

Statewide Variation in Cannabinoid Regulations

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ABSTRACT

As a growing number of states legalize the use of cannabinoids for medical and non-medical purposes, there continues to be large gaps in the understanding of appropriate dosing, impact on health, and the state's role in regulation of products. Here, we present a summary of 2022 cannabis regulations by state to evaluate for the presence of THC:CBD ratios, maximum THC concentration or content within products, specific caps for cannabis possession, and requirements for testing for cannabinoid content and/or contaminants such as pesticides and heavy metals. These results are presented in Map 1 and Table 1 and demonstrate substantial variation among product THC content, purchasing limits, and quality measurements across the country. Finally, we note there is currently no centralized data collection platform for this set of information between states as cannabis use evolves, creating poor transparency between consumers and state regulators.

KEYWORDS: cannabis, cannabis regulation, cannabis potency

INTRODUCTION

The use and legalization of cannabinoids is growing nationally, now reaching the smallest state in the United States. As of Spring 2022, 37 states allow the use of medical cannabis while 19 states allow for non-medical (also referred to as recreational) use, the latest being Rhode Island which passed the Rhode Island Cannabis Act on May 25th 2022.¹ Although typically classified as a single drug, the cannabis plant contains over 500 chemicals and 100 unique cannabinoids with diverse and sometimes opposing actions. How different cannabinoid ratios and mixtures interact and the impact on health effects is largely unknown. Federal regulations greatly restrict the ability of researchers to study even state-regulated cannabis products of differing strains and concentrations. Even among the two most commonly studied and most prominent cannabinoids delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD), appropriate medical proportions of THC and CBD remain undefined.²

This baseline uncertainty is reflected in the numerous challenges the recreational market has seen in addressing quality control and regulated use of cannabinoid products.³

Cannabis is currently regulated at the state level. The biggest barrier to centralized regulation of cannabis is that its use and distribution remains a federal offense under the Controlled Substances Act.¹ Here, we present a summary of 2022 cannabis regulations by state. For states with recreational and/or medicinal cannabis use we sought to evaluate whether laws considered THC:CBD ratios and/or specified cannabinoid ratio parameters in products. Further we sought to assess whether state laws outlined maximum THC concentration or content limits within products. We also evaluated whether states outlined specific caps for cannabis possession and requirements for testing for cannabinoid content and/or contaminants such as pesticides and heavy metals. A summary of findings is outlined in Table 1 and Map 1, see [Appendix](#).

THC:CBD RATIOS AND THC CONTENT

Outside of states that restrict THC content in CBD products (primarily for medical patients with intractable epilepsy), there are currently no states with legalized recreational cannabis that describe ratios of THC:CBD in either purchasing or possession legislation. For states with restriction of THC content in medical low THC/high CBD products, there is variation on the minimum level of CBD (range >5% to >15%) and maximum level for THC (ranging <0.3% to <0.9%, with the exception of Wisconsin which instead requires that the THC level must be less than that which can give a psychoactive effect instead of a specific concentration. Additionally, there are only three states with legalized medical or recreational cannabis that restrict THC potency in drafted regulations. This includes Montana, which limits THC concentration in marijuana flower to 35% unless directed by a physician, as well as Connecticut and Vermont, which newly cap marijuana flower potency at 30% and THC concentrates at 60% for recreational cannabis products, (see Map 1).⁴ For edible cannabis products, multiple states have regulation on the maximum milligrams (mg) of THC in a serving (range 5 to 10) and per package (range 20 to 800) as reported in Table 1, though this again varies significantly across state lines.

PURCHASE AND POSSESSION LIMITS

Among the 50 states there is significant variation in the limits on possession and potency. While most states do enact a form of weight-based purchasing and possession limit strategies for raw cannabis products (in ounces or grams) and plants (immature, mature and/or total plants), that does not typically account for the concentration and overall dose of THC an individual can purchase at a time from recreational and medical dispensaries.⁵ For example, possession in the state of Washington is capped at 1 ounce (oz) of cannabis flower and cultivation or possession of cannabis plants for personal use is still prohibited, while Massachusetts allows up to 10 oz in a person's home and Maine allows up to 6 mature or 12 immature plants per person. Weight-based sale limits also pose a problem with the considerable heterogeneity of product potency and cannabinoid concentration. Assuming 10mg of THC as a typical dose, current laws in Alaska and Michigan respectively allow for purchases of 560 doses and 2,283 doses per transaction based on median product potency.⁵

The majority of states limit non-medical, recreational adult sales based on weight per transaction rather than weight per period of time (per week or month), while medical sales tend to be limited per time period similar to other pharmacologic prescriptions (see Table 1).⁴ This trend can be explained by state-run efforts to make legal sales competitive with the illegal market for recreational use.⁴ To monitor adherence to purchasing limits, states individually enact seed-to-sale tracking systems for use of cannabis products to assist state governments with collecting taxes, verifying safety testing, analyzing public consumption trends, and preventing diversion; however, there is no federal tracking system in place.⁴ While these systems have the potential to collect robust data for government use (consumer demographics, product and potency trends, and effects on public behavior in response to changes in legislation), there is only limited publicly available data from these tracking systems for outside analysis. Rhode Island has contracted Metrc, a cannabis track-and trace platform that operates in many other states in the northeast region, to use radio-frequency identification tags that can confirm and track products (similar to tracking systems in running race bibs, pets and livestock, and automated retail checkout lines).⁶

