



EXECUTIVE SUMMARY



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LETTERS FROM THE PUBLISHERS

It is my pleasure to present to you this Executive Summary. This will give you a solid glimpse of what we elaborate on in much more detail in the full report.

Many in the business and financial sector have taken a “wait and see” approach to the legal cannabis industry. The data in this report confirms what

pioneer investors and entrepreneurs suspected: legalization of cannabis is one of greatest business opportunities of our time and it’s still early enough to see huge growth.

As the leading publisher in researching and understanding the legal sale and distribution of cannabis, ArcView Market Research brings unparalleled expertise and insight to the task. To broaden the data and analytics capacity of the report we have partnered with New Frontier on this edition. This is a historic collaboration to create the most comprehensive report on this industry to date.

As the leading national network of high net worth investors looking to capitalize on the legalization of cannabis, The ArcView Group believes that investment in quality market data and analysis will pay dividends, not only for the investors and entrepreneurs in our network but also for the political movement and industry at large.

Troy Dayton
CEO, The ArcView Group

"Information is the oil of the 21st century, and analytics is the combustion engine."

—Peter Sondergaard, Gartner Research

It is not often one has the opportunity to have a front row seat, let alone a driving seat, in understanding an industry as unique as the legal marijuana market. It is both an exhilarating and humbling experience to see first-hand the power of data to reveal the most intricate patterns and fascinating phenomena of this revolutionary industry.

We could not be more excited to have ArcView Market Research be our partner on this journey and it is a privilege and a pleasure to present you with the unparalleled quantitative and qualitative data and analysis necessary to successfully, and profitably, take on this new frontier.

Giadha De Carcer
Founder & CEO, New Frontier

You can hire a consultant to tell you what you're doing wrong every quarter...



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ABOUT THE REPORT

ArcView Market Research has produced three editions of The State of Legal Marijuana Markets. This 4th edition is the result of a historic collaboration between ArcView Market Research and New Frontier. Building off ArcView Market Research's deep experience and nuanced understanding of these markets, this edition leverages New Frontier's advanced modeling, analytical capabilities and breadth of industry data to shed new light on the evolution of this fast-growing industry.

The data included in this report is sourced from a wide range of sources including government agencies, businesses operating in the industry, drug law reform advocates, and academic and medical institutions.

Leveraging the vast array of data collected, industry analysts and econometricians used a variety of analytical tools, including a proprietary Four Dimensional Modeling technique, to create groundbreaking analysis of the market, including:

- Growth projections for sales in legal states
- Demand elasticity for medical and adult use products
- Impact of taxation policy on product sales
- Analysis on the impact of activating adult use sales on the state's medical market
- Interplay of adult use demand between neighboring adult use states
- Performance of publicly traded cannabis companies relative to the overall stock market
- Evolution of demand for different cannabis product classes including edibles and infused products

NOTE: CHANGES IN PROJECTION MODELS FROM PREVIOUS REPORTS

The projections in this report differ from previous editions of The State of Legal Marijuana Markets in three main ways:

● **Consumer-based modeling:**

The projections are based on individual patient and adult use consumer expenditures, not in retail sales estimates from dispensaries, and are therefore more likely to account for sales through caregivers and delivery services.

- **Historical data volume:** The volume of historical market data including patient counts and tax receipts is greater than was available during the production of previous reports, thereby enabling more accurate model creation for each individual state market.
- **Adult use market stabilization:** The adult use markets in Colorado and Washington were still very immature and undergoing significant changes at the time of the previous reports, including the end of vertical integration for adult use production in Colorado, and the revisions to taxation and licensing protocols in Washington. In the intervening year, the markets have stabilized enabling greater accuracy in predicting future growth of adult use sales.

Due to the changes in the methodology used to calculate market growth, the market estimates and projections in this 4th edition report cannot be compared to those in previous editions of the report.

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OVERVIEW

National market growth remains strong

2015 was another watershed year for the legal cannabis market. National legal sales grew to \$5.4 billion up from \$4.6 billion in 2014, fueled by explosive growth in adult use market sales, which grew from \$351 million in 2014 to \$998 million, an increase of 184%. Demand is expected to remain strong in 2016 with legal markets projected to grow to \$6.7 billion, a 24% increase over 2015.

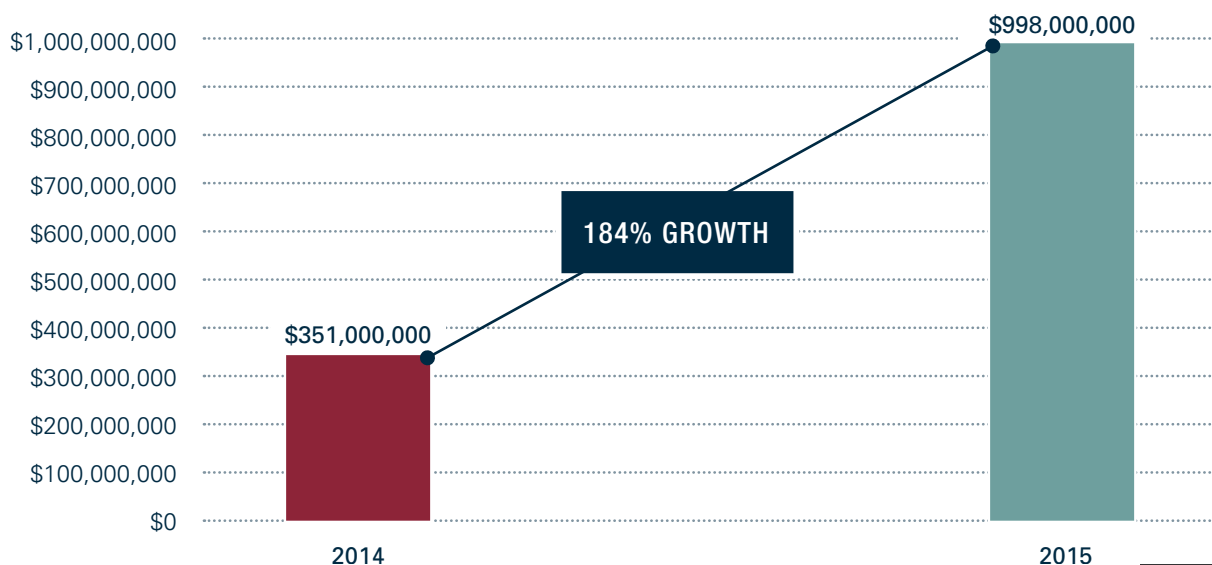
By 2020, legal market sales will grow to \$21.8 billion, with adult use sales

comprising nearly two-thirds of the total market.

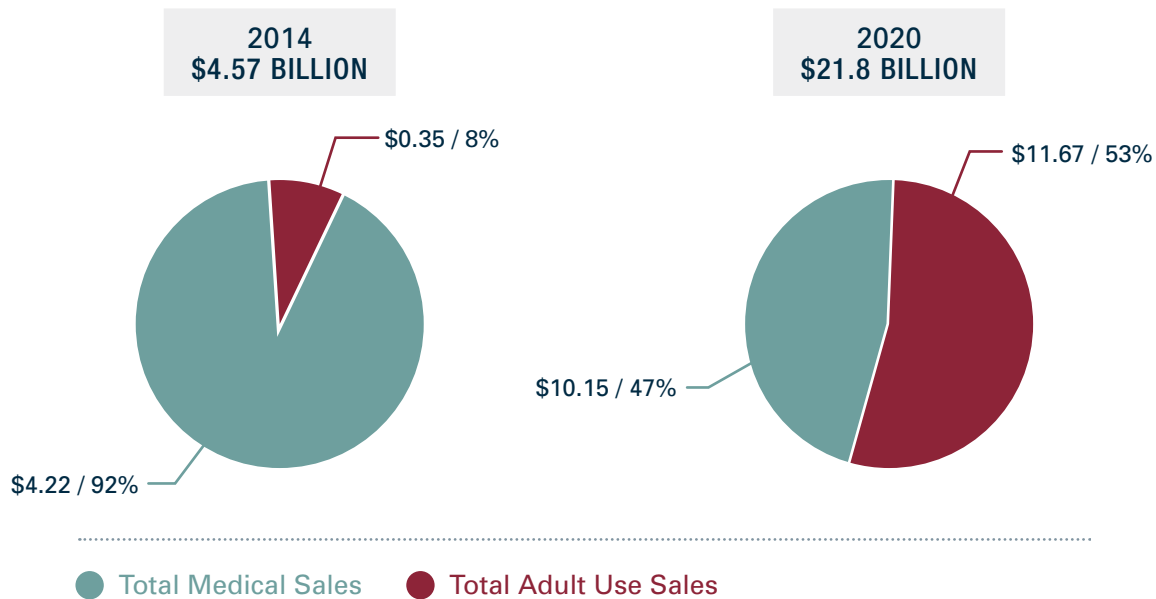
Legal sales are a growing revenue source for states

Legal sales have been a boon for state coffers in markets like Colorado, where the state was expected to generate \$135 million in cannabis taxes and licenses fees in 2015, a 77% increase over the \$76 million the state raised in 2014. In Washington, the first year of legal sales generated \$70 million in tax revenues from sales of \$257 million, a significant windfall even after product shortages and pricing instability plagued the program during its early months.

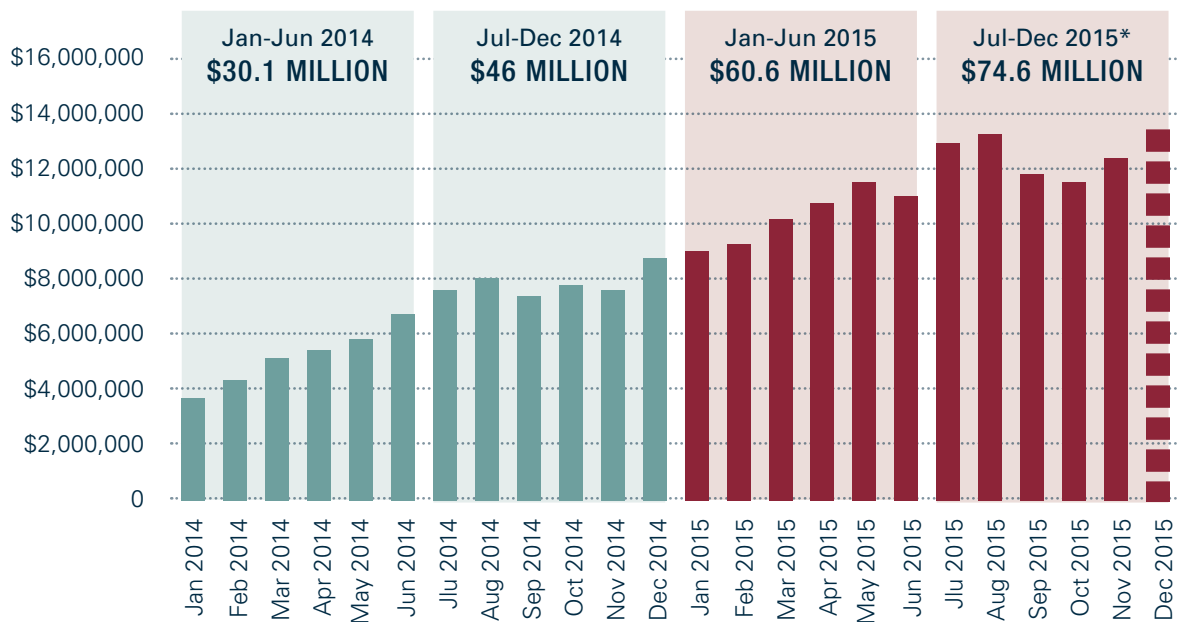
National Adult Use Market Sales



i Growth in U.S. Legal Marijuana Markets



i Growth in Colorado Marijuana Tax & License Fee Revenue 2014-2015



*December tax revenues are projected.

Source: Colorado Marijuana Enforcement Division

Majority support for legalization is fueling a national policy shift

The industry's continued expansion was matched by equally strong growth in popular support for cannabis legalization nationally. According to Gallup, 58% of Americans now support legalization of cannabis for adult use, up from 36% in 2005; a separate poll by Harris found 81% of Americans support legalization for medical use.

