



MONASH
University

Monash Business School MBA Program

Caulfield Campus

Saturday 11th July 2020

Technology, Innovation and Entrepreneurship

Transport & Technology

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Public Transport Research Group
Monash Institute of Transport Studies
Monash University



**PUBLIC TRANSPORT
RESEARCH GROUP**



**GROUP
OF EIGHT
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Public Transport and Technology

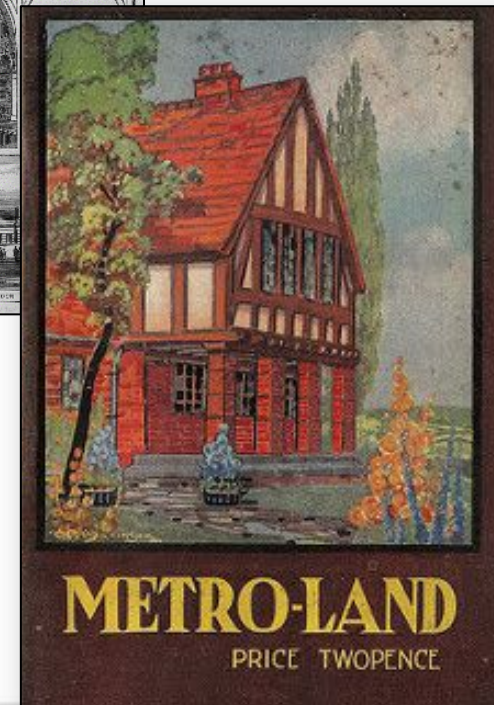
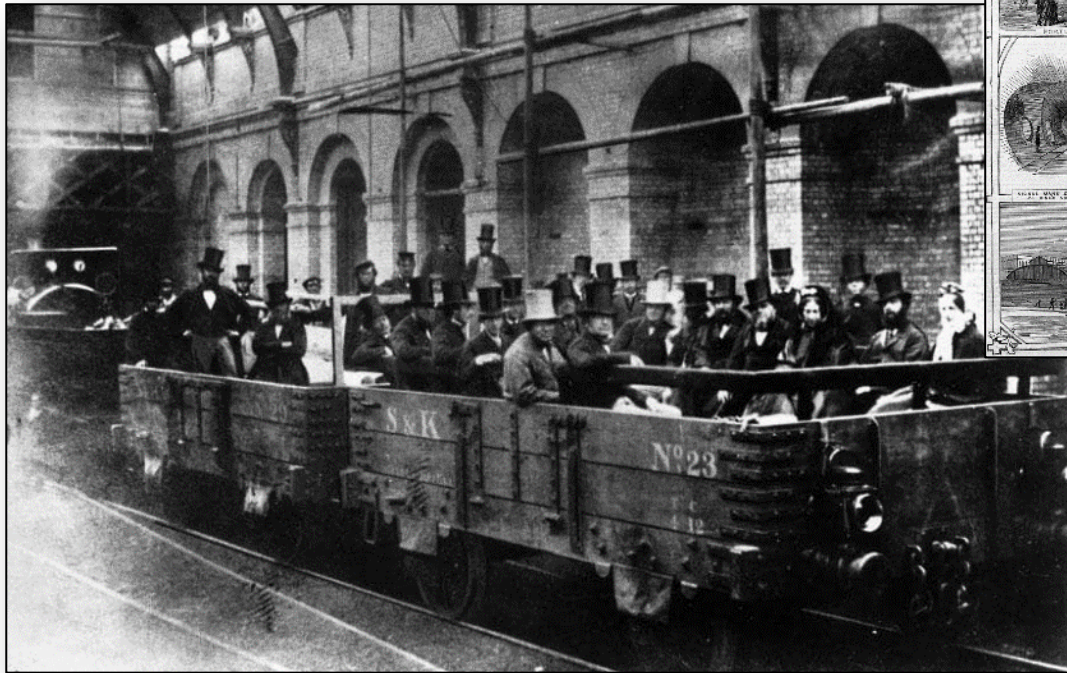
- 1. History**
- 2. Disruptions**
- 3. Technology & Failure**
- 4. PT & Technology**







