How Travel Demand Has Been Changing

Susan Handy
Asilomar 2015
Annual VMT per Capita in U.S.

Source: Bureau of Transportation Statistics, U.S. Census
Peak in VMT per capita by state

Map Created by T.J. Garceau, 2014. Base map layer from Esri.

Source: Garceau et. al., 2014
Commuting by car


Registered vehicles per capita

Source: Bureau of Transportation Statistics, National Transportation Statistics, Tables 4-11 and 4-12
It’s the economy, right?

VMT vs. GDP

Source: Garceau et. al., 2014
Or other factors?

- Income
- Fuel prices
- Traffic congestion
- Aging population
- Regional migration
- Back-to-the city
- Smartphones
- Others
Another way to look at it...

How do we as individuals and households make choices about travel?

How and why are these choices changing?
Nested choices

Long-term Choices
Lifestyle
Residential Location

Mid-term Choices
Driver’s license
Auto ownership

Short-term Choices
Trip frequency
Trip destination
Mode choice
Choice process

Set of choices available
- Drive alone
- Shared ride
- Bus
- Rail
- Bicycle
- Walk
- Skateboard

Qualities of choices available
- Cost
- Time
- Comfort
- Safety

Value placed on different qualities
- Cost vs.
- Time vs.
- Comfort vs.
- Safety

Knowledge, perceptions
# Changes in all cells

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Expanding Traveler Choice

NEW MOBILITY OPTIONS

- Dynamic Ridesharing
- Smart Paratransit
- Carsharing
- Bike Sharing
- NEVs
Bike sharing
“Lounge buses”

http://www.bizjournals.com/sanfrancisco/blog/2015/03/leap-transit-commuter-bus-san-francisco-loup.html
Car access without ownership
Status quo ownership? Shared cars? Shared cars with shared rides?
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Are the “Millennials” different?

Example 1: Allison

Example 2: Hannah
Driver’s License
Got license within 1 year of eligible age

Source: 2014 UC Davis Campus Travel Survey
Driver’s License: Role of Parents

“My parents were happy to drive me places”

Source: 2014 UC Davis Campus Travel Survey
What else do we know...

The Decline in Marriage Among the Young

% married at age 18 to 32, by generation

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<thead>
<tr>
<th>Generation</th>
<th>% Married</th>
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<tr>
<td>Millennial</td>
<td>26</td>
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<tr>
<td>Gen X (1997)</td>
<td>36</td>
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<tr>
<td>Boomer (1980)</td>
<td>48</td>
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<tr>
<td>Silent (1960)</td>
<td>65</td>
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Source: Data from 1980, 1997 and 2013 are from the March Current Population Survey; 1960 data are from the 1960 Census

Generations, Facebook and Friends

Median number of friends

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<tr>
<th>Generation</th>
<th>Median Number of Friends</th>
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<tbody>
<tr>
<td>Millennial</td>
<td>250</td>
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<tr>
<td>Gen X</td>
<td>200</td>
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<td>Younger Boomer</td>
<td>98</td>
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<tr>
<td>Older Boomer/Silent</td>
<td>50</td>
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Note: Based on Facebook users, n=960. In 2013, “Younger Boomers” were ages 49 to 57, “Older Boomers” were ages 58 to 67 and “Silents” were ages 68 to 85.

Source: Pew Research Center’s Internet Project survey, Aug. 7-Sep. 16, 2013

http://www.pewsocialtrends.org/2014/03/07/millennials-in-adulthood/
Millenials: the Generation that Walks the Talk

Walking More, Driving Less

83% of Millennials like walking, but only 71% like driving. This 12 point gap is a wider margin than any other generation. The gap for Baby Boomers is 2 points.

50% of Millennials prefer living within an easy walk of other places (compared to 43% of Gen X, 38% Baby Boomer and 30% Silent Generation)

51% of Millennials prefer living in attached housing (townhouse, condo) where they can walk to shops and have a shorter commute (compared to 44% of Gen X, 43% Baby Boomer and 41% Silent Generation)

The hierarchy of needs

The must-haves for previous generations aren’t as important for Millennials. They’re putting off major purchases—or avoiding them entirely.

15% Extremely Important
25% I might purchase one if I really need it, but indifferent otherwise
30% I do not intend to purchase one in near future
30% Important, but not a big priority
5% I do not feel strongly about it

“How important is it for you to own the following?”

Source: Goldman Sachs Fortnightly Thoughts intern survey, 2013
Ride Sharing
Has used Uber, Lyft, or other service

Source: 2014 San Francisco Voter Survey
Bicycling culture

Riding away from a bar crawl

In Sickness and in Health, Long After the Bike Is Due Back
E-Bikes and Parents

“I love my bike. It’s my car!”
Smartphones and travel

Flexibility in activities

Flexibility in travel

Productive travel time
### Choice Sets

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**Implications for VMT?**
How do choices stack-up?
What replaces what?
Will new options mean new travel?
VMT in the future?

“The aggregate trends discussed do not allow us to forecast with any certainty the car use that we can expect in the future.”
– Goodwin and Van Dender, 2013
Things we can influence

Set of choices available + Qualities of choices available + Value placed on different qualities
By the tens of thousands, Portlanders preview their new car-free bridge
8/9/15

“With walkers and in strollers, on hopalongs and (in the case of quite a few happily panting dogs) on leashes, Portlanders packed a series of previews Sunday of Tilikum Crossing, the first bridge in the United States to carry buses, bikes, trains, streetcars and people walking but no private cars.”

“Anyone hoping to cruise San Francisco’s motley main drag of Market Street, whether driving through or simply gawking, will likely have to do it aboard Muni, in a taxi, on a bicycle or on foot.”
L.A. will add bike and bus lanes, cut car lanes in sweeping policy shift

8/11/15

“City leaders say the plan reflects a newfound view that simply widening streets is no longer feasible or, in many cases, desirable. They contend that if even a small share of motorists change their travel behavior, choosing alternatives to the car, the city can make a big dent in the overall number of miles traveled.”

Tipping the balance

If the options are good enough...
If driving is bad enough...
Challenge: US resistance to driving impediments

Pricing

Restrictions
Not all vehicle trips are “high value”!

The goal is accessibility!
Will demand management strategies work?

http://arb.ca.gov/cc/sb375/policies/policies.htm
Transforming Transportation

How will travel change in the future?

- What’s going on with the millennials? What about the baby-boomers?
- How will new mobility services evolve? Autonomous vehicles?
- What about long-distance travel?
- And don’t forget freight!