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Benchmark Policies And The Rationalization Of Cannabis

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Benchmark Policies and the Rationalization of Cannabis

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Abstract

The process of creating new policy is frequently dependent on knowledge and study of precedent, which in turn, helps influence future strategy. In the case of legal cannabis state industries, there is much to be learned from policy mistakes made in how other states managed cannabis legalization. As such, these mistakes leave gaps in policy, which pose a threat to the rationality of the legal industry and set poor precedent for future efforts. In turn, the goal of this paper is to identify gaps in cannabis policy and highlight what should be seen as benchmark policy for further industry developments. Specifically the topics touched on will include: locality referendums, problems with access in legal markets, criminalization policy, justice for past convictions, industry diversity, issues in cannabis taxation, cannabis concentrate/extract policy, CBD regulation, bank access policy, uses in the opioid epidemic, health issues in cannabis vaping, and medical cannabis insurance. Providing insight into these topics is important, as any legalization effort undertaken should not be applauded just for its initiation. As such, moving towards incorporating benchmark policies into the coming legalization efforts is key, as the process of rationalizing cannabis continuously moves forward.

Benchmark Policies and the Rationalization of Cannabis

By: Ethan Handa

Background

In the creation and establishment of benchmark policy, much emphasis must be placed on learning from what already exists in comparative circumstances. In the undertaking of state-legalization of cannabis, states are frequently aware of the policy their predecessors undertook, yet still continue to make mistakes, which are counter-intuitive to the success of the industry. However, this also brings in the point, that the success of the cannabis industry in a state, is not a unilateral measurement. The success of a state's policy can be measured on consumer satisfaction, producer revenue, state totality benefits and a host of other profiling mechanisms. However, for certain, is that no state has created truly ideal cannabis policy, which as a result, inherently leaves gaps in the policy that looks to govern the substances use. Finding these gaps in policy are key to the future success of the industry and are often portrayed by issues state-policy advocates are unaware of. As such, outlining these gaps, while focusing on how future efforts can achieve benchmark policies are the goals of this paper. The contribution this endeavour will undertake is finding holes in policy and suggesting implementations, which look to rationalize cannabis through newfound benchmark policy. This process will hopefully assist in legalization efforts of the future, which would in turn place an emphasis on the rationality of benchmark policies in any drastic shift in status-quo.

A negative connotation and perception has surrounded cannabis for decades, which has mostly coincided with its long standing prohibition by the federal government. There are few studies on the short or long-term effects of cannabis use, which has halted any perception

change science and fact can attain. This is mostly due to the significant barriers involved in researching an illicit substance, which according to a paper by the national academy of sciences, include: obtaining multiple forms government approval (DEA, FDA and others), obtaining investigational new drug applications, a letter of authorization and obtaining cannabis directly from the government to study.³² In addition, the stagnation in perceived public view is likely due to the government's history of suppressing research. A drugs scheduling has significantly limited the supply for research on the substances medical (and recreational) value, which insures that drugs viewed as higher schedule by the government, would stay in that schedule.³⁴ As such, this allowed the government to continue harsh criminalization of cannabis, despite many calls for rescheduling and study. This drawn-out process, has left few chances for findings to dispute the placement of cannabis in the schedule 1 category of the controlled substance act, which claims cannabis to have a high potential for abuse and no known medicinal value.³³ Due to this, there has been few ways to change perception on the substance, as little can be done to test and prove the medicinal value or general safety of cannabis (apart from death statistics). Noticeably absent due to these barriers to adequate research, are any studies that have been able to look at the long term medical and recreational effects of cannabis. As such, even those who ingest cannabis have no information on the reality of long term effects, as limits on research have indirectly promoted the idea that using cannabis-use is irrational. Currently, the only way to rationalize cannabis to the public, has been through state policy via the 10th amendment, which allowed these states to legalize cannabis, despite its federal illegality.³⁵ However, the process of truly rationalizing cannabis goes beyond just legalizing and regulating the substance and extends to creating the best possible policies for legalization, as current policies leave vast room for improvement.

History of Cannabis Criminalization

In order to move away from the negative connotation that has surrounded cannabis for decades, a process of rationalization must occur. However, before this process can be taken en masse, it is important to understand what has contributed to the moral framing society had placed the substance into. This includes the negative perception created through years of government legislation to dissuade people from using cannabis, with a special focus on its criminalization for even simple possession. One of America's first attempts to criminalize cannabis came with the introduction of the Marijuana Tax Act of 1937, which forced purveyors of marijuana and hemp to pay a tax or face steep fines and imprisonment.¹ However, this regulation was largely impractical, as it forced even small scale buyers to register with the federal government, as well as the IRS, which as a result were often ignored.¹ This was later overturned in a 1969 court case, wherein judges stated that this tax policy was essentially founded on self-incrimination.³ According to further accounts, there were multiple other reasons for this newfound policy on cannabis, which are not too different than what is seen in the present day. These are aptly described in a review of the legislation by drug policy expert and Yale alum, Dr. David Musto. Musto cites racism and the perception that cannabis was useless as the main causes for the passing of this legislation.² Specifically, Musto remarked that there was increasing American fear of "Mexicans", who many claimed had perpetually caused violent acts after using the substance.² In regard to the perceived uselessness, it seems that this was typically an argument based on a lack of research that came with the plant, wherein the Federal Bureau of Narcotics felt the drug was too useless to be under their control, which led to this ineffective policy as a result.² In addition, Kleiman et al mentions that several high profile arrests were made right after the laws passing in order to publicize the legislation, however this

attitude soon ceased once fear was already incited.³ Soon after this, the Boggs Act passed in 1951, which was influential because it eliminated the marijuana tax. However, in lieu of the tax, the Boggs Act instituted full on criminalization of cannabis, with a special focus on the introduction of mandatory minimum sentences in the US.⁴ This meant that federally, any possession of cannabis held a minimum sentence of two years in federal prison, which is a much harsher punishment than what was found in the 1937 tax act.^{1,4} These minimum sentences were later repealed, only to be put back in place years later during the Reagan administration.⁷ In order to solidify his War on Drugs, President Nixon's 1971 enacting of the Controlled Substance Act (CSA) and 1973 creation of the Drug Enforcement Agency (DEA) directly promoted the idea that drug use was a criminal act deserving of harsh punishment, with diminutive chances at rehabilitation.⁵ This was used to incite fear around drugs and punish many who opposed Nixon, which has been reiterated in many 2016 reports from one of Nixon's top presidential aides, who claimed, "the War on Drugs was created as a political tool to fight blacks and hippies".⁶ These divisive policies looked to remove Nixon's opposition from society by stigmatizing behavior in order to gain political clout. To further the anti-drug rhetoric asserted by the Nixon administration, the Reagan administration introduced the Anti-Drug Abuse Act in 1986, which played a vast role in the racist stigma found around drugs to this day.⁷ The act criminalized (freebase) crack cocaine, which was predominantly used by African Americans, at much harsher rates than oft caucasian-used powdered cocaine.⁷ This was fundamental in starting disproportionate arrest discrepancies between races, which saw validity across all substances. In addition, mandatory minimums for cannabis and other drugs were put into effect, which helps paint a picture of how drugs were viewed

during this time. To further demonstrate this perception is a report by the Department of Justice from 1987, which states: “Drug abuse has also been shown to be one of the best indicators of serious criminal careers”.⁸ The report also remarks that “ \$223 million in grants (will be given) to enhance the criminal justice system's response to the drug problem”, which clearly demonstrates the focus on criminalizing drug offenders.⁸

The stigma this 20th century criminalization created has lasted for decades, which has allowed cannabis legalization to be out of the question for years. As such, the prospect of state-wide legalization left part of the population with little understanding of how and why this process would be undertaken. However, it seems that over time perception of cannabis has changed. According to Pew Research Institute, in the year 2000, 31% of the American public favored legalization.⁹ That number has doubled today, as Pew saw 62% of respondents favor federal legalization in their latest public poll.⁹ This potentially portrays a generational divide, which is highly based on the propaganda perpetuated on the substance during an individual’s life, which results in either creating stigma or openness to acceptance. This shift in perception has helped legalize cannabis in many states, but the lasting stigma has likely contributed to many of the policy issues we see today.

