



Plug In America

The Public Charging Experience

May 2024

In partnership with

EPRI
EVs2Scale
2030™

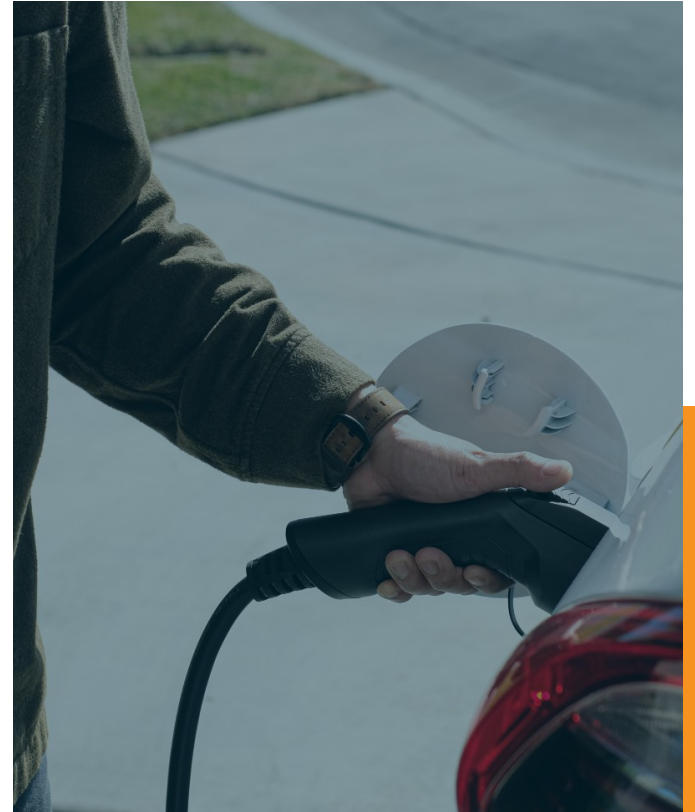
Methodology & Context

This survey was conducted online over a three-week period from Mar. 7 to Mar. 28 of 2024. It was composed of 923 respondents. To see the demographics of the survey respondents, please go to [Slide 24](#).

Of our sample, 92% of respondents have access to home charging. Only 15% of the sample said that they use public charging as their primary form of EV charging.

Public charging is designed to be a supplementary form of charging, rather than a primary form of charging. While some drivers may rely on public charging as a primary form of charging, our long-term goal is to support cost-effective at-home charging solutions for multifamily housing residents and renters.

Many of the respondents taking this survey use public charging rarely, meaning that they use it less than 10 times in a calendar year.



Methodology & Context (continued)

Throughout the survey, graphs are displayed to show the difference between Tesla drivers and drivers of other manufacturers. This is not done to compare the two experiences, but rather to separate the experiences to get a more accurate picture of the public charging landscape.

Tesla drivers and drivers of other manufacturers (OEMs) have a fundamentally different experience with public charging. Because Tesla's network is a vertically integrated system, the company has more control over the charging experience. While today Tesla drivers have a better experience in comparison to other manufacturers and provides hope for what all public charging experiences can be, the Tesla driver experience also has room for improvement.

As more vehicles become equipped to use Tesla chargers and there is more competition in the charging marketplace, we expect that the numbers in this analysis will get closer. Also, with the Tesla network opening to vehicles from other manufacturers, it may undergo temporary hurdles for drivers of other OEMs as Tesla's network adjusts to serving new vehicles.





Main findings

The public charging experience deviates based on whether one drives a Tesla.

Tesla drivers and drivers of other cars are fundamentally having different charging experiences. Because of this, drivers of other vehicles are forced to sacrifice convenience, performance, and dependability in comparison to Tesla drivers.

The experience of non-Tesla drivers leaves a lot of room for improvement.

Whether it be finding chargers, the presentation of a public charging station, the charging process, or even finishing a charge, drivers of other manufacturers find themselves unsatisfied with public charging.

Tesla consistently provides a positive experience but could still improve.

Tesla drivers reported much higher satisfaction with reliability, but survey results indicated improvements can still be made to offer better charging station experiences.