While support for cannabis law reform has risen across all age groups, it is highest among adults age 18-34, 74% of whom now support legalization of adult use. This broad base of support

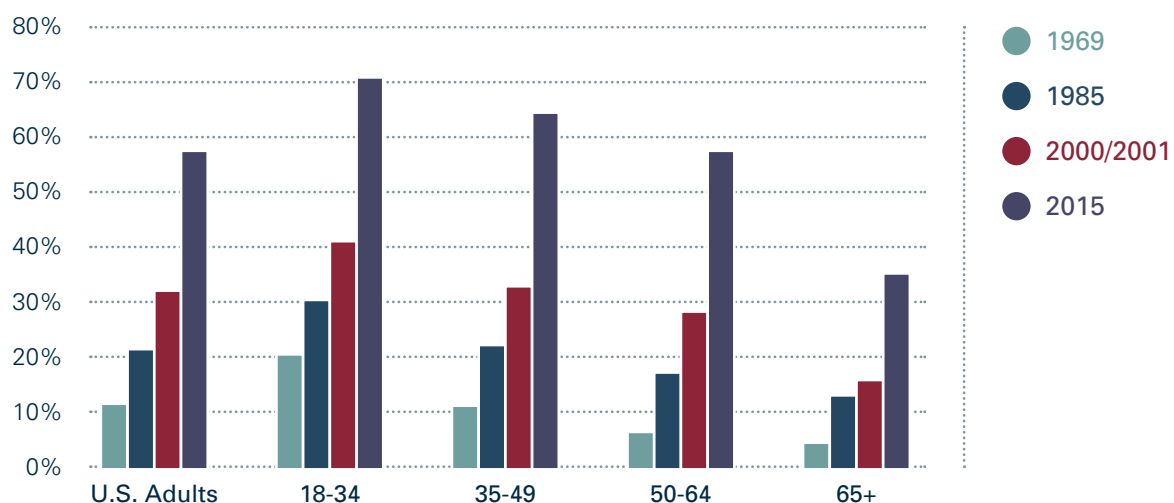
among younger voters portends a generational shift in views that will fundamentally reshape the country's approach to cannabis regulation.

One nation united under marijuana laws

Currently, 86% of Americans live in a state that allows some degree of legal cannabis use, including CBD-only, medical and full adult use. The wide exposure of the majority of Americans to evolving cannabis laws has been instrumental in shaping the public's increasing acceptance of cannabis.



Surging Support for Adult Use Legislation 1969-2015



Source: Gallup





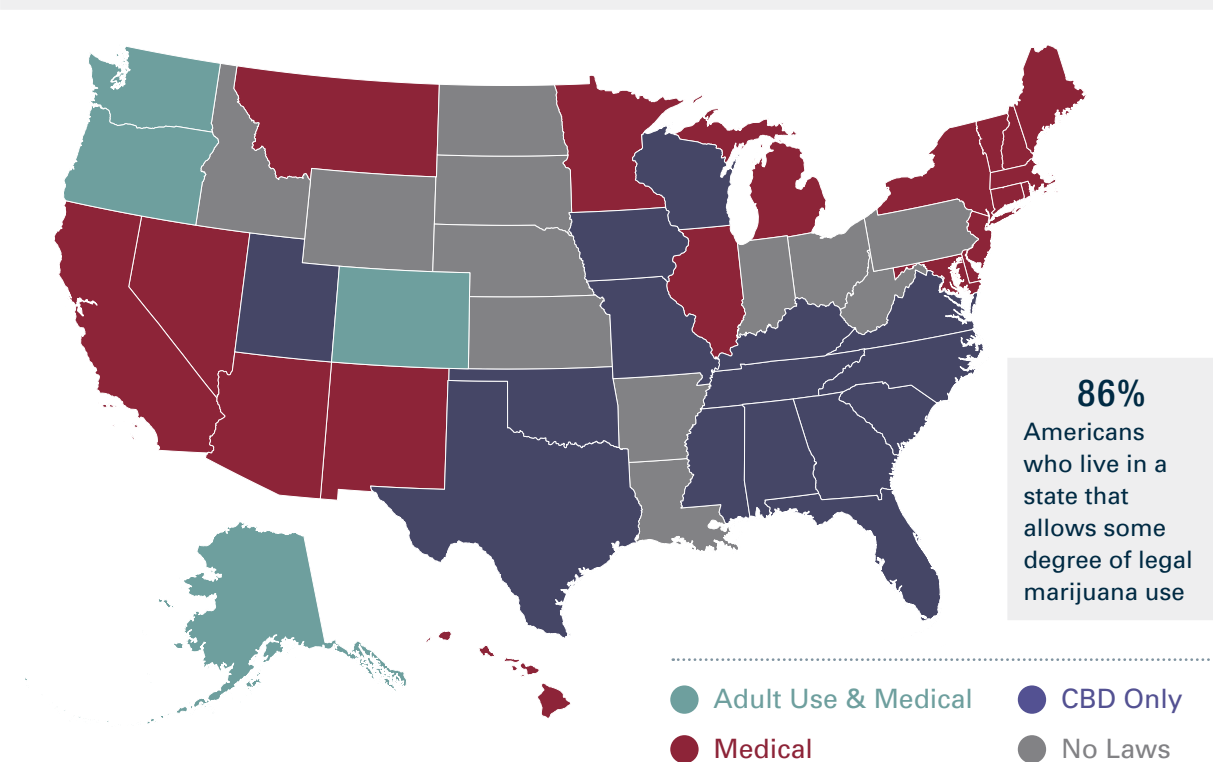
Overview of Marijuana Legalization Models

Adult Use	Permits adults to grow, possess, and consume marijuana. Adult use jurisdictions often create regulated retail environment from which consumers can purchase cannabis
Medical Use	Allows patients to consume cannabis for medicinal reasons with a doctor's recommendation. Some states allow patients to grow their own cannabis while others require that the cannabis is purchased through a licensed dispensary.
CBD Only	Permits medicinal use of cannabis products that have little or no tetrahydrocannabinol (THC) the main psychoactive compound in cannabis, relying instead on cannabidiol (CBD), the plant's other main cannabinoid. Jurisdictions which restrict access to CBD products also tightly restrict the types of medical conditions for which it can be prescribed.

Note: Except for use in this chart, we do not consider CBD Only states to be Medical Use states due to the small size of the CBD-only markets and very restrictive nature of the CBD-only laws.

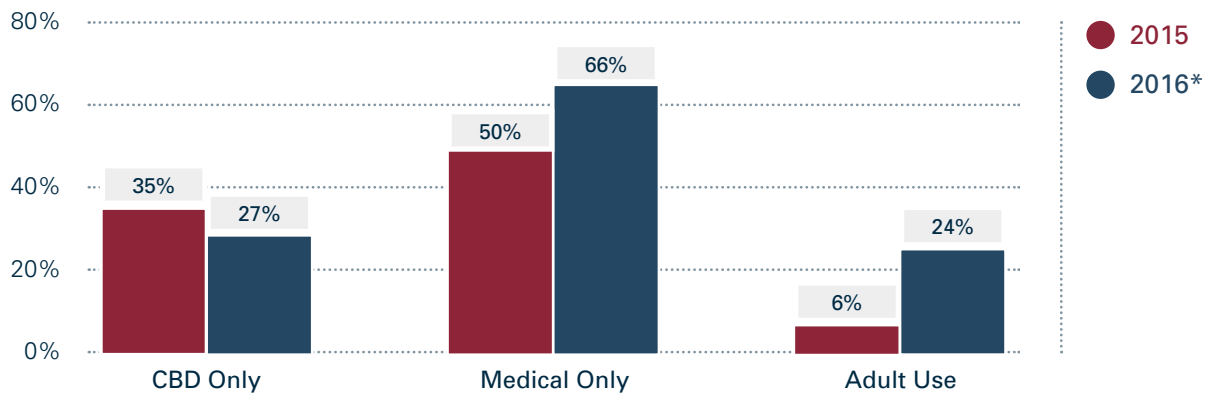


Marijuana Legalization in the United States





Percentage of Americans in States with Legal Marijuana Markets



* Projected

State market success has established a stark alternative to prohibition

By almost every metric the legalization and regulation of adult use in Colorado and Washington has been a success. Many of the negative outcomes threatened by prohibitionists have not borne out. Crime is down, falling prices have made the legal market increasingly competitive against the black market, regulatory compliance is high as businesses dare not risk losing their valuable licenses, and product quality and diversity has increased. The success of these markets has provided the first clear evidence that legalization is a viable alternative to prohibition, a fact-based counterpoint to the argument that it is

in society's best interests to sustain the prohibition of cannabis.

The shift in this debate is currently playing out in state houses across the country as well as on the national stage. The 2016 presidential election is the first time in U.S. history that major party candidates have declared support for legal adult use cannabis access. In Congress, lawmakers have slashed the DEA's budget, prohibited the Justice Department from spending resources to intervene in legal state markets that meet certain criteria, proposed rescheduling of cannabis to enable more medical research and introduced the first-ever legislation to end federal cannabis prohibition altogether.

SALES, GROWTH & FORECASTS

Data Analysis: National Market

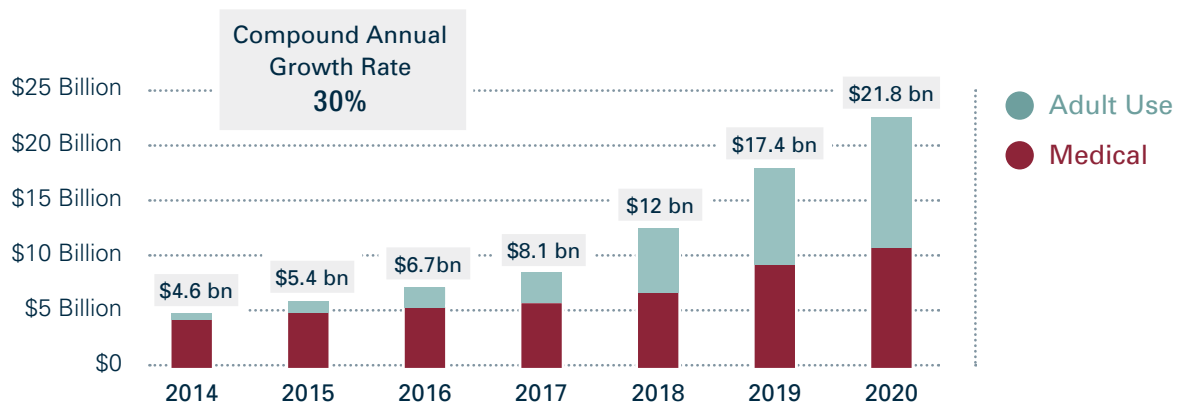
The strong growth in demand for legal cannabis over the past two years is expected to continue in the years ahead. Twenty-three states already permit medical cannabis use and four states and the District of Columbia allow full adult use. With nearly a dozen states debating changes to their cannabis laws in the coming year, 2016 will be the tipping point in which a majority of U.S. states transition from cannabis prohibition to some form of regulated

legal markets. Key states, including California, Nevada and Massachusetts, are expected to legalize adult use, while Florida is expected to pass a medical cannabis bill similar to the one that narrowly failed in 2014.

ELEVEN NEW STATES WILL BE VOTING TO EXPAND MARIJUANA ACCESS IN 2016

2016 will be a watershed year for marijuana legalization. Seven states will be voting to allow adult use, including California, Nevada, and Arizona in the southwest, and Massachusetts, Maine, Rhode Island and Vermont in the northeast. Importantly, Vermont is poised to be the first state to legalize cannabis through the Legislature. Four states – Florida, Ohio, Missouri and Pennsylvania – are best positioned to advance medical laws in 2016, which

i Growth of Legal Medical & Adult Use Marijuana Sales 2014-2020



would significantly expand medical marijuana access in the eastern half of the U.S.

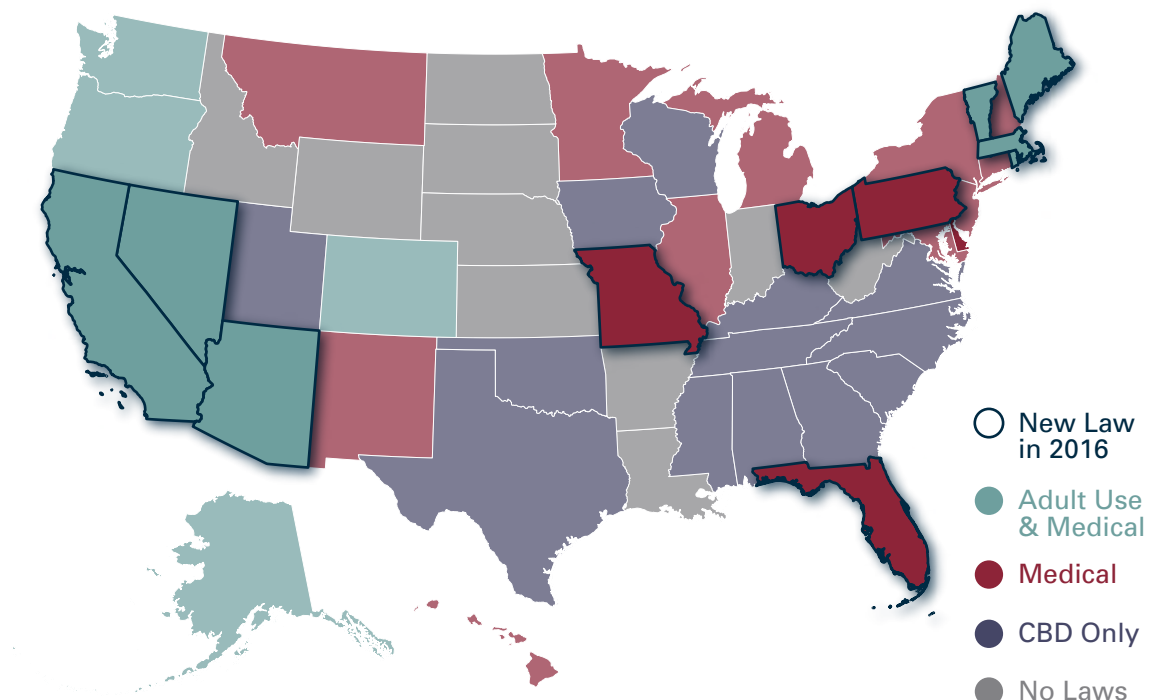
While support for medical and adult use legalization is high within these states, the passage of the measures is not guaranteed. The initiatives face two important challenges:

- **Initiative funding:** The campaigns pushing the ballot initiative will need to raise enough capital to ensure they can fund a robust media and get-out-the-vote campaign during

the election cycle, a period during which media will be more expensive and campaign resources more scarce due to the competing demand from the presidential and state government campaigns.

