Prioritization Techniques to Evaluate Sites for Improving Winter Safety in Iowa

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Abstract

Each winter, hundreds of drivers are injured on Iowa’s highways due to winter-weather related crashes. Though the transportation agencies spend millions of dollars on proactive and reactive maintenance for ensuring best possible pavement conditions and visibility for traveling motorists, there is no systematic method to identify potentially problematic winter weather-related crash locations in Iowa. The objective of this paper is to identify candidate locations to improve safety during winter weather conditions using different prioritization techniques and winter weather crash data from 2002-2009 for different types of roadways (interstate/freeway, multilane and two-lane highways). These techniques include evaluating sites by crash frequency, crash proportion, and crash severity, as well as a combined metric assigning equal weights on crash frequency, proportion, and severity. A moving average analysis was also conducted for 3-mile road segments on I-29, I-35, I-80, I-680, I-380 and US-20 roadways to take into account the spatial proximity of the segments in the ranking process. The paper concludes with a comparison of the results produced by the different methods. The results of this paper can assist state agencies to identify high crash locations during winter weather conditions and screen road networks for winter safety improvements.

Keywords: winter maintenance and operations—roadway screening—weather-related crashes

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