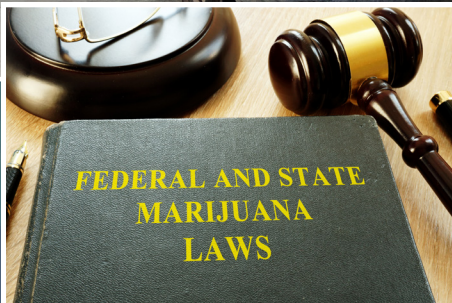


Impacts of Marijuana Legalization on the Trucking Industry

June 2023



Prepared by the American Transportation Research Institute

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Jeffrey Short

Vice President

American Transportation Research Institute
Atlanta, GA

Alexa Pupillo

Research Analyst

American Transportation Research Institute
Atlanta, GA



Atlanta, GA • Minneapolis, MN • Washington, DC • Sacramento, CA

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LIST OF ACRONYMS

ADA – Americans with Disabilities Act
ATRI – American Transportation Research Institute
BLS – Bureau of Labor Statistics
CBD – Cannabidiol
CDC – Centers for Disease Control
CDL – Commercial Driver’s License
CLP – Commercial Learner’s Permit
CMV – Commercial Motor Vehicle
CSA – Controlled Substances Act
DACH – Drug and Alcohol Clearinghouse
DEA – U.S. Drug Enforcement Administration
DRE – Drug Recognition Expert
DSP – Delivery Service Partners
DUI – Driving Under the Influence
EEOC – Equal Employment Opportunity Commission
FARS – Fatal Analysis Reporting System
FDA – U.S. Food and Drug Administration
FMCSA – Federal Motor Carrier Safety Association
GAO – Government Accountability Office
GHSA – Governors Highway Safety Association
IFTA – International Fuel Tax Agreement
MATS – Mid-America Truck Show
MIS – Alcohol Management Information System
MMCREA – Medical Marijuana and Cannabidiol Research Expansion Act
MSJ – Massachusetts Supreme Judicial
NHTSA – National Highway Traffic Safety Administration
ODAPC – Office of Drug and Alcohol Policy and Compliance
OO/IC – Owner-Operators/Independent Contractors
PTSD – Post-Traumatic Stress Disorder
RAC – Research Advisory Committee
RTD – Return-To-Duty
SAP – Substance Abuse Professional
SDLA – State Driver Licensing Agencies
SFST – Standardized Field Sobriety Testing
THC – Tetrahydrocannabinol
U.S. DOT – U.S. Department of Transportation

INTRODUCTION

In 2019 the American Transportation Research Institute (ATRI) released its first research publication on the impact of marijuana legalization on the trucking industry. The report, *Marijuana Legalization and Impaired Driving: Solutions for Protecting our Roadways*, focused on legalization trends and roadway safety.¹ The key findings of that research included:

- More robust data collection is needed at the state- and federal-level to understand the prevalence and safety outcomes that result from marijuana-impaired driving.
- Safety campaigns must be employed to mitigate driving while impaired by marijuana, particularly among non-commercial drivers.
- Law enforcement requires better tools and more training to identify marijuana-impaired driving; a quantitative field sobriety testing device does not currently exist.

With more jurisdictions legalizing or decriminalizing marijuana, ATRI's Research Advisory Committee (RAC) voted in 2022 to conduct research that focused on the impacts of marijuana on the trucking industry's workforce.^{2 3}

While the use of marijuana (and specifically its active drug tetrahydrocannabinol [THC]) is legal in many states for medical or recreational purposes, it remains illegal to operate a vehicle while impaired by the drug. Driving while impaired can result in increased safety risks as well as fines, loss of driving privileges and imprisonment.

Those who work in safety-sensitive federally regulated positions are prohibited from using marijuana and are subject to testing for controlled substances. For these workers, a positive test for past drug use can result in termination of employment. In the trucking industry in particular, those who possess a commercial driver's license (CDL) are held to this standard. In order to operate a large truck, CDL drivers are required by federal law to pass a test for marijuana and other drugs in several situations, including pre-employment, post-accident, randomly and in instances where there is reasonable suspicion of drug use.⁴

More than half of all positive trucking industry drug tests are for marijuana metabolite according to the Federal Motor Carrier Safety Administration (FMCSA) Drug and Alcohol Clearinghouse (DACH) data.⁵ A positive test effectively removes a driver from the industry until a series of remedial steps are taken. The DACH data also indicate that more than 100,000 drivers tested

¹ Carolina Boris, Alexandra Shirk, and Jeffery Short, *Marijuana Legalization and Impaired Driving: Solutions for Protecting our Roadways*, American Transportation Research Institute (March 2019), <https://truckingresearch.org/2019/03/12/marijuana-legalization-and-impaired-driving-solutions-for-protecting-our-roadways/>.

² ATRI's Research Advisory Committee is comprised of industry stakeholders representing motor carriers, trucking industry suppliers, labor and driver groups, law enforcement, federal government, and academics. The RAC is charged with annually recommending a research agenda for the Institute.

³ It should be noted that there are many different names for marijuana. Some research refers specifically to the key psychoactive ingredient in marijuana, which is Δ9-tetrahydrocannabinol or Δ9-THC. The term cannabis is also used, which is in reference to the species of plant from which the Δ9-THC drug is sourced. There are also many slang terms for marijuana. In this report, the research team chose to refer generally to the drug and the plant it is derived from as marijuana, though the active drug in Marijuana – which is THC – will in some cases be referred to as well.

⁴ These drivers are covered by the Federal Motor Carrier Safety Administration (FMCSA) Drug and Alcohol Testing Program.

⁵ Federal Motor Carrier Safety Administration, "Drug & Alcohol Clearinghouse: December 2022 Monthly Summary Report" (January 24, 2023), <https://clearinghouse.fmcsa.dot.gov/Resource/Index/monthly-report-Dec2022>.

positive and were removed from duty during the three-year period of 2020 through 2022.⁶ With a national driver shortage that fluctuated between 65,000 and 80,000 in recent years, these positive tests impact the industry.⁷

At the same time, numerous state governments have made it easier for the general public to obtain marijuana. In many states the drug can be bought at a store and used solely for recreational purposes, and it is not uncommon to see billboards advertising marijuana along the Interstate system.⁸

This difficult situation is coupled with a lack of research into several critical marijuana-related issues. Due in part to limited funding and constrained access to marijuana for research, the effects of marijuana impairment on activities such as driving are not fully understood. Additionally, it is too soon to calculate the relationship between legal marijuana and highway safety outcomes.

This report assesses the impacts of legalization on the trucking industry's workforce and includes:

- a review of the latest demographic trends in marijuana legalization;
- an overview of research and data related to highway safety and marijuana use;
- a summary of workforce and hiring implications for the trucking industry; and
- an analysis of available national data for positive marijuana drug tests.

The report also analyzes data derived from two ATRI surveys on the industry impacts of marijuana – one focused on motor carrier perspectives and the other focused on driver perspectives. Finally, the research offers a review of possible near-term outcomes intended to help the industry navigate through the complex safety and employment issues that have resulted from state-level legalization of marijuana.

It should be noted that ATRI calculations in this research utilize multiple decimal places in the various analyses; however, the research tables and figures are typically rounded to the nearest tenths place for clarity and presentation purposes. Tables and figures that include rounded numbers are marked in the report with an asterisk (*).

⁶ Ibid.

⁷ Dan Ronan, "Long-Term Strategies Key, Recruiting Experts Say," Transportation Topics, <https://www.ttnews.com/articles/long-term-strategies-key-recruiting-experts-say>.

⁸ Les Besthoff and Katherine Lay, "Mass. Cannabis Company Still Advertising on I-84," NBC, <https://www.nbcconnecticut.com/investigations/mass-cannabis-company-still-advertising-on-i-84/2863965/>.

MARIJUANA LEGALIZATION AND DECRIMINALIZATION TRENDS

Federal Status of Marijuana

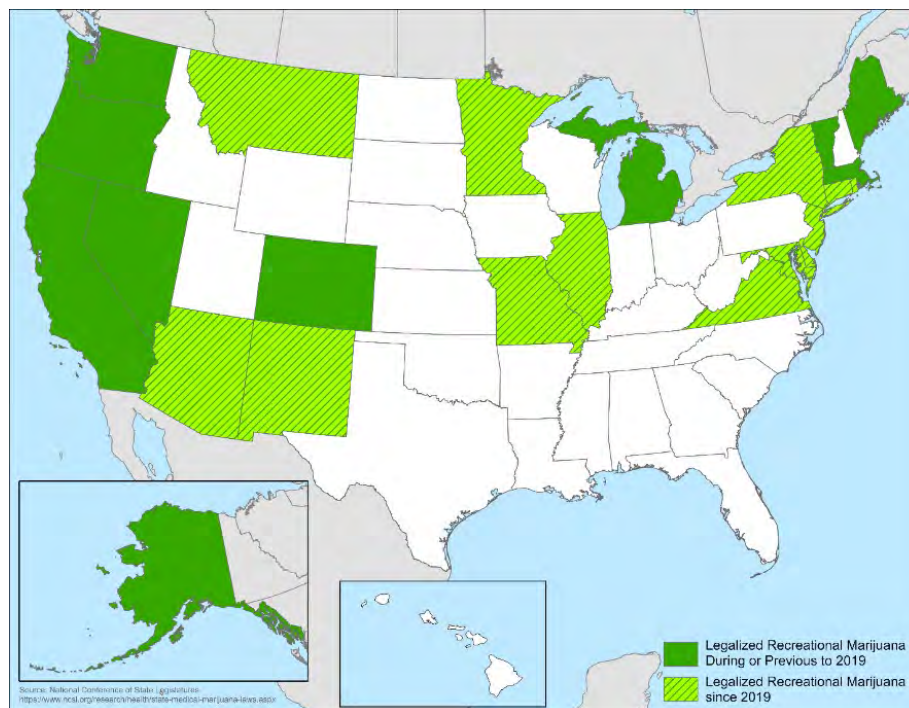
The Controlled Substances Act (CSA), enforced by the U.S. Drug Enforcement Administration (DEA), lists marijuana as a Schedule I drug. This category of controlled substances is defined as “drugs with no currently accepted medical use and a high potential for abuse.”⁹ Since inception of the CSA in 1970, several petitions to move marijuana to a different classification have been rejected by the DEA, most recently in 2016.¹⁰ Thus, in the eyes of the federal government, marijuana remains an illegal substance.

State-Level Marijuana Legalization Update

At the state-level, the landscape of drug legalization and decriminalization has changed significantly in the past four years.

At the time of publication in 2019, ATRI’s prior research identified 10 states that had legalized recreational marijuana. By June 2023, that number has more than doubled; 23 states now have laws legalizing recreational marijuana as shown in Figure 1.¹¹

Figure 1: Map of States with Legalized Recreational Marijuana



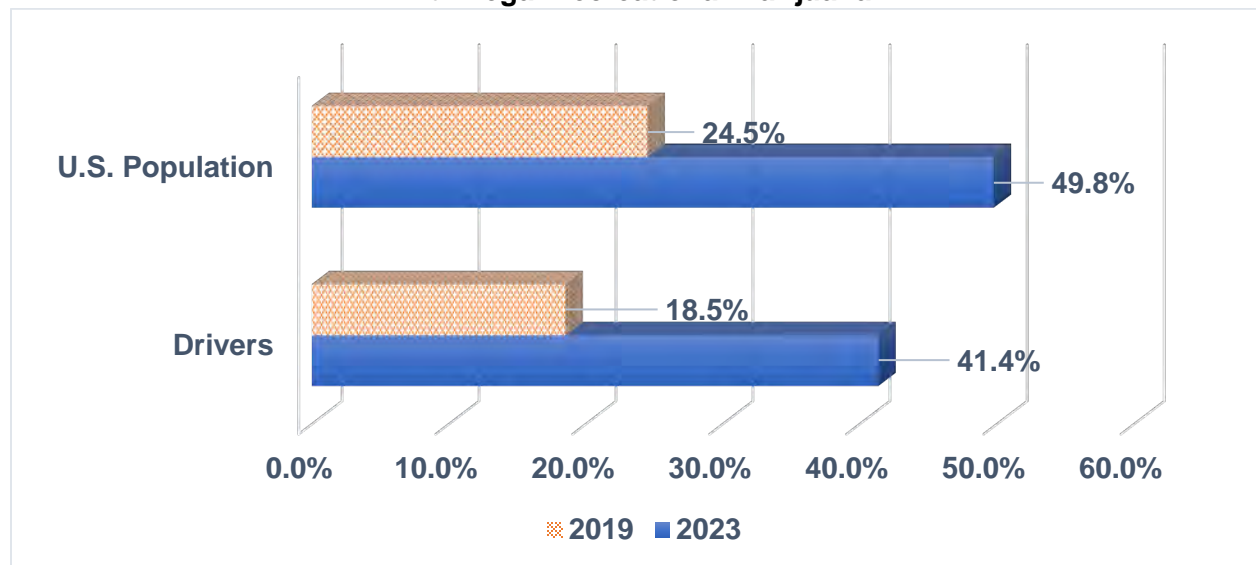
⁹ United States Drug Enforcement Administration, “Drug Scheduling,” (accessed February 14, 2023), <https://www.dea.gov/drug-information/drug-scheduling>.

¹⁰ Lisa N. Sacco, “The Schedule I Status of Marijuana,” Congressional Research Service (updated on October 7, 2022), <https://crsreports.congress.gov/product/pdf/IN/IN11204>.

¹¹ The District of Columbia has also legalized recreational marijuana.

As a result of these changes in state law, 49.8 percent of the general population – and 41.4 percent of truck drivers – live in states where recreational marijuana use is legal, according to Bureau of Labor Statistics (BLS) data (Figure 2). These figures are up from 24.5 percent and 18.5 percent respectively since the 2019 report.¹²

Figure 2: Percentage of U.S. Population and All Truck Drivers Residing in States with Legal Recreational Marijuana



Congress has seen several efforts to legalize marijuana nationally, though none have been successful.¹³ As noted earlier, marijuana is classified by CSA as a Schedule I drug, alongside heroin, ecstasy and LSD. Federal prosecutors have generally taken a hands-off approach when it comes to state legalization and have not pursued charges in instances where drug use/possession complies with state law.¹⁴

The Pew Research Center's 2022 survey appears to document growing acceptance of marijuana legalization; only 10 percent of Americans disapprove of marijuana legalization, 30

¹² U.S. Census Bureau, "Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia, and Puerto Rico: April 1, 2020 to July 1, 2022 (NST-EST2022-POP)" (December 2022), https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html#par_textimage_1574439295.

U.S. Census Bureau, "Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2019 (NST-EST2019-01)" (December 2019), <https://www.census.gov/newsroom/press-kits/2019/national-state-estimates.html>.

U.S. Bureau of Labor Statistics, "Occupational Employment and Wages, May 2021: 53-3032 Heavy and Tractor-Trailer Truck Drivers" (May 2021), <https://www.bls.gov/oes/>.

U.S. Bureau of Labor Statistics, "Occupational Employment and Wages, May 2019: 53-3032 Heavy and Tractor-Trailer Truck Drivers" (May 2019), <https://www.bls.gov/oes/2019/may/oes533032.htm>.

¹³ Mary Jane Gibson, "Federal marijuana legalization is stopped in its tracks," Vox (March 31, 2022), <https://www.vox.com/22968976/federal-marijuana-legalization-cannabis-policy-decriminalization>.

¹⁴ James M. Cole, "Memorandum for All United States Attorneys: Guidance Regarding Marijuana Enforcement," U.S. Department of Justice, Office of the Deputy Attorney General (August 29, 2013), <https://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf>.

percent believe it should only be legalized for medical usage, and 59 percent support both medical and recreational legalization.¹⁵

Additionally, those once deterred by the possible criminal consequences of marijuana purchase, possession, and use may be more open to trying (or more regularly using) legal marijuana. One study of U.S. legalization, in fact, found an average increase of approximately 20 percent in marijuana use frequency that is attributable to the legalization of recreational marijuana.¹⁶

Medical Marijuana

Since 2019, five additional states (Alabama, Kentucky, Mississippi, South Dakota, and Virginia) have legalized marijuana use for medical purposes.

Since marijuana is still federally recognized as a Schedule I drug and is not FDA-approved for medical uses, it cannot be legally prescribed by doctors in the U.S. – even those doctors that are based in states where medical use is legal.¹⁷ Doctors might provide “recommendations” or “certifications” that a patient has a condition that could be improved by using marijuana.¹⁸

In Massachusetts, for example, an individual can participate in the Medical Use of Marijuana Program if: 1) they have a qualifying medical condition (e.g. cancer, Crohn’s disease); and 2) if a certified health care provider (e.g. Massachusetts-licensed physician) recommends that the individual become a patient of the program.¹⁹ After these steps are taken, the individual will receive a registration card allowing for the purchase of marijuana at a medical marijuana dispensary. This puts dispensary workers, who are not required to have medical/scientific training, in the position of discussing types and quantities of marijuana with patients.²⁰

Alongside the marijuana industry, the cannabidiol (CBD) industry has also been growing rapidly.²¹ CBD is found in the hemp and marijuana plants (which both fall in the same plant species *cannabis sativa*). Hemp, however, has a very low THC level compared to marijuana,

¹⁵ Ted Van Green, "Americans overwhelmingly say marijuana should be legal for medical or recreational use", Pew Research Center (November 22, 2022), <https://www.pewresearch.org/fact-tank/2022/11/22/americans-overwhelmingly-say-marijuana-should-be-legal-for-medical-or-recreational-use/>.

¹⁶ Stephanie M. Zellers et al., "Impacts of recreational cannabis legalization on cannabis use: a longitudinal discordant twin study," *Addiction* 118, no. 1 (January 2023), <https://pubmed.ncbi.nlm.nih.gov/36002928/>.

¹⁷ There are exceptions for four FDA approved cannabis-derived or synthetic cannabis-related drugs which physicians can prescribe: Epidiolex (cannabidiol), Marinol (dronabinol), Syndros (dronabinol), and Cesamet (nabilone). These drugs are used for serious conditions such severe epilepsy and appetite loss in cancer and AIDS patients. Source: U.S. Food and Drug Association, "FDA and Cannabis: Research and Drug Approval Process" (updated February 2023), <https://www.fda.gov/news-events/public-health-focus/fda-and-cannabis-research-and-drug-approval-process>.