- **Opposition campaigns:** New campaign financing laws have given donors greater flexibility to raise and spend large sums of capital on elections. As a result, the measures face the potential threat of a wealthy donor or political action committee

i States Most Likely to Legalize in 2016



mounting a well-funded campaign in opposition to one or more of the proposed initiatives.

National attitudes may have swung in favor of legalization but the practical realities of retail politics in a closely contested election year will be the final determinant of which new states pass legalization measures in 2016.

“

...recent animal studies have shown that cannabis extracts may help kill certain cancer cells and reduce the size of others.

National Institute on Drug Abuse

“...recent animal studies have shown that cannabis extracts may help kill certain cancer cells and reduce the size of others. Evidence from one cell culture study suggests that purified extracts from whole-plant cannabis can slow the growth of cancer cells from one of the most serious types of brain tumors. Research in mice showed that treatment with purified extracts of THC and CBD, when used with radiation, increased the cancer-killing effects of the radiation.”

This was a very significant concession for an agency whose research into cannabis had previously focused exclusively on the harms it caused, signaling a new receptivity to the growing body of research showing cannabis’s powerful therapeutic potential. Additionally, in 2015 the National Institutes of Health announced a request for research proposals to explore the therapeutic potential for cannabis to treat pain. The call for proposals was notable in the breadth of research which the NIH was willing to fund, ranging from understanding the interaction between cannabinoids in the endocannabinoid system to assessing the role of cannabinoids in the conditions that are highly associated with pain (including diabetes, HIV, and cancer).

Medical Markets

FEDERAL INVESTMENT IN MEDICAL MARIJUANA RESEARCH GROWS, BUT PROGRESS IS SLOW

2015 saw significant shifts in the national position on medical cannabis. At the federal level the National Institutes on Drug Abuse (NIDA) added the following language to the section of its website on cannabis:

While this first-of-its-kind grant was an important step forward in the establishment of nationally funded research into the medicinal applications and efficacy of cannabis, it was not all smooth sailing. Clinical research into the efficacy of cannabis to treat post-traumatic stress disorder (PTSD) in veterans, a study which had been approved in 2014, was not able to move forward due to NIDA's failure to provide the cannabis strains required for the study.

The federal government's monopoly on the supply of medical cannabis for federally-funded clinical research and its refusal to permit use of privately sourced cannabis in the clinical trials has delayed progress on approved research.

Looking ahead, the ability of NIDA to produce the breadth and quality of cannabis required for federally funded clinical studies will be a key factor in determining the speed with which medical cannabis research advances in the years ahead.

CONGRESS RESTRICTS FEDERAL INTERVENTION IN STATE MARKETS

Congress also took a more assertive stance in allowing states with legal regulated cannabis markets to proceed

without the threat of enforcement from the Drug Enforcement Agency (DEA). Through a series of legislative actions Congress prohibited federal agencies from interfering in state-legal cannabis programs, renewed protections for state-legal hemp programs and introduced protections for states with CBD programs. Congress also cut the DEA's budget by \$23 million, a strong signal that the appetite for the heavy-handed approach to enforcement was falling out of favor among legislators.

“

Congress also cut the DEA's budget by \$23 million, a strong signal that the appetite for the heavy-handed approach to enforcement was falling out of favor.

DESPITE LEADERSHIP CHANGES, DEA REMAINS SKEPTICAL OF MEDICAL MARIJUANA

The replacement of outspoken DEA Chief Michelle Leonhart with long-time Justice Department official Chuck

Rosenberg was widely applauded by the industry. Leonhart had been unwavering in her opposition to any marijuana legalization, angering drug law reform advocates by her refusal to acknowledge any difference in the harms caused by heroin compared to those caused by cannabis. Rosenberg was perceived to be more moderate than his predecessor, leading to cautious optimism that his appointment would swing the agency to a less oppositional view of legal cannabis.

However, during a press conference in November 2015, Rosenberg expressed deep skepticism about cannabis, saying, “What really bothers me is the notion that cannabis is also medicinal – because it is not. We can have an intellectually honest debate

about whether we should legalize something that is bad and dangerous, but don’t call it a medicine – that is a joke.” His comments reverberated across the industry, drawing swift condemnation from physicians and patients alike, and led to an online petition calling for his resignation that accrued more than 150,000 signatures by late December 2015.

The impact of Rosenberg’s suspicion of medical cannabis on the DEA’s enforcement priorities remains to be seen. The agency has been proactively pushing resources to address the twin epidemics of prescription drug abuse and heroin addiction that now grip many parts of the country. In states like Vermont the deaths from opiate overdoses doubled between 2014 and 2015, and the number of residents seeking treatment for opiate addiction in 2015 increased 771% from 2000. Cannabis law reform advocates will be watching closely to see if the agency’s shift in focus to opioids represents a long-term realignment away from cannabis enforcement as more states seek to create legal regulated cannabis markets.

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In Vermont the deaths from opiate overdoses doubled between 2014 and 2015, and the number of residents seeking treatment for opiate addiction increased 771% from 2000.



Washington Monthly Adult Use Sales Growth



Source: Washington State Liquor & Cannabis Board

Adult Use

ADULT USE SALES CONTINUE TO HIT NEW HIGHS

2015 was a year of new milestones in adult use markets. In August, Colorado adult use sales exceeded \$100 million for the first time, a new benchmark for the state that had seen strong month-over-month growth in sales since the beginning of the year. Washington also saw strong growth in monthly sales in 2015, growing by 299% from \$18.8 million in January to \$75.3 million in December.

NEW LEGAL STATES ARE DRIVING INCREASED INTERSTATE COMPETITION

Oregon launched its adult use market with limited sales through existing medical dispensaries on October 1, and although the state does not track adult use sales, the Oregon Retailers of Cannabis Association estimated that sales in the first week alone were \$11 million.



TOP TRENDS TO WATCH IN 2016

This report includes 2016 Trends to Watch - the key disruptors that ArcView/New Frontier believes should be incorporated into strategic and operational planning for the next twelve to eighteen months. Resilient performance in the cannabis industry comes from planning that considers multiple scenarios and contingency analysis that improves preparedness for high-impact disruptive trends.

Overall industry growth in 2016 will increase social pressures on many governments, which could prompt abrupt changes to regulatory, economic, and security policies that would in turn disrupt cannabis companies' business strategies. Rather than risk being caught unaware, executives in the cannabis market should view scenario planning as a core competency in anticipation of the likely actualization of one or more of the scenarios identified below.

2016 TOP TEN TRENDS TO WATCH:

1. Congressional action
2. State legalization crossing the majority threshold

3. Price wars and competition
4. Cannabis unfriendly president elected in 2016
5. Increased emphasis on compliance and regulation
6. Integration of technology
7. Innovative product development
8. Increased industry sophistication and business intelligence
9. Energy use – importance and business priority
10. Advancement of international debate and legalization

Congressional action

The United States Congress could impact the legal cannabis industry in a number of ways. ArcView/New Frontier has highlighted six of the biggest potential actions Congress could take in the short term.

1) DEA Funding & Resource Allocation

With legislative bills including components such as the Rohrabacher-Farr amendment, Congress has begun to strip the DEA of funds used to enforce cannabis prohibition in states within legally operating markets. Currently,

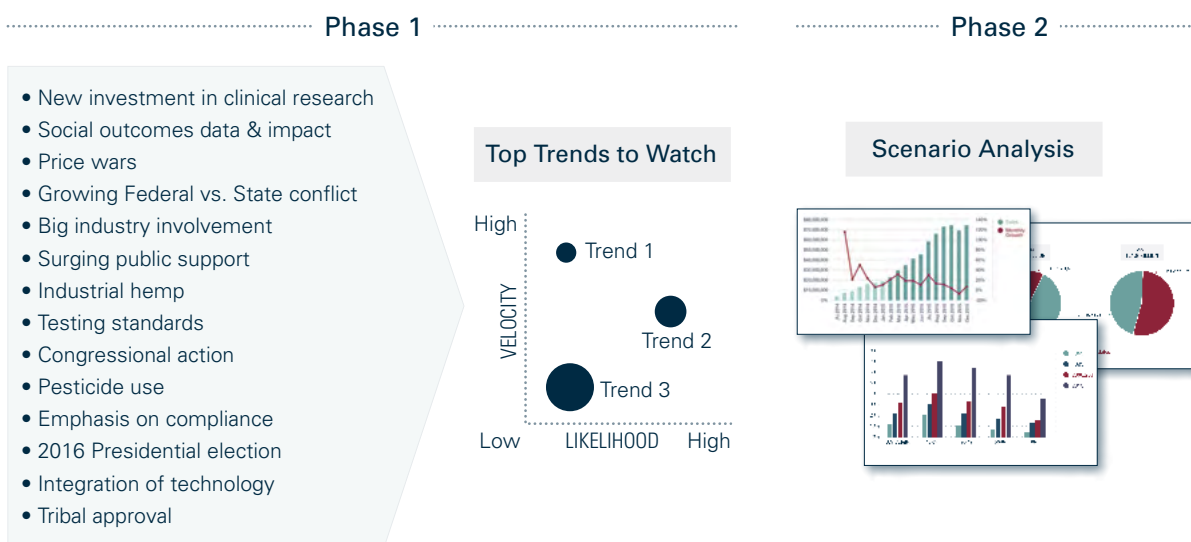


Trends to Watch Methodology

Focus of this research: For the cannabis industry, what potentially disruptive events should participants incorporate into strategy or operational planning?

Research methodology: New Frontier identifies and prioritizes the biggest trends, then creates detailed analysis for each event.

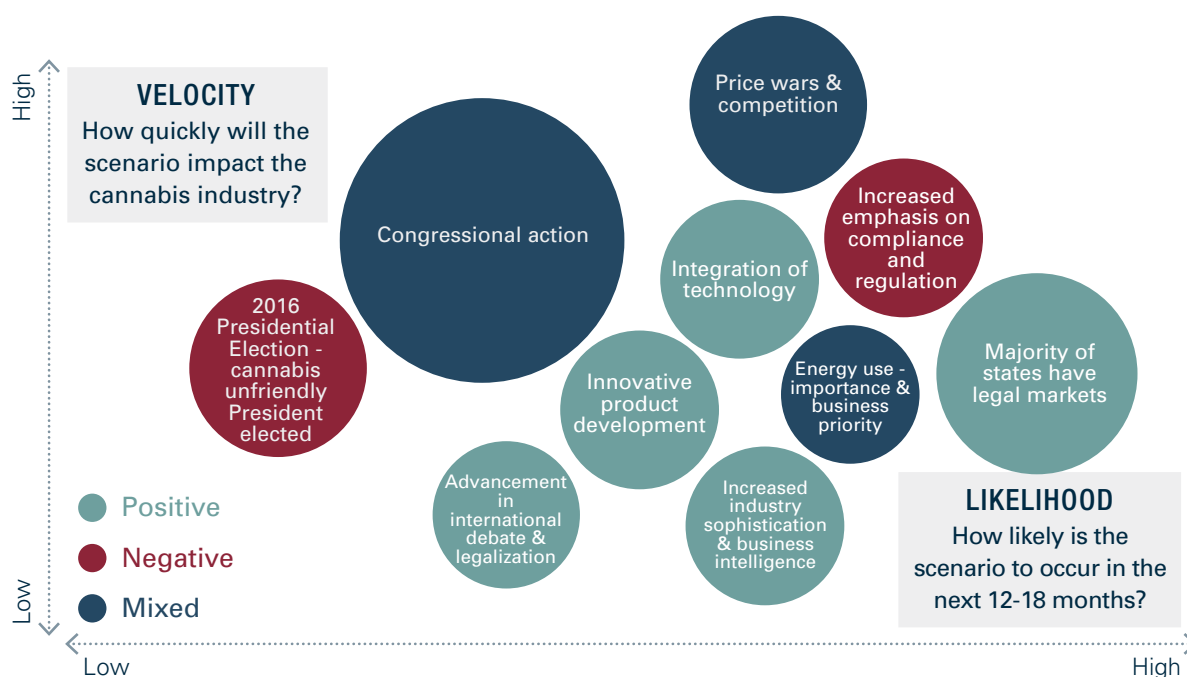
PHASE 1: Disruptive Trend Prioritization	PHASE 2: Scenario Analysis
New Frontier's research teams considered an extensive list of events. Analysts and industry experts then filtered and quantitatively scored key trends by impact, likelihood and velocity potential for the next 12-18 months.	For each top ten trend, New Frontier research teams analyzed the potential impact to the industry and identified signposts to monitor.



