ALTACORP CAPITAL

January 7, 2019

Cannabis and Life Sciences

Thematic Review of the Canadian, US, and International Cannabis Markets, and the Cannabinoid-derived Pharmaceutical Space

Initiating Coverage on 3 Cannabis and Life Sciences Companies:

- Valens GroWorks Corporation (VGW-CNQ, Outperform, $5.00 TP)
- Auxly Cannabis Group Inc. (XLY-TSXV, Outperform, $1.50 TP)
- GW Pharmaceuticals PLC (GWPH-US, Outperform, US$160 TP)

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Table of Contents

Our Investment Thesis

A Bullish Perspective on Medical & Recreational Cannabis and Cannabinoid-Derived Pharmaceuticals

In this report, we initiate coverage of the cannabis sector, which includes both medical and recreational cannabis. We also initiate coverage of the cannabinoid-derived pharmaceuticals sector, which includes companies pursuing pharmaceutical-based products using cannabinoids as the active pharmaceutical ingredients (API), as well as rigorous clinical trial programs. We see the global trend of cannabis legalization as having wide-ranging implications for a number of existing sectors, including but not limited to, alcohol, tobacco, pharmaceuticals, health, wellness, as well as related businesses and services within the broader cannabis ecosystem, such as retail, accessories, data analytics and technology.

The Launch of a New Industry Presents Incredible Opportunities

We believe the broader cannabis sector presents investors and entrepreneurs with remarkable exposure to growth opportunities, driven by the disruptive, innovative, and health-related benefits of cannabinoids. The sector as a whole remains in its nascent stages, both in Canada, and globally. **We forecast the Canadian legal cannabis market to reach $10bn in annual sales by 2025.**

To date, there has been very little pharmaceutically-oriented research coverage of the cannabis space. With our research team's unique lens of the Consumer Packaged Goods (CPG) and Healthcare industries, we enter this space with key and differentiated opinions. As cannabis usage continues to gain wider acceptance from the public, as well as governments and regulators around the world, we believe that the growing trend of legalization will continue to sweep across nations. While the initial phase of legalization within a particular jurisdiction is likely to be exclusively medical usage, over the longer term, it presents the opportunity to transition to recreational usage.

Canada has already established itself as a first mover and a global thought leader with respect to cannabis legalization, after having first legalized medical usage in 2001, and recently becoming the first G7 nation to legalize recreational cannabis. We see this first-mover advantage as short to medium-term in nature, as we view the federal legalization of cannabis in the US as an eventuality. In the intermediate period, Canadian companies have the opportunity to establish global footprints, and take leadership positions in advancing and shaping new markets and policies, internationally.

Investment from Legacy Industries to Reshape the Sector in Coming Years

We also see the continued investment from legacy industries into the cannabis space as a catalyst for growth, as partnerships and acquisitions will inject new capital into the space, while simultaneously enabling cannabis businesses to expand their distribution, product development and R&D capabilities. The strategic involvement of mature firms in this industry will add credibility to the sector from the standpoint of the investment community, and provide the capability to leverage these large companies' corporate infrastructure to operate at scale.

Risks and Volatility to Persist, But Worth the Upside

From a cost vs. benefit perspective, we see the near term risks and volatility in the space as being worth the pay-off over the long term. To date, the majority of investment in the cannabis space has been retail-dominated, which has been one of the drivers of the extreme volatility we have seen in the sector. As the industry establishes credibility, we believe more institutional capital will move into the space to take advantage of these opportunities, which should help to bring greater stability to the sector from a capital markets perspective. The injection of institutional capital will also place greater importance on fundamentally-driven analyst research as well as companies' financial performance and results.

Understanding the Cannabis Plant

The *Cannabis Sativa* plant, better known as simply *cannabis*, or *marijuana*, colloquially has been used by humans for nearly 5,000 years. The plant was initially used for medical purposes, as well as religious rituals, while hemp, a closely related cousin of the marijuana plant without psychoactive properties, was used in an industrial capacity to make rope, clothing and various other products. Today, cannabis is still used medically, but is also well known, at least in Western societies, for its recreational use.

Due to the plant being considered an illegal and scheduled substance in most parts of the world, very little research on the plant and its properties have been done. In particular, our understanding of the manner in which cannabinoids interact with cannabinoid receptors and other biological pathways in the human body is still in its infancy from a research perspective. Cannabinoid receptors are part of what is known as the *endocannabinoid system*. The endocannabinoid system influences a number of physiological processes such as immune response, central nervous system regulation, cardiovascular function, bone development, digestion, metabolism, wake/sleep cycles, learning, pain response, and regulation of stress and appetite

Within the cannabis plant, there are over 100 active compounds known as *cannabinoids*. Many are found in only trace quantities, while others can be expressed in greater quantities through selective breeding of different strains.

Cannabis Plant

Figure 1. Cannabis Plant
Source: lift news, Leafly, Ryland Zweifel, iStock

The main psychoactive compound found in cannabis is ***tetrahydrocannabinol***, better known as ***THC***. The compound is found in trace amounts in the hemp variety, but can be found in the flower of the female marijuana plant in concentrations of more than 30%.

The other most abundant cannabinoid in the plant is ***cannabidiol***, or ***CBD***, which is mainly known for its therapeutic properties, which includes anti-inflammatory, anti-anxiety and anti-epileptic effects. CBD is not associated with the “high” sensation one normally experiences from THC.

In addition to THC and CBD, a number of other more rarely-occurring cannabinoids are being researched for their potential medical benefits, including CBG, CBGV, CBDV, THCV, THCA, CBN, amongst others. As scientists and researchers progress in their understanding of the science behind the plant’s compounds and its effects on the human body, these compounds will most likely find their way into more common therapeutic uses. A further layer of complexity is added to the study of the plant’s impact on the body when one considers the role of the other compounds within the plant, such as terpenes and flavonoids, which are believed to synergistically impact the effect of the cannabinoids on the body. This phenomenon, known as the *entourage effect* and its implications for understanding the plant’s effects on the human body, are believed to be of critical importance to the biological mechanisms underlying the body’s reaction to cannabis.

Industry Overview

Canada

Cannabis Legalization: How Did We Get Here?

Although medical marijuana (MMJ) has been legal in Canada since 2001, the market has been gaining substantial acceptance since the passage of the Marihuana for Medical Purposes Regulations (MMPR) legislation in 2013, which was subsequently replaced by the Access to Cannabis for Medical Purposes (ACMPR) in 2016. This, in turn, was replaced by the Cannabis Act, in 2018, which encompasses the regulations for access to both medical and recreational cannabis. This legislation allowed for the use of medical cannabis with a recommendation from a licensed medical practitioner, for a broad spectrum of conditions.

The regulations allow for the sale and distribution of medical cannabis directly from Licensed Producers (LPs) to consumers through online or phone orders, and to be received via home delivery. Although pharmacies are not authorized to sell cannabis to individuals through their brick and mortar storefronts as they can for other prescription and over-the-counter medications, we believe that a mechanism will exist in the future, whereby a pharmacist would be able to dispense cannabis products to eligible patients.

Public Sentiment and Government Policy Objectives Underpinned the Movement towards Recreational Legalization

Canadian Prime Minister Justin Trudeau committed to legalizing cannabis in 2015. The federal government believed that the public was better off having the already-medically legal substance regulated by responsible policy than left to the black market. The Canadian government laid out the three primary policy objectives behind their plan to legalize recreational cannabis:

- To keep cannabis out of the hands of youth;
- To keep profits out of the pockets of criminals;
- To protect public health and safety by allowing adults access to legal cannabis

Additionally, public sentiment was ripe for a change in policy, as most Canadians supported cannabis legalization. A joint poll conducted by CTV News and Nanos in 2016 indicated public support was near 70% for cannabis legalization. Since that time, public support remained strong in the lead up to legalization.

Canadian's Support for Cannabis Legalization

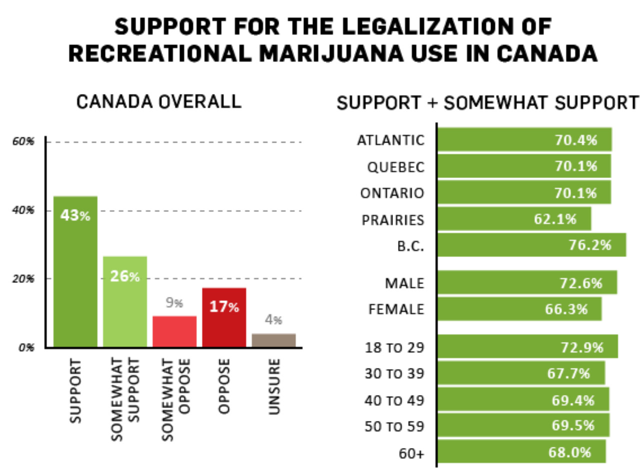


Figure 2. Canadian`s Support for Cannabis Legalization
Source: CTV News/Nanos Research (2016)

The passing of the Cannabis Act in June 2018 allowed for the recreational use of marijuana (RMJ) to begin on October 18, 2018, which made Canada the second country in the world (after Uruguay) and the first G7 nation to legalize cannabis for adult use. Today, adults can access cannabis through legal channels in all provinces and territories across the country, though the retail and distribution systems vary from province to province.

Cannabis Legalization Timeline

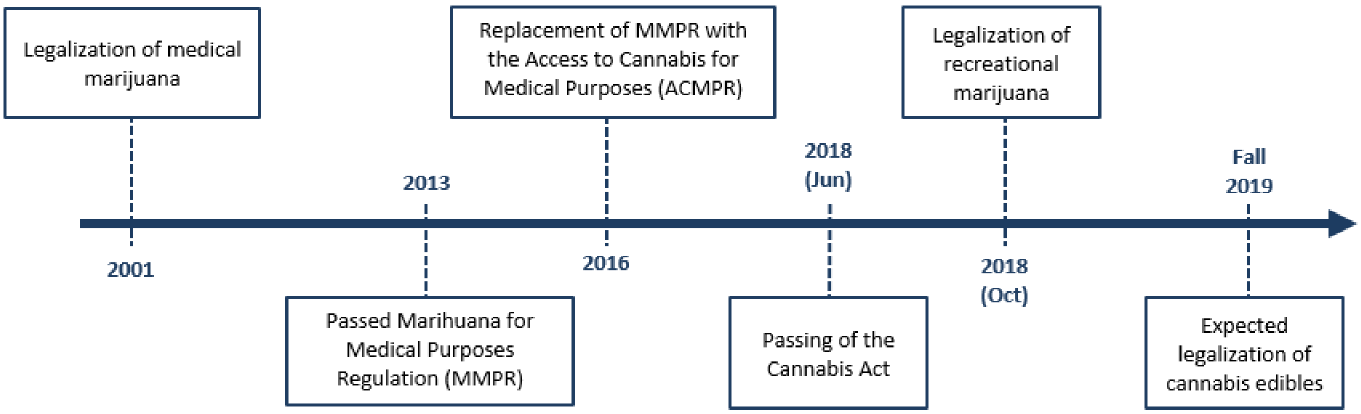


Figure 3. Timeline of Cannabis Legalization in Canada
Source: AltaCorp Capital Inc.

Overview of Legal Framework

Taxation of Cannabis

Both medical and recreational cannabis are taxed equally, with no distinction. All cannabis sold is subject to HST, as well as an excise tax, equal to the greater of $1 per gram (for product less than $10 per gram) or 10% of the retail price. Prior to recreational legalization, medical cannabis was only subject to HST.

In addition, LP's who sell both recreational and medical cannabis are subject to a 2.3% annual tax on cannabis revenues – the "Annual regulatory fee" - for cost recovery in relation to the administration of government regulatory activities. Micro and nursery license holders will pay 1% of revenues, while those selling only medical cannabis will be exempt from this fee.

Illustration of Cannabis Taxation on a Per Gram Basis

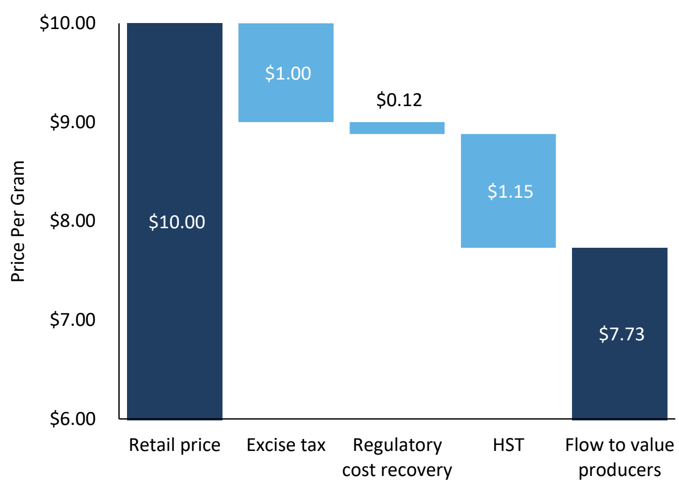


Figure 4. Illustration of Cannabis Taxation in Canada
Source: AltaCorp Capital Inc., Government of Canada

An added benefit for patients who purchase cannabis through legal medical channels is the ability to claim it as an eligible medical expense for tax credits on their income tax return.

Provinces Determine Retail, Distribution Models

Similar to alcohol regulations, the federal government defers to the provinces on matters regarding distribution, sale and consumption of cannabis. The provincial legislation determines whether retail will be public or private, as well as the legal age of consumers, which generally coincides with the legal age of consumption of alcohol.

Retail Landscape by Province

	Provinces										Territories		
	BC	AB	SK	MB	ON	QC	NL	PEI	NS	NB	YT	NT	NU
Brick and Mortar Retail	Hybrid Public/Private	Private	Private	Private	Private	Public	Private	Public	Public	Public	Private (govt location to start)	Hybrid Public/Private	Hybrid Public/Private
Online Retail	Public	Public	Private	Private	Public	Public	Public	Public	Public	Public	Public	Public	Public
Distribution	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
Retail Location/Licenses	Unlimited (8 locations per license)	65[1] (to increase in subsequent licensing rounds)	51 in first licensing round	40 in first licensing round	Unlimited, but first licensing round limited to 25[2] (Online only until April 2019)	20 initially, plan 160 within 3 years	41	4	12	20	1 government location initially	6 initial (in current liquor stores)	None in 2018
Legal Age	19	18	19	19	19	18 (proposed to be increased to 21)	19	19	19	19	19	19	19

[1] *AB had initially planned to issue 250 licenses in first round but halted issuance of new licesnses due to supply shortages. No timeline provided on when licensing will resume*

[2] *ON has limited the initial round of licensing to 25 locations due to supply shortages. No timeline on when cap will be lifted*

Figure 5. Provincial Cannabis Retail Landscape
Source: ACC Research, CCSA, data compiled from various provincial government publications and announcements

Cannabis Market Forecast

ACC Unique Market Forecasting Methodology

We derive our estimate of market demand for cannabis using our forecast of the average spend per cannabis consumer, and the total number of cannabis consumers across the country, as well as a forecasted rate of adoption of legal supply channels.

While commonly cited forecasts are based on volume of cannabis sold in dried kilogram equivalents, we believe that over the medium term, this approach to market sizing is not an informative methodology. While this approach may be appropriate for a market dominated by dried flower, as Canada will be for the very short-term, it poorly reflects the consumption patterns of users in a developed market.

As the market matures, formats such as edibles, beverages and concentrates will make up a greater portion of total sales, as they already comprise more than half of sales in established US legal recreational markets. These formats contain very little cannabis by weight, as the delivery methods are measured based on the amount of *active ingredient* contained in the product. Beverages and edibles, for example, may contain very little active ingredient, though pricing and margins actually increase significantly compared to dried flower, if compared on an equivalent basis.

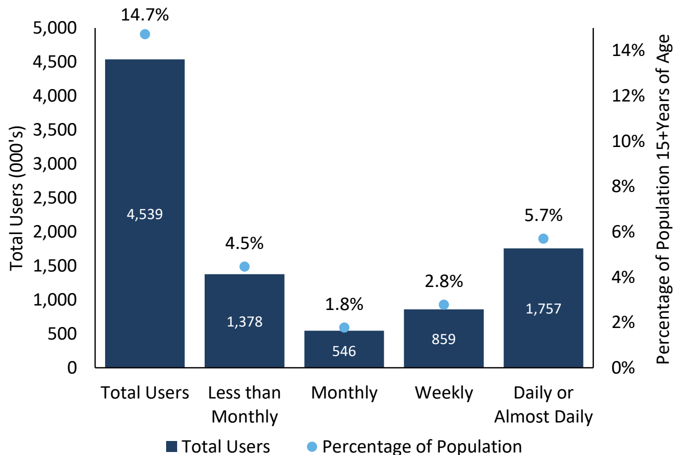
As such, estimating an average price per dried gram equivalent becomes inaccurate when looking across an entire national market, given the broad spectrum of formats, pricing, concentrations and active ingredient content in the strains used in production. We believe that while it is possible to obtain a more accurate view on how an individual company may convert raw production to finished goods pricing on an equivalent basis, **average spending by consumer is the best methodology to derive a forecast of market demand at the macro level.**

Consumer Spending and Usage Patterns in Canada

Based on their Third Quarter 2018 survey of 5,798 Canadians, StatCan indicated that ***approximately 25% of cannabis users spent at least $250 in the past 3 months*** on cannabis, with over 10% of overall users spending more than $500 during that period.

High frequency users (daily or almost daily use) account for more than 38% of cannabis users in Canada, which equates to just under 1.8 million users.