Public Charging Satisfaction

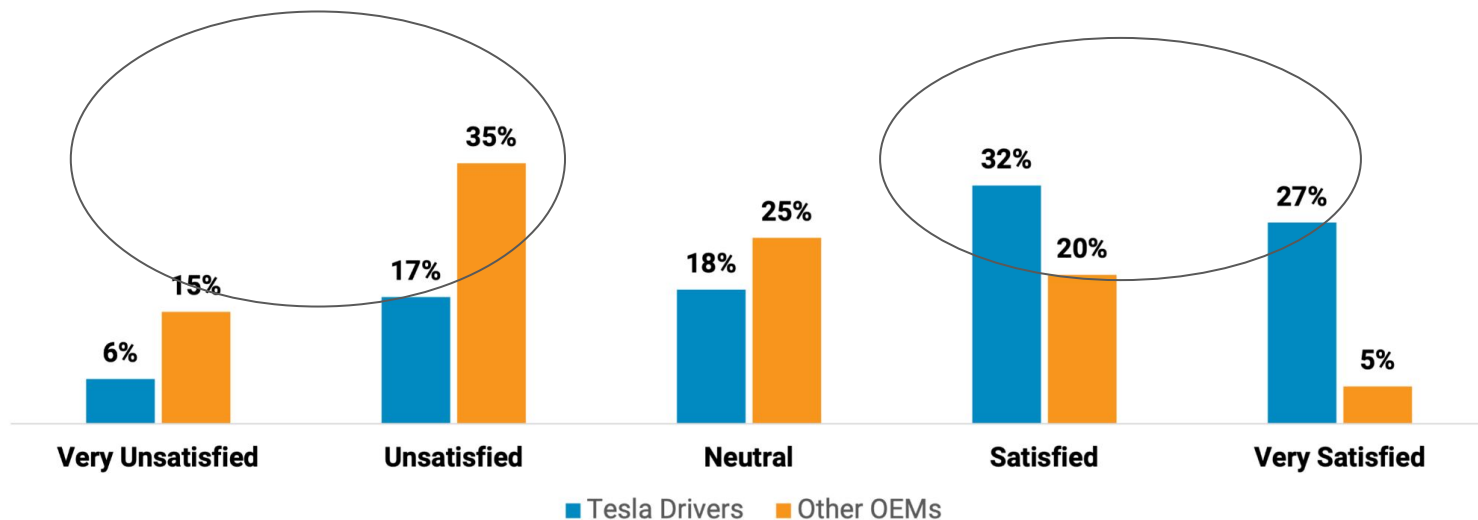
Reliability is the biggest issue in public charging, while availability remains an issue for many.

38% of respondents said they are **satisfied with the quantity of public charging options near them**, compared to **40% who said they are unsatisfied with it**. Less than 30% of respondents who primarily use fast-charging networks like Electrify America, ChargePoint, and EVgo said they are satisfied, showing the need for a more robust network of options.

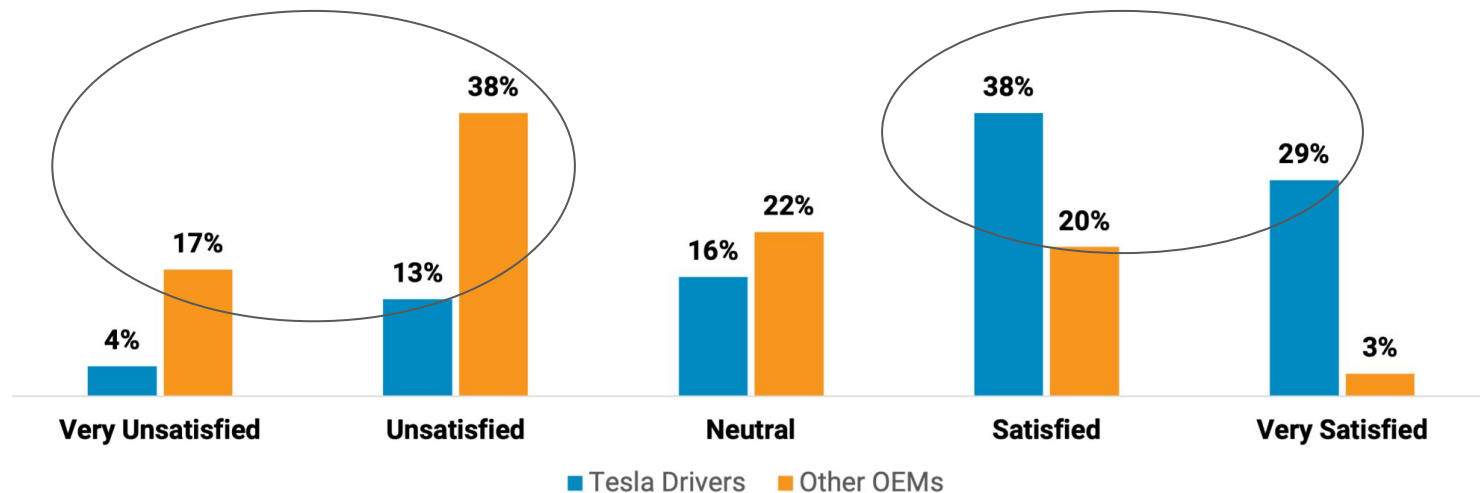
40% of respondents said they are **satisfied with the availability of public chargers** when they pull into a charging station, while another **40% said they are at least unsatisfied**. Drivers who primarily use the Tesla Supercharger network reported 67% satisfaction, compared to primary users of Electrify America, Charge Point, and EVgo, who reported less than 25% satisfaction.

