



Summary of the work being done at Statistics Canada to prepare for and then measure the impacts of cannabis legalization

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Delivering insight through data for a better Canada

Statistics Canada: preparing the statistical system for cannabis-related measures

Rapidly changing and complex society:

Cannabis, Opioids, Children and Youth, Access to Mental Health Services, Horizontal issues: Social and Economic Impacts



Proliferation of data and providers:

...a crowded space and a need for trusted information



Data revolution, ingenuity and innovation:

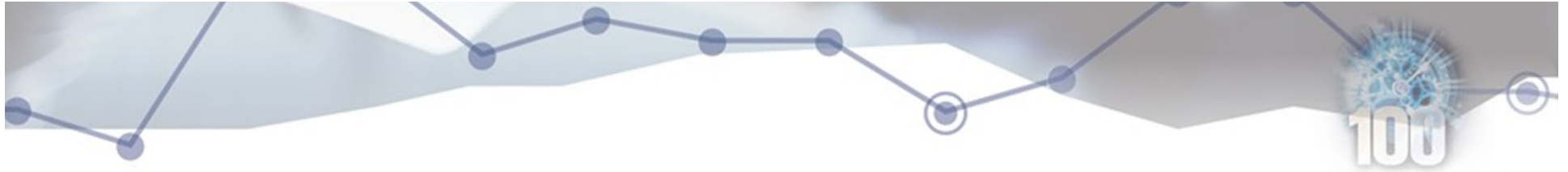
Advances in enabling technologies, analytical tools, not just a survey world anymore ...



Increased expectations:

Demand for faster data for baseline and impact measurement





Cannabis for non-medical purposes became legal October 17, 2018

The Cannabis Act has 3 goals:

- *keep cannabis out of reach of youth*
- *keep profits out of the hands of criminals*
- *protect public health and safety by allowing adults access to safe, legal cannabis*

(Health Canada)



What is legal as of October 17, 2018

Subject to P/T restrictions, adults aged 18/19 + can legally:

- Purchase** limited amounts of fresh or dried cannabis, cannabis oil, seeds, or plants from P/T authorized retailers;
- Possess** up to 30 grams of dried legal cannabis or equivalent in public;
- Consume** cannabis in locations authorized by local jurisdictions;
- Grow** up to 4 plants/household (not per person/personal use only), from licensed suppliers;
- Share** up to 30 grams of dried cannabis or equivalent with other adults;
- Make** legal cannabis-containing products at home (e.g. food and drinks), provided that dangerous organic solvents are not used in process

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-Pre-made edibles & concentrates legal by Oct. 2019

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Key milestones in path to legalization: Process not an event



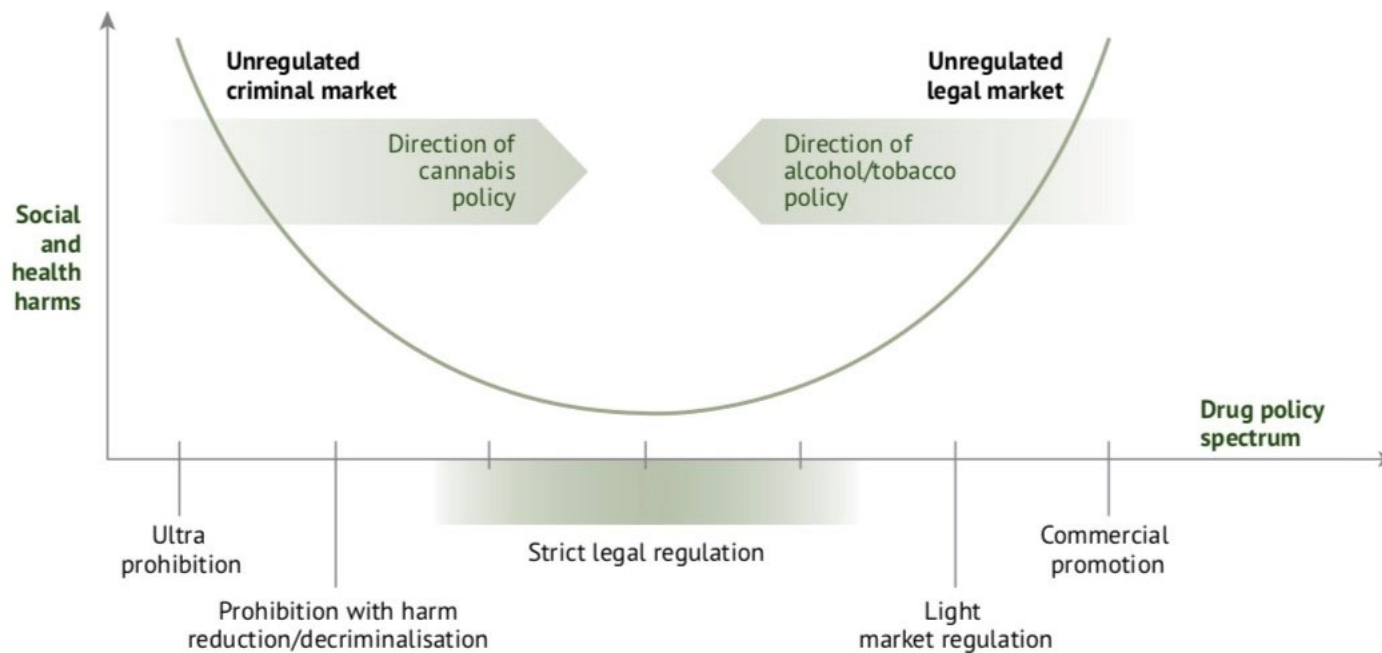
1923	Cannabis deemed illegal in Canada
1969	Royal (LeDain) Commission of Inquiry in the non-medical use of drugs
1972	LeDain Commission recommends the removal of criminal penalties for use & possession
1999	Fed. gov't begins issuing ministerial exemptions-- allowing individuals to possess/ cultivate marijuana for medical purposes.
2000	ON Court of Appeal decides in R. v. Parker that legislation prohibiting marijuana possession infringes the rights of persons who need it medically; ministerial exemption scheme is also unconstitutional
2001	Fed. gov't responds by implementing Marijuana for Medical Access Regulations (MMAR). Authorizes persons meeting medical criteria to possess/have produced the marijuana necessary to alleviate condition.
2003	ON Superior Court decides in R. v. Hitzig that the MMAR falls short of constitutional requirements b/c they don't provide a legal (marijuana) supply to persons entitled to possess it for medical purposes.
2003-2005, 2011	Ongoing Charter challenges & rulings against Fed. gov't. MMAR continually modified in response
2013	Fed. gov't introduces Marijuana for Medical Purposes Regulations (MMPR), incl. commercially licensed industry for production & distribution
2015	MMPR changed to allow authorized medical patients access to cannabis oil not just dried marijuana, based on Supreme Court R. v. Smith and another challenge resulting in restatement of provision to allow personal cultivation
2016	Access to Cannabis for Medical Purposes Regulations (ACMPR) replaces MMPR
2018	C-45 Cannabis Act

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Legalization with aim to find balance between social/health harms and commercialization



1 Rolles S & Murkin G. How to regulate cannabis: A practical guide, 2nd ed. Transform Drug Policy Foundation 2016
www.tdpf.org.uk/resources/publications/how-regulate-cannabis-practical-guide

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Innovation: one-stop shop for cannabis data announcements, links to articles, etc.



CANNABIS

STATS HUB

Cannabis statistics are available on the following topics:



Health

Canadian's use of cannabis by age, sex, province and territory



Justice

Cannabis offences along with estimates of drug impaired driving



Economy

Household spending on cannabis, as well as production and distribution, for both medical and non-medical use



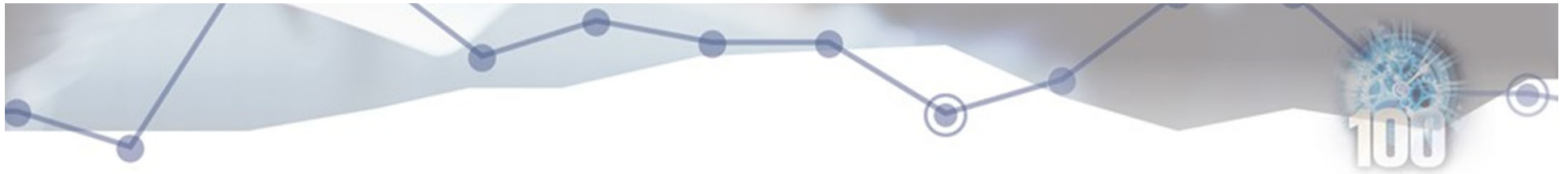
Prices

Consumer price of cannabis by province and territory



Crowdsourcing

(opens in a new window)



Framework documents: key overview

1) A cannabis economic account – The framework (Nov. 21, 2017)

<https://www150.statcan.gc.ca/n1/pub/13-605-x/2017001/article/54881-eng.htm>

-vision of the cannabis economic account

-introduce new industry, product, and expenditure classifications

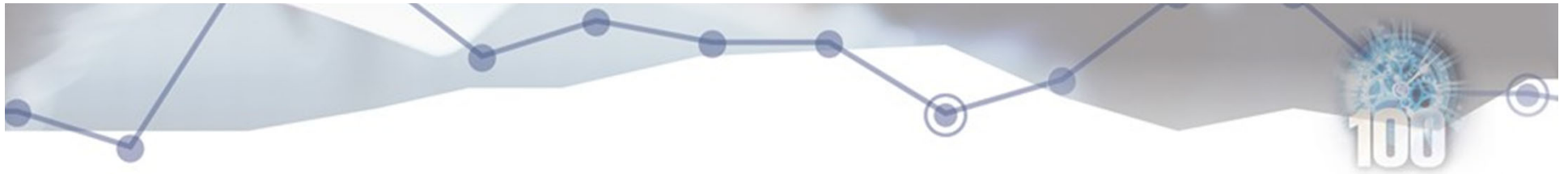
-compiling the cannabis account

2) Preparing the social statistics system for the legalization of non-medical cannabis (Oct. 12, 2018)

<https://www150.statcan.gc.ca/n1/pub/75-006-x/2018001/article/54979-eng.pdf>

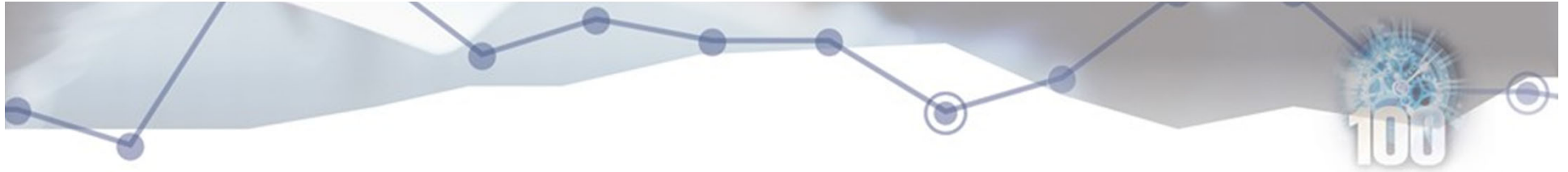
-describes recent adjustments and initiatives undertaken to enhance the capability to assess C-45 impacts on health and social institutions

-identified 4 key domains; each domain linked to key indicators and identified data sources



1) How to estimate the size of the cannabis market?

