



CAV public acceptability dialogue

Engagement report – Appendices

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Contents

Appendix A – Methodology	4
1. Rationale for overall process.....	4
2. Research Questions.....	5
3. Methods used	7
4. Limitations.....	12
5. Dialogue process design	13
6. Recruitment and achieved sample.....	52
7. Data capture.....	54
8. Analysis and reporting approach.....	58
Appendix B – Oversight Group	60
1. Terms of Reference for Oversight Group	61
Appendix C – Specialist Group	64
1. Specialist group brief	65
2. Attendance at workshops	67
Appendix D – Participant suggestions	69
Appendix E – Guiding principles	73
1. Abergavenny	73
2. Glasgow	74
3. Leeds.....	75
4. Millbrook.....	77
5. Milton Keynes.....	78
Appendix F – Quantitative data results	80
1. Voting	80
2. Lenses	84

Appendix A – Methodology

1. Rationale for overall process

The objectives for the project and the dialogue are included in the main body of the report. The dialogue is intended to inform Government strategy and regulations, development of the technology itself and to support the planning of future engagement. To achieve these objectives the dialogue needed to develop coherent conclusions based on the following:

1. Participants' current understanding of, and engagement with, the different terms used to describe the technology.
2. Participants' current knowledge levels of the technology.
3. Participants' perceptions, aspirations, and concerns on the development and use of vehicles.
4. How and in what circumstances participants' aspirations and concerns regarding CAVs might be addressed?
5. What circumstances make people more or less amenable to ride-sharing?

While the first two objectives could potentially be addressed using qualitative techniques, the other three required a deliberative approach in which participants are given information in order to help them develop their understanding of the topic to enable meaningful discussion.

Public dialogue provides in-depth insight into the views, concerns and aspirations of a broadly representative sample of the population. This allows decision makers to develop policy informed by public views. We designed reflective and evolving processes, with each stage building on the last.



This approach enabled us to capture unprompted views before providing a mix of opportunities to support different learning styles. It gave participants time to build their knowledge and gave them access to specialists (in workshops 2 and 3) who could answer their questions.

The approach is built upon Sciencewise Guiding Principles for public dialogue. The Sciencewise programme is run in a partnership between UK Research and Innovation (UKRI), the Department for Business, Energy and Industrial Strategy (BEIS) and Involve.



2. Research Questions

Below we outline the questions to be answered for each of the research objectives:

1. Explore with participants their current understanding of, and engagement with, the different terms used to describe the technology (e.g. connected/autonomous vehicles, driverless cars, highly automated vehicles, self-driving cars etc)
 - a) What language do participants currently use to describe the technology?
 - b) To what extent have they heard of the different terms?
 - c) What do individuals understand by the different terms? What immediate thoughts/reactions, if any, do they evoke?
2. Explore with participants their current knowledge levels of the technology and their uninformed perceptions of the benefits/disbenefits.
 - a) How knowledgeable are people about the technology and how knowledgeable do people feel they are about the technology?
 - b) What are participants' current experiences of semi-autonomous features in vehicles e.g. automatic parking, lane assist, automatic braking etc.?
 - c) What are participants' perception of when they think this technology (meaning Level 3 and beyond) may be available?
 - d) What are their current perceptions of the benefits/disbenefits of the technology?
 - e) Where are they getting their current knowledge and perceptions from e.g. media?
3. Gain understanding of participants' perceptions, aspirations and concerns on the development and use of vehicles at each level of automation and their reactions to different potential scenarios of how the technology could be deployed and the stages leading to full autonomy.
 - a) There is a debate within industry about which level ought to be aimed for and different manufacturers are aiming for different levels of automation. What are people's reactions to the differing levels of autonomy? What would they be willing to accept/use? What are the benefits/disbenefits of each level?
 - b) Does the type of vehicle that is automated impact on participants' attitudes? For example, is automation viewed more or less favourably in public transport vehicles than it is in privately owned vehicles? Why is this?
 - c) Does the context of use impact on participants' attitudes? For example, is automation viewed more or less favourably when used in urban areas or in rural areas? Why is this? What other contextual



factors affect participants' attitudes and why?

- d) What are the parameters of public acceptability? An exploration of attitudes towards a number of possible implications, both positive and negative, of CAVs should be undertaken. These include, but are not limited to:
- Road safety improvements due to AVs eliminating human error
 - Reduced congestion due to vehicles being able to travel closer together and more ride-sharing
 - Increased accessibility for people who cannot currently drive
 - Positive environmental impacts if all AVs are electric
 - Increased productivity in the population if people can now work on their daily commute
 - Cybersecurity challenges due to the risk of hacking
 - Data privacy and data collection issues around protection of personal data
 - Labour market impacts due to possible job losses as a result of automation
 - Impact on personal freedoms – if autonomous vehicles become so much safer will it be ethical to let people drive?
 - Ethical concerns about the decisions an AV makes in a collision scenario
 - Loss of abstract or intangible associations with driving (e.g., “freedom”, “control”, “rite of passage” etc.)
 - Impact on other road users (e.g. pedestrians, cyclists, wheelchair users etc.)
 - Impact on landscape - urban, rural?
- e) What trade-offs do participants make between the possible positive and negative implications of automation? For example, are concerns about loss of privacy due to data sharing assuaged by the knowledge that it will result in a better journey?
- f) What are the participants' attitudes/reactions to the potential scenarios? How do these scenarios affect participants' attitudes towards automation? E.g. in a 'mobility as a service' type scenario where car ownership declines, will people cease to bond with their cars or will this bond endure and, potentially, affect public acceptability?
- g) How do people's attitudes change as people learn more about the technology?
4. Develop an understanding of how and in what circumstances any public concerns regarding CAVs might be addressed.
- a) How can we solve the potential problems they identify in relation to CAV?
- b) What would relieve the concerns identified above?



- c) What are the best ways to communicate with the public about CAV?
- 5. What circumstances make people more or less amenable to ride-sharing?

3. Methods used

As outlined in the main report, we adopted a multi-stage design in five locations using qualitative, quantitative and deliberative techniques. We also gave participants in three locations the opportunity to experience emerging technologies for themselves – an innovative method used to make the discussions feel more tangible.



Figure 1: Overview of dialogue process

3.1. Preprogramme survey

165 participants completed a pre-programme survey as part of the recruitment process. The questionnaire consisted of closed questions for ease of use, and covered aspects of the Sciencewise dialogue objectives. We used the data collected, along with the demographic and attitudinal information we collected through the recruitment process, to ensure mixed groups in the workshops and to support our analysis. The full questionnaire follows below:

Question 1

Fully driverless or self-driving vehicles are not yet available for everyday use. How much, if anything, would you say you know about these types of vehicle?

Please put a mark next to the one that most applies to you:

Hadn't heard about them before now	
Hardly anything but I've heard of them	
A little	
A fair amount	
A lot	
Don't know	

Question 2

Although fully driverless or self-driving vehicles are not yet available for everyday use, some cars available today have self-driving features. Which



of these, if any, have you heard of, and have you used any of them yourself?

Please put a mark next to the ones that apply:

Feature	Heard of it	Used it myself
Lane assist: detects if the driver unintentionally leaves their lane and adjusts the steering accordingly		
Automated parking: where the car parks itself without driver involvement		
Automatic Emergency braking that detects if impact is imminent and applies brakes automatically		
Adaptive cruise control where the car automatically adjusts the speed based on the traffic ahead		
In-car Wi-Fi connection		
Remote control drive or remote control parking. This when driving is controlled remotely using a mobile device outside the car		
Traffic Jam assistant for use in slow-moving traffic. The vehicle automatically drives within its lane, keeping safe distance from the vehicle in front		

Question 3

To what extent do you think that this technology will have a positive or negative impact on society?

Very positive	
Fairly positive	
Neither positive or negative	
Fairly negative	
Very negative	
Don't know	

**Question 4**

To what extent do you think that this technology will have a positive or negative impact and you and your family?

Very positive	
Fairly positive	
Neither positive or negative	
Fairly negative	
Very negative	
Don't know	

3.2. Workshops

We conducted 15 workshops in total – with three workshops occurring in each of five locations: Abergavenny, Glasgow, Leeds, Millbrook, and Milton Keynes.

Leeds, Milton Keynes and Millbrook were chosen for their proximity to live trials, so that participants could experience the technology as part of their deliberative journey. Glasgow and Abergavenny were included to ensure representation of the devolved administrations. Across these five locations it was possible to recruit urban, suburban, town and rural residents to ensure a good mix of experiences in the overall sample.

Workshop 1 – evening

Participants were given packs which contained their personal voting key pad and post-it notes which enabled us to track individual views over the course of the dialogue. They were split into three groups, which they would remain in for the rest of the dialogue process. Each group was created to have a mix of people with different demographics (by age, regularity of driving etc) to encourage deliberation between people with different backgrounds and experiences. The first workshop was focussed on sharing introductory information with participants, and understanding their baseline knowledge and perceptions of CAVs.

Table 1: Participants attending workshop 1 in each location

Location	Date	Participants attending
Abergavenny	11/10/2018	32
Glasgow	09/10/2018	34
Leeds	16/10/2018	33
Milton Keynes	01/10/2018	30
Millbrook	03/10/2018	32



Workshop 2 – full day

Participants were given their personalised material packs, and split into the same three groups as they were in Workshop 1 to ensure consistency for analysis/reporting. This workshop delivered on the largest share of the research objectives, focussing on participants' attitudes towards, and aspirations for, CAVs.

In all locations except Glasgow, one or two participants did not attend. Participants who informed us they were not able to attend due to unforeseen personal circumstances were invited to attend the final workshop.

Table 2: Participants attending workshop 2 in each location

Location	Date	Participants attending
Abergavenny	10/11/2018	31
Glasgow	27/10/2018	34
Leeds	10/11/2018	31
Milton Keynes	20/10/2018	29
Millbrook	03/11/2018	31

In three locations, some participants were given an experience of self-driving technology:

- Leeds – 9 participants had an experience in a self-driving simulator
- Millbrook – All but one participant (who chose not to participate) had an experience in a highly automated car
- Milton Keynes – All participants had an experience in a self-driving pod

We considered giving a subset of participants in each location an experience of CAVs, but we were concerned they may influence the opinions of other group members who did not have the experience. Instead, we chose 3 locations where participants would experience CAV technology. Participants in Scotland and Wales did not experience a CAV trial as it would have resulted in a much larger commitment as they would have had to travel long distances to the sites. This also meant we could compare the views of those who did or did not have exposure to CAV technology.

We chose to incorporate the CAV experiences in Workshop 2 because:

- Trial experiences last 10-20 mins per person, so integrating with workshop justified the time/effort/cost required to attend and minimised down time while queuing;
- It minimised recruitment bias as not requiring people to commit to four dates;
- It was cost-effective (reduced expenses / incentive costs);
- It ensured that if a trial had to be cancelled (e.g. due to weather) DfT would still get value from the day as other data is collected



- Using a modular design helped to mitigate order effects (see below)

Including these experiences meant that, in these workshops, some participants missed some of the discussions, and some discussions had less time allocated to them than in the other locations. More detail of what discussions were affected by experiences follows in next section: Dialogue Process Design.

Workshop 3 – half day

Participants were given their personalised material packs, and split into the same three groups as before. The third workshop was focussed on exploring participants' views on shared-ownership and shared-occupancy, and developing sets of guiding principles. There were no further drop-outs at this stage.

Table 3: Participants attending workshop 3 in each location

Location	Date	Participants attending
Abergavenny	01/12/2018	31
Glasgow	24/11/2018	34
Leeds	08/12/2018	31
Milton Keynes	24/11/2018	30
Millbrook	01/12/2018	32

3.3. Homework

Between the workshops, we asked participants to do some simple homework. This involved using their programme journal to record the following:

- Any references to CAVs in their daily lives (things they notice, not seek out) through conversations, the media, or other sources, and their reaction to them. This will enable us to learn more about to what extent participants are influenced by incidents around CAVs (i.e. accidents etc).
- Reflections they have between workshops.
- Information about the regular journeys they make, and the community in which they live, and any particular challenges for introducing CAVs to their local area.

The majority of participants completed their homework and were keen to discuss their conclusions in the workshops.

3.4. Interviews

Data was also collected through interviews conducted after Workshop 3. At the third workshop, we asked for 5 volunteers to be interviewed a week later. The telephone interviews were 20 minutes long. The interview questions were mainly focussed on exploring sharing in more depth. A total of 5 participants



from each location were interviewed. The interview questions are displayed below:

Interview questions

1. First, could you tell me what kind of transport do you usually use at the moment? What type of journey do you usually make with that transport (i.e. long commute, running errands / school run etc) and who with?
2. Now, I'd like you to think back to before you joined this project. Have your views on self-driving vehicles changed at all over the course of the workshops? If so, how?
3. Do you think you would use some sort of self-driving vehicle in the future? Why / why not? If yes what kind of vehicle (privately owned, self-driving public transport etc), and in what circumstances / what type of journey?
4. As you may have discussed during the workshops, self-driving technology may make it easier to share vehicles. What do you understand sharing to mean in relation to self-driving vehicles, and what do you think to the idea of sharing vehicles with people you don't know?
 - i. If people wouldn't want to share vehicles, ask: "is there anything that might make you willing to share?" If not, why not?
 - ii. If they give an answer such as "if it was cheaper" ask "how much cheaper would it need to be? Or "if it was a shorter journey time, ask: "how much shorter".
5. Are there any topics that haven't been covered in the workshops that you would have liked more time to discuss?
6. Do you have any other thoughts to share with us about self-driving vehicles?

4. Limitations

The limitations of our chosen approach are summarised in the main report and set out below in more detail.

We used a range of stimulus materials, specialists, and activities to enable participants to engage with the dialogue, each of which required different data collection processes and may have influenced participant views. The materials and activities were reviewed by the Oversight Group and Specialist Group to minimise the risk of bias. The potential influence of stimulus materials and activities is discussed further in Chapter **Error! Reference source not found.** of the main report. We offered many participants the opportunity of an experience they would not normally access in their daily lives (not offered during recruitment), this could mean that overall they were more positive



towards the subject.

During recruitment, potential participants were told the dialogue was about 'the future of transport'. We avoided mentioning autonomous vehicles specifically, to try to attract a wider audience, but nonetheless participants may have been more interested in transport than the general public. Financial incentives were also used to encourage wider participation.

Due to the human element involved in any engagement process it is possible for bias to arise in data collection, analysis, and reporting. The dialogue delivery contractor (Traverse) regularly considers conscious and unconscious bias in its training and personal development. For this project, early in the process, the team met to discuss their conscious biases, to identify any actions required to minimise the risk of bias in facilitation, data processing, and reporting. Several people have been involved in analysis and reporting to mitigate the risk of bias.

The dialogue was a qualitative engagement exercise, with a sample of 158 people from across the UK. Due to the sample size, and the experiences people were exposed to, the findings are not generalisable, and should be considered reflective rather than representative of any wider community or population, particularly when interpreting graphs and demographic differences.

Clear differences in views between the five dialogue locations are clearly stated in the report. However, if there were no obvious differences in views, this is not referenced. The relatively small size of each sub-group meant any differences have to be large to be notable. Any differences in views between locations should not be interpreted as geographical trends, as they could be attributed to other variables, such as differing local samples, or location specific experiences.

News and media coverage of CAVs over the duration of the dialogue was outside the research team's control. Instead, we monitored participants' exposure to stories through a homework task. We found there were no noteworthy stories during the dialogue.

This report is a snapshot in time. People's views (both positive and negative) may change significantly in the future; particularly given the nature of the technology, and the potential for advancements in other technologies (like mobile phones) to influence attitudes. While efforts were made to future-proof these findings, for example by exposing people to the emerging technology, it will be important to refresh this work as the technology becomes more familiar.

5. Dialogue process design

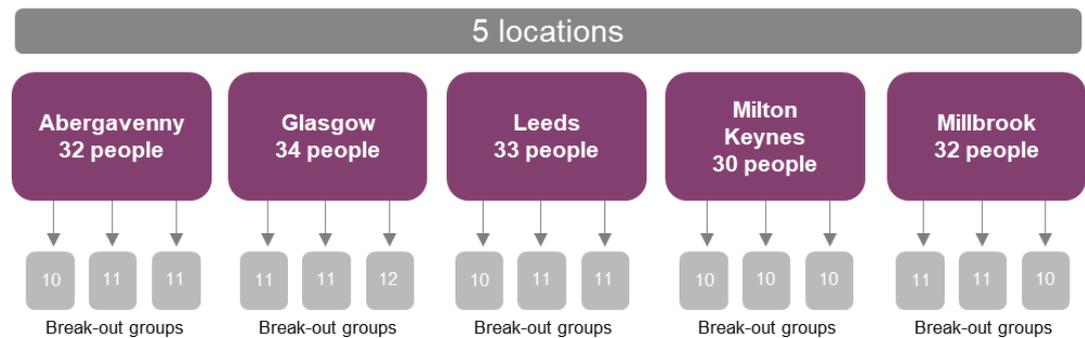
5.1. Number of facilitators

At each location, participants were divided into three groups of 10-12 people. Groups worked together in separate areas or rooms to aid discussion and quality of recording.



