

Cannabis and You

A comprehensive guide to the new Canadian reality of legalized recreational cannabis.





Cannabis and You

Mood Disorders Society of Canada (MDSC) is pleased to present this educational resource, Cannabis and You, as part of our popular public awareness educational series.

MDSC strives to provide up to date information on subjects that affect our mental health. As recreational cannabis is now legal in Canada, there are risks and benefits that we all need to be aware of. MDSC does not take any position on cannabis, that is your individual choice to make. Through this book, it is our hope we can assist you by providing you with easy to understand, relevant information on cannabis so that you are better able to make an informed decision.

This important resource could not have been developed without the incredible dedication of Dr. Barbara Everett PhD in the researching and writing of this handbook, along with the MDSC team who have contributed to this project.

As a society, mental illness affects all Canadians. The overarching message that Mood Disorders Society of Canada wants to share is that recovery from mental illness is possible. Caring for each other is the foundation and having a support network is crucially important. Please take care of yourselves, and each other.

Our full public awareness educational series are on the website.

Additional hardcopies of this handbook or any other of our other publications can be ordered by going to our website at www.mdsc.ca and sending us an email request by clicking on "contact us".

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Mood Disorders Society of Canada La Société Pour Les Troubles de L'Humeur du Canada



Introduction

In 2001, Canada legalized medical cannabis, followed 17 years later by recreational cannabis (October 2018). It is safe to say that this change has been a disruptive force in the Canadian economy and in Canadian lives.

Advocates for legalization have cheered this development while addiction specialists worry that widespread availability will cause even more harm than before. Physicians are not sure how to view the many positive claims they hear from their patients. In addition, the police, initially wary, have adapted to the new reality.

Mood Disorders Society of Canada, (MDSC), is a strong national advocate on behalf of Canadians affected by mood disorders. MDSC is also dedicated to education. With its many publications, MDSC provides detailed, credible information so that its membership and visitors to its website can make the best possible decisions for themselves.

One of the important themes throughout this publication is the divergence between the benefits that people attribute to cannabis use, (first person testimonials), and the weak and contradictory findings of formal medical and academic research. Research is cautious and conservative and, while people's lived experience of cannabis use may indeed, be correct; it is going to take time for medical and academic professionals to catch up.

This publication reviews what research has found out so far about the benefits of cannabis use, but also what it has revealed about the risks, and it describes the cannabis industry as a whole.

In a departure from normal practice, (using only academic and health science sources), MDSC has had to turn for information to the commercial websites of cannabis retailers and producers. Before being chosen for citation, each industry resource was assessed and used only if it showed a dedication to public education by providing credible and trustworthy information – free of sales pitches or claims.

In compliance with its non-profit and charitable status, MDSC does not endorse or promote any commercial products.

CHAPTER 1 - The legalization journey

This is a snapshot in time of cannabis use and sale in Canada. Policies will evolve as the industry settles in and becomes part of the fabric of Canadian life.

A word about terminology

While MDSC mainly uses the term "cannabis" throughout this work– as does medical and academic research - there are a number of categories (and names) of cannabis that need review:

Cannabis sativa: This refers to one of two varieties of cannabis plants. Cannabis means the whole plant including the parts that are psychoactive and those that are not. It also includes hemp, the non-active fibers used to make rope, clothes and a variety of other products. Sativa plants are tall, sparse and have thin leaves.

Cannabis indica: These cannabis plants are smaller and bushier. Like cannabis sativa, products from cannabis indica can be psychoactive or non-intoxicating.

Sativa and indica cannabis offer different experiences (sativa is thought to be more of a stimulant while indica is considered calming).

Cannabis: Cannabis is often used as a synonym for marijuana but that is not strictly accurate because marijuana refers only to the intoxicating parts of the cannabis plant. Cannabis is the accepted universal term that is widely used in media reporting, medical and academic research, government policies and other publications.

Tetrahydrocannabinol: Known commonly as THC, this term refers to the chief intoxicant in cannabis sativa and indica plants.

Cannabidiol: CBD as it is abbreviated, is the non-intoxicating part of the cannabis sativa and indica plants.

Cannabinoids: Refers generically to both THC and CBD.

Hashish: Usually just called hash, is the concentrated intoxicating resin from the tops of the female cannabis sativa plant that can be smoked, made into a tea or used in baking.

In addition, there are the slang names that have been in common usage for decades: Weed, pot, grass, dope, bud, hash, ganja, Mary Jane and likely a few more.



Medical marijuana

The prescription and use of medical marijuana must follow the Access to Cannabis for Medical Purposes Regulations (ACMPR, 2016)¹ which replaced the former Marijuana for Medical Purposes Regulation (MMPR). The regulations attached to the ACMPR are highly detailed but the main point is that medical marijuana can only be obtained with a medical prescription and only from a licensed producer. People, (or someone they designate), can also grow their own plants based on a formula related to their prescribed daily use. Producers of medical marijuana are highly regulated.² Even with legalization of recreational cannabis in 2018, medical marijuana is still governed by the ACMPR.

If you have health insurance coverage through your employer, most companies cover medical marijuana. $^{\scriptscriptstyle 3}$

Recreational marijuana

Bill C-45, known as the Cannabis Act, provided for the legalization of recreational cannabis but also prescribed the regulations for its use, growth and possession.

Across Canada, it is legal to carry 30 grams of cannabis. More may be stored at home. You can also have four plants for your own use although growing still remains illegal in Quebec and Manitoba. You can grow your plants indoors or out but, if outside, they must be in a safe location that is out of view. Some provinces allow smoking only in your home while others allow outdoor smoking wherever cigarette smoking is permitted.⁴

Possession of more than the allowed 30 grams could lead to charges of intent to traffic with all the legal consequences that entails.

Edibles became legal for sale in December 2019.⁵ Edibles are even more highly regulated than regular cannabis. Two reasons are given for the extra scrutiny. First, they must be kept out of the wrong hands (children, specifically, but also unsuspecting adults and pets). Second, people feel the effects much more slowly because edibles affect the body differently. The danger here is overdose, as people initially feel nothing and keep on eating until they have had way too much.

