

## ABSTRACT

Lane Deviation as a Result of Visual Workload and Manual Data Entry. (August 1994)

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Any requirement for drivers to attend to ancillary tasks while they are driving will contribute to attentional demands which may interfere with their driving performance. The introduction of Intelligent Vehicle Highway Systems, cellular phones, and other complicated in-vehicle controls will impose higher attentional demand loads than have currently been seen. Lane keeping is a critical performance measure for safe driving.

This study looked at the effect of driver age, type of data entry (manual or verbal), and vertical position of a data display panel on lane keeping performance. The experimental tasks were similar to those found in in-vehicle navigation systems and cellular phones. A no-load condition was studied to establish a baseline for the performance measures.

Both older and younger drivers exhibit lateral deviations of approximately 15 cm under no-load conditions. Under manual data entry conditions all drivers exhibited lateral lane deviations in excess of the no-load condition. Lateral deviations greater than 0.5 meters occurred in 6.2% of all manual data entry trials. The maximum deviation recorded was over 2 meters. Verbal data entry of data was clearly superior to manual data entry for all measures. Younger drivers consistently performed better than older drivers with lower errors and faster time to complete experimental trials. However there was no difference between driver age groups for lane keeping

performance. While placing the data display panel in high position yielded better performance for all measures. A substudy found no significant difference in lateral deviation between driving at 35 miles per hour and 55 miles per hour.