VirginiaTech

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# New data from Virginia Tech Transportation Institute provides insight into cell phone use and driving distraction

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BLACKSBURG, Va., July 29, 2009 – Several large-scale, naturalistic driving studies -- using sophisticated cameras and instrumentation in participants' personal vehicles -- conducted by the Virginia Tech Transportation Institute[2], provide a clear picture of driver distraction and cell phone use under real-world driving conditions, according to the institute.

Combined, these studies continuously observed drivers for more than 6 million miles of driving.

"Given recent catastrophic crash events and disturbing trends, there is an alarming amount of misinformation and confusion regarding cell phone and texting use while behind the wheel of a vehicle. Our research findings can help begin to clear up these misconceptions as it is based on real-world driving data. We conduct transportation safety research in an effort to equip the public with information that can save lives," says Tom Dingus, director of the Virginia Tech Transportation Institute.

In the institute's studies that included light vehicle drivers and truck drivers, manual manipulation of phones such as dialing and texting of the cell phone lead to a substantial increase in the risk of being involved in a safety-critical event such as a crash or near-crash. However, talking or listening increased risk much less for light vehicles and not at all for trucks. Text messaging on a cell phone was associated with the highest risk of all cell phone related tasks.

**Risk Estimates**

A snapshot of risk estimates from these studies includes the following:

**For light vehicles or cars**

- Dialing a cell phone made the risk of crash or near-crash event 2.8 times as high as non-distracted driving;
- Talking or listening to a cell phone made the risk of crash or near-crash event 1.3 times as high as non-distracted driving; and
- Reaching for an object such as an electronic device made the risk of crash or near-crash event 1.4 times as high as non-distracted driving.

**For heavy vehicles or trucks**

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- Dialing a cell phone made the risk of crash or near-crash event 5.9 times as high as non-distracted driving;
- Talking or listening to a cell phone made the risk of crash or near-crash event 1.0 times as high as non-distracted driving;
- Use of, or reach for, an electronic device made the risk of crash or near-crash event 6.7 times as high as non-distracted driving; and
- Text messaging made the risk of crash or near-crash event 23.2 times as high as non-distracted driving.

**Explanation of findings**

Eye glance analyses were conducted to assess where drivers were looking while involved in a safety-critical event and performing cell phone tasks. The tasks that draw the driver's eyes away from the forward roadway were those with the highest risk.

Several recent high visibility trucking and transit crashes have been directly linked to texting from a cell phone. VTTI's research showed that text messaging, which had the highest risk of over 20 times worse than driving while not using a phone, also had the longest duration of eyes-off-road time (4.6-second over a six-second interval). This equates to a driver traveling the length of a football field at 55 miles per hour without looking at the roadway. Talking/listening to a cell phone allowed drivers to maintain eyes on the road and were not associated with an increased safety risk to nearly the same degree.

Recent results from other researchers using driving simulators suggest that talking and listening is as dangerous as visually distracting cell phone tasks. The results from VTTI's naturalistic driving studies clearly indicate that this is not the case. For example, talking and listening to a cell phone is not nearly as risky as driving while drunk at the legal limit of alcohol. Recent comparisons made in the literature greatly exaggerate the cell phone risk relative to the very serious effects of alcohol use, which increases the risk of a fatal crash approximately seven times that of sober driving. Using simple fatal crash and phone use statistics, if talking on cell phones was as risky as driving while drunk, the number of fatal crashes would have increased roughly 50 percent in the last decade instead of remaining largely unchanged.

These results show conclusively that a real key to significantly improving safety is keeping your eyes on the road. In contrast, "cognitively intense" tasks such as emotional conversations, or listening to books-on-tape, can have a measurable effect in the laboratory, but the actual driving risks are much lower in comparison.

**Recommendations based on findings from research studies**

Driving is a visual task and non-driving activities that draw the driver's eyes away from the roadway, such as texting and dialing, should always be avoided.

Texting should be banned in moving vehicles for all drivers. As shown in findings overview, this cell phone task has the potential to create a true crash epidemic if texting-type tasks continue to grow in popularity and as the generation of frequent text message senders reach driving age in large numbers.

Headset cell phone use is not substantially safer than hand-held use because the primary risk is associated with both tasks is answering, dialing, and other tasks that require your eyes to be off the road. In contrast, true hands-free phone use, such as voice activated systems, are less risky if they are designed well enough so the driver does not have to take their eyes off the road often or for long periods.

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All cell phone use should be banned for newly licensed teen drivers. Our research has shown that teens tend to engage in cell phone tasks much more frequently -- and in much more risky situations -- than adults. Thus, our studies indicate that teens are four times more likely to get into a related crash or near-crash event than their adult counterparts.

**The disconnect between naturalistic and simulator research**

The institute says it is important to keep in mind that a driving simulator is not actual driving. Driving simulators engage participants in tracking tasks in a laboratory. As such, researchers that conduct simulator studies must be cautious when suggesting that conclusions based on simulator studies are applicable to actual driving.

With the introduction of naturalistic driving studies that record drivers (through continuous video and kinematic sensors) in actual driving situations, there is now a scientific method to study driver behavior in real-world driving conditions in the presence of real-world daily pressures.

So, if the point of transportation safety research is to understand driver behavior in the real-world and conflicting findings occur between naturalistic studies and simulator studies, then findings from the real-world scenarios (and not the simulator-world) must be considered the gold standard, according to the institute.

They go on to indicate it is also critical to note that some results of recent naturalistic driving studies, including those highlighted here as well as others are at odds with results obtained from simulator studies. Future research is necessary, says researchers, to explore the reasons why simulator studies sometimes do not reflect studies conducted in actual driving.

Dedicated to its motto, *Ut Prosim* (That I May Serve), Virginia Tech[3] takes a hands-on, engaging approach to education, preparing scholars to be leaders in their fields and communities. As the commonwealth's most comprehensive university and its leading research institution, Virginia Tech offers 215 undergraduate and graduate degree programs to more than 30,000 students and manages a research portfolio of $450 million. The university fulfills its land-grant mission of transforming knowledge to practice through technological leadership and by fueling economic growth and job creation locally, regionally, and across Virginia.

**Listen to related podcasts**

- Hear more about the study itself.[4] (Length 7:30)
- Learn more information on the study's findings.[5] (Length 5:35)

## Related Links

- New partnership between Virginia Tech Transportation Institute and Center for Injury Biomechanics receives first research grant [6]