QUALITY MEASURES

Further, there is state-to-state variation on testing and verification of product concentrations, contaminants, and heavy metals with certain states such as California conducting their own product testing and other states such as Arizona outsourcing to state-certified labs without state run co-testing.⁷ Florida has some of the least defined testing requirements in the country and uses third-party labs to test for TCH and CBD levels. While Florida labs often test for

some contaminants, there is no specific requirement for them to do so.⁸ In contrast, since 2020 the state of Michigan has been co-testing and inspecting processing facilities twice monthly and has one of the most restrictive additive laws banning vitamin E and any other additives that have not been FDA-approved as inhalants.⁸ Of note, there is currently no centralized data collection platform for this set of information between states, as evidenced by the greater than 80 resources needed to collate the information in Table 1. For example, there are no testing regulations available on state websites for Indiana and Louisiana regarding their medical cannabis programs and legislation, requiring emails be sent directly to their state government offices and third-party testing sites. This poses a large problem both for consumers making decisions about personal use of medical and recreational cannabis products as well as state governments creating effective and standardized legislation for regulation and safety of the cannabis market.

RHODE ISLAND REGULATIONS

As of 2021, Rhode Island requires testing by one of four state-certified third-party labs for cannabinoid profile, metals (arsenic, cadmium, lead and mercury), pesticides (17 commonly used in cannabis cultivation), moisture content, microbiologic contaminants (yeast, mold, bacterial), and residual solvents (31).⁹ There is no scheduled testing verification process through the state of Rhode Island or between third-party labs although verbiage holds the right to do so. Rhode Island plans to set limits of cannabis possession to 1 oz and three plants per person with medical users to possess no more than 2.5 oz and 12 mature plants. Rhode Island does not currently have a published plan to set a potency limit or maximum THC:CBD ratio in marijuana products, though it will set a limit for edible products of 10mg THC per serving and 100mg THC per edible package.¹⁰

CONCLUSION

Rhode Island takes a moderate approach on cannabis product testing and possession regulations compared to other states across the nation; however, ambiguity remains regarding quality and safety monitoring procedures and implementation. Due to lack of rigorous study of legalization practices and limited scientific data about individual cannabinoid effects and interactions, the optimal strategy for encouraging safe and responsible consumption of cannabis while limiting the risk of over-intoxication or diversion of products is uncertain. Currently the recreational market faces challenges in both quality control and safety, further complicated by rapid evolution of new and more potent preparations, increasing availability of alternative cannabinoids, and use of novel delivery methods.³ Unfortunately, scientific data is lacking to help guide industry and state regulators. With cannabis

increasingly being used for medicinal and recreational purposes, it is important to expand our understanding of cannabinoids and their interactions and evaluate the impact of cannabis policy on health and community. Finally, transparency and centralized comparison regarding possession limits, THC/CBD content, and contaminant testing of cannabis products between states is urgently needed as more states move towards legalizing medical and recreational use. The lack of data of cannabis regulations and health outcomes creates barriers to informed personal cannabis consumption and evidence-based policy development.

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Disclosures

Grant funding: Dr. Wightman is partially supported by the National Institute of General Medical Sciences of the NIH (P20GM12550), by the National Institute on Drug Abuse of the NIH (R21DA055023; UG3DA056880), and by a Foundation for Opioid Response Efforts (FORE) award. The content is solely the responsibility of the authors and does not necessarily represent the official view of the National Institute of Health or FORE Foundation.

COI: The authors have no conflicts of interest to disclose.