Assessment Criteria:

- 1. Impact:** Potential effect on business performance; e.g. growth, profitability, market share (bubble size)
- 2. Likelihood:** Probability of occurrence by mid-year 2017 (x axis)
- 3. Velocity:** Speed of impact on business performance (y axis)

i Top 10 Trends to Watch



Bubble size represents relative business impact of the event; color represents positive, negative or mixed effect for medical marijuana market potential

bills are also being put forth to completely remove funding for the cannabis eradication program.

2) Medical Research Approval

Although full clinical research approval will likely only come through reclassification of cannabis through the Controlled Substances Act (CSA), incremental changes to allowing cannabis research have already begun.

On December 23rd, 2015, the DEA eased some of the regulatory requirements imposed by the CSA for those who are conducting FDA-approved clinical trials on cannabidiol (CBD), an extract of the cannabis plant. These modifications will streamline the exploration of CBD, a compound which has already shown significant medicinal promise, and which has generated significant interest in exploring its therapeutic potential.

3) Banking & Financial Services

Businesses that sell cannabis in states where it is legal are forced to conduct all their transactions in cash because they lack access to banking services. While this issue has been on the back burner in Congress for several years, a solution may be in the works.

According to the summary text of H.R.2076 – Marijuana Business Access to Banking Act of 2015, “This bill provides a safe harbor for depository institutions providing financial services to a marijuana-related legitimate business insofar as it prohibits a federal banking regulator from: (1) terminating or limiting the deposit or share insurance of a depository institution solely because it provides financial services to a marijuana-related legitimate business; or (2) prohibiting, penalizing, or otherwise discouraging a depository institution from offering such services”

4) Tax Policies

The IRS does not allow businesses to deduct the cost of their cannabis as they would for any other good sold because cannabis is a controlled substance under federal law. This

creates a significantly higher tax burden for cannabis businesses because they often spend more on cannabis than any other input into their sales. This inability to deduct a key cost of goods sold puts cannabis at a significant disadvantage against other non-cannabis businesses, and it makes more difficult to remain financially viable as competition increases and prices fall.

“

Of the possible congressional actions, reclassification of cannabis would have the greatest impact on the cannabis industry as a whole.

Addressing this tax dilemma is one important step that Congress can take to improve the business environment and ensure cannabis businesses can remain viable as the market expands. In the longer term, Congress may also look at taxing cannabis under a model similar to that of alcohol and tobacco products. While the probability of a national tax of cannabis remains low

in the near term, it will be an important step in legitimizing the industry at the national level and an important milestone toward the creation of a coordinated federal policy for regulating legal cannabis.

5) Allowing the Department of Veterans Affairs to Use Cannabis as Healthcare Treatment

Late in 2015, the US Senate passed the FY2016 Military Construction and Veterans Affairs Appropriations Bill, which included language to allow VA doctors to recommend medical cannabis to their patients in states where medical cannabis is legal. Although the approved language was ultimately removed from the final omnibus spending bill, its passage through the senate was a strong indicator of growing congressional support for allowing veterans access to medical cannabis.

6) Rescheduling Marijuana via the Controlled Substances Act

Of the possible congressional actions, reclassification of cannabis would have the greatest impact on the cannabis industry as a whole.

Five criteria that must be met for drug rescheduling:

- The drug's chemistry must be known and reproducible
- There must be adequate safety studies
- There must be adequate and well-controlled studies proving efficacy
- The drug must be accepted by qualified experts
- The scientific evidence must be widely available

Even with mounting scientific evidence and completed research studies, the DEA does not appear to be interested in reclassifying cannabis in the near future, though it is possible that Congress may reschedule cannabis as part of bills on medical cannabis or on banking for cannabis businesses.

State legalization crossing the majority threshold

ArcView/New Frontier analysis and polling of industry experts projects a 92.8% chance that by year's end a majority of US states (26 or above) will have some form of legalized cannabis market. Notably, the majority of states debating legalization in 2016 are concentrated in the northeast U.S., establishing a beachhead for adult use on the east coast of the country.

The passage of medical bills in Ohio, Pennsylvania, and Florida would also mean the activation of medical markets in some of the most populous states in the country.

Price wars and competition

Optimizing the sales price of cannabis to maximize both sales volume and profitability is one of the most significant challenges facing the cannabis industry. Not only is there significant competition to contend with in the legal market, there is also a robust illicit market competing for the same business. As new growers have entered the market, competition on price in both wholesale and retail markets has increased significantly; this trend is expected to continue in 2016.

Cannabis unfriendly president elected in 2016

Over the past decade there has been steadily growing support for cannabis reform in the United States. While this dynamic continues to play out in legal cannabis markets, this progressive attitude is also a hot topic for national debate. As a presidential election approaches, candidate stances on

cannabis are poised to have a dramatic effect on the direction of the industry as a whole.

Though public opinion is shifting toward embracing cannabis reform, presidential candidates are more reticent to support legalization. Not all candidates are opposed to reform – some have come out strongly in support for reevaluation of federal policy – but across the candidates, their views are more complicated and nuanced than can be summarized with a simple “for or against” answer.

Emphasis on compliance and increased regulations

Almost no other industry has as much regulatory scrutiny sans federal support or recognition. Particularly for companies looking to expand across states, being fully compliant will be a complex and resource intensive task as state regulatory agencies differ wildly. This will continue to create business opportunities for those that can help businesses navigate these waters, while increasing risk and costs for those who seek to do business across state lines.

Integration of technology

With such a young industry it is no surprise that technology is already having a massive impact in the development of legalized cannabis. With the millennial generation driving a large portion of cannabis market growth, technology is poised to have a major impact in overall industry evolution in 2016. Some of the most notable technological enhancements are in the following domain areas:

- Production automation
- Compliance and regulatory tracking
- Consumer engagement
- Service delivery
- Social media and marketing
- Tracking patient outcomes



As a presidential election approaches, candidate stances on cannabis are poised to have a dramatic effect on the direction of the industry as a whole.

Innovative product development

New products have changed the landscape of cannabis product consumption. In Washington, edibles and extract sales are already numbering in the hundreds of thousands of units in a single month.

While it is impossible to predict future product innovation, the potential for growth potential is very large as new derivative products are continuously developed. New Frontier sees some of the largest opportunity for new cannabis products in the following areas:

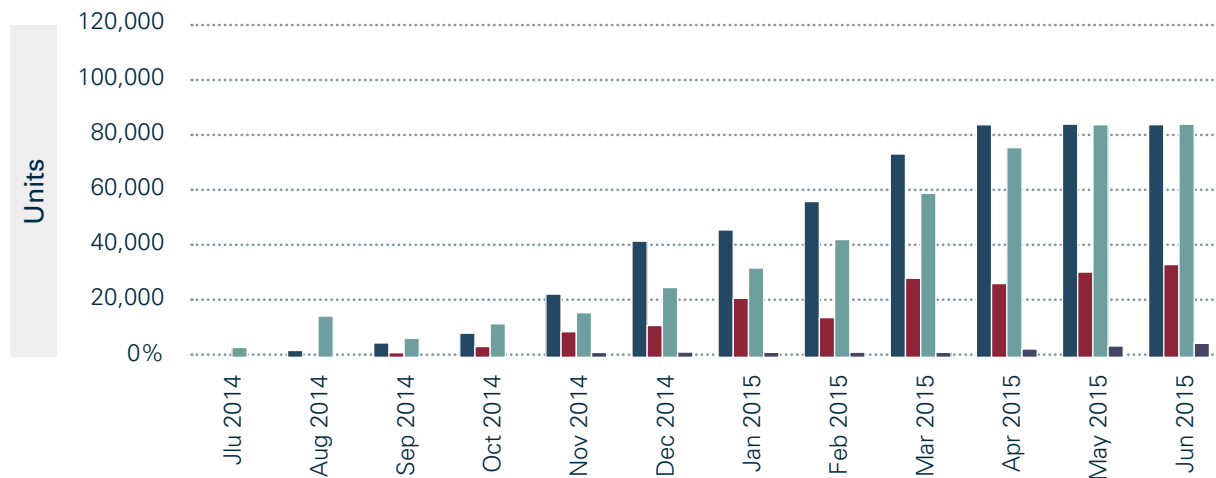
- Wax/shatter
- Vaporizers
- Pills
- Edibles
- Specialized strains

Increased industry sophistication and demand for business intelligence

Many cannabis businesses are beginning to advance past their early growth states and new businesses are constantly entering



Washington Marijuana Concentrate & Infused Product Sales



	July 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015
Solid Edibles	0	1520	4099	7661	21938	41249	45226	55516	73056	89153	107093	112825
Liquid Edibles	0	0	22	3165	8114	10733	20417	13470	27656	25607	30191	32762
Extract for Inhalation	1740	13929	5926	11355	15324	24425	31415	41875	58354	75397	97379	114264
Topicals	0	0	0	0	66	245	277	520	924	1730	2936	3963

Source: Washington State Liquor & Cannabis Board

the market. Increasing competition will squeeze margins and lead mid-stage companies to refine their strategies. As the focus shifts from purely operational to more strategic priorities, the overall industry will evolve dramatically. Similarly, as in all other high-growth industries, the value placed on business intelligence will grow as data-driven decision grows in importance. No longer will pricing decisions, retail locations, and product mixes be driven purely by instinct and anecdote. The ability

to analyze multiple tiers of historical and relevant market intelligence will allow companies to base their strategies on a critical mass of data regarding prior performance.

The sheer quantity of new tools and information available will be instrumental in shaping the overall direction of industry growth in the coming years, helping increase business sophistication and accelerate strategic innovation.



Energy use – importance and business priority

Cannabis is the most energy intensive agricultural crop produced in the U.S. Its production consumes one percent of the country's electrical output, using the equivalent electricity of 1.7 million homes at a cost of \$6 billion annually. High energy costs, which can account for as much as half of the total wholesale price, are driven by the electricity required to grow the plant indoors, manage the intense heat generated by conventional indoor cultivation lights, and operate the ventilation, cooling, water and humidity management systems required to maintain optimal growing conditions for the plants.

Cannabis's prohibition, and the stiff penalties for growing the plant, increased the price high enough

to allow growers to recoup their energy costs while maintaining high profit margins. This provided little incentive to invest in optimizing the energy efficiency of their operations. However, as more states legalize cannabis use (and thereby eliminate the risk of grower criminalization), more cultivators will enter the market to meet soaring demand. This, in turn, will lead prices to fall as the market becomes more competitive.

The unrestrained use of energy to cultivate cannabis cannot be sustained in legal cannabis markets. Growers who invest early in optimizing their energy efficiency and product quality will be best positioned to thrive as the industry grows and becomes more competitive.

Advancement of international debate and legalization

Countries across the world are grappling with the question of legalizing cannabis. Many governments are conducting internal debates and initiating dialogue on how best to proceed. New Frontier has identified some of the bigger potential players and summarized their current marketplace.

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As more states legalize cannabis's use...more cultivators will enter the market to meet soaring demand.

ISRAEL

Regulatory conditions are helping to sow the seeds for a cannabis culture. The Ministry of Health is the only national FDA-equivalent body that has publicly declared and accepted the benefits of cannabis. In fact, Israel has already approved a vast number of medical conditions for treatment with cannabis, including cancer, epilepsy, neurological conditions, and MS.

CANADA

In November 2015, newly-elected Prime Minister Justin Trudeau announced that possession of cannabis for adult use would be legalized. A full legalization program is currently under development.

SPAIN

Private consumption and cultivation is legal in many parts of Spain; however, any sale or transport of cannabis remains illegal.

MEXICO

While cannabis is decriminalized in Mexico the Supreme Court upheld the legality of a small group to use medicinal cannabis. President Enrique Peña Nieto has publicly opposed regulatory changes that would lead to a legal cannabis market.

AUSTRALIA

On the 17th of October 2015, the Federal Government announced that it would legalize the growing of cannabis for medicinal and scientific purposes.

URUGUAY

The South American country became the first country ever to legalize the sale of cannabis in May 2014; however, the slow pace of market activation has meant that regulatory bodies, police, and pharmacies have yet to catch up with home growers and their steady clientele.

JAMAICA

On February 25th 2015, the Jamaican House of Representatives passed a law decriminalizing possession of up to 2 ounces of cannabis. The new law includes provisions legalizing the cultivation for personal use of up to 5 plants, and establishes regulations for the cultivation and distribution of cannabis for medical and religious purposes.

GERMANY

The possession of cannabis is illegal in Germany but consumption itself is legal on the basis of it being considered self-harm, which is not considered a crime. The possession of small amounts is prosecuted but charges are almost always dropped.

The definition of this “small amount” varies depending on the federal state.

It is also possible to receive a special permission by the “Federal Institute for Drugs and Medical Devices” to obtain, possess and consume cannabis as a part of medically supervised and accompanied self-therapy. Furthermore, cannabis cultivation and possession can be permitted to scientific institutions or administrative bodies. Pharmacies can obtain a special permission to sell cannabis or cannabis-based medication to patients with government permission.

COLOMBIA

Since 1994, cannabis has been legalized for possession of small amounts up to 22 grams for personal consumption. It is legal to possess up to 20 plants for personal consumption.

On December 22, 2015, the President of Colombia, Juan Manuel Santos, signed a decree legalizing the cultivation, consumption, export, and import of cannabis strictly for medical and scientific purposes.

