Cannabis Regulation and Public Health: Using the Experience of Alcohol Regulation to Maximize Public Health Outcomes in Ontario

by

Mark Longo

A thesis submitted in conformity with the requirements for the degree of Master of Laws

Faculty of Law
University of Toronto

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Abstract

The Government of Canada has signalled that it will legalize recreational cannabis on or before July 1, 2018. While there are numerous anticipated benefits of this change, including a reduction in the costs of enforcement and an increase in tax revenues, the consumption of cannabis is not risk-free. The many negative effects related to cannabis consumption include increased cancer risk, impairment of cognitive and psychomotor functioning, and a greater likelihood of manifesting mental health issues. A regulatory approach aimed at reducing these harms associated with use – and not use per se – is called a “public health” approach. In order to contribute to the design of a regulatory framework for cannabis in Ontario, this paper reviews and synthesizes the literature on the efficacy of specific regulatory tools in maximizing public health outcomes with respect to alcohol, including taxation and price controls, controlling the physical availability, and advertising and marketing restrictions.
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1 Cannabis, Criminalization, and Public Health

1.1 Introduction

The Government of Canada has signalled that it will legalize production, distribution, retail, and recreational consumption of cannabis, likely on or before July 1, 2018.¹ This move presents an opportunity to regulate the quality and distribution of a drug already being consumed by 10% of Canadians and 14% of Ontarians;² to bring millions of dollars of tax revenue into government coffers – money currently being funneled into the black market; and to reduce interaction of otherwise law-abiding Canadian citizens with the justice system and lower the economic costs of enforcement.³ In this way, the legalization of cannabis represents an incredible opportunity to improve the health and safety of Canadians who use cannabis and of those who do not. However, cannabis is a drug that carries with it both acute and chronic risks to consumers and society. Cannabis use is causally connected to cognitive and psychomotor impairment, manifestation of psychosis, motor vehicle incidents, certain cancers, and cannabis dependence.⁴ Any move toward legalization must be taken with the utmost care, and the system of production, distribution, and retail availability ought to be tailored to minimize the harm to Canadians and society. If the goal of the cannabis production, distribution, and retail availability regime to be adopted is to minimize harms to Canadian society – as the Federal Government and numerous institutions have suggested it should be – Canada and Ontario ought to adopt a cannabis regulatory regime that is informed by its own experiences – and those of other jurisdictions – with other legalized intoxicants, namely, alcohol.


³ Ibid at 1, 2.

An approach to intoxicant distribution and retailing that has as its goals the minimizing of risks and harms of consumption – and not consumption *per se* – is called a “public health” approach. It is focused on maintaining and improving the health of populations through health promotion and health protection, and has as its primary goal the prevention of death, disease, injury, and disability.\(^5\) A public health approach places an emphasis on evidence-based, pragmatic initiatives, and is predominantly concerned with reducing substance use-related harms by acting on determinants and risks and through targeted interventions to reduce the health burden of use.\(^6\) A public health approach to cannabis has been recommended by The Task Force on Cannabis Legalization and Regulation,\(^7\) the Centre for Addiction and Mental Health,\(^8\) the Canadian Public Health Association,\(^9\) and numerous academics and public health experts\(^10\) as the guiding principle for cannabis legalization in Canada that will produce the best outcomes for all Canadians.

There are numerous approaches to intoxicant regulation beyond one that seeks to maximize public health outcomes, including economic activity maximization, tax revenue maximization, absolute libertarianism, and more, each with their own goals, strengths, and critiques. The public health model in particular is susceptible to a challenge of state paternalism, wherein the state is restricting the liberty of its population “for its own good”. Whether this restriction of liberty can be justified by the public health benefits that accrue to both individuals and society is beyond the scope of this work. This paper takes the position that the public health approach, as advocated for

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\(^8\) *Supra* note 4 at 1.

\(^9\) *Supra* note 5 at 3, 4.

by the Federal Government and others, is the approach that will, and ought to be, adopted by the federal and provincial governments of Canada.

The issue then becomes identifying the regime of production, distribution, and retail that would best serve to maximize public health outcomes. In 2014, the legislature of Vermont commissioned a report from the RAND Corporation on the various forms that cannabis regimes could take. The result was at least ten different regulatory models employing different combinations of regulatory options and tools – from continued prohibition through government monopoly to standard commercial models – on which a cannabis regime could be modelled. When designing the system that best serves the public health goals of maintaining the health of Canadians and preventing death, disease, injury, and disability, we ought to learn from the experience of the many regimes that regulate the only other legalized intoxicant in our society: alcohol.

This paper seeks to examine the public health impacts of various regulatory options as they have been applied to alcohol in order to craft a regulatory regime for cannabis that best achieves the goals of public health. The goal of this paper is to aggregate a number of studies on the effectiveness of certain relevant regulatory policies – at the population level and with respect to target subgroups – and to determine which policies have the greatest effectiveness in promoting positive public health outcomes. The policies explored in this paper are:

- Taxation and price controls, including minimum pricing and graduated tax schemes based on product potency;
- Regulating the physical availability of the substance, including state retail monopolies, limiting hours/days of purchase, and minimum purchasing ages;
- Advertising/marketing restrictions; and
- Education programmes.

I conclude that legalization with strict regulation – meaning that the provincial government will have an active role to play in retailing, pricing, and marketing/advertising regulation – is the regime most likely to achieve the goals of a public health approach.

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12 Ibid.
This paper will begin by discussing cannabis: what it is and the history of prohibition, including the remarkable lack of both scientific and sociological information on which to base an informed policy decision available to decision makers at the time and of parliamentary debate advocating or expressing an argument in favour of the to-be-created criminal regime. It will then canvass the public health harms of cannabis as well as alcohol, in order to best understand the relative risks and harms of each, and in order to both establish a threshold for acceptable public risk and lay the groundwork for a discussion of how these regulatory policies will promote public health.

Then an in-depth discussion of regulatory policies, including the categories and types of potential regulations available to governments when designing a cannabis regulatory regime will explore their effectiveness as shown through numerous domestic and international implementations. The positions on each of these policy options of three major institutions – the Federal Task Force on Legalizing and Regulating Cannabis, the Centre for Addiction and Mental Health (CAMH), and the Canadian Public Health Association, will be outlined. The goal will be to identify those policy options and the system of regulation most likely to promote public health in the cannabis regulatory regime of Ontario.

1.2 Cannabis and Public Health

1.2.1 Cannabis – What it is and the Effects Sought through Use

Cannabis products are derived from the female plant Cannabis sativa. While Cannabis sativa contains numerous chemicals and cannabinoids, the primary active ingredient is delta-9-tetrahydrocannabinol (THC). The THC content of the Cannabis sativa plant is concentrated in the flowering top of the female plant, but the chemical is present throughout the entire plant structure. Cannabis products can take numerous forms. The most common is typically referred to as “marijuana”, which is the dried flowering top of the plant, and which has a THC content of approximately 0.5% to 15% by mass. There are numerous forms of processed cannabis, referred to as “concentrates”, that have increased amounts of THC, including “hashish”, dried

14 Ibid.
15 Supra note 13.
cannabis resin that typically has a THC content of 2% to 20%; “hash oil”, a further refined form of hashish with a THC concentration of 15% to 50%; and other products, such as “shatter”, that can have even higher potencies. Edible products of various concentrations are also widely produced and consumed. For occasional users, a dose of two to three milligrams of THC will produce the typical cannabis “high”, while frequent users will require significantly higher doses to obtain the same results. Understanding this variety of products and concentrations will be useful in considering some of the potential policy options discussed later.

1.2.2 The History of Cannabis Prohibition in Canada – a Prohibition without a Problem

The history of cannabis prohibition in Canada began when a drug causing no harm to society was added to the schedule of proscribed drugs after no legislative debate or comment, resulting in no arrests or seizures of the drug until nearly a decade later. Cannabis was added to the schedule of proscribed drugs under the Opium and Narcotic Drug Act by An Act to amend the Opium and Narcotic Drug Act, 1923 (“1923 Act”). No explanation for the addition of cannabis to the schedule was ever provided to Parliament, nor was any public explanation sought by any Member of Parliament or Canadian senator. In fact, original drafts of the 1923 Act did not make any mention of cannabis, save for one of many carbon copies of the Bill, which appears to have been placed into a typewriter for a second time to have the phrase “Cannabis indica (Indian

16 Ibid.
17 Ibid.
19 Ibid.
20 Ibid at 182.
21 The Opium and Drug Act, SC 1911, c 19.
22 An Act to amend the Opium and Narcotic Drug Act, SC 1923 c 22.
23 Supra note 18 at 179.
Hemp) or Hasheesh” retyped onto it.\textsuperscript{24} In addition to there being no detectable problems with respect to cannabis use in Canada at the time, there is the question of what knowledge of the drug and its effects was available to legislators and policymakers.\textsuperscript{25} While there were studies of cannabis available at the time, including the Indian Hemp Drugs Commission,\textsuperscript{26} an Indo-British commission investigating the use of cannabis in India, there is no evidence that anyone in the Canadian government had reviewed it.\textsuperscript{27} (It should also be stated that the Indian Hemp Drugs Commission Report found that moderate use produces no negative physical, mental, or moral effects, and that excessive use harms no-one but the user, and even these effects were difficult to observe.\textsuperscript{28}) Many individuals point to Emily Murphy’s \textit{The Black Candle},\textsuperscript{29} published in 1922, a year prior to the \textit{1923 Act}, as a potential catalyst for the sudden criminalization of cannabis.\textsuperscript{30} In a chapter entitled “Marijuana – a New Menace”, Murphy includes quotes indicating that cannabis is “driving [users] completely insane”, that users “become raving maniacs and are liable to kill or indulge in any form of violence”, and that “[i]f this drug is indulged in to any great extent, it ends with the untimely death of its addict”.\textsuperscript{31} Internationally, ten states in the US had criminalized/prohibited cannabis and four more did so in 1923.\textsuperscript{32} Due to the complete lack of discussion or debate in Parliament or the Senate, it is difficult to identify what considerations went into the criminalization of cannabis.

\textsuperscript{24} Supra note 18 at 179.

\textsuperscript{25} Ibid.

\textsuperscript{26} Indian Hemp Commission, \textit{Report}, (Simla: Government Central Printing Office, 1894).

\textsuperscript{27} Supra note 18 at 179.

\textsuperscript{28} Supra note 26.