- Because cannabis consumption and distribution had historically been illegal STC had very little “economic” infrastructure to draw upon (initially):
 - ✗ There was no: industry or product classifications; no survey universe or frame;
 - ✗ Few stores where prices could be collected
 - ✗ No focus group available to test questions; no scanner data of purchases or tax records to access.
- Yet, desire to estimate the amount and value of cannabis being consumed pre-legalization



Used existing information (mainly from health and social surveys) and transformed it into estimates of consumption and expenditure

**Experimental Estimates of Cannabis Consumption in Canada, 1960 to 2015
(Ryan Macdonald and Michelle Rotermann 2017)**

<http://www.statcan.gc.ca/pub/11-626-x/11-626-x2017077-eng.htm>

- Self-reported cannabis consumption data (self-reported) = most robust, repeatedly measure, and Canadian
- Adapted existing approaches (PBO 2016, ESPAD 2015, Abramsky and Drew 2014) to estimate the size/composition of the cannabis market
- Convert survey data to time series

Experimental Estimates of Cannabis Consumption in Canada, 1960 to 2015 (Ryan Macdonald and Michelle Rotermann 2017)

<http://www.statcan.gc.ca/pub/11-626-x/11-626-x2017077-eng.htm>

Able to estimate:

The amount of cannabis consumed by multiplying:

- 1) # of consuming Canadians (C)
- 2) # of days they consume (D)
- 3) # of grams they consume (G)

Thus, household consumption = $C \times D \times G$.

Household expenditure on cannabis by multiplying:

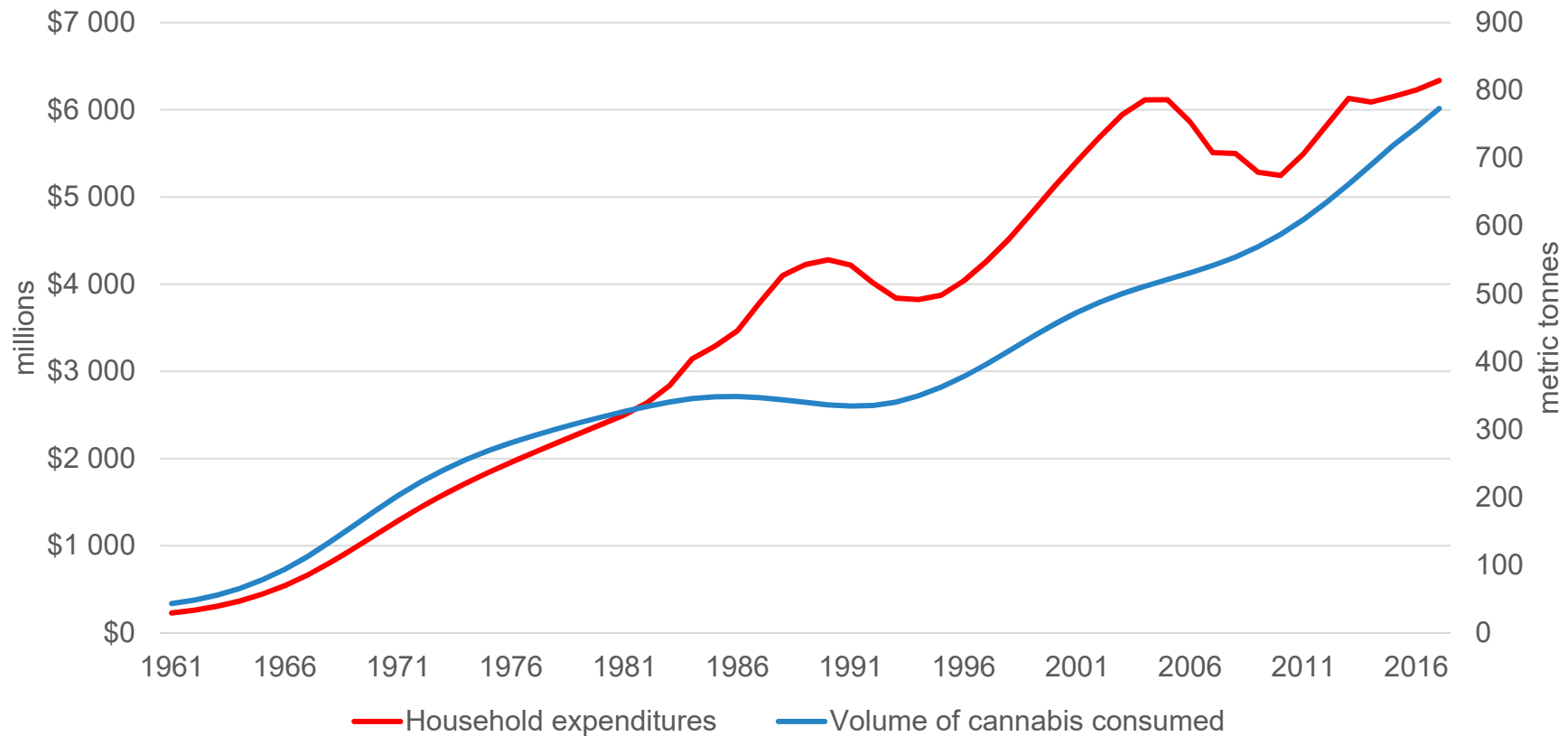
Amount consumed x price paid (P)

Thus, household expenditure = $C \times D \times G \times P$.

In 2015, ~700 tonnes of cannabis was consumed with an estimated value of 5.0-6.2 \$ billion, depending on \$



Canadian's spent just over \$6 billion on medical and non-medical cannabis in 2017





2) Hosting crowd-sourcing website to capture how much people are paying for dried cannabis

...the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people and especially from the online community rather than from traditional employees or suppliers.

- Launched in January 2018
- Aims to get better picture of black market pricing before cannabis becomes legal
- Online, voluntary confidential survey: \$ and quantity; which city; whether it was used to medicate or for recreational purposes +
- 20K + usable submissions
- addresses important price data gap

Source: <https://surveys-enquetes.statcan.gc.ca/cannabis/>

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Statscannabis - Crowdsourcing the price

StatsCannabis
FRANÇAIS

Statistics Canada needs your help collecting cannabis prices

Tell us about your last purchase of dried cannabis – submissions are anonymous!

[Your data is protected](#)

I PAID A TOTAL AMOUNT OF

\$ Total Amount

FOR

Quantity

IN

City

FROM

Source

TO

Primary Reason

[Submit](#)

Cannabis prices in Canada

(Cannabis for medical and non-medical purposes, per gram)

Region	Price per gram
B.C.	\$6.89
Prairies	\$7.21
Ontario	\$7.45
Quebec	\$5.84
Atlantic	\$7.07
Territories	\$10.82
Canada	\$6.86

Source: Crowdsourced data, January 25, 2018 – January 22, 2019

[Show data table](#)
[Download submitted data](#)

Pros:

- data obtained quickly, cost effective, real-time measurement, open-data

Cons:

- statistical bias, difficult to maintain interest, limited detail

Crowdsourcing



Statscannabis Pre-legal \$6.85 (19,443 submissions); post-legal \$8.04 (936 submissions)

Price of dried cannabis by province, pre-legalization and post-legalization

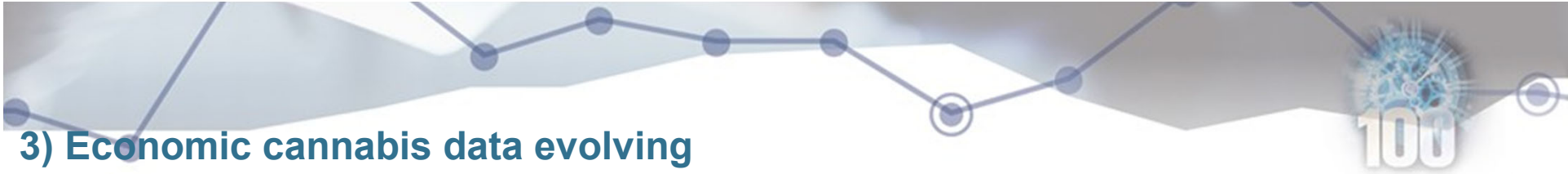
	Pre-legalization		Post-legalization		Pre-legalization to post-legalization Change in price
	Average price	Submissions	Average price	Submissions	
	dollars per gram	number	dollars per gram	number	% change
Newfoundland and Labrador	7.68	224	9.36	15	21.8
Prince Edward Island	7.32	136	7.69	4	5.0
Nova Scotia	7.29	752	8.73	59	19.7
New Brunswick	6.34	476	8.27	22	30.5
Quebec	5.82	5,453	6.75	147	15.9
Ontario	7.42	5,752	8.05	375	8.5
Manitoba	7.15	582	9.14	52	27.7
Saskatchewan	7.28	444	8.02	21	10.3
Alberta	7.30	2,946	9.07	121	24.2
British Columbia	6.89	2,609	7.15	111	3.7
Yukon	9.01	38	10.36	4	15.0
Nunavut	15.24	3	0	0	0
Northwest Territories	12.71	28	14.45	5	13.7

Note(s): The pre-legalization period covers January 1 to October 16, 2018. The post-legalization period covers October 17, 2018, to March 31, 2019.