Cannabis companies have to submit their various edible products to Health Canada for review and approval. Edibles must be individually wrapped and each serving may not contain more than 10 milligrams of THC per product. Cannabis is also allowed in coffee but the amount of caffeine must be limited to compensate. Cannabis is allowed in beer too but it may not contain any alcohol.

Pesticides

In the early days, after the legalization of medical marijuana, some users began to report troubling symptoms – which they eventually attributed to pesticide use in the growing process. Health Canada initially resisted regulation, holding the position that growers were policing themselves. However, a number of scandals and lawsuits claiming harm from pesticides caused government officials to rethink their views.⁶

Researchers have shown that pesticide residue on cannabis can enter your blood stream but it is not known how much residue is toxic for humans. While there is no doubt that cannabis smokers have been exposed to residual pesticides for decades, now that the industry is legal and regulated, close oversight of pesticide use is mandated.⁷

1 Government of Canada. (August 2016). Understanding the new access to cannabis for medical purposes regulations.

2 Government of Canada. Medical use of cannabis.

3 Examples are Sun Life, Great West Life and Medavie Blue Cross

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⁴ Most people have no desire to wade through the extensive cannabis legalization legislation along with its regulations. However, many vendors have sections on their websites that outline the various possession laws and restrictions.

⁵ Thibedeau, H. (June 14, 2019). Cannabis edibles available for sale in mid-December.

⁶ Robertson, G. (Dec 31, 2017). Globe and Mail. How Health Canada changed its mind on pesticide testing in the marijuana industry.

⁷ Barcott, B. (2016). Pesticides 101: Questions and answers for cannabis patients and users. Leafly.



Indeed, during inspection and testing, Health Canada has found that pesticides were present in marijuana products and growers have been fined.

Recently, in 2018 – 2019, 133 tests were conducted and it was found that 5% of the cannabis samples were contaminated⁸ – which is an improvement over past years but still worrying to consumers.

The Pest Management Regulatory Agency has advised Health Canada that there are 20 (at time of publication) registered pesticides under the Pest Control Products Act approved for use in commercially produced cannabis grown indoors.

Non-compliance with approved pesticide use can result in:

- Seizure and destruction of products
- · Recall of products already sold
- Suspension or revocation of license
- A penalty up to \$1 million⁹

Growers also monitor their crops for the presence of mold, bacteria and metals.¹⁰

While it is true that problems have been found, at least now, there is oversight and a mechanism for correction.

Pardons

As part of the legislative process, the federal government has provided for pardons for people who had, in the past, acquired criminal convictions for simple possession – an activity that is now legal – so long as it is 30 grams or less.¹¹

Bill C-9, an adjunct to the Cannabis Act Bill 45, provides for no-cost, no-wait expedited pardons. Pardons are formally called "record suspensions" by the Parole Board of Canada, which is responsible for issuing them.

A pardon does not mean that your criminal record will be expunged from the Canadi-

an Police Information Centre (CPIC). Your conviction and pardon will remain in CPIC's data storage – just no longer accessible. What is being issued is a federal pardon not a provincial or municipal one, although these jurisdictions tend to restrict access to their databases once they receive a communication that you have been issued a pardon at the federal level.

You can apply for a pardon even if you are not a Canadian citizen or if you are not a Canadian resident.

You are also eligible even if you have unpaid fines or victim fees.

A pardon is valuable help for employment applications, getting bonded and accessing volunteering opportunities where vulnerable populations are involved.

However, a pardon does not guarantee you will get a visa or be able to cross international borders.

You can apply for a pardon yourself. You do not need a lawyer to represent you or a third party company that specializes in helping people get pardons.

Note that applications require a considerable amount of documentation that may take time to gather – nothing can be forgotten or left out to ensure timely consideration. Incomplete applications will only lengthen the process as you communicate back and forth with the Parole Board of Canada.

Pardons can be revoked if there is:

- A new offense
- Evidence that false statements were made on the application
- Or an applicant was found, retrospectively to have been ineligible at the time of application

If your pardon is revoked, your record of conviction is restored in the CPIC database.

Application forms are available on the Government of Canada Parole Board website.

A downloadable Cannabis Record Suspension Guide and a Protect Yourself from Fraud Guide are also available.

Traveling within Canada

Possession laws apply all across Canada so you are safe to travel by car, bus or train with your cannabis in whatever form insofar as you heed the maximum possession laws (30 grams).

Airlines allow you to pack 30 grams in your checked luggage or your carry-on. Oils must conform to already existing rules for liquids – nothing over 100 milligrams is allowed. If your prescription for medical marijuana means that you need to carry more, you must have corroborating documentation with you.¹²

⁸ Staniforth, J. (Dec 2019). Only 5% of Canadian cannabis tests positive for pesticides. Leafly.
9 For further information, see: Government of Canada, Pest control products for use on cannabis.
10 Marijuana Business Daily (May 2017). Canada: Producers must test medical cannabis for pesticides.
11 Canada.ca. Pardons for simple possession of cannabis convictions.



Sniffer dogs: Some of the RCMP's sniffer dogs, trained to detect cannabis, had to be retired because they were no longer needed. However, they kept many others because they were still useful in the detection of numerous illegal substances (including marijuana in quantities) when stored or carried illegally.¹³

The Ontario Provincial Police stopped training their sniffer dogs to detect cannabis in 2016 in light of pending legalization of recreational marijuana.¹⁴

Crossing international borders

People are advised not to travel outside Canada with cannabis in their possession. Canada is one of only two countries in the world that has legalized recreational cannabis (the other being Uruguay). Many countries have legal medical marijuana but it is a risk to presume that you will not run into trouble crossing international borders.

Of course, the main border Canadians cross is the US border. Cannabis is federally illegal in the US and US Customs and Border Patrol are unforgiving. You can be refused entry for admitting to agents that you use cannabis even though it is legal to do so in Canada. Canadian legal sources say that you can potentially be banned from the US for life. Investors in the Canadian cannabis industry – even those who don't use cannabis themselves, can face the same fate.

The US Customs and Border Patrol does not recognize the pardons, which are now offered by the Canadian government.¹⁵ You retain your criminal conviction in their eyes.

