JUNE 2021

SALES AND REVENUE FROM REGULATED CANNABIS PRODUCTS: BRITISH COLUMBIA

October 2018 – December 2020

University of Victoria
Canadian Institute for Substance Use Research
Institut canadien de recherche sur l'usage de substances

Originally prepared for the Government of BC by:

The Canadian Institute for Substance Use Research, University of Victoria

Authors: Sam Churchill, Kate Vallance, Russ Callaghan, Tim Stockwell,

Amanda Farrell-Low, Tim Naimi

Suggested citation: Naimi, T., Vallance, K., Churchill, S., Callaghan, R., Stockwell, T. & Farrell-Low, A. (2021). *Sales and Revenue from Regulated Cannabis Products: British Columbia, October 2018-December 2020*. Victoria, BC: Canadian Institute for Substance Use Research, University of Victoria.

1. Executive Summary

Background and objectives

Recreational cannabis was first legalised on October 17, 2018, with the addition of edible products one year later. In BC, cannabis is distributed through direct government online and retail stores and through licensed private retailers who purchase cannabis at wholesale prices from the government; online sales through private retailers has recently been allowed. The objectives of this report are to present patterns of BC government cannabis sales, per capita consumption, potency and price in the province overall and by health authority area. This report does not include information about the unregulated market.

Data and methods

All data were obtained from the Liquor and Cannabis Distribution Branch of the BC provincial government. Data included sales of all unique cannabis products sold as wholesale product to private retailers, retail sales through BC government outlets, and internet retail sales through the BC online store. To allow cross-product comparisons, results are presented in terms of the weight of tetrahydrocannabinol (THC).

Results

- Sales of cannabis by THC weight increased steadily from October 2018 though December, 2020. From 2019 to 2020, per capita annual sales per person aged 15 and older for all cannabis products increased from 63.8 mg to 129.4 mg. In 2020, the BC government sold a total of 8,000 kg of THC through the wholesale, retail and online market, generating approximately $290 million in gross revenue.
- Sales are concentrated among a relatively small number of brands. By THC weight, the top 10 cannabis products accounted for 13.5% percent of total sales in 2020. Of the top 10 most popular products, nine were flower products and one was an extract.
- The largest amount of THC was sold in the Interior health area, but on a per-person basis the largest amount of THC was sold in the Northern health area.
- Private retailers sell about four times as much cannabis as government retail stores, and outnumber government stores by about 10:1. However, on average each government store sells more than twice as much THC as each private store. Limiting the number of private retailers could help maintain the government share of the retail market.
- Since sales were legalized, the potency for flower and pre-roll has increased.
- Since sales were legalized, the median sales-weighted price for flower and pre-roll has decreased. For flower, the average price including taxes is approximately 12 cents per 5 mg unit of THC. A joint containing 20 mg of THC therefore costs about 50 cents.
- Across all unique individual products of flower, pre-roll, vape kit and vape cartridge subcategories sold in government retail stores, there was an inverse relationship between potency and price per 5-mg unit of THC. In other words, higher-potency products tended to be cheaper per fixed amount of THC than lower-potency products.

Discussion

The regulated sale of cannabis products through BC government channels, in terms of both THC weight and revenue, has increased substantially since the introduction of legalized recreational use. However potency has increased while prices for the most common subcategories of cannabis products have decreased, with more potent products costing less. Minimum unit pricing, product-specific taxes and potency limits would likely have public health benefit.

Contents

Tables and figures, ordered consecutively as they appear in the report

2. Background and objectives

2.1 Legalisation of recreational cannabis in Canada

Non-medical cannabis was legalised in Canada on October 17, 2018 with the establishment of the federal Cannabis Act under Bill C-45. One year later, on October 17, 2019, federal cannabis regulations were updated to allow for the commercial production and sale of edible cannabis (e.g., baked goods, candies, and beverages), extracts (e.g., vaping liquids, tinctures, wax, hash, cannabis oil), and topicals (e.g., creams, lotions and balms, similar products for application to skin, hair, nails). These additional products began being available for purchase around mid-December 2019 due to a 60-day intent to produce requirement in the law. Under the federal regulations, each province and territory is responsible for determining how cannabis is distributed and sold in their respective jurisdiction. Provinces and territories may add additional restrictions beyond federal regulations related to lowering possession limits, increasing the minimum age, restricting public use and adding requirements for personal cultivation (see Table 1). The current status of all jurisdiction-specific regulations can be found here.

Table 1. Legal age and type of cannabis distribution outlet by province and territory

P/T	Legal age	Permitted cannabis distribution outlets			
		Government in-person store	Government online store	Private licensed in-person store	Private licensed online store
BC	19+	✓	✓	✓	✓
AB	18+		✓	✓	
SK	19+			✓	✓
MB	19+			✓	✓
ON	19+		✓	✓	
QC	21+	✓	✓		
NB	19+	✓	✓		
NS	19+	✓	✓		
PE	19+	✓	✓		
NL	19+		✓	✓	
YT	19+		✓	✓	
NT	19+	✓	✓		
NU	19+		✓ +by phone		

Note: public possession limit is 30 grams of dried cannabis or equivalent in all jurisdictions. Source: Government of Canada

** BC allowed private licensed online retail store sales as of August 4, 2020*

2.2 Licensed retail trade sales of cannabis in Canada

Overall licensed retail sales of recreational cannabis in Canada were estimated to be nearly $300 million for the month of December 2020, marking a substantial increase from $148 million sold in that same month the year prior (Stats Can, 2021) (see Table 2). In December 2020, British Columbia (BC) reported the fourth highest recreational cannabis sales ($42.5M) across all provinces and territories behind Ontario, Alberta, and Quebec. Overall, BC's licensed trade sales increased by 139% in December 2020 compared to December 2019. The proportion of purchases consumers reported making from the unregulated cannabis market in Canada dropped from 52% down to 40% post-legalisation (Stats Can, 2019). In BC, the decrease was smaller, with 51% of consumers still reporting purchasing from the unregulated cannabis market compared to 55% prior to legalisation. This is likely due to the continued operation of informal sales (e.g., through individual dealers) and a substantial (but quickly declining) number of unlicensed cannabis retail stores throughout BC, with even more unlicensed online-only retailers. As a result, the extent of recreational cannabis sales from the unregulated market is difficult to estimate and has likely changed since last estimated.

The average price of cannabis per gram purchased in the illicit/unregulated market in Canada in 2019 was estimated by the StatsCannabis crowdsourcing application to be approximately $5.96, which was similar to that in BC at $5.95 (Stats Can, 2020). The crowdsourced average price estimates per gram of legally sourced cannabis was higher for both Canada ($10.29) and BC ($9.32) (Stats Can, 2020).

Table 2. Licensed retail sales ($) of recreational cannabis in Canada, Dec 2019 vs. Dec 2020

Jurisdiction	December 2019	December 2020
Canada	$147.9M	$299.7M
Newfoundland and Labrador	$3.3M	$5.4M
Prince Edward Island	$1.4M	$1.8M
Nova Scotia	$6.2M	$8.2M
New Brunswick	$4.1M	$6.8M
Quebec	$33.5M	$50.8M
Ontario	$33.7M	$94.7M
Manitoba	$7.1M	$11.4M
Saskatchewan	$7.6M	$12.2M
Alberta	$32.3M	$63.8M
British Columbia	***$17.8M***	***$42.8M***
Yukon	$0.6M	$0.7M
Northwest Territories	$0.3M	$0.9M
Nunavut	Not available	Not available

Note: data are unadjusted and for the month of December only; Source: Statistics Canada

2.3 Regulatory structure of non-medical cannabis distribution and sale in BC

Non-medical cannabis in BC is regulated by the Cannabis Control and Licensing Act in combination with the Cannabis Distribution Act. BC's overall non-medical cannabis framework and ongoing policy development are managed by the Cannabis Legalisation and Regulation Secretariat, which falls under the Ministry of Public Safety and Solicitor General (more details here). The Liquor and Cannabis Regulation Branch (LCRB) are responsible for licensing and regulating private recreational cannabis retailers and monitoring the overall non-medical retail sector for the province. The BC Liquor Distribution Branch (LDB) is the sole wholesale distributor of non-medical cannabis products in BC and also runs the BC Cannabis Stores. The first government-run retail cannabis outlet in BC opened on legalisation day in October 2019 in the city of Kamloops and the first licensed private cannabis retail outlet opened in Kamloops one month later.

The LDB oversees the distribution of pre-packaged products to both government-run retail and online stores and licensed private cannabis retailers. Federal excise duty on cannabis products is payable by licensed cannabis producers upon delivery to the purchaser (i.e. the LDB). Most cannabis products in BC are subject to 5% government sales tax (GST) and 7% provincial sales tax (PST); PST is not charged on cannabis seeds (Government of BC, 2018). There is no additional PST charged on top of the standard 7% for most cannabis products in BC, unlike the extra 3% PST added to all alcohol products (BCLDB, 2021). As of January 1, 2020, a 20% provincial sales tax (PST) was added to vapour products such as liquids and cartridges (with the exclusion of dry herb vaporizers) on top of the 5% government sales tax (GST) (Government of BC, 2019). Non-medical cannabis products are sold directly through government-run retailers (in-store and online) and licensed private retailers must first purchase the products wholesale from the LDB for subsequent in-store sale.

While online sales were initially prohibited for licensed private retailers, in August of 2020, a COVID-19 related policy change allowed for online orders and payment with in-store pickup (Government of BC, 2020a); home delivery of cannabis products by private retailers was permitted starting July 2021 (Government of BC, 2021a). As of January 2021, there were 25 government retail stores and 279 licensed private cannabis retail stores. Cannabis retailers are authorised to operate between the hours of 9am and 11pm. In comparison, there are currently 198 government retail and 699 privately-owned retail liquor stores in BC with allowable hours of operation between 7am and 11pm daily; hours of operation were expanded in response to the COVID-19 pandemic in 2019 (Government of BC, 2020b).

2.4 Restrictions on non-medical cannabis in BC

The legal age in BC for purchasing, using, possessing, or growing non-medical cannabis in BC is 19 years or older. Adults over age 19 may legally carry up to 30 grams of non-medical dried cannabis (or its equivalent) in public. Adults can legally possess up to 1000 grams of dried non-medical cannabis (or its equivalent) in a non-public place such as a residence. The limit is based on the expected yield from four cannabis plants, which is the allowable number to be grown per household. Further restrictions or prohibition of growing non-medical cannabis can be implemented by landlords or strata corporations on their properties. Local and Indigenous governments also have the authority to restrict growing of non-medical cannabis at home through bylaws (Government of BC, 2021b). Cannabis can be smoked or vaped in public places in BC where tobacco smoking and vaping is currently permitted, with a few exceptions where cannabis is prohibited including regional and municipal parks (full list available here). Smoking and vaping is prohibited in all other public places except in permitted designated areas.

