Technology and Driver Distraction

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Driving accounts for more fatalities each month than the 9/11 attacks and kills more teenagers each day than the Columbine tragedy [1]. Driver distraction represents a well-documented, serious, and growing contribution to this problem [2]. Distraction contributes to approximately 10-20% of all motor vehicle crashes. Crashes caused by cellphones alone account for an estimated 2,600 fatalities, 330,000 injuries, and cost $43 billion per year [3]. The rapid development of technology, ranging from MP3 players and cellphones to navigation systems and DVD players, promises to confront drivers with many additional distractions in the coming years.

Drivers' surprisingly limited attentional capacity makes them vulnerable to distraction—people cannot look at or think about two things at once without consequences, particularly novice drivers. For example, when interacting with a radio, cassette, cellular phone, no experienced drivers took glances longer than 3 seconds, but 29% of the inexperienced drivers did [4]. Glances away from the road longer than 2 seconds more than double the odds of a crash [5]. Even when a distraction does not draw a drivers eyes from the road, as in a hands free cellphone conversation, a driver's ability to perceive and respond to the road can be diminished, leading to delayed responses to other vehicles and a tendency to miss critical events [6]. Distraction is a particular problem because drivers have inaccurate expectations regarding the danger of distractions and they often fail to appreciate how distractions undermine their performance. It is difficult for drivers to learn from experience with distractions.

Implications, Applications, Relevance

Reducing the risk of distraction-related crashes presents an important challenge. Bans outlawing certain activities and technology can be difficult to enforce and the rapid pace of technology change produces new distractions more rapidly than legislatures can respond. Fortunately this rapid develop of technology provide a solution to the distraction problem. New technology can enable cars to assess whether a driver is distracted and then guide a distracted driver's attention to critical roadway events, such as a car ahead that begins braking [7]. This technology can also help drivers appreciate how distractions undermine their driving safety [8, 9]. Although promising, drivers may respond to this technology in unanticipated ways, particularly teen drivers [10]. As a consequence, a greater research base is needed to help designers tailor technology to drivers' needs and capabilities.

References

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