



THE COST OF MEDICAL MARIJUANA IN CANADA

A Pharmacy Dispensing Model and the Status Quo



CANADIAN
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DU CANADA

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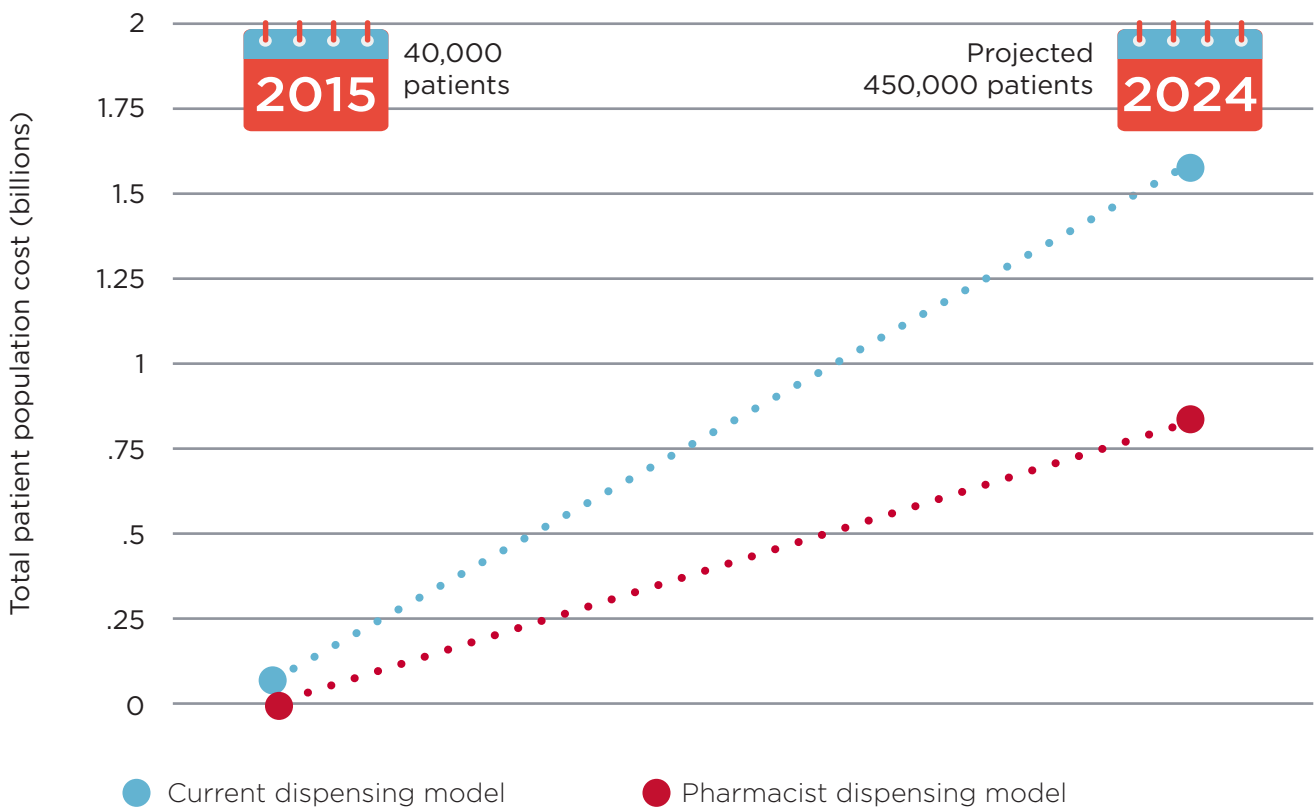
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At a Glance

- Medical marijuana is currently sold by licensed producers in Canada with an average cost of \$3,719 per year per patient, resulting in a total patient population cost of \$147.5 million in 2015. Under a pharmacy dispensing model, the cost could be reduced by more than half to \$1,822 per year per patient, resulting in a total cost of \$72.3 million.
- Projected to 2024, the number of medical marijuana patients could increase from about 40,000 in 2015 to almost 450,000, resulting in a total cost of \$1.6 billion under the current dispensing model and \$827 million under a pharmacy dispensing model.
- A pharmacy dispensing model has the additional benefits of professional oversight of medical marijuana dispensing, reduced inappropriate use, and convenient and timely access to patients.

Current dispensing model vs pharmacy dispensing model



Executive Summary

To enhance public and patient safety in the rapidly evolving medical marijuana environment, the Canadian Pharmacists Association (CPhA) is recommending pharmacists play a front-line role in the patient management and dispensing of medical marijuana (MMJ).¹ The CPhA believes such a role is needed to ensure that patients receive timely and appropriate access, education, and clinical oversight.²

The Conference Board was approached by the CPhA to conduct an analysis of the direct cost to patients in accessing medical marijuana (MMJ) in Canada under two scenarios: 1) the licensed producer-as-dispenser model (status quo), and 2) a pharmacy dispensing model. In addition, the CPhA requested the Conference Board assess the additional costs, if any, to the Canadian government if MMJ were dispensed in community pharmacy.

A review of the literature, websites, white papers, and consultations with key informants were conducted to identify and validate the data and analytic assumptions used to assess the cost differential to patients between a pharmacy dispensing model and the current dispensing model.