2.5 Main objectives

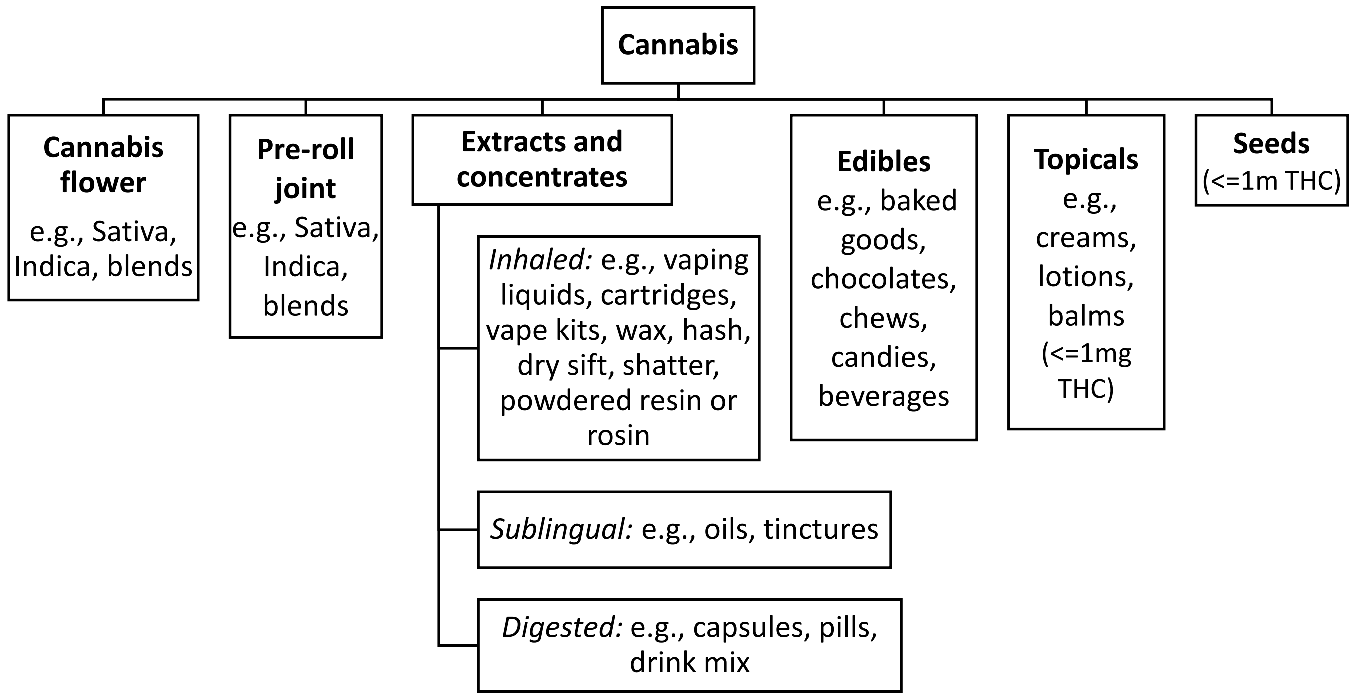
The main objectives of this report are to provide an overview and analysis of patterns of cannabis sales and consumption across BC between 2018 and 2020 based on cannabis sales from the BC government. Cannabis consumption will be estimated in terms of weight of THC per person aged 15+ using recorded sales data from licensed government and private retailers. Data will be presented at the provincial and health authority levels.

3. Data and Methods

3.1 Description of dataset

Official cannabis sales data were sourced from the BC Liquor Distribution Branch (LDB) for the period from October 2018 to December 2020. The dataset included: category of cannabis product and stock keeping unit (SKU number); potency of individual cannabis products; total size, volume, and weight of retail unit; number of retail units sold; geographic sales information down to the five regional health authorities; and type of retail outlet. The different types of retail outlet included direct government in-store and online retailers as well as government wholesale distributed to licensed private retailers; no sales data were provided for online licensed private retailers. Geographic location of government and licensed private retail cannabis outlets was not provided in the dataset. Categories of cannabis products provided in the dataset included the following: flower; pre-roll; edibles; extracts and concentrates; topicals; and seeds (see Figure 1).

Figure 1. BC government categories of recreational cannabis products distributed in BC



Note: While cannabis capsules, pills, oils, tinctures were available for sale as of legalisation in October 2018, extracts and concentrates were not available until December 2019, which by statutory requirement was 60 days after edibles were permitted in October 2019.

3.2 Data standardisation and weighting, conversion to THC equivalents

Four product subcategories were built from the dataset including flower, pre-roll, extracts and concentrates, and edibles – all containing >= 1mg of THC. Products such as CBD pills, seeds and topicals have no psychoactive effect so were not included as a category in most analyses except for sales amounts in dollars. For all cannabis products, the potency and grams of THC sold were calculated by converting the various weight and volume measures (e.g., capsule, pill, gram, milligram, millilitre etc.) into grams of THC. The subcategories were built to indicate the grams of THC within a particular SKU. To account for certain products where a range of THC content was indicated, the midpoint between the minimum and maximum estimates was used to calculate potency.

To assist with comparing various cannabis formulations, all product weights were converted into their THC weight or their THC-based potency (i.e., the percentage of product weight accounted for by THC). THC weight is reported in grams per milligram (g/mg), grams when reporting total sales in the population, and by milligrams or 5-mg standard units when reporting sales among individuals. The 5-mg unit, as proposed by Freeman (2020) and others, should not be considered to be representative of a 'typical' amount consumed, or a standard joint, or a standard or low-risk 'dose' (for which there is currently no consensus definition) for either inhaled or ingested cannabis. However, 5 mg of THC from either inhaled or oral administrations can produce psychological effects among some users, and some studies find that the subjective feeling is similar at a fixed dose of THC across either mode of administration (Health Canada, 2018).

Reporting results in THC weight across different products also allows the flexibility to calculate other consumption measures using alternate assumptions related to pharmacological equivalency or estimates of what might constitute a 'typical dose' for a particular product subcategory. However, the topic of pharmacological equivalency and dosing for cannabis is controversial and depends on several factors and assumptions (MacCallum, 2018; Zeisser, 2012; Hammond, 2019; Colorado, 2015). For example, equivalency may vary considerably between regular vs. irregular users, or based on variation in technique. Furthermore, pharmacological equivalency depends on the cannabinoid being prioritized (THC versus carboxy-THC, an intoxicating THC metabolite that may be found in greater relative proportion with oral versus inhalational administration). It also depends on whether one prioritizes peak cannabinoid levels or the total bio-availability (i.e., the area under the curve of the cannabinoid level over time). For identical amounts of cannabis, peak cannabinoid levels are typically higher with an inhalational route compared to oral administration, whereas the total bio-availability is typically higher for oral routes. Another area of controversy is the degree to which there may be differences among various modes of oral (sublingual versus swallowed) and respiratory absorption (smoking versus vaping versus dabbing) (Health Canada, 2018).

Estimates of per capita consumption were calculated by dividing the total amount of THC sales by the BC population aged 15 years and older; health authority-specific population estimates were based on those populations in 2019. Wholesale prices represent the price at which products were sold by the government to licensed private retailers; retail prices are not available for licensed private retailers. Retail prices represent the price at which products were directly sold through government in-store and online stores. These prices are inclusive of the 5% GST (excluding cannabis seeds) and 7% PST added to all cannabis products. However, as of January 1, 2020 the tax for vapor products (including cartridges and liquids but excluding dry herb vaporizers) was increased to 20% PST with the 5% GST then added to that new total (as opposed to being applied to the base price). Taxes for other products remained unchanged; therefore as of 2020 the PST+GST tax on most items was 12% of the base price, but for most vapor products PST + GST was 26% of the base price.

Sales are also presented in grams of THC by number of outlets (e.g., government retailers and licensed private retailers) and normalised for the proportion of government to licensed private retailers. Time units were standardised so that months were sequentially ordered for time series analyses.

4. Results

4.1 Descriptive results and popular cannabis products

Table 3. Number of unique cannabis products sold through BC government channels since October 2018, and percent with >= 1mg THC, by subcategory

Subcategory	Number of unique SKUs/products (n)	Percent unique products with >= 1mg THC	Percent of sales $ for products with >=1mg THC
All Products	**1811**	**96.5%**	**99.5%**
Edibles	124	87.1%	92.9%
Extracts and Concentrates	448	98.7%	99.8%
Flower	894	100.0%	100.0%
Pre-roll	303	100.0%	100.0%
Seeds	29	N/A	N/A
Topicals	13	N/A	N/A

Overall, the BC government distributed 1,811 unique cannabis products, of which more than 95% contained 1 milligram (mg) of THC or greater (see Table 3); for flower and pre-roll this was based on 1 gram (gm) or more of product. The flower subcategory contained the most unique products, while the edibles subcategory contained the largest percentage of products with 1 mg of THC or less (approximately 13% of edible products). Presumably, this reflects the fact that edibles are the most common source of cannabidiol (CBD)-forward cannabis products. Seeds and topical products are considered not applicable because the THC is not used for psychoactive effects.

Table 4. Top 5 cannabis products sold through BC government channels in 2020 by subcategory, grams of THC sold, percent sales by grams of THC, and price per unit

Rank	Subcategory	De-identified product name and brand	Product class	Grams of THC sold*	% sales by grams THC**	Price per 5-mg THC unit***
1	Flower	Product 1, Brand A	Indica	186,396.00	3.34%	$0.11
2	Flower	Product 1, Brand B	Sativa	129,050.85	2.31%	$0.13
3	Flower	Product 2, Brand B	Indica	104,726.10	1.88%	$0.13
4	Flower	Product 1, Brand C	Indica	96,301.38	1.73%	$0.11
5	Flower	Product 2, Brand A	Indica	87,242.26	1.56%	$0.11
1	Extracts and Concentrates	Product 1, Brand D	Oils/Tinctures	100,899.92	13.45%	$0.27
2	Extracts and Concentrates	Product 1, Brand E	Hash	14,464.45	1.93%	$0.39
3	Extracts and Concentrates	Product 2, Brand D	Cartridge	14,456.31	1.93%	$0.57
4	Extracts and Concentrates	Product 1, Brand F	Cartridge	12,982.38	1.73%	$0.55
5	Extracts and Concentrates	Product 1, Brand G	Cartridge	12,517.95	1.67%	$0.59
1	Pre-roll	Product 1, Brand H	Hybrid	68,605.51	5.49%	$0.20
2	Pre-roll	Product 2, Brand H	Hybrid	64,595.48	5.17%	$0.20
3	Pre-roll	Product 3, Brand H	Hybrid	56,328.56	4.50%	$0.20
4	Pre-roll	Product 4, Brand H	Hybrid	41,979.05	3.36%	$0.21
5	Pre-roll	Product 2, Brand F	Hybrid	40,908.90	3.27%	$0.26
1	Edibles	Product 1, Brand I	Chocolate	1,223.28	5.30%	$3.93
2	Edibles	Product 1, Brand J	Chews	971.15	4.21%	$4.48
3	Edibles	Product 1, Brand I	Chocolate	939.07	4.07%	$3.61
4	Edibles	Product 1, Brand K	Chocolate	896.15	3.89%	$2.24
5	Edibles	Product 1, Brand L	Beverages	755.4	3.28%	$3.92

**Grams of THC sold is based on all sales channels (government and licensed private); **% of sales by grams THC within that subcategory, e.g., flower; ***Price per unit is restricted to government retail sales channels only. Prices are inclusive of 5% GST and 7% PST charged on the base price for flower, pre-roll and edible products; as of January 1, 2020 for cartridges and vape kits prices were increased and included a 5% GST and a 20% PST applied to the GST-adjusted price.*

Cannabis sales based on THC weight are concentrated among a relatively small number of brands (i.e., unique products). The five top selling brands (based on THC weight) of flower products accounted for approximately 10% of all flower sales in 2020, and the top five brands by THC weight for extracts and concentrates, pre-roll and edible products during that time period accounted for approximately 20% of sales (see Table 4).

On average, the top-selling pre-roll products have higher prices than unrolled flower, and extracts and concentrates products had higher prices than pre-roll products. Edibles tend to have higher prices per amount of THC, possibly reflecting the fact that they may involve considerable preparation, can contain up to a maximum of 10mg of THC per product, and because their appeal may be based on factors such as flavour, appearance, and amount of CBD content.

