Addressing parking demand growth and collapse in the era of disruptive technological change

PRESENTER:
Jacob Martin
Team Leader - Transport Planning

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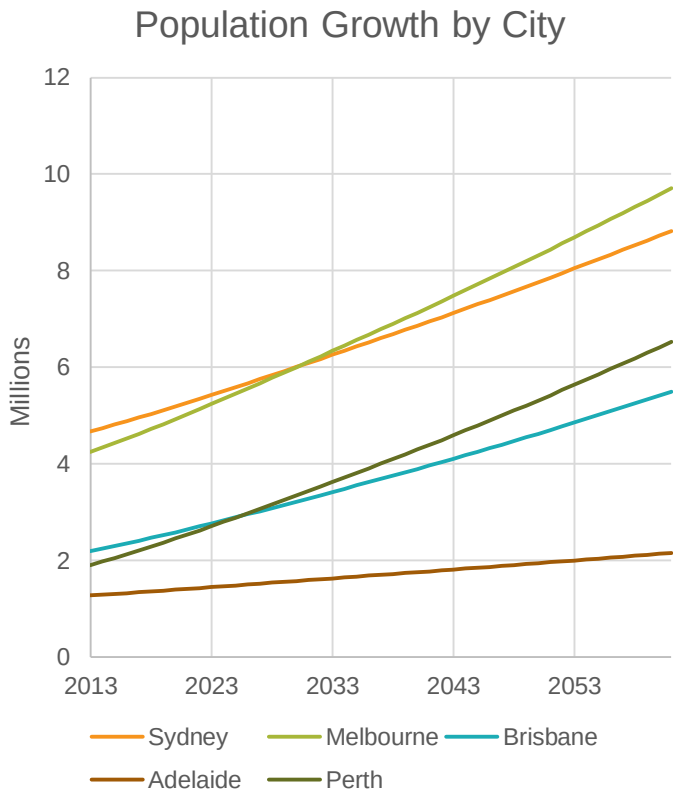
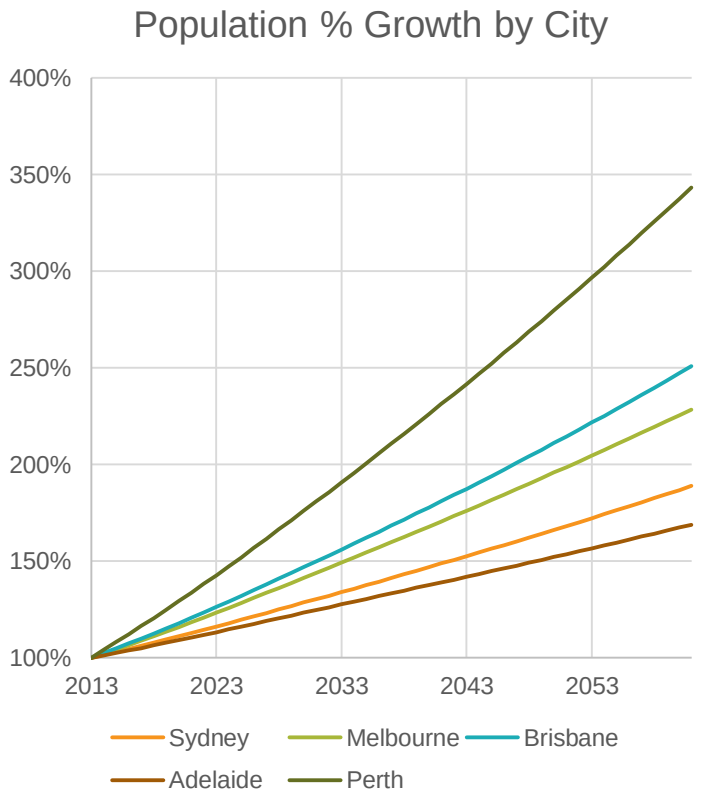
01 City Growth Patterns

