



Washington State
Liquor and Cannabis Board

**Taxing Cannabis by Potency:
A Feasibility Study**
Legislative Directed Work Group Report



Cannabis Potency Tax Feasibility Study

Table of Contents

I.	Executive Summary.....	1
II.	Introduction	2
	Origins of the Concept of Taxing by Potency.....	2
III.	Background	3
	Cannabis Regulation in Washington State.....	3
	Current Tax Structure	4
	Other Jurisdictions	
	Illinois	5
	Canada	5
IV.	Methodology.....	5
	Concentration Versus Potency.....	6
V.	Options for Consideration.....	7
	Taxing by Milligram.....	7
	Taxing by Product Type.....	8
	Taxing by Potency Ranges.....	8
	Excise Tax with Potency-based Add-On	9
VI.	Findings	9
	Public Health	9
	Tax Revenue and Economic Impact	9
	Industry and Small Businesses	10
	Concern Over Testing Integrity	11
	Challenges Around implementation Within the Traceability System.....	11
	Considering Medical Patients	11
VII.	Recommendations	12
VIII.	Conclusion.....	13
	References	14
	Appendices	
	A. House Bill 1109 Proviso Language.....	15
	B. Work Group Member Composition.....	16
	C. BOTEK Analysis Cannabis Potency Tax Feasibility Study Executive Summary.....	18

I. Executive Summary

The 2019 session of the Washington State legislature adopted a proviso (See Appendix A) in the operating budget directing the Washington State Liquor and Cannabis Board (WSLCB) to convene a work group and produce a report to the legislature considering the feasibility of taxing cannabis by potency.

In addition to forming a work group of cannabis subject matter experts, WSLCB contracted with BOTEC Analysis, a research and consulting public policy firm that specializes in issues related to cannabis legalization and policy, to study the potential impact and feasibility of a potency-based cannabis tax. BOTEC's report included a literature review (See the BOTEC report's Executive Summary in Appendix C), and the results of phone and in-person interviews with a range of cannabis stakeholders. BOTEC's stakeholder interviews and report development was done concurrently with the work group meetings; and BOTEC's work served as a resource to help inform this report and the work group's recommendations.

The work group discussed four potential options for a potency-based cannabis tax:

- Tax by the number of milligrams of THC in the cannabis product;
- Tax by product type (flower, topical, vape, concentrates, edibles, etc.);
- Tax by range of concentrations, for example, 20 percent and above equals higher tax, below 20 percent equals lower tax; or
- A hybrid of the options above, or one of the options in addition to the excise tax.

The work group discussed and analyzed the options above and how these frameworks may impact businesses, communities, and the state. Work group members expressed concern, and needed more information on the following topics:

- Unknown impacts to public health.
- The potential for disproportionate impacts to small businesses who may have to alter their production and packaging processes.
- General concern about the capacity of the traceability system to audit a complex tax framework.
- A lack of evidence regarding how this proposal would impact consumer behavior and revenue.
- Concern related to testing lab proficiency and reliability until Department of Ecology lab standardization has been implemented.
- Impact of the proposal on medical patients who may use higher potency products to manage their medical conditions.

These among other concerns led the work group to agree that a change to a potency-based tax would not be feasible at this time, despite some members being interested in the potential of the concept. The consultant team at BOTEC came to a similar conclusion, noting that "a potency tax is likely to affect consumer purchasing habits to an unknown extent, and it is currently impossible to quantify any public health gains resulting from those effects. It is not

feasible to estimate the potential long-term revenue changes afforded by a switch from ad valorem to a potency tax. However, the considerable costs relating to the implementation of a cannabis potency tax in Washington State, as well as both theoretical and practical challenges in doing so, are better known. Therefore, at present, any change in the tax structure would require embracing large known costs and additional unknown costs in exchange for unknown benefits.ⁱ”

II. Introduction

The 66th legislature, through a proviso in the state’s operating budget, Engrossed Substitute House Bill 1109, directed the WSLCB to convene a work group to determine the feasibility of and make recommendations for varying the marijuana tax rate based on product potency, or THC content. As the mandate was not explicit in how such a tax framework would be structured, the work group created a working definition for the term “potency” in this context, as described in Section IV of the report. The work group also discussed possible frameworks for taxation.

The WSLCB reached out to a diverse community of stakeholders to form a workgroup to analyze the feasibility of implementing a potency-based cannabis tax. In addition to forming a workgroup, WSLCB used the competitive bidding process to contract with BOTEC Analysis to conduct stakeholder interviews from outside of the work group and draft a potency tax implementation feasibility report. While BOTEC and the work group’s work was done concurrently; and the two groups were studying the same issue, BOTEC and the work group both recognized the distinct roles each would play in responding to the legislative mandate. Specifically, that BOTEC’s work would serve as a resource to inform the workgroup, provide perspective from individuals and organization that would be affected by a change in the current tax structure, and help frame some of the content to be included in the work group’s report to the legislature.

