

Consumer Responses to Fuel Economy

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How do consumers value fuel economy?

- By how much consumers value fuel economy one of the most important policy issues related to CAFE

Societal Effect	Undiscounted Value	Sum of Present Discounted Values @ 3%	Sum of Present Discounted Values @ 7%
Lifetime Fuel Expenditures (Pretax)	\$577,260	\$459,059	\$358,200
Consumer Surplus from Additional Driving	\$53,178	\$42,264	\$32,988
Net Social Benefit	\$12,000	\$10,000	\$10,000

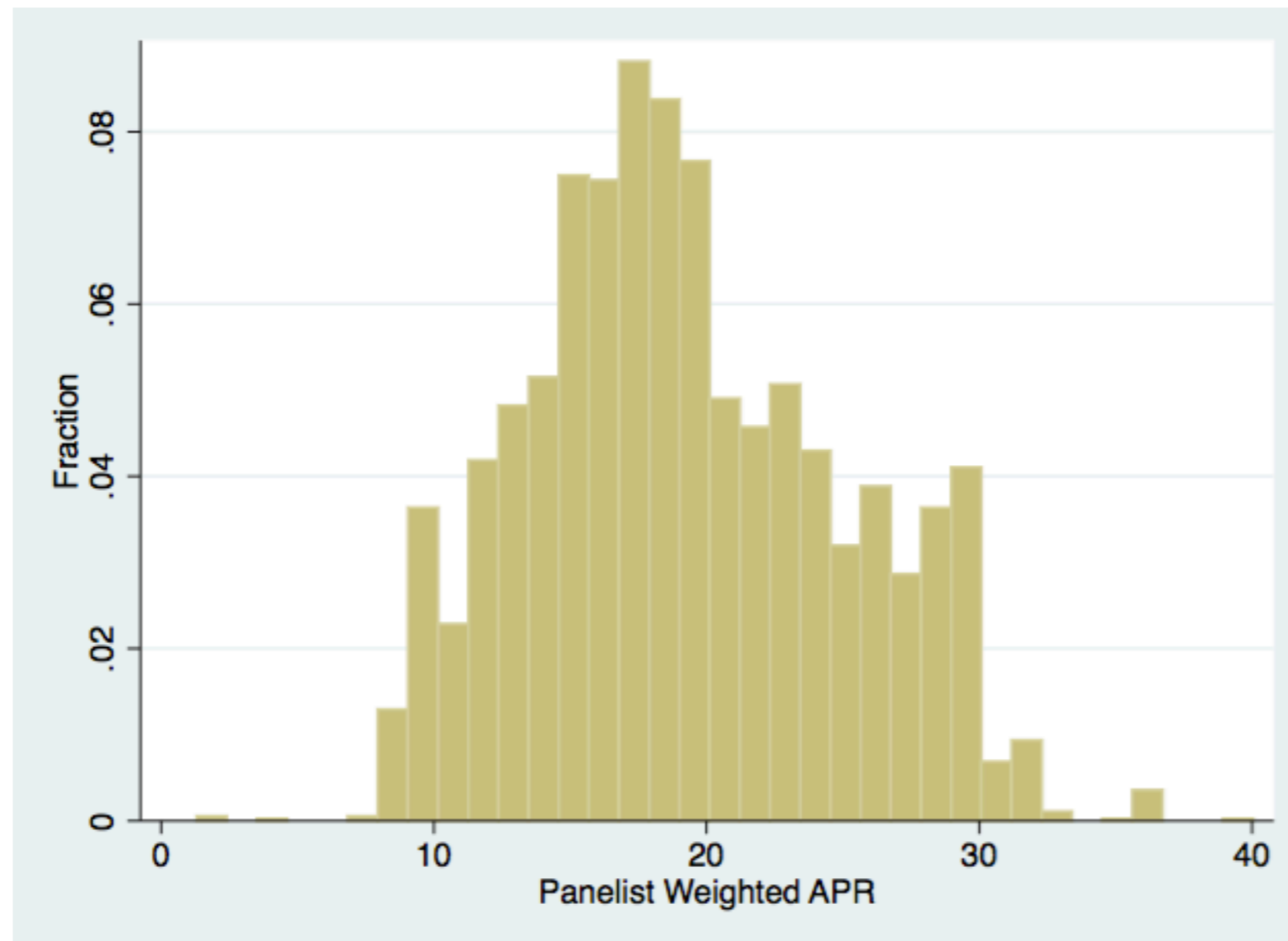
- 80% of the benefits of CAFE are predicated on the assumption that consumers undervalue fuel economy (or firms believe they do)
 - Why?
 - If consumers correctly value fuel economy either (a) CAFE standards wouldn't be needed to incentivize the new technology, or (b) NHTSA would be adding the net benefits up incorrectly

