(How) Do Car and Truck Buyers Think about Fuel Economy?

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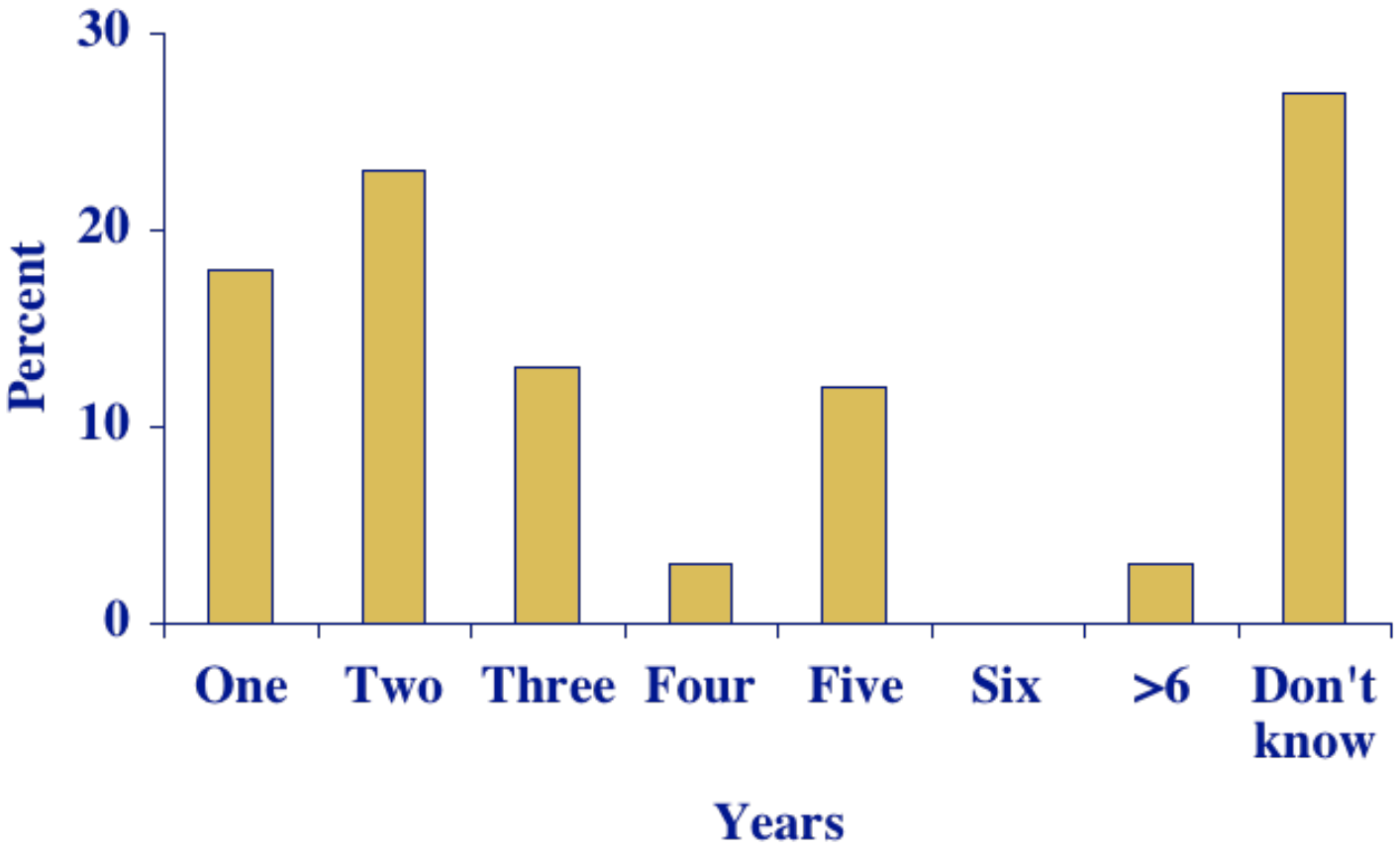
Δt, payback period



How soon, in years, would the fuel savings have to pay back the additional cost to persuade you to buy the higher fuel economy option? (ORCI for NREL, 2002. N = 1,000)

Δt : Do we know what this graph means?

- The modal response (27 percent) is, “I don’t know.”
- The question is novel, so people struggle with it.
  - The premise is in conflict with peoples’ conceptions that “economy” cars are inexpensive.
- Not everyone is answering the same question; some respondents are answering the question “how long *should* it take…?”

How do people answer the question?

