Millennials' Attitudes and Lifestyles, Adoption of Technology and Travel Behavior: Preliminary Results and Implications for Travel Demand Modeling

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Mobility of Millennials in California
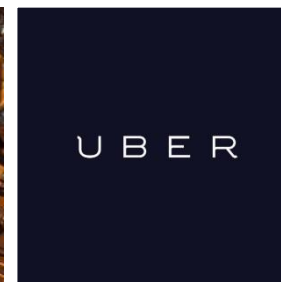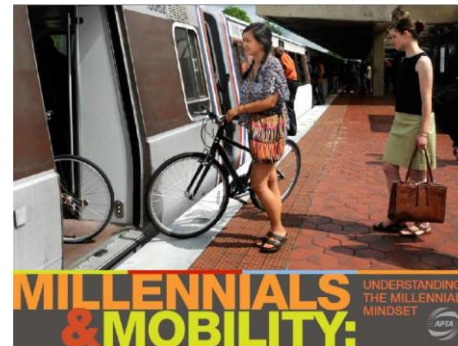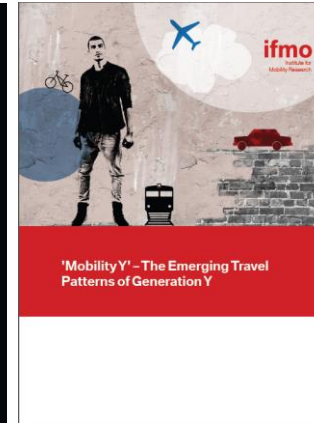
Interest in better understanding:

- The relationships among *millennials' personal attitudes*, *lifestyles* and *actual behaviors*

  …do they behave differently from previous generations?

- Impact of *classical* (economic and non-economic) variables vs. *specific factors affecting millennials' choices* (e.g. adoption of technology, etc.)

- Their *aspirations for/opinions about life and future mobility* (e.g. major life changes, purchase and use of cars vs. use of other modes)

(2)

"Millennials" (or "Generation Y")

- Millennials are often described as heavy adopters of *technology* and *social media*

- Less dependent on cars, and adaptable to the *sharing economy*

- *Often* prefer urban locations and social lifestyles (at least *in some regions*)

- The focus is mainly on *urban population*...

Potential Factors Affecting the Mobility of Millennials

Economic	Auto Costs	Technology	Demographic Change
• Recession • Unemployment	• Gasoline • Auto insurance • Driver's education • Auto repairs • Other fees	• Communication technology • Transportation technology (Über)	• Delayed marriage • Fewer children • Boomerang
Residential Location • More likely to move to and live in cities	**Cultural** • Environmentalists • Less materialistic	**Regulatory Changes** • Graduated Driver's Licensing • Texting while driving laws	**Alternative Modes** • Better transit • Improved infrastructure for walking/biking

(Source: Blumenberg, 2014)

Common Limitations of Previous Studies

Lack of information on key variables:

- e.g. *personal attitudes and preferences* for studies based on the analysis of National Household Travel Survey data

Use of non-random samples:

- e.g. *convenience samples* for studies on university students

California Millennial Study

- Statewide study in California

- Design of a detailed online survey to collect information from millennials

- Survey distributed through an opinion panel to a sample of Millennials and Generation X

- Quota sampling by geographic region and neighborhood type

- Focus on personal attitudes, lifestyles, living arrangements, and adoption of technology, among other factors controlled in the study

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- Lew Fulton

- Pat Mokhtarian

- Susan Handy

- Farzad Alemi

- Rosaria Berliner

- Kate Tiedeman

Survey Content

Focus on:

A. *Individual Attitudes and Preferences (general, environmental, technology, lifestyles, etc.)*

B. *Online Social Media and Adoption of Technology*

C. *Residential Location and Living Arrangements*

D. *Employment and Work/Study Activities*

E. *Transportation Mode Perceptions*

F. *Current Travel Behavior*

G. *Emerging Transp. Services (e.g. car-sharing, Uber, Lyft, etc.)*

H. *Driver's License and Vehicle Ownership*

I. *Previous Travel Behavior and Residential Location*

J. *Aspirations for/Opinions about Future Mobility*

K. *Sociodemographic Traits*

Individual Attitudes and Preferences

Section A: Your Opinions on Various Topics

To begin, we'd like to learn more about your opinions on various issues related to transportation, residential location and lifestyles. This will give us a more complete context for understanding your answers to later questions. We want your honest opinion on each statement contained in the next three tables (or your best guess, for topics you are not very familiar with) – **there are no *"right"* or *"wrong"* answers in this survey!**
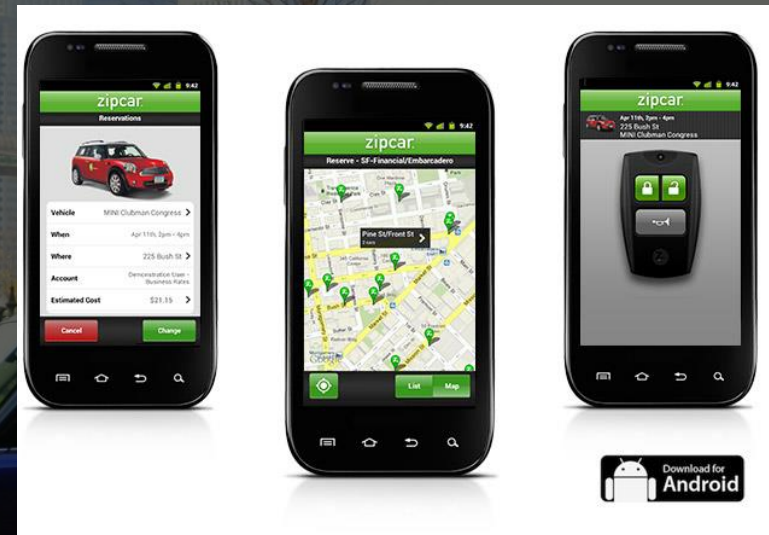
Please choose the response that most closely fits your reaction to each of the following statements.

