

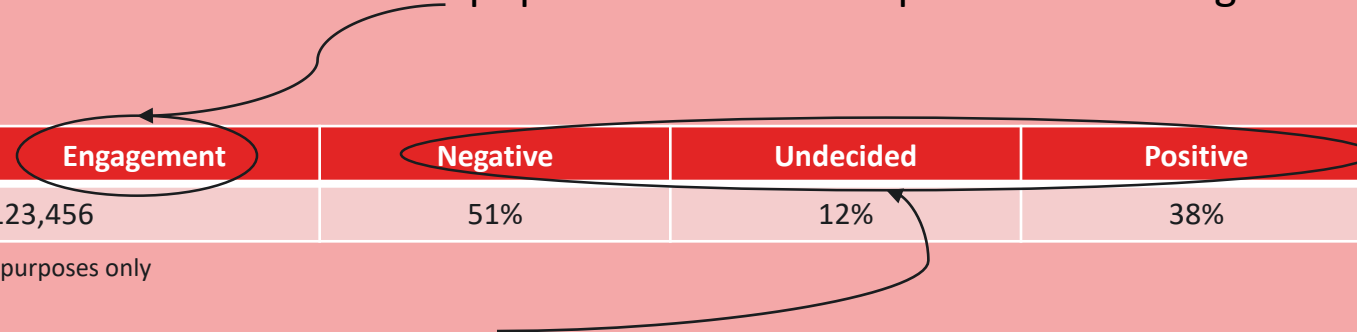


ADVANCED SYMBOLICS INC.

Cannabis Consumption CAD vs US

How to Read the Report

Engagement: a measure of how many people were actually engaged with the topic and discussing the topic online. While posing a traditional research question prompts a survey taker to respond, the AI based engagement rate indicates how interested the population is in the topic without being asked.



Region	Engagement	Negative	Undecided	Positive
Canada	123,456	51%	12%	38%

*Example data, for illustration purposes only

Stance detection: is a separate AI that determines if a person opposes or supports the given topic. Stance detection measures the semantic polarity in the context of the topic. The stance: “Positive,” “Undecided” and “Negative” can have a variety of meanings, depending on the nuances of topic being researched.

Key Observations

Reporting



<p>Canadians are 39% net positive towards cannabis advertisement in Canada.</p> <p>Canadians are primarily concerned about promoting the use of cannabis in ads. Canadians want to see ads geared towards the social responsibility and real-estate effects of Cannabis.</p>	<p>There is an opportunity to drive down the Canadian stigma towards cannabis advertising while creating relevant ads by using natural consumer themes around cannabis advertisement.</p> <p>Consider implementing advertisements and messages that show the real-life effects Cannabis is having on society and business, specifically the real-estate market.</p>
<p>Canadians are less engaged with Cannabis advertisement in 2019 (152,000) than they were in 2018 (321,500) during Federal legalisation.</p>	<p>Considering federal legalisation occurred last year, and engagement has decreased, cannabis advertising is not yet necessarily top of mind with Canadian consumers.</p> <p>Consider implementing a regular media strategy around cannabis advertisement in order to maintain cannabis top of mind with consumers.</p>
<p>Geographically, consumers in the province of Alberta (0.99%) are most engaged towards Cannabis advertisement followed by British Columbia (0.98%) and Ontario (0.90%).</p>	<p>Consider targeting ads for the under 35 age group in the geographies where the consumption of marijuana is most frequented.</p>
<p>Canadians frequent online news articles (CBC, CTV News), the GrowthOp and leafly the most</p>	<p>News websites could be a potential channel for PR activities and brand promotions.</p>

Key Observations

Americans are 7% net positive towards cannabis advertisement in USA.

Americans are concerned about broadcasters rejecting Cannabis ads. Americans want to see ads geared towards the infused and health/wellness products along with the agricultural commercial effects of growing cannabis.

Americans are more engaged with Cannabis advertisement in 2019 (over 2M) than they were in 2018 (over 970K).

Reporting

There is an opportunity to increase American positive stance towards cannabis advertising while creating relevant ads by using natural consumer themes around cannabis advertisement.