However, in October 2018, the US Customs and Border Patrol issued a statement that Canadians working in the cannabis industry will not be denied entry insofar as the reason for their trip has nothing to do with their profession.¹⁶

13 CBC (July 24, 2018). Legal pot puts 14 RCMP sniffer dogs out of work.

- 14 Lawton, A. (Nov 2017). What happens to sniffer dogs when marijuana is legalized in Canada?
- 15 Canna Law Blog. Canada Cannabis legislation today: US Customs and Border update.
- 16 Cain, P. (October 2018). Global News. In a major shift, the US says it won't ban Canadian pot workers

CHAPTER 2 - Buying

Cannabis and cannabis products are now available all across Canada but variations in sales models and price exist.

Provincial/Territorial variations

While the legalization of recreational marijuana is governed by federal law, each province and territory was allowed to customize how legalization was to work for them - from setting the legal age to how and where it was to be sold.

See Appendix A for the details for your province or territory.



Products a. THC

THC is available in many strains that come with wonderfully creative names and accompanying claims as to their effects – aside from getting high.

There are two general categories of cannabis that shoppers will see offered for sale:

- 1. Cannabis sativa: It is said to be experienced as a stimulant.
- 2. Cannabis indica: Claims for indica are that it has anti-anxiety effects, helps with sleep, and can also provide pain relief.

Forms: Flowers to make your own joints, pre-rolled joints, oils, capsules, pills, sprays, drops, creams, lotions, salves and edibles (cookies, baked goods and candies). Vape kits are also for sale.

b. CBD

CBD is offered in forms to be taken orally (drops, pills etc.) or used for vaping. It is also available in creams, drops, salves, and lotions.

Also offered for sale are accessories that include:

- Grinders
- Rolling papers
- Filters for joints
- · Pipes and bongs
- Vaporizers
- Safety storage kits
- Cleaning products to keep your smoking supplies fresh

Sales venues

a. Online

Online shopping is available across Canada from official provincial or territorial sites although some provinces allow customers to purchase directly from privately owned cannabis retailers' sites.

All sites ask you to verify your age before entering. From there, you purchase proceeds much like any other online purchase. You provide your shipping address and pay with your debit or credit card. Some sites ask for a secure direct transfer payment from your bank account.

Advice on some private provider sites warn you not to use your credit card when buying cannabis because Canadian banks have an agreement with the US government to share Canadians' credit card data upon request and without a warrant – as anti-terrorism and crime measures. Perhaps the risk is low that your credit card data will come to the attention of the US Customs and Border Patrol or Homeland Security but US unrestricted legal access to your data is worth knowing about.¹⁷

b. Brick and mortar stores

Many provinces have stores where customers can consult with a "budtender" and get advice before purchasing. Stores can be run by the private sector or they may be government owned and operated. Some provinces have chosen to sell cannabis products through their liquor stores.

c. Price variations

There are price variations across the country, which are not inconsiderable. For example, cannabis in Quebec sells for \$8.43/gram while the Yukon charges \$14.11/gram. The average price across Canada is \$11.15/gram with some provinces charging more and some less.¹⁸

Canada Post

Online stores (and individuals) can mail cannabis products within Canada through Canada Post. The usual possession amount applies – 30 grams maximum. When you enter an online commercial or government cannabis site, you will be asked to confirm your age but they don't just take your word for it. The real check comes at your door when your order is delivered by Canada Post. The products must be sealed in an odor, tamper and leak-proof inner and outer package. Canada Post sells approved packaging in its stores. The contents or the sender are not identified on the package. It will be either delivered or held at your local Post Office for pick-up. Proof of age must be provided if the recipient looks to be under 25. A signature is required if sent by online providers. If sent by an individual, a signature is required only if the sender has requested it.¹⁹

19 Canada Post. Shipping information available at Canada Post website cannabis page.



The black market

The black market remains alive and well, although somewhat reduced, despite legalization.²⁰ "The sale of cannabis is the easiest money that organized crime makes." said the Federal Border Security and Organized Crime Reduction Minister. It is estimated that the size of the black market is from \$6 to \$8 billion. The average price of illegally available cannabis is \$8.24/gram while legal cannabis is taxed (a \$1.00 excise tax/gram) and subject to HST – plus shipping charges when ordered from online sources. While penalties for trafficking have been increased (up to 14 years in prison), black market sales remain brisk.²¹

¹⁷ Cannabis.net. Use your credit card to buy weed in Canada. Get banned for life from the USA.

¹⁸ Marin, B. (Oct 2019). Price averages for Canadian cannabis. Leafly.

²⁰ Statistics Canada reports that the black market has shrunk by 21%.

²¹ Krishnan, M. (Oct 2018). Here's what happened to the black market now that weed is legal. Vice.

CHAPTER 3

Research

The legalization of recreational cannabis has stimulated research funding, although it is not flowing as fast as researchers would like. Yet, it is safe to say that progress is being made.

Academic activity over the years

In the past, cannabis research clustered around subjects like addiction and criminal activity. The reason for this focus was that funding was simply not commonly available for investigations into possible benefits because cannabis was illegal. It was hard to, first of all, get funders interested in studying the potential positive effects of usage. Second, researchers had little access to recreational cannabis for study and could, potentially, expose themselves or their subjects to legal repercussions in the execution of their research.

As cannabis remains federally illegal in the US, there has been little research on possible benefits for the country as a whole. States where recreational cannabis has been legalized have instituted research activity – an example is the Institute of Cannabis Research at Colorado State University.

What research has been done to date has been centered on pharmaceutical drugs that contained cannabinoid compounds – noting that these drugs are not equivalent to natural cannabis.

Results have been generally disappointing, offering non-existent, mixed or weak conclusions. There have been some positive results shown in the treatment of pain and some cannabinoid based drugs have been approved for the treatment of two very rare forms of epilepsy.

Academic and medical research has a long lead time with many steps along the way: Designing a study, finding approved sources of funding, applying for grants, waiting to be approved, gathering and analyzing the data, writing a paper on results and submitting it for publication. This process can easily take up to five years – in many cases, more.

Canadian researchers say that they are hampered in moving forward in their research by strict regulations (still in place) when they could be taking advantage of Canada's unique leadership position in the world (making recreational cannabis legal across the country). For example, they must still apply for a permit for study under the Cannabis Act and the process is a much more stringent than for research involving alcohol.²²

Some researchers have taken the position that funding must be a shared responsibility between the cannabis industry and government, presumably with corporations

22 Geary, A (Oct 19, 2019). CBC News. Regulations, funding keeps Canada from becoming world leader in cannabis research, scientists say.

avoiding charges of conflict of interest by providing only unrestricted research and educational grants.

