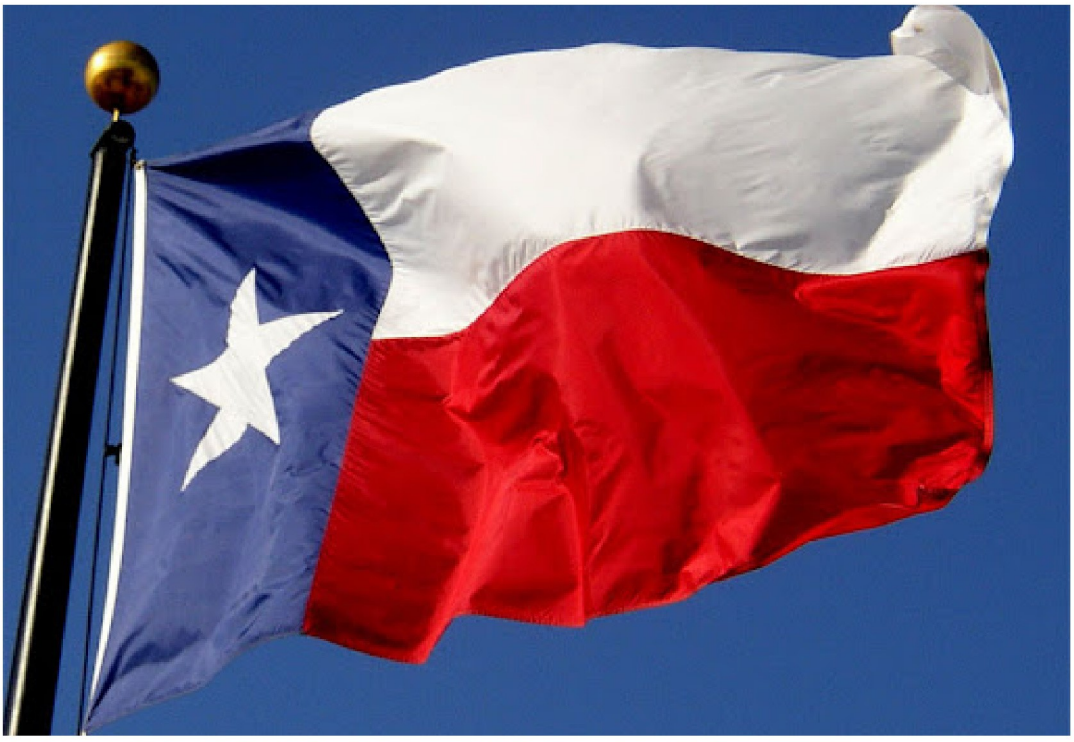


Texas Trends Survey 2021

Electric Vehicles

HOBBY SCHOOL OF PUBLIC AFFAIRS
UNIVERSITY of HOUSTON

TSU
TEXAS SOUTHERN UNIVERSITY
Barbara Jordan – Mickey Leland School of Public Affairs

Research Team

Michael O. Adams, Professor of Political Science and founding director of the Executive Master of Public Administration Program, Barbara Jordan – Mickey Leland School of Public Affairs, Texas Southern University
Gail Buttorff, Co-Director, Survey Research Institute, and Instructional Assistant Professor, Hobby School of Public Affairs, University of Houston
Renée Cross, Senior Director and Researcher, Hobby School of Public Affairs, University of Houston
Jim Granato Dean, Hobby School of Public Affairs, University of Houston
Mark P. Jones, Joseph D. Jamail Chair in Latin American Studies, James A. Baker III Institute for Public Policy's Fellow in Political Science, and Professor, Department of Political Science, Rice University; Senior Research Fellow, Hobby School of Public Affairs, University of Houston
Johanna Luttrell, Assistant Director, Elizabeth D. Rockwell Center on Ethics and Leadership; Instructional Assistant Professor, Hobby School of Public Affairs, University of Houston
Henrietta MacPepple, Research Assistant, Hobby School of Public Affairs and PhD Candidate, Department of Political Science, University of Houston
Maria P. Perez Argüelles, Researcher Associate, Hobby School of Public Affairs, University of Houston
Pablo M. Pinto, Director, Center for Public Policy, and Professor, Hobby School of Public Affairs, University of Houston
Carroll Robinson, Associate Professor, Department of Political Science, Texas Southern University
Savannah L. Sipole, Research Associate, Hobby School of Public Affairs, University of Houston
Agustín Vallejo, Post-Doctoral Fellow, Hobby School of Public Affairs, University of Houston
Sunny M. C. Wong, Professor, Hobby School of Public Affairs, University of Houston

Executive Summary

The survey, fielded between October 4 and October 21, 2021, asked the 2,067 respondents about whether they owned or planned to own an electric vehicle, the reasons why they would not consider owning or leasing an electric vehicle in the future, and support for three policy options aimed at encouraging the purchase or lease of electric vehicles.

Over 90% of respondents did not currently own or lease a vehicle that only uses electric power. Of those Texans who said yes, respondents who belonged to the Millennial or Gen Z generations were more likely to currently own or lease an electric vehicle.

Of those who did not currently own or lease an electric vehicle, the survey asked about the likelihood of purchasing or leasing one in the future. Only 11% of Texans who said they were very likely to own or lease an electric vehicle compared to 38% who said they were not at all likely.

Most respondents from the Silent/Boomer generation (57%) said they were not at all likely to purchase or lease an electric vehicle with a further 24% saying they were not too likely. Gen Z respondents, by contrast, were the most likely to consider purchasing or leasing an electric vehicle in the future. Forty-five percent of Gen Z'ers and 36% of Millennials said they were somewhat likely to purchase or lease one in the future. Gen X respondents showed more willingness than those in the Silent/Boomer generation but less than the two younger generations.

Cost of electric vehicles was one of the main reason why respondents said they would not consider buying or leasing an electric vehicle with 57% of respondents selecting this option. The lack of charging stations was the second most selected option. Respondents who identified as Democrats (54%) were more likely to say that there are not enough charging stations, while the majority of individuals who identify as either Republican (57%) or Independent (63%) were less likely to purchase or lease an electric vehicle in the future because of the cost.

Forty-percent of respondents said that the electric vehicle would need to travel 300 or more highway miles on a single-charge range for them to considering purchasing or leasing one. Still, 30% said they would never purchase or lease an electric vehicle. In terms of wait times for an

electric vehicle to charge, respondents willingness to wait was inversely related to the travel distance.

Two of three proposed policy options for electric vehicles in the future were supported by a substantial majority of Texans. Seventy-one percent of respondents strongly or somewhat supported the creation, by 2035, of a network of electric vehicle charging stations across Texas and the U.S. comparable to the network of gas stations.

Black (67%) and Hispanic (63%) respondents revealed more support than white (52%) respondents for creating a network of charging stations across the U.S. and Texas. Men (61%) were also more likely than women (57%) to support this policy option. A robust majority of Millennial (73%) and Gen Z (72%) respondents support the creation of a charging station network, while about half of those in the Gen X cohort (54%) and less than half of the Silent/Boomer generation (45%) supported this policy.

The second most supported policy option was the creation of a federal tax rebate for any person who purchases an electric powered vehicle. Three-fifths of respondents (63%) strongly or somewhat supported a federal rebate. The least popular policy option among Texans was to require all new vehicles sold to be electric by the year 2035; only 40% of respondents strongly or somewhat support this policy.

Republicans were, overall, the least likely to support any of the policy options and Democrats were the most likely with a substantial majority supporting both a federal tax rebate (72%) or the creation of a network of charging stations (76%).

About a third of respondents with household incomes of $40,000 or less supported new vehicles being sold as electric, while those in the $60,000-79,999 bracket and those with household incomes greater than $100,000 supported this policy option the most.

Contents

List of Figures

List of Tables

Chapter 1: Introduction

The U.S. has made significant progress toward the use of electric vehicles. The Biden-Harris Administration along with automobile giants such as Tesla, Mercedes-Benz, Ford Motors, General Motors, and China's BYD, are working to gradually eliminate the sale of gas-powered vehicles by 2040.[1] While there is progress at the national and state levels, some major challenges remain for this transition to electric vehicles, including vehicle cost, lengthy charging times, infrastructure for charging stations, electric grid capacity, and mileage range, among others.

Texans are no strangers to the issues and challenges involving the electric grid and power generation capacity. Electric vehicles are generally more expensive than their gasoline-fueled counterparts and "maximizing the use of renewable energy to power electric vehicles is crucial" (Glandorf 2020).[2,3] So as not to further strain the grid, the power generation capacity in Texas and elsewhere will therefore need to be overhauled to accommodate electric vehicles.[4]

When it comes to infrastructure, homeowners can charge their electric vehicles in their homes with a wall-mounted charger; for those living in apartments, however, it is not so easy. Few apartment parking garages currently have charging infrastructure and building managers may find it too costly to install.[5] Additionally, compared to typical residential energy use, electric vehicle charging consumes more energy; thus, apartment building managers need a way to monitor electric vehicle charging to ensure electric vehicle owners pay for the electricity they consume charging their vehicle.[6]

Longer trips with an electric vehicle can be more challenging without expanded infrastructure since they need to be charged; however, most electric vehicles on the market today now offer ranges of over 260 miles.[7] To date, installing charging stations is expensive. Chargers cost between

[1] Plumer, Brad, and Hiroko Tabuchi. 2021. "6 Automakers and 30 Countries Say They'll Phase Out Gasoline Car Sales." The New York Times

[2] Glandorf, Joseph. 2020. "On the Move: Unpacking the Challenges and Opportunities of Electric Vehicles." Environmental and Energy Study Institute

[3] New electric vehicles cost between $30-40,000, in large part because of battery production costs (Stringer, David, and Kyunghee Park. 2021. "Why an Electric Car Battery Is So Expensive, For Now." Bloomberg.com.).

