



Marijuana and Edibles: What are the Food Safety and Public Health Concerns?

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Presentation Outline

- *Cannabis sativa*
- Cannabis Use in Canada
- Methods of Cannabis Consumption
- Legality of Cannabis in Canada
- Marijuana Edibles
- Example: Colorado
 - Background
 - Opportunities
 - Challenges
- Cannabis Packaging and Advertising
- *A Framework for the Legalization and Regulation of Cannabis in Canada*
- *Proposed Approach to the Regulation of Cannabis: Summary of Comments Received During the Public Consultation*
- Public Health and Food Safety Concerns
- Future of Marijuana Edibles
- Conclusions
- Questions



Cannabis sativa

- *Cannabis sativa* has been a source of fiber, food, oil and medicine for centuries
- Hundreds of chemical entities are in cannabis; more than 100 of which are cannabinoid compounds.
- Cannabis is becoming increasingly researched and recognized for the management/alleviation of many health conditions including mood disorders, Multiple Sclerosis (MS), epilepsy, pain etc.



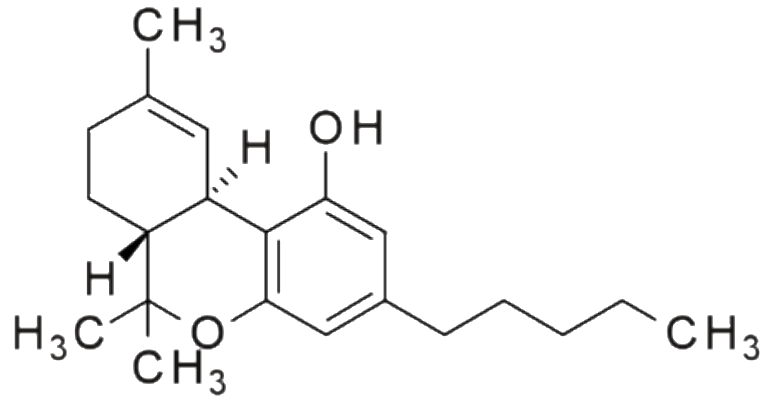
Cannabis sativa

- Recognized cannabinoid based pharmaceutical drugs:
 1. Sativex® (made from plant marijuana)
 2. Marinol® (synthetic THC) – No longer available in Canada
 3. Nabilone® (synthetic THC analog)
- Side effects may include dry mouth, drowsiness, dizziness, and confusion
- Some doctors are still not comfortable prescribing marijuana

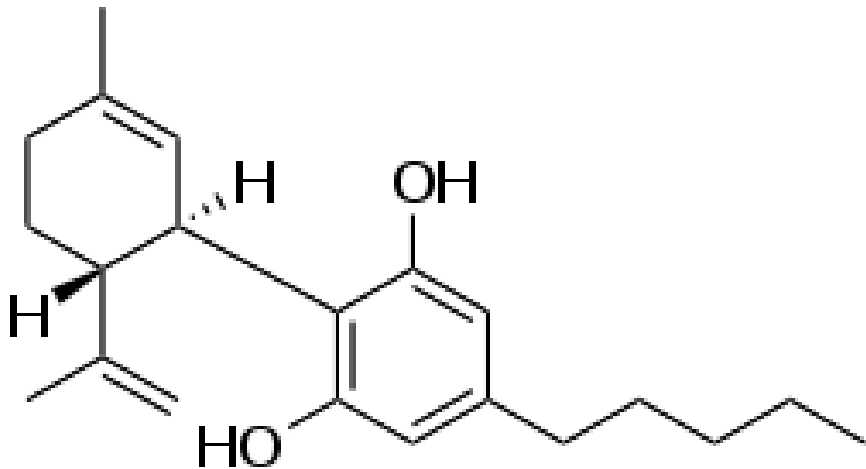


Cannabis Action and Cannabinoid Receptors

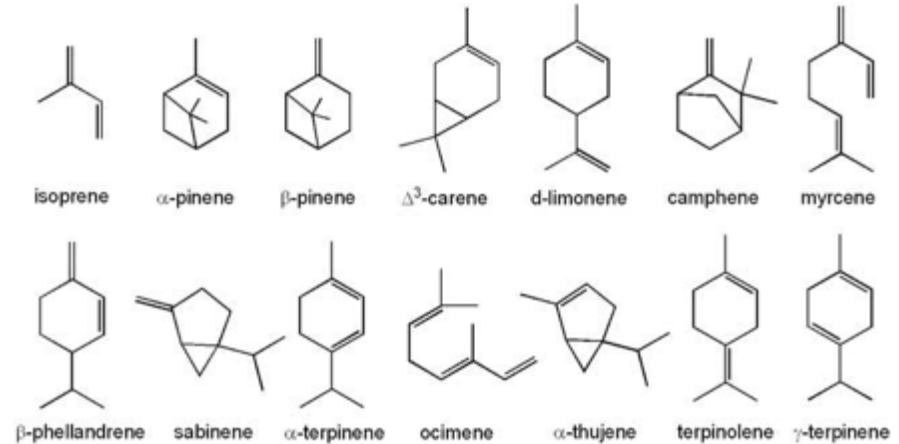
Delta-9-Tetrahydrocannabinol (THC)



Cannabidiol (e.g., CBD)



Terpenes (e.g., α -Pinene)



Canadian Cannabis Survey 2017

- Survey is **not** designed to collect information on the **prevalence** of cannabis use in Canada
- Focuses on knowledge, attitudes and behaviours of Canadians
- Data includes: perception; cannabis use patterns; driving and cannabis; and cannabis for medical purposes



Health
Canada

Source: <https://www.canada.ca/en/health-canada/services/publications/drugs-health-products/canadian-cannabis-survey-2017-summary.html>



