

**Submission to the Senate Standing Committee on
Social Affairs, Science and Technology**

Re:

**Bill C-45: An Act respecting cannabis and to amend the
the Controlled Drugs and Substances Act, the Criminal Code and other Acts
(the “Cannabis Act”)**

and

***“Lessons Learned from Marijuana Legalization in Four U.S. States and D.C.”
by Smart Approaches to Marijuana (SAM)***

A REPLY

This submission was created by a cross-sectoral group of prominent researchers, legal advocates, industry experts, academics and public health professionals who share a common commitment to ensuring that Canada’s proposed framework of legalization with strict regulation will enable a safer legal market and will protect public health.

Executive Highlights

SAM (Smart Approaches to Marijuana) is not a neutral entity, nor university based, and has a long history of taking policy positions contrary to the empirical evidence and emerging knowledge base from US jurisdictions that have legalized recreational cannabis.

1. **Youth Use:** A recently published study found that previous studies of cannabis in youth may have overstated the magnitude and persistence of cognitive deficits associated with use. This study was not able to demonstrate any cognitive deficits after three days of abstinence, greatly diminishing fears of long term cognitive damage and countering a long-standing narrative of SAM (Scott JC, 2018).
2. **Impaired Driving - Bill C-46:** While there are scientifically accurate links between blood alcohol concentration and impairment, this is not the case for THC (Drug Policy Alliance, 2016). 'Intoxication' as used in the SAM report refers to the presence of THC in one's system at the time of fatal crash, rather than actual impairment, and is based on the number of 'cannabis involved' fatalities in Colorado (i.e. positive tests for THC). To date, the only study to formally estimate the impact of recreational cannabis legalization in Washington and Colorado on motor vehicle fatalities did not detect significant post-legalization rate increases compared to eight control states that did not legalize recreational cannabis (Aydelotte et al., 2017).
3. **Hospitalization and ER Visits in Legal US States:** The SAM report refers to increased emergency department usage from a 2017 newspaper article. However, a closer look reveals a very different narrative. Prior to the reduction in criminal penalties in 2013, there are almost no hospital visits due to cannabis. This is not because there were no medical issues related to cannabis, only that people were unable to seek medical attention due to fear of arrest or having their children taken from their home by child services. In addition, the SAM report disingenuously uses quotes from a 2016 Colorado Department of Public Health and Environment Report, *Monitoring Health Concerns Related to Marijuana in Colorado*. However, the updated 2017 version of this Colorado Report includes some very relevant updated information about the effects of public health initiatives on cannabis-related harms.
4. **Social Justice (charges, arrests):** Statistics cited in the SAM report inflated arrests but fail to consider that the highest increase is actually for public consumption, signaling an important gap in many US legalization efforts. In addition, there is a dramatic drop in arrests and convictions for cannabis production, distribution and possession in states that have legalized.
5. **Trends in Crime Since Legalization:** The SAM report claims that legalization will entrench cartels, and that cannabis legalization will, in some undescribed form, actually work to increase involvement in crime and the criminal justice system. However, data indicates no differences in crime rates post legalization, based on the extent to which a state has amended its cannabis laws -- legalized, decriminalized, or permitted medical use.
6. **Opioid Use and Overdose:** The SAM report, relying on a line of reasoning originating from the outdated and largely debunked "gateway" theory, points to an increasing rate of opioid-related deaths in Colorado as evidence that cannabis liberalization has contributed to this trend. There is no evidence to suggest that state cannabis laws have contributed to rising opioid use and related harms across the US. Contrastingly, there is a rapidly growing body of evidence to suggest that cannabis liberalization may be helping to reduce opioid-related overdoses through promoting increased substitution of cannabis for opioids.

Date: April 30, 2018

To: The Senate of Canada

Subject: Bill C-45, The Cannabis Act; *Lessons Learned from Marijuana Legalization in Four U.S. States and D.C* by Smart Approaches to Marijuana (SAM) - A Reply

It has come to our attention that some Senators have been circulating a report written by the anti-reform US-based advocacy group known as Smart Approaches to Marijuana (SAM). As industry experts, academics, and other industry stakeholders, we believe the decisions being made by the Senate during the current debate of Bill C-45 are crucial and need to be informed by evidence. SAM is not a neutral entity, nor university based, and has a long history of taking policy positions contrary to the empirical evidence and emerging knowledge base from US jurisdictions that have legalized recreational cannabis. Simply put, SAM is known for being heavily partisan and prone to misleading the public, and legislators, in its quest to halt evidence-based cannabis policy reform.

To ensure the Senators have well-balanced evidence, this submission was created by a cross-sectoral group of prominent researchers, legal advocates, industry experts, academics and public health professionals who share a common commitment to ensuring that Canada's proposed framework of legalization with strict regulation will enable a safer legal market and will protect public health. The conclusions of this reply should come as no surprise to Senators, as it is wholly consistent with the conclusions of the *Senate Special Committee on Illegal Drugs (2002)*, chaired by the late Senator Pierre Claude Nolin, which engaged in the most comprehensive study of cannabis policy in Canada. This report came to the conclusion that cannabis should be legalized for recreational (also referred to as "adult-use") purposes (see also earlier historical Commissions of Inquiry dating back to 1894, including Canada's LeDain Commission in 1972, that all arrived at the same or similar conclusions, which are listed in "*Marijuana Myths Marijuana Facts - A Review of the Scientific Literature*" by Zimmer and Morgan at page 17 of this Reply).

Critical to the interpretation of results from the United States, Canada's approach of "legalization with strict regulation" is a very different regulatory framework than what has been adopted by individual US states and there are important methodological issues to be considered in extrapolating state-level outcomes in Colorado and other legal states to the national framework being proposed in Canada. The approaches in the US are largely commercially-driven regulations, whereas in Canada, federal, provincial, and territorial governments remain committed to a public health framework.

1. Youth Use

Key Points

- Legalization of cannabis has had little to no impact on overall youth use according to state level data.
- Lifetime youth usage rates in Washington and Colorado remain stable.
- Approximately 2% of the youth population *who use cannabis* do so in ways that would be described as problematic (i.e., frequent or heavy use).
- Frequent or heavy cannabis use in teens and young adults has been associated with small reductions in cognitive functioning in some studies, but not in others, and any cognitive defects are substantially diminished following periods of abstinence.

As described in the 2018 Drug Policy Alliance report, the 2015 Youth Risk Behavior Survey reported 21.7% of high school students in the US used cannabis in the past month and this rate has been consistent over the last ten years. In many states, including Oregon, Nevada, California, Maine, Massachusetts and Washington, D.C., cannabis legalization is either too new or has not yet been implemented and thus too soon to reliably measure the effects (Drug Policy Alliance, 2018).

