

C7
Travel Demand Modeling

CHALLENGES ASSOCIATED WITH CREATING A COMBINED REGIONAL MODEL FOR THREE
SMALL-TO-MEDIUM SIZED MPOs

Kevin Hall
Texas A&M Transportation Institute
505 E. Huntland Drive, Suite 32020
Austin, Texas 78752
512-407-1120 Ext. 12120
K-Hall@tti.tamu.edu

Dr. Jim Benson
Texas A&M Transportation Institute
505 E. Huntland Drive
Austin, Texas 78752
512-407-1124 Ext. 12124
t-williams@tti.tamu.edu

Hang Pao
Texas A&M Transportation Institute
505 E. Huntland Drive
Austin, Texas 78752
512-486-5180
Gabriel.Contreras@txdot.gov

The Texas Department of Transportation (TxDOT), in cooperation with the Hidalgo County Metropolitan Planning Organization (HCMPO), Harlingen-San-Benito MPO (HSB MPO), and the Brownsville MPO (BMPO), created a combined regional travel demand model (TDM) to address long-range capacity enhancement projects for the entire region. The region is commonly referred to as the Lower Rio Grande Valley (LRGV). Although geographically adjacent to each other, each MPO historically addressed modeling and planning individually. In the past 15 years, the LRGV has and continues to experience tremendous population growth. The region added over a quarter of a million people between 2000 and 2010. One million more people are expected to be added in the next 30 years. Because of this population growth and the need to look at transportation solutions regionally, a decision was made to combine the three individual travel models and to coordinate planning activities collectively.

The purpose of this presentation is to convey the challenges associated with combining three study areas into one functioning regional travel demand model. This process begins with the development of a network and zone system for the region that retains the capability to extract individual study area data from the combined effort. Unique to this model, at least relative to most models developed in Texas, is the approach to trip generation and trip distribution. Trip ends are estimated for each individual MPO during the trip generation portion of the model but are combined for the trip distribution step. More accurately, trip attraction scaling for the internal trip purposes is performed at the MPO level rather than at the regional level. Following the trip generation step, the generation results are aggregated to the regional level for trip distribution. In this manner, any potentially unresolved socio-economic issues that might impact trip generation results (during scaling) are contained locally; thereby minimizing any further impact to the remaining two MPOs in the study area. Interchanges between study areas are allowed to occur during the trip distribution step by using a single combined production and attraction generation file segregated by trip purpose. Unlike the internal trip purposes, external and additional trips made by non-residents are addressed at the regional level.