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INTRODUCTION
ABOUT NEW FRONTIER DATA

• New Frontier Data is an independent, technology-driven analytics company specializing in the cannabis industry. It offers vetted data, actionable business intelligence and risk management solutions for investors, operators, researchers and policymakers.

• New Frontier Data’s reports and data have been cited in over 82 countries around the world to inform industry leaders. Founded in 2014, New Frontier Data is headquartered in Washington, D.C. with additional offices in Denver, CO, London, UK, Bogota, Colombia, and Sydney, Australia.

• New Frontier Data does not take a position on the merits of cannabis legalization. Rather, its mission and mandate are to inform cannabis-related policy and business decisions through rigorous, issue-neutral and comprehensive analysis of the legal cannabis industry worldwide.
THE GLOBAL CANNABIS MARKET
Canada and the U.S. have developed the most advanced regulated markets, serving as a template for the world.

**Canada**
- Population: 36.3 million
- Cannabis Consumers: 4.2 million
- 2018 Legal Market: USD $1.3 billion

**U.S.**
- Population: 325.7 million
- Cannabis Consumers: 22.4 million
- 2018 Legal Market: USD $9.8 billion

**TOTAL CURRENT LEGAL MARKET 2018-2025**
- Canada: $36 Billion
- US: $136 Billion
- Total: $173 Billion
U.S. UPDATE
A GROWING MAJORITY NOW SUPPORT FULL LEGALIZATION

With a strong and growing majority now supporting full adult use, there momentum for expanding state legalization and for federal prohibition reform will only grow in the years to come.

U.S. Support for Cannabis Legalization
2010 - 2017

Source: Pew Research Center
Normalization of cannabis will continue as:
- More states legalize
- Medical applications of cannabis are better understood
- Product forms are tailored to reflect unique consumer preferences.

Past-Month Cannabis Use

- 22.4 million
  - Past Month Users (2016)
  - +7.45 million
    - Change Since 2009

Lifetime Cannabis Use

- 114.8 million
  - Past Year Users (2016)
  - +14.6 million
    - Change 2009

Source: Substance Abuse & Mental Health Administration
UNDERSTANDING THE IMPACT OF CANNABIS LEGALIZATION

Based on research and analysis contained in our reports, below are some of the most salient economic and social topics in jurisdictions that have reformed cannabis their cannabis laws:

• **Jobs Creation**: Cannabis industry’s potential to create multi-sectoral jobs
• **Tax Revenue**: Legal cannabis as a source for tax revenue for national and local governments
• **Healthcare Savings**: Impact of cannabis on patient health and healthcare costs
• **Energy Consumption**: Managing electricity use and driving greater efficiency and sustainability in production and processing
• **Potential for Hemp and CBD**: Industrial and medical applications for domestic and international markets
• **Social Impact**: Crime and law enforcement implications, and impact on public health

<table>
<thead>
<tr>
<th>258,000</th>
<th>$26.3 Billion</th>
<th>$1.9 Billion</th>
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<tbody>
<tr>
<td>Number of estimated plant-touching jobs in the U.S. Cannabis Industry</td>
<td>Estimated U.S. annual cannabis sales by 2025</td>
<td>Cost of Top 3 U.S. Pain Medications (OxyContin, Hydrocodone, Fentanyl)</td>
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</table>
• As global cannabis markets expand, US markets are in flux
  – New adult use markets are slowly rolling out
  – Regulatory structures still being deployed. Expect a bumpy ride
  – More states exploring legalization as a means to address budget issues
    • $1.5b combined revenue in OR/WA/CO (01/14 - 12/17)
• Recent New Frontier Data report outlined job creation and increased revenues associated with full legalization
  – 1.1m jobs, over $100b in federal tax revenue
• Federal illegality versus legal states dynamic still exists
  – Creating a significant barrier to entry for some normalized businesses such as banks, insurance, and HR firms
• State policy makers struggling with balance between public safety, tax revenues versus growth of a new industry and illicit conversions
• City and Counties are playing a key role in the growth (or barriers) of cannabis opportunities
  – Prohibition through legalization
  – Driving consumers and suppliers back to illicit market
SALES IN CURRENT MARKETS ARE GROWING, BUT ARE DWARFED BY THE ILLICIT MARKET

With the most states only allowing restricted medical use, and other regulatory factors, including high tax rates and regional cannabis business bans limiting consumer participation, there will remain a well-entrenched illicit market for the foreseeable future.

