

CANNABIS: MOVING FORWARD, PROTECTING HEALTH

EXECUTIVE SUMMARY

Why this book

While cannabis remains an illegal drug at the federal level in the U.S., states are in the midst of significant experiments in cannabis medicalization, decriminalization and legalization. Without taking a position in favor of or against cannabis legalization, this book aims to fill the vacuum that currently exists in public health-driven guidance regarding how states that choose to legalize can do so while still safeguarding public health and safety.

A public health perspective

Drawing on research and experience from two other legal drugs, alcohol and tobacco, as well as cannabis regulatory efforts in other countries, the book provides a public health perspective on cannabis policy, using the Institute of Medicine's definition of the mission of public health as "fulfilling society's interest in assuring conditions in which people can be healthy." To this end, the book identifies five public health goals for cannabis regulation:

- Preventing youth cannabis use;
- Controlling the prevalence, frequency, and intensity of use;
- Reducing cannabis-related harms to individuals and communities;
- Ensuring accurate information about the risks of cannabis use; and
- Minimizing the influence of a profit-driven cannabis industry in setting cannabis policies.

Cannabis use and health

Experience with cannabis legalization thus far suggests that adult cannabis use tends to increase. The effect on youth cannabis use is less clear, although youth have become less likely to view cannabis use as risky. Among adults, cannabis use is concentrated among daily or near-daily users, who account for as much as 80% of consumption, 71% of days of use, and 60% of the dollars spent on cannabis.

A 2017 comprehensive review of the literature on cannabis and health conducted by the National Academy of Sciences, Engineering and Medicine (NASEM) concluded that there was substantial research evidence in support of the effectiveness of cannabis and cannabinoids in reducing chemotherapy-induced nausea, symptoms of chronic pain, multiple sclerosis-related spasticity, and seizure frequency in two rare forms of epilepsy. While there are myriad other conditions that state medical cannabis programs have listed as approved indications, evidence in support of those uses ranges from moderate to non-existent.

Cannabis-related harms include increased risk of motor vehicle crashes, development of schizophrenia and other psychoses, respiratory symptoms such as coughing, wheezing or phlegm, and lower birth weight of offspring. Early initiation of use and frequent use during adolescence are associated with impaired cognitive functioning and school performance, cannabis dependence, depression, psychotic symptoms, anxiety, and suicide attempts. Cannabis use disorder is a diagnosable psychiatric condition which affects approximately 22% of users, while 13% will develop cannabis dependence. Studies of whether cannabis use is a substitute or a complement to use of other drugs have found conflicting results.

The changing cannabis product mix

The changing mix and nature of cannabis products on the U.S. market complicates the task of cannabis regulation. Health effects and outcomes of cannabis vary based on the component of the plant, its THC content, how it was processed, and the route of ingestion. Regarding the latter, while smoking remains the most common method, vaping, dabbing and consuming cannabis edibles are all increasing. States have primary responsibility for establishing quality standards, testing for THC content, determining and setting limits on the use of pesticides and chemicals in growing and processing cannabis, and supervising laboratories to assist them with these tasks.

Increased selling of cannabis flowers rather than leaves, a shift from pollinated to unpollinated female plants, advanced growing techniques, and selective breeding have contributed to a steady increase in the potency of cannabis, now estimated to be as much as five times the strength available in the 1960s. While the industry has increased its sophistication in the use of the plant, legalization has otherwise moved far ahead of scientific knowledge and testing of cannabis in the various forms it is available today.

Building a coherent regulatory system

Cannabis regulatory system options range from allowing home production only to fully commercializing cannabis production and supply. Decades of cannabis prohibition have left in place significant illegal markets, and new and regulated legal markets will not replace these overnight.

The measure of the effectiveness of an overall cannabis regulatory system will be how well it achieves the five public health goals listed above. The book identifies six possible regulatory systems (although other countries have implemented hybrids of these types):

- **Home cultivation only:** Adults may cultivate up to a maximum number or plants (and may in some cases give a certain amount to others).
- **Cannabis social collectives (CSCs) or co-ops:** Individuals may cultivate up to a maximum number of plants and can share (either give or sell at cost) with other club members.
- **Government wholesale and/or retail monopolies:** A single government agency is the sole wholesaler and/or retailer of cannabis products cultivated and/or processed by many producers.
- **Public authority:** Similar to a monopoly, but the state government creates a single, independent, special-purpose public authority that is the sole purchaser and distributor of cannabis. May include retail as well.
- **Licensed regulatory system, public-health focused:** Competitive private market, subject to laws and regulations, public health and safety goals set and regulated by state department of health.
- **Licensed regulatory system, commercial:** Competitive private market, subject to laws and regulations; normally overseen by a cannabis control agency placed in an existing government department.