Frequency of Consumption by Cannabis Users in Canada (Q3 2018)



Total Users	Users by Usage Frequency (000`s)			
Spending in Past 3 Months	Less than Monthly	Monthly or Weekly	Daily or Almost Daily	Total Users (000's)
$0	919	501	92	**1,512**
$1 - $50	301	264	123	**687**
$51 - $100	79	234	116	**428**
$101 - $250	55	258	479	**791**
$251 - $500	24	124	505	**654**
$501 - $1,000		24	297	**321**
+$1,000			146	**146**
Total	**1,378**	**1,404**	**1,757**	**4,539**

% of Users	Users by Usage Frequency (000`s)			
Spending in Past 3 Months	Less than Monthly	Monthly or Weekly	Daily or Almost Daily	Percentage of Total Users
$0	67%	36%	5%	**33%**
$1 - $50	22%	19%	7%	**15%**
$51 - $100	6%	17%	7%	**9%**
$101 - $250	4%	18%	27%	**17%**
$251 - $500	2%	9%	29%	**14%**
$501 - $1,000	0%	2%	17%	**7%**
+$1,000	0%	0%	8%	**3%**
Total	100%	100%	100%	**100%**

Figure 6. Cannabis Consumption Patterns in Canada (Q3 2018)
Source: Statistics Canada ("StatCan"), AltaCorp Capital Inc.

There is a high concentration of total spending amongst the most frequent cannabis users. Of those that we consider highly frequent users (those who use cannabis multiple times per week), **54% spent at least $250 in the past 3 months**. Conversely, of those consumers who we consider relatively lower frequency users (either weekly, monthly or quarterly) **71% spent less than $50 during the preceding 3 months**.

Our analysis also highlights that regular cannabis users on average spend in excess of $100 per month on cannabis products.

Regular Cannabis User Spending Habits in Canada

		2017
Total Cannabis Spending (mm $CAD)	$	5,700.0
Cannabis Users (mm)		4.87
Regular Cannabis Users (mm)		4.55
Avg. Annual Spend Per User (CAD)	**$**	**1,252**
Avg. Monthly Spend Per User (CAD)	**$**	**104**

Figure 7. Cannabis Spending per User in Canada
Source: StatCan, Health Canada, AltaCorp Capital Inc.

Using overall market averages, the spending per *regular cannabis user* (at least quarterly usage) in Canada totaled $1,252 for the year in 2017, which exceeded the average spend per consumer on alcohol (discussed in *Figure 28* of this report).

Comparing the average per user spend in Canada to established recreational markets in the US, we conclude that there is significant room for growth in the years following recreational legalization.

Average Spend per User – Established US Recreational Markets

	Colorado	Washington
Estimated Users[1]	1.0	1.2
Total population[2]	5.6	7.4
Population 18+[2]	4.3	5.8
% of pop'n 18+	78%	78%
User % of total pop'n	**17.6%**	**15.6%**
User % of 18+ pop'n	**22.7%**	**20.0%**
2018 Est. Legal Sales ($mm USD)[1]	**$ 1,692**	**$ 1,174**
Adjustments		
Visitor demand[3]	9.1%	n/a
Estimated local legal spending ($mm USD)	**$ 1,537**	**$ 1,174**
Legal Market Penetration[4]	70%	50%
Estimated Total Spending ($mm USD)	$ 2,196	$ 2,347
Total Annual Spending per User ($USD)	**$ 2,231**	**$ 2,032**

[1] Arcview Market Research, Brightfield Group, ACC estimates (in millions)

[2] US Census Bureau (in millions)

[3] MJ Policy Group

[4] Arcview Market Research, BDS Analytics, ACC estimates

Figure 8. Average Spending per Cannabis User in Established US Markets
Source: AltaCorp Capital Inc.

Over time, with the improvement of access to legal channels, the introduction of new higher margin product formats, and brand recognition amongst consumers, we expect the annual spend per consumer to increase meaningfully.

User Base

We use a number of different sources with respect to the total number of cannabis users in Canada to more accurately estimate the total user base in the country. A report from the Canadian Parliamentary Budget Office published in late 2016 forecasted that approximately 4.6mm Canadians would be cannabis users post-legalization. StatCan reported that approximately 4.8mm Canadian used cannabis at least once in 2017, which includes the legal (medical being the only legal source at the time) and illicit markets. Of these, 4.55mm used cannabis at least more than once annually, whom we may consider to be “regular” users. Even more recently, StatCan, in their 2018 3rd Quarter National Cannabis Survey, reported that 15% of Canadians used cannabis sometime during the past 3 months. This equates to 4.6mm regular users of cannabis, prior to recreational legalization. ***All three sources indicate a current regular user base of approximately 4.6mm people nationwide.***

Over the longer term, our conservative estimates place this figure at approximately 6.7mm users by 2025, which assumes that regular usage amongst the adult population rises from 15% of the population to 20%, spurred by legalization, introduction of new products, improved access, and reduced social stigma, among other factors. This level of usage is consistent with that observed in US states where recreational consumption is legal, such as Colorado, Washington and Oregon.

Total Consumer Spending on Cannabis in Canada to Reach $10.1bn by 2025

Canadian Cannabis Market Forecast

Year	2017A	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E
Total Spending (Legal vs. Illicit)[7]									
Total Population (mm)[1]	36.9	37.3	37.6	38.0	38.4	38.8	39.2	39.5	39.9
Aged 15+[1]	84%	84%	84%	84%	84%	84%	84%	84%	84%
Total Addressable Market	**31.0**	**31.3**	**31.6**	**31.9**	**32.3**	**32.6**	**32.9**	**33.2**	**33.5**
Users as % of Addressable Market (at least quarterly use)	15%	16%	17%	18%	19%	20%	20%	20%	20%
Total Regular Cannabis Users[2]	**4.6**	**5.0**	**5.4**	**5.6**	**6.0**	**6.4**	**6.6**	**6.6**	**6.7**
annual growth rate		*10%*	*7%*	*4%*	*7%*	*6%*	*4%*	*1%*	*1%*
Average Spend Per Regular Annum[3]	$ 1,252	$ 1,350	$ 1,425	$ 1,550	$ 1,625	$ 1,700	$ 1,775	$ 1,830	$ 1,875
growth in spend per user		*8%*	*6%*	*9%*	*5%*	*5%*	*4%*	*3%*	*2%*
Total Spending (C$mm)	**$ 5,702**	**$ 6,761**	**$ 7,660**	**$ 8,664**	**$ 9,698**	**$ 10,800**	**$ 11,679**	**$ 12,157**	**$ 12,574**
market growth rate		*18.6%*	*13.3%*	*13.1%*	*11.9%*	*11.4%*	*8.1%*	*4.1%*	*3.4%*
Legal Market Penetration	4%	10%	32%	47%	57%	64%	70%	75%	80%
Total Legal Spending	**$ 242**	**$ 676**	**$ 2,413**	**$ 4,029**	**$ 5,480**	**$ 6,923**	**$ 8,117**	**$ 9,117**	**$ 10,071**
legal spending growth rate		*179%*	*257%*	*67%*	*36%*	*26%*	*17%*	*12%*	*10%*
Total Illicit Spending	**$ 5,459**	**$ 6,085**	**$ 5,247**	**$ 4,635**	**$ 4,219**	**$ 3,877**	**$ 3,562**	**$ 3,039**	**$ 2,502**
Volume Forecast (Illustrative)[4]									
Implied Volume Consumed *(000s dried kg equivalents)*	773.4	945.8	1,071.6	1,212.0	1,356.7	1,510.8	1,633.7	1,700.6	1,758.9
Assumed Average Price per Gram	**$ 7.37**								
Medical vs. Recreational[7]									
Registered Patients (mm's)[5]	0.27	0.37	0.40	0.44	0.47	0.49	0.50	0.52	0.53
patient registration growth rate		*37%*	*7%*	*10%*	*8%*	*4%*	*3%*	*3%*	*3%*
estimated deflator[6]	*67%*	*67%*	*67%*	*67%*	*67%*	*67%*	*67%*	*67%*	*67%*
Estimated Individual Patients Registered	**0.18**	**0.25**	**0.27**	**0.29**	**0.32**	**0.33**	**0.34**	**0.35**	**0.36**
as % of total cannabis users	*4%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Avg. Spend per Legal Medical Patient per Annum[8]	$ 1,812	$ 1,954	$ 2,063	$ 2,244	$ 2,352	$ 2,461	$ 2,569	$ 2,649	$ 2,714
Spending Growth per Patient		8%	6%	9%	5%	5%	4%	3%	2%
Legal Medical Market (C$mm)[5]	**$ 242**	**$ 484**	**$ 547**	**$ 655**	**$ 741**	**$ 806**	**$ 867**	**$ 921**	**$ 972**
Recreational Users	**4.4**	**4.8**	**5.1**	**5.3**	**5.7**	**6.0**	**6.2**	**6.3**	**6.3**
as % of users	*96%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*	*95%*
Total Legal Recreational Market (C$mm)	**$ -**	**$ 192**	**$ 1,866**	**$ 3,374**	**$ 4,738**	**$ 6,116**	**$ 7,249**	**$ 8,196**	**$ 9,099**

[1] StatCan - use 15+ as all data references overall users, illicit and legal

[2] StatCan - Cannabis Stats Hub - 2017 actual only

[3] 2017 actual is ACC estimate based on StatCan 2017 total spending and regular users - assumes all users consuming less than quarterly do not pay for their cannabis

[4] 2017 actuals based on StatCan Cannabis Stats Hub. Future estimates are illustrative and do not drive forecasted spending. Assumes price per gram equivalent is constant @$7.15 overall, which accounts for the deterioration of price in dried bud, offset by higher margin formats. Actual volumes likely to be lower due to shift in focus towards active ingredient content as the market matures

[5] Health Canada actual figures for 2017

[6] ACC estimate for percentage of patients that are likely registered with multiple LPs. This is to account for double counting of registered patients and estimate actual individuals registered as patients with LPs at any time. Grams per day used also reflects his adjustment to the patient base

[7] All future forecasts are ACC estimates

[8] Actual spending per medical patient in 2017 is an ACC estimate using available information from Health Canada. Annual growth in spending is equivalent on a percentage basis to ACC estimated spending growth per total users

Figure 9. Forecast of the Canadian Cannabis Market
Source: AltaCorp Capital Inc.

We estimate that **total spending on legal cannabis in Canada in 2019 to be $2.4bn, which would account for just under one third (32%) of total demand, both legal and illicit**. Over the longer term, **we forecast the Canadian market reaching approximately $10.1bn in total legal spending by 2025**, which represents a CAGR of 47.1% from 2018-2025. Of this spending, **we estimate $9.1bn (90%) will be recreational and ~$1bn (10%) will be medical.**

We also note that our forecast includes the expectation of pharmacy sales being made legal sometime in 2020. Once this occurs, Canada will represent a unique market split between medical and recreational cannabis spend, due to the fact that cannabis will be widely available through both established medical sales channels and recreational channels. In the US, for example, even medical cannabis is sold through dedicated cannabis dispensaries, which are purely cannabis-focused retail channels, and not through a CVS or Walgreens. Conversely, in countries such as Germany, where medical cannabis may be obtained through a pharmacy, there are no channels for recreational retail. The introduction of availability via pharmacies would make Canada unique from a consumer access standpoint in this regard.

Legal Cannabis Spending Forecasted to Reach $10.1bn in Canada by 2025

Our 2025 forecast sees the Canadian user base reach 6.7mm users, and total legal spending at $10.1bn per year.

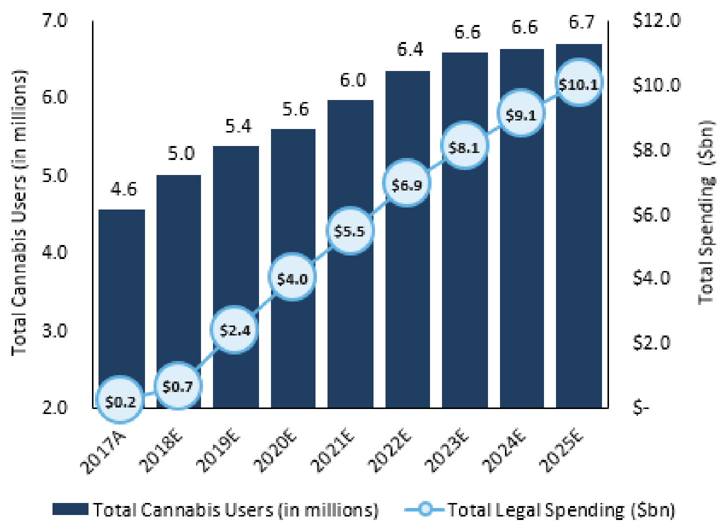


Figure 10. Cannabis Spending and User Base Forecast
Source: AltaCorp Capital Inc.

Our model sees the increase in legal market adoption as the most significant driver of growth in the shorter term. However, over the longer term, the growing user base, as well as an increase in the average spending per user on cannabis products will drive an increasing share of overall market growth. **We believe the growth forecast for per user spending is conservative, and there could be upside to this number based on the data seen in established US legal recreational markets.**

Supply to Constrain Legal Market in Near-Term…

The current dynamics of the legal marijuana market in Canada are such that demand exceeds supply. Thus far (as of January 2019), Health Canada has approved 142 licenses under the Cannabis Act. The total number of companies that hold and operate these licenses is significantly less, however, as many LPs (particularly large publicly-traded names) hold multiple site licenses across the country. In addition, a meaningful number of these LPs are early stage businesses with assets that have not been fully developed and brought on-line, while also lacking resources and proven track records of successful production. *Note that since cannabis legalization, Health Canada does not grant "LP" licenses any longer. Rather, companies are granted sub-licenses for: cultivation, sale and/or processing. We use the term "LP" in this initiation report to indicate that a company has received either one, or a combination of all 3, sub-licenses.*

In addition, of these 142 licenses, just 68 are currently approved for the sale of product. The remaining licenses are cultivation only, and require further approval from Health Canada in order to obtain their sales license. **Due to these factors, in the near term, as expected, the undersupply condition has been exacerbated by the introduction of the recreational market. This is expected to support wholesale prices of dried flower over the next one to two years.**

…but Will Move to Oversupplied Condition Once Capacity is Built-Out

Based on the published planned capacities of many of the large and mid-sized Canadian LPs, we have calculated at least 2.3mm kg of domestic cultivation capacity once these projects are built out, which we expect should occur by late 2020. This figure excludes various other privately held LPs that have not made their planned capacity public. We believe the total number could potentially exceed 3mm kg if all plans were included.

Additionally, further developments on the supply side, such as outdoor grow (which is already legalized and underway in Canada), will only push available supply even higher, while driving the cost of production lower. Over the longer term, technologies such as yeast fermentation and other synthetically-derived technologies used to produce cannabinoids, if successfully commercialized, may drive the cost of inputs down even lower. Thus far, three companies have announced investments in the technology, including **Cronos (CRON-TSX, NR)** - partnership with Boston-based Ginkos Bioworks, **Organigram's (OGI-TSX, NR) -** partnership with Montreal-based Hyasynth Bio and **Cardiol Therapeutics' (CRDL-TSX, NR)** - partnership with Delaware-based Noramco (private). These various developments will ensure ample supply long-term and accelerate the commoditization of raw cannabis, and further out, could also drive down pricing on primary cannabinoid extracts such as THC, CBD and other rarer cannabinoids.

Uptake of Legal Demand in Canada Likely to be Slower than Expected

While over the long-term, we view the cautious approach to regulation by Health Canada and provincial regulators as a means to building a strong and reliable market environment for businesses and consumers alike, we believe that the uptake of legal demand may be slower than expected by market observers.

StatCan estimated in their September 2018 release that legal cannabis spending in the fourth quarter of 2018 could total as much as $1.02bn, and account for 76% of total spending. In our view, this is extremely aggressive, as the legal market lacks both the supply and distribution infrastructure to displace the illicit market in such short order. In their latest data report on December 21, 2018, Statistics Canada indicated that legal recreational cannabis sales nationwide hit $43mm for the two weeks post-legalization. Note that this figure does not include total medical spend. These sales numbers do not support StatCan's estimate.

In our view, the following factors will most likely contribute to a slower progression of legal market penetration than may be expected by StatCan:

Bottlenecks with access to legal supply: With the aforementioned near-term shortage of legal supply in the short-term likely to abate by about 2020, the matter of distribution is still one that must be overcome, as customers may still find it easier to access illicit supply in their home markets. For example, in Ontario, the early days of the Ontario Cannabis Store (OCS) have been challenging, and brick and mortar stores are not expected to open prior to April 2019. The Ford administration also announced that it would limit the initial retail licensing round to just 25 stores due to the supply shortages currently hampering the market. In provinces such as BC, illicit dispensaries still dominate the landscape, and in Quebec, the plan to roll out just 160 locations in a province of nearly 8.5mm people within 3 years suggests that market will remain underserved by legal retail channels.

Lack of different product formats such as edibles, vapes and beverages: The current regulations allow only for dried flower, oils and some capsules and sprays. Some of the more popular formats including edibles (including beverages), vape pens, concentrates (shatter, wax, resin, etc) are unavailable in the legal market, and are not expected to be allowed for sale by Health Canada before Fall 2019. The lack of options during the first months of legal recreational sales will likely slow the adoption of legal channels, as existing consumers will continue to obtain these goods from illicit sources. Additionally, these formats, in particular vapes and edibles, are seen as a gateway for inexperienced or new cannabis consumers, and therefore, new user growth may lag until these products are made available.

In late December 2018, Health Canada released their draft regulations for public consultation on the rules surrounding new cannabis products including edibles, beverages, vapes, topical and extracts, with proposed limits on THC per serving, restrictions on additive ingredients and total active content per package, amongst other things.

