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Electric Vehicle Association England



## Improving Drivers' Confidence in Public EV Charging

Research report on the consumer  
experience at public electric vehicle  
chargepoints in England

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## Executive summary

### **This document reports on the findings of a consumer survey on drivers' experiences with public electric vehicle charging in England.**

The online survey was designed to align with the themes presented in the Government's consultation on *The consumer experience at public electric vehicle chargepoints* and to gather the views of drivers on how they perceive the current state of public charging.

#### **The main findings from EVA England's research are:**

- 92% of EV drivers in England use public chargepoints at some time or another.
- EV drivers find a contactless credit or debit card the easiest method by which to access a chargepoint and therefore pay for a charge.
- Most drivers would welcome the ability to use a contactless card, a smartphone app or an RFID card across all chargepoint networks (roaming).
- Having access to real-time information ahead of a charging event would save drivers time.
- Drivers strongly prefer to pay for their charge in pence/kWh.
- Drivers would welcome a 99% reliability standard to be set for chargepoint operators.
- There is not enough signage designating EV charging along A-roads, motorways, at destinations and at Motorway Service Areas (MSAs).
- English drivers are, overall, dissatisfied with their experiences at public EV chargepoints – a rating of 2.16 out of 5.

#### **The main recommendations to improve drivers' confidence in public EV charging in England are:**

- A contactless credit or debit card payment option should be offered along with a smartphone app and/or RFID card option.
- Drivers should be able to use a smartphone app and/or RFID card option across all chargepoint networks.
- Data, such as maintenance levels and chargepoint availability, should be made available to drivers ahead of a public charging event.
- A single pricing metric of pence/kWh hours should be adopted.
- A 99% reliability standard for chargepoint operators is reasonable and should be implemented.
- Signage should be greatly deployed along A-roads, at destinations, along motorways and at MSAs to better designate the location of public EV charging.

EVA England also recommends that further research and work, such as regular surveys and workshops with EV drivers, be undertaken in order to track progress and consumer satisfaction.

## Introduction

EVA England was incorporated as a community interest company in June 2020 to offer a voice to electric vehicle (EV) drivers in England and to facilitate the faster adoption of electric vehicles. One such way EVA England achieves its mission is by undertaking surveys of EV drivers and using survey responses to make informed recommendations to Government and to industry. EVA England began welcoming members in March 2021 and currently represents over 200 individuals.

This document reports on the findings of a survey on the consumer experience of public electric vehicle chargepoints, viewed from the perspective of current EV drivers. 1,216 drivers completed the survey, which ran for three and a half weeks from 22 February 2021 to 19 March 2021.

EVA England is pleased to contribute this report and its recommendations as a means of identifying areas of improvement and ways in which confidence in public charging can be increased, which in turn will pave the way for the mass adoption of electric vehicles.

## Need and Scope

In February 2021, the UK Government announced a consultation on *The consumer experience at public electric vehicle chargepoints*.<sup>1</sup> EVA England designed a survey around the consultation's four key themes with input from the Office for Zero Emission Vehicles (OZEV) and Department for Transport (DfT). The aim of the survey was to gather the views of current EV drivers on their experiences with public chargepoints in the UK.

The survey was designed around the consultation's four key themes:

1. Payments
2. Pricing (transparency)
3. Open data
4. Reliability

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<sup>1</sup> Department for Transport and Office for Zero Emission Vehicles, *The consumer experience at public electric vehicle chargepoints*, 13 February 2021. <https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-chargepoints>

Other areas of interest included the emerging themes highlighted in the consultation document:

5. Weatherproofing and lighting
6. Signage
7. Accessibility<sup>2</sup>

Participants were also asked to gauge their current satisfaction with public EV charging.

The survey was hosted through the online survey platform, Typeform. EVA England gathered 1,216 responses from current battery electric vehicle (BEV) and plug-in hybrid vehicle (PHEV) drivers across the UK, including England, Northern Ireland, Scotland and Wales. 96 responses came from Northern Ireland, 31 from Scotland and 24 from Wales. Of the 1,216 responses, 1,025 indicated they were EV drivers in England and it is their responses that form the basis of this report.

## Method

This research was comprised of a mainly quantitative survey that included one free response question to gather qualitative data. The survey's main objective was to gather crucial information about drivers' attitudes toward the current state of public EV charging.

As mentioned above, the survey focused on the consultation's four key themes and emerging themes. Questions of the survey were designed to address each of those themes and was designed with the awareness of OZEV and DfT. The themes are addressed separately in this document, but also viewed together in order to paint a more complete picture of perceptions toward the current state of public charging in England and how drivers' confidence can be improved.

## Profile of respondents

Of the 1,025 participants from England, 96% indicated they were drivers of battery electric vehicles (BEV) with the remaining 4% designating they were drivers of plug-in hybrid vehicles (PHEV). 73% indicated that their EV (whether BEV or PHEV) was their primary vehicle, 22% indicated it was their only vehicle and 5% said it was their secondary vehicle.

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<sup>2</sup> The charity, Motability, is undertaking extensive work around the themes of accessibility and public EV charging. EVA England, therefore, placed less emphasis on this theme, but recognises it as a key factor in shaping the future of public charging that addresses the needs of all drivers.

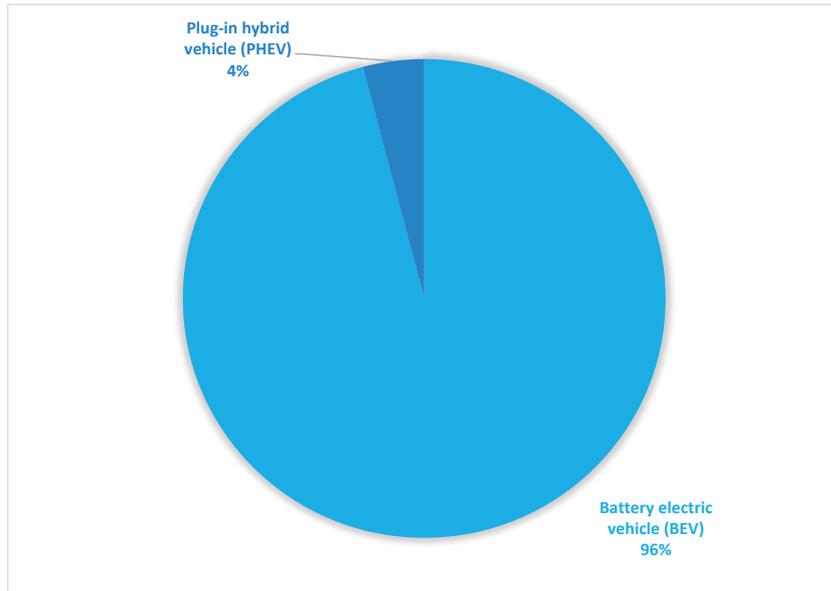


Figure 1 Profile of respondents by vehicle type

91% of participants indicated they identified as male, with 7% (75 drivers) indicating they identified as female. 2% preferred not to disclose their gender identity. 94% indicated they did not classify themselves as living with a disability, while 5% (46 drivers) indicated they did classify themselves as living with a disability.

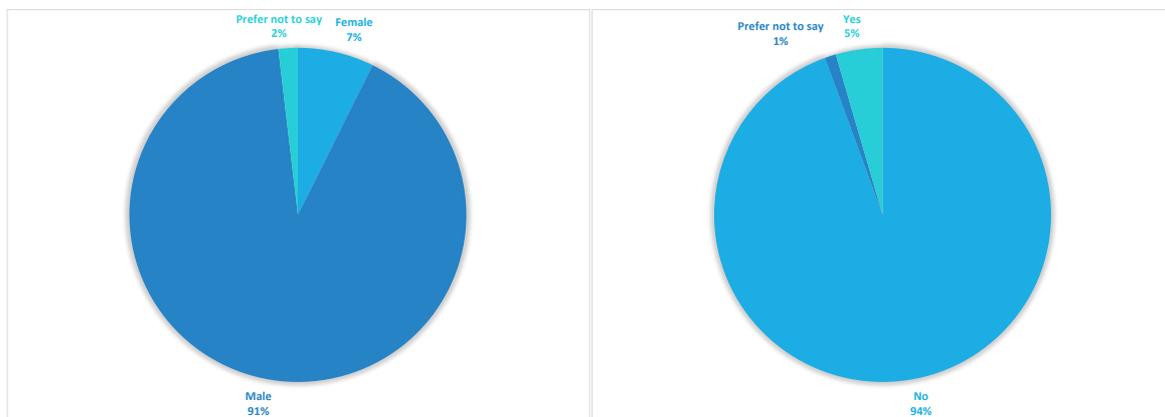


Figure 2 Profile of respondents by gender identification and disability

The largest age demographic to participate in the survey was that of the 45-54 age group, which accounted for 31% of survey responses. The 45-54 age demographic was followed by 55-64 at 23% and 35-44 at 21%.

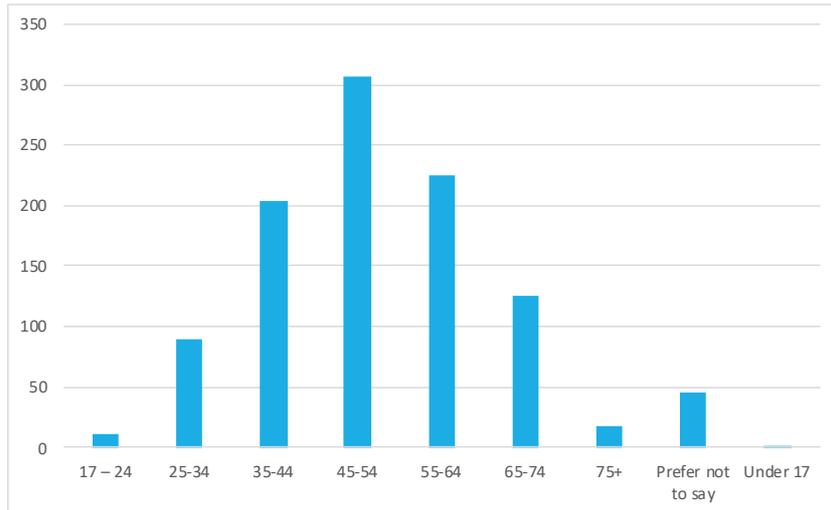


Figure 3 Profile of respondents by age

Participants were also asked to classify the area in which they normally reside with the ability to select from rural, suburban or urban. 38% of participants indicated they lived in a suburban area, 33% rural and 28% urban.

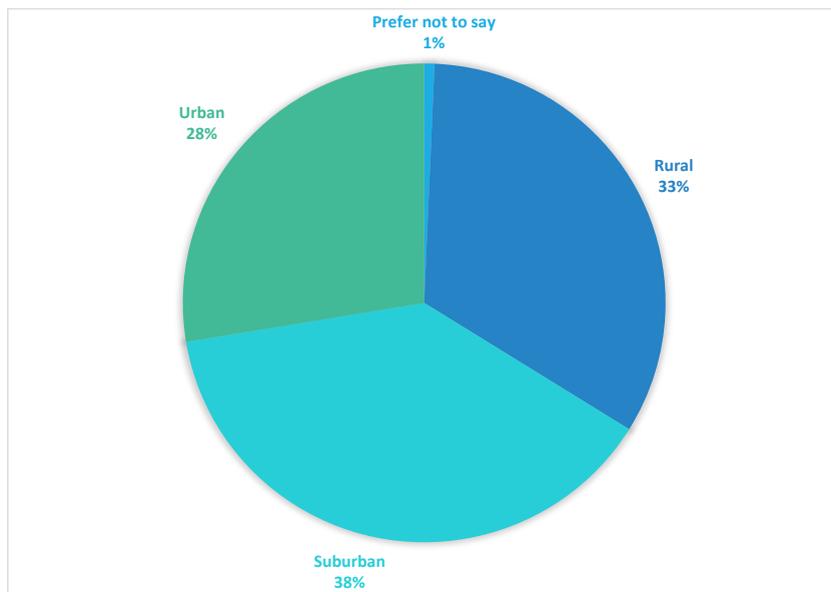


Figure 4 Profile of respondents by area

### Charging patterns of respondents

Participants were asked a series of questions in order to better ascertain how they normally charge their vehicle and how frequently they use public chargepoints. Key to understanding how EV drivers normally charge and why, respondents were asked if they had access to off-street parking.<sup>3</sup>

<sup>3</sup> Off-street parking is defined as access to a private driveway, garage or parking space.

91% indicated that they had access to off-street parking, while 9% indicated that they did not. Off-street parking is necessary to have a home chargepoint installed and it therefore gives some indication as to the potential access to a home charger. It is also important to highlight that a smaller percentage of drivers who classified the area in which they live as 'urban' had access to off-street parking. There was a greater proportion of rural and suburban drivers with access to off-street parking.

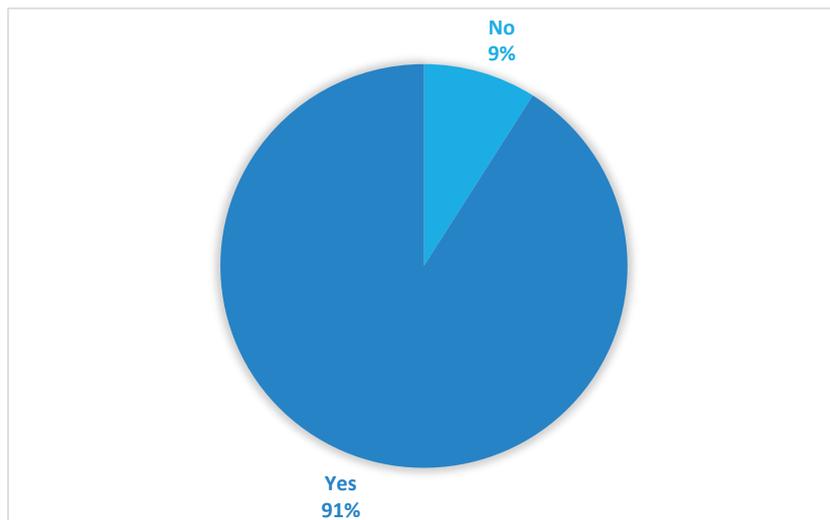


Figure 5 Access to off-street parking

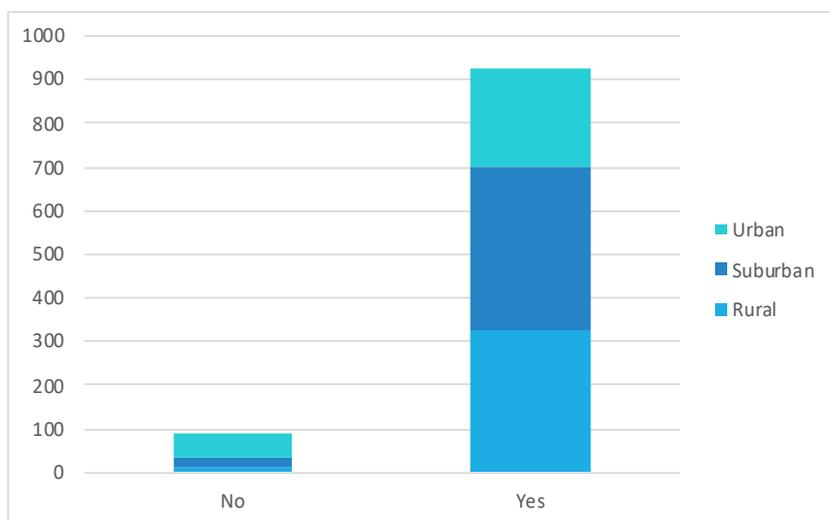


Figure 6 Access to off-street parking by area

Having such a high percentage of participants indicating they have access to off-street parking and the potential ability to charge at home illuminates charging behaviours and patterns, as well as the frequency of public EV charging events. It could also be viewed that a lack of off-street parking could be a barrier to EV adoption and further highlights the importance of improving experiences at, and confidence in, public EV chargepoints.

Participants were asked to describe the circumstances under which they normally charge their vehicles. 39% indicated that performed most of their charging at home while sometimes using public chargepoints and 36% performed almost all of their charging at home.

10% of drivers indicated that they performed all of their charging using public chargepoints, which was closely followed by 9% of drivers who said they used an even split of home and public charging.

Only 5% of drivers designated workplace charging as the primary location in which their charging events occurred.