Each location had one lead facilitator and three table facilitators (one for each break out group). The number of participants in each location shown in the diagram below are based on the first workshop, which had the largest number of participants.

Table 4



5.2. Choice of tools

We worked with the Oversight Group (see Appendix B) to design the workshops.

Some features were present at every workshop. These include:

- **Eating together:** We have learned from experience that eating together as a group makes a significant difference to the level of investment in a process, and participants' willingness to trust each other. Trust is critical to good dialogue to enable an open sharing of views.
- **Presentation of programme objectives and workshop agenda:** It is important for participants to remain connected to what they are involved in and what they will be contributing to.
- **Programme journal:** Participants were invited to use their journal outside the sessions to note any reflections they have, and also during sessions to note reflections they may not want to share with the group. It was made clear that these journals would be collected at the end of the programme.
- **Keypad voting and tracker questions:** We gave each participant the same voting keypad throughout to track their opinions over time. We repeated some questions to track changes of opinion, and also added new questions each session. Comment cards were given out with each keypad and participants were asked to note down the reasons for their choice each time they voted.
- **Coloured post-its:** Each participant was given a specific colour of post-it which could be attributed to them. This enabled us to capture attributable written data throughout the events.



5.3. Attendance of external parties at each workshop

Members of the Oversight group (Appendix B), Specialist group (Appendix C), CCAV and DfT attended each workshop in each location.

Abergavenny	
11 October	
Roger Hoggins	Monmouthshire County Council
10 November	
Simon Shapcott	CCAV
Cath Fallon	Monmouthshire County Council
Graham Pankhurst	UWE
Jonathan Flower	UWE
Phil Morgan	Cardiff University
1 December	
Claire Gregory	CCAV
Kate Williams	Monmouthshire County Council
Graham Parkhurst	UWE
Phil Morgan	Cardiff University

Glasgow	
9 October	
Steve Mann	CCAV
Patrick Corcoran	DfT
27 October	
Hannah Cook	CCAV
Shuo Li	Newcastle University
Paul Cowie	Centre for Rural Economy
Steve Mann	CCAV
24 November	
Shuo Li	Newcastle University
Steve Mann	CCAV
Patrick Corcoran	DfT

Leeds	
16 October	
Dr Paul Cowie	Centre for Rural Economy
Steve Mann	CCAV



10 November	
Dr Paul Cowie	Centre for Rural Economy
David Hamson	CCAV
Ben Payne	CCAV
Prof Natasha Merat	ITS Leeds
Sam Chapman	The Flow
Chris Tennant	LSE
8 December	
Simon Shapcott	CCAV
Rachel Pinto	DfT
Yee Mun Lee	ITS Leeds
Sam Chapman	The Flow

Millbrook	
1 October	
Jessica Uguccioni	Disabled Person's Transport Advisory Committee
Steve Robinson	Sciencewise
Matt Eglinton	CCAV
3 November	
Patrick Corcoran	DfT
Matt Eglinton	CCAV
Kimmae Payn	CCAV
Lucy Yu	Five AI
Rob Gifford	Independent
Sam Chapman	The Flow
1 December	
Michael Dnes	Road Investment Strategy 2
David Webb	CCAV
John Baverstock	DfT
Lucy Yu	Five AI
Prof Gary Burnett	University of Nottingham



Milton Keynes	
3 October	
Fran McMahon	Road Tech
Catherine Lovell	CCAV
20 October	
Pauline Morgan	Road User Licensing, Insurance and Safety
Fran McMahon	Road Tech
David Webb	CCAV
Rob Gifford	Independent
Dr Yee Mun Lee	ITS Leeds
Prof Gary Burnett	University of Nottingham
24 November	
Fran McMahon	Road Tech
David Hamson	CCAV
Richard Slade	CCAV
Dr Rachel Lee	Living Streets
Dr Yee Mun Lee	ITS Leeds



5.4. Workshop overviews and process plans

Workshop 1

Overview (objectives 2.3.1, 2.3.2, part 2.3.3)

This workshop focused on understanding participants' initial reactions to CAVs, what they saw as pros and cons, and what they understood by different terminology. This session also provided participants with some initial information about CAV technology and features. Below is an outline of the activities. A more detailed description of the different activities can be found in Workshop 1 Process Plan below.

Activity	Rationale for activity
Group session - Registration and dinner with terminology cards Participants had dinner together while filling out terminology cards.	To ensure participants are comfortable and interact with each other on a relaxed basis from the very beginning. To understand what individuals understand by different terms.
Plenary session - Introduction to the dialogues	To clearly communicate clear and specific objectives with the participants.
Group session - Visions of the future Each participant was given a piece of foam board and asked to stick on it three pictures that reflect their vision of the future with self-driving vehicles and write the words that they would use to describe this kind of technology. Participants then described to the group the future they see and were encouraged to notice / observe the	Mood boards worked as a creative way for participants to clearly express their immediate thoughts and reactions, how they understood the idea of CAVs and when they thought autonomous technology would become available. It was also an inclusive way of making participants voice their thoughts and feel able to contribute to the discussion from the very beginning.



language they use.	It was noted what language participants used to describe the technology.
Group session - Information about CAVs Participants took part in a discussion about where and when they had heard of CAVs.	To understand where participants got their information about CAVs from.
Plenary session - Characteristics of the technology Each participant was given a short quiz sheet and asked to find a partner and explore four stands of information about CAVs to find the answers to their quiz sheet. The posters covered the following topics: Poster 1 = Automation Poster 2 = Connectivity Poster 3 = How they interact. By this poster, there was a laptop playing a video (Rush Hour video) Stand 4 = Sharing	To allow time for participants to become informed in the area and be able to reflect on their own and others' views; and explore issues in depth with other participants. To provide participants with information and views from a range of perspectives, and encourage access to information from other sources, to enable participants to be adequately informed. To understand how knowledgeable people are/ what people understand about the technology and the different attributes or characteristics.
Group session - Pros and cons Each participant had their own personal post-its and wrote down pros and cons with the technology.	To understand what people's reactions were to the differing levels of autonomy. To understand the pros/cons of each level. To be able to track attributable data.



Plenary session - Tracking vote - reactions to the characteristics	To be able to track attributable data. To understand what they would be willing to accept/use. To understand how people's attitudes change as people learn more about the technology.
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Process Plan

DfT and [Sciencewise](#) are funding a project to run a series of public dialogue workshops to explore the public acceptability of connected and automated vehicles (CAVs). Traverse is an independent consultancy contracted to design and run the dialogue events. There will be 3 dialogue events, reconvening the same 30 participants, in 5 locations across the UK.

This document sets out each stage of workshop 1 and will form the basis of a combined discussion guide and pro forma for facilitators. The main activities are outlined below alongside the research questions they are intended to address. The workshops in this stage will address the research questions 1a to e, 2a and set the benchmark for 2g:

1. Explore with participants their current understanding of, and engagement with, the different terms used to describe the technology (e.g. connected/autonomous vehicles, driverless cars, highly automated vehicles, self-driving cars etc)

- a) What language do participants currently use to describe the technology?
- b) What do individuals understand by the different terms? What immediate thoughts/reactions, if any, do they evoke?
- c) How knowledgeable are people/what do people understand about the technology and the different attributes or characteristics, for example digital connectivity, driver-assistance, self-driving (including input from driver in certain circumstances, and no input from driver).
- d) Where are they getting their current knowledge and perceptions from e.g. media?
- e) What are participants' perception of when they think this technology (meaning Level 3 and beyond) may be available?



2. Gain an understanding of participants' perceptions, aspirations and concerns on the development and use of vehicles.

- a) What are people's reactions to the different characteristics of the technology? What would they be willing to accept / use? What do they see as the pros and cons of the technology?
- g) How do people's attitudes change as people learn more about the technology?

Outline approach

Time	Activity
6.30pm	Registration and dinner
7.00pm	Plenary - introduction to the dialogues
7.15pm	Group session – visions of the future
7.45pm	Group session – information about CAVs
8.05pm	Break
8.15pm	Plenary – characteristics of the technology
8.50pm	Group session – pros and cons
9.20pm	Plenary and tracking vote - reactions to the characteristics
9.30pm	Plenary – thank you and close



Detailed process plan

Timing	Activity / questions	Materials	Research questions / Sciencewise Principles
6.30pm PLENARY	Registration and dinner On registration, participants are given four cards, each of which has a term for CAVs printed on it, and are asked to write on each card whether they have heard of the term, and what they understand by it. These are collected up when they divide into groups (each card will have their name on).	Participant pack Terminology cards	RQ1: What do individuals understand by the different terms?
7.00pm PLENARY	Introduction to the dialogues. Welcome to the dialogue programme, overview of objectives, ground rules, introduction to the team, orientation to participant pack. Short presentation by policy specialist or a video from a policy specialist to thank the participants and explain what will happen with the results of the dialogue.	Slide pack Video from policy specialist	<i>Sciencewise principle: Have clear and specific objectives, which are clearly communicated with the participants</i>
7.15pm GROUP SESSION	Visions of the future. Participants will divide into groups of 10 and move into different rooms or areas. Each room/area of the room will have a table covered with different photographs. Each participant is given a piece of foam board and asked to stick on it three pictures that reflect their vision of the future with self-driving	Photographs	RQ1: What language do participants currently use to describe the technology? What do individuals understand by the different terms? What immediate



	<p>vehicles and write the words that they would use to describe this kind of technology.</p> <p>Participants then describe to the group the future they see and are encouraged to notice / observe the language they use. The facilitator will refer back to the cards they filled in at dinner (if different) and ask them what their reactions to the different terms are. The facilitator will also use the images to ask participants when they see this technology becoming available and how commonplace it will be.</p>		<p>thoughts/reactions, if any, do they evoke?</p> <p>What are participants' perceptions of when they think this technology may be available?</p>
<p>7.45pm</p> <p>GROUP SESSION</p>	<p>Information about CAVs.</p> <p>The facilitator will ask participants if they have heard about CAVs and, if so, where (media, what type of media, through friends, etc). They will introduce participants to their programme journal and ask them to create a page where they note down anything they hear/see about CAVs between the workshops, and where they heard/saw it.</p>		<p>RQ1: Where are they getting their current knowledge and perceptions from e.g. media?</p>
<p>8.05pm</p>	<p>Break</p>		
<p>8.15pm</p> <p>PLENARY</p>	<p>Characteristics of the technology.</p> <p>The plenary discovery session will have three sets of four posters in the room. Each participant will be given a short quiz sheet and asked to find a partner and explore the four stands to find the answers to their quiz sheet. The posters cover the following topics:</p>	<p>Characteristics of CAVs posters</p> <p>Supporting videos</p>	<p><i>Sciencewise principle: Be deliberative - allowing time for participants to become informed in the area; be able to reflect on their own and others' views; and explore</i></p>



	<p>Poster 1 = Automation –</p> <p>Poster 2 = Connectivity.</p> <p>Poster 3 = How they interact. By this poster, there will also be a laptop playing a video (Rush Hour video)</p> <p>Stand 4 = Sharing</p> <p>Participants will be asked to fill in the quiz sheet, and then the lead facilitator will go through the answers in plenary.</p>	<p>Quiz sheet</p>	<p><i>issues in depth with other participants.</i></p> <p><i>Sciencewise principle: Provide participants with information and views from a range of perspectives, and encourage access to information from other sources, to enable participants to be adequately informed</i></p> <p>RQ1: How knowledgeable are people/ what do people understand about the technology and the different attributes or characteristics?</p>
<p>8.50pm</p> <p>GROUP SESSION</p>	<p>Pros and cons</p> <p>Each group will have 3 pieces of flip chart paper, one for pros, one for cons, and one for questions. To start with, participants will work as individuals using coloured pens and post-its to add their ideas to the flip charts.</p> <p>Then the group will work together with the facilitator to review their ideas, and the facilitator will draw attention to the posters used in the previous session to remind them about different aspects of the technology. They will review the post-its and</p>		<p>RQ2: What are people's reactions to the differing levels of autonomy?</p> <p>What are the pros/cons of each level?</p>



	synthesize into themes, and end the session with their group's "big questions" to take into the next workshop.		
9.20pm PLENARY	<p>Reaction to the characteristics.</p> <p>Participants will vote with their keypads to capture their reactions to the pros and cons of CAVs. They will note down the reasons why on their comment card.</p>	<p>Tracking vote (PowerPoint slides and keypads)</p> <p>Comment cards</p>	<p>RQ2: What are people's reactions to the differing levels of autonomy? What would they be willing to accept/use?</p> <p>What are the pros/cons of each level?</p> <p>How do people's attitudes change as people learn more about the technology?</p>
9.30pm PLENARY	<p>Thank you and close.</p> <p>Participants will be reminded of the details of the next event, and given their homework, which is to:</p> <ul style="list-style-type: none"> a) Make a note of any information they hear about CAVs and where they heard it. b) Google some of the different terms or chat with friends and family about them and note down anything they find interesting. c) Ask their friends and family what they think about ride-sharing. <p>Participants will also be asked to fill in an evaluation form.</p>	<p>Information slides for next event and homework</p>	



Workshop 2

Overview (objectives 2.3.3 and part of 2.3.4)

Three specialists attended this workshop in each location, and spent time with participant groups, answering their questions, and discussing some of the key concerns and ideas that were raised in Workshop 1.

This workshop also explored future scenarios with participants – presenting different world views (one where not much had changed, one where CAVs were partially introduced, and one where CAVs were the norm). Following on from these discussions, participants were asked to think about what trade-offs they might be willing to make, and what conditions they would want in order to find CAVs acceptable.

Glasgow and Abergavenny had a full day workshop without any exposure to CAV technology. Participants at the other three locations (Leeds, Milton Keynes and Millbrook) got to experienced different CAV technologies:

- one group experienced a simulation (Leeds);
- one a low speed pod (Milton Keynes); and,
- and one an autonomous vehicle (Millbrook).

To facilitate this, we hosted the second full-day workshop on-site at the trial locations.

All groups of participants ran through the same sessions and activities. In locations with experiences of CAV technologies, less time was given to the scenarios and the trade-off activities to allow time to debrief with participants after their experiences.

The table below outlines the activities undertaken during the second workshop, and the rationale. Sessions with specialist involvement are highlighted in purple.

Activities	Rationale for activity
<p>Registration and review of pros, cons, and questions from previous workshop</p> <p>The pros, cons, and questions from workshop 1 were put on tables for participants to review and chat to someone from a different group about their views.</p>	<p>To allow time for participants to become informed in the area; be able to reflect on their own and others' views; and explore issues in depth with other participants.</p>



Plenary - Welcome and overview of the day	To have clear and specific objectives, which are clearly communicated with the participants.
Plenary – Briefing for experiences	To have clear and specific objectives, which are clearly communicated with the participants.
Specialist Q&A Each specialist gave a 2-minute introduction covering who they are and what they think the most interesting “unknowns” are regarding the development of this technology. They moved between groups, and participants had 15 minutes for questions and discussions with each specialist.	To ensure the dialogue took place between the general public, policy makers, scientists (including publicly and privately funded experts) and other specialists and stakeholders.
Group session – Debrief In groups, participants were given the opportunity to share anything they learnt from talking to the specialists, and any ways in which their views have changed. One specialist joined each group – they did not participate in this session but listened to the conversation and were present to provide clarifications if needed.	To understand how people's attitudes change as people learn more about the technology. To allow time for participants to become informed in the area; be able to reflect on their own and others' views; and explore issues in depth with other participants.
Group session – Scenarios (part 1) In their groups, participants were presented with a range of lenses through which to view the scenarios [e.g. safety, ownership, environment, road sharing, privacy, etc.]. Individually they chose the five that are most important to them. Each group also had a large map, featuring an urban	To understand how people's values and preferences influence their attitudes towards automated vehicles. To ensure participants could more visually picture scenarios and easily engage with questions from different perspectives.



