



# Electric vehicles: User experiences and attitudes

Research for Transport Focus

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# About this research

To support its work championing the best outcomes for transport users across Great Britain, Transport Focus wished to deepen its understanding of people's experiences of using electric vehicles (EVs), and the infrastructure set up to enable this.

In particular, evidence was required to help inform Transport Focus' response to the Office For Zero Emission Vehicles's (OZEV) consultation on the provision of public EV chargepoints, especially across the SRN\* - see Appendix for a summary of the key topics of focus.

Research explored EV users' experiences overall, and with a focus on using public chargepoints:

26

EV users across  
England



Mix of length of EV ownership,  
typical trip purpose & distance,  
access to home chargers, and  
frequency of SRN usage



4 days  
March 26-29<sup>th</sup> 2021



Mobile ethnography\*\* based:  
participants uploaded video,  
image and text to describe and  
illustrate experiences

*\*Strategic Road Network: motorways and major A-roads in England, managed by Highways England*

*\*\*See appendix for research format and participants details*

*This report references a number of video clips, held separately to keep document size manageable.*

*Video clips may be shared within Transport Focus and with immediate stakeholders for the purposes of illustrating research findings. Some participants were willing for video material to be shared publicly; **please check with Insight team / Rebecca Joyner** for details before doing so.*

# A snapshot of the findings: Perceptions, realities → priority is reducing effort

## Biggest barriers to EV:

Cost, charging infrastructure, range anxiety

Electric cars too expensive to buy/lease

46%

Concerned about where to charge

44%

Concerned about how far I could drive before needing recharge

42%

*637 road users unlikely to purchase EV in next 5 years: biggest barriers to purchasing EV within next 5 years*

*Transport Focus: Travel during Covid-19 survey*

In reality, these challenges are not insurmountable

*I paid less than a penny per kWh, so I've got 150 miles for about 50p. You show me a combustion engine vehicle that can do that!*

*(F, 54, 2-5 yrs EV user)*

*There are WAY more chargers out there than you realise - just got to look for them*

*(F, 48, 2-5 yrs EV user)*

*We don't find it difficult at all [to plan around the EV]... It's just about [being] prepared... can't be disorganized... the benefits of having an electric car really outweigh potential problems*

*(F, 34, <6m EV user)*

But EV users' experiences illustrate...



A need to **ease layers of effort**

Particularly driven by (but not limited to) complexity in the multi-player chargepoint network



Requirement for **genuine, visible** (to the public) **and joined up commitment** from industry and government to achieve this

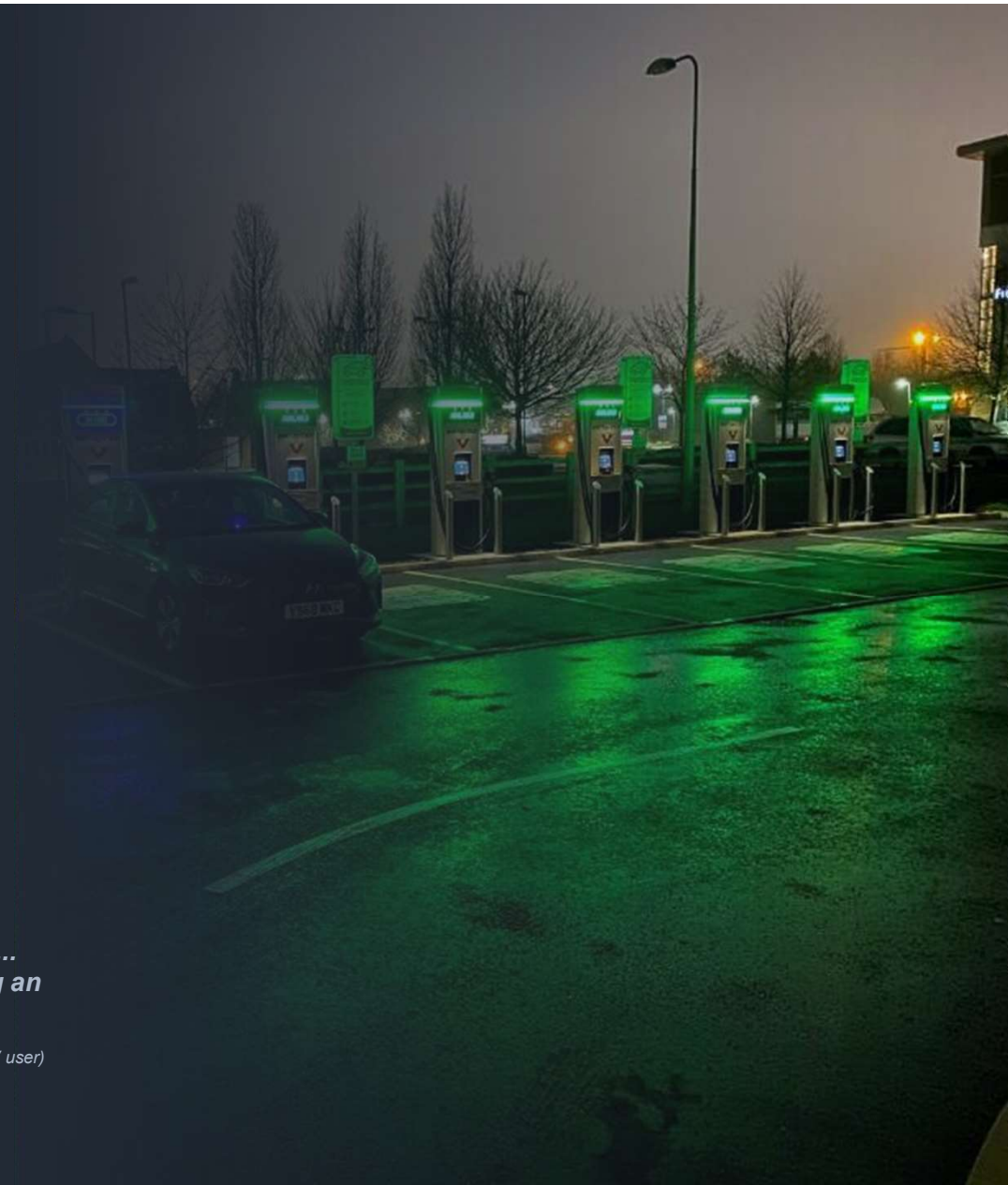
# Overview of the electric vehicle experience

*I now look forward to my commute each day. it's a pleasure to drive, can't wait for restrictions to be lifted so we can go further afield*

*(F, 62, <6m EV user, Tesla)*

*It's just about making sure that you are prepared... [you] can't be disorganized... the benefits of having an electric car really outweigh potential problems*

*(F, 34, <6m EV user)*



# Overview: owning and using an electric vehicle

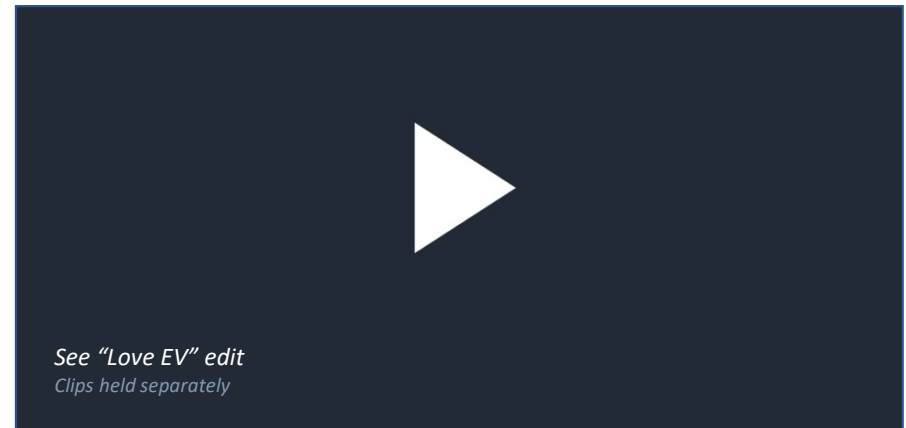
On the whole: lots to love and EV users are positive about their choice

- Sense of no going back
- Cost benefit
- Environmental benefit
- More enjoyable driving experience

*Calmer, quieter, considered (heightened awareness of driving efficiently)*

- Modern cars with up to date features
- Some hassle factors removed

*No going to petrol stations (a noticeable benefit for those with home charge access)*



*[I feel] smug about  
having never to set foot  
on a petrol forecourt,  
cheap running costs*

*(M, 34, <6m EV user, Tesla)*



*At the end of the study, participants uploaded images representing how they felt overall about using EVs (and separately how they felt about chargepoint infrastructure).*

*This image was provided by one participant, and typifies the attitudes that many expressed throughout the study.*

# Specific benefits for disabled users

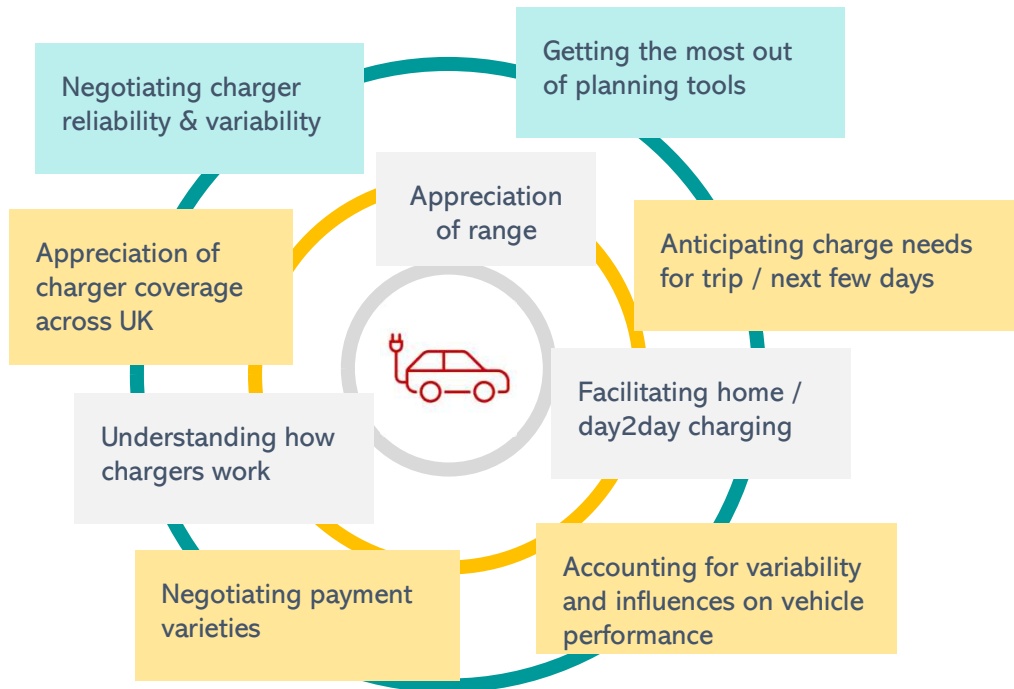
- Avoiding fuel stations: a real benefit for one EV user living with anxiety
- Modern, high spec, responsive vehicles, with same benefits as other automatics: major benefit for one participant with reduced mobility
- Needing to stop frequently for whatever reason (e.g. impacts of autism, needing to rest from the concentration of driving, needing to physically move, etc.): EV users need to stop periodically to re-charge, meaning this fits easily with some health and comfort needs

