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Cannabis Regulation: Lessons Learned In Colorado and Washington State

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Executive Summary

In November 2012, Colorado and Washington state became the first two US states to legalize the personal possession and retail sale of cannabis. The two states developed regulatory frameworks with many common features (e.g., minimum purchase age of 21, ban on public use), and some key differences. For example, Washington bans personal production, while Colorado permits up to five plants per household. The two states began with different contexts: Colorado had a well-established, regulated medical distribution system to build on, and Washington had no existing regulated supply. Retail sales began on January 1, 2014, in Colorado and on July 8, 2014, in Washington.

To learn from evidence and experience about the legalization of cannabis for non-therapeutic use and its health, social, economic and public safety impacts, the Canadian Centre on Substance Abuse (CCSA) led delegations to Colorado (February 2015) and Washington state (August 2015). The delegations consisted of partners from public health, treatment and enforcement sectors. The goal was to inform the ongoing dialogue about policy options for the regulation of cannabis in Canada and internationally by observing the effects of the various models and approaches in the two states. The aim was not to take a position on the question of legalization, but to collect the best available information to support evidence-informed policy advice. To this end, the delegation met with stakeholders from a range of perspectives, including public health, regulation, government, enforcement, prevention and the cannabis industry.

The overarching lesson that emerged during discussions with stakeholders was that any jurisdiction considering policy change should **identify a clear purpose to drive the overall approach**. In other words, begin by defining the problem to be solved and the goals to be achieved.

Colorado and Washington had to **develop a comprehensive regulatory framework** taking a substance from criminal prohibition to retail sales. Any new regulatory system for cannabis needs to address considerations across health, public health, enforcement, criminal justice, social and economic sectors. It must account for the administration, monitoring and enforcement of all processes, including production, processing, sales, advertising and taxation. The framework also has to coordinate federal, state, district and municipal orders of government, and their respective roles in such areas as enforcement, taxation and health care. The CCSA delegation learned the following key lessons about developing a regulatory framework from stakeholders:

- **Reconcile medical and retail markets** to promote consistency in such areas as purchase quantities and administration, and to reduce the scope of the grey market, which is the market for products produced or distributed in ways that are unauthorized or unregulated, but not strictly illegal;
- **Be prepared to respond to the unexpected**, such as the overconsumption of edibles in Colorado and an unmanageable volume of licensing applications within a limited timeframe in Washington state;
- **Control product formats and concentrations** to ensure there are no unanticipated consequences from unregulated formats and concentrations;
- **Prevent commercialization** through taxation, rigorous state regulation and monitoring, and controls on advertising and promotion; and
- **Prevent use by youth** by controlling access and investing in effective health promotion, prevention, awareness and education for both youth and parents.

The need to **invest in effective implementation** was a common message of stakeholders in both Colorado and Washington. They highlighted the value of allocating a portion of funds generated through retail sales to education, prevention, treatment and research. They also emphasized the need to ensure proactive investment to build capacity before the new regulations are implemented and retail sales begin. These investments fall into several common themes:

- **Take the time required to develop an effective framework for implementation** and to prepare for a successful launch;

  (Colorado stakeholders recommended taking longer than the one-year period provided in that state. There is also a need to give retailers time to develop capacity to meet consumer demand. Washington stakeholders encountered price escalation as retailers struggled to obtain or produce product within two months of receiving licenses.)

- **Develop the capacity to administer the regulatory framework**, recognizing that a significant investment in staff and administration is required to process licenses, conduct comprehensive inspections and address violations;
- **Provide strong central leadership and promote collaboration** to bring diverse partners to the table from the beginning and to promote open, consistent communication and collaborative problem-solving;
- **Invest proactively in a public health approach** that builds capacity in prevention, education and treatment before implementation to minimize negative health and social impacts associated with cannabis use;
- **Develop a clear, comprehensive communication strategy** to convey details of the regulations prior to implementation, so that the public and other stakeholders understand what is permitted, as well as the risks and harms associated with use, so that individuals can make informed choices;
- **Ensure consistent enforcement of regulations** by investing in training and tools for those responsible for enforcement, particularly to prevent and address impaired driving and diversion to youth, and to control the black market;
- **Invest in research to establish the evidence base** underlying the regulations, and to address gaps in knowledge, such as new and emerging trends and patterns of use; and
- **Conduct rigorous, ongoing data collection**, including gathering baseline data, to monitor the impact of the regulatory framework and inform gradual change to best meet policy objectives and reduce negative impacts.

In summary, the consistent message CCSA heard was that any jurisdiction considering regulatory changes to cannabis policy should take the time to set up the infrastructure and allocate the resources needed to get it right, assess impacts along the way and make incremental changes, as needed.

CCSA would like to thank the Colorado and Washington stakeholders and Canadian delegation members for their generous contributions of time, expertise, information and advice.

Objective

The Canadian Centre on Substance Abuse (CCSA) is Canada's only national agency dedicated to reducing the harms of alcohol and other drugs on society, informing policy and practice, and improving services, supports and care for those suffering from substance use disorders.

To this end, and in light of ongoing dialogue about the impacts and policy options for the regulation of cannabis[1] in Canada and internationally, CCSA coordinated visits with partners to Colorado and Washington state in February and August, 2015, about a year after retail sales of cannabis were implemented in each state. These visits brought senior CCSA leadership and subject-matter experts, and partners from public health, treatment and enforcement to meet with diverse stakeholders to learn from evidence and experience about the health, social, economic and public safety impact of cannabis legalization.[2] The purpose of these visits was not to arrive at a position on the question of legalization, but to ensure that CCSA has the best available information with which to provide evidence-informed policy advice on the issue of cannabis regulation in a timely way.