<p>area, a rural area, public transport services, emergency services, other public features such as a school, hospital, shopping centre etc. They also had small model people, vehicles, and buildings.</p> <p>The facilitator presented the group with a future scenario involving self-driving vehicles, asked the group to discuss it, and then asked them to decide whether they think this scenario would have benefits or dis-benefits in comparison to their situation today in each of their chosen categories. They also captured this individually on their slider sheets.</p> <p>Using these visual aids, the facilitators also introduced different facets of life [e.g. school run, commute, shopping trips] and character archetypes [e.g. parent, very old, disability] to help participants think through the various impacts.</p> <p>One specialist was with each group. They did not participate in the activity, but were there to answer questions or clarify things for participants.</p>	
<p>Group session – Scenarios (part 2 & 3)</p> <p>Two additional scenarios were introduced and discussed.</p>	<p>To understand how people's values and preferences influence their attitudes towards automated vehicles.</p> <p>To ensure participants could more visually picture scenarios and easily engage with questions from different perspectives.</p>
<p>Group session – Trade-offs and parameters</p> <p>Reflecting on their discussions around the scenarios, facilitators asked participants to identify the biggest barrier around the technology, and the biggest opportunity.</p>	<p>To understand what the parameters and trade-offs are, in terms of public acceptability.</p>



Facilitators then asked what “trade-offs” might make up for their “barrier” problem, or make them think twice about the value of the “opportunity” they identified.	
Plenary – Report back and tracking vote	To understand how people’s attitudes change as they learn more about the technology. To track attributable data.

The table below outlines when activities were interrupted by experiences in Leeds, Millbrook and Milton Keynes.

Activities	Leeds experience schedule	Millbrook experience schedule	Milton Keynes experience schedule
Registration and review of pros, cons, and questions from previous workshop		Participant experiences lasted throughout the day with each participant being in one autonomous vehicle for 10 minutes at a time before swapping with next participant.	
Plenary - Welcome and overview of the day			
Plenary – Briefing for experiences			
Specialist Q&A	Participants 1 – 6 have experience in simulator		
Break			
Group session – Debrief			First group have experience in low speed driverless pod
Group session – Scenarios (part 1)			Second group have experience in low speed driverless pod



Lunch			
Group session – Scenarios (part 2 & 3)	Participants 7- 9 have experience in simulator		Third group have experience in low speed driverless pod
Break			
Group session – Trade-offs and parameters			
Plenary – Report back and tracking vote			

Process Plan (Example from Leeds)

DfT and [Sciencewise](#) are funding a project to run a series of public dialogue workshops to explore the public acceptability of connected and automated vehicles (CAVs). Traverse is an independent consultancy, specialising in public engagement, who have been contracted to design and run the dialogue events. There will be 3 dialogue events, reconvening the same participants, in 5 locations across the UK. There will be approximately 30 members of the public attending the events in each location.

This document sets out each stage of workshop 2 and will form the basis of a combined discussion guide and pro forma for facilitators. The main activities are outlined below alongside the research questions they are intended to address.

The workshops in this stage will address the research questions 2a to g.

2. Gain an understanding of participants' perceptions, aspirations and concerns on the development and use of automated and connected vehicles:

- i. What are people's reactions to the different characteristics of the technology?
- ii. What would they be willing to accept/use?
- iii. What are the benefits/disbenefits of the different characteristics?

a) How do people's values and preferences influence their attitudes towards automated vehicles? For example:

- Preferences around car sharing vs personal attachment to cars



- Attitudes towards the environment
- Preferences around road-sharing (different users) and public vs private transport
- Views on justice and responsibility (in case of incident, who is accountable)
- Views on privacy and data security

b) Does the type of vehicle that is automated impact on participants' attitudes? For example, is automation viewed more or less favourably in public transport vehicles than it is in privately owned vehicles? In freight vs movement of people?

c) Does the geographical context of use impact on participants' attitudes? For example, is automation viewed more or less favourably when used in urban areas or in rural areas? Why is this? What other geographical factors affect participants' attitudes and why?

d) Do personal characteristics and demographics, life stage, family/household structure, type of road-user (e.g. driver, non-driver, cyclist, etc) affect participants' attitudes?

e) What are the parameters and trade-offs in terms of public acceptability? An exploration of attitudes towards a number of possible implications, both positive and negative, of CAVs should be undertaken. *[For example: road safety improvements, reduced congestion, increased accessibility for people who cannot currently drive, cybersecurity challenges due to the risk of hacking, etc]*

f) How do people's attitudes change as people learn more about the technology?



Outline approach

Time	Main group
9.30am	Registration and review of pros, cons, and questions from previous workshop
10am	Plenary - Welcome and overview of the day
10.10am	Plenary – Briefing for experiences
10.30am	Specialist Q&A
11.45am	Break
12.00pm	Group session – Debrief
12.30pm	Group session – Scenarios (part 1) Scenarios part 2
1pm	Lunch
1.45pm	Group session – Scenarios (part 2 & 3) Experience Those participants who aren't engaged in the experience will be continuing with the group session - scenarios part 3 & Trade offs activity Debrief and Scenarios part 3
2.45pm	Break (to be taken at some point during the afternoon when convenient for each group) Break (to be taken at some point during the afternoon when convenient for each group) Break (to be taken at some point during the afternoon when convenient for each group)



3pm	Group session – Trade-offs and parameters Debrief Group session – Trade-offs and parameters
3.30pm	Plenary – Report back and tracking vote
3.45pm	Plenary – Thank you and close

Detail of activities

Timing	Activity / questions	Materials	Research questions / Sciencewise Principles
9.30am REGISTRATION	The pros, cons, and questions from workshop 1 will be on tables. While they are signing in, participants will be asked to review these and chat to someone from a different group about their views.	Summary of pros, cons, and questions	<i>Sciencewise principle: Be deliberative - allowing time for participants to become informed in the area; be able to reflect on their own and others' views; and explore issues in depth with other participants.</i>
10am PLENARY	Welcome and overview of the day. The welcome will include a reminder of who is in the room, and the ground rules. We will introduce the specialists and remind participants	Slides	<i>Sciencewise principle: Have clear and specific objectives, which</i>



	<p>they will have an opportunity to ask them questions and hear their views on the technology.</p> <p>The lead facilitator will recap the dialogue objectives and will introduce the idea that by the end of the third workshop, each group will devise a set of guiding principles for CAV public acceptability.</p> <p>The overview will reinforce that the day should be driven by the participants, with the specialists on hand to support and answer queries, not to influence the discussion.</p>		<p><i>are clearly communicated with the participants,</i></p>
<p>10.10am PLENARY</p>	<p>Experience briefing</p> <p>Participants will be briefed altogether about the self-driving vehicle experience and be given relevant documentation to sign.</p>		
<p>10.30am PLENARY</p>	<p>Specialist Q&A.</p> <p>Each specialist will give a 2-minute introduction covering who they are and what they think the most interesting “unknowns” are regarding the development of this technology.</p> <p>Each specialist will then go to a separate table, and participants will be invited to join a table (they do not have to be in their groups). As they move to a table, participants will be asked to vote, with sticky dots, on the pros / cons / questions (for their group) that they feel are the most important, to give them a sense of what their group priorities are.</p> <p>The specialist and table facilitator will then begin a conversation with the group around them about questions they have. After 15 minutes, the lead facilitator will ask the specialists to move around, so the group has chance to speak to all the specialists. Facilitators will note down any themes from the questions being asked.</p>		<p><i>Sciencewise principle: Take place between the general public, policy makers, scientists (including publicly and privately funded experts) and other specialists and stakeholders as necessary</i></p>



<p>11.45am</p>	<p>Break</p>		
<p>12 noon GROUP SESSION</p>	<p>Debrief</p> <p>In groups, participants will be given the opportunity to share anything they have learnt from talking to the specialists, and any ways in which their views have changed.</p> <p>One specialist will join each group – they will not participate in this session but will listen to the conversation and be on hand to provide clarifications if needed.</p> <p>This is also an opportunity for participants to share details of any homework they completed.</p>		<p>RQ2: How do people's attitudes change as people learn more about the technology?</p> <p><i>Sciencewise principle: Be deliberative - allowing time for participants to become informed in the area; be able to reflect on their own and others' views; and explore issues in depth with other participants.</i></p>
<p>12.30pm GROUP SESSION</p>	<p>Scenarios – part 1</p> <p>In their groups, participants will be presented with a range of lenses through which to view the scenarios [e.g. safety, ownership, environment, road sharing, privacy, etc.] <i>(these will be informed by any themes arising from the previous workshop)</i></p> <p>Individually they will choose the five that are most important to them. Facilitators will note these choices down as an indication of which things are most important to them and influence their attitudes. Participants will each be given a slider sheet which has “major benefits compared to</p>	<p>Lenses “slider” sheet</p> <p>Lenses options</p> <p>Scenarios</p> <p>Character</p>	<p>RQ2: How do people's values and preferences influence their attitudes towards automated vehicles?</p>



	<p>today” at one end and “major dis-benefits compared to today” at another and 5 spaces where they can write each of their chosen categories ready to discuss the scenarios. They will prepare 3 slider sheets, one per scenario.</p> <p>Each group will also have a large map, featuring an urban area, a rural area, public transport services, emergency services, other public features such as a school, hospital, shopping centre etc. They will also have small model people, vehicles, and buildings, and playdoh.</p> <p>The facilitator will present the group with a future scenario involving self-driving vehicles, ask the group to discuss it, and then ask them to decide whether they think this scenario would have benefits or dis-benefits in comparison to their situation today in each of their chosen categories. They should capture this individually on their slider sheets.</p> <p>Using these visual aids, the facilitators will also introduce different facets of life [e.g. school run, commute, shopping trips] and character archetypes [e.g. parent, very old, disability] to help participants think through the various impacts.</p> <p>One specialist will be with each group. They will not participate in the activity, but will be there to answer questions or clarify things for participants.</p>	archetypes	
1pm	Lunch		
1.45pm	<p>Scenarios parts 2 & 3</p> <p>Facilitators will present participants with two further future scenarios for discussion.</p>		
3pm	Trade-offs and parameters.		RQ2: What are the parameters and



GROUP SESSION	<p>Reflecting on their discussions around the scenarios, facilitators will ask participants to identify the biggest barrier around the technology, and the biggest opportunity (i.e. did they consistently think that data security would be a problem in every future scenario, and that mobility would always be better than today).</p> <p>Facilitators will then ask what “trade-offs” might make up for their “barrier” problem, or make them think twice about the value of the “opportunity” they identified. For example, if the service was much cheaper than their current mode of transport, would that mean people wouldn’t mind about their data being collected, if all vehicles were shared and you couldn’t buy them, would that mean the mobility potential was reduced? Facilitators will ask each participant in turn, and then work with the group to consider if there are any key themes arising across the group.</p>		trade-offs in terms of public acceptability?
3.30pm PLENARY	<p>Report back and tracking vote.</p> <p>Each group facilitator will report back a couple of key themes from their discussions.</p> <p>A tracking vote will be conducted to see if participant views have developed over the course of the session.</p>	Slides	RQ2: How do people’s attitudes change as people learn more about the technology?
3.45pm PLENARY	<p>Thank you and close.</p> <p>Participants will be given a reminder of the next session, and their homework. They will also be asked to fill in evaluation forms, and asked whether or not they would be willing to take part in a short telephone interview before the next session.</p>	Slides	



Scenarios used in workshop 2

World view A – not much different to now

It's the year 2030. Things have changed- but overall life isn't that much different from how it is now in terms of our transport systems and services. There was a big fuss made about self-driving transport during the 2020s but only some things seem to have stuck around. More expensive cars have more features (they suggest routes based on traffic, then can do most of the driving for you on that route, slowing down, speeding up, and overtaking on motorways for example) and pretty much all cars have some level of driver assistance (like automatic emergency braking) in them but most people are still driving their cars themselves. However, most cars are connected these days – for example they can all call 999 themselves if the car crashes – transmitting location data instantly to the emergency services. Some people choose to have lots of connectivity features in their car and have an interface a bit like the Amazon Alexa or Google Home which is linked into all their favourite services such as music, route-finding, weather, shopping etc.

In some areas of life, there are more examples of connected and automated vehicles. At airports, for example, the shuttle buses to take you to the runway don't need a driver, nor do trams in some cities that run along guided routes. Some very large shopping centres have self-driving pods you can jump in that go fixed routes around the centre to reduce the time spent walking between shops. They are also using things like this at some holiday resorts like CenterParcs and Butlins and at big stadiums.

Some people are still frustrated with transport systems and road accidents and pollution but there wasn't much uptake for fully automated services and options when they were trialled. Congestion, especially in major cities, continues to get worse.

World view A - Facets of life

Health care – Changes in transport technology haven't had a big impact on health care – in terms of people and goods getting to and from hospitals and doctors surgeries.

Goods and shopping – Some of the big companies use self-driving pods to deliver large items, or self-driving vans for groceries ordered online etc. These are usually only available in certain parts of the country, and it depends on the company as to how much it costs. Big shopping centres have self-driving pods to help you get around but they have a fixed route.

Schools – Changes in transport technology haven't had a big impact on schools, as school buses and school transport runs pretty much in the same way.

Workplaces – Most people have the same commuting options as they did before.

Long distance travel – Changes in transport technology haven't had a big



impact on how people get around for social reasons – whether going on holiday to a different country, or different part of the UK, or just going to the pub.

Environment – *A lot of transport technology is still dependent on petrol but there are many more electric and hybrid vehicles.*

World view B – bit of a mixed bag

It's 2030 and there's a bidding war between the bus companies for who will provide the new self-driving fleet for Millbrook. Yet more bus routes are due to be replaced with self-driving bus pods. Self-driving bus pods can be added and taken away on a route as things get busier and quieter, and passengers can effectively press to call a bus pod during off-peak times – this is called Dynamic Routing. Local authorities are promoting this kind of transport to help keep traffic flowing and avoid congestion and pollution, so it's really cheap to ride on the bus pods which means they're pretty popular. You don't need to buy tickets on bus pods at all anymore – you just tap your card or phone to the reader on the bus, and it just debits the right amount of money. If you need to take a mixture of a bus or a train it doesn't matter – the app works it all out for you and just charges you for your full journey if you have a pay as you go service, or you might have a subscription that allows you to do a certain number of journeys or travel a specific number of miles. Most taxi companies are also part of this as well, so you can wrap the price of the taxi into your overall journey and not have to pay for two or three different types of transport for one journey.

Fewer people who live in cities are buying cars because it seems likely that more of these services will be introduced, but people who live further away from developed transport networks still need their own vehicles. Others have bought themselves fully self-driving cars – you can't always tell which cars are self-driving and which aren't from the outside. Some pressure groups are campaigning for segregation of automated vehicles as there are safety concerns about them being on the roads alongside manual vehicles. People with specific needs (like mobility or sight issues) have been given access to these cars but they tend to be part of a share scheme where you share access to a car with a few other people and need to book it in advance. On a few of the busiest motorways, hubs have been set up in key spots where self-driving fleets start and end, and people can complete the motorway part of their journey in a self-driving vehicle – it's a bit like a park and ride set up. These are linked to an app, so you don't need to book in advance – although it can be cheaper if you do.

In some places, some companies are trying out a service where you can order a small self-driving pod to your house (like a taxi or Uber). These are being used in small cities and towns where road conditions aren't too congested. A few of the supermarkets and other shops are exclusively using pods to do their deliveries, and the rest are starting to follow. You enter the code you're given to get access to your grocery tray in the back of the van-



style pod.

World view B - Facets of life

Health care – Some people have been given access to shared pods to help them get around and this means it can be easier for them to get to hospital and doctors' appointments. It's not available everywhere, and some people don't qualify for the service. Otherwise, transport technology hasn't really affected healthcare.

Goods and shopping – More and more freight is being carried around the country by big self-driving vehicles. Some people really like doing their shopping online and having a self-driving pod delivers their groceries, and this service is becoming increasingly common.

Schools – There is some impact on transport related to schools as children still need to get to and from school. Dynamic routing means that it's more convenient for parents to send their child on the bus, than take them there themselves. People under the age of 17 aren't allowed unaccompanied in a self-driving vehicle, so the self-driving buses being trialled with schools have a supervisor on them but not all do. And some parents still want to take their kids to school themselves so the school run can be a bit busy.

Workplaces – Some people do their commute now in a self-driving vehicle which means they can catch up on their favourite television show or do some work / admin during their commute. In some places, where self-driving pod fleets are replacing buses, some people have noticed changes to their journey to work which impacts on their daily routine a bit. Some like it as it means their travel is more flexible, others prefer things as they were.

Long distance travel There are different things going on with transport all around the UK at the moment, so you never know quite what to expect when you go somewhere new. The motorway self driving fleets are still being trialled – and you can see them going up and down some motorways around the country.

Environment – There is intense discussion in the media about how an increase in shared and self-driving vehicles may have a big impact on land-use in relation to parking. Some people think that parking space and car parks should be given over as public land for parks and recreation – whereas others think that more housing should be built.