Origins of the Concept of Taxing by Potency

Beau Kilmer and the late Mark Kleiman from BOTEC analysis along with Robert MacCoun, a Stanford Law School Professor, are considered conceptual architects behind the notion of taxing cannabis by potency. They argue that a tax based on THC content has the potential to protect public revenues against losses in the event of falling prices and discourage the use of more potent cannabis products, which may be associated with greater public health harms.

Increased competition and efficiencies in cannabis production, as in other industries, tend to lead to lower prices. In theory, as prices decrease, excise tax revenue based solely on sale price may impact the state’s cannabis tax revenue stream. A potency tax may protect against tax revenue declines by focusing a tax on the THC content, rather than price of the cannabis product. Additionally, implementing a structure that taxes more potent cannabis products at a higher rate could address some public health concerns by potentially discouraging the use of

high potency products that may be associated with greater health risks by increasing their price.

III. Background

Cannabis Regulation in Washington State

Initiative 502 (I-502) was passed into law by Washington voters in 2012. I-502 legalized use of cannabis products for adults 21 and over and allowed for possession of up to one ounce of useable cannabis, 16 ounces of cannabis-infused products in solid form, and 72 ounces of cannabis-infused products. The law established a regulatory framework for the production, processing, and retail sale of cannabis. Washington, among other states legalizing adult use cannabis, adopted the Cole Memorandum issued in 2013. The Cole Memorandum was a set of guidelines, issued by then-US Deputy Attorney General James Cole, outlining federal enforcement priorities. Those priorities included prohibiting diversion of marijuana across state lines and prohibiting youth access, among other things. WSLCB responded to this guidance by contracting with a third party vendor to develop a seed-to-sale traceability system. In addition to the goal of preventing diversion, the traceability system is the primary auditing and inventory tool for cannabis production and sales data in Washington State. Senate Bill 5052, known as the Cannabis Patient Protection Act, signed into law in 2015, required that all medicinal cannabis dispensary sales be under the same regulatory framework as recreational cannabis retail outlets.

The excise taxes collected from cannabis sales in Washington State have grown each year since adult use of cannabis was legalized. In FY 2019, Cannabis tax revenue in Washington State exceeded \$389 million, with the majority of the money going to the state general fund and to fund health care services. Total revenue from cannabis taxation has increased each year despite the decline in price. As of September 2019, the average price per gram for cannabis flower, including excise tax but not sales tax, is just over \$6, significantly below the peak average of over \$25 per gram at the onset of legalization (see figure 1). That being said, it does appear that Washington has already passed through the largest price drop, as prices have stabilized and even slightly increased throughout the past year (see figure 2).

Figure 1

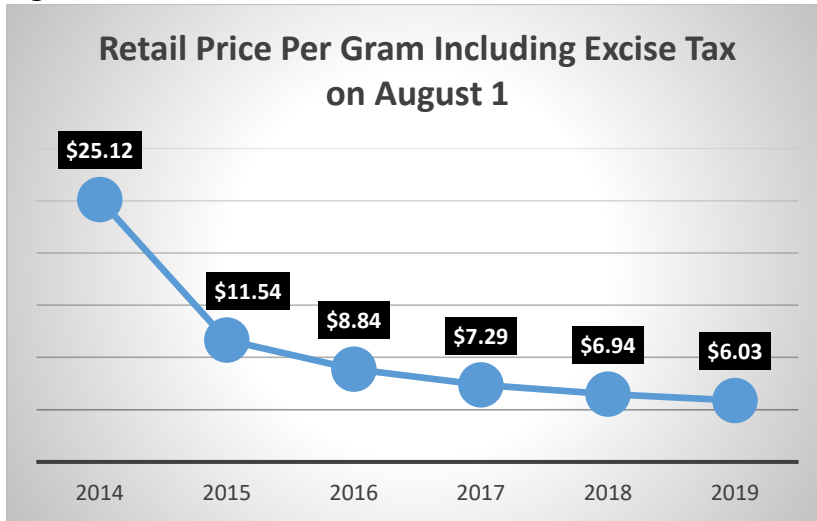
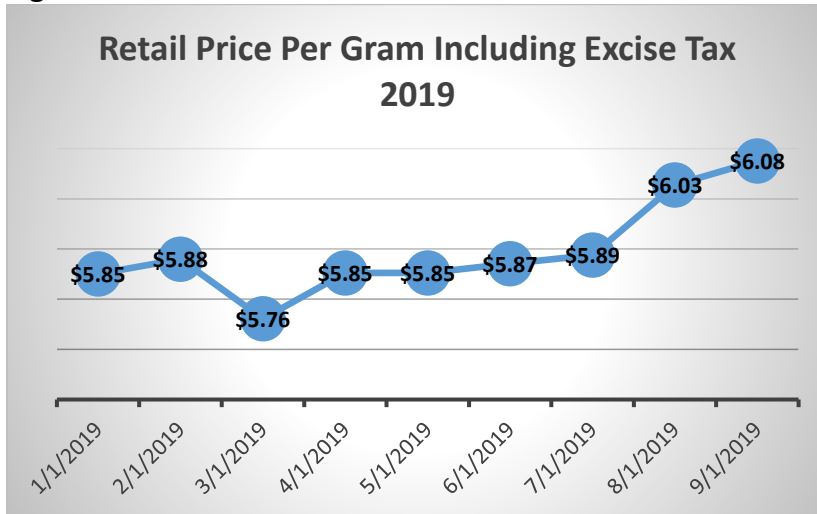


