

Melbourne Transport Problems & Progress

- Ideas for Bold Politicians

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The Australian Research Council Key Centre in Transport Management



Introduction

Transport in Melbourne

Public Transport in Melbourne

The Drivers of Change

The Future



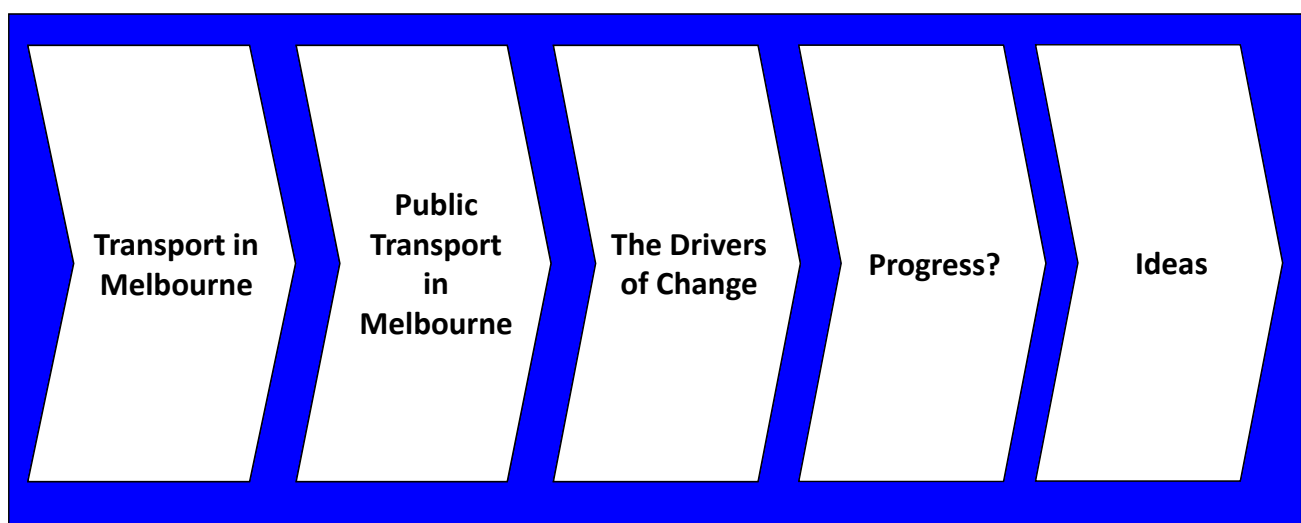
This presentation overviews Melbourne transport problems and progress...

Issues Covered

- What is the transport context of Melbourne?
- What are the major public transport problems in service provision and development
- Outlines progress in service development
- Identifies Ideas for Bold Politicians



...and is structured as follows



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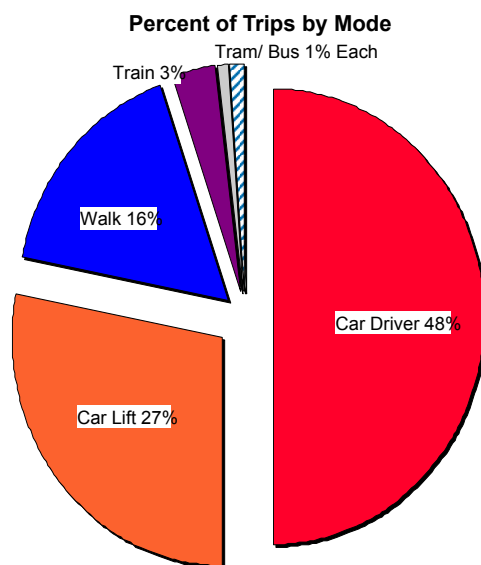
The Drivers of Change

Progress?

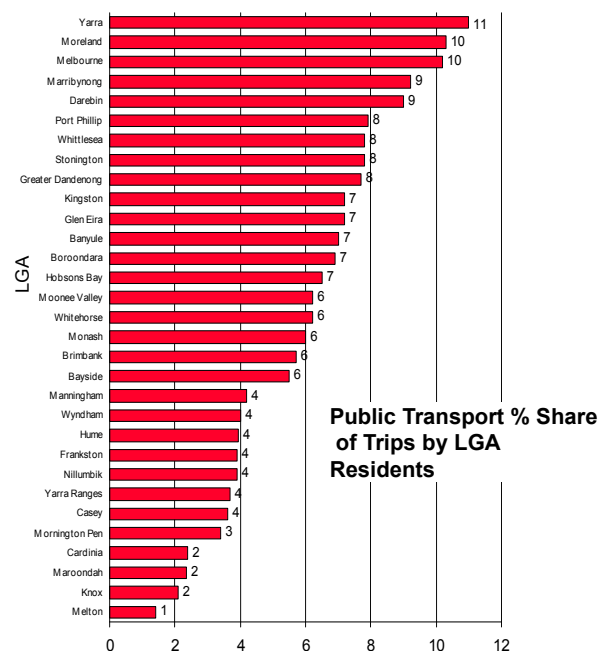
Ideas



Melbourne is a car based society – 75% of trips are by car



Source: Melbourne on the move – VATS 1994



Car vehicle sales and ownership continue to rise

Total new passenger vehicles sold annually - Australia

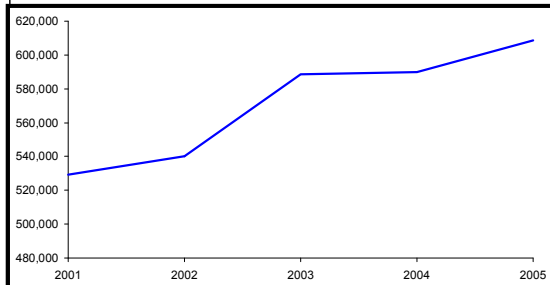


Figure 7.2: New passenger vehicle sales 2001-2005 (FCAI, 2006)

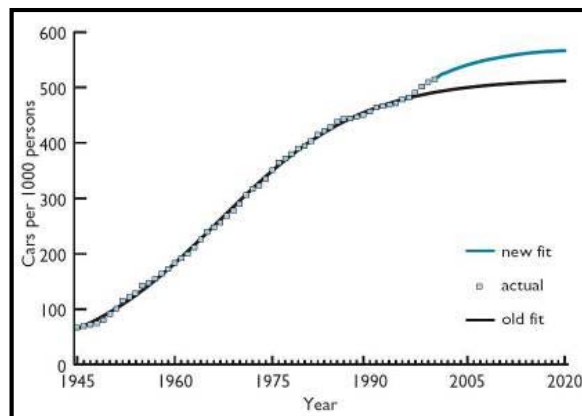
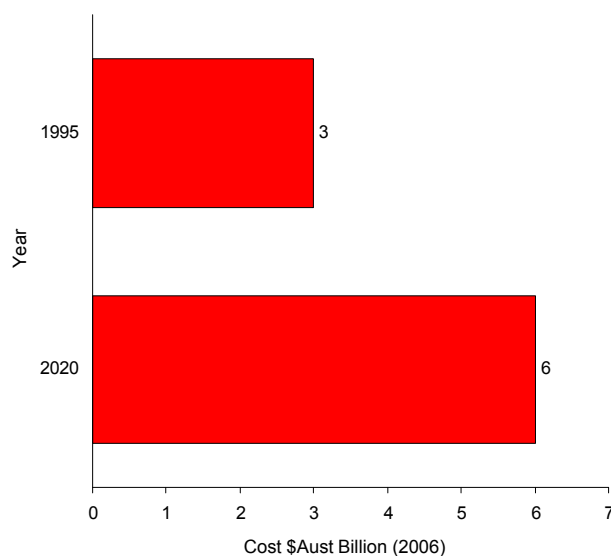


Figure 10.4: Revised projected per capita Australian motor vehicle ownership (BTRE, 2002, p.15)

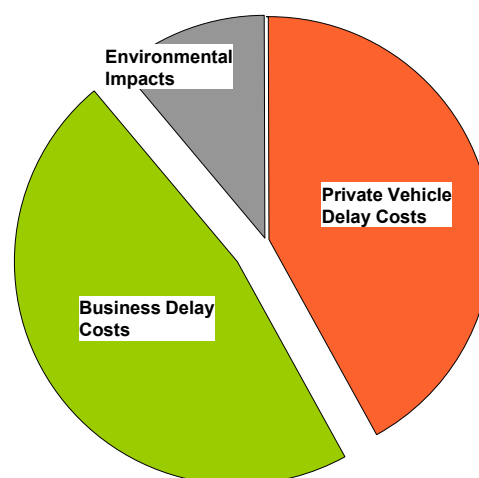
Urban traffic congestion in Melbourne costs \$3B p.a. (2005) and will double by 2020

Cost of Urban Traffic Congestion - Melbourne

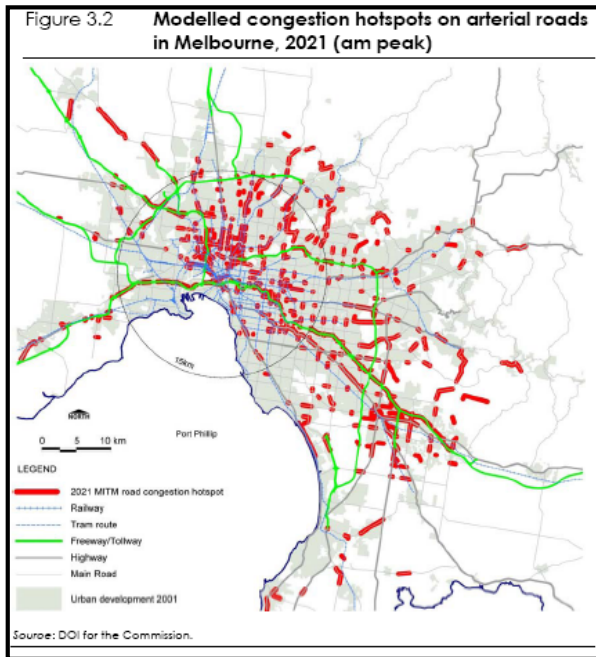
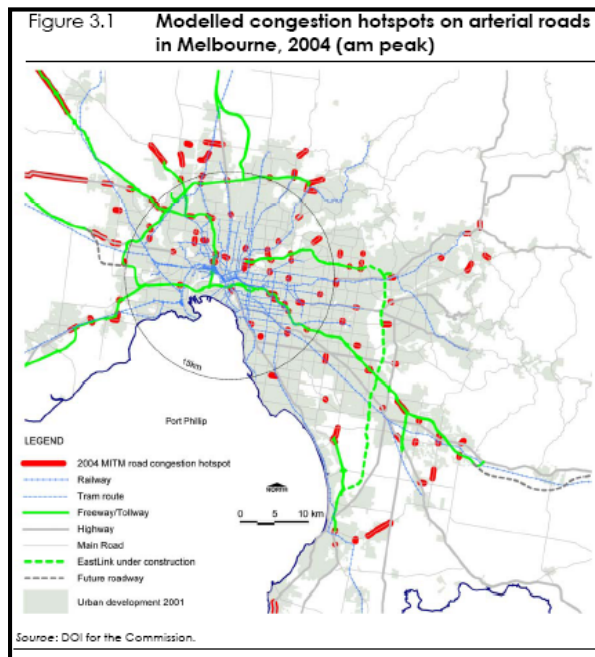


Source: BTRE (2006)

Share of 1995 Costs



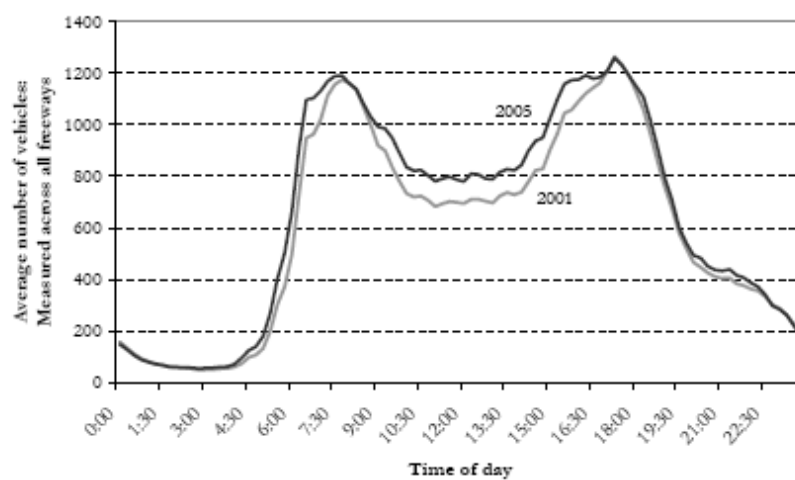
Congestion 'hotspots' are expected to spread spatially....



Source: VCEC (2006) *Inquiry into Managing Transport Congestion*

....and in Time

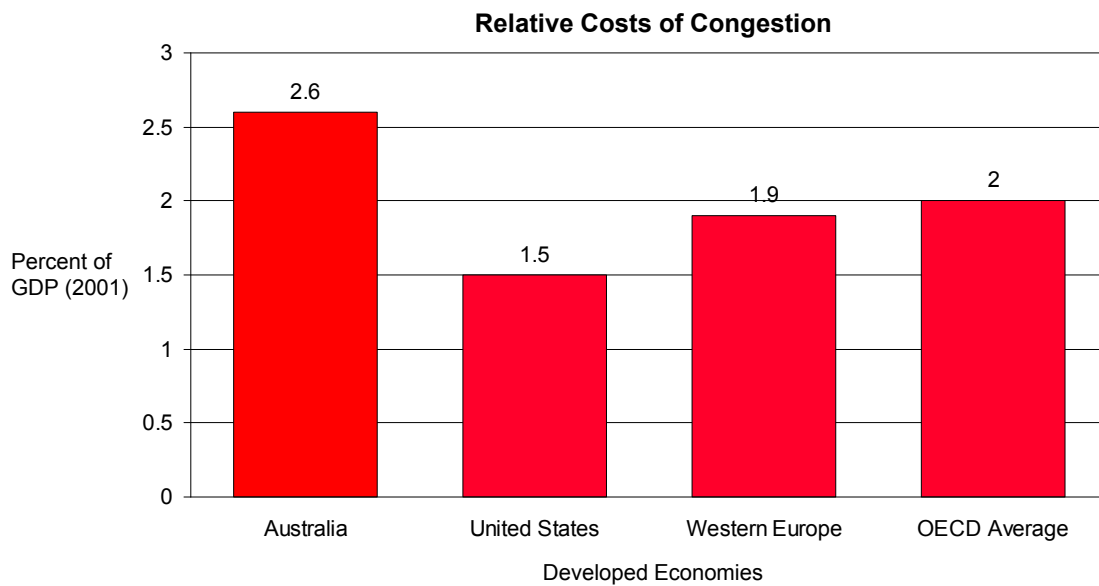
Figure 3.3 Peak spreading on Melbourne's freeways



Source: VicRoads.