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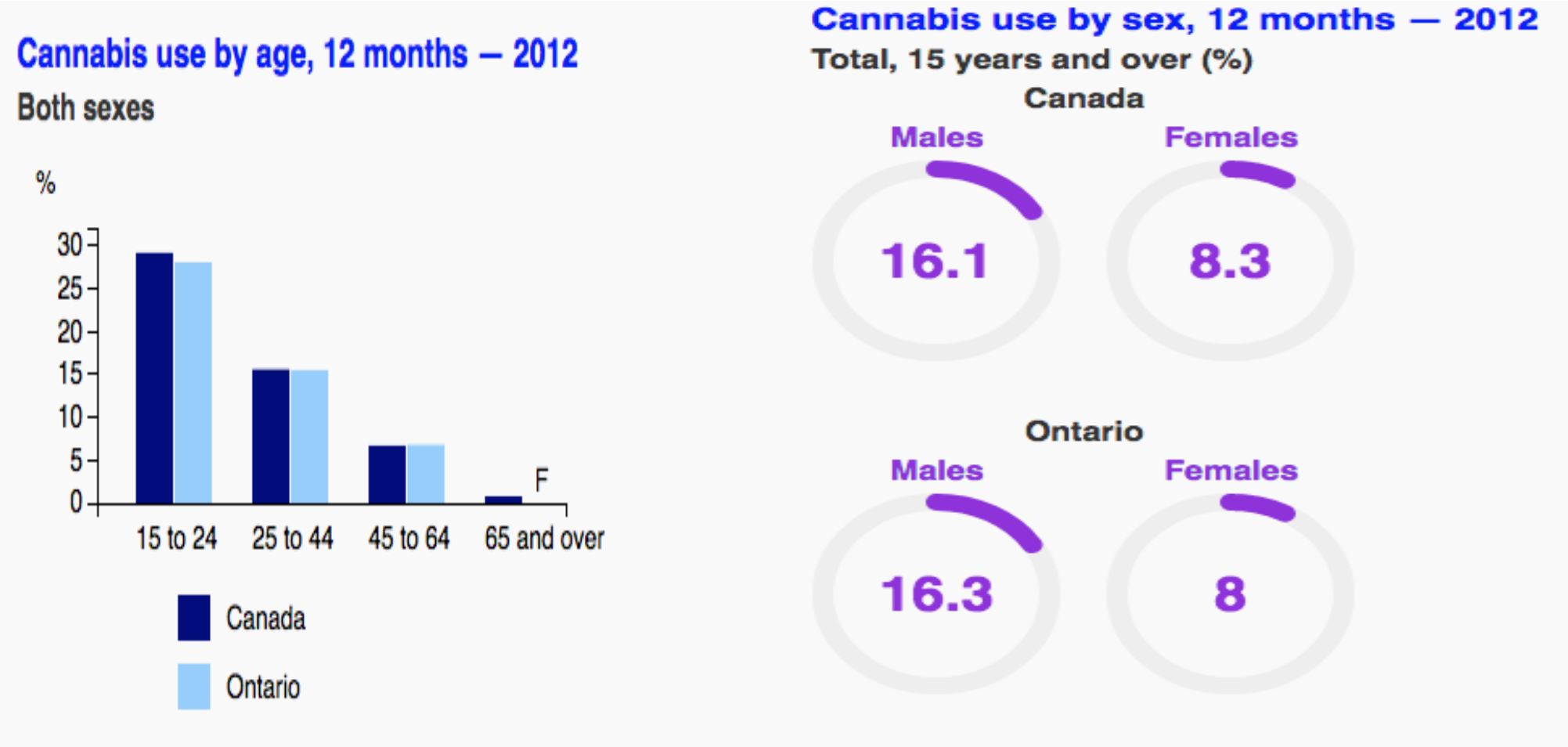
Cannabis Use in Canada

The Canadian Community Health Survey (CCHS)

- ***Cannabis use, lifetime:*** Individuals who reported using cannabis or hashish at least once in their lifetime
- ***Cannabis use, 12 months:*** Individuals who reported using cannabis or hashish at least once in the 12-month period prior to the interview



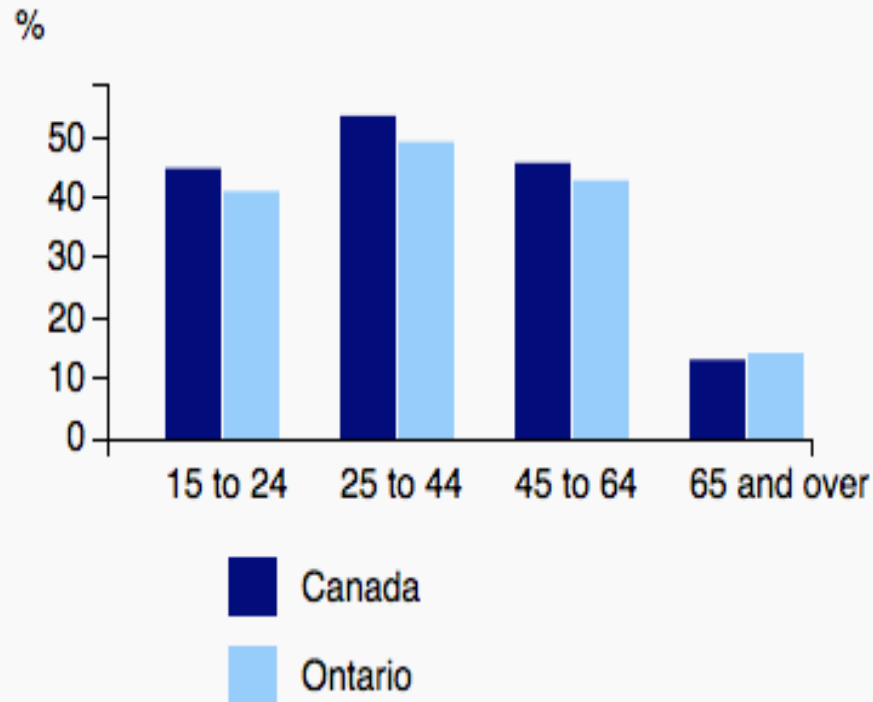
CCHS: Cannabis Use, 12 Months



CCHS: Cannabis Use, Lifetime

Cannabis use by age, lifetime — 2012

Both sexes



Cannabis use by sex, lifetime — 2012

Total, 15 years and over (%)