[4] Ibid fn. 2

[5] Ibid fn. 2; modera™. 2021. "Infrastructural Challenges for Widespread Adoption of Electric Vehicles." modera™

[6] Ibid fn. 2

[7] Doll, Scooter. 2021. "Longest-Range Electric Vehicles (EVs) You Can Buy in 2021." Electrek.

$2,500 and $35,000 depending on the type (e.g., level 2 vs. DC fast charger) in addition to the indirect or "soft costs."[8]

With these challenges in mind, legislators are working to enact policies to help in the transition toward cleaner energy use and emission reduction. President Biden signed the Infrastructure Investment and Jobs Act (2021) on November 15, 2021, a bipartisan infrastructure bill that includes $7.5 billion for the construction of a national network of chargers and infrastructure to help accelerate the adoption of electric vehicles reduce emissions from gasoline- and diesel-powered vehicles.[9] The Act (H.R.3684) sets standards for electric vehicle charging stations[10] and creates grants for publicly accessible charging and fueling infrastructure to reduce climate change.[11] In addition, the Act requires a study on the environmental impact of electric vehicles that will take place 120 days after the enactment of the Act.[12] The Federal Highway Administration section of H.R.3684 also outlines budget allocations to provide funding for states to deploy, operate, and maintain electric vehicle charging infrastructure.

Many states are also joining in to help in the transition by offering incentives via government rebates and grants to individuals who opt to purchase an electric vehicle. In addition to legislative support, many local utility companies offer rebates for those who purchase or lease electric vehicles, in turn making the transition from gasoline- or diesel-powered vehicles more affordable. In Texas, companies such as Austin Energy offer electric vehicle owners rebates for the purchase and installation costs of a charging station.[13]

Additionally for Texans, several state agencies offer rebates for customers who lease or own an electric vehicle which meets certain eligibility standards. The Texas Commission on Environmental Quality, for example, now offers rebate incentives for eligible vehicles according to the Texas Health and Safety Codes and the Texas Administrative Code.[14] The Texas Natural Gas Vehicle (NGV) grant program offers grants to replace or convert vehicles weighing more than 8,500 pounds into vehicles that operate, at least 60%, on natural gas or propane.[15,16] Similarly, the Texas Clean Fleet Program (TCFP) offers grants to replace fleet vehicles with electric or alternative fuel vehicles,[17,18] while the Governmental Alternative Fuel Fleet Grant Program (GAFF) has grants for the purchase or lease of vehicles powered by natural gas, propane, hydrogen, or electricity.[19]

[8] Ibid fn. 2
[9] H.R. 3684 Infrastructure Investment and Jobs Act (2021)
[10] Ibid fn. 9, see Sec. 11129
[11] Ibid fn. 9, see Sec. 11401
[12] Ibid fn. 9, see Sec. 40435
[13] https://ev.austinenergy.com/incentives/
[14] Light-Duty Motor Vehicle Purchase or Lease Incentive Program:https://www.tceq.texas.gov/airquality/terp/ld.html
[15] Alternative Fuels Data Center: Texas Laws and Incentives:https://afdc.energy.gov/laws/all?state=TX
[16] Texas Natural Gas Vehicle Grant Program:https://www.tceq.texas.gov/airquality/terp/tngvgp.html
[17] Ibid fn. 15
[18] Texas Clean Fleet Program: https://www.tceq.texas.gov/airquality/terp/tcf.html
[19] Governmental Alternative Fuel Fleet Grant Program: https://www.tceq.texas.gov/airquality/terp/gaff

Despite the incentives offered by various state programs, some Texas legislators have proposed legislation to increase the cost of owning an electric vehicle to compensate for lost income from gasoline taxes.[20] Additionally, other policies in Texas ban car companies from selling directly to customers. With these types of franchise laws, companies who produce and sell electric vehicles, like Tesla, must first sell vehicles to independently owned, third-party car dealerships who are then allowed to sell to Texans.[21]

Hobby School/TSU Texas Trends Survey

The Hobby School of Public Affairs at the University of Houston and the Barbara Jordan – Mickey Leland School of Public Affairs at Texas Southern University are conducting a five-year survey project to study Texas's changing population, with emphasis on the state's Black, Latino, and Asian residents. In addition to a representative sample of all Texans, the survey includes an over sample of these three groups to allow for an objective and statistically valid report of their opinions and experiences.

The first survey of this five-year project focused on opinions about recently passed legislation during the 2021 regular and special sessions of the Texas Legislature and preferences related to electric vehicles and criminal justice issues. The survey was fielded between October 4 and October 21, 2021 in English and Spanish. A total of 2,067 YouGov respondents 18 years of age and older took the survey, resulting in a confidence interval of ±2.2% at the 95% confidence level. The respondents were matched to a sampling frame on gender, age, ethnicity/race, and education and are representative of the Texas adult population.

This is the fourth report from the first survey.[22] This report examines Texans' political attitudes related to electric vehicles, challenges to electric vehicle adoption, and support for public policies that would promote the purchase and lease of electric vehicles.

Survey Population Demographics

The weighted survey population is split almost equally between women (51%) and men (49%). Forty-five percent of respondents are white, 37% Hispanic, 12% Black, 4% Asian, and 2% as other. In regard to generations, 31% of respondents belong to the combined Silent Generation (born between 1928-1945) and Baby Boomer (1946-1964) cohorts, 27% to Gen X (1965-1980), 31% to the Millennial (1981-1996) generation, and 11% to Gen Z (1997-2003).[23] Religion is very important in the life of 40% of Texans surveyed, somewhat important in the life of 28%, not too important in the life of 14%, and not at all important in the life of 18%. Finally, 31% of the population identifies

[20] Tex. S.B. 1728, 87th Leg., R.S. (2021): https://capitol.texas.gov/tlodocs/87R/billtext/html/SB01728I.htm

[21] Voelcker, John. 2021, May 27. "Tesla Will Have to Ship Its Texas-Built Cars Out of State to Sell Back to Residents." The Drive. See also the Texas Occupations Code, Sec. 2301.252: https://statutes.capitol.texas.gov/docs/oc/htm/oc.2301.htm

[22] Previous reports can be found here: https://uh.edu/hobby/txtrends/

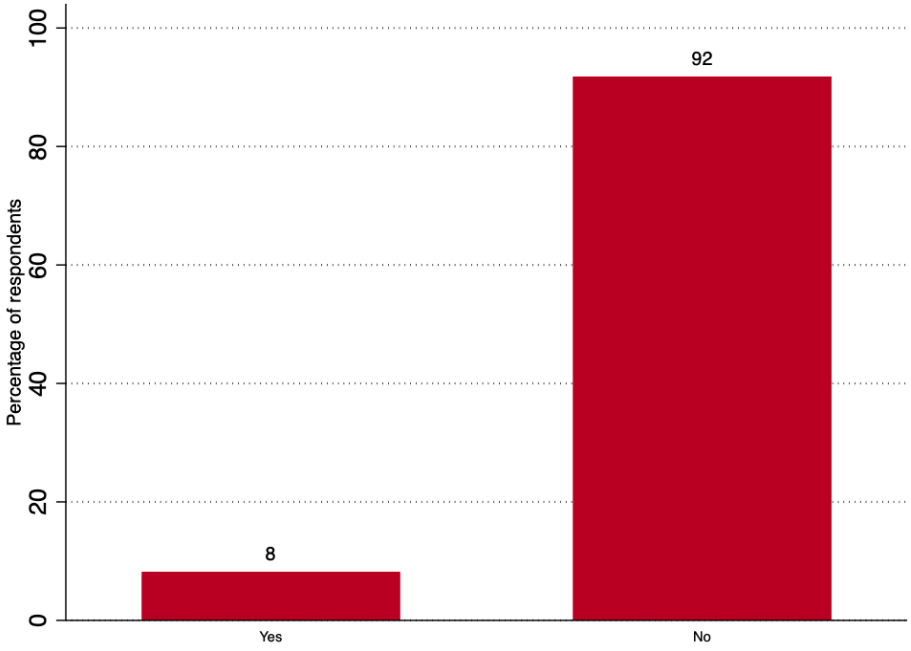
[23] Gen Z extends to 2012 but only respondents aged 18 and older are included in the survey.

as Democrat, 30% as Republican, 29% as Independent, with 8% unsure and 3% who identify with another political party or group. This report looks at relationship with five demographics: generation, gender, race/ethnicity, party ID, and income.

Chapter 2: Owning and Leasing Electric Vehicles

In regard to electric vehicles, the survey respondents were first asked if they currently own or lease a vehicle - whether car, SUV, or truck - that *only* uses electric power. Figure 2.1 shows that only eight percent of respondents currently own or lease an electric vehicle.

Figure 2.1: Do you currently lease or own an electric vehicle (a car, SUV or truck) that only uses electric power?



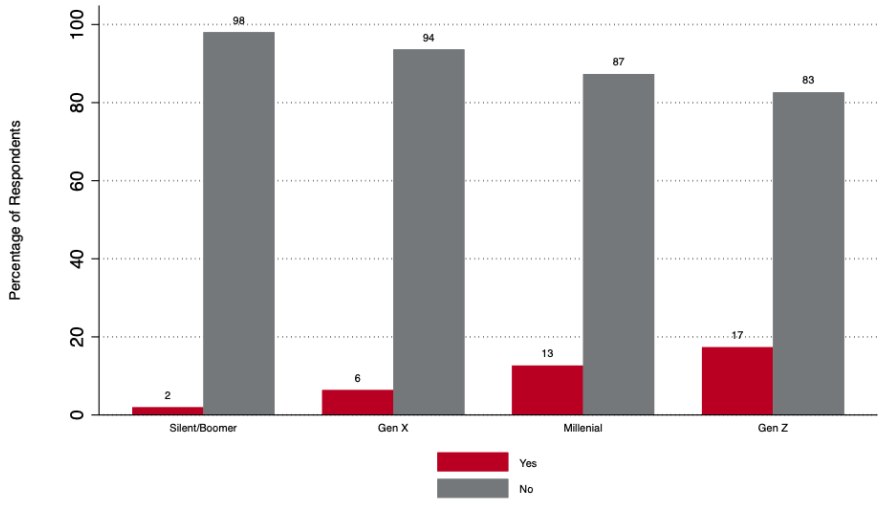
Owning or leasing an electric vehicle was not related to income, gender, or party ID; however, it was related to race/ethnicity (Table 2.1) and generation (Figure 2.2). Black (11%) and Hispanic (12%) respondents were more than twice as likely as white respondents to currently own or lease an electric vehicle; only 4% of white respondents reported owning or leasing an electric vehicle.