Cannabis regulators can learn from the experience of regulating alcohol and tobacco, where establishment of independent regulated tiers of the industry (i.e. mandating the separation of production and processing from wholesaling and from retailing, to prevent vertical integration of the industry), enabling local control, keeping cannabis businesses small and diverse, and taking steps to

prevent cannabis industry influence in policy making. These include restricting industry members from sitting on any government body, committee, or advisory group; and separating administrative authority (e.g., the power to grant licenses) from enforcement of restrictions regarding those licenses, to prevent regulatory capture.

State should orient their cannabis regulatory systems to achieve the five public health goals listed above. State-run cannabis monopolies, public authorities, or public-health oriented licensing regulatory systems will provide states the greatest control over distribution, sales and promotion of cannabis products, which is essential to achieving public health goals.

Systems that start more conservatively, giving public health concerns as much weight as economic interests, can always expand or liberalize in the future; proceeding in the opposite direction is likely to be much more difficult, since commercial interests will likely oppose market restrictions.

Cannabis regulation and social justice

Decades of racially-biased drug laws and enforcement practices have disproportionately affected poor—and particularly Black and Latinx—communities, and contributed to the U.S. having the largest penal population in the world. While decriminalization and expungement could help to mitigate these social injustices, states have also attempted to address them through how they structure legalization of cannabis. Well-intentioned state programs that promote entry into the cannabis industry by members of groups harmed by cannabis prohibition may have the unintended effect of concentrating cannabis investment and retail outlets in poor communities. A better approach from a public health perspective would be to reinvest cannabis revenues in affected communities through support of non-cannabis businesses and services.

Cannabis marketing regulation

The marketing taxonomy of product, promotion, place, and price provides a useful way of structuring key specific elements of a public health approach to cannabis regulation, beyond the creation of an overall regulatory system.

Product

With rapid product-related changes occurring, states need to establish and continually reevaluate regulatory environments as new products and health data emerge. Preventing high-risk consumption should be a priority. Policies to achieve this include prohibiting concentrates; establishing a THC ceiling no higher than 15%; regulating and making high-potency products available separately if they are permitted, for instance only through government-controlled stores with additional purchasing and safety standards; banning edibles and drinkables, or any products containing alcohol or tobacco; and establishing minimum CBD-to-THC ratios with the flexibility to alter these as additional research emerges.

Additional policies protective of youth include a ban on sale of edibles (if permitted at all) within 1500 feet of schools, playgrounds and other sensitive land uses; prohibiting giveaways of products or branded items; and banning any products deemed appealing to children.

Cannabis products should employ childproof or child-resistant packaging; require rotating and specific health and safety warnings covering at least 30% and ideally 50% or more of the package's principal display area; provide basic consumer information such as standard dosage for adults, ingredients, THC content, THC-to-CBD ratio if relevant, any pesticides used in cultivation, and an expiration date.

Marketing and promotion

Marketing and promotion encompass a range of activities, including direct advertising (e.g., broadcast and print media, billboards, storefront signs, point-of-sale items, and online social media) as well as indirect advertising such as branded merchandise and sponsorship of events, product placements, influencer marketing, direct mail, in-cinema advertising, and social responsibility programs and messages.

Multiple studies have found that alcohol and tobacco marketing influence youth consumption; cannabis marketers have been particularly active in digital and social media, and early research indicates that this marketing is associated with youth cannabis use.

U.S. Supreme Court decisions as well as state constitutional provisions protecting commercial speech make regulation of cannabis advertising challenging, and underscore the importance of "nonspeech" measures that can mitigate possible harmful effects of cannabis marketing. Such measures include removing the tax deductibility of cannabis marketing expenses, or supporting counter-advertising which has been effective in reducing tobacco use.

Some regulatory systems incentivize advertising and marketing more than others. If substantial marketing activity is likely, states should draw on lessons from alcohol and tobacco regulation to reduce and restrict cannabis marketing as much as possible. In addition, marketing restrictions need to be supported by robust and well-resourced systems for monitoring marketing activity and enforcing the restrictions.

Physical availability ("place")

The physical availability of cannabis – how easy and convenient it is to obtain it – is a significant determinant of cannabis use and associated problems. The many facets of physical availability include type, number, and location of outlets; outlet retail practices, including days and hours of sale and use of security personnel; and accessibility to youth.

Historically, alcohol and tobacco outlets have clustered in poor communities and communities of color, and there are indications that cannabis outlets may be doing the same. Research has found more cannabis outlets to be associated with increased cannabis consumption and harms, along with increases in crime, either in the immediate vicinity of the stores or in nearby or adjacent areas.

