Emerging Trends in US Vehicle Travel Demand

2014 EIA Energy Conference
Nancy McGuckin
Travel Behavior Analyst
Overview

- Historic pattern of VMT per capita
- Differences in changes since 2007 by State
- Private and Commercial VMT in context
- Why Millennials?
VMT per capita: an unprecedented change:

Source: McGuckin’s analysis of Census Population (Jul 1) and HPMS Historic VM-1 Tables including all VMT and Census Population Estimates
Changes in per capita VMT by State 2007-2012:

Overall US decline is -6%

Source: McGuckin’s analysis of HPMS VM-2 including all VMT and ACS population estimates by state
Changes in per Capita VMT by State (graphic):

Source of graphic: Steve Polzin, CUTR
Sources of Roadway VMT:

<table>
<thead>
<tr>
<th>Private vehicle travel:</th>
<th>Percent of Household-based VMT</th>
<th>Percent of Total Roadway VMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuting</td>
<td>27</td>
<td>76</td>
</tr>
<tr>
<td>Shopping</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Personal errands</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Social and recreational</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>School/Medical/All Other</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Subtotal Private vehicle VMT</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Commercial and Utility Vehicles: 24

Total Roadway Vehicle Travel: 100%

Source: McGuckin’s analysis of NHTS 2009 and HPMS VM-1 2009
Private vehicle travel for all purposes has declined:
(Measured in VMT per Capita)

Source: McGuckin’s analysis of NHTS Data series
Why focus on millennials?

Percent Change in VMT per Capita: 1995 to 2009

Source: McGuckin’s analysis of NHTS Data Series, comparing VMT per capita from the NHTS data series, 1995-2009
Changing Markets: The Millennials

- The Economy
- Social Trends
- Changes in Values
- Information-Communication Technology
Millenials are a big cohort, as numerous as the baby-boom:

In 2030, Millenials will outnumber Baby-Boomers by 22 million:

Source: McGuckin’s analysis of Census historic tables 1900 to 2010, and 2030 forecast
For young people, travel by all means is declining and the shift really took place between 2000 and 2009:

Source: FHWAs “The Next Generation Of Travel”, 2011. Note that all travel is included, not just VMT
Young men’s vehicle travel rates declined more than women (16-29 years old):

Source: McGuckin’s analysis of NHTS Data Series
Factors influencing Millennials changing travel demand:

- High unemployment and
- Vehicle/Gas costs and
- Student debt

- Longer college careers
- Later family Formation
- “Emerging Adulthood”

- Environmental concerns
- Health/activity
- Disinterest in Car Culture

- On-line all the time: social activities, shopping, multi-tasking in transit

Information and Communications Technology
Historic low workforce participation among 16-29 year olds (coupled with historic high participation by 55 and older):

Source: McGuckin’s analysis of NHTS Data Series

* The quote is from an informal survey (web-based) conducted by McGuckin, 2010

I'm not so sure how much of this has to do with technology or the driving age. I think it has more to do with the fact that young people are one of the largest portions of the population who have been hurt by the recent recession.

-Courtney
Young people (esp. men) delay licensing:

-- **39 percent** said they’d rather walk/bike or use public transportation

-- **37 percent** said they were either too busy or didn’t have the time to get a license.

-- **32 percent** said that owning and maintaining a vehicle was just too expensive.

-- **31 percent** said they could hitch a ride with someone else if needed.

--- **9 percent** said they were worried about driving’s effects on the environment.

-- **8 percent** said they could work or communicate online.

Source: McGuckin’s analysis of Table D20 Highway Statistics Historic Summary

Source: The Reasons for the Recent Decline in Young Driver Licensing in the U.S.; UMTRI, Schoettle and Sivak m Aug 2013, at: http://deepblue.lib.umich.edu/bitstream/handle/2027.42/99124/102951.pdf?sequence=1
Delayed marriage is at an unprecedented high:

According to Pew, only 21 percent of 18-29 year olds are married.

“Marriage these days signals that you’ve figured out how to be a grown up. You’ve “arrived,” having finished school, settled into a career path, bought a condo, figured out who you are, and found your soul mate.