¹⁸ Marijuana Policy Project, "'Prescribing' Versus 'Recommending' Medical Cannabis" (2016), <https://www.mpp.org/files/uploads/2016/09/Prescribing-vs.-Recommending.pdf>.

¹⁹ Cannabis Control Commission, "Ten Things New Patients Should Know," Commonwealth of Massachusetts (June 2020), <https://masscannabiscontrol.com/for-new-patients/ten-things-new-patients-should-know/>.

²⁰ Nancy A. Haug et al., "Training and Practices of Cannabis Dispensary Staff," *Cannabis and Cannabinoid Research* 1, no. 1 (December 2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5531366/#>.

²¹ Grand View Research, *Global Cannabidiol Market Size, Share, Industry Analysis, 2030* (2022), <https://www.grandviewresearch.com/industry-analysis/cannabidiol-cbd-market>.

and it is not considered an intoxicating plant.²² CBD, in fact, is legal in all 50 states with some restrictions.²³ That said, it is possible for THC to be present in CBD products.

Both CBD and medical marijuana products are prone to labelling inaccuracies, and the amount of THC and/or CBD in the product in many cases does not match what is advertised.²⁴ This mislabeling can result in issues for the consumer. In 2015, a truck driver filed a lawsuit against a CBD oil company after he was fired for testing positive for THC. The driver claimed that he had been taking only the CBD product which was advertised as having zero THC. The CBD product was independently tested and found to have THC levels over the federal limit.²⁵

Decriminalization in States where Recreational Marijuana is Illegal

Some states where recreational and/or medical use is illegal have decriminalized possession of small amounts of marijuana.²⁶ Additionally, major cities such as Atlanta, Houston, and Philadelphia have also decriminalized marijuana possession within their jurisdictions.²⁷

Impact on State Budgets and Economies

In many cases, state governments have a financial incentive to legalize and decriminalize marijuana.

A first incentive is the potential reduction of criminal justice system costs. One estimate indicates that in 2008 (prior to the commencement of recreational marijuana legalization) state-level expenditures related to marijuana prohibition totaled more than \$10 billion annually.²⁸ These costs are associated with law enforcement, the judicial system and incarceration. In theory these costs will greatly decrease in states where the drug has been legalized, though a Department of Justice study suggests that quantifying this decrease is difficult.²⁹

²² <https://msutoday.msu.edu/news/2021/cbd-marijuana-and-hemp#:~:text=CBD>

²³ Peter Grinspoon, "Cannabidiol (CBD): What we know and what we don't," *Harvard Health Publishing* (September 24, 2021), <https://www.health.harvard.edu/blog/cannabidiol-cbd-what-we-know-and-what-we-dont-2018082414476>.

²⁴ Institute for Safe Medicine Practices, "ISMP Warns that Medical Marijuana Product Labeling Problems Have Led to Errors" (January 2013, 2020), <https://www.ismp.org/news/ismp-warns-medical-marijuana-product-labeling-problems-have-led-errors>.

²⁵ Tyson Fisher, "Trucker's CBD lawsuit gutted after RICO claims dismissed," *Land Line* (August 12, 2021), <https://landline.media/truckers-cbd-lawsuit-gutted-after-rico-claims-dismissed/>.

²⁶ National Organization for the Reform of Marijuana Laws, "North Carolina Laws and Penalties" (March 2020), <https://norml.org/laws/north-carolina-penalties-2/>.

National Organization for the Reform of Marijuana Laws, "Nebraska Laws and Penalties" (March 2020), <https://norml.org/laws/nebraska-penalties-2/>.

²⁷ National Organization for the Reform of Marijuana Laws, "Local Decriminalization Laws" (December 2022), <https://norml.org/laws/local-decriminalization/>.

²⁸ Jeffery A. Miron, *The Budgetary Implications of Drug Prohibition*, Department of Economics, Harvard University (2010), https://scholar.harvard.edu/miron/files/budget_2010_final_0.pdf.

²⁹ Erin J. Farley and Stan Orchowky, "Measuring the Criminal Justice System Impacts of Marijuana Legalization and Decriminalization Using State Data" (September 2019), <https://www.ojp.gov/pdffiles1/nij/grants/253137.pdf>.

A second financial incentive is revenue from the taxation of marijuana sales. Since legal sales of recreational marijuana officially began in 2014, states have received tax revenues totaling \$11.2 billion; in 2021 the annual figure reached \$3.7 billion and is likely to grow.³⁰

Economic development may also be a state-level impetus for legalization. *Forbes* recently reported on estimates of the U.S. market for marijuana products, citing predicted annual sales of \$31.8 billion by the end of 2023 and \$50.7 billion by 2028.³¹

Summary of Legalization Trends

- While state-wide legalization is expanding, marijuana is recognized as an illegal Schedule I drug by the federal government.
- As of June 2023, 23 states have legalized recreational marijuana – up from the 10 states that had legalized the drug at the time of ATRI's 2019 report.
- 49.8 percent of the general population and 41.4 percent of truck drivers live in states with legalized recreational marijuana – up from 24.5 and 18.5 percent respectively at the time of ATRI's 2019 report.
- 59 percent of Americans support both medical and recreational marijuana legalization, with only 10 percent rejecting any form of legalization.
- The CBD industry has grown rapidly, and CBD products are legal in all 50 states. However, the CBD industry also lacks regulation and products advertising THC levels below the federal limit may actually be above the limit – risking users' employment in safety-sensitive positions.
- States have multiple financial incentives to legalize marijuana including decreases in justice system costs, revenue from marijuana sales taxation, and economic development from growth of the marijuana industry.

³⁰ Marijuana Policy Project, "Cannabis Tax Revenue in States that Regulate Cannabis for Adult Use" (updated on April 5, 2022), <https://www.mpp.org/issues/legalization/cannabis-tax-revenue-states-regulate-cannabis-adult-use/>.

³¹ Iris Dorian, "Despite Some Stumbles, Total Sales In U.S. Cannabis Market Could Soar To \$50.7 Billion By 2028, Says Top Researcher," *Forbes* (February 15, 2023), <https://www.forbes.com/sites/irisdorian/2023/02/15/despite-some-stumbles-total-sales-in-us-cannabis-market-could-soar-to-507-billion-by-2028-says-top-researcher/?sh=2985628c164d>.

MARIJUANA AND HIGHWAY SAFETY

Research on marijuana has been difficult in the past due to federal and state laws making the drug illegal. However, funding for research has steadily grown in recent decades from \$30 million in 2000 to over \$143 million in annual awards in 2018.³²

The Infrastructure Investment and Jobs Act (IIJA), passed in November 2021, may increase research and analysis of marijuana's impacts on roadway safety. The IIJA contains a directive for the U.S. Department of Transportation (U.S. DOT) to produce a report about scientific research and associated research barriers as it relates to marijuana impairment while operating a vehicle.³³ The IIJA requires the report to describe approaches and make recommendations for achieving the following:

- Access for scientific research to marijuana samples that match today's potency.³⁴
- A "clearinghouse to collect and distribute samples and strains of marijuana for scientific research that includes marijuana and products containing marijuana lawfully available to patients or consumers in a state on a retail basis."³⁵
- A path toward allowing researchers in states that have not legalized marijuana to gain access to samples of marijuana in order to conduct marijuana-impaired driving research.³⁶
- An understanding of barriers to conducting marijuana-impaired driving research.

Additionally, as part of the IIJA, the National Highway Traffic Safety Administration (NHTSA) will offer guidance to states on educating the public about the risks of marijuana-impaired driving.³⁷

Beyond provisions in the IIJA, the federal Medical Marijuana and Cannabidiol Research Expansion Act (MMCREA) was passed into law in December 2022.³⁸ This legislation removes certain restrictions on research involving marijuana for medical use. It also enables the Food and Drug Administration (FDA) to develop and approve new drug trials utilizing CBD or THC.

³² Cathleen O'Grady, "Cannabis research data reveals a focus on harms of the drug," *Science* 369, no. 6508 (September 2020), <https://www.science.org/doi/epdf/10.1126/science.369.6508.1155>.

³³ *Infrastructure Investment and Jobs Act*, HR 3684, 117th Cong., *Public Law 117-58*, <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

³⁴ Cathleen O'Grady, "Cannabis research database shows how U.S. funding focuses on harms of the drug" (accessed February 14, 2023), <https://www.science.org/content/article/cannabis-research-database-shows-how-us-funding-focuses-harms-drug>. Previously, the University of Mississippi was the only legal producer of cannabis used for research purposes. Cannabis produced by the University of Mississippi is less potent than what is available in states that allow recreational marijuana.

³⁵ *Infrastructure Investment and Jobs Act*, HR 3684, 117th Cong., *Public Law 117-58*, <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

³⁶ *Ibid.*

³⁷ *Infrastructure Investment and Jobs Act (IIJA)*, Senate Amendment HR 3684, 117th Cong., *GHSA Summary*, <https://www.ghsa.org/sites/default/files/2021-10/GHSA%20IIJA%20GHSA%20Summary%20102821.pdf>

³⁸ Aram Ordubegian et al., "New Law Eases Federal Restrictions on Medical Marijuana Research and Cultivation," *The National Law Review*, (December 7, 2022), <https://www.natlawreview.com/article/new-law-eases-federal-restrictions-medical-marijuana-research-and-cultivation>.

The Impact of Marijuana on Vehicle Drivers

According to the Centers for Disease Control (CDC), the THC contained in marijuana “is a psychoactive (mind-altering) compound that affects areas of the brain that control the body’s movements, balance, coordination, memory and judgment.”³⁹ The impacts of marijuana also include:

- impaired coordination;
- distorted perception;
- memory loss; and
- problem-solving difficulties.⁴⁰

Of particular concern for those operating a motor vehicle are decision-making capabilities as well as reaction times, which can be slowed by marijuana.⁴¹

One 2009 study, which compared the impact of alcohol versus marijuana on driving, found that the “detrimental effects of cannabis use vary in a dose-related fashion, and are more pronounced with highly automatic driving functions than with more complex tasks that require conscious control.”⁴² The researchers indicate that a driver’s awareness of being impaired by marijuana can allow the driver to compensate for that impairment; this compensation is, however, eliminated if alcohol and marijuana are combined. Ultimately this early study found that past research is inconclusive as to whether marijuana use increases accident risk.

By 2016, however, new research had found that “acute cannabis intoxication is associated with a statistically significant increase in motor vehicle crash risk.”⁴³ Another study in 2017 found that “drivers under the influence of [marijuana] multiply their risk of being responsible for causing a fatal accident by 1.65,” – while alcohol increased that risk by 17.8 times.⁴⁴

More recent research published in 2021 found additional evidence that driving performance was impacted by marijuana impairment.⁴⁵ The meta-analysis reviewed more than 80 past research publications to identify both the magnitude and the duration of impairment experienced after marijuana use. Peak marijuana effects were found to impair “driving performance and driving-related cognitive skills (e.g. lateral control, tracking, divided attention).”⁴⁶ The study also offered evidence that drivers should wait five hours after inhaling marijuana before operating a vehicle.

³⁹ Centers for Disease Control and Prevention, “Marijuana and Driving: How to Keep Your Fleet’s Drivers Safe” (updated on November 23, 2021), <https://www.cdc.gov/niosh/newsroom/feature/marijuana-and-driving.html>.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Andrew R. Sewell, James Poling, and Mehmet Sofuoglu, “The Effect of Cannabis Compared With Alcohol on Driving,” *The American Journal on Addictions* 18, no. 3 (2009), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2722956/>.

⁴³ Ole Rogeberg and Rune Elvik, “The effects of cannabis intoxication on motor vehicle collision revisited and revised,” *Addiction* 111, no. 8 (2016), <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.13347>.

⁴⁴ Jean-Louis Martin et al. “Cannabis, alcohol and fatal road accidents,” *PLoS One* 12, no. 11 (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5678710/>.

⁴⁵ Danielle McCartney et al., “Determining the magnitude and duration of acute $\Delta 9$ -tetrahydrocannabinol ($\Delta 9$ -THC)-induced driving and cognitive impairment: A systematic and meta-analytic review,” *Neuroscience & Biobehavioral Reviews* 126 (2021), <https://www.sciencedirect.com/science/article/pii/S0149763421000178>.

⁴⁶ Ibid.

Thus, the body of research does conclude that driving under the influence of marijuana causes impairment, and highway safety is negatively impacted by that impairment. The full impact of such impairment must still be quantified through additional scientific research.

Research on the Impact of Marijuana Legalization on Roadway Safety Statistics

Measuring the impact of marijuana on highway safety trends is a more difficult undertaking. The myriad external variables that can influence the outcome of these studies make it difficult to isolate the impact of marijuana on roadway safety. That said, there is a broad body of literature regarding the impact of marijuana legalization on highway safety statistics, particularly focusing on safety outcomes in those states that first legalized recreational marijuana in 2012 (Colorado and Washington State).

A study published in 2017 was among the first to explore the relationship between legal recreational marijuana and highway safety, examining data from Colorado, Washington and eight control states.⁴⁷ The authors did not find a statistically significant change in fatality rates, though future research was recommended. A second study of the same two states, but published one year later, found no difference in fatalities between those states and a control group. It was, however, noted that fatal accidents where one vehicle driver tested positive for marijuana had increased nationwide 10 percent from 2013 to 2016.⁴⁸ Finally, a study published in 2019 looked at three states (CO, WA and OR) along with nine neighboring control states (where recreational marijuana remained illegal). The study found that “in the year following implementation of recreational cannabis sales, traffic fatalities temporarily increased by an average of one additional traffic fatality per million residents,” in all 12 states.⁴⁹

As additional states have legalized recreational marijuana and as data collection is possible for longer periods of time, a broader set of marijuana/safety data emerged for researchers to analyze. A 2021 study sought to quantify the association between legalization of recreational marijuana and fatal motor vehicle crashes using Fatal Analysis Reporting System (FARS) data. The study found that legalization of recreational marijuana in the U.S. was “associated with a relative increased risk of fatal motor vehicle collisions of 15% and a relative increase in associated deaths of 16%, with no conclusive difference between the first and subsequent years after legalization.”⁵⁰

Finally, a 2022 study found that the “legalization of the recreational use of marijuana and the subsequent onset of retail sales in five states was on average associated with a 5.8% increase

⁴⁷Jayson D. Aydelotte et al., “Crash Fatality Rates After Recreational Marijuana Legalization in Washington and Colorado,” *American Journal of Public Health* 107, no. 8 (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5508149/>.

⁴⁸ Benjamin Hansen, Keaton Miller, and Caroline Weber, “Early Evidence on Recreational Marijuana Legalization and Traffic Fatalities,” *Economic Inquiry* 58, no. 2 (2020), <https://onlinelibrary.wiley.com/doi/abs/10.1111/ecin.12751>.

⁴⁹ Tyler J. Lane and Wayne Hall, “Traffic fatalities within US states that have legalized recreational cannabis sales and their neighbors,” *Addiction* 114, no. 5 (2019), <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14536>.

⁵⁰ Sarah B. Windle et al., “Association between legalization of recreational cannabis and fatal motor vehicle collisions in the United States: an ecologic study,” *Canadian Medical Association Open Access Journal* 9, no. 1 (2021), <https://www.cmajopen.ca/content/cmajo/9/1/E233.full.pdf>.

in injury crash rates and a 4.1% increase in fatal crash rates.”⁵¹ In this research, the authors note that marijuana impairment causes drivers to slow down and increase following distances. In light of this, it was suggested by the authors that:

“It is reasonable to expect that such behaviors will reduce the severity of crashes that result. In that sense, past research suggests that fatal crash rates may be less affected by marijuana legalization than less severe crash rates. That is, the compensation exhibited by marijuana-impaired drivers, especially lower speeds, may not be sufficient to avoid a crash, but it may be enough to reduce the severity of that crash.”

Overall, the study found that marijuana led to a greater increase in injury crashes than fatal crashes. As was the case in earlier studies, the authors do caution that the findings may be influenced by other factors.

While the trends in research findings suggest that marijuana does impact overall highway safety outcomes, most conclude that more research is needed using data from a longer period of time than is currently available.

Research on Establishing Impairment Standards and Measuring Impairment

The Governors Highway Safety Association (GHSA) indicates that “every state has laws dealing with alcohol-impaired driving and drug-impaired driving. But unlike the laws for drunk driving, those that address drugged driving are nuanced, difficult to enforce and prosecute, and vary substantially by state.”⁵²

There are two primary approaches to document marijuana-impaired drivers. The first is behavior-based, with evidence collected through standardized field sobriety testing (SFST). These tests are often conducted by a law enforcement officer with special training known as a drug recognition expert (DRE). SFST procedures include having the subject: 1) follow an object with his or her eyes; 2) walk in a straight line; 3) stand on one leg; and 4) finger-to-nose test. The outcomes of these tests may offer evidence that the subject is impaired by marijuana.

However, these tests were designed to gauge alcohol impairment, not marijuana, and there is evidence that SFST procedures lack sensitivity when it comes to marijuana impairment. For example, a AAA Foundation study found that of the walk-and-turn, one-leg-stand, and finger-to-nose tests, only the latter showed a greater rate of failure as THC blood-levels of subjects increased.⁵³

⁵¹ Charles M. Farmer, Samuel S. Monfort, and Amber N. Woods, "Changes in Traffic Crash Rates After Legalization of Marijuana: Results by Crash Severity," *Journal of Studies on Alcohol and Drugs* 83, no. 4 (2022), <https://www.jsad.com/doi/10.15288/jsad.2022.83.494>.

⁵² Governors Highway Safety Association, "Drug Impaired Driving" (updated on March 2023), <https://www.ghsa.org/state-laws/issues/Drug%20Impaired%20Driving>.

⁵³ Barry Logan, Sherri L. Kacinko, and Douglas J. Beirness, An Evaluation of Data from Drivers Arrested for Driving Under the Influence in Relation to Per se Limits for Cannabis, Foundation for Traffic Safety, American Automobile Association (May 2016), <https://aaaafoundation.org/wp-content/uploads/2017/12/EvaluationOfDriversInRelationToPerSeReport.pdf>.