1. Technically competent; but still novel

- A few people, mostly farmers, engineers, and people in the financial services sector discuss simple payback calculations.
- Able to explain how to calculate simple payback periods and offer some of the variables involved.
- Mostly “backcasters” and one “forecaster.”
  - Backcasters imagine using their past record of fuel expenditures to calculate the financial value of future fuel economy savings
  - Forecaster attempted to think about the future savings this vehicle would actually accrue
    - DISMAY—what is the future price of gasoline?

- It is clear that despite knowing how to make such calculations, *none* have ever done so for a vehicle purchase.

How do people answer the question?

2. Really guessing

- Temporal anchors
  - The length of their loan or lease for their most recently financed vehicle
  - The length of time they expect to own the car
- A few offer answers that are vague and flexible.
  - Waiting for us to validate their answer?
- Most were overly optimistic

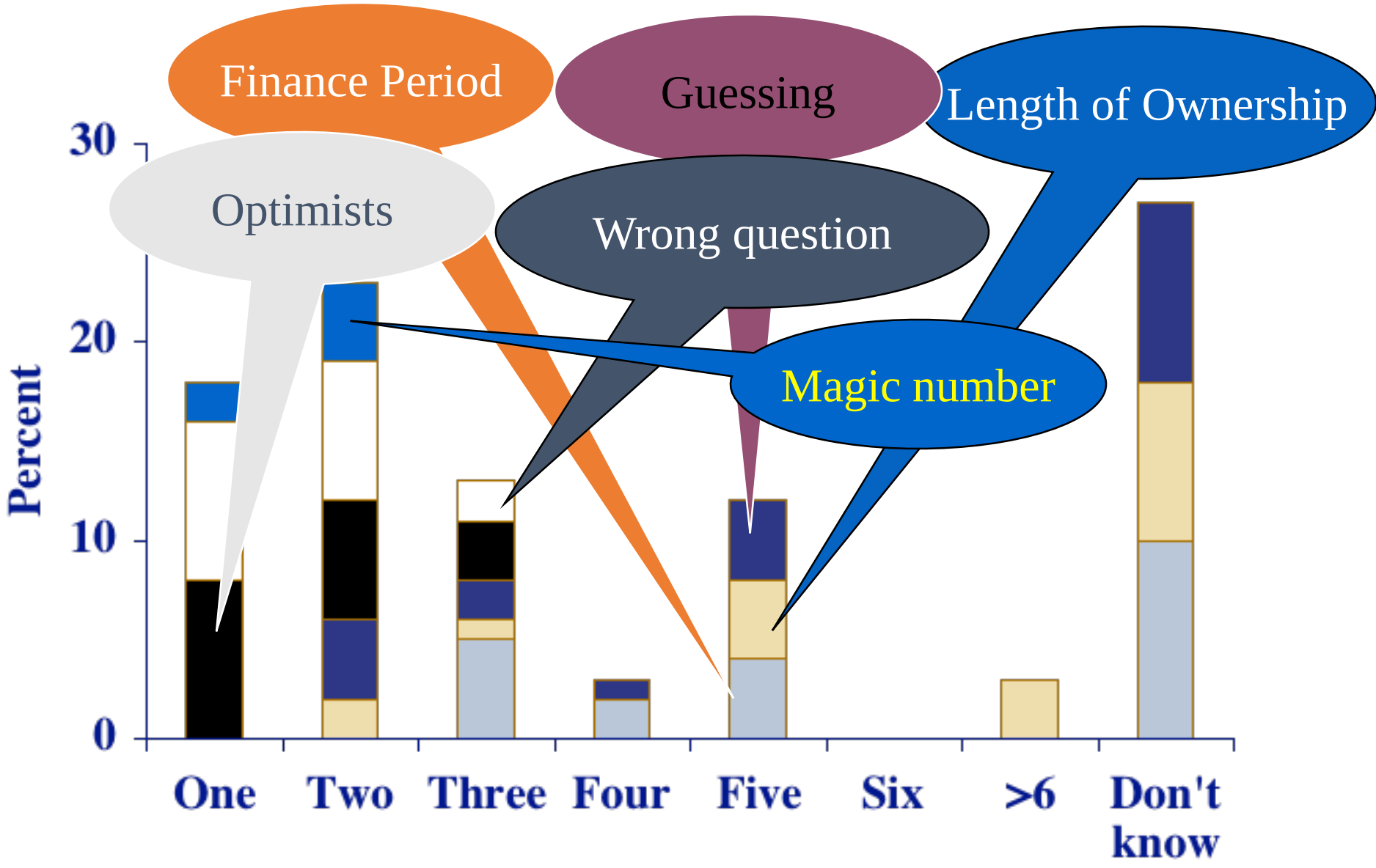
  "Oh yeah. I'd definitely pay $5,000 more if I was going to get it back in (one, two, three) years."

