

Initial Findings from the Ultra Low Carbon Vehicle Demonstrator Programme

How quickly did users adapt?

A review of preliminary usage and perception data from the first three months of vehicle trials

This document presents preliminary data collected from drivers of the demonstrator cars in the Technology Strategy Board's nationwide Ultra Low Carbon Vehicle Demonstrator Programme.

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The Technology Strategy Board is the UK's national innovation agency, a business-led government body which works to create economic growth by ensuring that the UK is a global leader in innovation. Sponsored by the Department for Business, Innovation and Skills (BIS), it brings together business, research and the public sector, accelerating the development of innovative products and services to meet market needs, tackle major societal challenges and help build the future economy.

www.innovateuk.org

Oxford Brookes University is one of the UK's leading modern universities and enjoys an international reputation for teaching excellence and innovation as well as strong links with business and industry.

www.brookes.ac.uk

Cenex is the UK's first Centre of Excellence for low carbon and fuel cell technologies. Cenex is a delivery agency, established with support from the Department for Business, Innovation and Skills, to promote UK market development in low carbon and fuel cell technologies for transport applications. Cenex's principal focus is on catalysing market transformation projects linking technology providers and end users.

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Summary

This document presents the preliminary data collected from drivers of the demonstrator cars being tested in the nationwide Ultra Low Carbon Vehicle Demonstrator Programme. The Technology Strategy Board, which is running the programme, commissioned the data collection from Oxford Brookes University.

The demonstration trial involves 340 vehicles, which range from high performance vehicles to small city cars, being tested on everyday journeys by real-life users. This analysis provides a valuable initial insight into the first three-month 'adaptation phase' of low carbon vehicle usage.

The initial usage data, collected from on-board computers in the vehicles, covers 19,782 charging events and 110,389 individual journeys covering 677,209 miles. In addition the report document assesses pre-trial and three-month user perception surveys for both private drivers and fleet drivers.

The trials began at the end of 2009 and continue until mid 2012. A full 12 months' data is being collected from all the vehicles in the trial, which will offer more detailed insights and will be available during 2012. This will be published on the Technology Strategy Board website with other updates about the programme. For more information see:

<http://www.innovateuk.org/ourstrategy/innovationplatforms/lowcarbonvehicles.ashx>.

Key findings

- The actual **experience** of learning how to use the vehicle was even more straightforward than the drivers had anticipated prior to the trial. Ninety-five per cent of private drivers (PDs) found that electric vehicles (EVs) were no more difficult to use than the car the participants usually drove.
- This **ease of adaptation** is backed up by usage data showing that there was no significant individual journey length or daily mileage per vehicle change over the first three months of usage, showing users made little or no change to their daily driving habits after switching from conventional to low carbon vehicles.
- **Performance:** Prior to the trial, only 16% of PDs and 14% of fleet drivers (FDs) expected their EV to perform better than their normal car. However, these scores improved by 24% and 26% respectively after three months.
- **Range anxiety:** Prior to the trial 100% of PDs said they would be more concerned about reaching their destination with an EV than they would with their normal car. After three months this dropped significantly, by 35%.
- The **drop in range anxiety** is in part due to the increased understanding of vehicle capabilities, driving techniques and journey planning. Charging data also shows users gained more confidence in their journey distance over the three months, with an eight per cent increase in users allowing their batteries to drop below 50% before plugging in.
- **However**, after three months of vehicle use, both PDs and FDs still cite the adequate range they require for daily trips at 92.12 miles and 120.64 miles respectively, showing that despite confidence in the vehicles' ability an increased range is still a key desire.

Background

The Technology Strategy Board is the UK's national innovation agency, sponsored by the Department for Business, Innovation and Skills. We drive business innovation by working across business, universities and government.

We set up a dedicated programme for low carbon vehicles in 2007. This is the Low Carbon Vehicles Innovation Platform, which aims to:

- help and support UK auto sector business growth
- accelerate the introduction of low carbon vehicles into the UK mass market
- reduce emissions from transport.

The growing pressure from customers and regulators for more environmentally friendly vehicles is creating new business opportunities for both the established industry and innovative new entrants.

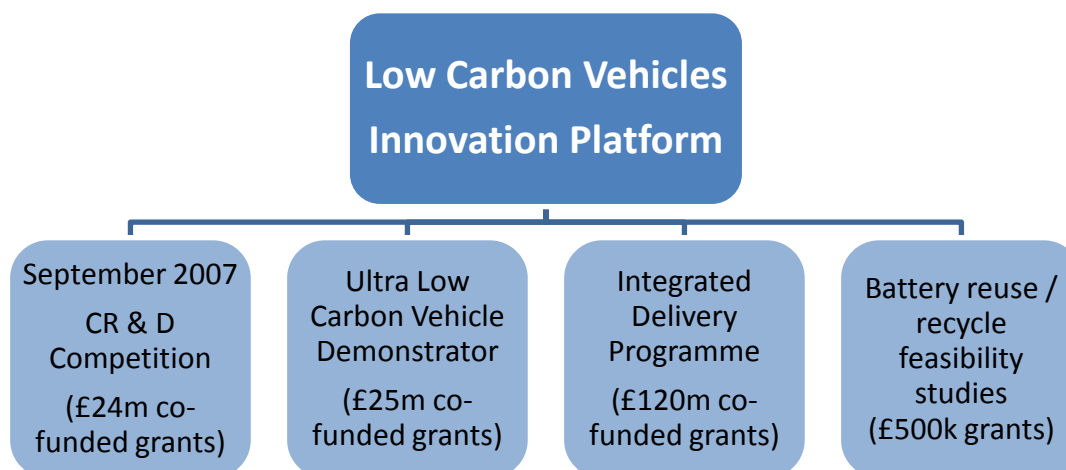
The Low Carbon Vehicles Innovation Platform invests jointly with the industry and other funders in interventions that promote UK-based R&D in low carbon vehicle technologies, and strengthen the relevant supply chains within the UK.

The Low Carbon Vehicles Innovation Platform – work so far

Since September 2007 the Innovation Platform has created and managed nine research and development funding competitions, as well as working closely with industry in developing the roadmap and UK capability study.

In 2008 an Integrated Delivery Programme was launched, with support from central and regional government and the Engineering and Physical Sciences Research Council (EPSRC). This is a framework for investment in low carbon vehicle innovation which is designed to ensure that the whole innovation chain is supported, from basic research through to demonstration.

The following diagram shows key elements of the Innovation Platform's work to date.



The Ultra Low Carbon Vehicle Demonstrator Programme

The Technology Strategy Board launched the Ultra Low Carbon Vehicle Demonstrator (ULCVD) programme in 2008 as the first major step in a UK-wide journey to support the development of technologies and markets for ultra low carbon vehicles. The programme was designed to deliver:

- Exposure to multiple drivers and drive cycles
- Real-world testing through in-vehicle logging and analysis (supported by Cenex)
- An opportunity to understand customer perceptions and concerns (supported by Oxford Brookes University)
- Interface challenges with infrastructure
- Passenger cars on the road for 12 months each.

Key facts to date

- £25.5m public sector funding (£52m project value)
- 8 consortia running projects
- Including 19 vehicle manufacturers
- 340 vehicles (electric, pure hybrid and fuel cell vehicles).
- 110,389 individual journeys (from December 2009 to June 2011)
- 677,209 miles travelled (1,089,862 km)
- 19,782 charging events
- 143.2 MWh of electricity consumed

The project consortia and their members

Project: **Peugeot Electric Vehicles**

Area: Glasgow

Members: Allied Electric Vehicles, Scottish Power, Axion Batteries, Strathclyde University

Project: **CABLED**

Area: Coventry and Birmingham

Members: Jaguar Land Rover, Mitsubishi, Smart, Tata Motors, EoN Energy, Arup, Coventry City Council, Birmingham City Council, Aston University, Coventry University, the University of Birmingham.

Project: **EVADINE**

Area: Newcastle and Gateshead

Members: Nissan, Smith Electric Vehicles, Liberty Electric Cars, Peugeot, Gateshead Council, Future Transport Systems, Newcastle University

Project: **MINI-E**

Area: Oxford

Members: BMW, SSE, Oxford Brookes University

Project: **EEMS Accelerate**

Area: national

Members: Delta Motorsport, Westfield Sports Cars, Ecotricity Cars, Lightning, AEA Technology, Green Motion Eco Car Hire

Project: **Ford**

Area: North West London

Members: Ford, SSE, Strathclyde University

Project: **Smart**

Area: London

Members: Smart, Nudge Advisory

Project: **Toyota Plug-In Hybrid**

Area: London

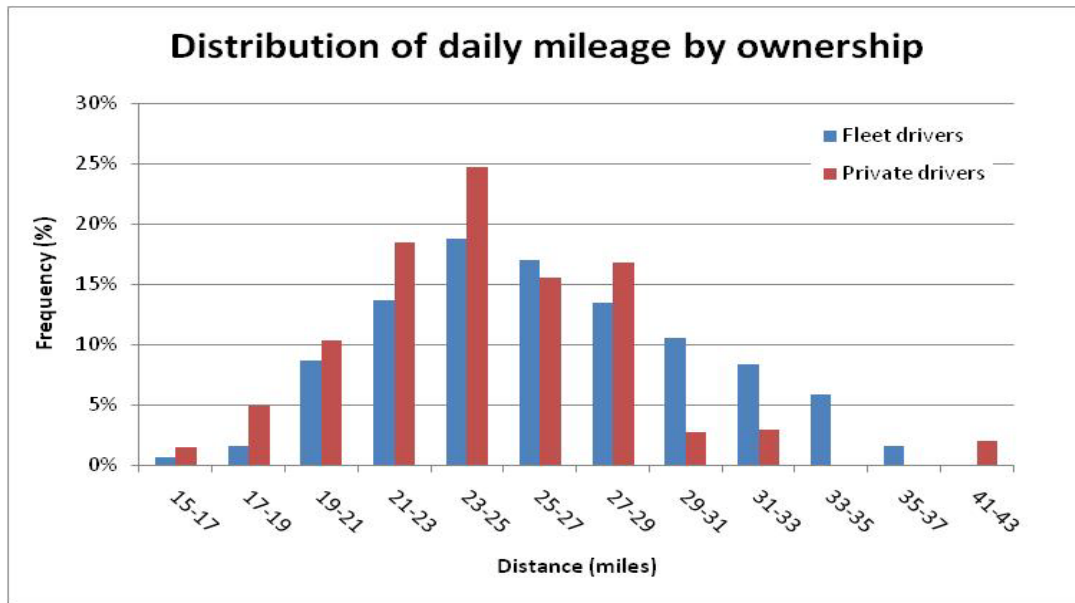
Members: Toyota, EDF Energy, MET Police, Transport for London, GCDA

Vehicle Usage Data

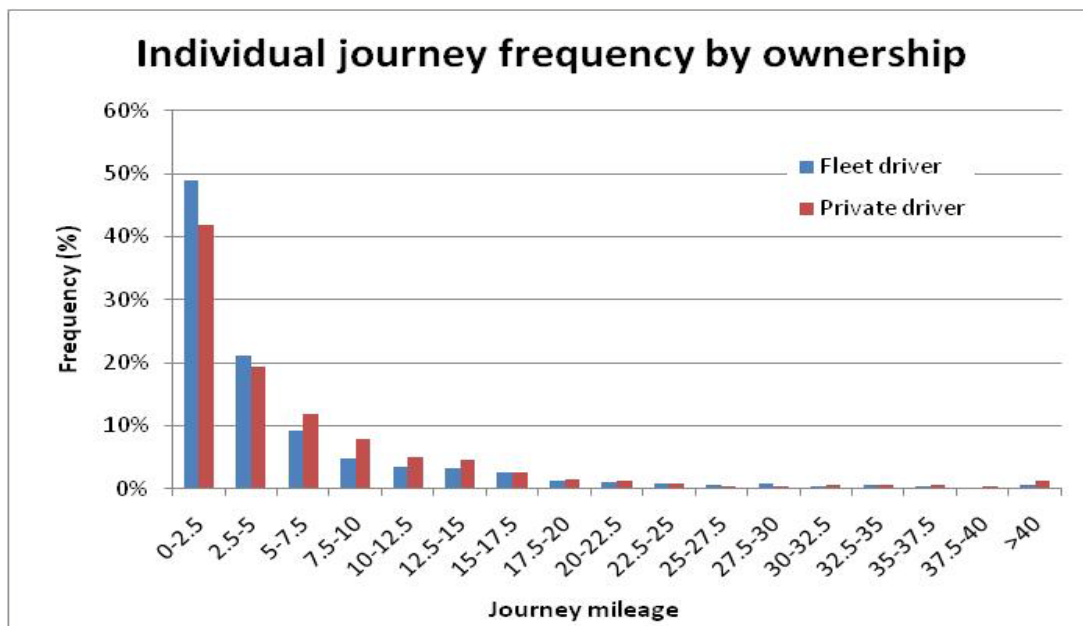
Drivers in the trial are a mix of private drivers and fleet drivers. The majority of fleet drivers had sole use of the vehicle.

Journey length analysis

The average daily distance travelled per vehicle was 24.3, 25.0 and 23.3 miles for months 1, 2 and 3 respectively. Fleet drivers achieved a slightly higher daily mileage rate of 25.5 miles compared to private drivers who achieved 24.0 miles.



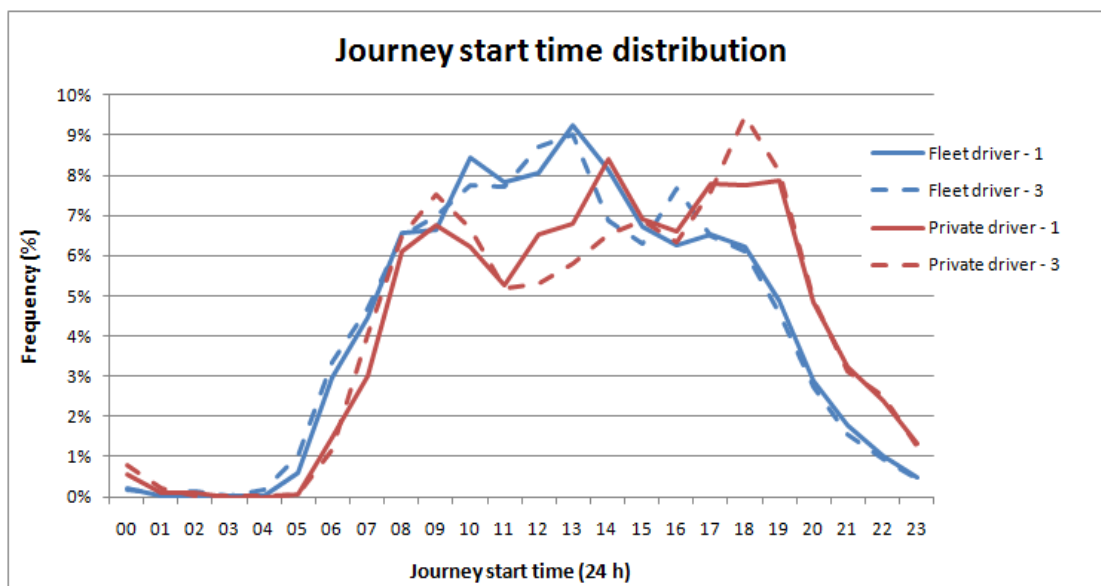
The distribution of journey mileages over the first three months of vehicle deployment showed no significant trend, with the average overall journey mileage being 6 miles. Fleet drivers achieved a lower individual journey mileage of 5.4 miles compared with 6.3 miles for private drivers. Fleet drivers dominate the low mileage journeys whereas private users have a higher incidence of high mileage journeys. 63.2% of journeys were below 5 miles and 99% of journeys were below 40 miles. The maximum journey length was 100.1 miles!



