KANTAR PUBLIC

Department for Transport

Transport and Technology: Public Attitudes Tracker

Wave 3 summary report

March 2019

Contents

1. Introduction

1.1 Background to the survey

In 2017, the Department for Transport (DfT) commissioned Kantar Public to conduct six waves of research to track public attitudes and behaviours relevant to transport in England. This report focuses on the results from Wave 3 of the survey, conducted in December 2018. Where questions have also been asked at previous waves, we include comparisons to these results and note any changes.

The survey aims to fill gaps in knowledge on key areas and emerging topics such as public attitudes to autonomous vehicles and future modes of travel. It is conducted biannually and comprises a face-to-face omnibus survey.

Survey fieldwork is conducted on the Kantar TNS face-to-face omnibus, a weekly omnibus survey. The omnibus survey is conducted through random location sampling, a high-quality form of quota sampling in which sample points are allocated through a random selection.

Prior to Wave 1, DfT and Kantar Public jointly developed the questionnaire content. This process included a review of relevant questions asked on other surveys and four focus groups to assist the development of new questions. All questions were tested through two rounds of cognitive testing. Further cognitive testing was conducted before Wave 3 to help to develop new questions relevant to ride-sharing and Mobility as a Service; in the questionnaire we gave respondents the example of an app to illustrate this concept.[1]

Around 3,500 adults in England were interviewed at each wave of the survey. The sample is representative of individuals aged 16 or over living in England. Data were also weighted to the profile of adults in England.

More information on the sample and survey methodology is included in Appendix A.

1.2 Notes on findings

The Wave 1 questionnaire included a large number of questions, with a sub-set of these questions followed up at Waves 2 and/or 3. New questions on Mobility as a Service were asked for the first time in December 2018. Appendix B includes an overview of which questions have been asked on each wave of the survey to date. The questionnaire for December 2018 (Wave 3) is included in Appendix C.

The results for questions asked at multiple waves show a high degree of consistency over time, which is helpful in validating those findings. A small number of changes in attitudes have occurred between waves. This might be indicative of a wider change in public attitudes, but further waves of survey data will be needed before determining whether these represent longer-term trends.

Significant differences at the sub-group level and between survey waves are noted in this report. Strictly speaking, significance tests can only be applied to probability samples and are not applicable to the random location design adopted for this survey. However, it can be assumed that the variable of a random location sample is similar to that of an equally specified probability sample. It has therefore been decided to flag any differences – based on a 95% confidence interval – in this report, to help users interpret the results. However, users are encouraged to treat changes flagged as significant with caution. Differences are noted for the key demographic sub-groups of gender, age, social grade[2] and urbanity. Other sub-group

[1] The Mobility as a Service app was introduced to survey respondents as follows: *Imagine you have an app on your smartphone which enables you to access and pay for a range of public and private transport options, including taxis, buses and trains. You could either pay as you go, or you could pay for a monthly package which would be tailored to you, such as paying for unlimited public transport options and two taxis a month. The app would also make recommendations on which travel options might be best for you by using real time information, such as on traffic levels.*

[2] Social grade is a classification system based on occupation; in this report, differences between the upper social grades (ABC1) and lower grades (C2DE) are considered.

comparisons are also included where relevant, including based on region, ethnicity,[3] car ownership and Uber users (defined as those who had used the Uber service in the 3 months prior to the survey).

[3] Our analysis focuses on any differences in results between people from white backgrounds and people from black and minority ethnic backgrounds (BME). Due to limited sample sizes, it is not possible to compare results between different BME groups.

2. Journey Planning

2.1 Transport planning

In December 2018, the majority of smartphone users (86%) had used their phone for at least one transport planning purpose (compared with 84% in December 2017). Those more likely to use their smartphone for transport planning purposes included:

- Urban dwellers (88% versus 80% of rural dwellers); and
- People aged under 45 (93% versus 82% of those aged 45-64 and 69% of those aged 65+).

The most common transport planning purposes mentioned were maps/navigation/satnavs (69%), route planning/route planning apps (63%) and checking live travel times (54%).

2.2 Unfamiliar journey planning

The majority of people said they found planning all types of unfamiliar journey ‘easy’ (this was regardless of whether or not they used a smartphone). Journeys by car/ van and train were seen as easier than those by bus or other forms of public transport (78% and 73% ‘easy’ versus 66% and 64% respectively). Journeys involving different modes of travel were deemed less straightforward than unfamiliar journeys using one transport mode, although 62% of people still reported such planning as ‘easy’. The December 2018 results were in line with those from December 2017.

3. Mobility as a Service

3.1 Travel services: awareness and use

The vast majority of people (88%) were aware of at least one of five travel services in December 2018 (Fig 3.1), with the highest levels of awareness recorded for app-based minicab services such as Uber (77% - same result as December 2017) and car rental services (73%, down from 78% the previous year).

Awareness of public bike share schemes has increased to 45% (from 38% in December 2017); there have been no significant changes in awareness of car clubs or internet-arranged or app-based car sharing.

Of those *unaware* of any of these services, this was most likely to be the case among:

- Women (14% versus men 10%);
- Older people 65+ (25% versus 10% or less in younger groups); and
- Those in social grades C2DE (18% versus ABC1 6%).

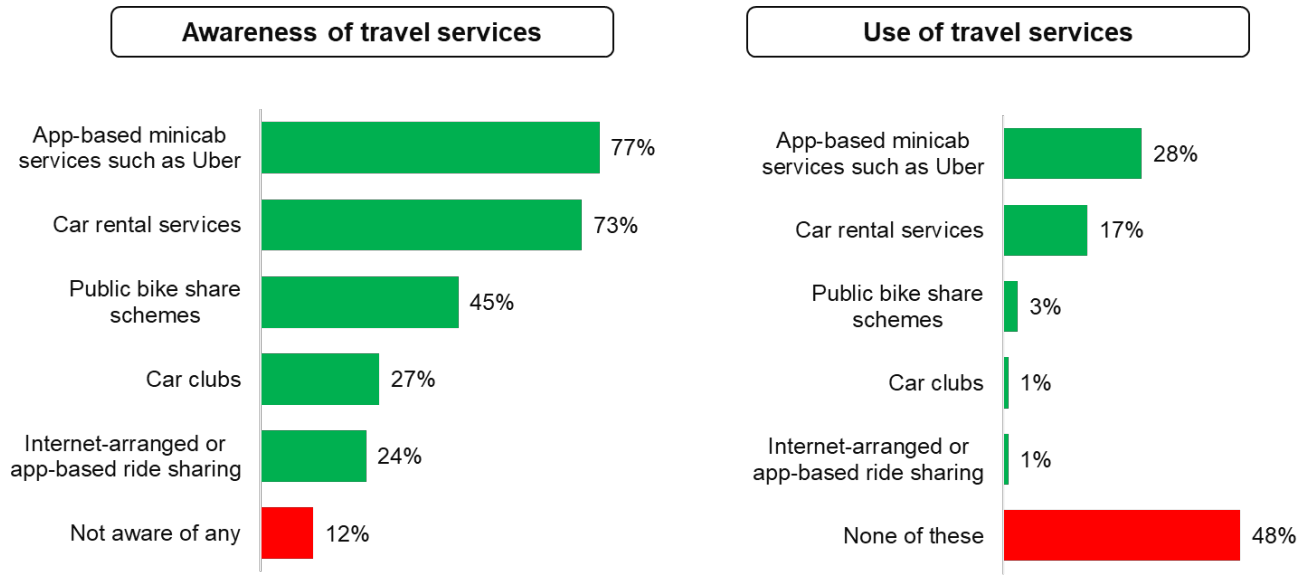
Four in ten people (40%) in December 2018 used at least one of the travel services (Fig 3.1),[4] with those most commonly used being app-based minicab services such as Uber (28% versus 25% in December 2017) and car rental services (17%, compared with 23% in December 2017). There has been no change in the use of public bike share schemes, car clubs and internet-arranged or app-based ride-sharing, but usage levels remain at 3% or less.

Those most likely to have used at least one travel service include:

- Men (44% versus women 37%);
- Younger people (16-24s 48% versus 25% of 65+);
- People from black and minority ethnic (BME) backgrounds (45% versus white 40%); and
- ABC1 (48% versus C2DE 32%).

[4] This result is based on all respondents, including those unaware of the travel services.

Fig 3.1: Awareness and use of travel services, December 2018



Source: Q23. Which of the following types of travel services have you heard of?/ Q.24. Do you personally use any of these travel services nowadays?

Base: Q23 all respondents (Dec 18: 3,532). Q24 asked to all aware of service but re-based on all respondents (Dec 18: 3,532)

3.2 Ride-sharing

As mentioned previously (Fig 3.1), when prompted with a list of travel services, 24% of people were aware of internet-arranged or app-based ride-sharing, and 1% had used such services.

The advantages and disadvantages of ride-sharing were explored for the first time in December 2018 (Fig 3.2). To answer these questions, ride-sharing was defined as "*a taxi that you would share with people you don't know at a lower cost compared with a conventional taxi. The trip is likely to be a bit longer in order to pick up and drop off other people. Uber Pool is an example of ride-sharing".*

Cost was overwhelmingly deemed to be the main advantage of ride-sharing, with 67% saying ride-sharing would be cheaper than travelling alone.[5] The groups more likely to cite this advantage were:

- Men (69% versus women 64%);
- ABC1 (73% versus C2DE 60%); and
- Uber users (79% vs non-users 64%).

Other advantages of ride-sharing were being better for the environment (20%), more social (12%), there being less congestion (11%), and that it would be safer than travelling alone (5%).

Eleven per cent thought there would be no advantages of ride-sharing, and this was more likely to be the case among older people (15% of 65+ versus 25% of 16-24s) and those unaware of app-based minicab services (18% versus 9% of those with awareness of the service).

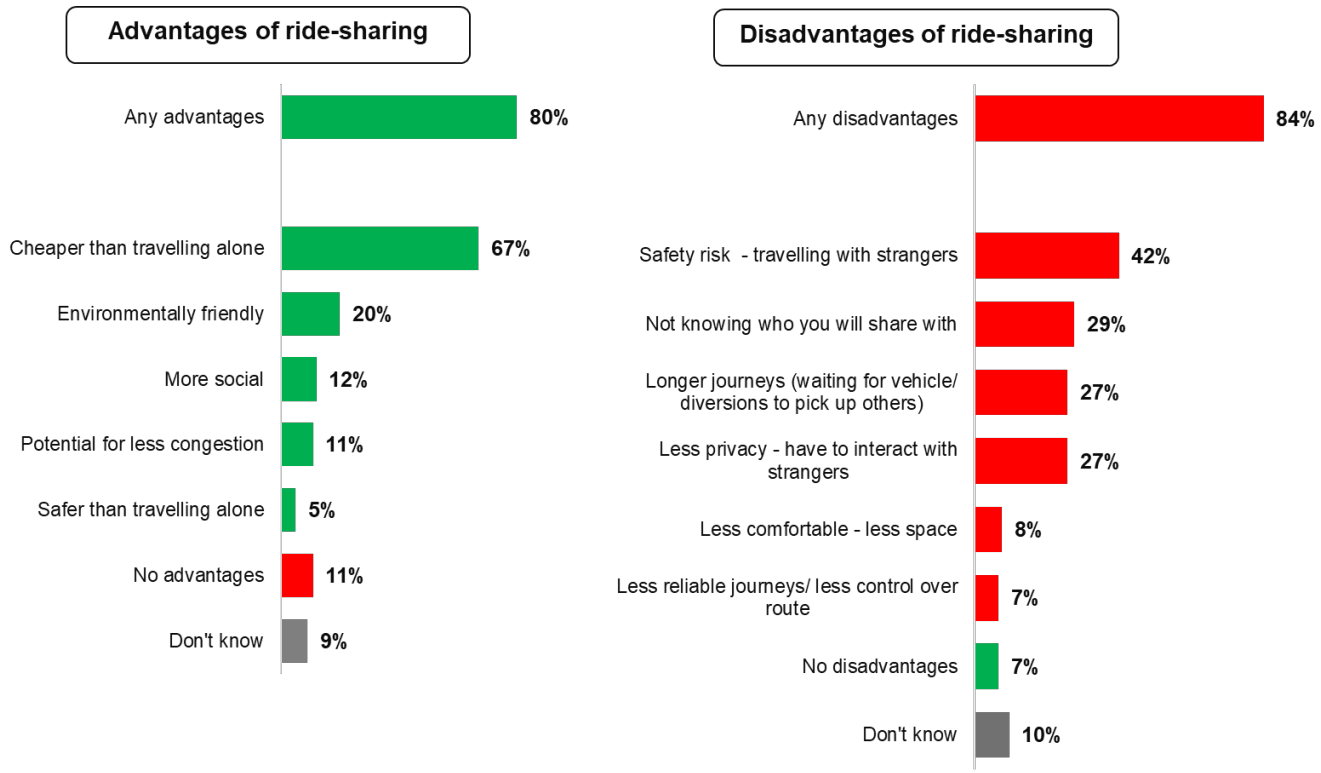
[5] The question about ride-sharing was unprompted, i.e. the interviewer recorded the respondent's answer into a pre-coded list which was not shared with the respondent.

In terms of the disadvantages of ride-sharing, the biggest drawback was safety concerns due to travelling with strangers, mentioned by 42%.[6] Those more likely to cite this issue were:

- Women (49%, versus men 36%);
- BME (48%, versus white 42%); and
- Those living in the North East (57%) and the West Midlands (54%) (versus 44% or less in other regions).

Other disadvantages mentioned were not knowing who you would share with (29%), longer journey times (27%) and less privacy due to having to interact with strangers (27%). When the responses are grouped together, 69% of people mentioned at least one stranger-related concern[7] and 30% mentioned a journey related concern.[8]

Fig 3.2 Advantages and disadvantages of ride-sharing, December 2018



Source: Q71b. What do you think are the advantages, if any, of ride-sharing compared with travelling alone or with people you know in a taxi?/ Q72. What do you think are the disadvantages, if any, of ride-sharing compared with travelling alone or with people you know in a taxi?

