

# **Florida Electric Vehicle Owner Survey Analysis**

## **Florida Electric Vehicle Roadmap**

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# **Electric Vehicle Owner Survey Analysis**

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## **Introduction**

This is a supplemental report for the FDACS OOE's *Florida Electric Vehicle Roadmap* project.

An online survey was conducted to solicit feedback from one of the largest stakeholder groups, the end-users. The survey's objective was to gain a better understanding of Florida's current charging infrastructure from those with first-hand experience. The survey served as a platform for Florida electric vehicle (EV) owners to communicate their specific needs and concerns. We believe this is the first survey of this nature to be conducted in Florida.

This supplemental report addresses the survey responses of Florida EV owners as well as outlines the methodology, results, and conclusions from the survey.

## **Methodology**

The online survey consisted of sixteen multiple-choice questions and was open to the public from August 11, 2020 to August 25, 2020. Questions were focused on the user's environment, behavior, and opinions about Florida EV infrastructure. Several questions were rephrased and asked a second time to validate consistency. Not all participants answered every question.

There were 532 responses. In order to participate in the survey, qualifying respondents needed to meet two conditions: own a PHEV/BEV and live in Florida. The survey results are detailed below.

## Survey Results

|                                                                                                                                                     | Responses        | Percentage        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|
| <b>Q1. Do you live in Florida? (Qualifying question to continue survey)</b>                                                                         |                  |                   |
| <b>Q2. Do you own a Plug-In Hybrid or an All-Battery EV? (Qualifying question to continue survey)</b>                                               |                  |                   |
| <b>Q3. What regional area of Florida do you live?</b>                                                                                               |                  |                   |
| Southwest (Charlotte, Collier, Glades, Hendry, Lee)                                                                                                 | 46               | 9%                |
| Southeast (Broward, Miami-Dade, Monroe, Palm Beach)                                                                                                 | 109              | 20%               |
| West Central (Desoto, Hardee, Highlands, Hillsborough, Manatee, Pasco, Pinellas, Polk, Sarasota)                                                    | 136              | 26%               |
| Central (Alachua, Bradford, Citrus, Gilchrist, Hernando, Lake, Levy, Marion, Sumter)                                                                | 41               | 8%                |
| East Central (Brevard, Indian River, Martin, Okeechobee, Orange, Osceola, Seminole, St. Lucie)                                                      | 117              | 22%               |
| Northwest (Bay, Calhoun, Escambia, Gulf, Holmes, Jackson, Okaloosa, Walton, Washington)                                                             | 8                | 2%                |
| North Central (Baker, Columbia, Dixie, Franklin, Gadsden, Hamilton, Jefferson, Lafayette, Leon, Liberty, Madison, Suwannee, Taylor, Union, Wakulla) | 40               | 8%                |
| Northeast (Clay, Duval, Flagler, Nassau, Putnam, St. Johns, Volusia)                                                                                | 35               | 7%                |
| <b>Q4. What is your age range?</b>                                                                                                                  | <b>Responses</b> | <b>Percentage</b> |
| 18-29                                                                                                                                               | 13               | 2%                |
| 30-50                                                                                                                                               | 184              | 35%               |
| 50+                                                                                                                                                 | 335              | 63%               |
| <b>Q5. How long have you owned your PHEV or EV?</b>                                                                                                 | <b>Responses</b> | <b>Percentage</b> |
| Less than 1 year                                                                                                                                    | 108              | 20%               |
| 1-3 years                                                                                                                                           | 239              | 45%               |
| 3-5 years                                                                                                                                           | 89               | 17%               |
| 5 or more years                                                                                                                                     | 96               | 18%               |
| <b>Q6. What is the mileage range of your EV on battery?</b>                                                                                         | <b>Responses</b> | <b>Percentage</b> |
| 20-40                                                                                                                                               | 71               | 13%               |
| 41-80                                                                                                                                               | 92               | 17%               |
| 81-125                                                                                                                                              | 54               | 10%               |
| 126+                                                                                                                                                | 313              | 59%               |
| <b>Q7. Do you feel Florida has adequate charging infrastructure?</b>                                                                                | <b>Responses</b> | <b>Percentage</b> |
| Yes                                                                                                                                                 | 31               | 6%                |
| No                                                                                                                                                  | 453              | 86%               |
| Don't know                                                                                                                                          | 43               | 8%                |
| <b>Q8. Do you live in a single-family residence or a multi-dwelling unit?</b>                                                                       | <b>Responses</b> | <b>Percentage</b> |
| Single-family residence                                                                                                                             | 462              | 88%               |
| Multi-dwelling unit                                                                                                                                 | 65               | 12%               |
| <b>Q9. Does your residence have EV charging installed?</b>                                                                                          | <b>Responses</b> | <b>Percentage</b> |
| Yes                                                                                                                                                 | 423              | 80%               |