The fairytale wedding is your gateway into adult life.”

2010 Pew Research Report

Source: Age at first marriage from McGuckin’s analysis from data at http://www.infoplease.com/ipa/
Millenials are more likely to live at home:

“He could be helping his parents ... maybe they need assistance with paying bills / taking care of the house/etc.

He may have had some financial troubles in the past or he might just be saving up his money to buy a nice home of his own in the near future.

Don’t assume the worst!”

-Eric

Source: McGuckin’s analysis of US Census TAD-1. Young Adults Living At Home: 1960 to Present

* The quote is from an informal survey (web-based) conducted by McGuckin, 2010
Some young people may have a different attitude toward auto ownership:

“For Millennials, cars are not status symbols; they are perceived as unnecessary luxuries that are:

- Expensive
- Harmful to the environment
- Antisocial

They would rather own a great smartphone or laptop instead. (Real-time, portable technology helps to confer the sense of “freedom” that owning a car does not)”

Latitudes Report on Phase 1 findings for TCRP “Millenials and Mobility”

Source: McGuckin’s analysis of NHTS Data Series
Most non-drivers live in households with other drivers...part of the car-sharing culture:

“My roommate thinks I'm nuts for not driving a car, but I think he's nuts for going around the block for a half hour just to find a suitable parking spot.”

-Jake

Source: McGuckin’s analysis of 2009 National Household Travel Survey

* The quote is from an informal survey (web-based) conducted by McGuckin, 2010
Millenials are more likely to use transit:

Millenials who use transit prefer it for both practical and ideological reasons:

- It is significantly more affordable
- It gives them “me time” to rest, reflect, or do work
- It makes them feel more ethical:
  - It reduces traffic
  - It benefits the environment
- It feels more social, more a part of the community vs. feeling isolated in a car
- It allows people to avoid car hassles (often costly), including parking, traffic, and car upkeep

---Latitudes Report on Phase 1 Findings for TCRP “Mobility and Millenials”

Source: McGuckin’s analysis of 2009 NHTS
Changing Demand: Information & Communications Technology

- Widespread adoption of new technology
- Some evidence for substitution effects for social and shopping
- System-wide changes in the brick-and-mortar and delivery for goods and services
Unprecedented adoption of communications technology:

“The Internet is becoming the town square for the global village of tomorrow.”

Bill Gates

*Includes handheld devices, such as smartphones and tablets
**Includes tablets but not smartphones

Source: Exploring America’s Online Experience::http://www.ntia.doc.gov/files/ntia/publications
The Connected Generation

- 72 percent of US households have internet connection – 83 percent of individuals 18-29 (Census 2011)
- 90 percent of millenials use the Internet daily, compared to 79 percent of boomers
- 75 percent of millenials use social networking sites, compared to only 30 percent of boomers.
- There was a 21 percent increase in online course enrollment in colleges across the country in 2012.

Percent who BYOD (Bring their own device) to the Office—Desk Phones Just Don’t Work for Me:

http://www.eweek.com/mobile/byod-trends-millenials-have-little-use-for-desk-phones-report.html

Over all ages, 72 percent of Americans go on-line everyday, but not all activities have a direct travel substitute:

On-line activities reported “Yesterday”:

- Used social or professional sites (FB, LN)
- Get News
- Go on-line just to pass the time
- Played On-Line Games
- Watch video on-line (You-Tube)
- Did banking on-line
- Used Classified ads like Craigslist
- Look for How-To, Do-it-Yourself or Repair info
- Buy a product on-line
- Take part in chat rooms
- Take a virtual tour of a location

Source: McGuckin’s analysis of the Pew “Usage over Time” data, all ages. Only people reporting on-line activity
There may be a substitution effect in time-use--people are spending more time on-line for leisure and less time in travel for leisure:

Source: McGuckin’s analysis of the American Time Use Survey (ATUS) data

“Computers and the internet play a huge role in [millenials’] everyday lives; they depend on this technology for everything from work to socializing to getting around.”