Base: All respondents (3,532)

[6] The question was unprompted, i.e. the interviewer recorded the respondent's answer into a pre-coded list which was not shared with the respondent.

[7] Stranger-related concerns included: 'Safety risk – travelling with strangers'; 'Less privacy- having to interact with strangers'; and 'Not knowing who you will share with'.

[8] Journey-related concerns included: 'Longer journeys (waiting for vehicles to arrive/ diversions to pick up others); and 'Less reliable journeys/ less control over choice of route (unable to accommodate complex trip chains/ changing needs during journeys)'.

3.3 App-based minicab services

This section explores the use of app-based minicab services, with a particular focus on Uber as this is the most widely known service of this type.

Around two in ten (18%) of those interviewed in December 2018 said they had used an app-based minicab service in the last 3 months: 16% had used Uber and 2% had used another service. Those most likely to have used an app-based minicab service included:

- Men (19% versus women 16%);
- 16-34s (31% versus 20% or less in other groups);
- BME (29% versus white 16%);
- Urban (19% versus rural 10%); and
- ABC1 (23% versus C2DE 12%).

Those who had used Uber in the last 3 months were asked a series of questions about their last Uber journey.

In terms of the **purpose of their journey**, a majority (63%) said it was for social or leisure purposes. Smaller proportions mentioned travelling to or from work (12%); personal business (11%); and travelling to or from train stations or airports (9%). Five per cent mentioned going to or returning from the shops and this was more common for those in lower social grades (11% C2DE versus 1% ABC1).

In terms of journey **length**, around two-thirds of the most recent journeys were 20 minutes or less: 22% were 0-10 minutes and 44% were 11-20 minutes. The average journey length was 17 minutes.[9]

Those who used Uber in the last 3 months were also asked what **alternative mode of transport**, if any, they would have used had they not used the Uber service (Fig 3.3). Very few said they would not have travelled (4%). Four in ten would have used either a private hire taxi (29%) or a black cab (10%); this was most likely among:

- Car owners (43% versus non-car owners 30%);
- White people (44% versus BME 25%); and
- Those living in rural locations (56% versus urban 37%).

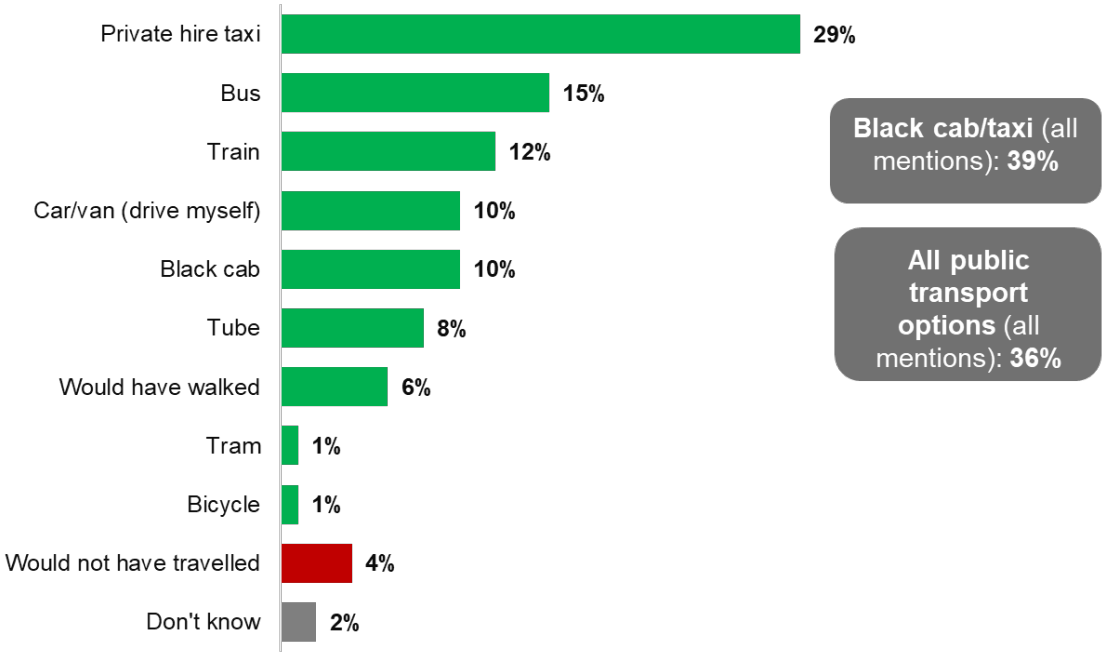
Thirty-six per cent would have used public transport instead of Uber, with bus (15%) and train (12%) the most common mentions. Those more likely to choose public transport as an alternative method of travel were:

- Men (41% versus women 31%);
- Non-car owners (55% versus car owners 27%); and
- BME (48% versus white 32%).

Six per cent said they would have walked and 1% said they would have cycled.

[9] Respondents answered the question in terms of banded journey times. The average figure was calculated using the mid-point of each band, and therefore the calculated average journey time should be treated as indicative rather than exact.

Fig 3.3: Mode of transport that would have been used instead of Uber, December 2018



Source: Q69. If you had not used Uber for this trip, which mode of transport would you have used instead?

Base: Those who used Uber in last 3 months (511)

3.4 Uber Pool

Those who had used Uber in the last 3 months were asked whether they had used Uber Pool for their most recent journey or for any previous Uber journey. The majority of Uber users (78%) said they had never used Uber Pool. In total, 21% of Uber users had used Uber Pool before: 13% had used Uber Pool for their last journey while a further 8% had used Uber Pool for other trips.

The group of Uber users who had **not** used Uber Pool for their last trip were asked why they had not used it. By far the most common answer was not knowing Uber Pool was an option or not having heard of Uber Pool (44%), which may point to a lack of awareness of the service amongst Uber users.

Seventeen per cent said they didn't want to share with strangers, and this was more common among people from BME backgrounds (25% versus 14% of white people). Ten per cent said Uber Pool was not an option for their journey; 8% said it wasn't much cheaper; 7% said they were already travelling in a group; and 5% said it would have made the journey longer.

3.5 Ride-sharing pricing

3.5.1 Uber Pool

Those who used Uber in the last 3 months were presented with a scenario where the price of a regular Uber trip was £20. They were asked how much Uber Pool would need to cost in order to switch to this.

Nine per cent said they would never choose Uber Pool, 19% said it would depend on the circumstances and 7% said they didn't know (Fig 3.4). Around half of Uber users (48%) said they would switch to Uber Pool only if the price was less than £12 (compared with £20 for a regular Uber trip). Only small proportions would switch to Uber Pool if the price was more than £12.

3.5.2 Other ride-sharing services

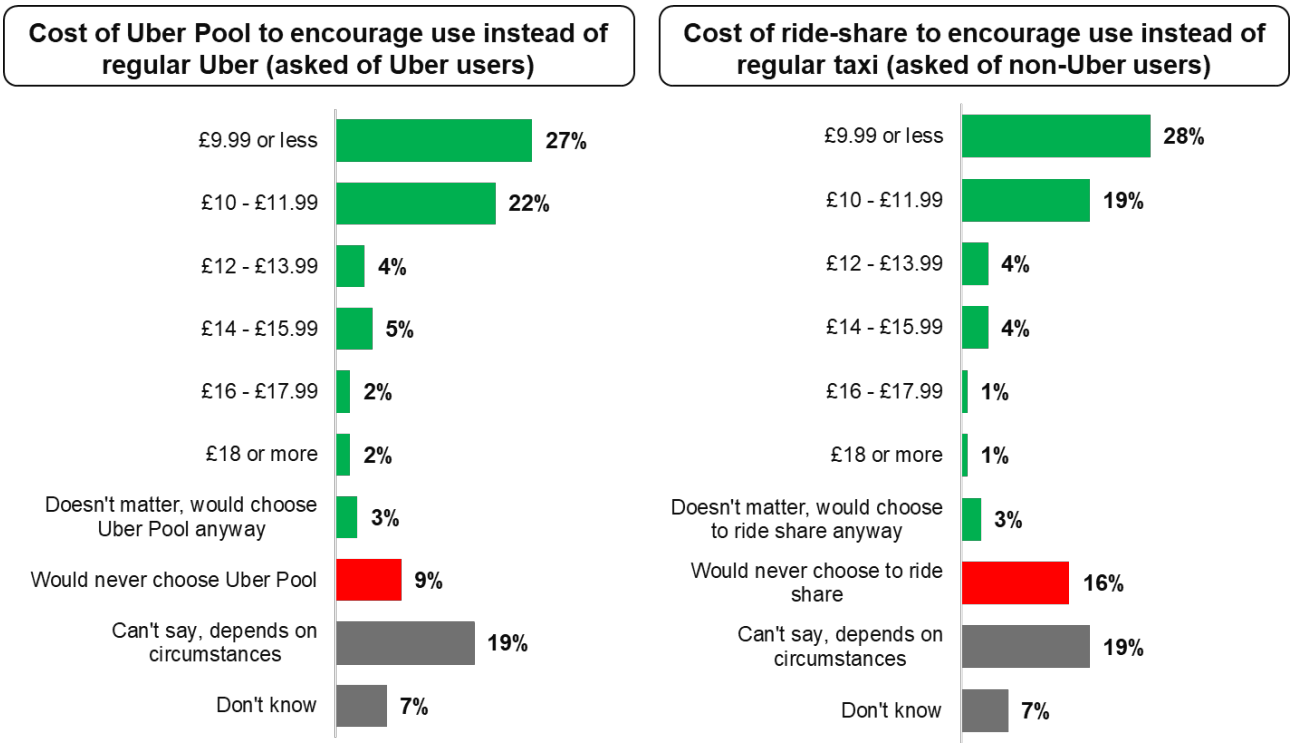
Those who had **not** used Uber in the last 3 months were presented with an equivalent question to that asked of Uber users. They were asked to imagine the cost of a regular taxi trip was £20 and to say how much ride-sharing would need to cost in order to switch to this service.

The results are very similar to those for Uber Pool. Around half (47%) would choose ride-sharing only if the price was under £12 (compared with £20 for a regular taxi trip) (Fig 3.4).

Sixteen per cent said they would never choose to ride-share; this was higher among women (20% versus men 12%) and older age groups (10% 16-24s increasing to 22% for those aged 65+).

Three per cent said the price did not matter and they would choose to ride-share anyway. This was markedly higher in the North East (16% compared with 3% of less in other regions) and a little higher in rural compared with urban areas (6% versus 3%).

Fig 3.4: Cost of journey to switch to Uber Pool or ride-share, December 2018



Source: Q71a. Imagine that the cost of a regular Uber trip – so not using Uber Pool – was £20. How much would Uber Pool need to cost for you to choose it instead of a regular trip?/ Q73. Imagine the cost of a regular taxi trip was £20. How much would ride-sharing by taxi need to cost for you to choose this instead of a regular taxi trip?

Base: Q71a Those using Uber in last 3 months (511)/ Q73 Those who have not used Uber in last 3 months (3,021)

3.6 Mobility as a Service (MaaS) app

All people interviewed in December 2018 were presented with the idea of a new app available for smartphones based around the concept of Mobility as a Service. The app was introduced as follows:

> Imagine you have an app on your smartphone which:
>
> - Enables you to **access and pay for a range of public and private transport options, including taxis, buses and trains.** You could either pay as you go, or you could pay for a monthly package which would be tailored to your needs (e.g. paying for unlimited public transport options and two taxis a month).
> - Makes **recommendations on which travel options might be best for you** by using real time information (e.g. on traffic levels).

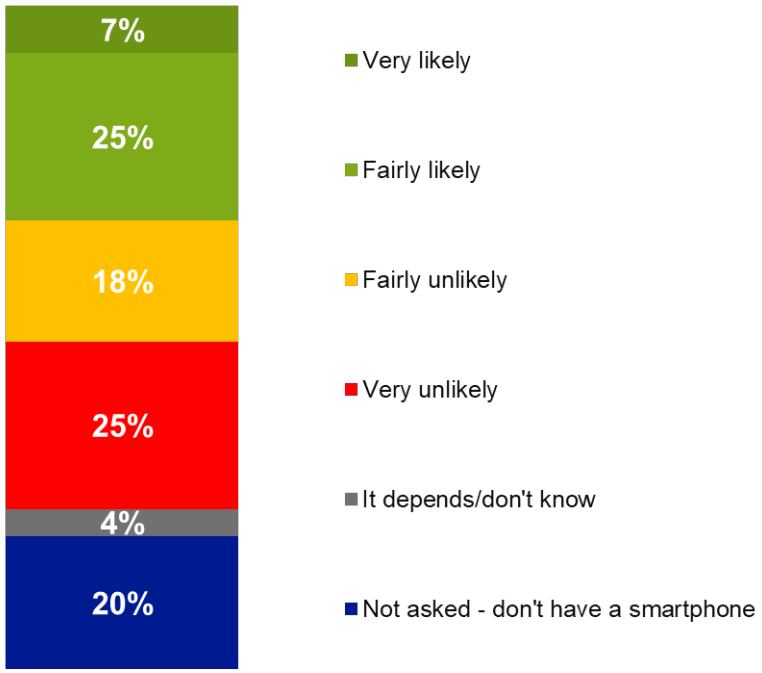
3.6.1 Likelihood to use MaaS app

As shown in Fig 3.5, three in ten smartphone users said they would be likely to use this app (7% 'very likely' and 25% 'fairly likely'). It is important to treat this finding with a degree of caution; the app was a newly introduced concept with only a short description provided, so it is not possible to say whether all those who said they would use the app would do so in practice.

Those groups who were more likely to say they would use the app included:

- Men (35% versus women 29%);
- Younger people (54% of 16-24s dropping to 9% among those aged 65+);
- BME (43% versus white 30%);
- Urban (33% versus rural 28%); and
- Uber user (60% versus non-user 27%).

Fig 3.5: Likelihood to use a Mobility as a Service app, December 2018



Source: Q60. How likely, if at all, would you be to use a service like this?