Figure 2



Current Tax Structure

Washington State currently imposes a 37 percent ad valorem excise tax on retail sales of any cannabis product, paid by the consumer at the point of sale. The tax is remitted from the retailer to the WSLCB and is deposited into the state dedicated marijuana account to be used for state services, including health care services, revenue sharing for cities and counties, and for education and prevention, among other programsⁱⁱ. The 37 percent excise tax took effect in June 2015 when the legislature passed House Bill 2136, which replaced the previous excise tax of 25 percent each at production, processing, and retail sale established by the original marijuana initiative, I-502, in 2012. The current structure was modified to create price parity with the large medical and illicit market place.

No jurisdiction with legal cannabis has changed from a price-based to a potency-based tax since the outset of legalization. However, Illinois and Canada have included principles from potency-based tax schemes into their new regulatory frameworks. Both of these jurisdictions are in the early stages of cannabis legalization—therefore, data to gauge the effectiveness of these taxation schemes from a revenue generation and public health perspective is not yet available.

Illinois

In June of 2019, the passage of House Bill 1438 ended cannabis prohibition and established a system to tax and regulate cannabis for adults 21 years of age and over in the state of Illinois. A 10 percent tax is applied to cannabis flower or products with less than 35 percent THC, and a 20 percent tax is applied to products infused with cannabis, such as edibles. Additionally, Illinois imposes a 25 percent tax on *any* product with a THC concentration higher than 35 percent. The 25 percent tax is largely considered a potential tax on cannabis products other than flower, as it would be atypical for cannabis flower to produce a THC concentration at 35 percent or aboveⁱⁱⁱ.

Canada

October 17, 2018, Bill C-45, referred to as the Cannabis Act, legalized adult use of cannabis and established production, distribution and sales. The Cannabis Act allows people 18 years of age and older to buy cannabis online or in retail stores. However, most Canadian provinces have raised the minimum age to 19, to align with the nationwide minimum drinking age. For cannabis flower, Canada imposes an ad valorem tax of 10 percent on the sale price or a flat rate tax of \$1 per gram for flower and \$.25 per gram for trim—whichever is greater. For example, if 3.5 grams of flower sells for \$40 pre-tax, the Canadian tax would be \$4, because 10 percent of \$40 (\$4) is greater than \$3.50, or \$1 per gram. Conversely, oils are not taxed by weight or as a percentage of sale price, but by their THC content—generally at 1¢ per milligram. Manufactured cannabis products including edibles, extracts and topicals become legal soon and will be taxed according to THC content at 1¢ per milligram as well^{iv}.

IV. Methodology

In order to study the feasibility of taxing cannabis by its potency, it was necessary to employ expertise from a variety of disciplines. WSLCB used a competitive bidding process to contract with a third party vendor to produce a technical report to serve as a resource for the work group and WSLCB staff. Two firms submitted proposals which were reviewed by a panel of cross-divisional staff. The proposals were reviewed and scored using the same rubric. The firm with the highest score, BOTEC Analysis, was awarded the contract.

The WSLCB created a scope of work with BOTEC that included stakeholder interviews to identify impacts to cannabis licensees and ancillary businesses, the public health background behind taxing cannabis by its THC concentration rather than price, and an econometric evaluation of how such a change may impact tax revenue in today's system. BOTEC Consulting built out a team of researchers to interview stakeholders, conduct a literature review, and produced a report of their findings for the WSLCB. BOTEC drafted their report concurrently with the first two work group meetings. The report, titled "Cannabis Potency Tax Feasibility Study",

was completed in late September 2019 and provided to the work group for review and discussion prior to the third and final work group meeting.

The WSLCB formulated a work group to further study the feasibility of taxing cannabis by potency. Staff at the WSLCB reached out to a variety of stakeholders, including; cannabis producer, processor, and retail licensees, members of cannabis advocacy groups, representatives from testing laboratories and other ancillary cannabis businesses, public health practitioners, researchers in public health and cannabis from University of Washington and Washington State University, members of the prevention community, and staff from state agencies in relevant content areas (See Appendix B). The goal was to incorporate expertise and perspective from representatives with a wide range of content knowledge as it relates to the cannabis marketplace, public health, and taxation. Further, it was crucial to include voices who would be differentially impacted by a change in the tax structure, particularly a change to taxing by the product potency.