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STATE	Adult Recreational Use: Y/N and Year	Medical: Y/N, Limited High CBD/low THC and Year	Ratio Used for High CBD/Low THC Medical Products (None, high-CBD/low THC)	Limits on Possession and Growing at Home	Maximum THC Concentration Allowed in a Product	Limits on Individual Serving of Cannabis	Product Testing Requirements	Who is Responsible for Testing?
Alaska	Y, 2014 (1)	Y, 1998 (1)	n/a	6 plants total (up to 3 mature plants), 1 oz flower for medical and recreational (3)	100mg THC per edible (3)	1oz flower, 10 mg THC per service (10 serving maximum or 100mg in a packaged edible), 7g concentrate, or 5.6g THC total products (3)	Increased regulation in 2019 to include random and supplemental testing by the state board in addition to standardized testing for potency, solvents, microbes, pesticides and heavy metals (3)	State certified third party labs via Alaska Marijuana Control Board (3)
Arizona	Y, 2020 (1)	Y, 2010 (1)	n/a	2.5 oz for medical, 1 oz and up to 6 plants for recreational (4)	100mg THC per edible (4)	2.5 oz cannabis per purchase per 14 days for medical, 1 oz or less of marijuana for recreational (except that not more than 5 g of marijuana may be in the form of marijuana concentrate). Maximum edible THC dosing is 10mg/serving and 100 mg per edible package (4)	Did not require testing prior to 2020, now uses third-party labs with standard requirements (microbes, metals, pesticides, herbicides, fungicides, potency, growth regulators and residual solvents) (5)	Third party labs certified through the Arizona Department of Health Services (5)
California	Y, 2016 (1)	Y, 2003 (1)	n/a	1oz, 6 plants for recreational, 8 oz and 6 plants for medical (7, 8)	No maximum THC concentration for dried marijuana or concentrates (7)	1 oz raw flower, 28.5 g of non-concentrated cannabis, 8 g of concentrated cannabis (includes concentrated cannabis contained in cannabis products), and 6 immature cannabis plants in one day to a customer for recreational (7). For medical patients, possession up to 8 oz of dried cannabis per qualified patient and 6 mature plants. (8)	Cannabinoids, terpene content, mycotoxins, heavy metals, moisture content, residual solvents, pesticides, microbes and foreign materials. Results must be sent to California Department of Cannabis Control within 24 hours. (9)	Third party labs certified and reporting to the California Department of Cannabis Control (9)
Colorado	Y, 2013 (1)	Y, 2000 (1)	n/a	1 oz and 6 plants per person (10)	No maximum THC concentration for dried marijuana or concentrates (10)	1 oz of marijuana flower, or 8 g of concentrate, or 800 mg servings of edible product, or more than 6 seeds in a day to a customer. Up to 20,000 mg per day for medical marijuana products. Up to 10 mg THC per serving in edible products (10)	Testing for potency and cannabinoid profile, mycotoxins, heavy metals, mold, pesticides, microbes (10)	Testing performed by state run labs through the Colorado Department of Public Health and Environment (10)
Connecticut	Y, 2021 (1)	Y, 2012 (1)	n/a	1.5 oz public, up to 5oz and 3 plants at home (11)	Caps the potency of cannabis that can be sold in the state, capping flower at 30% THC and all other products except pre-filled vape cartridges at 60%; these caps can be adjusted by regulators, no more than 5 mg of THC (11)	Medical 2.5 oz per 30 days, 1.5 oz of cannabis or an equivalent amount of cannabis products or concentrates (11)	Testing for potency, terpenes, microbes, mycotoxins, heavy metals and pesticide residue (12)	Third party labs certified by the Connecticut Department of Consumer Protection (12)
Illinois	Y, 2019 (1)	Y, 2013 (1)	n/a	1 oz, 5 plants (21)	500 mg in single product (21)	30g (1 oz) dried cannabis, 500mg THC in product, or 5g concentrate (21)	Tested for pesticides, solvents, mycotoxins, chemicals, NOT heavy metals (22)	Third party labs approved by Illinois Department of Agriculture (22)

Maine	Y, 2016 (1)	Y, 1999 (1)	n/a	2.5 oz for both medical and recreational use. Up to 3 mature plants, 12 immature plants for recreational use. Up to 6 mature plants for medical patients (31)	No maximum potency for plant material. Maximum of 100 mg THC per package in edible form (31)	2.5 oz flower or concentrate medical, up to 5g concentrate purchased at one time. Maximum of 10 mg THC per serving in an edible (31)	Mandatory testing for heavy metals, solvents, pesticides, mold, foreign materials, microbes, potency, moisture (except in plants, seedlings, flowers, trim, hashish or other products not manufactured with solvents) (32)	Third party labs authorized by The Maine Office of Cannabis Policy (32)
Massachusetts	Y, 2016 (1)	Y, 2012 (1)	n/a	1 oz possession in public, 10 oz possession at home, 6 plants per person for recreational. Medical patients can possess up to 10 oz and 12 flowering plants (35)	Maximum 20mg THC per edible package. No potency limit on raw plant material (35)	Recreational serving size for edibles is 5 mg THC per serving. Recreational purchasing limit of 1 oz of dry marijuana or 5 g of active THC in marijuana concentrate or 500 mg of THC in edibles. Medical purchasing limit is 2.5 oz per 14 day period (35)	All product is tested for pesticides, metals, solvents, and medical is also tested for cannabinoid profile. Additional testing protocols vary by product and are tested by state-licensed third party sites. If a batch fails and is cleaned/retested it must also be retested by a second third party facility (36)	Independent labs approved by the state Cannabis Control Commission (36)
Michigan	Y, 2018 (19)	Y, 2008 (19)	n/a	2.5 oz in public and 10 oz at home, 12 plants for and medical patients (19)	No potency limit for raw plant products. Maximum 100 mg of THC per container of edibles (19)	Maximum 10 mg of THC per serving of edibles. 2.5 oz flower or 15g concentrate for recreational patients purchased at one time. Medical patients may purchase 2.5 oz per day or 10 oz per month (19)	Michigan MRA banned vit E and any additive not FDA approved as an inhalant. Also ensures compliance with twice-monthly inspections of processing facilities. Required potency, foreign matter, solvents, pesticides, fungicides and terpenes. (37)	Third party labs that are inspected twice monthly by state Marijuana Regulatory Agency (37)
Montana	Y, 2020 (1)	Y, 2004 (1)	n/a	1 oz, 4 plants, 12 seedlings for medical patients. 1 oz and 2 mature plants for recreational use (44)	The total psychoactive THC of marijuana flower may not exceed 35% unless directed by physician (44)	Limit purchasing 1 oz per day, 5 oz per month. Edible adult-use marijuana products may have up to 10 mg of THC per serving, up to 100 mg of THC in an entire package. Topical products may contain no more than 6% THC potency and no more than 800 mg of THC per package. (44) Capsule, transdermal patch or suppository, may contain no more than 100 mg of THC per serving and no more than 800 mg of THC in an entire package.	Testing for cannabinoid profile, moisture, foreign matter screening, microbiological screen, pesticide screen, residual solvents (45)	Third Party Labs, regulated by State Board of Health and Revenue (45)
Nevada	Y, 2016 (1)	Y, 2000 (1)	n/a	1 oz plant material and 6 plants per person for recreational use. 2.5 oz plant material and 12 plants for medical use (47)	Limit of 10 mg of THC per dose or more than 100 mg of THC per package of edible product. Maximum 6% THC for a topical product. No potency limit for raw plant material (47)	1oz flower or 1/8 oz concentrate per day for recreational purchasing limit and 2.5 oz flower or 10,000mg infused product per 14 days for medical patients. No more than 10 mg THC per serving in an edible product (47)	Testing for only some heavy metals (arsenic, lead, cadmium, mercury) and concerns of excessive yeast and mold that are underreported (37)	State Licensed Third Party Labs (48)