Base: All who use a smartphone (rebased to all; 3,532)

3.6.2 Potential impact of MaaS app on car/van use and ownership

Those who owned or used a car or van and were smartphone users were asked how likely it was that they would reduce their car/van use if a Mobility as a Service app was available. Twenty-three per cent said they would be likely to reduce use (3% 'very likely' and 19% 'fairly likely'). However, once again, we cannot say with any certainty that this level of reduced car/van use would happen in practice.

Those more likely to say they would reduce car/van use included:

- ABC1 (26% versus C2DE 17%);
- BME (33% versus white 21%); and
- Uber user (39% versus non-user 19%).

There was also a pattern of likelihood to reduce car use decreasing with age, ranging from 28% amongst 16-24 year olds to 9% amongst those aged 75+.

In addition, people were asked whether they would be likely to give up ownership of their car or van if this new service was available. This question was asked of those who said they would be likely to reduce their car use. The results, however, have been re-based to also include those who said they would be unlikely to reduce car use. Overall, 7% said they were likely to give up car/van ownership (1% 'very likely' and 6% 'fairly likely') and those more likely to say they would do so were:

- Urban dwellers (8% versus rural dwellers 4%);
- London (17% versus 10% or less elsewhere);
- BME (12% versus white 6%); and
- Uber user (14% versus non-user 5%).

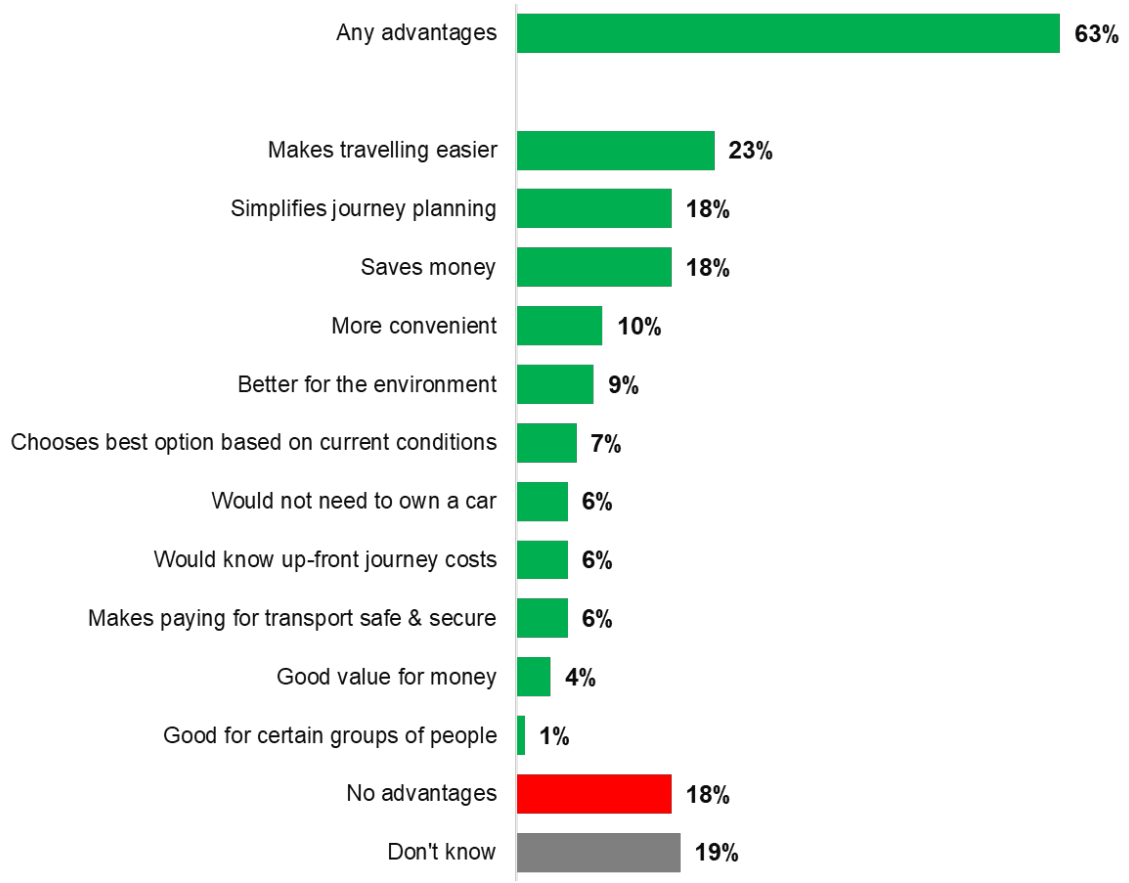
3.6.3 Advantages and disadvantages of MaaS app

All those interviewed in December 2018 were asked what they saw as the advantages and disadvantages of a Mobility as a Service app (Fig 3.6).[10]

Overall, 43% mentioned a convenience-related advantage, including making travelling easier (23%), simplifying journey planning (18%), being more convenient (10%) and choosing the best option based on current conditions (7%). Twenty-five per cent mentioned a cost-related reason, including saving money (18%), knowing the upfront journey costs (6%), and being good value for money (4%).

Around four in ten could either not think of any advantages (18%) or did not know (19%), and this was more likely among older people (58% of those aged 65+ versus 41% or less in younger groups), those in lower social grades (C2DE 45% versus ABC1 30%) and those with restricted mobility (59% versus fully mobile 35%).

Fig 3.6: Advantages of Mobility as a Service app, December 2018



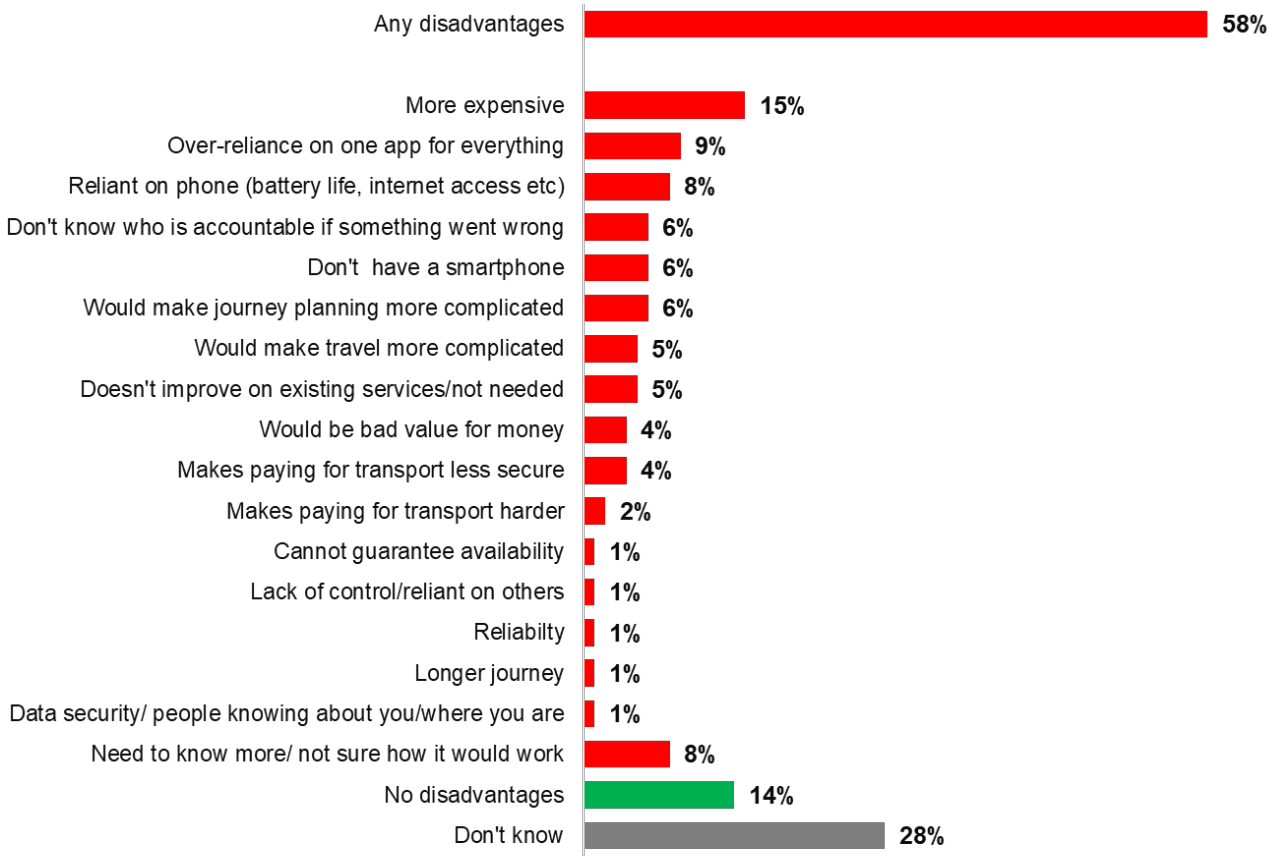
Source: Q63. What do you think the advantages, if any, of a service like this might be?

Base: All respondents (3,532)

[10] This was an unprompted question.

In terms of disadvantages, these were wide-ranging, but only mentioned by small percentages in most cases (Fig 3.7). After pooling responses together into themes, 17% cited cost as a disadvantage,[11] while 11% mentioned a concern related to the app complicating travel.[12] Fourteen per cent could not think of any disadvantages and 28% said they did not know.

Fig 3.7: Disadvantages of Mobility as a Service app, December 2018



Source: Q64. What do you think the disadvantages, if any, of a service like this might be?

Base: All respondents (3,532)

[11] This included: 'More expensive' and 'Would be bad value for money'.

[12] This included: 'Would make journey planning more complicated'; 'Would make travelling more complicated'; and 'It makes paying for transport harder'.

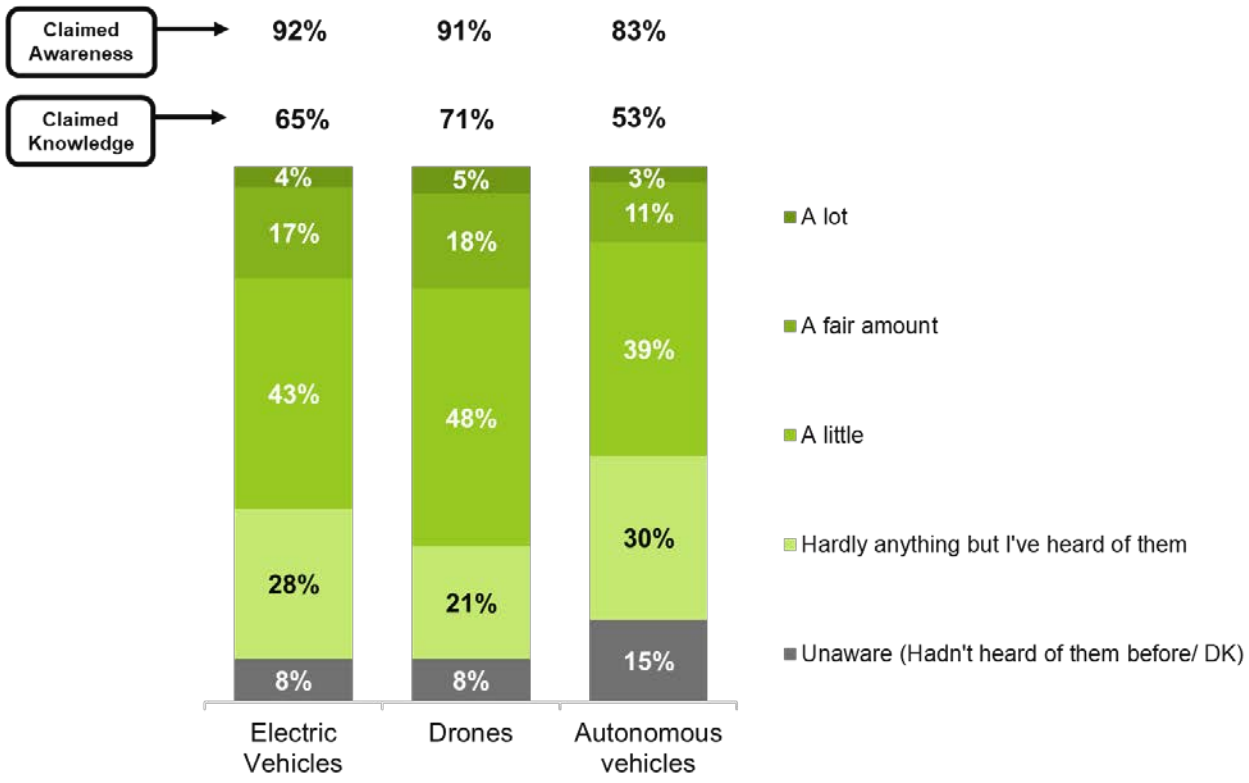
4. Awareness

4.1 Awareness of electric vehicles, drones and autonomous vehicles

Awareness of new and current technologies was high in December 2018, with over eight in ten claiming awareness of each of electric vehicles (EVs), drones, and autonomous vehicles (AVs). Awareness of drones and EVs was highest, with 91% and 92% saying they were aware of these respectively, while 83% were aware of AVs. Awareness levels were stable year on year but compared to six months previously (in June 2018), awareness had dropped slightly for drones (down from 94%) and AVs (down from 87%).

While overall awareness was high, a large majority of those aware said that they only knew 'a little' or 'hardly anything' about the technology in question (Fig 4.1).

Fig 4.1: Awareness of new and current technologies, December 2018



Source: Q25. How much, if anything, would you say you know about electric vehicles?/ Q28. 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 vehicles?/ Q34. How much, if anything, would you say you know about drones?

Base: All respondents (3,532)

4.1.1 Awareness of electric vehicles

Over nine in ten (92%) claimed to be aware of EVs in December 2018 and this is consistent with earlier survey waves. Claimed knowledge (defined as knowing at least 'a little') remains the same as in June 2018 (65%), although the percentage of those who said they knew 'a fair amount' or 'a lot' has dropped back to the level seen in December 2017, standing at 21% in December 2018 compared to 25% in June 2018.