CCSA has produced this report to summarize the key themes and lessons learned during the two visits. The report is based on the notes recorded and input provided by delegation members.

Background

Legislative approaches to regulating cannabis fall along a continuum, with criminal prohibition, the currently dominant model in Canada and internationally, at one end and unrestricted access and free market production at the other (see Appendix D). The question of how cannabis should be regulated has recently been raised at both national and international levels. It was an issue in Canada's recent federal election, and has been raised by the United States Office of the Attorney General and at the 58th session of the United Nations Commission on Narcotic Drugs. Despite a great deal of dialogue, a lack of clarity remains about the differences between decriminalization, legalization and commercialization of cannabis, and the various regulatory options and models within each category (Canadian Centre on Substance Abuse, 2014).

Cannabis is illegal for retail sale at the federal level in the United States, as it is in Canada. However, 23 states and the District of Columbia have passed legislation allowing medical use, and four states (Colorado, Washington state, Oregon and Alaska) and the District of Columbia have passed legislation allowing retail sales.

The discrepancy between the status of cannabis with the federal and state orders of government creates significant challenges. Because cannabis remains a scheduled substance at the federal level, the state is forced to take responsibility for regulations, inspections and enforcement normally handled by federal departments and agencies such as the Food and Drug Administration or the Department of Agriculture. This situation also prevents normal banking operations, resulting in a primarily cash-based industry with corresponding safety and administrative issues. Although banking capacity has developed to an extent in Washington through smaller credit unions, transactions are limited to the production level and retail sales remain cash-based. The discrepancy also creates

1 The terms "cannabis" and "marijuana" both refer to the dried flowers, fruiting tops and leaves of *Cannabis sativa*. CCSA uses the term cannabis; this report uses the term marijuana when it is part of a formal title such as the Office of Marijuana Coordination.

2 Appendix A provides a list of the CCSA delegation members, Appendix B a list of Colorado stakeholders, and Appendix C a list of Washington State stakeholders. Stakeholders were identified through a combination of referrals from existing networks, suggestions from contacts as they were made in each state, and targeted searches for individuals in key roles representing the broad range of perspectives sought (e.g., public health, enforcement, administration, regulation, government, industry, prevention, treatment).

jurisdictional challenges for enforcement. For example, in Washington state the federal Coast Guard is responsible for enforcing federal laws — under which cannabis is illegal — on navigable waterways and for public safety on ferries and other vessels travelling between the mainland and islands; however, federal ferries are the only means of transportation available to some islands within Washington state.

The first two states to legalize the personal use and possession of cannabis for non-therapeutic purposes were Colorado and Washington state, which passed Amendment 64 and Initiative I-502 respectively in November 2012. Table 1 compares key components of the new regulations in the two states.

Colorado began retail sales on January 1, 2014, by permitting existing licensed medical distributors to transfer to non-therapeutic sales. This approach leveraged Colorado's existing framework for medical cannabis, which included state licensing. Retail licensing expanded to new retailers in October 2014. Licenses must be approved by both the Marijuana Enforcement Division of the Department of Revenue and relevant local licensing authorities, the latter of which have the authority to prohibit retail sales altogether. Of Colorado's 321 local jurisdictions, only 72 had allowed retail sales as of December 2014 (Brohl, Kammerzell, & Koski, 2015).

Washington state began retail sales under the supervision of the Washington Liquor Control Board on July 8, 2014. Initial licensees were drawn from a pool of suitable applicants in May 2014. This two-month time period for the licensees to produce or obtain stock and establish points of sale resulted in limited initial retail capacity with a gradual scale-up over subsequent months. As in Colorado, municipal authorities can impose restrictions from hours of operation to caps on the number of retail outlets up to complete bans on sales. Although Washington state did not have a regulated medical market, unregulated retail sales were taking place, with over one hundred distribution centres in Seattle alone.

Table 1: Summary of Colorado and Washington Regulatory Frameworks

	Colorado	Washington state
Age restrictions	21 or older	21 or older
Personal possession	1 oz or its equivalent	A combined maximum of: 1 oz dried product 16 oz infused solid product 72 oz infused liquid product 7 g concentrates
Personal production	Up to 6 plants (maximum 3 mature) that must be in an enclosed, locked space	Not permitted
Licensing body	Colorado Department of Revenue	Washington State Liquor and Cannabis Board
Taxation	15% excise; 10% sales + municipal taxes (approx. 30% of total price)	Prior to July 1, 2015: 25% excise tax at each of production, processing and retail sale stages + state and local sales taxes (approx. 50% of total price) As of July 1, 2015: 37% excise tax + state and local sales tax
Forms of sale	Dried marijuana, extracts and infusions	Dried marijuana and infusions
Residency restrictions	Purchase limit of ¼ oz for non-residents Retailers and producers must have lived in the state for 2-years	Retailers and producers must have lived in the state for 3-months
Driving restrictions	5 nanograms/ml THC in whole blood	5 nanograms/ml THC in whole blood
Public use	Not permitted	Not permitted

The Colorado and Washington state approaches to medical marijuana also form an important part of the regulatory context. Although both states permit the use of marijuana for therapeutic purposes, they differ greatly in terms of the existing degree of state regulation.