Access and Locality Referendum

Access to cannabis upon legalization is supposed to show positive externalities like a decrease in black market sales. However, this only seems possible if the legal market is accessible. The issue here, is that often citizens do not even get to decide if they will have access upon legalization.¹² Currently, the vast majority of op-out

decisions are made by local elected officials, which leaves locality residents out of this landmark process. Moreover, subtracting the people of a polis from the equation is largely overly paternalistic. These officials also have the ability to see the will of the people representing them through the referendum process and as a result create policy around their decisions. All states apart from Indiana and Wyoming allow for localities to organize and initiate public referendums on important local policies, yet municipalities have failed to even consider this as an option.¹³ An example of this is seen in Michigan, where sixty cities have decided to opt-out of recreational sales, which effectively reduces the public's role in these decisions, while also implicitly ignoring potential local tax revenues that can be generate from legal sales.¹⁰ For reference, currently in Colorado there is an average local tax on all goods of 4.6%; in addition to this is the local excise tax on cannabis, which for example is currently 3.5% in the city of Denver.¹⁴ As such, the near 10% projected local tax revenue taken from all potential cannabis purchases is effectively being left on the table by local representatives. Such financially motivated decisions should account for the will of the people, which is something also largely missing in California post-legalization. In California, 73% of cities and towns have banned commercial cannabis interests and sales, which has created 'marijuana deserts' across the state.¹⁵ This means, that 40% of California residents would have to drive over 60 miles in order to obtain legal cannabis, which creates an access problem and may force consumers back into the black market, despite the substances newfound legality.¹⁶ As of February 2019, there have been less than five referendums surrounding legal cannabis in California, yet as previously

mentioned, the vast majority of localities reject cultivation and sales.¹⁷ However, the case in Massachusetts is seemingly different, as they passed Bill H.3818: An Act to Ensure Safe Access to Marijuana.¹⁸ This act makes sure to avoid the access problems created by the restrictive laws in California, as it mandates that cities and towns have no fewer cannabis businesses than 20% of the amount of alcohol licenses that locality has issued.¹⁸ However, this rule has not stopped many municipalities from outright banning sales similar to other states. One interesting example, is the case of the Massachusetts town of Newton, which banded together to call for a voting initiative on the town's future in cannabis, as council members originally wanted to outright ban sales. This referendum saw the locality vote no to an outright ban, as well as a general limit on commercial enterprises.¹⁹ Unfortunately, this concept of citizen choice on new, groundbreaking policy is frequently absent, and will continue to be if locality referendums are not taken into account in future legalization efforts. In lieu of local referendums, a policy based on the previous statewide referendum could be effective in addressing this lack of citizen involvement. This policy would note that if your municipality had greater than 50% who voted in favor of legalization, you must take a followup referendum to approve of a sales ban. This would allow a town or city to at the very least take public opinion into account, and disallow outright bans that lack public input. In the long-run this ability to ban legal policies at the local level could significantly stunt the legal cannabis industry and produce the opposite effect intended with the sales bans. As such, increased access will remain key to subtracting black market,

criminal competition, which seems to have far greater negative externalities than legal sales do.

Low Access to Legal Consumption Spaces

Fundamentally found in this idea of choice, is a focus on the originality found between areas, wherein cookie-cutter policy will fail to address individualistic concerns. This is something realized in the cannabis legalization undertaken in Canada, where the law is not unilateral across territories and provinces.¹¹ These differences in law are largely founded on distinctions in where it is legal to consume cannabis, as territories and provinces are split over what best practice is. To further complicate things, there are differences founded between provinces and the cities contained inside them. For example, the province of Alberta maintains some of the most liberal laws in the nation around public smoking, yet its biggest city, Calgary, has banned public consumption, except in designated areas.²⁰ The creation of designated smoking spaces is an interesting piece of policy, as it is both stigmatizing and liberating. On one hand, this grants smokers a place to safely use cannabis, which was never offered anywhere throughout history. Yet, it is difficult to feel completely satisfied with being relegated away from society to perform a legal act. This raises the question of whether the externalities surrounding open-public consumption are truly detrimental to public health and wellbeing. Currently in the US, no state allows for public consumption. In Colorado, this policy brought on a stiff increase in public consumption tickets in Denver when compared with the year prior to legalization (2013).²¹ Despite this, the policy in

Colorado (and the rest of legal states) remains, that only those using cannabis on private property have the right to do so. This creates disparities, wherein only those wealthy enough to own their own property will have the right to consume cannabis. Similar to the way in which an apartment complex would prohibit pets, building owners can effectively ban consumption on their owned property. This leaves many average citizens with no place to consume a legal substance without fear of potential repercussions.

To rectify the lack of legal public places to consume cannabis, one would wonder why many states fail to look towards the coffee shop model set up by the Dutch. In this case, cannabis isn't even legal, yet it is tolerated with a blind eye from law enforcement if consumed on your own property or in one of the nearly 200 coffee shops throughout the Netherlands.²² However, these coffee shops represent a communal, public place for cannabis consumption, similar to how a traditional bar would serve alcohol throughout the world. Since legalization in Denver, cannabis social clubs have begun to pop up, which are establishments that offer locals and tourists a place to legally consume cannabis. However, these establishments are not common enough to actually cover the demand of Colorado, as there are less than twenty in the entire state.²³ In addition, these places represent another financial hurdle to safe, legal consumption, as people typically pay a membership fee to enter the space. Also important to note, is that none of these establishments actually sell cannabis products, which directly contrasts it with the traditional bar model. As such, these business are closer in form to someone's

basement, than anything resembling an upscale bar. (See Image 1) This brings out more stigma, wherein people who want to use cannabis legally are forced away from the norm, which also dissuades potential new consumers, due to the complexity of laws and regulations. The absurdity of this system can easily be pointed out in a direct comparison to alcohol, which would require someone who wants to drink to go purchase their drink of choice, then be forced to go pay for another place to consume this drink away from the rest of society.

However, there has recently been a shift in this anti-consumption-space paradigm, wherein Alaska has approved on-site cannabis use for the near-future. A bill recently signed by the Alaska Lt. Governor Kevin Myers, will allow licensed dispensaries to apply for on-site consumption, which will begin the licensing process starting April 11, 2019.²⁴ This bill looks to make onsite consumption at existing dispensaries the new norm, which helps with the negative externalities found in open-air consumption, while also reducing the time and stigma it takes to consume cannabis. In addition, this directly addresses the gap between how homeowners vs renters can legally consume, while also giving tourists and new consumers a more ideal experience. In Oregon, there is also a bill (SB 639, 2019), which looks to grant licenses in a similar manner. However, SB 639 is focused on even more than the Alaska bill, as it also looks to legitimize other areas of the booming Oregon cannabis industry.²⁵ The bill looks to create what they call “consumption cafes” at already established dispensaries, while also allowing for cannabis farm tours (similar to wine tours) and expanded cannabis

delivery services.²⁶ All of these do much to rationalize and legitimize the business of cannabis, while also allowing increased access to all segments of the public population. In other states, one would have to wonder if indoor consumption would be able to usurp indoor smoking laws, which were passed to reduce access to secondhand tobacco smoke. An example of this is seen in Colorado, where in 2006, the legislature issued a statewide (tobacco) smoking ban from everywhere but private residences and automobiles.²⁷ Although cannabis is a completely different substance, the negative externalities surrounding general secondhand smoke may not be enough for the passage of on-site smoking. Overall, this is something to consider in the constant entanglement of old law and new policy implementation, wherein new policy creation might depend on what was set in stone in the past.

Criminalization, Clearing Convictions and Diversity in the Industry

In 2017, Pew Research Institute released a poll showing that 61% of the American public now favor full-on cannabis legalization, which shows a steep change in perception overtime.²⁸ However, this perception certainly is not reflected by the laws still surrounding the substance across the nation. This is further realized, when analyzing marijuana possession arrest trends for 2017, which showcase that there are increased arrests compared with years prior.²⁹ However, when looking further into this data, it shows that arrests for personal cannabis consumption have increased rapidly, while arrests for manufacturing and distributions (felony or higher charges) have decreased. This points towards a direct increase in police enforcement, as simple

marijuana possession charges made up nearly 40% of all drug-related arrests in 2016 and 2017.³⁰ This directly singles a change in enforcement, as police are potentially scrambling to find ways to criminalize cannabis.

Clearly, when cannabis is legalized in a state, police enforcement should drastically shift its focus towards criminal acts with truly negative consequences. However, often forgotten, are those who were criminalized during decades of cannabis prohibition, as they continue to pay with their wasted life, despite policy and law dictating their reason for imprisonment to now be illegitimate. In late 2018, California became the only state to see how poorly the ills of old policy have hurt those affected. As such, Gov. Brown signed a bill, which will allow for the automatic review and potential reduction or dismissal of low-level California cannabis charges.³¹ The idea is that those caught with old policy, should not have to bare the brunt of that the rest of their financial and professional lives. Prior to this, cities like Seattle and San Francisco, have also passed bills, which will look to directly erase conviction records, however California is the first legalized state to undertake this effort statewide, which looks to overturn convictions for current offenders. In Colorado, expunging convictions is extremely complicated, and not even something many know is available. The process involves petitioning the court and paying fees, which might pose a barrier to lower-income individuals who wish to expunge unjust convictions.³⁶ Denver advocates are calling for a wide sweeping clearance of these past convictions, which would eliminate disparities created by differences in time and income level between the

population. Equity would be created, in a system that wipes all past cannabis possession charges from records, as only offering justice to those with the ability to pay seems unfair. Additionally, what makes California's law so different is that the convictions are automatically reviewed, which removes the citizen from complicated legal processes.