Existing empirical literature

- Three recent papers in economics suggest consumer mistakes don't exist or are small
- Busse, Knittel, and Zettelmeyer (*American Economic Review*, 2013)
 - New car DR: 0.0 – 6.7 percent
 - Used car DR: 0.1 – 11.8 percent
- Allcott and Wozny (*Review of Economics and Statistics*, 2014)
 - Used car DR: 15 percent
- Sallee and West (*Journal of Public Economics*, forthcoming)
 - Used car DR: 5.0 percent

What should their discount rate be?

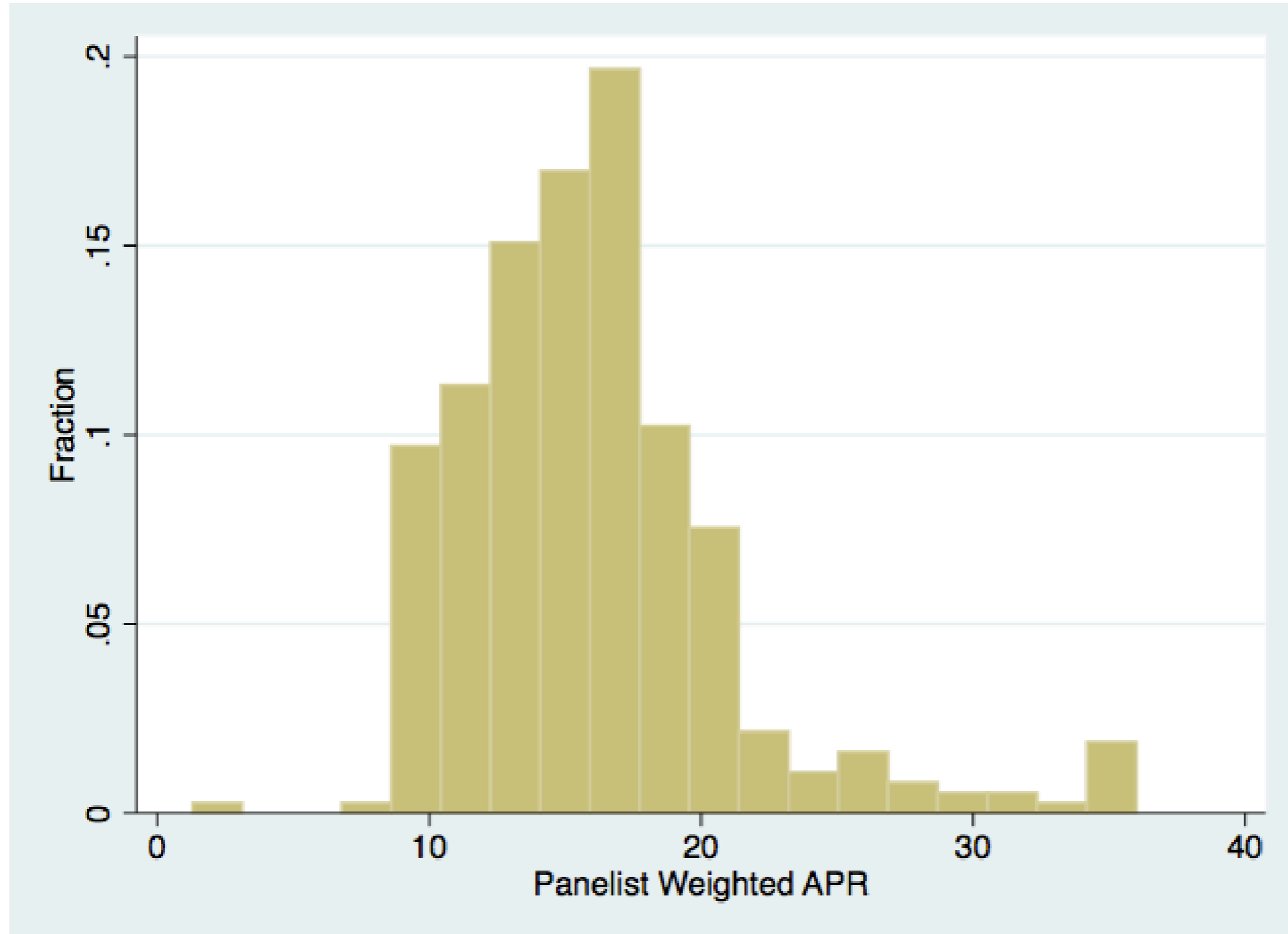
- The right discount rate is the marginal cost of funds faced by consumers