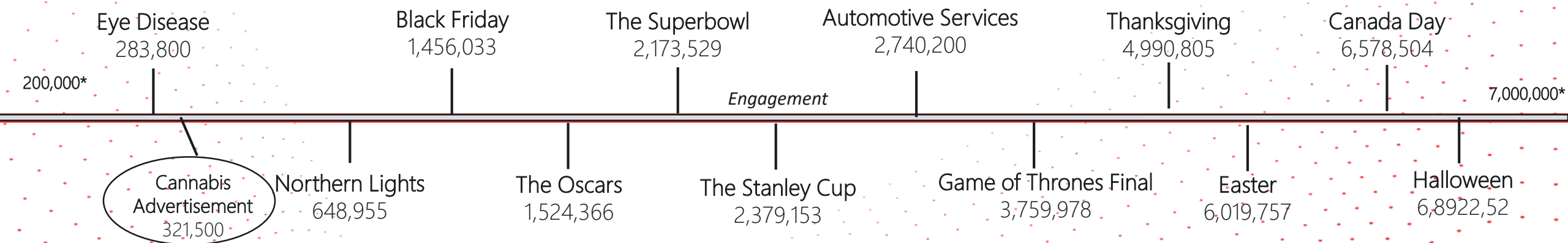
Consider implementing advertisements and messages that show the commercial effects of growing cannabis and its health and wellness advantages to consumers.

Consider utilizing lessons learned of the Canadian cannabis market in order to continue this upward trend in the United States.

1

Context of Cannabis Industry in Canada

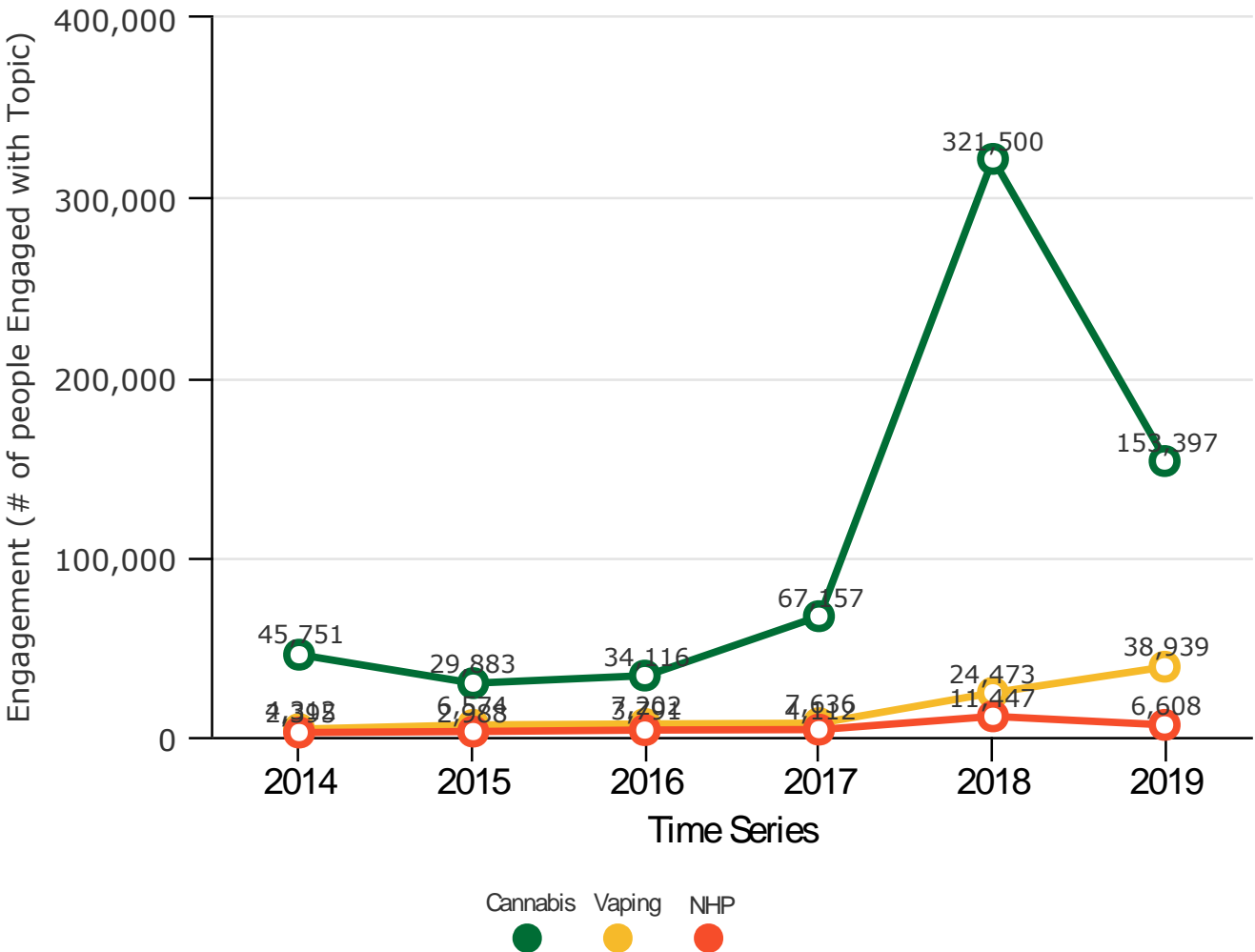
In 2018, 321,500 Canadians are Engaged with Cannabis Ads