Evidence on youth use and legalization in the United States demonstrate that the “legalization of marijuana has had little to no impact on the overall youth use of marijuana” across Colorado, Washington State, Oregon and Alaska (Drug Policy Alliance, 2016:4). For example, the Washington State Healthy Youth Survey (2016) found no significant changes in youth use between 2002-2014 (grades 6, 8, 10 and 12, two-years post-legalization). Lifetime youth rates in Washington and Colorado also remained stable (Washington State Healthy Youth Survey, 2016; Healthy Kids Colorado Survey, 2015).

A 2017 study considered trends in similar non-legalized states. Researchers monitored changes in self-reported cannabis use among 8th, 10th, and 12th grade students in Washington and Colorado in the years preceding and proceeding recreational legalization and compared these trends against control (non-legalized) states. Of the six age groups monitored, small but significant post-legalization increases (2%-4%) were observed among 8th and 10th grade students in Washington only (Cerdeña, 2017). This study helps identify the age groups where there may be a small effect on under-age youth cannabis use.

In terms of cannabis liberalization, a recent systematic review and meta-analysis of 11 studies did not find evidence that medical cannabis legalization leads to increase in youth cannabis use (Sarvet A, Wall M, et al, 2018).

Further, recent work has explored how the perception of harm impacts youth use. Drawing on two nationally representative surveys of 8th, 10th and 12th graders, Sarvet et al. (2018) found that while the perception that cannabis use is not harmful has increased among youth, this shift was not accompanied by increased cannabis use. Finally, recent US studies have demonstrated that ‘youth across the country are also reporting that marijuana is not as easy to access as it has been in the past, particularly for younger teens’ (see also Johnson, J. K., et al. 2017).

The association between the frequency of cannabis use and cognitive impairment is an oft-cited adverse effect of youth use. On April 18, 2018, a meta-analysis (published in JAMA Psychiatry) looked at the association of cannabis use with cognitive functioning in adolescents and young adults. The meta-analysis found that previous studies of cannabis in youth may have overstated the magnitude and persistence of cognitive deficits associated with use. This meta-analysis was not able to demonstrate any cognitive deficits after three days of abstinence, greatly diminishing fears of long term cognitive damage and countering a long-standing narrative of SAM (Scott JC, 2018).

It is now well established that the brain continues to undergo maturation and growth beyond adolescence and likely establishes its adult state around the age of 25. There is growing concern about the impact of cannabis use by adolescents, even by adults between the ages of 18-25, and the subsequent effect on brain development. There is some evidence from human studies to indicate that excess cannabis use during adolescence could modulate brain development, however this research is far from complete and is fraught with issues associated with comorbid use of other substances (particularly alcohol) as well as other influencing variables, such as life stress, risk taking/impulsive behavior and socioeconomic status. In fact, a recent study that very carefully controlled for all these variables and studied the impact of daily cannabis use during adolescence on brain structure, found no evidence for an effect of cannabis on brain development. More so, this study also performed a large-scale analysis of all other studies on cannabis use and neuroimaging and showed that if you collapse all of the data together, there is no impact of cannabis use in adolescence on brain development (Weiland et al., 2015). As such, the most conservative perspective that can be taken would be to state that there is potential for cannabis use, particularly heavy

problematic use with high THC content cannabis, to impact brain development. However, given the lack of clear evidence to support this, the most appropriate conclusion would be that there is no compelling scientific evidence to clearly argue that cannabis use influences normative brain development in the majority of adolescents that use it recreationally.

Further, and as discussed above, there is no evidence from US states that have undergone legalization to indicate that legalization of cannabis will have any impact on use patterns in adolescents. This is important to note because these data together should quell fears that legalization will likely result in an increase in use in adolescents. While the prevalence of youth cannabis use following legalization in various US states provides important information about the trends we might expect to see in Canada following legalization, it is also important to draw on and understand Canadian data to gain a sense of who it is that will be impacted by these policy changes.

In Canada, the prevalence of cannabis use amongst youth has remained stable, or declined, in recent years and was recently estimated at 18% for youth aged 15-17 and 28.4% for those aged 18-24 (Statistics Canada, 2018). Though cannabis use amongst Canadian youth is high relative to their peers from other countries, the proportion of youth with “high risk” use is small. Indeed, approximately 2% of the youth population who uses cannabis does so in ways that cause harms (Leos-Toro et al., 2017). The Leos-Toros findings indicate that, while 1 in 10 Canadians aged 15-24 reported using cannabis in the past 3 months, only 2% of the sample of Canadians who reported using cannabis in the past 3 months were characterized as having a “high risk” of severe health or other problems. Through legalization, resources and interventions targeting these youth can be established, and the stigma surrounding treatment seeking to be diminished.

The alternative (i.e. to retain the ‘status quo’ or its equivalent) will continue to drive youth consumption underground, continuing such use to be resourced/supplied by an illicit market. As such, problems arising from such ‘underground’ use will go unreported, hidden and out of control, and our most vulnerable population (i.e. youth) will be exposed to cannabis of unknown quality and potency as well as other controlled substances present in the illicit market.

It is critical for parents and guardians to engage in healthy discussions with their youth around cannabis use. Healthy households already engage in conversations with youth regarding responsible alcohol consumption, responsible sexual practices and other ‘adult’ oriented behaviours. In April 2018, the Canadian Students for Sensible Drug Policy (CSSDP) released a “toolkit” to support adults in having realistic, informed, non-judgmental conversations with young persons (online: <https://cssdp.org/youthtoolkit/>).

2. Impaired Driving - Bill C-46 *

** Although the current Senate study is not reviewing Bill C-46, it is important to address impaired driving in response to the SAM report.*

Key Points

- Measurements of the presence of THC in saliva and blood is not an indicator of impaired driving or road safety. Laws that restrict and penalize driving based on blood levels of THC (“per se laws”) are not evidence based or scientifically supported.
- The number of DUIs in Colorado and Washington has decreased; a small portion of these DUIs involved cannabis as the only drug.
- Cannabis legalization in both Washington and Colorado is not associated with any significant changes in motor vehicle crash fatalities when compared to eight control states that prohibit non-medical cannabis.

The most comprehensive epidemiological systematic review and meta-analysis on the risk of a motor vehicle accident associated with cannabis use estimated that, after controlling for important secondary risk factors such as co-occurring alcohol use, age, and gender, cannabis use is associated with an 11% increased risk of a motor vehicle accident (Rogeberg and Elvik, 2016). To put this in context, driving with a BAC of 0.04-0.05 is associated with an 18-38% increased risk of a motor vehicle accident (Blomberg et al., 2009).