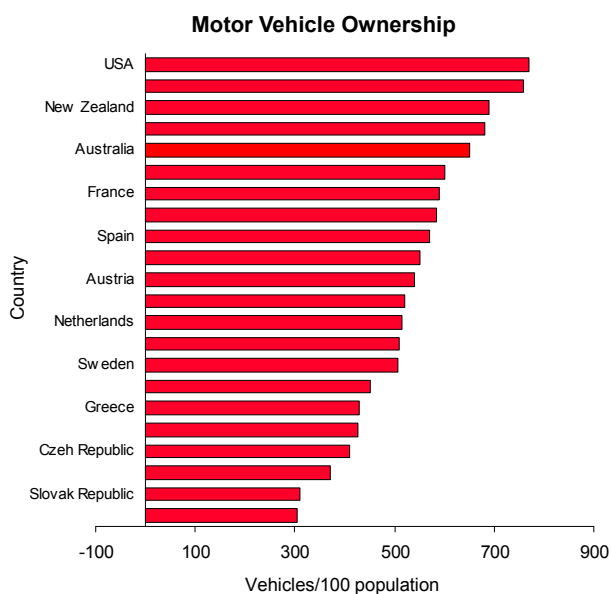
Source: VCEC (2006) *Inquiry into Managing Transport Congestion*

While all developed economies are affected, in Australia impacts are greater...

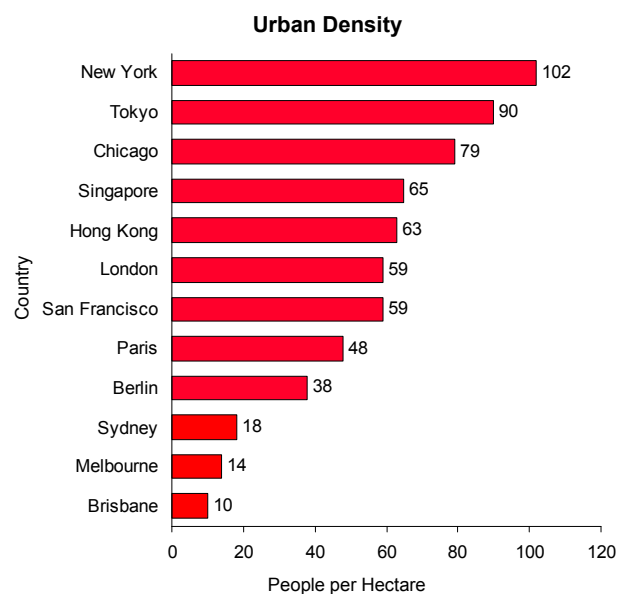


Source: ARA (2006) National Passenger Transport Agenda

...due to higher car dependency, low urban density, and.....

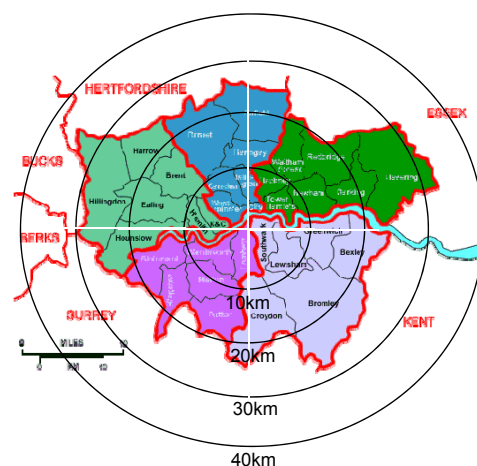
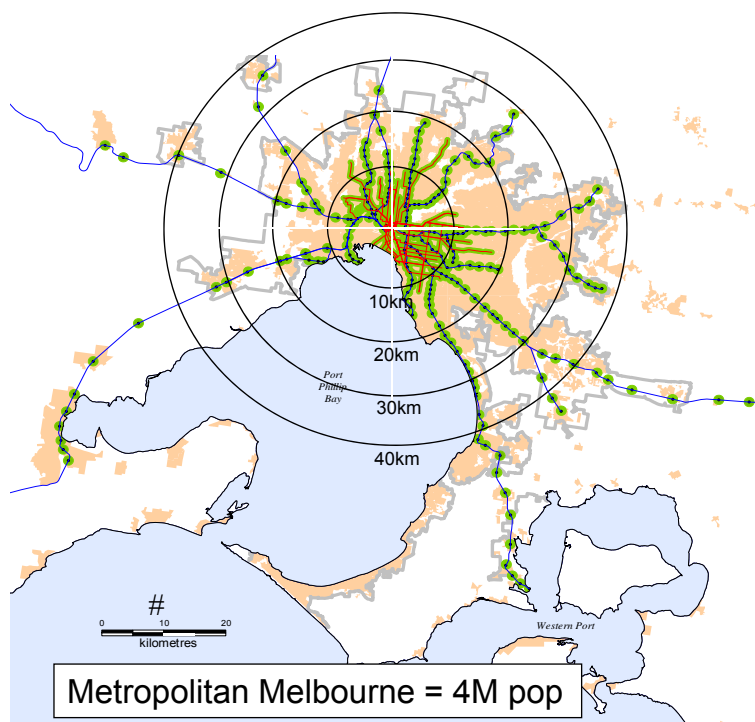


Source: OECD Factbook (2006)



Source: The Economist - Submission to the VCEC Inquiry into Managing Transport Congestion (2006)

...because our cities are GIGANTIC in scale



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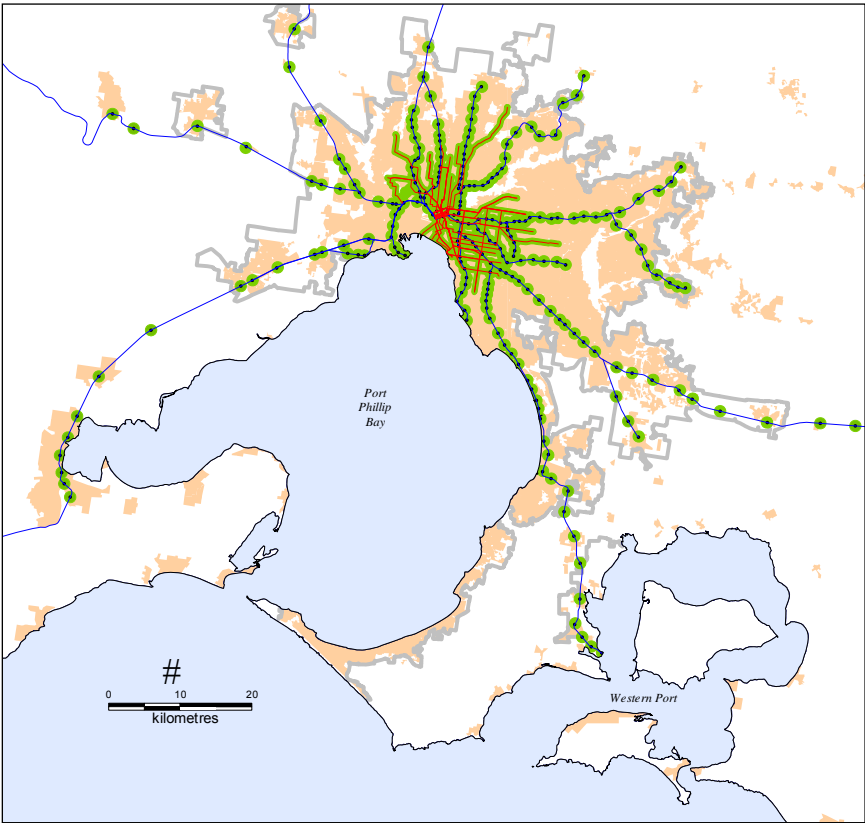
Progress?

Ideas



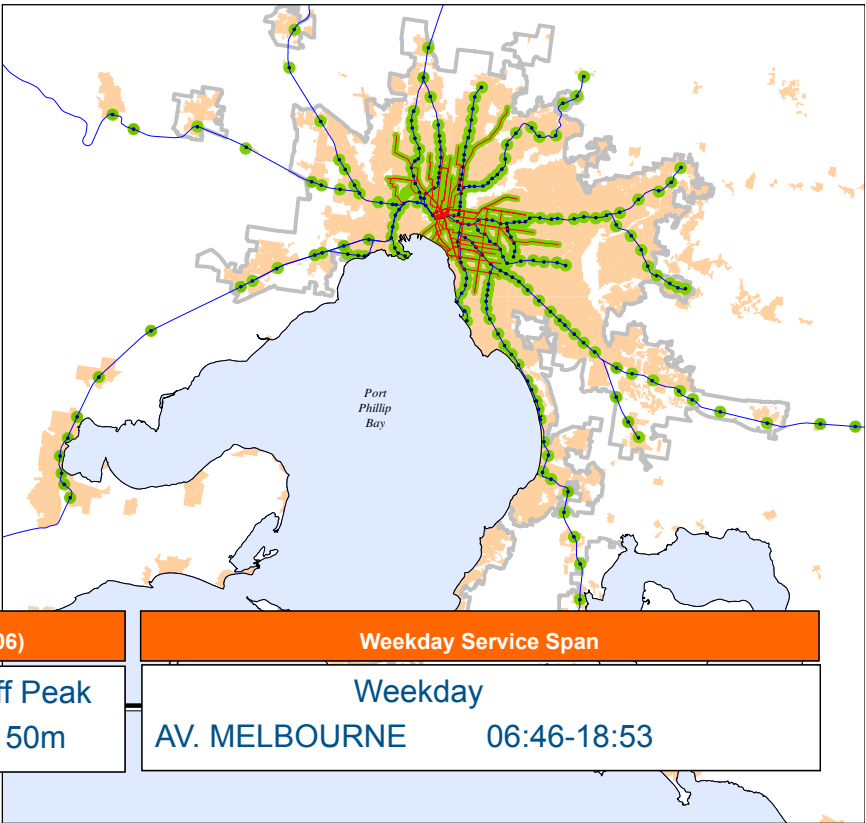
Buses **ARE** Melbourne’s public transport for most residents, which is a problem....

- Over two thirds of Melbourne can only be serviced by bus services since rail and tram services lie considerable distances from where people live or where they want to travel to
- In 1996 the Metropolitan strategy team identified that 2.16M Melbournians lived In areas where buses were bus was the only means of access to public transport. 0.98M lived within access distance of rail services



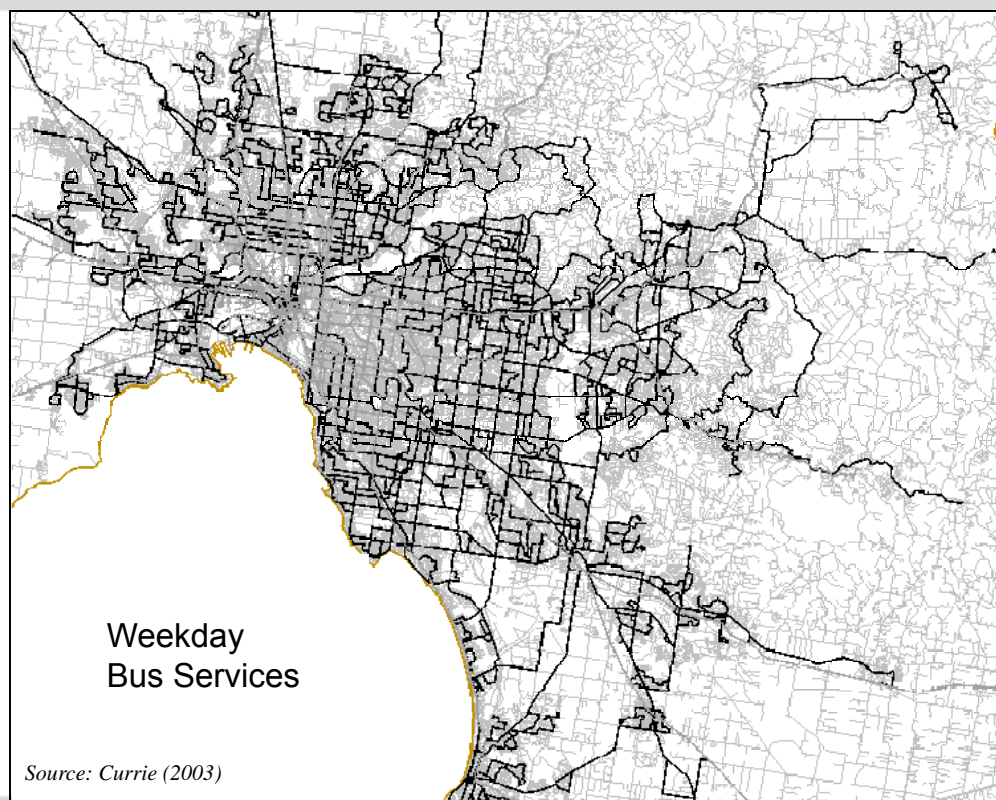
...because there arent many

- Over two thirds of Melbourne can only be serviced by bus services since rail and tram services lie considerable distances from where people live or where they want to travel to
- In 1996 the Metropolitan strategy team identified that 2.16M Melbournians lived In areas where buses were bus was the only means of access to public transport. 0.98M