NATIONAL DEVELOPMENTS

The growing divide between federal and state policy

Over the next year we anticipate even greater debate about the disconnect between federal and state cannabis policies on issues including the business challenges created by lack of clear regulation of banking for cannabis businesses, the high cost of federal cannabis enforcement in states where it is legal, and the problems with the tax code that cause cannabis business to pay a much higher effective tax rate than other businesses. Areas in which we expect to see Executive and Congressional action in the year ahead include:

EASING BUSINESS ACCESS TO FINANCIAL SERVICES

Banks continue to refuse to work with cannabis businesses because of cannabis’s illegality under federal law. Although the lack of access to financial services has been an issue from the outset, it has become more pronounced as the industry has grown.

With over \$5 billion in sales mostly conducted in cash, the lack of banking services creates significant drag on operational efficiency for cannabis businesses as well as substantial security risks, forcing businesses to invest heavily in measures to protect the business and secure the high volumes of cash accumulated.

THE HIGH COST OF FEDERAL PROHIBITION ENFORCEMENT IN LEGAL STATES

In 2014 the DEA spent nearly \$1 million to eradicate 16,067 plants in Oregon, an enforcement action that cost an average of \$60 per plant, despite cannabis being legal in the state. The revelation of the high cost of the agency's cannabis eradication program in part led to the DEA's budget being cut by Congress in 2015. It also fueled calls for a reevaluation of the effectiveness and outcomes of federal prohibition of cannabis.

PREVENTING MILITARY PERSONNEL FROM EXPLORING THE POTENTIAL BENEFITS OF MARIJUANA

Due to federal cannabis prohibition, soldiers face punitive sanctions if they use cannabis, even for medicinal purposes while off duty. With punishment ranging from official

reprimands to the loss of benefits, military personnel who live in states with legal cannabis markets risk jeopardizing their status by using marijuana, even when permitted by the state. In 2015, the Senate passed a bill allowing military veterans to access medical marijuana in states where it is legal, but the approved bill was ultimately excluded in the final omnibus spending bill that passed the Congress. However, it was an important step toward increasing veteran access to marijuana.

Ohio shows the limits of voters' willingness to end prohibition

2015 brought some important developments to the debate on how to legalize and regulate cannabis. These advances will significantly influence the approaches adopted by the states that will legalize in the coming years. While legalization initiatives were defeated in state legislatures across the country, Ohio was the only state which attempted to legalize through the initiative process in 2015. The measure was resoundingly rejected by Ohio voters by a 2-1 margin.

The problem with the Ohio initiative was the inclusion of a provision that would

have limited cannabis production in the state to 10 companies owned by the initiative backers. The idea of writing a cannabis producer oligopoly into the state constitution was a poison pill for Ohio voters, leading even cannabis legalization supporters to vote against the measure. While cannabis opponents have tried to use Ohio as an example to dispute legalization's forward momentum, the specific characteristics of Ohio's initiative, from the inclusion of the producer oligopoly to the decision to hold the initiative in an odd-year election, make it impossible to generalize the result across the broader national market.

While a majority of the public in Ohio (and nationally) clearly supports a new approach to cannabis policy, the outcome of Ohio's initiative proves

that voters are not willing to accept it at any cost. The overwhelming defeat of Ohio's initiative suggests that voters viewed the status quo with prohibition as a better option than the ten-producer oligopoly proposed by the initiative.

The move to more expansive regulation

States continue to wrestle with how to best regulate their markets, but the general trend has been toward more rather than less regulation. California finally enacted new rules to govern its highly deregulated medical market, and Oregon adopted an expansive and methodical approach to developing its adult use rules, forming working groups with stakeholders from across the industry tasked with formulating guidelines for every area of regulation. Legislators and regulators are finding that a robust regulatory framework can significantly mitigate many of the issues that lead to suboptimal market performance when the market goes live. However, many advocates and business owners feel that markets are being over-regulated in ways that increase costs and raise barriers to entry.

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In 2014 the DEA spent nearly \$1 million to eradicate 16,067 plants in Oregon, an enforcement action that cost an average of \$60 per plant...

The industry's first pesticide lawsuit will reshape cultivation

In October 2015, two cannabis users in Colorado filed a suit against the largest cannabis grower in the state for using the pesticide myclobutanil, claiming that they would not have used the product had they known it contained the pesticide. Although myclobutanil is approved for use on food crops, the suit alleges that when heated, such as when cannabis is smoked, it breaks down into the toxic chemical hydrogen cyanide. The suit has yet to be litigated but has already begun to fuel new scrutiny of pesticide use in cannabis cultivation and has led to a debate on the extent to which producers and processors are liable for the products they sell to cannabis consumers.

Growing need for analysis of social outcomes and impact of legalization

The social outcomes of cannabis prohibition are well understood. Arrest rates for minorities are as much as 12 times higher despite similar cannabis

usage rates across all races, and the lifetime earnings of individuals with a cannabis conviction are significantly lower than those of users who have never been arrested. What is less well understood are the social impacts of cannabis legalization.

Some areas that are of particular interest are the effects of driving after consuming cannabis, the impact of legalization on youth use of cannabis and the degree to which the substitution of alcohol with cannabis creates potential reductions in societal harms.

DOES LEGAL MARIJUANA MAKE ROADS LESS SAFE?

Research by the Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) found that the percentage of fatalities in Colorado in which the driver tested positive for cannabis increased from 6.9% in 2006 to 19.2% in 2014. While this is a significant increase, the tests only prove that the driver had consumed cannabis within approximately 30 days prior to the crash. It does not establish that the drivers were impaired at the moment of the crash.

This is an important distinction because the increased prevalence of cannabis among the drivers involved may be a

reflection of the higher general usage rates since cannabis was legalized in Colorado, as would be expected, rather than a reflection of more drugged driving incidents within the state. Additionally, while the number of drugged driving case involving cannabis in Denver doubled from 33 in 2013 to 66 in 2014, the increase may be attributed in part to more aggressive DUID enforcement post-legalization rather than due to a doubling of the actual number of impaired drivers on the roads.

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Arrest rates for minorities are as much as 12 times higher despite similar cannabis usage rates across all races...

While drugged driving remains a very significant concern, more data will be required to understand the extent to which the increases in drugged driving cases are fueled by increased enforcement rather than by an organic growth in the number of impaired drivers. There will also need to be more research into whether there is

a substitution effect between alcohol and cannabis, and what effect that might have on overall highway safety.

Additionally, there are a number of companies working on cannabis breathalyzers, which will be invaluable in addressing inability to distinguish between drivers who are actively impaired versus those who consumed cannabis in the weeks prior to the test but were not under the influence at the moment of testing.

LEGAL MARIJUANA LOWERS THE PERCEIVED RISK, BUT DOES IT MAKE MORE KIDS TRY IT?

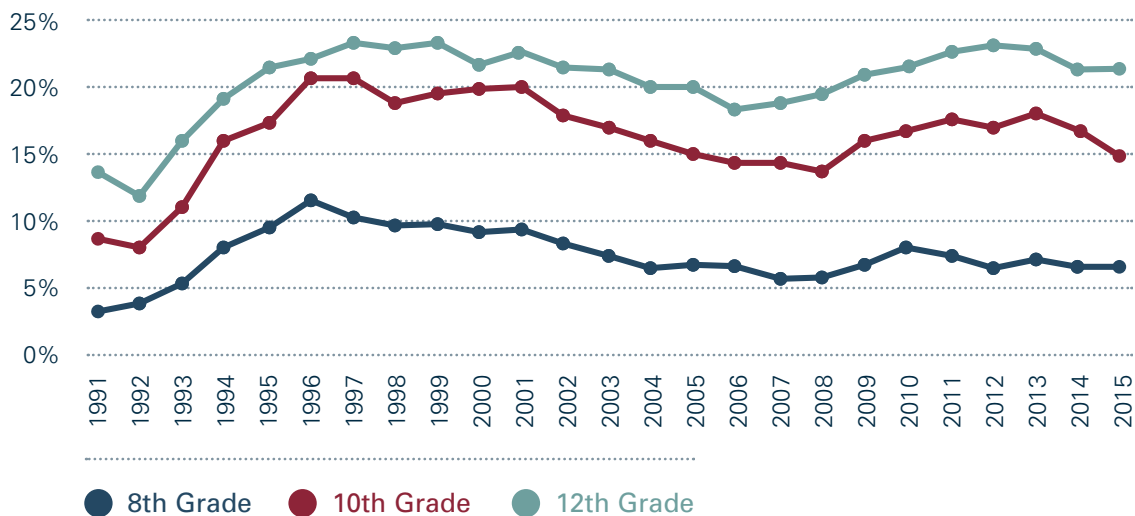
The 2015 Monitoring the Future survey funded by NIDA found that cannabis use among 8th, 10th and 12th graders was down or flat over the past year, reflecting an overall downward trend. This is encouraging news as it suggests that growing public support for legalization is not resulting in a national resurgence of cannabis use among young people

There are, however, some areas of concern related to teen use. A study by University of Washington found that nearly one in five teen cannabis users in the state (17%) reported using cannabis at least once a week, and half those teens had driven a



Marijuana Use is Flat or Declining Among the Nation's Youth

% Reporting Marijuana Use in past 30 days



Source: University of Michigan Institute for Social Research

car within three hours of consuming cannabis. Based on early research that indicates that cannabis may have a negative impact on the development of adolescent brains, continued effort is needed to help teens make responsible decisions.

STATE MARKETS

Data Analysis: State Markets

Among the states where adult use is currently legal, Washington is projected to be the largest market by 2020 at \$2.3 billion followed by Colorado at \$2 billion. Collectively, the top 5 states will generate \$5.5 billion in sales by 2020 and will account for 47% of the total adult use market.



The medical market in California will continue to be the largest market in the U.S. through 2020, although the combination of strict new medical regulations passed in 2015 and the legalization of adult use in 2016 is expected to reduce the levels of patient participation in the market in the coming years. Consequently, California's medical market is projected to shrink slightly from \$2.7 billion in 2015 to \$2.6 billion by 2020.

The five largest medical marijuana markets will generate \$5.5 billion in

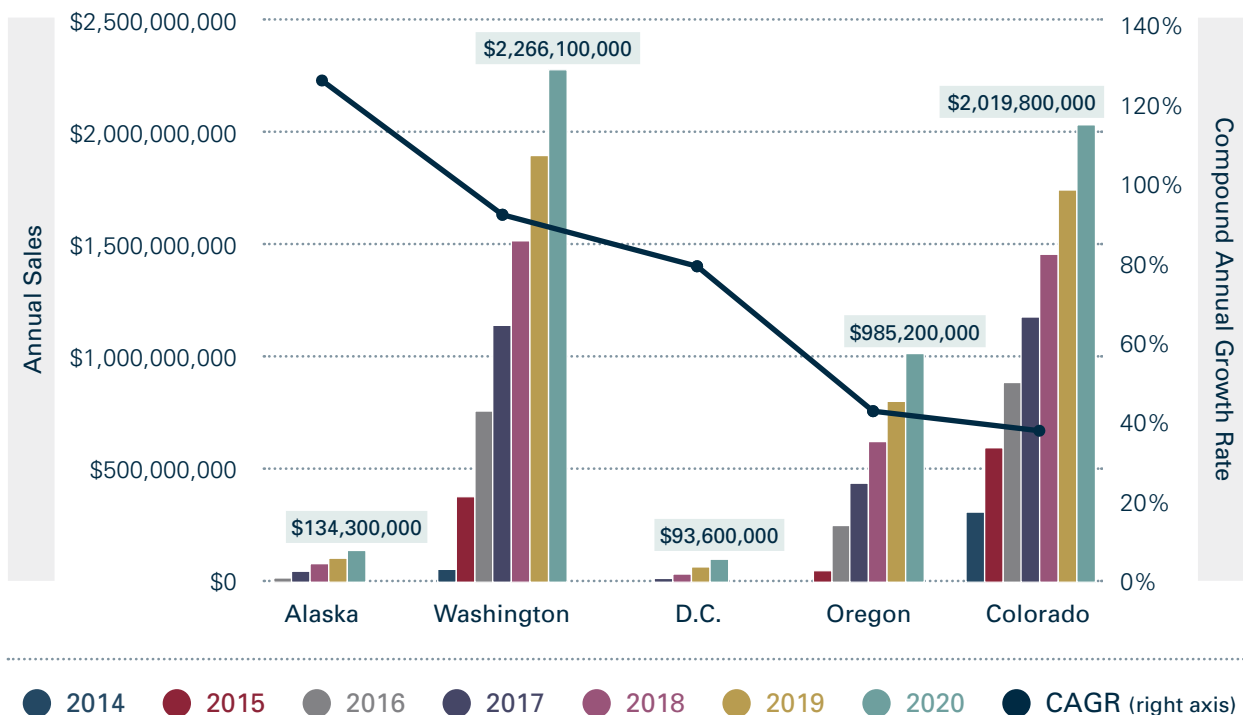
sales in 2020 and will account for 24% of the total national medical market.