Local control is an important element of an effective, public health-oriented cannabis regulatory system. States and localities can use zoning restrictions, proximity buffers, and density controls to influence the placement and density of cannabis outlets. Other regulatory options include limiting days and hours of sale, mandating use of security personnel, and banning sales to persons under 21, which all the states that have legalized cannabis for adult non-medical use thus far have done. Sanctions for underage purchasers should be civil and not criminal, with penalties on par with those for adult violations for possessing cannabis over the maximum allowed amount.

Given historic disparities in the placement of alcohol and tobacco outlets, it is important that limits on cannabis availability be accomplished in ways that equitably distribute cannabis businesses throughout a community.

Price

Cannabis consumers, including youth and regular users, are sensitive to price; similar to alcohol and tobacco, cannabis price increases are likely to decrease consumption. Cannabis may be taxed by weight, by price, or by potency. No matter which approach states choose, effective cannabis taxation requires robust administration and enforcement.

Other options for influencing cannabis prices include local taxes, minimum unit pricing, banning price discounts, such as coupons, price promotions, and bulk purchases at discount. These approaches should be considered in addition to robust taxation.

Because cannabis prices are likely to drop following legalization, if legalization occurs, cannabis taxes should be set high enough to counter this. Taxes set based on potency are the most likely to discourage excessive consumption and should regularly be adjusted to account for inflation. Taxation levels and regimes should be flexible to adjust to changing patterns of use, product mixes, and laboratory and testing technologies and research on the effects of potency.

Non-tax steps can also support using pricing as a public health measure. These include minimum pricing, minimum markups, and tax floor policies, as well as bans on price promotions, bulk purchases, couponing, and bundling of products with services.

Cannabis taxes should be set at a level that generates sufficient revenue to support both a robust public health-oriented cannabis control agency, and state and local as well as mass-reach interventions, substance use prevention, cessation and treatment, counter-marketing, surveillance, and evaluation.

States may also use cannabis tax revenues to mitigate community-level damage from the War on Drugs and promote wealth creation in affected communities, provided this is not tied to increasing cannabis businesses in those communities.

Cannabis enforcement, monitoring, and surveillance

An effective cannabis regulatory system will need to be supported by robust enforcement and informed by ongoing monitoring and evaluation. Existing national surveys need more detailed questions about the mode, frequency, and quantity of cannabis consumption.

There is a critical need for the establishment of a research-based standard for impairment from driving under the influence of cannabis, as well as development of a validated standardized field sobriety test for cannabis DUI.

Given the racist history of drug laws and their enforcement, state licensing, enforcement and adjudication systems should be easily accessible to researchers and the public at large, and should include race and ethnicity of persons involved in cannabis businesses. Efforts to use cannabis revenues to promote social equity should also be carefully monitored and evaluated for effectiveness.

Finally, enforcement operations and priorities should be transparent and accountable to the public, and should not be influenced by efforts to increase cannabis revenues, or by cannabis industry pressure.

Conclusion

Historical and current cannabis policies have been influenced by a range of factors, including racism, xenophobia, periodic drug panics, and, in the current era, commercial interests. Taking a public health approach to cannabis regulation offers the possibility of a fresh start, informed by research and experience from decades of experience with alcohol and tobacco, and the experiences of other countries with cannabis. Such an approach should be characterized by the courage to experiment and to follow public health data and science, animated by a commitment to social justice and addressing the inequities created by the policies of the past, and founded in the faith that we can do a better job of creating cannabis policies that facilitate a safe and balanced life for all.

FACT SHEET: CANNABIS PRODUCTS

Product types

- Cannabis users have access to a changing panoply of products made from cannabis plants, and they consume these products in different ways. Some of these products and methods for ingestion include:
 - **Concentrates** (e.g., kief, dry sift hash, etc.): Cannabis products processed to maximize THC while removing excess plant material and other impurities. Concentrates can have THC levels as high as 70 to 90%.^{1,2}
 - **Crystals**: THC crystals now exist as a type of concentrate and can be up to 100% THC.³
 - **Dabbing**: One method for using concentrates, in which a user places a cannabis concentrate on a heated water-pipe attachment (known as a nail); the concentrate vaporizes and the user immediately inhales the vapor through a water-pipe device known as a dab rig.²
 - **Edibles/Drinkables** (e.g., candies, baked goods, beverages, etc.): Many of these products contain multiple servings. For example, a cookie may be labeled as containing multiple servings but be packaged and marketed as if it were a single serving.
 - **Extracts** (e.g., butane hash oil, carbon dioxide wax, shatter, etc.): A type of concentrate that uses solvents to draw out desired substances from the plant.
 - **Smoking Combustible Materials** (e.g., joints, blunts, etc.): Inhalation is the most common method of consumption, at least nationally. THC levels can range from less than 1% to approximately 30% in most combustible materials (e.g., dried buds) used for smoking,⁴⁻⁷ with average THC levels between 9% and 20%.⁷⁻⁹
 - **Tinctures**: Alcohol-based cannabis extracts that are normally placed under the tongue or directly in the mouth. Tinctures can also be blended with food and beverages.
 - **Vaporizing or Vaping** (through e-cigarettes, vape pens, vape mods): Vaping devices heat a liquid and deliver cannabinoids via vapor. Vaporizers emit minimal odor, rendering public cannabis use less detectable. Vaping cartridges lack standardized levels of THC potency. A non-peer-reviewed analysis of 19 samples from 13 popular cartridge brands found that THC ranged from 14% to 71%.¹⁰



