

# Research Summary

## Crash Location Correction for Freeway Interchange Modeling

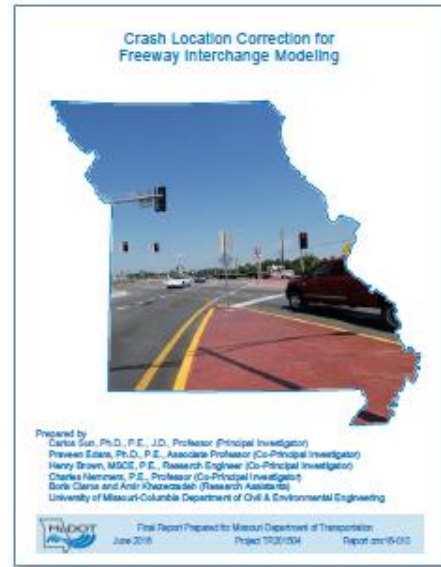
**HSM**  
Highway Safety Manual



The AASHTO [Highway Safety Manual](#) (2014) enables the modeling of freeway interchanges, including interchange facilities such as terminals, ramps, and speed-change lanes. HSM recommends calibrating to local conditions. The calibration process is data intensive and requires crashes to be located accurately at the appropriate interchange facility.

This is important since safety treatments could differ for different interchange facilities. A high percentage of interchange crashes in the Missouri crash database are landed incorrectly at interchanges. For example, some crashes are arbitrarily placed in the middle of an interchange instead of at one of the ramp terminals.

Crash data correction is a labor intensive process which involves the manual review of the original crash reports along with additional information such as aerial photographs. A complete set of tutorials was developed for interchange crash correction. In addition, training tests were developed to ensure that reviewers interpret and apply the procedures



uniformly. Due to the enormous amount of labor that was required for reviewing all the crash reports, a large team of 25 research assistants and researchers was assembled.

There were 12,409 crash reports that were collected and reviewed, and 9,168 reports underwent the full set of procedures. The majority of the crashes were on interchange terminals, either at diamond interchanges (5,086 crashes) or partial cloverleaf interchanges (1,482). The speed-change lanes had 1,820 crashes and ramps had 780 crashes. The project found that 69% of all reviewed crashes were landed incorrectly within the interchange. The error rates by facility type were 90% for ramps, 79% for terminals, and 53% for speed-change lanes.

The police officers who complete crash reports are very important members in the collaborative highway safety effort, and any improvements made in the practice of crash landing on the front end helps to facilitate safety analysis and countermeasure design in the back end.



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Example of Incorrect Crash Landing on Crossroad (Yellow Flag) and Correct Location on North Ramp (Red Star)

## ***Project Information***

**PROJECT NAME:** Crash Location Correction

**PROJECT START/END DATE:** July 2014 through March 2016

**PROJECT COST:** \$59,996

**LEAD CONTRACTOR:** University of Missouri-Columbia

**PRINCIPAL INVESTIGATOR:** Dr. Carlos Sun

**REPORT NAME:** Crash Location Correction for Freeway Interchange Modeling

**REPORT NUMBER:** cmr 16-010

**REPORT DATE:** June 2016

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