The second approach is biology-based, measuring the concentration of THC in a driver's blood (in nanograms per milliliter [ng/mL]). Three states have laws where anything greater than 0 ng/mL of THC in the blood indicates impairment (i.e. zero tolerance).⁵⁴ Four states have per se limits – including Illinois, Montana and Washington – setting THC impairment levels at 5 ng/mL, and Ohio at 2 ng/mL.⁵⁵ Colorado has a “permissible inference” law for those with a 5 ng/mL or greater concentration of THC in their blood.

Finally, there are 10 states where impairment is determined by a positive metabolite test; metabolites could be present several weeks after use.

Thus, there is no standard approach in the U.S. to identify unsafe, marijuana-impaired driving. There is, however, past research that may help move the U.S. toward a standard.

In research released in 2016 the AAA Foundation looked at data collected by DREs along with DUI arrest data. Key data points included SFST results and ng/mL of THC in the blood. The study found that no “objective threshold exists that establish(es) impairment, based on THC concentrations measured in specimens collected from cannabis-positive subjects placed under arrest for impaired driving.”⁵⁶ In the research, there were only “minimal differences” in impairment found between those with >5 ng/mL and those with <5 ng/mL of THC concentration in the blood. Of particular note were the following findings:

- Among those who were considered **impaired** through SFTS: 80 percent had THC concentrations of 1 ng/mL or greater; 20 percent had lower concentrations.
- Among those who were considered **not impaired** through SFTS: 30 percent had THC concentrations of 1 ng/mL or greater; 70 percent had lower concentrations.

Therefore, a significant group with high THC levels were not identified as impaired, and some who were considered sober were identified as impaired.

The report was not able to identify a “quantitative threshold for *per se* laws” that could be scientifically supported.

A study published in 2021 found similar results. The researchers tested simulated driving performance of subjects who used marijuana. Blood and oral concentrations of THC were measured. The study found a “poor and inconsistent relationship between magnitude of impairment and THC concentrations in biological samples, meaning that per se limits cannot reliably discriminate between impaired [and] unimpaired drivers,” ultimately concluding that better methods for identifying impairment were needed.⁵⁷

⁵⁴ Ibid.

⁵⁵ Per-se Laws DUI laws make it illegal to have a certain amount/concentration of a substance in the body while driving regardless of whether the subject's level of impairment. For example, driving with a blood-alcohol concentration at 0.08% or above is inherently illegal even if the subject was not shown to be otherwise impaired.

⁵⁶ Barry Logan, Sherri L. Kacinko, and Douglas J. Beirness, An Evaluation of Data from Drivers Arrested for Driving Under the Influence in Relation to Per se Limits for Cannabis, Foundation for Traffic Safety, American Automobile Association (May 2016), <https://aaaafoundation.org/wp-content/uploads/2017/12/EvaluationOfDriversInRelationToPerSeReport.pdf>.

⁵⁷ Thomas R. Arkell et al., “The failings of per se limits to detect cannabis induced driving impairment: Results from a simulated driving study,” *Traffic Injury Prevention* 22, no. 2 (2021), <https://www.tandfonline.com/doi/abs/10.1080/15389588.2020.1851685..>

These findings indicate that a biological measurement of impairment will be difficult to achieve, and some researchers believe that the behavioral approach to documenting impairment is the most promising.⁵⁸

Summary of Marijuana Research Trends

- The IIJA and MMCREA, along with outside funding, will likely increase the volume of research conducted on marijuana and its impact on roadway safety.
- Various research studies over the years have found that marijuana intoxication negatively impacts driving performance, however, most indicate that more research is required to fully understand marijuana impairment.
- Initial data does suggest that marijuana legalization has negatively impacted highway safety, particularly in the case of increases in non-fatal crashes, but more research is needed.
- There are severe challenges to overcome with biological measurements of marijuana driving impairment, and, while current behavior-based SFSTs have been shown to lack sensitivity to marijuana impairment, this approach may be the standard if biology-based impairment tests are not developed.

⁵⁸ Cell Press, "Developing a roadside test for marijuana intoxication isn't as easy as it sounds," *Science Daily* (January 25, 2018), <https://www.sciencedaily.com/releases/2018/01/180125135606.htm>.

WORKFORCE IMPLICATIONS OF LEGALIZED RECREATIONAL MARIJUANA

Federal Requirements for Drug Testing of Safety-Sensitive Employees

The federal government requires employers to conduct controlled substances tests (i.e. “drug test”) on certain safety-sensitive or security-sensitive employees. The regulation of this testing generally falls under three agencies: the U.S. Department of Defense; the Nuclear Regulatory Agency; and the U.S. DOT.⁵⁹ Additionally, “all federal employees involved in ‘law enforcement, national security, the protection of life and property, public health or safety, or other functions requiring a high degree of public trust’ are subject to mandatory drug testing.”⁶⁰

A variety of safety-sensitive positions are covered within the U.S. DOT drug testing regulations, as shown in Table 1.⁶¹

Table 1: Safety-Sensitive Employees Covered by U.S. DOT

Aviation	Flight crews and attendants, dispatchers, maintenance workers, air traffic controllers, operations specialists, aviation screeners, and ground security coordinators.
Pipeline	Operations, maintenance, and emergency response employees.
Transit	Certain operators of vehicles that move passengers, operators of non-revenue service vehicles that require a CDL, vehicle maintenance employees, dispatchers, and security employees who carry a firearm.
Railroad	Employees moving trains, train dispatchers, signal employees, mechanical employees who test and inspect tracks, railroad maintenance and construction workers.
Maritime	Crewmembers of a vessel.
Highway	Certain truck or bus operators.

As indicated above, truck and bus drivers fall within the “highway” category, which is overseen by FMCSA.

According to FMCSA, a truck or bus driver is subject to testing for drugs (and alcohol) if that driver: 1) holds a CDL; and 2) operates a commercial motor vehicle (CMV). The definition of CMV can be any one of the following:

- A vehicle with gross vehicle weight rating or gross vehicle weight (or gross combination weight rating/gross combination weight) of 26,001 or more lbs.; or
- A vehicle designed to carry 16 or more passengers; or
- A placarded vehicle (of any size) used to transport hazardous materials.⁶²

⁵⁹ Substance Abuse and Mental Health Services Administration, “Considerations for Safety and Security-sensitive Industries,” U.S. Department of Health & Human Services (updated on July 2022), <https://www.samhsa.gov/workplace/employer-resources/safety-security-sensitive>.

⁶⁰ Ibid.

⁶¹ Office of Drug & Alcohol Policy & Compliance, “Office of Drug & Alcohol Policy & Compliance,” U.S. Department of Transportation (updated on March 2023), <https://www.transportation.gov/odapc>.

⁶² Office of Drug & Alcohol Policy & Compliance, “Office of Drug & Alcohol Policy & Compliance,” U.S. Department of Transportation (updated on March 2023), <https://www.transportation.gov/odapc>.

Pursuant to these regulations, trucking companies must ensure that drug testing, including a test for marijuana use, is conducted at specific times on safety-sensitive employees.⁶³ In a given year it is a current requirement that 50 percent or more of a trucking company's drivers will be given such tests, which are administered for the following reasons:

Pre-Employment Testing – A test must be conducted prior to the first time a driver performs safety-sensitive tasks.

Post-Accident Testing – If a CDL driver is involved in a crash that includes a fatality, bodily injury or damage that disables an involved vehicle, then a test must be conducted.

Random Testing – Currently 50 percent of a carrier's drivers must be randomly tested for controlled substances annually.⁶⁴ The testing rate for motor carriers is determined by FMCSA through an analysis of national positive random drug test rates for CDL holders and is set at either 25 percent or 50 percent of drivers.

Reasonable Suspicion Testing – If it is suspected (and is based on specific observations made by the employer) that a driver has used a controlled substance, an employer can require that driver to submit to a drug test.

Return-to-Duty Testing and Follow-up Testing – Finally, testing is required for drivers who test positive for controlled substances and seek to return to the industry. This testing is first conducted after a driver completes required education and/or treatment within the return-to-duty (RTD) process. The driver must be tested after completing the process prior to conducting safety-sensitive functions and must also have a plan for follow-up testing to ensure that controlled substances are not being used again by that driver.

Controlled substance testing is carried out through a urine drug screen. The U.S. DOT published a final rule in May 2023 "to amend the transportation industry drug testing program procedures regulation to include oral fluid testing."⁶⁵ The U.S. DOT stated: "this will give employers a choice that will help combat employee cheating on urine drug tests and provide a more economical, less intrusive means of achieving the safety goals of the [testing] program."⁶⁶

An additional testing approach (which is not currently recognized by the U.S. DOT) is hair testing. While urine testing can detect myriad drugs including marijuana, cocaine and methamphetamine, the window for detection among these can range from 1 to 30 days. Marijuana is detectable in urine for several weeks, while cocaine and methamphetamine are

⁶³ Controlled Substances and Alcohol and Testing, 49 CFR Part 382 (2001), <https://www.ecfr.gov/current/title-49/subtitle-B/chapter-III/subchapter-B/part-382>.

⁶⁴ Federal Motor Carrier Safety Administration, Notice, "Annual Random Controlled Substances Testing Percentage Rate for Calendar Year 2020", *Federal Register* 84, no. 248 (December 27, 2019), <https://www.govinfo.gov/content/pkg/FR-2019-12-27/pdf/2019-28164.pdf>.

⁶⁵ U.S. Department of Transportation, Proposed Rules, "Procedures for Transportation Workplace Drug and Alcohol Testing Programs: Addition of Oral Fluid Specimen Testing for Drugs," *Federal Register* 87, no. 39 (February 28, 2022), <https://www.govinfo.gov/content/pkg/FR-2022-02-28/pdf/2022-02364.pdf>.

⁶⁶ *Ibid.*

only detectable in urine for a couple of days.⁶⁷ Hair testing can detect these drugs for up to 90 days after use.⁶⁸

Research has found that hair testing is very effective at identifying several drugs when compared to urine testing.⁶⁹ Crosstab analysis indicates a statistically significant difference between hair and urine positivity rates, with hair detecting significantly more positives overall and individually for cocaine, opioids, amphetamines/methamphetamines, marijuana, ecstasy, and PCP.⁷⁰ In comparing 936,872 hair and urine pre-employment drug screens administered from 2017-2022, hair detected 25x more opioid users, 23x more cocaine users, and 13x more amphetamine/methamphetamine users.⁷¹

Federal Prohibitions for Alcohol vs Marijuana and Other Drugs Among Truck Drivers

It should be noted that the rules prohibiting the use of alcohol and controlled substances are different, with allowable alcohol levels and a zero-tolerance for Schedule I drugs, as shown in the following summary of prohibitions.⁷³

Alcohol Prohibitions: The regulations state that drivers may not drink alcohol while on duty. Drivers cannot drink alcohol within a four-hour time period prior to coming on duty. Drivers shall not report to duty while having a blood alcohol concentration of 0.04 or greater.

Controlled Substance Prohibitions: The regulations state that drivers shall not report for duty or be on duty "when the driver uses any drug or substance identified in Schedule I," or when the driver uses any non-Schedule I drug that is listed in other schedules without appropriate medical instructions.

In addition to Schedule I drugs there are four other Schedules of controlled substances listed by the DEA.⁷²

Schedule II: Substances with high potential for abuse which can lead to severe psychological or physical dependence. Examples include morphine and fentanyl.

Schedule III: Substances with less potential for abuse than Schedule I or II substances and with moderate to low potential for psychological or physical dependence. Examples include narcotics with less than 90 milligrams of codeine per dosage and non-narcotics such as ketamine and anabolic steroids.

Schedule IV: Substances with low potential for abuse and low risk of dependence. Examples include alprazolam (Xanax) and diazepam (Valium).

Schedule V: Substance with lower potential for abuse compared to higher schedule substances and consist mostly of preparations containing limited quantities of certain narcotics.

⁶⁷ Mary Sauer, "Everything You Should Know About a Hair Strand Drug Test," *Healthline* (updated on February 6, 2023), <https://www.healthline.com/health/hair-follicle-drug-test>.

⁶⁸ Roy Maurer, "Hair, Saliva or Urine—Which Is Best for Drug-Testing Job Candidates?," Society for Human Resource Management (February 15, 2018), <https://www.shrm.org/resourcesandtools/hr-topics/talent-acquisition/pages/hair-saliva-urine-drug-testing-methods-specimens.aspx>.

⁶⁹ Douglas M. Voss, Joseph D. Cangelosi, and Ming Li, "A Longitudinal and Statistical Assessment of Hair vs. Urine Testing Efficacy" (2023).

⁷⁰ Ibid.

⁷¹ Ibid.

⁷² U.S. Drug Enforcement Administration, "Drug Scheduling" (accessed March 20, 2023), <https://www.dea.gov/drug-information/drug-scheduling>.

⁷³ Controlled Substances and Alcohol and Testing, 49 CFR Part 382 (2001), <https://www.ecfr.gov/current/title-49/subtitle-B/chapter-III/subchapter-B/part-382/subpart-B>.

Marijuana is on the Schedule I list, which includes drugs considered by the federal government to have no medical use and also have the potential for abuse. Therefore, the medical use of marijuana by a CDL holder is not allowed, even with medical instructions or supervision.

Federal Statistics for Driver Drug Testing Results

To track the effectiveness of drug prohibitions and drug testing efforts among drivers, the U.S. DOT compiles national data on CDL holder drug testing. The two key programs that provide these data and statistics to the public – the Drug and Alcohol Management Information System (MIS) and the Drug and Alcohol Clearinghouse (DACH) – are described below.

Program One: MIS Data

The first program, which uses an annual survey to collect data from a sample of larger carriers, is called the Drug and Alcohol MIS. The collection of these data is overseen by the Office of Drug and Alcohol Policy and Compliance (ODAPC) within the U.S. DOT Office of the Secretary. The agency is currently required to provide historical data from this program to the public; at the time of publication, the datasets covered 2003 through 2021. This public data disclosure satisfies a 2018 law requiring the U.S. DOT to “establish and make publicly available on its website a database of the drug and alcohol testing data reported by employers for each mode of transportation.”⁷⁴ These data are referred to herein as MIS data.

The MIS data are aggregated from a survey of all companies having >1,000 regulated drivers, and from a random sample of companies having <1,000 regulated drivers.⁷⁵ The dataset represents a sample of the 600,000 motor carriers that are regulated by the U.S. DOT.⁷⁶

The carrier survey collects drug and alcohol testing results from the sampled companies that return valid surveys. These are broken down by testing category (e.g. pre-employment, return-to-duty) and, importantly, include the results of tests that are both positive and negative. This allows for measurements of positive test rates, which is key to setting the required random drug testing rate in a given transportation sector. It should be noted that the MIS data that are disclosed by the U.S. DOT are aggregated. When conducting the analysis below, ATRI researchers had no opportunity to identify and remove errors, weight the data or conduct deeper data analyses (e.g. by trucking company size or location).

Using the publicly available data from U.S. DOT, Table 2 shows trends in the aggregated survey data for all positive and negative drug tests. The data show that the average positive test rate across the 10-year period is 1.07 percent. The percentage of positive tests for marijuana is found in the last column: 66.9 percent of all positive tests, on average, were positive for marijuana. It should be noted that the majority of the drug tests in Table 2 were conducted for pre-employment screening or as part of a random drug testing protocol.

⁷⁴ U.S. Department of Transportation, "DOT Agency MIS Data" (updated on January 17, 2023), https://www.transportation.gov/odapc/DOT_Agency_MIS_Data.

⁷⁵ U.S. Department of Transportation, "2021 MIS Data" (updated on January 17, 2023), <https://www.transportation.gov/odapc/2021-MIS-DATA>.

⁷⁶ Between the years of 2012 and 2021, the average sample included approximately 975,000 employees and 2,805 companies. On average, there are about 347 employees per company. Despite 19.1 percent of employees being represented, only 0.5 percent of companies are.

Table 2: MIS Annual Data Summaries – All Drug Testing

Year	Total Number of Drug Tests	Verified Positive Drug Result	Positive Drug Test Rate	Percent of Positive Tests that are Positive for Marijuana
2012	997,981	8,909	0.89%	65.4%
2013	1,004,417	9,425	0.94%	67.2%
2014	771,981	7,070	0.92%	67.7%
2015	1,148,016	12,182	1.06%	67.2%
2016	866,655	9,618	1.11%	67.5%
2017	947,210	11,834	1.25%	68.5%
2018	938,757	12,979	1.38%	63.3%
2019	1,105,102	13,545	1.23%	65.4%
2020	1,296,829	12,677	0.98%	68.0%
2021	1,499,974	14,645	0.98%	69.2%
MEAN	1,057,692	11,288	1.07%	66.9%

Pre-employment tests – which are a subset of the table above – are conducted on driver candidates prior to conducting safety-sensitive work. There are two key takeaways in the pre-employment test trends, which are displayed in Table 3.

The first is that the *pre-employment* screening positive test rate is much higher than the positive rate across all drug testing categories – with an average of 1.35 percent across the 10-year time period. This is not surprising, as the pre-screening is intended to filter out prospective drivers who use drugs.

The second takeaway is that marijuana contributes to a higher percentage of positive drug tests in the pre-employment category than in the overall testing data – on average 71.1 percent of positive drug tests are positive for marijuana. Therefore, past use of marijuana – which may have been up to 30 days prior to the test – is filtering out a significant number of potential truck drivers from the industry. There is the potential that these drivers had last used marijuana prior to even deciding to become a truck driver.

Table 3: MIS Annual Data Summaries – Pre-Employment

Year	Total Number of Drug Tests	Verified Positive Drug Result	Positive Drug Test Rate	Percent of Positive Tests that are Positive for Marijuana
2012	474,950	5,844	1.23%	70.6%
2013	491,039	6,451	1.31%	72.0%
2014	388,855	4,803	1.24%	72.6%
2015	594,976	8,537	1.43%	71.7%
2016	531,005	7,221	1.36%	71.2%
2017	592,530	9,007	1.52%	71.6%
2018	604,811	9,833	1.63%	66.0%
2019	699,004	9,679	1.38%	68.0%
2020	599,218	6,878	1.15%	71.7%
2021	746,669	9,226	1.24%	75.4%
MEAN	572,306	7,748	1.35%	71.1%

The MIS data documenting *random testing* of CDL holders is also noteworthy. According to the Government Accountability Office (GAO), the primary use of the MIS data for all modal administrations including FMCSA is to determine the required random testing rate.⁷⁷ The required testing rate is based on past positive rates compiled for each mode.

