

FHWA Office of Highway Policy Information 2020/2021 Existing Research Activity Update

AADT from Non-traditional Sources

The Alternative AADT and Traffic Data Source Method Exploration project is a pooled fund research activity where FHWA and 18 State DOTs (~\$1.5 m) pooled resources together to: a) explore the theoretical and practical basis for a series of new traffic data gathering methods based on none-traditional data and b) conduct data quality and method reliability evaluation associated with such methods. The first part of the contract (development) was awarded to StreetLight Data, Inc. (<https://www.streetlightdata.com/>) through the competitive small business set-aside program per FHWA's acquisition office. The second part (verification and validation) of the contract was awarded to (a) Cambridge Systematics/TTI team under the Policy IDIQ and (b) the National Renewable Energy Lab (NREL) under a IAA. (Project completion in 2021)

POC: Steven Jessberger at 202-366-5052 or by email at steven.jessberger@dot.gov

Bulk Vehicle Identification Number (VIN) & Licensed Driver Data Collection

The Motor Fuel and Highway Finance Division collects motor vehicle registration and licensed driver data annually from the States and disseminates it to partnering US DOT offices, industry stakeholders, and the public. States submit aggregated data to the FHWA by means of a series of reporting forms that provide a summary of active registrations and licenses at a given time. This data is used by the FHWA to determine highway investment needs, Federal-aid apportionment to the States, and to perform roadway safety/crash and vehicle fuel economy studies. This initiative focuses on the development of new requirements for States to assemble and submit, to FHWA, unprocessed vehicle identification number (VIN), other vehicle registration-related, and licensed driver data. The objectives are to: (1) address longstanding data quality concerns, and (2) collect disaggregated data that will support various analysis and research initiatives. As of December 2020, this effort is in the initiation phase.

POC: Allison Weber at 518-431-8886 or by email at Allison.Weber@dot.gov

Collection and Estimation of AADT on Local Roads (Office of Safety)

This project is carried out with the objective of developing an informational guide on the estimation and collection of Annual Average Daily Traffic (AADT) on Low Volume Roads as defined in the Highway Safety Improvement Program (HSIP) final rule for the collection of MIRE Fundamental Data Elements (FDE). This guide will assist State, Tribal, Metropolitan Planning Organizations (MPO), and local agencies in the estimation and collection of AADT on Low Volume Roads for use in data-driven safety analysis. The guide was completed in 2020 with a final report that is now available.

POC: Marc Starnes at 202-366-2186 or by email at marc.starnes@dot.gov

Data Analytics and Modeling Methods for Tracking and Predicting Origin-Destination Travel Trends based on Mobile Device Data

The objective of this project is to develop data analysis and modeling methods for tracking and predicting origin-destination (OD) travel patterns and trends based on mobile device data. Algorithms for imputing missing information in mobile device data and for correcting sampling bias will be developed. Key products include 2016 passenger travel OD tables at the national (MSA-to-MSA for the U.S.) and metropolitan (TAZ-to-TAZ for Baltimore) levels by various modes, purposes, time periods, and socio-demographical groups based on three types of mobile device data sources: cell phones, GPS devices, and Smartphone apps.

POC: Patrick Zhang at 202-366-1941 or email patrick.zhang@dot.gov

Data Assessment Team (DAT)

The purpose of the Data Assessment Team (DAT) is to ensure that the data that State DOT's annually submit to the HPMS meet FHWA business needs, accurately represents conditions, and are collected and reported correctly. The DAT will review documentation regarding the States' HPMS data and the processes used to generate this data to ensure consistency with the requirements, discover best practices, as well as identify any needed improvements that may be warranted to formal HPMS guidance and technical support activities. These reviews will be conducted on-site with the state DOT's by FHWA staff and supported with contractor assistance. Five states will be reviewed annually.

POC: Terrence Beltz at 651- 291-6116 or by email at terrence.beltz@dot.gov

Developing Vehicle Occupancy Factors for Passenger Vehicles, Trucks and Buses.