Our analysis shows that a pharmacy dispensing model is likely to be more cost-effective for MMJ patients when comparing the more likely scenarios of a 5 to 10 per cent markup in pharmacy with the average cost of MMJ from a licensed producer.

At a population level, the estimated difference between a pharmacy dispensing model with a 10 per cent markup versus the status quo licensed producer model represents a roughly doubling in cost to patients—the cost difference would have been almost \$72 million in 2015 and would reach over \$785 million in 2024.

There is likely to be little additional cost to governments with the pharmacy dispensing model other than tax revenues forgone in a pharmacy dispensing model, while there would be numerous benefits including the professional oversight of MMJ dispensing, potentially reductions in inappropriate use, and increased access for patients.

¹ Canadian Pharmacists Association, CPhA Calls for Pharmacists' Role in the Management and Dispensing of Medical Marijuana.

² Ibid.

Introduction

The Issue

To enhance public and patient safety in the rapidly evolving medical marijuana environment, the Canadian Pharmacists Association (CPhA) is recommending that pharmacists play a front-line role in patient management and the dispensing of medical marijuana (MMJ).³ The CPhA believes that such a role is needed to ensure that patients receive timely and appropriate access, education, and clinical oversight.⁴

The evolution of the CPhA's position was informed by three main considerations.⁵ First, its members expressed increasing concern about the lack of appropriate clinical oversight regarding the use of medical marijuana and its implication on patient health and safety. Second, an independent commissioned report found that the management and dispensing of medical marijuana by pharmacists is the best option to enhance patient safety and access for Canada.⁶ Third, in a public opinion survey commissioned by the CPhA earlier this year, Canadians confirmed that they want and trust pharmacists to play a key role in the management and dispensing of medical marijuana.

Although there has been positive reception for a pharmacy dispensing model for MMJ in Canada, the CPhA has heard concerns from government officials regarding the costs to patients. There is currently no data or estimates on the cost differential between the current dispensing model, or status quo (via licensed producers), and the CPhA-proposed pharmacy dispensing model, from the patient or government perspectives.

The CPhA therefore approached the Conference Board to conduct an analysis of the direct cost to patients in accessing MMJ in Canada under two scenarios: 1) the licensed producer-as-dispenser model (status quo), and 2) a pharmacy dispensing model. In addition, the CPhA also requested that the Conference Board assess the additional costs, if any, to the Canadian government if MMJ was dispensed in community pharmacy.

Research Objectives

The objectives of this research are:

- to estimate the average cost per MMJ patient and the total patient population cost in the current year (over 12 months) in a proposed pharmacy dispensing model versus the current model (status quo);
- to estimate the average cost per MMJ patient and the total patient population cost forecasted to the year 2024 in a proposed pharmacy dispensing model versus the current model (status quo);
- to assess the additional cost, if any, to the Canadian government with the proposed pharmacy dispensing model compared to the current dispensing model.

³ Canadian Pharmacists Association, <http://www.pharmacists.ca/news-events/news/cpha-calls-for-pharmacists-role-in-the-management-and-dispensing-of-medical-marijuana/>

⁴ Ibid.

⁵ Ibid.

⁶ KPMG, *Improving Medical Marijuana Management in Canada*.

Methodology

A review of the literature, websites, and white papers, and consultations with key informants were conducted to identify and validate the data and analytic assumptions used to assess the cost differential to patients between a pharmacy dispensing model and the current dispensing model.

Analysis and Assumptions

Average marijuana consumption per patient is estimated using market data provided and analyzed by Health Canada.⁷ The average amount of marijuana per client shipment will be used as a proxy for daily consumption.

TABLE 1: AVERAGE CONSUMPTION PER PATIENT IN 2014/15 AND 2015/16 (grams)

2014/15	4.00	1.00
2015/16	3.00	1.08

Source: Health Canada.

The Canada Marijuana for Medical Purposes Regulations (MMPR) currently allows patients to purchase a 30-day supply of marijuana or 150 grams at one time, whichever is less. The total cost of a 30-day prescription supply is calculated as the average amount consumed per day multiplied by the average price per day which is then multiplied by 30 days (e.g., 30 x 1.08 = 32.4 grams per month x the average price from licensed producers).

Pricing figures reported for the licensed producers' model include sales tax from the respective province. Pricing reported for the pharmacy dispensing model does not include sale taxes since prescription drugs dispensed through pharmacies are zero-rated (no sales tax is charged).

Forms of Medical Marijuana

Medical marijuana can be consumed in several ways. It can be smoked, inhaled through a vaporizer, or consumed as cannabis oils. Dried marijuana is generally used for smoking or vaporizing, while cannabis oils can be taken orally or used to infuse edibles. Cannabis oils constitute less than 5 per cent of the overall market, so this report will focus on dried marijuana.

The Current Dispensing Model

The current dispensing model includes 34 licensed medical marijuana producers across Canada, 19 of which are located in Ontario, 8 in British Columbia, 2 in Saskatchewan, and 1 in New Brunswick, Prince Edward Island, Quebec, Manitoba, and Alberta. These producers are licensed under Health Canada to grow and sell marijuana to Canadians with a valid medical prescription.

The wholesale price per gram from licenced producers is estimated from interviews with the producers, as well as the markup per gram. Most producers either completely absorb the cost of shipping or provide free shipping on orders over certain amounts. Average and minimum costs per gram from each producer were obtained from online product catalogues and sales tax for each respective province was included in the analysis.

