Electric car drivers: Desires, Demands & Who They Are

Over 2,000 EV drivers in 28 countries told us what they want in future EVs & EV charging
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Executive Summary

In one of the largest electric car driver surveys in the world, *CleanTechnica* recently collected responses from over 2,000 respondents spread across 49 of the 50 US states, 9 Canadian provinces, and 26 European countries. In this report, we explore these responses in detail, highlighting many unique findings useful to understanding, serving, and growing the electric vehicle (EV) driver community.

This report segments responses by three distinct electric vehicle groups (Tesla drivers, pure-electric but non-Tesla drivers, and drivers of plug-in hybrids) as well as by continent (North America versus Europe). This segmentation unveils clear differences on many topics – which is sensible given the vast variation in user experience for each type of EV and for the two regions, but which we’ve never seen uncovered before.

Range, performance, charging options, and price vary a great deal for these different types of EVs, and we can see the results of those differences in many responses. With regards to region, there are large continental differences in urban design, average annual driving distances, charging infrastructure, and culture that also appear to result
in differences in EV buyer needs, EV driver impressions, and EV life across the two continents.

The report delves into these findings in much closer detail, highlighting important nuance and context, but some of the most powerful responses in general were:

- The largest portion of these early adopters went electric primarily for environmental reasons (33–45% of respondents chose that option as their main reason), but many others did so for financial savings, because they love new tech, for certain driving benefits of electric cars (e.g., instant torque or a smooth & quiet ride), and because of their greater convenience.

- The electric car that respondents most commonly expected to get next (23–50% of respondents) was the Tesla Model 3, but many other respondents planned to next get the Nissan LEAF, Chevy Bolt, Chevy Volt, BMW i3, Tesla Model S, Tesla Model X, and Tesla Model Y. There was huge variation on this topic according to which model respondents currently had, with notable brand loyalty.

- There was a great desire for electric vehicles across several car classes, especially the intermediate and SUV/CUV classes, indicating a clear need for more EV models across a broader range of popular classes.

- Despite many respondents not requiring so much range, the vast majority of respondents do expect their next EV model to have approximately 200 or more miles of range. Though, there was considerable variation in responses, with Tesla drivers expecting much more range from their next EV than other EV drivers.
• There was tremendous demand for cars capable of super-fast charging and Level 3 fast charging, despite the fact that these were seldom used by most respondents.

• There was also a strong and broad desire for cars capable of over-the-air software updates; autonomous cruise control; keyless start, stop, and entry; the ability to preheat or pre-cool the car using a smartphone app; the ability to check charging status on a smartphone app; and all-wheel drive.

• EV drivers primarily found the current charging infrastructure to be convenient, accessible, and reliable, but it was also clear that there’s a lot of potential to improve on each of these matters. There was considerable variation in responses by type of EV.
The vast majority of respondents had home charging and the vast majority of charging was done at home, with only a small percentage of respondents frequently using public charging stations. Though, there was again considerable variation in responses by type of EV as well as by region.

Getting an electric car often led to more energy-efficient driving and greater energy conservation in other areas of life. Though, there was considerable variation in responses according to type of EV.

Depending on group, 28-40% of respondents already had home solar panels.

There was wide divergence regarding which EV purchase incentives respondents considered to be most attractive, implying that several different incentives should be used by governments, utilities, and manufacturers to maximize EV adoption.

Respondents were largely living in relatively small cities or towns, were richer than the norm, and were predominantly male. The percentage of respondents with or without kids living at home was split quite evenly.
• Common misconceptions about EVs that drivers faced from non-EV drivers included misconceptions that electric cars take too long to charge, are too expensive, don’t have enough range, are slow, and aren’t environmentally beneficial. Though, there was significant variation in responses when taking into account the type of EV respondents had and the region in which they lived.

• Respondents primarily bought their EVs – rather than leasing them. Though, there was again considerable variation in responses according to type of EV and region.

Corroborating the findings of the surveys to some degree, on topics that have been studied by others, we found quite similar responses. For example, findings regarding reasons EV drivers went electric and the potential for improvement in charging infrastructure were similar to those recently published in EV-Box’s *Manifesto of Electric Mobility*.

This second annual *CleanTechnica* examination also comes to some of the same conclusions as our first EV report did, and there are not many divergences from our initial study, but there are numerous additional findings as well.

