Presentation by

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How do policymakers and citizens expect transport innovation (e.g. Road Transport Automation) to change their lives and their cities?

POLIS Conference, Rotterdam, 1-2/12/2016

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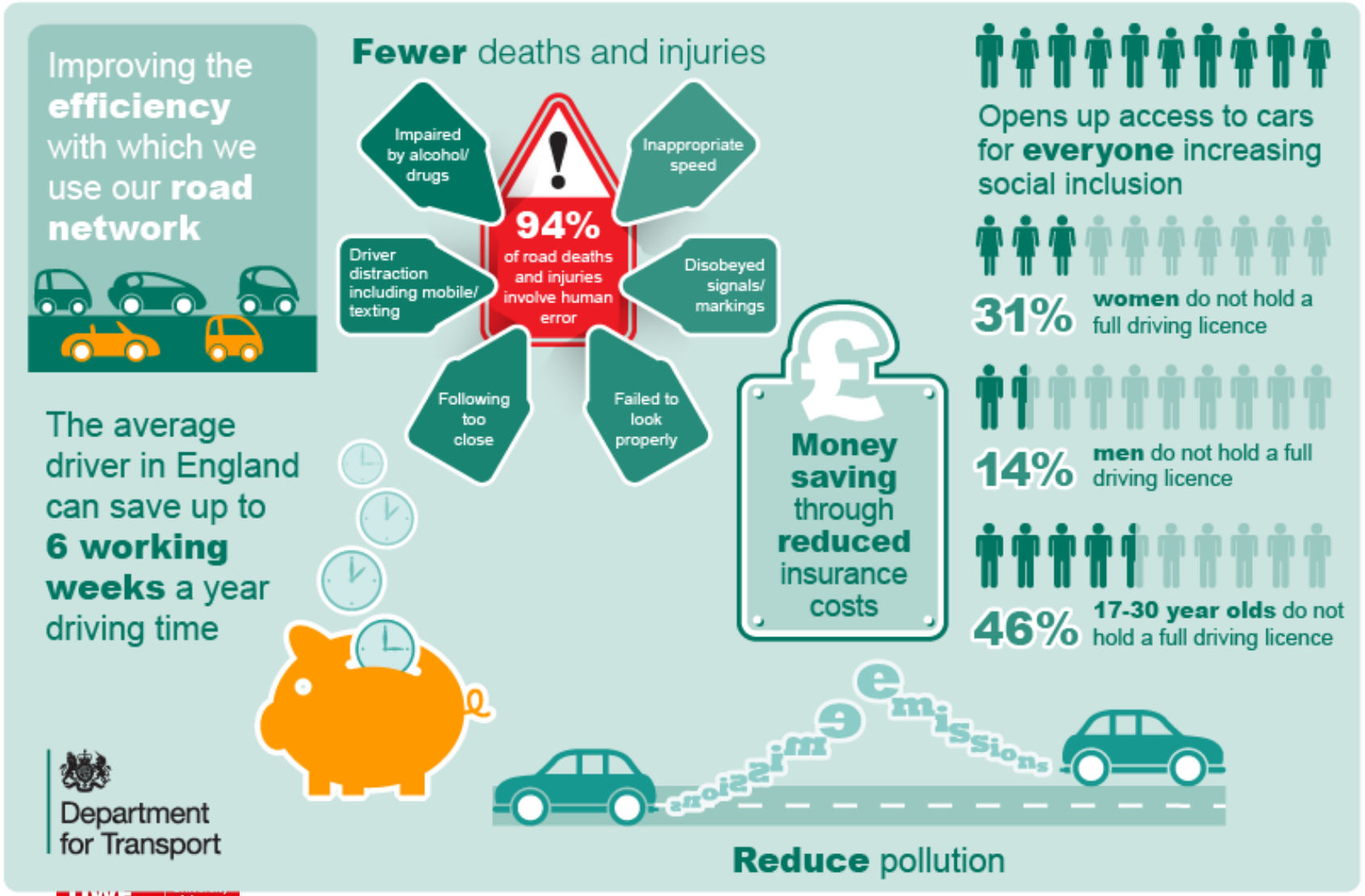
Centre for Transport & Society

Overview

- Visions of AV benefits and 'revolution'
- Expert and citizen understandings of AVs
- When might urban AV benefits arise?
- Willingness to use and pay for AV modes
- Key point summary
- Implications for parking?

