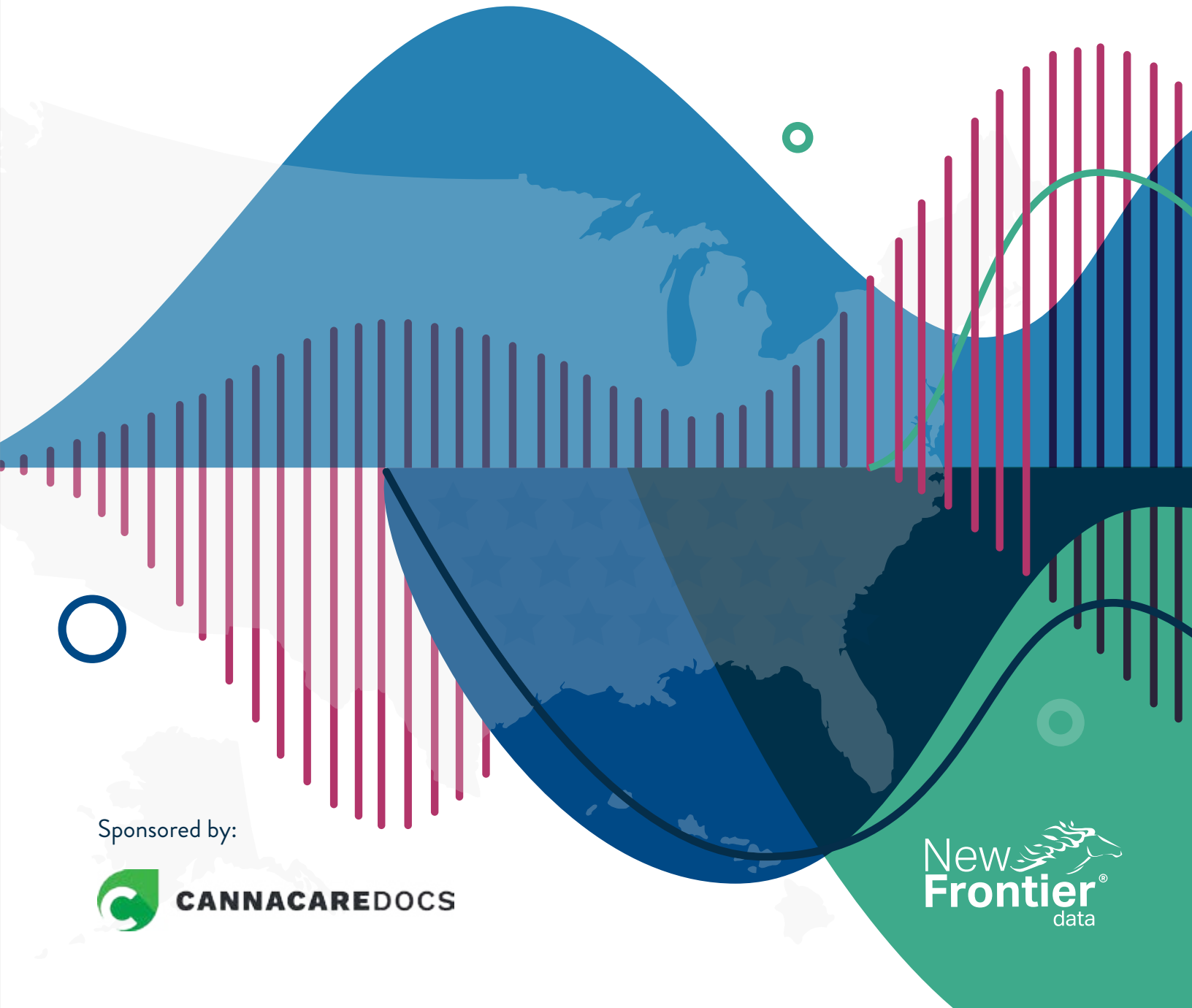


2023

U.S. Cannabis Report

Market Updates
& Projections



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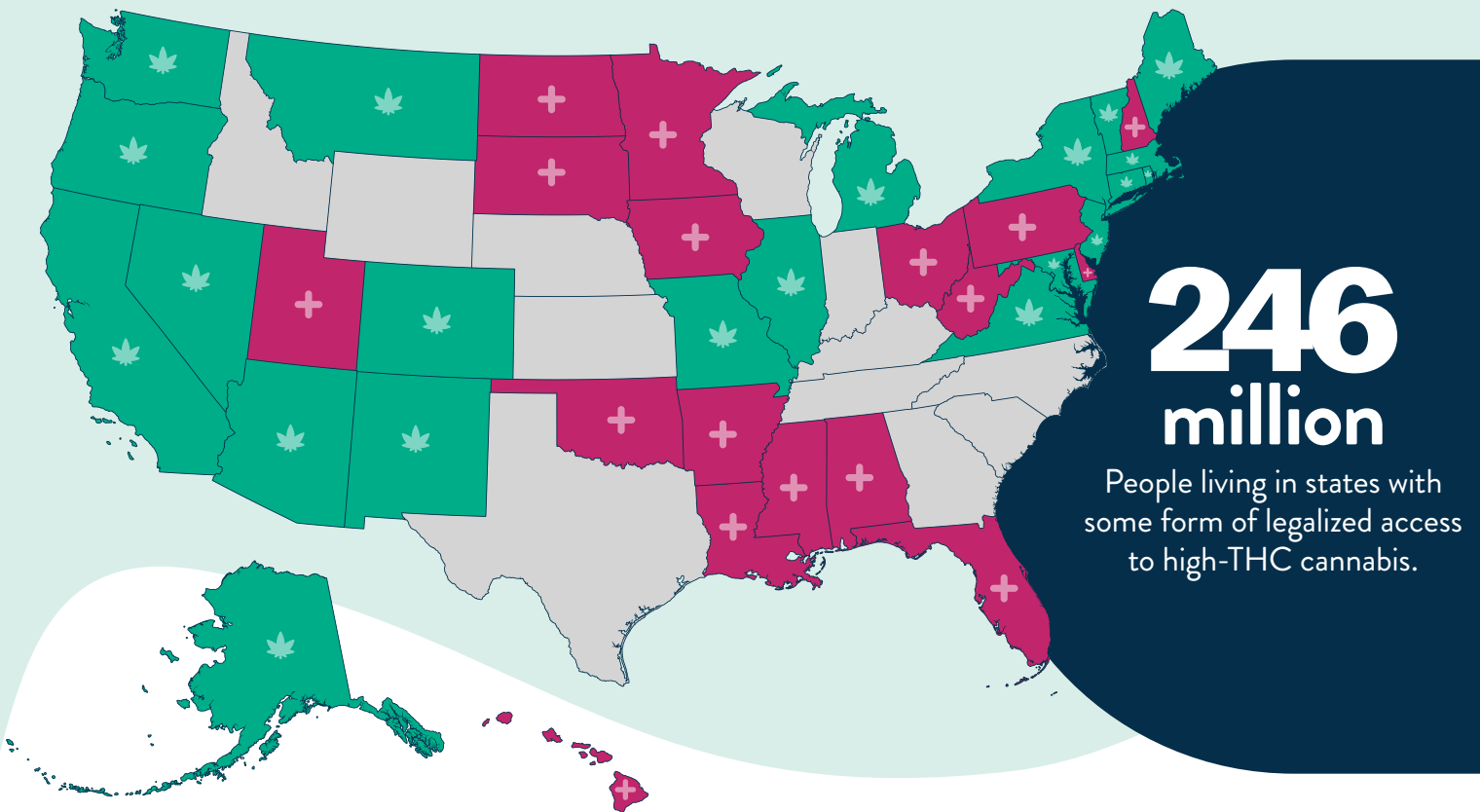
State-Level Legalization Continues in Absence of Federal Action on Cannabis

FOLLOWING THE FOOTSTEPS of Connecticut, New Mexico, New York, and Virginia last year, three additional states - Maryland, Missouri, and Rhode Island, passed measures to legalize adult-use cannabis sales in 2022, bringing to total to 22 states (including D.C.) where high-THC cannabis is legal for adult-use, and 39 (including D.C.) where high-THC cannabis is legal for medical use.

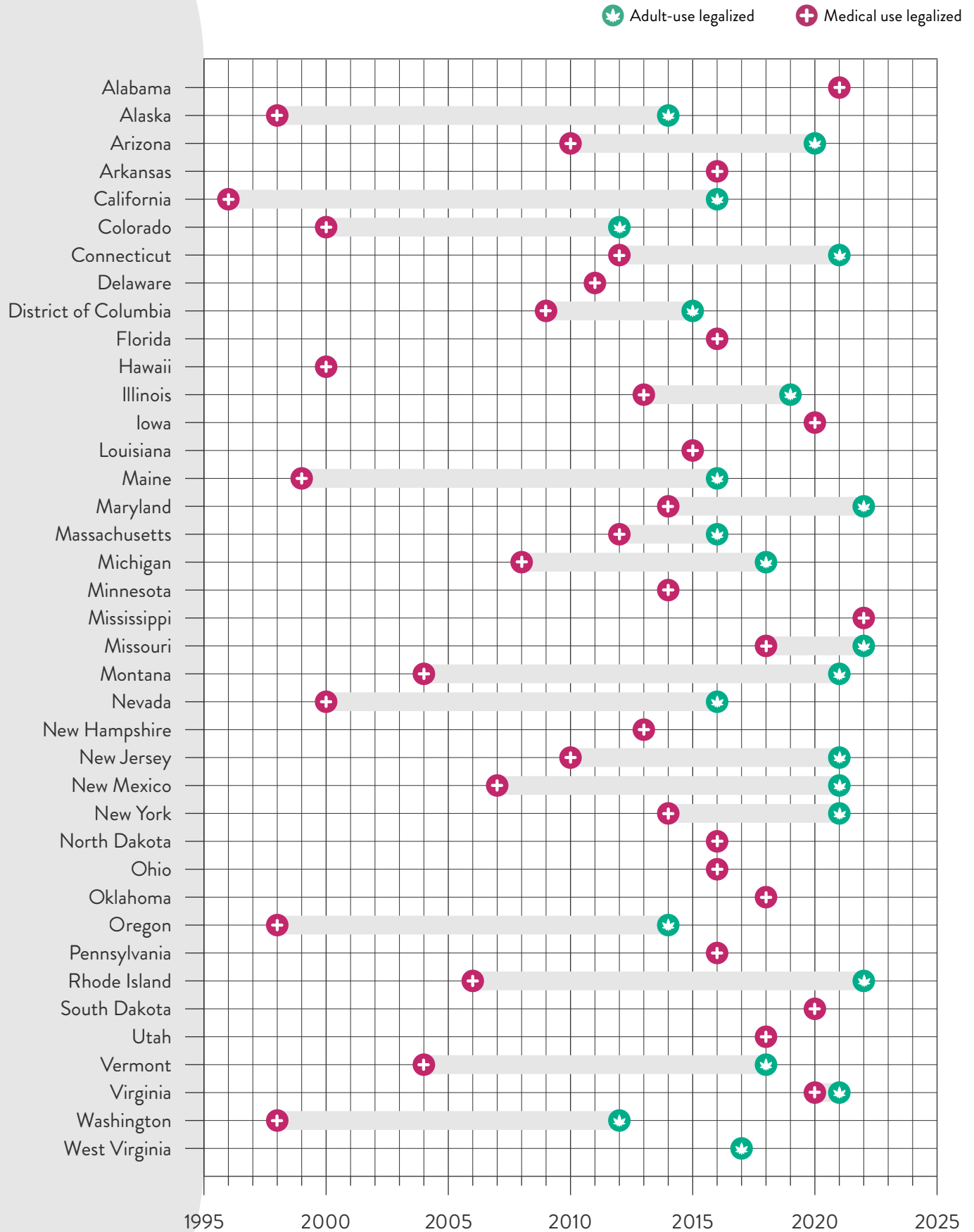
With a combined 159 million Americans living across those 22 adult-use states, 47% of American adults now have access to legal adult-use cannabis, and nearly three-quarters (73%) of the country now have access to legal medical cannabis in some form. Conversely, 90 million Americans (27% of the U.S. population) live in states where possession and use of cannabis remain illegal.