As in December 2017 and June 2018, claimed knowledge was higher among men (76% versus women 53%) and social grades ABC1 (74% versus C2DE 55%), and significantly lower among those aged 75+

(46% versus 56% or more in other age groups). Knowledge was significantly lower in the North West (49%) and North East (46%) compared with all other regions.

Further results in relation to electric vehicles are included in section 5.

4.1.2 Awareness of drones[13]

Awareness of drones remains very high at 91% in December 2018, which is similar to that seen in December 2017 (92%). Claimed knowledge was 71%, which is a similar to June 2018 and December 2017, with 23% claiming that they knew a 'fair amount' or 'a lot' about drones.

Groups more likely to claim knowledge about drones included men (79% versus women 63%), and those in social grades ABC1 (78% versus C2DE 62%). At least 72% of those in all age groups up to 65 claimed some knowledge, compared with 62% of those aged 65-74 and 50% of those aged 75+ (the latter group was significantly less likely than all other age groups to claim knowledge).

4.1.3 Awareness of autonomous vehicles (AVs)

While awareness of AVs remains at 83%, this is lower than that observed in June 2018 (87%) but in line with the level seen in December 2017 (83%). Claimed knowledge remains stable over time, with 53% of people in December 2018 claiming to know at least 'a little' about AVs.

Groups more likely to claim knowledge about AVs included men (64% versus women 42%), those in social grades ABC1 (62% versus C2DE 43%) and car owners (59% versus 40% of non-car owners). People in the oldest age bracket (75+) were much less likely than other age groups to claim knowledge (36% versus 49% or more in other age groups).

At a regional level, in December 2018 those living in the North East had significantly lower levels of knowledge than those living in all other regions (34% versus 47% or more).

Further results in relation to autonomous vehicles are included in section 5.

4.2 Driver assistance features: awareness and usage

In December 2018, three quarters of people (76%) said they were aware of at least one driver-assistance feature;[14] this marked an increase since June 2018 (73%) but was similar to the findings for December 2017 (76%). The feature with the greatest level of awareness was automated parking (66%) (Fig 4.2).

Two in ten (21%) were not aware of any of the features, and this was most likely among women (28% versus men 15%) and those aged 65+ (32% versus 24% or less in other age groups).

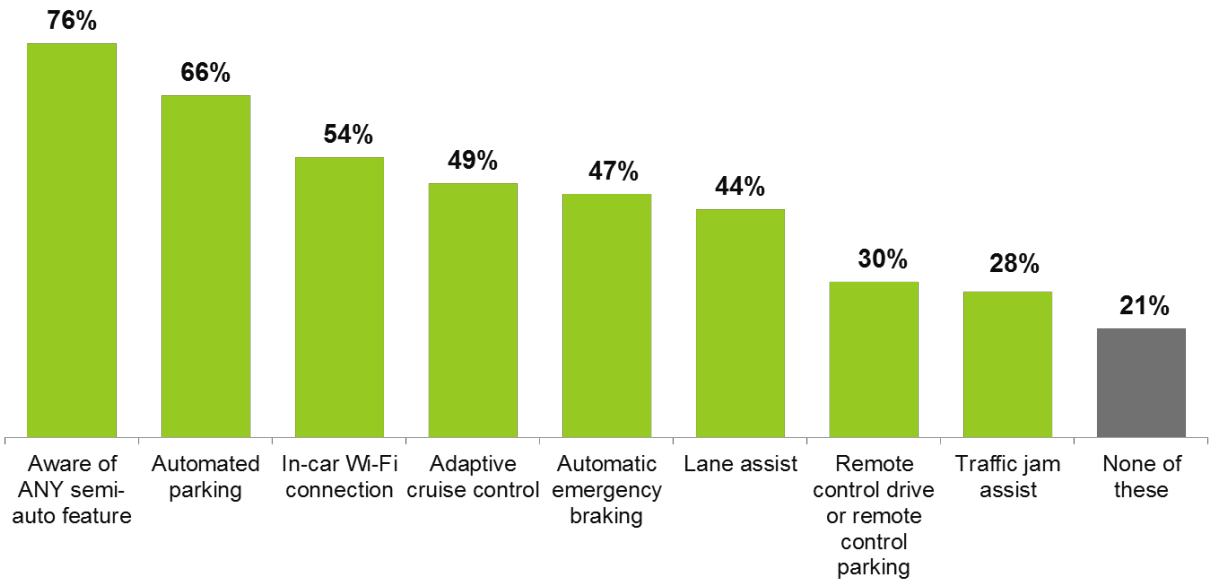
Year on year, there have been significant increases in the proportions of people aware of:

- Automated parking (66%, up from 61% in December 2017)
- In-car Wi-Fi connection (54%, up from 50%)
- Adaptive cruise control (49%, up from 44%)
- Automatic emergency braking (47%, up from 44%)
- Remote control drive or remote-control parking (30%, up from 24%)
- Traffic jam assist (28%, up from 22%)

[13] The December 2018 survey took place before the widely reported disruption of Gatwick airport by drones.

[14] This figure excludes those who were ONLY aware of in-car Wi-Fi connection, which is not classified as driver assistance.

Fig 4.2: Awareness of driver-assistance features, December 2018



Source: Q31. 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 have you heard of?

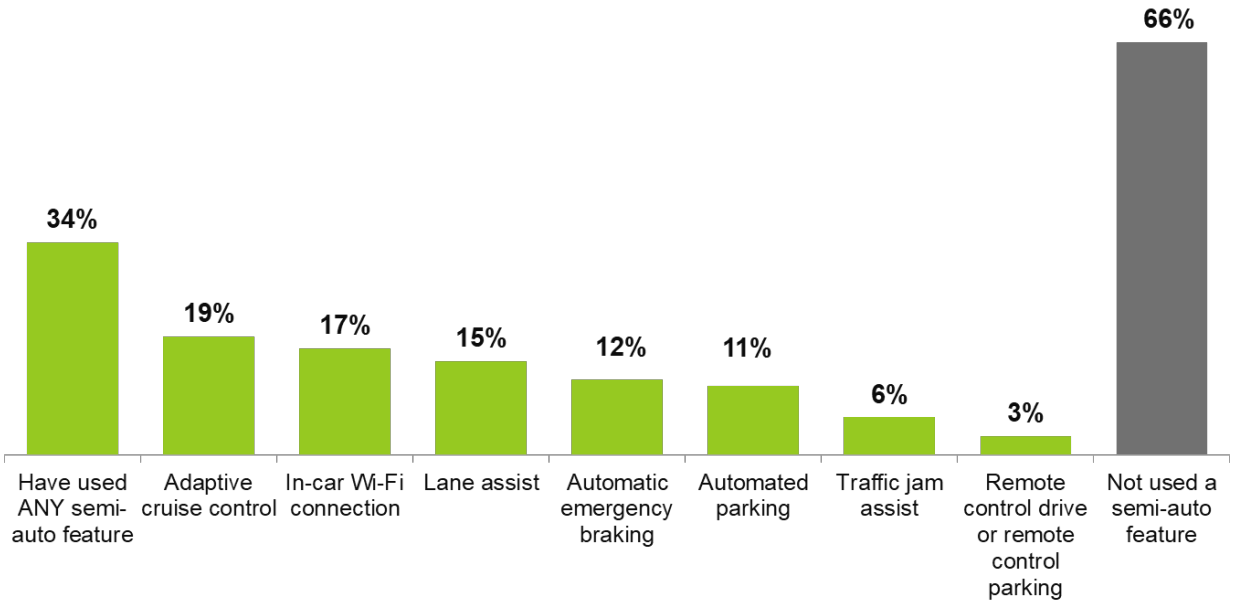
Base: All respondents (3,532)

Amongst those with a valid UK driving licence, just over three in ten (34%) had used any of these features (Fig 4.3), with adaptive cruise control (19%) and in-car Wi-Fi (17%) the most commonly used. Reported usage was highest among among men (40% versus women 27%) and those aged 25-34 (41%) and 35-44 (40%).

Year on year, there have been increases in **use** of:

- Adaptive cruise control (19%, up from 16% in December 2017)
- In-car Wi-Fi connection (17%, up from 15%)
- Lane assist (15%, up from 12%)
- Automatic emergency braking (12%, up from 9%)
- Remote control drive or remote-control parking (3%, up from 1%)

Fig 4.3: Use of semi-autonomous features, December 2018



Source: Q32. And which, if any of these, have you used yourself?

Base: All with a valid UK driving licence (rebased: 2,362)

4.3 Awareness of future modes of travel: space tourism, HGV platoons, hyperloops, flying taxis

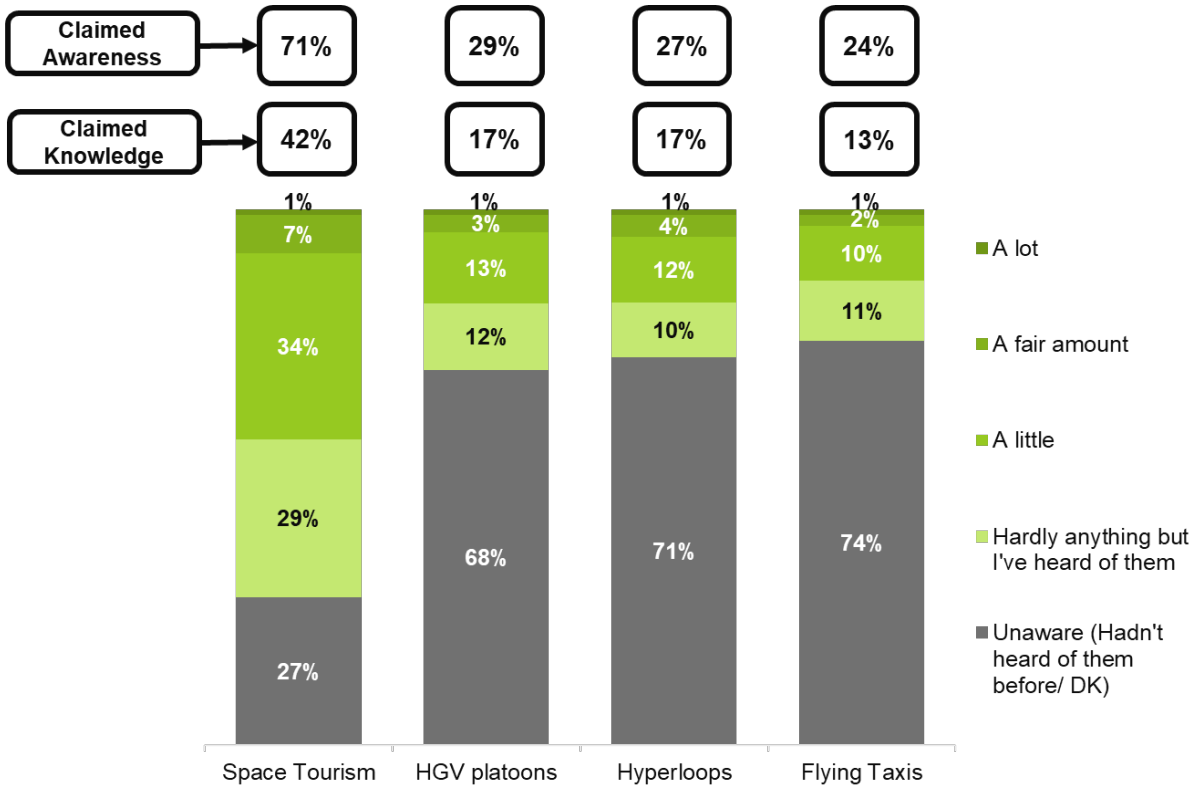
Awareness of a range of future modes of travel varied greatly, with the highest awareness recorded for space tourism (Fig 4.4):

- Space tourism, 71% aware
- HGV platoons, 29% aware
- Hyperloops, 27% aware
- Flying taxis, 24% aware

In terms of claimed knowledge, while four in ten (42%) knew at least 'a little' about space tourism, less than two in ten claimed knowledge of any of the other transport modes.

Claimed knowledge for all types of future transport modes was higher among men than among women.

Fig 4.4: Awareness of space tourism, HGV platoons hyperloops and flying taxis, December 2018



Source: Q33. The next question is about HGV platoons. By this we mean wirelessly connected lorries travelling in convoy close together, with acceleration, braking and potentially steering controlled by the lead vehicle. How much, if anything, would you say you know about HGV platoons?/ Q41. Space tourism will allow members of the public to buy tickets to travel to space and back. How much, if anything, would you say you know about space tourism?/ Q42. Hyperloops are a proposal to travel at speed of up to 800 miles per house between cities. How much, if anything, would you say you know about hyperloops?/ Q43. Flying taxis are drones that can fly passengers on short journeys within cities, without the need for a pilot. How much, if anything, would you say you know about flying taxis?

Base: All respondents (3,532)

Year on year, levels of awareness and knowledge of space tourism and hyperloops are stable. However, awareness of flying taxis has increased to 24% in December 2018 (from 20% in December 2017) and claimed knowledge has risen to 13% (from 10%) in the same period.

In contrast, awareness of HGV platoons has dropped to 29% (from 36% in December 2017), with a corresponding fall in levels of knowledge to 17% (from 21%).

