



Abstract

The way in which battery electric vehicles (BEVs) are recharged represents a behavior change for consumers compared to internal combustion engine vehicles (ICEVs). BEVs take many hours to recharge, ICEVs are refueled in a matter of minutes at a gas station.

Previous studies found that BEV recharging is a shortcoming, due to long charge times, short ranges and a lack of charging infrastructure. This idea comes about from studies of BEVs with ranges of 100 miles, the market now contains BEVs with ranges of more than 200 miles. This paper conducts in-depth interviews with adopters of these longer range BEVs. The aim of this is to understand how drivers of BEVs with ranges of greater than 200 miles perceive the way in which they are refueled.

Method

Qualitative interviews were selected for this study due to their ability to capture more in-depth information than questionnaires. This is possible as interviewees are given more time to reflect, to think more deeply about the matter and give more insightful answers. All interviews were audio recorded and after the interviews took place were fully transcribed by the interviewer.

Results

Socio-demographic profile of respondents

- 19 interviewees work in software or computing, 4 work in jobs related to the environment, 3 are professors at universities, 4 work in the medical sector, 2 work in the electric vehicle industry, and 2 work in engineering. 5 high-end BEV owners do not have careers with any link to the environment, technology or BEVs.
- Level of education is high with 18/39 having completed an undergraduate degree, 11 a master's degree, and 7 a doctorate or medical degree.
- Age of interviewees is spread between 35 and 80. Most interviewees were middle aged.
- Car ownership is high at 2.5 cars per household, which is in alignment with other samples of high-end BEV early adopters (15), and is higher than the US average of 1.9.

Results

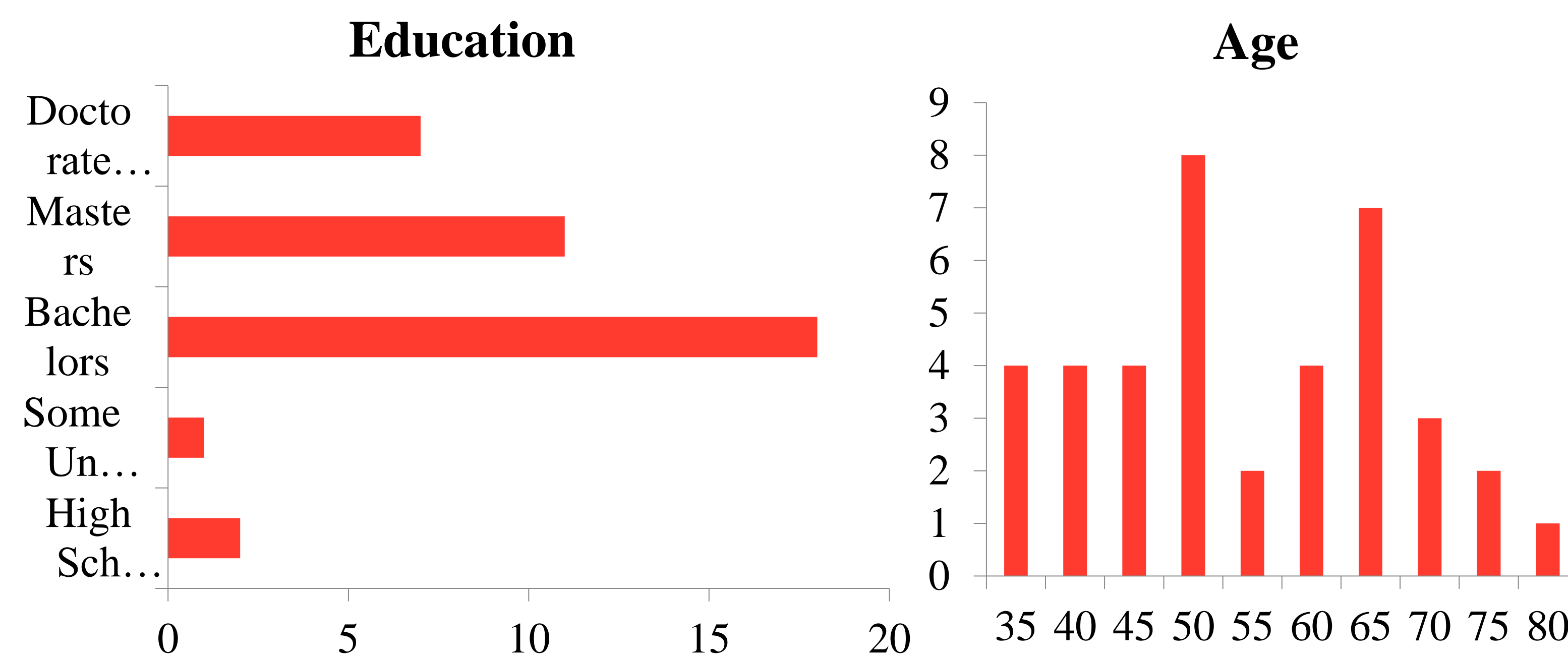


Figure 1: Highest level of education and age of respondents (n=39)

Purchase Motivations & Benefits of Ownership

Purchase Motivations- Performance was a purchase motivation for 27 interviewees. 26 interviewees mentioned environmental motivations, 19 interviewees mentioned technological motivations, and 17 interviewees mentioned the range of a Tesla as a reason for adoption.

