Research to Develop Performance Measures for Maintenance of Roadside Features

This research study developed performance metrics, for difficulty and risk of a collision in performing maintenance operations on roadside features.

WHAT WAS THE NEED?

Highway maintenance operations can expose California Department of Transportation (Caltrans) workers to live traffic, increasing their safety risks. Furthermore, the maintenance of certain roadside features can be more difficult, requiring more time and increasing the exposure time of workers to traffic and roadway hazards.

Currently there is no quantitative method for assessing the difficulty and safety risks of such operations. There was a need to develop a risk index for comparing operational safety risks for different relevant maintenance functions based on associated parameters, such as time of operation, location, road geometry, traffic counts, and type of operation. Such metrics or index can then be used to plan, prioritize, and schedule maintenance operations to increase efficiency, and improve the safety of highway workers and traveling public.

WHAT WAS OUR GOAL?

The goal of this project was to enable Caltrans maintenance personnel to prioritize certain classes of maintenance operations based on their difficulty and injury or hazard risks from live traffic to the workers performing such operations.

WHAT DID WE DO?

Maintenance activities associated with roadside features are classified and Difficulty Index and Collision Risk Index are developed. These two indices can be computed for each work order based on parameters that were identified after considering a large dataset as well as results of a survey from relevant Caltrans personnel.

Caltrans provides a safe, sustainable, integrated and efficient transportation system to enhance California’s economy and livability.

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WHAT WAS THE OUTCOME?

This research study developed performance indices, or metrics, for difficulty as well as risk of a collision in performing maintenance operations associated with roadside features. This will help improve efficiency of maintenance operations and improve the safety of highway workers and traveling public.

WHAT IS THE BENEFIT?

The project results can enable Caltrans personnel to use objective data and measures for decision-making in planning and scheduling of maintenance operations. The project results can also be used in allocating resources in terms of personnel and equipment, considering additional safety measures, and deciding if and what type of lane closure is necessary to help reduce the risk of collision and injury to highway workers.

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IMAGES

Figure 1. Distribution of roadside maintenance work orders among districts 2013-2018

Figure 2. Top 10 activities based on different scores

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