Table 5. Top 10 overall cannabis products sold through BC government channels in 2020 by subcategory, grams of THC sold, percent of THC sales and price per 5 mg unit of THC unit

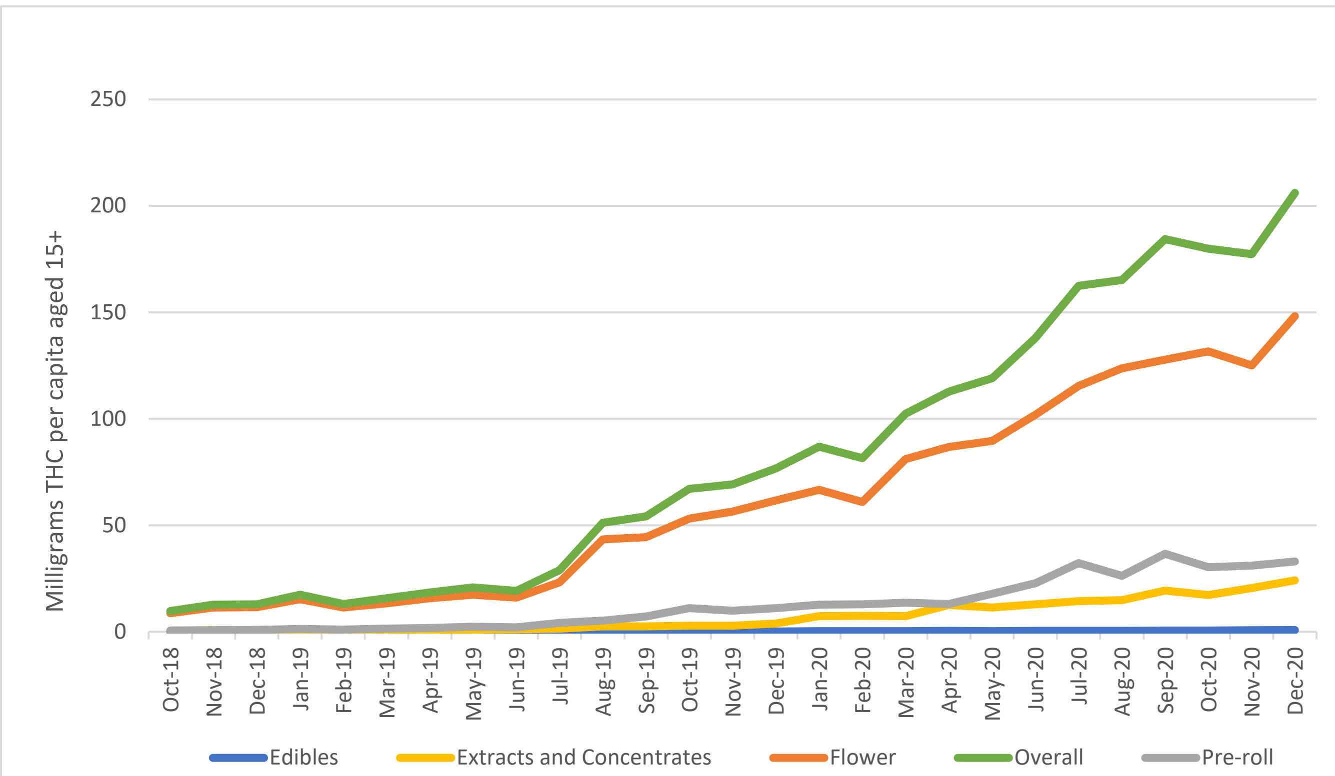
Rank	Sub category	De-identified product name & brand	Product class	Grams of THC sold *	% sales by grams THC	Price per 5-mg THC unit**
1	Flower	Product 1, Brand A	Indica	186,396.00	2.45%	$0.11
2	Flower	Product 1, Brand B	Sativa	129,050.85	1.70%	$0.13
3	Flower	Product 2, Brand B	Indica	104,726.10	1.38%	$0.13
4	Extract	Product 1, Brand C	Oils/ tinctures	100,899.92	1.33%	$0.27
5	Flower	Product 1, Brand D	Indica	96,301.38	1.27%	$0.11
6	Flower	Product 2, Brand A	Indica	87,242.26	1.15%	$0.11
7	Flower	Product 3, Brand A	Sativa	84,340.20	1.11%	$0.13
8	Flower	Product 3, Brand B	Sativa	81,112.71	1.07%	$0.15
9	Flower	Product 1, Brand E	Sativa	80,225.60	1.06%	$0.12
10	Flower	Product 1, Brand D	Sativa	73,561.18	0.97%	$0.11

**Grams of THC sold is based on all sales channels (government and licensed private); **Price per unit is restricted to government retail sales channels only (i.e., government stores or government online); prices are inclusive of 5% GST and 7% PST charged on flower, pre-roll and oil/tinctures products.*

Combined, the top 10 cannabis products accounted for 13.5% percent of total sales by THC weight in 2020 (see Table 5). Of the top 10 most popular products, nine were flower products and one was an extract. The price per 5 mg unit of THC in the flower products ranged from $0.10-$0.13. The price of the extract was approximately twice that of the price for flower, which is perhaps not surprising because the bioavailability of THC in an extract may be two or more times that in flower. At present, there is no minimum unit pricing for THC content in BC.

4.2 Results presented by weight of THC

Figure 2. Monthly Per capita milligrams of THC sold through BC government channels, by product subcategory, 2018-2020



Since the legalisation of recreational use, monthly cannabis sales by the BC government (i.e., based on THC weight sold in a wholesale, retail or online context) has increased steadily, particularly since mid 2019 (see Figure 2). By December, 2020, per capita consumption among persons aged 15+ years had more than doubled to a total of 206 mg per person. By THC weight, flower accounted for approximately 75% of all sales. However, the consumption of all product categories has increased over time. These increases could reflect increased actual consumption, or an increase in market share of cannabis sold by the government versus by unregulated sources, or a combination of both factors. Of note, per capita figures would be higher were the population restricted to those who actually consumed cannabis, rather than being divided among the entire population.

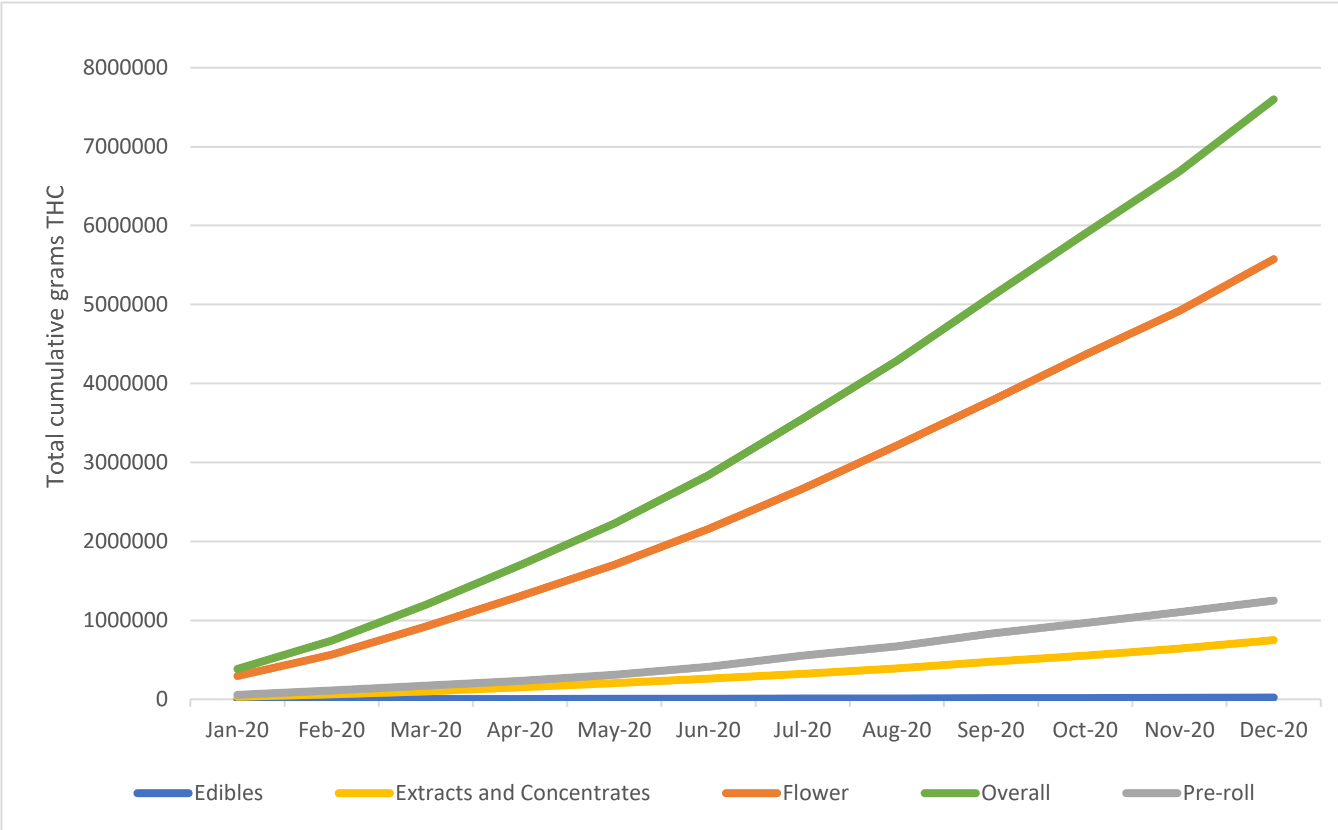
Table 6. Total annual per capita (among all persons 15+ years) milligrams of THC sold through BC government channels, by product category, 2019 and 2020

Product category	2019	2020
All Products	63.8	129.4
Edibles	0.1	0.7
Extracts and Concentrates	3.3	20.2
Flower	50.2	86.5
Pre-roll	10.2	21.9
Seeds	N/A	N/A
Topicals	N/A	N/A

For all cannabis products, the average annual per capita milligrams of THC sold by the BC government (i.e., the total amount of THC sold divided among all persons aged 15 and older) doubled from 63.8 mg in 2019 to 129.4 mg in 2020. Flower and pre-roll accounted for approximately 83% of THC sales in 2020, followed by extracts and concentrates. Although the largest absolute increase in per capita THC sales occurred for flower (an increase of 36.3 mg per capita), the sale of extracts and concentrates increased by approximately 500%.

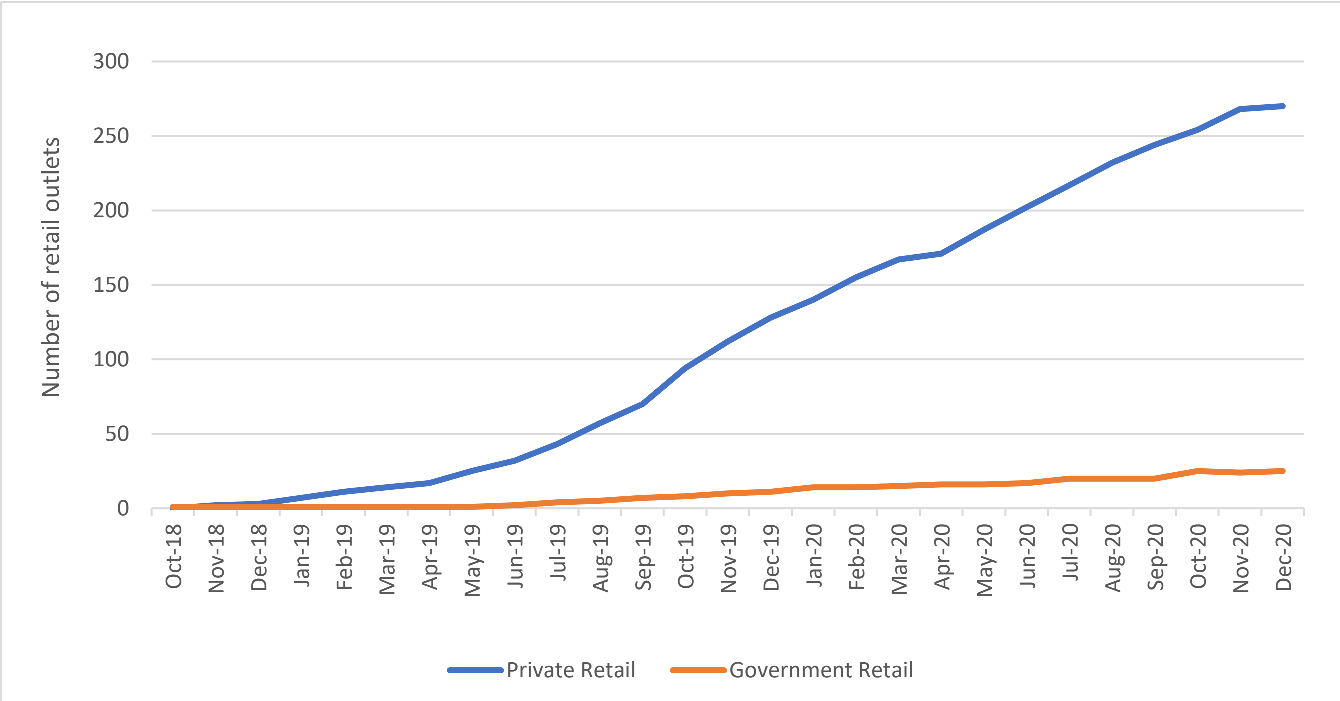
Of note, per capita estimates would be higher if consumption were averaged among just cannabis users rather than the entire population, and also higher if consumption from unregulated (i.e., non-government) sources were included in estimates.