In 2016 the requirement for motor carrier random testing was decreased from 50 percent of truck drivers annually for each carrier to 25 percent of drivers.⁷⁸ This change was made because the random positive drug test rate – based on the MIS data – was below 1 percent for three consecutive years (2011-2013).

Four years later FMCSA unexpectedly increased the random testing rate to 50 percent from 25 percent, starting with the year 2020.⁷⁹ This change was made because FMCSA's analysis of the 2018 MIS data found that greater than 1 percent of random drug tests were positive. FMCSA stated that the industry's annual financial cost due to this change is "an estimated \$50

⁷⁷U.S Government Accountability Office, *Transportation Safety: DOT Has Taken Steps to verify and Publicize Drug and Alcohol Testing Data but Should Do More* (March 2021), report to Congressional Committees, <https://www.gao.gov/assets/gao-21-296.pdf>.

⁷⁸ Federal Motor Carrier Safety Administration, "FMCSA Announces Controlled Substances Random Testing Rate for Calendar Year 2017" (December 13, 2016), <https://www.fmcsa.dot.gov/newsroom/fmcsa-announces-controlled-substances-random-testing-rate-calendar-year-2017>.

⁷⁹ Federal Motor Carrier Safety Administration, Notice, "Annual Random Controlled Substances Testing Percentage Rate for Calendar Year 2020", *Federal Register* 84, no. 248 (December 27, 2019), <https://www.govinfo.gov/content/pkg/FR-2019-12-27/pdf/2019-28164.pdf>.

Trimble Transportation, "FMCSA Increased Random Drug Testing Rate to 50 Percent For Calendar Year 2020 (& 2021...)" (February 23, 2022), <https://transportation.trimble.com/resources/blogs/fmcsa-increased-random-drug-testing-rate-to-50-percent-for-calendar-year-2020-2021>.

to \$70 million increase in costs to the industry by requiring that more drivers be tested.”⁸⁰ The importance of the MIS data – and the quality of that data – is underscored by such impacts to industry.

Using the available aggregated MIS dataset for random testing, ATRI was not able to replicate FMCSA’s finding of a greater than 1 percent positive rate in 2018. This change to a 50 percent testing requirement was implemented at a point where the positive rate was increasing (it has since dropped according to the MIS data) as shown in Table 4. For random testing, the average positive random drug test rate across a 10-year period was found to be 0.65 percent (approximately half the rate of pre-employment testing). Additionally, 58.0 percent of positive random drug tests were positive for marijuana.

Table 4: MIS Annual Data Summaries – Random Testing

Year	Total Number of Drug Tests	Verified Positive Drug Result	Positive Drug Test Rate	Percent of Positive Tests that are Positive for Marijuana
2012	494,442	2,625	0.53%	55.4%
2013	481,261	2,515	0.52%	56.3%
2014	358,781	1,928	0.54%	58.6%
2015	522,923	3,099	0.59%	57.1%
2016	310,540	1,929	0.62%	56.8%
2017	328,305	2,275	0.69%	58.8%
2018	307,109	2,474	0.81%	54.3%
2019	377,765	3,098	0.82%	59.8%
2020	668,968	5,063	0.76%	63.9%
2021	708,920	4,491	0.63%	59.2%
MEAN	455,901	2,950	0.65%	58.0%

Using the publicly available U.S. DOT data, it was not possible to conclude that the industry had a positive random drug testing rate above 1 percent at any point during the past 10 years, and it is not clear which dataset(s) were used to support an increase of the industry’s random drug testing requirement to 50 percent.

The GAO has highlighted in the past the fact that the FMCSA does not disclose the limitations of their drug testing data and findings.⁸¹ GAO reports that a sampling process is used to choose which employers will send data, and the data is then aggregated and weighted to create an estimate that is then generalized to the entire driver population.

⁸⁰ Federal Motor Carrier Safety Administration, Notice, "Annual Random Controlled Substances Testing Percentage Rate for Calendar Year 2020", *Federal Register* 84, no. 248 (December 27, 2019), <https://www.govinfo.gov/content/pkg/FR-2019-12-27/pdf/2019-28164.pdf>.

⁸¹ U.S. Government Accountability Office, *TRANSPORTATION SAFETY: DOT Has Taken Steps to Verify and Publicize Drug and Alcohol Testing Data but Should Do More* (March 2021), <https://www.gao.gov/assets/gao-21-296.pdf>.

Program Two: Drug and Alcohol Clearinghouse Data

A second source of federal statistics on drug test violations is found in FMCSA's Drug and Alcohol Clearinghouse (DACH).⁸² The DACH is a secure online database that gives employers, FMCSA, State Driver Licensing Agencies (SDLAs), and state law enforcement personnel near-real-time information regarding drug and alcohol violations pertaining to CDL and commercial learner's permit (CLP) holders.⁸³

Since this program was fully implemented in 2020, CDL holders that are employed or seeking driving employment are required to register with the DACH. Once in the database, employers can report drug violations or query the system to determine if a driver is prohibited from working in a safety-sensitive position. The database is for operators of both large trucks and buses, but a vast majority of people listed within the DACH are truck drivers.⁸⁴

If a CDL driver has a drug violation recorded within the DACH, he or she must be removed from safety-sensitive positions until RTD actions are completed and the driver's CDL is restored. The RTD process includes:

- evaluation by a substance abuse professional (SAP);
- participation in and completion of a treatment program that is established by the SAP; and
- successful negative tests for controlled substances.

During 2020-2022, nearly 154,000 positive drug tests were reported; this includes more than 177,000 substances identified (a test can identify the presence of more than one drug).⁸⁵

The distribution of substances identified through drug testing is shown in Figure 3. Marijuana accounted for 101,512 (57.2%) of the 177,376 substances identified in the DACH. This was followed by cocaine (15.6%), methamphetamine (8.9%), opioids (8.9%) and amphetamine (8.6%).

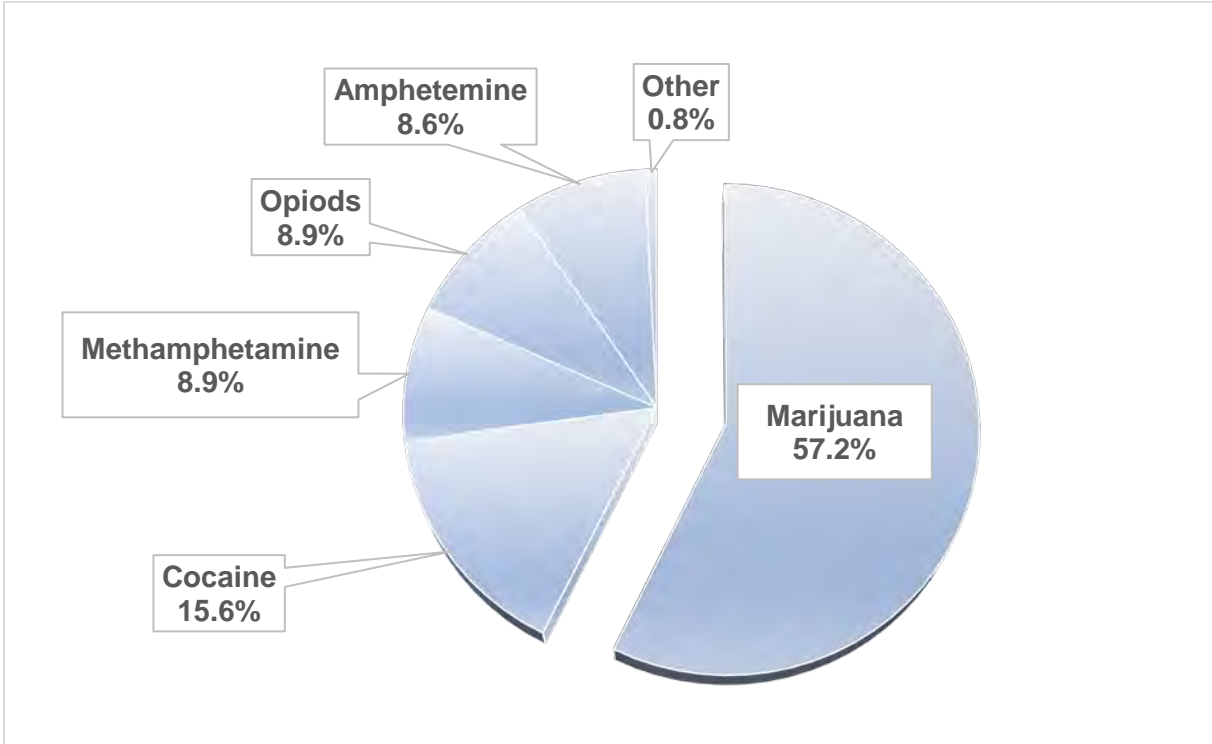
⁸² Federal Motor Carrier Safety Administration, "Drug and Alcohol Clearinghouse Top 5 FAQs" (January 8, 2020), <https://clearinghouse.fmcsa.dot.gov/FAQ>.

⁸³ Please note that CDL will be used in this section to describe both CDLs and CLPs.

⁸⁴ According to the Bureau of Labor Statistics (BLS) data from 2022, truck drivers and sales drivers make up 7.1 times the number of jobs than that of school and transit bus drivers; Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey" (Updated on March 31, 2023), <https://www.bls.gov/cps/lfcharacteristics.htm>.

⁸⁵ Federal Motor Carrier Safety Administration, "Drug & Alcohol Clearinghouse: December 2022 Monthly Summary Report" (January 24, 2023), <https://clearinghouse.fmcsa.dot.gov/Resource/Index/monthly-report-Dec2022>.

Figure 3: Percentage of Substances Identified in Positive DACH-Reported Drug Tests 2020-2022



The DACH does not compile statistics on negative tests; thus, positive test rates cannot be calculated. Additionally, the publicly available summaries do not include sufficient information on occupation (truck vs bus driver) or carrier size and sector.

Table 5 describes the historical progression of the number of CDL holders in the RTD process. FMCSA indicates that as of January 2023 there were 166,296 drivers with one or more violations and the majority (63.0%) tested positive more than one year prior. Of the 166,296 positive-test drivers, 72.6 percent remained in prohibited status and more than half (91,523 drivers or 55.0%) had not started the RTD process.

By the end of December 2022, 27.6 percent of prohibited drivers were able to return to safety-sensitive positions and 4.5 percent completed the follow-up testing plan. This is an indication that as of January 2023, positive drivers or driver candidates are far more likely to leave the industry (and, in theory, enter another industry) instead of completing the RTD process.

Table 5: Cumulative DACH Statistics for 2020 – 2022

RTD Status	# of Drivers as of 1/2021	# of Drivers as of 1/2022	# of Drivers as of 1/2023
Total			
Drivers with 1 or more violations	51,998	104,840	166,296
Prohibited Status			
RTD process not started	34,769	61,084	91,523
SAP Process	3,675	6,918	10,691
Determined Eligible for RTD Testing	7,031	13,050	18,131
Total in Prohibited Status	45,475	81,052	120,345
Not-Prohibited Status			
RTD Test with Negative Results	6,513	21,607	38,424
Follow-Up Testing Plan Complete	0	2,181	7,527
RTD Test with Negative Results	6,513	23,788	45,951

Testing Implications for the Truck Driver Shortage

The federal prohibition of marijuana use by CDL holders has been highlighted as a potential disincentive for drivers to stay in the industry, and it has even been argued that loosening the restrictions on marijuana use would make the industry more attractive and widen the potential labor pool.⁸⁶

Testing for marijuana metabolites in urine is the prominent strategy for preventing CMV operation by marijuana-impaired drivers. As stated previously, marijuana testing is especially effective since it is detectable for weeks (up to 30 days) after use, making it far more likely for a marijuana user to test positive than a user of other drugs.⁸⁷ Cocaine and methamphetamine may only be present in urine from one to five days – a much shorter detection window than marijuana.⁸⁸

While current marijuana testing is likely effective at removing drivers who may work while impaired, it also likely removes drivers who previously used the drug but would not operate a truck while impaired.

⁸⁶ Alex Daugherty and Mona Zhang, "Cannabis confusion: Thousands of truckers taken off the job amid supply chain woes," *Politico* (May 2022), <https://www.politico.com/news/2022/05/07/cannabis-truckers-supply-chain-woes-00030508>.

⁸⁷ Scott E. Hadland and Sharon Levey, "Objective Testing - Urine and Other Drug Tests," *Child and Adolescent Psychiatric Clinics* 25, no. 3 (July 2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4920965/>.

⁸⁸ Ibid.

It is not definitively known where the thousands of CDL drivers and driver candidates that declined the RTD process ultimately found employment. A greater unknown is the number of potential drivers who have been dissuaded from joining the industry due to pre-employment screening for marijuana. What is clear, however, is that the industry has a long-standing driver shortage; estimates indicate that 65,000 additional truck drivers are needed.⁸⁹

BLS data indicate that more than 2.9 million Americans are employed as either “Heavy and Tractor-Trailer Truck Drivers” or “Light Truck or Delivery Services Drivers” as shown in Table 6.⁹⁰ As of 2021, 65.3 percent of these drivers were heavy-duty drivers and 34.7 percent were light-duty truck drivers, not requiring a CDL. According to these figures, a light-duty truck driver who becomes a heavy-duty truck driver would earn on average 18.1 percent more annually.

Table 6: BLS Driver Occupation Comparison

	Heavy-Duty Truck Driver	Light-Duty Truck Driver	Total
Drivers	1,903,420	1,010,040	2,913,460
Percent of Total	65.3%	34.7%	
Mean Annual Wage	\$50,340	\$42,630	

Employers of CDL drivers likely compete for drivers with short-haul parcel delivery companies that have emerged with the shift to e-commerce.⁹¹ While these positions typically pay less, there are non-monetary benefits such as increased home time. Additionally, non-CDL positions are not required to submit to pre-employment screening (though some employers continue to test non-CDL drivers for insurance and liability reasons). While there is little evidence that long-haul truck drivers are migrating to non-CDL positions explicitly because of marijuana testing policies and regulations, legalizing marijuana may be a motivator for truck drivers to migrate to positions that do not require drug testing.

Marijuana Use and Employment Protections

The Equal Employment Opportunity Commission (EEOC) manages and enforces civil rights laws that ban workplace discrimination at the federal level. Among the discrimination complaints that are covered by EEOC are those related to disability, specifically the civil rights covered under the Americans with Disabilities Act of 1990 (ADA). The disabilities covered under that act include medical issues and conditions that are physical and mental in nature.

⁸⁹ Dan Ronan, "Long-Term Strategies Key, Recruiting Experts Say," *Transport Topics* (February 2023), <https://www.ttnews.com/articles/long-term-strategies-key-recruiting-experts-say>.

⁹⁰ U.S. Bureau of Labor Statistics, "Occupational Employment and Wages, May 2021: 53-3032 Heavy and Tractor-Trailer Truck Drivers" (updated on March 31, 2022), <https://www.bls.gov/oes/current/oes533032.htm>.

U.S. Bureau of Labor Statistics, "Occupational Employment and Wages, May 2021: 53-3033 Light Truck Drivers" (updated on March 31, 2022), <https://www.bls.gov/oes/current/oes533033.htm>

Note: the headings have been simplified from the longer-form occupation titles used by BTS

⁹¹ Evan Donovan, "More companies decide to stop screening new hires for marijuana," *Yahoo News* (March 6, 2023), <https://news.yahoo.com/more-companies-decide-stop-screening-224947206.html?guccounter=1>.

It is recognized by some state governments that marijuana use can represent a medical treatment and can be administered under the guidance of a medical professional. As a result, some have contended that use of marijuana for the treatment of a medical condition is a protected activity under ADA, and that drug tests should not be used to terminate the employment of this type of user. Many states, however, have specific laws intended to protect employees that consume medical marijuana. These laws may ultimately contradict federal laws, particularly those pertaining to safety-sensitive positions.⁹²

The following is an overview of two cases within the legal system that concern federal and state drug screening laws.

Medical Marijuana and Federal Employment Protections

One noteworthy federal case is *Eccleston v City of Waterbury*. In this case a firefighter (the plaintiff) employed by the City of Waterbury (defendant) in Connecticut (where medical marijuana is legal) had his employment terminated due to a random drug test that was positive for marijuana.⁹³ The plaintiff, who held that he was using marijuana in an effort to treat post-traumatic stress disorder (PTSD), sued the city claiming that his rights under ADA were violated.

The defendant's case was dismissed by the court for several reasons, including:

- "The ADA relies on the federal Controlled Substances Act to define 'illegal drug use,' and under the Controlled Substances Act, marijuana is an illegal drug."⁹⁴
- "The employee's state-sanctioned use of medical marijuana was not protected by the ADA" because marijuana use is prohibited under federal law.⁹⁵
- Marijuana use does not constitute a reasonable accommodation because it is a Schedule I illegal substance.

The court cited several past federal cases to make these points, including:

- *Kamakeeaina v. Armstrong Produce, Ltd.*: Since marijuana is a Schedule I drug, "using marijuana is not a reasonable accommodation."⁹⁶
- *Zarazua v. Ricketts*: "it simply is not possible to conclude that creating an exception for medical marijuana...would be a reasonable accommodation under the ADA."⁹⁷
- *Washburn v. Columbia Forest Products, Inc.*: "the fact that the state may exempt medical marijuana users from the reach of the state criminal law does not mean that the state can affirmatively require employers to accommodate what federal law specifically prohibits."⁹⁸

⁹² Ibid.

⁹³ Stacey Lococo, "Connecticut Medical Marijuana User Could Not Proceed With ADA Claims", JD Supra (March 2021), <https://www.jdsupra.com/legalnews/connecticut-medical-marijuana-user-4491736/>.

⁹⁴ Ibid.

⁹⁵ Ibid.

⁹⁶ Thomas Eccleston v. The City of Waterbury and Neil O'Leary, No. 3:19-cv-1614 (SRU), D. Conn. (March 22, 2021), <https://casetext.com/case/eccleston-v-city-of-waterbury#>.