\textsuperscript{29} Emily F Murray, \textit{The Black Candle} (Toronto: Thomas Allen, 1922).

\textsuperscript{30} Supra note 18 at 180-181.

\textsuperscript{31} Ibid.

\textsuperscript{32} Ibid at 180.
After cannabis was criminalized in 1923, the first seizure of cannabis was in the form of marijuana cigarettes in 1932.\(^{33}\) This prompted a comment on cannabis from the Chief of the Narcotic Division, who wrote in his Annual Report that the drug was particularly harmful to youth who were procuring the drug in cabarets and dance halls. In 1934, cannabis was the subject of an editorial in the *Canadian Medical Association Journal*, which noted that cannabis was being sold “to young boys and girls … in cabarets and night clubs”.\(^{34}\) In 1938, cannabis caught the attention of both the newspapers and Parliament, when a bill was proposed to criminalize the cultivation of cannabis as an offence.\(^{35}\) This increased newspaper attention on the subject, prompting the *Toronto Daily Star* to run a story entitled “Marijuana Smokers Seized with Sudden Craze to Kill”.\(^{36}\) In 1938, a story in *Maclean’s Magazine* connected cannabis to “reefer madness”, and wrote that cannabis production in Canada could “send a large proportion of the Dominion’s population to the insane asylum”.\(^{37}\) These beliefs about cannabis and its effects persisted in Canada unchallenged for the next 30 years.

In the 1960s the conversation around cannabis changed for a number of reasons. First, and likely most importantly, the way that society perceived “users” of the drug shifted from the drug-addled criminal deviant or trafficker, to young, white middle and upper-middle class individuals.\(^{38}\) Even those involved in law enforcement admitted that the current cadre of cannabis users both lacked a prior history of delinquency and did not engage in criminal activity as a result of cannabis use (outside their cannabis use itself, of course).\(^{39}\) A second cause of the shift in conversation was that cannabis users of the 1960s were active and vocal in engaging with

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\(^{33}\) *Supra* note 18 at 182.

\(^{34}\) *Ibid* at 183.

\(^{35}\) *Ibid* at 183-185.

\(^{36}\) *Ibid* at 184.

\(^{37}\) *Ibid* at 186.

\(^{38}\) *Ibid* at 491.

\(^{39}\) *Ibid* at 492.
the cannabis prohibition debate.\textsuperscript{40} At universities, young users published student newspapers, held conferences, and challenged in other ways what they saw as an oppressive and unfair legal regime.\textsuperscript{41} A third shift in the conversation related to the perception of the efficacy of drug laws: through the 1960s, the number of convictions for cannabis use continued to rise dramatically – as an example, there were 28 cannabis-related convictions in 1964, but 19,929 in 1973\textsuperscript{42} – but so did the number of users, leading many to question whether the deterrence rationale for harsh drug laws was effective.\textsuperscript{43} Finally, during this period, cannabis began to be studied more thoroughly and this information became more accessible to both the general population and policy-makers.\textsuperscript{44}

This era began a sustained outcry for reform to Canada’s cannabis drug laws. That the criminalization of cannabis was not an effective strategy to promote public health goals – which became a kind of retroactive justification for criminalization after the addition of cannabis to the \textit{1923 Act} without sufficient scientific information or even comment or debate in parliament – and that the enforcement of cannabis prohibition was too costly to continue, was a message echoed by a number of sources. Those calling for a change in policy included the federal government’s own Commission of Inquiry into the Non-Medical Use of Drugs (the Le Dain Commission) in 1972, the Senate in 1974, the Canadian Bar Association in 1994, the Canadian Centre on Substance Abuse in 1998, CAMH in 2000, the Fraser Institute in 2001, the Senate Special Committee on Illegal Drugs in 2002, the Canadian Drug Policy Coalition in 2013, and the Canadian Public Health Association in 2014.\textsuperscript{45} With the election of Justin Trudeau’s Liberal Party in 2015, major legislative reform seems finally at hand.

\textsuperscript{40} \textit{Supra} note 18 at 492.
\textsuperscript{41} \textit{Ibid} at 492.
\textsuperscript{42} \textit{Ibid} at 495.
\textsuperscript{43} \textit{Ibid} at 493.
\textsuperscript{44} \textit{Ibid} at 494.
\textsuperscript{45} \textit{Supra} note 4 at 7.
1.3 The Legalization Debate

The argument for cannabis legalization generally rests on four main propositions: that prohibition has not been successful in deterring cannabis use; that the harms and risks of cannabis use are lower than those of tobacco and alcohol; that cannabis procurement and consumption should be severed from illicit drug markets, where users are exposed to more dangerous substances as well as violence; and that the resources currently being spent on enforcing cannabis laws could be better spent elsewhere.46

1.3.1 Patterns of Cannabis Consumption under the Current Regime of Prohibition

A discussion of the potential for cannabis legalization ought to take into account the consumption rates and patterns within the current regime of cannabis prohibition. The rates of cannabis consumption in Canada and Ontario are among the highest in the world, with approximately 10% of Canadians, 14% of Ontarians, and 23% of Ontario high school students reporting having used cannabis in the previous year (which is referred to as “previous-year use”), according to a Health Canada survey in 2013.47 To compare this with other illicit drugs, no other drug exceeds previous-year use of 1% in Canada.48 The rates of everyday use are approximately 4% among adults and 3% of high school students.49 Consumption patterns with respect to the heaviest users are similar to those of alcohol in Canada, where 20% of users account for 80 to 90% of all cannabis consumption.50 Under a system of prohibition, none of the cannabis consumed is monitored for potency or quality and consumers are forced to interact with illicit suppliers to obtain cannabis. This creates a greater degree of exposure to other, more harmful

46 Supra note 4 at 7.
47 Supra note 2 at 1.
48 Supra note 4 at 2.
49 Supra note 2 at 1.
50 Ibid.
illicit drugs and violence.\textsuperscript{51} If the goal of cannabis prohibition is to prevent Canadians from consuming cannabis, it has been a failure, and it has generated additional harms outside of those directly related to use.

1.3.2 Public Health Risks and Harms

The public health risks and harms of alcohol and cannabis are comparable in some ways and dramatically different in others. When it comes to similarities, the public health risks and harms of both alcohol and cannabis are found primarily in two groups: heavy users and youth.\textsuperscript{52} Both alcohol and cannabis carry risks of dependence – 9\% of cannabis users develop cannabis-dependence issues and 23\% of alcohol users develop alcohol-dependence – and numerous other risks including cancers and mental issues, meaning that population-level consumption needs to be minimized from a public health perspective. However, the specific risks, and the magnitude and costs of these risks, are dramatically different. They are covered below.

1.3.2.1 Alcohol

Alcohol is the second leading contributor to the burden of illness at the population level in Canada, second only to tobacco (which places alcohol as a higher contributor to death, disease, and disability than obesity, lack of physical activity, illicit drug use, and unhealthy diet).\textsuperscript{53} The economic costs of alcohol are massive, and it was estimated that in 2002 the direct and indirect economic cost of alcohol use in Canada was $14.6 billion dollars – with indirect costs such as loss of productivity of $7.1 billion, direct health care costs of $3.3 billion, and direct law enforcement costs of $3.1 billion.\textsuperscript{54} Alcohol is a known contributor to chronic diseases such as numerous types of cancers (breast, mouth, throat, larynx, liver cancers, among others) and cirrhosis of the liver, Fetal Alcohol Spectrum Disorder, and alcoholism.\textsuperscript{55} Alcohol also

\textsuperscript{51} Supra note 4 at 7.
\textsuperscript{52} Ibid at 3.
\textsuperscript{53} Supra note 5 at v.
\textsuperscript{54} Ibid at 2.
\textsuperscript{55} Ibid.
contributes to harm through drunk driving, violence, and sexual assault. Alcohol-related harm is found to a greater extent in marginalized and low-income groups than in higher-income groups, even though rates of alcohol consumption are higher in the higher-income groups. While there are numerous factors that contribute to the risks and harms of alcohol consumption, there is a strong connection between absolute levels of consumption and rates of harm, with studies showing reductions in alcohol-related harms during periods of reduced access to alcohol, such as retail workers strikes. With respect to youth consumption, the percentages of Canadian youth in grades 7 to 11 that reported having consumed alcohol within their lifetimes were between 51.6% and 70%, and the percentage of grade 12 students reporting having consumed alcohol in their lifetimes was between 77.3% and 91%. Alcohol does a great deal of harm in our society, yet its use remains socially acceptable and incredibly prevalent: over 80% of Canadian adults consume alcohol.

1.3.2.2 Cannabis

Cannabis use carries with it numerous health risks both acute and chronic, including potential cognitive and psychomotor impairment, respiratory issues, dependence, and mental health issues. In terms of cognitive and psychomotor impairment, cannabis use impairs memory, attention span, and psychomotor performance (the relationship between cognitive functions and physical movement). With respect to the public health burden of cannabis in Canada, cognitive and psychomotor impairment when it comes to impaired driving represents the greatest contribution of harm to Canadians. Relating to respiratory issues, cannabis smoke contains

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56 Supra note 5 at 2.
57 Ibid at 3.
58 Ibid at 4.
59 Ibid at 5.
60 Supra note 7 at 34.
61 Supra note 4 at 3-7.
62 Ibid at 3.
numerous known carcinogenic chemicals, and long-term frequent use is linked to cancer and bronchitis. In regards to issues of dependence and addiction, approximately 9% of cannabis users develop cannabis dependence, and these users would likely experience withdrawal symptoms – including anxiety, irritability, inability to sleep, and depression – should they ever attempt to quit. There are also concerns about mental health issues, as cannabis use has been causally linked to the likelihood of individuals manifesting certain mental health issues – including psychosis – as well as increasing the severity of symptoms in those already experiencing mental health issues. According to CAMH’s Cannabis Policy Framework, cannabis users have a 40% higher risk of manifesting psychosis than non-users, and frequent users have a 50% to 200% higher chance of manifesting psychosis than non-users. The specific neurochemical mechanism that increases the risk of psychosis in users is not well known at this point, but the connection is clear.