Overall, **40% of respondents** answered that they are **satisfied with public charger reliability**, with **39%** saying they are **unsatisfied**. However, people who primarily use Electrify America fast chargers reported satisfaction of 19%, and those who primarily use of EVgo fast chargers reported satisfaction of 13%.

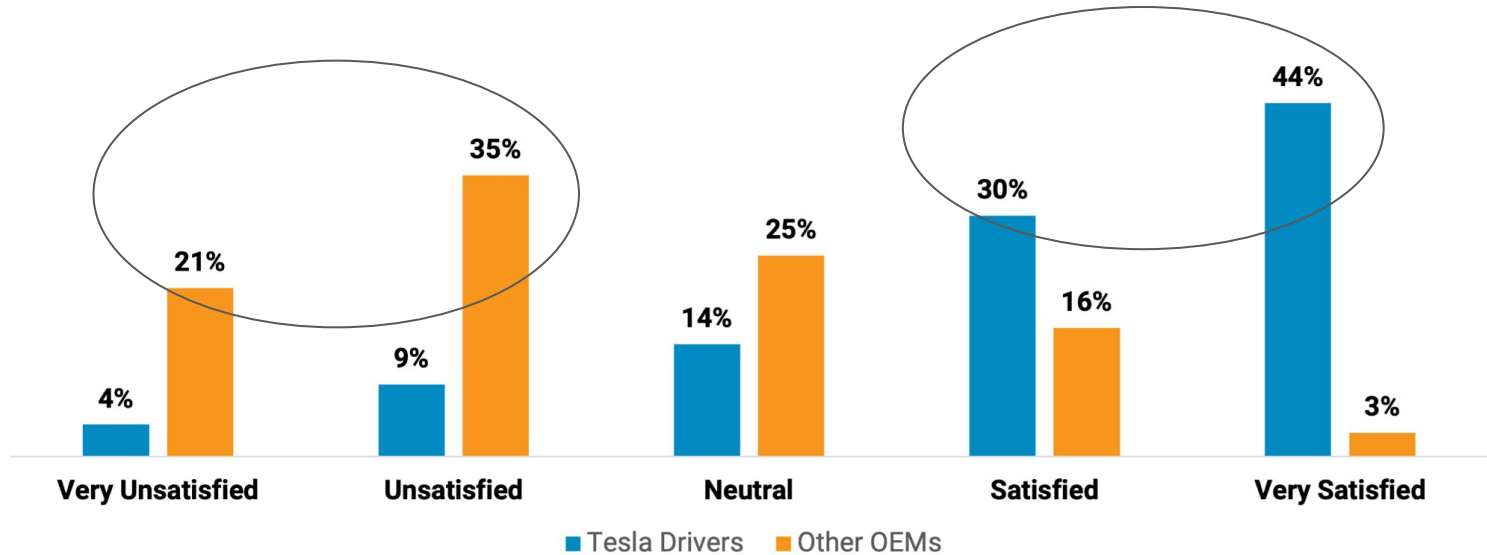
How satisfied are you with the quantity of public charging options near you?



How satisfied are you with the availability of public chargers when you need them?



How satisfied are you with public charger reliability?



How often are respondents having negative experiences at charging stations?

Broken and nonfunctional chargers are the biggest public charging issue.