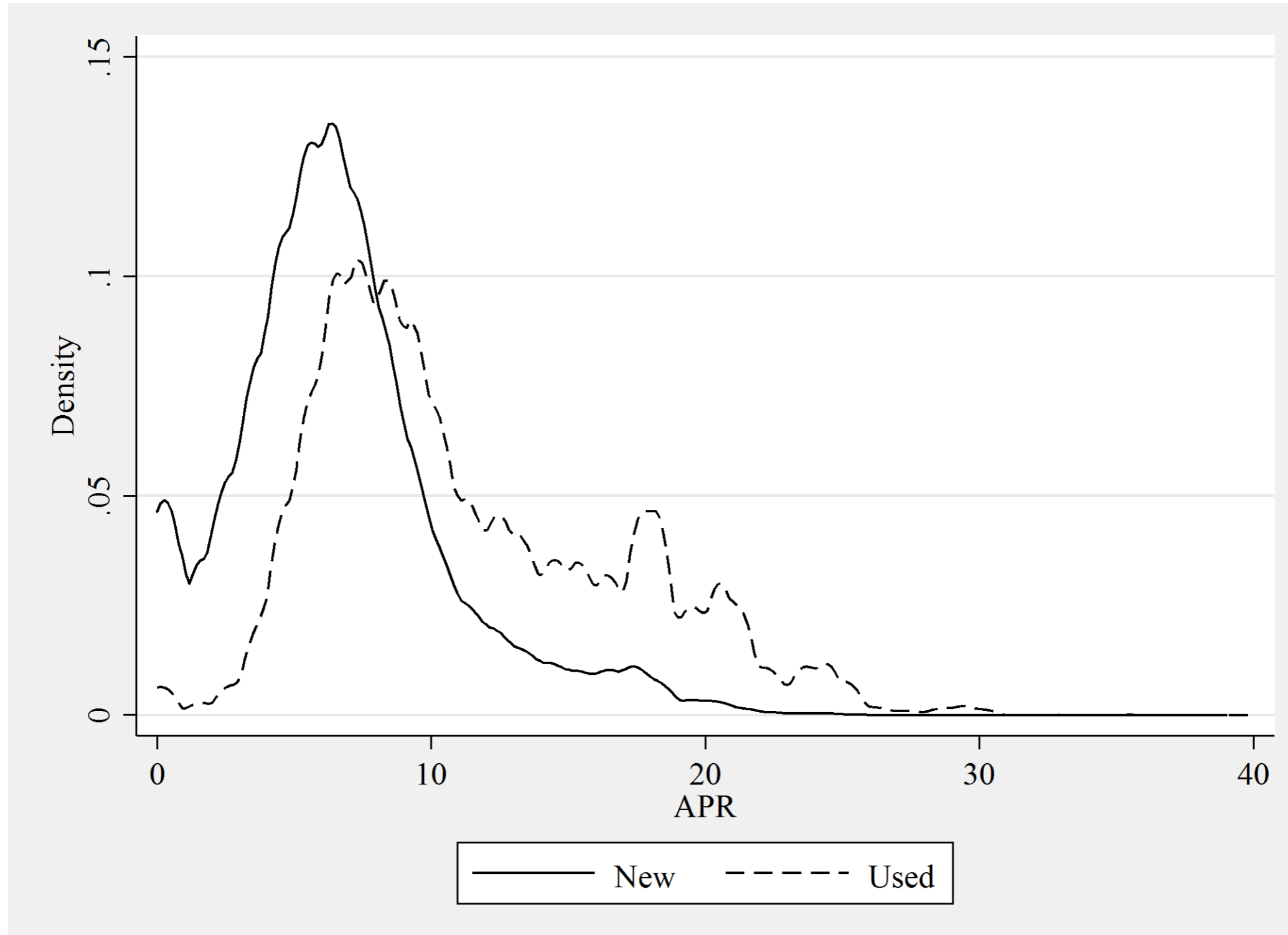
From a panel of ~4000 HHs. Conditional on having CC debt (~60-70% of US)

