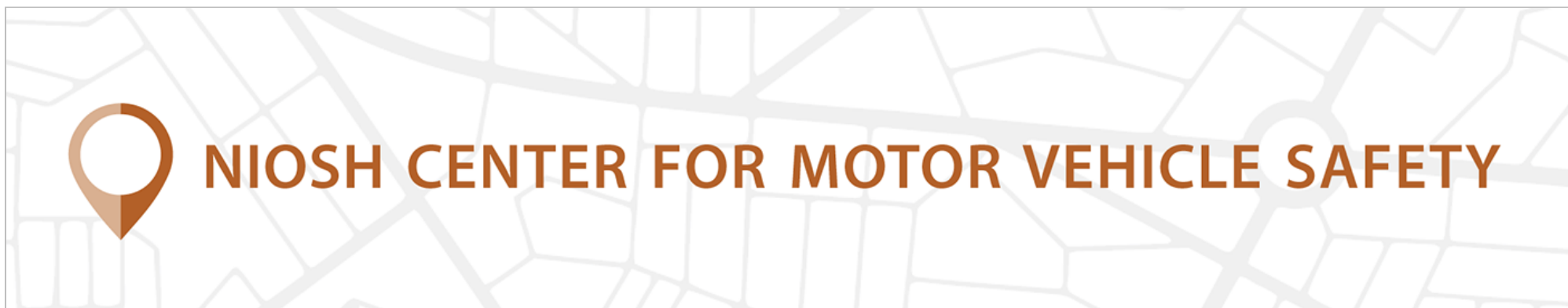


Behind the Wheel at Work



Behind the Wheel at Work is a quarterly eNewsletter bringing you the latest news from the NIOSH Center for Motor Vehicle Safety.

Volume 5 Number 4 January 2021

Marijuana and Driving: Keep Your Fleet's Drivers Safe

What's the difference between cannabis and marijuana? What are the effects of marijuana use on driving? How can employers reduce the risk of impairment from marijuana use among drivers? Let's explore answers to these and other questions.

Update on the Coronavirus Disease 2019 (COVID-19) Response

While the NIOSH Center for Motor Vehicle Safety will continue to share valuable safety information in our quarterly Behind the Wheel at Work eNewsletter, you can stay up to date on the COVID-19 response in real time on CDC's [COVID-19 webpage](#) or sign up for CDC's [COVID-19 newsletter](#).

✉ Sign Up: Behind the Wheel at Work

To receive the email newsletter,
enter your email address:

[What's this?](#)

Submit

In This Issue

[The Science](#)

[Safety Tip](#)

[How Employers Can Address Risks](#)

[Webinar Recording](#)

[Go-to Resources](#)

Marijuana Use and Driving: The Science



What is cannabis? Is it the same as marijuana?

Cannabis generally refers to the *Cannabis sativa* plant, or products derived from the plant. Marijuana generally refers to the dried leaves, flowers, stems, and seeds from the plant that contain substantial amounts of delta-9-tetrahydrocannabinol (THC), a psychoactive (that is, mind-altering) compound.¹ THC concentrations in marijuana have increased substantially over the past few decades.² The other well-known naturally occurring compound found in the plant and contained in many products is cannabidiol (CBD), which is not mind-altering.³ Because of its psychoactive effects

and the potential for impairment, the THC found in marijuana is the primary concern for driving safety. However, any cannabis product (including CBD products) may contain small amounts of THC.

What is marijuana used for?

In the U.S., [more states](#) are making it legal to use marijuana for medical and non-medical purposes. However, the [U.S. Drug Enforcement Administration \(DEA\)](#) classifies marijuana as a Schedule I drug, meaning that these drugs have no currently accepted medical use and a high potential for abuse. To date the [U.S. Food and Drug Administration \(FDA\)](#) has not approved the use of cannabis for the treatment of any disease or medical condition.⁴ However, the FDA has approved one cannabis-derived drug product and three synthetic cannabis-related drug products for treatment of specific conditions, including seizures in children, nausea among cancer chemotherapy patients, and anorexia associated with weight loss in AIDS patients. These are available only by prescription from a licensed provider. Common reasons for non-medical marijuana use include users' desire for short-term euphoria and relaxation.⁵⁻⁶

Do we have any estimates of marijuana use among workers?