Table 2.1: Lease or own electric vehicle by race/ethnicity

	Race/Ethnicity			
	White	**Black**	**Hispanic**	**Total**
	%	%	%	%
Yes	4	11	12	8
No	96	89	88	92
Total	100	100	100	100

As for generational differences, Gen Z respondents were the most likely to own or lease an electric vehicle (17%) compared to 13% of Millennial and 6% of Gen X respondents. Only 2% of respondents from the Silent/Boomer generation reported owning or leasing an electric vehicle.

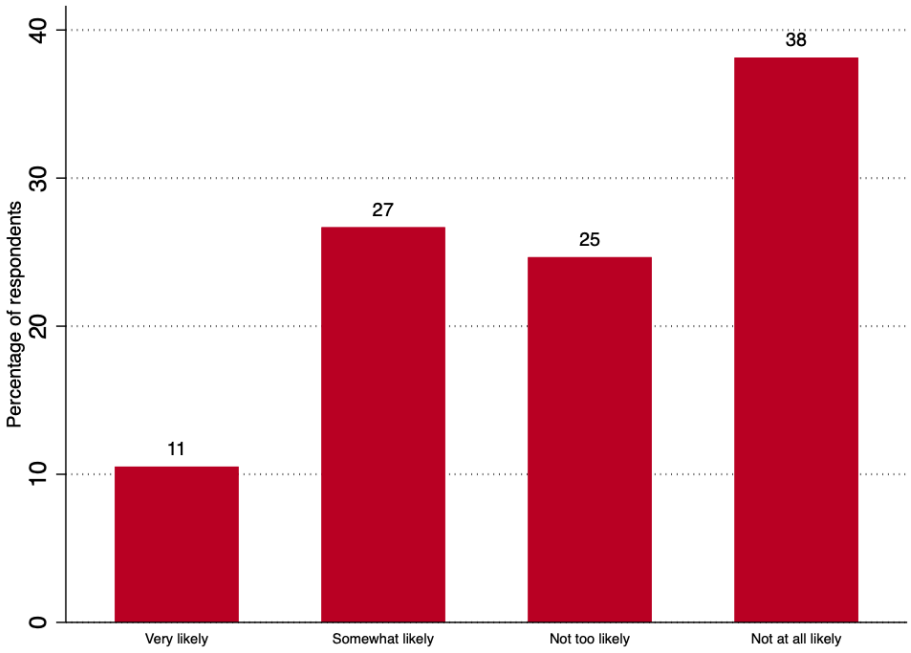
Figure 2.2: Lease or own electric vehicle by generation



Likelihood of future ownership

Respondents who reported not owning or leasing an electric vehicle to the first question were then asked how likely they are to own or lease an electric vehicle in the future. Figure 2.3 shows that 38% of respondents were not at all likely to own or lease an electric vehicle. A further 25% and 27% said they were not too likely and somewhat likely, respectively. Only 11% said they were very likely to consider purchasing or leasing an electric vehicle in the future.

Figure 2.3: Based on what you know about electric vehicles (cars, SUVs and trucks) that only use electric power, the next time you lease or purchase a vehicle, how likely are you to seriously consider leasing or purchasing an electric vehicle?



When it comes to future ownership, we do see relationships between how likely respondents are and key demographics such as party ID, generation, and gender. The majority of respondents from the Silent/Boomer generation (57%) said they were not at all likely to purchase or lease and electric vehicle in the future, with 24% saying they were not too likely (Figure 2.4). By contrast, 45% of Gen Z'ers and 36% of Millennials said they were somewhat likely to purchase or lease one in the future. Gen X respondents showed more willingness than those in the Silent/Boomer generation to purchase or lease an electric vehicle but less than the two younger generations.

As shown in Table 2.2, white respondents were much more likely to say they were not at all likely to purchase or lease an electric vehicle compared to Hispanic and Black respondents. Forty-six percent of white respondents said they were not at all likely to purchase or lease an electric vehicle with a further 24% saying they were not too likely. By comparison, 29% of Black and 32% of Hispanic respondents said they were not at all likely, with 27% and 24%, respectively, saying they were not too likely.

Figure 2.4: Likelihood of owning or leasing an electric vehicle by generation

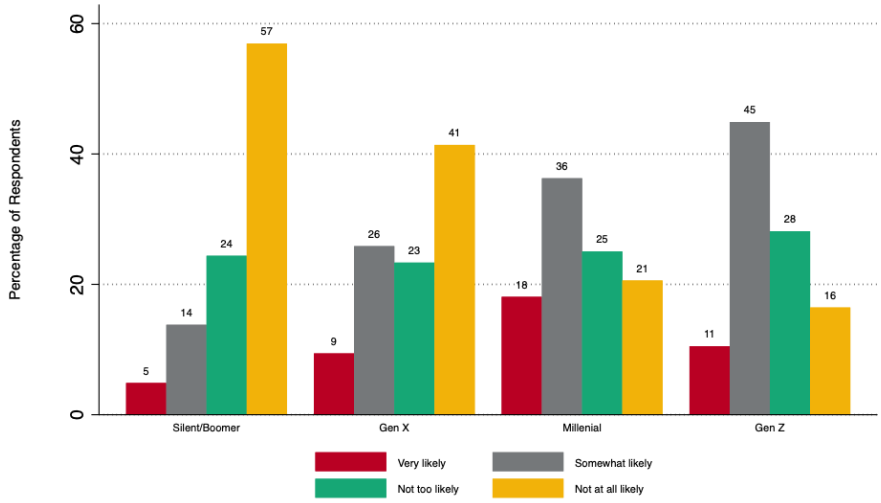


Table 2.2: Likelihood of leasing or purchasing electric vehicle by race and ethnicity

	Race/Ethnicity			
	White	**Black**	**Hispanic**	**Total**
	%	%	%	%
Very likely	11	13	10	10
Somewhat likely	19	31	34	27
Not too likely	24	27	24	25
Not at all likely	46	29	32	38
Total	100	100	100	100

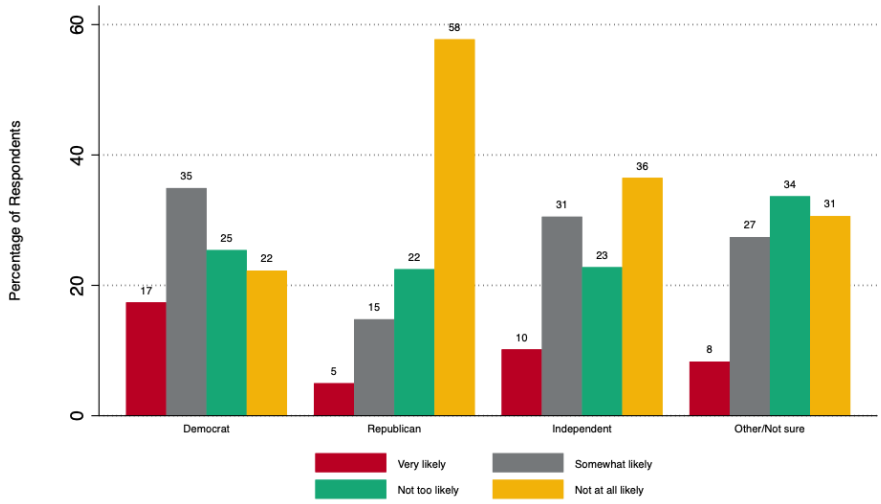
Table 2.3: Likelihood of leasing or purchasing electric vehicle by gender

	Gender		
	Male	**Female**	**Total**
	%	%	%
Very likely	12	9	10
Somewhat likely	30	23	27
Not too likely	23	26	25
Not at all likely	35	42	38
Total	100	100	100

Table 2.3 reveals that a higher proportion of female respondents reported that they were not at all likely compared to male respondents (42% vs. 35%). From Figure 2.5, we can see that respondents who identify with the Republican party (58%) were also more likely to say they are not at all interested compared to Democrats (22%), Independents (36%), and those who identified with

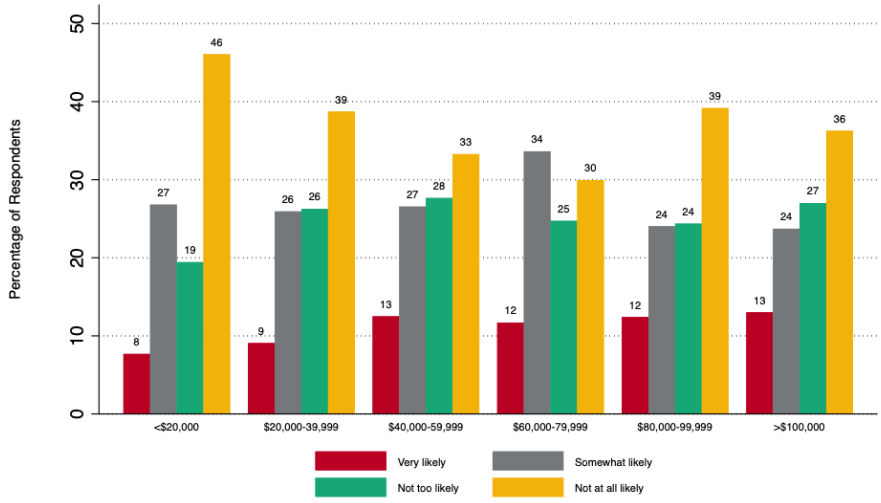
no or another political party (31%). Democrats, on the other hand, were more likely to report interest in leasing or owning an electric vehicle in the future, with 52% saying they were somewhat or very likely to purchase or lease, followed by Independents with 41% reporting some interest.