See: Stango and Zinman, "Borrowing High vs. Borrowing Higher" NBER WP

High income, high credit score



Densities for new- and used-auto loans



On-going research

- Randomized Control Trial with Hunt Allcott
 - Partnering with Ford Motor Company
- Placed research assistants in seven Ford dealerships across the country
- Designed an iPad App that is a short (personalized) course on the importance of fuel economy
- Currently collecting data on vehicle purchases
- Also running an online experiment

Fuel economy short course

Next, think about two individuals, both of whom are considering upgrading their vehicles:

LOW MPG PAIR
Old Vehicle: 12
MPG
New Vehicle: 14
MPG

HIGH MPG PAIR
Old Vehicle: 22
MPG
New Vehicle: 24
MPG

Would you expect there to be a difference in fuel cost savings between the individuals? No difference?

A. PERSON 2 [22 → 24] WOULD SAVE MORE MONEY

B. PERSONS 1 AND 2 WOULD SAVE ABOUT THE SAME AMOUNT

C. PERSON 1 [12 → 14] WOULD SAVE MORE MONEY

D. PERSON 1 [12 → 14] WOULD SAVE 3 TIMES AS MUCH MONEY

SUBMIT


Fuel economy short course

How much money do you think will be spent to buy gas for each vehicle every week?
Include money spent by you or anyone else on gas for your vehicle. *(Give your best guess.)*

Back **Miles per Gallon can be confusing!**

The person switching from 12 MPG to 14 MPG would save three times more money than the person switching from 22 MPG to 24 MPG.

12 MPG avg. annual costs: \$4,688	22 MPG avg. annual costs: \$2,557
14 MPG avg. annual costs: \$4,018	24 MPG avg. annual costs: \$2,344
PERSON 1's savings: 12 to 14 MPG: \$670	PERSON 2's savings: 22 to 24 MPG: \$213



12 MPG 14 MPG 22 MPG 24 MPG

One complete line equals \$500 in annual fuel costs (estimated)

That's why we're giving you information about fuel economy in terms of how much you'll pay each year, for every option you're considering.

Okay

What do you expect will be the cost of a gallon of regular gas?

3.744

How much money do you think will be spent to buy gas for each vehicle every week?

Include money spent by you or anyone else on gas for your vehicle. **(Give your best guess.)**