This brings us to a critical point: the most serious of non-motor vehicle public health harms is found principally among two high-risk groups: heavy users and youth. The issues as laid out above – of cognitive and psychomotor impairment, respiratory issues, dependence, and mental health – are largely concentrated among daily or near-daily cannabis users. With respect to the health impact of cannabis use on youth and adolescents, frequent use in youth is correlated with increased risk of developing mental health issues, low levels of academic achievement and life satisfaction, and a higher rate of developing dependence issues. Many studies have found a

63 Supra note 4 at 4.
64 Ibid at 4.
65 Ibid at 4.
66 Ibid at 3-7.
67 Ibid at 4.
69 Supra note 4 at 5.
70 Ibid.
connection between frequent youth cannabis use and an increased risk of developing schizophrenia. Further, while the cognitive issues associated with regular cannabis use, laid out above, typically wane after approximately a month of non-use in adults, some studies have suggested that the effects may be irreversible in youth. All of this suggests that a public health-based approach to cannabis regulation needs not only to consider population-level consumption and harm-reduction strategies, but also to focus on these two groups, youth and heavy users, as the primary at-risk group at which to target regulations.

1.3.2.3 The Social Costs of Criminalization/Prohibition

When combined with the social costs of cannabis prohibition – those costs borne by Canadians beyond impacts on health – prohibition as a legal regime for cannabis is even harder to justify. The Centre for Addiction and Mental Health put the arrest numbers at 60,000 individuals for possession of cannabis each year, an amount that accounts for almost 3% of all arrests in Canada, and over 500,000 Canadians currently have these possession offenses on their criminal records. In addition to the cost imposed on individuals for this criminalisation/prohibition regime is the cost to the state: in 2002, the cost of enforcement for possession, including policing, adjudication, and corrections was estimated at $1.2 billion.

1.3.3 The Debate – To Legalize or not to Legalize

There are challenges to the propositions underlying the argument for legalization as laid out above that must be considered. The focus of this section will be a debate-in-articles that occurred in the International Journal of Drug Policy following the publication of a summary of CAMH’s Cannabis Policy Framework in that same journal. The authors of the CAMH report engage with a specialist in alcohol dependence, Dr. Kalant, on whether legalization, or decriminalization – at

71 Supra note 4 at 5.
72 Ibid.
73 Ibid at 6.
74 Ibid.
75 Ibid.
least until we better understand the public health impact of legalization in other jurisdictions – is the best approach for public health. Kalant directly challenges the proposition that prohibition has not been successful in deterring cannabis use. He writes that it is unreasonable to expect that criminalization/prohibition be 100% successful in deterring use, as this is not the result of any prohibition, be it a prohibition on speeding or a prohibition on murder. The most that one can reasonably expect of prohibition is that it reduces the occurrence rate of the prohibited activity. Kalant writes that when it comes to reduction of use, prohibition has been successful in the past. Even alcohol prohibition in North America in the 1920s and 1930s had a marked effect on rates of consumption and public intoxication, he writes, though it came with numerous harmful consequences, such as growth of organized crime. Kalant notes that one must make a “judgement call” on whether the trade-offs of reduced rates of consumption are worth the harmful consequences. Kalant points to numerous indicators that cannabis prohibition is, in fact, successful at lowering the rates of cannabis consumption and its related risks and harms, and that legalization may increase these rates – including among youth. A recent study of high school students reported that 10% of students who had not yet used cannabis would do so should it become legalized, and that 18% of those students who already use cannabis would use it more frequently. Further, Kalant cites evidence suggesting that cannabis use in Colorado among individuals over 12 years of age has increased by somewhere between 17% and 63% in the two years after legalization as compared to the two years prior to legalization, while nation-wide averages showed no increase. (Other studies, cited later in this paper, have come to contrary conclusions on youth use in Colorado.)

Kalant also challenges the magnitude of social costs of cannabis enforcement as put forward by CAMH. Of 18,206 cases where cannabis possession was demonstrated, Kalant writes, possession

77 Ibid.
78 Ibid.
79 Ibid.
80 Ibid.
charges were pursued in only 4,257 cases, all others being let off with a warning or simply dropped. Of those charges pursued, all but 249 were charged with more serious crimes, to which possession was charged in addition, and of the 249 possession charges pursued, only 42 were convicted. Kalant also questions the belief that legalization and strict regulation would reduce access to cannabis by underage users, referencing Ontario’s experience with alcohol, where past-year use was reported by 10% of grade 7 students, rising along with age up to 74% of grade 12 students. With respect to fatal vehicular incidences of individuals 19 years of age or younger, 17.4% of the drivers killed in these crashes tested positive for alcohol (18.6% tested positive for other drugs – mainly cannabis – and 14% tested positive for both drugs and alcohol). Kalant suggests that these numbers are hardly evidence that the current regime of alcohol regulation is the model to emulate with respect to minimizing public health harms in Canada. Kalant also points out the inherent contradiction in the suggestions of public health authorities that minimum pricing and taxation will reduce consumption and its related risks and harms, noting that any price point high enough to deter rates of consumption will likely be high enough to allow for the continuation of black markets, especially among youth.

Fischer, Rehm & Crépault made the following observations in response to the challenges of Dr. Kalant. First, it is undoubtedly true, as Kalant points out, that the weighing of harms and costs of different regimes, be they criminalization/prohibition, decriminalization, or legalization, will have to come down to a “judgment call” weighing the positives and negatives of each regime. With respect to the first of Kalant’s points as laid out above (i.e., that prohibition cannot be seen

81 Supra note 76 at 6.
82 Ibid.
83 Ibid.
84 Ibid at 8.
85 Ibid.
86 Ibid.
as a failure merely because it has not completely eliminated cannabis use), Fischer, Rehm & Crépault point to studies indicating that regions that have undergone liberalization of their cannabis control regimes have not seen accompanying changes in use levels that can be attributed to said policy changes.\(^88\) Further, with respect to a public health approach to alcohol and other drugs, the goal is not the reduction of prevalence of use \textit{per se}, but instead a reduction in the related harms of use.\(^89\) The argument here is that even if the percentage of users increases, this is not necessarily bad, as most “use-trajectories” of cannabis are \textit{relatively} harm-free\(^90\) (as compared to alcohol and other drugs, that is; it should be noted that cannabis is not harm-free, and thus population-level reductions in use ought to remain a goal of any public health-promoting regulatory regime). Most, but not all, of the harms of cannabis use are concentrated in a subgroup of 25\% to 30\% of heavy users and youth, so the question is not necessarily whether the absolute number of users increases, but whether the number of users experiencing the harms and risks related to consumption increases or decreases.\(^91\) When it comes to Kalant’s points on problematic use among youth, Fischer, Rehm & Crépault point out that the severe consequences of use occur in a minority of users, and that most young people who consume cannabis will suffer no chronic health problems.\(^92\) Further, the legalization of cannabis will offer opportunities for education with respect to risky consumption, including prevention and education programs, specifically those risk factors most connected with negative public health outcomes – namely, daily or near-daily use, concentration of THC consumed, and cannabis-impaired driving.\(^93\) It is also the case that youth access may be reduced by the corresponding “drying-up” of the black market. However, the main point, as presented by Fischer, Rehm & Crépault, is that the goal of a public health-oriented substance policy should aim to prevent and minimize the risks and harms attending substance use, not use \textit{per se}, and that an approach involving legalization with strict

\(^88\) \textit{Supra} note 87 at 11-16.

\(^89\) \textit{Ibid.}

\(^90\) \textit{Ibid.}

\(^91\) \textit{Ibid.}

\(^92\) \textit{Ibid.}

\(^93\) \textit{Ibid.}
regulation provides the most promising avenue for achieving that goal.\textsuperscript{94} Kalant’s point about the apparent inconsistency of the goals of discouraging problematic use through minimum pricing and taxation and of stamping out the black market may be based on a misunderstanding of the supply/demand situation in a legal versus an illicit market, as cannabis users would likely prefer to use legal avenues of cannabis procurement over illegal ones, even if the price is relatively the same.\textsuperscript{95} When it comes to youth procurement, it is likely that those 25\% of youth aged 16 to 18 will seek to continue their use, and will continue to rely on illicit sources of cannabis, including indirect or “social” avenues of procurement.\textsuperscript{96} While this is less than ideal, indirect or “social” avenues of procurement are still preferable to the black-market involvement currently required for cannabis procurement with the complete lack of quality controls on the product and greater exposure to criminal elements.\textsuperscript{97}

In response, Dr. Kalant agrees with the emphasis on dangerous use over total use, but points out that many studies suggest that the two variables appear connected in both alcohol and cannabis use, and that, therefore, any rise in total use would likely be accompanied by a rise in problematic use.\textsuperscript{98} Kalant suggests that the legalization of cannabis in Canada should wait until the experiments with legalization currently being undertaken in Colorado and Washington can be better studied and understood prior to engaging in what he calls an “experiment on a whole society”.\textsuperscript{99} Instead, he suggests decriminalization until further study of legalization and its effects can be undertaken.\textsuperscript{100} The difference between these positions, then, is essentially whether to legalize now or decriminalize in order to learn more prior to later legalization.

\textsuperscript{94} Supra note 87 at 11-16.
\textsuperscript{95} Ibid at 14.
\textsuperscript{96} Ibid.
\textsuperscript{97} Ibid at 11.
\textsuperscript{99} Ibid.
\textsuperscript{100} Ibid.
As the federal government has committed to legalization now, this knowledge gap means that we must seek information on the public health impact of various regulatory policies wherever we can find it. This is the goal of this paper: to use knowledge gained from the experience of alcohol regulation to design a regulatory regime that maximizes public health outcomes by reducing the harm inflicted on both the population as a whole and specific at-risk subgroups.

1.3.4 Why Colorado, Washington, Alaska, and Oregon are not relevant Public Health Models

As of this writing, four U.S. states have voted to legalize the sale and consumption of cannabis for recreational purposes. However, for a number of reasons, the experience of these states provides limited evidence for the impact of recreational cannabis. First, there is the “brush-fire” effect, where jurisdictions see short-term increases in interest and consumption of a product before settling down to long-term levels. Second, there are still state and federal conflicts with respect to the legality of cannabis, so supply systems have not developed as they could in a truly legal context. Finally, and most critically, none of these states have adopted a regime dedicated to public health, instead taking a more pure commercial model, and have thus not adopted many of the policy recommendations found in this paper. Some of the most effective public health measures are missing from these states’ regulatory regimes, including a lack of a government monopoly on retail, no minimum pricing regulations, and no graduated tax schemes based on potency. There is therefore little value is comparing these commercialized regimes to that of pre-legalization in order to draw public health conclusions.