Changing modes of consumption

- The limited data available suggest that both youth and adults are changing their modes of consumption as cannabis becomes more legally available,¹¹ with a higher percentage of users dabbing, vaping, and consuming edibles.^{12,13}
- Adolescent modes of cannabis consumption appear to be shifting toward more potent products and delivery methods, which may pose more significant harms.¹⁴
- Analysis of Monitoring the Future data gathered by the National Institute on Drug Abuse from 2015 to 2018 found that among 12th-grade past-year cannabis users, smoking prevalence was decreasing and vaping and edible use was on the rise.¹⁵

Changes in potency

- Increased selling of cannabis flowers rather than leaves, a shift from pollinated to unpollinated female plants, advanced growing techniques, and selective breeding have contributed to a steady increase in the potency of cannabis.
- Average potency of cannabis products seized by the Drug Enforcement Agency (DEA) rose from approximately 4% in 1995 to 12% in 2014.¹⁶
- By 2017, average THC concentration of seized DEA products rose to 17.1%.¹⁷
- A systematic review and meta-analysis of studies from seven countries published between 1970 and 2017 found THC concentrations in herbal cannabis increased by 0.29% on average each year.¹⁸

Product-related health concerns

- Many cannabis products lack basic consumer information, such as reliable estimates of portion sizes, warning messages, source information, ingredient lists, THC content, pesticide use, or an expiration date.
- Limited research available suggests that users are likely to consume higher doses of THC, sometimes unintentionally, when using higher-potency products.^{19,20}
- These products appear to appeal to heavy users seeking high levels of intoxication, potentially increasing both the frequency and the intensity of use by this high-risk cohort.
- Higher-potency products may be particularly dangerous for young or inexperienced users, for whom use may lead to more dependence and harms, including emergency room visits and motor vehicle crash fatalities.^{21,22,23}
- Use of pesticides in cannabis cultivation can put both workers and consumers at risk, and in the absence of federal regulation, states have been uneven regarding protections put in place.
- Cannabis cultivation can also create hazardous wastes, and require high levels of water and energy, with effects on the environment and climate change largely unstudied and unknown.

RECOMMENDATIONS

With rapid product-related changes occurring, states need to establish and continually reevaluate regulatory environments as new products and health data emerge. Policies to consider include:

Products

- Prohibiting concentrates.
- Prohibiting any products that contain alcohol or tobacco.
- Establishing a THC ceiling of 15%.
- If high-potency products are allowed, regulating and making them available separately, for instance through government-controlled stores with additional purchasing requirements and safety standards.
- Establishing a minimum CBD-to-THC ratio with flexibility to alter this as research emerges.
- Banning edibles and drinkables, or if permitted, following Canada's example and phasing in the sale of edibles after legalization of cannabis for nonmedical use if they are not already available.
- If edibles are allowed, prohibiting their sale in outlets within 1,500 feet of schools, a more stringent prohibition than for outlets that do not sell edibles.
- Prohibiting any product deemed to be "appealing to children."
- Prohibiting free giveaways of products or branded items.

Packaging

- Requiring childproof or child-resistant packaging.
- Requiring on all product packaging rotating and specific health and safety warnings that cover at least 30% and ideally 50% or more of a package's principal display area.
- Requiring plain packaging (i.e., no branding) and permitting inclusion of strain name, amounts of THC and CBD, and warnings.
- Developing a standardized dosage for adults and putting recommended dosage information (i.e., serving size) on the label.
- Requiring clearly visible labels that list the percent concentration and THC-to-CBD ratio.