Colorado's medical market underwent significant expansion in 2009 after a successful court challenge created an opportunity to set up medical cannabis distribution centres. The *Colorado Medical Marijuana Code* was subsequently passed in 2010, establishing statewide regulations governing the use and sale of cannabis for medical purposes (Office of the State Auditor, 2013). As of January 1, 2014, 493 medical distribution centres had been opened (Brohl et al., 2015). The number of medical cards issued also subsequently increased from 5,051 in January 2009 to 111,031 in January 2014 (Light, Orens, Lewandowski, & Pickton, 2014). Colorado's medical market therefore served as a foundation for the retail model by providing a network of established, licensed producers and retailers.

Conversely, although Washington state has permitted the use, possession, sale and cultivation of cannabis for authorized patients since 1998, the state had not established comprehensive regulations governing distribution or patient registration. Regulations were limited to authorized medical conditions and limits were set for the quantity of plants or product allowed in an individual's possession. Washington is currently in the process of implementing regulations that will bring medical distribution into alignment with the retail system, which will be addressed later in this report.

Lessons Learned

The CCSA delegation met with a number of individuals and organizations representing a broad spectrum of perspectives, including regulation, enforcement, public health, cannabis industry, research, data collection and treatment, and advocates on both sides of the legalization debate (see appendices B and C). Many stakeholders identified the importance of beginning by clearly identifying the problem to be solved and focusing regulation, messaging, data collection and implementation accordingly.

Several consistent lessons learned through the legalization experience in Colorado and Washington state emerged over the course of the consultations, and there were key messages that tied these lessons together. Stakeholders in both states emphasized the importance of taking the time and making the proactive investments needed for a strong and comprehensive regulatory framework. That framework should include the infrastructure needed to address public health and safety concerns such as cannabis use among youth and cannabis-impaired driving. Also before legalization, a jurisdiction should gather comprehensive baseline data and after legalization continue ongoing research and data collection on the health and social impacts of cannabis use.

Identify a Clear Purpose to Drive the Overall Approach

The CCSA delegation heard the old catchphrase “the devil is in the details” many times during its consultations. Identifying clear policy goals is an important way to ensure that regulatory details provide a consistent strategic approach and provide measures against which to monitor and evaluate progress and impact. The legalization of cannabis is often promoted as a way to reduce the black market and the role of organized crime, reduce the impact of criminal charges on those apprehended for possession, improve product safety and generate tax revenue. Depending on how these goals are prioritized, details such as taxation structure can vary considerably. For example, if the goal is to price out the black market, the taxation structure will be set up differently than if the goal is to generate state revenue.

Develop a Comprehensive Regulatory Framework

The challenge of developing an entirely new framework for regulating a previously illegal substance cannot be underestimated. As illustrated in Table 1, there is a great deal of consistency in the Colorado and Washington approaches, as well as some key distinctions. This section outlines the key themes that emerged about establishing the regulatory framework.

Reconcile medical and retail markets

Stakeholders in both Colorado and Washington state remarked on the challenges associated with the co-existence of retail and medical markets. In both states, the pre-existing medical regulations create a system of dual standards (e.g., different minimum ages, purchase quantities, growth restrictions, and taxation levels) and contribute to the grey market, which is the market for products produced or distributed in ways that are unauthorized or unregulated, but not strictly illegal. The grey market associated with personal production is especially difficult to regulate and enforce. For example, Colorado’s Amendment 64 allows medically authorized individuals to produce up to six plants for personal use, and designated caregivers can grow up to six plants for up to five people, as well as for themselves. Stakeholders identified that plants grown within this market constitute about one-third of the total supply, and pose a high risk for diversion both to youth and to out-of-state destinations.

Stakeholders emphasized the importance of distinguishing between cannabis' function as a medical substance and as a recreational substance. When that function is medical, stakeholders agreed that cannabis should be treated as such in terms of dosage, guidelines, production, distribution and product configuration (i.e., it should not be supplied in candy form). Several stakeholders noted that there was a need for healthcare professionals to have a stronger voice in the regulatory system. They highlighted the lack of conclusive research in some areas and the dual medical–recreational function of cannabis as barriers to engaging the health field more strongly.

In Colorado, although the medical market is currently larger than the retail market, trend data suggests the gap is closing (Brohl et al., 2015). There are incentives for both options. Using the retail market eliminates the burden of renewing a medical card every year. However, when purchasing with a medical card, the price is lower because of lower taxes. Further, youth between the ages of 18 and 21 can access cannabis for medical use, and youth below the age of 18 can access cannabis for medical use with parental approval. Examining the extent to which individuals approved to access cannabis for medical use choose to change to the retail market will contribute to understanding possible interactions between the two markets and overall impacts on rates of use.

Washington state is in the process of introducing regulations that will bring the medical market into alignment with the retail market. Because medical distribution centres are currently unlicensed, there is no accurate data on their number; however, estimates indicate 100 to 300 in the Seattle area alone and 500 to 800 state-wide. Senate Bill 5052, passed in September 2015, requires that all retail outlets obtain licenses through the Washington Liquor and Cannabis Board. A special endorsement will be required to allow the provision of authorized medical users with tax exemptions, higher purchase quantities and a lower purchase age of 18 years.[3] All dispensaries are required to be licensed by July 2016. Washington state is not placing a cap on the number of new permits issued, and is prioritizing dispensaries established prior to January 1, 2013 in the licensing process. The Washington State Economic and Revenue Forecast Council estimates that bringing the medical market into state regulation will close to double sales revenue and market share.

