



EV driver survey report 2021



newmotion

A Member of the Shell Group

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Introductory letter

This year, the NewMotion EV Driver Survey spoke to its largest, most diverse group of respondents yet. While the demographics of EV drivers don't (yet) fully reflect those of society at large, more people are buying into electrification, [sales are soaring](#) (IEA, January 2021), and we are well past the point where EVs are just for one or two 'types' of people. As we are a part of the Shell group, we share a common mission - to enable emission free transportation for all. We have committed to operate 500,000 customer owned charge points by 2025, up from around 60,000 today. These are charge points for businesses, fleets and individuals at home, at work and on-the-go.

That gives us a big job to do. Early adopters are often willing to put up with inconvenience for the sake of their passion; today's new adopters may be less forgiving. This research is designed to give us the insight we need to create an EV experience that works for everyone.


The results are fascinating. We found that drivers are creating new rituals around EV driving, with 95% noticing changes in their driving behaviour since going electric. They are switched on to the urgency of greener lifestyles, with 58% of drivers choosing an EV for sustainability reasons versus 34% for financial reasons. 60% agree that smart charging is a key way of encouraging further EV adoption. As always there are still areas for improvement: for example 59% of respondents need to carry multiple cards for on-the-go charging so extending networks of charging infrastructure continues to be an important priority in keeping the barrier to switch to EVs as low as possible.

This real feedback from EV owners should be a guide to how we can improve for the future. With over 10,000 respondents from five key European markets offering their time for this research, it's the most comprehensive dataset of its kind. Reading this report, you will get a fresh insight into the EV driving and charging experience, showing clearly where the industry's expertise needs to be focused.

Personally, the insights from our customers demonstrate we are on the right path. I'm looking forward to helping make the next phase of transition to EV's and EV charging a reality I hope your enthusiasm is similarly sparked.



Melanie Lane,
CEO at NewMotion

A handwritten signature in grey ink that reads "Melanie".

Executive summary

NewMotion's EV Driver Survey 2021 is the largest survey of its kind in Europe. More than 10,000 EV drivers across Belgium, France, Germany, the Netherlands, and the UK participated.

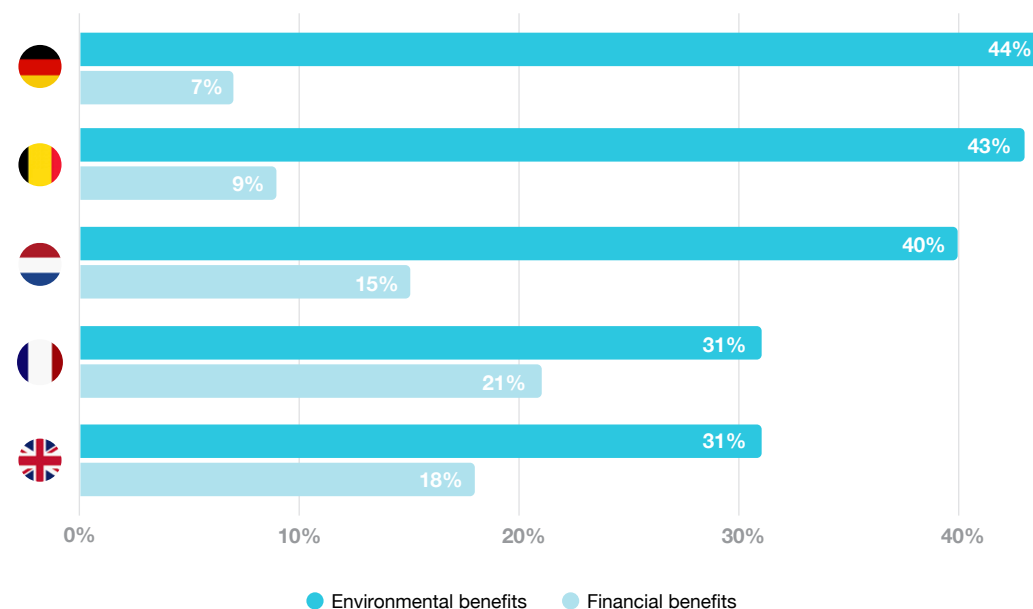
5,713 Germany
3,652 Netherlands
511 France
510 UK
200 Belgium



Top 5 reasons for choosing a particular charge point

	2021	2020
1. Ease of use of the charge point	47%	52%
2. Cost of charge point	32%	33%
3. Recommended by my car dealer or employer	32%	26%
4. Charging speed	30%	25%
5. Smart functionalities	21%	19%

Environmental benefits outrank financial reasons for choosing an EV



Support for pro-environmental charging functionality



73%

Willing to delay a charging session to help prevent an energy demand peak



67%

Interested in financial benefits for using my EV's battery to help support renewables



60%

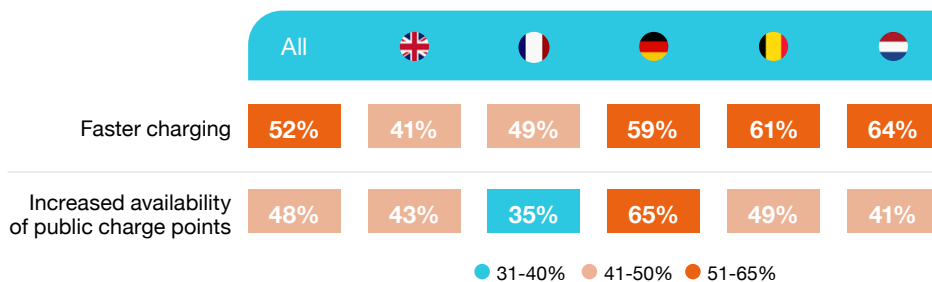
Believe that smart charging would help encourage EV ownership



57%

Willing to charge more slowly to help maximise renewable energy usage

Speed and availability are the biggest desires for an improved charging experience



Those who charge at home are more aware of their energy usage

61% | Since I started driving electric, I am more aware of my home energy tariff

77% | I would be interested in a dedicated EV energy tariff for my home

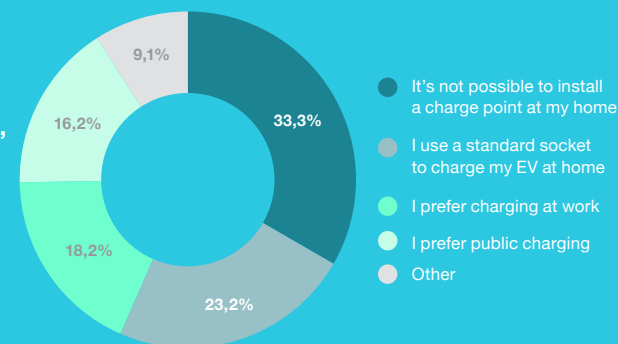
On the go, most need multiple charge cards to get the job done

59% | Have two or more charge cards



Only 4% of EV drivers are planning on switching back to petrol or diesel, and 8% are considering hydrogen

Home charging isn't possible for everyone, for a variety of reasons, increasing the need for access to charging infrastructure at the workplace, at retail locations, and on-the-go.



Methodology and respondents

This is the largest survey of its kind in Europe. Speaking to more than 10,000 EV drivers across Belgium, France, Germany, the Netherlands, and the UK, NewMotion gathered real-world data on key questions for stakeholders in the EV and charging sectors, from attitudes to public charging networks, to expectations for the future of e-mobility, to the changes that EVs have on driving behaviours.

The range of respondents was broad. Two-thirds were aged 25-54, in the central section of their working lives, meaning that many were outside this traditional age (50+) range for the EV market. Drivers in the UK skew particularly young, with 16% of them under 25, while Belgium has the strongest cohort of over 65s, at 17%.