The objective of this research is to deliver vehicle occupancy factors for Passenger Vehicles, Buses and Trucks for the years 2017 through 2023 by following the currently developed methods with minor modifications and updates. The research will be focused on Interstate and Non-Interstate NHS for four time periods such as 1. Monday-Friday (6 AM – 10 AM), 2. Monday – Friday (10 AM – 4 PM), 3. Monday – Friday (4 PM- 8 PM) and 4. Saturday-Sunday (6 AM – 8 PM). The Vehicle Occupancy Factors will be specific to State, MPO Planning areas in a State and Census Urbanized area in a State.

POC: Hebbani Lokesh at 202-366-5047 or email Hebbani.lokesh@dot.gov

FHWA Data Governance

There is a growing need to improve the quality, consistency, and management of FHWA data to address programmatic needs and stakeholder concerns. FHWA Data Governance is a collaborative effort involving all functional areas within the organization and across the DOT. The focus is on the systems that are used to collect, store, analyze, and report data, as well as the users and uses of the data. This is an encompassing effort that includes all business units within FHWA. To date, the Data Governance Advisory Council (DGAC) has published the first two volumes of the Data Governance Plan on the Data Governance website at: <https://www.fhwa.dot.gov/datagov/>. The first version of the FHWA Data Element Dictionary has recently been completed and is available at: <https://www.fhwa.dot.gov/datagov/dataelements.cfm>.

POC: David Winter at 202-366-4631 or by email at david.winter@dot.gov
Brian Brotsos at 202-366-9013 or by email at brian.brotsos@dot.gov

FHWA Data Visualization Center

FHWA's on demand data visualization service for FHWA staff was very busy in 2020. Now in its sixth year, the Data Visualization Center (DVC) continues to produce data based visualizations ranging from small charts and graphs to complex dashboards, maps, and web tools. With more than 225 visualization projects complete to date, the Data Visualization Center (DVC) continues to provide play a key role in the communication of data with FHWA stakeholders. In addition, webinar training provided by the DVC supports FHWA staff with tools and resources to create visualizations on their own.

POC: Justin Clarke at 202-550-1035 or by email at justin.clarke@dot.gov
Terrence Beltz at 651- 291-6116 or by email at terrence.beltz@dot.gov

FHWA State and Local Highway Finance Data Reassessment

The Office of Highway Policy Information carried out a major reassessment initiative on the state and local highway finance data program. The scope covered both data items to be collected and methods of processing such collected data. The study assessed current processes of receiving and analyzing both revenue and expenditure data to identify possible alternatives in the amount and quality of the information collected and develop a more streamlined collection, analysis, and reporting process. This work was guided by a panel of interested experts from State and local agencies, FHWA Division Offices, and others. The contractors work ended in December 2019 and the results are being used to develop new forms and analytical tools with continued input from the stakeholders.

POC: Michael Dougherty at 202-366-9234 or via email at michael.dougherty@dot.gov

FHWA Traffic Monitoring Guide (TMG) Update

Traffic data enables the delivery of the Federal-aid highway program to state and local transportation agencies. The ability to collect, process and report quality traffic data in an efficient and cost-effective manner is vital to all transportation decision making. With the implementation of the transportation performance management per MAP-21 and FAST Act, new traffic data and timely data are needed to ensure public accountability and transparency. The 2021 TMG Update will incorporate current standards and practices in the Traffic Monitoring Guide under the Policy Information Office's Initiative to provide timely and quality vehicle occupancy factor data and information for decision makers and data users.

POC: Clayton Clark at 202-366-5053 or by email at clayton.clark@dot.gov

HPMS Reassessment

Approximately every ten years, the Highway Performance Monitoring System (HPMS) is evaluated to ensure it is meeting the mission of the FHWA and the transportation community. The reassessment also focuses on technological advancements to gain efficiencies in data collection, processing, storage, and dissemination. Some of the overarching concepts include:

- Incremental approach to data reporting
- Alternative sources – incorporating data from Non-State DOT sources
- Data simplification
- ARNOLD Maturity

POC: Thomas Roff at 202-366-5035 or by email at thomas.roff@dot.gov

HPMS Scorecards (Data Quality Improvement)

Developed by the FHWA Data Visualization Center for the Office of Highway Policy Information. The Scorecards provide a broad picture of data quality and completeness of state HPMS submissions. Based on statistical analysis using the 'R' suite, the Scorecards illustrate data distributions and quality checks through various charts, graphs, and icons. Updated for 2020, quality checks are based on a three-tier year to year, adjacent value and outlier detection.

