coalition for cannabis
Policy, Education, and Regulation

Testimony of Andrew Freedman
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Coalition for Cannabis Policy, Education and Regulation
Subcommittee on Civil Rights and Civil Liberties
Hearing on Developments in State Cannabis Laws and Bipartisan Cannabis Reforms at the Federal Level

November 15th, 2022

House Oversight Committee on Oversight and Reform
Subcommittee on Civil Rights and Civil Liberties
2154 Rayburn House Office Building
Washington, DC 20515

Chairwoman Carolyn B. Maloney
Ranking Member James Comer
Subcommittee Chairman Jamie Raskin
Subcommittee Ranking Member Nancy Mace

Chairwoman Maloney, Ranking Member Comer, Chairman Raskin, Ranking Member Mace, and distinguished Members of the Committee:

As the former cannabis czar for the State of Colorado and a current policy professional having advised nearly 20 state governments, it is an honor to join today's discussion on the need for federal cannabis reform. Like many in Congress, I too believe it is time to bring rational federal policy to states that have already reformed their respective state laws.

When Colorado voters approved a ballot initiative in 2012 legalizing cannabis, the then- Governor and present U.S. Senator, John Hickenlooper, called me into his office. He asked me to lead the state's efforts to implement its new law authorizing adult-use cannabis and to oversee its medical cannabis and hemp programs. I gladly accepted the challenge, which turned into the experience of my professional lifetime.

Since my time serving Governor Hickenlooper, states have steadily broken away from cannabis prohibition as "the law of the land," despite prohibition remaining federal law. Just last week, as Colorado celebrated the 10th anniversary of allowing adult-use cannabis, voters in two more states legalized adult-use cannabis, including in the very red state of Missouri. Today, roughly half of Americans live in the 21 states that have legalized adult-use cannabis. Additionally, 37 states have legalized medicinal use of cannabis. It is important to note these states have constructed sophisticated, durable regulatory systems tailored to address the understandably serious concerns of their communities.

The cannabis legalization movement is one of the most remarkable political phenomena and federalism experiments in modern American democracy. Despite often dire warnings from elected officials and community leaders, voters from across the political spectrum have time after time decided to exert states' rights and legalize cannabis in their own backyards. They do so because they believe that cannabis can be adequately regulated at the state level, and that federal prohibition has failed them similar to how alcohol prohibition did a century ago. They do so

because they believe that it has been unjust to lock away hundreds of thousands for using a substance that millions of Americans admit to using regularly. And they do so because they are excited about the economic prospects cannabis brings locally, particularly for small and minority businesses.

In my experience, I have found the motivating factors behind state implementation and regulation to vary vastly. Some rural counties I advised were only interested in licensing cultivation facilities so that their farmers could participate in a burgeoning market. I advised East Coast cities concerned about ensuring minority-owned businesses were first to enter their markets. I encountered states seeking to maintain medical cannabis while also not slowly becoming a de facto adult-use market. Throughout this work, one fact remained constant and that was states were critically hampered in achieving their goals and mitigating their concerns without federal reform.

So, in 2020, the Coalition for Cannabis Policy, Education, and Regulation, or CPEAR, was founded to embrace a simple reality: cannabis reform is here to stay, and it is time for the federal government to institute regulatory, public health, public safety, and criminal justice policies that respect and align with states. The coalition consists of members representing regulated industries, academics, think tanks, government associations, public safety officials, medical and mental health professionals, financial services firms, and social equity organizations. These subject matter experts are developing policy and find themselves part of the national cannabis regulatory conversation because state reforms have thrust this issue into their orbit. Together, this coalition strives to be a trusted, data- and science-driven resource for lawmakers and the larger stakeholder community. It collaborates to develop responsible policies that achieve our goals for criminal justice and cannabis reform. It works tirelessly to protect consumers and patients, reduce underage use, uphold public health and safety, and promote equity. To be clear, CPEAR does not advocate that a state should or should not legalize cannabis. States, counties, and cities should remain free to determine what, if any, form of legalization they wish to pursue, and we do not advocate for them to make any decision other than to advance the effective public policies they choose. But where states have decided to pursue cannabis reform, and even in states where cannabis remains illicit, the federal government can provide regulatory guardrails to aid states and get this done right. The states are asking for it.

To ensure it is done right, we have worked with key experts on policy papers on the following which are included in the appendix of my testimony, including:

- Opportunity, Ownership, and Empowerment: A Federal Cannabis Framework for Small and Minority Owned Businesses

- Prioritizing Mental Health in an Emerging Market: A framework for maintaining public health and expanding knowledge on Cannabis and Mental Health

- Addressing Youth and Cannabis: Solutions to combat and prevent youth misuse through a federal regulatory system

- Contextualizing the Problem: Driving Under the Influence of Cannabis and Other Drugs in America

I cannot overstate what a remarkable job state officials, advocates, and the industry have done to implement state regulatory programs, but there is a limit to what can be done when blanket federal prohibition remains on the table. Our system allows states wide latitude to effect policy change, but some issues and areas of law are inherently and solely under the jurisdiction of Congress and federal agencies, and it is on those issues where differences between state and federal law create the greatest tensions.

Thus, I implore Congress to ask the natural next question: how could changes to federal law help the cannabis policy landscape?

One example deals with law enforcement. States are often using cannabis tax revenue to train the state law enforcement community to improve their drug recognition expertise so that they can better detect impairment in drivers. Federal regulation and funding are critical to improve such training and to fast track the implementation of new impairment detection technologies.

Another issue on which federal prohibition is a hinderance involves curbing youth cannabis use. States enforce against underage sales and invest in afterschool programming that has proven to be an effective tool for combating underage misuse. However, federal cannabis regulation can further assist this effort to prevent youth use. The federal government can establish a national minimum purchase age of 21. Congress and federal agencies can draw upon all available best practices around point-of-sale age verification and the format and content of labeling and advertising. Each will help prevent youth cannabis use.

Federal policy reform would help in other ways, too.

States have implemented incredible track-and-trace inventory control systems to monitor cannabis products throughout the supply chain, from seed to sale. These systems have become a foundational part of the market and ensure that legal products are properly controlled and ultimately safe for consumers. And while track-and-trace systems also help combat the illicit market, they are not a silver bullet; reform requires a unified federal and state response. That means federal reform efforts should supplement — and integrate with — existing state policy, processes, and systems.

And while states are experimenting with their own systems for labeling and testing, federal regulation should create a minimum set of rules for all product manufacturers, ensuring national standards for consistent cannabis product quality, safety, ingredients, labeling, packaging, and serving size. Federal regulation could guard against unproven health claims, require health

warning labels, and use child-resistant packaging. These rules would enhance product safety and consumer protection for those who choose to use cannabis responsibly.

These are just a sample of issues for which smart federal policy can lead to better outcomes. That list continues to include areas such as addressing mental health concerns, providing research to understand fully the benefits and harms of cannabis use, properly preventing and treating substance abuse known as cannabis use disorder, ensuring small and minority businesses have the resources to thrive, and maintaining patient and veteran access to the medicine they need and deserve.

This is not to say the entire federal government isn't paying attention. The U.S. House of Representatives has both passed and introduced bipartisan cannabis measures for the past several Congresses with the goal of providing greater clarity, equity and safety to the regulated community with respect to cannabis.

In fact, Ranking Member Mace present today has championed the States Reform Act, of which provides a federal regulatory framework for cannabis. Additionally, Rep. Ocasio-Cortez co-leads the Harnessing Opportunities by Pursuing Expungement (HOPE) Act, an important reform bill for those impacted by prohibition. Both of these bills enjoy CPEAR's support.

Additionally, Ranking Member Comer has historically championed the federal effort to provide regulatory clarity to the U.S. hemp industry. As Kentucky's Commissioner of Agriculture, he implemented hemp pilot programs permissible per the 2014 Farm Bill. Once elected to Congress, he secured provisions in the 2018 Farm Bill fully legalizing the crop. He has since conducted related regulatory follow-up and oversight of the U.S. Food and Drug Administration.

We appreciate the contributions made by Members of this Committee to date, as well as others throughout Congress, and today's hearing is testament to your further commitment to get bipartisan federal cannabis reform done right.

I welcome any questions as the Subcommittee on Civil Rights and Civil Liberties continues to discuss merits of cannabis reform, the need for adequate safe federal regulation, and its impact on criminal justice.

Andrew Freedman

Executive Director

Coalition for Cannabis Policy, Education and Regulation

Appendix:

Opportunity, Ownership, and Empowerment: A Federal Cannabis Framework for Small and Minority Owned Businesses: CPEAR's first white paper explored solutions that the federal government can take to ensure that small and minority owned businesses would have an opportunity to fully participate in a federally regulated cannabis system.

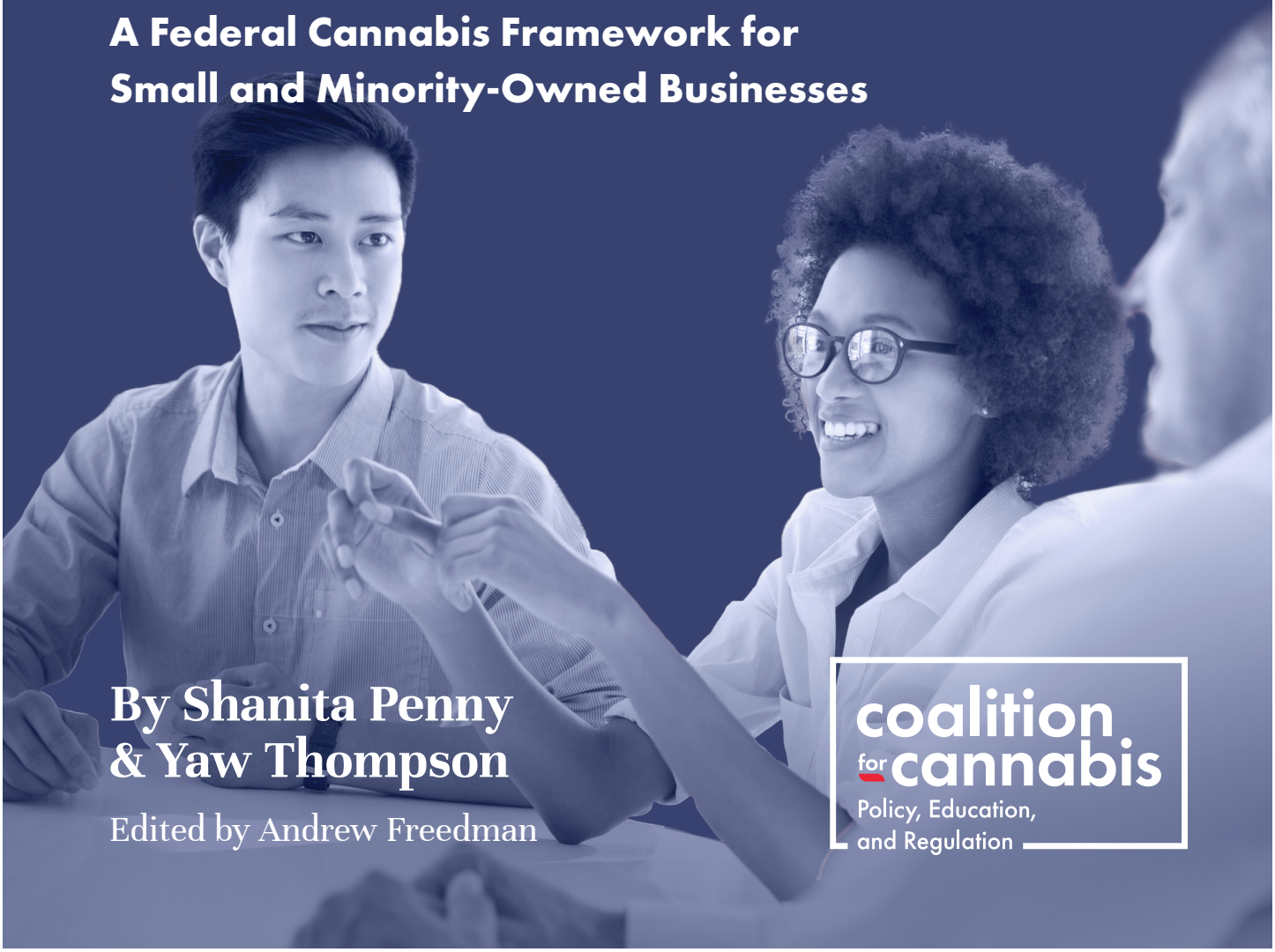
Prioritizing Mental Health in an Emerging Market: A framework for maintaining public health and expanding knowledge on Cannabis and Mental Health: As with any high-risk product and resulting externalities, CPEAR worked with mental health experts to explore the ways in which the federal government can improve mental health outcomes in a federal regulated cannabis system. The paper emphasizes the importance of crafting policies based on data and science, as well an increased funding for clinical research for the product.

Addressing Youth and Cannabis: Solutions to combat and prevent youth misuse through a federal regulatory system: In taking a wholistic view of a federal cannabis regulatory system, CPEAR has put forward policies and programs aimed at curbing youth cannabis misuse, and first use. These programs and policies have been successful at the state level, and the paper not only highlights why these programs have been successful, but also the best ways to amplify those efforts across multiple states under a federal regulatory system.

Contextualizing the Problem: Driving Under the Influence of Cannabis and Other Drugs in America: Examines the root causes of driving under the influence of cannabis and provides the data-backed recommendations that the federal government should immediately adopt to best protect our streets and communities.

Opportunity, Ownership, and Empowerment

A Federal Cannabis Framework for Small and Minority-Owned Businesses



By Shanita Penny & Yaw Thompson

Edited by Andrew Freedman

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This paper was produced in consultation with the Main Street Alliance (MSA), which is devoted to seeking to understand the issues that matter most to small businesses – promoting a more accurate understanding of what small businesses need on issues of job quality, capital access, and economic development. Throughout the paper, we will present the perspectives of some MSA members to highlight how the challenges and policies highlighted have impacted small businesses in non-cannabis industries.

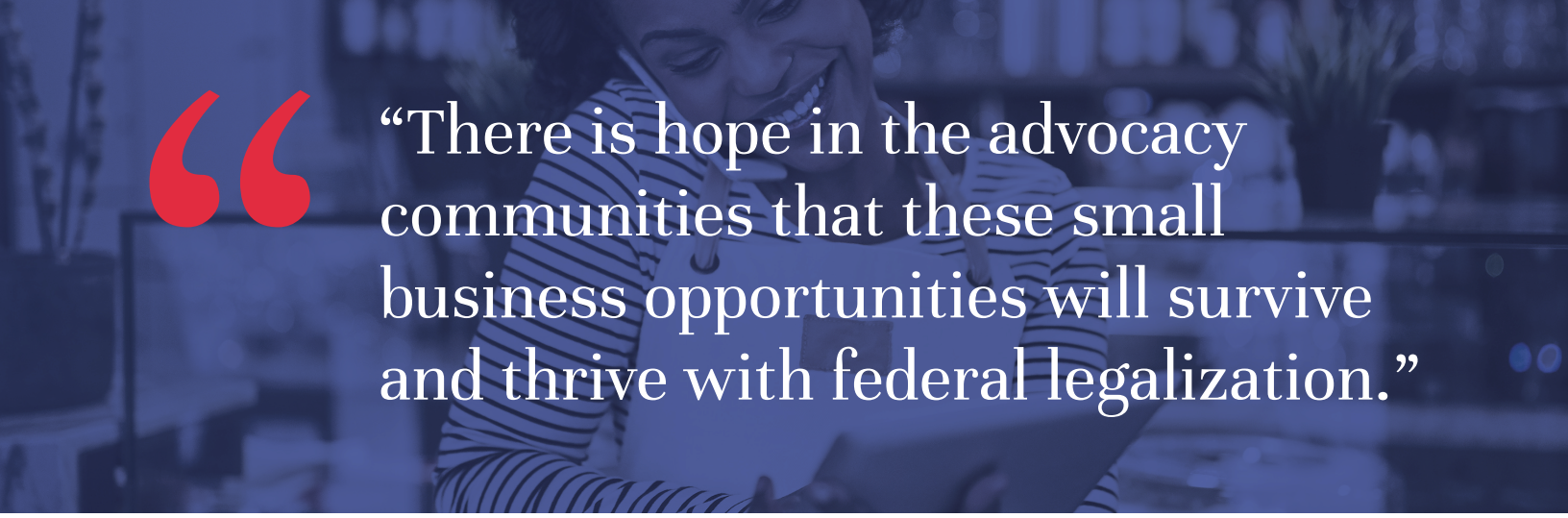
Introduction

WITH EVERY NEW STATE THAT PASSES LEGALIZATION, every new poll that shows increasing bipartisan support, and every policymaker that embraces reforming cannabis law, the creation of a legal, national cannabis industry inches nearer. It is time for the federal government to acknowledge that this industry is here and may soon have access to legal interstate commerce. Recently, the national narrative has focused on the inevitability of cannabis legalization.[1] More pertinently, however, is the fact that legalization is already here for much of America.

For many of the communities embracing legalization, the focus is on the ability of legalization to create quality jobs. A 2020 report from Leafly states that legalization already accounts for over 230,000 cannabis industry jobs annually.[2] Moreover, an analysis of the Colorado cannabis economy concludes that the indirect jobs

1 Lopez, G. (2021, April 20). This 4/20, marijuana legalization has won. Vox. https://www.vox.com/2021/4/12/22371929/marijuana-legalization-new-mexico-virginia-new-york-biden

2 Leafly. (2020, February). Leafly Jobs Report 2020. Leafly.com. https://leafly-images.imgix.net/Leafly-2020-Jobs-Report.pdf



> “There is hope in the advocacy communities that these small business opportunities will survive and thrive with federal legalization.”

created by the cannabis industry are almost half the size of the direct cannabis jobs market. “Security guards, construction and HVAC specialists, consulting, legal, and advisory services, and other business services” equaled about 23 percent of direct employment. In addition, the report estimates that the increased expenditures from workers in the cannabis industry create additional jobs equaling roughly 20 percent of direct employment in the industry.[3]

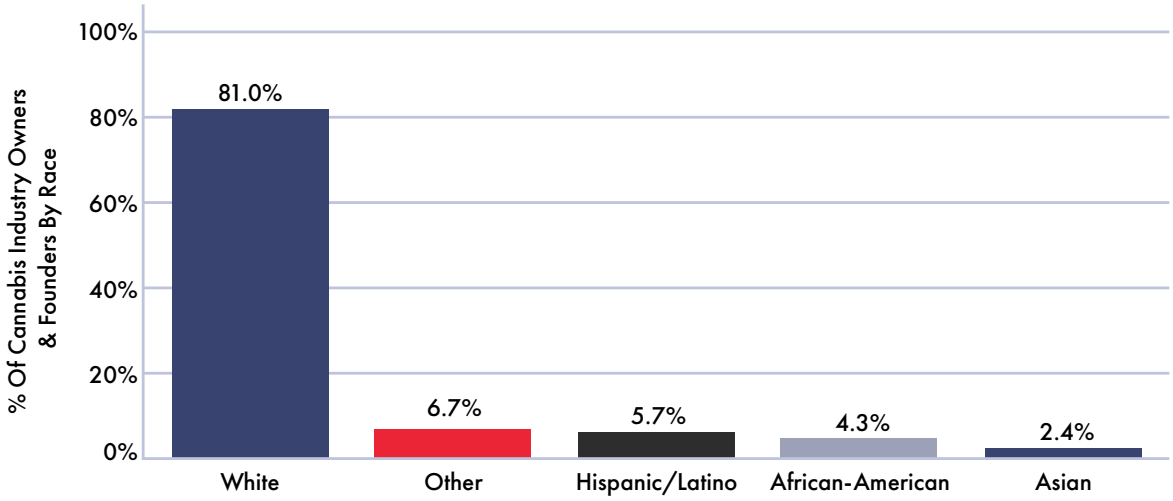
There is hope in the advocacy communities that these small business opportunities will survive and thrive with federal legalization. Moreover, that these small business opportunities may be realized by minority communities most impacted by the war on drugs. Many are looking toward the emerging cannabis economy to create small businesses owned by those who have had their life negatively impacted by a cannabis arrest, whether their own or that of a family member.

The challenges to making this hope a reality are significant: First, outside of the cannabis economy, there are presently significant disparities in minority access to capital, a lack of universal access to requisite job training, and disparate impacts from high regulatory burdens that negatively affect small and minority-owned businesses. Second, small cannabis businesses suffer significantly because of policy issues unique to cannabis around the further restriction of capital, high levels of taxation, and regulatory systems that value incumbency. Finally, interstate commerce will bring its own set of challenges. There is trepidation among many advocates and current industry members that interstate commerce will achieve economies of scale that crowd out small operators.

The impact of some of these challenges can already be seen within the current cannabis economy. The fact that cannabis is still federally illegal has meant that most traditional methods of accessing capital are not available. Slow rollouts of state regulatory programs mean that businesses are often burning through capital while the bureaucracy is being worked out. A lack of interstate commerce often means that those who are successful have limited opportunities to grow. Even well-intentioned programs that create social equity licenses have had a mixed record of rollouts, often harming the same communities they are seeking to help because they were not correctly structured.

3 Marijuana Policy Group, Light et al. *The Economic Impact of Marijuana Legalization in Colorado*. October 2016.

Breakdown of Marijuana Business Owners & Founders By Race



Note: Results reflect the percentage of respondents with any ownership stake in a marijuana business
Source: Marijuana Business Daily August 2017 reader survey

In part because of its continued federal illegality, data concerning the current breakdown of minority-owned cannabis businesses are sparse. The last survey of the industry, conducted in 2017 by *Marijuana Business Daily*, found that less than 5 percent of cannabis business owners were Black. *Marijuana Business Daily* took pains to explain the limitations of this poll. Among them, that this poll oversampled California, whose minority population is substantially higher than the national average, and thus probably overstates the participation of minority business owners. The low percentage of Black participants, given the limitations of the survey, is probably even more notable.

Despite these challenges, the nascent nature of the cannabis industry and the history of victimizing communities of color gives the government a unique opportunity to use cannabis as an opportunity to improve the government's overall approach to encouraging small business growth and improving opportunity for minority entrepreneurs. A federal framework should help alleviate some of the challenges faced by small businesses – providing access to capital, smoother regulatory rollouts, and much-needed technical assistance. The federal government must work now to define what this national economy will look like.

A federal regulatory framework must reflect the significant role that small businesses have played as pioneers of the cannabis economy. And a national marketplace ought to reflect that contribution. We envision a nationwide economic ecosystem underpinned by small and minority-owned businesses where entrepreneurs have a fair on-ramp to grow their investments in the marketplace.

Realizing such a marketplace requires three foundational components: (i) access to capital, (ii) equitable licensing, and (iii) a regulatory framework that is scaled for small business compliance/ participation.

This paper highlights opportunities for lawmakers to consider as they craft federal policies to govern a national cannabis industry.

> "Small business owners want effective, equitable, and active government support for a thriving small business sector. Though this preference may run counter to conventional wisdom, it reflects the priorities and day-to-day reality of real small business owners across geography, race, gender, and even political affiliation. This is true of the eight small business owners who spoke in-depth with Main Street Alliance about their experiences with Covid relief, their perspectives on government, and their ideas for what it will take to close the gap between small business needs and government action. Entrepreneurship is heralded as a path to opportunity. Yet it is only through government efforts to create a more equal economy, focusing on racial justice, that entrepreneurship can contribute to generational wealth, financial security, and prosperous local economies."
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> *- The Role of Government: A Small Business Perspective4*

4 Business Education Fund & Main Street Alliance. (2021). *The Role of Government: A Small Business Perspective*. Business Education Fund. https://static1.squarespace.com/static/5ff74507e375c93150f0ca32/t/60905c2ca055ee-18b199a9dc/1620073527274/Role+of+Government+Report+Design+FINAL.pdf

Goals and Objectives

WHILE NATIONAL AND MULTI-NATIONAL BUSINESSES can be critical to the sustainable growth of an emerging industry, a federal framework should be designed in a manner that cultivates a symbiotic relationship between small and minority-owned businesses and these national and multi-national businesses. This will involve the use of creative strategies aimed at allowing small and minority-owned businesses to thrive.

As the federal government pursues a comprehensive approach to advancing equity for all, attention must be paid to entrenched disparities in our laws, public policies, and public and private institutions. Decades of prohibition and disproportionate policing have left Black and Latino people with cannabis convictions that in most states are a barrier to entry in the cannabis industry. States like California and Massachusetts were the first to prioritize victims of the drug war in licensing of cannabis businesses, but these business owners are still struggling without banking relationships, access to capital, and other wraparound services and support to ensure not only their entry but sustainability. Existing operators in the cannabis industry range from small and medium-sized farmers, manufacturers, and retailers on the east coast and larger multi-state operators spanning markets across the country and expanding across the globe. All of these companies pay disproportionately higher federal taxes thanks to section 280E[5] of the Internal Revenue Code but cannot access small business loans and other Small Business Administration (SBA) services. It is imperative that public, private, and social stakeholders collaborate to reform laws and provide innovative solutions as well as tap into existing programs to create equitable opportunities and outcomes.

5 Section 280E of the Internal Revenue Code prohibits the deduction of ordinary business expenses from gross income for Schedule I and II substances, resulting in extremely high effective tax rates for most cannabis businesses.

> “Congress must establish a regulatory framework now that creates a culture of opportunity, ownership, and empowerment...”

Defining Success

Congress and the federal government must define success early in the process of establishing a regulatory framework. A final, definition of success is beyond the scope of this paper. However, the broad strokes of success are identifiable. Congress must establish a regulatory framework now that creates a culture of opportunity, ownership, and empowerment for communities and individuals most negatively impacted by the war on cannabis by prioritizing (i) social equity, (ii) community reinvestment, and (iii) economic empowerment.