**Opportunity to leverage some of this, to ensure that people with disabilities are designed in from the outset (during EV adolescence), rather than measures to aid disabled access being implemented retrospectively**

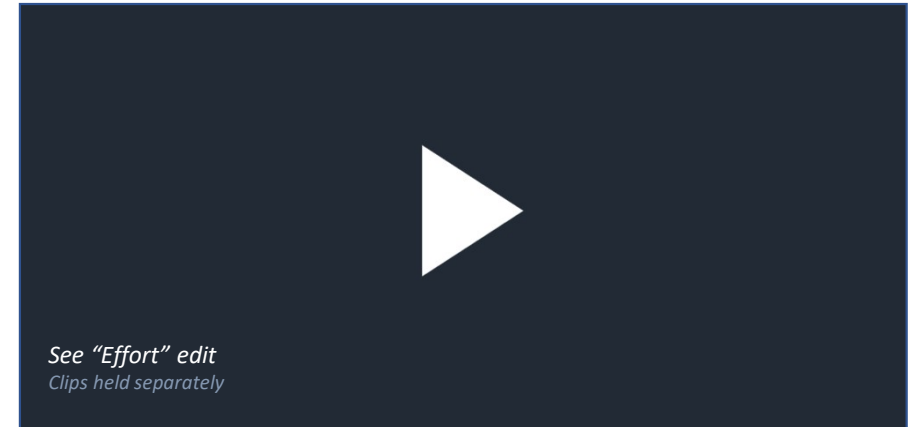
*Based on a very small number of disabled people in this study, and/or comments other participants made about people they know with certain health conditions. More research will be required to validate and expand upon these initial points*

# But, it requires more effort!

The “layers” of greater effort include...



As EV use extends beyond 'early adopters', it will likely become increasingly crucial to reduce these areas of effort



...charging needs to be mainstream and work as well as petrol stations. You need to know there are charge points available, that work, on motorways. You need to be able to pay on card or cash. Until "you don't have to think about it", there will be resistance and negative stories

(M, 41, 6-12m EV user)

Confusing, frustrating unless you know how....

(M, 57, 2-5 yrs EV user, Tesla)



At the end of the study, participants uploaded images representing how they felt overall about using EVs (and separately how they felt about chargepoint infrastructure).

This image was provided by one participant, and typifies the sense of effort and initially sometimes daunting “work” involved in running an EV, which most get used to quickly, and usually come to find acceptable

# Planning trips & managing EVs



# Trip planning / EV management: overview

Most planning and management is straightforward

EV users are positive about trip planning when....

- ✓ Straightforward
- ✓ Plenty of information
- ✓ Relevance of information  
*(Up to date, filterable, tailored)*
- ✓ Expectation and evidence of improvement to tools
- ✓ Accepted as part of the deal



Straightforward planning process inspires confidence for using the vehicle itself



Negative experience is driven by...

- × Poor accuracy of chargepoint info
- × Complexity due to multiple providers
  - Not knowing where to start
  - Mis-understanding / overlooking information



Difficult planning process creates nervousness and even limits / alters travel

When planning feels “ok”, all of the same positive elements are in place...

But:

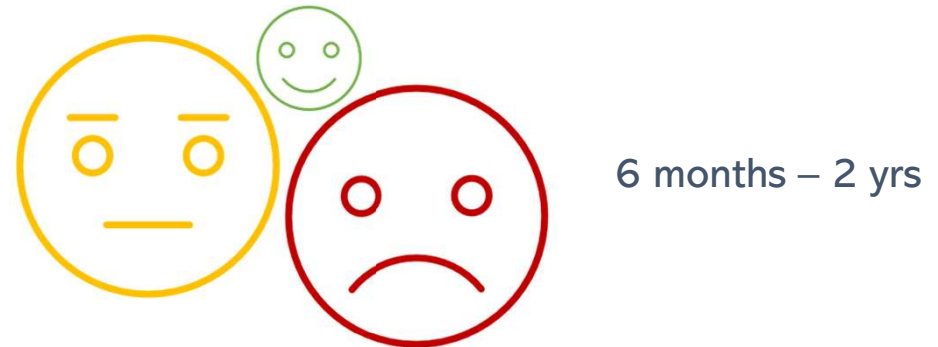
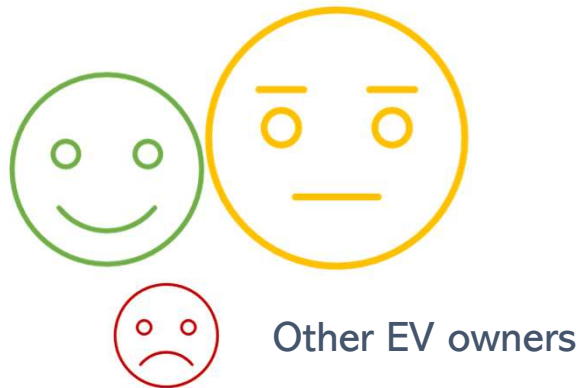
- ? Minor frustration at requiring multiple planning tools
- ? Accuracy of chargepoint data

*Especially:*

- Known chargepoints not listed
- Listed chargepoints not being available as public in reality

*Icons above give an indication of the relative level of positive / neutral / negative sentiment, among study participants, towards the concept of planning for a trip that will involve a charge at a public point.  
Note: relative size of icons is illustrative, based on qualitative feedback.*

# Trip planning / EV management: variations



# Some typical planning experiences



## Most planning and management is straightforward



See "Planning-positive" edit  
Clips held separately

*[Planning using Zapmap is] **incredibly easy**.... Zapmap has been around for quite a while and you can tell that they've been working with the people who have been using the app to make it as simple as possible. It has aspects of Google Maps about it .... The idea that you can just put post codes in.... set your car [details, range] ... filter out all the millions of types of charges out there...**it's just simple..... super easy***

(M, 41, 6-12m EV user)

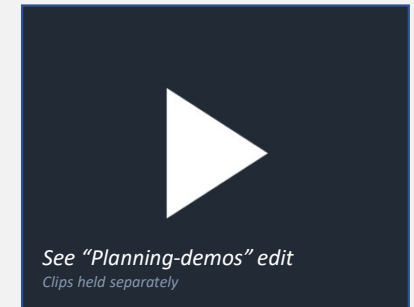
**The amount of information that's in there is really good**

(F, 45, 1-2 yrs EV user)



## Planning demos:

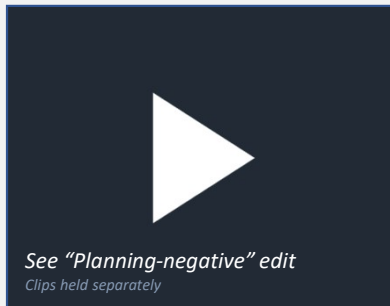
A few typical tools & tips that EV owners use



See "Planning-demos" edit  
Clips held separately



## But there are common frustrations



See "Planning-negative" edit  
Clips held separately

**The fact I'm having to use two different apps makes no sense at all.** What would really do it for me is if that whole process was actually built into the car's sat nav system. Currently ... my [sat nav] has got charging points on it, but there's no live data. It just tells you where some of the charge points are, ...[not] if they're working or even what speed they're charging at

(M, 57, 6-12m EV user)

There was a public charger ... next to work. ... [But I] was moved on by the caretaker telling me that it wasn't a public charger. But certainly on one of the apps it was, and actually the ...[in-car app] showed it as being a public charger.... **sets a little bit of doubt in my mind that when I turn up at other chargers, am I going to be able to use them or not.**

(M, 45, <6m EV user)

**It would be helpful if the Ecotricity app advised which are working ...to save a wasted journey**

(F, 27, 6-12m EV user)

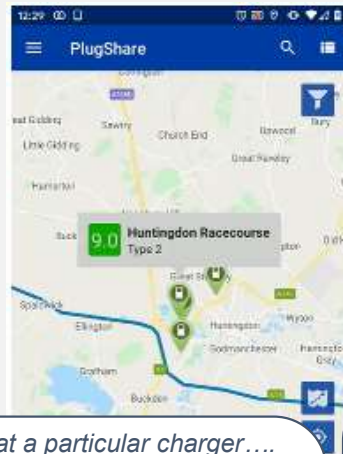
They aren't listed on [Pulse app]. **I only found them [by]... talking to a taxi driver.... [And there's] a place ... where there's a whole bank of chargers, but it doesn't seem to be listed on any apps, even though it is part of the [local authority] network.**

(F, 35, 6-12m EV user)

# Planning around expectation for charger unreliability

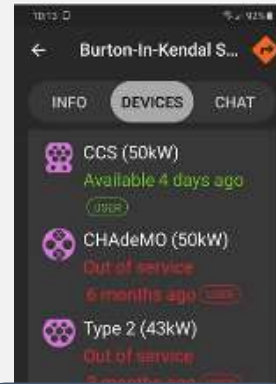
## Charger “status” information: absolutely crucial

- Working?
- In use?
- Advance and on-the-move usage
- Desire (expectation) for real time



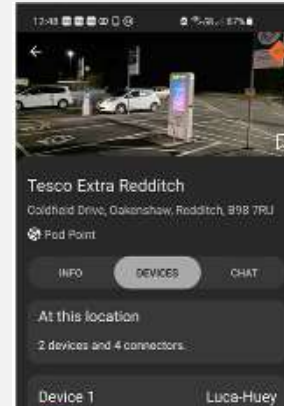
You can have a look at a particular charger.... What its up to date situation is... **So I even though I may have used Zapmap for route planning I would often [use this as well], particularly if there's two of us and somebody can check this as we're driving along to [check status and whether in use]...and if so, we can then plan to use a different one**

(F, 62, 5+ yrs EV user)



But can you see it's out of service? Six...three months ago... It's really frustrating that either this has not been updated and they are in service – but I can't take the chance on that – or that it... still hasn't been fixed.

(F, 45, 1-2yrs EV user)



Available a month ago. I wonder if it still is?