Canadians More Engaged with Cannabis Ads than Vaping or NHP in Canada

Since 2014, Cannabis is leading the charge in terms of **advertisement engagement** relative to the vaping and natural health product industries.

Cannabis advertisement engagement in 2019 is **4X that of vaping** advertisement and **25X that of Natural Health Products** advertisement.



2

Canadian Attitudes in Cannabis Advertising

Canadians are 39% Net Positive Towards Cannabis Ads

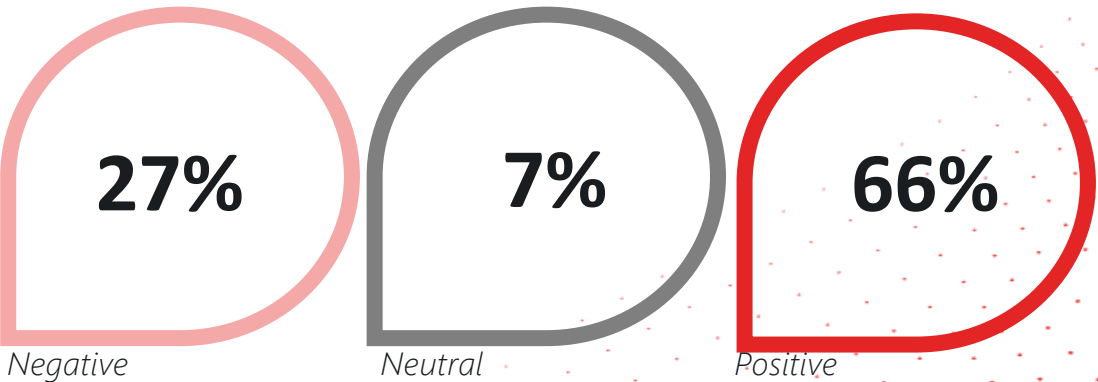
ASI

In 2018, **321,500 Canadians** are discussing Cannabis advertisements. General stance towards this is net positive **39%**.

Canadians aged under 35 years of age are most engaged in Cannabis advertisements with **39% and 40%** net positivity.

A major theme found was how to regulate advertisements that **promote the use of Cannabis**.

Canadians also believe **Cannabis company** advertisements are a **form of propaganda**.



Demographics	Engagement	- Negative	= Neutral	+ Positive
All	321,500	27 ± 1	7 ± 1	66 ± 1
Male	177,400	28 ± 1	7 ± 1	65 ± 1
Female	119,300	26 ± 1	5 ± 1	69 ± 1
Under 25	85,200	28 ± 1	6 ± 1	67 ± 1
25-34	46,500	26 ± 1	7 ± 1	67 ± 1
35-44	38,500	26 ± 1	8 ± 1	66 ± 1
45-54	38,900	26 ± 1	7 ± 1	66 ± 1
55-64	43,300	28 ± 1	6 ± 1	66 ± 1
Over 65	44,200	29 ± 1	7 ± 1	64 ± 1
White	192,500	25 ± 1	6 ± 1	69 ± 1
Black	37,300	31 ± 1	3 ± 1	66 ± 1
Asian	17,600	39 ± 1	7 ± 1	54 ± 1
Other	49,300	39 ± 1	15 ± 1	46 ± 1