Another way to provide justice to those affected by poor policy is through a system that pays vindication for ills of the past. More specifically, policy should be in place, which provides an opportunity in the cannabis industry for those arrested using drug war era laws. The current status quo around this actually presents the opposite strategy being employed by the governments in legalized states. In Washington state, regulators have set up a point system, which is used to judge if those with past crimes can even apply for a license to work in the state's cannabis industry.³⁷ The system disqualifies applicants once they reach eight total points, where it applies three points for misdemeanors and twelve points for felony convictions from the last ten years.³⁸ This seems unjust, as each applicant is not taken on a case-to-case basis, but rather blanketed into a yay or nay status without further investigation into the actual crimes they committed. This attitude towards former offenders is also showcased in a 2018 bill that legalized industrial hemp, which is expected to be a twenty billion dollar industry by 2020.³⁹ Industrial hemp is still defined as a "marihuana extract", despite there being none of the psychoactive chemical THC in it. The bill bans anyone with felony-drug convictions from participating in the hemp industry for life. This ruling seems

fundamentally harsh, as it also turns away people who may have talent for growing cannabis, yet are barred due to these past convictions. Disallowing citizens from working in an industry simply because of past (mostly unrelated) actions seems senseless and again fails to treat past offenders as individuals, rather than a group of irredeemable criminals.

As 80% of those in federal prisons and 60% in state prisons for drug convictions are black or latino, these policies are making sure that the budding cannabis industry will lack any form of diversity in the long run.⁴⁰ This is something that several states are attempting to change, with policies that look to put minorities at the forefront of the industry, due to the tremendous oppression they faced during the war on drugs in the past. Oakland city council has undertaken a measure dubbed, the equity permit program, which looks to grant priority to minority communities most impacted by the war on drugs.⁴¹ To qualify for the program, residents of Oakland must have an average income that is 80% less than the Oakland median-about 52K, which also promotes this program as one delivering upward mobility to a community with little options.⁴¹ However, according to the SF Chronicle, there have been significant flaws in the design of the program, which has left many minority growers without approved space for their legal operations.⁴² The plan offered non-minority companies priority, if they donate work space for cultivation to an minority-individual granted a license. However, it seems many of these organizations have left minority growers reeling after the companies received their license. Changes like this demand timely accountability and enforcement

of the policy in place, which seem to be largely absent in the implementation stage. As such, policies will fail when they are good in ideation, yet poor in execution. Maryland has taken a different approach, as the state only allows for medical legality currently. However, state representatives created a plan, which will allow for additional licenses in Maryland's medical industry for minority owners, in order to combat the industry's diversity problem.⁴³ However, this plan was only introduced after Maryland has well established non-minority owned cannabis businesses, which dominated their medical landscape. Additionally, a lawsuit against the plan has come into play, which states that adding more businesses without explicit demand present, jeopardises the millions in investments licensed business have already made. However, the lawsuit was thrown out days later after public outcry, from activists, who planned a sit-in at one of the companies many cannabis businesses.⁴⁴ This portrays the reality of an industry, which should have brought in minority licensing when the medical industry in Maryland was just beginning. In future legalization and medicalization efforts, there must be some semblance of reparations to minorities, who faced the worst of drug war punishment for years. In lieu of this, the industry is set up to be all white-owned, which neglects the unique history of this new commodity and allows for disparities to continue.

Cannabis Tax Issues

The tax revenue generated by cannabis legalization is often something touted as one of the most positive externalities of cannabis legalization, even by those who fundamentally oppose the substances consumption. These tax rates vary widely

between legalized states, wherein there exists a divide between how much state, local and excise tax will be levied on consumers. However, something often overlooked, is what exactly cannabis tax funds are being spent on. Additionally, often not realized is that cannabis tax revenue accounts for less than 2% of total state budgets in every state that has legalized, which does not discount its potential to help, but fails to represent a panacea that many have assumed to be present. In Colorado, recreational cannabis is taxed in three different ways. The first, is external to the consumer, as the state's cannabis 15% excise tax is levied on cannabis growers selling directly to dispensaries and distributors. The other two taxes in Colorado's system are a general 15% rate on retail cannabis sales, as well as a <3% local sales tax rate. 90% (or 40 million, whichever is greater) of these funds are contributed towards a competitive public education infrastructure improvement program, titled the B.E.S.T. program, which invests funds in accordance with school districts matching the contributions.^{45,46} According to Colorado Public Radio, this use of funding is counter to what intrigued many who voted to pass legalization in 2012, as nothing has been invested in improving the quality of education, teacher satisfaction or learning.⁴⁶ In fact, advertisements in 2012 showcased the message that Colorado ranked 35th in education funding in the nation, which is something unchanged by the introduction of cannabis tax funding. The funds from the general tax, end up in a combination of general budget funds, however the local tax can be utilized in any way the locality feels.^{46,47} These local taxes have led to investments in helping the homeless, funding scholarships and many other individualized projects.⁴⁶ However, obviously absent from the nation's first legal states tax plan, is any

contributions toward studying the long-term effects of cannabis use. As previously mentioned, conducting research on cannabis at the national level is an arduous process, which has been detrimental in learning any information regarding the long-term effects of cannabis use. However, contributing some of this tax money towards research is completely absent from Colorado budgeting. In Washington state, there is a similar trend, as more than 60% of the budget is contributed towards the state's Medicaid program, while drug research only makes up 0.1% of the entire cannabis tax revenue budget.⁴⁸ Also of note; about 8% of the budget is spent on drug treatment and substance abuse education, which helps cover some negative externalities of cannabis use, but again fails to invest in consideration towards long-run effects. In the 2019 legislative session, the state has begun to explore ways in which, cannabis tax revenue can be allocated for use in opioid-treatment programs.⁴⁸ In California, part of the funds have been budgeted towards research on cannabis at UC San Diego, Center for Medical Cannabis Research, which will receive 2 million annually for research on the long-term health effects of cannabis.⁵³ However, the state may have an issue coming up with the funds for this, which will be further explored below.

Although little tax money is being diverted towards studying the potential future harms of cannabis consumption in these states, there are greater tax problems in other states that have legalized cannabis, beyond where the tax money is being distributed. In Oregon, 176 cannabis business in the state owe a total of over 15 million in overdue taxes.⁴⁹ This is largely due to slim profit margins, which are a direct result of

overproduction of cannabis products, which are only allowed to be legally sold in state, not exported to another legal venue outside Oregon. This issue also exists, because there is no pressure on businesses to pay in a timely manner. This is due to the fact the Oregon Liquor Control Commission (OLCC) distributes licenses, while the department of revenue collects cannabis taxes, which means OLCC has no power to revoke licenses for unpaid taxes.⁴⁹ Oregon has a flat tax rate of 17% on all cannabis, which is largely less than the combined taxes found in other states.⁵⁰ However, the inability to export anything will keep sales profits lower than any projections, as in some cases mid-grade quality cannabis is simply disposed of or given away at extremely low prices. In California, the tax-rate on cannabis is nearly double what is found in Oregon, which has led to issues with sales, that has sent many consumers to the black market, despite legality.⁵¹ In the first half of 2018, tax revenue fell over 100 million dollars short of projections, which seems to be largely due to the near 45% aggregate tax-rate, which exists in many counties.⁵² This high tax-rate is dissuading consumers from participating in the legal market for cannabis, which has led the California state Assembly to launch Assembly Bill 286 (the Temporary Cannabis Tax Reduction Bill).⁵¹ This bill looks to lower the state's cannabis excise tax from 15% to 11%, while also suspending costly cultivation taxes till 2022.⁵¹ This will likely decrease overall tax rates by nearly 20%, but it will be difficult to overcome a steady black market of sales, which faces no consumer burden of tax. Keeping taxes at reasonable levels is more rational policy, because decreasing black market cannabis use and the crime that stems from it, should largely outweigh a focus on extremely high tax rates that dissuade consumers from legal

purchases. Also of note, is that California will make less than 2% of their total state revenue off cannabis taxes, so why institute policies that act like the state will fail without these collected funds? The main concern for future states should be passing a reasonable tax rate, which will encourage consumers to only shop in legal venues.

