

# MOUNTAIN-PLAINS CONSORTIUM

PROJECT BRIEF | May 2014

## Improving Rural Emergency Medical Services through Transportation System Enhancements



### the **ISSUE**

To provide safe, timely and quality emergency medical services (EMS), it is necessary to obtain a realistic estimate of the medical demand and the capacity of current transportation infrastructure pertaining to the services and to conduct a needs assessment from the rural transportation system perspective.

### the **RESEARCH**

A literature review focused on research and recent statistics and metrics related to EMS response and transport times in rural areas. Data analysis included a subset of the National EMS Information System (NEMSIS) data bank consisting of 50,396 EMS responses collected between January 1, 2012 and December 31, 2012. Data were analyzed from both spatial and temporal perspectives. Spatial analysis was conducted through GIS-based maps to summarize demand and performance by county. Temporal analysis was performed to describe the EMS demand and performance patterns by month of the year, day, week, and time of day. Demand analysis was also examined in relation to demographic characteristics of users such as age, gender, and medical condition. The EMS process components of travel speed, distance and duration corresponding to response time (RespTime), en-route time (ERTime), on scene time (OSTime), transporting time (ERHTime), destination time (DestTime), and total time were evaluated. EMS surveys and focus group discussions involved EMS personnel in four counties in eastern South Dakota.



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



### Lead Investigator

Haifa A. Samra, PhD  
South Dakota State  
University, Brookings  
haifa.samra@sdstate.edu

### Project Title

Improving Rural  
Emergency Medical  
Services (EMS) through  
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### Co-Investigator(s)

Xiao Qin, PhD  
Zhaoxiang He

### Research Assistant(s)

Zhaoxiang He

### Sponsors | Partners

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College of Nursing  
South Dakota State  
University

Department of Civil  
& Environmental  
Engineering  
South Dakota State  
University

## the **FINDINGS**

More than 36% of fatal crashes in rural areas have response times that exceeds 60 minutes. SD time of crash to hospital arrival or overall response time for fatal crashes was shorter than the national average in urban areas, but similar or slightly longer than the average for rural areas. The notification time in rural SD was 2 minutes (32.4%) shorter than the national average but the en-route time to crash scene was 2 minutes (6.1%) longer. 911 calls were highly skewed (60% per 30% counties). Todd County had the highest 911 call volume and the highest 911 calls per population of 1000. June, July, August, and December had the highest demand. EMS personnel rated SD highways as excellent and perceived road safety performance as good. Bridges, icy roads, narrow lanes, poorly marked or blind intersections, distracted and uneducated drivers were often cited as top risk factors.

## the **IMPACT**

Only 51% of the 911 calls had valid information for performance analysis. Improving EMS data quality in future data collection will enhance EMS services for rural areas. Analysis of multi-year data will identify clear patterns and trends. Advertisement and public service announcements will address issues related to distracted driver and alert drivers to yield to a moving emergency vehicle. It remains unclear how EMS response and transport times affect an outcome of an incident. Linking EMS data to crash data will predict service delivery more accurately and establish more specific, data driven, and performance-based measures.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=768>

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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