Florida Department of Transportation Research

Aging Driver and Pedestrian Safety: Human Factors Studies
BDK83 977-09

Over 3 million of Florida's 18 million residents are 65 and older. As part of its Safe Mobility for Life program, the Florida Department of Transportation (FDOT) strives to "improve safety, access, and mobility" for Florida's elder citizens.

In this project, Florida State University researchers compared aspects of sign and signal effectiveness for various age groups, using human factors methods in lab and field studies with both drivers and pedestrians. Based on the premise that effective signs and signals must attract attention, be legible, and be comprehensible soon enough for the traveler to safely take appropriate action, researchers structured six tasks engaging three age groups: 21–35; 36–64; and 65+.

In task 1, researchers evaluated the effective word order of messages used on both dynamic message signs (DMS) and portable changeable message signs. For this study, they presented AMBER and Silver Alert messages on a computer screen, and particiapnt response times were correlated with word order. The study also included the use of an eye tracker device to monitor participants' eye movements as they viewed photographs of DMS sign messages.

Task 2 examined the role of headlight beam settings to clarify an earlier FDOT study (BD543-17) which seemed to show that fluorescent sheeting was legible at greater distances with low beams. In this task, headlamp intensity was varied systematically so that its effect on fluorescent sheeting for drivers on a test track could be determined with more certainty.

Because intersections can be crowded with visual stimuli, task 3 assessed whether adding pedestal signals to a signalized intersection increases signal efficacy for drivers. In a field study for task 4, researchers examined the effectiveness for legibility of standard sheeting and retroreflective sheeting for overhead internally illuminated street name signs.

These test track signals display safety features, including redundancy and black housings with orange surrounds. Researchers investigated the effectiveness of the pedestal signal, visible at the left of the image.

Many pedestrian fatalities — 12% of all traffic fatalities — occur at intersections, so the use of pedestrian signals is important, but so is compliance with them, which has been found to be quite low. During task 5, researchers observed pedestrian behavior at Tallahassee intersections with different types of installed equipment to examine how auditory feedback provided by pedestrian signal confirmation buttons affected compliance. Further studies in this task assessed participants' receptivity to different types of button feedback in a field experiment.

Task 6 was designed to determine whether the use of a smaller character height of 16.8-inches on DMSs would bloom enough for legibility to be equal to the use of 18-inch characters. The study discovered that the difference in brightness of the pixels played a significant role, enough to conclude that further studies are needed to determine how much of a role brightness plays in assessing the blooming effect.

The findings in this project are helpful in ensuring that roadway improvements take into consideration and meet the needs of drivers and pedestrians in all age groups.

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For more information, visit http://www.dot.state.fl.us/research-center