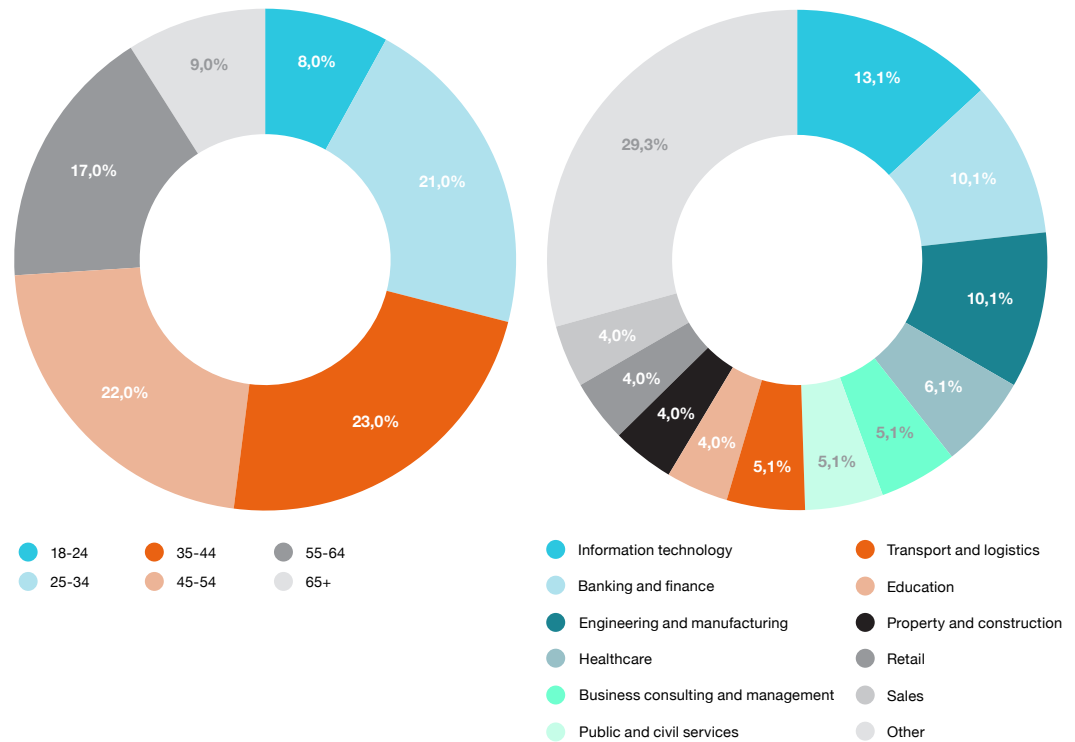
In terms of profession, many likewise work in the industries we would anticipate, with banking and engineering professionals each making up 10%, and IT being the most strongly represented sector at 13%. That leaves two-thirds of all drivers coming from other areas, and we had responses from people in every walk of life, from healthcare, to science, to the civil service. In 2020, for comparison, 20% of our respondents were in engineering roles.

The majority have at least one other vehicle available to them: for 37%, their EV is their only vehicle, and more than half also have a petrol or diesel car. However, just 17% say that their fossil fuel car is their primary vehicle.

As with traditional cars, private purchase is the most common route to ownership, at 59%. A further 29%, though, told us that they lease their car either privately or via their employer, while the remainder drive their EV as a company vehicle.



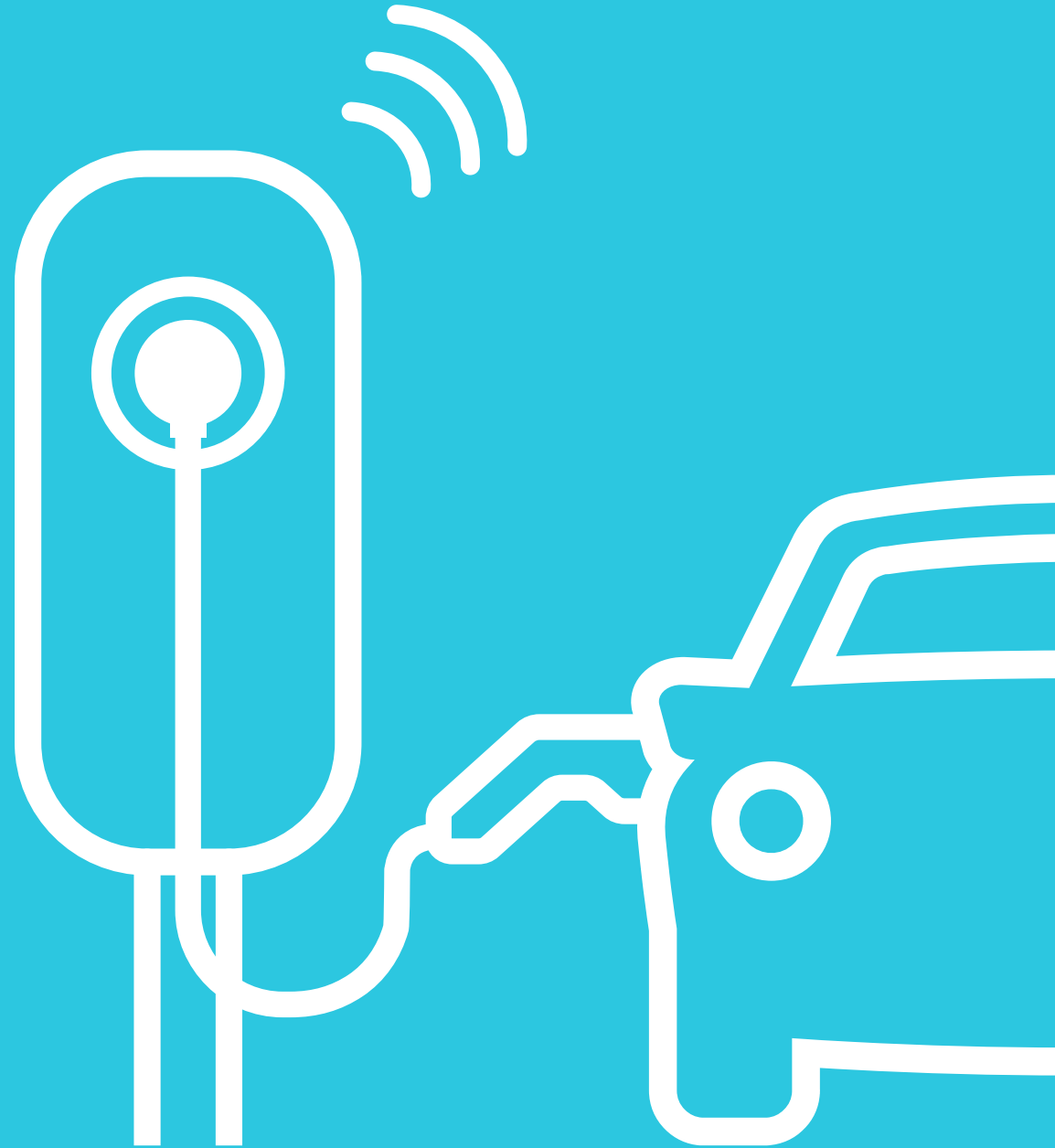
Respondents by age and profession



These base demographics suggest something of the breadth and diversity emerging in the European EV market – it may no longer make sense to think in terms of a single ‘average’ EV driver. As we will see, this diversity is reflected in a diversity of opinion. Our survey uncovered a wide variety of needs, wants, and expectations, and understanding these changes in the market will be vital as the industry builds towards an electric-first world.



The charging question



It might seem obvious to say that the biggest difference between an EV and a petrol or diesel vehicle is how it's powered, but this straightforward fact has big implications for owner's habits and lifestyles. For instance, 46% said that they hardly go to a fuel station any more. The ritual of filling a car's tank is deeply familiar to millions, but moving away from that is just the start of the changes that come with charging. The industry needs to account for a vast range of approaches to charging – and there's plenty of work to be done to develop a charging infrastructure that's fit for the future.