Cannabis Concentrate Policy

Cannabis concentrates or extracts, which are colloquially known by many names, but most commonly “dabs”, are something that seems to be widely misunderstood and heavily under-regulated in legal states.⁵⁴ (See Image 2) In recent years, news outlets have showcased this lack of understanding, by claiming concentrates are ‘dangerous’, ‘equal to 15-20 joints of weed at once’ and ‘super-high potency’.^{55,56} These reactions are exaggerated, however, the substance seems to be no more dangerous than regular cannabis if appropriate dosages are followed.⁵⁴ One of the main dangers currently seems to be in regard to the production of concentrates, which often involves a butane-based extraction process that has caused explosions and fires across the nation.⁵⁷ This poses a health threat in this new industry, as Politico notes that states offer no health or safety guidance towards concentrate producers. Additionally, the national institute for occupational safety and health is unable to act in any state-based legalization efforts, which means there have been no standard hazard evaluations in this industry space.⁵⁷ Also of note, is that fire and safety personnel will likely have never seen a butane hash oil fire, which is another cause for concern. These vast

impediments to safe production require a focus on increased guidelines or mandatory licensing, as currently these setups are conducive to danger and injury.

As of now, many states have laws that limit the amount of concentrate that can be legally purchased in a single transaction to a certain number of grams (5gs in most states, 8gs in Colorado).⁹⁸ However, these laws are difficult to enforce, as a consumer can just travel to another store and purchase the limit again. Passing policy, which takes note of this potential loophole, while also taking note of the potency disparity seems key. As such, apart from the potential dangers that can occur in the production of cannabis concentrates, is the unstable place these products hold alongside regular cannabis flowers in the industry. In the case of the American liquor industry, hard liquor is taxed at higher rates than beer and wine, while also having greater general restrictions from state to state. For example, in Washington state, the excise tax per gallon of hard liquor is more than 50x the rate, which beer is taxed at per gallon in the state.⁵⁸ Another example of this differentiation, is seen in New York state, which mandates separate stores for the sale of liquor and the sales of beer and wine, as the state looks to draw the distinction between the substances.⁵⁹ With reference to that, it makes little sense that extremely high strength cannabis concentrates are treated and taxed the same in states where they are legal. This seems to be a hole in every state's legislation, as there is much misunderstanding around these substances. Although cannabis concentrates do not have the same track record of over-intoxication and death that hard liquor does, it makes fundamental sense for more regulation to be put in place

around the substances. This is because, similar to hard liquor, there is inherently greater risk that comes with using cannabis concentrates, when compared with cannabis flower, especially to new, inexperienced consumers. An increase in regulation of these high THC extracts seems essential, as a lack of regulations contributed to a doubling of cannabis related hospital visits in Colorado after their first year of legalization.⁶⁰ The vast majority of these cases were a direct result of overconsumption, which similar to alcohol, will leave users feeling out of control or sickly. As such, an increase in taxes and regulation for high strength extracts and products is necessary to rationalizing cannabis concentrates and protect general public health.

CBD Regulation

Cannabis is comprised of over a hundred different cannabinoids, which are the chemicals in the plant that act on the brain.⁶¹ The chemical that gives off the high found in cannabis is tetrahydrocannabinol (THC), which makes it the most noted chemical found within the plant. However, with the introduction of the aforementioned 2018 hemp-farm bill, the federal government effectively federally legalized the use of the hemp-derived, non-psychoactive cannabinoid: cannabidiol (CBD).³⁹ CBD doesn't possess the 'high' that THC does, rather, CBD consumers are after a supposed myriad of (unverified) health benefits. According to Harvard Medicine, the only condition with lengthy, valid research on the effectiveness of the CBD are intense childhood seizures, which seem to cease with CBDs medicinal use. Many also claim CBD can assist with chronic pain, depression, anxiety and other conditions, all of which have little published

research to substantiate the claims.⁶³ Despite issues with validity, CBD has seen projections that show it as a 16 Billion dollar industry by 2025, which is largely predicated on it's introduction to many traditional retail businesses throughout the US.⁶² CBD has appeared in many different varieties, but mostly as a food, drink or plant form. The plant form has been under the harshest scrutiny, because it looks nearly identical to THC cannabis, despite having under the illegal limit (0.3%) THC. (See Image 3) This has led to numerous confusion-based, unjust arrests in states where THC cannabis still remains illegal to possess.^{64,65,66} However, there is much truth to the idea that CBD has allowed cannabis as a whole to gain greater acceptance, a fact that is signaled by its presence on the counter of large corporate pharmacies like CVS and Walgreens.⁵⁷ This normalization of a cannabinoid is important, as it demonstrates that the potential medical benefits of cannabis have the ability to outweigh harms even in the most corporate of spaces. CBDs federally legal status, should also make room for the introduction of new research on the chemical's clinical benefits. This is important, because without fact to substantiate these claims, the widespread use of CBD may be unwarranted or placebo. So, while CBD is now mainstream, the data to back this popularity up is largely absent at current.

Despite the vast market for CBD products, there is reason for concern over the actual contents of the product consumers are receiving. The unregulated market for CBD directly contrasts with the strict lab testing THC products must go through in all legal states. This leaves consumers to trust a brand they have likely never heard of, due

to a failure to confirm the true contents. This lack of regulation has led New York City Department of Health to ban the sale of food and drinks that contain CBD in NYC, as the uncertainty surrounding the products seem to be the issue.⁶⁸ This stance has also recently been echoed by the FDA, who wishes to further evaluate the safety of CBD in food and drink products.⁶⁹ Despite this, CBD products continue to be sold around the country, with consumers putting all their trust in the product's producers. The contents of CBD products is a dual sided issue, wherein the first issue is in the actual amount of CBD in a product, which is difficult to verify without lab testing. This is especially apparent because CBD does not have any noticeable mental or physical effects like THC cannabis does. This can allow for products to be marketed and sold as CBD containing, yet contain little to no CBD.⁷⁰ The other side of this issue is that there is also potential for extraneous, and potentially dangerous substances to be found in legal CBD products. A CBD corporation called Diamond CBD has had products that test positive for synthetic cannabinoids, dextromethorphan and high concentrations of melatonin, despite products being labeled as only CBD.⁷¹ The company is deceiving people in an unregulated market, which can be dangerous to consumer health. These dangers to public health of consumers are why all CBD products should be lab-tested and regulated. This seems to largely be a case of late action from the FDA, based on their miscalculation of CBDs popularity among the general public. However, this regulation might be less important than legitimate studies, which prove CBD to be an effective treatment, as the FDA has already set limits on the products advertising.⁷² These look

to limit false claims of CBDs medical abilities, which many producers have touted in the absence of regulation.

Bank Access for Cannabis Businesses

Despite the success many states have had in invoking the 10th amendment to legalize cannabis in their respective states, something that always must be considered, is the federally illegal status the substance still holds. This is especially important in regard to how legitimate cannabis business are able to manage their funds. In 2014, the Obama administration Treasury Department issued a memo to federal banks, saying that legitimate, legal-state cannabis businesses should be no issue at federal banks, as they would simply require slightly more oversight and reporting.⁷³ Despite this proclamation, large federal banks have shown an unwillingness to work with legal cannabis businesses, which is a direct result of conflicting state and federal law that institutions feel could lead them to federal money laundering charges. This has placed the burden on smaller credit unions and independent banks, who often do not have the same credibility, perks and wide accessibility found in banking with a federal chain.⁷⁴ As such, this has left legitimate businesses with few options to deposit large sums of cash, which is a direct detriment to their safety and financial security. On the state side, this lack of known income can also place stress on tax collection, wherein the true amount of sales can be withheld from the state. In response to these concerns, the US House Financial Services Committee has advanced a federal banking bill to the full house at the end of March, 2019.⁷⁵ This federal measure would look to codify concerns that

banks have with businesses, which are effectively viewed as federally illegal. The bill is expected to have moderate bipartisan support, but regardless will easily pass the Democrat controlled House of Representatives. However, the bill could run into some trouble in the US Senate, where Republicans have control. This is already apparent, as some of the Republicans in the preliminary Financial Services committee have already opposed the bill.⁷⁵ As such, this seems like a long-term fight, which if won, would help legitimize cannabis to the public and add greater safety to the financial side of the cannabis industry. However, at current, cannabis finances sits in a grey area between federal and state bureaucracy, which does much to subtract from the substances rationality. Which is furthered, when legitimate cannabis businesses are still treated as criminal at the federal level.