Be prepared to respond to the unexpected

Stakeholders agreed that despite best efforts in proactively identifying challenges, there are always surprises. Regulatory frameworks therefore need to be flexible and agile enough to adapt to these surprises and mitigate potential harms. Stakeholders also agreed that moving gradually and decreasing the restrictiveness of regulations is easier than increasing them, so they recommended beginning with a more restrictive framework and easing restrictions as evidence indicates.

Colorado's experience with edible cannabis products illustrates the importance of this theme. Sales of cannabis edibles is the one area in which retail cannabis sales overtook medical, with 2.85 million and 1.96 million units sold, respectively (Brohl et al., 2015). Initial regulations set a maximum dosage for edible products, but did not specify how that dosage was to be distributed relative to serving size. Many producers packaged edibles with several doses in what most consumers would consider one serving of a product; for example, a single brownie could contain up to ten doses. Cannabis ingested in edible form can also take over an hour to produce psychoactive effects, introducing a higher risk for overconsumption among naïve users.

Several high-profile overdoses from consuming edible forms of cannabis generated media attention, and a task force was struck in April 2014 to revisit the regulations. New regulations were introduced in February 2015 requiring edible products to be separated into doses of 10 mg of tetrahydrocannabinol

[3] Detailed requirements and regulations for this endorsement remain in development at the time this report is being written.

(THC) or less. The new regulations created significant losses for producers who had to change manufacturing processes and dispose of products that did not meet the new regulations.

Washington stakeholders noted the unexpected volume of applications received for the initial lottery-based licenses. In hindsight, a rolling rather than fixed application period would have distributed the volume over a longer period of time, allowing more time to review and work with applicants to ensure that those provided with license opportunities could meet all criteria. Washington also made a significant change to its taxation approach. The initial tax structure imposed a 25% tax at each stage of production, processing and sale. This structure prevented retailers from claiming the taxes as a business expenditure when filing their own corporate taxes. The state has therefore shifted to a 37% tax imposed at point of sale, and eligible for retailers to claim against revenue. This shift is not anticipated to reduce overall revenues generated for the state, or to increase costs to consumers.

Control product formats and concentrations

A theme that emerged in both Colorado and Washington was concern about the emergence of products containing high levels of THC, including both plants and extracts such as oils. Stakeholders from the public health and research communities in particular pointed out that there are gaps in knowledge about the long-term health impacts of consuming products with higher THC, and about trends in their use as surveys typically ask about smoking rather than other methods of use. There are also gaps in public education about the different effects and risks associated with the use of different formats; for example, the longer time of onset associated with edible versus smoked products.

The challenge faced in Colorado with packaging and dosage of edibles, as described previously, illustrates the unanticipated consequences for both consumers and producers of unregulated product formats. Several stakeholders also expressed continuing concern that many edible products are virtually identical to other candy or baked goods, and could be mistakenly ingested, particularly by youth, and supported more rigorous regulation of product formats. Stakeholders discussed several possible mechanisms for control, including limitations on THC concentration, imposing differential taxation levels according to THC concentration, and restricting product formats such as candies that might be more appealing to youth.

Prevent commercialization

Stakeholders agreed that avoiding commercialization, or the active promoting and marketing of cannabis, is the most important factor in preventing significant public health impacts such as those seen with the commercialization of alcohol and tobacco. Stakeholders suggested areas for particular attention, including taxation, a tightly controlled state distribution model, and strict regulations on advertising and promotion. Many stakeholders also recognized that the profit motives involved in a promising market are likely to attract corporate interests including or similar in nature to “big tobacco,” with a corresponding concern that profit motives will overtake any concerns for individual or public health. These motives are supported by initial sales figures, totalling approximately $313M US in Colorado in 2014 and $260M US in Washington state from July 2014 to June 2015.

As a stakeholder in Washington remarked, commercialization is embedded in the economic culture of the United States. Colorado and Washington state are approaching this issue differently. Colorado is now moving away from a requirement for vertical integration from production to sale, and Washington is preventing vertical integration by allowing only retailers to hold retail licences, whereas producer and processor licences can be held concurrently. Monitoring the success of the various approaches being taken to limit the formation of large cannabis businesses in Colorado and Washington, as well as the states that have more recently introduced regulation, will provide valuable lessons learned.

Another lesson learned from research on the alcohol market is that consumption is directly related to availability. Some stakeholders expressed concern with the density of retail sales outlets, particularly in Denver, and with the location of some outlets relatively close to schools. Washington state has taken measures to prevent this problem from developing by applying caps on the number of licenses and developing regulations on location, including density and proximity to certain venues frequented by youth (e.g., schools). Some stakeholders remarked that these regulations drive locations to industrial and other areas that are inconvenient for customers to access.

Prevent use by youth

All stakeholders agreed that cannabis is not a benign substance and young people are at a higher level of risk for experiencing negative impacts. For example, heavy or regular cannabis use in early adolescence can have lasting effects on the developing brain (Porath-Waller, Notarandrea, & Vaccarino, 2015). There are indications that youth are more likely to use products in concentrated form with higher levels of THC and to use cannabis in combination with other substances. Several stakeholders expressed concern about advertisements, packaging and formats that are attractive to youth. As previously noted, stakeholders in Colorado expressed particular concern about products allowed on the markets that are formatted to mimic popular brand-name snacks and candies. Washington state regulations have not permitted edibles in "candy" form for retail sale, although they do exist in the unregulated medical market.