"We cannot have ads that promote the use of marijuana"

"Canadian Cannabis companies should not promote the use of Cannabis #propaganda"

"Cannabis ads will be filled with lies and misinformation"

Promotion of Cannabis Use / Form of Propaganda

Canadians want Cannabis ads geared towards societal and business issues



*"I don't mind weed ads.
I want ads to show
there is a form of social
responsibility that
comes with smoking"*

*"Cannabis ads need to
tackle the health and
addictive effects so my
children understand what
they are inhaling"*

Social Responsibility

*"Why is no one talking about the
real-estate effects of Cannabis
legalisation?"*

*"Legalization of marijuana will
help Eastern and Western
Canadian real-estate. Good
commercial benefits"*

Cannabis and Real Estate

*"Why are we allowed to promote
alcohol but not medical cannabis
@Ralph Goodale"*

*"Medical Cannabis
has helped me, we
should be promoting
this medicine"*

**Less Regulation towards
Medical Cannabis**

3

Geographical Targeting

Alberta, British Columbia & Ontario most engaged provinces towards Cannabis ads

Majority of engagement from Canadians is from the largest provinces in Canada with the exception of Quebec.

When controlling the data for population size, Alberta is the most actively engaged province on the topic of cannabis advertisements.

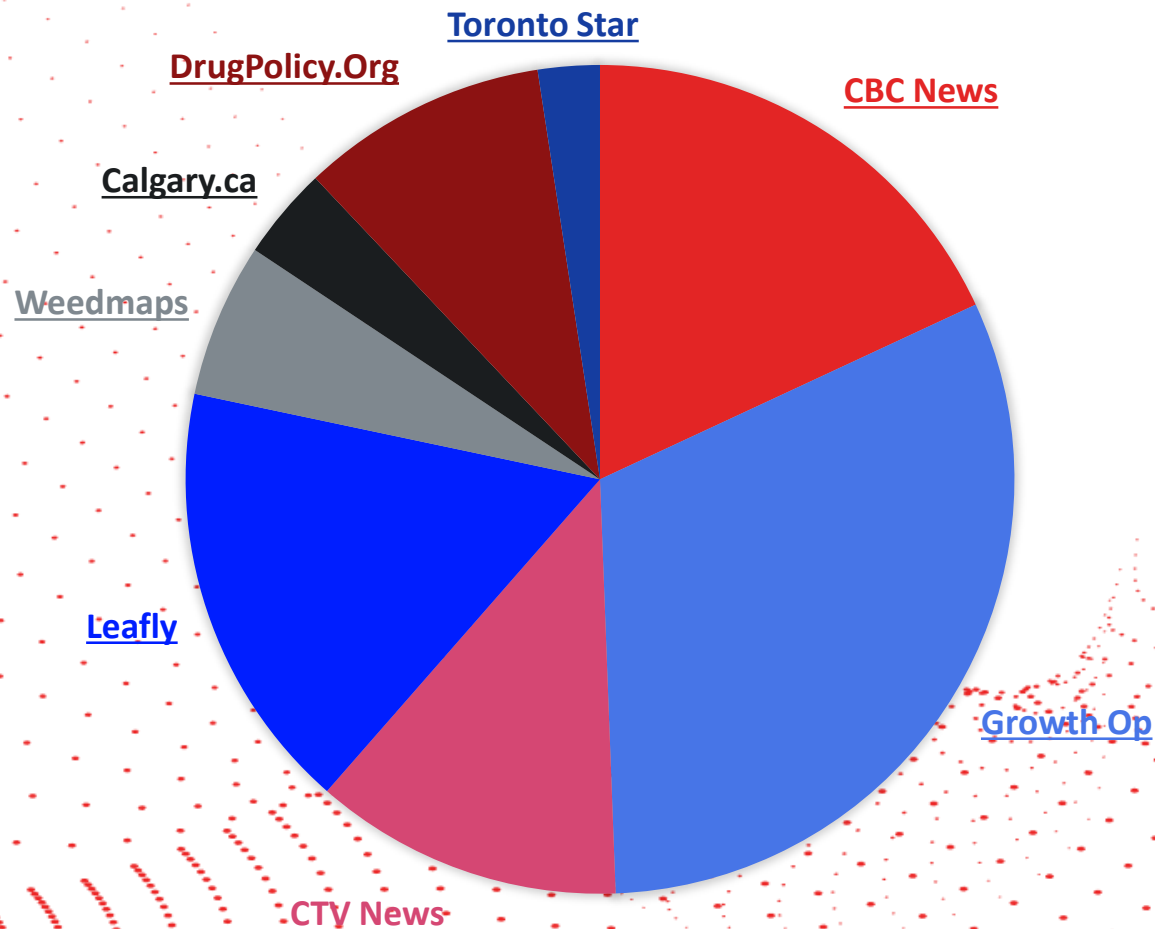


4

Source Discovery

Growth Op, CBC,CTV, Leafly most frequented sources

CANNABIS SOURCES CANADIANS ARE FREQUENTING



The data shows that the top sites for Cannabis information are:

<https://www.thegrowthop.com/cannabis-news/super-bowl-medical-marijuana-cbs-rejected>

<http://www.cbc.ca/news/canada/montreal/cannabis-legal-legalize-grow-jurisdiction-constitution-1.4527196>

<https://www.ctvnews.ca/business/montreal-cannabis-trade-show-exhibitors-hopeful-for-industry-s-future-1.4152344>

<https://www.leafly.com/news/lifestyle/watch-this-rejected-cannabis-super-bowl-commercial>

<https://news.weedmaps.com/2019/01/cbs-rejects-cannabis-advocacy-super-bowl-ad/?sf97956545=1>

<https://www.drugpolicy.org>

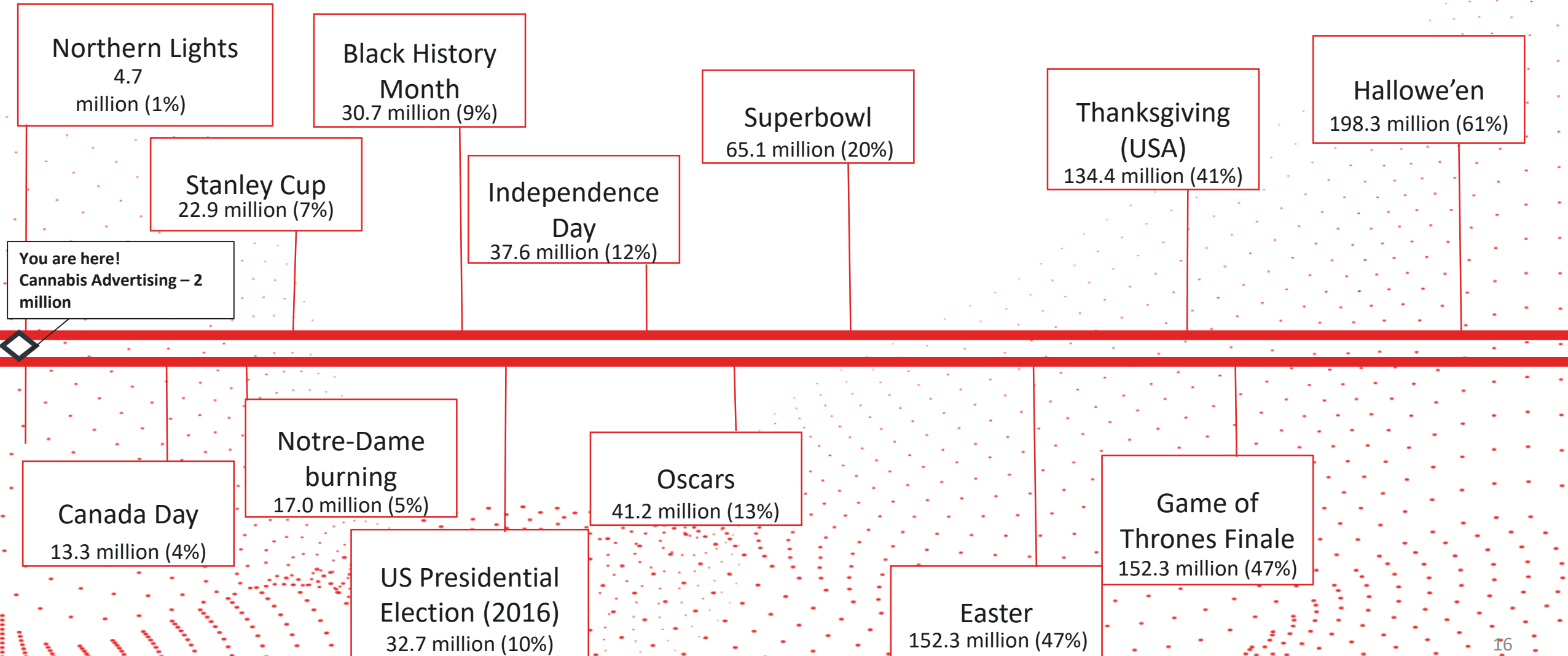
<https://www.calgary.ca/CSPS/ABS/Pages/Bylaws-by-topic/public-consumption-of-cannabis.aspx>

