



Florida Department of Transportation Research Evaluation of Rear-End Bus Collisions and Identification of Possible Solutions BDK85-977-50

As transit ridership continues to grow, the increasing deployment of buses certainly provides more opportunities for car-bus collisions. Pull-out bays, more bus stops, and dedicated lanes mean that drivers must be more aware of buses and accommodate their maneuvers in and out of traffic. In this project, University of South Florida researchers sought answers to a series of questions about car-bus rear end collisions: Are these collisions increasing? What is their prevalence? What conditions promote these collisions? What strategies can reduce the number and severity of collisions? How do Yield-to-Bus laws and pull-out bays affect these collisions?

Examining the literature and reports related to the incidence of car-bus rear end collisions revealed limited research. The researchers found studies documenting times and types of locations of bus collisions, but no substantive work on causes or prevalence of bus collisions. So, trends or prevention/mitigation strategies were not clear. However, data were available from the Federal Transit Administration (FTA), which since 2008, has counted rear end collisions as a category in transit authority reporting. FTA data for 2008-2012 were compiled for total, bus-rear-ending-car, and car-rear-ending-bus collisions for the U.S. and territories, the ten FTA regions, Florida, 18 Florida transit agencies, and the six most populous states in 2012 (CA, FL, IL, NY, PA, TX).

Briefly, the FTA data revealed few longitudinal trends, but showed that Florida had a higher collision rate than other states in the same FTA region or the entire U.S. When rear-end collisions were isolated, Florida's rate of car-rear-ending-bus collisions was more than double the national rate, but Florida's and the U.S. bus-rear-ending-car rate were the same. The rate of car-rear-ending-bus collisions was over ten times the rate of bus-rear-ending-car collisions in Florida. Compared to other populous states, Florida's percentage of car-bus collisions involving rear



In Florida, most rear-end collisions with buses happen during clear, dry days when the bus is stopped.

ending was double that of the next highest state.

Two Florida transit agencies were selected for closer examination, the Central Florida Regional Transportation Authority, operators of LYNX, and Broward County Transit. Broward County has the most bus pull-outs in Florida, making it ideal for studying the impact of pull-outs on collisions. The LYNX system was selected for its large area and many roadway types. Researchers reviewed 55 car-rear-ending-bus collisions for the LYNX system, and 51 for Broward County Transit. Incidents were coded with a variety of conditions, such as route direction, roadway surface conditions, lighting and weather conditions, and others. Interestingly, a high majority of the studied collisions occurred under dry, clear, daytime conditions.

The researchers also conducted interviews with and surveys of transit officials. A meeting of the Florida Transit Safety Network with car-rear-ending-bus collisions as its focus was held in February 2014. Insights from all of these efforts were reported.

The thorough investigation and analysis developed in this project will help transit agencies reduce the number and severity of car-bus collisions. The kind of surveillance practiced in this project is key to pinpointing hazards and making the transportation system safer.