National Center for Sustainable Transportation

POLICY BRIEF

Understanding the Early Adopters of Fuel Cell Vehicles

Scott Hardman and Gil Tal
Plug-in Hybrid & Electric Vehicle Research Center
Institute of Transportation Studies, University of California, Davis

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Issue

Car buyers in California have the choice of several types of alternative fuel vehicles (AFVs) including battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs). FCVs offer a different ownership proposition compared to BEVs, mostly relating to their refueling style. This study investigates FCV buyers in California and compares them to BEV owners. The hope is to understand why some households choose a FCV rather than a BEV.

Key Research Findings

More than 5,000 households have purchased FCVs in California. Most of these households are in the San Francisco Bay Area and Los Angeles. These regions are also where most hydrogen refueling stations are located (Figure 1).

FCV owners are not typical California residents. FCV owners have high household incomes (US$201,871 on average); are highly educated (38.9% have a post-graduate degree); 74.8% are male; mostly live in a detached house that they own; and have more than two vehicles in the household on average. FCV drivers also indicate that reducing greenhouse gas emissions, local air pollution, and reducing

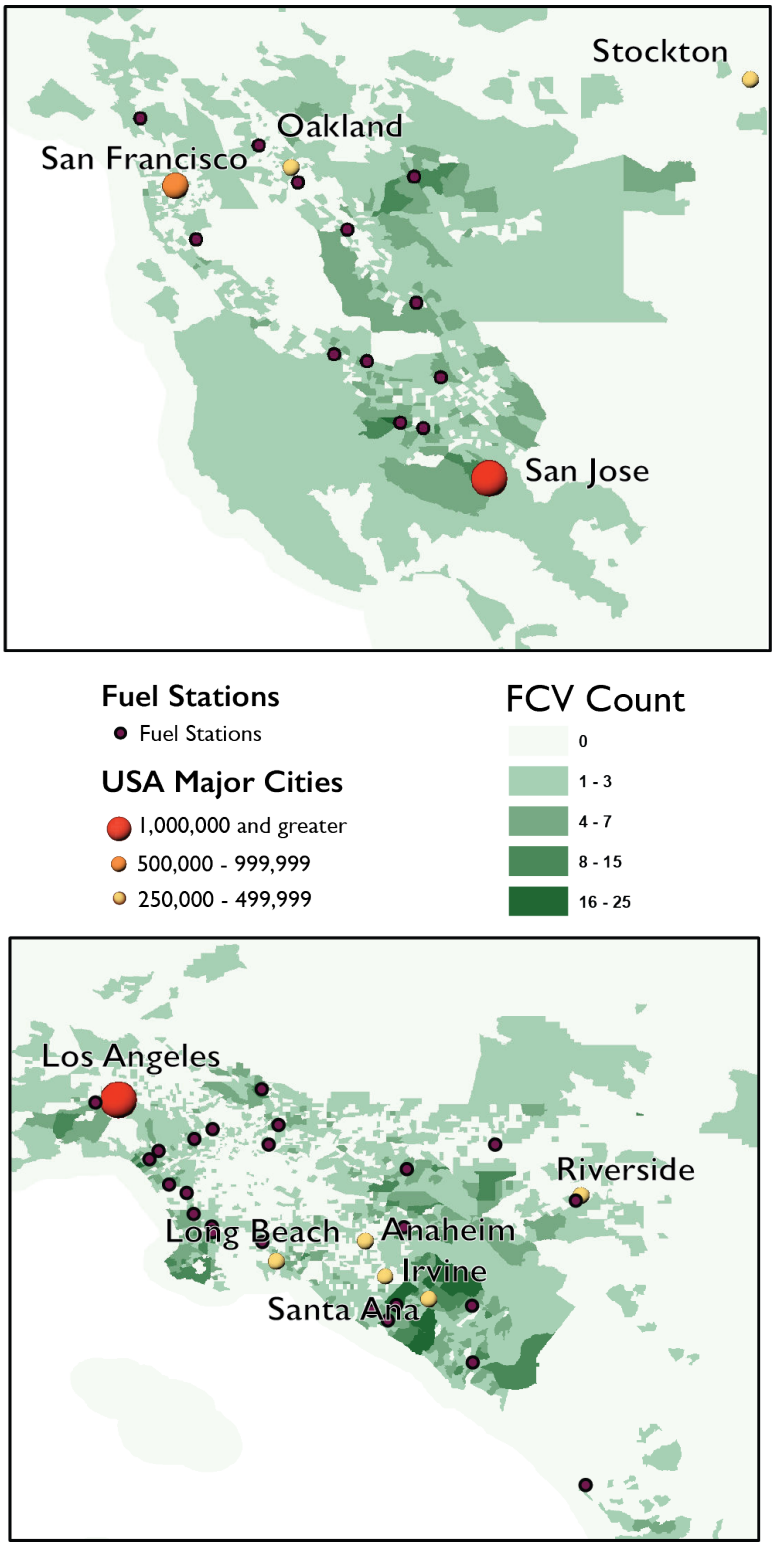

Figure 1. Fuel stations and major cities in California

oil dependency were important in their decision to purchase a FCV. They drive on average 12,445 miles per year and commute 19.1 miles one way.

Although FCV and BEV owners are similar in many ways, they differ in key respects. There is no significant difference in household income, number of people in the household, number of vehicles in the household, gender, or education. Compared to BEV owners, however, FCV owners are slightly older; fewer own their own home and more live in an apartment, condo, or townhouse; they have owned more AFVs previously (but fewer BEVs); they have higher annual vehicle miles traveled (VMT); and have slightly longer commutes.

These differences may explain why some people choose to adopt a FCV. Since fewer FCV buyers own their home and more live in multi-unit dwellings, they may have more barriers to accessing recharging from home, which may be why they selected a FCV rather than a BEV. Their slightly longer commutes and higher VMT may mean they perceive FCVs to be a better fit with their household's travel patterns, though their commutes are well within the range of a BEV.

FCVs may be perceived as more viable AFVs for those who reside in multi-unit dwellings or do not have charging options from home. Even so, PHEVs and BEVs with longer driving ranges coupled with expanding charging infrastructure are also an option for these consumers.

Only early adopter-type consumers are currently purchasing FCVs. This fact may suggest that FCVs do not yet have mainstream appeal.

More Information

This policy brief is drawn from the white paper "Understanding the Early Adopters of Fuel Cell Vehicles," from the National Center for Sustainable Transportation, authored by Scott Hardman of the University of California, Davis. The full paper can be found on the NCST website at https://ncst.ucdavis.edu/project/understanding-the-early-adopters-of-fuel-cell-vehicles/.

For more information about the findings presented in this brief, please contact Scott Hardman at shardman@ucdavis.edu.

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