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Summary of Research Findings Indicate Significant Crash Risks Associated with Hands-Free Texting While Driving

Research that specifically targets the risk of using in-car voice-to-text technology, or hands-free texting, while driving is limited. However, there is sufficient, growing and compelling research on this topic that has found that hands-free texting while driving poses a serious crash risk.^{1, 4, 17, 21, 28, 29, 32, 34, 35, 36}

The estimated crash risk for texting while driving using a hand-manipulated device has been found to be 8-to-23 times more risky than not texting.^{8, 14, 15, 30} By comparison, texting while driving is 2-to-5 times more risky than driving drunk^{2, 8, 15, 30} -- behavior which comes with severe penalties and jail time.

Texting while driving, either hands-free or hand-manipulated, involves significant driver distraction.^{1, 2, 4, 5, 8, 16, 17, 21, 34, 35, 36} The three most commonly mentioned distractions are (1) visual: eyes off the road; (2) manual: hands off the wheel; and (3) cognitive: brain focused on something other than the road and driving.^{2, 14, 17}

Recent research highlights the serious crash risk associated with cognitive distraction and “inattention blindness.”^{2, 4, 5, 17} Inattention blindness occurs when you look but do not see, or in other words, people’s brains do not process important visual information when they are concentrating on something else. An example of inattention blindness is when a driver passes right by a familiar freeway off-ramp only to realize a mile later that they missed the exit. This loss of driving focus is significant when a driver is talking on a cell phone and much worse when texting.^{21, 33} Of course, simply missing an off-ramp is a best case scenario in which nobody is killed or injured. When a driver, due to inattention blindness, fails to recognize a stop sign, a pedestrian, or a car braking ahead of them, the likely outcomes are much more severe.

Research on crash risk associated with texting and driving has clustered around two different methodologies: driving simulators and naturalistic studies using in-car cameras. Key findings from the research are:

Cognitive Load

- In-car voice-to-text devices induce significant cognitive load that decreases driving performance.²⁹
- Increased cognitive load results in significantly slower reaction times.²¹
- Voice-to-text applications result in a doubling of reaction times.^{35, 36}
- When cognitively distracted, the part of the brain that deals with driving shuts down by 37 percent.^{2, 4, 5, 17}
- There is a direct relationship between increased cognitive load and missing safety-critical events.^{4, 21, 29}
- Texting has a higher cognitive load than talking on a cell phone.^{21, 33}
- Cognitive load can cause drivers to have a narrow field of view (tunnel vision) and miss up to 50 percent of the information in their driving environment.^{2, 14, 17, 34}

- Use of hands-free systems impacts working memory, causing drivers to make significantly more errors when changing lanes and to be more likely to drift into another lane.²⁹

Eyes Off the Road

- Voice-to-text technology frequently fails to transcribe the spoken word accurately into text.²¹
- In-car voice-to-text devices still require the driver to take their eyes off the road and glance down.^{1, 17, 28, 32, 35, 36}
- In-car voice-to-text glance-down time duration while sending a text message can average as high as 2.45 seconds per glance,²⁸ with an average of 8.71 seconds in total time glancing down to send a three or four word message. The average total glance-down time to receive a message is 3.06 seconds, according to one study.²⁸ Other studies indicate that drivers take their eyes off the road for up to 4.6 seconds per glance when texting.¹⁵
- The observed average following distance between cars is about 1.2 seconds.¹² Traveling at 60 miles-per-hour (MPH) that is 106 feet, or between 5 and 6 car lengths.³ If a car in front of a texting driver traveling at 60 MPH slams on the brakes and the texting driver glances down for 2.45 seconds at the wrong moment, crash risk would be greatly elevated as the texting driver would have traveled 215 feet (11 car lengths) while looking down.³ A 4.6 second glance down at 60 MPH is the equivalent of driving 412 feet (23 car lengths or 1.3 football fields) with eyes off the road.³
- On dry pavement a car decelerates from 60-to-0 in about 180 feet once the brakes are applied.^{22, 23} Reaction time to hit the brakes is 60 feet at 60 MPH.^{22, 23} In the best-case hypothetical scenario, the texting driver going 60 mph would hit the brakes 11 feet (1/12th of a second) away from a stopped car.³

Increased Crash Risk

- Cognitive load and short glances away from the road are additive in their tendency to increase the likelihood of drivers missing safety-critical events.^{1, 32}
- Driver inattention is associated with 60% of rear-end crashes.^{7, 17, 31}
- Texting drivers cause an estimated 558,000 crashes a year, resulting in approximately 108,000 injuries requiring medical attention by a physician.¹⁶
- 3,331 people were killed in crashes involving distracted drivers in 2011.^{15, 16}
- In June 2011, more than 196 billion text messages were sent or received, up 50% from June 2009.¹⁵
- A majority of studies find no difference in crash risk between the use of hands-held and hands-free devices while driving.^{1, 5, 8, 17, 32, 34, 35, 36}
- **No research to date indicates voice-to-text in-car texting applications are safe.** There is considerable evidence that hands-free texting poses significant crash risk.^{1, 2, 4, 5, 8, 17, 21, 34, 35, 36}

In summary, research strongly indicates that drivers using hands-free devices to text put themselves, pedestrians, and other drivers at great risk.^{8, 34, 35, 36} Studies show that drivers who engage in hands-free texting while driving can have inattention blindness that impairs their ability to recognize safety-critical events.^{21, 28} Drivers who are texting hands-free while driving also frequently take their eyes off the road for several seconds while texting,^{15, 21, 28, 35, 36} and have a doubling of response time when they do recognize a problem.^{35, 36} These cumulative risk factors predispose drivers who use hands-free texting devices to crash risk that is at least eight times higher. Texting hands-free while driving poses a great danger to society.

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Link to download reference documents:http://www.adeptdriver.com/assets/resources/Texting_While_Driving_Research.zip*

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