A national government's view of autonomous vehicles



“Making Better Places”?

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Skinner & Bidwell (2016) MAKING BETTER PLACES: Autonomous vehicles and future opportunities

Sharing space with future AVs…

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Skinner & Bidwell (2016)

Suburbs with few cars (again)?

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Skinner & Bidwell (2016)

Release of space from road carriageways?

Skinner & Bidwell (2016)

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Key Questions for AV Evaluations

1. Will they be safer?
2. Will they result in less traffic?
   a. Less congestion?
   b. Fewer emissions?
3. Will they increase accessibility for all?
4. How will AVs mix with other road users?
5. Will AVs replace active travel?

Venturer Project contributing to answer these questions:

http://www.venturer-cars.com/

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How do experts understand AVs in the context of 'Smart Urban Mobility'

The sharing/ collaborative economy

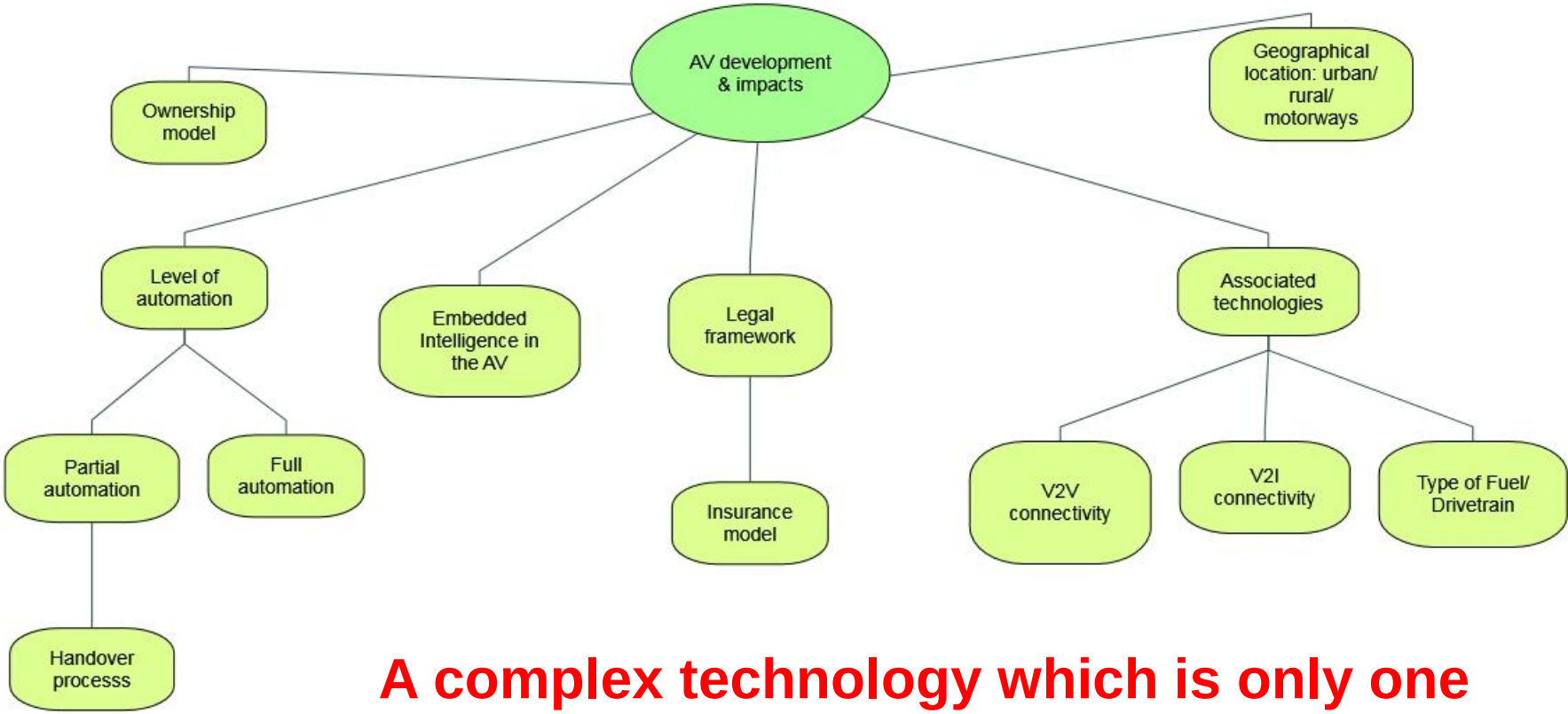
Trends in car use, e.g. by millennials

Mobility as a Service

Developments in Artificial Intelligence/ Robotics