5. Public attitudes to Electric Vehicles and Autonomous Vehicles

5.1 Electric vehicles (EVs)

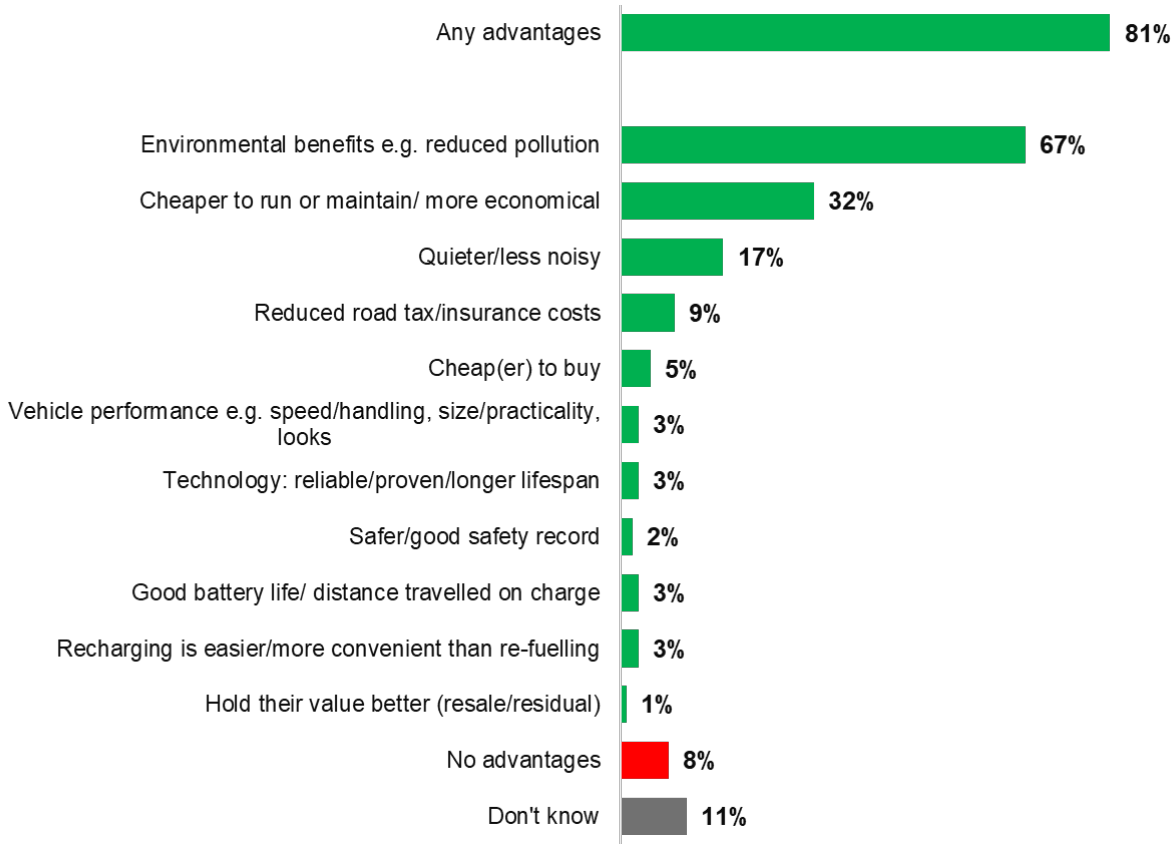
5.1.1 Perceived benefits and concerns surrounding electric vehicles

The categories in Fig 5.1 represent unprompted, 'top of mind' responses when respondents were asked if they could think of any advantages of EVs over petrol or diesel vehicles. The environmental benefit of EVs was by far the most commonly cited advantage (67%), followed by lower running costs associated with EVs (32%) and being quieter/less noisy (17%). Eight per cent perceived there to be no advantages to EVs, while 11% answered 'don't know'.

Those in social grades ABC1 were more likely than those in C2DE to mention environmental benefits of electric vehicles (75% versus 59% respectively).

The responses in December 2018 are very similar to those recorded in December 2017 (when the question was last asked).

Fig 5.1 Perceived advantages of electric vehicles, December 2018



Source: Q26. What do you think are the advantages, if any, of electric over petrol or diesel vehicles?

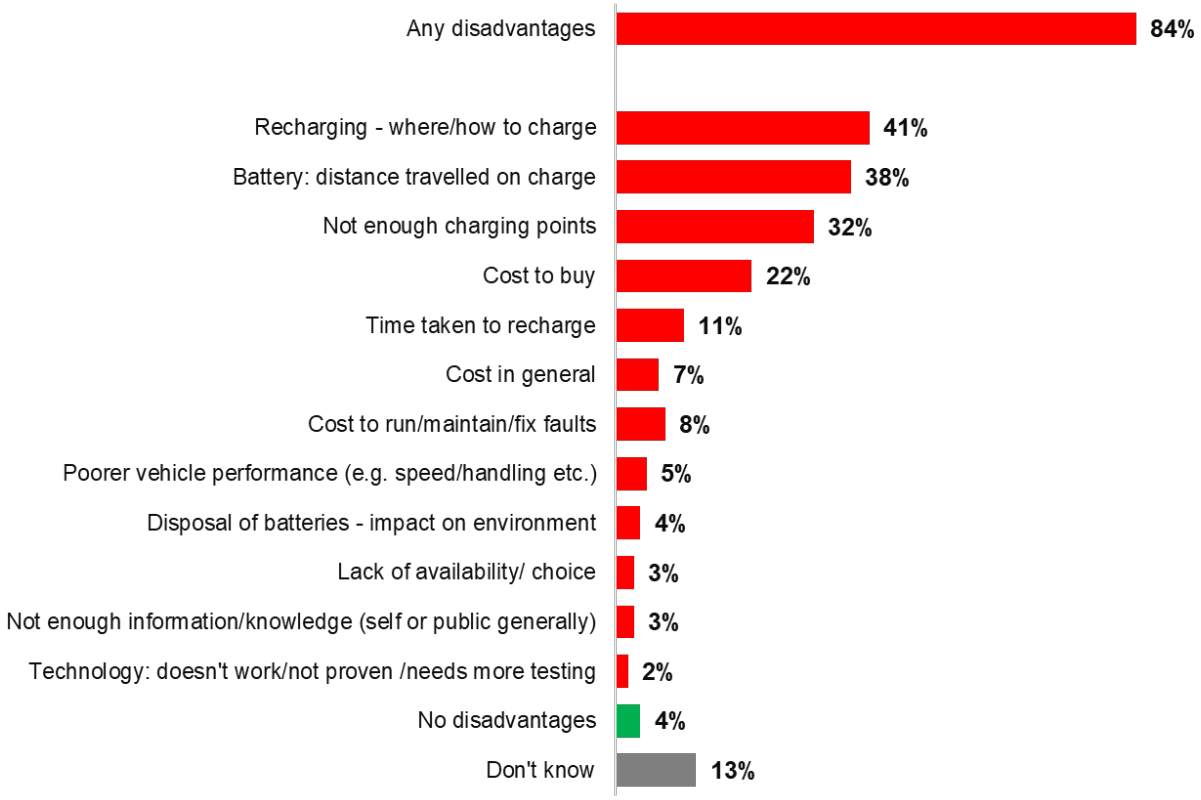
Base: All respondents (3,532)

In terms of the perceived disadvantages of EVs (Fig 5.2), issues relating to recharging and batteries were common themes: four in ten mentioned recharging (where/how) (41%) and battery life/distance travelled (38%) as disadvantages, while three in ten (32%) mentioned a scarcity of charging points. When responses were grouped together, 56% mentioned recharging concerns;[15] 40% mentioned battery concerns;[16] and 29% mentioned a concern related to cost.[17] A small minority (4%) could think of no disadvantages of EVs, while 13% answered 'don't know'.

Rural dwellers were more likely than those in urban areas to mention concerns around recharging (48% versus 39% respectively) and distance travelled on battery charge (44% versus 37%). Cost was more likely to be an issue for men (35% versus women 24%) and those in social grades ABC1 (31% versus C2DE 27%). Women were more likely than men to answer 'don't know' (17% versus 8% respectively).

The pattern of response was very similar to that seen in December 2017.

Fig 5.2 Perceived disadvantages of electric vehicles, December 2018



Source: Q27. What do you think are the disadvantages, if any, of electric over petrol or diesel vehicles?

Base: All respondents (3,532)

[15] This included 'Recharging – where/how to charge'; 'Not enough charging points'; and 'Time taken to recharge'.

[16] This included: 'Battery: distance travelled on charge'; 'Disposal of batteries – impact on environment'; and 'All other negative references to batteries' (not charted).

[17] This included: 'Cost to run/maintain/fix faults'; 'Cost to buy'; 'Cost in general'; and 'Value: resale/residual' (not charted).

5.2 Autonomous vehicles (AVs)

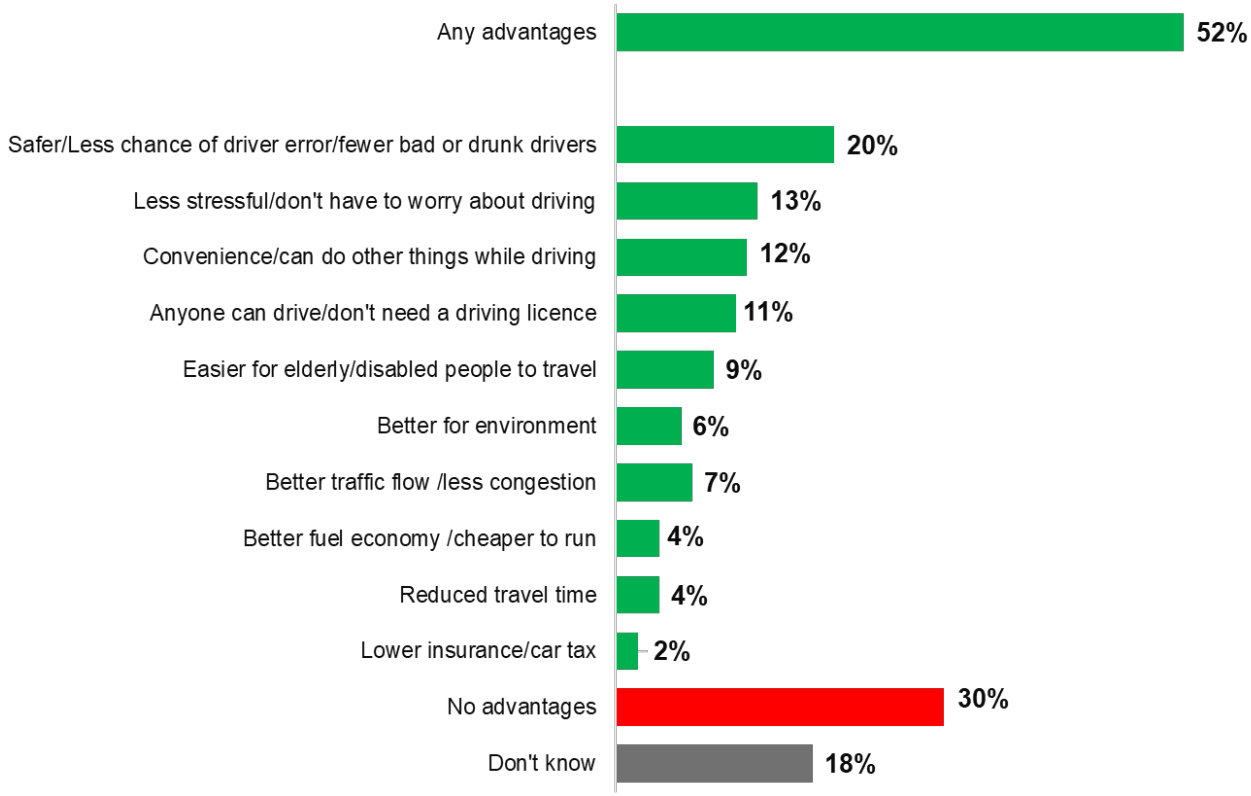
5.2.1 Perceived benefits and concerns surrounding autonomous vehicles

When asked for a top of mind response, half (52%) could mention at least one advantage of AVs, compared with eight in ten (80%) who could think of at least one disadvantage (Fig 5.3, Fig 5.4). Three in ten (30%) said there were no advantages, and 18% answered 'don't know'.

The most commonly reported advantage was safety (20%), followed by being less stressful/not having to worry about driving (13%) and convenience (12%). Those who knew at least a 'fair amount' about AVs were more likely to mention safety than those unaware of AVs (38% versus 9% respectively). A perception that AVs offered no advantages increased with age, from 14% of those aged 16-24 rising to 46% of those aged 65-74.

Year on year, the proportion of people citing at least one advantage has increased slightly (52% up from 49% in December 2017). While the pattern of response within category was similar, a larger proportion of people in December 2018 mentioned that anyone can drive/don't need a driving licence (11% versus 6% in December 2017).

Fig 5.3 Perceived advantages of autonomous vehicles, December 2018



Source: Q29. What do you think are the advantages, if any, of fully driverless or self-driving vehicles?

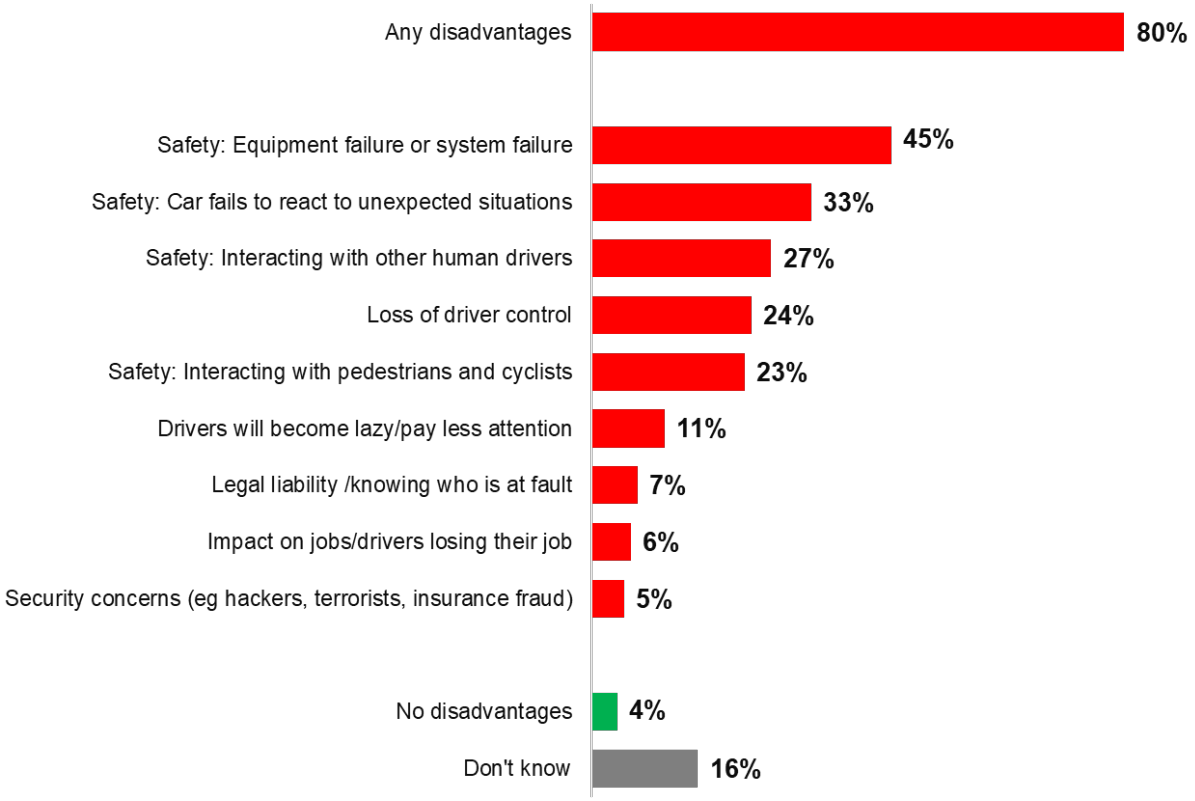
Base: All respondents (3,532)

When asked about perceived disadvantages of AVs, safety of equipment/ systems was the most commonly cited concern (45%), while 33% mentioned safety in unexpected situations. Fifty-eight per cent of people mentioned at least one safety-related concern.[18] Four per cent could think of no disadvantages and 16% answered 'don't know'.