The work group held three in person meetings; participants were invited to the Liquor and Cannabis Board's offices, and were also provided with a phone-in option that included web participation for questions and comments. Work group meetings were facilitated by Debbie Rough-Mack of Rough-Mack Consulting. The first work group meeting was predominantly dedicated to formation of ground rules for the work group. The second meeting dedicated to diving into perspectives and opinions on taxing cannabis by potency. The third meeting was dedicated to asking questions about and providing feedback on the BOTEC report and discussing the formulation of this legislative report. WSLCB staff emailed meeting notes for work group review following each meeting. A webpage was also developed on the WSLCB public-facing website with meeting agendas, structure, and goals, as well as the work group's composition.

Work group members agreed on how to incorporate their feedback, as well as information from the BOTEC report into this legislative report. A fourth meeting was held to provide feedback on the draft legislative report. The work group agreed upon the structure, key content areas, and a method for providing feedback on the report.

Concentration Versus Potency

Before delving in to the details of how to tax cannabis by potency, the work group had to come to an understanding of the meaning of the word "potency." After some discussion, it was agreed that potency would more generally refer to the amount of THC in a given cannabis product. The THC content of cannabis and cannabis products is popularly described as "potency". However, the use of this word is not an entirely accurate way to describe the information provided on a cannabis label. The term potency is defined as the "strength of an intoxicant or drug, as measured by the amount needed to produce a certain response." The potency of a cannabis product is difficult to understand without knowing the serving size or dosage, (which is not available on most cannabis labels) and the tolerance and metabolism of the end user. The "produce a certain response" component of the potency definition cannot be

elucidated by the number presented on the package. The numbers provided on a cannabis label are actually indicative of the THC concentration or content, rather than the potency. “THC concentration” is defined in Initiative 502 as “percent of delta-9 tetrahydrocannabinol content per dry weight of any part of the plant cannabis, or per volume or weight of marijuana product.” It should be noted that, while delta-9 THC is the most prevalent cannabinoid and intoxicant in the cannabis plant, there are other cannabinoids, for example delta-8 THC, that potentially contribute to the effects or potency of the cannabis plant.

One difficulty in establishing a framework for taxing cannabis by potency, is that no public health entity or governmental organization has agreed upon standard definitions for what is “high,” “medium,” or “low potency.” Given that much of the established marketplace creates products that are reaching historic levels of THC concentration, and because users respond to cannabinoids in very unique ways, it could be misleading to define any product as “medium” or “low potency.” Currently, there is no evidence base to support delineating between levels of potency or product types. Therefore, it would be difficult to assign corresponding tax rates to different potencies or product types.

V. Options for Consideration

The framework through which the tax would be implemented must be identified in order to evaluate the feasibility of taxing cannabis by its potency. BOTEC Consulting and the work group considered four options for possible taxation:

- Taxing cannabis products by THC content expressed as a number of milligrams;
- Taxing cannabis by its product type;
- Creating potency ranges and associated tax brackets for different ranges of THC concentrations; and
- Taxing partly by one of the above options while maintaining a price-based tax component like the one we have at present.

The challenges and opportunities presented by each framework for taxation are described below.

Taxing by Milligram

Working under the assumption that the heavier concentration of THC a person consumes, the greater the risk of certain health harms, the most effective way to discourage heavy consumption of THC would be to tax per milligram of THC. This is based on the principle from economic theory that, since consumers are price sensitive, they would respond to a tax increase by either buying less of this product or substituting with a different product. This would entail setting a tax rate in dollars per milligram of THC sold. Currently, few products actually disclose on the package the number of milligrams of THC in the product, as most cannabis packages express THC content as a percentage. Edibles are the only product type that express THC as a number of milligrams in a serving or package. To tax by milligram, producers

would have to convert their testing results from THC expressed as a percentage of weight, to THC as a number of milligrams. This conversion may need to sit in the traceability system or some other point of sale system in order to make audits possible, which would require software development and IT transformation. This change in process may be costly for cannabis producers and processors who would have to change their labeling and inventory practices. It also means that producers who were growing cannabis with a variety of different THC levels for different strains and harvest times would need to redo their packages and labels for each unique potency test result. This framework would rely heavily on having a reliable and valid measure of THC content, which was a concern among the work group. The work group agreed that the implementation of this tax framework sounded the most complicated, and least feasible.

Taxing by Product Type

Another option would be to create tax categories based on product type, recognizing that different product types are broadly associated with different relative “potencies” or THC concentrations. For example, THC content could generally be subdivided into four product categories: edible/topical, flower, vape oil, and concentrate. While logistically, this may prove simpler than transforming how THC content is expressed or compared, it may encourage industry to develop innovative new ways to enhance the THC content of a given product type, in order to maximize “potency” while maintaining a product type in a lower tax bracket. For example, a “concentrate” may be labeled as a “topical” in order for that product to be eligible for a lower tax rate. Further, it would be difficult to determine what tax rate should apply to what product category. While some product categories contain more THC than others (for example, concentrates contain more THC than flower) the relative potencies of the products are not always representative of the relative health risks or benefits.