01 City Growth and Activity





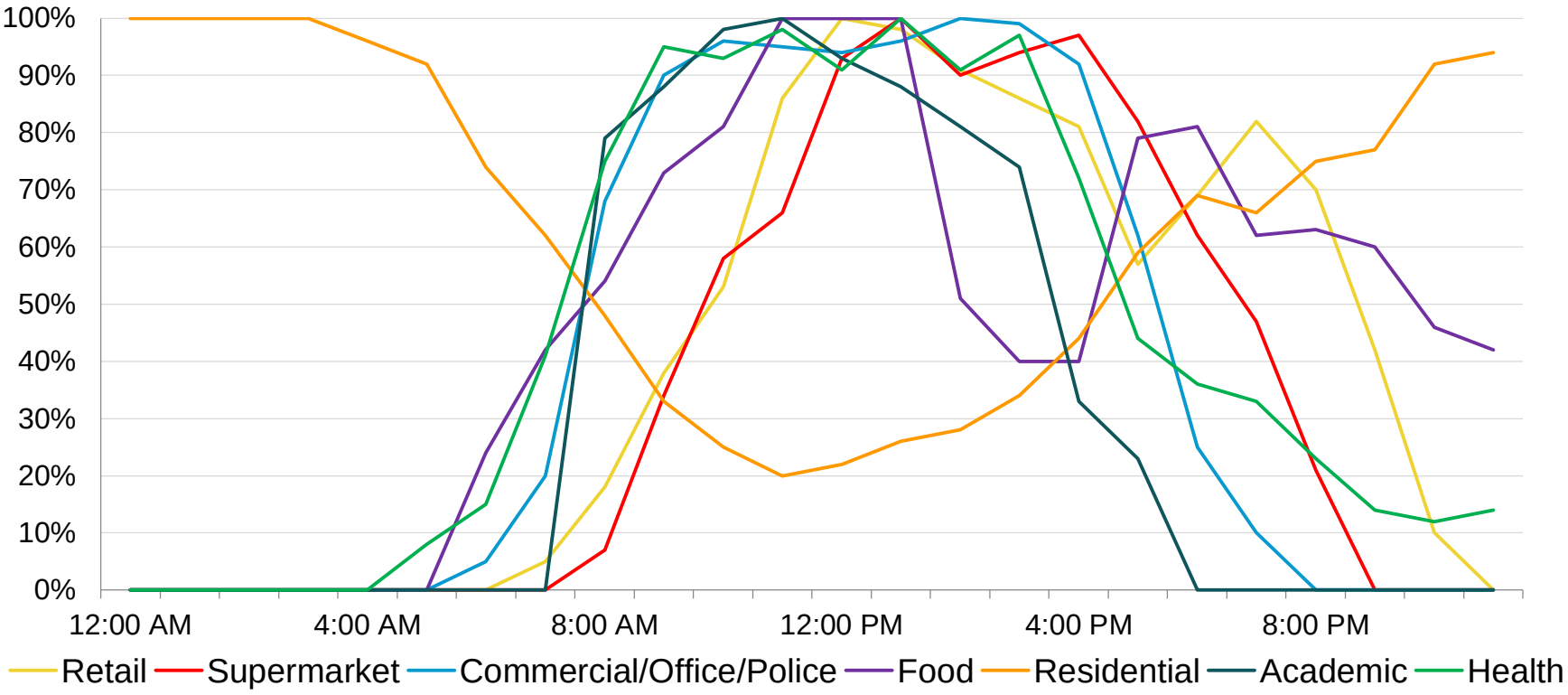
This population growth will affect the shape of our cities, both at the urban fringe and in the Activity Centres

01 Activity and Economic Success

> For a Centre to succeed, it must generate activity

> Activity means people, not cars

> But people have to get there somehow



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01 Impacts of Growth on Mode Choice

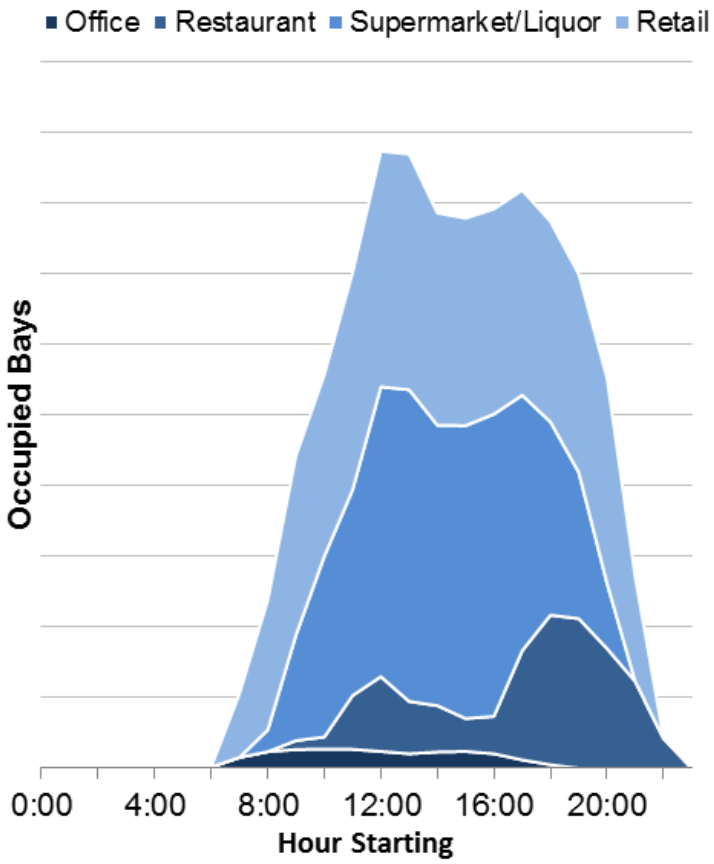
"Over 90 percent of all households own a private motor vehicle, with over 80 percent or more of all trips made by private car. In some suburbs located on the urban fringe, the proportion of private car trips exceeds 90 percent."

