

Delphi #1: Transport & Automated Vehicles

Page 1: Information and Consent

Automated vehicles have the potential to be the most profound technological change in road transport since the mass uptake of the private vehicle. Yet there are still many uncertainties relating to their emergence and potential diffusion. The aim of this study is to examine expectations of the future effects of automated vehicle (also called autonomous, driverless and self-driving vehicles) diffusion on energy demand and greenhouse gas emissions for passenger and road freight transport in the UK.

No background knowledge about automated vehicles is required for this study.

In this research we are using a multi-stage surveying approach, where each survey builds on (and learns from) the earlier survey and at the beginning of surveys two and three you will be provided with a short summary of the findings of the previous survey.

The information collected will be collated and used to inform academic publications, policy briefs and presentations. Members of the research team will have access to the data, but not your name or other personal details. No third parties will be given access to any of the data. The anonymised data will be deposited in specific repositories as required by the research funders (UK Research Councils).

Please read through these terms before agreeing to participate by ticking the 'yes' box below. You may ask any questions before taking part by contacting Dr Debbie Hopkins: debbie.hopkins@ouce.ox.ac.uk.

- Please note that your participation is voluntary. You may withdraw at any point during the questionnaire for any reason, before submitting your answers, by closing the browser.
- Your answers will be completely anonymous, and we will use our best endeavours to keep them confidential. Your data will be stored in a password-protected file and may be used in academic publications. Research data will be stored for a minimum of three years after publication or public release.
- Research is a task that we perform in the public interest. Further information about

your rights with respect to your personal data is available from
<http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/individualrights/>

- We will not be asking for your name or other identifiable information in the survey.
- Toluna UK Limited, with whom you have signed up as a panel member, is the data controller with respect to your personal data and, as such, will determine how your personal data is used. Please see the privacy notice you accepted when you became a Toluna member [<https://uk.toluna.com/privacy>]. The 'Online Survey Provider' is Jisc Online Surveys who will only have access to survey responses and will share only fully anonymised data with the University of Oxford, for the purposes of research.
- Any personal information that could identify you will be removed or changed before files are shared with other researchers or results are made public.
- Responsible members of the University of Oxford and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law.

This project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee Reference number: SOGE 1A 20-19.

If you have a concern about any aspect of this project, please speak to the researcher [Dr Debbie Hopkins, Debbie.hopkins@ouce.ox.ac.uk], who will do their best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the relevant Chair of the Research Ethics Committee at the University of Oxford: Chair, Social Sciences & Humanities Inter-Divisional Research Ethics Committee; Email: ethics@socsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD. The Chair will seek to resolve the matter in a reasonably expeditious manner.

Please note that you may only participate in this survey if you are 18 years of age or over.

** Required*

☐ I certify that I am 18 years of age or over

If you have read the information above and agree to participate with the understanding that the data (including any personal data) you submit will be processed accordingly,

please check the relevant box below to get started. Please note: you are required to answer all questions. * *Required*

- ☐ Yes, I agree to take part
- ☐ No, I do not wish to take part.

Please note: this survey was designed before the COVID-19 pandemic and associated lockdown. When we are asking about your 'usual' travel practices, please think about the period before COVID-19.

Page 2: Questions about you

1. What gender do you identify with?

2. What is your date of birth?

Dates need to be in the format 'DD/MM/YYYY', for example 27/03/1980.

Please make sure the date is between 01/03/1920 and 01/04/2002.



(dd/mm/yyyy)

3. In which country were you born?

- ☐ England
- ☐ Wales
- ☐ Scotland
- ☐ Northern Ireland
- ☐ Republic of Ireland
- ☐ Other

If you selected Other, please specify:

4. In which city or town do you live all or most of the time?

4a. Is this town/ city in:

- ☐ England
- ☐ Wales
- ☐ Scotland
- ☐ Northern Ireland
- ☐ Republic of Ireland
- ☐ Other

If you selected Other, please specify:

5. In 2019, what is your annual household income before tax (including income from salaries, benefits, pensions, allowances etc.)?