Change in Share of Market

2018
Legal: 28%
Illicit: 72%

2025
Legal: 46%
Illicit: 54%

Total U.S. Market Cannabis Demand

- Billions
- Total U.S. Market Cannabis Demand
- Legal Med
- Legal Rec
- Illicit
- Total Market (Legal+Illicit)
OVER $8 BILLION HAS BEEN INVESTED IN CANNABIS IN 2018 ALONE

2018 was already on track to shatter 2017 cannabis investment totals before Constellation Brands made the $4 billion investment into Canopy Growth Corp.

constellation's Investment in Canopy Growth was Equal to the Total Industry Investment in H1 2018

$8.3 Billion

Source: Viridian Capital Advisors
CULTIVATION AND RETAIL OPERATIONS HAVE SEEN THE HIGHEST INFLUX OF INVESTMENT

Not only have cultivation and retail seen the largest share of investment in the cannabis, the sector has also seen the highest year-over-year growth as the industry races to build scale and distribution outlets.

Top 5 Sector Capital Raises by Year

2015-2017

YoY Deal Volume Growth
454%

Source: Viridian Capital Advisors
LOCAL REGULATORS HAVE SIGNIFICANT IMPACT ON CANNABIS OPERATORS

- 54% of applications submitted to City of Portland, Oregon have not been licensed
- The 372 open applications represents approximately $186 million in investment, and 3,700 jobs making approximately $115 million in wages
CANNABIS ISSUES, TRENDS AND OBSERVATIONS
CANNABIS INDUSTRY ISSUES AND TRENDS

- Banking – Lack of access to capital markets are forcing businesses to go to Canada for funding or are borrowing from friends and families.
- Taxes – States need to balance tax policy and revenue generation with converting operators and consumers away from the illicit market. Federal 280e tax policies are taxing cannabis businesses at a higher rate than “normal businesses” impacting profitability and growth.
- Economic development options – While adult-use cannabis is in vogue now, cannabis for industrial and lifestyle applications growing quickly.
- Consumer trends – Cannabis is turning into a lifestyle product. Baby boomers are one of the fastest growing demographics.
- Retail trends – over 50% of market is now oils, edibles, lotions (non Flower).
- Industrial Hemp – CBD sales alone with top $1.2B by 2022.
CANNABIS IS A JOB CREATOR

- 258k “Plant touching” jobs in the legal cannabis industry in 2017
- Increasing to in excess of 642k by 2025 within those states where cannabis is currently legal.
- Consequently, jobs created would well exceed that total as more states legalize and national policy shifts from prohibition toward regulated access.

Source: New Frontier Data Estimate
A total of $1.5B was been collected in Colorado, Washington and Oregon on cannabis sales from 2014 through 2017.
**TAX AND PRICE INFLUENCE CONSUMER BEHAVIOR**

- Consumers are price sensitive (elasticity > -2.0)
- Tax policy plays a large role in illicit to legal consumer conversions
- When Oregon flower came online for rec users, Washington saw a steep drop off of demand
- Current tax rates:
  - WA: 37% state + 9% local
  - OR: 17% state = 3% local

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**Recreational Marijuana Border Effect**
Change in Tax Collections After Oregon Began Selling

<table>
<thead>
<tr>
<th></th>
<th>WA</th>
<th>Clark</th>
<th>Cowlitz</th>
<th>Klickitat</th>
<th>Pacific</th>
<th>Skamania</th>
<th>Seattle MSA</th>
<th>Rest of State</th>
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<tbody>
<tr>
<td>Total</td>
<td>10%</td>
<td>-39%</td>
<td>-47%</td>
<td>-43%</td>
<td>-36%</td>
<td>25%</td>
<td>12%</td>
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Percent change from July 2015 to September 2015 average to October 2015 to January 2016 average

