



Understanding Long-Distance Traveler Behavior

Supporting a Long-Distance Passenger Travel Demand Model

Exploratory Advanced Research . . . Next Generation Transportation Solutions



Long-distance trips in the United States can take 2 days or 2 weeks and may involve cars, buses, planes, or all three. Whether for business, to see family, or visit a national park, such a variety of trip characteristics requires a detailed understanding of traveler needs. Exploring new ways to model long-distance traveler behavior and better identify the required supporting infrastructure is the goal of “Foundational Knowledge to Support a Long-Distance Passenger Travel Demand Modeling Framework,” a Federal Highway Administration (FHWA) Exploratory Advanced Research (EAR) Program study awarded to Resource Systems Group (RSG).

Long-Distance Modeling

Highway infrastructure planning, high-speed rail development, and airport growth all depend on long-distance travel markets. To ensure infrastructure can meet growing demands in these areas there is a need to model and analyze passenger behavior. Interest in long-distance passenger modeling for statewide models has already been seen in California, Ohio, and Arizona, and high-speed rail studies have been conducted in Florida, California, and the Northeast Corridor; however, these models have been based on traditional travel demand forecasting methods rather than a robust understanding of underlying behavior and how and why long-distance passenger movements differ from other passenger travel.

Exploring Passenger Travel

Long-distance travel behavior will be explored in several key areas that move beyond traditional methods used for existing statewide models. For example, long-distance trips are scheduled weeks or months in advance of the trip and typically last several days or weeks. There are also significant seasonal effects that can influence long-distance travel, unlike short-distance travel which remains similar day-to-day. Both leisure and business travel are more sensitive to changes in the economy than short-distance travel and leisure activities will often differ from business activities as they are planned and executed with different goals and choices. Party size can also have a significant effect on mode and destination choices.

Current Techniques and Challenges

Several observations have been made based on current modeling techniques. Recreational travel models typically adopt a similar structure to business and other travel, despite broad differences between the two. Business models are generally more time-sensitive and less concerned with party size as a mode choice variable when compared to recreational travel models. For example, a business traveler on a long-distance trip is more likely to fly regardless of expense or the number of colleagues traveling in the party. A family on vacation, however, may decide to drive to save money even if the trip takes longer. Although advanced integrated activity-based models are currently operational, these are limited to an estimate of average weekday travel and do not account for scheduling, influence of other trips, other travelers, or social character.

An additional challenge is that no single dataset offers all the required features for estimating and applying long-distance travel



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demand forecasting models in the United States. A series of datasets have been identified for exploring long-distance models and the results will be a modeling framework that can be re-estimated once national long-distance travel data become available. The research team will use their experience to bridge the gap between ideal modeling design and implementing a tool that will be of practical use to planners.

Delivering a National Model

The ultimate goal of this study is to explore new approaches for a national model that is estimated, calibrated, and validated on available long-distance travel data in the United States and can subsequently be updated with new long-distance travel data for use in planning applications around the country. In the short term, this project will examine possible new frameworks for a national model that identify specifications based on statistical analysis of available data.

“The framework being developed can provide a foundation for subsequent implementation of an innovative national passenger forecasting model,” said Brad Gudzinis at FHWA. “The products of this research are first steps toward providing the tools needed to identify significant future travel trends and, ultimately, to make more informed decisions about policy and infrastructure investments,” he added.

Learn More

For more information on this EAR Program project, contact Brad Gudzinis, FHWA Office of Highway Policy Information, at 202-366-5024 (email: brad.gudzinis@dot.gov).

EXPLORATORY ADVANCED RESEARCH



What Is the Exploratory Advanced Research Program?

FHWA's Exploratory Advanced Research (EAR) Program focuses on long-term, high-risk research with a high payoff potential. The program addresses underlying gaps faced by applied highway research programs, anticipates emerging issues with national implications, and reflects broad transportation industry goals and objectives.

To learn more about the EAR Program, visit the Exploratory Advanced Research Web site at www.fhwa.dot.gov/advancedresearch. The site features information on research solicitations, updates on ongoing research, links to published materials, summaries of past EAR Program events, and details on upcoming events. For additional information, contact David Kuehn at FHWA, 202-493-3414 (email: david.kuehn@dot.gov), or Terry Halkyard at FHWA, 202-493-3467 (email: terry.halkyard@dot.gov).

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