Thus far it appears as though, according to certain studies in Colorado, adult past-year use of cannabis has increased from 16.80% of adults in Colorado 2013/2014 (pre-legalization) to 19.91% in 2014/2015 (post-legalization), while youth past-year use has decreased from 20.81% to 18.35% (a decrease of approximately 2.5%) during the same period, suggesting that

101 Wayne Hall, Michael Lynskey, “Why it is probably too soon to assess the public health effects of legalization of recreation cannabis use in the USA” 3:9 Lancet Psychology 900 at 900.

102 Ibid at 900-904.
legalization and regulated cannabis markets had the effect of lowering use rates in youth.\textsuperscript{103} In Washington, on the other hand, past-year cannabis use in 8\textsuperscript{th} and 10\textsuperscript{th} grade students has increased approximately 2.0\% and 4.1\% respectively, challenging that claim.\textsuperscript{104} Those data points aside, due to the lack of key public health regulatory policies, in addition to the state of flux in which cannabis markets find themselves, the experiences of Colorado, Washington, Alaska, and Oregon will not be a significant focus of this paper.


\textsuperscript{104}Magdalena Cerda et al, “Association of State Recreational Marijuana Laws With Adolescent Marijuana Use” (2017) 17:2 JAMA Pediatric 142 at 142.
Part II
Regulatory Policies and Public Health

2 Regulatory Policies and Public Health

There are numerous categories and types of potential regulations and policies available to governments when designing a regulatory regime for any product: the challenge is to identify those with the greatest public health impact attested to by rigorous and thorough study. The goal of this paper is to aggregate a number of studies on the population level effectiveness, and the ability to target at-risk subgroups, of certain regulatory policies available to Ontario and to determine which policies have the greatest effectiveness in promoting public health. Alcohol has been selected as a comparator due to the fact that the array of regulatory tools being suggested by the federal government and other institutions are the same as those that have been deployed in Canada and abroad to further public health objectives with respect to alcohol, and numerous studies have generated a great deal of data from which to draw conclusions on efficacy. The regulatory toolkit with respect to other goods with public health concerns, namely tobacco, is not as diverse or pertinent to designing a cannabis regime – as these regimes lack relevant experience with critical regulatory polices such as government monopolies and graduated taxation schemes based on potency – as well as a vital difference with respect to the end-goal of the public health project, namely, complete cessation (tobacco) as opposed to consumption pattern adjustment (alcohol and cannabis).

Three policies found most effective across numerous sources are discussed: taxation and price controls, regulating the physical availability of alcohol, and restrictions on marketing and advertising have all proven incredibly effective at minimizing the public health harms of alcohol. One policy, education programmes – including both in-school and mass media programs – has been included as an example of an ineffective policy that remains popular despite its lack of impact and cost-effectiveness. In order to determine which policies have the greatest degree of proven effectiveness, and which do not, numerous studies and meta-analyses of the effectiveness of these policies have been reviewed.

The efficacy of these policies will depend to a great deal on the degree to which the black market for cannabis can be minimized. This analysis assumes that the combination of availability
through legal channels and an ongoing black market crackdown will be effective in minimizing the appeal and scale of the black market for cannabis.

2.1 Efficacy and Evidence: Sources and Meta-analyses

The goal of this section is to generate a comparative synthesis of the literature with respect to the public health outcomes of various regulatory policies as they have been applied to alcohol regulatory regimes, and to determine which policies have the greatest evidentiary support in terms of both efficacy and scope in order to apply these policies to a public health-oriented cannabis regulatory regime. To achieve this goal, the author searched online and physical databases for the convergence of regulatory policy, public health, alcohol, and cannabis. The result is a number of population-level and target subgroup-focused studies on the effects of specific regulatory policies and changes, and numerous meta-studies which themselves synthesize the public health/alcohol/regulatory literature. The individual studies that have informed this analysis have been published in health, health policy, alcohol policy, and drug policy related peer-reviewed journals including The Lancet, The International Journal of Drug Policy, The International Journal of Alcohol and Drug Research, The Canadian Medical Association Journal, and more. There are three meta-analyses that, due to both comprehensiveness and scientific rigour, will be referenced frequently throughout this paper. The first is Babor et al’s *Alcohol: No Ordinary Policy*, 2nd ed. This book, referred to by some as the “alcohol policy bible”, offers a comprehensive literature review on the subjects of alcohol, public health, and public policy, drawing from hundreds of studies on the public health effectiveness of alcohol regulatory policies in numerous jurisdictions, to generate an evidence-based, public health-oriented review of alcohol policy. The second meta-analysis, Anderson, Chisholm & Fuhr’s “Alcohol and Global Health 2: Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol”, published in *The Lancet*, is an analysis of published systematic reviews and meta-analyses on the subject of alcohol regulatory policy and public health. The third meta-analysis, Martineau et al’s “Population-level

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interventions to reduce alcohol-related harm: An overview of systemic reviews”, published in *Preventative Medicine*, synthesized 52 literature reviews on 10 policy options to determine the level of evidentiary support for the impact of these policy options on public health outcomes.\(^{107}\) The message across these sources is consistent: there is a substantive amount of evidence on the effectiveness of alcohol policy options on public health, and certain policies, especially taxation and price controls, controlling the physical availability of alcohol, and marketing and advertising restrictions, are incredibly effective tools for maximizing public health with respect to both the population as a whole and specific at-risk subgroups.

### 2.2 Taxation and Price Controls

Taxation and price controls represent one of the most straightforward and effective means to alter the rate of consumption of any given product. The underlying theory is that increasing the price of certain products through means external to market forces reduces the demand for those products, consumption of those products, and therefore the negative impacts of consumption.\(^{108}\)

With respect to alcohol, decades of research – internationally and domestically – suggest that an increase in the price of alcohol reduces the volume of sales and consumption, and, importantly, that increasing the price of alcohol is one of the most effective approaches for reducing public health harm at the population level. Babor et al have concluded that alcohol taxation and price controls represent the policy option that is the most effective, best studied, and most comprehensively studied across countries of all of the available policy options. With respect to our target subgroups, they note that heavier drinkers appear to be as responsive to price increases as lighter drinkers, and that younger drinkers are affected as well as adults.\(^{109}\) Anderson, Chisholm & Fuhr rank alcohol taxation and price controls as “effective”,\(^{110}\) and write

\(^{107}\) Martineau *et al*, “Population-level interventions to reduce alcohol-related harm: An overview of systematic reviews” (2013) 57 Preventive Medicine 278.

\(^{108}\) *Supra* note 105 at 107.

\(^{109}\) *Ibid* at 242.

\(^{110}\) *Supra* note 106 at 2238.
that policies that result in higher prices for alcohol delay the initiation of youth into consumption of alcohol, slow the progression of young drinkers toward drinker greater amounts of alcohol, and reduce the quantity of alcohol consumption per occasion. Further, Anderson, Chisholm & Fuhr conclude that taxation and price controls, including minimum pricing, have a much greater impact on heavier drinkers than lighter ones. Martineau et al write that all studies of alcohol taxation and pricing that meet their test for methodological soundness conclude that there is “clear and consistent” evidence that higher alcohol pricing and taxation reduce overall consumption and related harm. Moving on to other studies and meta-studies, Giesbrecht et al consider “pricing” to be the most effective of all policy dimensions analysed, earning a score of 4 out of 5 in terms of effectiveness and 5 out of 5 in terms of scope of impact. Wagenaar et al found clear evidence that alcohol price and taxation are significantly and inversely tied to numerous public health harms, having the greatest impacts on morbidity and mortality, and medium impacts on traffic fatalities. As lowering population rates of consumption itself is a public health goal, overall price controls will be a critical tool in protecting public health. In addition to population-level controls, however, there are specific taxation and pricing policies that ought to be employed to affect the at-risk groups of heavy users and youth. The depth of data, the wide range of populations surveyed, and the evidence that taxation and price controls can be tailored to affect our two target subgroups – heavy users and youth – all suggest that any government attempting to maximize public health outcomes needs to take taxation and price controls seriously.

111 Supra note 106 at 2239.
112 Ibid.
113 Supra note 107 at 282.
2.2.1 Specific Policy: Minimum Pricing

Minimum pricing refers to establishing of minimum – or “floor” – prices at which products can be sold. This is usually expressed as a “minimum unit price” (MUP) for the intoxicant in question, and can be applied to either units of the intoxicant directly (in millilitres of ethyl alcohol), or per unit of product (per bottle of beer). There is a great deal of evidence from the world of alcohol regulation that minimum pricing in either form not only lowers general rates of consumption, but also specifically lowers the rate of consumption for heavy users.

2.2.1.1 Alcohol

Many studies have determined that increases in the minimum price per unit of alcohol have the effect of reducing both general levels of consumption in the population and levels of consumption in heavy users.

With respect to lowering population-level rates of consumption, minimum pricing has proven to be an effective means of reducing population-level rates of use. In British Columbia, a study undertaken to examine the effects of a 10% increase in the minimum price of alcohol demonstrated that it reduced consumption of spirits by 6.8%, wine by 8.9%, beer by 1.5%, alcoholic sodas and packaged cider by 13.9%, and total packaged alcohol consumption by 3.4%. A study by Gruenewald et al found that individuals respond to increases in alcohol pricing by shifting consumption to lower-priced options, and that increasing the price of the least expensive option would be the most effective way to ensure that price increases are accompanied by reductions in consumption. Another study, undertaken by Meier et al applied a modelling process to data from England and Wales and found that a minimum/floor price on a standard unit

116 Supra note 105 at 119.
of alcohol would be an incredibly effective, if not the most effective, means of reducing population level consumption and related harms.\textsuperscript{119}

When it comes to the goal of reducing harmful or risky consumption in heavy users, numerous studies have shown that minimum unit pricing affects those who are “heavy consumers” to a greater extent than moderate consumers. A 2016 study in Scotland found that minimum pricing will have the greatest effects on the heaviest purchasing households, and would not disproportionately affect lower-income households.\textsuperscript{120} Another study, published in 2016, examined the experience introducing a MUP in Australia and found the same: that a minimum unit price had the greatest impact on the highest 20\% of consumers while having minimal impact on moderate drinkers.\textsuperscript{121} Anderson, Chisholm & Fuhr have also found that minimum prices have a “much greater” effect on heavier over light drinkers, and that light drinkers bear a minimal cost increase when minimum pricing schemes are put into effect.\textsuperscript{122} These studies suggest that the incorporation of a minimum pricing system into a regulatory regime can accomplish the central goal of a public health-oriented regime: lowering the rate of consumption in the heaviest users without disproportionately affecting low-income households or moderate consumers.