Journey time analysis

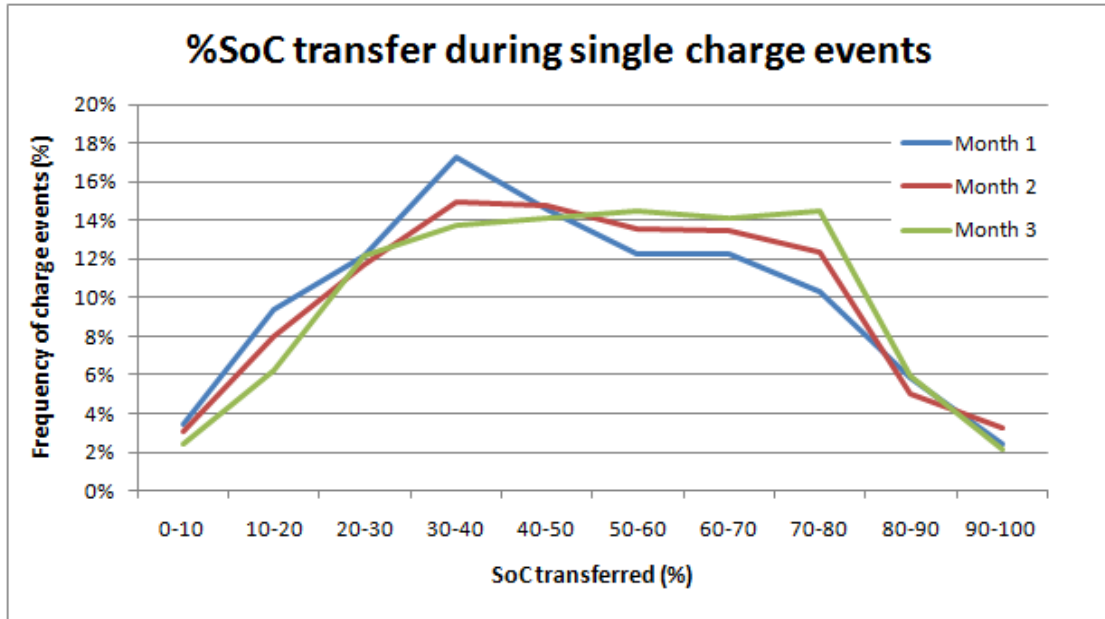
The journey start time distribution graph shows that fleet drivers generally start journeys earlier with a higher frequency of journeys throughout the working day. The private driver starts journeys later with less journeys throughout the working day and more evening journeys. 85% of the fleet drivers' journeys were between 07:00 and 19:00, compared with 78% of private drivers. The data also shows that while journey patterns for the fleet drivers did not significantly change throughout the first 3 months, the private driver tended towards utilising the vehicle more during as the first 3 months progressed.

The low variation of fleet drivers' journey start times throughout the first three months of vehicle operations showed that the fleet integration aspects were either well considered before hand or quickly established. Low usage variation would be synonymous with a well utilised and integrated EV as they are most suited to fleets with regular and predictable usage patterns.



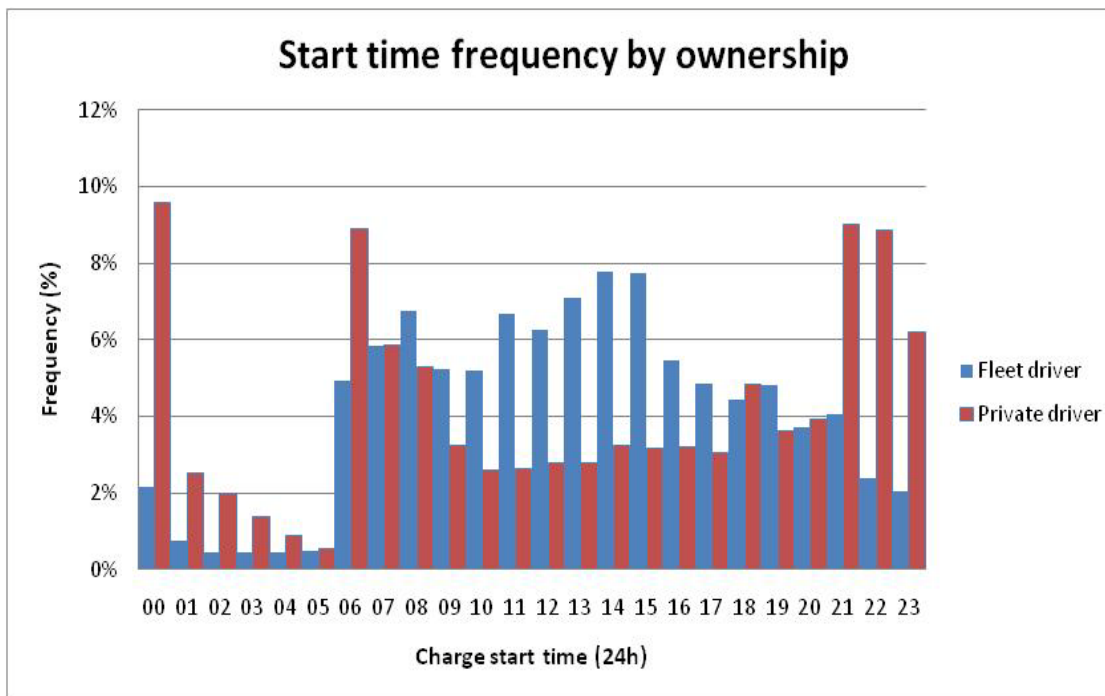
Charging data – State of Charge (SoC) analysis

Over the first three months of vehicle operation users reduced the frequency of charging the EVs when the battery was over 80% full and increased the number of charges that recharged over 50% of the battery capacity. From month 1 to month 3 users increase the number of charged that supply more than 50% SoC to battery by 8.2%. The average charge increase in month 3 was 30.2% which compares to 26.9% in month 1. private drivers delivered an average of 29.1% SoC, compared with fleet drivers who delivered 27.3% SoC per charge; although the journey data showed that there was little change in journey mileages, with users quickly integrating the vehicles into a regular routine. This shows that the users are slower to overcome fears of range anxiety and adapt to charging habits to less frequent and longer charges.

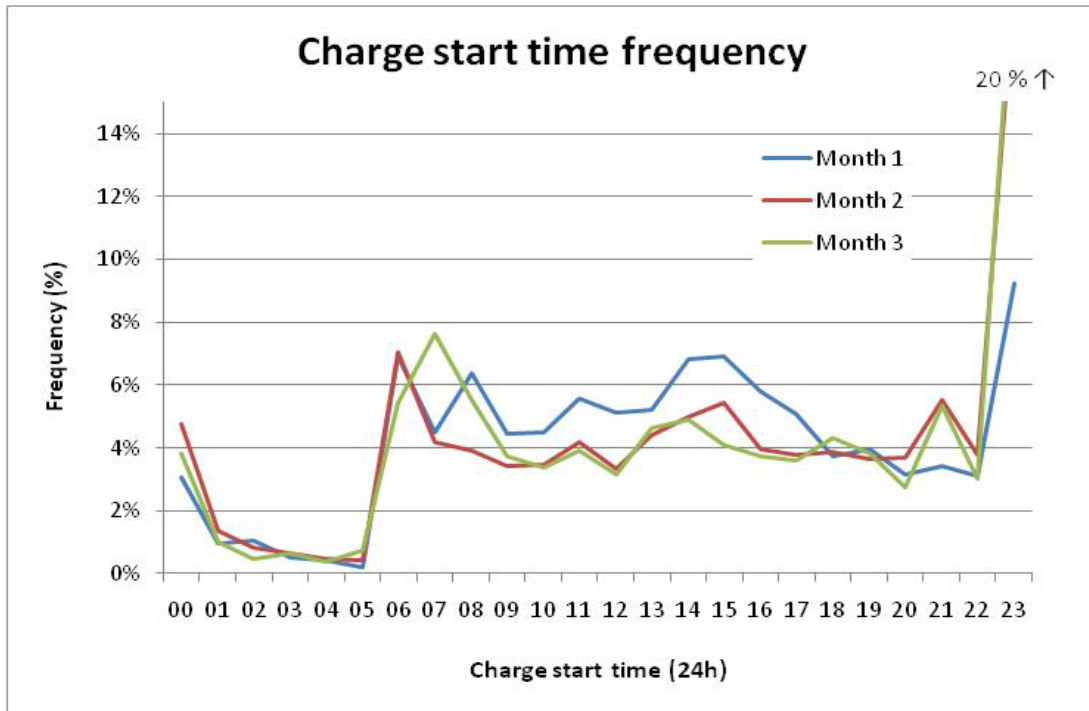


Charging data – charge time analysis

The most popular time of charge commencement is between 11pm and midnight, which accounted for 15% of charge start times over the first three months, demonstrates that smart metering technology can have a strong influence on charge distribution times. The data also shows peaks of charge activity in the early evening, early afternoon and morning. When analysed by month, a reduction in day time charges is apparent after month number one. This also ties in with users charging less frequently as the number of opportunity charges is reduced.



When split by ownership, fleet drivers have a higher rate of charge frequency during the day when compared with private drivers. The private drivers here appear to mostly utilise their home charging units with 34% of users opting to charge between 9pm and 1am (coinciding with off peak electricity tariffs timings from 9pm to 7am). A peak also occurs between 6am and 7am where private drivers that have access to work place charging plug in on arrival. 73% of fleet drivers put the vehicle on charge between the hours of 7am and 7 pm compared with 46% of private drivers. From month one to three, private drivers and fleet drivers reduced their day time charging events by 9% and 23% respectively, again showing that users adopt less frequent longer charges as they become familiar with the EV and their own journey habits.



Perception Data Analysis

Perception Data Analysis

The private drivers (PDs) were typical early adopters who had chosen to pay for their participation. In addition, compared to their fleet Driver (FDs) counterparts, the PDs had a greater amount of time to prepare for and research the car they would drive in the trial.

For their part, the FDs did not pay for their participation and were a mix of early adopters (especially those who were able to take the vehicle home as if it was their own) and of non-typical early adopters (especially those who were pooled car drivers and were unable to take the EV home overnight) and often did not elect to participate in the same way as private drivers

Adaptation to electric vehicles in the ULCV Trial

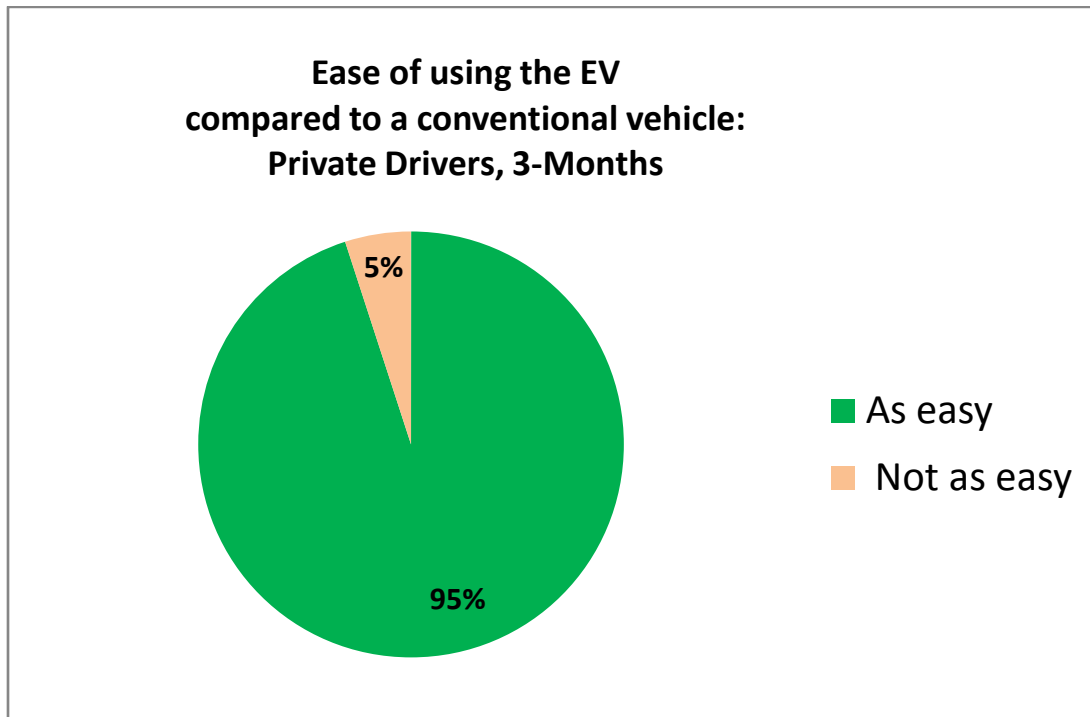
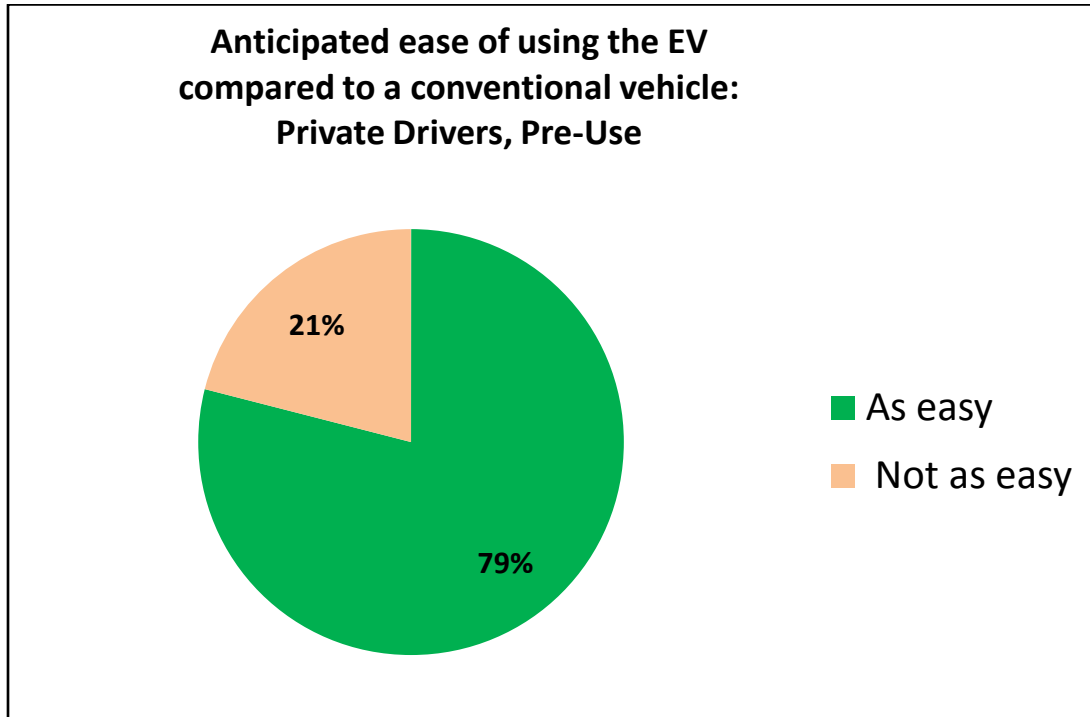
One of the overlooked aspects of managing a successful transition from a normal internal combustion vehicle to an electric vehicle (EV) is the degree to which an individual's deeply entrenched driving behaviour and preconceptions regarding EVs are challenged. Drivers adapt well-learned psycho-motor skills fundamental to driving, learn to process new information from unfamiliar displays, adopt a new style of regenerative braking, power their car differently, learn to assess available range and learn how different driving styles influence range.