In large part, these additional findings come from our decision to segment the responses by region and type of EV. As expected, there were notable differences between Tesla drivers, non-Tesla fully electric car drivers, and plug-in hybrid electric car drivers, as well as between Europeans and North Americans. We have never seen thorough EV surveys broken out by these three distinct groups before, but we believe it’s important to do so when surveying EV drivers.
Introduction

*Electric Car Drivers: Desires, Demands, & Who They Are* explores the preferences current electric car drivers in North American and Europe have regarding electric car models, classes, special features, range, battery options, and more. It also takes a deep dive into key consumer benefits of electric cars and the best ways to promote broader electric car adoption.

The report briefly peers into the profiles of these initial electric car adopters as well, identifying common demographics (related to income, number of children, and gender) in addition to more niche topics like respondents’ use (or not) of solar power.

The report segments responses according to geography as well as type of electric vehicle. Given vast differences in range and charging capability, responses are aggregated separately for drivers of non-Tesla fully electric cars, Teslas, and plug-in hybrid electric cars. Respondents with more than one EV were encouraged to respond for each type of EV model separately.

We have never seen EV drivers broken into all of these different segments for such a broad and deep study, so we found the results particularly interesting and hope you will too.

Responses were collected on the web over a period of a few months in the 3rd and 4th quarters of 2016. They were collected via online surveys, primarily shared and promoted on *CleanTechnica.com*.

In total, 2,324 unique surveys were collected from respondents via 6 web surveys.
It’s worth emphasizing that there is likely to be self-selection bias inherent in the findings, due to the fact that respondents were not selected by random sample but voluntarily chose to open and complete the surveys. Furthermore, targeting a specific community of cleantech enthusiasts surely pumped more bias into the survey responses, especially if you assume that respondents’ views had been influenced to some degree or another by a handful of primary writers and commenters on *CleanTechnica*.

That said, the respondent breakdown by EV model was similar to the market as a whole, indicating that the people who responded were fairly
reflective of the broader population of initial electric car buyers and lesees.

Additionally, several of the findings do match up closely with findings from other EV studies and publications, like EV-Box’s *Manifesto of Electric Mobility*, again implying that the responses can be generalized to some extent.

It’s also worth highlighting, however, that this study was focused on better understanding the preferences, insights, and user profiles of the most informed and experienced EV early adopters – since it’s expected that these are the consumers most equipped to guide EV development plans, priorities, and policies in the coming years.

The study was especially focused on identifying the differences between adopters of a few types of EVs, since there are sometimes vast differences in the user experiences and lifestyles related to the use of Teslas (which have long range and a vast super-fast charging network, but are expensive), non-Tesla fully electric cars with short or moderate range (60 to 107 miles of range), and plug-in hybrid electric cars (which can run on electricity but can also run on gasoline/diesel like a conventional car).

In total, we believe this report offers unique insight into the desires, demands, profiles, and collective experiences of these three to six distinct subpopulations. In this extremely fast-growing EV market, we hope that you will find this nuance and context as well as the broader study findings especially interesting and useful.
The Respondents’ Current Electric Cars

Before diving into the answers about desired features, coming models, and basic requirements, it’s useful to better understand which cars respondents have been driving. Since the answers in other sections are largely segmented by type of EV and region, I’ll segment the models in the same way for this section.

Teslas In North America

Unsurprisingly, the vast majority of North American Tesla drivers had a Model S (89%), but a significant portion of the respondents did have a Model X (16%) and over a dozen respondents had a Roadster (3%).

In total, 428 of North American respondents drove a Tesla.
Non-Tesla Pure Electrics In North America

Approximately twice as many respondents (873) drove a non-Tesla pure-electric car. Of those respondents, the majority (58%, or 506 respondents) drove a Nissan LEAF.

Approximately 6% of respondents drove a Ford Focus Electric, 6% a BMW i3 (non-REx), 5% a Chevy Spark EV, 4% a Mitsubishi i-MiEV, 4% a Fiat 500e, 3% a Volkswagen e-Golf, 3% a Smart Electric Drive, and 3% a Kia Soul EV. A dozen or so other models were represented in smaller numbers.

Plug-In Hybrids In North America

The second-biggest group of respondents was plug-in hybrid drivers in North America, for which we logged 549 responses.
Fairly reflective of the market, 74% of these respondents (406 people) had a Chevy Volt.

Far behind that but still offering significant numbers of responses were the Ford C-Max Energi (9%), BMW i3 REx (6%), Toyota Prius Plug-In (5%), and Ford Fusion Energi (3%). Another approximately 5% of respondents had other plug-in hybrid models.

Teslas In Europe

Of the 119 Tesla drivers in Europe who responded to our survey, almost all of them (97%) were Model S drivers.