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FACT SHEET: CANNABIS REGULATORY SYSTEMS

Public health goals

A public health approach to cannabis regulation will prioritize five goals:

1. Preventing youth cannabis use;
2. Controlling the prevalence, frequency, and intensity of cannabis use;
3. Reducing cannabis-related harms to individuals and communities;
4. Ensuring accurate information about the risks of cannabis use; and
5. Minimizing the influence of the cannabis industry and the profit motive in setting cannabis policies.

Regulatory system options

- Cannabis regulatory system options range from allowing home production only to fully commercializing cannabis production and supply.
- Decades of cannabis prohibition have left in place significant illegal markets, and new and regulated legal markets will not replace these overnight.
- Systems that start more conservatively, giving public health concerns as much weight as economic interests, can always expand or liberalize in the future; going in the opposite direction will likely be much more difficult.
- States may consider six regulatory system options:
 - **Home cultivation only:** Adults may cultivate up to a maximum number of plants (and may in some cases give a certain amount to others).
 - **Cannabis social collectives (CSCs) or co-ops:** Individuals may cultivate up to a maximum number of plants and can share (either give or sell at cost) with other club members.
 - **Government wholesale and/or retail monopolies:** A single government agency is the sole wholesaler and/or retailer of cannabis products cultivated and/or processed by many producers.
 - **Public authority:** Similar to a monopoly, but the state government creates a single, independent, special-purpose public authority that is the sole purchaser and distributor of cannabis. May include retail as well.
 - **Licensed regulatory system, public-health focused:** Competitive private market, subject to laws and regulations, public health and safety goals set and regulated by state department of health.
 - **Licensed regulatory system, commercial:** Competitive private market, subject to laws and regulations; normally overseen by a cannabis control agency placed in an existing government department.
- Other countries have implemented hybrid models that incorporate features of one or more of the models described above.

Key lessons from alcohol and tobacco regulation

- A key test of the public health orientation of cannabis regulatory systems lies in how each of the systems above implements the following lessons from alcohol and tobacco regulation:
 - Establishing independent regulated tiers (production/cultivation, product processing/packaging, wholesaling/distribution, and retailing);

- Enabling local control;
- Keeping businesses small and diverse; and
- Taking steps to prevent industry influence, including:
 - a. Restricting industry members from sitting on any government body, committee, or advisory group;
 - b. Separating administrative authority (e.g., the power to grant licenses) from enforcement of actions regarding those licenses, to prevent regulatory capture.

A full discussion of these systems, including their strengths and weaknesses from a public health perspective, are available in Chapter 4.

RECOMMENDATIONS

States considering a non-medical cannabis regulatory system should:

- Move slowly. Take a cautious approach to developing a regulatory system, knowing that regulations can be relaxed over time if public health concerns are mitigated.
- Put protections in place to reduce profit motives by the cannabis industry and to keep businesses small, or provide cannabis without creating a private cannabis industry.
- Consider co-ops or CSCs that remove the profit motive but allow cannabis users to access the product.
- Adopt some version of the large-scale regulatory systems most conducive to addressing public health concerns; a wholesale and retail monopoly, a wholesale-only monopoly, or a public authority with similar powers.
- If adopting a licensing system, make it public health-focused and adopt measures that
 - Guard against regulatory capture;
 - Prohibit vertical integration;
 - Prevent industry influence over policy decisions;
 - Keep businesses small and diverse; and
 - Permit local jurisdictions to place additional requirements on cannabis businesses.

FACT SHEET: CANNABIS AND SOCIAL JUSTICE

Racial Inequalities in Enforcement of Cannabis Laws

- Currently, there are hundreds of thousands of cannabis-related arrests each year in the United States, taking place both in states that have legalized cannabis for adult non-medical use, and in states that have not done so.
- Draconian laws regarding drug use – including cannabis – have contributed to the United States having the largest penal population in the world.
- Cannabis law enforcement, both before and after legalization, disproportionately affects poor – and particularly Black and Latino – communities, with long-term effects on both individuals and communities.
- In 2010, Black people were 3.73 times more likely to be arrested for cannabis possession than White people, and by 2018, Blacks were still 3.64 times more likely than White people to be arrested for cannabis possession.¹
- Concerns about these disproportionate effects have been a significant driver of campaigns to legalize adult nonmedical cannabis use.