In a good beginning, the Canadian Institutes of Health Research awarded 66 research grants in 2018 – 19 for cannabis related projects.

Physicians' perspectives

Although medical marijuana has been legal in Canada since 2001, physicians remain skeptical. There is a reason for this. Competent care of all their patients must be informed by evidence-based medicine and, as discussed above, academic research has been centered on the harms of cannabis use – not its benefits. They do not have a body of research to refer to when asked to prescribe medical marijuana.

What little research that has been available has not addressed practical issues such as safety. There are also no assurances that the cannabis product contains what the label say it does (there has been some research that shows that CBD levels can be much lower, or much higher than what is on the label). Also, some CBD products can have traces of THC in them and they can produce low level intoxicating effects. Finally, but important, it is not known how cannabis will interact with other drugs patients are taking.

The proceedings from a 2019 Mayo Clinic conference reviewed medical concerns and offered the conclusion that physicians must listen to their patients when they want to try cannabis products but should remain "curious and skeptical."²³

²³ Harrison et al (Sept 2019). Clinicians' guide to cannabidiol and hemp oils. Mayo Clinic Proceedings. Vol 94 (9), p. 1840 – 1851.



CHAPTER 4

Benefits

Cannabis has been with us for many decades. People have risked a lot to gain access to a substance that they clearly value. Many became vocal advocates for legalization and were subjected to arrest and imprisonment. First person endorsements of the health benefits of marijuana (aside from getting high) bubbled to the surface here and there but because using and selling were crimes, their voices remained largely underground.

The legalization of medical cannabis heralded a whole new reality. Cannabis is no longer just for the mellow stoner experience. It is supposed to ease many human health afflictions. However, what evidence do we have that it does?

First person testimonials

The voices of people who absolutely believe in cannabis's healing properties have not been collected - at least formally - but they are there - all over the Internet and YouTube.

As is typical of the Internet, first person testimonials range from the credible: "Cannabis eased my arthritis pain," or "helped me manage my anxiety," or "helped with my nausea" to the incredible: "Cannabis cured my cancer" or "Cannabis made my ALS (amyotrophic lateral sclerosis) symptoms disappear."

Over the years, there clearly have been enough positive experiences, along with friend-to-friend or family-to family endorsements, to convince the Canadian government that there are, indeed, benefits to cannabis use.



Benefits for people with mental health issues

There has been optimism in the scientific community that cannabis will be able to help people who are struggling with mental health issues. However, research findings have been disappointing in relation to a number of disorders with some hope for others (PTSD, for example). Note, however, that first person testimonials almost unanimously identify cannabis as helpful.

Two confounding factors may, at least in part, explain the tepid results in the research:

- 1. Human subjects have behavioral and environmental complexities that re search has trouble accounting for - muddying the findings.
- 2. People with mental illness, particularly those that are undiagnosed, can use alcohol, cannabis and other drugs to self-medicate. They know they are suffering and find that alcohol and/or drugs can ease their pain, if only for a while. Of course, using cannabis can and often does lead to other problems, addiction being one of them - on top of mental health problems. It is not uncommon for people, who courageously face their addiction and get clean and sober, to find out they now must grapple with their mental illness.

a. Depression

Researchers find mixed results – cannabis use can lead to more depressive symptoms and conversely, depression can lead to increased cannabis use. A fairly clear finding, however, is that cannabis use contributed to poorer functioning among psychiatric outpatients with depression.²⁴

Pain is often experienced in combination with depression and here, there are some positive results. Cannabis can help people deal more effectively with pain. Research makes the distinction, however, between acute and chronic pain with cannabis being helpful only with chronic pain.²⁵

b. Anxiety

Anxiety can be experienced on its own (generalized anxiety disorder or GAD) or in combination with depression. Research here has shown that there can be some initial reduction in anxiety with cannabis use but relief reduces over time.²⁶

A finding that may be of help to readers, cannabis taken before public speaking showed that people had less fear and anxiety during their speech.²⁷

c. Bipolar disorder

Again, results are mixed. However, one worrying finding (in a meta-analysis of cannabis and bipolar research involving 2,391 subjects) found that cannabis use is associated with triggering manic episodes.²⁸

d. Post-traumatic stress disorder (PTSD)

People with PTSD experience flashbacks, which are unbidden, intrusive, and disturbing memories of traumatic events, including sights, sounds and smells. People also experience hyperarousal meaning that they startle easily, have trouble sleeping, experience nightmares and can have angry outbursts that can include aggression. They also avoid experiences and places that remind them of the traumatic event and can isolate as a result. Their suffering and loneliness can lead to depression, suicidal thoughts and possible attempts.

First person testimonials laud cannabis use as helpful in reducing PTSD symptoms. Medical and academic research findings are more cautious but, in the main, they agree with users' perspectives.

In a 2009 study, the Canadian Forces Health Services Operational Support Centre studied 47 patients who were prescribed Nabilone (a synthetic cannabinoid).

24 Grohol, J. (July 2018). Medical marijuana for depression, bipolar disorder, anxiety and mental illness: Can it help?

25 Russo, E. (Sept 2019). Cannabis and pain. Pain Medicine. Vol 20 (11), p. 2083 - 2085.

26 Cuttler, C. Spraden, R. & McLaughlin, R. (2018). A naturalistic examination of perceived effects of cannabis on negative affect. Journal of Affective Disorders.

27 National Institutes of Health – National Centre for Complementary Medicine and Integrative Health (undated). Cannabis (Marijuana) and Cannabinoids: What You Need To Know.

28 Gibbs, M. et al (2015). Cannabis use and mania symptoms: A systematic review and meta-analysis. Journal of Affective Disorders. Vol (171(15). P. 39 – 47.

