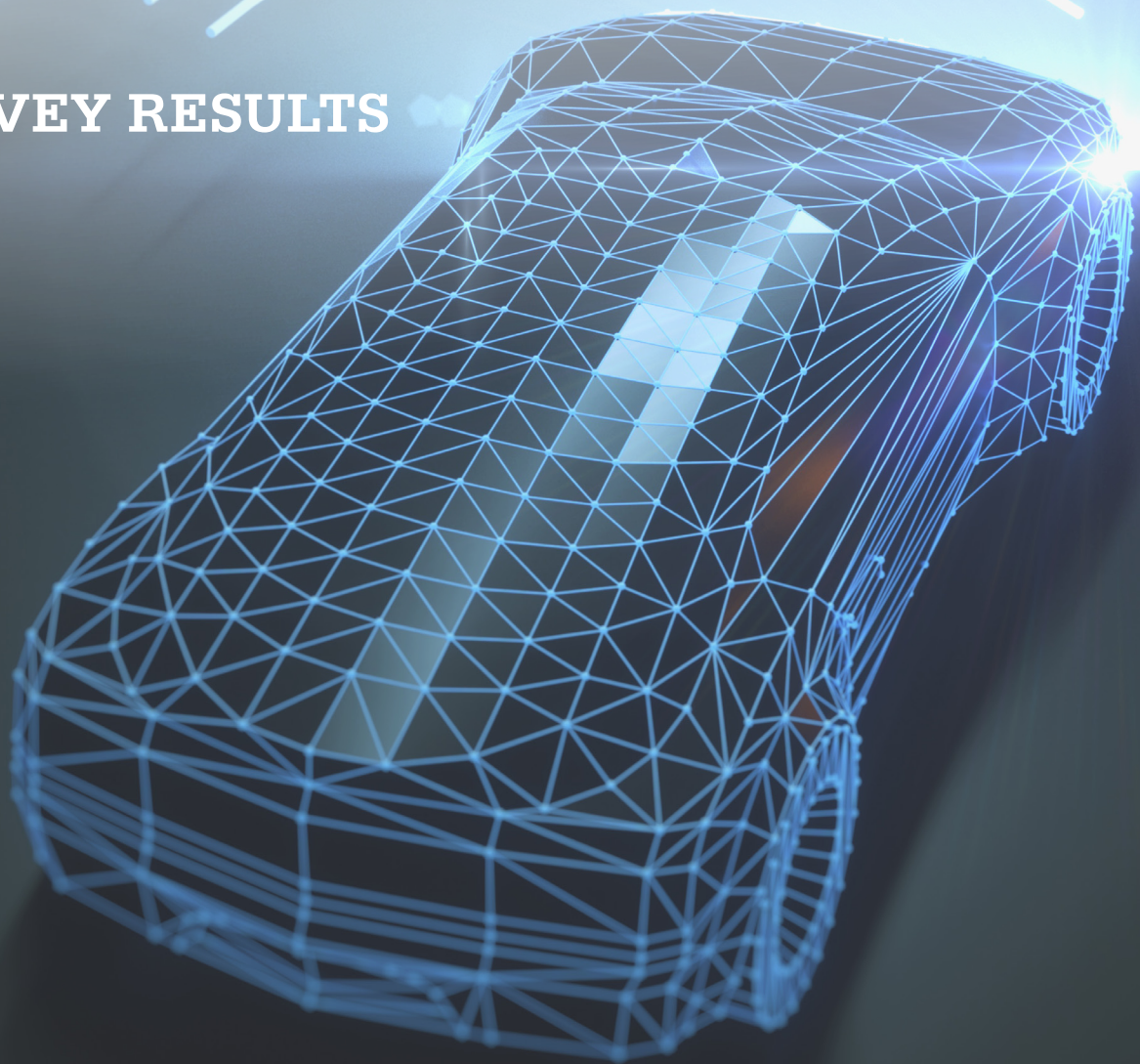


# PUBLIC PERCEPTIONS: AUTONOMOUS VEHICLES

Institution of  
**MECHANICAL  
ENGINEERS**

SURVEY RESULTS



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# 01

## FOREWORD

Driverless cars have long been touted as the next big step forward in road transport. In a best-case scenario, removing the requirement for a person 'at the wheel' could mean that the drudgery of commuting or long journeys could be freed up for more production or enjoyable activities. However, others point to less optimistic futures. Making road travel more convenient could clog up our streets, destroy the rail industry, and increase the energy usage and carbon emissions of the transport sector overall.

The public discourse around driverless cars usually focuses on fully autonomous vehicles that require no human intervention at all to get from A to B. But there are many levels of autonomy between this and complete driver control, many of which are already being used on the roads today, for example adaptive cruise control and parking assistance. It may therefore be a slow step-by-step process to get to full autonomy, rather than one leap.