⁷ Health Canada, *Market Data: Marijuana for Medical Purposes*.

The price per gram can vary greatly between licenced producers and also depends on the tetrahydrocannabinol (THC) or cannabidiol (CBD) content of each product strain. Strains higher in THC or CBD are costlier as they represent higher levels of product potency. Based on the publically available data, prices range between \$4.5 and \$15 per gram from the licenced producers.

The Pharmacy Dispensing Model

It is assumed that a pharmacy dispensing market would make for a more uniform market compared to the current market supplied by licensed producers. It is also assumed that pharmacies would be able to obtain a wholesale price for MMJ from producers, given the vast quantities they would be purchasing.

Pharmacies obtain their products from distribution centres, which have a typical markup of four to six per cent. A 5 per cent distribution centre markup is assumed and added to the wholesale price per gram. Producers currently ship directly to patients, so they would experience significant cost savings if they only shipped to a handful of distribution centres. Furthermore, distribution centres are already well-established, are better suited to manage inventory levels across a number of pharmacies, have the required infrastructure, and can incorporate a new narcotic with minimal effort and cost.

The pharmacy markup, distribution centre markup, and average dispensing fee will be factored into the average price per gram calculations under the proposed pharmacy dispensing model. The average dispensing fee was obtained from provincial public drug plan reimbursements for the 2007/08 fiscal year, then inflated to the 2015/16 fiscal year using the average annual rate of growth from 2001/02 to 2007/08.⁸ Four pharmacy markup scenarios were then analyzed—at 5, 10, 20 and 30 per cent—to cover the range of markups seen in pharmacy (5 or 10 per cent are the most likely scenarios). The costs under a pharmacy dispensing model do not include sales tax, since prescription drugs are taxed at a rate of 0 per cent—only if they are dispensed through a pharmacy.

As current regulations only allow for the lesser of a 30-day supply or 150 grams of marijuana, pharmacies could increase the supply to more than 30 days, resulting in even lower costs. However, this report will only examine a 30-day supply of marijuana to provide a per quantity analysis consistent with the current dispensing model.

This report's pharmacy dispensing model analysis for the total MMJ population in 2015 and 2024 assumes all MMJ patients in 2015 and 2024 were or would only be accessing MMJ through a pharmacy. Although we acknowledge that a mixed model—whereby patients could access MMJ through licensed producers or from pharmacy—could more accurately depict the market, we chose to conduct the analysis looking at the two extreme scenarios. The reasons for this include: 1) the difficulty in establishing the proportion of patients who would access MMJ in either model should the choice of either be made available; 2) the unknown impact on utilization due to differences in consumer taxation in each model; and 3) the desire to simplify the analysis to show the range of possible costs. The purpose of the analysis is not to advocate for any particular model, but to quantitatively demonstrate the possible range of values. A mixed delivery model, whereby patients can access MMJ through licensed producers or in pharmacy, would therefore result in total population costs that would be somewhere in between the values presented in our results.

⁸ Patented Medicine Prices Review Board, *Wholesale Up-charge Policies of Canada's Public Drug Plans*.

Results

Current Dispensing (Status Quo) Model

The estimated wholesale price per gram of MMJ from current producers is approximately \$4 for orders of a minimum of 10 kilograms per month.⁹ This price is marked-up to \$7 to \$12 per gram for sale to patients, although prices can reach as low as \$5 per gram or as high as \$15 per gram, depending on cultivation, growing methods, and THC or CBD content.¹⁰ The wholesale price of \$4 for gram used in this analysis is a hypothetical estimate of the potential price pharmacies would pay to distributors based on an interview with one of Canada's largest producers (Supreme). The accuracy of this estimate and whether it would be maintained in a pharmacy dispensing model is difficult to decipher; however, The Conference Board of Canada believes this is the best estimate to use at this time for our hypothetical analysis.

List of Licensed Producers and Pricing

Most insurance plans do not cover MMJ, and less than half of licenced producers offer compassionate pricing to their clients to ease the financial burden of paying out-of-pocket for their medicine. The compassionate pricing programs offered vary between producers, and clients must be eligible for federal disability benefits or show income tax statements to prove they are in a low income bracket in order to qualify.

To provide a sense of the variety of MMJ products and prices across licensed producers in Canada, Table 2 presents a snapshot of information as of August 15, 2016 that was gathered through a review of producers' websites.

⁹ John Fowler (President and Chief Executive Officer, Supreme Pharmaceuticals Inc.), phone interview by Alexandru Dobrescu, August 15, 2016.

¹⁰ Ibid.

