MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 18-344 (project 452) | March 2018

Calibration of the Highway Safety Manual's Safety Performance Functions for Rural Two-Lane Highways with Regional Considerations for the Rocky Mountains and Plain Regions

the ISSUE

The release of the first edition of AASHTO's Highway Safety Manual (HSM) in 2010 was a significant milestone in the advancement of the practice of road safety analysis. The development of Safety Performance Functions used in the manual is based on data from few states that do not adequately represent all states and regions. There is a need to identify limitations and possible improvements for use of the manual in the Rocky Mountain and Plains regions.

the RESEARCH

The study identifies limitations and possible improvements of the implementation of the first edition of AASHTO's Highway Safety Manual (HSM) for the Rocky Mountains and Plain regions. The study focuses on the transferability issue of the Prediction Models to Wyoming conditions.

1. A review of literature was performed on calibrating Safety Performance Functions (SPFs).
2. Data sources were identified.
3. Modeling framework and estimation methodologies were defined.
4. Geometric, traffic, crash, and weather information were obtained for rural roadways in Wyoming.
5. SPFs were calibrated and results were shared with WYDOT.

MOUNTAIN-PLAINS CONSORTIUM REGION 8

A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

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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

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the **FINDINGS**

1. The calibration of SPFs to Wyoming's local conditions was a necessary step for a better estimation of the expected safety performance of rural low volume roads.

2. The HSM SPFs are not adequate for Wyoming due to the fact that the HSM SPFs were developed using data from only a few states that have different climate conditions, roadway geometry, and vehicle compositions.

the **IMPACT**

The estimated Wyoming-specific full SPFs were statistically more accurate in predicting the number of crashes than the HSM calibrated ones and hence, they are recommended for assessing the safety performance of rural highways in Wyoming.

For more information on this project, download the entire report at http://www.ugpti.org/resources/reports/details.php?id=901

For more information or additional copies, visit the Web site at 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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