Figure 2.5: Likelihood of owning or leasing an electric vehicle by party ID



Finally, Figure 2.6 shows that, across income groups, the plurality of respondents are not at all likely to purchase or lease an electric vehicle in the future; though the highest proportion reporting not at all likely is among those earning less than $20,000. The middle two income groups - those between $40,000 and $79,999 - were slightly more likely to express an interest in leasing or purchasing an electric vehicle than those earning less than $40,000 or more than $80,000.

Figure 2.6: Likelihood of owning or leasing an electric vehicle by income group



Chapter 3: Reasons for not Purchasing or Leasing an Electric Vehicle

The survey not only explored who was not very likely to purchase or lease an electric vehicle but also why. For respondents who were not very likely to purchase or lease an electric vehicle in the future, the survey asked respondents why they were not interested. Possible reasons included (1) electric vehicles are too expensive, (2) lack of charging stations, (3) prefer gasoline vehicles, (4) lack of sufficient single-charge range, (5) lack of affordable service and repair, (6) no place to charge overnight at home, and (7) electric vehicles are bad for the environment. Respondents were also able to choose none of the above or do not want or need to own a vehicle.

Overall, the majority of respondents agreed that they are not likely to buy or lease and electric vehicle because they are too expensive (57%) and because of a lack of charging stations (53%). The least selected reasons were that electric vehicles are bad for the environment (11%), do not want or need to own a vehicle (6%) and none of the listed options (7%). This section describes the differences in participants' selection of responses by generation, political party identification, gender, race/ethnicity, and income group.

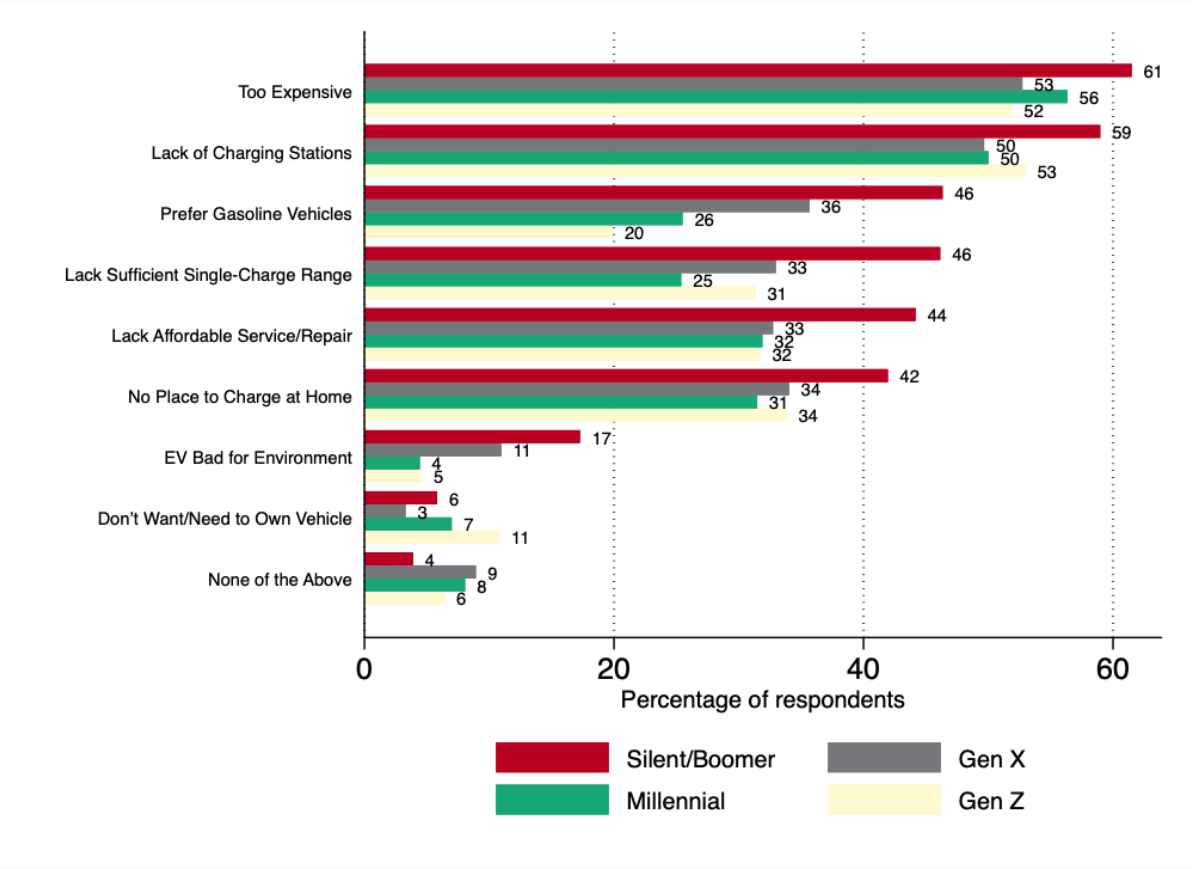
Generation

Regardless of generation, more than half of the respondents agree that electric vehicles are too expensive. As shown in Figure 3.1, Silent/Boomer respondents were the most likely to report the cost as a reason (61%), a nine percentage-point gap with Gen Z. A lack of charging stations was the second most cited reason across generation groups, with Silent/Boomer respondents being the most likely to report lack of charging stations (59%). Respondents from the Silent/Boomer generation were also far more likely to report, by at least 10 percentage points, that they prefer gasoline powered vehicles (46%) *and* a lack of sufficient single-charge range (46%) as reasons for not wanting an electric vehicle in the future.

For Gen Z respondents, lack of charging stations was the most cited reason (53%) followed by the cost of electric vehicles (52%). Cost and lack of charging stations were also the top two reasons

cited by Millennials. Only 20% of Gen Z respondents and 26% of Millennials said they preferred gasoline vehicles compared to 36% of Gen X and 46% of Silent/Boomer respondents, a more than 10 percentage-point gap.

Figure 3.1: Reasons for not wanting to purchase or lease an electric vehicle by generation



Race and ethnicity and gender

In addition to differences across generations, we also see differences in respondents' reasons by race/ethnicity and gender (Figure 3.2 and Figure 3.3). White respondents were the most likely to select any of the listed reasons, with the exception of none of the above and not wanting or needing a vehicle. A majority of white respondents said that cost and a lack of charging stations were reasons they were unlikely to purchase or lease an electric vehicle in the future. White respondents were more than 1.5 times as likely to select lack of sufficient single-charge range and lack of affordable service and repair than Black and Hispanic respondents. Cost and lack of charging stations were also the top two reasons cited by Black and Hispanic respondents.

Besides not wanting or needing a vehicle and none of the above, believing electric vehicles are bad for the environment was the least chosen reason across race/ethnicity groups; however, white respondents were approximately four times as likely to choose this option compared to Black and Hispanic respondents.

Similar to other demographics, cost and a lack of charging stations were the top reasons cited by both men and women. Sixty percent of men and 54% of women who were unlikely to purchase or lease an electric vehicle in the future cited cost as one of the reasons. A majority of both men and women also said that a lack of charging stations was a reason behind not wanting to purchase or lease an electric vehicle in the future.

More women than men answered that they are not very likely to buy or lease electric vehicles because of a lack of affordable service and repair and a preference for gasoline vehicles, or because they do not have a place to charge overnight at home. More men than women, by contrast, said that cost, lack of charging stations, sufficient single-charge range, and electric vehicles being bad for the environment were reasons for not wanting to purchase or lease an electric vehicle.

Figure 3.2: Reasons for not wanting to purchase or lease an electric vehicle by race/ethnicity