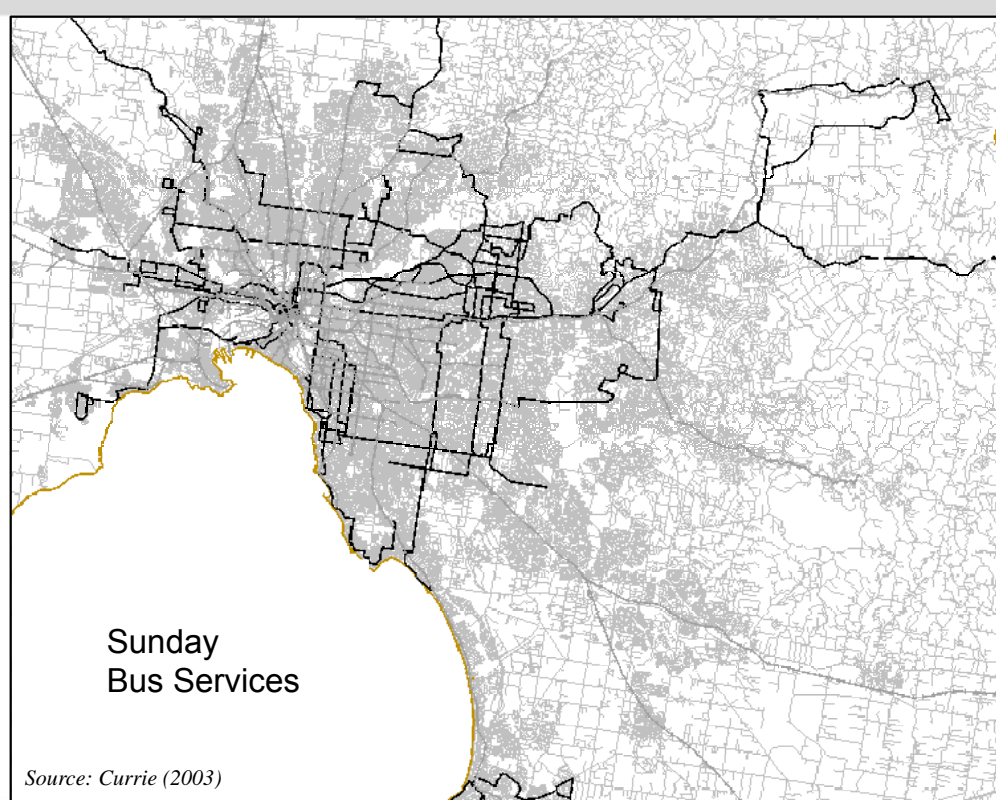


Weekday Service Frequency (2006)			Weekday Service Span	
	Peak	Off Peak	Weekday	
AV. MELBOURNE	40m	50m	AV. MELBOURNE	06:46-18:53

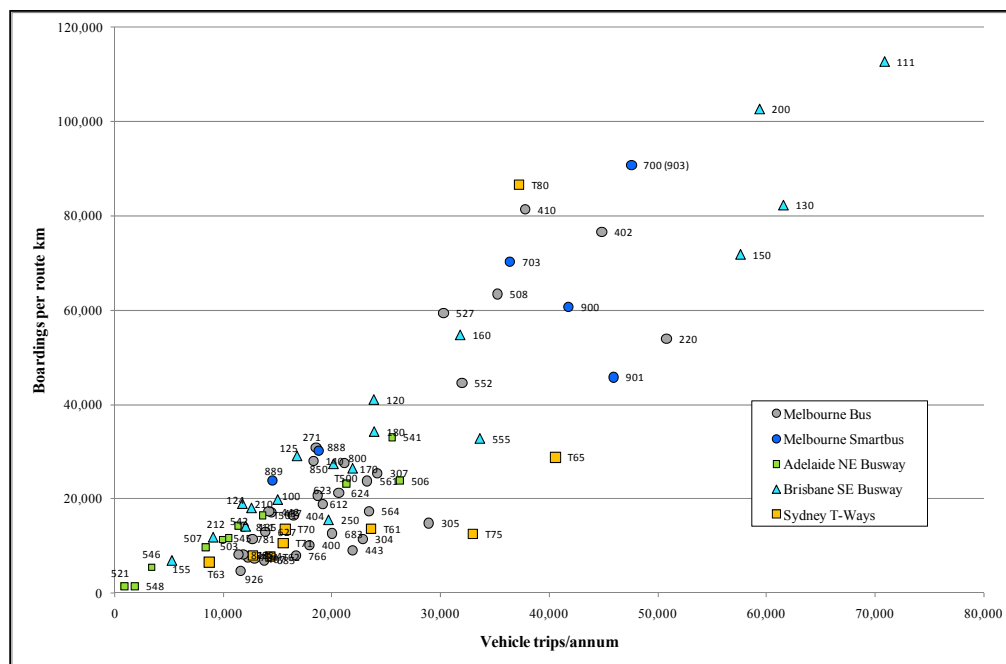
The bus network on weekdays...



...contrasts somewhat with weekends

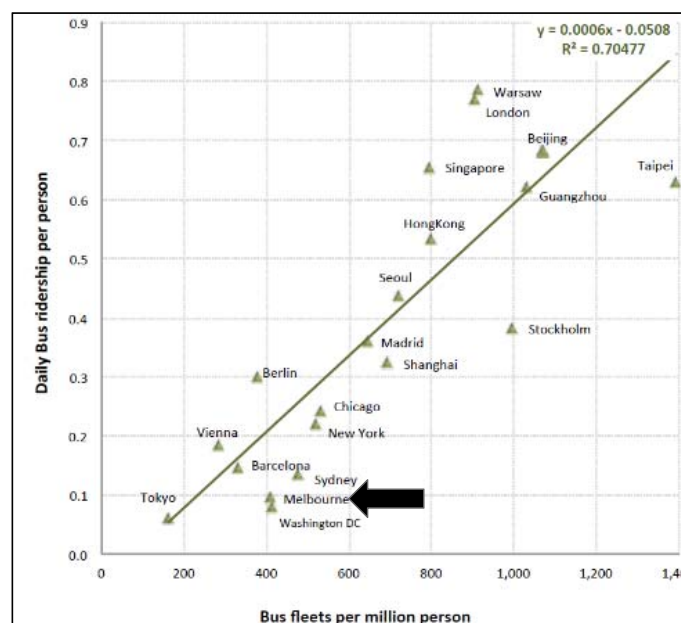


Frequency drives Australian ridership performance



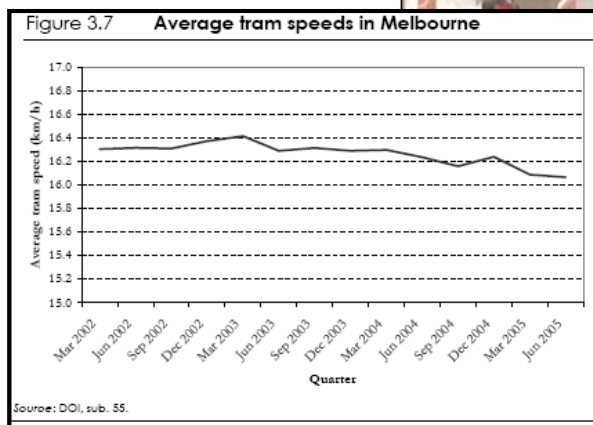
Source: Currie, G. and Delbosc, A (2011) 'Understanding bus rapid transit route ridership drivers: An empirical study of Australian BRT systems' TRANSPORT POLICY Volume 18, Issue 5, September 2011, Pages 755-764

In general our bus service level is poor compared to world practice

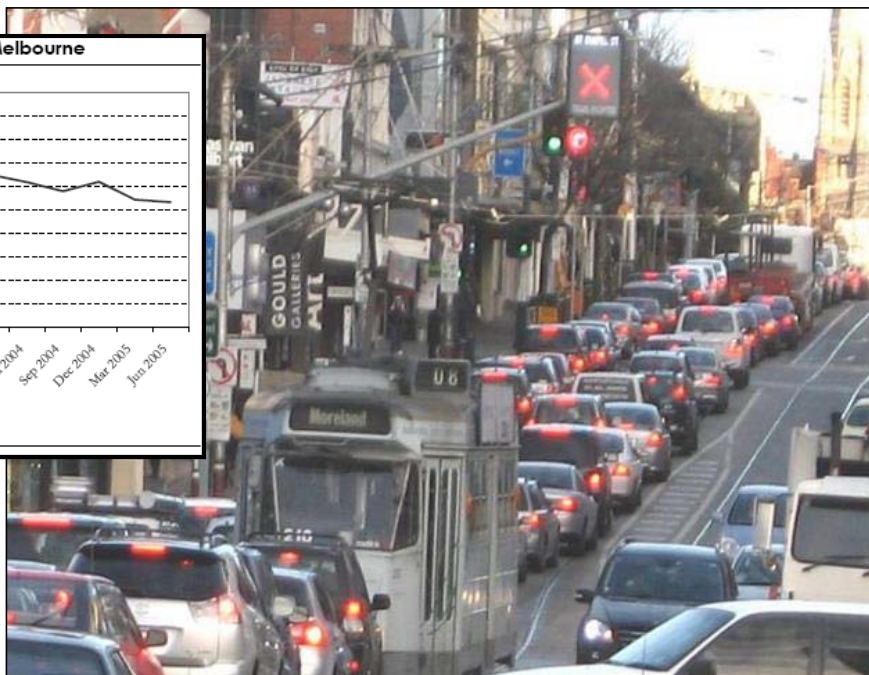


Source: Pan D (2013) 'Key Transport Statistics of World Cities' Journeys Sept 2013

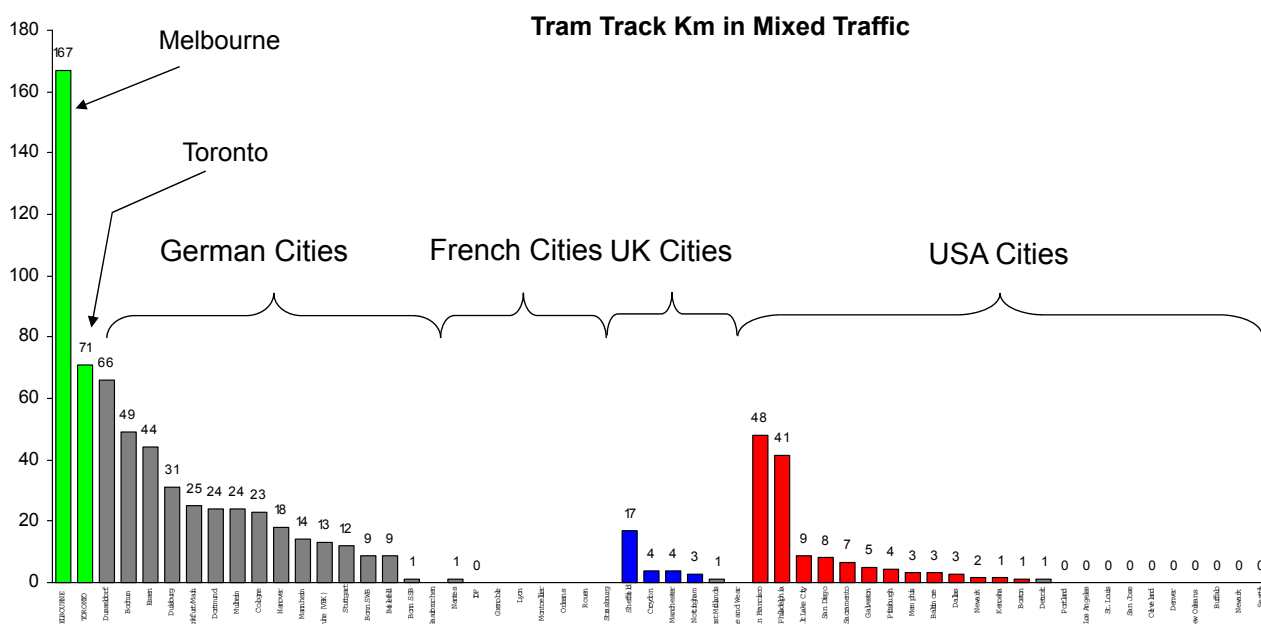
Tram services are struggling in growing traffic congestion



Source: VCEC (2006) *Inquiry into Managing Transport Congestion*



Melbourne is the worlds biggest "streetcar" system

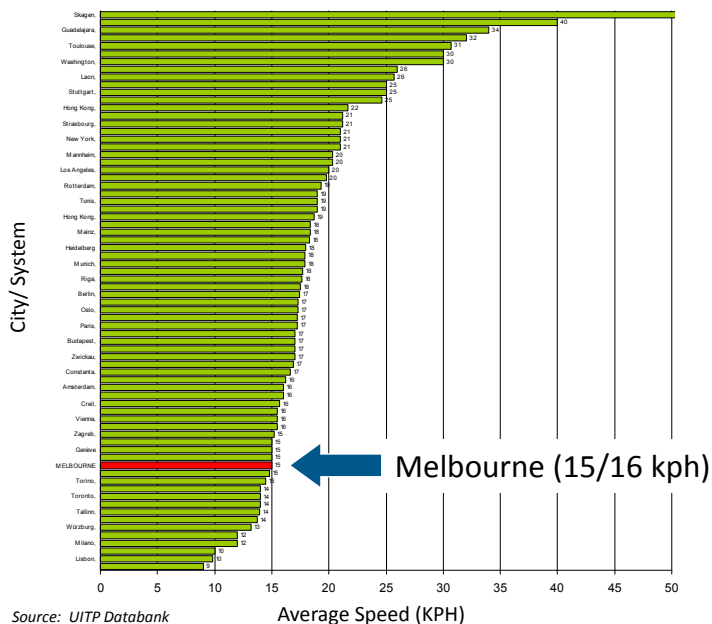


Source: Currie G and Shalaby A (2007) 'Success and Challenges in Modernising Streetcar Systems – Experience in Melbourne and Toronto' Transportation Research Record No 2006 Transportation Research Board Washington DC ISSN 0361-1981 pp 31-39 2007