TABLE 2: LICENSED PRODUCERS CURRENTLY SHIPPING PRODUCT AND PUBLISHED PRICING FROM PRODUCERS' WEBSITES (August 2016)

Licensed Producer	Average pre-tax price per gram (\$CAD)	Compassionate Pricing Program	Average pre-tax price with Compassionate Pricing
Abcann Medicinals Inc.	7.80	15% discount	6.63
Agripharm Corp.	Subsidiary of Mettrum Corp.	See Mettrum	Not published
AMMCan	N/A	Cultivation only	Not published
Aphria	8.54	Unknown	Not published
Aurora Cannabis Enterprises Inc.	8	\$5 per gram	5
Bedrocan Canada Inc.	5	Unknown	Not published
Broken Coast Cannabis Ltd.	7.18	15% discount	6.10
Canada's Island Garden Inc.	N/A	Cultivation only	Not published
Canna Farms Ltd.	7.92	None	7.92
Cannimed Ltd.	7.54	Not published	Not published
CannTrust Inc.	7.56	30% discount	5.29
Delta 9 Bio-Tech Inc.	No specific pricing info	50% discount	Not published
Emerald Health Botanicals Inc.	8.11	Not published	Not published
Green Relief Inc.	N/A	Cultivation only	Not published
Hydropharmacy	15	None	15
In the Zone Produce Ltd.	N/A	Cultivation only	Not published
MariCann Inc.	8.08	20% discount	6.46
MedReleaf Corp.	10.83	25% discount	8.12
Mettrum Ltd.	7.93	30% on first 30 grams	5.55
Natural Med Company	N/A	Cultivation only	Not published
OrganiGram Inc.	9.56	25% discount	7.17
Peace Naturals Project Inc.	7.27	Subsidy of \$3/gram	4.27
Prairie Plant Systems Inc.	N/A	Cultivation only	Not published
ReeCan Pharm	5.89	None	5.89
THC Biomed Ltd.	N/A	Cultivation only	Not published
Tilray	9.41	Not published	Not published
Tweed Farms Inc.	8.57	Not published	Not published
United Greeneries Ltd.	N/A	Cultivation only	Not published
WeedMD	N/A	Cultivation only	Not published
Whistler Medical Marijuana Corp.	11.07	None	11.07

Source: The Conference Board of Canada; licensed producers' websites.

The average price per gram varies by THC content, with higher THC strains tending to cost more. Notably, strains with less than 5 per cent THC content have a higher average price than strains with 5 to 15 per cent content; this can be explained by producers marketing strains with low THC content but high CBD content.

Table 3 provides an estimated pricing range by THC content, as made public on licensed producer websites. We present the minimum and maximum prices to represent a range of prices across producers.

TABLE 3: ESTIMATED PRICING BY THC CONTENT (\$CAD)

THC Content (%)	Average pre-tax price (\$)	Min pre-tax price (\$)	Max pre-tax price (\$)
<=5	8.03	5	12.5
5.01-10	7.29	5	12.5
10.01-15	7.78	4.46	12
15.01-20	8.24	4	15
20+	9.11	5	15

Source: The Conference Board of Canada; licensed producers' websites.

Table 4 provides a detailed breakdown of estimated cost per 30-day prescription, cost with compassionate pricing, and minimum cost per 30-day prescription with compassionate pricing across licensed producers based on data extracted from their public websites. All of the 30-day prescription prices reported include sales tax from the respective province the licensed producer is located in and shipping charges from the select producers that do not offer free shipping. The average price for a 30-day supply of MMJ varies from \$183/month from Bedrocan Canada Inc to \$558/month from Hydropharmacy (assuming consumption of 1.08 grams per day).

TABLE 4: TOTAL COST PER 30-DAY PRESCRIPTION (\$CAD, including sales tax)

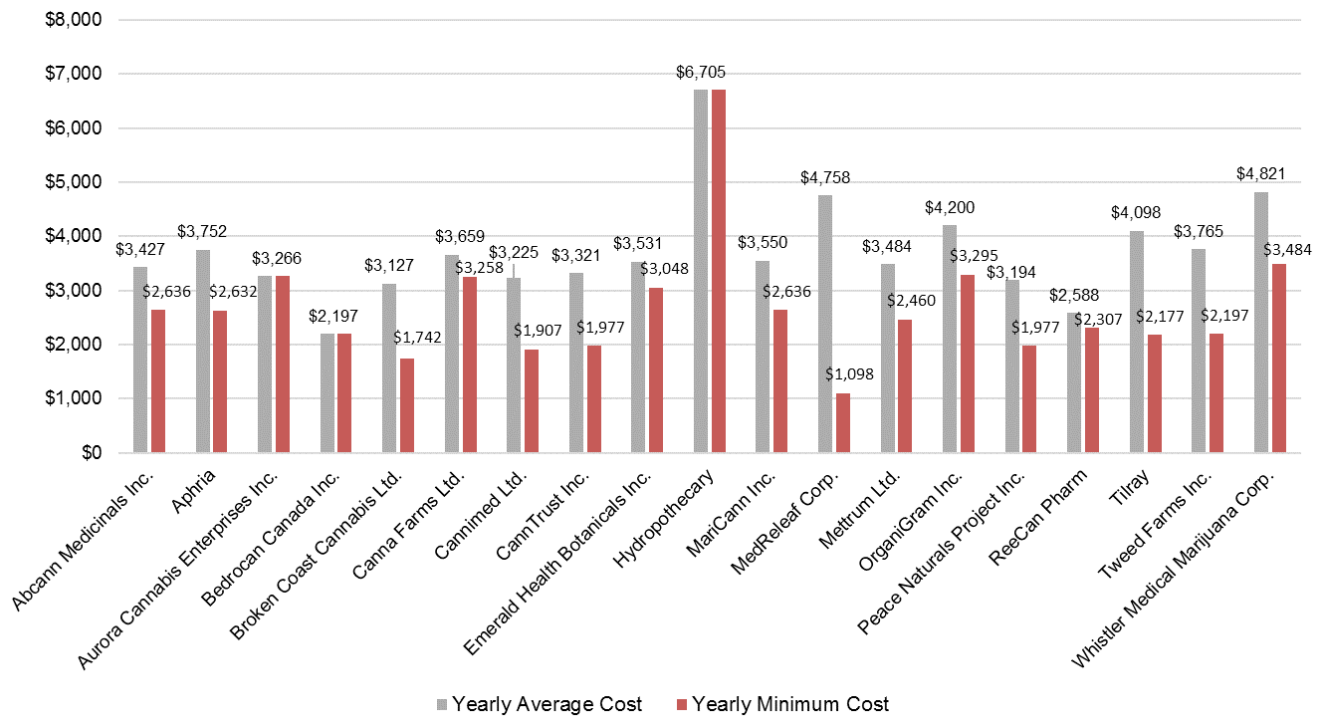
Licensed Producer	Cost per 30-day Prescription	Cost with Compassionate Pricing Program	Minimum Cost per 30-day Prescription (with Compassionate Pricing)
Abcann Medicinals Inc.	285.57	242.73	219.67 (178.72)
Aphria	312.67	N/A	219.31 (N/A)
Aurora Cannabis Enterprises Inc.	272.16	170.1	272.16 (170.1)
Bedrocan Canada Inc.	183.06	N/A	183.06
Broken Coast Cannabis Ltd.	260.54	221.45	145.15 (123.34) ¹
Canna Farms Ltd	304.90	N/A	271.52 (N/A)
Cannimed Ltd.	268.73		158.95 (N/A)
CannTrust Inc.	276.78	193.74	164.75 (115.32)
Emerald Health Botanicals	294.29		254.02 (N/A)
Hydropharmacy	558.78	N/A	558.78 (N/A)
MariCann Inc.	295.82	236.65	219.67 (175.38)
MedReleaf Corp.	396.50	297.38	91.53 (68.65) ¹
Mettrum Ltd.	290.33	224.73	205.03 (158.71)
OrganiGram Inc.	350.01	262.51	274.59 (205.94)
Peace Naturals Project Inc.	266.17	156.33	164.75 (54.92)
ReeCan Pharm	215.65	N/A	192.21 (N/A)
Tilray	341.48		181.44 (N/A)
Tweed Farms Inc.	313.77		183.06 (N/A)
Whistler Medical Marijuana Corp.	401.71	N/A	290.30