1. History









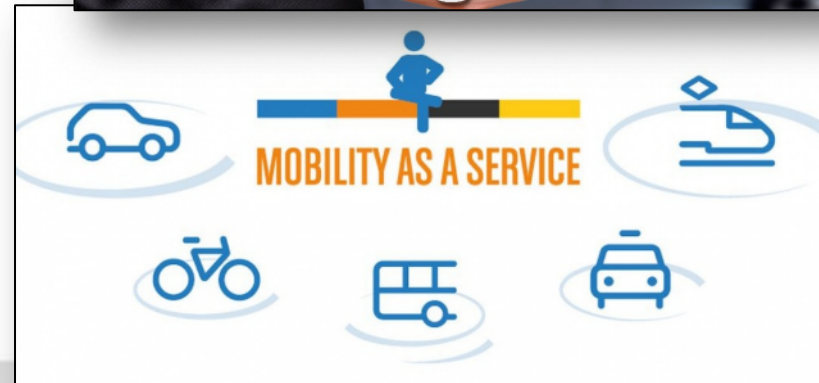
Public Transport and Technology

1. History
2. Disruptions
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4. PT & Technology









2. Disruptions

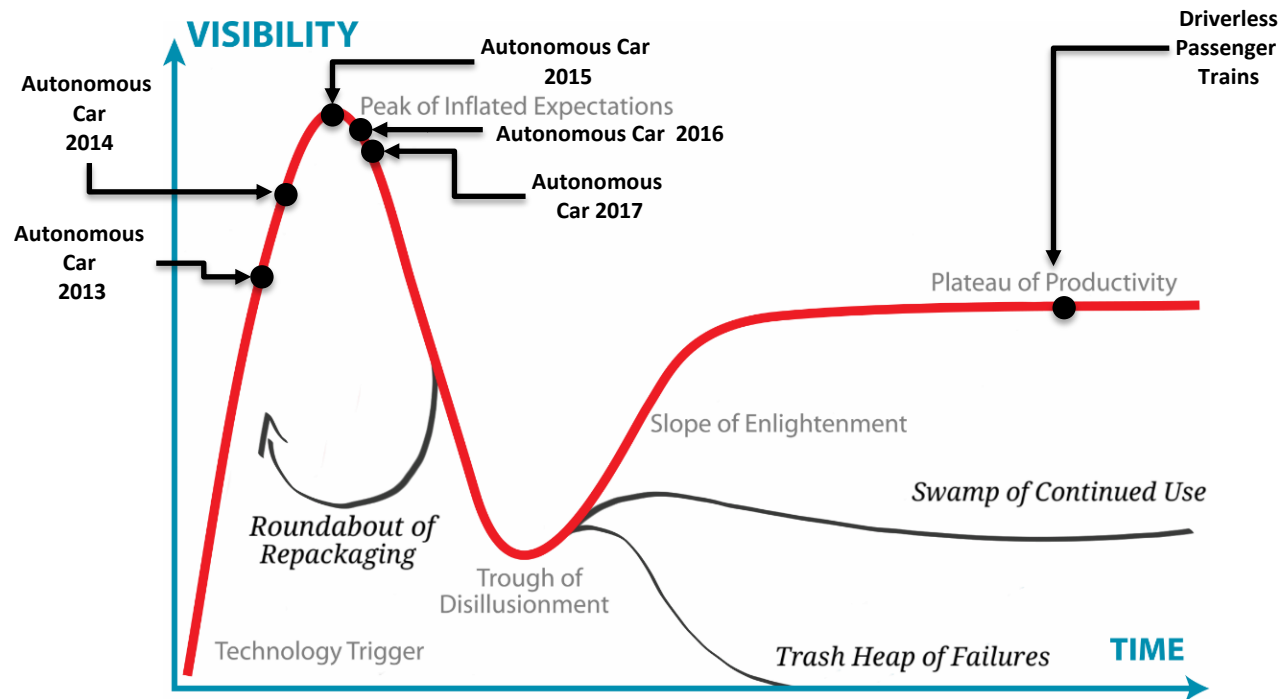


Public Transport and Technology