Results

Learning to use the EV

Despite the initial challenges in making the transition from internal combustion engine cars to EVs, both private drivers and fleet drivers felt that they would find it relatively easy to learn how to use their new EV. Despite the high initial expectation of it being easy to learn how to use the cars, at the 3 month assessment point these figures had increased even further.

The differences between the pre-experience and post experience measures are statistically significant for both PDs and FDs, meaning that the *actual experience* of learning how to use the vehicle was even more straightforward than the drivers had anticipated prior to the trial.



It is entirely possible that drivers would feel that it was easy *to learn* how to use the car but still find it *more difficult to drive than their normal car*. However, our data show this not to be the case. Once again, pre-measures showed both PDs and FDs to anticipate that the EV would be as easy to use as their usual car. Similar to the previous results, this proportion increased for

both PDs and FDs at the 3 month point of data collection, showing that the EVs in the trial were no more difficult to use than the car the participants usually drove. These data speak to the ease of transition from an ICE vehicle and adaptation to an EV, an adaptation was even evident in the 1 week interviews:

“It’s been really surprising actually. I’d thought it would take a bit more getting used to, but apart from little quirks of the car, that you know wouldn’t be any different if you were in a different model to your normal car, it’s been quite an easy sort of relaxed transition actually.”

Interviews at only 1 week post-pick-up indicate that drivers adapted well to the regenerative braking system, and how quickly to take one’s foot off the accelerator in order to stop smoothly at any given required distance:

“I love driving that car, it’s easy to drive. The braking system I think is fantastic, and I find it a lot easier that way to slow down; gracefully so to speak. It’s a pleasure to drive and I find it easy to drive.”

Performance of the EV

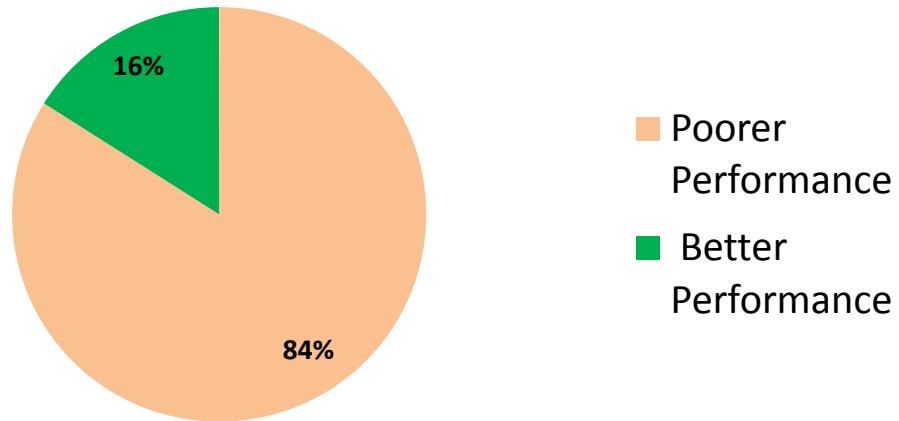
We can see from the results above that the EVs were easy to use, but just how impressive was that performance? In the questionnaires we set the bar very high, asking drivers to judge whether the performance of the EV was *better than* (as opposed to equal to) their normal car. Prior to the trial, only 16% of PDs and 14% of FDs expected their EV to perform better than their normal car. However, these scores improve at 3 months with the proportion increasing to 40% for PDs and increasing to 48% for FDs. These figures represent statistically significant improvements for both PDs and FDs.

“It’s probably been better than I expected. Mostly because, I had *quite* high expectations, but it’s been much easier, the transition’s been much easier, the user friendliness and been much easier, the re-charging’s been easier than I expected. It’s been a very simple job to get in it and use it and I’ve been using it a lot. I’m trying to test what it can, so I’ve been using it to nip around town for meetings and things like that, so it’s been better than I expected.”

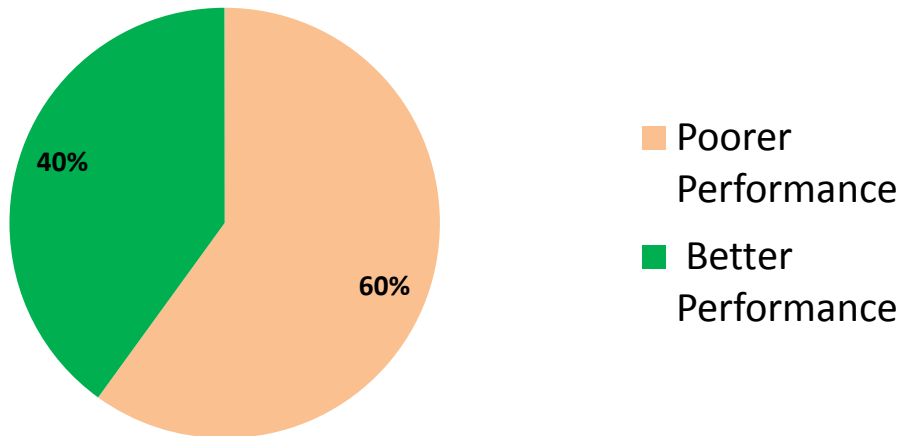
“I found it very easy, very smooth. I found it just like a normal car, you know, and actually better than my rubbish car that’s sitting outside in terms of handling. But then, it is a better car.”

As a note, in interviews we noticed that drivers joining the trial now are far more aware of the performance quality of EVs than were those drivers we interviewed at the beginning of the ULCV trial (who knew far less, and had fewer news items to draw upon in their search for information than has been the case in the last few months).

**Anticipated performance of the EV
compared to conventional vehicle:
Private Drivers, Pre-Use**

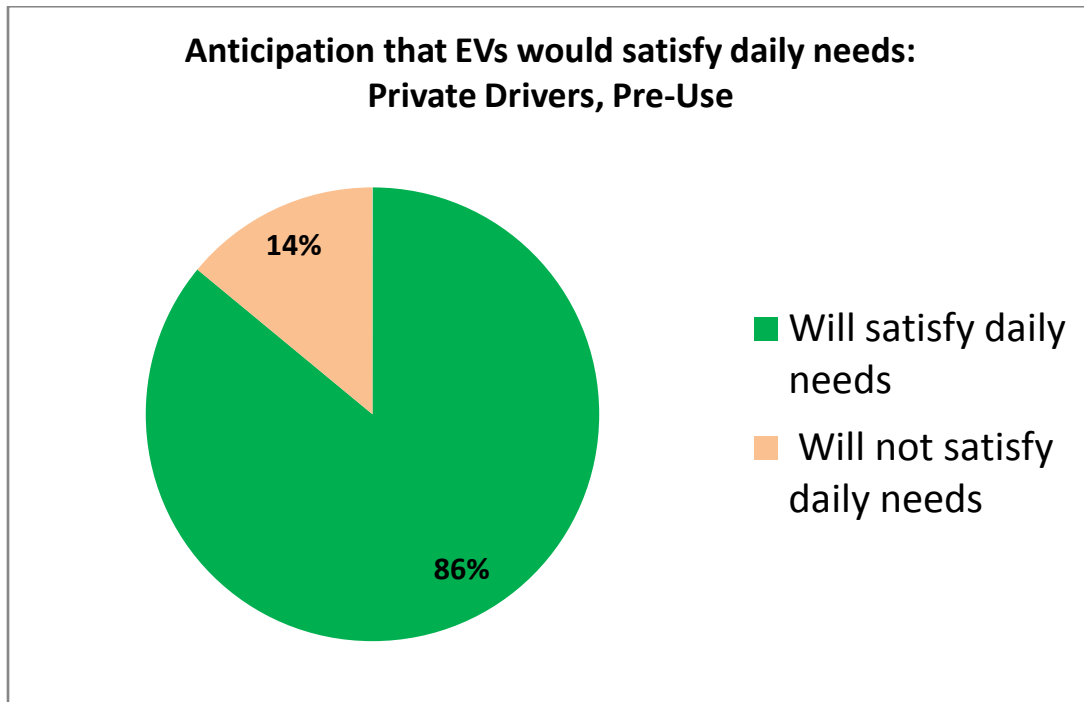


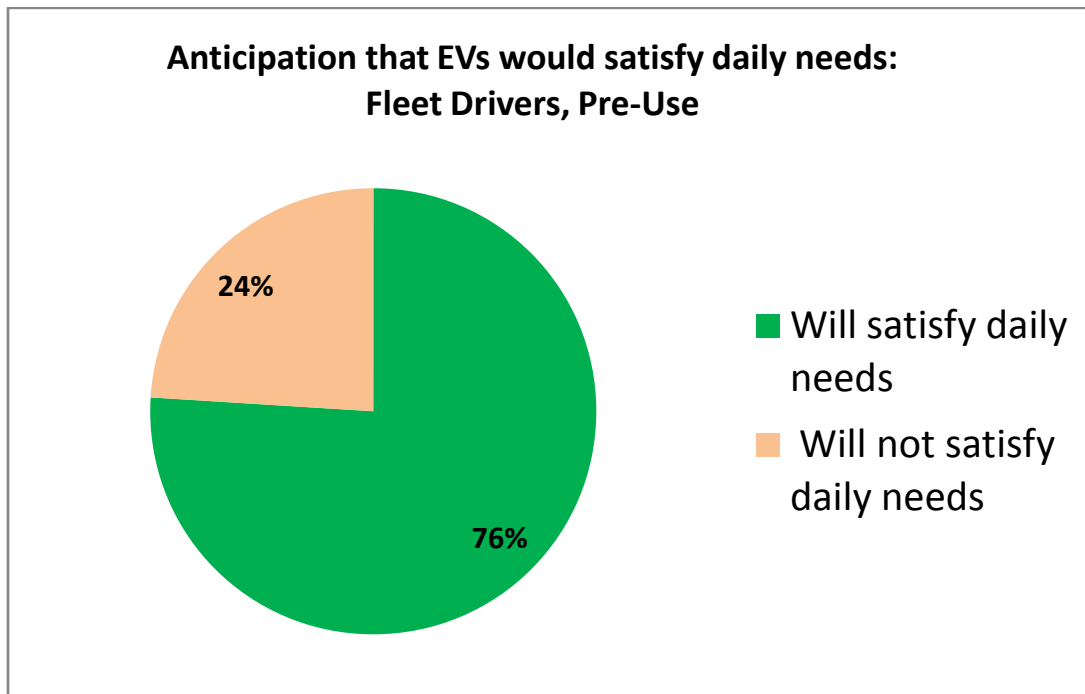
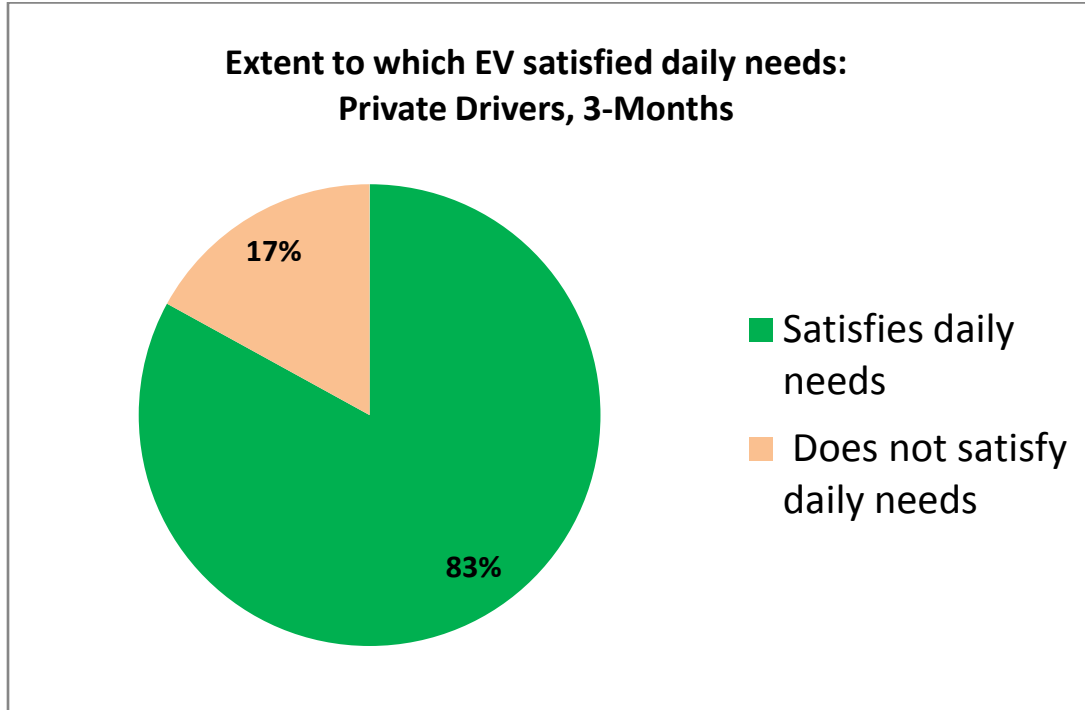
**Performance of the EV
compared to conventional vehicle:
Private Drivers, 3-Months**

