MONASH University

Transport Australia Society
Tuesday 19th March 2019; 12:00p.m.-12:30p.m.
Collaboration Zone 2 Lower, Engineers Australia
600 Bourke Street, Melbourne VIC

How to Improve Public Transport [in Melbourne]

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Public Transport Research Group
Institute of Transport Studies
Monash University

PTRG PUBLIC TRANSPORT RESEARCH GROUP

GROUP OF EIGHT AUSTRALIA

MONASH INSTITUTE OF TRANSPORT STUDIES

Institute of Transport Studies (Monash)
The Australian Research Council Key Centre in Transport Management

MONASH University

Introduction

Transport in Melbourne

Public Transport in Melbourne

The Drivers of Change

The Future

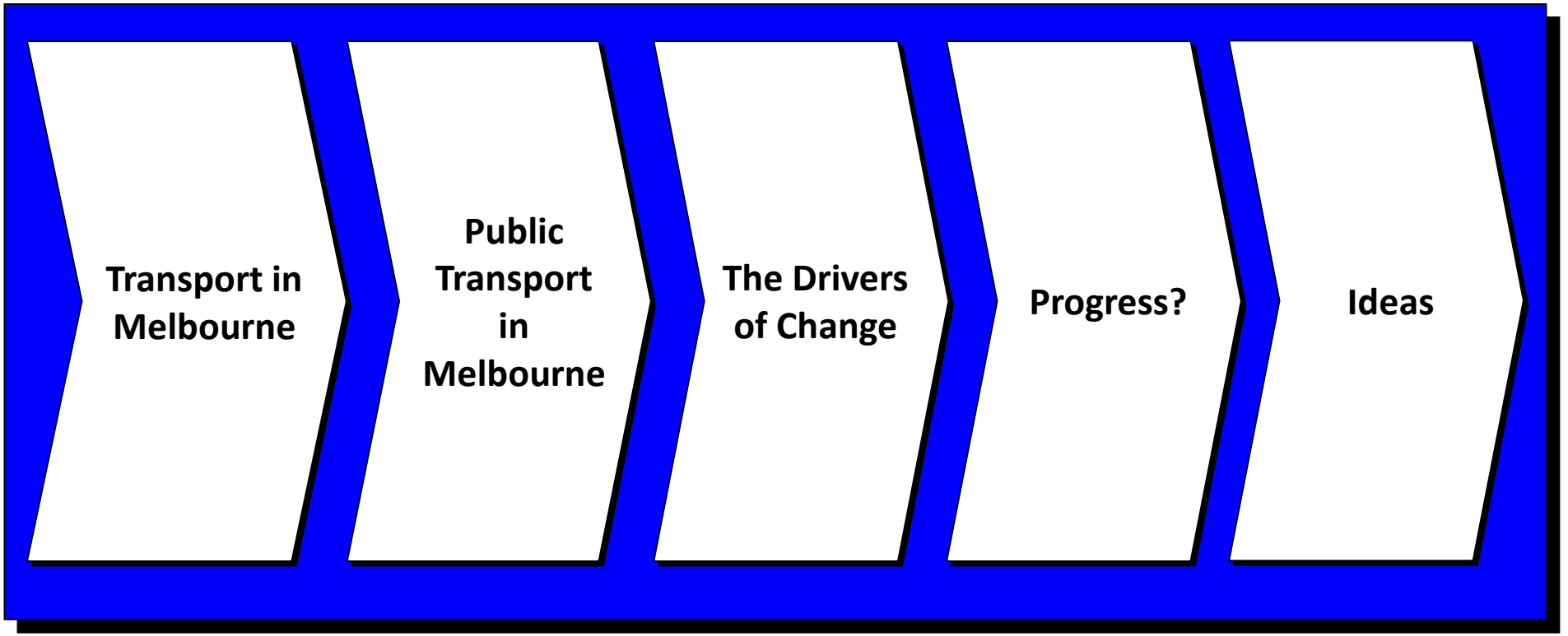
PTRG PUBLIC TRANSPORT RESEARCH GROUP

This presentation overviews Australian [Melbourne] transport problems, progress and futures …

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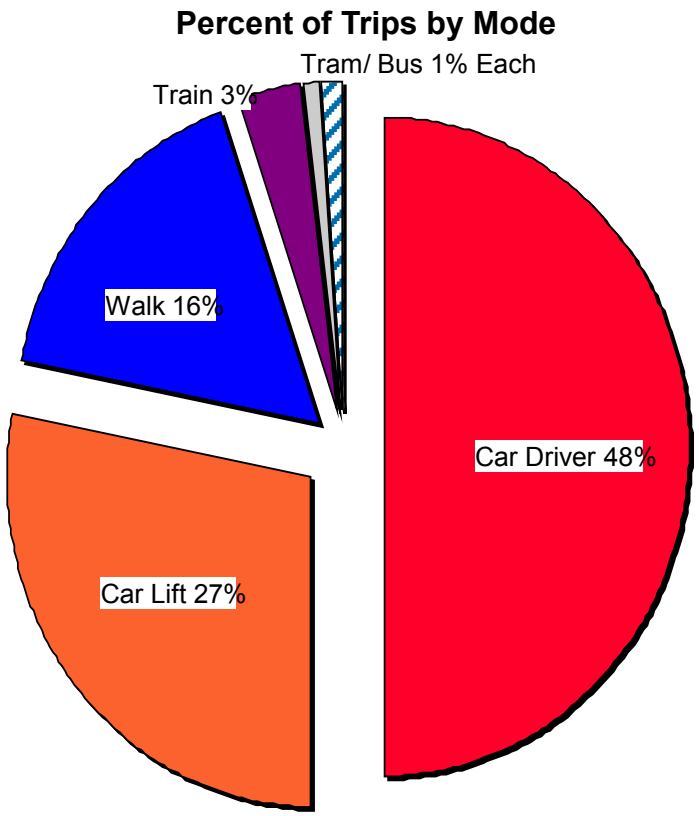
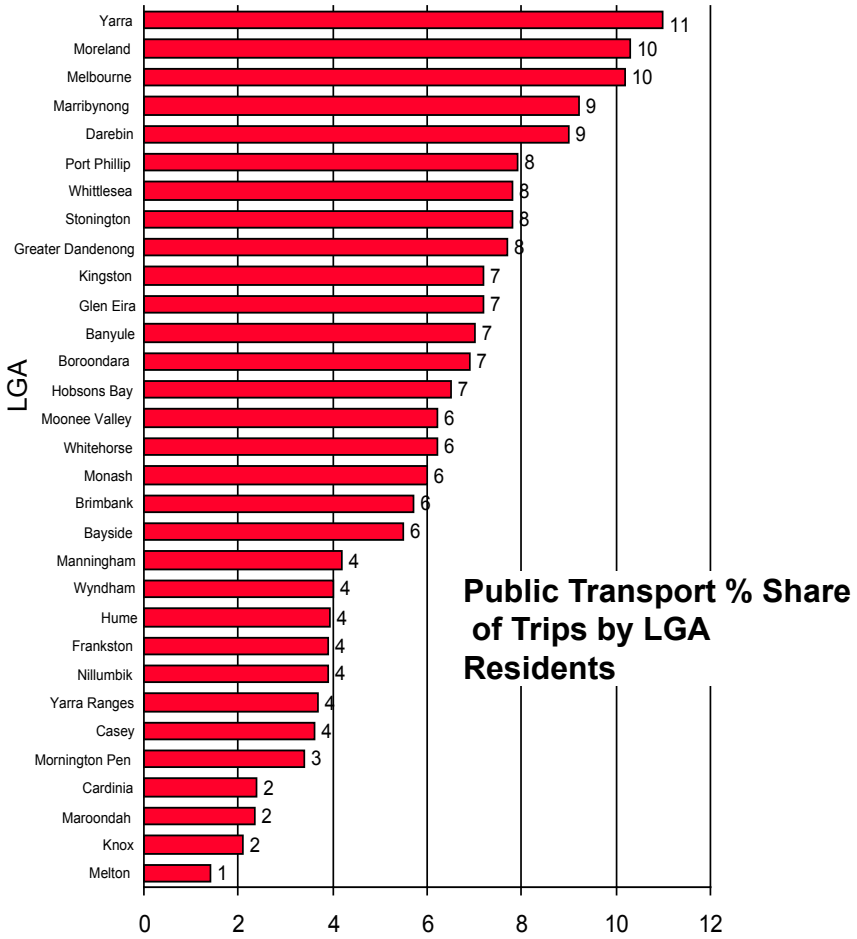
Melbourne is a car based society – 75% of trips are by car



Source: Melbourne on the move – VATS 1994



Car vehicle sales and ownership continue to rise

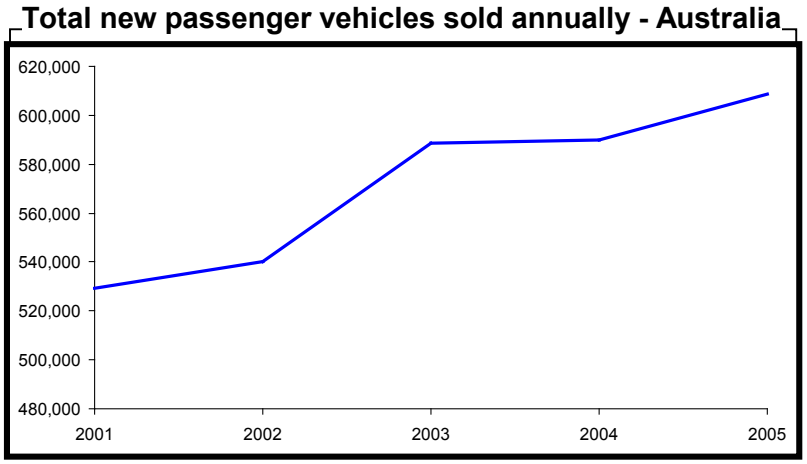


Figure 7.2: New passenger vehicle sales 2001-2005 (FCAI, 2006)

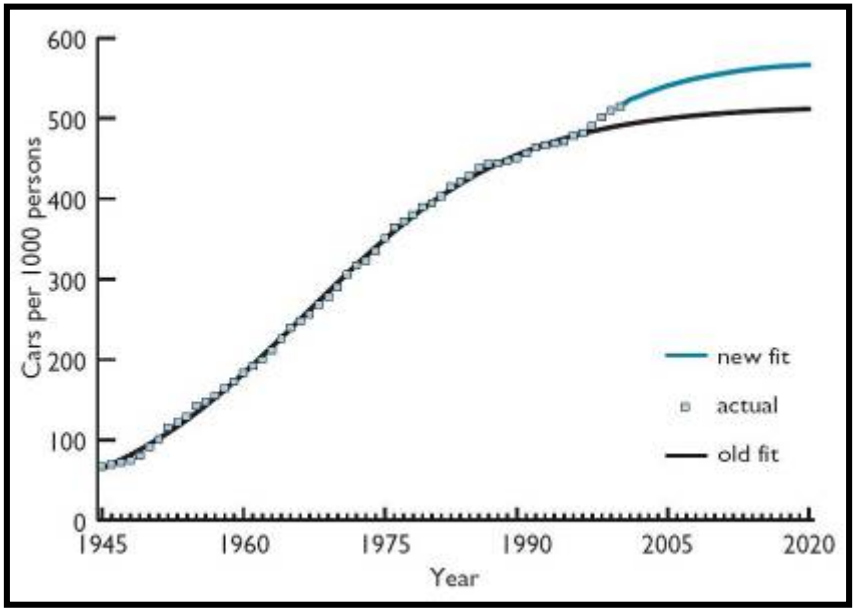
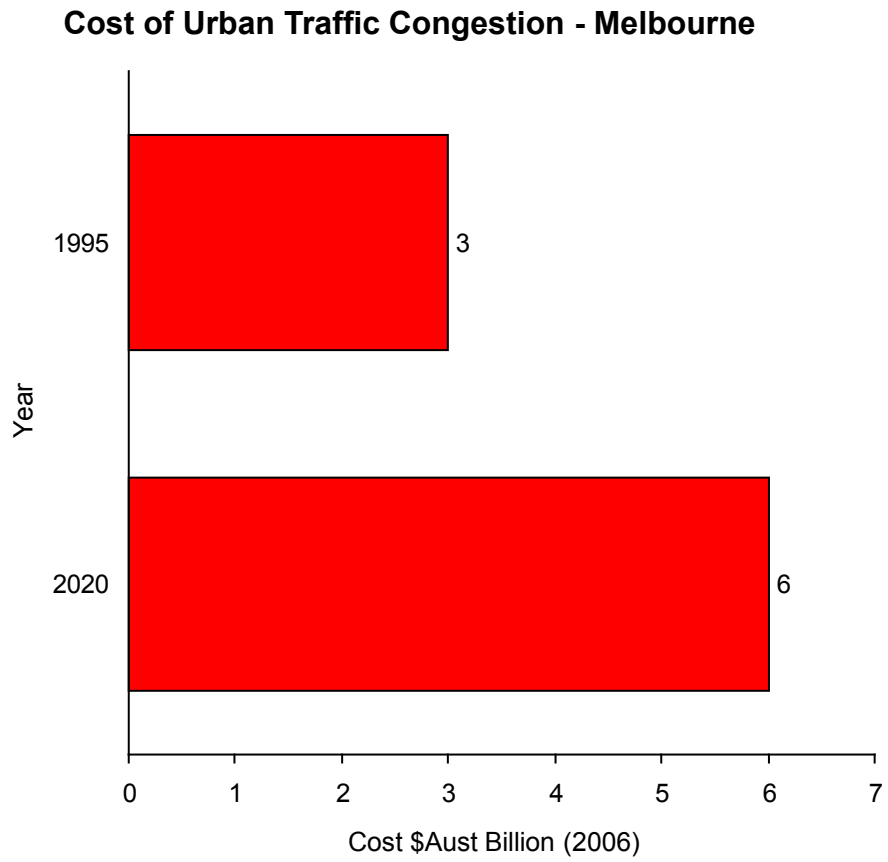
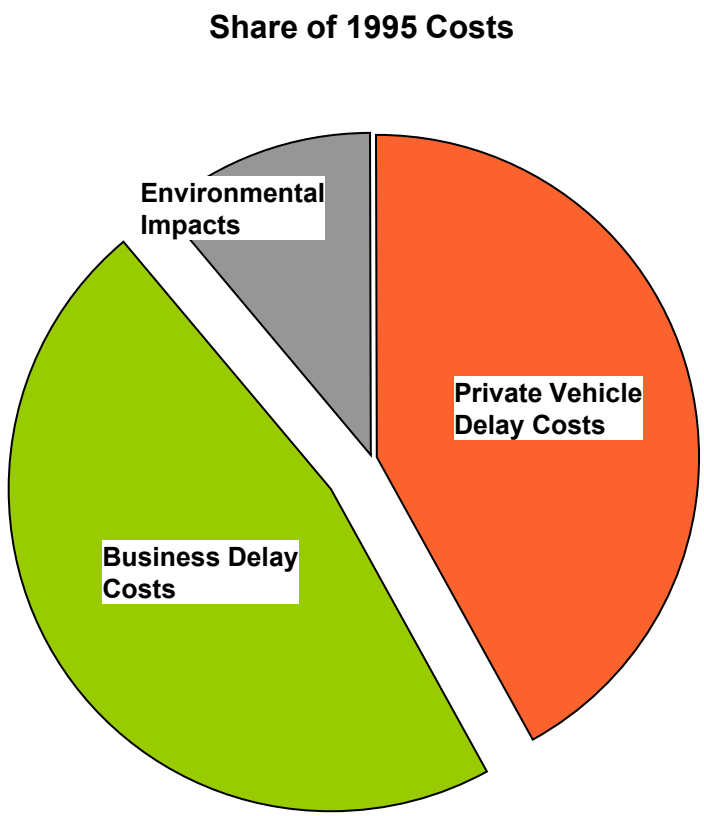


Figure 10.4: Revised projected per capita Australian motor vehicle ownership (BTRE, 2002, p.15)

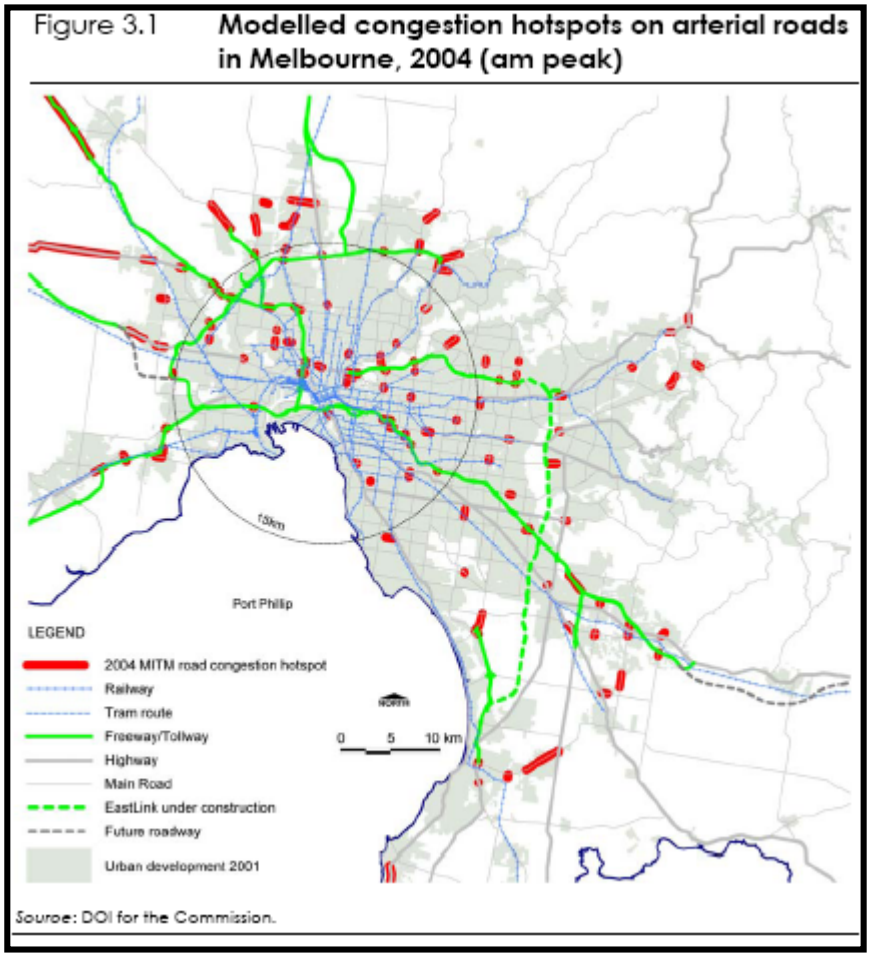
Urban traffic congestion in Melbourne costs $3B p.a. (2005) and will double by 2020