Decriminalization and Expungement

- Decriminalizing arrests for cannabis use and possession (reducing or eliminating incarceration-related penalties) can address this injustice, without full legalization of nonmedical cannabis for commercial sales.
- As of 2020, 27 states and the District of Columbia had decriminalized small amounts of cannabis intended for personal use.²
- Analysis of data from five states that decriminalized cannabis showed a 75% reduction in the rate of cannabis possession arrests for youth and similar effects on adult arrests between 2008 and 2014, without any apparent impact on rates of cannabis use in the past thirty days.³
- As of 2020, at least 23 states and the District of Columbia had enacted laws facilitating cannabis conviction expungement and other forms of record relief, such as sealing and set-aside, to mitigate some of the adverse effects criminal records can have on individuals.⁴

Social Equity Programs

- Incentivizing and facilitating participation of individuals and communities disproportionately affected by cannabis prohibition – through eligibility criteria, targeted training and technical assistance on license applications, and in some cases reduced application and license fees – is an approach some states have taken to redressing these inequities.
- These programs have faced significant implementation hurdles, including funding challenges and logistical barriers, and while it may be too early fully assess their success, early data indicate that they have not significantly impacted the diversity of cannabis business owners.
- While long-term outcomes of these approaches are not known. If they result in additional cannabis outlets in socially disadvantaged communities, the attendant harms may not be worth the anticipated economic benefits.
- Another option would be to require reinvestment of cannabis revenues in disproportionately affected neighborhoods in evidence-based wealth-building approaches no connected with the cannabis business.

RECOMMENDATIONS

- To continue to reduce high arrest rates for cannabis use, states should decriminalize cannabis possession for both adults and youth.
- States should establish expungement programs for previous cannabis-related criminal convictions, place the burden of the expungement process on the criminal justice system and not on previously convicted individuals.
- Disparities in police practices and in arrests of Black and Latino persons should be addressed in and of themselves and separately from changes in cannabis policy.
- Social equity programs promoting cannabis industry involvement by members of communities disproportionately affected by prior punitive approaches to cannabis regulation should be carefully examined for possible unintended adverse consequences.
- Jurisdictions should explore options for reinvesting cannabis revenue into socially disadvantaged communities without linking these initiatives to cannabis businesses.

A full discussion of these issues and the recommendations are available in Chapter 5.

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FACT SHEET: CANNABIS MARKETING AND PROMOTION

- Definition: Advertising and promotions include direct advertising (e.g., broadcast and print media, billboards, storefront signs, point-of-sale items, and online social media) as well as indirect advertising such as branded merchandise and sponsorship of events, product placements, influencer marketing, direct mail, in-cinema advertising, and social responsibility programs and messages.
- Cannabis marketers are particularly active in digital and social media. Early research indicates that cannabis marketing is associated with youth use.¹⁻³ In addition, a significant percentage of cannabis retailers make health claims that have not been scientifically substantiated.⁴
- Voluntary advertising codes are generally not effective.
- Whatever the mechanisms used to regulate cannabis marketing, putting standards into law and regulations is necessary.
- To ensure compliance, there needs to be adequate funding monitoring and enforcement of those standards.
- States that have already legalized nonmedical cannabis have established a variety of marketing restrictions that generally fall into two principal categories: restricting content and regulating placement. Examples of regulations include:
 - No cannabis outdoor advertisements in places where adults 21 and older are less than a certain percentage of the audience (see recommendations for suggested percentage)
 - No cannabis outdoor advertisements within 1,000 feet of a school, church, playground, or other sensitive use location
 - Restrictions or bans on signage at retail locations
 - Bans on event sponsorships
 - Limits on the use of social media
- Research from other areas of public health has shown that well designed and well-funded public awareness campaigns using the mass media can result in changes in health behavior at the population level if such campaigns occur in the context of complementary, community-wide interventions.⁵ These approaches should be considered for cannabis control agencies.

RECOMMENDATIONS

- If the regulatory system chosen by a state incentivizes advertising, the most effective regulatory response to cannabis marketing will as comprehensive a ban as possible.
- Short of an outright ban, restrictions on marketing content and placement should focus on what is allowed instead of what is prohibited.
- Bans on problematic products or pricing practices will obviate the need to restrict advertising related to them.
- Regarding exposure, if advertising is permitted, it should be limited to media and events where audiences contain 15% or fewer youth under 21, roughly the percentage of 12- to 20-year-olds in the general population.
- Health-related marketing claims not conclusively supported by scientific evidence should be banned, and a state cannabis scientific advisory board established to review the scientific literature in order to approve/reject health claims.
- A compliance unit should be adequately funded within a cannabis control agency to oversee marketing and advertising compliance.
- A review board comprising public health officials and substance abuse prevention professionals should review and approve all cannabis advertising for content and exposure.

- There should be strong administrative penalties for violations of marketing restrictions.

A full discussion of these issues and recommendations are available in Chapter 6.