Fiesta

\$



Taurus

\$



Edge

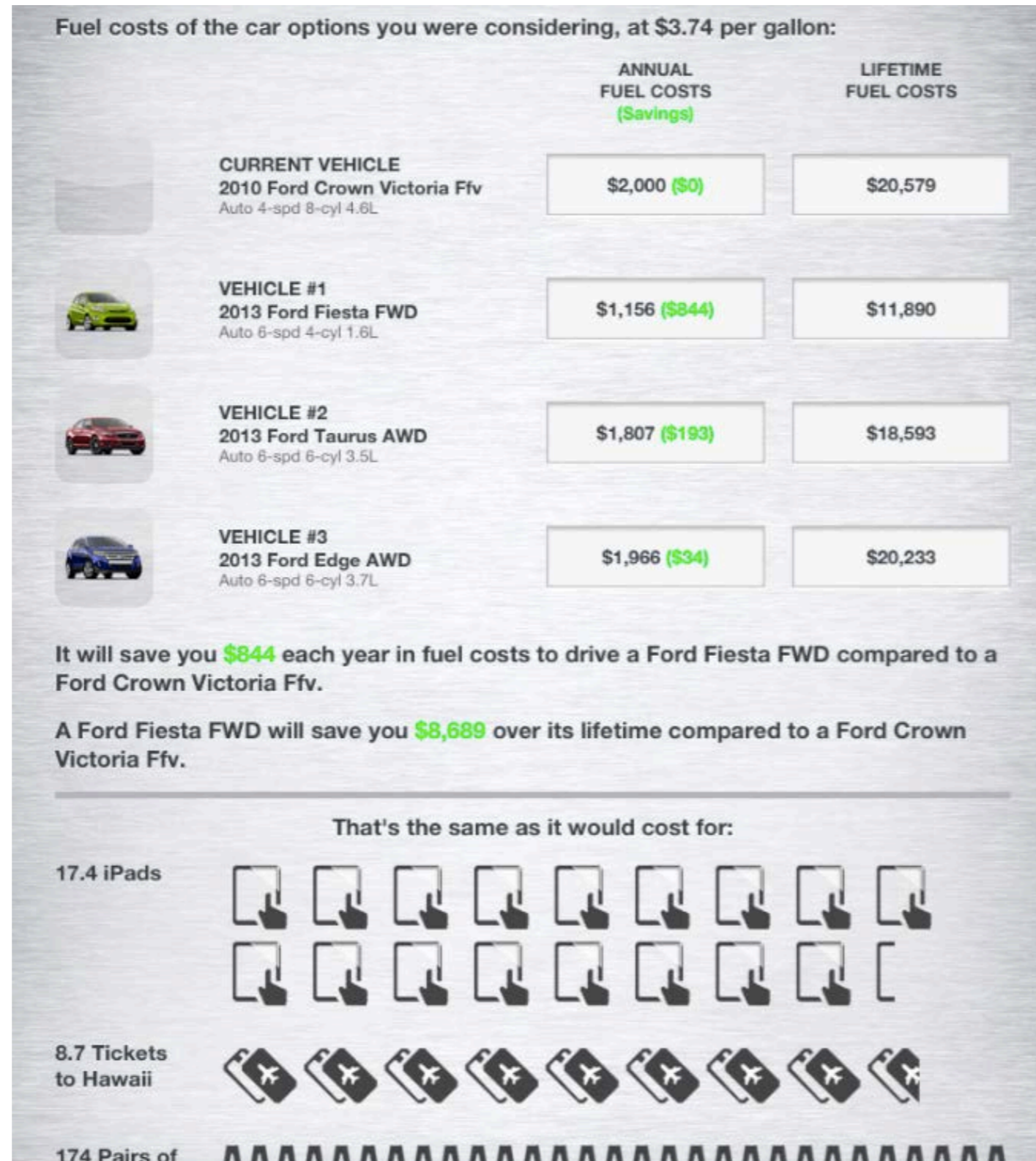
\$

Next, think about two individuals, both of whom are considering upgrading their vehicles:

LOW MPG PAIR
Old Vehicle: 12
MPG

HIGH MPG PAIR
Old Vehicle: 22
MPG




Personalized information



BACK

FUEL CALCULATOR DETAILS BY MODEL

Fuel costs can vary a lot within models.

		ANNUAL FUEL COSTS	LIFETIME FUEL COSTS
#1 	2013 Ford Fiesta SFE FWD Auto 6-spd 4-cyl 1.6L	\$1,144	\$11,767
	2013 Ford Fiesta FWD Manual 5-spd 4-cyl 1.6L	\$1,156	\$11,890
	2013 Ford Fiesta FWD Auto 6-spd 4-cyl 1.6L	\$1,156	\$11,890
#2 	2013 Ford Taurus FWD EcoBoost Auto 6-spd 4-cyl 2L	\$1,474	\$15,167
	2013 Ford Taurus FWD Flex Fuel Auto 6-spd 6-cyl 3.5L	\$1,671	\$17,198
	2013 Ford Taurus FWD Auto 6-spd 6-cyl 3.5L	\$1,671	\$17,198
	2013 Ford Taurus AWD Flex Fuel Auto 6-spd 6-cyl 3.5L	\$1,807	\$18,593
	2013 Ford Taurus AWD Auto 6-spd 6-cyl 3.5L	\$1,807	\$18,593
#3 	2013 Ford Edge FWD EcoBoost Auto 6-spd 4-cyl 2L	\$1,556	\$16,012
	2013 Ford Edge FWD Auto 6-spd 6-cyl 3.5L	\$1,724	\$17,737
	2013 Ford Edge FWD Auto 6-spd 6-cyl 3.7L	\$1,751	\$18,019
	2013 Ford Edge AWD Auto 6-spd 6-cyl 3.5L	\$1,837	\$18,903
	2013 Ford Edge AWD Auto 6-spd 6-cyl 3.7L	\$1,966	\$20,233