All products have a risk for pesticides, heavy metals, and unknown chemicals. Flower has a greater risk for biological contamination, concentrates and vapor products have a greater risk for processing chemicals, and edibles have a greater risk for unintentional overconsumption. However, these risks have not been compared to one another in a way that would make it easy to create relative corresponding tax rates for each product type. Work group members were uncertain as to how many product classification types there should be, and how these product type classifications should be defined.

Taxing by Potency Ranges

A third option is to create ranges of THC concentration, and associate different tax rates with these different ranges. For example, there could be one tax rate for products that are 20 percent THC or less, another tax rate for products between 20-40 percent THC, and a third tax rate for products above 40 percent THC. Regulators would therefore need to decide whether to set these numbers based on historical sales data of different concentration levels to meet a particular tax revenue expectation, or set numbers based on THC content levels that may have adverse health implications. The evidence regarding specific THC amounts that lead to adverse

effects is not established at this time. If taxes were collected in categories based on concentration ranges, rather than per milligram of THC, producers may be encouraged to find ways to maximize products' THC concentration up to the limit for the tax bracket. The work group agreed that appropriately bracketing the different ranges would be difficult. Without evidence regarding how different potencies impact health, the ranges would be arbitrary. Further, there was concern with how products at the margins of each range would be managed.

Excise Tax with Potency-based Add On

The final option would be to maintain a tax based on sale price, while adding one of the previously described potency-based taxes on top of the price-based tax. While this option would maintain some revenues in the event that consumer patterns changed in response to the potency tax, the structure would still add complexity to the system without a guaranteed corresponding benefit.

VI. Findings

Public Health

There are some health related concerns around the use of, and particularly the frequent or daily use of high potency cannabis for healthy individuals. Use of high potency cannabis puts users at increased risk for cannabis dependence^v. A study on the health effects of cannabis and cannabinoids conducted by the National Academy of Sciences evaluated a series of systematic reviews and found a dose-dependent association between cannabis consumption and the development of psychotic disorders^{vi}. Work group members with a public health background saw hope in a proposal to tax cannabis by potency, in the event that this tax may work to discourage high potency consumption. However, work group members acknowledged that there was not evidence to suggest that such a tax would definitely result in behavioral change. Further, work group members expressed concern as to how this tax would impact people under the age of 21, or low-income communities who are most price sensitive. From a public health perspective, work group members were concerned that if prices for high potency cannabis increased in the legal marketplace, consumers might be pushed to an illicit market place, where they could end up at greater risk for pesticide or solvent exposure, or other risks associated with the consumption of unregulated or illicit products. While some work group members were curious about the potential benefits of taxing cannabis by potency and thereby discouraging high potency use, this curiosity was counterbalanced by concerns around the potential regressive nature of the tax, as well as the risk of pushing consumers into an unregulated marketplace. Work group members had the most concern about how this might impact youth access and safety.

Tax Revenue and Economic Impact

When a movement towards state legalization of cannabis began, it was accurately predicted that the price of cannabis would decline as businesses were able to maximize their efficiencies

and produce cannabis with fewer legal risks than in the illicit marketplace. The concept of taxing cannabis by its potency was considered a protective option; as the amount of THC sold was expected to stabilize or increase over time, while the price was projected to decline. By taxing on THC content rather than price, states could protect themselves from reduced tax revenue in the wake of declining prices. However, seeing as Washington State has already legalized, and already experienced the initial price decline that occurs as a result of legalization, the predicted price declines were counterbalanced by also predicted steady increases in demand (both from shifting from the illicit market and new customers). Now that prices have stabilized at a very low level the revenue protection argument loses steam. In 2019, prices for cannabis have stabilized, and have even slightly increased, making such a protection unnecessary. It is possible, particularly in the event of national legalization and inter-state competition, that the state could experience another price drop. However, no such decline is expected at this time. Further, there is no way to predict how consumer use and purchasing behaviors may be altered by such a tax; if the tax did deter purchases of higher concentration products, these products may not generate additional tax revenue as expected. In accordance with findings from the BOTE report, it would be difficult to quantify or estimate how changing from an excise to a potency-based tax would impact revenues for the state.

Regardless of projected revenues, the state would have to take on a series of costs in order to modify the tax framework from a price-based tax to a potency tax. The change would require a series of modifications to rule and law, requiring staff time to administer those changes. It would also require IT transformation to the traceability system or some other system capable of auditing the tax.