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FACT SHEET: CANNABIS AND PHYSICAL AVAILABILITY

- Cannabis availability – how easy and convenient it is to obtain cannabis – is a significant determinant of cannabis use and associated problems.
- While the cannabis industry is still very much under development, a number of studies have found cannabis outlets tending to cluster in poor and minority communities.¹⁻⁴
- A large body of research has documented relationships between alcohol outlet density and various harms, including violence, motor vehicle crashes, and underage use. Research on the relationship between cannabis outlet density and harms is preliminary and more mixed.
- Until there is a clear association between harms and cannabis outlets, policymakers should consider that it is easier to limit outlet density before large numbers of retailers have established themselves than to reduce density and the number of outlets later.
- States and localities have three categories of land use regulations they can use to control the placement and density of cannabis outlets:
 - zoning restrictions (e.g., commercial versus residential),
 - proximity buffers (e.g., no cannabis outlets within 1,000 feet of sensitive land uses), and
 - density controls.
- There are examples of states using all three options in regulating cannabis businesses.
- In addition, experience from the alcohol field suggests that greater local control provides public health with more leverage to put in place protective measures (see Fact Sheet on Cannabis Regulatory Systems or Chapter 4).
- Other outlet retail practices, such as limiting days and hours of sale, mandating use of security personnel, and restricting accessibility to youth, are important to consider.
- To date, all states have legalized cannabis for nonmedical use have established a minimum legal purchase and consumption age of 21, and many states restrict access to cannabis retail environments to persons age 21 and above.
- Regulators also need to consider restrictions on allowing cannabis consumption on site, as some states have seen a proliferation of cannabis lounges, cannabis tour or party buses, and retailers with on-site sampling, as well as special events, concerts, or festivals with a cannabis focus.
- Direct-to-consumer sales and delivery raise public health concerns because of their potential to circumvent local decisions about cannabis availability and to increase availability to youth. These practices include home delivery; internet sales, third-person delivery, and delivery by mail.

RECOMMENDATIONS

- Jurisdictions should place population-based caps on the number of cannabis outlets and require at least a 1,000-foot buffer zone from sensitive land uses (e.g., schools, playgrounds, churches and other religious facilities, substance abuse treatment facilities, etc.).
- States should support the ability of local jurisdictions to govern cannabis availability within their borders. This includes permitting local governments to use zoning powers, set proximity buffers, and establish controls over outlet density.
- Any zoning restrictions and proximity buffers should equitably distribute cannabis businesses throughout a community.
- Implementation of distance requirements from schools and other sensitive areas must be done in ways that ensure that businesses do not end up predominantly located in poor communities and communities of color.
- Minimum purchase age laws should bar anyone under 21 from purchasing cannabis and explicitly state that using a false ID to purchase cannabis is illegal.

- Sanctions for underage purchasers should be civil and not criminal, with penalties on par with those for adult violations for possessing cannabis over the maximum allowed amount, and with the primary enforcement focus on outlets that sell to underage persons rather than the underage persons themselves.
- States should ban home delivery of nonmedical cannabis altogether to help keep it out of the hands of young people. If states do not prohibit it, they should give localities the option to do so, especially if they have already banned cannabis retail outlets within their borders.
- No one under age 21 should be permitted to work in cannabis-related businesses, and no one under age 21 should be allowed to enter a cannabis-selling establishment.

A full discussion of these issues and recommendations are available in Chapter 7.

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FACT SHEET: CANNABIS TAXES AND PRICES

- A public health approach to cannabis taxation and pricing will seek to achieve the following public health goals:
 - Preventing youth cannabis use;
 - Controlling the prevalence, frequency, and intensity of cannabis use; and
 - Reducing cannabis-related harms to individuals and communities.
- Cannabis consumers, including youth and regular users, are sensitive to price; similar to alcohol and tobacco, price increases are likely to decrease consumption.
- Commonly considered taxation options for cannabis include taxing by weight, potency, or price.
 - Taxing by weight is relatively easier to administer, but it may diminish options for using prices to affect the intensity of cannabis use.
 - Taxation by price is also relatively easy to administer, but when pretax prices go down, so does the tax, leading to an overall price decrease for consumers and a likely increase in consumption.
 - Taxing by potency generally means taxing by THC content (e.g., by milligram of THC, by product category, by potency range, or a hybrid model) and could significantly help achieve the public health goal of preventing cannabis-related harms; however, it may be more difficult to administer and enforce.
 - An effective cannabis taxation system requires robust administration and enforcement.
 - Other options for influencing cannabis prices include local taxes, minimum unit pricing, banning price discounts, such as coupons, price promotions, and bulk purchases at discount. These approaches should be considered in addition to robust taxation.

