

# Cannabis Impairment in the Workplace: A Jurisdictional Analysis of Drug Testing Policies and Recommendations in the Context of Canadian Legalization and Regulation

CAPSTONE PAPER FOR THE COMPLETION OF  
MASTERS OF PUBLIC HEALTH IN THE FACULTY OF  
HEALTH SCIENCES

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## Introduction

The Government of Canada proposed legislation in April 2017 that, once passed, will legalize and regulate cannabis in Canada by July 2018<sup>1</sup>. The intention behind this shift in drug policy is to better reflect public health evidence that cannabis prohibition is not effective at restricting drug use and is associated with social injustices that target marginalized populations<sup>2</sup>. The proposed Cannabis Act aims to control the production, distribution, sale, and possession of cannabis to balance the harms of problematic cannabis use with the social harms of drug prohibition<sup>3</sup>.

One of the stated goals of the move towards cannabis legalization is the protection of public safety<sup>2</sup>. Cannabis, like other drugs such as alcohol or some prescription medications, can cause impairment that can affect an individual's ability to perform certain tasks safely, such as driving<sup>4</sup>. As a result, the proposed Cannabis Act incorporates a strengthened legal framework for identifying and persecuting drivers who are impaired by cannabis, including the use of objective (biological) measures for the identification of impaired drivers and graded penalties that reflect the level of impairment, similar to the approach towards alcohol-impaired driving<sup>5</sup>.

Cannabis impairment can also affect safety in the workplace. However, the proposed Cannabis Act does not include a framework for cannabis impairment in the workplace, as workplace health and safety in Canada is a provincial jurisdiction for most industries. In British Columbia, workplace health and safety is regulated by the Occupational Health and Safety Regulations (OHSR)<sup>6</sup> under the Workers Compensation Act (WCA)<sup>7</sup>. Part 4 – General

Conditions of the OHSR contains regulations for impairment in the workplace in sections 4.19 and 4.20<sup>8,9</sup>. These regulations emphasize the employee's duty to report any impairment that could put their own safety or that of other workers at risk, and the employer/supervisor's responsibility to not knowingly permit a person who is impaired and may endanger themselves or others to remain at the workplace<sup>8,9</sup>.

However, the presence of these regulations does not necessarily translate into the risk of cannabis impairment in the workplace being reduced in practice. The implementation of this policy approach relies on individuals having to report use of a drug which has historically been criminalized, and may continue to face stigmatization even after legalization occurs.

Additionally, cannabis impairment is more complex than other impairing substances such as alcohol, and may not be well enough understood by workers or employers for them to identify when and individual's cannabis use may affect their safety at work. While objective drug testing based on analysis of bodily fluids is a growing field of research in the context of driving and workplace impairment, the methods for detecting cannabis impairment are still being developed, and the use of the wrong methods have the consequence of punishing individuals for non-problematic cannabis use rather than the act of performing an activity such as driving or working while impaired.

## Purpose

In Canada, cannabis is currently a hot topic – with the age of legalization and regulation looming nearer, there is (often heated) public debate about the risks of cannabis, and there is growing concern by employers who are uncertain of how to deal with cannabis in their workplace. This paper argues that while cannabis impairment does indeed pose some risk if it

occurs while workers are on the job, a zero-tolerance approach to cannabis in workers is unrealistic, perpetuates social harms, and is ineffective at protecting worker safety. Because of this, a balance needs to be achieved in a policy approach to workplace drug testing which manages both the human rights issues of drug testing as well as protects worker safety.

This paper will:

1. Discuss the social context of cannabis as it relates to drug prohibition
2. Review literature on our current understanding of cannabis impairment
3. Compare workplace drug testing policies in the context of social harms and workplace safety in three jurisdictions
4. Provide recommendations for workplace drug policies for cannabis which effectively incorporate principles of human rights as well as worker safety

## Literature Review

### The Social Context of Cannabis

Cannabis legalization and regulation is always a matter of intense public discussion, and the same has been true of the discussion taking place in Canada. As much as it is important to have a drug policy that is informed by scientific and other forms of evidence, it is also true that the push for cannabis legalization has been driven by social movements around the world.

Understanding the goals of these social movements in pushing for legalization and how the future framework of legalization and regulation is attempting to meet those goals requires an understanding of the history of cannabis prohibition – and while it is beyond the scope of this paper to provide an entire history (there are many other excellent resources that do this<sup>10</sup>), it is discussed briefly in the Canadian context as it essential to understanding why it is important that

any policies relating to cannabis legalization, including workplace testing policies, need to consider human rights.

Cannabis, despite being used for spiritual and medical purposes in various cultures throughout human history, was not widely known or used in North America besides for a few medical purposes. Despite this, when the United States began its national campaign against drugs in the 20<sup>th</sup> Century, it included cannabis in its ‘war against drugs’, calling it by its Mexican name *marihuana* to add a dangerous foreignness to the plant. The United States’ strict stance on drug prohibition was soon taken up in Canada and across the globe<sup>10</sup>.

While the stated goal of the ‘war on drugs’ was to put an end to drug use, in practice, criminalizing drug use had many social consequences. Individuals who use drugs are more likely to belong to social and racial minorities<sup>11</sup>, and the war on drugs meant that these people were intensely persecuted for relatively minor crimes such as drug possession.

Cannabis prohibition is just part of the wider social stigma on drug use which has dominated much of drug policy in the 20<sup>th</sup> Century. However, the tide is changing. Research is showing that drug prohibition is not effective at reducing drug use, and that drug use, rather than being a dangerous activity that must be eliminated, is an activity that is much more nuanced<sup>11</sup>. While it is true some drugs can be incredibly risky to an individual (such as the recent fentanyl overdose epidemic), there are also many instances where drug use can be managed and done safely. In essence, drug use can be viewed as a spectrum, encompassing both beneficial uses to problematic or harmful uses, as shown in Figure 1. Research supports what those who use cannabis have known for decades – that cannabis is not the incredibly dangerous and impairing drug that the government has said it is.