'Intoxication' as used in the SAM report refers to the presence of THC in one's system at the time of fatal crash, rather than actual impairment, and is based on the number of 'cannabis involved' fatalities in Colorado (i.e positive tests for THC). This only tells us that the driver used cannabis at some point, not that cannabis impairment was the cause of the fatality. It is important to note that oral fluid primarily detects THC or other cannabinoids from oral contamination from smoke. In some cases, the oral fluid concentration could be quite high due to deposits in mouth from the use of an oral spray (e.g. Sativex), or even passive environmental contamination (Lee, 2014; Verstraete, 2005).

We know that traces of THC can remain in someone's body for days to weeks, even months, after it is consumed, which means an individual can test positive but not be impaired (Wood, Brooks-Russell & Drum, 2015). Low levels of THC or its metabolites may be detected for a long time after use, long after any impairing effects would be expected, so that individuals who are not in fact impaired by cannabis drug use would be subject to legal penalties (Armentano, 2013).

While there are scientifically accurate correlations between blood alcohol concentration and impairment, this is not the case for THC (Drug Policy Alliance, 2016). This presents a challenge to testing for cannabis impairment. We know that traces of THC can remain in someone's body for days to weeks, even months, after it is consumed, which means an individual can test positive but not be impaired (Wood, Brooks-Russell & Drum, 2015). Low levels of THC or its metabolites may be detected for a long time after use, long after any impairing effects would be expected, so that individuals who are not in fact impaired by cannabis drug use would be subject to legal penalties (Armentano, 2013). In US states where cannabis is legal, such as Colorado, it is possible that more people overall would test positive for THC - but this simply tells us that the prevalence of cannabis use has increased among individuals who drive, but not necessarily that the prevalence of cannabis-impaired driving has increased.

Instead, we can look to the overall rate of motor vehicle accidents. If legalization led to increases in cannabis impaired driving (and cannabis-related motor vehicle accidents), then the overall number of accidents/fatalities should have increased as well. However, non-medical cannabis legalization in both Washington and Colorado is not associated with any significant changes in motor vehicle crash fatalities when compared to eight control states (Aydelotte et al., 2017).

Further data suggests that medical cannabis legalization is associated with decreases in overall motor vehicle fatalities when compared to states that do not have access to medical cannabis - particularly pronounced among those 25-44 years of age (Kim, 2016). Another study supports these results, finding that the liberalization of cannabis laws (medical cannabis access) was associated with an 8-11% reduction in overall traffic fatalities one year following, particularly among individuals aged 20-29 (Anderson, Hansen, and Rees, 2013). The latter study also estimated that medical cannabis legalization was associated with a significant 13% reduction in motor vehicle fatalities involving alcohol, a 5% reduction in beer sales, and reductions in alcohol use frequency among most age demographics assessed. Together, these findings suggest that increased substitution of cannabis for alcohol may have driven the reduction in motor vehicle fatalities associated with cannabis liberalization. Additional research indicates that laws legalizing cannabis are associated with a reduction in opioid-related fatal crashes among 21-40 year olds (Kim, 2016).

Finally, while there is a legitimate concern with respect to novice and intermittent users, daily medical users develop a significant tolerance to the effects of cannabis intoxication while apparently continuing to experience benefits from the relief of symptoms of their medical condition. It is important to note that the window of detection is an important factor for assessing possible impaired driving, since impairment tends to occur 2-4 hours after inhalation. This is of particular concern for more regular cannabis users, for whom detection of cannabinoids in oral fluids may not reflect recent use since they have higher initial concentrations of THC than occasional smokers, and low concentrations can be detectable for days in chronic users (Anizan et al, 2013; Lee et al, 2011; Lee et al, 2014).

In a pilot observational study (Freidel et al., 2015), 33 multiple sclerosis patients were tracked over a 4-6-week course of nabiximols, a pharmaceutical cannabinoid-based medicine with a 50:50 THC and CBD ratio. The authors concluded this treatment demonstrated drivers taking the drug remained fit to drive and found improved driving performance in stress tolerance tests (a measure of reaction time and attention) (Freidel et al., 2015).

This was the only study exploring how the impairment of medical cannabis affects people with illness; beyond demonstrating no impairment, it showed possible signs of improved driving. Thus, there is an urgent need to consider an exemption for medical cannabis patients with regards to per se levels - a zero-tolerance approach with severe legal consequences is arguably incongruent to a patient's legal right to access and consume medical cannabis. Effectively, a true zero-tolerance approach would force almost every medical cannabis user (of THC) to choose between their medicinal cannabis use and driving, despite not being functionally impaired. The United Kingdom, for example, which also relies on per se limits, has created laws that allow for a 'medical defense' if people are taking drugs, including cannabis, for medical reasons and are not impaired (see: <https://cfamm.ca/wp-content/uploads/2017/11/CFAMM-Blood-Drug-Concentration-Regulation-Submission-November-13-2017.pdf>).

Other examples can be sought in the US around medical use of cannabis and driving. Michigan, for example, prohibits driving with “any amount of a schedule I controlled substance.” However, the Michigan Supreme Court, in *People v. Feezel* (2010), held that the inert metabolites of marijuana do not constitute Schedule I controlled substances. Further, in *People v. Koon* (2013), the court ruled that qualified patients under the state’s medical marijuana act may not be charged under the state’s zero tolerance per se law. Rather, the government must prove impairment to obtain a conviction. Arizona also has a zero-tolerance law for both THC and its metabolites and a medical marijuana act. Again, the courts intervened and In *State v. Shilgevorkyan* (2013), the Arizona Supreme Court ruled that the statute’s prohibition from driving with any detectable amount of marijuana metabolite in one’s system was limited to metabolites capable of causing impairment. To hold otherwise, the court stated, would lead to “absurd results” and the criminalization of “otherwise legal conduct”.

Data from Colorado and Washington also suggest that the total number of arrests for driving under the influence of both alcohol and drugs has declined since legalization. For example, in Colorado, the number of DUI’s declined by 18% (from 5,546 in 2014 to 4,546 in 2015) (Colorado Department of Public Safety, 2016). In Washington, DUI citations declined by 8% from 2013 to 2014 (Washington State Patrol, 2015), and only 8% of DUIs in Colorado and 4% of DUIs in Washington involved cannabis as the only drug (Drug Policy Alliance, 2016).