Researchers found that 72% of study participants reported reduced nightmares, better sleep and fewer daytime flashbacks.²⁹

Based on a 2018 observational study of people diagnosed with PTSD, researchers at the British Columbia Centre for Substance Use found that 60 - 65% of subjects were less likely to have major depressive episodes or thoughts of suicide.³⁰

There are warnings, however. While cannabis use can help PTSD, it may lead also to overuse and possible addiction.³¹

Veteran Affairs Canada (VAC): Since 2014, the VAC has allowed coverage for medical marijuana for vets in limited circumstances. Initially the number of users was low. Conditions for which veterans qualified for a prescription were post-traumatic stress disorder, musculoskeletal diseases like disc problems, osteoarthritis and mental health problems like major depressive disorder or anxiety. The Canadian Armed Forces and the RCMP were also allowed access to medically prescribed cannabis.

The allowable dosage was 10 grams per day.

Overtime, costs rose from \$416,000 in 2013 to \$20,381,165 in 2015 - 2016.

In 2016, the VAC commissioned a review of their program and a medical panel recommended that the allowed dosage be limited to 3 grams/day of cannabis - either dried, fresh or oils. 32

For a summary of research on other health problems, see Appendix 2

29 Fraser, G, (2009). The use of synthetic cannabinoid in the management of treatment resistant nightmares in PTSD. CNS Neuroscience Therapy.

32 Veteran Affairs Canada special report: Cannabis for medical purposes.

³⁰ Leeder, J. (May 31, 2018). Medical cannabis use can help mitigate symptoms of PTSD, study says. Globe and Mail.

³¹ Yarnell, S. (2015. The use of marijuana for post-traumatic stress disorder: A review of the current literature. Primary Care Companion for CND Disorders.



A new emphasis on cannabis research

The following are a number of recently funded research projects:

- 1. The Ontario Long Term Care Association has launched a pilot study in partnership with the cannabis company Canopy Growth which is providing an unrestricted educational grant. The project is looking at whether or not CBD provides benefits when administered to residents of nursing homes. The study is recruiting residents and is expected to report findings by the end of 2020.³³
- 2. McMaster University is exploring potential antibiotic uses for a chemical compound found in cannabis. So far, the compound has shown itself to be effective in mice as an antibacterial. It also showed promising results in combating methicillen-resistent staphylococcus aureus much better known as MRSA a dreaded infection that can threaten the lives of vulnerable inpatients. The researchers' study has been published in the American Chemical Society Infectious Disease Journal with the caveat that the findings represent very early days in the investigative process.³⁴
- 3. Elsewhere in Canada, **pharmaceutical companies** are sponsoring clinical trials on CBD looking for evidence of effectiveness.
- 4. The Mental Health Commission of Canada has received a \$10 million grant through the federal budget, for community-based research over a five-year period. It convened a conference of stakeholders and they identified the following priorities for investigation:
 - the impact of cannabis use on mental health outcomes
 - the impact of mental health problems and illnesses on cannabis use

34 EurelAlert. News release (Feb 26, 2020). McMaster researchers uncover antibiotic potential of cannabis.

- the potential therapeutic benefits of cannabis use for mental health out comes
- effective treatment options for cannabis use disorder
- the links between THC and CBD potency, frequency of use, and age of initiation on mental health outcomes
- the need to emphasize the lived experiences of diverse and marginalized populations and support research led by those populations.³⁵

5. In June 2019, the Federal Sub-committee on National Security and Defense released a report calling for more research on the efficacy of cannabis as prescribed to Canadian Armed Forces members and veterans.

This project currently has three studies underway:

- A joint investigation by the Canadian Armed Forces (CAF) and Veteran Affairs Canada (VAC) on the effectiveness of cannabis use among veterans and CAF members
- A University of British Columbia study of cannabis specifically to treat post-traumatic stress disorder (PTSD) in cooperation with the cannabis producer Tilray an example of a government and industry partnership
- A study the focus is not specified by the Centre for Addiction and Mental Health and the University of Toronto ³⁶

The benefits to the Canadian economy

So far, discussion has focused on the health benefits of cannabis, but a huge component of the legalization of cannabis in Canada is the economic benefit.

The approval of medical marijuana in 2001 saw the advent of a new industry. Previously the economics of cannabis cultivation and sale could only be guessed at but not accurately measured because activity was illegal and shadowy.

The medical marijuana market was, and is, nowhere near the size of the recreational market, which launched in October 2018.

Statistics Canada (Stats Can) has added the cannabis industry to its calculations of gross domestic product (GDP).³⁷ Figures from Stats Can report cannabis has added \$8.26 billion to the Canadian economy. It also estimates that the industry has grown 185% since legalization.³⁸

A 2016 report from Deloitte estimates the entire market at \$22.6 billion (including growers, retail activity, paraphernalia, testing labs, ancillary supports and many more activities).³⁹

- 36 New research for Canadian veterans, Cannabis and PTSD. As published by Strainprint.
- 37 Statistics Canada will add marijuana impact to GDP data.
- 38 BNN Bloomberg. Cannabis industry adds 8.26 B to Canada's GDP.
- 39 Deloitte (2016). Recreational marijuana: Insights and opportunities

³³ Barr, J. CBC News (Feb 17th, 2020). Seniors study aims to find out if medical cannabis can ease common ailments of aging.

³⁵ Mental Health Commission of Canada. Shaping future investments in community-based research on cannabis and mental health.

Subsequent experience has shown that the Deloitte estimates might have been on the high side. $^{\scriptscriptstyle 40}$

This new industry has also had ripple effects throughout much of the Canadian economy.

Jobs, jobs, jobs

One estimate of the size of the Canadian cannabis job market is 150,000 and many cannabis companies are struggling to fill vacancies.⁴¹

Available jobs include:

- Marketing and sales
- Growing, cultivation and production
- Quality assurance
- Budtenders (retail workers)

There are also jobs in ancillary industries like construction, for example.

Candidates who have experience in highly regulated markets like alcohol and tobacco are also welcomed.

Tax revenue

It is estimated that, in the five months after legalization, recreational cannabis brought in \$132 million in tax revenues for the provinces and \$55 million for the federal government.⁴²

Offsetting these tax gains, in Ontario at least, the province, despite selling the most cannabis in the country, lost \$42 million in 2019.⁴³

New post-secondary educational programs

Twelve new programs have been launched in Canadian community colleges and universities. They are focused on equipping students for work in the cannabis industry.