<https://www.thestar.com/news/cannabis/2018/07/20/we-need-more-help-with-cannabis-rollout-provinces-tell-ottawa.html>

5

Context of Cannabis Industry in United States

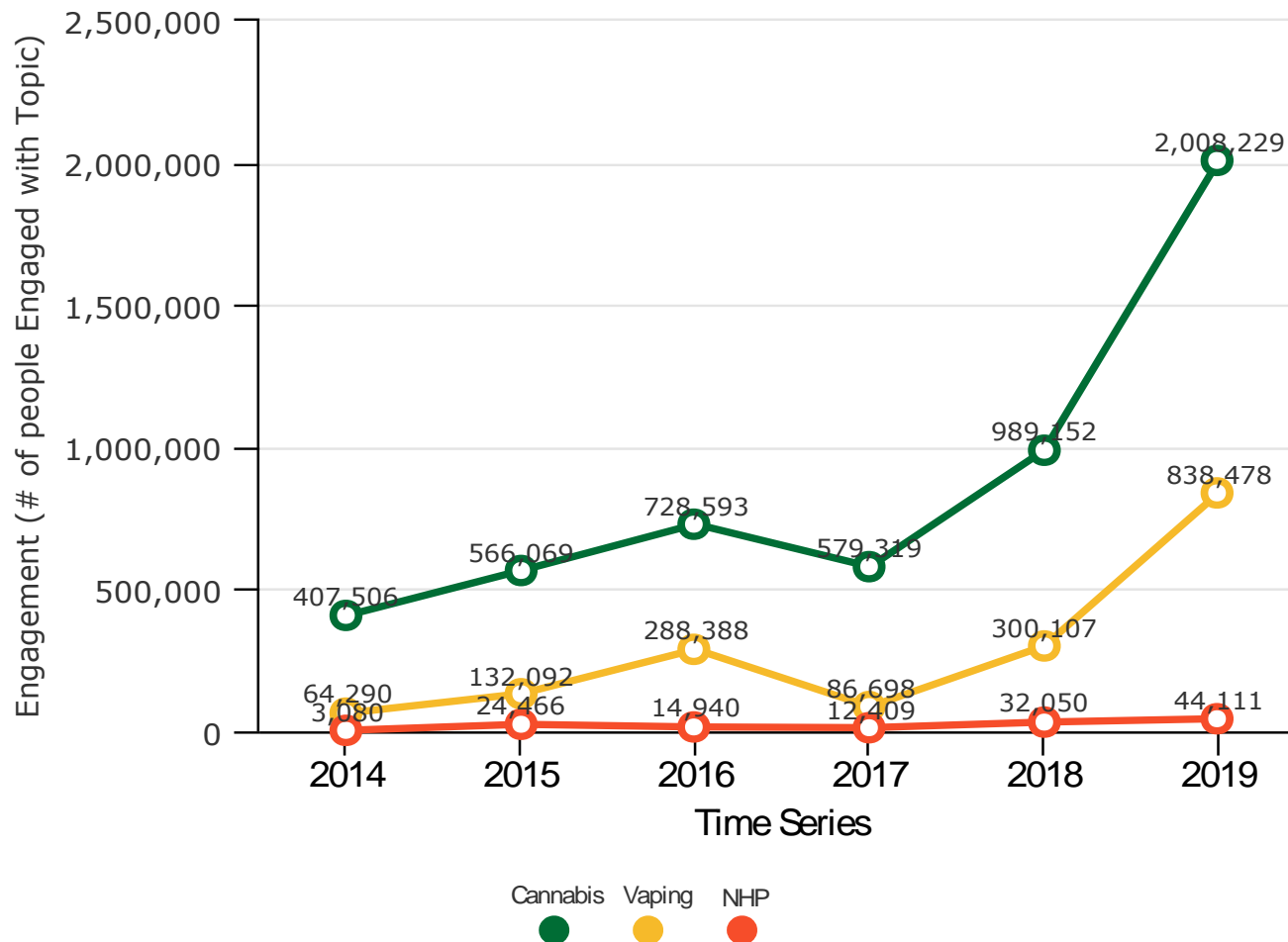
2M Americans Engaged with Cannabis Ads



U.S Cannabis Advertisement Engagement Increases in 2019



Americans More Engaged with Cannabis Ads than Vaping or NHP in USA



Since 2014, Cannabis is leading the charge in terms of **advertisement engagement** relative to the vaping and natural health product industries.

Cannabis advertisement engagement more than **doubled** in the past year. Interestingly, **vaping advertisement** engagement has nearly **tripled**.

6

American Attitudes in Cannabis Advertising

Americans are 7% Net Positive Towards Cannabis Ads

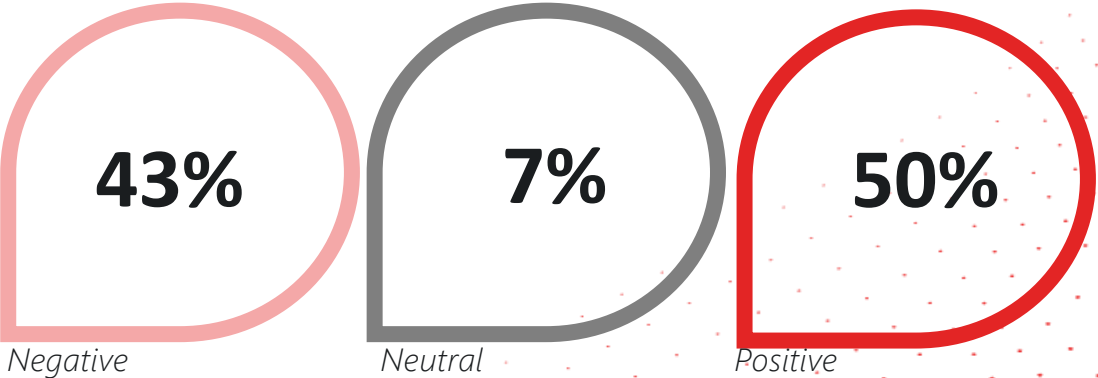
ASI

2M Americans are discussing Cannabis advertisements. General stance towards this is net positive 7%.