Summary of Health Canada Draft Regulations for Edibles, Beverages, Extracts and Topicals

	EDIBLE CANNABIS (SOLID)	EDIBLE CANNABIS (BEVERAGE)	CANNABIS EXTRACT (INGESTED)	CANNABIS EXTRACT (INHALED)	CANNABIS EXTRACT (CONCENTRATED THC)	CANNABIS TOPICAL
THC LIMIT	‣ 10 mg of THC per package	‣ 10 mg of THC per container	‣ 10 mg of THC per unit (such as a capsule) or dispensed amount ‣ 1000 mg of THC per package	‣ 1000 mg of THC per package	‣ 1000 mg of THC per package	‣ 1000 mg of THC per package
PRODUCT RULES	‣ No added vitamins, minerals ‣ Limits on caffeine ‣ No added alcohol	‣ No added vitamins, minerals ‣ Limits on caffeine ‣ No added alcohol	‣ No added vitamins or minerals ‣ No sugars, colours or sweeteners ‣ No nicotine or caffeine	‣ No sugars, colours or sweeteners ‣ No nicotine or caffeine	‣ No sugars, colours or sweeteners ‣ No nicotine or caffeine	‣ For use on skin, hair and nails ‣ Only cosmetic grade ingredients ‣ Not for use in eyes or on damaged skin
PACKAGING	‣ Child-resistant ‣ Plain	‣ Child-resistant ‣ Plain	‣ Maximum package size of 90 mL for liquid extracts ‣ Child-resistant ‣ Plain ‣ Must have dispensing device if not in unit form	‣ Maximum package size of 90 mL for liquid extracts ‣ Child-resistant ‣ Plain	‣ Maximum package size of 7.5 g ‣ Child-resistant ‣ Plain	‣ Child-resistant ‣ Plain
LABEL	‣ Standardized cannabis symbol for products containing THC ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Nutrition Facts Table	‣ Standardized cannabis symbol for products containing THC ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Nutrition Facts Table	‣ Standardized cannabis symbol for products containing THC ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Intended Use	‣ Standardized cannabis symbol for products containing THC (on label and directly on the vape cartridge) ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Intended Use	‣ Standardized cannabis symbol for products containing THC ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Intended Use	‣ Standardized cannabis symbol for products containing THC ‣ Health Warning Message ‣ THC/CBD content ‣ Ingredient list ‣ Allergens ‣ Intended use ‣ Directions for use ‣ Warning statement about not swallowing or using on broken skin
OTHER	‣ Must not be appealing to kids ‣ No health or dietary claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol	‣ Must not be appealing to kids ‣ No health or dietary claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol	‣ Must not be appealing to kids ‣ No health claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol	‣ Must not be appealing to kids ‣ No health claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol	‣ Must not be appealing to kids ‣ No health claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol	‣ Must not be appealing to kids ‣ No health or cosmetic claims ‣ No elements that would associate product with alcoholic beverages or brands of alcohol

Figure 11. Health Canada Proposed Regulations for Edibles, Extracts, and Other
Source: Health Canada

The proposed regulations somewhat mirror the standards seen in several US recreational markets, with 10 mg limits on THC per serving in edibles, beverages or capsules.

The most significant points to note include that ***i)*** no health claims can be made; ***ii)*** all packaging must be child resistant; and ***iii)*** no elements may be used that "would associate product with alcoholic beverages or brands of alcohol", which would have obvious implications for branding of products in the beverage category in particular.

Restrictions on branding and marketing: The *Cannabis Act* imposes extremely restrictive rules surrounding packaging, labelling, branding and promotion of cannabis products. This will impede companies' ability to develop brand recognition amongst cannabis consumers.

Health Canada labelling requirements include a standardized cannabis symbol that appears on every label, mandatory health warning messages, disclosure of THC and CBD content and must be child resistant.

For the most part, US recreational markets, allow for more freedom to implement brand imaging on their packaging, as the example shown here depicts.

Comparison of Health Canada's Extremely Restrictive Packaging Guidelines to US Recreational Cannabis Packaging

Canada | **US Markets**

Figure 12. Comparison of Packaging Restriction in Canada vs US Cannabis Markets
Source: Health Canada, MedMen (MMEN-CNQ, NR) Marketing Materials, Green Thumb Industries (GTII-CNQ, NR) Marketing Materials

The packaging, as well as any advertisements, must comply with the following branding restrictions:

- May not be appealing to young persons;
- May not have endorsements or testimonials;
- May not depict a person or fictional character;
- Associate cannabis or a brand element with evoking an emotion, or promoting a way of life that includes glamour, reaction, excitement, vitality, risk or daring.

Advertising may also not take place in any public forum where it can potentially be seen by underage persons, nor can a brand sponsor a person, event or facility.

Based on our interpretation of the Act, primary channels for promotion will be in store (point of sale), in venues where underage persons are not permitted, and through age-gated digital media channels.

While this may create a hurdle for companies, we foresee the restrictions to be loosened gradually over the long term, to move them closer to rules that govern alcohol advertisement. Until then, **we view the branding and packaging restrictions as a major roadblock to gaining consumer loyalty and recognition of brands and products.** This will force companies to be innovative in their pursuit of developing brand equity and recognition amongst consumers.

US Experience Supports Our View that Legal Market will Take Several Years to Displace Illicit Spending

Taking the experience of established recreational states in the US, we have seen the uptake of legal demand in places such as Colorado, Washington and Oregon take years to reach these forecasted levels of uptake. Colorado, for example, considered to be the most established legal recreational market in the world, was estimated to have reached **67% legal market uptake as of the end of 2017. This figure was reached after a full four years of legal recreational sales.**

Even the most established US recreational markets (eg. Colorado and Washington) lag the legal penetration forecasted by StatCan in the first quarter of legal recreational sales.

Legal Cannabis Spending as Percentage of Total Spending – 2017

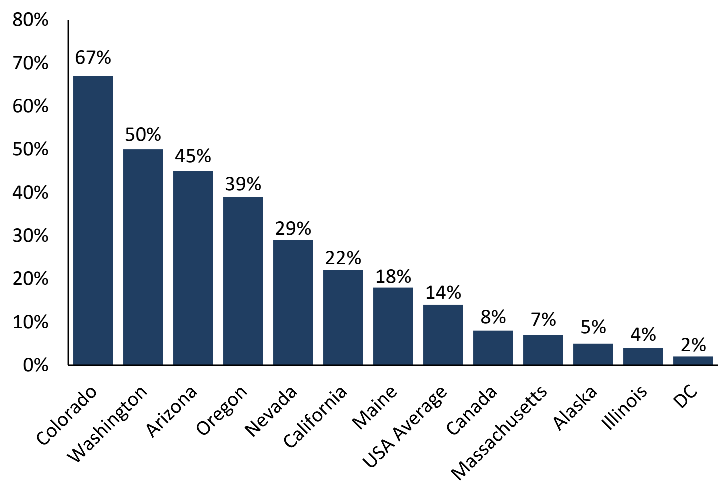


Figure 13. Legal Spending as Percentage of Total Spending on Cannabis
Source: Arcview Market Research

Colorado's legal retail and distribution system also has remarkable coverage of their population, with over 500 recreational dispensaries serving just 5.7mm residents. This type of coverage will, in a best case scenario, take several years for the Canadian market to achieve.

This, as well as Colorado's looser restrictions on branding and marketing, and a wider availability of product formats over the past several years, would suggest that Canada's legal market adoption rate should be slower than what has been observed there. ***We assume the Canadian market will achieve a 70% legal adoption rate by 2024, a little over 5 years post legalization, and achieve 80% by 2025.***

Industry Value Chain

We view the cannabis value chain as being comprised of 5 stages of activities from cultivation through distribution and retail.

Cannabis Industry Value Chain

Figure 14. Value Chain for Cannabis Industry
Source: AltaCorp Capital Inc.

In today's market, a number of LPs have taken the approach to vertically integrate, and assume all activities within the value chain. This situation may be tenable in the infancy of the industry, due to the fact that no companies have an established history of operational expertise and specialization in any stage of the value chain.

However, as the industry matures, we expect to see more companies begin to narrow their focus on certain activities within the value chain where they believe they hold a competitive advantage, and outsource the remaining activities to other specialist firms. We look for companies to begin to invest in developing their capabilities in a more focused manner across these various activities in the future.

For example, we may see an LP that focuses on product development and branding choose to divest its cultivation assets and outsource cultivation and processing activities via long term supply contracts. They may also elect to contract a local distribution and sales team in the various markets in which it is selling product. These models are commonplace within the more mature CPG verticals such as packaged food and beverages, alcohol, tobacco and personal care. Rarely do major CPG businesses in personal care, for example, own the retail outlets, or beer companies own barley and malt farms.

Where Will the Margin Fall?

In our view, the majority of the margin will accrue to firms that focus on value-added activities, particularly those which are focused on developing IP around brands and formulations, unique technologies, and building share of the retail channels.

As we expect raw cannabis to eventually become commoditized, we see activities such as cultivation losing share of margin in the near future. Conversely, companies that are able to build strong brand loyalty, and retailers that can own the access to the consumer at the point of purchase will be able to command significant and an increasing share of the margin within the value chain.

Market Dynamics in Medical vs Recreational Segments

Medical Market Overview

Health Canada published their latest patient count figures as of September 30, 2018, which placed the total number of registered MMJ patients in Canada at ~342,000, realizing a 3.2% monthly compounded growth rate over the preceding 12 months.

Obtaining the true number of individual medical patients is ambiguous given the manner in which Health Canada measures this statistic. The reported patient count figure is a summation of all of the patients registered with LPs, however, each LP maintains its own patient registration, and no central database is maintained by Health Canada of registered individuals. Therefore, an individual can register with multiple LPs to receive product from different providers, which inherently creates double counting of patients within the total figure. Nevertheless, patient count growth is taken as a directional sign of more overall patients, if not an exact measure.

For the 12 months ended September 30, 2018, Health Canada reported sales of an estimated 32,685 kg of dried kg equivalents of medical cannabis. This figure includes our estimate for dried kilogram equivalents of oil which is converted from Health Canada's reported oil sales numbers.

Factors affecting Medical Cannabis Demand

We see the following factors shaping the demand for medical cannabis in the coming years:

- Demographic trends: An aging North American population will fuel increasing prevalence in chronic conditions;
- Medical cannabis being offered as an alternative to opioids and other prescription drugs;
- Migration away from medical channels as jurisdictions legalize recreational cannabis;
- Eventual opening of distribution to patients through pharmacies and broadening of insurance coverage for medical cannabis.

An Aging Population Will See Increasing Prevalence in Chronic Conditions

We believe one of the factors supporting increased medical usage is the aging population, amongst which, chronic conditions that call for use of prescription medications, are far more common.

Canadian Prescription Drug Use by Age Group

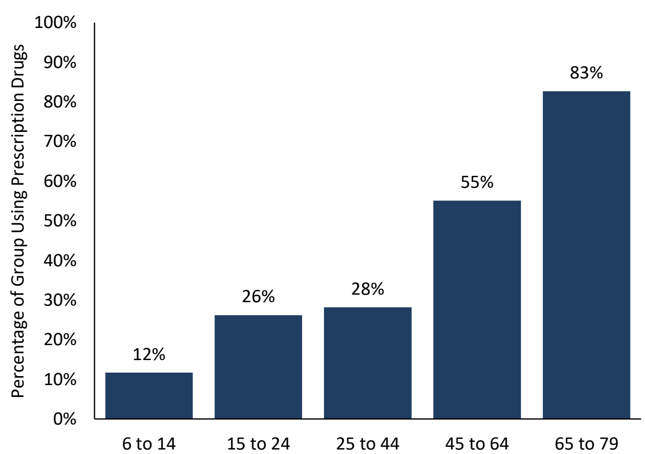


Figure 15. Prevalence of Prescription Drug Use by Demographic Groups in Canada
Source: StatCan

We have already seen extremely fast ramp ups in medical usage in markets with older populations, such as Florida for example, where the patient count has exceeded 200,000 in the first 2 years under a legal medical regime. As the Canadian population continues to age, we see medical usage amongst the older demographics increasing.

MMJ Will Steal Market Share from Opioids, Other Prescription Drugs

Of the prescription medicines that MMJ has shown to have the most displacing in replacing, is opioids. The opioid crisis is amongst the most pressing challenges of public health policy makers in North America at the moment, as the issue continues to intensify.

Opioid overdose deaths now claim more lives in Canada than automotive accidents according to StatCan, with opioids claiming 3,996 lives in 2017. South of the border, the situation is no better, with an estimated 72,000 Americans having died of drug overdoses in 2017, and over 49,000 of these deaths relate to opioid overdoses. Since 1999, opioid overdose deaths in the US have quadrupled. In 2018, President Trump, declared the opioid epidemic a national emergency.

US Drug Overdose Deaths per Annum

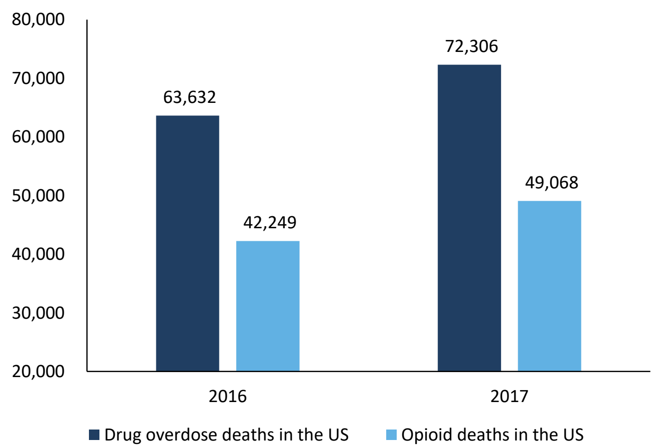


Figure 16. Drug Overdose Deaths per Annum (US)
Source: National Institute on Drug Abuse (provisional 2017 data)

In response, cannabis has been increasingly touted as an alternative to opioid use for pain relief, and has shown excellent promise in helping to combat abuse of these drugs. Numerous studies provide evidence supporting the conclusion that patients substitute opioid use with cannabis:

- Researchers, led by Bachuber et. al. (2014), found that when comparing U.S. states that have legalized medical cannabis, they observed a 25% decrease in opioid fatalities versus those states that do not allow it;
- A 2018 study published in the European Journal of Internal Medicine (Schleider et. al.) reviewed data from 2,970 cancer patients. The study showed that after six months of cannabis treatment, of those patients using opioids, 36% ceased using opioids entirely, and an additional 10% decreased their dosage;
- In July and August 2018 respectively, New York and Illinois both included opioid replacement as one of the allowable conditions for receiving a medical marijuana prescription legally within the states.

In MMJ-legal jurisdictions, cannabis is also being recommended to, and requested by, patients as a replacement for not just opioids, but other prescription medications and over-the-counter medicines, due in large part to patients voicing their preference for cannabis. Many often report less negative side effects, as well in many cases, superior safety and efficacy profiles. A 2017 survey from HelloMD and the Brightfield Group found ***a significant majority of MMJ patients preferred cannabis to previously prescribed medications to treat their various ailments.***

Patients Favour Efficacy of CBD vs OTC and Prescription Medications

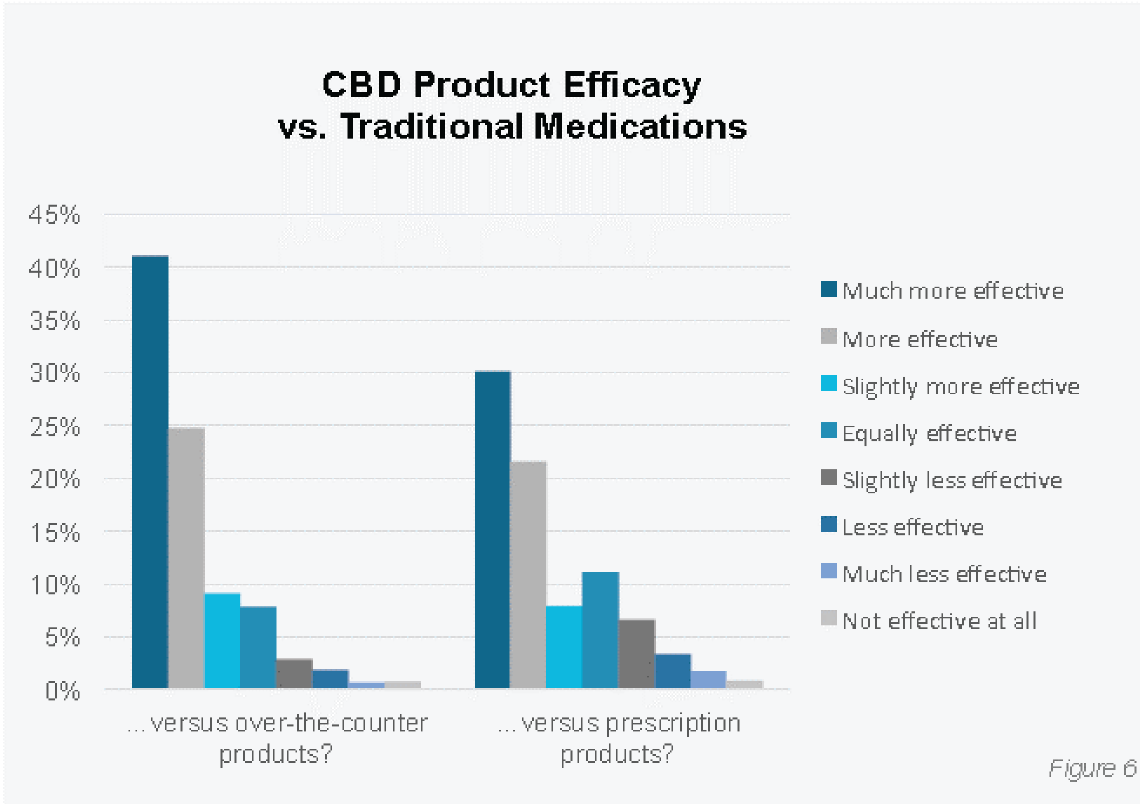


Figure 17. Patient Survey Regarding Efficacy of CBD vs. Traditional Pharma Drugs
Source: HelloMD, Brightfield Group

We view this trend of medical cannabis usage either replacing or displacing traditional prescription and OTC treatments as being in its very early stages. As continued research is conducted on the potential medical uses of cannabis, we expect this trend to intensify.

Migration Away from Medical Channels Post-Rec Legalization

In the period following recreational legalization, we expect to see legal medical spending growth slow, and perhaps even decline, as pseudo-medical users and those who value ease of access (without a prescription) migrate to recreational channels.

One of the issues with the distinction between medical and recreational channels is that many cannabis users may be “dual-users”, not using cannabis exclusively for one purpose. Even those using cannabis for some therapeutic purposes are likely to access product through the most convenient and available channels, which in many instances, is through the recreational one.