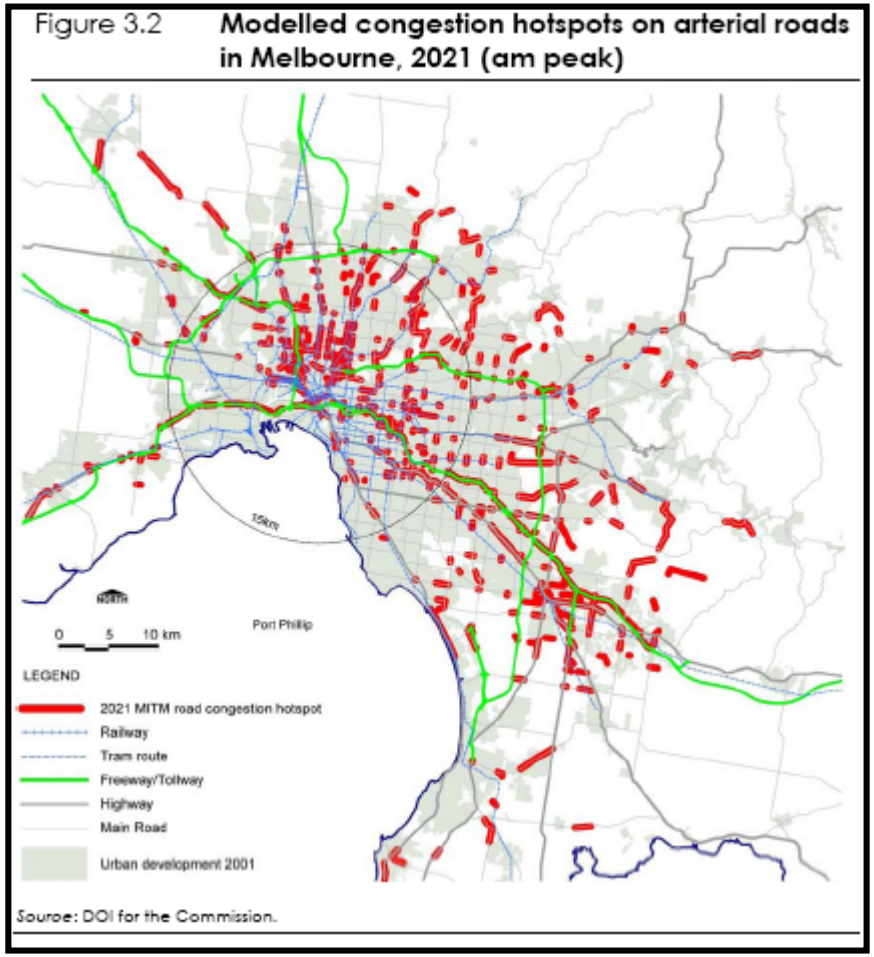




Source: BTRE (2006)

Congestion ‘hotspots’ are expected to spread spatially….





Source: VCEC (2006) Inquiry into Managing Transport Congestion

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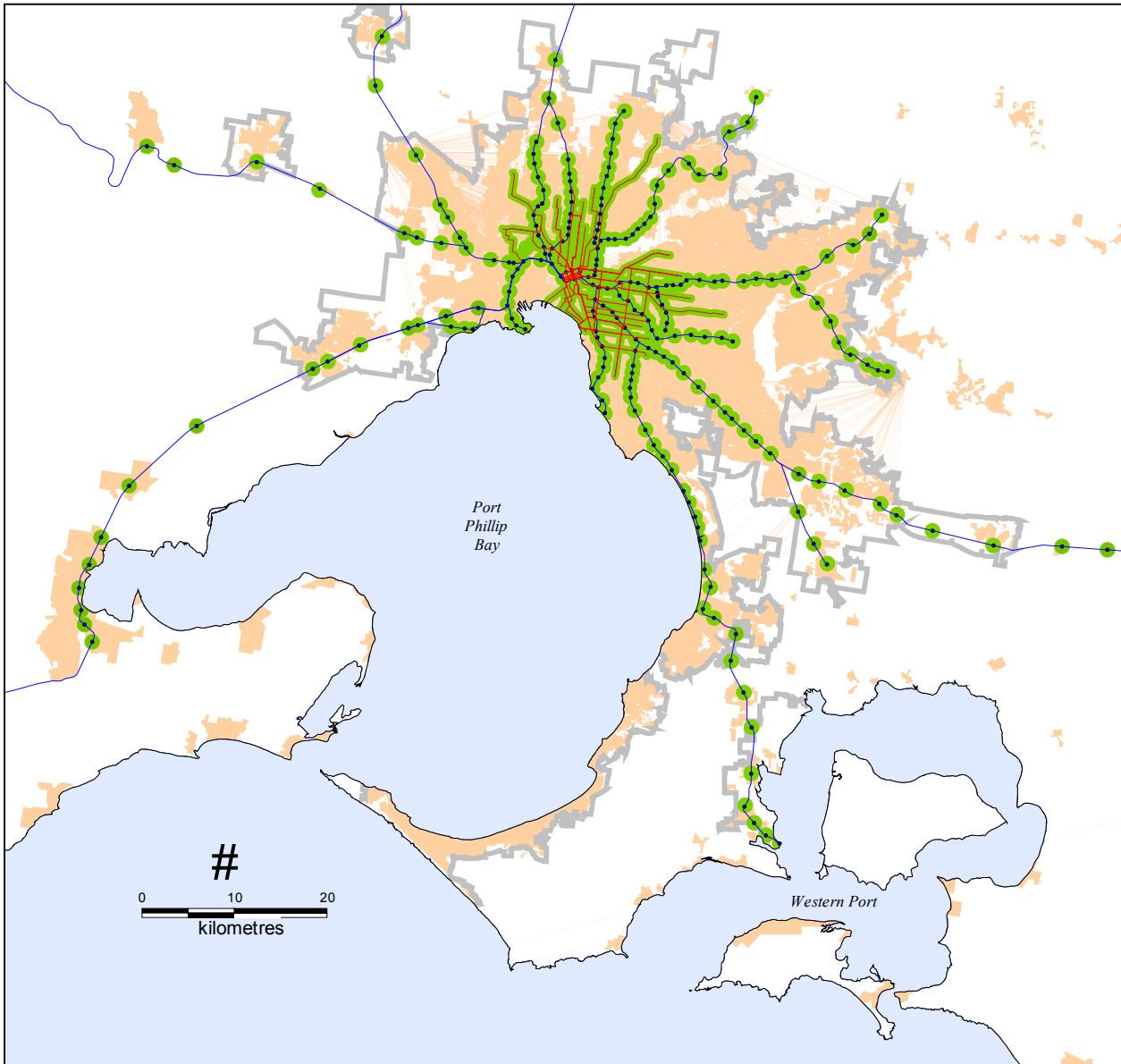
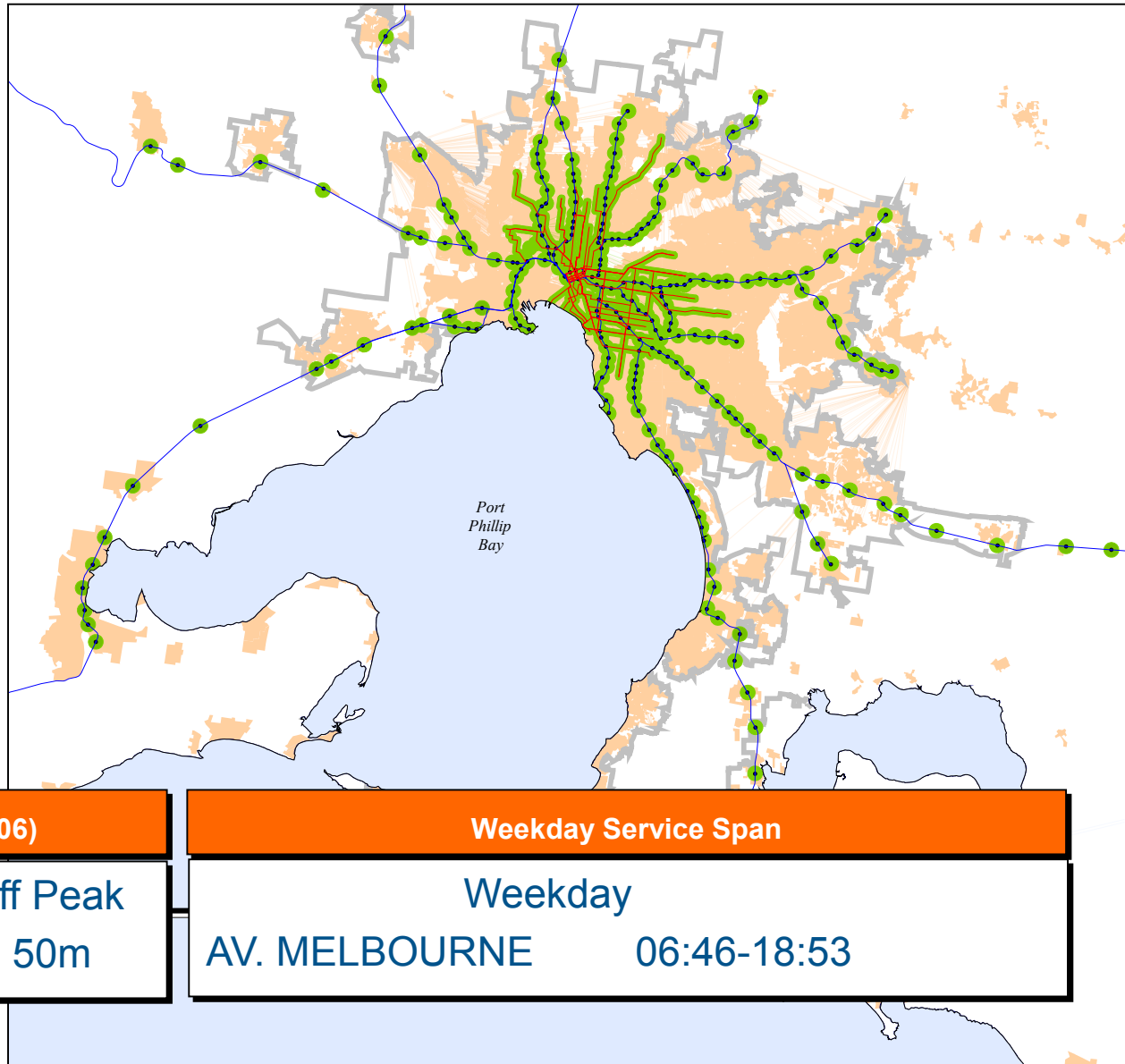
Buses **ARE** Melbourne's public transport for most residents, which is a problem….

- **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**



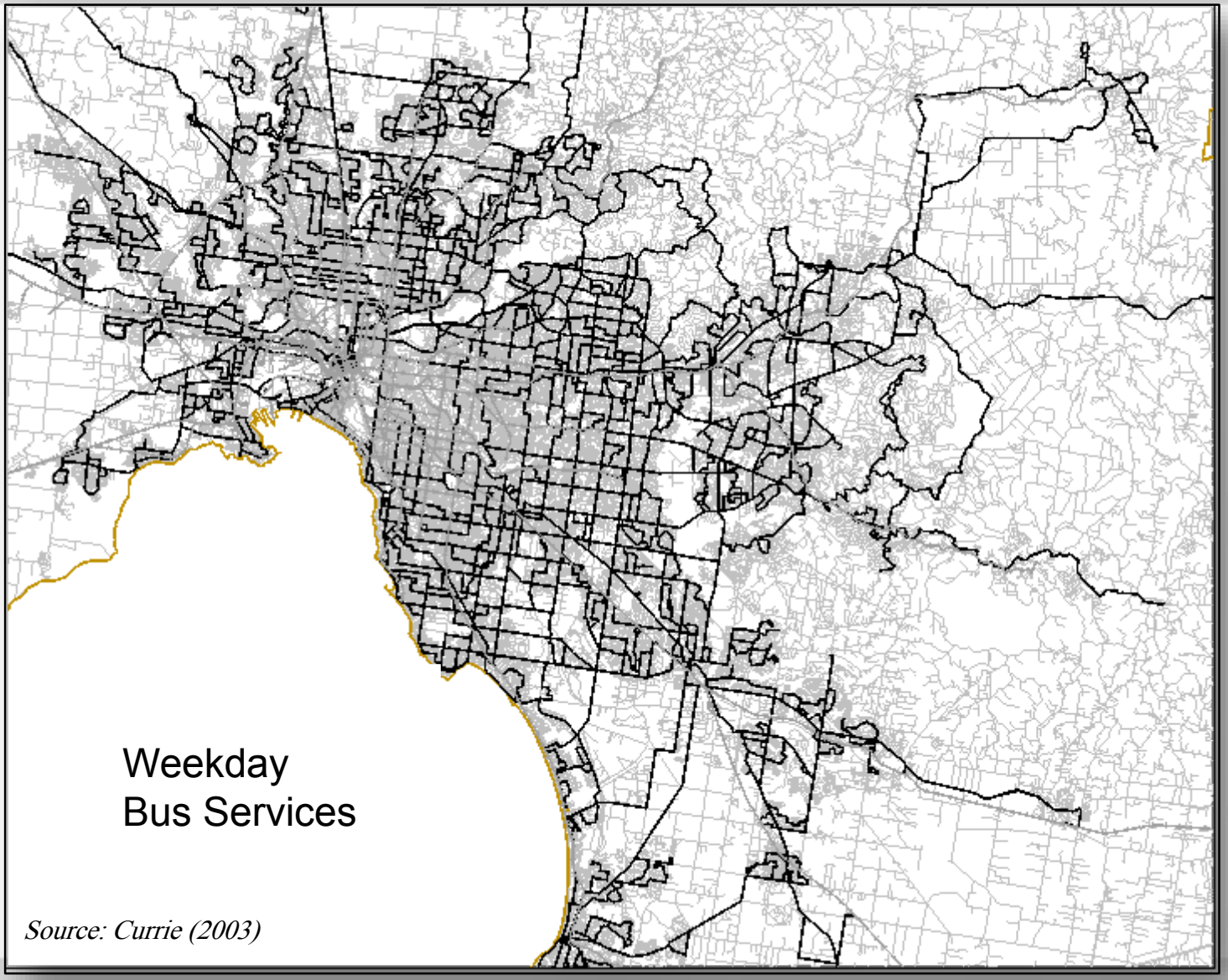
Weekday Service Frequency (2006)

	Peak	Off Peak
AV. MELBOURNE	40m	50m

Weekday Service Span

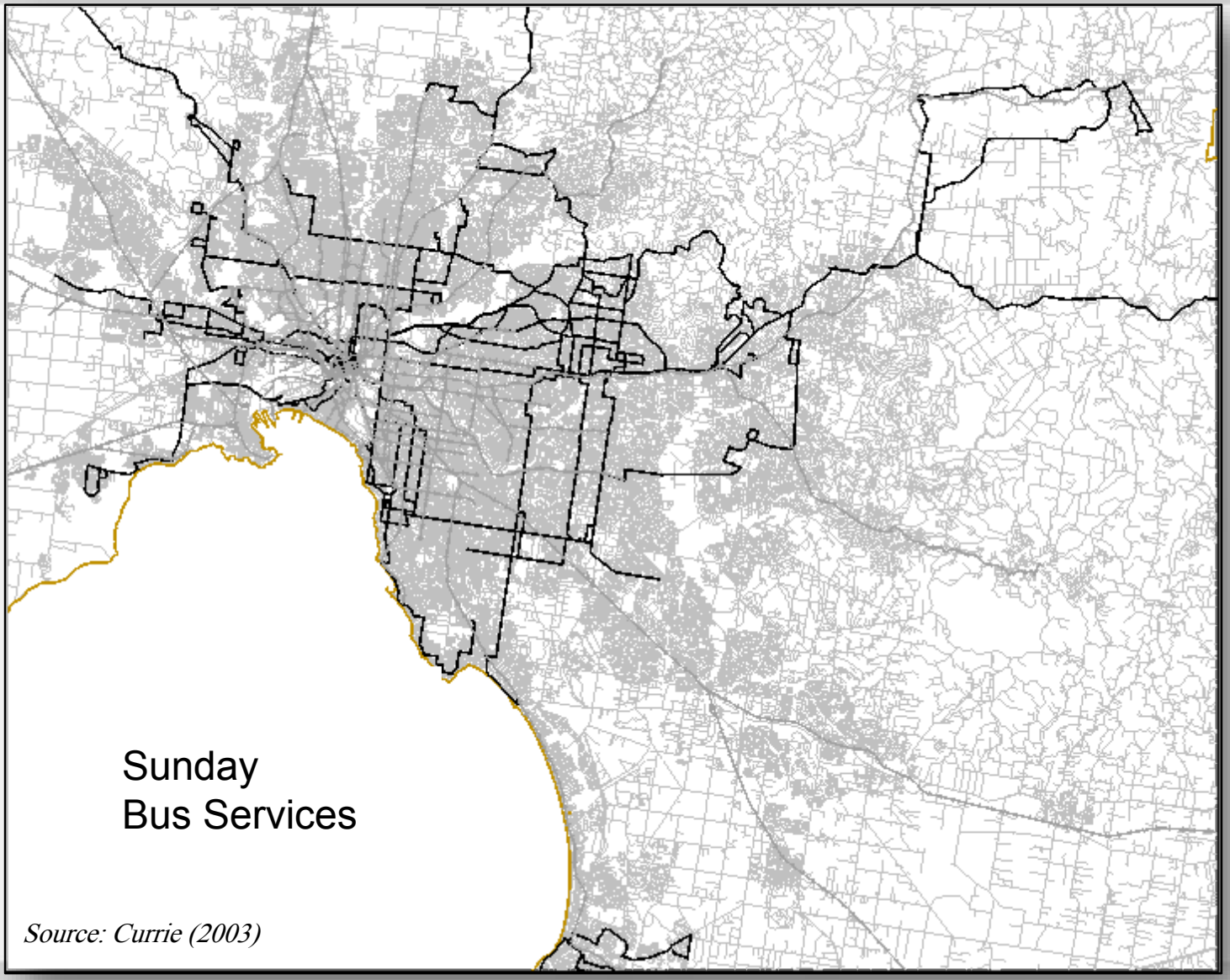
	Weekday
AV. MELBOURNE	06:46-18:53

The bus network on weekdays...