Source: www.502data.com, Oregon Office of Economic Analysis
HEALTHCARE IMPACT: LEGAL CANNABIS USE FOR PAIN; DISPLACING PRESCRIPTION DRUG SPENDING

• As U.S. spending on pain management continues to rise, patients are increasingly turning to cannabis as an alternative therapy. The use of cannabis to treat pain was affirmed by the U.S. National Academies of Sciences which concluded in 2017 that there is “substantial evidence that cannabis is an effective treatment for chronic pain in adults”.

• In medical cannabis states where pain is a permitted qualifying condition, pain patients make up the vast majority of program participants. Furthermore, government spending on pain related medications was 11% lower in medical cannabis states than in non-legal markets.

Source: State medical cannabis programs, New Frontier Data modeling, Bradford & Bradford.
CRIME: IMPACT ON CANNABIS-RELATED ARRESTS

• As jurisdictions transition from unregulated to legal and regulated cannabis markets, prosecutions for minor cannabis offenses fall dramatically as law-enforcement resources are diverted away from cannabis-related crimes.
• While prohibition enforcement costs decline, some resources must be redirected to regulatory and compliance enforcement for the legal industry.

Cannabis Possession Arrests in Washington DC Per 100,000 Residents
(2010 - 2016)

-96%
Decline in Cannabis Possession Arrests

Source: Washington DC Metropolitan Police Department
Cannabis interdictions at the U.S./Mexico border have fallen steeply as American consumers have shown a strong preference for legal products, including the quality, selection and convenience of the legal, regulated markets over the illicit market’s lower quality products.

With the U.S./Mexico border being the primary transit route for illicit cannabis, the decline in U.S. demand for imported cannabis will have continue to have displacement effects in Mexico as more states activate legal markets and as more consumers transition from the illicit to the legal market.

Source: U.S. Customs & Border Protection
The U.S. cannabis industry consumed an estimated 4.5 million megawatt hours of electricity (the same amount of electricity generated by Hoover Dam in a single year) from both legal and illicit cannabis cultivation in 2018.

An estimated 1.3 million of those megawatts were from legal cultivation activity.

Opportunities to drive efficiencies and sustainable practices into the cultivation sector are emerging.

**Total Estimated Energy Usage for Legal Cultivation in the U.S. (Megawatts)**

Source: New Frontier Data Estimate
KEY TAKEAWAYS

• Still a tremendous opportunity in cannabis, the market is consolidating and evolving. Policy makers must keep pace with the industry.

• Local, state and federal regulators play a major role in shaping the market.

• This is a global industry that is impacted by local issues. Think global, act local

• Data is integral in the success of cannabis businesses.
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OUR DATA COLLECTION APPROACH

Data collected across all five dimensions is critical to understand and evaluate this new sector.
In 2016- Quoted in 45 countries, media reach of 3.3 billion
In 2017- Over 69 countries, media reach of 5.3 billion
In 2018- Over 82 countries, media reach of over 6 billion.

OUR REACH

SHARE OF VOICE

New Frontier Data
84.7%

15.3%
Other

Forbes
The New York Times
CNBC
USA Today
FOX Business
The Wall Street Journal
The Washington Post
The Economist
CNN Money
TechCrunch
Inc.
FORTUNE
The Boston Globe
OUR CLIENTS

Knalysis Technologies
BCG
Gartner
Cohnreznick
Adakai Holdings
Medicine Man
Lift Get Happy
Bloomberg
The Green Hub
Harborside Health Center
The ArcView Group
Green Rush
Caliva
Vivid Gro
Native Roots Colorado
Syqe Medical
Apothecarium San Francisco
Potbotics
iAnthus Capital Management
Fidelity Investments
Omaha Farms