How do people answer the question?

3. There has got to be a way to figure this out…

- They just know there is some way to balance the higher vehicle price with the fuel cost savings, but don't quite know how.
- Some implicitly conclude the right payback period for them is the term of their vehicle financing.
  - "Well, if the savings on gas each month was at least as much as the increase in my monthly payment, then it would be worth it."
- Most mistakes lead respondents to be overly optimistic about payback periods (too short), and thus have over enthusiastic responses to fuel economy increases.

Hypothetical sub-distributions based on interviews



I-80 Ecodrive Field Test: Final Results

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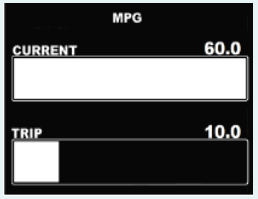
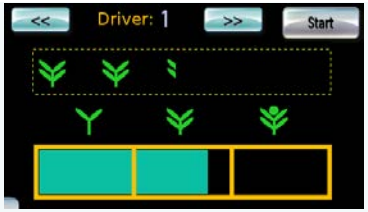
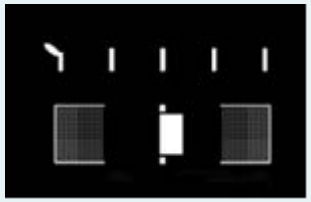
Summary

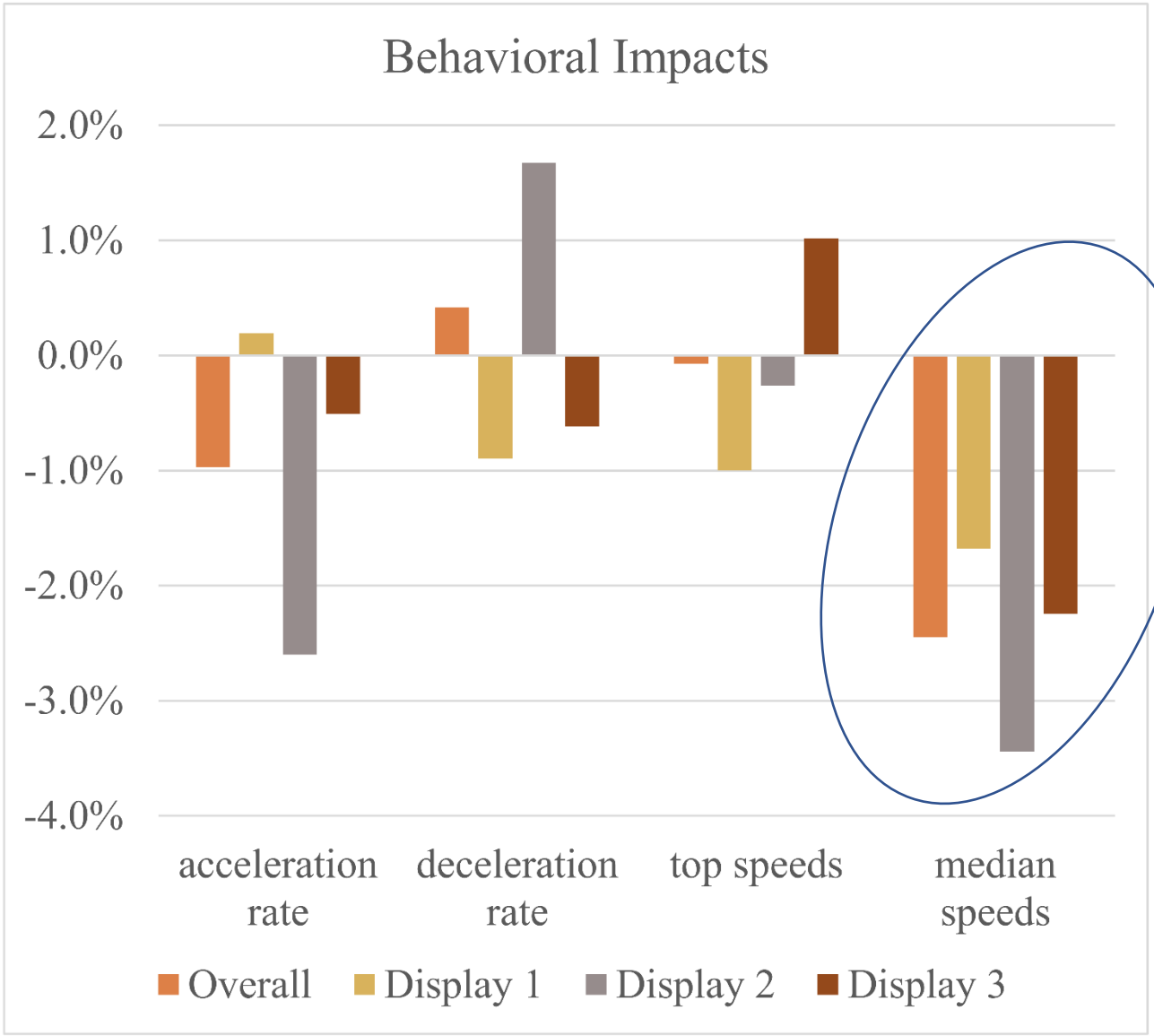
- Energy feedback to drivers appears to produce measurable increases in on-road fuel economy.
  1. We estimate an average **2.7%** improvement attributable to eco-driving behaviors, and **2.2%** attributable to increased on-road efficiency.
  2. 1.6 to 2.9% average improvement (due to eco-driving) by screen type, but differences between screen types not significant at $\alpha = 0.10$
  3. Participants' experiences are complicated—but instructive.

