TRAFFIC INCIDENT MANAGEMENT FOR THE RURAL ENVIRONMENT

Challenges of Traffic Incident Management in Rural Areas

On rural roadways, traffic incident responders face several unique roadway characteristics and conditions that create safety challenges for both responders and the traveling public. These safety challenges can slow the Traffic Incident Management (TIM) response timeline (detection, notification, and arrival stages), disrupt responder communications, and require additional personnel for tasks like manual traffic control, all while stretching often limited responder resources.
Common rural roadway characteristics that can create challenges for responders include:

- Two-Lane Roadways
- Roadways narrower than High-Speed, Limited Access Highways
- Minimal or No Shoulders
- Limited Roadway Safety Infrastructure
- Dark Roads
- High Speeds
- Varying Terrain/Grades and Roadway Topography
- Severe Weather
- Limited Sight Distances
- Unpaved/Gravel Roads
- Unfamiliar Road Users (Tourists)
- Livestock and Agricultural Equipment
- Unfamiliar Road Vehicles (Horse and Buggies, Agricultural Vehicles, Recreational Vehicles)

In addition to the rural roadway characteristics, response to rural roadway incidents and implementation of TIM practices can be further complicated by the following rural responder challenges:

- Long response distances
- Limited Responder Funding/Resources
- Limits/Gaps in Communication Infrastructure
- Lack of Intelligent Transportation Systems (ITS)
- Few Alternate Routes
- Responders Arriving on Scene in Privately Owned Vehicles (POVs)
- Vehicle Weight Restrictions

Even though only 19 percent of the U.S. population lives in rural areas, accounting for about 30 percent of miles traveled, the crashes in rural areas account for 43 percent of traffic fatalities and 1.7 times the fatality rate per 100 million Vehicle Miles Travelled than in urban areas. [1,2]

Source: Oregon Department of Transportation.

Source: Jaime Sullivan, Western Transportation Institute.

FHWA Office of Operations
https://ops.fhwa.dot.gov/tim/

James Austrich
202–366–0731
James.Austrich@dot.gov

Paul Jodoin
202–366–5465
Paul.Jodoin@dot.gov

Joseph Tebo
202–366–9242
Joseph.Tebo@fhwa.gov

Advantages of Traffic Incident Management in Rural Areas

While rural TIM responders face several challenges in rural areas, there are several benefits and opportunities that rural areas provide that can be advantageous to TIM response. These include:

Source: Jaime Sullivan, Western Transportation Institute.

- Low Vehicle Volumes–Rural areas tend to have lower vehicle volumes than urban areas. This can be attributed, in part, to low population and little interaction with noninvolved vehicles at an incident scene, which may result in few secondary crashes.
- Close Relationships–Typically, responders in rural areas have long-established relationships. Because the communities are small, the responders are often connected personally and through their TIM responsibilities. These existing relationships can help to prevent conflict and improve communications.
- Enhanced Coordination–Often, responders in rural areas work with the same people all the time. This familiarity can lead to ease of understanding all aspects of TIM (e.g., use of mutual aid agreements and engaging neighboring communities' responders). Additionally, TIM is often viewed as a collective responsibility. Typically, all responders in rural areas are inclined to participate, they have a thorough understanding of the other disciplines' responsibilities, and they work together.
- Volunteer Fire and EMS personnel– Some rural response disciplines are more likely to be staffed by volunteers than their urban counterparts [3–5]. Volunteers are essential to the provision of response services in many rural areas and are an integral part of effective TIM teams.

Source: Loveland-Symmes Fire Department.

Learn More

To learn more about current and past approaches for rural TIM, go to https://ops.fhwa.dot.gov/tim/.

References

1. USDOT Bureau of Transportation Statistics. 2020. "Estimated U.S. Roadway Lane-Miles by Functional System." (Web page). https://www.bts.gov/content/table-1-6-estimated-us-roadway-lane-miles-functional-systema, last accessed February 7, 2023.
2. USDOT Bureau of Transportation Statistics. 2022. "Rural Transportation Statistics." (web page). https://www.bts.gov/rural, last accessed February 7, 2023.
3. Amer, A., E. Roberts, U. Mangar, U., W. H. Kraft, J. T. Wanat, P. C. Cusolito, J. R. Hogan, J.R., and X Zhao.2015. *Traffic Incident Management Gap Analysis Primer.*

FHWA Office of Operations
https://ops.fhwa.dot.gov/tim/

James Austrich
202–366–0731
James.Austrich@dot.gov

Paul Jodoin
202–366–5465
Paul.Jodoin@dot.gov

Joseph Tebo
202–366–9242
Joseph.Tebo@fhwa.gov

4. Western Transportation Institute, Montana Department of Transportation, Wyoming Department of Transportation, Idaho Transportation Department, and Federal Highway Administration. 2004. "Greater Yellowstone Rural ITS Priority Corridor Incident Management Response Guide." (web page). https://westerntransportationinstitute.org/wp-content/uploads/2016/08/427972_Incident_Management_Guide.pdf, last accessed Februrary 7, 2023.
5. Wolff, R., J. Tang, D. Galarus, D. Larson. Western Transportation Institute, Department of Homeland Security. 2008. "Ad Hoc Routing for Rural Public Safety." (web page). https://westerntransportationinstitute.org/wp-content/uploads/2016/08/4W1566_Final_Report.pdf, last accessed Februrary 7, 2023.

Non-Binding Contents

Except for the statutes and regulations cited, the contents of this document do not have the force and effect of law and are not meant to bind the States or the public in any way. This document is intended only to provide information regarding existing requirements under the law or agency policies.

James Austrich
202–366–0731
James.Austrich@dot.gov

Paul Jodoin
202–366–5465
Paul.Jodoin@dot.gov

Joseph Tebo
202–366–9242
Joseph.Tebo@fhwa.gov