Potential uses for Cannabis to combat the Opioid Epidemic

With the opioid epidemic causing a myriad of issues across the nation, some states have pursued medical cannabis as a substitute for opioid prescriptions. Most notably, this effort has been undertaken in Illinois, where the state passed the Alternatives to Opioids Act of 2018, which includes the opioid alternative pilot program.⁷⁶ This program allows anyone with an opioid prescription to be offered a medical cannabis license instead. Additionally, this program allows for some cases of pain to be added to the accepted conditions list for medical cannabis.⁷⁷ The New York State Department of Health has a similar plan, which allows the substitution of cannabis for prescribed opioids. However, interestingly, the regulations also allow opioid users in

treatment, to use cannabis in conjunction with buprenorphine or other opioid-abuse treatments.⁷⁸ These policies have been met with criticism from physicians and scholars, who say that fundamentally, cannabis does not have the same ability to treat neuropathic pain that opioids do (79,80). Humphreys and Saitz suggest, that there is little to no evidence in scientific studies, but this seems to be largely due to the fact cannabis research has been widely restricted for decades.^{32,79} However, it seems they are missing the point of these pieces of legislation, which is to limit new cases of opioid abuse by halting potential addiction before it can start. Additionally, the bills still allows citizens to seek opioid prescriptions if they find cannabis inadequate for their pain management. Despite the lack of validity in research into the true effects of cannabis on pain, Campbell et al had some notes stating that cannabis has potential to at least change someone's perception of the pain they are feeling, even if they are still experiencing that pain in actuality.⁸⁰ This is something that certainly requires more research, which should happen now that cannabis research is less restrictive than ever. Another reason there could be some benefit to these policies, is found Bachhuber et al, which showcases that opioid overdose rates are largely down in states that legalized medical cannabis.⁸¹ Specifically, states that legalized medical cannabis by the time of the studies publishing saw a combined 25% less opioid-overdose rate on average, when compared with non-legal medical states.⁸¹ This shows some level of promise, which if further studied highlights cannabis as a promising ally in the fight to combat the opioid epidemic. However, only time will reveal if cannabis is an adequate substitute for opioids or just part of an interesting, yet inaccurate proposal.

Serious Health Problems in Cannabis Vaping

Some project the American nicotine vape industry to reach nearly 45 billion in size by 2023, however a significant impediment to this may lie in how the FDA chooses to regulate these products.⁸² This late response by the FDA is a direct result of heightened consumption rates by teen vaping, which had increased 80% among high school students.⁸³ As a result, the FDA has considered a number of options to fix this issue; including: banning flavors that appeal to use, banning social media advertising and raising taxes.⁸⁴ This increased scrutiny around the nicotine vape industry has showcased the direct issues found in these products. However there has been very little of this attention put towards the newly popular, cannabis vape cartridges (CVC). CVC may sound like a safer alternative to smoking cannabis, however both the legal and illegal industries have faced tremendous concerns. In the legal industry in California, CVC have consistently tested positive for pesticides, which are commonly found in agriculture, but lead to toxic emissions when heated. This is especially concerning, as the oil used in CVC is concentrated cannabis, which as a result might hold concentrated amounts of pesticides.⁸⁵ This places a spotlight on the safety concerns that come with these products, which is something echoed in Alzghari et al, which found that 80% of cannabis concentrates they tested contained elevated levels of pesticides, which were labeled as unsafe for human consumption.⁸⁶ Another concern in the California market, is the false advertising discovered by the state's mandatory lab testing, which found the majority of cannabis cartridges to contain lower percentages of THC than advertised.⁸⁶ This is of special note, as some California cannabis testing labs have been caught

falsifying the facts and figures of their tests.^{87,88} In addition, other lab tests have identified toxic metals in the design of the cartridges, which potentially release lead into vapor when heated.⁸⁹ This issue requires validity to the testing of cannabis vape cartridges, as these health hazards subtract from the validity and safety of the legal industry. As such, there should be great concern, when a legal industry is potentially peddling unsafe products to consumers.

In non-legal states, there has been a separate movement, which has black market consumers in fear. This is because cartridges in illegal states can be mass produced and sold without any testing of the cartridges actual contents, which means that there is no validity to the actual chemicals (and potential toxins) a consumer is inhaling. However, even more concerning is the abundant presence of knockoff packaging, which looks to mimic legitimate, legal-state cannabis vape cartridge brands.⁹⁰ This packaging directly mirrors the legal product and is widely available from Chinese wholesalers, who have perfected the copy cartridge designs. This has led to an unregulated black market, where the end-user has no information on a products validity, but may be unaware of these issues.⁹⁰ Another concern in this space, is similar to the nicotine vape industry, in that certain packaging designs can lead to youth use. This is because some other forms of Chinese-manufactured packaging is not a brand, but showcases Nintendo's Mario characters, naming them "Mario Carts" (short for cartridges).^{91,92} (See Image 4) There are also other cartridges dubbed "Exotic Carts", which try to draw in consumers with a variety of supposed dessert flavors and bright

colors.⁹³ (See Image 5) This is extremely concerning, as it can draw in youth, while there are further flags raised by the potential mystery contents of the cartridges themselves. Enforcement of these cartridges has to be a priority for law enforcement and public health experts, as the dissemination of such dangerous products must be noted. As for consumers, it seems that any black-market cannabis cartridge should be considered unsafe, as the user has no possible way to test for the actual contents of the product they are consuming.

Medical Cannabis Insurance

In cases where a physician prescribes medicine to a patient, the patient's insurance will typically cover a percentage of, if not the entire cost of the medication. This is one of the many reasons that patients invest in their health insurance, because some treatments can be excessively expensive to pay for out-of-pocket. However, left out of any form of American health insurance coverage is medical cannabis, which is barely even mentioned by insurers. One of America's top health insurers, Cigna, offers no official opinion on medical cannabis on their website, however they do somewhat try to dissuade patients in legal-medical states from seeking out the treatment by saying medical users might be federally prosecuted at any time.⁹⁴ This seems like a complete exaggeration, as even if the federal government was to prosecute anyone for medical cannabis, it would be the states themselves who invoked the tenth amendment to pass the policy. Furthermore, it seems that large insurers will never cover medical cannabis in America due to the aforementioned place it holds in schedule one of the controlled

substances act.³³ Additionally, a lack of FDA approval means that the substance would never see coverage by government insurance schemes, as the government themselves view cannabis as fundamentally unsafe for medical use.⁹⁵ There is also room for discussion on how medicaid plans could potentially cover state medical cannabis prescriptions, although this would likely lead to intervention by the federal government. The opioid pilot programs previously mentioned in New York and Illinois seem the proper place to supply this logic, as the plan allows for coverage of opioids, yet if they painkillers are replaced with cannabis, the fees immediately become out of pocket costs.^{76,77} This showcases the idea that medical cannabis is different, in that the treatment is perceived as a luxury for patient-consumers, with little reason to have coverage for it. This again seems to be an issue, due to a lack of lengthy, accurate research on the medical benefits of cannabis. However, of note here, is that states do not impose the same tax rates on medical cannabis, as they do with recreational, which offers some break to consumers with medical needs. To further question this medicalization process, one would wonder why medical cannabis patients need to pay a yearly license fee in addition to the steep out of pocket costs. However, it seems that the amount paid yearly for a medical cannabis card varies heavily by state, where some have no fees, yet some charge hundreds.⁹⁷ An interesting proposal could see medical cannabis licensing fees potentially covered through state-raised cannabis tax funds, which would be a good way to legitimize cannabis medicalization.

In Canada, one of the nation's largest health insurers, Sun Life Assurance Co, has moved to cover medical cannabis for the patients they insure.⁹⁶ The insurer has

agreed to cover the treatment as a result of much consumer feedback, wherein they have offered \$1.5K-6K coverage per person, per year. However, the conditions they cover are extremely limited and very severe, which leaves little space for non-life threatening conditions to receive covered treatment.⁹⁶ Regardless of that, this move by Sun Life Assurance Co is monumental, as it helps invoke the idea that cannabis is a legitimate, rational product, which can assist with medical issues. In the US though, it seems unlikely that any insurer will look to provide coverage for medical cannabis, until it is approved by the FDA or taken off the controlled substances list. As such, some focus should be placed on the legitimacy of medical cannabis as a treatment, which in the long-run might change perceptions of what should and should not be covered in medical care.

In Closing

Overall, the point needs to be made, that policy has not reached perfection in the governing of other substances either, be it legal or illicit. In the case of alcohol, each day 29 people die on average from drunk driving accidents, yet there is has been no major reform in this policy area for nearly twenty years.^{104,105} Additionally, excessive alcohol consumption is linked with a myriad of negative health effects, which again has seen little true attention from policymakers.^{107,108} Some of this is likely due to public perception, as alcohol-use has been perceived as rational for centuries. As such, this denotes the difficulty in changing policy around such a longstanding state of affairs. On the illicit side of substances, there is now a movement in Oregon and Colorado to

legalize psilocybin mushrooms for therapeutic use, yet this is difficult to see, when cannabis legalization has faced so many issues.¹⁰⁶ Similar to cannabis, psilocybin mushrooms have seen very little medical research, which is one of main reasons for their long-term prohibition. However, similar to cannabis rationalization, changes can slowly take place, which will allow for the potential for legitimate mushroom use to enter society. Despite this, this legalization effort will likely be even more restrictive than cannabis, which in the end saw uneven control efforts, despite overwhelming public support for cannabis legalization.⁹ Both of these cases signal, that each substance needs its own, individual policy around it. Looking for comparisons between substances can be useful, but individual perception will play a vast role in real policymaking.

