SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

Advanced Travel Analysis Tools (C10/C04/C05/C16)

Enhanced models that account for traveler behavior to inform better decisions about highway capacity needs.

Challenge

Existing transportation models and analytical techniques are limited in their ability to fully address or account for:

► Interactions between transportation supply, demand and land use;

► Impacts of operational strategies such as road pricing, ramp metering, reversible lanes, variable speed limits, and policy changes such as parking pricing, transit and flexible work schedules; and

► Effects of household trip chains and joint trip making.

The Solution

The Bundle: Advanced Travel Analysis Tools (C10/C04/C05/C16)

The *Advanced Travel Analysis Tools* bundle encourages transportation agencies to use a broader range of advanced travel analysis tools. These products have complementary features and uses, providing a range of analytical tools and methods that can be used from early planning through project development. The A*dvanced Travel Analysis Tools* will better align analytical outcomes with real-world conditions. Some transportation agencies may use one, or "mix and match" these tools and tactics in their current business practices.

The SHRP2 *Advanced Travel Analysis Tools* bundle includes four SHRP2 Capacity products:

► *Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time- Sensitive Network (C10)*

► *Improving our Understanding of How Highway Congestion and Price Affect Travel Demand (C04)*

► *Understanding the Contribution of Operations, Technology, and Design to Meeting Highway Capacity Needs (C05)*

► *The Effect of Smart Growth Policies on Travel Demand (C16)*

Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time-Sensitive Network (C10)

The *Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time-Sensitive Network (C10)* product links travel behavior choices, such as departure time or route, with network conditions to better reflect real-world dynamics. The enhanced integration of transportation supply and demand characteristics provides a sound framework for evaluating policy and operational strategies–at a high level of resolution.

For example, the product will help assess the impacts of highway capacity increases on traffic shifts by time of day or route, operation actions, or management actions. This product can also help transportation agencies dynamically integrate travel-time reliability, greenhouse gas emissions, road pricing, mode shifts, and non-travel choices such as work/shop at home or flex-time policies. This product includes open source software and supporting documentation to assist with model implementation.

The immediate benefit provided by these models is an improved understanding about how network conditions impact travel behavior – and conversely, how travel behavior adjusts to network operating conditions. These "dynamic" models are well equipped to evaluate a wider range of transportation alternatives – at a level of precision needed to identify and prioritize transportation solutions.

Improving our Understanding of How Highway Congestion and Price Affect Travel Demand (C04)

This product provides mathematical descriptions of the full range of highway user behavioral responses to congestion, travel time reliability, and pricing formatted for input to current and developing travel demand models. With this SHRP2 product, transportation models can better reflect how travelers respond to congestion, travel time reliability, and pricing. This provides transportation agencies with greater information to assess operational strategies and improvements. With better models, agencies better understand how operations-related projects can improve the performance of their highway networks. Specifically, this product provides mathematical descriptions of the full range of highway user behavioral responses to congestion, travel-time reliability, and pricing formatted for input to current and developing travel demand models.

Contribution of Operations, Technology, and Design to Meeting Highway Capacity Needs (C05)

This product is a guide for modelers on how to compare the effectiveness of less complex operational strategies, such as intersection channelization, with more expensive and complex treatments, such as adding general purpose highway lanes. With the enhanced capability to measure the cost and effectiveness of traffic operations strategies, this product helps transportation agencies demonstrate whether a particular strategy solves a specific congestion problem and whether that strategy will likely improve the performance of their highway networks. This product is a guide for modelers on how to compare the effectiveness of less complex operational strategies, such as intersection channelization, with more expensive and complex treatments, such as adding general purpose highway lanes.

The Effect of Smart Growth Policies on Travel Demand (C16)

This product serves as a strategic-level policy screening tool that can be used in early transportation planning. It allows transportation agencies to easily apply scenario-forecasting techniques to test the impacts of policy changes related to demand management, system optimization and alternative modes. This product includes a Web-based software tool and a user guide.

Implementation

Successful implementation of the *Advanced Travel Analysis Tools* bundle will involve a wide range of stakeholders. A product implementation plan will guide deployment of this product bundle and ensure effective connections among and between other national initiatives. Performance measures will be included in the implementation plan to evaluate the success of these efforts.

This product bundle allows transportation professionals access to a more robust range of modeling tools that are capable of providing rich analytical insights that will aid planning and decision making. With these tools, transportation agencies can more effectively evaluate a range of policy options in early planning (C16), can better integrate network and supply models (C10), and better test the effects of various operational strategies on congestion and traveler behavior. The products in this bundle support more informed decisions about adding highway and transit capacity, enhancing traffic operations, introducing priced roads, and improving traveler information.

How can you learn more?

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Strategic Highway Research Program

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