POC: Terrence Beltz at 651-291-6116 or via email at terrence.beltz@dot.gov

Integrated Transportation Information Platform (ITIP)

The ITIP was developed with the goal of providing a “one-stop shopping” resource for various infrastructure condition, performance and Federal-aid project data elements; which are maintained independently within some of the agency's major data systems. Currently, the ITIP integrates and accesses data elements which are maintained within four of the agency's core data systems. The application's business intelligence (BI) tools provide users with the ability to perform data analysis, visualization, and report retrieval activities. ITIP provides supports the FAST Act Transportation Performance Management (TPM) related infrastructure condition, safety, and system performance/congestion regulatory objectives. In October 2019, an application modernization project was initiated, which involves a commercial off-the-shelf (COTS) solution and application redesign effort. Ultimately, this work aims to improve the application's performance, and expand its BI capabilities, interoperability, scope of integrated data sources, and accessibility. Full migration to the COTS solution is slated to be completed by Spring 2021.

POC: Matt Spiel at 608-829-7518 or by email at matthew.spiel@dot.gov

National Bicycle Network (NBN)

The preliminary study on establishing a NBN was completed in 2019. Follow on work is now being completed with Oak Ridge National Laboratory (ORNL) to complete methods used to gather national geospatial data in a consistent common format to represent bicycle travel facilities such as routes, trails, and shared use roadways including both bicycle routes and independent bicycle trails as part of a roadway system. The project was started in 2020 and is expected to have a finished web portal for submitting data in 2021.

POC: Steven Jessberger at 202-366-5052 or by email at steven.jessberger@dot.gov

National Road Network Pilot (NRNP) Program

The December 2019 Department of Transportation Appropriations Act, 2020, title I of division H, P.L. 116-94 and House Report 116-106 provided funding for the National Road Network Pilot Program. This project will gather requirements and the process framework to improve the quality of the HPMS road network in three areas:

1. Connectivity of networks at intra- and inter-state borders,
2. Spatial representation of multi-carriage roadways, and
3. Spatial accuracy of networks.

These focus areas will be addressed through outreach to select pilot states and in coordination with U.S. Department of Transportation agencies. The project will identify tools for improved network edge matching and standardized reporting of data that are attached to state linear road networks. More information at:

<https://datahub.transportation.gov/stories/s/wkw2-rxsg>

POC: Justin Clarke at 202-366-9245 or by email at justin.clarke@dot.gov

Next Generation National Household Travel Survey (Next Gen NHTS) – Nat. Core Data Component

In September 2019, FHWA awarded a contract to Ipsos to collect the national core data for the NHTS program. Ipsos will be surveying 7,500 households in the US that are currently members of its Knowledge Panel. The survey collects data on trips taken by all members of participating households over a 24-hour period. This data includes information on trip purpose, when the trip was taken (time of day/day of week), travel time, length of trip, and mode(s) of travel. In addition to surveying the 7,500 national households, state and local government agencies participating in the Next Gen NHTS pooled fund study can purchase up to additional surveys to be conducted within their jurisdictions. Virginia DOT is purchasing 11,000 surveys and Tennessee DOT is purchasing 5,000 surveys. We are continuing to work through Office of Management and Budget (OMB) processes to approve the data collection effort. The start date for the survey (once approved by OMB) will depend on the state of travel related to COVID issues (are schools back to in-school instruction, are quarantine orders in effect, etc.).