Overall, it seems most of these benchmark cannabis policies are only relevant to cannabis legalization efforts of the future. As such, the originality of the history and perception of cannabis, place it in a policy category on its own. However, an increased focus on how to correct errors of the past, while looking towards the future, seems key to continued rationalization of cannabis and the policies that govern it. With all of these insights in mind, it would seem as if cannabis legalization efforts thus far have left much to be desired. However, there needs to be some emphasis placed on the uniqueness that effectively comes with this vast shift in policy, in that to this point, there has been little precedent to act on. Moreover, it seems that any cannabis legalization effort undertaken by states is applauded, simply because any sort of reform in this space is long overdue. However, as the US progresses towards further state legalization efforts

of cannabis, a learning from these errors of the past will only introduce improved policies. As such, taking all of these policy area recommendations into account seems crucial to truly creating benchmark policy, which rationalizes cannabis to society.

Images

Image 1⁹⁹



Image 2¹⁰⁰

CANNABIS CONCENTRATES

| | | | |
|---|---|--|--|
|  <p>CRUMBLE Dried oil with a honey-comb like consistency</p> |  <p>BADDER/BUDDER Concentrates whipped under heat to create a cake-batter like texture</p> |  <p>SHATTER A translucent, brittle, & often golden to amber colored concentrate made with a solvent</p> |  <p>DISTILLATE Refined cannabinoid oil that is typically free of taste, smell & flavor. It is the base of most edibles and vape cartridges</p> |
|  <p>CRYSTALLINE Isolated cannabinoids in their pure crystal structure</p> |  <p>DRY SIFT Ground cannabis filtered with screens leaving behind complete trichome glands. The end-product is also referred to as kief</p> |  <p>ROSIN End product of cannabis flower being squeezed under heat and pressure</p> |  <p>BUBBLE HASH Uses water, ice, and mesh screens to pull out whole trichomes into a paste-like consistency</p> |

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Image 3¹⁰¹



Image 4¹⁰²



Image 5¹⁰³



References

1. US Legal, Inc. (n.d.). Marijuana Tax Act Law and Legal Definition. Retrieved from <https://definitions.uslegal.com/m/marijuana-tax-act/>
2. Musto, D. F. (1972, February 01). The Marihuana Tax Act of 1937. Retrieved from <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/490581>
3. Kleiman, M. A., & Hawdon, J. E. (n.d.). Marihuana Tax Act (1937). Retrieved from <http://sk.sagepub.com/reference/drugpolicy/n213.xml>
4. Marijuana Timeline. (n.d.). Retrieved from <https://www.pbs.org/wgbh/pages/frontline/shows/dope/etc/cron.html>
5. Timeline: America's War on Drugs. (2007, April 02). Retrieved from <https://www.npr.org/templates/story/story.php?storyId=9252490>
6. LoBianco, T. (2016, March 24). Report: Nixon's war on drugs targeted black people. Retrieved from

- <https://www.cnn.com/2016/03/23/politics/john-ehrllichman-richard-nixon-drug-war-black-s-hippie/index.html>
7. Thirty Years Of America's Drug War: A chronology. (n.d.). Retrieved from <https://www.pbs.org/wgbh/pages/frontline/shows/drugs/cron/>
 8. Graham, M. G. (1987). Controlling Drug Abuse and Crime: A Research Update. Retrieved from <https://www.ncjrs.gov/App/abstractdb/AbstractDBDetails.aspx?id=104865>
 9. Hartig, H., Geiger, A., Hartig, H., & Geiger, A. (2018, October 08). 62% of Americans favor legalizing marijuana. Retrieved from <http://www.pewresearch.org/fact-tank/2018/10/08/americans-support-marijuana-legalization/>
 10. Jordan, J. (2019, April 16). These 60 Michigan cities have opted out of recreational marijuana sales. Retrieved from <https://www.metrotimes.com/news-hits/archives/2019/01/02/these-60-michigan-cities-have-opted-out-of-recreational-marijuana-sales>
 11. Gaughan, J. (2019, January 15). Here's How Cannabis Legalization Differs From Province To Province In Canada. Retrieved from <https://www.narcity.com/news/heres-how-cannabis-legalization-will-be-different-from-province-to-province-in-canada>
 12. Lovett, K., & Lovett, K. (2019, January 15). Cuomo would prohibit sale of pot to anyone younger than 21, allow localities against marijuana legalization to opt out. Retrieved from <https://www.nydailynews.com/news/politics/ny-pol-cuomo-pot-legalization-20190114-story.html>
 13. Laws governing local ballot measures. (n.d.). Retrieved from https://ballotpedia.org/Laws_governing_local_ballot_measures
 14. Scarboro, M. (2018, March 26). How High are Marijuana Taxes in Your State? Retrieved from <https://taxfoundation.org/marijuana-taxes-state/>
 15. Replogle, J. (2017, December 19). As California Embraces Legal Marijuana, Many Cities and Counties Say 'No'. Retrieved from <https://www.kqed.org/news/11637917/as-california-embraces-legal-marijuana-many-cities-and-counties-say-no>
 16. Branam, B., & Levine, N. (2018, March 25). Weed is legal. But this map shows just how much of California is a 'pot desert'. Retrieved from <https://www.sacbee.com/news/state/california/california-weed/article205524479.html>
 17. Local marijuana on the ballot. (n.d.). Retrieved from https://ballotpedia.org/Local_marijuana_on_the_ballot
 18. An Act to Ensure Safe Access to Marijuana Bill H.3818 190th (2017 - 2018). (n.d.). Retrieved from <https://malegislature.gov/Bills/190/H3818>

19. Edelson, J. (2018, November 06). Newton voters reject ballot questions that would have limited marijuana shops - The Boston Globe. Retrieved from <https://www.bostonglobe.com/news/marijuana/2018/11/06/newton-voters-weighing-recreational-marijuana-questions/rb6ArOkxN8X1jJczgQBJKI/story.html>
20. Elliott, J. K. (2018, October 17). Cannabis IQ: A visitor's guide to smoking legal marijuana in Canada. Retrieved from <https://globalnews.ca/news/4438410/canada-marijuana-tourism-pot-visitor-guide/>
21. Markus, B. (2014, November 14). Marijuana public consumption tickets up 471 percent in Denver. Retrieved from <https://www.cpr.org/news/story/marijuana-public-consumption-tickets-471-percent-denver>
22. Haines, G. (2017, February 21). Everything you need to know about marijuana smoking in the Netherlands. Retrieved from <https://www.telegraph.co.uk/travel/destinations/europe/netherlands/amsterdam/articles/everything-you-need-to-know-about-smoking-marijuana-in-the-netherlands/>
23. Marijuana Social Lounges. (n.d.). Retrieved from <https://www.coloradopotguide.com/what-to-do/marijuana-social-lounges/>
24. Dickson, E. (2019, March 13). Alaska Approves On-Site Marijuana Use. Retrieved from <https://www.rollingstone.com/culture/culture-news/alaska-weed-consumption-on-site-pot-bar-807817/>
25. Roberts, C. (2018, August 26). Push To Legalize Marijuana Consumption Spaces In Oregon Kicks Off. Retrieved from <https://www.marijuanamoment.net/push-to-legalize-marijuana-consumption-spaces-in-oregon-kicks-off/>
26. Norml. (2019, February 01). Oregon: Cannabis Social Consumption Bill SB 639 Is About Civil Rights. Retrieved from <https://blog.norml.org/2019/01/31/cannabis-social-consumption-bill-sb-639-about-civil-rights/>
27. State of Colorado Clean Indoor Air Act. (n.d.). Retrieved from [https://www.colorado.gov/pacific/sites/default/files/Indoor air LE Key Points_0.pdf](https://www.colorado.gov/pacific/sites/default/files/Indoor%20air%20LE%20Key%20Points_0.pdf)
28. U.S. public opinion on legalizing marijuana, 1969-2017. (n.d.). Retrieved from https://www.pewresearch.org/fact-tank/2018/10/08/americans-support-marijuana-legalization/ft_18-01-05_marijuana_line_update/
29. Angell, T. (2018, September 24). Marijuana Arrests Are Increasing Despite Legalization, New FBI Data Shows. Retrieved from <https://www.forbes.com/sites/tomangell/2018/09/24/marijuana-arrests-are-increasing-despite-legalization-new-fbi-data-shows/#7326269f4c4b>