# Spectrum of Psychoactive Substance Use

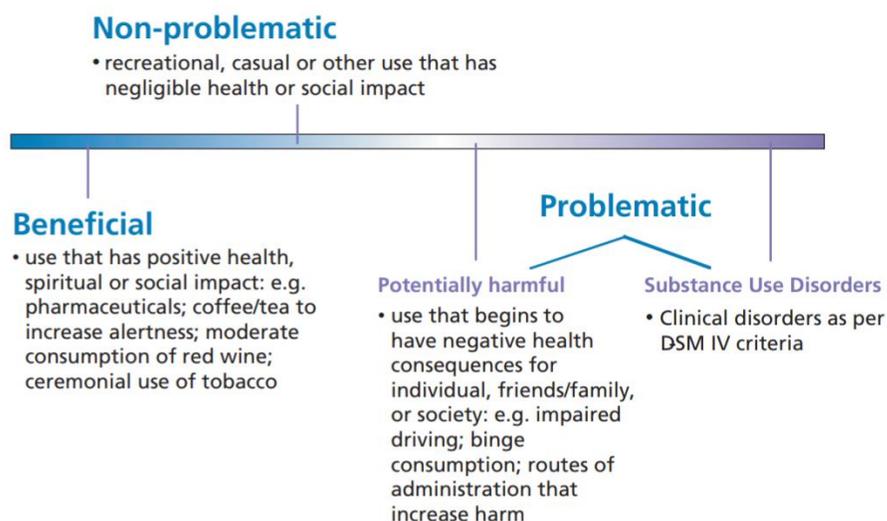


Figure 1: Drug use can be understood as a spectrum, with effects ranging from beneficial to problematic. Original diagram from the British Columbia Ministry of Health Services<sup>12</sup>.

## Cannabis Impairment

Cannabis impairment is the result of the psychoactive nature of the main ingredients of cannabis, chemical compounds called cannabinoids. Although there are over 60 cannabinoids found in *Cannabis sativa*, the cannabinoid that is primarily responsible for its psychoactive effect and is the most widely studied is  $\Delta^9$ -tetrahydrocannabinol ( $\Delta^9$ -THC or THC)<sup>13</sup>. THC interacts with cannabinoid (CB) receptors that are present in the brain and outer tissues, such as in the gut, resulting in behavioural and physiological effects that constitute cannabis impairment<sup>14</sup>, shown in Table 1. However, there is evidence that THC also has multiple non-specific effects on a number of neurologic systems and affect various enzyme systems and endocrine systems, as well as additional neurological pathways, which can make the effects of cannabis impairment highly variable between individuals and different strains of cannabis<sup>14</sup>.

Behavioural Effects	Physiological Effects
Euphoria	Changes in heart rate and blood pressure
Relaxation	Red eyes
Altered time perception	Dry mouth and throat
Lack of concentration	Increased appetite
Impaired learning	Decreased respiratory rate

Table 1. Behavioural and physiological effects of cannabis. Adapted from Sharma, Murthy, and Bharath, 2012<sup>14</sup>.

It has been argued that there is a lack of evidence relating to cannabis impairment<sup>15</sup>; this is partly true. It is true that the prohibition of cannabis has made it intensely difficult for researchers to study cannabis impairment in any meaningful way. However, it is more accurate to say that there is a lack of good quality evidence, as there are many studies that have been done that are subject to the social biases emanating from an era of drug prohibition<sup>4</sup>. The result is studies of cannabis impairment which rarely reflect how cannabis is actually used by those who use cannabis, and face methodological biases which blur the current scientific understanding of cannabis impairment<sup>4</sup>.

A review carried out on the state of evidence of cannabis impairment as it relates to driving<sup>4</sup> argues these same points. When those studies are looked at alone, it is clear that cannabis use does result in physical impairment, including short-term negative impacts on reaction time, motor coordination, divided attention, short-term memory and decision-making<sup>4</sup>. However, those impacts are not nearly on the same magnitude as impairment effects of other drugs, including alcohol, as measured by Odds Ratios (ORs) of increased motor vehicle accidents (MVAs).

The most comprehensive and recent review of this finding was done by Rogeberg and Elvik<sup>16</sup> in a meta-review that was based on 21 studies, for a total of 28 estimates and a combined sample size of 239,739, of which 92% of the samples were from studies which reported estimates that were adjusted for known confounders. It addressed methodological problems with

previous meta-analyses<sup>17,18</sup> including small sample sizes, pooling incomparable effect estimators (OR and culpability), failure to adjust for confounders, and use of measures that did not indicate current or recent cannabis use, and therefore would not reliably indicate impairment<sup>16</sup>. The 21 studies included in the meta-review are shown in Table 2.

The meta-review found that the pooled OR for MVAs for those who drove after using cannabis was 1.22 (1.1-1.36) based on a weighted least-squares meta-regression model, which is better able account for the biases of small sample sizes. This is much lower in magnitude than alcohol, which has an OR for MVA risk of 2-4 for blood alcohol concentrations of 0.05-0.08%<sup>19</sup>, or even other prescribed medications such as benzodiazepines, which has an OR for MVA crash risk of approximately 1.7<sup>20</sup>.

While these studies are in the context of cannabis impairment and driving, they are likely a reasonable comparison to how cannabis impairment would affect the risk of workplace accidents through worker impairment, as many of the same skills required for driving are necessary when performing potentially dangerous activities in the workplace as well. There is no comparable research in the field of occupational health and safety that investigates the risk of workplace accidents due to cannabis impairment, which is a significant gap in our understanding of cannabis impairment in the workplace.

