

# MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 19-394 (project 453) | August 2019

## Speed Selection During Winter Road Conditions



### the **ISSUE**

Improve understanding of driver behavior, particularly speed selection, during winter road conditions in order to address high speed variation and associated decreases in road safety during adverse weather.

### the **RESEARCH**

Models were developed for speed selection behavior based on different weather parameters. Truck percentage was also included in the model because of its important impact. Furthermore, an analysis was done to identify how sensitive traffic operations are to changes in the weather-related parameters during adverse weather conditions. A model was developed in VISSIM tool using observed traffic parameter data during ideal and different storm events.



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Colorado State University  
North Dakota State University  
South Dakota State University

University of Colorado Denver  
University of Denver  
University of Utah

Utah State University  
University of Wyoming



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### Project Title

Speed Selection Behavior  
During Winter Road  
Conditions

### Sponsors | Partners

University of Wyoming  
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Innovative Technology  
Administration

## the FINDINGS

Pavement surface conditions were found to have a significant negative impact on reductions of average speed. The impact of truck percentage is similar to other weather parameters in the model and was found to have a significant impact on reducing average speed. It was also found that shorter headways and spacing were decreased during non-ideal weather conditions. Average speed was found to be more sensitive than average spacing. Procedure guidelines for calibrating adverse weather conditions in VISSIM developed on the basis of the sensitivity analysis on VISSIM parameters. An important conclusion from this project is that VISSIM can be used to calibrate the impacts of adverse weather conditions on traffic operations, allowing for its use in testing the impacts of adverse weather conditions before being deployed.

## the IMPACT

Increased understanding of driver behavior in adverse weather conditions is critical to developing and successfully implementing weather responsive traffic management strategies.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=960>

For more information or additional copies, visit the Web site at [www.mountain-plains.org](http://www.mountain-plains.org), call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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