

HOW DRIVERS DECIDE WHETHER TO GET A FUEL CELL VEHICLE: AN ETHNOGRAPHIC DECISION MODEL (EDM)



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Overview

We developed and tested an ethnographic decision model (EDM) of hydrogen fuel cell vehicle (FCV) adoption using structured interviews with California residents who either actually adopted an FCV or “seriously considered” doing so before deciding against it.

Research Question

How does a group of prospective FCV adopters move through the decision-making process that ultimately leads them to adopt one or not? To what extent is there a shared decision-making process?

Method

- EDM is a qualitative and inductive research method following a structured protocol (Figure 1).
- EDM is an established but not widely known ethnographic method (Gladwin 1989, Ryan & Bernard 2006).
- The automobile industry is one of the largest employers of ethnographers.
- Much social science is based on stated intentions, whereas EDM is based on completed decisions.

Participant Recruitment

- Posted on social media groups and forums designed for drivers and others interested in FCVs, BEVs, PHEVs, and HEVs.
- Offered \$35 gift cards for Round 1, \$15 for Round 2.

Initial Prompt for Structured Interviews

- “Thinking back to when you were thinking about purchasing/leasing a hydrogen fuel cell vehicle, walk me through your decision-making process. Why were you initially considering a fuel cell vehicle and what things did you consider when deciding whether or not to adopt this type of car?”

Table 1. Characteristics of Respondents

Category		Adopted (n=29)	Did Not Adopt (n=24)
Region	Los Angeles	12	11
	San Francisco	13	11
	San Diego	3	2
	Sacramento	1	0
	Man	20	23
Gender	Woman	8	1
	White	17	12
Race/Ethnicity	Hispanic	9	10
	Asian	1	0
	Other/No answer	3	2
	Age	25-39	5
	40-49	8	11
	50-59	8	5
	60-74	7	3
Number of People in HH	1	4	3
	2	10	9
Education	3	6	3
	4-5	9	9
	High School	3	0
	Bachelor's	10	12
Income	Graduate	15	12
	< \$74K	1	0
	\$75K - \$99K	5	2
	\$100K - \$149K	5	5
	\$150K - \$199K	6	5
Vehicle Ultimately Purchased	>\$200K	8	7
	Toyota Mirai	22	-
	Honda Clarity	7	-
	BEV	-	11
	PHEV	-	8
	HV	-	2
ICE	-	2	

Figure 1. Methodology

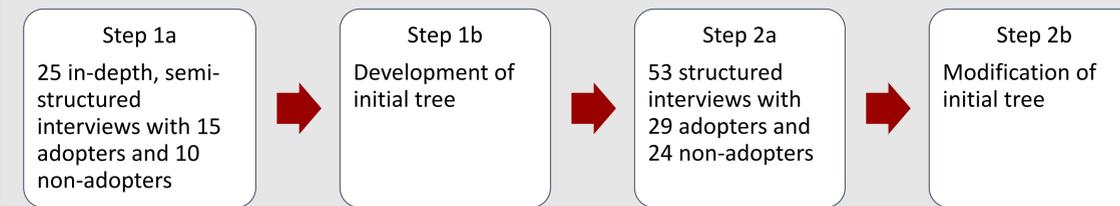
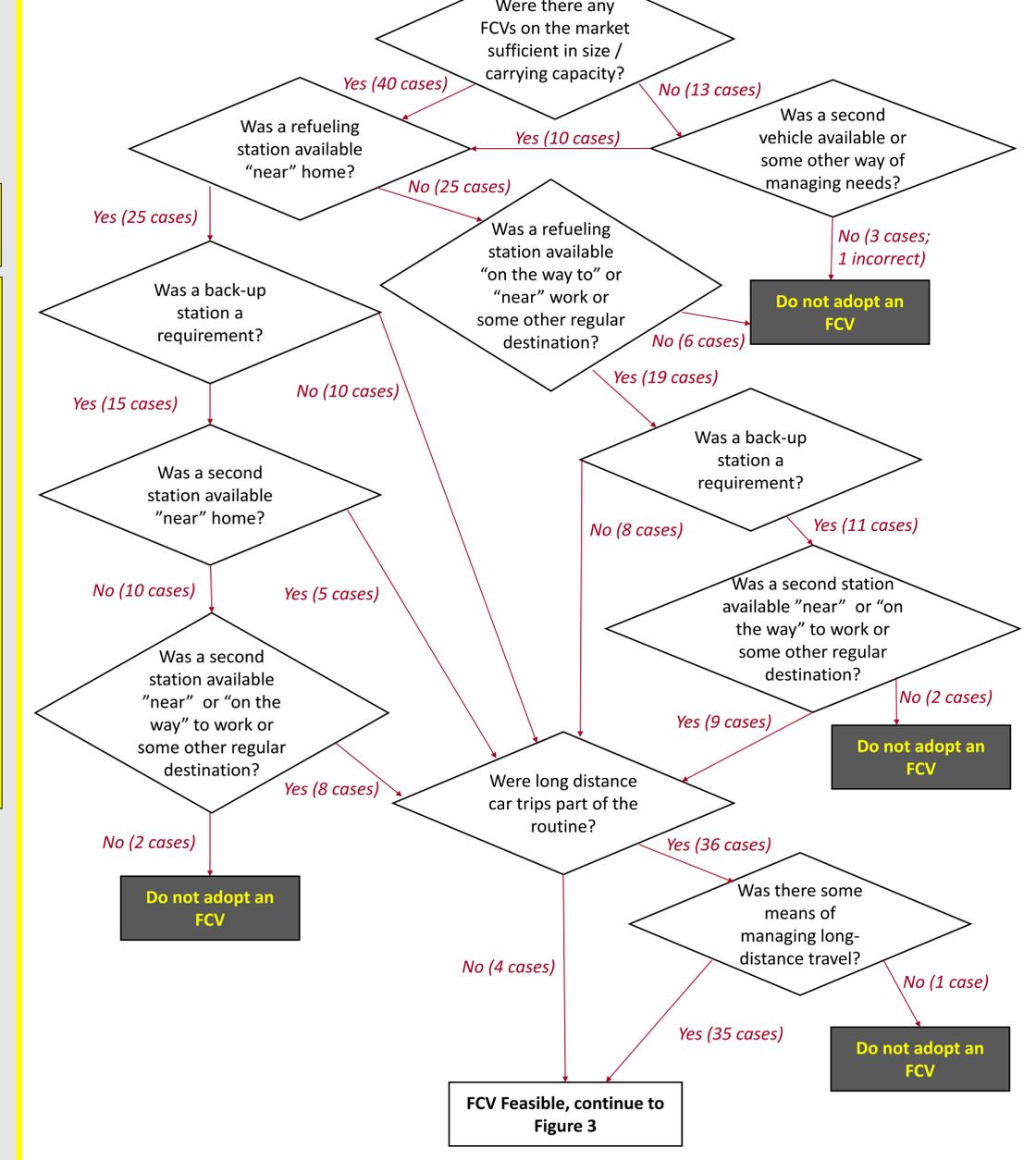