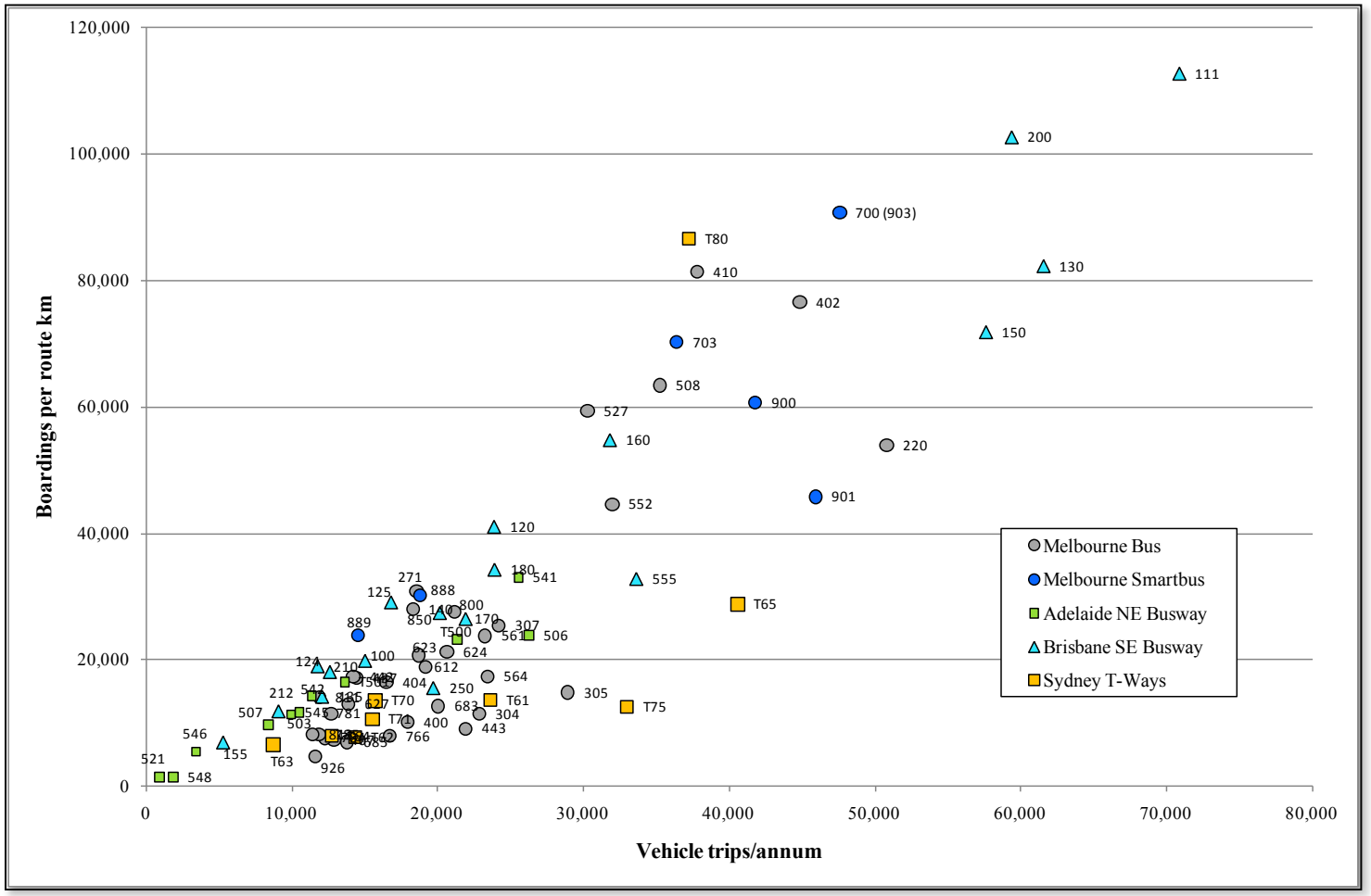
Source: Currie (2003)

…contrasts somewhat with weekends



Source: Currie (2003)

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

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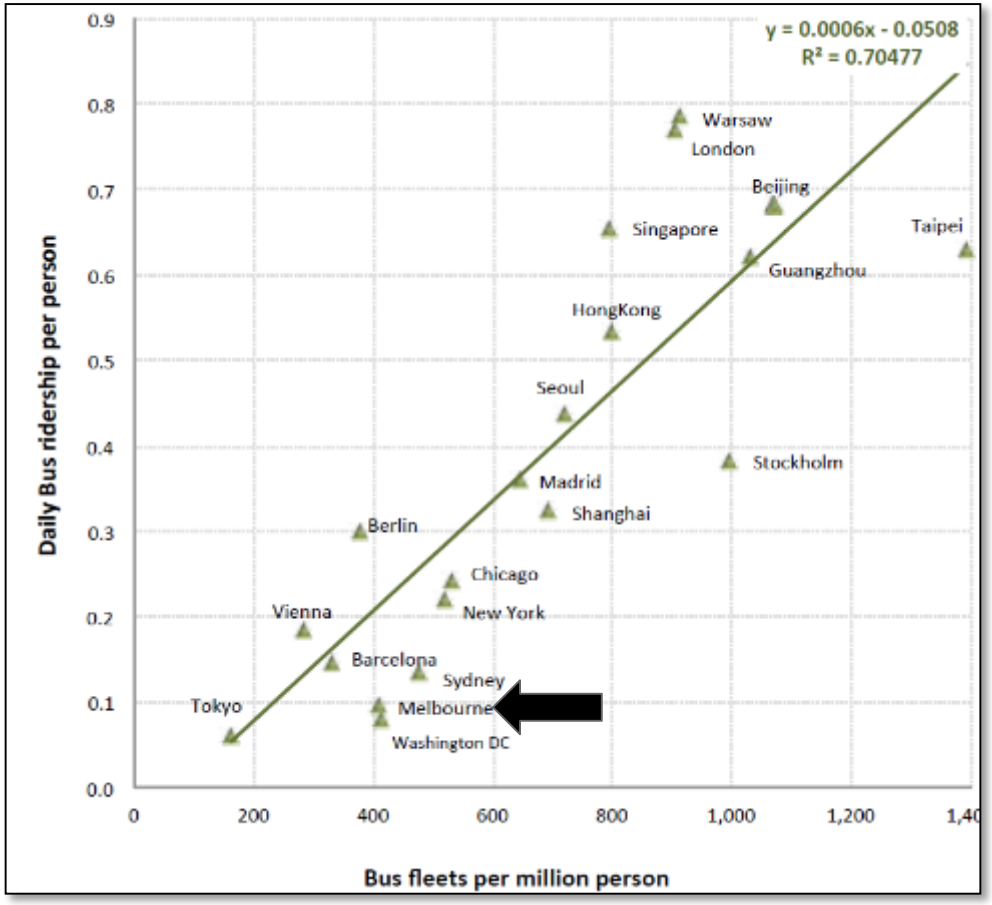
In general our bus service level is poor compared to world practice



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

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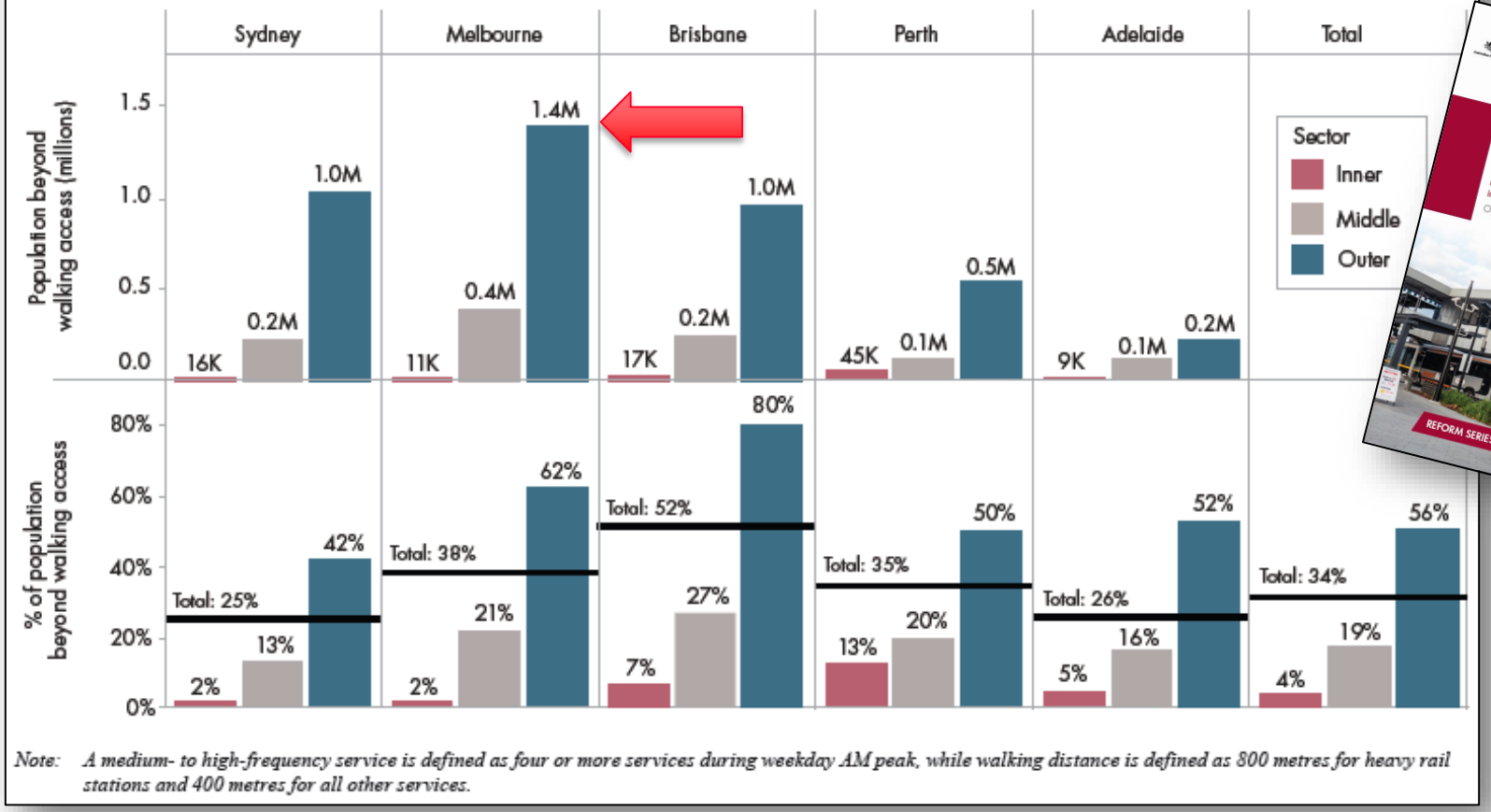
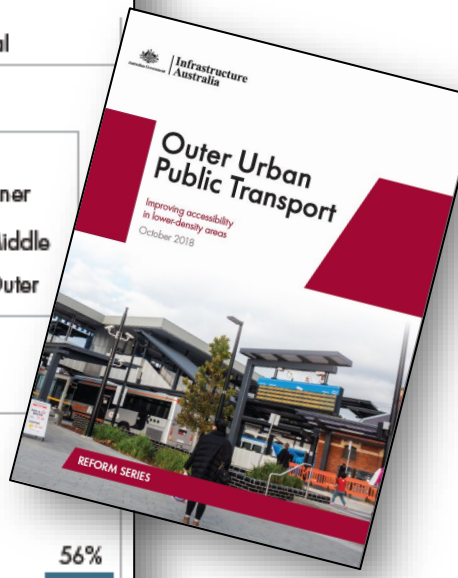
New Data – Melbourne has highest outer population in Australia outside walk access to good public transport

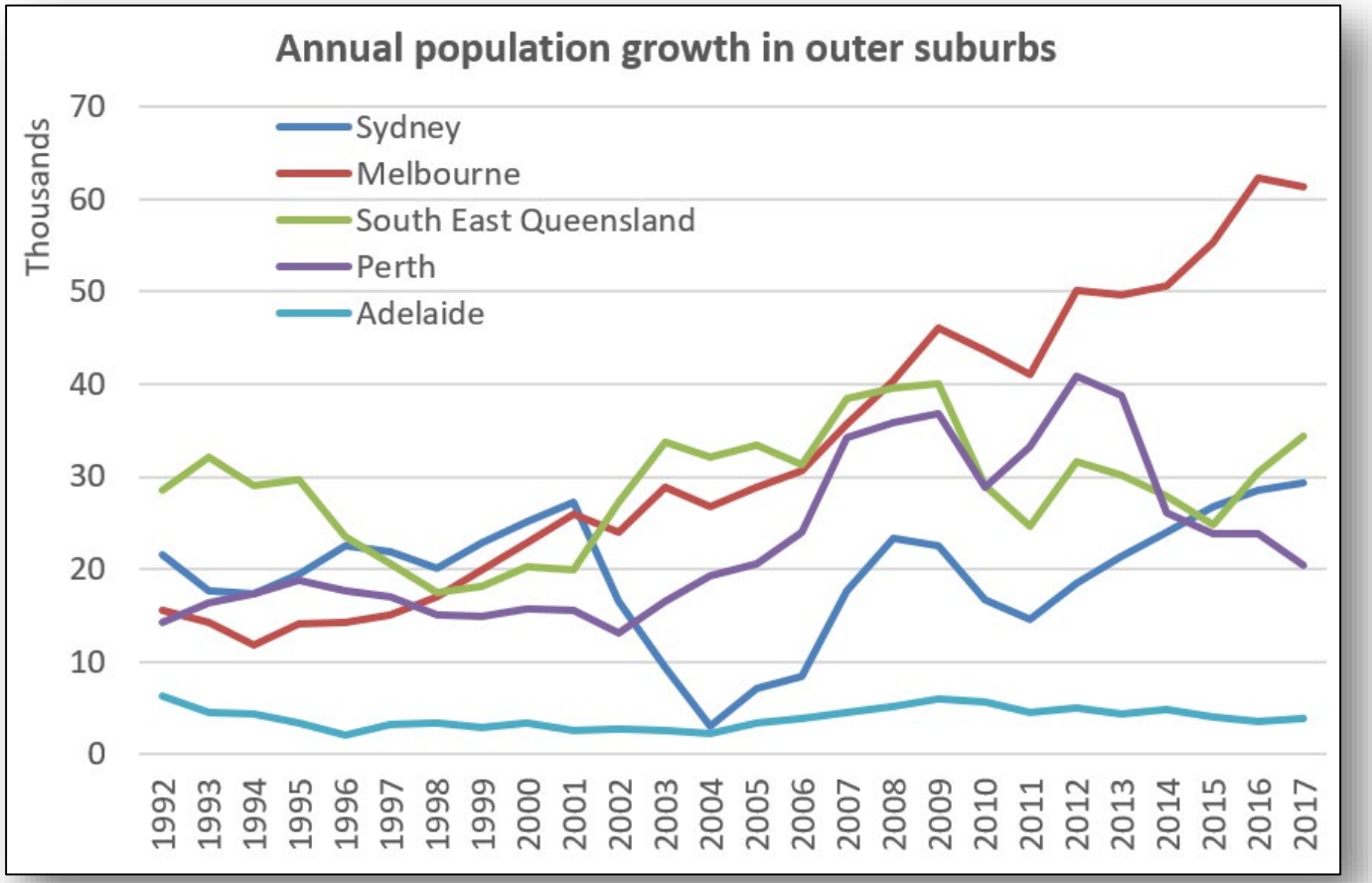
Figure 9: Walking access to medium- to high-frequency public transport by city and by sector during weekday AM peak, as count and proportion of city population, all five cities, 2017





Note: A medium- to high-frequency service is defined as four or more services during weekday AM peak, while walking distance is defined as 800 metres for heavy rail stations and 400 metres for all other services.