Internet of Things

Intelligent Transport System innovations



A complex technology which is only one of many interrelated developments

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Citizens polarised views revealed in qualitative research

Positive	Conditional	Negative
Safer, managed system	Affordable by all?	Loss of control e.g. route
Inclusive: independent travel by young/ old/ disabled/ disqualified	Clean fuels?	Pleasure of driving
Can drink alcohol &'drive'	Cybercrime?	Loss of driving jobs
Can relax in journey, no need to park on arrival	Trustworthy?	Reduced practice by human drivers (loss of skill)
Collective form of transport No 'social display' No user maintenance	Legal responsibility?	Low trust in technology / Won't solve transport problems
Can use journey time productively	Support if public (collective) transport	Poor interaction with other road users
More comfortable ride	If can switch between human / auto. control	Loss of identity, personality, sex appeal
Predictable journey time		

One debate… …but very different implications!

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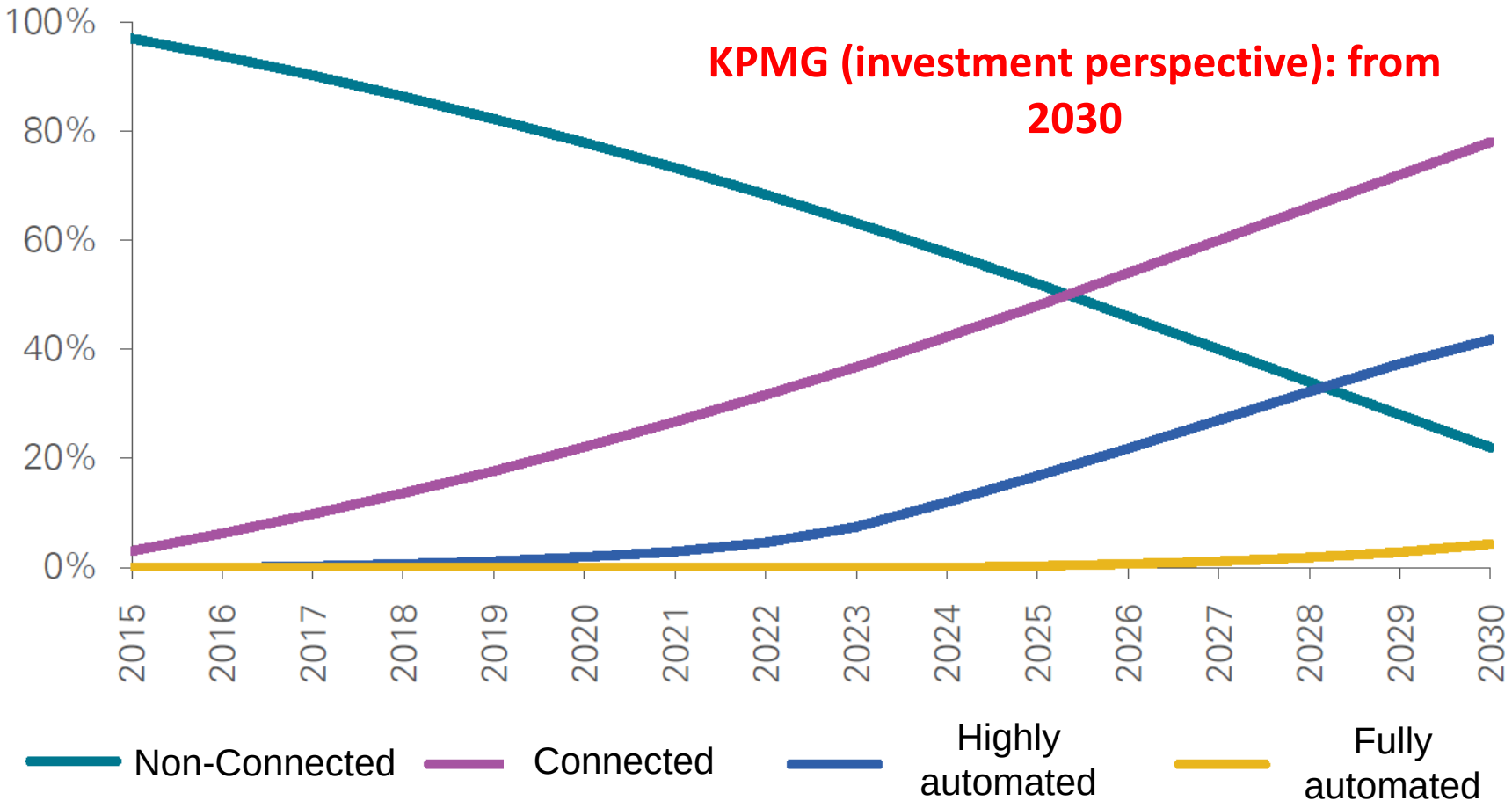
And an uncertain timeline…