Mixed Traffic service impedes performance

Average Operating Speeds – World Tram/Light Rail Systems



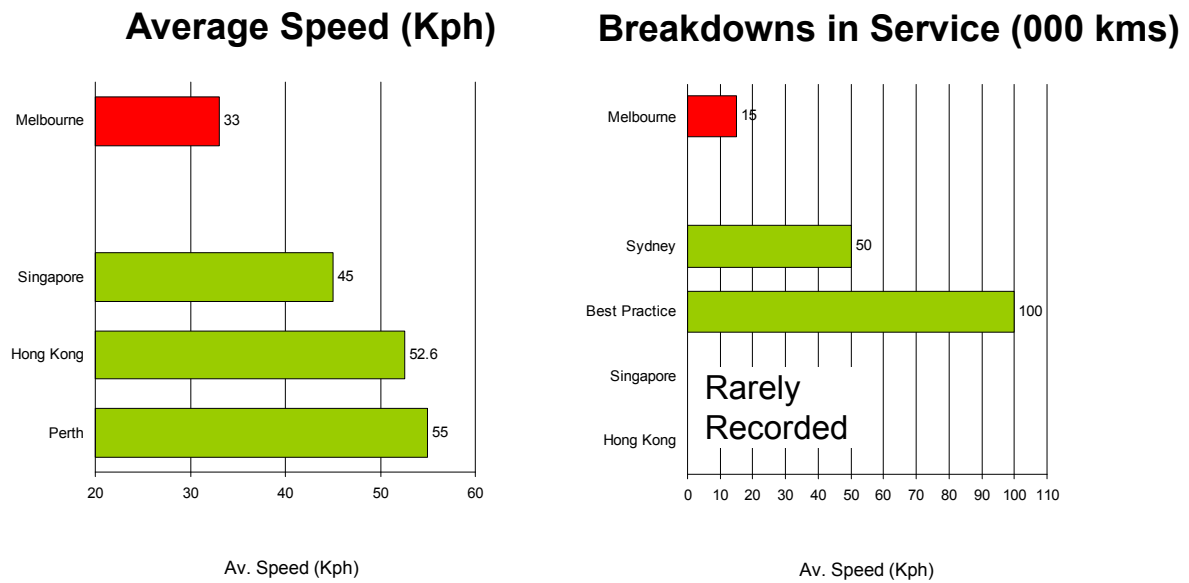
Source: UITP Databank

Melbourne Tram Reliability

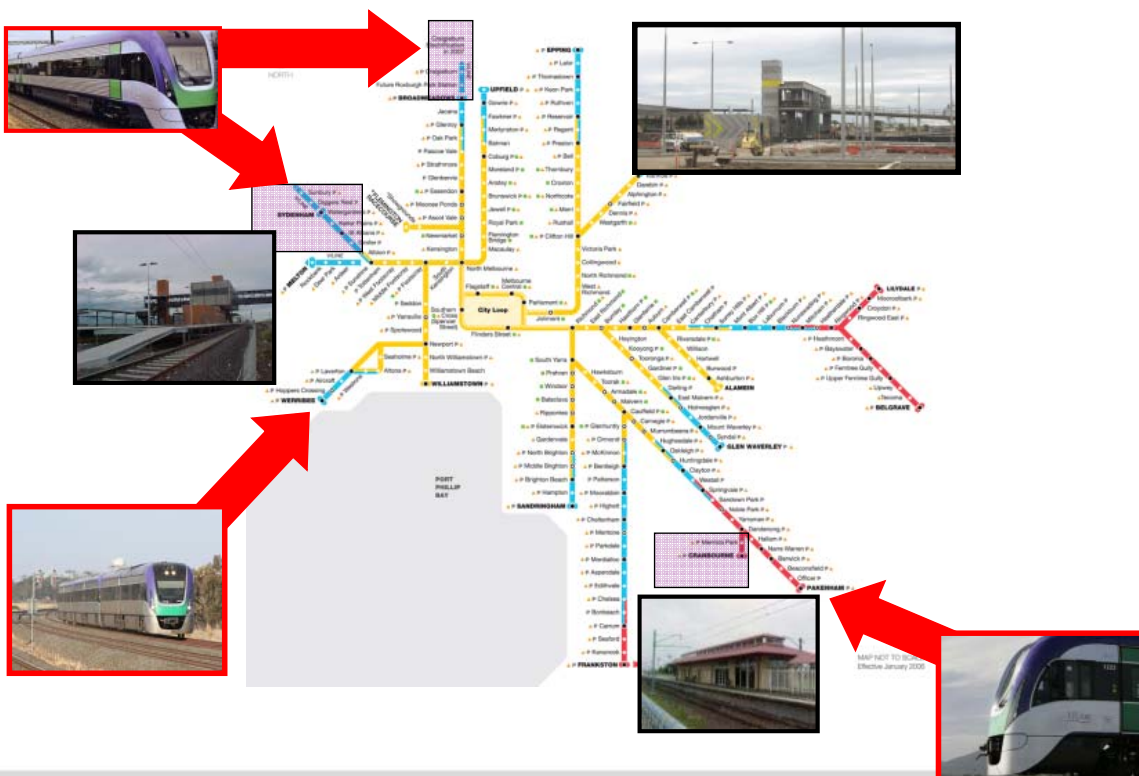
- 33% of services are considered to be NOT running on time
- On time defined as arriving more than 1 min early of more than 6 mins late

Source: Track Record

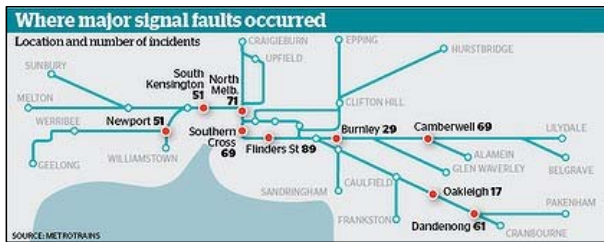
Better performing railways are built on new not old infrastructure and strong resilience/reliability



...yet expanding rail, thus making it more complex, has been our approach to mass transit expansion



Unplanned disruptions are common; e.g. reported signal faults; 1,900 p.a. (5+/day)



Reported Signaling Disruptions

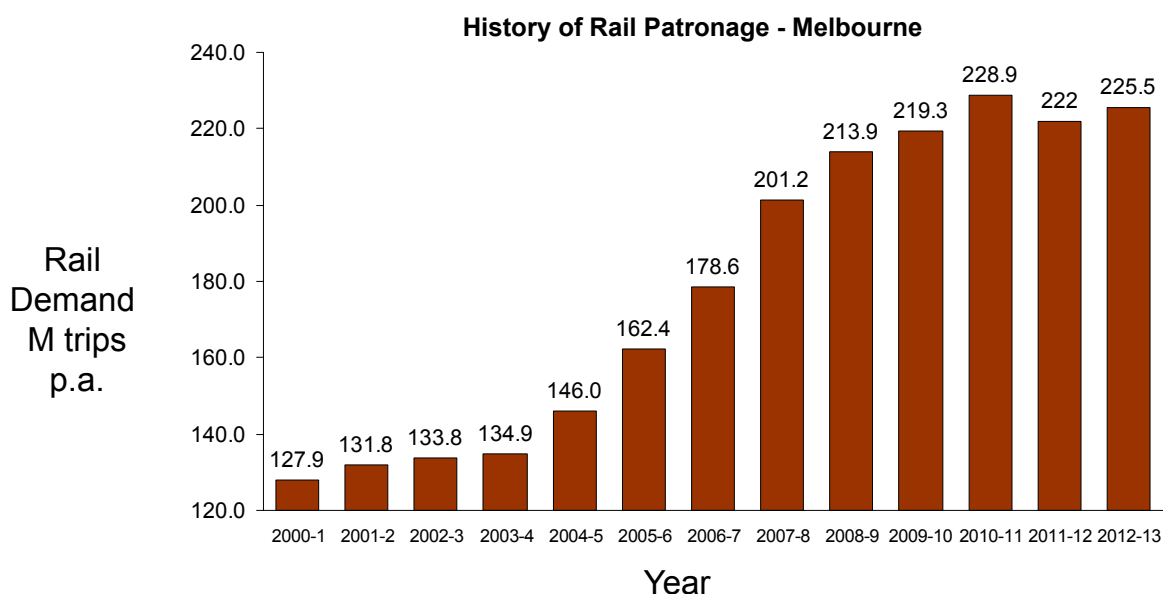
- 1,900 signal failures p.a. (12 months to August 2013)
- 5.2 per day
- Biggest Locations:
 - Flinders Street Station 89
 - North Melbourne 71
 - Newport 51

Metro Trains

"We are installing advanced computer technology which improves control of the signalling system, but our field equipment is outdated and requires replacing,"

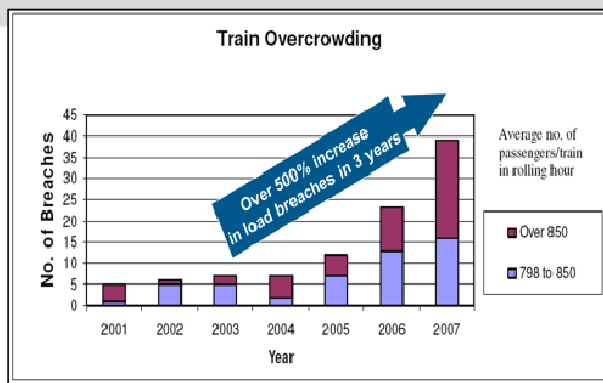
Source: Adam Carey, The Age, 'Signal failures are causing chronic rail delays' 23/10/2013

Melbourne rail demand growth has been impressive by any standard



Source: Department of Transport/ Public Transport Victoria Annual Reports

However the rail network has reached capacity



How Transit Orientated is Melbourne Development?

Density

– the concentration and compactness of development within geographic space

Diversity

– the land use mix including the balance and compatibility of users with each other (and transit)

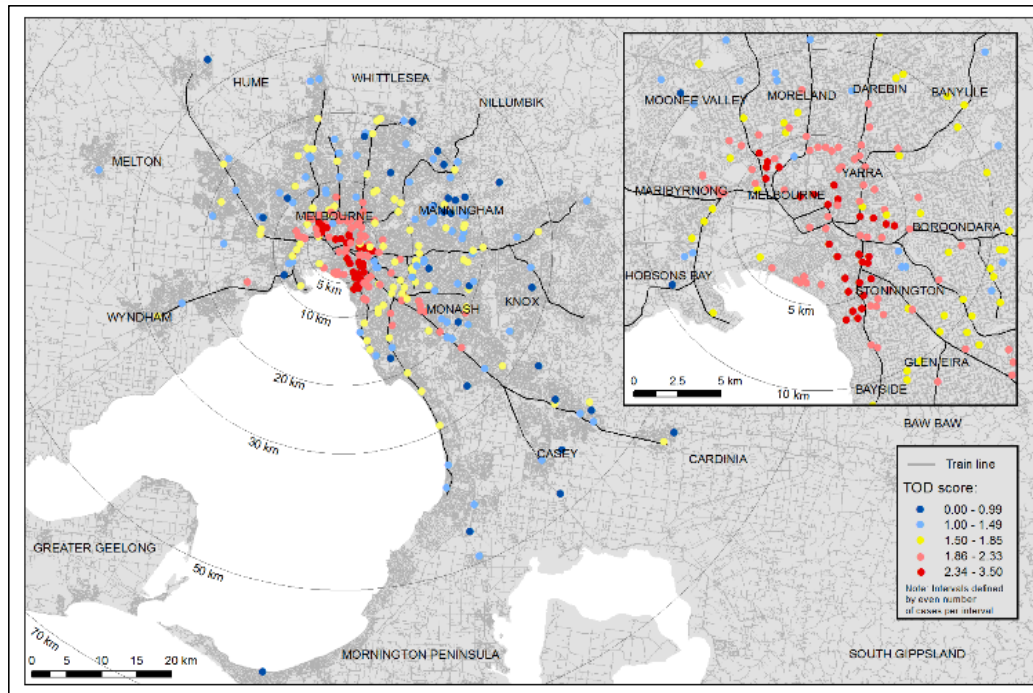
Design

– which relates how the various land uses are combined, linked and presented in terms of ease of access and attractiveness



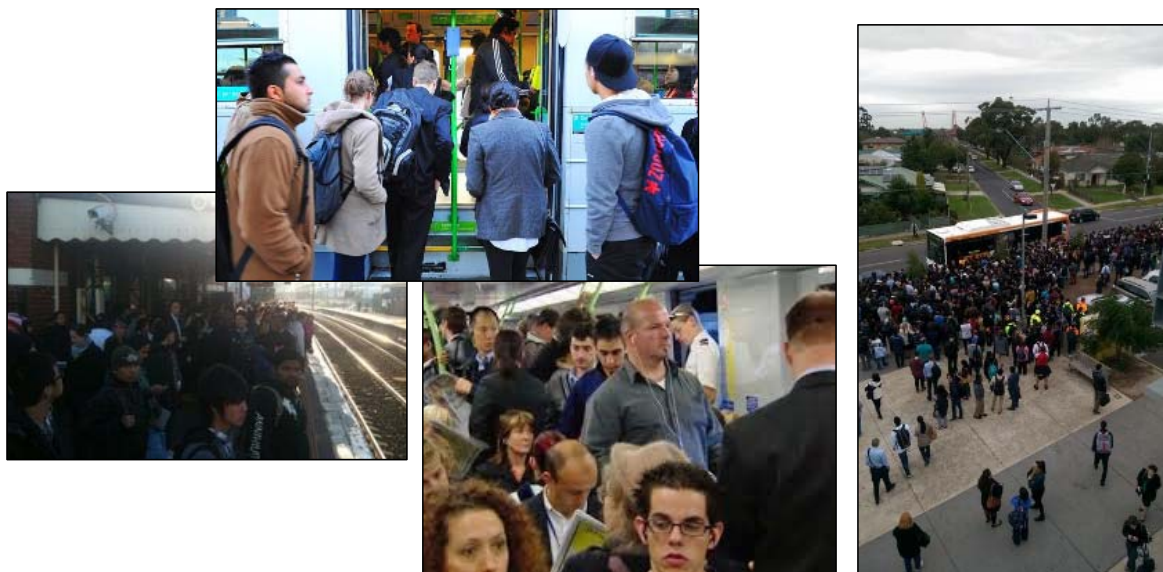
Source: Cervero and Kockleman (1997)