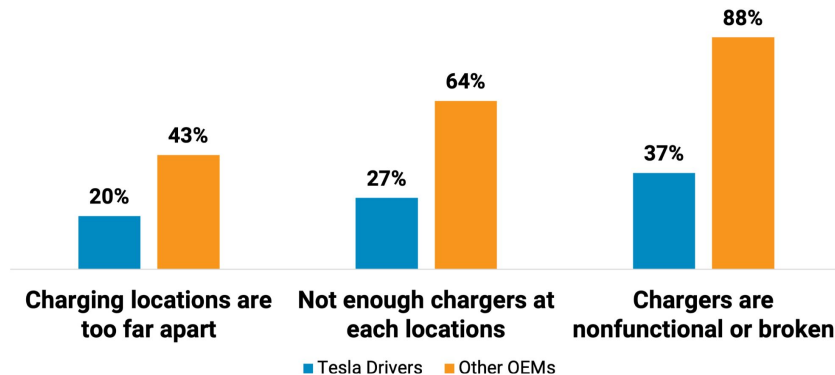
68% of respondents said they have encountered a broken or nonfunctional charger in the past year, with the percentage exceeding 80% for users of most fast-charging networks.

We are unable to track if respondents were able to charge successfully after they encountered this issue, so this percentage does not necessarily reflect respondents being unable to charge at all.

49% of respondents said they have encountered not having enough chargers at each location in the past year.

34% of respondents answered they've experienced charging locations that are too far apart.

Which of the following have you encountered while using public charging in the past year?



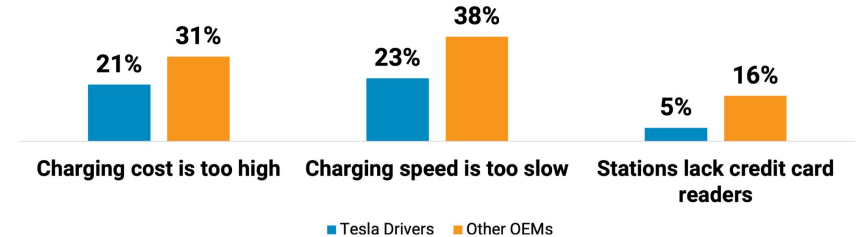
Respondents indicate improvements can be made on fundamental issues - like charging costs and charging speed.

27% of respondents answered that they have encountered charging costs that are too high, a problem that was especially identified with those who primarily use Electrify America fast chargers.

32% of respondents answered that they have encountered charging speeds that are too slow in the past year.

12% of respondents said they have been at charging stations which lack credit card readers in the past year, highlighting a need for investment to ensure public charging is as easy and convenient as possible.

Which of the following have you encountered while using public charging in the past year?

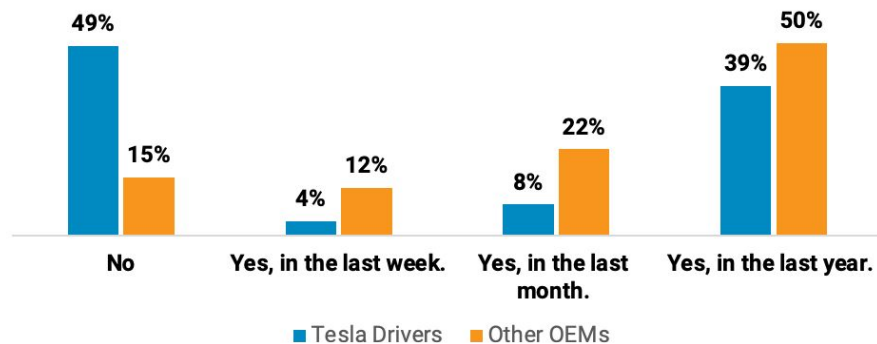


Initiating a charging session can be difficult for drivers.

About 3 in 4 total respondents indicated that they have tried to initiate a charging session at a fast charger in at least the past year and have been unsuccessful. We are unable to track if respondents were able to charge successfully after the initial attempt, so these percentages do not necessarily reflect respondents being unable to charge at all.

The frequency of this happening leaves room for improvement in reliability: 9% of respondents answered it had happened in the past week at the time of the survey, while 17% answered it had happened in the past month.

Have you ever tried to initiate a charging session at a public fast charger and been unsuccessful?