Source: KPMG analysis based on IHS (2015) estimates and publicly available information from GSMA (2014), Ofgem, MobileSquared and RAC Foundation (2008).

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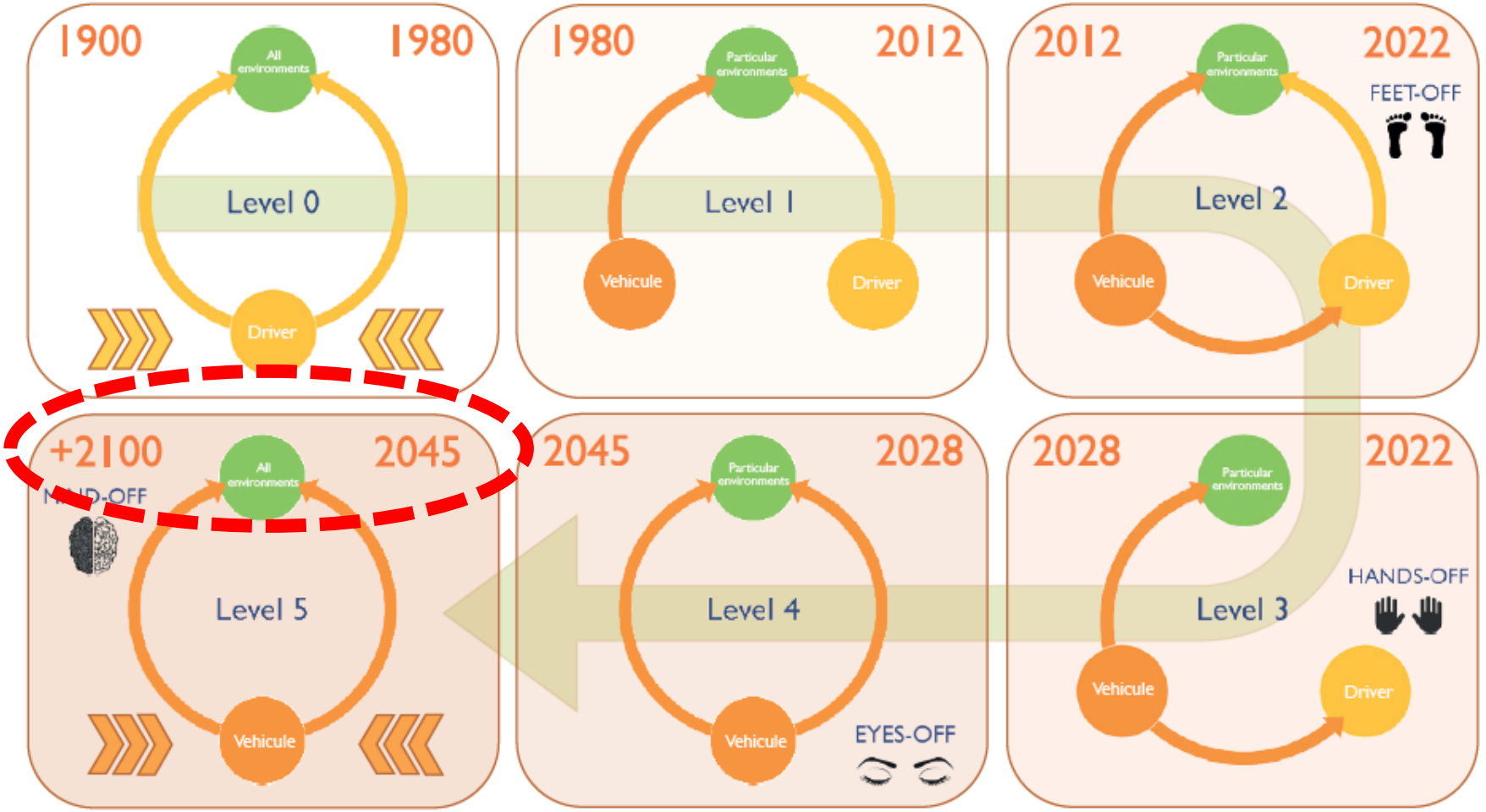
Some technology specialists are cautious



