



Transportation
Safety and
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Project Title:

Work Zone Safety Improvements
Using Automated Injury Data
Collection

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Task Manager:

Hamid Ikram
Transportation Engineer
hamid.ikram@dot.ca.gov

Work Zone Safety Improvements Using Automated Injury Data Collection

Collected work zone traffic collision reports (TCRs) data and developed a web-based decision support system for prioritizing maintenance activities.

WHAT WAS THE NEED?

Work-zone-related injuries and fatalities are a major safety concern. Developing mitigation measures is vital in improving work zone safety for roadway workers and traveling public. Developing such measures, however, require detailed data on the characteristics of these accidents and injuries. Existing databases do not provide sufficient information that would justify mitigation measures or allow cost benefit analysis. This is because they only include traffic collision outcomes and locations, but do not provide information on driver behavior, work zone intrusion and location, number of lanes, and comments by drivers, witnesses, and officers.

The Traffic Accident Surveillance and Analysis System (TASAS) database provides basic outcome information, such as number of people injured or killed, basic event that took place (e.g. auto accident, car hitting the barrier, etc.). However, more information is needed for mitigation, including data on the nature and severity of injuries, information about collision in terms of “what hit what”, as well as information about the actual location in work zone where accident occurred (e.g. taper, activity zone or transition area). Information about contributing factors that cause accidents can play a crucial role in developing and planning for mitigation measures, which is not included in existing databases.

WHAT WAS OUR GOAL?

The purpose of this project was to provide an updated database with detailed injury and accident data, that can be used as a decision support system for developing countermeasures and planning roadway construction and maintenance activities to improve the safety of highway workers and traveling public.



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economy and livability.

WHAT DID WE DO?

This research project collected data from approximately 39,000 Traffic Collision Reports (TCRs) including diagrams and narratives for years 2011 to 2017 from 12 Caltrans districts. These TCRs were tracked down, scanned, created image files of the diagrams, converted narrative portions of reports into digital text and populated a searchable database.

The extracted data from TCRs was codified in terms of factors and outcomes and has become part of a decision support system designed to allow data analysis that can be used for planning and management for work zone operations, to improve worker and motorist safety.

WHAT WAS THE OUTCOME?

Outcome of this project is a data set and web-based analysis tool that can be used to query information and develop understanding of collision trends and attributes related to work zone accidents. This web-based tool can serve as a decision support system for mitigation and improvement of highway safety. A number of collision attributes are identified and combined with injury and collision cost models that can be used to assess societal cost of such collisions.

WHAT IS THE BENEFIT?

This project will help Caltrans improve safety and efficiency and reduce the cost of highway maintenance activities by identifying needed countermeasures for planned maintenance activities and assessing the societal cost of work zone collisions.

IMAGE



Figure 1: AHMCT work zone collision database web portal

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Please view the final report at:
<https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/final-reports/ca21-3236-finalreport-ally.pdf>