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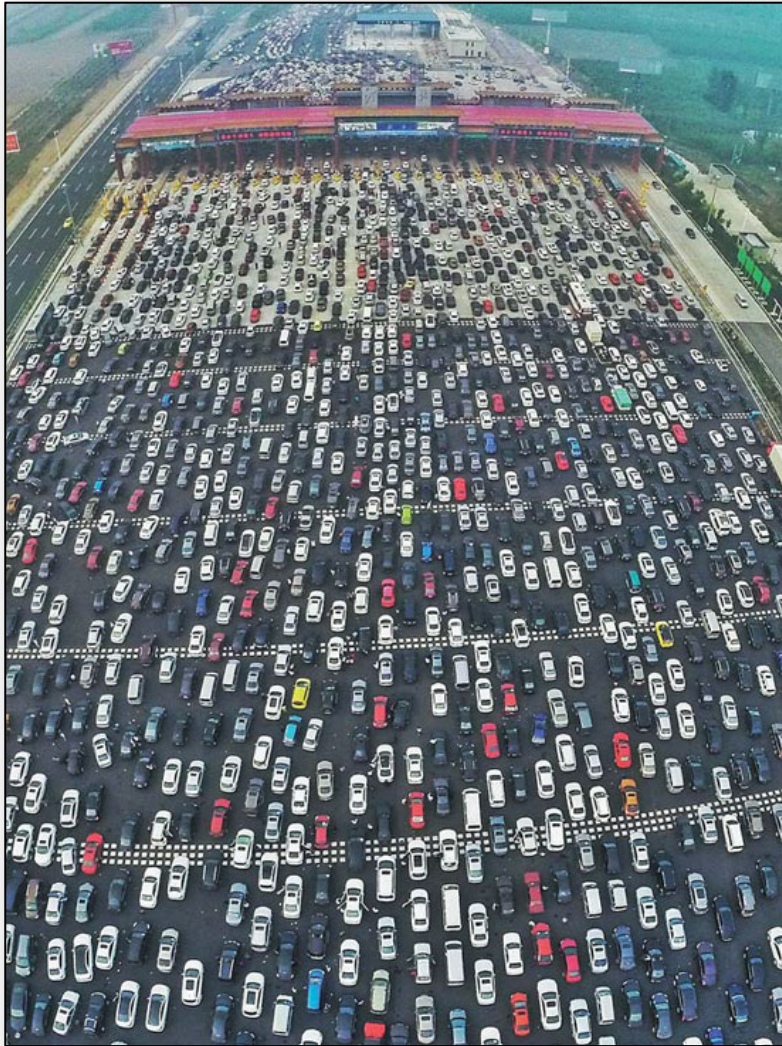


The Autonomous Car – Contemporary Progress

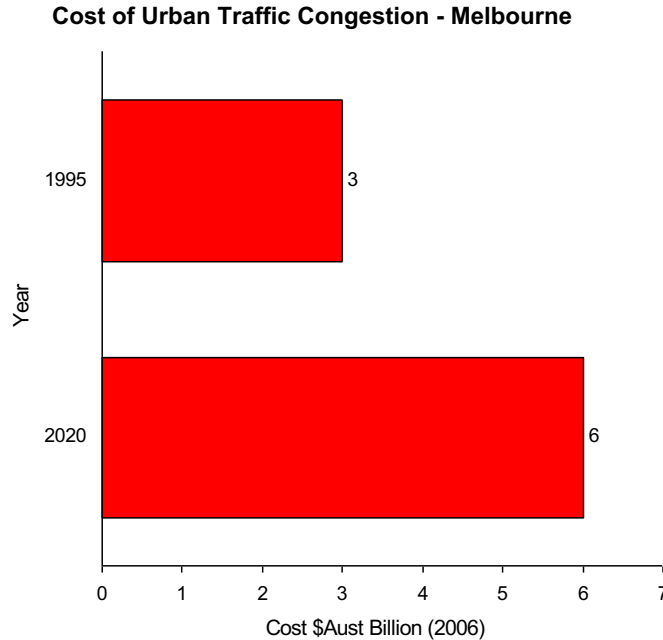


Source: Based on Gartner Corporation; <https://www.gartner.com/newsroom/id/3784363>

