



# ***Public Transit at a Time of Changing Lifestyles, Emerging Transportation Technologies and Shared Mobility***

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# Impact of Disruptive Technologies

Disruptive technologies such as *shared mobility*, *electrification* and *autonomous vehicles* are bringing big changes in:

- *Transportation supply*
- *Transportation demand*

*Need to update travel demand forecasting to capture effects of new trends...*

*Importance to evaluate impacts on the environment and sustainability*

*Role of policy in affecting travelers' response to innovations and the use of travel modes...*



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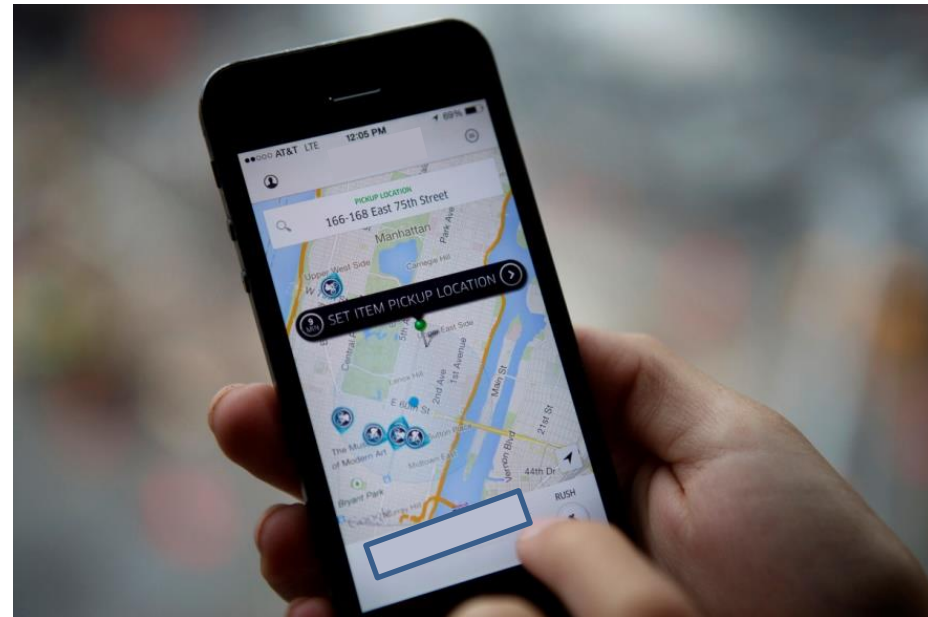
# What is the Impact of Emerging Technologies?

- Smartphones (GPS, access to more info)
- Increasing opportunities to multitask
- Integrated ride-sharing / shared mobility
- Impact levels of car-ownership
- Extend range of public transportation

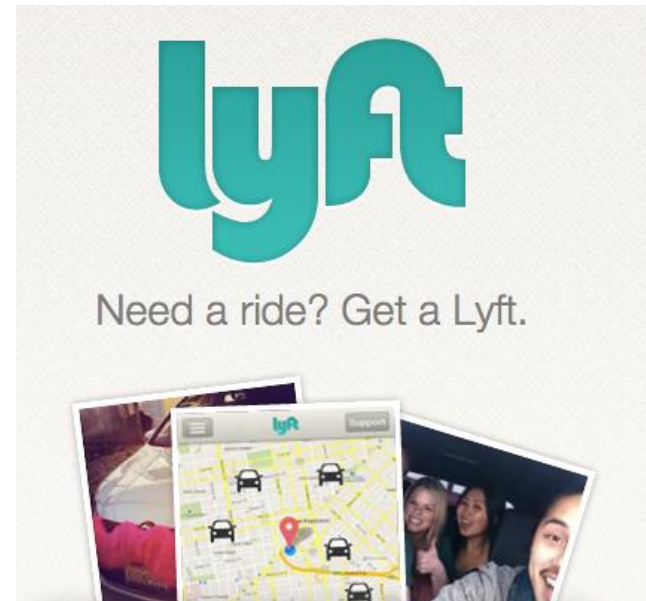
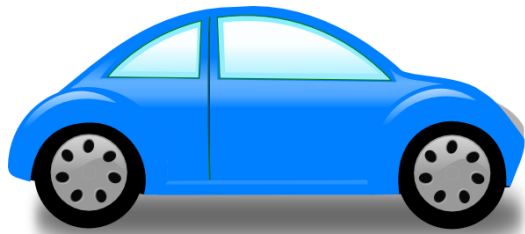