Industry and Small Businesses

BOTE reached out to some larger businesses who said they could prepare for, and felt relatively neutral about a change in tax towards potency. However some members of the work group and stakeholders representing smaller businesses were concerned about a change. Any regulatory change implemented at the business level will disproportionately impact smaller businesses. Taxing cannabis by its potency could have unknown effects on consumer behavior. It is possible that it could shift consumers away from concentrates, which could reduce prices of bulk flower used to produce them, or increase prices of useable flower. It may also encourage consumers to use different strains or product types. Currently, many small businesses rely on a model of producing strains, grades, and products that have worked for them in the current marketplace. Changing strains, grades, or products to respond to consumer shifts as a result of a tax change may disproportionately challenge small businesses having to invest in new strains or modes of production to respond to the marketplace. For cannabis farmers, it wouldn't just be a matter of investing in new strains. There could be challenges in accessing new strains since this is a closed market and breeding programs take years to produce desired cultivars and traits. Further, any change in labeling or software infrastructure may be particularly challenging for small businesses to take on.

Concern Over Testing Integrity

Taxing cannabis by potency requires trust in the potency number displayed on the package. Some members of the work group were concerned about the integrity of the numbers used to express potency. Work group members described a variety of concerns. Firstly, the cannabis plant is heterogeneous in nature, with different pieces of the plant having different amounts of THC, making it a difficult product to consistently test. Additionally, some work group members expressed concern that the science behind testing THC is still developing, and may not be sufficiently well settled to base a tax structure around. Further, industry members expressed concern around inconsistency in sampling methodology and variation in equipment and testing protocol that led to varying test results between producers who sample in different ways, and testing labs that test in different ways. Finally, work group members expressed concern around a culture of “potency inflation;” the idea that the market desires a high potency product, and therefore some licensees and labs may game the system by shopping for samples and lab results that produce the highest potency results. All of these issues contributed to the work group’s lack of trust around the potency numbers expressed on the package. Workgroup members agreed that they would like to see effort put forth to improve testing integrity prior to considering a proposal to base taxation on lab results.

Challenges Around Implementation Within the Traceability System

In order to administer and enforce a tax, some type of auditing system is needed to oversee tax reporting and ensure tax compliance. Because different products would have different tax rates based on their THC content, the system would need to connect both to the sale process, as well as the packaging process on individual or batched products. One option would be to build out functionality within the current traceability system to provide this function. However, due to delays and challenges in functionality with the current system, industry stakeholders felt that expanding the infrastructure of the system to allow for this tax change was not possible. In the event that the system could expand, changes would likely be of significant cost to the state, as well as cannabis licensees, and could take years to implement. Another option would be to develop an entirely separate software system to oversee the tax. However, this option could also be costly to the state and licensees in order to develop and implement. Either option adds complexity to the current simplistic model of collecting a single tax rate at the point of sale.

Considering Medical Patients

Many medical patient stakeholders have reported the use of and need for ‘high potency’ THC products. While academic research has little evidence around the efficacy of high levels of THC for medical purposes, there are a limited number of case studies discussing the use of higher doses of THC for pain management, particularly in the realm of the reduction or replacement of opioid use^{vii}. When evaluating a framework for taxing cannabis by THC content, one must identify if such a framework is appropriate for medical patients who may use larger amounts of THC for treatment or symptom management of a medical condition. Currently, there are approximately 14,000 people registered in the Department of Health’s Database for authorized

patients. Authorized patients have higher purchasing limits, can homegrow their own cannabis, and are exempt from paying state and local sales taxes; which amount to approximately 10 percent, depending on location. Stakeholders from the medical community have stated that many choose not to participate in the database for authorized patients as they perceive the process has little benefit or incentive. Patients have expressed interest in exemption from paying the 37 percent excise tax, and are currently only exempted from paying the sales tax. This interest suggests that it is likely that an excise tax exemption would increase participation in the database. It is not possible to predict how much of an increase there would be and what effect this would have on revenues.

VII. Recommendations

While some work group members expressed interest in the concept of taxing cannabis by a measure of its potency, the work group arrived at consensus in acknowledging that such a change would not be feasible at this time. Work group members had a series of questions that would require better understanding prior to moving forward with taxing cannabis by its potency. As described by BOTEC Consulting firm, it is not possible to estimate the public health gains from changes in consumption, nor is it possible to estimate the revenue impacts from such a change. A transition from a price-based tax to a potency tax would require known large operational costs for unknown and unquantifiable benefits. Before recommending a change in the tax structure, work group members suggested that additional research on the topic would be helpful:

- What effect does price have on consumption, and how might this vary between groups?
 - Effects on youth?
 - Effects on low income communities?
- How does potency or THC concentration relate to impairment?
- How is high or low potency defined as it relates to health benefits or risks?
- What are the relative health benefits or risks of different product types?
- What are the negative consequences of use?
- How would this proposal impact medical consumers?
- How would this proposal impact business owners?
- Which of the tax frameworks studied would have the greatest ease of implementation?
- What are the benefits and drawbacks from sliding scale taxes in other industries?

Given that so many questions existed at the conclusion of the work group meetings due to an absence of adequate research, the work group recommended maintaining the status quo with the current 37 percent excise tax.