Canada

Males

49.4

Females

35.8

Ontario

Males

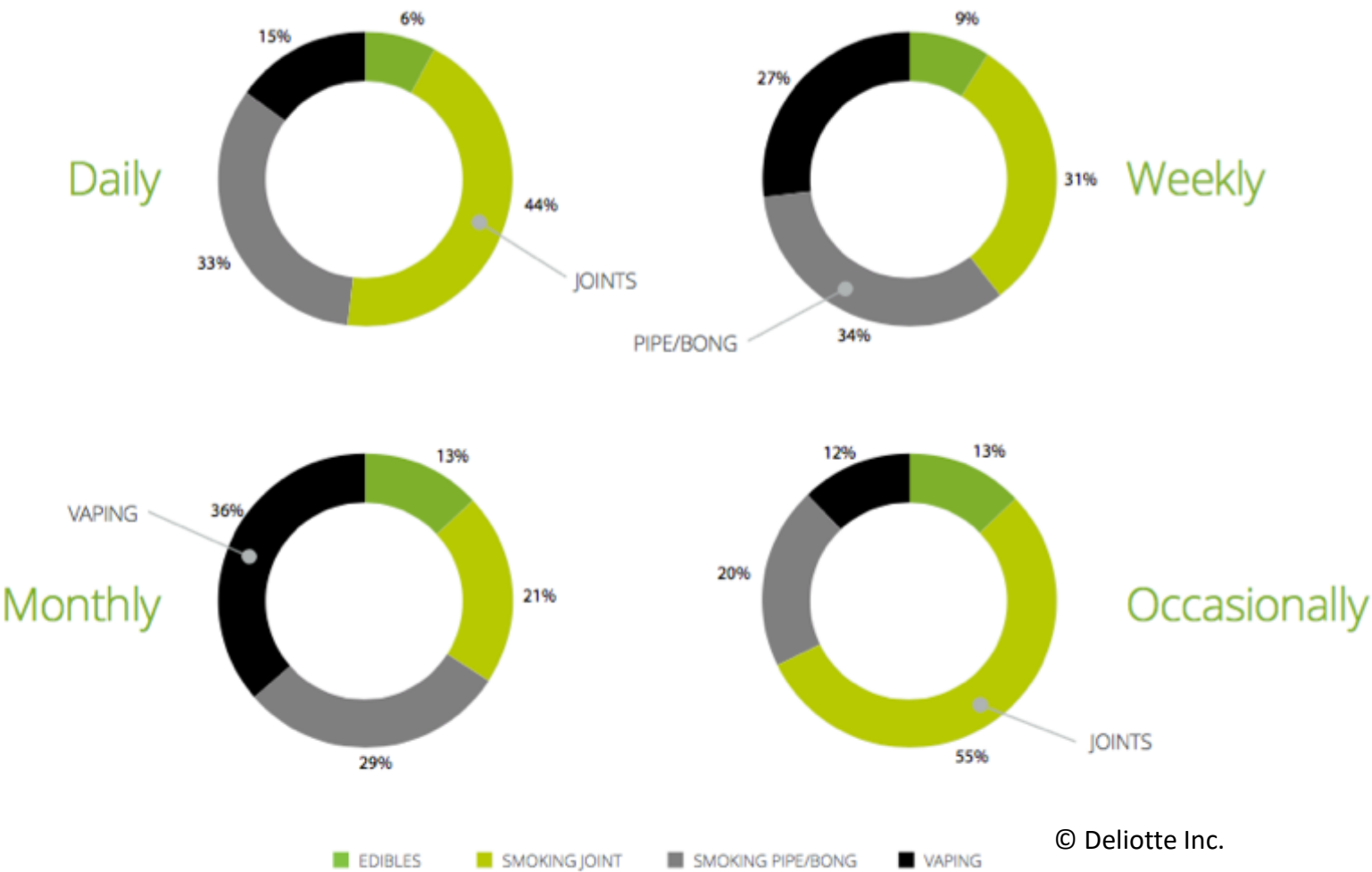
46.8

Females

33.1



Methods of Cannabis Consumption in Canada



© Deloitte Inc.

Legality of Cannabis in Canada

- **Access to Cannabis for Medical Purposes Regulations (ACMPR)**

- Medicinal purposes only
- Government only permits dried cannabis, cannabis oils (and fresh cannabis)
- Other cannabis products may not be sold, but individual can make edible products for their own consumption
- People can still purchase edibles online though!

- **The Cannabis Act (Bill C-45)**

- July 1 2018
- No mention of edibles, but lays out the laws of marijuana oils and extracts used to make edibles
- Edibles will wait; one year after legalization
- Proposed regulations geared towards packaging of cannabis products in order to avoid access to children



What is Marijuana Edibles?