Even with medical cannabis having been legal in Canada since 2001, a 2018 survey by Health Canada reported that just 24% of medical users obtained their cannabis from an LP. **In our view, this supports the notion that convenience is highly valued by users, and that there is a preference to obtain cannabis without a prescription if the option existed.**

This trend has been observed in several US markets, including Colorado, Oregon and Washington, post-legalization of recreational cannabis, after previously allowing medical cannabis consumption only. Further, as our firm has conducted numerous site visits to US dispensaries, various personnel have indicated that a growing trend amongst MMJ users is to purchase recreational cannabis as opposed to MMJ –the reason being that users do not want to be registered in government databases when receiving a prescription and making a purchase, which is standard practice for medical cannabis in many US states.

In 2017, medical cannabis sales in Colorado decreased by 6.5% y/y which is attributed to medical patients beginning to access cannabis through legal recreational channels, circumventing the need for a doctor's recommendation.

Colorado Cannabis Sales by Channel (Medical vs Recreational)

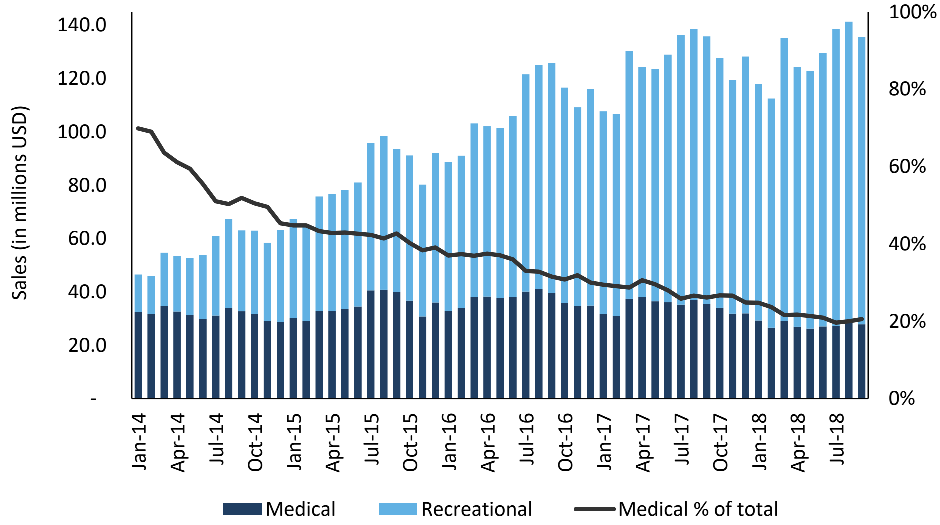


Figure 18. Colorado Cannabis Sales
Source: Colorado Department of Revenue

Distribution via Pharmacies and Insurance Coverage Should Mitigate Slowing of Medical Demand Relative to US Markets, Post-Recreational Legalization

While we believe the Canadian legal medical market will also experience a slowing in growth post-recreational legalization, it may be mitigated in comparison to what we have observed in the US, in part, due to two factors: eventual distribution of medical cannabis through pharmacies, and broadening of coverage for medical cannabis from major health insurance plans.

Although, insurers like Manulife Financial Corporation (MFC-TSX, NR) and Sun Life Financial Inc. (SLF-TSX, NR) have begun offering insurance coverage for medical marijuana, coverage is still relatively restrictive, and is only available on more expensive "luxury" plans, or limited to a specific set of conditions, depending on the insurer. We believe that as further data supports the efficacy of medical cannabis in the relief of certain conditions, insurers will most likely expand their coverage to include it as part of their more standard plans.

With respect to pharmacy sales, while Shoppers Drug Mart (L-TSX, NR) has received their sales license from Health Canada under the Cannabis Act, they will only be able to sell cannabis through the existing direct-to-consumer channel available to all other LPs, and not through their retail locations. We do, however, see the prospect of medical cannabis being sold in pharmacies as a behind-the-counter product under the supervision of a pharmacist, as being highly likely sometime in the next few years (we forecast 2020 in our market model). This would greatly improve access for medical cannabis users, and allow the medical channel to better compete with recreational channels from a convenience perspective. This development, in our view, would provide a boost to medical cannabis sales, if and when it occurs.

Recreational Market Overview

The Cannabis Act legislation was passed in June 2018, legalizing RMJ. This historic moment allowed for the commencement of legal RMJ sales across the nation on October 17, 2018, making Canada only the second country (after Uruguay), and the first G7 nation, to legalize recreational cannabis for adult use on a national level.

Catalysts for Recreational Demand Growth

We see the following as pivotal factors that will shape the landscape for recreational cannabis demand in the coming years:

- Increasing social acceptance and reduced stigma surrounding cannabis use;
- New delivery formats, including concentrates and edibles;
- Improved access and distribution channels.

Increasing Social Acceptance

The legalization of cannabis is expected to increase the user base, primarily as a result of the reduced social stigma surrounding the drug. As societal norms experience a shift in the coming years, a number of those who are currently non-users will be more inclined to try cannabis as a result of its reformed legal status, and wider acceptance amongst the broader culture.

A recent survey noted that 55% of those surveyed would consider trying marijuana once it was legalized, well above the current regular user of approximately 15% ship amongst Canadian adults.

If Recreational Cannabis Were to Become Legal, Would You Try It?

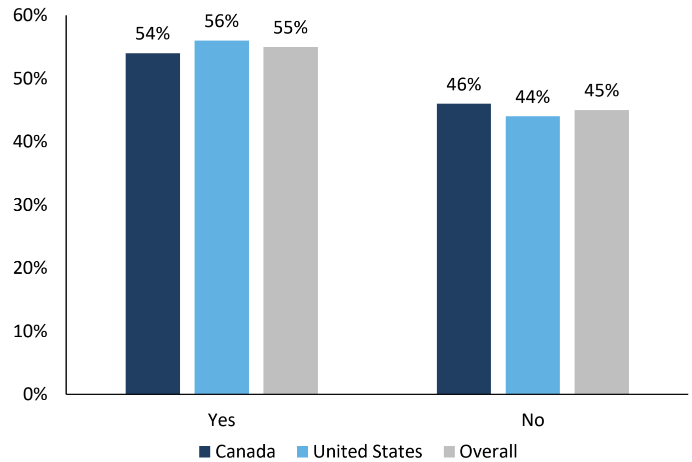


Figure 19. Survey Responses on Cannabis Consumption
Source: A.T. Kearney Cannabis Survey

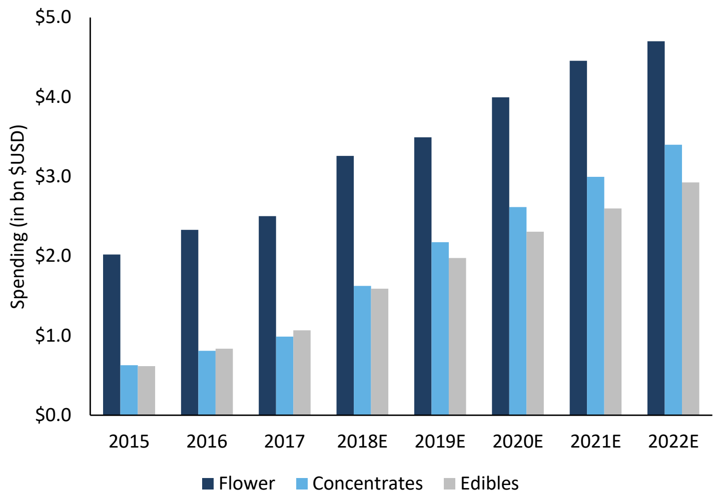
Although very difficult to predict, over the much longer term, the regular user base may experience significant growth as a result of demographic shifts. Older generations are, on average, far less frequent users of cannabis, in large part due to its history of illegality and social stigma. As these older generations are displaced over time by future generations, the majority of the population will never have known anything different from legal cannabis in their lifetime. Although not captured within the forecast period of our models, a dynamic such as this could push the user base, much closer to that of alcohol (80%) than tobacco (16%).

New Delivery Formats

Current Health Canada regulations only allow for dried flower (including pre-rolls), oils, and a select variety of other variants of these formats (such as sprays and capsules). However, as noted earlier in the report, it is widely expected that by late 2019, the regulations will allow for the introduction of new delivery formats which are staples of mature recreational cannabis markets in the US, including edibles, beverages and concentrates, including vape pens.

The forecasts for established US markets in California, Washington, Oregon and Colorado highlight that annual growth in spending in the concentrates and edibles categories is set to outpace dried flower by a wide margin.

Established US Market Forecasts Show Highest Growth in Edibles and Concentrates Categories



	Growth Rate %							CAGR
Category	2016E	2017E	2018E	2019E	2020E	2021E	2022E	('17A-'22E)
Flower	15%	7%	30%	7%	14%	12%	5%	13%
Concentrates	29%	22%	64%	34%	20%	15%	13%	28%
Edibles	35%	28%	49%	24%	17%	13%	13%	22%

Figure 20. Growth Rate by Cannabis Product Segment in Established Legal US Markets
Source: Brightfield Group, AltaCorp Capital Inc.

With categories such as concentrates and edibles making up the fastest growing segments in established recreational markets south of the border, these formats are expected to add significant growth to the market once introduced in Canada. These formats offer a more user-friendly, discrete method of consumption, allow for more accurate dosing and provide the option to consume cannabis in a smoke-free method. ***Based on our research, many current non-users, particularly in older demographics, are likely to have an aversion to smoking, for both health and social reasons. However, our findings suggest these users typically find these alternative formats more approachable, and we would expect these formats to serve as a gateway to the category for non-users.***

Much like the established US markets, as Canada's recreational market develops in the years following legalization, we expect to see alternative product formats occupy an increasing share of total spending. We also expect to see a multitude of new consumption formats developed, and the proliferation of formats that have yet to be widely commercialized, such as the inclusion of cannabis in sports drinks, packaged foods (beyond traditional edibles), cooking ingredients and personal care.

Packaging and branding for these products may be appealing to a much wider audience, similar to a traditional CPG product, as opposed to a traditional cannabis product catered to a regular or frequent user.

Branded CPG Products Containing Cannabis Can Have Wide Appeal

Figure 21. Examples of CPG Products Containing Cannabis
Source: Green Growth Brands (GGB-CNQ, NR) Marketing Materials

Improved Consumer Access and Growth of Retail Channels

With Canada's legal recreational sales having just begun on October 17, 2018, it will take time for the recreational distribution system to develop, and achieve the requisite scale and reach to adequately serve legal demand. This process will unfold in the coming months and years.

The sales channels for recreational cannabis vary from province to province, as the federal government has granted provincial governments the ability regulate RMJ distribution in their jurisdictions as they see fit. Provincial distribution systems range from completely private – such as Saskatchewan; to hybrid systems – such as Ontario, Alberta and BC, with private brick and mortar retail and government-run online sales; to completely government-managed distribution, such as in Quebec, where the provincial corporation owns both online and brick and mortar sales.

Canada Needs More Cannabis Dispensaries: In order to equal the recreational cannabis dispensary coverage achieved by Colorado, Canada would need to have nearly 3,500 dispensaries nation-wide.

Canada Needs More Cannabis Dispensaries

	Population	Actual/Planned/Estimated Licensed Retail Locations	Stores per 100,000 Inhabitants	Retail Locations Needed to Equal Colorado Density
Colorado[1]	5,607	**549**	**9.5**	
Canada:				
BC[2]	4,873	5	-	462
Alberta[4]	4,286	65	1.5	407
Manitoba	1,338	40	3.0	127
New Brunswick	760	20	2.6	72
Newfoundland and Labrador	529	41	7.8	50
Nova Scotia	954	12	1.3	91
Ontario[3]	14,193	25	0.2	1,347
Prince Edward Island	152	4	2.6	14
Quebec	8,394	160	1.9	797
Saskatchewan	1,164	51	4.4	110
Total (Canada)	**36,643**	**423**	**1.2**	**3,477**

[1] Colorado retail locations based on list from Colorado department of Revenue os of January 2, 2019

[2] BC has no estimates available for total legal retail licenses to be issued, and total is not capped

[3] No cap on total licenses in Ontario, however, ON licenses have been limited to 25 in the first round of licensing due to supply shortages

[4] AB had initially planned to issue 250 licenses in the first year, but have since temporarily capped licensing in the interim to 65 locations until supply conditions ease to allow for more inventory to supply additional locations. No timeline has been provided as to when the next round of licenses will be issued

Figure 22. Comparison of Legal Cannabis Dispensaries per Capita
Source: Brightfield Group, AltaCorp Capital Inc.

Ontario has announced that they will allow privately-owned and operated brick and mortar locations beginning in April 2019, with a phased approach of granting licenses. The Province has also included a limit on the combined ownership in each cannabis retailer by LPs of 9.9% of total equity to encourage more ownership from small businesses and increase competition amongst retailers. More recently, the Ford administration also capped the first round of retail licenses at 25 as a result of product supply shortages.

Alberta, similarly had initially allowed for 250 initial licenses, and will likely increase that number meaningfully in the coming years, for a population of less than 5mm residents. However, in the interim, like Ontario, the province recently halted the issuance of new licenses due to a shortage of legal supply (capped at 65). There has been no timeline given as to when retailers can expect additional licenses to resume being issued. Over the long term, the stated planned number of retail locations should allow for adequate servicing of legal demand, once the retail system becomes more developed. However in the interim, the legal market will remain underserved, with just 65 locations currently licensed.

Conversely, provinces such as Quebec only plan to open up to 160 stores in the first 3 years of recreational sales, for a population of over 8mm people. Here, we would expect that the illicit market will retain a stronger presence, as the distribution system will most likely struggle to properly serve the market.

Key Themes and Catalysts in the Cannabis Space

Cultivation will experience margin compression

While the supply issues in the near term will likely put a floor under prices for raw dried bud, over the longer term, we expect that cultivation of cannabis and hemp will revert to single-digit EBITDA margins, in-line with those seen in cultivation of other crops. Much like in the alcohol industry, margins are likely to be concentrated downstream in the value chain, with those who develop products and brands, create proprietary technology and those who specialize in distribution and retail.

This outlook is supported by the experience of markets in the US, more specifically, in established recreational states, where cultivation licenses tend not to be tightly restricted, such as in Washington and Oregon. Here, we have observed the continual decline of wholesale prices of dried bud over the years, as supply continues to be plentiful, and cultivators undercut one another for market share.

The average US spot wholesale price of dried cannabis has been in a sustained downtrend over the past several years. This trend is far more pronounced in mature recreational states such as Washington and Oregon.

US Wholesale Prices In Sustained Downtrend ($USD)

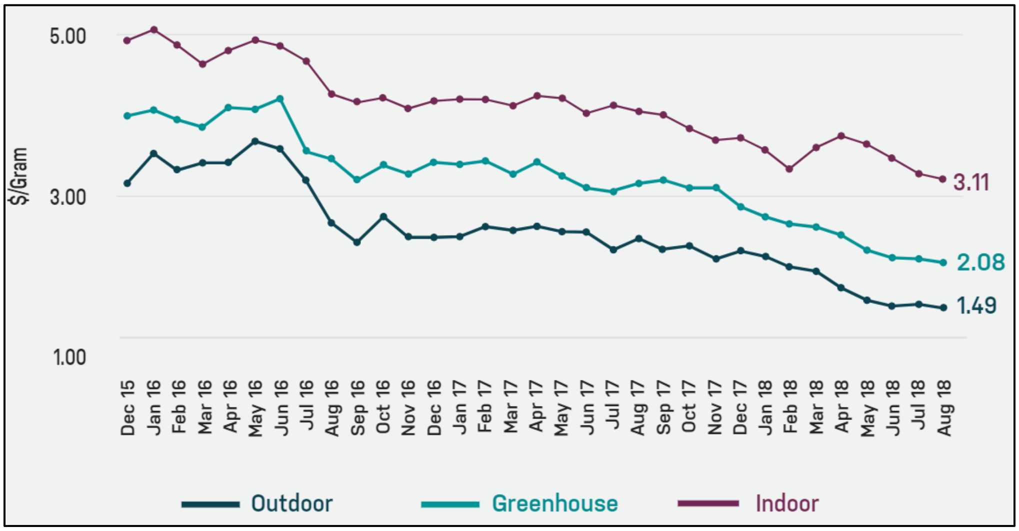


Figure 23. US Wholesale Cannabis Prices
Source: Arcview Market Research

This dynamic will present significant opportunity for LPs who can successfully add value downstream, as their input costs will decline, and access to supply will be plentiful. **We foresee the potential for many LPs to exit cultivation activities once the supply side in this market develops, and instead, offloading their cultivation assets and entering supply agreements with cultivation-focused businesses.**

Cannabinoids will be seen as an input as focus shifts to new product formats

With the expected introduction of consumables and concentrates in Canada in Fall 2019, the evolution of the marketplace in terms of product categories will displace many existing brands and product formats.

Indeed we have seen that in established US markets such as California and Colorado, dried flower makes up less than half of total sales on average. In California and Colorado, products other than dried flower are forecasted to account for 2/3 of the market by 2022, and currently accounts for just over half of spending as of 2017.

Estimates of market share by category see dried flower accounting for just 37% of total spending in Colorado and California by 2022, having previously made up half of the total market.

Category Share Forecast – Colorado and California (2017 – 2022)

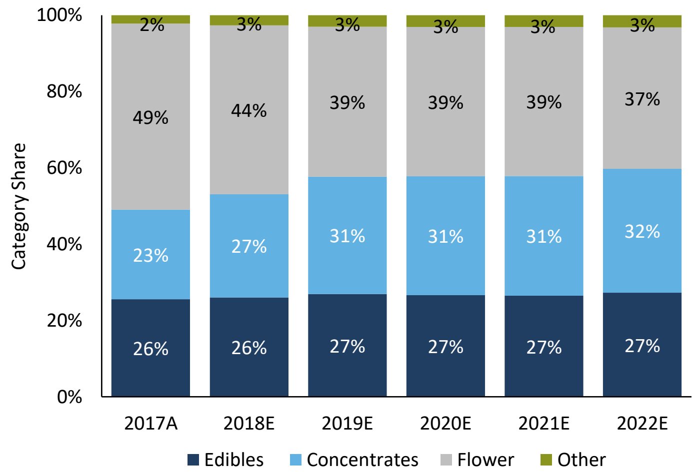


Figure 24. Total Share of Spending by Product Segment in US Markets
Source: Brightfield Group, AltaCorp Capital Inc.