Source: The Conference Board of Canada.

¹ Denotes marijuana trimmings. Trimmings are less suitable than dried marijuana for smoking and are generally used in edibles.

Chart 1 summarizes the yearly cost of MMJ to a patient from each of the licensed producers, including sales taxes and shipping where applicable. The yearly minimum cost accounts for purchasing the cheapest strain from each producer, while the average cost takes into account all strains available from a producer.

CHART 1: YEARLY COST OF MEDICAL MARIJUANA FROM LICENCED PRODUCERS (Yearly \$CAD)



Source: The Conference Board of Canada; licensed producers' websites.

A Pharmacy Dispensing Model

As the estimated producer wholesale price is \$4 per gram,¹¹ it is assumed pharmacies would purchase MMJ at this price. The average pharmacy markup per gram is added to the base wholesale price to estimate the price per gram to the patient (see Table 5).

TABLE 5: ESTIMATED COSTS IN A HYPOTHETICAL PHARMACY DISPENSING MODEL BY PROVINCE

Province	Average Dispensing Fee (\$CAD)	Pharmacy Markup
British Columbia	8.14	Max. 8%
Alberta	14.43	Max. 7.5%
Saskatchewan	9.06	Max. 8.5% to a max of \$50/package
Manitoba	9.08	Unknown
Ontario	7.45	8%
New Brunswick	9.29	Unknown
Nova Scotia	10.81	2 to 10.5%
Prince Edward Island	7.03	Max. 13%
Newfoundland and Labrador	Unknown	Max. 8.5%
Average (Canada)	9.31	N/A ¹

Source: Patented Medicine Review Board.

¹ Due to the wide variability in reported pharmacy markups across Canada and missing data for some provinces, we did not report an average markup.

Pharmacy markup varies by province, so a number of markup scenarios were simulated to account for market variability (see Table 6). A distribution centre markup of 5 per cent was assumed for all pharmacies. The average national dispensing fee of \$9.31 reported by the Patented Medicine Review Board was added to the prescription price under each markup scenario before computing the yearly cost of MMJ to the patient. This assumes that a prescription is maintained at 30-days (for many other drugs currently dispensed in pharmacy, 90-day prescriptions are applied). No sales tax was applied to the prescription cost under a pharmacy dispensing model since drugs dispensed through a pharmacy are taxed at zero per cent.

