Safe to use hands-free devices in the car? Yes, according to research

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Many newer cars feature integrated hands-free interfaces for phone calls, navigational use, and other tasks, allowing drivers to keep both hands on the wheel and stay focused on driving. Credit: Virginia Tech Transportation Institute

New research from the Virginia Tech Transportation Institute suggests that drivers who use hands-free electronic devices, as opposed to handheld ones, are less likely to get into a crash.

With hands-free technology, drivers can make calls and perform a variety of other tasks while still keeping their hands on the wheel and eyes on the road.

"Any activity that places either visual or manual demands on the driver—texting, browsing or dialing a hand-held phone, for instance—substantially increases crash risk. However, our recent study has found that the primarily cognitive secondary task of talking on a hands-free device does not appear to have any detrimental effects," said Tom Dingus, director of VTTI and the principal investigator of the study.

The goal of the project was to determine the extent to which crash risk could be affected by primarily mental behaviors, known as cognitive distractions. Cognitive distractions occupy the mind but do not require the driver to look away from the road or remove his or her hands from the wheel. Examples include interacting with a passenger, singing in the car, talking on a hands-free cell phone, and dialing on a hands-free phone via voice-activated software.

Using video and other sensor data from the Second Strategic Highway Research Program naturalistic driving study, the largest light-vehicle study of its kind ever conducted, Dingus and the research team analyzed video footage of 3,454 drivers, 905 crashes (including 275 more serious crashes), and 19,732 control periods of "normal driving" for instances of cognitive distraction. For comparison, they also studied examples of drivers performing visual and manual activities, such as texting on a hand-held phone or adjusting the radio.

Drivers who used a hand-held phone increased their crash risk by 2 to 3.5 times compared to model drivers, defined as being alert, attentive, and sober. When a combination of cognitive secondary tasks was observed, the crash risk also went up, although not to nearly the same degree. In some cases, hands-free cell phone use was associated with a lower crash rate than the control group. None of the 275 more serious property damage and injury crashes analyzed were associated with the use of hands-free systems.

"There are a number of reasons why using a hands-free device could keep drivers more engaged and focused in certain situations," said Dingus. "One is that the driver looks forward more during the conversation. Although engaging in the conversation could cause a small amount of delay in cognitive processing, the driver is still more likely be looking in the direction of a precipitating event, such as another car stopping or darting in front suddenly. The phone conversation could also serve as a countermeasure to fatigue on longer road

trips. Perhaps most importantly, a driver who is talking on a hands-free phone is less likely to engage in manual texting/browsing/dialing and other much higher-risk behaviors."

On Feb. 5, state lawmakers passed legislation that aims to make holding a cell phone while driving illegal.

"VTTI's research has shown consistently that activities requiring a driver to take his or her eyes off of the forward roadway, such as texting or dialing on a handheld phone, pose the greatest risk. It is also important to note that in many newer cars, the driver can do some tasks hands-free using well-designed interfaces. Giving the driver an option to use a safer system will help with compliance for a new law and lead to fewer distraction-related crashes," said Dingus.

Eight-hundred and forty-three people died on Virginia roads in 2017, according to the Virginia Department of Motor Vehicles. Of these, 208 fatalities and 14,656 injuries were attributed to distracted driving, an 18.2 percent increase from 2016. Texting/cell phone use was cited as one of the top three causes.

More information: Thomas A. Dingus et al, The prevalence of and crash risk associated with primarily cognitive secondary tasks, *Safety Science* (2019). DOI: 10.1016/j.ssci.2019.01.005

Provided by Virginia Tech

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