Source(s): Cannabis Stats Hub (13-610-X).

<https://www150.statcan.gc.ca/n1/en/daily-quotidien/190410/dq190410c-eng.pdf>



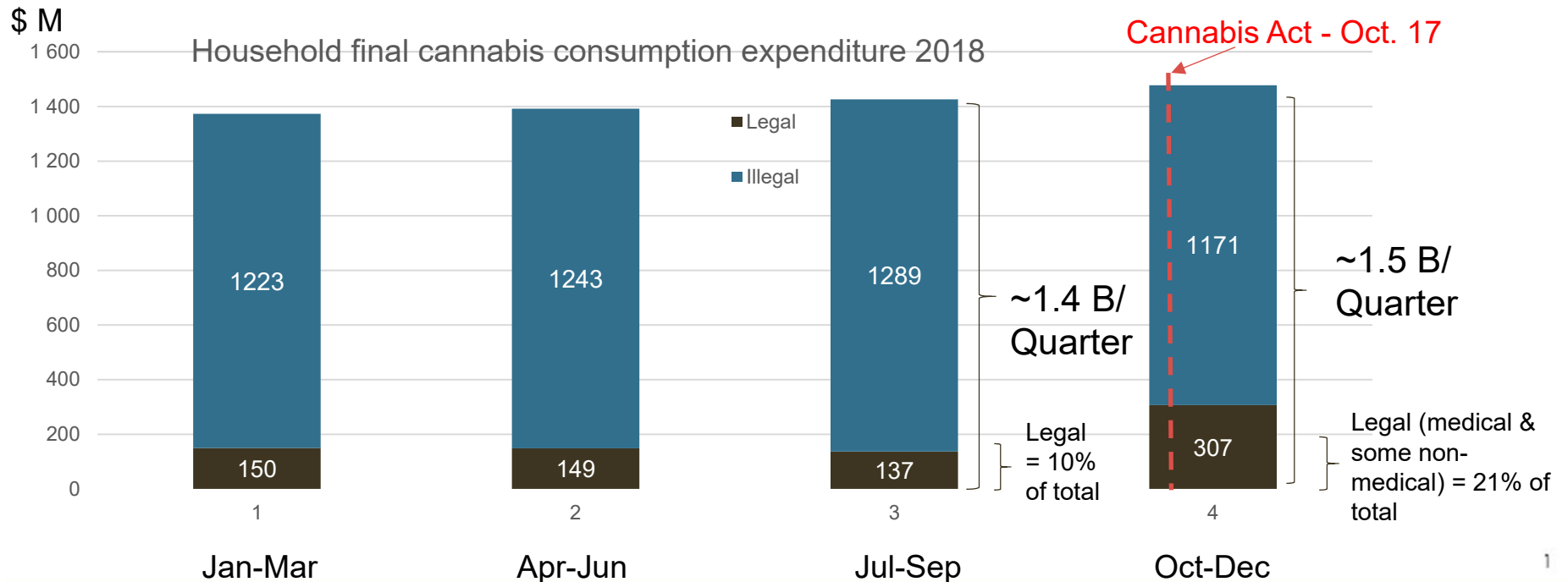


3) Economic cannabis data evolving

By Q4 2018, the national economic accounts includes estimates of legal & illegal economic activities related to cannabis production, distribution, and consumption for medical and non-medical use (first-time)

-previously, only activities related to legal use for medical purposes were recorded in the official GDP estimates

<https://www150.statcan.gc.ca/n1/en/pub/13-605-x/2019001/article/00003-eng.pdf?st=jSNZYKjx>





4) Piloting the use of municipal wastewater to measure the prevalence of cannabis/opioids

Rationale/data gap to be addressed:

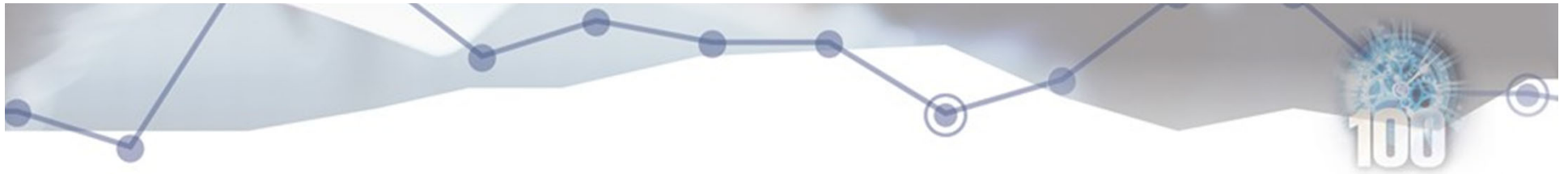
- high quality, timely data related to production and consumption of non-medical cannabis are difficult to obtain regardless of legal status
- Given these difficulties & the ongoing detailed data needs STC piloting collection of non-traditional data (e.g. wastewater)
- approach not new; performed in various countries for over decade
- Pilot = 5 sites: Island of Montreal, Halifax, Vancouver, Edmonton, Toronto
- Wastewater provides measure of drug quantity consumed which can differ from how much purchased
- Work continuing on assessing data quality and accuracy



<http://www.statcan.gc.ca/pub/13-605-x/2018001/article/54922-eng.pdf>

<https://www150.statcan.gc.ca/n1/pub/13-605-x/2019001/article/00006-eng.htm>

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-describes recent adjustments and initiatives undertaken to enhance the capability to assess C-45 impacts on health and social institutions

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4 key social domains established in the social framework



1. **Basic surveillance measures**, which include frequency of use, quantity used, purpose and method of use, along with basic sociodemographic characteristics such as gender and age.



2. **Public health and health care**, to assess the impact on the health of the Canadian population and on the Canadian health care system. Variables of concern include cannabis use disorders, co-use with other substances and health care attributable to cannabis use.

3. **Public safety and justice**, to monitor and assess the implications of the legislation on law enforcement, the administration of justice, and community safety and well-being.

4. **Other social statistics**, to assess the potential impact on various outcomes, including school dropout rates, truancy, workplace safety and work performance.



Basic Surveillance Measures

	Importance/rationale	Main data source
Frequency of use	-fundamental to determining associated risks; can be an indicator of dependence	NCS, CTADS (CADS), CHSCY
Quantity used	-frequency alone can be insufficient as a measure of risk -know that daily users can use more per day than non-daily users	NCS
Purpose of use	-medical, non-medical, or both	CTADS (2015 & 2017), CADS, NCS 2018 Q4 and 2019 Q1
Method of cannabis exposure	-can be consumed in various ways: -smoked, vaporized (vaped), dabbed, consumed in edible products/drinks, absorbed topically and sublingually, mixed with tobacco, etc. -Method used affects uptake of psychoactive constituents	CTADS (CADS), CCHS 2019/20
SES, socio-demographic covariates	Age, gender, sex, household income, ethnicity, labour force participation, education, aboriginal identity	CTADS (CADS), NCS, CHSCY, CCHS

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Public health and health care

	Importance/rationale	Main data source
Age at first daily/regular use	-↑ risk of dependence/harms	CADS/CTADS (age of initiation) ; CCHS 2019/20
Pattern of use	-can be used to develop measure upon which dose-response analysis could be based	NCS (quantity); CCHS, CTADS(CADS), NCS (freq)
Anxiety or depression	-cannabis use associated with different mental disorders	CCHS 2019/20
Cannabis related harms	-what % of population experiencing harms due to cannabis (ASSIST or SDS) -frequency of use or quantity not always sufficient	ASSIST: CTADS (CADS) Severity of Dependence Scale (SDS): CCHS 2019/20
Co-use with other substances	-use with other substances an important public health concern	CTADS (CADS)
Driving/ being a passenger	-impairs judgement, reaction time	NCS, CCHS 2019/20, CTADS (CADS)
Use during pregnancy	-use during pregnancy could affect infant's health	CADS
Medical consultations attributable to cannabis	-trends in usage of ER, poison control, rehab, mental health care	Discharge Abstract Database (DAD) -excludes QC -excludes adult psychiatric beds





National Cannabis Survey

<https://www.statcan.gc.ca/eng/survey/household/5262>

- RapidStats program is a newer survey model aimed at improving timeliness and being responsive to emerging issues.
- Surveys under this model would be completed from start to finish in about 4 months.
- The *National Cannabis Survey* is the second survey conducted within the new RapidStats infrastructure and has been collected 4 times in 2018 (and continuing into 2019)
 - Desire to have survey quarters collected both pre- and –post legalization
- Objective: To better understand cannabis usage and to monitor changes in behaviour pre- and –post implementation of C-45

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National Cannabis Survey



Target Population: General hhld. population aged 15 +

Geography: Provinces most quarters; 3 territorial capitals included Quarter 2 (Q2) 2018 and Q2 2019

Collection mode: Electronic Questionnaire (EQ) with telephone follow-up

Content (originally): 15 questions, with 5 additional demographic questions (household size, age, gender, postal code, education, marital status, health status)

Response rate: targeted sample size 12K, RR ~50%; ~6,000

Collection:

2018 Q1 mid-February to mid-March ==Apr 18
Q2 mid-May to mid-June ==Aug 9
Q3 mid-August to mid-September ==Oct 11
Q4 mid-November to mid-December ==Jan 2019