- An ecosystem centered on small and minority-owned businesses, wherein financial tools and regulatory protection are available to market entrants who fulfill minimum criteria.
- A focus on ensuring communities disproportionately affected by the war on drugs have fair access to the emerging federal legal cannabis market.
- A path to the industry for formerly incarcerated individuals convicted of non-violent cannabis crimes (i.e. expunging the records of people convicted of violating cannabis laws and discontinuing use of previous cannabis convictions as a disqualifier for “good moral character”).
- Small and minority-owned businesses have access to capital.
- Small and minority-owned businesses have all the resources necessary to meet regulatory requirements.
- Federal revenues are allocated for investments in disproportionately affected communities.

Broadly speaking, success looks like an inclusive and vibrant economic ecosystem overflowing with opportunities for a growing class of small businesses and minority entrepreneurs while generating economic growth and jobs in disproportionately affected areas; a self-sustaining industry that recognizes the importance of small businesses and reinvests in communities.

Rethinking "Minority-Owned" Small Businesses in a Federal System

The Small Business Administration's current definition of minority-owned businesses as "firms that are owned and controlled at least 51% by African Americans, Asian Americans, Hispanic Americans, and Native Americans" creates the incentive to engage in "figure heading," in which white investors assign a minority investor to the role of CEO but retain control of the business while reaping its profits.

As Congress works on a federal framework for cannabis, is there an opportunity to work with the SBA to improve upon and leverage the definitions of minority-owned businesses and small disadvantaged businesses? The latter is currently defined as being "at least 51% owned and controlled by a socially and economically disadvantaged individual or individuals." Black Americans, Latino Americans, Asian Pacific Americans, Subcontinent Asian Americans, and Native Americans are presumed to qualify. Other individuals can qualify if they show by a "preponderance of the evidence" that they are disadvantaged. All individuals must have a net worth of less than $750,000, excluding the equity of the business and primary residence. Successful applicants must also meet applicable size standards for small businesses in their industry.[6] A potential avenue to explore may include geographic components that factor in cannabis arrests data, gentrification, and communities that have been left behind in our previous government support schemes, such as opportunity zones.

Furthermore, there is an opportunity to work with state oversight authorities to factor these expanded definitions into their licensure and taxation procedures. Addressing the current scope of the SBA definition through these avenues helps the federal government and state authorities improve access to the market for small and minority-owned businesses that qualify.

The Role of the Federal Government vs State Systems

One of the core tensions that policymakers will have to grapple with while pursuing federal legalization is the proper role of the federal government vis-a-vis state regulatory systems. This tension is particularly pronounced with issues of social equity and small business protections. The time, place, and manner that a regulated business operates is a decision most often, and properly, left to local government. Local authorities have the clearest insight into community concerns and have the best ability to tailor their programs accordingly.

6 Small Business Administration. (n.d.). Small Disadvantaged Business (SDB)| SBAGOV.org. SBAGov.Org. Retrieved June 14, 2021, from http://sbagov.org/government_opportunities/federal_contracting_guide/small_disadvantaged_business.htm

> "We're a small organic brewery, and as a small business, it can be tough to operate with changing regulations and guidelines. Since we bottle and sell our beer across state lines, we need to know the ins and outs of different state laws and regulatory agencies. We're happy to do it, but in some states, the regulations change quickly. Lots of times it feels like the states aren't really coordinating since we often find ourselves dealing with contradictory requirements. We spend a lot of time just making sure we're tracking the right measurements and filing the right reports to the right agencies on the right timelines — some even require you to file if you have nothing to report. It would be great if there were one, trusted, publicly available, and certified place where I could get all this information to make sure I stayed up to date and current — this would save us hundreds of hours of work, not to mention the constant worry that we missed some crucial update to a state or local regulation."
>
> *- Colorado Brewery Owner*

Why should we expect the federal government to get something right on a broad scale that states are struggling to get right on a smaller scale? In part, some of the policy suggestions in this paper address federal government actions and inactions that have hampered states' abilities to properly implement their legislative priorities – particularly issues concerning interstate commerce, federal tax laws, and banking policy. But more so, the federal government can and should aid the states in some critical areas as they attempt to build economies that foster small business growth and provide meaningful equity access to the marketplace by funding successful programs at a larger scale, establishing defensible definitions of equity, and providing states the incentive to adopt programs and policies that have been proven effective.

State and local programs will have a much more direct impact on how to incorporate small and minority-owned businesses into the regulatory model. The suggestions in this framework are not meant to usurp the state's role in determining the time, place, and manner with which cannabis businesses operate.

Policies to Pursue

IT IS IMPORTANT TO NOTE that some of the most important policy changes for small and minority-owned businesses are accomplished simply through federal legalization and the creation of a federal regulatory system. Such movement would create access to Small Business Association lending, merchant banking and loans, and relief from extremely high 280E taxation. Probably of even greater importance, providing clarity to business owners – both plant-touching and non-plant touching – that they are not committing a crime, would eliminate the legal, regulatory, and mental costs associated with businesses operating in this legally nebulous space. It would also open up opportunities for local insurance, real estate, construction, plumbing, manufacturing, and dozens of other businesses to engage with this fast-growing industry in a normalized and legal business setting.

Still, as discussed above, many are looking for more protections for small and minority-owned businesses as this nascent industry matures. The following topic areas constitute a non-exhaustive list of policies that the federal government should actively pursue when determining how best to legalize cannabis while protecting small and minority-owned businesses.

Access to Capital

One of the most significant barriers to entry in the cannabis industry for both small and minority-owned businesses is access to capital.

Cova, an industry Point-of-Sale system, broke down the major components of opening a cannabis retail store and determined the startup costs to be between $150,000 to $2 million.[7] That's a broad range, and most in the cannabis industry would say an owner needs to be toward the higher end of that range to avoid running out of working capital before being able to open. In fact, the State of Pennsylvania requires applicants have $2 million in capital before they can acquire some license types.[8]

Small and minority-owned cannabis businesses face two obstacles concerning accessing this type of capital. First, federal law makes it difficult or even impossible for cannabis businesses to access traditional financial services such as checking accounts, payroll accounts, and lines of credit. Second, there is a significant racial funding gap in the U.S. that results in small businesses owned by people of color receiving less financing, less frequently – and at higher interest rates.[9]

In a report for McKinsey & Company, titled "Building Supportive Ecosystems for Black-owned US Businesses," the authors observe: "Black entrepreneurs struggle more to secure capital and access to credit. Even with strong personal credit, Black business owners and other entrepreneurs from marginalized groups are about half as likely as their white counterparts to receive full financing."[10]

Both the MORE Act (H.R.3617) and the SAFE Banking Act (H.R.1996) begin to address the goal of closing the racial funding gap. The MORE Act would utilize cannabis tax revenue to establish a Cannabis Opportunity Program to assist small businesses owned and controlled by socially and economically disadvantaged individuals that operate in the cannabis industry. The SAFE Banking Act would require an "Annual Diversity and Inclusion Report" to "address the availability of financial services for minority- and women-owned CRLBs and provide recommendations to expand access to these minority-owned Cannabis Related Legitimate Businesses (CRLBs)." The bill also "requires the comptroller general to

7 Cohen, G. (2017, May 17). How Much Does it Cost to Open a Cannabis Dispensary? Cova. https://www.covasoftware.com/blog/the-true-cost-of-opening-a-cannabis-dispensary

8 George, J. (2016, June 1). Here's how much cash you'll need to get into Pa.'s medical marijuana business. Philadelphia Business Journal. https://www.bizjournals.com/philadelphia/morning_roundup/2016/06/penn-medical-marijuana-capital-requirement-permit.html

9 Goldschein, E. (2021, January 8). Black Business Owners Are Shut Out From Capital Due to Racial Funding Gap. Fundera. https://www.fundera.com/blog/racial-funding-gap

10 Baboolall, D., Cook, K., Noel, N., Stewart, S., & Yancy, N. (2020, December 4). Building supportive ecosystems for Black-owned US businesses. McKinsey & Company. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/building-supportive-ecosystems-for-black-owned-us-businesses#

study barriers to marketplace entry for minority- and women-owned CRLBs, including CRLB licensing and access to financial services."

The federal government should look toward Black-owned banks to help fill the capital access gap. Black-owned banks tend to be community-oriented and best positioned to make immediate impacts in the communities in which they serve. Empowering Black-owned banks to have the potential to be "anchor institutions" through the provision of resources, a banking relationship, and access to capital can fill funding gaps created through historical distrust many underserved communities have toward large financial institutions.

The federal government should also consider the role of Minority Depository Institutions (MDI's) and community development financial institutions (CDFIs) as a bridge to supporting historically underserved communities. These institutions were initially created to fill a gap in the financial system for small and minority-owned businesses and they have strong ties to the communities they serve. Those financial institutions "were hit particularly hard during the 2008 financial crisis as evidenced by the higher rates of failures and closures relative to non-minority bank peers."[11] Recently, however, the highest appropriation ever for CDFIs was made in the CARES Act. The $12 billion from the CARES Act was meant to build the capacity of CDFIs and MDIs. The funding includes $3 billion in emergency support through the CDFI Fund to provide grants and other financial and technical assistance in the form of $1.25 billion in Immediate Support for the current fiscal year, and $1.75 billion – available until it is expended – for supporting Minority Lending Institutions. It also includes a $9 billion Emergency Capital Investment Program administered by the Department of the Treasury to provide low-cost, long-term capital investments to MDIs and CDFI depositories.[12]

Given their established role in the financial system, and their standing in minority communities, these institutions may serve as a natural conduit to the businesses that need support in the emerging cannabis industry. This can only be achieved by first addressing the process in which an entity is designated as a CDFI. The federal government has been very limited in approving new entities and must make a concerted effort to approve Black-led institutions to build upon the efforts included in the SAFE Banking Act and MORE Act.

These policies will allow the Federal Deposit Insurance Corporation and the Treasury Department to empower MDIs and CDFI's to be anchor institutions in the communities they serve and, coupled with campaigns to rebuild trust between underserved communities and the U.S. financial system, are a pilot to improve the federal government's overall approach to improving opportunities for minority and small business owners.

11 Toussaint-Comeau, M., Federal Reserve Bank of Chicago, & Newberger, R. (2017). Minority-Owned Banks and Their Primary Local Market Areas. Economic Perspectives, 41(4). https://www.chicagofed.org/publications/economic-perspectives/2017/4

12 CU Stategic Planning. (2020, December 22). $12 billion in Cares Act for CDFIs. Credit Union Strategic Planning. https://www.creditunionstrategicplanning.com/post/12-billion-in-cares-act-for-cdfis

Minority Supplier Standards

THE FEDERAL GOVERNMENT SPENDS MORE than $400 billion each year on products and services, of which 23 percent is set aside for small businesses and another 16 percent for diverse small businesses. The SBA works with government agencies to make sure these federal supplier diversity requirements are met. Large prime vendors to federal government agencies are also required to sub-contract a certain amount of their work to diverse suppliers. This gives us a model to use for the Drug Enforcement Administration's (DEA) procurement of medical cannabis for research.

The Cannabidiol and Marihuana Research Expansion Act (S.253), a bill to streamline the application process for researchers and to increase the number of growers that can provide research-grade cannabis, does not include measures to prioritize diversity and inclusion within its supplier certification framework. Early access to this expansion opportunity would provide small and minority-owned businesses the chance to capture new sources of revenue, the expertise of supplying research-grade cannabis, and the branding of being a federally recognized cannabis cultivator and federal government contractor.

Congress has been increasingly focused on improving conditions around research as it relates to product access and supply. After more than 50 years of using medical cannabis from a single domestic source, the DEA recently announced it is in the process of registering several additional American companies to produce cannabis for medical and scientific purposes. This new, federally sanctioned pipeline for more products and strains of cannabis presents an opportunity for "true" small businesses and entrepreneurs to successfully secure participation as long as robust and inclusive supplier standards are part of a larger federal framework.

Early Market Access for Small and Minority-Owned Business

Like other emerging industries, first-mover businesses can reap outsized benefits related to brand recognition and larger market share. The emerging industry also benefits from a well-prepared and financed business because of how quickly they can contribute to getting a market up and running. In statewide cannabis markets, those first movers are often well-financed businesses from a medical cannabis market moving into an adult-use retail industry or the delivery service that has the exclusive ability to operate in a resort town. Too often these license opportunities are doled out to incumbent, well-connected individuals. Unlike other aspects of a federal framework, state authority involvement is essential because of the state-led evolution of the industry. State involvement in this issue is also important because of the plethora of opportunities to support inclusive participation that will still differ from state to state. Take compliance requirements for consumption lounges as an example: regulations differ for businesses that can operate outdoors year-round versus businesses that use an indoor orientation because of seasonal weather conditions.

Efforts by state authorities such as the Office of Cannabis Control in Massachusetts or the Illinois Department of Financial and Professional Regulation have fallen short of their goal to create an inclusive marketplace. Is there an opportunity for the federal government to enhance state licensing procedures

> "Minnesota's liquor laws are some of the strictest in the country, especially for direct sale - that's the hardest on really small distilleries like ours. While over the years things have opened up for direct sale for breweries and wineries, the same has happened only to a much smaller extent for distilleries, making it hard for small distilleries to compete. We're required to work with distributors if we're going to sell our spirits. This is fine, but there is a big imbalance in power that is hard for small businesses because in spirits the distributors are much bigger companies, and don't really need us since they have much bigger clients to rely on. So basically, we need them because of regulations but they don't actually need us, so the power is out of balance. The regulations have been designed over time with the distributors and retailers in mind, but not the producers."
>
> *-Minnesota Distillery Owner*

by providing technical support to encourage the inclusion of small and minority-owned businesses in the emerging industry? Are there other avenues that the federal government can improve its efforts to work with small and minority-owned businesses that could be complementary to current state efforts?

There should be a special focus on business licenses for less capital-intensive businesses within the cannabis economy – such as delivery businesses and consumption lounges – which should have licenses reserved for small and minority-owned businesses.

A measure in the Nevada legislature, for example, proposes to establish licensing for consumption lounges, which are essentially bars where people can legally consume cannabis outside their homes.[13] The bill includes a preference for minority applicants defined as those "adversely affected by previous laws and criminalized activity relating to cannabis."[14]

As the cannabis regulatory system grows, there will be countless new market opportunities, and the federal government should pursue strategies and support states to improve early access to the regulatory market for small and minority-owned businesses, particularly where there are low-capital opportunities. An equitable federal regulatory framework would recognize these and encourage states to promote programs for small and minority-owned businesses to have out-sized access to these licenses. This may be encouraged through a few policies: the federal government should provide states and localities with data on licensing programs that have successfully created minority-owned small businesses. This could be accomplished by utilizing provisions from the Marijuana Data Collection Act (S.1456), a bipartisan bill reintroduced this session.[15] The federal government could also provide states and localities with grants for technical assistance to create these licensing opportunities, as well as to aid potential licensees in applying for, and successfully launching, a new business.

Federal Tax Revenue Expenditure

A federal tax revenue program should, in part, serve to achieve social equity by prioritizing community reinvestment and economic empowerment of disproportionately affected communities of color.

A successful federal regulatory structure would allocate a significant portion of federal tax revenues for

13 A.B. 341, 2021 Biennium, 2021 Reg. Sess. (Nev. 2021).

14 Rindels, M. (2021, April 3). Lawmakers look to allow cannabis consumption lounges for economic growth, diversifying marijuana industry. The Nevada Independent. https://thenevadaindependent.com/article/lawmakers-look-to-allow-cannabis-consumption-lounges-for-economic-growth-diversifying-marijuana-industry

15 https://www.menendez.senate.gov/imo/media/doc/marijuana_data_bill_text.pdf

initiatives aimed at improving negatively affected communities. In addition, revenues should fund programs that help Black and minority entrepreneurs secure access to capital, business support, mentoring, and other professional services.

These types of programs are not new to cannabis legalization bills. The MORE Act establishes a community reinvestment grant program that would fund job training, reentry services, legal aid for civil and criminal cases (including expungement of cannabis convictions), literacy programs, youth recreation or mentoring programs, and health education programs in communities most impacted by the war on drugs. Additionally, the program would target substance use disorder services to those same communities.

The federal government has the opportunity to refine these grant programs to focus on services and programs that have already been proven successful at the state level. For example, Illinois' Restore, Reinvest, and Renew (R3) program, established in its adult-use cannabis legislation, requires 25 percent of marijuana tax dollars to be used to provide disadvantaged people with services such as legal aid, youth development, community reentry, and financial support. The first round of recipients included local governments, faith-based organizations, and businesses. The government should be actively gathering data from these state programs to augment programs that have had a proven effect on positively impacting communities most impacted by the war on drugs.

A Scaled Regulatory System

Policies governing a federal cannabis market should be centered on and influenced by science, innovation consumer protection, and public health. All products available to consumers should be produced using the most rigorous standards. However, regulatory compliance from states and the federal government can be a barrier to market access for businesses of most sizes, especially small minority-owned businesses that already lack accessible financing.

Democratic Congresswoman Nydia M. Velázquez of New York, the Chair of the U.S. House Small Business Committee, has argued that "small cannabis businesses are often left scrambling to remain compliant when regulations change and must either find new sources of capital to cover the cost of changes or face significant fines for violations."[16]

Businesses on all levels of the supply chain need to comply with stringent requirements relating to product cultivation, manufacturing, testing, packaging, and sales. Each of these activities requires complex

16 Office of Congresswoman Nydia M. Velázquez. (2019, June 28). Chairwoman Velázquez Announces Bills to Open SBA Programs to Legal Cannabis Businesses [Press release]. https://smallbusiness.house.gov/news/documentsingle.aspx?DocumentID=2712

"At the level of the Federal Government, the EPA has historically been the biggest ally for small automotive repair businesses. From limiting hazardous chemicals paperwork/reporting for small auto businesses (conditionally exempt) to providing funding for training for small body shops to transition to water-based auto painting, the EPA has enabled small auto repair businesses to remain competitive with new car auto dealers and large franchise operations. Where the EPA's involvement on behalf of small auto repair shops was most significant was during the transition by auto manufacturers of vehicle mechanical, air, and fuel systems to computer control, primarily to meet federal air quality standards as established by the Clean Air Act. Companies that marketed automotive computer control diagnostic tools and information products to the independent repair shops were threatened with lawsuits for violating intellectual property statutes. Only franchised new car dealers should/could have access to this proprietary emission tooling/information. Had the auto manufacturers been successful in limiting these repairs to their franchised dealers, there would no longer be an independent auto repair sector. The EPA ruled clean air standards trumped intellectual property rules (and the franchised dealers would never be able to meet the demand) so manufacturers were required to make public all emission-related diagnostic/repair information and source codes for diagnostic tooling."

- Oregon Autoshop Owner

technology, and security to protect public health and prevent product diversion, all of which can be cost-prohibitive to small and minority businesses. According to a research report conducted by Babson College in 2016, 60 percent of respondents identified some level of difficulty in understanding and navigating government regulations and law; meanwhile, 80 percent of their respondents recognize the importance of technology to their operations, but have concerns about affordability.[17]

A 2020 survey of small businesses by the National Federation of Independent Business ranked environmental regulations (18), finding out about regulatory requirements (26) and obtaining licenses & permits (34), in the upper quartile of issues about which they are concerned.[18] Moreover, in a recently released Cato Institute report on barriers to entry for startup businesses, its authors argue how businesses

17 Babson College. (2016). The State of Small Business in America. https://www.babson.edu/media/babson/site-assets/content-assets/images/news/announcements/goldman-10ksb-report-2016.pdf

18 Wade, H., & Heritage, A. (2020, July). Small Business Problems and Priorities (10th Edition). NFIB Research Center. https://assets.nfib.com/nfibcom/NFIB-Problems-and-Priorities-2020.pdf

of smaller sizes may be disproportionately affected by onerous federal and state regulations because they lack the necessary economies of scale to purchase the right equipment and enlist the necessary assistance to comply with regulations in a cost-effective and timely manner.[19]

While compliance can be cost-prohibitive, participants must comply. To that end, a federal framework must contemplate solutions reducing compliance hurdles for small and minority-owned businesses with increased access to regulatory and compliance tools. These could include solutions including, but not limited to, wraparound services and technical assistance to growers, manufactures, distributors, and storefront operators.

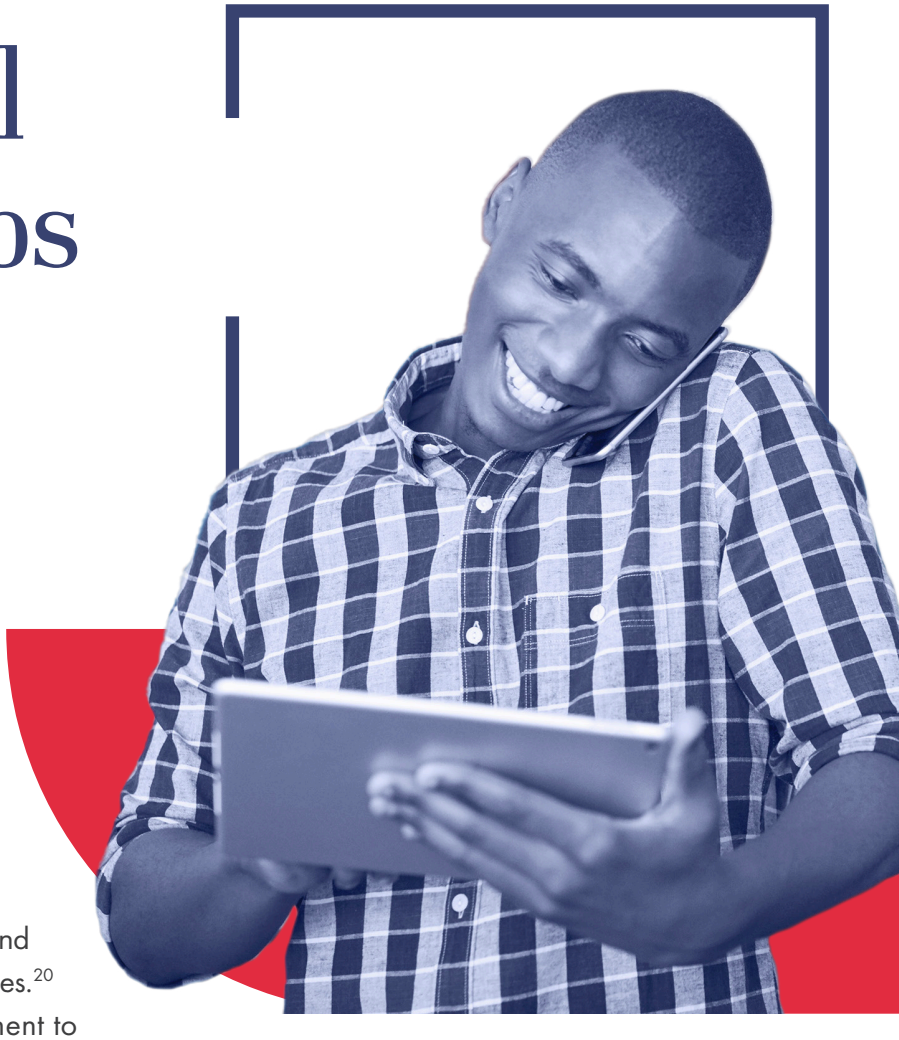
Furthermore, potential solutions should involve partnerships with state authorities to clarify regulations or extend timelines for compliance for small and minority-owned as well as other eligible businesses.

"Pest control is highly regulated due to the chemicals that we use. We need to submit regular reports to each county that we operate in, and for a small, family business, this can be challenging. There are multiple control boards that we report to quarterly across the state, and they all used to have different requirements, which sometimes meant weeks of work for my daughter and I to ensure we were reporting everything correctly. We still need to report to each county and board, but at least now they all ask for the same information — this cross-jurisdiction communication and coordination has really helped a lot."

- California Pest Control Company Owner

19 Edwards, C. (2021, May). Entrepreneurs and Regulations: Removing State and Local Barriers to New Businesses. Cato Institute. https://www.cato.org/policy-analysis/entrepreneurs-regulations-removing-state-local-barriers-new-businesses

Exploring Meaningful Partnerships



OVER THE PAST YEAR, MANY LARGE COMPANIES have taken bold steps toward ameliorating historical injustices toward people of color. The cannabis industry must be just as bold in the action taken to reconcile the war on drugs.

In a recent example, Netflix pledged $100 million to Black-owned financial institutions and programs that serve lower-income communities.[20] Lowe's announced a $25 million commitment to

20 Merced, M. J. (2020, June 30). Netflix Moves $100 Million in Deposits to Bolster Black Banks. The New York Times. https://www.nytimes.com/2020/06/30/business/dealbook/netflix-100-million-black-lenders.html

> “The private sector can serve as a major resource for small and minority-owned cannabis businesses under a federal regulatory framework.”

fund financial relief efforts for minority-owned businesses.[21] Founders First Capital Partners, a San Diego-based investment firm, has committed $100 million to a “Racial and Social Economic Equality Initiative” to offer financial assistance to historically underfunded Black entrepreneurs.[22]

These businesses are not alone. Increasingly, the private sector sees minority-owned businesses as good business. The private sector can serve as a major resource for small and minority-owned cannabis businesses under a federal regulatory framework. Many keys to success outlined here – e.g., access to capital, regulatory compliance, mentoring, and other professional services – are best delivered through public-private partnerships.

The private sector is not the sole solution, federal policies and agencies should include incentives that ensure meaningful partnerships between large corporations and small and minority-owned businesses.