|                                                                                                                                                              |                  |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|
| No                                                                                                                                                           | 103              | 20%               |
| <b>Q10. How often do you charge at your residence?</b>                                                                                                       | <b>Responses</b> | <b>Percentage</b> |
| Less than 24%                                                                                                                                                | 53               | 10%               |
| 25-49%                                                                                                                                                       | 21               | 4%                |
| 50-74%                                                                                                                                                       | 64               | 12%               |
| 75-100%                                                                                                                                                      | 388              | 74%               |
| <b>Q11. What EV power charge level do you use most often?</b>                                                                                                | <b>Responses</b> | <b>Percentage</b> |
| Home Level 1                                                                                                                                                 | 140              | 27%               |
| Home Level 2                                                                                                                                                 | 281              | 54%               |
| Public Level 2                                                                                                                                               | 53               | 10%               |
| DCFC                                                                                                                                                         | 50               | 10%               |
| <b>Q12. How would you rank the reliability (uptime) of public charging?</b>                                                                                  | <b>Responses</b> | <b>Percentage</b> |
| Excellent                                                                                                                                                    | 66               | 13%               |
| Good                                                                                                                                                         | 330              | 63%               |
| Bad                                                                                                                                                          | 126              | 24%               |
| <b>Q13. Where would you most like to see public charging?</b>                                                                                                | <b>Responses</b> | <b>Percentage</b> |
| Government facilities                                                                                                                                        | 22               | 4%                |
| Multi-dwelling units                                                                                                                                         | 36               | 7%                |
| Work                                                                                                                                                         | 51               | 10%               |
| Shopping & Entertainment                                                                                                                                     | 192              | 37%               |
| Public Highways                                                                                                                                              | 220              | 42%               |
| <b>Q14. How would you rank the availability of public charging?</b>                                                                                          | <b>Responses</b> | <b>Percentage</b> |
| Excellent                                                                                                                                                    | 10               | 2%                |
| Good                                                                                                                                                         | 174              | 33%               |
| Bad                                                                                                                                                          | 337              | 65%               |
| <b>Q15. EVs do not contribute gas taxes to maintain our roads, would you agree to an equitable EV fee if part of it was used to build EV infrastructure?</b> | <b>Responses</b> | <b>Percentage</b> |
| Yes                                                                                                                                                          | 252              | 47%               |
| No                                                                                                                                                           | 115              | 22%               |
| No Response                                                                                                                                                  | 165              | 31%               |
| <b>Q16. What do you believe is the biggest barrier for purchasing an EV?</b>                                                                                 | <b>Responses</b> | <b>Percentage</b> |
| Vehicle cost                                                                                                                                                 | 95               | 18%               |
| Driving range                                                                                                                                                | 103              | 20%               |
| Lack of information                                                                                                                                          | 158              | 30%               |
| Lack of public charging                                                                                                                                      | 163              | 31%               |

## Comparative Analysis

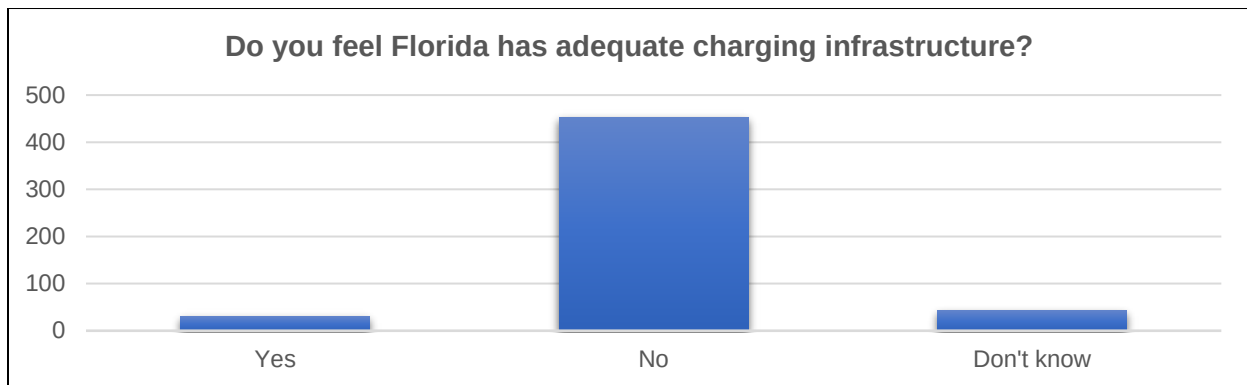
The survey response data was comparatively analyzed to gain a better understanding of the relationships between responses to different questions. For example, how does vehicle range impact the respondent's feelings towards public charging infrastructure, how does type of residence relate to charging behavior, etc.

Comparing inter-related questions helped identify several patterns. Key takeaways from the analysis are highlighted below. The following points are derived from the direct survey results and have not been tested for statistical significance.

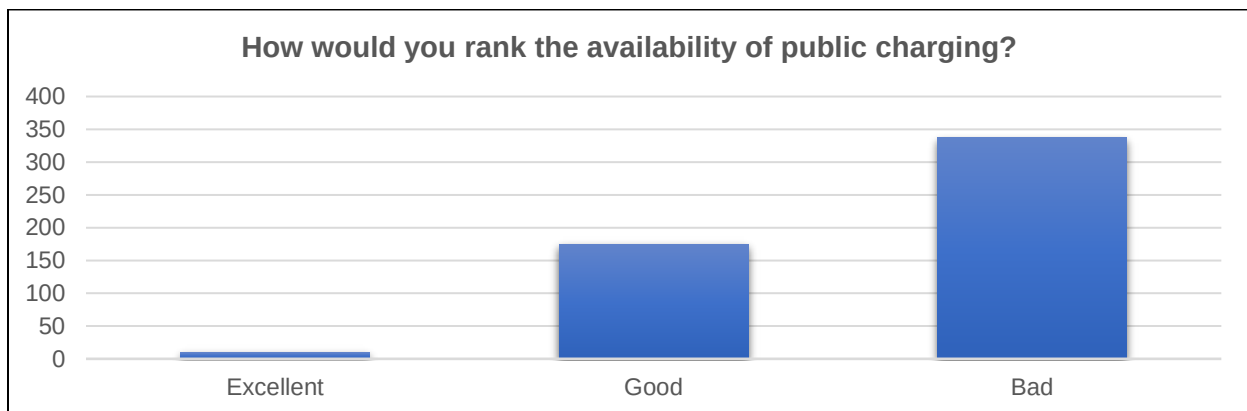
## Key Takeaways

### 1. Most end-users feel Florida's charging infrastructure is inadequate and the availability needs to be improved.

- 86% of respondents answered that they do not feel Florida has adequate charging infrastructure (Q7).

