

Marijuana and Psychomotor Performance

Operating a motor vehicle under the influence of cannabis is a criminal offense in every state, irrespective of cannabis' legal status under the law.

Acute cannabis intoxication may influence in a dose-related manner certain psychomotor skills, such as reaction time, necessary to operate a motor vehicle safely. However, these effects tend relatively short-lived and are far less dramatic than changes in psychomotor performance associated with drivers under the influence of alcohol. In studies of either on-road or simulated driving behavior, subjects under the influence of cannabis tend to drive in a more cautious and compensatory manner — such as by reducing speed and engaging in fewer lane changes — while subjects under the influence of alcohol tend to drive more recklessly.

RESOURCES: NORML's state-by-state summary of drugged driving laws | National Conference of State Legislatures summary of marijuana-impaired driving laws | National Conference of State Legislature's summary of drugged driving per se laws

"The compensatory behavior exhibited by cannabis-influenced drivers distinctly contrasts with an alcohol-induced higher risk behavior, evidenced by greater percent speed."

Cannabis effects on driving longitudinal control with and without alcohol, Drug and Alcohol Dependence, 2016

In assessments of actual on-road driving performance, subjects typically demonstrate only modest changes in psychomotor performance following THC administration

"Most marijuana-intoxicated drivers show only modest impairments on actual road tests. ... Although cognitive studies suggest that cannabis use may lead to unsafe driving, experimental studies have suggested that it can have the opposite effect."

The effect of cannabis compared with alcohol on driving, The American Journal on Addictions, 2009

The combined administration of cannabis and alcohol typically has an additive influence upon psychomotor performance, which can lead to significantly reduced performance and increased odds of accident

"Relative to drivers testing negative for both alcohol and marijuana, the adjusted odds ratios of fatal crash initiation were 5.37 for those testing positive for alcohol and negative for marijuana, 1.62 for those testing positive for marijuana and negative for alcohol, and 6.39 for those testing positive for both alcohol and marijuana."

Role of alcohol and marijuana use in the initiation of fatal two-vehicle crashes, Annals of Epidemiology, 2017

"Relative to drivers who tested negative for both alcohol and marijuana, the estimated odds of fatal crash involvement increased 16 fold for those testing positive for alcohol and negative for marijuana, 1.5 fold for those testing negative for alcohol and positive for marijuana, and over 25 fold for those testing positive for both alcohol and marijuana."

Interaction of marijuana and alcohol on fatal motor vehicle crash risk: a case-control study, Injury Epidemiology, 2017

By contrast, THC positive drivers, absent the presence of alcohol, typically possess a low — or even no — risk of motor vehicle accident compared to drug-negative drivers.

NORML

Working to Reform Marijuana Laws

"As noted above, even if cannabis impairment is present, it creates (unless combined with alcohol or other drugs) only a fraction of the risks associated with driving at the legal 0.08 BAC threshold, let alone the much higher risks associated with higher levels of alcohol. ... The maximum risk for cannabis intoxication alone, unmixed with alcohol or other drugs, appears to be more comparable to risks such as talking on a hands-free cellphone (legal in all states) than to driving with a BAC above 0.08, let alone the rapidly-rising risks at higher BACs."

Driving while stoned: Issues and policy options, BOTEC Analysis/SSRN white paper, 2018

"The primary objective of this study was to analyse whether there is a significant association between driving under the influence of cannabis and unfavorable traffic events. ... 24 studies were included in the meta-analysis. ... Our analysis suggests that the overall effect size for driving under the influence of cannabis on unfavorable traffic events is not statistically significant."

The association of unfavorable traffic events and cannabis usage: A meta-analysis, Frontiers in Pharmacology, 2018

By comparison, operating a vehicle with multiple passengers or after consuming even slight amounts of alcohol are behaviors associated with greater risk of motor vehicle accident

Drivers with two or more passengers in the car possess a crash risk of more than two-fold (OR=2.2).

The contribution of passengers versus mobile phone use to motor vehicle crashes resulting in hospital attendance by the driver, ScienceDirect, 2007

Data has not substantiated claims of an alleged uptick in marijuana-induced fatal accidents in states that have regulated the use of cannabis for either medical or recreational purposes. In fact, some studies have identified a decrease in motor vehicle accidents following legalization

In 1996, NHTSA reports that there were an estimated 37,500 fatal car crashes on US roadways. But by 2014, during which time a majority of states legalized medical cannabis and several others passed laws either reducing or eliminating marijuana-related adult use penalties, this total fell to just under 30,000.

US National Highway Traffic Safety Administration, Fatality Analysis Reporting System

RESOURCES: Major 'drugged driving' report's findings prove overblown | Marijuana legalization should not be held hostage to drugged driving concerns | Drugged driving concerns should not influence marijuana decision

Proposed per se thresholds for THC are not evidence-based and may result in inadvertently criminalizing adults who previously consumed cannabis several days earlier but are no longer under the influence

RESOURCES: Should per se limits be imposed for cannabis? Equating cannabinoid blood concentrations with actual driver impairment: practical limitations and concerns, Humboldt Journal of Social Relations, 2013 | Imposing per se limits for cannabis: Practical limitations and concerns, 2013 | Cannabis and psychomotor performance: A rational review of the evidence and implications for public policy, Drug Testing & Analysis, 2012 | Cannabis and Driving: A Scientific and Rational Review, 2011

"[B]lood THC levels drop very sharply over time-periods measured in minutes. Blood THC is not a good proxy either for recency of use or for impairment, and the dose-effect curve for fatality risk remains a matter of sharp controversy. ... Moreover, the lipid-solubility of THC means that a frequent cannabis user will always have measurable THC in his or her blood, even when that person has not used recently and is neither subjectively intoxicated nor objectively impaired."

Driving while stoned: Issues and policy options, BOTEC Analysis/SSRN white paper, 2018