The biggest barriers to greater levels of autonomy are increasingly non-technical. The technology is almost there, but regulation is yet to catch up. A sticking point is liability in the event of an accident – will car manufacturers now be responsible for every accident now that drivers are out of the picture?

One factor will be a prerequisite for driverless vehicles being anything more than a niche innovation: public acceptance. The Institution of Mechanical Engineers commission polls of the general public on nascent technologies because we know that the interface between technology and human beings is often as important as the technology itself.

In this poll, seven out of ten people indicated that they would feel uncomfortable being an occupant of a fully autonomous car travelling at, for example 70 mph (110 km), a figure that has not changed significantly over the years. This is not surprising as to most people driverless cars are still an abstract idea. It will only be when we see more trials across the country and perhaps some early adopters that we will discover if the public will be accepting.

Unsurprisingly, at the IMechE we are optimistic about technology and its ability to change the world for the better. Personally, I see autonomous vehicles as a tool of liberation for the elderly and disabled.

**Matt Rooney**

Head of Policy

Institution of Mechanical Engineers

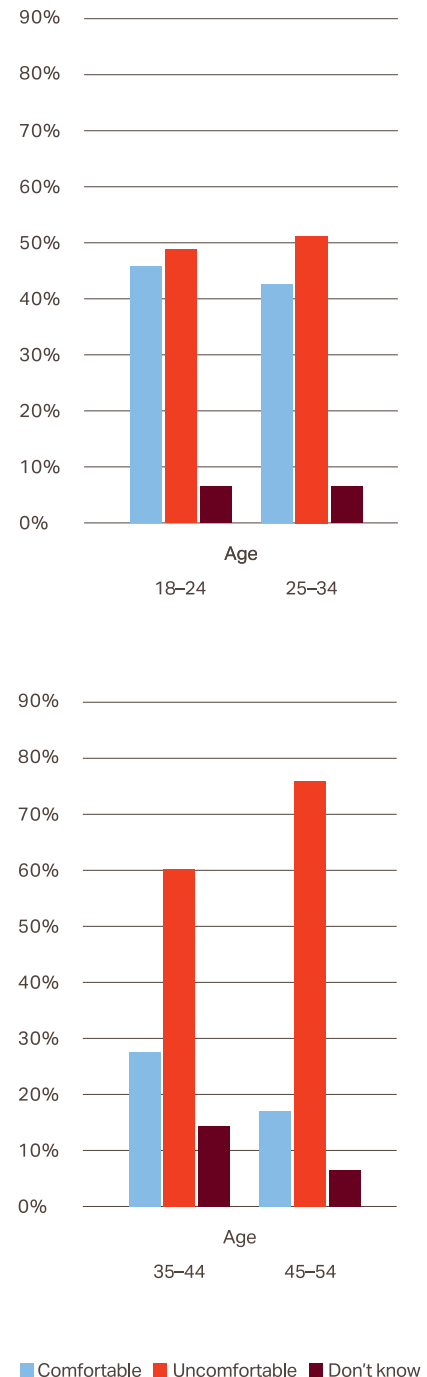
The Institution of Mechanical Engineers recently carried out a survey to find out about public attitudes to autonomous vehicles and whether they have changed in recent years, following previous polls in 2017 and 2019.

The Institution commissioned Walnut Unlimited to carry out this survey of a nationally representative sample of 2,013 adults across Great Britain.

### KEY FINDINGS

- / **Seven out of ten (70%)** of interviewees indicated they would be uncomfortable travelling in an autonomous vehicle with no human control, at for example 70 mph, compared with 29% who said they would feel comfortable. The results are similar to findings in 2017 and 2019.
- / **Almost half of drivers (49%)** suggested they would feel comfortable in the driving seat of an autonomous vehicle using a full self-driving capability, but which can also be driven like a conventional vehicle.
- / **Whilst around a third of drivers (34%)** indicated that they would not let an autonomous vehicle with self-driving and conventional capabilities take over the driving task, a similar proportion suggested they would let it take over if they felt tired (31%) or unwell (30%).
- / **Half of respondents (50%)** said fully autonomous cars should be available to people who have a disability or health problem which made them unable to drive. A similar number (46%) supported cars being used by people who can no longer drive due to age.
- / **Two fifths of interviewees (39%)** said their biggest concern travelling in a completely autonomous vehicle would be having no overall human control. The second most cited concern (29%) was worries about the car's ability to deal with external events, for example an accident. These concerns have remained consistent since our first poll in 2017.