As we highlighted earlier, this trend shows no signs of slowing down in these markets, as projected growth rates for consumables and concentrates looks to outpace that of dried bud in these markets (*Figure 20*). Cannabinoids will be viewed simply as an input, as the compounds will migrate into other existing categories, such as nutraceuticals, lifestyle enhancement and wellness, fitness supplements and beauty and skin care.

We expect that over the long term, dried bud may make up as little as 20% to 25% of the total dollar share in the market.

Building on our discussion regarding falling margins for wholesale bud, these product formats offer opportunities for companies who can successfully develop and market them to insulate their margins from declining prices of dried bud.

Data from Colorado has shown that the retail price, ***on a per serving basis***, when delivered through formats such as edibles, has remained remarkably consistent when compared to dried flower, which has fallen considerably during the same period.

Price per THC Serving Trends for Marijuana Products in Colorado

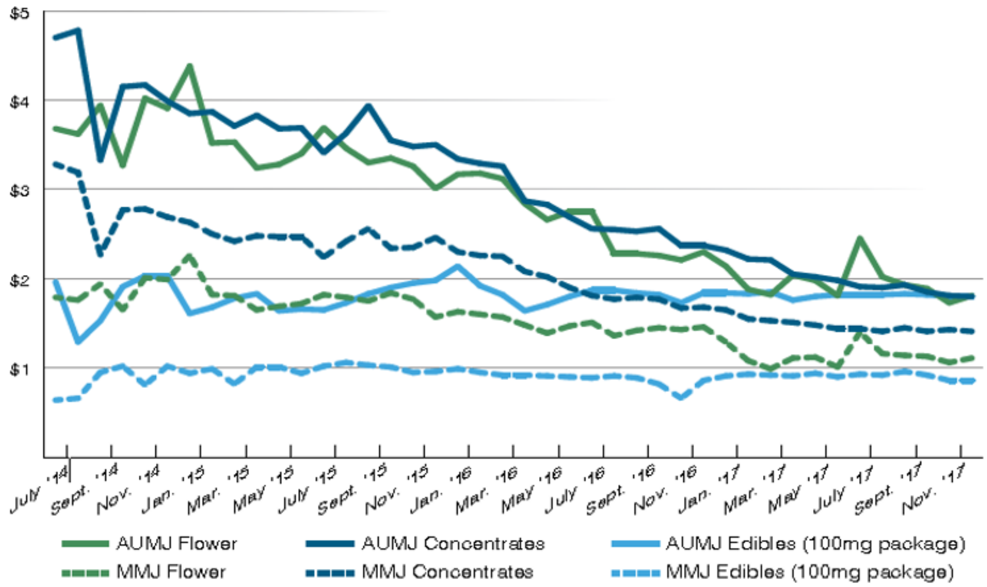


Figure 25. Price per Serving of THC by Product Category
Source: MJ Policy Group Colorado Market Update 2017

The commoditization of dried bud will necessitate that LPs who want to maintain pricing power need to build a defensible position in the market through creative product development, as well as brand loyalty and top-of-mind awareness amongst consumers.

M&A Activity to Consolidate Fragmented Marketplace

Over the next several years, we believe that consolidation will be one of the dominant themes within the sector, and while we have already begun to see this take shape, we believe it will accelerate.

As we find ourselves in the very early stage of this industry's life cycle, we expect to see a significant number of new entrants into the industry, each seeing opportunity to establish presence in a new and growing market. This dynamic has created a highly fragmented marketplace, with many firms competing for share in the same segments and geographies. There are currently over 100 publicly listed companies on Canadian and US securities exchanges that are involved in cannabis-related businesses, with dozens more planning public listings, and countless others remaining private.

There are several scenarios why companies may merge or be acquired:

- Larger firms with access to capital and strong balance sheets may see meaningful synergies in smaller firms that occupy a competitive presence in market segments or geographies which they currently do not, or possess competencies, IP or technologies that they feel are incremental to their business;
- Mergers of like-sized firms that offer synergies to create a larger, more competitive entity with greater capabilities, economies of scale and share of the total market;
- Firms who are unsuccessful with executing their business plans will be unable to access additional capital needed to continue operating. These distressed assets may be acquired opportunistically by firms who see some value in them at attractive valuations.

Drivers of Consolidation in the Cannabis Sector

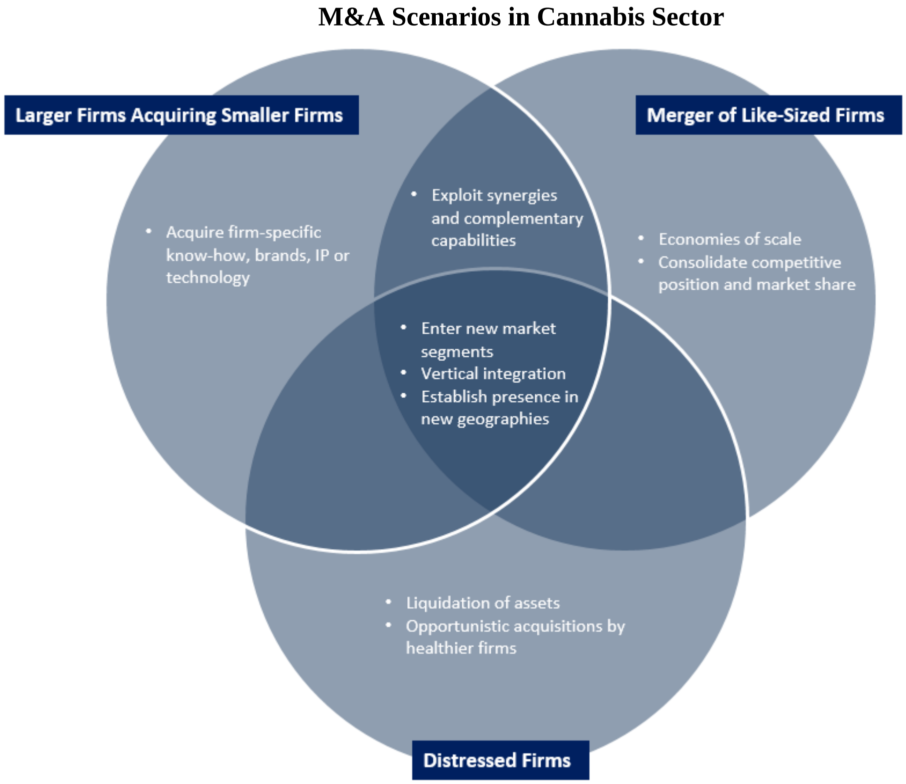


Figure 26. Drivers of M&A Activity
Source: *AltaCorp Capital Inc.*

The marketplaces in Canada and the US find themselves in a stage where new entrants continue to come to the market, having raised capital based on their proposed business plans and projected performance. However, at some point, companies will need to generate financial and operational results that justify the viability of their businesses, and the redundancies within the sector will be resolved. After the commencement of recreational sales, as businesses begin to report actual results, the marketplace will view these business in a more discerning manner, and those unable to execute their plans will exit the sector.

The corollary to this, however, is that strong businesses that prove their ability to execute, or to develop attractive IP, will be attractive takeover targets in the consolidation phase.

This environment provides significant opportunities for investors to identify undervalued businesses with competencies and assets that would be attractive to potential acquirer firms.

Investment from legacy industries is expected to reshape the landscape in cannabis

The entrance of mature CPG businesses into the cannabis space is a trend that is sure to reshape the industry in the coming years. Cannabis users have been shown to substitute their consumption of alcohol and tobacco, competing, at least in part, for the same dollars spent by many of these consumers.

For these two industries in particular, a move into the cannabis business is a necessity as a defensive move, to prevent loss of market share, as much as it is a play for growth, given the later stage these industries find themselves in.

Studies have found that legalized cannabis may reduce purchases of alcohol in that market by 15%, and reduce use of tobacco by 12%. The potential dollar losses for these categories totals over $73bn ($55bn USD) per year assuming cannabis were legal across North America.

Regulated Consumer Products Potential Lost Sales to Legal Cannabis in North America (2018 Market Size)

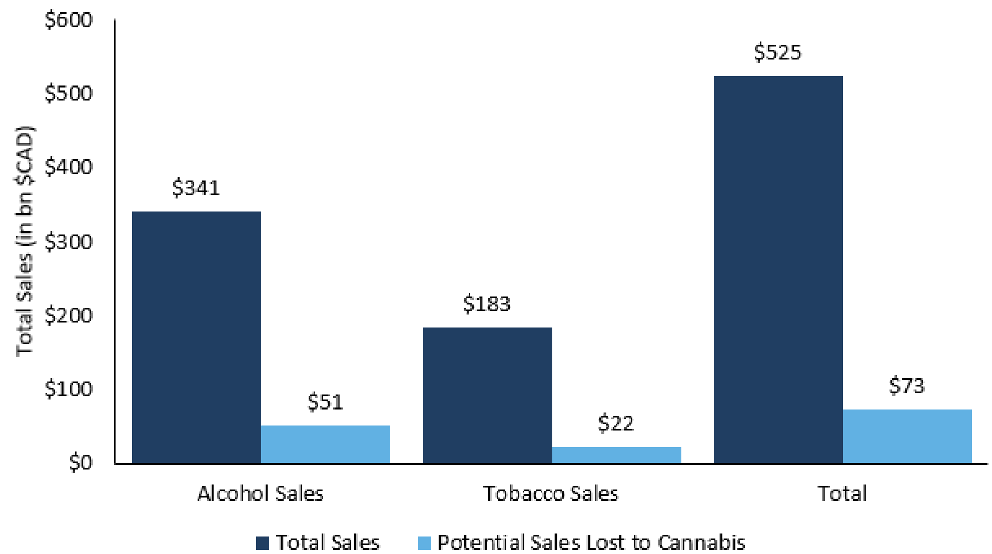


Figure 27. Potential Lost Sales for Regulated Products From Legalized Cannabis
Source: Euromonitor, Statista, International Journal of Drug Policy, University of Connecticut, Georgia State University, StatCan, AltaCorp Capital Inc.

However, we expect this trend will not be limited to alcohol and tobacco, as we foresee a number of other mature industries migrating into the cannabis sector in search of growth, including non-alcoholic beverages, nutritional and wellness supplements, personal care and "big pharma".

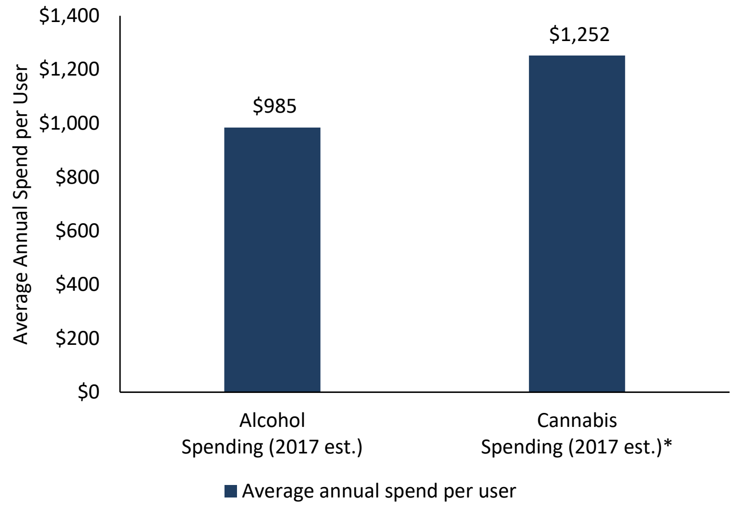
The entrance of these mature global businesses into the space, through acquisitions of, or partnerships with, existing cannabis firms, will afford the fledgling sector access to corporate infrastructure, best practices and industry-leading capabilities that these companies can offer. Their financial and operational backing will also add credibility, and de-risk the operations of these businesses from an investor perspective.

Alcohol

Data from US states with legal cannabis supports the observation that cannabis has a measurable substitution effect with alcohol, causing a drop in overall beer, wine and spirit sales of as much as 15% in these markets. Applying this rate of substitution to the North American market would suggest the entire alcohol category stands to lose more than $51bn to cannabis if it were to be legal throughout North America (Canada and USA).

Of the major alcohol categories, beer is likely to be the most threatened by cannabis legalization. In recent years, major beer producers have been facing headwinds of low overall consumption growth, and increasing market share occupied by craft breweries. The entrance of cannabis into the equation would look to weaken this outlook further.

Canadian Cannabis Users Exceed Per Capita Spending of Alcohol Consumers



**We assume the user base for cannabis includes only regular users (at least quarterly) as data indicates most highly infrequent users do not pay for their own cannabis*

Figure 28. Spending Per User on Alcohol and Cannabis in Canada
Source: StatCan, Public Health Agency of Canada, AltaCorp Capital Inc.

Big Alcohol is keenly aware of the threat presented by cannabis to their market share, and has been the first mover amongst major global CPG industries to begin investing in the sector. Some of the transactions we have seen thus far include:

- **Constellation Brands (STZ-US, NR) $5B investment into Canopy Growth Corp (WEED-TSX, NR)**, which, with prior investments, gives them a 38% stake in the business. This also included an agreement to make Canopy their exclusive global partner for all cannabis-related activities. Constellation also holds warrants that, if exercised, allow them to take a controlling stake in Canopy;

- **Molson Coors (TAP-US, NR) Canada's agreement to form Truss, the joint venture with HEXO (HEXO-TSX, NR)** for the purpose of developing cannabis-based non-alcoholic beverages. Molson Coors Canada also obtained warrants that allow them to take a minority stake in HEXO, which, if exercised, total $69M in proceeds;

- **Lagunitas, a major California-based craft brewer, and subsidiary of Heineken (HEIA-AMS, NR)**, released sparkling THC beverage released in California in July 2018.

A number of other major global alcohol producers have been reported to be exploring potential relationships with cannabis producers. We expect that over the next several years, many more major global alcoholic beverage companies will make investments to obtain exposure to cannabis in some capacity.

Tobacco

The tobacco industry is yet another obvious candidate for investment into the sector, given the high substitutability of their product with cannabis. One study published in the International Journal of Drug Policy, which looked into the connection between cannabis use and other addictive substances found that 12% of those surveyed substituted cannabis for tobacco. In North America alone, this would suggest that the tobacco industry could lose over $22bn in sales to cannabis.

Additionally, the recent move towards smokeless and vapour options for consuming tobacco opens up the market even further to penetration from cannabis products, for which there are a plethora of smoke free alternatives, such as vaping, edibles and beverages.

Total Tobacco Market (Spending) vs. Smokeless Tobacco and Vapour Product Market Share

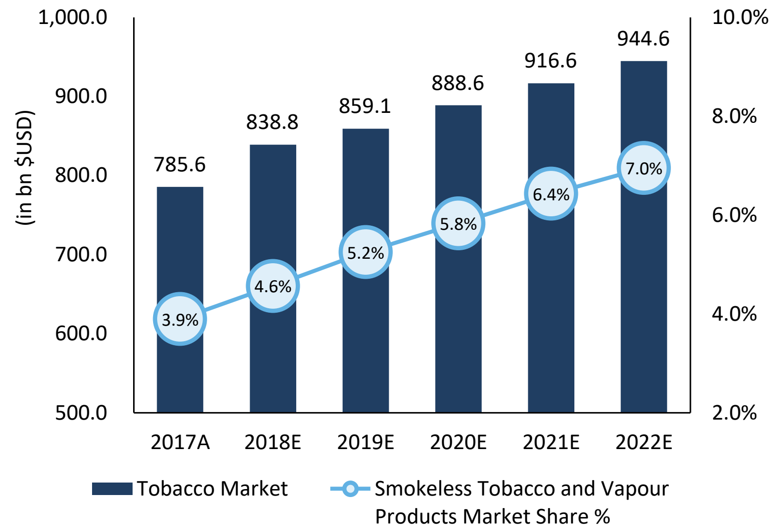


Figure 29. Share of Total Tobacco Spending on Smokeless and Vapour Products
Source: Euromonitor

Most recently, we saw the first major investment into the cannabis space by a global leader in the tobacco sector, with the $2.4bn investment in **Cronos Group (CRON-TSX, NR)** by **Altria (MO-US, NR)**, the US-based manufacturer of Marlboros brand cigarettes, as well as owner of a 10.1% stake in **Anheuser-Busch InBev (BUD-USA, NR)**, the world's largest alcohol company. The investment gives Altria a 45% stake in Cronos, with an option to purchase an additional 10% stake for a further $1.4bn investment. In late December, Altria also announced a purchase of a 35% stake in a leading e-cigarette company, Juul Labs (private), for total value of $12.8bn USD. This deal may allow for Cronos to access Juul's leading technology for vape pens and create synergies between the two companies.

Much like our expectations for the alcohol industry, we foresee this as the first of several global tobacco companies to make their way into the cannabis sector in the coming months and years.

Pharmaceuticals

We have also seen major pharmaceutical businesses enter the medical cannabis space through partnerships with LPs. The agreements we have seen thus far are primarily collaborative arrangements whereby the LPs intend to leverage the pharma businesses' corporate infrastructure to co-develop, commercialize and distribute medical cannabis products.

Some examples of these partnerships include:

- **Tilray (TLRY-US, NR)** signed an agreement with Sandoz, a subsidiary of Swiss-based global pharmaceutical company **Novartis AG (NOVN-SWX, NR)** to build on a previous working relationship that was limited to the Canadian market. Under the expanded agreement, Sandoz will leverage their global supply chain, sales force and distribution network to market Tilray's medical cannabis products. The agreement is focused primarily on non-combustible cannabis products;

- **CannTrust Holdings (TRST-CA, NR)** entered an agreement with Canadian-based global generic drug manufacturer Apotex (private), to develop alternate dosage formats for medical cannabis products, and market them in Canada, as well as potentially in global markets. Through the agreement, CannTrust will leverage Apotex's R&D and manufacturing capabilities, as well as their vast distribution network, which spans 85 countries globally.

