

## TRANSPORTATION PLANNING

The Texas A&M Transportation Institute (TTI) Transportation Planning Program conducts research on travel surveys, travel behavior and related data collection methods to support travel models, policy, and air quality analyses. Program researchers have expertise in travel data collection methods and technologies; survey design and sampling, data analysis and interpretation; demographic data preparation for modeling; and corridor management and preservation.



The Transportation Planning Program's research and expertise helped lay the groundwork for the Texas Department of Transportation (TxDOT) Travel Survey Program. Since the mid-1990s researchers in the program have processed and analyzed survey data for 29 external surveys, 23 household surveys, 14 workplace surveys, 21 commercial vehicle surveys, 2 state border survey, and have analyzed and applied the Texas add-on samples to the 2001 and 2009 National Household Travel Survey (NHTS). Program researchers have hands-on experience in designing, fielding, and analyzing all types of travel surveys in more than 60 metropolitan regions across the U.S., as well as in Mexico, Canada, and the U.S. Virgin Islands.



In their work with TxDOT, researchers in the Transportation Planning Program provide travel survey program assistance that includes state-of-the-practice procedures for survey methods, data collection and reporting, development of survey bid specifications and survey data processing. Program staff is also responsible for the analysis of survey data, which involves data expansion, development of trip rates by trip purposes, preparation of trip tables and analysis of trip length, vehicle miles traveled and other factors as needed by transportation modelers.

The program's research and expertise helped lay the groundwork for the Texas Department of Transportation (TxDOT) Travel Survey Program. The TxDOT program is perhaps the most comprehensive survey and data collection effort to support travel demand modeling in the United States. This program includes household, workplace, external and commercial vehicle surveys scheduled on a 10-year recurring basis to support modeling for the state's 25 MPOs. It also includes major statewide survey efforts that support Texas' Statewide Analysis Model (SAM). The SAM provides analysis and forecasting capabilities of passenger and commodity/freight movements in Texas.

### Areas of Research

The Transportation Planning Program focuses on the following areas of research:

- **Travel Surveys and Data Collection:** Researchers have experience and expertise with household, long distance, workplace, commercial vehicle and external travel surveys, including the National Household Travel Survey (NHTS), state border and regional travel surveys, stated preference surveys, and the use of Bluetooth, GPS and mobile smart devices for collecting components of travel and trip making.
- **Demographics to Support Modelling:** Researchers review and prepare population, household, employment, and income data for travel model base and forecast years and provide training to assist Metropolitan Planning Organization (MPO) staff in understanding demographic trends and data sources.
- **Corridor Management and Preservation:** Researchers study corridor management and preservation tools, guidelines and best practices and how to integrate these into the local development, MPO planning, and DOT project development processes, provide instructional workshops in these areas.
- **GPS and GIS Analysis:** Program researchers have extensive experience in the analysis and application of Global Positioning System (GPS) data and Geographic Information System (GIS)-based software used to support travel demand models and general planning practices.
- **Vehicle Classification Counts:** Researchers have been actively involved in the management of vehicle classification count data used to support travel surveys for over a decade. Researchers develop sampling methods for selecting count locations, as well as a method to provide count results using a Google Maps® interface.



## Project Examples:

### Travel Survey Technical Support

Program researchers are at the forefront of the methodological and administrative issues entailed in designing, conducting, and analyzing travel survey data to support modeling, policy, and other applications. They translate this experience into practical and timely technical support for agencies pursuing travel surveys. For example, for the Texas Department of Transportation, researchers draft and review project scopes, monitor the status of data collection, and provide independent assessments of deliverables and data in real-time, thereby ensuring the data collection efforts yield the desired detail and distributions. For Colorado's Front Range Travel Survey, staff provided independent assessments of data and analyze the long distance travel survey data to help identify the most appropriate weighting scheme. In the Utah Statewide Travel Survey, staff is actively reviewing instruments and respondent materials to sharpen the respondent appeal and improve participation by reducing respondent burden.



### Emerging Methods for External Travel Surveys

This project researched new and emerging techniques for collecting data on vehicle movements into, out of, and through urban areas. Such movements are important in transportation planning and are termed 'external travel' because one or both ends of the trip (origin or destination) is outside of the urban area. Researchers studied and evaluated Bluetooth and GPS technologies applied in connection with in-vehicle applications, smart devices and related 'apps', and mobile Bluetooth readers and assessed GPS data to collect and/or develop external trip information needed for travel demand models. The project included the first external survey in the U.S using mobile Bluetooth readers where the results were directly compared to a region's (Bryan-College Station, Texas) prior external survey. The survey included 13 external stations and assessed the accuracy and viability of estimating external-through travel movements using Bluetooth readers. The findings indicated that external-through movements derived from Bluetooth were reasonable and comparable to the prior survey and that the use of Bluetooth is a viable option in lieu of license-capture surveys.



### Corridor Management and Preservation

Researchers in the Transportation Planning program have experience in corridor management (CM), corridor preservation (CP), and other important transportation planning activities that coordinate transportation and land development. Defined, CM is the management of land development in concert with roadway design, access control, and traffic operations along an existing transportation corridor, while CP is the practice of acquiring, preserving, or protecting right-of-way (ROW) needed for a future transportation corridor.

Guided by former practitioners and experienced researchers, the program has completed numerous research projects in the areas of corridor management and preservation, DOT/local coordination in the land development process, and preserving the functionality/asset value of highways. Findings from this research were used to develop Guidelines on Corridor Management and Preservation in Texas, Guidelines on Preserving the Functionality of State Highways in Texas and related 7-hour instructional workshops designed for TxDOT and local planners and engineers who interact on planning and land development matters. Since 2005, the program has conducted over 45 workshops on CM and CP and DOT/local involvement in land development process throughout the state of Texas.



## Contact

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## TTI's Mission

*To solve transportation problems through research, to transfer technology and to develop diverse human resources to meet the transportation challenges of tomorrow.*