TABLE 6: COSTS RELATED TO THE SALE OF MMJ IN A PHARMACY DISPENSING MODEL (\$CAD)

	5 % markup	10 % markup	20 % markup	30 % markup
30-day Prescription Cost	142.88	149.68	163.29	176.90
Cost Including Dispensing Fee	152.19	158.99	172.60	186.21
Yearly Per Patient Cost	1,826.33	1,907.98	2,071.27	2,234.57

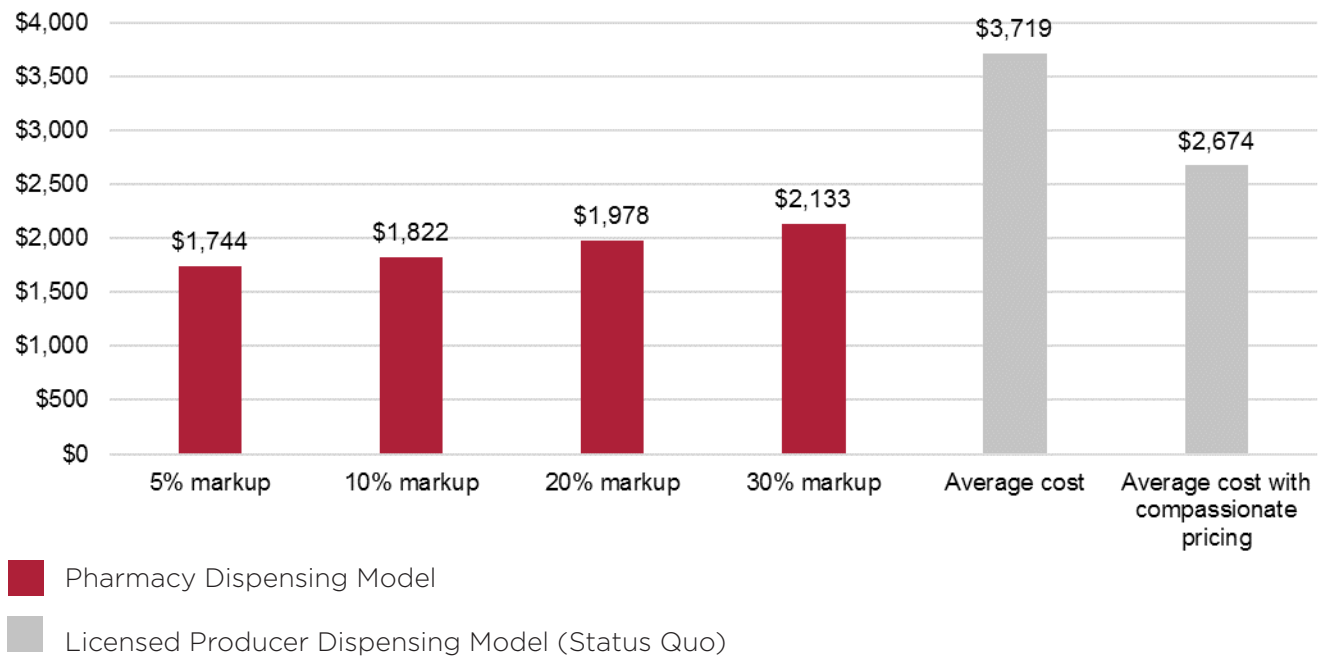
Source: The Conference Board of Canada; Patented Medicine Review Board.

¹¹ Fowler, interview.

The yearly cost of MMJ is lower under a pharmacy dispensing model than the cost to acquire a similar amount of 30-day prescriptions under the current model of licenced producers. Bedrocan Canada Inc has the lowest average cost among licenced producers—a yearly supply of MMJ would cost \$2,197.

Under a pharmacy dispensing model, with the more likely 5 and 10 per cent markup scenarios, the yearly cost for a patient would be \$1,826 and \$1,907, respectively. Examining the average cost across all licenced producers gives a yearly per patient cost of \$3,719, or \$2,674 if we account for compassionate pricing programs (see Chart 2). A pharmacy dispensing scenario would therefore entail significant cost savings over these average licensed producer costs, as even the 30 per cent pharmacy markup scenario produces a lower cost per patient per year (\$2,133) than the average cost with compassionate pricing from licensed producers (\$2,674). The cost estimated under the pharmacy dispensing model would also be lower if pharmacies prescribed a supply greater than 30 days, since patients would pay the dispensing fee fewer times.

CHART 2: COST PER PATIENT IN PHARMACY AND CURRENT LICENSED PRODUCER DISPENSING MODELS (\$CAD)



Source: The Conference Board of Canada.

Health Canada provides the number of registered MMJ clients at the end of each quarter, starting with Q1 of 2014/15. There were 39,668 registered patients at the end of 2015, and Health Canada estimates the number of users will grow to 433,688 in 2024.¹²

¹² Health Canada, *Market Data: Marijuana for Medical Purposes*.

Tables 7 and 8 show the cost per patient per year along with the total population cost for 2015 and 2024. Table 7 summarizes the average costs along the current licenced producers market compared to the 4 markup scenarios in pharmacy.

TABLE 7: COMPARISON OF COSTS BETWEEN STATUS QUO AND PHARMACY DISPENSING MODEL FOR 2015 AND PROJECTED FOR 2024 (\$CAD)

Year	2015	2015	2024
Type of Cost	Cost per Patient	Total Population Cost (n = 39,668)	Total Population Cost (n = 433,688)
Pharmacy Dispensing (5% markup) ¹	\$1,826	\$72,446,779	\$792,056,538
Pharmacy Dispensing (10% markup) ¹	\$1,907	\$75,685,592	\$827,466,295
Pharmacy Dispensing (2% markup)	\$2,071	\$82,163,218	\$898,285,811
Pharmacy Dispensing (30% markup)	\$2,234	\$88,640,843	\$969,105,327
Licensed Producers (average cost) ¹	\$3,719	\$147,536,399	\$1,613,007,105
Licensed Producers (average cost with compassionate pricing)	\$2,674	\$106,080,166	\$1,159,768,450