21 Lowe’s Companies. (2020, June 11). Lowe’s Opens Applications For The First Wave Of Its $25 Million In Minority Small Business Grants [Press release]. https://corporate.lowes.com/newsroom/press-releases/lowes-opens-applications-first-wave-its-25-million-minority-small-business-grants-06-11-20

22 Grant, T. (2020, June 25). Founders First Capital unveils $100m program for diverse-led businesses. Buyouts. https://www.buyoutsinsider.com/founders-first-capital-unveils-100m-program-for-diverse-led-businesses/

Conclusion

AS EARLY ADOPTERS OF LEGALIZED CANNABIS, intrastate systems have been the testing ground for a nationwide cannabis industry. The ascent of the industry is emblematic of American ingenuity and in the process set off a cultural revolution from Ontario to Johannesburg. However, the acute growth of the industry has highlighted the fault lines in the emerging industry, the most critical of which is the barriers facing small and minority-owned businesses.

The challenges are real for any business and are likely to be particularly pronounced for small cannabis businesses – small business provides more jobs in America and creates significant contributions to their communities – addressing today's policies so that they don't stymie success in the future will be critical to ensuring that small businesses – and all businesses have the necessary foundation of support to provide a safe and reliable experience, to be the on the front lines to protect youth and to create the resources and investments back into the communities where they live and work.

Fine-tuning legalization will be a complicated endeavor requiring massive stakeholder engagement, access to the best data and science, and ever-evolving best practices. This paper begins the discussion of how to get the right ecosystem of small and minority-owned businesses into a national cannabis economy. It will require a thoughtful regulatory structure that protects and builds small businesses and encourages minority ownership. While this paper is not exhaustive, it lays out a framework that nurtures opportunity, ownership, and empowerment for small and minority-owned businesses.

Prioritizing Mental Health in an Emerging Market

A Framework for Maintaining Public Health and Expanding Knowledge on Cannabis and Mental Health

coalition for cannabis
Policy, Education, and Regulation

A Note

FROM ANDREW FREEDMAN, the Executive Director of the Coalition for Cannabis Policy, Education, and Regulation (CPEAR):

Some reading this policy paper may be surprised that it highlights potential negative effects from cannabis use. Those readers might believe that highlighting mental health issues will be counterproductive to our goal of progressing cannabis policy and regulation. Opponents of a tax and regulate system often point to a tragic incident of cannabis use as an argument for prohibition, full stop.

Our CPEAR Center of Excellence believes that this line of argumentation misses the point. Data and research may well illustrate negative effects of cannabis, as well as beneficial uses. However, Americans will continue to use cannabis, regardless of what any study suggests or individual may think of cannabis use. Congress is not deciding on a world with or without cannabis. With fully half of Americans admitting to trying cannabis[1], Congress is deciding on what the role of government should be in protecting these consumers, patients, and the communities where they reside.

As we have stated many times: cannabis and cannabis reform are already here, we exist to get it right. To do so, we need to take a sober look at the data and research, and shape best practices, as responsible use must be part of any version of responsible regulation.

We are deeply indebted to everyone who helped make this paper possible.

Executive Director Andrew Freedman made history in 2014 when then-Governor John Hickenlooper tapped him to become Colorado's cannabis czar, in charge of implementing the world's first adult-use cannabis market. Since then, he has advised 19 different governments in establishing their cannabis regulatory frameworks. Andrew holds a J.D. from Harvard Law School and a B.A. from Tufts University.

1 https://www.usnews.com/news/national-news/articles/2021-08-17/record-high-more-americans-are-trying-marijuana-gallup-poll-finds

About the Authors

This paper was authored by **Dr. Staci Gruber** and **Dr. Kelly Sagar** with contributions from **Dr. Malik Burnett**.

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Dr. Staci Gruber is the Director of the Cognitive and Clinical Neuroimaging Core at McLean Hospital's Brain Imaging Center and an Associate Professor of Psychiatry at Harvard Medical School. Dr. Gruber's clinical research focuses on the application of neurocognitive models and brain imaging to better characterize risk factors for substance abuse and psychiatric conditions. She has been studying the impact of cannabis on the brain for over two decades using neurocognitive, clinical and diagnostic assessments and multimodal brain imaging techniques. Her work examining the etiologic bases of neural models of dysfunction in cannabis-using adolescents and adults has been published in numerous peer reviewed journals and been the basis of national and international symposia, documentaries, news stories and press conferences, including features in the New York Times, NPR, and CNN's documentary series "WEED" with Dr. Sanjay Gupta.

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Kelly Sagar, PhD, is an Instructor in Psychiatry at Harvard Medical School and Assistant Neuroscientist at McLean Hospital in the Cognitive and Clinical Neuroimaging Core (CCNC) and Marijuana Investigations for Neuroscientific Discovery (MIND) program, both directed by Dr. Staci Gruber. She joined the CCNC in 2009 as a research assistant, primarily working on studies investigating the neural substrates of psychiatric disorders and substance use. After spending several years working as a school psychologist, she ultimately decided to pursue a career in research, earning her doctorate in behavioral neuroscience with a concentration in addiction science.

Currently, Dr. Sagar's research is focused on examining the impact of cannabinoid use utilizing neuropsychological measures, clinical assessments, and multimodal neuroimaging techniques. She is particularly interested in the differential impact of recreational versus medical cannabis use, and how factors such as age of onset and exposure to individual cannabinoids mediate cognitive and clinical effects.

Dr. Malik Burnett

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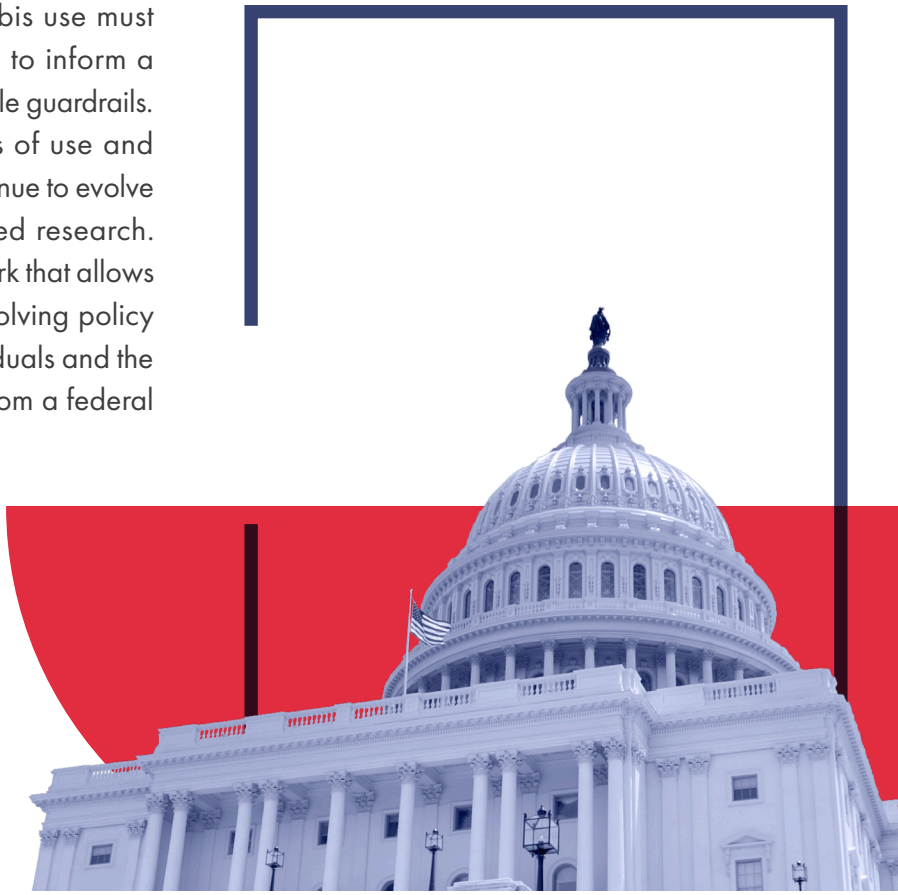
As a physician, entrepreneur, and drug policy expert, Dr. Malik Burnett works to advance the broader drug policy reform agenda with the goal of shifting US drug policy from a framework based on criminal justice to one based on public health. He is currently an Adjunct Assistant Professor in Addiction Medicine at the University of Maryland Midtown Campus, where he serves as Chair of the Opioid Taskforce, an Addiction Medicine physician at MedMark Treatment Centers, and a consultant for the Maryland Addiction Consultation Service. Additionally, he serves on the American Society of Addiction Medicine Public Policy and Legislative Advocacy Committees and is involved in developing a number of venture start-ups and drug policy initiatives through his consulting company Prevision Strategies and Analytics. He attended Duke University where he completed a medical degree and a master's in business administration at Duke's School of Medicine and the Fuqua School of Business, respectively.

Drs. Gruber and Sagar conducted this work as paid consultants and are publishing in that capacity.

Executive Summary

The regulatory structure governing cannabis use must be rooted in science, evidence, and data to inform a responsible marketplace and utilize reasonable guardrails. Our understanding of the potential harms of use and therapeutic applications of cannabis will continue to evolve over time through continued and advanced research. Officials should design a regulatory framework that allows common-sense rules to be responsive to evolving policy and market environments. To that end, individuals and the communities in which they live will benefit from a federal regulatory system designed to manage mental health outcomes regarding the use of cannabis products. Ultimately, these components should serve as the foundation upon which a comprehensive federal regulatory system is built. This white paper seeks to define the fault lines in the current understanding of cannabis and its impact on mental health and provides recommendations to advance an evidence-based regulatory system.



Claims regarding the effects of cannabis on mental health appear to fall on seemingly opposite ends of the spectrum. One side believes that cannabis use causes psychosis, worsens psychiatric symptoms, and poses a significant risk for developing cannabis use disorder. The other side often dismisses any claim of potential harm or side effects from cannabis use, instead focusing exclusively on the potential therapeutic aspects, particularly mental health conditions. *The truth is likely somewhere in the middle:*

- **CANNABIS & PSYCHOSIS:** Cannabis may be one of many factors related to the manifestation of psychosis, and products with moderate or even low amounts of THC may exacerbate symptoms. Clinical trials of CBD products have shown therapeutic *benefits* in those with psychosis.

- **CANNABIS & ANXIETY:** Mixed research findings reflect a complex relationship heavily influenced by the unique effects of individual cannabinoids and the doses used. While low doses of THC and mid-range doses of CBD may alleviate anxiety, higher doses of THC often produce or exacerbate anxiety.

- **CANNABIS & PTSD:** Some research studies have corroborated anecdotal findings of symptom relief, while other studies report that cannabis use is related to more severe symptoms and problematic use patterns. Cannabis use may provide short-term relief, but long-term use could potentially result in poorer outcomes in those with PTSD.

- **CANNABIS & MOOD:** While associations between cannabis use and mood disorders have been documented, additional research is needed to more clearly delineate this relationship. given evidence that some cannabinoids may provide clinical benefit for at least a subset of individuals with mood disorders, controlled clinical trials are needed.

- **CANNABIS & CANNABIS USE DISORDER (CUD):** Although some individuals develop CUD, the majority of recreational cannabis consumers do not develop problematic patterns of use. Preliminary data suggest CBD may protect against development of CUD.

Where should research go from here?

There are dozens of pertinent and pressing questions that should be addressed as quickly as possible with rigorous research. Most relevant to overseeing cannabis use, the federal government should promote and fund research behind two critical areas:

First: Defining Responsible Use

Although additional research is needed to delineate the specific parameters with the most significant impact, existing data can be used to help to shape a framework for responsible use. Important considerations include:

- **AGE:** Children and adolescents are particularly vulnerable to the adverse effects of cannabis, as they are with *any* drug.
- **THC AND CBD CONTENT:** While THC has therapeutic benefits, it is also associated with adverse outcomes, particularly for children and adolescents. CBD, which has a range of therapeutic properties, has an acceptable safety profile and may protect against adverse outcomes associated with THC.
- **PRODUCT CHOICE & MODE OF USE:** Different modes, or ways of using cannabis, are associated with unique characteristics regarding how much of the active ingredients enter the body, how long it takes to feel or get an effect, and how long effects will last.
- **CUD PREVENTION:** Those with mental illness are more likely to use high potency products, but these products are most likely to be associated with CUD; harm reduction efforts are key.
- **FAMILY HISTORY/GENETIC LIABILITY:** Individuals with a personal or family history of mental illness, particularly psychotic disorders, are likely at higher risk for adverse outcomes associated with cannabis use. Specific genes influence an individual's ability to metabolize drugs including cannabinoids, which also leaves some at increased risk for adverse effects.
- **OTHER MEDICATION USE:** Cannabinoids can interfere with the metabolism of certain medications, making them more or less potent.

Second: Improving screening tools for Cannabis Use Disorder (CUD)

Existing screening tools are considered reliable and valid among recreational (non-medical) cannabis consumers, but new metrics designed to assess problematic use in those who (also) use for medical purposes are needed.

Finally, it is incumbent on the federal government to act quickly in order to:

CREATE A FRAMEWORK FOR RESPONSIBLE USE

- Decision-making tools designed to help consumers identify their level of risk will certainly increase safety and help prevent unnecessary exposure for those least likely to gain benefit and most likely to experience negative effects.

- Provide resources for public education campaigns, screening, and treatment to prevent and mitigate irresponsible cannabis use.

- Grant the appropriate regulatory powers the ability to place restrictions on problematic cannabis products as research and data dictate.

REDUCE BARRIERS TO CANNABIS RESEARCH

- To thoroughly assess both the potential benefit and risks associated with cannabis and cannabinoid use, researchers should be allowed to study the actual products used by consumers and patients, which is not possible under current Federal law.

- Invest in rigorous research on cannabinoid-based therapeutics for mental health

- Well-designed, empirically sound, and controlled studies offer an important opportunity to customize and optimize cannabis and cannabinoid-based treatments, ultimately changing the narrative and transforming patient care.

- Encourage federal public health and research agency officials to issue joint guidance to research institutions about the opportunities and legality of conducting clinical, observational, and other scientific research focused on cannabis. This will undoubtedly help address the potential chilling effect on some universities given the extremely complex, dynamic set of rules and shifting landscape associated with cannabis

STANDARDIZE TOOLS FOR CANNABIS RESEARCH

- The wide variety of cannabis/cannabinoid formulations available across the country has led to contradictory results across research studies and misinterpretations about what these findings mean. Standardized metrics to assess cannabinoid exposure and standardized batteries to assess outcomes are needed across research investigations.

Introduction

CANNABIS HAS BEEN USED FOR THOUSANDS OF YEARS, with references dating back as far as 2700 BC; however, public opinion has shifted dramatically throughout history and has recently pushed many jurisdictions to reform their cannabis laws. In crafting comprehensive, sensible cannabis policy, one of the most important considerations is ensuring the protection of vulnerable populations. While substantial research has centered on the impact of cannabis use among youth, given the well-documented neurodevelopmental vulnerability associated with childhood and adolescence, far less work has focused on those with mental health issues. For decades, the impact of cannabis on mental health has been hotly debated given concerns about the potential negative effects of cannabis on various psychiatric conditions juxtaposed against claims regarding therapeutic benefits of some cannabinoids for certain psychiatric symptoms. To fully understand the potential impact of cannabis on mental health, it is essential to delineate several key terms, some of which are mistakenly used interchangeably.

Cannabis: Finding Common Language for a Complex Plant

Cannabis or **marijuana** are terms often used to describe *anything* from the plant *Cannabis sativa L.* Importantly, cannabis is actually comprised of hundreds of compounds, including over 100 **cannabinoids**. Cannabinoids are chemicals that interact with the **endocannabinoid system (ECS)**, a series of chemicals and receptors throughout the brain and body known for maintaining homeostasis and other critical functions, including learning and memory, mood, pain perception, movement, pleasure, coordination, and the senses. Of the cannabinoids, delta-9-tetrahydrocannabinol (**THC**) and cannabidiol (**CBD**) are typically the most abundant in the plant, and accordingly, the most widely studied. THC is the primary intoxicating constituent of the plant, often sought by recreational consumers, while CBD is generally considered non-intoxicating. Moreover, CBD has been shown to potentially mitigate negative effects that can occur in the context of THC exposure, including adverse psychological symptoms as well as cognitive decrements and other brain-related changes.[1-3]

Although both THC and CBD have been noted to have therapeutic properties given the distinct ways they exert their effects, it is not surprising that these cannabinoids appear to impact specific psychiatric symptoms very differently. This is a critical point, as the majority of commercially available cannabis products contain a combination of these compounds. Although most research to date has focused on THC and CBD, it is important to recognize that most cannabis products also contain "minor" or less common cannabinoids (e.g., cannabichromene, cannabigerol, cannabinol, tetrahydrocannabivarin), as well as additional compounds, including terpenes which give cannabis its characteristic scent and taste profile and have been demonstrated to confer their own effects.[4] Products that contain an array of cannabinoids and other naturally occurring compounds from the plant are referred to as **full-spectrum** or if they contain no detectable THC, **broad-spectrum**. In 2018, the Farm Bill was signed into law which effectively legalized the production of **hemp**, a variety of cannabis with less than <0.3% THC by weight. Hemp-derived products have proliferated over the past several years with demand typically driven by consumers interested in CBD or other cannabinoids. They are widely available online, in retail stores, including licensed cannabis dispensaries, grocery stores, coffee shops, and even gas stations. Therefore, available products may be derived from either cannabis or hemp, further complicating the landscape..

Most cannabis chemovars (also known as cultivars or strains) and cannabis-based products used in the real world contain varying amounts of THC and CBD and other cannabinoids and chemicals, which all work together and account for specific cannabis varieties or products conferring unique effects. Although still somewhat controversial, the **entourage effect** refers to the synergy that occurs when these chemicals work together. It is important to note that all currently FDA-approved medications containing cannabinoids (e.g., nabilone, dronabinol, Epidiolex) are single-compound formulations thatmay not apply directly to real-world consumers and patients who typically choose full- or broad-spectrum products.

Individuals who use cannabis recreationally or non-medically (to get high or feel altered) generally seek products high in THC. *In fact, most studies assessing the effects of cannabis have focused on those using products for recreational purposes. As a result, study findings to date largely reflect the impact of products high in THC, which is often associated with negative effects. In contrast, until recently, relatively little empirically sound data have focused on the impact of CBD which is often touted for its therapeutic benefits.* While the provisions of the Hemp Farming Act of 2018 incorporated into that year's Farm Bill generated considerable confusion regarding the legal status of certain products, it also prompted a sharp increase in the use of high-CBD products, predominantly for those with medical or psychiatric symptoms. In addition, expanding legalization of cannabis for medical purposes has also led to increased popularity of products with more varied cannabinoid profiles. Consequently, vastly different outcomes are beginning to be reported among medical cannabis patients relative to recreational/non-medical consumers. Accordingly, as policymakers, clinicians, and other stakeholders consider the impact of legalization, particularly with regard to mental health, it is critical to understand that the term *"cannabis" is often used to describe both the whole plant and any of its individual components, which often confer a very wide range of different effects.* A review of available literature further underscores this point, with study findings often appearing mixed or inconsistent depending on the population under study, cannabinoid profile of the products being studied, frequency of use and amount of product used, and a number of other variables. For example, while *exposure to products high in THC appears to be related to more negative outcomes in general, the use of products high in CBD or other non-intoxicating cannabinoids appears to reduce the likelihood of negative outcomes. As a result, cannabis is anything but "one size fits all."*

Part I:

CANNABIS & MENTAL HEALTH: A REVIEW OF THE RESEARCH

Claims regarding the effects of cannabis on mental health appear to fall on seemingly opposite ends of the spectrum. One side believes that cannabis use causes psychosis, worsens psychiatric symptoms, and poses significant risk for developing cannabis use disorder. The other side often dismisses any claim of potential harm or side effects from cannabis use, instead focusing exclusively on the potential therapeutic aspects, particularly for mental health conditions. *While the truth is likely somewhere in the middle, caveats are essential, and additional moderating factors must be considered.*

Over the past decade, cannabis use has increased steadily, most concerning for vulnerable populations, including children and adolescents, older adults, and those struggling with mental health conditions. To put this population into context, in 2019, the National Survey on Drug Use and Health estimated that 51.5 million Americans age 18 or older had a mental health condition, representing approximately 20.6% of the population. Although additional research is needed, existing data can be used to shape policies that will ultimately make cannabis use safer overall, particularly for vulnerable populations.

In 2017, given the controversy regarding both the potential detriments and benefits associated with cannabis use, the National Academy of Sciences, Engineering, and Medicine (NASEM) issued a report summarizing the health impact of cannabinoids.[5] With regard to mental health, the report concluded that cannabis use may be associated with an increased risk of psychosis, particularly when used more frequently or in higher amounts. However, the report also noted that cannabis use could yield positive

effects in this population, including better learning and memory-related outcomes. In addition, the report concluded that cannabis use does not appear to increase the likelihood of developing depression, anxiety (with the exception of social anxiety disorder), or posttraumatic stress disorder but noted that cannabis use may *exacerbate* symptoms in those already diagnosed with mood/anxiety disorders and that heavy cannabis users are more likely to report thoughts of suicide than non-users. For individuals with bipolar disorder (BPD), NASEM concluded that daily cannabis use may be linked to worse clinical symptoms. Importantly, however, the studies that met NASEM's rigorous criteria for review were predominantly focused on the impact of THC. *Newer research focused on specific cannabinoids vs. the impact of "cannabis" use in general will ultimately allow for more thoughtfully crafted, informed policies designed to protect the mental health of all Americans.*

It is also important to note that the continued criminalization of cannabis in some jurisdictions across the US has a measurable impact on Americans' mental health. According to the Federal Bureau of Investigations Uniform Crime Report, just over 350,150 Americans were arrested for cannabis-related crimes in 2020, with 91% of arrests for possession only. The negative impact on mental health associated with interactions with the criminal justice system is well established.[6] Given this reality, the continued expansion of decriminalization policies and diversion programs at the federal, state, and local levels will increase the opportunities for Americans with mental health conditions to get the help they need.

The discussion that follows is an overview of the research to date on the association of cannabis and various psychiatric disorders organized by commonly discussed topics within each disorder.

Cannabis & Psychosis

Does Cannabis Cause Psychosis?

Psychotic disorders such as schizophrenia are relatively rare, but they are considered chronic and debilitating. The relationship between cannabis use and psychosis has been well-documented; earlier onset of use, use of higher potency products, and increased frequency and amount of cannabis used have all been associated with higher rates of psychosis. It is important to recognize what this association means and what it does not. Although strong evidence indicates that those diagnosed with psychotic disorders, including schizophrenia, have higher rates of cannabis use than the general population, mounting research suggests that cannabis use *alone* is not sufficient to *cause* psychotic disorders.[7-9] If this were the case, it would be expected that the observed uptick in cannabis use over recent years would result in an increased prevalence of psychotic disorders, which has not been observed. Therefore, alternative theories have been proposed to explain the relationship between cannabis use and psychosis.

One theory is that cannabis use may be a *contributing* cause of psychosis among many other variables, such as genetic predisposition, poor school performance, use of other drugs (alcohol, tobacco), and

other familial and social factors.[9,10] While some believe that cannabis is a contributing cause in the model, others suggest that the association between cannabis use and psychosis would not be observed if confounding variables were properly controlled for. In fact, dozens of variables have been identified as potential confounds, making it extremely difficult, if not impossible, to control for in observational research studies. Taken together, psychotic disorders are complex with a multitude of potential underlying causes. *It is therefore unlikely that a single factor, such as cannabis use, can by itself directly cause an individual to develop a psychotic disorder.*

Alternatively, some posit that individuals may have a *shared vulnerability* to psychosis and cannabis use. Interestingly, recent investigations reported higher cannabinoid receptor density and levels of certain chemicals in the endocannabinoid system of individuals diagnosed with schizophrenia. In addition, other studies have uncovered associations between some genes related to cannabinoid receptors and those related to schizophrenia.[7] These findings indicate that individuals with psychotic disorders may have an underlying biological vulnerability to *both* increased rates of cannabis use and an increased risk for psychosis without cannabis use as a causal factor. Similarly, it is possible that those who have a genetic vulnerability for psychosis may be more susceptible to psychiatric disorders in general.[11,12] This would mean that those at risk for psychotic disorders are also at increased risk for developing problematic patterns of cannabis use, previously referred to as "addiction" or "dependence", and more recently termed "cannabis use disorder."

How Do Cannabis and Cannabinoids Impact Psychotic Symptoms?

It is also important to consider how cannabis may impact those already diagnosed with a psychotic disorder. Notably, most studies examining this question have focused on those who smoke cannabis, with the majority conducted prior to the widespread legalization of medical and recreational cannabis use that currently exists in the US. While this makes it difficult to tease out the effects of different types of cannabis products, cannabis sold in the unregulated or "black market" is typically high in THC with very low or undetectable levels of CBD.[13,14] In general, frequent cannabis use, particularly daily use of high potency products (those with higher THC content),[15] is related to higher rates of relapse, longer hospitalization time, and poorer treatment outcomes.[16] It remains unclear, however, whether these negative consequences are a direct result of cannabis use exacerbating psychotic symptoms or if they may be related to other factors, such as an increased motivation to use cannabis to treat more severe symptoms.