Figure 3. Cumulative total grams of THC sold through BC government channels monthly, by product subcategory, 2020



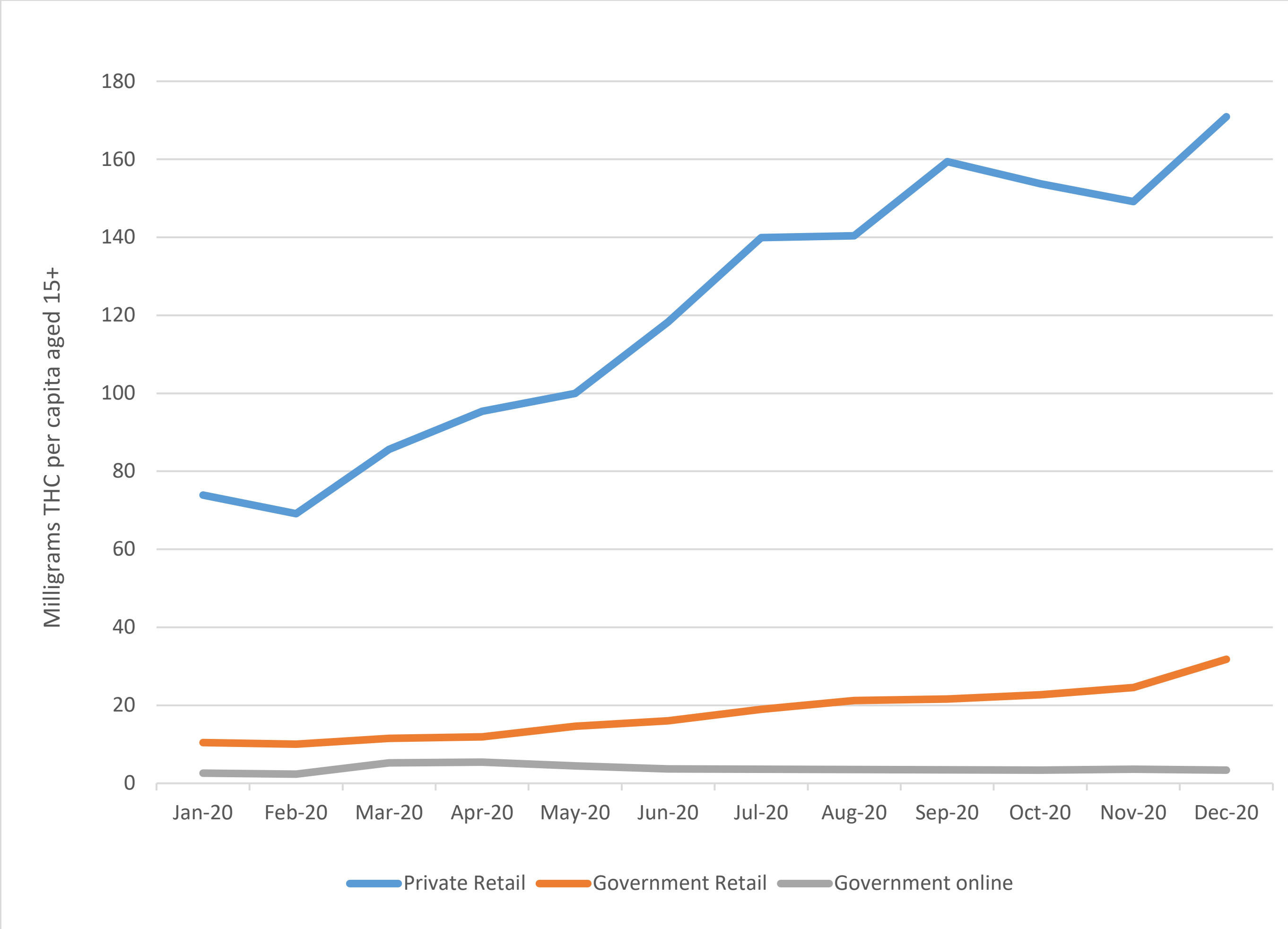
Almost 8 million grams, or 8000 kilograms, of THC were sold through BC government channels in 2020. Of this, approximately 5700 kilograms of THC were from flower products.

Figure 4. Number of licensed cannabis retail stores by outlet type in BC, 2018-2020



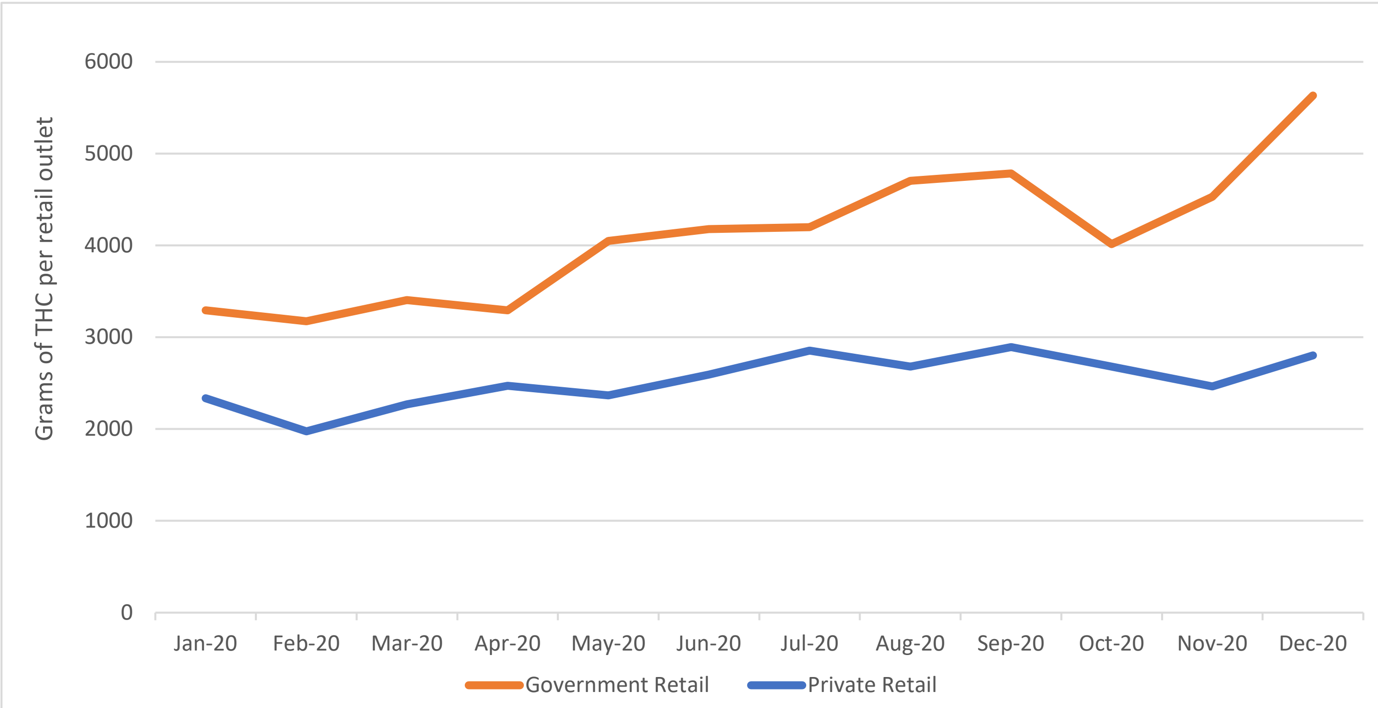
Throughout the period of legal sales, the number of licensed private retail outlets has increased far more rapidly than for government retail outlets (see Figure 4). There are currently approximately 10 times as many licensed private retail outlets compared to government retail outlets.

Figure 5. Per capita milligrams of THC sold by outlet type in BC, 2020



In 2020, the majority of THC distributed and sold by the BC government occurred through licensed private retail outlets (for whom the government acts as the wholesaler), followed by government retail outlets (with less than one-fifth the sales of licensed private retail outlets), followed by the government online outlet (with approximately one-fiftieth the sales of licensed private retail outlets) (see Figure 5). Of note, government online sales do not include unregulated online sales or private online sales. During the year, the growth of sales through licensed private retail outlets exceeded that in government retail outlets and the government online outlet.

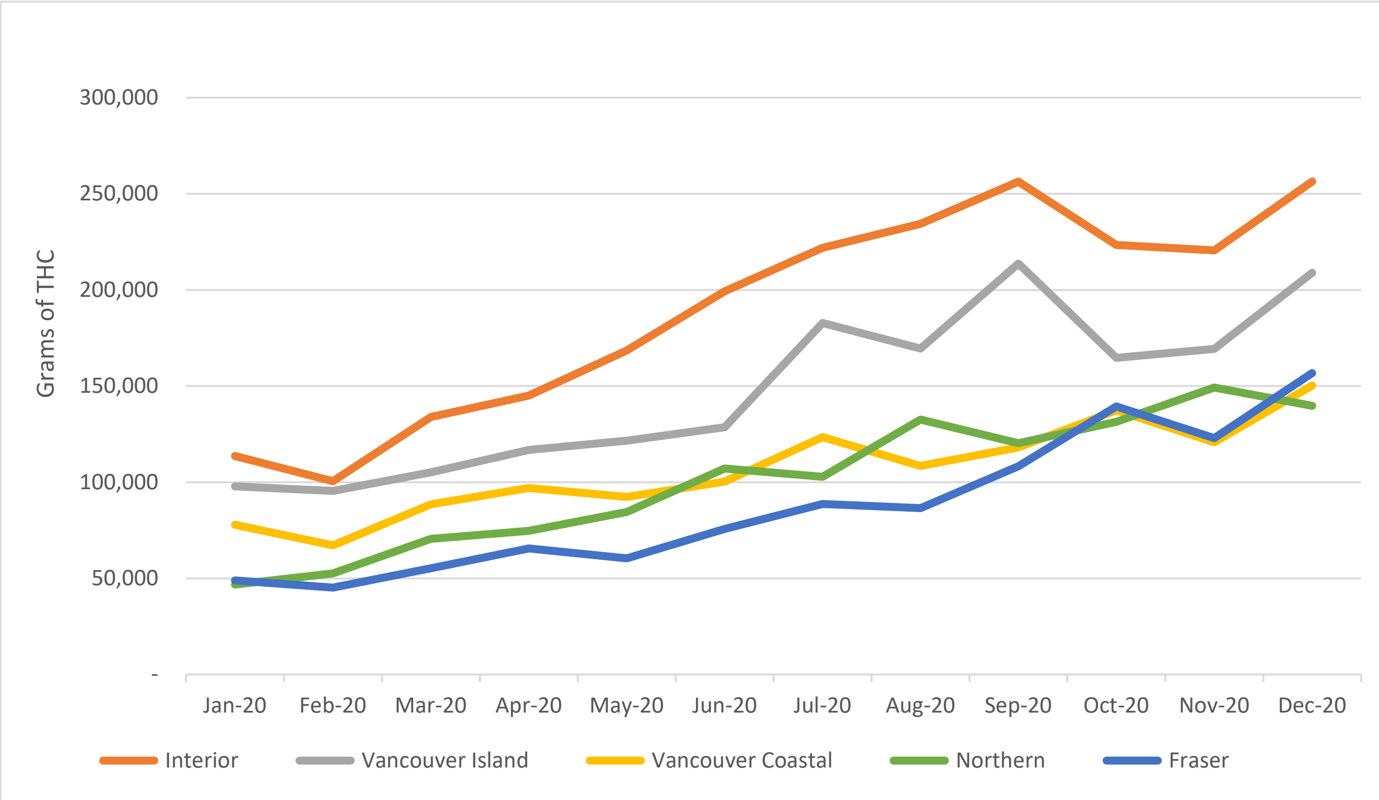
Figure 6. Grams of THC sold per physical licensed retail outlet in BC, 2020