Those in social grades ABC1 were more likely to make any mention of safety (63% versus 52% of C2DEs).[19] Those unaware of AVs were more likely to answer 'don't know' (47% versus 10% of those with some awareness).

The findings relating to safety are very similar when compared to those recorded in December 2017 (when 58% also mentioned a safety-related concern), but there has been a slight decrease since June 2018, when 62% mentioned a concern about safety.[20]

Fig 5.4 Perceived disadvantages of autonomous vehicles, December 2018



Source: Q30. What do you think are the disadvantages, if any, of fully driverless or self-driving vehicles?

Base: All respondents (3,532)

[18] Safety concerns included: 'Equipment failure/system failure'; 'Car fails to react to unexpected situations'; 'Interacting with other human drivers'; and 'Interacting with pedestrians and cyclists'

[19] Safety definition - see previous footnote.

[20] The June 2018 survey wave followed publicity of a fatal crash involving an autonomous vehicle in the United States.

Appendix A – Survey Methodology

Overview of survey methodology

Survey fieldwork was conducted on the Kantar TNS face-to-face omnibus, a weekly omnibus survey. The omnibus survey is conducted through random location sampling, a high-quality form of quota sampling in which sampling points are allocated through a random selection. Respondents in each interviewer assignment are drawn from a small set of homogenous streets, thus giving interviewers very little choice in the selection of respondents. Quotas are set on characteristics which are known to have a bearing on individuals' probabilities of being at home and so available for interview. This minimises any selection bias introduced because of interviewers focusing on groups that are more likely to be at home. Rules are also in place which govern the spacing between addresses and the timing of interviews.

Census small area statistics and the Postcode Address File (PAF) are used to define sampling points. Sampling points are areas of similar population sizes formed by the combination of wards, with the constraint that each point must be contained with a single Government Office Region (GOR).

The addresses are issued to achieve an adult sample of between 13 and 18 interviews in provincial areas and 12 and 15 in London. Assignments are conducted over two days of fieldwork and carried out on weekdays between 2pm and 8pm and at the weekend. Interviews are conducted by computer assisted personal interviewing (CAPI). Approximately 2,000 UK interviews are conducted with adults aged 16+ on the omnibus each week. To achieve the required sample size in England, fieldwork for this research was conducted during two weeks of the omnibus survey for each wave. Wave 3 fieldwork took place between 30 November and 9 December 2018.

Overview of Questionnaire Development

Prior to Wave 1, DfT and Kantar Public jointly designed the questionnaire. This process involved multiple stages including:

- an initial qualitative research phase to test broad understanding of concepts to be covered in the questionnaire.
- a formal desk review of proposed questions using Kantar Public's Questionnaire Appraisal Framework (QAF), to review questions asked on other surveys for relevance and applicability to this research and to inform the development of new questions.
- Cognitive testing of the draft questionnaire, which provided an in-depth test of the survey questions prior to main stage fieldwork.

Further cognitive testing was conducted before Wave 3 to help to develop new questions relevant to ride-sharing and a Mobility as a Service app.

Achieved sample profile and weighting

A total sample of 3,532 interviews was collected at Wave 3. The achieved sample at each wave is representative of individuals aged 16 or over living in England. Data were also weighted to match the profile of the population in terms of age, gender, region, ONS rural/urban classification, working status, ethnicity, number of cars/vans in household, whether individual has a driving licence, housing tenure and highest qualification (for those aged 18-69).

The achieved sample profile at wave 3 is outlined in the following tables.

Fig A.1. Wave 3 sample profile

Category	Sub-category	Achieved sample	Unweighted %	Weighted %	Difference
Gender	Male	1,689	47.8	49.0	-1.2
	Female	1,843	52.2	51.0	+1.2
Age	16.24	452	12.8	13.5	-0.7
	25.34	589	16.7	16.9	-0.2
	35-44	521	14.8	15.7	-0.9
	45-54	486	13.8	17.2	-3.4
	55-64	470	13.3	14.4	-1.1
	65+	1,014	28.7	22.3	+6.4
Region (GOR)	North East	172	4.9	4.8	+0.1
	North West	465	13.2	13.1	+0.1
	Yorkshire and the Humber	357	10.1	9.8	+0.3
	East Midlands	301	8.5	8.6	-0.1
	West Midlands	384	10.9	10.5	+0.4
	East of England	391	11.1	11.1	0.0
	London	514	14.6	15.6	-1.0
	South East	597	16.9	16.3	+0.6
	South West	351	9.9	10.2	-0.3
Urbanity (ONS classification)	Urban	2,977	84.3	81.5	+2.8
	Rural	528	14.9	17.8	-2.9
Working status	Full time	1,208	34.2	45.1	-10.9
	Part time	448	12.7	15.2	-2.5
	Retired	1,067	30.2	21.1	+9.1
	In education	225	6.4	4.6	+1.8
	Not working	584	16.5	14.0	+2.5
Ethnicity	White	2,999	84.9	85.7	-0.8
	Minority ethnic	508	14.4	13.6	+0.8
Number of cars/vans in household	0	957	27.1	18.0	+9.1
	1	1,562	44.2	39.0	+5.2
	2	809	22.9	31.0	-7.2
	3+	204	5.8	12.0	-6.2
Whether individual has a driving licence	No licence	978	27.7	18.8	+8.9
	Provisional licence	158	4.5	8.1	-3.6
	Full licence	2,362	66.9	72.0	-5.1

Appendix B – Questionnaire covered by survey wave

Question number (used in data)	Questionnaire name	Description	W1	W2	W3
Q1	Internet	How often use internet	Yes		
Q2	Smartphone	Whether personally use a smartphone	Yes		Yes
Q3	SmartTrans	Whether use smartphone for range of purposes	Yes		Yes
Q4	Licence	Whether hold UK driving licence	Yes	Yes	Yes
Q5	Numcar	Number of cars in household	Yes	Yes	Yes
Q6	Fuel	Fuel type(s) of cars in household	Yes		
Q7	CarOwn	Whether personally own/use car	Yes	Yes	Yes
Q8	B19	Miles driven per year	Yes		
Q9	PTFreq	Frequency of travel by public transport	Yes		yes
Q10	BikeFreq	Frequency of bike travel	Yes		
Q11	CarFreq	Frequency of car travel	Yes		Yes
Q12	B50	Number of short haul flights in last 12 months	Yes		
Q13	B51	Number of long haul flights in last 12 months	Yes		
Q14	B42_31	Agreement with attitude statements (x3)	Yes		
Q15	B17	Important factors when buying car	Yes		
Q16	CarWhen	When expect to replace car	Yes		
Q17	CarNext	Type of car expect to purchase next	Yes		
Q18	Attid1	Agreement with attitude statements (x3)	Yes		
Q19	CarPlan	Methods used to route plan for car journeys	Yes		
Q20	PTPlan	Methods used to route plan for public transport	Yes		
Q21	BikePlan	Methods used to route plan for bike journeys	Yes		
Q22	Jplansat	Ease of planning different journeys (x5)	Yes		Yes
Q23	Mobheard	Travel services heard of	Yes		Yes
Q24	Mobuse	Travel services used	Yes		Yes
Q25	Evknow	Knowledge about electric vehicles	Yes	Yes	Yes
Q26	EVEnc	Advantages of electric vehicles	Yes		Yes
Q27	EVProb	Disadvantages of electric vehicles	Yes		Yes
Q28	AVKnow	Knowledge about autonomous vehicles	Yes	Yes	Yes
Q29	AVBen	Advantages of autonomous vehicles	Yes	Yes	Yes
Q30	AVConcern	Disadvantages of autonomous vehicles	Yes	Yes	Yes
Q31	AVFeat	Awareness of self-driving features	Yes	Yes	Yes
Q32	AVUsed	Use of self-driving features	Yes	Yes	Yes
Q33	HGVKnow	Knowledge about HGV platoons	Yes		Yes
Q34	Droneknow	Knowledge about drones	Yes	Yes	Yes
Q35	DroneOwn	Whether owned a drone	Yes	Yes	
Q36	DroneAwar	Awareness of uses of drones	Yes	Yes	
Q37	DroneSup	Support for different uses of drones	Yes	Yes	
Q38	Droneconc	Concerns over use of drones	Yes	Yes	

Question number (used in data)	Questionnaire name	Description	W1	W2	W3
Q39	AQWorry	Concern about air quality in local area	Yes		
Q40	CCWorry	Concern about climate change	Yes		
Q41	Space1	Knowledge about space tourism	Yes		Yes
Q42	Hyper1	Knowledge about hyperloops	Yes		Yes
Q43	FlyTaxi1	Knowledge about flying taxis	Yes		Yes
Q44	B46a	Safest form of travel	Yes		
Q45	B46b	Second safest form of travel	Yes		
Q46	B46c	Third safest form of travel	Yes		
Q47	A1	How long lived at current home	Yes		
Q48	CN76	How often use home delivery	Yes		
Q49	F12	Highest qualification	Yes	Yes	Yes
Q50	B2	Whether have disability or long-standing health problem	Yes		Yes
Q51	B39b	Whether disability of health problem makes it difficult to ride bike	Yes		
Q52	F15_Hincome	How managing financially	Yes		
Q53	NS1	Whether work as employer or self-employed	Yes	Yes	Yes
Q54	NS2	Number of people who work at employer/who you employ	Yes	Yes	Yes
Q55	NS3	Whether supervise other employees	Yes	Yes	Yes
Q56	NS4	Job description	Yes	Yes	Yes
Q57	HHIncome	Household income	Yes	Yes	Yes
Q60	MaaS1	Likelihood to use new MaaS travel service			Yes
Q61	MaaS2	Likelihood to use new service			Yes
Q62	MaaS3	Likelihood to give up ownership of car if service available			Yes
Q63	MaaSAdv	Advantages of new service			Yes
Q64	MaaSDisAdv	Disadvantages of new service			Yes
Q65	UberUse	Whether used Uber in last 3 months			Yes
Q66	UberPool	Whether used Uber Pool for last Uber journey			Yes
Q67	UberPurp	Purpose of last Uber journey			Yes
Q68	UberLength	Length of last Uber journey			Yes
Q69	UberAlt	How would have travelled if not used Uber			Yes
Q70	UberPNot	Why didn't use Uber Pool			Yes
Q71a	UberPCost	How much cheaper Uber Pool would need to be to use			Yes
Q71b	RsAdv	Advantages of ride-sharing			Yes
Q72	RSDisAdv	Disadvantages of ride-sharing			Yes
Q73	RSCost	How much cheaper than regular taxi ride-sharing would need to be to use			Yes

Appendix C – Wave 3 Questionnaire

F1: All adults 16+ in England
SHOW SCREEN – READ OUT
Now we are going to ask you some questions to understand your general transport behaviours and attitudes. The questions are being asked on behalf of the Department for Transport, but please remember that none of your answers will be personally identifiable to you.

F1: All adults 16+ in England
SHOW SCREEN
Q.2 (Smartphone). Do you personally use a smartphone?

INTERVIEWER ADD IF NECESSARY - A smartphone is a phone on which you can access emails, use apps, and view websites. Popular brands of smartphone include iPhone and Android phones such as the Samsung Galaxy S7.

1. Yes
2. No

Don't know

F2: All who use a smartphone (Q2\1)
SHOW SCREEN – MULTI CHOICE
Q.3 (SmartTrans). Do you typically use your smartphone to go online for any of these purposes?

SCRIPTERS: DO NOT INVERT

1. Route planning\route planning apps
2. Maps\navigation\satnavs
3. Checking live travel times (e.g. bus, train, tram, flights etc.)
4. Buying flight tickets online
5. Buying train\bus\other public transport tickets online
6. Checking traffic updates
7. Booking a taxi or minicab using Uber
8. Booking a taxi or minicab using another app (not Uber)
9. Finding out about services available in the area (e.g. restaurants, cafes, shops, garages)

None of these – FIX AND MUTUALLY EXCLUSIVE
Don't know– FIX AND MUTUALLY EXCLUSIVE

F20: All adults 17+ in England

SHOW SCREEN
Q.4 (Licence). Do you hold a valid UK driving licence?

ADD IF NECESSARY: Include international permits or other foreign licences valid in the UK.
PROBE TO CODES IF NECESSARY

1. Yes, full licence for car
2. Yes, provisional licence for car
3. Currently disqualified
4. No

Don't know

F1: All adults 16+ in England
SHOW SCREEN
Q.5 (Numcar). How many cars or vans does your household own or have continuous use of at present?

INTERVIEWER NOTE: INCLUDE COMPANY CARS, IF AVAILABLE FOR PRIVATE USE. INCLUDE ANY BROKEN DOWN VEHICLES WHICH MAY BE IN USE WITHIN THE NEXT MONTH.