Intensification

- Activity Centres:
  - Density
  - Mixed-Use Development
- Residential Vehicle Ownership

Sprawl

- Regional Centres
  - Destination Trips
  - Single-Use Development
- Commuter Park 'n' Ride



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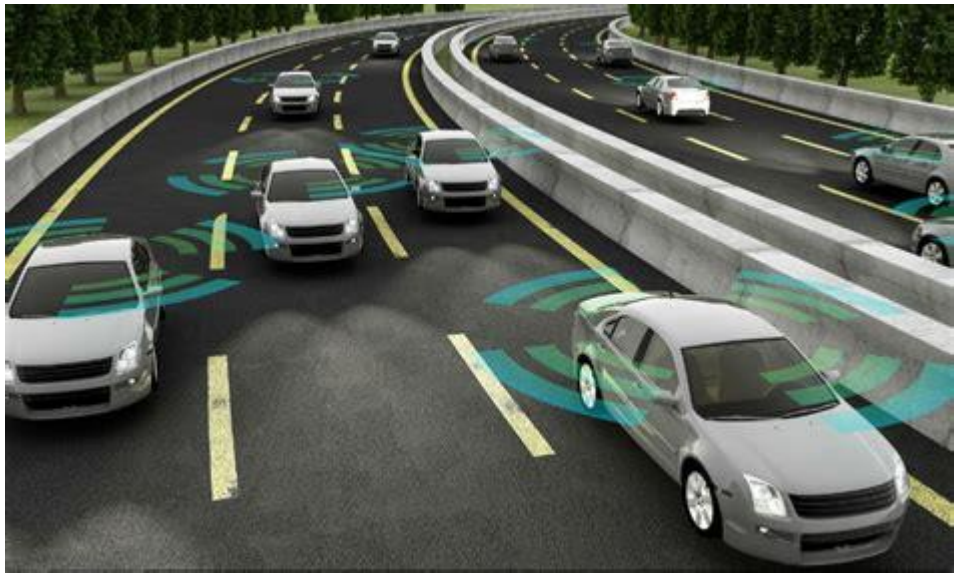
01 How Intensification Impacts Parking Demand

As Activity Centres grow, the rate of vehicle trip generation declines, but…

Vehicle use will continue to increase

This is restrained by several factors:

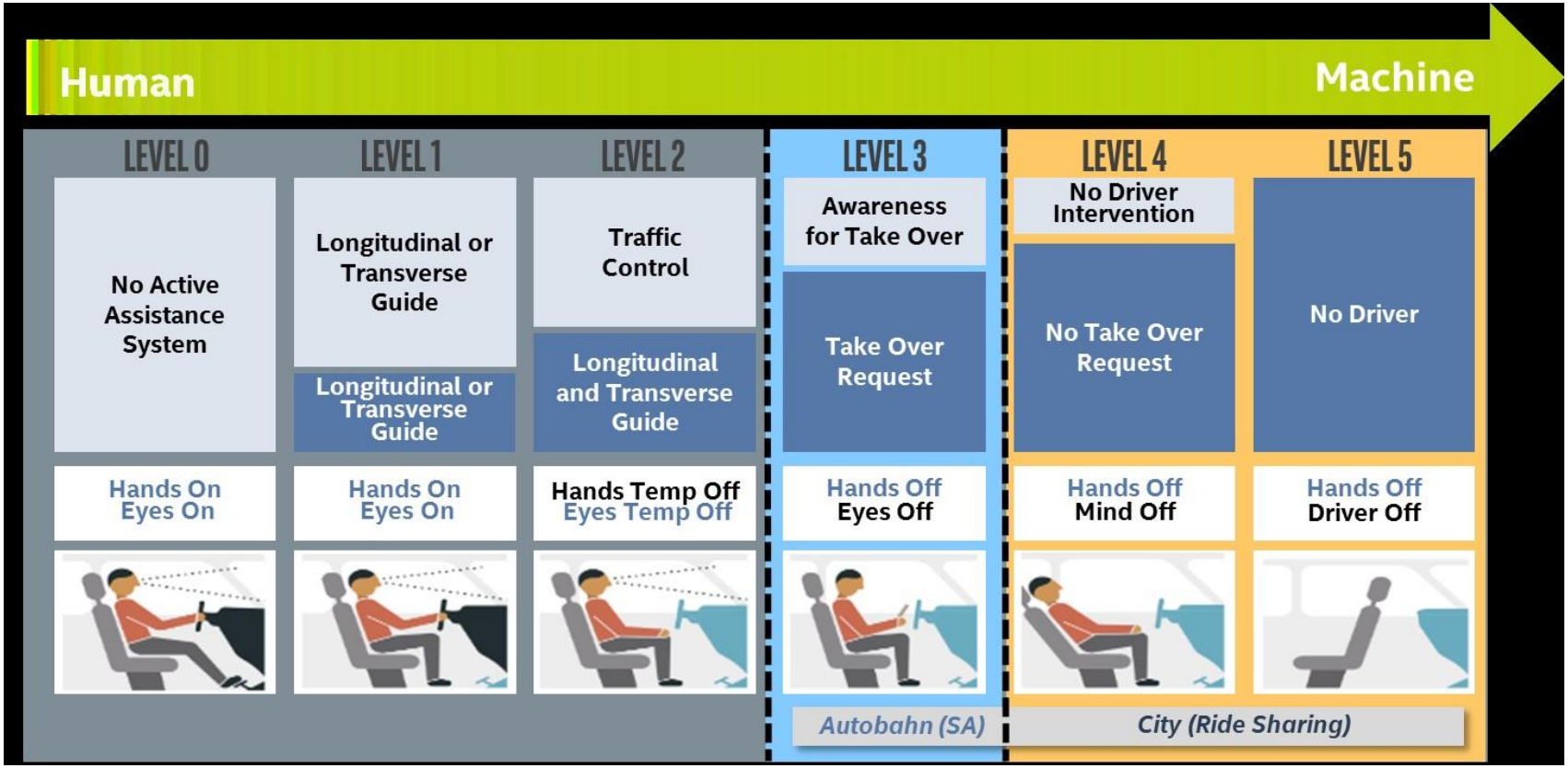
- Supply side:
  - road space
  - parking
- Demand side:
  - alternative transport provision
  - pricing