One key difference between pharma-LP partnerships compared to the partnerships entered with alcohol and tobacco manufacturers is that we have yet to see a major direct investment into an LP from a pharmaceutical company. **Further, to date, none of the partnerships between cannabis and pharma companies have**

involved cannabinoid-derived pharmaceutical companies (discussed on Page 41 of the report). We expect this trend to come to a halt once the US legalizes cannabis at a federal level.

Global Markets

United States

US Presents Remarkable Opportunity for Cannabis Investors, Despite Hurdles

The United States presents the most enticing opportunity of any of the global cannabis markets, albeit, one that comes with its own set of nuances and challenges to navigate.

While estimates of the size of the US legal cannabis market vary, most reasonable forecasts place legal spending by 2022 in excess of $20bn USD, more than doubling from the approximately $10bn USD estimated for 2018.

Of note, all third party estimates we have reviewed also forecast recreational spending to have surpassed medical spending nationwide by the end of 2018.

Forecasted US Legal Cannabis Spending Expected to Surpass US$22bn

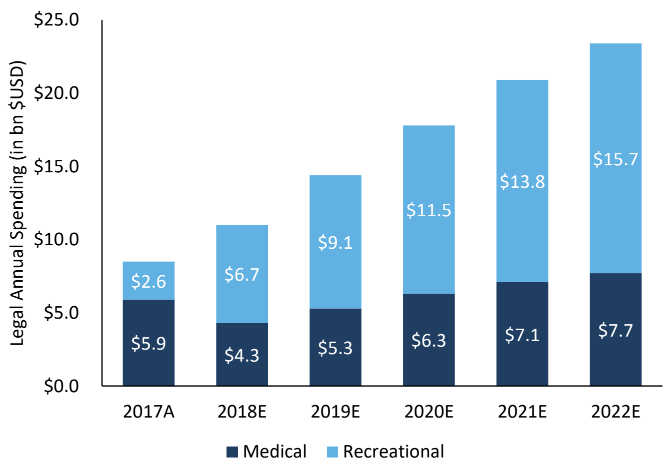


Figure 30. US Legal Cannabis Spending Forecast
Source: Arcview Market Research

The US cannabis market is currently, and for the foreseeable future, the largest addressable market in the world. Indeed, California alone is, and is forecasted to remain, larger than even the most bullish forecasts of the entire Canadian cannabis market.

The California cannabis market alone is still forecasted to be more than 2x the rest of the world (ex-Canada) in 2022.

California Market Still Larger than Canada, Rest of World (2022E)

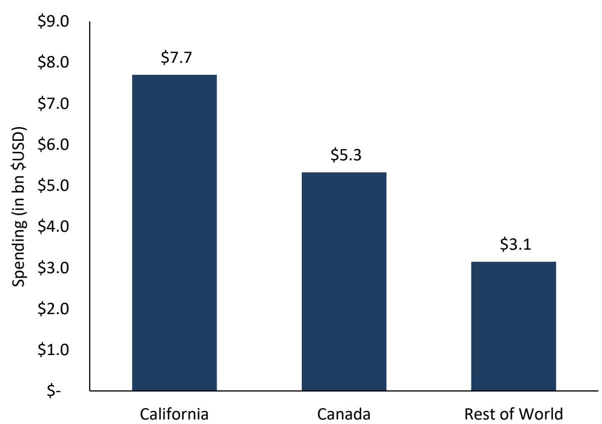


Figure 31. Market Size Comparison by Geography
Source: Arcview Market Research, AltaCorp Capital Inc.

However, there are numerous hurdles for cannabis companies attempting to unlock this market, stemming from the fact that the substance remains federally illegal, and classified as a **Schedule I substance by the US Drug Enforcement Administration (DEA)**. The federal ban on the substance has partitioned US cannabis companies not only from the rest of the world, but has also shut down trade within the country. Despite this, thousands of entrepreneurs have remained undeterred, and set up businesses in the cannabis sector in compliance with state laws which allow for some form of medical or recreational cannabis.

We believe that the legalization of cannabis at the federal level is an eventuality, and the political and societal impediments to a national cannabis market are dissipating quickly. **In our view, the US market remains an incredible opportunity for cannabis investors, in spite of these regulatory challenges. We are bullish on the prospects for well-positioned US (and Canadian) cannabis businesses, particularly a) those with access to the California market, and b) multi-state operations.**

Market Dynamics

While US cannabis businesses have the opportunity to access the largest addressable cannabis market in the world, they also have to overcome three primary inefficiencies related to their operations and capital structures which are not faced by their Canadian and global counterparts:

- **Tax rate**: US cannabis businesses must deal with the non-deductibility of expenses related to activities that support the trafficking of controlled substances (in this case, cannabis), for tax purposes (U.S. Code § 280E – commonly referred to as simply "280E"), due to its illegality at the federal level. This causes US cannabis businesses to face significantly higher tax rates;
- **Liquidity:** US cannabis businesses are restricted in their ability to list on major global exchanges like NYSE, NASDAQ or TSX. Their primary channel to access public capital is to list on the Canadian Securities Exchange (CSE), which lacks the liquidity and visibility of the larger exchanges;
- **Lack of interstate commerce in cannabis:** The inability to ship cannabis products across state lines makes the businesses unable to leverage economies of scale, via larger, centralized cultivation and production assets. This makes capital asset investment and production processes less efficient.

However, we note that several US markets, particularly established legal states such as Colorado and California, are well ahead of the Canadian market in areas such as branding, marketing and development of new products:

- These established markets typically have larger and more knowledgeable consumer bases due to longer history of legal markets;
- Most markets have fewer restrictions on product development than current Health Canada regulations, allowing for a variety of formats and formulations;
- These markets also enjoy fewer restrictions on marketing and branding, making them ideal grounds for the development of brand-related IP.

Indeed, several Canadian companies are leveraging existing established US brand IP and product formulations to bring to the Canadian market for adult use, particularly in preparation for the expected legalization of after edibles and concentrates in 2019.

History of Legalization and Regulatory Environment

As noted, the United States federal government deems cannabis and any of its derivatives to be illegal. Specifically, the DEA has classified cannabis (which included both marijuana and, until the recent passing of the US Farm Bill in December 2018, hemp) and their derivatives as a Schedule I substance under the US Controlled Substances Act (1971).

A Schedule I substance under the Act is defined as i) having a high potential for abuse; ii) no accepted medical use, and; iii) a lack of accepted safety for use of the drug under medical supervision. This classification is in conflict with clinical research and patient feedback regarding the effectiveness of various strains of cannabis for medical purposes.

Public Opinion Is Strongly Supportive of Reform

Public opinion has also shifted meaningfully over the past few decades as a result. A poll conducted by Pew Research in 2018 found that 62% of Americans were in favour of legalization of cannabis for medical purposes, up from just 12% in 1969, nearly 50 years ago.

U.S. Public Opinion on Legalizing Marijuana (1969 – 2018)

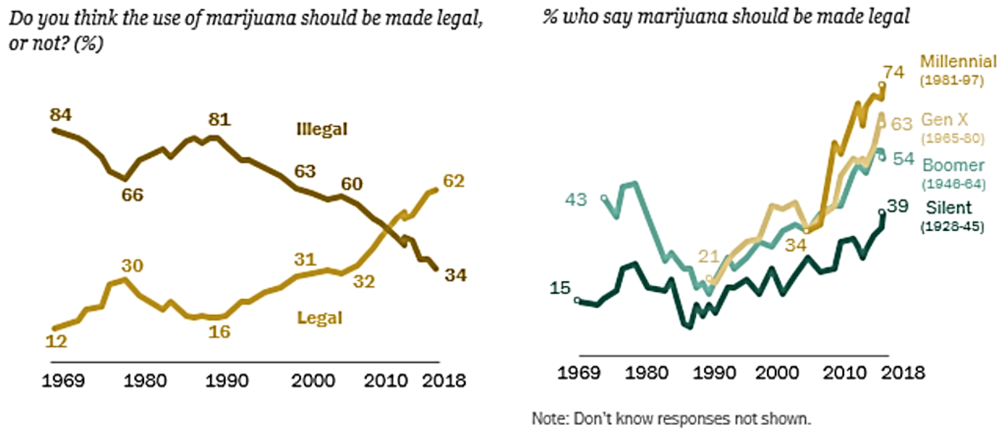


Figure 32. US Public Support for Cannabis Legalization
Source: Pew Research Centre

Legislative Environment Continues Progressing Positively at the Federal Level

In January of 2018, US cannabis policy received a setback, when former Attorney General Jeff Sessions rescinded the Cole Memorandum – an Obama Era directorate that offered federal protections to cannabis businesses that i) operated within the laws of their state, ii) refrained from shipping cannabis products across state lines, and iii) kept cannabis out of the hands of underage persons.

Although this may have been viewed as a sign that policy and attitudes at the federal level were regressing, both businesses, and federal land state legislators that have supported cannabis reform have continued to move forward with their plans, mostly undeterred by this move.

The Farm Bill Was the Biggest Development in Cannabis Reform in the US in 2018

The *Hemp Farming Act of 2018* was part of the version of the *2018 Farm Bill*, which was passed by the Senate and Congress, and signed into law by President Donald Trump in December 2018. This bill removes hemp (with THC content of less than 0.3%) from the list of Schedule I substances, thereby legalizing it at the federal level. Importantly, this bill creates a legal distinction between marijuana (commonly still referred to as cannabis) which contains THC, and hemp, which contains very low levels of THC, but relatively high levels of CBD, which can be extracted for use in CPG and medicinal products.

This law is transformational for the US cannabis market, as it opens the national market for US cannabis companies to market hemp-derived CBD products, which Brightfield Group estimates could be a ~$22bn USD market by 2022. While the exact nature of the regulations around CBD products still need to be formulated, industry observers note the likely scenario of hemp-derived CBD products being distributed and sold through traditional retail channels such as grocery and convenience stores, greatly increasing consumer access.

The Bill allows companies conducting business in the hemp space to overcome all three major hurdles faced by US marijuana companies, outlined in the previous section. Some of the most important changes for hemp-only cannabis businesses include:

- **Allows interstate commerce in hemp products**, in contrast to marijuana, which, even between legal states, cannot move across state lines;
- **Access to federal banking services**, and even allows hemp farmers to be eligible for crop insurance. The bill also lifts restrictions on advertising, marketing & other financial services;

- **Removal of the tax burdens associated with "280E"** federal tax rules;
- **Allows for greater access to capital markets for hemp companies**, which will be allowed to pursue listings on US exchanges including the Nasdaq and NYSE;
- Hemp will be removed from the purview of the US Department of Justice (DOJ) and be placed with the Department of Agriculture's.

Of note and as part of the Farm Bill, the US FDA's regulatory authority will retain oversight of all food and drug products containing hemp. In particular, any hemp-based product making claims about uses and indication of product for specific therapeutic benefit will need to satisfy the US FDA's requirements and navigate their regulatory approval pathways. While the FDA will enforce this, their commissioner, Dr. Scott Gottlieb, is more concerned about unsubstantiated claims made by hemp companies/products with specific therapeutic benefits. The FDA will issue their official position sometime in 2019 and are currently engaged in consultation.

It is important to note that marijuana remains illegal at the federal level, even after the passing of this legislation, and remains a state-governed issue with respect to its legality.

The new Farm Bill opens the door for Canadian LPs to establish an active US presence in the hemp-derived CBD space, and already, several Canadian cannabis companies have positioned themselves to enter the US market in this product category. Some of them include:

- **Village Farms International, Inc. (VFF-TSX, NR)** is an established vegetable grower with more than 100 acres under greenhouse in Texas. The Delta B.C.-based company entered the cannabis industry in 2017 through a partnership with Emerald Health Therapeutics Inc. It's one of only two Canadian companies represented on the board of the U.S. Hemp Roundtable, an industry lobby group;
- **Canopy Growth (WEED-TSX, NR)** has been experimenting with field-scale hemp-derived CBD in Saskatchewan. In October, the company paid more than $400-million in cash and shares to acquire Colorado-based ebbu, Inc., a best-in-class hemp R&D and commercialization company. After the Farm Bill was signed into law, Canopy commented that they are now set to enter the US market;
- **Cronos Group Inc. (CRON-TSX, NR)**, after receiving $2.4-billion from US-based tobacco company Altria Group, Inc., is positioned to leverage this relationship to enter the U.S. hemp market;
- **Aurora Cannabis (ACB-TSX, NR),** has over 50% ownership of Hempco, a Vancouver-based company, which develops foods, fiber and nutraceuticals using the hemp plant;
- **HEXO (HEXO-TSX, NR) –** As part of their JV with Molson Coors Canada to create Truss, may focus efforts on how to commercialize hemp-based products in the US.
- **TerrAscend Corp. (TER-CNQ, NR)** entered a definitive agreement to acquire the assets of a US-based hemp-derived wellness product manufacturer and distributor.

US Hemp-Derived CBD Market Presents Potential "Gold Rush" Opportunity for US Cannabis Companies

Market Forecast for US Hemp-Derived CBD (2017A – 2022E)

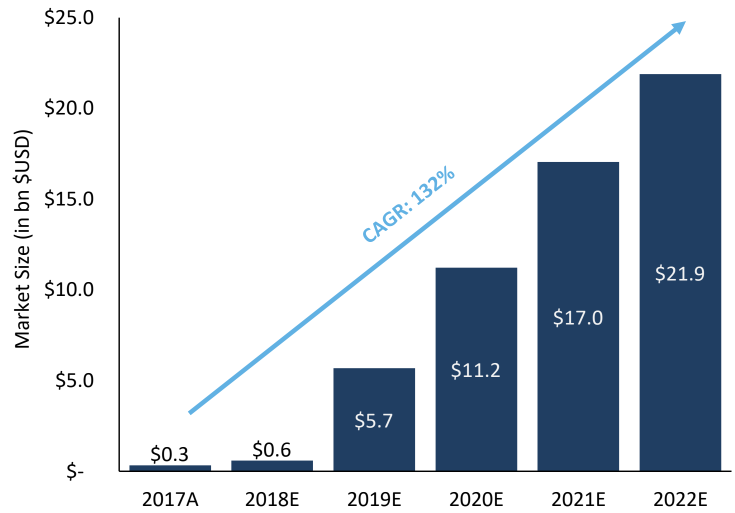


Figure 33. Forecast for Hemp-Derived CBD market (US)
Source: Brightfield Group

Some of the other victories for cannabis reform at the US federal level in 2018 include:

- **The Rohrabacher-Blumenauer Amendment**, which was first enacted in 2014, was renewed as part of a short term spending bill in September, and had been extended until December 21, 2018 as part of the short-term spending bills approved by the government. The amendment protects medical cannabis businesses that are in compliance with state laws, through barring the use of federal funds to prosecute them. The protection is not a permanent solution, as it must be renewed as part of each successive budget at the federal level. With the government currently in a shutdown, the bill is now expired, and must be renewed as part of the next approved budget;

- **Attorney General Jeff Session resigned after the November 2018 mid-term elections**. Sessions was seen as the biggest opponent of cannabis reform within the White House administration, and his departure offers at least the opportunity for a new direction in policy from the Attorney General`s (AG) office. A permanent replacement has been nominated by President Trump – William Barr, the former AG under President George H.W. Bush – though the he has yet to be confirmed by the Senate. However, he is not generally viewed as welcoming in his stance towards cannabis legalization policies, and is unlikely to support a major shift in the DOJ's stance on cannabis.

Efforts by members of Congress and the Senate to advance changes to federal laws around marijuana and hemp have made headlines this year. They include:

- **STATES Act:** The *STATES Act* was introduced concurrently by members of the House and senate in 2018, and has received bi-partisan support. The proposed law, championed primarily by Senator Cory Gardner (R-Colorado), looks to amend the *Controlled Substances Act* making it inapplicable to those acting in compliance with state laws relating to cannabis, which would protect all compliant persons and companies from any federal prosecution. The Democrats taking control of Congress in the November 2018 elections is seen as a positive development for this Bill, though its future remains uncertain;

- **MAPLE Act:** Introduced in 2018 by Rep. Earl Blumenauer (D-Oregon), the Maintaining Appropriate Protections for Legal Entry Act (MAPLE Act) aims to clarify the much-publicized border issues for those working in the cannabis industry. The legislation would protect those whose activities with respect to cannabis are "lawful in the State, Indian Tribe, or foreign country in which the conduct occurred…or subsequently made lawful under the law or regulation of such jurisdiction." (*H.R.7275 — 115th Congress (2017-2018)*)

Legality at the State Level: Recreational vs Medical

Currently, 33 US states and the District of Columbia have state-level legislation that allows for legal use of cannabis, with 10 states (plus DC) allowing recreational usage.

In every state that allows for recreational cannabis usage, the legislation followed several years of legal medical cannabis usage, just as Canada did. Colorado, followed by Washington, were the first states to begin legal recreational sales in 2014. Legislators are cautious to jump directly to allowing the use of recreational cannabis without experience in implementing and managing a legal medical system. We expect the progress of cannabis laws to continue to follow this blue print in the future.

As of December 2018, 221 million US citizens (68% of the population) live in states with some form of legal cannabis laws.