Notably, some studies have reported *fewer* negative outcomes associated with cannabis use in those using products with detectable amounts of CBD.[17] Bolstered by evidence from animal studies demonstrating that CBD has potential antipsychotic effects, a number of clinical trials of CBD have generated promising results.[18-23] Overall, these studies have primarily concluded that CBD appears to *improve* symptoms common in psychotic disorders. CBD has also been shown to have comparable efficacy to other antipsychotic medications, and with fewer side effects than traditional antipsychotic medications.[21] It is

important to note, however, that further research using adequately-powered, well-controlled trials and an evidence-based balance of risk and benefit reviewed and overseen by the appropriate regulator (i.e., the Food & Drug Administration [FDA]) are needed to reach conclusions on the relationship between psychotic symptoms and cannabis and cannabinoids. Moreover, it is also important to recognize the false belief that using *any* cannabis product containing CBD completely eliminates the risk of THC-related adverse psychiatric effects.[24]

Cannabis & Psychosis: Conclusions

Overall, the relationship between cannabis use and psychosis is complicated. In considering the evidence, it is clear that although earlier onset of cannabis use (particularly during adolescence and emerging adulthood) and using cannabis more frequently and in higher amounts are each associated with increased risk for psychotic disorders, cannabis use alone is not likely sufficient to cause psychosis *de novo*. Most agree that a number of variables contribute to the manifestation of psychotic disorders, and cannabis use might be considered one of these factors or may be peripherally related to these factors. Additional empirically sound research studies with oversight from the FDA are needed to understand the contribution that each of these variables has on the manifestation of psychosis and identify who may be at greatest risk based on their genetic profile and other potentially associated variables. Given available data, those with a family history of psychosis, particularly among first-degree relatives, should be considered potentially vulnerable to negative outcomes associated with cannabis use. For individuals diagnosed with a psychotic disorder, it is possible that using cannabis or cannabinoid-based products with even low to moderate amounts of THC may exacerbate symptoms. Cannabis use, therefore, represents a modifiable risk factor that should be targeted in those who use cannabis and have poor clinical outcomes. In contrast, products predominantly or exclusively containing CBD may help to address symptoms and provide therapeutic benefit. Given the proliferation of cannabinoid-based products with varied constituent profiles, further research using adequately-powered and well-controlled trials is needed to determine whether specific CBD-based therapeutics could be safe and effective alternatives for those at least a subset of those with psychotic disorders. However, as this population is particularly vulnerable, it is essential to proceed with caution and carefully consider potential risks and benefits.

Cannabis & Anxiety

Does Cannabis Cause Anxiety Disorders?

Everyone experiences some degree of anxiety, and estimates suggest 1/3 of Americans experience an anxiety disorder at some point in their lives, making it the most common mental health condition in the US. Although conventional medications can be effective for some, others do not find relief, and some struggle with unwanted side effects. The growing availability and popularity of legal cannabis

coupled with high rates of anxiety further exacerbated by the COVID-19 pandemic have reignited a long-standing conversation about the potential effects of cannabis on anxiety.

Research suggests that cannabis use is prevalent among individuals with anxiety disorders, yet relaxation and relief from anxiety are among the most commonly reported motives for cannabis use.[25] To date, few studies have examined the causal nature of the association, and those that have often failed to control for related factors have led to mixed findings. *Like most psychiatric disorders, most believe the etiology of anxiety disorders is multifactorial and it is not likely caused by a single factor, including cannabis use.*

Does Cannabis Improve or Worsen Anxiety?

The short answer is "it depends," and again is related to the constituent profile, frequency, and amount of product used. Data suggest that while many find cannabis effective for relaxation and anxiety-related symptom relief, others report that cannabis use worsens symptoms of anxiety. While individual factors such as genetic profile, physiology, other substance use, and previous experience with cannabis likely play a role, *the impact of cannabis and cannabinoid products on anxiety appears to be related to the specific effects of individual cannabinoids.* Research findings suggest that THC and CBD have different effects on anxiety, and that dose is a critical consideration. For example, while low doses of THC have generally been demonstrated to reduce anxiety, high doses of THC often worsen anxiety.[26] Conversely, the few studies conducted thus far suggest that CBD does not worsen anxiety at any dose, and it may effectively relieve anxiety at mid-range doses.[27,28] Accordingly, there is significant interest in pursuing the development of cannabinoid-based therapeutics for anxiety, particularly CBD-based preparations.

While additional research using appropriately powered, controlled clinical and preclinical studies should be conducted, several preliminary investigations assessed the efficacy of CBD for anxiety and reported that CBD appears to be effective for reducing situational anxiety, such as public speaking tasks,[29,30] and in those with social anxiety.[31] As all of these studies were conducted using CBD isolate, additional research is needed to determine whether CBD as a single compound is more or less effective than full- or broad-spectrum products (those containing other cannabinoids and chemicals naturally found within cannabis plants), as the latter represents products most often consumed by individuals in the real world, outside of laboratory studies.

Cannabis & Anxiety: Conclusions

Studies have demonstrated a relationship between rates of cannabis use and anxiety; however, it remains unclear whether cannabis use itself leads to anxiety disorders, or those with anxiety are more prone to use cannabis. While many report using cannabis to alleviate symptoms of anxiety, mixed research findings reflect a complex relationship heavily influenced by the unique effects of individual cannabinoids and the doses used – while low doses of THC and mid-range doses of CBD may alleviate anxiety,

higher doses of THC often produce or exacerbate anxiety. Accordingly, several factors play a role in determining how cannabis use impacts anxiety, including the amounts of THC and CBD present within a product, and an individual's unique genetic profile. Although numerous pharmacological treatments are available for anxiety, not everyone achieves adequate symptom relief and many experience unwanted side effects, underscoring the need for safe and effective alternative treatments. A number of investigations are currently focused on the impact of CBD-based products for those with anxiety, and further work in this area is clearly indicated.

Cannabis & Post-Traumatic Stress Disorder (PTSD)

About half of all adults in the US will experience a traumatic event at some point in their lives. Although only a small percentage (4-9%) develop Post-Traumatic Stress Disorder (PTSD), those who do often struggle to find effective treatments. As a result, cannabis use is common among those with PTSD, including Veterans, who often report using cannabis specifically to improve symptoms including anxiety, sleep disturbance, hyperarousal, and to help avoid emotional triggers.[32] Although some research studies corroborate these largely anecdotal findings and suggest that patients with PTSD may find relief with cannabinoid use, others caution that cannabis use may be actually be associated with more severe symptoms and may ultimately result in problematic patterns of use.[33] Some work suggests these mixed findings may be due to the fact that cannabis use can provide short-term relief, but it is possible that long-term use could result in poorer outcomes.[34] Despite several reviews on the topic, most conclude that comprehensive data assessing the potential benefit and harms of cannabis use for PTSD is lacking; as noted in the NASEM report, most studies to date are limited by small sample sizes and poor control over other related variables.[5,35] Given the high rates of cannabis use in those with PTSD and the need for alternative treatment options, additional empirically-sound studies are warranted.

Cannabis & Mood Disorders

Does Cannabis Cause Depression or Mood Disorders?

As with the other mental health conditions previously discussed, studies generally show an association between mood disorders and the use of cannabis, but no link has been established to suggest that cannabis use *causes* mood disorders. A number of explanations and additional variables may explain the link between cannabis and depression for example, but it is critical to examine the factors that influence this relationship to understand how cannabis use affects mood overall.[25]

Does Cannabis Improve or Worsen Mood or Depressive Symptoms?

It is quite common for cannabis consumers to report that they use cannabis/cannabinoids to relieve negative mood, but many question whether cannabis improves mood or if it could have detrimental long-term effects.

While difficult situations in life can lead individuals to feel sad, down, or lonely, when these feelings become severe and persistent, an individual may be suffering from **depression**. Depression affects approximately 7% of adults and is the leading cause of disability among Americans ages 15-44. The majority of studies conducted thus far suggests that individuals with depression who use cannabis or cannabinoid-based products for non-medical purposes (which typically contain considerable THC) may be at increased risk for more severe symptoms, have higher rates of suicidal ideation, lower utilization of psychiatric services, and a higher chance of developing problematic cannabis use.[36] These risks appear to be elevated with increased frequency and higher amounts of cannabis used.[16] A handful of studies, however, also suggest that cannabis users have a better mood and a lower likelihood of experiencing a depressive event.[25]

Findings are also complicated when it comes to the relationship between cannabis use and suicidality. Overall, data suggest that chronic cannabis use predicts suicidality; among young adults, increased suicidal behaviors (ideation, plan, attempt) have been reported with greater risk for women than men.[37] Notably, the relationship between cannabis and suicidality has been questioned given limitations of existing research studies and the possibility that the reverse is true – suicidality may predict cannabis use.[38] In addition, adolescent cannabis use has been associated with an increased risk of developing depression or suicidal behaviors later in life, highlighting the need for prevention and harm reduction strategies targeting this population.[39] Although few studies have assessed whether very recent use of cannabis could trigger suicidal thoughts, existing data actually suggest that it may *lower* immediate risk, perhaps as a result of the euphoria experienced during cannabis intoxication.[38] More research is needed to understand this phenomenon.

Popular culture has also fueled a stereotype of cannabis users exhibiting a depression-like syndrome characterized by a lack of motivation, lethargy, apathy, and decreased productivity. However, a cannabis-specific "amotivational" syndrome is not supported by actual clinical findings.[25] Recent studies of medical cannabis patients have reported significant *improvements* in mood, and preliminary data suggest this may be due to the use of products with considerable amounts of CBD.[40,41] Additional preclinical work and observational human studies will help pave the way for FDA-approved clinical trials which will further clarify findings thus far and inform best practices.

Bipolar Disorder (BPD) is a debilitating mood disorder characterized by severe changes in mood, including highs (mania) and lows (depression). BPD affects approximately 4.4% of adults at some point during their lives. Rates of substance use are quite high among those diagnosed with BPD, and among substances used by patients with BPD, cannabis is extremely common, second only to alcohol.[42]

Interestingly, some studies assessing cannabis use among patients with BPD note reduced compliance, higher illness severity, and exacerbation of manic symptoms, while other data indicate that patients with BPD frequently report subjective clinical improvements as a result of cannabis use, underscoring the need for more work in this area.[43-47]

Cannabis & Mood: Conclusions

While associations between cannabis use and mood disorders have been documented, additional research is needed to more clearly delineate the relationship between cannabis use, depression, suicidality, mania, and related symptoms. Given evidence that some cannabinoids may provide clinical benefit for at least a subset of individuals with mood disorders, controlled clinical trials are needed to generate more definitive answers regarding whether certain formulations, specifically those containing considerable amounts of CBD, may effectively address at least some mood-related symptoms.

Problematic Use: Cannabis Use Disorder (CUD)

Cannabis Use Disorder (CUD) describes a problematic pattern of cannabis use that leads to significant impairment or distress. In other words, individuals with CUD may exhibit impaired control over their cannabis use; a negative impact on their employment, educational, or social pursuits; elevated risk of harm; and physical dependence (tolerance or withdrawal).

Controversy regarding whether patterns of cannabis can become problematic has been at the forefront of cannabis legalization discussions for years. However, many experts assert that a percentage of individuals who use cannabis may develop patterns of use that have clear negative consequences.[48] According to national survey studies of recreational users, rates of CUD are highly variable, with estimates ranging from 4-20%[49,50] in some studies and up to 30% in others.[51] Importantly, there is consensus *that the vast majority of recreational cannabis consumers do not develop problematic patterns of use.* However, given that youth and individuals with psychiatric conditions both tend to have higher rates of cannabis use than the general public, targeted interventions that aim to prevent, delay, and/or limit cannabis use are critical for these vulnerable populations.[52]

As noted in a recent review, "the current and pressing challenge with cannabis is to develop well-reasoned policies that consider factual information about risks and potential benefits of cannabis and cannabinoid compounds in service of mitigating potential harm and maximizing potential benefits."[48] Along these lines, it is important to recognize that those using cannabis products with higher THC content are likely at *higher* risk for developing a CUD, as THC produces strong reinforcing biologic effects[53], which are related to higher addiction severity.[54] Interestingly, however, initial evidence suggests that CBD, which is non-intoxicating, has a low potential for addiction as it lacks rewarding effects and is not associated with tolerance or withdrawal symptoms.[55] Recent work suggests that those using cannabis for

medical purposes may be at lower risk for developing CUD, which is likely related to their goals for use (to address symptoms and often to avoid intoxication), their more frequent use of products containing CBD and other non-intoxicating constituents, and other factors which require further exploration.[56] In addition, CBD may actually have "anti-addiction" properties[57]; preliminary data suggest that CBD may protect against the development of CUD[58] and has been investigated as a potential treatment for other substance use disorders (i.e., tobacco, opioid, and cocaine). However, it is also important to consider data suggesting that individuals with pain, for example, may be an emerging group vulnerable to CUD,[59] although additional studies are needed to confirm these findings. Given the evolving knowledge base in this area, further well-designed, comprehensive preclinical and observational studies, as well as clinical trials with oversight by the FDA, are needed to conclude the efficacy of CBD for treatments and for whom it is most effective.

Part II:

RESEARCH SHOULD GUIDE A GOVERNMENT FRAMEWORK FOR RESPONSIBLE USE

In reviewing the state of the science around cannabis use and mental health, it becomes increasingly clear that study findings are mixed not only because there are dozens of variables to consider, but also because for decades, most have treated "cannabis use" as if cannabis is only one thing used in one way. More recently, many have begun to differentiate cannabis from the compounds that comprise it as well as individuals' goals of cannabis use, which helps clarify the complexities of cannabis and mental health. To more thoroughly understand the effects of cannabis on mental health, more research is needed – but where do we go from here?

As the nation pushes towards cannabis legalization, several key areas must be considered to ensure that vulnerable populations are protected and that all who use or recommend the use of cannabis do so in ways that are likely to maximize benefit and minimize risk and harm.

Defining Responsible Use

Given the overwhelming "green rush" across the US in recent years, clear guidelines will help ensure safer patterns of use in the context of mental health. Although additional research is needed to delineate the specific parameters with the most significant impact, existing data can help shape a framework for responsible use. Importantly, individual differences related to genetics, metabolism, tolerance/experience,

modes of use, product selection, conventional medication use, use of other substances, and additional factors will affect how cannabis and certain cannabinoids interact with each person's body.

Age: As children and adolescents all undergo critical stages of brain development, youth are more vulnerable to the adverse effects of cannabis, as they are with *any* drug. Accordingly, policymakers should carefully consider age-related guidelines to help prevent or reduce adolescent cannabis use. Earlier onset of recreational cannabis use and higher frequency and more significant amounts of cannabis use have been associated with more negative outcomes than those who begin using later.[60] To date, there is a paucity of research on the long-term effects of CBD in pediatric/adolescent populations, an area in need of further investigation, including studies specifically focused on whether CBD-based therapeutics could be appropriate for addressing mental health symptoms.

THC and CBD Content: Research suggests that while THC may have medicinal properties, increased exposure to THC is related to negative outcomes (higher risk for mental health problems including development of cannabis use disorder, cognitive decrements, and other brain changes). CBD has been noted to have antipsychotic, antidepressant, antianxiety, anti-craving, and pro-cognitive effects and is generally considered safe, with a few negative effects reported. Accordingly, using products with higher amounts of THC is more likely to confer greater risk, while using products with higher amounts of CBD may *lower* risk of negative outcomes and may confer significant therapeutic benefit. Further research using appropriately-powered, well-controlled trials is clearly needed. These studies must include an evidence-based assessment of the risks and benefits of each product assessed, which are then reviewed, approved, and monitored by the FDA. Ultimately, this approach will help identify which products and what doses of cannabinoids are best for certain individuals and specific symptoms and conditions. Importantly, guidelines for safer use should stipulate that those using or planning to use cannabis should aim for the lowest effective dose ('start low and go slow'), and should allow ample time for effects to occur before using more product. While no fatal overdoses have been directly related to cannabis use, being overly intoxicated with cannabis can be extremely uncomfortable, disorienting, disturbing, and dangerous as it may lead to risky behaviors.

Product Choice, Mode of Use & Related Risk: Cannabis products are available in many forms including dried flower, concentrates (products designed to deliver a bigger "bang for the buck," which typically contain extremely high levels of THC), oils and extracts, edibles/ingestibles, topical and transdermal preparations, and suppositories, each of which have their own modes of use or routes of administration. Different modes or ways of using cannabis are associated with unique characteristics regarding how much of the active ingredients enter the body, how long it takes to feel or get an effect, and how long effects will last. It is also likely that each way of using cannabis confers different risks in terms of both physical and mental health, but research has only begun to scratch the surface. At this point, however, it has been posited that modes of cannabis use that deliver high doses of THC quickly are more rewarding, reinforcing, and pose a higher risk for negative outcomes. For example,

while traditional methods of inhalation (smoking or vaping) are often used for flower or concentrates, "dabbing" – the vaporization of a small amount of a highly concentrated (usually THC) product (a "dab") on an extremely hot surface – delivers a single large bolus or dose all at once to the consumer, and it is designed to cause an intense high. As a result, while smoking and conventional vaping allow individuals to titrate their intake relatively easily, "dabbing" may be more difficult to control. Exposure to very high potency products is related to a higher risk of negative outcomes.

CUD Prevention: Individuals diagnosed with mental health conditions are often more likely to use cannabis,[61] yet they are also at higher risk for transitioning from "regular" use to a cannabis use disorder (CUD).[50,62] How can we work to prevent the potential transition to CUD and change the trajectory in this vulnerable population? One important consideration is the amount of THC and CBD contained in products. Given that THC is closely linked to CUD, potentially limiting THC exposure is key. Although additional research is needed, it is possible that the use of even small amounts of CBD may be protective against developing CUD. Unfortunately, a recent study demonstrated that cannabis consumers with pre-existing mental conditions were more likely to use products with higher THC potency.61 Accordingly, harm reduction efforts will be beneficial in those with mental health conditions.

Family History/Genetic Vulnerability: Individuals with a personal or family history of mental illness, particularly psychotic disorders, are likely at higher risk for adverse outcomes associated with cannabis use. Interestingly, this population is also more likely to use cannabis for the alleviation of symptoms. As a result, it is imperative for these individuals to be aware of the potential risks associated with use, particularly with regard to high-THC products. Further, specific genes influence an individual's ability to metabolize drugs including cannabinoids, which leaves some at increased risk for adverse effects. For example, someone who is considered a "poor" metabolizer of THC may experience intoxication at significantly lower doses or for longer periods of time.

Other Medication Use: Individuals with mental health conditions are often treated with conventional medications. Importantly, clinical evidence suggests both THC and CBD can inhibit the metabolism of other drugs via interactions with the body's cytochrome P450 (CYP) enzymes which are involved in the metabolism of drugs and detoxification of foreign chemicals. This means that using cannabinoids could cause certain pharmaceuticals to become more or less potent, both of which may result in adverse outcomes. Research focused on the degree and severity of interactions between cannabinoids, and specific medications is sparse, and greater work in this area is warranted, including studies that focus on how genetics may also influence this relationship.

Improving Screening Tools for CUD

Currently, several screening tools exist that can be used to provide information about whether an individual may be exhibiting symptoms or behaviors consistent with cannabis use disorder (CUD). While these

screening tools have generally been shown to be valid and reliable, they have only been evaluated in recreational/non-medical cannabis users. Importantly, initial work suggests that these tools likely are not appropriate for assessing CUD in those who use cannabis for medical purposes.[56] One issue is that these tools use frequency of cannabis use as one of the main criteria to assess the presence of CUD, but those who use cannabis as a medication are often expected to use cannabis daily. Therefore, high frequency of use can falsely inflate overall risk for CUD in those using cannabis medically. In addition, these tools could be strengthened if caveats could be issued. For example, the criteria assessing time spent acquiring cannabis may reflect the distance some patients must travel to access a dispensary, or reflect time patients wait to purchase products, rather than flagging a problematic behavior. It is critical to invest in research to develop appropriate tools to assess CUD in medical cannabis patients and conduct research using these tools to better understand the relationship between medical cannabis use and the development of CUD.

Effective Treatments and Approaches for CUD

For those experiencing patterns of problematic cannabis use, a variety of treatment options are available. Standard behavioral treatments include cognitive-behavioral therapy (CBT), motivational enhancement therapy, and contingency management. CBT teaches strategies to correct problematic behaviors, develop coping skills, and pursue prosocial behaviors to help enhance self-control and stop using cannabis. Motivational enhancement therapy is designed to enhance internal motivation to change, encouraging collaborative goal setting and using one's own internal resources to effect behavior change. Contingency management is often used in conjunction with traditional "talk therapy" and is a reward system where individuals achieve tangible rewards for desired behaviors (negative drug screen, attending sessions, etc.)[63] Given that each approach has its own unique strengths, studies have actually demonstrated that a *combination* of all three approaches is most effective. Still, abstinence is only maintained in about 20% during treatment, and unfortunately, abstinence rates drop further after treatment is complete.[64]

Several pharmacological options have also been evaluated for initiation of abstinence, relapse prevention, and cannabis withdrawal symptoms, which include irritability, anxiety, relentlessness, sleep disruption, and appetite changes.[65] Overall, despite years of research, there are currently no clearly efficacious pharmaceutical treatments for CUD.[64] Nonetheless, studies point to some promising areas for future investigations, and suggest that individual characteristics of those diagnosed with CUD (gender, impulsivity, severity of CUD) will influence which medications are most effective. In addition, while many have shared anecdotal evidence regarding the potential efficacy of CBD for treating CUD, little research has been published thus far, and it is therefore premature to conclude that CBD may confer benefits for those with problematic cannabis use.

Part III:

CREATING A REGULATORY FRAMEWORK TO PROMOTE RESPONSIBLE USE

Despite the fact that cannabis remains illegal at the Federal level, and the noted risks associated with use, especially with regard to products containing THC for some vulnerable populations, rates of use continue to increase across the nation. While a number of factors should be considered when developing a framework for safe and responsible use (see Part II), it is clear that additional resources must be devoted to expand and articulate specific guidelines that inform consumers about best practices for cannabis and cannabinoid use that are least harmful and most beneficial to their mental health. Decision-making tools designed to help consumers identify their level of risk will certainly increase safety and help prevent unnecessary exposure for those least likely to gain benefit and most likely to experience negative effects.

In order to promote responsible use, the government should consider a two-pronged approach that employs both prevention and harm reduction efforts. **Prevention efforts** are needed to protect cannabis consumers that likely have a higher risk for negative outcomes, including children and adolescents, those with certain mental illness or a family history of psychosis, and pregnant or lactating individuals. However, as a significant number of Americans do not fall into high-risk categories, it is prudent to delineate guidelines and enact public health policies focused on **harm reduction** in order to *educate consumers and further encourage responsible use*. Considerations for harm reduction messaging include:

Prevention of "overuse": Consumers must be aware of the risks of overuse, which can more easily occur when using cannabis in certain ways. High-THC products, particularly concentrates, which are designed to deliver a high dose of THC quickly, can result in unwanted and uncomfortable effects for some. Given what we know about the potential negative impact of cannabis use (and any drug use) during development, age-related restrictions may be considered for high potency products, and marketing of these products should specifically avoid targeting youth. In addition, edibles and other products with slow rise times and longer duration of effects can also raise the risk of consuming more THC than intended, leading to unwanted effects. It is imperative to ensure that consumers are well informed about the risks and benefits associated with different product types and ways of using cannabis.

Encourage using the "lowest effective dose": For those using cannabis for therapeutic reasons, emphasize using just enough to achieve a therapeutic effect (i.e., the "lowest effective dose"). Educate consumers about the time it takes to feel an effect and how long it can last as a function of specific routes of administration. Further, it is important to ensure all consumers are aware that non-intoxicating products may be an option and that many of these products confer desirable effects for a range of conditions.

Adopt similar strategies as used to promote responsible alcohol use: It is essential to continue to promote messaging that individuals who are intoxicated must refrain from unsafe behavior that puts themselves or others at risk, such as driving/operating vehicles and other machinery, activities requiring critical thinking and decision-making, or caring for children or the elderly. As with alcohol use, consumers must be aware of the risks associated with misuse or overuse, and public health messaging should promote moderate, responsible consumption.

Standardization of Packaging and Doses: In order to help consumers understand how a specific product may affect them, products must be labeled clearly and consistently. All cannabinoids present within a product should be listed and the amount of each cannabinoid clearly noted. Standard unit dosing for each cannabinoid, particularly THC, should be determined and stated in order to provide consumers with a sense of their actual exposure. Overall, standardized labeling will help decrease confusion and assist consumers in making informed, responsible choices. Federal oversight should confirm that products are tested by third parties using reliable methods which yield accurate results, while also ensuring that all products remain free of contaminants, including pesticides, aflatoxins, heavy metals, yeast, and mold.

Companies Must Utilize Responsible Marketing Practices: In the current landscape, cannabis companies typically rely on their own internal studies, which are often observational or anecdotal in nature, underpowered, and lack rigor, to make claims regarding the potential therapeutic effects of their products. It is imperative that statements regarding the potential therapeutic effects of cannabinoid-based products are based on empirically sound data with proper oversight from regulators and other third parties.

Within this proposed framework, the government can and should provide resources for public education campaigns, screening, and treatment to prevent and mitigate cannabis misuse and outline steps for responsible use. Additionally, it should grant the appropriate regulatory powers the ability to place restrictions on problematic cannabis products as research and data dictate.

Reduce Barriers to Cannabis Research

Cannabis researchers must navigate an unprecedented and complex landscape when it comes to conducting cannabis-based research. The discrepant laws across states and the fact that most cannabinoids remain illegal at the Federal level is incredibly complicated. As a result, multiple institutional approvals (i.e. FDA, DEA, and local IRBs) are needed. Further, until recently, the National Center for the Development of Natural Products at the University of Mississippi produced cannabis exclusively for the National Institute on Drug Abuse (NIDA), the only approved source of cannabis for US-based clinical research studies, making it difficult for scientists to access cannabis-based products that are analogous to those used by consumers. With few exceptions, the majority of products currently available to researchers are limited to either conventional flower provided by NIDA with significantly lower potency (amount of THC) relative to products widely available to consumers across the country, or are FDA-approved single-compound products which are essentially pure THC (e.g., dronabinol, nabilone) or CBD (e.g., Epidiolex or other purified formulations). Accordingly, these all lack "ecological validity" and may not reflect real-world outcomes for those using a wide range of "typical" cannabis products or the increasingly popular hemp-derived full- and broad-spectrum products. In order to thoroughly assess both the potential benefit and risks associated with cannabis and cannabinoid use, researchers should be allowed to study the actual products used by consumers and patients, which is not possible under current Federal law.