SCRIPTERS: DO NOT INVERT

4: None
1: 1
2: 2
3: 3 or more

F3: All with cars\vans in household or have use of them (Q5\1,2,3)
SHOW SCREEN
Q.7 (CarOwn). Just to check, do you personally own or have continuous use of a car or van?

INTERVIEWER NOTE: INCLUDE COMPANY CARS, IF AVAILABLE FOR PRIVATE USE. INCLUDE ANY BROKEN DOWN VEHICLES WHICH MAY BE IN USE WITHIN THE NEXT MONTH

1. Yes
2. No

F1: All adults 16+ in England
SHOW SCREEN
Q.9 (PTFreq). About how frequently do you travel by public transport in the UK, including buses, trains, trams, underground, metro and light rail?

SCRIPTERS: DO NOT INVERT

1. Every day (7 days a week)
2. Most days (4-6 days a week)
3. 1-3 days a week
4. 1-3 times a month
5. 3-4 times a year
6. Once or twice a year
7. Less often\not at all

Don’t know

F1: All adults 16+ in England
SHOW SCREEN
Q.11 (CarFreq). Excluding taxi journeys, about how frequently do you travel by car or van, whether as a driver or passenger?

SCRIPTERS: DO NOT INVERT

1. Every day (7 days a week)
2. Most days (4-6 times a week)
3. 1-3 days a week
4. 1-3 times a month
5. 3-4 times a year
6. Once or twice a year
7. Less often\not at all

Don’t know

F11: All who travel by car or public transport at least once a year (Q11\1-6 OR Q9\1-6)
Q.22 (Jplansat). Thinking now about making a journey that you are not familiar with, how easy or difficult would you find it to plan …….

SHOW SCREEN AND READ OUT STATEMENT

SCRIPTERS: AT EACH SCREEN INCLUDE THE FOLLOWING: How easy or difficult would you find it to plan…

SCRIPTERS: DO NOT RANDOMISE ORDER OF STATEMENTS

...an unfamiliar car or van journey? **IF F8 (Q11\1-6)**
…an unfamiliar train journey **IF F9 (Q9\1-6)**
…an unfamiliar bus journey **IF F9 (Q9\1-6)**
…an unfamiliar journey that involves other public transport (eg tube, metro, tram)? **IF F9 (Q9\1-6)**
…an unfamiliar journey that involves a mixture of different transport methods? **IF F9 (Q9\1-6)**

1. Very easy
2. Fairly easy
3. Neither easy nor difficult
4. Fairly difficult
5. Very difficult
6. Not applicable – I don't plan these journeys

F1: All adults 16+ in England
SHOW SCREEN – MULTI CHOICE
Q.23 (Mobheard). Which of the following types of travel services have you heard of?

SCRIPTERS: DO NOT INVERT

1. App-based minicab services such as Uber
2. Car rental services
3. Car club, which you can become a member of, and which allows access to locally parked cars that can be used on demand. Examples include ZipCar, Co-wheels, Drivenow
4. Internet-arranged or app-based ride sharing, where you can arrange lift shares with people you don't know, for example liftshare.com, blablacar.com
5. Public bike share schemes. This is where you can pick up a locally parked bike, usually parked on the street or other public place, and use it for short periods, returning to the same or a different location.

None of these – MUTUALLY EXCLUSIVE

F12: All who have heard of specified travel services (Q23\1-5)
SHOW SCREEN – MULTI CHOICE
Q.24 (Mobuse). You mentioned you have heard of:

SCRIPTERS ALL OF THIS APPEARS ON ONE SCREEN

App-based minicab services such as Uber (show if Q23\1 mentioned)
Car rental services (show if Q23\2 mentioned)
Car club (show if Q23\3 mentioned)
Internet-arranged or app-based ride sharing (show if Q23\4 mentioned)
Public bike share schemes (show if Q23\5 mentioned)

Do you personally use any of these travel services nowadays?
CODE ALL THAT APPLY

SCRIPTERS: DO NOT INVERT

1. App-based minicab services such as Uber (show if Q23\1 mentioned)
2. Car rental services (show if Q23\2 mentioned)
3. Car club, which you can become a member of, and which allows access to locally parked cars that can be used on demand. Examples include ZipCar, Co-wheels, Drivenow (show if Q23\3 mentioned)
4. Internet-arranged or app-based ride sharing, where you can arrange lift shares with people you don't know, for example liftshare.com, blablacar.com (show if Q23\4 mentioned)
5. Public bike share schemes. This is where you can pick up a locally parked bike, usually parked on the street or other public place, and use it for short periods, returning to the same or a different location. (show if Q23\5 mentioned)

None of these – MUTUALLY EXCLUSIVE

F1: All adults 16+ in England
SHOW SCREEN
Q.25 (EVknow). How much, if anything, would you say you know about electric vehicles?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about them before now
2. Hardly anything but I've heard of them
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England
DO NOT SHOW SCREEN UNTIL TOLD TO DO SO

F1: All adults 16+ in England
DO NOT SHOW SCREEN – MULTI CHOICE
Q.26 (EVEnc). What do you think are the advantages, if any, of electric over petrol or diesel vehicles?

DO NOT PROMPT. PROBE FOR ANY OTHER ADVANTAGES. CODE ALL THAT APPLY.

1. Cheaper to run or maintain\ more economical
2. Cheap(er) to buy
3. Environmental benefits e.g. reduced pollution
4. Reduced road tax\insurance costs
5. Quieter\less noisy
6. Good battery life\ distance travelled on charge
7. Recharging is easier\more convenient than re-fuelling (eg location of charging points, ease\time taken to recharge)
8. Hold their value better (resale\residual)
9. Safer\good safety record
10. Vehicle performance e.g. speed\handling, size\practicality, looks
11. Technology: reliable\proven\longer lifespan
12. Other – PEN WRITE IN

No advantages – SINGLE CODE

Don't know – MUTUALLY EXCLUSIVE

F1: All adults 16+ in England
DO NOT SHOW SCREEN – MULTI CHOICE
Q.27 (EVProb). What do you think are the disadvantages, if any, of electric vehicles over petrol or diesel cars?

DO NOT PROMPT. PROBE FOR ANY OTHER DISADVANTAGES. CODE ALL THAT APPLY.

1. Cost to run\maintain\fix faults
2. Cost to buy
3. Cost in general
4. Battery: distance travelled on charge
5. Recharging - where\how to charge (eg at home, elsewhere)
6. Not enough charging points
7. Time taken to recharge
8. Value: resale\residual
9. Safety features\record
10. Poorer vehicle performance (e.g. speed\handling, size\practicality, style\looks)
11. Technology: doesn't work\not proven \needs more testing
12. Lack of availability\ choice
13. Disposal of batteries – impact on environment
14. Not enough information\knowledge (self or public generally)
15. Other – PEN WRITE IN

No disadvantages – MUTUALLY EXCLUSIVE

Don't know – MUTUALLY EXCLUSIVE

F1: All adults 16+ in England
(Intro1). Now a few questions about autonomous vehicles, commonly referred to as driverless or self-driving vehicles. By this we refer to vehicles that can drive themselves on roads with little or no input from a human driver.

F1: All adults 16+ in England
SHOW SCREEN
Q.28 (AVKnow). 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?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about them before now
2. Hardly anything but I've heard of them
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England
DO NOT SHOW SCREEN UNTIL TOLD TO DO SO

F1: All adults 16+ in England
DO NOT SHOW SCREEN – MULTI CHOICE
Q.29 (AVBen). What do you think are the advantages, if any, of fully driverless or self-driving vehicles?

DO NOT PROMPT. PROBE FOR ANY OTHER ADVANTAGES. CODE ALL THAT APPLY.

1. Safer\Less chance of driver error\fewer bad or drunk drivers
2. Convenience\can do other things while driving
3. Less stressful\don't have to worry about driving
4. Better traffic flow \less congestion

5. Reduced travel time
6. Better for environment
7. Better fuel economy \cheaper to run
8. Lower insurance\car tax
9. Easier for elderly\disabled people to travel
10. Better for economy e.g. improved productivity
11. Anyone can drive\don't need a driving licence
12. Other – PEN WRITE IN

No advantages - MUTUALLY EXCLUSIVE

Don't know - MUTUALLY EXCLUSIVE

F1: All adults 16+ in England

DO NOT SHOW SCREEN – MULTI CHOICE

Q.30 (AVConcern). And what do you think are the disadvantages, if any, of fully driverless or self-driving vehicles?

DO NOT PROMPT. PROBE FOR ANY OTHER DISADVANTAGES. CODE ALL THAT APPLY.

1. Safety: Equipment failure or system failure
2. Safety: Car fails to react to unexpected situations
3. Safety: Interacting with other human drivers
4. Safety: Interacting with pedestrians and cyclists
5. Drivers will become lazy\pay less attention
6. Loss of driver control
7. Concerns about whether a driving test would apply
8. Legal liability \knowing who is at fault
9. Security concerns (eg hackers, terrorists, insurance fraudsters)
10. Data privacy (location tracking)
11. Increased congestion\more cars on the road
12. I enjoy driving\would take away pleasure of driving.
13. Impact on jobs\drivers losing their job
14. Reduced investment in public transport
15. Other – PEN WRITE IN

No concerns - MUTUALLY EXCLUSIVE

Don't know - MUTUALLY EXCLUSIVE

F1: All adults 16+ in England

SHOW SCREEN – MULTI CHOICE

Q.31 (AVFeat). 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 have you heard of?

SCRIPTERS: DO NOT INVERT

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

None of these – MUTUALLY EXCLUSIVE

F13: All who have heard of self driving features and hold a valid UK driving licence (Q31\1-7 AND Q4\1-3)
SHOW SCREEN – MULTI CHOICE
Q.32 (AVUsed). And which, if any of these, have you used yourself?

SCRIPTING: ONLY SHOW RESPONSES CODED AT Q31

SCRIPTERS: DO NOT INVERT

1. Lane assist, detects if the driver unintentionally leaves their lane and adjusts the steering accordingly
2. Automated parking, where the car parks itself without driver involvement
3. Automatic Emergency braking that detects if impact is imminent and applies brakes automatically
4. Adaptive cruise control where the car automatically adjusts the speed based on the traffic ahead
5. In-car Wi-Fi connection
6. Remote control drive or remote control parking. This when driving is controlled remotely using a mobile device outside the car
7. Traffic Jam assistant for use in slow-moving traffic. The vehicle automatically drives within its lane, keeping safe distance from the vehicle in front.
   None of these– MUTUALLY EXCLUSIVE

F1: All adults 16+ in England
(Intro2): The next question is about **HGV platoons.** By this we mean wirelessly connected lorries travelling in convoy close together, with acceleration, braking and potentially steering controlled by the lead vehicle.

F1: All adults 16+ in England

SHOW SCREEN
Q.33 (HGVKnow). How much, if anything, would you say you know about HGV platoons?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about them before now
2. Hardly anything but I've heard of them
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England
(Intro3): The next question is about **drones.** A drone is an unmanned aerial vehicle guided by remote control or on-board computers.

F1: All adults 16+ in England
SHOW SCREEN
Q.34 (Droneknow). How much, if anything, would you say you know about drones?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about them before now
2. Hardly anything but I've heard of them
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England

(Intro 5): Developments in science and technology mean that there are some new and innovative ways of travelling that are being developed.
I'll ask you about some of these over the next few questions.

F1: All adults 16+ in England

SHOW SCREEN
Q.41 (Space1): **Space tourism** will allow members of the public to buy tickets to travel to space and back.

How much, if anything, would you say you know about space tourism?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about this before now
2. Hardly anything but I've heard of this
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England

SHOW SCREEN
Q.42 (Hyper1): **Hyperloops** are a proposal to travel at speeds of up to 800 miles per hour between cities using small high speed vehicles inside tubes.

How much, if anything, would you say you know about hyperloops?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about this before now
2. Hardly anything but I've heard of this
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England

SHOW SCREEN
Q.43 (FlyTaxi1): **Flying taxis** are drones that can fly passengers on short journeys within cities, without the need for a pilot.
How much, if anything, would you say you know about flying taxis?

SCRIPTERS: DO NOT INVERT

1. Hadn't heard about this before now
2. Hardly anything but I've heard of this
3. A little
4. A fair amount
5. A lot

Don't know

F1: All adults 16+ in England
MaasIntro. I now want to ask you about an idea for a new way of accessing transport.

Imagine you have an app on your smartphone which enables you to access and pay for a range of public and private transport options, including taxis, buses and trains. You could either pay as you go, or you could pay for a monthly package which would be tailored to you, such as paying for unlimited public transport options and two taxis a month. The app would also make recommendations on which travel options might be best for you by using real time information, such as on traffic levels.

INTERVIEWER: HAND CARD [*NUMBER*] TO RESPONDENT. THEY CAN REFER TO THIS AT ANY TIME.

F2: All who use a smartphone (Q2\1)
MaaS1. How likely, if at all, would you be to use a service like this?

SHOW SCREEN

1. Very likely
2. Fairly likely
3. Fairly unlikely
4. Very unlikely
5. It depends (SPONTANEOUS)
6. Don't know (SPONTANEOUS)

F26: All who personally own\continuously use car\van (Q7\1) and use a smartphone (Q2\1)
MaaS2. How likely, if at all, would you be to reduce the amount you currently use your car or van if you knew this service was available?

SHOW SCREEN

1. Very likely
2. Fairly likely
3. Fairly unlikely
4. Very unlikely
5. It depends (SPONTANEOUS)
6. Don't know (SPONTANEOUS)

F22: All who own car\van and are very or fairly likely to reduce the amount they use it if MaaS service available (MaaS2\1,2)
MaaS3. And how likely, if at all, would you be to give up ownership of your car or van if you knew this service was available?

SHOW SCREEN

1. Very likely
2. Fairly likely
3. Fairly unlikely
4. Very unlikely
5. It depends (SPONTANEOUS)
6. Don't know (SPONTANEOUS)

F1: All adults 16+ in England
MaaSAdv. What do you think the advantages, if any, of a service like this might be?