Stakeholders in both Washington and Colorado also agreed that reducing the negative impacts on youth should be a priority for any policy model. Acting on this priority includes closely monitoring youth rates of use and access to diverted product, and the health and social impacts on youth. The state must invest proactively in health promotion and prevention, and awareness and education for both youth and parents. Stakeholders pointed out the challenges in determining the impact on youth rates of use. For example, school surveys have not traditionally separated cannabis from other substances or asked about mode of use (e.g., smoking, edibles or vaping), and the methodologies of state and national youth surveys vary. These methodological variations result in different interpretations of impact depending on which data source and analytical approach are being used (Retail Marijuana Public Health Advisory Committee, 2015).

Invest in Effective Implementation

Developing a regulatory framework is only one piece of the puzzle. Implementing the framework and ensuring that there is the capacity and infrastructure needed to support it is also vital. Stakeholders particularly emphasized the need for proactive investment to build capacity **before implementation**, rather than waiting for revenues generated through taxation. This section outlines key themes that emerged about implementation.

Take the time required to develop an effective framework for implementation

Both Colorado and Washington experienced challenges with timing. Colorado had about one year to develop and implement a regulatory structure for retail production and distribution of cannabis. Stakeholders agreed that this was an aggressive timeline. A condensed timeline limits opportunities to engage stakeholders, collect data, conduct research, and ensure that regulatory agencies and other partners (e.g., enforcement and health professionals) can determine resource requirements and train staff. Stakeholders also pointed out that Amendment 64 outlined a framework within which they had to work, so they did not have the opportunity to craft regulations specifically to reflect available evidence on public health and safety impacts.

Washington waited an additional six months to implement, and many stakeholders felt that this provided a better opportunity to develop a comprehensive regulatory framework. The difficulty encountered in Washington was primarily with launching the retail market. Initial retailers had a period of only two months between license approval and the first legal sales date of July 8, 2015. Most retailers required additional time to produce or obtain product, establish locations and engage staff; resulting in limited product availability, price inflation and consumer frustration.

Develop the capacity to administer the regulatory framework

Stakeholders noted that regulatory bodies need to develop physical and human resources to administer the new regulations. Administration includes processing licence applications and renewals, conducting inspections, fielding complaints and addressing violations. In Colorado, for example, the Department of Revenue has taken on 55 new full-time employees to handle administrative and regulatory requirements. The City of Denver has added 37.5 full-time employees across sectors including administration, health, the coroner's office, public safety and emergency response.

Over the course of 2014, the Colorado Department of Revenue processed licenses for 322 retail stores, 397 retail cultivations, 98 product manufacturers and 16 testing facilities, as well as 77 denials, 30 suspensions, ongoing field inspections and other activities (Brohl et al., 2015). There are also costs associated with legal challenges by those denied licenses.

In Washington, the Washington State Liquor and Cannabis Board reported taking on 22 new full-time employees at a cost of $5M. From July 2014 to June 2015, the Board issued 131 producer, 275 processor and 161 retail licences. Stakeholders remarked that resources for inspections were limited and complaint-driven rather than proactive.

Provide leadership and promote collaboration

Stakeholders in both Colorado and Washington highlighted the value of central leadership to facilitate coordination and collaboration across the broad range of stakeholders involved in and affected by implementing cannabis regulations. In Colorado, the Governor's office created the Office of Marijuana Coordination with a leadership mandate. Stakeholders reported being involved to some degree on various working groups to develop, implement and amend regulations. They confirmed that this cross-sectoral approach was valuable for bringing all perspectives to the table from the beginning, generating consensus solutions to challenges, promoting consistency of information and avoiding conflict. From the administrative perspective, this approach smoothed implementation by ensuring ongoing communication across departmental divisions and enabling quick identification and attention to unintended impacts.

Stakeholders in Washington state pointed out that the absence of central leadership was a gap in the development of a regulatory framework in their state. Addressing that gap would have contributed to smoother implementation and improved understanding across sectors.

Invest proactively in a public health approach

One dominant rationale for cannabis legalization is the increased opportunity for a public health approach that includes prevention, education and treatment, in contrast with an enforcement approach focused on legal sanctions. A portion of sales revenue in both Colorado and Washington has been designated to support prevention and education initiatives. However, revenue-based funding by nature means a delay between the initiation of sales and the availability of funding, which results in limited resources prior to and early in the implementation stage — the period during which these initiatives are most needed. In addition, taxation revenue in Washington that was initially

earmarked for cannabis-related prevention, education, treatment, regulation and research has been reallocated to the general revenue stream, which reduces the funding available for public health.

A public health approach is comprehensive and stakeholders highlighted the need to build capacity across all system components that would be impacted by cannabis legalization. Stakeholders in Colorado in particular remarked on the importance of ensuring that resources are in place to address potential impacts on the health sector from emergency hospital admissions, poison control incidents and demand for treatment.

Stakeholders cautioned that lobbying by the cannabis industry could influence political decision making in favour of retail profit over public health. These concerns were more prominent in Colorado, where an established and coordinated industry presence has been part of the collaborative development process.

Develop a clear, comprehensive communications strategy

Stakeholders in both Colorado and Washington commented on the high level of public misunderstanding about the details of the legislation, both leading up to the initial vote and following the development of the regulatory framework. Clarity among the public about the legislation is important to reducing the health, social and public safety impacts. For example, people must know about possession and purchase limits, and restrictions on use in public and below the age of 21. Stakeholders emphasized the importance of communicating restrictions on cannabis-impaired driving and informing the public that police do have a scientifically validated method for testing for impairment.

