Climate Policy in an Energy Boom
Opportunities to Reduce Vehicle Use
Current Trends and Future Prospects
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August 08, 2013
Social and Economic Interactions Create Demand for Travel

Growth in:
- Income
- Knowledge

Specialization in:
- Employment
- Consumption
- Social Relationships
- Time Use

Growth in:
- Person Travel
- Commerce
- Communication
Framework for Thinking About Travel Demand

Legal/Political Climate  Culture  Technology  Security  Economy

Socio-Demographic Conditions
Household/Person Characteristics
- Income/wealth levels and distribution
- Age/activity level
- Culture/values
- Racial/ethnic composition
- Immigration status/tenure
- Gender
- Family/household composition
- Housing location

Land Use Pattern
- Regional/national distribution
- Density
- Mix of land uses
- Urban form
- Urban design
- Contiguosity of development

Business, Governance, Institutional Context
- Scale of activity concentration
- Economic structure of service delivery

Travel Demand
- Local person travel
- Tourism/long trips
- Freight
- Commercial Travel

Travel Impacts:
1. Change trip frequency
2. Change destination
3. Change mode
4. Change path

Transportation Supply/Performance
- Modal Availability
- Modal Performance
  - Cost
  - Speed/congestion
  - Safety, security
  - Reliability
  - Convenience
  - Image, etc.
  - Multi-tasking opportunities

Polzin, CUTR 2009
Growing Awareness and Interest in VMT Trends and Travel Behavior

- The Past and Future of Global Mobility. Scientific American, October, 1997
- Transportation for Tomorrow: Report of the National Surface Transportation Policy and Revenue Study Commission. 2007
# Person Travel in Perspective

## Private Vehicle Travel 2009

<table>
<thead>
<tr>
<th>Household Travel</th>
<th>Percent of VMT</th>
<th>Percent of Total Roadway VMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuting</td>
<td>27.8</td>
<td></td>
</tr>
<tr>
<td>Work-Related/Business Travel</td>
<td>9</td>
<td>76(^1)</td>
</tr>
<tr>
<td>Other Resident Travel</td>
<td>63.2</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

## Public and Commercial Travel

| Public Vehicle Travel                   | 2\(^2\)         |
| Utility/Service Travel                  | 12\(^3\)        |

## Freight and Goods Movement Travel

| Total                                   | 100\%           |

Sources: CIA 2013, Brief 2, NHTS 2009, FHWA State Statistical Abstracts, FHWA

\(^1\)FHWA estimate based on NHTS data.

\(^2\)FHWA estimate using vehicle registration data.

\(^3\)FHWA estimate based on HPMS data and NHTS.

\(^4\)FHWA estimate based on HPMS data.
VMT Change by State, 2007–2012

The map illustrates the percentage change in vehicle miles traveled (VMT) by state from 2007 to 2012. The color coding indicates different percentage ranges:

- Red: <= -5.00%
- Dark Orange: -4.99% - -3.00%
- Orange: -3.99% - -2.00%
- Light Orange: -2.99% - -1.50%
- Yellow: -1.49% - 0.00%
- Light Green: 0.01% - 1.50%
- Gray: 1.51% - 3.00%
- Medium Gray: 3.01% - 6.00%
- Dark Blue: 6.01% - 15.00%

States with a decrease in VMT are shaded in red, while states with an increase are shaded in blue. The map provides a visual representation of how different states have fared in terms of VMT changes over the specified period.
Truck Versus Light Vehicle VMT Trends

Annual VMT (millions)

- All Rural ALL LIGHT DUTY VEHICLES
- All Rural 2-AXLE 6-TIRE OR MORE AND COMBINATION TRUCKS
- All Urban ALL LIGHT DUTY VEHICLES
- All Urban 2-AXLE 6-TIRE OR MORE AND COMBINATION TRUCKS

Urban Versus Rural VMT Trends

As of 2011, 33% of VMT was rural.

– Rural accounts for 2.9% of the total 4.2% decline in VMT since 2007.

– Heavy vehicle VMT accounts for 30% of the rural VMT decline.

– Rural – typically longer distance trip travel – is an expected reduction area due to fuel prices and economic stress.

– Reduced travel on rural facilities is partially attributable to less long distance commutes and travel by urban residents.
Urban Versus Rural VMT Trends

As of 2011, 67% of VMT was urban.

– Up 1% in share since 2007.
– Urban accounts for 1.3% of the total 4.2% decline in VMT since 2007.
– Heavy vehicle VMT accounts for 74% of the urban VMT decline.
– Urban light vehicle declines accounts for only about 8% of total VMT declines from 2007-2011.
Thus Urban Per Capita Travel ...