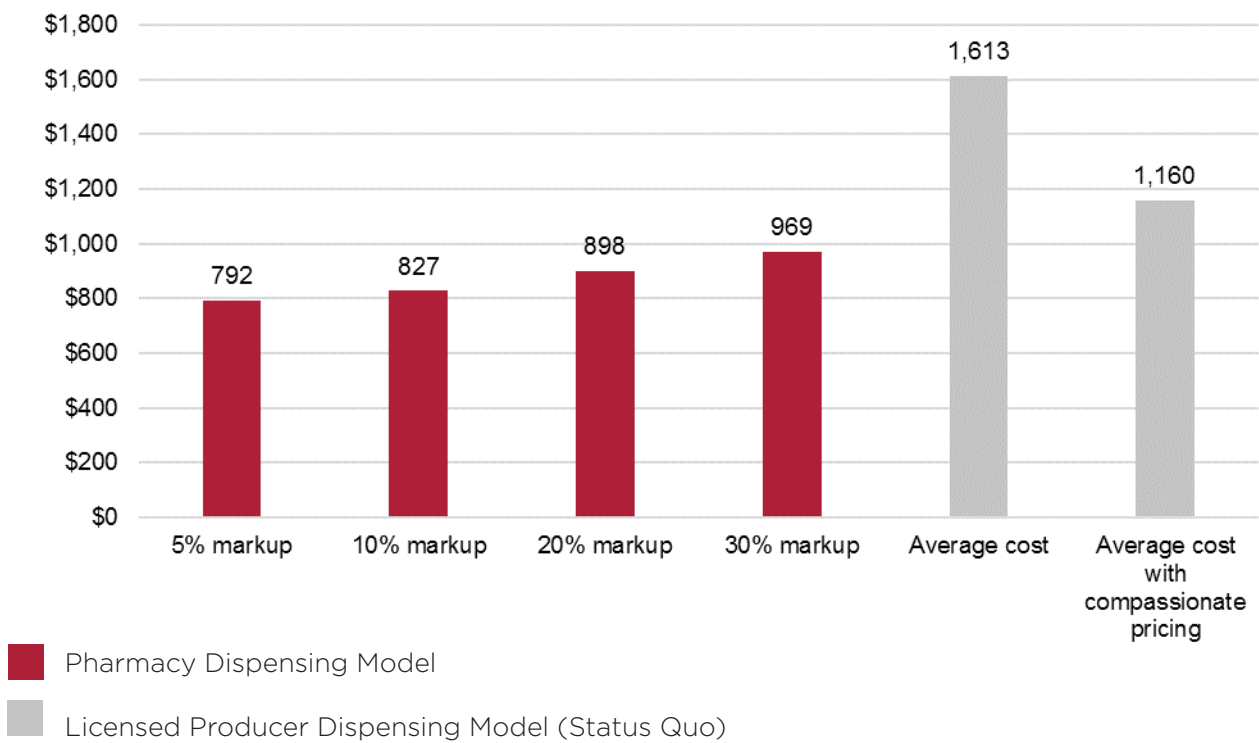
Source: The Conference Board of Canada; Health Canada; licenced producers' pricing information.

¹The most realistic scenarios for comparison; used in the conclusion and discussion.

Chart 3 summarizes the total cost to MMJ patients under the most likely status quo scenarios compared to the different markup scenarios. Using the average strain cost across all licensed producers results in a \$1.6 billion cost to patients in 2024, compared to \$792 and \$827 million under the most likely 5 and 10 per cent pharmacy markup scenarios. Even applying compassionate pricing to the average cost from licensed producers does not lower the total population cost to be in range with even the highest pharmacy markup scenario of 30 per cent. Furthermore, it is unrealistic to assume that all MMJ patients would qualify for the compassionate pricing programs currently offered by the licensed producers.

Chart 3

Cost Comparison Between Status Quo and Pharmacy Dispensing Medical Marijuana Models for Registered Users in 2024 (\$CAD millions)



Source: The Conference Board of Canada.

Table 8 analyzes the low-end of the market, where licenced producers are selling strains for \$4-6 per gram. It is assumed that pharmacies would be able to purchase this low-grade marijuana for \$2 per gram, and the same markup scenarios were applied to compare costs in the low end of the market. The minimum cost from a licenced producer assumes all MMJ patients would purchase the cheapest strain currently available, which is \$4.46 per gram from CanniMed. This yields a \$1,977 yearly cost per patient, which is significantly higher than any of the pharmacy scenarios examined for low-grade marijuana, which range from \$857 to \$1,061 per patient per year.

TABLE 8: COMPARISON OF MINIMUM COSTS BETWEEN STATUS QUO AND PHARMACY DISPENSING MODEL FOR 2015 AND PROJECTED FOR 2024 (\$CAD)

Year	2015	2015	2024
Type of Costs	Cost per Patient	Total Population Cost (n = 39,668)	Total Population Cost (n = 433,688)
Pharmacy Dispensing (5% markup)	\$857	\$34,007,535	\$371,802,457
Pharmacy Dispensing (10% markup)	\$898	\$35,626,941	\$389,507,336
Pharmacy Dispensing (20% markup)	\$979	\$38,865,754	\$424,917,093
Pharmacy Dispensing (30% markup)	\$1,061	\$42,104,567	\$460,326,851
Licensed Producers (minimum cost) ¹	\$1,977	\$78,423,636	\$857,401,176
Licensed Producers (average of min. cost) ²	\$2,684	\$106,475,259	\$1,164,087,982
Licensed Producers (average of min. cost with compassionate pricing)	\$1,816	\$72,021,221	\$787,403,933

Source: The Conference Board of Canada; Health Canada; licenced producers' pricing information.