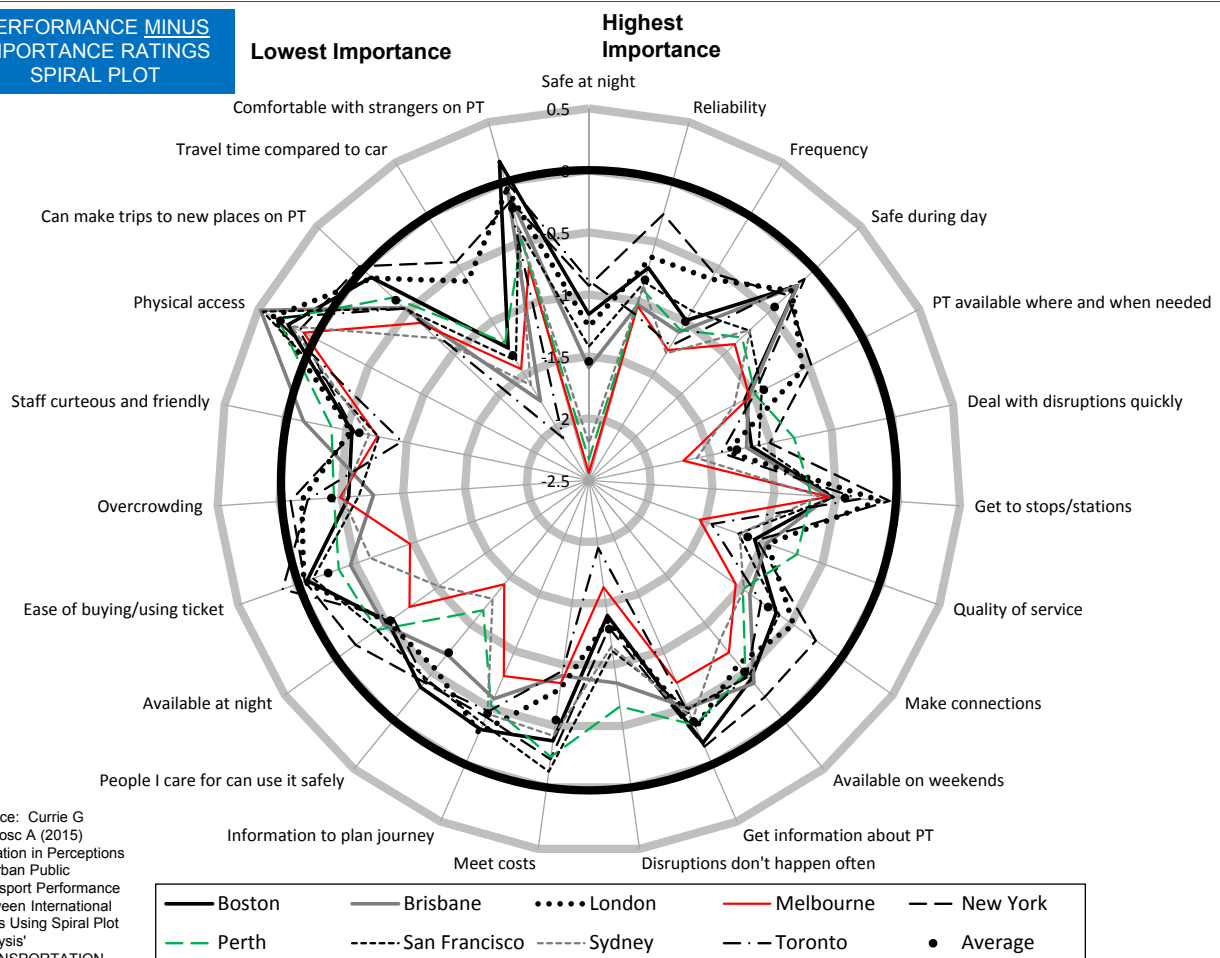
The Transit Orientation of Development – OVERALL Melbourne – only in central areas



Source: Aston L, Currie G and K Pavkova (2016) 'Does Transit Mode Influence the Transit-Orientation of Urban Development? - An Empirical Study' JOURNAL OF TRANSPORT GEOGRAPHY Vol 55 (2016) pp83-91

So what do passengers think about these issues?





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Growth in urban travel and car ownership continues to rise

- Since 1996 car travel has increased at 1.9% p.a. (Challenge Melbourne - issues in metropolitan planning for the 21st century Oct 2000)
- Forecasts suggest metropolitan travel will increase by around 20% by 2020 without action to address current trends (NCCC Study)



Meanwhile road freight volume is expected to double in 20 years

- Melbourne road freight movements total around 170M tonnes p.a.. This has grown by 120% between 1971 and 1997.
- Truck traffic forecast to double over the next 20 years (Challenge Melbourne)
- The efficient movement of commercial traffic has been directly linked to a competitive economy and the affordability of consumer products



We have also stopped being active – this has led to ‘the epidemic of obesity’

Lifestyle underpins Australia's growing obesity problem

The Dieticians Association of Australia says television and less active lifestyles have contributed to increased rates of obesity.

The Australian Institute of Health and Welfare (AIHW) has released a report showing **nine million adult Australians carry excess weight.**

The report estimates at least 16 per cent of men and 17 per cent of women are obese, with a further 42 per cent of men and 25 per cent of women considered overweight.

Ms Collins says **lifestyles have changed significantly over the last century.**

"We use our cars more, most people have jobs where they sit down, most of us don't do as much work around the house, or even the yard.

"There just aren't the same opportunities to be active."

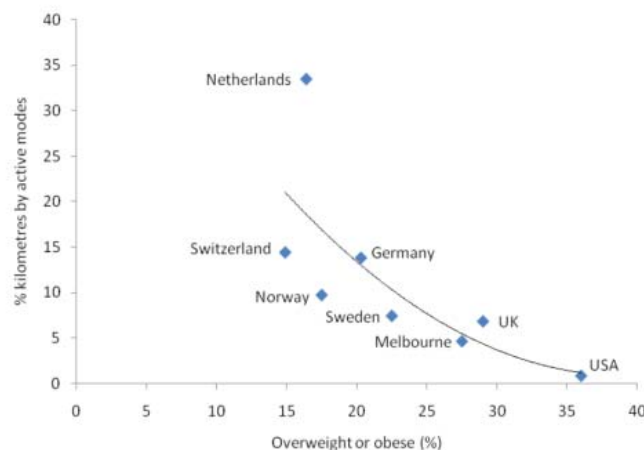
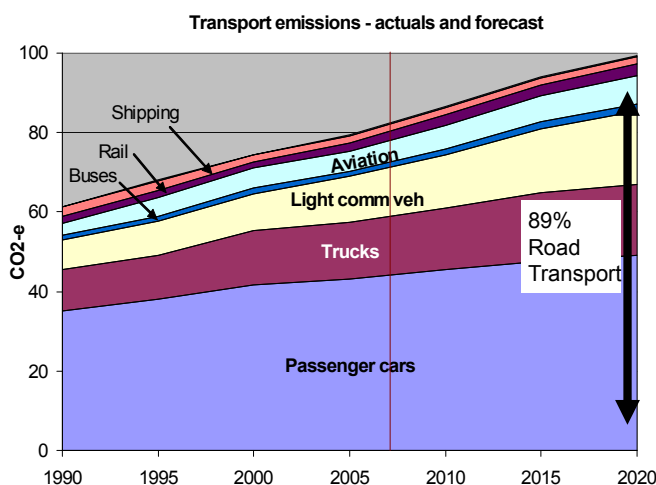


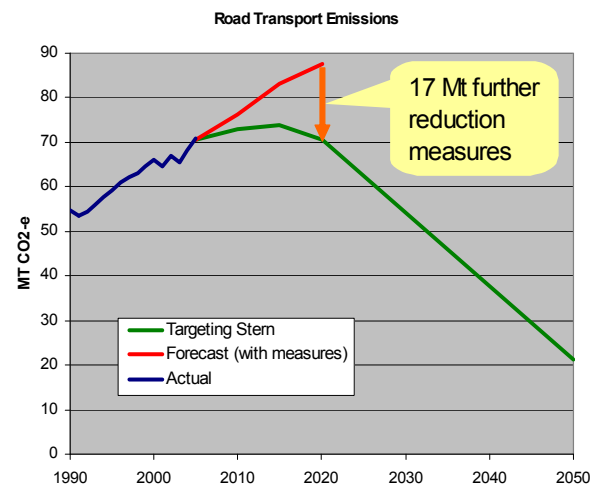
Figure 4: Active travel distance and overweight/obesity
(Melbourne Statistical Division travel data included in absence of Australian national data for children's active travel distance)
(Sources: Christie et al, 2004; International Obesity TaskForce, 2009)

Source: ABC News Online – September 2003

Road dominates increasing greenhouse emissions - BIG change is needed to meet the 'Stern' Target



Source: Australian Greenhouse Office (2006)

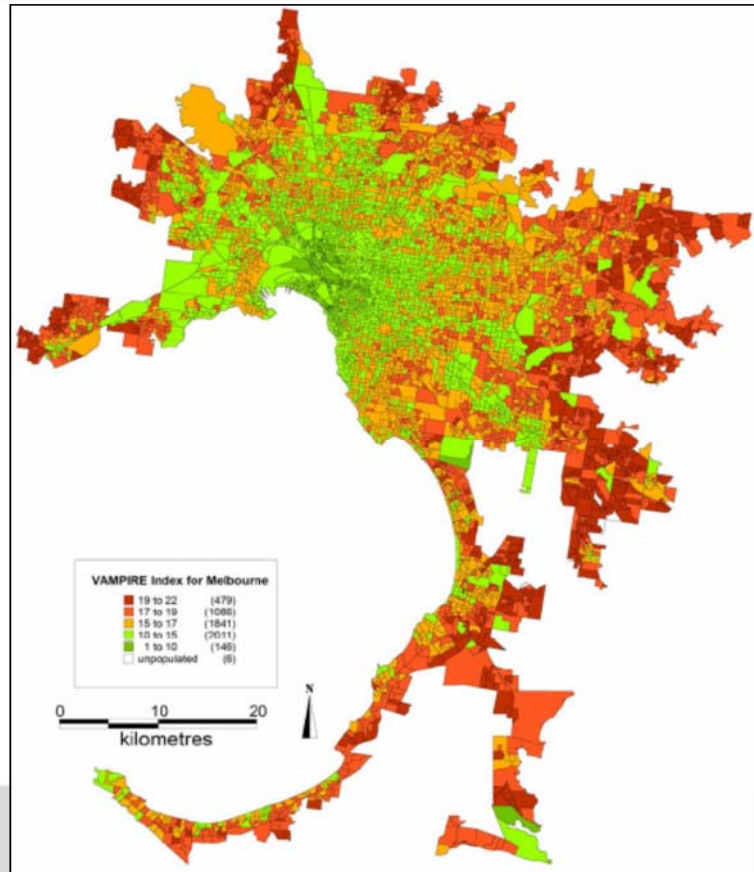


Source: Bus Association of Victoria (2007)

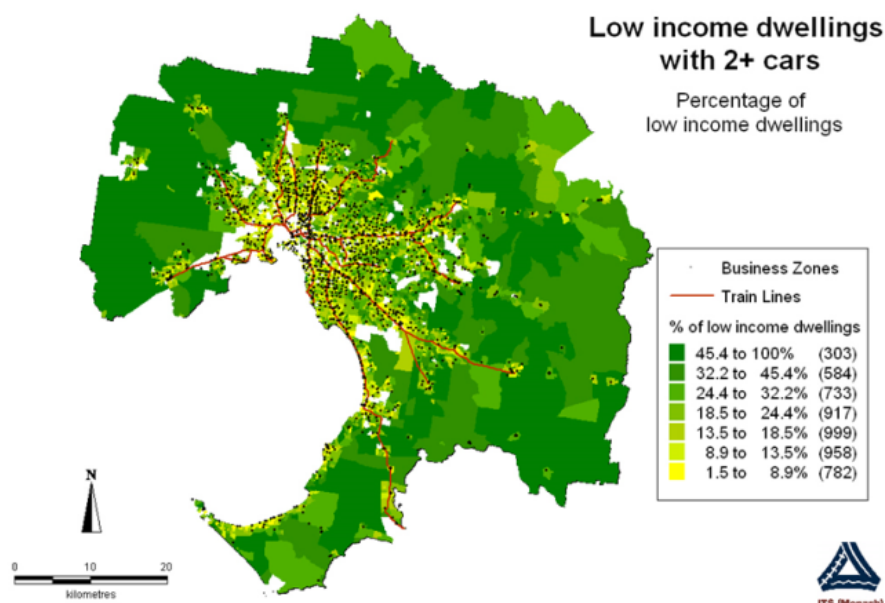
To stabilise at 450ppm CO₂e, without overshooting, global emissions would need to peak in the next 10 years and then fall at more than 5% per year, reaching 70% below current levels by 2050. - Sir Nicholas Stern

Research suggests that if fuel prices rise a high share of Melbourne residents are being marginalised

Source: Dodson J and Sipe N (2006)
Shocking the Suburbs: Urban location, housing debt and oil vulnerability in the Australian City
 - 'vulnerability assessment for mortgage, petrol and inflation risks and expenditure' (VAMPIRE).