# Car Ownership vs. Shared Mobility



# What Replaces What?

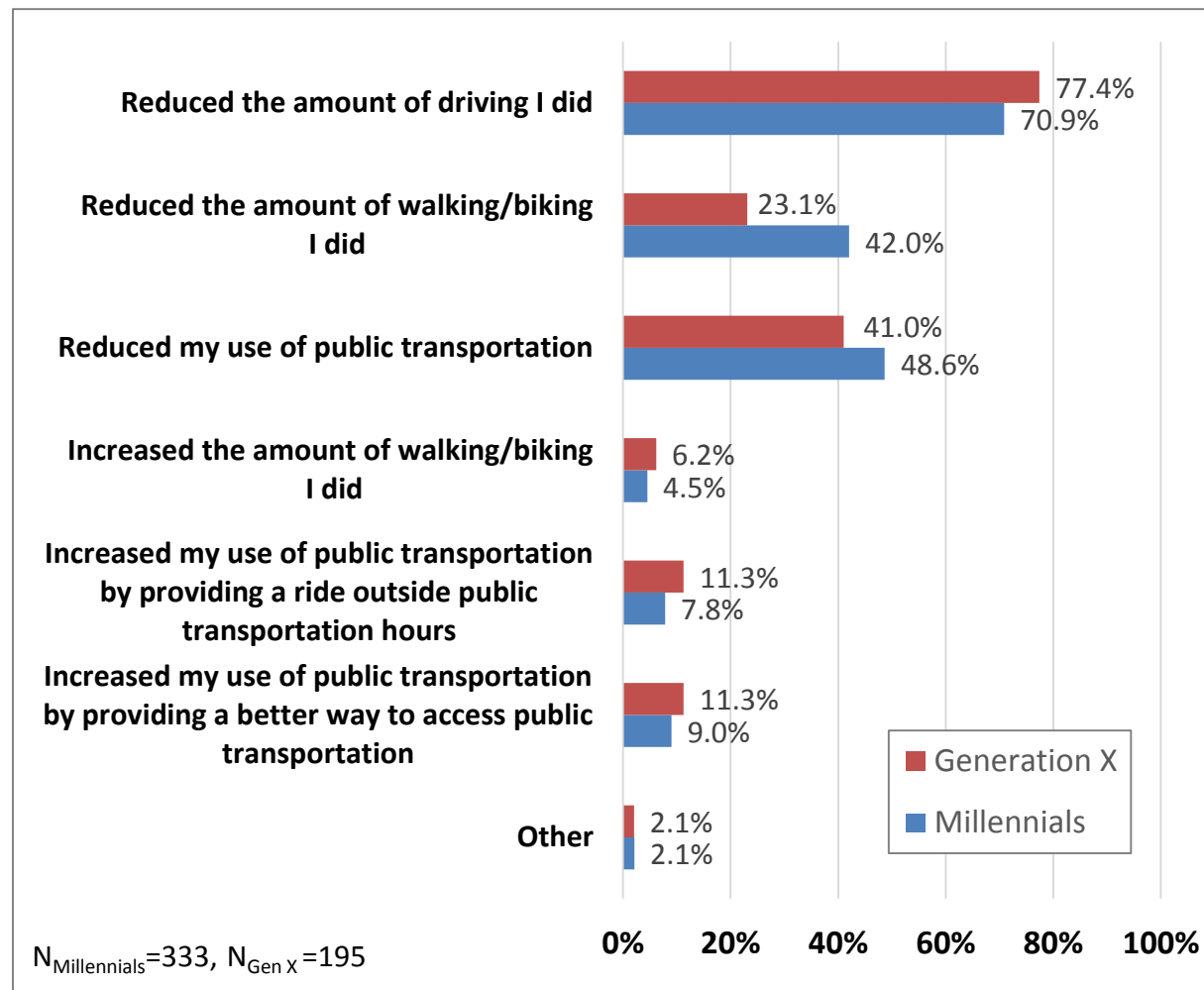


# Some Research Questions...

- How do customers respond to new mobility choices?
- What are the barriers to the adoption of new technological services?
- How are other travel options and choices affected?
- How does innovation impact mobility for various demographic markets?
- How can transit agencies efficiently integrate shared mobility options?

