NATIONAL SAFETY COUNCIL®

Graduated Driver Licensing

How does technology relate to the crash rates and driving behaviors of novice teen drivers?

While teenage driver crashes and casualties decreased in the past decade, and in spite of recent attention to the issue, teens are still high risk drivers and unintentional injury from motor vehicle crashes remains the number one cause of death among teens in the United States. In absolute numbers, 3,889 teens aged 16-19 – more than 10 every day – died in passenger vehicles driven by a teen in 2005. Per population, teen drivers age 16-19 are involved in about twice as many crashes, fatal and non-fatal, as drivers aged 30-59 (Ferguson, Teoh, & McCartt, 2007).

Technology must be considered for both negative and positive effects on novice teen driving. Factors that cause young drivers to crash more frequently than other drivers amplify the potential risks and benefits of new technology.

Infotainment Technology and Teen Driver Risk

According to Lee, 2007, infotainment technologies include a wide array of devices that enable drivers to perform tasks unrelated to driving and place young drivers at risk, such as making telephone calls, watching videos, managing e-mail, sending and reading instant messages, and selecting and listening to music. Even commonly accepted devices in vehicles, such as a car radio, are changing substantially with satellite radio and MP3 music players, like the iPod. As of 2007, approximately 70% of new cars will include a capability to connect to iPods. All of these systems have the potential to distract drivers, but cell phones have attracted the most attention.

- A focus group study found that teens were more willing than other drivers to use cell phones, text messaging, and PDAs while driving. This study also showed that peer influence may exacerbate the tendency of young drivers to use infotainment technology while driving – passengers in the car increased the use of cell phones.

- A survey of 1,291 college students found that of the respondents that were drivers, 87% owned a cell phone and 86% reported using their phone at least occasionally while driving. The respondents also reported 762 crashes or near-crashes and that 21% of these incidents occurred while using a cell phone.

- Similarly, another survey found that young drivers used a cell phone more often while driving and were more likely to experience a dangerous situation as a result of using a phone compared to experienced drivers.

- New internet services made possible by Wireless Applications Protocol (WAP) may be even more distracting. Text messaging represents one such service that already poses a substantial distraction.

Potential Impact of Emerging Technologies on Driving Safety and Risk

At the same time, emerging technologies such as electronic stability control, collision warning systems, and intelligent speed adaptation that support the driver are recognized by Lee (2007) for the potential to enhance driving safety and may mitigate risks posed by infotainment distractions. Lee notes that:

- Increasingly, cars are being equipped with advanced driver assistance systems (ADAS) that include GPS and navigation systems, sensor suites, and control systems that can help people drive safely.

- These systems may also use biometric technology to recognize individual drivers and develop a history of driving performance to assess momentary and long-term changes in the driver.

This fact sheet reflects current information presented at the International Symposium on Novice Teen Driving: GDL and Beyond – Research Foundations for Policy and Practice held in Tucson, Arizona on February 5-7, 2007. **For more information, go to *www.nsc.org/gdl/.***

Evidence from Current Research on the Effectiveness of Technology

Young drivers are particularly vulnerable to distractions posed by info-tainment systems, but could benefit tremendously from driver support systems. Extending proven approaches to improve teen driving safety, such as GDL, represents the most promising path for implementing new technology. Tailoring technology to teen drivers may have an effect similar to placing an adult passenger in the teen's vehicle (Lee, 2007).

In a pilot study (McGehee, 2007), vehicles with novice teen drivers were equipped with an event-triggered video recording system. As an instructional and monitoring device, the device also recorded seat belt use. Teens and parents received a weekly report which compared their performance to their peers.

Based on the research conducted and presented by McGehee, 2007, the event-triggered video system (with feedback in a weekly graphical report card and video review) can reduce unsafe driving behaviors when reviewed by teens and their parents.

- After four weeks of these reports there was a substantial reduction in events due to "coachable" driving errors.
- These results suggest that incorporating both video and parental involvement in driver training can significantly reduce the number of unsafe driving events of newly licensed teens.
- This feedback may help teen drivers, particularly those who experience many incidents, become aware of their unsafe driving behaviors and improve their driving.

Attempts to Increase Effectiveness of Technology & Next Steps

The coming years are likely to bring increasingly complex distractions and vehicles. When paired with novice drivers, this combination has potential to undermine teen driving safety to a greater extent than any one trend alone. However, technology has potential to enhance the safety of young drivers. There is an urgent need for researchers, designers, and policy-makers to consider how to capitalize on the potential benefits of emerging technology.

For example, young drivers might benefit from advanced driver assistance systems developed for the general public, but greater benefits are possible by tuning this technology to the specific needs of young drivers. One promising example is video feedback technology (Lee, 2007).

In regard to video feedback, according to McGehee, 2007:

- One promise of the video feedback intervention is that it could reduce teen fatalities by helping them learn to drive more safely during their first months of unsupervised driving.
- One explanation for the reduction in events is that the teens modified their behavior by learning to slow down for turns, curves and intersections, plan ahead, and look further down the roadway to allow more time to react to traffic situations. If video feedback accomplished only this, it could save many lives.
- A multi-year longitudinal study of the video feedback intervention is needed to assess its long-term effects on teen driver behavior, for example, to find if improvements in teen driver behaviors were sustained.

References

Lee, J.D. (2007). Technology and teen drivers. Journal of Safety Research, 38(2), 203-213.

McGehee, D.V. (2007, February). An in-context video feedback intervention pilot on novice drivers: Implications for GDL. In Novice teen driving: GDL and beyond – Research foundations for policy and practice. Symposium conducted in Tucson, AZ.

McGehee D.V., Raby M., Carney C., Lee J.D., Reyes M.L. (2007). Extending parental mentoring using an event-triggered video intervention in rural teen drivers. Journal of Safety Research, 38 (2), 215-227.

NOTE: James Hedlund summarizes information presented and discussed at the Symposium. This summary contains a complete listing of secondary references. See: Hedlund, James. (2007). Novice teen driving: GDL and beyond. Journal of Safety Research, 38(2), 259-266.