Monash research has highlighted 'forced car ownership' in fringe urban Australia



Key Findings - FCO

- Over 20,000 Melbourne households with income <\$500/week running 2+ cars
- Zero/Very Low Public Transport
- 'Forced Car Ownership' – No choice
- Growing as fuel prices rise
- Even modest public transport access can reduce forced car ownership

Source: Currie and Senbergs (2007)

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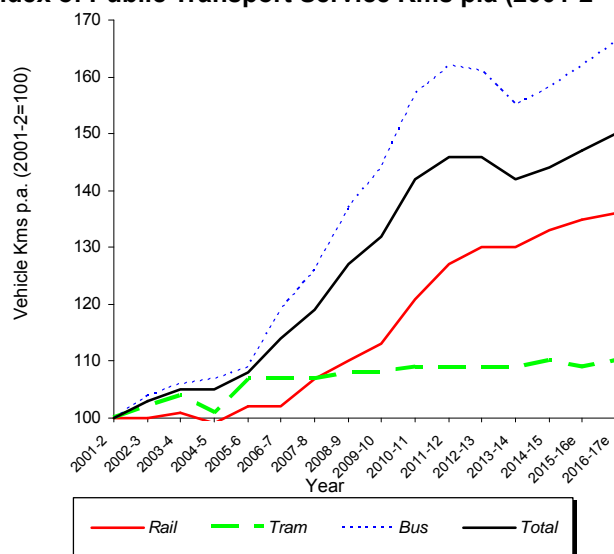
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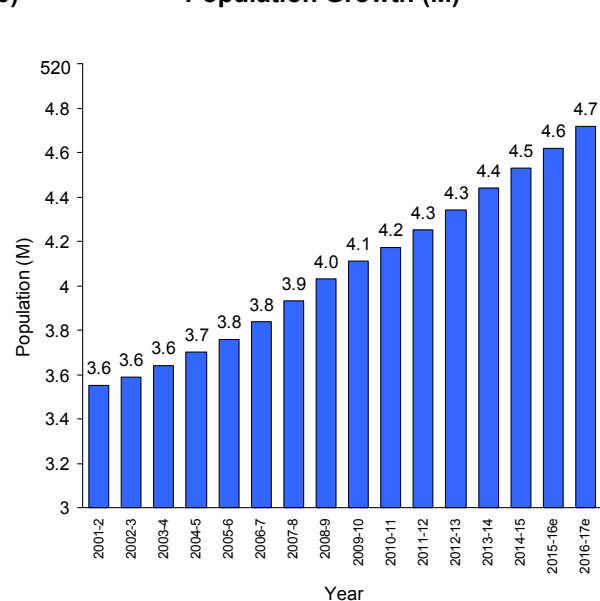


Since 2001 PT service increased 63% (66% bus/ 36% rail, 10% tram) but - but population growth continues at a faster pace...

Index of Public Transport Service Kms p.a (2001-2=100)

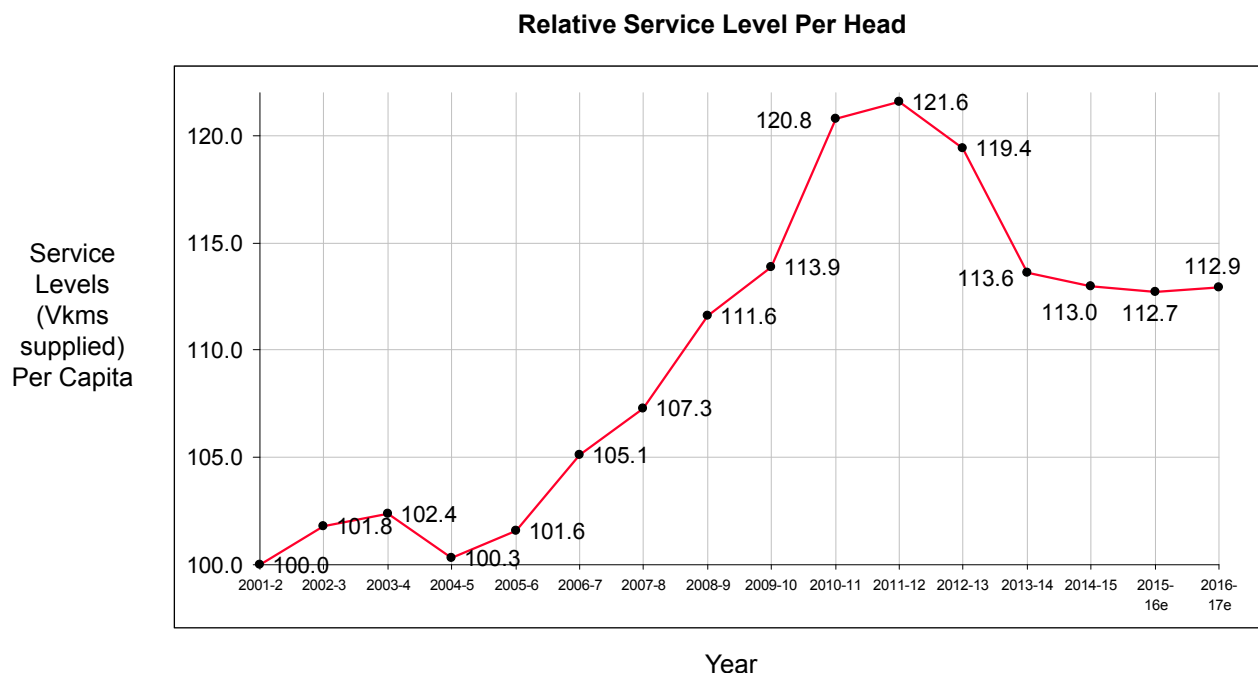


Population Growth (M)



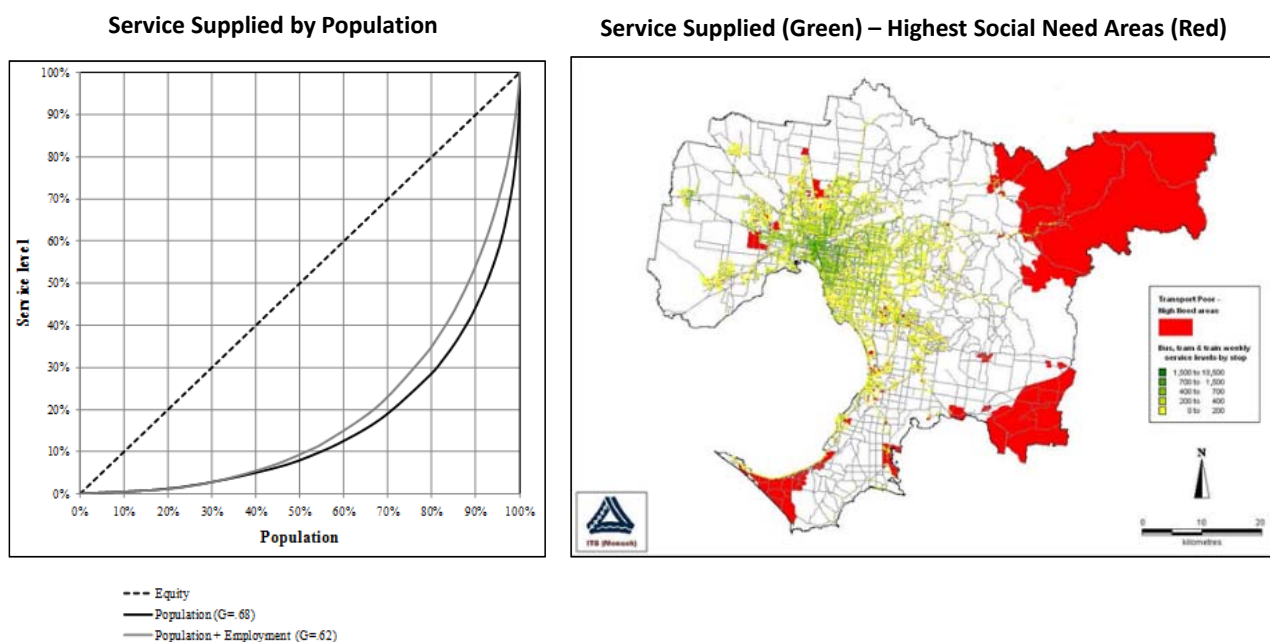
Source: Department of Transport/ Public Transport Victoria Annual Reports

...in last 10 years, per person service increased 22% then declined since 2011 (we have declined by 9% points); recent trend is flat



Source: Department of Transport/ Public Transport Victoria Annual Reports

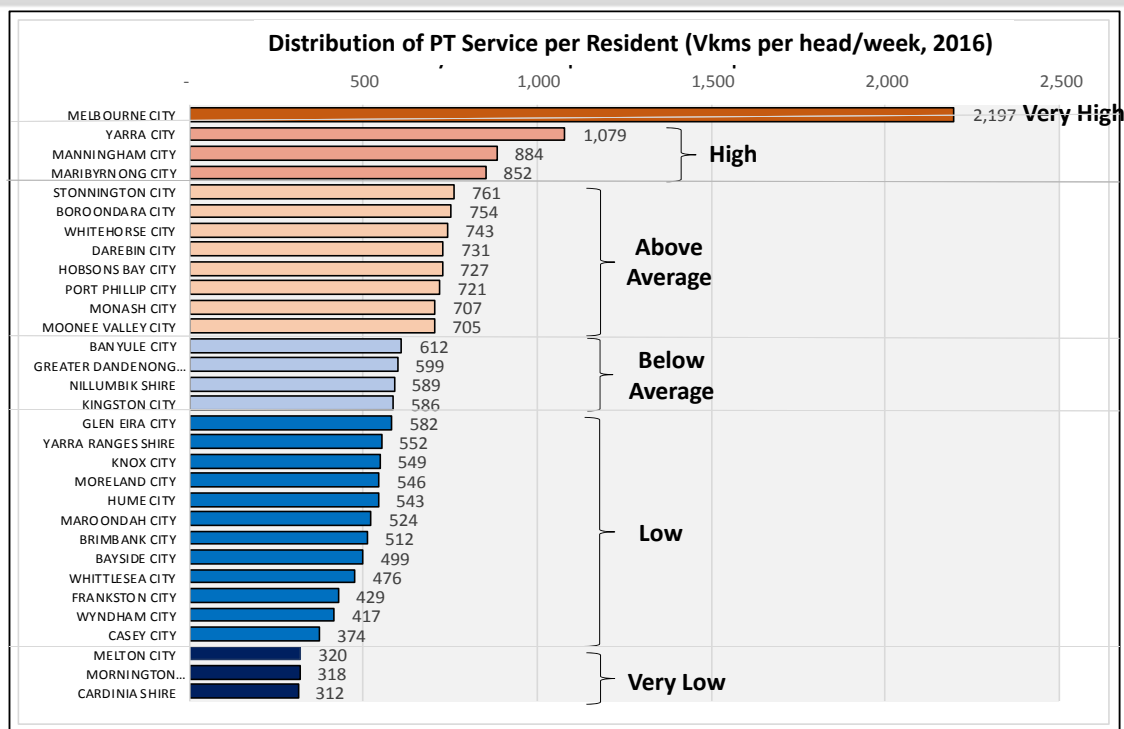
Melbourne has BIG inequity in PT service– many high need areas with no service areas on the urban fringe



Source: Delbosc A and Currie, G. (2011) 'Using Lorenz Curves to Assess Public Transport Equity' JOURNAL OF TRANSPORT GEOGRAPHY Volume 19, Issue 6, November 2011, Pages 1252-1259

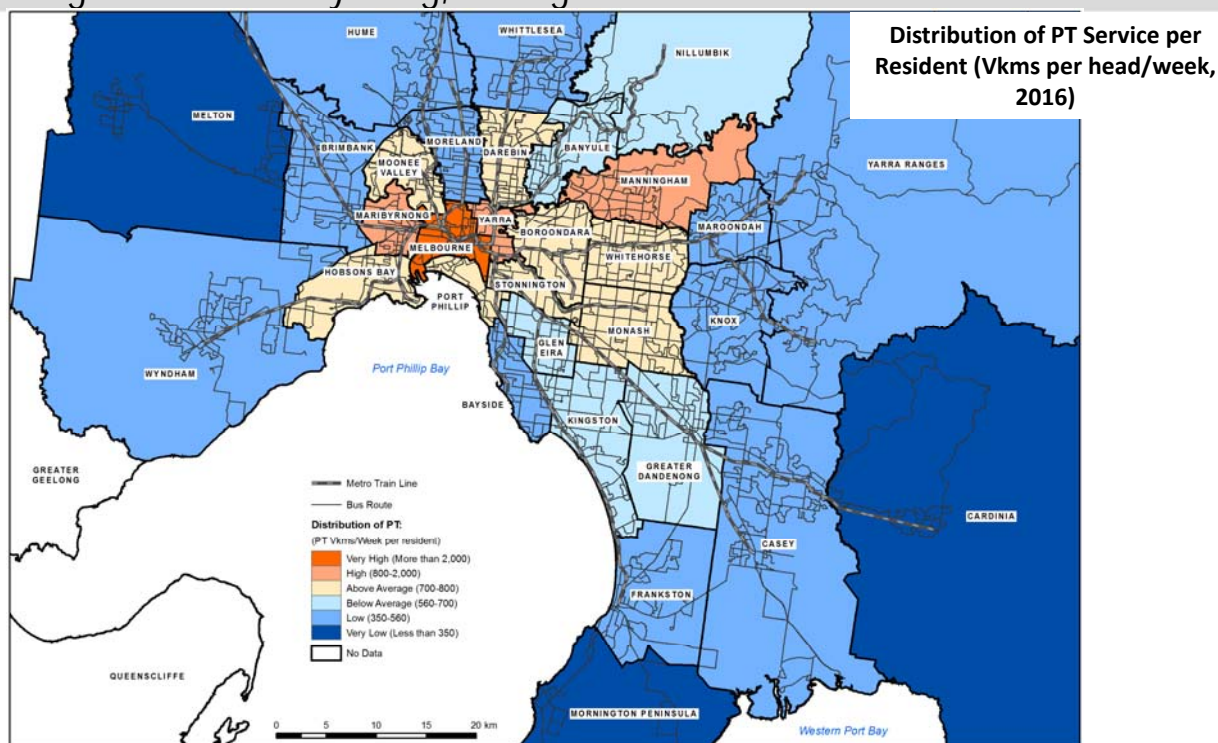
Source: Currie, G. (2010) Quantifying spatial gaps in public transport supply based on social needs, JOURNAL OF TRANSPORT GEOGRAPHY 18 (2010) 31–41

In 2016, 18 of our 30 LGA's have below average service per resident...



