2017 National Household Travel Survey

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Office of Highway Policy Information, FHWA
Presentation Outline

✓ What It Is
✓ Methods
✓ Information Derived
✓ Usage
✓ Add-on Program
✓ Sample Questions from Add-ons
✓ Opportunities and Challenges
✓ How You Can Be Part of It
✓ 2017 NHTS Data Release Schedule
✓ Summary
Office Organizational Chart

FHWA Office of Highway Policy Information
David Winter, PE

Motor Fuel and Highway Finance
- Ralph Davis
- Mike Dougherty
- Clarissa Smith
- Bryant Gross
- Brian Lomax
- Helen Davidson

Highway System Performance
- Chris Allen
- Rob Rozycki
- Tom Roff
- Ron Erickson
- Ronald Vaughn, PMP
- Justin Clarke, AICP
- Jeromy Barnes, GISP
- Seemeen Hashem¹

Travel Monitoring and Surveys
- Dr. Tianjia Tang, PE
- Steven Jessberger
- Danny Jenkins, PE
- Dr. Patrick Zhang, PE
- Dr. Wenjing Pu, PE
- Mike Slattery
- Dawn Edwards
- Vacant
- Apara Banerjee¹

¹ Indicates contractor
What Is NHTS?

The National Household Travel Survey is the only national publicly available travel behavior data providing information on:

a) Why people travel (trip purpose)
b) How we travel (modal usage)
c) When we travel (time of day, day of week, and month of year)
d) How often people travel (# of trips and # of miles)

By a host of social, demographical and geographical data dimensions
2017 NHTS Method

✓ Survey
✓ Address Based Sampling (ABS)
✓ Two Stages – recruitment and travel dairy recording/retrieval
✓ Mail/Web/Phone
✓ Household – all members
✓ A complete 24 hour day
2017 NHTS Survey Method

Population
All Households

Sampling Frame
Households Have Mailing Address

Sampled Households

Responded Households

answers
Data Collection Illustration

Population
All Households (1,000)
Sample Frame
Households Have Mailing Addresses (900)
Sampled Households (100)
Responded Households (50)
10 bus riding HH
40 non-bus riding HH
Weighting - Illustration

Population
All Households (1,000)

Sample Frame
Households Have Mailing Addresses (900)

Sampled Households (100)

Responded Households (50):
10 bus riding HH
40 non-bus riding HH

# of Households Do Use Bus:

\[
10 \times \frac{100}{50} \times \frac{900}{100} \times \frac{1,000}{900} = 200
\]

# of Households Don’t Use Bus:

\[
40 \times \frac{100}{50} \times \frac{900}{100} \times \frac{1,000}{900} = 800
\]
Data Collection: Illustration with Added Data Dimension

Population
- All Other Income HH (900)
  - Sample Frame
    - All other Income HH (850)
  - High Income HH (50)
    - High Income HH (100)

Sampled Households
- (AOIHH 90)
- (HIHH 10)

Responded Households (41):
- (9)
  - 3 bus riding HH
  - 6 non-bus riding HH

- 7 bus riding HH
- 34 non-bus riding HH
Weighting – Illustration with Added Dimension

# of Households Do Use Bus:

- High Income HH (100) -> Sampled Households (AOIHH 90)
  - Sample Frame
  - All Other Income HH (900)
  - High Income HH (50)

- All other Income HH (850)

- (HIHH 10) -> Responded Households (41):
  - # of Households Do Use Bus:
    - Total bus use hold = 33.3
    - +153.7 = 187 vs “200”
2017 NHTS Method - Weighting

Data Dimensions

✓ Income
✓ Education
✓ Race
✓ Ethnicity
✓ Heavy Rail
✓ Age
✓ Gender
✓ POV Ownership
✓ Employment Status
✓ Others
2017 NHTS Sample Sizes

✓ 26,000 households
✓ 103,112 households
Weighting Control

American Community Survey (ACS) conducted by the U.S. Census
Key Information Derived—

# of Trips by Start Time & Purpose

Number of Vehicle Trips by Start Time and Purpose

Vehicle Trips/Day (millions)

Start Hour

Commute  Fam/Pers (inc. Shop)  School/Ch  Soc/Rec  Total

Midnight 2 3 4 5 6 7 8 9 10 11

Noon 1

Midnight 2 3 4 5 6 7 8 9 10 11

Vehicle Trips/Day (millions)

U.S. Department of Transportation
Federal Highway Administration
Office of Highway Policy Information
### Key Information Derived – Trip Rates