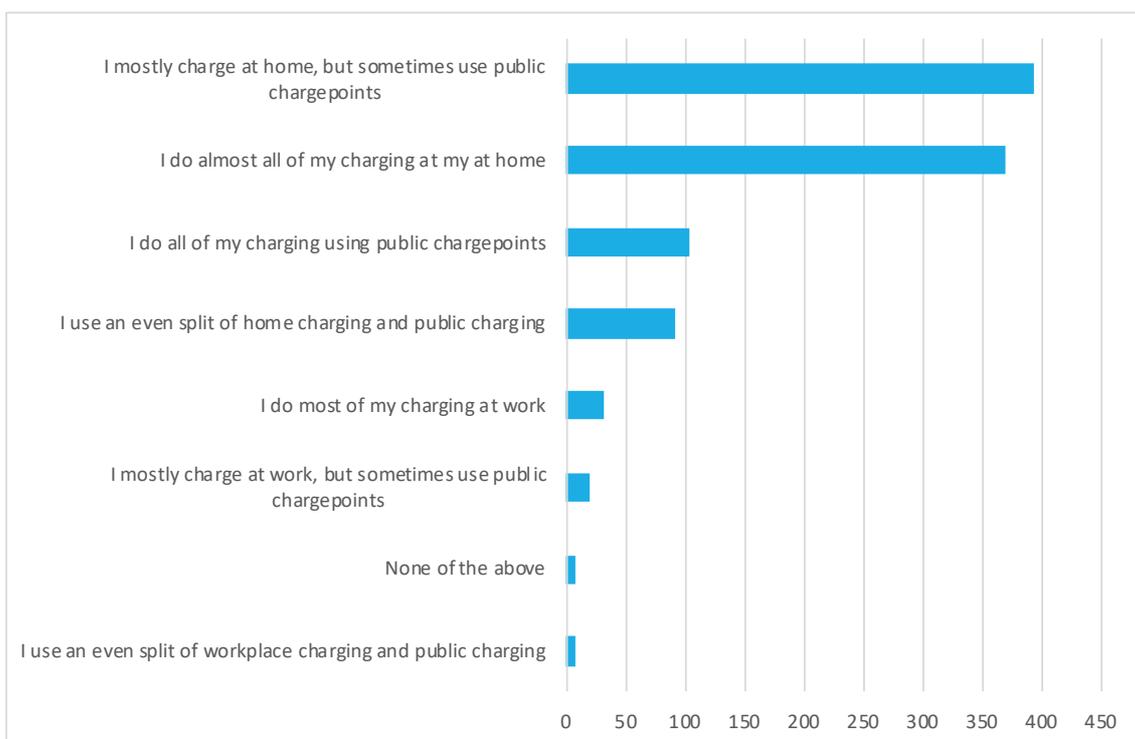


Figure 7 Charging patterns of survey participants in England

When broken down by area (rural, urban or suburban), rural and suburban drivers still performed most of their charging at home with some use of public chargepoints. There was a larger number of urban drivers (57), however, that indicated that they exclusively used public EV charging. 57 drivers also indicated that they lacked access to off-street parking.

### Urban Drivers

30% of urban drivers performed almost all of their charging at home with another 30% mostly charged at home, but sometimes used public EV chargepoints. 20%, however, indicated that they did all of their charging using public chargepoints.

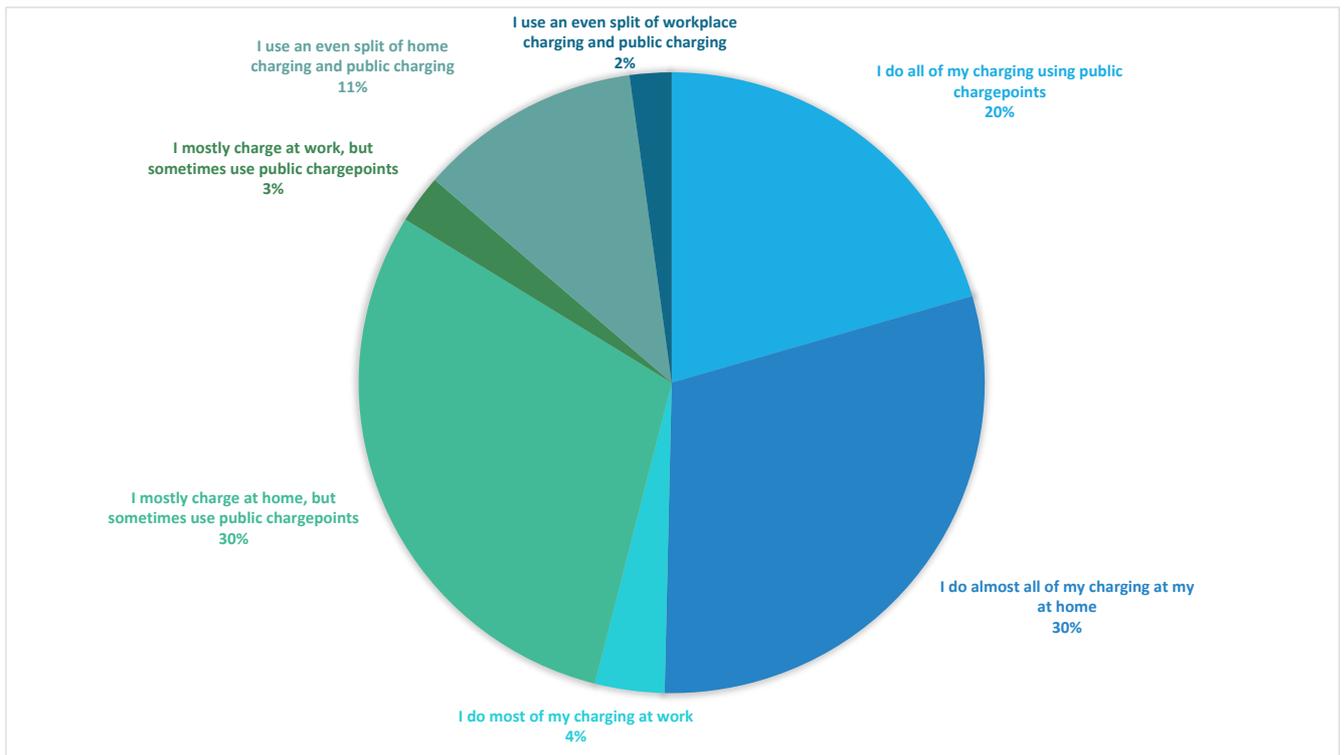


Figure 8 Charging patterns amongst urban drivers

### Suburban drivers

Amongst suburban drivers, patterns again change with 42% indicating they mostly charged at home, but sometimes used public chargepoints and 38% indicating they did almost all of their charging at home. Only 8% (31 drivers) said they exclusively used public charging.

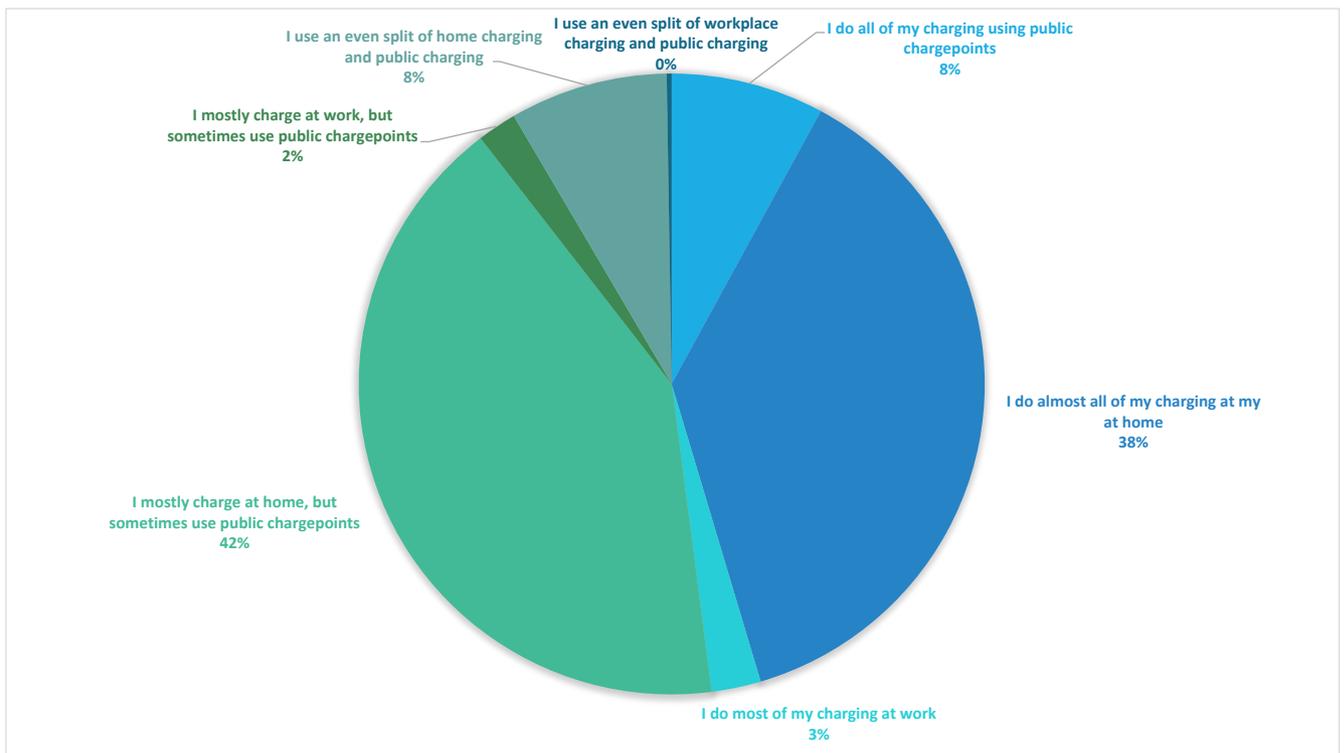


Figure 9 Charging patterns amongst suburban drivers

## Rural drivers

Rural drivers normally charged in a similar fashion to suburban drivers, with 43% of rural drivers saying they mostly charged at home, but sometimes used public chargepoints and 41% indicating they did almost all of their charging at home. 8% used an even split of home and public charging and only 4% exclusively used public charging.

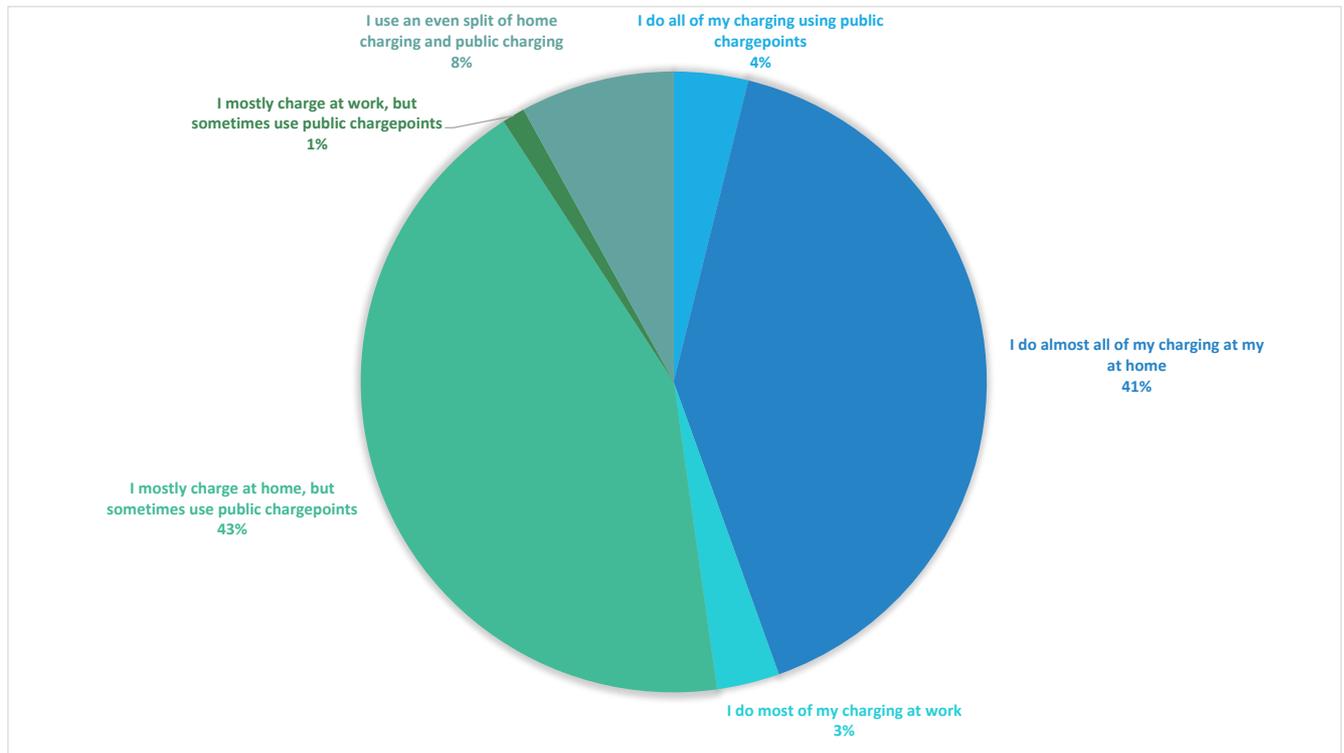


Figure 10 Charging patterns amongst rural drivers

## Frequency of public charging use

Survey participants were also asked the frequency at which they use public chargepoints.<sup>4</sup> 30% of drivers overall indicated that they used public charging once a month, closely followed by 27% who indicated once or twice a month. 14% of participants indicated that they used public charging once or twice a week followed by 12% who used public charging once a week. 9% of drivers used public charging more than twice a week and 8% indicated they did not use public charging.

<sup>4</sup> It is important to note that the COVID pandemic has impacted driving behaviours, and this was noted in several comments of the survey. Drivers were asked to think of how they *normally* drive and charge their vehicle for this question.

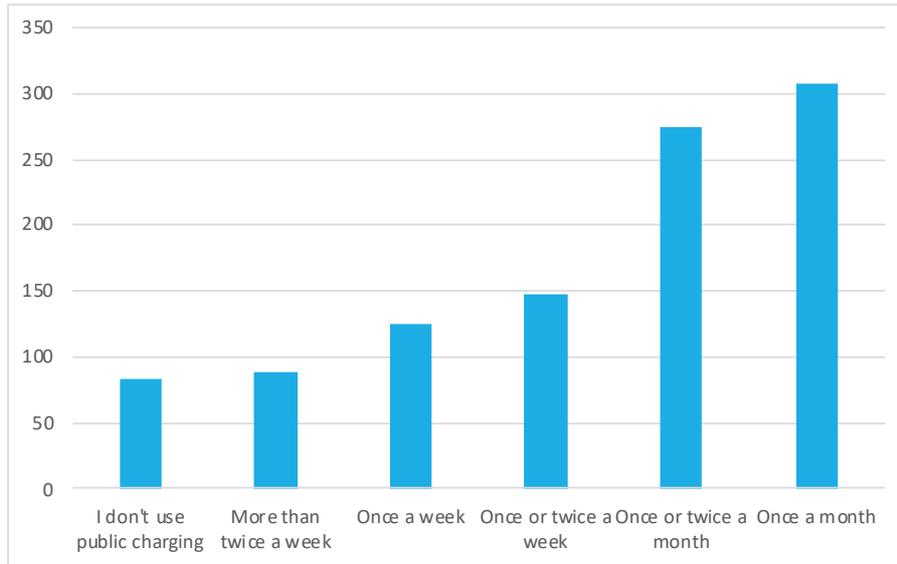


Figure 11 Frequency of public chargepoint use

Amongst drivers who exclusively used public charging, 35% use public charging once or twice a week, 26% more than twice a week and 23% use public chargepoints once a week.

Amongst drivers who indicated they did almost all of their charging at home, 35% use public chargepoints once a month and 29% use public chargepoints once or twice a month. 21% indicated that they do not use public charging.

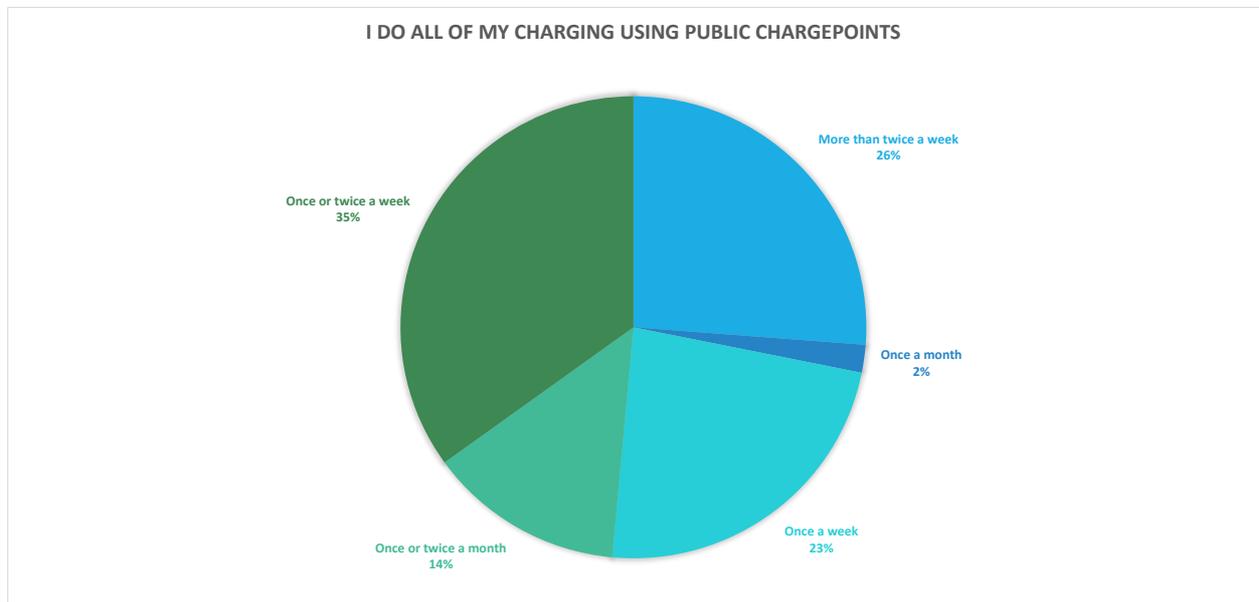


Figure 12 Frequency of public chargepoint use amongst drivers without home charging

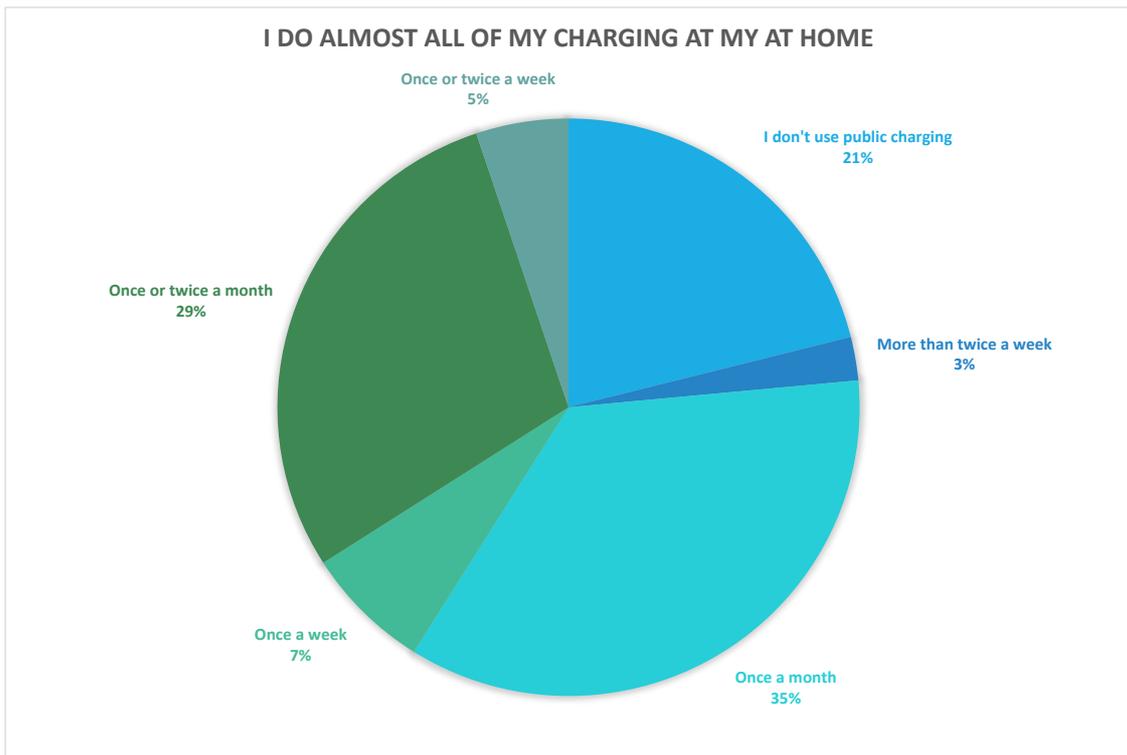


Figure 13 Frequency of public chargepoint use amongst home charging drivers

For those drivers who almost exclusively charge at home, it is clear their use of, and therefore dependence on, public chargepoints is significantly less than those who exclusively use public chargepoints. Whereas 35% of drivers who almost always charge at home may use a public chargepoint once a month, the same percentage of drivers without home charging use public chargepoints once or twice a week.

