Sustainable Mobility
New Findings from the NHTS

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Transportation Research Board
Overview:

- The State of the Union
- Overall Trends in Travel
- Changes in Workforce and Commuting
- Non-Work Travel

Many intriguing research opportunities…
The State of the Union
In 2008, total vehicle travel showed unprecedented declines ...

Year over year numeric change - HPMS VMT

Source: Historic HPMS
But changes were distributed unevenly...

Change in VMT Growth Rate by State: HPMS 2007-2008

Without the VIUS, we do not know what proportion of VMT is residential or freight...

Source: TSI Freight from BTS, VMT/Capita McGuckin’s analysis
Unemployment is unevenly distributed

2008 Percent Unemployed by State

Source: BLS data, McGuckin’s analysis
NHTS has been conducted during economic downturns before...

GDP per Capita (Chained 2000 Dollars) from BEA
But, gas prices also spiked in the summer of 2008...

Average Monthly Gas Cost
all grades all formulations

Source: EIA.gov
There are changes in the household vehicle fleet...

Source: NHTS data series
Including growth in hybrid acquisition and use...

Fleet Characteristics and Use

Source: NHTS data series
And then there was ‘cash for clunkers’…

Fuel efficiency by vehicle birth order

Households with One Vehicle
Households with Two Vehicles:
Households with Three or more vehicles

EIA Estimated ‘On-Road’ MPG

Source: NHTS data series
Trends in Overall Travel
Every age group showed a slight decrease in trip making...

Source: NHTS data series
Per capita person miles of travel show declines...

Per capita Miles/Day

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>30.0</td>
<td>9.6</td>
</tr>
<tr>
<td>2001</td>
<td>28.6</td>
<td>10.1</td>
</tr>
<tr>
<td>2009</td>
<td>25.7</td>
<td>5.6</td>
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Miles Driving | Miles Passenger | Miles of Travel in Non-POV

xx.x=Miles of Travel Per Day per Capita

Source: NHTS data series
In addition, self-reported driving miles is down for all ages but 65+…

Self-Reported Annual Driving Miles (YEARMILE)

Source: NHTS data series
Young men and older women show the strongest differences in driver miles...
Young people are less likely to be working...

In the U.S., the unemployment rate for 16- to 24-year-olds has climbed to more than 18%, from 13% a year ago (Lizzy Ratner, The Nation)

Source: NHTS data series
African-Americans and Hispanics lost more workers than Whites...

"Sadly, African-American teen unemployment is nearly six times the national average and almost twice that of teens in general."

Source: NHTS data series
But overall, the amount of vehicle miles for commuting stayed about the same…

Source: NHTS data series
Changes in Commuting
Walk and Bike to Work Increased as Gas Prices Increased...

Source: 2009 NHTS, Gas Cost from EIA.GOV
In large metro areas walk/bike to work increased while transit held steady...

Transit and Walk/Bike to Work in Large MSAs
(1 mil. Pop or more)

Source: 2009 NHTS
In smaller metro areas, transit rose as gas prices rose...

Source: 2009 NHTS, Gas Cost from EIA.GOV
Younger workers shifted to transit in smaller metro areas...

Source: 2009 NHTS
Work at Home in Urban Areas *Doubled* between 1995 and 2009...

Number of Workers who Work At Home

![Bar graph showing the number of workers who work at home in urban areas, with a significant increase between 1995 and 2009.](source: 2009 NHTS)
Not just ‘working retirement’ but mid-career workers increased WAH...

Percent of Workers who Work at Home by Age

Source: 2009 NHTS
Trends in Non-Work Travel
Vehicle miles for shopping fell slightly in total and as a percent...
Vehicle miles for errands declined both in total and as a percent...

Percent of VMT and Total Vehicle Miles for Fam/Pers Errands

- Total VMT for Fam/Pers
- Percent of VMT

<table>
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<tr>
<th>Year</th>
<th>Miles (000,000,000)</th>
<th>Percent of VMT</th>
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<tbody>
<tr>
<td>1995</td>
<td>420</td>
<td>20.6%</td>
</tr>
<tr>
<td>2001</td>
<td>320</td>
<td>16.7%</td>
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<tr>
<td>2009</td>
<td>300</td>
<td>15.3%</td>
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Vehicle miles for recreation declined slightly...

Percent of VMT and Total Vehicle Miles for Social and Recreation

- Total VMT for Soc/Rec
- Percent of VMT

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<th>Year</th>
<th>Miles (000,000,000)</th>
<th>Percent of VMT</th>
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<tbody>
<tr>
<td>1995</td>
<td>12.4%</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>13.5%</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>13.3%</td>
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Annual vehicle miles for medical trips by people 65+ has doubled since 1995

Source: NHTS data series
Overall, transit use for non-work increased more than work...

Number of Transit Trips by Purpose, People aged 16 +

Source: NHTS data series
And walk for Non-Work purposes grew substantially...

Source: NHTS data series
Shopping on the Internet...

- Purchased something over the Internet:
  - 30 percent of adults in the last month

- Purchases delivered to the household:
  - 3.7 times a month

- Does Internet shopping reduce VMT?

Source: NHTS 2009
People who shop on the Internet make longer actual shop trips...

Source: 2009 NHTS
Increase in small commercial vehicle travel may be related to internet deliveries...

Source: USPS HDS Data, 2008 from NHTS
Source: Historic HPMS
Early indications show changes in travel behavior…

- **Overall Travel**
  - Trip-making is slightly lower
  - Driving declines for men, increases for older women
  - Vehicle miles for work and errands declined
  - Increases in vehicle miles for other purposes (medical)

- **Commuting**
  - More unemployment, unevenly distributed (demographically and geographically)
  - Increase in transit/walk and bike with higher gas prices
  - More work at home and flexible arrangements
Intriguing avenues for further research...

- Gas Prices and travel shifts
- Travel by workers looking for work
- Work at home
- Workers with flexible arrival times
- Internet shopping and home deliveries
- Walk and bike (utilitarian and exercise)
- “Stay-cations” during economic downturns
- Intersection of age, sex, race/ethnicity, or immigrant status with all
Thank You!

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http://nhts.ornl.gov