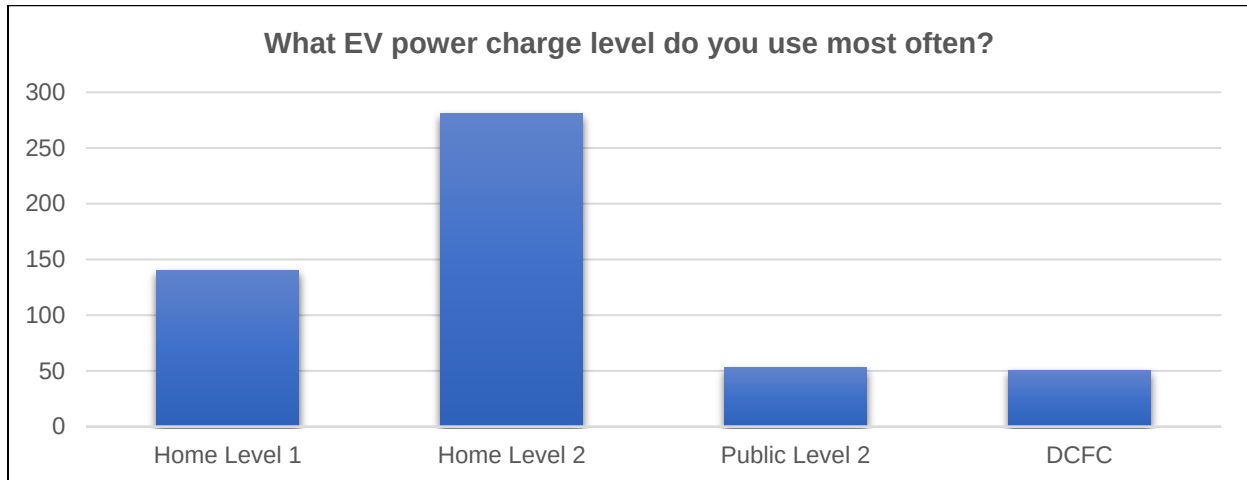


- 65% of respondents ranked the availability of public charging as “Bad” (Q14).

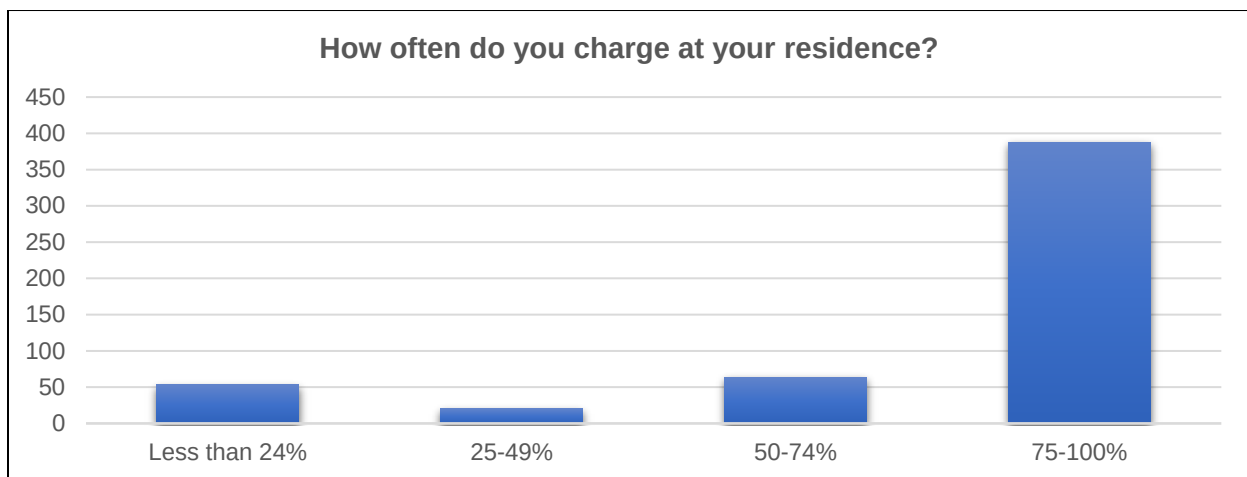


## 2. Overall, EV drivers complete most of their charging at home.

- 54% of respondents reported they use Home Level 2 charging most often (Q11).
- 27% of respondents reported they use Home Level 1 charging most often (Q11).