2019 Q1 mid-February to mid-March ==May 2019
Q2 mid-May to mid-June ==August TBD

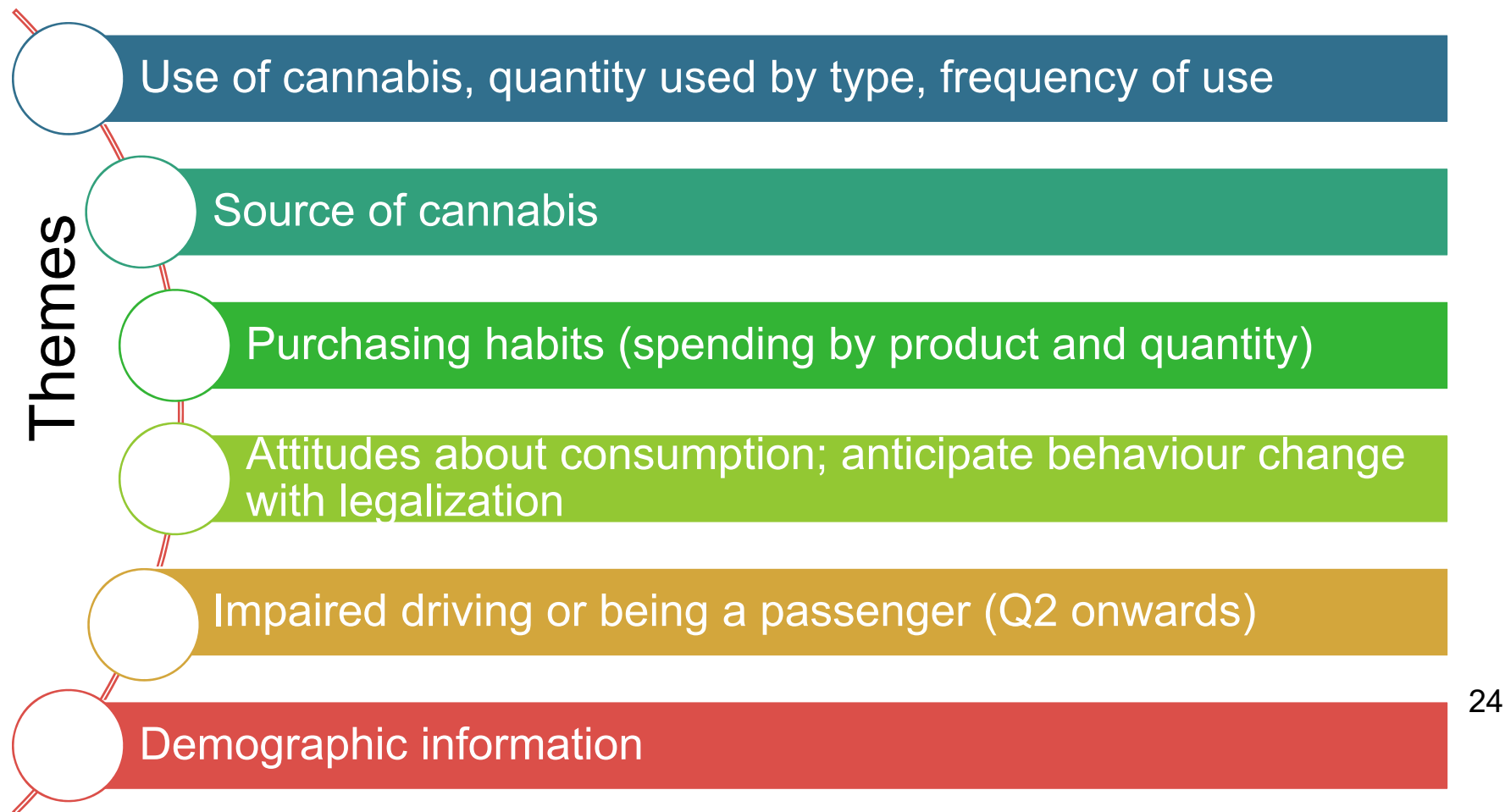
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National Cannabis Survey –2018 Q1 - Q3

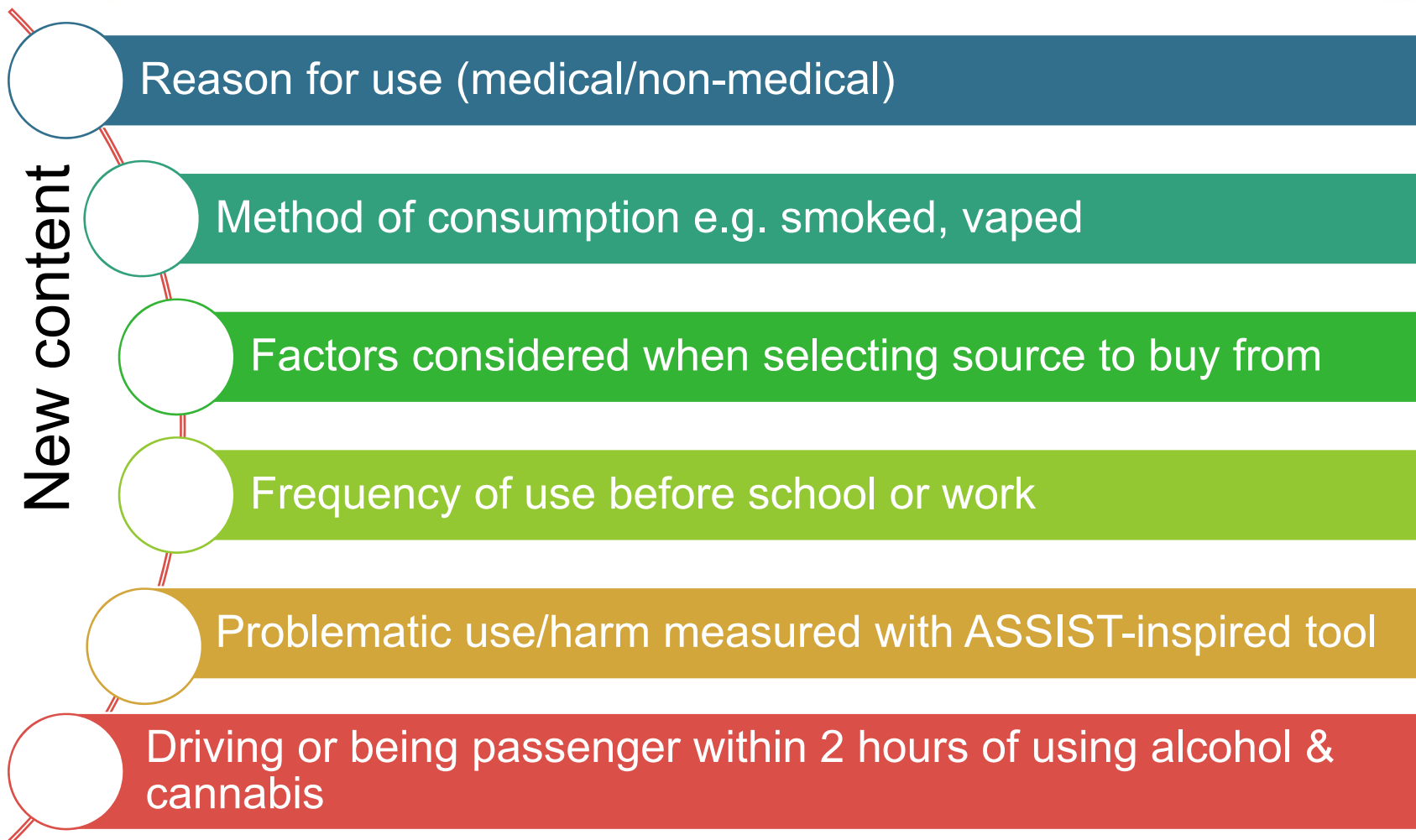
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References cannabis use and related behaviours in previous 3 months



NCS–2018 Q4 & 2019 Q1

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Canadian Tobacco, Alcohol and Drugs Survey (CTADS) 2017

<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4440>

Objective: Monitor changes regarding the usage of tobacco, alcohol and drugs (prescription and non-prescription)

Target Population: General household population aged 15 +; voluntary

Geography: Provinces only

Collection mode: CATI

Content: tobacco, alcohol, prescription and non-prescription drug use, e-cigarettes, exposure to second-hand smoke (ETS) + SES/socio-demographic

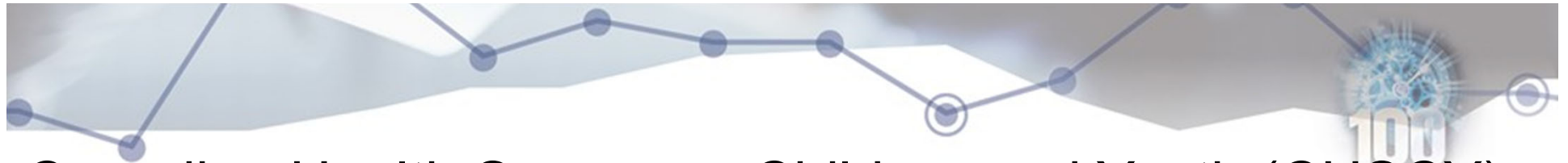
Cannabis content: modes of use, age of initiation, lifetime use, past year and 3-month use, purpose of use (medical/non-medical), frequency, harms

Response rate:, RR ~40%; ~16,000

Collection: February to December 2017

26

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Canadian Health Survey on Children and Youth (CHSCY) - 2019

<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=282165>

Objective: to paint a portrait of the health and well-being of Canadian children and youth

Target Population: General household population aged 1 to 17; voluntary

Geography: Provinces + territories

Collection mode: EQ

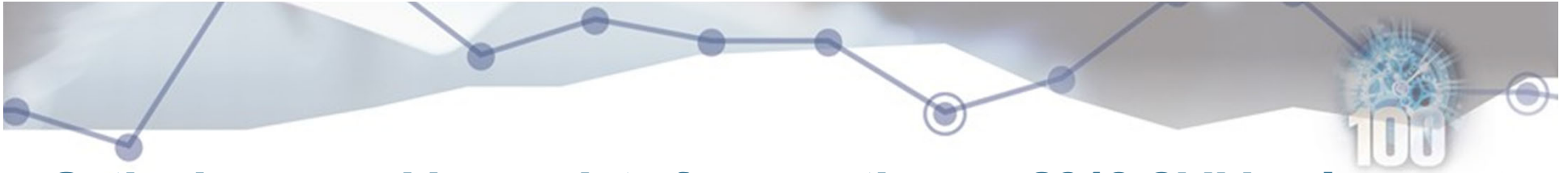
Collected: Feb to June 2019

Sample size: ~25,000

Cannabis content: frequency of cannabis use, age at first use, perceived harm resulting from use, access and usual source

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Gathering cannabis use data from youth: new 2019 Children's Health Survey will include cannabis questions for 12 to 17 year-olds

- Have you **ever** used or tried cannabis, also known as marijuana, hash, weed or pot?
- How old were you when you first tried cannabis or marijuana?
- In the **past 12 months**, how often did you use cannabis or marijuana?
- In the **past 3 months**, how often did you use cannabis or marijuana?
- How much do you think people risk harming themselves, physically or mentally, if they use cannabis or marijuana **once in a while**? How much do you think people risk harming themselves, physically or mentally, if they use cannabis or marijuana **regularly**?
- How easy or difficult would it be for you to get cannabis or marijuana if you wanted some?
- In the **past 12 months**, how did you **usually** get the cannabis or marijuana you used?