That shouldn’t come as much surprise since Model X deliveries to Europe were still slim when the surveys were conducted and there are only so many Tesla Roadsters out there.
Non-Tesla Pure Electrics In Europe

Responses from drivers of non-Tesla pure-electric cars were dominated by people with the Nissan LEAF (48%), Renault Zoe (18%), and fully electric BMW i3 (9%).

Being the most popular non-Tesla electric cars in Europe, this makes sense in general. However, the Renault Zoe has been the top-selling electric car in Europe for years and is underrepresented here, probably due to it being particularly popular in France, where we have quite limited readership.

Aside from those three popular models, nearly 100 respondents had other pure-electric cars across a dozen or so models, showing the growing range of electric cars on the market and the variety of respondents in our survey.
Plug-In Hybrids In Europe

Among European respondents with plug-in hybrids, three models accounted for approximately 73% of the cars – 34% of respondents had a Chevy Volt or Opel/Vauxhall Ampera (the Volt and Ampera are essentially the same model but with different branding and slightly different styling), 21% had a Mitsubishi Outlander PHEV, and 18% had a BMW i3 REx (which arguably isn’t a plug-in hybrid – it’s a range-extended electric vehicle – but seemed to fit better in this group for practical ownership reasons).

Despite being in the #2 spot, the Mitsubishi Outlander PHEV is underrepresented here. The Outlander PHEV has been an extremely popular model in recent years, but that has been driven in large part by significant incentives in the Netherlands. The Ampera/Volt has done better in the UK, where we have significantly more readers.
Approximately 6% of respondents had the Volkswagen Passat GTE, 6% the Audi A3 e-Tron, 6% the Volvo V60 PHEV, and 5% the Volkswagen Golf GTE. A few additional respondents had the Toyota Prius Plug-In, BMW 330e, and Volvo XC90 T8.
Where EV Drivers Were “EVangelized”

This is one of the topics where responses were most likely to be “warped” due to where the surveys were promoted and self-selection bias. Nonetheless, a quick look at the responses is interesting since it shows that roughly $\frac{1}{3}$ of respondents found out about electric cars from niche media, roughly $\frac{1}{3}$ found out about electric cars from mainstream media, and roughly $\frac{1}{3}$ found out about them from all other sources combined (friends, family, work, etc.).

North American EV Drivers
“How (from where/whom) did you first learn about EVs?”

- Niche Media: 35%
- Mainstream Media: 32%
- Other: 33%
European EV Drivers
“How (from where/whom) did you first learn about EVs?”

- Niche Media: 30%
- Mainstream Media: 42%
- Other: 28%
Why These Early Adopters Went Electric

One of the questions commonly asked in polls of EV drivers is why they decided to go electric. The findings from our surveys matched previous findings, particularly the importance given to the environmental/climate benefit of driving electric – 33-45% of respondents indicated this was their main reason for going electric.

However, we also discovered some notable differences in priorities relative to the type of EV people had and their region (North America vs Europe).

One unsurprising finding was that Tesla drivers were much more likely to have gone electric for the fun/convenience benefits of instant torque. This is a major benefit of record-setting, lighting-quick Teslas. Instant torque didn’t register as high as I had expected for other respondents, however, and not a single PHEV driver in Europe chose that as their #1 reason for going electric. The differences in responses are striking when you look at the chart on the next page.

European Tesla drivers were also notably impressed by and sold on the smooth and quiet ride of their electric cars, with 10.1% of respondents indicating that feature most inspired them to go electric. Otherwise, in the five other surveys, that answer was chosen by no more than 5.1% of respondents (North American Tesla drivers) and as little as 3.2% of respondents (European plug-in hybrid drivers).

Interestingly, European non-Tesla EV drivers were much less inspired by the energy security or national security benefits of electric transport than their Tesla-driving or North American counterparts (1.4-1.6% of respondents versus 5.9-9.8% of respondents). Again, check out the chart on the next page for max effect on that difference.
What most inspired you to get an EV?

- Environmental benefit
- Energy/national security benefit
- Fun/convenience of instant torque
- The smooth & quiet drive
- I love new tech
- Convenience of EV charging
- Low maintenance
- Financial savings
- Other

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Of course, while Tesla drivers fly high on instant torque, they typically aren’t pulled in by any financial savings from driving these large premium-class vehicles.

However, over a dozen Tesla-driving respondents did choose that benefit as the #1 thing that inspired them to get an EV. Presumably, they were comparing costs with large gas-powered vehicles like the Mercedes S-Class, BMW 7 Series, or gas-powered SUVs; or they simply drive a great deal and benefit from the long range and free Supercharging of Tesla vehicles.