\subsection*{2.2.1.2 Cannabis}

As cannabis has been legally purchasable for only a short time, there are few studies on how a minimum/floor price will impact cannabis consumption rates. However, the reality of production costs for legalized cannabis suggest that minimum pricing will be a pressing issue. Comparisons to conventional crops suggest that, after legalization, the cost of production of cannabis per pound would fall dramatically. Based on a RAND Corporation study commissioned by the state of Vermont in 2014, professional cannabis farmers could produce marijuana products in

\begin{flushleft}
\textsuperscript{119} \textit{Supra} note 105 at 119.


\textsuperscript{122} \textit{Supra} note 106 at 2239.
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greenhouses for the equivalent of $0.25 to 0.50 (USD) per gram, and could produce cannabis outdoors at a cost of approximately $0.10 to $0.20 (USD) per gram. In that report, it was suggested that this represents a per-hour intoxication cost of less than $0.05 (USD), which means that “establishments could afford to give cannabis products away free, in the way that bars serve free salty nuts and hotels leave chocolates by the bedside.” These realities of production suggest that the province will have to set minimum/floor prices in order to discourage widespread overconsumption. The Federal Taskforce on the Legalization and Regulation of Cannabis, CAMH, and the Canadian Public Health Association all recognize the need for a pricing scheme that balances health protection and the elimination of the illicit market, but none have explicitly advocated for minimum pricing.

2.2.1.3 Critiques and Challenges

The idea of minimum pricing for cannabis would work only if there is no accessible black market willing to undercut the cost of cannabis to a sufficient degree that would encourage individuals to forgo the legally purchased options. As Dr. Kalant might point out, this is the underlying tension between a public health approach seeking to lower consumption through price controls and the desire to eliminate the black market. This was the experience of Washington State immediately following legalization, where high taxes and supply issues had less-than-expected impacts on the black market for cannabis. The solution to that issue would likely have to be a minimum price that is set with both public health and illicit market reduction in mind, in addition to a mix of strict production and distribution monitoring in order to prevent supply-line leakage, and an ongoing, effective black-market crackdown. While the monitoring and regulation of this regime may be somewhat expensive, it is likely that taxation revenues from a legalized regime greatly outstrip any enforcement costs.

123 Supra note 11 at 2084.
124 Ibid.
125 Supra note 7 at 2, Supra note 4 at 13, and Supra note 5 at 6.
2.2.2 Specific Policy: Graduated Tax Scheme Based on Potency

Graduated taxation based on potency refers to applying a higher level of taxation to those products that contain a higher percentage of cannabis or alcohol. The underlying theory is that encouraging the consumption of lower-potency products will reduce overall consumption rates of either alcohol or THC.\(^\text{127}\) There is a difference to be noted here between alcohol and cannabis. While higher-potency alcoholic products are tied to greater public health harms than lower-potency products, this relationship is due to the connection between higher potency products and higher levels of consumption, and not to any danger of high-potency alcohol products themselves.\(^\text{128}\) This is not the case with cannabis, as higher-potency cannabis products are more closely connected with certain public health harms than are lower potency products.\(^\text{129}\) This means that the goals of graduated tax schemes based on potency are different when it comes to alcohol and cannabis. With respect to alcohol, a shift from higher potency products to lower potency products is “successful” from a public health perspective only if it is accompanied by “incomplete substitution”, i.e. when the amount of alcohol consumed is lower overall. With respect to cannabis, the shift from higher potency products to lower potency products is itself a success. As higher-potency cannabis products place the user at higher risk of mental health problems – though this connection is presently not completely understood – the target at-risk population expands beyond heavy users and youth to the entire using population.

2.2.2.1 Alcohol

With respect to alcohol, the goal of graduated taxation regimes is a shift from high alcohol content products such as spirits to lower alcohol content products such as wine and beer in order to reduce the absolute quantity of alcohol consumed. Many studies have found that the consumption of more highly concentrated alcoholic beverages is correlated with higher rates of alcohol poisoning and higher alcohol consumption, though rates of these harms are the same

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\(^{127}\) Supra note 105 at 107.

\(^{128}\) Ibid at 115-118.

\(^{129}\) Supra note 4 at 5.
across beverage types when alcohol consumption remains the same.\textsuperscript{130} The use of graduated taxation regimes have yielded great success in the past, including in Nordic countries that converted from predominantly spirit-drinking societies at the beginning of the 20\textsuperscript{th} century into predominantly beer-drinking societies at the beginning of the 21\textsuperscript{st} century.\textsuperscript{131} Selvanathan and Selvanathan have found that increases in price of more highly concentrated beverages result both in consumption being shifted to lower-concentration beverages and in overall reductions in consumption of alcohol, though the actual magnitude of these effects varies from study to study.\textsuperscript{132} However, there has been no study that suggests perfect per-unit parity in substitution effects, meaning that while the magnitude of the reduction in alcohol consumed may vary as a result of increased taxation of higher-potency products, no study has found that it remains the same or increases on a population level.\textsuperscript{133}

### 2.2.2.2 Cannabis

The impact of graduated taxation schemes based on potency with respect to cannabis is important in two ways: first, graduated taxation will reduce the overall quantity of THC consumed, as is the case with alcohol, above, but also important is the fact that use of higher-concentration cannabis products places users at higher risks of developing the mental health problems including cognitive/psychomotor issues and dependence than do lower-potency products.\textsuperscript{134} The precise mechanism for this is unknown at the moment, but studies have shown the link between increased potency and psychological issues. The Federal Task Force on Cannabis Regulation and Legalization has acknowledged the greater relative risks of high-potency THC products and has recommended a tax scheme based on potency to discourage the consumption of said high-potency products.\textsuperscript{135} They acknowledge the increased risk that high-

\textsuperscript{130} Supra note 105 at 116.

\textsuperscript{131} Ibid.

\textsuperscript{132} S Selvanathan, E A Selvanathan, “Empirical regularities in cross-country alcohol consumption” (2005) 81 The Economic Record (suppl 1) at 128.

\textsuperscript{133} Supra note 105 at 117.

\textsuperscript{134} Supra note 4 at 4.

\textsuperscript{135} Supra note 7 at 26.
concentration products present, but consider the benefits of regulation, including proper labelling and a more controlled and accurate production regime, to make availability of these products worthwhile.136 The Centre for Addiction and Mental Health advocates for establishing a pricing regime that encourages the use of lower-harm products over higher-harm products.137 The Canadian Public Health Association also recommends a varied taxation regime based on concentration of THC, but it should be noted that the CPHA suggests a THC concentration maximum of 15%.138

2.2.3 Conclusion on Taxation and Price Controls

In addition to price controls being effective methods to reduce consumption at a population level, a public health approach suggests that the specific policies of minimum pricing and graduated taxation regimes ought to be employed to reduce the rates of consumption by at-risk groups and of consumption of higher-risk products.

2.3 Regulating Physical Availability

Regulating the physical availability of a product refers to altering the ease with which one can procure a specific product. There are numerous ways that this can be done, including controlling the location and density of retail outlets, regulating the hours and days during which the product can be procured, and establishing minimum ages for procurement. The underlying theory is that by controlling the contexts in which the product can be procured, one can control both the economic and opportunity costs of procurement as well as who can procure the product at first instance.139 This has the effect of decreasing demand as costs of procurement increase.

Babor et al consider regulating the physical availability of alcohol to be the second most effective strategy, after taxation and price controls, for reducing the consumption of alcohol and

136 Supra note 7 at 24.
137 Supra note 5 at 13.
138 Ibid at 7.
139 Supra note 105 at 107.
its attendant harms.\textsuperscript{140} Anderson, Chisholm & Fuhr found that all policies regulating the availability of alcohol, government monopolies, minimum purchasing ages, regulating the days/hours of sale, and outlet density, all rank as “effective” policy measures.\textsuperscript{141} Martineau et al also found that restricting availability through the policies mentioned above is an effective means of minimizing population-level consumption and harms.\textsuperscript{142} Many of these specific policies have the effect of reducing rates of consumption in the target groups of heavy users and youth, making them appealing beyond population-level reductions.

2.3.1 Specific Policy: State Retail Monopolies

State retail monopolies refer to situations where the only avenue for procuring a product is through a state-run enterprise. This system can limit consumption and its resulting harm through a number of mechanisms: direct control over the number, location, density, and hours/days of operation of outlets, increased training for front-line purveyors, as well as removing the motive for increasing profits through illicit or potentially illicit sales.

2.3.1.1 Alcohol

State monopolies on the sale of alcohol in the interest of public health and public order were first proposed in the late nineteenth century and have been put into practice in numerous countries, including the United States, Canada, Sweden, Iceland, Norway, Finland, numerous countries in southern Africa, and a number of Indian states.\textsuperscript{143} There is strong evidence that state retail monopolies on alcohol reduce both total consumption and the resultant harms.\textsuperscript{144} In the United States, the privatisation of wine sales in five states increased wine sales dramatically in four of

\begin{footnotesize}
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\item\textsuperscript{140} Supra note 105 at 249.
\item\textsuperscript{141} Supra note 106 at 2235.
\item\textsuperscript{142} Supra note 107 at 281-282.
\item\textsuperscript{143} Supra note 105 at 136.
\item\textsuperscript{144} Ibid at 136.
\end{enumerate}
\end{footnotesize}
those states (with an increase from 42% to 150%) but less dramatically in the fifth (13%).\textsuperscript{145} In Sweden, a move to allow the sale of medium-strength beer in private (grocery) outlets increased the total sales of the product by 15%, and placing beer sales back into the hands of state retail monopolies decreased sales by that same amount.\textsuperscript{146}

With respect to youth, there is evidence that removing the private profit motive reduces the number of illicit sales to minors. In Finland and Norway, a study found that outlets were 66% less likely to sell alcohol to “underage-appearing 18-year-olds” without checking ID.\textsuperscript{147} Another study found that, in the United States, state retail monopolies substantially lowered rates of underage drinking, binge drinking, and vehicular fatalities as compared to states without state retail monopolies.\textsuperscript{148}

The meta-analyses examined also strongly support a government retail monopoly for alcohol. Babor et al have evaluated government monopoly of retail sales as effective, very well studied, and well researched cross-nationally. They write that a government monopoly on retail sales is an effective way to limit alcohol consumption and harm, and note that explicit public health and public order goals by these monopolies increase the beneficial effects of these policies.\textsuperscript{149} Anderson, Chisholm & Fuhr consider a government monopoly an “effective” method to achieve public health goals, although this effect may be due to government monopolies typically having shorter hours and lower outlet density.\textsuperscript{150} Martineau et al point to two studies that suggest that

\begin{footnotesize}
\textsuperscript{145} A C Wagenaar and H D Holder, “Changes in alcohol consumption resulting from the elimination of retail wine monopolies: Results from five US states” (1995) 56 J of Studies on Alcohol 556.