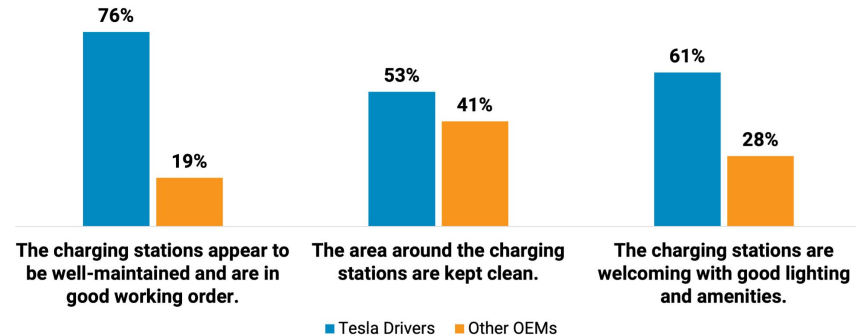
How often are respondents having positive experiences at charging stations?

Improvements can be made to make charging stations more welcoming and accommodating to EV drivers.

Less than half of total respondents answered that they have consistently encountered well-maintained or clean stations, along with good lighting and amenities.

Tesla owners have a rosier experience at public charging stations that could still improve. Controllable aspects like the cleanliness of a station and the amenities surrounding it are some of the first things consumers notice about a station.

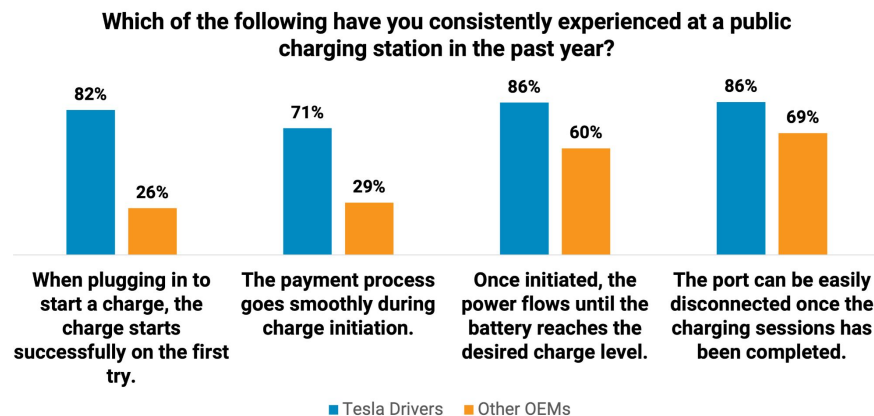
Which of the following have you consistently experienced at a public charging station in the past year?



The charging process leaves room to be desired for all drivers, albeit less so for Tesla drivers.

46% of total respondents said they are consistently able to start a charge successfully on the first try, while 44% said the payment process consistently goes smoothly during charge initiation.

Respondents have better luck once the charge has been initiated but still face some problems. 69% of respondents said the power flows until the battery reaches the desired charge level consistently, and 75% said the port can consistently be disconnected easily.



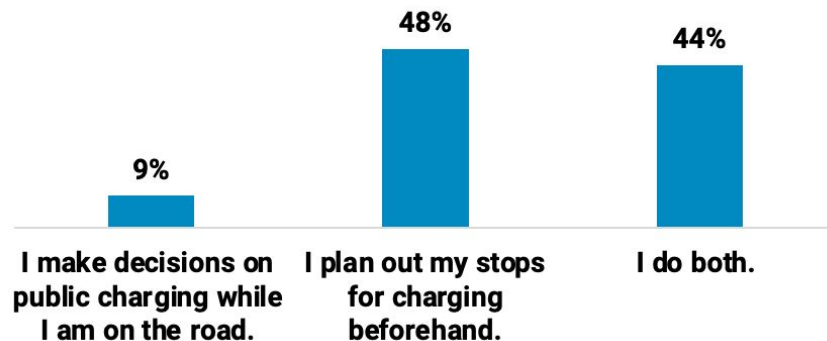
Other Key Takeaways

EV drivers are likely to plan their stops for public charging before driving.

Almost half of EV driver respondents said they plan out their stops for charging before getting on the road, with only 9% saying that they decide while on the road.

As 44% of respondents say they do both, this further stresses the importance of giving consumers the tools necessary to know where chargers are and where they can find them on their road trips.

Do you plan out your stops for public charging beforehand or make decisions while on the road?

