

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

"Although laboratory studies have shown that marijuana consumption can affect a person's response times and motor performance, studies of the impact of marijuana consumption on a driver's risk of being involved in a crash have produced conflicting results, with some studies finding little or no increased risk of a crash from marijuana usage. Levels of impairment that can be identified in laboratory settings may not have a significant impact in real world settings, where many variables affect the likelihood of a crash occurring."

[Congressional Research Service, Marijuana Use and Highway Safety, 2019](#)

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](#)

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.

"In this multi-site observational study of non-fatally injured drivers, we found no increase in crash risk, after adjustment for age, sex, and use of other impairing substances, in drivers with THC <5ng/mL. For drivers with THC ≥5ng/mL there may be an increased risk of crash responsibility, but this result was statistically non-significant and further study is required. ... There was significantly increased risk in drivers who had used

alcohol, sedating medications, or recreational drugs other than cannabis. ... Our findings ... suggest that the impact of cannabis on road safety is relatively small at present time."

[Cannabis use as a risk factor for causing motor vehicle crashes: a prospective study, *Addiction*, 2019](#)

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 uptick in marijuana-induced fatal accidents in states that have regulated the use of cannabis for medical purposes, and some data has identified a decrease in motor vehicle accidents. Adult-use regulations have also largely not been associated with statistically significant increases in traffic fatalities, though researchers are still assessing longer-term trends

"In the five years after legalization, fatal crash rates increased more in Colorado and Washington than would be expected had they continued to parallel crash rates in the control states (+1.2 crashes/billion vehicle miles traveled, but not significantly so. The effect was more pronounced and statistically significant after the opening of commercial dispensaries ... [This finding]... stands in contrast to earlier studies finding decreases in traffic fatalities following medical marijuana legalization. ... [T]hese unexpected findings raise the possibility that legalization of medical and recreational marijuana represent two distinct policy exposures rather than 'escalating doses' of the same exposure and pose very different risks. This is an area in need of further study."

[Fatal crashes in the 5 years after recreational marijuana legalization in Colorado and Washington, *Accident Analysis and Prevention*, 2019](#)

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

"Research studies have been unable to consistently correlate levels of marijuana consumption, or THC in a person's body, and levels of impairment. Thus some researchers, and the National Highway Traffic Safety Administration, have observed that using a measure of THC as evidence of a driver's impairment is not supported by scientific evidence to date."

[Congressional Research Service, *Marijuana Use and Highway Safety*, 2019](#)