VIII. Conclusion

After thorough analysis, a work group with a diverse set of perspectives came to the conclusion that transitioning to a potency-based tax for cannabis was not feasible at this time in Washington State. Some work group members from the public health community were in favor of a tax structure that would discourage consumption of high potency cannabis, but did not have confidence that this tax would guarantee those outcomes. Many work group members noted that the idea of a potency-based cannabis tax could be of value for states that had not yet legalized or implemented their tax framework, but would present a costly infrastructural change to a state like ours that has.

References

- ⁱ Prieger, J. et al. Cannabis Potency Tax Feasibility Study. BOTEC Analysis. October 2019.
- ⁱⁱ Washington State Liquor and Cannabis Board 2018 Annual Report. Accessed: https://lcb.wa.gov/sites/default/files/publications/annual_report/2018-annual-report-web.pdf
- ⁱⁱⁱ Marijuana Policy Project Overview of the Illinois Cannabis Regulation and Tax Act. Accessed: <https://www.mpp.org/states/illinois/overview-of-the-illinois-cannabis-regulation-and-tax-act/>
- ^{iv} Government of Canada Excise Duty Framework for Cannabis. Accessed: <https://www.canada.ca/en/revenue-agency/campaigns/cannabis-taxation.html>
- ^v Freeman, T. P, and A. R Winstock. “Examining the Profile of High-Potency Cannabis and Its Association with Severity of Cannabis Dependence.” Vol. 45, no. 15, 2015, pp. 3181–3189
- ^{vi} National Academies of Sciences, Engineering, Medicine. Committee on the Health Effects of Marijuana, issuing body. *The Health Effects of Cannabis and Cannabinoids: the Current State of Evidence and Recommendations for Research*.
- ^{vii} Lynch, M. Cannabis Reduces Opioid Dose in the Treatment of Chronic Non-Cancer Pain. *Journal of Pain and Symptom Management*. 2003. 25(6) 496-498.

Appendix A

Engrossed Substitute House Bill 1109 (2019)

Section 143

(7) \$100,000 of the dedicated marijuana account—state appropriation for fiscal year 2020 is provided solely for the board to convene a work group to determine the feasibility of and make recommendations for varying the marijuana excise tax rate based on product potency. The work group must submit a report of its findings to the appropriate committees of the legislature by December 1, 2019.

Appendix B

Work Group Member* Composition

Work Group Members	Organization
Wade Alonzo	WA Traffic Safety Commission
Shelly Baldwin	WA Traffic Safety Commission
Ryan Black	WA State Department of Health
Kim Brady	City of Seattle
Andy Brassington	Washington Cannabusiness Association (WACA)
Mary Brown	Advanced Integrative Medical Science Institute
Beatriz Carlini	University of Washington, Alcohol & Drug Abuse Institute
Julia Dilley	Multnomah County/State of Oregon Public Health Division
Gregory Foster	Cannabis Observer
Steve Freng	High Intensity Drug Trafficking Areas NW
Eric Gaston	Cannabis Organization of Retail Establishments
Kevin Haggerty	University of Washington, Social Development Research Group
Laura Hill	Washington State University
Cherie MacLeod	City of Seattle
Mary Mitchell	City of Seattle
Nick Mosely	Confidence Analytics
Jim Mullen	WACA
Billy Nicholson	Confederated Tribes of the Colville Reservation
Crystal Oliver	Washington Sungrowers Industry Association
Brittany Radice	Green Bits
Kelli Rimmer	City of Seattle
Shelly Rowden	WA State Department of Health
Sheri Sawyer	Office of the Governor
Nathan Schreiner	Squaxin Island Tribe
Andre Unicume	WA State Department of Revenue
Rachael Weygandt	Evergreen Herbal
Liz Wilhelm	WA Association for Substance Abuse & Violence
WSLCB Work Group Staff	Title
Brett Cain	Policy Analyst and Tribal Liaison
Trecia Ehrlich	Research Consultant
Steve Johnson	Deputy Chief of Enforcement
Kevin Milovac	Cannabis Licensing Manager
Jim Morgan	Chief Financial Officer
Justin Nordhorn	Chief of Enforcement
Victoria Owen	Administrative Support
Nick Poolman	Chemist

Nicola Reid	Compliance and Adjudications Manager
Chris Thompson	Director of Legislative Relations
Work Group Meeting Facilitator	Organization
Debbie Rough-Mack	Rough Mack-Consulting
BOTEC Analysis	Title
Steven Davenport	Researcher/Analyst
Richard Hahn	Director of Client Engagement
Samuel Hampsher	Managing Director
Clarissa Manning	Director of Business Operations
Pat Oglesby	Senior Researcher/Tax Specialist
James Prieger	Senior Researcher

* The list of work group members is not comprehensive in its identification of varying levels of participation and contribution. Some work group members attended all four work group sessions, some attended only one. Some members participated by phone, while others attended meetings in person, or some combination of the two. Some organizations are listed multiple times on the list, to illustrate when alternates were made available to attend or participate in place of another representative. No organization or entity had more than one spot at one time. Times for work group meetings were chosen after all participants had the opportunity to participate in a poll to identify their availability, meeting times with the most availability were chosen.