According to the Washington State 2017 Traffic Safety Annual Report:

- decrease in marijuana positive driver fatalities by 5.2% from 116 to 110 between 2015-2016
- decrease in fatalities involving a drug or alcohol impaired driver by 17.8% from the 2012-2016 five-year rolling average of 242 to 199 by December 31, 2017
- decrease in serious injuries involving a drug or alcohol impaired driver by 8.9% from the 2012-2016 five-year rolling average of 405 to 369 by December 31, 2017

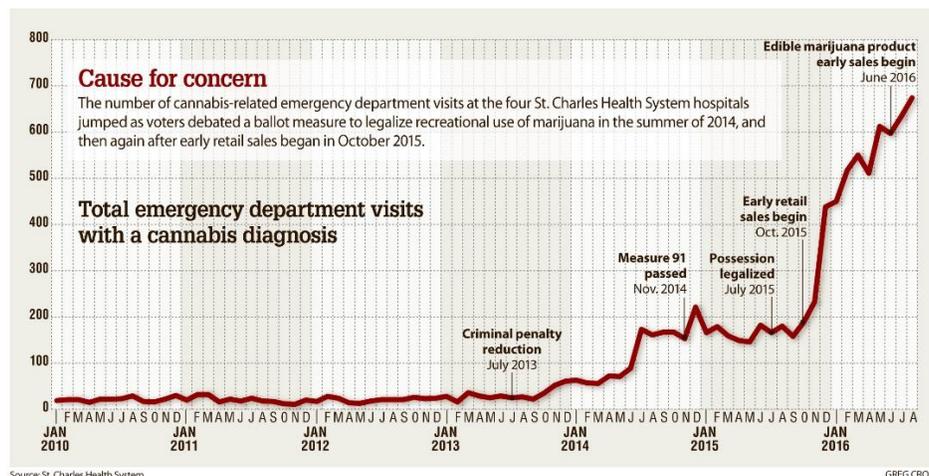
3. Hospitalizations and ER Visits in Legal US States

Key Points

- Prior to the reduction in criminal penalties in 2013, there are almost no visits due to cannabis. This is likely tied to the illegal status of cannabis, and fear of criminal arrest or intervention by family and child services.
- In the context of poisoning or accidental ingestion as a result of household cleaners, alcohol, plants, fertilizers, pesticides, paint thinner and antifreeze, accidental ingestion due to cannabis is negligible.
- The US is predominantly driven by a commercial market, and access and availability in Canada remains committed to a strict public health approach.

The SAM report refers to increased emergency department usage from a 2017 newspaper article, however, looking at this graph from within the article, a very different narrative appears.

Prior to the reduction in criminal penalties in 2013, there are almost no visits due to cannabis. This is not because there were no medical issues related to cannabis, only that people were unable to seek medical attention due to fear of arrest or having their children taken from their home by child services. Once criminal penalties were reduced, people were likely able to access medical services without fear of enforcement authorities, but it is not until possession was legalized and retail sales began that numbers began to increase.



While some of this is inevitably related to increased prevalence of cannabinoid hyperemesis syndrome (characterized by recurrent nausea, vomiting and crampy abdominal pain) and inadvertent or accidental ingestions, significant barriers around stigma and fear of arrest have also been removed from those with cannabis-related issues who require medical attention. The increase in accessing health care services is not necessarily a negative outcome in the US context.

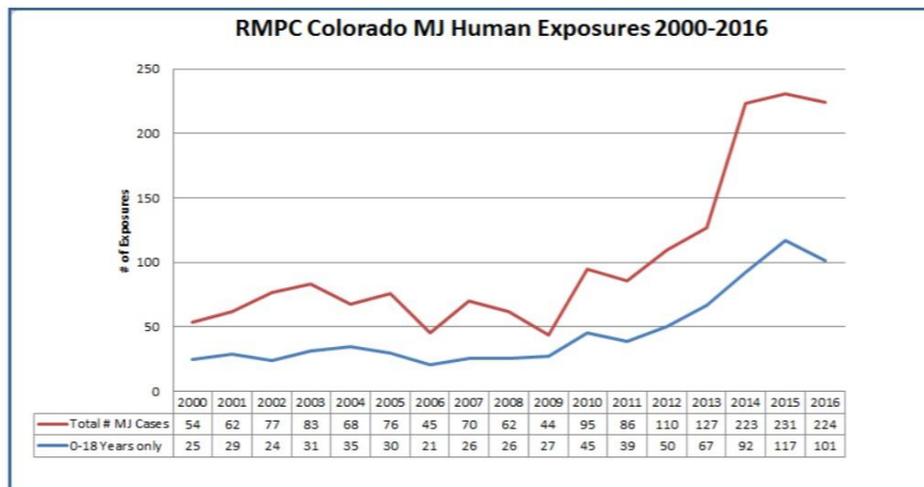
Criminal penalties and child protection service involvement are less prevalent for cannabis users in Canada. With universal health care, Canadians also have more equitable access to emergency services.

Additional common causes of injury include burns resulting from the production of concentrates that are made from butane and other flammable hydrocarbons and solvents these most often occur in clandestine black market operations, forced into compromised environments due to prohibition. Formal environments encourage formal processes, professionalism and adherence to safety standards thereby minimizing risk of injury.

Certain extraction processes and technology, such as high-pressure CO₂ and distillation, have been adopted from established industries, such as food and beverage and pharmaceutical production, are known to be safe.

The SAM report also disingenuously uses quotes from a report by the Colorado Department of Public Health and Environment, *Monitoring Health Concerns Related to Marijuana in Colorado: 2016*. The 2017 version of the Colorado Report (which is readily available), includes some very relevant updated information about the effects of public health initiatives on cannabis-related harms:

There are indications that policy and education efforts about the potential health effects of marijuana are working. For example, marijuana exposure calls to the Rocky Mountain Poison and Drug Center have decreased since 2015. This includes calls about accidental exposures in children under 9 years old. In addition, the overall rate of marijuana-related emergency department visits dropped 27 percent from 2014 to 2015. (Note: 2016 data is not available yet.)



It should be acknowledged that such ER visits typically result in nominal medical intervention and that patients are released a short time later (Cao et al, 2016):

*Characterization of edible marijuana product exposures reported to United States poison centers. The most common age groups were: ≤5 years (N = 109, 0.15/100,000 population/year) and 13-19 (78, 0.09). The most frequent clinical effects were drowsiness/lethargy (N = 118, percentage = 43%), tachycardia (84, 31%), agitated/irritable (37, 14%), and confusion (37, 14%). Children ≤5 years have more drowsiness/lethargy, ataxia, and red eye/conjunctivitis. **No deaths were reported.** The most common therapies administered were intravenous fluids (85, 20%), dilute/irrigate/wash (48, 11 %), and benzodiazepines (47, 11%).*

Consider that improvements in packaging and labelling are decreasing the number of people who inadvertently experience an overdose after consuming cannabis products. Even in pediatric patients, the overwhelming majority of these cases involve observation only and no active management.