The substitution effect between medical and adult use markets

When you zero in on individual states, the interplay between adult use and medical markets highlights an important dynamic. Activation of adult use sales slows the growth of medical markets as patient participation plateaus and falling prices and wide

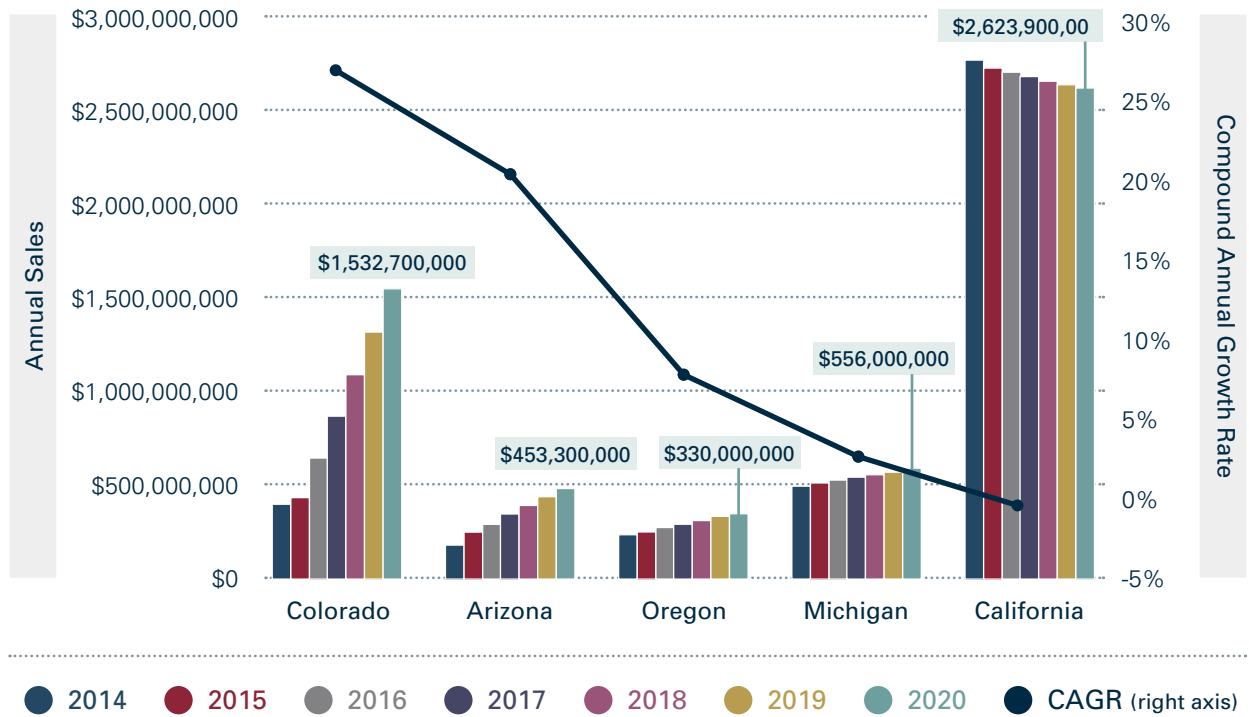


Adult Use Market Growth Projections 2015-2020





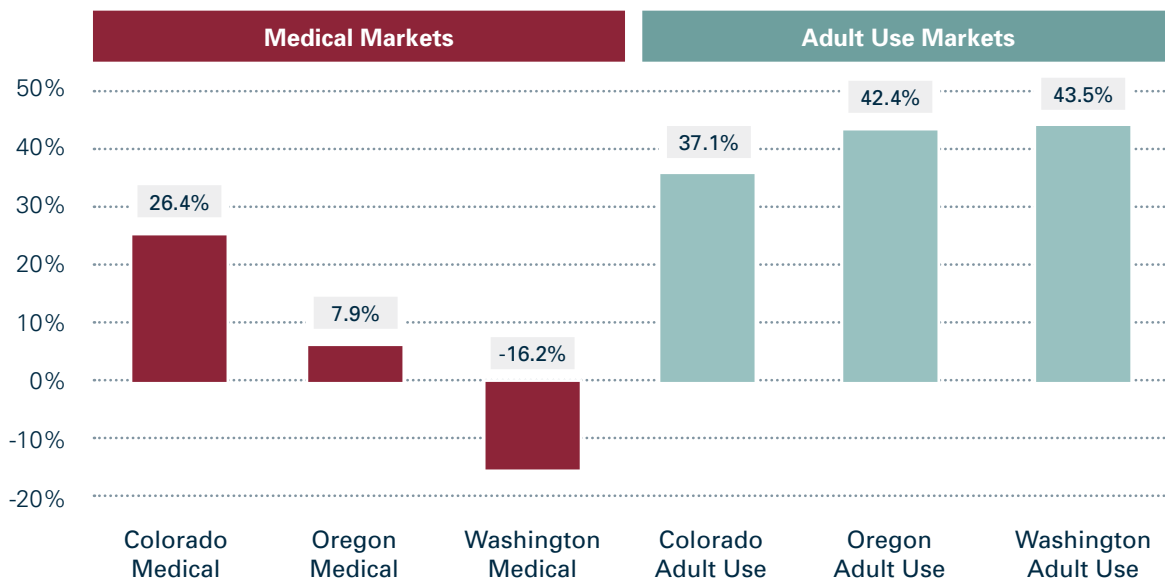
Top 5 Medical Market Growth Projections* 2015-2020



Based on market size in 2015



Compounded Annual Growth Rate Between Medical & Adult Use Markets*



*From the first full year of adult use market activation



product selections make the adult use market more competitive against the medical market.

When looking at growth projections, it is clear to see that in markets with both medicinal and adult use programs, adult use markets are expected to achieve much higher levels of growth once they are fully operationalized. The interplay is critical to understand in order to make accurate assessments of the market opportunities in states with potential for having both adult use and medicinal frameworks, especially if states restrict businesses from holding licenses for both the medical and adult use markets.

Local regulation frameworks create widely varied results across state markets

State regulations for legal cannabis markets and implementation approaches vary widely between states. As a result the growth and performance of state markets has varied widely. Washington D.C., Maryland and Illinois are three examples of local markets facing critical inflection points in 2016.

CONGRESS BLOCKS CREATION OF REGULATIONS IN D.C.

In Washington D.C., critical debate erupted between the District and Congress on legalization in the nation's capital. Despite city residents passing cannabis legalization with 70% of the vote – the highest passage rate of any legalization initiative in the country – Congress, which has regulatory oversight of the city, prohibited the city council from spending any funds to establish a legal, regulated market. This resulted in the city being the only market in the country where it is legal for adults to grow, possess, and consume cannabis but it remains illegal to buy and sell it. In 2016, this unresolved issue will gain new traction as part of the broader national legalization debate, and its resolution will bring legal cannabis to one of the most important tourism destinations in the country.

PROSPECTIVE OWNERS FLOOD MARYLAND WITH LICENSE APPLICATIONS

Cannabis legalization further expanded along the east coast as Maryland opened its license application process to very strong demand. The state's medical cannabis commission received 705 dispensary applications for the 94

available licenses, indicating that many entrepreneurs see rich opportunity in the state's legal cannabis market.

SLOW ROLLOUT STALLS ILLINOIS MEDICAL PROGRAM AND JEOPARDIZES DISPENSARY BUSINESSES

Not all new medical programs elicited the same excitement as Maryland's. In Illinois, the state's medical program has been plagued with setbacks, including a lack of licensed growers and extremely slow patient registrations. By January 2016 the state had approved only 4,000 medical cannabis patients, far fewer than dispensary owners will need to keep their businesses viable. Furthermore, the Governor's refusal to expand the list of qualifying conditions will keep patient participation low for the foreseeable future.

Evidence based assessment of multiple legalization models

In November 2012, voters in Washington and Colorado approved the first two laws in the U.S. to legally regulate cannabis production, distribution and sales. A year-and-a-half later, the first retail cannabis stores

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As there is no standardized regime across states, each state is free to pick and choose the elements they wish to include in their system.

opened their doors on July 8, 2014. Data from those markets has begun to flow in as regulated state markets have built their fully functioning operations. With increased transparency around the entire supply chain and better insight into the industry's impact and outcomes, states contemplating cannabis legalization will finally be able to use concrete, empirical evidence in their decision-making.

As there is no standardized regime across states, each state is free to pick and choose the elements they wish to include in their system. For example, states differ dramatically on: their allowance of reciprocity in medical markets, taxation rates, qualifying conditions, and the types and amount of dispensaries permitted. With states essentially creating a new industry from scratch, the evidence

pouring out of Washington, Colorado, Oregon, and other legalized markets will have a significant impact on future legalization regimes.

\$636 MILLION

Amount of money Washington is projected to receive in the next five years from its adult use cannabis market.

Source: Economic Revenue and Forecast Council)

\$13.2 MILLION

Taxes and fees collected in Colorado in August 2015, the single highest month of tax revenues since adult use sales began in January 2014.

Source: Colorado Marijuana Enforcement Division

For states designing legalization regimes, decisions will have to be made about the amount of flexibility that will be built into the system. This is critical for both taxation and regulations. Just as amendment processes allow for evolution in political legislation, as the cannabis industry expands there will be much to learn about cannabinoids and new cannabis products, and there will need to be mechanisms in place for incorporating new information into the regulatory regimes.

For example, the state of Illinois built a “sunset” provision into its 2013 medical cannabis law: if the state does not renew or create a new law by the end of 2017, the program will cease to exist.

When it comes to cannabis legalization, we are in uncharted waters. There is much to learn from what is happening with the earliest adopters — Colorado and Washington — but their commercial approach is only one option. The home production model in Washington, D.C., and collectives being implemented in Uruguay highlight some of the other approaches. The data and information surrounding tax revenues, regulatory effectiveness, and other system outcomes will play a much larger role in informing how the industry evolves in the coming years.

Emphasis on compliance and increased regulations

REGULATORY OVERSIGHT ENVIRONMENT

Almost no other industry has as much regulatory scrutiny without federal support or recognition. Particularly for companies looking to expand across states, full compliance will be

a perplexing task as state regulatory agencies differ wildly.

Not only are the regulatory agencies which oversee the industry different across states, but also the regulations governing each state market vary widely across markets in areas including:

- 11. Application Costs**
- 12. Business Records Required**
- 13. Labeling, Packaging & Product Safety**
- 14. Licensing Qualifications**
- 15. Regulatory Codes and Nomenclature**
- 16. Security & Surveillance**
- 17. Taxation**
- 18. Waste Disposal**

According to Adherence Compliance, a leading cannabis compliance consulting firm, only about 20% of regulations in CO would apply to another state. Without consistent state-to-state standards, specialized expertise in each market of operation will be required. In the short-term, the compliance and regulatory environment could fundamentally change the structure of many businesses.

THE FUTURE OF CANNABIS COMPLIANCE

Cannabis businesses face an almost unmatched regulatory and compliance burden among emergent industries and the complexity will be compounded as legalization expands and more states come online with their own regulatory frameworks. Additionally, easing of federal law may actually increase regulatory complexity as it could add a layer of federal oversight on top of the existing state and local requirements.

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When it comes to cannabis legalization, we are in uncharted waters and there is much to learn from what is happening with the earliest adopters.

As regulatory complexity increases, demand for compliance-related support will grow, creating new businesses opportunities for compliance professionals, but increasing the costs and complexity for businesses that touch the plant. The nascent banking and insurance markets will also require

complex oversight, adding to the compliance burden and audit risk for the businesses.

These developments all highlight the imperative of a strong compliance focus for businesses entering this industry.

Price wars and competition

Optimizing the sales price of cannabis to maximize both sales volume and profitability is one of the most significant challenges facing the cannabis industry. Not only is there significant competition to contend with in the legal market, but there is also a robust illicit market competing for the same business. As new growers have entered the market, competition on price in the both the wholesale and retail markets has increased significantly; this trend is expected to continue in 2016. For example, since Colorado ended the 70% vertical integration requirement, the rate at which new cultivators are entering the market has accelerated, greatly increasing the market's product supply and resulting in downward pressure on prices.

As the industry matures and large-scale production ramps up, industry

participants should be prepared for competitor efforts to capture market share through price reduction strategies. This is especially true as excess supply could lead to nervous producers attempting to offload inventory through fire-sale pricing. For example, surplus production in Washington between summer 2014 and summer 2015 led to the average price per gram to dip below \$10 for some strains by the end of the 2015.