(1 of 3) Your opinions and preferences about personal lifestyles and residential location

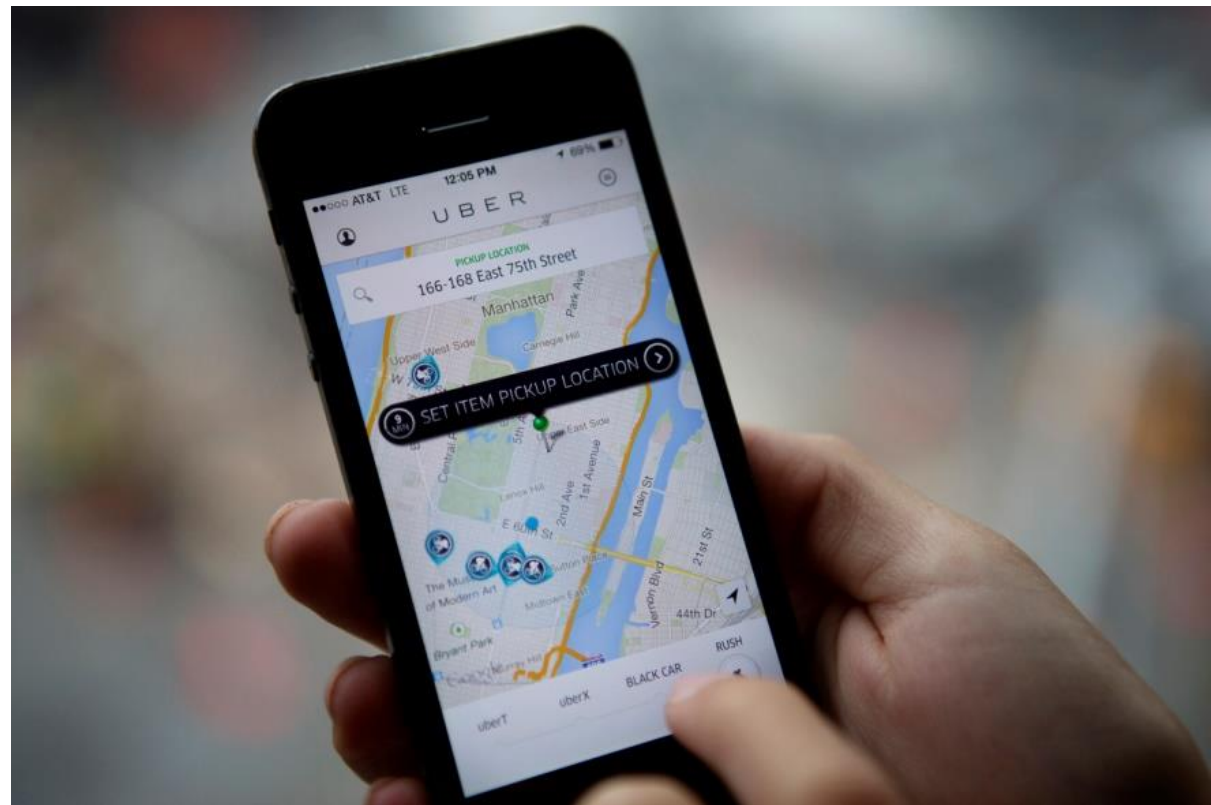|	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I prefer to live close to transit, even if it means I'll have a smaller home and live in a more crowded area.	○	○	○	○	○
Getting regular exercise is very important to me.	○	○	○	○	○
I like sticking to a routine.	○	○	○	○	○
I prefer to live in a spacious home, even if it is farther from public transportation and most destinations.	○	○	○	○	○
Individuals should generally put the needs of the group ahead of their own.	○	○	○	○	○
Doing two or more activities at the same time is the most efficient way to use my time.	○	○	○	○	○
I like the idea of having different types of businesses (such as stores, offices, post office, bank, library) mixed in with the homes in my neighborhood.	○	○	○	○	○
The importance of exercise is overrated.	○	○	○	○	○

What is the Impact of Emerging Technologies?