Executive Summary

This report investigates the feasibility of implementing a potency tax on cannabis products in Washington State. Attention is given to the theoretical and technical considerations of replacing the current 37 percent ad valorem tax basis, in whole or in part, with a tax based on the concentration or amount of THC within a given product. For practical considerations we use the term "potency tax" synonymously with "a tax on THC concentration."

Interviews were conducted with a broad range of stakeholders including the Departments of Revenue and Ecology, cannabis regulators in California, Canada and Illinois, Tier 1, 2 and 3 producers and processors, medical and non-medical retailers, medical cannabis consumers, testing laboratories, point-of-sale-systems operators, stakeholders in the medical sector, and industry investors, to articulate their estimated costs for adaptation and compliance cost faced in response to a hypothetical tax on potency.

A literature review illuminates the history of cannabis taxation in Washington, and explores taxation in Illinois, and Canada, which have taxed cannabis based on THC concentration. The origins of the concept of a potency tax are discussed and an overview of the case for taxing cannabis by potency is presented. We find two broad arguments in favor of the potency tax:

As the market matures, efficiencies of scale and the increased competition tend to decrease product prices. If cannabis is taxed only on an ad valorem basis, lower prices may reduce public revenues. Increased sales might offset the impact of declining prices, but increased consumption resulting from lower prices will likely increase the costs of consumption faced by the state. Thus if consumption costs increase faster than revenues, then the state's budget may be threatened even while revenues rise. A potency tax would therefore aim to protect the balance in the state's budget by tethering (if somewhat imperfectly) revenue to THC with the goal of meeting any rise in consumption costs due to increased THC consumption with a proportionate increase in revenue.

A small but increasing body of evidence suggests that the public health harms of cannabis consumption are more strongly associated with products at the higher end of the potency curve. Concerns have been raised about adulterants including pesticide residue and heavy metals appearing in concentrates. Anecdotal evidence suggests an increasing number of hospital admissions for THC toxicity involving uncontrolled vomiting. And, at the time of writing, significant media attention is being given to the morbidity and mortality associated with vaping. The Center for Disease Control has publicly associated several hundred reported incidents of respiratory failure to the vaping of products containing THC. Advocates hope that a tax on THC products could encourage consumers to select lower potency products thus slowing the trend towards potency and avoiding associated public health harms.

Several models of taxing potency are identified, along with their potential drawbacks.

- A direct potency tax that establishes a dollar value per milligram of THC.
- A tax that creates different tax brackets for different types of cannabis products (for example establishing a distinct tax rate for flower, another for concentrates, and another for edibles).

- A tax based on ranges of THC concentration, that identifies different ranges of THC amounts and establishes corresponding tax rates for those ranges.
- A combination; maintaining a stable excise tax and adding one of the aforementioned THC taxes listed above as a supplement.

A brief econometric analysis demonstrates that the effectiveness of a potency tax is difficult to estimate at this time due to scarcity of academic research and practical experience. Specifically, we do not know enough about cross elasticities of demand between the licit and illicit markets and between products of different potencies making it difficult, if not impossible, to predict how consumers would respond to a potency tax. Additionally, imperfect evidence regarding the marginal harms of various levels or forms of THC consumption make it impossible to guarantee that a tax on THC would be successful in reducing public health harms related to THC consumption. Thus, the legitimacy of the arguments in favor of a potency tax is unstable. Given the interests vested in Washington State's current regulatory structure that might be threatened by the adoption of any of the models presented, a discussion of the legitimacy of the arguments in favor of a tax on THC is an integral component in any determination of the feasibility of a potency tax.

Furthermore, several specific features of Washington's regulatory and enforcement infrastructure limit the effectiveness of any potency tax implemented at this time: confidence in Washington's laboratory testing regime is already low, with no standardized testing procedure and ample opportunity for gaming leading to variation in test results. The imposition of a THC tax may put additional stress on that system, requiring the LCB to invest in additional enforcement capacity at the expense of any potential revenue gains. Second, the reduced scope of the current traceability system and the persistence of bugs and malfunctions have limited the state's ability to use the system to monitor and enforce compliance among licensees. Changes to the Leaf Data System would require a comprehensive overhaul of the current database, which would be likely both costly and time consuming. Any change to reporting requirements or the traceability system would require corresponding changes to integrators and point-of-sale software providers which would also likely be both costly and time consuming.

In summary, a potency tax is likely to affect consumer purchasing habits to an unknown extent, and it is currently impossible to quantify any public health gains resulting from those effects. It is not feasible to estimate the potential long-term revenue changes afforded by a switch from ad valorem to a potency tax. However, the considerable costs relating to the implementation of a cannabis potency tax in Washington State, as well as both theoretical and practical challenges in doing so, are better known. Therefore, at present, any change in the tax structure would require embracing large known costs and additional unknown costs in exchange for unknown benefits.