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<tr>
<td><strong>Per Person</strong></td>
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<tr>
<td>Daily Person Trips</td>
<td>2.02</td>
<td>2.92</td>
<td>2.89</td>
<td>3.76</td>
<td>4.30</td>
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<td>Daily PMT</td>
<td>19.51</td>
<td>25.95</td>
<td>25.05</td>
<td>34.91</td>
<td>38.67</td>
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<tr>
<td><strong>Per Driver</strong></td>
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<tr>
<td>Daily Vehicle Trips</td>
<td>2.32</td>
<td>2.34</td>
<td>2.36</td>
<td>3.26</td>
<td>3.57</td>
<td>3.35</td>
<td>3.02</td>
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<tr>
<td>Daily VMT</td>
<td>20.64</td>
<td>19.49</td>
<td>18.68</td>
<td>28.49</td>
<td>32.14</td>
<td>32.73</td>
<td>28.97</td>
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</table>
# Key Information Derived – Trip Rates

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<tr>
<td>Daily Person Trips</td>
<td>6.36</td>
<td>7.69</td>
<td>7.20</td>
<td>8.94</td>
<td>10.49</td>
<td>9.66</td>
<td>9.50</td>
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<tr>
<td>Daily PMT</td>
<td>61.55</td>
<td>68.27</td>
<td>62.47</td>
<td>83.06</td>
<td>94.41</td>
<td>95.24</td>
<td>90.42</td>
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<td>Daily Vehicle Trips</td>
<td>3.83</td>
<td>3.95</td>
<td>4.07</td>
<td>5.69</td>
<td>6.36</td>
<td>5.95</td>
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<tr>
<td>Daily VMT</td>
<td>34.01</td>
<td>32.97</td>
<td>32.16</td>
<td>49.76</td>
<td>57.25</td>
<td>58.05</td>
<td>54.38</td>
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### Key Information Derived – Trip Lengths

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<tbody>
<tr>
<td><strong>Average person trip length (miles)</strong></td>
<td>9.67</td>
<td>8.87</td>
<td>8.68</td>
<td>9.47</td>
<td>9.13</td>
<td>10.04</td>
<td>9.75</td>
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<tr>
<td><strong>Average vehicle trip length (miles)</strong></td>
<td>8.89</td>
<td>8.34</td>
<td>7.90</td>
<td>8.85</td>
<td>9.06</td>
<td>9.87</td>
<td>9.72</td>
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# Key Information Derived - Trip Rates by Purposes

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<tr>
<td>All Purposes</td>
<td>2,628</td>
<td>3,262</td>
<td>3,828</td>
<td>3,581</td>
<td>3,466</td>
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<tr>
<td>To/From Work</td>
<td>537</td>
<td>539</td>
<td>676</td>
<td>565</td>
<td>541</td>
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<tr>
<td>Work Related Business</td>
<td>62</td>
<td>38</td>
<td>100</td>
<td>109</td>
<td>106</td>
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<tr>
<td>Shopping</td>
<td>474</td>
<td>630</td>
<td>775</td>
<td>707</td>
<td>725</td>
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<tr>
<td>Other Family/Personal</td>
<td>456</td>
<td>854</td>
<td>981</td>
<td>863</td>
<td>748</td>
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<tr>
<td>School/Church</td>
<td>310</td>
<td>304</td>
<td>337</td>
<td>351</td>
<td>333</td>
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<tr>
<td>Social and Recreational</td>
<td>728</td>
<td>874</td>
<td>953</td>
<td>952</td>
<td>952</td>
</tr>
<tr>
<td>Other</td>
<td>61</td>
<td>22</td>
<td>6</td>
<td>30</td>
<td>61</td>
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</table>
## Key Information Derived- Trip Rates by Purposes

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<tbody>
<tr>
<td><strong>Person Trips per Day</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>2.92</td>
<td>2.89</td>
<td>3.76</td>
<td>4.30</td>
<td>4.09</td>
<td>3.79</td>
</tr>
<tr>
<td>To or From Work</td>
<td>0.57</td>
<td>0.59</td>
<td>0.62</td>
<td>0.76</td>
<td>0.65</td>
<td>0.59</td>
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<tr>
<td>Family/Personal Errands</td>
<td>0.91</td>
<td>1.02</td>
<td>1.71</td>
<td>1.97</td>
<td>1.79</td>
<td>1.61</td>
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<tr>
<td>School/Church</td>
<td>0.35</td>
<td>0.34</td>
<td>0.35</td>
<td>0.38</td>
<td>0.40</td>
<td>0.36</td>
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<tr>
<td>Social and Recreational</td>
<td>0.71</td>
<td>0.80</td>
<td>1.01</td>
<td>1.07</td>
<td>1.09</td>
<td>1.04</td>
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<tr>
<td>Other</td>
<td>0.38</td>
<td>0.14</td>
<td>0.06</td>
<td>0.12</td>
<td>0.16</td>
<td>0.18</td>
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Key Information Derived – Trips by Gender