(M, 45, <6m EV user)

Suggestion for some way of auto-check-in to overcome issue of people forgetting to check in

## “Back-up” plans: the norm

But usually. If I'm going to London, then I already know where the chargers are. I **have my main charger and then a backup charger and then another one, so that's pretty much it.**

(M, 34, <6m EV user, Tesla)

Tesla owner: typically plans very little at all, but still has back-up

I had to double-back on myself [because]... the turning for [the] services was in the middle of major roadworks...[so now I]... always check ... to make sure my intended stop is working... I will also scope out an alternative or two in case plan A doesn't work

(F, 54, 2-5 yrs EV user)

Screenshots / comments taken from selected screen-recordings made by participants, as they demonstrated a typical planning that they would do, in advance of a trip where they expect to require a charge en route

Here illustrating: 1) the most frequently used and/or needed type of information – whether or not chargers are (likely to be) working, and 2) despite usually finding this information, the almost universal behaviour of having at least one back-up in expectation that first choice charger might not be in service on arrival

# Summary:

## Best practice in providing useful information to EV users

Information topics	Tailoring	Management of planning tools
<ul style="list-style-type: none"> <li>✓ <b>Chargepoint details: using the unit</b> <ul style="list-style-type: none"> <li>Photo (for wayfinding)</li> <li>Charger type, network brand</li> <li>Charge duration estimate</li> <li>Payment mechanism required</li> <li>Price</li> </ul> </li> <li>✓ <b>Chargepoint details: reliability</b> <ul style="list-style-type: none"> <li>Charger status including history</li> <li>Date of most recent check-in</li> <li>No. connections (<i>indicating likelihood of at least one being available</i>)</li> </ul> </li> <li>✓ <b>Using particular chargepoint: implications for own car / journey</b> <ul style="list-style-type: none"> <li>Pro-active chargepoint suggestions, based on charge estimates for vehicle</li> <li>Estimate of % charge remaining at chargers / destinations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Journey factors</b> <ul style="list-style-type: none"> <li>Weather, road conditions</li> <li>Gradients</li> <li>Time of day for trip</li> <li>Extra weight in car</li> </ul> </li> <li>✓ <b>Vehicle parameters</b> <ul style="list-style-type: none"> <li>Realistic mileage range</li> <li>Battery level at journey outset</li> </ul> </li> <li>✓ <b>User preferences</b> <ul style="list-style-type: none"> <li>% run-down willing to reach</li> <li>Filters: charger types <ul style="list-style-type: none"> <li>• Speed / type</li> <li>• Network provider / brand</li> </ul> </li> <li><i>Accounting for:</i> <ul style="list-style-type: none"> <li>○ <i>A judgement of reliability</i></li> <li>○ <i>Familiarity and confidence in using</i></li> <li>○ <i>Convenience: existing membership, app, etc.</i></li> <li>○ <i>(Price)</i></li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Community-based</li> <li>✓ Updates to information is actioned (Zapmap)</li> </ul>

# Further suggestions for tangible improvements to planning tools for public EV charging

## Improve usefulness

Real time charger status

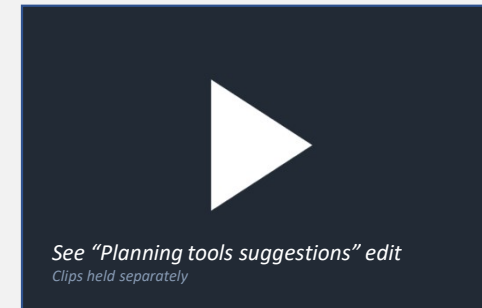
- Working?
- In use?

Address patchy charger coverage within apps

Waypoints / return trips (as ABRP)

Next level updates:

Real time feedback loop to adjust and refine navigation and charging requirements on the move, based on actual conditions, actual car performance, etc.



## Reduce effort

Integration of tools / apps

In-car sat nav improvement (or mitigation via education?)

Reduce complexity of payment and usage across networks, in the first place!

## Help users optimise outcomes

Signposting / online education around tools available?

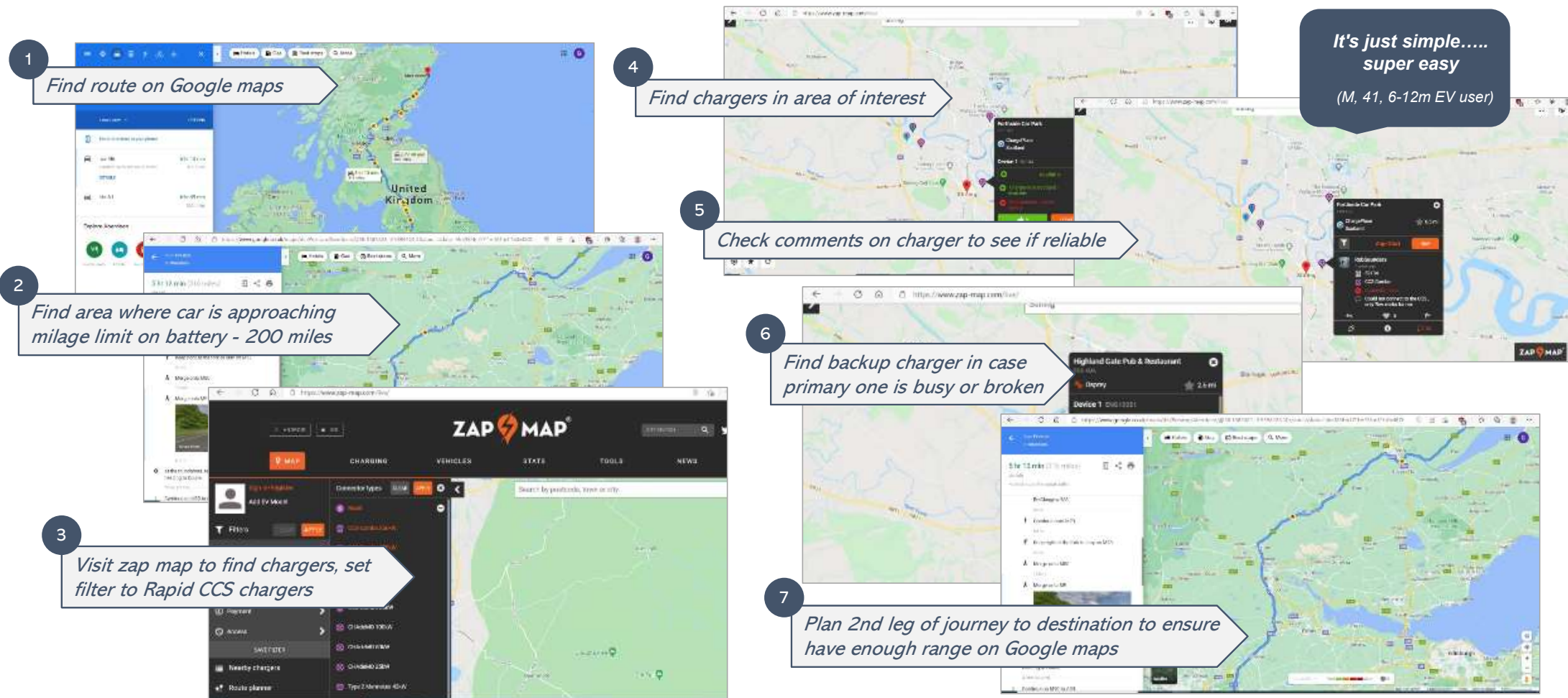
Accessible, salient tutorials?

# Illustration:

## Typical, straightforward planning process for long distance trip

*Screenshots / commentary provided by one participant, as he demonstrated the typical planning he would do (on a desktop computer in this case), in advance of a trip where he expected to require a charge en route*

*Here illustrating the set of simple (as he and many others typically saw them) steps involved*



# Illustration:

## The need to use multiple planning tools

Screenshots / commentary provided by one participant, as he demonstrated the typical planning he would do (via apps, which is typical), in advance of a trip where he expected to require a charge en route

Here illustrating the typical behaviour of using several different apps or tool as part of the process

1

This participant spent a long time looking at different options for destination chargers, during a planned trip 2-3 hrs from home



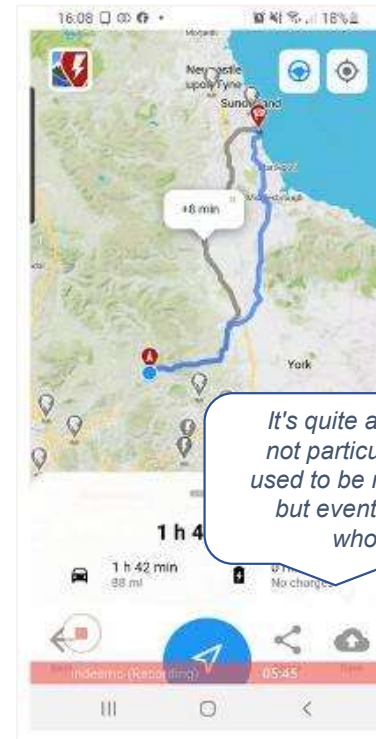
2

*I might then also look at Zapmap just in case there's any ...that haven't been registered on the other one*

*What's interesting here is Zapmap makes it a little bit more obvious that this one is broken*

3

Having given up on destination chargers, he then switched to a third different app (ABRP) which allows more details to be added, to better plan for rapid chargepoint stops along the way



*It's quite a complex app and it's not particularly user friendly... it used to be more of a web based... but eventually it will give me a whole lot of options*

4



Ultimately plugs details into Google maps for the actual navigation due to preference and being familiar with this for driving

*Not so good is the fact that you have to use multiple tools... there isn't one tool out there that... gives you everything you need and integrates to everything.... Ideally you would be able to go into an app which isn't proprietary in any way and you'd be able to see all the charge points there, you'd be able to filter for ones that don't work....*

*(M, 44, 1-2 yrs EV user)*

# Illustration: Straightforward planning; best practice elements of planning tools

Screenshots / commentary provided by one participant, as she demonstrated the typical planning she would do (via apps, which is typical), in advance of an (overseas) trip where she expected to require a charge en route

Here illustrating some of the helpful features and types of information which she finds useful

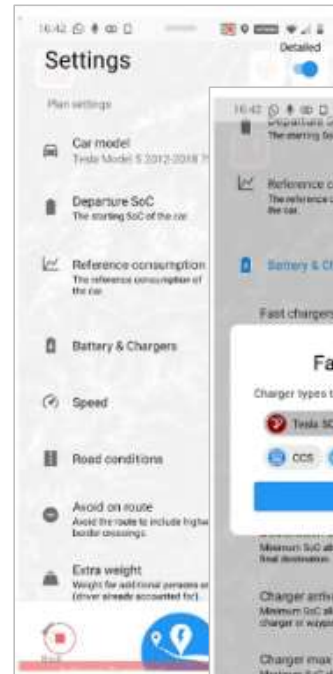


Demo given by Tesla owner who rarely needs to put significant effort into planning journeys