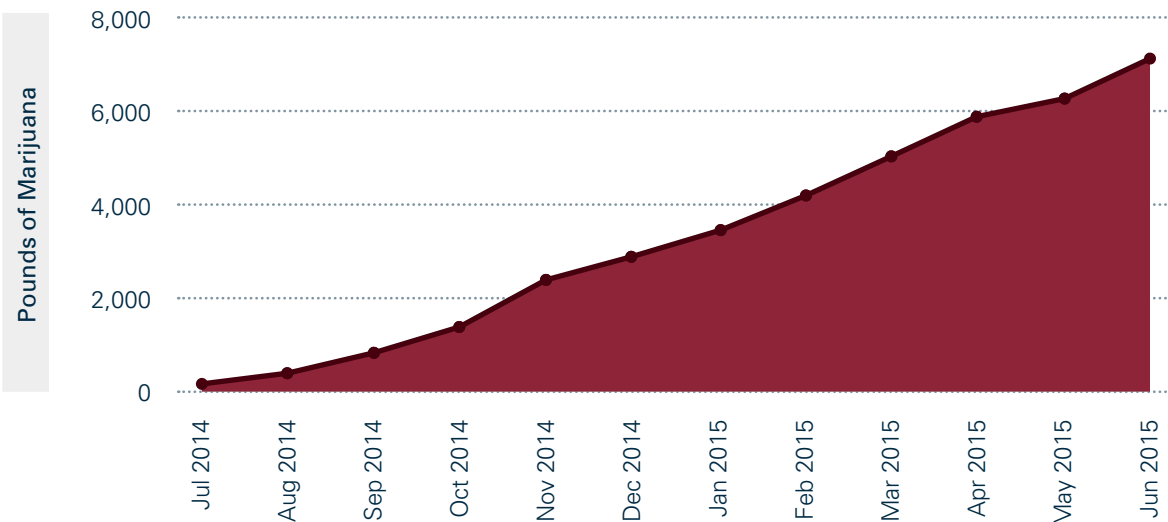
The downward pressure on prices will continue to grow as production capacity increases. While this will be a positive development for consumers who will benefit from lower prices, it will challenge the long-term viability of businesses which have pegged their operational models to wholesale prices at current market rates.

Cross-border wars: Cannabis competition across state lines

Industries such as alcohol and tobacco have long understood the impact that nuanced differences in adjacent states can have. From discrepancies in pricing and taxation to availability and supply chains, neighboring states with dissimilar regimes can drastically alter their consumers' behavior.



Washington State Cumulative Recreational Cannabis Surplus



Source: Washington State Liquor & Cannabis Board

We observed a strong example of the interplay between state markets when Oregon launched sales of adult use products on October 1, 2015. Until that point adult use sales in Washington had been growing in a strong upward trend. However, immediately following Oregon's market launch, Washington's average daily cannabis revenues began to fall by almost the exactly same amount as they were once growing.

The decline could be attributed to a number of factors:

- **No taxes on Oregon products:** The state did not levy taxes on adult use products for the first three months, making Oregon's products

significantly less expensive than products in Washington, which are taxed at 37%.

- **Decline in Oregonians buying in Washington:** Oregonians were no longer crossing the border to purchase adult use products in Washington. Indeed, some of the steepest sales declines were reported by Washington dispensaries on the border with Oregon.
- **Increase in Washingtonians buying in Oregon:** Washingtonians began crossing the border into Oregon to purchase the lower priced cannabis.



The interplay between legal markets will become even more important as more western and north-eastern states activate their adult use markets. Oregonian businesses in particular must be prepared for the potential impact of market activation in California due to the high volume of cannabis produced by its southern neighbor in the region that borders Oregon.

FINANCE & INVESTMENT

The ups and downs of marijuana investment in 2015

As a multi-billion dollar industry with significant growth potential, investment into cannabis companies continued to gain ground in 2015. Millions of dollars flowed into new direct and ancillary businesses as sophisticated investors, looking to capture some of the growing pie, funneled new capital into a space long dominated by bootstrapped entrepreneurs.

PRIVATE CAPITAL FUNDRAISING REACHED NEW HEIGHTS

After more than a year and a half of due diligence, Peter Thiel's investment Founders Fund joined a \$75 million Series B funding round of Privateer Holdings, a company which focuses on investments in the cannabis space. Privateer's portfolio includes Leafly, a leading cannabis information platform, Marley Naturals, a product company branded under license from Bob Marley's estate, and Tilray, a leading cultivation company in Canada. The stamp of approval from the most sophisticated players in the venture capital community was another milestone in the evolution to mainstream cannabis investing.

Additionally, new products launched by famous figures such as hip hop star Snoop Dogg, musician Willie Nelson and actor Tommy Chong have highlighted the significant emerging opportunities for savvy marketers to leverage their celebrity status to establish new brands in this market. Snoop Dogg, for example, has built a diversified portfolio of companies including a cannabis products line under the brand name Leafs by Snoop, the Double G brand of vaporizers produced in partnership with manufacturer Greco Science, and Merry Jane, a cannabis media company.

Other notable figures are getting involved in other ways. Sean Parker, the silicon valley icon and former Facebook president, has become heavily involved in the 2016 legalization campaign in California, bringing with him not only significant new capital but also a large network of connections in the state's technology industry, a sector which may otherwise have not been as heavily involved in the campaign.

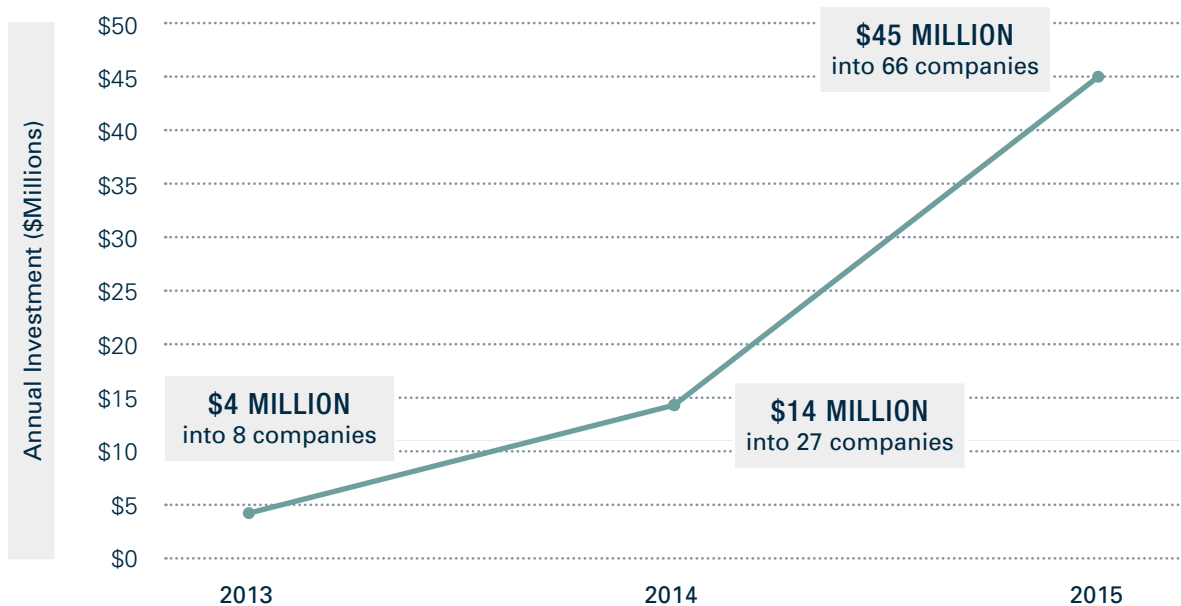
MERRILL LYNCH RELEASES ITS FIRST REPORT ON THE INDUSTRY

The release of "Medical cannabis has high POTential", a report on the medical

marijuana industry by Merrill Lynch late in 2015 was another important example of the interest the industry is generating among traditional investors. The report generated significant buzz in the industry because it was the first report released by a major investment bank assessing opportunities in the market. While the report was focused principally on the pharmaceutical cannabis market, it established beyond doubt that leading financial market players are paying attention to the industry and exploring potential points of entry for their clients.



Investments by ArcView Investor Members by year 2013-2015

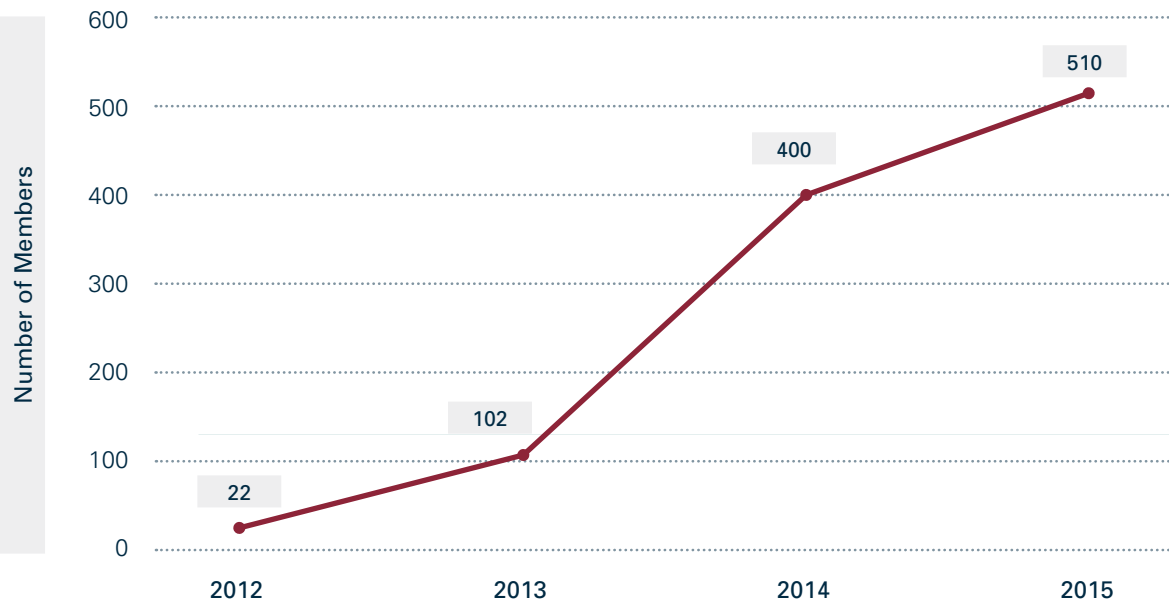


Source: The ArcView Group





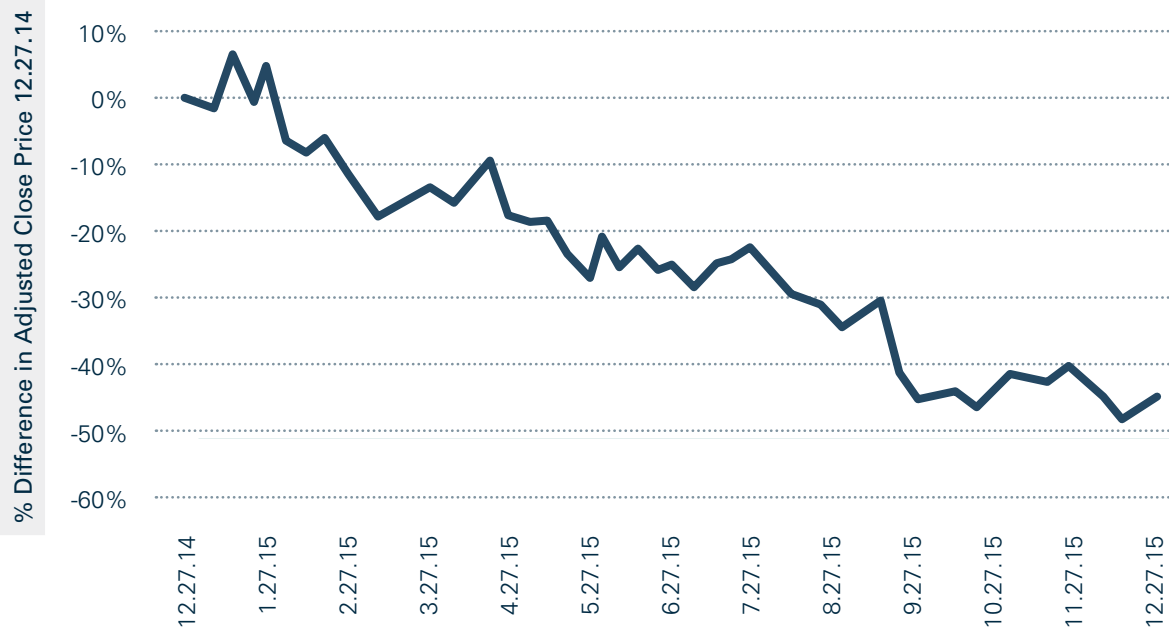
ArcView Investor Member Growth by Year 2012-2015



Source: The ArcView Group



2015 Marijuana Stock Index* Performance



*Marijuana companies chosen for this analysis are: ACAN, STEO, MDBX, BRDT ARNA, OGRMF, DIGP, GWPH, MSRT, CNBX, INSY, CNAB, CARA, AMMJ