Autonomous vehicles have the potential to transform this paradigm completely; but to an unknown extent and at an unknown time.

02 Autonomous Vehicles and Parking

02 Levels of Automation



In an autonomous future, two things influence the need for parking:

1. The extent of ride sharing
2. The requirement for the driver and the vehicle to end up in the same place

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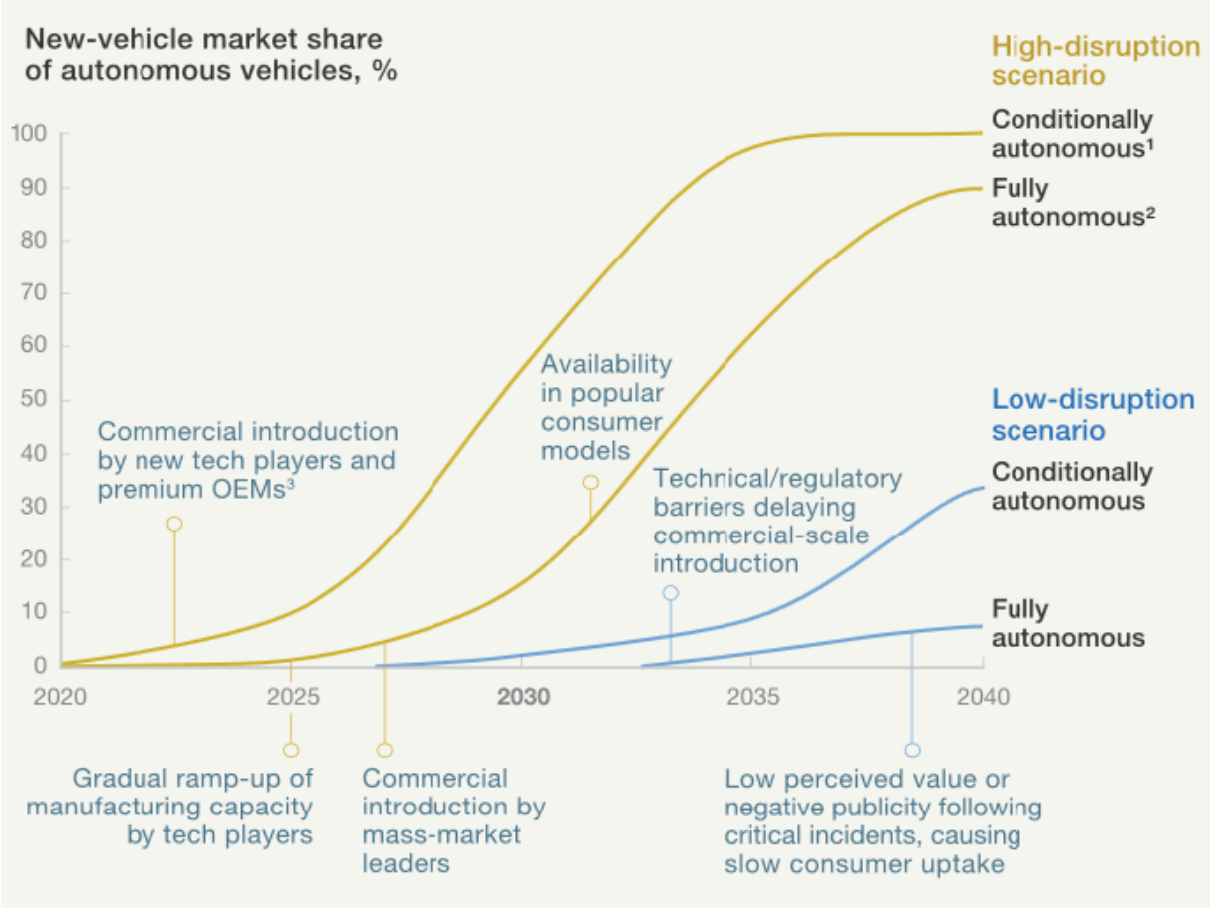
02 Autonomous Vehicle Projections