Clear messaging about the risks and harms of cannabis use — integral to the public health approach — is important for reducing negative health impacts. Evidence indicates that the perception of harms associated with cannabis use is inversely related to rates of use among youth (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2015). Stakeholders pointed out that, to be perceived as credible, factual information about the health impacts of cannabis use must be conveyed in a way that is balanced and unsensational. They noted the value of drawing on lessons learned from campaigns against alcohol-impaired driving. Further, stakeholders highlighted the need for targeted communications to address specific risky behaviours, such as cannabis-impaired driving and use in combination with other substances including alcohol. Communications must also be developed to educate the public on the varied effects of different product formats and concentrations (e.g., delayed onset with edibles).

Ensure consistent enforcement of regulations

Stakeholders agreed there remains a strong role for enforcement under legalization, especially in areas such as driving while impaired, use in public, distribution to youth, and black market production and diversion. Enforcement stakeholders in Colorado, for example, remarked that they had observed an increase in the black market because of the increased ease of production and the profits associated with exporting to neighbouring states. Investing in education, training, analysis and investigative capacity is important to ensure consistent and effective enforcement of the regulations. Colorado stakeholders noted that adequate resources had not been invested to ensure access to the training required for effective and consistent enforcement. Several Washington stakeholders felt that frontline officers did not view enforcement of the regulations as a priority, which led to the normalizing of transgressions such as use in public. Colorado stakeholders pointed out the lack of labs for sample analysis as a significant obstacle, whereas Washington stakeholders emphasized that the availability of testing labs and the scaling up of impaired driving detection capacity before legalization had been especially beneficial.

Invest in research to establish the evidence base

Stakeholders in both Colorado and Washington pointed out that there are gaps in knowledge about patterns and impacts of cannabis use. Colorado stakeholders in particular identified that more time and resources would have enabled regulators to work with the health and research communities to gather existing scientific knowledge on the impacts of use, identify gaps and inform the regulatory framework. The legal status of cannabis has restricted access to it for research purposes, which has limited the ability to collect evidence on the impacts of use. Stakeholders pointed out that research institutions in states that have legalized cannabis risk losing federal funding by using local supplies instead of federally approved product.

It was also remarked that the uniformity of cannabis supplied by the federal government for research further limits the information available on products with higher concentrations of THC. Emerging trends in use, such as consumption of these products, have created important gaps in knowledge about acute and long-term health impacts. Cannabis concentrates, in the form of oils and resins, provide levels of THC in excess of those possible in the plant form. The acute and long-term impacts of these products is currently unknown and of particular concern for high-risk groups. Evidence on these impacts would be valuable to inform product regulations or guidelines and public awareness.

Conduct rigorous, ongoing data collection

As the first states to enact a legalized regulatory framework for cannabis, Colorado and Washington are in a unique position to contribute to the evidence base on the impacts of regulatory change. There are many different perspectives, for example, on potential tax revenue, impact on organized crime and health, and impact on rates of use among both adults and youth (e.g., Light et al, 2014; Caulkins, Andrzejewski, & Dahlkemper, 2013).

Monitoring impacts is also necessary to determine if policy objectives are being met, and to identify unanticipated impacts in a timely manner. However, many stakeholders in both Colorado and Washington expressed frustration that lack of baseline data meant they could not answer many fundamental questions about the impact of legalization. For example, many data systems did not report cannabis separately from other illicit substances, (e.g., school expulsion and suspension data), did not ask about the use of different product formats (e.g., smoked versus edibles), or did not systematically screen for the presence of cannabis (e.g., emergency rooms and coroners' reports). Different data collection and analytical approaches, and reporting timelines contribute to inconsistent results. Stakeholders agreed that quality data would enable a more evidence-driven approach.

Data collection is subject to availability bias, with sales revenue and taxation data being easier to track and report than complex multi-sectoral direct and indirect costs (e.g., poison control calls, emergency visits, hospital stays, treatment numbers, impaired driving fatalities, enforcement training, tourism and employment). Several stakeholders noted the importance of clarifying the research question (e.g., what is the problem the new regulation is trying to solve?) and then collecting and analyzing data strategically to make more efficient use of resources and produce more relevant results.

In Colorado, data on poison control, hospitalizations and emergency department visits have, for example, indicated an increase in cannabis-related incidents between January and June 2014 (Retail Marijuana Public Health Advisory Committee, 2015). However, further analysis is needed to determine if this increase is a result of legalization or other factors such as increased awareness and willingness to report a previously illegal behaviour. Similarly, increases in cannabis-impaired driving incidents in Washington are being attributed by some stakeholders to the new regulatory framework (e.g., Couper and Peterson, 2014); however, others point out that confounding factors such as a recent Supreme Court ruling and increased detection capacity are likely driving this increase.

Additional data collected over time will be needed to demonstrate whether any impact is sustained. Although preliminary evidence does not indicate changes in prevalence of use, stakeholders in Washington did point out that there are indications that perceived risk of cannabis use is decreasing. Evidence supports an inverse relationship between perceived risk and rates of use, meaning that when perceived risk decreases, rates of use increase.

Colorado is addressing gaps in information by adding questions about cannabis to state-level public health surveys for adults, youth, pregnant women and new mothers (Retail Marijuana Public Health Advisory Committee, 2015). Results from these surveys is anticipated in fall 2015, but information on the impact of Amendment 64 will be limited by the lack of comparable baseline data. There is also work underway on questions to collect data on the costs associated with cannabis-related hospital visits and rates of driving while impaired by cannabis.