New Jersey	Y, 2020 (1)	Y, 2010 (1)	n/a	2 oz for medical patients, 1 oz for recreational patients. Unable to cultivate at home (52)	Medical THC level not to exceed 10 percent; medical edibles and vaporizers capped at 350mg THC (53)	Per transaction, recreational users may purchase 1oz flower, 5g concentrate, or 1,000 mg edibles. An edible package may contain no more than 100 mg THC. Medical patients may purchase up to 2 oz per 30 days (52)	Dept of Public Health Services, interim temporary testing to include cannabinoids, heavy metals, foreign materials, microbes, pesticides, and moisture prior to final approval of legislation (54)	Independent testing centers approved by the New Jersey Cannabis Regulatory Commission (54)
New Mexico	Y, 2021 (1)	Y, 2007 (1)	n/a	8 oz for medical patients, 2 oz for recreational users, 6 plants per person (19)	800 mg of edible cannabis in a product, no potency limit (19)	Recreational users may purchase 2oz per day of dry plant product, 16g extract, or 800mg edibles. Medical patients may purchase 8oz dried product in 90 days or a total of 6600mg THC (19)	Testing for cannabinoid potency, terpenes, solvents, pesticides, heavy metals, microbes, mycotoxins (55)	Third party labs approved by the State of New Mexico Department of Health (55)
New York	Y, 2021 (1)	Y, 2014 (1)	n/a	3 oz, 3 plants per person (19)	No potency limit (19)	Medical patients may purchase and possess up to a 60-day supply of products; Recreational users may purchase 3 oz dried cannabis or 24g concentrate (56)	Testing for microorganisms, foreign material, moisture content, pesticides, solvents, metals and terpenes (57)	Third party labs certified by the Office of Cannabis Management (57)
Oregon	Y, 2014 (1)	Y, 1998 (1)	n/a	For recreational users, may possess 2 oz in public, up to 8 oz and 4 plants at home. For medical users, up to 24 oz plant material (19)	No potency limit for flower material. Recreational limit on edibles of 50 mg of THC per package. A medical grade edible may contain up to 100 mg of THC per package. Total THC in marketed hemp CBD consumable products < 2 mg per serving and <20 mg per container for those over 21 years old, and <0.5mg total for those under 21 years old (65)	Medical limit of 24 oz of marijuana plant material, 5g concentrates, or 16 oz edibles in 30 days. Edible packages up to 100 mg for medical users with no specified serving size. Recreational limit of 2 oz of plant material and 5 oz extracts per purchase. Recreational edible serving size is up to 5mg of THC with up to 50 mg THC in a single package for recreational users (19, 65)	Testing for potency, pesticides, water/moisture, microbial testing, solvents. Does not specify heavy metals. (66)	Third party labs certified through the Oregon Liquor & Cannabis Commission (66)
Rhode Island	Y, 2022 (1)	Y, 2006 (1)	n/a	For medical users up to 2.5 oz and 12 mature plants. For recreational users, up to 1 oz in public, 10 oz at home, and 3 mature plants (68)	No potency limit for raw marijuana products. Maximum 100mg THC per edibles package (68)	Medical patients may purchase up to 2.5 oz in 15 days. Recreational users may purchase up to 1oz or 5g concentrate at a time. 10 mg THC per serving for edibles (68)	Testing for pesticides, herbicides, growth regulators, metals, microbiological contaminants, solvents (68)	Third party labs authorized by the Rhode Island Cannabis Control Commission and Department of Health (68)
Vermont	Y, 2018 (1)	Y, 2004 (1)	n/a	1 oz, 2 mature plants, 4 immature plants (73)	Vermont newly caps potency of flower at 30% and concentrates at 60% for recreational cannabis products, Edibles can have up to 50 mg of THC with servings of no more than 5 mg of THC each (74)	Edibles have a maximum of 5 mg of THC per serving, no limit on plant material serving. Medical patients may purchase up to 2 oz every 30 days. Recreational users may purchase 1 oz per transaction though there are no open dispensaries operational yet. (73, 74)	Testing for potency, moisture, microbes/human pathogens, heavy metals, pesticides, solvents (74)	Third party labs registered with Agency of Agriculture, Food and Markets and quality control/compliance testing performed by the Agency, funded by the Department of Public Safety. Not yet fully operationalized. (74)