Investment

Federal legalization means that the cannabis industry is safe for investors to consider adding to their portfolios. Many producers now trade on various Canadian stock exchanges. The standard risks for any investment apply – there will be fluctuations and failures and there have been.

40 Subramanian, S. (Dec 2019). Ontario sold the most cannabis in first year of legalization, despite low store count. Financial Post.

41 Rodriguez, J. (2018). Pot jobs are "legion" but Canadian companies are struggling to find workers. CTV Online News.

- 42 Cain, P. (June 2019). Cannabis taxes brought in \$186 million in 5 months. Global News.
- 43 Kuepper, J. (2019). How to invest in the Canadian legal cannabis industry.

44 Hall, J. (July 2019). Cannabis courses and programs wafting across Canadian universities and colleges. Toronto Star.



CHAPTER 5

Risks

The risks associated with cannabis use have been well documented.

Negative effects on developing brains

Brains continue to develop until age 25. Early and regular use in youth affects cognition, memory, attention and the ability to process thoughts.⁴⁵ Cannabis use also doubles the risk of psychosis among young people, especially if they are over-using.

The Schizophrenia Society of Ontario warns that the risk factors in young people for subsequently developing schizophrenia are:

- A history of schizophrenia in the family
- Starting to use cannabis at a young age
- Using frequently
- And using potent versions of cannabis⁴⁶

In the lead up to legalization, the Canadian Psychiatric Association (CPA) advocated for a country-wide age restriction of 21. It also asked for regulation of the potency of the cannabis products sold. Quebec accepted the age restriction of 21. Otherwise, the CPA's recommendations were received but not implemented.

If you've been diagnosed with schizophrenia

Cannabis use in people who have been diagnosed with schizophrenia is associated with a higher risk of relapse, hospitalization and delayed or weaker recovery.⁴⁷

There is no causal link between cannabis use and schizophrenia but cannabis is clearly considered a risk factor.

There is some evidence that CBD might help in lowering the side effects of medication for schizophrenia but this hypothesis was tested only in a supervised clinical setting.⁴⁸

45 The Canadian Psychiatric Association (Oct 2018). Position paper. Psychiatrists remind Canadians to consider mental health implications of recreational cannabis use on youth.

- 46 Schizophrenia Society of Ontario (Oct 2018). SSO's take on the legalization of cannabis.
- 47 Schizophrenia Society of Ontario (Jan 2019). SSO's take on the legalization of cannabis.
- 48 WebMd (undated). Schizophrenia and marijuana: Trigger or treatment.

Addiction

People can become addicted to cannabis both psychologically and physically. Psychological addiction is when people feel that they cannot function properly in their lives or relationships without cannabis. Physical addiction occurs when use has become so prominent in a person's life that their body has chemically accommodated to the point that they physically crave cannabis.

Heavy use can also build up a tolerance meaning that people need more and more to achieve the same effect.

- 1 in 3 users will develop a problem
- Of those, 1 in 11 will develop an addiction
- 1 in 6 will develop an addiction if use began as a teenager
- Of those who smoke daily, 25% 50% will develop an addiction

In assessing whether or not people are addicted, the following behaviors are considered relevant (if they have occurred over a 12-month period):

- Failure to fulfill duties at work, at home or at school
- Giving up important social, recreational or occupational events in order to use
- Consuming often and in ever-increasing amounts
- Inability to cut down

The risk of addiction to cannabis is lower than for alcohol, tobacco or opioids.

If people get help for their cannabis addiction and decide to quit, they may experience withdrawal symptoms, which can include:⁴⁹

- Irritability
- Difficulty sleeping
- Decreased appetite
- Restlessness
- Cravings for marijuana
- Nausea
- Abdominal pain

Overdose

Due to scientific cultivation practices and controlled growing environments, today's cannabis is much stronger than it was in the mellow days of peace and love.

The symptoms of an overdose are nausea, paranoia, or losing consciousness. A cannabis overdose is not fatal unlike for alcohol, heroin or opioids.⁵⁰



Impaired driving

Drug and/or alcohol impairment while driving is the leading cause of death or injury in Canada.

Impairment for cannabis is defined as having between 2-5 nanograms (one-billionth of a gram) of THC per milliliter of blood when tested.⁵¹

The Canadian Federal Government allotted \$161 million for an investment in law enforcement, training and public education to accompany the legalization of cannabis. Sixty-one million of that amount is being used for training front line police officers in cannabis impairment detection and for purchasing the necessary devices to perform roadside tests.⁵²

Officers who have been trained are called Drug Recognition Experts and as of February 2020, there were 1,213 of them across Canada. In addition, as of April 2018, 14,400 officers had been trained to administer the Standard Field Sobriety Test, which involves a cheek swab.

Accidental ingestion

a. Children

"Kids get into everything," an emergency doctor is quoted as saying. A 2013 – 2017 study of Ontario, Manitoba, and Nunavut poison centres, showed that annual calls for children under age 18 reporting toxic cannabis exposure rose by 50%.⁵³

In a US study where researchers reviewed 44 examples of credible research, it was found that children admitted to the emergency room for accidental cannabis ingestion stayed an average of 27 hours. However, 18% had to be admitted to intensive care and of those, six percent were intubated.

⁵¹ Department of Justice. Impaired driving laws.

⁵² Government of Canada. Drug impaired driving.

⁵³ Ubelacker, S. (Oct 2018). Experts warn of dangers to children exposed to cannabis through second hand smoke or ingestion of edibles. The Globe and Mail.

⁴⁹ Medical News Today. What to know about marijuana withdrawal.

⁵⁰ Government of Canada. Addiction to cannabis.

Symptoms of accidental ingestion are lethargy and ataxia (loss of muscle control) and, in rare cases, seizures may occur.⁵⁴

Secondary smoke from cannabis, in measurable quantities, can also be toxic to children.

b. Accidental overdoses in adults

Likely because of the unexpected potency of present-day cannabis and now, the legalization of edibles, people have been showing up in emergency departments with accidental overdoses.