World view C – how things have changed

It's strange to think back to how we used to use cars and other types of transport 10 years ago. Just like with mobile phones and the internet, it's hard to imagine life before transportation became automated and connected. That doesn't mean everyone likes it – just like with mobile phones, people are worried about the health and social impacts. And some people just want things back how they were before.

Today, in 2030, you're either a poddy or a solo. A poddy, is someone who loves riding in self-driving pods either big or small. Poddies don't own their own vehicle, so many people have reclaimed their front gardens instead of using them as a driving space. Poddies just order a pod when they need one on an app (there are many apps and pod fleets to choose from – they all have slightly different features and prices) and it turns up at their door and takes them where they want to go. Some people use the big pods that go on fixed routes (basically like the old-style buses) that are really cheap to use. There are fewer of these in rural areas due to levels of demand. Some people use shared pods, where other people in the pod are going to a similar place and the pod just drops them all off. Others like their own pod to take their family around, or get work done. Pods mean that parents don't need to do a school run. They also mean that there isn't any work for taxi drivers anymore, and that the work has changed for other people whose jobs were based around vehicles – for example mechanics tend to maintain fleets of pods, or work for a company that specialises in solo maintenance.

Solos are basically just customisable pods that people can buy. They're all electric, and it's just like having your own car. Except you don't drive it, so you don't need to take a driving test. Solos don't all look like cars as they used to. They're on wheels, but there are all sorts of shapes and styles available. Those who didn't support the shift to automation have had to get used to the changes. Some people still want to drive old style cars and they have to hire space on tracks in order to do so. Non-connected cars are no longer allowed on most roads, although motorbikes and bicycles are still permitted in special lanes.

Solos need to get their own vehicle insurance policy just like you do today, but these days the cost of insurance is not about how careful a driver you are, but more about how careful you are with your passwords and security and what kind of protection you want for your data. People are more worried about hacking and cyber-crime than road accidents now.

Pods and Solos communicate with each other on the road and speeds are regulated by the smart road system. This means that journey times are much more reliable and you rarely get stuck in a traffic jam. There has been an increase in car-use, and health groups are concerned that there is a decrease in active travel such as walking and cycling. The smart road system works better the more vehicles are on it (because it receives more data) so on less-well travelled roads the information isn't as reliable. Also on single track roads you can still get stuck behind slow moving vehicles and are



unable to overtake. Many small country roads aren't smart at all so it's easy to get stuck behind slow moving farm vehicles that you cannot overtake. You can choose to what extent you can synchronise your personal data with your pod app or your solo. The more you share your data, the more reliable, convenient, and personalised the service becomes, and the more features you get (for example the music you like to listen to while travelling).

World view C: Facets of life

Health care – There are pod services that take vulnerable and elderly people to and from their doctor and hospital appointments – but it depends on where you live and what your local health service is like as to how these are arranged. Ambulances (and other emergency service vehicles) are one of the few vehicles that are still driven by people, as they need to be able to respond quickly to the needs of the person who is ill – although automated versions are being worked on.

Goods and shopping – There are few jobs for delivery drivers these days as everything is delivered by some form of transport technology. Small items tend to be delivered by drones, and bigger items by large pods. Some people have security concerns as there are reports in the news of packages going astray. Haulage and freight is all carried by fleets of large automated vehicles that move around as convoys, although there are still some individual self-driving lorries. High street shops have a pod service where you can buy your goods in store and then add your bag of shopping to a pod schedule and it will drop it off at your house later on in the day or the next day.

Schools – Most schools have some kind of pod fleet to help children get to and from school. Where and how these services run depend on the school. Some will run fixed routes that aim to be close to most families and involve a short walk for the children, others will pick up and drop off children at their homes. Some schools charge for the pods, others have subsidies, others provide them for free or as part of other fees. Depending on the school there may or may not be an adult in the vehicle to supervise the children.

Workplaces – People commute to work in so many different ways now. Some of the old services in the cities are almost unchanged – for example, the buses are self-driving but they still run on the same routes. However, the ability to order pods and take shared pods means that some people have decided not to own a vehicle at all. Some companies have bought pods, or pay for their staff's pod fees as part of their benefits package.

Long distance travel – Going abroad now is very different, as some countries don't have the same transport systems so it can take a while to get used to roads where people are driving. Traveling around the country is also different as shared pods can work a bit differently in different places. Some social venues have started including pod rides home as part of the



ticket price.

Environment – *Climate change is a reality and unpredictable and extreme weather is difficult for both pods and solos to cope with. Most – but not all – vehicles are electric, which means air pollution in cities has improved significantly. There are still some challenges around vehicles colliding with small wildlife. Vehicles easily react to large animals, but there is an ongoing debate with the car industry and environmental groups about the appropriate reactions to small animals such as mice and rabbits.*



Workshop 3

Overview (objectives 2.3.4 and 2.3.5)

For Workshop 3, all participants across all locations had the same experience. Two specialists attended the final half-day workshop in each location. The session began by exploring the findings so far, and sense-checking these with participants. Following this, participants were guided through a discussion on sharing, to consider if they would consider sharing occupancy of vehicles, and under what conditions. The workshop ended with groups working together with specialists to develop guiding principles to help inform how this technology might be introduced in a way that was acceptable to the general public.

The table below outlines the activities during the third workshop. Sessions with specific specialist involvement highlighted in purple.

Activities	Rationale for activity
Plenary – Lunch Participants, facilitators, specialists, and evaluator ate together.	To allow time for participants to reflect on their own and others' views.
Plenary – Welcome and introduction to the day Introduction of objectives and run through agenda.	To have clear objectives and communicate these with participants.
Plenary – Presentation of findings so far Key themes that have arisen in the first two workshops, including data from pre-programme survey and voting, were presented to participants. Participants were given the opportunity to feedback on the findings.	To ensure participants are involved in the reporting of their views.
Group session – Exploring ideas of sharing Each group was allocated a journey type (commute, motorway/long journey, returning home from a night out).	To understand what makes people more or less amenable to ride-sharing.



<p>For each journey type they got introduced to two different vehicle options – with some combination of a shared vehicle and an automated vehicle. Participants were given tickets, and asked to undertake a simple prioritisation exercise. They are asked whether they would choose to travel in one of the vehicle alternatives, and given some “what if” scenarios to see if that influenced their choice.</p>	
<p>Group session – Reverse engineering – exploring the best and the worst</p> <p>Facilitators presented groups with some of the potential risks / worst case scenarios that were identified through the previous workshops. Dividing each group into two sub-groups of five, each sub-group picked one scenario/risk to discuss.</p> <p>Participants were asked to make a list of all the things that could happen/be done which would mean that situation occurs in the worst way possible.</p> <p>They were then instructed to take the list and brainstorm the opposite of each of the things identified to create a list of ways to mitigate that risk.</p>	<p>To understand how aspirations can be achieved or identified risks/unintended consequences mitigated in relation to CAVs.</p> <p>To understand if anything would relieve the concerns identified, if so, what?</p>
<p>Group session – Developing guiding principles</p> <p>Participants developed a list of guiding principles, and / or guiding questions for policy makers and scientists, based on what they had discussed in the workshops.</p>	<p>To understand how aspirations can be achieved or identified risks/unintended consequences mitigated in relation to CAVs.</p>



Specialists were on hand to work with the groups to develop their ideas.	
Plenary – Group presentations Each group presented their guiding principles to the rest of the participants.	To enable all those involved in the process to increase their knowledge and understanding of the subject under discussion.
Plenary – Tracking vote	To understand how people's attitudes change as they learn more about the technology and gather attributable data.

Process Plan

DfT and [Sciencewise](#) are funding a project to run a series of public dialogue workshops to explore the public acceptability of connected and automated vehicles (CAVs). Traverse is an independent consultancy, specialising in public engagement, who have been contracted to design and run the dialogue events. There will be 3 dialogue events, reconvening the same participants, in 5 locations across the UK. There will be approximately 30 members of the public attending the events in each location.

This document sets out each stage of workshop 3 and will form the basis of a combined discussion guide and pro forma for facilitators. The main activities are outlined below alongside the research questions they are intended to address. These workshops cover research questions 3 and 4:

3. Develop an understanding of how we might meet the public's aspirations with respect to automated vehicles.

- a) How can we achieve aspirations or mitigate risks/unintended consequences identified in relation to CAV?
- b) Would anything relieve the concerns identified, if so, what?
- c) What are the best ways to communicate with the public about CAV? What do they want to understand more about?

4. Explore what the public sees as the role of local and central governance in the development and deployment of the technology (compared with industry) and who they think is responsible for any raising awareness and engagement



- What are their views on the roles of local and central organisations (including public sector and charities, other representative bodies) vs industry/car manufacturers in terms of:
 - the development of the technology in future? For example, who provides infrastructure; ensures safety; ensures access; safeguards data; sets standards and regulations e.g. government or independent bodies? in raising awareness and understanding in future?

Outline approach

Time	Activity
12.30pm	Plenary – Lunch
1.00pm	Plenary – Welcome and introduction to the day
1.10pm	Plenary – Presentation of findings so far
1.20pm	Group session – Exploring ideas of sharing
2.30pm	Group session – Reverse engineering – exploring the best and the worst
3.00pm	Break
3.10pm	Group session – Developing guiding principles
3.55pm	Plenary – Group presentations
4.40pm	Plenary – Tracking vote
4.50pm	Plenary – Thanks, next steps, and close



Process plan

Timing	Activity / questions	Materials	Research questions / Sciencewise Principles
<p>12.30pm PLENARY</p>	<p>Lunch Participants, facilitators, evaluators, and specialists will eat together to start the event.</p>		<p><i>Sciencewise principle: Be deliberative - allowing time for ... participants to reflect on their own and others' views.</i></p>
<p>1.00pm PLENARY</p>	<p>Welcome and introduction to the day The welcome will include a reminder of who is in the room, and the ground rules. The lead facilitator will recap the dialogue objectives and will remind participants that this day will focus on developing guiding principles, which groups will present to each other and the specialists / observers in the final session. The specialists attending will be introduced to participants. Specialists will move informally between the groups during the day, answering any clarification questions the groups have. Groups will also be able to book time with specialists if they have a particular subject they want to discuss.</p>	<p>Slides</p>	<p><i>Sciencewise principle: Have clear and specific objectives, which are clearly communicated with the participants,</i></p>
<p>1.10pm PLENARY</p>	<p>Presentation of findings so far. Presentation of the key themes that have arisen in the first two workshops, including data from pre-programme survey and voting. We will give</p>	<p>Slides</p>	<p><i>Sciencewise principle: Involve participants in the reporting of their views.</i></p>



	participants the opportunity to feedback on the findings.		
1.20pm GROUP SESSION	<p>Exploring ideas of sharing</p> <p>Each group is allocated a journey type (commute, motorway/long journey, returning home from a night out). For each journey type there are two different vehicle options – with some combination of a shared vehicle and an automated vehicle. Participants are given tickets, and asked to undertake a simple prioritisation exercise. They are asked whether they would choose to travel in one of the vehicle alternatives, and given some “what if” scenarios to see if that influences their choice (e.g. “what if this cost you 25% less than your usual journey?” Facilitators capture the discussion and use the ticket to ensure collection of attributable information.</p>	Tickets	RQ4: What makes people more or less amenable to ride-sharing?
2.30pm	<p>Reverse engineering – exploring the best and the worst</p> <p>Facilitators present groups with some of the potential risks / worst case scenarios that were identified through the previous workshops. Dividing each group into two sub- groups of five, each sub-group will pick one scenario/risk to discuss.</p> <p>Their task is to:</p> <p>a) make a list of all the things that could happen/be done which would mean that</p>	Potential risks / worst case scenarios	<p>RQ3: How can we achieve aspirations or mitigate risks/unintended consequences identified in relation to CAV?</p> <p>Would anything relieve the concerns identified, if so, what?</p>



	<p>situation occurs in the worst way possible (use the example of running a bad restaurant to get them started).</p> <p>b) take the list and brainstorm the opposite of each of the things identified to create a list of ways to mitigate that risk.</p> <p>Following this, the facilitator asks the two groups to pick a potential opportunity / best case scenario for CAVs that resonates with them and do a similar exercise – first consider the negative (what would happen to make it impossible for that situation to occur), and then brainstorm the ways those negatives can be avoided/overcome.</p>		
3pm	Break		
3.10pm GROUP SESSION	<p>Developing guiding principles.</p> <p>Facilitators will work with the groups to review the topics they have covered over the last two workshops, as well as their ideas from the previous sessions, and develop a list of guiding principles, and / or guiding questions for policy makers and scientists.</p> <p>Specialists will be on hand to work with the groups to develop their ideas.</p>		RQ3: How can we achieve aspirations or mitigate risks/unintended consequences identified in relation to CAV?
3.55pm PLENARY	Presentations		<i>Sciencewise principle: Enable all those involved in the process to</i>



	<p>Each group will share back to the room (table facilitators may present if the group nominates them) their guiding principles or guiding questions.</p> <p>Specialists, and members of other groups will be given the opportunity to comment and ask questions.</p>		<i>increase their knowledge and understanding of the subject under discussion</i>
4.40pm PLENARY	Tracking vote. We will conduct a final tracking vote, asking participants the same questions.	Slides with tracking vote questions	RQ2: How do people's attitudes change as people learn more about the technology?
4.50pm PLENARY	Thank you, next steps, and close. Participants will be given information about what happens next with the project, the publication of the report, and how they can keep informed should they wish to. They will also be asked to fill in evaluation forms.		



6. Recruitment and achieved sample

6.1. Sampling approach

Participants were sampled to reflect the UK population when aggregated across all locations. However, applying a nationally reflective sampling framework to individual locations can result in an artificial feeling when participants are in a room together¹. To avoid this, each of the five locations was recruited to reflect the local area (i.e. we focused on the rural segment in rural areas, and a more ethnically diverse group in more urban areas). The aim was to ensure that there was a mix of participants in each group to ensure different views were heard. We worked with our academic partners at UCL to agree the final sampling framework, and incorporate feedback from the Oversight Group.

Participants were sampled according to their age, gender, ethnicity, socio-economic background, attitude to technology, urban/ suburban/ rural dwelling, driving regularity, and car ownership status.

6.2. Recruitment approach

We worked with our trusted partners Plus Four to recruit participants. Plus Four work with over 700 interviewers and recruiters throughout the country through a mixture of face to face and database recruitment. For this project we used predominantly face to face recruitment done door-to-door (not on street) as this is found to be a more efficient process and results in better attendance. Turnout was high at all events with fewer drop-outs between recruitment and the first event than expected. All participants were double-screened for quality purposes.

Participants were given the following incentives:

Workshop 1	Workshop 2	Workshop 3
£25	£75	£200

¹ For example, some areas have more ethnic diversity than others and therefore having a nationally representative number of people from BAME groups could be very atypical for the area.



6.3. Target vs actual quota

Following best practice, we over-recruited (170 to achieve 150) to allow for drop outs over the course of the process. In reality, very few drop-outs occurred.

Category	Quota Detail	TOTAL	
		Target	Actual
Gender	Female	75	86
	Male	75	73
	Total	150	159
Age group	18-24	15	14
	25-34	25	35
	35-44	25	27
	45-54	25	29
	55-64	25	23
	65-74	20	18
	75+	15	13
	Total	150	159
Ethnicity	White British	118	123
	White Other	10	10
	BAME	22	26
	Total	150	159
Where they live	Urban	54	57
	Suburban	63	68
	Rural	33	34
	Total	150	159
Social grade	AB	40	43
	C1	40	49
	C2	30	28
	DE	40	39
	Total	150	159
Driving status	Never drive myself – and don't have a license	28	32
	Never or rarely drive, but have a license	18	19
	Sometimes drive (once or twice a week)	44	39
	Drive most days or every day	60	69
	Total	150	159
Car ownership	I own the car that I drive (shared ownership, and finance on vehicles included here)	61	77
	I drive a car belonging to somebody else	21	23
	I drive a company car	10	15
	Driven a hire car within the last 2 years	16	21
Mobility needs	I have particular mobility needs that affect my transport choices	10	12
Technology use / attitude	I like to stay keep up to date and adopt new tech quickly	40	51
	I will buy or use new technology once it is familiar and people I know have already tried it	90	88
	I avoid buying or using new technology unless I have to	20	20
	Total	150	159



7. Data capture

Over the three workshops we collected both qualitative and quantitative data, that was both attributable and non-attributable. Attributable and non-attributable data were processed and analysed separately. Interview data was also processed separately. All data was captured with the relevant workshop location, to enable analysis of differences between areas.

