

The Impact of Typeface Design in a Text-Rich Automotive User Interface on Driver Distraction

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Researchers and policy makers are actively focused on better understanding and regulating driver distraction as it relates to the type of technologies and interactions that should be permitted in the vehicle. More limited investments are being made in the optimization of information that needs to be available to drivers. Past efforts in ISO and SAE standardization of legibility requirements focus largely on the display of “stamped” media (e.g. fixed labels, numbers, and icons). However, modern electronic displays present a number of new characteristics that are not addressed in these standards (e.g. pixilation, reflection, etc.). This talk will focus on recent research on the impact of typeface design on driver attention and how variations in design and presentation of content may have significant impact on reducing driver distraction.

Results from a series of studies assessing the impact of typeface design on glance behavior away from the roadway are considered. During the studies, drivers were asked to interact with a multi-line menu display designed to model a text-rich automotive human machine interface; the HMI screens were implemented using two different typeface designs. Across studies of black text on a white background, among men, a “humanist” typeface resulted in a 10.6% lower visual demand as measured by total glance time as compared to a “square grotesque” typeface. Total response time and number of glances required to complete a response showed similar patterns. Interestingly, the impact of the different typeface styles was either more modest or not apparent for women on these variables across studies. Current efforts have focused on extended these results to a broader set of display characteristics. Overall, this research suggests that optimizing typeface characteristics may be viewed as a relatively simple and effective method of providing a significant reduction in interface demand and associated distractions.