Virginia	Y, 2021 (1)	Y, 2020 (1)	n/a	1oz, 4 plants for recreational (75)	No potency limit specified (76)	Maximum of 10 mg THC in cannabis products per dose/serving. For medical patients, no more than 4oz dispensed per 30 days; recreational up to 4 plants or 1 oz, no concentrate equivalent specified (75, 76)	No in state production or purchase as of 2022 with plans to address this next legislative session (75)	The Virginia Department of Health has given permits to five third party "cannabis pharmaceutical processors" for medical marijuana processing (75)
Washington	Y, 2012 (1)	Y, 1998 (1)	n/a	No recreational cultivation, 1oz marijuana possession for recreational and 3 oz for medical patients. Home cultivation for medical users only, up to 6 plants (77)	No potency limit of raw plant material (77)	Up to 10 mg of THC per serving in edibles. Limit of 1 oz marijuana flower per day for recreational users or equivalent (16 oz edibles, 72 oz liquid edibles, 7g concentrate). Medical users may possess 3 oz of raw flower or equivalent (48 oz of edibles, or 21 g concentrate) and up to 6 plants at home (77, 78)	Prohibits certain pesticides but testing is voluntary for pesticides, heavy metals and mycotoxins. "Complaint products" are those that follow recommended testing for pesticides, metals and mycotoxins though consumers may purchase "complaint" or regular products. (79)	Cannabis processor licensed through the Washington Liquor and Cannabis Board which will perform random tests of deemed compliant products (79).
Alabama	N (1)	Y, 2021 (1)	n/a	No home cultivation. Medical possession limit is 70 days worth of prescribed doses (2)	THC <0.3% by extract except with medical prescription (2)	Maximum prescription is 50 mg per day for the first 90 days (if 90 days have passed during which the patient has been unsuccessfully treating with medical cannabis while under the registered certifying physician's care, and the registered certifying physician determines that a higher dosage of medical cannabis, up to 75 mg of delta-9 THC is medically appropriate). May obtain 70 days worth of prescribed marijuana at a time. (2)	Requires labs to perform tests to certify cannabinoid potency and that medical cannabis is "reasonably free" of heavy metals, microbes, chemical contamination, residual pesticides and growth inhibitors, and residual solvents. Also requires one employee of the lab to have an advance degree in medical or laboratory science. (2)	Third Party Labs certified by Alabama Medical Cannabis Commission (2)
Arkansas	N (1)	Y, 2016 (1)	n/a	2.5 oz for medical patients (6)	No maximum THC concentration for dried marijuana or concentrates (6)	2.5 oz cannabis per medical purchase per 14 days. Maximum of 10mg THC per serving in cannabis-infused food or drink products (6)	Labs are largely self-policing but follow established ISO standards for testing, including for pesticides, solvents, moisture content, microbial contaminants and heavy metals (6)	Third party labs certified by Arkansas Department of Health (6)
Delaware	N (1)	Y, 2011 (1)	n/a	3 oz for medical patients, no home cultivation (13)	No maximum concentration of THC in dried marijuana or concentrates. Limit of 50 mg THC per edible package (13)	3 oz per 14 days for medical patients with a limit on edibles of 10 mg of THC per serving and 50 mg THC total per package of an edible product (13)	Testing for potency, cannabinoid profile, mold and microbes, growth regulators, pesticides, mycotoxins and solvents. There's no requirement to test for the presence of heavy metals (13)	Third party labs called "safety compliance facilities" that must be non-profits certified by the Delaware Department of Health (13)
Florida	N (1)	Y, 2016 (1)	Patients may be prescribed high CBD/low THC products with THC < 0.8% and >10% CBD by weight for qualifying medical patients by a physician's prescription (14)	n/a	No limit of THC concentration in raw marijuana or concentrates. However there is a limit of 15% THC potency and 200 mg total THC per package for edibles (15)	70 day supply of medical products may be dispensed at a time with an exception for maximum of 2.5 oz of smoking material that can only be dispensed every 35 days. Maximum of 10 mg of THC in an edible serving (15)	Third party labs testing for toxins and contaminants in medical marijuana products remains entirely voluntary. Must show lab verified THC and CBD levels is only requirement (5)	Third party labs certified by the Department of Health (5)