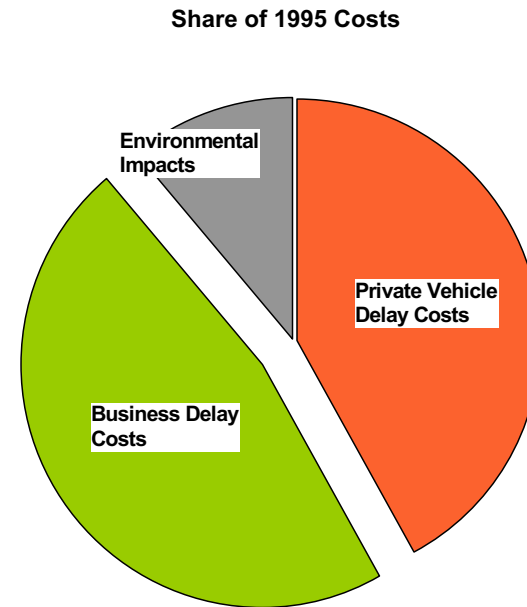




Urban traffic congestion in Melbourne costs \$3B p.a. (2005) and will double by 2020

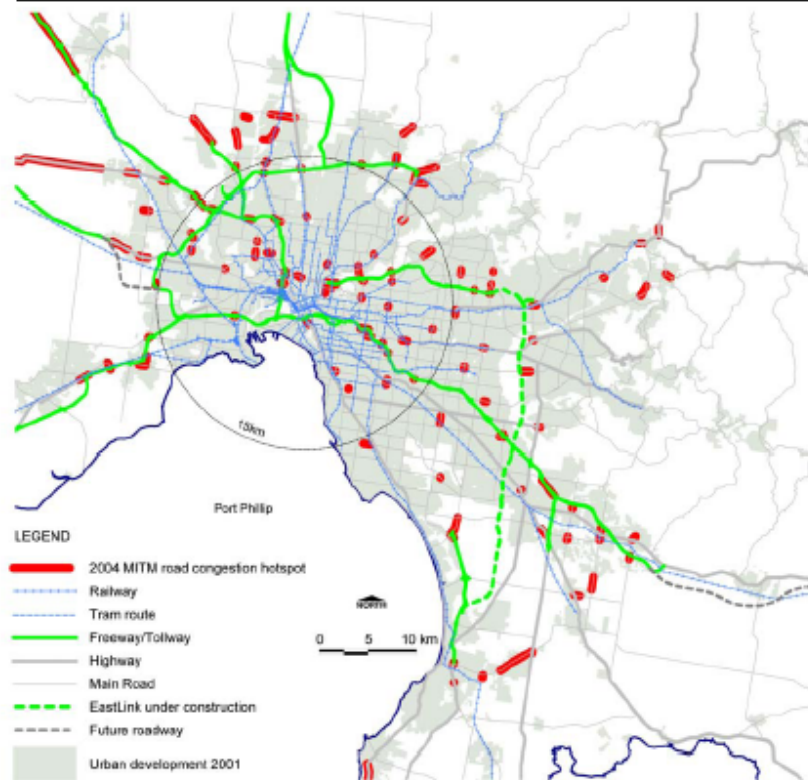


Source: BTRE (2006)