Additionally, most of the increase in states such as Colorado can be attributed to “pot tourism” and use of edibles among inexperienced users, harms that we may not see where we have a national context for legalization, where we have learned from Colorado and other jurisdictions about the need to educate tourists through public education, such as Colorado’s public health campaign “First Time 5” (a campaign to

encourage new users to take a 5 milligram half-dose of marijuana to make sure they don't ingest too much cannabis).

Finally, this data comes from US states that have a much different approach to cannabis legalization. While the US is predominantly driven by a commercial market, Canada remains committed to a strict public health approach, as evidenced by the restrictions found in Bill C-45, such as: restrictions on promotional activities; regulatory requirements with respect to good production practices for all classes of cultivation and processing; prohibitions on the promotion, packaging and labelling, and the display of cannabis and cannabis accessories; facility inspections; analytical testing requirements.

In the context of poisoning or accidental ingestion among household cleaners, alcohol, plants, fertilizers, pesticides, paint thinner and antifreeze, data from the Canadian Institutes for Health Information (CIHI) show that annually an estimated 7 children age 14 years and under die in Canada from poisoning, and another 1,700 are hospitalized for serious injuries. Medication is involved in 67% of all unintentional poisonings of children age 14 and under. The remaining poisonings are caused by a wide range of products, such as household cleaners, alcohol, plants, and fertilizers. Among medications, iron pills are a leading cause of death for children. Everyday household items such as laundry pods and windshield wiper fluid pose a greater risk in terms of being attractive to children and accounting for ingestions. Comparatively, accidental ingestion due to cannabis is negligible.

A sensible, preventative approach to this issue would include products being enclosed in childproof packaging and ensuring that education on proper storage of cannabis products, particularly edibles in the future, is included in public education campaigns and in retail.

It is important to consider that Canada will not start off with any allowance for edibles, particularly candy-based products that are attractive to children (learning from Colorado). Child-proof packaging for finished, bio-available products (i.e. not dried cannabis flower) have been credited with reducing pediatric poisonings from oral medications and hazardous household chemicals.

4. Social Justice (charges, arrests)

Key Points

- Currently, racial and ethnic minorities, and those from lower socioeconomic (SES) backgrounds are disproportionately targeted by drug-related arrests, much for cannabis possession alone
- While racial disparities continue to exist, arrests for cannabis in all legal marijuana states and Washington, D.C. have plummeted, except for a sharp increase in public consumption citations

Currently, under prohibitive laws, racial and ethnic minorities and individuals in lower SES brackets are currently targeted for cannabis-related offenses at disproportionate rates. Police data from across Canada show that black and indigenous men and women have been overrepresented in cannabis possession arrests (Browne, 2018). Regulation will allow us to start tackling these issues. That black, indigenous, and other people of colour (especially youth) continue to be arrested/suspended at higher rates than whites for cannabis-related offenses in US states with legal non-medical cannabis should not be taken as evidence that legalization is a failure. Rather, this information should be used to critically inform regulation and enforcement approaches to prevent unfair targeting of these groups.

While plans have been underway for this regulatory and legal shift, statistics in Canada confirm that most drug arrests continue to be for cannabis possession. In 2015, approximately 96,000 *Controlled Drug and Substance Act* offences were reported to the police; and of these offenses, more than half were for cannabis possession (Allen, 2015). Police agencies, however, do not collect race-based aggregate data, and this is

common throughout the justice system. Some mainstream media outlets have attempted to fill this void. *The Toronto Star*, for example, published an article using data from Toronto Police Services to demonstrate the disparity in how particular populations are policed when it comes to cannabis in one of the most multicultural cities in Canada (Rankin & Contenta, 2017). As the article uncovered, black individuals in Toronto with no history of criminal convictions were three times more likely to be arrested for the possession of small amounts of cannabis and were more likely to be denied bail.

According to the most recent data, arrests for cannabis in all legal cannabis states, including Washington, D.C., have plummeted, saving the judicial system millions of dollars, and more importantly, reducing the number of otherwise law-abiding citizens receiving criminal records. Additionally:

- The total number of low-level marijuana court filings in Washington fell by 98% between 2011 and 2015.
- The total number of marijuana-related court filings in Colorado declined by 81% between 2012 and 2015, and marijuana possession charges dropped by 88%.
- In Washington, D.C., marijuana arrests decreased 76% from 2013 to 2016, with possession arrests falling by 98.6%.
- In Oregon, the number of marijuana arrests declined by 96% from 2013 to 2016.
- In Alaska, the number of marijuana arrests for possession and sales/manufacturing declined by 93% from 2013 to 2015 (Drug Policy Alliance, 2018).

While racial disparities do still persist in the US, it is also a reflection of deeply embedded policing practices and institutionalized racism, and based on neighborhoods where police receive the most complaints for drug activity. Ultimately, the best way to address the disparities is to create a system that will repair and reinvest in communities that have been most harmed by cannabis prohibition.

Further, in the US, the statistics cited in the SAM report inflates arrests but is not considering that the highest increase is actually for public consumption, signaling an important gap in many US legalization efforts. An outright ban on cannabis consumption (except in private residences), and the lack of safe consumption spaces (akin to a bar for alcohol), poses an unfair challenge to responsible adult cannabis users. This is a particularly salient issue for individuals who are parents with children in the home or those who do not own their home (renters, those who live in apartments, condos, co-ops, and/or are marginally housed or homeless). The increase in public consumption tickets in US states that have legalized cannabis serves as a policy lesson of the importance of considering where adults will be able to consume cannabis, which must extend beyond private homes only. Provinces and municipalities that allow for licensed consumption spaces, or “vapour lounges”, will be able to mitigate some of the concern around public consumption.

5. Trends in Crime Since Legalization

Key Points

- No differences in crime rates post legalization, based on the extent to which a state has amended its cannabis laws -- legalized, decriminalized, or permitted medical use.

It may be somewhat counter-intuitive to suppose that crime of various kinds would increase post legalization. One of the purposes of legalization is, after all, to reduce crime associated with cannabis production, distribution and possession, and one would suppose that other kinds of crime would not be affected in any negative way by this change in law. The preceding section notes the dramatic drop in arrests and convictions for cannabis production, distribution and possession in states that have legalized.

