



TRAFFIC AND MAINTENANCE COMPLETED RESEARCH PROJECT

PROJECT NAME:

INVESTIGATION OF WEATHER CONDITIONS AND THEIR RELATIONSHIP TO CRASHES

PROJECT NUMBER: SPR-P1(20) M097

RESEARCHERS

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SPONSORS

Nebraska Department of Transportation

Federal Highway Administration

FINAL REPORT

[Click here to access final report](#)

NDOT RECOMMENDATIONS BASED OFF RESEARCH

[Click Here to access to Research Readiness Level \(RRL\) Assessment](#)

PROJECT ABSTRACT

“Nebraska Department of Transportation (NDOT) crash data were combined with meteorological data on winter weather season basis, reported road surface condition at crash time, and reported weather conditions at crash time. Overall, the key finding of the analysis was most winter-weather related vehicular crashes in Nebraska were associated with relatively minimal winter weather conditions. The reported crashes typically occurred either with relatively low snowfall amounts or as a result of residual snowfall on the ground highlighting the need for winter maintenance operations activities and public service announcements to continue well after a storm has exited the region. Another key finding was that most crashes were of lower severity (i.e., relatively minor injuries) and fatal crashes were rare. An important caveat of this result is that traffic volumes are typically lower during winter storms and must be taken into account. This makes the actual risk of a crash larger than the findings of this analysis alone would suggest.

Modeling of crash injury severity showed higher injury severity associated with icy pavements; higher visibility associated with greater likelihood of crashes involving visible injuries but lower likelihood of disabling injury/fatality crashes. Snowfall was associated with greater visible injury crashes while greater snow depth was associated with fewer visible injury and disabling injury/fatality crashes. The analysis also showed that the type of weather system had implications for the frequency of vehicular crashes. These global weather patterns can be forecast months in advance and allow for long-range strategic planning for transportation agencies regarding potential expected impacts. Limitations of the research include spatial and temporal aggregation of weather data, non-availability of winter maintenance activity data (e.g., plowing, material application), and detailed traffic counts during winter weather events.”

As quoted by P.I. Mark Anderson, in the December 2020 final report abstract



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