Georgia	N (16)	Limited High CBD/low THC, 2015 (16)	THC <5% and => 5% CBD (5)	n/a	<5% THC per product (5)	medical 20 fl oz of high CBD/low THC oil (16)	Testing for potency/THC content is the only requirement. Legislation also states "purity" test but does not outline what this entails. (17)	Third party labs certified by the state (17)
Hawaii	N (1)	Y, 2000 (1)	n/a	4 oz raw marijuana, 7 plants for medical patients (18)	medical: 100mg THC per product package (18)	medical 4 oz limit in 15 days, 10 mg THC per serving of edibles with maximum edible package containing 100 mg THC (18)	Testing for pesticides, heavy metals, solvents, moisture, microbes, dangerous molds, and potency (5)	State certified third party labs (5)
Idaho	N (19)	N (19)	THC < 0.3% and => 15x CBD by weight only for treatment with FDA approved Epidiolex (20)	n/a	THC <0.3% by extract for hemp CBD products, no medical or recreational THC use is legal except FDA approved Epidiolex CBD treatment for epilepsy in Dravet or LGS (20)	n/a	There is no testing requirement to determine the levels of THC or other contaminants, such as mold or fungi, for CBD products outside of FDA approved Epidiolex (20)	n/a
Indiana	N (19)	Limited High CBD/low THC, 2017 (19)	THC < 0.3% and => 5% CBD by weight (1)	n/a	THC <0.3%. There are no purchase limits at this time. Only for treatment resistant epilepsy (1)	No limits on low THC/CBD oil for treatment resistant epilepsy (1)	Only have to test for THC potency nothing else (optional additional testing but not required) (23)	Office of Indiana State Chemist approved labs, there is only one thus far (23)
Iowa	N (19)	Limited High CBD/low THC, 2014 (19)	THC <3% by extract for medical high CBD/low THC (24)	Maximum THC between products totaling to 4.5 g of THC every 90 days for medical marijuana patients, no home cultivation (24)	3% THC cap for medical marijuana use. No smokable flower or THC edible products permitted. (24)	No limits on low THC/CBD oil per serving, maximum 4.5 g of THC in total products purchased every 90 days for medical marijuana patients (24)	Testing for potency, microbiologic impurities, metals, pesticides, residual solvents (25)	Office of Medical Cannabidiol, Iowa Department of Public Health to license state-approved third party labs (25)
Kansas	N (1)	Limited High CBD/low THC, 2019 (1)	<5% THC/high CBD for medical use (26)	n/a	<5% THC for medical use, 0% THC/high CBD for recreational CBD (26)	No limits on low THC/CBD oil (26)	Testing for microbes, mycotoxins, solvents, pesticides, thc/cannabinoid potency, terpenes, moisture, homogeneity, heavy metals (27)	Third party labs licensed under State Director of Alcoholic Beverage Control (27)
Kentucky	N (1)	Limited High CBD/low THC, 2014 (1)	Only hemp-derived CBD for research or intractable seizures at a state university medical center with a maximum <0.3% THC (1)	n/a	<0.3% THC (1)	No limits on low THC/CBD oil (1)	Only testing for cannabinoid potency, metals, terpenes and moisture (28)	University of Kentucky Hemp Proficiency Testing Lab authorized by Kentucky Department of Agricultural (28)
Louisiana	N (19)	Y, 2017 (19)	n/a	Possession of up to 2.5 oz of raw cannabis flower for medical patients, no home cultivation (29)	No potency limit (29)	<2.5 oz or 71g of raw cannabis flower purchased per 14 days, no limit on individual serving size (29)	Testing requirements not yet published by Louisiana Department of Health, thus far only for testing of THC potency (29, 30)	Third Party Labs authorized by the Department of Health. Previously had been overseen by the Louisiana Department of Agriculture and Forestry and cultivated only in state universities (29)

Maryland	N (1)	Y, 2003 (1)	n/a	No home cultivation. Maximum possession is defined as a 30 day supply up to 120 g of cannabis flower or 36 g of THC in processed products (33)	No potency limit for raw plant material. Maximum 10mg THC per dose in edible forms (33)	30-day supply of 120 g of dried cannabis flower or 36 g of THC in a processed marijuana product. Maximum 100 mg THC per edible package (33)	Testing for potency, heavy metals, hair, insects, and molds at both growing and processed stage (33)	Labs certified by The Natalie M. LaPrade Medical Cannabis Commission (34)
Minnesota	N (1)	Y, 2014 (1)	n/a	Limit of 30-day supply for medical patients. No home cultivation (38).	No potency limit for medical patients. CBD products with less than 0.3% THC with no intoxicating effect and less than 5 mg of hemp-derived THC total per serving and no more than 50 mg THC per package for are available without a medical prescription (38)	Dose set by physician or pharmacist with a maximum of 30-day supply dispensed at once (39)	Testing for chemical cannabinoid composition and potency. No other requirements set (39)	Third party labs approved by the state Random quarterly tests for pesticides (19)
Mississippi	N (19)	Y, 2022 (19)	THC < 0.5% and \geq 15% CBD (19)	n/a	Maximum of 100 mg THC infused in product or 1 g concentrate (40)	Currently with high CBD/low THC oil per physician. Anticipated new upcoming expansion of medical marijuana program (not yet active) to allow daily limit of 3.5 g of flower, up to 100 mg of THC in infused products, and up to 1 g of concentrate. Patients may not purchase more than 21 g/0.75 oz per week (40)	Testing for cannabinoids, heavy metals, microbes, mycotoxins, pesticides, solvents, terpenes, foreign material (41)	Mississippi Department of Health and State Universities (19)
Missouri	N (1)	Y, 2018 (1)	n/a	4 oz raw marijuana, 6 mature plants for medical patients (42)	No potency limit in plant material. 100 mg THC infused in product or 1 g concentrate (42)	4 oz dried flower material per 30 days (or 1g concentrate or 100mg THC infused products) (42)	Testing for cannabinoid profile, microbes, chemical screening, heavy metals, solvents, moisture, foreign material (43)	Third Party Labs accredited by Missouri Department of Health and Senior Services (19)
Nebraska	N (19)	N (19)	n/a	n/a	hemp CBD products to contain up to 0.3% THC, can buy over the counter, no purchasing limit on hemp CBD oil (46)	n/a	n/a	n/a
New Hampshire	N (1)	Y, 2013 (1)	n/a	Medical patients may purchase up to 2 oz every 10 days, no home cultivation permitted (50)	No limit on THC potency for medical use. CBD oil only with medical use if $>$ 0.3% THC, not able to be added to food or beverage. (49)	2 oz raw plant material every 10 days, no specified serving limits (50)	Testing for bacteria, mold, mycotoxins, arsenic, cadmium, lead, mercury, solvents, prohibited pesticides (51)	Third party Labs, though Department of Health to test samples quarterly for prohibited pesticides and chemicals (51)
North Carolina	N (1)	Limited High CBD/low THC, 2014 (1)	THC < 0.9% and \geq 5% CBD by weight for medical patients (1)	n/a	<0.3% THC for public use of CBD oil, <0.9% for medical patients	No formal limit, dosing per physician for intractable epilepsy only (19)	No testing requirements (19)	Testing by the Dept of Health and Human Services (19)

