Millennials’ Personal Attitudes, Lifestyles, Residential Location and Mobility Patterns in California

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Better understand the residential location, lifestyles and mobility-related choices of young adults, and investigate:

- Their impact on future travel demand in California
- Their potential for future vehicle purchases
- The impact of classical (economic and non-economic) variables vs. specific factors affecting the life of millennials (e.g. personal attitudes, adoption of technology, etc.)
“Generation Y”

• Interest in understanding dynamics of Millennials

• Very active segment of the population

• Increasing economic power

• Different lifestyles from previous generations

• “Diverse, Expressive and Optimistic”
“Generation Y”

- Young Adults from 18-30, approx. 24% of US population
- Rapidly changing trends in:
  - Household size
  - Educational attainment
  - Economic influence / consumption
The “Millennials” (or “Generation Y”)

- Racially/ethnically diverse generation
- Often still climbing the income ladder
- Better educated than older generations
- Heavy adopters of technology and social media
The “Millenials” (or “Generation Y”)

- Often prefer urban locations and social lifestyles (at least in some regions)
- Less dependent on cars, and adaptable to the sharing economy (instead of ownership)
- Several studies have investigated this dynamic and active segment of the population
- Often, the focus is only on urban population...
Mobility Trends: VMT

Trends in Vehicle Miles Traveled (VMT) are changing:

Not only in the United States, but in other countries as well:

(1) Federal Highway Administration (FHWA), Feb 2014
(2) Kuhnimhof et al., 2013

Figure 5. Evolution of car kilometres per trip-maker and day (driver and passenger) by travellers aged 20–29 (authors’ analysis; for data sources, see Appendix 1).
Small increases in number of households without a car:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>8.87</td>
</tr>
<tr>
<td>2006</td>
<td>8.78</td>
</tr>
<tr>
<td>2007</td>
<td>8.72</td>
</tr>
<tr>
<td>2008</td>
<td>8.84</td>
</tr>
<tr>
<td>2009</td>
<td>8.90</td>
</tr>
<tr>
<td>2010</td>
<td>9.01</td>
</tr>
<tr>
<td>2011</td>
<td>9.29</td>
</tr>
<tr>
<td>2012</td>
<td>9.22</td>
</tr>
</tbody>
</table>

More prominent in larger cities:

<table>
<thead>
<tr>
<th>City</th>
<th>Population rank</th>
<th>2007</th>
<th>2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>1</td>
<td>54.1</td>
<td>56.5</td>
<td>+2.4</td>
</tr>
<tr>
<td>Washington, D.C.</td>
<td>24</td>
<td>35.5</td>
<td>37.9</td>
<td>+2.4</td>
</tr>
<tr>
<td>Boston</td>
<td>21</td>
<td>36.0</td>
<td>36.9</td>
<td>+0.9</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>5</td>
<td>32.4</td>
<td>32.6</td>
<td>+0.2</td>
</tr>
<tr>
<td>San Francisco</td>
<td>14</td>
<td>29.5</td>
<td>31.4</td>
<td>+1.9</td>
</tr>
<tr>
<td>Baltimore</td>
<td>26</td>
<td>29.3</td>
<td>31.2</td>
<td>+1.9</td>
</tr>
<tr>
<td>Chicago</td>
<td>3</td>
<td>25.6</td>
<td>27.9</td>
<td>+2.3</td>
</tr>
<tr>
<td>Detroit</td>
<td>18</td>
<td>21.2</td>
<td>26.2</td>
<td>+5.0</td>
</tr>
<tr>
<td>Milwaukee</td>
<td>30</td>
<td>18.4</td>
<td>19.9</td>
<td>+1.5</td>
</tr>
<tr>
<td>Seattle</td>
<td>22</td>
<td>15.3</td>
<td>16.6</td>
<td>+1.3</td>
</tr>
</tbody>
</table>

(Sivak, 2013; based on American Community Survey data)
Mobility Trends: Urban Form

- Significant growth in central areas in many US cities (e.g. 15x – 45x faster than suburbs in Atlanta, GA)
- Large percentage of migration of young adults
- Increase of mixed-use housing
- Ditching suburbs?

(Denver Infill, 2014, denverinfill.com/blog)
Mobility Trends: Technology

- Smartphones (GPS, access to more info)
- Integrated ride-sharing / mobility
- Increasing opportunities to multitask
- Lower levels of car-ownership
- Extend range of public transportation-mobility
Car Ownership vs. Shared Mobility
The Mobility of “Millennials”

Blumenberg et al. analyzed young adults’ travel behavior in the U.S. (1990-2009):

- Greater impact of employment, HH income, and economic status on Generation Y
- Travel behavior is not affected by race/ethnicity as much as for previous generations (Gen-X, Baby Boomers, etc.)
- Millennials appear to travel fewer miles and make fewer trips than previous generations at the same point in life

[Source: Blumenberg et al. (2012), using NHTS data]
The Mobility of “Millennials”

[Source: Blumenberg et al. (2012), using NHTS data]
The Mobility of “Millennials”

Travel behavior of young adults in Sweden (1978 to 2006):

• Greater percent of 18-24 year olds has a driver’s license in 2006 than in previous years
• Fewer young adults have access to cars in 2006 than in previous years
• “Generation Y” men on average travel less in recent years...
• …but women tend to travel more than in the past!

