

**Project Number**

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Statewide Analysis of Bicycle Crashes

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Current Situation

Bicycle crashes are a major traffic safety concern in Florida. A climate that provides for year-round riding and a large population means that there are more bicycles on the road and an increased potential for bicycle-vehicle conflicts. Bicycling has many benefits for the cyclist, for traffic, and for the environment, and with more and more people adopting cycling for recreation or as their primary mode of transportation to work, the Florida Department of Transportation (FDOT) is committed to making Florida's roadways as safe as possible for Florida's cyclists.

Research Objectives

Florida International University researchers sought to improve bicycle safety on Florida's state roads by conducting a comprehensive analysis of both statewide and site-specific causes and patterns of crashes.



A cyclist waits for a light to change at an intersection.

Project Activities

An extensive literature review was conducted to locate existing studies in four areas: (1) risk factors that affect the frequency and severity of bicycle crashes; (2) bicycle crash causes, patterns, and contributing factors; (3) network screening methods used to identify and prioritize bicycle hot spots; and (4) safety performance of the most commonly implemented engineering countermeasures. The researchers found that spatial analysis using ArcGIS was the most common method of screening data to locate relevant information, but other interesting methods were also used. In addition to common bicycle accommodations such as bike lanes, the researchers examined the effect on bicycle safety of other roadway features, such as shared path width and separation, shoulder type, and shoulder width.

The researchers then examined 26,036 bicycle crashes that occurred in Florida during 2011-2014. Analyses were conducted to determine the relationship of crashes to factors like time of day, weather conditions, crash location, vehicle characteristics, and bicyclist characteristics. Roadway geometry was also studied.

Using the analyses of crash characteristics, for each of the seven FDOT districts, the researchers identified the top five locations at which the most bicycle crashes occurred. These hotspots represented 2,954 bicycle crashes. Police reports for these crashes were analyzed in detail to identify specific crash types and patterns. Based on their findings, the researchers identified major crash types and major contributing factors related to roadway characteristics and driver or bicyclist behavior. Engineering and education countermeasures were recommended.

Finally, Florida-specific crash modification factors (CMFs) for bicycle crashes were developed. CMFs can be used with roadway characteristics data to determine the likely safety performance of a roadway. This can assist in planning and prioritization of countermeasures.

Project Benefits

The findings and recommendations developed in this report will assist designers and planners in the continuing effort to improve bicycle safety on Florida roadways.

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