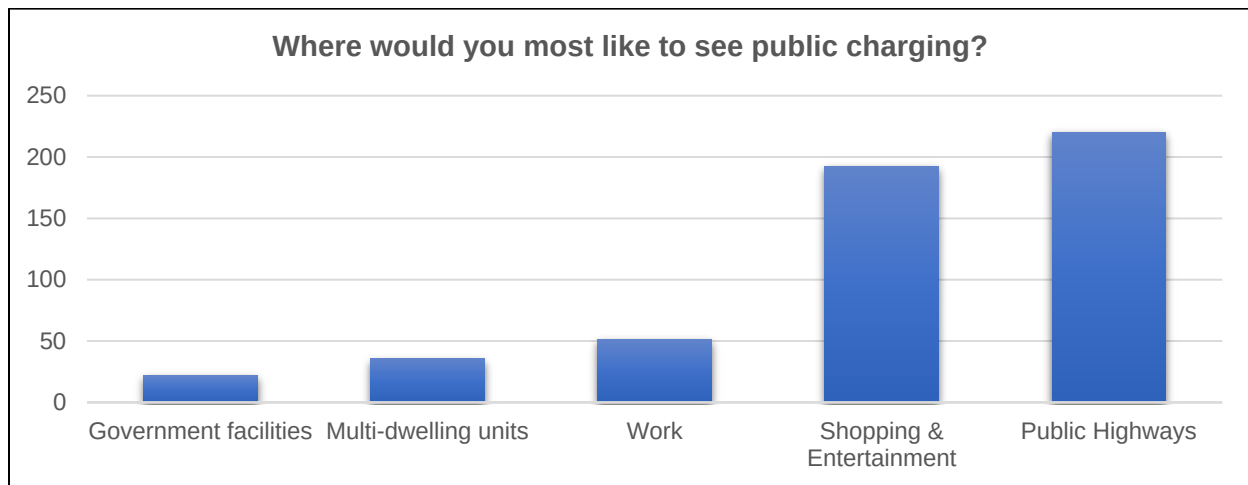


- 74% of respondents reported that they complete 75-100% of charging at their residence (Q10).



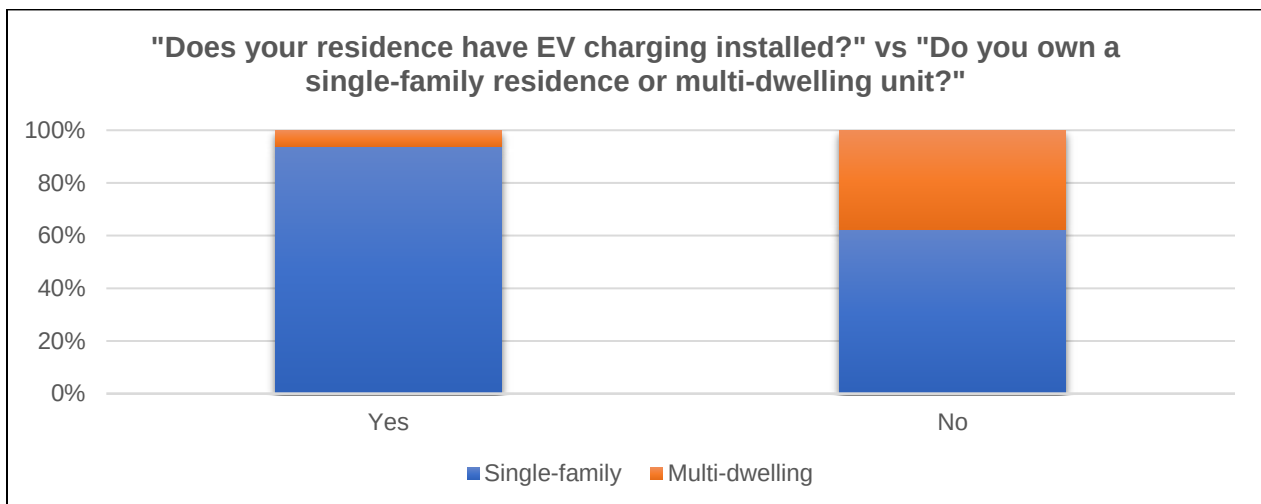
**3. Most respondents would like to see more public infrastructure along public highways or at shopping/entertainment locations.**

- 42% of respondents said they would most like to see public infrastructure along public highways (Q13).
- 37% of respondents said they would most like to see public infrastructure at shopping/entertainment centers (Q13).

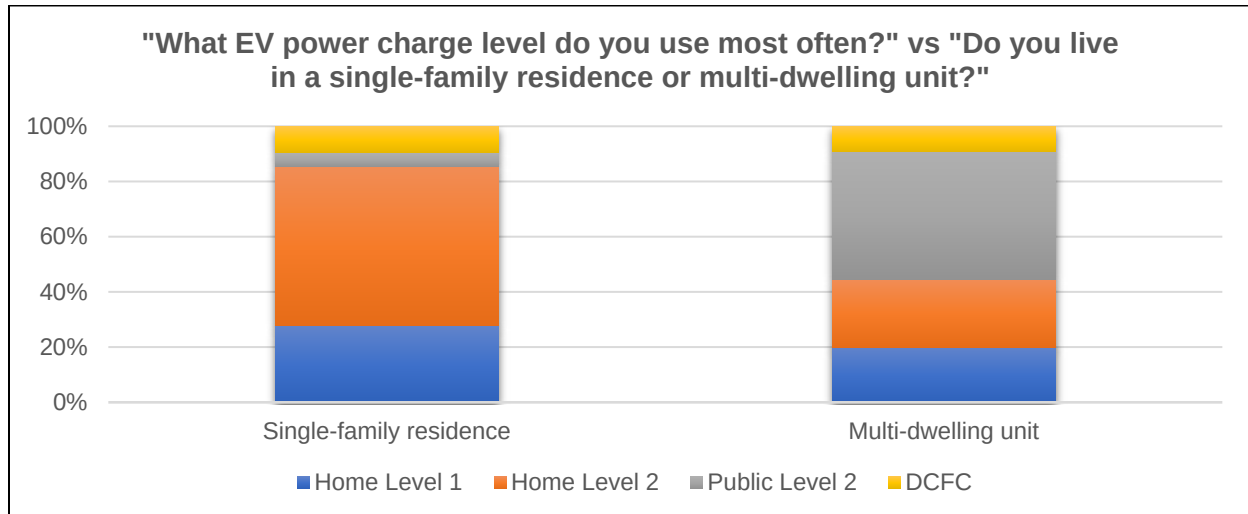


**4. Charging behavior is much different for those living in a single-family residence than those living in multi-dwelling units.**