Invest in Rigorous Research on Cannabinoid-based Therapeutics for Mental Health

Although great discoveries are often initially sparked by anecdotal findings, *well-designed, empirically sound, controlled studies offer an important opportunity to customize and optimize cannabis and cannabinoid-based treatments, ultimately changing the narrative and transforming patient care.* As noted in the NASEM report, THC is an effective option for several indications, including chronic pain, nausea and vomiting associated with chemotherapy, muscle spasticity associated with multiple sclerosis.[5] It is well-established that CBD has a wide range of purported therapeutic effects that could provide relief for those suffering from mental health conditions. For example, several clinical trials of purified CBD for anxiety have generated positive findings, with additional studies of full- or broad-spectrum products underway, providing hope to the countless individuals seeking alternative treatments for anxiety that are effective and well-tolerated. In addition, CBD presents with an acceptable safety profile (especially relative to THC), and even at high doses CBD generally seems to be well tolerated. A number of "minor" cannabinoids have also been noted to have therapeutic potential, potentially applicable for a range

of mental health conditions.[4] Harnessing the therapeutic benefits of certain cannabinoids while also mitigating potential harms to create safe cannabinoid-based treatments may be the answer for individuals for whom conventional medicine does not provide adequate symptom alleviation or produces unwanted side effects. All statements touting the efficacy and safety of cannabis and its effect on mental health of the end-user must be supported by thoroughly controlled and comprehensive clinical studies conducted, overseen by an appropriate federal regulator, and independently reviewed by partner public health and safety agencies. Adhering to this standard is particularly critical to patient safety, maintaining public health, and establishing trust between patients and healthcare providers.

Standardizing Tools for Cannabis Research

Currently, the wide variety of cannabis/cannabinoid formulations available across the country has led to contradictory results across research studies and misinterpretations about what these findings mean.[66] First, it is imperative that researchers clearly denote whether they are studying those who use medically, recreationally/non-medically, or for both reasons and that they define the specific type(s) of cannabis/cannabinoid products under study (product type, mode of administration, content of THC, CBD, and other cannabinoids), and acute versus long-term effects. Observational studies of cannabis use have faced significant difficulty in determining the best way to quantify cannabis use. Assessing even seemingly basic aspects of use including frequency or amount of cannabis used is not easy when considering different product types and modes of use, and the field needs tools to help researchers accurately and systematically assess exposure to cannabinoids using the same metrics. Finally, mixed findings are often related to the outcome measures used. Therefore, it is imperative to develop standardized batteries to assess outcomes in cannabinoid-based research investigations.

Conclusions:

Cannabis is an incredibly polarizing topic. As increasing numbers of states legalize cannabis, the perception of risk and harm has continued to drop, fueling the belief that cannabis is a benign substance. While it is true that many use cannabis without serious consequences, it is important to acknowledge that each person has a unique degree of risk based on factors related to the cannabis products they are using and their own individual characteristics. Current research suggests cannabinoids have great therapeutic potential for some conditions and for some individuals, but what's good for one is not necessarily good for all, and what's good in low doses may not be good in high doses. All sides must be considered in order to avoid both antiquated views from the Reefer Madness era and the more recent push to all but include cannabinoids in the drinking water. The truth and path forward are somewhere in between, and we must allow science, not rhetoric, to lead the way.

Cannabis has been a documented part of history for thousands of years and is likely here to stay. It is critical that commercially-available therapeutic applications of cannabis-derived formulations are subject to U.S. Food & Drug Administration oversight and evidence-based standards, similar to other prescription medicines. Once in place, patients, caregivers, and health care providers can be certain that cannabis-derived products have been manufactured to meet rigorous quality standards, and have undergone comprehensive study regarding safety and efficacy using empirically sound methods, allowing consumers to adequately assess the potential risk-benefit ratio for their own use. Accordingly, we must remove research barriers, dedicate funds for innovative projects, draft well-informed policies, and invest in additional efforts designed to protect our most vulnerable populations. Regardless of any opinion, moral or ethical concern, political or religious views, science and empirically sound data must guide discussions and policies regarding best practices and the safest ways for individuals to use cannabis.

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coalition for cannabis
Policy, Education, and Regulation

Addressing Youth and Cannabis

Solutions to combat and prevent youth misuse through a federal regulatory system

Table of Contents

Executive Summary

The Coalition for Cannabis Policy, Education, and Regulation (CPEAR) presents "Addressing Youth and Cannabis: Solutions to combat and prevent youth misuse through a federal regulatory system," outlining proven solutions to address youth use and misuse concerns. This policy paper explains youth misuse in the evolving federal cannabis regulation debate, offers solutions within a proposed federal regulatory system, and highlights key findings, including:

- Data reveals youth use either decreases or remains flat in regulated cannabis markets;
- Under government guidance, access to research, and increased exposure to community-driven, science-based after-school programming, cannabis use among young people decreases and prevents intake at an early age;
- Youth cannabis access would probably decline in regulated markets due to a lack of illicit markets.

CPEAR believes local communities should be at the core of any effort to reduce youth use and misuse of cannabis. These efforts include afterschool programs comprised of measurable targets on a timely basis. Additionally, a federal regulatory system should consist of policies to fund community systems and ensure that appropriate resources are available. Finally, a community approach must be driven by data and science to adapt continuously.

Implementing federal cannabis regulation will require a comprehensive approach to account for externalities resulting from widespread access. The most important of which is its impact on youth and the availability of resources to combat any avenues for misuse by that segment of the US population. This policy area is critical as only adults over 21 should consume cannabis, except for treatments proven by clinical trials and a licensed physician has recommended medication.

The solutions presented in this paper make up a substantial part of a comprehensive regulatory system, where public health and safety are inextricably linked with the programs to reduce youth use and misuse.

Contextualizing the Problem: Prevalence of Cannabis Use and Harms in Youth

Section Highlights

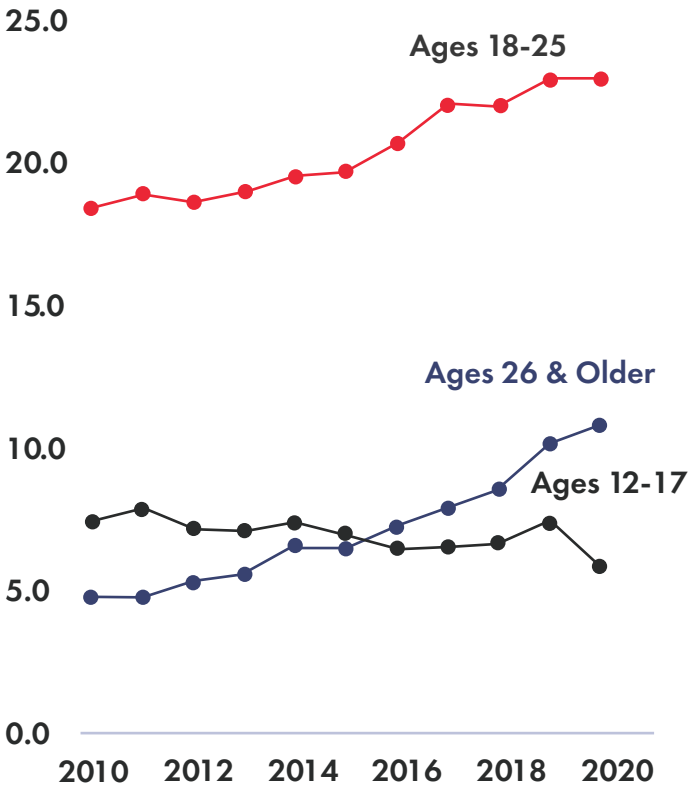
- Prevalence of cannabis use among adolescents (ages 12-17) has stayed relatively stable over the last decade.
- Cannabis-related harms in adolescents are on the rise, but it is unclear whether that is due to legal cannabis laws or not.
- Youth who live in poverty, are racial minorities, and use cannabis monthly are particularly vulnerable to transition from cannabis use to experiencing cannabis-related harms.
- Recent data shows the potential for systemic marginalization in the years following alleged and convicted cannabis possession violations. This includes restrictions on employment, education, housing, etc.

What is the Prevalence of Cannabis Use Among Youth?

As shown in Figure 1, past-month cannabis use among adolescents has stayed relatively stable since 2010. For example, in 2010 about 7% of adolescents used cannabis in the past month compared to about 6% in 2020. However, multi-racial, Black, and American Indian/Alaska Native adolescents are more likely to use cannabis regularly than White adolescents, [1,2] a result that may be linked to broader existing social inequities and health disparities. Further, there was a notable decrease in use among adolescents in 2020, although it is unclear if that is a product of limited access due to the COVID-19 pandemic.

Figure 1

U.S. Past-Month Use Prevalence



What is the Prevalence of Cannabis-Related Harms Among Youth?

Unfortunately, the rates at which adolescents use cannabis on a daily basis has increased among those who previously used the product on a monthly basis. (See Figure 2). This trend is concerning because daily cannabis use among adolescents is associated with significantly increased risk for later Cannabis Use Disorder (CUD), worse educational outcomes, problematic tobacco use, use of illicit substances, and suicide attempts.[3] As defined by Yale Medicine, CUD is the continued use of cannabis despite significant negative impact on one's life and health. The last decade has also witnessed the number of adolescent cannabis-related hospitalizations triple such that approximately 1-4% of all adolescent

1 Race/ethnicity and marijuana use in the United States: Diminishing differences in the prevalence of use, 2006 to 2015 (nih.gov)

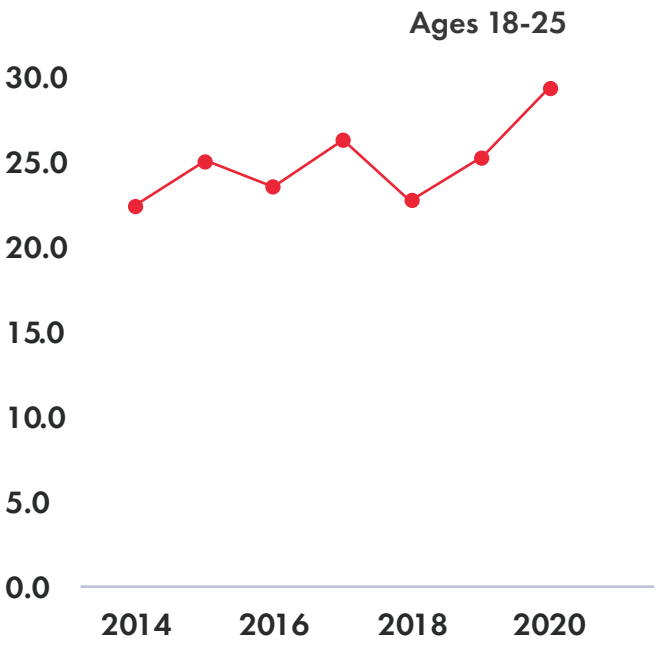
2 Race/Ethnicity Differences in Trends of Marijuana, Cigarette, and Alcohol Use Among 8th, 10th, and 12th Graders in Washington State, 2004-2016 - PubMed (nih.gov)

3 https://espace.curtin.edu.au/bitstream/handle/20.500.11937/7449/204908_132440_adolescentcannabis_Lancet_Psychiatry.pdf?sequence=2

hospitalizations in the U.S. are accounted for by cannabis-related incidents.[4] The average potency of tetrahydrocannabinol (THC), the principal psychoactive ingredient in cannabis, used by adolescents and adults alike, has also risen considerably in the last few years.[5] The average potency of tetrahydro-cannabinol (THC), the primary intoxicating compound in cannabis, has also risen considerably over the last decade. This is particularly concerning for adolescents who are developmentally vulnerable as higher potency cannabis use has been associated with CUD, psychosis and mood disorders...[6]

Figure 2

% of Adolescents Past-Month Users
Who Use Date



These findings highlight that fewer adolescent are engaging in low-risk cannabis consumption, but more are exhibiting high-risk cannabis use patterns.

4 https://www.sciencedirect.com/science/article/abs/pii/S1054139X21003852

5 Prevalence and modes of cannabis use among youth in Canada, England, and the US, 2017 to 2019 - ScienceDirect

6 Cannabis Use, Cannabis Use Disorder, and Comorbid Psychiatric Illness: A Narrative Review - PubMed (nih.gov)

As with adults, youth cannabis use does not perfectly equate to measurable harm but growing evidence does suggest that cannabis use among youth is more likely to result in overall negative health and social outcomes. [7,8] Cannabis use can be attributed to negative physical, mental, and social outcomes, referred to in this paper as cannabis-related harms. While cannabis use generally increases the risk of cannabis-related harms,[9] multiple factors increase the risk of experiencing negative academic, vocational, mental health, cognitive, and substance misuse outcomes later in life. Risk factors include the age of first cannabis use, frequency of use, and potency of tetrahydrocannabinol (THC).

Young people are particularly vulnerable to cannabis-related harms because critical development in physical, neurocognitive, and psychosocial health occurs during adolescence (ages 12–17) and young adulthood (18–25). Cannabis use during these developmental stages, particularly when used regularly or early on in adolescence, may impair memory and decision making, which negatively affect long-term academic and career outcomes.[10] Although the exact reasons why cannabis use substantially and negatively impacts youth outcomes is not yet fully understood, growing evidence suggests that youth use can alter the development of brain regions that control key cognitive functions that are critical to healthy decision-making.[11] Recent estimates suggest that a greater proportion of adolescents in the population meet criteria for CUD than do those 26 and older.[12] This equates to over 1.2 million adolescents who have CUD in the U.S.

> *Based on this evidence, there is general agreement among scientists that youth cannabis use (unless indicated to treat specific medical conditions substantiated by evidence) increases risks of harm to a greater extent than any potential benefits.*

7 Young-adult compared to adolescent onset of regular cannabis use: A 20-year prospective cohort study of later consequences - PubMed (nih.gov)

8 Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis - PubMed (nih.gov)

9 Effects of Cannabis Use on Human Behavior, Including Cognition, Motivation, and Psychosis: A Review - PubMed (nih.gov)

10 Associations Between Marijuana Use Trajectories and Educational and Occupational Success in Young Adulthood - PubMed (nih.gov)

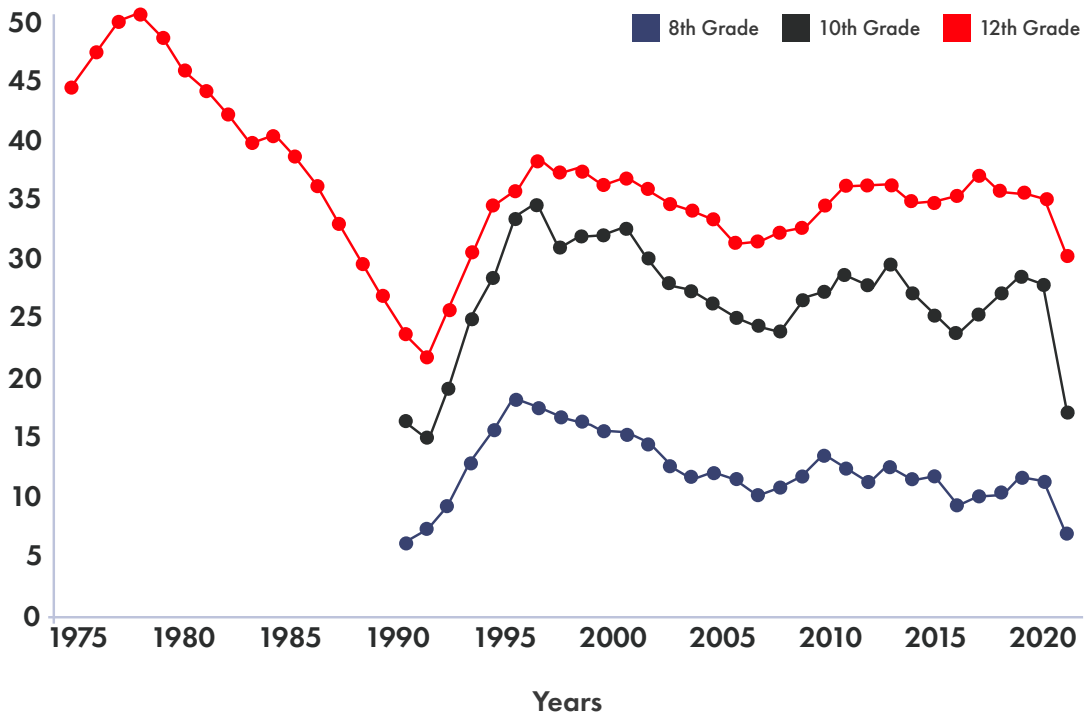
11 Adverse Effects of Cannabis on Adolescent Brain Development: A Longitudinal Study (nih.gov)

12 https://www.samhsa.gov/data/report/2020-nsduh-detailed-tables

What are the Impacts of Cannabis Legalization on Youth Cannabis Use Prevalence and Cannabis-Related Harms?

LEGALIZATION IMPACTS ON YOUTH PREVALENCE OF CANNABIS USE. State legalization of cannabis has *not, on average* impacted the prevalence of cannabis use among adolescents. In other words, states with medical and/or adult use laws are not seeing larger increases in adolescent use relative to states where use remains illegal.[13]

Marijuana: Trends in 12 Month Prevalence of Use in 8th, 10th and 12th Grade



Source: Monitoring the Future[14]

LEGALIZATION IMPACTS ON YOUTH CANNABIS-RELATED HARMS. Unfortunately, a growing number of studies suggest that state legalized cannabis increases youth cannabis-related harms such as CUD, cannabis-related hospitalizations, and driving under the influence of cannabis.[15]

13 http://monitoringthefuture.org/data/21data.htm

14 Medical marijuana laws and driving under the influence of marijuana and alcohol - PubMed (nih.gov).

15 The Effect of Age of Initiation of Cannabis Use on Psychosis, Depression, and Anxiety among Youth under 25 Years - PubMed (nih.gov)

One potential reason is that cannabis legalization may lead to an increase in cannabis-related harms, not increased use. This could be the result of an evolution in consumer choice, and the availability of higher potency products in a regulated market (e.g. concentrates). Such products increase the risks for CUD, psychosis, and mental health.[16]

While the body of evidence for cannabis-related harms surrounding legalization is growing, it is challenging to identify *specific* legal provisions (laws and regulations) that may help or exacerbate cannabis-related harms in youth. This research is pivotal for future states seeking to enact legalization in a fashion that protects youth. Further, as the federal government begins to design a national strategy for cannabis legalization, this research may help replace heterogenous laws with consistent policies that contribute to healthy outcomes.

Co-occurring Cannabis and Mental Health Risks and Opportunities

While it is unclear whether mental illness could be caused by cannabis use, the presence of the ailment may be a contributing factor to increased cannabis use. Data shows that depressive episodes in adolescents and adults have increased by 52 and 63 percent, respectively, over the past 15 years. This likely suggests that mental health and cannabis use are related. This relationship is especially important to note as the nation is recovering from a pandemic, during which time mental health needs and cannabis use has risen. In the years ahead, there will be a critical need for mental health and CUD screenings, as well as novel treatment options.

16 The Effect of Age of Initiation of Cannabis Use on Psychosis, Depression, and Anxiety among Youth under 25 Years - PubMed (nih.gov)

Policy Lever 1: Cannabis Use Prevention for Adolescents

Section Highlights

- A broad array of effective and affordable approaches exists for preventing future cannabis use and reducing existing patterns of cannabis use.
- Effective prevention programs fundamentally shift perceived norms surrounding cannabis use, enhance important psychosocial skills, integrate community-wide efforts, or engage in all of the above.
- Effective prevention programs potentially can save state governments as much as $38 in care costs for every $1 spent by simultaneously reducing cannabis, alcohol, tobacco, opioid, and other substance use.
- "Whole Person" prevention frameworks emphasize the development of broad-skill development, using afterschool programs and integrated prevention programs as a foundation. The wholistic nature of the approach is more likely to yield improved youth use prevention outcomes.

Prevention Approaches

Cannabis prevention approaches are designed to provide services that result in fewer first-time cannabis users, as well as fewer individuals who transition to using cannabis regularly. Prevention approaches are generally considered to provide the greatest impact on long-term population health and economic savings by redirecting youth away from early substance use that decreases the odds of future substance use disorders, lower employment and educational attainment, and co-occurring mental health issues. Despite the clear benefits of cannabis prevention approaches, their success is contingent on providing a broad range of services that are carefully planned, well-funded, and integrated. A number of instructive programs exist to address youth substance use abuse.[17, 18]

KEY DEFINITIONS. The below sections reference several related but unique terms that can be clarified with definitions. We are defining *afterschool programs* simply as funded programs that provide supervision to school-age children in the hours after school ends. When we reference *afterschool and school-based prevention programs*, we are specifically referencing prevention programs that are implemented within the context of an afterschool program or during the school day.

AFTERSCHOOL AND SCHOOL-BASED PREVENTION PROGRAMS. Afterschool programs are attended by over 10 million youth who are commonly from underrepresented groups[19]. Although not all afterschool programs incorporate prevention programs, the proportion that do continues to increase. Many afterschool and school-based prevention programs aim to enhance a broad range of life skills such as social-emotional learning, self-control, and adaptive coping skills which can increase academic achievement, positive social behaviors, and reduce problem behaviors[20,21,22]. Many of these skills serve as protective factors against future substance use among adolescents. Afterschool programs can also help provide structure for vulnerable adolescents that may not otherwise have parental supervisions immediately after school. Such programs may, as a result, help to reduce risk factors of future cannabis use and other substance use among adolescents. After school programs also provide a clear point of contact where prevention and other important resources can be directed. Moreover, afterschool programs are attended more commonly by those from underrepresented groups who also tend to be at higher risk to begin to use cannabis in the first place. Together, these factors suggest that afterschool programs can help to serve as a foundation for a "whole-person" approach to cannabis prevention. Such an approach begins with targeting fundamental skills for success in life and increasing prevention

17 https://asklistenlearn.org/

18 https://www.sadd.org/

19 http://www.afterschoolalliance.org/documents/AA3PM-2014/National-AA3PM-2014-Fact-Sheet.pdf

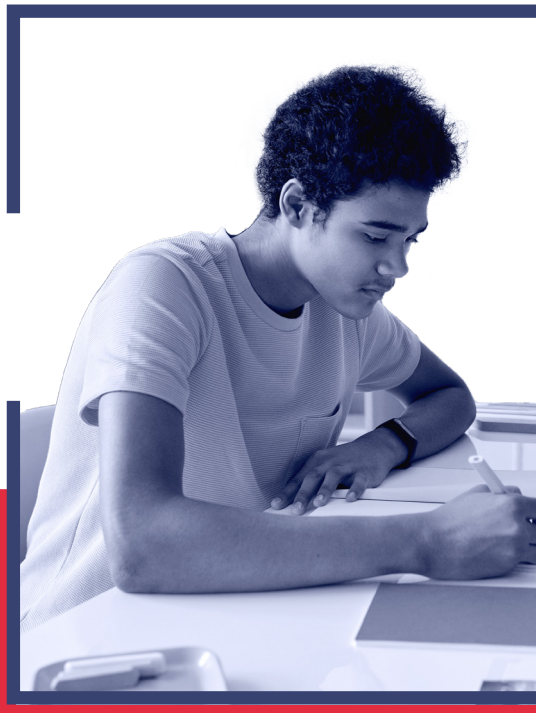
20 https://www.eccnetwork.net/sites/default/files/media/file/Durlak_A_meta-analysisof_after_school.pdf

21 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2840398/

22 https://link.springer.com/content/pdf/10.1007/s10464-010-9300-6.pdf

approaches to address more specific skill deficits and risk factors. In turn, this approach may decrease the odds of future substance use.[23]

Prevention programs implemented through afterschool programs are often led by a teacher or staff member. Activities used to improve social-emotional skills include group discussions, group activities, role-playing, board games, video lessons, modeling, and student workbooks. School-based and afterschool programs tend to be administered over many sessions during the school year. The "LifeSkills Training (LST)©" approach is one such program, which has been validated with elementary, middle, and high-school students.[24] The "Project Towards No Drug Abuse (Project TND)" program has been found to be an effective prevention approach for cannabis and other substances among high school students.[25] Other validated afterschool and school-based programs focus on addressing mental health issues in youth as an indirect means of preventing future or existing substance use patterns. For example, "Preventure" is administered by licensed psychologists across a pair of 90-minute workshops that include emotional reflection exercises, goal setting, and breaking down personal, emotionally challenging experiences using validated CBT techniques.[26] Afterschool and school-based programs that implement skills training components tend to be effective prevention methods and have boasted favorable savings in care costs relative to costs of implementation.