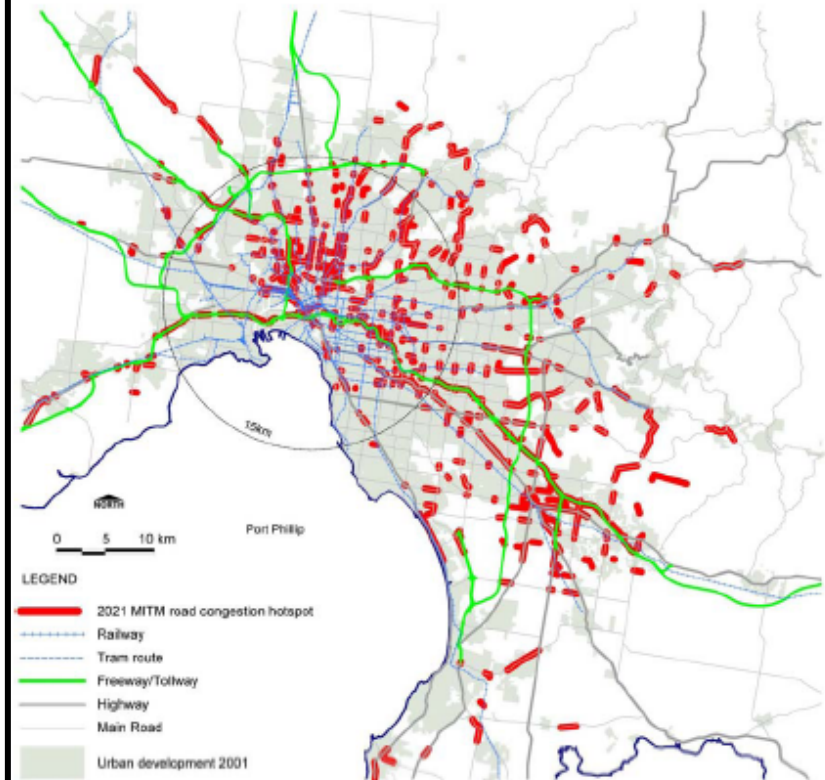
Congestion 'hotspots' are expected to spread spatially....

Figure 3.1 Modelled congestion hotspots on arterial roads in Melbourne, 2004 (am peak)



Source: DOI for the Commission.

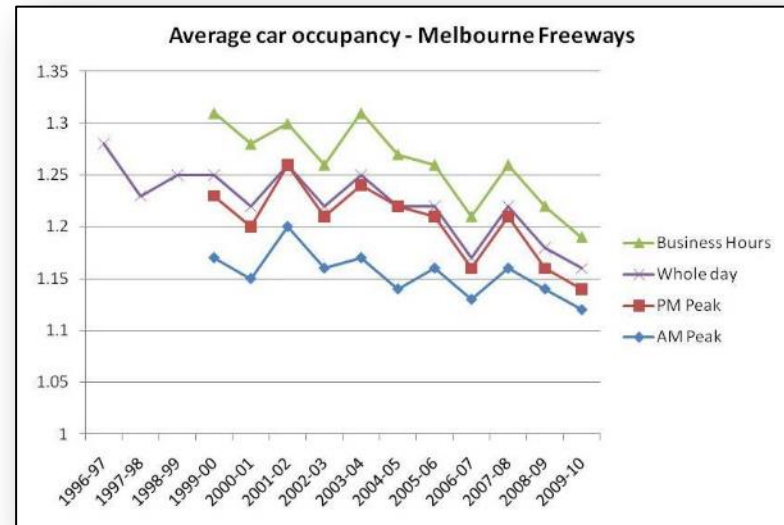
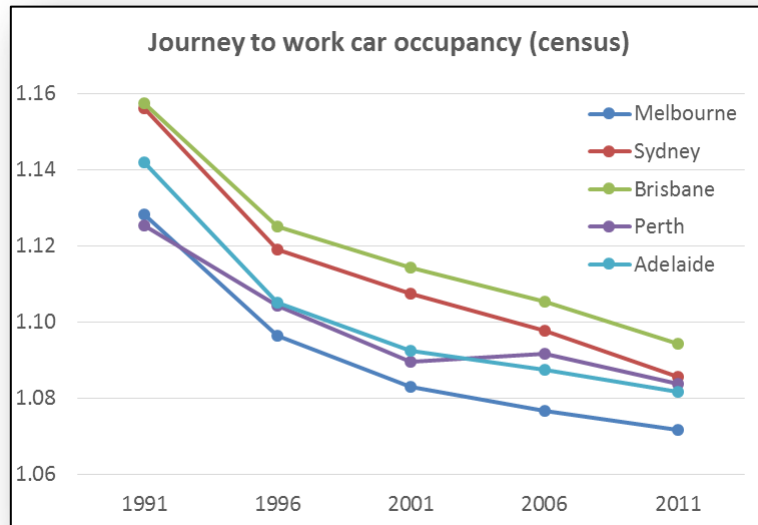
Figure 3.2 Modelled congestion hotspots on arterial roads in Melbourne, 2021 (am peak)