[Frandsberg and Vilhelmsen, 2011]
The Mobility of “Millennials”

Travel behavior of young adults in Australia:

• Decline in licensing and car ownership due to delay in life events

• Car ownership a result of necessity/responsibilities

• Car seen less as a status symbol than in previous years

• Environmental concerns are not influential on choices

[Raimond and Milthorpe, 2010; Delbosc and Currie, 2014]
The Mobility of “Millennials”

Travel behavior of young adults in Belgium (2014):

- More millennials commute via bicycling, flexibility is key

- Car perceived as an additional cost (not shared by older adults)

- Social influence, access to facilities, weather, and travel time

- Environmental concerns or health benefits not as influential

[Simons et al., 2014]
## Potential Factors Affecting the Mobility of Millennials

<table>
<thead>
<tr>
<th>Economic</th>
<th>Auto Costs</th>
<th>Technology</th>
<th>Demographic Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recession</td>
<td>Gasoline</td>
<td>Communication technology</td>
<td>Delayed marriage</td>
</tr>
<tr>
<td>Unemployment</td>
<td>Auto insurance</td>
<td>Transportation technology (Uber)</td>
<td>Fewer children</td>
</tr>
<tr>
<td></td>
<td>Driver’s education</td>
<td></td>
<td>Boomerang</td>
</tr>
<tr>
<td></td>
<td>Auto repairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other fees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Location</td>
<td>More likely to move to and live in cities</td>
<td>Cultural</td>
<td>Alternative Modes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmentalists</td>
<td>Better transit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less materialistic</td>
<td>Improved infrastructure for walking/biking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Polzin et al., 2014)
Limitations of Current Studies

Lack of information on key variables:

- e.g. personal attitudinal 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
Our Study for National Center for Sustainable Transportation / Caltrans

- Statewide study to investigate residential location, lifestyles and mobility-related decisions of millennials

- Focus on impact of:
  - Economic activity and income
  - Individuals’ lifestyles and living arrangements
  - Modifications in household structures and sociodemographics
  - Environmental concerns and attitudes
  - Other personal attitudes and preferences
  - Residential location and urban form
  - Gas price and transportation costs
  - Adoption of technology
  - Mode choice and new travel solutions (e.g. car-sharing, Uber, Lyft, etc.)
  - Cultural background
  - Social networks and influence of peers

Acknowledgments: Dr. Lewis Fulton, Dr. Susan Handy, Dr. Patricia Mokhtarian, Ros(Aria) Berliner, Eric Gudz
Representative Sample of Millennials

Sample representative of the population of young adults (18-30) in California, on a number of dimensions:

- Age
- Education
- Income
- Household type and living arrangements
- Geographic region (Bay Area vs. Sacramento, Los Angeles, etc.)
- Urban form and neighborhood type
- Cities vs. rural areas
Content of the Survey

Online survey will collect information on:

a) *Personal attitudes* (social habits, lifestyles, adoption of tech, interactions, etc.)

b) *Transportation attitudes* (e.g. mode perception, time flexibility, comfort, price, etc.)

c) *Engagement in online/social media activities*

d) *Cultural background* (role of family, collectivism, individualism, etc.)

e) *Socio-demographics* (gender, age, household size, income, etc.)

f) *Travel Behavior* (mode, distance, route choice, etc.)

g) *Limitations and constraints* (disability, safety, mode accessibility, etc.)

h) *Propensity to purchase a car* (importance of vehicle ownership, etc.)
Millennials in California

Who they are:
- White: 58.92%
- Black or African American: 14.85%
- American Indian: 14.02%
- Alaska Native: 5.69%
- American Indian and Alaska Native tribes specified: 5.12%
- Asian: 14.02%
- Native Hawaiian and Other Pacific Islander: 0.31%
- Some Other Race: 0.31%
- Two or more races: 0.42%
- Other: 0.66%

How they get to work:
- Car, truck, van: 3.05%
- Bus or trolley: 1.04%
- Streetcar: 0.08%
- Subway: 0.03%
- Railroad: 0.03%
- Ferry: 0.02%
- Taxi: 0.02%
- Motorcycle: 4.71%
- Bike: 4.90%
- Walked: 1.82%
- Work at home: 82.69%