- Smartphones (GPS, access to more info)

- Increasing opportunities to multitask

- Integrated ride-sharing / shared mobility

- Lower levels of car-ownership

- Extend range of public transportation

Car Ownership vs. Shared Mobility

California Millennial Dataset

180 Urb./Sub./Rural

180 Urban
180 Suburban

250 Urban
250 Suburban

100 Urban
100 Suburban

290 Urban
290 Suburban

180 Urban
180 Suburban
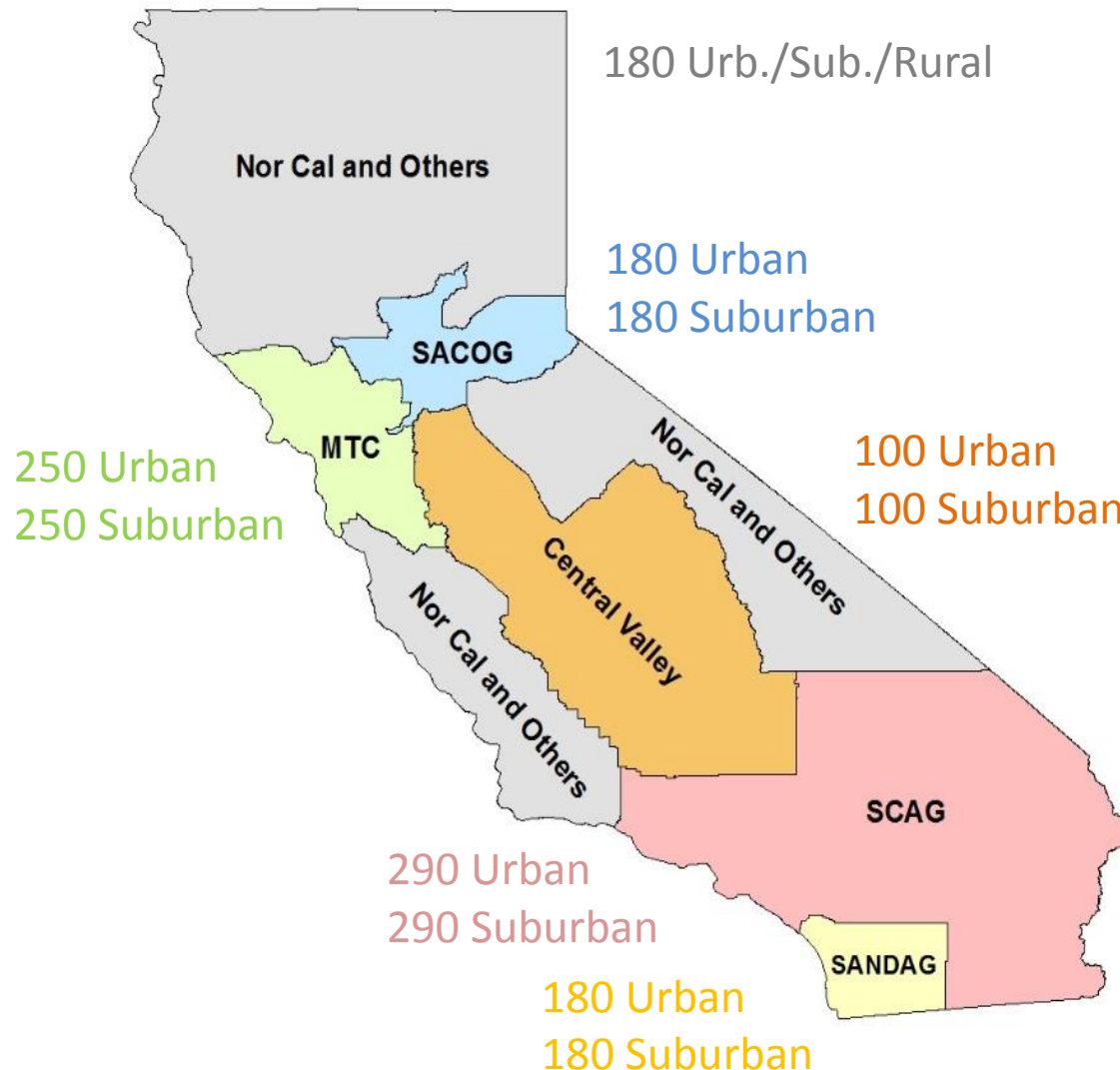
+270 Rural (All California)

Control for demographic targets:
- *Age*
- *Gender*
- *Income*
- *Race and Ethnicity*
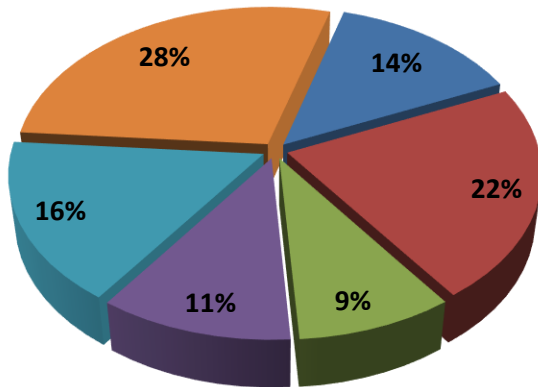- *Presence of Children (Y/N)*

Data collection in Fall 2015

Target of:
1400 Millennials
1000 "Gen Xers"

N = 2400 Total sample size

Sample Characteristics (N=2160)

Millennials

Generation X
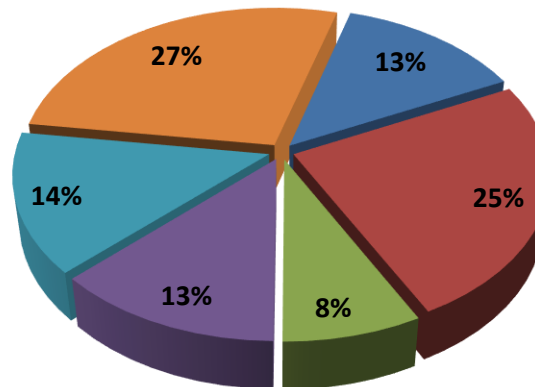
Central Valley
MTC
NorCal and Others
SACOG
SANDAG
SCAG