PRINT RECEIPT

SUBMIT

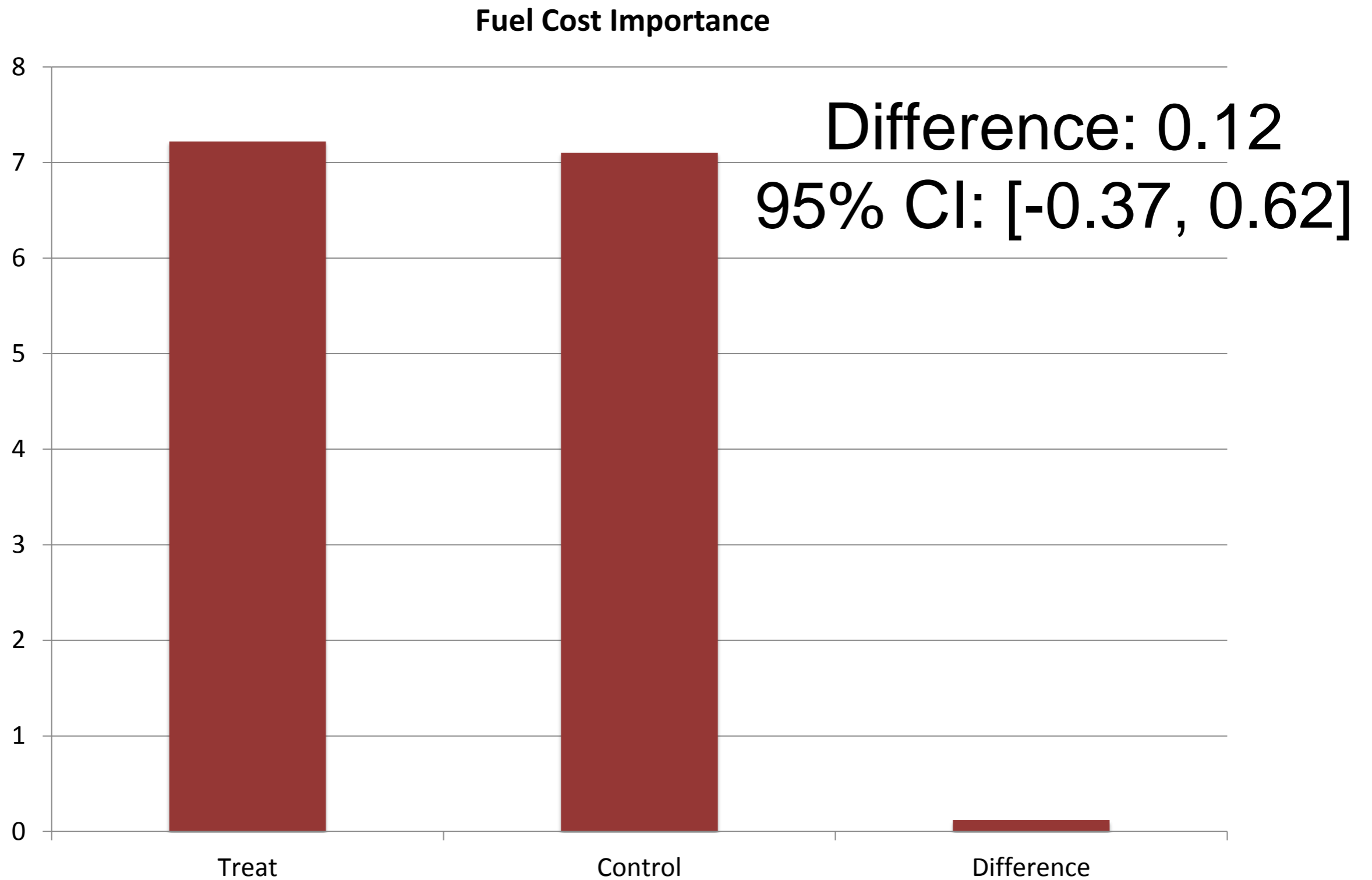
PRELIMINARY results

- We are still collecting data
- Have data for roughly 25 percent of participants
- Draw no conclusions from this!
 - (Other than, “I can’t wait until they are done”)

