



0-6766: A Generic Mode Choice Model Applicable for Small and Medium-Sized MPOs

Background

Due to the projected population growth increase in Texas and the continued increase in total motorized vehicle miles traveled in Texas, the Texas Department of Transportation (TxDOT) is interested in examining multimodal solutions to aid in managing the growing auto travel demand. TxDOT's Transportation Planning and Programming Division has initiated another enhancement to their travel demand modeling system to analyze alternative transportation modes.

What the Researchers Did

The researchers performed the following tasks:

- An extensive literature review was conducted on current mode choice models used in Texas urban areas and other states, examining general methodology and procedures that were incorporated and identifying any challenges that were faced. Recommendations were then made of which small and medium-sized metropolitan planning organizations (MPOs) in Texas should incorporate a mode choice model.
- An examination of the Texas Package Suite of Travel Demand Models was completed to determine the recommended specifications for the traffic analysis zone (TAZ)-based travel demand model design using the data

currently available, focusing only on home-based work trips.

- Four MPOs—Bryan-College Station, San Angelo, Longview, and Lubbock—were selected, based on Project Monitoring Committee recommendations, to aid in the development of guidelines for skim generation. The appropriate guidelines to develop skims were developed for the following five travel modes: drive alone, car sharing, transit, walk, and bicycle.
- Complete demographic and trip characteristic data were compiled for two of the four MPOs, Lubbock and Longview, and if any trip characteristic data were unavailable, they were constructed through a specific set of provided guidelines.

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- Multinomial logit mode choice models were estimated for Lubbock and Longview using the available and generated data to determine the best estimate. These estimated models were then used as examples to help develop the framework for the generic mode choice model tool in Excel.
- A workshop with TxDOT personnel was held to present the mode choice model estimation techniques for Lubbock and Longview and demonstrate the forecasting mode choice model tool in Excel.
- The amount of transit data currently available for the chosen Lubbock and Longview MPOs is not sufficient, which could affect the resulting model estimations. This finding could help support the need for implementing onboard transit surveys to obtain more data.
- The forecasting tool in Excel works at a household size and income group level, as well as at a TAZ level. The tool will calculate the share for each alternative mode at each household size and income group combination and compute the weighted average for the mode share at the TAZ level.

What They Found

The researchers had the following findings:

- A mode choice model should be highly considered for implementation into the Texas Package to help evaluate the ability to effect a change in a traveler’s mode of travel.
- The collection and generation of data are vital to obtaining accurate model estimation for mode choice shares, specifically when creating the skims that are not generally available from survey data.

What This Means

The generic stand-alone mode choice modeling tool will allow MPOs to discover the current modal shares for their area, as well as forecast modal shares for possible scenarios. Being able to view the impact of these scenarios will benefit the MPOs in assessing transportation policies and allow policy makers to weigh different investment options.

For More Information

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