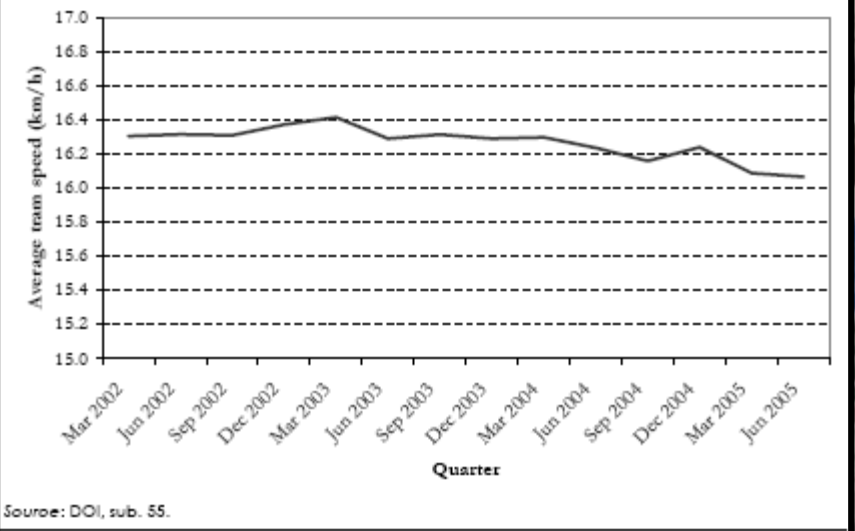
Melbourne has the most sprawling outer suburban areas in Australia



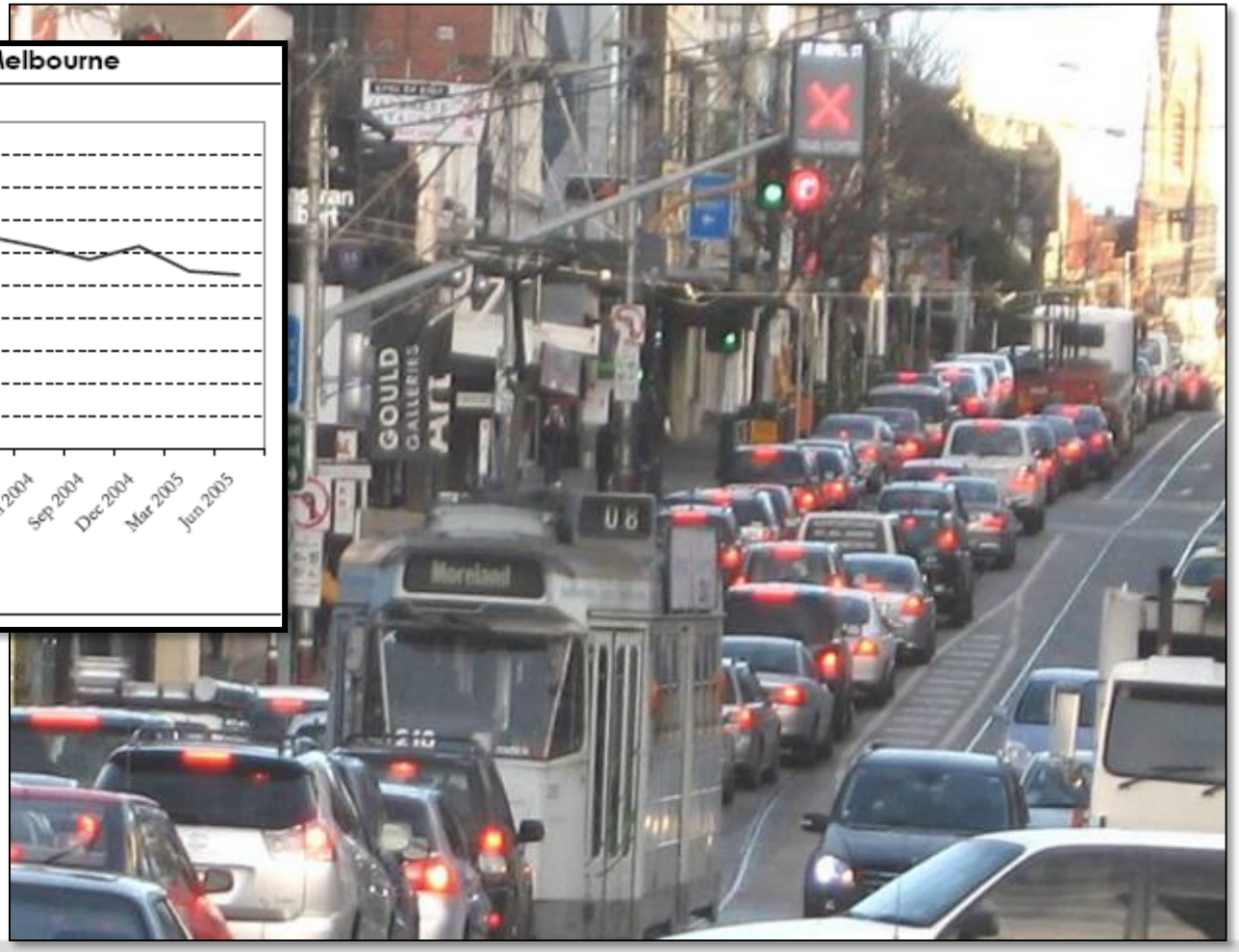
Source : Charting Transport (www.chartingtransport.com)

Tram services are struggling in growing traffic congestion

Figure 3.7 **Average tram speeds in Melbourne**

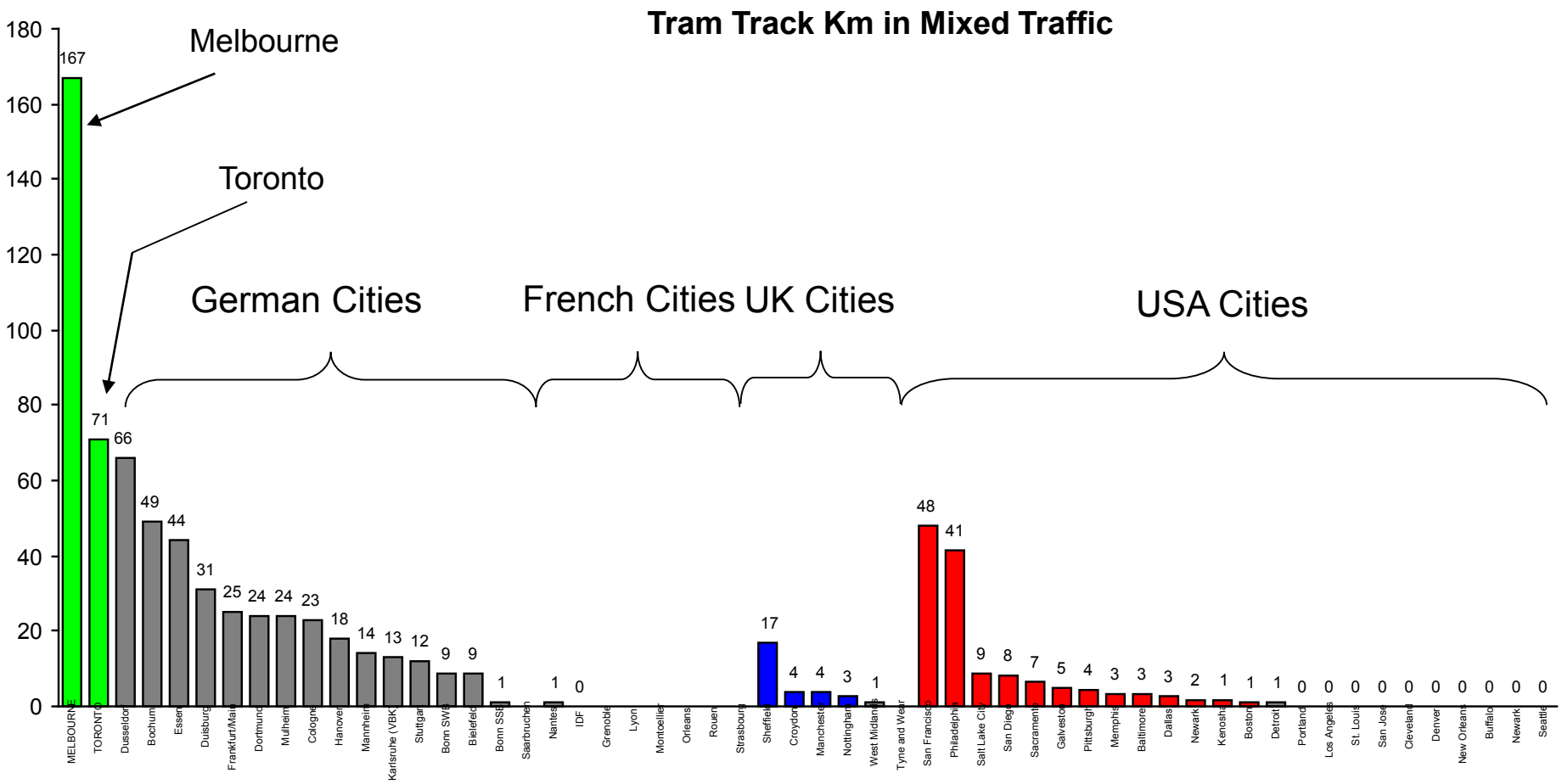


Source: DOI, sub. 55.



Source: VCEC (2006) Inquiry into Managing Transport Congestion

Melbourne is the worlds biggest “streetcar” system

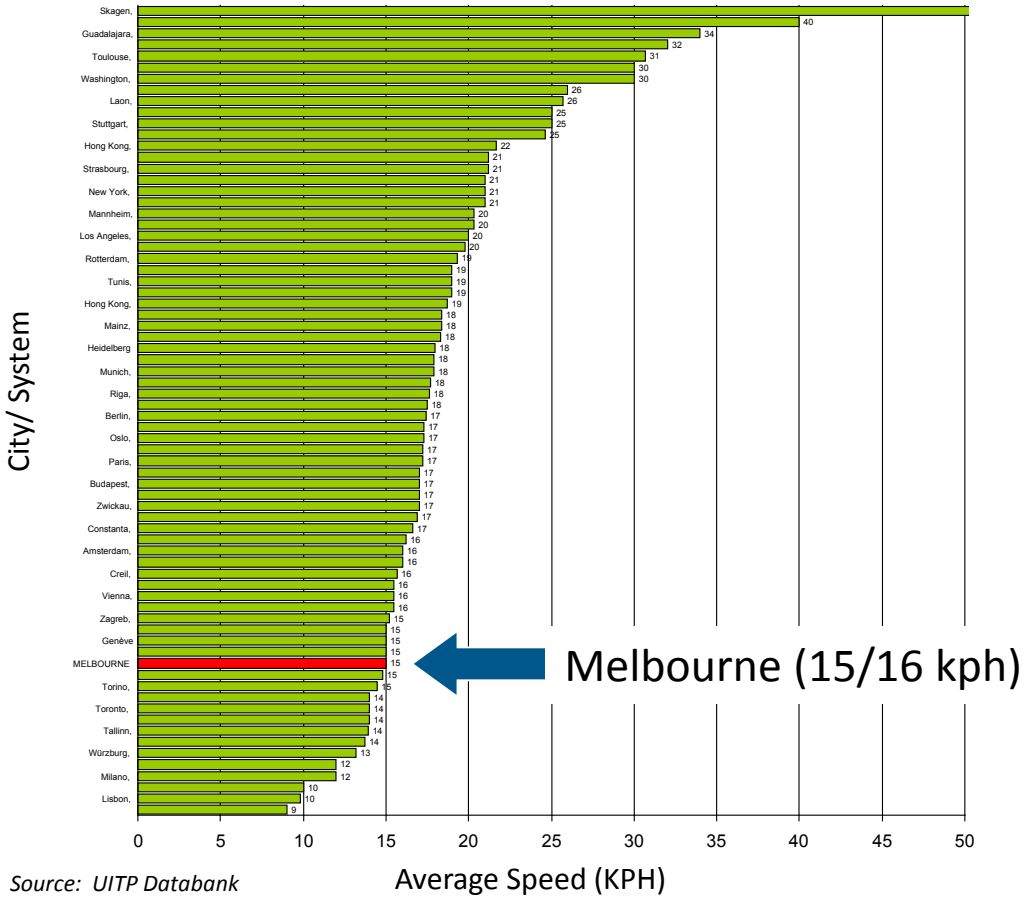


Source: Currie G and Shalaby A (2007) ‘Success and Challenges in Modernising Streetcar Systems – Experience in Melbourne and Toronto’ Transportation Research Record No 2006 Transportation Research Board Washington DC ISSN 0361-1981 pp 31-39 2007


Le Pine

Mixed Traffic service impedes performance

Average Operating Speeds – World Tram/Light Rail Systems



Source: UITP Databank

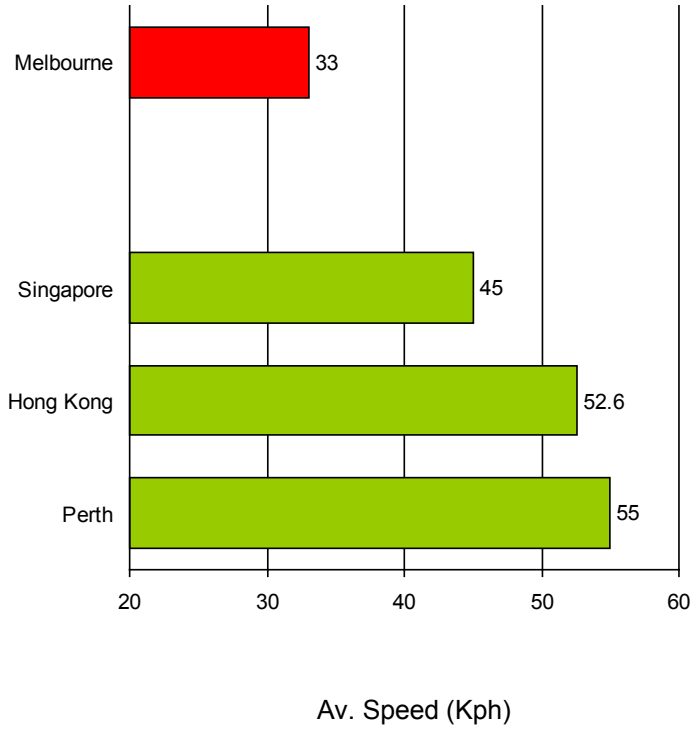
Melbourne Tram Reliability

- **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**

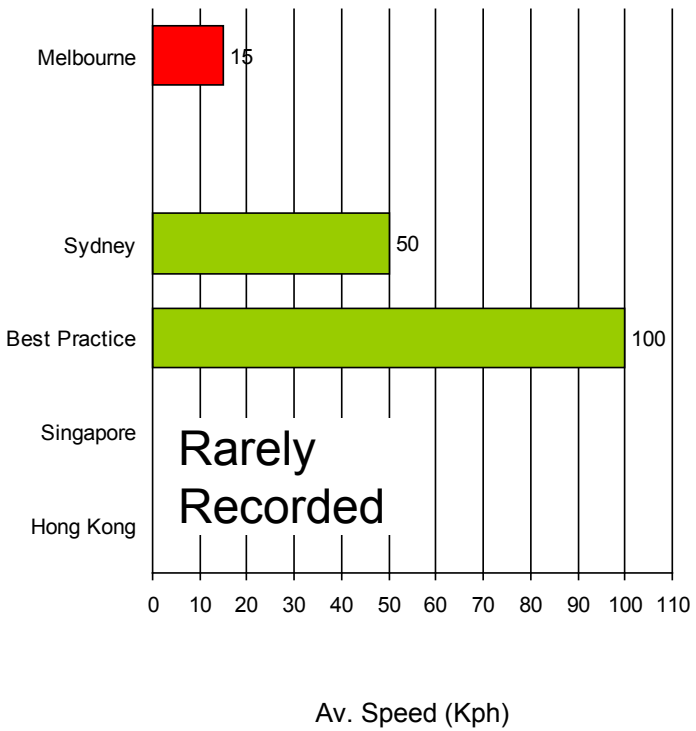
Source: Track Record

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

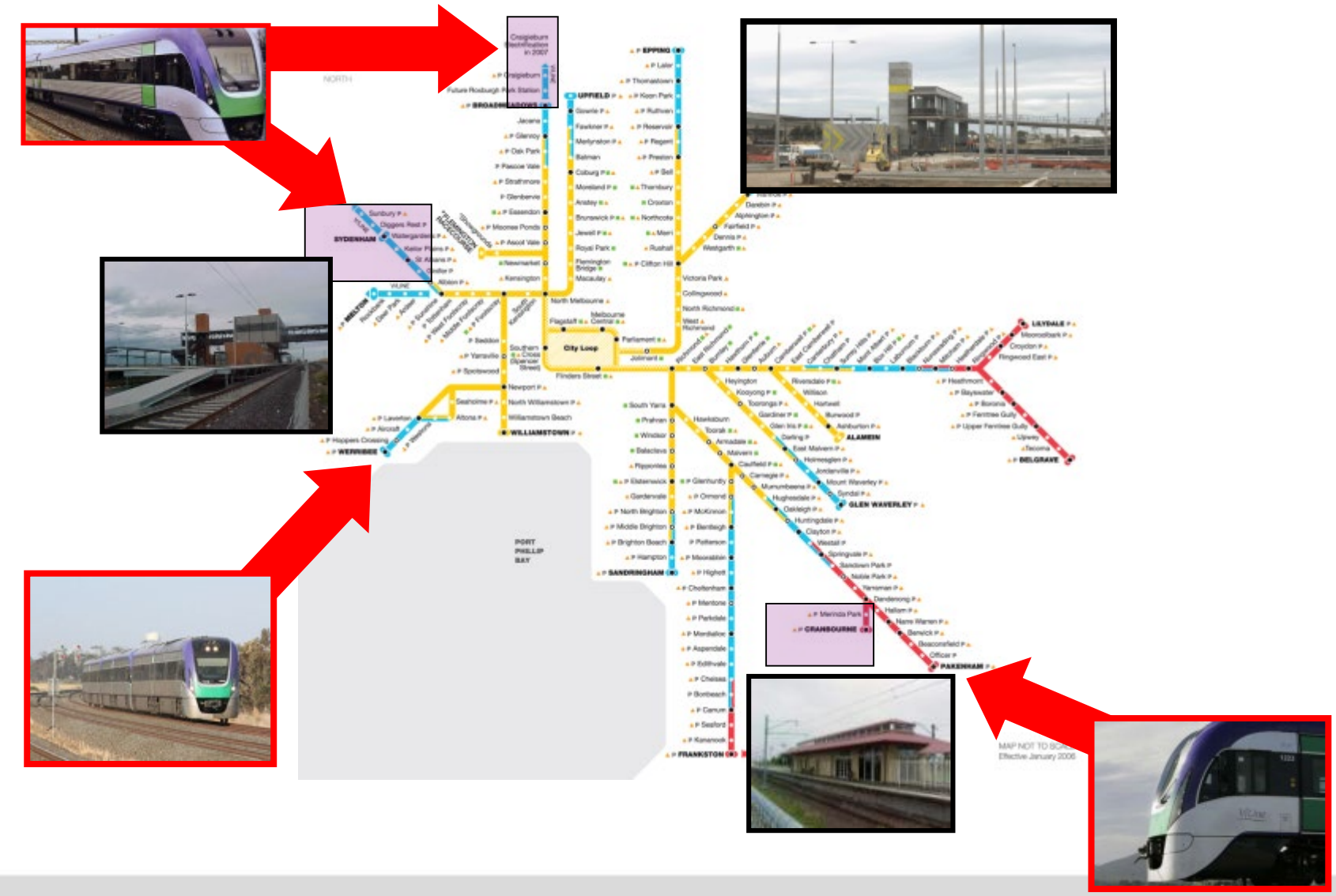
Average Speed (Kph)