Millennials
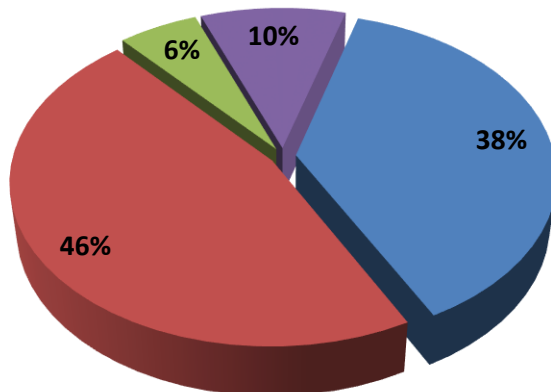
Generation X
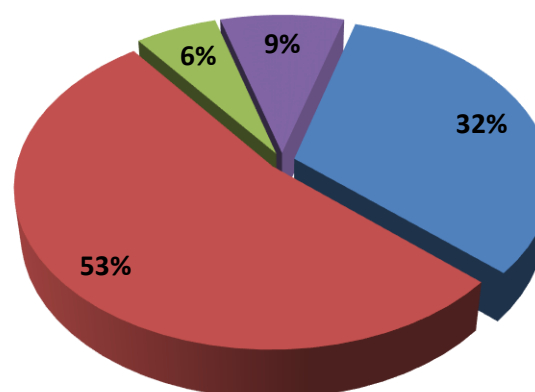
Urban
Suburban
Rural
Small town

Sample Characteristics (N=2160)

Millennials

70%
15%
9%
4%
1% 1%

Generation X

72%
14%
7%
5%
1% 1%

- Asian/Pacific Islander
- White/Caucasian
- Black/African American
- other/multi-racial
- Decline to Answer

Millennials

55%
45%

Generation X

58%
42%

- Household without Children
- Household with Children
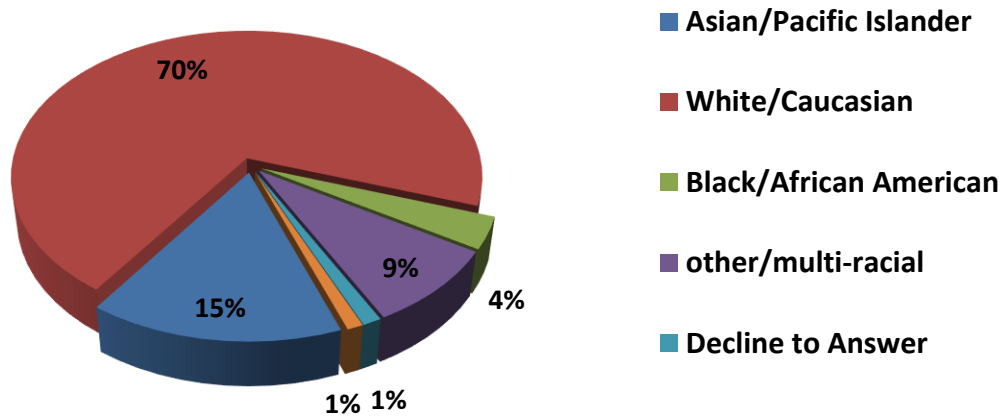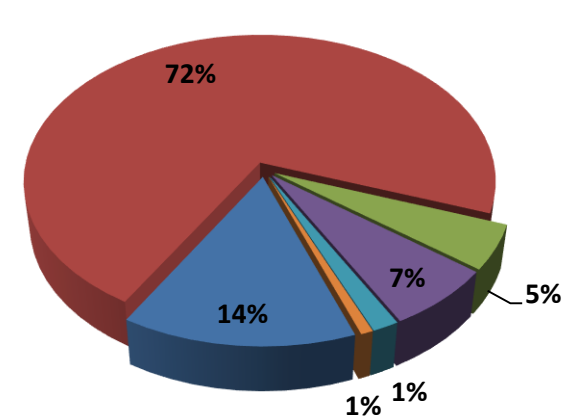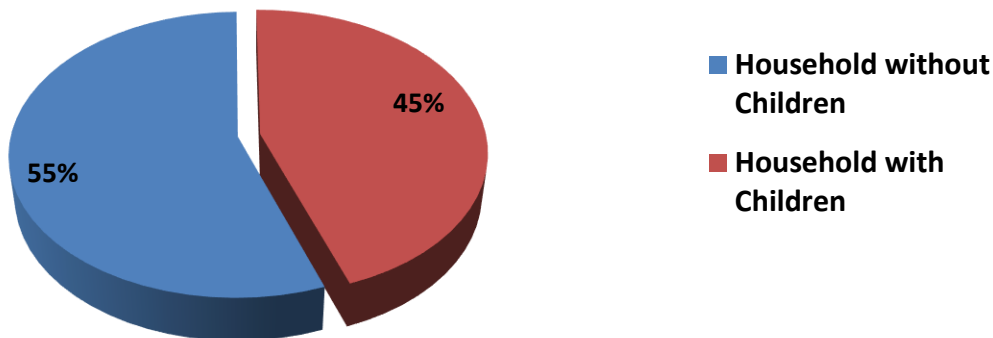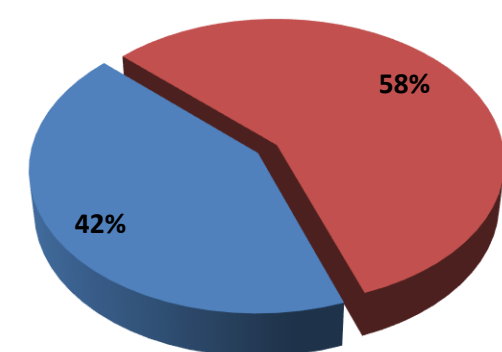
Vehicle Miles Traveled

