

STC Research Project Description

Project Title: Safety Consequences of Alternative Road Networks

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Project Start Date: September 1, 2000 **End Date:** August 31, 2001

Other Milestones, Dates:

Project Objective: To develop a methodology for estimating systemwide accidents on a proposed highway network.

Project Abstract: The latest transportation legislation at the Federal level, Transportation Equity Act of the 21st Century (TEA-21), has enhanced the importance of safety and security issues in the metropolitan/urban transportation planning process. TEA-21 has identified seven factors that must be addressed by Metropolitan Planning Organizations (MPO), and one of these deals exclusively with safety and security. The principal investigators of this proposed research recently undertook a case study oriented project for which they met and discussed with the transportation planners of several MPOs and state DOTs the subject of how safety and security issues can be taken into consideration in making decisions involving transportation plans and projects. They have found that MPOs generally consider safety and security in the project evaluation stage when developing a Transportation Improvement Plan (TIP), and that there exists a variety of methodology for this purpose. However, there are other types of planning activities for which analytical tools for safety assessment are not adequate, and one of these activities involve the development of long-range transportation plans (LRTP).

The development of a LRTP involves the analysis of alternative networks of roadways and transit routes. Except for very large metropolitan areas the focus of analysis usually is on the roadway network, which consists of roads of different functional classes carrying different levels of traffic volumes. Traditionally the criteria for comparing alternative roadway network configurations with different proportions of various functional classes or roads such as freeways and non-freeway arterials and also different levels of traffic carrying capacity include the following:

1. Measures involving traffic congestion such as the number of miles of roads with high volume/capacity (v/c) ratios.
2. Average travel speed.
3. Cost of roadway improvements.
4. Households expected to be displaced by new road construction.
5. Air pollution emissions.
6. Noise levels.

The generally used criteria do not include any measures reflecting the number of accidents of different types primarily because analytical tools for this purpose have been lacking. The proposed research will test the feasibility of a specific methodology for estimating the safety benefits of different roadway networks for an urban area in terms of their potential for accident reduction.

Task Description: Correlate accident data from Tennessee for urban roads of different types with volume/capacity ratios.

Total Budget: \$23,810

Student Involvement (Thesis, Assistantships, Paid Employment): One graduate student for one year.

Relationship to Other Projects: n/a

Technology Transfer Activities: Papers to be presented in conferences and published in journals.

Potential Benefits of Project: It will help incorporate safety considerations in long-range highway planning in urban areas.

TRB Keywords: systemwide safety, highway network, long-range highway planning, accident prediction