Canadian Community Health Survey (CCHS) – Annual 2019/20

<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226>

Objective: to gather health-related data at the sub-provincial levels of geography (health region or combined health regions).

Target Population: General household population aged 12 +;

Geography: Provinces + territories

Collection mode: CATI; voluntary

Content: diseases/health conditions, health, health services, lifestyle/social conditions, mental health + SES/socio-demographic

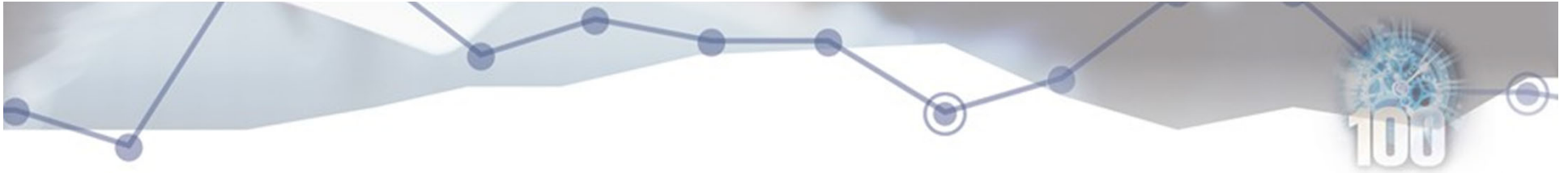
Cannabis content: various reference periods, modes of use, age of initiation, lifetime use, purpose of use (medical/non-medical), frequency, harms, driving after consuming

Response rate: TBD; ~60,000 per year

Collection: January to December

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With these data we have started to answer some important questions...

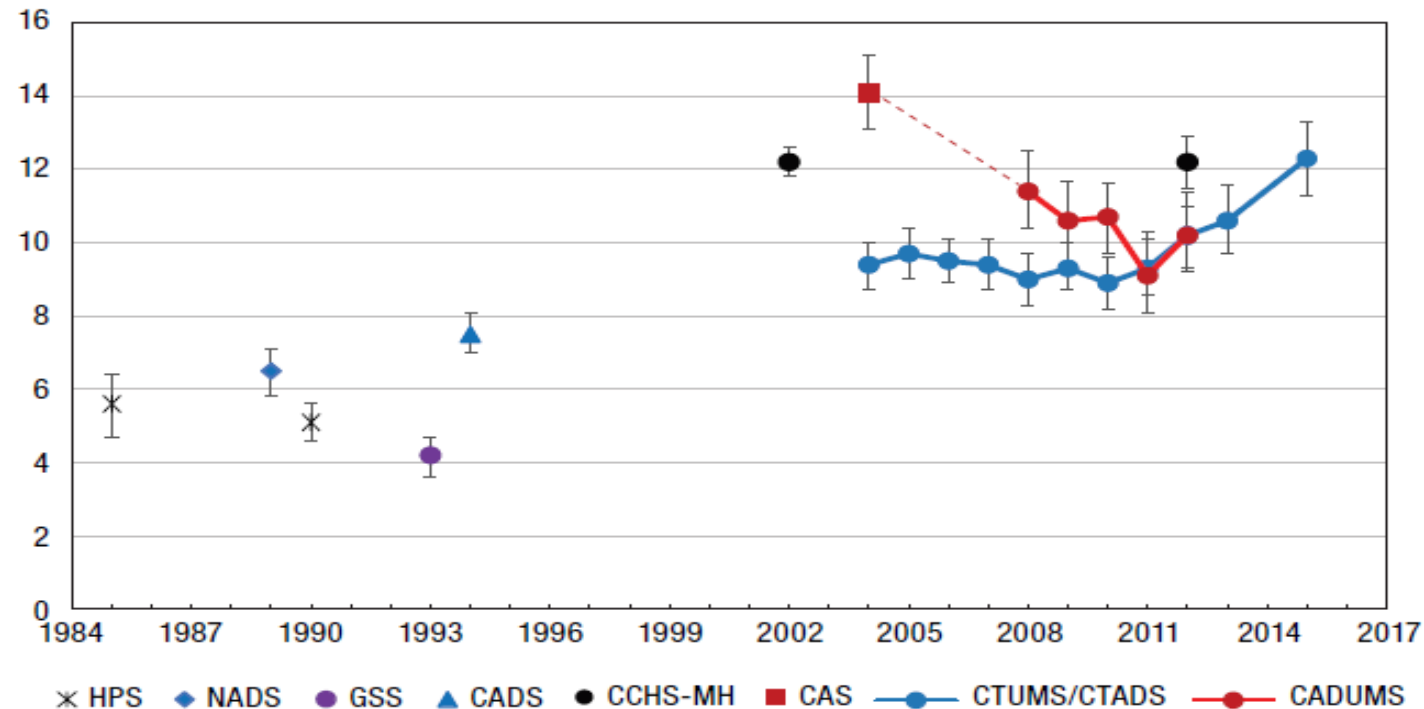


Is cannabis use more common now than previously?



Prevalence of past-year cannabis use, by survey, household population aged 15 or older, Canada excluding territories, 1985 through 2015

percent

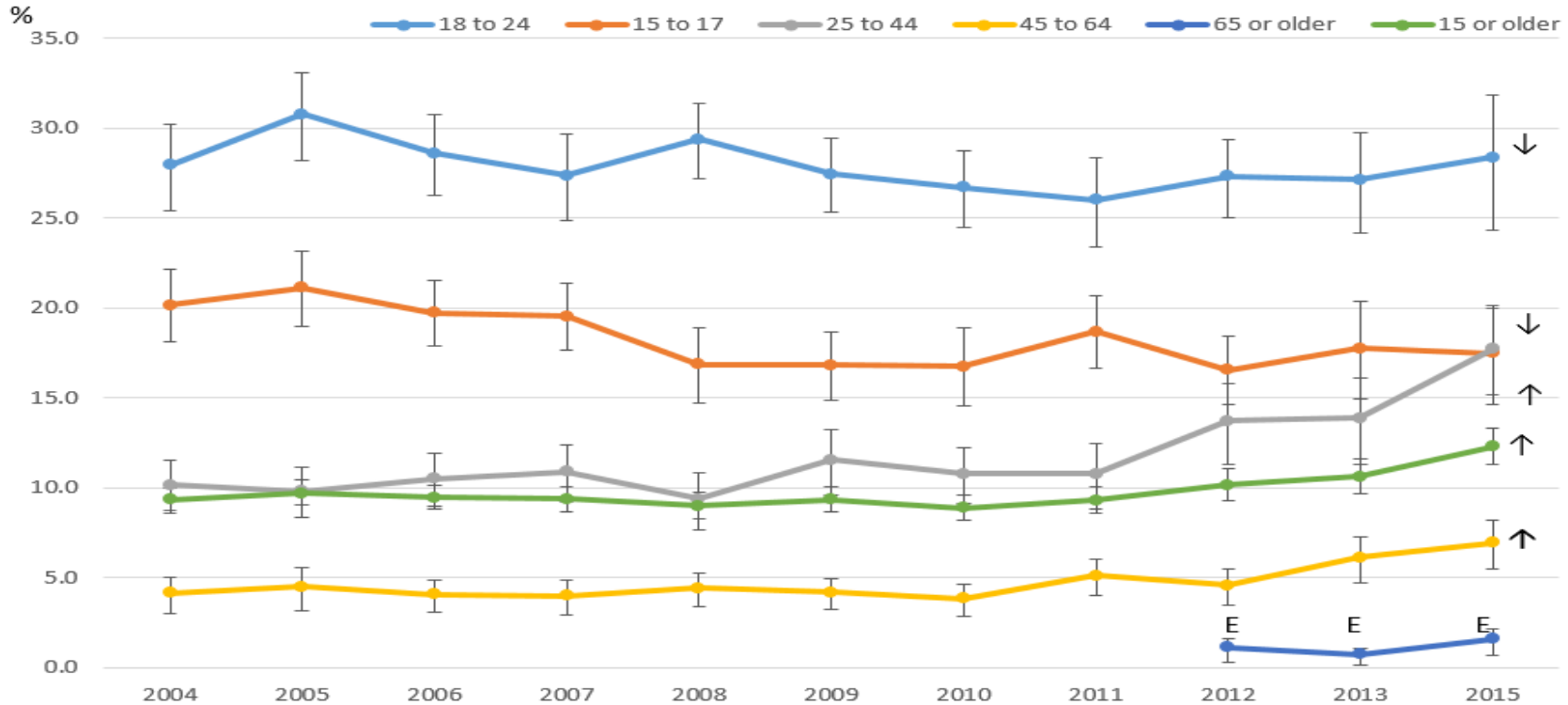


Sources: 1985 and 1990 Health Promotion Survey (HPS); 1989 National Alcohol and Drug Survey (NADS); 1993 General Social Survey (GSS); 1994 Canadian Alcohol and Other Drugs Survey (CADS); 2004 Canadian Addiction Survey (CAS); 2004 through 2012 Canadian Tobacco Use Monitoring Survey (CTUMS); 2008 through 2012 Canadian Alcohol and Drug Use Monitoring Survey (CADUMS); 2013 and 2015 Canadian Tobacco, Alcohol and Drugs Survey (CTADS); 2002 and 2012 Canadian Community Health Survey—Mental Health and Well-being (CCHS-MH).