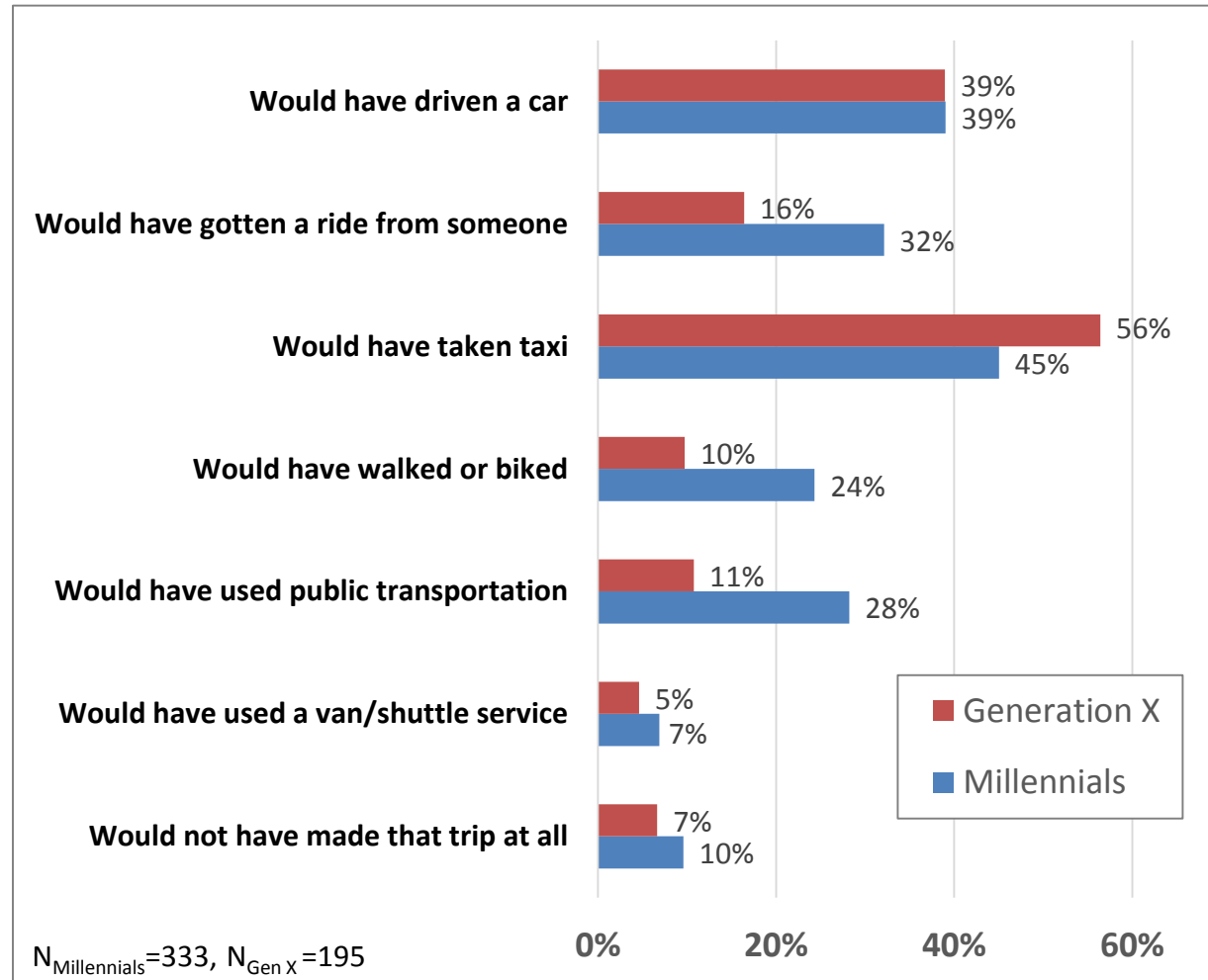
# Impact of Uber/Lyft Use

## Impact of last Uber/Lyft trip on the use of other means of transportation (by age group)



# Impact of Uber/Lyft Use (2)

**How would you have traveled if Uber/Lyft was not available?**



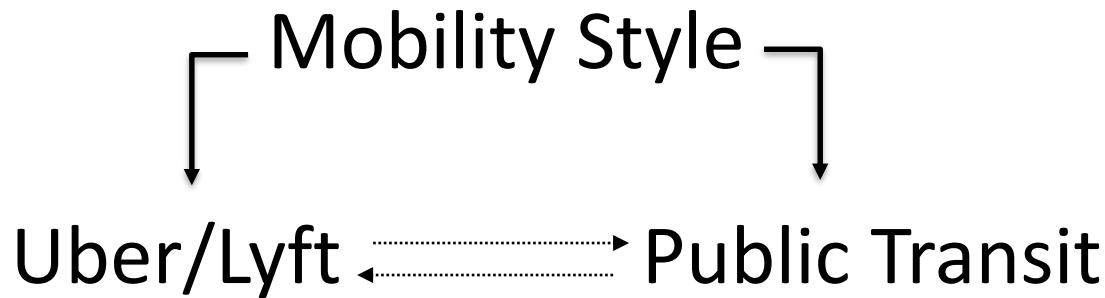


# Emerging Travel Patterns

- Millennials more often adopt shared mobility.
- Urban residents that live in zero-vehicle households more likely to use Uber/Lyft more frequently.
- Increased land use mix and regional auto accessibility increase the likelihood of using these services.
