

Do consumers cross-shop ICEVs, HEVs, and PEVs?

STEPS 2016 Project 13: A Quasi-Experiment in Consumer Choice
of Conventional and Alternative Fuel Vehicles.

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It is assumed they do, or
that it would be a good thing if they did

- Analysts
- Automakers and dealers
- Automotive press

- Do consumers?
 - No.

Study Design

- Plan D: Convenience sampling
 - Vehicles parked on UCD campus
 - PHEVs and BEVs first, then corresponding ICEV and HEV variants
 - Convenience sampling strictly limits results to sample
 - The half of the sample that are ICEV/HEV buyers are drawn from 98% of car owners
 - + Focused look at a comparatively rich PEV eco-system
 - PEVs and PEV drivers; special financing offers from PEV manufacturers; and, charging in many parking facilities

Resulting in these vehicles...

Make-Model	ICEV	HEV	PHEV	BEV
Fiat 500	█			█
Ford C-Max	█		█	
Ford Focus	█			█
Ford Fusion	█	█		
Toyota Prius		█		

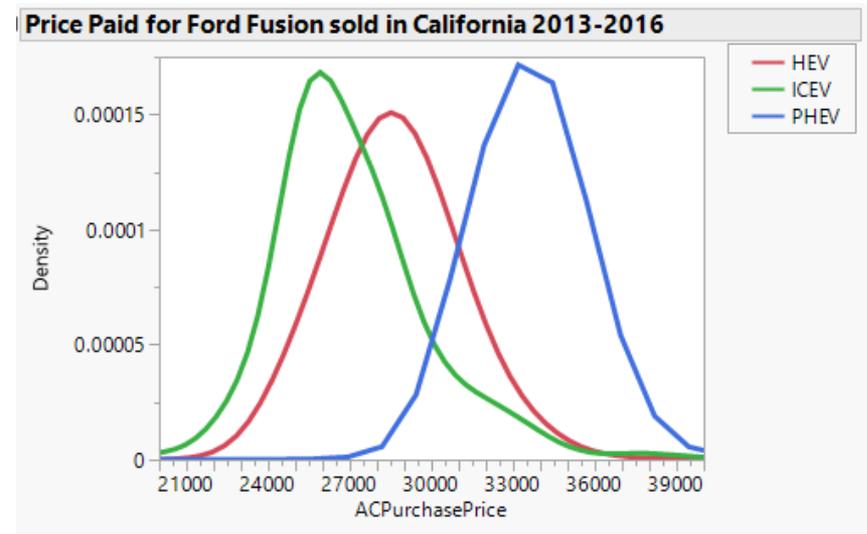
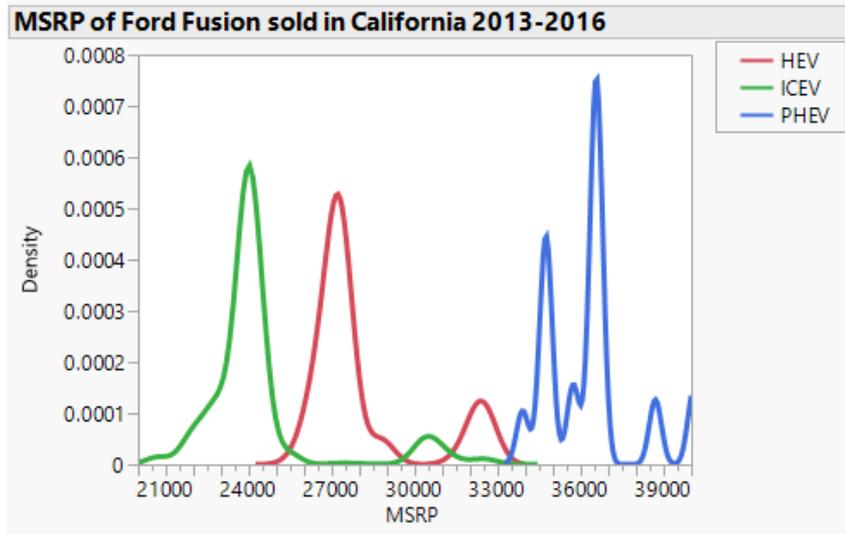
...driven by these people

- Female/male
- Student/staff/faculty
 - Anticipated age, income difference between students and staff/faculty
- Live in Davis/Commute from out of Davis

ICEV and HEV drivers

- None cross-shopped PEVs
 - Those who knew PEVs existed...
 - Dismissed PEVs at the first sign of a potential problem
 - Price too high; *no knowledge or consideration of incentives*
 - Range too short; *confused about HEV/PHEV/BEV distinctions; wrong about vehicle range, no knowledge of charging*
 - Can't charge at home; *cant' imagine a PEV without home charging; no knowledge of other charging*
 - Those who didn't know PEVs exist...
 - They did not consider PEVs at all because, well, they don't know PEVs exist

Ford Fusion in CA: MSRP vs. Price Paid by powertrain flavor



Based on 15,157 vehicles reported by Experian.

	MSRP, mean	Price paid, mean
Fusion ICEV	\$24,400	\$26,800
Fusion PHEV	\$36,300	\$33,400
Δ PHEV-ICEV	\$11,900 (~50%)	\$6,600 (~25%)

PEV owners

- Some attention to HEVs.
- Generalization that PEV owners did not cross-shop ICEVs is largely substantiated.
 1. PEVs only
 - Volt, Tesla, C-MAX, **Prius Plug-in**
 2. HEVs as gateways to PEVs (among people unfamiliar with PEVs)
 - Cars she drove: Fit (ICEV) (“cheap”), Prius (HEV) (“expensive, no deals), **Fiat 500e**, Fiat 500 (ICEV) (“cheap and clunky” compared to BEV).

Cars she did not drive: SMART (too small), Nissan (too long to wait—info. from on-line message boards), Ford (doesn’t like to buy American), Honda and Toyota (didn’t think they offered leases).
 3. HEVs considered with PEVs (among those familiar with PEVs)

Interpretations: Different questions; different engagement

- ICEV/HEV buyers: **“Why would I buy a PEV?”**
 - If they haven’t heard of PEVs being for sale, they haven’t asked anything
- PEV buyers: **“How do I get a PEV?”**
- ICEV/HEV buyers, lack engagement, either
 1. Simply don’t they know PEVs are a possibility, or
 2. Have no impetus to solve even the first imagined problem and thus none to explore whether there is a second or third.
- PEV buyers have impetus to solve one problem and move on to the next until they own a PEV

“It takes two good reasons to buy a PEV and one flimsy excuse not to.”

Gil Tal

Market Implications

- Create Awareness—of everything, still
 - PEVs, really
 - The distinction between HEVs, PHEVs, and BEVs (and FCEVs?)
 - Incentives
 - Range, charging, and their relationship
- Instigate engagement