Project Summary

Texas Department of Transportation

0-6267: Benefits of Public Roadside Safety Rest Areas in Texas

Background

The Texas Department of Transportation (TxDOT) currently operates and maintains a system of 80 safety rest areas, 12 travel information centers, and numerous picnic areas statewide. These safety rest areas enhance highway safety; enhance the comfort and convenience of highway travel; and facilitate the transmission of information to highway users.

While popular with the traveling public, competition for funding and increases in facility construction, operation, and maintenance costs have brought into question the cost-effectiveness of public safety rest areas in Texas. A reliable and acceptable method for comparing safety rest area benefits with costs is required to guide decision-makers in the allocation of resources to a safety rest area program in competition with other demands. This project developed a benefit-cost analysis methodology for safety rest areas in Texas and to demonstrate its application in select corridors throughout the state. In addition, this project considered new approaches that could reduce the public cost burden borne by individual public agencies.

What the Researchers Did

This investigation comprised six general tasks:

- Characterizing available data to support safety rest area benefit-cost analysis—Researchers assessed the availability, level of detail, units of measure, accuracy, certainty, completeness, timeliness, and statewide consistency for a variety of related data elements.
- Reviewing existing benefit-cost analysis methods—Researchers conducted a comprehensive literature and state-of-the-practice review to identify and assess existing methods that may have applicability for safety rest areas in Texas.
- Developing a methodology for safety rest area benefit-cost analysis in Texas—Based on available data and promising methodological approaches, researchers developed a unique methodology for application in Texas.
- Selecting demonstration corridors in Texas—Researchers selected corridors to reflect a range of traffic, roadway, and facility conditions in an effort to frame minimum and maximum estimated benefits and costs and associated methodological limitations.
- Demonstrating the safety rest area benefit-cost analysis methodology in select corridors—To prove application, researchers assimilated and analyzed specific data elements that support determination of both benefits and costs using the proposed methodology.

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- Exploring alternate safety rest area development opportunities—As almost a stand-alone task, researchers conducted a comprehensive literature and state-of-the-practice review to identify alternative strategies for maintaining/developing safety rest areas.

What They Found

Based upon the available supporting data for Texas, a benefit-cost ratio relationship was developed that included safety, comfort and convenience, and excess travel and diversion benefits accrued by highway users; direct monetary benefits accrued by highway or other public agencies; economic development/tourism and specific business enterprise benefits accrued by external entities; and direct monetary cost accrued by highway agencies.

Resulting benefit-cost ratios were estimated to be 8.7:1 along the U.S. 287 corridor, 29.5:1 along the IH-45 corridor, and 11.7:1 along the IH-10 corridor. However, the data used to develop the safety-related benefits and the resultant benefit-cost ratio along the IH-45 corridor may be suspect. Therefore, researchers caution against placing too great an emphasis on this particular finding.

Alternative development strategies findings suggest a number of opportunities related to: safety rest area development outside of the federal right-of-way that can subsequently support primary commercial services (e.g., food/beverage sales, fuel sales); supplemental infrastructure to support the use of electric vehicles and generate power using solar or wind technologies at safety rest areas; partnerships with private truck stop owners to cooperatively meet truck parking demand while concurrently meeting the needs of general safety rest area patrons; and public-public partnerships to include state/local park agencies, Tribal Nations, or state/local law enforcement agencies.

What This Means

This research better enables TxDOT to compare safety rest area benefits with costs and subsequently guides decision-makers in the allocation of resources to a safety rest area program.

Regarding the validity of this overall approach for comparing safety rest area benefits with costs, a number of strengths and shortcomings can be identified. The proposed method utilizes timely and relevant data and national/aggregate unit values, whose sources are carefully documented to ensure defensibility and repeatability of the benefit-cost ratios estimated for Texas. Required assumptions were also framed to produce the most conservative estimates.

A noted shortcoming of the applied method is that it is heavily assumption-based—minor changes to any of the assumed values will influence the resultant benefit-cost ratios, although it is unclear to what extent these ratios would change. A second shortcoming—not unique to this methodology—relates to the quality and accessibility of supporting data, which challenged and in some instances prevented estimation of individual benefit and cost components. A high level of variability in individual benefit and cost component estimates—both within and between the three demonstration corridors—suggests limited transferability of these results.

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