30. 2016 Crime in the United States: Table 18. (2017, September 07). Retrieved from <https://ucr.fbi.gov/crime-in-the-u.s/2016/crime-in-the-u.s.-2016/topic-pages/tables/table-18>
31. Norwood, C. (2018, October 1). California's New Marijuana Law Is a First But Likely Not the Last. Retrieved from [https://www.governing.com/topics/public-justice-safety/gov-california-marijuana-criminal-record-state.html?utm_term=California's New Marijuana Law Is a First But Likely Not the Last&utm_campaign=Distracted by Data&utm_content=email&utm_source=Act-On Software&utm_medium=email](https://www.governing.com/topics/public-justice-safety/gov-california-marijuana-criminal-record-state.html?utm_term=California's+New+Marijuana+Law+Is+a+First+But+Likely+Not+the+Last&utm_campaign=Distracted+by+Data&utm_content=email&utm_source=Act-On+Software&utm_medium=email)
32. Challenges and Barriers in Conducting Cannabis Research. (2017, January 12). Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK425757/>
33. Drug Scheduling. (n.d.). Retrieved from <https://www.dea.gov/drug-scheduling>
34. Lopez, G. (2016, August 11). The federal government won't change marijuana's "schedule." Here's what that means. Retrieved from <https://www.vox.com/2014/9/25/6842187/drug-schedule-list-marijuana>
35. The 10th Amendment of the U.S. Constitution. (n.d.). Retrieved from <https://constitutioncenter.org/interactive-constitution/amendments/amendment-x>
36. Colorado should wipe low-level marijuana convictions clean. (2018, December 05). Retrieved from <https://www.denverpost.com/2018/12/04/remove-low-level-marijuana-convictions/>
37. Rough, L. (2017, June 09). Can You Get a Cannabis Business License if You're a Convicted Felon? Retrieved from <https://www.leafly.com/news/industry/can-convicted-felons-get-a-cannabis-business-license>
38. Marijuana Licensing: Criminal History Record Check. (n.d.). Retrieved from https://lcb.wa.gov/mjlicense/criminal_history_check
39. Avins, J. (2018, December 15). Proposed hemp regulations continue the racist legacy of the US war on drugs. Retrieved from <https://qz.com/1475224/proposed-hemp-regulations-continue-the-racist-legacy-of-the-us-war-on-drugs/>
40. Race and the Drug War. (n.d.). Retrieved from <http://www.drugpolicy.org/issues/race-and-drug-war>
41. Fox, H. (2018, June 25). Can Oakland Help Solve the Weed Industry's Diversity Problem? Retrieved from <https://www.rollingstone.com/culture/culture-features/can-oakland-help-solve-the-weed-industrys-diversity-problem-196047/>
42. Taylor, O. R. (2018, July 15). Oakland's marijuana equity program is hurting those it was supposed to help. Retrieved from

- <https://www.sfchronicle.com/news/article/Oakland-s-marijuana-equity-program-is-hurtin-g-13077077.php>
43. Dresser, M. (2019, April 07). Maryland lawmakers reach deal on medical marijuana licenses, making more minority owners likely. Retrieved from <https://www.baltimoresun.com/news/maryland/politics/bs-md-medical-marijuana-deal-20180407-story.html>
 44. Donovan, D. (2019, April 07). Baltimore County cannabis grower sues to stop Maryland from awarding new licenses that could improve diversity. Retrieved from <https://www.baltimoresun.com/news/maryland/politics/bs-md-cannabis-growers-lawsuit-20190326-story.html>
 45. Marijuana Tax Revenue and Education Infograph. (n.d.). Retrieved from <https://www.cde.state.co.us/communications/marijuana-fact-sheet-marijuana-tax-revenue-for-education-after-july-2018>
 46. Brundin, J. (2018, October 22). Do Marijuana Taxes Go To Schools? Yes, But Probably Not In The Way You Think They Do. Retrieved from <https://www.cpr.org/news/story/do-marijuana-taxes-go-to-schools-yes-but-probably-not-in-the-way-you-think-they-do>
 47. Roberts, M. (2018, September 18). Here's Where Your Colorado Marijuana Tax Dollars Go. Retrieved from <https://www.westword.com/news/heres-where-your-colorado-marijuana-tax-dollars-go-10214271>
 48. Whittenberg, J. (2018, August 08). Where does Washington's marijuana tax money go? Retrieved from <https://www.king5.com/article/news/local/where-does-washingtons-marijuana-tax-money-go/281-581833195>
 49. Andrews, R. (n.d.). 176 Oregon cannabis businesses owe Oregon \$15.7M in overdue taxes. Retrieved from <https://kval.com/news/local/176-oregon-cannabis-businesses-owe-oregon-157m-in-overdue-taxes>
 50. Recreational Marijuana FAQs. (n.d.). Retrieved from <https://www.oregon.gov/olcc/marijuana/Pages/FAQs-Taxes.aspx>
 51. Daniels, J. (2019, January 29). California proposes slashing pot taxes to help regulated industry compete with black market. Retrieved from <https://www.cnbc.com/2019/01/28/calif-bill-introduced-to-slash-pot-taxes-as-legal-industry-struggles.html>
 52. Williams, S. (2017, November 12). California Could Tax the Daylights out of Marijuana Consumers. Retrieved from <https://www.fool.com/investing/2017/11/12/california-could-tax-the-daylights-out-of-marijuana.aspx>

53. Williams, S. (2016, October 15). Here's How California Would Spend Its Expected \$1 Billion in Marijuana Tax Revenue. Retrieved from <https://www.fool.com/investing/2016/10/15/heres-how-california-would-spend-its-expected-1-bi.aspx>
54. Al-Zouabi, I., Stogner, J. M., Miller, B. L., & Lane, E. S. (2018, November 02). Butane hash oil and dabbing: Insights into use, amateur production techniques, and potential harm mitigation. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6220730/>
55. Dangerous new marijuana product looks like lip balm, packs big kick. (n.d.). Retrieved from <https://www.foxnews.com/health/dangerous-new-marijuana-product-looks-like-lip-balm-packs-big-kick>
56. Jackman, T. (2015, December 23). Shatter, a super-high-potency marijuana, is appearing on the East Coast. Retrieved from https://www.washingtonpost.com/local/public-safety/shatter-super-high-potency-marijuana-now-appearing-on-east-coast/2015/12/23/e09dfde4-a8fa-11e5-bff5-905b92f5f94b_story.html?utm_term=.c3cc8b79325d
57. Rainey, R., Owerhohle, S., & Higdon, J. (2019, February 18). New problem for legal weed: Exploding pot factories. Retrieved from <https://www.politico.com/story/2019/02/18/marijuana-factories-explosions-safety-issues-1155850>
58. State Alcohol Excise Taxes. (2018, March 13). Retrieved from <https://www.taxpolicycenter.org/statistics/state-alcohol-excise-taxes>
59. New York Liquor Laws. (n.d.). Retrieved from <https://www.stateliquorlaws.com/state/NY>
60. Blake, A. (2016, April 18). Colorado hospitals and treatment centers say marijuana-related cases have spiked. Retrieved from <https://www.washingtontimes.com/news/2016/apr/18/marijuana-related-hospitalizations-spike-in-colora/>
61. Atakan, Z. (2012, December). Cannabis, a complex plant: Different compounds and different effects on individuals. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3736954/>
62. Dorbian, I. (2019, March 12). CBD Market Could Pull In \$16 Billion By 2025, Says Study. Retrieved from <https://www.forbes.com/sites/irisdorbian/2019/03/12/cbd-market-could-pull-in-16-bln-by-2025-says-study/#3db60bc83efd>
63. Grinspoon, P. (2018, August 24). Cannabidiol (CBD) - what we know and what we don't. Retrieved from

- <https://www.health.harvard.edu/blog/cannabidiol-cbd-what-we-know-and-what-we-dont-2018082414476>
64. Interstate hemp commerce under fire despite Farm Bill assurances. (2019, February 05). Retrieved from <https://hempindustrydaily.com/interstate-hemp-commerce-under-fire-despite-farm-bill-assurances/>
 65. Whitmire, L. (2019, January 06). Ohio man facing two felony possession of drug charges for cannabidiol oil. Retrieved from <https://www.mansfieldnewsjournal.com/story/news/2019/01/06/ohio-man-facing-two-felony-possession-drug-charges-cbd-oil/2466832002/>
 66. Ethers, K. (2018, November 21). Tallahassee CBD business raided, thousands of dollars in hemp seized. Retrieved from <https://www.tallahassee.com/story/news/2018/11/20/tallahassee-cbd-dispensary-raided-thousands-dollars-hemp-seized/2068011002/>
 67. Pitofsky, M. (2019, April 05). CBD products are popping up in stores near you. Here's what you need to know about them. Retrieved from <https://www.usatoday.com/story/news/health/2019/04/04/cbd-what-you-need-know-cannabis-products/3366442002/>
 68. Gold, M. (2019, February 05). New York City Cracks Down on CBD Edibles, Saying the Cannabis Derivative Is Unsafe. Retrieved from <https://www.nytimes.com/2019/02/05/nyregion/cbd-food-nyc-restaurants.html>
 69. Sander, J. (2019, April 05). FDA Schedules Hearing on CBD-Infused Food and Drinks. Retrieved from <https://www.marijuanatimes.org/fda-schedules-hearing-on-cbd-infused-food-and-drinks/>
 70. Puri, S. (2019, April 11). 'Patients Are Being Duped': What's Inside Some CBD Products. Retrieved from <https://www.nbcconnecticut.com/investigations/Patients-are-Being-Duped-Whats-Inside-Some-CBD-oil-Products-506011161.html>
 71. Love, S. (2018, November 30). CBD Vape Liquid Contains Dangerous Ingredients. Retrieved from https://tonic.vice.com/en_us/article/j5zdd8/cbd-vape-liquid-contains-dangerous-ingredients
 72. Keshner, A. (2019, April 07). FDA warns companies to stop making 'unsubstantiated' claims about CBD curing cancer and Alzheimer's. Retrieved from <https://www.marketwatch.com/story/government-warns-companies-to-stop-making-unsubstantiated-claims-about-cbd-2019-04-04>
 73. Angell, T. (2018, November 29). More Banks Welcome Marijuana Business Accounts, New Federal Report Shows. Retrieved from