The passage of I-502 in Washington state included the direction of resources to the Washington State Institute for Public Policy to conduct a comprehensive cost-benefit evaluation of its implementation. The evaluation was to cover impacts on public health, public safety, substance use, the criminal justice system, economy and administration (Washington State Institute for Public Policy, 2015). The evaluation issued its first report in September 2015, outlining the evaluation plan and baseline measures. The first report to provide initial outcome analyses is scheduled for September 2017.

Stakeholders in Washington said they are working with colleagues in other states to promote consistent approaches to measuring impact. This consistency will be extremely useful in providing comparable data, particularly in areas such as criminal justice and the black market, where reliable, quantifiable indicators are less available.

Conclusions and Next Steps

The overarching message that the CCSA delegation heard from Colorado and Washington stakeholders was that if a jurisdiction is considering regulatory changes to cannabis policy, it should identify the central goal or problem to be solved, and use this goal to inform regulations, data collection and public awareness initiatives. A comprehensive regulatory framework should, for example, take into account legislation and policy, public awareness and prevention, health interventions and treatment, detection, deterrence and enforcement, adjudication and sanctions, and evaluation.[4] They also identified the importance of taking the time and investing the resources needed to get it right, assessing impacts along the way, and making incremental changes to respond to emerging lessons learned. Stakeholders also agreed that decreasing regulations is easier than increasing them, and so advised beginning with a more restrictive framework and easing restrictions when appropriate.

Much of the data needed to fully evaluate the impact of cannabis legalization is not yet available, and CCSA will continue to monitor it closely as it emerges. These efforts will be greatly helped by the contacts and relationships established through CCSA's meetings with Colorado and Washington state stakeholders. CCSA will also monitor the emerging policy frameworks in Oregon, Alaska and Washington, DC, following successful legalization campaigns in those jurisdictions in November 2014.

CCSA will use the information gathered from the fact-finding trips to Colorado and Washington state to ensure its contribution to the ongoing dialogue on cannabis policy is informed by the best available evidence. CCSA emphasizes that any changes to cannabis policy should be made based on the principles of applying available evidence, reducing negative health, social and criminal justice impacts, and promoting public health and the equitable application of the law.

CCSA recommends that the dialogue on cannabis policy in Canada begins by defining the problems or harms to be addressed. CCSA also recommends taking advantage of the opportunity to inform the Canadian dialogue with the impacts and lessons learned through the implementation of various policy options internationally.

[4] Based on a framework developed by CCSA to guide the development of a comprehensive regulatory response to the problem of drugs and driving.

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Appendix A: CCSA Delegations

Colorado

CCSA Senior Leadership
Rita Notarandrea, Chief Executive Officer
Rho Martin, Deputy Chief Executive Officer

CCSA Subject Matter Experts
Health — Amy Porath-Waller, Director, Research and Policy
Policy — Rebecca Jesseman, Senior Policy Advisor and Director, Information Systems and Performance Measurement

External Delegates
Gary Bass, Member, CCSA Board of Directors, and Superintendent (retired), Royal Canadian Mounted Police
Ian Culbert, Executive Director, Canadian Public Health Association

Washington State

CCSA Senior Leadership
Rita Notarandrea, Chief Executive Officer

CCSA Subject Matter Experts
Health — Amy Porath-Waller, Director, Research and Policy
Policy — Rebecca Jesseman, Senior Policy Advisor and Director, Information Systems and Performance Measurement

External Delegates
Trevor Bhupsingh, Director General, Law Enforcement and Border Strategies Directorate, Public Safety Canada
Inspector Michael Carlson, Royal Canadian Mounted Police
Ian Culbert, Executive Director, Canadian Public Health Association
Inspector Mike Serr, Vancouver Police Department
Lori Spadorcia, Vice President of Communications and Partnerships, Centre for Addiction and Mental Health

Appendix B: Colorado Stakeholders

Meeting Host	Individual	Role (Organization if different from meeting host)
Colorado Department of Revenue	Barbara Brohl	Executive Director
	Ron Kammerzell	Deputy Senior Director of Enforcement
	Lewis Koski	Director, Marijuana Enforcement Division
SMART Colorado	Gina Carbone	Founding member
	Henny Lasley	Board member
	Jo McGuire	Speaker
Colorado Tobacco Education and Prevention Alliance	Bob Doyle	Executive Director
Marijuana Industry Group	Michael Elliott	Executive Director
Springs Rehabilitation	Ken Finn	Service Provider
Office of the Governor	Andrew Freedman	Director of Marijuana Coordination
	J. Skyler McKinley	Deputy Director of Marijuana Coordination
Vicente Sederberg LLC	Christian Sederberg	Attorney at Law
	Andrew Livingston	Policy Analyst
	Joshua Kappel	Attorney at Law
Colorado Enforcement (multiple organizations)	Ashley Kilroy	Denver Marijuana Coordinator
	Ben Cort	CeDAR; SMART Colorado
	Bruce Mendelson	Denver Drug Strategy
	Chelsey Clarke	Rocky Mountain High Intensity Drug Trafficking Area
	Chris Halsor	Understanding 420
	Jack Reed	Statistical Analyst, Office of Research and Statistics, Colorado Department of Public Safety
	James Henning	Denver Police Department
	Jim Burack	Colorado Department of Revenue, Marijuana Enforcement Division
	Kevin Wong	Rocky Mountain High Intensity Drug Trafficking Area
	Marco Vasquez	Chief, Erie Police Department; Colorado Association of Chiefs of Police
	Mark Fleecs	Denver Police Department
	Marley Bordovsky	Denver City Attorney's Office
	Nachshon Zohari	Denver Drug Strategy
	Rob Madden	Colorado State Patrol
Denver Police Department	Robert White	Chief of Police
	David Quinones	Deputy Chief of Police
Colorado Department of Public Health and Environment	Larry Wolk	Executive Director and Chief Medical Officer
	Tista Gosh	Deputy Chief Medical Officer and Director, Disease Control and Environmental Epidemiology
	Michael VanDyke	University of Colorado Denver, Anschutz Medical Campus
	Ali Maffey	Policy and Communication Unit Supervisor
	Karin McGowan	Deputy Executive Director and Director, Community Relations