Reference	Authors	Year	Country	Design	Accident severity	Estimator of risk (OR)	Measure of drug use	Confounders controlled (see Table 1)	Dose-response assessed	Dose-response found
[17,37]	Terhune	1983	United States	Culpability	Mostly PDO	OR	Lab analysis	Alcohol, other drug use	No	No
[41]	Williams <i>et al.</i>	1985	United States	Culpability	Fatal	OR	Lab analysis	Alcohol, other drug use	No	No
[19]	Terhune <i>et al.</i>	1992	United States	Culpability	Fatal	OR	Lab analysis	Alcohol, other drug use	No	No
[42]	Longo <i>et al.</i>	2000	Australia	Culpability	Injury	OR	Lab analysis	Alcohol, other drug use	Yes	Yes
[43]	Lowenstein	2001	United States	Culpability	Injury	OR	Lab analysis	Alcohol, other drug use	No	No
[14]	Mura <i>et al.</i>	2003	France	Case-control	Injury	OR	Lab analysis	Age, gender	No	No
[11]	Brault <i>et al.</i>	2004	Canada	Case-control	Fatal	OR	Lab analysis	Age, gender, time of day	No	No
[18]	Drummer <i>et al.</i>	2004	Australia	Culpability	Fatal	OR	Lab analysis	Age, gender, other drug use, alcohol, type of accident, place of residence	Yes	Yes
[44]	Assum	2005	Norway	Case-control	Mostly fatal	OR	Lab analysis	Region	No	No
[12]	Blows <i>et al.</i>	2005	New Zealand	Case-control	Injury	OR	Self-report	Age, gender, ethnicity, education, alcohol, km driven, speed, time of day	No	No
[20]	Laumon <i>et al.</i>	2005	France	Culpability	Fatal	OR	Lab analysis	Age, alcohol, time of day	Yes	Yes
[45]	Mathijssen	2005	Netherlands	Case-control	Injury	OR	Lab analysis	Alcohol, other drug use	No	No
[15]	Woratamarat <i>et al.</i>	2009	Thailand	Case-control	Injury	OR	Lab analysis	None	No	No
[46]	Kuypers <i>et al.</i>	2012	Belgium	Case-control	Serious injury	OR	Lab analysis	Age, gender, time of day	Yes	No
[47]	Hels <i>et al.</i>	2011	Denmark, Italy, Netherlands	Case-control	Serious injury	OR	Lab analysis	Age, gender	No	No
[47]	Hels <i>et al.</i>	2011	Lithuania	Case-control	Serious injury	OR	Lab analysis	None	No	No
[47]	Hels <i>et al.</i>	2011	Norway	Case-control	Fatality	OR	Lab analysis	Age, gender	No	No
[47]	Hels <i>et al.</i>	2011	Portugal	Case control	Fatality	OR	Lab analysis	None	No	No
[48]	Gjerde <i>et al.</i>	2013	Norway	Case-control	Fatal	OR	Lab analysis	Age, gender, region, season, time-period, road type	No	No
[49]	Li <i>et al.</i>	2013	United States	Case-control	Fatal	OR	Lab analysis	None	No	No
[50]	Poulsen <i>et al.</i>	2014	New Zealand	Culpability	Fatal	OR	Lab analysis	Age, gender, alcohol, other drug use, licence status, vehicle type, road class, crash type	Yes	No
[51]	Romano <i>et al.</i>	2014	United States	Case-control	Fatal	OR	Lab analysis	Alcohol, other drug use	No	No
[52]	Compton <i>et al.</i>	2015	United States	Case-control	Mostly PDO	OR	Lab analysis	Age, gender, ethnicity, alcohol	No	No
[53]	Dubois <i>et al.</i>	2015	United States	Culpability	Fatal	OR	Lab analysis	Age, gender, alcohol, other drug use, driving history	No	No

PDO = property damage only.

Table 2. Studies included in the meta-review by Rogeberg and Elvik<sup>15</sup>.

## Measurement of Cannabis Impairment

Perhaps one of the reasons that policy-makers struggle with measuring cannabis impairment is because of the previous experience with alcohol – in contrast to cannabis, alcohol is relatively easy to measure. Alcohol has one active ingredient, is water-soluble, and is therefore expelled from the body in a reasonably predictable pattern<sup>21</sup>. Additionally, its solubility in water means that the concentration of alcohol which is expelled from the breath can be used with a high degree of confidence to calculate the concentration of alcohol in the blood, and make direct inferences about an individual's level of impairment<sup>21</sup>. This is the basis for measuring alcohol impairment in drivers around the world.

However, cannabis is not nearly so simple. While THC is believed to be the main active ingredient in cannabis, it is not the only one, and there is increasing research that suggests that the many other chemicals found in cannabis also play a role in how THC is absorbed and metabolized<sup>22</sup>. The concentrations and combinations of these many different chemicals vary between strains of cannabis<sup>22</sup>. Cannabis is also administered in a variety of ways, including smoking, vaping, oral ingestion of various forms, and topical applications, each of which distribute cannabis throughout the body differently. THC, unlike, alcohol, is fat soluble, which means that once it enters the body it is absorbed in fat cells, then slowly released back into the bloodstream as it is metabolized. Inhalation of cannabis results in a very fast uptake of THC and more rapid onset of psychoactive effects, usually within 1-2 hours, while ingestion of cannabis results in peak absorption of THC around 3-4 hours after use, and a slower metabolism<sup>4</sup> (see Figure 2). All of these factors make it difficult to determine the exact effects of cannabis on impairment based on a biological measurement of a single component of cannabis, usually THC.