Cannabis Legality by State in the US

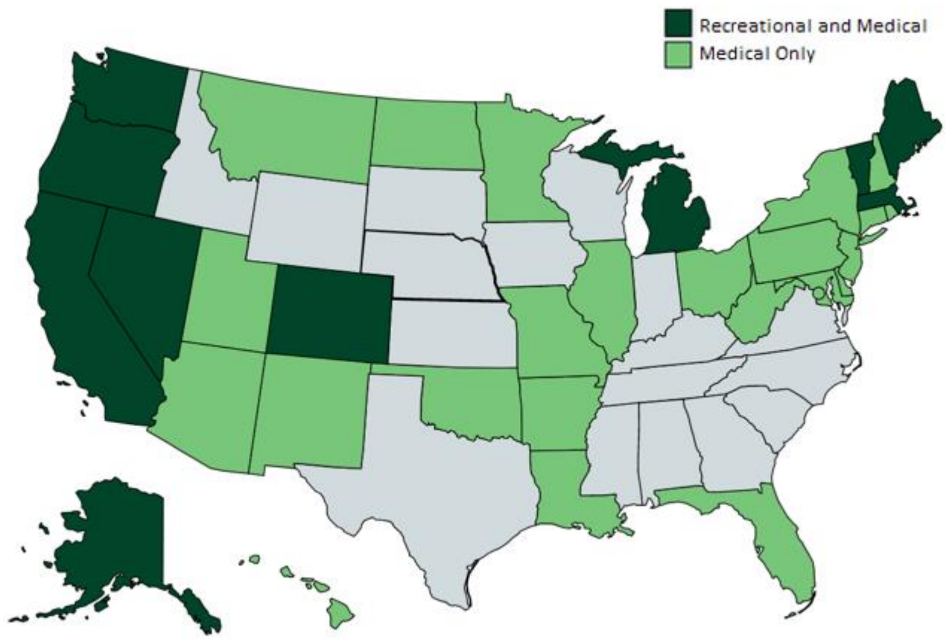


Figure 34. Map of US States by Legal Status of Cannabis
Source: procon.org, AltaCorp Capital Inc.

Some of the progress made at the state level in 2018 includes:

- **California** began legal recreational sales of cannabis on January 1, 2018;
- **Massachusetts** began legal recreational sales in November 2018;
- Voters in **Michigan** approved a ballot proposal to legalize recreational cannabis, making it the 10th state (as well as DC) to do so;
- Voters in **Oklahoma, Missouri** and **Utah** approved proposals to allow medical cannabis;
- The **New York** State Department of Health, in their commissioned by Governor Andrew Cuomo, recommended that the state move to legalize recreational cannabis.

International Cannabis Markets (Ex-Canada & USA)

Global Markets Present Canadian LPs with First Mover Advantage for Eventual Recreational Legalization, Post-Medical Legalization

While Canada became the first G7 nation to legalize recreational cannabis, a growing movement of legalization of medical cannabis has gained continued momentum internationally. Developed countries such as Australia, Germany, Italy and the UK have all legalized medical cannabis in some capacity in recent years. In certain developing economies, we have seen medical cannabis legalized in LATAM countries including Colombia, Chile and Mexico. It is expected that in the coming years, dozens of additional nations will pass legislation allowing for medical cannabis use.

These nations vary with respect to the breadth of conditions cannabis is allowed to be prescribed for under their medical regimes, with more liberal regulations (similar as Canada) presenting greater market opportunities in the near term for LPs.

Over the past two years, numerous Canadian LPs have made significant investments in their global operations, as they look to establish a footprint in emerging medical cannabis markets, and take advantage of their experience, IP, and capital resources that have been afforded to them as first movers on the international stage. The Canadian government, as well as Canadian-based LPs, have been regarded as thought leaders for governments, public health administrations, regulators and businesses in other developing cannabis regimes around the world.

Over the long-term, we see a number of these nations eventually transitioning to legal recreational cannabis regimes, as we have observed from our experience in Canada, as well as in numerous US states. We view the entry into these markets by Canadian LPs as a means to establishing a presence, with licensing, production, distribution and branding, in preparation for the more lucrative opportunity in recreational cannabis that is near certain to materialize in the coming years.

Export Opportunity Remains Exclusively Medical for Now

At this time, several United Nations Treaties deem the production, sale and possession of cannabis to be illegal, including the *Single Convention on Narcotic* Drugs (1961); the *Convention on Psychotropic Substances* (1971); and t*he Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances* (1988). However, exceptions can be made for “medical and scientific purposes”, and as such, a legal global trade in medical cannabis has emerged in recent years.

At the moment, most recently-legalized international markets, particularly in Europe, lack the domestic production capacity to serve their medical patients. This has provided Canadian LPs with the opportunity to use their relatively advanced domestic production infrastructure to supply these fledgling international markets with through export agreements.

However, it remains unlikely that such an opportunity would present itself for any recreational product, even if these nations were to legalize recreational cannabis, so long as these treaties remain in place. We believe the establishment of production and distribution capabilities within the borders of these countries will be necessary for serving these potential recreational markets in the future. We also see a high likelihood of at least some of these countries eventually requiring the production of medical cannabis within their borders, once domestic production infrastructure reaches a level where it can adequately serve the market.

Global Potential Market Size

Over 30 nations globally have legalized medical cannabis at a federal level in some form, with many more likely to do so in the near future. Even some of the most historically restrictive states in the world (eg Malaysia), when it comes to drug policy, are exploring the opportunity to legalize medical cannabis.

We assume that a liberal medical cannabis regime that allows for use in treatment of a wide breadth of conditions afflicting large segments of the population such as pain, sleep and anxiety, as having the potential to reach a usage rate of 2% of adults in that nation. We base this assumption on the average medical cannabis user rates from mature legal medical cannabis markets such as Colorado, Michigan, Washington, Hawaii and California using patient registry data relative to the population of that region.

Applying this assumption to our list of nations that have already legalized medical cannabis, we conservatively estimate the total potential patient base of international markets (ex-Canada and US) to be 17.8mm over the longer term.

Potential Patient Base in International Markets (Excl. Canada and USA)

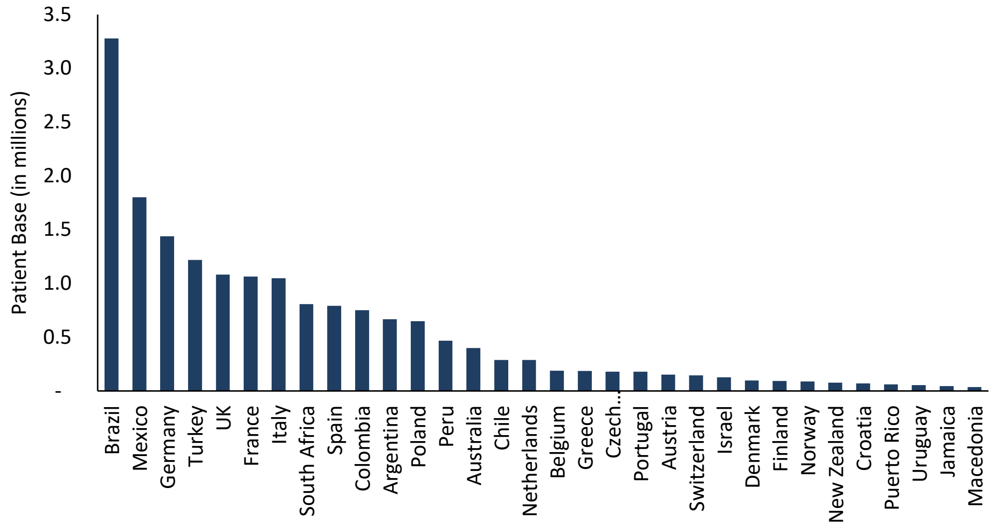


Figure 35. Potential Medical Cannabis Patient Base by Country
Source: AltaCorp Capital Inc.

In *Figure 36*, we cite data from Arcview Market Research, which includes the potential market size estimates for a number of currently legal medical cannabis markets, and others likely to become legal during the forecast period. The forecast highlights that the total for all global markets is approximately $7bn USD ($9.35bn CAD), which would be nearly equal to our estimate of the Canadian legal market (including recreational cannabis) in 2025. Note that these markets only contemplate medical cannabis regimes, and that any legalization of recreational cannabis would be incremental to these figures.

Our totals include countries with limited medical cannabis laws that are deemed likely to liberalize these restrictions in the near future, such as France and Brazil.

Potential Market Sizing of MMJ Patients in International Markets (Excl. Canada and US)

International MMJ market (excl. Canada and US)					
Country	Potential Patient base (in millions)	2027 Arcview Market Size Estimate (mm of $USD)	Country	Potential Patient base (in millions)	2027 Arcview Market Size Estimate (mm of $USD)
Argentina	0.67	123.0	Macedonia, FYR	0.03	2.1
Australia	0.40	289.0	Mexico	1.80	501.0
Austria	0.15	63.0	Netherlands	0.29	114.0
Belgium	0.19	86.0	New Zealand	0.08	97.0
Brazil	3.28	363.0	Norway	0.09	n.a.
Chile	0.29	6.5	Peru	0.47	48.0
Colombia	0.75	18.0	Puerto Rico	0.06	7.0
Croatia	0.07	7.2	Poland	0.65	75.0
Czech Republic	0.18	8.5	Portugal	0.18	65.0
Denmark	0.10	n.a.	South Africa	0.81	n.a.
Finland	0.09	14.0	Spain	0.79	249.0
France	1.06	176.0	Switzerland	0.14	320.0
Germany	1.44	2,316.0	Turkey	1.22	57.0
Greece	0.18	18.0	UK	1.08	631.0
Israel	0.13	62.0	Uruguay	0.05	49.0
Italy	1.05	241.0	Other	n.a.	968.0
Jamaica	0.04	4.9	**Total**	**17.79**	**$ 6,979.2**

Figure 36. Potential Patient Base and Forecasted Medical Cannabis Spending by Country
Source: AltaCorp Capital Inc., World Bank, Arcview Market Research

Note that these estimates are long-term in nature, as many of these markets are blue-sky opportunities, with little visibility as to how fast they will develop. We reiterate that factors such as the nature of the qualifying conditions for usage, whether or not government health plans cover the costs, and access to supply based on policies regarding import vs. in-country cultivation, will all impact if, and when, these markets may reach their potential demand.

Canada and US to Remain the Engines of Global Legal Demand

While we are bullish on the prospects for Canadian LPs to leverage their position as first movers, as well as their extensive advantage in capital resources, to establish leadership positions in these markets, we view these opportunities as longer-term compared to the more immediate opportunities presented by the Canadian recreational market, and the US market more generally.

Estimates highlight that global cannabis in the coming years will still be primarily US and Canadian-centric. With the rest of the world's (ex-Canada and USA) consumer spending on cannabis forecasted to reach $3.1bn USD by 2022 according to Arvcview Market Research – with about 50% of this attributed to Germany – which would account for about 10% of the total global market. By then, Canada alone will account for 17%, and the US making up the remaining portion 73% share.

US and Canada as Percentage of Forecasted Global Cannabis Sales

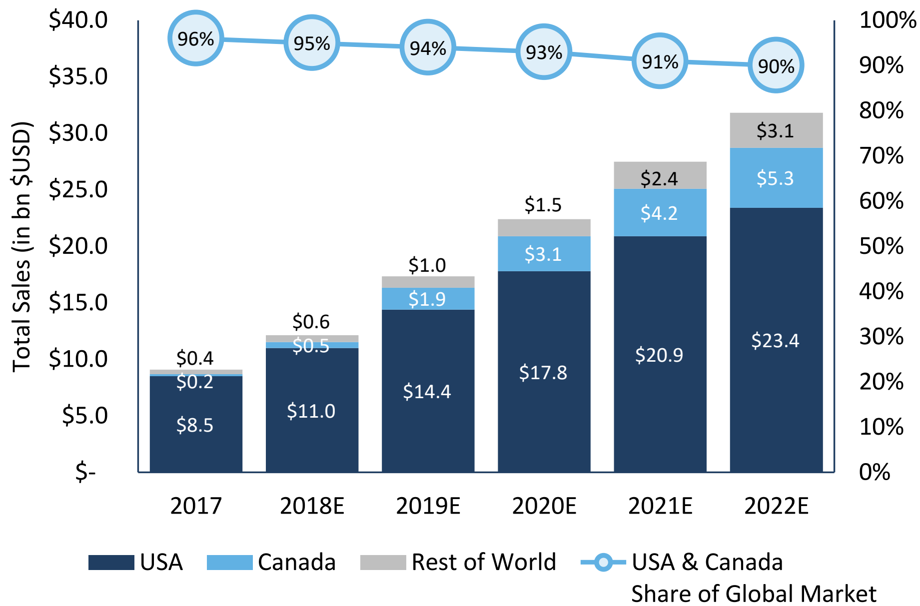


Figure 37. Forecasted Legal Cannabis Spending by Geography
Source: Arcview Market Research, AltaCorp Capital Inc.

In addition to being very early stage in their development, as long as these international markets remain purely medical, and in many cases, restricted in scope, the potential for most Canadian LPs to generate significant revenues from these markets in the near term is likely to be limited. Aside from a few possible exceptions, such as Germany and the UK, we view these opportunities as long-term in nature. ***We see most major Canadian LPs being unlikely to derive a major portion of their revenues and EBITDA from these markets in the very near term. The international play may take several years to develop more fully. Our view on this would turn more bullish with the potential legalization of recreational cannabis in any of the major markets.***

With this said, we view Canadian LPs with international operations as being in an advantageous position relative to competitors, as this will provide them a first mover advantage in establishing a presence in these international markets ahead of the likely eventual move to recreational legalization.

LATAM

We have seen a number of LPs make significant acquisitions to obtain a LATAM presence over the past year, with transactions totalling nearly $1bn of investment into the region. Some of these notable transactions include:

- **Canopy Growth Corp**, acquiring a Colombian-based cannabis company, now called Spectrum Colombia, and rolling it into their existing South American operations under the Canopy LATAM umbrella. The transaction as valued at approximately $200mm at the time the deal was announced in July 2018, and has the potential to increase with the achievement of future milestones;

- **Aphria (APHA-TSX, NR)** acquired the Latin American assets of Scythian Biosciences – now re-named SOL Global Investments (SOL-CNQ, NR) – for approximately $300mm at the time the transaction close in September 2018;

- **Aurora Cannabis** acquiring Uruguay-based ICC Labs for $290mm (value announced at the time the deal was agreed to) in September 2018. The deal gives Aurora operational assets in Uruguay, as well as a license in Colombia.

The burgeoning cannabis market presents the opportunity to access a significant population in emerging economies. However, without a robust distribution infrastructure, a low average wage for the population, and restrictions on both qualifying conditions and product formats, the likely revenue to be generated in sales in these markets appears to be limited in the near term.

Total Legal Cannabis Spending in LATAM Markets (2017A – 2022E)

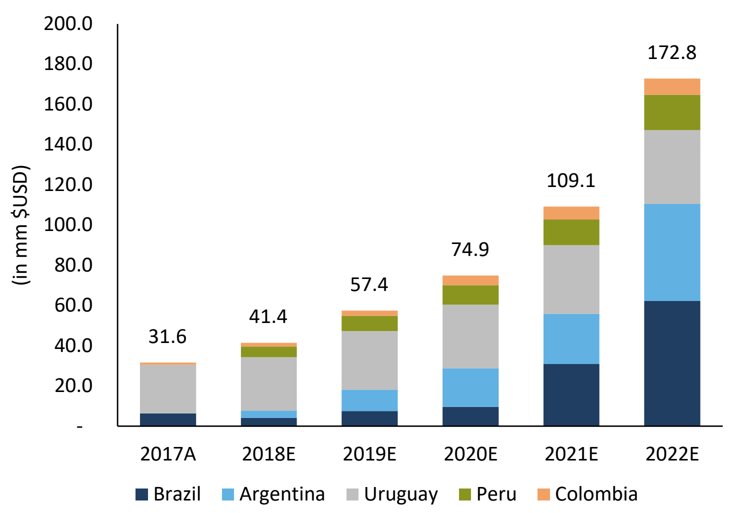


Figure 38. Forecasted Legal Cannabis Spending in LATAM Markets
Source: Arcview Market Research

Thus far, the LATAM nations that have legalized medical cannabis include Argentina, Colombia, Chile, Mexico, Peru and Uruguay, which also was the first country in the world to legalize recreational cannabis in December of 2013.

Assuming that we see eventually legislation passed to allow for a robust, national medical cannabis market, Brazil, over the longer term, is projected to be the most attractive of the major LATAM markets. The country has a population of over 200mm, and a national health care plan that is likely to cover the cost of medical cannabis for patients. However, their current system is incredibly restrictive, and allows for only very limited use of imported products that must be approved by the government.

Colombia Sees Investment from Canadian LPs and International Cannabis Businesses as Export Hub

Colombia, in particular, has attracted numerous investments from LPs looking to leverage operations there as an export hub, due to its favourable climate, which is ideal for low cost cultivation of marijuana and hemp, which can potentially be shipped to markets within the region, and even to Europe, if produced in a compliant facility. The growth prospects for the national market itself remain somewhat restricted, due to the prohibition on the sale of dried bud, and the ability to grow plants in home.

Mexico Pushes Closer to Recreational Legalization

In November of 2018, the Mexican Supreme Court deemed that legislation banning the use of cannabis was unconstitutional. As a result, the Senate proposed a bill to allow for the legalization of recreational cannabis, and the regulation of the production, sale and consumption of the plant, which is supported by the country's new President, Andres Manuel Lopez. The Mexican administration believes this is the only effective manner for the government to combat the illegal drug activity and cartels that have plagued the nation for years, which until now, has been battled unsuccessfully, by enforcing the illegality of the plant.

If passed, Mexico would be the 3rd national legal recreational market in the world, and would most certainly attract a flood of investment from Canadian, and other global cannabis businesses looking to secure their share of the burgeoning demand that is likely to come from the country's 130mm residents. In terms of the addressable market size on a population basis, Mexico would lay claim to the world`s largest federally legal recreational cannabis market.

Europe and Israel

Europe represents a significant opportunity for LPs as far as medical cannabis markets are concerned, particularly with the recent medical legalization in Germany (2017) and the UK (2018), the two largest economies in Europe. However, across the EU, cannabis rules remains fragmented, with the plant residing in a legal "grey area" within many countries, while lacking a comprehensive legal framework to regulate the production and sale of cannabis, as we have in place in Canada as well as in several US states.

Additional countries within Europe to have legalized medical cannabis include Italy, Greece, Denmark, Poland, the Netherlands, Israel and several others. As mentioned, the regulation surrounding cannabis in many of these countries remains restrictive, and in some jurisdictions, lacks clarity, such as Belgium, Spain and Portugal, making any possible near term commercial opportunities fairly inconsequential.