Figure 2. Stage 1 Model: Process to determine FCV feasibility



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Figure 3. Stage 2 Model: Process to compare FCV to other options

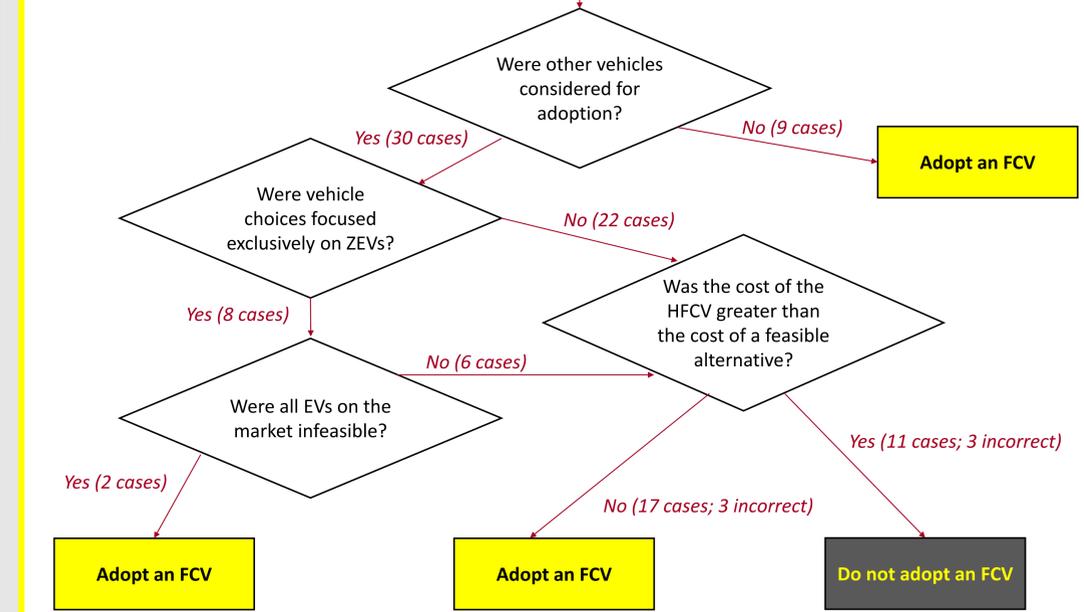


Table 2. EDM Results (n = 53)

	Decided to Adopt	Decided Not to Adopt	Total
Correct	28 (52.8%)	18 (34%)	46 (86.8%)
Incorrect	3 (5.7%)	4 (7.5%)	7 (13.2%)
Total	31 (58.5%)	22 (41.5%)	

Table 3. Ways in which respondents indicated long-distance travel was possible.

Ways in which long-distance travel was feasible	Respondents who only traveled in state (n= 19)	Respondents who traveled in and out of state (n = 17)
Supported by refueling Infrastructure	13	15
Second vehicle in the household	6	15
Rental car program	5	6
Company car/rental	0	2
Fly	0	1
Travel with someone else	0	1

CONCLUSIONS

- Two primary aspects of deciding whether to get an FCV emerged from this research: (1) would an FCV be feasible for their life, and if so (2) does it compare favorably to other vehicle options?
- No drivers dropped out because of insufficient driving range of FCVs.
- Most respondents prefer a station near home but are willing to rely on a station near or on the way to work or another frequent destination for a primary station and/or a backup station.
- Cost and zero emissions were two major factors for respondents when comparing to other vehicles, but there were large differences in which kinds of costs individuals considered.
- Most non-adopters had multiple reasons for deciding against FCV adoption: keep in mind that they drop out of the tree model at the first such reason—not necessarily their most important reason.
- The model ultimately correctly predicted 87% of cases in the sample.
- Ethnographic decision modeling is useful for understanding widely shared decision pathways for alternative fuel vehicle purchasing.