North Dakota	N (1)	Y, 2016 (1)	n/a	Possession limit of 3 oz for medical patients. No home cultivation (58)	<0.3% THC for unregulated CBD, no potency limit for medical products (58)	Purchase limit of 2.5 oz or 400mg THC per 30 days (58)	Testing for pesticides, microbiological contaminants and mycotoxins, pollutants and heavy metals, water activity and moisture content, and cannabinoid content (59)	Third party labs approved by the North Dakota Department of Health. Random testing from DOH at any time at third-party lab's expense. (59)
Ohio	N (1)	Y, 2016 (1)	n/a	10 oz raw product, no home cultivation (60).	Medical marijuana will have a maximum of 35% THC content for "plant matter" and up to 70% for extracts (60)	Maximum purchasing limit of 90 day supply as determined by a physician or 10 oz plant material, 11 g of THC oil concentrates and edibles, or 59 g of vaporizing oil for medical patients (60, 61)	Testing for potency, moisture, water content, foreign matter, microbes, mycotoxins, heavy metals, solvents, and pesticides (61)	Third party labs certified by the Medical Marijuana Control Program and overseen by the State of Ohio Board of Pharmacy. Ohio Medical Marijuana Control Program can inspect anytime without notice (61)
Oklahoma	N (1)	Y, 2018 (1)	n/a	3 oz raw product on person (8 oz at home) and up to 6 plants (62)	12% proposed in 2018 but not ever enacted, no current limit on potency (63)	3oz on person (8oz at home), 1 oz concentrate, 72 oz edibles, 6 plants and 6 seedlings for medical purchased at one time (62). No specified limit on serving.	Pesticides, heavy metals, microbes, foreign material, moisture, THC potency, terpenes (64)	Third party labs certified by the State Department of Health, Oklahoma Medical Marijuana Authority division (64)
Pennsylvania	N (1)	Y, 2016 (1)	n/a	90 day supply as specified by a physician, no home cultivation (67)	No potency limit specified for medical products (67)	Medical patients can purchase a 90 day supply per physician prescription (67)	Testing for potency, terpenes, pesticides, solvents, heavy metals, microbes, moisture (67)	Third party labs certified through the Pennsylvania Department of Health, Office of Medical Marijuana (67)
South Carolina	N (1)	Limited High CBD/low THC, 2014 (1)	THC < 0.9% and => 15% CBD by weight (1)	n/a	<0.9% THC limit for FDA approved medical CBD products (1)	FDA-approved CBD per physician as part of treatment for intractable seizures or investigational study (1)	n/a	n/a
South Dakota	N (1)	Y, 2020 (1)	n/a	Medical use allows up to 3 oz and 3 plants per person. Population voted in favor of legalizing recreational possession to 1 oz but now overturned in state court (1)	Currently held up in court for recreational use. No potency limit for medical use (1, 19)	Medical prescriptions for up to 3 oz for qualifying conditions, no serving size specified (19, 69)	Potency of THC and CBD and microbes only (69)	Third party labs with oversight be the South Dakota Department of Health (69)
Tennessee	N (1)	Limited High CBD/low THC, 2014 (1)	THC < 0.9% as part of research study through Tennessee Technological University (1)	n/a	Medical patients may possess CBD oils with no more than 0.9% THC (1)	High CBD/low THC per physician as part of a research study for intractable seizures (1)	no testing requirements by the state, only allows approved CBD prescriptions by a physician/research study (1)	Only products produced by Tennessee Tech University (1)
Texas	N (1)	Limited High CBD/low THC, 2015 (1)	THC < 0.5% by weight and >10% CBD (69, 70)	No possession limit specified (70)	Medical <0.5% THC (70)	All parts of the plant and any resulting compounds, salts, resins, oils and derivatives that contain no more than 0.5 % by weight of THC. Medical use of these substances is limited to swallowing, not smoking. The dose is prescribed and there is no specified serving size (70)	Testing for THC and CBD levels, pesticides, solvents, fungicide, fertilizer, mold, and heavy metals (71)	No state-owned testing facilities. Dispensary organizations conduct their own laboratory tests. Proposed but not signed into law that eventually labs will be licensed through the Texas Department of Public Safety (70, 71)