### Concern over finding public chargepoints

Lastly, drivers were asked to gauge how often they felt concerned about finding a public chargepoint when in need of a charge and away from their normal charging destination. 94% of participants indicated that they experienced concern at some time or another – 37% of drivers indicated that they sometimes felt concern about finding a chargepoint, closely followed by 35% of drivers who often felt concern and 22% who seldom felt concern. Only 66 drivers (6%) indicated that they never felt concern about finding a public chargepoint.

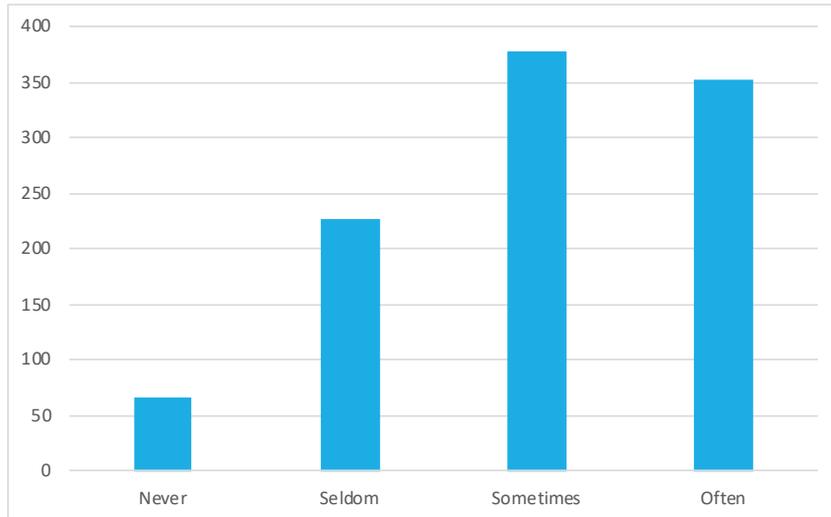


Figure 14 Concern over finding public chargepoints amongst EV drivers in England

Amongst the 74 female drivers, the concern rate varied with 37% of female drivers indicating they often felt concern over finding a public chargepoint away from their normal charging location (home). 32% sometimes felt concern, while 24% were seldom concerned with finding a chargepoint. Only 7% (5 drivers) never felt concern over finding a public chargepoint.

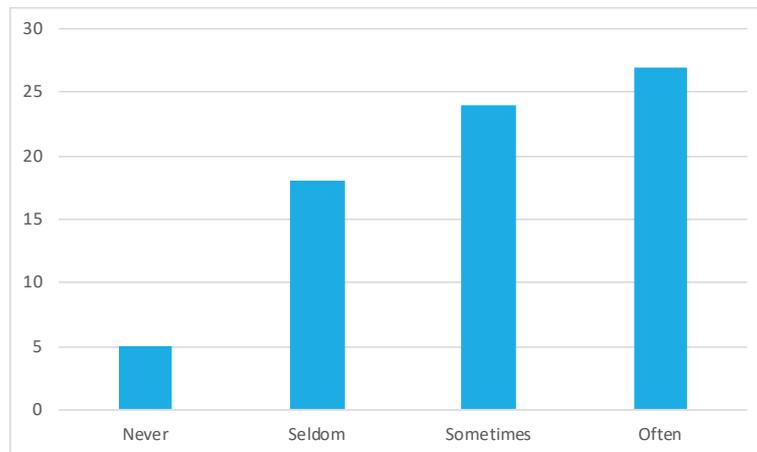


Figure 15 Concern over finding a chargepoint amongst female EV drivers in England

Similarly, amongst the 46 drivers who indicated they had a disability, the concern rate again varied with 46% of disabled drivers indicating they often felt concern over finding a public chargepoint away from their normal charging location. 30% sometimes felt concern, while 20% were seldom concerned with finding a chargepoint. Only 4% (2 drivers) never felt concern over finding a public chargepoint.

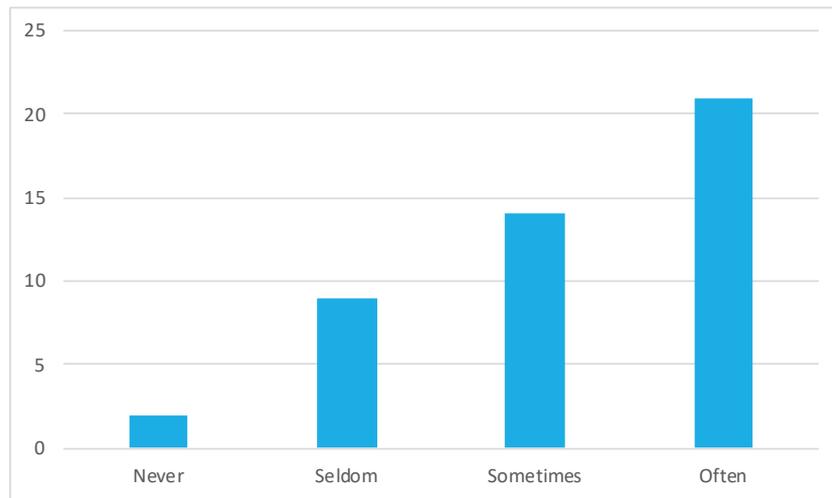


Figure 16 Concern over finding a chargepoint amongst disabled drivers

With drivers that identify as female, as well as drivers that identify as living with a disability the level of concern over finding a chargepoint away from a normal charging location (such as, home) increases to ‘often’. Amongst all drivers, concern tends toward ‘sometimes’.

## 1 Making it easy to pay

On the consultation’s theme of payment, participants were first asked to select all the methods they had used to access a public chargepoint. Accessing a public chargepoint is closely tied to the method in which a driver will pay for a charging event and the results indicate that drivers are accustomed to accessing a chargepoint using different methods.

In order of frequency of response, drivers had accessed a chargepoint with a smartphone app, a contactless credit or debit card, a membership card (also known as an RFID card) and charging subscription service.

1. A smartphone app
2. Contactless credit or debit card
3. A membership card (also known as an RFID card)
4. Membership to a subscription service
5. Other contactless payment (for example, Apple Pay or Google Pay)
6. Chip and pin credit or debit card
7. Phone call

The consultation proposes that “consumers should be able to pay instantly for using public chargepoints in a smooth and hassle-free manner.” Participants were therefore asked which payment method they found *easiest* when accessing a chargepoint and therefore paying for a charge.

A contactless credit or debit card was deemed the easiest method for accessing a chargepoint with 46% of participants (472 drivers) selecting a contactless card. A contactless credit or debit card was followed by a smartphone app (145), a membership (RFID) card (137) and other contactless forms of payment such as, Apple Pay (106).

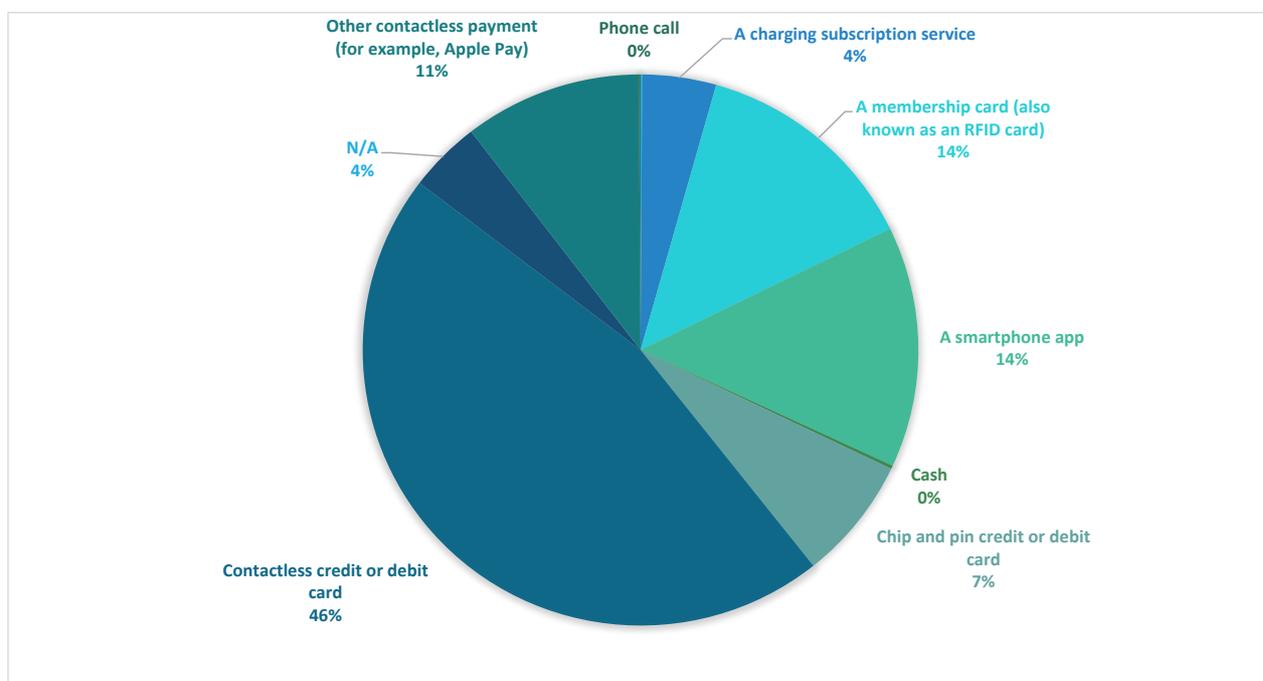


Figure 17 Easiest payment method

74 participants selected a chip and pin credit or debit card as the easiest access method while 44 indicated that a subscription service was the easiest method. Only 1 participant indicated that a phone call payment option was the easiest method by which to access a chargepoint.

The survey then asked participants if they would welcome the ability to use what they deemed as the easiest access method across all public chargepoints. 94% would prefer to use the method they selected across all chargepoints, while only 6% said they would not. In order of preferred method, drivers would like the ability to use the following across all chargepoints:

1. Contactless credit or debit card (467 drivers)
2. An RFID card (125 drivers)
3. A smartphone app (123 drivers)
4. Other contactless payment method (102 drivers)
5. Chip and pin credit or debit card (70 drivers)
6. A charging subscription service (40 drivers)

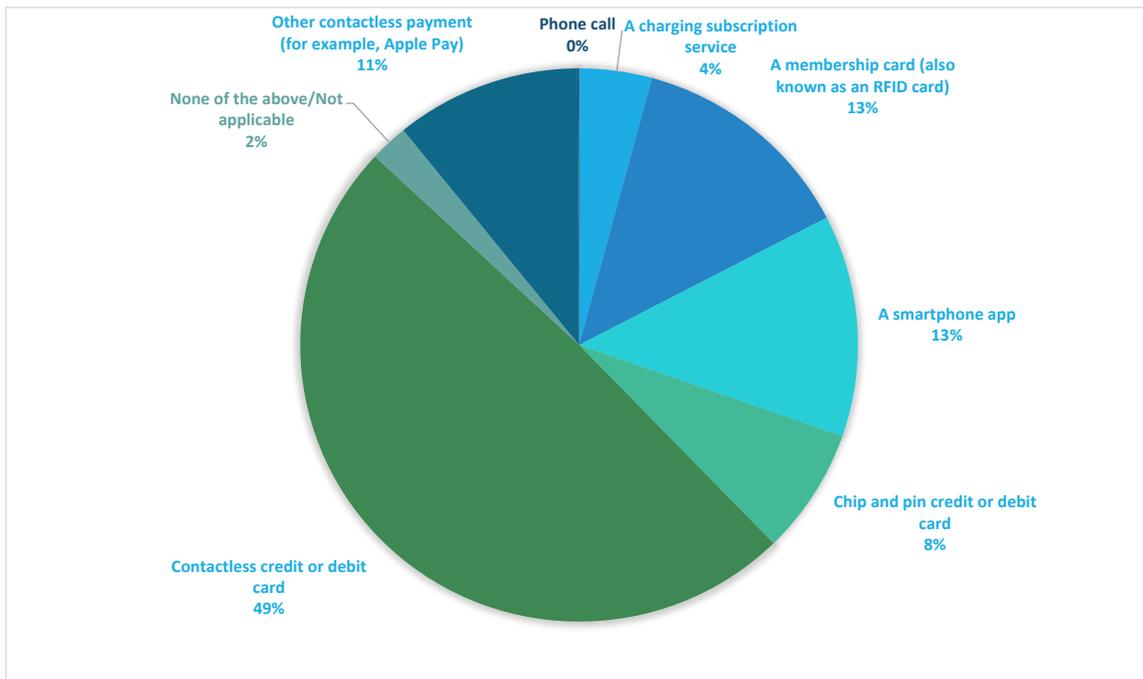


Figure 18 Preferred method of payment across all chargepoints

The survey also asked participants if they would like the ability to pay for a charge through a call or text-based payment option. 84% of English EV drivers would not welcome a call or text-based option to pay for a charge with only 16% indicating that they would welcome a call or text-based solution.

Comments, too, show the preference for a contactless form of payment across public chargepoints.

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“All chargers need to accept contactless credit/debit cards [...] No petrol/diesel car driver would accept anything else.”

“EVERY charge point needs to be accessible via contactless. Nothing should be hidden behind an app gateway or QR code. My parents don’t have a mobile phone – this seriously limits their public charging experience.”

“Contactless debit/credit card payment should be an option at ALL chargers.”

“Contactless is the future and how I pay for the rest of [my] life.”

“I am new to using an EV and the charging points but found the myriad of apps and service operators and lack of clarity on the charges very confusing. Needing to get special RFID card is a pain, too many cards in the wallet already. Contactless makes sense.”

“They should all be [c]ontactless and no club membership nonsense. Just a setup like a petrol station.”

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Acutely tied to the preference for contactless credit or debit card were the themes of ease and familiarity – drivers find contactless easy to use and are accustomed to using a contactless credit or debit card to pay for other goods and services. One particular comment suggested that for new EV drivers the various form of access and payment methods can be ‘confusing’ and that contactless appeared more straightforward.

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“Far too complicated, too many apps, cards, payment methods and pricing.”

“I have used apps and debit cards on other networks occasionally. It should be as easy to charge as it is to fill up with petrol or diesel.”

“I don’t need anything but my debit / credit card to pay for petrol, why should EV charging be any different?”

“Google/Apple pay, or contactless debit / credit card should be the way forward the same as it is in fuel stations - it's just another kind of fuel.”

“Using any charge point should be as easy or even easier than using a petrol/diesel pump on any garage forecourt. Swipe your payment card, plug in, charge!! As easy as 1,2,3.”

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Comments also suggested that differing payment or access methods across different networks can be complicated and a possible solution found through a comparison with their previous experiences refuelling using petrol or diesel.

## 1.1 Destination charging

Participants were next asked to rate various access methods when using destination charging (for example, at a leisure centre or carpark). A contactless credit or debit card was, again, the most preferred method for paying for a charge at a destination charger.

45% strongly disagreed that they prefer to access a destination charger with an RFID card.