(Yole Développement, October 2015)

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Major Technical Problems Remain

- All weather operation
- Interaction with pedestrians in shared space
  - Non-verbal communication
- Detection of cyclists' manoeuvres and arm signals at junctions?
- Safe passing distances…

Better or worse conditions for pedestrians and cyclists?

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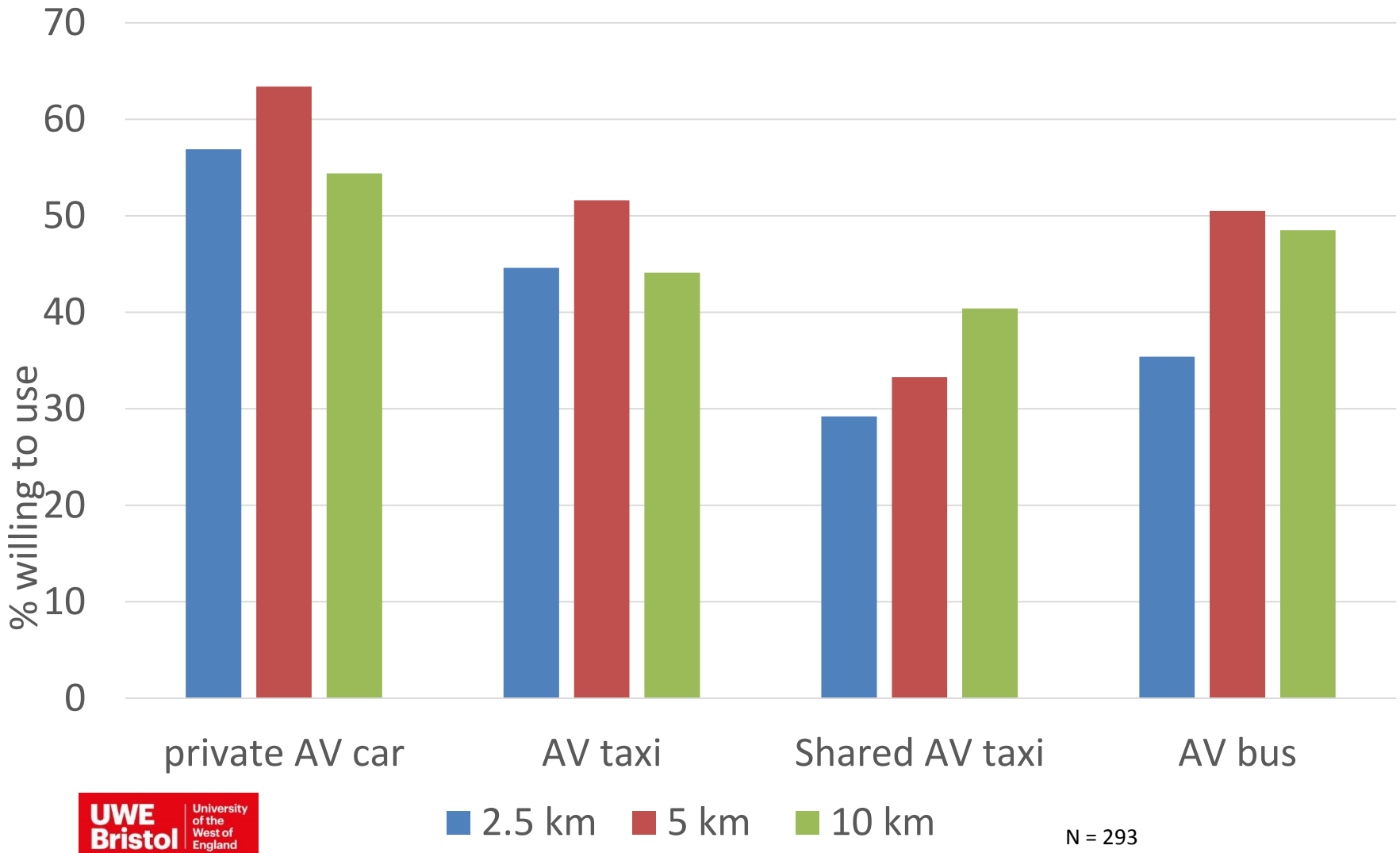
Car-driver citizens' acceptance of AV modes for different journey lengths