DO NOT PROMPT.

1. Would save me money
2. Would make journey planning simpler
3. Would make travelling easier
4. It chooses the best option for me based on current conditions

5. It makes paying for transport safe and secure
6. I would know the up-front journey costs
7. It would be good value for money
8. I would not need to own a car
9. It is better for the environment
10. It is more convenient
11. Other (specify)
12. Don't know (SPONTANEOUS)
13. No advantages

F1: All adults 16+ in England
MaaSDisAdv. What do you think the disadvantages, if any, of a service like this might be?

DO NOT PROMPT.

1. It's more expensive
2. I don't have a smartphone
3. Would make journey planning more complicated
4. Would make travelling more complicated
5. I would be over-reliant on one app for everything
6. I would be reliant on my phone (battery life, internet access, etc)
7. It makes paying for transport harder
8. It makes paying for transport less secure
9. It would be bad value for money
10. Don't know who would be accountable if something went wrong
11. I need to know more/ not sure how it would work
12. Doesn't improve on existing services/ not needed
13. Other (specify)
14. Don't know (SPONTANEOUS)
15. No disadvantages

F25: Those who use app-based mini-cab services such as Uber (Q.24\1)
UberUse. Have you used an app-based minicab service, such as Uber, in the last three months?

IF YES: CHECK IF UBER OR ANOTHER APP-BASED MINICAB SERVICE.
[Multicode codes 1 and 2]

DO NOT INVERT

1. Yes – Uber
2. Yes – another app-based mini-cab service
3. No
4. Don't know (SPONTANEOUS)

F23: If used Uber in last three months (UberUse\1)
UberPool. Please think about the last time you used Uber.

Did you use Uber Pool?

INTERVIEWER – IF NEEDED:
This is the option which allows you to pay less than a normal Uber by sharing the car with others who you don't know. Typically, the journey would be a bit longer to allow for picking up and dropping off the other people. This is known as 'ride-sharing'.

INTERVIEWER: IF 'NO', ASK 'Have you used Uber Pool for other trips?'

DO NOT INVERT

1. Yes
2. No – but have used Uber Pool for other trips

3. No – have never used Uber Pool
4. Don't know (SPONTANEOUS)

F23: If used Uber in last three months (UberUse\1)
UberPurp. Still thinking about the most recent trip where you used Uber. What was the purpose of this trip?

Please choose all that apply.

SHOW SCREEN

1. Travelling to or from work
2. Going shopping or returning home from shopping
3. Taking children to or back from school
4. For personal business (going to/returning from the bank, doctors, etc)
5. Travelling to/ from airport, train station, etc
6. Social/leisure purposes
7. Other (specify)
8. Don't know (SPONTANEOUS)

F23: If used Uber in last three months (UberUse\1)
UberLength. How long was this Uber trip, in minutes?

SHOW SCREEN

DO NOT INVERT

1. 0-10 minutes
2. 11-20 minutes
3. 21-30 minutes
4. More than 30 minutes
5. Don't know / can't remember (SPONTANEOUS)

F23: If used Uber in last three months (UberUse\1)
UberAlt. If you had not used Uber for this trip, which mode of transport would you have used instead?

Please choose one answer.

[RANDOMISE]

INTERVIEWER: IF MORE THAN ONE ANSWER SELECTED, ASK WHICH WOULD HAVE BEEN THE MAIN MODE OF TRANSPORT (MODE USED FOR THE FURTHEST PART OF JOURNEY).

SHOW SCREEN

1. Bus
2. Black cab
3. Private hire taxi
4. Bicycle
5. Would have walked
6. Train
7. Tube
8. Tram
9. Car/van (drive myself)
10. Other (specify)
11. Would not have travelled
12. Don't know (SPONTANEOUS)

F24: Did not use Uber Pool on last Uber trip (UberPool\2,3)
UberPNot. Why didn't you use Uber Pool on this occasion?

DO NOT PROMPT. IF RESPONDENT SAYS ‘DIDN’T WANT TO’, ASK ‘Why did you not want to use Uber Pool?’.

1. It wasn’t that much cheaper
2. I didn’t want to share with a stranger
3. It would have made my journey longer
4. I was already travelling in a group
5. It wasn’t an option for this journey
6. I didn’t know it was an option/hadn’t heard of Uber Pool before
7. Other (specify)
8. Don’t know (SPONTANEOUS)

F23: If used Uber in last three months (UberUse\1)
UberPCost. Imagine that the cost of a regular Uber trip – so not using Uber Pool – was £20. How much would Uber Pool need to cost for you to choose it instead of a regular trip?

DO NOT PROMPT. IF RESPONDENT SAYS ‘ANYTHING CHEAPER’ SELECT CODE 3. IF RESPONDENT OFFERS A PRICE BAND, PROBE FOR A SINGLE AMOUNT IN £.

1. It doesn’t matter – would book Uber Pool anyway
2. Would never use Uber Pool
3. £18 or more
4. £16 - £17.99
5. £14 - £15.99
6. £12 - £13.99
7. £10 - £11.99
8. £9.99 or less
9. Can’t say – depends on circumstances
10. Don’t know (SPONTANEOUS)

F1: All adults 16+ in England
RSIntro.
I’m now going to ask you about ‘ride-sharing’ by taxi. By this, I mean a taxi that you would share with people you don’t know at a lower cost compared with a conventional taxi. The trip is likely to be a bit longer in order to pick up and drop off other people. Uber Pool is an example of ride-sharing.

F1: All adults 16+ in England
RSAdv. What do you think are the advantages, if any, of ride-sharing compared with travelling alone or with people you know in a taxi?

DO NOT PROMPT.

1. Cheaper than travelling alone
2. More social
3. Potential for less congestion (if everyone shares)
4. Environmentally friendly
5. Safer than travelling alone
6. Other (specify)
7. No advantages
8. Don’t know (SPONTANEOUS)

F1: All adults 16+ in England
RSDisAdv. What do you think are the disadvantages, if any, of ride-sharing compared with travelling alone or with people you know in a taxi?

DO NOT PROMPT.

1. Safety risk – travelling with strangers
2. Less privacy – having to interact with strangers

3. Not knowing who you will share with
4. Less comfortable – less physical space inside vehicle
5. Longer journeys (waiting for vehicles to arrive / diversions to pick up others)
6. Less reliable journeys/less control over choice of route (unable to accommodate complex trip chains / changing needs during journeys)
7. Other (specify)
8. No disadvantages
9. Don't know (SPONTANEOUS)

F27: All who have not used Uber in last 3 months ((Q24\NOT 1) OR (UberUse\NOT 1 AND UberUse=2,3,DK))

RSCost. Imagine the cost of a regular taxi trip was £20. How much would ride-sharing by taxi need to cost for you to choose this instead of a regular taxi trip?

DO NOT PROMPT. IF RESPONDENT SAYS 'ANYTHING CHEAPER' SELECT CODE 3. IF RESPONDENT OFFERS A PRICE BAND, PROBE FOR A SINGLE AMOUNT IN £.

1. It doesn't matter – would choose to ride share anyway
2. Would never choose to ride share
3. £18 or more
4. £16 - £17.99
5. £14 - £15.99
6. £12 - £13.99
7. £10 - £11.99
8. £9.99 or less
9. Can't say – depends on circumstances
10. Don't know (SPONTANEOUS)

F1: All adults 16+ in England

SHOW SCREEN

Q.49 (F12): Please look at this screen and tell me whether you have any of the educational or school qualifications listed. Start at the top of the list and tell me the first one you come to that you have.

SCRIPTERS: DO NOT INVERT

1. University Higher Degree (e.g. MSc; PhD)
2. First degree level qualification (e.g. BA; BSc) including foundation degrees; PGCE
3. Diploma in higher education; HNC; HND; Nursing or Teaching qualification (excluding PGCE)
4. A level; AS level; NVQ level 3; GNVQ Advanced; or equivalent 5
5. GCSE grade A* -C; O level; CSE grade 1; NVQ level 2; GNVQ intermediate; or equivalent
6. GCSE grade D -G; CSE below grade 1; NVQ level 1; GNVQ Foundation level; or equivalent
7. None of these

   Refused

F1: All adults 16+ in England

SHOW SCREEN-MULTI CHOICE

Q.50 (B2): Do you have any disability or other long standing health problem that makes it difficult for you to do any of the following...

READ OUT AND SELECT ALL THAT APLPLY

1. Go out on foot
2. Use local buses
3. Get in or out of a car

   None of these – MUTUALLY EXCLUSIVE

F1: All adults 16+ in England
(IntroNS): Now some questions about your job. If you are currently working, please answer about your current job. If you are not working, please answer about your most recent job.

F1: All adults 16+ in England
SHOW SCREEN
Q.53 (NS1). Do (did) you work as an employee or are (were) you self-employed?

1. Employee
2. Self-employed with employees
3. Self-employed\freelance without employees
4. Never worked

F16: All who are employees or self-employed with employees (Q53\1,2)
SHOW SCREEN
Q.54 (NS2). **IF F17 (Q53\1):** How many people work (worked) for your employer at the place where you work (worked)?]

IF F19 (Q53\2): How many people do (did) you employ?]

1. 1-24
2. 25 or more

F17: All who are an employee (Q53\1)
SHOW SCREEN
Q.55 (NS3). Do (did) you supervise any other employees?

IF NECESSARY: A supervisor or foreman is responsible for overseeing the work of other employees on a day-to-day basis.

1. Yes
2. No

F21: All who work\worked (Q53\1-3)
SHOW SCREEN
Q.56 (NS4). Which of these best describes the sort of work you do (did)?

SCRIPTERS: DO NOT INVERT

1. Modern professional occupations such as: teacher, nurse, physiotherapist, social worker, welfare officer. Artist, musician, police officer (sergeant or above), software designer
2. Clerical and intermediate occupations such as: secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxiliary, nursery nurse
3. Senior managers or administrators (usually responsible for planning, organising and co-ordinating work, and for finance) such as: finance manager, chief executive
4. Technical and craft occupations such as: motor mechanic, fitter, inspector, plumber, printer, tool maker, electrician, gardener, train driver
5. Semi-routine manual and service occupations such as: postal worker, machine operative, security guard, caretaker, farm worker, catering assistance, receptionist, sales assistant
6. Routine manual and service occupations such as: HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter\waitress bar staff
7. Middle or junior managers such as: office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican
8. Traditional professional occupations such as: accountant, solicitor, medical practitioner, scientist, civil\mechanical engineer

F1: All adults 16+ in England

SCRIPTING THIS IS SIM TO WED 39 PUBLIC ATTITUDES END QUETSION, SO SET UP IN THE SAME WAY

SHOW SCREEN
Q.57 (HHIncome). Please could you look at this screen and tell me which of these represents your **household's total income**, before tax and any other deductions. This includes earnings from employment or self-employment, income from benefits and pensions, and income from other sources such as interest from savings.

SCRIPTERS: DO NOT INVERT

Please just tell me the letter that applies to your household.

Annual	**Weekly**	**Monthly**
E) Under £2,500	Under £50	Under £200
J) 2,500 - £4,999	£50 - £99	£200 - £399
C) £5,000 - £9,999	£100 - £199	£400 - £829
G) 10,000 - £15,999	£200 - £309	£830 - £1329
K) 16,000 - £19,999	£310 - £389	£1,330 - £1,649
A) £20,000 - £24,999	£390 - £489	£1,650 - £2,099
D) 25,000 - £29,999	£490 - £579	£2,100 - £2,499
M) 30,000 - £34,999	£580 - £679	£2,500 - £2,899
B) £35,000 - £39,999	£680 - £769	£2,900 - £3,349
H) 40,000 - £44,999	£770 - £869	£3,350 - £3,749
L) 45,000 - £49,999	£870 - £969	£3,750 - £4,149
F) £50,000 or more	£970 or more	£4,150 or more
Don't know		
Refused		

Appendix D – Glossary of terms

Adaptive cruise control	This controls and maintains a vehicle's speed automatically.
Automated parking	When a car parks itself without driver involvement.
Automated vehicles	These were referred to as 'driverless or self-driving vehicles' in the original survey question wording. These are vehicles that can drive themselves with little or no input from a human driver.
Automatic emergency braking	Braking that detects if impact is imminent and applies brakes automatically.
Driver assistance	A feature which automates an aspect of a vehicle's operations, such as automated parking or lane assist (see below).
Drone	An unmanned aerial vehicle guided by remote control or onboard computers.
Electric vehicles	A vehicle that is powered solely by electricity, rather than petrol or diesel.
Flying taxis	Drones that can fly passengers on short journeys within cities, without the need for a pilot.
HGV platoons	Wirelessly connected lorries that travel in convoy close together, with acceleration, braking and potentially steering controlled by the lead vehicle.
Hyperloops	A proposal to travel at speeds of up to 800 miles per hour between cities using small high-speed vehicles inside tubes
Lane assist	A feature that detects if the driver is unintentionally leaving their lane and adjusts the steering accordingly.
Mobility as a Service	This describes a shift away from personally-owned modes of transportation and towards mobility solutions that are consumed as a service. The survey introduced a Mobility as a Service app as follows: *Imagine you have an app on your smartphone which enables you to access and pay for a range of public and private transport options, including taxis, buses and trains. You could either pay as you go, or you could pay for a monthly package which would be tailored to you, such as paying for unlimited public transport options and two taxis a month. The app would also make recommendations on which travel options might be best for you by using real time information, such as on traffic levels.*
Remote control drive or remote-control parking	Driving that is controlled remotely using a mobile device outside the vehicle.
Ride-sharing	A taxi that you would share with people you don't know at a lower cost compared with a conventional taxi (e.g. Uber Pool).
Space tourism	This allows members of the public to buy tickets to travel to space and back.
Traffic jam assist	In congested traffic, the vehicle automatically drives within its own lane and keeps safe distance from the vehicle in front.
Uber Pool	A form of ride-sharing that allows Uber customers to choose to share a journey with people they don't know for a lower cost compared with a private Uber journey.