



Project Number

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Understanding Interactions between Drivers and Pedestrian Features at Signalized Intersections

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Current Situation

Florida's busy roadways are used by many kinds of vehicles, from bicycles to semis. In this transportation mix, the nonvehicular user – the pedestrian – is often the most vulnerable. The Florida Department of Transportation has a continuing goal to identify major causes that contribute to pedestrian injuries and fatalities and to develop countermeasures to significantly improve pedestrian safety. The signalized intersection is where most interactions between vehicles and pedestrians occur, making it an area of serious concern for pedestrian.

Research Objectives

In this project, University of South Florida (USF) researchers studied driver behavior at signalized intersections with the goal to understand driver response to four signs designed to prevent driver-pedestrian conflicts: "Stop Here on Red," "No Turn on Red," "Turning Vehicles Yield to Pedestrians," and "Right on Red Arrow after Stop".

Project Activities

USF Center for Urban Transportation Research (CUTR) researchers obtained data from the Road Information Database developed by the Strategic Highway Research Program 2 (SHRP2). They used the data to identify locations and types of pedestrian signs and markings for analysis. Based on the location of the signs and markings, traffic volumes, and lane configurations, the researchers selected fifteen intersections for further examination and acquired corresponding data from SHRP2's Naturalistic Driving Survey (NDS). The NDS database contains recordings of driving behavior captured during the SHRP2 study. This data was useful for studying interactions between drivers and various pedestrian features at selected signalized intersections.

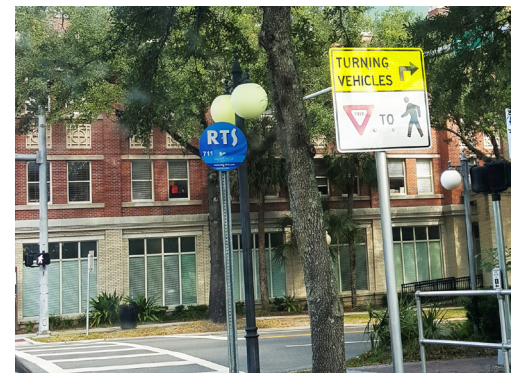
Trip data for fifty-four NDS drivers formed the basis of this study. However, the data include video and sensor output, so processing can be time-consuming. The researchers developed two software tools to assist in automatic or semi-automatic data reduction. The Automatic Video Processing Tool (AVPT) was designed to automatically detect and track pedestrians and traffic signal indications in NDS videos. A second software tool, the NDS Data Reduction and Analysis Tool (DRAT), assisted the researchers in focusing on events of interest in the videos and capturing and converting event-related numerical data.

Using the RID and NDS data and the two software tools, the researchers were able to construct datasets of driver behaviors at intersections with and without specific pedestrian features. Driver compliance was correlated with the presence of signs and markings.

Project Benefits

This project demonstrated the effective use of SHRP2 datasets to produce insights into driver behavior. Information derived from studies such as this one can guide the choice of intervention options at intersections to make them safer for pedestrians.

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



This sign alerts drivers to check for pedestrians in the crosswalk.