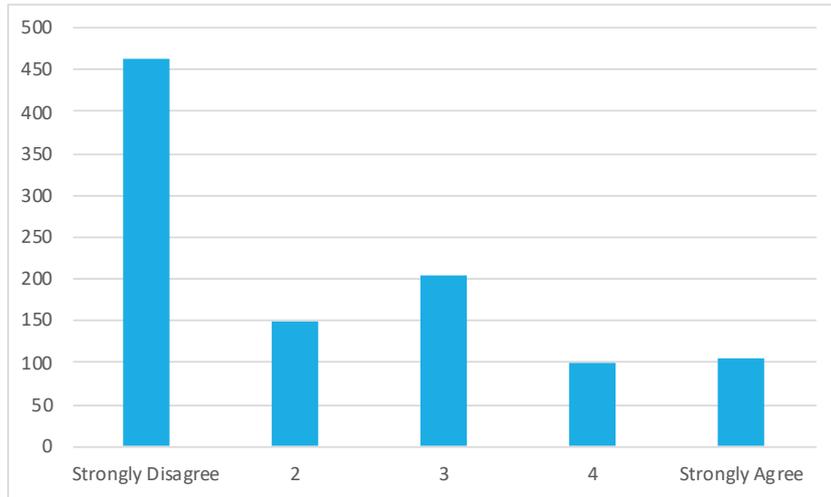


Figure 19 I prefer to pay for my charge with an RFID card

64% strongly agreed and 19% agreed that they prefer to access a destination charger using a contactless credit or debit card.

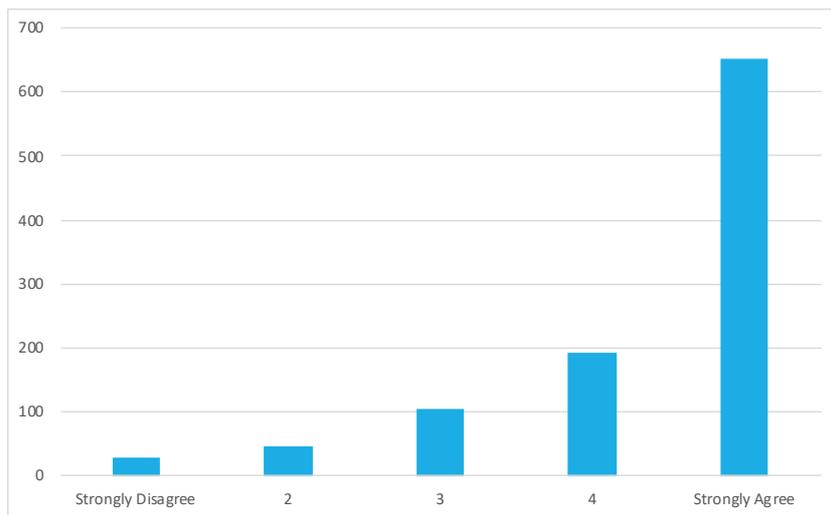


Figure 20 I prefer to pay for my charge with a contactless credit or debit card

There is mixed preference amongst drivers on using a smartphone app to access a destination chargepoint, with 16% strongly in favour of using a smartphone app and 22% strongly opposed.

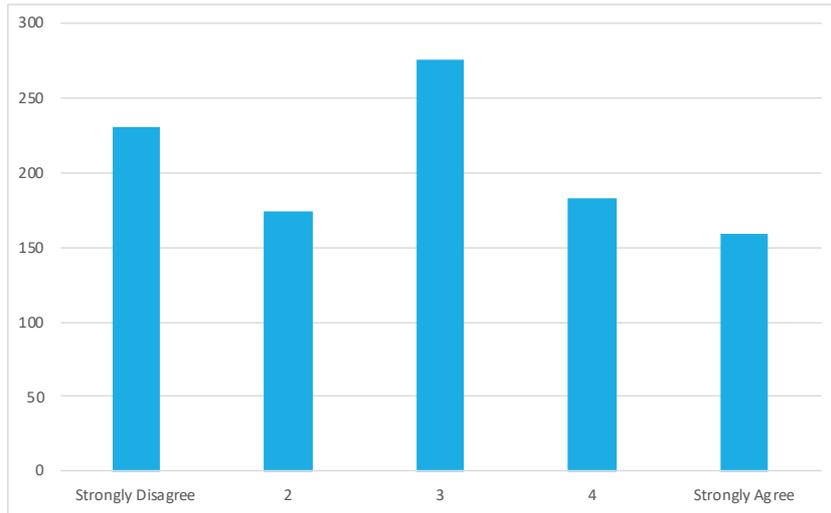


Figure 21 I prefer to pay for my charge through a smartphone app

88% of drivers were strongly opposed to paying for a charge at a destination chargepoint with cash.

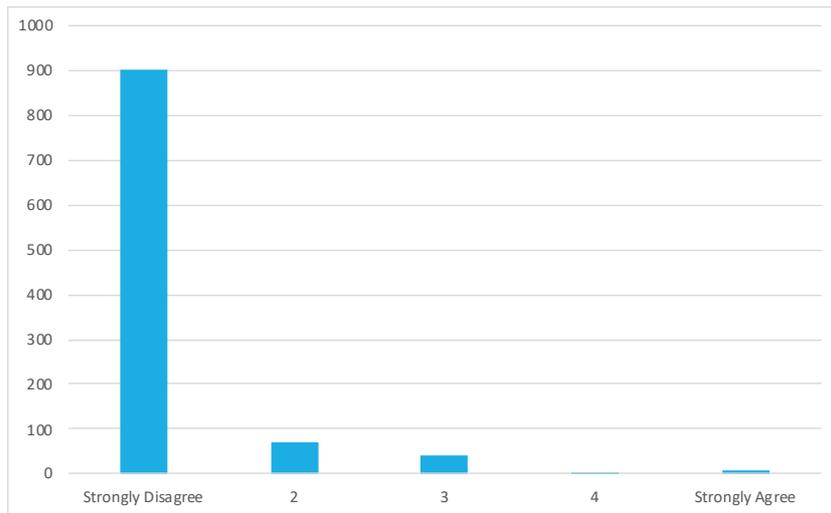


Figure 22 I prefer to pay for my charge with cash

34% strongly preferred and 25% preferred to have multiple options to pay when using a destination chargepoint. 27% neither agreed nor disagreed with the sentiment. It is clear, however, that more drivers preferred the idea of having multiple payment options rather than not.

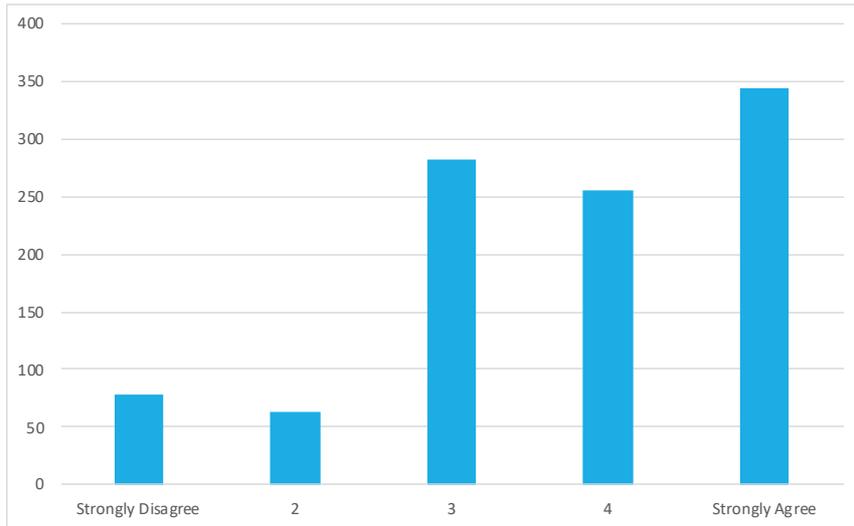


Figure 23 I prefer to have multiple options when paying at a destination chargepoint

## 1.2 Rapid charging

Participants were next asked the same questions in order to rank access methods when using rapid charging (for example, along the motorways).<sup>5</sup> A contactless credit or debit card was again the most preferred method for paying for a charge at a rapid chargepoint.

59% of drivers disagreed either somewhat or strongly that they would prefer to use an RFID card at a rapid chargepoint. 21% would welcome the ability to use an RFID at a rapid chargepoint.

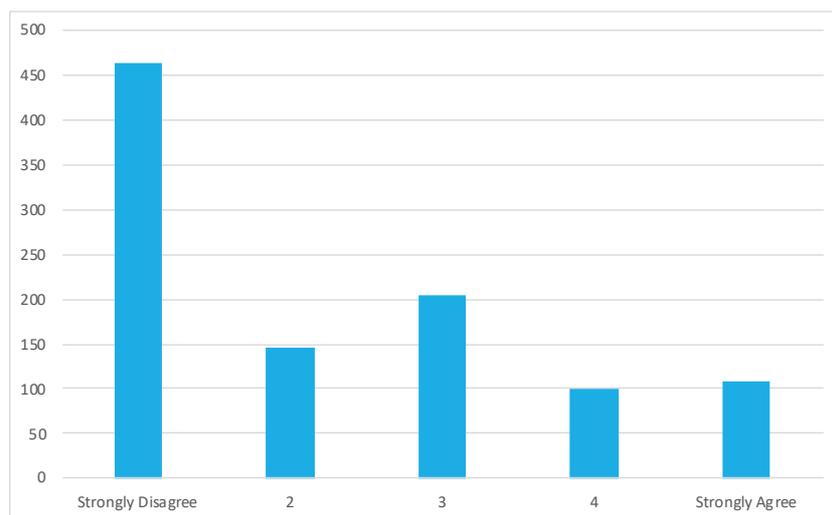


Figure 24 I prefer to pay for my charge with an RFID card

<sup>5</sup> Rapid chargepoint are usually found along motorways, at motorway service areas or locations near main routes. Rapid chargers range from 43 kW (AC) charging to 50kW (DC) charging, with a burgeoning ultra-rapid offering at 100+ kW.

67% strongly preferred and 18% somewhat preferred to use a contactless credit or debit card at a rapid chargepoint. 5% would not prefer to use a contactless credit or debit card at a rapid chargepoint.

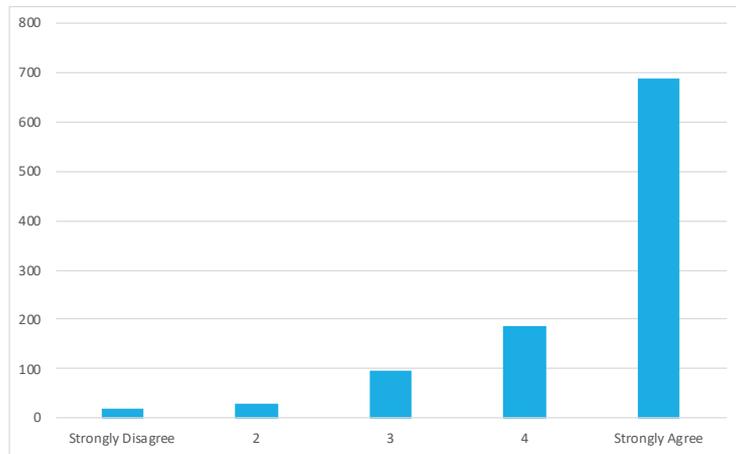


Figure 25 I prefer to pay for my charge with a contactless credit or debit card

Again, perceptions were mixed on using a smartphone app at a rapid charger with 27% neither agreeing or disagreeing, 21% strongly disagreeing, 20% agreeing, 16% both strongly agreeing and disagreeing.

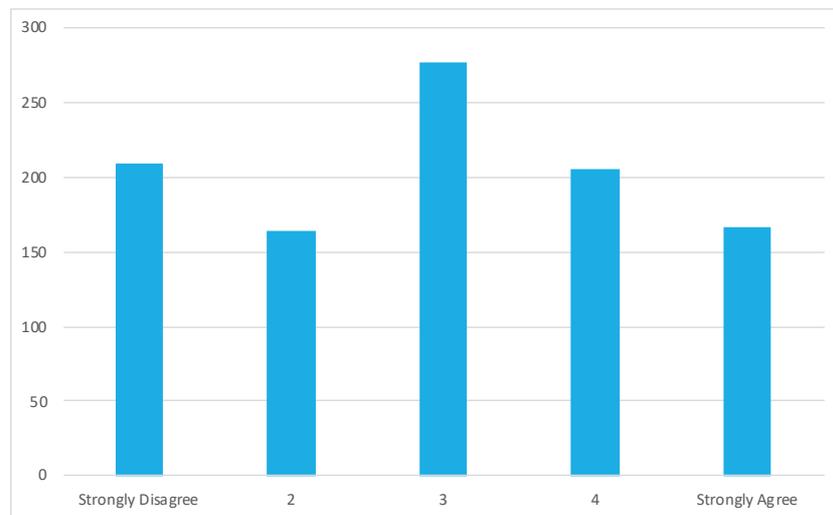


Figure 26 I prefer to pay for my charge through a smartphone app

88% of drivers were strongly opposed to paying for a charge at a rapid chargepoint with cash. Only 2% would welcome a cash payment option at rapid chargepoints.

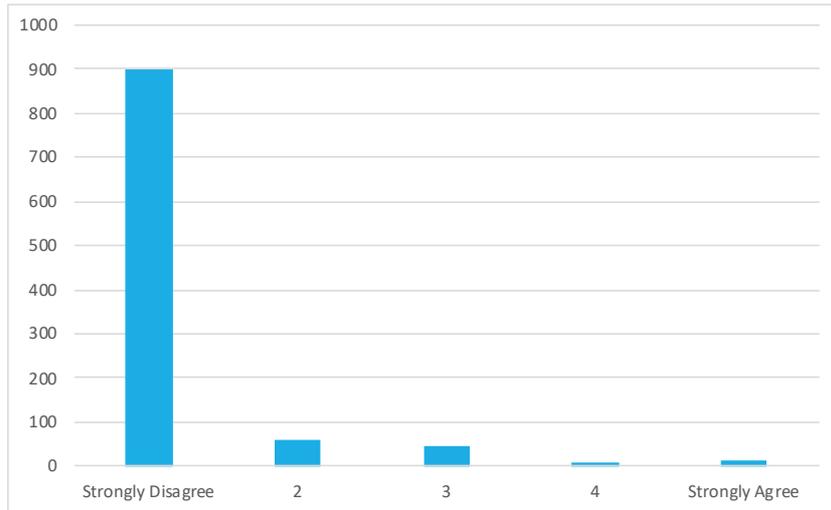


Figure 27 I prefer to pay for my charge with cash

36% of drivers strongly welcome and 25% welcome having multiple options to pay for a charge at a rapid chargepoints. 25% neither agreed nor disagreed that they would prefer having multiple option, and 7% disagreed and strongly disagreed.

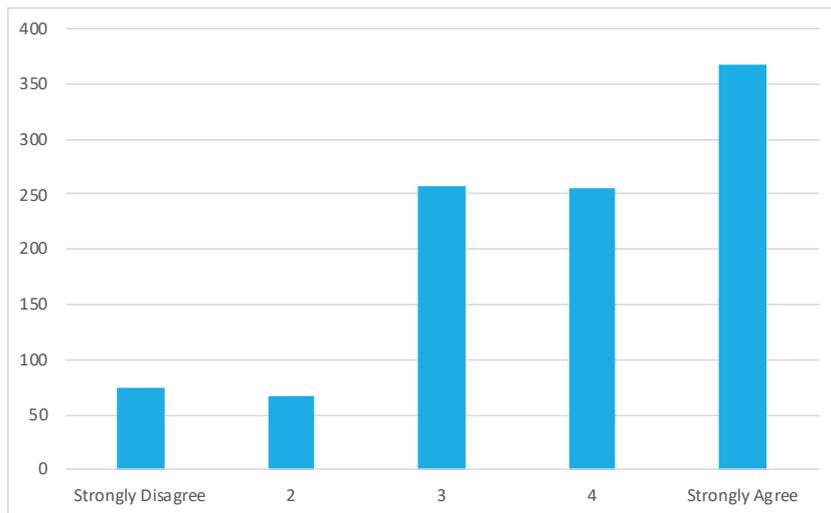


Figure 28 I prefer to have multiple options when paying at a rapid chargepoint

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“All rapid chargers should be contactless.”

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## 2 Roaming

For the purposes of this survey, roaming was defined as having the ability to use an access or payment method across all chargepoints regardless of the chargepoint operator. In the following series of questions about roaming, participants were asked if they would welcome the ability to use a smartphone app, an RFID card or a QR code to across all networks.

87% of survey participants would welcome the ability to use one smartphone app across all public chargepoint networks, while a smaller percentage (71%) would welcome the ability to use one RFID card across all public chargepoint networks.

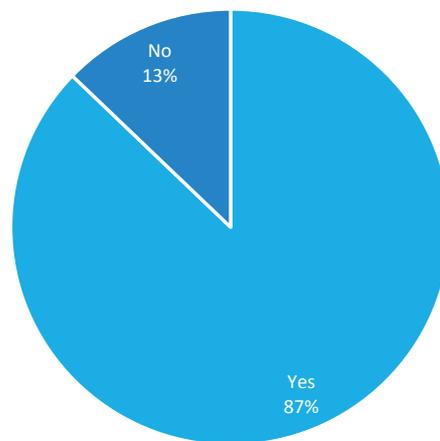


Figure 29 Preference of a smartphone app roaming solution amongst drivers

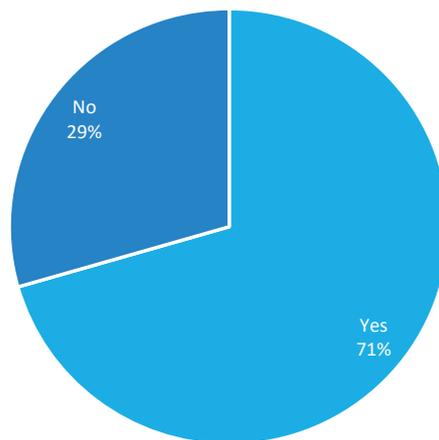


Figure 30 Preference of an RFID card roaming solution amongst drivers

On the theme of roaming, survey comments differed on their preferred method of roaming access. Drivers also offered roaming solutions primarily based on a combination of RFID card, smartphone app or contactless credit or debit card.

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“[O]ne RFID card or app for all.”

“A single charging payment method across all providers would be preferable.”