Three Feedback Designs

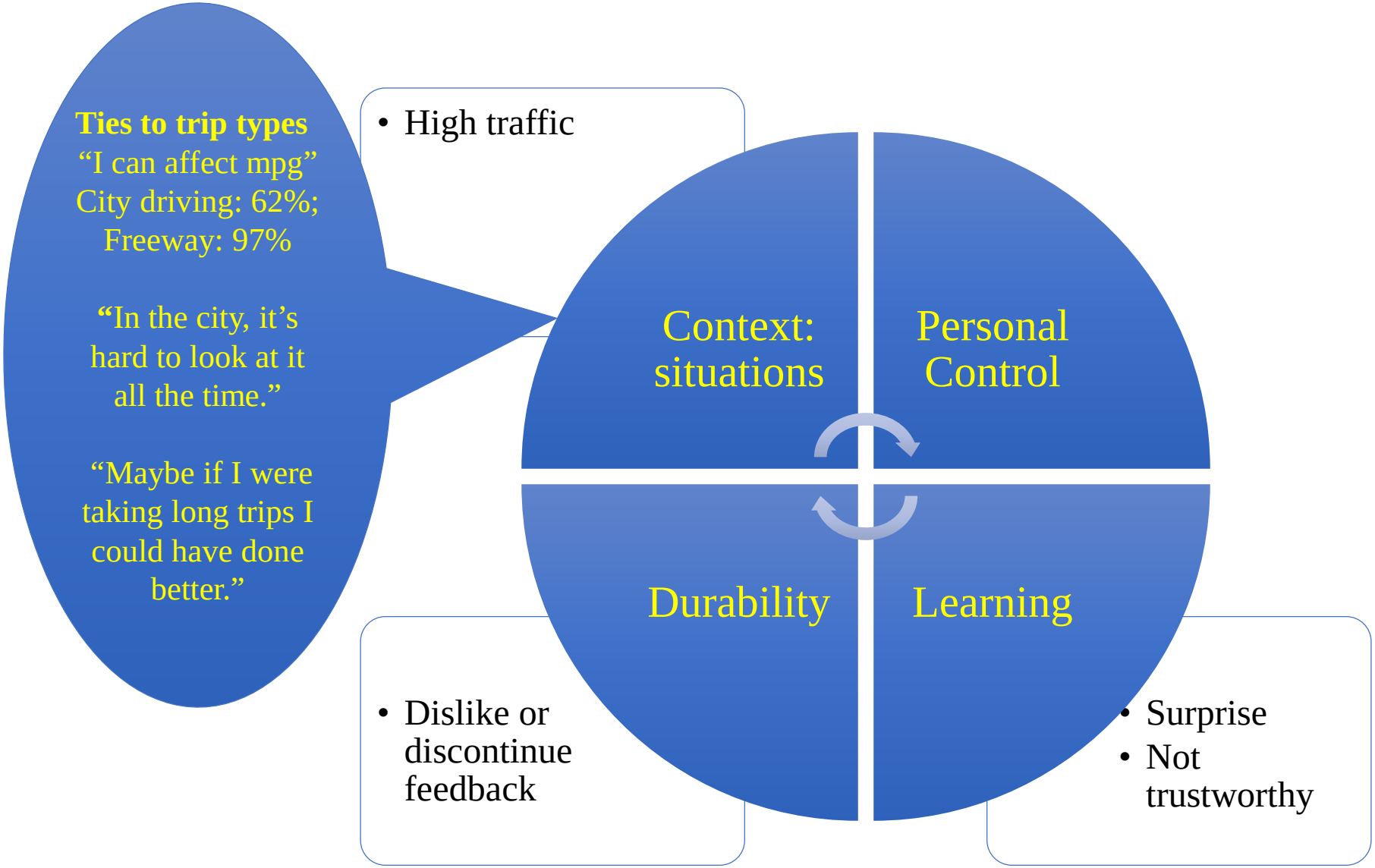
- Comparison of three feedback designs summarized by NHTSA
- Mid-point of average scales calibrated to households' vehicles' combined EPA rating