6. Do any of these conditions or illnesses affect you in any of the following areas? Select all that apply.

- ☐ Vision (e.g. blindness or partial sight)
- ☐ Hearing (e.g. deafness or partial hearing)
- ☐ Mobility (e.g. walking short distances or climbing stairs)
- ☐ Stamina or breathing or fatigue
- ☐ Other

☐ None

If you selected Other, please specify:

7. What is your highest level of educational attainment?

8. In January 2020, were you:

- ☐ Working as an employee
- ☐ On a government sponsored training scheme
- ☐ Self-employed or freelance
- ☐ Working paid or unpaid for your own or your family's business
- ☐ Away from work ill, on maternity leave, on holiday or temporarily laid off
- ☐ Doing any other kind of paid work
- ☐ Retired (whether receiving a pension or not)
- ☐ A student
- ☐ Looking after home or family
- ☐ Long-term sick or disabled
- ☐ Other

If you selected Other, please specify:

9. How many people aged **under 18** live in your house all or most of the time?

10. How many people aged **18 and over** live in your house all or most of the time, including you?

Page 3: About your travel and transport

11. Do you have any of the following driver's licences? Select all that apply.

- ☐ Car (Full): B1/Bauto/BE
- ☐ Car (Provisional): B1/Bauto/BE
- ☐ Moped (Full): P
- ☐ Moped (Provisional): P
- ☐ Motorcycle (Full): A
- ☐ Motorcycle (Provisional): A
- ☐ Medium or large vehicle (Full): C
- ☐ Medium or large vehicle (Provisional): C
- ☐ I do not have a driver's licence

11a. How old were you when you FIRST obtained a **full** licence?

11b. Have you ever been disqualified from driving?

- ☐ Yes
- ☐ No

11c. Have you ever had penalty points added to your licence for driving offenses? (Note: If you have had penalty points in the past, but they are now cleared, please tick 'yes').

- ☐ Yes
- ☐ No

12. In the last 3 years (since 2017), have you been in any type of road accident, no matter

how minor? (Note: Please include any accidents in which you were involved as a pedestrian, driver, passenger, cyclist or motorcyclist, even if no other party were involved. Only include incidents that happened on a public road, including pavements and cycle lanes on the public road)

- ☐ Yes
- ☐ No

12a. How many times have you been involved in a road accident, no matter how minor, in the last 3 years?

12b. In this accident, were you

- ☐ A cyclist
- ☐ A pedestrian
- ☐ A driver
- ☐ A passenger

12b. In your most recent accident, were you:

- ☐ A cyclist
- ☐ A pedestrian
- ☐ A driver
- ☐ A passenger

13. Do you own or long-term lease a vehicle? (Note: this may include a car, van, moped, motorbike)

- ☐ Yes

☐ No

13a. How many vehicles (cars, motorbikes, mopeds) are owned or leased by people living in the same house as you all or most of the time?

13b. Thinking of the vehicle you drive all or most of the time, does it have:

- ☐ Cruise control
- ☐ Airbag
- ☐ Satellite navigation system
- ☐ Air conditioning
- ☐ Electric windows
- ☐ Lane assist
- ☐ Automatic breaking
- ☐ Adaptive cruise control
- ☐ Automated parking
- ☐ None of these

13c. Thinking of the vehicle you drive all or most of the time, what fuel does it use?

- ☐ Petrol
- ☐ Diesel
- ☐ Electric/ battery only
- ☐ Hybrid
- ☐ Plug-in Hybrid
- ☐ Liquefied Petroleum Gas (LPG)
- ☐ Bi-fuel (combination of two fuels)
- ☐ Other

If you selected Other, please specify:

14. In January 2020, how did you commute to work or school all or most of the time?

If you selected Other, please specify:

14a. When travelling by car or van, are you...

