Willingness to pay for electric vehicles and their attributes

This article presents a stated preference study of electric vehicle choice using data from a national survey. We used a choice experiment wherein 3029 respondents were asked to choose between their preferred gasoline vehicle and two electric versions of that preferred vehicle. We estimated a latent class random utility model and used the results to estimate the willingness to pay for five electric vehicle attributes: driving range, charging time, fuel cost saving, pollution reduction, and performance. Driving range, fuel cost savings, and charging time led in importance to respondents. Individuals were willing to pay (wtp) from $35 to $75 for a mile of added driving range, with incremental wtp per mile decreasing at higher distances. They were willing to pay from $425 to $3250 per hour reduction in charging time (for a 50 mile charge). Respondents capitalized about 5 years of fuel saving into the purchase price of an electric vehicle. We simulated our model over a range of electric vehicle configurations and found that people with the highest values for electric vehicles were willing to pay a premium above their wtp for a gasoline vehicle that ranged from $6000 to $16,000 for electric vehicles with the most desirable attributes. At the same time, our results suggest that battery cost must drop significantly before electric vehicles will find a mass market without subsidy.

Keyword: Electric vehicles, Discrete choice, Stated preference

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