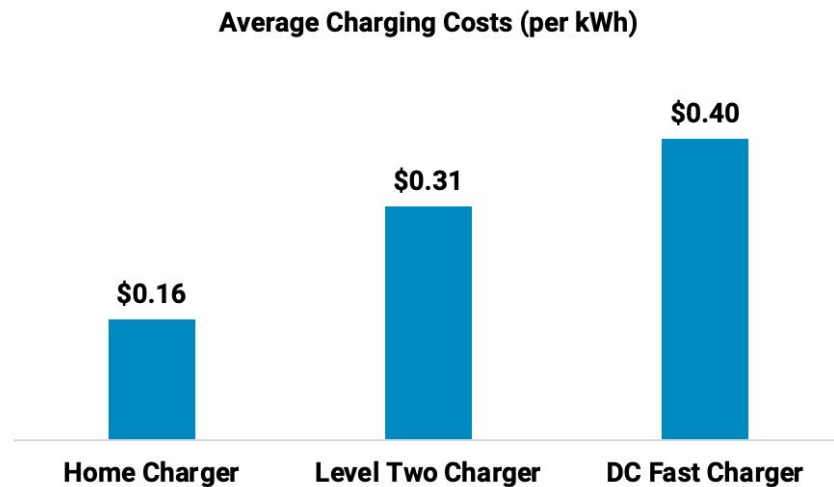


Many respondents are able to get their charging for free.

18% of respondents said they get their home charging for free. The average cost for respondents who do pay is \$0.16 per kWh.

66% of respondents said they get their Level Two charging for free. The average cost for respondents who do pay is \$0.31 per kWh.

29% of respondents said that they get their DC Fast Charging for free. The average cost for respondents who do pay is \$0.40 per kWh.



Tesla users love their app, while PlugShare is widely used and well-liked.

Amongst our respondents, PlugShare was cited as the most popular public charging phone app. Furthermore, it was among the highest rated for its users. About 19% of PlugShare users said their app is great, while an additional 59% said that their app is good.

ChargePoint and Electrify America had a similar number of users and similar ratings for their public charging phone app. They were the second- and third-most popular apps amongst our respondents, respectively, and just below 60% of users gave a rating of at least good to both.

Some users answered that they used their vehicle's app, and Tesla was by far and away the most popular car for these respondents. About 60% of Tesla drivers who answered this way said the app is great, while an additional 25% said the app is good.

Charging Phone Apps

How would you rate the public charging phone app you use primarily?	Very Bad	Bad	Neutral	Good	Great	Total Respondents
ChargePoint	1.3%	8.8%	31.4%	44%	14.5%	159
Electrify America	4.5%	11.6%	27.7%	47.1%	9%	155
EVgo	2.1%	10.4%	37.5%	35.4%	14.6%	48
PlugShare	0%	3.3%	18.3%	59.2%	19.2%	213
Shell	16.7%	16.7%	50%	16.7%	0%	6
Tesla	0%	1.3%	13.2%	25%	60.5%	76
Volta	0%	0%	100%	0%	0%	2

Policy recommendations & solutions

Plug In America recommends the following strategies to improve the public charging experience for EV drivers. A more detailed explanation is available at the end of this document.

ACCESS

Comprehensive charging location deployment

Sufficient chargers at each location

Affordable and transparent pricing

RELIABILITY

99% uptime

Timely maintenance and repair

Customer support

SEAMLESS PAYMENT

Plug-and-charge technology

Variety of payment options

SAFETY AND AMENITIES

Clean and well maintained locations

Safety features (Lighting, security cameras, other measures)

Co-location with or creation of amenities

Demographics

Age Range	Percentage
18-24	0.4%
25-34	2.7%
35-44	6.7%
45-54	13.6%
55-64	23.7%
65-74	37.9%
75+	14.8%

Some respondents declined to specify.

Race/Ethnicity	Percentage
Asian/Asian American or Pacific Islander	5.2%
Black or African American	2.1%
Hispanic or Latino	4.5%
White	87.8%
Other	2.1%

*Some respondents declined to specify.
Respondents were allowed to select multiple choices so percentages up to over 100%.*

Gender Identity	Percentage
Male	81.9%
Female	18.0%
Nonbinary	0.1%

Some respondents either declined to specify or answered that they would prefer to self-describe.