The Canadian Institutes for Health Information reports that emergency room visits in Ontario due to cannabis overdoses have tripled (from 449 in 2013 to 1,500 in 2017). Alberta reports double the admissions in the same period (from 431 to 832). Although data is sparse from other regions of the country, what is available show a quadrupling in the number of admissions.⁵⁵

In a hopefully uncommon incident in the summer of 2019, hash brownies accidentally made their way onto the dessert table at a seniors' luncheon in a small town outside of Parry Sound in Ontario. Ingestion resulted in 10 attendees being taken to hospital.⁵⁶

Unlabeled homemade edibles and now, legal edibles, present dangers for overdoses because their effects are felt much more slowly. People can think that they are not getting any effect and go on to eat way too much.

c. Pets

Veterinarians are reporting an increase in pets coming to their clinics showing signs of having ingested cannabis. Symptoms include poor muscle control, incontinence, diarrhea, hypotension (low blood pressure), lethargy, dilated pupils and vomiting.⁵⁷ In rare cases, the pet can die. It is not known how many milligrams per kilo constitutes a toxic dose for dogs.

Cats are less likely to ingest cannabis accidentally because they are naturally finicky eaters and are not inclined be drawn to unfamiliar foods.

Pet owners have found, through word of mouth and online research, that small doses of THC for their pets can ease nausea. However, veterinarians cannot prescribe cannabis, although they are asking Health Canada to allow them to.⁵⁸

54 Richards, J.R. Smith, N.E. & Molin, A. K. (2017). Unintentional cannabis ingestion in children: A systematic review. Journal of Pediatrics, Vol 190, p. 142 – 152.

55 Katie Nicholson (Aug. 28, 2018). CBC online health report. Spike in cannabis overdoses blamed on potent edibles and poor public education.

56 McQuigge, M. (March 21, 2019). Police investigating after pot-laced brownies served at lunch for seniors.

57 Shah, Maryam (Nov 2, 2016). More pets accidentally ingesting marijuana. The Toronto Sun.

58 Almedia, J. (Oct. 2nd, 2018) Cannabis in Canada: What does legislation mean for veterinarians and pets. Veterinary Practice News.



d. Safe storage

The Canadian Centre on Substance Use and Addiction offers advice on safe storage that will help avoid accidents:

- There should be prominent and visible labels on all your cannabis products. Those you buy will come with labels but you should also label your homemade edibles.
- 2. They should be stored in child-safe re-sealable containers. For maximum safety, consider getting a lock box.
- 3. They should also be stored out of reach of children and pets.⁵⁹

Reproductive health

Research can be contradictory but some studies report reduced sperm counts in men who regularly use marijuana.

High use of marijuana in women can decrease the production of estrogen needed for ovulation. For women who use multiple drugs including cannabis, chances of ovulation can drop by $52\%.^{60}$

Researchers report that more study is required because recreational cannabis has not been legal for very long, or, as in the US, is not federally legal at all.⁶¹

Given what is available, however, couples wishing to conceive can only heighten their chances by abstaining.

59 Canadian Centre of Substance Use and Addiction. How to safely store your cannabis.
60 Gundersen, T.D. et al (Sept. 2015). Association between use of marijuana and male reproductive hormones and semen quality: A study among 1215 health young men. American Journal of Epidemiology. Vol 182(6), p. 473 – 481.

61 Healthline Parenthood (undated). Five things to know about marijuana use and your fertility.

In addition, a recent study on child development, researcher tested 3,435 pre-natal women to track cannabis use during pregnancy. Their infants were assessed 12 months after birth. For those who tested positive for cannabis use during pregnancy, 9.1% of their infants showed developmental problems in comparison to 3.6% of infants born to mothers who hadn't used cannabis during pregnancy.⁶²

The research on CBD is less clear. It's not really known if CBD interferes with fertility.

However, the US Food and Drug Agency strongly recommends that both CBD and THC be avoided during pregnancy and lactation.⁶³

Conclusions

Legalization of recreational cannabis in Canada constitutes a sea of change. It is a market that is too new to know the full effects for cannabis companies and their customers. Research on cannabis' potential benefits is in its infancy. The question lingers: What harms will it cause? Many years will pass before a body of reliable findings are available.

One thing is certain, cannabis users applaud this new Canadian reality.

citizens. All other provinces and territorie

Nunavut has an agreement with the private grower - tweed.com, for their citizens. All other provinces and territories require people to buy from online government stores.

Special note: Saskatchewan and Manitoba allow people to buy cannabis

online from private retailers as well as from government online sources.

Appendix 1 Provincial/Territorial cannabis laws

Alberta

Minimum age: 18

Retail sales: Online sales at *albertacannabis.org*. Cannabis is also sold in standalone privately run stores. There is no cap on the number of stores there can be.

Home grow: Up to four plants per household.

British Columbia

Minimum age: 19

Retail sales: Online sales at *bccannabisstores.com*. Cannabis is sold in both government-run and privately owned stores.

Home grow: Up to four plants per household so long as their house is not used as a daycare.



Manitoba

Minimum age: 19

Retail sales: Online sales at *Igcamb.ca/cannabis/store-list*. Cannabis is sold in stores run by four licensed private companies.

Home grow: Not permitted.



New Brunswick

Minimum age: 19

Retail sales: Online sales at *www.cannabis-nb.com*. Stores are operated by New Brunswick Liquor under a subsidiary named CannabisNB.

Home grow: People can grow up to four plants per person.

62 Karbanda, E. (et al) (2020). Birth and early developmental screening outcomes associated with cannabis exposure during pregnancy. Journal of Perinatology, Vol 4, p. 473 – 480.

63 The Food and Drug Administration (FDA) (undated). What you should know about using cannabis, including CBD, when pregnant or breast-feeding.

Newfoundland and Labrador

Minimum age: 19

Retail sales: Online sales at shopcannabisnl.com. Cannabis is sold at privately owned stores.

Home grow: Up to four plants per household.



Northwest Territories

Minimum age: 19

Retail sales: Online sales at ntlcc.ca Cannabis is sold through liquor stores.

Home grow: Up to four plants per household but rental agreements and condominium bylaws can restrict cultivation.



Nova Scotia

Minimum age: 19

Retail sales: Online sales at cannabis.mynslc.com. In order to shop online, you must first visit a store in person, show proof of age and get an access code. Cannabis is sold in Nova Scotia liquor stores.

Home grow: Up to four plants per household.