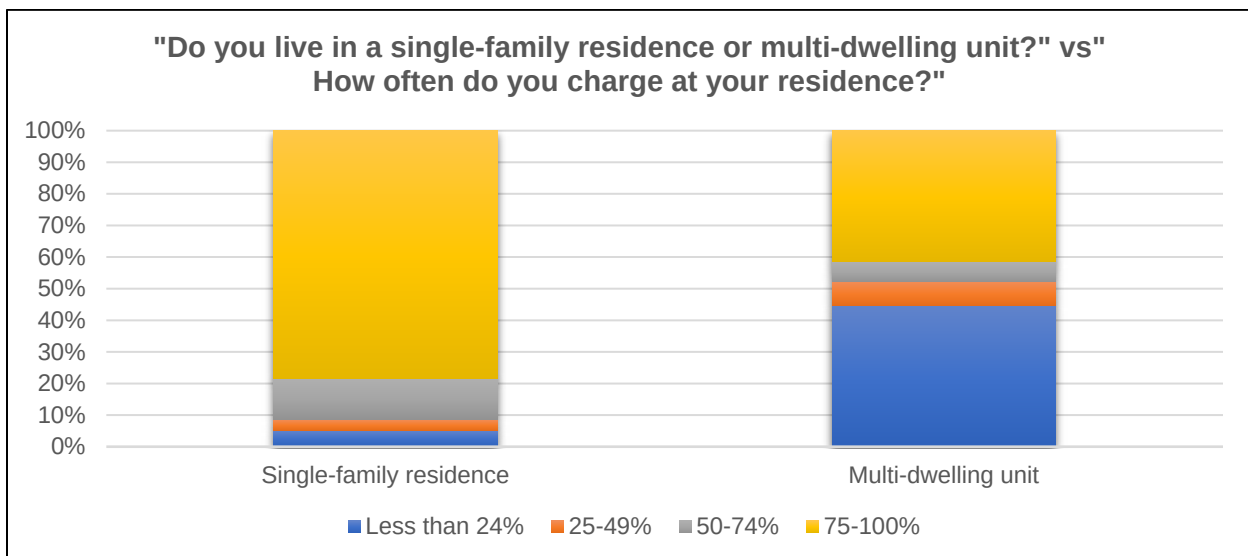
- 40% of those who live in multi-dwelling units have EV charging installed (Q9, Q8).
- 86% of those who live in a single-family residence have EV charging installed (Q9, Q8).



- 45% of respondents living in multi-dwelling units said they use a Home Level 1 or Home Level 2 charger most often (Q11, Q8).
- 80% of those living in single-family residence said they use Home Level 1 or 2 charging most often (Q11, Q8).

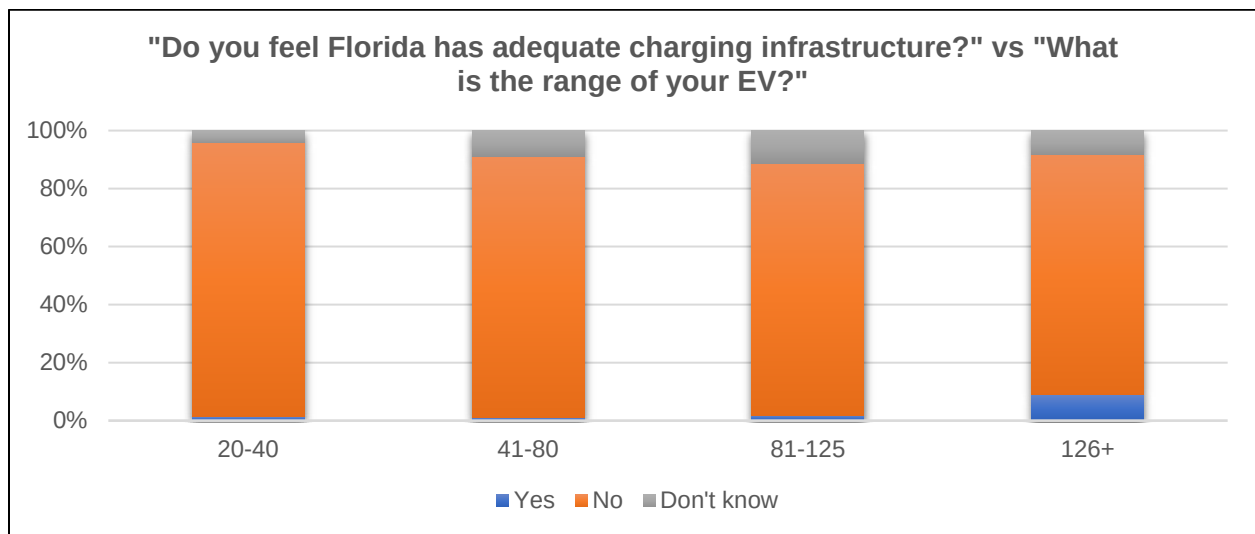


- 45% of respondents living in multi-dwelling units said they complete 24% (or less) of total charging at their residence (Q10, Q8).
- 5% of respondents living in a single-family residence said they complete 24% (or less) of total charging at home (Q10, Q8).