Of course, financial savings were a huge factor for other EV drivers, ranging from being the top incentive for 13% of respondents (North American plug-in hybrid drivers) to 23% of respondents (European plug-in hybrid drivers).

I was a bit surprised at how many people chose the simple response “I love new tech” as their #1 inspiration for going electric, with this benefit competing closely with “financial savings” for the second-highest overall reason for switching to an EV (both of which trail far behind “environmental benefit,” as noted above and is exceedingly clear from the chart).
Best Things About Driving Electric

This section is similar to the previous one, but the survey question behind it allowed more freedom (up to three choices instead of only one), which offered a way for us to more inclusively examine the broad palette of electric car benefits.

Additionally, we figured there might be differences between why people went electric and what they discovered were the biggest benefits of EVs after living with them.

“Environmental benefit” was still the leading response, but the gap narrowed hugely for this question versus the previous one. Drive quality was illuminated as a dramatic benefit of EVs in this section. “The smooth and quiet drive” of EVs and “the fun and/or convenience of instant torque” were in close contention for the #2 spot. However, they both concern drive quality and could have been combined if we chose to go that route. In such a case, “drive quality” may well have risen to #1.

The remaining benefits rather evenly split the pie, with some notable differences by region and type of EV, as highlighted in the previous section. However, one more benefit worth pulling out here is “low maintenance.” It didn’t perform well at all in the previous section, but it gets quite a bit of love here – comparable with several other topics, on average.
What are your 3 favorite things about driving electric?

- Environmental benefit
- Energy/national security benefit
- Fun/convenience of instant torque
- The smooth & quiet drive
- I love new tech
- Convenience of EV charging
- Low maintenance
- Financial savings
- Other

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Europe Tesla
Europe non-Tesla pure EV
Europe PHEV
N. America Tesla
N. America non-Tesla pure EV
N. America PHEV
Expected Next EV Model (... As You’d Expect)

With over 100,000 reservations logged in under 24 hours – before the car was even unveiled – it doesn’t take six polls to uncover which electric car tops the list of “expected next EV model.” Nonetheless, the Tesla Model 3 didn’t single-handedly account for the majority of answers for that question, and seeing the precise “future car” split according to these six very different EV-driving groups is fascinating.

As with our initial EV owner report, it’s striking how loyal many consumers are to the brands and models they are currently driving. Of course, given that they chose those brands and models in the first place, they must have had several reasons (or at least one or two reasons) for doing so. Nonetheless, it’s interesting how many Volt drivers plan to get a Bolt, how many LEAF drivers plan to stick with a LEAF, and how many Tesla drivers don’t plan to leave the brand.

With regard to that last point, 91.6% of European Tesla drivers and 90.4% of North American Tesla drivers plan to get another Tesla next – a Model 3, Model S, Model X, or Model Y. That doesn’t even count the people who plan to get another Tesla but don’t know which one, or who don’t plan to get another car at all (don’t expect to outlive their Tesla).

Similarly – but not so dramatically – 20.5% of North American plug-in hybrid drivers (which are primarily Volt drivers) chose the Chevy Volt, and another 18.9% of them chose the Chevy Bolt. In Europe, where the Volt isn’t so widespread, those numbers dropped to 1.6% and 4.8%, respectively.

The following chart provides an overview of the most popular models for respondents’ expected next EV, broken down by the six distinct EV driver groups. After that are more detailed charts for each of those six groups.
What do you think your next EV model will be?

- BMW i3
- Chevy Bolt
- Chevy Volt
- Nissan LEAF
- Tesla Model 3
- Tesla Model S
- Tesla Model X
- Tesla Model Y

Europe Tesla
Europe non-Tesla pure EV
Europe PHEV
N. America Tesla
N. America non-Tesla pure EV
N. America PHEV
What do you think your next EV model will be? [Tesla drivers]

- Audi Q7 e-Tron
- BMW i3
- Chevy Bolt
- Chevy Volt
- Fisker Karma
- Tesla Model 3
- Tesla Model S
- Tesla Model X
- Tesla Model Y
- Volkswagen e-Golf

Europe
North America
What do you think your next EV model will be?  
[non-Tesla pure-EV Drivers]

- BMW i3
- Chevy Bolt
- Chevy Volt
- Hyundai IONIQ EV/PHEV
- Kia Soul EV
- Nissan LEAF
- Renault Zoe
- Tesla Model 3
- Tesla Model S
- Tesla Model X
- Tesla Model Y
- Volkswagen e-Golf