- <https://www.marijuanamoment.net/more-banks-welcome-marijuana-business-accounts-new-federal-report-shows/>
74. Zhang, M. (2017, December 31). Florida's Medical Marijuana Industry Is Losing Its Bank, But Others Are Stepping In. Retrieved from <https://www.forbes.com/sites/monazhang/2017/12/31/floridas-medical-marijuana-industry-is-losing-its-bank-but-others-are-stepping-in/#4b65389f4470>
 75. Angell, T. (2019, March 29). Marijuana Banking Bill Approved By Congressional Committee. Retrieved from <https://www.forbes.com/sites/tomangell/2019/03/28/marijuana-banking-bill-approved-by-congressional-committee/#484737882ce1>
 76. Opioid Alternative Pilot Program. (n.d.). Retrieved from <http://www.dph.illinois.gov/topics-services/prevention-wellness/medical-cannabis/opioid-alternative-pilot-program>
 77. Marotti, A. (2019, January 14). Prescribed opioids but want to try medical marijuana instead? A new Illinois program will let you. Here's how. Retrieved from <https://www.chicagotribune.com/business/ct-biz-illinois-opioid-marijuana-program-2019-0103-story.html>
 78. New York State Department of Health Announces Opioid Replacement Now a Qualifying Condition for Medical Marijuana. (n.d.). Retrieved from https://www.health.ny.gov/press/releases/2018/2018-07-12_opioid_replacement.htm
 79. Humphreys, K. (2019, February 19). Should Physicians Recommend Replacing Opioids With Cannabis? Retrieved from <https://jamanetwork.com/journals/jama/fullarticle/2723649>
 80. Campbell, G. (2018, July 02). Effect of cannabis use in people with chronic non-cancer pain prescribed opioids: Findings from a 4-year prospective cohort study. Retrieved from <https://www.sciencedirect.com/science/article/pii/S2468266718301105>
 81. Bachhuber, M. A. (2014, October 01). Medical Cannabis Laws and Opioid Mortality. Retrieved from <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1898878?resultClick=1>
 82. \$44.6 Billion E-Cigarette Market - Global Size, Share, Development, Growth, and Demand Forecast, 2013-2018 & 2023 - ResearchAndMarkets.com. (2018, October 22). Retrieved from <https://www.apnews.com/edd5303cfba34fa9b4801ef49929acf5>
 83. Nedelman, M. (2018, November 15). Teen vaping up 80%; FDA proposes new rules. Retrieved from <https://www.cnn.com/2018/11/15/health/fda-vaping-ecigarette-regulation/index.html>
 84. LaVito, A. (2018, September 12). FDA puts e-cig makers on notice: Fix 'epidemic' teen use or products may be pulled from market. Retrieved from

- <https://www.cnbc.com/2018/09/12/teen-e-cigarette-use-product-flavors-come-under-regulatory-scrutiny.html>
85. Harris, Z. (2018, July 27). Vape Company Fails Pesticide Test, Issues First Product Recall in Legal Market. Retrieved from <https://merryjane.com/news/vape-cartridge-company-fails-pesticide-test-becomes-first-to-issue-product-recall-in-ca-legal-market>
 86. Alzghari, S. K., Fung, V., Rickner, S. S., Chacko, L., & Fleming, S. W. (2017, September 11). To Dab or Not to Dab: Rising Concerns Regarding the Toxicity of Cannabis Concentrates. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5679763/>
 87. Schroyer, J. (2018, December 06). Falsified California testing lab data may result in major marijuana product recall. Retrieved from <https://mjbizdaily.com/falsified-california-testing-lab-data-may-result-in-major-marijuana-product-recall/>
 88. Luery, M. (2018, December 05). Sacramento marijuana testing lab admits to falsifying pesticide results. Retrieved from <https://www.kcra.com/article/sacramento-marijuana-testing-lab-admits-to-falsifying-pesticide-results/25402844>
 89. Downs, D. (2019, January 29). California Cannabis Labs Are Finding Toxic Metal in Vape Carts. Retrieved from <https://www.leafly.com/news/health/california-cannabis-labs-are-finding-toxic-metal-in-vape-carts>
 90. McDonell-Parry, A. (2018, December 06). Counterfeit Weed Vape Cartridges Are Flooding Black Markets. Retrieved from <https://www.rollingstone.com/culture/culture-news/weed-pot-vape-counterfit-unsafe-black-market-763619/>
 91. Mario Cartridge Packaging. (n.d.). Retrieved from https://www.alibaba.com/product-detail/New-Arrival-Mario-Carts-Gold-Oil_60827772406.html
 92. Mario Carts Vape Cartridge Review – Tasty, But Are They Legit? (2019, January 16). Retrieved from <https://dabconnection.com/reviews/cartridges/mario-carts-vape/>
 93. Exotic Cartridge Packaging. (n.d.). Retrieved from https://www.alibaba.com/product-detail/Sundayvape-Popular-exotic-cart-pack-various_60859597642.html?spm=a2700.7724838.2017115.23.3bc04d52rSVDZl&s=p
 94. Cigna on Medical Marijuana. (n.d.). Retrieved from <https://www.cigna.com/individuals-families/health-wellness/hw/medical-topics/medical-marijuana-abl2153>
 95. Medicare Coverage of Medical Marijuana. (2019, February 13). Retrieved from <https://www.ehealthmedicare.com/medicare-coverage-articles/does-medicare-cover-medical-marijuana/>

96. Tierney, A. (2018, February 15). Canadian Health Insurance Company to Cover Medical Cannabis. Retrieved from https://www.vice.com/en_ca/article/neq3n8/canadian-health-insurance-company-to-cover-medical-cannabis
97. Sherrard, M. (n.d.). How Much "Weed" Cards Cost in Every State. Retrieved from <https://www.civilized.life/articles/how-much-weed-cards-cost-in-every-state/>
98. Keeler, J. (2018, September 07). Purchasing Limits in Recreational States. Retrieved from <https://www.wikileaf.com/thestash/purchasing-limits-recreational-states/>
99. NorthWest Cannabis Club Basement. (n.d.). Retrieved from https://images.potguide.com/sociallounge/453692/CmRaAAAAXgtDdMBjn7fm8SoGW1_64EjDREdK.jpg
100. Cannabis Concentrates Breakdown. (n.d.). Retrieved from https://coloradocannabistours.com/wp-content/uploads/2018/11/cannabis-concentrates-oil_s.jpg
101. CBD only Cannabis. (n.d.). Retrieved from https://www.highandpolite.co.uk/wp-content/uploads/2018/10/44661635_683796282007321_1760842480036610048_n-e1540241681563-735x400.jpg
102. Mario Cartridge Packaging. (n.d.). Retrieved from <https://www.dhgate.com/product/dhl-exotic-carts-mario-carts-package-with/432571134.html>
103. Exotic Cartridge Packaging. (n.d.). Retrieved from <https://www.amazon.com/All-10-Flavors-Packaging-PACKAGING/dp/B07L4Y67F8>
104. Impaired Driving: Get the Facts | Motor Vehicle Safety | CDC Injury Center. (n.d.). Retrieved from https://www.cdc.gov/motorvehiclesafety/impaired_driving/impaired-driv_factsheet.html
105. Mercer, S. L., Sleet, D. A., Elder, R. W., Cole, K. H., Shults, R. A., & Nichols, J. L. (2010). Translating Evidence into Policy: Lessons Learned from the Case of Lowering the Legal Blood Alcohol Limit for Drivers. *Annals of Epidemiology*, 20(6), 412-420. doi:10.1016/j.annepidem.2010.03.005
106. Rense, S. (2019, February 05). Psilocybin-A.K.A. Shrooms-Could Become the Next Legalized Drug. Retrieved from <https://www.esquire.com/lifestyle/health/a25794550/psilocybin-mushrooms-legalization-medical-use/>
107. CDC - Fact Sheets-Alcohol Use And Health - Alcohol. (n.d.). Retrieved from <https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm>
108. Global status report on alcohol and health 2018. (2018, September 21). Retrieved from https://www.who.int/substance_abuse/publications/global_alcohol_report/en/