Benefits of Ownership- The most prominent benefit of owning a high end BEV is being able to recharge at home. Performance was the next most prominent benefit of ownership with 27 mentioning this. 29 interviewees mention low running costs. Further benefits of ownership include software updates and HOV (high-occupancy vehicle) lane access in California.

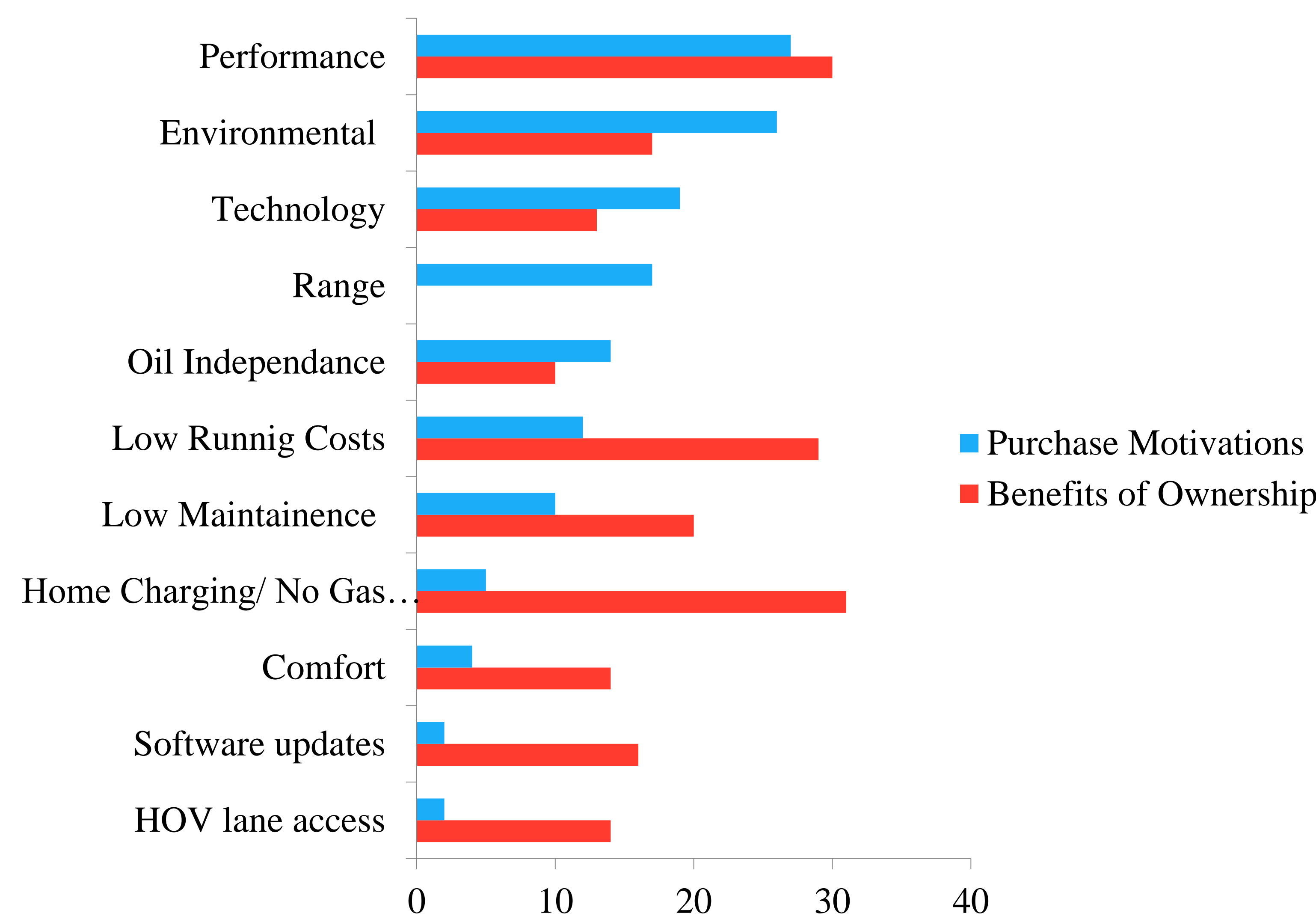


Figure 2: Count of purchase motivations and benefits of ownership of high-end battery electric vehicles (n=39).