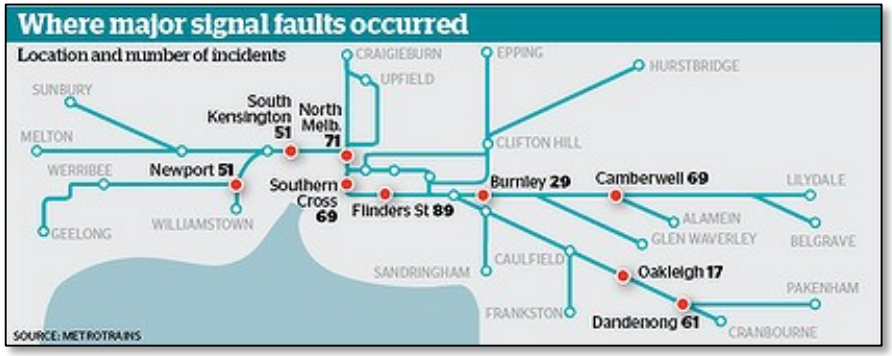
Breakdowns in Service (000 kms)



...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

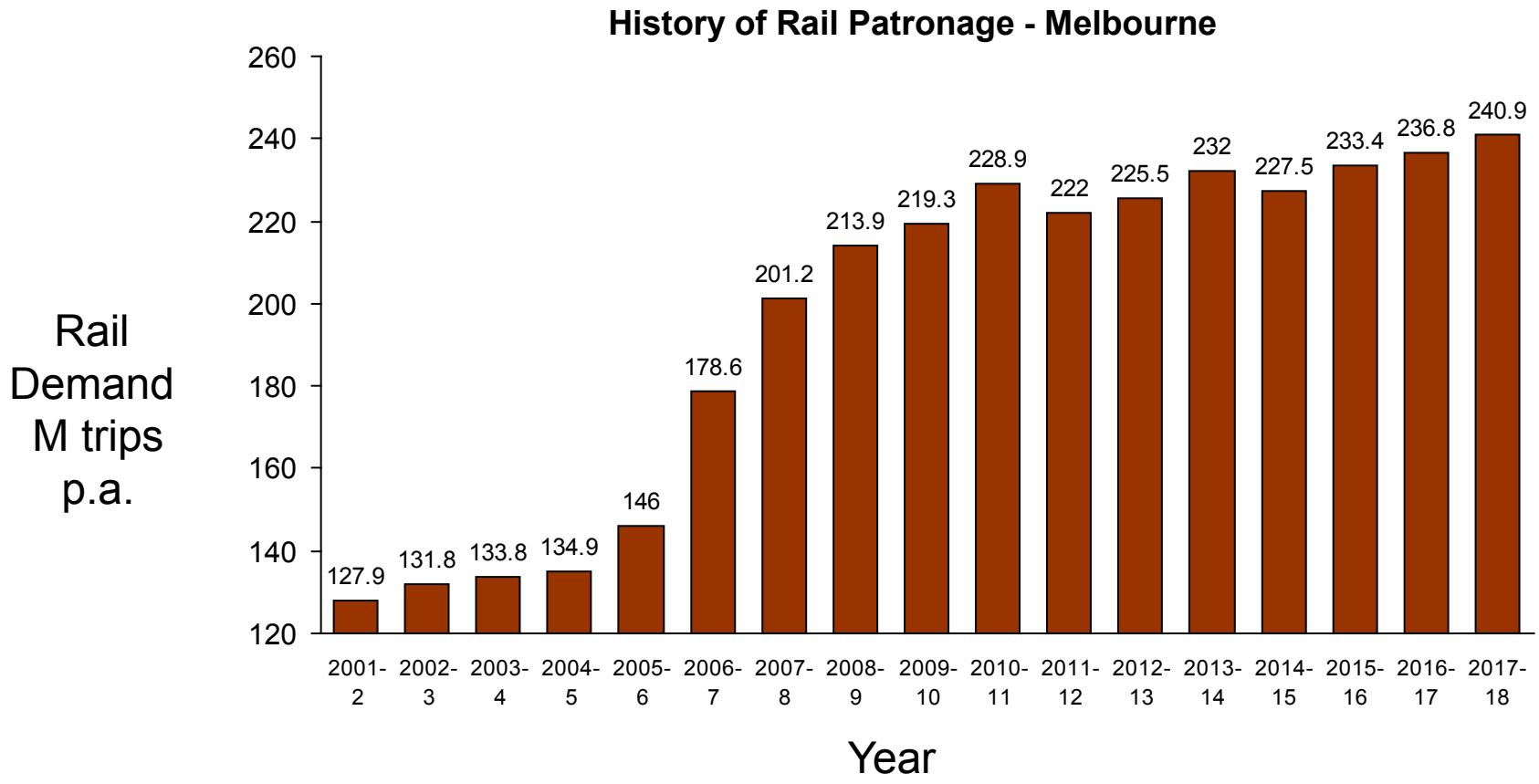
- **1,900 signal failures p.a. (12 months to August 2013)**
- **5.2 per day**
- **Biggest Locations:**
  - **Flinders Street Station 89**
  - **North Melbourne 71**
  - **Newport 51**

Metro Trains

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

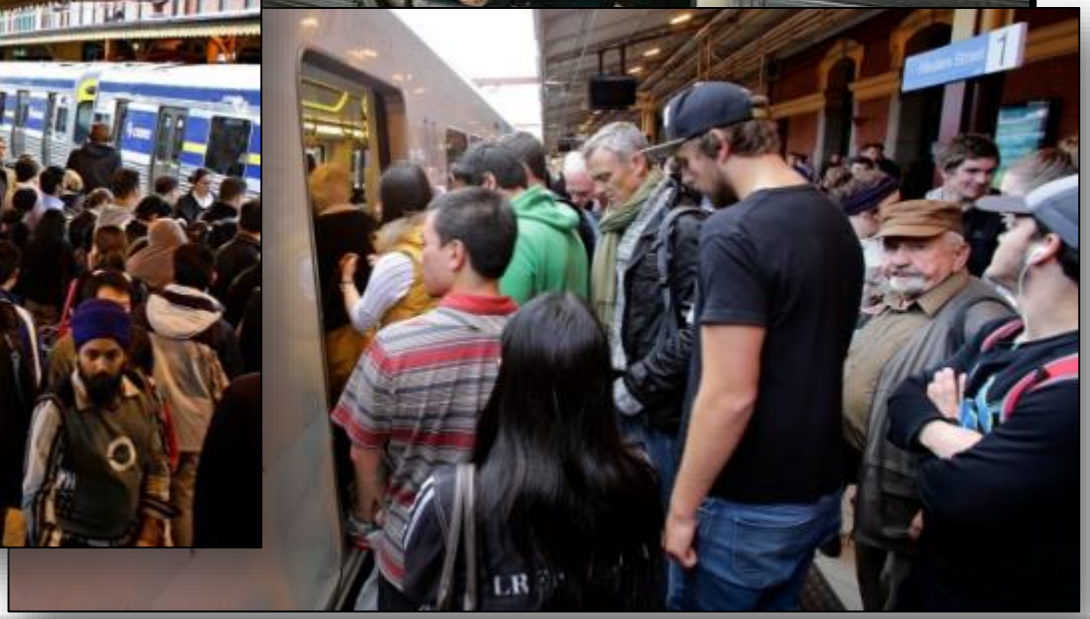
Source: Adam Carey, The Age, 'Signal failures are causing chronic rail delays' 23/10/2013

Melbourne rail demand growth has been impressive by any standard

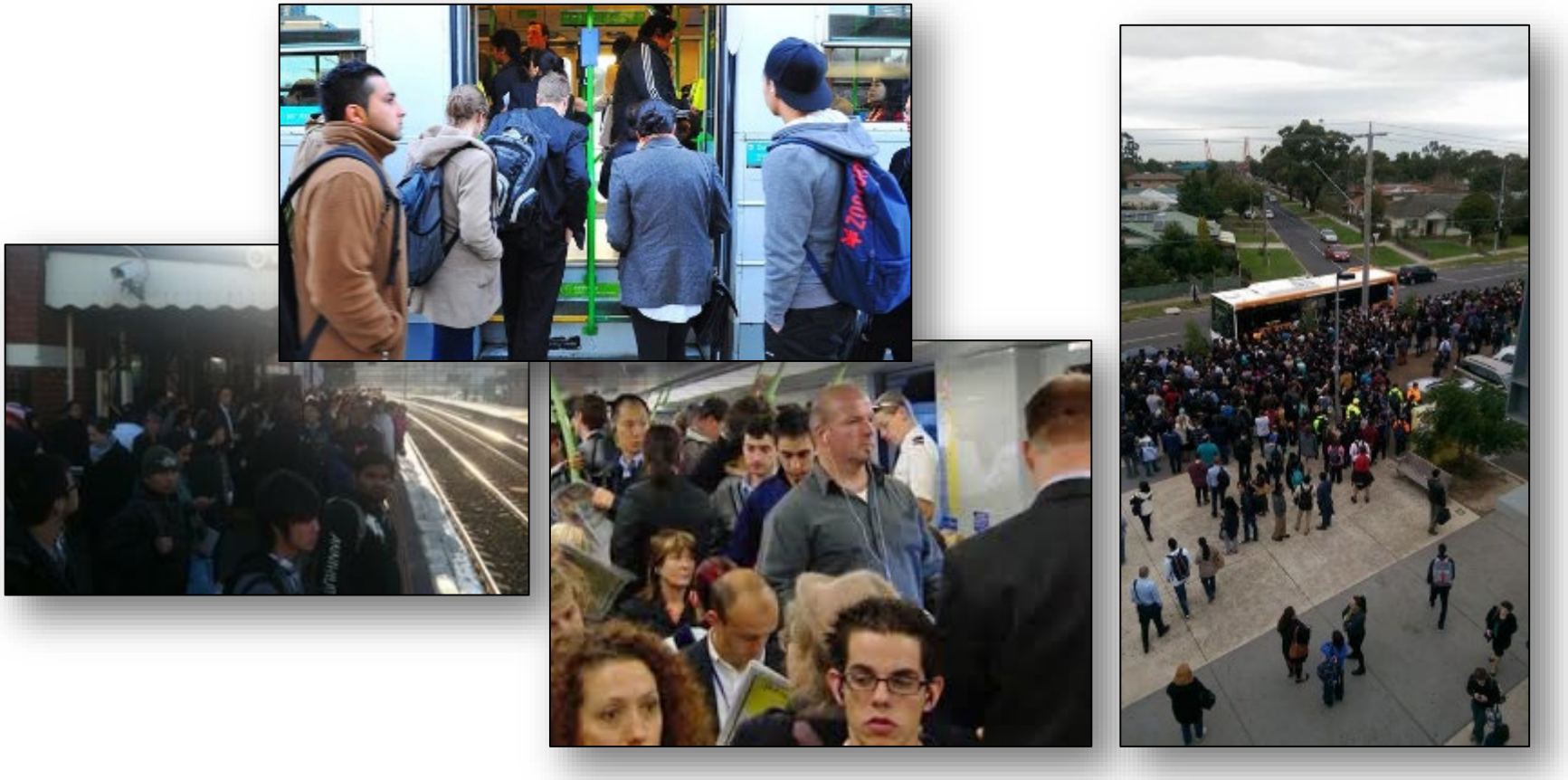


Source: Department of Transport/ Public Transport Victoria Annual Reports

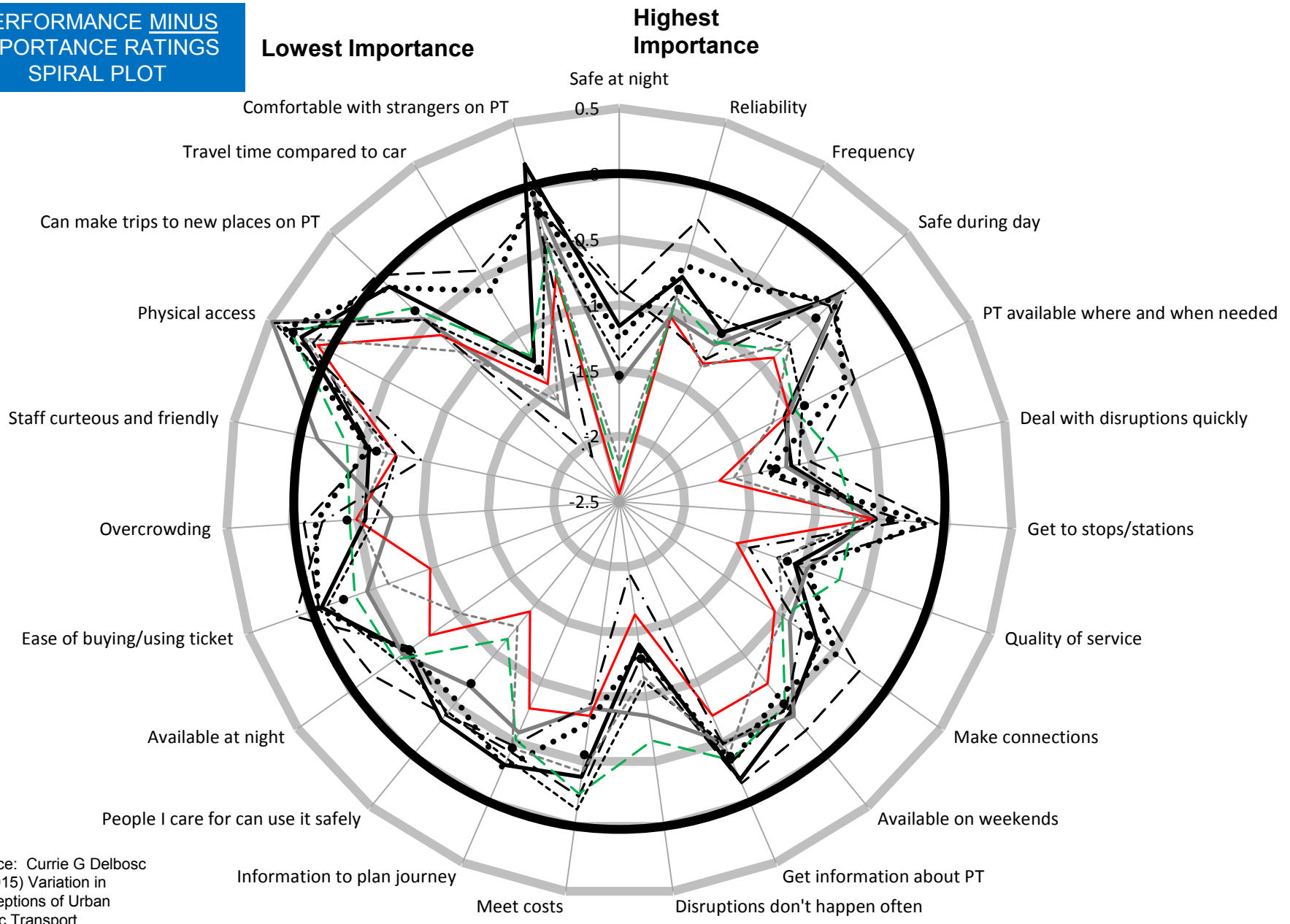
However the rail network has reached capacity in many places



So what do passengers think about these issues?