⁹⁷ Zarazua v. Ricketts, 8:17CV318, D. Neb. (October 2, 2017), <https://casetext.com/case/zarazua-v-ricketts>.

⁹⁸ Thomas Eccleston v. The City of Waterbury and Neil O'Leary, No. 3:19-cv-1614 (SRU), D. Conn. (March 22, 2021), <https://casetext.com/case/eccleston-v-city-of-waterbury#>.

- *James v. City of Costa Mesa*: “To conclude that use of marijuana for medical purposes is not an illegal use of drugs under the ADA would undermine the CSA's clear statement that marijuana is an unlawful controlled substance that has 'no currently accepted medical use in treatment in the United States.’”⁹⁹

CSA’s Schedule I listing of marijuana is critical for employers that want to screen employees for marijuana use. With regard to the U.S. DOT drug testing requirements for safety-sensitive employees, the Schedule I listing means that supervised medical use is not allowable.

Should the drug be placed on a different Schedule and recognized as a medical treatment, however, it may be the case that employers must accommodate use outside of employment. Considering that nearly 41,000 marijuana violations were reported to the DACH in 2022 alone, this scenario represents the potential for a considerable legal burden to the industry.¹⁰⁰ It would create a large conflict between the highway safety efforts of trucking companies and an individual’s uncertain and potentially hazardous right to use drugs that impair driving.

Medical Marijuana and State Employment Protections

In many states, the use of marijuana is considered a medical treatment. The Commonwealth of Massachusetts, for instance, allows individuals with specific medical conditions to possess and use marijuana for the purposes of medical treatment under its 2012 Medical Marijuana Act, as described earlier in this report.

In one case decided by the Massachusetts Supreme Judicial (MSJ) Court (*Barbuto v. Advantage Sales & Marketing, LLC*) the plaintiff (*Barbuto*) was denied employment due to a positive marijuana drug test. A representative of the defendant stated that medical marijuana use would not be an issue since it was outside of work hours; ultimately the company’s human resources department rescinded the employment offer.

The plaintiff’s case was first dismissed in a lower court, but the MSJ reversed that decision and allowed the case to go forward. The court’s findings were:

- Medical marijuana is legal under Massachusetts state law, and while the plaintiff’s use and possession of marijuana outside of work would be a criminal act at the federal level, responsibility for that act would not extend to the employer.¹⁰¹
- “The company’s policy prohibiting any use of marijuana is applied against a handicapped employee who is being treated with marijuana by a licensed physician for her medical condition ... effectively denies a handicapped employee the opportunity of a

⁹⁹ *James v. City of Costa Mesa*, 700 F.3d 394 (9th Cir. 2012) (November 1, 2012), <https://casetext.com/case/james-v-city-of-costa-mesa>.

¹⁰⁰ Federal Motor Carrier Safety Administration, “Drug & Alcohol Clearinghouse: December 2022 Monthly Summary Report” (January 24, 2023), <https://clearinghouse.fmcsa.dot.gov/Resource/Index/monthly-report-Dec2022>.

¹⁰¹ *Cristina Barbuto vs. Advantage Sales and Marketing & Joanne Meredith Villaruz*, No. SJC-12226, 78 N.E.3d 37, Mass. SJC (July 17, 2017), <https://cases.justia.com/massachusetts/supreme-court/2017-sjc-12226.pdf?ts=1500300170>.

reasonable accommodation, and therefore is appropriately recognized as handicap discrimination.”¹⁰²

The court found that this discrimination claim could proceed and could not be dismissed simply because marijuana is illegal under federal law.¹⁰³ The court noted that its ruling “does not necessarily mean that the employee will prevail in proving handicap discrimination” if the defendant were able to prove that the employees use would cause an undue hardship to the employer.¹⁰⁴

Of particular note to the trucking industry, the court stated that “an undue hardship might be shown if the employer can prove that the use of marijuana by an employee would violate an employer's contractual or statutory obligation, and thereby jeopardize its ability to perform its business” and further stated that “[The Court recognizes] that transportation employers are subject to regulations promulgated by the United States Department of Transportation that prohibit any safety-sensitive employee subject to drug testing under the department's drug testing regulations from using marijuana.”¹⁰⁵

Recreational Marijuana and State Employment Protections

In addition to states providing medical protections for employees, there are states (e.g. California and New York) that have passed legal protections for those consuming marijuana for recreational purposes outside of the workplace. For example, California's AB-2188 makes it “unlawful for an employer to discriminate against a person in hiring, termination, or any term or condition of employment ... if the discrimination is based upon the person's use of cannabis off the job and away from the workplace.”¹⁰⁶

Testing for impairment and discriminating against employees or prospective employees who are impaired, however, remains legal under this law, which goes into effect in 2024. It is also noted that the law does not apply to “any job that is statutorily subject to federal drug testing requirements, and certain building/construction trades.”¹⁰⁷ Thus safety-sensitive employees such as CDL drivers are not covered by AB-2188's recreational marijuana use protections.

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ An act to add Section 12954 to the Government Code, relating to employment, AB-2188, Cali. Secretary of State (September 18, 2022), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB2188.

¹⁰⁷ Bryan Hawkins and Robert Sarkisian, "AB 2188 Leaves California Employers' Policies on Marijuana Use up in Smoke", JD Supra (October 2022), <https://www.jdsupra.com/legalnews/ab-2188-leaves-california-employer-s-6685403/>.

Summary of Workforce Implications Findings

- Based on U.S. DOT MIS Data and Sources:
 - Positive marijuana tests are higher in pre-employment screening than in overall testing (71.1% versus 66.9% over 10 years).
 - FMCSA raised its random testing rate from 25 percent to 50 percent based on their calculated rate of positive tests being greater than 1 percent. This change cost the industry an estimated \$50-\$70 million to meet the additional testing requirements.
 - ATRI was unable to replicate FMCSA's finding of a greater than 1 percent positive rate in 2018, which was the basis for FMCSA's increase to a 50 percent random testing requirement. The MIS data that is published for the public is aggregated, limiting the ability of outside researchers to perform a detailed analysis.
- According to DACH data, for the three-year period 2020-2022:
 - 57.2 percent of positive findings for drugs were for marijuana;
 - 72.6 percent of drivers with positive test results during that time were in prohibited status at the beginning of 2023, and 55 percent have not initiated the RTD process; and
 - only 4.5 percent of drivers with previous positive tests completed follow-up testing for RTD, indicating that drivers are more likely to leave the industry than complete the RTD process.
- The trucking industry has to compete with other industries such as short-haul delivery that are not required to test for drugs (including marijuana).
- Multiple states recognize medical marijuana use as valid and have moved to protect employees' use under state law.
 - Marijuana's current status as a Schedule I drug protects employers from being sued under the ADA act for discriminating against medical marijuana use.
 - Should marijuana be moved from the Schedule I drug designation, there could be costly legal ramifications for industry and highway safety.

MOTOR CARRIER AND DRIVER SURVEYS

To gain a better understanding of how legalized recreational marijuana may impact trucking operations, ATRI conducted two industry surveys: one addressing carrier issues, perspectives and work rules, and another directed to truck drivers seeking similar insights. The carrier and driver survey document used to collect data can be reviewed in Appendix A and B respectively.

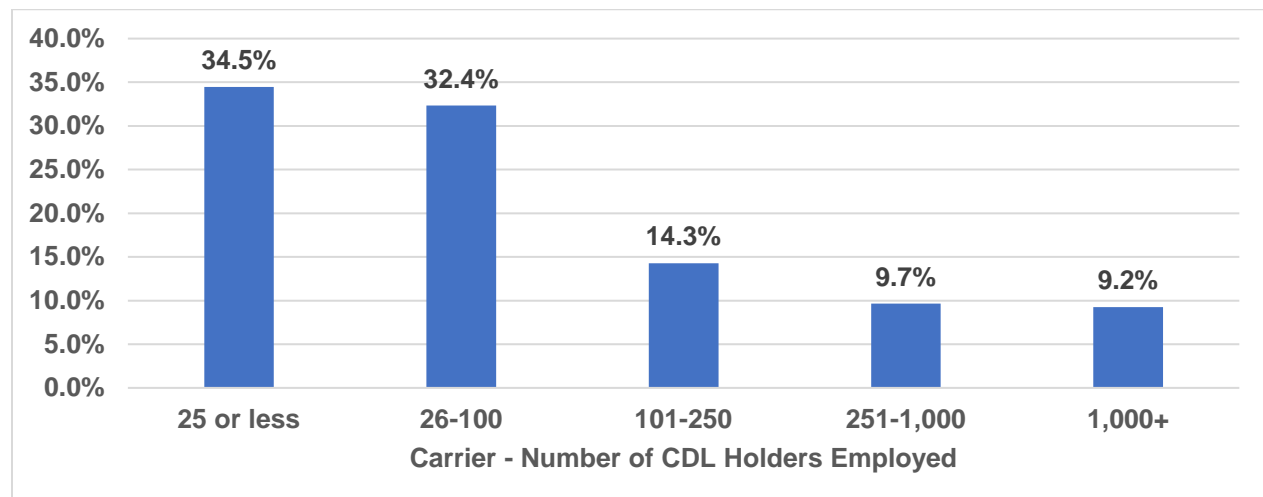
Motor Carrier Survey

The motor carrier survey was conducted in early 2023 using an online data collection form (see Appendix A) that was distributed via survey links to motor carriers via email and industry press. The aggregated results of this data collection were reviewed, cleaned of invalid responses, and summarized; a total of 238 valid responses were included in the final motor carrier analysis, representing 125,105 CDL drivers.

Survey Respondent Demographics

Of the 238 motor carrier respondents, the majority were fleets employing 100 or fewer CDL drivers (Figure 4). Most respondents were either safety directors (37.8%), senior executives (28.2%), driver managers and recruiters (19.3%), or human resources personnel (7.1%). In terms of industry sector, the plurality of responses was from the truckload sector (42.4%). Private carriers (13.9%), less-than-truckload (10.1%), hazmat (9.7%) and flatbed (6.3%) made up the largest categories outside of truckload.

Figure 4: Respondent Carrier Size*



To understand the scale of conflict between state and federal laws, carriers were asked what percentage of their drivers were based in states where recreational marijuana was legal as shown in Table 7.

Table 7: Number and Percentage of Drivers Based in States where Recreational Marijuana is Legal

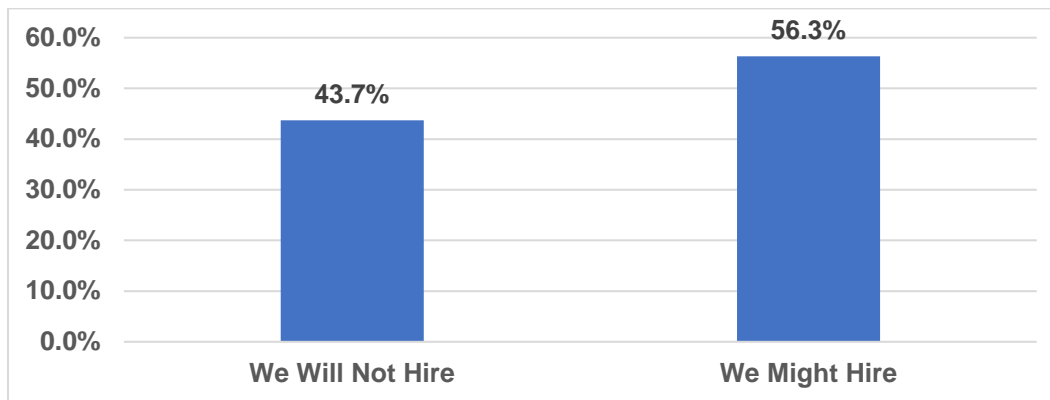
	Drivers	Percentage
Legal	49,306	39.4%
Not Legal	75,799	60.6%
Total	125,105	

Carrier Hiring Practices

Based on DACH data, marijuana use clearly has an impact on the availability of truck drivers – with more than 100,000 drivers being removed from the industry in the past three years. Of those drivers testing positive, the DACH data confirms that most have not completed the RTD process and instead opt to remain outside of the interstate trucking industry. Furthermore, truck drivers who do successfully return to duty may still find it difficult to find truck driving employment, based on the carrier survey data indicating that a segment of carriers will not hire truck drivers who have tested positive.

To better understand hiring practices, carriers were first asked if a prior positive marijuana test at any time in the past automatically disqualifies a driver from employment at their company (per company policy). The majority (56.3%) indicated a willingness to hire a driver with a prior positive drug test. It should be noted that 43.7 percent will not hire truck drivers with a past positive test, thus exacerbating the number one industry issue among trucking company executives, the driver shortage (Figure 5).¹⁰⁸

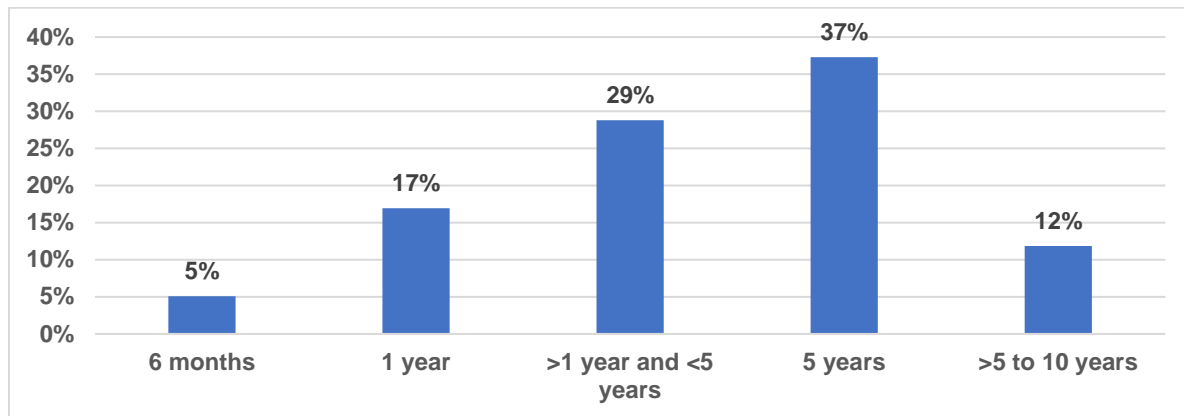
Figure 5: Hiring Driver Candidates with Past Positive Marijuana Test



More than half (54.8%) of those willing to hire a driver with a past positive marijuana test indicated that a specific time period must pass first. The most common time period indicated was five years (which assumes the driver is not still in prohibited status), as shown in Figure 6.

¹⁰⁸ American Transportation Research Institute, "Critical Issues in the Trucking Industry – 2022" (October 2022), <https://truckingresearch.org/atri-research/top-industry-issues/>.

Figure 6: Elapsed Time Period before Carriers will Hire a Past-Positive Driver



Some drugs are known to be far more dangerous and addictive when compared to marijuana. In light of this, carriers were asked if they treat different drug violations differently. Only 24.4 percent of respondents indicated that some drug violations were treated differently from others, depending on the drug that was used; 75.6 percent indicated that different drugs were weighted equally in hiring decisions.

Carriers that treated drug violations differently were then asked to elaborate on their response. The most common open-ended responses were that methamphetamine and cocaine were the most serious violations. Common variations of carrier statements included:

- “Cocaine or Methamphetamine test results end in termination without rehire.”
- “Methamphetamines and Cocaine are automatic NOs.”

The same subgroup also indicated that marijuana use is not as consequential as the use of other drugs:

- “We do not hire individuals with past drug violations other than marijuana.”
- “We have begun looking more leniently at marijuana issues since there is so much confusion regarding DOT vs state laws.”
- “Anything other than marijuana is a no-hire.”

Given the dramatically growing landscape of marijuana legalization, it was hypothesized that carriers would begin to increase leniency toward positive marijuana test results. This was not the case, however: an overwhelming majority, 86.1 percent, indicated that the company has not changed its practices in the last five years.

The final hiring-related question asked if carriers were encountering challenges during the RTD process. Numerous challenges were identified, with the most common answers being variations of:

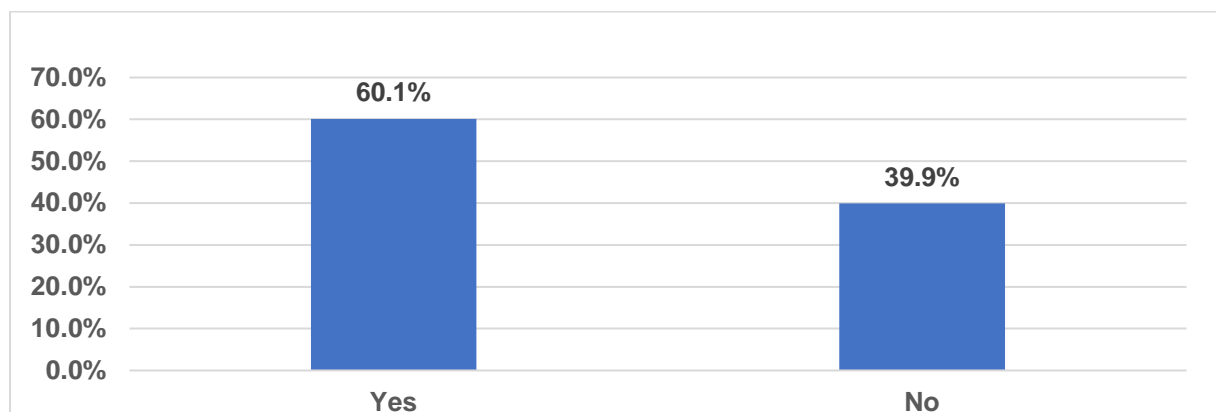
- The time it takes to navigate through RTD (including scheduling of required drug tests);
- The cost of counselors and rehab facilities; and
- The general lack of resources available to help a carrier navigate through the process.

Marijuana Testing of Truck Drivers

The DACH data corroborates that legalized recreational marijuana has impacted the number of available truck drivers due to positive pre-employment screening. A prospective driver may, for instance, have used marijuana legally prior to entering the industry but could still test positive during pre-employment screening because of the long time period during which marijuana is detectable.

Carriers were asked if they had seen an increase in positive tests in the last five years. The majority, 60.1 percent, had noticed an increase (Figure 7).