Utah	N (1)	Y, 2018 (1)	THC < 0.3% and \geq 15% CBD by weight for CBD prescribed for intractable seizures (1)	30 day supply per medical prescription, no home cultivation or recreational possession (72)	Recreational hemp-derived CBD products are limited to less than 0.3% THC. Marijuana-derived CBD products have a 20 g THC limit per single dose for medical patients (72)	30 day supply per physician where each dose is not to exceed 113g unprocessed marijuana flower and/or 20 g of total THC content in any form per dose (72)	Testing for cannabinoid profiles, pesticides, heavy metals, solvents, microbial life, toxins and foreign matter (72)	Utah Department of Agriculture and Food has one licensed Independent Cannabis Testing Facility located in Utah County (72)
West Virginia	N (1)	Y, 2017 (1)	n/a	n/a	no potency limits or possession limits described (80)	Dosing per physician, flower cannot be smoked but can be vaporized, no recreational use (80)	Pesticides, solvents, moisture, THC and CBD concentration, microbes (81)	Office of Medical Cannabis awarded one third party lab in 2021 for medical cannabis testing that is just recently operational (82)
Wisconsin	N (1)	Limited High CBD/low THC, 2013 (1)	THC level must be less than can give psychoactive effect, but undefined specific ratio (1)	n/a	<0.3% THC for CBD recreational products, no definite limit on medical though must not produce psychoactive effect (1)	High CBD/low THC products for any medical condition approved by a physician in a form that does not produce psychoactive effect (83)	Cannabinoid potency for high CBD/low THC hemp products (84)	Third party labs certified through U.S. Department of Agriculture (84)
Wyoming	N (1)	Limited High CBD/low THC, 2015 (1)	Hemp extracts with THC < 0.3% and \geq 5% CBD by weight or FDA approved Epidiolex (1)	n/a	Hemp extracts with less than 0.3% THC and at least 5% CBD by weight for intractable seizures (1)	CBD oil per neurologist for treatment resistant seizures (1)	No in state production or purchase (1)	n/a

Key

N: No

Y: Yes

N/A: not applicable

oz: ounces

mg: milligrams

g: grams

THC: delta-9 tetrahydrocannabinol

CBD: Cannabidiol

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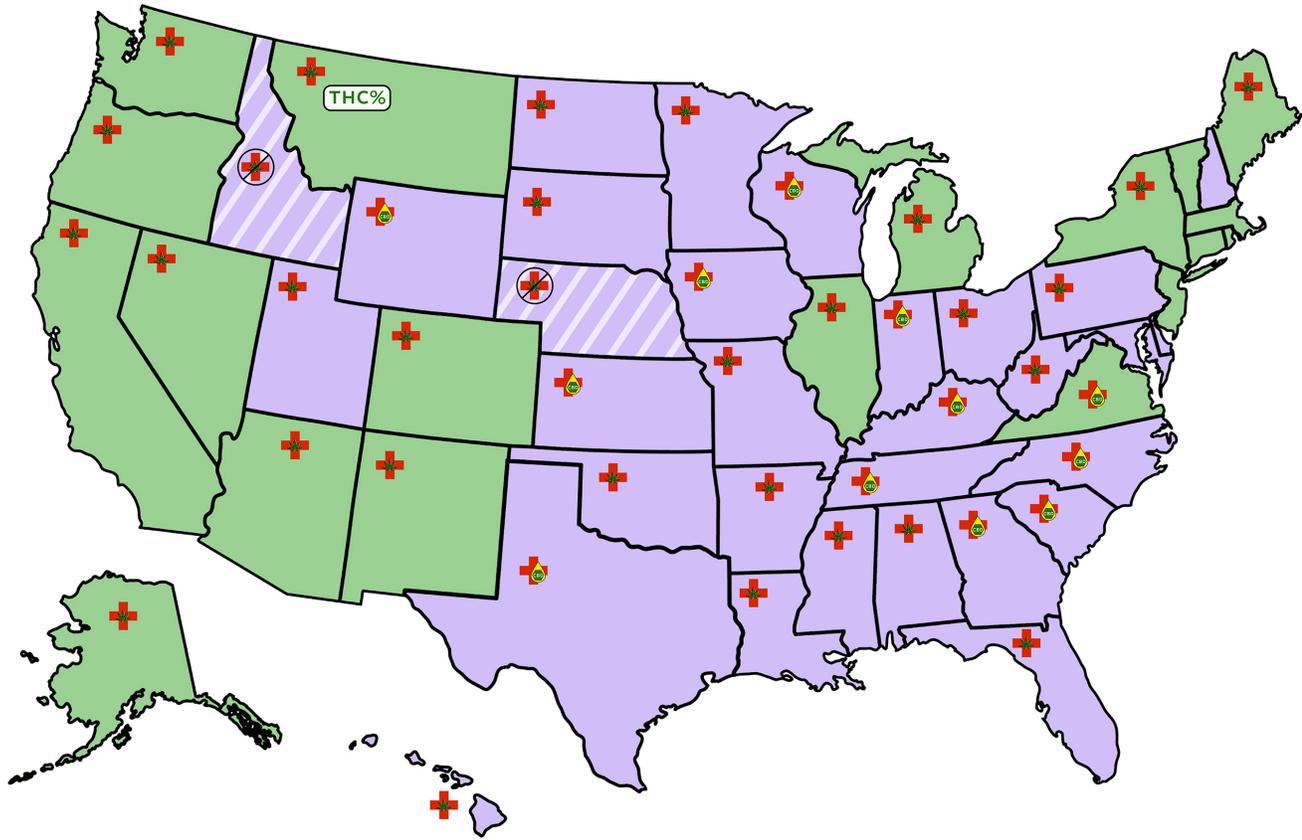
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- New Hampshire
- Vermont
- Massachusetts
- Connecticut
- Rhode Island
- New Jersey
- Delaware
- Maryland

No adult or medical use
Adult Use: No
Adult Use: Yes

CBD
 Medical: Limited High CBD/low THC oil

Medical: Yes
Medical: No

THC%
 THC Potency Cap