Personal charge points dominate – but are closely followed by on-street

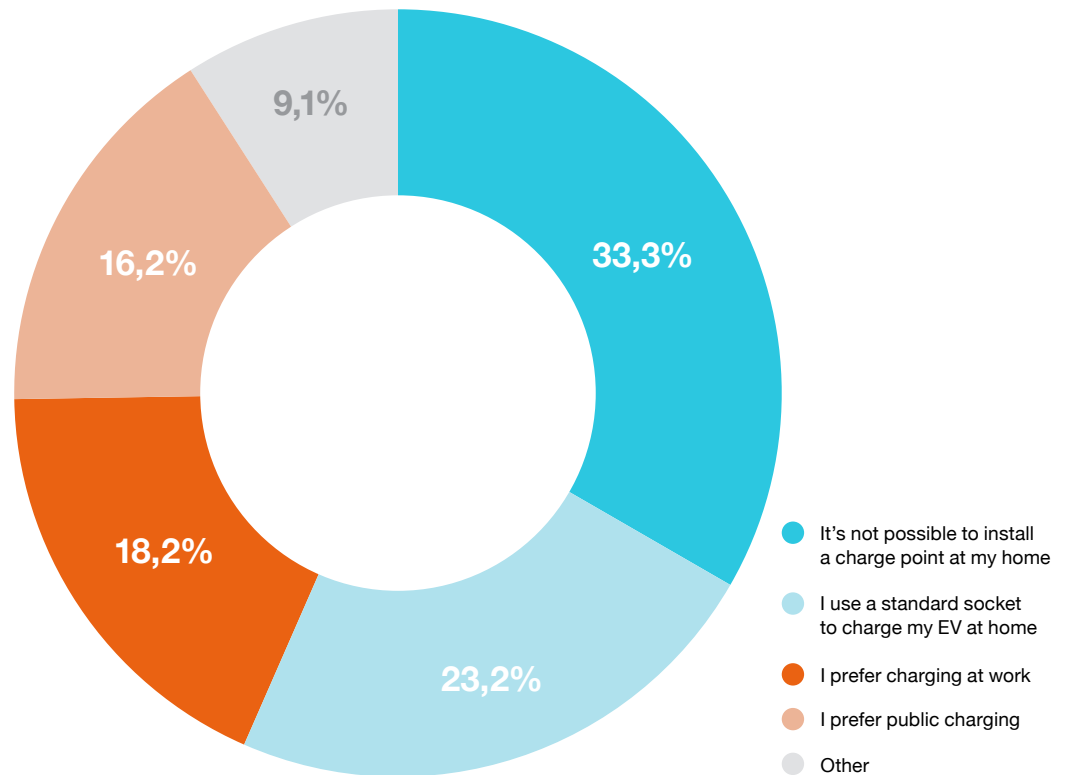
While 84% of drivers have private parking available to them, and are therefore reasonably likely to be able to install a charge point at home, just 68% actually do have a personal charge point. 38% of drivers, meanwhile, have charging points available to them at their place of work, and 15% have neither, requiring them to use alternative solutions such as going into a standard socket or taking advantage of on-street and other on-the-go charging options.

When asked about charging frequency, 40% of drivers say that it is about as expected – but 26% charge more at home than they anticipated, and 17% charge more at work. Those who do have a home charge point seem to be taking full advantage of it: just 9% of that group say they use it less than expected, and 31% that they use it more than expected.

When it comes to charging on the go, 22% are doing this more than they thought they would. On-street charge points are the most popular option for this, being used by 62% of drivers overall, followed by parking garages and shopping and leisure destinations, at 46% each. On-street is particularly prevalent in Germany, where it's used 79% of drivers, while the UK and France have the joint-highest rate of not charging on-the-go at all, at 10%.



Reasons why EV users without a home charge point have not installed one



At-home chargers have an eye on their bills

Home charging often also means making an additional decision about what kind of charge point is right for you. By far the most common reason given for having picked a particular charge point, at 47%, is its ease of use. This was followed by the device's cost and how quickly it charges, at 32% and 30% respectively.

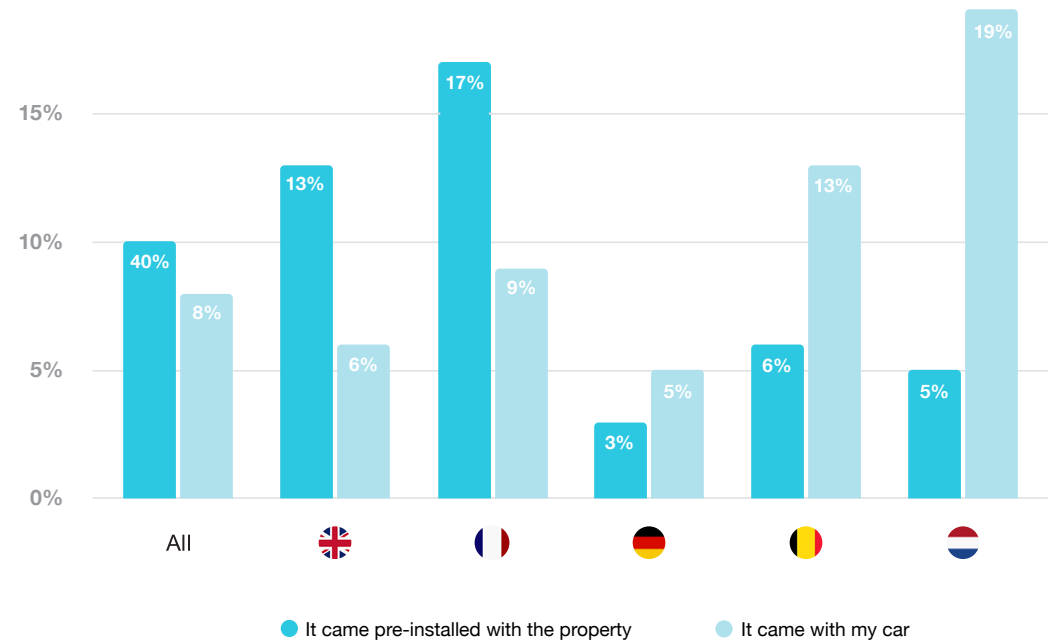
Top 5 reasons for choosing a particular charge point

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Of course, not everybody has to make this decision when buying an EV: 10% of charge point owners say that it came pre-installed with the property, while 8% say that it came bundled with the car. As EVs become even more widespread, homes with charge points already installed will also become increasingly common.



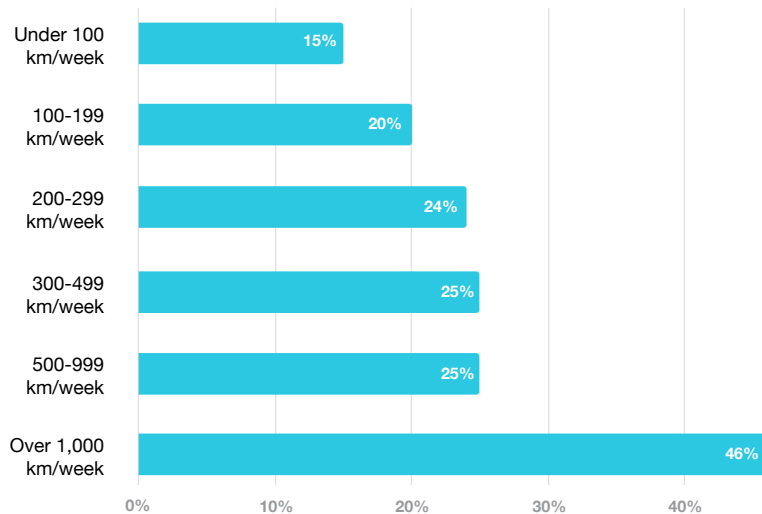
Reasons why drivers didn't choose their own charge point



Home charging is, of course, a significant additional source of electricity usage: an average EV battery can hold enough energy to power a standard European home for a week. This means that energy tariffs will be much more important for EV drivers. Indeed, 60% agree that they have become more aware of their energy usage since going electric, while 77% say they would be interested in an EV-specific energy tariff which offers financial benefits.



Percentage of drivers who 'strongly agree' that they are more aware of their energy usage since switching to an EV, by weekly driving distance



Percentage of drivers who say they don't need to charge on a daily basis

	France	9%
	UK	10%
	Belgium	24%
	Netherlands	31%
	Germany	42%

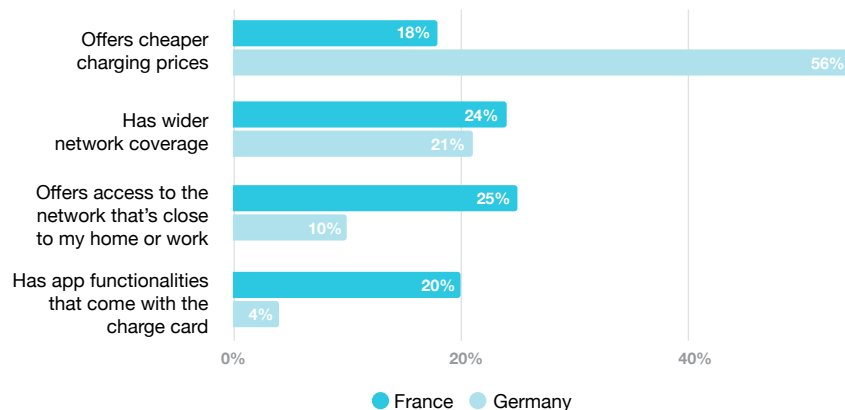
One of the most interesting differences in attitudes towards charging in our data is around whether or not people feel the need to charge every day. Amongst drivers with private home charge points, an average of 22% do not charge daily – but this average is significantly swayed by German drivers, where more than two in five do not feel the need for daily charging.