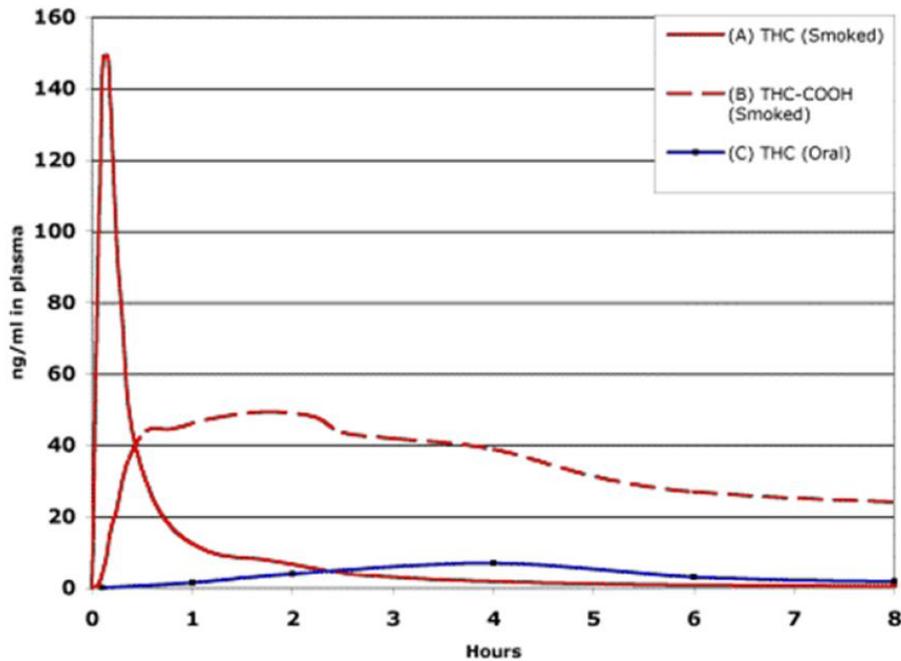


Figure 2: Diagram of absorption patterns of THC for smoked and orally ingested cannabis<sup>23</sup>.

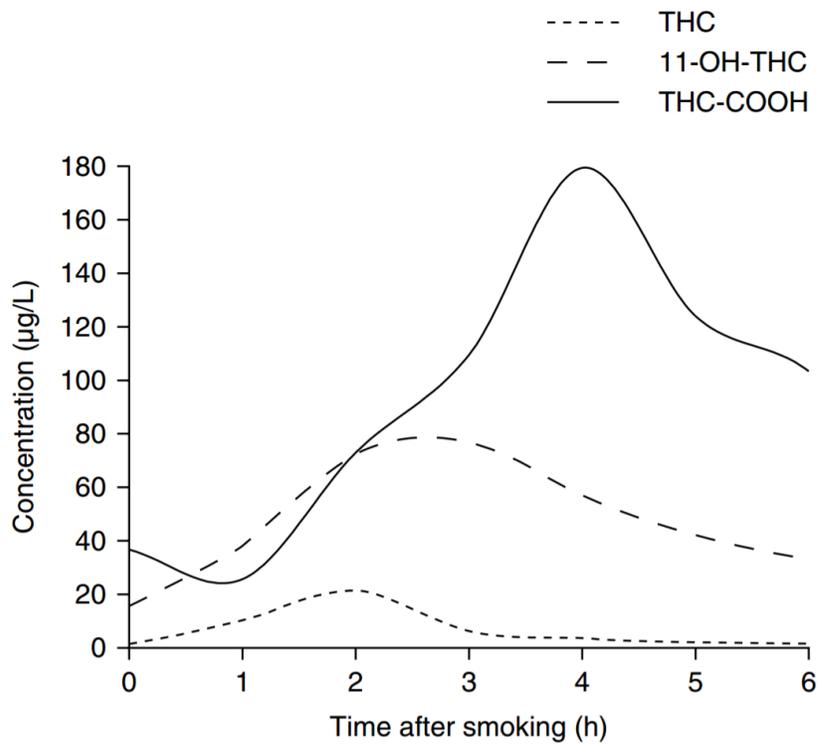


Figure 3: Diagram of mean urine concentrations of THC and its metabolites after smoking a cannabis cigarette containing 27mg of THC (N=8)<sup>24</sup>.

However, despite the challenges in measuring cannabis impairment, there are still existing methods to doing so. One method which bypasses the problems of biological tests is behavioural-based impairment testing – in the context of driving, this is a Standardized Field Sobriety Test (SFST) which is carried out by a police officer. However, these tests were developed for alcohol impairment testing, and a review of evidence shows that they are not effective at predicting cannabis impairment, which present with different physical impairment characteristics than alcohol<sup>4</sup>. Police also have trained Drug Recognition Experts (DRE) who use a standardized set of behavioural and physical tests to determine drug impairment, however, these tests have also been shown to have a low effectiveness in identifying cannabis impairment<sup>4</sup>, and the testing and certification of DRE officers limits their widespread use.

For biological measures, a number have been used in research and in other forms of drug testing. Urinalysis is a widely-used measure, however, there are challenges with using this method as a determination of actual impairment by cannabis. THC is expelled in urine only after it is metabolized, and THC metabolites (typically 11-OH-THC or THC-COOH) can be detected in urine in high concentrations hours after initial use (see Figure 3 for a diagram of THC metabolism in urine after smoking), and research shows it may be present for up to days or weeks after it was initially absorbed<sup>25</sup>. This means it says nothing about impairment at the time the sample was collected, or even current use.

There is a growing body of research into other easily collectable biological samples, including breath and oral fluids<sup>26</sup>. While there is promise in these fields, the technology is still being tested and validated. For oral fluids, based on current research it appears that while levels of THC in oral fluid are not a good indicator of level of impairment (similar to breathalyzer

testing for alcohol), it is a good predictor of current use of cannabis, which is likely to indicate some level of impairment<sup>4</sup>.

The most accurate measure of cannabis impairment is blood testing for THC. Much research has been done to try to determine a blood THC level comparable to blood alcohol concentrations that are used to indicate driving impairment. While it is still an imperfect measure (as discussed above), current knowledge of cannabis impairment indicates that a blood level of THC of 7-10ng/mL in serum is a reasonable comparison in terms of level of impairment to BAC of 0.05-0.08%, a level used in many jurisdictions (including BC) to indicate alcohol impairment<sup>25</sup>.

## Methods

This paper uses a jurisdictional analysis approach in order to examine policy options for drug testing in the workplace in three different jurisdictions – US (federal), Colorado, and Maine – in comparison to relevant policies in BC. These jurisdictions were chosen for analysis due to their differing approaches to drug testing in the workplace, despite similar North American contexts. As the central argument of this paper is that a workplace policy for cannabis needs to balance the workplace safety with the potential of workplace policies to perpetuate social harms based in drug prohibition models, these jurisdictions will be compared on aspects relating to human rights as well as worker health and safety. Criteria used to focus the discussion of these policies are defined in Table 3.