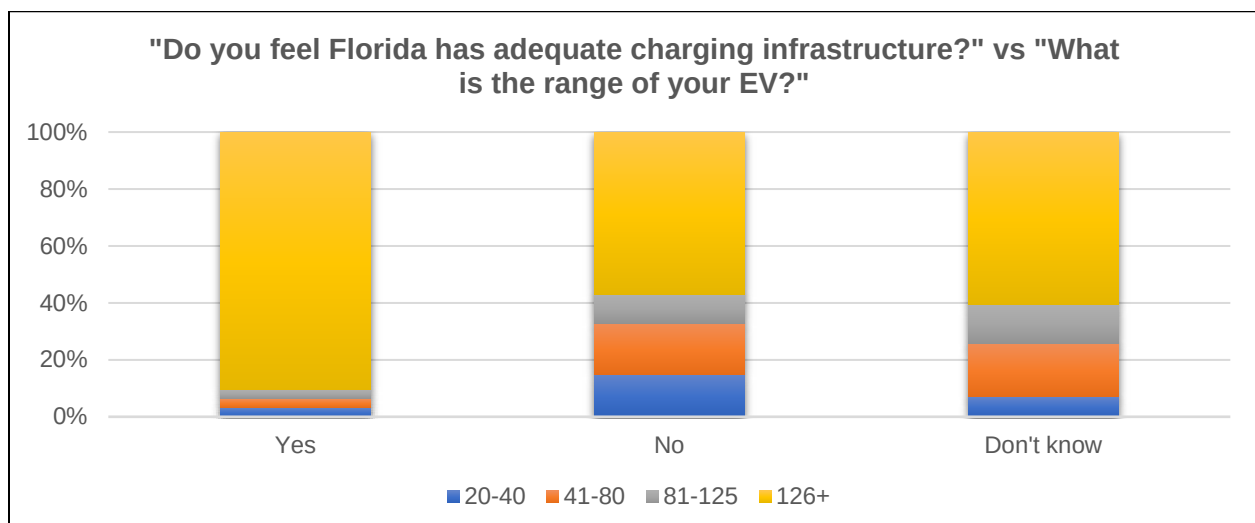


**5. Owners of higher-range electric vehicles seem to have a more positive outlook on Florida's charging infrastructure.**

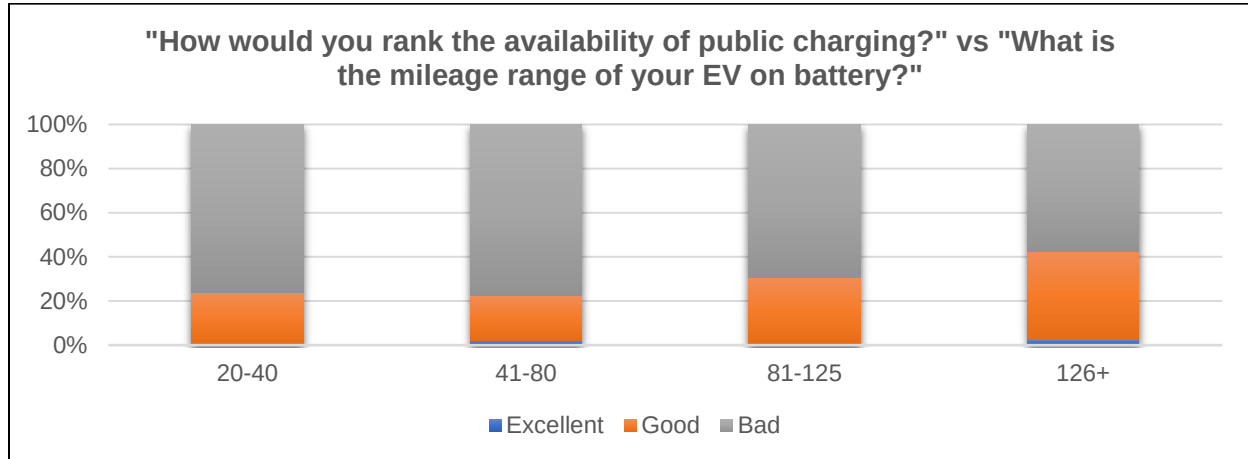
- 1% of those with 20-40 mile range said Florida has adequate charging infrastructure, while 94% said it does not (Q7, Q6).
- 1% of those with 41-80 mile range said Florida has adequate charging infrastructure, while 90% said it does not (Q7, Q6).
- 2% of those with 81-125 mile range said Florida has adequate charging infrastructure, while 87% said it does not (Q7, Q6).
- 9% of those with 126+ mile range said Florida has adequate charging infrastructure, while 83% said it does not (Q7, Q6).



- Of the 6% of respondents that answered “Yes” to “Do you feel Florida has adequate charging infrastructure?”, 90% of them have vehicles with a range of 126+ (Q7, Q6).