Data from the [2019 National Survey on Drug Use and Health \(NSDUH\)](#) indicates that 44.9 million Americans aged 18 or older used marijuana in the past year. Of those, 24.7 million were employed full-time and 6.8 million part-time. Drug testing results from the [Quest Diagnostics Drug Testing Index](#) indicate that overall, 4.4% of the U.S. workforce had a positive urine drug screen in 2018, nearly a 5% increase from 2017. The data also showed a nearly 8% increase in marijuana use among workers from 2017 to 2018, with the number of workers and job applicants who tested positive for marijuana increasing from 2.6% to 2.8%. Positive test results for marijuana urine testing, the most common type of testing done, continue to increase for the general U.S. workforce and for workers in regulated, safety-sensitive industries.* Because marijuana use is increasing across almost all industry sectors, it is likely that an increasing number of workers who drive as part of their job are using the drug.

* Examples of safety-sensitive positions include pilots, drivers (rail, bus, and truck), and workers in nuclear plants.

What are the effects of marijuana?

This depends on several factors, including the person's previous use of marijuana or other drugs, biology (e.g., genes), gender, how the drug is taken, and how strong the drug is.⁷ Marijuana users may experience altered senses (e.g., seeing brighter colors), altered sense of time, mood changes, impaired body movement, difficulty thinking and problem-solving, memory impairment, hallucinations, delusions, and psychosis. Long-term marijuana use may affect brain function and development in younger users, and it has been linked to mental illness.¹

How does marijuana use affect driving?

Driving while impaired by any substance is dangerous. The THC contained in marijuana affects areas of the brain that control the body's movements, balance, coordination, memory, and judgment.⁸⁻¹⁰ It can also impair coordination, distort perception, and lead to memory loss and difficulty in problem-solving.⁸⁻¹⁰ Specific to driving, it can slow reaction times and the ability to make decisions.

Meta-analyses research (analysis of combined similar studies) has found that the risk of being involved in a crash significantly increases after marijuana use.¹¹⁻¹⁶ Still, marijuana's specific contribution to crash risk is unclear because it can be detected in body fluids for days or even weeks after use and is often combined with alcohol.¹⁴ Several driving simulator and other studies found that many marijuana-impaired drivers tend to drive more cautiously by driving slowly or taking fewer risks, perhaps to compensate for their impairment.¹⁶

Challenges in determining impairment

Impairment from marijuana use can last several hours and is a significant concern for driving safety, yet determining marijuana impairment is complicated. Impairment from marijuana varies with THC concentration or dose, route of administration, and users' experience with or tolerance to the drug.¹⁷ Marijuana can be detected through drug testing long after the individual has stopped experiencing any physiological effects and impaired functioning. Also, there isn't an agreed upon threshold for THC levels to determine impairment. Lastly, there is wide variability in how THC is metabolized by frequent versus infrequent users, which makes interpretation of a positive urine drug test a challenge.¹⁸ For all of these reasons, traditional drug testing (e.g. urine or blood) is not an ideal tool for determining if a driver was impaired at the time of a crash. There is a need for better tools to detect impairment.

Research needs

Research aimed at better understanding the impacts of marijuana use on workers is needed, including estimates of marijuana use by industry and occupation for those who drive as part of their job. It is also important to take a closer look at how state laws may impact workers' marijuana use and on-the-job health and safety. Issues related to testing practices and determination of impairment also need to be better understood in order to ensure effective workplace policies and practices.