\textsuperscript{146} Supra note 102 at 137.

\textsuperscript{147} I Rossow, T Karlsson & K Raitasalo, “Old enough for a beer?: Compliance with minimum legal age for alcohol purchases in monopoly and other off-premise outlets in Finland and Norway” (2008) 103 Addiction 1468.

\textsuperscript{148} Supra note 105 at 138.

\textsuperscript{149} Ibid at 244.

\textsuperscript{150} Supra note 106 at 2238.
\end{footnotesize}
government privatization has consistently resulted in increased excessive consumption and related harm, and that re-monopolizations have the opposite effect.\textsuperscript{151}

2.3.1.2 Cannabis

The regime of retail distribution is considered by a number of sources to be one of the most impactful regulatory policies available, and a state monopoly on retail sales is found to be the most conducive retail model for facilitating public health goals. With respect to at-risk groups, particularly youth, the experience of alcohol suggests that extra training and oversight by government employees and the elimination of the profit motive are likely to reduce the occurrence of illicit purchases by youth.\textsuperscript{152} However, there are questions as to how a government monopoly on retail sales would be implemented in Ontario. There are valid concerns about co-location of cannabis and alcohol sales as facilitating and encouraging co-use, which increases the risk of harm to both those consuming and the public.\textsuperscript{153} It would therefore be unwise to sell cannabis in existing Liquor Control Board of Ontario (LCBO) stores. The only option would be a massive enterprise of creating an equivalent retail regime, a Cannabis Control Board of Ontario (CCBO), which would acquire and then administer store locations across the province. Given the Province of Ontario’s recent moves toward privatisation of alcohol outlets and lacklustre support for a government retail monopoly on cannabis,\textsuperscript{154} this seems unlikely. The Federal Task Force on Cannabis Regulation and Legalization does not state a preference for state retail monopolies over a system of licensed distributors, but does stress that retail sales ought to be regulated by the provinces and territories in some way.\textsuperscript{155} The Federal Task Force does not wish to see alcohol and cannabis co-located in LCBOs, due to an increase in exposure of cannabis marketing to those who consume solely alcohol and a concern that this may encourage or facilitate co-use of

\textsuperscript{151} \textit{Supra} note 107 at 282.
\textsuperscript{152} \textit{Supra} note 105 at 138.
\textsuperscript{153} \textit{Supra} note 7 at 34.
\textsuperscript{154} \textit{Ibid} at 35.
\textsuperscript{155} \textit{Ibid} at 34.
alcohol and cannabis.\textsuperscript{156} The Centre for Addiction and Mental health recommends a government retail monopoly for sales combined with a social responsibility mandate that has as its goals controlling consumption and reducing harm.\textsuperscript{157} The Canadian Public Health Association does not necessarily advocate for a state retail monopoly, and suggests that, should the decision to establish a licensed storefront system be made, these storefronts ought to be tightly regulated with respect to such factors as density of locations and proximity to areas known to be frequented by children.\textsuperscript{158}

2.3.1.3 Critiques and Challenges

The main challenge to a state retail monopoly on cannabis from a public health perspective would be that desire for tax revenues would eventually outweigh any public health goals of the regime. Dr. Kalant suggests that this has been the case with respect to Canadian provincial experiences in alcohol retail regimes, where interest in maximizing revenue through extensive and sophisticated advertising and marketing activities and moves to maximize access has trumped any public health consideration.\textsuperscript{159} Babor et al suggest that when government retail monopolies write explicit goals of maximizing public health and public order into the relevant legislation/regulation, public health incomes tend to be maximized.\textsuperscript{160} Whether the province could resist the siren song of greater revenue, however, is unclear.

2.3.2 Specific Policy: Limiting Hours/Days of Sale

Limiting the hours and days that one can purchase a product reduces the opportunities and availability of a product, lowering both the overall rate of consumption and related harms. Limiting hours and days of sale can also produce beneficial effects by preventing the purchase of

\textsuperscript{156} Supra note 7 at 34.
\textsuperscript{157} Supra note 4 at 12.
\textsuperscript{158} Supra note 5 at 7.
\textsuperscript{159} Supra note 76 at 8.
\textsuperscript{160} Supra note 105 at 244.
intoxicants during high-risk periods, namely, late at night. It should be said that these restrictions are only effective if the black market for cannabis is successfully minimized.

2.3.2.1 Alcohol

There is strong and consistent evidence from numerous studies that reducing the hours and days of sale have beneficial impacts on amount of alcohol consumed and the rates of related harms.\textsuperscript{161} In Ontario, a study of an extension of purchasing hours for on premise outlets from 1 a.m. to 2 a.m. found significant increases in injuries, including assaults and fall-related injuries.\textsuperscript{162} In Iceland, a study of a change from controlled purchasing hours in the form of closing times to an unrestricted system found significant increases in injuries, drunk driving, and alcohol-related police activity.\textsuperscript{163}

There is also evidence that restrictions on hours of sale affect heavy drinkers as much as lighter ones, if not more so.\textsuperscript{164} Studies in Nordic countries found that mandatory Saturday closings of alcohol retail outlets had a more pronounced impact on heavy drinkers, and other studies of the same Saturday closings suggest that those most impacted by the closings were those most likely to be involved in domestic violence.\textsuperscript{165}

Babor et al consider restrictions on hours/days of sale to be a well studied policy option that has been proven effective across numerous countries.\textsuperscript{166} Anderson, Chisholm & Fuhr point to two studies that have found good evidence that introducing or maintaining restrictions on hours/days of availability reduce both consumption and related harm.\textsuperscript{167} Martineau et al consider restrictions

\begin{itemize}
\item \textsuperscript{161} \textit{Supra} note 105 at 136.
\item \textsuperscript{162} E Vingilis \textit{et al}, “Impact of extended drinking hours in Ontario on motor-vehicle collision and non-motor-vehicle collision injuries” (2007) 68 J of Studies on Alcohol and Drugs 905.
\item \textsuperscript{163} \textit{Supra} note 105 at 133.
\item \textsuperscript{164} \textit{Ibid} at 135.
\item \textsuperscript{165} \textit{Ibid} at 136.
\item \textsuperscript{166} \textit{Ibid} at 244.
\item \textsuperscript{167} \textit{Supra} note 106 at 281.
\end{itemize}
on hours/days of sale “effective”, and write that reviews found “consistent evidence” that increases in hours/days of alcohol availability increase consumption and harm, and that reductions in days/hours of sale reduce consumption and harm.\textsuperscript{168}

2.3.2.2 Cannabis

The findings that limiting hours/days of sale has the greatest impact not only on heavy users but also on problem users, as was found in the studies of Nordic countries, suggest that tight control over hours and days of sale can produce beneficial public health benefits in the targeted problem users. While selecting the specific hours and days of sale can seem somewhat arbitrary, there is solid evidence that through restriction, beneficial outcomes can be achieved. The Task Force on the Regulation and Legalization of Cannabis does not explicitly recommend restrictions on hours/days of sale in its report, but it can be inferred from its recommendation of a system of licensing that certain time restrictions on retail availability would be included in that regime.\textsuperscript{169}

The Centre for Addiction and Mental Health advocates for limits on retail hours of sale, but does not go into specifics on the subject.\textsuperscript{170} The Canadian Public Health Association recommends that if storefront sales are allowed, rules regarding operation should be established “with specific reference to the criteria established in Washington State”, which allow cannabis products to be sold any time between 8 a.m. and 12 a.m.\textsuperscript{171}

2.3.3 Specific Policy: Minimum Purchasing Age

With respect to either alcohol or cannabis, youth consumption is a primary concern of any public health regime. The goal of a minimum purchasing age is to prevent youth from procuring the

\textsuperscript{168} Supra note 107 at 2235.
\textsuperscript{169} Supra note 7 at 33-35.
\textsuperscript{170} Supra note 4 at 12.
product in question, and this represents one of the most common public health-related policies implemented around the world.\textsuperscript{172}

2.3.3.1 Alcohol

Nearly all countries have minimum purchasing age requirements when it comes to alcohol, and these regulations have substantial impacts on youth drinking and its related harms.\textsuperscript{173} In the United States, multiple studies have attested to the beneficial effects of the implementation of a minimum legal drinking age of 21. One study found a 19\% reduction in vehicular fatalities due to drunk driving across all 50 states and the District of Columbia when all other variables are controlled for.\textsuperscript{174} Other studies attest to reductions in alcohol-related admissions to hospitals and alcohol-related fatalities.\textsuperscript{175} Comprehensive reviews of published papers have concluded that the increase in the minimum drinking age to 21 in the United States has been the single most effective strategy for reducing drinking and driving among high school and college-aged youths as compared to numerous other anti-drunk driving efforts.\textsuperscript{176}

Babor et al consider minimum legal ages to be very effective and supported by a great breadth of research in numerous countries, specifically noting that minimum legal purchase ages have a particularly powerful effect on reducing traffic fatalities.\textsuperscript{177} Anderson, Chisholm & Fuhr consider a minimum purchasing age “effective”, and note that a review of 132 studies published between 1960 and 1999 showed that changes in minimum drinking laws can reduce youth drinking and alcohol-related harm, especially, again, with respect to road traffic accidents.\textsuperscript{178}

\begin{thebibliography}{177}
\bibitem{172} Supra note 105 at 249.
\bibitem{173} Ibid at 139.
\bibitem{174} Ibid at 139.
\bibitem{175} K I Klepp, L A Schmid & D M Murray, “Effects of the increased minimum drinking age law on drinking and driving behaviour among adolescents” (1996) 4 Addiction Research 237.
\bibitem{176} Supra note 105 at 140.
\bibitem{177} Ibid at 244.
\bibitem{178} Supra note 106 at 2235.
\end{thebibliography}
Martineau et al found the same effectiveness of minimum purchasing ages on reducing youth consumption and related harms, as Babor et al, Anderson, Chisholm & Fuhr, and similar effectiveness on reducing traffic fatalities.  