Legalized States

🌿 Legal adult-use & medical + Legal medical use only - No legal high-THC market



Legalization Timeline



Continued State-Level Market Activation Expected in Coming Years

While at first the odds for federal cannabis reform seemed likelier with Democratic leadership in place than under more conservative Republican administrations (support for federal reform is higher within the Democratic Party), tangible reform has failed to materialize, and consensus on the particulars of a national reform remains elusive heading into 2023. With each passing year the number of legal states (and the size of the legal industry) continues to grow, increasing pressure for federal action to address the disconnected patchwork of state regulations nationwide - specifically banking reforms to enable the cannabis industry to fully participate in the national and global financial markets.

Aside from being distracted by other issues, liberals and moderates remain divided on several issues with cannabis reform, including:

- Legalization vs. decriminalization
- Appropriate level of federal taxes
- Interstate commerce
- Banking reform
- Prioritization of social-equity programs
- Records expungement procedure
- Investments in advancing cannabis research

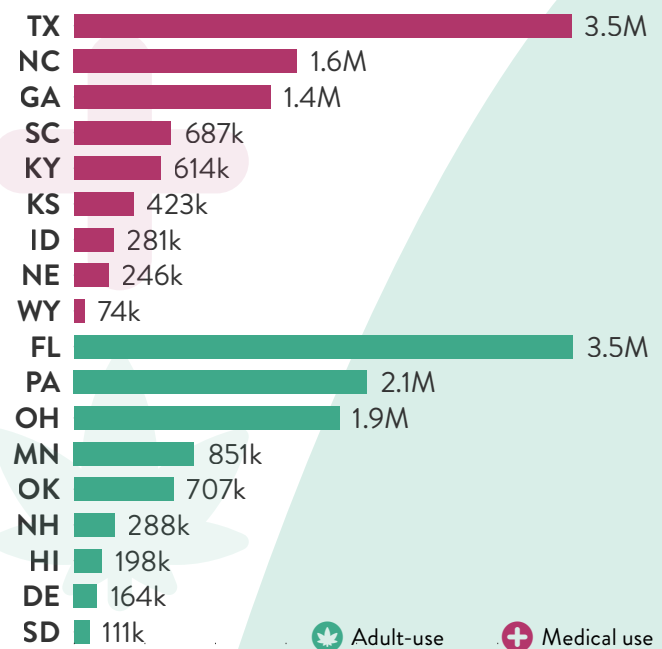
Without federal action on rescheduling or banking reform in the near term, it remains highly likely that the current patchwork model of state legalization will perpetuate through at least 2025.

Potential New Legal State Markets

Based on New Frontier Data's analysis of state legalization efforts, we have identified nine states demonstrating strong likelihood to legalize adult-use cannabis, and nine states likely to legalize medical use prior to 2030. Passage of medical-use legalization in those nine markets would bring access to legal medical cannabis for an additional population of nearly 70 million Americans (8.8 million current cannabis consumers). Passage of adult-use legalization in the specified nine markets would bring adult-use cannabis to a population of 62 million additional Americans (10 million current cannabis consumers).

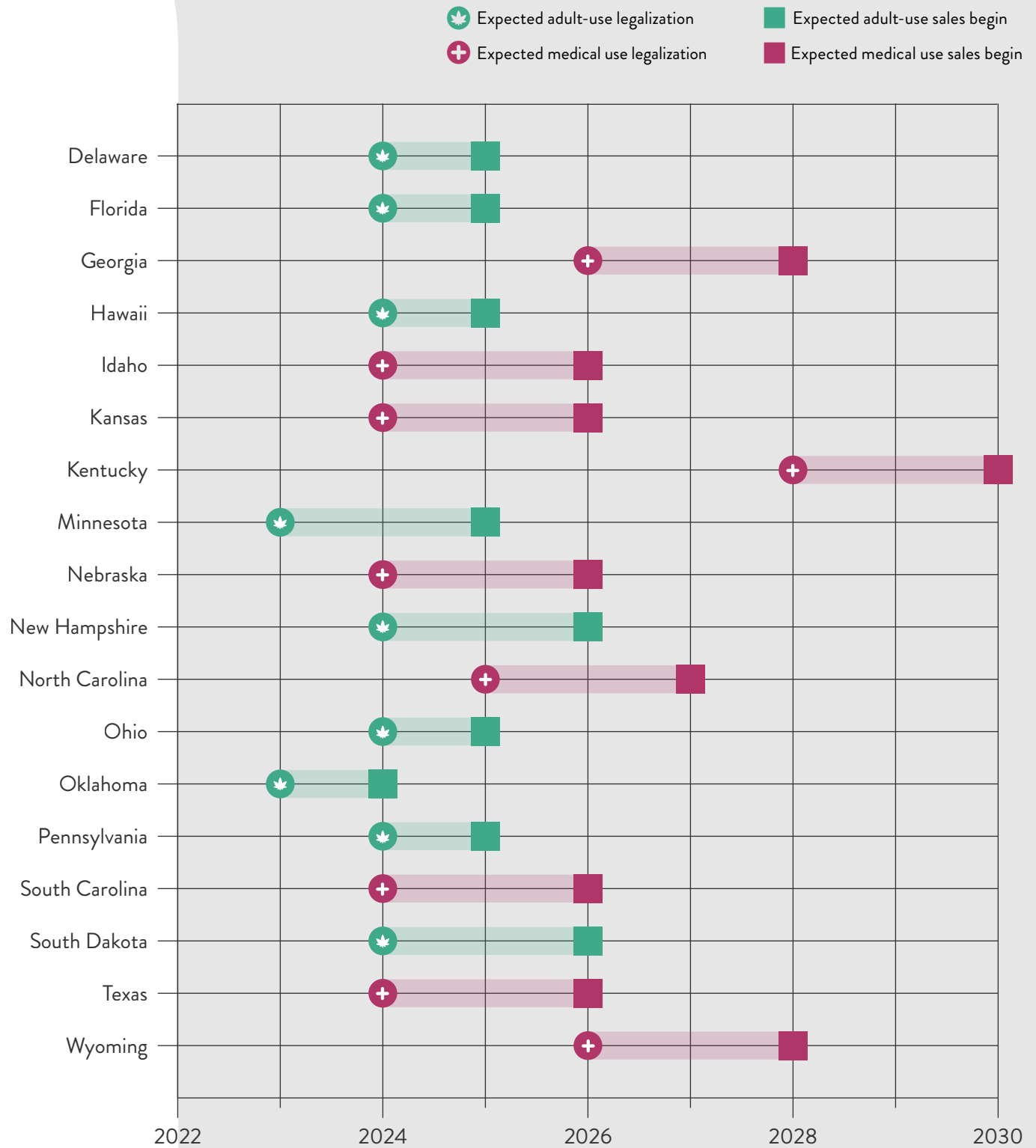
Potential New Markets by 2030:

Estimated Current Cannabis Consumers by State



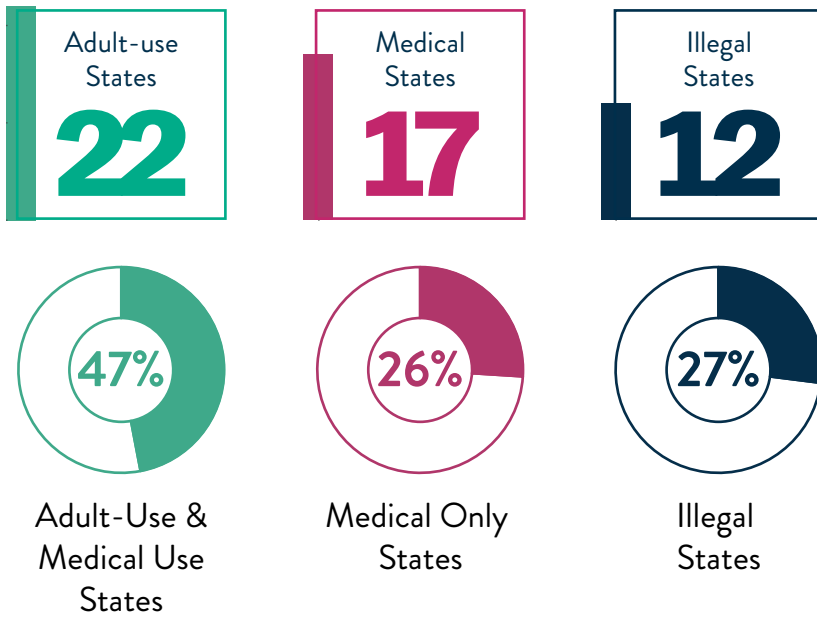
Note: Values shown are the estimated populations of existing cannabis consumers in 2023. Cannabis consumer is defined as a state resident who consumes cannabis at least once per year.

Potential Legalization Timeline



Note: Year shown for new markets is the expected year of legalization. New Frontier Data estimates a sales start date of +2 years from legalization for newly legalized medical markets, and +1 years from adult-use markets with preexisting medical markets. South Dakota is the sole exception, assumed to have an adult-use sales start date of +2 years from legalization.

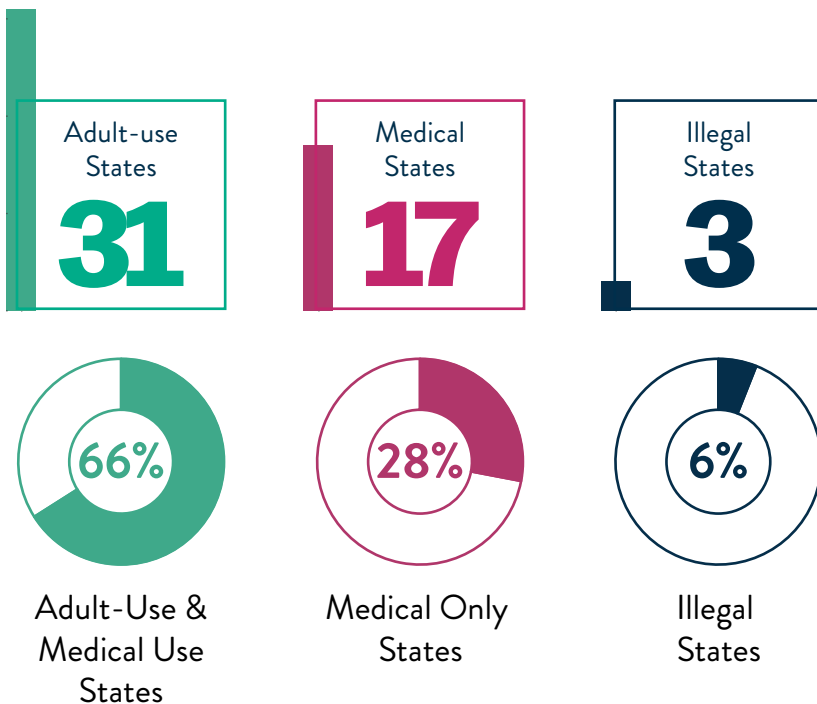
Current Percentage of Americans Living in Legal Cannabis Markets



If all 18 potential states are successful in enacting policy reform measures over the next eight years, it would not only add a additional projected \$13 billion annually to U.S. legal retail sales by 2030, but also immeasurable political pressure for federal reform. The new markets would increase the percentage of Americans living in states with some form of legal cannabis access to 94%, and of those living in states with legal access to adult-use cannabis to 66%.

Potential Percentage of Americans Living in Legal Cannabis Markets

If all potential states legalize respective markets by 2030



While it is difficult to pinpoint when federal legalization may occur, or what form it might take, it seems clear that expansion of the legal market will continue to create further public support and social normalization that adds pressure on lawmakers.

Cannabis Industry Sales Growth Projections

FUELED BY STRONG CONSUMER demand in the newest operational legal state markets, annual legal sales of cannabis in the U.S. totaled an estimated \$30 billion in 2022. Annual sales across these states are projected to surpass \$35 billion in 2023, and, if the pace of state-level legalization continues in the absence of federal policy reform, grow to an estimated \$71 billion by 2030 (CAGR 12%).