15. To how many destinations do you travel on a regular **weekday**? (Note: if you travel directly to work in the morning and on the way home stop at the supermarket, you travel to three destinations: work, supermarket, home)

16. On average, how many miles do you think you travel on a regular **weekday**?

17. How many long-distance (50+ mile) car trips do you do **per year**?

18. Have you, or has anyone in your household, ordered any of these things online, over the phone or by post in the last year? (Note: This does not include letters, milk, newspapers or magazines)

- ☐ Food and drink
- ☐ Takeaway meals
- ☐ Clothes or footwear
- ☐ Books/CDs/DVDs/software
- ☐ Furniture
- ☐ Soft furnishings/bedding
- ☐ Electrical appliances or items (e.g. computer/fridge/TV/kettle)
- ☐ Holiday/travel tickets
- ☐ Any other tickets (not for travel)
- ☐ Plants/bulbs/flowers/seeds
- ☐ Health goods and toiletries
- ☐ DIY/garden equipment
- ☐ None of these

19. Are you aware of the following transport items:

	Yes, I am very aware	Yes, I somewhat aware	No, I am not aware
The Google car	☐	☐	☐
Advanced breaking systems	☐	☐	☐

Carsharing schemes	☐	☐	☐
Uberpool	☐	☐	☐
Mobility-as-a-service	☐	☐	☐

20. Have you used the following services?

	Yes, I have regularly	Yes, I have on a few occasions	No, I haven't.
Taxi/ private hire	☐	☐	☐
Uber	☐	☐	☐
Uberpool	☐	☐	☐
Car club (e.g. Zip Car)	☐	☐	☐
Hire car	☐	☐	☐

21. From the list below, what do you think are the three most important issues relating to transport in the UK? Please select one per column.

	First	Second	Third
Traffic congestion	☐	☐	☐
Financial cost	☐	☐	☐
Unequal provision/ access	☐	☐	☐
Climate change	☐	☐	☐
Air pollution	☐	☐	☐
Traffic safety and injury	☐	☐	☐

Page 4: About Autonomous Vehicles

22. How familiar are you with the following terms?

	I have never heard of it	I know a little	I know roughly what it means	I am very familiar
Connected and autonomous vehicles	☐	☐	☐	☐
Autonomous vehicles	☐	☐	☐	☐
Automated vehicles	☐	☐	☐	☐
Driverless vehicles	☐	☐	☐	☐
Self-driving vehicles	☐	☐	☐	☐
Robotic vehicles	☐	☐	☐	☐

23. Which of these terms have you heard used most often?

24. Do you have any experience driving a car with 'driver assist' features (e.g. automatic breaking, lane assistant, adaptive cruise control)?

25. Please read the following statements and signal whether you agree or disagree.
Automating the driving task will:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Make the roads safer and reduce collisions	☐	☐	☐	☐	☐
Reduce travel times	☐	☐	☐	☐	☐
Make driving cheaper	☐	☐	☐	☐	☐
Lower vehicle emissions	☐	☐	☐	☐	☐
Reduce driver fatigue	☐	☐	☐	☐	☐

26. How comfortable would you feel sharing the road with a vehicle which can:

	Very comfortable	Comfortable	Neither comfortable nor uncomfortable	Uncomfortable	Very uncomfortable
... help the driver to steer, break or accelerate but where a human is in charge of the driving task	☐	☐	☐	☐	☐

... do most of the driving tasks, but in some circumstances asks the human to take over	☐	☐	☐	☐	☐
... do all driving tasks, and the human passenger is never allowed to take over or drive the vehicle.	☐	☐	☐	☐	☐

27. How desirable is it to have, by 2030, vehicles which do all of the driving task (and humans not allowed to take over at all) on some of the UK's public roads for the following vehicle types:

	Very desirable	Desirable	Neither desirable nor undesirable	Undesirable	Very undesirable
Freight vehicles	☐	☐	☐	☐	☐
Service vehicles (e.g. rubbish trucks)	☐	☐	☐	☐	☐
Private passenger vehicles	☐	☐	☐	☐	☐
Public passenger vehicles	☐	☐	☐	☐	☐

28. How likely do you think it is that, by 2030, vehicles which do all of the driving task (and humans are not allowed to take over any of the task) will be on some of the UK's public roads for the following vehicle types:

	Very likely	Likely	Neither likely nor unlikely	Unlikely	Very unlikely
Local bus	☐	☐	☐	☐	☐
Private car	☐	☐	☐	☐	☐
Taxi	☐	☐	☐	☐	☐
Truck (e.g. HGV)	☐	☐	☐	☐	☐
Van	☐	☐	☐	☐	☐

29. When do you think that the majority of **passenger** vehicles in the UK will be able to do all of the driving task without any human interference?