Europe | North America
--- | ---
0% | 0%
6% | 6%
12% | 12%
18% | 18%
24% | 24%
30% | 30%
36% | 36%
42% | 42%
48% | 48%
54% | 54%
60% | 60%

Europe
North America
What do you think your next EV model will be? [plug-in hybrid drivers]

Europe

North America

- BMW 330
- BMW i3
- Chevy Bolt
- Chevy Volt
- Hyundai Sonata EV/PHEV
- Mitsubishi Outlander PHEV
- Nissan LEAF
- Tesla Model 3
- Tesla Model S
- Tesla Model X
- Tesla Model Y
Desired Car Classes

One of the challenges of the current EV market is extreme lack of choice. There are only a few widely available models, and even if you look in the most popular markets (California, Norway, etc.), EV models only account for a small percentage of all the vehicle classes.

We were curious which classes were most desired for future EV purchases and again polled respondents on this topic (simply in regards to size and style, not taking into account price). The results showed the most desired classes were “intermediate-sized cars” and “SUVs/crossovers,” two classes very poorly represented by current offerings. Overall, however, this was one of those topics where responses for some of the options varied markedly from one group to the next.

Non-Tesla pure-EV drivers in both North America and Europe, as well as plug-in hybrid drivers in Europe (where streets are narrower and parking tougher), desired compact cars a great deal. This was actually the #1 choice for non-Tesla pure-EV drivers in Europe, garnering votes from 39% of that group. Non-Tesla pure-EV drivers in North America and plug-in hybrid drivers in Europe each provided a vote of 23% for this class. Tesla drivers and North American plug-in hybrid drivers, on the other hand, were seldom attracted to the compact car class, pulling in only 9% (European Tesla drivers), 5% (North American Tesla drivers), and 11% (North American plug-in hybrid drivers) of respondents.

Tesla drivers on both continents had a lot of interest in the “full size” class, but that class was otherwise not very popular. 27% of Tesla drivers in Europe and 23% of Tesla drivers in N. America were most interested in this class. Otherwise, 18% of European PHEV drivers, 15% of N. American PHEV drivers, 14% of European non-Tesla pure-EV drivers, and 8% of N. American non-Tesla pure-EV drivers chose this class.
Which car class are you most interested in for a future EV?

- Europe Tesla
- Europe non-Tesla pure EV
- Europe PHEV
- N. America Tesla
- N. America non-Tesla pure EV
- N. America PHEV

Compact
Intermediate
Full Size
SUV/Crossover
Pickup Truck
Sports Car
Scooter/Motorcycle
Tesla drivers also had atypically strong preference for sports cars. 10-11% of Tesla drivers chose that class as their top choice for their next EV, whereas the percentage ranged from 1% to 3.5% from the other groups. Presumably, the split here is because current Tesla drivers simply have more cash to drop on extravagant sports cars. However, another plausible explanation is that Tesla drivers are much more attracted to quick, high-performance cars – something we highlighted in earlier sections of this report.

North Americans, predictably, had much stronger preference than Europeans for pickup trucks. North Americans chose this class 7-11% of the time, whereas Europeans chose this class only 1-2% of the time.

The “intermediate” and “SUV/crossover” classes were popular across all of the groups, matching the general story in the auto market these days. The range for the intermediate class across the six respondent groups was 22-36% of respondents, and the range for the SUV/crossover class was 19-28% of respondents.

Clearly, diversification across all of the car classes (in terms of size/style and price) would increase EV sales, but it seems that automakers would do well to focus on the intermediate and SUV/crossover classes first.
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EV-Box is an international market leader in Electric Vehicle (EV) charging solutions and related cloud-based services, with an installed base of over 48,000 charging points worldwide that serve individuals, businesses, facilities and major public charging networks. You can know more about EV-Box at www.ev-box.com.

T Shuttle

T Shuttle is an intercity electric shuttle startup in Central Europe. It is offering transport that is more convenient, more comfortable, cheaper, and quicker than flying or taking the train along certain routes. Its first route goes between Berlin (Germany) and Wrocław (Poland). Find out more or book a trip at: www.tshuttle.co.

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The Beam is a tri-annual printed publication covering the energy transition and the race to a zero carbon economy. It features interviews with global cleantech leaders, insightful op-eds, and beautiful imagery.

EV Obsession

EV Obsession is a leading EV-focused blog that specializes in original EV sales reports, EV reviews, EV guides, and EV op-eds. EV Obsession is a sister blog to CleanTechnica.

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