Information on the different policy options in each jurisdiction were found online on governmental websites and through internet searches for supporting guidelines, policy interpretations, and relevant case law. Grey literature was used as a starting point to opportunistically identify materials that were relevant to the analysis.

Human Rights	Worker Health & Safety
How is testing carried out (i.e. is it random, mandatory)?	What is the level of tolerance for cannabis in the workplace?
Are there guidelines for those using cannabis for medical purposes?	Are there guidelines or standards for consistent implementation of testing?
Does the policy respect worker's freedom to use cannabis when not at work (and when it will not affect their work?)	What type of testing is done?
What are the repercussions of a positive test?	How accurate is testing as determining impairment?

Table 3. Criteria for evaluating cannabis workplace drug testing policies with respect to human rights considerations as well as workplace safety.

## Results

### Description of Jurisdictions

Each of the jurisdictions examined for this paper differ slightly in their approach to cannabis policy, which in the US adds confusion to the issue of workplace drug testing as cannabis is still illegal under US federal law. In the US, states can opt out of federal laws, which in effect causes the federal government to lose its ability to enforce cannabis prohibition. Colorado was one of the first states to legalize personal use of cannabis in 2012, along with Washington. Since then, Colorado has been the focus of international attention as an example of the state-wide effects of cannabis legalization. Maine, in contrast, is relatively new to cannabis legalization, with regulations to make cannabis legal just coming into effect in January 2017. All of these perspectives are useful to compare to Canada, which is on the brink of legalization and regulation of cannabis.

The distinction between cannabis legality at the federal level and state level in the US results in a complicated legal environment for drug testing in the workplace. Since cannabis is still illegal at the federal level, workers who are employed by federal organizations must still comply with federal workplace drug policies. Workers employed in the Department of Transportation (DOT) are required to undergo random testing if they are in what is considered a

safety sensitive position. This includes workers such as pilots, school bus drivers, ship captains, and any driver who holds a commercial driving license<sup>27</sup>.

At the state level, workplaces where federally-regulated employees work must have a DOT drug testing program in place for those employees. However, for other employees, and other workplaces, in neither Colorado nor Maine is drug testing required or prohibited. So, while under the federal Drug-Free Workplace Act employers must not allow impairment at work, drug testing is not a mandatory component of meeting that legislative requirement. This is similar to BC, where drug testing is also not required, and is in fact only permitted under BC Human Rights Code when there can be shown to be a Bona Fide Occupational Requirement (BFOR), such as in safety sensitive positions<sup>28</sup>.

## Test Implementation

### Human Rights

How testing is carried out in each jurisdiction impacts human rights, as testing can be considered an invasion of privacy, both at the point of sample collection and when the sample is analyzed, as it reveals information about an individual which in most cases individuals have a right to keep private (such as other medications that the employee is taking, which may reveal other health issues). Testing procedures that are more stringent, which occur at a higher frequency and which require a more invasive sample (such as urine or blood) are greater restrictions on human rights, and therefore must not occur without undue reason. The most stringent testing procedure is done at the US federal level for DOT employees who are in safety sensitive positions, which emphasizes mandatory random testing. However, this infringement on human rights is considered justified under federal law based on the nature of the work that these

employees carry out, which has the potential to cause significant harm to other workers or members of the general public if they are in any way impaired.

At the state level in Colorado and Maine, drug testing for non-federally regulated employees is not required; however, in Colorado, any employer can choose to implement a drug testing program without notifying the state. This means that a potentially greater number of workers are being subjected to drug testing without due cause. This issue is further aggravated by the fact that the Colorado Supreme Court has ruled that even though cannabis is legal at the state level, employers still have the right to terminate employees as the result of a drug test positive for cannabis, due to the overarching federal prohibition<sup>29</sup>, as happened to one Colorado worker who had been prescribed medical cannabis. In Colorado, not only does the policy framework for drug testing have the potential to subject workers to an invasion of privacy through testing where it may not be necessary, but this also forms the basis for discriminatory action against workers who are using cannabis legally. In Maine, drug testing for non-federally regulated employees is also optional, however state law is better equipped to deal with the challenges in Colorado's approach as Maine employers must apply to the state to implement a drug testing program. It is reported that a small proportion of employers actually do so and get approved, with about 500 out of 40,000 employers in the state performing any kind of drug testing, and fewer than 200 of which use random testing<sup>30</sup>. Those that do get approved for a drug testing program must follow state guidelines for testing protocols. This increases the likelihood that the invasion of privacy in the form of testing is only occurring where is it considered necessary for safety, and not impinging on human rights where there is no need.

In BC, the drug testing situation is similar to Colorado and Maine, as implementation of a workplace drug testing program is optional. There is no requirement to report drug testing

programs to a regulating agency, as there is in Maine, or any requirement to meet certain drug testing protocols. However, unlike in Colorado, there are protections against unnecessary workplace testing in BC under the Human Rights Code<sup>28</sup>. In BC, courts have ruled that drug testing can only take place if there is reasonable cause or a near miss, and if it can be shown that there is a BOFR (such as a safety-sensitive workplace)<sup>28</sup>. Regular and/or random testing is only permitted for safety-sensitive workplaces, and only where the test indicates current impairment<sup>28</sup>.

### Worker Safety

The DOT guidelines for drug testing in the workplace argue that mandatory, random testing is the most effective way to prevent workplace impairment, as it acts as a deterrent for workers to be at work impaired<sup>27</sup>. This logic is justified under federal law for safety-sensitive positions, as the potential consequences of a safety-sensitive worker being impaired at work are severe. It is likely that this is true, and that the potential consequences of being caught with a positive drug test do prevent many workers from using drugs. However, as will be discussed further in the following section on testing protocol, the use of urinalysis for the mandatory tests reduces the effectiveness of the tests at detecting actual impairment. The end result of the DOT testing random procedure is to eliminate all drug use, including that of workers who use cannabis in their off-work time, which does not impact worker safety; and in the case of some workers who may be using cannabis for medical purposes, may make them less capable of performing their job.

