



Project Number

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Investigation of Low Visibility Related Crashes in Florida

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Current Situation

Florida's high population and frequent fog conditions place its drivers at higher than normal risk of incidents related to low visibility. Also, Florida's extensive woodlands can experience fires, causing smoke-related low visibility for drivers. Smoke and fog have been known to combine to cause extremely low visibility situations. Understanding where low-visibility conditions due to smoke or fog are likely to occur is essential to providing adequate warning to drivers and preventing crashes.

Research Objectives

Researchers from the University of Central Florida developed a methodology for identifying areas of increased fog and/or smoke crashes in Florida. They focused on these areas to develop a more detailed map of specific hotspots.

Project Activities

The researchers acquired data for fog- or smoke-related crashes in Florida in the period 2013-2017. Details of these crashes were studied to examine when and where they occurred. It was found that fog/smoke crashes were significantly higher in Florida's winter months from December to March. The incidence of these crashes was highest in the morning hours from 5 am to 9 am. The researchers also categorized crashes according to facility type and type of crash – in the last category, the most common crash type in fog or smoke was the rear-end crash. The researchers determined the number of fog/smoke crashes per county to identify if counties differed in the number of crashes. Duval, Hillsborough, Polk, and Orange Counties were found to have the highest incidence of fog/smoke crashes. Crash locations were also correlated with roadway network data, divided into one-mile segments.

Using the kernel density estimation method, eight hotspots were identified in Duval, Orange-Osceola, Pinellas-Hillsborough-Polk, Lee, Escambia, Alachua, Leon, and Miami-Dade Counties. Duval, Orange and Hillsborough were the top three of these. Each of these hotspots were examined in greater detail to reveal the specific segments, intersections, and on- or off-ramps where the frequency of fog/smoke crashes were greatest. Eighty-one segments, forty-nine intersections, and forty-five freeway/expressway ramps were identified.

Project Benefits

With detailed information about where fog/smoke crashes are most likely, both short-term and long-term countermeasures can be provided to reduce this type of crash.

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



This sign alerts drivers to low visibility conditions on a low-lying stretch of US-441.