**Graph 1.** How would you feel being an occupant in a fully autonomous car with no human control, travelling at 70 mph, Attitudes by age range



- / **Over half the people interviewed (56%)** said they were unhappy with being on a road with a mix of autonomous and non-autonomous vehicles.
- / **A majority (53%)** want fully autonomous vehicles clearly marked with both a special light and written sign/ image on the vehicle.
- / **One quarter (25%)** believe that fully autonomous vehicles will be widely used on public roads in the UK by the 2030s.
- / **More men indicate** they are comfortable with the technology than women, as are younger people compared to older people (Graph 1). This is in line with our previous surveys.

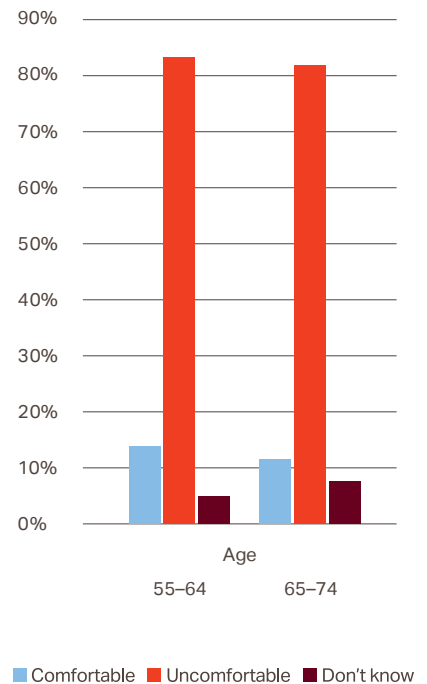
The race is on to bring autonomous vehicles to the UK's streets. Progress is being made in many areas from road trials and research into safety, to updates to the Highway Code and legislation outlining insurance regulations for them.

The models being tested on the roads today have controls to allow a human driver to take over but features of autonomous technology that assist drivers do already exist in many new cars. These include automatic emergency braking, adaptive cruise control to maintain a set distance from a vehicle ahead and lane assist. As they become more widespread, people should feel more confident about the benefits of the technology and how it responds intelligently to road conditions.

Ultimately the success of the technology will depend on whether consumers feel comfortable in adapting and switching to driverless vehicles.

Future transport is one of the Institution's policy priorities, and the polls give useful insight into how attitudes to driverless technology are evolving,

**Graph 1.** How would you feel being an occupant in a fully autonomous car with no human control, travelling at 70 mph, Attitudes by age range



# 03

## ALLOWING THE CAR TO TAKE CONTROL

A step-by-step approach will be needed to gain acceptance of the technology. Drivers appear more positive towards the technology if it is in their control when to switch it on.

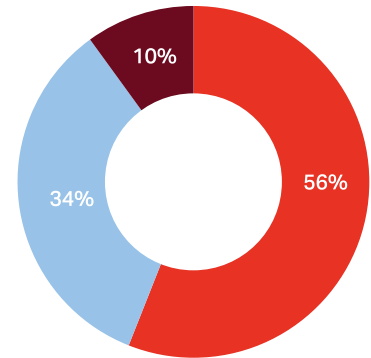
Asked what they thought of driving a car with full self-driving capability but they as the driver could decide when to switch, half of drivers (49%) said they would be comfortable with this compared to 46% who wouldn't.

Drivers were also asked about what would influence their decision to let the car take over the driving. The top three factors were feeling tired (31%) or unwell (30%) and needing to communicate with someone (18%) – either send an email or answer a call.

In answering these and other questions, women said more often that they felt uncomfortable with the idea of autonomous cars than men (Graphs 2 and 3) while younger people were more enthusiastic than older people.

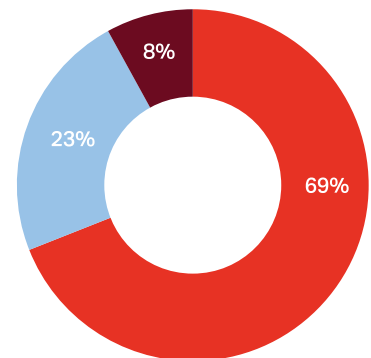
Looking at the responses by social class, people in the wealthiest AB category were more comfortable with the idea of the technology than people in the poorest DE group.

**Graph 2.** How would you feel being an occupant in a fully autonomous car with no human control? (Men)



■ Uncomfortable  
■ Comfortable  
■ Don't know

**Graph 3.** How would you feel being an occupant in a fully autonomous car with no human control? (Women)



■ Uncomfortable  
■ Comfortable  
■ Don't know

# 04

## SHARING THE ROAD WITH DRIVERLESS CARS

Over half the people interviewed (56%) said they were unhappy with being on a road with a mix of autonomous and non-autonomous cars.