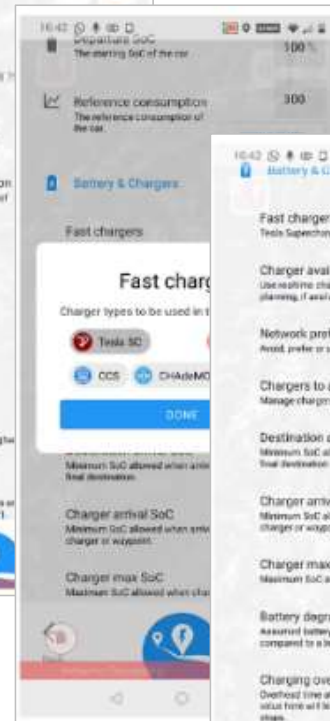
Therefore, putting more effort into a trip to Italy – and planning out overnight stops at the same time – using a comprehensive app (ABRP) felt completely appropriate, and not difficult

*[For long distance] trip planning, we tend to use A Better Route Planner simply because you can do return trips. That's the one thing that the Tesla in-car satnav ... doesn't do: ... waypoints or round tripping.....It's the one shortcoming ... that as [Tesla] owners we've been petitioning for now for years.*

(F, 48, 2-5 yrs EV owner, Tesla)

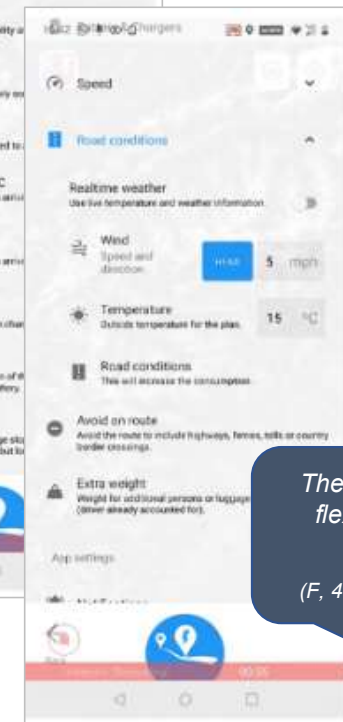


Car settings inc. make & model, level of charge



Specify chargers – in this case restricting to Tesla superchargers

How far willing to allow battery to run down to



Weather

Road conditions

Extra weight (in this case family holiday with luggage)

+ waypoints / round trips

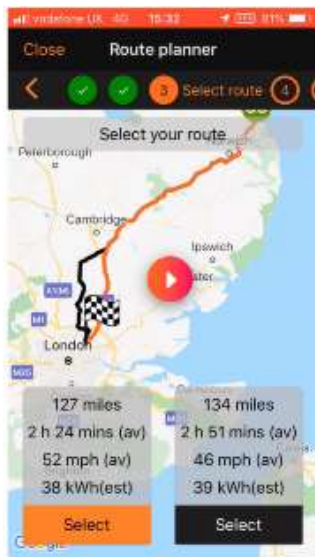
*These are all really useful flexible items for you to tweak about with.*

(F, 48, 2-5 yrs EV owner, Tesla)

# Illustration: Planning tools - not so easy to use for all

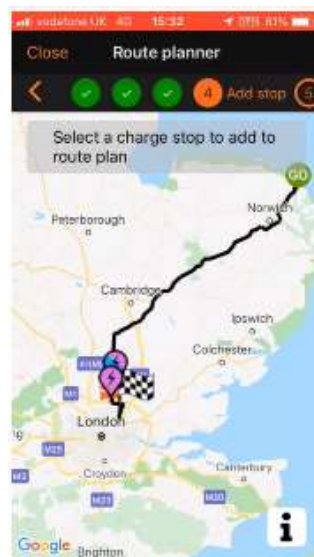
Screenshots / commentary provided by one participant, as she demonstrated the typical planning she would do (via apps, which is typical), in advance of a trip where she expected to require a charge en route

Here illustrating (unexplained) difficulty with using a popular app. Difficulty in this case may have been user error, or an issue with connectivity. I.e. not necessarily the app-provider's fault, or a problem with data being made available for example, but this highlights what could be an issue for some individuals, especially in future as usage widens beyond "early adopters". Perhaps indicating a need for more support/education around planning resources, and/or simplified "basic" level tools as an option?

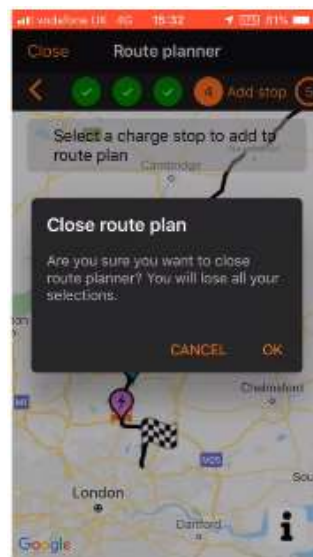


And I'm now going to press next step so it's now showing me my route, which it says is 134 miles.

And I'm selecting that one.

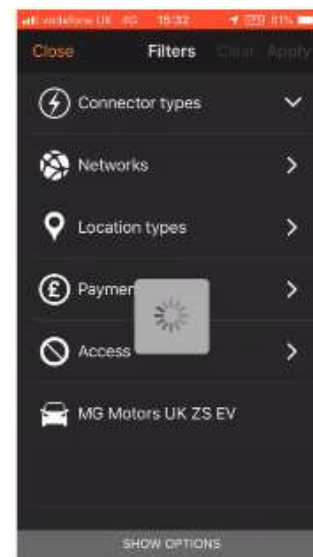


Now at the moment it's only come up with two chargers, so I don't think that can be right.....



This is not as easy as I thought it would be.

Yeah, it's not letting me do this for some reason.....



So I'm going to go back to the filters...

And...try again...

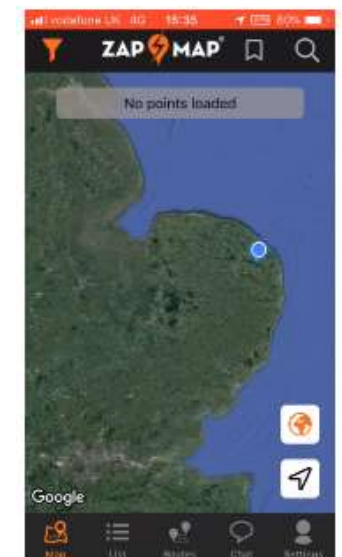
For some reason, it's not accepting this. So already it's become stressful.



...[Third attempt]...

And it's not applied any.... I don't know why this is happening. I don't know what's happened.

....



That was a... fail.

**Probably me, but this is why at the moment I would find it too stressful to go on a long journey,**

... a miserable fail.

# Charging in practice

*I don't always go further afield than what I know... because I can't always trust chargers ...it has hindered me a little bit in that respect*

*(F, 45, 1-2 yrs EV user)*

*I am confident in the Tesla supercharger network... super reliable... [but] I've come across plenty... on the public network where ... there's a fault with them*

*(M, 57, 2-5 yrs EV user - Tesla)*



# Attitudes towards public chargepoints: #1 an unknown



*At the end of the study, participants uploaded images representing how they felt overall about the public chargepoint infrastructure*

*These selected images typify the first of two main themes in the attitudes expressed about chargepoints, throughout the study: a sense of never really knowing for certain whether or not you will be able to charge your car in a smooth, effortless way... and hoping for the best*



*My feelings about using public chargers:  
Wonderful sailing on a beautiful sea, but with hidden, unexpected rocks*

*(F, 62, 5+ yrs EV user)*



# Attitudes towards public chargepoints: #2 perception as a “tangled mess”



*A tangled mess*

(M, 41, 6-12m EV user)



*Using public charge points at the moment: rubbish*

(F, 61, 6-12m EV user)



*At the end of the study, participants uploaded images representing how they felt overall about the public chargepoint infrastructure*

*These selected images typify the second of two main themes in attitudes expressed about chargepoints, throughout the study: the various emotions prompted by network complexity, with multiple providers and their usage and payment set-ups*

# Using public chargepoints in practice: overview

Majority of public chargepoint experience is “fine”

EV users are positive about charging at a public unit when....

- ✓ Works first time
- ✓ Straightforward
  - *Tethered*
  - *Plug, tap & go*
  - *Familiar brand / provider = familiar with “how to do it”*
- ✓ Minimal waiting
- ✓ Minimal effort payment
- ✓ Rapid charge



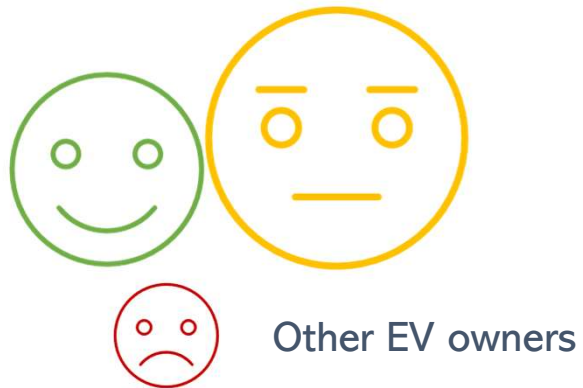
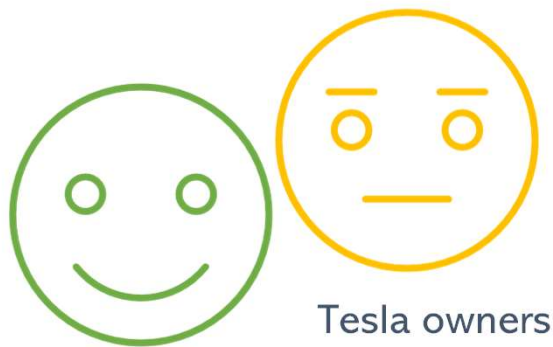
Negative experiences caused by:

- × Charge failed
- × Unable to connect / disconnect
- × Charger spaces blocked (ICE, but also EVs)
- × Support / call centre unavailable or long wait time
- × *Complexity*

...majority of occasions may have small points of friction, but which have no major consequences:

- Requirement to use different apps, cards, payment methods
- Straightforward in practice but planning / finding had been challenging / stressful
- Switch to free vend if operational issue (Ecotricity)
- Support / call centre needed but effective
- Chargepoint placement within the area feels like afterthought

# Using public chargepoints in practice: variations



Under 6 months



6 months – 2 yrs

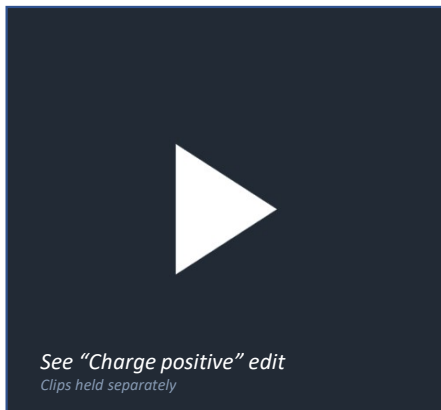


Over 2 yrs

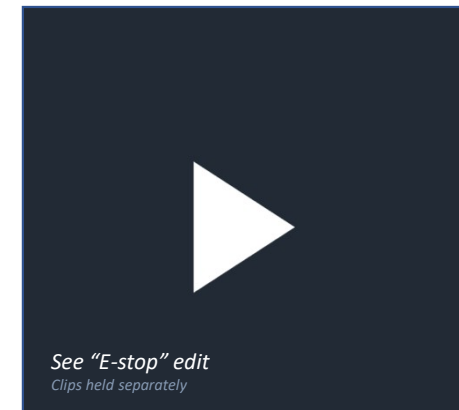
# Summary: best practice / improvements for constructive chargepoint experience