This does not stop SAM from claiming that legalization will entrench cartels, and that cannabis legalization will, in some undescribed form, actually work to increase involvement in crime and the criminal justice system.

As noted, the discussion in the preceding section points to reductions in cannabis-related crime. But what of other kinds of crime, beyond those directly related to cannabis? Maier, Mannes and Koppenhofer (2017) considered this issue by looking at Uniform Crime Report data (UCR) for all 50 U.S. states, post 2014 legalization. They found that while the trend was for property and violent crime rates to be higher in states where cannabis remains illegal, that difference is not statistically significant. Similarly, in states where cannabis is either decriminalized or approved for medical use, they found lower rates of crime than in states where a blanket prohibition prevails. In sum, they found no differences in crime rates post legalization, based on the extent to which a state has amended its cannabis laws -- legalized, decriminalized, or permitted medical use.

Likewise, a study looking at crime rates pre- and post- legalization in the state of Washington and comparing it to rates to the neighbouring state of Oregon concluded that legalization was associated with a significant reduction in rapes and property crimes (Dragone et al, 2018). The authors suggest four possible mechanisms for this result, including the direct psychotropic effects of cannabis, the substitution away from violence-inducing substances (e.g. alcohol), the reallocation of police efforts, and the reduced role of criminals in the cannabis market.

The suggestion that legalization will lead to increases in crime, separate from the realm of cannabis production, distribution and possession, has no empirical support.

6. Opioid Use and Overdose

Key Points

- Increases in opioid use and related outcomes in US states need to be considered against the backdrop of an ongoing opioid crisis affecting jurisdictions across North America.
- There is no evidence to suggest that state cannabis laws have contributed to rising opioid use and related harms across the US. Contrastingly, there is a rapidly growing body of evidence to suggest that cannabis liberalization may be helping to reduce opioid-related overdoses through promoting increased substitution of cannabis for opioids.

Relying on a line of reasoning originating from the outdated and largely debunked “gateway” theory (Kleinig, 2015), the SAM report points to an increasing rate of opioid-related deaths in Colorado as evidence that cannabis liberalization has contributed to this trend. Colorado is not the only US jurisdiction seeing a rise in the rate of opioid overdoses. Similar to Canada, jurisdictions across the US are in the midst of an ongoing opioid crisis, and it is important to consider how rates of opioid use and overdose are changing in all states, regardless of their cannabis laws. Between July 2016 and September 2017, the US Center for Disease Control (CDC) estimated that opioid overdoses increased nationally by 5.6% per quarter (Vivolo-Kantor et al., 2018). Of the 45 states analyzed, only one state (Kentucky) experienced a significant reduction.

Several lines of evidence now suggest that, in fact, access to legal cannabis is associated with reductions in opioid use/use disorders, opioid prescribing, and opioid-related mortality. Although it is too early to evaluate how recreational cannabis legalization has impacted opioid-related outcomes in most states, a recent study in Colorado found that legalization was associated with a short-term 6.5% reduction in overdose deaths (Livingston et al., 2017).

Meanwhile, a growing number of studies have begun evaluating the impact of medical cannabis legalization on opioid use and overdose. Bachhuber and colleagues (2014) analyzed 10 years of data from all US states and demonstrated that the passage of a medical cannabis law was associated with a 25% lower annual rate of opioid-related deaths. A more recent analysis added three more years to the data and found that although the overall passage of a medical cannabis law was not associated with significant reductions in opioid deaths, passing a cannabis law that allowed for operational dispensaries was associated with a similar magnitude reduction in opioid deaths as the Bachhuber study (Powell, Pacula and Jacobson, 2018).

These findings are further complemented by studies indicating significant reductions in the prevalence of opioid use in states with medical cannabis laws among adults aged 21-40 years (Kim et al., 2016), hospitalizations for opioid abuse or dependence (Shi, 2017), treatment admissions for opioid use disorder (Powell et al., 2018; Chu 2015), and opioid prescribing (Bradford et al., 2018; Wen, Hockenberry, 2018). Pre-clinical studies also provide a plausible basis for the “opioid-sparing” effects of cannabis (Nielsen et al., 2017). A growing body of high-quality observational research is aligning in various ways suggesting a positive effect of cannabis liberalization on opioid misuse.

Summary and Recommendations

- We urge Senators to make recommendations that are grounded in evidence and not political messaging.
- Legalization of cannabis within a public health framework will ensure all Canadians have access to much-needed education, a safe and regulated market, and cannabis of known quality and potency, mitigating many of the perceived harms of legalization.
- Cannabis, when used responsibly, has a high safety profile that contradicts the stigmatizing messaging that has been perpetuated by groups like SAM and are not supported by current evidence.
- International jurisdictions are closely watching Canada: we can be a global leader in the responsible use of legal cannabis by establishing regulations that:
 - are grounded in science and not opinion,
 - protect and do not criminalize Canadians, and
 - do not unduly penalize marginalized and underserved populations, including those using cannabis for medical purposes.

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ADDITIONAL RESOURCES

Canadian Drug Policy Coalition, [Cannabis Use and Driving: Evidence Review](#)

CATO Institute's legalization policy assessment in 2016, [Dose of Reality: The Effect of State Marijuana Legalization](#)

- *"Our conclusion is that state marijuana legalizations have had minimal effect on marijuana use and related outcomes. We cannot rule out small effects of legalization, and insufficient time has elapsed since the four initial legalizations to allow strong inference. On the basis of available data, however, we find little support for the stronger claims made by either opponents or advocates of legalization. The absence of significant adverse consequences is especially striking given the sometimes-dire predictions made by legalization opponents."*

Drug Policy Alliance (2018), *From Prohibition to Progress: A Status Report on Marijuana Legalization*

- [Executive Summary](#)
- [Full Report](#)
 - *"Marijuana legalization has a positive effect on public health and safety. Nationally, and in states that have legalized marijuana, youth marijuana use has remained stable or declined. Legal access to marijuana is associated with reductions in some of the most troubling harms associated with opioid use, including opioid overdose deaths and untreated opioid use disorders. DUI arrests for driving under the influence, of alcohol and other drugs, have declined in Colorado and Washington, the first two states to establish legally regulated adult use marijuana markets. In addition, crash rates in both states have remained similar to those in comparable states that have not legalized marijuana."*

Hartman R, Huestis, M (2013). Cannabis effects on driving skills, *Clinical Chemistry* 2013 Mar; 59(3): 10.1373/clinchem.2012.194381, online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3836260/>

- Recommendations to the Drug Policy Task Force and the Colorado Commission of Criminal and Juvenile Justice

Hostiuc, S, Moldoveanu, A, Negoii, I, Drima, E (2018). The Association of Unfavorable Traffic Events and Cannabis Usage: A Meta-Analysis. *Front. Pharmacol.*, 12 February 2018, online: <https://doi.org/10.3389/fphar.2018.00099>

Huestis, M. Developing a roadside test for marijuana intoxication isn't as easy as it sounds (January 25, 2018), online: https://www.eurekalert.org/pub_releases/2018-01/cp-dar011818.php

- Statement given by Marilyn Huestis, who spent over 20-years leading cannabinoid-related research projects at the US National Institute on Drug Abuse
- Simply identifying cannabis use in a driver is not enough to justify the assumption of an increased risk for UTEs (unfavorable traffic events).