ARCVIEW SEES STRONG MEMBER & INVESTMENT GROWTH

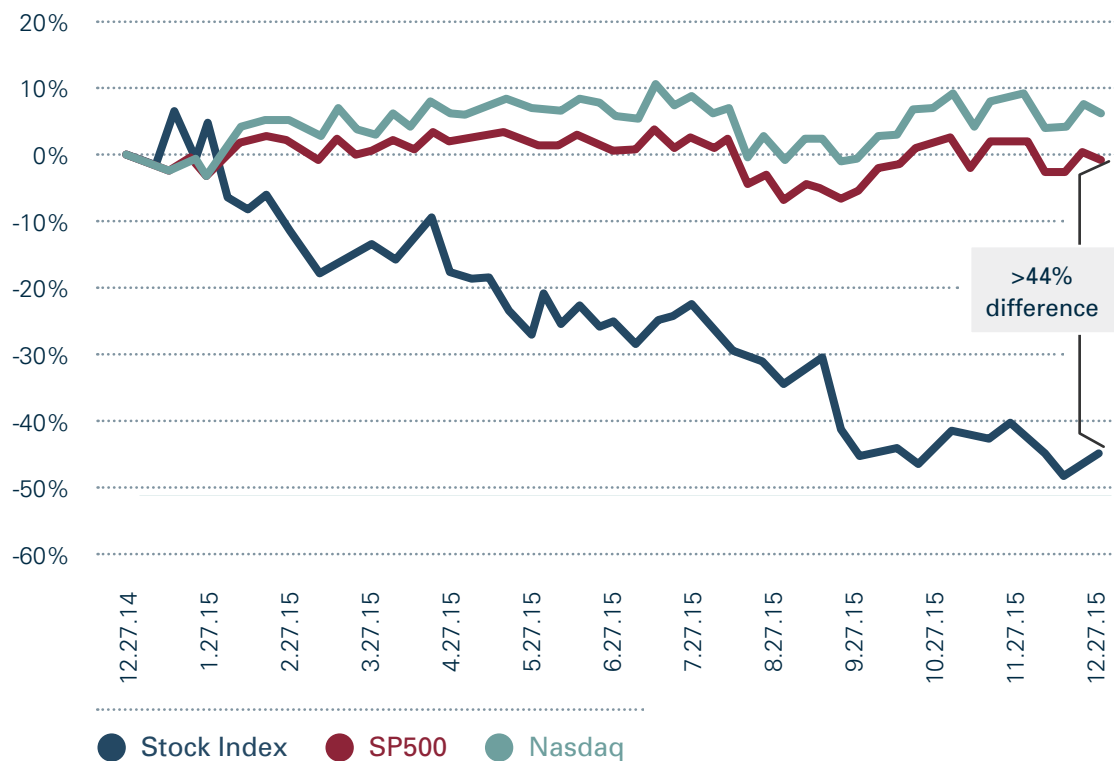
The ArcView Group – the leading cannabis investor forum – has seen dramatic growth in its investment portfolio over the past three years. In 2013, members invested \$4 million into 8 companies, which grew more than ten-fold in 2015 to \$45 million invested across 66 companies. The company's growth highlights the growing interest among investors for cannabis opportunities, and the number of attractive investment opportunities emerging in this market.

MARIJUANA STOCKS SAW STEEP DECLINES IN 2015

Not all aspects of the cannabis investment landscape performed well in 2015. Publicly traded cannabis companies performed poorly, with New Frontier's Marijuana Stock Index losing nearly half its value during the year. The full report will examine why.

Compared with broad performance in the equities macro environment, marijuana stocks had greater than 44% worse performance over 2015 than both the NASDAQ and S&P500 indices.

i 2015: Marijuana Stock Performance vs. S&P500 & Nasdaq



Capital investment flows into clinical research

The cannabis healthcare market is a sub-sector that is receiving a large portion of capital investment. For medical cannabis, one of the most important elements in the current debate is the bifurcation of the two major types of approach to using cannabis as medicine.

1) Traditional FDA-clinical trial approach to marijuana-derived therapy development.

As the gold-standard for much of the healthcare industry, clinical trials and the requisite understanding of all constituent components of treatment is just beginning to emerge in the medical cannabis field. As prohibitions on research continue to relax, this approach will become more viable.

2) The whole-plant extract or nutraceutical approach.

Beyond the debate about smoking as a medicine (which is potentially negated by vaporizers and edibles) there is a more fundamental question surrounding whether deriving specific compounds from the plant is as effective as using whole plant extracts. As

the industry continues to evolve and more research is conducted, ArcView/New Frontier expects the opacity of this question to be clarified in clinical results.

Many companies are already injecting significant amounts of capital into this potentially lucrative industry. From research on cell development to pill-based therapies, both early-stage and well-established healthcare companies are betting big on clinical research producing highly profitable cannabis-based products.

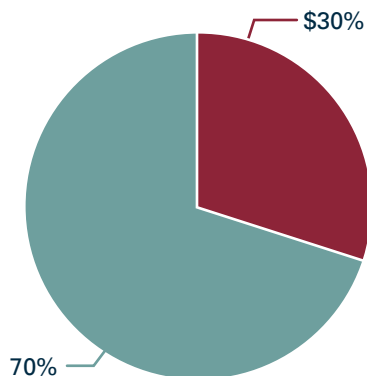
Banking and financial services limitations impede business growth

Currently, financial institutions that either assist or seek to assist marijuana-related companies face significant uncertainty with respect to the legal status of cannabis under state and federal law. Consequently, financial institutions have been slow to serve the growing legal marijuana industry. Banks remain wary of federal scrutiny or prosecution for aiding illegal drug activity should they allow these businesses to open accounts, receive loans, or utilize credit cards or electronic funds transfer systems.

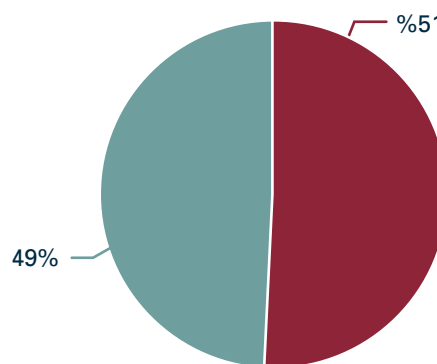


Cannabis Industry Access to Banking Services

CANNA-BUSINESSES



ANCILLARY SERVICE PROVIDERS



● Have a bank account ● Do not have a bank account

Source: Marijuana Business Daily

The lack of access to a full financial system is among the biggest inhibitors to industry growth. Cannabis businesses conducting all their transactions in cash not only creates a significant security issue, it reduces operational efficiency because cash transactions are more labor intensive to manage than digital payments. These inefficiencies impact all the individuals and businesses which support the industry because employees, vendors, and even tax agencies are paid in cash by the cannabis businesses. These pain points underscore the struggle of operating marijuana-related businesses under a framework of conflicting state and federal law.

However, on the heels of policy memos issued by both the Department of Justice and the Financial Crimes Enforcement Network, some financial institutions are expressing interest in wading into the growing pool of small business customers operating in the marijuana industry.

On the legislative side, the banking issue is gaining new ground in Congress:

According to the summary text of H.R.2076 – Marijuana Business Access to Banking Act of 2015, which was introduced in the summer of 2015, “provides a safe harbor for depository institutions providing financial services

to a marijuana-related legitimate business insofar as it prohibits a federal banking regulator from: (1) terminating or limiting the deposit or share insurance of a depository institution solely because it provides financial services to a marijuana-related legitimate business; or (2) prohibiting, penalizing, or otherwise discouraging a depository institution from offering such services.”

While congressional action on banking and financial services for cannabis is still generally regarded as unlikely in 2015, innovative companies are finding ways to help bridge the gap and provide much needed services.

Tax policies

There are two critical aspects related to taxes that will significantly shape the industry in the year ahead.

INABILITY TO DEDUCT COSTS OF GOODS SOLD WILL BE A GROWING BURDEN ON BUSINESSES

Section 280E of the IRS code prohibits businesses from deducting expenses incurred in the trafficking of a controlled substance. Since marijuana is still federally illegal, marijuana businesses

cannot deduct their cost of goods sold as would be done in any other business. The inability to deduct the cost of the product leaves marijuana businesses owners with significantly higher tax bills than comparative businesses. Most businesses pay 35% tax on their profits, but the inability to deduct the cost of the product increases marijuana businesses taxes to as much as 82%. The impact of 280E has been mitigated in part by the high profitability experienced by early industry entrants, but as the market becomes more competitive and prices fall, the impact of this high tax bill will increasingly compromise the viability of more marijuana businesses.

RETHINKING STATE TAXES TO DRIVE GREATER REVENUE

New Frontier’s analysis of marijuana price elasticity found that even small changes in price can have very significant impact on demand. Marijuana demand in adult use markets is highly elastic, and we found that even a modest 15% change in price can increase demand by twenty-fold. The elasticity effect is a critical consideration when forming state tax policy because, if taxes are set too high, consumer will have less incentive to leave the black market for the legal market.

In Washington, the price increase created by the state's initial tax rate of 25% charged for each sale at the producer, processor, and retail levels respectively was cited as a key reason for low consumer participation when the legal market first launched. This led lawmakers to change the tax to a flat rate of 37% charged on retail sales in the summer of 2015. Following this change the state's market has experienced strong steady growth. However, Washington will face stiff competition from Oregon's legal market, where taxes are set at a much lower 17%. As Oregon's full adult use market comes online in the fall of 2016, the extent to which Washington consumers will be willing to cross the border to purchase lower-cost marijuana may increase pressure on Washington's legislators to further lower the tax rate to compete against the state's southern neighbor.

Marijuana speculation and long-term trends

The cannabis industry's extremely high levels of industry growth are attractive to investors. With large potential profits to be made, there is growing interest in the opportunities surrounding securitization of the industry. Savvy investors are already looking to the

future for new ways to capitalize on the growth of legal marijuana but early enthusiasm has been tempered by the poor performance of public companies in the past year.

The industry may still be too immature for a true commodity market due to the lack of standardization, price stability and liquidity. However, as the market stabilizes, banking services become available, and more liquidity is injected into the market, there will be new opportunities to build sophisticated financial instruments that allow for price hedging and risk management.

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With large potential profits to be made, there is growing interest in the opportunities around securitization of the industry, and savvy investors are already looking for new ways to capitalize on the growth of legal marijuana.

Big industry involvement a growing prospect?

Many pundits are predicting the involvement of big industry in legal marijuana, as once legal on a federal level, many big players could leveraging their significant economies of scale and national distribution channels to take over market share. Small cannabis companies already recognize this possibility; as publicly traded companies routinely include “competition from larger companies” in their annual reports as one of the major risk factors. While Big Agriculture, Tobacco, Alcohol, or Pharma could all theoretically disrupt the status quo, massive conglomerates are unlikely to wade into the market in any significant way in the immediate future until there is greater clarity on marijuana’s legality at the federal level, and until they feel assured that involvement in the industry would not exposed their other businesses lines to legal jeopardy.

However, if the industry matures and legalization conflicts are clarified, corporate involvement could lead to seismic changes. One of the main reasons investment into ancillary and direct cannabis businesses has been so resilient has been the opportunity to create a multi-billion-dollar market

basically from scratch. Without well-entrenched and larger competitors, many marijuana companies have been able to grow extremely quickly. Once the behemoth multinational corporations enter the market, they will likely go on an acquisition spree versus directly competing against companies that have years of experience in navigating the complex market.

WHAT TO EXPECT IN THE FULL 200+ PAGE REPORT

This executive summary provides just a glimpse of the rich data and analysis you will find in the full 200+ page State of Legal Marijuana Markets report. The report is the definitive guide to the legal cannabis industry, covering the most important national and state-level developments of the past year and closely examining the economic, social, and political factors that will shape the growth and trajectory of the industry in the years to come.

This report is an invaluable resource to investors who want to understand the investment landscape, entrepreneurs who want to learn about the opportunities and risks for businesses in this industry, and public policy decision makers who want insight into how states are managing the transition from illicit to legal, regulated markets.

Key areas in the full report include:

NATIONAL DEVELOPMENTS:

- Social and demographic changes that are fueling growth in support for legalization
- Key drivers of industry growth in the coming years
- Ways in which expanding adult use markets are impacting federal policy toward cannabis
- How the positions of the presidential candidates might impact the growth of the industry
- The social and economic costs of prohibition
- Emerging medical marijuana therapeutic applications and the evolving climate for cannabis research
- The consequences and implications of lack of banking services for the industry

- The impact of the federal tax burden on long-term business viability
- Growth of canna-tourism and emerging opportunities in cannabis hospitality and recreation

TOP TRENDS:

- How Congressional action in the coming years could impact the industry's growth and trajectory
- How price competition is changing producer and retailer strategies
- The costs of complex compliance and regulatory requirements on cannabis businesses
- How new technologies are modernizing the industry and changing the way business is done
- Which products and services are growing the fastest and why
- Ways that growers are adapting their strategies to manage soaring energy costs
- How data is transforming business strategies and the cannabis consumer experience
- Which international markets are leading the global discussion on cannabis legalization

STATE MARKETS:

- Key lessons from states which have legalized adult use
- Analysis of the states that are most likely to change their cannabis laws in 2016
- Detailed profiles of each state medical and adult use market including key developments in 2015
- State market growth projections for medical and adult use markets through 2020
- Profile of state medical programs, including qualified patient growth rates
- Local market factors that are shaping the growth and performance of each market
- Analysis of inter-state competition between adult use markets

The cannabis industry is growing at a compounded annual rate of 30%, making it one of the fastest growing sectors in the economy. It is an industry with incredible opportunities, and significant risks. The full State of Legal Marijuana Markets 4th Edition is a vital companion to help executives navigate this complex landscape, understand evolving trends, identify opportunities that will grow their businesses, and profit in an increasingly competitive marketplace.

THE FINANCE & INVESTMENT LANDSCAPE

- Key trends in the in the public and private cannabis investment market
- Best performing publicly traded cannabis companies
- Biggest risk drivers in cannabis business investments
- Impact of residency rules on out-of-state investment opportunities

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