

Technical Memorandum 5

Crash Analysis



This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

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This document is posted at:

<http://www.tdot.state.tn.us/i24/>

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1.0 Introduction

1.1 Corridor Location and Overview

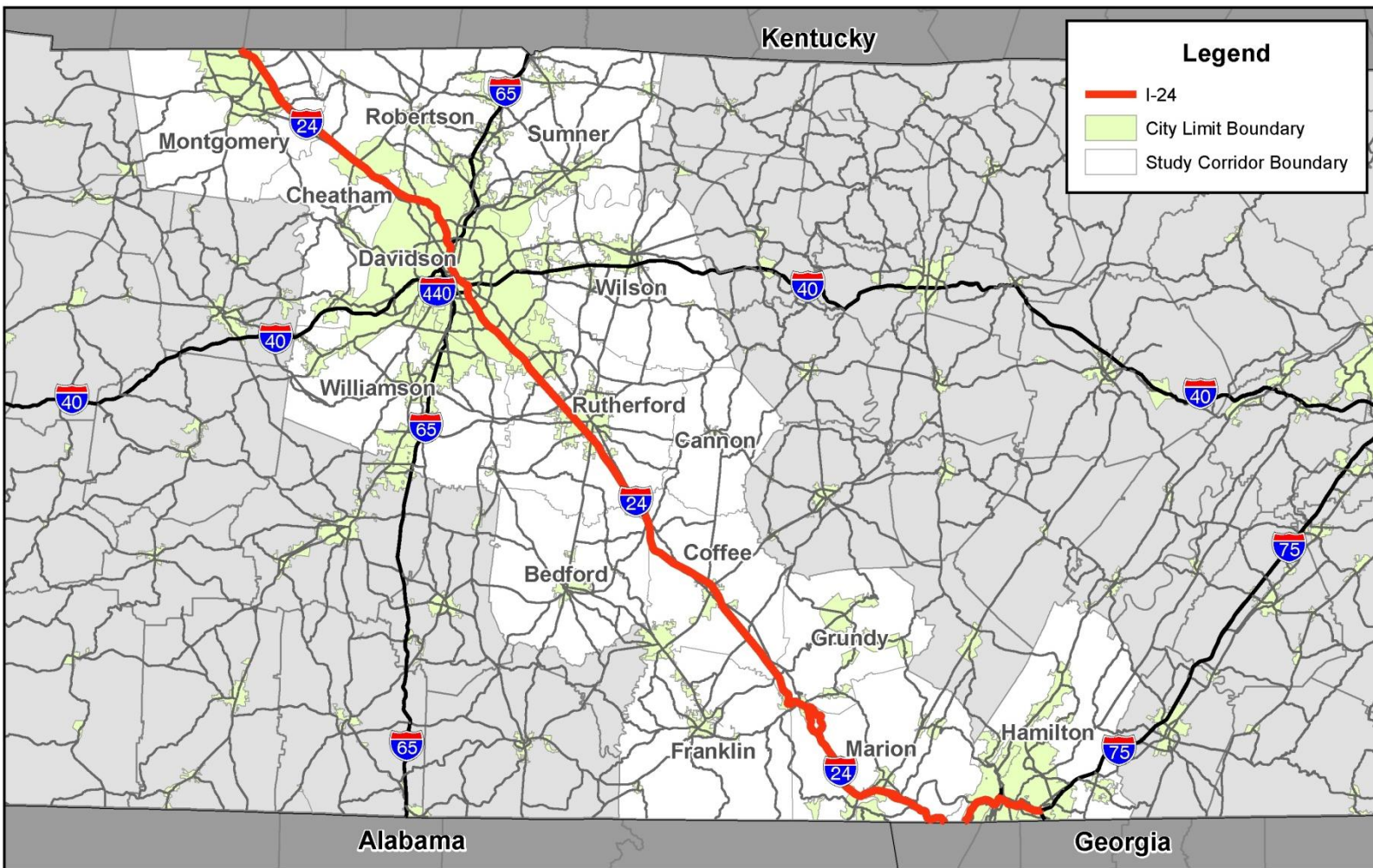
The purpose of the I-24 Multimodal Corridor Study is to examine potential multimodal transportation improvements that would address existing and emerging transportation system issues associated with this strategic corridor through central Tennessee connecting the Clarksville, Nashville and Chattanooga urban areas. The corridor extends from the Kentucky border to where it meets I-75 in Hamilton County, a distance of approximately 185 miles (refer to Figure 1).