<https://www150.statcan.gc.ca/n1/pub/82-003-x/2018002/article/54908-eng.pdf>

Is use among all age groups increasing?

Prevalence of cannabis use, by age group, household population aged 15 or older, Canada excluding territories, 2004 to 2015



Data source: 2004 to 2012 Canadian Tobacco Use Monitoring Survey (CTUMS) and 2013 and 2015 Canadian Tobacco, Alcohol and Drugs Survey (CTADS)
 Notes: ↑ Statistically significant increase in trend (p<0.05); ↓ Statistically significant decrease in trend (p<0.05); E use with caution. Require 5 or more data points to test for trend therefore line pertaining to 65 or older not tested.

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Source: Canadian Tobacco Use Monitoring Survey (CTUMS) & CTADS
<https://www150.statcan.gc.ca/n1/pub/82-003-x/2018002/article/54908-eng.pdf>

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What % of Canadians currently consume cannabis? Does it differ regionally?

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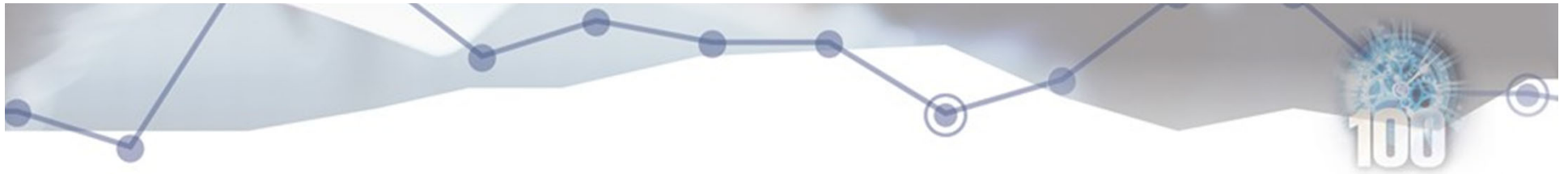
Percentage of people reporting cannabis use in the past three months by quarter, household population aged 15 or older, Canada excluding territories (except 2018 Q2)

	2018				2019
	Q1	Q2	Q3	Q4	Q1
Canada	14.0	15.6	15.2	15.4	17.5
Newfoundland and Labrador	16.4	18.1	16.1	19.2	18.5
Prince Edward Island	14.1	19.2	15.0	17.9	15.4
Nova Scotia	20.0	21.0	23.0	21.6	18.2
New Brunswick	14.3	17.3	13.8	18.9	18.2
Quebec	10.4	10.6	10.1	13.6	11.0
Ontario	13.5	17.8	15.1	15.4	20.0
Manitoba	16.6	15.1	18.9	15.1	13.0
Saskatchewan	15.1	9.9	15.7	16.5	15.7
Alberta	16.6	15.6	17.0	16.2	21.5
British Columbia	17.1	17.3	20.0	15.3	19.1
Whitehorse (Yukon)		23.1			
Yellowknife (Northwest Territories)		26.8			
Iqaluit (Nunavut)		33.0			

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<https://www150.statcan.gc.ca/n1/daily-quotidien/190502/dq190502a-eng.htm>

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Will Canadians change their behaviours once legalized?

- About 8 in 10 Canadians 15 years and over said they would be unlikely to try cannabis or increase their consumption with legalization
- However, intention to use cannabis in the future and once legal largely depended on whether the person reported current use.
- 28% of current users said they would likely increase use, more than 4X the percentage of those not currently using (6%)



Source: National Cannabis Survey 2nd Quarter , 2018

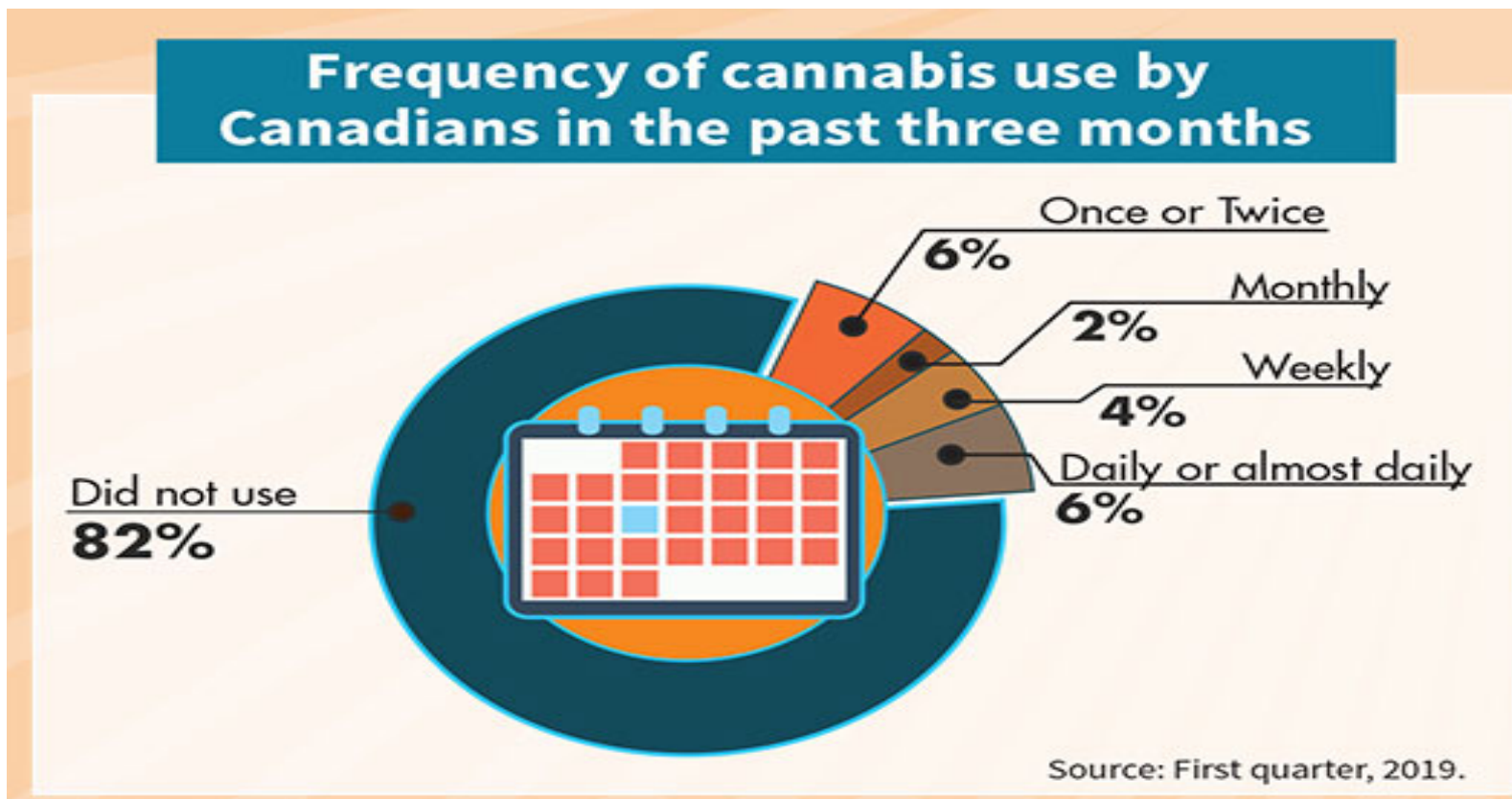
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How many consume daily/almost?



6% Canadians (1.8 million) report using daily/almost daily. Daily/almost daily use more common among 15 to 24 year olds (10%) vs. 25+ (6%)



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<https://www150.statcan.gc.ca/n1/daily-quotidien/190502/dq190502a-eng.htm>

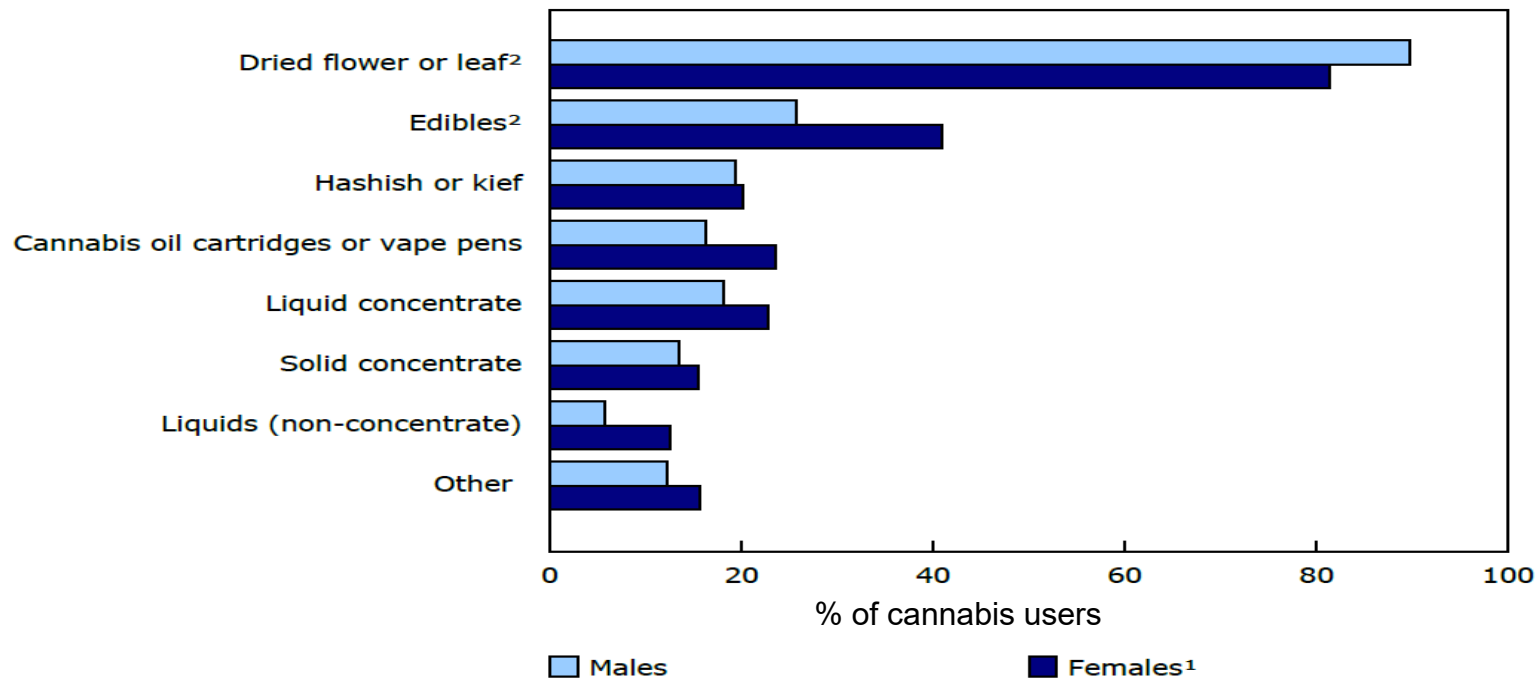
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Which products are used by which people?