• Offset urban population growth and contributed 8% to overall VMT decline.
Mode Shifts and VMT Trends

• Based on person miles, increased transit use can explain \( \approx 5.6\% \) of urban light-vehicle declines in VMT.

• Carpooling continued to decline but overall occupancy increased 2\% from 2001 to 2009.

• Bike and walk together constitute less than 1\% of total person miles of travel thus changes are not meaningful in explaining VMT changes.

• Domestic airline travel declined by 1/10 of 1\% between 2005 and 2012.

• Amtrak and intercity bus are an order of magnitude to small to influence VMT meaningfully.
Thus the majority of urban per capita travel reductions are from trip rate and trip length changes.

• Between 2001 and 2009 (NHTS reference points) the person trip rate declined 4.4 percent and the trip length declined 6.2 percent.

• Work at home increased from 3.26 percent in 2000 to approximately 4.33 percent of the workforce in 2011.
PMT and VMT per Capita by Age

2001 Per Capita VMT
2008 Per Capita VMT
Licensure by Age
Licensure by Age

The AAA Foundation surveyed a random sample of 1,039 young people ages 18-20 to investigate the ages at which they obtained licenses, and reasons for waiting to obtain a license among those who were not licensed within 1 year of their state’s minimum age.

- 44% licensed within 1 year of minimum age, 54% licensed before turning 18.
- Strongest predictor of delayed licensing was low household income.
- Racial and ethnic differences still present after controlling for income.
- Most cited not having a car, costs associated with driving, and ability to get around without driving as main reasons for not getting licensed sooner.
- Little/no support for hypotheses from previous studies regarding GDL, social media as important reasons for low licensing rates.
Understanding Weak Travel Demand for Millennials

- Economic conditions:
  - very high unemployment
  - high school loan debt
  - limited compensation due to competitive job market, etc.
  - Economic stress limits the ability to carry out some activities and is exacerbated by higher fuel costs.

- Different composition than did the young workforce decades earlier:
  - delayed marriage
  - delayed start a family
  - delayed homeownership
  - more urban
  - more minority, more likely to be born outside of the US
  - perhaps more likely to have come from a lower income household less able to provide parental financial support for education, car and homeownership

- Value differences:
  - substitute communication technology in lieu of travel
  - does not see vehicle ownership being a path to freedom and independence
  - do not depend on travel as an enabler of socialization
  - different sensitivities to environment
I’m selling the suburban house and buying a little downtown condo.

First thing I’m going to do is sell my big pickup truck and go for a walk.

I’m not going to Disney. I’m going to stay home and watch the Disney Channel on the Big Screen.

I’m selling the suburban house and buying a little downtown condo.
Mean Household Income Received by Each Quintile 1967 to 2008

- Lowest fifth
- Second fifth
- Third fifth
- Fourth fifth
- Highest fifth

Census 2008 dollars
PMT by Income Quintile

Annual Per Person PMT

- 1st
- 2nd
- 3rd
- 4th
- 5th

Years:
- 1983
- 1995
- 2009
Summary

Several historic trends that have supported growing VMT have played themselves out:

- labor force participation
- vehicle ownership and licensure levels,
- migration from city to suburbs
- shifts to personal vehicle

It's premature to discern the magnitude of new trends due to limited data and economic/demographic uncertainties

- The significance and duration of the economic impact is unknown.
- What is the new economic normal?
So what might help?

• Travel options will fare better if the high fixed, low variable cost of auto ownership changes.

• Transportation revenues should be user based with transparency to influence behavior - the trend is away from that to general funds, land use value capture, etc., that do not have feedback to travel behavior.

• Delivery of services and products continue to experience economy of scale by consolidation at the cost of additional travel (retail, schools, services, healthcare, etc.).

• Be aware of the presumption that the switch to transit is more energy efficient.

• We don’t know what the consequences of autonomous or connected smart vehicles will be.
Other Strategies

• Reorganize sports conferences to minimize travel. Don’t give out tickets to the visiting team.
• Require divorcing couples with kids to do an environmental impact statement on the visitation/shared custody transportation plan.
• Require annual leave to be used in two week blocks to avoid those energy intensive weekend getaways.
• Make house swapping practical and cheap to enable optimization of household travel.
• Outlaw youth sports travel teams.
As You Prepare for the Future, Remember:

Some things don’t go as planned.
Additional Information

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