Distracted Driving and Cell Phone Use

Executive Summary

Distracted driving is any activity that diverts attention from driving, and is a significant public health and safety issue. One of the most common driving distractions is cell phone use while driving. Due to the increased prevalence of cell phone use while driving over the last 20 years, a combination of smartphone applications, advanced vehicle technologies, educational campaigns, and legislation have been implemented to reduce distracted driving and associated crashes. Missouri is one of two states that does not prohibit texting and driving for all drivers. Missouri law (RSMo 304.820) prohibits texting and driving for those under the age of 21.

Highlights

- During 2020, distracted driving accounted for 12% of Missouri vehicle crashes and 9% of driving fatalities.
    - Of the distracted driver accidents, 14% involved a cell phone and 29% of those cell phone-related accidents resulted in injuries and fatalities.
- Approximately 29 smartphone applications have been designed to prevent phone use while driving. The safety implications and potential effectiveness of such applications relies heavily on the drivers' voluntary use.
- Research shows technological advancements in vehicles, such as lane-keeping assistance, adaptive cruise control, and hands-free capabilities, can actually contribute to increased distracted driving.
- The effectiveness of driver awareness education and campaigns have yielded varying results in reducing driver distraction in all populations, including teens.
- While cell phone-use-laws and subsequent fines vary from state to state, 48 states specifically ban text messaging for all drivers.

Limitations

- Crashes may involve more than one type of driver distraction. Therefore, Missouri counts of distraction-related crashes, persons killed, and persons injured may be duplicated.
- Reports suggest that all-driver handheld cell phone bans have resulted in long-term reductions in hand-held phone use. However, the effect on reducing crashes from distracted driving remains unclear.

Research Background

Distracted Driving

Distracted driving is any activity that diverts attention from driving, including talking or texting with a cell phone, eating and drinking, and handling a stereo or navigation system.[1]

MOST Policy Initiative, Inc. is a nonprofit organization that provides nonpartisan information to Missouri's decisionmakers. All legislative Science Notes are written only upon request by members of the General Assembly. ***This Science Note was published on 12/3/2021 by Dr. Jill Barnas, Human Services, Public Safety & Corrections Policy Fellow – jill@mostpolicyinitiative.org.***

One of the most common driving distractions is cell phone use (particularly texting) while driving. Approximately 90% of Missourians engage in smartphone activities while driving.[2] In an analysis of the 2015 Youth Risk Behavior Survey, it was estimated that approximately 47% of Missouri teenagers text and drive.[3] However, distracted driving is not just a young driver problem, as 70% of drivers using cell phones in Missouri crashes were older than 22 years old.[2] Cell phone use while driving has been shown to increase the risk of an accident by fourfold, which is similar to driving while intoxicated.[4]

During 2020, distracted driving accounted for 15,765 crashes (or 12%) of the 131,309 crashes in Missouri.[5] Of the total number of driving fatalities, 9% were attributed to distracted driving.[5] Of the 15,765 distracted driver accidents, 14% involved a communication device (e.g., smartphone or cell phone), with 29% of those accidents resulting in injuries and fatalities.[5]

While there was a reduction in accidents involving communication devices from 2019 to 2020, it cannot be determined if those reductions are related to the combined use of smartphone applications, vehicle technology advancements, and state and national campaigns to reduce distracted driving. Reductions from distracted driving and apparent cell phone use could also have been a result of behavioral changes during the COVID-19 pandemic in 2020.

Smartphone Applications

In response to the increased prevalence of distracted driving, approximately 29 smartphone applications have been designed to prevent mobile phone use while driving.[6] An example of these applications includes Apple and Android's "Do Not Disturb While Driving" which disable certain phone functions, such as texting, once the phone senses vehicle motion. An analysis of smartphone applications indicated that 89.7% of the applications offer solutions to manage mobile phone calls while driving, while 51.7% target texting and other visual-manual task management while driving.[6] Approximately 33% of the applications substitute visual-manual interactions with voice/audio interactions and 55.1% of the applications can be integrated to operate using an in-vehicle display.[6]

The majority of available smartphone applications use blocking approaches rather than managing the workload of mobile phone interactions while driving.[4,6] This may limit the success of the applications as users may become distracted bypassing blocking mechanisms. Commonly used apps, such as music and navigation, have a motion function that reduces visual-manual task management. The safety implications and potential effectiveness of such applications rely heavily on the drivers' voluntary use and personal preference for these applications, as they are optional.[4,6] As such, reliance on these applications may not fully reduce distracted driving.

Vehicle Technology Advancements

New technological advancements in vehicles include advanced driver assistance systems (ADAS), such as lane-keeping assistance, blindspot indicators, adaptive cruise control, and hands-free capabilities, which were developed to reduce accidents and crashes. However, research shows these advancements can contribute to distracted driving. Results from drivers

using ADAS show an 80% increased chance of engagement in distracted driving tasks, such as texting and dialing a number on hand-held phones.[7]

Research also suggests that hands-free smartphone technologies are distracting to drivers. In a driving simulation involving smartphone distractions for those aged 21-78 years old, driving performance significantly dropped for all ages after introducing smartphone distractions (both voice and texting). Driving with distraction resulted in speeding, swerving, and tunnel vision; these behavioral changes were detectable for as long as 20-25 seconds after the distraction, enough time to travel nearly half a mile at highway speeds.[8]

Driver Awareness Education and Campaigns

The effectiveness of driver awareness education and campaigns have yielded varying results in reducing driver distraction in all populations, including teens.[9,10] Some research studies observed short-term reductions in driver distractions, but these are often based on self-reported metrics.