2.3.3.2 Cannabis

There is a great deal of scientific information that attests to the fact that cannabis consumption in youth increases the risk of negative physical and mental health outcomes, including addiction, psychosis, depression, anxiety, and diminished academic achievement. There is also evidence to suggest that the elevated risk to young individuals persists until the age of 25. This is particularly worrying given the current rates of cannabis consumption among youth: in 2013, 23% of individuals in grades 7 to 12 and 40.4% of individuals age 19 to 29 admitted to using cannabis in the previous year, according to a study by Health Canada. The Federal Task Force on the Regulation and Legalization of Cannabis has recommended establishing a national minimum age of 18 for consumption, but will allow the provinces to establish their own minimum age, as it does with alcohol. The Centre for Addiction and Mental Health recommends establishing a minimum age but does not specifically set one out in their policy framework. The Canadian Public Health Association has recommended a minimum age of 19 for purchase, regardless of the province’s current legal minimum drinking age. The Canadian Medical Association Journal recently published an editorial objecting to the federal government’s stated goal of a minimum purchasing age of 18, pointing out that harm to a

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179 Supra note 107 at 282.
180 Supra note 5 at 5.
181 Ibid.
182 Supra note 4 at 2.
183 Supra note 7 at 16, 17.
184 Supra note 4 at 12.
185 Supra note 5 at 5.
developing can occur until at least the age of 25.\textsuperscript{186} Ontario has suggested that it will be setting the minimum purchasing age of cannabis at 19, with Premier Kathleen Wynne suggesting that it would be “impractical” to have a higher age for cannabis consumption than alcohol.\textsuperscript{187}

2.3.3.3 The Problem of “Social Sources” of Intoxicants for Youth Users

Young people use a variety of sources to procure alcohol,\textsuperscript{188} particularly important to them are social sources: those non-traditional retail/commercial means of procurement including parties, over-age friends, and recruited adults.\textsuperscript{189} This is different from the standard illicit market, as the product originated from a legal retail source at some point.\textsuperscript{190} While there are numerous policies that have attempted to minimize youth alcohol consumption and harm – including “dram shop” liability, social host liability, and bans on public drinking\textsuperscript{191} – there is not much evidence to suggest that these methods are effective at reducing the social availability of intoxicants to minors.\textsuperscript{192} The best options for reducing youth consumption is a combination of a minimum age of purchase, a government monopoly, and taxation and price controls to minimize demand, combined with an effective illicit-market crackdown.

2.3.4 Specific Policy: Restrictions on Outlet Densities

Restrictions on outlet densities have two primary effects: they reduce the availability of a product, increase the opportunity cost of procurement and thereby reduce demand, and they prevent the formation of ‘districts’: areas of high consumption that increase the likelihood of the

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{186} CBC News, “Medical journal calls for tighter rules on legal pot to protect the young”, \textit{CBC News} (29 May 2017), online: \texttt{<http://www.cbc.ca/news/health/cannabis-bill-teens-cmaj-1.4134161>}. \\
\item \textsuperscript{187} Rob Ferguson, “Ontario on track to setting 19 as minimum legal age for recreational pot”, \textit{The Toronto Star} (20 July 2017) online: \texttt{<https://www.thestar.com/news/queenspark/2017/07/20/ontario-on-track-to-setting-19-as-minimum-legal-age-for-recreational-pot.html>}. \\
\item \textsuperscript{188} \textit{Supra} note 105 at 143. \\
\item \textsuperscript{189} \textit{Ibid}. \\
\item \textsuperscript{190} \textit{Ibid}. \\
\item \textsuperscript{191} \textit{Ibid}. \\
\item \textsuperscript{192} \textit{Ibid} at 143, 144.
\end{enumerate}
\end{footnotesize}
occurrence of harm, especially violence.\textsuperscript{193} These findings can apply to both on-premise retail outlets such as bars and clubs as well as off-premise retail outlets such as LCBOs.

\subsection*{2.3.4.1 Alcohol}

There is a substantial body of evidence that links increases in outlet density with increased rates of consumption and related harm. In Norway, increases in alcohol outlet density increased occurrence of alcohol-related harms – especially violence – even when per capita consumption was controlled for.\textsuperscript{194} While studies have consistently found increases in the occurrence of alcohol related harm as a result of increases in outlet density, the effect of greater outlet density on rates of alcohol consumption is less straightforward, suggesting that even if greater outlet density does not lead to increased alcohol consumption, it does lead to increased risky and harmful alcohol consumption.\textsuperscript{195}

With respect to youth consumption rates, there is substantial evidence that outlet density is connected to rates of youth heavy episodic drinking,\textsuperscript{196} and that gradual increases in alcohol outlet density are connected to increases in levels of youth alcohol consumption.\textsuperscript{197}

Babor et al consider restrictions on density of outlets to be effective and supported by a breadth of research in numerous jurisdictions.\textsuperscript{198} Anderson, Chisholm & Fuhr found restrictions on outlet density to be “effective”, suggesting that their systematic review has found “consistent evidence for the effect of outlet density on violence, harm to others, and drunk driving.”\textsuperscript{199} Martineau et al found studies demonstrating clear positive association between increases in alcohol outlet

\begin{flushleft}
\textsuperscript{193} \textit{Supra} note 105 at 132.
\textsuperscript{195} \textit{Supra} note 105 at 132.
\textsuperscript{196} \textit{Ibid}.
\textsuperscript{197} \textit{Ibid}.
\textsuperscript{198} \textit{Ibid at} 244.
\textsuperscript{199} \textit{Supra} note 106 at 2235.
\end{flushleft}
density and rates of consumption, but less evidence for the association between alcohol outlet density and rates of harm.200

2.3.4.2 Cannabis

Restrictions on outlet density can be implemented through two main methods: a government retail monopoly or a licensing regime with density restrictions. Given the clear evidence presented above on the positive relationship between outlet density and both rates of consumption and rates of harm, it seems prudent that the model that ends up being adopted by the province contains restrictions on retail outlet density. The Federal Taskforce on the Legalization and Regulation of Cannabis has called for limitations on the density and location of retail outlets.201 The Canadian Public Health Association also recommends that limits on the density of retail outlets be established.202

2.3.5 Conclusion on Regulating Physical Availability

Regulating the physical availability of alcohol is an effective method to minimize the public health harms of substance. In addition to the population-level impacts of a state regulatory monopoly, studies have suggested that it can also lower the consumption rates of youth, a specific goal of a public health-oriented regime. Limiting the days and hours of sale as well as restrictions on density affect the heaviest of drinkers, minimize heavy drinking in youth, and reduce other risks including violence and traffic injury. Minimum purchasing ages are crucial for any intoxicant regulatory regime.

2.4 Advertising and Marketing Restrictions

Advertising and marketing are critical to the modern profit-making enterprise.203 Broader conceptions of advertising and marketing include not only the traditional media of print,

\footnotesize{200 Supra note 107 at 282.  
201 Supra note 7 at 35.  
202 Supra note 5 at 7.  
203 Supra note 105 at 185.}
television, and radio, but also places of sale, price promotions, new media including social media, and sponsorship of cultural and sports events.\textsuperscript{204} While the connection between advertising and consumption in adults is one issue, the impact of advertising and marketing on youth is of a particular concern to any public health regime, and thus the effect of advertising and marketing on youth will be the primary focus of this section.

2.4.1 Alcohol

There is a good deal of research on the impact of marketing and advertising on consumption rates and patterns of youth. The progression of effectiveness of alcohol advertising is well understood by psychologists, and follows a predictable path among youth related to identity development.\textsuperscript{205} First, a youth likes the advertisement, then the youth wishes to emulate the characters featured in the ad, then the youth begins to associate the behaviour of the depicted characters with positive benefits.\textsuperscript{206} There is strong evidence that exposure to alcohol marketing increases the likelihood that youth will begin alcohol use and increases the likelihood of increased consumption if the youth already uses alcohol.\textsuperscript{207} Studies in the United States have compared states with different level of marketing and advertising exposure and have found that youth in high marketing/advertising-exposure states consumed more alcohol than youth in low exposure regions, and that each additional marketing dollar spent per capita increases the number of drinks consumed by youth by 3%.\textsuperscript{208} Further, it has been found that individuals in their mid-20s in high exposure areas increased their rate of alcohol consumption in that period of their lives while that same group in low exposure markets did not.\textsuperscript{209}

\textsuperscript{204} Supra note 105 at 185.
\textsuperscript{205} Ibid at 188.
\textsuperscript{206} Ibid.
\textsuperscript{207} Ibid at 189.
\textsuperscript{209} Ibid.
Babor et al consider legal restrictions on exposure to be an effective and well-researched cross-jurisdiction policy option for reducing consumption and minimizing alcohol-related harms, and they note that there is strong evidence to support a “dose-response” effect (an increase in advertising/marketing exposure increases consumption and related harms) of exposure to advertising on young people’s drinking.\textsuperscript{210} Babor et al also suggest that industry “voluntary self-regulation” is wholly ineffective at reducing exposure of young persons to alcohol marketing and has no impact on reducing youth consumption or related harms.\textsuperscript{211} In a systematic review including 13 studies on the subject, Anderson, Chisholm & Fuhr found that volume of advertising is positively related to early initiation in youth users and to higher rates of consumption in current users.\textsuperscript{212} Anderson, Chisholm & Fuhr also found no evidence that industry self-regulation was effective or that it prevented the varieties of marketing found to influence the drinking patterns of youth.\textsuperscript{213} Martineau et al did not include Advertising/Marketing as one of the policy areas in their meta-analysis.

2.4.2 Cannabis

The above studies suggest that advertising and marketing, in their many forms, have positively correlated relationships with ages of initiation into substance use, intensification of use in youth already using, intensification of use in adults, and difficulty of individuals cutting back or ceasing when they would like to. All of this suggests that a new regime ought to contain serious restrictions on all forms of advertising and marketing in the new cannabis regulatory regime. The Federal Task Force on Regulation and Legalization of Cannabis recommends comprehensive restrictions on the advertising and promotion of cannabis and related merchandise similar to the restrictions in the \textit{Tobacco Act}.\textsuperscript{214} The Centre for Addiction and Mental Health also recommends restrictions on marketing, advertising, and sponsorship similar to those found in the \textit{Tobacco}

\begin{footnotesize}
\begin{enumerate}
\item \textit{Supra} note 105 at 246.
\item \textit{Ibid.}
\item \textit{Supra} note 106 at 2235.
\item \textit{Ibid.}
\item \textit{Supra} note 7 at 20.
\end{enumerate}
\end{footnotesize}
The Canadian Public Health Association has recommended a complete prohibition on advertising, marketing, and sponsorship related to the sale of cannabis-related products. From a public health perspective, *Tobacco Act*-style restrictions applied to alcohol would likely also yield significant public health gains, but there is little political will to pursue this avenue, despite calls to do so from the CPHA and others.

