Public Abstract
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Graduation Term:SP 2016
Department:Civil Engineering
Degree:MS
Title:Empirical Study of Freeway Interchange Crash Characteristics and Influence Areas

Factors that affect drivers at interchanges are various and include changing lanes, changes in speed limits, and lengths of speed-change lanes. State Departments of Transportation (DOTs), local authorities, and transportation researchers use reported crash locations for analysis, neglecting the functionality of speed-change lanes. This may lead to the inaccurate prediction of the number of crashes and non-optimum geometric designs. This study used a newly proposed method for locating crashes by the functionality of speed-change lanes instead of exact crash location for safety analysis. Missouri crash reports were reviewed to determine how police officers located crashes. In addition, the functional and physical classification methods were compared. Crash distributions were presented for different types of facilities, such as freeway segments, speed-change lane segments, and ramp segments, in order to better understand the safety of different interchange-related facilities. In addition, on the basis of crash data, the safety influence areas were estimated using empirical data. By using functional classification, more crashes were assigned to speed-change lanes than ramps or freeways that had been assigned through the use of physical classification. Mainline freeway segments still generated the most crashes in interchanges under functional classification (62.09%), with speed-change lanes second (21.21%). The interchange influence area determined in this research was 2000 ft., which is longer than the 1500 ft. discussed in previous studies.