MARIJUANA AND DRIVING:

What does the weight of research evidence suggest?

Alcohol and Marijuana Are Very Different Drugs

While the effect alcohol has on driving, among other things, is widely known and researched, the case is not so clear for marijuana. Research has shown a straightforward look at impairment based on how much alcohol is present in blood: The higher the alcohol concentration, the more impaired the driver. Because alcohol is water-soluble but active THC ($\triangle^9$-THC, the main contributor to psychoactive effects, but just one among many cannabinoids in marijuana) is fat-soluable, there is no definitive relationship to levels in the blood or bodily fluids and impairment. THC could be detected weeks after use, long after any impairment would occur. Conversely, THC presence may be negligible, but impairment is obvious[2, 3].

Marijuana Cannot Be Treated the Same as Alcohol

In an attempt to enforce drug-impaired driving, some states have created legal limits, also known as per se limits, which specify the maximum amount of active THC that drivers can have in their system based on a blood test[18]. Active THC is the main chemical component in marijuana that can impair driver performance and affect the mind. Presence of active THC is generally suggestive of recent marijuana use[1]. States' limits on THC are similar in concept to the .08% BAC limit for driving under the influence of alcohol.

Researchers have examined lab results of drivers arrested for impaired driving, and the results suggest that legal limits for marijuana and driving are problematic because:

There is no science showing that drivers reliably become impaired at a specific level of marijuana in the blood. Depending on the individual, drivers with relatively high levels of marijuana in their system might not be impaired, while others with low levels may be unsafe behind the wheel. This finding is very different from alcohol, where it is clear that crash risk increases significantly at higher BAC levels[1, 18].

Unlike for Alcohol, blood concentrations of THC cannot be estimated for other points in time. THC concentrations in blood do not metabolize in a linear fashion. The average time to collect blood from a suspected driver is often more than two hours because taking a blood sample typically requires a warrant and transport to a facility[19]. Active THC blood levels may decline significantly and could drop below legal limits during that time[4].

Marijuana can affect people differently, making it challenging to develop consistent and fair guidelines. For example, frequent users of marijuana can exhibit persistent levels of the drug long after use, while drug levels can decline more rapidly among occasional users although the impairing effects are usually greater among occasional users[2, 7].

While marijuana use has been shown to slow reaction time, impair cognitive performance and negatively affect executive functioning[5, 6, 7, 8, 9, 10], measuring active THC concentration in blood or oral fluid doesn't accurately capture current impairment[1, 18]. While a more accurate test may involve psychomotor testing, there is insufficient research to support such a test at this time[11].

Prevalence of Drivers Who Recently Used Marijuana

A national survey of alcohol and drug use among drivers showed that the percent of weekend nighttime drivers found to have active THC in their system increased from 8.6 percent in 2007 to 12.6 percent in 2013-2014. Active THC was one of the most commonly detected drug among drivers in this study[12]. Unfortunately, while this information is among the most up-to-date and informative data available on actual marijuana prevalence among drivers, NHTSA has been prohibited by Congress from expending funds on this type of research in the future.

The AAA Foundation for Traffic Safety research found an alarming increase in the proportion of drivers involved in fatal crashes who had recently consumed marijuana following the legalization of recreational marijuana use in the state of Washington. A 2016 study found that the percentage of drivers involved in fatal crashes who recently used marijuana doubled after legalization[16]. A 2020 study update found that this increase was sustained five years after legalization[22]. Safety advocates warn that other states that move to legalize recreational use of marijuana may observe similar trends.

The Best Tools Available to Law Enforcement

While there is no fast and easy roadside method such as a breathalyzer used in alcohol testing to determine if a driver is under the influence of drugs, law enforcement officers do have access to training designed to help recognize the threat. **The Drug Evaluation and Classification (DEC) Program trains officers to apprehend substance-impaired drivers.** The course certifies officers as Drug Recognition Experts (DREs) and helps law enforcement to identify impairment as a result of drug or alcohol use and rule out illness, disease, or neurological disorders. Becoming a DRE requires extensive training: a nine-day course and additional days of field testing [17]. **The Advanced Roadside Impaired Driving Enforcement (ARIDE) Program is an intermediate training that provides officers with general knowledge related to drug impairment [11].** The ARIDE program is designed to support the use of DREs. While additional training can be costly in terms of monetary and time means, this approach is currently the most effective and reliable way to identify and adjudicate drug-impaired drivers.

Limits on Research:

Marijuana is classified as a Schedule I substance under the Controlled Substances Act. This means that research involving marijuana is difficult to conduct as it requires a government license to obtain, store, and administer to subjects. There are also additional requirements for security, documentation, and disposal. Currently, federal law restricts not only the use of this drug for research purposes, but also the strains of cannabis used in research[11].

Additionally, making current research more robust and available would require states to have more detailed records that distinguish between alcohol, drugs, or a combination of the two in impaired driving cases. States would also need to include what drugs are most frequently used by impaired drivers and establish standard toxicological screening procedures for detection thresholds[18].

Bottom Line

It is clear that marijuana has the potential to impair motor and cognitive skills essential for driving safely, but the magnitude of the resulting impact on crash risk is debated within the research community. Further research to develop a definitive way to test actual impairment separate from drug presence is desperately needed.

REFERENCES

For a complete list of citations visit:
bit.ly/researchrefs