



Project Summary

Texas Department of Transportation

0-5711: Improving Quality and Accuracy in Select Travel Surveys

Background

The Texas Department of Transportation (TxDOT), Transportation Planning and Programming Division (TPP), funds and manages an ongoing statewide travel survey program. This program collects data on travel in all major urban areas in Texas. Two elements of this program, household and external travel surveys, are critical in the efforts of the department to develop and maintain travel demand models that accurately reflect travel behavior in Texas. These surveys are designed and implemented following accepted state-of-the-practice methods. This research examined these surveys in respect to issues such as non-response, sampling frame, proxy reporting, sample size, directionality, time-of-day, and quality control. The objective of the research was to evaluate the impact of data quality and accuracy.

What the Researchers Did

Researchers performed an extensive review of the literature and survey practice in areas outside Texas. These findings were compared to the survey practice in Texas. Data from recent household travel surveys in Texas were used to estimate and evaluate the potential impact on travel estimates from households that were excluded from the sampling frame, households that were identified as non-response households, and the use of proxies in household surveys. Evaluation of data from recent external surveys determined the impact of directionality on travel estimates, the impact of time-of-day expansion of the survey data, and the adequacy of current sample sizes in external surveys. An additional evaluation was conducted on the accuracy of automatic vehicle classification counters relative to their use in external surveys and vehicle classification counts.

Based on the research findings, researchers developed a guidebook on quality control of household and external surveys. The guidebook includes:

- documentation on the data element checks that are performed in household and external surveys in Texas, and
- a specific set of recommendations for household and external surveys to maintain data quality and accuracy.

Research Performed by:

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What They Found

The following items summarize the findings of the research:

- Household and external surveys in Texas are consistent with similar surveys in other parts of the nation.
- Households excluded from participation in household surveys due to the sampling frame and methodologies are not likely to impact accuracy of travel estimates.
- Non-response households could potentially impact the accuracy of travel estimates derived from the household surveys.
- The use of proxy reporting in household surveys has a negative impact on the estimates of travel from household surveys.
- Automatic vehicle classification counters typically undercount non-commercial vehicles and overcount commercial vehicles.
- The practice of surveying vehicles in one direction only in external surveys has no impact on the accuracy of estimates in both directions.
- The practice of expanding external surveys based on the aggregate 24-hour vehicle counts is acceptable and produces essentially the same results as expanding the survey data based on time-of-day counts.
- Current sample sizes for non-commercial vehicles at external surveys are adequate, but current sample sizes for commercial vehicles are not adequate.

What This Means

The current methods for conducting household and external surveys in Texas produce excellent data for use in developing and calibrating travel demand models. A number of recommendations from this research may be implemented that will improve the data and maintain the high quality of the travel surveys. These recommendations may be incorporated into the attachments of the bid specifications with minimal effort. This research found that the household and external surveys within the overall travel survey program produce high-quality data that ensure the TxDOT travel demand models accurately reflect overall travel within Texas urban areas.

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