

Effects of Marijuana on the Driving Task



There is growing evidence that recent use of marijuana, specifically the psychoactive substance $\Delta 9$ - tetrahydrocannabinol (THC) increases the risk for motor vehicle accidents compared to drug-free drivers, particularly at higher concentrations.

(Ramaekers et al., 2004; Ramaekers et al., 2009).



Research has demonstrated recent THC use approximately **doubled one's risk of a traffic crash, this is especially true for fatal crashes**

(Asbridge et al., 2005; Asbridge et al., 2012; Hartman & Huestis, 2013; Li et al., 2013; Otto et al., 2016).



In addition, the **reaction times** of drivers who are under the influence of THC are **slower than for sober drivers**

(O'Kane et al., 2002; Ramaekers et al., 2006; Grotenhermen et al., 2007; Lenné et al. 2010; Ronen et al., 2010; Adrian, 2015; Hartman et al., 2016).



THC impairment has been found to **impact**, in a dose-dependent manner, a **driver's ability to gauge time and distance**

(Bech et al., 1973; O'Kane et al., 2002).

Also, habitual THC users have been found to have **10 times the crash risk compared to occasional or non-users**

(Blows et al., 2005).

10x



THC impairment has also **demonstrated increased errors in recognition of traffic lights and delayed response times** to their appearance

(Moskowitz et al., 1976; O'Kane et al., 2002).



Studies which look at unsafe driver action, a proxy measure of crash responsibility, **found drivers who test positive for THC are 16-29% more likely to commit an unsafe action** than drivers who test negative for THC

(Hansteen et al., 1976; Bédarad et al., 2007; Dubois et al., 2015).



Studies have demonstrated THC use **impairs fundamental road tracking ability**, with the degree of impairment increasing as a function of the consumed THC dose

(Barnett et al., 1985; Robbe, 1994; Sexton et al., 2002; Ménétrey et al., 2005; Bosker et al., 2012; Battistella et al., 2013; Adrian, 2015).



Drivers under the influence of THC appear to have a **similar brake latency to drivers with a BAC of 0.05**

(Liguori et al., 1998).



Drivers under the influence of THC also demonstrate **impairment in their ability to complete divided attention tasks**

(Barnett et al., 1985; Battistella et al., 2013; Hanson, 2013; Adrian, 2015).



Individuals also report that THC use made them feel **too tired to drive safely**

(Neale, 2001; Sexton et al., 2002; Sewell et al., 2009; Ronen et al., 2010).

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