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
NORML's state-by-state summary of drugged driving laws; National Conference of State Legislatures summary of marijuana-impaired driving laws

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. More experienced cannabis consumers tend to demonstrate tolerance to these effects.

"This study examined driving performance after cannabis use, inclusive of high concentration tetrahydrocannabinol (THC) products. … The absence of decrements in driving performance in the daily use groups supports a role of tolerance in mitigating acute impairment. When changes in driving performance were observed, the effect size was notably small. These findings underscore the challenges of developing standardized impairment thresholds in the presence of large inter-individual variability in driving performance, and tolerance to cannabis with daily use."
Impact of naturalistic cannabis use on lateral control and speed: A driving simulator study, *Traffic Injury Prevention*, 2025

"This is the first study of the impact of cannabis edibles on simulated driving. … Compared to [baseline], cannabis edibles produced a decrease in mean speed 2 hours after consumption. … No changes in standard deviation of lateral position (SDLP; 'weaving'), maximum speed, standard deviation of speed or reaction time were found at any time point."
The effect of cannabis edibles on driving and blood THC, *Journal of Cannabis Research*, 2024

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

"We undertook a systematic search of electronic databases, and identified 13 culpability studies and 4 case–control studies from which cannabis-crash odds ratios could be extracted. … Taking the role of study biases into account, we have shown that the best epidemiological evidence concerning the risk of crashing after using cannabis (as indicated by testing positive to THC) is compatible with the null hypothesis that the recent use of cannabis has no effect at all (such that the cannabis-crash OR = 1.0)."
The risk of being culpable for or involved in a road crash after using cannabis: A systematic review and meta-analyses, *Drug Science, Policy and Law*, 2021

By comparison, operating a vehicle with multiple passengers or while pregnant are factors 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

"Consistent with an improvement in traffic safety, we find that the legalization of medical cannabis leads to a decrease in auto insurance premiums on average of $22 per policy per year. The effect is stronger in areas directly exposed to a dispensary, suggesting increased access to cannabis drives the results. In addition, we find relatively large declines in premiums in areas with relatively high drunk driving rates prior to medical cannabis legalization. This latter result is consistent with substitutability across substances that is argued in the literature."
Medical cannabis and automobile accidents: Evidence from auto insurance, *Health Economics*, 2022

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

"Frequent (≥ 4 times a week) users of smoked cannabis drove a simulator the morning after last use of smoked cannabis; a control group of non-cannabis users matched for age and sex was also included. Concentrations of THC, cannabidiol (CBD) and metabolites were measured in oral fluid and blood at the time of the drive. … The regular cannabis use group showed no significant impairment in driving performance 12-15 hours after last cannabis use the night before, compared to the control group. … Neither blood nor oral fluid THC, CBD or metabolites was significantly correlated with any measure of driving after correction for multiple comparisons. … Blood and oral fluid THC concentrations may not be an accurate correlate of driving behavior."
Driving by frequent cannabis users 'the morning after' last use of smoked cannabis: An observational driving simulator study, *Journal of Cannabis Research*, 2026

"Linking recent cannabis use to driving impairment outside of the laboratory is challenging due to poor correspondence between THC levels in biological markers (such as blood or oral fluids) and behavioral measures of impairment. Experimental research points to deficiencies in the per se approach to DUIC."
Recent advances in the science of cannabis-impaired driving, *Current Addiction Reports*, 2026

"The current study found no significant or consistent correlations between THC concentrations in blood or oral fluid and driving performance metrics. This is in line with emerging evidence that these biological measures are poor indicators of cannabis-induced impairment. This finding has important implications for both research and public policy, as it suggests that relying on THC levels alone may not accurately reflect a driver's presence or degree of functional impairment."
A randomized, placebo-controlled, double-blind, pilot study of cannabis-related driving impairment assessed by driving simulator and self-report, *Journal of Psychopharmacology*, 2025

"Unlike alcohol, THC remains in the body long after its psychoactive effects have worn off. So, unlike commonly used alcohol sobriety tests, blood tests for cannabis that are currently widely used in law enforcement and employment screening cannot distinguish between recent or past use."
Nora Volkow, Director: National Institute on Drug Abuse, January 14, 2025