Figure 7: Has there been a Noticeable Increase in Positive Pre-Employment Tests or Walk-Outs in Past Five Years?



Those who had noticed this increase were given an opportunity to select an age group that was most likely to test positive. Nearly half (45.5%) indicated that there was no particular age group that was more likely to test positive. The most frequently selected age group was 26-35 years old (27.6%).

As discussed earlier, CBD oil has become increasingly available in the U.S., and there are numerous instances where drivers blamed a positive test on CBD oil and not marijuana. Consequently, carriers were asked if they had experienced such a situation. Most carrier respondents (73.0%) had not experienced drivers attributing positive tests to CBD oil. For the 27.0 percent of carriers who had been given a CBD explanation, some carriers offered skepticism:

- “Two drivers that failed for marijuana have claimed it was CBD and not marijuana.”
- “Anecdotally, some drivers who test positive will say it was because of CBD”
- “Driver ‘swears’ it is just CBD, nonetheless they are positive for marijuana.”

Some carriers, however, were more accepting of drivers’ CBD explanations:

- “Drivers are being told by other drivers that the oil is legal and that you can use it for medical purposes and get by which is untrue.”
- “CBD is available everywhere in our state, I believe the driver just didn’t understand that he could in fact test positive.”
- “Most drivers do not understand CBD oils will result in positive test for marijuana.”

As noted earlier in this research, certain drugs may only be detectable for a matter of days using urine tests. Hair testing, however, has the ability to detect drugs, e.g. cocaine and methamphetamine, for up to 90 days. Respondents were asked if they use additional testing approaches such as hair testing; a significant majority (92.0%) indicated that no additional testing approaches were used.

This result is not surprising – hair testing in particular is more expensive than traditional testing and is not presently recognized within FMCSA testing requirements. Should hair testing become formally incorporated into the DACH, it is likely that more carriers would utilize this approach.¹⁰⁹

Driver Knowledge of Marijuana Use and Regulations

With growing conflicts between state and federal marijuana laws, it is plausible that some drivers may be unclear on the laws. To understand the degree of truck driver confusion and misunderstandings, carriers were asked if there were instances where drivers were unaware that legalized recreational marijuana cannot be used by CDL holders.

More than three-quarters (75.6%) of carriers indicated that they had not experienced driver misunderstandings. For those who had experienced misunderstandings, responses included:

- “Most drivers just assume that as long as they are not high at work that they are ok. Just like alcohol. Once we educate them on the drug testing requirements, they are usually quite surprised, saying ‘I can walk in and buy it, but I can’t work for you if I use it?’”
- “Most regional/local drivers are focused on state laws and believe that its legal to use while operating within their state.”
- “They believe they are not subject to the FMSCA rules due to their state legalization.”

To understand the role that carrier executives play in educating drivers, carriers were asked if they educate drivers on the prohibition of marijuana use for CDL holders; 82.8 percent indicated that they provide education and training on the issue.

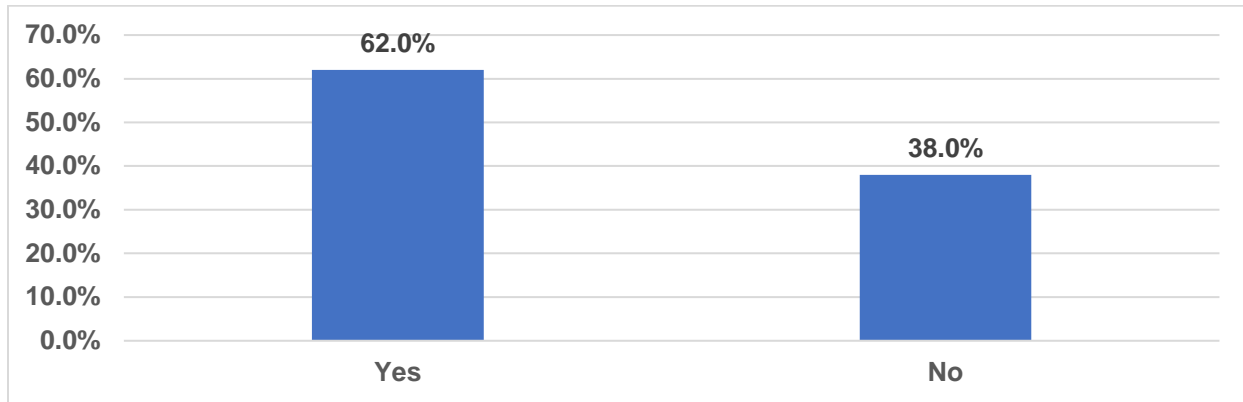
Carrier Perspectives on Federal Drug Testing Policies and Procedures

U.S. DOT drug testing policy has generally remained unchanged despite the rapid changes in state-level marijuana laws, with the recent exception of allowing oral fluid testing as of May 2023. The current marijuana test indicates past use of the drug for up to 30 days but does not shed any light on impairment. Preventing impaired driving by safety-sensitive works is, however, the purpose of U.S. DOT’s testing program. And the current testing regimen identifies marijuana users who would drive impaired and also those who would never drive impaired.

New Testing Approaches Needed. With this as a backdrop, carriers were asked if they believe that changes in federal drug testing policies for CDL drivers are needed. The majority, 62.0 percent, indicated that a change was needed (Figure 8).

¹⁰⁹ Guy Burdick, "FMCSA Denies Request for Drug Use Hair Testing," *EHS Daily Advisor* (December 29, 2022), <https://ehsdailyadvisor.blr.com/2022/12/fmcsa-denies-request-for-drug-use-hair-testing/>.

Figure 8: Are Changes in Federal Drug Testing Policy Needed?



Those indicating “yes” were asked to elaborate on what changes are needed. The responses fell into four categories as shown in Table 8. Nearly half (47.0%) believed that a sobriety or impairment test was needed – which would help distinguish between drivers that used marijuana during their personal time versus drivers who use marijuana while on-duty.

A second group of respondents (27.6%) indicated that marijuana should not be treated as a Schedule I drug (and could therefore be consumed recreationally or under medical supervision). Finally, 14.9 percent indicated that stricter drug laws are needed or additional testing options such as hair testing should be recognized.

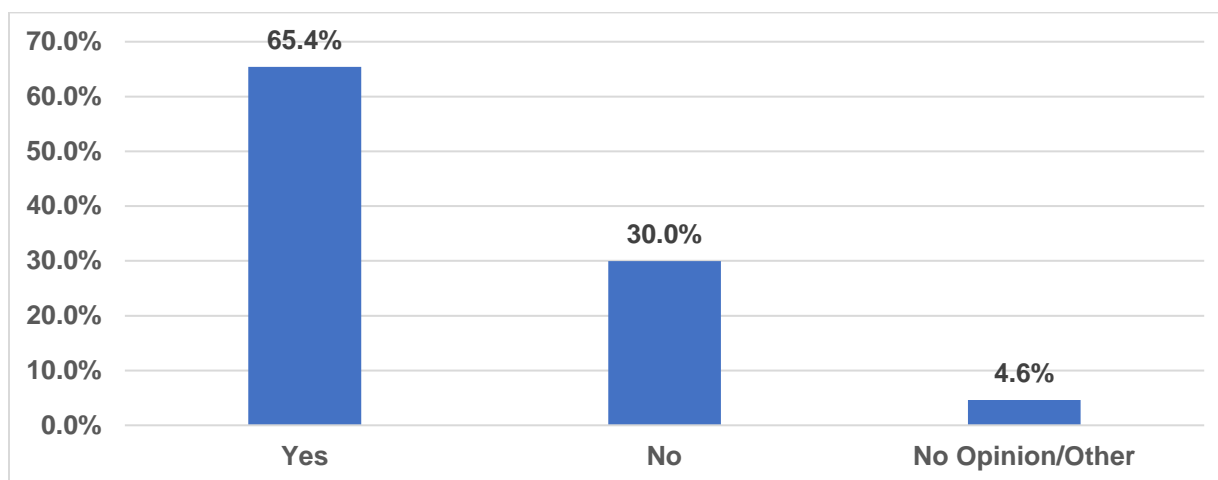
Table 8: Top Changes in Federal Regulations Identified by Respondents*

	% of Responses
Sobriety/Impairment Test for Recent Use is Needed	47.0%
Marijuana should be Legalized/Removed from Schedule 1	27.6%
Additional Testing Options should be Available, and/or Stricter Drug Laws are Needed	14.9%
Other	10.4%

To further understand carrier opinions on current marijuana testing regulations, carriers were next asked: “To satisfy FMCSA’s drug testing requirements, would you prefer that drivers and driver-candidates were required to take a marijuana test that measured impairment or very recent use (e.g., within the past day) instead of the current test, which can identify use many weeks prior?”

The majority, 65.4 percent, indicated that such a change was preferred (Figure 9).

Figure 9: Should Marijuana Impairment Test Replace Marijuana Use Test?



This finding speaks to the reality of current drug testing policy which identifies past use of marijuana across a broad period of time. Hard drugs, such as cocaine and methamphetamine, (which the respondents indicated are extremely dangerous and many differentiate from marijuana) have a brief detection window (up to a couple of days). Cocaine, for instance, can be undetectable through urine testing within 24 to 48 hours. Marijuana, on the other hand, lasts for many weeks and the test therefore is an indicator of past use, and not necessarily impairment.

That said, 30.0 percent of respondents approve of the current testing approach. The approach does effectively remove drivers and driver candidates who use marijuana and does, in fact, act as a barrier to marijuana-impaired driving. That said, it also impacts drivers who might use marijuana at home but would never drive while impaired.

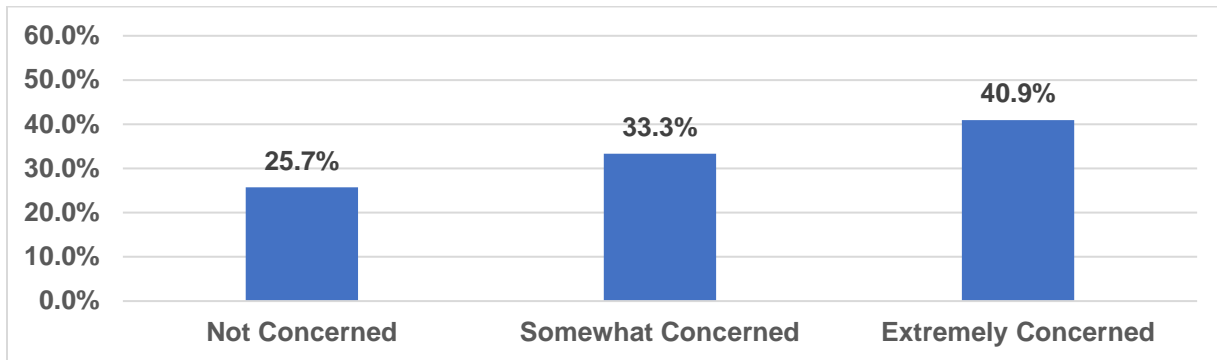
Carrier Concerns Toward Legalizing Marijuana

Finally, the respondents were given a list of five possible concerns related to state-level legalization of recreational marijuana and asked to rank the issue by concern level, with choices being:

1. Not Concerned
2. Somewhat Concerned
3. Extremely Concerned

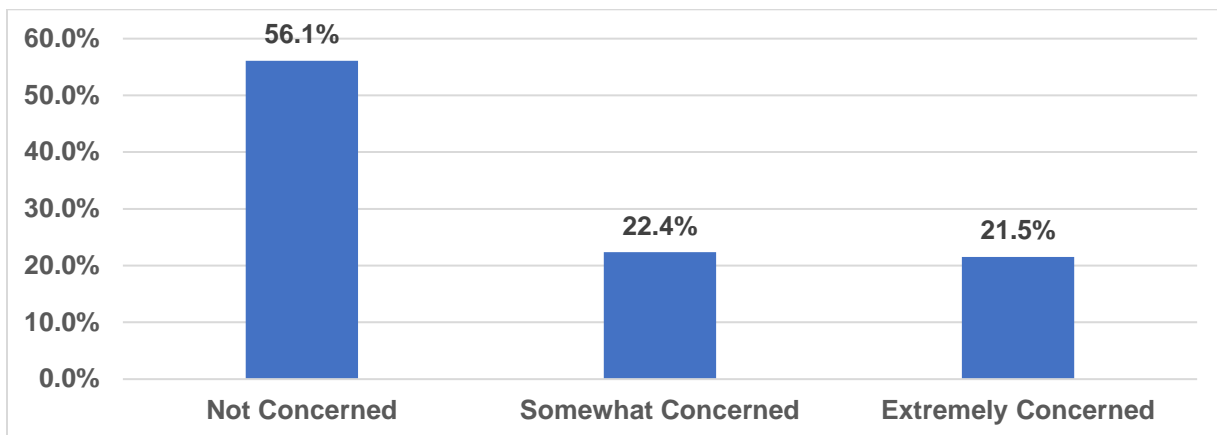
Carriers are Worried that Legal Marijuana would Increase Impaired Driving. It is recognized that legal recreational marijuana increases the availability and acceptability of the drug and can lead to a greater proportion of truck drivers using the drug. To this end, the first question asked carriers if they were concerned that drivers would be more likely to drive while impaired as a result of marijuana legalization. Nearly three quarters of respondents had some level of concern, and within that group 40.9 percent were extremely concerned (Figure 10).

Figure 10: Concern that Drivers will be More Likely to Drive while Impaired as a Result of Legalization*



Marijuana Not Viewed as a Gateway Drug. A common belief in the U.S. is that drugs such as marijuana can act as a “gateway” drug and can lead individuals to try more dangerous drugs. Most carriers (56.1%), however, were not concerned that the increased use and acceptability of marijuana would lead to the use of other drugs. The remaining respondents were somewhat concerned (22.4%) and extremely concerned (21.5%), as shown in Figure 11.

Figure 11: Marijuana will Act as a Gateway Drug for Drivers



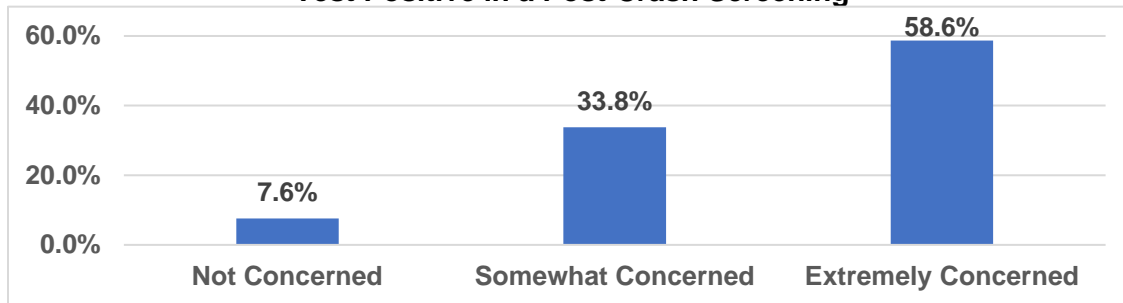
Concern is Mixed on Marijuana’s Productivity Impacts. A third “concern” question related to on-the-job performance. It is assumed that impairment and use of drugs and alcohol can lead to poor performance and absences from work. Carriers were asked to rank their concern that marijuana would impact performance in legal states; the plurality of respondents were not concerned (38.4%), though a significant number of carriers were either somewhat concerned (34.2%) or extremely concerned (27.4%).

The Potential for More Frequent Post-Crash Positive Marijuana Tests is Very Concerning. As previously discussed, a driver must submit to a drug test after certain types of crashes. The drug test for marijuana would indicate use of the drug within the past several weeks, however, and would not definitively indicate if marijuana impairment played a role in the crash.

In light of this broad window for positive tests, carriers were asked if they are concerned that marijuana legalization would lead to more positive tests during post-crash screening. The majority of respondents (58.6%) were extremely concerned that drivers would be more likely to

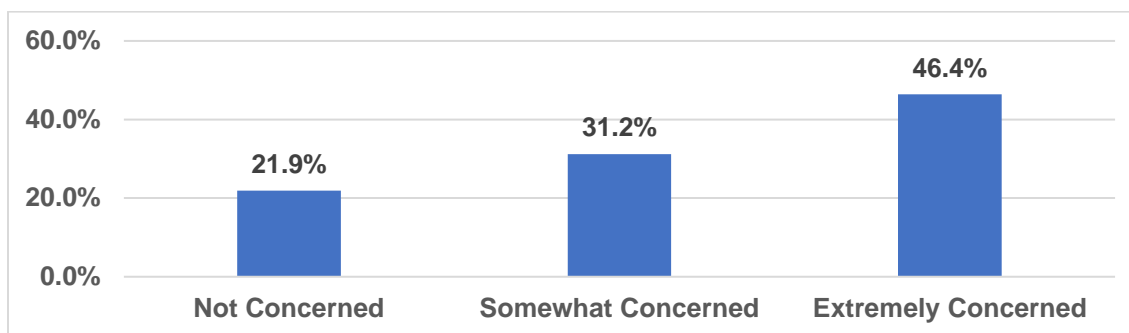
test positive in post-crash screening in states where recreational marijuana is legal (Figure 12). Only 7.6 percent were not concerned.

Figure 12: Concern that a Driver is More Likely to Test Positive in a Post-Crash Screening



Carriers Foresee Insurance Cost Impacts due to Legal Recreational Marijuana. With litigation and insurance costs increasing, carriers were asked if they were concerned that insurance costs would increase simply because a carrier had operations in a legalized state; 46.4 percent were “extremely concerned,” followed by 31.2 percent being somewhat concerned (Figure 13).

Figure 13: Concern that Insurance Rates will Increase for Carriers in a Legal State*



Driver Survey

Driver inputs on marijuana legalization offer an important perspective from a critical industry population. Consequently, a driver survey was conducted across a 30-day time period in early 2023. The survey was distributed in-person at the Mid-America Truck Show (MATS) and made available online.

The resulting data were cleaned to ensure completeness and accuracy. Additionally, an effort was made to ensure that no duplicative submissions or efforts to skew the survey results were found. A total of 3,302 valid responses were identified; of those respondents, 95.5 percent currently held a CDL and 4.5 percent previously held a CDL.