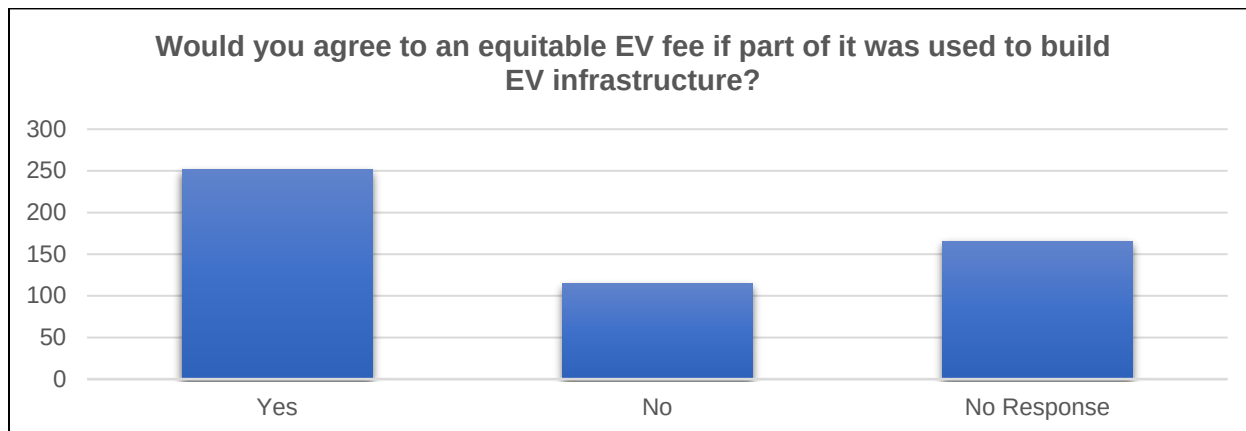
- 76% of those with 20-40 mile range ranked the availability of public charging infrastructure as “Bad” and 24% ranked it as “Good” (Q14, Q6).
- 78% of those with 41-80 mile range ranked the availability of public charging infrastructure as “Bad” and 20% ranked it as “Good” (Q14, Q6).
- 69% of those with 81-125 mile range ranked the availability of public charging infrastructure as “Bad” and 31% ranked it as “Good” (Q14, Q6).
- 58% of those with 126+ mile range ranked the availability of public charging infrastructure as “Bad” and 40% ranked it “Good” (Q14, Q6).



## Other Insights

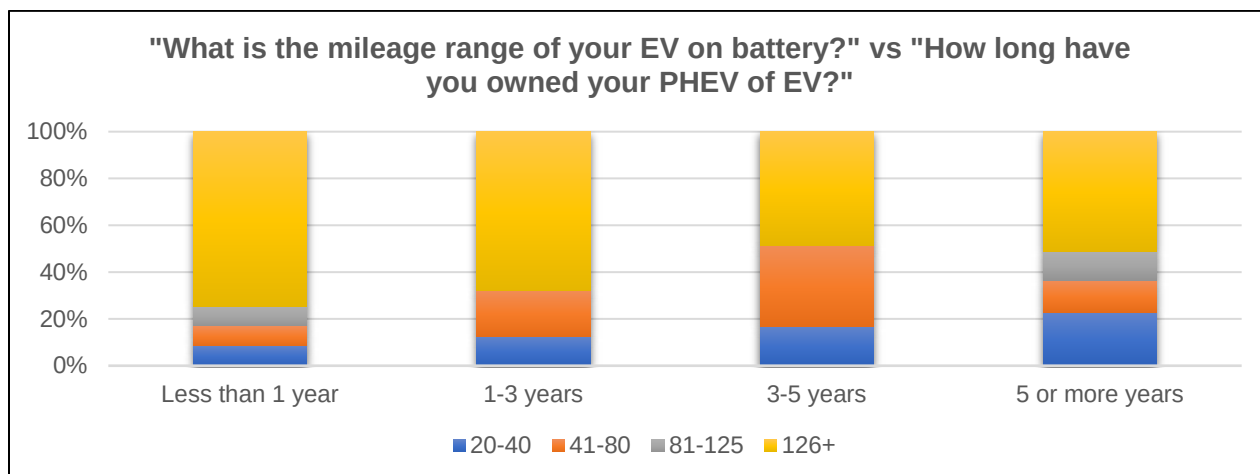
### 1. Most respondents would agree to an equitable EV fee if part of it was used to build EV infrastructure.

- 47% of respondents said they would agree to an EV fee (Q15).
- 22% of respondents said they would not agree to an EV fee (Q15).
- 31% of respondents did not respond to this question, which was a much lower response rate than the other questions (Q15).



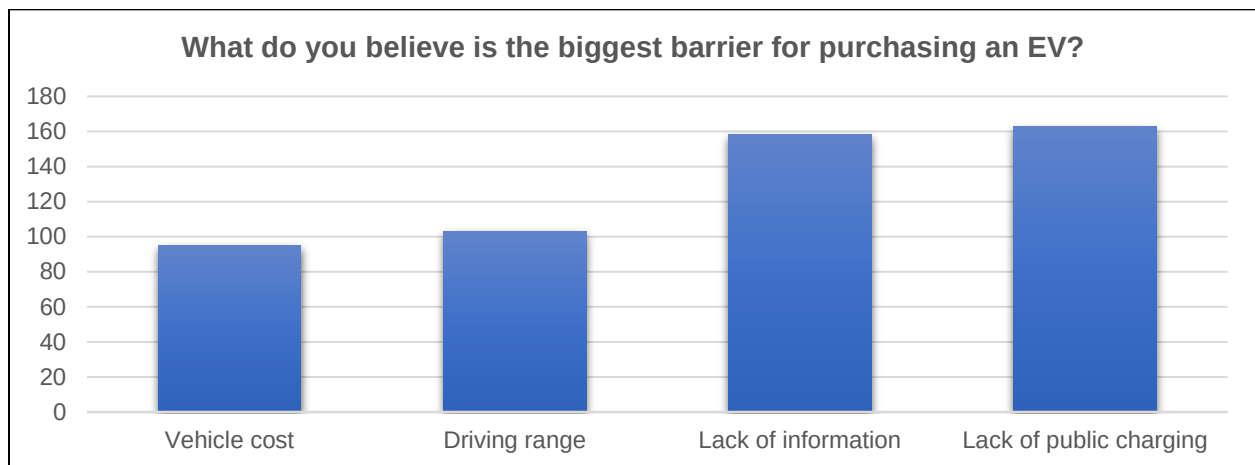
### 2. There is an upward trend between vehicle range and time of ownership.

