Shared, Electric, Automated:
The 3 Revolutions and the Future of Mobility

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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
Uber/Lyft ridership is growing quickly...

2018 Ridership (estimates):
- Local bus: 4.7 billion
- Urban rail: 4.2 billion
- Taxi/TNC: 3.8 billion

(Annual rate)

Ridehailing Users in the U.S.: Insights from 2017 NHTS Data

Only **10% of U.S. residents** (aged 16+) reported to have used ridehailing in the past 30 days.

**Frequency of ride-hailing use in 30 days in the U.S.**

- **Never**, 90.2%.
- **At least once**, 9.8%.
- **Once**, 2.4%.
- **Twice**, 2.4%.
- **3-4 times**, 2.0%.
- **5+ times**, 3.0%.

**Almost 50% of American ridehailing users live in five states:**
- California (20%),
- New York (9.2%),
- Florida (7.2%),
- Texas (6.4%),
- Illinois (5.9%).

*Source: Hongwei Dong, using 2017 NHTS data*
Spatial Distribution of Taxi/Ridehailing Trips

Source: Hongwei Dong, using 2017 NHTS data
How are these transportation “revolutions” affecting vehicle ownership and travel behaviors?
CA Mobility Panel: Adoption of Shared Mobility in 2015-2018

For more details:
Of course, though... “Not all users behave the same way”

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:
“Not all on-demand mobility services are created equal”...

Impact of ridehailing on use of other modes - “What Would You Have Done if Ridehailing Was Not Available?”

For more details:
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

Giovanni Circella, University of California, Davis
Grant Matson, University of California, Davis
Farzad Alemi, University of California, Davis
Susan Handy, University of California, Davis

New report (January 2019) available at https://escholarship.org/uc/item/35x894mg
“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 are micromobility solutions changing travel behaviors?

E-scooters largely similar in speed to bicycles...

Can share bike lane infrastructure!

New nationwide data collection effort at UC Davis
How Will Vehicle Automation Shape Future Mobility?

Shared AV Pilots
How Will Vehicle Automation Shape Future Mobility?

Privately-owned AVs?

For more details:
• How will MaaS (Mobility as a Service) change future mobility?

• Under what conditions would individuals prefer to access a vehicle as needed rather than owning one?

To date, only a minority seems interested in not owning a vehicle & using fleet of Shared AVs (Source: California Mobility Panel, 2018 Data)
“Not all vehicles are created equal”: AVs will differ from today’s vehicles...

...What factors can encourage to share rides with strangers?

Source: Beth Ferguson and Angela Sanguinetti (2018)
Thank you!

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