There are many different timeframes and projections for AV uptake

Technology is progressing faster than policy.



Source: ADVI (2017) citing McKinsey & Company (2016)

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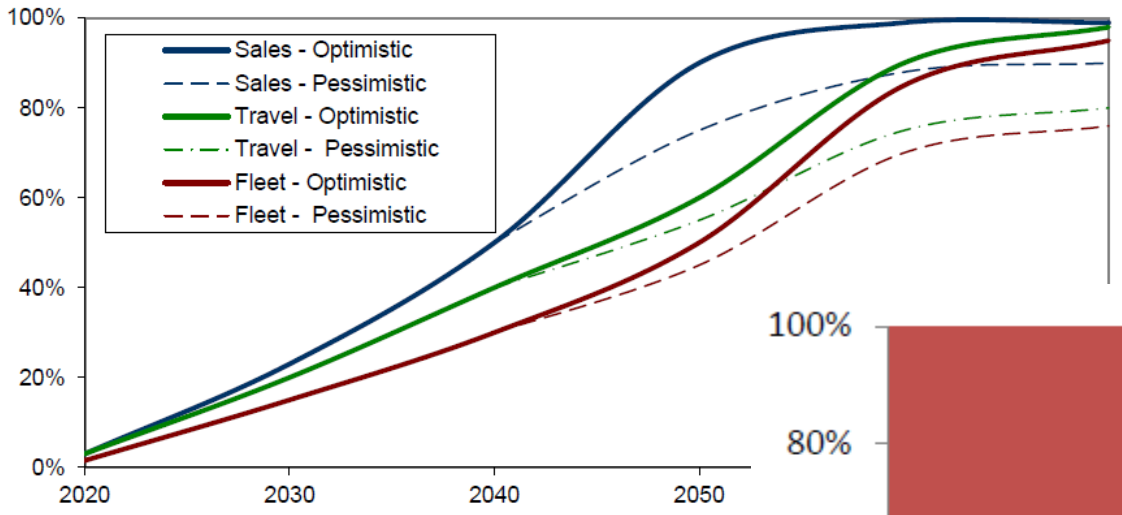
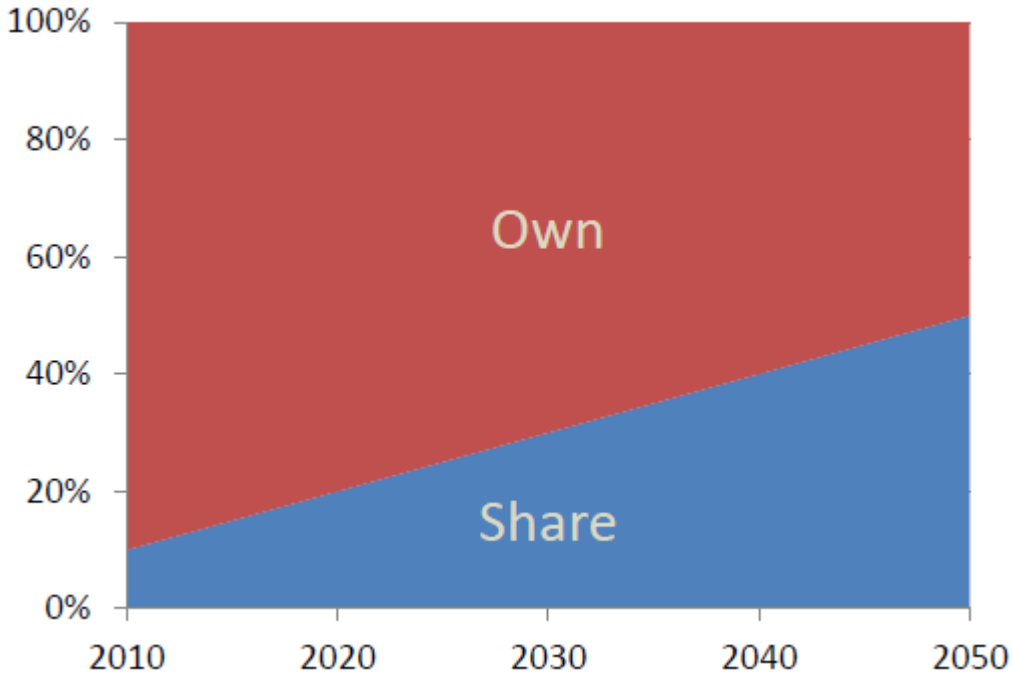
02 Shared vs Private Ownership Models