Operational efficacy	User mindset	Chargepoint sites
<ul style="list-style-type: none"> <li>✓ <b>Aid confidence around – and experience of – reliability / availability</b> <ul style="list-style-type: none"> <li>Learn from Tesla's operational excellence?</li> <li>Several units available</li> <li>Reduce out-of-service instances – make user re-set an option?</li> <li>Optimise planning tools</li> <li>Information: e.g. charge supplied, speed of charge</li> </ul> </li> <li>✓ <b>Fit for purpose support</b> <ul style="list-style-type: none"> <li>Faster reaction to out-of-service reports / notification</li> <li>Reliable – ideally universal – helplines</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Reduce effort and complexity</b> <ul style="list-style-type: none"> <li>Contactless / credit card</li> <li>Auto-charge to account</li> </ul> </li> <li>✓ <b>Promote fairness</b> <ul style="list-style-type: none"> <li>Goodwill free-vend is an appreciated mitigation</li> <li>Remove connection fees?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Minimise waiting</b> <ul style="list-style-type: none"> <li>Several units available</li> <li>Measures to discourage space blocking / hogging (signage, education, etiquette promotion?)</li> </ul> </li> <li>✓ <b>Environment</b> <ul style="list-style-type: none"> <li>Comfortable environment (lighting, remoteness, weather-proofing)</li> <li>Facilities (refreshments, toilets)</li> </ul> </li> <li>✓ <b>Access</b> <ul style="list-style-type: none"> <li>Easy to locate within site</li> <li>Open / accessible</li> <li>Sufficient size, shape</li> <li>Location and proximity to other functions</li> </ul> </li> </ul>
<p>Petrol / diesel station mindset (appetite for forecourt-style approach)</p> <p>Streamlining of payment mechanisms / usage interface</p>		

# Using public chargepoints in practice: some typical experiences



Re-setting: a quick win to  
reduce number of issues?



One particular issue which arose often during the study was a common experience of chargepoints not working, but simply needing to be "re-set". This was usually known or suspected to be because a previous user had needed to emergency stop the charge, when their car / app would not disconnect from the unit once they had charged as much as they needed to.

This is often exacerbated by call centres being difficult to contact, to resolve the problem, especially when the user discovers, after a long wait for a call centre, that they could have re-set the unit themselves.

The frequency of needing to emergency stop is clearly one problem, but could there be a quick win for chargepoint suppliers, in providing information at the site, on how to re-set, as a first port of call?

# Illustration: Several small issues in a row while charging

*Photos / commentary provided by one participant, as she demonstrated the use of a public chargepoint. She had used this unit before and expected the process to go without incident. In practice, there was a fault with the unit, so she called the support helpline who rebooted it - this call was quick and straightforward. A second attempt also failed, but after starting again for a third time she was successful.*



*Thankfully not like this every time, but you never know 'til you arrive!  
I would say about 75-80% of my charging publicly goes smoothly.*

*(F, 48, 2-5 yrs EV user)*



*Welcome screen*



*It's rebooted  
– yay!*



*Blank screen during rebooting of rapid  
charger by BP Chargemaster*



*Uh-oh red cross = bad sign.  
Try the process again...and if you  
get error message again, try again*



*Charging – phew!*

# Major issue #1: Reliability is unpredictable

Typical problems encountered centre on...

**Chargepoint  
units**

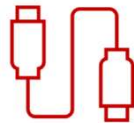


Operational issues



Emergency stop  
*(often easily resolved)*

**App  
dependency**



App-unit  
connection



App  
connectivity

**Maintenance /  
support**



Helplines



Issues reported multiple  
times, not resolved

Occasional experiences x word of mouth =  
nervousness and even avoidance of travel for some

*I It has caused me a little bit of anxiety and nervousness.... I'm not 100% sure how it's going to work out... I haven't had one fail on me yet but ... you do read some horror stories when you look at Facebook*

*(M, 45, <6m EV user)*

*I do ... stick to places I know. I don't tend to try newer places now like I would have done, 'cause I'm so scared that they are not going to be any charges there or ... they'll be broken*

*(F, 45, 1-2 yrs EV user)*

*There aren't many charge points on the route ...and my fear is... they're not working or there's someone already charging....I will revert to...diesel... for longer journeys*

*(F, 61, 6-12m EV user)*

# Major issue #2: Complexity of payment / usage

What the current payment / usage landscape means to EV users:

At best: a faff



There's all the cards I've got. Can you see that? Can you see that!?

(M, 57, 6-12m EV user)

At worst:



Confusing, another layer of complexity to planning



Causes stress in the moment



Puts off travel

The ambition:

- To be easy as paying for petrol
- Appreciate groups / work-together schemes
- ...but ultimately most prefer contactless / card or auto payment
- + universal helpline

*The ideal would be that your car would be registered and you would plug in ... [and] the machine would go, "oh! It's this car with this reg so we'll bill this account". But ... a solid win is always ...to just pay by card, like at a petrol station*

(F, 35, 6-12m EV user)

The Tesla difference:

Friction-free

*As for using a Tesla supercharger... you plug the car in and they do all the billing automatically.... It's easier than filling up with petrol*

(M, 34, <6m EV user, Tesla)

*(Note the benefit of multiple players = no monopoly)*

*For motorways and A-roads, Ecotricity is rubbish, I'm glad they their monopoly is reducing*

(F, 48, 2-5 yrs EV user)

*I have a Juice card ...Octopus energy ...have collaborated with [several] electric charging companies whereby you just ...tap and go, and it gets charged to my Octopus bill.... I don't have to input any credit card details .... I think there should be a lot more of that*

(M, 57, 2-5yrs, EV user, Tesla)

# Complexity of payment / usage: some further examples

*Image provided by one participant,  
representing how he felt overall about  
the public chargepoint infrastructure*

**A tangled mess**

*(M, 41, 6-12m EV user)*

*I know lots of people like using apps, but if it asks for a password, when I am tired from driving and needing to find a toilet, I can quickly become anxious and unable to remember a password for each app...*

*I feel under pressure to get started as quickly as possible... First you have to find the charger on the app. There is a number on the machine, too small to read from inside the car, so I need to have my phone and my reading glasses, get out and then get back in again. ...then wants to check my bank card details, so then I have to find my bank card. This is all before plugging in. It is not an easy process. To be honest, as a lone woman in a carpark, I feel vulnerable having my phone and my bank card out – and then where do I put them while plugging in?*

*(F, 62, 5+ yrs EV user)*

*I'm not comfortable at the moment doing a long distance journeys because of the state of the rapid chargers [referring to payment complexity]. I thought the government were going to bring it in that they were all to be contactless, which makes huge sense.*

*(F, 61, 6-12m EV user)*

See "Complex payment" edit  
*Clips held separately*

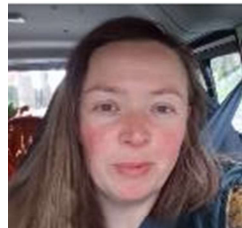
# There is value in reliability and simplicity

Price is a factor in decisions around charging:



Carly isn't able to charge at home, so for "normal" day-to-day charging she prioritises lower cost and not going out of her way. She charges for free at work and supermarket facilities, or uses slower local authority chargers while out for socialising, exercise, etc.

Clare uses her EV for her business, and chooses cheaper options where available - but only to a point, and not at the expense of reliability and simplicity. Typically, she will search chargers from a pool of lower cost providers she trusts, but screen out Ecotricity after bad experiences, despite it often being lower cost



But willingness to pay a little more for better service is common

Friction-free usage

*Instavolt ...are almost always a joy to use. ...You can **just use a contactless card, tap on, plug in and away you go**...Generally if I have a choice I will seek out an Instavolt as it charges a little faster ...compared to Ecotricity and they are more reliable so I don't mind paying a bit extra.*

*(F, 54, 2-5 yrs EV user)*

Operational reliability

*So preferably I'd be looking at the better networks that I know are more reliable.... Even if they're slightly more expensive, reliability is key. **You don't really want to be pulling up to a charger that doesn't work and having to find another one***

*(M, 44, 1-2 yrs EV user)*

...especially in context of lower running costs vs. petrol/diesel, and home charging

*Price doesn't really worry me too much. We save so much money on the car itself, if I end up having to pay ...the equivalent of half a tank of petrol ....then I will, and ... I'm fortunate to have a charger at my [destination]... that I can charge the car up [again] when I get there*

*(M, 45, <6m EV user)*

# Is charger scarcity an issue?



Zapmap screenshot provided by one participant, as illustration of her attitude towards public chargepoints: demonstrating what she feels is comprehensive coverage

F, 62, <6months EV user

## Relatively, a smaller issue to those already using EVs

*There's so many charges now that you can... choose to stop.... depending on how hungry you are, what time of day it is, what the traffic is like*

(F, 62, 5+ yrs EV user)

## Black spots rather than widespread problem....

*There are still black spots in the country. Wales is particularly bad. You have to get the charge when you can*

(M, 41, 6-12m EV user)

## ...and improving:

*That's a great idea...a lot of petrol stations have started to install chargers*

(M, 57, 6-12m EV user)

*[Since] I had my first EV in 2016 - the strides made to the infrastructure ... is immense*

(M, 57, 6-12m EV user)

## But scarcity does have tangible impact when it hits



John will drive from the West Midlands to Devon for a holiday this summer. He's considering an overnight stop on the way to mitigate for high demand on limited numbers of (rapid) chargers on the way

Marie had to charge to 90% during a journey due to no other useful chargers being available after this point before home. This, along with the charger switching to free-vend and therefore being hogged by others, led to a very slow charge = guilt for the next waiting user, and time-wasting



## (Often about reliability as much as "absolute" scarcity)

*There aren't many charge points on the route ...and my fear is... they're not working or there's someone already charging....I will revert to...diesel... for longer journeys*

(F, 61, 6-12m EV user)

## And there is concern for the impact of increased EV use, and industry commitment to accommodate this

*I do not think as a country we are set up for the increase in electric car users... there is a lack of charging points... Where we live there has been a new service station built but no charging points, which seems crazy given the popularity is growing.*

(F, 27, 1-2 yrs EV user)

# Access issues are not uncommon

Users' experiences suggest that provision for EVs is not always fully thought-through: better planning required

*The charger was in the same place where you would... pump up tyres and refill your water ... So if anybody was using that ...I wouldn't be able to charge. But also I was sat there for 15-20 minutes ...[so] they wouldn't have been able to [use air & water]... definitely ...not thought out there.*

(F, 45, 1-2 yrs EV user)

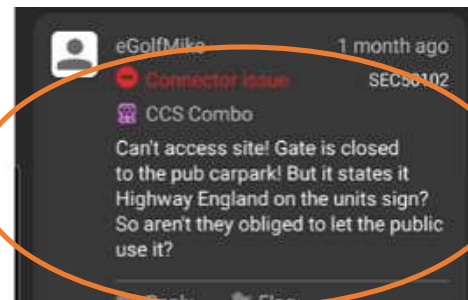
*You've got to be careful how you actually approach these charges... So the charger sucker on my car is at the back on the left hand side, so you tend to have to reverse it in.*

(M, 57, 6-12m EV user)

Subject to management of private land

*During lockdown, some places have closed off their charge points ... there has never been a case where somewhere has closed down a petrol station because of lockdown...If we're going to make [EVs the norm]... then we do have to make a massive transition with our infrastructure. It can't just be one charge point hidden in a pub carpark, it needs to be a bank ...in really regularly used places*

(F, 35, 6-12m EV user)



(M, 38, 6-12m EV user)

ICE-blocking, requirement for better communication / education?