Average Weekly VMT by Neighborhood Type
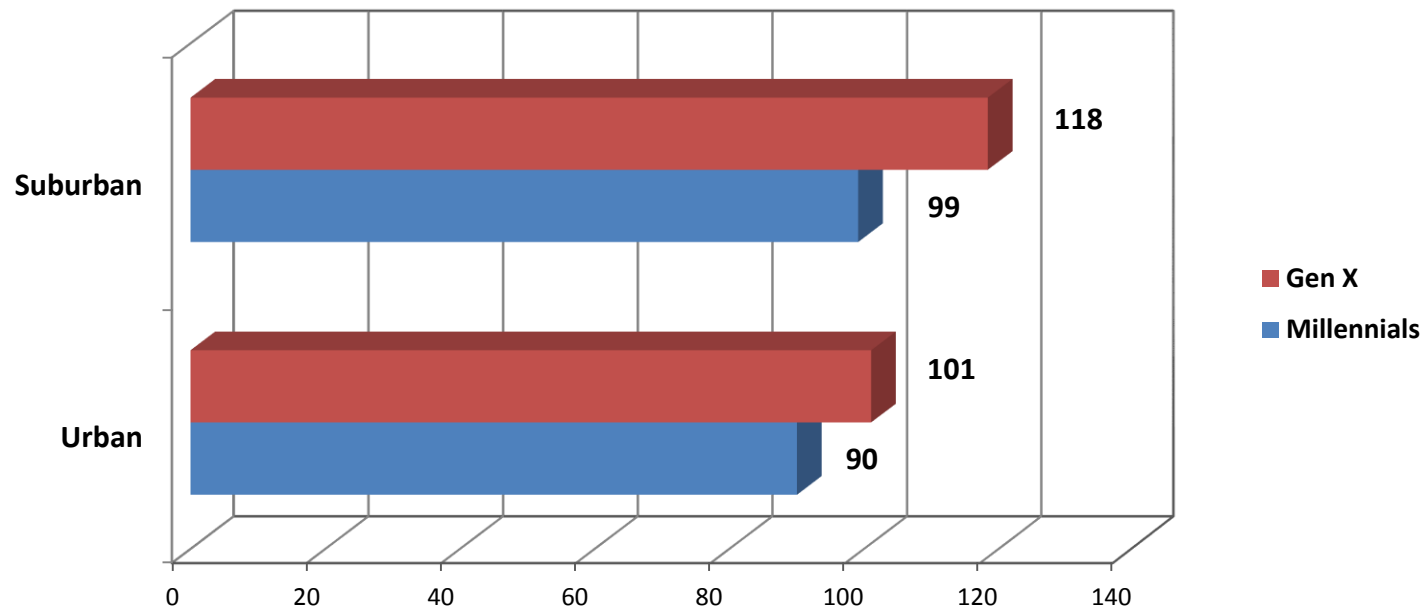
N=2110, unweighted sample

