

TRAVEL DEMAND FORECASTING

A task the policy-maker must often face is to make a choice between various transportation scenarios. One of the procedures available to help make this decision is Travel Demand Forecasting.

Travel Demand Forecasting is the process used to predict travel behavior and resulting demand for a specific future time frame, based on assumptions dealing with landuse, the number and character of tripmakers, and the nature of the transportation system.

Travel demand forecasting utilizes a travel forecasting *model* and attempts to answer questions such as:

- How many trips will be made in the future?
- Which transportation systems will become over-congested in the future?
- How much ridership will a new transportation service attract?

Use of a tool such as the travel forecasting model can help the policy-maker make an informed decision.

The Connecticut Department of Transportation (ConnDOT) model consists of four basic steps: trip generation, trip distribution, mode choice and travel assignment. Although much more complicated in actuality, ConnDOT's model, like most others in use throughout the US, has its roots in the four step process.

Landuse and Census

Landuse data (population, employment, etc.) forms the basis for the amount and type of activity in a region. This demographic information is available from several sources. The *Census* is a nationwide survey conducted every ten years and provides a detailed population profile of Connecticut. Existing employment statistics are available from the State Labor Department. ConnDOT develops landuse forecasts, in cooperation with the Office of Policy and Management and the regional planning agencies.

Trip Generation

Trip generation provides the connection between landuse and travel. It uses known relationships between trip making and demographics to predict the number of person trips, or 'trip ends', starting and ending in particular geographic areas, called '**traffic analysis zones**' (TAZs).

Trip Distribution

Trip distribution uses characteristics of the transportation network and regional demographics to distribute the trip ends from the generation model to specific origins and destinations amongst the states TAZs.

Mode Choice

The allocation of person and vehicle trips to a particular travel mode occurs in the mode choice model. Using *Level of Service* characteristics of each available transportation system, the model 'chooses' a mode of travel for each trip based on the relative attractiveness of each competing mode.

Travel Assignment

Travel assignment or trip assignment is the process in which the volumes on the transportation system are estimated. These can be present-day volumes on an existing network or forecasted volumes on alternative future systems. Assignment volumes may be expressed as vehicles on a highway network or persons on a transit system.

The ConnDOT Statewide Travel Model is a network-based computer model utilizing **TRANPLAN** software. Highway and transit networks are an integral part of the model, allowing proposed service changes (highway or transit) to be incorporated into the model. Thus the effect of adding a transit service, increased highway capacity or any other network-oriented change (which can be modeled in this manner) can be analyzed.

Products & Uses

The primary products and uses of the travel model are:

Highway Assignments: utilized to design and evaluate alternative highway proposals. These assignments are used by the ***Traffic Analysis unit*** to develop corridor and site-specific future traffic volumes.

Vehicle Miles of Travel (VMTs): a basic input to highway source emissions models for the Statewide Implementation Plan, environmental documents and Indirect Source applications. VMT is the product of highway distance times traffic volume. VMTs are used by ConnDOT and the Department of Environmental Protection for mobile emissions analysis.

Trip Tables: used to analyze area to area movements of person and vehicles.

Level of Service of Highway Sections: used to evaluate the quality of service on highway systems.

Transit Usage Forecasts: used to evaluate existing transit systems and proposed transit projects.

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