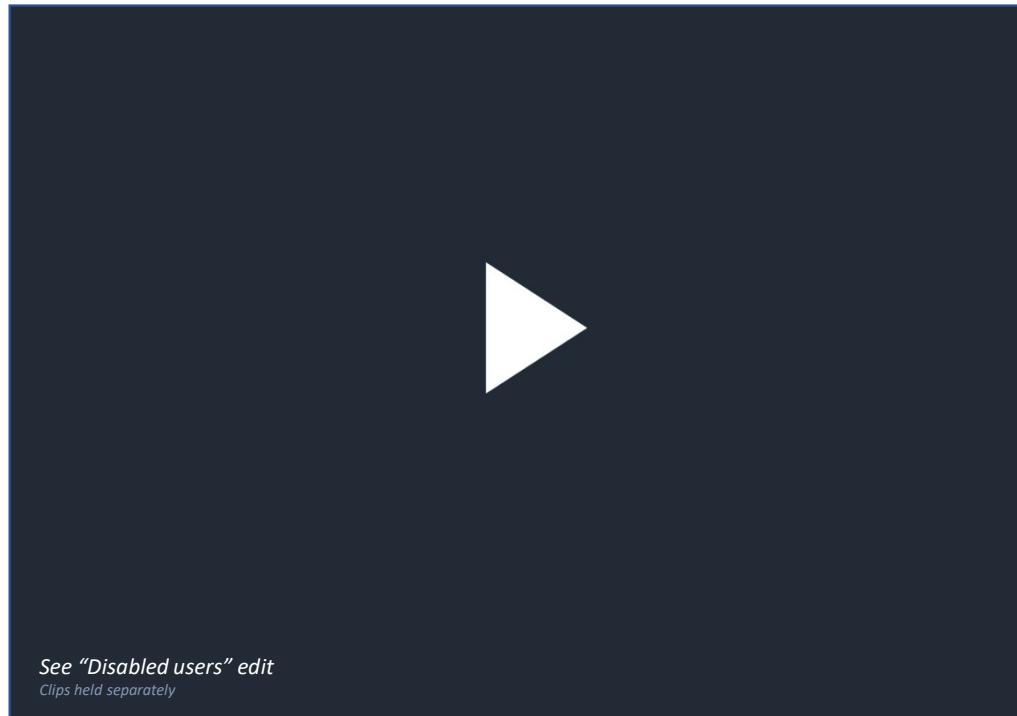


(F, 52, <6m EV user, Tesla)

*I've seen electric vehicles parked in those charging only spots, not even plugged in. ...they should know better.... that needs to be policed a little bit better...they need to either have a warning or get a ticket or whatever.*

(F, 45, 1-2 yrs EV user)

# Usability for disabled EV travellers



It's crucial to consider physical accessibility, with a mindset to design this in from the outset

*We need to treat EVs exactly as we do with petrol stations. **We need to design them so they're accessible so it's not just for...one able bodied person.** If you've got someone who is in a wheelchair how are they going to get around the front of the car to plug it in?*

*(F, 35, 6-12m EV user)*

But other points identified in this study – around speeding up and reducing effort involved in planning and charging – will also go a long way to aiding those with a variety of health conditions

*I drove over to Wales with my son... I was aware **he was finding the stops difficult, so we left one charger early.** This made the next stretch very stressful.*

*(F, 62, 5+ yrs EV user)*

# Signage

## Not a big issue to current EV users

- Did not come up spontaneously in this study
- Comprehensive data in planning tools makes this feel less relevant

## Short term priority: maintain and improve planning information

- ✓ Accuracy / comprehensive coverage of chargepoint data

- ✓ Photos



*The nice thing is you get photos ... of where to look for the charge points.*

*One of my little irritations is sometimes when you go into a car park... You've got to hunt the charger!*

*(M, 57, 6-12m EV user)*

- ✓ ...and on-site signage within chargepoint locations

*You can get parking fines for using them out-of-hours or if you forget to register at reception*

*(F, 54, 2-5 yrs, EV user)*

## Longer term, simple signage seems a sensible addition

- Putting EV charge on a level with petrol/diesel refuelling
- (On prompting) EV users agreed motorway signage would aid basic way-finding and reassurance

*The onus is on the driver at the moment, and sometimes that can be really stressful when you're in an area that you don't know or you find yourself on a different route than intended, like I did when the motorway was closed... it would just [need to] be a little symbol.*

*(F, 45, 1-2 yrs EV user)*

# The weather – and environment at chargepoints in general – makes a difference

Lighting, weather-proofing, facilities and proximity to services / people make the experience comfortable – and practical

*Unlike petrol stations which tend to have a big canopy, there is little shelter considered for EV owners while charging.... when it's pouring down its not a fun experience. The same can be said for lighting - in winter or at night its not easy to locate charge ports and deal with chargers.*

*(M, 44, 1-2 yrs EV user)*

*It was after midnight when we got to Shrewsbury services. Everything was closed, no lights on, difficult to find the charger, no toilets or cafés.*

*(F, 62, 5+ yrs EV user)*

Again, streamlining other aspects of charger use play a part

*I have a chargemycar card ... which is a contactless payment card. It's a monthly fee... and then at the end of every month .... [all charging fees] just go out by direct debit.... **It literally takes me about 30 seconds to put my car in and get it charging ...which is great when it's raining.***

*(F, 45, 1-2 yrs EV user)*

Weather also affects EV battery performance

*When I first got my car back in July, [I would commute to and from school everyday] ... and just do one full charge at the weekend ... But in the winter ... I did have to do two to three extra rapid charges a week because overnight the battery didn't react very well to the cold... [And] a trip that would normally in the summer ... take around 8% of my battery in the winter would be close to 19 or 20%....it all is weather dependent.*

*(F, 45, 1-2 yrs EV user)*



Implications for infrastructure: arguably needs to cope with increased demand in winter

# Safety at public chargepoints

Remote positioning of chargepoints is also a source of anxiety in terms of safety –especially for women



*My big problem ... is that it is all too often one chargepoint in the back of a car park with no lighting. And as a woman that is quite intimidating, it's very scary situation*

*(F, 35, 6-12m EV user)*

Safety is also affected by other aspects of charging



*When I'm charging my car I can feel very vulnerable. ....if anybody comes up and confronts me ...[or] they want to take my purse....I cannot drive away. I physically have to get out and unplug the car in order to drive away... I'm not really quite sure what the answer is – maybe a quick release button in cars?*

*(F, 35, 6-12m EV user)*



*I know lots of people like using apps, but ... I can quickly become anxious and unable to remember a password for each app...*

*First you have to find the charger on the app. There is a number on the machine, too small to read from inside the car, so I need to have my phone and my reading glasses, get out and then get back in again. ...then it wants my ...details, so I have to find my bank card. ...To be honest, as a lone woman in a carpark, I feel vulnerable having my phone and my bank card out*

*(F, 62, 5+ yrs EV user)*

# Home chargers: convenient but not without challenges

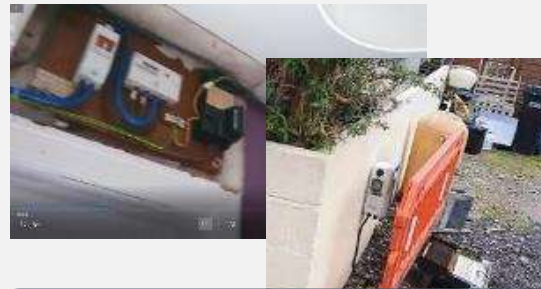
Most study participants have home chargers



- ✓ Relatively easy to keep car charged
- ✓ Only really need to use public chargers for longer distances, or where vehicle range is small

*Photos provided by participants*

But even at home, it's effort-laden, and certainly not future proof



*Unless you've got an easily accessible point on ...your house... you've got to be pretty dedicated, I think, in order to get an electric vehicle to be charged from home..... I've decided to use this because it's good for my business ...[and] in the long run... this will pay for itself. But short sighted people might not want to spend the best part of .... 2 and a half grand to fit that wall charger*

*(M, 38, 6-12m EV user)*

*Stills and commentary taken from video provided by one participant, as he explained the lengths he had gone to, to install a home charging point across a shared driveway at a short distance from his house, including new electrical consumer unit etc. inside*



*Stills taken from video provided by one participant, as she explained her home charging set-up, including cables across public pavement*

*(F, 48, 2-5 yrs EV user)*

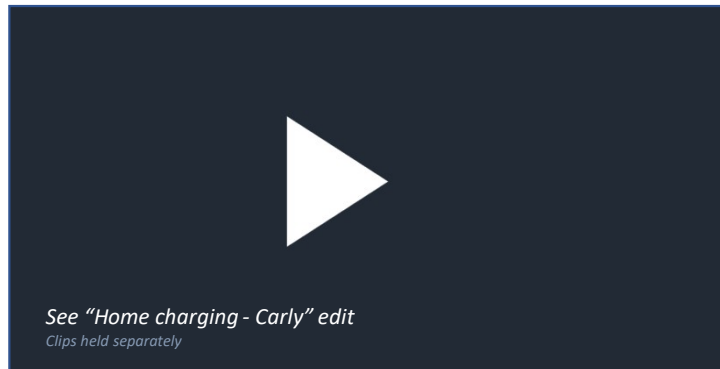


*Interestingly both of these examples are business EV users, doing lots of short trips for work. Although not explicitly mentioned, presumably users like this would wish to avoid charging up at public points frequently (e.g. every day), as this would eat into productive working time.*



***Should business users receive specific assistance for setting up home charging, in order to future-proof and help make EV accessible and genuinely viable for business users?***