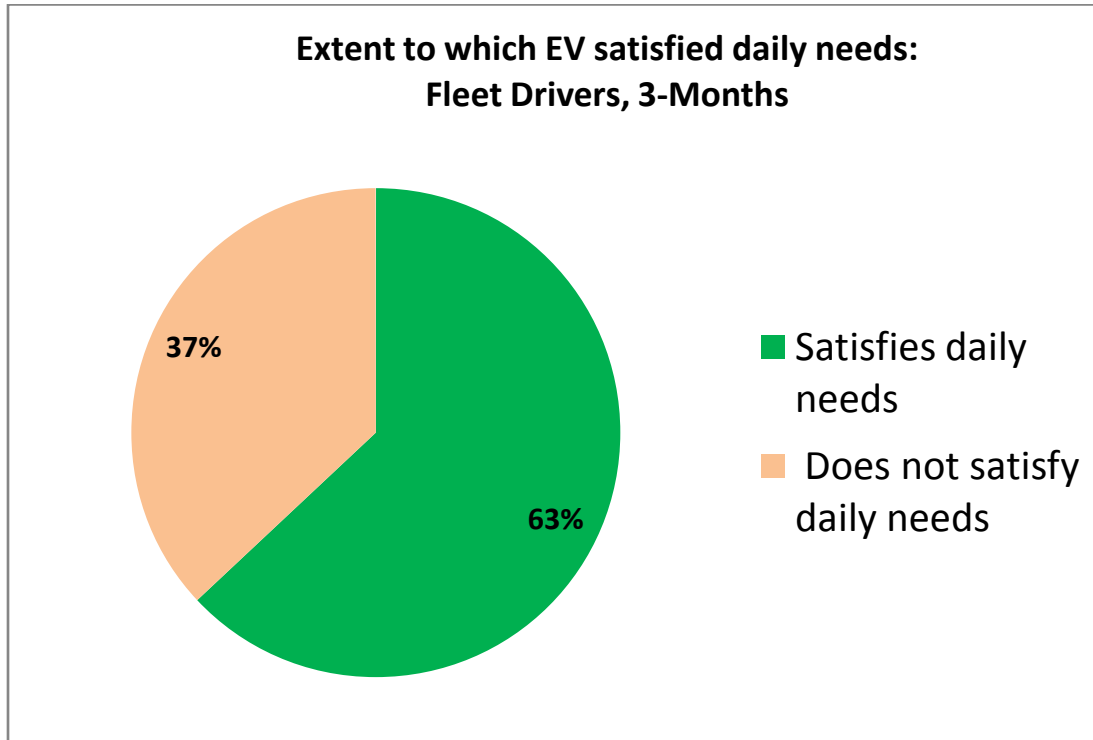


EVs satisfying daily driving needs

In interviews, both PDs and FDs also highlighted the importance of EVs being able to be integrated into the drivers' lives rather than the drivers having to alter their lives in order to incorporate limitations and idiosyncrasies of EVs. Our questionnaires assessed the degree to which participants felt the EVs could satisfy their daily needs. Pre-measures indicated that 86% of PDs and 76% of FDs expected their EV to satisfy their daily needs. While the proportion of PDs who feel their EV has actually satisfied their daily needs remains stable at 3 months at 83%, the proportion of FDs dropped to 63%. The differences between PDs and FDs are significant at both pre-trial and 3 month post-trial points. In addition, the drop in FDs' responses from pre-trial to 3 month post-trial is also statistically significant.







Degree to which journeys need more forward planning:

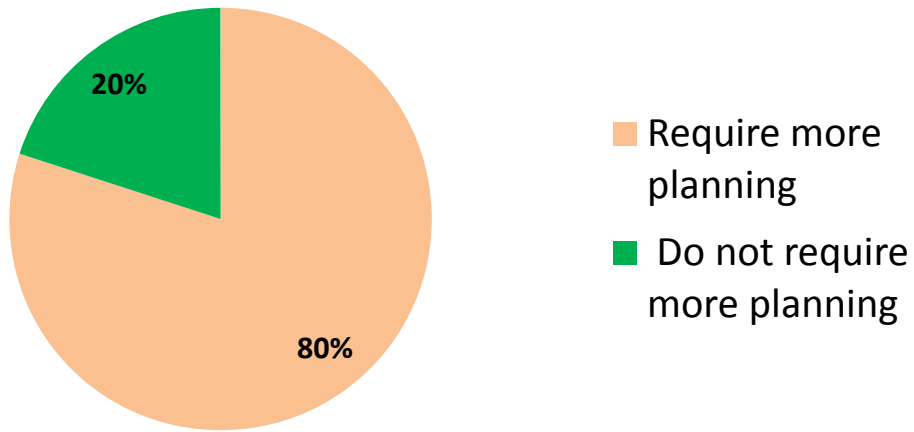
Concern for having to plan journeys more carefully was evident at the pre-trial phase for drivers. At the 3 month stage of having driven the vehicle PDs had changed their opinion slightly but FDs had become significantly more positive about the degree to which they had to plan their journeys.

“In terms of the practicalities, the only real thing that you have to do is bigger journey planning, you really do need to think about where you’re going and plan things in advance so that you know you’ve got enough charge in the car to be able to use it. Not come into it an hour before you need to go out and find you haven’t got enough charge to get there.”

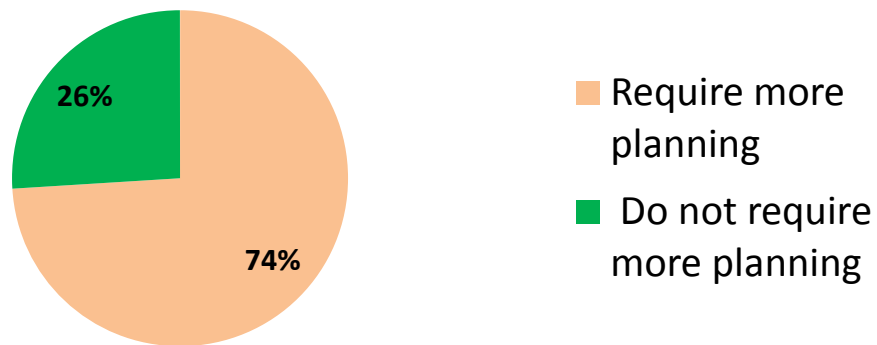
“I do plan ahead so there’s been a number of occasions where I’ve tried to, you know, I do think about, I’m definitely thinking all the time, ‘when can I use it, when can I use it.’ “

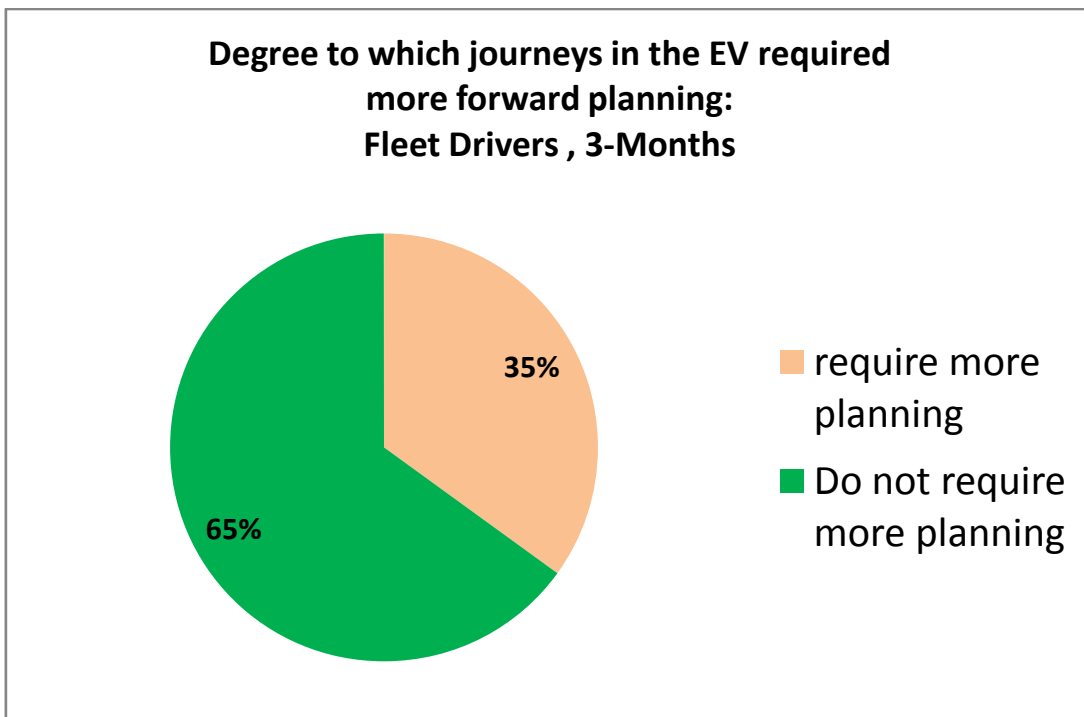
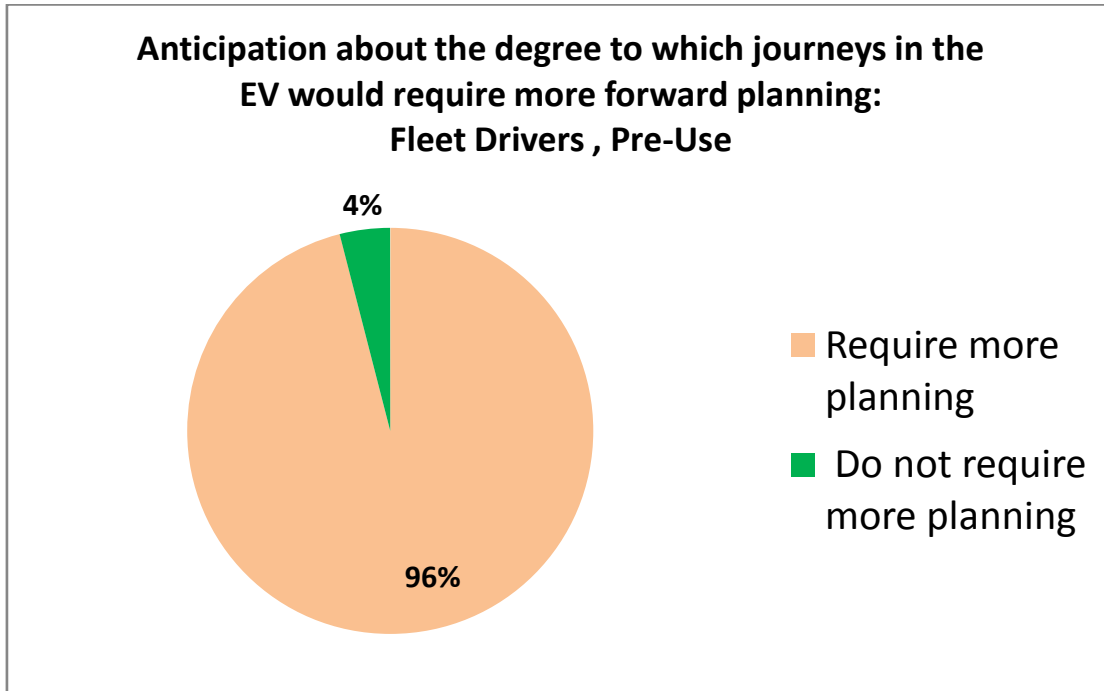
“Well the main difference is having to think more isn’t it? I mean really I have to think every day and even the night before I have to think more of what I’m doing before I know where I’m going or yeah, what I’m likely, where I’m likely to go, you know distance wise really and am I going to be able to charge.”

**Anticipation about the degree to which journeys in the EV would require more forward planning:
Private Drivers, Pre-Use**