<https://www150.statcan.gc.ca/n1/daily-quotidien/180809/dq180809a-eng.pdf>

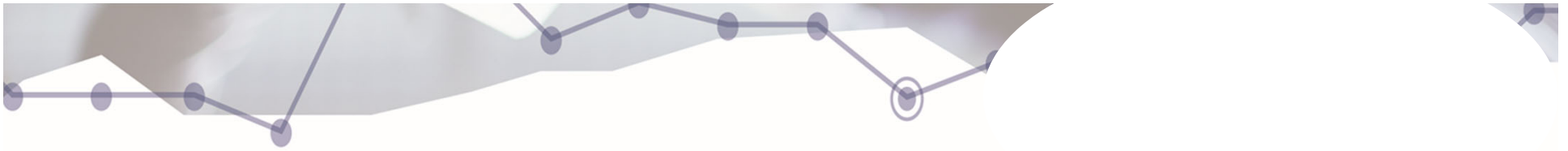
Percentage reporting use of each cannabis product in the past three months by gender, household population aged 15 years or older, Canada, second quarter of 2018



1. Reference category.

2. Significantly different from reference category ($p < 0.05$).

Source(s): National Cannabis Survey (5262).



How common is medical use? How common is non-medical use?



Source: NCS 2018 Q4

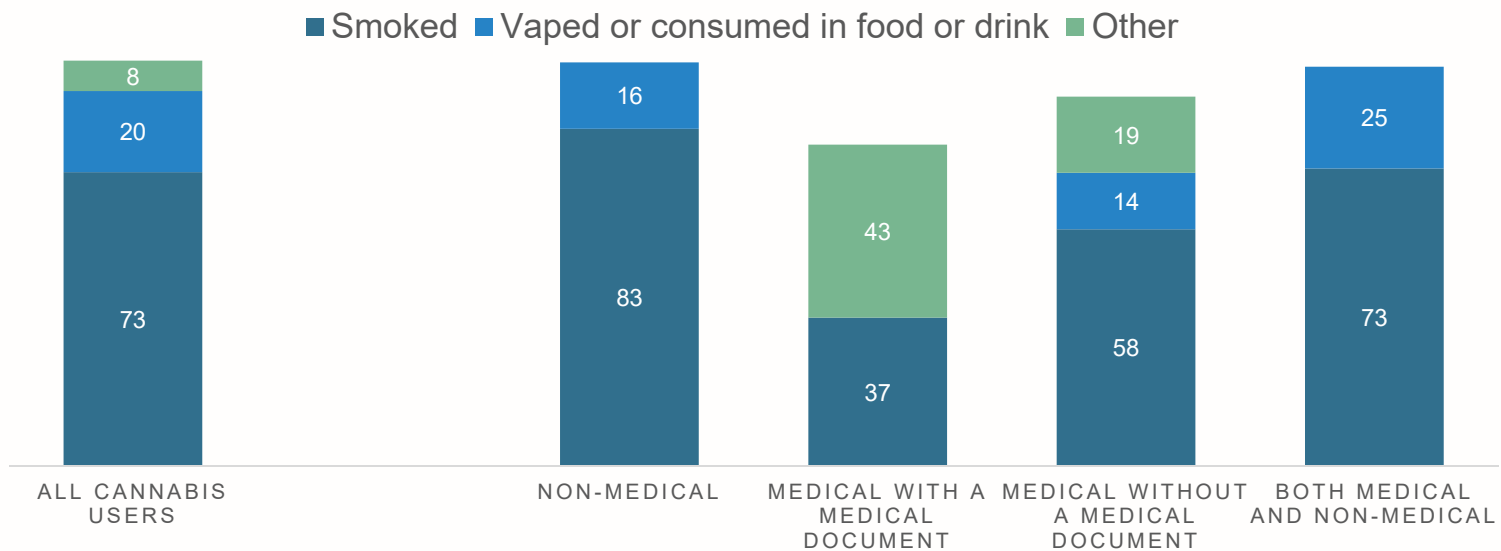


Statistics Canada
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Delivering insight through data, for a better Canada

Canada

What is the most common method of consumption? Does it differ by type of user?



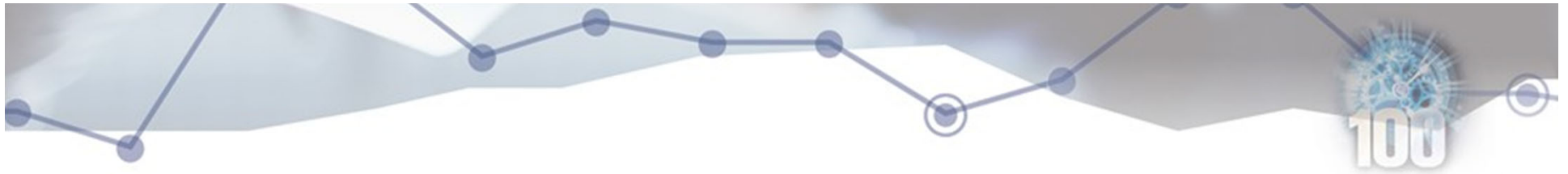
Due to data suppression, some bars do not add to 100%.



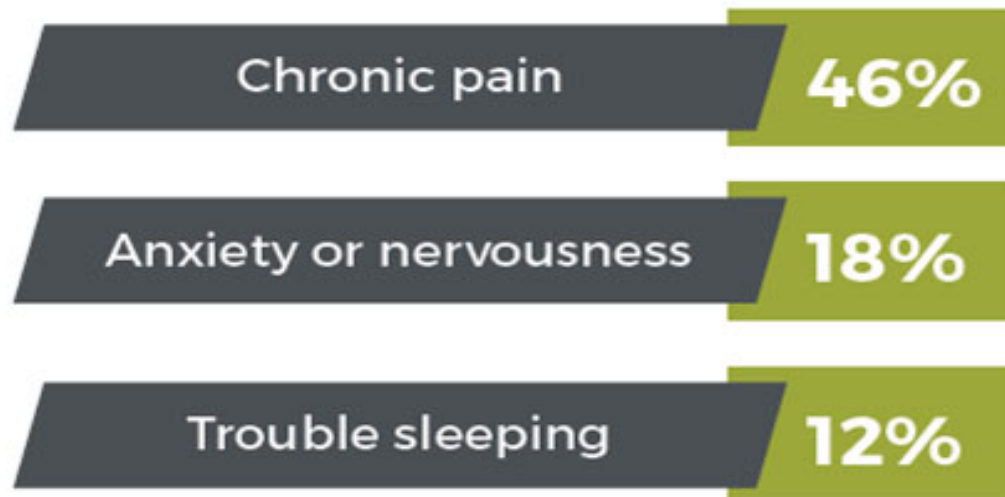
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What are the main reasons for medical use?



Source: CTADS 2017

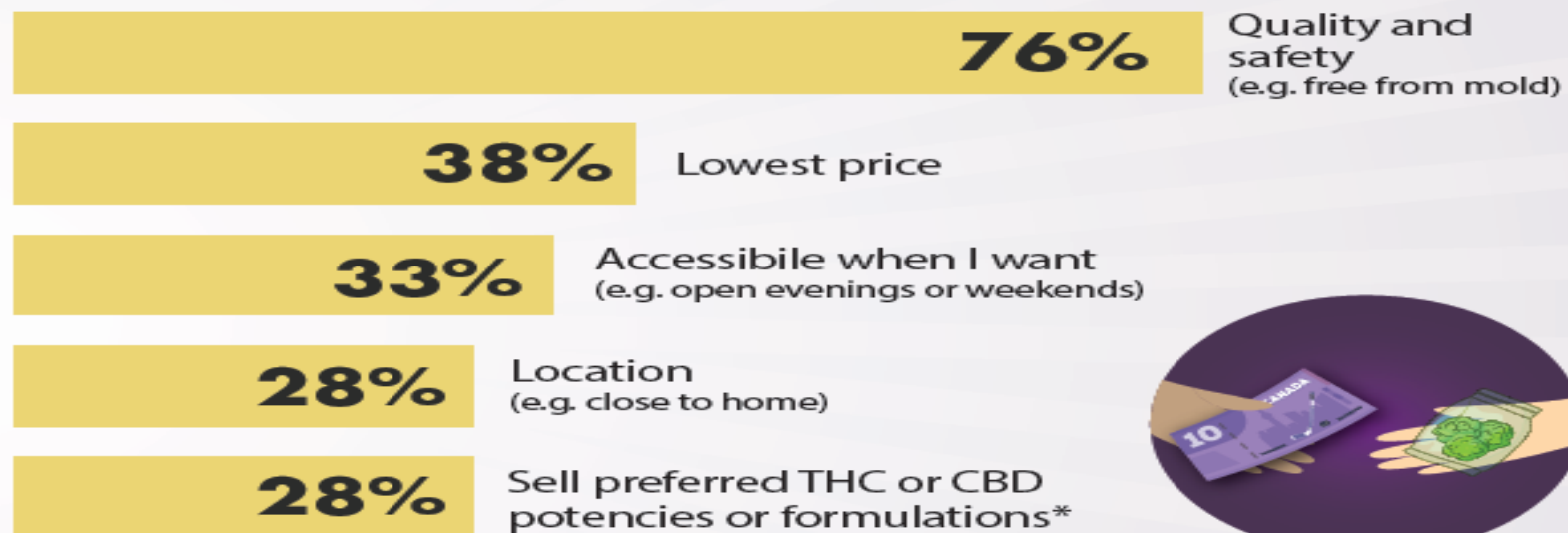
<https://www150.statcan.gc.ca/n1/daily-quotidien/181030/dq181030b-eng.htm>

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Which factors are important when selecting a purchasing source?