- Marijuana edibles may include any of the following examples:
 - Composed of marijuana (e.g., cannabis tea)
 - Marijuana used as an ingredient (e.g., baked goods such as brownies, chocolate, etc.)
 - Infused with marijuana OR marijuana oils (e.g., gummies, liquors etc.)
- Recreationally, cannabis is in cooking oils, drinks, ointments, tinctures, creams, and concentrates (e.g., butane hash oil, resins, waxes, and “shatter”).



What we used to think of marijuana edibles...



What marijuana edibles look like now...



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The different forms of cannabis

Form	Description	THC potency
fresh or dried herbal material	Flowers and leaves from the cannabis plant	up to 30%
cannabis oil	Cannabis extract dissolved in oil. Can be used to make other forms (e.g., edibles).	up to 3%
chemically concentrated extracts (e.g., hash oil/shatter/budder/wax)	Highly concentrated cannabis extract dissolved in petroleum-based solvent (e.g., butane). Shatter, budder and wax most highly concentrated.	up to 90%
physically concentrated extracts (e.g., hash/kief)	Loose trichomes or pressed resin from the cannabis plant.	up to 60%
edibles	Foods and drinks containing extracts of cannabis	Depends on the amount of extract added
tinctures/sprays	Cannabis extract dissolved in a solvent, often alcohol. Can be used to make other products (e.g., edibles).	varies
creams/salves/liniments	Cannabis extract preparation prepared with alcohol, oil or wax and applied to the skin.	varies

Source: <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/about.html#a3>



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Marijuana Edibles - Challenges

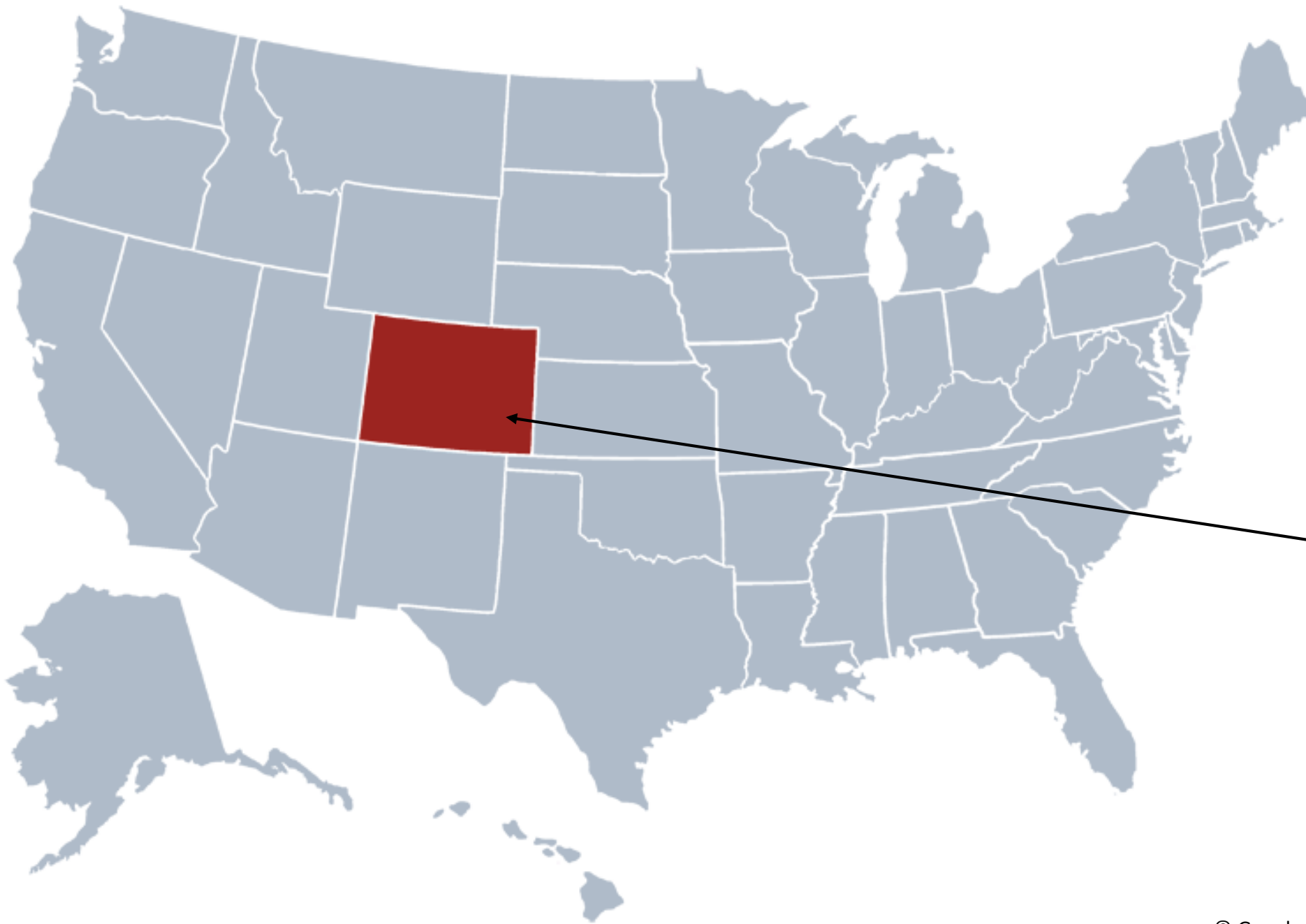
- Marijuana edibles present many challenges, **including:**
 - Determining accurate dose of THC and CBD or other cannabinoids
 - No or lack of knowledge of dose calculation
 - Delayed and variable onset of psychotropic effects
 - Type of food ingestion also influences the onset time
 - Marketing and promotion of marijuana edible products to children
 - Pesticide residues and control
 - Transparency in labelling and packaging (e.g., child-proof) of marijuana edibles
 - Advertising



So...

what are the public health and food safety
concerns of marijuana edibles?





