

What might the widespread adoption of fully-autonomous vehicles mean for older people's mobility and their safety on the road?



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A mobility vision for the future...

... A world in which people walk, cycle, and use a shared fleet of electric autonomous vehicles to get around. There might be no private cars or parking, more efficient land use, more affordable urban housing, and built environments that better promote community. In this world, adults seamlessly maintain their social connections and activities outside the home as they age.*

*“Driverless cars to set elderly free” –
The Times*

*“The future of Google's driverless car is old people”
- The Washington Post*

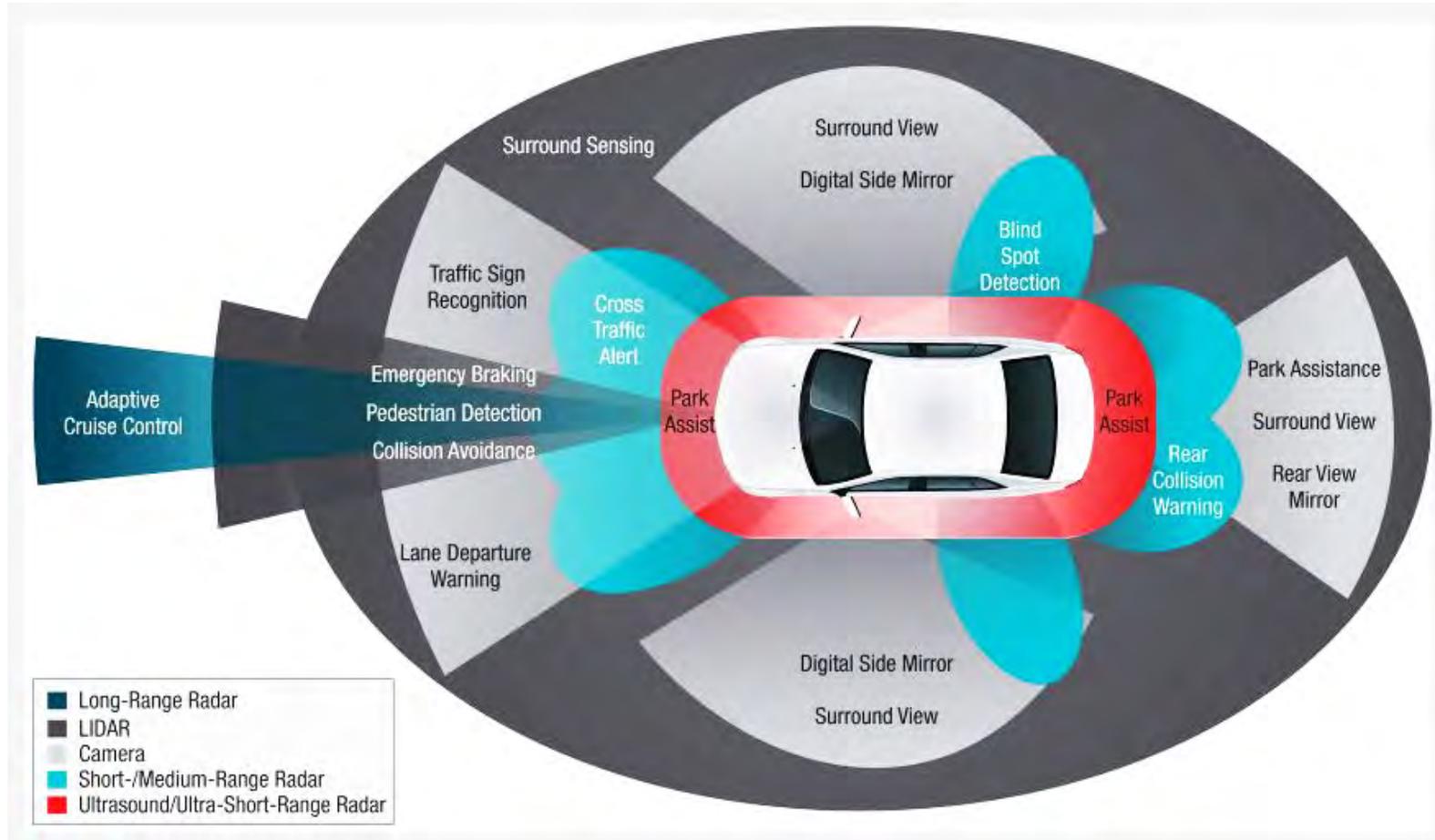
* Fitt, H., Curl, A., Dionisio-McHugh, R., Fletcher, A., Frame, B., & Ahuriri-Driscoll, A. (2018). Think Piece: Autonomous vehicles and future urban environments: Exploring implications for wellbeing in an ageing society (Second ed.). Christchurch, NZ

Agenda

1. Autonomous vehicles (AV)
2. The Flourish Project
3. What do the older people in our study think are the benefits?
4. Potential impacts on road safety
 - Safer drivers
 - Safer roads
 - Safer streets
5. Delivering AV solutions for older people
 - Implementation and policy challenges
6. Conclusions



What do we mean by autonomous vehicles, or driverless cars specifically?



1. Autonomy builds on driver aids, e.g. Advanced Driver Assistance Systems (ADAS)
2. Levels of autonomy: 1-5 (5 = no steering wheel or pedals, hands off, eyes off)
3. Mobility equity relies on level 5

Autonomous vehicles – Evolution and revolution,



The Flourish project

Our goals and approach



Goal: To advance the successful implementation of connected and autonomous vehicles (CAVs) in the UK

Three year, £multi-million, co-funded by industry. Delivered in partnership with Innovate UK. Supports the Future of Mobility Grand Challenge.