- Tech-savvy individuals with stronger pro-environmental and variety-seeking attitudes more likely to use shared mobility.
- Those with stronger *preference to have their own car* are less likely to use shared mobility services.
- Individuals with higher *willingness to pay to reduce travel time* are high-frequency users.

# Shared Mobility and Travel Behavior

How does the adoption of *shared mobility* affect other components of *travel behavior* (e.g. use of transit)?

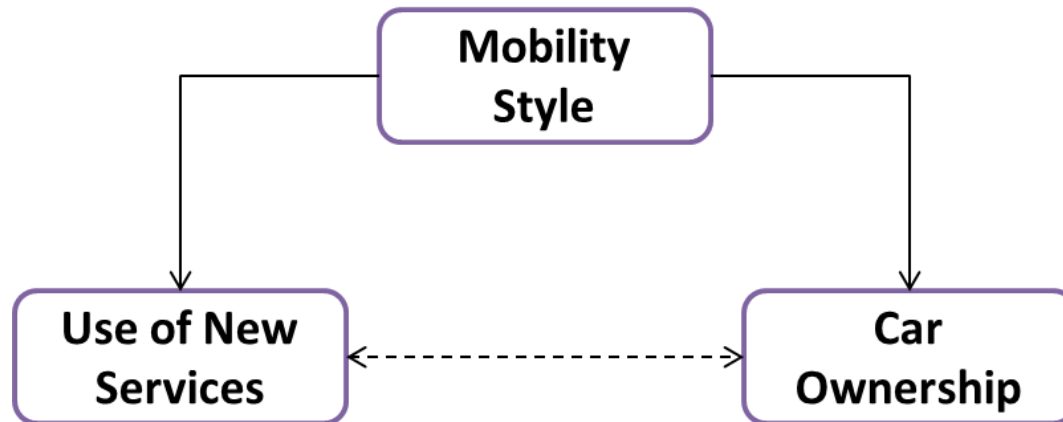


Various modeling approaches: *bivariate ordered Probit*, *recursive Probit*, or *latent-class structural equation models*...