Demographics

Region	Percentage	Respondents
Northeast	19.4%	172
South	21.3%	189
Midwest	14.6%	129
West	44.7%	396

Northeast states: CT, MA, ME, NH, NJ, NY, RI, PA, VT
South states: AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV
Midwest states: IA, IL, IN, KS, MI, MN, MO, NE, ND, OH, SD, WI
West states: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY

Demographics

Do you own or lease an EV?	Percentage
Yes, I own an EV	88.7%
Yes, I lease an EV	9.5%
No, but I drive an EV	0.9%
No	0.9%

Do you have access to EV charging at your home residence?	Percentage
Yes	92.1%
No	7.9%

Which best describes your home residence?	Percentage
Single-family home	85.3%
Multi-family housing (2-5 units)	8.2%
Multi-family housing (6+ units)	6.4%
Other	0.1%

Do you own or rent the residence you live in?	Percentage
Own	91.8%
Rent	8.2%

Demographics

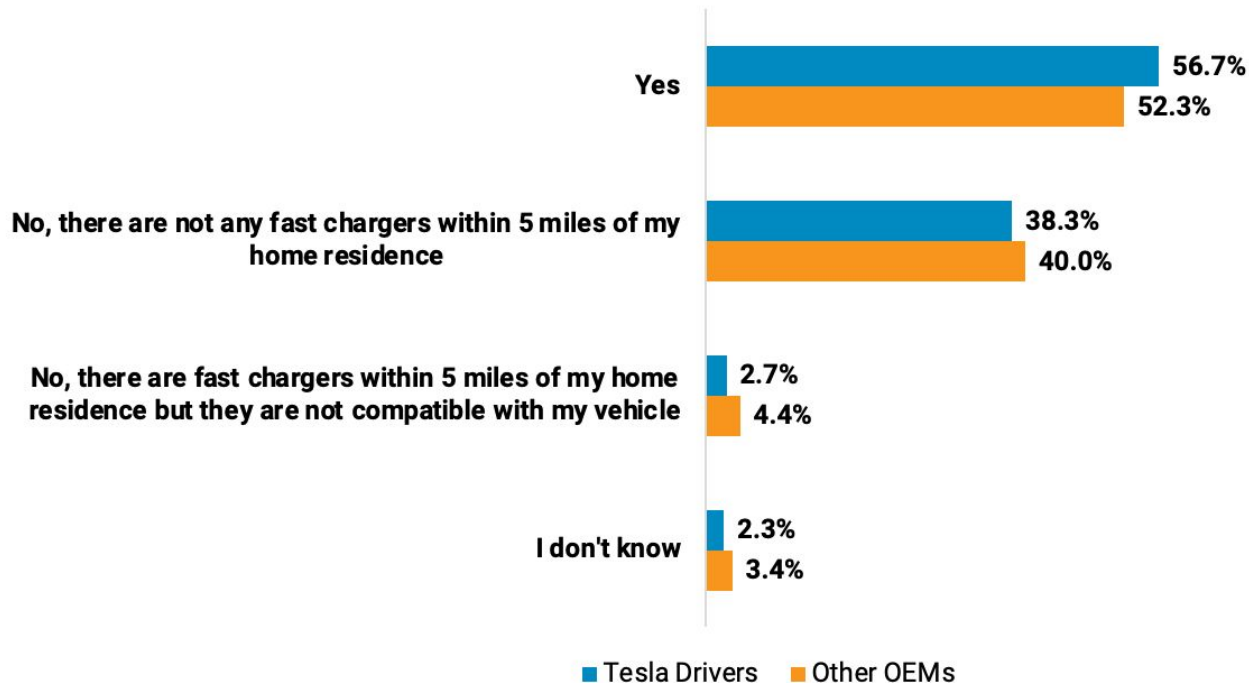
A breakdown of these tables by vehicle manufacturer is on the next two slides

Do you have a public fast charger within 3 miles of your home residence compatible with your vehicle?	Percentage
Yes	53.5%
No, there are not any fast chargers within 3 miles of my home residence	40.9%
No, there are fast chargers within 3 miles of my home residence but they are not compatible with my vehicle	5.5%

How often do you use public chargers?	Percentage
Daily	1.5%
3 or 4 times a week	3.8%
Once or twice a week	13.7%
Once every couple weeks	14.8%
Once a month	18.3%
Rarely	45.0%
Never	2.8%