A Transient, Green Generation

"I'm still trying to figure out my career (e.g. what I want to do, where I'll end up)"
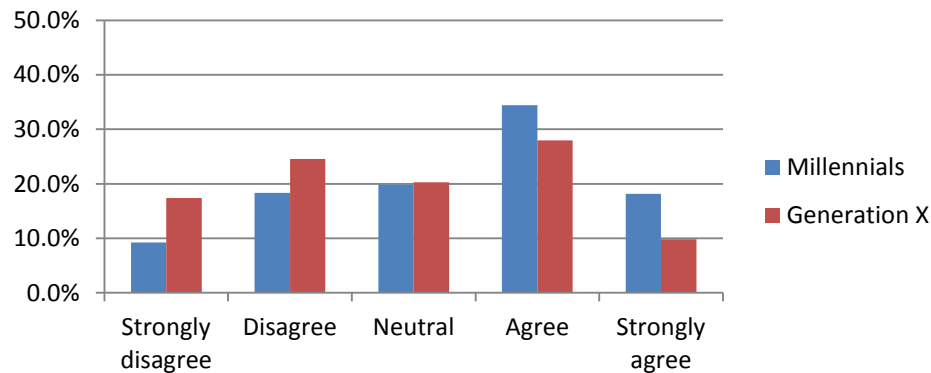
"I prefer to live close to transit even if it means I'll have a smaller home and live in a more crowded area"
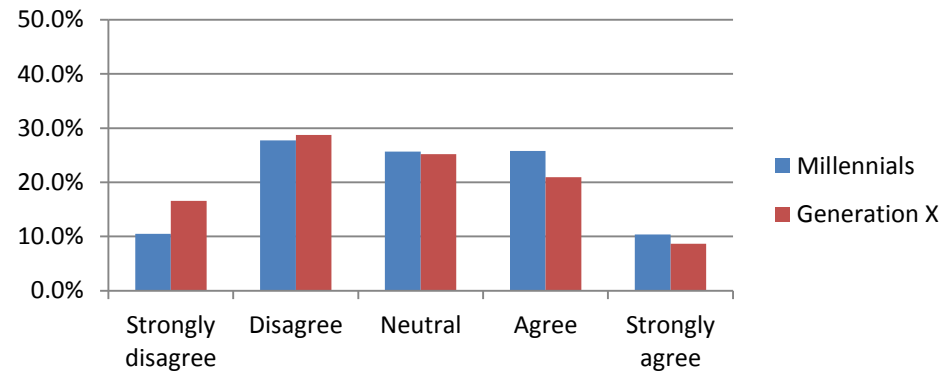
"I'm already well-established in my field of work"
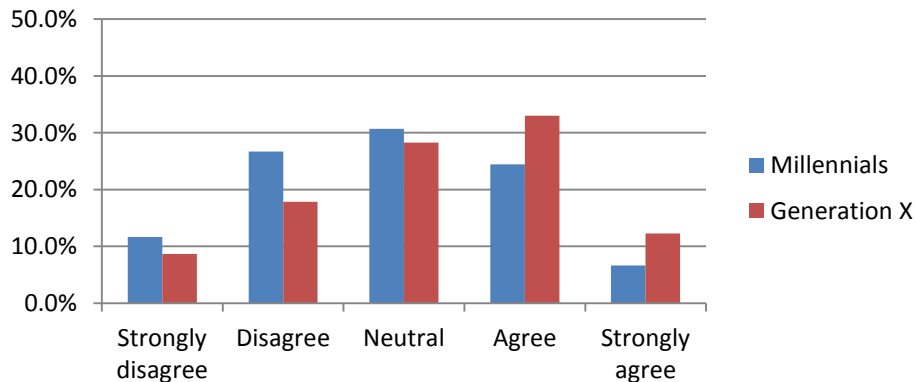
"We should raise the price of gasoline to reduce the negative impacts on the environment"
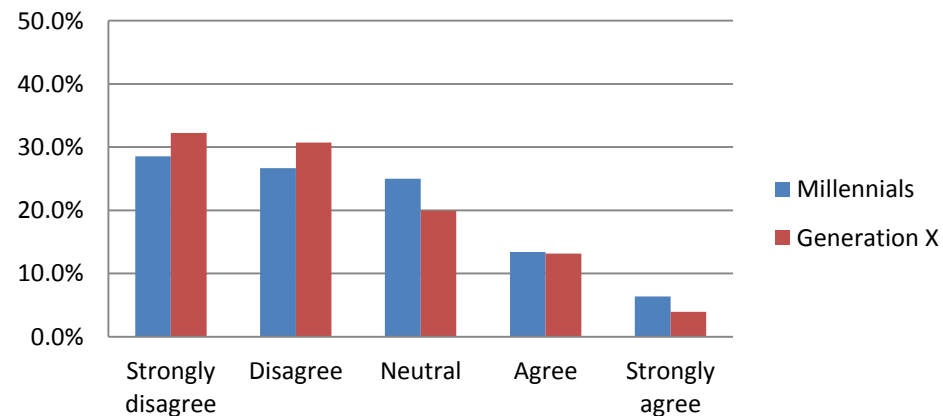
Tech-Savvy, Smartphone-Oriented

"I avoid doing things that I know my friends would not approve"
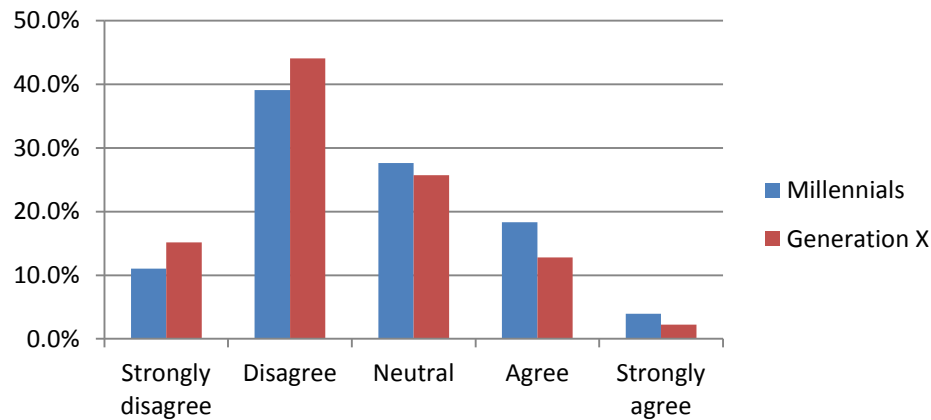
Use smartphones to "decide which means of transportation, or combinations of multiple means, to use for a trip"
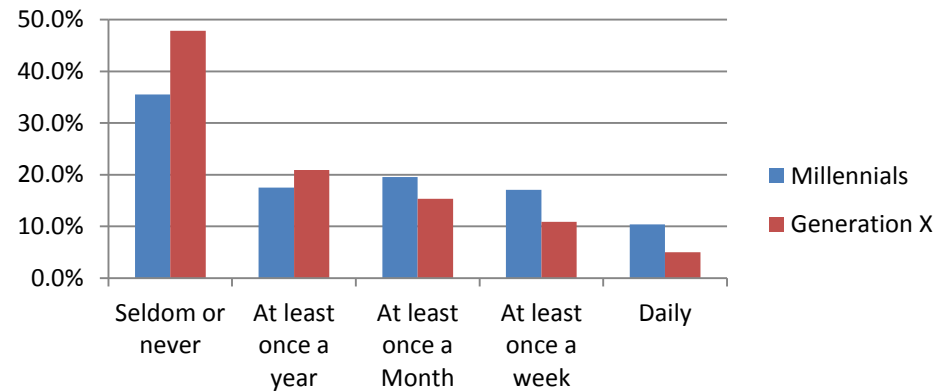
"Having Wi-Fi and/or 3G/4G connectivity everywhere I go is essential to me"
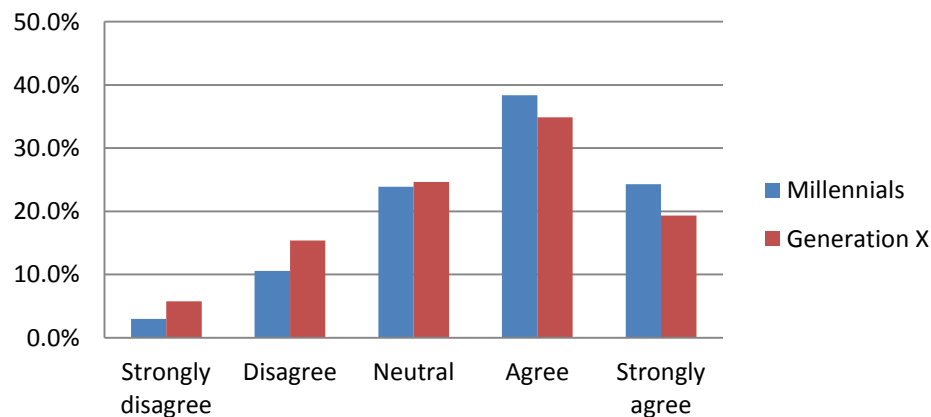
Use smartphones to "identify possible destinations (e.g. restaurant, café, etc.)"