2022 Estimated Medical Cannabis Spending – Europe and Israel

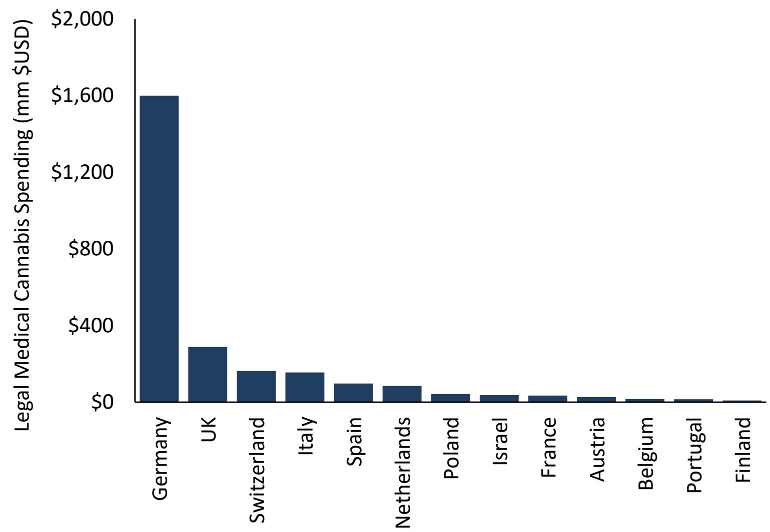


Figure 39. Forecasted Legal Cannabis Spending in European Markets
Source: Arcview Market Research

Israel, while a relatively small market in terms of its revenue potential, is a key global center for R&D and medical research in the cannabis sector. The country was a pioneering force in cannabis research thanks to Dr. Raphael Mechoulam`s work in the 1960s, which led to the establishment of a legal medical cannabis regime in 1992. We note that several Canadian LPs have established a presence in the country in order to leverage some of the leading minds in the field of cannabis research, which is crucial in IP development. As an innovator in the cannabis sector, the Israeli Parliament recently (December 2018) passed a Bill legalizing the export of medical cannabis, internationally. The Knesset's measure was approved unanimously by 21 votes.

Germany and UK Present Most Significant Opportunities Near-Term

Of all the international markets, perhaps the one which has garnered the most attention has been Germany. With a population of over 80mm, and a relatively liberal list of qualifying conditions for patients, the German market presents the largest and most immediate medical market opportunity in the European Union, with Arcview estimating that sales could reach almost $1.6bn USD by 2022.

A number of Canadian LPs have already commenced export to Germany, as favourable supply and demand dynamics have seen wholesale dried flower fetch upwards of $13 per gram (reported by Canopy for Q2/2018). The current rules allow for sales through pharmacies, and regulations require any cannabis sold there to be produced in an EU-GMP (Good Manufacturing Practices) certified facility, the most rigorous manufacturing certification a company can be awarded, in line with other industries including pharmaceuticals, foods, and beverages. The German government has re-started their application process for domestic cultivation licenses, and expects a decision to be made in 2019. A number of major Canadian LPs count themselves amongst the applicants for these licenses.

More recently, the UK has allowed the use of medical cannabis as of November 1, 2018, with patients requiring a doctor's prescription, and must display "exceptional clinical need". The move was largely spurred by two cases of juvenile patients with epilepsy, whose cases managed to gain public attention when they were denied the use of cannabis oil to treat their ailments. With public support, the government took notice, and within months, changed the rules to permit for use of medical cannabis.

Cannabinoid-Derived Pharmaceuticals in This Market

Market Overview – We Are Bullish

With the 2018 approval of GW Pharmaceuticals' (GWPH-US, USD$160 TP, OP) Epidiolex by the US FDA, and the rescheduling of the drug by the DEA from Schedule I to V, the first ever plant-based cannabinoid-derived pharmaceutical was approved for sale at the federal level in the United States. This landmark decision has opened the door for all future cannabinoid-derived pharmaceuticals, and has helped to de-risk an entire pipeline of cannabinoid-derived pharmaceutical drug development. Numerous companies from around the world, including Canada, Australia, the US and Israel, have already begun clinical trials for cannabinoid-derived pharmaceuticals to treat conditions such as chronic pain, sleep, MS, epilepsy and cancer, amongst others.

Difference Between Medical Cannabis and Cannabinoid-Derived Pharmaceuticals is Crucial

In assessing the cannabinoid-derived pharmaceutical market, it is very important to distinguish the difference between a *cannabinoid-derived pharmaceutical* and *medical cannabis*.

Medical cannabis is simply a reference to the use of cannabis, in any form, generally for therapeutic purposes, for issues such as pain, sleep issues, nausea, and others. The cannabis itself is used by patients for relief of symptoms associated with such conditions, but *is not* a dosed and formulated medicine that is designed specifically for the treatment of these conditions, in spite of any efficacy that patients may experience from its usage. Medical cannabis, in most cases, only requires a physician's prescription, and in Canada and the US, is not required to be dispensed under the supervision of a pharmacist. At least in legal markets in the US and Canada, medical cannabis is widely available through cannabis dispensaries, and via home delivery, which broadens the patient base who may obtain access to the product.

The term ***cannabinoid-derived pharmaceutical*** refers to drugs that have been designed, dosed and formatted to treat specific indications, and undergo the full gamut of clinical trial development in line with regulatory requirements to prove their safety and efficacy. Like any US FDA (or EMA [European Medicines Agency])-approved drug, a cannabinoid-derived pharmaceutical is able to make specific claims for therapeutic use, contains a product monograph and is eligible for private and/or public reimbursement. Without the backing of regulator-approved clinical trials, the pharmaceutical product would not receive marketing authorization in that jurisdiction, and would not be allowed to make claims of efficacy for those specific conditions. The IP generated from the research process is normally patent-protected. Critically, these products also require a prescription from a licensed physician, and must be dispensed by a pharmacist, which restricts access to only those patients for whom the product is deemed suitable.

Greater Risk with Greater Reward Potential as Market Size not Limited to Cannabis Spending

The pathway to developing a pharmaceutical product requires a longer investment time horizon than the product development cycle for medical cannabis products, Natural Health Products (NHPs), or traditional CPG products, as the time required to complete pre-clinical testing and clinical trials may take several years, and the commercialization spend could cost several billions of dollars.

The development process is also significantly more expensive, as the cost of developing the IP, and funding the trials can be quite costly in relation to developing new strains, formats or delivery mechanisms for non-pharmaceutical products. In addition, due to higher hurdles with respect to proving efficacy, the risk of failure within the product development pipeline is much higher relative to traditional medical cannabis products. **The term cannabinoid-derived pharmaceuticals refers to the utilization of the traditional pharmaceutical/biotechnology model – the only difference between the two is that the active pharmaceutical ingredient (API) is a cannabinoid-derived product as opposed to another form of medicine.**

While the hurdles are much higher in achieving pharmaceutical approvals, if successful, it carries significantly greater rewards relative to a medical cannabis product, or NHP. The four key benefits in obtaining health regulation approval for pharmaceutical products are:

- **Ability to make specific claims, using protected IP,** with respect to efficacy to treat certain conditions – Medical cannabis products cannot make claims regarding efficacy of treatment of specific conditions;
- **Allows more broad market access** – not explicitly limited to markets where *medical cannabis* is legal if regulated as a pharmaceutical by federal health regulators such as the US FDA, Health Canada or the EMA;
- **In most instances, a prescription pharmaceutical may also be eligible for reimbursement** by a private or government payor;
- **Higher prices of drug** by the manufacturer, **which translate to substantially higher gross margins to the company.**

Due to the ability to make claims about the efficacy of pharmaceutical products, their addressable market overlaps with traditional pharmaceutical drugs, compared to medical cannabis, which is very limited in the claims it can make with respect to treatment of specific indications. Therefore, a cannabinoid-derived pharmaceutical may have a great ability to steal share from an existing pharmaceutical product, such as a pain or sleep aid, relative to a medical cannabis product. Doctors are more likely to have a much greater level of comfort prescribing patients a cannabinoid-derived pharmaceutical that has withstood rigorous clinical trials, with proven safety, efficacy and standardized dosing in lieu of traditional pharmaceuticals.

Comparison of Recreational, Medical and Cannabinoid-Derived Pharmaceuticals by Level of Rigour

	Clinical Trials	Eligible for insurance reimbursements	Manufactured to GMP Standards	Product Consistency	Time Horizon to Market	Margin	Operates to Pharma Standard
Recreational	No	No	Not Required	Medium	Short	Moderate	No
Medical	Not Required	Some	Not Required	Medium	Short to Medium	Moderate	Not Required
Cannabinoid-derived Pharmaceutical	Yes	Yes	Yes	High	Long	High	Yes

Figure 40. Regulatory and Timeline Comparison Matrix (Cannabinoid-Derived Pharmaceuticals vs Others)
Source: AltaCorp Capital Inc.

Closing Thoughts

In conclusion, cannabinoid-derived pharmaceuticals demand a level of rigour in development, testing, manufacturing and commercialization, dissimilar to both recreational and medical cannabis products. This is not to say that recreational or medical cannabis products/companies are inferior to cannabinoid-derived pharmaceutical ones. Rather, our definitions incorporate nuance in order to separate the three segments and the companies that compete in those sectors, into distinct categories, which will be appreciated by investors. In our view, this will allow investors to better understand and make more informed decisions about the level of risk and near-term versus long-term successes and returns they can expect to observe amongst companies.

Where, for the most part, medical and recreational cannabis companies should be viewed as CPG-type businesses within the cannabis sector, cannabinoid-derived pharmaceuticals, while also utilizing cannabinoids as APIs, we believe, should be viewed from the lens of the more traditional pharmaceutical and biotechnology business model and market.

Initiating Coverage Reports

We are initiating coverage in separate publication on the following three companies, with links to their respective initiation reports here:

Valens GroWorks Corporation

(VGW-CNQ, Outperform, $5.00 TP)

Link to report: **VGW: This Premier Cannabis Company has Flown Under the Radar...Until Now (January 7, 2019)**

Auxly Cannabis Group Inc.

(XLY-TSXV, Outperform, $1.50 TP)

Link to report: XLY: **Differentiated Business Model Offers Exposure to High-Margin Segments of the Cannabis Value Chain (January 7, 2019)**

GW Pharmaceuticals PLC

(GWPH-US, Outperform, US$160 TP)

Link to report: GWPH: **Making the Case for the World Leader in Cannabinoid-Derived Pharmaceuticals (January 7, 2019)**

Industry Comparatives

		Share		Market	Enterprise	Fiscal Year	EV/Revenue (2)			EV/EBITDA (2)			EBITDA Margins (2)		
	Ticker	Price	Currency	Cap (1)	Value	End	FY2019E	FY2020E	FY2021E	FY2019E	FY2020E	FY2021E	FY2019E	FY2020E	FY2021E
Canadian Cannabis Companies															
Tilray, Inc.	TLRY-US	$69.95	USD	$7,064	$6,881	31-Dec	51.7x	25.6x	17.5x	782.3x	176.6x	110.1x	6.6%	14.5%	15.9%
Canopy Growth Corporation	WEED-CA	$37.94	CAD	$14,903	$9,959	31-Mar	12.5x	7.8x	5.4x	61.7x	30.3x	17.7x	20.3%	25.6%	30.4%
Aurora Cannabis Inc.	ACB-CA	$7.02	CAD	$7,453	$7,057	30-Jun	19.0x	8.1x	5.0x	1421.2x	28.1x	15.2x	1.3%	29.0%	32.8%
Cronos Group Inc	CRON-CA	$15.80	CAD	$5,739	$3,285	31-Dec	27.4x	13.1x	-	86.2x	35.1x	17.8x	31.7%	37.2%	-
Aphria Inc	APHA-CA	$8.07	CAD	$2,057	$1,652	31-May	2.9x	1.8x	1.2x	9.2x	6.0x	4.5x	31.6%	29.8%	27.4%
HEXO Corp.	HEXO-CA	$5.81	CAD	$1,361	$1,037	31-Jul	10.4x	4.5x	2.6x	318.3x	15.3x	10.7x	3.3%	29.2%	24.4%
CannTrust Holdings, Inc.	TRST-CA	$7.15	CAD	$778	$688	31-Dec	3.7x	2.4x	1.8x	13.1x	7.3x	7.2x	28.3%	32.4%	24.9%
OrganiGram Holdings Inc	OGI-CA	$5.75	CAD	$931	$740	31-Aug	6.0x	3.3x	-	20.1x	9.4x	-	29.9%	35.7%	-
Green Organic Dutchman Holdings Ltd.	TGOD-CA	$2.59	CAD	$732	$394	31-Dec	1.1x	0.6x	-	8.6x	2.8x	-	12.3%	23.3%	-
Auxly Cannabis Group Inc.	XLY-CA	$0.87	CAD	$540	$303	31-Dec	1.8x	0.5x	-	8.6x	1.5x	-	21.3%	35.9%	-
Supreme Cannabis Company Inc	FIRE-CA	$1.57	CAD	$505	$529	30-Jun	7.4x	3.3x	2.7x	36.5x	10.2x	7.6x	20.3%	32.5%	36.0%
VIVO Cannabis Inc.	VIVO-CA	$0.88	CAD	$263	$206	31-Dec	2.8x	1.1x	0.5x	18.0x	3.8x	1.3x	15.3%	27.8%	36.1%
Wayland Group Inc.	WAYL-CA	$1.09	CAD	$207	$160	31-Dec	1.3x	1.2x	-	10.3x	3.7x	-	12.5%	32.6%	-
WeedMD, Inc.	WMD-CA	$1.39	CAD	$161	$119	31-Dec	1.9x	0.9x	-	6.8x	2.8x	-	28.0%	30.0%	-
Emblem Corp.	EMC-CA	$1.01	CAD	$133	$100	31-Dec	1.3x	0.7x	-	9.0x	2.8x	-	15.0%	25.4%	-
Delta 9 Cannabis, Inc.	NINE-CA	$1.45	CAD	$124	$101	31-Dec	1.0x	0.6x	0.6x	4.4x	3.1x	3.4x	22.3%	18.6%	18.2%
Canopy Rivers, Inc. Class A	RIV-CA	$3.50	CAD	$689	$403	31-Dec	11.3x	4.3x	-	128.9x	71.0x	-	8.8%	6.0%	-
Mean							**9.6x**	**4.7x**	**4.2x**	**173.1x**	**24.1x**	**19.6x**	**18%**	**27%**	**27%**
Canadian Extractors															
Neptune Wellness Solutions, Inc.	NEPT-CA	$3.86	CAD	$321	$284	31-Mar	4.6x	2.0x	1.5x	22.9x	8.3x	5.3x	20.0%	24.5%	28.0%
Radient Technologies Inc	RTI-CA	$0.80	CAD	$235	$186	31-Mar	-	-	-	-	-	-	-	-	-
MediPharm Labs Corp.	LABS-CA	$1.84	CAD	$238	$196	31-Dec	-	-	-	-	-	-	-	-	-
Valens GroWorks Corp.	VGW-CA	$1.76	CAD	$201	$159	30-Nov	2.9x	1.7x	-	6.5x	3.8x	-	45.0%	44.8%	-
Mean							**3.8x**	**1.9x**	**1.5x**	**14.7x**	**6.1x**	**5.3x**	**33%**	**35%**	**28%**
U.S-Based Cannabis Companies															
Curaleaf Holdings, Inc.	CURA-CA	$7.50	CAD	$3,523	$3,145	31-Dec	7.4x	3.9x	2.6x	19.7x	9.3x	7.1x	37.2%	42.2%	35.9%
MedMen Enterprises, Inc. Class B	MMEN-CA	$4.65	CAD	$2,730	$2,667	30-Jun	10.6x	4.1x	2.2x	-	313.2x	65.2x	-	1.3%	3.3%
Acreage Holdings, Inc.	ACRG.U-CA	$22.00	USD	$2,385	$1,994	31-Dec	7.2x	3.6x	2.2x	29.4x	11.6x	6.8x	24.3%	30.9%	32.9%
Green Thumb Industries Inc.	GTII-CA	$14.12	CAD	$2,439	$2,131	31-Dec	7.8x	3.7x	-	33.8x	10.5x	-	23.1%	35.0%	-
Trulieve Cannabis Corp.	TRUL-CA	$11.10	CAD	$1,236	$1,205	31-Dec	4.1x	3.0x	2.7x	9.2x	6.8x	6.5x	44.3%	44.9%	42.0%
Origin House	OH-CA	$6.91	CAD	$470	$367	31-Dec	2.3x	1.3x	1.3x	18.1x	7.2x	7.0x	13.0%	18.6%	18.6%
Green Growth Brands Ltd.	GGB-CA	$4.99	CAD	$1,005	$808	31-Dec	5.8x	1.9x	1.0x	25.3x	8.0x	4.6x	23.1%	23.4%	23.0%
Mean							**6.5x**	**3.1x**	**2.0x**	**22.6x**	**52.4x**	**16.2x**	**27%**	**28%**	**26%**
Pharmaceutical and Biotechnology															
GW Pharmaceuticals Plc	GWPH-US	$108.88	USD	$3,338	$2,660	31-Dec	23.0x	5.8x	2.6x	-	-	-	-	-	-
Insys Therapeutics, Inc.	INSY-US	$4.25	USD	$316	$295	31-Dec	3.0x	2.5x	1.7x	-	-	-	-	-	-
Vertex Pharmaceuticals Incorporated	VRTX-US	$172.70	USD	$44,888	$42,781	31-Dec	12.2x	9.8x	7.8x	-	-	-	-	-	-
Xenon Pharmaceuticals Inc.	XENE-US	$6.87	USD	$184	$111	31-Dec	-	6.3x	3.3x	-	-	-	-	-	-
Zogenix, Inc.	ZGNX-US	$41.13	USD	$1,604	$1,377	31-Dec	119.0x	9.1x	3.2x	-	-	-	-	-	-
Mean							**39.3x**	**6.7x**	**3.7x**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Company Filings, FactSet, AltaCorp Capital
(1) Shares outstanding based on most recent quarterly financials and adjusted for significant publicly disclosed transactions; market cap presented as fully diluted with all in-the-money securities added to the equity value and cash proceeds added to diluted cash balance;
(2) Based on Analyst consensus estimates for the Fiscal Year End

Figure 41. Industry Comparatives
Source: Company Filings, FactSet, AltaCorp Capital Inc.

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