“Having a universal app and / or ability to pay via contactless card or device would be a massive advantage [...]”

“There need to be roaming agreements enforced between charge networks to allow use of a single card between. There shouldn’t be a penalty for paying using contactless vs an app.”

“Multi-network access through one app or RFID, or contactless payment would be much more user friendly. ICE [internal combustion engine] drivers don't need to worry about which fuel station they fill up from and having this issue with EVs may put people off switching.”

“It is essential for all charging to be provided on a single access/payment system [...] I now have 7-8 apps and still don’t have full access to ‘member’ rates in the UK. [W]e need a RIFD & app (to allow customer choice) which accesses all charge locations!”

---

Most comments that mentioned the ability to use one smartphone app across chargepoint networks also stated it alongside other access methods, usually contactless or RFID cards, with no preference other than ease of use. Participants suggested a combination of access methods would allow for consumer choice.

While some favoured a smartphone app that could be used across networks, others highlighted the need for a single card that would grant access across chargepoint networks.

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“They should sort out the one card for all providers issue like in the Netherlands.”

“One [RFID] card for all networks would be best, as phone signals are sometimes too weak to work.”

“One [RFID] card to operate all charge points. [...] In England it’s a mess - every point is on a different network and needs a different app – it’s a nightmare.”

“There should be one universal card to pay for charging.”

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Survey participants were also asked if they would welcome the option to access a chargepoint via a QR code that would then direct you to a payment platform.<sup>6</sup> 59% of

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<sup>6</sup> A QR Code was defined as a barcode that can be scanned using the camera on a smartphone, which would then redirect a user to a payment platform.

respondents said they would not prefer QR code access to chargepoints and 41% said they would welcome the option to access a chargepoint by QR code.

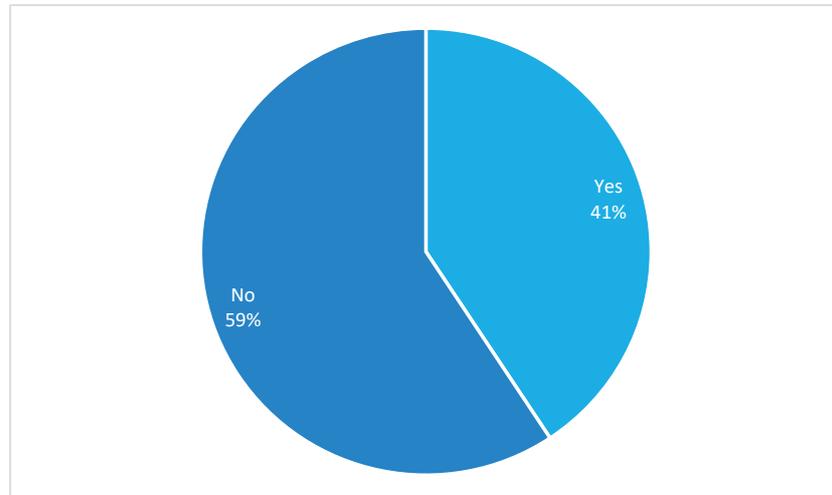


Figure 31 Preference of QR code access

Amongst drivers who provided comments, only three offered opinions on QR codes, two of which are listed below.

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“I believe contactless payment or QR across the network is the way forward.”

“PLEASE don’t use QR codes. These can be easily replaced by scammers!”

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### 3 Opening up chargepoint data

The Government’s consultation presented several ‘must have’ data points, as well as other ‘should have’ and ‘could have’ data points that could be made available to consumers. For the purposes of the survey, participants were asked a series of questions in order to determine the value of opening up data for the consumer, as well as the importance of data in how they currently access the public charging network.

83% of participants primarily use a website or app (such as, Zap-Map) to locate public chargepoints, while 17% indicated they primarily used their vehicle’s onboard map.<sup>7</sup> Every

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<sup>7</sup> Zap-Map is, perhaps, one of the most well-known apps for locating public chargepoints. At present, Zap-Map allows users to access data relating to location, service level, connector type, and payment method ahead of a charging event.

driver in England who participated in the survey either used an app or website to locate chargepoints or their vehicle's onboard map.

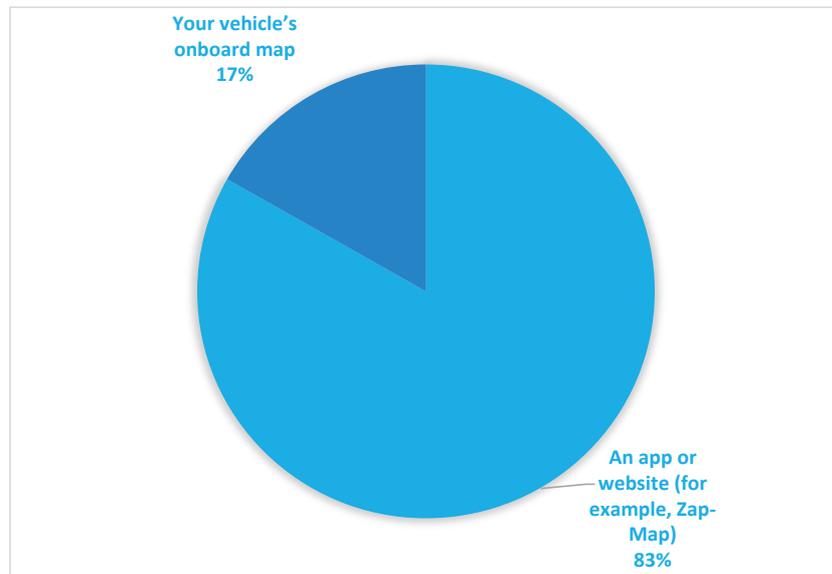


Figure 32 Locating public chargepoints

Websites, smartphone apps and onboard maps allow users to access certain data ahead of time. This data, however, is not real-time information. 98% of respondents believed that having access to real-time data ahead of a charging event would save them time.

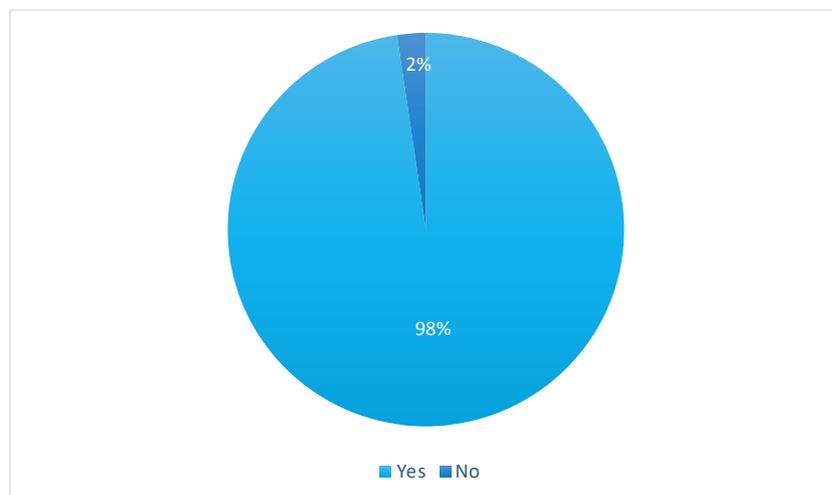


Figure 33 Having access to real-time data would save me time

Survey comments also stressed the importance of real-time information in saving time and suggested such information could include the working order of a chargepoint, the availability of a chargepoint, time until charging completes and peak usage times.

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“Ensure more and more ultra-fast chargers are available and in working condition with knowledge about their real time availability”

“Forward availability of chargepoints before arrival is invaluable. Time until charging finishes may also be useful to determine waiting times.”

“I would love real time info on how many chargers are in use and if there is issues with the charger [...]”

“Reliability / Up time and popularity KPIs should be available [...] Then we can sort/search for the best and most reliable units, see peak usage periods etc. [This] helps drivers improve route planning & charging stops. May also make the networks up their game, identify whether locations need more units etc.”

“[T]he government should mandate that public charge providers send them monthly data on uptime by networked device type. Publish the data monthly on uptime (and number of devices) by service provider for each type and overall.”

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When asked a series of questions on how they choose particular chargepoints, participants indicated that the location of a chargepoint was the primary factor in choosing a chargepoint, followed by the chargepoint network and lastly the cost to charge their vehicle.

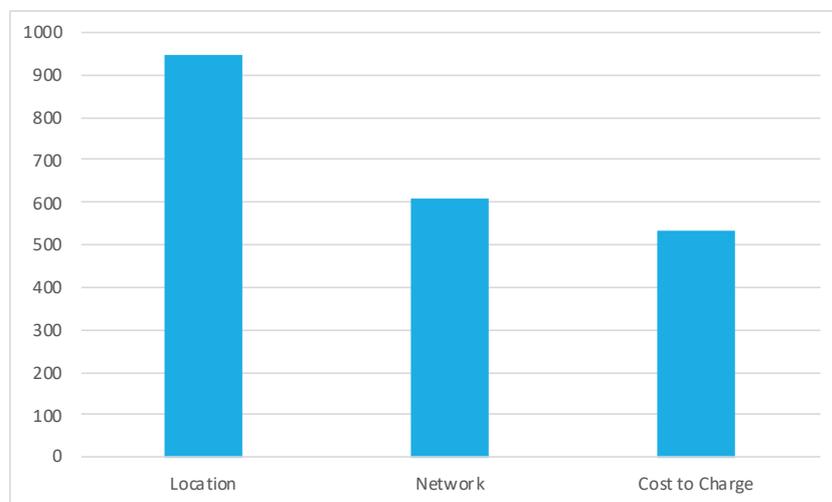


Figure 34 Choosing a chargepoint

Location, then, is a key consideration amongst EV drivers when choosing a chargepoint. The relevance of data and opening it up to the consumer becomes clear with the following comment.

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“As the operators work individually they cannot see when they inadvertently create a public charging dead zone. If they all have one machine offline that's not a priority but, if they're all in the same area that's an issue for drivers. Some sort of cross-service oversight with perhaps each supplier agreeing to prioritise repairs for a certain area might just relieve the stress.”

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Drivers believe that certain data ahead of a charge would save them times as well as help them locate convenient chargepoints in working condition.

## 4 Pricing Transparency

Overwhelmingly, survey participants preferred a pence/kWh format for paying for a charge. 94% indicated that a charge for electricity used (pence/kWh) was the preferred format, with 2% designating a charge for time spent charging (pence/minute), 2% for a flat rate for a charging session and 2% a membership fee.

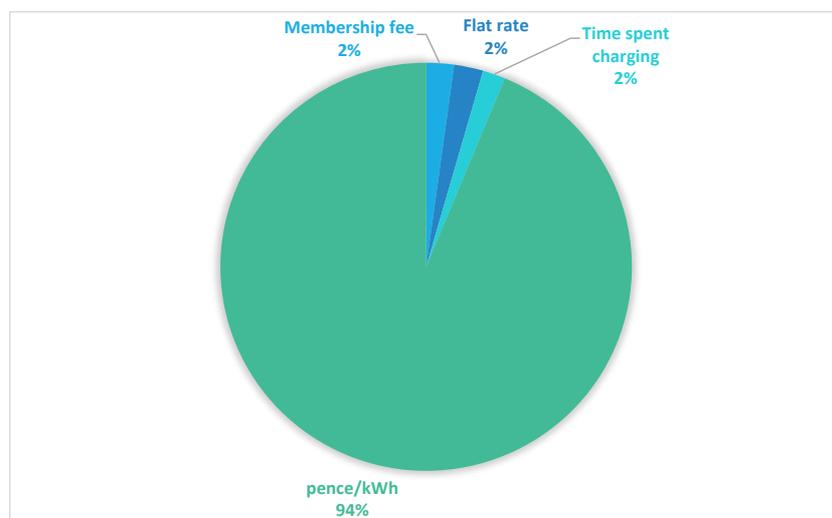


Figure 35 Preferred metric for paying for a charge

While survey results strongly support a charge for electricity used and a pence/kWh pricing metric, comments from the survey also revealed that drivers feel concern over pricing between public chargepoint networks, with many commenting prices were too high especially when compared to the costs to charge at home.

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“Public charge points are disproportionately more expensive than home chargers which is a major issue for anyone with no home charging capability.”

“Price per kWh is eye watering now to the point where diesel is cheaper per mile.”

“It’s already getting expensive to public charge and probably will keep increasing. It stops us making longer trips in our EV and revert back to diesel.”

“Huge amount of cost variance. Some networks charge £0.15p/kWh similar to home, some go as high as £0.65/kWh and punish anyone who doesn't want to pay for a monthly subscription.”

“The vast majority of public charge points are too expensive. Rapid charging should never cost more than 25p per kWh and destination charging (including 22kW AC points, which only allow 7kW charging for most EVs) should never be more than 15p per kWh.”

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Responses suggest that drivers perceive that costs to charge their vehicle on the public network have increased over time. Drivers also highlighted that high costs along the public network disproportionately impact those without access to off-street parking and therefore without access to home charging.

A handful of comments also suggested that better pricing transparency is needed. Suggestions were offered on separating out costs to charge their vehicle from other costs, such as for parking and for accessing the chargepoint, as well as the ability to receive a receipt.

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“Maybe an email where relevant to show kwh used along with costs (receipt).”

“I automatically get a receipt when I buy petrol, why not electricity?”

“There needs to be transparency on charges just as there is on a petrol station sign/pump.”

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## 5 Reliability

Relating to the reliability theme, the survey asked participants to rank their level of agreement to a series of statements regarding locations, maintenance and amount of public chargepoints. The survey also asked questions relating to a reliability standard for chargepoint operators, as proposed in the Government’s consultation, and around the idea of 24/7 call centres.

## 5.1 Locating and location

45% of drivers agreed or strongly agreed that they found it easy to locate public chargepoints with 34% neither agreeing nor disagreeing.

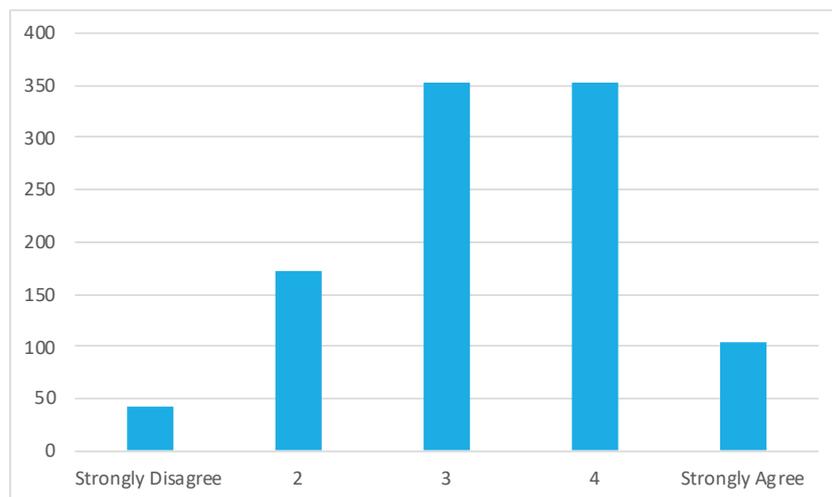


Figure 36 I found it easy to locate public chargepoints

As mentioned in the opening up chargepoint data section, drivers indicated that location was the primary factor in choosing a chargepoint. In the free response answer, drivers also cited the need for chargepoints in convenient locations, often highlighting areas without a sufficient number of public chargepoints. Beauty spots and rural destinations were amongst those identified as needing greater infrastructure, with survey participants emphasising that tourism could suffer if the dearth of chargepoints was not corrected.

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“A convenient location is the primary concern, none of us want to detour if we can help it.”

“Needs to be more charge points in rural destinations and Beauty spots, along with community chargers in towns and villages that do not have off street parking.”

“I would like to see more urgency from the Suffolk County Council in preparing the county for the public EV charging infrastructure. [...] It appears the council has not realised that many summer holiday makers with EV's won't visit if they can't charge their cars.”

“Too few chargers in rural tourist spots such as Lake District, Yorkshire Dales, North York Moors.”

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Areas in Scotland and the north of England were several times noted as having an insufficient amount of public chargepoints and effectual EV charging “deserts”. North

Yorkshire, Newcastle, Carlisle, Birmingham and parts of Scotland were all highlighted by participants.

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“Not enough high capacity chargers in the northern areas of England.”

“Geographical spread is patchy e.g., in North Yorkshire, there’s very little between York and the Tees, or between the A1 and the M6 - an EV desert!”

“Too many black spots. For example I cannot travel from [N]ewcastle to Carlisle without enormous stress that the only charge point on route is in Hexham and may not be working. My car does not have enough range to skip this.”

“I own a Nissan LEAF, use it for private hire taxi in Birmingham, very few rapid charges in the city. Probably 10 or so compared to 600 in London. Totally unacceptable.”

“Huge desert from Gretna to Edinburgh. Also, most of Wales and bits of England. Means often take wife’s diesel car instead of my EV on long trips.”

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## 5.2 Number of chargepoints (at a given location)

52% of survey participants either disagreed or strongly disagreed that there are typically enough available chargepoints to use. 29% agree that there are enough available chargepoints to use, while only 5% strongly agreed there are enough chargepoints.

