Fact Sheet

Permian Basin Travel Demand Model

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Permian Basin MPO
Metropolitan Planning Organization

What is a travel demand model (TDM)?

- A software tool used to predict how people will use the transportation system.
- TDMs answer important questions about where people travel and how they get there.
- The Permian Basin Metroplitan Planning Organization (MPO) TDM will be used by the MPO to evaluate the ability of the existing transportation system to accommodate future growth in the region.

Why are TDMs important?

- Given the high price tag and longer implementation timeline of infrastructure improvements, it is important that decision makers proactively address the transportation needs of the region and invest limited resources in projects that will best improve mobility over the long term – the TDM is one tool that can be used in this process.

How do TDMs predict traffic?

- Traditionally, travel demand models use a four-step process that uses an area's population, the location of different land uses, and the configuration of the existing and future transportation system (as programmed in various state, regional, and local plans) to answer the following questions:

  1. How many trips will people take?
     - TDMs use population and household characteristics to estimate the number of trips that people will make in the study area – determining the number of trips originating in each traffic analysis zone (TAZ) during the Trip Generation step.

  2. Where will people travel to?
     - Certain land uses are assumed to be trip attractors, or destinations that people commonly travel to: employment centers, restaurants, shopping and entertainment centers, etc.
     - Completion of the Trip Distribution step provides the geographic distribution of origin and destination points within the study area and the number of trips that are predicted to take place between each TAZ pair.

  3. Which routes will they take?
     - The final step, Traffic Assignment, determines the actual routes on the transportation system that people will take from start to finish.
     - The traffic assignment is an iterative process that takes congestion, travel time and class of vehicle into account.

What can a TDM tell us?

- TDMs predict the number of vehicles using each roadway. From this information, other traffic-related measures can be derived, such as travel times, travel speeds, level of service and classes of vehicle using the road.

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Are the results accurate?

- A TDM undergoes a 'reality check' before traffic conditions can be forecasted for future years or different scenarios. A 'base year' is selected for which travel data is known, and the model outputs are compared to the data to see how well the model predicts existing conditions. This process is call validation.

- The TDM must meet an established level of accuracy. If the results do not meet this level of accuracy, adjustment must be made to the inputs until the results are deemed acceptable.

Delphi Process

What is a Delphi process?

- A consensus building process to help understand an issue when historic trends don't necessarily provide a guide to future outcomes.

- In this case the process will be used to identify patterns in regional growth and development through an interactive dialogue with local experts and community leaders.

- The process involves an initial workshop to be held in the region, followed by several rounds of interactive online review and feedback by participants.

Why are we doing one?

- This process is designed to account for newly emerging patterns of development and growth in the Permian Basin region – such as anticipated levels of activity in oil and gas drilling – that are not necessarily reflected in data based on previous historical trends.

How will it be used?

- In the context of this project, the results of the Delphi process will be used to develop regional population and employment forecasts that serve as inputs to the Permian Basin MPO TDM.

Who is on the Delphi panel?

- The MPO is in the process of recruiting panel participant from the following areas:
  - » TxDOT Odessa District
  - » Colleges
  - » MPO (select staff and very select Technical Committee Members)
  - » County governments/departments
  - » Downtown development corporations
  - » Oil and gas industry representatives
  - » Public Utility Commission of Texas
  - » Real estate brokers
  - » Freight carriers
  - » Business leaders
  - » All area Chambers of Commerce
  - » Employers
  - » Utility companies
  - » Financial professionals
  - » School districts
  - » Long-term residents familiar with the history and legacy of the area

- A panel comprised of participants from these sources will be well-balanced and produce a high-quality projection of the area's future growth.

Permian Basin MPO Metropolitan Planning Organization

Texas Department of Transportation