**Degree to which journeys in the EV required more forward planning:
Private Drivers, 3-Months**

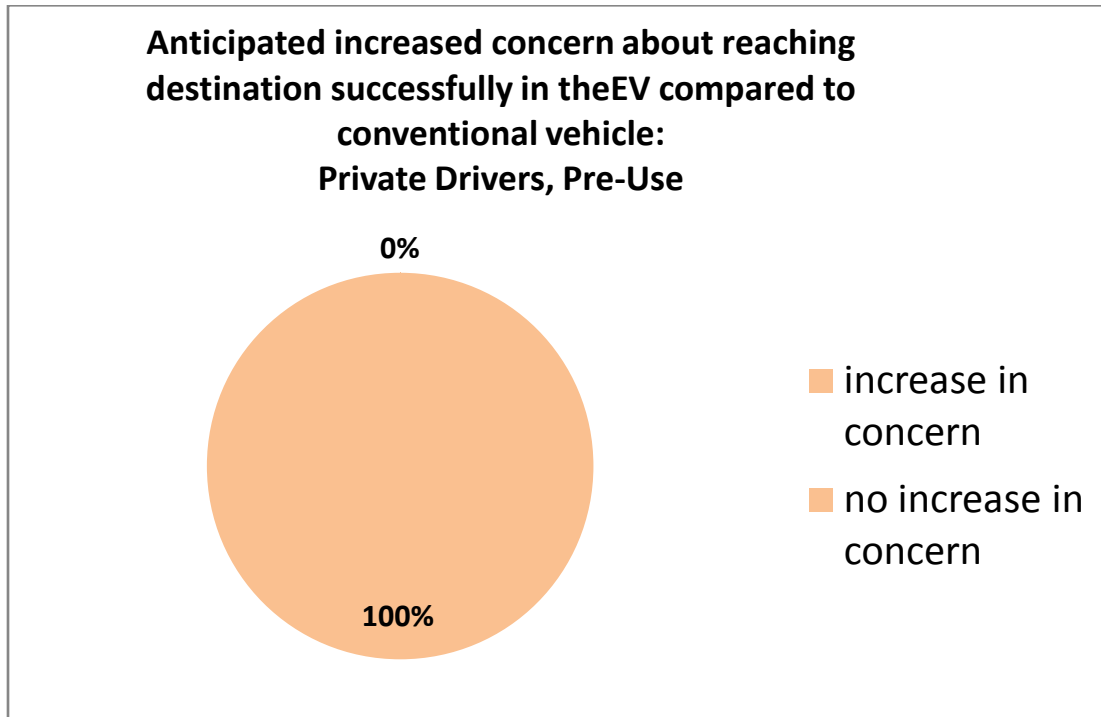


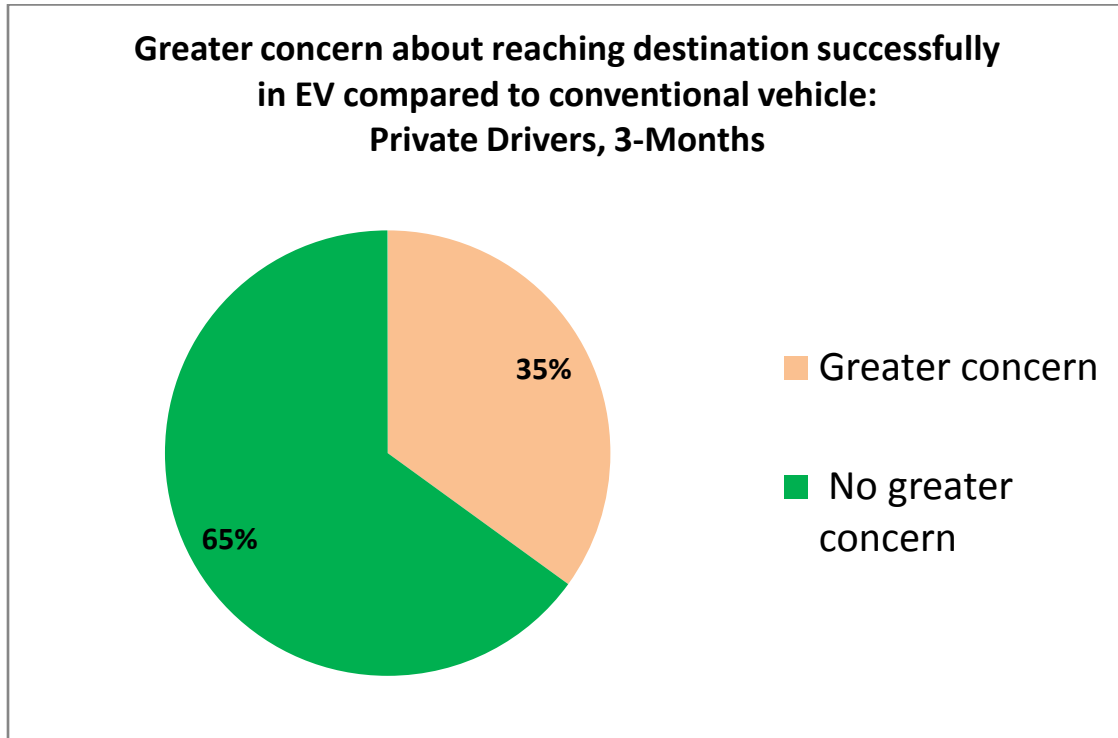


Concerns about reaching one's destination successfully

One of the classic sources of anxiety facing drivers is the limited range of EVs. At pre-trial, 100% of PDs and 71% of FDs said they would be more concerned about reaching their destination with an EV than they would with their normal car. After 3 months, 65% of PDs and

70% of FDs felt the same way. We can see that drivers adapt well to the vehicle, but that this does not diminish their concern regarding range. Interviews show that drivers quickly become knowledgeable about the types of trips they can take and make successfully, but the lack of charging opportunities means that considerations of range continue to play a role in the everyday thinking of EV drivers. So, does this mean that they don't feel they will make it to their destination?





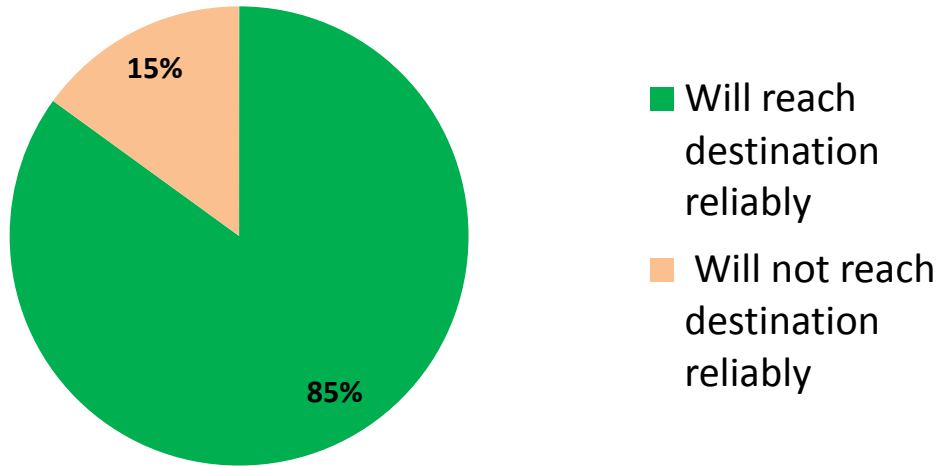
Will My EV actually get me to my destination successfully?

Drivers of both groups have relatively high expectations regarding the likelihood of reaching their destination reliably believing they would make their destination. This opinion increases slightly by the 3 month period:

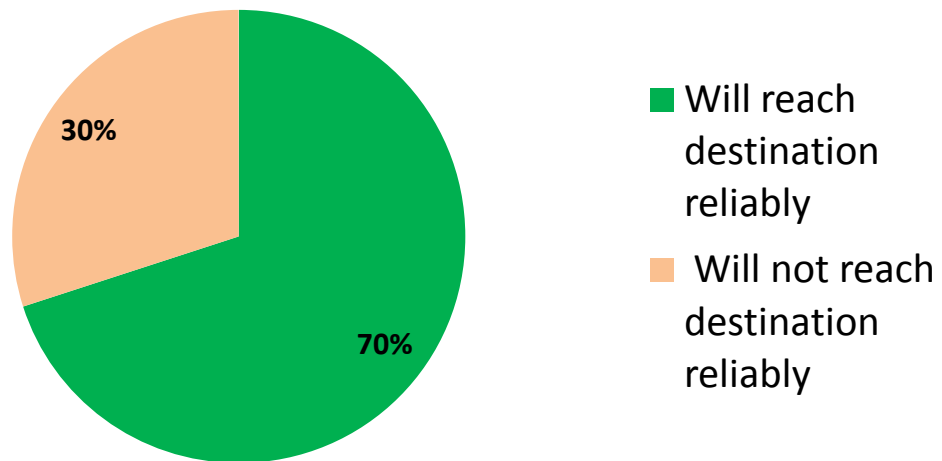
“Getting more and more confident and impressed with it. My feeling is now I can probably get 80 miles from my normal driving pattern based on the journey, the maximum I’ve actually done is 60 miles and I had 25% charge left after doing 60 which makes me think I would get 78 – 80 miles or something like that, which is quite good to know.”

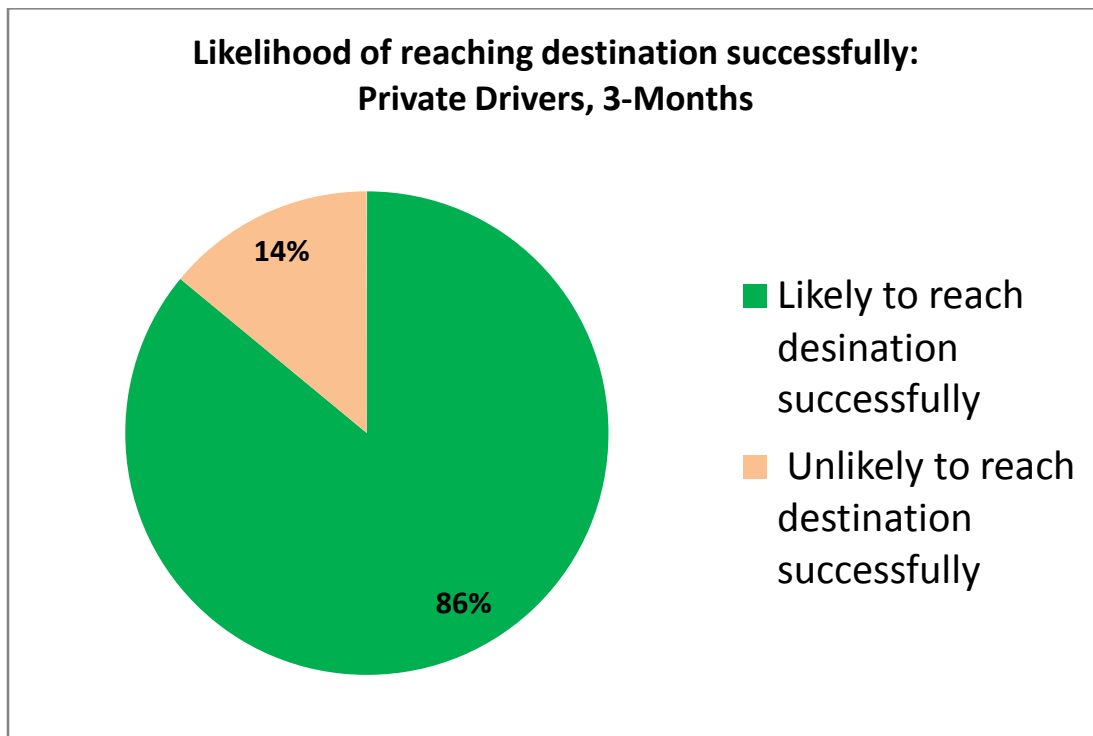
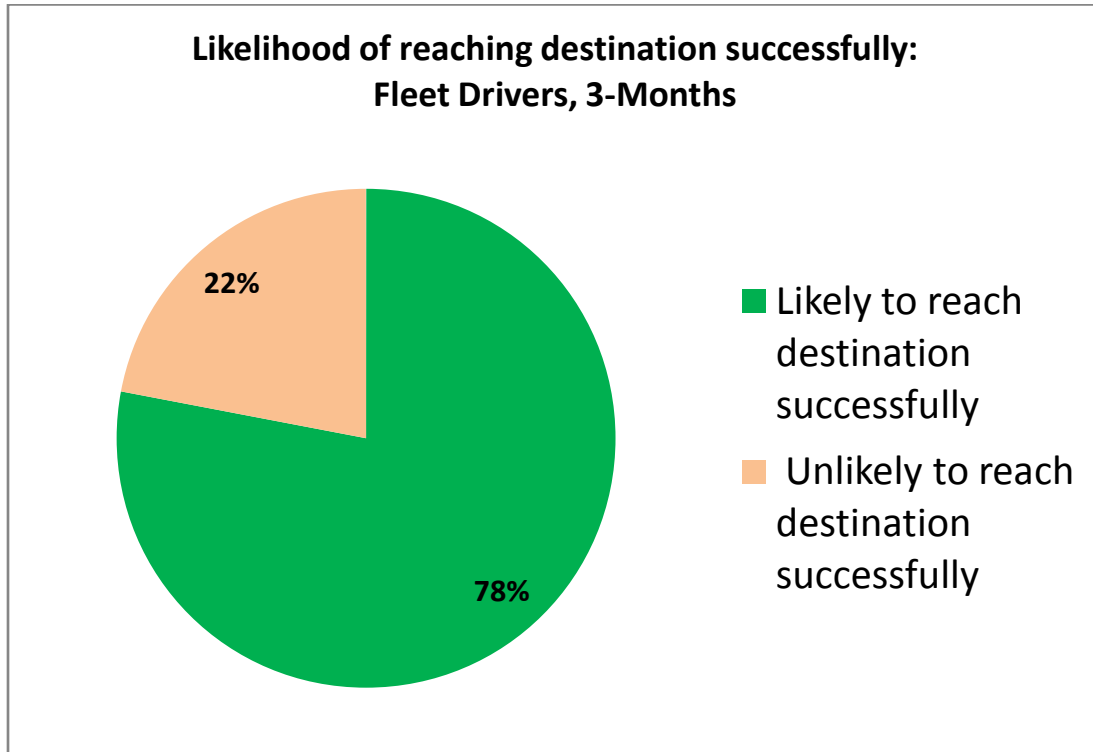
So, overall, drivers have to plan more carefully, are *concerned about* reaching their destination, but realise that they will make it (and we haven’t had hoards of people not making it to their destination). What level of range would reduce this anxiety for drivers?

**Expectation of the likelihood of reaching destination reliably in the EV:
Private Drivers, Pre-Use**



**Expectation of the likelihood of reaching destination reliably in the EV:
Fleet Drivers, Pre-Use**





Adequate and Ideal Ranges for EVs

		Pre-use	3 months
Private Drivers	Daily use	76 miles	92 miles
	All trips	232 miles	206 miles
Fleet Drivers	Daily use	102 miles	120 miles
	All trips	168 miles	168 miles

We also asked drivers to indicate what distance (in miles) they considered to be (i) adequate for daily use, and (ii) more than sufficient for all trips. At the pre-trial phase of data collection, PDs considered 75.61 miles to be adequate for daily use and 232.80 miles to be more than sufficient for all trips. By the 3 month questionnaire, these figures had risen to 92.12 miles for daily use and decreased to 206.37 miles for all trips. For their part, at the pre-trial phase, FDs considered 102.27 miles to be adequate for daily use and 168.18 miles to be sufficient for all trips. By the 3 month questionnaire, the figure considered adequate for daily use had risen to 120.64 miles but the figure considered sufficient for all trips had remained stable at 167.87 miles. In sum, PDs require a longer range than FDs to cater for all trips and FDs felt they need a longer range than PDs to cater for daily use.

It was common for both PDs and FDs to report that the “remaining range” display fluctuated during a drive. Some drivers learned to adapt their driving style in order extend the range as much as possible. Next, we consider whether driving an EV alters one’s driving style.

