Assessment of Sidewalk/Bicycle-Lane Gaps with Safety and Developing Statewide Pedestrian

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Current Situation

Interest in multimodal transportation and walkable/bikeable communities has led to construction of more sidewalks and bicycle paths. However, in many places, sidewalks or bicycle paths are not continuous, leaving gaps that force pedestrians and bicyclists to make decisions about using the road, potentially exposing them to danger. Some gaps are more dangerous than others, and a system to prioritize them for completion is needed.

Research Objectives

University of Central Florida researchers developed a tool to assist agencies in prioritizing sidewalk and bicycle path gaps. They also developed an average pedestrian crash rate as a baseline for comparison.

Project Activities

First, the researchers reviewed efforts to quantify pedestrian safety, including federal, state, and local efforts to collect data on pedestrian crashes and develop crash rate estimates. These studies determined a wide variety of risk factors which

For safe riding, cyclists use the sidewalk and crosswalks on this busy, multilane road.

contributed to the likelihood of pedestrian crashes, such as number and type of housing units, population, income-defined areas, roadway characteristics, human factors, vehicle characteristics, and in special locations such as parking lots, school zones, and at rail crossings.

To accurately establish an average pedestrian crash rate, the project required a precise understanding of each pedestrian crash in the study area, FDOT District 5, which includes the greater Orlando area. Locations, road types, and other data were needed. Because local agencies tended to use independent GIS data that did not interact easily, the researchers turned to the Florida Unified Basemap Repository (UBR). The Florida Department of Transportation's Roadway Characteristics Inventory (RCI) provided precise definitions of roadways at crash sites. The Signal Four Analytics database, designed to support crash mapping and other traffic engineering needs was also used.

The UBR database helped identify approximately 5,000 crashes in the study area; just over half of these took place on State Highway System roads. The researchers were able to develop average crash rates for District 5 and identify hotspots – locations where pedestrian crashes were higher than average that also had gaps. The researchers divided crashes into those that took place at an intersection and those that took place along a roadway segment, and they developed models for each type. By combining data of the location and severity of pedestrian crashes with information about bike lane and sidewalk presence/absence, the researchers created a prioritization tool that planners can use to rank crash hotspots for construction of new sidewalks and bike paths.

Project Benefits

Pedestrian and bicycle safety are a high priority for the Florida Department of Transportation. The results of this project will allow path-connecting projects to be scheduled where they will have the highest impact on pedestrian and bike safety and saving lives.

For more information, please see dot.state.fl.us/research-center