Appendix C: Washington State Stakeholders

Meeting Host	Individual	Role (Organization if different from meeting host)
Seattle City Attorney's Office	Peter Holmes	Executive Director
	John Schochet	Deputy Chief of Staff
	Kathleen Harvey	
University of Washington, School of Medicine, School of Social Work and School of Public Health (multiple organizations)	Dr. Dennis Donovan	Director, Alcohol & Drug Abuse Institute; Professor, Department of Psychiatry & Behavioral Sciences
	Roger Roffman	Professor Emeritus, School of Social Work
	Beatriz Carlini	Senior Research Scientist, Alcohol and Drug Abuse Institute
	Caleb Banta-Green	Senior Research Scientist, Alcohol and Drug Abuse Institute
	Sharon Garrett	Research Coordinator, Alcohol and Drug Abuse Institute
	Gillian Schauer	Research Affiliate, Alcohol and Drug Abuse Institute
	Denise D Walker	Research Associate Professor, Co-Director, Innovative Programs Research Group, School of Social Work
	Christine Lee	Research Associate Professor, Psychiatry, Associate Director, Center for the Study of Health and Risk Behaviors
	Mark Cooke	Policy Advocate, American Civil Liberties Union
	Adam Darnell	Senior Research Associate, Washington State Institute for Public Policy
	Jennifer Wyatt	Training & Program Specialist, Northwest Addiction Technology Transfer Center
	Jennifer Velotta	Clearinghouse Coordinator, Information Services & Dissemination, Alcohol and Drug Abuse Institute
	Meg Brunner	Web Information Specialist, Information Services & Dissemination, Alcohol and Drug Abuse Institute
	Kevin Haggerty	Director, Social Development Research Group, School of Social Work
	Nancy Sutherland	Director, Information Services and Dissemination, Alcohol and Drug Abuse Institute
	Katarina Guttmannova	Principal Investigator, Social Development Research Group
	Jennifer Bailey	Principal Investigator, Social Development Research Group
King County Sheriff's Office	Sheriff John Urquhart	
	Chris Barringer	Chief of Staff
Seattle Sick Children's Hospital	Dr. Leslie Walker	Chief, Adolescent Medicine
	Inga Manskopf	Community Coalition Leader
	Liz Wilhelm	Community Coalition Leader
	Kevin Haggerty	Director, Social Development Research Group, University of Washington, School of Social Work
Cannabis City	Dr. James R. Lathrop	CEO
Washington State Economic and Revenue Forecast Council	Lance Carey	Senior Economist
Office of Governor	Jason McGill	Policy Advisor
	Sandy Mullins	Policy Advisor
	Xandre Chateaubriand	Policy Advisor

Washington State Department of Social and Health Services (multiple organizations)	Jane Beyer	Assistant Secretary, Behavioral Health and Service Integration Administration
	Lisa Hodgson	Office Director, Health Professions and Facilities, DOH
	Kristi Weeks	Review Officer/Policy Counsel, DOH
	Paul Davis	Manager, Tobacco Prevention and Control and Marijuana Education, DOH
	Rick Garza	Director, LCB
	Sarah Mariani	Division of Behavioral Health and Recovery
	Mary Segawa	Public Health Education Liaison, LCB
	Steven Johnson	Deputy Chief, Enforcement, LCB
	Michael Langer	Office Chief, Behavioral Health and Prevention, BHSIA
Harris & Moure, pllc	Robert McVay	Attorney at Law
Washington Association for Substance Abuse & Violence Prevention	Derek Franklin	President
Northwest High Intensity Drug Trafficking Area	Dr. Steve Freng	Prevention/Treatment Manager
Washington State Patrol	Lt. Robert Sharpe	Impaired Driving Section Commander

Appendix D: Glossary of Terms

The following terms are commonly used to categorize approaches that fall at various points along the regulatory continuum for cannabis.

Criminalization: The production, distribution and possession of cannabis are subject to criminal justice sanctions ranging from fines to incarceration. Conviction results in a criminal record.

Decriminalization: Non-criminal penalties, for example, civil sanctions such as tickets or fines, replace criminal penalties for personal possession. Individuals charged will not, in most cases, receive a criminal record. Most decriminalization models retain criminal sanctions for larger-scale production and distribution.

Legalization: Criminal sanctions are removed. The substance is generally still subject to regulation that imposes guidelines and restrictions on use, production and distribution, similar to the regulation of alcohol and tobacco.

Regulation: Regulation refers broadly to the legislative or regulatory controls in place with regard to the production, distribution and possession of cannabis. The term is, however, increasingly being used in reference to the guidelines and restrictions on use, production and distribution of cannabis under legalization approaches.