Table 5: Overview of data categories, sources, and related capture

Data category	Main sources	Capture
Attributable, quantitative data	Recruitment screener Voting data	Data reports were copied into attributable data spreadsheet
Attributable, qualitative data	Voting comment cards Activity data (e.g. mood boards, post-it notes, lens sheets)	Data entered into attributable data spreadsheet
	Interview data	Data entered into a spreadsheet
Non-attributable, qualitative data	Detailed facilitation notes	Data entered into Magpie (bespoke processing and analysis tool)
	Audio recordings	Transcribed into anonymised documents for archiving

Our methods were informed by the research questions, and the research questions were informed by the project's overarching objectives.



Research questions	Attributable, quantitative data	Attributable, qualitative data	Non-attributable, qualitative data
<p>AWARENESS AND KNOWLEDGE</p> <p>Explore with participants their current understanding of, and engagement with, the different terms used to describe the technology</p> <ul style="list-style-type: none"> • What language do participants currently use to describe the technology? • What do individuals understand by the different terms? What immediate thoughts/reactions, if any, do they evoke? • How knowledgeable are people/what do people understand about the technology and the different attributes or characteristics? • Where are they getting their current knowledge and perceptions from e.g. media? • What are participants' perception of when they think this technology (meaning Level 3 and beyond) may be available? 	<p>Pre-workshops</p> <p>Data from questions asked as part of the recruitment process, about familiarity with different types of vehicle technology.</p> <p>Workshop 1</p> <p>Participants indicate on personal cards if they have heard of different terms.</p>	<p>Workshop 1</p> <p>Participants note their understanding of different terms on personal cards.</p> <p>Participants' collages and discussion of how they see a future with CAVs.</p>	<p>Workshop 1</p> <p>Facilitator notes from discussing what, where, and when participants have heard about CAVs before, and their thoughts, feelings, or responses to those.</p> <p>Workshop 2</p> <p>Facilitator notes of <u>homework debrief</u>, and <u>World views</u>.</p>
<p>ATTITUDES</p> <p>Gain an understanding of participants' perceptions, aspirations and concerns on the development and use of automated and connected vehicles.</p> <ul style="list-style-type: none"> • What are people's reactions to the different characteristics of the technology? • What would they be willing to accept/use? • What are the benefits/disbenefits of the different characteristics? 	<p>Pre-workshops</p> <p>Data from questions asked as part of the recruitment process, about impacts of CAVs on themselves, and society.</p> <p>Workshop 1</p> <p>Participants' keypad votes on impacts of</p>	<p>Workshop 1</p> <p>Participants note their pros and cons of CAVs, and any questions on attributable post-its.</p> <p>Participants' comments on their votes.</p>	<p>Workshop 1</p> <p>Facilitator notes from <u>Pros, cons, and questions</u>.</p> <p>Workshop 2</p> <p>Facilitators notes from <u>specialist Q&A</u>, <u>experiences debrief</u>, <u>Introducing variables</u>, and <u>World</u></p>



Research questions	Attributable, quantitative data	Attributable, qualitative data	Non-attributable, qualitative data
<p>a) How do people's values and preferences influence their attitudes towards automated vehicles?</p> <p>b) Does the type of vehicle that is automated impact on participants' attitudes?</p> <p>c) Does the geographical context of use impact on participants' attitudes?</p> <p>d) Do personal characteristics and demographics affect participants' attitudes?</p> <p>e) What are the parameters and trade-offs in terms of public acceptability?</p> <p>f) How do people's attitudes change as people learn more about the technology?</p>	<p>CAVs on themselves, and society.</p> <p>Workshop 2</p> <p>Participants' lenses slider sheets.</p> <p>Participants' keypad votes on impacts of CAVs on themselves, and society.</p> <p>Workshop 3</p> <p>Participants' keypad votes on impacts of CAVs on themselves, and society.</p>	<p>Workshop 2</p> <p>Participants' comments on lenses slider sheets.</p> <p>Participants' comments on their votes.</p> <p>Workshop 3</p> <p>Participants' comments on their votes.</p>	<p><u>views.</u></p> <p>Participants' notes from <u>Introducing variables.</u></p> <p>Workshop 3</p> <p>Group notes and facilitator notes from <u>Reverse engineering.</u></p>
<p>ASPIRATIONS</p> <p>Develop an understanding of how we might meet the public's aspirations with respect to automated vehicles.</p> <ul style="list-style-type: none"> • How can we achieve aspirations or mitigate risks/unintended consequences identified in relation to CAV? • Would anything relieve the concerns identified, if so, what? 	<p>Workshop 1</p> <p>Participants' keypad votes on aspirations and concerns.</p> <p>Workshop 2</p> <p>Participants' keypad votes on aspirations and concerns.</p> <p>Workshop 3</p>	<p>Workshop 1</p> <p>Participants' comments on their votes.</p> <p>Workshop 2</p> <p>Participants' comments on their votes.</p> <p>Workshop 3</p>	<p>Workshop 2</p> <p>Group notes and facilitator notes from <u>trade-offs.</u></p> <p>Workshop 3</p> <p>Group notes and facilitator notes from <u>Reverse engineering and Guiding</u></p>



Research questions	Attributable, quantitative data	Attributable, qualitative data	Non-attributable, qualitative data
	Participants' keypad votes on aspirations and concerns.	Participants' comments on their votes.	<u>Principles.</u>
<p>SHARING</p> <p>What makes people more or less amenable to ride-sharing? There are a number of factors which are likely to have an impact, and we'd like to understand the interactions between these factors.</p> <ul style="list-style-type: none"> • What factors affect people's willingness to share? • Who is more/less open to the concept of ride-sharing and why? • How does automation itself affect people's willingness to share vehicles with strangers? • Which trips would lower occupancy ride-sharing replace? 	<p>Workshop 3</p> <p>Participants submit an attributable post-it to indicate that they would opt-in to a particular journey-transport combination.</p>	<p>Workshop 3</p> <p>Participants provide some descriptions of what conditions would make them opt-in to ride-sharing for a particular journey type.</p>	<p>Workshop 2</p> <p>Facilitator notes from <u>World views.</u></p> <p>Workshop 3</p> <p>Facilitator notes from <u>Sharing.</u></p>

8. Analysis and reporting approach

8.1. Analysis

After each set of workshops, we held analysis meetings to discuss the findings and how the analysis might adapt and change. The team of analysts worked collaboratively throughout the process to ensure consistency and to regularly reflect on the coding framework. Key findings were taken back to later workshops to test and refine our understanding.

After the final workshop, Traverse and their academic partners from UCL met to reflect on the findings and emerging themes and to develop our thematic analysis approach. The figure below shows how this process worked.



Quantitative data

All attributable, quantitative data from the workshops was analysed against demographics, attitudinal and qualitative data. Voting data was used to quantitatively analyse changes in opinions over the course of the dialogue events and to explore demographic differences. Quantitative data was analysed in Excel.

Qualitative data

We coded qualitative data into different high-level themes (using a methodology based in grounded theory technique) in our bespoke analysis tool – Magpie. We considered both stated attitudes and discourse analysis, which means that we collected data regarding how participants express their views, as well as what views they express.

We coded data at sentence level using an agreed code frame, adding sub-categories where necessary.

Limitations

As a result of the careful design, large amounts of the data collected were attributable. This added time to both data capture and analysis but made the approach more robust. Nonetheless, while we spoke to a large number of people, the qualitative nature of the discussions means all findings must necessarily be considered to be reflective rather than representative of the views of the population as a whole.

8.2. Reporting



Report formatting and styles were agreed within the project team early in the dialogue project timeline.

We used the data analysis to deliver four key reporting outputs:

1. **Interim report 1:** After the first workshop, to support workshop evaluation and refining of workshop 2.
2. **Interim report 2:** After the second workshop, to support workshop evaluation and refining of workshop 3.
3. **Storyboard report:** After all three workshops and further high-level analysis, we produced a storyboard report to reflect a draft overview of the findings and the proposed report structure.
4. **Engagement report:** This is the full report for the dialogue events, including appendices. This report leads with the qualitative analysis of the workshops and interview data, supported by quantitative analysis of the voting data (including reviewing change over time and demographic differences).

For each output, a draft version was distributed amongst the project team (including Sciencewise and DfT) for review and comment.

Report structure

The report structure was agreed with Sciencewise, DfT, and the Oversight Group and amended after the first draft to ensure the key findings were not lost and to remove repetition between sections.

Sometimes public dialogue can be reported chronologically, reflecting the developing knowledge-base of participants. However, this can be uninspiring to read and instead we adopted a thematic structure for the report with commentary about how views changed included where relevant. This structure made it easier communicate the key findings, while demonstrating the value of deliberative dialogue and how increased levels of information may affects people's views.

We also used several reporting techniques (spotlights, take-away messages and specific boxes focussing on findings relating to sharing) to break up the text and highlight key findings. There were few demographic differences, and over the course of the dialogue participants tended to coalesce around particular views. However, where differences were observed they are reported on in the text.

Appendix B – Oversight Group

The Department for Transport convened a group of stakeholders from industry, policy, public interest groups, and academia, to provide oversight for the dialogue. The role of the group was advisory, to oversee the dialogue process and materials, and to help ensure that:

- the dialogue material was comprehensive, balanced, and accessible to a lay audience.
- the engagement process was far reaching, accessible targeting all relevant audience groups where possible.

The Oversight Group provided comment on background and stimulus materials used in the dialogue, the outputs from the dialogue, and also the communications strategy for the outputs.

Below is a list of members of the oversight group (for workshop attendance see Section 5.3, above):

Name	Role / organisation
Iain Forbes (Chair)	Head of the Centre for Connected and Autonomous Vehicles
Michael Dnes	Head of Road Investment Strategy 2
Vikkie Judd	Senior Marketing Manager, Energy, Technology and Innovation at DfT
Pauline Morgan	Head of Road User Safety Delivery Programme, Road User Licensing, Insurance and Safety Division
David Wong	Society of Motor Manufacturers and Traders
Mervyn Kohler	Age UK
Helen Dolphin	Disabled Person's Transport Advisory Committee
Jessica Uguccioni	Disabled Person's Transport Advisory Committee
David Skipp	Ford Motor Company
Lucy Yu	Five AI – CAV software company
Deirdre O'Reilly	Highways England
Dr Paul Cowie	Centre for Rural Economy
Josh Harris	Brake – road safety charity



Andy Cope	Sustrans – walking and cycling charity
Nick O'Connor	Meridian Mobility

1. Terms of Reference for Oversight Group

Below are the agreed Terms of Reference for the Oversight Group.

Ensuring impartiality

Ensuring that the dialogue process is balanced and perceived as such by the outside world.

Support for DfT on the process

- Helping to develop the criteria on which the success of the project is going to be judged through the project evaluation. Oversight group members are often members of key organisations who will use the outputs of a dialogue, so help from them on what success “looks like” is useful.
- Giving advice when things get challenging for the DfT project manager – dealing with uncertainties, providing independence where needed, advice on finding and contacting the right people quickly.

Ambassador role

- Providing informed input to the dialogue – at set up stage, throughout the dialogue and with dissemination of findings and impact of outcomes.
- Members are key players, so when it comes to dissemination of the results of a dialogue they often own or can influence policy change in relevant institutions.
- Providing a credible independent voice for the process, if needed – quotations explaining the integrity of the process can be provided to media; in the case of controversy, media interviews could even be arranged.

Time commitment

The project took place over approximately an eight-month period, commencing w/c 16th July 2018. The public dialogue workshops took place over a two-month period, commencing w/c 24th September 2018. Members were expected to commit to three half day meetings in London and an additional half day to review materials (stimulus and dialogue results) offline and give advice on their areas of expertise on an ad hoc basis.

Every effort was made to find dates when all Oversight Group members could attend meetings. If members were not able to be at meetings in person but were able to dial in, then provision for this was made. For key items of business where the group's opinion was sought, if someone was not able to attend or send a deputy, they were invited to submit comments and views in advance and these were presented to the rest of the group.



Oversight Group members were invited to attend at least one public dialogue workshop so that they could view the public dialogue process in person. Attendance was voluntary and it was requested that members only attended in an observational capacity (rather than as a participant).

Meeting minutes

Actions agreed during Oversight Group meetings were recorded and sent to members no more than ten working days after each meeting. Members had five working days to comment.

Confidentiality

While the project will inevitably be in the public domain, there was a requirement for Oversight Group members to keep discussions and outputs from the meetings, content of the workshops (both stimulus/CAV experiences and participant inputs) and early iterations of project outputs (before publication) confidential. All project documents, including actions agreed during Oversight Group meetings, are published by Sciencewise on conclusion of the project. For this reason, the conversations at Oversight Group meetings will abide by Chatham House Rules, with content of discussions captured but not attributed.

Guiding Principles

The guiding principles of the dialogue are as follows:

- Inclusivity

The dialogue should seek at all stages to include the perspectives of a range of UK residents, in addition to taking account of the plurality of knowledges and interests in the topic area.

- Influence

The dialogue must include mechanisms that ensure it has a clear means of influencing relevant policy making processes.

- Openness, honesty and transparency

The dialogue must make clear the different roles of different stakeholders and explain how decisions are reached within the process.

- Participation

A broad spectrum of voices must be involved as participants throughout the dialogue including use of unbiased experts.

- Oversight

Oversight Group members and the Evaluation Team should also be able to hear first-hand the views that are being expressed during the dialogue process.





Appendix C – Specialist Group

The dialogue delivery contractor (Traverse) convened and chaired an additional group to provide specialist expertise throughout the dialogue process. This group was made of industry experts, academics, and other relevant bodies. Sciencewise dialogues involve members of the public interacting with subject-matter specialists to learn and explore together. As such, members of the specialist group were both invited to provide comment on the dialogue materials and the analysis process, as well as attending events with participants.

Below follows a list of members of the Specialist group:

Name	Organisation
Darren Capes	City of York Council
Lucy Yu	Five AI
David Skipp	Ford Motor Company
Dennis Witt	Ford
Ray King	Newcastle City Council
Shuo Li	Newcastle University
Nikolas Thomopoulos	University of Greenwich
Andrew Dorrian	North East Regional Transport Team
Sarah Sharples	University of Nottingham
Simon Tong	Transportation Research Laboratory
Kristen Fernández-Medina	Transportation Research Laboratory
Professor Glenn Lyons	University of the West of England
Graham Parkhurst	University of the West of England
Sam Chapman	The Floop
Charlene Rohr	RAND
Ricardo Botas	Imperial College London
Bhavin Makwana	RAC Foundation
Steve Gooding	RAC Foundation



Paul Newman	Oxford Robotics Institute
Andy Graham	White Willow Consulting
Deirdre O'Reilly	Highways England
Jonathan Clough	Highways England
Phillip Proctor	Highways England
Jonathan Hale	National Infrastructure Commission
Alan Nettleton	Transport Systems Catapult
Benedict Taylor	Go-Science
Jonathan Keating	Go-Science
Greg Marsden	ITS Leeds
Zia Wadud	ITS Leeds
Natasha Merat	ITS Leeds
Matthew Cockburn	Connecting Bristol
Graeme Smith	Oxbotica
Chris Tennant	LSE
Nick Reed	Bosch
Dr Ana Gross	The University of Warwick
Dr Kirsten Revell	The University of Southampton
Professor Neville A Stanton	The University of Southampton

1. Specialist group brief

Below is the brief we sent to potential members of the Specialist Group to encourage them to participate.

Specialist Group overview

To inform the development of these dialogues, Traverse will convene a group of specialists with in-depth knowledge of CAVs, transport planning, and other fields relevant to the development and deployment of connected and automated vehicles in the UK.

Who will be involved in the Specialist Group?

Up to 25 members, with a range of views and expertise on connected and



automated vehicles; such as:

- academics;
- car manufacturing companies;
- planning bodies and local government;
- interest groups;
- transport businesses; and
- government policy officials.

Role and purpose of the group

1. To inform the development of scenarios that depict different futures of connected and automated vehicles, including deployment scenarios.
2. To advise and scrutinise workshop stimulus materials where relevant.
3. To review the analysis outputs to support the development of a draft report.

Time commitment

1. Attendance at Specialist Group workshop: 7 August, 14:00 – 16:30.
2. Review of early findings document in January, over email.
3. If possible, attendance at dialogue events in October and November 2018 (possibilities for time and travel to be reimbursed).

Our commitment to you

1. Open communication regarding project objectives and methodology.
2. Acknowledgement of views and ideas contributed, providing feedback on what has been taken forward and why.
3. Communication of ongoing project development and outputs.

Confidentiality

While the project will inevitably be in the public domain, there will be a requirement for Specialist Group members to keep discussions and outputs from the workshop, content of the workshops (both stimulus/CAV experiences and participant inputs) and early iterations of project outputs (before publication) confidential.

While feedback in the workshop may be captured by Traverse, the full discussion will not be minuted or attributed.

