Demand and the Vehicle Revolution: Technology, Consumer Behavior, and Policy Evolution

Sharyn Lie
Director, Climate Economics & Modeling Center
Office of Transportation and Air Quality

September 24, 2018
Technology

Viable alternatives exist today

Source: https://www.fueleconomy.gov/feg/alternatives.shtml
Technology
Hype or Happening?

Source: https://www.gartner.com/en/research/methodologies/gartner-hype-cycle

Technology Challenges:
Cost and Range

Plugin Vehicle Battery Costs ($/kWh)
- BNEF (Historical)
- NREL (Projection)

Distribution of Trips by Distance
- Percent of Trips
- Miles

Source Data:
- https://www.bnef.com/core/insights/17517/
- https://nhts.ornl.gov/vehicle-trips
- Adapted from: https://insideevs.com/study-60-percent-trips-less-6-miles
- Source data: National Household Travel Survey, 2017
- https://nhts.ornl.gov/vehicle-trips
Technology
Infrastructure: Limited but Growing

Sources:
Technology
Systems Integration

- Real time data is helping people make decisions
- Recent proliferation of options
- Options are not connected
Consumer Behavior

New York City Data

![Chart showing trips per day for Yellow Taxi, Uber, and Lyft in New York City from May '15 to Sep '16.]

http://www.businessofapps.com/data/uber-statistics/

Average Annual Expenditures per Consumer Unit (2016)

- Transportation: $9,049 (15.8%)
- Personal Care Products & Services: $707 (1.2%)
- Food at Home: $4,049 (5.5%)
- Personal Insurance and Pension: $6,631 (11.9%)
- Miscellaneous: $959 (1.7%)
- Education: $1,329 (2.3%)
- Apparel: $1,803 (3.1%)
- Cash Contributions: $2,081 (3.6%)
- Food Away From Home: $3,154 (5.1%)
- Entertainment: $2,913 (5.1%)


http://www.creditloan.com/blog/average-american-spends-on-entertainment/
Consumer Behavior
Mobility as a Service (MAAS)

- Solutions need to be integrated and easy
- Need one accessible payment mechanism for all modes
- How to get the price signals right?

Source: https://whimapp.com/
Consumer Behavior

What's Happening in the Shared Mobility Industry?

400 Cities with Carsharing
Traditional carsharing services are currently operating in more than 400 North American cities.

120 Cities with Bikesharing
More than 120 North American cities have launched bikesharing systems.

300 Cities with TNCs
Ridesourcing or Transportation Network Companies (TNCs) are operating in more than 300 cities in North America.

Source: http://sharedusemobilitycenter.org/
Policy Evolution