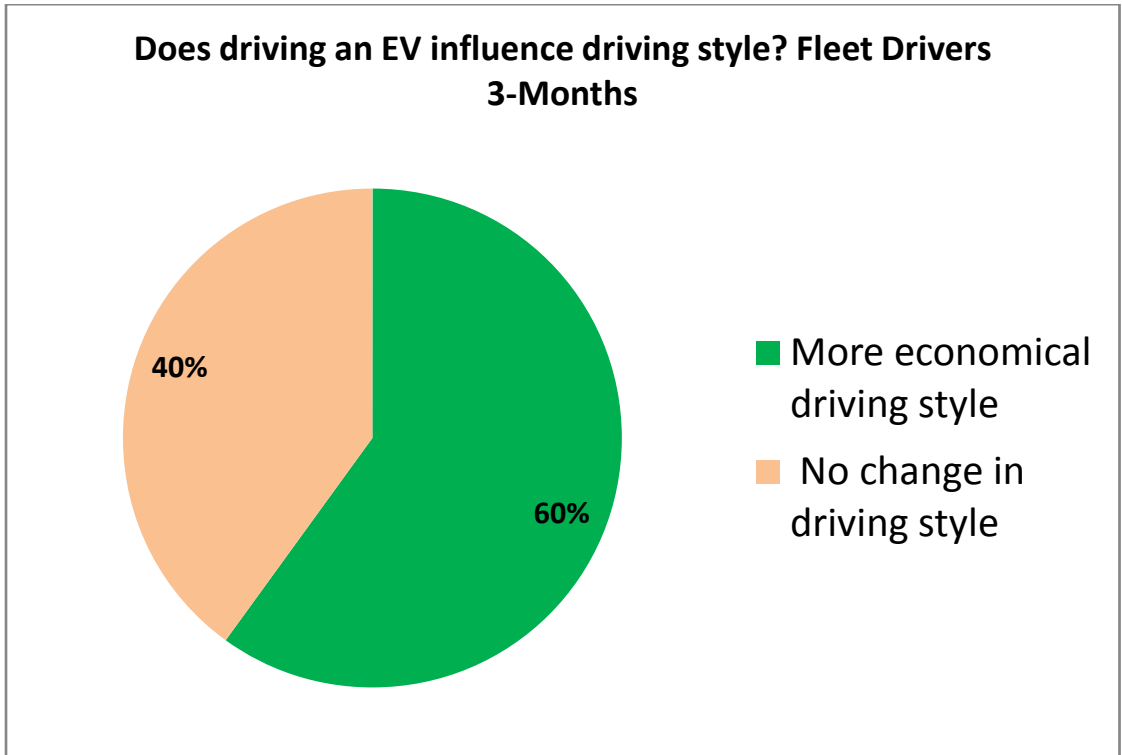
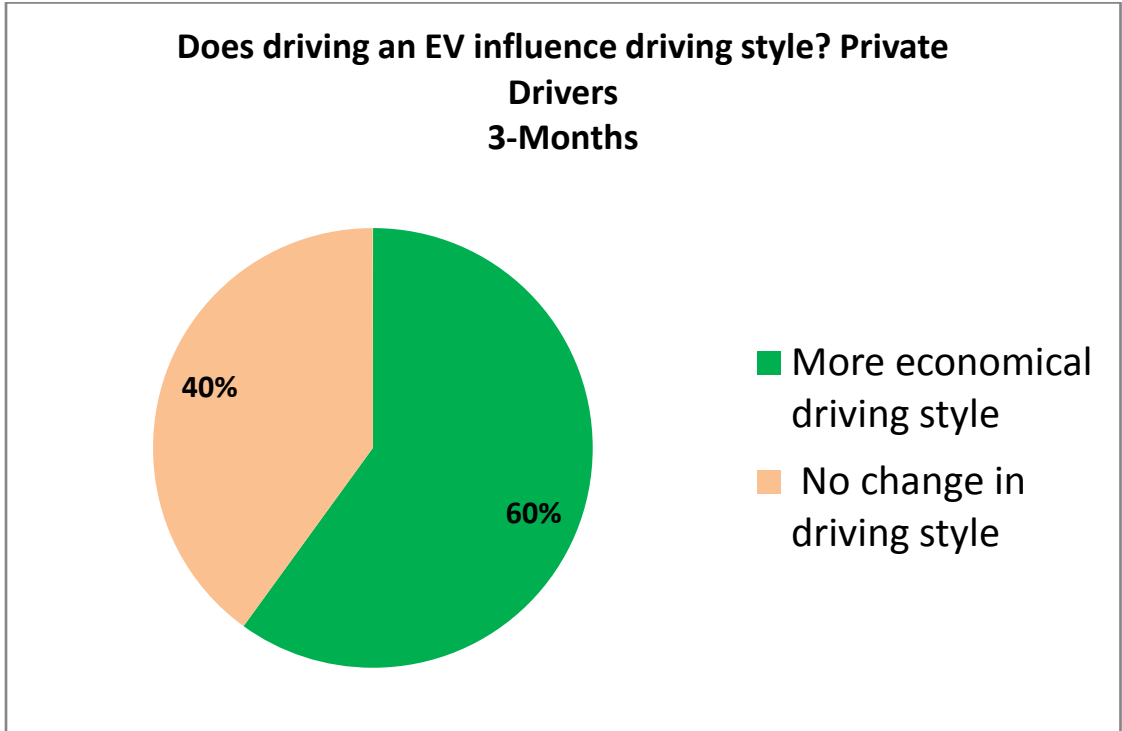
Does driving an EV influence driving style?

A critical feature associated with the battery is the range that the driver can expect to achieve per charge and the way in which each individual's driving style influences fluctuations in range. Moreover, drivers need to learn how variables external to the driver (such as the outside temperature and the way in which the car responds to hotel features) also influence the state of battery charge and range. Both PDs and FDs scored similarly in considering that their driving had become more economical as a result of driving an EV:

"I mean you can drive it as you wish, but I suspect that you would impinge on the number of miles, you know if you're a real foot-down person, you might be pushed to get 80, I should think. I do think in this electric car business you have to do your little bit as well. I think actually, I would say with an electric car, this is a joint venture, it's a partnership. You drive me well and I'll give you more miles."

"Well I just try and drive as steady and smooth as possible, I don't look to see when it's regenerating, what I do notice is every now and again, when I look at the miles there's a few extra miles on the clock so I know it's done it. So I try not to be erratic really. I do drive slightly different because I know there's times when it can charge a bit more. But I don't deliberately do anything I just try and be a bit of a better driver really and, you know, not have your foot down all the time and then slow up very, very fast, do it on a gradual thing. And I think it does regenerate some of the miles back in, and you know every little helps really."

"I think the main thing that came back to me was that this reflects very much on your driving technique, if you drive carefully you'll probably do a lot more miles, if you drive badly you do a lot less, so it's a very rapid indication, whereas with a petrol car, you don't notice that so much. It's a very important moderator of driving behaviour I think."



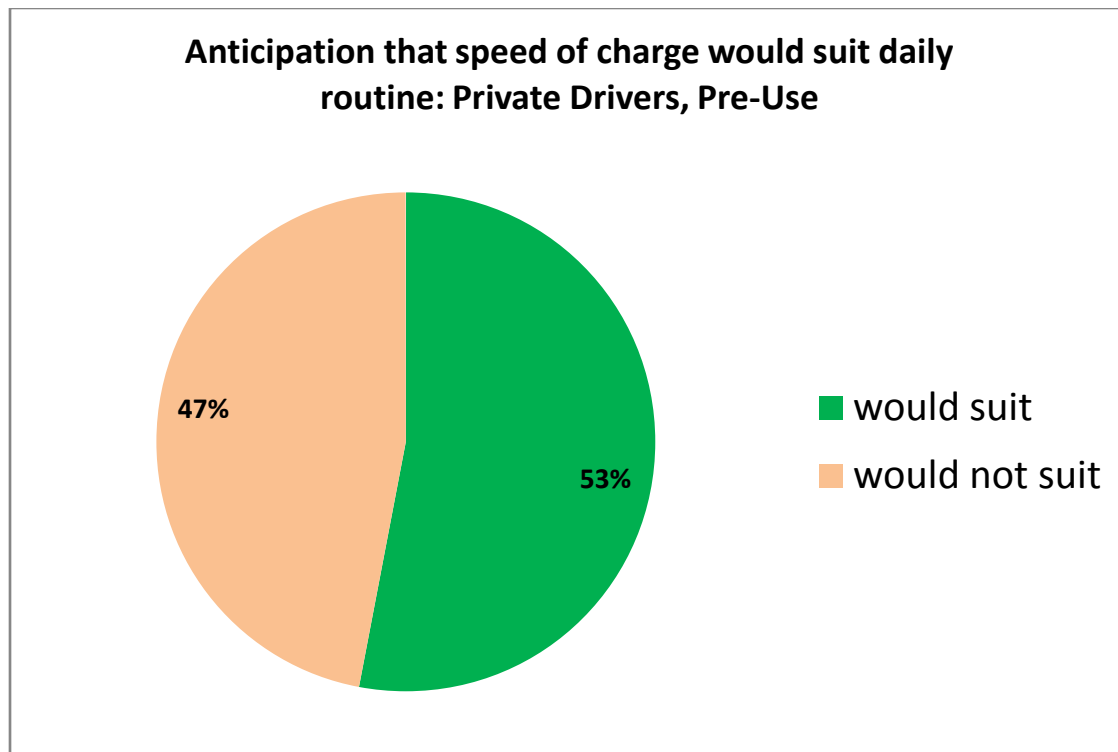
Adapting to charging an EV

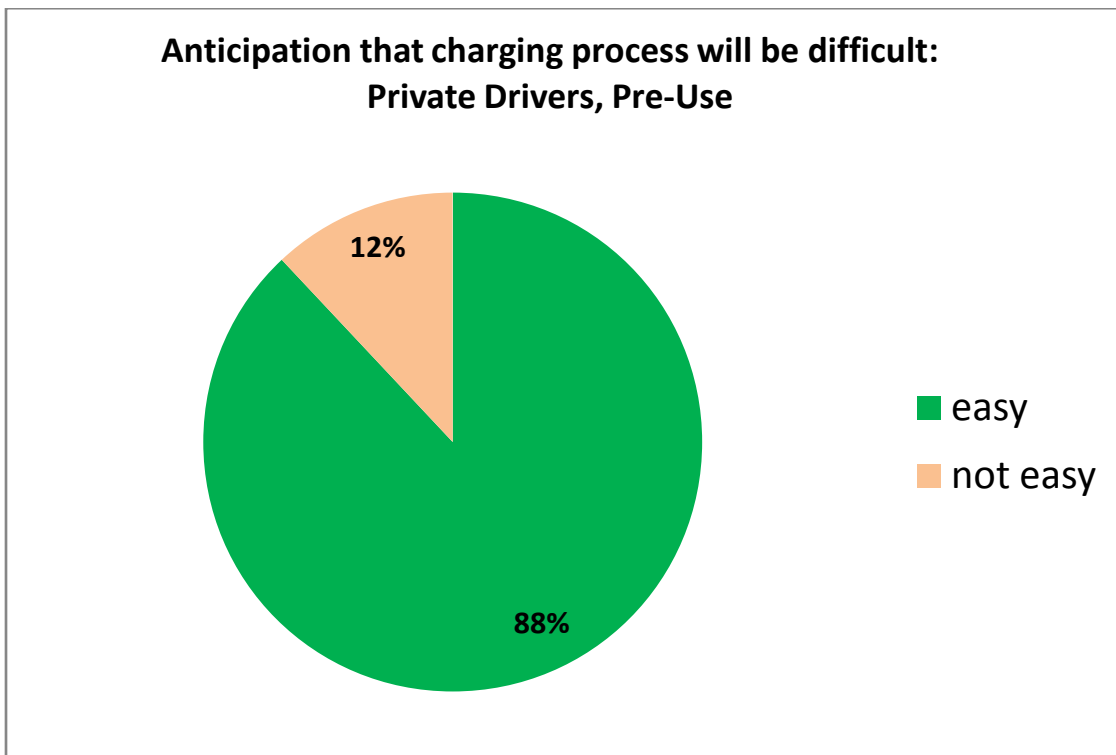
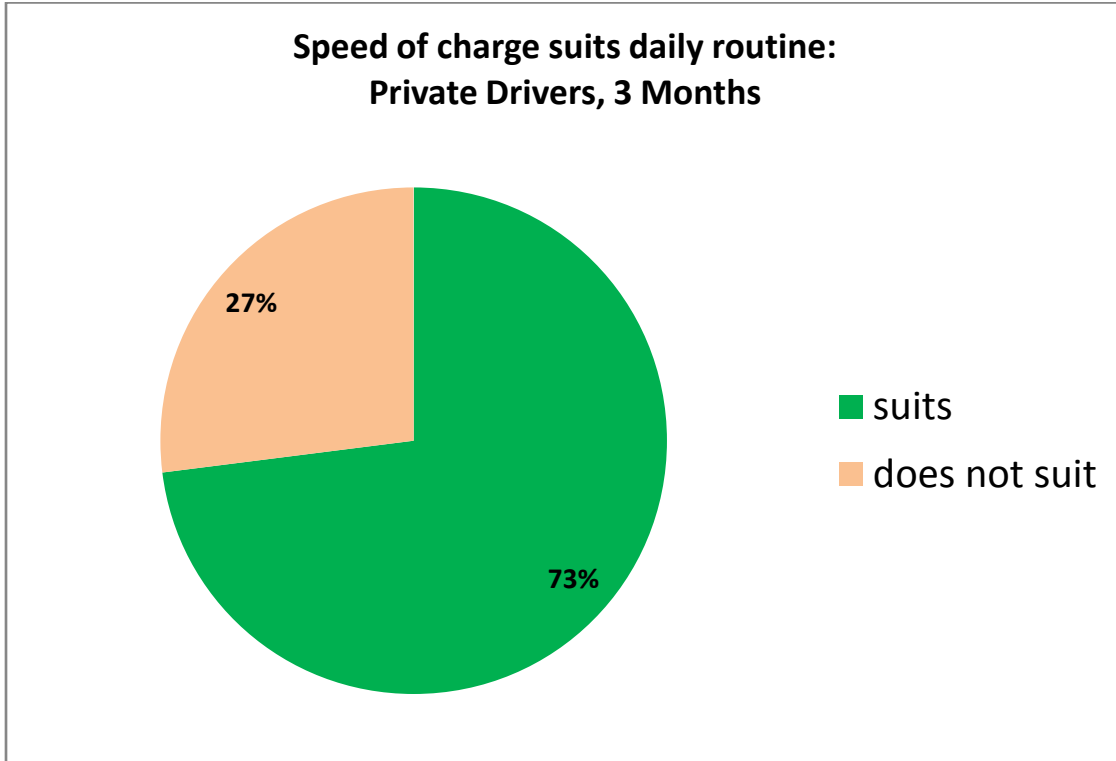
At pre-trial phases of data collection, drivers are particularly concerned about the processes involved in charging the car (as opposed to refuelling through petrol stations), the length of time it will take to fully recharge a battery, and also have a heightened awareness of the way in which they will need to manage their time in order to establish a regular and effective charging routine. We know from the results we presented at HEV11 that people expected to be able to adapt to the charging process and that, in fact, it was even easier than they had anticipated – and this was equally the case for PDs and for FDs.