Guiding principles

The guiding principles of the dialogue are as follows:

- Inclusivity. The dialogue should seek at all stages to include the perspectives of a range of UK residents, in addition to taking account of the plurality of knowledges and interests in the topic area.
- Influence. The dialogue must include mechanisms that ensure it has a clear means of influencing relevant policy making processes.



- Openness, honesty and transparency. The dialogue must make clear the different roles of different stakeholders and explain how decisions are reached within the process.
- Participation. A broad spectrum of voices must be involved as participants throughout the dialogue including use of unbiased experts.

2. Attendance at workshops

Abergavenny	
10 November	
Graham Pankhurst	UWE
Jonathan Flower	UWE
Phil Morgan	Cardiff University
1 December	
Graham Parkhurst	UWE
Phil Morgan	Cardiff University

Glasgow	
27 October	
Shuo Li	Newcastle University
Paul Cowie	Centre for Rural Economy
Steve McCan	CCAV
24 November	
Shuo Li	Newcastle University
Steve Mann	CCAV
Patrick Corcoran	DfT

Leeds	
10 November	
Prof Natasha Merat	ITS Leeds
Sam Chapman	The Flow
Chris Tennant	LSE
8 December	
Yee Mun Lee	ITS Leeds
Sam Chapman	The Flow

Milton Keynes	
20 October	



Rob Gifford	Independent
Dr Yee Mun Lee	ITS Leeds
Prof Gary Burnett	University of Nottingham
24 November	
Dr Rachel Lee	Living Streets
Dr Yee Mun Lee	ITS Leeds

Millbrook	
3 November	
Lucy Yu	Five AI
Rob Gifford	Independent
Sam Chapman	The Flow
1 December	
Lucy Yu	Five AI
Prof Gary Burnett	University of Nottingham

Appendix D – Participant suggestions

Throughout the workshops, participants suggested measures that could make them feel more comfortable using CAVs. These suggestions were not agreed between participants, nor were they the suggestions of the majority of participants, this is a comprehensive list and as such there may be some contradictions. Demands about safety, equity, and freedom to choose may be in conflict, for example.

Participant suggestions are summarised in the table below, corresponding to the themes from chapter 2.

Safety and security

In an emergency:

- Systems should alert emergency services or vehicle manufacturers in case of breakdowns or emergency
- There should be alarm and emergency stop buttons in the vehicle
- Personal CAVs should be programmed to know about certain medical conditions and have appropriate safety systems in place

Failure of technology

- Vehicle software should be updated and checked regularly
- Vehicles should have back-up systems
- There should be a connection to a support phone line
- Clear laws and government regulation on data sharing
- Central control system that monitors all CAVs

Road safety

- A driving test or education programme on road safety should still exist
- Users should be made aware of CAV safety features and functions
- Roads would need to be monitored in case of accidents

Testing

- Testing of CAVs should be held to an extremely high standard (many repetitions of many different tests)
- All tests should be overseen by, or carried out by, an independent body
- Outcomes of tests should be transparent and published in full.



Freedom to move

Staying in control

- There should be a steering wheel as an override function

Convenience and comfort

- CAVs should be able to drop off and pick up at different locations
- A system or an app should calculate journey time, cost, and pick up and drop off points.
- Users should have access to vital information before and during the journey, such as accidents, traffic updates or roadworks
- It should be possible to personalise private CAVs in terms of design and features
- Payments for transport services need to be easy

Equality

Available to all

- CAV services should be subsidised by the government to make affordable options available
- Inclusivity and accessibility should be prioritised to avoid benefits being limited to certain groups only
- People without internet access must still be able to access CAVs
- CAVs should work in all areas of the country
- Free transport travel cards for older people (75+)
- CAVs should be able to communicate with users in different ways (for example through both audio and visual) and languages

Prioritise older people and those with mobility issues

- CAVs should be accessible and designed for a range of disabilities and needs
- There should be different options to accommodate different disabilities
- Disabled people, as well as organisations and government bodies working with disabled people, should have the chance to input into designs to ensure key needs are met
- People with mobility needs should qualify for financial and physical support
- Guide dogs should be allowed onboard
- CAVs should be easy to order for people who might not be used to using technology or have visual or hearing impairments
- Priority should be given to older people, disabled people, and



people with mobility needs in using CAVs

- It should be easy to communicate any problems while on a journey

Accountability

Insurance

- Users should have different insurance for different types of journeys and CAVs
- Insurance should be affordable, clear, and inclusive

Liability

- Cameras and recording systems, like an aeroplane black box, should be used to investigate accidents
- Manufacturers should provide reassurance that problems with a car will be dealt with

Transitioning

Infrastructure and regulations

- Gradual deployment of vehicles phased over time
- General connectivity and road infrastructure in rural areas should be improved to enable transition
- Provision for electric vehicles should be improved (charging points)
- The Highway Code should be updated, and new laws and regulations drafted

Education

- There should be more information about the technology in trustworthy online sources and on social media

Trials

- Trials must be carried out in safe areas
- There should be test centres where people can experience the technology
- There should be free trials for the public

What will society look like?

Laziness

- Savings from public transport should be reinvested in health care
- Non-automated driving options could preserve skills



- People could be given financial incentives to walk to CAV stops

Job loss

- Older people whose jobs are at risk should be given the training and funding they need to switch sector or jobs
- Re-employment schemes should support drivers to re-skill and change industry
- CAV technology should be bought from the UK to help maintain jobs in the country
- New university degrees and apprenticeships should be tailored to CAVs

Loss of joy of driving

- Places should be maintained for those who would still want to drive manually if CAVs are to become universal

Environment

- The process of designing and making CAVs should be environmentally friendly
- Non-automated vehicles must be recycled in an environmentally friendly way
- Non-automated vehicles could be converted to reduce waste



Sharing

To feel safe when sharing with other passengers

- A method of verifying, rating, or checking other passengers
- Security measures for children using CAV services
- Closed compartments to improve sharing on long journeys
- Mid-sized, local sharing groups where CAVs are shared only with people within the same neighbourhoods or local communities
- Female only services
- Security guard on late night services
- Self-locking doors
- Emergency button

Convenience and comfort

- A system or an app should calculate journey time, cost, pick up and drop off points, and number of people you may share with.
- Paying for the service would need to be easy



Appendix E – Guiding principles

Below are the guiding principles created by each group in workshop three. These are captured as presented by the groups, without changing any words or terminology, and the principles are not presented in any particular order of priority.

1. Abergavenny

Table 1

- Ensure that manufacturers accountable for any technical faults so long as the vehicle was properly maintained ('MOT-ed').
 - liable for any accidents
 - people would only need insurance for personal safety such as theft/assault (would have add-ons)
- Ensure that compensation is available for delays (especially in sharing vehicles and if this is compulsory or you do not have another choice)
 - ensure there are enough options/vehicles for everyone
 - it has to be better than now, otherwise there is no incentive
- It should be a condition that abuse will not be tolerated. Ensure passengers are liable for prosecutions.
- Ensure the tech is affordable and no one is excluded
- Self-driving vehicles should not be allowed on the road until it's proven that they meet safety standards and can deal with unexpected situations (trials, checks, transparency towards the public).
- Support all users to access this technology/service regardless of circumstances (e.g. mobility, family, age, sex, race...)
- The software should be standardised, but the vehicle design should vary, to give people choice.
 - to ensure it's all synced/compatible
 - to facilitate autonomous decisions
 - you need to think about different customer segments/needs

Table 2

- People should have the choice to keep, and gain, their independence. And that choice should be real (cost).
- Avoid benefits being limited to certain groups – more equality; don't let gap get bigger.
- Raise awareness about the impacts of your choices – environmental and social.
- Support people who are affected – jobs and wellbeing.
- Listen to the public.
- Ensure system is robust and avoid reliance on a single system.



- Enable and support social interaction.
- Ensure that everyone's rights are protected.

Table 3

- CCTV- Responsible car manufacturers will take on responsibility and accountability to install CCTV inside and outside of their vehicles.
- The user of the pod/to be aware of the security measures to enable themselves to be secure whilst travelling. The car manufacturer and the data holder to be accountable also in their measures.
- The manufacturer to provide safety measures and invest in the interior of the pod to enable security of the traveller.
- Government to supply education and redeployment opportunities for those vulnerable in losing their jobs.
- The UK government places the funding into current and future UK companies not foreign companies. And to invest in UK citizens of all ages.

2. Glasgow

Table 1

- Government manufacturers should work together to offer a comparison to what you spend now and if you are at a loss, subsidise the cost.
- Government and manufacturers should be accountable for setting and reaching accurate CO2 targets and pay-out if they break this. International – easier, needs to be coordinated everywhere.
- Government should make sure many manufacturers pass safety standards should be high; including a mandatory manual override system.
- Government should prioritise the roll out of CAVs for elderly and disabled through regulating manufacturers to do this as part of the tendering process. With a set % quota available for the demographic. NHS – funding concerns, ambulances should be prioritised.

Table 2

- Ensure clear structure of accountability – users not responsible for accidents – network operator liable if accident influenced by malfunction.
- Enable inclusion through standard influence (consistency of design) (accessibility).
- Ensure software compatibility of companies that participate in the network - including existing non-self-driving cars.
- Support people to transition to self-driving vehicles if they become available e.g. financial support/scrappage.
- Register users /ensure age limitation, but respect data privacy.
- Prioritise comfort and safety of passengers.



- Enable users to take control in given situations e.g. traffic light failure.

Table 3

- Ensure that infrastructure is in place first.
- Prioritise safety.
- System education.
- Ensure that systems are thoroughly tested and monitored.
- Ensure that people are aware who's accountable.
- No impact on environment.
- Work towards zero emissions.
- Data systems must be secure.
- Subsidised transport.
- Create re-employment schemes.

3. Leeds

Table 1

- Need to set up a national body rather than at local level:
 - Need experts in this national body but difficult to know how to get them: we don't want the experts from Google and other internet giants but we know they are the experts.
 - Business need to be involved because its where the money is coming from, but biased.
 - Existing manufacturers who can advise on new vehicles need to be involved but again, need some standard safety check list that all manufacturers should agree and be able to tick.
 - The new body could be a new department of the government, including members or representatives from:
 - Police
 - Social services
 - Parent representatives / teachers/ child protection team to decide about the age limit from which a child can be on their own in a driverless car
 - Doctors to help car manufacturers to think about health needs in the vehicles in case of emergency
 - Charity people with disability and mobility needs to help car manufacturers to design the vehicles – all kinds of impairments should be catered for
 - DVLA for the safety test requirements.
- Would the car need a MOT? Not only mechanical but for a software and in that case it should be more often than once a year as technology is moving fast. As the vehicle is electrical, it needs to be plugged in and there will be a check every time the vehicle is plugged in – like an anti-virus, the software would be looking at any



updates/problems and notify the user straight away. Issue with this: it is a check from the internet provider and can be biased not from an independent check like for the MOT. This independent body needs to be effective and have a watchdog, like OFGEM, OFWAT etc. but more effective than the current one.

- The most important principle is the vehicles should be safe and inclusive: everyone regarding their age, condition, wealth, location, is taken into account when developing self driving vehicles.
 - Think about wider than London for the usage of the self driving car: a national initiative but also looking at European standards for vehicles to be on the other side of the road.
 - Additional features required on autonomous vehicles:
 - Tinted windows to avoid other drivers being distracted by autonomous vehicles
 - An independent mechanical device to stop the vehicle in case of an emergency/ if hacked/ if software problem etc.

Table 2

- Sharing – who is in the car?
 - Identity verification!
 - Manufacturers – build the programme into the car.
 - Service providers – enforce ID checks into the AEE and force update.
- Funding for current services.
 - Focus on developing this tech should not have a detrimental effect on current public transport services.
 - Local councils – maintain current public transport service level, private service companies (bus services).
- Accessibility.
 - Guidelines for manufacturers.
 - Physical - to run them.
 - They should not cost anymore to run than today's standard mid-range cars.
 - Access to services should be as affordable as today's basic transport service.
 - Space for wheelchairs, facilities for deaf – with input from a panel of relevant organisations and bodies.
- Transparency – testing and reports online (independent body), plans for the future and funding (local council)

Table 3

- Manufacturer contributions to road infrastructure changes and private investment – but with government regulation (independent).
- Adequate back-up systems in place in case of security breaches. (Enlist



hackers in order to test systems and find flaws etc).

- Enable 'drivers'/users to set parameters/settings for different scenarios – scenic, different people in the cars, manufacturers, unexpected situations.
- Ensure independent rigorous testing.
 - Independent from manufacturers, not paid for by manufacturers.
 - Still have MOTs.
- Interaction and co-operation between nations in regards data sharing and cyber security – Interpol type of organisation but not every country may be on board.
- Inclusivity, affordability and benefits to mobility – expensive, accessible design, door-to-door.

4. Millbrook

Table 1

- Testing and trials – ensure that trials take place in designated zones before public trials.
 - Government should agree standards.
 - Subject to responsibility.
- Safety
 - ensure failsafes and backups and redundancy (including computer systems)
 - create MOTs for self-driving
 - more people to monitor
- Infrastructure – ensure costs of infrastructure (roads, IT, mapping, connectivity) are shared fairly.
- Public Awareness.
- Disability – provide vehicles suitable for all.
- Mobility for all.
- Standards – encourage companies to agree on standards.
 - Safety
 - Compatibility
 - Independent
- Responsibility – ensure oversight of the whole system.
- Transparency.

Table 2

- Develop and communicate a set of transparent protocols, rules and regulations, driven by an independent and impartial organisation.
 - The organisation will be:



- appointed by the Government through a bidding process,
- open to both experts and laymen (important to hear a range of views).
- The organisation will develop:
 - rules around safety, accountability, behaviour (communicated to everyone).
- Ensure that the technology is open to everyone and accessible to people with disabilities by promoting joint up services/technologies. Ensure that the cars can be used by people in wheelchairs and that there are evacuation procedures in place.
- Prioritise environmental benefits over financial profits. Re-invest % of profits into something that is beneficial to society.
- Support people whose jobs will be lost as a result of the introduction of self-driving technology.

Table 3

- Ensure a standard back system is in place that passengers know about.
 - Public awareness broadcast
 - Demonstration video in cars
 - Inclusive – languages, braille
 - Adequate control system
 - Surveillance
- Ensure a plan is in place to fund infrastructure changes.
 - private roads
 - investment
 - vehicle manufacturers' responsibility
- Trial the service (in cities) to ensure benefits outweigh the costs.
- Speak to people. With mobility issues. What are the key needs?
- Legislation in place to ensure private companies work together for successful implementation.

5. Milton Keynes

Table 1

- 1. Accountability: Enforced by the government with legislation regarding the changing responsibilities depending on levels of automation.
- Education and transparency: The general public needs to be made of all the benefits, concerns and the motives of transitioning to this technology.
- Training: Everyone needs to receive some standard teaching that doesn't depend on how manufacturers, on how vehicles operate, road rules, emergency procedures, how to recognise when something goes



wrong.

- Affordability: Public transport (and with new technology) needs to be cheaper than it is now.
- All vehicles should have a standard set of safety features (before amenities) and require regular certified inspection.

Table 2

- Safety: Impact-resistant cabins (manufacturers and Government). All manufacturers need to adhere to standard vehicle safety regulations.
- Cost: Incentive scheme to switch: Government-backed incentive scheme to encourage transition from manual vehicles to autonomous vehicles. Tax breaks on the running costs. Guided phase in for transition to self-driving vehicles (auto / manual).
- Design / aesthetics: For all vehicles – shared and private: design should reflect functionality, aesthetics, consumer demand, whilst adhering to safety guidelines.

Table 3

- Alternative vehicles promoting better quality of life: Quality of life cannot be lower than current. Affordable for all. Accessible for all. Sharing vehicles lowers cost as split between users. Solo users charged full price of journey. New options shouldn't cost more than current cost, e.g. normal commute = £40 petrol per week, solo commute = £40 per week.
- Insurance: All driverless cars must follow protocols to ensure the vehicle is fit for purpose on the road. The responsibility of the car falls down to the vehicle owner.
- Transparency: Government regulation to ensure transparency between manufacturer and user. Create regulatory authority. Approved / specialist service engineers.



Appendix F – Quantitative data results

1. Voting

Participants were asked several questions about perceptions of CAV technology prior to engagement and at each workshop. In each question participants could only select one option. This enabled views to be tracked and analysed over time, and against different demographic groups.

The following data should be treated as indicative of views rather than representative. Therefore, we have presented the data as figures rather than percentages and in the report have not quoted percentages or exact numbers of participants reporting different views. A strength of the dialogue approach is that participants become more informed over time and this can sometimes, but not always, lead to a change in views. Therefore, voting at the end of the dialogue may not reflect current public opinion as it reflects more considered views.