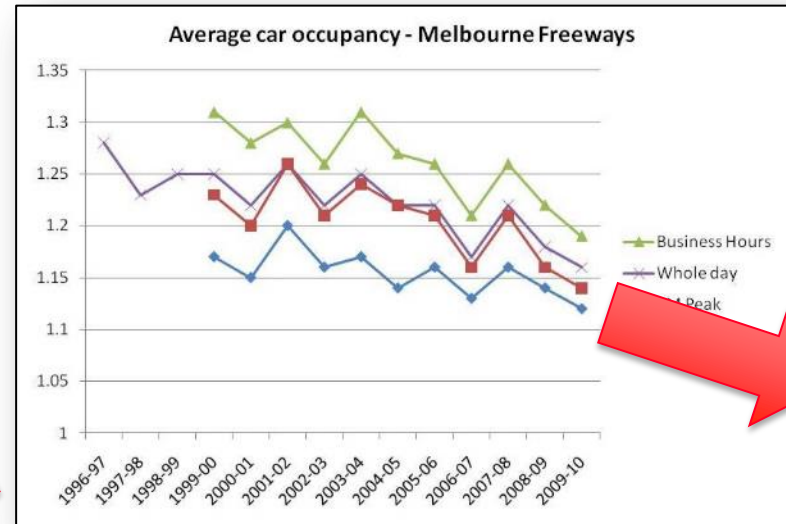
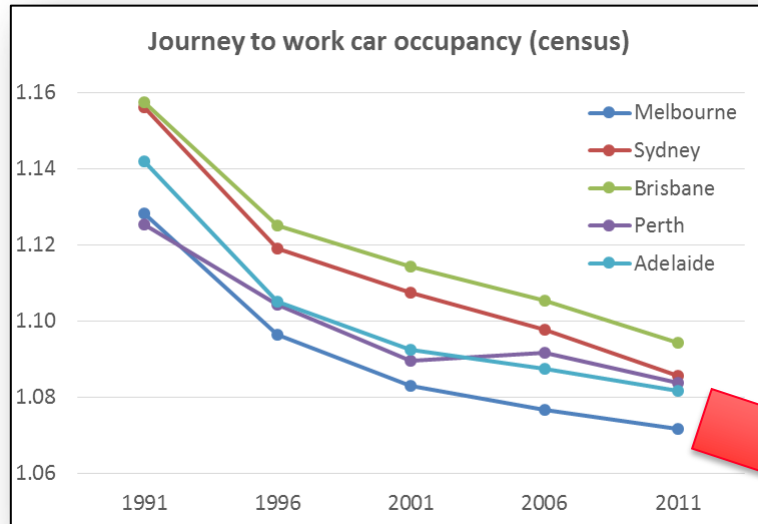
Source: DOI for the Commission.

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

Shared travel has been DECLINING for 30 years



With AV's we can now achieve occupancy ; BELOW 1!



Will Autonomous Cars will Reduce Congestion?