EV drivers will go wherever the charge points are

While home charging requires the up-front purchase of a device, charging on the go usually means registering with a charging network, giving users access to charging infrastructure on the street and in other public locations. 94% of drivers have at least one network's card to do this, and 76% have two or more.

Of those with multiple cards, 93% say that they have a favoured card which they use more than others. For 37%, this is because a particular card offers cheaper prices than the others, while for 22% it's because their preferred card offers wider coverage and more charging locations. Charging networks are, however, very different in different geographies: in Germany, for instance, more than half of users favour a network with lower prices, while for France this number is just 18%.

EV drivers in France and Germany prefer their favourite charge card because it...



More than one charge card, just in case

Even though having multiple cards is common, it may be the case for many that any additional cards are a 'just in case' measure: 69% of drivers agree that their main charge card gives them access to all of the charging locations they need – the majority of drivers agree in every country, but it is particularly the case in the Netherlands.

The importance of on-the-go charging to the EV lifestyle is underlined by the fact that 57% of drivers agree that charging availability influences where they shop, and 54% agree that they are worried about a lack of charge points in the future; in 2020, 45% of respondents identified with that feeling.

Overall, while our data suggests that charging infrastructure is developing well, it also shows that there is still work to be done. With 37% of respondents never charging at work, and over half using fast charging less than once a month, there is plenty of scope for how we charge to evolve yet further. Availability is not, however, the only way that we can improve this vital infrastructure.



57%

of drivers agree that charging availability
influences where they shop

Percentage of drivers who agree that their main charge card gives them access to the charging they need



UK

60%



France

60%



Germany

78%



Belgium

80%

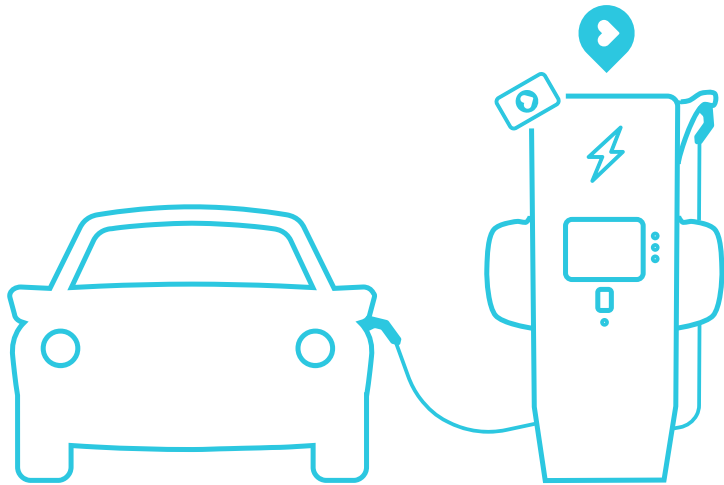


Netherlands

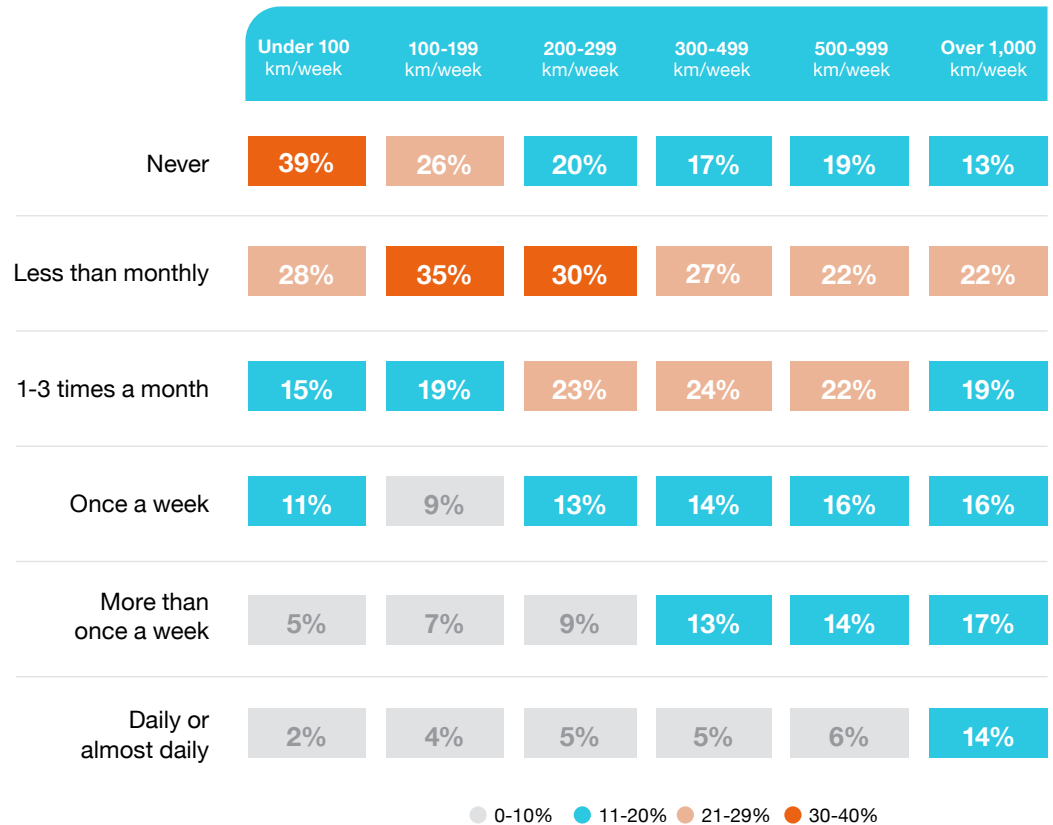
88%

Fast charging is a rare experience for most

Alongside the on-street charge points which are fast becoming a familiar sight in cities, there has also been a growing availability of fast charge points, which are rated at 50kW or higher and can fill a battery in under an hour. Mostly found alongside highways, these charge points make it easier to complete long journeys in a time which is comparable to traditional vehicles. While our longest-distance drivers are much more likely to use them, however, they are not a daily feature of life for many, with less than half using them once a week and 13% never using them.