Some evidence suggests that afterschool programs might have a particularly important role in youth prevention. For example, a recent review of school-based cannabis prevention programs found that administering more sessions and having staff other than teachers deliver the intervention in an interactive manner—an approach conducive to afterschool programs—resulted in more effective prevention of cannabis use.[27] Moreover, a recent study by RAND concluded that, despite considerable societal savings for every dollar spent on school-based prevention programs, the primary downside to

23 https://www.sciencedirect.com/science/article/pii/S1054139X07001048?casa_token=OlzZisQnblQAAAAA:-gOE3UilHqdFKqiW2gSvMW2nCByuY0_AyCFJl9Og-C3_gDneQ87GX59BvSg_F6FChJl0348ZSHx8

24 Life Skills Training: Empirical Findings and Future Directions (link.springer.com)

25 Project Towards No Drug Abuse: A Review of the Findings and Future Directions (claremont.edu)

26 Brief, personality-targeted coping skills interventions and survival as a non-drug user over a 2-year period during adolescence - PubMed (nih.gov)

27 A meta-analytic review of school-based prevention for cannabis use - Database of Abstracts of Reviews of Effects (DARE): Quality-assessed Reviews - NCBI Bookshelf (nih.gov)

administering prevention programming during the school day is that it directly competes with important academic activities, unlike afterschool programs.[28] Afterschool programs also are conducive to providing "warm handoffs" to services and coordinating with parents—both important contributions to broader social health outcomes. It is important that afterschool programs and their partners carefully collaborate and work together to ensure that services are truly integrated, and their potential combined effectiveness maximized.[29] This integration should be inclusive of parents and adults with whom individuals have an inherent or cultivated pre-existing relationship. These individuals could be trained on how best to address discussing cannabis use with underage individuals. Therefore, state and federal funding for research and implementation efforts designed to enhance afterschool programs would be particularly well-placed.

BRIEF COUNSELING AND MONITORING APPROACHES. An increasingly common and promising prevention approach provides one or two intervention sessions that includes a counselor using motivational interviewing techniques to inspire youth to create and commit to adaptive goals, providing feedback on cannabis use patterns relative to peers, and prompting youth to consider the future benefits of avoiding or reducing substance use. These interventions are designed to provide customized one-on-one support from counselors to youth to address misperceptions and norms regarding cannabis use and to provide initial skills training to help youth pursue healthy, substance-free activities.[30] One of the more promising of these approaches is the "Teen Marijuana Checkup," which has been used in Colorado, Washington, and multiple other states as a widespread prevention tool. The program can be described as an in-school, voluntary participatory and intervention program wherein teens may "take stock" of his/her use.

COMMUNITY-BASED APPROACHES. Community-wide initiatives generally leverage coalitions of community organizations, clinicians, parents, and schools to plan and implement multiple prevention efforts.[31] Community-based approaches require organizing funding and other resources and assessing the effectiveness of prevention efforts. They typically integrate school-based, afterschool, and parent involvement programs with community-wide practices or policy changes. Many community-based approaches and afterschool programs incorporate a Positive Youth Development (PYD) framework, a strength-based approach to care, empowering and supporting young people to envision and meet their potential.[32] In general, however, community-based programs focus on integrating resources amongst a broad array of community stakeholders.

28 What Are the True Benefits of School-Based Drug Prevention Programs? | RAND

29 Understanding "comprehensive afterschool" in the American Rescue Plan (afterschoolalliance.org)

30 Preventing Marijuana Use Among Youth (samhsa.gov)

31 The Oxford Handbook of Crime Prevention - Hardcover - Brandon C. Welsh; David P. Farrington - Oxford University Press (oup.com)

32 Positive Youth Development (youth.gov)

One of the most effective community-based programs for preventing youth cannabis and other substance use is the PROSPER program (PROmoting School-community-university Partnerships to Enhance Resilience). PROSPER implemented a broad range of school and family-based services in 28 communities in two states. It includes 1) groups of community members connected with schools and led by a PROSPER project manager, (2) prevention coordinators who interface with public research universities, and (3) university researchers in each state. Starting with 6th grade students, PROSPER has been shown to reduce the proportion of youth who ever use cannabis by age 19, the frequency of cannabis use among youth already using, and the use of cigarettes, alcohol, and several forms of illicit substances.[33] Although the effects of PROSPER and similar approaches are not large in scale (e.g., about 9% reduction in youth risk of ever using cannabis between 6th grade and 19 years old), they are cost effective. PROSPER is estimated to save $38 in health costs for every $1,[34] suggesting community-based approaches are prudent from both health and economic perspectives.

DIGITAL INTERVENTIONS. Digital interventions show promise to 1) strengthen community-based approaches, 2) further the scope and generality of the prevention approaches to youth experience, and 3) improve the cost-benefit ratios of prevention efforts. For example, greater use of digital software can and should be leveraged to organize and plan community-wide initiatives and to collect data on program implementation and substance use outcomes. Moreover, digital approaches can be used to deliver customized and automated digital interventions for youth outside of school and to integrate such approaches with other structured or semi-structured settings, such as afterschool programs. Digital interventions could reduce the costs of implementing many prevention approaches by replacing live clinicians with equally effective automated digital interventions and by increasing the efficiency and speed of communication, measurement, and implementation of community-wide prevention services.

A DIGITAL COMMUNITY. Like most prevention efforts, effective cannabis youth prevention approaches require considerable initial financial and community investment. Attempting prevention efforts in isolation from other community-based efforts can contribute to a lack of buy-in from government officials, due to reduced program effectiveness and health cost savings.

To address these issues, there is an increasing push from researchers to develop and examine the effectiveness and efficiency of digital prevention frameworks that integrate individualized interventions, school-based programs, and community-based programs into a single platform that connects stakeholders, resources, and youth to consolidate prevention efforts.[35] However, there is currently insufficient research and implementation funding at state and federal levels to escalate these efforts. The federal

33 PROSPER Delivery of Universal Preventive Interventions with Young Adolescents: Long-term Effects on Emerging Adult Substance Misuse and Associated Risk Behaviors (nih.gov)

34 Life skills training: preventing substance misuse by enhancing individual and social competence - PubMed (nih.gov)

35 On the use of digital technologies to reduce the public health impacts of cannabis legalization in Canada (link.springer.com)

government is uniquely positioned to fund such efforts considering that, if such programs were to be funded by cannabis tax revenue alone, states without active markets would be left behind.

Public Education Campaigns

To date, significantly more is known about what not to do when designing cannabis public education campaigns than what to do. Several studies have shown that public messaging that focuses only on harms associated with cannabis use or that pushes abstinence-only messaging not only fails to improve educational or cannabis use outcomes but also may backfire by producing too much reactivity among youth.[36]

The most successful public education campaign to date is the "Good to Know" program that originated in Colorado, which provides evidence-based educational statements about laws and potential health effects of cannabis use in a judgement-free fashion. A research study found that the campaign not only increased awareness, but significantly increased perceptions of risk associated with CUD, driving under the influence of cannabis, and negative cognitive outcomes associated with cannabis use.[37] Although this study did not use a control group, which makes the true effectiveness of the campaign difficult to determine, the "Good to Know" program has been shown to reduce perceptions of risk associated with cannabis use, which, in turn, tend to relate to healthier cannabis use patterns in the future.[38]

Public education campaigns should also seek to address adjacent issues, such as youth access to cannabis. While it is important to ensure that underage individuals do not gain access to cannabis, it

36 A Rebuttal-Based Social Norms-Tailored Cannabis Intervention for At-Risk Adolescents | SpringerLink

37 MJ_RMEP_FinalMJReport17.pdf (colorado.gov)

38 MJ_RMEP_FinalMJReport17.pdf (colorado.gov)

is important to highlight other sources of access, including family and friends. A comprehensive, yet targeted, approach to public education of this issue should include the individual and societal effects of providing the provision of cannabis to underage individuals.

This approach should consider moving beyond the traditional method of communicating, such as messages to include training on age verification for dispensary workers and other service providers in the industry.

Moving forward, there is a desperate need for more funding and research focused on examining how different public messaging campaign components influence cannabis use, instead of only relying on risk perceptions, attitudes, and awareness. If effective at reducing use, such an approach could be both scalable and cost-effective for prevention.

Policy Lever 2: Equitable Youth-Centric Regulations

Section Highlights

- State medical cannabis laws differ on the minimum age for purchasing cannabis, but all states with adult use laws set the minimum age to 21 and require that retail dispensaries check IDs.
- There is considerable variability across states regarding consequences of underage purchasing and selling, but very few states incorporate CUD or mental health screening in the context of underage violations.
- More evidence than not suggests that non-White youth are more likely to experience cannabis allegations relative to their white peers, which likely further marginalizes these groups by increasing risks of criminal justice involvement in the future.

Existing Laws

Laws on underage cannabis use vary considerably state to state. Some medical cannabis laws do not set a minimum required age to purchase cannabis at a medical dispensary, while other states set the minimum age at 18, 19, or 21. In states with a minimum age, youth authorized as patients can still possess cannabis if an adult acts as a designated caregiver.[39] States also differ widely on the amount that may be possessed for medical use. Various laws specify a number of doses determined by a physician, an amount of THC, or an amount of cannabis or cannabis products by weight.

Adult use cannabis laws are substantially more consistent, setting a minimum age of 21 to purchase, possess, or use cannabis, and requiring dispensaries to check state-issued IDs to verify age. However, compliance is uneven. For example, it is estimated that over two-thirds of adult use dispensaries in California do not comply with the state requirement to post minimum age requirement signage.[40]

Impacts of Underage Provisions

Despite limited existing evidence on the relative impacts of various age limits and consequences for violations on youth outcomes, growing evidence suggests several policies are counterproductive to youth wellbeing. For example, underage purchasing, selling, and cultivation of cannabis in some states can result in years of imprisonment, which likely disproportionately impacts people of low socioeconomic status, racial/ethnic minorities, and other marginalized groups.[41] Considerable evidence suggests that involvement in the criminal justice system increases risk of opioid use disorder (OUD), mood disorders, overdose and overdose deaths, and substantially worsens long-term academic and vocational outcomes.[42]

Recent evidence suggests that legalization of adult use in Oregon increased cannabis-related criminal allegations, particularly among Black and Alaskan Native/Native American youth.[43] Because equity for populations disproportionately impacted by criminalization is a commonly cited reason for legalization, states must consider the impact of incarcerating youth for purchasing, selling, or cultivating cannabis. States should instead focus resources on referring youth to screening, prevention, and treatment services

39 State Medical Marijuana Laws (ncsl.org)

40 Assessment of Recreational Cannabis Dispensaries' Compliance With Underage Access and Marketing Restrictions in California - PubMed (nih.gov) State Laws (norml.org)

41 State Laws (norml.org)

42 From Prison to Home: The Effect of Incarceration and Reentry on Children, Families, and Communities (aspe.hhs.gov)

43 Implications of Cannabis Legalization on Juvenile Justice Outcomes and Racial Disparities (nih.gov)

for potential CUD and mental health disorders and connect youth to prevention and treatment programs, as well as notify parents of violators. The recently approved Cannabis Regulatory Enforcement Assistance and Marketplace Modernization (CREAMM) Act offers an instructive path to ensuring enforcement of cannabis laws do not harm equity outcomes for underaged minorities. This approach should be empowered by federal cannabis regulation. Formalized efforts to implement "warm hand-offs" from law enforcement to health screening, prevention, or treatment personnel could both target disproportionate cannabis use and harms experienced by marginalized populations and enhance large-scale youth prevention efforts. Importantly, policymakers would have to consider additional punitive, yet temporary penalties for repeat offenders.

Like almost all topics surrounding youth cannabis use and prevention, there is a real need for more research on how age-specific provisions of legal cannabis laws affect youth cannabis use and cannabis-related harms. The legal cannabis market increases the availability of high-potency products, which have been associated with an increased risk of psychosis and CUD for some. However, unlike the tobacco and alcohol industries, there remains a pervasive illicit cannabis market that can easily provide youth with access to cannabis. Cannabis purchased illicitly is more likely to contain contaminants, including other illicit substances relative to products available in a regulated market. Therefore, increased vigilance of legal sales of high-potency products may best balance reducing risks of youth cannabis-related harms.

Marketing and Advertising

Most U.S. states with legal cannabis laws have restricted cannabis advertising; however, restrictions vary widely. Reducing youth exposure to advertising would likely be effective, as growing evidence suggests that greater youth awareness and brand recall of ads corresponds with more frequent cannabis use.[44]

Unfortunately, current restrictions on advertising cannabis in legal cannabis states are challenging to enforce due to overly broad language. For example, many states have specified that retailers cannot make "untrue" or "scientifically" false claims, which is challenging to enforce due to the lack of scientific research and consensus on what patterns of cannabis use are harmful. Moreover, although a growing number of studies point to cannabis advertisements as a contributor to elevated cannabis use among youth,[45] it is unclear which aspects of advertisements are most harmful and whether those who see cannabis advertisements are more likely to use cannabis in the first place.

44 Cannabis advertising, promotion and branding: Differences in consumer exposure between 'legal' and 'illegal' markets in Canada and the US - PubMed (nih.gov)

45 Active cannabis marketing and adolescent past-year cannabis use - PubMed (nih.gov)

Policy Lever 3: Data Infrastructure, Taxes, Funding Solutions

Section Highlights

- The taxation "sweet spot" that deters consumption but does not encourage substitution with an illicit market is still unknown.
- Funding youth use prevention and intervention programs can yield cost-savings for governments; thus, a significant portion of tax revenue should be allocated to these efforts.
- Using community-based organizations as infrastructure for referrals is likely the best use of tax funding, as it eases accessibility burdens and maximizes resources.
- Federal funding should prioritize identifying sources that can be allocated to states for these efforts, following models of opioid responses.
- Augment existing local, state, and federal dollars to utilize large, timely surveys that capture patterns and trends associated with adolescent cannabis use and related harms.

Data Infrastructure

At present, there are no publicly available data sets that provide data on adolescent cannabis use on a state-by-state basis. There are also no available data sets that assess cannabis-related risks and harms such as CUD, driving under the influence, high-concentrate cannabis use, and use of cannabis to cope with negative emotions.

Two-Prong Approach

Taxing regulated substances, such as cannabis, can help prevent or reduce youth substance use in two notable ways. First, increasing the sale price of cannabis or other regulated substances can strongly influence purchasing decisions. Second, tax revenue can be used to fund prevention of youth cannabis use, cannabis use during pregnancy, driving under the influence of cannabis, and other harmful activities. These two functions of taxation have been considered successful policy levers for helping to address public harms associated with other substances, such as tobacco, but the relative impacts of such policies in the context of legal cannabis regulations appears more nuanced and complex.

The Role of Cannabis Taxes in Funding Prevention

The taxation of cannabis provides a new and robust funding stream for local and state governments. As of May 2021, the 10 states with active adult use cannabis markets reported close to $8 billion dollars in combined cannabis tax revenue.[46] While each state allocates this revenue differently, almost all states with adult use markets allocate a portion of cannabis tax revenue to public health efforts, whether these be through the domains of public health or public education.[47] This funding is generally provided to programs that promote prevention (e.g., public education campaigns and early interventions) or offer substance use disorder treatment services. Generally, increased funding for any public health efforts represents a victory. However, evidence-based prevention and treatment programs that reduce barriers in access and cost and target broad psychological well-being must be prioritized. Examples from Colorado and California are instructive.

46 Marijuana Tax Revenue in States that Regulate Marijuana for Adult Use (mpp.org)

47 Marijuana Taxes (urban.org)

Success Story - Colorado School-Based Referrals

Since 2019, Colorado's Department of Education has distributed $11.9M of cannabis tax revenue annually to the School Health Professional Grant program.[48] Its goals are to increase the presence of school health professionals in elementary and secondary schools, provide substance abuse and behavioral health care, implement substance abuse prevention education, and provide evidence-based resources to school staff, students, and families. Further the grant aims to reduce barriers for at-risk students by providing access to community-based organizations providing treatment and counseling.[49]

School districts, charter schools, and educational services agencies receive funding for three years, with priority to applicants with demonstrated high need. Grants made in 2017 and 2019 supported the placement of 40 nurses, 102 counselors, 69 social workers, and 18 psychologists across the state.[50] The 2017 awards resulted in over 25,000 students being referred to services or support for substance abuse or behavioral health needs, resulting in over 80,000 individual encounters. This amount reflects an estimated 16% of total students within the funded districts.[51]

DENVER'S AFTERSCHOOL GRANT PROGRAM

The city of Denver approved a special sales tax to fund the Marijuana Policy Office, which supports regulation, enforcement, education, and public health programs. The special tax is currently at 5.5%, and, in 2018, $3.7 million was made available for education and prevention services. The Office of Children's Affairs (OCA) had previously established a competitive grant process for out-of-school time programs, funded through marijuana and other taxes to support youth development programs that help build social and emotional skills. The funds are encouraged to support youth in neighborhoods with limited opportunities identified by the Child Well-Being Index. $1.5 million was also set aside for the Denver Afterschool Alliance to support programs and train program staff. Currently, more than 100 afterschool programs are funded through the competitive grant process.

School health professionals and school-based health programs are increasingly being recognized as the default health system for children. Moreover, they are being acknowledged as appropriate avenues for substance use intervention hand-offs and partners to other community organizations, where resources can be carefully organized, integrated, and maximized by co-located services and expanding care. The takeaway of Colorado's School Health Professionals Grant is that cannabis tax revenue distribution effectively created a new or improved referral pathway for school districts to community partners.

48 Marijuana Tax Revenue and Education (cde.state.co.us)

49 School Health Professional Grant Program (SHPG) (cde.state.co.us)

50 2019-2020 School Health Professional Grant Legislative Report (cde.state.co.us)

51 2019-2020 School Health Professional Grant Legislative Report (cde.state.co.us)

Promising Approach - California's Youth-Centric Community Infrastructure

California has taken a unique approach to allocating cannabis tax revenue by providing 60 percent of net revenue from cannabis to community-based organizations, diversifying the way interventions are delivered. The 2016 law legalizing adult use established the Youth Education Prevention, Early Intervention and Treatment Account, which has provided the Department of Health Care Services over $100M between 2019 and 2021, to be granted to community-based organizations to support prevention and intervention.[52]

The Elevate Youth California program has a central focus on marginalized and disproportionately at-risk populations.[53] The grant program has three funding tracks that build on the existing substance use prevention framework and promote leadership skills and activism among youth.

Many community-based organizations that focus on youth, including Elevate Youth grantees, follow the Positive Youth Development (PYD) framework, a strength-based approach to care, empowering and supporting young people to envision and meet their potential.[54] The theoretical basis for PYD is research showing that motivational interviewing and socio-emotional strategies are effective in preventing and intervening on substance use.[55]

Although PYD alone is simply a framework that inherently supports prevention concepts, research suggests that coupling PYD with evidence-based prevention efforts can produce durable effects. A study carried out in an urban afterschool program found that youth were significantly more likely to perceive

52 $21.5M in 2019, $29.7M in 2020, and $61.62M in 2021.

53 ELEVATE YOUTH CALIFORNIA: SUPPORTING CAPACITY BUILDING FOR COMMUNITY ORGANIZATIONS (shfcenter.org)

54 Positive Youth Development (youth.gov)

55 What is positive youth development and how might it reduce substance use and violence? A systematic review and synthesis of theoretical literature (ncbi.nlm.nih.gov)

drugs as harmful upon program exit and exhibited lower increases in substance use one year after the program's completion.[56]

Cost Benefit of Funding Prevention

The overall cost of substance misuse in the United States, which the National Institute on Drug Abuse estimates at $600 billion annually,[57] dwarfs the cost of prevention programs. Effective prevention programs have the potential to reduce these societal costs. One of the most validated community prevention programs for cannabis carried out in school or community-based settings, Project Towards No Drugs, is associated with cost savings of $3.80 per dollar spent, respectively.[58]

Despite such favorable cost-benefit estimates, the costs for planning, implementing, evaluating, and improving such programs are front-loaded and typically require highly skilled and motivated teaching staff and community stakeholders. Thus, additional research establishing cost benefits, as well as identifying more effective and easily administrable approaches for preventing youth cannabis use, would be helpful in generating additional support for prevention efforts.

Current Federal Funding for Youth Cannabis Prevention

Most federal funding for youth cannabis and substance use prevention is derived from the National Institute on Drug Abuse (NIDA) and the Substance Abuse Mental Health Services Administration (SAMHSA), which serve to advance research and translation of research to practice, respectively.[59],[60] Although proposed 2022 budgets include a 37 percent increase for NIDA research grants and a 63 percent increase for SAMHSA prevention and treatment activities,[61],[62] the amount of cannabis-specific research or implementation funding for youth-prevention to be allocated by either agency is unknown.

56 Impact of a Positive Youth Development Program in Urban After-School Settings on the Prevention of Adolescent Substance Use (sciencedirect.com)

57 Principles of Drug Addiction Treatment: A Research-Based Guide (Third Edition) Is drug addiction treatment worth its cost? (drugabuse.gov)

58 Substance Abuse Prevention Dollars and Cents: A Cost-Benefit Analysis (samhsa.gov)

59 Who We Are (samhsa.gov)

60 About NIDA (drugabuse.gov)

61 Substance Abuse and Mental Health Services Administration (samhsa.gov)

62 Fiscal Year 2022 Budget Information - Congressional Justification for National Institute on Drug Abuse | National Institute on Drug Abuse (drugabuse.gov)

Other federal agencies provide funding for cannabis research or program implementation on occasion but have been infrequent to date.

A Call for Federal Funding

In 1992 Congress reauthorized the SAMHSA noncompetitive block grant for substance abuse prevention and treatment (SAPT). This block grant helps states provide treatment services for substance abuse for all ages and implement programs targeted at youth for alcohol, drugs and tobacco. Each year, SAMHSA allocates approximately $1.8B to states, based on a needs-based formula.[63] The statute requires states to spend at least 20% of SAPT funding on prevention efforts. These funds make up an average 62 percent of state primary prevention budgets and up to 75 percent in some states.[64]

States may spend SAPT prevention funds on cannabis use prevention, as there is no minimum spending requirement for alcohol, tobacco, or any specific drug. However, with such limited funding and much higher mortality associated with other substances, states cannot be expected to sufficiently address youth cannabis use with SAPT funding. Even with supplemental funding from the American Rescue Plan,[65] federal prevention funding is insufficient to address increases in youth cannabis use and CUD.

Prevention efforts would benefit from a dedicated revenue stream, as exists for opioids. In 2016, the 21st Century Cures Act authorized SAMHSA to allocate $1B to states through an Opioid State Targeted Response grant (STR). Funds are explicitly reserved for evidence-based opioid use disorder (OUD) treatment and prevention.[66] The program's successes include the following:

- Heroin use decreased by 66% (from 30% at intake to 10% at 6-month follow up).
- Pain reliever misuse decreased by 83% (from 16% at intake to 3% at 6-month follow-up).
- The average number of days of use of heroin went from 21 days in the 30 days prior to intake to 15 days in the 30 days prior to 6-month follow up.[67]

63 Substance Abuse and Mental Health Block Grants (samhsa.gov)

64 Substance Abuse Prevention and Treatment (SAPT) Block Grant (nasadad.org)

65 HHS Announces $3 Billion in American Rescue Plan Funding for SAMHSA Block Grants to Address Addiction, Mental Health Crisis (hhs.gov)

66 PUBLIC LAW 114–255—DEC. 13, 2016 (congress.gov)

67 2020 Report to Congress On the State Opioid Response Grants (samhsa.gov)

The Opioid State Targeted Response grants have given states the necessary resources, materials, and technical assistance to achieve impactful results. Moreover, some states have allocated STR funding to youth programs. California, for example, uses this funding to provide grants to community-based organizations with the intent of creating an infrastructure of prevention and treatment services grounded in evidence-based practices and PYD principles.[68]

Because addressing opioid misuse is such an important priority at all levels of government, a dedicated federal funding stream to cannabis prevention, much like STR, could ensure that states' youth cannabis prevention efforts do not remain on the back burner. As seen in California, such an approach can help to ensure funds reach community-based programs and improve access to treatment.

Another benefit of programs like STR is that they generate a body of data that helps to identify effective prevention programming. With no national evaluation of cannabis prevention and treatment programs to date, SAMHSA could help to fill this void through a dedicated funding stream with rigorous program and state-level evaluation requirements.

68 YOR California (work.cibhs.org)

Summary of Recommendations

Based on the evidence and findings presented in this white paper, we recommend the following actions:

- Implement a systematic adolescent cannabis use survey to evaluate and direct policy efforts on adolescent prevention. The survey should include a specific set of cannabis-centered questions to serve an additional purpose to the existing surveys conducted by Monitoring the Future and the National Survey on Drug Use and Health (NSDUH).

- Increase youth access to evidence-based treatments for CUD that focus on skills development and goal setting.

- Allocate a substantial portion of cannabis tax revenues towards funding of afterschool programs, school-based and afterschool prevention programs, digital interventions, counseling, and community prevention programs.

- Prioritize referral to prevention and treatment, restricting exposure to advertisements, and limiting access to high-potency products over penalizing underage use.

- Set cannabis taxation levels appropriately to limit consumption and fund treatment and prevention efforts, without driving purchasers to the illicit market.

- Allocate a significant portion of state cannabis tax revenue to youth treatment and prevention, particularly school-based and digital interventions, as well as afterschool programs and positive youth development programs.

- Create dedicated federal funding for youth cannabis use prevention and CUD treatment, to be allocated by SAMHSA to schools and community-based organizations.

- Require rigorous evaluation of funded treatment and prevention programs to identify effective interventions.

- Encourage states to enforce minimum age laws as it relates to cannabis. States should also implement mandatory training on types of products that can be available in a regulated market and their associated mental health risks.

Acknowledgments

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coalition for cannabis
Policy, Education, and Regulation

Contextualizing the Problem

Driving Under the Influence of Cannabis and Other Drugs in America

Table of Contents

Position Statement

It is CPEAR's position that it is never safe to drive while under the intoxicating influence of cannabis. Those that do put the lives of themselves and others at risk, especially when combined with other intoxicating substances. Our laws should create a clear expectation that if you drive high, you will get a DUI – with no exceptions. Additionally, the federal government should be embracing and evolving the programs, technologies, and best practices that have been proven to combat driving while intoxicated on cannabis. This paper examines the root causes of driving under the influence of cannabis and provides the data-backed recommendations that the federal government should immediately adopt to best protect our streets.

