



Aging Driver and Pedestrian Safety: Human Factors Studies of Signs & Signals

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**Research Funded by the Florida Department of Transportation
Contract BDK83-977-09**

Problem Statement – Why Performed?

- Florida has one of oldest state populations: 3.5M residents 65+ yrs, ~0.5 million 85+ yrs.
- Given aging road user vulnerability to crashes as drivers and as pedestrians, FDOT tries to provide road environments that reduce driver/pedestrian error and maximize safety, per the goals of its Aging Road User Program, *Safe Mobility for Life*.

Research Performed

- Used human factors techniques, including lab and field studies, to assess efficacy of sign and signal characteristics on driver and pedestrian behavior, taking into account normative age-related changes in perception, cognition, and psychomotor speed
- Conducted six tests to assess features of signs and signals that contribute to their effectiveness: i.e. attracts attention, is legible, and is comprehensible soon enough for observer to safely take appropriate action.
- Assessed age differences of participants drawn from three age groups: young (21-35 yrs), middle (50-64 yrs), and older (65+ years)

Project Tasks

- **Task 1:** Evaluated effective word order for dynamic and changeable message signs.
- **Task 2:** Assessed the role of headlight beam setting on warning sign perception for standard vs fluorescent yellow sheeting.
- **Task 3:** Assessed the efficacy of supplemental pedestal traffic signals.
- **Task 4:** Evaluated the effectiveness of internally illuminated overhead street sign names using standard, non-reflective sheeting compared to highly reflective sheeting.
- **Task 5:** Evaluated the effectiveness of pedestrian confirmation buttons using different forms of feedback.
- **Task 6:** Assessed the efficacy of character size for two dynamic message signs.

Research Results: Tasks 2 & 3

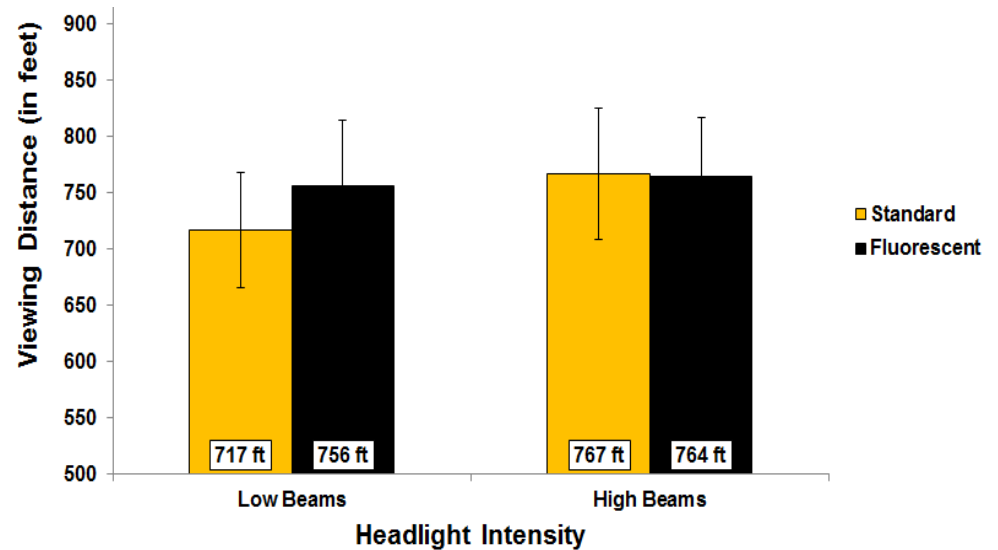
- **Task 2 (field study):**



Fluorescent yellow sheeting produced faster warning sign processing (40 ft legibility advantage) only when drivers used low beam headlamps; with high beams, standard and fluorescent sheeting were equivalent.

- **Task 3 (lab study):**

Pedestal signals did not aid left turn stop/go decision (for speed or accuracy); this finding was confirmed by a field study of left and right turns.



Recommendations

- **Task 2:**

Fluorescent yellow sheeting recommended for use on urban (not rural) roads to increase visibility, assuming low beam use on urban and high beam use on rural roads.

- **Task 3:**

Supplemental pedestal signals should be considered a reasonable investment only to enhance intersections with unusually low visibility of signalized intersection due to obstructions that cannot easily be alleviated.

Implementation Status

- **Task 2:**

Based on the findings, adopt use of fluorescent yellow sheeting on urban road signs (but not rural ones) to help increase visibility.

- **Task 3:**

Based on the findings, do not pursue installation of pedestal pedestrian signals at intersections

Implementation Strategy

- **Task 2:**
 - Modify Section 2.29 (Use of Fluorescent Sheeting) in the Traffic Engineering Manual
- **Task 3:**
 - Assisted in decision-making. No changes to guidelines or policy needs to be made, any implementation will be on a case by case basis.

Value of Implementing Research

- Aids decision making to help reduce crashes for our increasing 65+ aging population.
- Promotes effective allocation of resources to specific priority areas.
- Supports Aging Road User Strategic Safety Plan, which is a part of FDOT's Strategic Highway Safety Plan.

Conclusions

Human factors studies of drivers and pedestrians of various age groups (young, middle, older) can provide effective evidence-based recommendations for improving safe mobility for our aging population of drivers and pedestrians