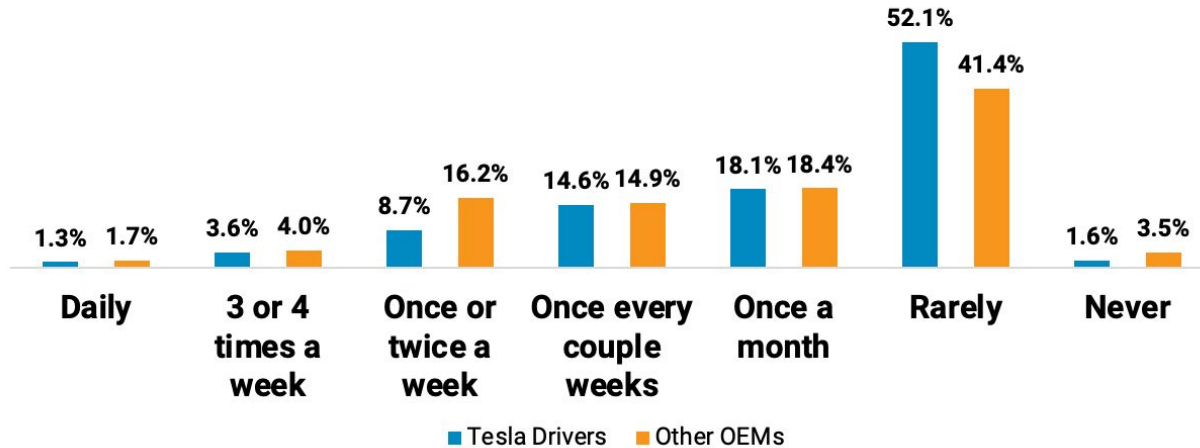
Demographics

Do you have a public fast charger within 3 miles of your home residence that is compatible with your vehicle?



Demographics

How often do you use public chargers?



Charging Network Information

What Level Two public charging network do you primarily use?	Percentage
ChargePoint	55.9%
Tesla	15.1%
Electrify America	8.4%
Volta	6.4%
Blink	2.7%
EV Connect	2.1%
FLO	0.9%
Greenlots/Shell Recharge	0.8%
SemaConnect	0.3%
Other	7.3%

Which DC fast charging network do you primarily use?	Percentage
Tesla	37.7%
Electrify America	36.3%
ChargePoint	10.8%
EVgo	10.8%
EV Connect	1.0%
Greenlots/Shell Recharge	0.9%
Blink	0.6%
Other	2.0%



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PlugInAmerica.org/survey/insights



PUBLIC EV CHARGING RECOMMENDATIONS

Public EV charging is one of the most-cited barriers to EV adoption. Whether it's finding chargers, the presentation of a public charging station, the charging process, or even finishing a charge, drivers find themselves unsatisfied with public charging.¹ As such, Plug In America recommends the following strategies to improve the public charging experience for EV drivers.

ACCESS

- EV charging location deployment must be comprehensive to provide access to all communities, especially low-income communities that often face additional barriers to access.
- Each location needs sufficient chargers. Redundancy (having multiple chargers at each location) can ensure a driver can still charge if one charger is broken or occupied when they arrive, making a broken charger a mere inconvenience rather than a frustrating, memorable part of their day. Charging companies should consider increasing the number of chargers at charging locations.
- Charging locations should be accessible for drivers with varying abilities and comply with the Americans with Disabilities Act (ADA). Accessible spaces should be marked clearly so drivers can easily identify the space that works for them.
- Pricing information should be readily displayed and available, including any initiation, idling, or other fees, before the driver begins their charging session.

RELIABILITY

- Charging stations should aim to meet a 99% uptime.
- Stations should have proactive maintenance schedules and timely repair processes to minimize downtime.
- A 24/7 toll-free customer service number should be available for drivers to process

¹ The Public Charging Experience Survey, Plug In America, <https://pluginamerica.org/survey/insights/>

payments, report issues, and receive immediate support.

SEAMLESS PAYMENT

- Plug-and-charge technology, where a driver simply plugs in their vehicle and the charging station automatically recognizes it and bills the appropriate account, eliminates the need for additional payment options and should be available at charging stations to simplify the charging process for drivers.
- Until plug-and-charge becomes more ubiquitous, other payment options, including contactless payment, are necessary to ensure all drivers can charge.

SAFETY AND AMENITIES

- Charging locations should be clean and well-maintained.
- Locations should offer safety features, including adequate lighting, security cameras, and other measures.
- Charging stations should include amenities such as bathrooms and food to fulfill basic human needs.