Acknowledgment

We would like to thank Responsibility.org for providing input and insights into impaired driving prevention for this publication and our Center of Excellence members for the productive discussions, feedback, and reviewing our initial drafts.

Executive Summary

Driving under the influence of cannabis (DUIC) and drugs (DUID) is extremely risky and dangerous to drivers, passengers, and pedestrians. Yet, according to the National Highway Traffic Safety Administration (NHTSA), the rate of driving under the influence has increased by 2.5 times over the past decade. Approximately 11 percent of the US adult population has driven under the influence, which equates to roughly 28 million individuals.

At the same time, peer-reviewed data shows cannabis legalization is not the main reason for the increase in cannabis-impaired driving. This report expands on the contours of this issue by outlining available data and its underlying implications, while putting forward reasonable solutions to reducing the prevalence of DUIC/DUID on the nation's roads.

Currently, Advanced Impaired Driving Enforcement trained officers and Drug Recognition Experts (DREs) represent the best approach for detecting DUIC and DUID. However, attention and investment in research, technology, and public messaging can make readily deployable solutions even more effective.

State jurisdictions require increased funding for research to identify valid, non-invasive, and single-trial impairment detection approaches for roadside testing. Roadside tests for impairment should account for the latent effects of cannabis use and invest in emerging technology that can distinguish between impairment and presence. Moreover, state jurisdictions need to inform their residents about misconceptions around the low-risk nature of driving under the influence with evidence-based messaging.

Driving under the influence of cannabis (DUIC) and drugs (DUID) is extremely risky and dangerous to drivers, passengers, and pedestrians.

- The use of cannabis or other drugs with psychoactive effects may impair judgement and decision-making and increases the odds of deciding to drive under the influence.

- DUIC and DUID increase the risk of a serious injury or death from a motor vehicle crash by at least two to three times.

The prevalence of cannabis and multi-substance impairment rose considerably over the last five years, leading to a rise in crashes resulting in serious injury or death.

- Factors for the increase in DUIC offenses include a lack of understanding of how cannabis impacts one's ability to safely drive a vehicle.

- Approximately 11% of the US adult population engaged in driving under the influence of cannabis within the last month, which equates to roughly 28 million individuals [1].

- The rate of driving under the influence of cannabis (DUIC) has grown by 2.5 times between the years of 2007 and 2018 [2].

Cannabis legalization is likely not the driver of elevated cannabis-impaired driving.

- While there is a need for more research and better data collection, studies showing an effect of legalization on DUIC find that the effect is either insignificant or declines a year after the legal market was implemented [3,4].

- Driving while impaired by cannabis represents real-time cognitive and motor deficits that increase the odds of motor vehicle crashes and deaths.

Evidence-based public messaging that increase perceived risk of driving while impaired is needed given growing scientific evidence that low risk perception is predictive of such behaviors.

- Much like with cannabis use prevalence, perceived risk of harm is a consistent and strong predictor of driving while impaired.

1 Perceived Safety of Cannabis Intoxication Predicts Frequency of Driving While Intoxicated - PMC (nih.gov)

2 Trends in Cannabis Involvement and Risk of Alcohol Involvement in Motor Vehicle Crash Fatalities in the United States, 2000–2018 | AJPH | Vol. 111 Issue 11 (aphapublications.org)

3 Cannabis use and driving under the influence: Behaviors and attitudes by state-level legal sale of recreational cannabis (cannabisproject.ca)

4 Cannabis legalization and driving under the influence of cannabis in a national U.S. Sample - ScienceDirect

- The average individual who engages in driving while impaired *believes* that it is safe to drive at an intoxication level of 6 on a scale of 10. There is no safe level for DUIC.

Advanced Impaired Driving Enforcement trained officers and Drug Recognition Experts (DREs) represent the most relevant approach at present for detecting DUIC and DUID, but increased funding is needed for research that identifies valid, non-invasive, and single-trial impairment detection approaches for roadside testing.

- Per se and zero tolerance laws assess THC presence instead of actual impairment, which sets the stage for unequitable and inaccurate enforcement of DUIC. Impairment needs to be based on the actual observed behaviors of the driver and a totality of the circumstances, not a quantitative result.

- Unlike blood alcohol concentration, there is no currently available validated technology that evaluates a standard measure of cannabis impairment in real time, though this is changing with the emergence of novel technologies.

Creative and integrated policy efforts at state and federal levels are needed to reduce DUIC and DUID.

Contextualizing the Problem – Driving Under the Influence of Cannabis and Other Drugs in America

Section Highlights

- Deaths from motor vehicle crashes and DUIC are consistently increasing.
- Any form of DUI dramatically increases impairment and odds of experiencing a serious injury or death from a motor vehicle crash.
- More drivers experienced serious crashes or deaths with cannabis (THC) in their system than any other drug in 2020.
- To date there has not been a clear effect of cannabis legalization on DUIC prevalence.
- Low perceived risk of harm is predictive of engaging in driving impaired by cannabis and can be improved through evidence-based public messaging.

How Pervasive Are Motor Vehicle Crashes in America?

The number of Americans dying from motor vehicle crashes increased by 30% from 2010 to 2021 [5,6]. This concerning trend represents an additional 28,000 deaths by motor vehicle crashes in the last decade [1]. Even when considering the decrease in number of miles driven during the COVID-19 pandemic in 2020, the number of deaths by motor vehicle crash per mile driven increased dramatically [1]. Additionally, the number of pedestrians killed in 2020 increased 46% from 2010. Almost every year since 2010 the number of pedestrian deaths has risen [7].

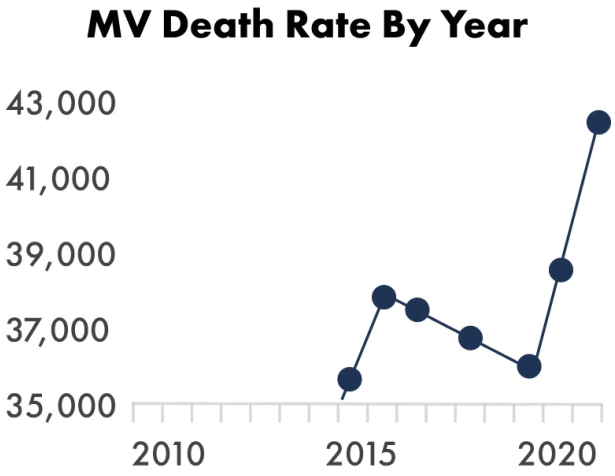


Figure 1. Motor Vehicle Crashes Annually

> *If current trends continue, there will be approximately 100,000 additional deaths from motor vehicle crashes in the 2020s compared to the 2010s.*

This alarming realization has many asking, why are these death rates increasing so rapidly and what can policymakers do to curb this trend? One of the largest addressable factors to motor vehicle crashes, injuries and deaths is drug-impaired driving or more commonly referred to as driving under the influence (DUI) or driving under the influence of drugs (DUID). It has been shown that over half of drivers involved in a serious motor vehicle crash tested positive for one or more substances that may have impaired their driving performanc [8]. Similarly, over half of pedestrians killed by a motor vehicle have alcohol or another substance in their system [9].

> *Any form of DUI dramatically increases the risk of experiencing a serious injury or death due to a motor vehicle crash [10].*

This is because the use of alcohol, cannabis, or other substances alone or in combination before or while driving a motor vehicle have been scientifically shown to impair motor function (the control of body

5 Early Estimates of Motor Vehicle Traffic Fatalities and Fatality Rate by Sub-Categories 2021 (dot.gov)

6 Traffic Safety Facts Annual Report Tables (nhtsa.gov)

7 Pedestrian Traffic Fatalities by State: 2020 Preliminary Data | GHSA

8 Drug-Impaired Driving | NHTSA

9 Pedestrian Deaths Soar in 2020 Despite Precipitous Drop in Driving During Pandemic | GHSA

10 Cannabis, alcohol and fatal road accidents | PLOS ONE

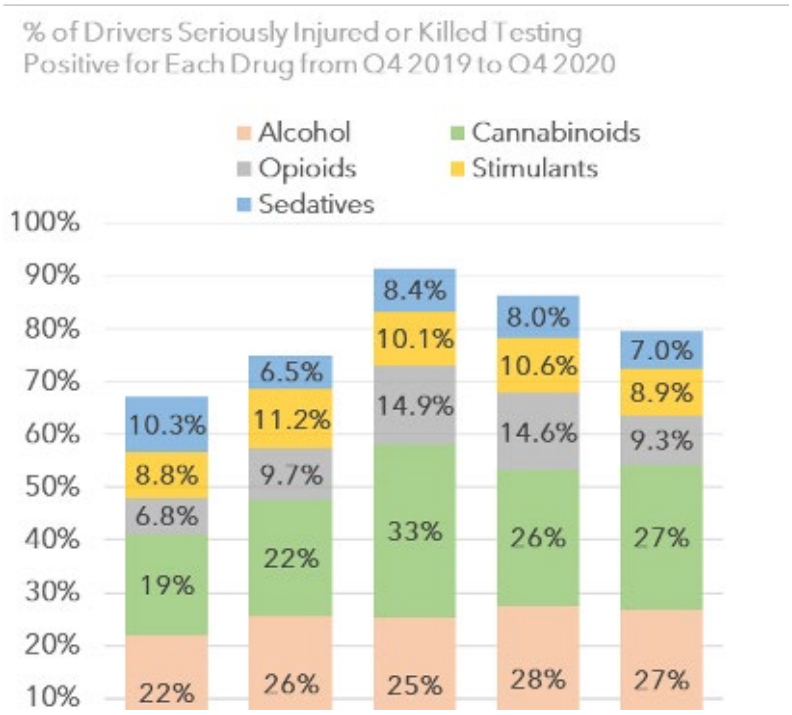
movement), vision, and awareness while driving [11,12]. Impairment from cannabis and other substances produce immense safety concerns such as drifting into other lanes, swerving, overcorrections, and issues maintaining attention on the road [13,14,15].

What is the Prevalence of Driving Under the Influence?

CANNABIS VS. OTHER SUBSTANCES Recent evidence suggests that the number of motor vehicle crashes thought to be related to the impairment from cannabis is increasing across time, matches the number of alcohol-impaired incidents, and is over three times more prevalent than opioid, sedative, and stimulant-involved crashes [16]. The number of crashes where drivers used both cannabis and alcohol together has also risen notably from 2010 to 2019 [10]. Combining alcohol and cannabis before or during driving tends to produce a multiplicative effect that further impairs cognitive skills and driving performance [17].

Figure 2. Serious Injuries or Deaths Associated

% of Drivers Seriously Injured or Killed Testing Positive for Each Drug from Q4 2019 to Q4 2020



11 The Effect of Cannabis Compared with Alcohol on Driving: American Journal on Addictions: Vol 18, No 3 (tandfonline.com)

12 Cannabis Effects on Driving Skills | Clinical Chemistry | Oxford Academic (oup.com)

13 Cannabis smoking impairs driving performance on the simulator and real driving: a randomized, double-blind, placebo-controlled, crossover trial - Micallef - 2018 - Fundamental & Clinical Pharmacology - Wiley Online Library

14 Effect of Cannabidiol and Δ9-Tetrahydrocannabinol on Driving Performance: A Randomized Clinical Trial | Adolescent Medicine | JAMA | JAMA Network

15 Drugged Driving DrugFacts | National Institute on Drug Abuse (NIDA) (nih.gov)

16 Fatality Analysis Reporting System (FARS) | NHTSA

17 Effects of combining alcohol and cannabis on driving, breath alcohol level, blood THC, cognition, and subjective effects: A narrative review. - PsycNET (apa.org)

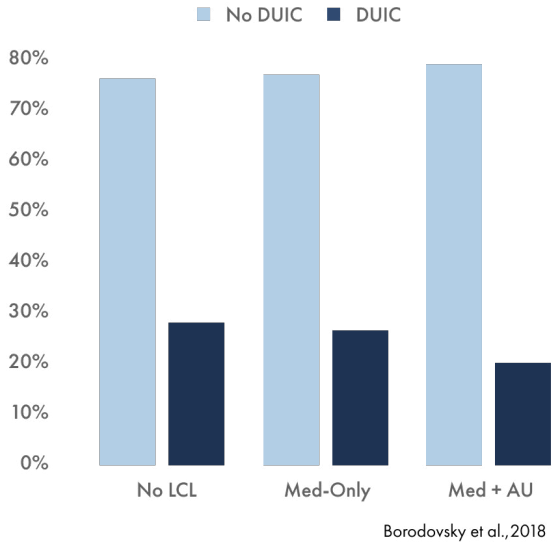
As shown in Figure 2, more drivers experienced serious crashes or deaths with cannabis (THC) in their system than any other drug in 2020. Paired with the fact that the rate of driving under the influence of cannabis (DUIC) has grown by 2.5 times between 2007 and 2018, and the rate for alcohol-impaired crashes has decreased over that same time period, it is clear that driving under the influence of cannabis specifically is a major problem that needs to be addressed [2]. DUIC is most common among individuals who use cannabis at least monthly and a conservative estimate at a population level suggests that 11% of all U.S. adults ages eighteen and older have engaged in DUIC in the past month.

> *There are at least 28 million individuals who operate a vehicle under the influence of cannabis twice per month. As a result, there are approximately 56 million instances of DUIC per month [1,6].*

Notably, most population studies of DUIC simply ask whether individuals engaged in DUIC in the past month or the past year and do not ask about how many times they drove under the influence or, alternatively, how many days participants drove under the influence. The latter is important because those who do engage in DUIC tend to do so more than once per month and asking participants about the frequency of DUIC allows researchers to better capture the overall problem [12]. Local, state, and federal survey approaches should always assess the number of days or instances of DUI for cannabis and for other substances to accurately capture cannabis and polysubstance related patterns of DUI across time.

What is the Impact of Legal Cannabis Laws on DUIC Prevalence?

Figure 3. Past Month DUIC Prevalence by State with Legal Cannabis Laws



Borodovsky et al., 2018

With more and more states implementing legal medical and adult use cannabis markets, many assume that is the reason for the increase of serious motor vehicle crashes, injuries, and deaths. While there have been reported increases in DUIC cases over the years, growing evidence suggests that increased cannabis legalization does not correlate to an increase in those cases[12]. This conclusion is validated by a body of scientific evidence that produces mixed findings regarding the impact of cannabis laws on DUIC. For example, some large-scale survey studies,

including the study that produced the findings noted in Figure 3, show an association with cannabis legalization and lower DUIC prevalence [14] [18], whereas others show an increased frequency of DUIC[19,20]. Rather, there are likely other factors linked to the rising rates of DUIC in the U.S, such as decreasing perceived risk of harm associated with cannabis use. For example, in a recent study showing that adult use states showed the lowest DUIC rates, followed by medical-only states and then by states where any cannabis use (N=3) is illegal, the authors found that perceptions of risk associated with DUIC were also higher as a function of greater state legalization levels [1]. Further confusion is added to the question of whether legal cannabis laws influence DUIC rates because data on cannabis-impaired driving is extremely limited. Another relevant factor is that cannabis use is increasing in U.S. states regardless of its legal status, which could contribute to the elevated rates of DUIC, and which is congruent with existing findings showing limited evidence of a relationship between legal cannabis laws and higher DUIC. In addition to the need for more research on cannabis-impaired driving, research must be prioritized on examining whether specific provisions, policies, or regulations associated with state cannabis laws help mitigate DUIC and DUID risks.

What is the Most Evidence-Based Way to Prevent Driving Under the Influence of Cannabis?

More frequent cannabis use and lower perceived risk of harm associated with cannabis consistently predict who engages in DUIC [4]. As such, the rising prevalence of cannabis in those involved in crashes in the United States is most likely a result of the fact that 1 in 10 Americans who use cannabis almost daily do not perceive the risk of harms associated with cannabis use and operating a motor vehicle [21]. For example, on a scale of 0-10 of cannabis intoxication, where 0 represents being completely sober and 10 represents inebriated, the average individual who engages in DUIC believes that it is safe to drive at an intoxication level of 6 [4]. The same study found that the perceived safety of different DUIC levels strongly predicted how many days individuals would engage in DUIC in the past month, even after controlling for how many days they used cannabis[4].

Together, these findings highlight that interventions and public messaging campaigns that successfully convey to the public that DUIC is dangerous are extremely important for reducing the rates of motor

18 Cannabis use and driving under the influence: Behaviors and attitudes by state-level legal sale of recreational cannabis - PMC (nih.gov)

19 Cannabis Legalization and Detection of Tetrahydrocannabinol in Injured Drivers (nejm.org)

20 EARLY EVIDENCE ON RECREATIONAL MARIJUANA LEGALIZATION AND TRAFFIC FATALITIES - Hansen - 2020 - Economic Inquiry - Wiley Online Library

21 Cannabis legalization and driving under the influence of cannabis in a national U.S. Sample - ScienceDirect

vehicle crashes and deaths related to DUIC. For example, even if these efforts only have a 5% improvement in perceived risk of driving when impaired by cannabis, hundreds of lives could be saved in most U.S. states by preventing motor vehicle crashes due to impaired driving.

Current Day DUIC and DUID Enforcement Mechanisms

Section Highlights

- Advanced Roadside Impaired Driving Enforcement (ARIDE) and Drug Recognition Experts (DREs) are the most evidence-based and feasible approach to addressing DUIC and DUID, despite some limitations.
- State-level use of DREs as the ultimate determinant of impairment is a more accurate, effective, and likely equitable approach to DUIC and DUID enforcement.
- State and federal funds for the training, maintenance and evaluation of DRE programs need to be increased. Per se laws and zero tolerance policies are subject to challenge given the complexities of measuring THC impairment. Novel technologies emerging show initial promise for better DUIC enforcement and likely prevention.

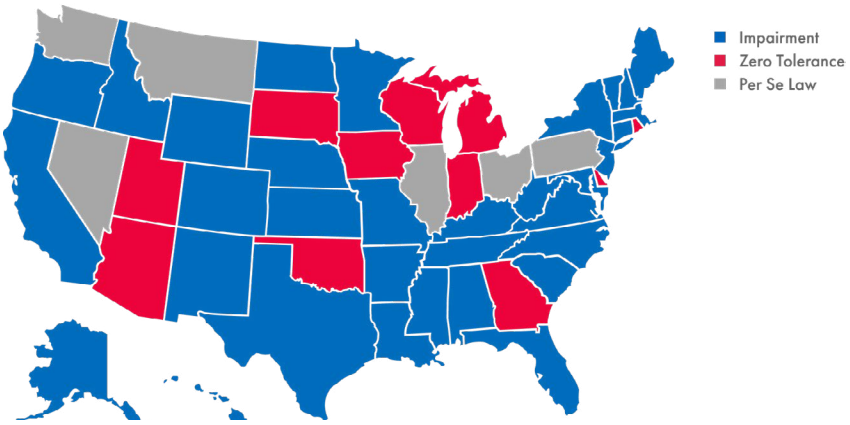
Roadside Impairment Detection

The most common way that the incidence and aftermath of driving under the influence of cannabis (DUIC) and driving under the influence of drugs (DUID) are detected is through enhancing roadside detection policies and practices. Generally, these practices involve a multi-step roadside process including the use of Standardized Field Sobriety Testing (SFST) and oral fluid collection as part of the process of determining probable cause for potential arrest [22]. Twenty-four states have statutes authorizing some form of oral fluid, saliva or other bodily substances or fluids testing, but only a handful conduct oral fluid testing in practice. In field studies with actual drivers suspected to be impaired and in highly controlled, double-blinded, placebo-controlled studies, different SFST tasks appear to demonstrate sensitivity although often only one of three show sensitivity [23,24]. However, SFST tasks are just one part of a much larger evidence gathering process conducted by officers who suspect potentially impaired drivers, and existing studies have rarely evaluated the *additional contribution* of the SFST to accurately assessing impairment within that larger process.

Most U.S. state regulations fall under the following categories of impairment: general impairment detection, zero tolerance, or per se laws. Most states employ impairment laws (See Figure 4), which require evidence of cannabis-induced impairment, such as poor performance during testing performed by officers roadside trained in the standard field sobriety tests, or ARIDE-trained officers who employ additional tests that capture measures of altered time and space, concentration, and memory. Colorado has a reasonable inference law that states that in instances where THC is identified in a driver's blood in quantities of 5ng/ml or higher, it is permissible to assume the driver was under the influence. Reasonable inference laws differ from per se laws in that they allow drivers who are charged to introduce an affirmative defense to show

DUIC Impairment Laws by State

Figure 4. DUIC Policies Across America



22 22-1058_TS_Oral-Fluid-Drug-Screening-Handout_v1-04.11.22.pdf (aaa.biz)

23 A placebo-controlled study to assess Standardized Field Sobriety Tests performance during alcohol and cannabis intoxication in heavy cannabis users and accuracy of point of collection testing devices for detecting THC in oral fluid | SpringerLink

24 New Information on Validity of SFST in Detecting Drug Impairment.pdf (tndagc.org)

that despite having tested at or above the legal limit, they were not impaired. Colorado's law is generally grouped under a single "permissible inference" category when it comes to mapping out state cannabis-impaired driving laws, requiring the prosecution to prove that the driver was incapable of driving or affected by THC (similar to general impairment states), the 5 ng/ml threshold places Colorado in its own unique category.

When officers recognize the driver is potentially under the influence of a substance other than alcohol, they may call in a drug recognition expert (DRE) to provide additional assistance. DREs are police officers trained to recognize impairment in drivers under the influence of drugs other than alcohol. Considerable evidence suggests that roadside tests employed by DREs are much more accurate than other currently available methods, particularly those that leverage physiological measurement techniques such as pupil dilation and reactivity to light [25]. While most police officers in the United States are required to complete Standardized Field Sobriety Testing (SFST) to recognize alcohol impairment, The International Association of Chiefs of Police (IACP) along with the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation coordinates the International Drug Evaluation and Classification (DEC) Program. This program allows officers to build the skills necessary for detecting and identifying persons under the influence of drugs and in identifying the category of drugs causing the impairment [26].

Currently, Drug Recognition Experts (DREs) are the most evidence-based method that can be feasibly used to enforce DUIC on the roadside and should be utilized to the greatest extent possible [23,27,28] but there is only 1 DRE per 27 million miles.

Areas of Improvement for Enforcement

INCREASED PRESENCE ON THE ROADSIDE While DREs are by far the most evidence-based approach for detecting DUIC that can currently be implemented on roads and highways, there are several potential limitations of only leveraging DREs to detect DUIC and DUID.

25 Drug Recognition Expert (DRE) examination characteristics of cannabis impairment - ScienceDirect

26 Drug Recognition Expert Section (DRE) | International Association of Chiefs of Police (theiacp.org)

27 The Accuracy of Evaluations by Drug Recognition Experts in Canada: Canadian Society of Forensic Science Journal: Vol 42, No 1 (tandfonline.com)

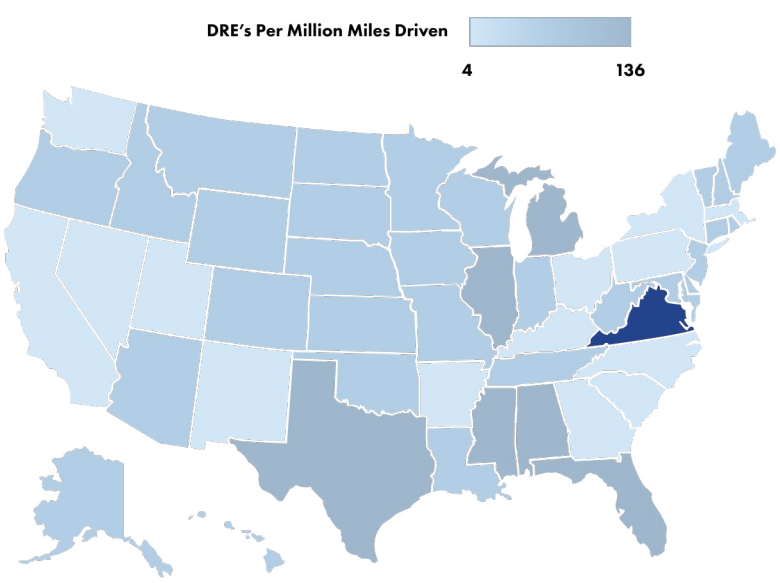
28 A placebo-controlled study to assess Standardized Field Sobriety Tests performance during alcohol and cannabis intoxication in heavy cannabis users and accuracy of point of collection testing devices for detecting THC in oral fluid | SpringerLink

First, training DREs and maintaining sufficient levels of DREs in states and localities is costly and time-consuming. Second, there are often a limited number of DRE instructors in each state [29], which stymies efforts to effectively increase the number of DREs as a means of reducing DUIC and DUID.

The deficit of DREs and DRE instructors is *problematic because several scientific studies have shown that the perceived probability of experiencing negative consequences of DUIC or DUID is much more important than the severity of consequences and is critical to discouraging DUIC* [30] .

However, as shown in Figure 5, on average there is only 1 DRE per 27 million miles at any given time in the U.S. states, which suggests that low perceived probabilities of being caught for DUIC by drivers are likely based in reality.