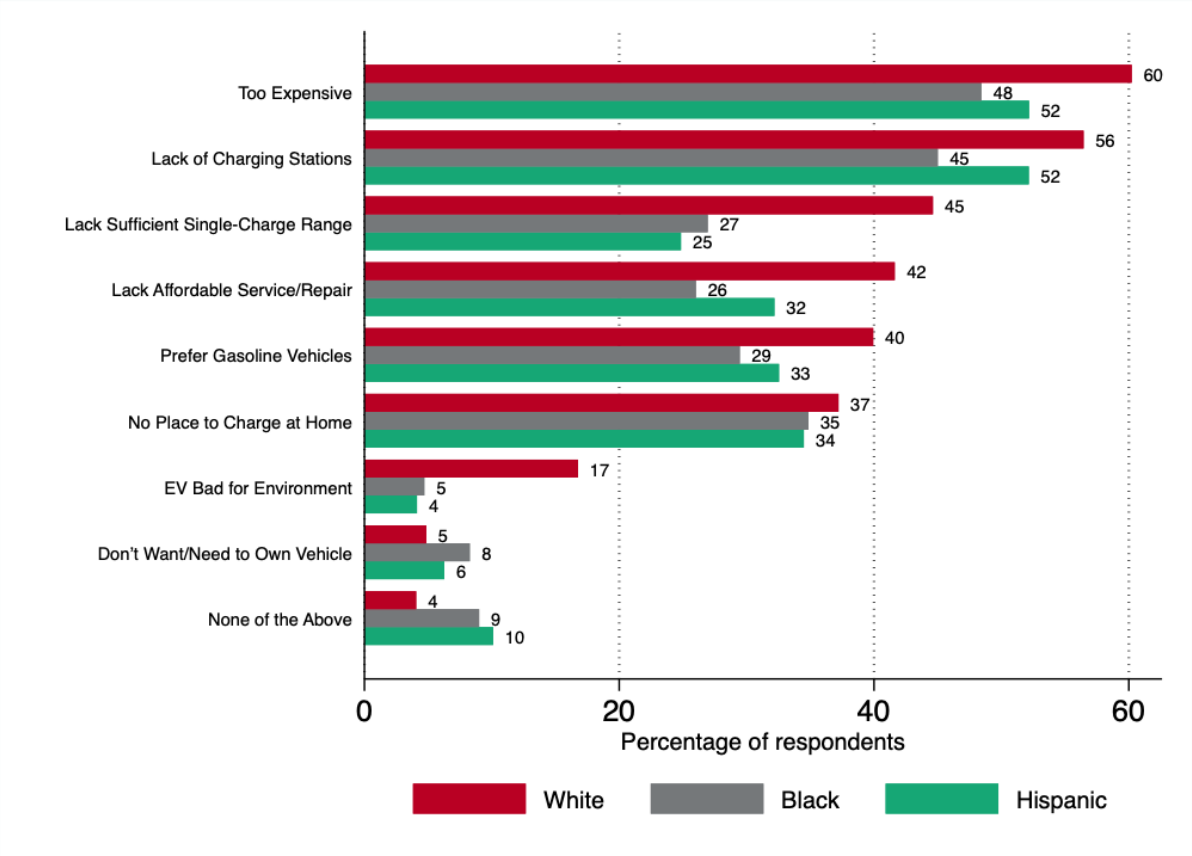
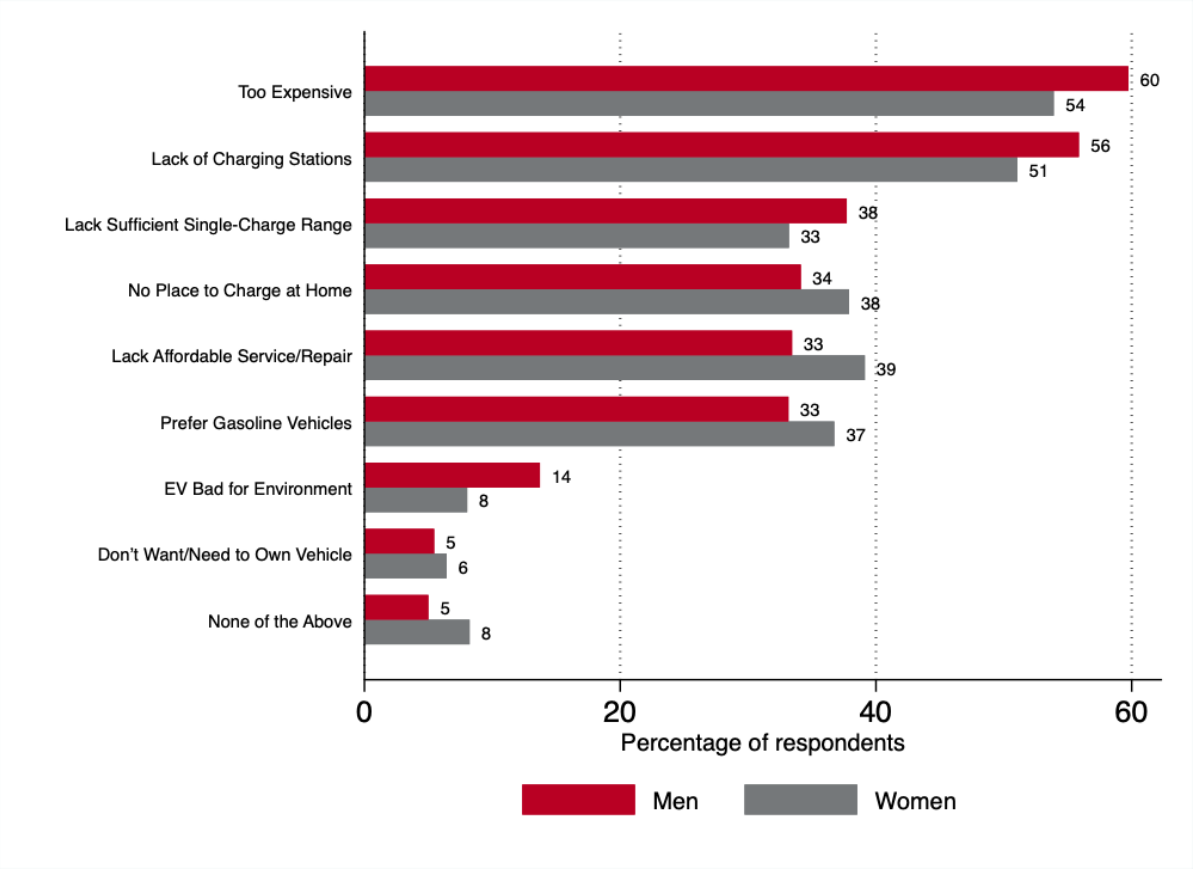


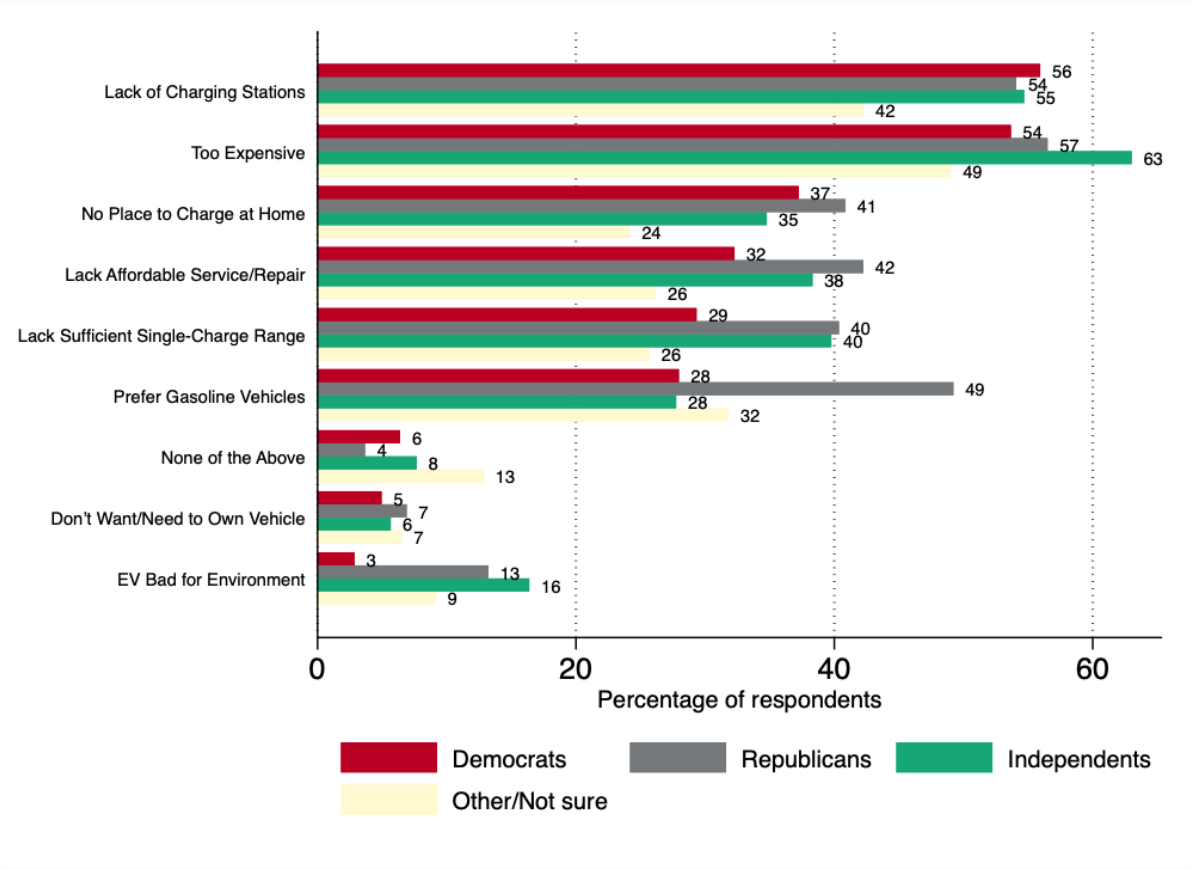
Figure 3.3: Reasons for not wanting to purchase or lease an electric vehicle by gender



Party ID

Figure 3.4 shows the reasons why respondents are not likely to buy an electric vehicle based on their party identification. Similar proportions of Republicans, Democrats, and Independents said that a lack of charging stations was a reason behind not wanting an electric vehicle. Independents were most likely to cite cost (63%) whereas Republicans were most likely to say that they prefer gasoline vehicles (49%). Republicans and Independents were also more likely than Democrats and those that identify as Other to believe that electric vehicles are bad for the environment. Among Democrats, the top reasons for not wanting to purchase or lease an electric vehicle were lack of charging stations (56%), cost (54%), and no place to charge overnight at home (37%).

