Background & Motivation

- Electric (EV), autonomous (AV), & shared vehicle technologies can impact safety, emissions, mobility, travel habits, & land use.
- EVs can reduce emissions, dependent on generation sources.
- AVs & shared AVs (SAVs) may improve traffic operations & safety, but increase VMT through improved mobility.

Survey Sample

- n = 1,426 Americans over age 18.
- Screened to remove those who sped through the survey, apparently did not understand or pay attention to the questions or attempt to honestly complete the survey.
- Weighted to match demographics of United States population.
- Asked about intentions to use, willingness to pay, & policies concerning EVs, AVs, & SAVs.

Summary Statistics

- 32.4% of respondents would prefer an AV for next vehicle, if price premium is neglected.
- If using a car capable of both human driving (HV) & autonomous, average respondent would use AV mode for 36% of travel distance.
- WTP for full AV technology is nearly $1,000 higher if HV capability is maintained.

Summary Statistics (2)

- Home Location Choice Results
  - Average respondent currently lives 10.2 miles from downtown & 7.9 miles from their place of work or school.
  - 24.4% of respondents are actively considering moving in the near future, of which 60.6% expect to move within the next year.
  - AV & SAV availability may increase interest in duplexes, townhomes, & mixed-use multifamily, & decrease interest in detached single family & other multifamily housing (70.7% would not change choice).
  - Of those currently considering moving, more expect to move farther from the city center than to move closer; though AV & SAV availability would shift choices closer than they otherwise would move.

Future Scenario Results

- Scenario includes AVs available at $5,000 price premium, life-cycle cost competitive EVs with 30-minute charge time for full 200-mile range, private SAV rides at $0.65/mile, & DRS rides at $0.40/mile.
- 24.5% of travel miles would be private SAV rides, 14.8% would be DRS.
- Next acquisition: 8.2% BEV, 5.1% plug-in hybrid, 15.5% hybrid, 5.5% no acquisition.
- 1 in 3 would choose full AV option for next acquisition.
- Males, those without a current driver license, younger people, those with a higher household income, non-whites, more educated, respondents, married respondents, those who live closer to downtown, disabled respondents, & those who are closer to acquiring their next vehicle are more likely to choose an AV.

Conclusions

- Results show a mixture of enthusiasm & concern for autonomous & shared vehicle technologies.
- Willingness to give up vehicle ownership is low, even among those who expect to primarily use SAVs.
- Making fast chargers widely available may speed EV adoption.
- Policies to limit empty driving below average respondent opinion may be needed to limit congestion from empty VMT.
- Future work will include a fleet evolution simulation to year 2050, based on survey results to estimate fleet composition, SAV use, residential location shifts, & VMT by mode & vehicle type in year 2050 & intermediate years.

Geographic Locations of Respondents

- Males, those without a current driver license, younger people, those with a higher household income, non-whites, more educated, respondents, married respondents, those who live closer to downtown, disabled respondents, & those who are closer to acquiring their next vehicle are more likely to choose an AV.