

C8
Travel Demand Modeling

WHAT OPERATIONS AND RELIABLE TRAVEL ROUTES LOOK LIKE WITHIN THE MOST
INNOVATIVE SMALL MPO TRAVEL MODELS

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Travel modeling efforts conducted for smaller urban areas/MPOs too often are driven by the needs or desires of large MPO staffs elsewhere within that state, rather than what is more appropriate for the smaller community. This presentation describes what works and what doesn't from a 25-year history working directly in or with small MPOs and their customers for project design, alternatives (and some operations) analysis, programming of funding, and long-range planning – using software and data that combined costs less than \$1,000, and needing less than 1 FTE staff for its development and maintenance. Both the customers and increasingly cash-strapped planning boards want to see that they are getting value for every dollar spent (a.k.a the Better Faster Cheaper test). The procedures that will be described have consistently run well ahead of (or counter to) many conventional wisdoms of the travel modeling profession, have been conducted more simply than standard processes, and consistently demonstrate better performance than the typical modeling process.

Discussed are the features that enable operations-level analysis of forecasted traffic and travel times (such as intersection traffic controls and dynamic assignment), seasonal travel patterns (Sandusky region), and use of GIS/digital e911 street files, with minimal added burden on data collection. The work presented draws on a history of 6 years of modeling with travel time reliability: 10 years with dynamic traffic assignment (area wide, to assess duration as well as extent of congestion), and 25 years with networks incorporating the direct intersection-level controls (instead of use of "equilibrium" based on volume/delay curves), along with other constraints such as opposing-direction traffic on two-lane roads, horizontal and vertical alignment, and railroad crossing delays.

A relatively new focus area is travel time reliability, which heavily influences the travel routes people choose. While there has been considerable discussion and SHRP2-level research on the topic recently, only two working travel models in this country to date incorporate estimation of travel paths based on most reliable travel times, both in small MPOs (Sandusky OH and Wheeling WV/OH). Travel paths are built to not (necessarily) have the shortest travel times, but have "reliable" times, by combining the sum of the average link (road segment) times with a portion of their calculated variation. The variations by link are estimated as a function of the roadway functional class, link distance, ratio of modeled time to "free flow" time, and travel time correlation with adjacent roadway segments. The weighting given to the variation in time relative to average time (reliability ratio) is not initially asserted or derived from surveys, but estimated as part of overall model validation. Various travel time data sources are used to estimate equation values.