Note: Excludes government online sales

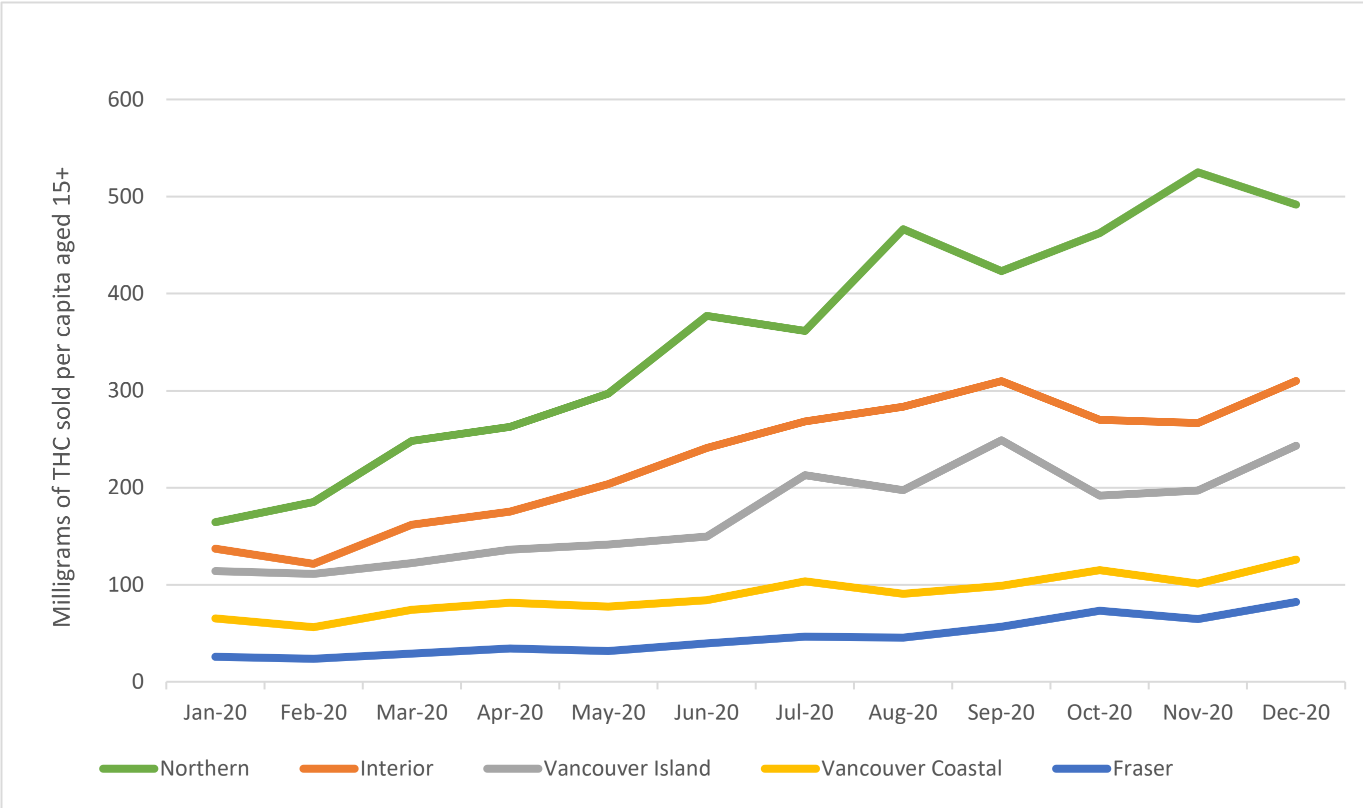
Although the total amount of THC sales were larger among licensed private retail stores in aggregate (as shown in the preceding figure), government retails stores sold approximately twice as much THC per outlet compared with licensed private retail outlets in 2020 (see Figure 6). Therefore, the larger sales volume and more rapid increase in sales observed among licensed private retail outlets reflects the proliferation of licensed private retail outlets, rather than an increase in average sales per licensed private retail outlet. If the BC government wishes to retain a larger fraction of sales by total THC weight, it might choose to restrict the number of licensed private outlets, increase the number of government outlets, or some combination thereof.

Figure 7. Total grams of THC sold through BC government channels, by health authority, by month in 2020



In terms of total grams of THC sold by the government through wholesale (to licensed private retailers), government retail or government online channels, the Interior health authority sold the most every month, followed by Island Health Authority (see Figure 7). The Vancouver Coastal, Northern, and Fraser health authorities sold generally similar, lower, amounts of THC in 2020.

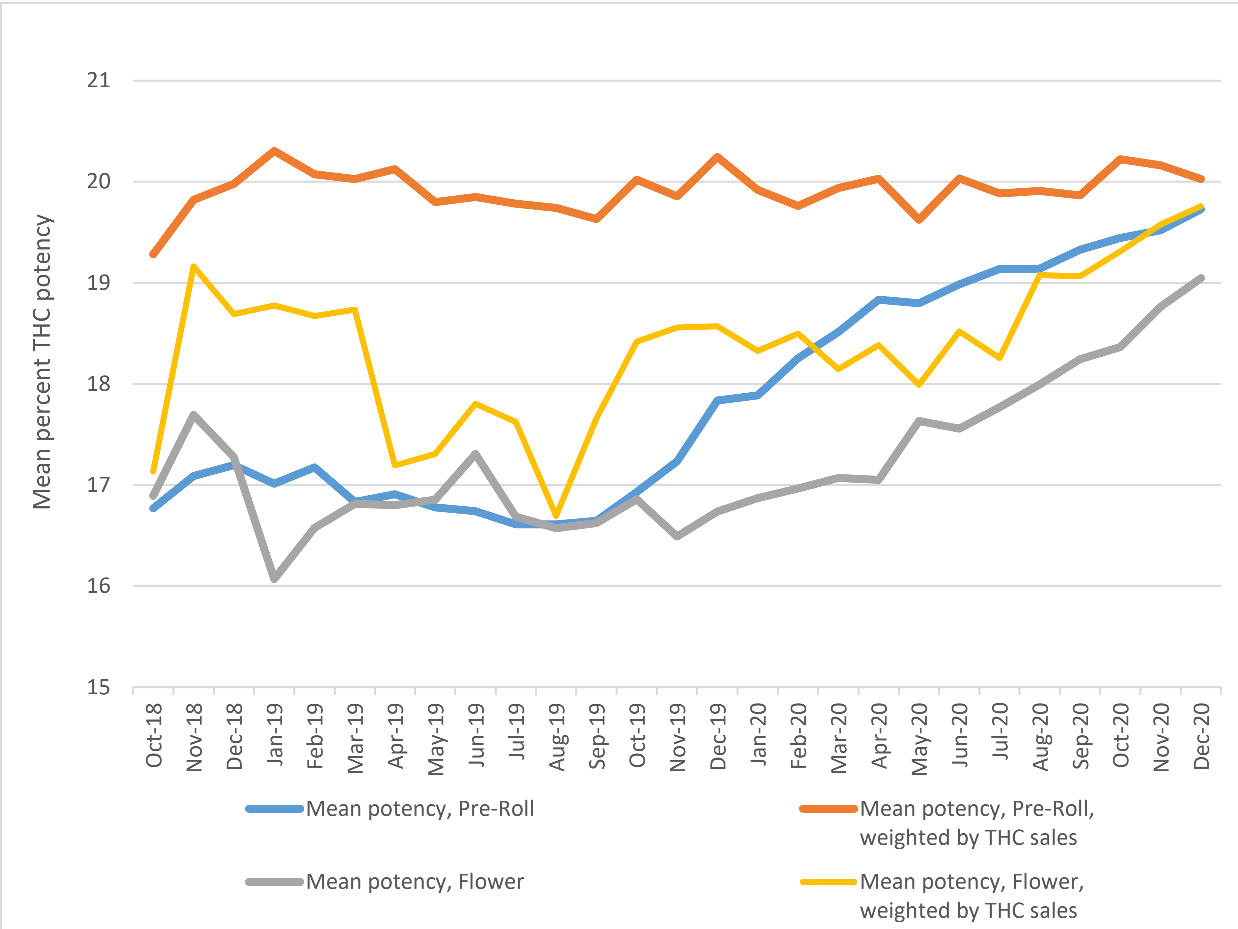
Figure 8. Per capita milligrams of THC sold through BC government channels, by health authority, by month in 2020



There were striking variations in per capita sales of THC (i.e., sales divided by the population aged 15 years of older) by health authority in 2020, ranging from approximately 500 mg per capita in the Northern Health Authority to less than 100 mg per capita in the Fraser Health Authority (see Figure 8). Between-health authority differences became larger as the year progressed.

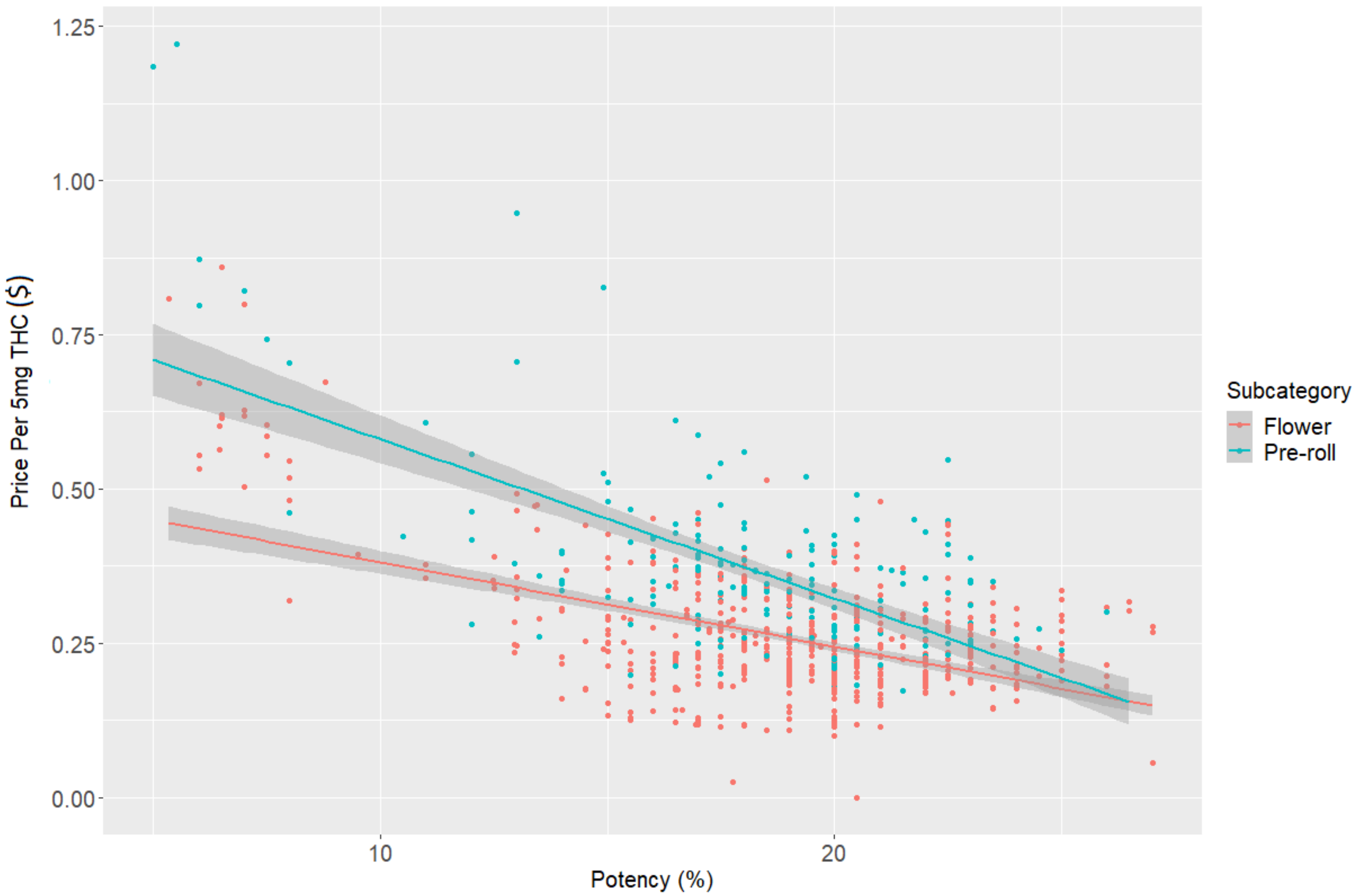
4.3 Results presented percent potency of THC

Figure 9. Mean percent potency of THC in cannabis products sold through BC government channels, among unique individual products and on a sales-weighted basis, 2018-2020



The average potency of flower and pre-roll products (based on unique individual products, i.e., where each product counts once) and the sales-weighted potency have increased since legal cannabis sales began, largely because of increases starting in late 2019 (see Figure 9). The exception is the sales-weighted potency of pre-roll, which has stayed at approximately 20% since early 2019. Higher potency products carry additional risk.