The lack of guidance from Colorado on when and how workplace drug testing should be done is also an ineffective method of protecting worker safety. Without guidance on how a testing program should be carried out, employers may not have policies or procedures in place to be able to effectively use testing when it may be useful (for example, in case of suspicion of

impairment at work or after an incident). Maine, in contrast, does implement drug testing more effectively by having employers apply to the state to have a drug testing program, which ensures consistency of drug testing programs. While it means that fewer employers use drug testing, those that do are more likely to have policies and procedures in place to effectively protect worker safety.

In BC, there is also a lack of guidance on how drug testing should be carried out. What rules do exist have been settled by case law rather than guidance on what is most effective at protecting worker safety in balance with human rights. As is demonstrated in Maine, there is an opportunity to develop guidelines and to regulate when drug testing is necessary, which has the potential to increase the consistency and effectiveness of workplace drug testing.

## Testing Protocol

### Human Rights

The protocol for workplace drug testing is an important consideration because, as discussed in the critical literature review, different tests have varying effectiveness of detecting actual impairment. The use of a test that in which a positive result does not indicate impairment or recent use is problematic in the context of personal freedom because it results in undue sanctions to an employee that are based on past use of cannabis, not on use of cannabis that would cause impairment at work. There is no scientific evidence that past cannabis has any lasting impairment effect that would prevent an employee from doing their job safely, except in extreme cases of cannabis dependence<sup>4</sup>.

Unfortunately, this is a weakness of workplace drug testing programs in all jurisdictions analyzed for this paper. The most common type of drug testing used is urinalysis across all

jurisdictions. This is due to the relative ease of sample collection and available analytical methods for testing the presence of a variety of drugs in urine. However, THC can be detected in urine for a long period of time after initial use<sup>25</sup>, and effectively says nothing about impairment. Using this type of testing methodology effectively prevents workers from being able to ever use cannabis, even outside of working hours, placing a severe restriction on personal freedom.

At the US federal level, some agencies of the DOT in certain circumstances (such as in response to an incident) do require the collection of other samples, such as blood. Blood is a much more accurate measure of current impairment than urine, although the nature of a blood sample makes it more invasive. Requiring a blood sample in extenuating circumstances where a measure of current impairment is of vital importance is balance between intrusions of a worker's personal privacy and the consequences of using an inaccurate test; while in an ideal world the most accurate test would be used in all instances, it is unreasonable to require employees to give regular blood samples without due cause.

In Maine, the guidelines for workplace drug testing set for employers includes cut off levels for a number of biological samples, including urine, hair, oral fluids, and sweat<sup>31</sup>. Of these, oral fluids is believed to be the most accurate at detecting recent use of cannabis, which may predict impairment but does not on its indicate impairment<sup>4</sup>. However, urine is still the most commonly used test. Additionally, the use of testing for THC in hair and oral fluids has not yet been validated as viable methods of testing current impairment. Overall, while Maine does provide guidance on the type of testing that should be used, the guidelines lack specificity, and even while meeting them employers may be implementing drug testing programs that are not accurate at detecting current impairment.

Colorado and BC both lack any guidance of what type of drug testing should be used in the workplace, and as such urinalysis is most often used by default. As a result, workers in these jurisdictions who do have to comply with drug tests are likely to be facing drug tests that impede their personal freedom to use cannabis in a way that does not affect their ability to work. In Colorado, the consequences of this are perhaps more severe, as workers can be terminated from employment based on a positive test.

### Worker Safety

Using a test that does not accurately measure impairment is not just a problem relating to human rights, but also impacts an employer's ability to effectively address worker safety. As a testing methodology, urinalysis lacks specificity at identifying the outcome that actually matters for workplace safety, which is impairment, not simply the presence of THC. In other words, it is an ineffective tool at achieving the desired outcome of a safe workplace that is free of impairment. Along the same lines, testing hair and sweat samples as is described by the Maine drug testing policies for employers is also not proven to be effective. While blood testing is, with current understanding, the most effective at determining current impairment, it is impractical to implement due to the invasiveness of taking a blood sample. Oral fluid testing is believed to indicate recent use of cannabis, which is when workers are most likely to be impaired – however, it on its own does not indicate a level of impairment in an individual.

### Medical Cannabis

#### Human Rights

One area in particular where human rights is an important consideration is the inclusion of workplace drug testing policies relating to workers' use of medical cannabis. This issue is complicated by the fact that due to a lack of high quality scientific research in the area of medical

cannabis, there is a blurred line between what constitutes medical cannabis use and what is personal cannabis use, and what is an approved use of medical cannabis differs in each jurisdiction. Additionally, individuals may use cannabis in a way similar to self-medication, for example to help with stress or anxiety, and consider that to be medical use even if it is not an approved use in their jurisdiction.

From the perspective of human rights, in almost all jurisdictions, an employer cannot place restrictions on an employee based on medical reasons, including what medications they take. However, at the US federal level, cannabis is still a Schedule 1 drug with no approved medical uses. Therefore, there are no concessions for workers to use medical cannabis in DOT safety-sensitive positions. In Colorado, case law has determined that the overarching illegality of cannabis means that even if an employee is using cannabis for a medical use that is approved in Colorado, the employer still has the right to terminate employment of that employee if they fail a drug test.

Maine and BC both do not have any specific concessions for how to deal with medical cannabis use in relation to workplace drug testing. It is likely that if a conflict were to arise it would be dealt with on a case by case basis in the judiciary system. This is less than ideal, as it leaves a lot of uncertainty for those using cannabis for medical purposes on what they can or cannot do, and as a result they would likely not discuss their medical needs with their employer.