PERFORMANCE MINUS IMPORTANCE RATINGS SPIRAL PLOT



Source: Currie G Delbosc A (2015) Variation in Perceptions of Urban Public Transport Performance Between International Cities Using Spiral Plot Analysis' TRANSPORTATION RESEARCH RECORD No. 2538 on pages 54-64

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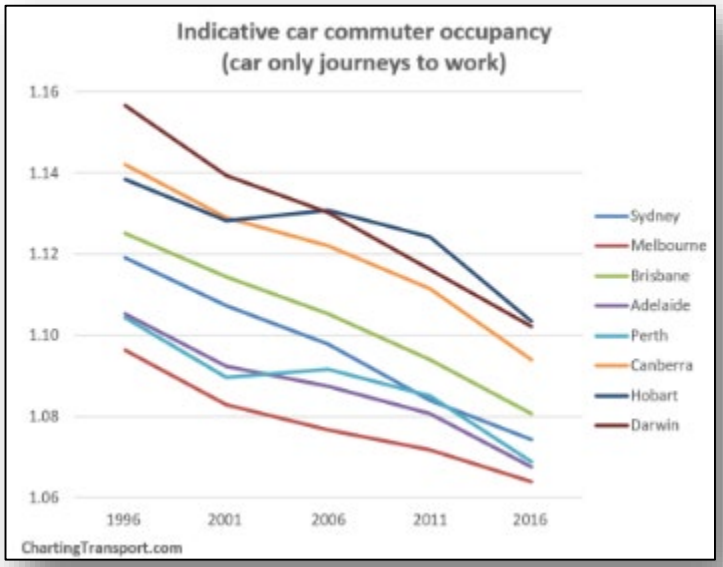
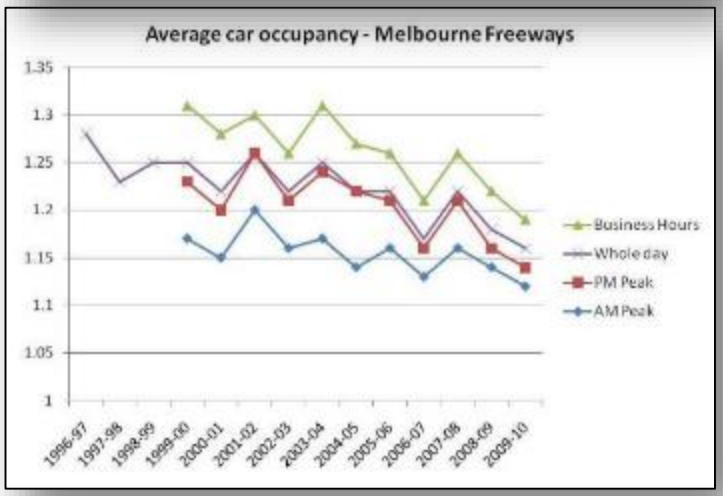
Growth in urban travel and car ownership continues to rise

- **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)**

While traffic grows, occupancy plumits – more cars, filling more roads carrying less people - shared mobility is in decline



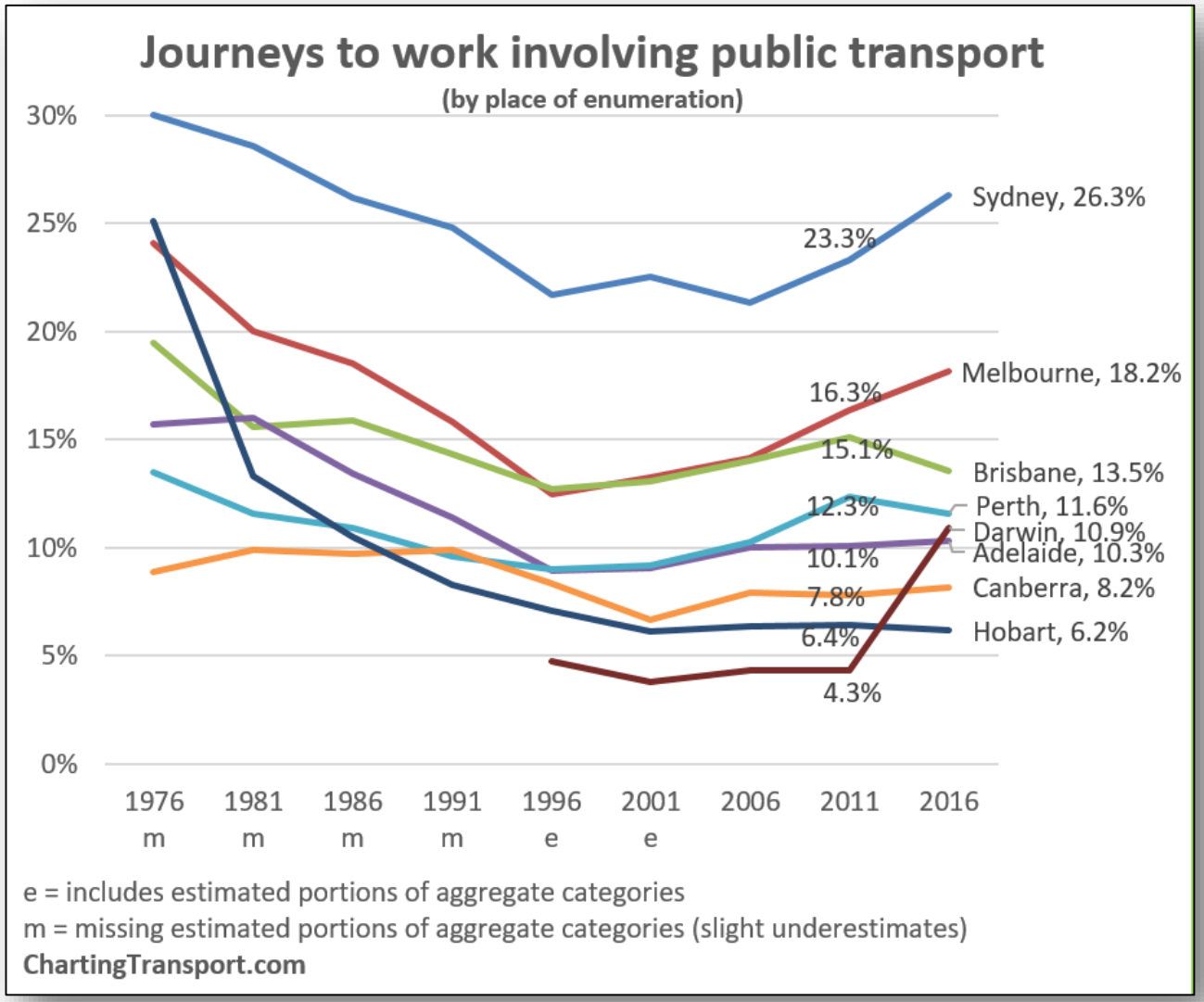


Source : Charting Transport (www.chartingtransport.com)

Meanwhile road freight volume is expected to double in 20 years

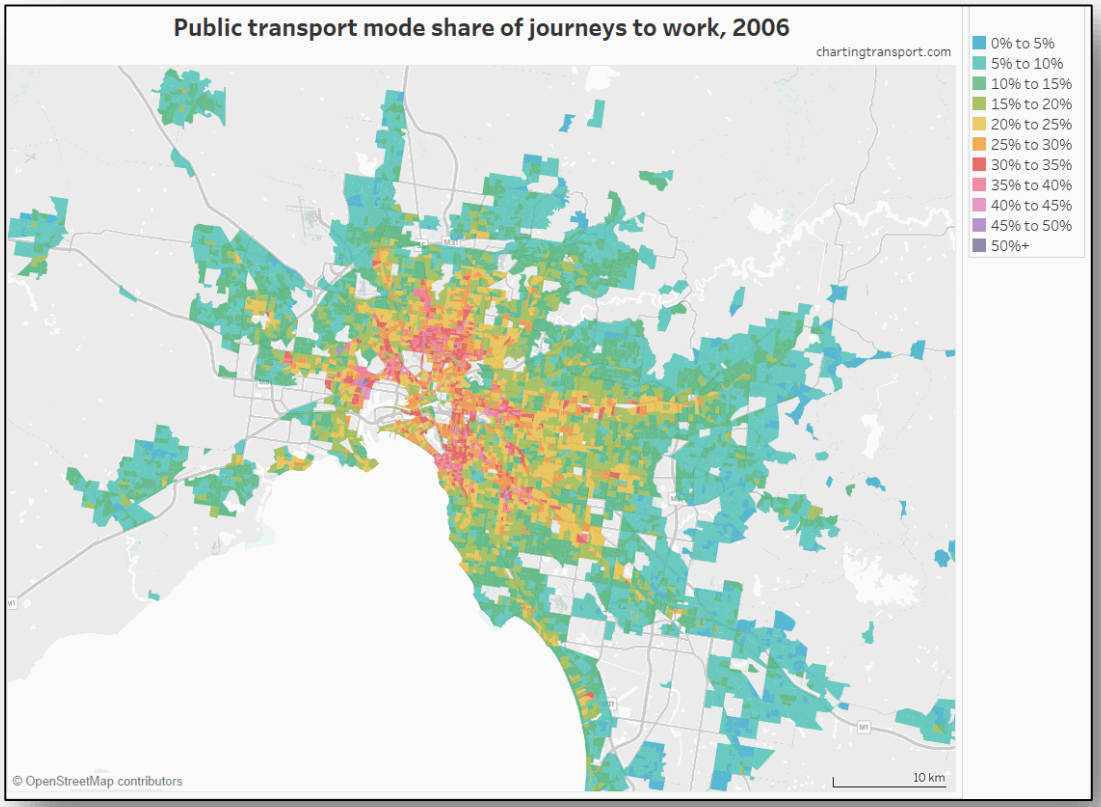
- **Melbourne road freight movements total around 170M tonnes p.a.. This has grown by 120% between 1971 and 1997.**
- **Truck traffic forecast to double over the next 20 years (Challenge Melbourne)**
- **The efficient movement of commercial traffic has been directly linked to a competitive economy and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

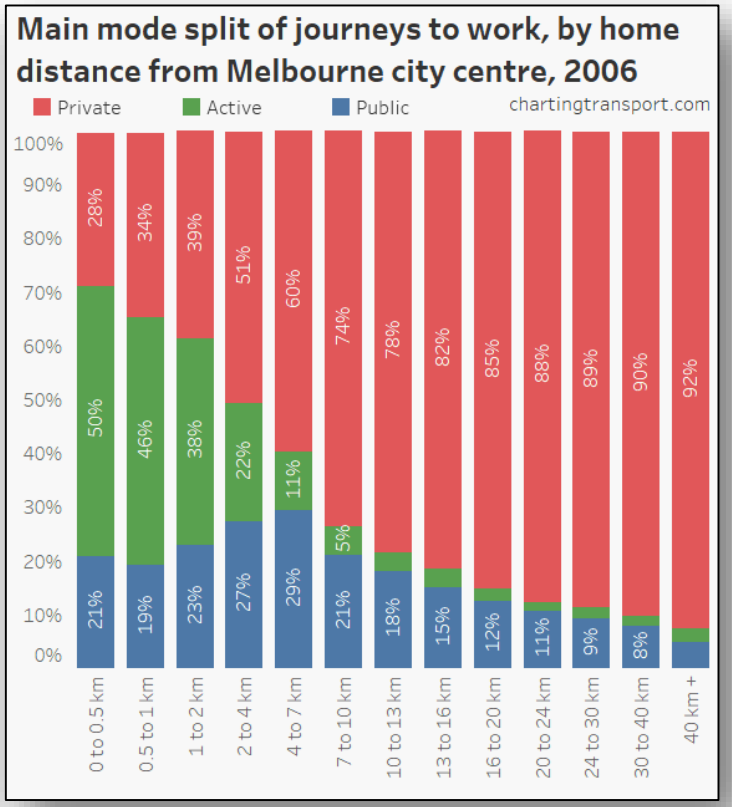
Peak transit use and share is up; but only in transit rich inner areas – We have TWO WORLDS in Melbourne for travel; but overall car still dominates



Peak transit use and share is up; but only in transit rich inner areas – We have TWO WORLDS in Melbourne for travel; but overall car dominates

Home – Journey To Work by PT Trend





Source : Charting Transport (www.chartingtransport.com)

In general 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**."

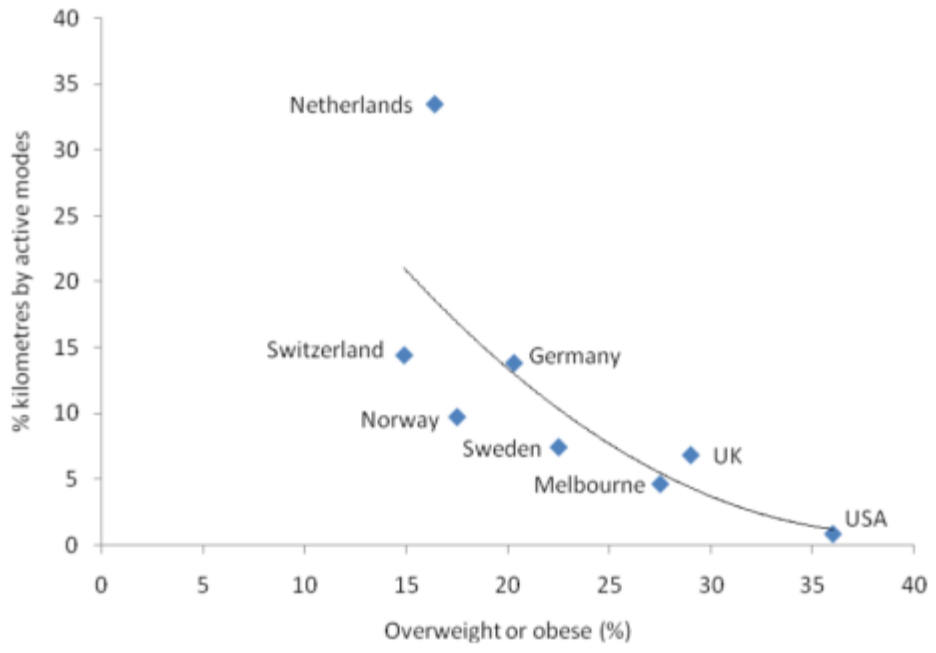
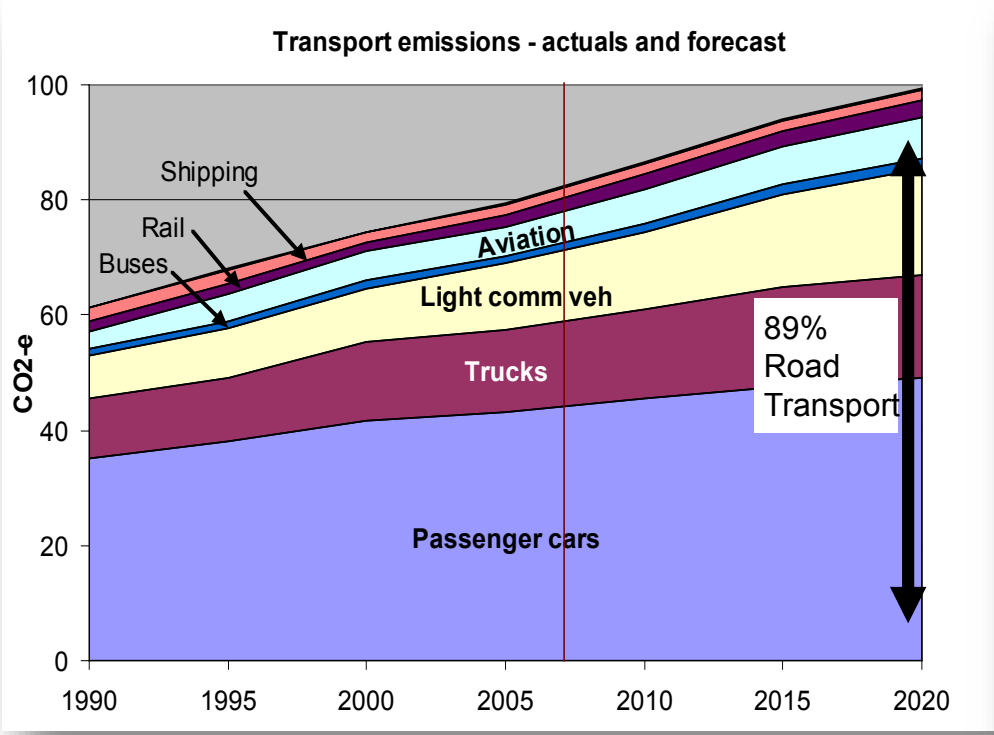


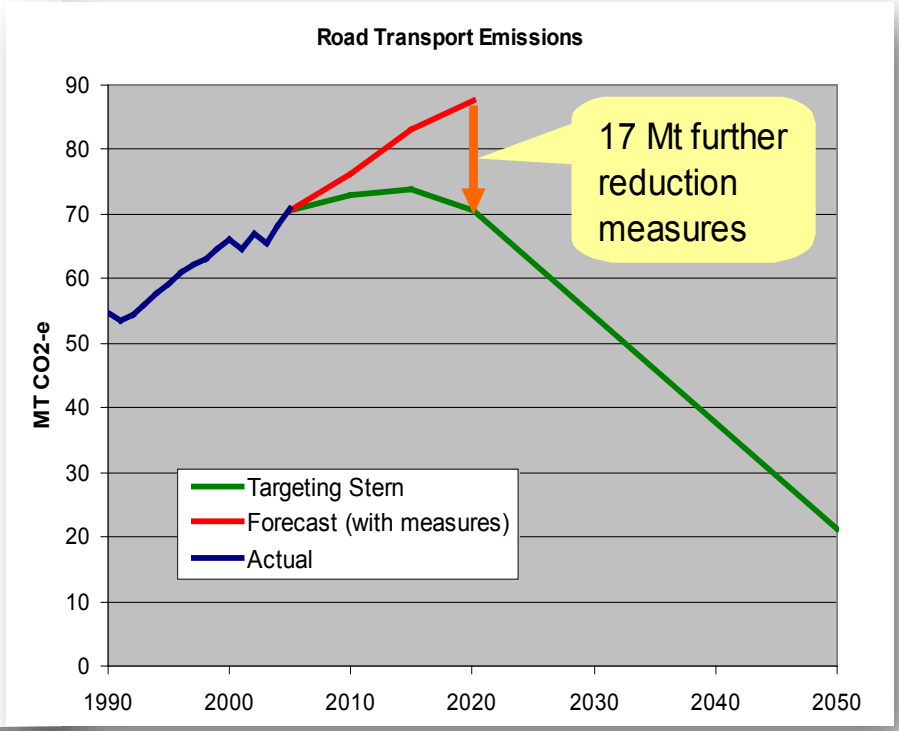
Figure 4: Active travel distance and overweight/obesity
(Melbourne Statistical Division travel data included in absence of Australian national data for children's active travel distance)
(Sources: Christie et al, 2004; International Obesity TaskForce, 2009)

