



TECHSUMMARY *August 2019*

State Project No. DOTLT1000143 / LTRC Project No. 16-1SA

Highway Construction Work Zone Safety Performance and Improvement in Louisiana

INTRODUCTION

Work zones (i.e., road construction, maintenance, and repair) present a number of safety and operational challenges due to interrupted travel routes, increased delay, and congestion. A particular concern in work zones are crashes. Much of the data concerning work zone crashes come from state crash reporting forms. Prior research has shown that data collection practices and crash reporting procedures have a fundamental impact on work zone-crash data quality. For the most part, states collect similar information about crashes (e.g., location, vehicles and persons involved, contributing circumstances, environment, etc.), but these forms vary considerably in their design, coding procedures, and the level of detail captured. Additionally, each state has their own data collection processes and procedures regarding work zone crash reporting practices. While national guidelines such as Model Minimum Uniform Crash Criteria (MMUCC) standardize definitions and data elements, compliance is not mandated and the degree to which states have adopted the MMUCC work zone-related data elements varies.

The degree to which crash data provides insight into work zone crashes depends on many factors, beginning with how a “work zone crash” is defined in that state. When states define a work zone crash by its physical location (such as in Louisiana), it is impossible to tell what if any role the work zone actually played in the crash from the data unless either additional data elements are collected or the events leading to the crash are explained in the narrative. As it stands, most states do not collect enough data about work zones on their crash report forms to fully analyze work zone-involvement in crashes.

OBJECTIVE

The overall goal of the project was to provide a review of current practices for reporting work zone crashes in Louisiana and other states, to review literature to obtain the state of knowledge on work zone crashes and reporting practices, to identify factors associated with work zone crashes in Louisiana that can be used to develop strategies to reduce work zone crashes and injuries, and to develop recommendations for improved reporting of work zone related crashes.

SCOPE

The scope of this project was to assess current practices of reporting work zone crashes in Louisiana and compare them to national guidelines and practices in other states in the US. This project does not include an analysis of work-zone crashes or answer questions regarding whether or not work zone crashes have an effect on crash frequencies. Instead, this project examined what was necessary to obtain consistent data to make these assessments.

METHODOLOGY

In total, 10 work zones reflecting a variety of work types were selected from 8 distinct projects (two projects involved work on two separate Interstates and each is considered

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a work zone). All crashes that took place within the work zone as well as within 5 miles before and after the work zone in both directions were retrieved from the crash data warehouse using the parameters provided by DOTD and LTRC (i.e., control section and milepost, sign placement dates) for each work zone project in the sample (N = 3,636). The crash data analysis provides a general overview of crash characteristics by proximate location to the work zone.

Content analysis methodology was applied to empirically examine the narratives and drawings for explicit work zone involvement. In order to make meaningful inferences about work zone crash reporting practices in Louisiana, information contained in the narratives must be systematically "coded" into representative categories for analysis. Upon establishing a codebook, two researchers independently completed the coding of the crash report narratives and drawings in this study. The accessible population, i.e., the number of crash reports for which narratives and drawings were electronically available for review (N = 2,723) includes approximately 75% of the 3,636 crashes reported in the crash data analysis.

Lastly, contractor work diaries for each of the projects were examined for internal consistency and level of detail. Two project diaries were suitable for conducting an in-depth analysis of crashes occurring during active work zone hours. Because both project diaries provide documentation for the dates and times in which the work zone was active, it was possible to match crashes by date/time and triangulate observations.

CONCLUSIONS

In total, officers reported 149 out of the 3,636 crashes as work zone crashes, reflecting approximately 4%. Of the 149 officer-reported crashes, only 104 crashes were actually inside the DOTD workzone boundaries. According to the crash data analysis, 1,910 crashes were identified as having taken place within the actual workzone boundaries. Taken together, this amounts to 1,806 crashes that technically should have been reported "work zone" but were not. Officers are instructed to mention any additional factors that could not be reported on the form in the narrative; however, this study finds inconsistencies here as well as in most cases there is no mention of the work zone in the narratives or the drawings.

There is an overall lack of consistency with respect to officer narratives and the contractor work diaries but

also the degree to which their content provided insight into work zone involvement in crashes. The accurate reporting of work zone crashes serves two objectives: (1) it allows an estimation of a work zone "effect," i.e., do work zones have on average a higher crash count than if there had there been no work zone in place; and (2) it provides opportunities for problem identification such as risk factors that could be eliminated or reduced. Without additional data elements to better capture work zone relation, Louisiana's current reporting practices are not sufficient to understand how and to what degree work zone activities are related to crashes.

RECOMMENDATIONS

- DOTD to oversee work zone operations, contractor reporting documents
- Assess static work zones according to well-defined parameters via before-and-after methods
- Identify/address shortcomings of current crash report form with respect to data quality
- Adopt the MMUCC recommendations as a minimum standard
- Revise the *LA Crash Report Manual* to clearly instruct officers to look for the posted signs of a work zone and to specify objective criteria
- Train law enforcement regarding the *LA Crash Report Manual* to improve accuracy and consistency

IMPLEMENTATION STATEMENT

Implementation of some of the recommendations in 2019 will likely lead to a better reporting of work zone crashes. There are several strategies to be implemented. (1) Clearly define what needs to be reported, i.e., work zone crashes versus work zone related crashes. (2) Change the crash report to follow the suggested factors in MMUCC. (3) Improve the diaries from contractors to assure that location and work hours are reported consistently. (4) Revise the crash handbook to clearly define work zone crashes. (5) Improve training of police officers to report work zone crashes. (6) Build model for assessing average work zone effect using DOTD location and timing of sign postings and diaries.