Colorado



Colorado - Background

- In 2012, Constitutional Amendment 64 in Colorado legalized recreational cannabis for anyone 21 years of age or older
- Amendment 64 also allows for licensed marijuana retail stores, cultivation operations and edible manufacturers

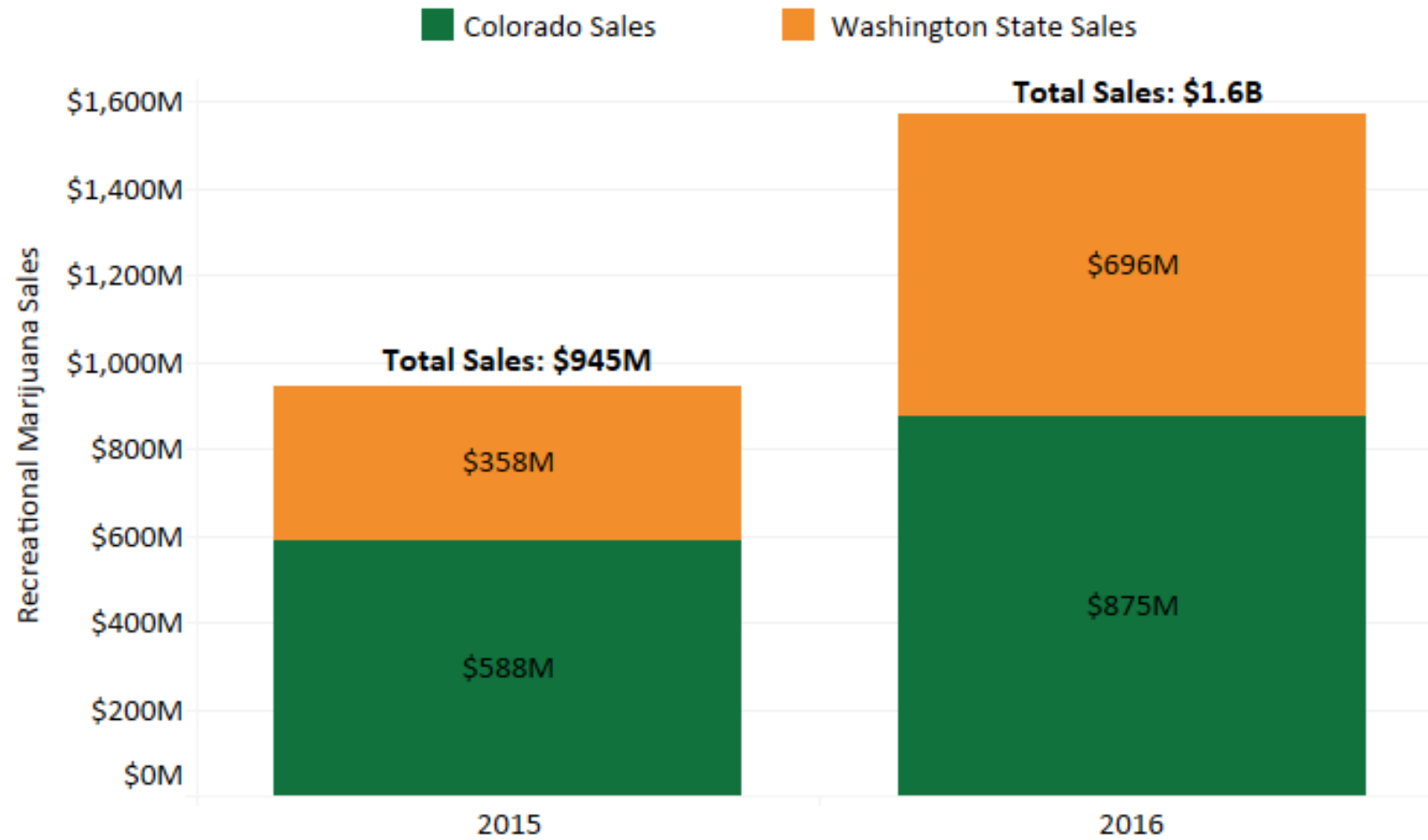


Colorado – Opportunities

- In 2014, 4.8 M medical and recreational marijuana edible products and nearly 150,000 lbs. were sold
- 2014 to 2016: Annual sales of marijuana edibles increased from \$90.4M to \$126.17M to 189.9M
- June 2017: 491 retail marijuana stores and 513 medical marijuana centres in Colorado



