



# Vehicles Advice Transport Modelling

**Infrastructure Victoria**

Key Findings – August 2018

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# Introduction

Our scope was to estimate the impacts of emerging technologies relating to people's travel behaviour.



Automated vehicles

Cars that don't need a human driver



Vehicles on demand

Taxis / Uber

Share cars

Demand responsive transport

Autonomy improves convenience and reduces cost, making them viable for everyday travel



Zero emission vehicles

Battery electric or hydrogen vehicles

# Approach - the Melbourne Activity and Agent Based Model

<https://home.kpmg.com/au/en/home/insights/2018/03/transport-modelling-melbourne-activity-based-model.html>



# Scenarios

Scenario	<i>Automated vehicles</i>	<i>Vehicles on demand</i>	<i>Zero emission vehicles</i>
			
Dead end	✗	✗	✗
Private drive	✓	✗	✓
Hydrogen highway	✓	✗	✓
Electric avenue	✗	✗	✓
Fleet street	✓	✓	✓
High speed	✓	✓	✓
Slow lane	✗	✗	✗
Mix of scenarios	✗	✗	✓

# Summary of results

Scenario	Road congestion 	Fleet 	Physical activity 	Accessibility 
Private drive		-		
Hydrogen highway		-		
Electric avenue		-	-	
Fleet street				
High speed				
Slow lane				
Mix of scenarios				-

# Alternative land use scenarios

We tested two alternative land use scenarios produced by Infrastructure Australia:

- Expanded low density city
- Centralised high density city

These were applied to the:

- Mix of scenarios
- Private drive scenario

## **Key findings:**

- Changes in travel behaviour and congestion from land use were minor relative to the changes caused by AVs and mass take-up of on-demand vehicles.
- People shifted away from and towards public transport and active modes in the respective scenarios

# Influencers of outcomes



## More comfort and convenience

People are willing to accept longer travel times

### Nature of impact

More and longer car trips,  
more congestion

### Potential magnitude of impact

++



## Higher effective road capacities

Arterial roads and especially freeways capable of higher levels of throughput ('platooning')

More and longer car trips,  
but less congestion and delay

+++



## Empty running

People can send cars home to avoid parking fees

Much more congestion in  
inner areas

++ (if not managed)



## Reduction in private car ownership

People don't own cars and instead rely on cheap, autonomous taxis / demand responsive transport

More use of public transport  
and active modes

++ (if taken up)



## Lower 'sunk' travel costs

People perceive a higher proportion of their cost of their travel on a trip-by-trip basis

More use of public transport  
and active modes

+++ (depending on pricing models)



## Lower running costs

Cost of driving declines

More and longer car trips,  
more congestion

+

# Implications

## Opportunities

- Reduce the size of the fleet
- Get more from our existing road infrastructure
- Improve amenity and liveability
- Make transport pricing fairer
- Reduce transport disadvantage

## Threats

- ◀ Congestion due to optional empty running of private AVs
- ◀ Congestion due to urban sprawl
- ◀ Congestion due to comfort and convenience
- ◀ Poor accessibility and equity outcomes
- ◀ Congestion due to empty running of on-demand vehicles
- ◀ Reduced productivity of our CBD and inner core
- ◀ Delays getting in and out of on-demand vehicles

# Potential responses

## Non-build responses



Create an integrated transport pricing strategy



Address coverage and fares for vehicles on demand



Plan for population growth in inner and middle suburbs



Re-evaluate the road hierarchy

## Build responses



Build communications infrastructure to enable platooning



Invest in high quality alternatives to driving



Invest in high capacity trunk public transport



Provide parking and drop-off/pick-up locations for AVs



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