Americans over 55 and 65 years of age are most positive in Cannabis advertisements with 12% and 19% net positivity.

A major theme found was frustration towards CBS rejecting Superbowl Cannabis ads.

Americans also believe we should promote the Agricultural Commercial opportunity of Cannabis.



Demographics	Engagement	- Negative	= Neutral	+ Positive
Male	945,300	43 ± 1	7 ± 1	50 ± 1
Female	631,800	43 ± 1	8 ± 1	49 ± 1
Under 25	366,700	48 ± 1	8 ± 1	43 ± 1
25-34	352,300	45 ± 1	6 ± 1	49 ± 1
35-44	226,400	42 ± 1	8 ± 1	50 ± 1
45-54	182,600	42 ± 1	7 ± 1	51 ± 1
55-64	214,600	41 ± 1	7 ± 1	53 ± 1
Over 65	224,500	36 ± 1	8 ± 1	55 ± 1
White	1,036,900	45 ± 1	6 ± 1	48 ± 1
Black	235,200	49 ± 1	5 ± 1	46 ± 1
Asian	150,000	30 ± 1	14 ± 1	56 ± 1
Other	155,000	32 ± 1	12 ± 1	56 ± 1

"Commercial cannabis is a new source of income. Let's promote the green dream"

"California is opening a Commercial Hemp Cultivation. This is so cool"

"Does anyone understand the commercial rules for cannabis ordinance?"