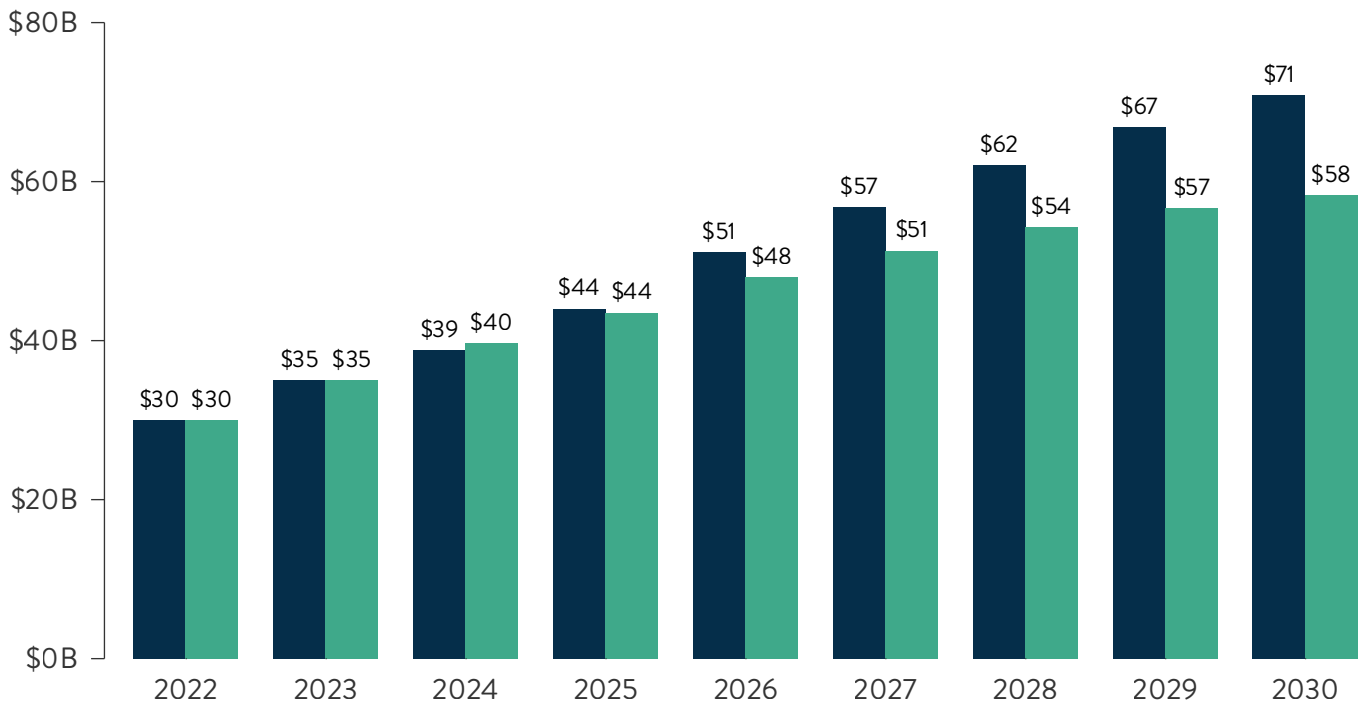
SCENARIO ANALYSIS: GROWTH OF THE U.S. LEGAL CANNABIS INDUSTRY

Scenario A: Assumes continued pace of new state legalization.

Scenario B: Assumes stagnation in pace of state legalization (only currently legalized states are assumed to remain operational through 2030).

Legal Cannabis Sales Growth: Scenario A vs. Scenario B

● Scenario A: Total legal sales ● Scenario B: Total legal sales

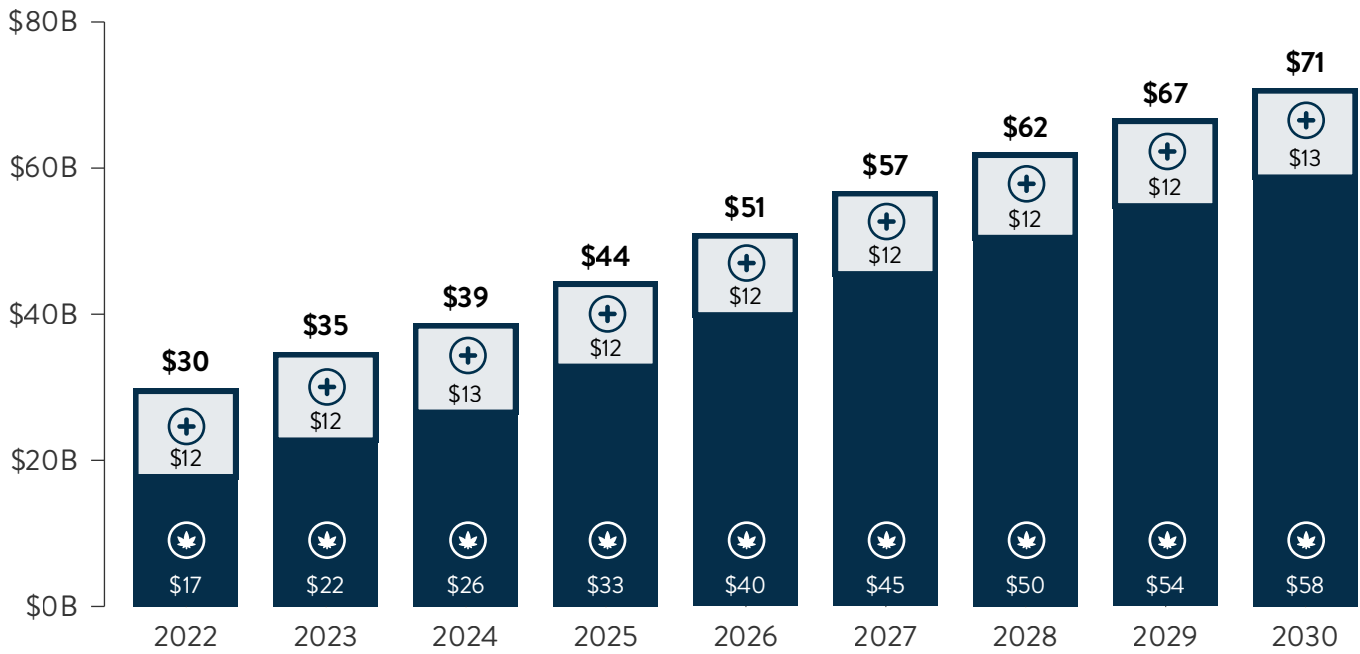


Note: Historically, states which legalize adult-use cannabis on top of existing medical markets experience declines in patient participation.



Legal Cannabis Sales Growth: Scenario A

Legal adult-use sales Legal medical sales

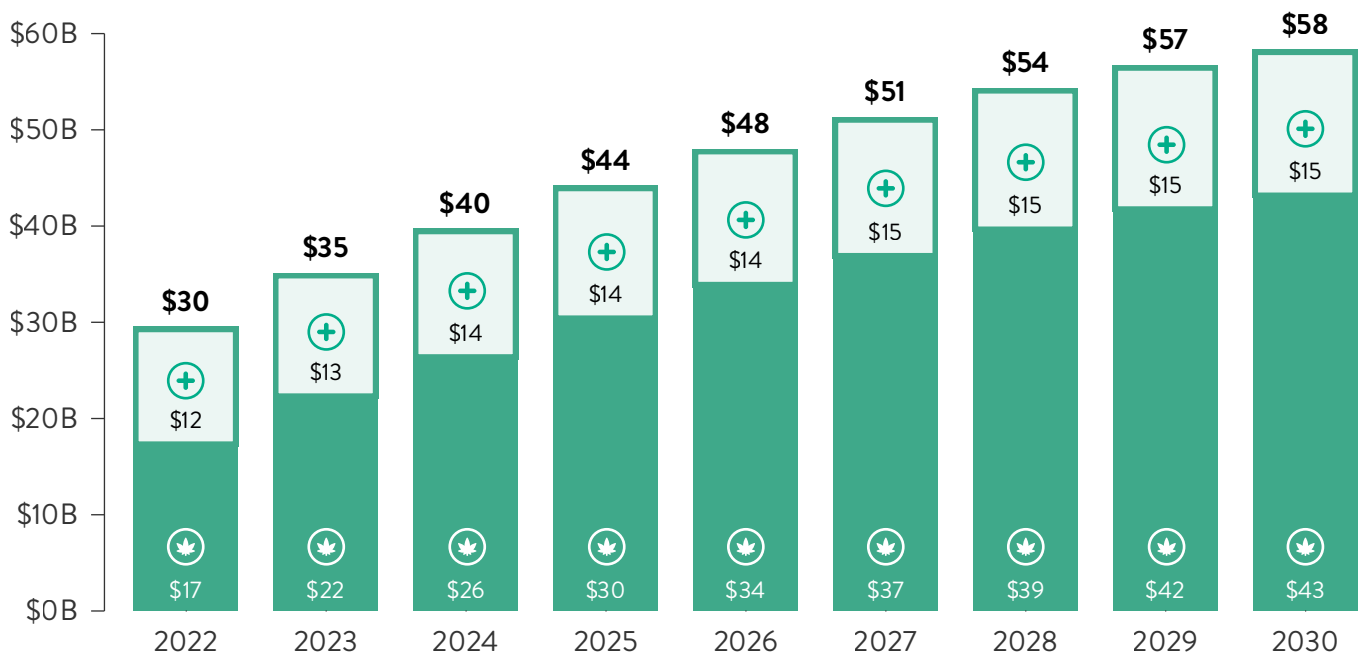


Note: Includes sales from all 18 new target market likely to legalize, summarized in table above.



Legal Cannabis Sales Growth: Scenario B

Legal adult-use sales Legal medical sales



Note: Market size projections in this chart are based solely on the state markets that have passed medical and adult-use legalization initiatives as of November 2020, and do not include assumptions for any additional states that may pass legalization measures in the future.

Overall growth in the national legal industry is fueled by convergent forces, including:

- The addition of new legal revenues from state markets that have recently reformed their cannabis laws and erected retail markets for high-THC cannabis products;
- Sustained demand growth in legal states as consumers make the transition from the unregulated market to the legal one; and
- Increased cannabis consumption throughout the U.S. population as public recognition of cannabis' expansive therapeutic value grows, usage becomes increasingly normalized and destigmatized, and cannabis is diversified for more medical and wellness uses.

In states that have chosen to legalize cannabis for adult-use on top of an existing medical cannabis program, the key drivers of size and growth for each market have been in the details of the respective regulatory structures for each market. Some of the key distinctions having the greatest impact on legal market sales are:

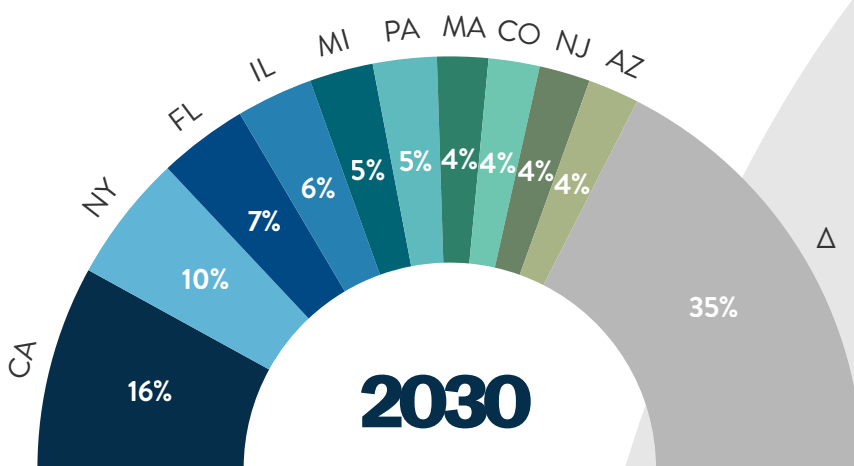
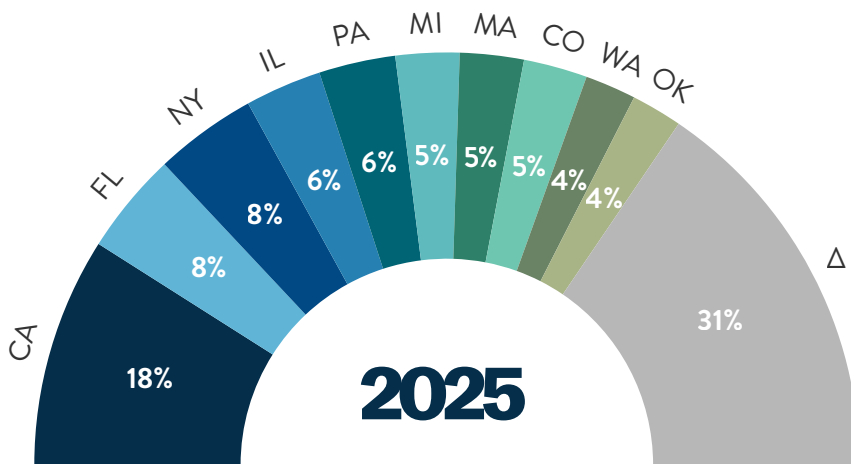
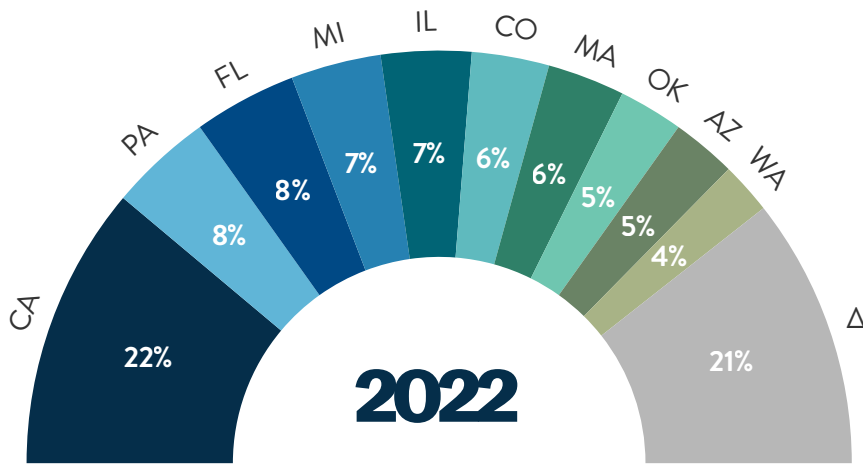
- **The chosen integration approach** for retail access of both market types;
- **Availability and accessibility of retail outlets** (e.g., differences in total number of accessible retail locations between market types);
- **Maturity level of existing medical market** (e.g., the more entrenched a medical market is before adult-use activation, the higher its likelihood to maintain the patient base)
- **Effective tax differences** between medical and adult-use programs;
- **Ease of medical market entry by new participants** (e.g., number and types of approved qualifying conditions in medical markets, cost of card renewal);
- **Differences in product type restrictions** between markets; and
- **Home cultivation/caregiver laws.**

New Frontier Data projects that by 2030 California, New York, and Florida will be the three largest legal state markets.

Top 10 Largest State Markets:

Legal Medical & Adult-Use Combined Annual/Projected Sales

New Frontier Data projects that by 2030, California, New York, and Florida will be the three largest legal state markets, with Illinois, Michigan, and Pennsylvania close behind.



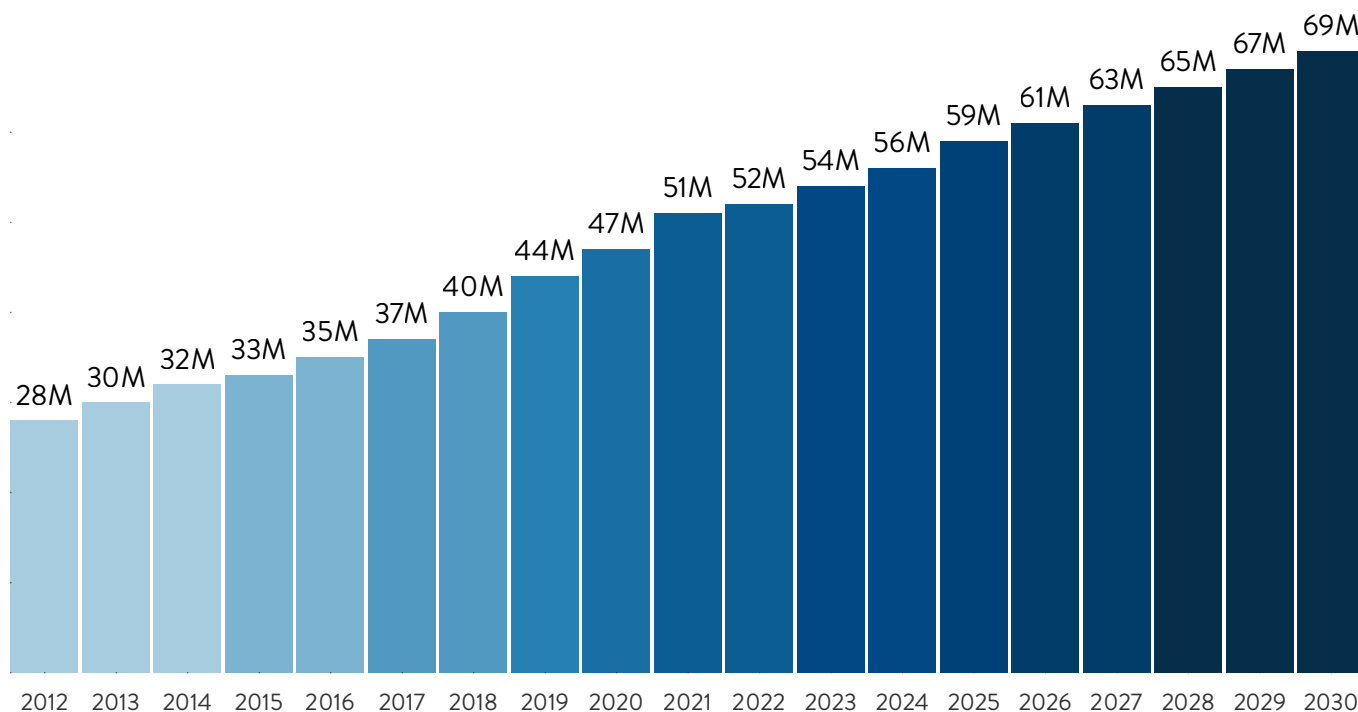
Δ Denotes "Rest of Legal States Combined" and includes annual revenue projections for 29 currently legal states with expected sales operational before 2030. All share calculations are based on combined legal sales in both medical and adult-use markets.

The Growing U.S. Cannabis Consumer Base

AN ESTIMATED 54 MILLION U.S. adults will consume cannabis at least once in 2023 across both legal and unregulated markets. That number is projected to grow by roughly 4% per year over the next eight years, reaching an estimated 69 million U.S. consumers by 2030.

69
million
U.S. cannabis consumers
by 2030

Total U.S. Cannabis Consumers: In millions



States with the Most Cannabis Consumers

2023 est., in millions



States with the Highest Cannabis Consumer Density

Est., cannabis consumers per 1,000 people



Notably, three of the 10 states with the most consumers (i.e., Florida, Ohio, and Pennsylvania) are likely to legalize adult-use markets in the next few years, while Texas and North Carolina could approve full medical programs by 2025. The current restraints on cannabis in both Texas and North Carolina underscores the scale of market opportunity over the medium term, as there are many more large consumer markets for legal cannabis to expand into throughout the coming years.

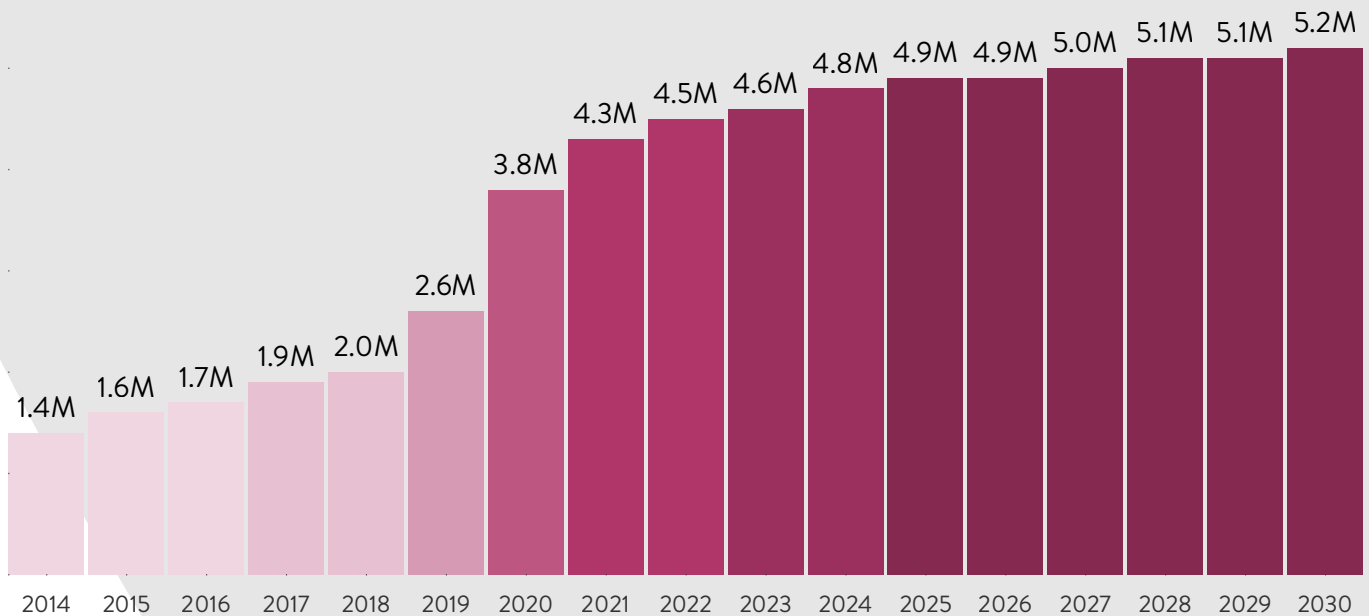
Aside from Washington D.C., which has legalized the possession and use of cannabis for adult-use, but not the sale or legal marketplace, all of the states with the highest density populations of cannabis consumers are currently operational adult-use markets.

National Medical Cannabis Program Participation

WITH 39 STATE MARKETS (including D.C.) currently operating legal medical cannabis programs, the total number of registered patients nationwide surpassed 4.5 million in 2022. Just in legal medical-use states (with no assumptions for new markets by 2030), New Frontier Data projects that there will be a combined 5.2 million patients registered by 2030, representing roughly 2% of the entire U.S. population.

While most Americans now live in a state with a medical market, specific state regulations (e.g., restricted lists of qualifying conditions, product limitations, program participation costs, retail access, and product taxation) all significantly influence the level of participation within each state. These factors collectively determine how quickly and how large each state program will grow.

Projected Growth in Number of U.S. Medical Cannabis Patients: 2014-2030, in millions

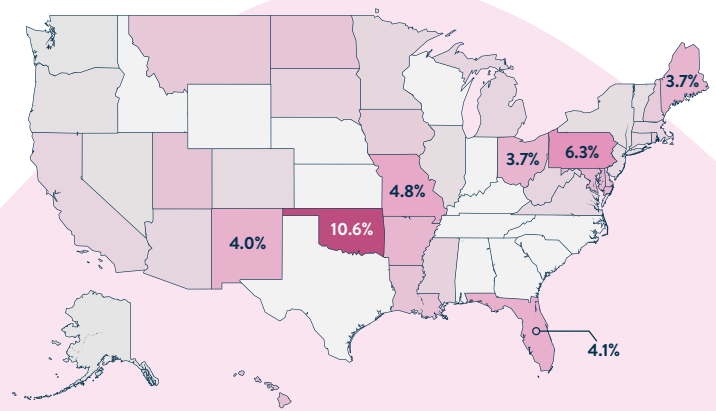
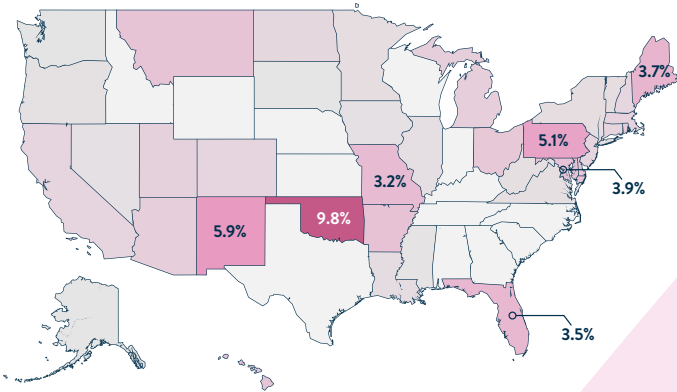


Note: Values shown are estimates for total counts of patients registered as of December each year. Patient growth reflects assumptions of Market Scenario A (no additional states legalize cannabis markets prior to 2030).