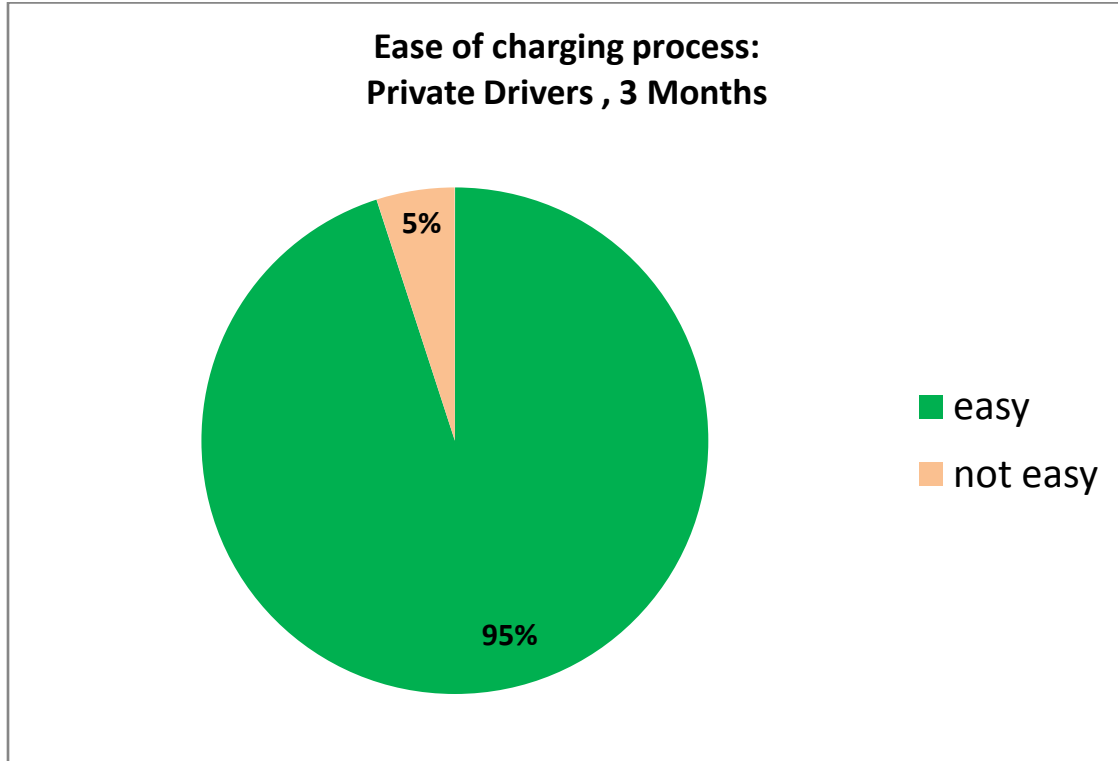
“I know now there was nothing to be apprehensive about 'cos you plug it in, it starts charging at 11.30pm at night and charges till 6.30am in the morning and then stops. Basically you plug it in and it does it all for you.”

“I found the charging very easy: plug it into the mains, put the other bit into your own electric point. That’s it; that is all you have to do and walk away. Wake up in the morning and it’s all done. Unplug it, take the thing out, put the cable in the boot of the car and away I go. Takes me 30 seconds in the morning to get the car up and running.”

Each group considered an infrastructure to be essential despite also acknowledging that they could incorporate an EV into their lives without an infrastructure but PDs were more likely to say that they’d have an EV even if the only place they could charge was at home.



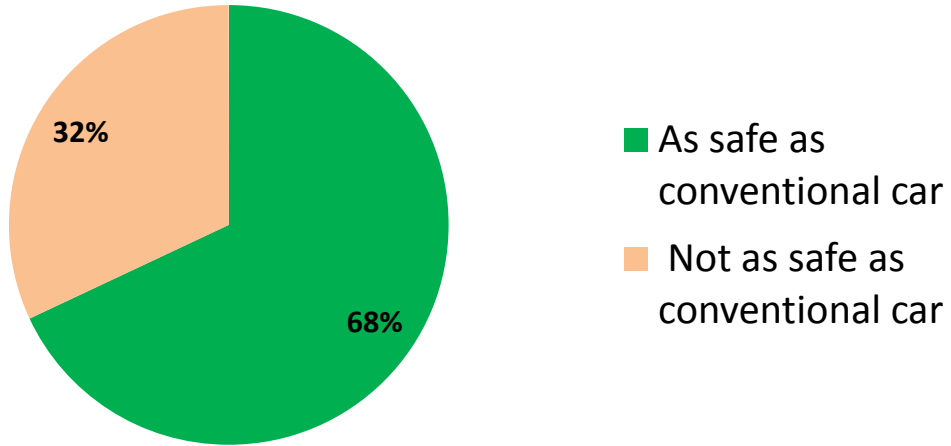




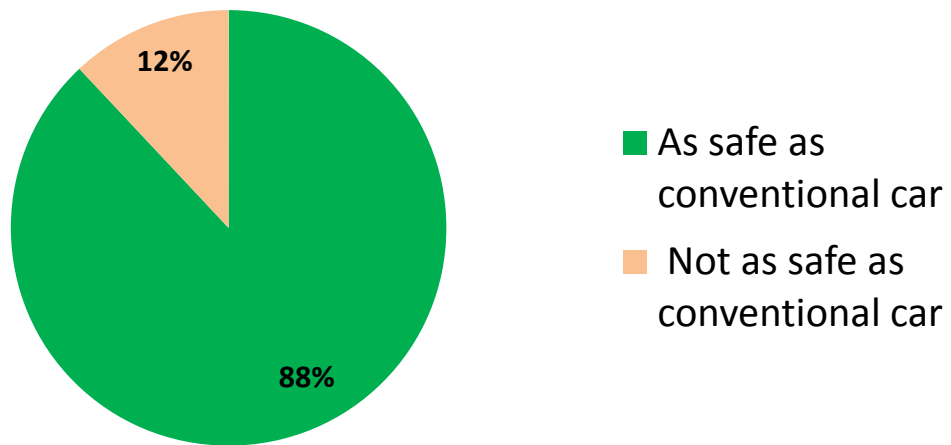
Overall safety of driving an EV

Pre-measures indicated that 68% of PDs and 73% of FDs expected their EV to be as safe as their normal car. This proportion increased significantly for both PDs and FDs. One of the biggest safety issues that drivers mentioned in pre-trial interviews related to the low level of noise of EVs.

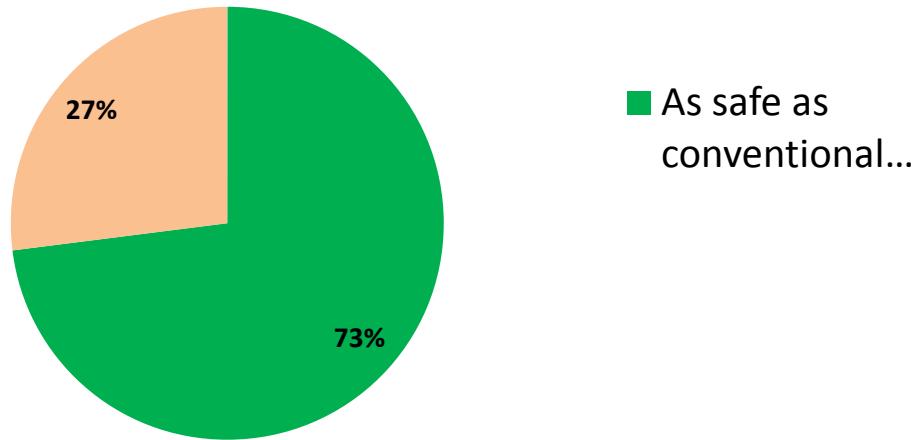
**Expectation regarding the safety of the EV
compared to a conventional car:
Private Drivers, Pre-Use**



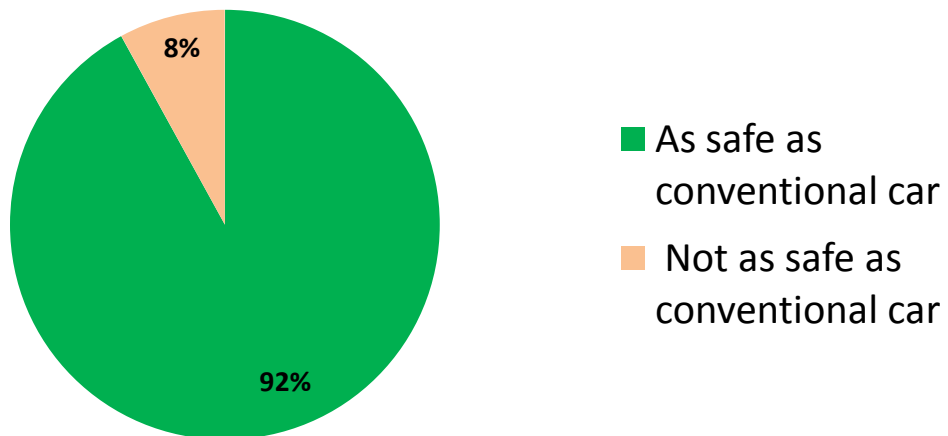
**Perceived Safety of Driving the EV
compared to a conventional car:
Private Drivers, 3-Months**



**Expectation regarding the safety of the EV
compared to a conventional car:
Fleet Drivers, Pre-Use**



**Perceived Safety of Driving the EV
compared to conventional car:
Fleet Drivers, 3-Months**



Adapting to the low noise of an EV

The lower noise of an EV is a cause for concern for many individuals prior to driving an EV for the first time. Overall, drivers of both groups quickly embrace the low noise of EVs and alter their perspective on low noise being a danger. PDs were significantly more positive than FDs about the lack of engine noise at the pre-trial phase of data collection. These figures improve significantly for each group at the 3 month questionnaire with 81% of PDs and 87% of FDs indicating that they like the lack of noise associated with driving an EV.

“I like the low noise, it’s really relaxing, it makes the whole driving experience a more relaxing one.”

“It’s much more relaxing and you find yourself actually more calm and it’s a much more relaxing way of driving and it’s kind of graceful and serene almost. You’re sat there in your own little world and there is very little intrusion and everybody comments on it at first when they get in the car.”

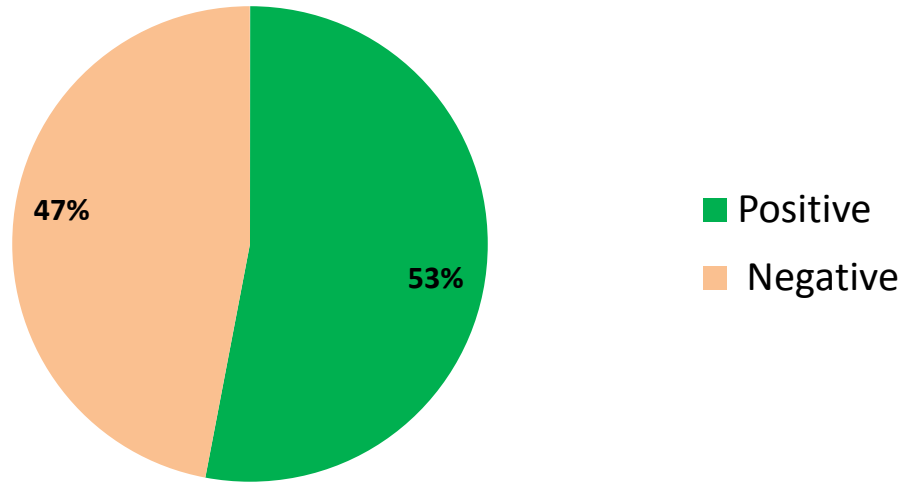
Similarly, both PDs’ and FDs’ pre-trial opinions about low noise being a danger to people outside the car decreased at the 3 month trial point, with PDs showing a particularly marked drop to 23%

“I mean I’m conscious of the fact that particularly when I’m on the electric charge, that people probably can’t hear me coming. So I’m cautious approaching any pedestrians and junctions where I think it might be likely that someone might step out in front of me. But I won’t say that I’m driving hugely different because of it. You know, even when you’ve got a noise people still step out without looking; so you know, you’re always aware of that anyway.”

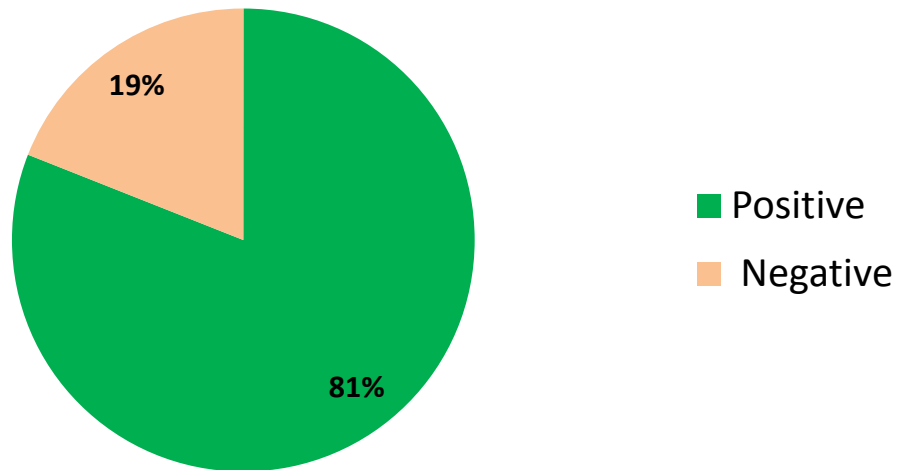
“Perhaps I’m making some adjustments to driving to make sure that it’s safe when you’re in areas where someone could step out in front of you. I think I’m prejudging those situations as well. I think you’d sort of realise that people are starting to sort of not look round.”

Drivers demonstrate quite a marked turnaround with regards to the low noise of EVs. They feel that they are more vigilant at lower speeds and do not report significant incidents with pedestrians, cyclists, animals.