Exhibit 13 **Autonomous Vehicle Sales, Fleet and Travel Projections** (Based on Table 6)



Source: VTPI



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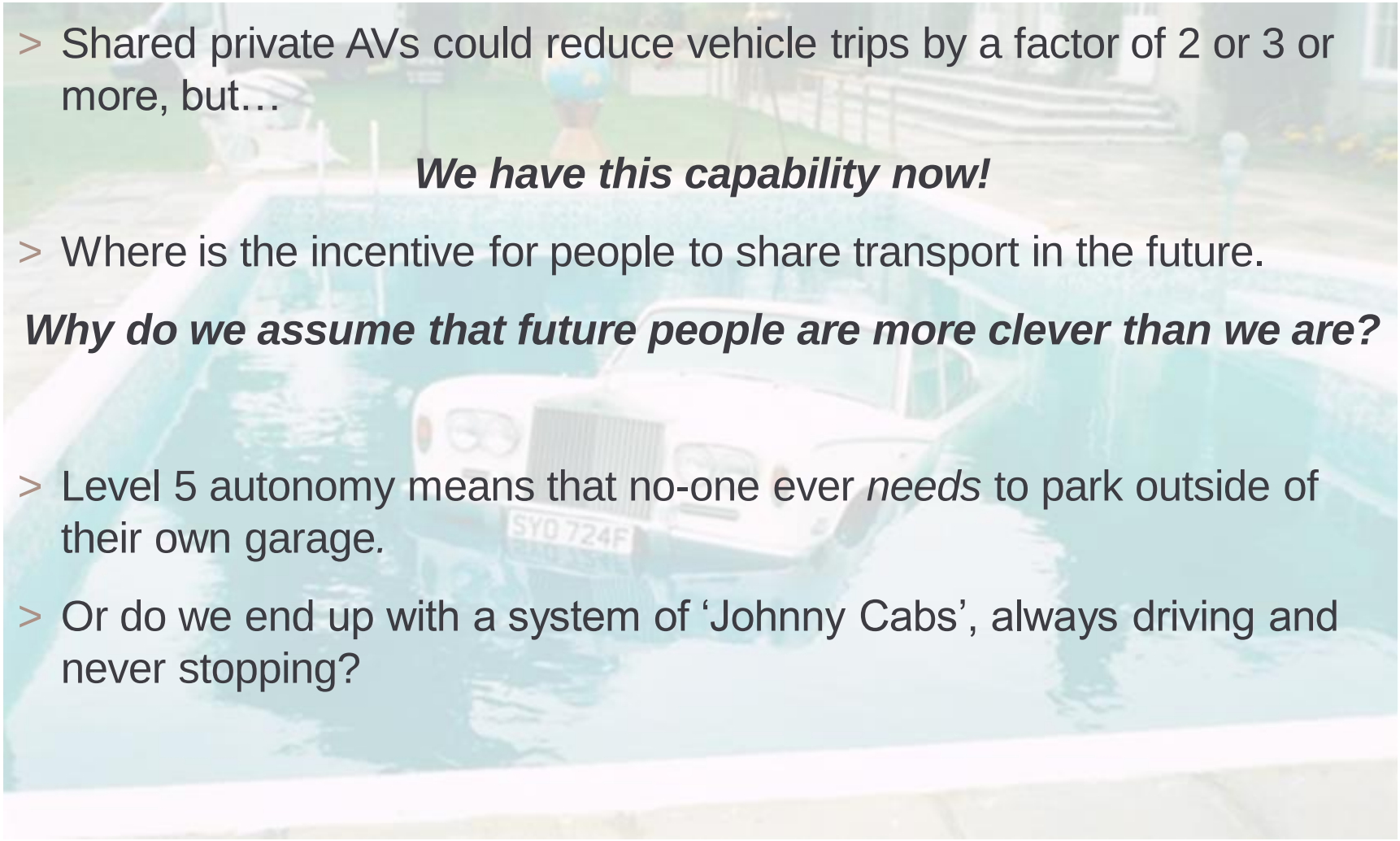
02 How Automation Affects Parking Behaviour



- Shared private AVs could reduce vehicle trips by a factor of 2 or 3 or more, but…

We have this capability now!