Figure 5. DREs Per Million Miles Driven



ADDRESSING HUMAN JUDGEMENT The DRE program utilizes a 12-step process to evaluate whether a driver is impaired. This protocol involves a broad series of steps including physiological tests, interviewing the driver, and divided attention tasks [31]. For example, some evidence suggests that DRE impairment detection approaches requiring physiological measurement tools (pupil dilation, light reactivity) are much more accurate than psychophysical ones (one leg stand) [23]. In addition to the fact that DREs are fairly accurate at detecting cannabis impairment, in general, any accuracy issues tend to lean towards false negatives instead of false positives. In other words, a disproportionate amount of potential DUIC instances where a DRE makes a judgment on impairment is inaccurate because they report the driver as not being impaired when they are impaired. Although it is ***never*** okay to use

29 2021SB-00888-R000226-Eucalitto, Garrett, Deputy Commissioner-CTDOT-TMY.PDF

30 Preventing cannabis users from driving under the influence of cannabis - ScienceDirect

31 12 Step Process | International Association of Chiefs of Police (theiacp.org)

cannabis and drive, an inflated rate of false positives, which inaccurately allege drivers of being impaired could potentially hinder the ability to prosecute DUIC cases that are accurate.

It is critical that law enforcement receive comprehensive training to prevent unequal treatment of individuals from underrepresented racial groups [32]. Although data on the effectiveness of trainings for police to avoid such biases is limited, there are growing efforts among law enforcement to complete trainings focused on providing trauma-informed care to those from underrepresented racial groups. Another potentially promising approach for reducing such biases includes providing brief trainings on components of Acceptance and Commitment Therapy, which is an effective alternative to Cognitive Behavioral Therapy that can help defuse implicit stereotypes and promote values-consistent actions by professionals [33]. Police agencies that prioritize involving citizens as a part of decision making often show higher social equity performance and, in turn, have higher trust from the public [34]. It is important that law enforcement agencies provide funding for such trainings as DREs will be needed for many years to come.

The Problems with Per Se and Zero Tolerance Laws

Per Se and Zero Tolerance laws differ greatly from impairment laws because they require proof that there was any form of Tetrahydrocannabinol (THC) in a driver's system either through blood or urine screening. Per se laws set a specific cutoff point that is predetermined to signify impairment (e.g., ≥5 µg/L blood THC), whereas zero tolerance laws determine DUIC simply based on whether there is any presence of THC above zero.

Further, THC can remain present in blood for close to 24 hours [35] , and potentially over a month in urine depending on frequency of use [36]. Given this, the presence of THC in a driver's system could be from previous use and not be indicative of current or even immediate past use or impairment. It is because of

32 Trauma Training for Criminal Justice Professionals | SAMHSA

33 ERIC - EJ807001 - The Impact of Acceptance and Commitment Training and Multicultural Training on the Stigmatizing Attitudes and Professional Burnout of Substance Abuse Counselors, Behavior Therapy, 2004 (ed.gov)

34 Improving Community Relations: How Police Strategies to Improve Accountability for Social Equity Affect Citizen Perceptions: Public Integrity: Vol 20, No 4 (tandfonline.com)

35 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3570572/

36 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2587336/

this that the justice system is seeing an emergence of cases appealing charges for impairment of THC under per se or zero tolerance laws, albeit mostly unsuccessful [37,38,39,40].

While it is ***never*** safe to drive under the influence of cannabis or other drugs, per se and zero tolerance laws are often inequitable. In a study conducted by the Stanford Open Policing Project, analysis of a data set including nearly 100 million traffic stops across the United States revealed that Black drivers were 20% more likely to be stopped than White drivers relative to their share of the residential population [41]. As a probable result of this, studies have found that Black and Latino drivers are overrepresented among DUI convictions relative to population size. Further, when comparing conviction rates for DUI with frequency of consumption behavior, there is an obvious racial bias against Blacks and Latinos [42]. In addition, if an individual crosses from a legal cannabis state without a zero-tolerance law into an illegal cannabis state with a zero-tolerance law, the cannabis they used yesterday may show up during testing even though the individual is in no way impaired. With equity being a core component of cannabis legalization, the vast likelihood of unjust enforcement of per se and zero tolerance laws should be considered.

THC as A Poor Indicator of Impairment

There is overwhelming scientific evidence that suggests that the amount of THC in a driver's system is a very poor indicator regarding whether a driver is impaired[19]. This contrasts significantly from blood alcohol levels and impairment in driving under the influence of alcohol that have evidence-based blood alcohol concentration limits[43,44]. However, state regulators in about one-third of U.S. states have passed per se or zero tolerance laws that only require the presence of THC to prosecute potential DUIC offenses.

37 Love v. State, 517 S.E.2d 53 (Ga. 1999).

38 Williams v. State, 50 P.3d 1116, 1118 (Nev. 2002)

39 State v. Williams, 93 P.3d 1258 (Nev. 2004)

40 City of Kent v. Cobb, 196 Wash. App. 1043 (Wa. 2016)

41 A large-scale analysis of racial disparities in police stops across the United States

42 https://onlinelibrary.wiley.com/doi/full/10.1111/1745-9133.12558

43 Lowering state legal blood alcohol limits to 0.08%: the effect on fatal motor vehicle crashes. (aphapublications.org)

44 A PRELIMINARY ASSESSMENT OF THE IMPACT OF LOWERING THE ILLEGAL PER SE LIMIT TO 0.08 IN FIVE STATES. NHTSA TECHNICAL REPORT | Semantic Scholar

In a recent study that administered different amounts of THC to participants before using a driving simulator, all participants showed THC levels above per se limits, however, less than half met validated criteria for impairment[45].

The amount of THC in one's system is a poor indicator of whether one is impaired for several reasons:

1. There are large differences in how individuals process and metabolize THC. One individual may show higher THC blood levels than another person, but in practice may be affected but not necessarily impaired[42].

2. THC blood levels in general are less related to impairment than blood alcohol levels are. This is likely due to the fact that there are metabolites of THC that can be stored in many parts of the body, like fatty tissues, where the impact of THC on functioning could be varied enough to cause large discrepancies in whether someone is impaired.

3. Growing evidence suggests that frequent cannabis use may create a tolerance to the presence of THC in one's system. This was clearly recognized in driving simulator studies, where cannabis is administered to those who use cannabis regularly and compared to those who use cannabis irregularly[42].

4. Per se laws imply to the public that driving with a THC level below a given threshold is safe, which often is unlikely to be the case. Factors such as not using cannabis regularly, how an individual's body metabolizes THC, and being accustomed to higher levels of THC all play a role in impairment (see [46] for a review).

In a recent study [46], all participants showed THC levels above per se limits, however, less than half met validated criteria for impairment.

45 The failings of per se limits to detect cannabis-induced driving impairment: Results from a simulated driving study (theiacp.org)

46 Strengths and limitations of two cannabis-impaired driving detection methods: a review of the litera (tandfonline.com)

Novel Impairment Detection Technology – Promising Science Based Solutions

Section Highlights

- Advances in eye-tracking and portable neuroimaging technologies are poised to provide a potential solution to the rapid, non-invasive, and accurate detection of roadside cannabis impairment as well as a lack of a 'baseline' for comparison.
- Despite the promise of these technologies, there are considerable barriers, including lack of research fundings and the challenges associated with detecting impairment from other substances in isolation or combination with cannabis.

Multiple emerging technologies, not currently available to law enforcement, show promise in improving the accuracy of DUIC impairment detection and efficiency. Generally, these instruments are designed to be operated by law enforcement officers easily, rapidly (e.g., 1-2 minutes), and non-invasively. Like DREs, these novel technologies are intended to assess real-time impairment from THC. Two instruments, eye-tracking and portable neuroimaging technologies, provide novel approaches for potentially improving the accuracy of detecting impairment due to DUIC. However, if an impairment detection technology relies on capturing how drivers perform on roadside DRE tests when not under the influence of THC, it becomes an impractical solution for implementing in roadside contexts as each individual person may have different baseline levels.

Because of potential varying skill sets for tasks among the population, any novel technology or instrument that claims to be a solution to DUIC impairment detection must be able to do so accurately for each driver in a single trial.

Eye-Tracking

One promising novel technology is the use of non-invasive eye-tracking devices to rapidly assess voluntary and involuntary eye movements. These eye movements characterize temporary neurological impairment due to recent THC use. Existing evidence from research on the efficacy of DREs already shows that involuntary pupil movements and other psychophysical tests used by some DREs are the most effective components of DRE approaches[23]. These devices use state-of-the-art cameras to capture milli-second level eye movements that have been shown to correlate with plasma blood levels of THC [47] and cognitive impairment [48] . A cutoff score would provide a score such that if a driver was over that number, it is highly likely (e.g., 80-90%+) that the individual is driving impaired.

47 Preliminary Eye-Tracking Data as a Nonintrusive Marker for Blood Δ-9-Tetrahydrocannabinol Concentration and Drugged Driving | Cannabis and Cannabinoid Research (liebertpub.com)

48 Long-term effects of cannabis on eye movement control in reading | SpringerLink

Functional Near-Infrared Spectroscopy

Another promising technology combines a popular brief cognitive function task and functional near-infrared spectroscopy (FNIS), which uses near-infrared light to measure real-time hemodynamic (blood) activity in the prefrontal cortex that is characteristic of temporary impairment [49]. A recent study using oral THC showed that the FNIS-enabled procedure was only six minutes in duration and was able to predict impairment from THC with 76% accuracy. While not perfect, this is very promising as DREs estimated impairment accuracy at 67%[50]. Interestingly, the false positive rate was lower for FNIS (10%) relative to DREs (35.9). Although studies using FNIS to assess acute impairment have been done in laboratory settings, portable and easy to use FNIS devices already exist and algorithms that predict whether the FNIS data signals impairment can be readily programmed such that law enforcement officers can receive real-time results on the scene. Given the high accuracy of FNIS, there is considerable promise for this approach to be implemented in real world settings.

Despite the promising potential technological advances in detecting cannabis-related impairment at the roadside, it is important to note that existing research has only provided promising evidence for detecting impairment that may be related to the presence of THC.

> *Often, impaired drivers are under the influence of multiple substances, therefore new impairment detection technologies will need to be able to detect cannabis impairment in those who also used other substances.*

Moreover, until such devices can accurately detect other illicit substances such as opioids, DREs will remain an absolute necessity.

49 Delta-9-tetrahydrocannabinol intoxication is associated with increased prefrontal activation as assessed with functional near-infrared spectroscopy: A report of a potential biomarker of intoxication - ScienceDirect

50 Identification of Δ9-tetrahydrocannabinol (THC) impairment using functional brain imaging | Neuropsychopharmacology (nature.com)

Data Monitoring of All Incidences of Driving While Intoxicated

Section Highlights

- Despite robust data on motor vehicle crashes through NHTSA and other federal sources, data on DUIC and DUID involved crashes and deaths are underreported because testing for cannabis and other drugs is often omitted when drivers test positive for sufficiently high blood alcohol levels.
- There is no federal or state surveillance data that records frequency of instances or days of DUIC or DUID, or that provides rapid public access to data.
- Both data gaps severely limit opportunities to detect notable increases in DUIC and DUID trends, and effectively remove the ability to evaluate the effectiveness of law enforcement, community-based, or other interventions designed to reduce DUIC and DUID.

Perhaps the best available data in the U.S. on cannabis-involved motor vehicle crashes and deaths is from the FARS, the Fatal Analysis Reporting System [51]. Specifically, the FARS provides data on the percentage of drivers who tested positive for substances such as alcohol and THC. However, this data is severely limited by the fact that drivers suspected as driving impaired are often first tested for blood alcohol levels greater than .08%, and if found to be positive, all other substances are not tested. Because the opportunity for THC to be assessed is a byproduct of whether a driver is found to have driven under the influence of alcohol, the degree to which THC is implicated in state and federal crashes is heavily skewed downwards.

Another limitation of FARS and other datasets is they are usually made available to the public one and a half to three years after the data were collected. Particularly in a dynamic landscape of cannabis legalization, such delays in access to data severely limit the capacity of government regulators, community agencies, and law enforcement to adjust and address changes in DUIC and DUID trends. Although there are some state-specific data collection approaches performed, challenges such as limited funding, poor data collection methods, and limited analytical research capacities prevent maximizing the utility of such data collections.

To address these data gaps in DUIC and DUID, federal research and implementation funding is needed above and beyond that of NHTSA. In particular, there is a need to advocate for funding from the National Institute on Drug Abuse (NIDA) and the Substance Abuse Mental Health Services Administration (SAMHSA) who are overwhelmingly the primary federal funders of research and implementation on substance use harm prevention and treatment in the U.S. Unfortunately, when searching NIDA's current grant portfolio for research grants with an explicit focus on DUIC or DUID, there are only 7 funded projects [52]. When combining the total funds for these 7 projects, the total is $2.4 million, which represents 1 in a 78,000th of NIDA's annual funding. Clearly, there is a need to advocate at the federal level for greater research on DUIC and DUID [51].

51 https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

52 RePORT RePORTER (nih.gov)

Policy and Program Approaches Utilized to Reduce DUIC and DUID For All States

Section Highlights

- Conceptualizing DUIC and DUID offenses through a public health lens will reduce DUIC and DUID incidence.
- Programs that deemphasize severity of negative consequences for DUIC and that emphasize screening for Cannabis Use Disorder and referrals to treatment should be prioritized.
- Targeted trainings to criminal justice staff can help facilitate reducing DUIC and DUID through a public health approach.

Addressing the Cycle of DUIC and DUID Offenses Through a Public Health Lens

Most instances of DUIC and DUID are committed by those who meet criteria for cannabis use disorder (CUD) and/or another substance use disorder (SUD), and who serially engage in DUIC or DUID. For example, among those who use cannabis 20-30 days per month, 1 in every 3 engages in DUIC 20-30 days every month. Such individuals therefore exhibit DUIC hundreds of times per year and, represent a disproportionate number of DUIC instances, which if addressed can also result in large scale reductions in DUIC at a population level.. There are several barriers to efforts to reduce the incidence of DUIC and DUID among likely repeat offenders.

First, as shown by Figure 5, such individuals engage in DUIC or DUID in large part because they have developed CUD or SUD, which by definition are characteristic of a loss of control over one's substance use and an inability to value the delayed negative consequences of substance use [53]such as DUID. For example, about half of those with CUD engage in DUIC and vice versa [54], and more frequent and problematic cannabis use are associated with greater deficits in responding to delayed consequences [55]. As shown by Figure 5, the development of CUD or a SUD often represent the start of a maladaptive cycle that increases the risk of DUIC and DUID, supports a habitual pattern of repeat offending, and which rarely changes after involvement in the criminal justice system.

Several recent scientific studies have shown that there are effective approaches to reducing DUIC that can be feasibly implemented. Two notable examples are provided in the sections below.

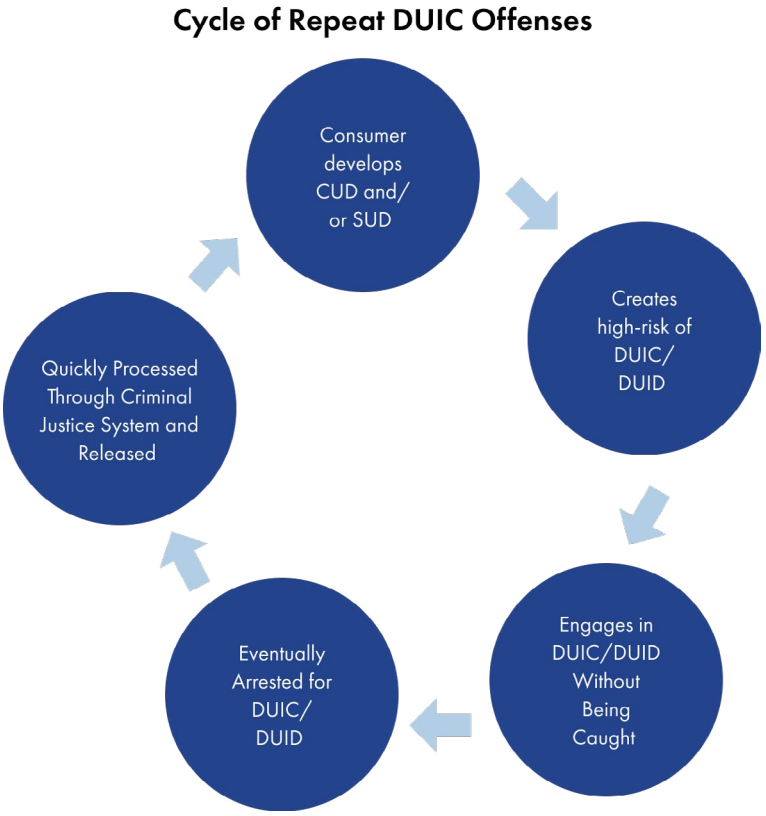
53 Cannabis Use Disorder and Its Treatment | SpringerLink

54 Impact of age at onset of cannabis use on cannabis dependence and driving under the influence in the United States - ScienceDirect

55 Greater delay discounting and cannabis coping motives are associated with more frequent cannabis use in a large sample of adult cannabis users - PMC (nih.gov)

Targeting DUID Recidivism with Swift and Certain Penalties

Figure 6. DUIC Cycle



Policies that are designed to target DUID recidivism without increasing the severity of consequences for DUID have shown strong initial promise. For example, the 24/7 Sobriety program has shown promising initial findings for reducing DUIC/DUID among those who were already arrested for drug impaired driving. The 24/7 Sobriety program is a county opt-in program that facilitates impairment testing twice daily for repeat DUID or DUI offenders. Those who test positive or skip tests receive low severity punishment, but consequences are delivered immediately and with high levels of certainty[56]. The program provides less severe punishment for any future impaired driving instances. However, it increases the probability of punishment and reduces the delay until the consequences are administered which has been shown to reduce county level drug-impaired driving by 9%[57]. Despite showing strong initial effectiveness for reducing DUID, the program does come with challenges such as needing to check oral fluid and urine twice daily, which would require the involvement of others such as Drug and Alcohol consortium staff, and must be cost-effective and easy to implement.

56 24/7 Sobriety Program | RAND

57 A Natural Experiment to Test the Effect of Sanction Certainty and Celerity on Substance-Impaired Driving: North Dakota's 24/7 Sobriety Program | SpringerLink

Training Law Enforcement and Criminal Justice Personnel to Administer Evidence Based Interventions

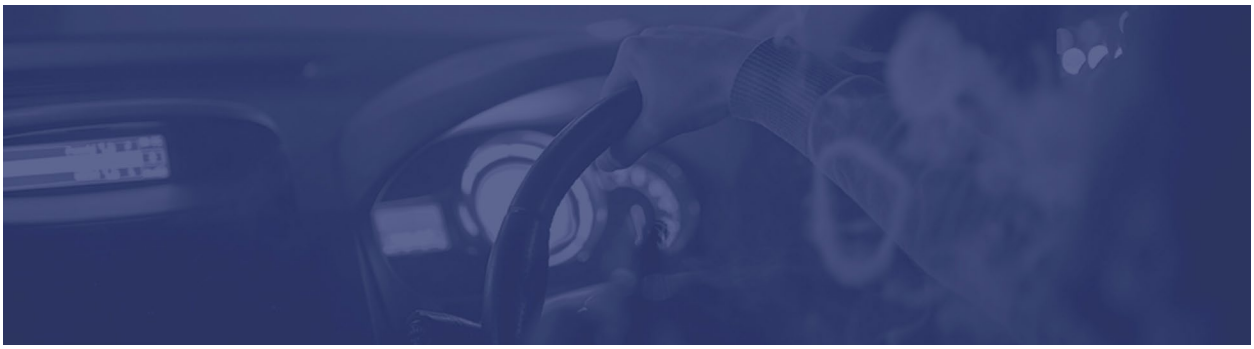
State and local efforts that train law enforcement and employees in the criminal justice system to administer screenings for CUD and other SUDs, and that help properly assess and transition repeat offenders to treatment services, can reduce the likelihood of future DUIC or DUID by reducing the frequency, amount, potency, and severity of cannabis and other substance use. Such approaches are unfortunately rarely incorporated for criminal justice or law enforcement staff involved in DUIC or DUID cases. An exception to this is driving while intoxicated (DWI) courts, which have been shown to help reduce recidivism. However, behavioral health cross-training programs have been helpful for training police and other law enforcement officers to more effectively interact and help those with SUDs and mental health problems [58]. Another opportunity can be gleaned from existing criminal justice environments training staff to implement motivational interviewing [59], which is a brief counseling approach that has been shown to help reduce cannabis and other substance use [60] and that is implemented by some agencies already [61]. Such programs are appealing to many, there is a great need for government funds to develop, implement, and maintain such programs.

58 Delivering Behavioral Health | Bureau of Justice Assistance (ojp.gov)

59 72_2_9_0.pdf (uscourts.gov)

60 Motivational Interviewing for Cannabis Use Disorders: A Systematic Review and Meta-Analysis - Abstract - European Addiction Research 2021, Vol. 27, No. 6 - Karger Publishers

61 https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.eiu.edu%2Fihec%2FMotivational%2520Interviewing%2520for%2520College%2520Police.pptx



Potential Policy and Program Solutions to Reduce DUIC and DUID For States with Legal Cannabis Laws

Section Highlights

- Innovative solutions such as requiring consumption sites to have a traffic safety plan and procedure, prohibiting parking lots and partnering with ride-share companies at cannabis consumption sites should be considered as a part of a larger DUIC/DUID prevention approach.

Traffic Safety Plans for Consumption Sites

A popular trend emerging from the cannabis legalization movement is cannabis consumption sites, locations where consumers over the age of twenty-one may enter a regulated and licensed establishment where it is permissible to consume cannabis onsite. These are often called consumption lounges. Of the eighteen states with adult use cannabis laws, seven include a license type for consumption sites (New York, New Jersey, Nevada, New Mexico, Illinois, Colorado, and California).

Much like alcohol consumption at bars, consuming cannabis at a consumption site poses a potential risk of cannabis-impaired driving. Because of this, statutes, local ordinances, and programmatic guidance can take measures to prevent impaired driving at the advent of this unique license type.

For example, including a traffic safety management plan as a part of the application requirements to become licensed as a consumption lounge may be effective in increasing oversight and responsibility within establishments. This plan may include things like training staff to detect signs of impairment, providing standard operating procedures or scripts in how to prevent a consumer from driving when impairment is detected, and placing signs throughout the establishment reminding consumers they may not drive after they have consumed cannabis. In places that allow public consumption of cannabis, public education campaigns should be prioritized and server training programs similar to those used for alcohol should be prioritized to reduce DUIC.

Discourage Driving and Encourage Rideshare Programs

Some city codes require mandatory parking minimums, where types of establishments are required to have a minimum amount of parking space per occupants or per square footage. In Los Angeles County, bars are required to have one parking spot per every three occupants despite the common goal of discouraging driving after drinking [62]. Prevention of DUIC is ***always*** better than enforcement. Because of the problems with DUIC enforcement discussed in this paper, there may be reasons for states and cities that have legalized a form of onsite consumption to include more stringent policies that promote prevention, particularly in high commerce urban areas. This could include prohibiting cannabis consumption establishments to have parking lots as a means of discouraging driving through limited parking options.

62 https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT22PLZO_DIV6DEST_CH22.112PA_22.112.070REPASP

Additionally, cities and states across the country have encouraged partnerships or the use of rideshare programs such as Lyft or Uber at cannabis consumption lounges, cannabis events, and bars. Rideshare is often cited as a hopeful approach to addressing DUI in general [63]. One such example comes from the Washington Regional Alcohol Program SoberRide®, who has partnered with Lyft to provide free rides home on high-risk DUIC/DUID holidays for rides that cost up to $15 [64,65]. Scientific studies have shown that ride-share programs are associated with significantly reduced rates of DUI [66,67]. For example, a recent scientific study found that even a small increase in the rideshare trips per square mile at key locations in Chicago would decrease the odds of an alcohol-involved crash,[66] further reinforcing the potential utility of subsidizing rideshare programs during holidays in high-risk geographic areas or neighborhoods. Given that Lyft has already demonstrated potential interest in partnering with local government to provide ridesharing services on holidays, the logistics needed to launch such programs may be fairly easily implemented.

63 http://ndaa.org/wp-content/uploads/NDAA_Lyft_FinalReport.pdf

64 SoberRide – WRAP

65 Washington, D.C. - Lyft

66 Association of Rideshare Use With Alcohol-Associated Motor Vehicle Crash Trauma | Addiction Medicine | JAMA Surgery | JAMA Network

67 Rideshare Trips and Alcohol-Involved Motor Vehicle Crashes in Chicago: Journal of Studies on Alcohol and Drugs: Vol 82, No 6 (jsad.com)

Summary of Recommendations

Based on the evidence and findings presented in this white paper, we recommend the following actions:

Perceived Risk Recommendations

Research and impairment evidence-based public messaging systems to effectively discourage driving under the influence of cannabis and other drugs.

Roadside Testing Recommendations

- *Increase funding to research cannabis and multi-substance impairment.*
- *Fund research and development of innovative impairment detection technology to be used by law enforcement in roadside settings.*
- *Pilot-test the most effective impairment detection approaches for DUIC, such as rapid eye-tracking, alongside DREs to provide additional data and to maintain the use of DREs for other forms of DUID.*

Data Monitoring Recommendations

- *Increase state and federal funding specifically for surveillance development and maintenance of data on DUIC, DUID, motor vehicle accidents, and screening and treatment rates.*

Potential Policy and Program Recommendations

- *Increase funding to train and hire roadside law enforcement and DREs to perform evidence-based brief interventions. Increase screening for SUDs and mental health disorders using an instrument validated among DUI offenders, and warm handoffs from the criminal justice system to treatment services and relevant health professionals.*

- *Pilot-test the most effective impairment detection approaches for DUIC, such as rapid eye-tracking and functional near-infrared spectroscopy, alongside DREs and other technologies like oral fluid and blood testing to provide additional data and to maintain the use of DREs for other forms of DUID.*

- *Ensure that states and localities that permit cannabis consumption sites incorporate strategies to effectively prevent DUIC to include a traffic safety plan, public education and public/private rideshare campaigns.*