HPMS Reassessment 2010+

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OHPI Data Programs

Office of Highway Policy Information

Financing & Fuel Division
- Motor Fuel
- Highway Finance
- Driver Licensing

Highway System Performance Division
- HPMS
- Public Roads
- Toll Facilities

Travel Monitoring & Surveys Division
- Traffic Monitoring
- Weigh-in-Motion
- NHTS
It is the mission of the HPMS, as an integral part of the Nation’s suite of transportation databases, to provide a database and analysis process for assessing and reporting the extent, condition and performance of the Nation’s highway system in the most cost-effective manner consistent with the following goals.
What is HPMS?

- Highway Performance Monitoring System or HPMS
- Developed in 1978
- Provides essential information on Nation’s highways
  - Extent
  - Condition
  - Performance
  - Use
  - Operating characteristics
- Used for
  - Apportionment
  - C&P Report
  - Performance measures
  - Analytic models
## Data used for Apportionment

<table>
<thead>
<tr>
<th>Fund</th>
<th>Factors</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate Maintenance (IM)</td>
<td>Interstate System Lane Miles</td>
<td>33 1/3 %</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles Traveled on the Interstate System</td>
<td>33 1/3 %</td>
</tr>
<tr>
<td>National Highway System (NHS)</td>
<td>Lane Miles of Principal Arterial Highways (excluding Interstate System)</td>
<td>25 %</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles Traveled on Principal Arterial Highways (excluding Interstate System)</td>
<td>35 %</td>
</tr>
<tr>
<td></td>
<td>Total Lane Miles of Principal Arterial Highways divided by the State’s Population</td>
<td>10 %</td>
</tr>
<tr>
<td>Surface Transportation Program (STP)</td>
<td>Lane Miles of Federal-Aid Highways</td>
<td>25 %</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles Traveled on Federal-Aid Highways</td>
<td>40 %</td>
</tr>
<tr>
<td>Highway Safety Improvement Programs</td>
<td>Lane Miles of Federal-Aid Highways</td>
<td>33 1/3 %</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles Traveled on Federal-Aid Highways</td>
<td>33 1/3 %</td>
</tr>
<tr>
<td>State and Community Highway Safety Grants</td>
<td>State Population</td>
<td>75 %</td>
</tr>
<tr>
<td></td>
<td>Public Road Miles</td>
<td>25 %</td>
</tr>
</tbody>
</table>
Performance Measure

Percentage of travel on the National Highway System (NHS) meeting pavement performance standards for "good" rated ride.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>53.0</td>
<td>54.0</td>
<td>55.5</td>
<td>56</td>
</tr>
<tr>
<td>Actual</td>
<td>52.0</td>
<td>52.0(r)</td>
<td>54.0(r)</td>
<td>55*</td>
</tr>
</tbody>
</table>

(r) Revised; * Preliminary estimate

Associated FY 2007 Funding - $11.78 billion
Other Uses of HPMS data

- Extent and use of public roads
- Performance measures
  - Pavement
  - Safety
  - Congestion
- Analytic models
  - HERS and HERS-ST
  - FAF
  - NAPCON
  - Others
Distribution of Urban Travel

Urban Travel by Functional Class

Vehicle Miles of Travel (VMT in Billions)


Categories:
- Local
- Collector
- Min Art
- OPA
- OFE
- Interstate
Analysis Example from HERS-ST: Modeling Current and Future Conditions

Modeling impact of geometrics, pavement condition, and traffic volume on speed.
Why a Reassessment?

- Respond to current and future business needs
  - Where does FHWA want to be in 2010?
  - What types of analyses and data will be needed
- Respond to new data needs in SAFETEA-LU
- Capitalize on changing technology
- Where possible, address resource constraints and institutional changes
Underlying considerations when evaluating changes

- Does this improve HPMS?
  - How does it impact data quality?
  - Does it enhance or add capabilities?
- What is the Federal need for these data?
- Is the level of detail and extent appropriate?
- Are these data currently available?
- If not, what will be the burden on States?
- Are these data available from other sources?
Major Reassessment changes

- New geospatial Data Model
- Elimination of Functional Class bifurcation
- Additional pavement data and creation of pavement estimates summary data
- More extensive coverage of traffic data
- Inclusion of EPA non-attainment & maintenance boundaries by pollutant type (8 total)
- ITS data obtained from different source
- Addition of metadata
- Addition of ramps as a type of facility
- Future research topics
Why a new Data Model?

- Improve data quality
- More direct transfer of data from State databases to HPMS
- Eliminate need for States to recode and dynamic segment data, and reduce need to estimate data
- More robust and flexible
- Provides common State provided network
- Uses States’ Linear Reference System (LRS) for interfacing with other State provided data
- Ability to analyze data using geospatial boundaries
- Builds on the existing web based application
New Data Model

Organized by:
- Catalog
- Table
- Data Item

CATALOGS

Traditional Flat Table Data
- SUMMARY
- ESTIMATES
- METADATA

Linear Referenced Data
- SHAPES
  - SECTIONS
  - REFERENCE
  - POINTS
Vehical-Miles of Travel (VMT) for 2005

% Change in Total VMT From 2004 - 2005

- Below -3.0
- -2.9 - 0.0
- 0.0 - 3.0
- Above 3.0

Source: HPMS, 2004, 2005
Compiled by: Office of Highway Policy Information, FHWA
HPMS Geospatial Data Model
Enhanced HPMS Analytic Capabilities

- More accurate and complete highway networks – updated annually
- Better data match
- More extensive travel data
- Includes all non-attainment and maintenance areas
- Easily interfaced with other U.S. DOT data
Linking Data Programs

- HPMS
- NBI
- Grade Crossing

Geospatial Linking data
Interfacing with OHPI Data

- Continuously collected travel data
  - Volume
  - Class
  - Weigh-in-Motion
- National Household Travel Survey (NHTS)
- Other data
  - Motor fuel
  - Licensed drivers
  - Motor vehicle registrations
Change in Population, Workers and Drivers
1969 - 2001

NHTS Data Series
Types of Trips added since 1990

To/From Work  Shopping  Other Soc/Rec  Family & Pers Errands  Visiting

NHTS Data Series
All Vehicles in Motion—The Changing Peak Period

NHTS 2001
All Vehicles in Motion—The Changing Peak Period

NHTS 2001
Changes in Travel
National Trends
Conclusion

- Post-Reassessment HPMS will support analysis beyond existing capabilities
  - Additional data
  - More extensive data
  - Geospatial highway networks

- *Data Specifications* posted on HPMS website; *Field Manual* and *Final Report* coming soon
Thank You!

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