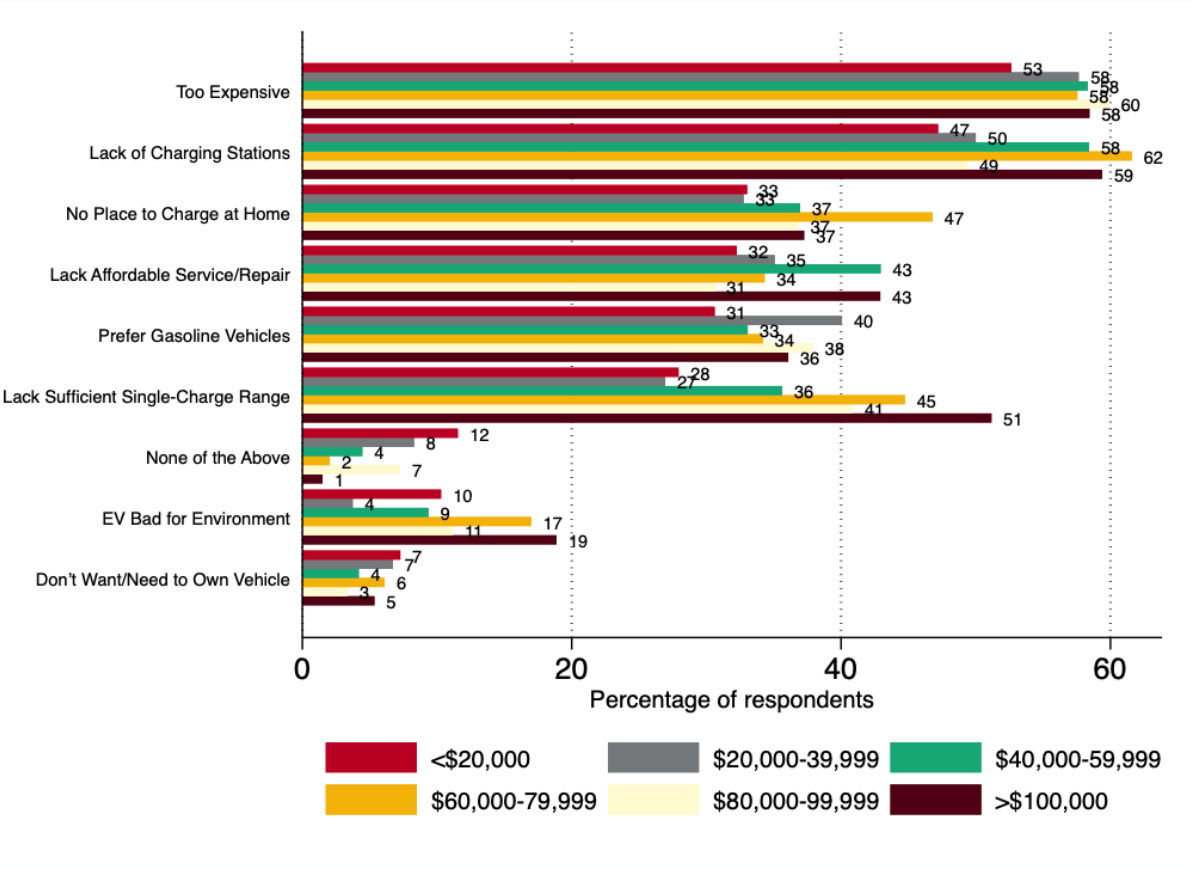
Figure 3.4: Reasons for not wanting to purchase or lease an electric vehicle by by party ID



Income

When we looked at responses by income group, we found no clear pattern between income and reasons why participants are not likely to buy an electric vehicle. Figure 3.5 reveals similar trends across income groups as other demographics; namely, cost and a lack of charging stations were the most frequently chosen reasons across all income levels. A majority of respondents in every income group said that the cost of electric vehicles was one of the reasons behind not wanting to purchase or lease one in the future. A majority of respondents in the higher income groups - with the exception of those earning between $80,000-99,999 - also cited a lack of charging stations, and majority in the highest income group said that the lack of sufficient single-charge range was a reason for not wanting an electric vehicle in the future.

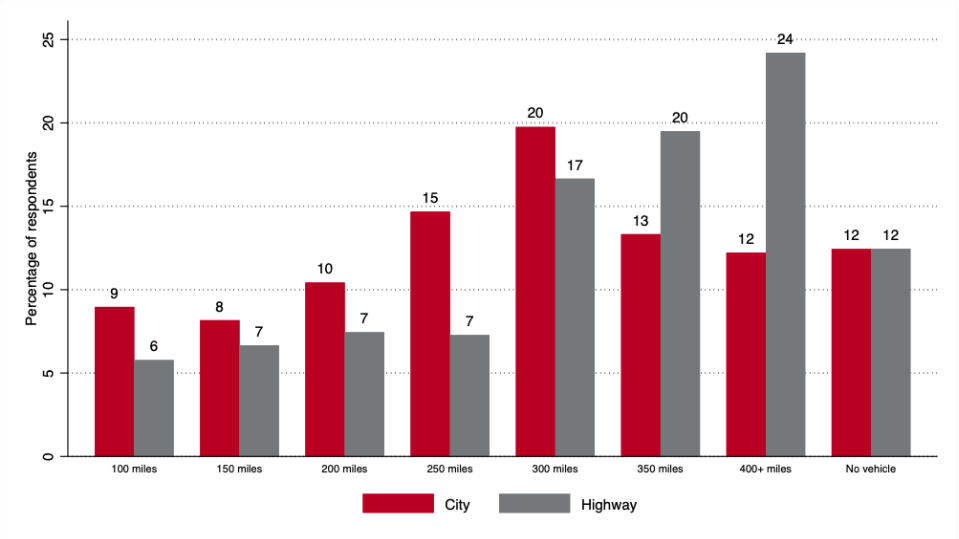
Figure 3.5: Reasons for not wanting to purchase or lease an electric vehicle by income



Chapter 4: Attitudes toward Single-Charge Range

As we saw in the previous chapter, the lack of sufficient single-charge range was one of the top reasons for respondents not wanting to purchase or lease an electric vehicle in the future. For respondents who do not currently own or lease an electric vehicle, the survey asked about the fuel efficiency of their current vehicle as well as efficiency attributes of electric cars that would make them willing to buy or lease. First, respondents were asked how many city and highway miles per gallon their current vehicle can go before needing to fill up. The distribution of responses is shown in Figure 4.1. About 35% of respondents, a plurality, reported that they could drive between 250 and 300 miles in the city on a full tank of gas. As expected, the fuel efficiency reported by respondents increased for the highway. Forty-four percent of respondents reported being able to drive more than 350 miles on the highway with their current vehicle before needing to fill up.

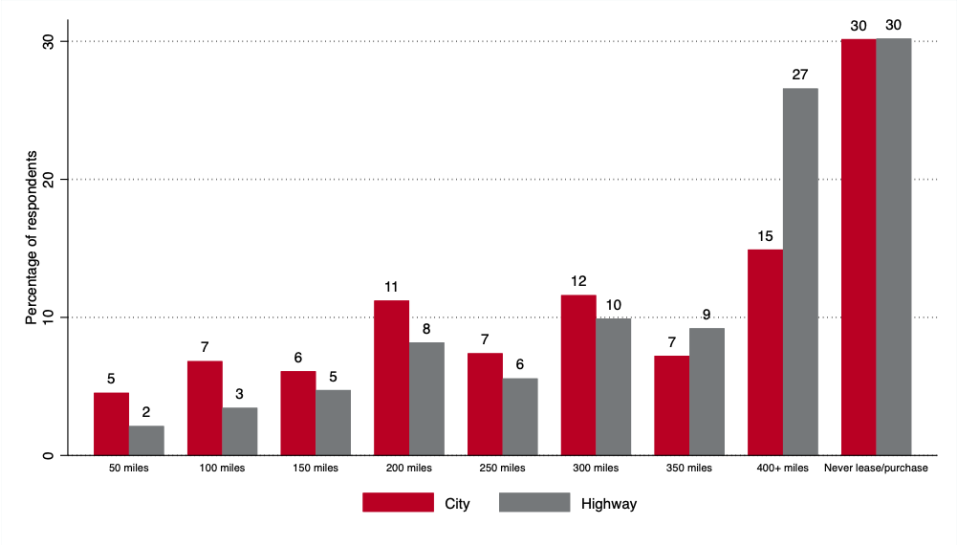
Figure 4.1: How far can you drive your current sole or primary gasoline-powered vehicle (car, SUV or truck) on a full tank before needing to fill it up with gasoline (or diesel) in the City and on the Highway respectively?



Respondents were then asked the minimum number of miles an electric vehicle would need to be able to travel on a single charge for them to consider leasing or purchasing one, again by both city and highway miles (Figure 4.2). Thirty percent of respondents said they would never purchase or lease an electric vehicle regardless of the number of miles traveled on a single charge. For highway travel, respondents clearly preferred a higher minimum number of miles. Twenty-seven percent of respondents said 400 or more miles was the minimum number of miles the vehicle would need to be able to travel on a single charge, followed by 9% who said 350 miles would be the minimum.

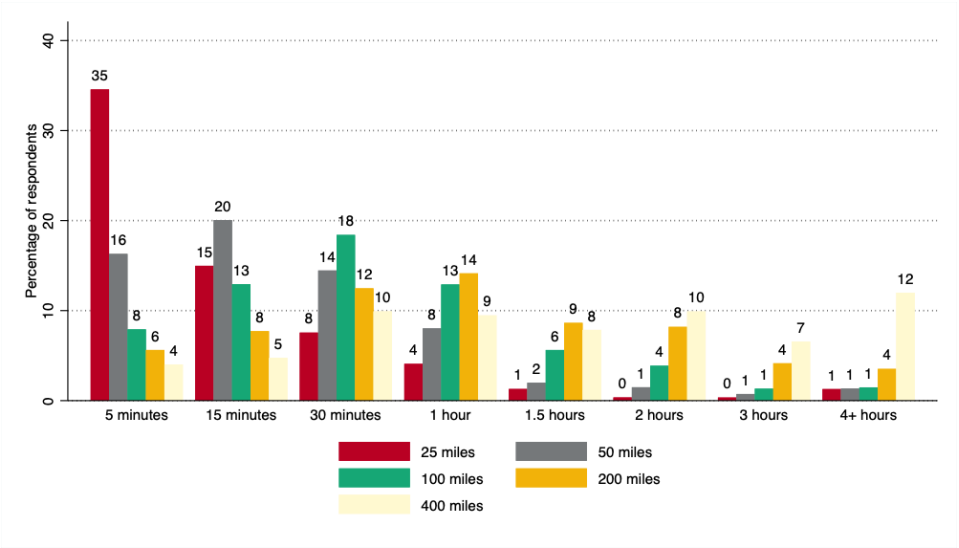
Respondents were slightly more tolerable of shorter distances when asked about the minimum number of miles an electric vehicle would need to travel in the city. While, on average, the preferences was for a higher minimum number of miles for a single charge, more respondents were willing to tolerate lower minimums when considering city driving than for highway driving. For example, 11% of respondents said 200 miles for driving in the city was the minimum, 7% said 250 miles, and 12% said 300 miles.