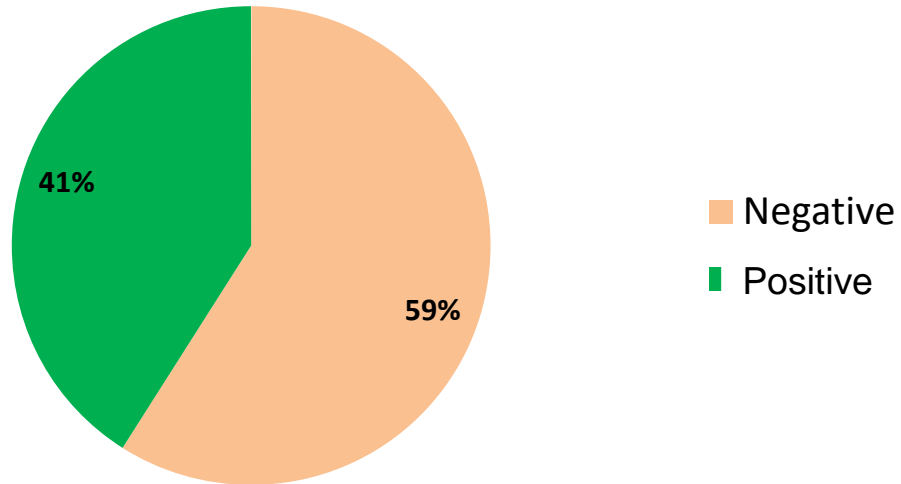
**Anticipation about the Low Noise of EVs:
Private Drivers, Pre-Use**



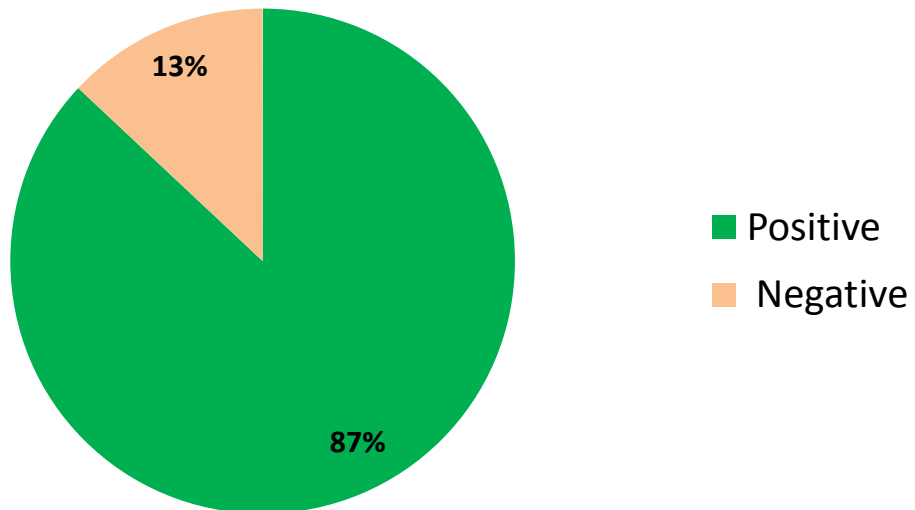
**Attitudes towards the low noise of EVs:
Private Drivers, 3-Months**

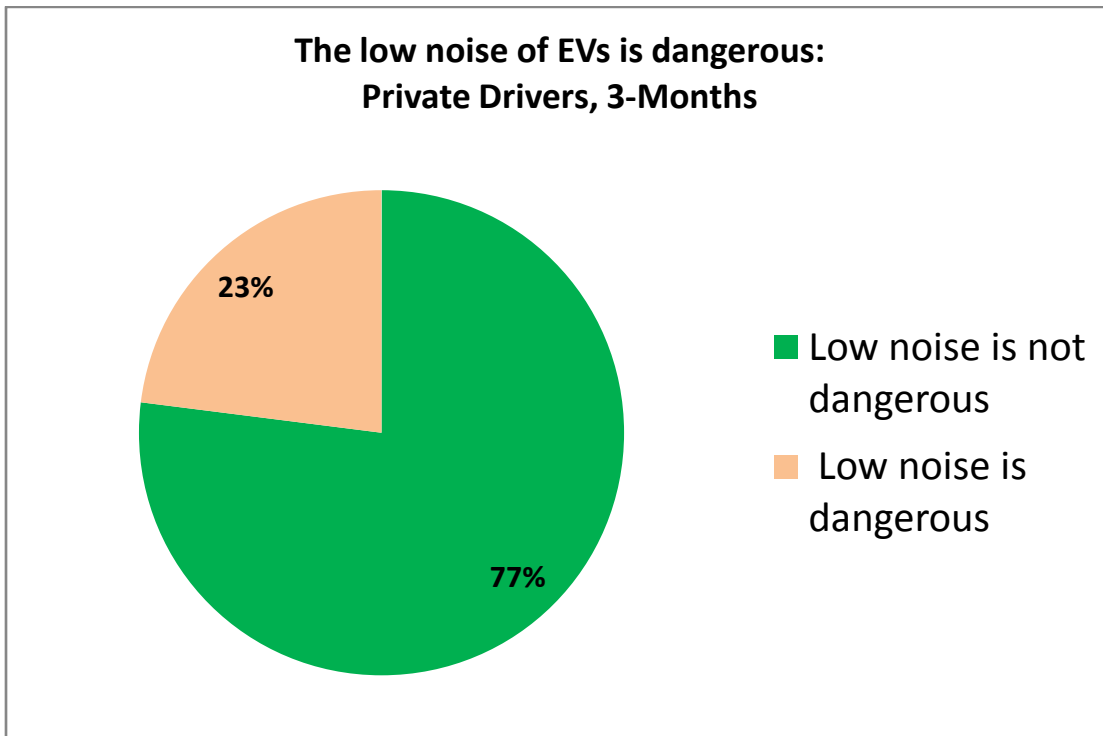
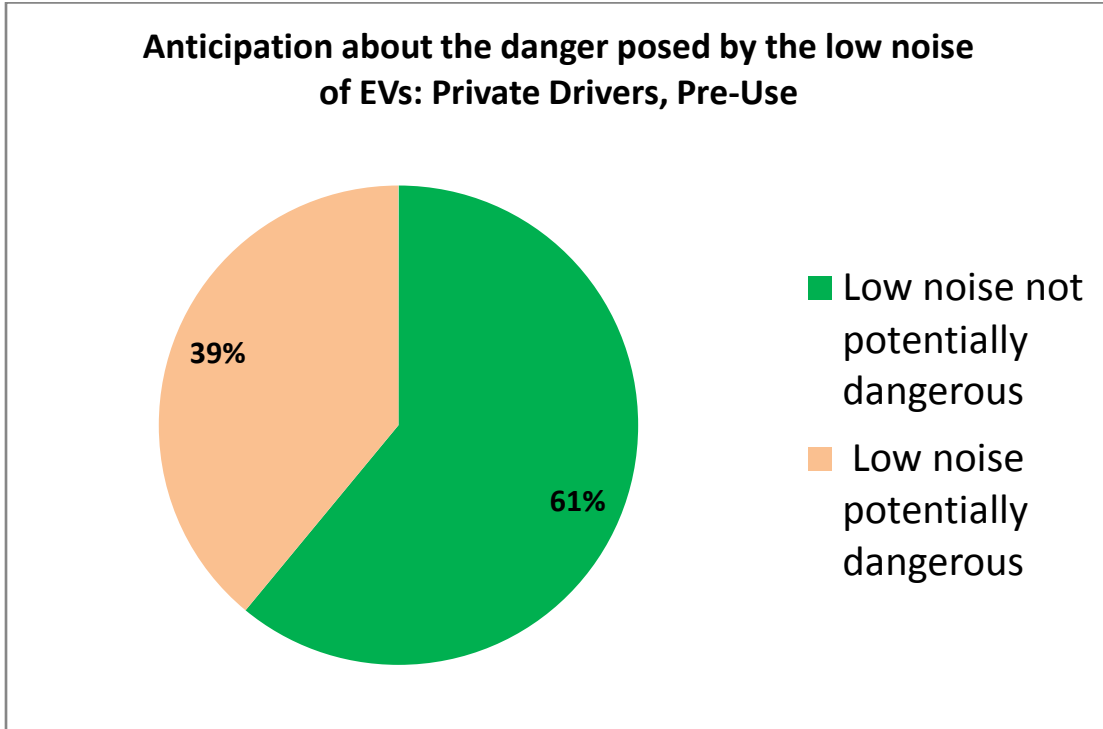


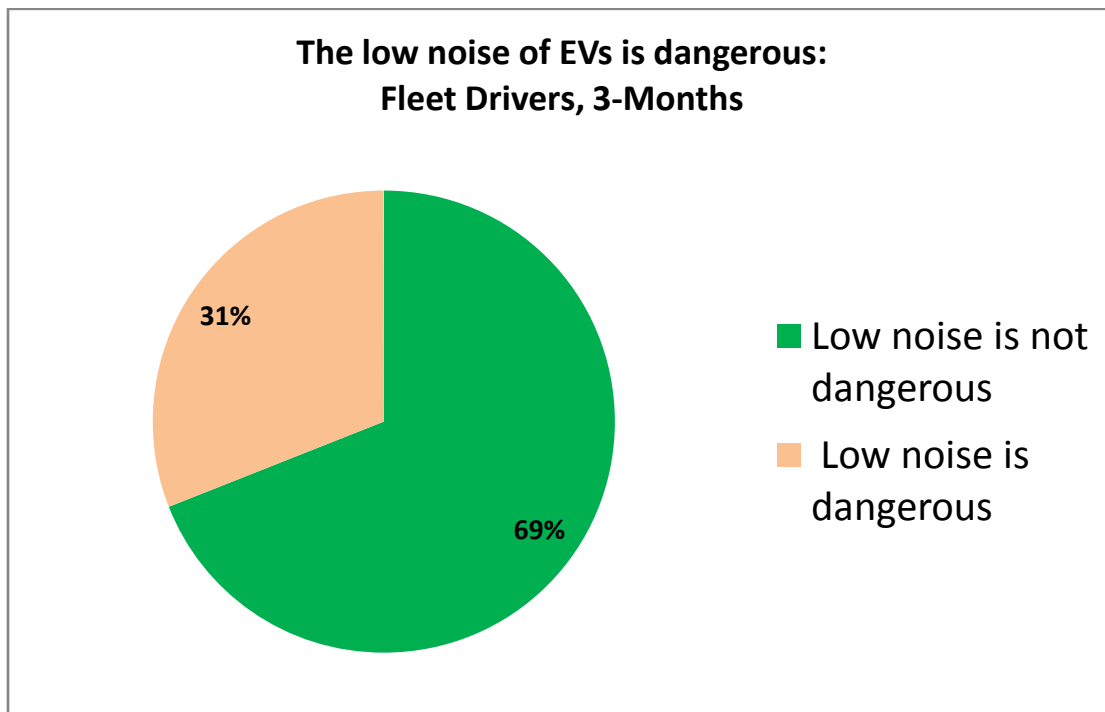
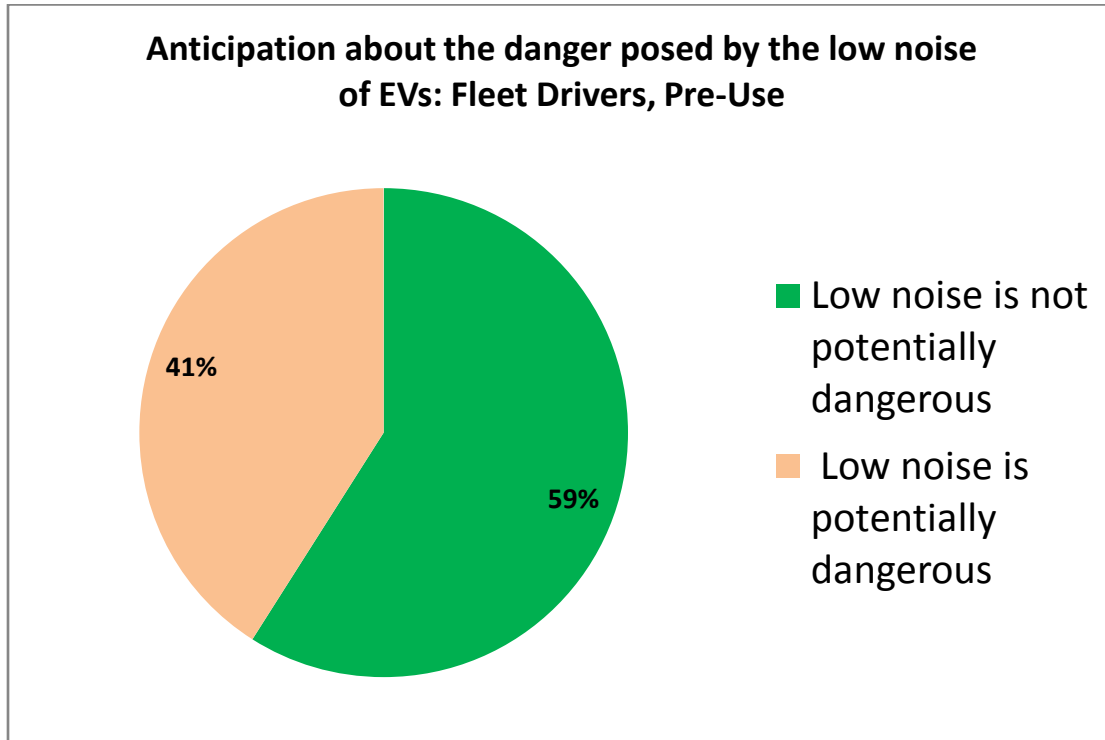
Anticipation about the Low Noise of EVs: Fleet Drivers, Pre-Use



Attitudes towards the low noise of EVs: Fleet Drivers, 3-Months







Differences between private drivers (PDs) and fleet drivers (FDs)

For the most part the results for PDs and FDs are consistent. There are some interesting differences and we feel these can be explained in part by the initial motivational profile we

identified in our report for EVS25 and in part by the greater variety of roles required for fleet vehicles compared to private vehicles. While FDs adapted well to the EV, significantly more PDs see EVs as practical. In the words of fleet drivers, the fleet EV has to be fit for purpose and those purposes are varied:

“I think first and foremost [the EV] has got to be efficient, it’s got to be safe; it’s got to be fit for purpose and it’s got to portray the right image.”

“It has to be fit for purpose and that will change depending on what that purpose is.”

We also know that a greater proportion of PDs than FDs felt they received sufficient training to use their EV effectively. Interviews with Fleet Managers reveal a variety of training procedures, which could perhaps be standardised for even greater fleet adaptation.

Completing the Ultra Low Carbon Vehicle Demonstrator Programme

The perceptions analysed in this report represent the first three months of data as users adapted to the vehicles. The road user trials, and the collection and analysis of data, continue into 2012. After all the vehicles have completed 12 months of trials, the full data set will be published - with the aim of providing a valuable body of evidence to inform future market development.

We are grateful to all participants and partners in this groundbreaking programme.

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T11/054

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