Nunavut

Minimum age: 19

Retail sales: The Nunavut Liquor and Cannabis Commission has signed an agreement with Canopy Growth to allow direct online sales at *tweed.com*. There are no stores at present but they are planned for the future.

Home grow: Not permitted.



Ontario

Minimum age: 19

Retail sales: Online sales at ocs.ca. Retail privately run stores were established through a lottery process run by the Ontario Retail Cannabis Corporation.

Home grow: Up to four plants.



Prince Edward Island

Minimum age: 19

Retail sales: Online sales at *peicannabiscorp.com*. There are four stores. Otherwise, cannabis is sold through the PEI Liquor Control Commission.

Home grow: Up to four plants.



Quebec

Minimum age: 21

Retail sales: Online sales at sqdc.ca. Cannabis is sold through the Quebec Alcohol Corporation stores.

Home grow: Not permitted.



Saskatchewan

Minimum age: 19

Retail sales: Saskatchewan has no government online store for cannabis. Instead, it has issued permits to private companies who can establish stores and sell online.

Home grow: Up to four plants but landlords and condominium boards can restrict cultivation.



Yukon

Minimum age: 19

Retail sales: Online sales at cannabisyukon.org. The Yukon Liquor Corporation store sell cannabis although there are plans allow privately owned stores.

Home grow: Up to four plants but they must be hidden from view. Landlords may prohibit renters from growing.

Sources of information:

Namaste Technologies

Leafly



Appendix 2 A summary of research on cannabis and health problems other than mental illness⁶⁴

Pain

In a 2018 Israeli study, 900 elderly persons were administered cannabis in THC form. Most (75%) had no previous history of cannabis use. The study subjects had a number of conditions (Parkinson's, chemotherapy related nausea, inflammatory disease and PTSD). Ninety-three percent reported improvement in their symptoms after six months of use but a reduction in pain was the most salient finding with subjects reporting a change on a pain scale of from eight to four. Fifteen percent of subjects stopped opioid use altogether.⁶⁵

Migraines

A University of Colorado study of 121 adults with histories of migraines found that 40% reported positive effects from cannabis use and 85% said that they were experiencing fewer migraines.⁶⁶

65 Abuharsira, R. Schkeider, L.B.L. Mechoulam, R. & Novack, V. (March 2018). Epidemiological characteristics, safety and efficiency of medical cannabis in the elderly. European Journal of Internal Medicine. Vol (49), p. 44 – 50.

66 Rahn, B. (2016). New study confirms that cannabis can help migraine suffers. Leafly

Rheumatoid arthritis and osteoarthritis

There have been several small studies focused on rheumatoid arthritis and osteoarthritis that show that cannabis use can curb morning pain (but not pain overall). It can improve sleep and lower inflammation in joints (but not joint stiffness).⁶⁷

Nausea and appetite loss due to cancer treatment

The author of the cited study, a practicing oncologist, has been convinced by his patients that cannabis is an effective antiemetic and appetite stimulant but in a review of the research found very few formal academic studies on the matter, although, of those he reviewed, results were positive.⁶⁶

As of April 2017, the US National Cancer Institute reported 10 human trials looking at the use of natural cannabis – as opposed the pharmaceutically produced synthetics. They found mixed results. The researchers speculate that these findings may be attributed to the fact that natural cannabis is not controlled for THC concentration and thus, is hard to study as subjects may be getting different dosages.⁶⁹

The Canadian Cancer Society reports that there is some evidence that cannabis use helps manage cancer treatment symptoms, particular nausea and vomiting, but offers no endorsement.⁷⁰

Epilepsy

Epidolex is a drug containing CBD extract and has been approved for use (with other epilepsy medications) in both the US and Canada. It is used to treat two rare forms of epilepsy (Dravet and Lennox – Gastaut) in infancy and early childhood. In clinical trials, the drug was shown to be effective but it came with side effects (diarrhea, vomiting, and fatigue).^{71 72}

Multiple Sclerosis

Various reviews of studies focused on the use of cannabis in MS have shown some reduction in spasticity (involuntary muscle movements) when THC and CBD are taken in combination.

67 Medical marijuana, CBD oil and rheumatoid arthritis. WebMD.

68 Abrams, D, (2016). Integrating cannabis into clinical cancer care. Current Oncology.

- 72 Epilepsy Canada. A discussion of Epidolex.
- 73 Hendrick, B. (undated). Marijuana eases spasticity in MS patients. WebMD.

⁶⁴ For an extensive review of cannabis use for various health problems, see National Institutes of Health – National Centre for Complementary Medicine and Integrative Health. Cannabis (Marijuana) and Cannabinoids: What You Need To Know.

⁶⁹ Havelka, J. (July 2017). How cannabis is used for nausea and vomiting relief. Leafly.

⁷⁰ Canadian Cancer Society. Cannabis and cannabinoids for medical purposes.

⁷¹ Epilepsy Foundation. Medical marijuana and epilepsy. Quoting a study from the New England Journal of Medicine (2017).

Where Can I Get More Information?

The Mood Disorders Society of Canada (MDSC) is a national, not-for-profit, registered charitable organization that is volunteer-driven and committed to improving the quality of life for those Canadians living with mood disorders and their families.

The website (www.mdsc.ca) contains more information on depression, bipolar disorder and medications, as well as other mood disorders, contact information for finding mental health services and links to provincial Mood Disorders Associations.

Our website www.depressionhurts.ca provides further information on depression, including causes and symptoms, information on recovery and managing your depression symptoms, questions to ask your doctor, information for family and friends and much more. With over 2.5 million visitors, and available in four languages, we are sure this resource will be of great assistance in your journey.

MDSC also leads the national Defeat Depression campaign. These walks / runs are held from coast to coast, hosted by community organizations coming together to support local mental health services. At these events people share their stories, knowledge and experiences. Here you will find friends and neighbours in your area who learn from each other and tackle depression together. Please visit www.defeatdepression.com

How Can You Help?

At the Mood Disorders Society of Canada, we strive to support the needs of Canadians impacted by mental illness. Without ongoing core funding, we rely on generous donations from the public to assist us in this work.

If you would like to support our efforts, you can make a tax deductible donation on our website.

Email: info@mdsc.ca Website: www.mdsc.ca