30. When do you think that the majority **freight** vehicles in the UK will be able to do all of the driving task without any human interference?

31. Do you think that vehicles that can do all of the driving task without any human interference will be:

Page 5: Agree/disagree statements

You will now be asked about your level of agreement with a series of statements which are in three blocks: first, general statements about society, second, about transport, and third about automated vehicle technologies.

Read the statement, and select one of the five options: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

32. Please read the following statements and note the degree to which you agree or disagree with it

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Those who get ahead should be taxed more to support the less fortunate	☐	☐	☐	☐	☐
In this country, the brightest should make it to the top	☐	☐	☐	☐	☐
I think there should be more discipline in the youth of today	☐	☐	☐	☐	☐
I support government efforts to get rid of poverty	☐	☐	☐	☐	☐
Cooperating with others rarely works	☐	☐	☐	☐	☐
I would support the introduction of compulsory National Service	☐	☐	☐	☐	☐

Censorship of films and magazines is necessary to uphold moral standards	☐	☐	☐	☐	☐
The future is too uncertain for a person to make serious plans	☐	☐	☐	☐	☐
There is no use in doing things for people, you only get it in the neck in the long run	☐	☐	☐	☐	☐
In a fair system, people with more ability should earn more	☐	☐	☐	☐	☐
People who are willing to work hard should be allowed to get on	☐	☐	☐	☐	☐
If people in this country were treated more equally, we would have fewer problems	☐	☐	☐	☐	☐

33. Please read the following statements and note the degree to which you agree or disagree with it

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
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In the end, all transport-related environmental problems will be resolved by technological solutions	☐	☐	☐	☐	☐
It is important that people are able to own their own car	☐	☐	☐	☐	☐
Individual mobility needs trump safety concerns in transport	☐	☐	☐	☐	☐
The proper authorities show sufficient responsibility for safety in the transport sector	☐	☐	☐	☐	☐
New technology will solve the problems within transport	☐	☐	☐	☐	☐
The environmental impact of the transport system worries me	☐	☐	☐	☐	☐
More money should be spent on public transport to ensure everyone can access what they need	☐	☐	☐	☐	☐

Sometimes the transport companies have to prioritise the economy before safety to be able to do business	☐	☐	☐	☐	☐
There is no use worrying about the environmental damage from transport, I can do nothing about it anyway	☐	☐	☐	☐	☐
Appropriate measures to improve safety in transport are often stopped if they are too costly	☐	☐	☐	☐	☐
I trust the experts when they tell me what mode of transport is the safest	☐	☐	☐	☐	☐
There is no point trying to change the transport system because activism never works	☐	☐	☐	☐	☐

34. Please read the statements below, and note the degree to which you agree or disagree with it

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I don't want to share an automated vehicle with people I don't know	☐	☐	☐	☐	☐
Some people will take advantage of automated technologies if they are not well regulated	☐	☐	☐	☐	☐
People should be able to own automated vehicles as they do cars today	☐	☐	☐	☐	☐
The development of automated vehicles will stimulate the UK economy and help many people's lives	☐	☐	☐	☐	☐
The public need to be educated about the benefits of automated vehicles	☐	☐	☐	☐	☐
I would only use an automated vehicle if I owned it myself	☐	☐	☐	☐	☐

Automated vehicles will make the transport system more equitable by allowing people without a driver's licence to travel by car	☐	☐	☐	☐	☐
It would be best if automated vehicles were shared ownership rather than privately owned	☐	☐	☐	☐	☐

Page 6: Thanks

Thank you for completing this survey!