Table 6: Voting questions asked at each stage of the engagement process

Questions	Pre-engagement	Workshop 1	Workshop 2	Workshop 3
To what extent do you think that this technology will have a positive or negative impact on society?	X	X	X	X
To what extent do you think that this technology will have a positive or negative impact and you and your family?	X	X	X	X
What are you most optimistic about in relation to driverless or self-driving vehicles?		X	X	X
What are you most concerned about in relation to driverless or self-driving vehicles?		X	X	X
What would mitigate your concerns about self-driving vehicles?			X	X
Who do you think will benefit most from driverless or self-driving vehicles?			X	X
Which term do you think is easiest for people to understand about this type of technology?				X



1.1. Impacts on society

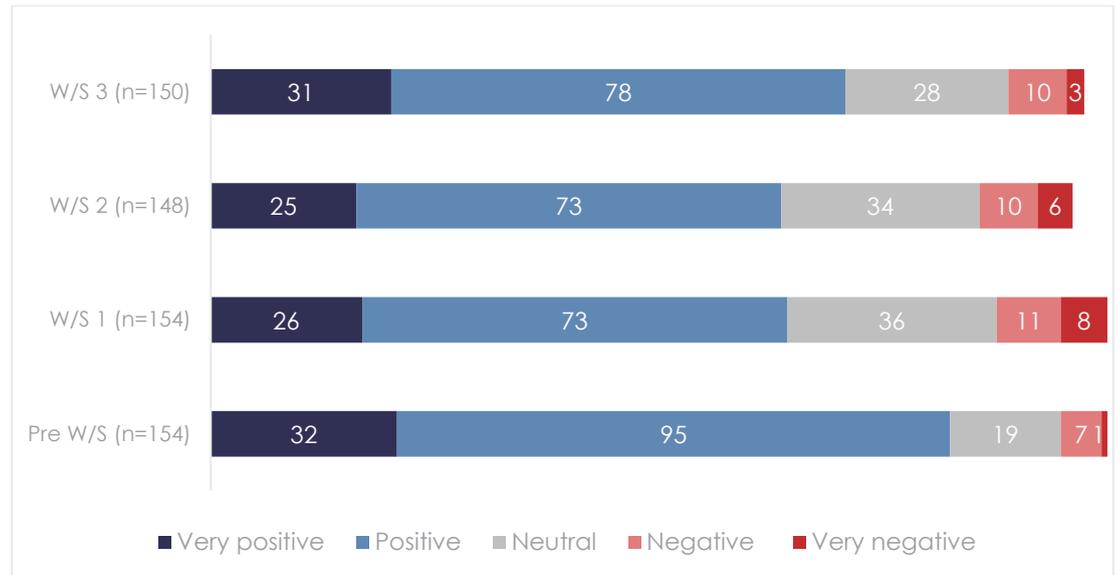


Figure 2: Graph showing participants' votes as to what extent they thought that this technology would have a positive or negative impact on society; from before the workshops (Pre-W/S) and at each workshop (W/S 1, W/S 2, and W/S 3).

1.2. Impacts on you and your family

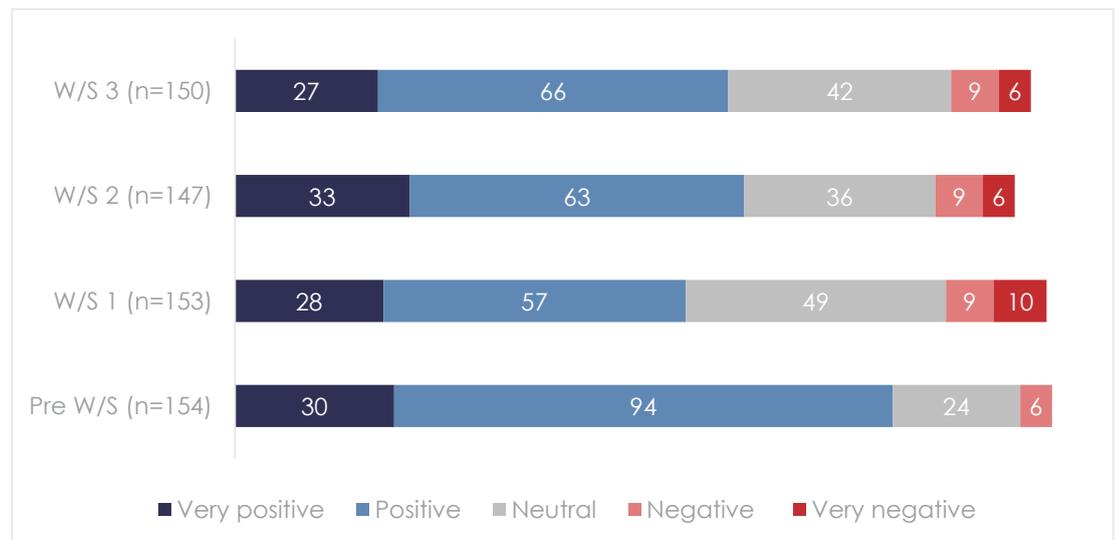


Figure 3: Graph showing participants' votes as to what extent they thought that this technology would have a positive or negative impact on themselves and their families; from before the workshops and at each workshop.



1.3. Who will benefit?

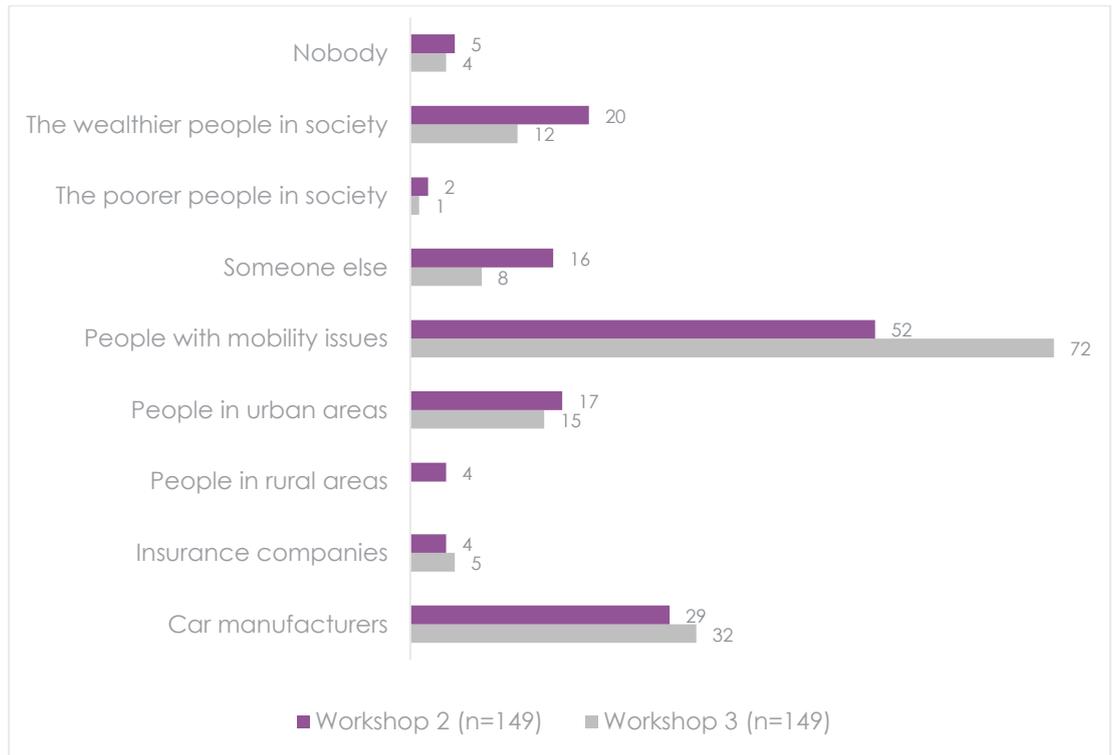


Figure 4: Graph showing the number of participants, at workshops 2 and 3, who voted for each option when asked who they thought would benefit most from CAVs

1.4. What are you most optimistic about?

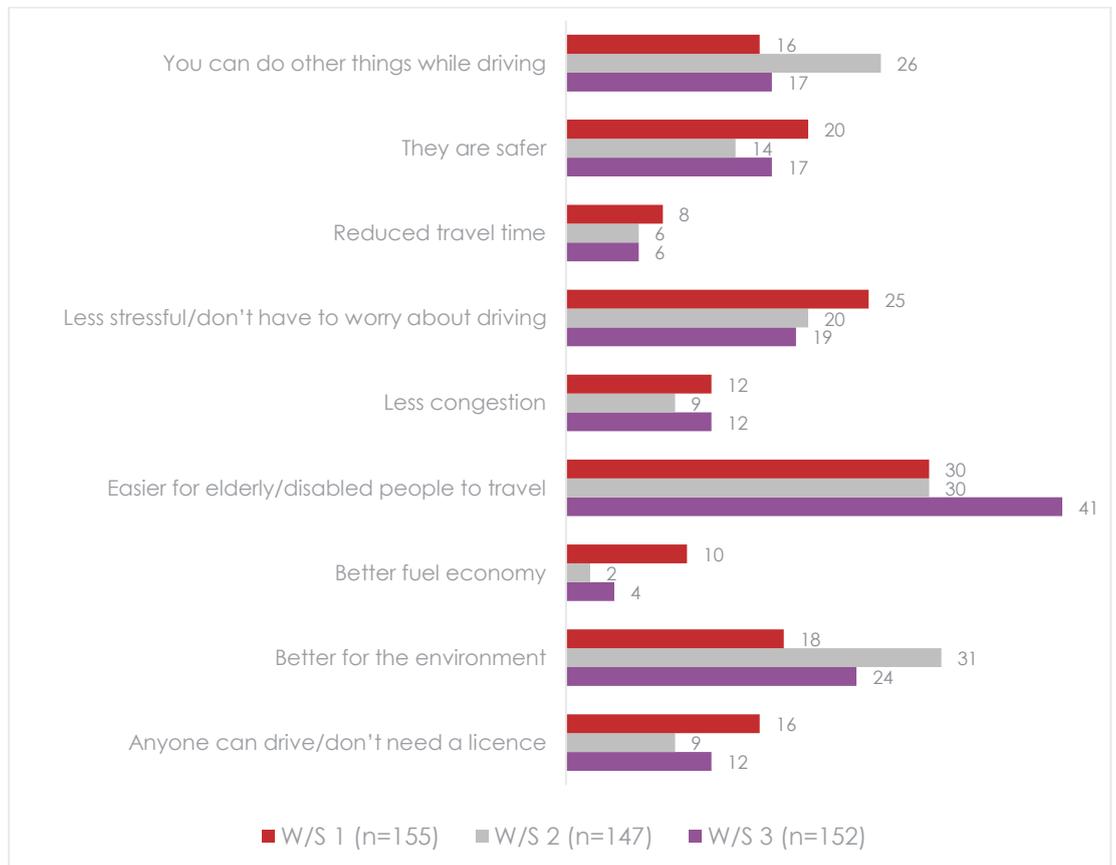


Figure 5: Graph showing the number of participants at each workshop, that were most optimistic about each of the proposed items



1.5. What are you most concerned about?

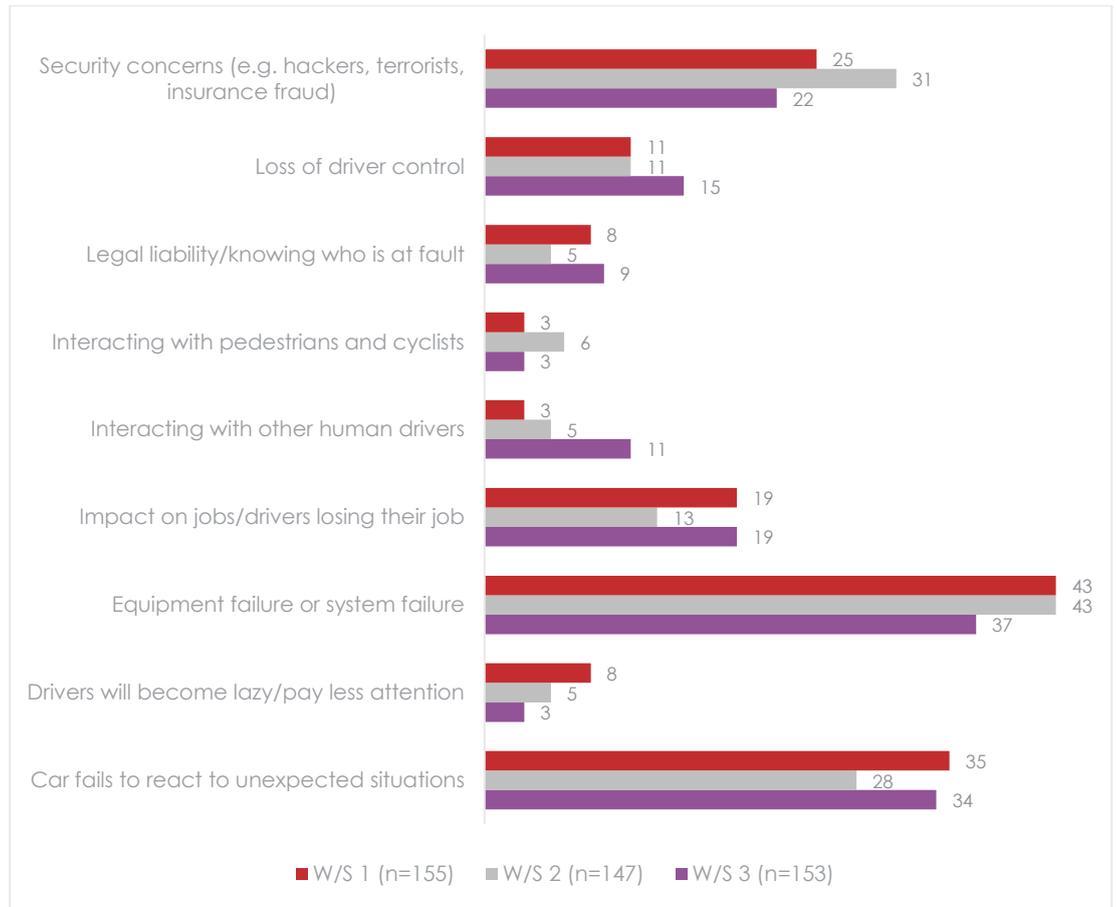


Figure 6: Graph showing the number of participants at each workshop, that were most concerned about each of the proposed items

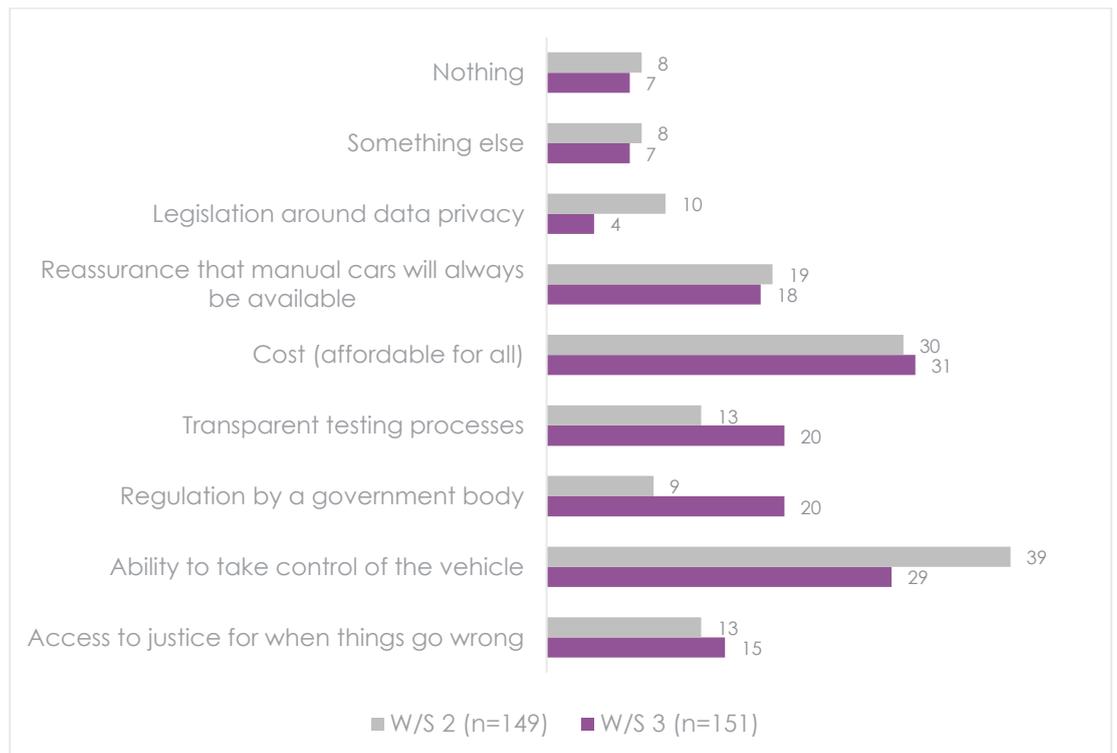


Figure 7: Graph showing the number of participants at workshop 2 and 3, that felt that the proposed measure would mitigate their concerns



2. Lenses

In the second workshop, participants explored three scenarios, with different levels of integration of CAVs into the road transport network. Prior to exploring the scenarios, participants selected five 'lenses' from 33 options. In each scenario they considered if things would be better or worse than today for each of their selected lenses.

