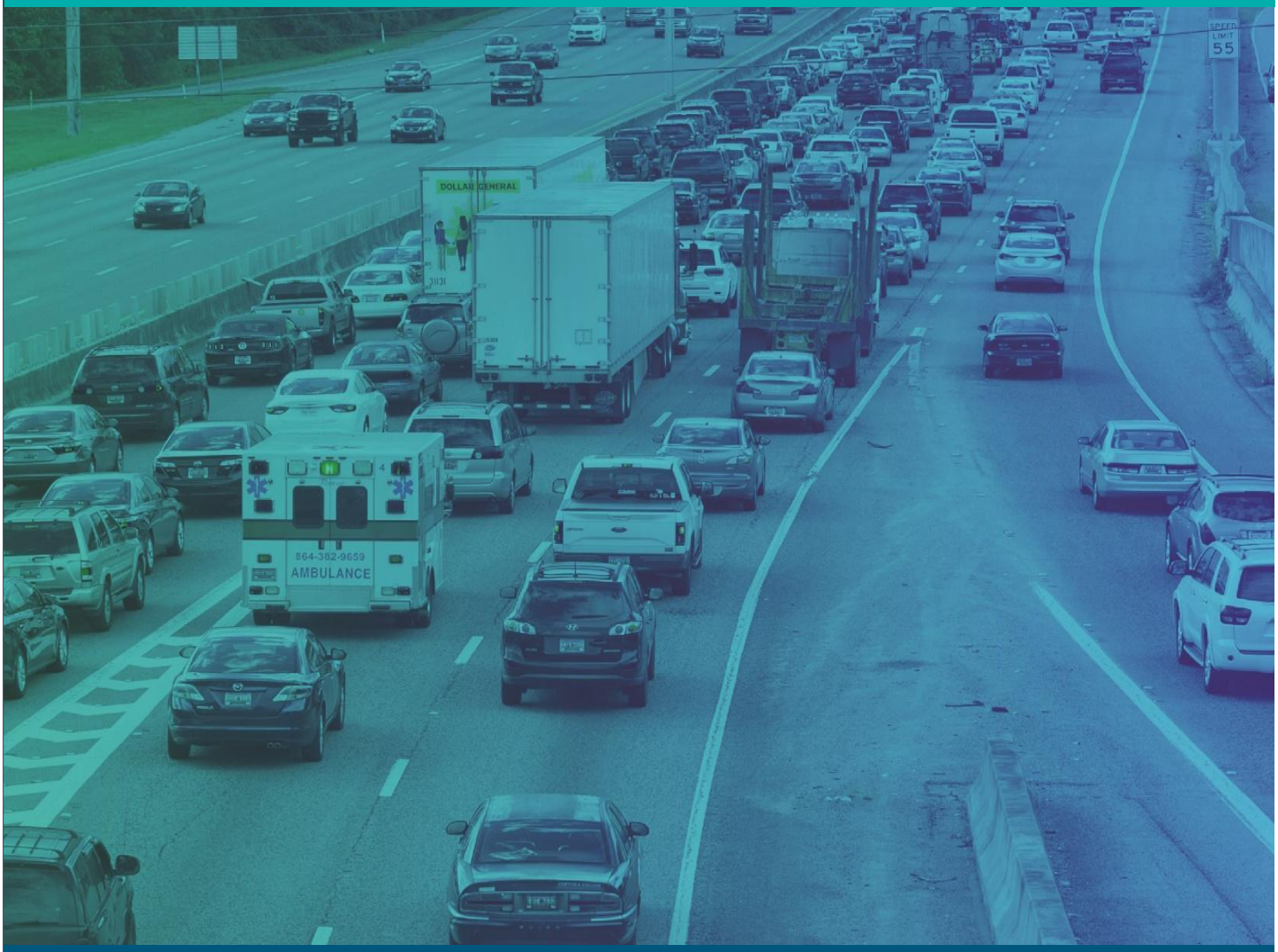
CAROLINA CROSSROADS



Predictive Crash Analysis Methods

I-20/I-26/I-126 Systems Interchange Modification Report (Systems IMR) Re-evaluation

October 12, 2026

1. Introduction

The purpose of this document is to provide guidance on the use of the Federal Highway Administration's predictive safety analysis tool, the Interchange Safety Analysis Tool Enhanced (ISATe), that was utilized in the Carolina Crossroads IMR. These details shall be implemented in a revision of the IMR so that comparisons can be made with the original results. The ISATe is available for download at AASHTO - Highway Safety Manual - Tools (www.highwaysafetymanual.org/Pages/Tools.aspx).

2. Methodology

All segmentation and analysis efforts shall be undertaken using the ISATe User Manual methodologies.

The analysis presented in the *Systems Interchange Modification Report I-20/I-26/I-126 Systems Interchange Modification Report (Systems IMR) Re-Evaluation, March 19, 2026* examined predictive crash frequencies for mainline freeway segments and ramp segments. Ramp termini were not evaluated within ISATe due to complexities in design and limitations in the ISATe tool. Instead, ramp termini were evaluated qualitatively in the *Systems Interchange Modification Report I-20/I-26/I-126 Systems Interchange Modification Report (Systems IMR) Re-Evaluation, March 19, 2026*. Collector-Distributor (C/D) systems were evaluated using the Ramp Segments methodologies.

Freeway Segment Assumptions

- Clear Zone Width (W_{hc})=30 feet
- Median Barrier Width (W_{ib})=2 feet
- Radii for horizontal curves are measured to the inside edge of travel way
- 2050 Design Year Build volumes are the only future-year predictive assessment required
- Presence of Barrier in Median=Center
- Proportion of AADT during high-volume hours (P_{hv})=0.073
- AADTs must be recalculated and come from balanced volume forecasts that have been reviewed and approved by SCDOT
- Existing crash data has not been used, and Empirical-Bayes analysis is not required

Ramp Segment Assumptions

- Average traffic speed on the freeway (V_{frwy})=65 mph
- 2050 Design Year Build volumes are the only future-year predictive assessment required
- AADTs must be recalculated and come from balanced volume forecasts that have been reviewed and approved by SCDOT
- Existing crash data has not been used, and Empirical-Bayes analysis is not required