Most Recent Commute - Mode Choice

Millennials

- Uber/Lyft (on-demand ride services) 1.2%
- Bike or e-bike 3.5%
- Walk or Skateboard 4.2%
- Other 2.0%
- Public Transit 6.1%
- Work-/school-provided shuttle 3.9%
- Motorcycle or motor-scooter 1.0%
- Carpool 9.2%
- Drive alone 68.9%

Generation X

- Uber/Lyft (on-demand ride services) 0.4%
- Bike or e-bike 1.7%
- Walk or Skateboard 4.1%
- Other 3.3%
- Public Transit 8.1%
- Work-/school-provided shuttle 0.7%
- Motorcycle or motor-scooter 0.4%
- Carpool 7.6%
- Drive alone 73.6%

N=2160, unweighted sample

Multitasking while Traveling

Millennials

Region	Multi-tasked while commuting	Didn't do anything while commuting
Central Valley	55.3%	44.7%
MTC	70.4%	29.6%
NorCal and Others	67.9%	32.1%
SACOG	66.7%	33.3%
SANDAG	63.0%	37.0%
SCAG	62.1%	37.9%

■ **Multi-tasked while commuting** ■ **Didn't do anything while commuting**

Generation X

Region	Multi-tasked while commuting	Didn't do anything while commuting
Central Valley	48.7%	51.3%
MTC	59.2%	40.8%
NorCal and Others	50.0%	50.0%
SACOG	53.0%	47.0%
SANDAG	56.3%	43.8%
SCAG	52.5%	47.5%

■ **Multi-tasked while commuting** ■ **Didn't do anything while commuting**

N=2160, unweighted sample

A Uber-Friendly Generation?

Familiarity with and usage of On-demand ride services (e.g. Uber, Lyft)

Legend: Millennials (blue), Gen X (red)

