Shechtman, O., Classen, S., Stephens, B., Davis, E., Awadzi, K. & Mann, W. (in press). The impact of roadway intersection design on simulated driving performance of younger and older adults during recovery from a turn. *Advances in Transportation Studies, an International Journal.*

Abstract

Objective: The Federal Highway Administration (FHWA) proposed guidelines for highway design to increase the safe driving ability of older drivers. Little empirical evidence exists to support the effectiveness of these guidelines. The purpose of this study was to investigate if the improved design features are effective during recovery from a turn in 4 pairs of intersections using a high-fidelity driving simulator.

Methods: Using the FHWA guidelines, we replicated four pairs of improved versus unimproved intersection in a driving simulator. We examined driving performance, as indicated by kinematic measures, of younger (25-45 years) and older (65-85 years) drivers during recovery from a turn in four intersection pairs. Thirty-nine subjects, 19 young and 20 older adults, participated in the study. Kinematic measures were obtained from the simulator and analyzed for differences.

Results: Our findings indicated that the FHWA guidelines for implementing safe road conditions were helpful in one of the four improved intersections for both younger and older drivers. We also found that older drivers did not benefit more or less than younger drivers from implementing the FHWA guidelines. Finally, younger drivers exhibited higher speeds during the recovery phase of the three left-turn intersections.

Conclusions: These findings suggest that both young and older drivers may benefit from some of the safety features recommended by the FHWA guidelines. The findings of the present study may provide critical information for enhancing safe driving to those involved in roadway design, such as engineers, planners, and policy makers.

Keywords: Older and younger drivers; driving simulation; driving kinematics; roadway infrastructure; highway safety; intersection design