### 2.4.3 Conclusion on Advertising and Marketing Restrictions

Advertising and Marketing increase the population-level and target subgroup consumption of intoxicants, and thus minimizing the advertising and marketing of any harmful substance is prudent. Given the known effects on user recruitment, age of initiation, and the dose-responsiveness of advertising and marketing, *Tobacco Act*-style restrictions on advertising and marketing need to be applied to cannabis products in Ontario.

### 2.5 Education Programmes – In-School and Mass Media Campaigns

In-school education strategies are very popular policies when it comes to mitigating the public health risks and harms of intoxicant consumption, and, in recent years, the number of these programs has increased exponentially. With respect to alcohol, education strategies focus on one or more of the following: instilling knowledge about alcohol and its risks, changing intentions to drink to lower-risk scenarios, changing drinking behaviour – including youth initiation, lowering the frequency or intensity of drinking-related harms, and changing public support for alcohol initiatives. These programs are typically delivered in secondary or post-secondary settings, so the target is predominantly youth. There are also mass media information

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215 *Supra* note 4 at 13.

216 *Supra* note 5 at 6.


218 *Supra* note 105 at 215.

219 *Ibid* at 199.
campaigns, focusing on informing individuals about the risks and complications associated with drinking.\textsuperscript{220} and what is called “counter-advertising”: attempts to portray consumption in a more realistic light, highlighting the risks and harms of consumption, as well as the industry that promotes it, in order to decrease the appeal of a product and demand for it.\textsuperscript{221}

The programs designed to delay initiation and affect consumption patterns and their attendant harms – as opposed to those with the goal of affecting public support for initiatives – will be the focus of this section.

2.5.1 Alcohol

There are many studies attesting to the ineffectiveness of school intervention programs on changing drinking behaviour in either adolescents or college-aged youth. The history of educational interventions is a graveyard of ineffective strategies. After (junior-high and high) school-based interventions based on “alcohol information and risks” became popular in the 1970s and 1980s, studies were undertaken to determine the impact of these programs on drinking behaviour.\textsuperscript{222} Interestingly, while studies show that these programs can increase the knowledge of alcohol and its attendant risks in youth, actual behaviour of youth with respect to substance consumption was unchanged.\textsuperscript{223} A different kind of education program, “affective programs”, which became popular in the 1980s, focused on general decision-making ability, self-esteem, and other kinds of personal development.\textsuperscript{224} These were also ineffective in reducing consumption or risky behaviour.\textsuperscript{225} Most recently, “resistance training”, focusing on providing youth with the skill set to resist pressures to consume, and “normative education”, focusing on correcting youths’ incorrect beliefs about the amount of consumption considered acceptable and the rate of

\textsuperscript{220} Supra note 105 at 200.

\textsuperscript{221} Ibid.

\textsuperscript{222} Ibid at 204.

\textsuperscript{223} Ibid.

\textsuperscript{224} Ibid at 205.

\textsuperscript{225} Ibid.
consumption of their peers, have been the focus of school education programs. Results on these studies are mixed, with certain studies finding a reduction in drinking and related harms, and other authors challenging those positive studies, indicating that more methodologically and scientifically sound studies do not find any impact of these studies on youth behaviour. One study has found that an education strategy with a “harm reduction” goal has had an impact on youth behaviour, imparting more knowledge of alcohol and its risks and having significant impacts on both overall consumption and the occurrence of harm. However, the author of a critical assessment challenges those results and recommends interpreting the results of the study with caution. While there is limited evidence attesting to a miniscule impact of education strategies on youth consumption and its attendant risks, most evidence points to a lack of efficacy of educational programs.

Babor et al conclude that classroom education has an effectiveness ranking of zero (out of a possible 3), and that this is a very well-studied effect supported by a solid breadth of cross-national studies. They note that, while knowledge of alcohol and its risks may increase, there is no long-term effect on consumption or harms. Martineau et al acknowledge that, while two studies on one education intervention at a college showed beneficial results, replication studies of the same intervention did not produce the same beneficial results. Beyond that one instance,

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226 Supra note 105 at 205.
227 Ibid.
228 Ibid at 205-206.
231 Supra note 105 at 246.
232 Ibid.
233 Supra note 107 at 293.
Martineau et al write, “all other interventions reported non-significant effects.” Anderson, Chisholm & Fuhr arrive at generally the same conclusion: that while there are temporary benefits of school-based education, there is no sustained impact on youth drinking behaviour. With respect to cost-effectiveness, Anderson, Chisholm & Fuhr come to the conclusion that the impact of school-based education is so minimal as to have a cost-effectiveness approaching zero.

Babor et al find that mass media campaigns also have an effectiveness ranking of zero, and that there is a solid breadth of international research coming to that conclusion. Anderson, Chisholm & Fuhr find that public information campaigns are ineffective in reducing alcohol-related harm. Anderson, Chisholm & Fuhr further suggest that the evidence on the effects of counter-advertising is inconclusive. Martineau et al conclude that there is some evidence of an overall public health benefit of mass media campaigns, but note that there are shortcomings in the methodology of these studies and that these studies should not be taken to be conclusive.

2.5.2 Cannabis

The limited effectiveness of in-school education programs – in addition to their abysmal cost-effectiveness – suggests that any successful effort on the part of government to promote public health outcomes with respect to cannabis consumption should not have education programs as a central plank of its program. The effectiveness of mass media campaigns is inconclusive, and the cost-effectiveness of such policies is likely to be incredibly low. The Federal Taskforce on the Legalization and Regulation of Cannabis writes that “National campaigns and in-school programs are important components of an overall approach to public education on cannabis”, and

234 Supra note 107 at 293.
235 Supra note 106 at 2235.
236 Ibid at 2241.
237 Supra note 105 at 247.
238 Supra note 106 at 2237.
239 Ibid.
240 Supra note 107 at 282.
it recommends that the federal government “implement as soon as possible an evidence-informed public education campaign, targeted at the general population but with emphasis on youth, parents, and vulnerable populations.”

2.5.3 Conclusion on Education Programmes

Despite great enthusiasm for in-school education programs, there is very little evidence suggesting that they are effective, and a good deal more evidence suggesting that they are not. Combined with their cost-ineffectiveness, it makes little sense for the emphasis of any public health regime to be placed on this method of minimizing public health harms. Whether the province wishes to launch an information campaign on cannabis simply to increase knowledge and awareness of the intoxicant is one thing, but there should be no benefits to public health expected as a result of the program.

3 Conclusion

An overwhelming amount of evidence and analysis points to certain policy tools as being effective in promoting population-level public health goals, and specific policy tools have been shown to be particularly effective at targeting the at-risk subgroups of heavy users and youth. All meta-studies, systematic reviews, and articles consulted considered taxation and price controls to be an effective method of reducing population-wide consumption and maximizing public health outcomes. Taxation and price controls impact heavier users more than lighter ones, and youths as well as adults. Minimum pricing is a specific policy that has been shown to reduce the rate of consumption of the heaviest of users while having a minimum impact on moderate consumers. A graduated taxation scheme based on potency has proven effective in shaping users’ behaviours toward alcohol, and the increased risks posed by higher-potency cannabis products means that a tool that shifts users to lower-potency products is even more essential. A provincial government that takes the goal of public health seriously needs to be prepared to use taxation and price controls to their maximum possible effect, and to understand the particular benefits of minimum pricing and a graduated taxation scheme based on potency.

241 Supra note 7 at 27.
After taxation and price controls, regulating the physical availability of alcohol has proven effective, and the lessons learned from these regimes needs to be applied to any legalized cannabis system. While less than popular, a government monopoly on retail sales has proven to be effective in minimizing consumption and its related harms, especially with respect to youth procurement. A retail monopoly with the explicit goals of promoting public health would be the retail system most conducive to maximizing public health and protecting youth. Limiting hours and days of sale has also proven effective, and has been shown to minimize consumption in the heaviest of users. Minimum purchasing ages ought to be established. The only question would be at what age: 18 as the Federal Government allows, 19 as Ontario indicates it will implement, or 25 as certain public health organizations suggest. Specific restrictions on outlet density have also been shown to reduce the harm related to consumption, and should be part of any retail regime, be it a government retail monopoly or a licensing system.

The effect of advertising and marketing is well understood. Advertising and marketing lower the average age of youth initiation, increase user recruitment, and increase the rate of consumption for current users. All public health institutions and authors agree that a Tobacco Act-equivalent set of restrictions on cannabis advertising and marketing ought to be put into place.

The failures of in-school information and prevention programs are well known, and any government that hopes to maximize public health outcomes cannot place much emphasis on the public health outcomes of education strategies. A mass media information campaign might be useful for informing a population about the nature of cannabis and the steps the government is taking to protect the health of Canadians, but, again, no emphasis ought to be placed on the public health impacts of this campaign.

The real question is whether the province of Ontario, or any other province, will truly aim to maximize public health outcomes through their cannabis regulatory regime. Some of these policies, specifically those involving taxation and pricing controls and a government retail monopoly, will likely not be very popular with either consumers or commercial entities. Even if the regime begins as a public health-oriented regime, can the provinces resist the temptation of far greater revenues in order to continue pursuing public health at great cost to their bottom line?

As this paper illustrates, the public health burden of alcohol is colossal, and yet the provinces
have not decided to design their regulatory regimes to maximize public health outcomes in their citizens. We must demand that they do so for cannabis.
References

*An Act to amend the Opium and Narcotic Drug Act*, SC 1923 c 22.


I Rossow, T Karlsson & K Raitasalo, “Old enough for a beer?: Compliance with minimum legal age for alcohol purchases in monopoly and other off-premise outlets in Finland and Norway” (2008) 103 Addiction 1468.


S Selvanathan, E A Selvanathan, “Empirical regularities in cross-country alcohol consumption” (2005) 81 The Economic Record (suppl 1).


The Opium and Drug Act, SC 1911, c 19.


Wayne Hall, Michael Lynskey, “Why it is probably too soon to assess the public health effects of legalization of recreation cannabis use in the USA” 3:9 Lancet Psychology 900.