- Where is the incentive for people to share transport in the future.

Why do we assume that future people are more clever than we are?

- Level 5 autonomy means that no-one ever *needs* to park outside of their own garage.
- Or do we end up with a system of 'Johnny Cabs', always driving and never stopping?

02 Opportunities and Issues for Cities

Opportunities:

> More stuff, closer together

> Reduced development costs

> Space for improved public amenity

Issues:

> More congestion

> Increased VKT

> Pedestrians?

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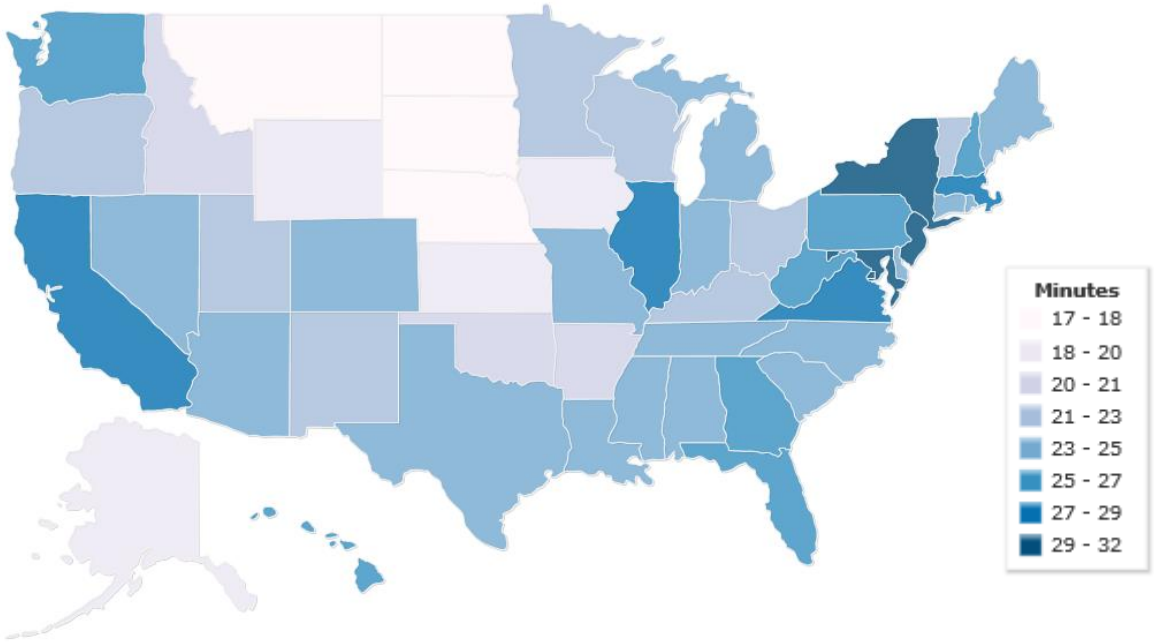
02 Equilibrium Effects

- Commuting Time
- Travel Time Reliability
- Convenience/Freedom
- Privacy/Alone Time
- Fees/Costs of Travel



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03 Demand Growth / Collapse Scenarios

03 Response to Demand Growth – Increase Supply

Considerations

> Private / Public

> On-Site / Off-Site

> City Centre / Peripheral

Impacts

> Traffic generation

> Congestion

> Parking Infrastructure Cost

> Road Network Costs

Recommendations

> Banded Parking Rates

> Residential Off-site Parking

> Peripheral long-stay

> City Centre short-stay

> Land banking

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03 Response to Demand Growth – Improve Efficiency