Annual Person Trips per Person

<table>
<thead>
<tr>
<th>Year</th>
<th>Women</th>
<th>Men</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td></td>
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<tr>
<td>2001</td>
<td></td>
<td></td>
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<tr>
<td>2009</td>
<td></td>
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</tbody>
</table>

To or From Work • Family and Personal Errands • Social and Recreational
Key Information Derived
Average Time Spent in a Vehicle by Age, 2001 and 2009

![Bar chart showing average time spent in a vehicle by age group in 2001 and 2009.](chart.png)

- **65+**: 2009 vs. 2001
- **55-64**: 2009 vs. 2001
- **45-54**: 2009 vs. 2001
- **35-44**: 2009 vs. 2001
- **25-34**: 2009 vs. 2001
- **19-24**: 2009 vs. 2001
- **5-18**: 2009 vs. 2001

Minutes per Day in a Vehicle as Driver or Passenger

*Color codes: 2009 - Red, 2001 - Blue*
Additional Key Information

visit

www.fhw.adot.gov/policyinformation
How NHTS Are Used

✓ Used for travel demand analysis including State DOTs and MPOs travel demand modeling work
✓ Used for a wider range of policy issue and scenario based analysis
✓ Used to support legislative initiatives
✓ Used in AADT and other traffic data monitoring and estimation processes
✓ Others
Add-on Program

The NHTS add-on program is a partnership effort between the FHWA and other agencies.

State DOTs and local MPOs can join the FHWA national program to collect local data by contributing financially to the program.
Benefits of the Add-on Program

For State and local agencies:

✓ Get more data with less money
✓ Without the need of survey subject matter expertise
✓ Learn from each other

For FHWA:

✓ More data points for add-on areas improving the overall data resolution and quality.
✓ Helps the FHWA to stay on top of local issues
Sample Add-on Questions

An add-on participant can put six additional local unique questions to the national questionnaire which will be asked only within the add-on geographical boundary.
2017 Add-on Partners

IA Northland Regional COG; Des Moines Area MPO

Indian Nations COG (Tulsa, OK)

CA DOT
AZ DOT
TX DOT
NCTCOG

WI DOT
NY DOT
MD DOT
NC DOT
SC DOT
GA DOT
Sample Add-on Questions

• AZQ5 What type of transportation investments should the state focus on? Please indicate your top THREE choices.
  • a. New roadways
  • b. Existing roadway maintenance/reconstruction
  • c. Public transportation
  • d. Sidewalks
  • e. High-occupancy vehicle lanes
  • f. Bike lanes and paths
  • g. Recreational trails
  • h. Transportation system management/signal coordination
Sample Add-on Questions

CAQ4. [Ask if age 16+] What keeps you from biking (or biking more often) to your destination(s)? Please indicate the top THREE reasons:

- Health issues
- No one to bike with
- No nearby paths or trails
- Not enough bike lanes or wide curb lanes
- No sidewalks/Sidewalks are narrow or in poor condition
- Utility poles in the middle of the sidewalk
- Too far to travel by bike
- Safety concerns
- Too much traffic
- Air quality
- No shops or other conveniences nearby
- Prefer to drive
Challenges

✓ Low respond rate
✓ Costly
Opportunities

✓ Take advantage of new data sources
✓ Switch to an annual survey to be enhanced with other administrative data
✓ Pool the resource together and take advantage on the scale of economy phenomena
✓ Collect both rate and origin destination data
How You Can Be Part of It

✓ Know what NHTS is
✓ Be a NHTS ambassador to your agency
✓ Focus on what NHTS can do for transportation decision making (why, how, when and how much and how many travel by social and demographical data dimensions)
✓ Check out our website at www.fhwa.dot.gov/policinformation or www.nhts.ornl.gov
✓ Talk to the NHTS program manager: Danny Jenkins at 202-366-1067, Daniel.Jenkins@dot.gov

Let’s make the collection!
2017 NHTS Deliverables

✓ Original Quality Controlled and Non-weighted data - December 1 2018
✓ National Weighted Quality Controlled Data – planned to release by 1/7/2018
✓ National Travel Trend Summary - March 2018
✓ National NHTS User Workshop (Washington DC) - August 2018
Summary

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✓ How You Can Be Part of It
✓ 2017 NHTS Data Release Schedule
✓ Summary
FHWA Travel Behavior Data
Program Manager

Danny Jenkins, PE
202-366-1067
Daniel.Jenkins@dot.gov
Questions?