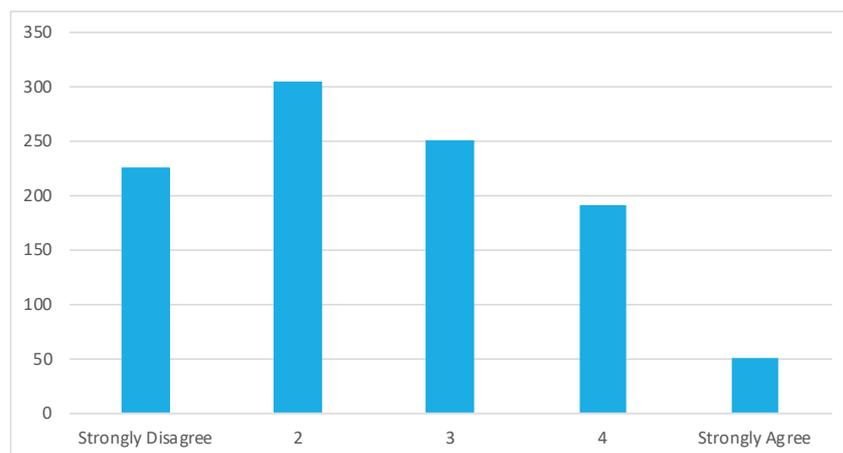


Figure 37 There are typically enough available chargepoints for me to use.

Several comments from drivers centred on the number of available working chargepoints, both in general and at a given location.

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“There simply should be more units at all locations.”

“Charge stalls per location is an important metric. Only having 1 or 2 is liable to queuing or arriving to find it broken.”

“Single charger installations are inadequate, often meaning frustration by having to wait or failure to start charge, provide at least dual chargers at all locations (with decent bay parking) [...]”

“They should be install in groups of 4 at a minimum.”

“Our reasonable size town (50000) had until recently only had one charging point in the centre which has been out of use for months.”

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Those concerned about not enough available chargers often cited that this increased their concern over finding a working chargepoint mixed with a perception that queue lengths and times have increased.

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“I find that you often have to wait for one to become free as they are now busy or that they don't work.”

“I've noticed more queues (out of lockdown) over last year as ownership has grown. We need to accelerate public infrastructure faster than EV ownership growth rate to support/encourage folks to switch.”

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Suggestions also indicated that given the increase in uptake in electric vehicles seen this past year, there needs to be a greater number of public chargepoints to keep pace.

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“There is not enough charging points for the amount of new electric cars that are now being purchased.”

“As the push to move to EVs gains momentum, access to charge points is going to become critical and a problem with too many vehicles accessing them.”

“I would prefer an increase in public charge points as demand will dramatically increase in the future.”

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### 5.3 Maintenance

62% of drivers disagreed or strongly disagreed that public chargepoints are typically in good working order. Only 14% of survey participants felt that they found chargepoints in good working order.

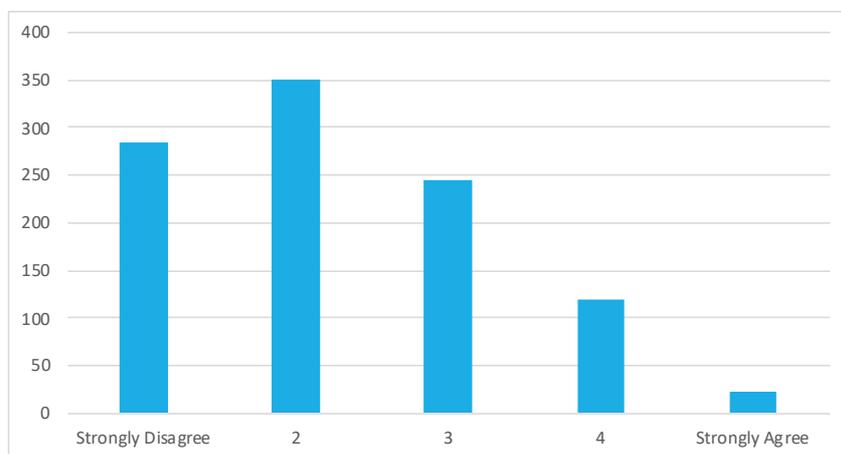


Figure 38 Public chargepoints are typically in good working order and I rarely experience issues.

While maintenance issues were most commonly cited with a particular motorway chargepoint operator, there were also general comments on finding out of order chargepoints, broken charging cables or vandalised chargepoints. As one driver succinctly summarised:

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“They are just out of order too much.”

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### 5.4 Current reliability concerns

Key to understanding how reliability can be improved is of course through an understanding of frequent issues with public chargepoints. Questions in this portion of the survey were developed with input from DfT and OZEV and were aimed at understanding how much consumer time is spent because of current issues with public charging.

Participants were asked to select from a series of issues that had caused them to walk (or drive) away from attempting to charge their vehicle at a public chargepoint. The issues were listed as follow:

- The chargepoint could not be easily located
- The chargepoint was out of order
- There was a long queue

- The chargepoint was inaccessible
- The chargepoint would not connect with my car
- The chargepoint could not be easily activated
- The chargepoint didn't provide a suitable payment method
- I felt unsafe to use a particular chargepoint
- Other

The most common reliability issue to drivers was that a chargepoint was out of order. This was followed by the chargepoint could not be easily activated or that the chargepoint would not connect with the vehicle.

104 drivers had not experienced a situation in which they had an issue with a chargepoint, while 96 drivers suggested that a long queue made them abandon their attempt to charge their vehicle.

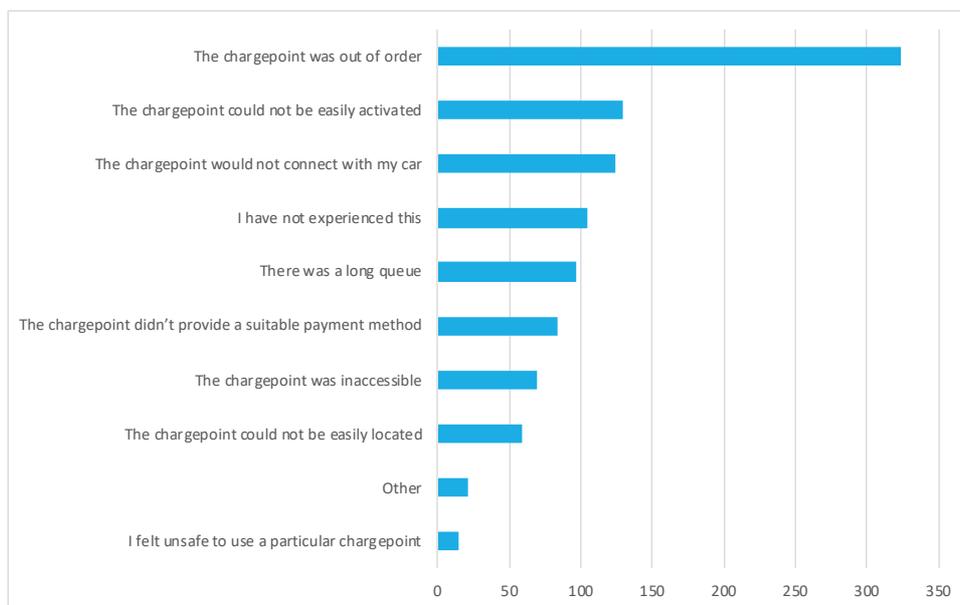


Figure 39 Walking away from a charge

Participants were then asked to estimate how many times in the past twelve months they had to choose a different public chargepoint from the one they had originally intended to use. 36% of drivers said 1-2 times, 29% indicated 3-4 times, 12% said 5-9 times and 9% of drivers indicated they had to choose a different chargepoint 10+ times. 14% of drivers said they had never had to choose a different public chargepoint than the one they intended to use.

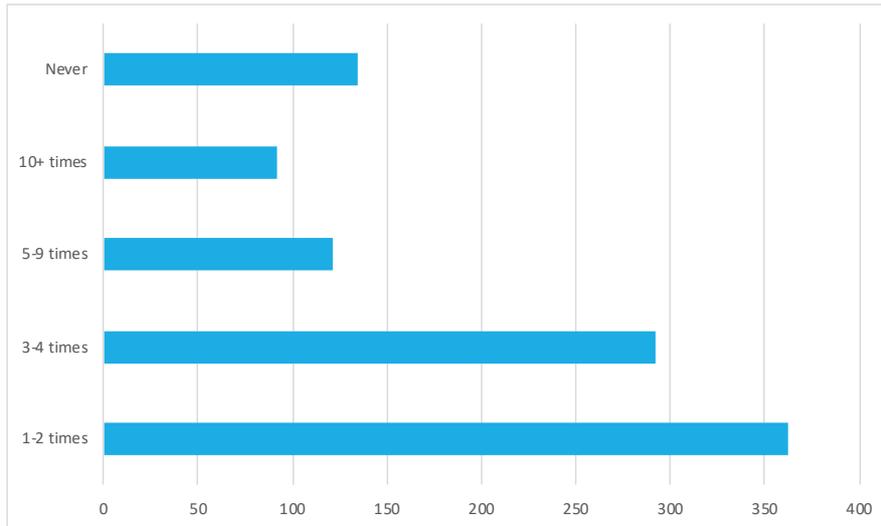


Figure 40 Finding a different chargepoint

Perhaps the most commented upon theme in the free response portion of the survey was that of reliability. While the consultation asks about a reliability standard, comments reveal further concerns over the lack of available chargepoints, not enough chargepoints at a given location, lack of access to facilities, out of service chargepoints, as well as specific locations or areas in need of attention.

#### 5.4.1 Lack of available chargepoints

Closely tied to the availability of chargepoints is the perception amongst EV drivers of being “ICE-d” – that is, when a chargepoint is blocked by a petrol or diesel vehicle. Although the survey did not explicitly ask about ICE-ing, respondents frequently commented on the topic giving some indication as to the perception of the prevalence of a chargepoint being blocked by a non-electric vehicle. Comments also suggested the need for penalties for blocking a chargepoint, or better enforcement of existing penalties, to better ensure reliable access to a chargepoint.

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“Charging spaces are often blocked by vehicles that are not using the charger and this can be very frustrating and confrontational. Doesn’t seem to be any legal enforcement?”

“Charging points blocked by ICE vehicles is a real bugbear. There needs to be better control of this by the providers.”

“[E]xisting number would be sufficient if they were all reliable, accepted contactless and never ICEd.”

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Drivers also highlighted that they not only experienced issues with chargepoints being blocked by non-electric vehicles, but also by electric vehicles that were not charging or had

long completed a charge. Reliability of access to a chargepoint, then, is a concern amongst drivers.

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“I find electric cars parked in electric car bays, but they don’t even have a charge cable connected [...]”

“On a number of occasions I have found charge points blocked by cars that are either not even connected to a charger or are non-electric cars and are using the charge point as a parking space despite signs warning that these are not parking spots. It should be made a finable offence.”

“Whilst I appreciate charging through lamp posts, it is of no use if you can’t access them because a car is parked there and not charging. I know these are not parking bays but I think they should be designated as such during peak day time hours.”

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#### **5.4.2 Facilities access**

Drivers also noted the need for increased access to facilities, as chargepoints can be located in areas that can be closed or in which public services (such as loos) can be closed. Reliable access, again, is the key theme here.

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“A lot of times ChargePoint located at Pubs or hotels and there no 24/7 accessible toilets.”

“All public chargers should have access to public services.”

“Having public chargers behind gates or barriers that are locked and inaccessible is a problem as there are so few available in some areas. I know not all petrol stations are 24 hrs but, in some ways, charging points can be if access can be granted.”

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#### **5.4.3 Motorways**

Perhaps the most frequent comment on reliability and locations centred on the public charging network along English motorways. One particular chargepoint operator was mentioned no fewer than 126 times, while “motorway” was mentioned 152 times. Comments in this vein were always negative and at times colourful.

The following two quotes broadly illustrate drivers’ concerns with and perceptions of the reliability along motorways:

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“I haven't yet needed to charge at a motorway service station, but the reports about the unreliability of [sic] makes me nervous given they seem to have a monopoly at service stations.”

“Imagine a motorway service area where the petrol pumps were out of order 50% of the time. The only way to get help was to phone a call centre that was only open during office hours. That is the current situation for EV charging at motorway service areas and is totally unacceptable.”

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It should also be noted that comments mentioned Tesla and their Supercharger network as an exemplar for public EV charging, both at destinations and along the motorways. Tesla was mentioned 164 times in answers to the free response question with every mention a positive one.

## 5.5 A reliability standard

The Government's consultation set out the parameters by which chargepoint operators might be required to meet a 99% reliability standard, as well as provide a 24/7 helpline for drivers. Survey participants were explicitly asked if chargepoint operators should be required to meet a certain level of reliability and if the 99% reliability standard as proposed by the Government was fair.



Figure 41 Need for a reliability standard

99% of drivers believe that chargepoint operators should be required to meet a certain threshold of reliability and 93% of drivers believed that a 99% reliability standard would be fair.

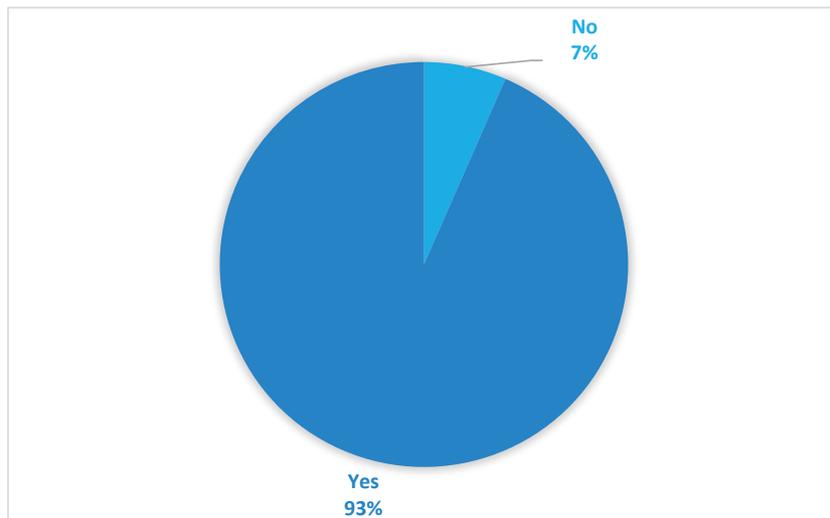


Figure 42 A 99% reliability standard

## 5.6 Helplines

Most public chargepoints include a phone number or contact details for drivers who need assistance at that chargepoint. 55% of drivers, however, did not agree that there is clear and easy instruction on how to access assistance when issues arise. Only 15% felt that there is clear instruction on how to access assistance.

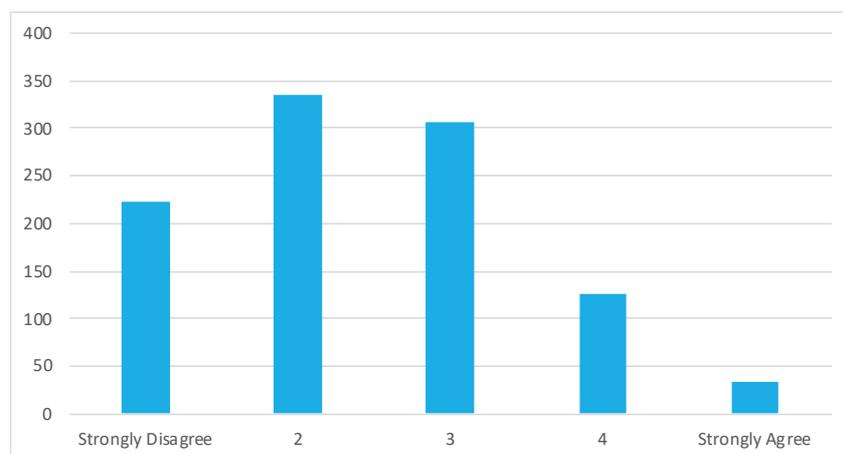


Figure 43 When I have issues at a chargepoint, there is clear and easy instruction available about how I access assistance

Regarding a 24/7 helpline, questions asked participants to estimate how many times in the past twelve months they have had to call a helpline, either for assistance accessing the chargepoint or because something wasn't working properly.<sup>8</sup> 41% of drivers have had to call a helpline 1-2 times, while 16% drivers have had to call 3-4 times. 6% of drivers called 5-9

<sup>8</sup> At present, certain chargepoint operators may offer a 24/7 helpline for users of their chargepoints. Not all operators, however, offer a 24/7 service.

times and 3% have had to call a helpline 10+ times in the past twelve months. 34% of drivers indicated that they have never needed to call a helpline.

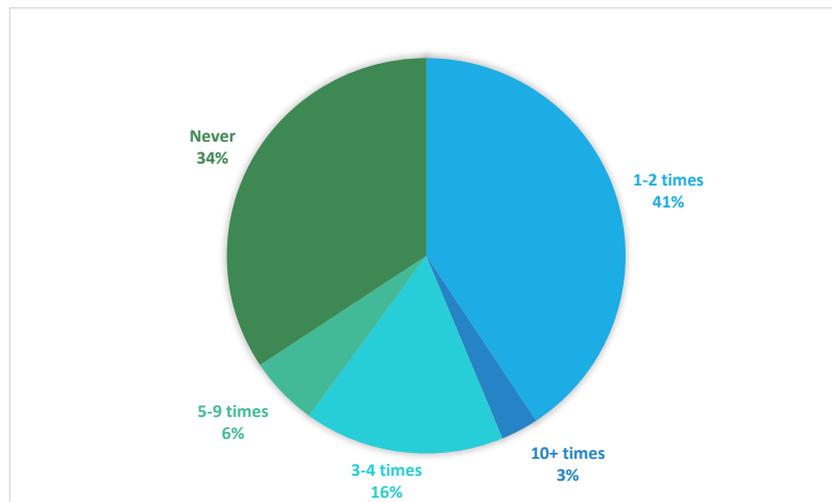


Figure 44 Calling a helpline in the last twelve months

Amongst drivers who have had to call a helpline, 57% indicated that calling that helpline did not resolve their issues, while 43% indicated that it did resolve their issues.

Participants were also asked if they believed it would be fair for there to be a small cost to the driver when calling a 24/7 call centre. 83% said it would be unfair and 17% indicated they believed that it would be fair for there to be a small cost associated with calling a 24/7 helpline.