Survey Respondent Demographics

Overall, the demographics of driver respondents were similar to those of the industry. Regarding gender and age, 90.7 percent were male, with an average driver age of 51. The largest trucking sector represented was truckload (58.6%) followed by flatbed (8.3%), less-than-truckload (8.0%), and hazmat tanker (5.4%).

More than 2,000 respondents (62.9%) were employee drivers while 21.3 percent were owner-operators/independent contractors (OO/IC) leased to a motor carrier. Additionally, 11.3 percent were OO/IC with their own authority. Similar to the population of drivers in the U.S., at the time the survey was taken, 40.3 percent of drivers resided in states where recreational marijuana was legal.

Impacts of Marijuana Testing

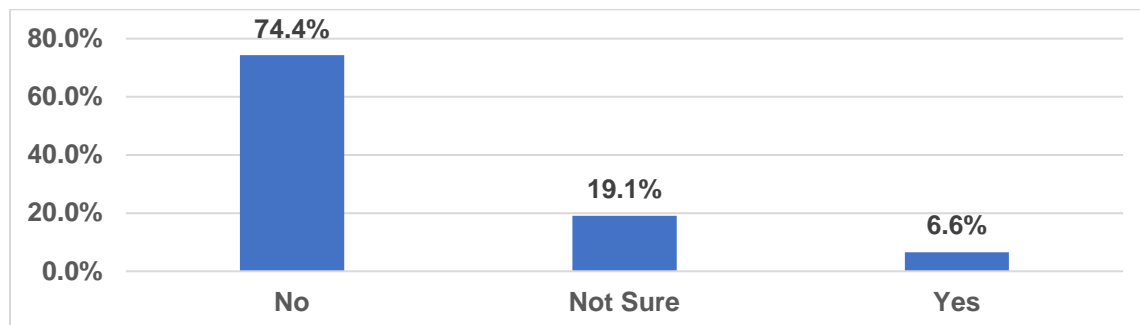
Truck drivers were asked if it is common for CDL drivers to leave the industry for jobs that do not require testing for marijuana. A majority of respondents said that it is either very common or common to leave the industry (50.2%).

Drivers were asked next about CBD oil, which, as discussed earlier, has been linked by some to false-positive tests. Respondents were asked if they were aware of situations where CBD oil had led to a positive drug test. The majority of drivers (62.1%) were not directly aware of a CBD oil issue, while 21.6 percent have had or know of positive testing issues that have resulted from CBD use.

Driver Knowledge of Marijuana Regulations and Procedures

Drivers were given a knowledge question related to state and federal marijuana laws. The question asked if interstate CDL truck drivers can use marijuana while both off-duty and in a state where recreation marijuana is legal. A large majority of respondents (74.4%) indicated correctly that CDL holders cannot use marijuana, even in a state where it is legal, while 19.1 percent were uncertain about the rules (Figure 14). Finally, a small minority (6.6%) of respondents incorrectly indicated that CDL holders could use marijuana in a legal state.

Figure 14: Knowledge Test: Can an Interstate CDL Truck Driver Use Marijuana Off-Duty in a State where it is Legal?*

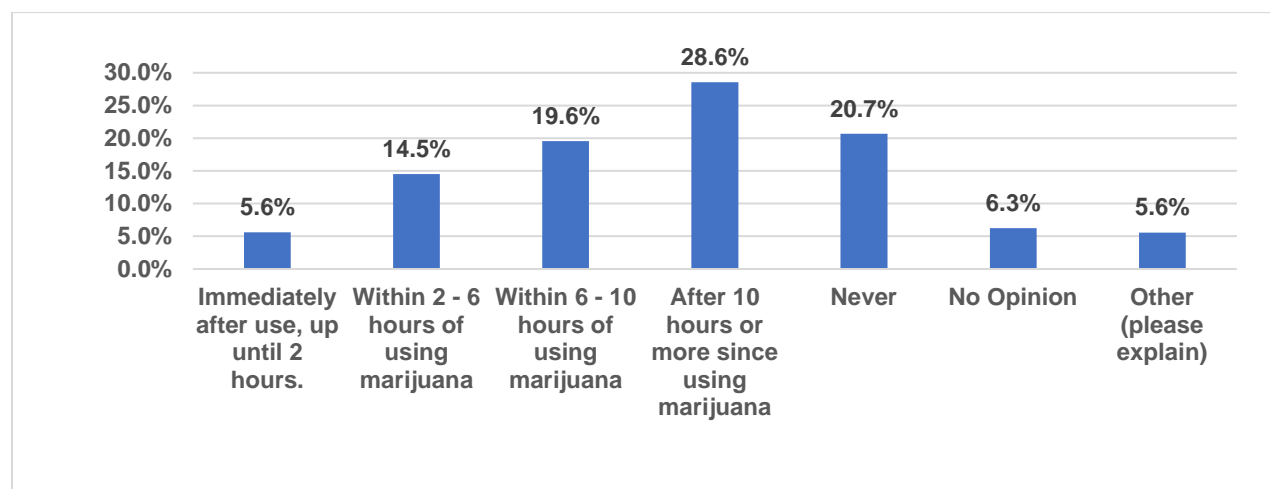


Impairment factors include the potency of the marijuana that is consumed, recency of use and each individual's reaction to the drug. While it remains an unknown, drivers were asked to

estimate when they believe someone can safely operate a vehicle after marijuana use. The most common answer was after 10 hours (28.6% of respondents) as shown in Figure 15.

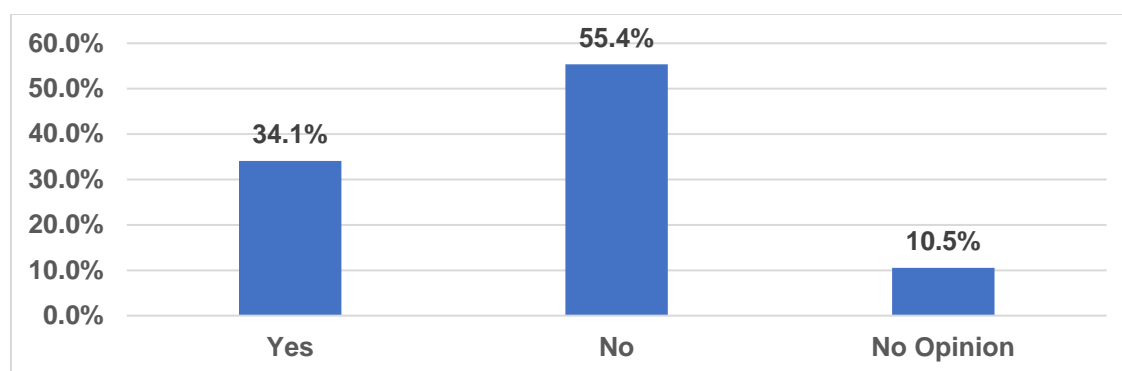
The answers, however, vary greatly. As recreational marijuana use increases, drivers of both commercial and non-commercial vehicles need scientifically valid answers to this question

Figure 15: Driver Opinion on Marijuana Impairment Time*



With increased use of marijuana, especially among non-commercial drivers, it is likely that impaired driving has increased. Given their extensive driving experiences, truck drivers were asked if they thought highway safety, in general, had been negatively impacted by legalized recreational marijuana. The majority (55.4%) indicated that they believed highway safety had not been impacted (Figure 16).

Figure 16: Has Highway Safety been Impacted by Legalized Marijuana Use?



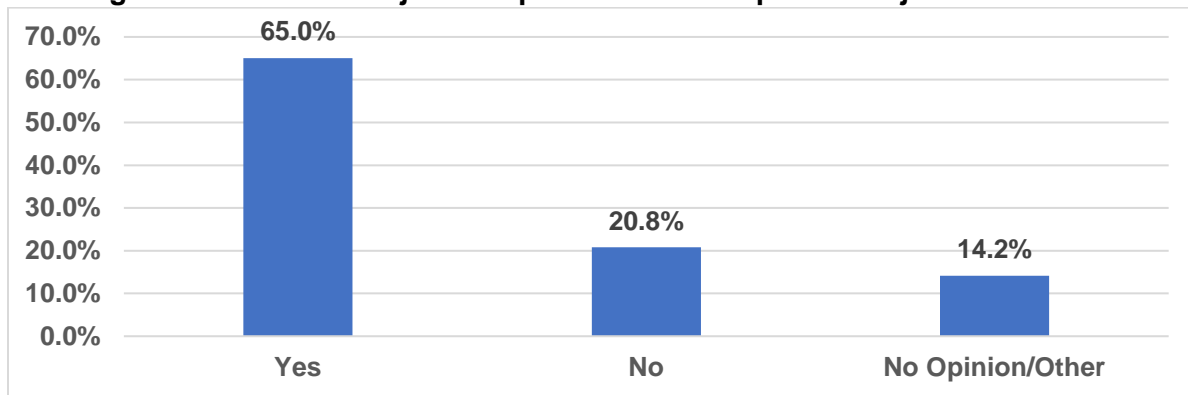
Changes to Federal Drug Testing Policies are Needed

As with carrier respondents, the driver survey respondents were asked if changes in federal drug testing laws for CDL holders are needed. The majority, nearly 70 percent, agreed that there should be changes to the way drug testing is done.

Next, drivers were asked if FMCSA should require a marijuana impairment test instead of the current marijuana use test. The majority, 65.0 percent of driver respondents, indicated that an

impairment test is preferred (Figure 17). Only 20.8 percent indicated a desire for the marijuana use test to continue as part of drug screening.

Figure 17: Should Marijuana Impairment Test Replace Marijuana Use Test?



Next drivers were asked if recreational marijuana should be federally legalized. The majority (66.5%) felt marijuana should be legalized nationally.

A Final Thought from Truck Drivers: Open-Ended Comments Shed Light on the Marijuana Topic

The driver survey concluded with a text box where drivers were given the option to provide any final comments on issues related to the legalization of recreational marijuana. Approximately 41.8 percent of respondents opted to leave a written comment.

Comments that were most germane to the topic fell into two categories: 1) comments supporting a loosening of marijuana testing and laws (72.4%); and 2) comments supporting the status quo (27.6%).

Majority of Truck Drivers want Eased Federal Marijuana Laws. Beyond general support for less-strict rules, 23.7 percent specifically cited a belief that personal rights should be respected while a driver is off-duty, and/or the federal government should not monitor activities of a truck driver while he/she is at home. This was often accompanied by a statement that drivers must never be impaired by marijuana while on-duty.

A similar sentiment was expressed by a group of comments (22.1%) that centered on impairment testing. Those falling within this response category indicated that the urine testing protocol is too intrusive and extensive since it can identify marijuana use that occurred weeks prior and outside of an individual's work life. A representative comment within this category stated:

"FMCSA should require a marijuana *impairment* test instead of the current marijuana use test. A test showing that someone used marijuana at some point, somewhere is absurdly pointless. It reveals nothing at all about the person that is relevant to operating a commercial vehicle."

Additional comments included those who believe the health benefits of marijuana represent a legitimate reason to use marijuana (16.4%) and that less strict rules would help the industry attract and retain drivers (5.8%).

Analysis of Comments Supporting the Status Quo. Approximately 62.3 percent of the “status quo” comments submitted statements of general support:

“I do not think it should be legalized until we have more accurate roadside tests to determine if someone is under the influence. There should be harsher penalties when someone is using and driving, especially a CMV.”

More than 34 percent were more specific, citing the impact of marijuana on highway safety. One truck driver in this category stated:

“As professional drivers we need to be held to the highest standard, not only for our safety but everyone else’s safety. No way should it be legal to use if you hold a CDL.”

Truck Driver Comments Relating Alcohol and Marijuana. It is also noteworthy that 33.5 percent of all comments received made a comparison of alcohol and marijuana.

Some drivers, for instance, made the statement that alcohol was dangerous and unhealthy when compared to marijuana:

“More families have been destroyed by legal alcohol consumption than any controlled substance. There are more beneficial aspects with marijuana than negative.”

Other drivers questioned why, according to federal regulations, alcohol could legally be consumed several hours prior to driving, as long as blood alcohol levels remained below 0.04. This was often juxtaposed with the test for marijuana which is often detectable for weeks.

“Why is a driver allowed to get drunk from consuming alcohol off-duty, then wake up hungover, and hop in the driver seat of an 80,000 lb. truck and drive it? Yet smoking marijuana off-duty, and feeling completely normal the next morning, is an automatic loss of license and career.”

Summary of Survey Findings

The trucking industry’s view of marijuana has likely changed in recent decades, with many feeling that a new approach to regulation is needed. Based on the survey results, there are several ongoing trends in the industry, as well as changes that should be explored.

Hiring and Testing

In terms of truck driver hiring and testing, a slight majority of carriers are willing to hire drivers with a past positive marijuana test, and some carriers (24.4%) treat marijuana as a less serious offense when compared to harder drugs such as cocaine and methamphetamine. Carriers are however seeing an upward trend in pre-employment tests that are positive for marijuana, thus eliminating candidates in a very tight labor market.

From the truck driver perspective, a real component of the truck driver shortage is due to drivers leaving the industry for jobs where federal drug testing is not a requirement. The majority of

drivers (50.2%) indicated that leaving the industry to avoid drug testing was common or very common.

Labor market tightness may also be an impetus for holding back on alternative testing approaches – only 8.0 percent of carrier respondents indicated that additional testing approaches such as hair testing were being used.

Driver Knowledge of Marijuana Regulations

Most carriers (75.6%) had not experienced drivers who were unaware of federal marijuana rules for CDL holders. Most carriers (82.8%) also offer driver education on the rules.

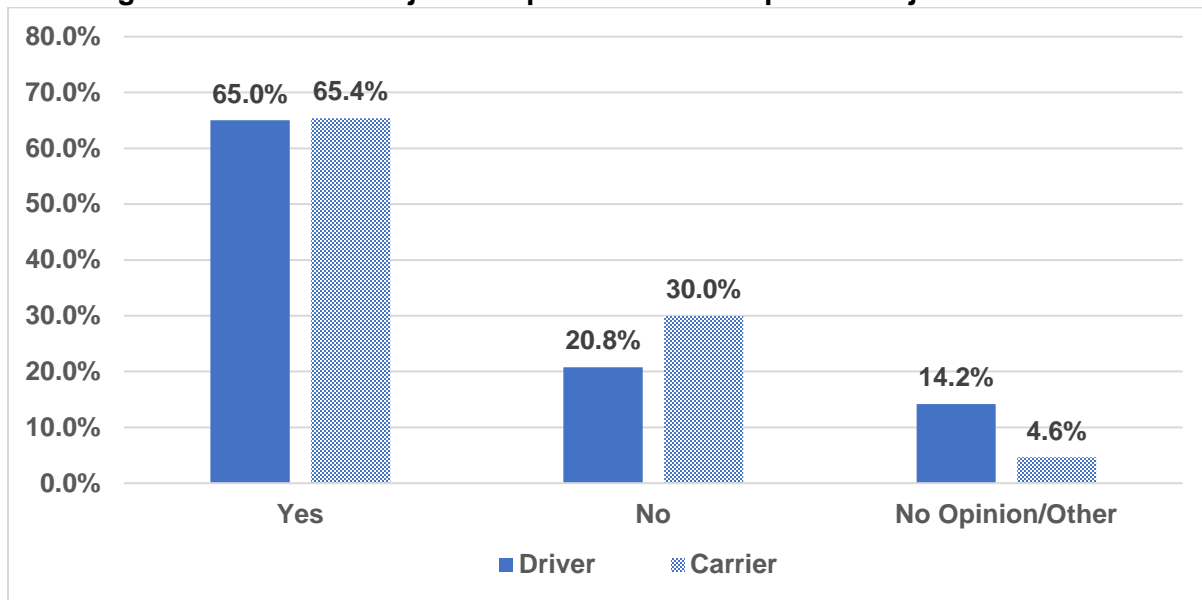
Nevertheless, an industry-wide effort should be made to improve driver education, especially considering that one in four truck drivers lacked an accurate understanding of marijuana rules for CDL holders. Many CDL drivers – 19.1 percent – were not certain if they could or could not use marijuana in a state where it is legal. An additional 6.6 percent believed that they could use marijuana as a CDL holder, which of course is incorrect.

Perspectives on Federal Drug Testing Rules

The majority of truck drivers (69.9%) and carriers (62.3%) indicated that changes were needed to federal drug policy rules in light of state-level legalization.

Drivers and carriers were also well-aligned when asked if an impairment or recent use test should replace the current FMCSA testing requirements (Figure 18).

Figure 18: Should Marijuana Impairment Test Replace Marijuana Use Test?



Carrier Financial Concerns

The most common concern for carriers was that a driver would test positive for marijuana in post-crash screening. Such a finding could have a large financial consequence to a carrier that is facing post-crash litigation, regardless of whether the driver was impaired. Within the U.S. labor force, this is a growing issue, with 7.3 percent of the U.S. workforce testing positive for marijuana after on-the-job accidents according to one analysis.¹¹⁰ A second common concern was that insurance rates would increase simply for operating in legalized states.

Driver Concerns with Testing Privacy and Appropriateness

Generally, drivers felt that current marijuana testing protocols are not appropriate and had the potential to invade one's privacy and unduly ruin a career. The key issue is that marijuana uniquely remains detectable for up to several weeks, whereas other drugs do not. Additionally, while many drivers view the use of alcohol and marijuana as an acceptable off-duty "weekend" activity, marijuana use is strictly prohibited under current regulations while alcohol use is tolerated within hours of operating a large truck. Many drivers cited this disconnect.

¹¹⁰ Quest Diagnostics, "Post-Accident Workforce Drug Positivity for Marijuana Reached 25-Year High in 2022, Quest Diagnostics Drug Testing Index Analysis Finds" (May 18, 2023), <https://newsroom.questdiagnostics.com/2023-05-18-Post-Accident-Workforce-Drug-Positivity-for-Marijuana-Reached-25-Year-High-in-2022.-Quest-Diagnostics-Drug-Testing-Index-Analysis-Finds>.

CONCLUSION: MARIJUANA LEGALIZATION AND THE TRUCKING INDUSTRY

In the past decade legalized recreational marijuana has shifted from limited, novel legislation to a national reality. There are currently 23 states where recreational marijuana can be legally purchased and consumed, and approximately half of the U.S. population lives in those states. In all likelihood more states will move in this direction since a majority of Americans (59%) support legalization.