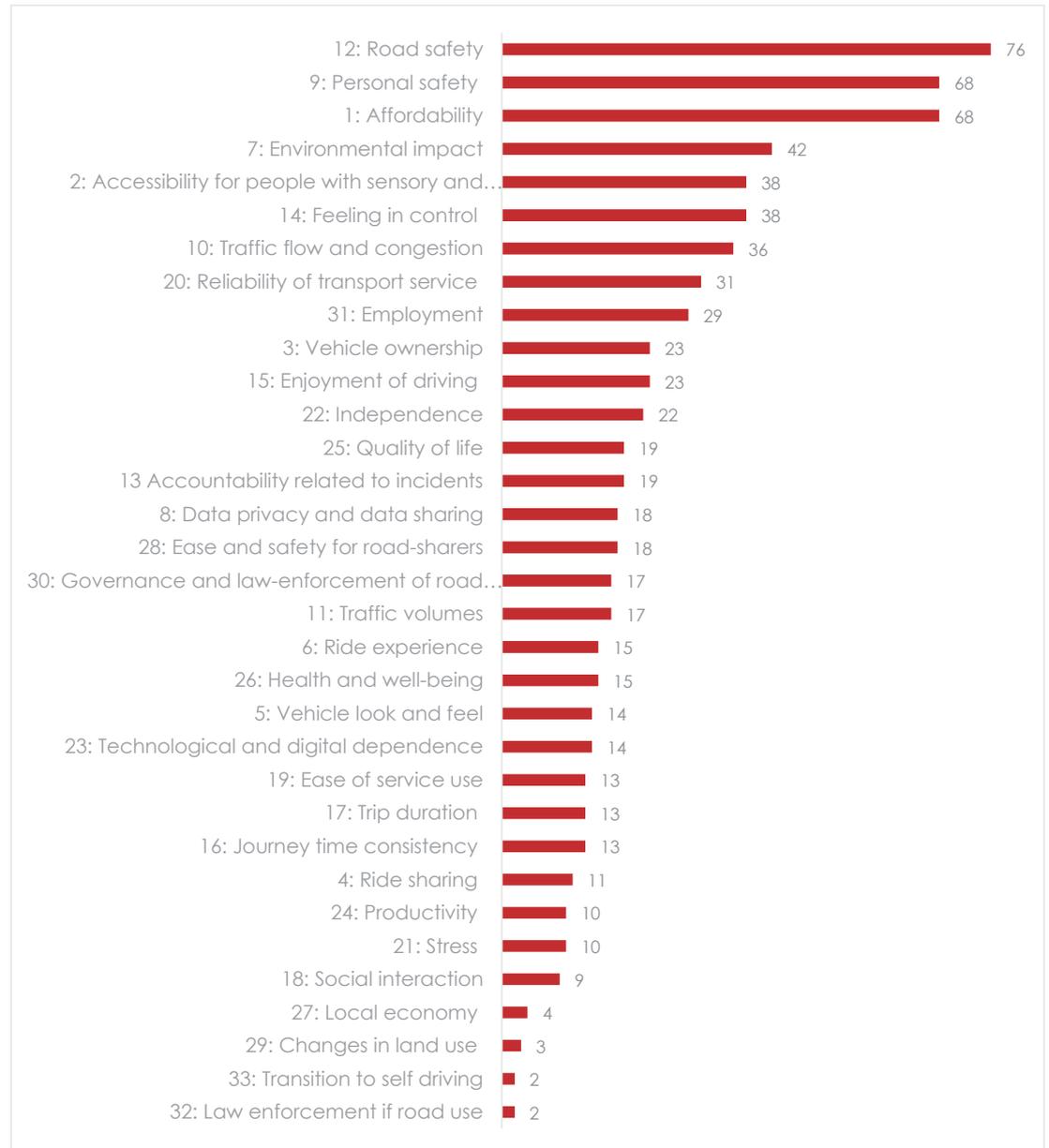


Figure 8: Graph showing how many participants selected each lens option, where each participant could select up to five lenses. The number in each title indicates where it was on the list of options (n= 150)

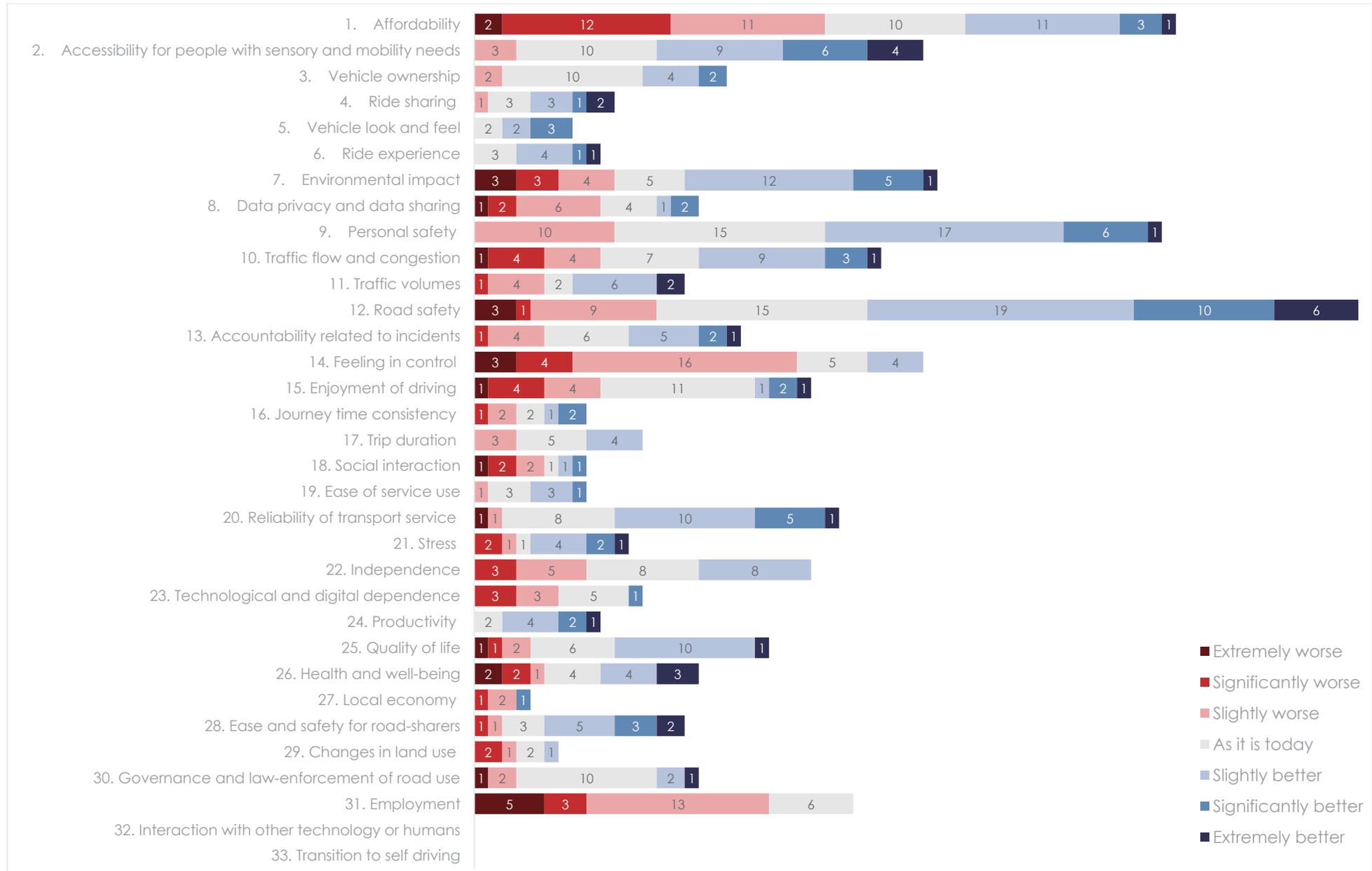


Figure 9: Graph showing participants' perspectives on how their selected lenses would be affected by Scenario A – in which not much has changed in road transport.

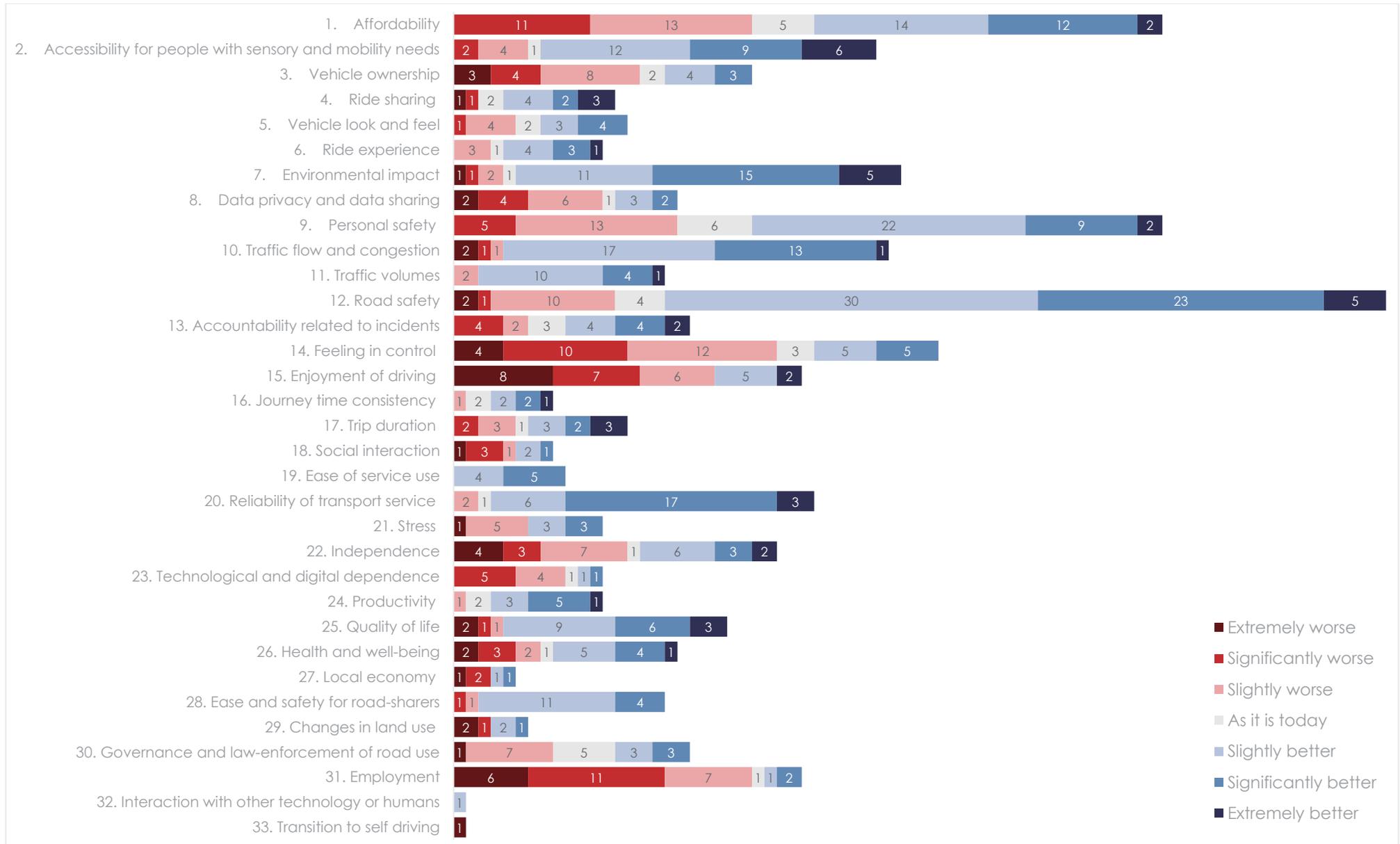


Figure 10: Graph showing participants' perspectives on how their selected lenses would be affected by Scenario B – in which road transport is a mix of CAVs and non-automated vehicles.

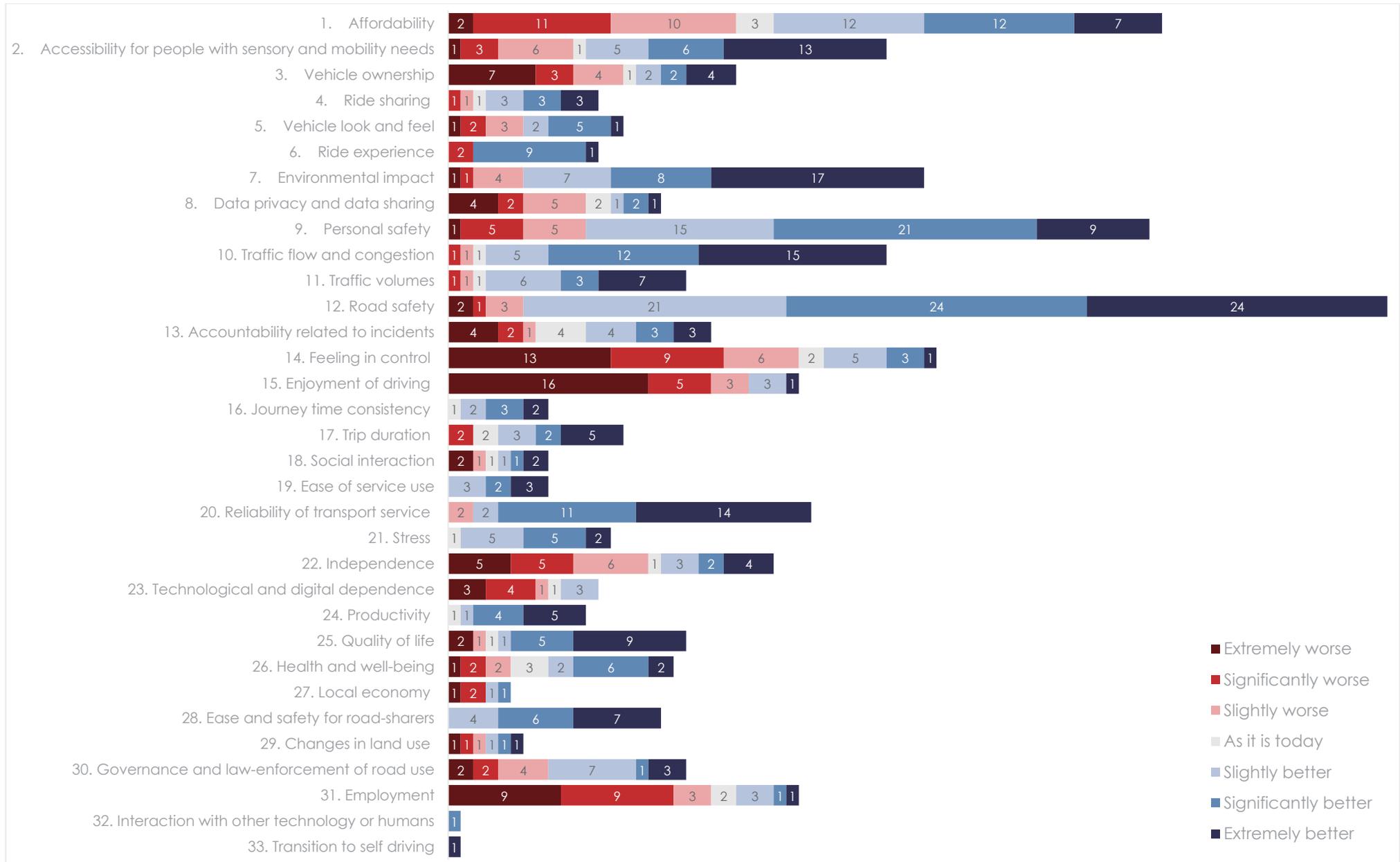


Figure 11: Graph showing participants' perspectives on how their selected lenses would be affected by Scenario C – in which CAVs are the main form of road transport.

TRAVERSE