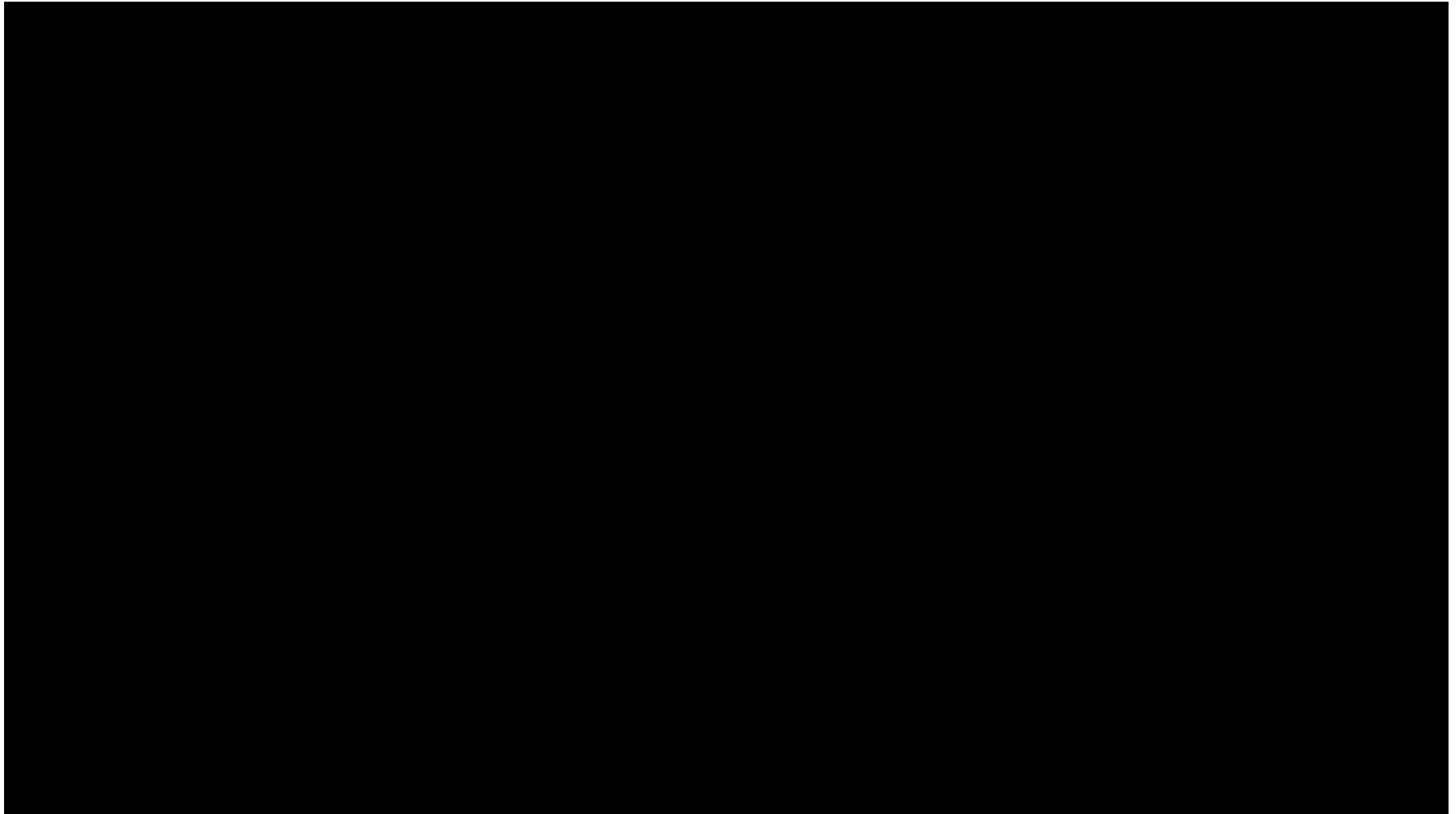
Autonomous Cars will Reduce Congestion - Evidence