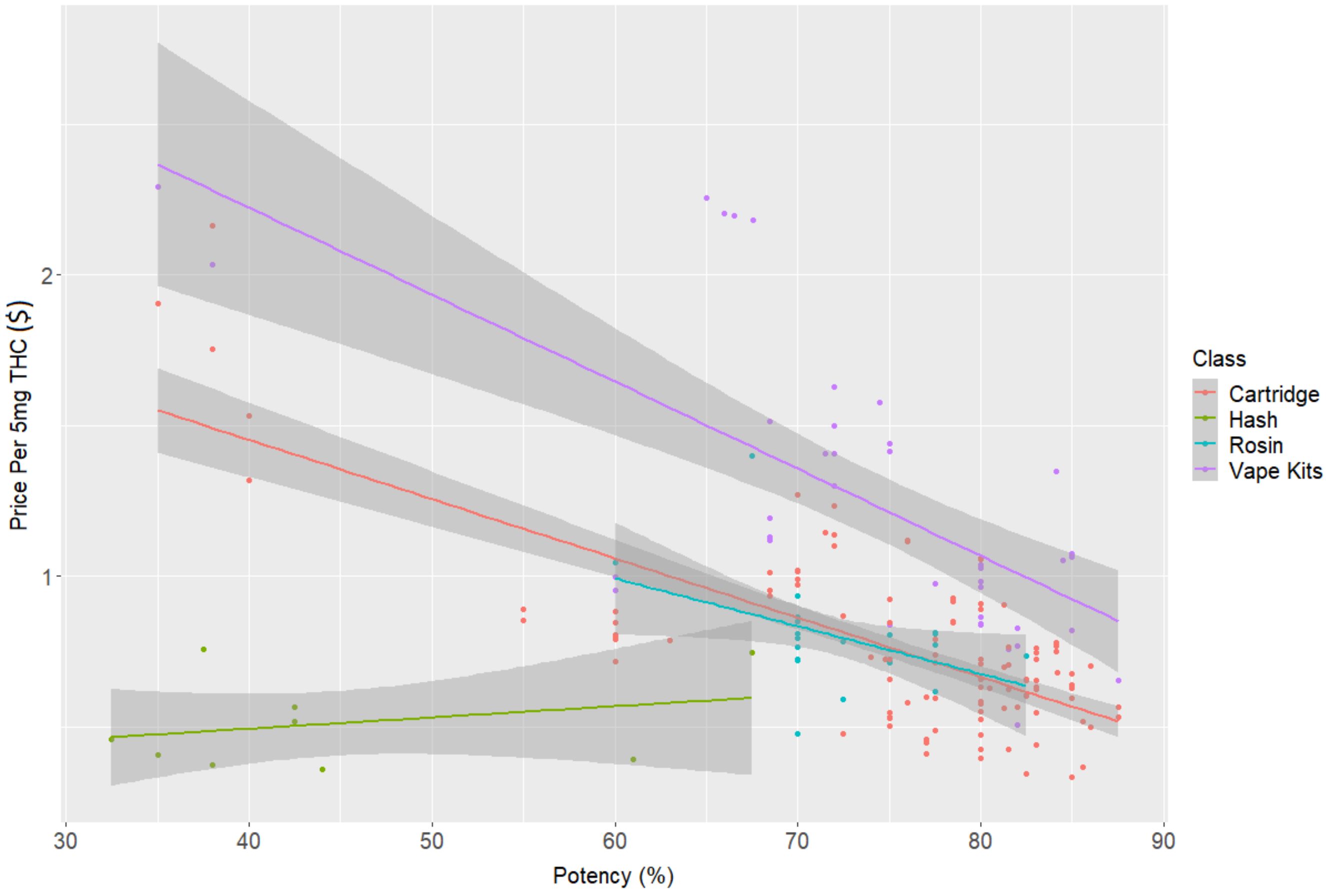
Figure 10. Percent potency versus price per 5-mg THC unit for flower and pre-roll products in BC government retail outlets, 2020



Note: Prices are inclusive of 5% GST and 7% PST charged on flower and pre-roll products.

Across all unique individual products of the flower and pre-roll subcategories, there was an inverse relationship between potency and price per 5-mg unit of TCH in government retail stores (see Figure 10). In other words, more potent products tended to cost less on a THC-standardised basis than lower potency products. This may create an economic incentive to purchase higher potency products, which are typically associated with higher risks for consumers. This figure is restricted to government retail outlets as we do not know the retail prices in licensed private stores.

Figure 11. Percent potency versus price per 5-mg THC unit for extracts and concentrates products sold in BC government retail outlets, 2020

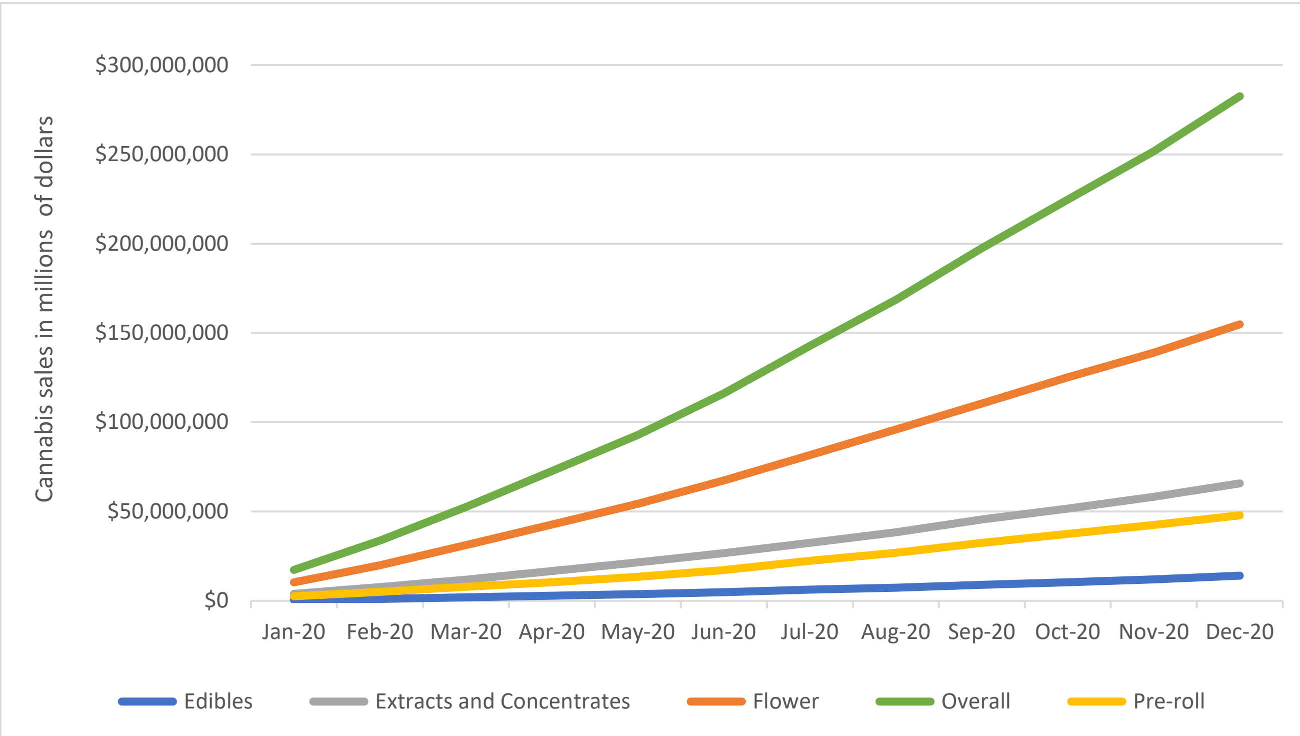


Note: Prices are inclusive of 5% GST and 7% PST for hash and rosin, and 5% GST plus a 20% GST charged on cartridges and vape kits (as of January 1, 2020).

Because the extracts and concentrates subcategory contain several classes of products, we examined the relationship between the average potency of unique individual products sold in government retail outlets and the retail price per 5-mg unit THC among some of those larger classes (see Figure 11). We did not include all products in the extracts and concentrates subcategory because some had very few products or were comprised of only low potency products. As with flower and pre-roll, for cartridges, vape kits and rosins there was an inverse relationship between the two in which more potent product tended to be cheaper on a per-THC-equivalent basis.

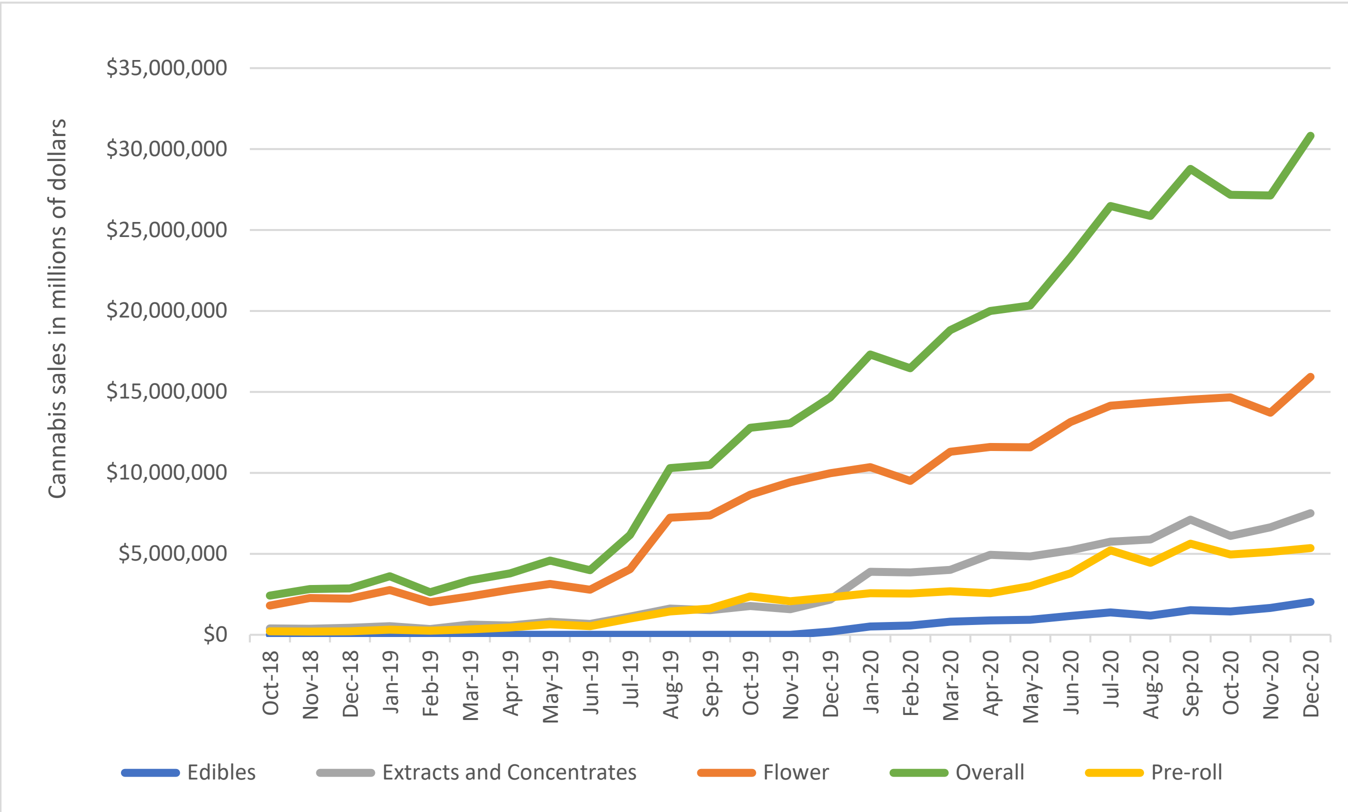
4.4 Results presented by cannabis sales in dollars through BC government sales channels

Figure 12. Cumulative cannabis sales in dollars by product subcategory through all BC government channels, by month in 2020