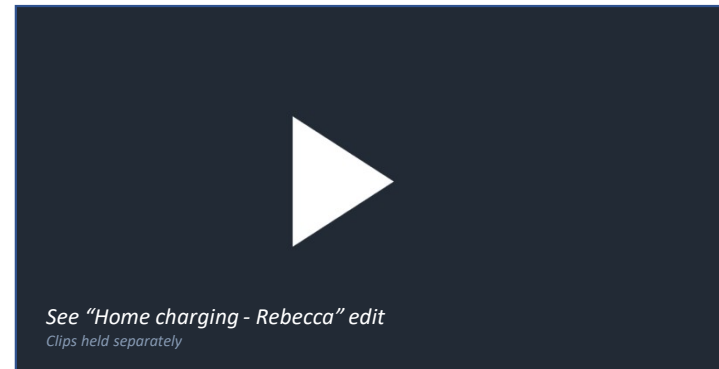
# Not having a home / work charger can be frustrating and generate further effort



*Video clip from a study participant as she discussed her chargepoint experiences and how she managed this without access to home charger. Here she describes...*

- ☹ Frustration that building / land owners for flats appear uninterested in providing on-street charging for EV-user residents

*(F, 35, 6-12m EV user)*



*Video clip from a study participant as she discussed her chargepoint experiences and how she managed this without access to home / work charger. Here she describes...*

- ☹ Additional time / effort to charge during daily commute to work, in order to have confidence in having sufficient charge to get home again, or for "just in case" scenarios
- ☹ An upsetting experience: lacking "just in case" charge, participant was forced to spend critical time charging en route to taking her child to hospital

*(F, 35, 6-12m EV user)*

# Looking forwards

*[Tesla] seem to have thought ahead and planned.*

*Hopefully charging companies and the government will see the light and simplify structure and pricing. It's such a shame they didn't from the off*

*(F, 48, 2-5 yrs EV user)*



# Attitudes to future of EV: lots of cautious optimism



*At the end of the study, participants uploaded images representing how they felt overall about the way things are set up for using EVs in Britain*

*These selected images are representative of the dominant attitude here: one of cautious optimism*

***The key expressions of this cautious optimism:***

- ***There is a long way to go***
- ***But EV users have confidence that technology is moving quickly***
- ***...all in context that EV is the right thing to do environmentally, and will help to bring wider societal benefits as a result***

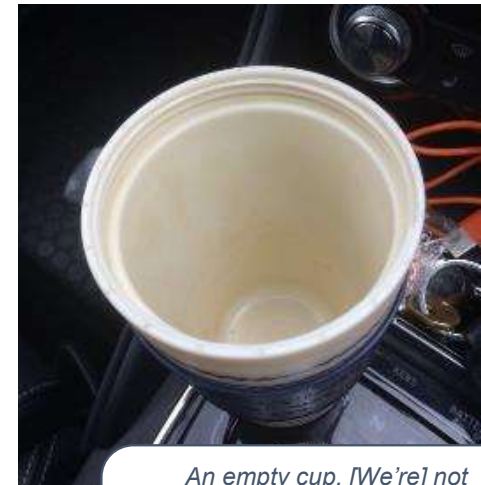
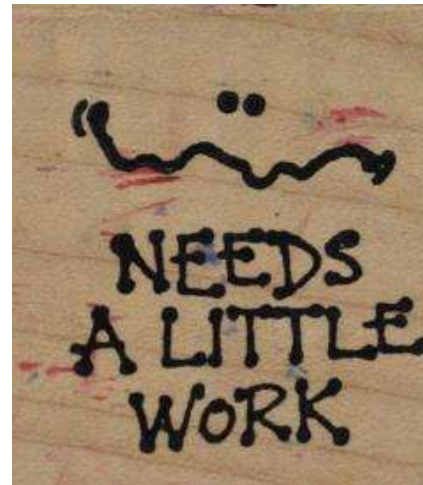
*See notes page below for participants' captions to their images, for additional detail*

...but a real demand for more government and industry pro-activity and conviction



*Needs to build up [from what are scattered components at present]*

*(M, 38, 2-5 yrs EV user)*



*An empty cup. [We're] not adequately set up yet for common use of electric vehicles. Empty promises by gov*

*(F, 61, 6-12m EV user)*

*At the end of the study, participants uploaded images representing how they felt overall about the way things are set up for using EVs in Britain*

*These selected images are representative of a second key theme within EV users' attitudes*

# Users' experiences, and hopes for the future, reveal a desire for real conviction towards EV provision – that they can see

In summary....

**Please make it easy!**

*Providers are not joined up. Not enough collaboration and too many segmented approaches*



See “Easy & mainstream” edit  
*Clips held separately*

Appeal for genuine ambition from government and industry ... with particular expectation for public sector to step up

**Treat EV as the mainstream – think petrol station**



See “Future thinking” edit  
*Clips held separately*

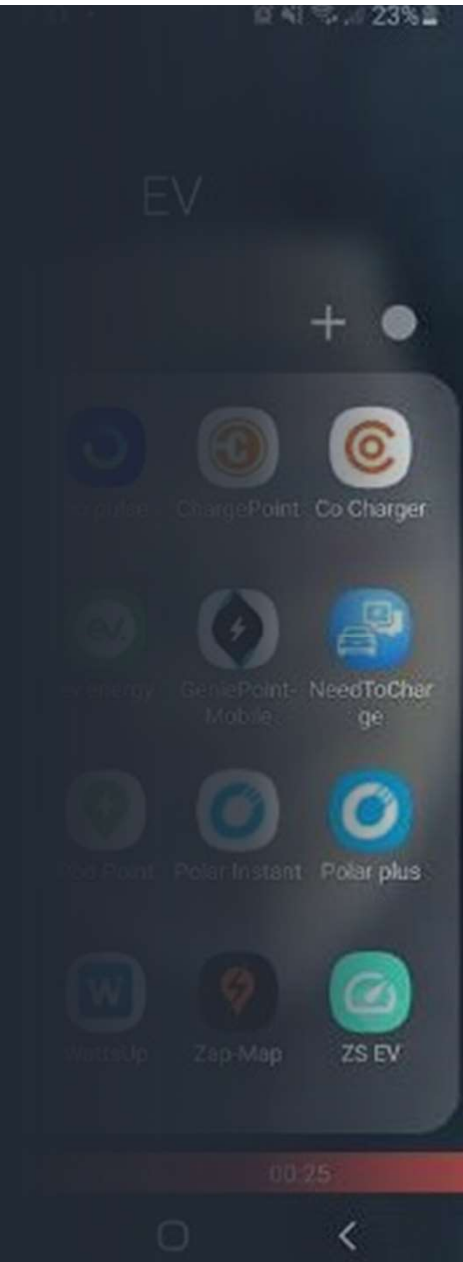
# EV owners: Now and future

*I find it daunting pulling up to charge points because sometimes I don't know how they work*

(F, 45, 1-2 yrs EV user)

*You have to be a bit of an eccentric to want to use electric cars, I think, and you've got to kind of put the effort in to make it work.*

(M, 38, 2-5 yrs EV user)



# EVs and lifestyles: implications for future EV users

## The lifestyle context for EV usage:



### Energy engagement

*EV users are typically also engaged in energy supply generally, having solar panels fitted at home, understanding infrastructure and payment options, typically making deliberate choice of home energy provider based on greener and fairer home energy tariffs... and all of these things are on the rise*



### Reduced car travel (?) = greater spending choice for vehicles

*More working from home, reduced car use (for some)*



### “Self-tracking” = EV management fits in, familiar mindset

*Increase in “self-tracking” – smart gadgets to track weight, steps, heart-rate, energy use.... The way EV use needs to be managed, i.e. with apps and smart integrations – in theory – fits in easily*



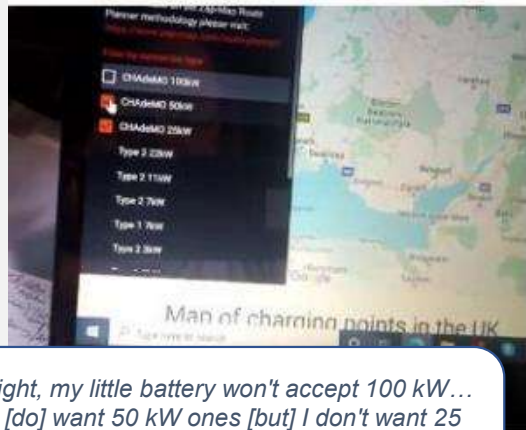
**Many may take issues around EV planning and management in their stride**

But measures will be needed to prevent some from slipping through gaps:

- Understanding payment options / getting best car and home energy tariffs
- Simple to use apps and tools – and education for how to use them
- Specific support for those who have no choice but to travel (by road) for work or to work?

And more integration & engagement = raised expectations for tech = frustration when things don't work seamlessly

# For example: is this level of engagement and technical / practical predisposition for everyone?



Right, my little battery won't accept 100 kW...  
I [do] want 50 kW ones [but] I don't want 25  
kilometres, not much use for me, it's not rapid

(F, 48, 2-5 yrs EV user)

Useful to apply detailed filters within  
planning tools like Zapmap...

Would everyone know to filter in or out  
each of these kinds of granular options?



App showing EV running cost:

- No. trips
- Total mileage
- Battery / range available
- CO2 saving
- Details of charges

Used in demo to check and then illustrate that an  
attempted charge had failed (app connection failure),  
despite car itself indicating that it was taking a charge

*During the study, EV users demonstrated some of the tools they  
regularly use to help plan trip and manage their "EV life" generally.  
Shown here are some stills and commentary taken from screen-  
recordings they provided for these demonstrations.*

*These illustrate some typical behaviours and inclinations among our  
participants, for example:*

- Tight level of granularity in filters used to get the best out of  
tools like Zapmap
- Additional apps and services used to track total EV running cost  
in real detail
- The sheer number of apps typically held on EV users'  
smartphones to facilitate effective EV usage



# There is already evidence that it's easy to get caught out (initially, and even with experience): a few examples

*One of the things I have found with ...charging in general, is there has to be a degree of ...technical knowledge ...Quite often my wife has taken the car to the local M&S and charged it up in the car park there ...but found that it hasn't charged properly 'cause either the RFID card hasn't worked, or there's been something else that's been technically wrong with it and not set it properly.*

*So I do kind of worry to certain degree of how my wife will cope with driving it down the South Coast to see her family... and have to rely on a charger*

*(M, 45, <6m EV user)*

*The planning took about an hour and even then I made a mistake and didn't realise until the charger I was planning to use was showing on the wrong side of the motorway! I had to travel to the next junction, get back on the other side of the motorway and go to the services where the charger was, then travel to the next junction, come off the motorway again and then back on the other side!*

*(F, 45, 1-2 yrs EV user)*

*First time I got there, I didn't have the app – I wasn't expecting to have to use a Genie point [so] I hadn't prepared as well as I should have done. It took me ages to download the app, and then it took me two or three goes to get the thing working. It was working fine, but it was me: user error*

*(M, 57, 6-12m EV user)*



# There is already evidence that it's easy to get caught out: e.g. a series of things EV users need to be aware of



When I first got my electric car, I was making my usual commute from Skipton to Chester in the morning....