--Latitudes Phase 1 findings for TCRP “Millenials and Mobility”

Source: McGuckin’s analysis of the American Time Use Survey (ATUS) data
We need to be able to link on-line behavior and travel behavior more conclusively...

77.1 percent of millennial respondents reported browsing online before purchasing in the store, nearly 17 percentage points higher than the general population.

58 percent of millennial respondents admitted to ‘showrooming’, nearly 10 percentage points higher than older shoppers.

56.3 percent of millennial respondents admitted to looking at an item in one store, yet purchasing the item online from a different retailer – double the rate of the general population.

“Showrooming’ is browsing in a brick and mortar shop and then purchasing on-line for lower cost

Source: Millennial Shopping Habits By Samer Forzley  Pythion.com

Small but significant differences in shopping behavior on-line and on-road
Per capita shopping trips by on-line purchase behavior

<table>
<thead>
<tr>
<th>Age of Respondent</th>
<th>Did Not Shop On-Line</th>
<th>Made Purchases On-Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-24</td>
<td>339</td>
<td>317</td>
</tr>
<tr>
<td>24-34</td>
<td>412</td>
<td>395</td>
</tr>
<tr>
<td>35-54</td>
<td>418</td>
<td>388</td>
</tr>
<tr>
<td>All</td>
<td>406</td>
<td>392</td>
</tr>
</tbody>
</table>

Source: McGuckin’s analysis of 2009 NHTS, self reports only
System-wide changes are taking place all around us:
(and faster than I can make a new slide!)

<table>
<thead>
<tr>
<th>Old School</th>
<th>New School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bookstores</td>
<td>Amazon /Kindle</td>
</tr>
<tr>
<td>Travel Agent</td>
<td>On-line booking</td>
</tr>
<tr>
<td>Blockbuster</td>
<td>Streaming Video</td>
</tr>
<tr>
<td>Avis/Hertz</td>
<td>Zipcar</td>
</tr>
<tr>
<td>Greyhound</td>
<td>Megabus</td>
</tr>
<tr>
<td>Taxi</td>
<td>Uber/Lyft</td>
</tr>
<tr>
<td>Priceline</td>
<td>Hotel Tonight</td>
</tr>
<tr>
<td>Facebook/Myspace</td>
<td>IM/Skype/Vine</td>
</tr>
<tr>
<td>Big Data</td>
<td>Bigger Data</td>
</tr>
<tr>
<td>The Internet</td>
<td>The Internet of Things</td>
</tr>
</tbody>
</table>
People are responding to those changes the way people do:

- **Incrementally**
- **Via Peer Culture**
- **Economically**
- **Hard-to-quantify**
Concluding Thoughts

• We are at a critical juncture
• Many of the demographic factors that pushed VMT in the last few decades have played out
• Need to re-evaluate our forecasts
Several demographic ‘push’ factors for VMT growth have leveled off:

- Percent of Families with Children
- Women’s entry into labor force
- Migration from city to suburbs
- Vehicle occupancy (-->Drive alone)

Source: McGuckin’s analysis of NHTS data series
Millenials: Will their changes persist?

• Emerging adulthood as a life-stage
• A tough economy
• A skeptical eye toward car ownership:
  • Is it affordable? More of a hassle than a convenience?
  • Are other options better (for health, environment, etc)?
• Favorable attitudes toward dense urban living, low-speed modes and car-sharing
• Modest measurable effects from connected-ness and ICT
The Past is history....

Source: McGuckins analysis and projection of HPMS VM-1 data, re-creating the US PIRG graphic Fig 1 in ‘New Directions’
The future is uncertain:

- The evidence suggests that the nation’s per-capita decline in driving cannot be dismissed as a temporary side effect of the recession.
- At stable per-capita rates, total passenger VMT would grow about 40% between 2010 and 2050.
- In contrast some ‘optimistic’ forecasts have 170% increase to 2050.

Source: McGuckin’s forecast of VMT scenarios using historic HPMS VM-1
Thank you!
Emerging Trends in US Vehicle Travel Demand

Nancy McGuckin
www.travelbehavior.us