For the few drivers who chose to comment on their experiences with calling a chargepoint helpline, few have had positive experiences. Issues with out-of-hours calls, disconnected calls, unclear instructions on how to access assistance and long call wait times were all highlighted.

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“It is also not good enough that some operators helplines are only open business hours, which is totally useless if you have a problem at night or weekends.”

“First attempt to show a family member ‘how easy’ it was to charge, failed badly. Contactless payment would not work. Called helpline repeatedly who immediately disconnected call. Embarrassing.”

“I feel there should be a fixed time for operators to repair faulty charge points, along with guaranteed response times for answering calls. Frequently have been on hold for [more than] 20 minutes waiting to speak to an operator.”

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“I have owned my EV for less than 12 months. On 3 occasions, when using a different charging company for the first time, I needed to call the helpline because the instructions on the charger were insufficiently clear.”

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## 6 Weatherproofing and Lighting

The Government’s consultation also presented emerging themes surrounding public EV chargepoints. Among the emerging themes were weatherproofing, lighting and signage.

Survey participants were asked the degree to which they experienced issues using public chargepoints in rainy weather. While most (78%) indicated that they did not feel they experienced issues in inclement weather, 69% of survey participants agreed or strongly agreed that they preferred to use chargepoints located under some type of roofing or covering.

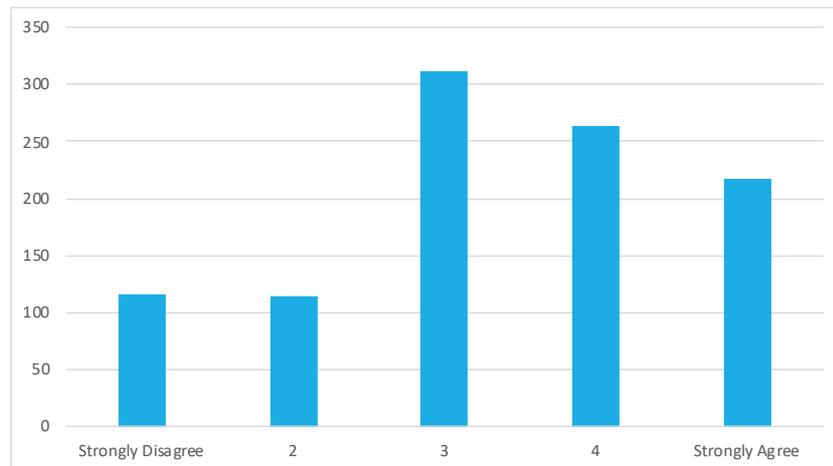


Figure 45 I rarely have issues using public chargepoints in rainy weather.

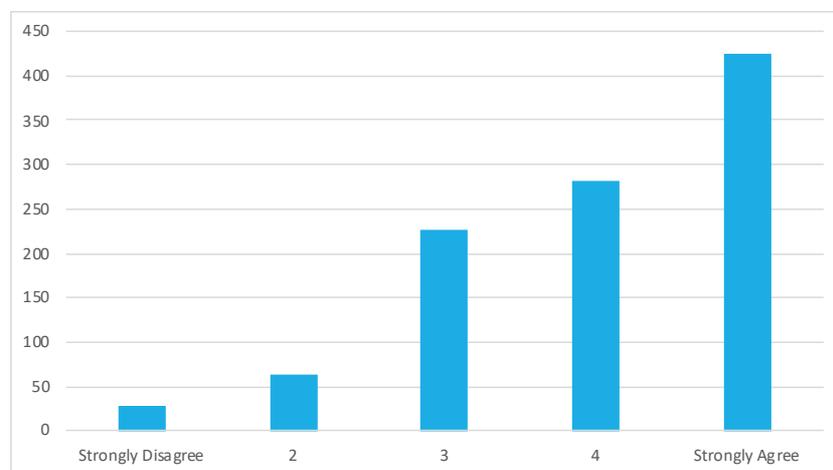


Figure 46 I prefer to use chargepoints located under some type of roofing or covering

A larger proportion of survey comments focused on the other themes of the survey, such as reliability, with only a few commenting on issues around weatherproofing. Issues with the sun, wind, rain and general elements were cited amongst participants.

Most survey participants also indicated they there was not enough lighting at public chargepoints, although there appeared to be no strong perceptions on lighting. 38% believed there was not enough lighting at public chargepoints, 38% neither agreed nor disagreed that there was enough lighting, and the remaining 24% felt there was enough lighting at public chargepoints.

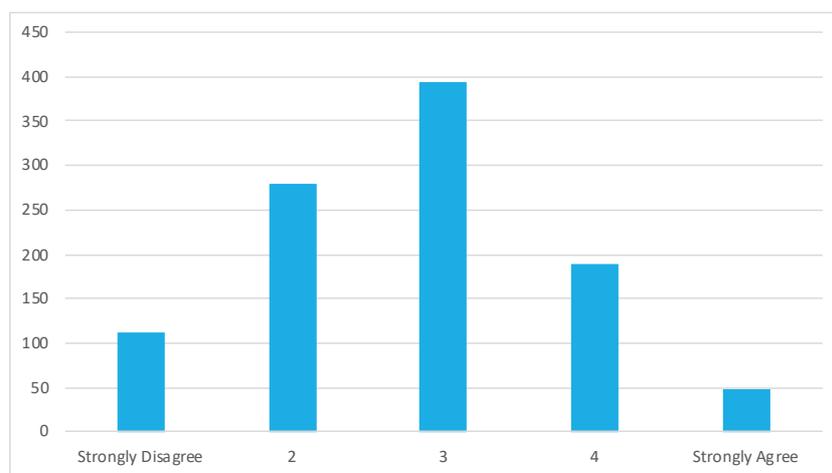


Figure 47 When I use public chargepoints I find there is enough lighting

Comments around lighting, like weatherproofing, were few compared to other themes of the survey and were usually tied to issues or perceptions around safety.

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“[N]eed a unified and reliable service which is safe to use e.g., for lone females.”

“[W]ould be worried for my wife in some car parks when the charger is tuck[ed] into a corner with poor lighting.”

“Beside many public charge points either being out of order or not having the appropriate app installed, many are located in unsafe areas with poor lighting and NO rest facilities.”

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## 7 Signage

In general, drivers perceived a lack of signage that let them know the location of a public chargepoint along motorways, A-roads, at Motorway Service Areas (MSAs) and destinations. Most survey participants indicated that there was not enough clear signage along

motorways designating the location of public chargepoints, with 42% strongly indicating there was not enough clear signage along motorways and 30% agreeing there was not enough signage along motorways.

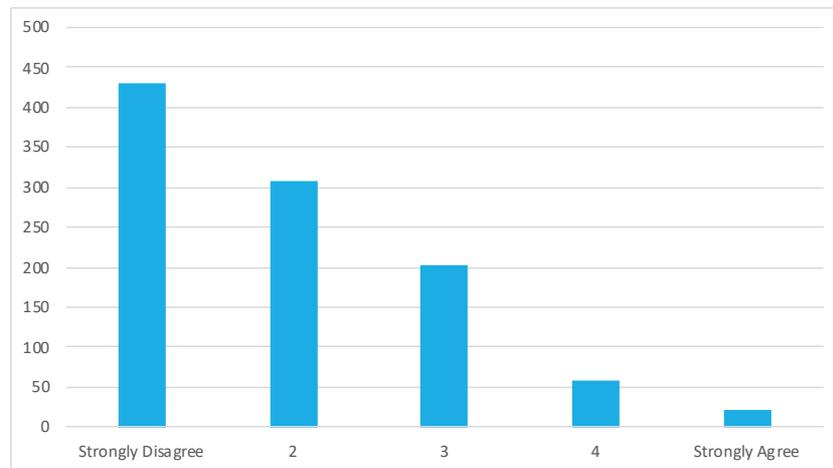


Figure 48 There is clear signage along motorways that let me know where I can find a chargepoint.

Similarly, most participants indicated there was not enough clear signage in Motorway Service Areas giving the location of public chargepoints. 31% strongly felt there was not enough clear signage in MSAs and 34% felt there was not enough signage in MSAs.

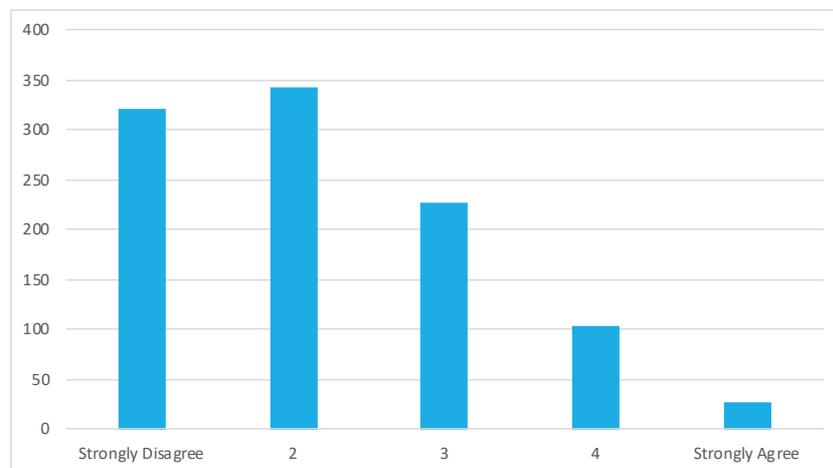


Figure 49 There is clear signage in MSAs that let me know where I can find a chargepoint

More participants, however, indicated that signage along A-roads is very much a perceived issue. Only 3% agreed or strongly agreed that there is sufficient clear signage along A-roads, with 28% disagreeing and 59% strongly disagreeing.

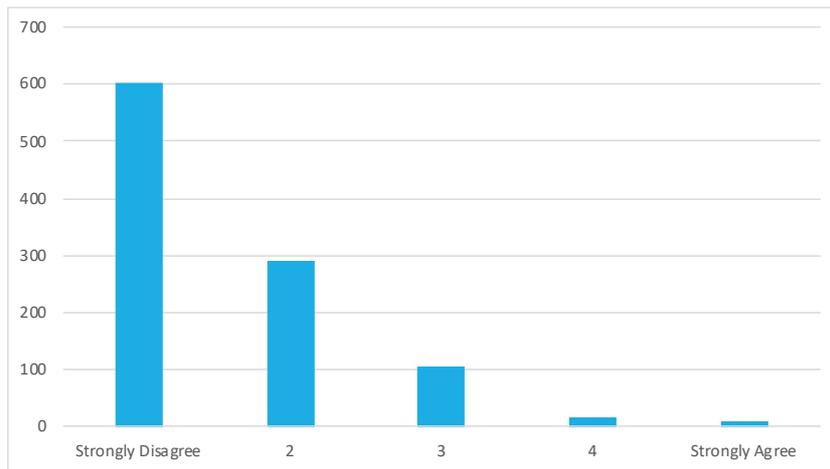


Figure 50 There is clear signage along A-roads that let me know where I can find a chargepoint.

Most (74%), too, disagreed or strongly disagreed that there is clear signage at destinations (such as supermarkets or leisure centres) indicating the location of a public chargepoint. Only 8% of participants felt there exists enough signage at destination chargepoints.

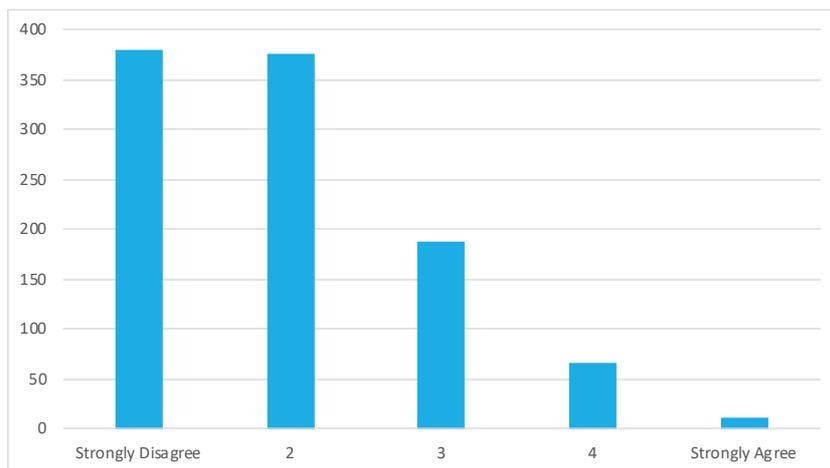


Figure 51 There is clear signage at destinations that let me know where I can find a chargepoint.

Amongst the comments that highlighted the need for signage, two drivers highlighted the need for clear directions and designations for EV charging in order to prevent the chargepoint from being blocked or occupied by a non-electric vehicle. One also suggested the need for a standardisation of signage to make it clearer for drivers where they can find EV charging at destinations.

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“Clearer directions are needed to find chargers in car parks etc. Charging points need to be clearly designated to prevent ICE cars parking there and blocking access for EVs and a fine levied automatically to anyone abusing that space, ICE or EV parked but not charging.”

“Destination/supermarket chargers need a standardised signage for where the facilities are. Different logos/fonts/colours etc confuse and slow locating of chargers down.”

“Please ensure that the area reserved for electric vehicle charging has bold clear signage and coloured paint on the whole space to help ensure it is kept clear.”

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## 8 General satisfaction with public EV charging

Lastly, survey participants were asked to what extent they were satisfied with the current state of public EV charging. The average satisfaction rating was 2.16 out of 5 amongst drivers in England with the most frequently occurring rating being a 2 out of 5.

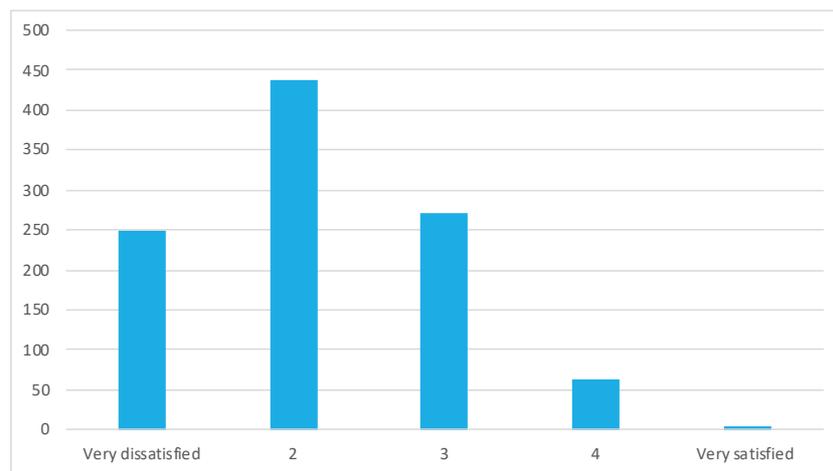


Figure 52 General satisfaction with public EV charging in England

Most (43%) drivers indicated that they were somewhat dissatisfied with public charging in England, with 24% indicating they were very dissatisfied. 26% were neither satisfied nor dissatisfied. 6% were somewhat satisfied and only 1% was very satisfied with the current state of public charging infrastructure in England.

## Conclusion and recommendations

91% of survey participants have access to off-street parking and therefore the potential ability to charge at home. Having access to off-street parking, of course, does not necessarily denote the presence of a home charger. As expected, urban drivers have proportionally less access to off-street parking, but most urban drivers that took part in this survey still had access to off-street parking. The results chime well with comments, both in this survey and in previous EVA England surveys, that indicate drivers are more likely to switch to an electric vehicle if they have the ability to charge at home.

With that noted, this survey revealed that while most EV drivers will charge at home, EV drivers still use public charging, whether this is rare or frequent in occurrence. Only 36% of drivers indicated that they performed almost all of their charging at home. 39% suggested that while they do most of their charging at home, they still sometimes rely on public EV charging.

10% of EV drivers exclusively use public charging while 9% use an even split of home and public charging. The workplace, however, represents an area where it appears a small proportion of charging events occur.

Despite having such a large percentage of survey participants with access to off-street parking and such a large percentage of survey participants who mostly charged at home, only 8% indicated that they do not use public charging. ***That means 92% of EV drivers in England at some time need to use public charging.***

Amongst the 92% of drivers who use public charging, more than half (57%) are using public chargepoints once or twice a month. Roughly a quarter of drivers are using public charging one or two times a week and 9% of drivers are using public charging more than twice a week.<sup>9</sup> For those who exclusively use public chargepoints, their charging frequency increases with most using public charging once, twice or more than twice a week.

With such a high percentage of EV drivers using public chargepoints, it is interesting to note that most drivers (72%) feel concern either often or sometimes about finding a public chargepoint. Only 6% never feel concern about finding public charging. Amongst female and disabled drivers this concern increases to more often than sometimes.

With 92% of drivers using public EV charging and most feeling concern about finding a public chargepoint, it is then critical to highlight the areas in which improvements can be made

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<sup>9</sup> Again, it is important to note that the COVID pandemic and resulting lockdowns have impacted drivers' behaviours. Participants were asked to think of how they *normally* drive and charge their vehicle.

and concern mitigated. For an integrated system which supports EV drivers and encourages the uptake of electric vehicles, EVA England offers recommendations around the key themes of this report in the following sections.

## Making it easy to pay

| Recommendation 1  |
|---|
| <ul style="list-style-type: none"><li>Chargepoints should offer a choice between three standardised payment methods: 1) A contactless credit or debit card 2) A 'universal' RFID card 3) A smartphone app</li></ul> |



Drivers should be able to pay for their charge with ease at public chargepoints and it is clear from this survey that most drivers would prefer it to be as easy, if not easier, to pay for a charge as it would to pay for petrol or diesel.

As it stands, drivers are accustomed to using multiple membership (RFID) cards or smartphone apps to access the public charging network. Drivers are also accustomed to subscribing to a charging service, using a contactless credit card or debit card, as well as other forms of contactless payment.