Source: ABC News Online – September 2003

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



Source: Australian Greenhouse Office



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**

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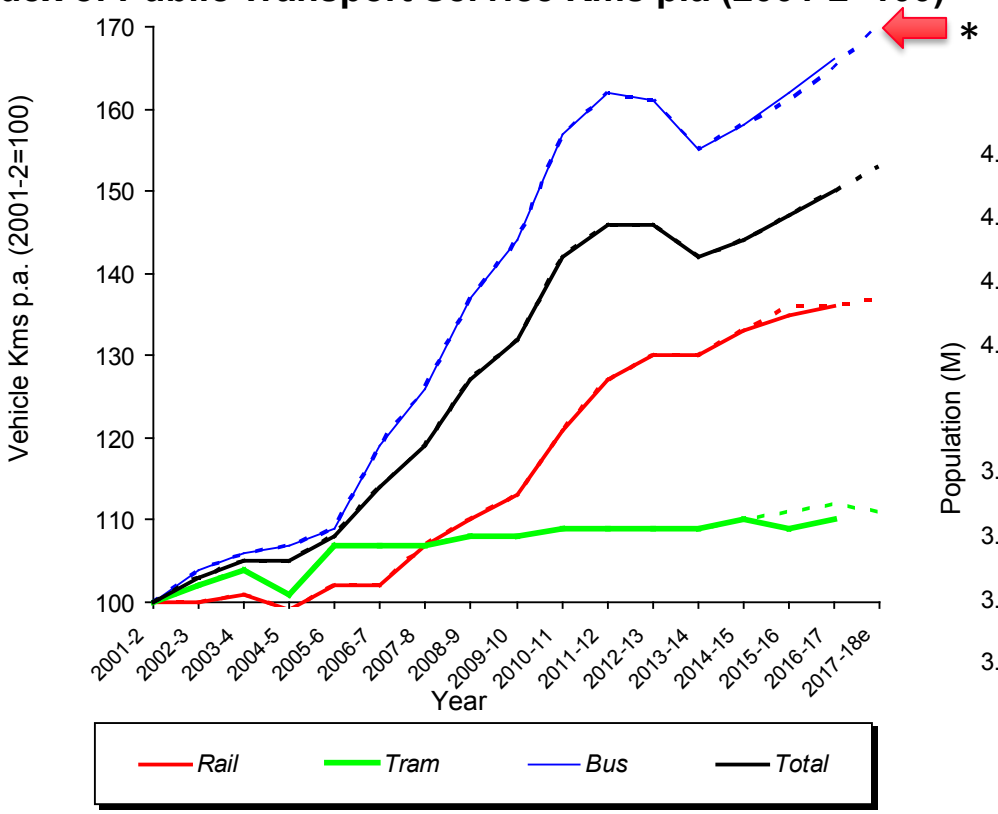
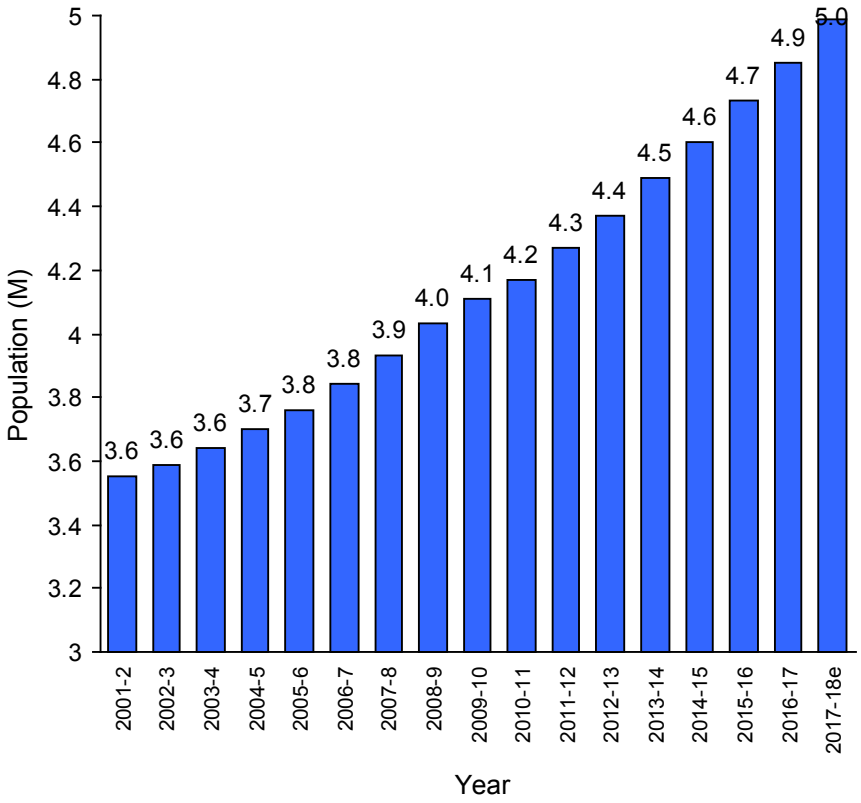
Since 2001 PT service increased 67% (70% bus/ 37% rail, 11% tram) but - but population growth continues at a faster pace…

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



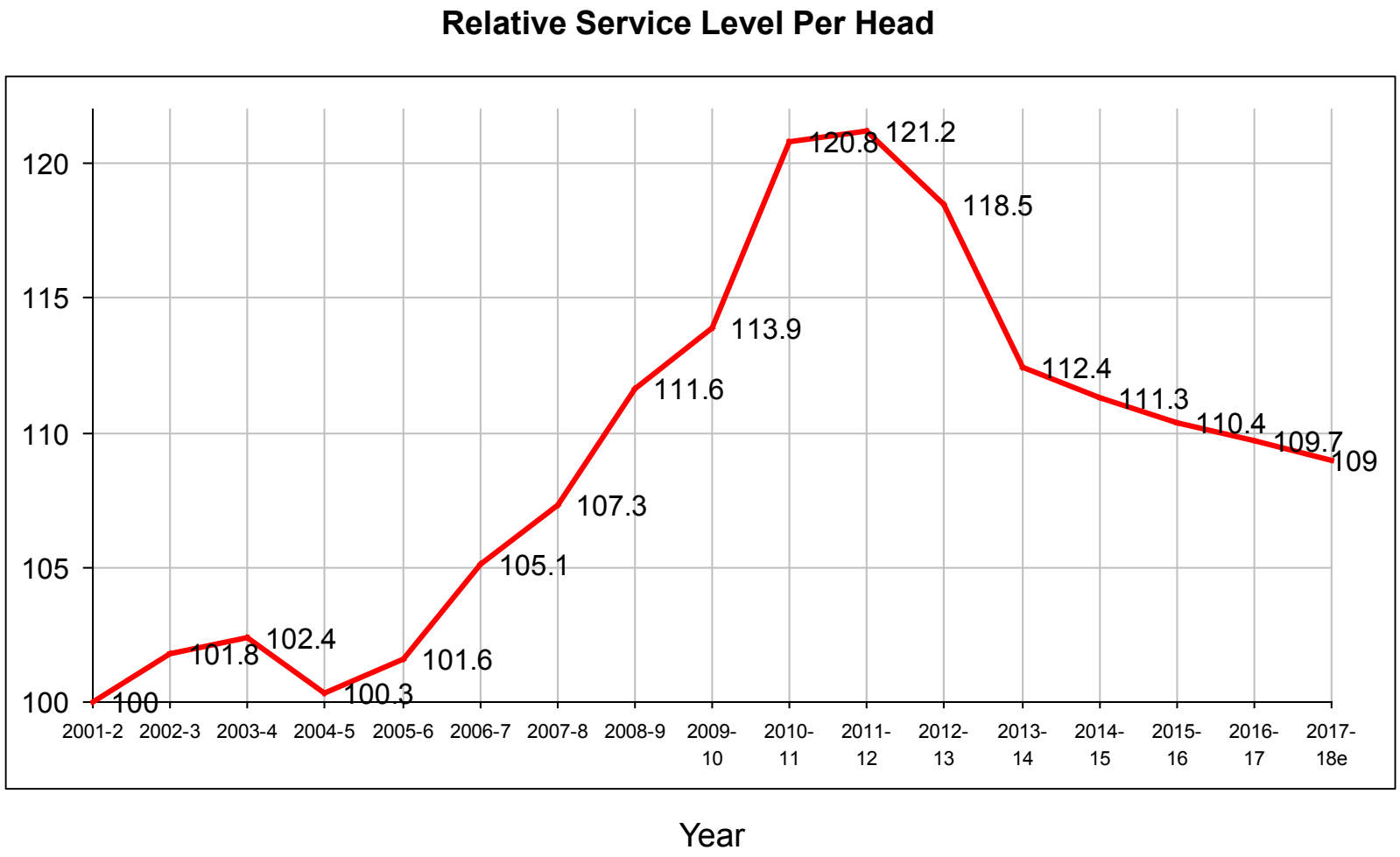
Population Growth (M)



Source: Department of Transport/ Public Transport Victoria Annual Reports

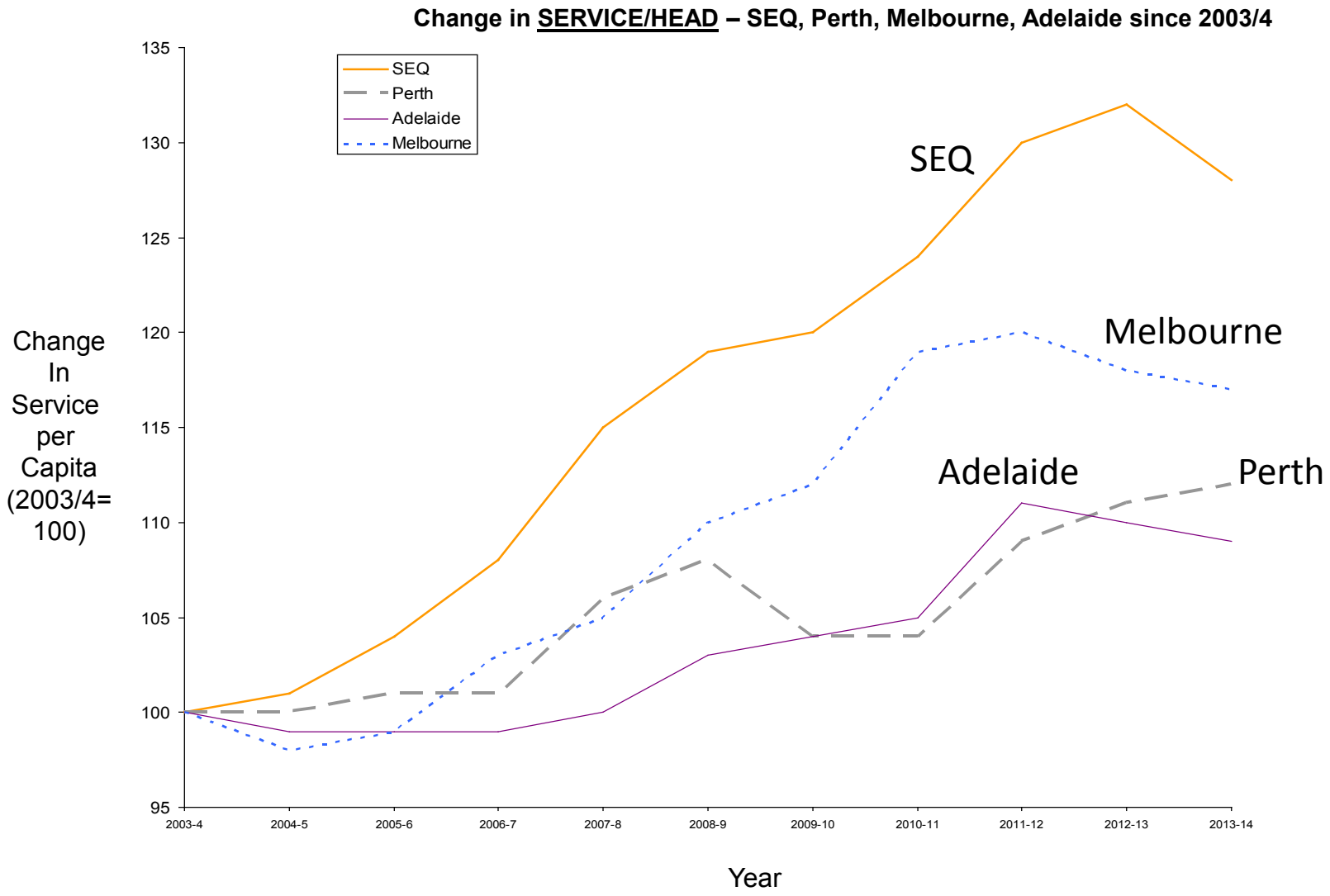
*Note: * More bus services sooner initiative (~$2.5M 2016-2020); New bus services initiative ($.3M-$9Mp.a. 2015-2020)*

…in last 10 years, per person service increased 21% then declined since 2011 (we have declined by 12% points); recent trend is decline

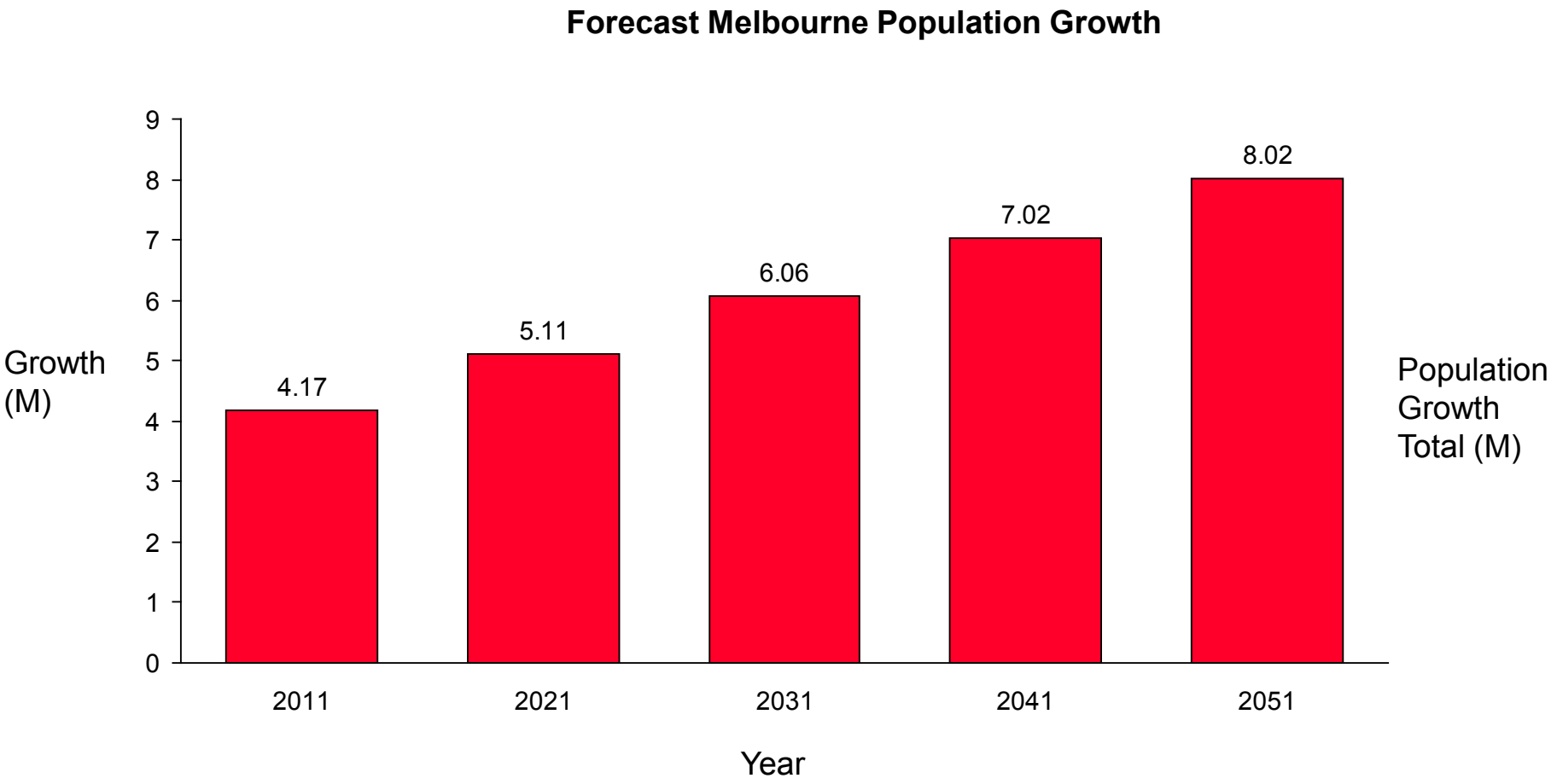


Source: Department of Transport/ Public Transport Victoria Annual Reports

Earlier Australia wide per capita analysis



Melbourne is expected to grow to 8M by 2050; we will be the size of London today in 30 years