### Workplace Safety

One of the major questions of most employers as well as workers is whether using cannabis for medical purposes results in the same concerns of impairment as using cannabis for personal use. Fortunately, there is a scientific basis to answer this question. The most important component to answering this question is the mode of administration of cannabis. Most approved

medical uses of cannabis are administered orally (i.e. tablets, liquid drops), which behaves very differently in the body compared to smoking cannabis, as discussed in the literature review. In this instance, medical cannabis can be treated just as any other prescription medications, such as opioids or benzodiazepines are treated, in which patients are advised by doctors to monitor their own impairment especially when trying a new dose or strain. In effect, medical cannabis use can be managed to reduce the symptoms of impairment as the body builds tolerance to the psychoactive effects – and having an open discussion between the worker and employer in which a worker can give forewarning of when they may not be able to perform safety sensitive tasks due to medication changes would allow employers to accommodate those needs within a safe workplace. However, having guidance for employees to discuss their medical cannabis needs is not present in any of the jurisdictions which were analyzed for this paper.

## Discussion

In the face of legalization and regulation of cannabis in Canada, impairment in the workplace is (along with driving impairment) cited often in the media as one of the top concerns of the public and employers. Other jurisdictions, such as Maine and Colorado, which have legalized cannabis faced similar pressure to ensure that cannabis impairment did not become a widespread issue of public safety.

This is an interesting example of how risk perception often differs from objective measures of actual risk. The idea that cannabis legalization will result in mass uptake by the general population of cannabis has been shown to be unfounded in states where legalization has occurred, even in Colorado, where legalization of personal cannabis use has been in place for a number of years and has since been allowed to commercialize<sup>32</sup>. The advocacy efforts of the

medical cannabis community, changing perceptions on the effectiveness of a prohibitionist approach to drug policy, public acceptance of drug use, and lack of enforcement in many jurisdictions (especially some areas of BC, such as Vancouver) means that those who wish to use cannabis for personal use likely already do so.

Additionally, there is in many cases a severe overestimation of the magnitude of the risks relating to cannabis impairment, which is based in a lack of understanding of the scientific evidence that is available, and perpetuated by the history of drug prohibition which framed cannabis - along with all other drugs - as extremely dangerous, and painted drug users themselves as reckless and aggressive outcasts of society<sup>10</sup>. In reality, the evidence shows that cannabis impairment, while it is still a problem in public safety contexts such as driving and the workplace, is in terms of magnitude a lower risk compared to other drugs which are legal, including alcohol and many prescription drugs. There is also a prominent cannabis culture which is very interested in promoting safe and healthy use of cannabis, which maximizes the benefits of cannabis use (such as socializing, relaxation, and treatment of minor illnesses such as pain) while doing so in a safe manner. It is short sighted of policy makers to continue to view cannabis as a one dimensional and dangerous drug that should be controlled, and in their best interest to recognize that cannabis use is as multi-faceted and diverse as the people that use cannabis, and work towards managing use that is problematic in partnership with those who cannabis rather than focus on prohibition.

In the context of workplace drug testing policy, the jurisdictions analyzed in this paper fall short of delivering a policy approach that reflects a balance between actual risk of cannabis impairment with considerations of human rights. Federally-regulated workers in safety-sensitive positions face the most stringent drug testing policies, although it can be argued that this is a

justified intrusion on human rights in the context of the consequences of impairment in those positions. At the state level, Colorado's workplace drug testing policy appears to be dysfunctional at best, conflicting with the federal status of cannabis as a Schedule 1 drug. Maine, on the other hand, has made a move to protect a worker's right to use cannabis outside of work by including in their regulations protections for workers against wrongful termination or refusal to hire based solely on an individual's cannabis use outside of work. However, while their drug testing program does better at controlling the impact on human rights by requiring employers to apply to the state to run a drug testing program, their use of urinalysis for cannabis drug testing is, like all other jurisdictions, a serious flaw from both a human rights and effective worker safety perspective.

While no single policy approach stands out as being a model that meets both human rights and worker safety requirements, the jurisdictional analysis presented in this paper makes it easier to see the gaps in current workplace drug testing policies in the context of legalization, and to put forward several recommendations for how to address those gaps in BC as Canada moves toward cannabis legalization and regulation. These recommendations are presented below:

[Recommendation 1: Development of a provincial oversight for the implementation of a workplace drug testing policy.](#)

In Maine, employers have to apply to the state Department of Labor to be able to implement a workplace drug testing policy. This allows the state to control what the protocols for drug testing are. BC, like Colorado, does not provide provincial/state guidance on what drug testing protocols are accepted, which leads to lack of consistency on which drug tests are used and when they are used. With the approach of cannabis legalization and regulation, knowledge of which drug testing protocols are most supported by best practice is something that employers

will need as they begin to respond to the new legislation. Having a regulatory oversight of testing protocols ensures that there is no testing being done which does not effectively determine impairment, and would therefore be an unnecessary invasion of privacy and ineffective at actually promoting safety in the workplace. This role could be taken on by provincial bodies of workplace safety, including WorkSafeBC, or be associated with another regulating body.

### [Recommendation 2: Develop guidelines for the appropriate methodology for drug testing in the workplace that recognizes the need effectively identify cannabis impairment](#)

While some jurisdictions analyzed did provide guidelines for workplace drug testing protocol, a weakness in all jurisdictions was the reliance on testing methodology that does not accurately demonstrate impairment. Urinalysis has long been the standard for drug testing in the workplace, however, it reflects the principles of drug prohibition that a worker should never use cannabis, even outside of the workplace, in a way that has no effect on their ability to come to work unimpaired and perform their job safely. Blood testing for THC is the only biological measure that has been shown to accurately predict impairment, however, it is impractical to use on a regular basis due to the invasiveness of taking a blood sample. Oral fluid has been shown to predict recent use, but not provide insight on any level of impairment. While there is much research being done into alternative methods for biological testing of impairment, currently the available tools are imperfect.