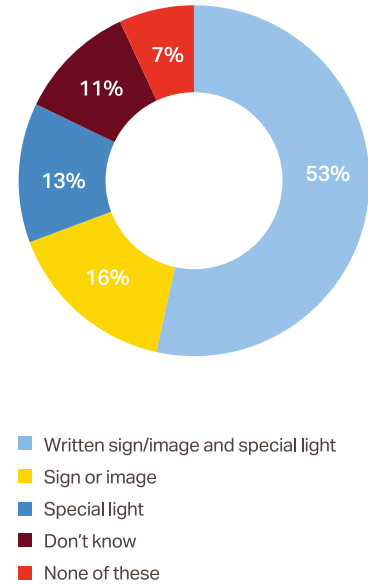
A majority (53%) want driverless cars clearly marked with both a special light and written sign/ image on the vehicle.

Government-backed trials of autonomous cars have taken place in London, Bristol, Coventry and Milton Keynes.

A new research project ServCity, funded by the UK Government, has started driverless car trials on London streets with the goal of developing a blueprint for the deployment of autonomous vehicles in UK cities.

The trials are centred around the Smart Mobility Living Lab in Greenwich, south east London, and will gather data and test vehicle performance.

**Graph 4.** How do you think autonomous cars should be marked?



# 05

## TECHNOLOGY CONCERNS

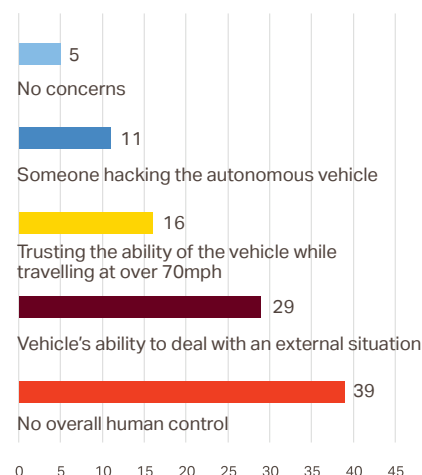
Worries about the technology have remained similar in our three polls, both in terms of issues and level of concern.

The most recent poll found top two concerns continued to be having no overall human control of the vehicle (39%) and worries about the vehicle's ability to deal with external events, for example an accident (29%). Men and women have similar levels of concern and there was little difference according to age.

Responsibility in the event of an accident has been clarified by an update of the Highway Code in 2022 to include rules for motorists using self-driving vehicles. Under the Code, human drivers won't be held responsible if an autonomous vehicle is involved in a crash. Instead, insurance providers will be liable for claims in such circumstances.

This follows The Vehicles Act 2018 which outlines regulations for the insurance of autonomous vehicles. It states that insured autonomous vehicles will be covered for accidents that happen while the vehicle's software is driving.

**Graph 5.** What would be your biggest concern about travelling in a fully autonomous vehicle?



Robotaxis – driverless taxis – are being tested on roads in the United States. The taxis don't have a steering wheel, pedals or driver's seat but rely on a network of sensors to move through a city.

These taxis could start operating in UK cities in the next few years. We asked in our poll if people would be happy to use one of these taxis which they would book via an app.

Two thirds (64%) suggested they would be unlikely to use a service like 'Robotaxis'. A quarter (26%) said they thought they would use this type of service.

## LOOKING AHEAD

We asked people when they expected fully autonomous cars to be driven widely on UK roads. One quarter (25%) believe that fully autonomous vehicles will be widely used on public roads in the UK by the 2030s.

Around a fifth (17%) thought this would be in the 2040s and one in ten people (11%) suggested the 2050s.

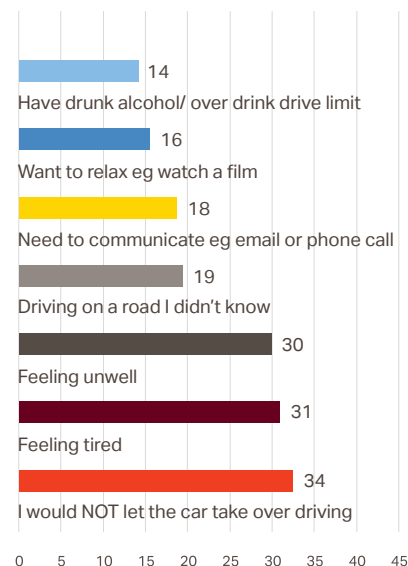
Eight percent said they didn't expect to see the cars ever widely driven.

Public acceptance will be key to the widespread adoption of autonomous vehicle technology. Concerns remain about the lack of human control of driverless cars and whether they would be able to respond to unexpected situations, for example an accident on the road ahead.

It may be the technology is adopted gradually. Our poll shows support for use of the technology for personal mobility with around half of respondents supporting the use of driverless cars for people unable to drive due to age or health problems.

Equally, people could see advantages of using driverless technology to help keep them safe. Three in ten drivers said they would consider switching their car to fully autonomous mode if they felt tired or unwell (Graph 6).

**Graph 6.** What factors, if any, would influence your decision as driver to let the autonomous vehicle take over driving?



## NOTES



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