# Shared Mobility and Travel Behavior

How does the adoption of *shared mobility* affect other components of *travel behavior* and *vehicle ownership*?

Jointly model the adoption of shared mobility and *use of other modes* or *vehicle ownership*:

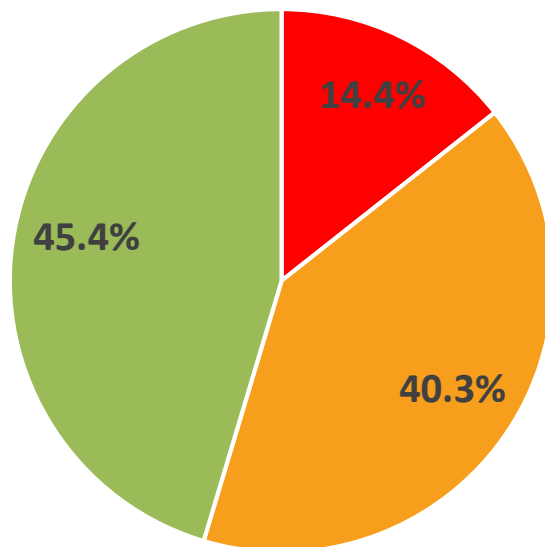


Data from longitudinal component of panel study (2015-2018) will help disentangle the relationship with *vehicle ownership*...

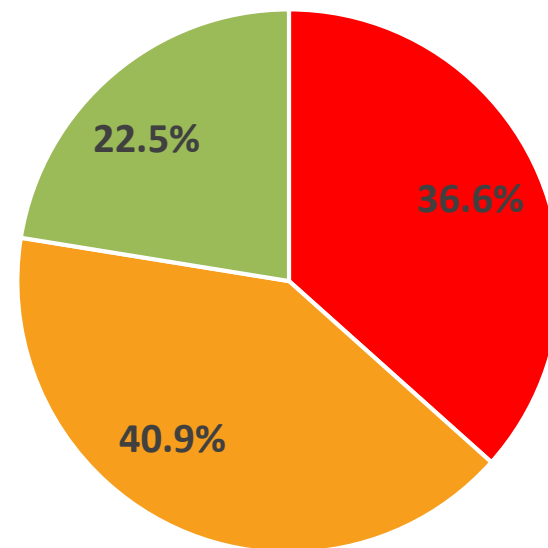
# What Limits the Adoption of Shared Mobility?