RECOMMENDATIONS

- Cannabis tax regimes need to be flexible in order to respond to and influence patterns of initiation and consumption.
- Cannabis taxes should be set high enough to increase prices post-legalization, more than countering the drop in price likely to occur in the wake of legalization.
- Specific taxes should be set based on potency, to discourage excessive consumption. Potency ranges may be set and adjusted as laboratory and testing technologies and research on the effects of potency evolve.
- Specific taxes on cannabis should adjust automatically to account for inflation.
- Minimum pricing, minimum markup, and tax floor policies should be implemented.
- Price promotions, bulk purchases, coupons, and bundling of products with services should be prohibited.
- The tax administration structure should be efficient and facilitate ease of tax collection, possibly by collecting taxes at the producer, cultivator, or wholesale level instead of at the retail level. The structure should also allow for flexibility, free from industry influence, to adapt tax rates as more information becomes available on product-related harms.
- Cannabis taxes should generate sufficient revenue to provide adequate funding for a robust cannabis control agency with the capacity to evaluate the health and safety impact of legalization of non-medical cannabis.
- A portion of cannabis tax revenues should also statutorily be placed in a fund to support state and local as well as mass-reach interventions, substance use prevention, cessation and treatment, counter-marketing, surveillance, and evaluation.

- If taxes are sufficiently high, revenues from them may be used to mitigate community-level damage from the War on Drugs, provided this is not tied to increasing cannabis businesses in those communities.

A full discussion of these issues and recommendations are available in Chapter 8.

FACT SHEET: CANNABIS ENFORCEMENT, MONITORING, AND SURVEILLANCE

- Regulatory systems are only as good as their implementation, and enforcement and evaluation are critical elements of implementation.
- Emerging cannabis regulatory regimes require both data collection and effective enforcement systems if they are to be amenable to evaluation over time.
- Existing national surveys of adult and youth drug use need to incorporate additional questions about mode, frequency, and quantity of cannabis consumption.
- Scientifically valid evaluation of the impact of legalization of cannabis for nonmedical use requires a detailed national database that tracks policies and changes over time.
- States have required seed-to-sale tracking systems for cannabis production and sales. The information in these systems is not consistent across states, and researchers often are unable to access the information needed for monitoring and surveillance.
- Without evidence-based levels of cannabis impairment and accurate and reliable testing to determine them, cannabis-impaired driving laws will be difficult to enforce.

RECOMMENDATIONS

- Existing national surveys, in consultation with leading cannabis researchers, should add questions about mode, frequency, and quantity of cannabis consumption.
- The federal government should fund the creation of a detailed legal database tracking policies and changes over time, again in consultation with leading cannabis policy researchers.
- State licensing, enforcement, and adjudication data systems should be made easily accessible to researchers and the public at large. These systems should include race and ethnicity of persons involved in cannabis businesses as well as track outcomes from social equity initiatives. The federal government should fund a centralized database of this information from all states tracking information over time.
- States should require publicly available seed-to-sale tracking systems for cannabis production and sales, with data as consistent as possible across states.
- States should adopt NHTSA's suggested records systems changes and additions, including creating separate offenses for cannabis-impaired and alcohol-impaired driving.
- Research into effective means of determining and measuring the causal role of cannabis use in traffic crashes should be a high priority and should include an examination of alcohol and drug use across all crashes to identify co-use or substitution effects.
- A key focus of this research should be establishment of an impairment standard for driving under the influence of cannabis and development of a validated standardized field sobriety test to assess driving under the influence of cannabis.

ENFORCEMENT RECOMMENDATIONS

- Provide sufficient funding, resources, and expertise for enforcement of cannabis laws.
- Implement policies and practices to ensure that enforcement operations and priorities are not influenced by revenue or cannabis industry pressures.
- Establish clear enforcement guidelines and protocols to ensure fair and consistent enforcement.
- Law enforcement should focus on sales to minors by retailers and establish administrative penalties that increase from fines to license suspension and revocation, with a window of no less than three years for consideration of subsequent violations.

- State and local law enforcement agencies should develop protocols and have adequate resources and training to conduct frequent and regular underage compliance checks of cannabis retailers for sales of cannabis to anyone under age 21.
- A comprehensive records management system that allows researchers and the public to track enforcement actions (e.g., number of complaints, investigations, verbal or written warnings, citations) and administrative adjudication decisions that include warnings, fines, suspensions, and revocations. This system should also be able to track the length of time from enforcement actions to adjudication decisions.
- In relation to impaired driving, states should increase funding for training law enforcement personnel to detect cannabis impairment and increase the use of technologies such as oral fluid screening when feasible and science -based
- Inclusion in such a system of data by income, race, sex, and location to facilitate public monitoring of equity in enforcement practices.

A full discussion of these issues and recommendations are available in Chapter 9.