

# MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 22-482 (project 631) | September 2022

Enhancing Crash Data Reporting to Highway Safety Partners in Wyoming by Utilizing Big Data Analysis and Survey Techniques



## the **ISSUE**

Providing the appropriate crash data to various groups is an efficient means of addressing road safety. Yet, gaps in road safety data reporting exist. The appropriateness of the frequency at which road safety data are provided to partner groups should be evaluated as well.

## the **RESEARCH**

For this project, evaluating the data needs of partner groups and the appropriateness of the data provision frequency was achieved by disseminating a tailored survey to each group. In addition, more profound insights on the human factors that lead to crashes in the state were obtained to better address road safety. This was achieved by using big data analytical techniques conducted on the Wyoming Department of Transportation's crash data.

## the **FINDINGS**

This project resulted in a series of recommendations for WYDOT regarding specific road safety data reporting requirements to the partner groups. In particular, the recommendations pertained to specific data elements to be reported, crash data reporting intervals, and appropriate formats for presenting the data. (continued)



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

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



### Lead Investigator(s)

Khaled Ksaibati  
khaled@uwyo.edu

### Co-Investigator(s)

Ahmid Farid  
farid@calpoly.edu

Mahdi Rezapour  
rezapour2088@yahoo.com

### Research Assistant(s)

Sahima Nazneen, GRA, PhD

### Project Title

Enhancing Crash Data Reporting to Highway Safety Partners in Wyoming by Utilizing Big Data Analysis and Survey Techniques

### Sponsors | Partners

USDOT, Research and Innovative Technology Administration

## the FINDINGS (continued)

Suggestions made for WYDOT include the provision of the following data for the Wyoming Highway Patrol, Wyoming Association of Sheriffs and Chiefs of Police, and Wyoming’s counties:

- Crash statistics by crash type
- Crash injury severity level statistics by age/gender
- Seat belt use statistics
- DUI statistics
- Fatigued-driving-related crash statistics
- Distracted-driving-related crash statistics
- Traffic violation statistics
- Truck policy violation statistics
- Crash statistics by weather condition
- Crash statistics by lighting condition
- Crash statistics by day of the week
- Crash statistics by time of day
- Motorcycle crash statistics
- Hot spots by crash severity level and description (seat belt improper use or non-use, commercial motor vehicle-related, etc.)

Other noteworthy suggestions entail the planning for research studies relating to the following topics:

- Effectiveness of speed, seat belt use, and other violation enforcement policies
- Effectiveness of traffic safety educational campaigns
- Response times of emergency services, particularly for fatal, suspected serious injury, and suspected minor injury crashes

For the other groups—the Wyoming Seat Belt Coalition, Wyoming Transportation Safety Coalition, Governor’s Council on Impaired Driving, Wyoming Bicycle and Pedestrian System Task Force, and the motorcycle groups—the recommendations are similar. Yet, they are tailored to seat belt use, truck safety, impaired driving, non-motorist safety, and motorcycle safety, respectively.

## the IMPACT

Once WYDOT implements the recommendations outlined in this study, its partners will have access to comprehensive data delivered to them in a timely manner. They would have a more comprehensive understanding of road safety conditions, especially the human factors that contribute to crashes. This would enable the groups to propose effective measures to address road safety. The research also provides a strategy for conducting follow-up studies on several research topics such as the effectiveness of traffic safety campaigns.

For more information on this project, download the main report at <https://www.ugpti.org/resources/reports/details.php?id=1101>

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.



This publication was produced by the Mountain-Plains Consortium at North Dakota State University. The contents of this brief reflect the views of the authors, who are responsible for facts and the accuracy of the information presented herein. This document is disseminated under the program management of the USDOT, Office of Research and Innovative Technology Administration in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.

**NDSU** NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice Provost, Title IX/ADA Coordinator, Old Main 201, 701-231-7708, [ndsu.eoaa@ndsu.edu](mailto:ndsu.eoaa@ndsu.edu).