Colorado & Washington State Recreational Marijuana Sales: 2015 vs 2016



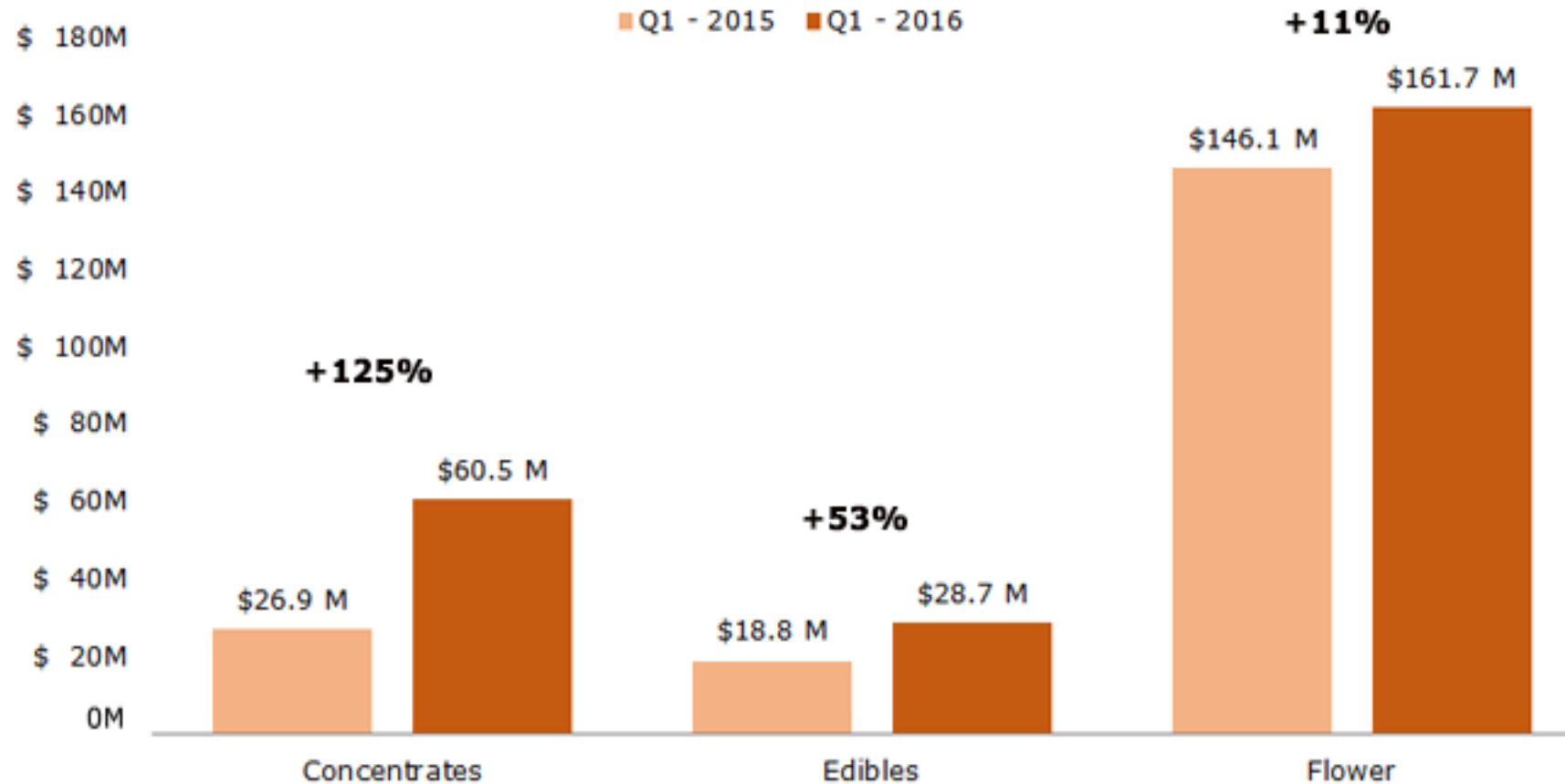
Source: Washington State Liquor & Cannabis Board, Colorado Department of Revenue
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Marijuana Concentrates, Edibles & Flower Sales Growth in Colorado

Colorado cannabis retail sales



Includes both medical and recreational marijuana sales

Source: BDS Analytics

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Colorado - Challenges

- Cannabis and Driving
- Emergency Department Visits
- Hospitalization
- Youth Marijuana Exposure
- Foodborne Illnesses and Outbreaks
- Packaging, Manufacturing and Marketing



Colorado – Impaired Driving

- Marijuana-related traffic deaths = **55 deaths** in 2013 to **123 deaths** in 2016
- Marijuana-related traffic deaths increased **66 percent** from 2013 – 2016 compared to 2009 – 2012
- What is marijuana-related?
 - Any time marijuana shows up in the toxicology report. It could be marijuana only or marijuana with other drugs and/or alcohol.

Data Source: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2016



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Colorado – Impaired Driving

Challenges:

- Marijuana stays in the body for a long time
- No consensus on how to determine the level of THC in the body
- An accurate roadside test for drug levels in the body doesn't exist
- Drivers with multiple drugs in their system (e.g., alcohol) makes it harder to know which substance contributed more to the crash

Acceptance:

- Marijuana can slow reaction time
- Impaired driving associated with marijuana in combination with alcohol appears to be greater than that for either by itself



Canadian Cannabis Survey: Cannabis and Driving

- Asked when it is safe to drive after cannabis use = “*it depends*” (36%) on the person’s tolerance, weight and quantity used
- 23% of respondents said they did not know when it was safe to drive
- 39% of respondents having used cannabis in the past 12 months reported driving within 2 hours after using cannabis.



Colorado – Emergency Department Visits

- Emergency department visits related to marijuana increased 35% after the legalization of recreational marijuana
- Colorado Emergency Department visits per year related to marijuana:
 - **2013 – 14,148**
 - **2014 – 18,255**
 - **2015 – 10,476***

Data Source: Colorado Hospital Association, Emergency Department Visit Dataset. Statistics prepared by the Health Statistics and Evaluation Branch, Colorado Department of Public Health and Environment

** Only nine month of comparable 2015 data*



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Colorado – Hospitalization

- Hospitalization related to marijuana:
 - **2011 – 6,305**
 - 2012 – 6,715
 - 2013 – 8,272
 - **2014 – 11,439**
 - **2015: – 10,901**

Data Source: Colorado Hospital Association, Emergency Department Visit Dataset. Statistics prepared by the Health Statistics and Evaluation Branch, Colorado Department of Public Health and Environment



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Colorado – Hospitalization (con't)

- *Marijuana-Related:* Data could be obtained from lab tests, patient self-admission or some other form of validation obtained by the provider. Marijuana-related **does not** necessarily prove marijuana was the cause of the emergency department admission or hospitalization
- Data represents hospital discharge and emergency department visits where marijuana could be a causal, contributing, or co-existing factor noted by the physician during the visit



CAN YOU TELL WHICH CANDY IS A MARIJUANA EDIBLE?

