



FHWA's Office of Planning (HEPP) develops and implements programs and activities that advance comprehensive international, interstate, State, metropolitan, rural, tribal, and multi-modal planning.

The Federal Highway Administration's (FHWA) Office of Planning, Environment, and Realty offers research opportunities to improve transportation decision making and promote efficiency while protecting communities and the environment.

- ◆ Informs Decisions
- ◆ Reduces Environmental Impacts
- ◆ Enhances Quality of Life
- ◆ Accelerates Project Delivery
- ◆ Advances Transportation Planning

Research Focus

The Office's research efforts focus on advancing surface transportation planning with partners and customers by providing a cooperative, performance-driven process by which long and short-range transportation priorities are determined. HEPP's research supports many emphasis areas including census and travel modeling, congestion management, transportation equity, public involvement, rural planning, environmental linkages, freight planning, non-motorized planning, performance management, public involvement, scenario planning, and visualization.

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FEATURED RESEARCH ACTIVITIES

Assessment on the Effectiveness of Performance-Based Planning and Programming

In June 2021, FHWA published a report with the findings of a study on how Performance-Based Planning and Programming (PBPP) influences transportation planning and programming decisions at State departments of transportation (DOTs) and metropolitan planning organizations (MPOs). Research was conducted throughout 2020 using online reviews of planning and programming documents, interviews, and peer exchanges

with practitioners, and a survey of FHWA Division and Federal Transit Administration (FTA) Region staff. This report documents current practices and identifies opportunities for enhancements. The aim is to help planning and programming staff from the State DOTs, MPOs, and partner agencies (e.g., public transit providers, FHWA, and FTA) not just to meet Federal regulations, but to achieve their own goals for the performance of the transportation system. Here is a link to the [final report](#).

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Virtual Public Involvement (VPI)

This Every Day Counts (EDC) initiative supports agencies' efforts to engage the public more effectively by supplementing face-to-face information sharing and engagement with technology and virtual engagement in the transportation decision making and project delivery process. In EDC-5, VPI team members focused on introducing eight tools and techniques to advance virtual public involvement efforts with State DOTs. In EDC-6 team members are focusing on Environmental Justice, institutionalizing VPI, in addition to a local approach (outreach includes MPOs, Regional Transportation Planning Organizations (RTPOs), local agencies, and Tribal governments). For more information, please visit the [VPI website](#).

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Enterprise Data Enhancement for Planning through Geospatial Enabled Linear Referencing (MPO/LRS)

This project is developing guidance by establishing a sound methodological approach to enhance planning technical capabilities with Linear Referencing System (LRS) based geospatial enterprise data. This study will document exemplary practices utilized by Metropolitan Planning Organizations (MPOs including Rural Planning Organizations (RPOs), Regional Planning Commissions (RPCs), and Councils of Government (COG), to develop methodologies that will leverage linear referencing as the core enterprise data program consistent with the National

FHWA geospatial programs such as the All Roads Network of Linear Referenced Data (ARNOLD). Ultimately the guidance will expand the geospatial data sharing and interoperability between the various transportation planning organizations including MPOs, the State DOTs and FHWA.

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VisionEval Strategic Modeling System

VisionEval is a modeling system to support scenario planning and strategy development. It allows agencies to explore combinations of policies and program elements to explore “what if” questions and develop flexible responses in the face of uncertain future conditions. FHWA is the lead agency for a pooled fund developing and deploying VisionEval. The pooled fund has seven state DOT members, and four MPOs, and it is open to new membership. Members receive technical support for deployment, as well as the opportunity to influence future development of the system. Visit the [VisionEval](#) website for the software and documentation.

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Understanding GPS and Mobile Phone Data for Origin-Destination Analysis

Emerging datasets such as mobile phone and GPS data have now become a promising data source for many transportation planning applications, including origin destination (OD) analysis, which serve as the basis for transportation investment and policy decisions. The aim of this report is not to develop methods for OD analysis but to gain a thorough understanding of such emerging datasets. The study results demonstrate the many different characteristics possessed by the two and their implications for OD analysis are discussed. View the [GPS Mobile Phone Data Origin-Destination Analysis](#) report.

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Promises of Data from Emerging Technologies for Transportation Applications: Puget Sound Region Case Study

With the explosion of the number of studies using big, passively-generated data for transportation analysis, this study focuses on understanding the properties of such data and how these properties affect our ability in deriving trip-related characteristics. View the report [Puget Sound Region Case Study](#).

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Quantifying Risk and Uncertainty in Travel Forecasts

Over the past decades, transportation agencies have used predictive planning with a predetermined plan within a specific timeframe. These predictions rely on models and inputs that carry different types of uncertainties. For current methods, FHWA’s Travel Model Improvement Program (TMIP) looked at risk profiles for models in Chattanooga TN and Toledo OH in the [How-To: Quantify Uncertainty in Travel Forecasts](#) report.

The risks of the predictive planning approach are found in deep uncertainties driven by new technology, climate change, shifts in national and global economies, and pandemics. TMIP partnered with RAND to evaluate forecasting approaches from other disciplines for use by transportation planning agencies. [Transportation Planning for Uncertain Time: A practical guide to decision making under deep uncertainty for MPOs](#) introduces robust decision-making concepts for regional planning applications. Tools for applying these forecasting concepts are developed and demonstrated in [Uncertainty in Travel Forecasting: Exploratory Modeling and Analysis TMIP-EMAT: A Desk Reference](#).

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National Complete Streets Assessment

In the spring of 2023 FHWA published a summary of the National Complete Streets survey of State DOTs that was completed in 2022. The information collected through this assessment will help FHWA better understand where it can develop additional technical assistance and tools to improve [Complete Streets](#) implementation at the State level.

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