U.S. Medical Cannabis Patients

CURRENT PATIENT SATURATION¹

ESTIMATED PATIENT SATURATION BY 2030



4.5 million

Number of U.S. medical cannabis patients as of Jan. 2023

1.9%

Average saturation rate across all medical states as of Jan. 2023²

5.2 million

Est. number of U.S. medical cannabis patients by Dec. 2030

2.1%

Est. average saturation rate across all legal medical states by Dec. 2030

Top 7 States by Patient Saturation (as of January 2023)

		REGISTERED PATIENT SATURATION %
1.	OKLAHOMA	9.84%
2.	NEW MEXICO	5.88%
3.	PENNSYLVANIA	5.07%
4.	DISTRICT OF COLUMBIA	3.89%
5.	MAINE ³	3.69%
6.	FLORIDA	3.54%
7.	MISSOURI	3.24%

Top 7 States by Patient Count (as of January 2023)

		REGISTERED PATIENT COUNT
1.	FLORIDA	788,297
2.	PENNSYLVANIA ⁴	658,378
3.	CALIFORNIA ⁵	500,332
4.	OKLAHOMA	395,681
5.	OHIO	268,672
6.	MISSOURI	200,253
7.	MICHIGAN	178,642

1. Patient saturation reflects the number of estimated registered medical cannabis patients in each state as a percentage of state population.

2. The national average saturation reflects the average patient saturation rate across all legal medical cannabis markets that have begun the patient registration process.

3. Estimate displayed for the state of Maine includes patients that shop from both regulated medical dispensaries as well as through the caregiver system.

4. Estimate for Pennsylvania includes total program registrations. Estimate for active purchasing patients in Pennsylvania was 372,000 as of January 2022.

5. Estimates displayed for the state of California are New Frontier Data estimates for active medical patients only. There are upwards of an estimated 2 million card-holding medical cannabis patients in California, of which only a fraction represents active purchasers of medical cannabis products from licensed and regulated medical dispensaries.

The range of qualifying medical conditions permitted by each state is a key determinant for patient participation within any legal medical market. States permitting broader lists of conditions generally attract far greater participation than do those states which limit medical cannabis accessibility (e.g., markets restricted to cancer patients or the terminally ill). Recognizing this, there has been a distinct trend of initially restrictive medical programs expanding the allowable conditions in an effort to boost rates of patient registration and program sales. The most common way to broaden the potential patient pool and increase program sales has been to add key ailments associated with higher rates of patient registration (such as chronic pain) to the list of accepted qualifying conditions.

IMPROVING MEDICAL CANNABIS ACCESS: EVOLUTION OF PRESET QUALIFYING CONDITION LISTS

Newly legal medical markets are generally trending toward more expansive programs, permitting a broad array of health care practitioners to recommend medical cannabis for increasingly diverse lists of qualifying conditions.

In the first states to legalize medical use programs, the most commonly approved qualifying conditions included terminal illness, epilepsy, cancer, HIV/AIDS, and glaucoma. Those conditions still appear most commonly across all states which specify qualifying

conditions, though newer markets have greatly expanded their lists to include ailments such as PTSD, anxiety disorders, Alzheimer's, and autism spectrum disorders. Additionally, with a growing body of research suggesting that cannabis may hold promise in helping mitigate rates of opioid dependence and overdoses, many states have turned to cannabis as a countermeasure to the crippling opioid crisis. Some indirectly (by including chronic pain as an accepted qualifying condition), others by explicitly allowing any patient receiving an opioid prescription to automatically become eligible to access medical cannabis.

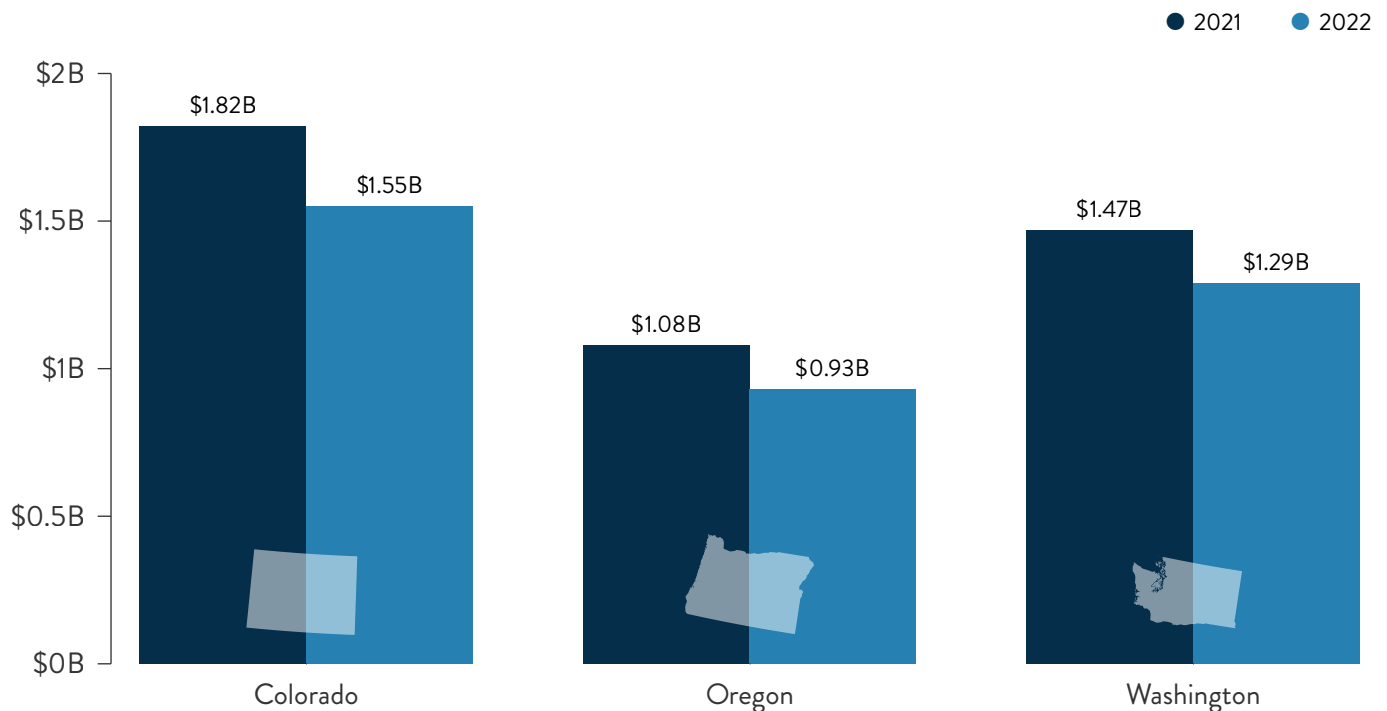
While most states have allowed the public to petition for new conditions (some having grown their qualifying condition lists considerably through the process), it is the permission for a physician's discretion (i.e., medical authority to prescribe cannabis for any condition which they deem appropriate) that has served as the greatest catalyst for expanding medical programs. Oklahoma has experienced explosive growth in its medical program in the past few years, and currently features the nation's highest patient participation rate (by a wide margin). While participation in Oklahoma's medical market is increased by other low regulatory barriers to entry (e.g., absence of license caps, and overall ease of access to retail dispensaries), the latitude granted to physicians has been instrumental to that market's explosive growth.

Increased Competition, Oversupply and Falling Prices

WHILE THE INFLUX OF DOLLARS into newly legal state cannabis markets pushed total cannabis sales to nearly \$30 billion in 2022, the most mature adult-use markets in the country were battling with increased regional competition, oversupply, and falling prices throughout the year. Colorado and Washington both saw a decline in annual sales for the first time since legalization in 2014, and all three of the oldest legal cannabis state markets experienced double digit declines in sales year-over-year from 2021.

Market competition created by the activation of a new legal market – both within a dual legal state market as the new adult-use market competes with the existing medical one, and between a state’s illicit and legal markets – creates downward pressure on cannabis prices. The speed of decline seen in retail prices is influenced by the regulatory structure of the market (i.e., prices will generally decline more slowly in limited license markets than in unlimited licenses markets, and more slowly in medical markets than in adult-use markets).

Annual Sales Down Roughly 14% in Most Mature Adult-Use Markets: 2021 vs. 2022



However, other factors also have effects, such as how quickly retail outlets open after initial legalization, state taxation levels, and the quality and variety of available products.

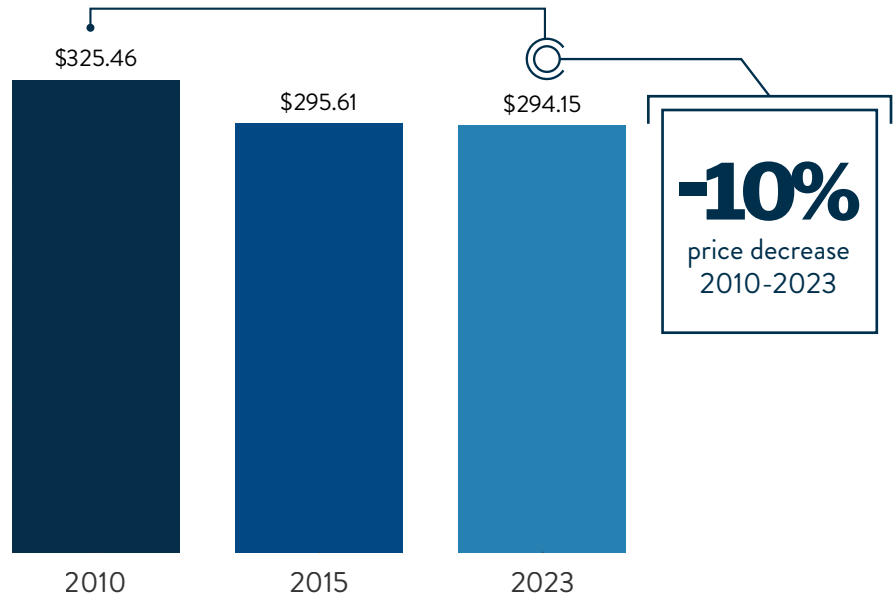
Looking specifically at flower prices, it is the oldest adult-use state markets – Colorado, Washington, and Oregon – which have seen some of the steepest cannabis price declines. Since 2010, average prices paid per ounce have fallen approximately 30%.

Now, the pioneering legal adult-use markets on the east coast are also dealing with falling prices. Massachusetts has an oversupply of cannabis and has seen a sharp decline in flower prices at adult-use dispensaries by as much as 50% since this time last year. In December 2022, the adult-use market had its first store closure since recreational sales began in 2018.

Similar to Colorado, Oregon, and Washington State, price declines in Massachusetts are a result of mismatched supply and demand.