References/resources

1. National Institute on Drug Abuse: Marijuana Drug Facts [↗](#)
2. ElSohly MA, Mehmedic Z, Foster S, Gon C, Chandra S, Church JC. [Changes in cannabis potency over the last 2 decades \(1995-2014\): analysis of current data in the United States](#) [↗](#) . Biol Psychiatry. 2016; 79(7):613-619. doi: 10.1016/j.biopsych.2016.01.004
3. Centers for Disease Control and Prevention: Marijuana and Public Health: What is marijuana?
4. U.S. Food & Drug Administration: FDA and Cannabis: Research and Drug Approval Process [↗](#)
5. Howard J, Osborne J. [Cannabis and work: Need for more research](#) [↗](#) . Am J Ind Med. 2020;1–10. doi: 10.1002/ajim.23170
6. Whiting PF, Wolff RF, Deshpande S, et al. [Cannabinoids for medical use: a systematic review and meta-analysis](#) [↗](#) . JAMA. 2015;313(24): 2456-2773. doi: 10.1001/jama.2015.6358
7. Centers for Disease Control and Prevention: Marijuana and Public Health: What determines how marijuana effects a person?
8. Lenné MG, Dietze PM, Triggs TJ, Walmsley S, Murphy B, Redman JR. [The effects of cannabis and alcohol on simulated arterial driving: Influences of driving experience and task demand](#) [↗](#) . Accid Anal Prev. 2010;42(3):859-866. doi: 10.1016/j.aap. 2009.04.021.
9. Hartman RL, Huestis MA. [Cannabis effects on driving skills](#) [↗](#) . Clin Chem. 2013;59(3):478-492. doi: 10.1373/clinchem.2012.194381.
10. Hartman RL, Brown TL, Milavetz G, et al. [Cannabis effects on driving lateral control with and without alcohol](#) [↗](#) . Drug Alcohol Depend. 2015;154:25-37. doi: 10.1016/j.drugalcdep.2015.06.015.
11. Elvik R. [Risk of road accident associated with the use of drugs: a systematic review and meta-analysis of evidence from epidemiological studies](#) [↗](#) . Accid Anal Prev. 2013;60:254-267. doi: 10.1016/j.aap.2012.06.017.
12. Ramaekers JG, Berghaus G, van Laar M, Drummer OH. [Dose related risk of motor vehicle crashes after cannabis use](#) [↗](#) . Drug Alcohol Depend. 2004;73(2):109-119. doi: 10.1016/j.drugalcdep.2003.10.008.

13. Li M-C, Brady JE, DiMaggio CJ, Lusardi AR, Tzong KY, Li G. [Marijuana Use and Motor Vehicle Crashes](#)  . Epidemiol Rev. 2012;34(1):65-72. doi: 10.1093/epirev/mxr017.
14. Asbridge M, Hayden JA, Cartwright JL. [Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis](#)  . BMJ. 2012;344:e536. doi: 10.1136/bmj.e536.
15. Rogeberg O, Elvik R. [The effects of cannabis intoxication on motor vehicle collision revisited and revised](#)  . Addiction. 2016 Aug;111(8):1348-59. doi: 10.1111/add.13347. Epub 2016 Apr 25. Erratum in: Addiction. 2018 May;113(5):967-969. PMID: 26878835
16. Compton, R. (2017, July). [Marijuana-Impaired Driving – A Report to Congress](#)   . (DOT HS 812 440). Washington, DC: National Highway Traffic Safety Administration.
17. Phillips, J. A., Holland, M. G., Baldwin, D. D., Gifford-Meuleveld, L., Mueller, K. L., Perkison, B., ... Dreger, M. (2015). [Marijuana in the Workplace: Guidance for Occupational Health Professionals and Employers: Joint Guidance Statement of the American Association of Occupational Health Nurses and the American College of Occupational and Environmental Medicine](#)  . Workplace Health & Safety, 63(4), 139–164. doi: 10.1177/2165079915581983.
18. NIDA News Release: [Research on THC blood levels sheds light on difficulties of testing for impaired driving](#)  .

The Bottom Line: Despite some unanswered questions about marijuana’s role in crash risk, workers impaired by marijuana do not have the skills needed to drive safely.⁸⁻¹⁰ Because marijuana use is on the rise for adults in the United States, this substance needs to be addressed as a part of all motor vehicle safety programs.

Safety Tip



You may receive an accommodation request from a worker for medical marijuana use in a state which requires accommodation. Consider using methods applied to other protected employees (e.g., employees with disabilities) to ensure safety, such as moving the employee out of safety-sensitive position, using alternative scheduling, or changing the employee’s duties.

How Employers Can Address Motor Vehicle Safety Risks Related to Marijuana Use



Acknowledgement: Natalie Hartenbaum, MD, MPH, FACOEM (OccuMedix)

Managing motor vehicle crash risks associated with marijuana impairment is not simple, but it is important. Marijuana impacts a driver’s cognitive abilities. Its use in the U.S. is increasing as more states legalize its recreational use. Other than alcohol, marijuana is the most frequently reported drug found in post-crash testing.

Here are a few tips for reducing your workers’ risk of impairment from marijuana while driving on the job:

- Develop a comprehensive marijuana policy that accounts for current laws in each state where your company operates.
- A zero-tolerance policy for marijuana may not be possible, depending on your state’s laws. However, the best marijuana policies will:
 - Prohibit workers using marijuana in any form while at work.
 - Prohibit workers from being impaired from marijuana at work.
- Partner with an attorney to review your policy and provide feedback. Make sure the attorney understands state marijuana laws and is up-to-date on marijuana-related case law.