POC: Danny Jenkins at 202-366-1067 or by email at daniel.jenkins@dot.gov

Next Gen National Household Travel Survey (NextGen NHTS) – Nat. Origin-Dest. Data Component

In June 2020, FHWA awarded a contract to the University of Maryland (UMD) to compile the national origin-destination (OD) data component of the NextGen NHTS program. The OD data component will leverage in-vehicle and smartphone application-generated passive mobility data to provide a national summary of travel between 582 zones that include all metropolitan statistical areas (MSAs) and the non-MSA portions of each state and the District of Columbia. The OD tables will summarize annualized trip-making for both passenger and truck travel with respect to the volume of travel, trip distance, and weekday vs. weekend travel. For passenger trips, algorithms will be used to impute traveler demographics, travel mode, and purpose. State and local government agencies participating in the Next Gen NHTS pooled fund study can purchase O-D flow data at more disaggregate geographic zones for a better understanding of passenger and truck travel within their jurisdictions.

POC: Patrick Zhang at 202-366-1941 or by email at patrick.zhang@dot.gov

NPMRDS Data Program

The National Performance Management Research Data Set (NPMRDS) is a vehicle probe-based travel time data set acquired by the Federal Highway Administration (FHWA) for its use in various performance measurement programs, such as its Freight Performance Measures, Urban Congestion Report, and other programs. The NPMRDS is also provided to state departments of transportation (DOTs) and metropolitan planning organizations (MPOs) for their performance management activities. The team consists of the University of Maryland (UMD), INRIX, the Texas A&M Transportation Institute (TTI), and KMJ Consulting. Data are available to registered users in monthly increments within five business days of the end of each calendar month. Access will be available through the NPMRDS Massive Data Downloader (MDD), at <https://npmrds.ritis.org>. Individual users from eligible organizations will register for unique account credentials to access the NPMRDS.

POC: Richard Taylor at (202) 366-1327 or Patrick Zhang at 202-366-1941 or by email at patrick.zhang@dot.gov

Policy Information Data Portal / Fuels & FASH v4.0

The Policy Information Data Portal (PIDP) is an integrated data collection system used by various data providers to transfer data to FHWA on a recurring basis. PIDP is broken into several components, including the Fuels and FASH (Financial Analysis System for Highways) version 4.0, which is soon to commence development. Fuels and FASH is a form-based system that States will use to submit their data pertaining to Monthly Motor Fuel Consumption, State and Local Highway Finance, Licensed Drivers and Motor Vehicles. Fuels and FASH v4.0 will support the same capabilities as its predecessor (v3.5) while increasing system functionality and providing the States with a user-friendly interface. The system will also consist of smart data analysis tools and validation checks to improve data quality and integrity. To move forward with the Fuels and FASH v4.0 effort, the Motor Fuel and Highway Finance Team is currently performing an overview study of system requirements and desired enhancements. Application development activities are slated to commence during the 2nd quarter of 2021.

POC: Tiffany Presmy at 202-366-5024 or email Tiffany.Presmy@dot.gov

Processing Transportation Performance Management Related Traffic Data.

Traffic data enables the delivery of Federal-aid highway program to the State and local agencies. The ability to collect, process and report the quality traffic data in an efficient and cost-effective manner is vital to all transportation decision makings. With the implementation of the transportation performance management per MAP-21 and FAST ACT, new traffic data and timely data are needed to ensure public accountability and transparency. Currently FHWA is relying on the National Performance Management Research Datasets (NPMRDS) to carryout portions of the transportation performance management data needs. Activities under NPMRDS effort include the procuring and distributing data to State DOTs and MPOs, providing specific technical assistance to data users, and developing new national information. On the vehicle occupancy factor data and information front, FHWA has been relying on the National Household Travel Survey for estimating national average passenger vehicle occupancy and the national transit data for bus occupancy information. With this research FHWA is planning to process the monthly NPMRDS data in a timely manner to provide quality and timely data to the community.

POC: Hebbani Lokesh at 202-366-5047 or email Hebbani.lokesh@dot.gov

Travel Monitoring Analysis System (TMAS) versions 2.8 and 3.0

The TMAS system offers the foundation for the FHWA to assess travel demand on all public roadways. The Office of Highway Policy Information strives to update offer appropriate new functionalities to meet new demands on the system.

