

Visual Scanning of Older Drivers: Implications for ITS and Vehicle Design

Dale Andrea¹ (Presenter); Judith Charlton¹; Brian Fildes¹; Mike Hammer²
¹Monash University Accident Research Centre; ¹Holden Australia

Biography

Dale completed a Degree in Science with Honours in Psychology in 1996 and has recently submitted his PhD. Dale's PhD research program was supported by a Postgraduate Scholarship from the ATSB and investigated human factors issues for older drivers particularly with regard to complex road environments. Dale has been involved in undergraduate teaching in Psychology at Monash University and has contributed to numerous road safety projects at the Accident Research Centre over the last 6 years. Dale's research experience at MUARC includes the assessment of crash risk associated with visual conditions, road safety issues for older drivers, and simulator research programs.

Abstract

Skilled driving requires the ability to detect and respond to relevant visual information both outside and within the vehicle. Despite substantial research directed to visual function among older drivers, there is a paucity of research on how visual search impacts on driver behaviour and how this might change with age. The study represents a unique preliminary investigation of older drivers' perception and visual-scanning behaviour during simulated driving incorporating complex and hazardous events. In an initial evaluation, the performance of ten younger drivers (25-40 years) and ten older drivers (over 64 years) was measured in a simulated driving task. Participants completed a familiarisation drive and two 10-minute test drives in a high-level driving simulator. The first test-drive involved a rural highway, the second drive was a residential street, and both drives encompassed a range of hazards. Hazards were selected on the basis of traffic conditions identified as high crash risk, particularly for older drivers (e.g., turning across on-coming traffic and lane merging). The FaceLab eye tracking system was used to monitor drivers' head and eye movement patterns. Tracking measures included fixation duration and location of fixation. These measures were synchronised with traffic hazards and standard driving performance measures including braking and steering responses, speed choice and lateral deviation. Some preliminary data is presented to illustrate the use of the simulator and FaceLab for the current objectives. These findings are further discussed in relation to the usefulness of the methodology for evaluating ITS applications as well as vehicle and road design for older drivers.