Some research studies have utilized pre- and post-test distracted-driving computer simulations in conjunction with education and found improvements in road awareness, attitudes, and attention to the roadway during the simulation. Additionally, participants reported being less likely to drive distracted in the future. However, these effects are relatively short-term, and do not result in actual driving behavioral changes in the long-term.[11]

Distracted Driving Legislation

Cell phone use is typically targeted in legislative efforts to curb distracted driving and falls into three types: 1) all-driver handheld cell phone bans; 2) complete cell phone bans that apply to a subset of drivers; and 3) all-driver texting bans.[12] Some states prohibit hand-held cell phone or all cell phone use by all or certain drivers in certain zones (e.g., school zones and construction zones).[12]

- All-driver handheld cell phone ban: Twenty-four states, and Washington, D.C., prohibit all drivers from using hand-held cell phones while driving.
- All cell phone ban: No state bans all cell phone use for all drivers, but 36 states and Washington, D.C. ban all cell phone use (including hands-free) for drivers under 18 years old.
- Text messaging ban: 48 states and Washington, D.C. ban text messaging for all drivers. Missouri prohibits text messaging by drivers 21 years old or younger (RSMo 304.820).

Fines associated with cell phone use laws vary state to state. In Missouri, those under 21 years old who are caught texting and driving have points added to their driving record under RSMo 302.302. This infraction does not have an associated fine. In California, drivers can incur a fine of $20 dollars each time. Illinois imposes a $75 fine that increases by $50 dollars for subsequent offenses. As of 2018, a first-time offense of distracted driving in Oregon carries a maximum fine of $1000 and if that first offense contributed to a crash, the fine ranges to $2000.[13]

Research investigating the effectiveness of distracted driving legislation is currently underway. Earlier reports suggest that all-driver handheld cell phone bans in California have resulted in long-term reductions in hand-held phone use, though it should be noted that hand-held use has fluctuated over the years (reaching 7.6% in 2016; 3.6% in 2017; and 4.5% in 2018).[14] However, the results of this legislation on reducing crashes from distracted driving remain unclear.

References

1. National Highway Traffic Safety Administration. (n.d). Distracted Driving. Retrieved December 2021 from https://www.nhtsa.gov/risky-driving/distracted-driving
2. Missouri Department of Transportation. (2019). The Dangers of Using Cell Phones While Driving. Retrieved December 2021 from https://www2.modot.org/BuckleUpPhoneDown/assets/files/BUPD%20Distracted%20Driving%20Infographic.pdf
3. Li, L., Shults, R. A., Andridge, R. R., Yellman, M. A., Xiang, H., & Zhu, M. (2018). Texting/emailing while driving among high school students in 35 states, United States, 2015. *Journal of Adolescent Health*, *63*(6), 701-708.
4. Overton, T. L., Rives, T. E., Hecht, C., Shafi, S., & Gandhi, R. R. (2015). Distracted driving: prevalence, problems, and prevention. *International journal of injury control and safety promotion*, *22*(3), 187-192.
5. Missouri State Highway Patrol. (n.d.). Missouri Traffic Safety Compendium. Retrieved December 2021 from http://www.mshp.dps.missouri.gov/MSHPWeb/SAC/Compendium/TrafficCompendium.html#
6. Oviedo-Trespalacios, O., King, M., Vaezipour, A., & Truelove, V. (2019). Can our phones keep us safe? A content analysis of smartphone applications to prevent mobile phone distracted driving. *Transportation research part F: traffic psychology and behaviour*, *60*, 657-668.
7. Dunn, N., Dingus, T., & Soccolich, S. (2019). Understanding the impact of technology: Do advanced driver assistance and semi-automated vehicle systems lead to improper driving behavior. *Washington, DC: AAA Foundation for Traffic Safety*.
8. Hill, L., Townsend, J., Snider, J., Spence, R., Engler, A. M., Moran, R., ... & Chukoskie, L. (2020). Distraction 'Hangover': Characterization of the Delayed Return to BaselineDriving Risk After Distracting Behaviors. Retrieved December 2021 from https://escholarship.org/uc/item/5139392p
9. AAA Foundation for Traffic Safety. (2019).Effectiveness of Distracted Driving Countermeasures: A Review of the Literature. Retrieved December 2021 from https://aaafoundation.org/wp-content/uploads/2019/11/19-0553_AAAFTS-DD-Countermeasures-Brief_FINAL.pdf
10. Yellman, M. A., Bryan, L., Sauber-Schatz, E. K., & Brener, N. (2020). Transportation Risk Behaviors Among High School Students—Youth Risk Behavior Survey, United States, 2019. *MMWR supplements*, *69*(1), 77.

11. Downs, E., Limperos, A., Strange, S., Schultz, W., Engberg, A., Oyaas, T., ... & Petters, N. (2018). Fair Game: Using Simulators to Change Likelihood of Distracted Driving at the Minnesota State Fair. *Communication Research Reports*, *35*(2), 121-130.
12. National Conference of State Legislatures. (2021). Distracted Driving: Cell Phone Use. Retrieved December 2021 from https://www.ncsl.org/research/transportation/cellular-phone-use-and-texting-while-driving-laws.aspx
13. Oregon Department of Transportation. (n.d.). Distracted Driving. Retrieved December 2021 from https://www.oregon.gov/odot/safety/pages/distracted.aspx
14. California Office of Traffic Safety. (2018). Observational Study of Distracted Driving Due to Electronic Device Use Among California Drivers for 2018. Retrieved December 2021 from https://www.ots.ca.gov/wp-content/uploads/sites/67/2019/06/2018-Distracted-Driving-Observational-Report.pdf