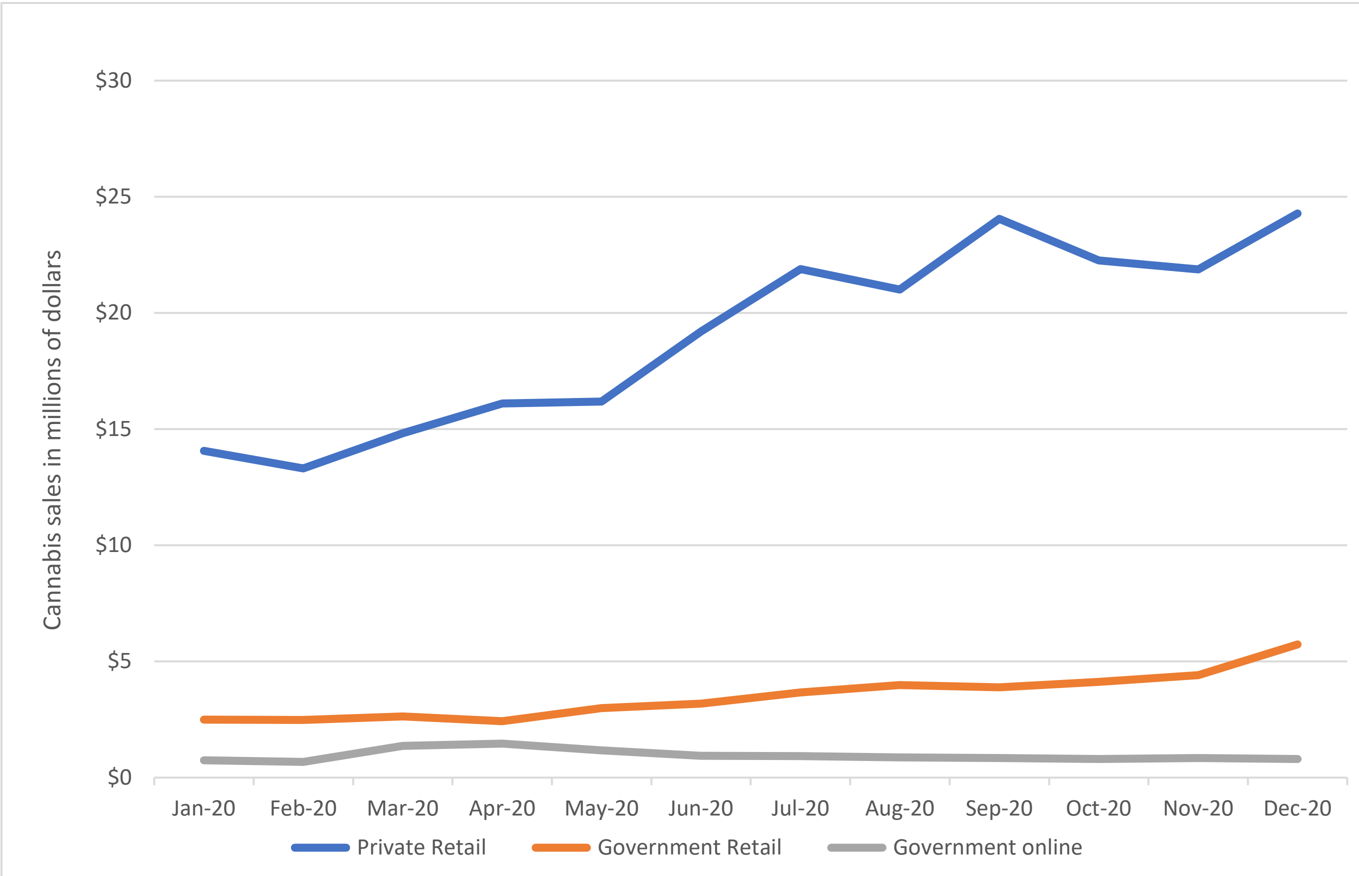
Cumulative cannabis sales in Canadian dollars increased steadily throughout 2020; sales were steady to increasing in all subcategories throughout the year (see Figure 12). By the end of December 2020, the BC government had sold nearly $300 million in cannabis products through wholesale distribution to licensed private retailers and through government in-store and online retail channels. Slightly more than half of revenue came from flower products.

Figure 13. Monthly cannabis sales in dollars through all BC government channels, by product subcategory, 2018-2020



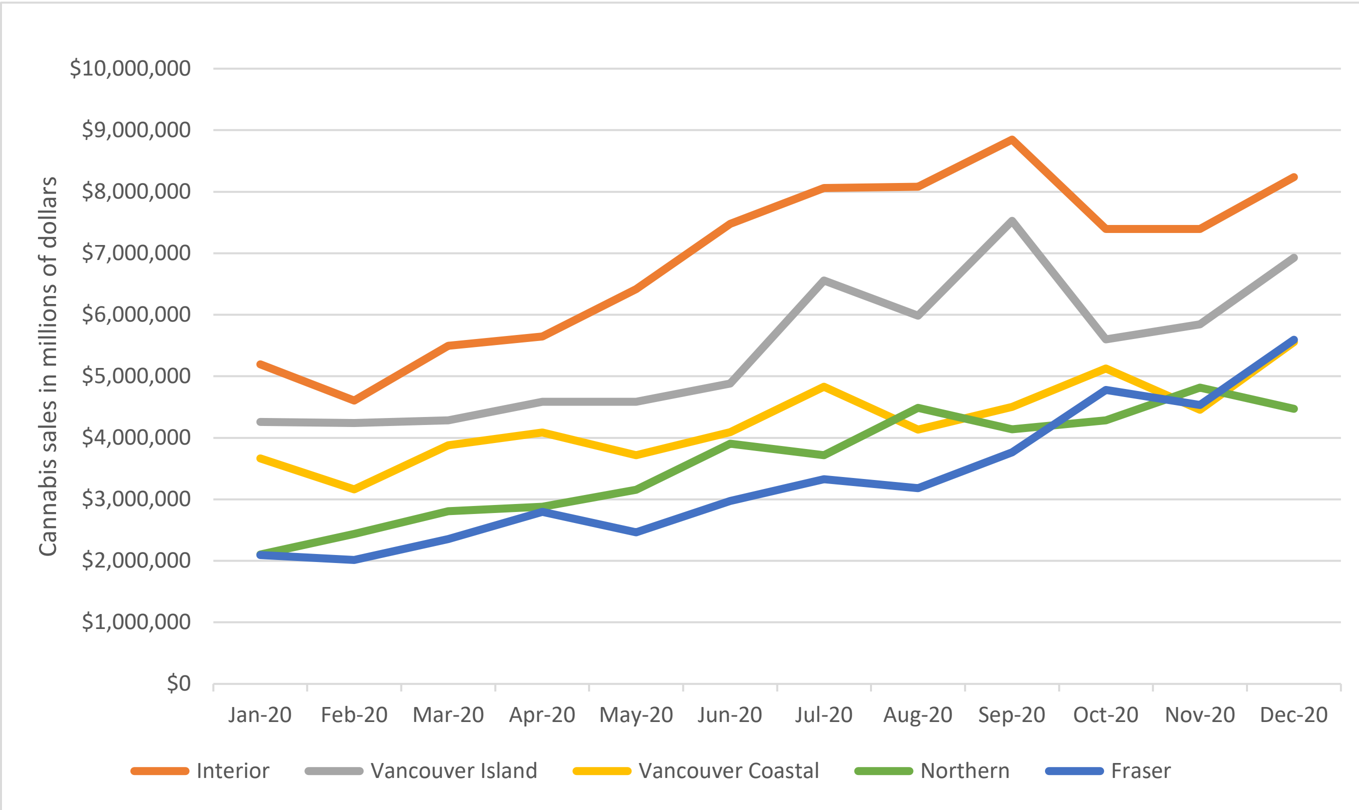
Since October 2018, monthly cannabis sales in dollars from all products sold in BC have increased nearly ten-fold, with large increases in all cannabis product sub-categories, including edibles (see Figure 13). The province currently has approximately $30 million monthly in sales via wholesale and retail channels.

Figure 14. Total BC government cannabis wholesale and retail sales in dollars, by sales channel, by month in 2020



In 2020, total monthly sales in dollars reflecting government wholesale (to licensed private retailers) and retail sales (both in-store and online) increased most rapidly in licensed private stores, but there were also increases in government retail outlets (see Figure 14). Government online sales increased in the early months of the COVID-19 pandemic but returned close to baseline during the second half of the year. Overall, sales in licensed private outlets were more than three times that of government outlets (in-store and online).

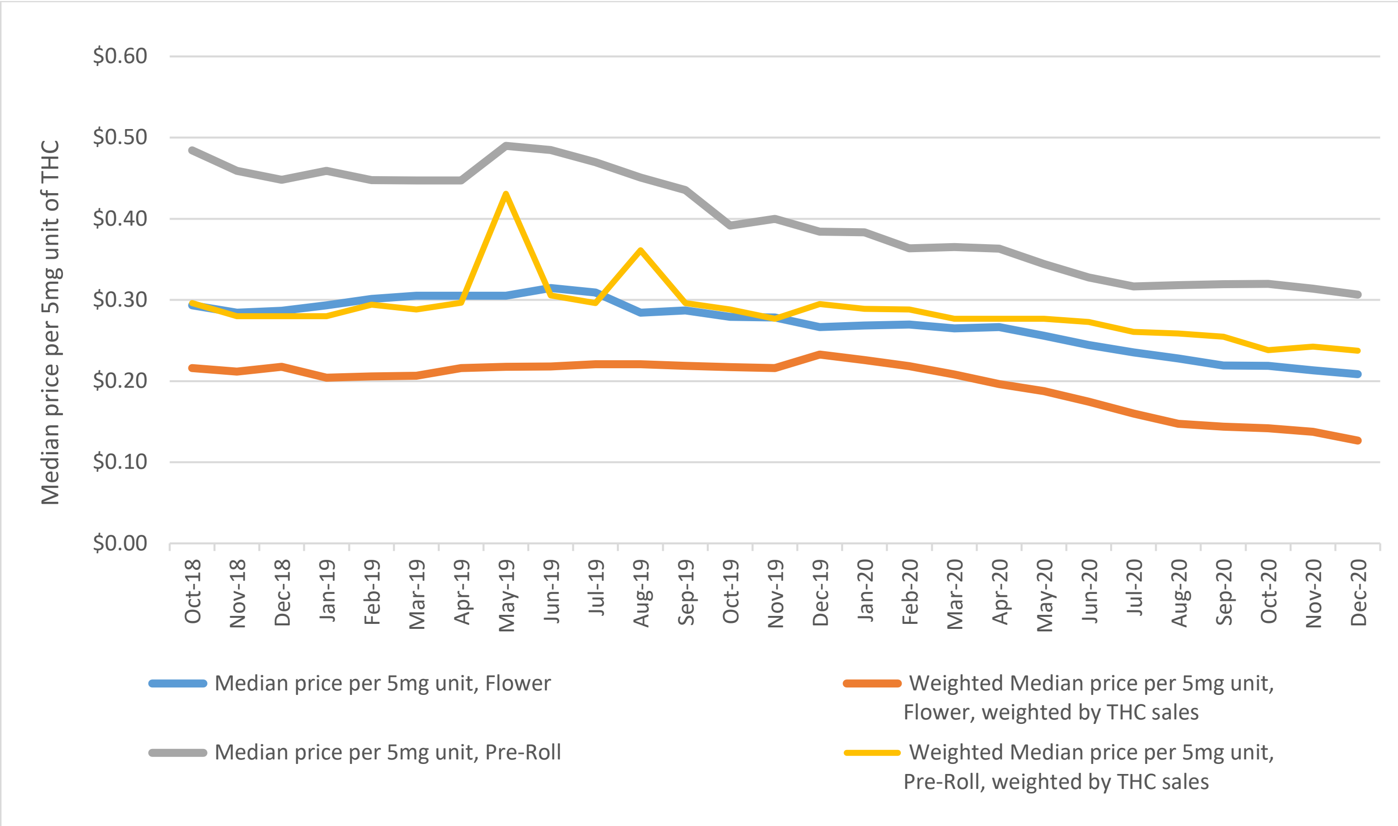
Figure 15. Monthly BC government wholesale and retail cannabis sales in dollars, by BC health authority, 2020



By health authority, sales in dollars through both government and via wholesale through licensed private outlets were greatest in the Interior and Vancouver Island Health Authorities (see Figure 15).