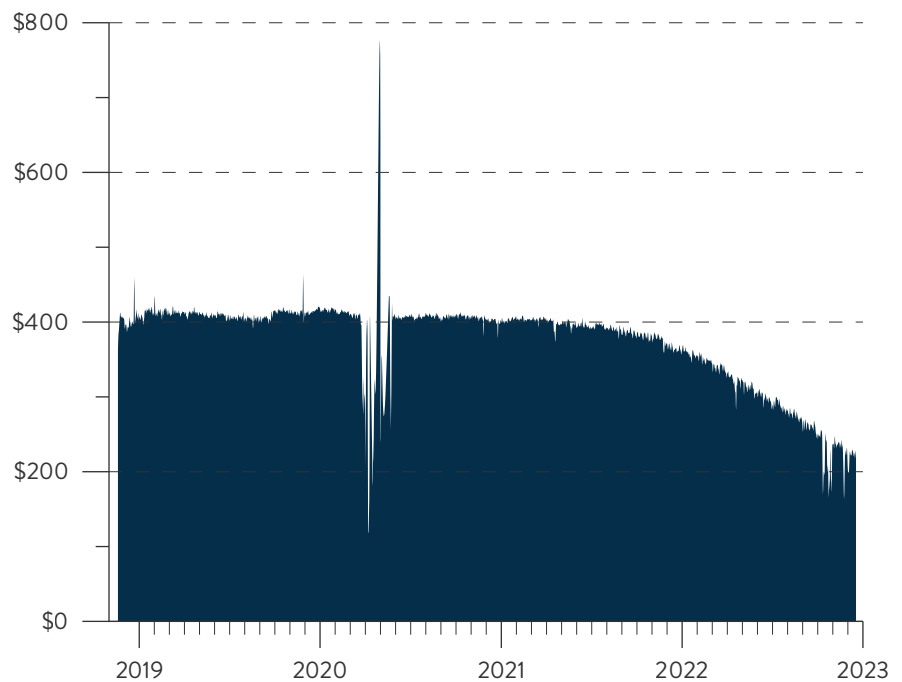
Decline in Average Price per Ounce of Flower in the U.S.

Avg. paid by consumers across all markets



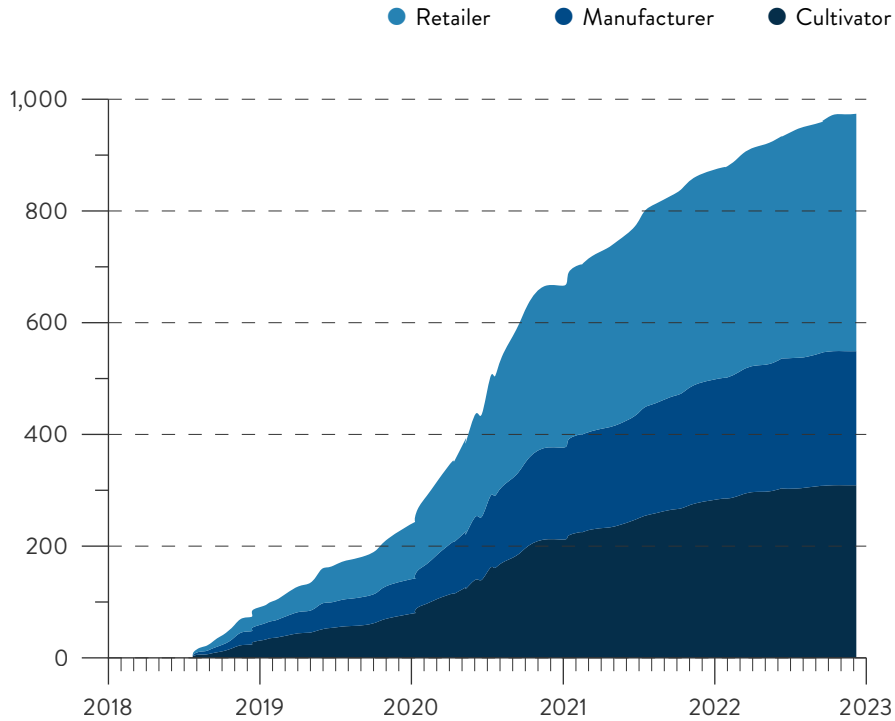
Note: Price per ounce data was scraped from self-reporting consumer sites (i.e. PriceofWeed Index, etc) for both high- and medium-quality cannabis flower across all U.S. states, and includes prices paid by consumers in illicit markets.

Massachusetts Adult-Use Average Retail Price/Oz.

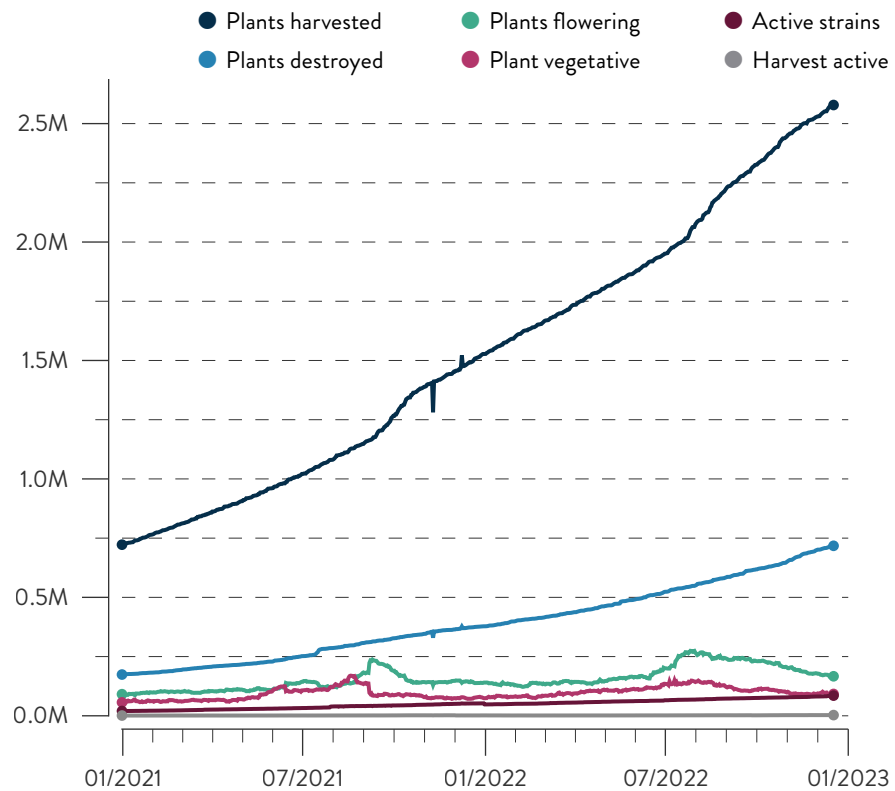


Source (bottom): Massachusetts Cannabis Control Commission's Open Data Platform.

Massachusetts Count of Approved Adult-Use Cannabis Licenses: By Type



Massachusetts Marijuana Establishment Adult-Use Plant Activity & Volume: Monthly Average



Source (both charts): Massachusetts Cannabis Control Commission's Open Data Platform.

While competitive forces and growing competition in newly legalized states continue to drive down both wholesale and retail prices in the legal markets, strong growth in consumer demand across the country will ensure sustained positive growth in cannabis consumption through 2030.

Furthermore, increasing demand for value-added products (i.e., vapes, concentrates, edibles, and topicals) will buoy spending prices at legal retail outlets, since those products have held their premium pricing better than flower. As value-added products command an increasing market share, the rate of market-wide price compression is expected to slow relative to prices in markets where flower remains the dominant product.



Detailed analysis of cannabis prices, market share by product, and other developing trends in all existing legal state cannabis markets will be provided in our upcoming sequel to this report, "2023 U.S. Cannabis Report: Industry Trends".

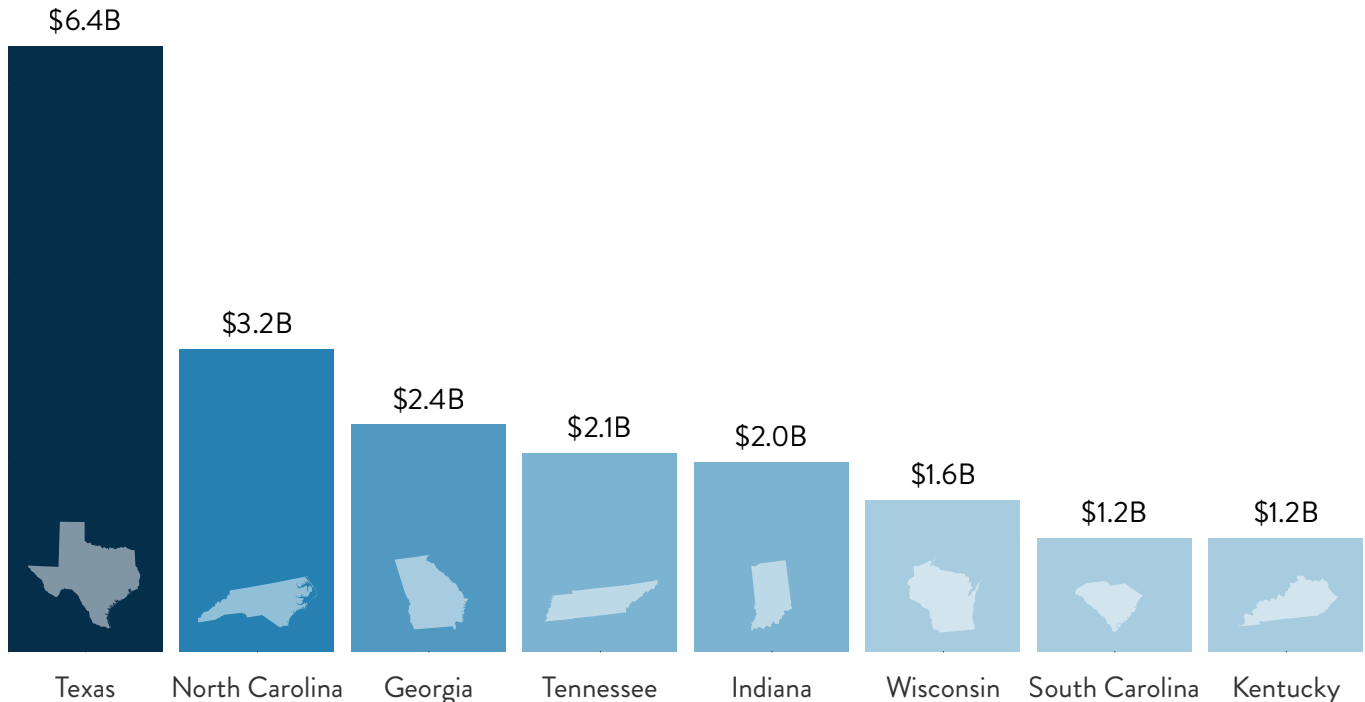
Expanding Legalization and the Erosion of the Illicit Market

THE NUMBER OF U.S. ADULTS who consume cannabis at least once a year continues to grow, with an estimated 69 million consumers across both legal and illicit markets expected by 2030. Despite strong performances seen in legal state markets (i.e. \$30 billion in combined state legal sales for 2022), illicit markets continue to serve most U.S. demand, with an estimated \$76 billion spent across illicit sources nationally in 2022.

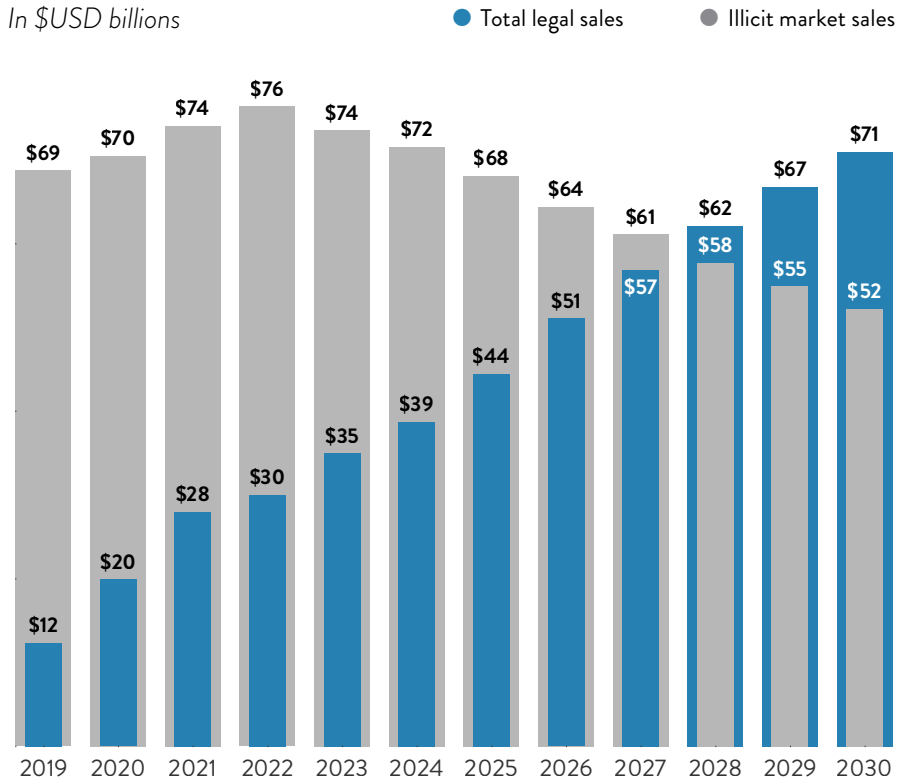
Among states without medical or adult-use cannabis sales in place, Texas, North Carolina, and Georgia, respectively, represent the three largest, currently unregulated state markets, worth a combined \$12.1 billion in estimated illicit cannabis sales in 2022. Barring any action to legalize cannabis, the combined illicit market in those three states is projected to be worth roughly \$18 billion by 2030.

