

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.

[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](#)

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...”

[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

“We extracted data for hazard response time, lateral position variability, lane deviations or excursions, time out of lane, driving speed, driving speed variability, speed violations, time speeding, headway, headway variability and crashes from experimental driving studies (i.e. driving simulator, closed-course, on-road) involving cannabis and/or alcohol administration. ... The combination of cannabis and alcohol was associated with greater driving performance decrements than either drug in isolation.”

[The effects of cannabis and alcohol on driving performance and driver behavior: A systematic review and meta-analysis, Addiction, 2022](#)

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](#)

Driving while pregnant is equivalent to a 42 percent relative increase in crash risk.
[Pregnancy and the risk of a traffic crash, CMAJ, 2014](#)

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.

“We examine the relationship between traffic fatalities and state marijuana laws using data from 1985 through 2019 and Poisson difference in difference models that allow effects to vary over time. ... We find lower state traffic fatalities following the implementation of MMLs [medical marijuana laws], consistent with earlier work. ... Further, we find no evidence of an association between traffic fatalities and cross-border recreational legalization. ... as of 2019, we find liberalization has been associated with lower traffic fatalities, not higher.”

[State marijuana laws and traffic fatalities, The Review of Regional Studies, 2021](#)

By contrast, data assessing the potential impact of adult-use legalization access on motor vehicle accidents is more mixed. Initial reports published in the years immediately following legalization consistently showed no change in accident trends, while more recent studies assessing longer time periods report inconsistent findings.

“Implementation of the Cannabis Act was not associated with evidence of significant post-legalization changes in traffic-injury ED visits in Ontario or Alberta among all drivers or youth drivers, in particular.”

[Canada’s cannabis legalization and drivers’ traffic-injury presentations to emergency departments in Ontario and Alberta, 2015-2019, Drug and Alcohol Dependence, 2021](#)

“There did not appear to be a relationship between the legalization of marijuana and the likelihood of finding THC in patients admitted after MVC [motor vehicle crash]. ... There was no apparent increase in the incidence of driving under the influence of marijuana after legalization.”

[Marijuana legalization and rates of crashing under the influence of tetrahydrocannabinol and alcohol, The American Surgeon, 2021](#)

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

“The per se legal standard for cannabis intoxication while driving promotes the use of unreliable testing methods, and the zero-tolerance standard is inconsistent with the trend toward legalization, both of which will likely lead to over-prosecution.”

[Oral fluids and breathalyzers fail as detection tools for cannabis-related driving impairment, New York State Bar Association Health Law Journal, 2021](#)