2009-2013 ACS 5-year estimates
## Millennials in California

### Commute time:

<table>
<thead>
<tr>
<th>Year</th>
<th>Avg. Travel Time to Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>24.36</td>
</tr>
<tr>
<td>2010</td>
<td>24.88</td>
</tr>
<tr>
<td>2011</td>
<td>24.77</td>
</tr>
<tr>
<td>2012</td>
<td>25.31</td>
</tr>
<tr>
<td>2013</td>
<td>25.58</td>
</tr>
</tbody>
</table>

### How much they make:

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$24,077.23</td>
</tr>
<tr>
<td>2010</td>
<td>$23,253.98</td>
</tr>
<tr>
<td>2011</td>
<td>$22,067.07</td>
</tr>
<tr>
<td>2012</td>
<td>$22,442.26</td>
</tr>
<tr>
<td>2013</td>
<td>$23,208.54</td>
</tr>
</tbody>
</table>

### Employment status:

<table>
<thead>
<tr>
<th>Year</th>
<th>Unemployed</th>
<th>Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>38.76%</td>
<td>61.24%</td>
</tr>
<tr>
<td>2010</td>
<td>41.00%</td>
<td>59.00%</td>
</tr>
<tr>
<td>2011</td>
<td>43.05%</td>
<td>56.95%</td>
</tr>
<tr>
<td>2012</td>
<td>42.26%</td>
<td>57.74%</td>
</tr>
<tr>
<td>2013</td>
<td>40.88%</td>
<td>59.12%</td>
</tr>
</tbody>
</table>
Millennials in California

Percentage of Young Adults in California (16-24) Using Private Vehicles for Daily Commute in 2013

Source: American Community Survey (ACS) 2009-2013 5 year estimates
Millennials in California

Trends Among Young Adults in California: Marriage, Education, and Poverty Changes

Source: U.S. Census Bureau
Behavioral Framework

Classical Factors
- Economic Activity
- Income
- Land Use
- Sociodemographics

Non-Classical Factors
- Personal Attitudes
- Transportation Preferences
- Urban Lifestyles
- Preferences for Location
- Adoption of Technology
- Changes in Sociodemogr.
- Cultural Background
- Peers influence

Travel Behavior Time $t_0$
- Measures of TB by mode
  - Auto ownership and use
  - Adoption of other modes

Time $t_0$
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Constraints and Limitations
- Personal Limitations
- Access/Availability of modes

Travel Behavior
Time $t_0$

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Constraints and Limitations
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Residential Location
+ LU Characteristics*

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Time \( t_0 \)

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*Measured with external data (e.g. US EPA Smart Location data), after geocoding of residence (X, Y)
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Travel Behavior (t₀-Δt)

Travel Behavior Time t₀
- Measures of TB by mode
- Auto ownership and use
- Adoption of other modes

Measured at time of survey

Time t₀

*Measured with external data (e.g. US EPA Smart Location data), after geocoding of residence (X, Y)
Behavioral Framework

Classical Factors
- Economic Activity
- Income
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Residential Location
+ LU Characteristics*

Travel Behavior (t₀-Δt)

Travel Behavior Time t₀
- Measures of TB by mode
- Auto ownership and use
- Adoption of other modes

Future Aspirations After Δt
- Propensity to buy a vehicle
- Future TB preferences

Constraints and Limitations
- Personal Limitations
- Access/Availability of modes

Measured at time of survey

Time t₀

*Measured with external data (e.g. US EPA Smart Location data), after geocoding of residence (X, Y)
Behavioral Framework

Classical Factors
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Residential Location
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Travel Behavior \((t_0-\Delta t)\)

Travel Behavior \(t_0\)
- Measures of TB by mode
- Auto ownership and use
- Adoption of other modes

Future Aspirations After \(\Delta t\)
- Propensity to buy a vehicle
- Future TB preferences

Non-Classical Factors \((t_1)\)

Residential Location \(t_1\)

Time \(t_1\)

*Measured with external data (e.g., US EPA Smart Location data), after geocoding of residence \((X, Y)\)
Why Does This Matter?

• Importance of understanding how millennials make their choices towards residential location and mobility (e.g. impact on housing and transportation demand)
  – Motivations behind observed trends
  – Expected duration of effects (permanent vs. temporary changes in mobility)
  – Investigation of many factors affecting young adults’ mobility (not possible with aggregated/less comprehensive datasets)

• Insights into the potential response of millennials to policies, e.g. economic incentives vs. promotion of environmental-friendly choices

• Preliminary results presented at IATBR conference in London in July 2015

• Plan to extend the study to other U.S. States (Georgia, Vermont, in next stage of the research), and to international comparisons
For more information, please contact:

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