Research question: How might the technology be harnessed to enhance and enable mobility for older adults and those with mobility-related conditions - contributing to the development of a more inclusive society?

EMPOWERMENT THROUGH **TRUSTED** SECURE MOBILITY

flourish 

The Flourish project – method

User-focused approach

Over 230 members of the public involved in research

Younger-old and older-old

Trials, focus groups, workshops and interviews

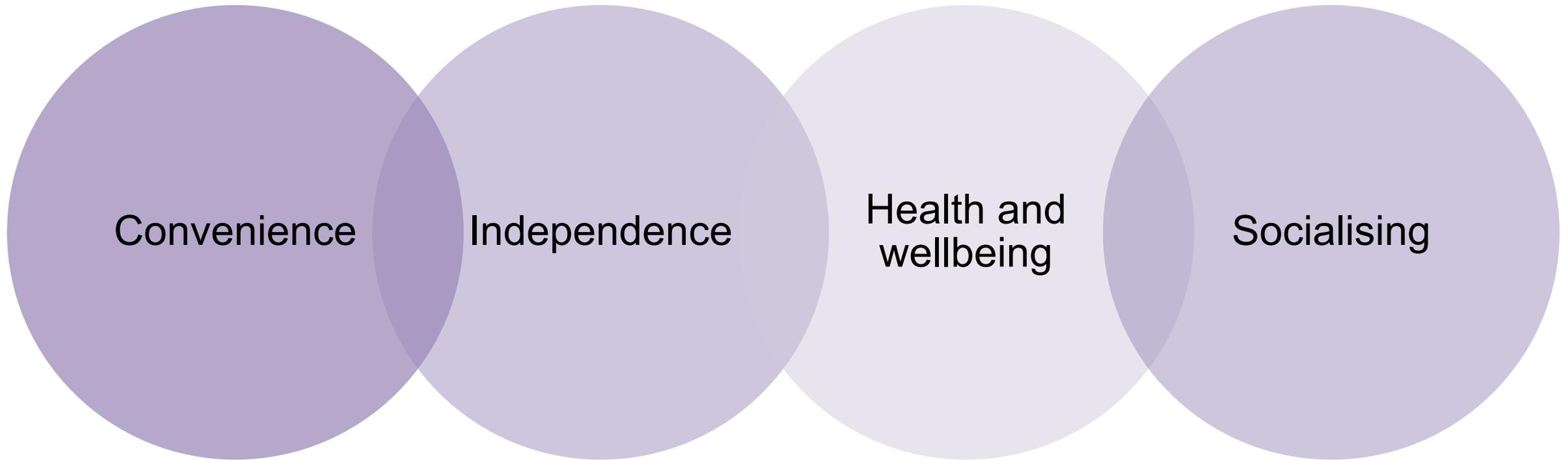
100 older people in simulator and live vehicles

Particular focus on interaction with the vehicle

My research focus: older people's mobility needs, journey purpose, wellbeing and social cohesion benefits



What do participants think are the benefits of fully autonomous vehicles



Road safety - safer drivers

1. Road traffic accidents – 1,770 road deaths, 26,610 people killed or seriously injured in UK in 2018 (DfT 2019)
2. 85% of road accidents (globally) resulting in injury are a result of human error (WHO 2018)
3. Increased chances of injury or death for older people in an accident
4. Risk that some older people drive longer than they are safe
5. Some claim 90% reduction in accidents if we were all travelling in AV (McKinsey & Co 2015)

“Hardest thing is knowing when to stop driving. You want to remain independent as long as possible.... from what I can see AV will be a godsend.”

“I lost some of my sight after suffering from a stroke. I think driverless vehicles could be amazing...I’d love it, to be able to do my own thing.”

“I would take the decision to not drive any more, if I was not safe to drive or had a medical condition that stopped me. AV would be a solution... ”

Road safety - safer roads

1. Connectivity – to other vehicles, to the road network and the internet / 'cloud'
2. No surprises, vehicles able to see around corners
3. Connectivity already here in vehicles: Information, emergency help, vehicle diagnostics
4. All vehicles connected within next 5-10 years



Road safety - safer streets



1. Shared-mobility model could mean significant reduction in parking in streets
2. All-electric vehicles would mean better air quality
3. Potential for fewer falls
4. Supports more walking / physical mobility

Delivering AV for older people – Some policy and planning challenges

Services for new settlement patterns

Meeting additional travel demand

Addressing heterogeneity in the older population

Planning for older people's mobility

Operating models to maximize benefit

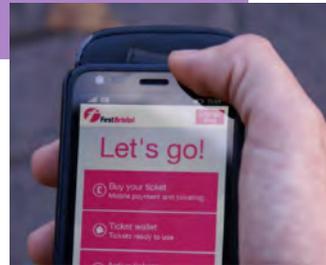
- How will we achieve the most desirable outcomes?
- How do you ensure that there is equity in delivery of autonomous mobility?
- Will road safety benefits be seen without strong policy direction?

Delivering AV for older people - Implementation challenges

Technical - HMI



Digital divide



Cost of vehicles / services



Rural / urban



- How do you address these issues?
- Who is responsible?
- How do you ensure that there is equity in delivery of autonomous mobility?

Conclusions

- Autonomous vehicles are seen to hold great promise – in particular for those that see reduced mobility, and problems in accessing transport
- Some visions of a future based on autonomous vehicles suggest there will be major road safety benefits – helping older people particularly
- But there are still many challenges to be overcome to reach that future

