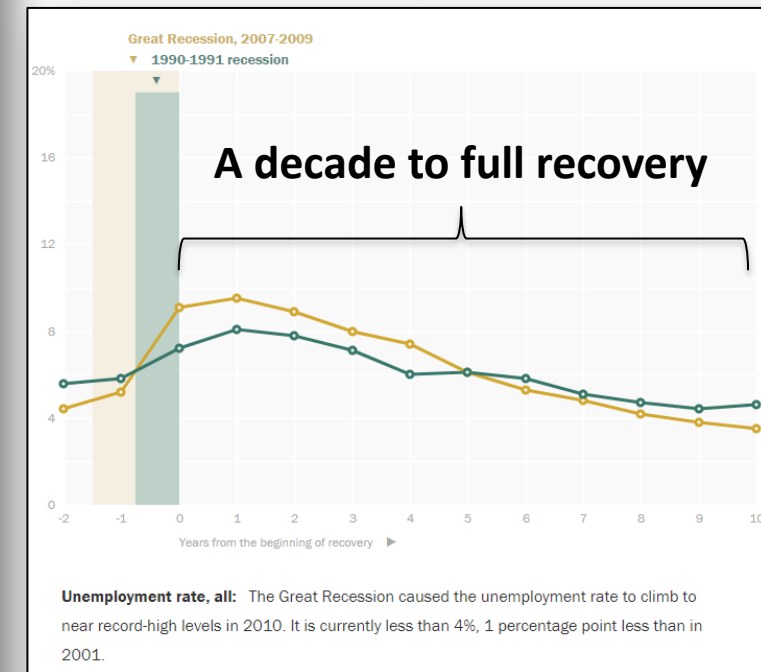
Employment Recovers in All Cases
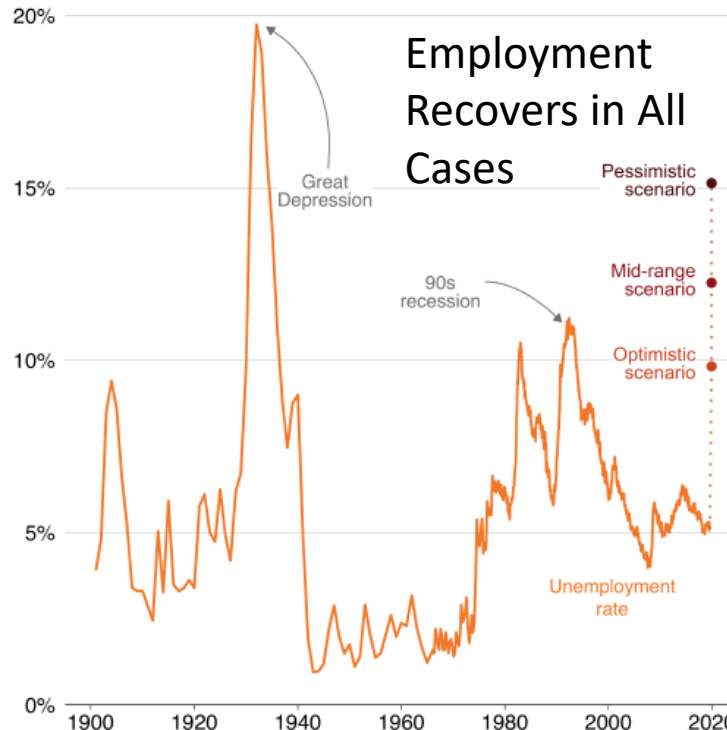
Notes: Data are annual prior to 1966; quarterly from 1966-78; and seasonally adjusted monthly data thereafter.
Sources: Butlin (1977), ABS (2007) and ABS (2020a).

Source: Coates, B., Cowgill, M., Chen, T., and Mackey, W. (2020). *Shutdown: estimating the COVID-19 employment shock*. Grattan Institute.

Recent Evidence

Great Recession, 2007-2009
1990-1991 recession

A decade to full recovery

Unemployment rate, all: The Great Recession caused the unemployment rate to climb to near record-high levels in 2010. It is currently less than 4%, 1 percentage point less than in 2001.

Source: RAKESH KOCHHAR AND JESSE BENNETT (2019) 'Two Recessions, Two Recoveries Compare the two longest episodes in U.S. history with our interactive' Pew Research Centre, Social and Demographic Trends Dec 31 2019.
https://www.pewsocialtrends.org/essay/two-recessions-two-recoveries/ last accessed May 2020

Post Shutdown – we need to find a new way to manage 51% of all travel to central Melbourne – Remode, Reduce and Renorming and how long it lasts might affect long term travel impacts
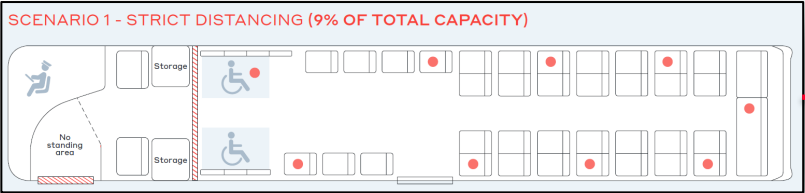
MESO EFFECTS – Adjustment to Post Shutdown Travel forced by Social Distancing

- Pre-Covid-19 Travel
- Covid-19 Shutdown
- Post-Shutdown
- Post-Pandemic Long Term

Post Shutdown – Infection Still Around

Social Distancing Required → **Public Transport Runs at 10-15% Capacity**

SCENARIO 1 - STRICT DISTANCING (9% OF TOTAL CAPACITY)

No standing area

Storage   Storage

Source: WSP – Public Transport and COVID-19, 2020

Commute To Work – City of Melbourne (000)

	Pre-Covid		Covid – Post Shutdown
Public Transport	220	57%	22
Drive a Car	117	30%	117
Walk	22	6%	22
Bike	15	4%	15
Car as Passenger	11	3%	11
Other	6	2%	6
	385		385
Work from home	9		9

198?

How can these commuters work

Remode or Reduce could create Renorming influencing long term travel

Source: ABS Census Journey to Work 2016 – Travel to the City of Melbourne

JTW excluding 90% of PT users who cannot travel due to social distancing

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16

A more detailed discussion of these findings is presented on the RESEARCHING TRANSIT podcast released Monday 25th May

www.ptrg.info

Podcast

Long Term Impacts of Covid-19 on Travel

Released Monday 25th May