

The Demand for Vehicles and Fuel

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Understanding a household's joint purchasing decision is important

- ▶ Casual empiricism says households diversify, but cannot quantify without the right data (dealer data or NHTS won't do)
- ▶ Complicated dynamics of how households' fleets evolve
 - ▶ Which car to replace, when to replace, expected future gasoline prices, expected household 'shocks'
 - ▶ Many factors unobservable to analysts can bias our analysis (e.g. a family's taste for big vehicles, family anticipating a longer commute).
- ▶ These data are excellent!
- ▶ Results intuitive: if the kept car is more fuel efficient, the new car will be less fuel efficient.
- ▶ The level of gasoline prices plays a role. Another question: is there more diversification when there is more **variance** in gasoline prices?

A Slightly Different Thought Experiment

- ▶ A family needing 2 vehicles starts with no vehicles
- ▶ Helicopter drop in the first car via some policy – let it be high MPG
- ▶ Household chooses which second car to buy
- ▶ Possible scenarios:
 1. Learn that high MPG cars “aren't that bad” → buy another high MPG car (multiplier effect of policy)
 2. Needing diversification, household buys a low MPG (more spacious, powerful, heavier) second car (no multiplier effect)

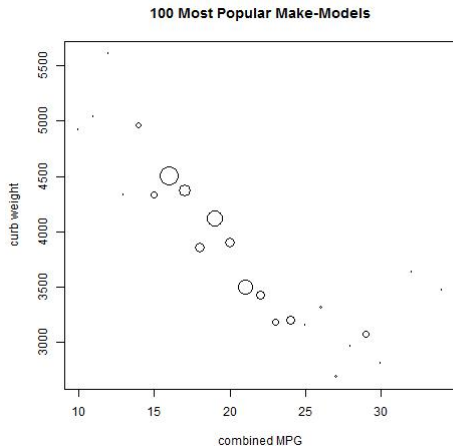
Is scenario (2) likely? And do households then shift miles to the more spacious, powerful, heavier, but higher price-per-mile vehicle?

What Drives Diversification?

- ▶ If I purchase a high MPG vehicle, what am I **not** buying?

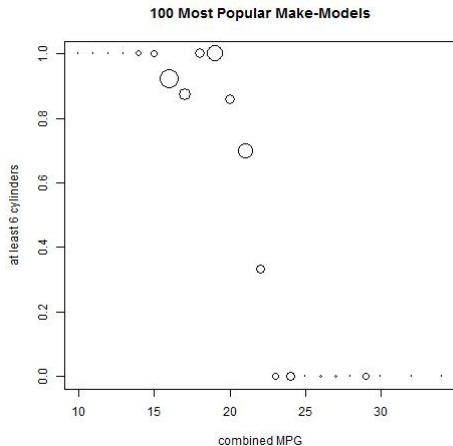
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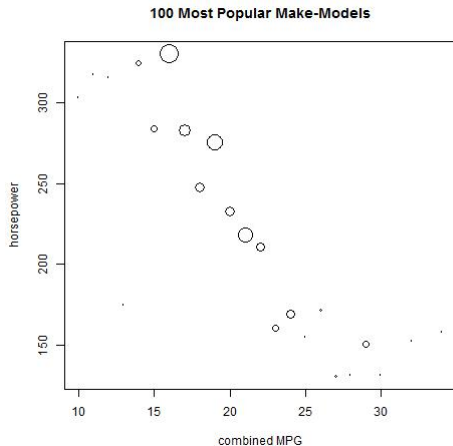
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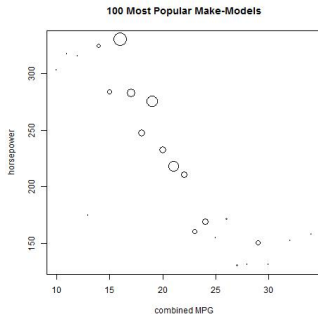
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These tradeoffs drive diversification. As technology evolves, will these tradeoffs continue to be as sharp? To avoid this, technology would need to give us as much 'vroom, vroom' and comfort and accident safety *at the same price.*

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- ▶ Understanding heterogeneous effects of scrappage programs on *next vehicle purchased*.
- ▶ Each of these questions is hard to answer convincingly, but these type of data plus frontier econometric techniques make it possible.

Lessons from Lewis

- ▶ All elasticity estimates are not created the same; incorporate into meta-analyses
- ▶ Frequency of data affects estimated price elasticity
- ▶ It's the 1980s again...
- ▶ Next step: where is the high frequency data on vehicle utilization so we can understand the types of driving behavior that change when gas prices rise?