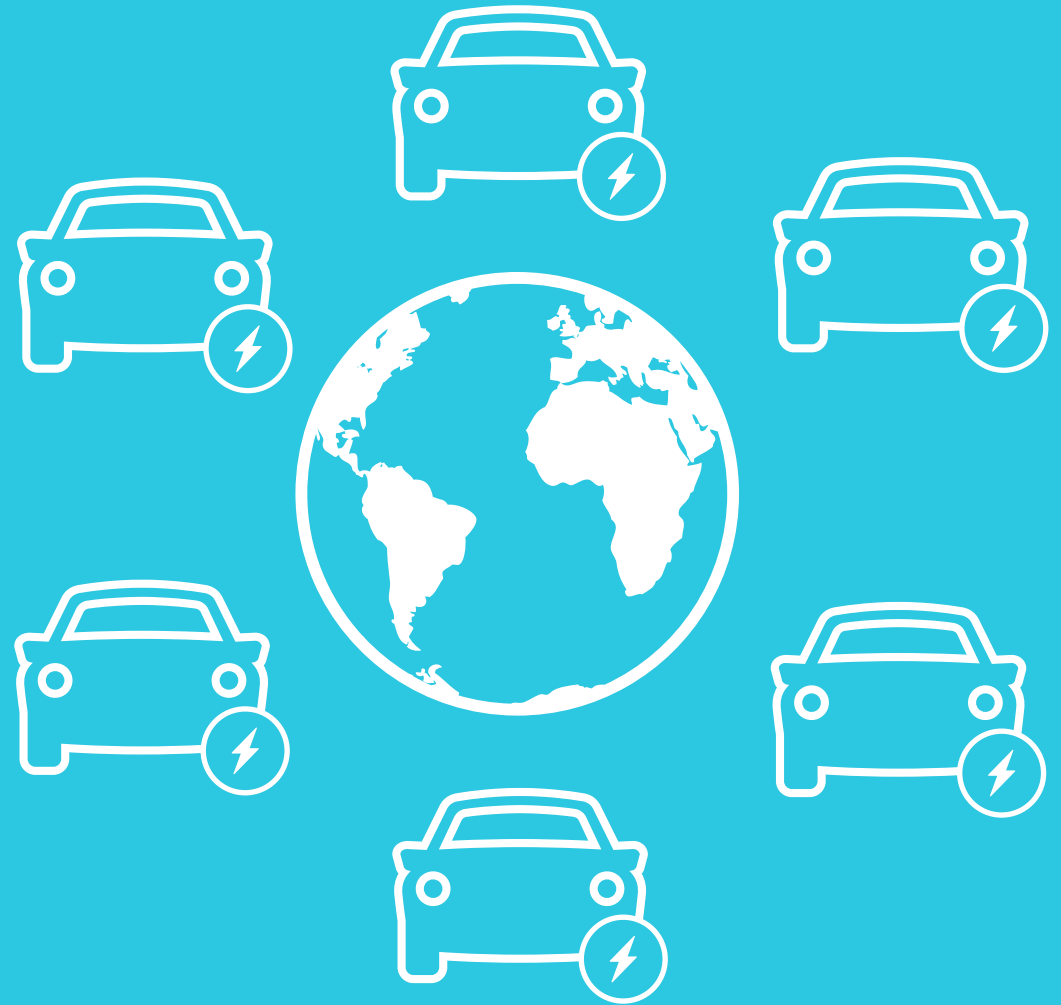


How often drivers use fast charging, relative to their weekly driving distance





The future of EVs and charging



Just as EVs are developing quickly, with better batteries, more efficient motors, and innovative vehicle designs changing what an EV is capable of, charging is also a fast-developing technology. From infrastructure upgrades, to bespoke home energy plans, to integration of charging with at-home renewables, there is broad support for many potential developments in the EV experience. EV drivers aren't returning to fossil fuels, so as charging becomes ever more critical, we will have to innovate in how it is delivered and managed.

The future is more, faster, interoperable charge points

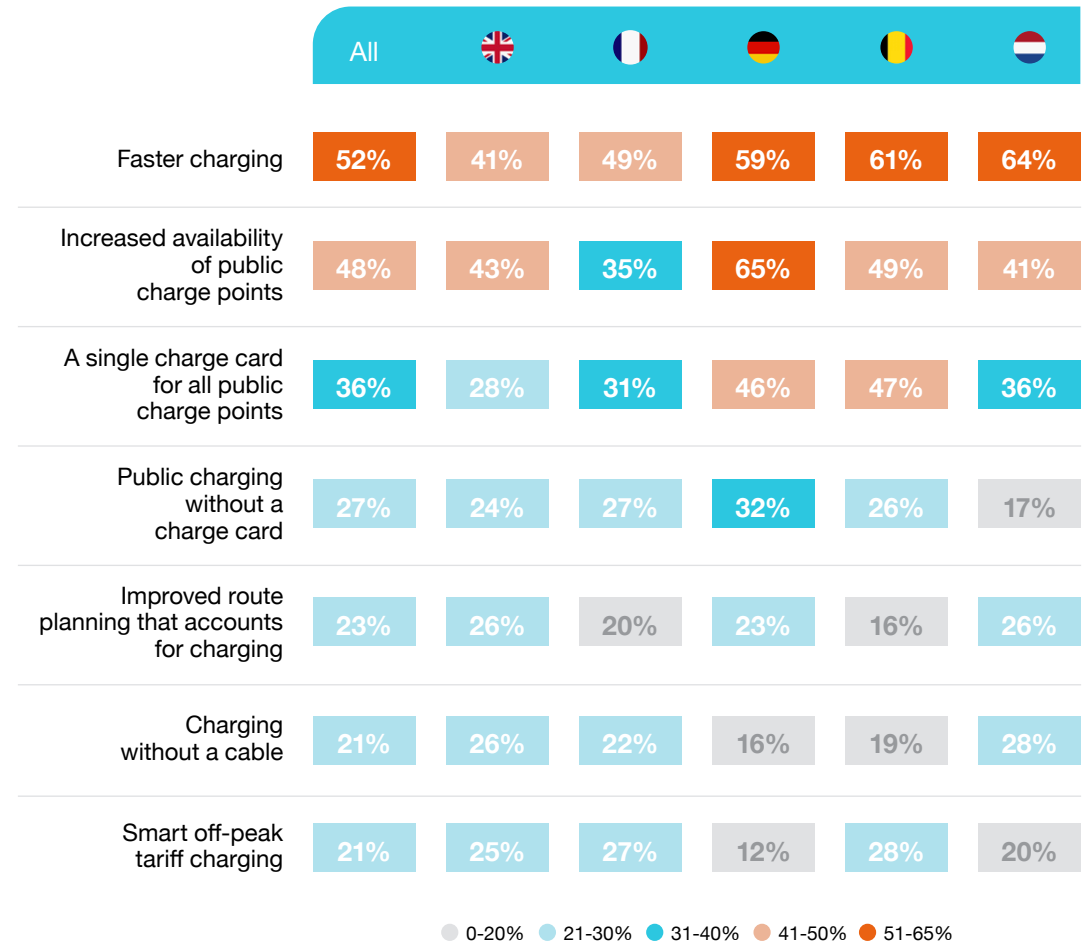
When asking drivers what three changes would most improve the charging experience, better availability of public charge points polls as strongly as we would expect, with 48% choosing it. This is beaten out, however, by faster charging, which is at the top of the list for 52% of drivers. While rapid charging infrastructure is being rolled out on long-distance routes like highways, there is a clear appetite for shorter charge times at all locations.

These two improvements are far and away the most popular ideas: next on the list is charge point interoperability, with 36% wanting a single charge card for every public charge point. This is, in fact, chosen by almost half of German and Belgian drivers.

A range of different approaches to paying for charging may also be popular: when asked whether they would be interested in paying a fixed monthly price for unlimited charging, 39% of respondents agreed and 38% disagreed. Interestingly, this varies significantly by market: over half of respondents in France and the UK agreed, compared to less than a quarter of those in Belgium, Germany, and the Netherlands.



Which changes drivers believe would most improve their charging experience

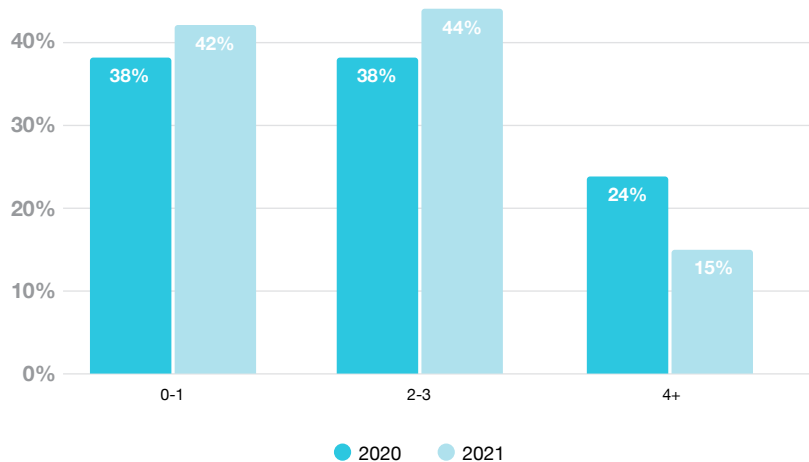


Having multiple charge cards is (slowly) declining

That desire for interoperability corresponds with the fact that 31% of drivers have two charge cards to hand, 13% use three cards, and 15% carry four or more cards with them. It's clear that this situation can be an additional complication that simply does not exist for traditional vehicles, and that this problem threatens to grow more urgent as the number of charge points increases.

It's encouraging, then, to see that the number of drivers carrying many cards seems to be on the decline, with drivers increasingly sticking to the one-to-three cards that get the job done for them. With more interoperability agreements in the future, this should only improve further.

Number of charge cards,
2020 vs. 2021



Percentage of EV owners driving more than 500km per week

 UK	9%
 France	10%
 Germany	16%
 Belgium	25%
 Netherlands	31%

Charging on the go may not be a necessity for most journeys. We found that 85% of EV owners average under 100km per day, putting their journeys well within the usual range of a modern EV. This means that, in most cases, we have the range and charging network in place for regular travel. However, offering drivers the guarantee that they can travel anywhere with their EV, will require building out EV infrastructure to cope with every eventuality, including rare long-distance travel. Faster and increased numbers of public charge points along the highways can be expected.