- Version 2.8 is now Live and includes: all processing and storage of non-motorized data (TMG 2016 non-motorized station and count formats) along with all VTRIS WGT 2 through 7 weight reports.
- Version 3.0 (expected in 2022) will include: the pavement design guide with both TMG speed and PVF data format processing and GIS capability along with other improved processes and reporting.

POC: Steven Jessberger at 202-366-5052 or by email at steven.jessberger@dot.gov

VMT Forecasting Model Assessment

The Office of Highway Policy Information of the FHWA is responsible for developing and delivering a wide range of transportation data to support the Federal-aid highway program. One of the most critical data components is the future travel demand as expressed in Vehicle Miles Travelled (VMT). The U.S. DOT's Volpe Transportation Research Center has been working with the Policy office in the developing, updating and running a national VMT projection model for the last 6 years. The FHWA relies on this VMT model for assessing national travel demand and publishes an annual outlook for future VMT growth information every year in late spring.

As part of the periodic program review, the Policy Office is performing an independent assessment on the VMT model with the goal of improving its reliability. For more information about the VMT Forecasting Model visit the FHWA Policy Special Tabulations page at: <https://www.fhwa.dot.gov/policyinformation/tables/index.cfm>.

POC: Clayton Clark at 202-366-5053 or by email at clayton.clark@dot.gov

Wow Wednesday Factoids

The Office of Highway Policy Information and the FHWA Data Visualization Center are leading an effort to communicate FHWA facts, initiatives, and data releases through social media. Each week, staff from HPPI work with FHWA program offices and the Office of Public Affairs to publish a new infographic on Facebook, LinkedIn, and Twitter. More than 150

unique graphics have been created to date, with many new topics planned for 2020. Interested parties are encouraged to follow FHWA on social media and 'like', share, or retweet graphics with colleagues. Examples of previously released factoid graphics are posted on Flickr: <https://www.flickr.com/photos/fhwa/albums/72157649163936650>.

POC: Terrence Beltz at 651-291-6116 or via email at terrence.beltz@dot.gov

Weekly Traffic Volume Trends (TVT) and Gasoline Supplied Reports

As a result of the COVID-19 pandemic, HPPI was looking to find reports that would show the results of reduced travel in a more immediate fashion than available with the current processes. The traffic volume trends (TVT) monthly report was adapted to create a weekly version. For gasoline volumes, Energy Information Agency (EIA) data is being used to create a report of gasoline supplied to distributors, which is a proxy, perhaps delayed by several days, for the amount of gasoline being purchased at retail.

POC: TVT – Patrick Zhang at 202-366-1941 or by email at patrick.zhang@dot.gov

Gasoline Supply – Michael Dougherty at 202-366-9234 or via email at michael.dougherty@dot.gov

National Highway Institute (NHI) Training Courses: (all half price for 2021 due to NHI's anniversary)

NHI - Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements Workshop

Course number 151056 is offered to states and their partners. This two-day workshop provides advanced, in-depth, hands-on understanding of data collection and reporting requirements for HPMS. Topics include: HPMS program background, the HPMS 2010+ data model, Transportation Performance Management (TPM) regulatory requirements, HPMS data collection and reporting requirements, statistical sampling requirements, and the HPMS submittal process. For more information about the course:

https://www.nhi.fhwa.dot.gov/course-search?tab=0&key=HPMS&res=1#coursesearch?tab=0&key=HPMS&sf=0&course_no=151056.

POC: Justin Clarke at 202-366-9245 or by email at justin.clarke@dot.gov

NHI - Traffic Monitoring Programs: Guide and Procedures (TMG)

Course number 151050 is offered to states, contractors and local agencies as a two-day training course. This course covers all aspects of both motorized and nonmotorized travel monitoring. For more information about the course visit NHI website for upcoming courses, current costs, and registration:

http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=Traffic+Monitoring&sf=0&course_no=151050.

POC: Steven Jessberger at 202-366-5052 or by email at steven.jessberger@dot.gov