1



2



Colorado – Youth Marijuana Exposure

- Youth past month marijuana use increased 12 percent in the three-year average (2013-2015) since Colorado legalized recreational marijuana compared to the three-year average prior to legalization (2010-2012)
- Prevalence of past 30-day marijuana use, youths 12 to 17 years old in 2012 – 2014 = 11.74% in Colorado vs. 7.22% in USA

What's the big deal with youth exposure to marijuana?

Data Source: SAMHSA.gov, National Survey on Drug Use and Health, Substate Region Estimates 2006-2014



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Outbreaks



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- Pathogens in Medical Marijuana

- *Escherichia hermanni*
- *Raoultella planticola*
- *Enterobacter hormaechei*
- *Enterobacter cloacae*
- *Citrobacter freundii*
- *Cronobacter turicensis*
- *Escherichia vulneris*

- Food

- *Salmonella*
- VTEC
- *Clostridium botulinum*
- Molds

VTEC: Verocytotoxigenic *Escherichia coli*

What's in your pot? Marketplace tests today's weed

As Ottawa prepares to legalize recreational marijuana, Marketplace investigation shows how weed has changed

Tyana Grundig and David Common - CBC News
Posted: Nov 25, 2016 5:00 AM ET | Last Updated: November 25, 2016



INVESTIGATION

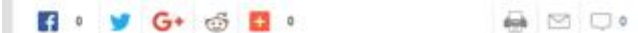
What's in your weed?

Ottawa says it's dangerous. Dispensaries say it's safe. The Globe subjected unregulated weed to a battery of tests to find the truth. The results cast

Bacteria prompts B.C. medical marijuana firm to recall product



Medical marijuana clone plants are shown at Harborside Health Center, a medical marijuana dispensary, in Oakland, Calif., Tuesday, Feb. 1, 2011. (AP Photo/Jeff Chiu)



CANADA

Banned pesticide found at medical marijuana company



Colorado - Packaging

- **Packaging in 2014:**
 - A standard serving size (10 mg of THC or less) clearly marked and labelled on every product
 - Child-resistant, opaque and re-sealable packaging



Colorado - Packaging

- **Packaging in 2016:**
 - Universal symbol on all packages:



- Words such as “candy” “candies” cannot appear on marijuana and/or marijuana packing, unless it is apart of establishment name
- Edibles shaped like animals, fruits or cartoons not allowed
- Packaging must include the following statement directly below the symbol: **“Contains Marijuana. Keep out of the reach of children.”**



Colorado – Packaging Con't

- **Packaging in 2016:**

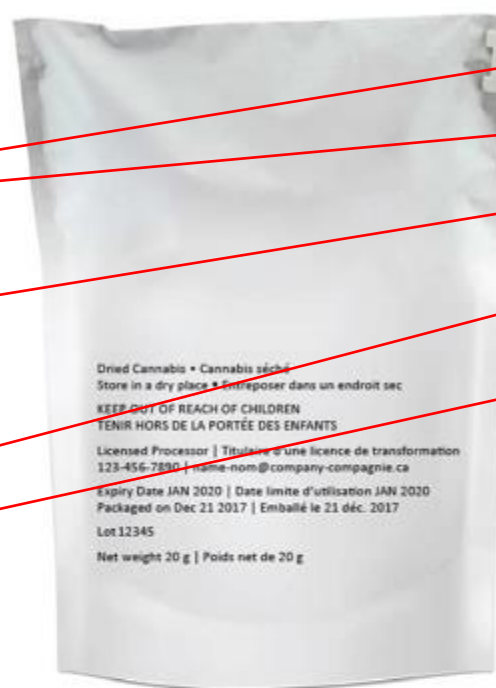
- Each container of medical and retail marijuana must be labeled with necessary and relevant information for consumers, including a potency statement and a contaminant testing statement.
- Information must be easily accessible to consumers, clear and noticeable
- Health and physical benefit claims cannot be included on labels

Same packaging regulations currently apply to medical marijuana under the ACMPR, regulated by Health Canada





Example of **FRONT (principal display panel)** with white/plain background and brand/producer name



Example of **BACK (secondary display panel)** with white/plain background

Company Name

Symbol

Warning

Brand Name

THC and CBD Content



Example of **FRONT (principal display panel)** with solid coloured background and brand/producer logo



Example of **BACK (secondary display panel)** with solid coloured background

Type of Cannabis (dried, oil etc.)

Warning ("KEEP OUT OF REACH OF CHILDREN")

Name of licensed producer and contact information

Expiration Date

Package Date

Lot Number

Net Weight



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Advertising – Cannabis

Adult Use Cannabis Advertising and Marketing Self-Regulatory Guidelines for Licensed Producers



November 2017



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Advertising – Cannabis

- Marketing will not be directed to persons under 18 years of age or designated legal age for purchase
- Advertising cannot be directed to or appeal particularly to young persons
- Advertising and branding cannot depict characters, animals, real or fictional that may appeal particularly to young persons.
- Do not use activities or content that may appeal particularly to young persons
- Advertising cannot attempt to influence adult non-consumers to try cannabis



Advertising – Cannabis

- Advertising cannot associate cannabis with driving or any skilled activity while impaired
- Advertising cannot, directly or indirectly, suggest that adult use cannabis has therapeutic or health related effects
- Licensed Producers(LPs) will not use strain names that are sexual in nature, sexist or present violent imagery for any newly developed strains of cannabis.