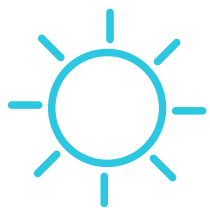
Perhaps counterintuitively, drivers in the geographically smallest countries in our survey are the most likely to travel long distances weekly. The highly urbanised UK has the smallest weekly distance needs.

Home charging should become smarter, too

Home charging is just as ripe for improvement as on-the-go infrastructure is, of course. When asked about a range of potential future technological developments, the most exciting idea for drivers (ranked first by 30% of respondents) was the idea of integrating home charging with at-home renewables such as solar panels. This is followed by the automatic recognition of the car without a card or app, known as Plug & Charge, at 24%.

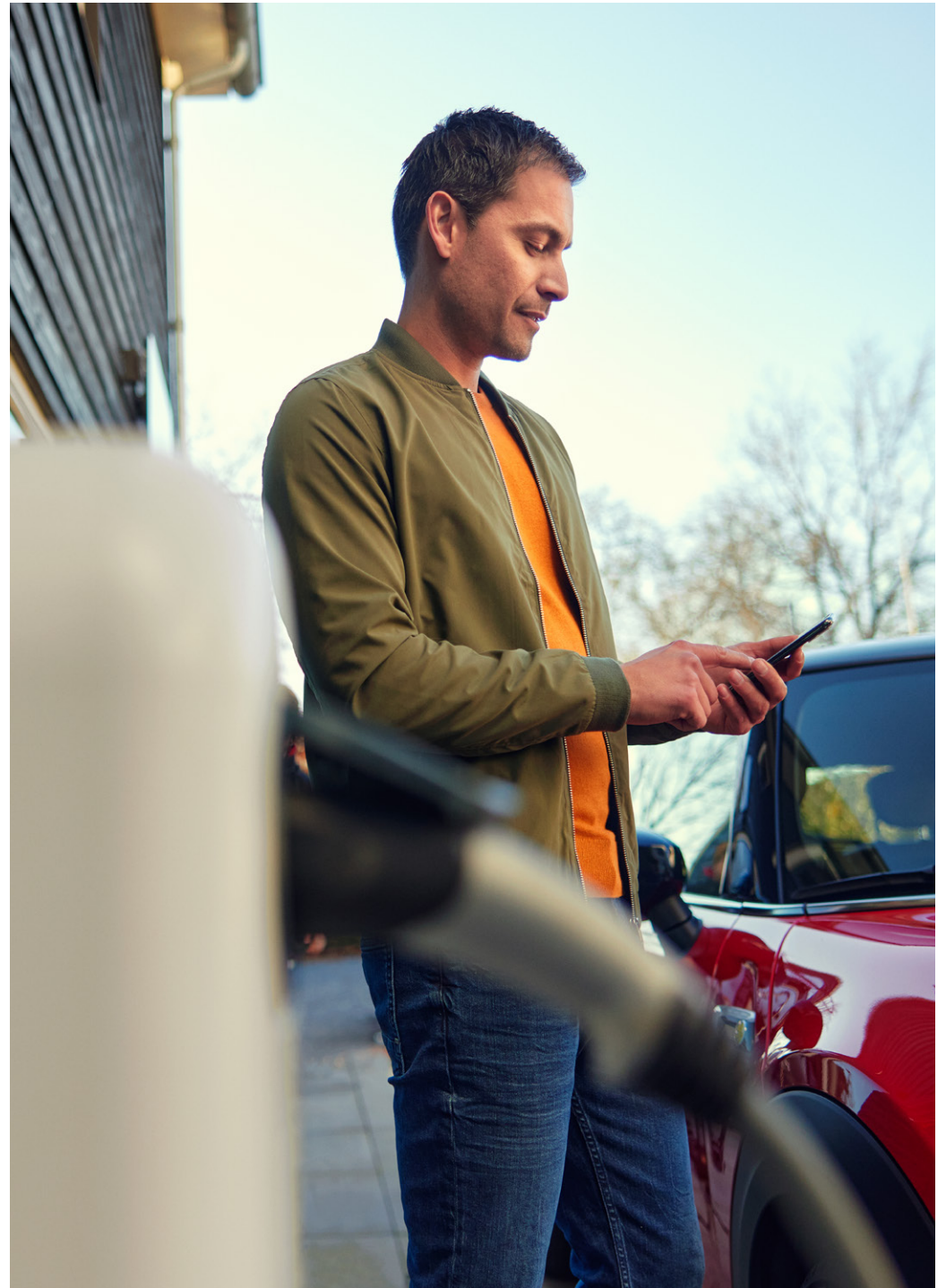
While these are very different kinds of ideas, they both speak to a future in which everything related to e-mobility is easier and more connected, from the power being generated on our roofs to the data being shared between our EVs and charge points.

We also found that certain technologies should be prioritised. Wireless charging, for example, would seem on the surface to be a way of saving a lot of hassle – but it's not yet in high demand, with a full third of drivers placing it as the least exciting innovation in the list.



30%

is most excited about the option to integrate home charging with solar-self-consumption.



We're driving towards a better planet

The acceleration of EV adoption is good news for the planet, but as we move transport energy requirements on to the grid our overall electricity production needs to significantly increase to fulfil the demand. Making that change smoothly will require easing this burden. Charging at off-peak times can help free up capacity, and there is now the potential for smart chargers to make a real difference by adjusting charge speed in real time according to grid supply.

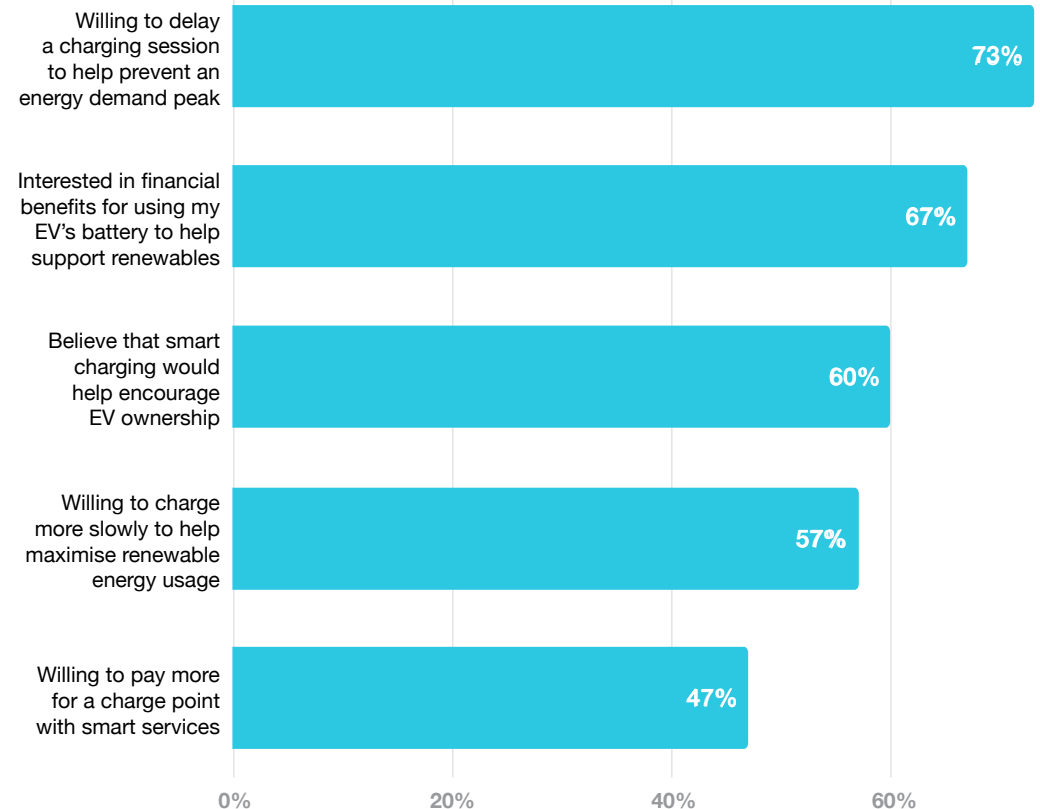
Smart chargers – with communications capabilities connecting them to cloud-based services – are increasingly widely available. Of course, using them in this way also requires the agreement of EV owners, so it's encouraging to see that drivers tend to be on board with this kind of idea. 73% agree that they would be willing to delay charging until later in the day in order to avoid a peak in demand. Charging more slowly for the same purpose is less popular, but still meets majority approval at 57%.