- Kanaris et al (1997) - +200% on freeways due to zero traffic conflicts
- Kesting et al (2008) – eliminate all delays with intersection with autonomic weaving in all directions
- Li et al (2013) – Intersection remote control – 31-37% capacity improvement

They are ALL maths/simulation studies – ALL THEORY - no actual human trials where this is proven



Humans Cannot Deal with Platooning/Intersection Weaving is Absurd in cities



Rush Hour (2015) Black Sheep Productions, Livschitz, F 2015, viewed 5 July 2018, <https://www.bsfilms.me/>

Humans Cannot Deal with Platooning/Intersection Weaving is Absurd in cities



ILLUSTRATION: DOUG CHAYKA

Are Driverless cars the solution or another part of the problem?



When Ride Sharing Isn't

- Uber assumed to have the same occupancy as Taxi at 1.66 per vehicle (including the driver)

- Source: San Francisco County Transportation Authority (2017) 'TNC's Today'



It isn't much
in the way of
sharing

- CarShare – average vehicle occupancy is 1.44 (including the driver)

- Source: Cervero, R Golub A and Nee B (2007) 'San Francisco City CarShare: Longer-Term Travel-Demand and Car Ownership Impacts' Institute of Urban and Regional Development University of California at Berkeley



Slightly better
than
Melbourne
traffic but
known to
have positive
impacts in
reducing car
ownership

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PT is under-invested and unreliable



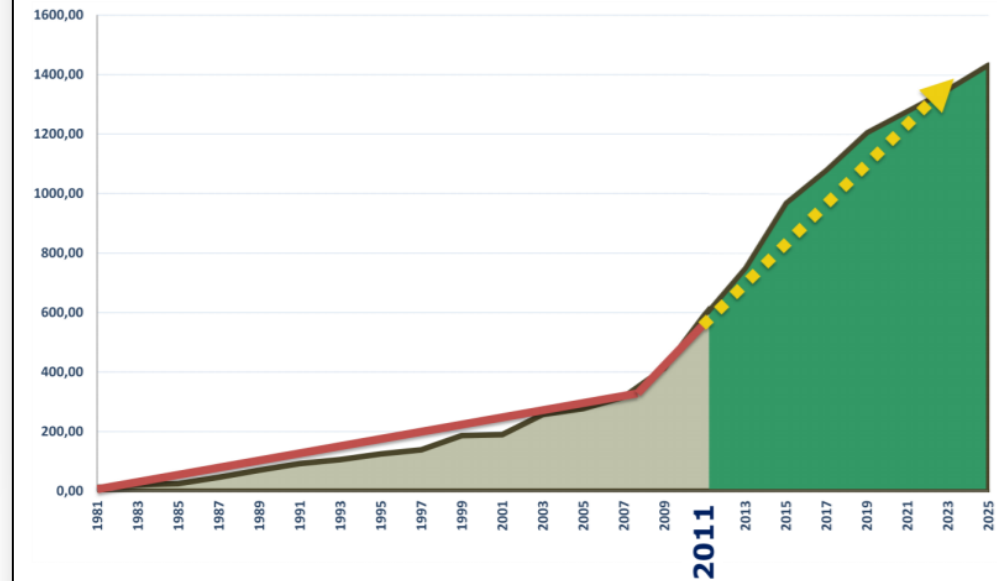
However buses, due to size are often the testbeds for new transport power sources



Most AV's on planet earth are trains



Figure 9: Expected evolution in automated lines (km)



Automated Trains are more efficient

Allowing for shorter journey times and more trains operating on the line at the same time.

2011



The Jubilee Line has increased the number of trains running in peak hours by 18 per cent, allowing an additional 5,000 people an hour.

2012



January 2012, overall capacity will increase by a third, this means the Jubilee can carry about 12,500 more passengers an hour.

Light rail transit; a growing technology solution



Bus Rapid Transit; Rubber Tired Railways




A New Way to Bring the Train to the City



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RESEARCH GROUP**

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CONNECTING CITIES

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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56	23	50	24	7682	170
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Monash Infrastructure




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Researching Transit

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