



## Project Number

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# Florida Department of Transportation Research Developing Florida-specific Mobility Enhancement Factors (MEFs) and Crash Modification Factors (CMFs) for TSM&O Strategies

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## Current Situation

The Federal Highway Administration describes Transportation Systems Management and Operations (TSM&O) as “a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have.” The Florida Department of Transportation (FDOT) has been a pioneer in adopting TSM&O strategies to improve the safety and mobility of Florida’s roadways. The TSM&O process requires research to effectively integrate its strategies into design and evaluation of transportation facilities.

## Research Objectives

Researchers at Florida International University and the University of North Florida quantified the mobility and safety effects of several TSM&O strategies.

## Project Activities

The researchers evaluated six TSM&O strategies. Ramp metering involves placing a traffic signal on an on-ramp to regulate the rate at which vehicles enter a limited-access highway. Dynamic message signs are placed on the side of a highway or over it to provide drivers with useful and timely information in real time. Road Rangers are assistance crews that drive a route and are ready to respond quickly to highway incidents ranging from vehicles out of gas to collisions. Express lanes are fee-based limited access lanes that allow vehicles making longer journeys to separate from general traffic, thus improving travel times for all drivers. Transit signal priority modifies the signal timing at intersections to better accommodate transit vehicles. Adaptive signal control technology is an Intelligent Transportation Systems strategy that optimizes signal timings in real time to improve traffic flow along the corridor.

The operational performance of each strategy was evaluated using mobility performance measures such as travel time, travel time reliability, average speed adjustment, incident clearance duration, etc. Safety benefits were evaluated using the crash occurrence risk, secondary crash occurrence risk, and crash frequency as the performance measures. Because these measures were based on Florida data, the researchers were able to derive Florida-specific mobility enhancement factors (MEFs) and crash modification factors (CMFs). MEFs indicate the effect of a strategy on traffic flow; CMFs indicate how many crashes are expected after the implementation of a strategy. In all cases, the strategies in the project improved traffic flows, except for one specific case, and they all reduced crashes.

As part of the project, the researchers created a software tool for assessment of the six TSM&O strategies examined in this work.

## Project Benefits

The results of this project will allow more precise measurements of the effect of certain TSM&O strategies. They also provide quantitative measures that can be used in considering TSM&O strategies in roadway designs.

*For more information, please see [www.fdot.gov/research/](http://www.fdot.gov/research/).*



*The dynamic message sign and other TSM&O strategies improve safety and traffic flow.*