Two-thirds of drivers, meanwhile, would be interested in receiving financial benefits in return for allowing their EV's battery to be used to support the grid. As we continue our electrification journey, both on the roads and in society more broadly, to power the world in a smarter, cleaner way, ideas like this will become more vital.

Perhaps even more important, though, is that future EV drivers are attracted to make the change as these ideas become an everyday reality. And, sure enough, 60% of current drivers think that smart charging would be a good way of encouraging further EV adoption.



Support for pro-environmental charging functionality





The modern EV lifestyle



We all know that a car is often much more than just a car: it says a lot about who we are and what we value. Today, for the majority of EV owners, the biggest things their car is saying is that they want to save the planet and have a great driving experience. As the demographic gets more diverse, though, so will the messages: plenty are in it to save money, and some are feeling a need for speed.

The big motivator is a car that's good for us and the planet

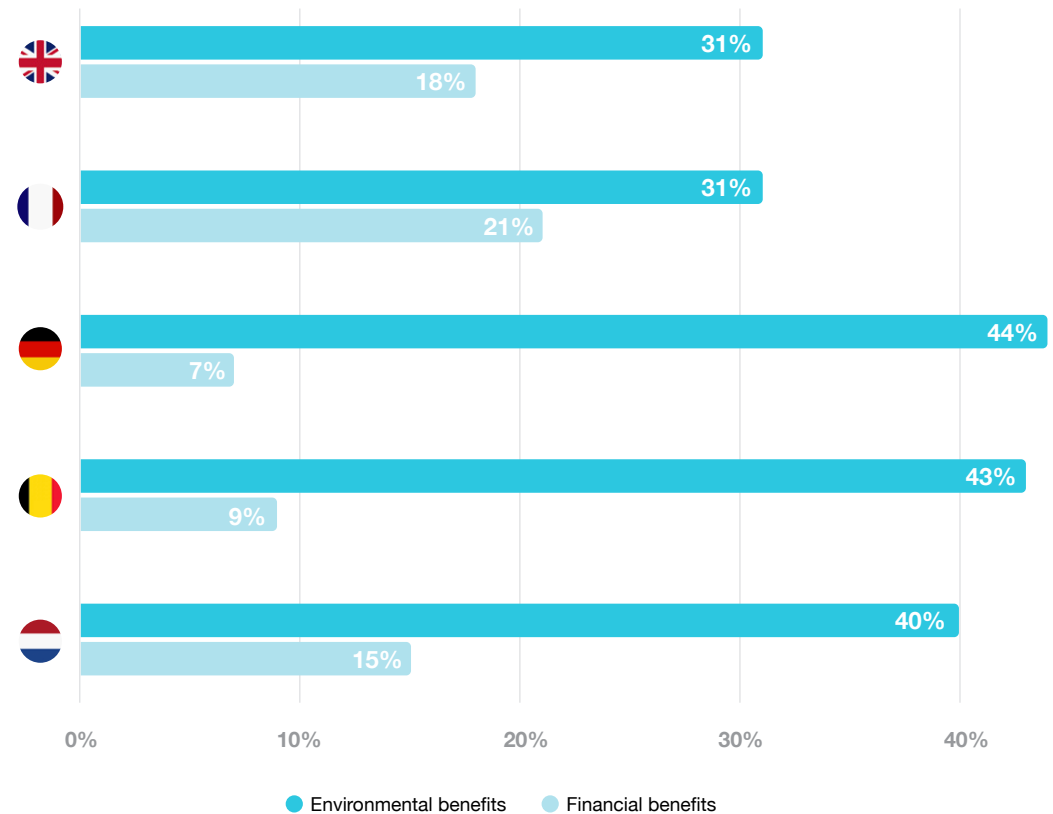
One thing that won't change is that the switch to EVs is being motivated, more than anything else, by climate change. This is obviously the case for governments and businesses aiming to meet emissions targets, and more than half of drivers say that helping the environment is one of their two biggest reasons for choosing an EV over traditional vehicles. The driving experience itself, though, is almost as important, being a top-two reason for 54% of drivers, versus 58% for the environment.

What's interesting here is that factors to do with the vehicle itself seem to outweigh contextual factors for EV ownership. For example, saving money is a key motivator for 34% of drivers, and taking advantage of subsidies and tax breaks for just 28%. While governments have often aimed to financially incentivise EV adoption, it seems that the technological advantages remain the biggest draw. Finances do, however, outrank social pressure: just 3% say that recommendations from their social network is the main reason they drive an EV.

The other side of this coin is what people feel they need to know before switching to an EV, so we asked what they researched before making the move. The biggest question, asked by 57%, was around vehicle range; unsurprisingly, given their longer journey distances, this was researched by 80% of Dutch EV users. Range was closely followed by brands and models (53%) and charging options (48%). While environmental benefits are the biggest reason for going electric, they also seem to be well understood and believed: at 37%, this is the least common research area.



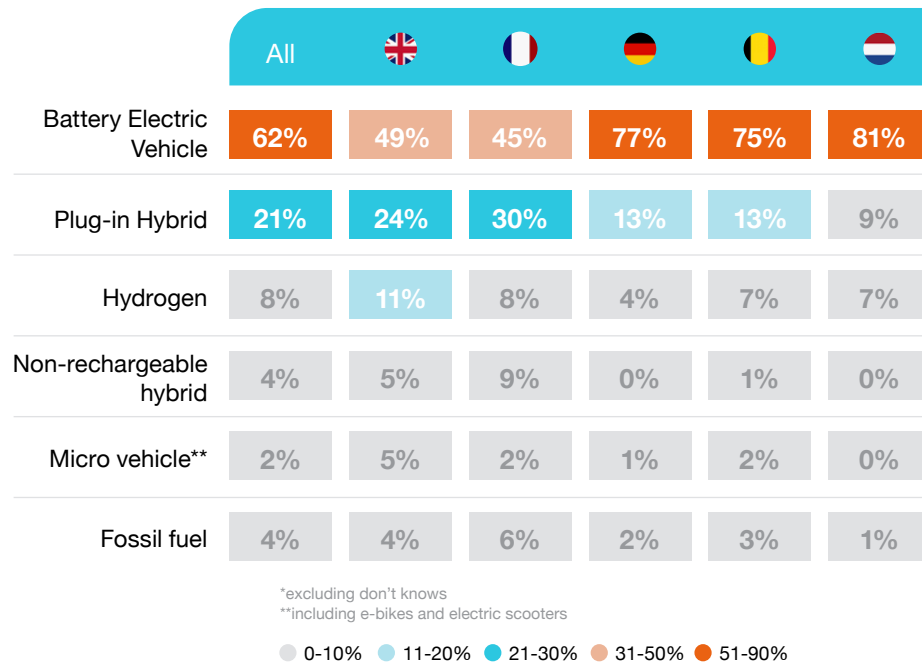
Percentage of drivers saying their most important reason for choosing an EV is the environmental or financial benefits



Now that they're in EVs, few are doing a U-turn

Now that they have gone electric, just 4% of EV owners say that their next vehicle will be a switch back to petrol or diesel. Across our sample, more than 3 in 5 drivers expect to buy a BEV as their next vehicle – rising to 4 in 5 in the Netherlands.

What kind of vehicle EV owners expect to buy next*



Percentage of owners of top-ten brands expecting to buy a BEV as their next vehicle

While just under half of EV owners in the UK are planning on buying a BEV for their next car, we also found that there are more UK drivers looking at a micro vehicle, such as an e-bike or e-scooter, than there are drivers looking at a fossil fuel car for their next vehicle.

Tesla	83%
Nissan	73%
Renault	71%
Hyundai	67%
Volkswagen	61%
Opel / Vauxhall	54%
BMW	50%
Audi	44%
Toyota	38%
Mercedes-Benz	37%

Many are driving carefully – but some are putting their foot down

We choose cars to match our aims and lifestyles – but the nature of the car we buy also affects our behaviour. This is especially true with EVs, where the difference is much bigger than that between two fossil fuel vehicles. Nearly half of drivers, for example, say they have started driving more efficiently, with lower speed and gentler acceleration, since switching to an EV. This is likely to do with range, as gentle driving is likely to preserve battery life. At the same time, 23% of drivers are taking advantage of the higher torque EVs offer and actually find themselves accelerating faster than they used to.

