Florida Department of Transportation Research

Timely, Dynamic, and Spatially Accurate Roadway Incident Information to Support Real-Time Management of Traffic Operations

November 2020

Current Situation

Florida is home to over 20 million people and a destination for more than 100 million visitors each year. Add millions of tons of freight moving around Florida every day, and the result is a very busy roadway system. The Florida Department of Transportation (FDOT) works constantly to manage traffic on Florida roadways to improve efficiency and safety. Traffic incidents that cause slowdowns or blockages are a major challenge to efficient traffic flow.

While FDOT has placed systems on Interstate highways that enable rapid incident response to minimize the impact on highway traffic, most incidents occur on smaller roadways. FDOT would like to advance its ability to rapidly respond to incidents on these roadways.

Incidents on Florida Interstates can be managed in real time through regional traffic management centers.

Research Objectives

University of Florida researchers drafted a plan to implement data collection, analysis, and communications that would support rapid response to traffic incidents on arterial roads.

Project Activities

The researchers worked with FDOT District 5, which includes long sections of I-95, I-75, and I-4 as well as the cities of Ocala, Daytona Beach, and Orlando. This district experiences a significant amount of traffic on many multilane non-Interstate roadways. Currently, District 5 receives timely alerts on only a small portion of its non-Interstate roadways. The researchers examined feasible communications systems that would tie District 5 into the information flow of incident reporting and dispatch that occurs in the regional 911 systems.

The researchers reviewed current incident management practice, including over 80 police and fire agencies and computer-aided dispatch (CAD) and 911 systems. On-site interviews and surveys were conducted, and similar systems across the U.S. were reviewed. The collected information in these efforts helped to fully document incident response information flow in District 5, needed and available data, and perceived barriers to interagency information sharing.

The researchers found that almost all critical data elements needed by FDOT for incident response are available in the CAD systems of survey respondents in District 5. The surveys also revealed that data security was the most common concern about interagency information sharing. Barriers to establishing a data-sharing system included agencies using different CAD systems, inconsistency in data standards, and the possibility of duplication of records.

Based on the existing structure and desirable qualities of an information sharing system for incident response, the researchers were able to define a feasible system. Applying these criteria to three candidate approaches found that an information-sharing hub would best provide the desired services. The researchers outlined the significant opportunity that integrating incident response systems could have on saving lives and reducing crash-related congestion.

Project Benefits

Extending the capability of real-time identification and response for traffic incidents will make Florida roadways safer and more efficient.

For more information, please see www.fdot.gov/research/.