We will now design a second survey, which will build upon the answers that you, and others, provided to these questions.

You will be invited to participate in the second survey very soon!

Please click [here](#) to end the survey.

Key for selection options

3 - 1. What gender do you identify with?

Female
Male
Neither
Other

7 - 5. In 2019, what is your annual household income before tax (including income from salaries, benefits, pensions, allowances etc.)?

Up to £5,199
£5,200 to £10,399
£10,400 to £15,599
£15,600 to £20,799
£20,800 to £25,999
£26,000 to £31,199
£31,200 to £36,399
£36,400 to £51,999
£52,000 and above

9 - 7. What is your highest level of educational attainment?

Higher degree or postgraduate (e.g. M.A., MSc., M.Ed, Ph.D. etc)
First degree level qualification, or degree-level equivalent, including foundation degrees; such as PGCE
Diploma in higher education; HNC; HND; Nursing or Teaching qualification

(excluding PGCE)

A level; AS level; NVQ level 3; GNVQ Advanced; or equivalent

GCSE grade A* - C; O level; CSE grade 1; NVQ level 2; GNVQ intermediate; or equivalent

GCSE grade D – G; CSE below grade 1; NVQ level 1; GNVQ Foundation level; or equivalent

None of these

11 - 9. How many people aged under 18 live in your house all or most of the time?

0

1

2

3

4

5+

12 - 10. How many people aged 18 and over live in your house all or most of the time, including you?

1

2

3

4

5+

13.a - 11a. How old were you when you FIRST obtained a full licence?

16 years old

17 years old

18 years old

19 years old

20 years old

21 years old

22 years old

23 years old

24 years old

25 years old

26 years old

27 years old

28 years old

29 years old

30 years or older

14.a - 12a. How many times have you been involved in a road accident, no matter how minor, in the last 3 years?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8+

15.a - 13a. How many vehicles (cars, motorbikes, mopeds) are owned or leased by people living in the same house as you all or most of the time?

- 1
- 2
- 3
- 4+

16 - 14. In January 2020, how did you commute to work or school all or most of the time?

- Underground, metro, light rail, tram
- Train
- Bus, minibus or coach
- Motorcycle, scooter or moped
- Car or van
- Taxi/minicab
- Bicycle
- By foot
- I didn't commute (i.e. worked/ studied from home)
- Other

17 - 15. To how many destinations do you travel on a regular weekday? (Note: if you travel directly to work in the morning and on the way home stop at the supermarket, you travel to three destinations: work, supermarket, home)

- 0
- 1

- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10+

18 - 16. On average, how many miles do you think you travel on a regular weekday?

- 0-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- 31-35
- 36-40
- 41-45
- 46-50
- 51-55
- 56-60
- 60+

19 - 17. How many long-distance (50+ mile) car trips do you do per year?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

13
14
15
16
17
18
19
20+

25 - 23. Which of these terms have you heard used most often?

Connected and autonomous vehicles
Autonomous vehicles
Automated vehicles
Driverless vehicles
Self-driving vehicles
Robotic vehicles
None of these

26 - 24. Do you have any experience driving a car with 'driver assist' features (e.g. automatic breaking, lane assistant, adaptive cruise control)?

I have a lot of experience
I have a little experience
I have no experience

31 - 29. When do you think that the majority of passenger vehicles in the UK will be able to do all of the driving task without any human interference?

By 2025
By 2030
By 2050
By 2070
After 2070
Never

32 - 30. When do you think that the majority freight vehicles in the UK will be able to do all of the driving task without any human interference?

By 2025
By 2030
By 2050

By 2070
After 2070
Never

33 - 31. Do you think that vehicles that can do all of the driving task without any human interference will be:

Mostly owned by individuals

Mostly owned by private companies and leased to individuals

Mostly owned by councils/governments and leased to individuals

Mostly owned by companies and used by individuals when needed (shared with other people)

Mostly owned by councils/governments and used by individuals when needed (shared with other people)