Considerations

> Shared parking

> Mixed Use development

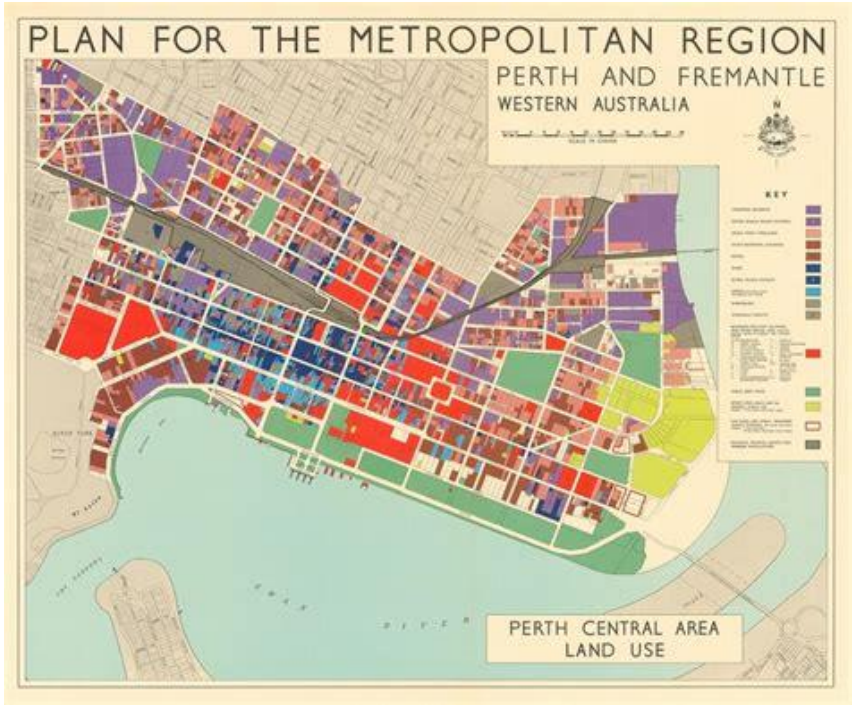
> Public parking

> Residential parking

Issues

> Demand growth will quickly exhaust capacity gains in the short term

> Best results will combine parking supply growth with efficiency



Recommendations

> DCPs and cash-in-lieu schemes

> Unbundled parking

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03 Response to Demand Growth – Parking Restraint

Option

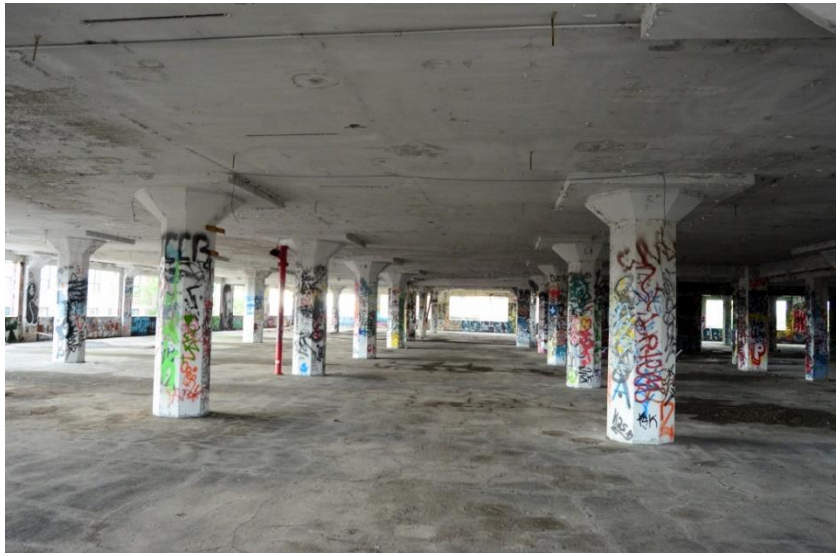
- Parking Cap → Mode Shift
- Supports:
  - Paid Parking
  - Urban Design
- Requires:
  - Alternative Transport Provision
  - Density
  - Mixed Use
- Creates:
  - Sustainable Parking Growth

Alternatives

- Restrictive parking maximums
  - Fine up until a set limit, but intensity of development may still overwhelm the network

03 Impacts of Demand Collapse

So, let's revisit the solutions that we looked at for the "near-term" demand growth scenario:



> **Increased supply:**

- Urban blight
- Financially unsustainable business (costs of construction are embedded in leasing rates)
- Housing affordability (supply of parking embedded in rental prices and housing costs)

> **Improved efficiency:**

- Minimises the pain of transition
- Provides for future opportunities (development growth with zero on-site parking)

03 Impacts of Demand Collapse

> **Parking Restraint:**

- Improved PT
- Fewer bays constructed
- Off-site public and shared parking
- Parking pricing *much* weaker as an incentive for mode shift

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03 What to do with Legacy Parking Provisions

- Repurpose
  - Adaptable parking
- Reuse
  - Peripheral Parking
  - City Centre Parking
- Demolish
  - Integrated parking
  - Stand-alone facilities

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03 Impacts of Policy Decisions

So, what solutions to near term growth still work under a demand-collapse scenario?

- Paid parking ✗
- Parking caps ✗
- Fuel tax ✗
- Road pricing: ✓
  - cordon charge
  - congestion charge
  - VKT charge

What do we do about ‘Zombie’ cars and ‘Johnny Cabs’?

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03 Conclusions

1. Parking will always be needed, but those needs are going to change

2. The days of using parking as a travel management tool may be numbered; we need other mechanisms

3. Policies need to be in place to guide changes in demand, to build the communities that we say we want

4. Decisions made now will affect how our communities grow and their continued economic and social viability

5. We can't afford to 'let the market decide'

Thank you

For more information

Jacob Martin
Team Leader, Transport Planning
Office: +61 8 9273 389

www.cardno.com