Mitchell, Dr. Ian (2018). Presentation, LIFT Conference and Expo (Vancouver), <https://haikudeck.com/p/048f4695cb/cannabis-and-driving>

NORML (National Organization for the Reform of Marijuana Laws) research and reports:

- Armentano, P. (2017) Blowing Up the Big Marijuana IQ Myth—The Science Points to Zero Effect on Your Smarts: Debunking one of the oldest theories about cannabis, online: <https://www.alternet.org/drugs/blowing-big-marijuana-iq-myth-science-points-zero-effect-your-smarts>
- Armentano, P (2013). Imposing per se limits for cannabis: [Practical limitations and concerns](#)
- Armentano, P. (2013). Should per se limits be imposed for cannabis? Equating cannabinoid blood concentrations with actual driver impairment: practical limitations and concerns, [Humboldt Journal of Social Relations](#), pp 41-51
- Armentano, P (2012). Cannabis and psychomotor performance: A rational review of the evidence and implications for public policy, [Drug Testing & Analysis](#), 2012
- Armentano, P (2011). [Cannabis and Driving: A Scientific and Rational Review](#)
 - It is difficult to establish a relationship between a person's THC blood or plasma concentration and performance impairing effects. ... It is inadvisable to try and predict effects based on blood THC concentrations alone, and currently impossible to predict specific effects based on THC-COOH (metabolite) concentrations.
- Marijuana and Psychomotor Impairment (2016), online: <http://norml.org/marijuana/fact-sheets/item/marijuana-and-psychomotor-impairment>
 - Proposed per se thresholds for THC are not evidence-based and may result in inadvertently criminalizing adults who previously consumed cannabis several days earlier but are no longer under the influence
 - The interpretation of cannabinoid effects is even more difficult than identifying the presence or concentration of natural or synthetic cannabinoid markers in a diverse array of biological samples. Interpretation is complex because the onset, peak, and duration of effects are different based on whether the route of cannabis administration is inhalation, oral, or rectal, and on whether the individual is an occasional or chronic frequent cannabis users. Currently, science does not support the development of cannabinoid limits per se in motor vehicles drivers because of the many factors influencing concentration–effect relationship
- Marijuana DUI Workgroup (2011). Recommendation to the *Drug Policy Task Force and Colorado Commission on Criminal and Juvenile Justice*, online: http://norml.org/pdf_files/MMIG_Workgroup_Recommendation_9-6-11.pdf
 - Individuals can vary widely in their sensitivity to THC induced impairment as evinced by the weak correlations between THC in serum and magnitude of performance impairment.
- Marijuana Regulation and Teen Use Rates (2016), online: <http://norml.org/marijuana/fact-sheets/item/marijuana-regulation-and-teen-use-rates>
- Marijuana Regulation: Impact on Health, Safety, Economy (23018), online: <http://norml.org/marijuana/fact-sheets/item/marijuana-regulation-impact-on-health-safety-economy>
- NHTSA Report: Evidence Fails to Support Proposed DUI Impairment Levels for Cannabis, (2014), online: <http://norml.org/news/2014/12/11/nhtsa-report-evidence-fails-to-support-proposed-dui-impairment-levels-for-cannabis>
 - The alcohol laws are based on evidence concerning the decreased ability of drivers across the population to function safely at these BACs. ... Such evidence is not currently available for concentrations of other drugs

- Relationship Between Marijuana and Opioids (2018), including citations for over two-dozen studies specific to reduced opioid intake, online: <http://norml.org/marijuana/factsheets/item/relationship-between-marijuana-and-opioids>

Ramaekers J, Berghaus G, van Laar M, Drummer O (2009) Dose related risk of motor vehicle crashes after cannabis use: an update, *Drugs, Driving and Traffic Safety*, pp 477-499, online: https://doi.org/10.1007/978-3-7643-9923-8_29

- One of the program's objectives was to determine whether it is possible to predict driving impairment by plasma concentrations of THC and/or its metabolite, THC-COOH, in single samples. The answer is very clear: it is not. Plasma of drivers showing substantial impairment in these studies contained both high and low THC concentrations; and, drivers with high plasma concentrations showed substantial, but also no impairment, and even some improvement.

Science News (Cell Press). Developing a roadside test for marijuana intoxication isn't as easy as it sounds (January 25, 2018), online:

<https://www.sciencedaily.com/releases/2018/01/180125135606.htm>

- There is no one blood or oral fluid concentration that can differentiate impaired and not impaired. It's not like we need to say, 'Oh, let's do some more research and give you an answer'. We already know. We've done the research.

Thayer RE, YorkWilliams, S, Karoly HC, Sabbineni A, Ewing SF, Bryan AD, Hutchinson KE, (2017) Structural neuroimaging correlates of alcohol and cannabis use in adolescents and adults. *Addiction*. 2017 Dec; 112(12):2144-2154

