

# MOUNTAIN-PLAINS CONSORTIUM

PROJECT BRIEF | December 2015

## Use of Travel Time, Travel Time Reliability, and Winter Condition Index Information for Improved Operation of Rural Interstates



### the **ISSUE**

This research was intended to help develop a new methodology for incorporating travel times calculated from intelligent transportation system (ITS) technology into Wyoming's road and weather condition reporting system.

### the **RESEARCH**

Bluetooth sensors and speed sensors were used to measure travel times on I-80 between Cheyenne and Laramie, as well as WY-28 between Farson and Lander in Wyoming. From previous research, the distribution of travel times on I-80 show two distinct modes. Travel times from the WY-28 corridor were then calculated to determine if this trend was common with other rural highways. The next step in this research was to determine the best way to measure travel times on a rural corridor. Bluetooth sensor travel time data was compared to speed sensor travel time data. Then a travel time index was created for I-80 from one year of speed sensor data. This travel time index was then modeled with weather variables downloaded from road weather information system (RWIS) stations. Finally, a methodology for implementing and evaluating this new travel time reporting procedure was developed.



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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

Use of Travel Time, Travel Time Reliability, and Winter Condition Index Information for Improved Operation of Rural Interstates

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### Sponsors | Partners

University of Wyoming  
Wyoming DOT  
USDOT, Research and Innovative Technology Administration

## the FINDINGS

The travel time frequency discussed in the first section was split into travel time indices, and the conclusions from this analysis are listed below.

- The travel time index gives a consistent and reliable measure of condition severity by separating the ideal condition travel times from non-ideal travel times through natural breaks in the travel time frequency.
- The methodology created for reporting the travel time index can help keep the travel time index reliable, but it may not respond quickly enough to changing conditions.

## the IMPACT

The results of this research will help to improve the current condition reporting system by incorporating both physical conditions (slick in spots, high wind speed, etc.) with travel times. This will help all types of travelers to more accurately quantify the severity of traveling conditions.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=831>

For more information or additional copies, visit the Web site at [www.mountain-plains.org](http://www.mountain-plains.org), call (701) 231-7938 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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