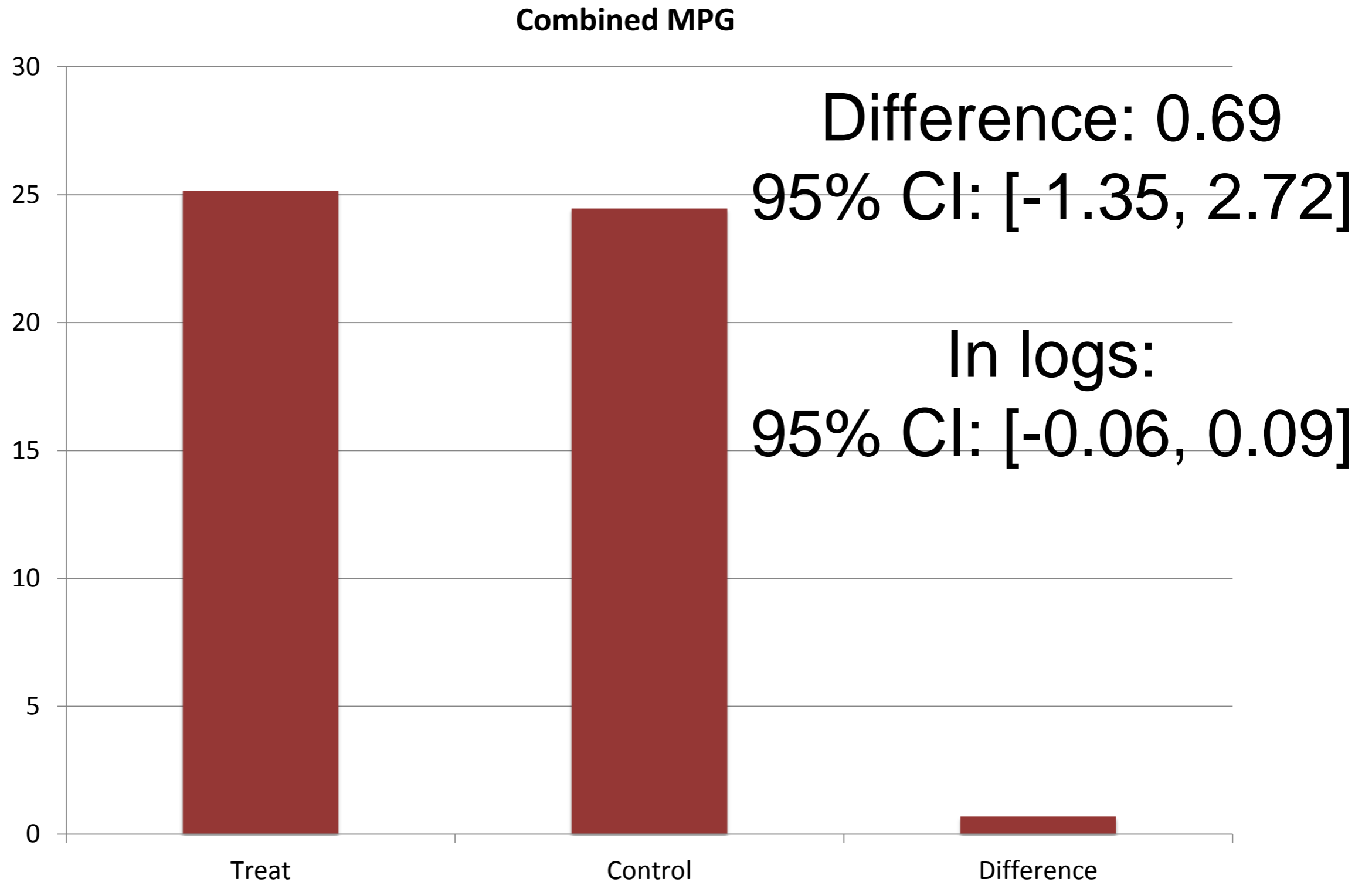
Did the information change beliefs?

