New Transportation Technologies and Implications for Various Population Groups

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27,476 lane-miles of freeways
24.8 million licensed drivers
27.7 million cars & trucks
38.8 million residents
"People won’t have as many vehicles because they’ll share one and own one."

Jim Hackett, Ford CEO
How are these transportation “revolutions” affecting vehicle ownership and travel behaviors?
California Panel Study of Emerging Transportation Trends

- Statewide longitudinal study with **rotating panel**
- 2015 survey: **Millennials** (18-34) and **Generation X** (35-50)
- 2018 survey: **All age groups**
- Quota sampling by **geographic region** and **neighborhood type**
- Focus on changing lifestyles, adoption of shared mobility and attitudes towards AVs
Timeline of the Project

2015
Opinion panel
Generation X
Millennials
N = 2,400

2018
Opinion panel, paper survey
Baby Boomers (and older)
Generation X
Millennials
Post-Millennials
N = ~ 4,500
(Optional in Spanish is also offered)

2021
(same method...)

Annual updates...
Major Differences Across Groups of Users

Latent-class adoption model to investigate differences in the use of ridehailing:

**Adoption Rate: 47%**
- Higher-educated independent millennials who live in more central areas and in households without kids
- The adoption rate significantly increases as the rates of technology adoption and frequency of long-distance leisure travel by plane increase.

**Adoption Rate: 27%**
- Most affluent individuals, predominantly dependent millennials or older Gen Xers, who live with their families.
- Technology adoption rate, household income, and frequency of non-car business long-distance trips affect the adoption.

**Adoption Rate: 5%**
- Least affluent and less educated individuals, who live in rural neighborhoods and do not work nor study.
- Adoption rate is affected by the characteristics of the built environment, including transit accessibility and land-use mix.

For more details:
What Would You Have Done if Ridehailing Was Not Available?

Drive alone: 28.5% (Ridehailing) 29.7% (Shared ridehailing)
Carpool: 15.6% (Ridehailing) 16.1% (Shared ridehailing)
Public bus: 12.9% (Ridehailing) 7.8% (Shared ridehailing)
Light rail/tram/subway: 8.6% (Ridehailing) 3.9% (Shared ridehailing)
Commuter rail: 0.5% (Ridehailing) 0.5% (Shared ridehailing)
Bike or walk: 8.6% (Ridehailing) 4.5% (Shared ridehaling)
Taxi: 25.8% (Ridehailing) 15.1% (Shared ridehaling)
Other: 3.8% (Ridehailing) 4.2% (Shared ridehaling)
I would not have made this trip: 6.5% (Ridehaling) 7.5% (Shared ridehaling)

Source: California Mobility Panel Study, 2018 online data, N=1,260
Panel Study of Emerging Transportation Technologies and Trends in California: Phase 2 Data Collection

January 2019

A Research Report from the National Center for Sustainable Transportation

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National Center for Sustainable Transportation
ITS UC DAVIS
INSTITUTE OF TRANSPORTATION STUDIES

New report (January 2019) available at https://escholarship.org/uc/item/35x894mg
Impacts on Public Transportation

• Ongoing efforts for integration with public transit and expansion of catchment areas

• Risk of reducing service in low-demand areas

• Less tech-savvy and older users benefit less from technology

• What about rural areas where deploying these services is less profitable?
“Not all trips are created equal”...

Where do trips happen?
Which trips could be made by...

Active Modes (Walking/Bicycling)  High-Occupancy Modes (Public Transit/Pooling)
How Things Will Change with MaaS?

Source: Matyas, 2018
Car Ownership vs. Shared Mobility?

- Under what conditions would individuals prefer to access a vehicle as needed rather than owning one?
- So far, only a minority of travelers (mainly in urban areas) are interested in not owning a vehicle and accessing mobility services when needed...
Major Changes in Future with Autonomous Vehicles

- **FUTURE OF INTEREST:**
  a fully autonomous vehicle

- **SIMULATION OF FUTURE:**
  a personal driver

For more details:
Elderly, Rural Travelers?

• Older travelers and people with disabilities might greatly benefit from increased automation

• Costs of deployment (i.e. privately-owned AVs) or accessibility (e.g. shared AVs in low-density areas) might create barriers to fruition

• Already seen today with TNCs...
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- Lew Fulton
- Dan Sperling
- Joan Walker
March 2018 Report:

Additional references to papers from this project:


For more info, visit 3rev.ucdavis.edu
Thank you!

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