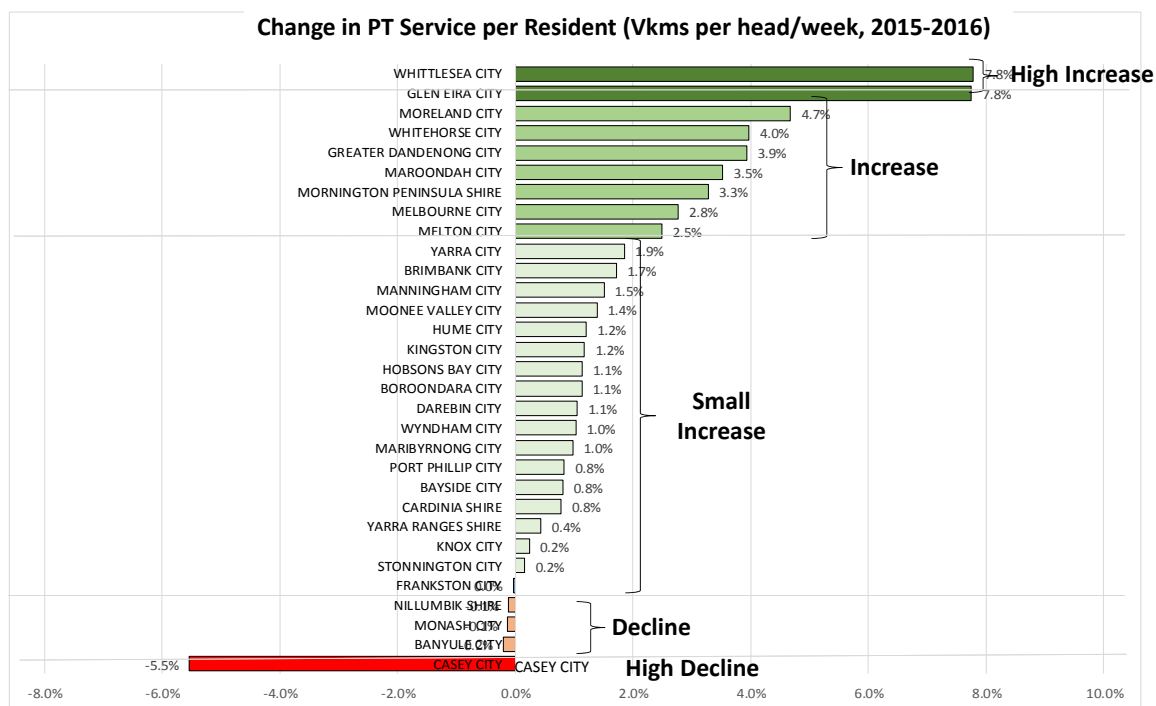
Source: PTRG analysis of the GTFS file data for Melbourne. Includes bus, rail and tram. Weekly data extracted for the week 19th- 25th Sept 2016. Data production undertaken by Phillip Boyles and Associates

Cardinia, Mornington & Melton have lowest service/head; Melbourne, Yarra, Manningham and Maribyrnong, the highest



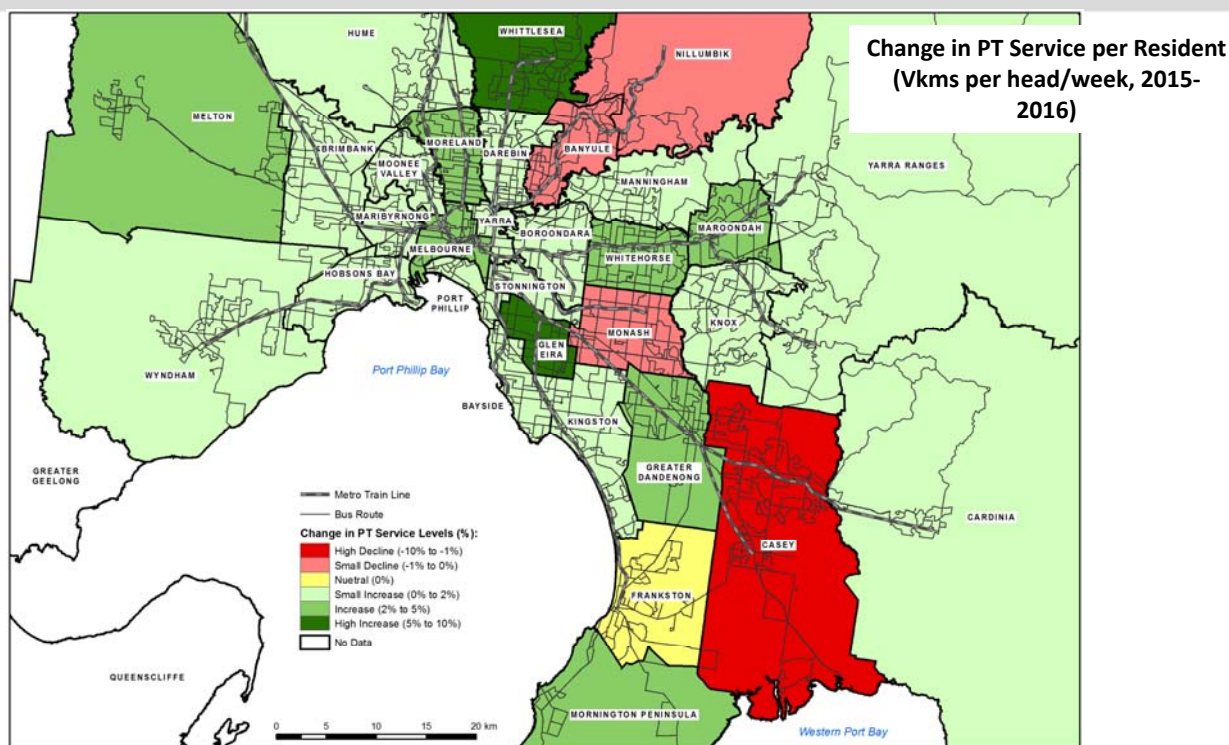
Source: PTRG analysis of the GTFS file data for Melbourne. Includes bus, rail and tram. Weekly data extracted for the week 19th- 25th Sept 2016. Data production undertaken by Phillip Boyles and Associates

Change in service is also uneven; some decline occurred 2015-2016...



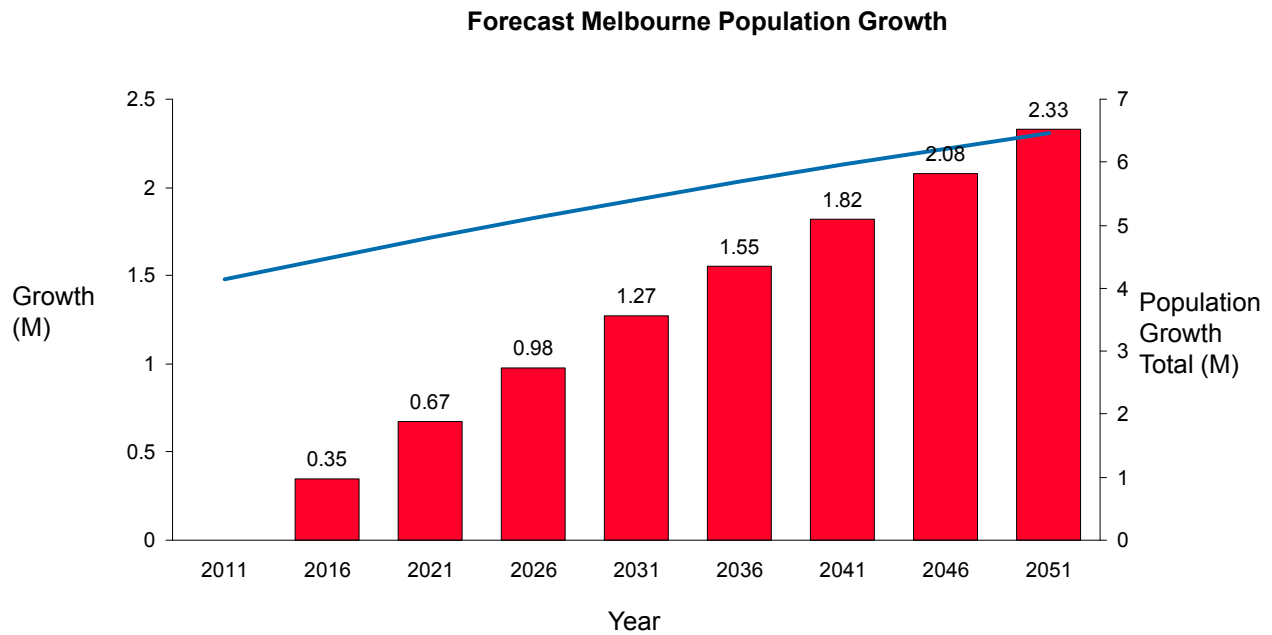
Source: PTRG analysis of the GTFS file data for Melbourne. Includes bus, rail and tram. Weekly data extracted for the week 19th- 25th Sept 2016. Data production undertaken by Phillip Boyles and Associates

...Notably in Casey, Banyule, Nillumbik and Monash.



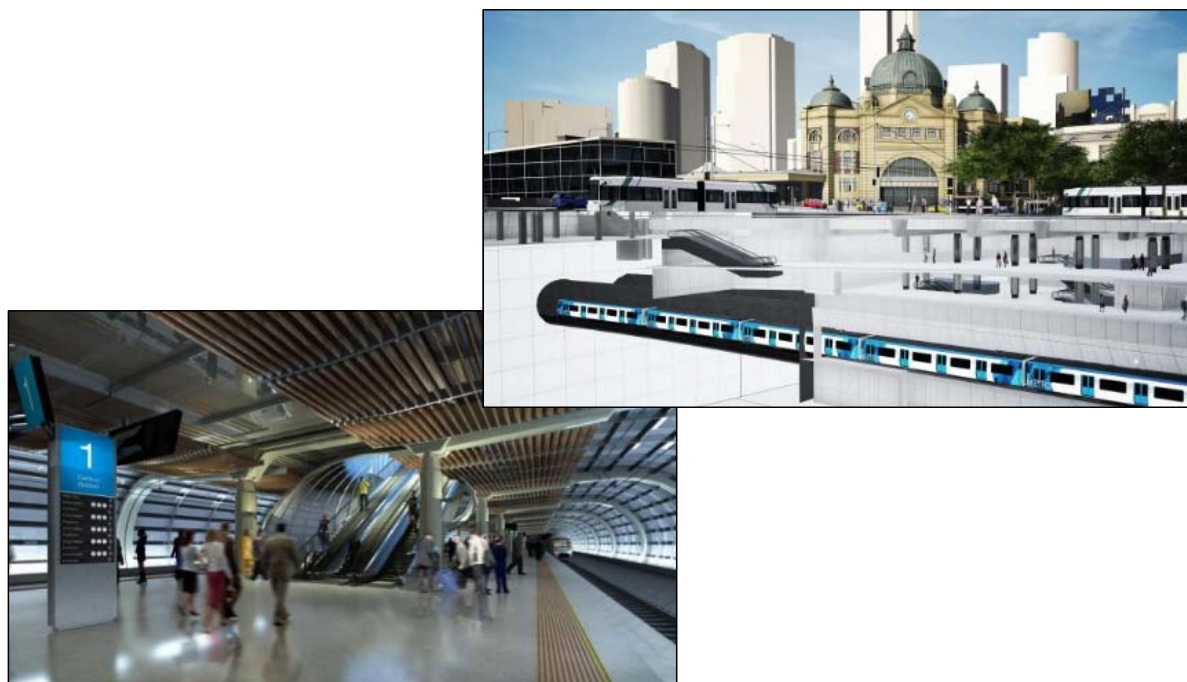
Source: PTRG analysis of the GTFS file data for Melbourne. Includes bus, rail and tram. Weekly data extracted for the week 19th- 25th Sept 2016. Data production undertaken by Phillip Boyles and Associates

Melbourne is expected to increase in size by another 1-2M people in 20-30 years

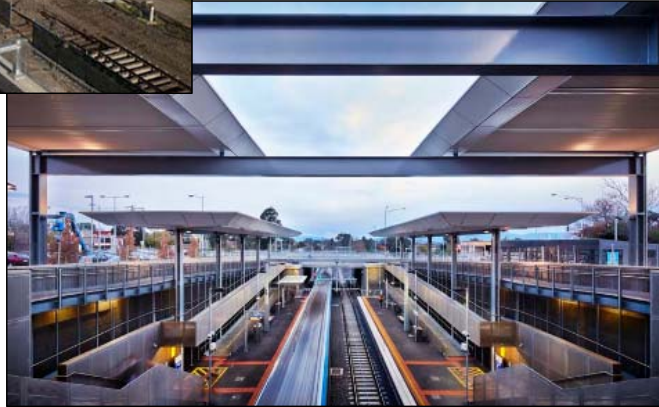


Source: *Victoria in Future* (2012)

Melbourne Metro; exciting but capacity upgrade is long overdue now – current start date is 2026!



Melbourne rail grade separations; exciting some capacity relief but not an increase in service



Where is tram and bus priority? – SmartBus; downgraded?