Leading purchasing considerations by cannabis users when selecting a source



*Definition: delta-9-tetrahydrocannabinol (THC) and Cannabidiol (CBD).



Source: NCS 2018 Q4



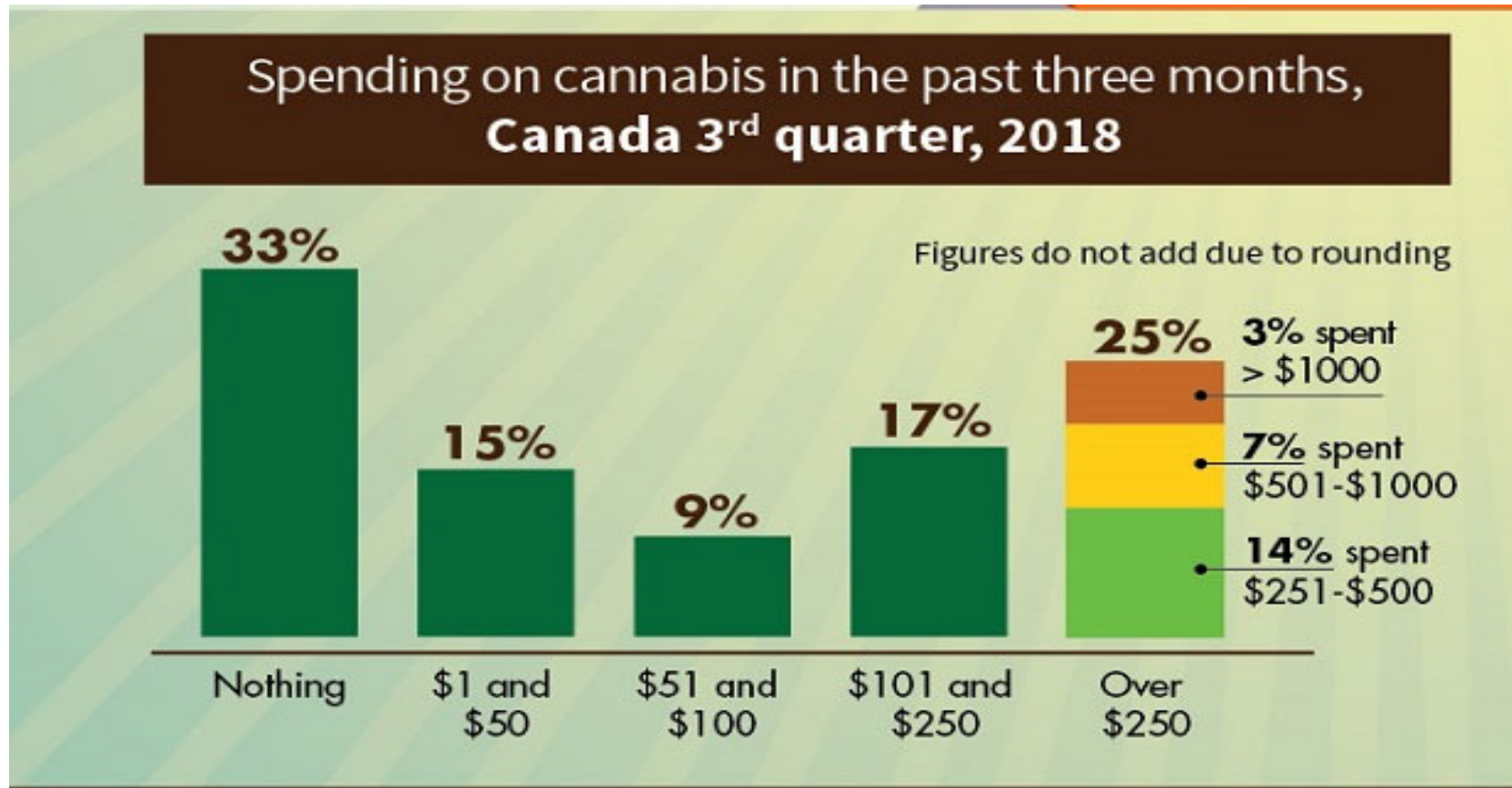
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How much do Canadians spend on cannabis?



<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018032-eng.htm>

At what age do Canadians start trying different substances, including cannabis?



Canadians are younger when they begin smoking cigarettes than when they begin taking other substances

Average age at first use

Cigarettes¹: **16.4 years**

Alcohol²: **18.3 years**

Cannabis³: **18.6 years**

Illegal drugs: **19.2 years**
(excluding cannabis)



¹ Lower age than other substances.

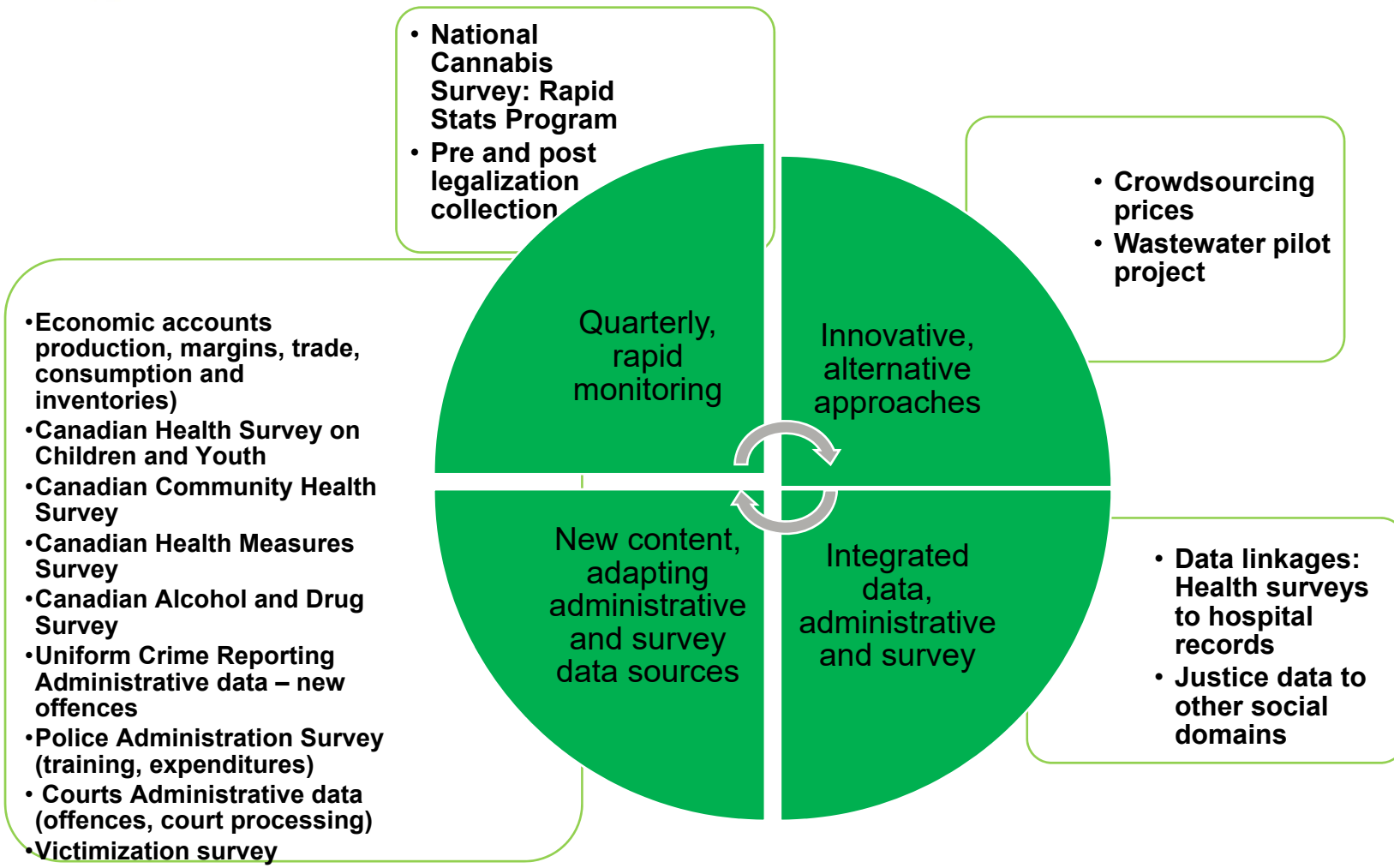
² Lower age than illegal drugs.

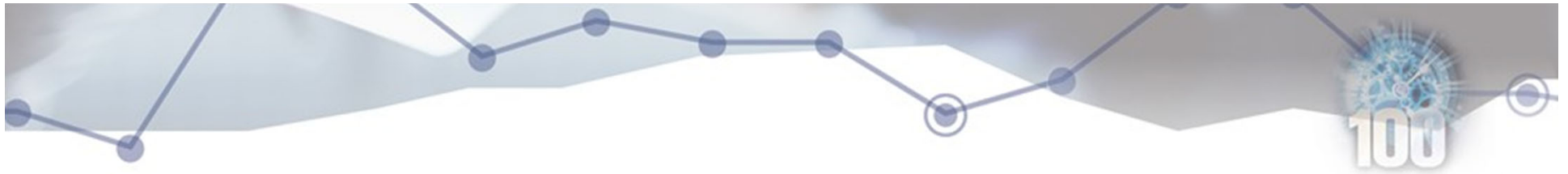
³ Excluding one-time cannabis users.

Source: CTADS 2017

<https://www150.statcan.gc.ca/n1/daily-quotidien/181030/dq181030b-eng.htm>

Much more to do: the way forward for cannabis information...





Thanks for listening!

Questions/Comments?

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