## *Concerns about drivers*

**Users**



**Non-users**

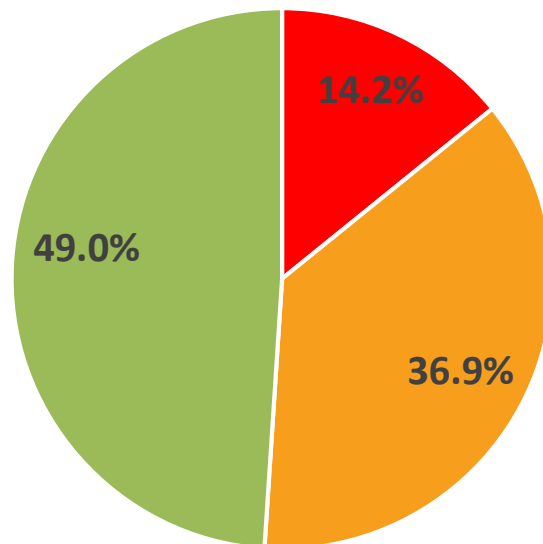


■ Strongly limits
 ■ Somewhat limits
 ■ It does not limit

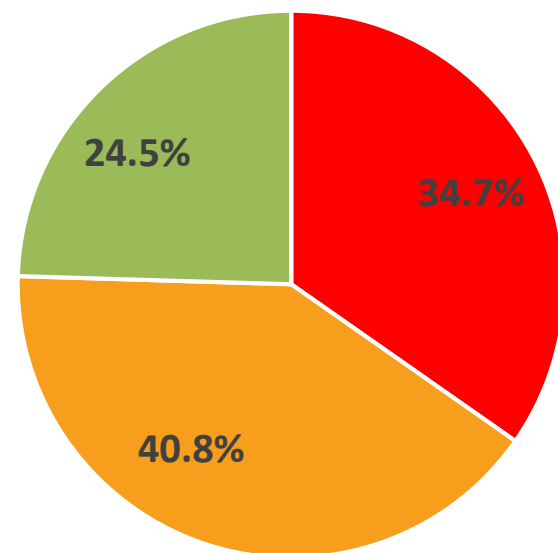
# What Limits the Adoption of Shared Mobility?

## *Concerns about comfort/safety*

**Users**



**Non-users**



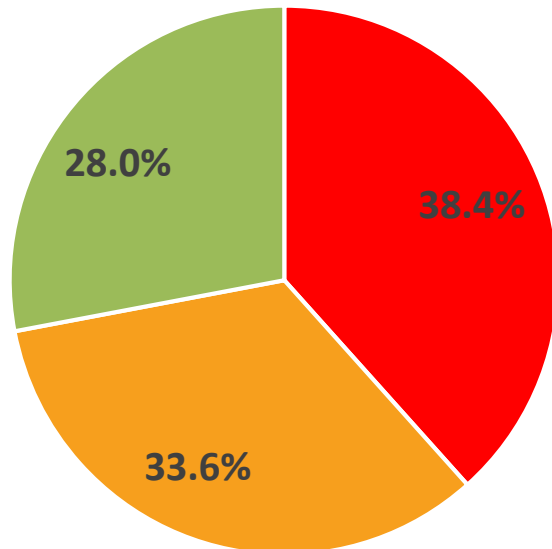
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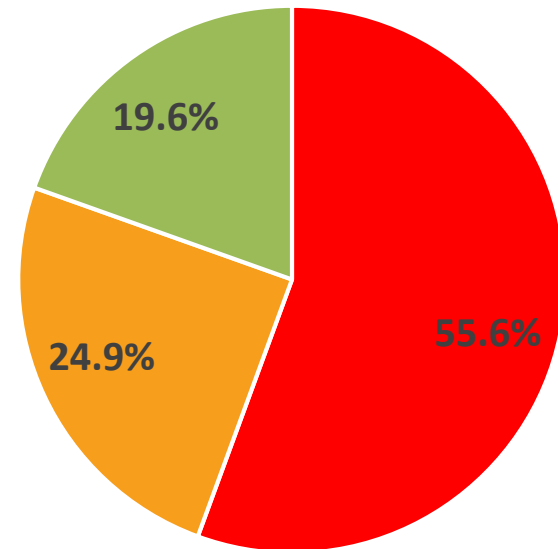
# What Limits the Adoption of Shared Mobility?