Figure 4.2: In order for you to be willing to lease or purchase an electric vehicle (car, SUV or truck), what is the minimum number of miles it would need to be able to travel on a single charge in the City and on the Highway respectively?



Finally, respondents were asked how long they would willing to wait for their electric vehicle to charge in order to travel 25, 50, 100, 200, and 400 miles. As shown in Figure 4.3, respondents' willingness to wait for the vehicle to charge is inversely related to travel distance. While 12% of respondents said they would be willing to wait more than four hours for the vehicle to travel 400 miles, only one percent of respondents said they would be willing to wait four hours for the vehicle to travel 25 miles. By contrast, 35% of respondents and 16% of respondents said they would be willing to wait five minutes to travel 25 and 50 miles, respectively.

Figure 4.3: In order for you to be willing to lease or purchase an electric vehicle, what is the longest that you would be willing to wait with your vehicle for the vehicle to be charged enough to travel the following distances?



Chapter 5: Support for Electric Vehicle Policies

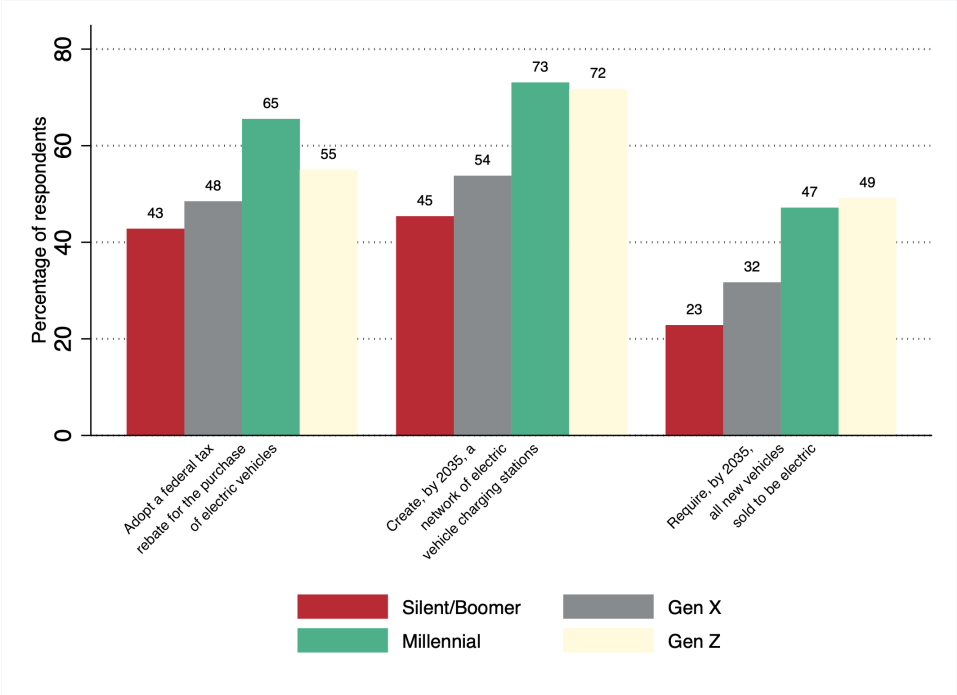
This chapter examines Texans' support for various public policies aimed at promoting the adoption and use of electric vehicles. The survey asked respondents the extent to which they support (strongly support or somewhat support) or oppose (strongly oppose or somewhat oppose) three policies related to electric vehicles:

1. Adopt a federal tax rebate for the purchase of an electric vehicle;
2. Create, by 2035, a network of electric vehicle charging stations across the U.S. and Texas similar to the current network of gas stations; and
3. Require, by 2035, all new cars, SUVs and trucks sold in the U.S. be electric vehicles.

We examined how respondents' preferences for various policy options vary by generational, gender, partisan identification, and income differences. Overall, among each of these demographics, there was more support for the creation of a network of charging stations across Texas and the U.S. by 2035 than for the other two policies. Seventy-one percent of respondents said they either strongly or somewhat support creating a network of charging stations. Three-fifths of respondents supported a federal tax rebate for the purchase of electric vehicles, but fewer than half (40%) said they strongly or somewhat support requiring all new vehicles to be electric by 2035.

Generation

Figure 5.1: Electric vehicle policy support by generation



This section examines the support for three policies across four generational groupings: Silent/Baby Boomer, Generation X, Millennial, and Generation Z. From Figure 5.1, we see a large majority of the Millennial (65%) and Gen Z (55%) generations strongly or somewhat support the adoption of a federal tax rebate for the purchase electric vehicles. In addition, respondents from these younger generations were supportive of creating a network of charging stations: 73% and 72% of Millennial and Gen X respondents, respectively, supported creating a network for electric vehicle charging stations by 2035.

Nearly half of the Silent/Boomer (43%) and Gen X (49%) cohorts supported the federal tax rebate, and 45% and 54%, respectively, supported the creation of a network of electric vehicle charging stations by 2035. There was less support among all generations with regard to requiring all new vehicles sold to be electric by 2035. Younger generations again revealed more support with 47% and 49%, respectively, supporting new vehicle regulations compared to 23% and 32% of respondents from the two older generations.

Race and ethnicity and gender

Along with the generational differences, we see similar differences in policy support by race/ethnicity and gender (see Figures 5.2 and 5.3). The creation of a network of electric charging stations by

2035 received the most support across all racial/ethnic groups. Nearly two-thirds of Black (67%) and Hispanic (63%) respondents strongly or somewhat supported this policy, and slightly over half (52%) of respondents who identified as white were in support. Similarly, 62% of Black and 55% of Hispanic respondents supported the policy to adopt a federal tax rebate for those who purchased an electric vehicle compared to 47% of white respondents. Like support across generations, requiring all new vehicles sold to be electric had the lowest support across all racial and ethnic groups. Still, support for this requirement was higher among Black and Hispanic respondents (44% and 41%, respectively) than among white respondents (28%).

Figure 5.2: Electric vehicle policy support by race and ethnicity

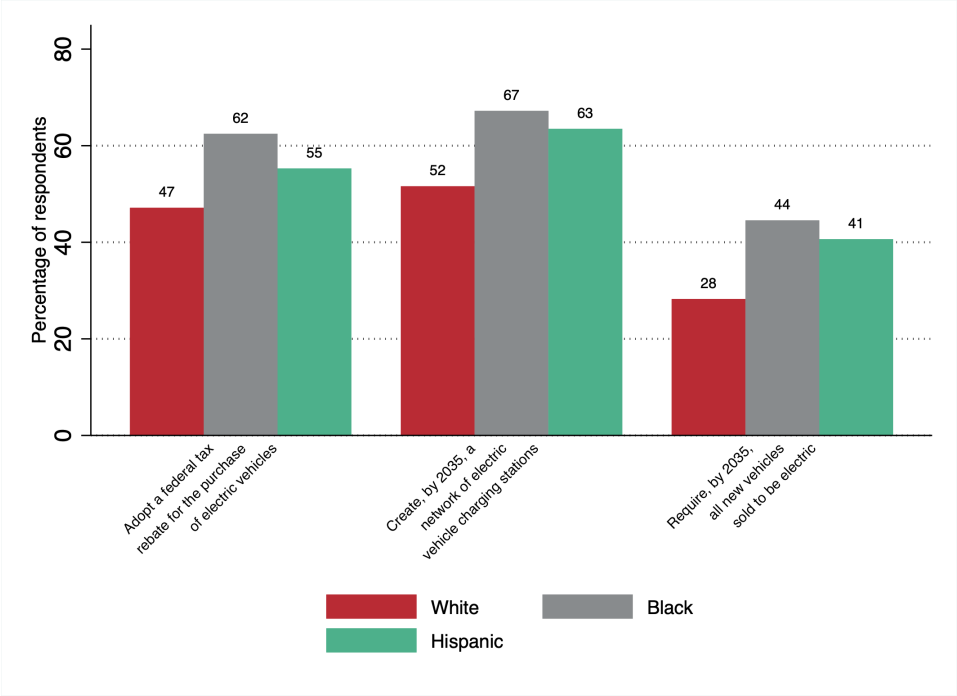
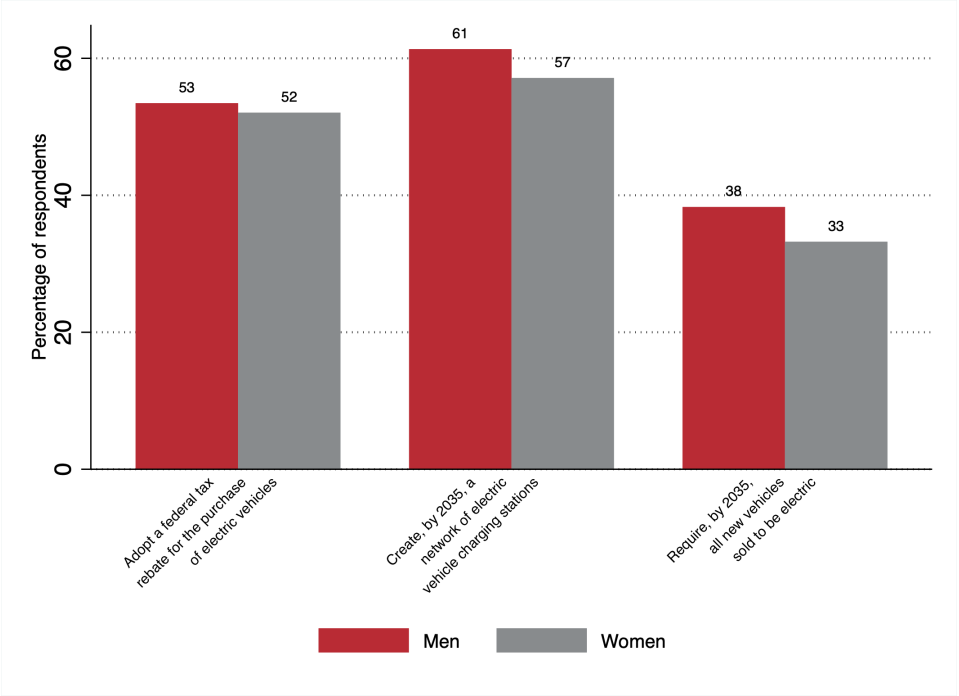


Figure 5.3 shows policy preferences by gender. Similar to what was observed across generation cohorts and race/ethnicity, a majority of both men and women supported the first two policy options. Fifty-three percent of men and 52% of women supported adopting a federal tax rebate for the purchase of electric vehicles, with an even higher proportion supporting the creating of electric vehicle charging stations (61% and 57%, respectively). However, only 38% of men and 33% of women supported requiring all new vehicles to be sold to be electric.