Used Google maps to navigate – of course I know the way but this helps me choose the best route to avoid congestion. I followed it without question, and it took me the fastest – but not the shortest – way...



This combined with the cold weather and the car heater being on, meant I got to work “running on fumes” and needed to charge before heading home.

(I now tend to wear extra clothing and avoid using the heater\* unless really necessary)

*\*common behaviour among EV users!*



Headed to a charger near to work – only to discover that it wasn't working as normal so what should have been a 7kw output was only 3kw. This meant I didn't have time to charge sufficiently for the full journey home....

...it also took me a few attempts to get it to work at all



So I had to stop on the way home, in a shopping mall car park. The chargers there were also very slow....



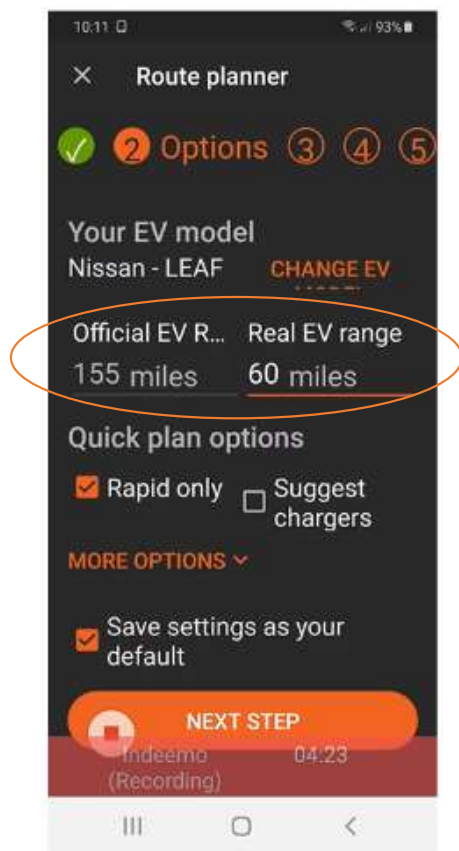
...So I gave up and stopped again, at a motorway service station, to get enough charge to get all the way home

*Paraphrased description of a difficult trip made by one participant when he was a novice EV user. Demonstrating the ease (as a new user) of making small mistakes, having minor misunderstandings about how best to manage EV charge, and underestimating the need to plan even for a very familiar journey*

*(M, 44, 1-2 yrs EV user)*

This demonstration of common and easy mistakes implies a need for education and/or support as EV use increases, as well as highlighting that we cannot assume that future EV users will be as engaged and competent with the amount of effort required, as the current EV community appears to be

# There is already evidence that it's easy to get caught out: e.g. mileage an easy place to trip up



*[Mileage]: this is one of my real problems with electric cars. When I first got the car, I was told [it] would charge to about 120 miles, that I would be absolutely fine to drive all the way to [work] and back because that was only about 60 miles ....*

*[But] you don't always get a charge of 120 miles in your car, some days ...it'll be maybe 110 miles, ...92, and some days it's like 84.*

*When you've got a 60 mile round trip, you can think well, all of those will be OK ..... [But it] doesn't work like that....Because I am going on motorways ... and if you're going uphill, ...if it's raining, ...you've got your wipers on, if you put your heat on, it instantly takes miles off you.... a 30 mile one way trip will cost me about 50 to 55 miles in my car.*

*(F, 35, 6-12m EV user)*

*The official miles that I get is 155 miles, which is ridiculous.... So the good thing about this [app] is that it says a real EV range so I can put in the [realistic] range.*

*(F, 48, 2-5 yrs EV user)*

Lots of users talk about the realistic range being a lot lower than the advertised mileage range.

Apps like Zapmap allow for this – which is appreciated

For most the real vs advertised range is not a big deal, meriting an eye-roll.

But for shorter range vehicles in particular it can be a real frustration.



**Should EV manufacturers be mandated to provide more realistic mileage range, and to highlight the factors that reduce this further in real journeys?**

And/or, since it's such a staple fact of EV life, **should there be better information provided generally about the factors which reduce mileage?** This would help those considering a switch to EV to choose the right vehicle for their lifestyle, and help novice EV users to avoid real problems.

# Summary



# Summary: electric vehicles bring benefits and even enjoyment, but usage requires effort

## **EV owners really love their vehicles and the overall experience of driving electric:**

- Running cost saving versus fossil fuel vehicles
- Enjoyable driving experience
- Environment of course a key benefit for many (but not all, and overall definitely secondary to cost).

## **EV usage requires some additional engagement compared to fossil fuel vehicles. Much of the time this is straightforward and even enjoyable – but not effortless.**

The effort required is multi-layered, but centres on:

- Practical usage of and payment at chargepoints
- Planning for trips and managing EV charge

Current EV users are typically engaged, willing to put in the effort, and reasonably confident with tech – all important attributes for managing, planning for, and using their vehicle in practice. But it seems likely that, as EV use extends beyond these 'early adopters', it will be necessary to reduce the effort required. If not, for some, this could limit their travel once fossil fuel vehicles are not available

## **Industry and government will need to work to break down the effort currently required of EV users:**

- Streamlining EV infrastructure, and pro-actively maintaining and expanding it to meet ongoing and increasing demand
- Simplifying and improving information used for planning trips and management of EV usage
- Informing / educating and supporting drivers to empower them to make use of EVs, its infrastructure and information ecosystem

# Summary: charging EVs in practice

**Most of the time charging electric vehicles is straightforward**

**However, problems are not uncommon.** This causes stress and frustration, and has tangible effects to spoil journeys or lead people to avoid certain types of travel, or choose other transport options.

Problems can be categorised in three main areas...

- Operational issues
- Complexity of usage and payment, as a result of multiple, unconnected network providers
- Access to and environment at chargepoints

**....and should be addressed with a mix of more robust maintenance, reduced complexity of network infrastructure, and a stronger emphasis on customer service** around the whole chargepoint experience

# Summary: information to plan for and manage EVs

**Planning for and managing EV battery life is well supported with comprehensive, useful tools and information** which are easily accessible; and most of the time, planning and managing EV journeys works well.

However, again, **problems are encountered often, and the task can be complex.**

There are a number of ways in which information can be improved and made more consistent, but users' priorities are:

- Better **accuracy and consistency of charger location data**
- More **up to date (ideally real-time) status information** about chargers
- And again, a **streamlining of the networks and organisations involved**

# Summary: further insights around charging and managing EVs

Despite real issues around reliability, there is a general feeling that charger networks and provision is improving and expectation that this will continue (at pace)

Coverage of chargepoints is an issue for EV users, but less so than it is a perceived barrier for current non-users. Of course expansion of the charging infrastructure must keep pace with increasing uptake, but continued commitment to ensuring reliability of existing chargepoints also seems crucial in achieving good coverage.

Tesla experience is notably different – lower effort and frustration due to widely available, reliable charging, and frictionless planning

The existence of a premium vs “standard” offering in EV seems to be accepted. However Tesla’s infrastructure sets a benchmark, and the ambition – from users’ perspective – for the rest of the industry

# Summary: looking to the future

**EV users are cautiously optimistic about the future**, i.e. looking towards 2030 when non-EV sales are planned to cease in UK.

But there is **explicit expectation on government to do more** to bring the whole infrastructure up to speed – **including a mindset change, where EV is given the status of petrol and diesel transport**

**And a plea for all players, across private and public sector, to become more aligned.** This relates to both:

- The immediate need to simplify the way things work currently
- A perception of the industry as “a tangled mess”, which can reduce confidence that everyone is working together and therefore that things will keep pace with demand, and that the big ambitions will be met

# Appendix



# Methodology

Over four days (March 26-29th 2021), 26 electric vehicle users in England responded to a series of “tasks” via smartphone/online research platform Indeemo.

Tasks included describing the way they used their EV, what they like and dislike about how things are set up for EV use in England (with an emphasis on SRN infrastructure), demonstrating where and how they charge their car at public charge points, and demonstrating how they go about planning for journeys that will involve a charge.

Participants responded to these tasks by making short selfie videos, uploading captioned images, and typing text answers in their own words. They also made screen-recordings with spoken commentary, and took screen shots and photos, to demonstrate how they used apps and other tools (e.g. maps) on their smartphones or desktop computer. The research moderator probed with additional questions for more detail or clarification where needed.

Responses to the tasks provided rich qualitative insight into the way EVs fit into users’ lives, and how people manage all of the aspects of owning and running an EV in 2021. The material also provides valuable, engaging, visual evidence for the highs and lows of EV usage, and users’ attitudes and priority needs for the future.

*Note: this research took place while Covid-19 rules were in place to restrict travel. While this meant that many of the participants did have a need to charge up their car at a public chargepoint during the research period, journeys made during this time were less frequent and over shorter distances than they typically would be. Therefore, some demonstrations of chargepoint usage were made using local chargepoints, rather than always being those along the SRN (though some still were). Nevertheless, the demonstrations given were highly revealing, acting as useful stimulus for participants to commentate on their usual experiences and attitudes around the charging infrastructure.*

# Study participants

26 electric vehicle owners took part in this research. All participants had experience of using the SRN and the chargepoint infrastructure along it (as well as other “local” chargepoints, and in many cases, chargepoints in other countries).

Participants included:



Mix of ages (23-67), gender and ethnicity



Living in regions all across England, and with experience of a range of motorways and A-roads



Owners of different models (6 Tesla owners, 3 electric van owners, several owned more than one EV, and/or petrol or diesel cars as well)



Range of experience with EVs (from <6 months to >5 years)



Variety of typical usage frequencies, distances, and journey purposes



Most had access to charging facility at home (usually but not always on a private driveway), or work.

2 had no access at either home or work.



3 explicitly mentioned having a physical or mental health condition which affected their daily lives; a further 2 had experience of travelling with a family member with a disability or health condition.

(No specific intention was made to recruit a given number of disabled EV users)

Department for Transport: consultation

# The consumer experience at public chargepoints

The consultation seeks proposals in four specific areas to ensure that all consumers can charge their vehicle in a way that is as straightforward as refuelling a conventional vehicle:

- making it easy to pay - a minimum standard for payment, ability to 'roam' across networks;
- opening up chargepoint data – making location data easily accessible
- using a single payment metric – standardising on 'pence per kilowatt hour' to make comparison easier
- ensuring a reliable charging network - seeking 99% reliability across the public charging network.

It also seeks evidence on three 'emerging policy areas':

- accessibility for disabled consumers
- weatherproofing and lighting
- signage



Thank you