- **Did people learn from the experiment?**
- "Was this information surprising? Gasoline costs are:"
 - Same as I thought: **43.3%**
 - More than I thought: **38.4%**
 - Less than I thought: **4.7%**
 - Hadn't thought about gas prices until today: **13.6%**

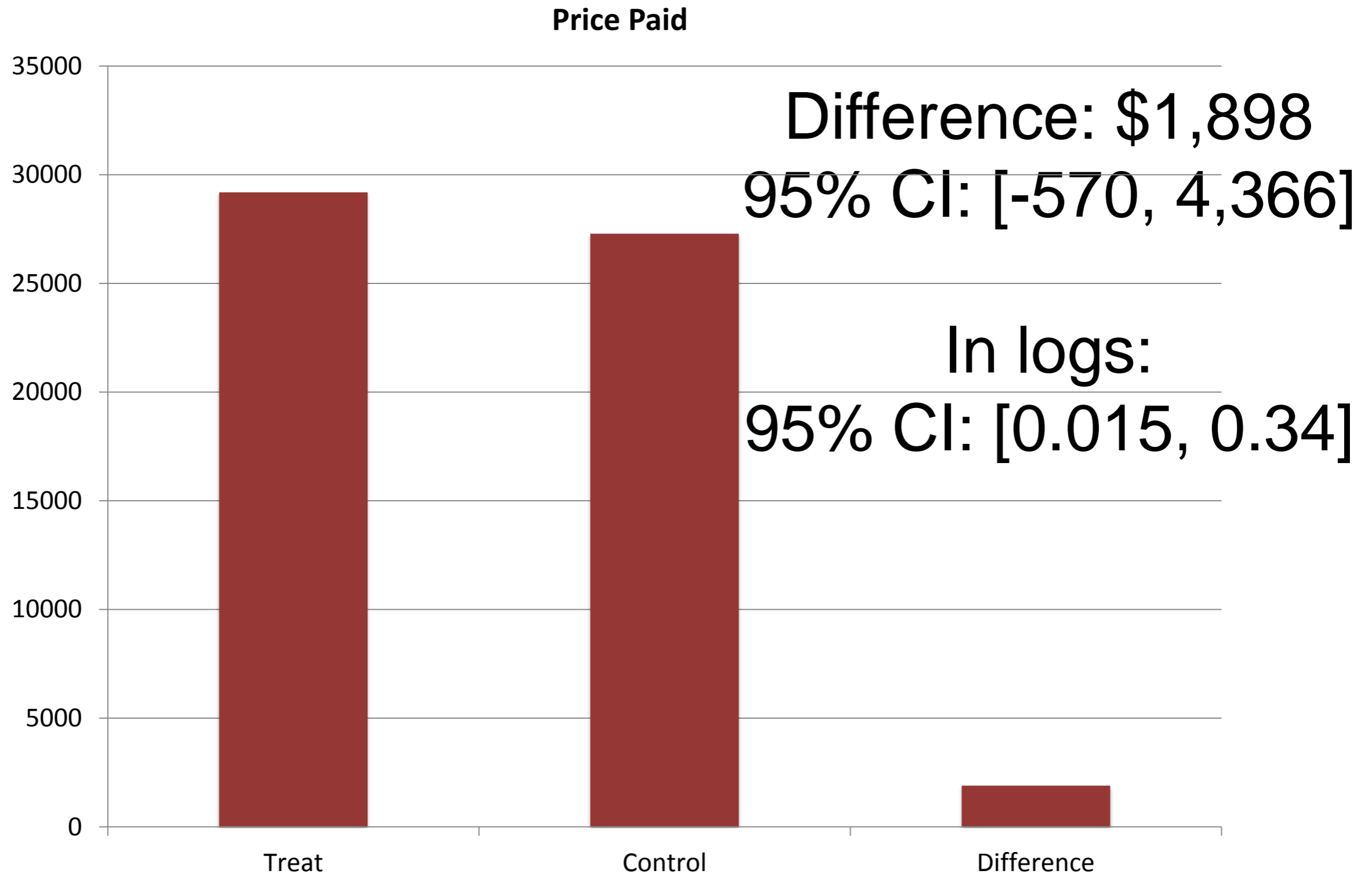
Is fuel economy more important? (0-10 scale)



Did it translate into higher MPG?



Did it translate into higher quality?



Conclusions?

- Recent research suggests that consumers are not undervaluing fuel economy
 - CAFE hinges on undervaluation
- More research is certainly needed
 - Given importance of issue
 - Given conventional wisdom among policy makers
- That's the goal of our new work
 - Still in the midst, so stay tuned!