

Driver Safety through Human Factors Science and Practice

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Overview of Issue

One of the most often cited statistics regarding transportation safety, is the finding that anywhere from 70 to 90% of all crashes are attributable, in whole or in part, to human error.^[1,4] This finding appears to hold for all modes of transportation,^[5,15] but has particular importance in the highway realm, where crashes resulted in nearly 43 thousand fatalities and more than 2.5 million injuries last year alone.^{[8]†}

Understanding *why* human error occurs is critically important in the quest toward finding ways to prevent crashes and the associated injuries and deaths. It is estimated that approximately 25% of police-reported crashes involve some form of driver inattention—situations where the driver is distracted, sleepy, or otherwise “lost in thought.”^[11,14] Other estimates of driver inattention range as high as 35-50%.^[3,12,13] Studies show that drowsy driving increases a driver’s risk of a crash or near-crash by a factor of four to six.^[6] Studies of driver demographics and crash causation indicate that younger drivers and older drivers are over-represented in crash figures. For example, although they have a lower rate of involvement in fatal crashes generally,^[9] older drivers appear to be involved in more crashes involving lane-change maneuvers and a failure to yield.^[7] From 1996 until 2005, the fatality rate among individuals age 16-20 was significantly higher than any other age group.^[10] Studies also show that 18-to-20-year-old drivers, as a group, experience four times as many inattention-related crashes and near-crashes compared to older drivers.^[2]

Implications, Applications, Relevance

Because it represents the leading contributor to crashes, improving our understanding of the factors that result in human error holds the greatest potential for reducing injuries and fatalities on the highways. As technological innovations create new opportunities for aiding drivers, research is needed to evaluate the impact of these technologies on drivers’ behavior, especially as it relates to crash risk. Similarly, research to better understand the underlying causes of human error would be instrumental in crafting educational initiatives, technological interventions, and other measures to influence driver behavior and reduce crash risk.

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