In the context of cannabis impaired driving, the Canadian Government has proposed that oral fluid screening be administered at the roadside if there is a suspicion of impairment, as method of identifying whether cannabis has been recently consumed<sup>33</sup>. If this resulted in a positive test, then there would be further evaluation by a drug recognition officer or a blood sample. This could be a reasonable response in the workplace as well, where if an employee is

suspected of being impaired they are first required to undergo an oral fluid screening, before undergoing further evaluation in the event of a positive test. This recognizes that impairment is most likely to occur with recent use of cannabis, and that an oral fluid screen is a relatively non-invasive method of determining whether recent use has occurred. If determining a more specific measure of impairment is necessary, such as potentially following an incident or a near miss, requiring a blood sample from that employee is likely a defensible action from a human rights perspective.

The guidelines should be specific about when and how often testing can occur: for most occupations, under BC Human Rights Code, random testing is not permitted. Testing should only be done if there is reasonable cause to suspect impairment and after an incident or near miss. Safety sensitive positions for which random testing may be permitted should be explicitly defined. Having specific guidelines which are provincially regulated allows for greater control over which tools are used in the workplace, ensuring that they are both acceptable under human rights considerations and effective at promoting workplace safety.

### [Recommendation 3: Develop guidelines for employers on managing medication impairment at work, including medical cannabis.](#)

None of the jurisdictions analyzed in this paper had specific guidelines on how to deal with medical cannabis at work, except to say that it was still considered illegal under US federal law. However, in BC, employers are required to accommodate workers' medical needs under the BC Human Rights Code. Provincial guidelines should define specifically what is considered medical cannabis so there is no confusion with self-treatment with cannabis, which would still likely be considered personal use.

Since medical cannabis is not the only medication which can cause impairment, it is important that these guidelines address the management of medication impairment as a whole. Medical cannabis, like other prescription medications, can cause impairment when there are changes to an individual's medication regime, however typically patients experience little impairment effects. Guidelines that encourage open and non-judgmental communication between a worker and their employer about their health needs as it may impact their safety or that of others at work is essential to supporting a worker's rights while protecting worker safety.

This is not to say that those using medical cannabis should be excluded from drug testing programs where they are implemented – it is still an important tool in determining whether impairment was a factor in, say, an incident or near-miss.

[Recommendation 4: Continue to evaluate and incorporate new technologies for measuring cannabis impairment, especially non-invasive methods.](#)

With the imminent legalization and regulation of cannabis, developing a fast, accurate, and non-invasive method for testing for cannabis impairment has been a top priority in the context of cannabis impaired driving. There are a number of pilot studies being done to test new technologies in this area. If an approved technology was not financially inaccessible, it could be potentially incorporated into workplace drug testing programs.

Research on cannabis impairment is a rapidly growing field. Any guidelines that are developed should be flexible enough to respond to advances in knowledge of cannabis impairment, especially as regards to testing methods that are as non-invasive to personal privacy as possible.

## Conclusion

This paper has used a jurisdictional analysis approach to examine the issue of workplace drug testing policies in the context of cannabis legalization and regulation in Canada. Through examining drug testing policies at the US federal level, in Colorado, and in Maine, it is clear that there are significant gaps in how workplaces are dealing with cannabis impairment from the perspective of human rights as well as their effectiveness at promoting worker safety. While human rights and workplace safety are two lenses through which these policies can be examined, they complement each other, and do not result in as much of a conflict as one might originally have thought. This shows that it is possible to have a policy that respects an individual's right to use cannabis outside of the workplace, while having drug testing policies in place that prevent impairment while on the job. The recommendations presented in this paper reflect the values of the cannabis legalization movement, that drug users should not be subjected to social harms solely based on their drug use, and that drug use can be managed and done safely. But they also are a rational approach to workplace safety which reflects a realistic view of cannabis use, that is not a problem to be eliminated but one to be managed by effective tools and cooperation with workers who use cannabis rather than prohibition.

The process of developing a cannabis legalization and regulation framework in BC and in Canada is likely to be a long one, and it is doubtful we will get it right the first time. However, the approach used in this paper demonstrates that it is possible to learn from other jurisdictions in order to give our first shot the best chance of success. Workplace drug testing policy is just one piece of the larger legalization puzzle, but with proper consideration of human rights along with concerns of safety, it can hopefully be a model for approaching issues relating to cannabis legalizing and regulation in the future.

## Reflection

I chose the topic of cannabis impairment in the workplace because I wanted to bring together two different perspectives that I have had the privilege to experience, which I didn't think often were brought together. For the past three years, I've worked in the field of occupational health and safety at WorkSafeBC, an area which I personally think is one of the most critical to public health.

However, when I was choosing a practicum, I was really interested in pursuing another interest of mine - drug policy, and specifically relating to cannabis. While I had always been interested in drug policy, cannabis in particular caught my attention when it became an election topic in the Canadian federal election of 2015, and with the election of the Liberal government became a real possibility. I saw this as an exciting time for public health because it signalled an opportunity for an evidence-based approach to drug policy, something which has up until now been lacking.

As part of my practicum, I came to have a high appreciation for the importance of evidence-based research in drug policy, as basing policies in social biases has historically perpetuated social harms. However, these social biases still largely exist, despite the fact that cannabis is on the brink of legalization and regulation at the federal level. During my practicum and since then, I found I often encounter people who still view cannabis how it has historically been portrayed, as a dangerous substance, and one that people should be prevented from using. As the changes to cannabis policy loomed nearer, concerns of how these policy changes would affect public became more common in news reports and in grey literature – including concerns from the world of occupational health and safety.

Having come from a background of occupational health and safety, and having researched cannabis impairment during my practicum, I knew that these concerns were valid – however, they are also inflated by historic biases which portray cannabis as inherently dangerous and morally wrong. I wanted to address these concerns while balancing them with a perspective that acknowledged these biases, as the evidence shows that these biases only lead to prohibitionist policies which are ultimately ineffective at achieving their goal. And, in my opinion, a policy that is based in multiple perspectives is more likely to be effective.

I found that trying to balance different perspectives was challenging at times, but I think that in the end, both frameworks complement each other. While there is still a need for a great deal of research on cannabis, there is enough of an evidence base to at least make evidence-informed policy decisions.

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