The largest difference among men and women is a five percentage point difference in support for requiring new vehicles to be sold as electric by 2035. Similarly, we see more than ten-point gap in support between white respondents and Black and Hispanic respondents for this policy, and an even bigger gap in support for this policy across generations.

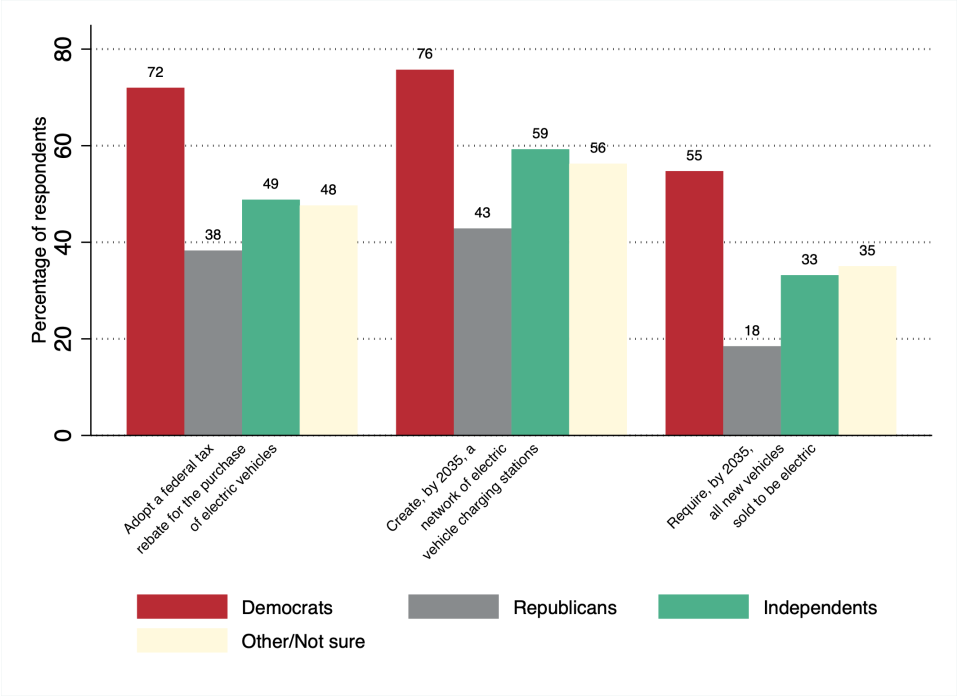
Figure 5.3: Electric vehicle policy support by gender



Party ID

Figure 5.4 displays respondents opinions for the three policy options by Democrats, Republicans, Independents, and those who identified with another party or were not sure. There are a few patterns of note when it comes to support for these policies. The first is that Democrats are significantly more likely to support all three of these policies than do those who identify as Independents and Other, and especially Republicans. Only 18% of Republicans supported requiring all new vehicles sold to be electric compared to 55%, 33%, and 35%, respectively, of Democrats, Independents, and Other. Creating a network of charging stations had the highest support across all party ID groups, including Republicans. While Democrats (76%) were more likely to support this option than the other three, the majority of respondents who identify as Independent (59%) or Other/Not sure (56%), as well as 43% of Republicans, strongly or somewhat supported this policy.

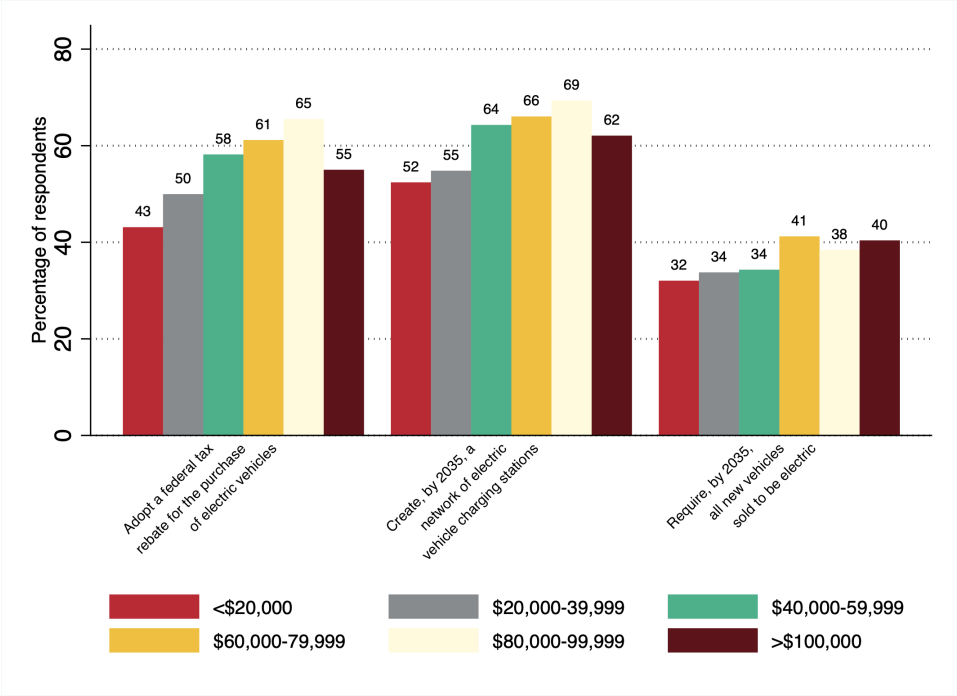
Figure 5.4: Electric vehicle policy support by party ID



Income

Finally, we examined support among Texans for the three policy options by income groups. Figure 5.5 shows the majority of all income brackets either strongly supported or somewhat supported the option to create a network of electric vehicle charging stations across the U.S. and Texas similar to the current network of gas stations. Nearly two-thirds of respondents who had a household income of $40,000 and above supported this policy option with the highest support (69%) among respondents with a household income of $80,000-99,999.

Figure 5.5: Electric vehicle policy support by income level



A similar trend was found among Texans who supported a federal tax rebate for the purchase of electric vehicles. Over three-fifths of respondents with household incomes between $60,000 and $99,999 either strongly supported or somewhat supported a federal tax rebate. At least 50% of respondents supported a federal tax rebate in the other income groups with the exception of the lowest income bracket. Forty-three percent of those earning less than $20,000 supported a rebate, the only income bracket with less than majority support.

Again, a policy that would require, by 2035, all new vehicles sold to be electric received the least support across all income groups. About a third of respondents with household incomes less than $60,000 supported requiring all new vehicles sold to be electric. Though this policy option yielded minor support across all income brackets, respondents with household incomes between $60,000 and $79,999 (41%) and greater than %100,000 (40%) supported this policy the most.

Chapter 6: Conclusion

The survey found that less than 10% of Texans currently own or lease an electric vehicle. Ownership was higher among Black and Hispanic respondents and among younger generations (Gen Z and Millennial). Moreover, almost two-thirds of respondents said they were not too or not at all likely to purchase or lease an electric vehicle in the future. Still, respondents from the Gen Z and Millennial generations were more likely than older generations to consider buying or leasing an electric vehicle. As with ownership, Black and Hispanic respondents were more likely to consider buying or leasing one in the future relative to white respondents. Men and Democrats were also more likely to consider buying or leasing an electric vehicle in the future.

Cost and the lack of charging stations were the top reasons cited for why respondents would not be very likely to purchase or lease an electric vehicle. A little more than a third of respondents cited a preference for gasoline vehicles as well as lack of sufficient single-charge range and affordable service and repair. While the majority of respondents, regardless of age, cited cost and lack of charging stations, respondents from the Silent/Boomer generation were more likely than the other three generations to cite one of the latter three (prefer gasoline vehicles, lack of affordable service and repair, and lack of sufficient single-charge), as were white and Republican respondents. Overall, few respondents said that they were not very likely to purchase or lease an electric vehicles because electric vehicles are bad for the environment, though men, white respondents, those from the Silent/Boomer generation as well as Independents and Republicans were more likely to cite this reason compared to other groups.

While there was support for policies aimed at encouraging the adoption of electric vehicles - and almost two-fifths of respondents said they would be likely to consider owning or leasing one in the future - the survey also revealed a knowledge gap about electric vehicles. For example, when asked about how difficult it would be to install and hook a level 2 charger, almost 30% of respondents said they didn't know, and another 20% said it would be very difficult or impossible. Moreover, between 11% and 17% of respondents selected "don't know" when asked whether they supported the three policy options aimed at encouraging electric vehicle adoption.

Nevertheless, despite this knowledge gap, a majority of respondents supported creating a network of electric vehicle charging stations across the U.S. and Texas similar to the current network of gas stations by 2035. A majority also supported a federal tax rebate for the purchase of an electric vehicle. Less than two-fifths of respondents, however, favored requiring, by 2035, all vehicles

sold to be electric. Younger generations (Gen Z and Millennial) as well as Black and Hispanic respondents revealed greater support for the policies compared to older generations and white respondents. A majority of Democrats supported all three policies whereas none of the three policies reached majority support among Republicans. Creating a network of charging stations did, however, receive support among a majority of Independents and respondents identifying as Other.