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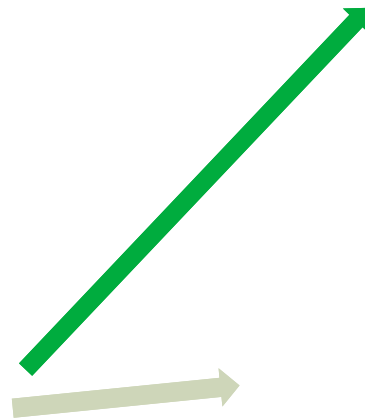
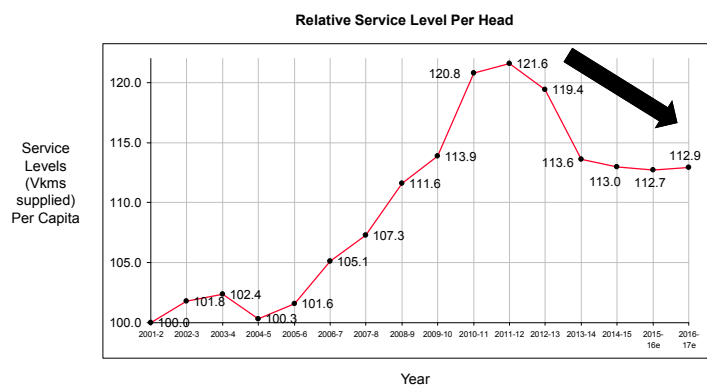
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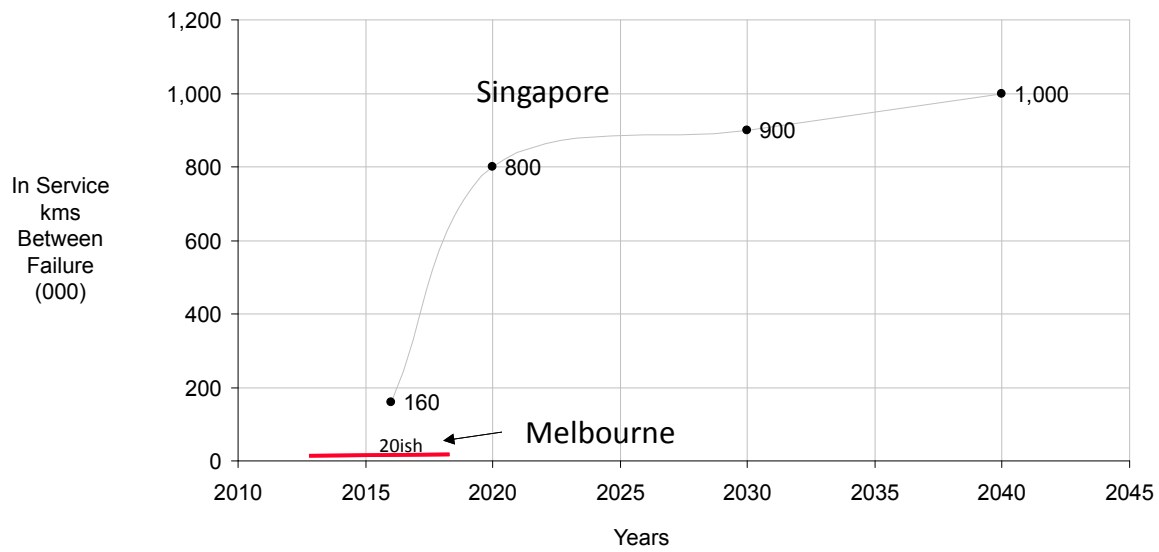


INVEST, INVEST, INVEST, INVEST – SERVICE LEVELS



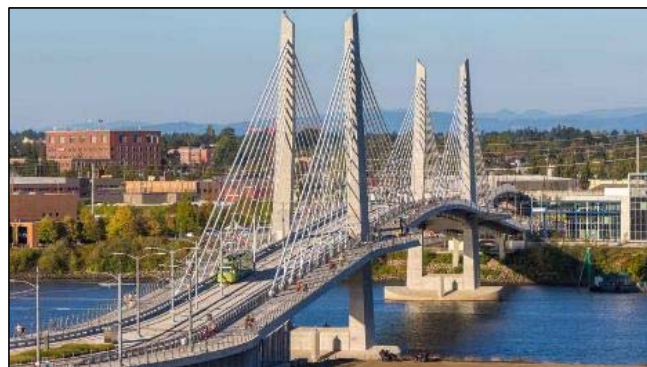
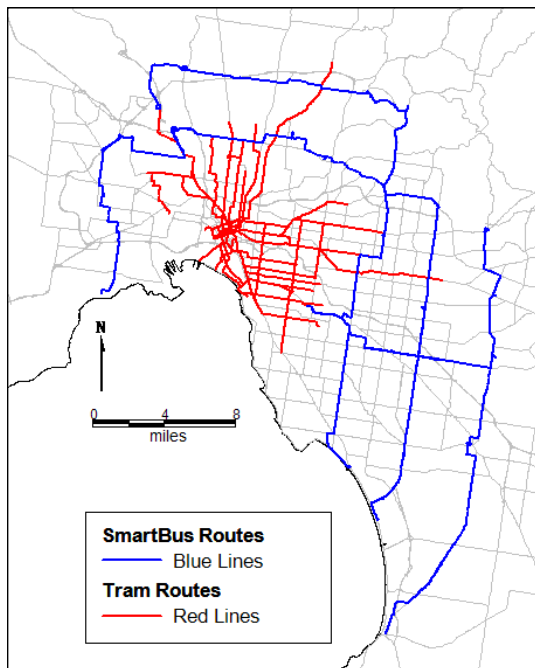
INVEST, INVEST, INVEST, INVEST – RAIL RELIABILITY

Singapore Plan for Rail Reliability Improvement

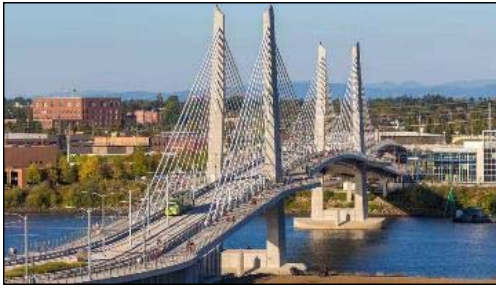


Source: Land Transport Authority of Singapore

INVEST, INVEST, INVEST, INVEST – TRAM/BUS RAPID TRANSIT

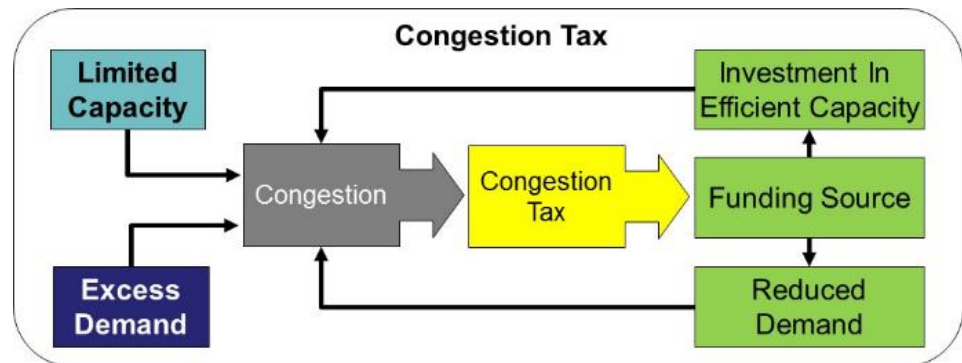


Get Sustainable Funding



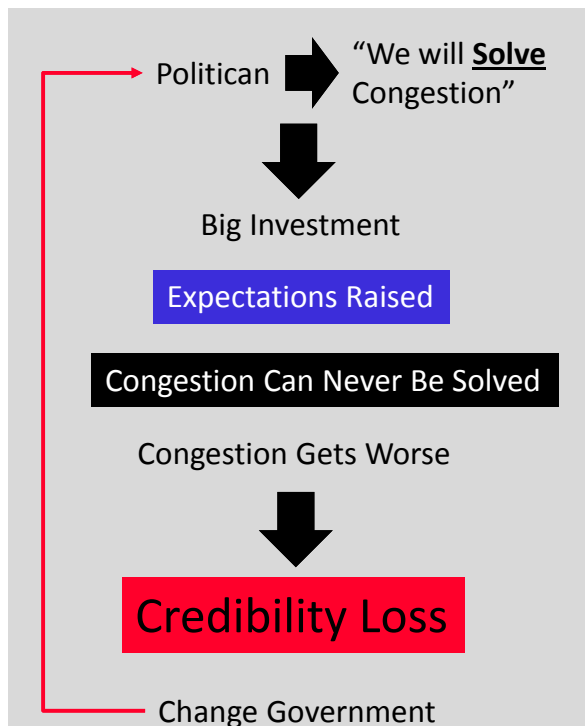
Employment Tax /
Versement Transport

MAKE THE PROBLEM FUND THE SOLUTION

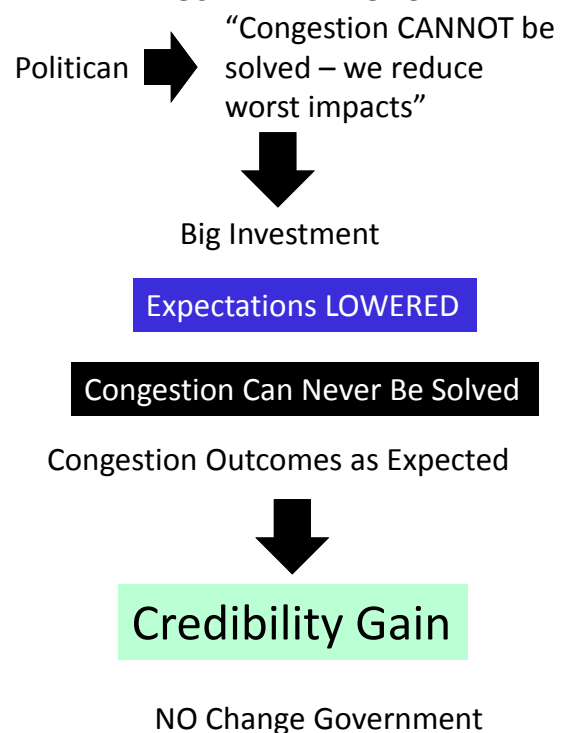



Take a new approach to discussing Congestion "SOLUTIONS"

NEGATIVE SPIRAL



POSITIVE APPROACH





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PTRG is the name for researchers at Monash University who are engaged in research on public transport systems, users, planning and policy.

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PTRG OVERVIEW

The Public Transport Research Group is the name for researchers at Monash University who are engaged in research on public transport systems, users, planning and policy. Research interests of the group are cross disciplinary, covering a range of topics in the public transport field.

OUR TEAM

Find out more about our staff, national associates, international associates, research students, PhD students and our advisory board who are all associated with the Public Transport Research Group.

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PUBLIC TRANSPORT SERVICE LEVEL TRENDS IN LOCAL GOVERNMENT AREAS IN MELBOURNE

Objectives

- To measure the quantity of urban public transport provision in local government areas in Melbourne between 2015 and 2016
- To explore if and how urban public transport provision has kept pace with population growth.

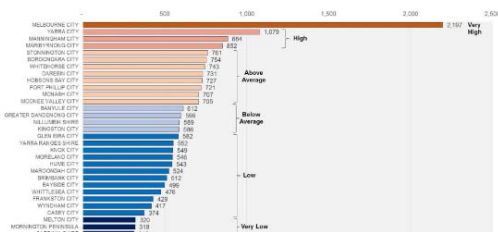
Method

- Compilation of public transport vehicle kilometres and urban population data for local government areas in Melbourne by year
- Comparison of public transport vehicle kilometres per capita by year.

Key results

CHANGES IN PUBLIC TRANSPORT SERVICE LEVELS PER CAPITA ARE HIGHLY UNEVEN ACROSS MELBOURNE.

Fig. 1 Public transport service provision per capita by local government area in Melbourne, 2016
(Total weekly public transport vehicle kilometres per 1,000 people)



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Objectives

- To measure aggregate urban public transport provision in Melbourne from 2001-02 to 2016-17
- To explore if and how urban public transport provision has kept pace with population growth.

Method

- Compilation of public transport vehicle kilometres (by mode) and urban population data for Melbourne by year
- Comparison of public transport vehicle kilometres per capita by year.

Key results

PUBLIC TRANSPORT SERVICE PROVISION PER CAPITA HAS BEEN DECLINING SINCE 2011-12 IN MELBOURNE.

Fig. 1 Public transport timetabled kilometres per year by mode in Melbourne (indexed: 2001-02 = 100)

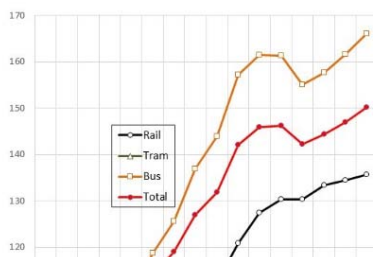
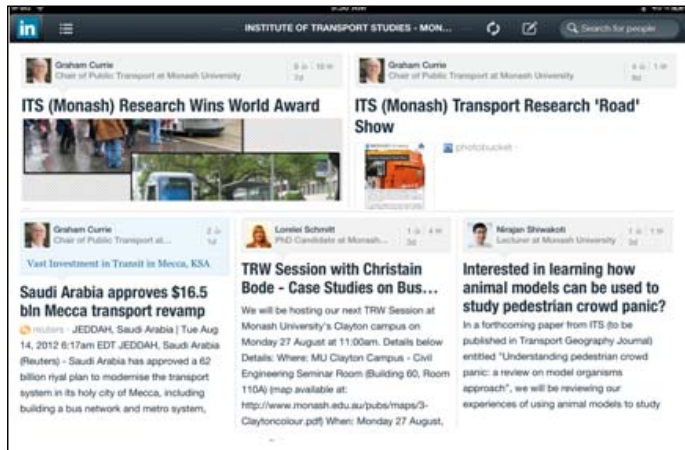


Fig. 2 Public transport timetabled kilometres per capita per year in Melbourne



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