Advertising – Cannabis

LPs will only advertise on television, radio, or on any websites or social media platforms where at least 70% of the audience is over 18 years of age or over a province's or territory's legal age for purchase, measured on a pre-media buy basis.



A FRAMEWORK FOR THE LEGALIZATION AND REGULATION OF CANNABIS IN CANADA

THE FINAL REPORT OF THE TASK FORCE ON
CANNABIS LEGALIZATION AND REGULATION



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Colorado – Lessons Learned

- Expect edibles to have a broad appeal
- Control for level of THC and/or portion size
- Ensure that cannabis edibles can be clearly distinguished

Task Force concluded that “edibles offers an opportunity to better address other health risks as it can possibly shift consumers away from smoked cannabis and any associated lung-related harms. This is beneficial for both the smoker and individuals subjected to second-hand smoke.”



PROPOSED APPROACH TO THE REGULATION OF CANNABIS

SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC CONSULTATION



- **Respondents:** Gov't should allow the sale of cannabis edibles and concentrates immediately once Cannabis Act passes
- **Proposal:** Strict limits on the use of colours, graphics, and other special characteristics of packaging
- **Proposal:** Specific information on potency, mandatory health warning messages, and marked with recognizable standardized cannabis symbol
- **Respondents:** Additional information on other cannabinoids and terpenes; growing conditions; whether a product was organic or not; and the origin of the cannabis (name of the cultivator)



Public Health Concerns

- Increased emergency department visits and hospitalization = healthcare costs
- Impaired driving and potential deaths
- Exposure to marijuana and its related products to children and adolescents

Food Safety Concerns

- Lack of labelling of marijuana and edible products
- Marketing to young children and teenagers
- Foodborne illnesses and outbreaks



Future of Marijuana Edibles...

California winery to produce alcohol-free, marijuana-infused wine



Rich Haridy | December 20th, 2017



Rebel Coast Winery has produced the world's first alcohol-free, THC-loaded white wine (Credit: Rebel Coast Winery)

TASTE 05/21/2015 08:37 EDT | Updated 12/06/2017 22:20 EST

Cannabis Coffee Pods Will Give You The Wake And Bake High You're Looking For



By Carly Ledbetter

Stoners, rejoice — cannabis single-serve pods are finally here to elevate your coffee cup wake and bake.

While weed coffee isn't a new concept, a few innovators on the west coast have started making weed-infused pods, Yahoo Business reports. One such coffee pod called Catapult retails for \$10 each, or \$37 for a pack of 6. It contains 10 milligrams of THC, the compound in marijuana that produces a high.

Uncle Ike's Pot Shop in Seattle, Washington, sells Catapult, which has been on the market since February 2015. Manager Jennifer Lanzador told The Huffington Post via email that drinking the weed-coffee combo "seems to give a kick from the caffeine, but it isn't a jittery feeling because of the THC... You get a nice energetic high," she added.



AdChoices

TRENDING



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Future of Marijuana Edibles...



MARIJUANA DOCTORS
A NEW KIND OF HEALTHCARE

SHOP | BLOG

SIGN IN

RE

ABOUT FIND A DOCTOR DISPENSARIES LEGAL STATES NON-LEGAL STATES CONDITIONS RES

Cannabis-Infused Soap

Posted by Marijuana Doctors on 08/29/2017 in [Medical Marijuana](#)



VENDORS PRESS/TRADE CAREERS (

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PRODUCTS

ARTISAN CONFECTIONS

KIVA BARS PETRA MINTS KIVA TERRA BITES KIVA MINIS



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Future of Marijuana Edibles...

LA WEEKLY



Cannabis cuisine is a rising trend in California.

Courtesy VICELAND

The Rise of High-End Culinary Cannabis

NATALIE COMPTON | APRIL 19, 2017 | 8:45AM

POLITICS DENVER POLITICS

Denver approves first social marijuana license, allowing vaping and edibles in Lincoln Park coffee shop

The Coffee Joint's approved license could be followed by a spa and other businesses



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Future of Marijuana Edibles...

Dissolvable Cannabinoids: A new frontier in cannabis consumables

Submitted by [Marijuana News](#) on Thu, 03/08/2018 - 09:13



Let's face it, not everybody is a fan of cannabis-infused edibles. No matter how hard you try to mask that signature cannabis flavor, an aftertaste or odor is often still detectable in many infused products. Solving the flavor problem is no easy task, but a new preparation may offer a solution.

Flavorless, odorless, and with a faster time of onset, dissolvable cannabinoid powder is an innovation that has the potential to change the edibles landscape from here on out. But what exactly are dissolvable cannabinoids, how are the



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made, and what value can they offer?

Conclusion

- Annual national retail market of marijuana edibles = \$5.5 to \$5.8 billion
- As of April 17, 2017, cannabis prices is \$7.36 per gram in Ontario
- **We need:**
 - Public education to understand risks of marijuana edibles
 - Regulation on packaging, advertising and marketing of marijuana edibles
 - Data on injuries, illnesses and outbreaks associated with marijuana and marijuana edible

The Canadian system “must be flexible enough to adapt in a timely way to new information and to provide appropriate safeguards”



Discussion Questions

- 1) How do you envision marijuana edibles shaping the federal/provincial and municipal inspection?
- 2) What challenges and benefits do you see in a) an one-tier system and b) two-tier system approach upon legalization?
- 3) Should the age limit for cannabis legalization be increased?
- 4) Why do we not have child-resistant packaging and labeling for alcohol and tobacco?
- 5) What are the benefits and challenges associated with the federal government allowing the provincial government to set the age limit? Why is this not the scenario with alcohol?



Cannabis Stats Hub

<https://www.statcan.gc.ca/pub/13-610-x/13-610-x2018001-eng.htm>



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Questions?

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