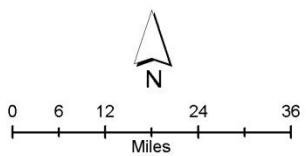
The analysis of corridor needs will go through a structured process of characterizing existing and projected corridor conditions, describing the purpose and need for corridor improvements, defining a set of performance measures against which to evaluate improvement options, and evaluating potential corridor improvements against these performance measures to develop a set of recommended improvements.

1.2 Purpose of This Document in the Study Process

This document presents the crash data that was provided by TDOT for the purposes of the I-24 Multimodal Corridor Study and identifies the location of segments on I-24 that have a crash rate higher than the statewide average for similar facilities. This analysis will be used later in the I-24 Multimodal Corridor Study when alternative improvement strategies and scenarios are developed and evaluated.

Figure 1: Study Corridor Map



  **Study Corridor Map**
I-24 MULTIMODAL CORRIDOR STUDY

2.0 Crash Data for the I-24 Corridor

For the purposes of the I-24 Multimodal Corridor Study, the Tennessee Department of Transportation (TDOT) provided crash data for the entire length of I-24 in Tennessee that was generated using TDOT's Highway Safety Improvement Program (HSIP) database. The HSIP database summarizes crash data by roadway segments. These segments are determined and defined automatically by the HSIP database based on several criteria including functional classification, county lines, city limits, rural/urban designation, traffic volumes and major interchanges.

Using the HSIP database, TDOT generated the number of crashes and calculated the average crash rates for each segment of I-24 based on crash and traffic data collected in 2008, 2009 and 2010. It should be noted that this document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

3.0 Crash Analysis for the I-24 Corridor

Locations along the study corridor that have experienced a higher number of crashes were identified based on the three most recent years of available crash records in TDOT's Highway Safety Improvement Program (HSIP). Locations along I-24 that will be given special consideration for the purposes of the I-24 Multimodal Corridor Study were defined as segments of roadway that have two or more times the statewide average rate for a rural or urban interstate facility. The use of this measure indicates that these locations should receive a higher priority in implementation of safety improvements due to some unfavorable characteristic of local conditions. Spot and segment locations with crash rates that qualify for a safety project are already being addressed by TDOT and, therefore, are not addressed again by this study. Currently, there are four safety projects being conducted by TDOT in the I-24 Corridor, all of which are located in Davidson County.

The locations that exceed two times the statewide crash rate were determined by calculating the average crash rates for I-24 for the years 2008, 2009 and 2010. These years are the most recent years for which complete crash data is available. These average crash rates were then divided by the average statewide crash rate to calculate the ratio of I-24 crash rates to the average statewide crash rates.

As stated above, any segment of I-24 that exceeds two times the average statewide crash rate will be considered as a location that will require special attention when improvement strategies are developed and evaluated later in the I-24 Multimodal Corridor Study. Based on the crash analysis, ten segments in the I-24 Corridor exceed the average statewide crash rate by two or more times. One of the segments is located in Robertson County, four segments are located in Davidson County, one segment is located in Grundy County, one segment is located in Marion County, and three segments are located in Hamilton County. It should be noted that two of the ten segments are already being addressed by TDOT as part of Safety Projects.

After identifying ten segments along I-24 as locations with a high crash rate, this study will not conclude its use of the I-24 crash rates. The crash rates generated by the HSIP database for all the segments on I-24 will be used by the study team to assist in the development, evaluation and prioritization of alternative improvement strategies and scenarios for the I-24 Corridor by relating the crash rates to traffic on I-24 (i.e., vehicle miles of travel) and by estimating costs associated with crashes on I-24.