**Drivers, however, feel that it is a contactless credit or debit card that is the easiest access or payment method.** 46% of survey participants felt this to be the case, which was followed (although not closely) by a smartphone app and an RFID card. Drivers, too, would welcome the ability to use the easiest form of payment, predominately contactless card, across all public chargepoints.

Only 8% of drivers in England would welcome the ability to use a pin and chip credit or debit card. 84% of drivers would not welcome a phone or text-based payment option.

Based on the result of EVA England's survey, a contactless credit or debit card is the preferred method of payment across all chargepoints, whether at destination chargers or rapid chargers. Most drivers, however, recognise the need and a desire for having multiple options when paying for a charge at a public chargepoint. The preferred payment options would be contactless, followed by an RFID card and then a smartphone app and this applies to destination and rapid chargepoints.

## Roaming

### Recommendation 2

- The Government should mandate that Charge Point Operators enable roaming and allow for drivers to use one app or RFID card on all networks

Closely tied to the theme of payments and making accessing a chargepoint easier is the idea of roaming, that is consumers being able to use a standardised form of chargepoint access across multiple networks where they are able to receive a receipt.

**87% of drivers would welcome the ability to use one smartphone app and 71% would welcome the ability to use one RFID card across all public chargepoint networks.** Given that survey participants indicated they would prefer having multiple options when accessing a chargepoint and paying for a charge, a roaming solution could see drivers using either an RFID card or a smartphone app. A combination of access methods would also allow drivers without a smartphone to charge across chargepoint networks.

Similarly, a QR code requires the use of a camera on a smartphone. Views on the use of a QR code were mixed – 59% of drivers would not and 41% would welcome the ability to access a chargepoint with a QR code. As one comment highlighted, there are of course security concerns with QR codes.

## Opening up chargepoint data

### Recommendations 3 & 4

- Government should mandate a minimum amount of data that must be made open in a standardised format to EV drivers.
- Collaboration should occur with Chargepoint Operators and Emobility Service Providers to open up further data to consumers in order to better equip them to better find and use public EV chargepoints.

In order to locate public chargepoints, most (83%) of EV drivers use a website or a smartphone app to locate chargepoints. 17% of drivers use their vehicle's onboard map.

**98% of drivers believe that having access to real-time information in advance of a charging event would save them time.** Examples of information that would save drivers time were:

- Working order of a chargepoint
- Availability of a chargepoint

- Time until charging completes at a chargepoint
- Peak usage times

Drivers are accustomed to planning their charge along the public network in advance and having access to real-time information would allow them to better gauge if the chargepoint is likely to be working, if there is likely to be a queue and the location of the chargepoint. Opening up chargepoint data would also allow drivers to better plan their routes and make more informed decisions when using the public charging network.

EV drivers that took part in the survey also indicated that location was the primary deciding factor when choosing a chargepoint. There is a strong perception that having access to real-time data ahead of a charge will save drivers time, as well as help them locate convenient chargepoints in working order.

### Pricing transparency

|  |
|--|
| <b>Recommendations 5 &amp; 6</b>   |
| <ul style="list-style-type: none"> <li>• All prices for electricity sold at EV charging sites should be stated in pence/kWh</li> <li>• Engage with EV drivers through focus groups to agree consumer-friendly messaging to explain the term, where messaging should be located etc.</li> </ul> |



Being able to compare the cost of charging between different networks is essential for EV drivers. While a range of metrics exist, the results of EVA England’s survey indicate that drivers would welcome the adoption of single pricing metric for a unit of electricity – pence/kWh. **94% of survey participants preferred to pay for their charge in p/kWh**, in other words to be charged for the amount of electricity used.

|   |
|---|
| <b>Recommendation 7</b>   |
| <ul style="list-style-type: none"> <li>• The cost to charge a vehicle should be clearly separated out from other costs associated with public EV charging, such as parking fees and connection fees.</li> </ul> |



Comments in EVA England’s survey also suggest the need not only for a transparent pricing metric, but also transparency in the costs associated with using a public chargepoint. The cost to charge a vehicle should be clearly stated and separated from other fees associated with charging, such as parking fees and connection fees.

## Reliability

### Recommendation 8

- Government should work with the EV chargepoint industry to establish a roadmap to mandate 99% reliability and 24/7 helpline availability within agreed timescales.

It is clear from this survey that fundamentally, EV drivers desire reliable access to reliable public chargepoints. Survey participants were asked to highlight the most common reliability issues they have faced that have made them abandon attempting to charge their vehicle. Reliability issues were ranked as follows:

1. The chargepoint was out of order
2. The chargepoint could not be easily activated
3. The chargepoint would not connect with my vehicle
4. There was a long queue
5. The chargepoint did not provide a suitable payment method
6. The chargepoint was inaccessible
7. The chargepoint could not be easily located
8. Other reason
9. Safety concerns at the chargepoint

Results also revealed that 86% of drivers have had to choose a different chargepoint than the one they originally intended due to reliability issues. Only 14% of drivers have never experienced the need to choose a different chargepoint than the one they intended.

Removing the 8% of drivers who do not use public charging, this leaves **only 6% of drivers who use the public network and have never had an issue with a charger.**

Both results from the survey data as well as comments from the free response portion of the survey highlighted key reliability concerns, which illuminate current issues EV drivers face when using a public chargepoint. Key areas of concern were as follows:

- Finding a convenient chargepoint
- Finding a working chargepoint
- Charging deserts
- Number of available chargepoints (at a given location)
- Access to facilities or the chargepoint itself

Results and comments, too, highlighted crucial areas in which reliability concerns could be improved, mainly in the North of England and along English motorways. Repeated concerns were expressed with a particular motorway chargepoint operator, which drivers felt not only represented a monopoly, but also an imperative area for improvement.

The survey asked participants if there should be a reliability standard for chargepoint operators, as proposed in the Government’s consultation. **99% of drivers believe that a reliability standard should be set.** 93% also felt that a 99% reliability standard would be fair.

Participants were also asked to give their views on helplines and their experiences on accessing assistance while at a public chargepoint. **55% of drivers did not believe that there is clear and easy instruction at public chargepoints on how to access assistance.**

66% of drivers have had to call a helpline at some point or another in the past 12 months, while 34% indicated that they have never needed to call a helpline. Amongst drivers who have had to call a helpline, 57% suggested that calling the helpline did not resolve their issues.

It would seem, then, that the availability of a 24/7 helpline is a necessary service and that the help that is provided is one area that drivers would like to see improved. Drivers, too, believe that it would be unfair to incur a cost for calling a 24/7 call centre (83% did not think it would be fair).

## Weatherproofing and lighting

### Recommendation 9

- Deliver a series of focus groups with EV drivers and chargepoint operators to establish minimum guidelines for weatherproofing and lighting at public chargepoints.

Most drivers (78%) indicated that they did not experience issues with using a chargepoint in rainy weather, but most drivers (69%) too suggested that they preferred to use chargepoints located under some type of covering or roofing.

Perceptions amongst drivers on lighting were mixed, with 38% believing there was not enough lighting and 38% neither agreeing nor disagreeing on the lighting issue. 24% felt there was enough lighting at public chargepoints. Comments, however, revealed a perception that not enough lighting could be a safety concern.

## Signage

### Recommendations 10 & 11

- Standardised signage should be increased in terms of both number and visibility both at the site of the chargepoint as well as on a range of approach roads.

- Engage with EV drivers through a series of workshops to establish ideal location types and consistency of messaging needed in order to deliver a programme of fit-for-purpose signage

Signage represents another area in which drivers feel there could be improvement. Most survey participants felt there was not enough signage indicating the locations of public EV charging along motorways, in Motorway Service Areas (MSAs), along A-roads and at destinations (such as supermarkets).

## Shaping the public charging network of tomorrow

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“People need to see charging [infra]structure in their face, to have confidence to purchase an EV and then be able to charge away from home with confidence.”

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Survey participants were also asked to rate their current level of general satisfaction with the public charging network in England. The average rating was a 2.16 with a large percentage of drivers being either somewhat dissatisfied or very dissatisfied with public EV charging. The intention of the satisfaction question was not to denigrate public charging, but rather to establish a benchmark by which future improvements, and therefore future satisfaction, could be compared.

This survey, along with the Government’s consultation itself, have highlighted key areas in which driver confidence in public charging can be improved. The key themes of the consultation and survey reveal that drivers want to be able to easily pay for a charge at convenient and reliable public chargepoints and across chargepoint networks. They want pricing to be clear in pence/kWh in order to be able to compare and understand exactly how much they are paying ahead of a charge. Real-time information, such as service conditions and availability of chargepoints, are crucial for drivers planning to use the public charging network. Fundamentally, they want to be able to charge their cars in just as easy, if not easier, fashion as they would their petrol or diesel car.

It is EVA England’s belief that improving confidence in public EV charging now will pave the road to the greater adoption of electric vehicles.

## Appendix A – Copy of survey questionnaire

### EVA England Survey

#### Consultation on the consumer experience of public charging

EVA England’s mission is to offer a voice for electric vehicle drivers and your participation in this survey is one way we achieve that mission. Our aim is to share the views of electric car and van drivers with the Government so that they can cultivate the best possible EV charging infrastructure for EV drivers in England.

When we use the phrases ‘public charging’ or ‘public chargepoints’, we are referring to “a chargepoint intended for use by members of the general public” used in any location.

By submitting a response to this survey, you accept the terms of our privacy policy.

#### **Q1 Do you drive either of the following?**

- a. Battery electric vehicle (BEV)
- b. Plug-in hybrid (PHEV)
- c. None of the above [SCREEN OUT]

*Screen out: Thank you for your interest in helping EVA England! For the purposes of this survey, we are interested in the views of EV drivers on their experiences using public charging. For more information on EVA England and the work we do, head over to our website.*

#### **Q2 Is the above vehicle your primary, secondary or only vehicle?**

- a. Primary vehicle
- b. Secondary vehicle
- c. Only vehicle

#### **Q3 Do you have access to off-street parking (for example, a driveway or a garage)?**

- a. Yes
- b. No
- c. Don’t know

#### **Q4 Which of the following best describes how you normally charge your vehicle?**

- a. I do almost all of my charging at my home
- b. I mostly charge at home, but sometimes use public chargepoints
- c. I use an even split of home charging and public charging
- d. I do most of my charging at work
- e. I mostly charge at work, but sometimes use public chargepoints
- f. I use an even split of workplace charging and public charging
- g. I do all of my charging using public chargepoints
- h. None of the above

**Q5 Thinking of how you normally drive and charge, how frequently have you used public chargepoints?**

- a. Once a week
- b. Once or twice a week
- c. More than twice a week
- d. Once a month
- e. Once or twice a month
- f. I don't use public charging

**Q6 How often do you feel concerned about finding a chargepoint when you need a charge away from home or your usual charging destination?**

- a. Often
- b. Sometimes
- c. Seldom
- d. Never

### **Making it easy to pay**

**Q7 Thinking about how you normally access and pay at a public chargepoint, which of the following have you used to pay for a charge? [CODE ALL THAT APPLY]**

- A smartphone app
- A membership card (also known as an RFID card)
- Contactless credit or debit card
- Other contactless payment (for example, Apple Pay)
- Chip and pin credit or debit card
- Cash
- Membership to a subscription service
- Phone call
- Text
- None of the above/Not applicable

**Q8 Considering the payment methods mentioned above, which did you find the easiest? Please select one answer.**

- a. A smartphone app
- b. A membership card (also known as an RFID card)
- c. Contactless credit or debit card
- d. Other contactless payment (for example, Apple Pay)
- e. Chip and pin credit or debit card
- f. Cash
- g. Membership to a subscription service
- h. Phone call
- i. Text
- j. None of the above/Not applicable

**Q9 Would you prefer to use the payment method you selected above at all chargepoints?**

- a. Yes

- b. No

**Q10 Thinking about how you access a destination charger (for example, supermarket, leisure centre or carpark), to what extent do you agree with the following? [RATE 1-5]**

- I prefer to pay for my charge with an RFID card.
- I prefer to pay for my charge with a contactless credit or debit card.
- I prefer to pay for my charge through a smartphone app.
- I prefer to pay for my charge with cash.
- I prefer to have multiple options when paying at a destination chargepoint.

**Q11 Thinking about how you access a rapid charger (for instance, along the motorways), to what extent do you agree with the following? [RATE 1-5]**

- I prefer to pay for my charge with an RFID card.
- I prefer to pay for my charge with a contactless credit or debit card.
- I prefer to pay for my charge through a smartphone app.
- I prefer to pay for my charge with cash.
- I prefer to have multiple options when paying at a rapid chargepoint.

**Q12 Would you like to be able to pay for a charge through a call or text-based payment option?**

- a. Yes
- b. No
- c. Don't know

## **Roaming**

**Q13 Would you welcome the option to use one smartphone app across all public chargepoint networks?**

- a. Yes
- b. No

**Q14 Would you welcome the option to use one RFID card across all public chargepoint networks?**

- a. Yes
- b. No

**Q15 Would you welcome the option to access a chargepoint via a QR code that would then direct you to a payment platform? A QR code is a barcode that can be scanned using the camera on a smartphone.**

- a. Yes
- b. No

## **Opening up chargepoint data**

**Q16 Which of the following do you primarily use to locate chargepoints?**

- a. An app or website (for example, Zap-Map)
- b. Your vehicle's onboard map

- c. Other
- d. None of the above/Not applicable

**Q17 Do you agree with the following about choosing a public chargepoint? [Yes/No]**

Having access to real-time information in advance of a charge would save me time.

I typically choose a chargepoint based on its location.

I typically choose a chargepoint based on the chargepoint network.

I typically choose a chargepoint based on the cost to charge my vehicle.

## **Pricing transparency**

**Q18 Which of the following is your preferred format for paying to charge your electric vehicle? [CODE ONE]**

- a. A charge for electricity used (pence/kWh)
- b. A charge for the time spent charging (pence/minute or £ per 30min/hour)
- c. A flat rate for a charging session
- d. An annual or monthly membership fee
- e. A charge in pence/mile of range
- f. Other

## **Reliability**

**Q19 Thinking about when you have normally used public chargepoints, to what extent do you agree with the following? [RATE 1-5]**

I found it easy to locate public chargepoints.

I found it easy to charge my vehicle where and when I needed to do this.

There are typically enough available chargepoints for me to use.

Public chargepoints are typically in good working order and I rarely experience issues.

When I have issues at a chargepoint, there is clear and easy instruction available about how I access assistance

**Q20 Do you think chargepoint operators should be required to meet a certain standard of reliability?**

- a. Yes
- b. No

**Q21 Do you think a 99% reliability standard for chargepoint operators, as proposed by the Government, is fair?**

- a. Yes
- b. No

**Q22 Thinking of the last twelve months, which of the following has caused you to walk away from attempting to charge your vehicle at a public chargepoint? [CODE ALL THAT APPLY]**

- The chargepoint could not be easily located

- The chargepoint was out of order
- There was a long queue
- The chargepoint was inaccessible
- The chargepoint would not connect with my car
- The chargepoint could not be easily activated
- The chargepoint didn't provide a suitable payment method
- I felt unsafe to use a particular chargepoint
- Other

**Q23 Can you estimate how many times in the past twelve months you have needed to choose a different chargepoint than the one you had originally intended to use?**

- Never
- 1-2 times
- 3-4 times
- 5-9 times
- 10+ times
- Don't know

**Q24 In the past twelve months, how many times have you needed to call a helpline when at a chargepoint, either for assistance accessing the chargepoint or because something wasn't working properly?**

- Never
- 1-2 times
- 3-4 times
- 5-9 times
- 10+ times
- Don't know

**Q25 If you answered 'yes' in the above question, did calling the helpline resolve your issue(s)?**

- Yes
- No
- Not applicable

**Q26 Do you think it would be fair for there to be a small cost when calling a 24/7 call centre?**

- Yes
- No

## **Weatherproofing and lighting**

**Q27 To what extent do you agree with the following statements? [RANK 1-5]**

I rarely have issues using public chargepoints in rainy weather.

I prefer to use chargepoints located under some type of roofing or covering.

When I use public chargepoints I find they are well lit/there is enough lighting.

## Signage

### Q28 To what extent do you agree with the following statements?

There is clear signage along motorways that let me know where I can find a chargepoint.

There is clear signage in Motorway Service Areas that let me know where I can find a chargepoint.

There is clear signage along A-roads that let me know where I can find a chargepoint.

There is clear signage at destinations (such as supermarkets or leisure centres) that let me know where I can find a chargepoint.

### Q29 Overall, are you satisfied with the current public charging infrastructure?

- a. Very satisfied
- b. Somewhat satisfied
- c. Neither satisfied nor dissatisfied
- d. Somewhat dissatisfied
- e. Very dissatisfied

### Q30 Is there anything else you would like us to know about your experiences using public charging in the UK? [FREE RESPONSE]

## Demographic questions

In the following questions we ask for a few more details about yourself that you can choose to answer. This is so we can better tailor our response to the consultation, as well as ensure we help build public charging infrastructure that works for everyone. If you would not like to answer any of the following questions, please mark “Prefer not to say” when appropriate.

### Q31 With which gender do you identify?

- a. Female
- b. Male
- c. Other
- d. Prefer not to say

### Q32 What is your age?

- a. Under 17
- b. 17 – 24
- c. 25 – 34
- d. 35 – 44
- e. 45 – 54
- f. 55- 64
- g. 65 – 74
- h. 75+
- i. Prefer not to say

### Q33 In which country do you normally reside?

- a. England
- b. Northern Ireland
- c. Scotland
- d. Wales
- e. Other
- f. Prefer not to say

**Q34 How would you describe the area you live in?**

- a. Urban
- b. Rural
- c. Suburban
- d. Prefer not to say

**Q35 Do you consider yourself to have a disability?**

- a. Yes
- b. No
- c. Prefer not to say

*Thank you for participating in our survey! For more information about EVA England and to sign up for updates about membership, head on over to our website.*