***Prefer to have/use my own car***

**Users**



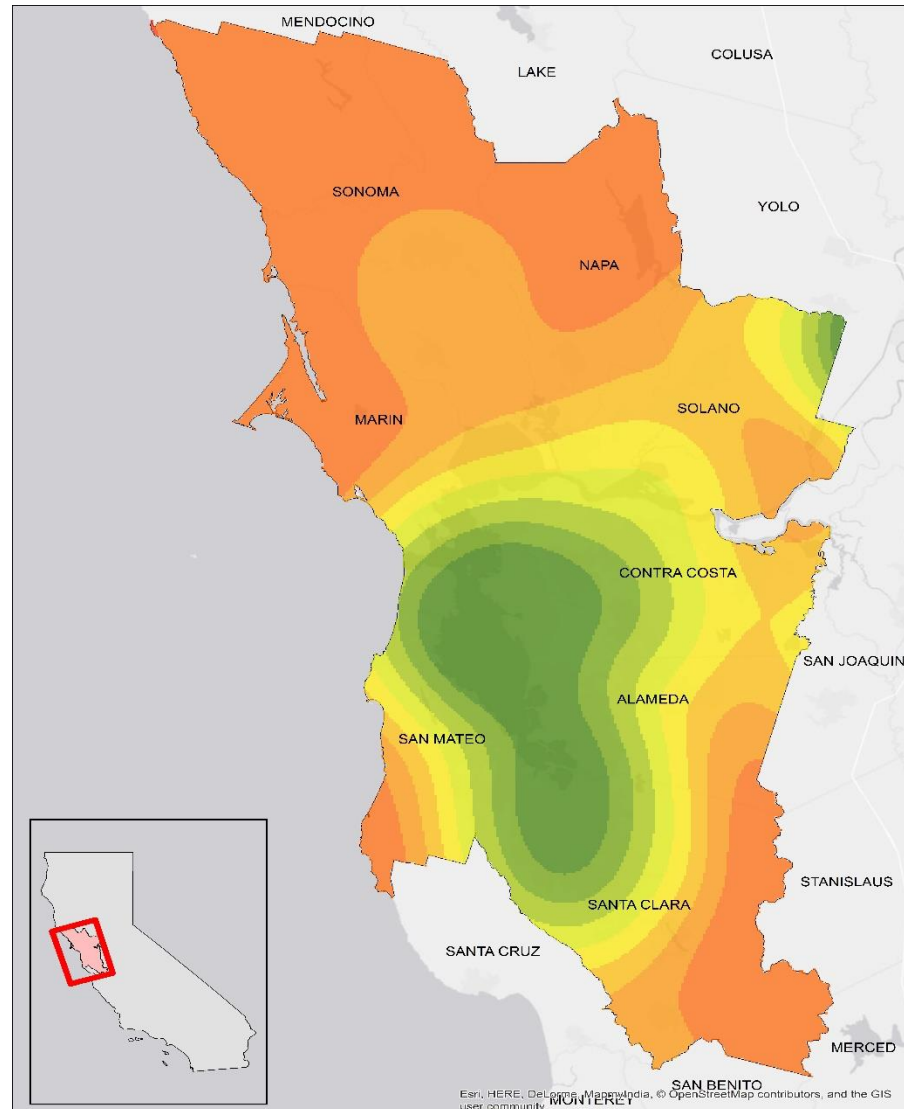
**Non-users**



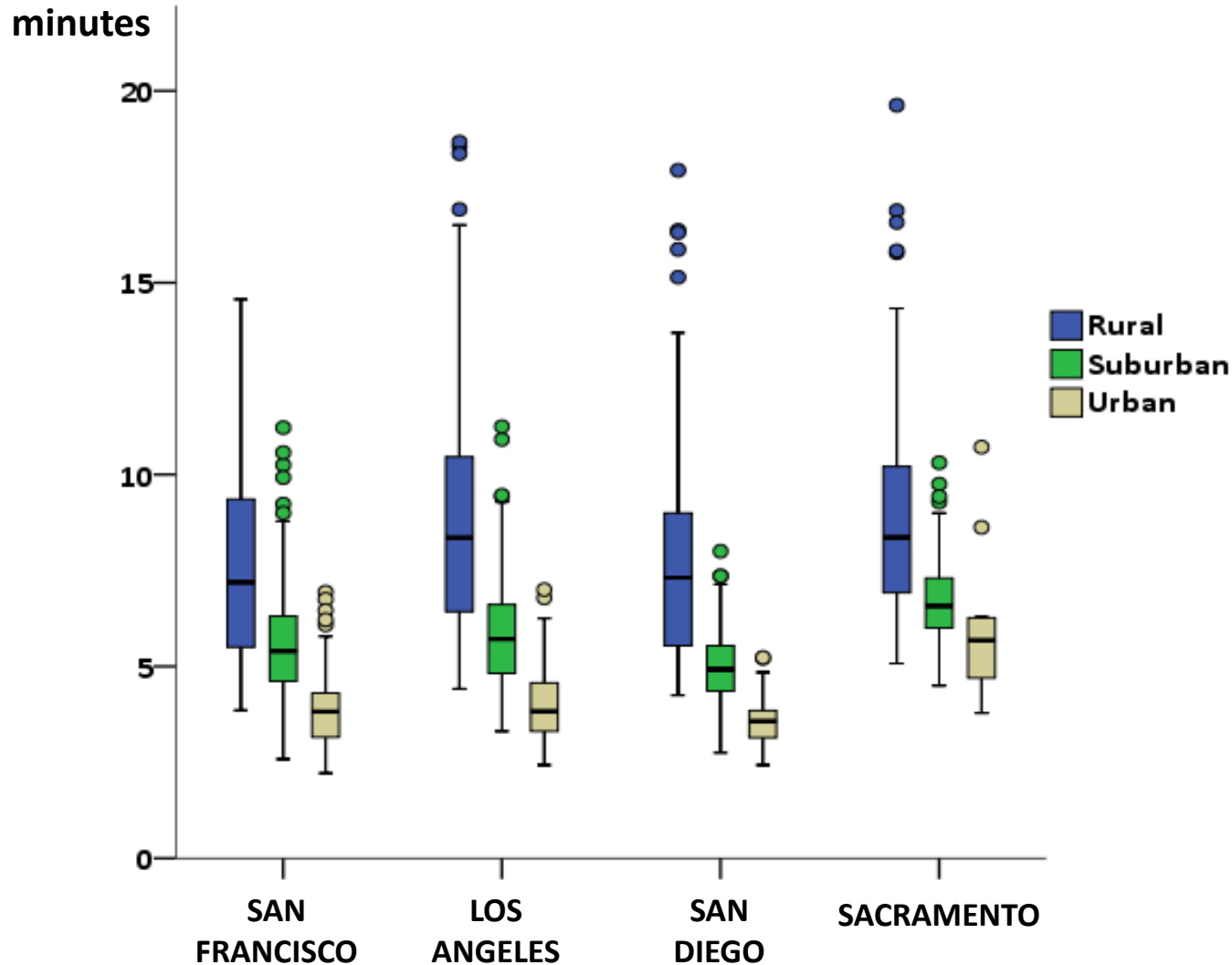
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# Availability of the Service

**Average waiting time to access on-demand ride-hailing services in Northern California**



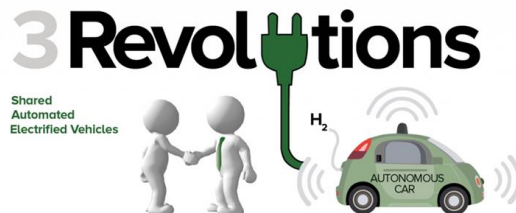
# Average Waiting Time for *UberX*



# How can we coordinate use of shared mobility and public transit?

- Uber/Lyft can provide first-/last-mile access to transit:
  - *What are the current experiences and pilot projects telling us?*
- Competition vs. substitution with public transit:
  - *What is the best allocation of funds? Use of curb space, right of way, etc.*
- Urban form (e.g. low-density regions) not conducive to use transit:
  - *Origins/destinations too far away to make service feasible/profitable (same for shared ride-hailing services)?*
  - *How do innovations influence mobility in urban, suburban and/or rural areas?*
- How will the transportation landscape change with AVs?
  - *Blending of public/private transportation? Opportunities for microtransit?*

*Important role of policies to align with societal benefits... and space for research partnerships to generate knowledge in this area...*



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Thank you for your attention!



**For more information, please contact:**

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