Largest Estimated Illicit Markets in 2022

In states with no legal market

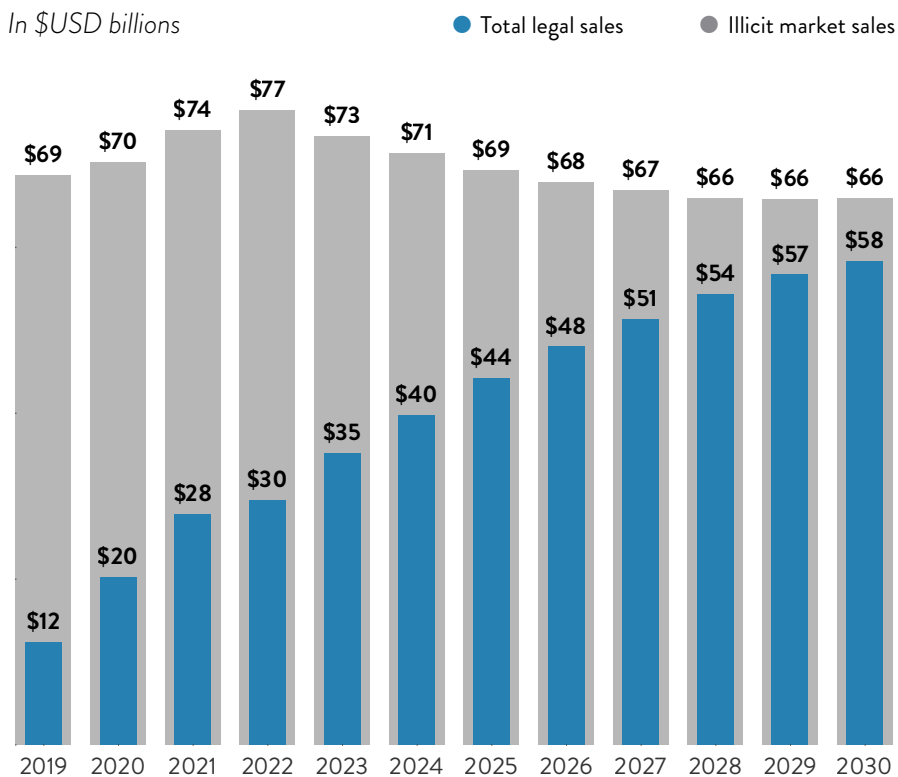


Legal vs. Illicit Sales: With Activation of Potential New State Markets by 2030



If a key objective of legalization is to disrupt illicit markets, that end is being achieved. Even with continued national increases in cannabis consumers, both legal medical and adult-use markets will increasingly erode demand met by illicit sources. In 2022, an estimated 28% of U.S. cannabis sales came through legal channels; by 2030, 48% of total annual U.S. demand will expectedly be met by legal cannabis purchases in the states where cannabis is currently legal.

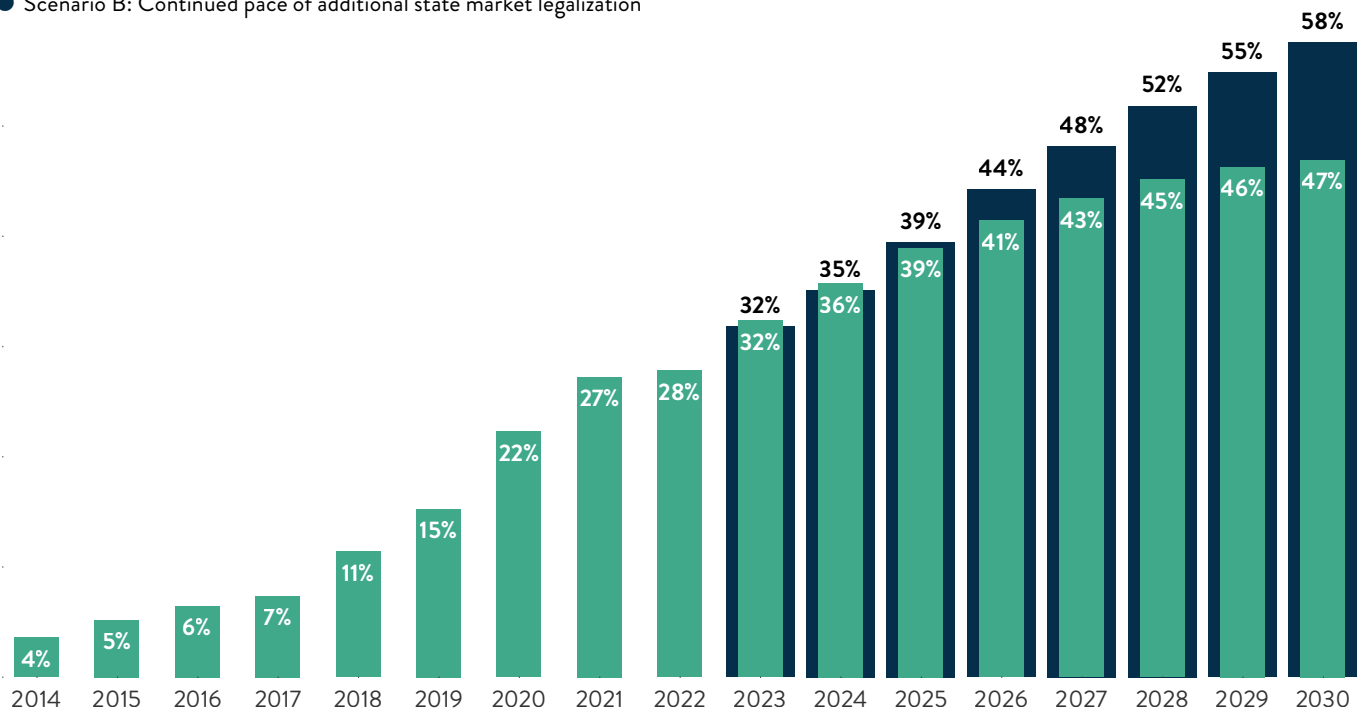
Legal vs. Illicit Sales: Across Current Legal Markets Only



If all 18 of the potential markets legalize within expected timelines, the legal market could capture nearly 60% of total cannabis market demand by 2030.

Percentage of Total U.S. Cannabis Demand Met with Legal Source

- Scenario A: No new legal state markets
- Scenario B: Continued pace of additional state market legalization



Key factors influencing how much demand a legal market can capture – and how quickly – include:

- Flexibility of regulatory structures to address changing market dynamics;
- Market implementation timelines;
- Allowances for diverse product types;
- Taxes and retail prices;
- Product access (largely determined by number of state licenses issued for cultivators and dispensaries, as well as allowances for delivery services); and
- Barriers to patient participation (largely determined by qualifying conditions in medical states).

When individual legalized states launch a regulated market on the heels of an efficient and effective unregulated market and impose strict market limitations to limit access, or otherwise experience delays, illicit markets can recapture consumers. In California, for example, just 44% of in-state demand will likely be met by legal regulated sources in 2022; that share is projected to grow to 53% by 2025, and 69% by 2030. Meanwhile, other recently activated adult-use markets like Massachusetts' are expected to convert nearly three-quarters of all cannabis sales to the legal market by 2025.

Key Takeaways

The oldest legal adult-use state cannabis markets saw declining revenues for the first time in 2022, but the influx of legal revenues from newly legalized east coast state markets serves as strong foundation for growth of overall U.S. cannabis industry in the medium-term.

Despite a few of the oldest operational legal markets on the west coast (CO, OR, WA) facing some challenges in 2022 in the forms of falling prices and illicit market competition, total sales across the U.S. as a whole were buoyed by the addition of new state markets (and their naturally high levels of associated sales growth in the initial years of legal program launch). Sales across legal U.S. cannabis state markets were worth a combined \$30 billion in 2022. With the continued conversion of consumer spending from the illicit market in existing legal markets, and the influx of new revenues from sizable state markets that are expected to operationalize in the next year (VA, NY), annual legal sales of cannabis are projected to top a collective \$35 billion in 2023, and grow at a compound annual growth rate (CAGR) of 9%, to reach more than \$58 billion by 2030¹.

1. Across U.S. states where cannabis is currently legal, with no assumptions for new legal state markets prior to 2030

New Frontier Data projects that by 2030 California, New York, and Florida will be the three largest legal state markets, with Illinois, New Jersey, and Michigan close behind.

With 18 additional states positioned to legalize either medical or adult-use in the next decade, legal sales could top \$71 billion by 2030 and add increased pressure for federal action on banking or interstate commerce.

Based on New Frontier Data's analysis of state legalization efforts, nine states are demonstrating strong momentum to join the market and legalize adult-use cannabis prior to 2030, while another nine seem likely to legalize medical cannabis. Should all of them succeed in their efforts (and on the timeline projected by New Frontier Data), sales in just those new states would boost annual industry revenues by an estimated 22%, adding approximately \$13 billion annually by 2030 and bringing total legal sales to an estimated \$71 billion. (Without counting any additional states' legalizing cannabis either for medical or adult-use by 2030, currently operational states will grow an additional \$29 billion in annual revenues over the next seven

years, highlighting the continued growth opportunities even among well-established markets.) Additionally, if all identified states by New Frontier Data are successful in passing legalization measures, this would increase the percentage of Americans living in states with some form of legal cannabis access to 96% (and that of Americans living in states with legal access to adult-use cannabis to 64%), undoubtedly adding immeasurable pressure to the push for federal reform.

State-level legalization expected to remain the standard in the near term.

The initial excitement about action on federal cannabis reform from new Democratic leadership has dwindled in the absence of tangible action, and the prospect of federal action to address the country's disconnected patchwork of state regulations (specifically banking reforms to enable the cannabis industry to fully participate in financial markets) remains elusive in 2023. Without federal action on rescheduling or banking reform in the near term, the current patchwork model of state legalization is expected to perpetuate.

While it is difficult to pinpoint when federal legalization may occur, and what form it might take, it seems clear that the success and projected growth of sales in existing legal state markets, taken with the continued strong expansion of state markets, would only heighten pressure on the federal government to reform national cannabis policy. However, even with the Democrats in control of both the White House and Congress, and their

If all 18 states are successful in passing legalization measures, the number of Americans living in states with some form of legal cannabis access would increase to 96%.

party largely in agreement that the time has come for federal reform, there remain some key issues on important divisions which could derail a path to reform, including:

LEGALIZATION VS. DECRIMINALIZATION

Legalization would grant the federal government broad powers to regulate a national cannabis industry, while federal decriminalization would perpetuate the current patchwork model with some states making cannabis fully legal, others permitting medical use only, and others maintaining a blanket prohibition. Both approaches would have major implications for the U.S. market, with a nationally legal model greatly favoring the MSOs, Canadian LPs, and non-cannabis consumer packaged goods (CPG) companies, while decriminalization would benefit smaller, single-state operators by maintaining a highly fragmented market.