Different drivers react differently to that question of range anxiety. 43%, for example, say that they don't mind leaving for their daily commute without a full battery. 19%, however, no longer use their car for long trips like holidays, and the same percentage take shorter trips on average with their EV. As we will see later, this indicates how big of an issue charging is for EV drivers, but it's clear that the move to electric does have an effect: just 5% of respondents said that they haven't noticed any changes in their driving behaviour.



43%

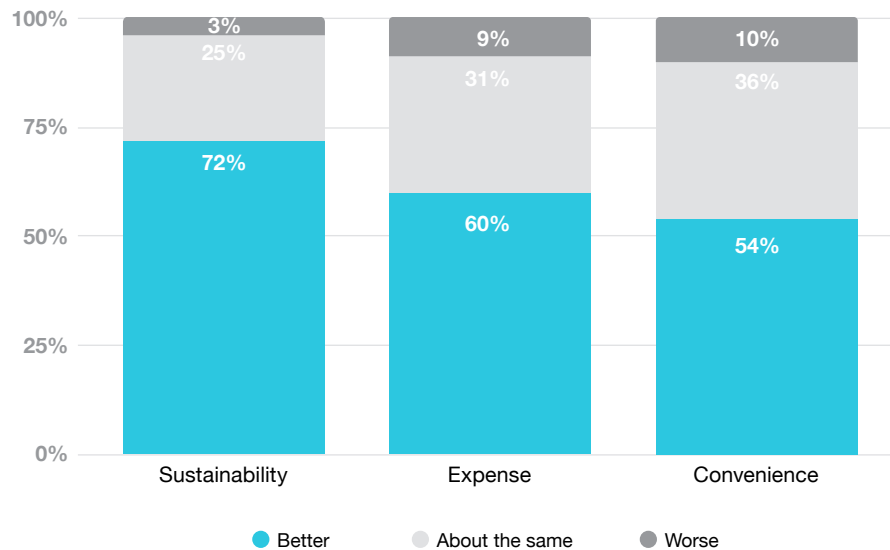
don't mind leaving
for their daily commute
without full battery.








EV drivers give their cars rave reviews

Of course, it's important to remember that the context for our respondents is not just EVs themselves: the majority of cars on the road are still powered by petrol or diesel, and almost all of our respondents will have driven a traditional vehicle before switching to electric. It's encouraging, then, that EV users rate their vehicles very favourably against petrol and diesel cars.

How EV drivers feel that EVs compare to petrol or diesel vehicles



Average of drivers favouring EVs for sustainability, expense, and convenience

 UK	56%
 France	60%
 Germany	66%
 Belgium	68%
 Netherlands	69%

While it's not surprising that EVs rank favourably on environmental grounds, it's interesting that drivers also favour their EV on grounds of cost. In spite of often higher up-front expense, the lower maintenance and running costs of EVs are clearly being felt by drivers. Given that drivers, as we have seen, favour ideas which would make the EV lifestyle easier, it's also good to see how few think that their vehicles are less convenient than the traditional alternative.

Looking at country data for this question suggests that the drivers who are the most positive about their switch to electric are in the Netherlands, while the most negative are in the UK.

EV owners want everyone on board

With the majority of drivers seeing the environment as a key reason to drive an EV – and 36% putting it as their overall most important reason – we would expect to see many owners take an interest in encouraging broader EV adoption.

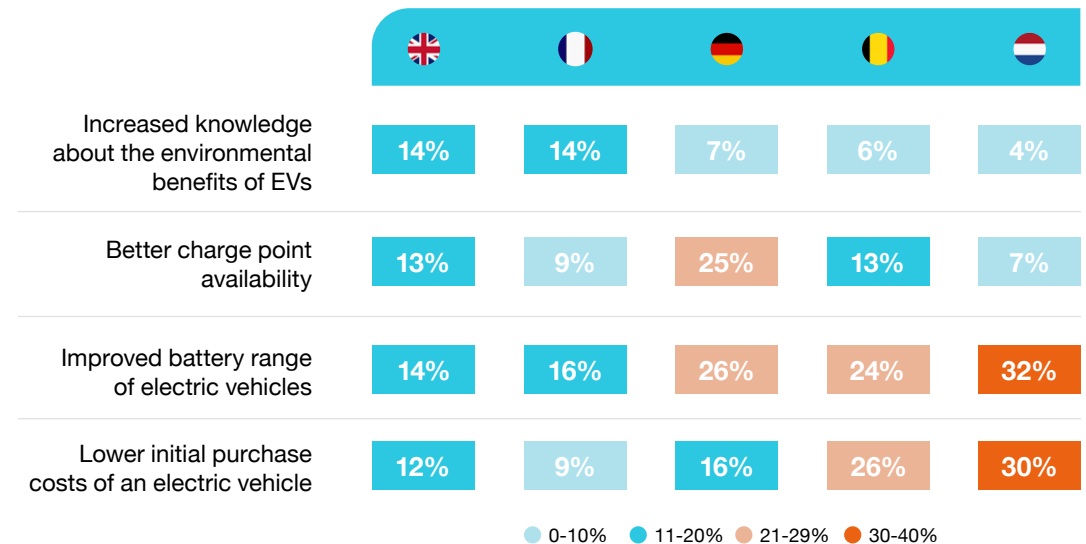
When asked what the best way of doing this would be, one in five owners told us that they believe better range would be the most important driver for mass EV adoption, and over half put it in their top three. Similarly, better charge point availability came in at second overall, with 45% putting it in their top three, ahead of cheaper vehicle costs at 37%.

Interestingly, while just 7% said that faster charging would be their most important factor, it was chosen as a top-three factor by 39%. Charge point availability might be the most obvious charging factor, drivers clearly have an awareness of how EV infrastructure as a whole could be improved: in a separate question, 60% of respondents agreed that smart charging would be a good way to encourage adoption.

Looking at the tax initiatives which governments often turn to, 23% placed higher taxes on fossil fuel vehicles in their top three, while 22% did so for tax benefits for EV purchases. Taxing traditional vehicles more harshly was also, however, the most disagreed-with policy on offer, with 18% saying that it would be the least important initiative in the list.



Percentage of drivers saying that the most important driver for mass EV adoption would be...



Building EV momentum

Ending this report by looking at how EV drivers think that others should be encouraged to make the switch, it's important to remember that the most important stakeholders for encouraging adoption are not governments, car manufacturers, or charging companies, but current EV owners. While social recommendations may not be a main reason for driving an EV, the reputation of EVs as capable, enjoyable cars is vital to give people the confidence to make the change.

We should always, therefore, be seeking to improve the experience for EV drivers. The data in this report shows us that the inherent qualities of an EV matter more than financial initiatives: sustainability and driving experience are what get people through the door. Once on board, their driving behaviours change significantly, in ways that can have all kinds of impacts on their lifestyles. They take shorter trips, favouring destinations with charging infrastructure. They go to petrol stations much less often. They pay more attention to their energy bills, staying aware of their EV's total cost of ownership.

But vitally, they show few signs of regret or nostalgia for petrol and diesel vehicles. What EV drivers are looking forward to is not an experience more like traditional vehicles, but quality of life improvements which are specific to the EV experience. While most charging happens at home, there is a keen need for faster, interoperable charging networks which can support all kinds of journeys with fewer complications. Home energy tariffs which reflect the reality of EV ownership will make power usage more cohesive and manageable. And smart charging, especially when it offers benefits to both user and planet, will be a significant step forward in how we use and live with EVs. At NewMotion we learned from these insights that we will need to continue to improve the charging experience. For instance, by creating a larger network of public charge points, and by providing better access to them via roaming. Through innovations, a smoother and smarter home charging experience, as well as a more efficient experience at the workplace or retail locations, will be achieved.

E-mobility is the rare thing we all look for: an enormous market opportunity that can significantly improve the world. Just as EV owners are excited about their vehicles, it's an exciting time for us to be in the industry.





About NewMotion

NewMotion is Europe's leading smart charging solutions provider for electric vehicles. Operating more than 60,000 charge point installations across the region, our mission is to enable everybody to drive as many kilometres as possible powered by clean energy with a focus on business and home locations.

With access to 200,000+ charge points in 35+ countries, we are the largest roaming network in Europe. More than 400,000 registered drivers use NewMotions's charge card or app for a seamless charging experience on-the-go. As a member of the Shell group, NewMotion is ISO 9001 & ISO 27001 certified and proud to have played an active leading role in the industry since 2009.

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