Categories:
- I have never heard of it
- I have heard of it but I've never used it
- I use it when traveling away from home
- I use it in my hometown/city
- I use it in my hometown & away from home
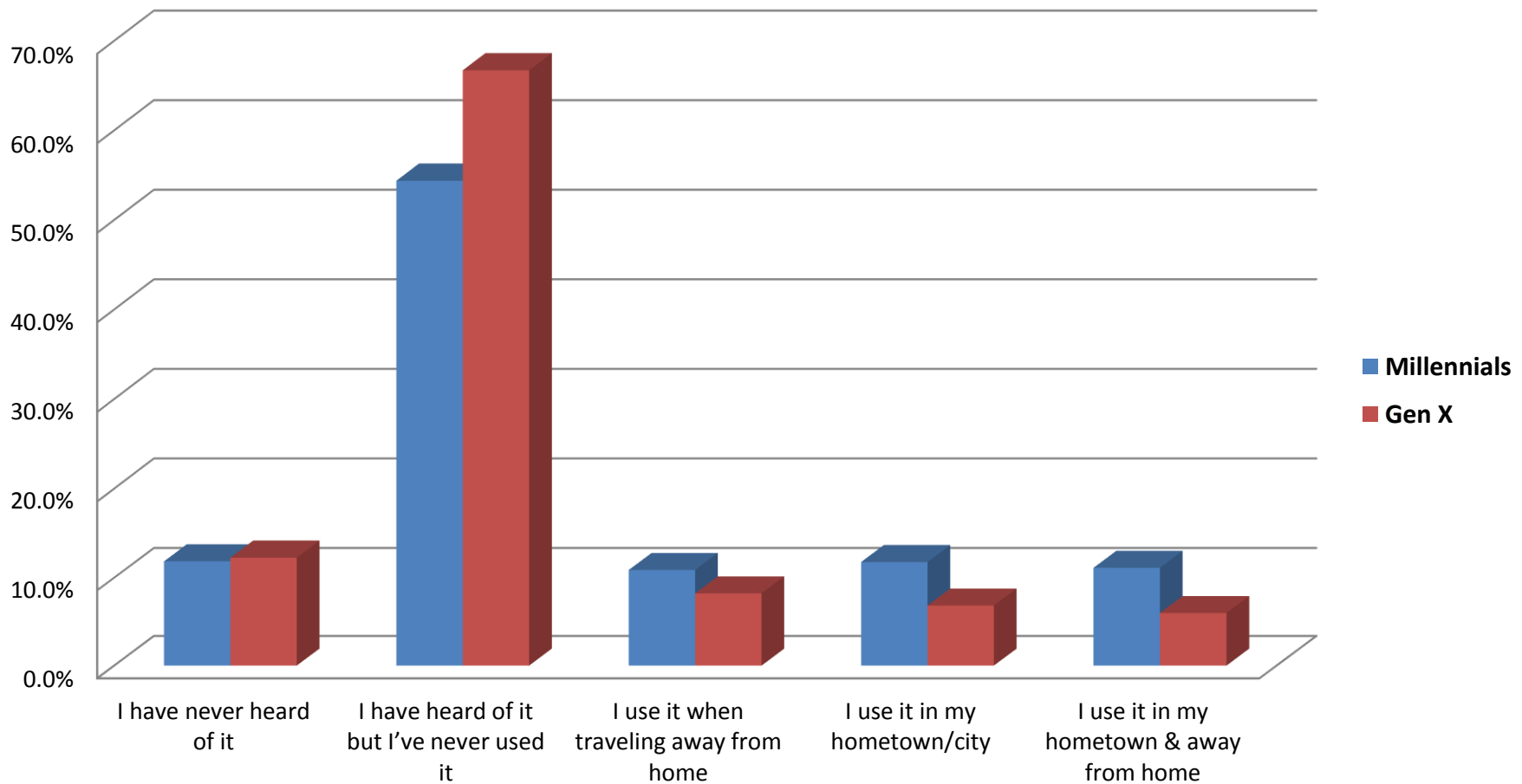
N=2160, unweighted sample

Impact of Last Uber Trip on the Use of Other Means of Travel

Millennials

- It reduced the amount of driving I did
- It reduced my use of public transportation
- It increased the amount of walking/biking I did
- It increased my use of public transportation by providing a better way to access public transportation
- It increased my use of public transportation by providing a ride outside public transportation schedule…
- It reduced the amount of walking/biking I did
- Other

Generation X

- It reduced the amount of driving I did
- It reduced my use of public transportation
- It increased the amount of walking/biking I did
- It increased my use of public transportation by providing a better way to access public transportation
- It increased my use of public transportation by providing a ride outside public transportation…
- It reduced the amount of walking/biking I did
- Other

Legend:
- SCAG
- SANDAG
- SACOG
- NorCal and Others
- MTC
- Central Valley

N=2160, unweighted sample

Preliminary Findings, and Next Steps

- Consistent with expectations, millennials are found to:
  - Drive less
  - Use ICT devices more often
  - Multitask during their commute
  - Have different personal attitudes (e.g. about the environment, technology…)
  - Adopt share mobility services more often

- How do their behaviors relate to…
  - Stage in life
  - Personal attitudes, lifestyles and living arrangements
  - Adoption of technology and mobility choices

- Relevance for modeling implications, for example:
  - Will these trends continue in future years, or are mainly part of *lifecycle* effects?
  - What is the role of shared mobility services?

- The study will provide insights into *potential response of millennials to policies*, and effect on future travel demand

Research Question 1

What are the relationships among travel behavior, personal preferences, adoption of technology and residential location of millennials?

Estimation of frequency models for the use of various means of travel, segmented respectively for millennials and Gen Xers.

- What are the main factors affecting the adoption of modes alternative to cars?
- What is the impact of the adoption of *on-demand ride services* (Uber/Lyft) on the use of other modes?
- What is the impact of living arrangements vs. personal preferences?

How do *level of education, income* and *geographic location* relate to millennials' choices?

Research Question 2

Are the dominant trends of millennials' travel permanent or temporary (e.g. effect of a transition in life stages)?

Estimation of a VMT model, which controls for sociodemographics, personal attitudes, lifestyles, and geographic location.

- What is the impact of stage of life (e.g. being married, presence of children) on the travel behavior of millennials?
- What is the impact of personal attitudes and preferences?
- How does the place where somebody grew up affect travel behavior?
- What is the impact of major life events (new job, relocation to city, moving out of parents' place, moving in with partner, etc.)?

Not possible to fully analyze these issues using NHTS, or other currently available travel survey data.

How many millennials match the stereotype of *urbanite/socialite* common in the media?

Cluster analysis to analyze different profiles of people (socialite/urbanite vs. others)

Stereotype common in the media:
- Live in urban areas
- Have dynamic lifestyles
- Heavy users of social media
- Own zero (or few) cars
- Use public transportation
- Adopt new technologies

How many millennials vs. members of older generation fit in this profile?

Acknowledgements

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Thank you for your attention!

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