BANKING AND FINANCE REFORM

Two primary financial issues facing the industry are the inability for plant-touching businesses to access traditional capital markets (including federal business-funding programs), and the significantly higher taxes which cannabis businesses pay – both being caused by the federal prohibition of cannabis. While legalization would broadly address both issues, anything short of full legalization will require separate legislation to address the capital issues in the cannabis market. Lawmakers remain divided about whether and when to grant the cannabis industry full and fair access to the national and global financial markets, and the lack of consensus could stymie near-term reform efforts.

SOCIAL EQUITY AND GOVERNMENT SUPPORT FOR THE INDUSTRY

Another area of division is the extent to which the federal government should actively support the industry's growth, particularly with programs aimed at poor, minority, and disadvantaged communities who have borne the burden of cannabis prohibition yet are now being excluded from the emerging legal industry. Reaching consensus on how the federal government can support the development of an equitable cannabis industry after decades of racially inequitable prohibition enforcement will likely remain a key point of division between progressive and more conservative lawmakers.

Ultimately, without strong backing from the White House, it is unlikely that Congress will be able to muster the votes or political will to advance sweeping national reforms. Those issues illustrate the complexities which lawmakers will face as they work to establish a framework for national reform.

The low likelihood of a sweeping measure passing congress has increased the likelihood that a more incremental move, like addressing cannabis banking, will clear Congress in the near term. The parties are more closely aligned on the urgency of removing the prohibitions on cannabis businesses using the financial systems, the state markets have matured sufficiently to show significantly improved business compliance, and the dramatic revenue growth of the industry makes the lack of access to banking services increasingly untenable. However, even with this strong consensus, it is unlikely that banking reform would happen until well after the 2022 midterm elections.

Despite broad public backing and increasing self-reported use, political opposition in historically conservative states will forcefully resist legalization efforts.

While we believe as many as 18 states could legalize medical or adult-use within the next 8 years, the strong resistance by conservatives in Mississippi and South Dakota to legalizing cannabis are likely a bellwether of the type of resistance that efforts to legalize will face in the south and Midwest – the most socially conservative regions of the country. It is worth noting that, the resistance will be from each state's political class, and not from the general public where majorities now support legalization. Given these local political dynamics, businesses hoping to pursue opportunities in these markets as they liberalize should not only be following public opinion in the state, but also very closely monitoring the attitudes of each state's powerbrokers who might have the ability to reverse popularly backed reform measures.

Medical program patient enrollment and participation. Registrations trend up in medical-only states that border newly legal adult-use states. Registrations trend down in states that legalize adult-use on top of exiting medical program.

The total number of registered medical cannabis patients nationwide surpassed 4.5 million in 2022. Just in the states where cannabis has been legalized for medical use (with no assumptions for any new markets by 2030), New Frontier Data projects that there will be a combined 5.2 million registered medical cannabis patients by 2030, representing nearly 2.1% of the entire U.S. population. As newly legal adult-use state markets begin to issue licenses and operationalize, and additional states choose to legalize cannabis for adult-use in the coming years, New Frontier Data expects to see further strong upticks in legal medical market participation in legal medical states bordering newly legalized adult-use states. Patients who live in a medical-only market and are registered with the state's program recognize that they can buy products in an adult-use market, and have an affirmative defense for possessing cannabis at home. It is expected for that medical registration/adult-use participation model to be most visible in the medical-only states in the Northeast, where legalized adult-use markets states (i.e., New York, New Jersey, and Virginia) either border or are otherwise accessible for people in more than a dozen medical-only markets. Additionally, as New Frontier Data's consumer research has shown that medical

patients consume and spend more than do recreational consumers, the regional demand of medical patients in adult-use markets will drive significantly higher revenues than will nonresident recreational consumer demand.

Broader macro factors could impact near-term revenues.

High levels of inflation, high taxes, and competing illicit (and border-state) markets, are compounding the price pressures seen in mature legal markets, and the potential convergence of broader economic developments (potentially a recession) would negatively impact cannabis consumer spending and sustain these pressures into the medium term. If an economic contraction is sustained through year's end, total 2023 revenues may return lower than forecast. However, the reallocation of spending would revert to the baseline as consumers regained their spending power in the following years as the legal market continues to grow in size and offer compelling (and increasingly cost-competitive) alternatives to the illicit market. Taken collectively, near-term uncertainty on the broader economic climate, along with medium-term uncertainty on precisely when the next crop of states will legalize or when federal reform might happen, will have little impact on the surging levels of demand for legal cannabis, and do little to deter the broader transition of consumers in legal market from purchasing within regulated channels.

Methodology

Data Overview

New Frontier Data's analysis in this report represents a new threshold of modeling in the evolving cannabis industry. The forecasts presented leverage data collected over 13 years, both spanning the breadth of the cannabis industry and including insights gained from dozens of state, national, and global forecasting iterations. The term "cannabis" here (i.e., also commonly referred to as marijuana) refers to high-THC cannabis and cannabis products sold in both legal and illicit markets. Legal cannabis refers to products sold in regulated channels, including dispensaries and delivery services. The illicit market is defined as sales of cannabis and cannabis products outside of regulated and taxed dispensaries or retail sales.

NOTE: Legal sales through dispensaries can include a small percentage of marijuana-derived CBD products; however, the sales and revenue forecasts do not include the hemp-derived CBD products sold in mainstream retail and nutritional supplement stores. New Frontier Data has separate models for hemp and CBD sold in mainstream (i.e., non-dispensary) channels, based on newly collected national cultivation and consumer demand data.

The data included in this report is drawn from a wide range of sources, including:

GOVERNMENT AGENCIES

We obtained data from federal, state, and municipal agencies ranging from tax revenues and medical cannabis patient participation rates, to rates of illicit cannabis use, and general demographic data.

RETAIL SALES

Point-of-sale data from strategic partnerships with industry-leading technology platforms provide visibility into retail sales trends, including evolving product demand, pricing and sales trends, and variability across markets.

ANCILLARY COMPANIES

Non-plant-touching businesses have been critical sources for insights into the evolving needs and multi-sectoral impacts of the cannabis industry. Data ranging from capital flows to cultivation supply sales provide valuable indicators into the leading edges of the market. Interviews with strategically placed stakeholders, including leading investors, business owners, regulators and lawmakers further hone our insights into emerging legal, regulatory, and industrial developments that will impact the industry.

CANNABIS LAW REFORM ADVOCATES

Projections for the states most likely to legalize in the next four years were based on extensive discussions with leading drug law reform advocates who have been central in the national and state-level campaigns to legalize cannabis. Their input was critical in informing our understanding of the arc of the national legalization movement, as well as the local political and legislative dynamics that could influence the growth and performance of each market.

ACADEMIC, RESEARCH & MEDICAL INSTITUTIONS

Research conducted by a broad range of academic institutions, medical centers, think tanks, and universities provided rich insight into issues including health effects of cannabis consumption, medical applications of the plant, and the socioeconomic costs and outcomes of both cannabis prohibition and legalization.



A key data input for the cannabis consumer growth model is state cannabis usage rate data reported by SAMHSA in their annual report on national drug use and health.

Updated estimates for the most recent years were deemed unreliable for inclusion in this year's annual industry update due to methodological concerns, and therefore the only updates made to the estimates for the growth of the overall consumer population are based on demographic updates from the censuses and CDC.

Market Projection Methodology

New Frontier Data has developed proprietary models for estimating the size of both the legal and illicit cannabis markets in the U.S. The models are continually refined based on new data inputs, expansion of legalization into new markets, changes in state regulations, and other market-disrupting events. The market growth projections for legal sales included in this report reference both adult-use and medical markets, and are focused exclusively on retail sales to medical patients and adult-use consumers. These projections do not include wholesale transactions between producers, processors, and retailers, or revenues collected by state governments. Nor do they include revenues from the ancillary (non-plant touching) sectors of the industry. The growth models were developed based on analysis of key inputs including:

- Size and growth of the total population within each state;
- Size and growth of the adult population within each state;
- Growth of cannabis usage rates in each state market;
- Monthly changes in legal medical and adult-use cannabis sales in legal state markets;
- Size and growth of the tourism population in states with adult-use sales, as well as in medical-use states that offer reciprocity to cardholding medical patients from other states;

- Monthly changes in patient registrations in each medical market since the activation of a medical program;
- Number and types of qualifying medical conditions accepted in the states which track patient registration growth;
- Monthly changes in medical cannabis expenditures per patient in the states which track this data;
- Monthly changes in expenditures per person in adult-use states which track this data;
- Interplay between medical and adult-use sales in states where adult-use sales are legal (specifically including demand elasticity to price differences in open-access markets);
- Time between passage of each state's respective legalization measure and launch of sales; and
- Analysis of each state's regulatory model to identify similarities and differences in each market's structure, to apply appropriate proxy estimations for more accurate variable predictions in new markets.

Based on such inputs, an economic growth model was applied to project the sizes of legal and illicit state markets through 2025. The projections depend on estimated sales per capita in both medical and adult-use markets, and the model is iteratively refined as additional data is collected on each market.

DOMESTIC CANNABIS CONSUMER ESTIMATIONS

The number of estimated cannabis consumers in a given state depends heavily on both the state's total adult population, and reported cannabis usage rates compiled by the U.S. Department of Health and Human Services from its annual Nation Survey on Drug Use and Health (NSDUH) – which New Frontier Data has adjusted to account for underreporting errors, and projected growth in usage rates according to each state's unique legal status and regulatory environment.

TOURISM CANNABIS CONSUMER ESTIMATIONS

New Frontier Data aggregates data from private data partnerships and publicly available sources that provide transparency into spending and consumption rates, as well as monthly sales share attributable to in-state residents vs. out-of-state visitors across all legal operating adult-use markets. This data is ingested and analyzed on a monthly basis in conjunction with respective overall state tourism visitation data, and provides the foundation for the development of expected participation and spending rates by tourist visitors in markets that have legalized adult-use sales but have yet to become operational. The tourism consumer projection models are updated iteratively to reflect changes in industry regulation that are pertinent to tourism participation, i.e.: product restrictions, rules surrounding delivery to non-private residences/hotels, allowance for public social-use spaces, and subsequent legalization of adult-use cannabis in a bordering state.

About Us



NEW FRONTIER DATA is the premier data, analytics, and technology firm specializing in the global cannabis industry, delivering solutions that enable investors, operators, advertisers, brands, researchers, and policymakers to, engage, and transact with the cannabis industry and its consumers. New Frontier Data's global reach and reputation is evidenced by research and analysis citations in more than 85 countries. Founded in 2014, New Frontier Data is headquartered in Washington, D.C., with presence in Europe, Latin America, and Africa.

Mission

New Frontier Data's mission is to inform policy and commercial activity for the global legal cannabis industry. We maintain a neutral position on the merits of cannabis legalization through comprehensive and transparent data analysis and projections that shape industry trends, dynamics, demand and opportunity drivers.

Core Values

- Honesty
- Respect
- Understanding

Vision

To be the nexus of data for the global cannabis industry.

Commitment to Our Clients

The trusted one-stop shop for cannabis business intelligence, New Frontier Data provides individuals and organizations operating, researching, or investing in the cannabis industry with unparalleled access to actionable industry intelligence and insight, helping them leverage the power of big data to succeed in a fast-paced and dynamic market. We are committed to the highest standards and most rigorous protocols in data collection, analysis, and reporting, protecting all IP and sources, as we continue to improve transparency into the global cannabis industry.

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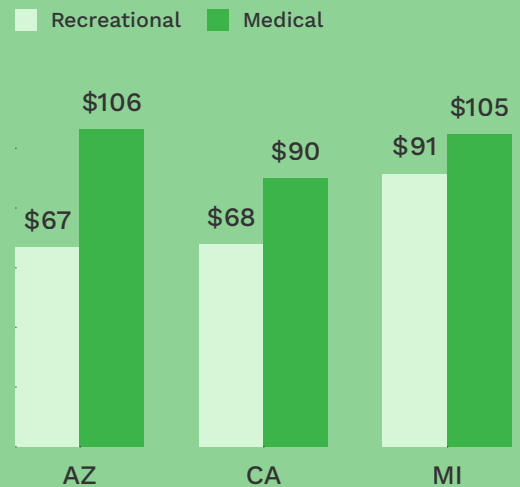


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