¹ Assumes purchasing the cheapest strain available from CanniMed at \$4.46 per gram; excludes marijuana trimmings.

² Average of the minimum cost between all licenced producers, which is the yearly cost of each producer's cheapest strain.

It is assumed that the average amount consumed remains constant at 1.08 grams per day, or 388.8 grams per patient per year. The forecasted total population cost does not consider the impact, if any, on policy changes such as the legalization of the use of recreational marijuana. As whether this will have an impact on the costs of MMJ is uncertain, The Conference Board has chosen not to speculate on the implications of this or other patient pricing policies.

Conclusions and Discussion

Our analysis shows that a pharmacy dispensing model is likely to be more cost-effective for MMJ patients considering the more likely scenarios of a 5 to 10 per cent markup in pharmacy compared to the average cost of MMJ from licensed producers.

Additionally, a pharmacy dispensing model would lead to a more consolidated market which would be better suited to capitalize on economies of scale. Current licensed producers must each maintain e-commerce websites, call centres, and home delivery of the product. Pharmacies have pre-existing drug distribution infrastructure in place, which would greatly drive down the overall distribution cost. This is a potential benefit to licensed producers because it would reduce their costs of running proprietary e-commerce websites and call centres, as well as the home delivery of MMJ to each patient. For instance, instead of shipping 100 different orders for 100 different patients (each order with its own associated shipping cost—which the producers usually absorb), licensed producers would ship a single large order to a pharmacy distribution centre which would then regulate inventory levels across pharmacies to ensure an adequate supply for patients from their local pharmacy.

At a population level, the estimated difference in cost between a pharmacy dispensing model with 10 per cent markup versus the status quo would have been almost \$72 million in 2015 and over \$785 million in 2024—with the status quo licensed producer model costing almost twice as much.

Access to Cannabis for Medical Purposes Regulations

Health Canada announced the Access to Cannabis for Medical Purposes Regulations (ACMPR) on August 11, 2016 in response to a federal court ruling that the ban on medical users to grow their own marijuana denies them fair access to medicine. The ACMPR will come into effect on August 24, 2016 and replace the current MMPR.¹³

However, growing marijuana at home can be an involved and costly process. Indoor marijuana growing kits range from approximately \$100 to thousands of dollars and seeds range from approximately \$60 to \$100+ for 10 seeds. Additionally, the ACMPR will place limits on how much patients can grow at home, meaning they would be unable to take advantage of any bulk discounts offered by producers.

¹³ Health Canada, *Market Data: Marijuana for Medical Purposes*.

We did not see how a pharmacy dispensing model would incur any additional direct costs to government; however, there would be forgone tax revenue to governments from the sale of MMJ to patients in a pharmacy dispensing model. We estimate that the forgone tax revenue (tax paid by patients) on the sale of MMJ would be about \$12.6 million in 2015 and \$138.3 million in 2024.¹⁴ This forgone tax revenue is relatively small compared with the potential gains that would result from the possible legalization of recreational marijuana in Canada. To provide some perspective, in the province of Ontario alone, tax revenues to the provincial government from the sale of alcohol are approximately \$1.8 billion annually.¹⁵

We believe that there would be additional offsetting of any forgone tax revenues through the many additional benefits to government with the proposed model. Firstly, a pharmacy dispensing model would ensure that MMJ patients would receive professional medical advice regarding appropriate use as well as important clinical information regarding adverse events. This may reduce the number of cannabis-related emergency visits to hospital. Recent research published in the *New England Journal of Medicine* reported that the legalization of marijuana in the U.S. state of Colorado resulted in a significant increase in the number of cannabis-related hospital visits.¹⁶ Furthermore, MMJ patients could be more closely monitored by pharmacists through current pharmacy medication review and management programs which would reduce the likelihood of addiction and the identification of any other health concerns that would need to be referred back to physician. In addition, physicians' reluctance in prescribing MMJ may decrease if MMJ were dispensed in community pharmacy as the relationship between physicians and pharmacists is long-standing. Pharmacist oversight in the dispensing of MMJ may also support enforcement efforts in reducing the potential impact of inappropriate prescribing, thus potentially alleviating the enforcement burden of marijuana abuse and illegal distribution. Finally, a pharmacy dispensing model could mean improved access for patients in the community, as well as more transparent pricing and better quality controls.

14 The foregone tax is related to consumer tax. Note that there is taxation throughout the MMJ distribution chain whereby growers, distributors, and dispensers would be taxed on profits.

15 Liquor Control Board of Ontario, *Annual Report 2014-15*.

16 Kim and others, "Marijuana Tourism and Emergency Department Visits in Colorado."

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The Canadian Pharmacists Association (CPhA) is the uniting national voice of pharmacy and the pharmacist profession in Canada. As pharmacists undertake an enhanced role in the delivery of health care services, CPhA ensures that the profession is recognized as a national leader in health care, influencing the policies, programs, budgets and initiatives affecting the profession and the health of Canadians.

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