- Determine if there are employee protections or accommodations for using marijuana during off-duty time, and if those protections include medical and non-medical use.
- Determine if drug tests are permitted and under what conditions you can test. If tests are permitted, determine what actions can employers take in the event of a positive test.
- Find out if there are state designated “safety sensitive” positions or if you, as an employer, can designate your own safety sensitive jobs and job tasks.
- Find out if there is an established threshold for determining marijuana impairment.
- Check regularly to see if there are recent changes to any state marijuana laws. [Four states](#)  legalized non-medical marijuana for the first time on Election Day 2020 (Arizona, New Jersey, South Dakota, and Montana).
- Outline specifics of drug testing if it is a part of your marijuana policy.
 - Make sure your policy describes the conditions under which testing will occur (e.g., ongoing periodic random testing, anytime impairment is suspected, or only after a crash), the threshold that will constitute impairment, and the consequences of a positive test.
 - Ensure that your testing activities follow the steps outlined in your policy.
 - Seek out and use a medical professional with training in interpreting THC drug tests.
 - Warn drivers that Cannabidiol (CBD) product labeling is not regulated. Labeling is [frequently inaccurate](#) . Consumption of CBD products with significantly higher levels of THC than what is on the producer’s label could result in a positive drug test.
- Provide access to support for employees with drug problems, either through in-house programs or referrals to local resources.
- Educate drivers on:
 - The effects of marijuana and other drugs on safe driving and cognitive abilities.
 - The details of your company’s marijuana policy, including special considerations for the state or states where they work.
 - Similar impairments that can result from fatigue, medications, and certain medical conditions.
- Train managers and supervisors on:
 - The details of your marijuana policy.
 - The specific responsibilities of managers/supervisors outlined in the policy.
 - How to recognize and document signs of impairment.
- Once you implement your policy, conduct regular review and monitoring of the relevant state marijuana laws and any improved methods for determining impairment. Update your policies as needed. As with other safety policies, they will continue to evolve and improve.

Bottom Line: Motor vehicle crash risks posed by marijuana impairment of employees can be managed effectively with comprehensive state-specific policies, worker and supervisor training, employer-provided support for workers struggling with drugs, and a partnership with an attorney who has expertise in state marijuana laws and related case law.

Resources:

[National Institute on Drug Abuse: Drugged Driving DrugFacts](#) 

Webinar Recording Available



2020 Webinar

Are you facing increasing questions about impaired driving as a result of marijuana laws? The National Institute for Occupational Safety and Health (NIOSH) Center for Motor Vehicle Safety hosted a webinar to answer these questions on September 16, 2020. [Marijuana and Driving: How to Keep Your Fleet Safe](#) is now available to view via recording.

Go-to Resources

- CDC: [What You Need to Know About Marijuana Use and Driving](#)
- National Institute on Drug Abuse:
 - [Marijuana Research Report](#)  
- National Safety Council: [Marijuana at Work: What Employers Need to Know](#) 
- National Highway Traffic Safety Administration: [Drug-Impaired Driving](#) 
- Driven to Wellness: [Impaired Driving](#) 

[Driven to Wellness: Impaired Driving](#) 

- Governors Highway Safety Association:
 - [Traffic safety impacts of marijuana legalization](#)  
 - [Marijuana-Related Laws](#)  
- S. Department of Transportation:
 - [Office of Drug & Alcohol Policy & Compliance](#) 
 - [Procedures for Transportation Workplace Drug and Alcohol Testing Programs](#) 
 - [DOT “Medical Marijuana” Notice](#) 
- Substance Abuse and Mental Health Services Administration:
 - [Drug-Free Workplace Toolkit | SAMHSA](#) 
 - [Know the Risks of Marijuana](#) 
- [Marijuana in the Workplace: Guidance for Occupational Health Professionals and Employers: Joint Guidance Statement of the American Association of Occupational Health Nurses and the American College of Occupational and Environmental Medicine](#)  . [Workplace Health & Safety](#), 63(4), 139–164.
<https://doi.org/10.1177/2165079915581983> 

More Information

- Please send your comments and suggestions to us: kur4@cdc.gov
- Follow us on Twitter: [@NIOSH_MVSafety](#)
- Visit our webpage: [Motor Vehicle Safety at Work](#)