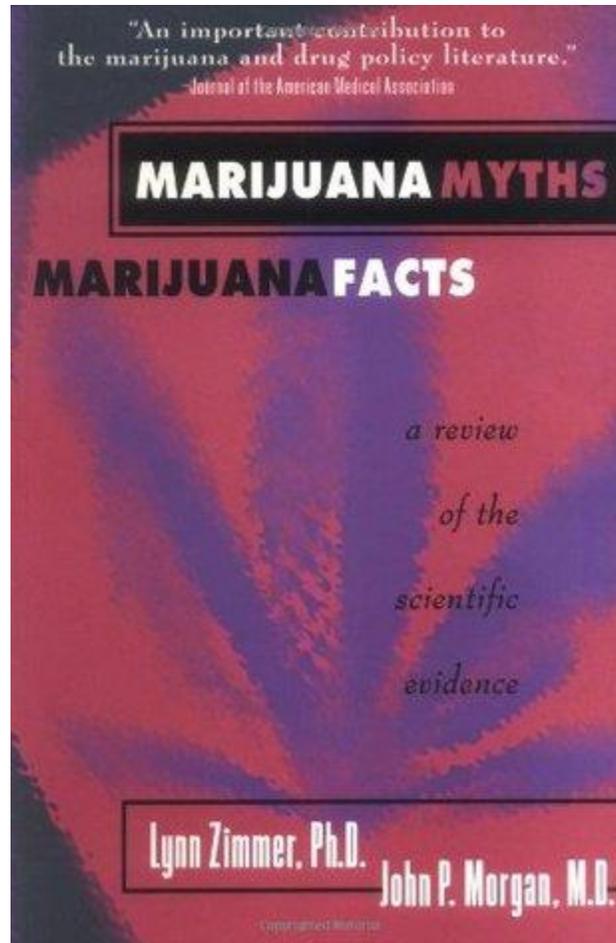
US Department of Transport, National Highway Traffic Safety Administration (2014), Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes (November 2014), online: <https://tinyurl.com/yysou3r7>

- <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812072> There is no direct correlation between driving impairment and THC concentration.

Marijuana Myths Marijuana Facts - A Review of the Scientific Literature

by Lynn Zimmer, Ph.D. and John P. Morgan M.D

In addition to the 2002 Senate Special Committee on Illegal Drugs which came the conclusion that cannabis should be legalized for recreational purposes, many other Commissions of Inquiry - dating back to the Indian Hemp Drugs Commission of 1894 (i.e. 124 years ago) – have findings to this same effect. These Commissions are referenced in “Marihuana Myths Marihuana Facts - A Review of the Scientific Facts”, by Lynn Zimmer, Ph.D. and John P. Morgan M.D (1997).



Indian Hemp Drugs Commission, 1894

The commission has come to the conclusion that the moderate use of hemp drugs is practically attended by no evil results at all.¹

Panama Canal Zone Report, 1925

The influence of [marihuana] . . . has apparently been greatly exaggerated. . . . There is no evidence . . . that it has any appreciably deleterious influence on the individual using it.²

LaGuardia Commission Report, 1944

There [is] no direct relationship between the commission of crimes of violence and marihuana . . . and marihuana itself has no specific stimulant effect in regard to sexual desires. The use of marihuana does not lead to morphine or cocaine or heroin addiction.³

*The British Wootten Report, 1969**

We think that the dangers of [marijuana] use as commonly accepted in the past . . . have been overstated. . . . There is no evidence that in Western society serious physical dangers are directly associated with the smoking of cannabis.

The Canadian LeDain Commission Report, 1970

Physical dependence to cannabis has not been demonstrated and it would appear that there are normally no adverse physiological effects . . . occurring with abstinence from the drug, even in regular users.⁵

National Commission on Marihuana and Drug Abuse, 1972

There is little proven danger of physical or psychological harm from the experimental or intermittent use of natural preparations of cannabis. . . . Existing social and legal policy is out of proportion to the individual and social harm engendered by the drug.⁶

The Dutch Baan Commission, 1972

Cannabis does not produce tolerance or physical dependence. The physiological effects of the use of cannabis are of a relatively harmless nature.⁷

Commission of the Australian Government, 1977

One of the most striking facts concerning cannabis is that its acute toxicity is low compared with that of any other drugs. . . . No major health effects have manifested themselves in the community.⁸

National Academy of Sciences Report, 1982

Over the past 40 years, marijuana has been accused of causing an array of anti-social effects including . . . provoking crime and violence, . . . leading to heroin addiction, . . . and destroying the American work ethic in young people. [These] beliefs . . . have not been substantiated by scientific evidence.⁹

Report by the Dutch Government, 1995

Cannabis is not very physically toxic Everything that we now know . . . leads to the conclusion that the risks of cannabis use cannot . . . be described as "unacceptable."¹⁰

The British Wootten Report, 1969

The association in legislation of cannabis and heroin . . . is inappropriate and new legislation to deal specifically and separately with cannabis . . . should be introduced as soon as possible. . . . Possession of a small amount of cannabis . . . should not be punished by imprisonment. . . . Sale or supply of cannabis should be punishable . . . with a fine not exceeding £100, or imprisonment for a term not exceeding four months.¹

The Canadian LeDain Commission Report, 1970

Since cannabis is clearly not a narcotic we recommend that the control of cannabis be removed from the Narcotic Control Act. . . . The Commission is of the opinion that no one should be liable to imprisonment for simple possession.²

National Commission on Marihuana and Drug Abuse, 1972

Marihuana's relative potential for harm to the vast majority of individual users and its actual impact on society does not justify a social policy designed to seek out and firmly punish those who use it. . . . Existing social and legal policy is out of proportion to the individual and social harm engendered by the drug.³

The Dutch Baan Commission, 1972

The current law does not respect the fact that the risks of the use of cannabis cannot be equaled to the risks of the use of substances that are pharmacologically much more potent. . . . This hurts the credibility of the drug law, and the prevention efforts based on the law are made untrustworthy.⁴

Commission of the Australian Government, 1977

Legal controls [should] not [be] of such a nature as to . . . cause more social damage than use of the drug. . . . Cannabis legislation should be enacted that recognises the significant differences between . . . narcotics and cannabis in their health effects. . . . Possession of marijuana for personal use should no longer be a criminal offence.⁵

National Academy of Sciences Report, 1982

The advantages of a policy of regulation include . . . the savings in economic and social costs of law enforcement . . . , better controls over the quality and safety of the product, and, possibly, increased credibility of warnings about risks.⁶

Australian National Drug Strategy Committee, 1994

Australia experiences more harm . . . from maintaining cannabis prohibition policy than it experiences from the use of the drug. . . . We conclude that cannabis law reform is required in this country.⁷

Report by the Dutch Government, 1995

It has been demonstrated that the more or less free sale of . . . [marijuana] for personal use in the Netherlands has not given rise to levels of use significantly higher than in countries which pursue a highly repressive policy. . . . Dutch policy on drugs over the last twenty years . . . can be considered to have been successful.⁸

Endorsements

This submission, “Bill C-45, The Cannabis Act; *Lessons Learned from Marijuana Legalization in Four U.S. States and D.C* by Smart Approaches to Marijuana (SAM) - A Reply” was created by a cross-sectoral group of prominent researchers, legal advocates, industry experts, academics and public health professionals who share a common commitment to ensuring that Canada’s proposed framework of legalization with strict regulation will enable a safer legal market and will protect public health.

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