Results

Benefits of home recharging

Adopters perceive refueling from home as a significant benefit of owning a BEV. This is due to consumers perceiving it as easier, quicker, more convenient and because they do not have to visit a centralized refueling station

“It’s incredibly convenient not to ever have to go to a gas station, or any central place.”

“There’s gas stations on all four corners from where I live, but its still a pain in the butt. Its still at least 10 minutes of my time”

“Its like my phone, the Tesla has timers so when I pull it into the garage I plug it in and at midnight/1 o’clock it will charge and its easy, there is nothing to it.”

“I don’t have to smell the gasoline and so that’s a plus, and I don’t have to sit there and get gasoline on my hands or whatever.”

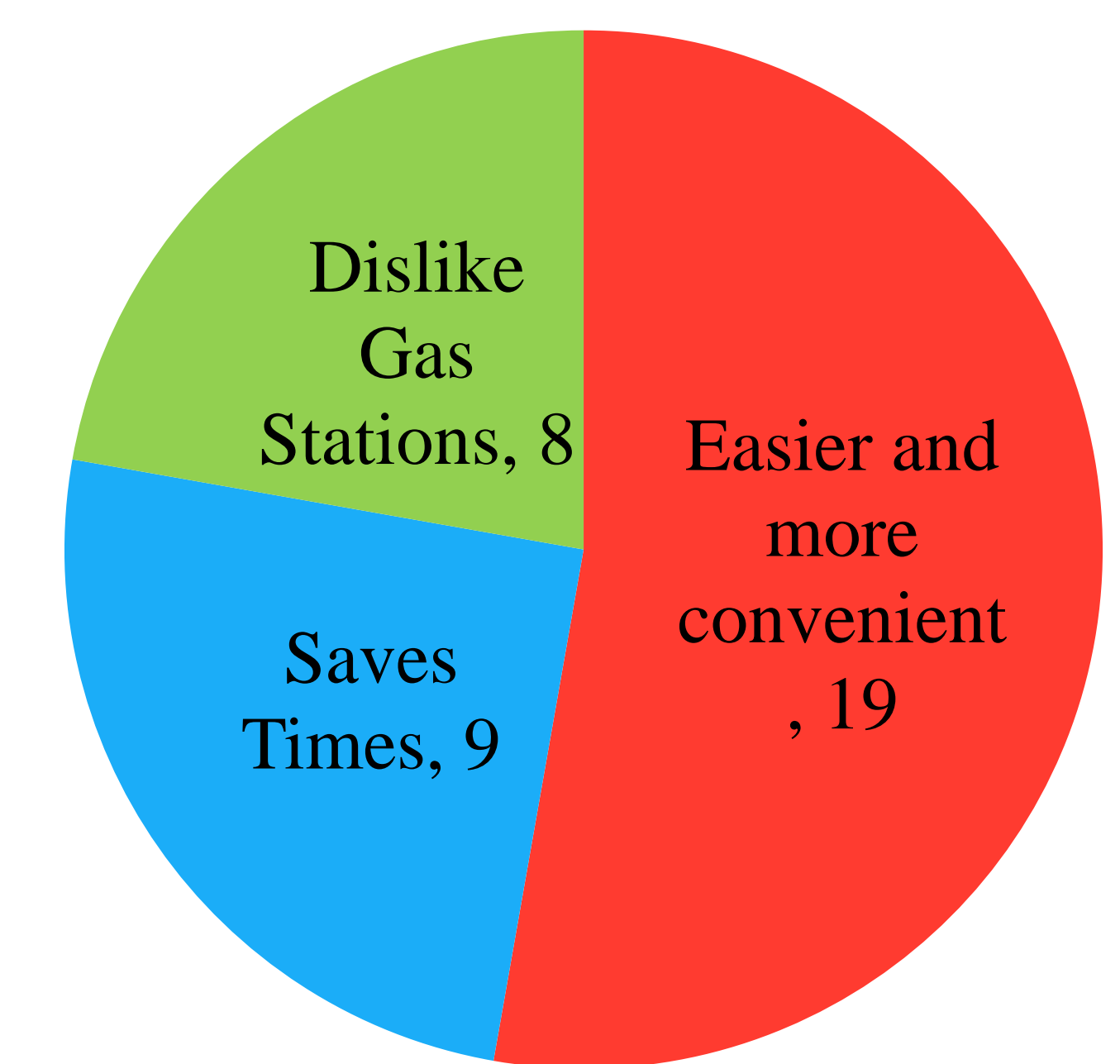


Figure 3: The 3 reasons why home charging of a high-end BEV is viewed as a benefit of ownership (n=31).

Conclusions

- Home charging is beneficial compared to ICEV refueling because it is more convenient, saves time, is easier, and because drivers see gas stations as poor environments.
- BEV refueling should not be viewed as a negative attribute; it is a psychological barrier that requires a behavior change, which is easily made once consumers adopt a BEV.

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