Agriculture Commercial Cannabis Ads

Americans want Cannabis ads geared to cannabis infused and health/wellness products



"Can't wait when big corporations will come out with Cannabis Infused products. Times are changing"

"Looking forward to seeing edible cannabis products being advertised during the Superbowl next year"

Cannabis Infused Products

"Certain cannabis strains should promote female libido!"

"My CBD gummies are helping me sleep much better"

Cannabis Wellness Products

Methodology

Methodology - Demographics

- A random sample of people online is collected using Conditional Independence Coupling (CIC). CIC is an algorithm that crawls online networks and creates a sample of people that is representative of the overall population. The sample produced is mathematically proven to converge to the stationary distribution of the population.
- In all statistical respects, the sample generated by CIC is identical to Random Digit Dialing used in traditional polling, with one important exception — the sample produced is many tens of thousands to hundreds of thousands of people.
- CIC can be adjusted to sample from a geographic location, like a country, state or province, and municipality. This is done by restricting the network CIC is crawling to people that reside in the desired geography. Two points of information are used by CIC to determine a person's geography: geo location information and self-reported location.
- If geo location information is present for the online person, this is used to determine their geography. Geo location information is recorded for every post a person makes. The multiple geo location points are clustered using a k-means algorithm. The cluster with the most points is taken to be the person's geography.
- If geo location information is missing, the self-reported location is used to determine the person's geography. The location information is often a city and state or province and sometimes it can be an actual address. A reverse address search provided by Microsoft's Bing Maps is used to resolve the self-reported location to a geography.
- In some cases CIC is unable to assign a geography to an individual due to lack of geo location or a self-reported location. These individuals are considered to be NOT in the geography.
- The CIC sample produced is representative of the population without needing to weight the sample based on demographics.

Methodology - Demographics

- The demographics for each individual are assigned by a collection of Artificial Intelligences (AIs). Each AI is trained to assign specific demographic information (gender, age, or race) using a specific attribute of the online profile.
- **Gender:** Gender is determined by examining the individual's first name and avatar image. Gender is determined using a combination of birth records and actuarial tables. Birth records for the past 150 years in both the US and Canada record how many male and female babies were given a specific first name. Matching the individual's first name with the birth records provides a probability of the individual's gender
- The individual's avatar is examined by image detection software Face++. This neural network AI has been trained on thousands of faces with known genders. It returns a gender probability based on the features of the image.
- **Age:** Age is determined by examining the individual's first name and avatar image. Age is determined using a combination of birth records and actuarial tables. Birth records for the past 150 years in both the US and Canada record how many babies each year were given a specific first name. Matching the individual's first name with the birth records provides a probability distribution for birth year. Actuarial tables from the US and Canada are used to adjust the probability distribution based on the likelihood that the individual would still be alive for a given birth year. The final distribution assigns a probability that the individual is of a certain age.
- The individual's avatar is examined by image detection software Face++. This neural network AI has been trained on thousands of faces with known ages. It returns an age distribution based on the features of the image.

Methodology - Demographics

- **Race:** Race is determined by examining the individual's last name and avatar image. The last name is compared against etymological records maintained by behindthename.com. Name etymology provides a probability of the country of origin for the last name. Using the country of origin and ethnicity tables maintained by the US Census and Stats Canada, a probability of race is assigned to the individual.
- The individual's avatar is examined by image detection software Face++. This neural network AI has been trained on thousands of faces with known races. It returns a race distribution based on the features of the image.
- The variety demographic distributions are combined using a Bayesian belief network. The census demographic distribution based on the individual's location is used as the prior for the Bayesian belief network.
- This statistical approach is superior to using self-reported data where a respondent may lie about their demographics over the phone.

Notes

- The AI runs several algorithms to determine a person's demographic, including analyzing their avatar, location, text, and name. In all cases the AI assigns a probability that the person fits into one of the demographic bins. Some people the AI is unable to categorize with high accuracy. In these cases the uncategorized person is left out of the Demographic breakdown. This can lead to cases where the sum of engagement by demographic is less than the total engagement.
- When total engagement is low, it is possible the percentage breakdown of opinion between demographic categories and overall may differ. This can happen when the fraction of low confidence demographic categorization is a few percent of the total engagement.