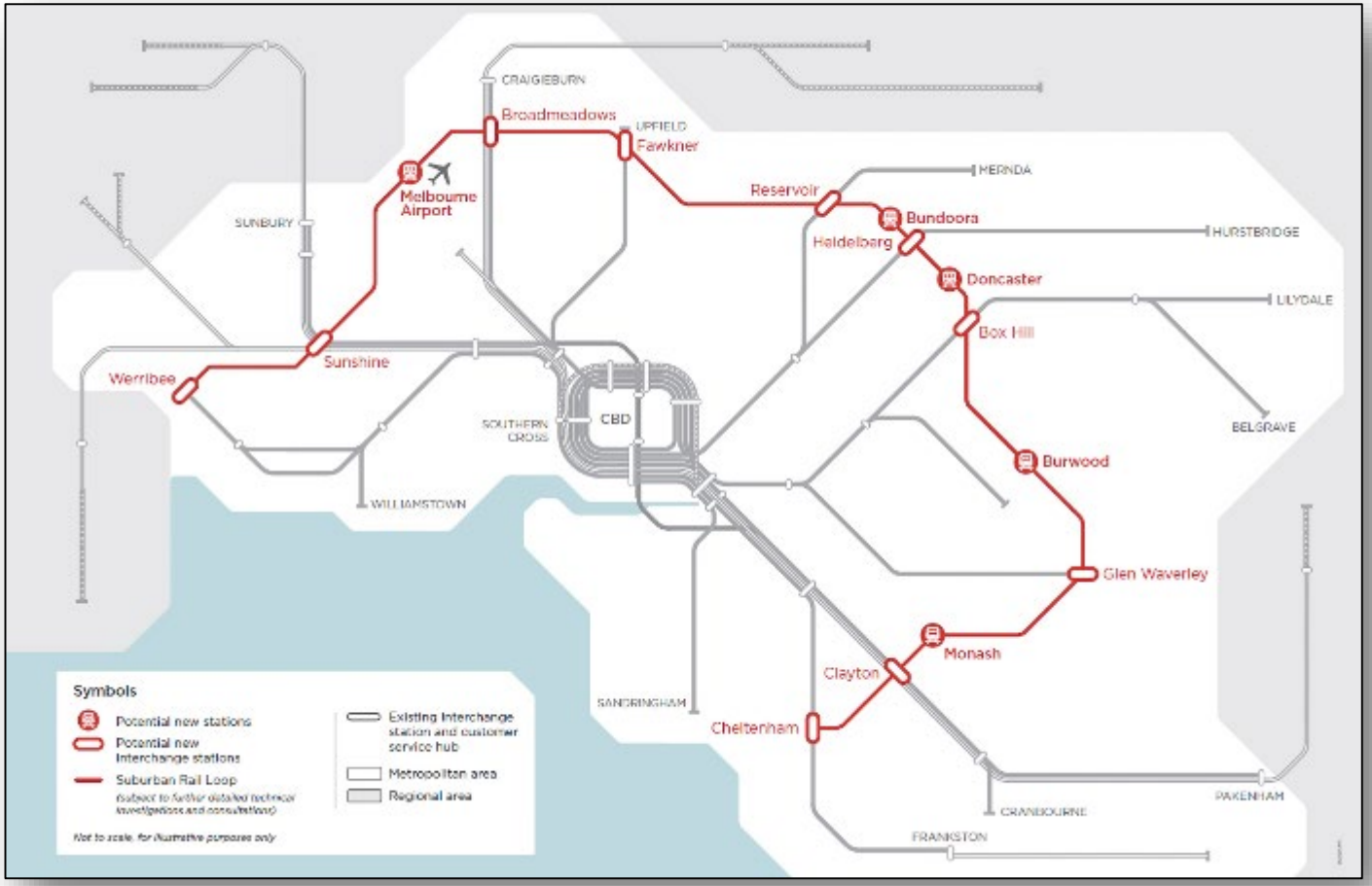


Source: Victoria in Future (2016)

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

Suburban Rail Loop – BIG Thinking but no planning and a long way off



Suburban Rail Loop

- **$50B est. cost**
- **90km circle line – tunnels in East, Tunnel & surface West**
- **Due for completion 2050; starts in 2022**
- **Said to be 'the biggest public transport project in Australian history'**
- **Said to carry 400,000 pas a day and take 200,000 cars off major roads**

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

Introduction

Transport in Melbourne

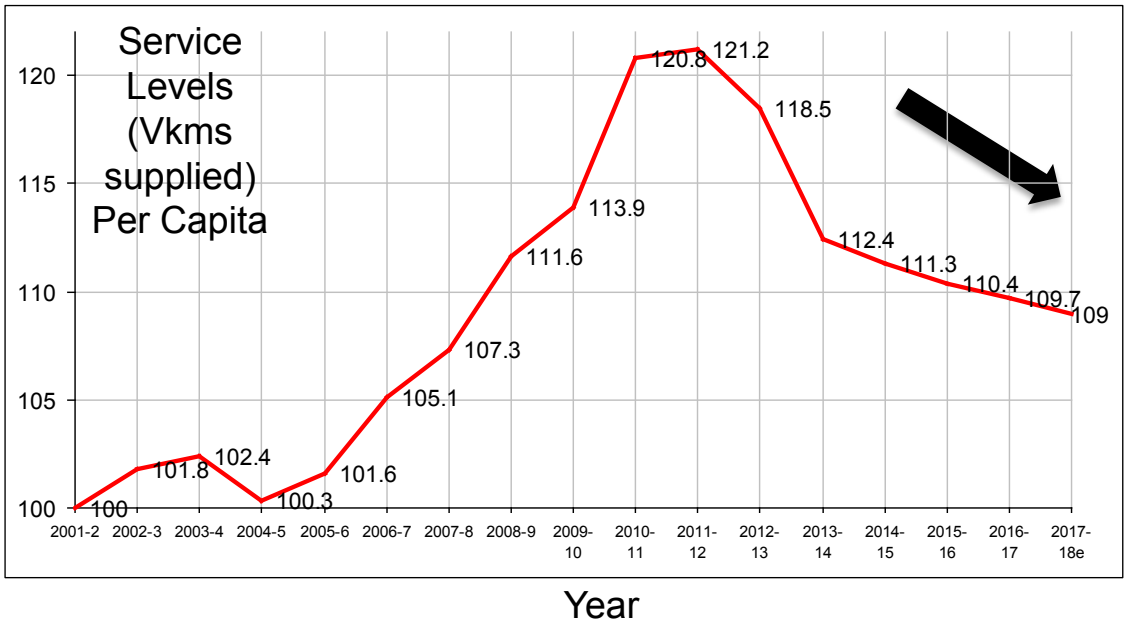
Public Transport in Melbourne

The Drivers of Change

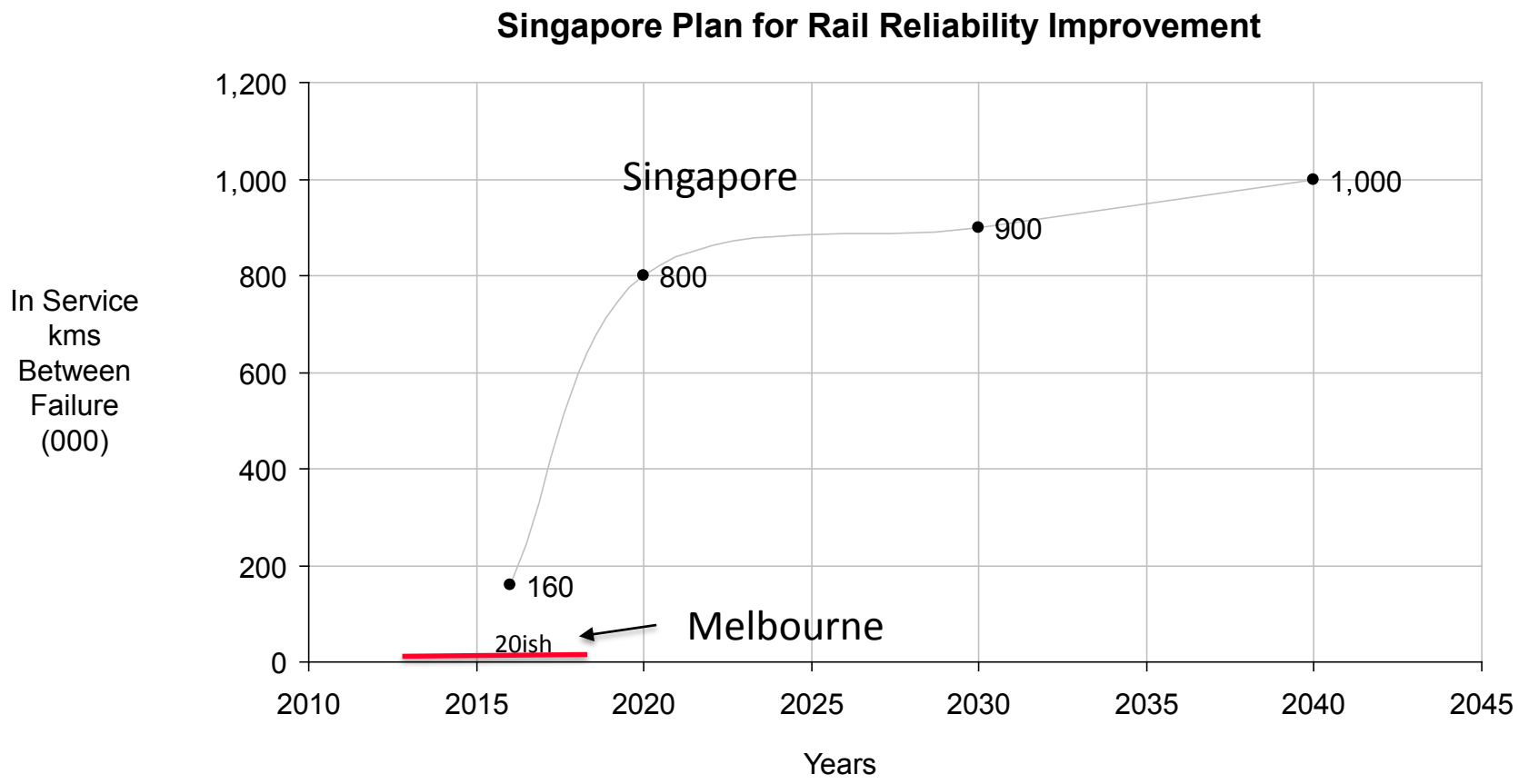
Progress?

Ideas

INVEST, INVEST, INVEST, INVEST – SERVICE LEVELS



INVEST, INVEST, INVEST, INVEST – RAIL RELIABILITY

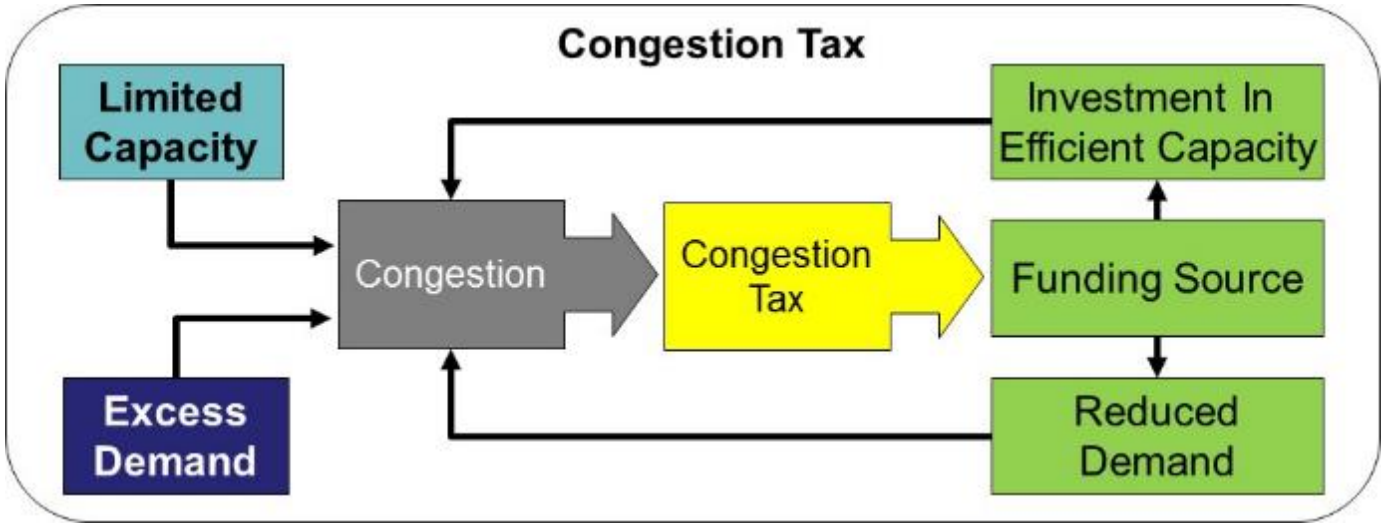


Source: Land Transport Authority of Singapore

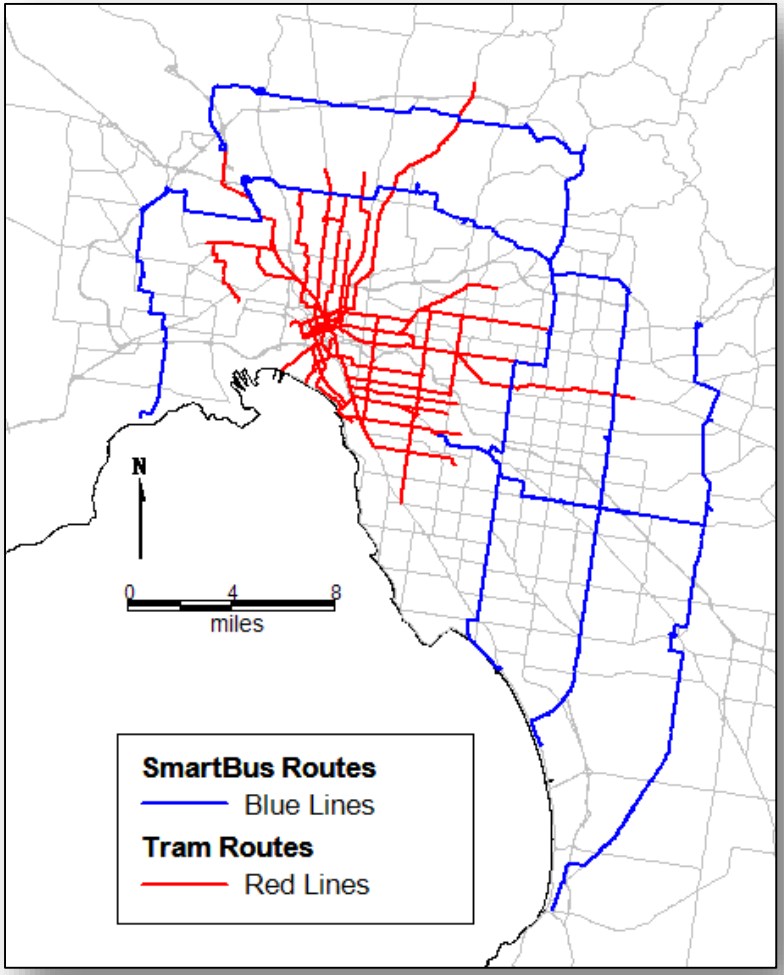
Get Sustainable Funding

Employment Tax /
Versement Transport

MAKE THE PROBLEM FUND THE SOLUTION



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



We need to look out for the Trackless Tram; lots of potential but not yet proven

The Evidence

- Much less cost that Light Rail
  - No tracks, no removal of below ground utilities
  - No overheads (batteries)
- Lighter than buses of same size
- LRT ride quality, performance & capacity
- 15km range on a 10 min terminus recharge
- $2-3M per vehicle (LRV=$6-9M)
- Deliver a new transit system in **3 months**

Source: Prof Peter Newman – October 2018

Contact us via our website PTRG.INFO, LinkedIn or Twitter

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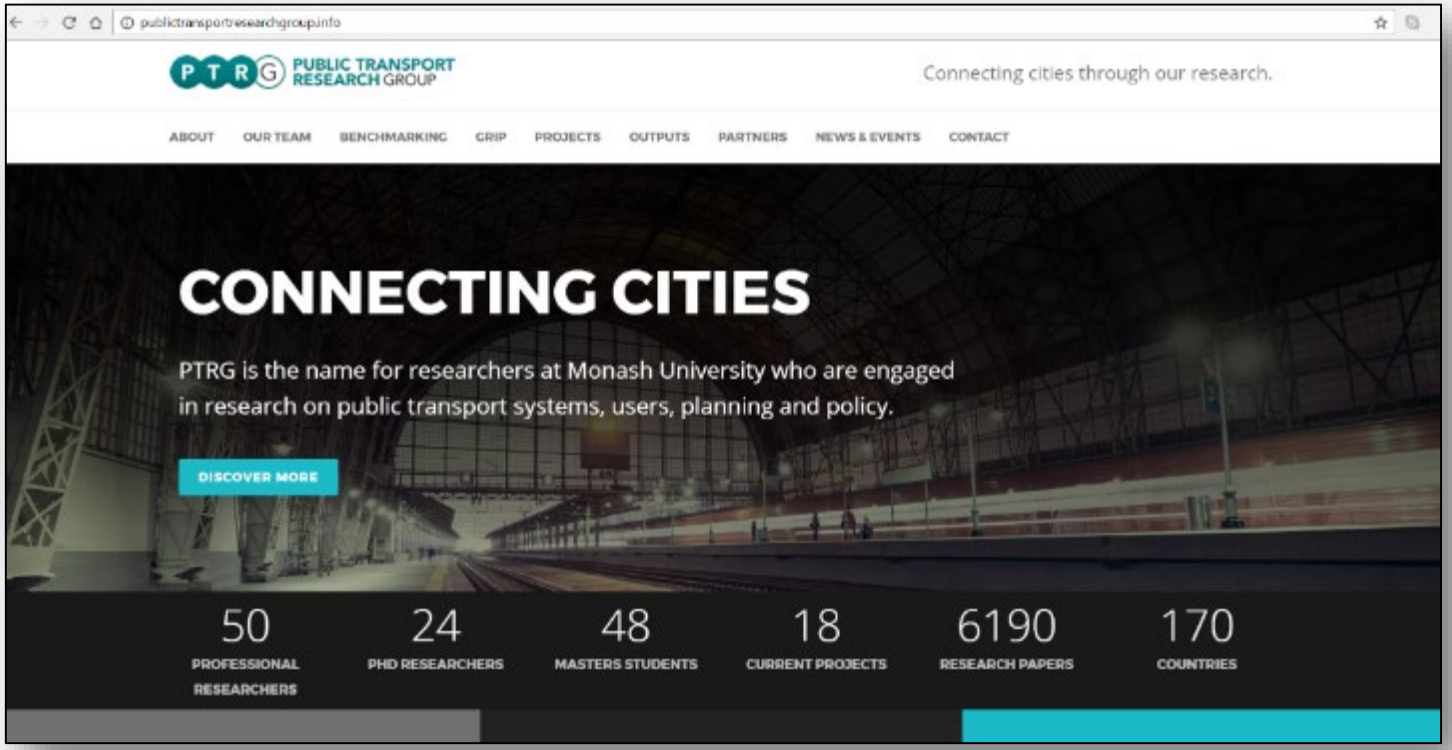

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