Direct Fuel Economy Value, "Numbers"		
Symbolic "Shrub" representation		
Acceleration level		

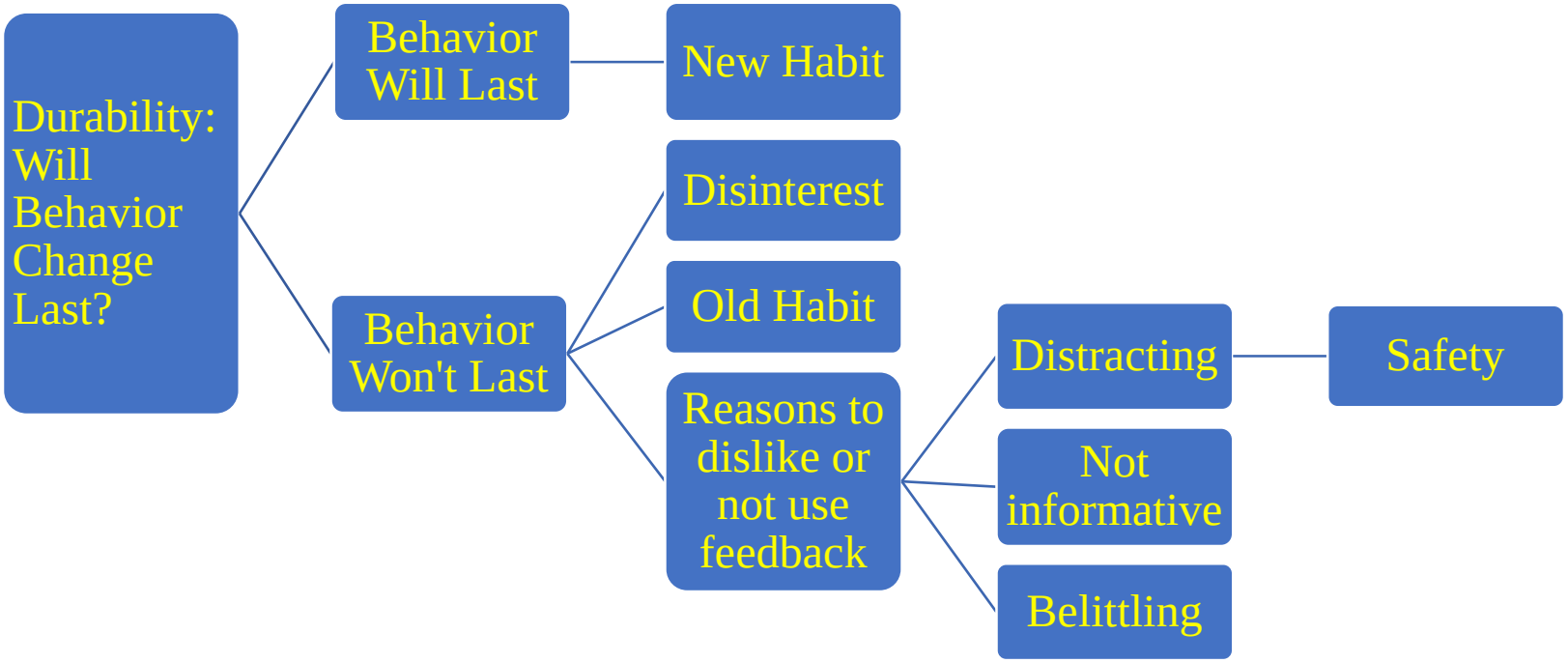
Driving Behavior Impacts of Feedback



Thematic Structure: All interview themes



Thematic Structure: Durability of behavior change



ACTUAL RESULTS MAY VARY

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Why is fuel economy a matter of public policy?

- There are many social benefits to increased fuel economy; there are lots of ways people aren't thinking about fuel economy as private consumers.
- On-road fuel economy can be improved through changes driver context.
  - Feedback
  - Goal setting
  - Habit formation