N = 293

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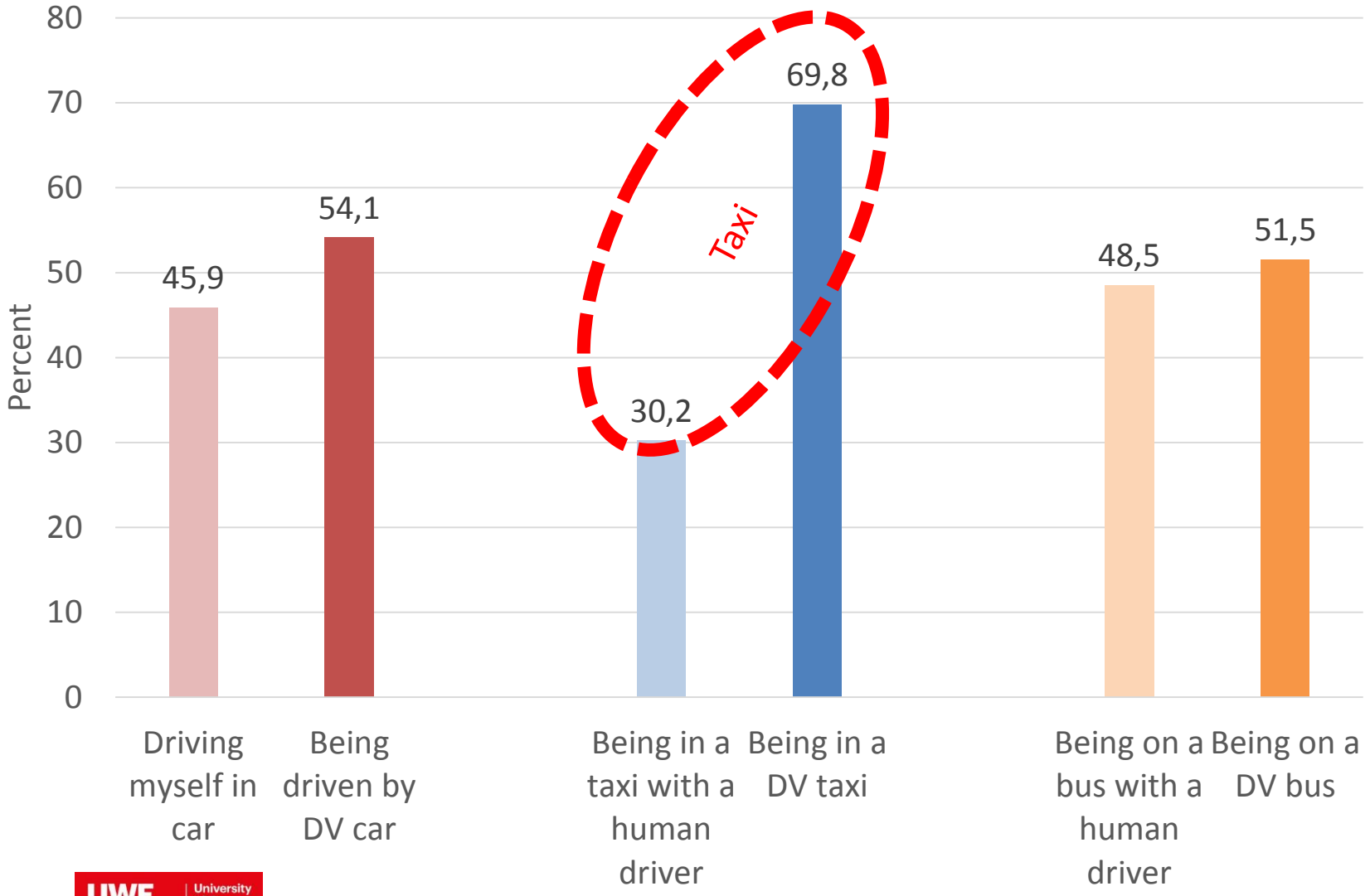
Preferences for human-driven vs AV version of same mode (transport professionals)



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Willingness to Pay (Transport Professionals)

Mode	Car	Taxi	Bus	Shared Taxi
Human-driven actual cost per km	€0.43	€1.80	€0.33	?
AV W2P per km	€0.50	€0.75	€0.33	€0.49
Net W2P	20% premium	Expect costs to fall by 2/3rds?	Accept/expect no change?	Expect similar to AV car?
AV cost minus driver (50%)	€0.50	€0.90	€0.17	?
Market attractiveness	Willing to pay technology premium. Owner-driver AVs financially viable.	Slight luxury mode but much more affordable than now	Low cost mode: compete on price or increase frequency?	Is a high-tech shared taxi service for approx. €0.5 per km possible?

Key points

Multiple visions of AVs are confused in the urban mobility discourse

- Segregated, medium-speed, battery-electric, low capacity 'pods'
- AV vehicles like current cars, minibuses and buses which mix with human-driven vehicles, pedestrians and cyclists

Full AV cars and buses are a long-term prospect

- Major technical challenges remain
- Consumer demand for full automation is yet to be confirmed

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Implications for parking (short-to-medium run)

Levels 1-3 AV <2030
(Modest growth in shared mobility, Little change in congestion)

- Easier to navigate to parking:
  - more effective utilisation?
  - Greater competition? (Although demand may rise)
- Parking more precise and space efficient
- Auto-valet parking in suitably equipped locations
- Fully autonomous pods providing P+R 'last mile'

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Implications for parking (long-run)

Levels 4-5 AV, more possible after 2030
(Remote summoning and dispatch possible)

- Significant sharing?
- Radical reduction in traffic and congestion?
- If so
  - parking in residential streets largely disappears
  - Car parks as AV service depots?
  - Car parking industry merges with software/firmware/hardware AV maintenance and 'stabling' industry

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Let's discuss!

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http://www.venturer-cars.com/

Venturer Project Bowler Wildcat AV Test Vehicle

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