While there is growing acceptance and availability of the drug in the U.S., there exist significant knowledge gaps regarding the relationship between marijuana use and public safety. The impacts of impairment on individual drivers and overall highway safety have yet to be adequately documented through research. Testing impaired individuals through a quantitative measurement – which has been key to combatting drunk driving – remains elusive in the case of marijuana. There is not even a definition or quantitative threshold for marijuana impairment.

Testing CDL drivers for drug use is a logical approach to support highway safety, and marijuana-impaired drivers should never operate heavy-duty trucks. That said, marijuana remains detectable for weeks, while alcohol and most recreational drugs are only detectable for a matter of days or even hours when using U.S. DOT-approved testing methods. This fact has led to the removal of many thousands of drivers from the industry based solely on past marijuana use.

Two Possible Federal Pathways

There are two pathways the federal government could take in the near-term regarding marijuana, and both present challenges for the trucking industry. The first is to continue with a federal policy recognizing marijuana as an illegal Schedule I drug. The second is a loosening of rules and possible removal of the drug from Schedule I.

Pathway One: Marijuana Remains a Federally Prohibited Schedule I Drug

Should the federal government maintain current marijuana laws, the trucking industry will continue to have thousands of drivers annually placed in prohibited status and will lose many others to occupations that do not test for marijuana use. Ultimately this puts pressure on the availability of CDL drivers.

That said, other labor-related complexities would be avoided if marijuana remains designated as a Schedule I drug. In particular, marijuana would continue to be recognized federally as a drug having no allowable medical use. As a result, carriers would not be required to make concessions to CDL drivers who wish to use the drug regularly for medical purposes. Additionally, carriers desiring a zero-tolerance policy for marijuana use could continue to do so without issue.

Finally, as more states legalize marijuana, conflicts between state and federal laws and jurisdictions will ostensibly increase issues for the trucking industry.

Pathway Two: Marijuana Rules Evolve toward Federal Legalization

It is possible, however, that federal marijuana rules will evolve toward legalization and ultimately marijuana will be removed from the federal Schedule I designation. Any shift toward federal legalization would likely ease pressure on the industry's driver shortage.

But, similar to maintaining the Schedule I "status quo," legalization also presents significant issues for the trucking industry. The central goal of industry drug testing efforts is highway safety. The current approach supports safety efforts, but also results in inefficiencies when drivers that do not present a safety issue are removed from the industry. To ensure that the trucking industry remains safe and unimpaired, there are several actions that must be taken before any federal efforts to legalize marijuana commence.

Develop a Nationally Recognized Marijuana Impairment Test and Impairment Standards

The ability to identify impairment through a quantitative measurement is critical to highway safety. Impairment measures require: 1) a tool to take the measurement; and 2) an accepted threshold at which a person is deemed impaired. Without these resources, the current testing approach and Schedule I designation should remain.

Protect a Carrier's Choice to Screen for Marijuana

The trucking industry has a substantial group of remote CDL workers who may operate for weeks at a time on public roadways far from company facilities. Regular impairment testing may not be possible for these employees. Carriers ultimately are responsible for the safe behavior of their drivers and must maintain a zero-tolerance position for on-the-job marijuana impairment, regardless of federal marijuana designations. Thus, the ability of a motor carrier to screen drivers for marijuana use must remain an option. To that end, carriers need federal protections from state and/or federal laws that would prohibit employers from screening employees for marijuana use through currently accepted testing methods. This is especially true should marijuana be removed from the Schedule I list.

Develop Greater Knowledge of Marijuana's Impacts on Highway Safety through Federal Research and Data Collection

There is a dearth of knowledge related to marijuana's impact on highway safety outcomes. A rigorous data collection effort should be developed to identify marijuana-involved crashes for all vehicle types; this could mirror the methodologies used in the FMCSA Large Truck Crash Causation Study. Key to this is post-crash marijuana impairment testing capabilities.

APPENDIX A: CARRIER SURVEY

Impacts of Marijuana Legalization on the Trucking Industry

The American Transportation Research Institute (ATRI), the trucking industry's not-for-profit research organization, is seeking motor carrier input on the impact of marijuana legalization on the trucking industry's workforce. This research was identified as a top priority in 2022 by ATRI's Research Advisory Committee.

Motor carrier staff and executives familiar with driver recruiting, retention and drug testing practices and trends are asked to share their input below. This timely research will provide insight into the specific challenges motor carriers face as the use of recreational marijuana grows in the U.S. The findings should also provide insight into approaches the industry can take to address these challenges.

The data collected will be kept completely confidential. Personal and organizational information will never be released for public use under any circumstance, and it will only be used internally for research analyses. The final report will only be presented in an aggregated, non-identifying format. As needed, ATRI will sign a confidentiality agreement.

If you have any questions about this survey and research, please contact Jeff Short at jshort@trucking.org.

DEMOGRAPHICS

The data collected will be kept completely confidential. The final report will only be presented in an aggregated, non-identifying format.

1. What is your role in trucking?
 - ☐ Motor Carrier: Human Resources
 - ☐ Motor Carrier: Safety
 - ☐ Motor Carrier: Training/Education
 - ☐ Motor Carrier: Dispatch/Driver Manager/Driver Recruiting
 - ☐ Motor Carrier: President/CEO/COO/CFO/EVP
 - ☐ Motor Carrier: Legal
 - ☐ Motor Carrier – Other (please specify):

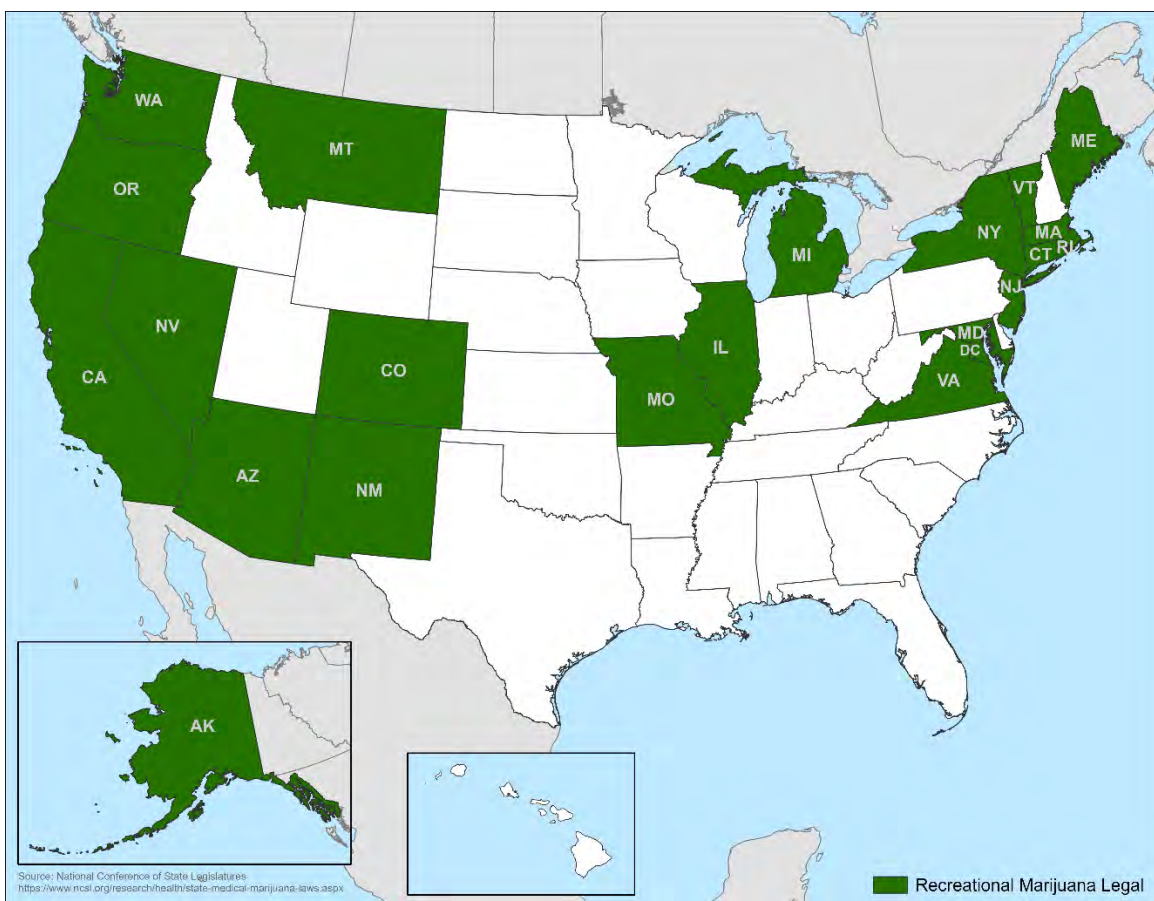
2. In what sector does your company primarily operate?
 - ☐ Truckload
 - ☐ Less-than-Truckload
 - ☐ Flatbed
 - ☐ Tanker – Petroleum/Hazmat
 - ☐ Tanker – Non-Hazmat
 - ☐ Oversize/Overweight
 - ☐ Intermodal
 - ☐ Express/Parcel
 - ☐ Private carrier
 - ☐ Other (please specify):

3. Approximately what percentage of your drivers' trips are in the following length-of-haul categories?
(Total must sum to 100%)

Local pickups and deliveries (less than 100 miles)	
Regional pickups and deliveries (100 – 500 miles)	
Inter-regional pickups and deliveries (500 – 1,000 miles)	
National pickups and deliveries (1,000+ miles)	
Total	100%

4. How many CDL holders does your company employ?

5. What percent of your company's drivers are based in states where recreational marijuana is legal today (see green states in map below)?



HIRING PRACTICES AND YOUR COMPANY POLICY

According to federal law, after a positive marijuana test result a driver must immediately be removed from operating any CMV on public roadways. To return to CMV operations after a positive marijuana test, a driver may follow the federal return-to-duty process.

6. Based on your company's policies, does a prior positive drug test for marijuana (at any time in the past) automatically disqualify a driver from employment?
- ☐ Yes
 - ☐ No
7. Is there a specific time period that must pass (e.g. 5 years) after a positive marijuana drug test before you will hire or rehire a driver?
- ☐ Yes
 - ☐ No
 - ☐ We strictly do not hire such drivers.

If yes, how long? (In years)

8. Do you treat different drug violations differently (e.g. marijuana vs cocaine)?
- ☐ Yes
 - ☐ No

If yes, describe:

9. In response to the increasing availability and consumption of marijuana in the U.S., has your company changed its practices related to hiring drivers with past marijuana positive tests?
- ☐ Yes
 - ☐ No

If yes, describe:

LABOR POOL

10. Have you noticed an increase in the past 5 years in: 1) pre-employment positive drug tests; or 2) candidates walking out when they learn a drug test is required?
- ☐ Yes
 - ☐ No
11. If you answered yes to previous question, is there an age group with the greatest increase?
- ☐ 25 or younger
 - ☐ 26-35
 - ☐ 36-45
 - ☐ 46-55
 - ☐ 56+
 - ☐ There is no specific age group.

12. How many of your drivers have you had to refer to the FMCSA Drug and Alcohol Clearinghouse due to a positive marijuana test, by year:

2020	
2021	
2022	

13. How many of your drivers have completed the return-to-duty process after a positive marijuana test and rejoined your company, by year the driver returned:

2020	
2021	
2022	

14. What challenges have you come across during the return-to-duty process after a positive marijuana test (list up to 3)?

--

15. Have you experienced issues with drivers using CBD oil and then testing positive for marijuana?

- ☐ Yes
☐ No

If yes, describe:

--

16. Have you experienced instances where drivers were unaware that legal recreational marijuana cannot be used by CDL holders?

- ☐ Yes
☐ No

If yes, describe:

--

17. Do you educate your drivers on the potential consequences of legal recreational marijuana use for CDL holders?

- ☐ Yes
☐ No

If yes, what approaches do you find most effective?

--

TESTING PRACTICES

18. Do you conduct random drug testing beyond what is required by FMCSA (i.e. 50% of drivers annually)?

- ☐ Yes
- ☐ No

If yes, please list %:

19. Do you use additional testing approaches such as hair testing?

- ☐ Yes
- ☐ No

If yes, describe:

APPROACHES TO ADDRESSING LEGAL MARIJUANA

20. In light of growing state-level legalization of marijuana, do you believe that changes in federal drug testing policies for CDL holders are needed?

- ☐ Yes
- ☐ No

If yes, what changes are needed?

21. To satisfy FMCSA's drug testing requirements, would you prefer that drivers and driver-candidates were required to take a marijuana test that measured impairment or very recent use (e.g. within the past day) instead of the current test, which can identify use many weeks prior?

- ☐ Yes
- ☐ No
- ☐ Other (please specify):

22. Below is a list of possible issues that might arise from state-level recreational marijuana legalization. Please indicate how concerned you are that these outcomes will result from legalization:

	1 = Not Concerned	2 = Somewhat Concerned	3 = Extremely Concerned
Drivers will be more likely to drive while impaired by marijuana.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marijuana will act like a gateway drug, and drivers will therefore be more likely to use other drugs (e.g. cocaine, meth).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drivers will be more likely to underperform in other areas aside from driving (e.g. late to work, calling out of work, unreliable record keeping, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drivers will be more likely to test positive in a post-accident screening regardless of impairment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our insurance rates will go up simply because we have operations in a state where recreational marijuana is legal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Please provide any additional comments that you may have.

Contact info (OPTIONAL). Occasionally ATRI will follow up with participants to clarify answers or request additional information. Your information will be kept strictly confidential. All participants who include contact information will receive an advance copy of the full report.

Company	Contact Name
Street Address	Position/Title
City, State	Zip
Phone	Email

Thank you! We greatly appreciate your participation.

Contact Jeffrey Short with questions at 770-432-0628 ext. 2
or jshort@trucking.org.

APPENDIX B: DRIVER SURVEY

Impacts of Marijuana Legalization on Trucking Operations

The American Transportation Research Institute (ATRI), the trucking industry's not-for-profit research organization, is seeking truck driver input on the impact of marijuana legalization on their trucking operations.

Current CDL holders are asked to share their input below. The final report will only be presented in an aggregated, non-identifying format. All data will be kept completely confidential.

If you have any questions about this survey and research, please contact Jeff Short at jshort@trucking.org.

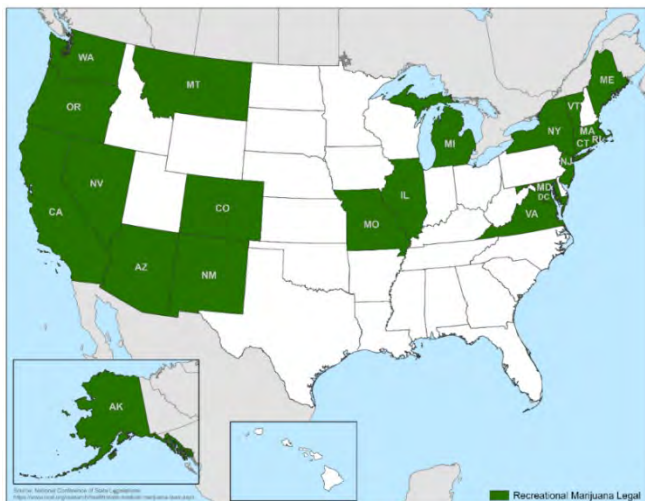
DEMOGRAPHICS

1. Are you a truck driver with a Commercial Driver's License (CDL) who operates a Commercial Motor Vehicle (CMV)?
 - ☐ Yes, I am a truck driver and currently hold a valid CDL and drive a CMV
 - ☐ No, I have never held a CDL
 - ☐ No, but I have had a CDL in the past
2. What is your gender?
 - ☐ Female
 - ☐ Male
3. What is your age? _____
4. In what sector do you primarily work? (check one)
 - ☐ Truckload
 - ☐ Less-than-truckload
 - ☐ Specialized, flatbed
 - ☐ Tanker: Food Grade
 - ☐ Tanker: Petroleum / Hazmat
 - ☐ Tanker: Non-Hazmat
 - ☐ Express / Parcel Service
 - ☐ Oversize / Overweight
 - ☐ Intermodal Drayage
 - ☐ Don't know
 - ☐ Other (please specify): _____
5. Which of the following best describes your employment: (check one)
 - ☐ Employee driver
 - ☐ Owner-operator (O-O) with own authority
 - ☐ O-O / Independent Contractor leased to a motor carrier
 - ☐ Other (please specify): _____

RECREATIONAL MARIJUANA LEGALIZATION

6. Do you live in a state where recreational marijuana is legal? (See green states in map below)

☐ Yes
☐ No
☐ Not Sure



7. Can an interstate CDL truck driver use marijuana off-duty in a state where it is legal?

☐ Yes
☐ No
☐ Not Sure

8. Have you or someone you know tested positive for marijuana after using CBD products?

☐ Yes
☐ No
☐ Not sure

9. Do you think roadway safety has been impacted by legal recreational marijuana?

☐ Yes
☐ No
☐ No Opinion

10. At what point do you believe someone can safely operate a vehicle after using marijuana?

☐ Immediately after use, up until 2 hours
☐ Within 2 - 6 hours of using marijuana
☐ Within 6 - 10 hours of using marijuana
☐ After 10 hours or more since using marijuana

☐ Never
☐ No Opinion
☐ Other (please explain):

11. Do you believe that changes in federal drug testing laws for CDL holders are needed?

☐ Yes
☐ No

If yes, what changes are needed?

12. Should FMCSA require a marijuana impairment test instead of the current marijuana use test?

☐ Yes
☐ No
☐ No Opinion
☐ Other (please explain):

13. Do you believe the federal government should legalize recreational marijuana nationwide?

☐ Yes
☐ No
☐ No Opinion

14. Is it common for CDL truck drivers to leave the industry for jobs where they are not tested for marijuana?

☐ Very Common
☐ Common
☐ No Opinion
☐ Not Common
☐ Very Uncommon

15. Please provide any additional comments on the legalization of recreational marijuana.

Thank you for taking our survey!



Atlanta, GA • Minneapolis, MN • Washington, DC • Sacramento, CA
(770) 432-0628

ATRI@Trucking.org
TruckingResearch.org