- 51% of vehicles owned "5 or more years" had a range of 126+ (Q5, Q6).
- 49% of vehicles owned "3-5 years" had a range of 126+ (Q5, Q6).
- 68% of vehicles owned "1-3 years" had a range of 126+ (Q5, Q6).
- 75% of vehicles owned "less than 1 year" had a range of 126+ (Q5, Q6).



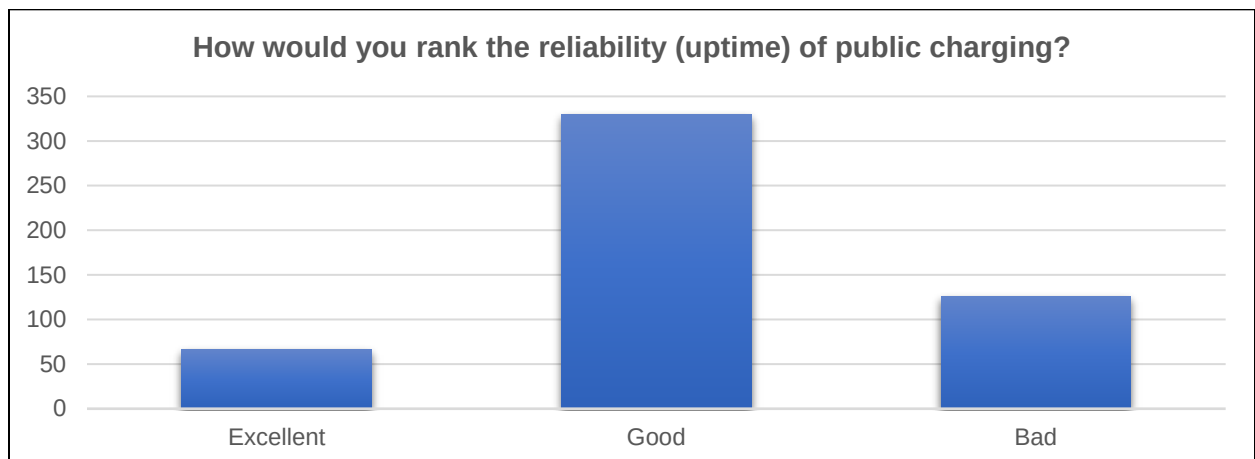
**3. There are several significant barriers for purchasing an EV, but lack of information and lack of public charging are most notable.**

- 31% of respondents believe “Lack of public charging” is the biggest barrier (Q16).
- 30% of respondents believe “Lack of information” is the biggest barrier (Q16).
- 20% of respondents believe “Driving range” is the biggest barrier (Q16).
- 18% of respondents believe “Vehicle cost” is the biggest barrier (Q16).



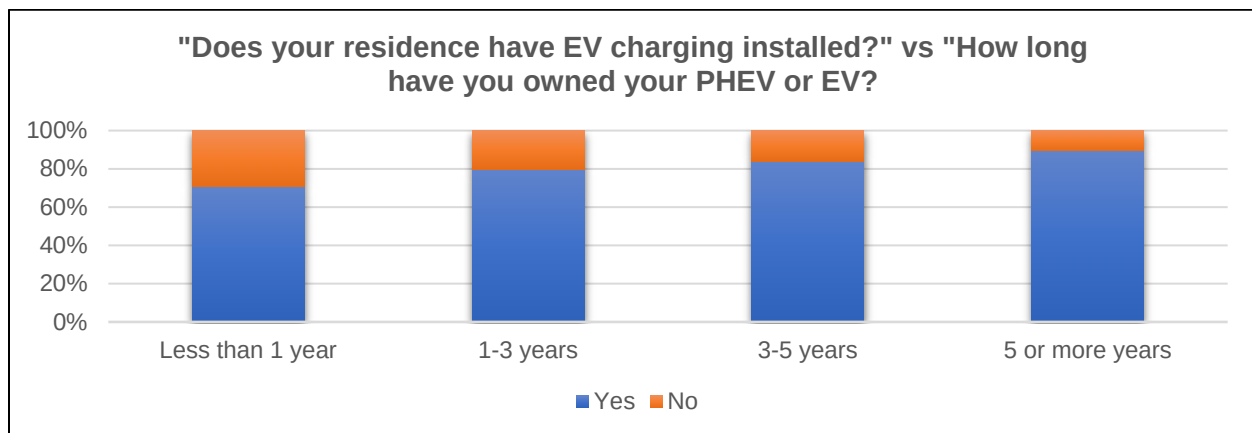
**4. Most respondents feel the reliability/uptime of public charging is good but could be better.**

- 13% of respondents ranked the reliability of public charging “Excellent” (Q12).
- 63% of respondents ranked the reliability of public charging “Good” (Q12).
- 24% of respondents ranked the reliability of public charging “Bad” (Q12).



**5. Users who have owned EVs for longer are more likely to have EV charging installed at their residence and complete more charging at home.**

- 71% of those who have owned their EV for a year (or less) have EV charging installed at their residence (Q9, Q5).
- 80% of those who have owned their EV for 1-3 years have EV charging installed at their residence (Q9, Q5).
- 84% of those who have owned their EV for 3-5 years have EV charging installed at their residence (Q9, Q5).
- 89% of those who have owned their EV for five years (or more) have EV charging installed at their residence (Q9, Q5).



- 66% of those who have owned their EV for 1 year (or less) complete 75-100% of charging at their residence (Q10, Q5).
- 73% of those who have owned their EV for 1-3 years complete 75-100% of charging at their residence (Q10, Q5).
- 75% of those who have owned their EV for 3-5 years complete 75-100% of charging at their residence (Q10, Q5).
- 83% of those who have owned their EV for five years (or more) complete 75-100% of charging at their residence (Q10, Q5).