4.5 Results presented by price per 5-milligram unit of THC

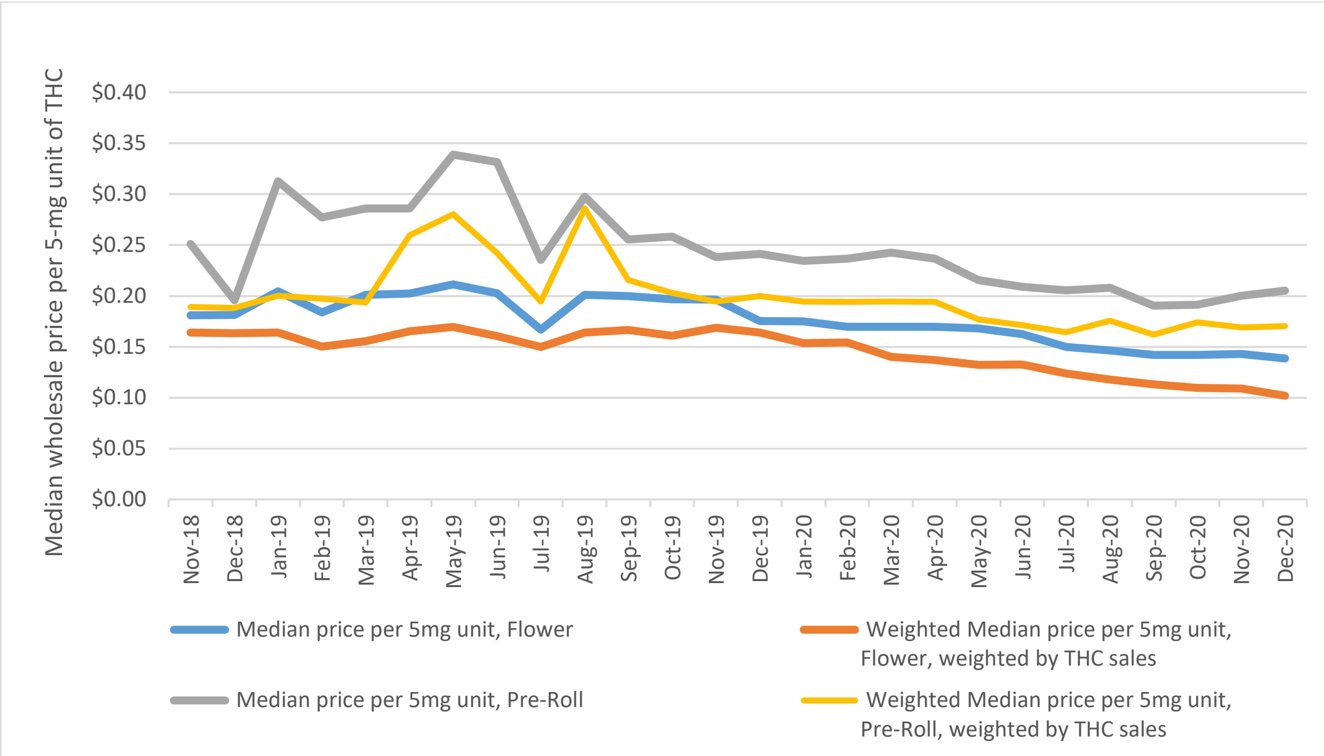
Figure 16. Median government retail price per 5-milligram THC unit for flower and pre-roll in BC, 2018-2020



Note: Prices are inclusive of 5% GST and 7% PST charged on flower and pre-roll products.

The median government retail price (government stores and the online outlet) per 5-mg unit of THC declined substantially for both flower and pre-roll products between October 2018 and December 2020, both based on unique individual products and on a sales-weighted basis (see Figure 16). Sales-weighted prices were lower than unweighted prices for both flower and pre-roll, reflecting consumers' tendencies to purchase cheaper cannabis products, at least on a per THC basis. Of note, these prices are for government retail outlets only, as we do not have retail prices for licensed private retailers.

Figure 17. Median government wholesale price per 5-milligram unit of flower and pre-roll in BC, 2018-2020



Median wholesale prices charged to licensed private retailers also fell, though not as steeply as government retail prices in the preceding figure. Of note, the difference between wholesale and retail prices is small, particularly for flower products (see Figure 17). For example, in comparison to the previous graph of retail prices there is a very small absolute difference between the sales-weighted government wholesale price (approximately $0.10) and the sales-weighted government retail price (approximately $0.11). Minimum markup requirements or increases in wholesale prices to licensed private retailers are a possible means by which governments can gain market share or increase revenues while reducing harms from excessive consumption by maintaining prices. However, the extent to which this is the case is influenced by prices in the unregulated cannabis market.

5. Discussion and limitations

5.1 Summary of results

This is the first detailed analysis of cannabis sales from the BC Liquor Distribution Branch presenting data by grams and sales of THC for BC and by health authority as well as per capita and by potency. Government sale through all channels was substantial, and increasing, however unclear the extent to which this is a function of changing/developing markets, increased consumption, or both factors. Of the products sold, the most popular products are flower and pre-roll, but sales of extracts and concentrates are increasing rapidly. Sales from licensed private stores have been increasing much more rapidly than in government stores, but this is due to the proliferation of licensed private stores rather than a reflection of sales volume per licensed private outlet. There is a substantial amount of relatively inexpensive cannabis – in relation to potency and price – currently available.

There are also a range of prices within and between categories with considerable availability of cheap cannabis which raises public health questions about creating conditions for overconsumption. There are also a lot of high potency products on the market and they are not necessarily more expensive even on a standard unit basis, which has important public health implications. Overall, in BC it is appears to be considerably less expensive to become intoxicated with cannabis than with alcohol.

5.2 Caveats and limitations

It is important to note some limitations and caveats with these data. As noted, data in this report are limited to sales by the BC government, and there remains a substantial unregulated/illicit market (either online or in unlicensed retail outlets) and also permitted home grown cannabis. Data were not available in weekly increments, limiting the overall number of data points to monthly sales. Due to missing information, it was not possible to present the data down to BC's 16 health service delivery areas, and data at the level of BC's 89 local health areas were suppressed due to small cell sizes. Price markups were not available for cannabis sold through licensed private retailers as the available data only represent the wholesale distribution through the government. The proportion of sales completed online for licensed private retailers after the regulatory change in August 2020 was not available. However, as the overall cannabis market in BC remains in flux, changes observed in the regulated sales channels will be important for understanding overall consumption from both the regulated and unregulated markets over time. Some data were presented in standardised 5-mg units of THC as proposed by Freeman et al., 2021, however it is important to acknowledge that this does not account for biological availability of THC across different modes of administration.

6. Future Directions

This report provides a preliminary snapshot of sales in the licensed cannabis market in BC from the time of legalisation in late 2018 up to December 2020. There are a number of different avenues for future analyses of cannabis sales data, especially given the rapidly evolving nature of the market. Some potential future directions include:

- Continued surveillance to monitor changes in number of licensed retail outlets, changes in the regulated market as a result of changes in, or interactions with, the unregulated market, changes due to recovery from pandemic, and overall market maturation.
- Analyses of smaller health areas including BC's 16 health service delivery areas.
- Modelling potential per capita consumption from all sources in BC using survey data (i.e. government and unregulated markets and including home grown).
- Detailed analysis of price variability and the cheapest prices per unit of THC by brand (i.e., specific products) within cannabis product categories, and potential implications for minimum unit pricing at various levels.
- Detailed assessment of the THC content characteristics of typical products (e.g. pre-roll joints, edible products).
- Further examination of THC potency variations among product types in relation to price (e.g., identifying high strength, low priced products).
- Modelling future sales projections and potential revenue for the BC government.
- Detailed examination of online versus retail store sales by licensed private retailers

- Systematic examination comparing prices in government retailers to market prices in licensed private retail stores.
- Modelling effects of seasonality on cannabis sales in BC.
- Wholesale vs. retail price assessment, within government stores and hopefully private stores as well.
- Tracking trends in sales and revenues including tax revenue from micro vs large producers, and BC producers versus non-BC producers.
- Calculating outlet density of government and licensed private outlets per capita and by health authority and health service delivery areas.
- Comparing typical potency of products sold through government versus private sales channels.

Acknowledgment of funding and data access

We would like to acknowledge funding received from the Government of British Columbia to prepare this report.

References

Freeman, T. P., & Lorenzetti, V. (2020). 'Standard THC units': a proposal to standardize dose across all cannabis products and methods of administration. Addiction (Abingdon, England), 115(7), 1207–1216. https://doi.org/10.1111/add.14842

British Columbia Liquor Distribution Branch. (2021). FAQ - What is the tax rate on alcohol in B.C.? http://www.bcldb.com/about/faq.

Colorado Department of Revenue. (2015). Marijuana Equivalency in Portion and Dosage. https://www.colorado.gov/pacific/sites/default/files/MED%20Equivalency_Final%2008102015.pdf

Government of BC. (2018). Provincial Sales Tax (PST) Bulletin, 141. https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/pst-141-cannabis.pdf.

Government of BC. (2019). Notice to Sellers of Vapour Products PST Rate Increase to 20%. https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/notice-2019-005-sellers-vapour-products-pst-rate-increase.pdf.

Government of BC. (2020a). B.C. allows app, website cannabis sales for pickup in store. https://news.gov.bc.ca/releases/2020AG0053-001447.

Government of BC. (2020b). Liquor store hours extended to protect seniors, most vulnerable. https://news.gov.bc.ca/releases/2020AG0031-000694.

Government of BC (2021a). Home delivery: another reason to choose legal cannabis. https://news.gov.bc.ca/releases/2021PSSG0051-001120

Government of BC. (2021b). Get Cannabis Clarity. https://cannabis.gov.bc.ca/.

Government of Canada. (2019). Cannabis Act. https://laws-lois.justice.gc.ca/eng/acts/c-24.5/.

Government of Canada. (2021). Cannabis in the provinces and territories. https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/laws-regulations/provinces-territories.html.

Hammond D. Communicating THC levels and 'dose' to consumers: implications for product labelling and packaging of cannabis products in regulated markets. International Journal of Drug Policy. 2019 Jul 25:102509.

Health Canada (2018). INFORMATION FOR HEALTH CARE PROFESSIONALS Cannabis (marihuana, marijuana) and the cannabinoids. Available at: https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-medication/cannabis/information-medical-practitioners/information-health-care-professionals-cannabis-cannabinoids-eng.pdf

MacCallum CA, Russo EB. Practical considerations in medical cannabis administration and dosing. European Journal of Internal Medicine. 2018;49:12-9.

Statistics Canada. (2019). National Cannabis Survey, 2018-2019. https://www150.statcan.gc.ca/n1/pub/82-003-x/2020002/article/00002/tbl/tbl03-eng.htm.

Statistics Canada. (2020). Table 2 Average price of cannabis, by province, 2019. https://www150.statcan.gc.ca/n1/daily-quotidien/200123/t002c-eng.htm

Statistics Canada. (2021). Table 20-10-0008-01 Retail trade sales by province and territory (x 1,000) DOI: https://doi.org/10.25318/2010000801-eng.

Zeisser C, Thompson K, Stockwell T, Duff C, Chow C, Vallance K, Ivsins A, Michelow W, Marsh D, Lucas P. A 'standard joint'? The role of quantity in predicting cannabis-related problems. Addiction Research & Theory. 2012;20:82-92.

Appendix A: Definitions

Cannabis: a group of plants with psychoactive properties that include *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis* that contain cannabinoids, including CBD and THC.

Cannabidiol (CBD): A phytocannabinoid chemical compound extracted from cannabis plants that is does not have intoxicating effects.

Cartridge: A vape cartridge is pre-filled with cannabis oil used in conjunction with a vaping device such as a pen.

Dabbing: Method of inhaling concentrated cannabis extracts through a heating method such as a vaporizer.

Delta-9-Tetrahydrocannibinol (THC): The main psychoactive compound in cannabis.

Edibles: Cannabis products that are consumed orally and contain THC, CBD or a combination of both.

Extracts/oils: Cannabis products in solid or liquid form that are typically smoked or vaporised but that can also be consumed orally in the form of concentrates.

Flower: Trichome-covered part of a female cannabis plant harvested for consumption in various products.

Hash: A highly concentrated cannabis extract that has been formed into a brick through heat and pressure and generally consumed via vaping or smoking.

Pre-roll: Cannabis flower that has been pre-rolled into a joint that is ready for smoking.

Powdered resin: A concentrated cannabis extract generally formed using solvents.

Powdered rosin: A concentrated cannabis extract usually made through heat and pressure formed into a solid and crumbled into powder.

Seeds: Product of a male cannabis plant that may pollinate a female producing either male or female cannabis plants at maturity.

Shatter: A highly concentrated cannabis extract with a brittle glass-like texture typically made by butane extraction and inhaled via dabbing.

SKU: Stock keeping unit (SKU) is a number that retailers assign to products for internal stock tracking; there is only 1 SKU assigned to any product so SKUs are unique product identifiers.