



**CANNABIS  
COMPLIANCE  
BOARD**  
STATE OF NEVADA

Cannabis Market Study

# Nevada Cannabis Compliance Board



# Executive Summary

The following cannabis market analysis, commissioned by the CCB who contracted TPMA, explores the current trends, and highlights the trends in sales, medical market contraction, and changing licensing landscape. The analysis also examines the implications of increasing cannabis supply, geographic and demographic insights regarding dispensary distribution and access disparities, and stakeholder perspectives on tourism regulation and the illicit market. Recommendations are provided to address these issues and perceptions, including strategies for market expansion, regulatory support, and combating the illicit market, aiming to stabilize and grow Nevada's cannabis industry amidst evolving challenges. The mixed methodology of collecting data from a variety of sources – academic literature, consumers, cannabis industry employees, and cannabis market research and data - assures that this report is free of actual or perceived bias. Neither TPMA nor any of its team members have vested interest in the conclusions drawn from this data and analysis provided herein.

In 2022 the Nevada cannabis industry generated \$862 million in sales, nearly all of it from the adult-use market. This overwhelmingly dominated the medical cannabis market which had \$1.6 million in sales in 2022. However, there has been a noticeable decline in sales since the industry's peak in 2021 affecting both the adult-use and the medical cannabis markets. The downturn is further marked by a reduction in the number of medical patients and cannabis licenses between 2022 and 2023. The demand for cannabis in Nevada remains inelastic, with a price elasticity estimate of -0.74, indicating that price increases lead to a proportionally smaller decrease in consumption. Even with these challenges, the overall supply of cannabis products available within the state has continued to rise, presenting a complex scenario of unequal supply and demand for stakeholders.

Despite the growth of the legal market, the illicit cannabis market in Nevada remains significant, estimated to be between \$242 million and \$370 million annually.<sup>1</sup> This underscores the challenge of fully transitioning consumers to the legal market.

To address market challenges and leverage opportunities, the following are recommendations for implementation.

- **Analyze underserved areas to identify licensing opportunities:** **Expansion:** A comprehensive approach to addressing rural and other underserved areas could encourage entrepreneurs to open dispensaries and cultivation facilities in locations with less of a cannabis market presence.
- **Partner with local universities and research institutes on cannabis research initiatives:** Findings from these research initiatives could provide evidence needed for legislative changes and regulatory reforms.
- **Conduct a public awareness campaign:** A targeted public awareness campaign would inform consumers that regulated dispensaries provide all the safety measures missing with the risk of consuming unregulated cannabis. It could also explain how regulation ensures the purity and quality of legal products.
- **Consider the impact of taxes on the illicit market:** Policymakers should consider how tax policy may encourage some consumers to seek out the illicit market. Therefore, the intentions of the taxes should align policy to encourage consumers to purchase in a system that places importance on quality and safety.

By adapting to market dynamics and implementing strategic recommendations, the industry can contribute to the overall economic prosperity across the state. Collaboration among industry stakeholders, policymakers, and regulators will be crucial in navigating these complexities and securing a thriving future for Nevada's cannabis industry.

<sup>1</sup> Estimates from Equio by New Frontier Data and the Regulatory Determinants of Cannabis Outcomes Survey by Cannabis Public Policy Consulting. For more information, please Estimated Illicit Market Size on page XX of the report.

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# Cannabis Market

Medical cannabis was legalized in June 2001, following voter approval of the Nevada Medical Marijuana Act (Ballot Question 9), resulting in a constitutional amendment.

Following the legalization of medical cannabis, in 2016, Nevada voters approved the Regulation and Taxation of Marijuana Act (Ballot Question 2), legalizing the purchase, possession, and consumption of cannabis for adults ages 21 and over as of January 1, 2017. In 2021, the Nevada State Legislature passed AB341, allowing the licensing and regulation of cannabis consumption lounges. Thereafter, the CCB promulgated consumption lounge regulations, granted several consumption lounge licenses, and is in the process of granting additional licenses.

## Market Trends

The effect of the cannabis industry in Nevada is significant, generating over \$862 million in sales in 2022. However, there has been some recent turbulence in the market. From 2020 through mid-2021, monthly sales were trending upward, likely because of stay-at-home orders and increased spending due to stimulus packages. However, since April 2021, monthly sales have been trending downwards, with seasonal upticks in sales (notably March through May).

While there has been variability in sales, what has remained stable has been the relative sizes of the adult-use and medical market. The adult-use market represents most sales, ranging from 99.6% to 99.8% of sales, depending on the month.

Delivery, as a percentage of total sales, saw a significant uptick in the early days of the Covid-19 pandemic, when they comprised up to 85% of all sales. Since then, in-store sales represent the majority of sales, about 96% of all sales in recent months. Trends in the adult-use market, mirror the industry as a whole. Delivery peaked in April 2020, comprising 85% of all sales, and then started to decrease, leveling off between 3.5% and 4% of total adult use sales.

The medical and adult-use markets have marked distinctions in size and product types. As a result, the market trends for each will be presented separately.

FIGURE 1: MONTHLY SALES, JANUARY 2020 TO SEPTEMBER 2023



Source: Nevada CCB, calculations by TPMA

FIGURE 2: DELIVERY SALES, AS A PERCENTAGE OF TOTAL SALES, JANUARY 2020 TO SEPTEMBER 2023

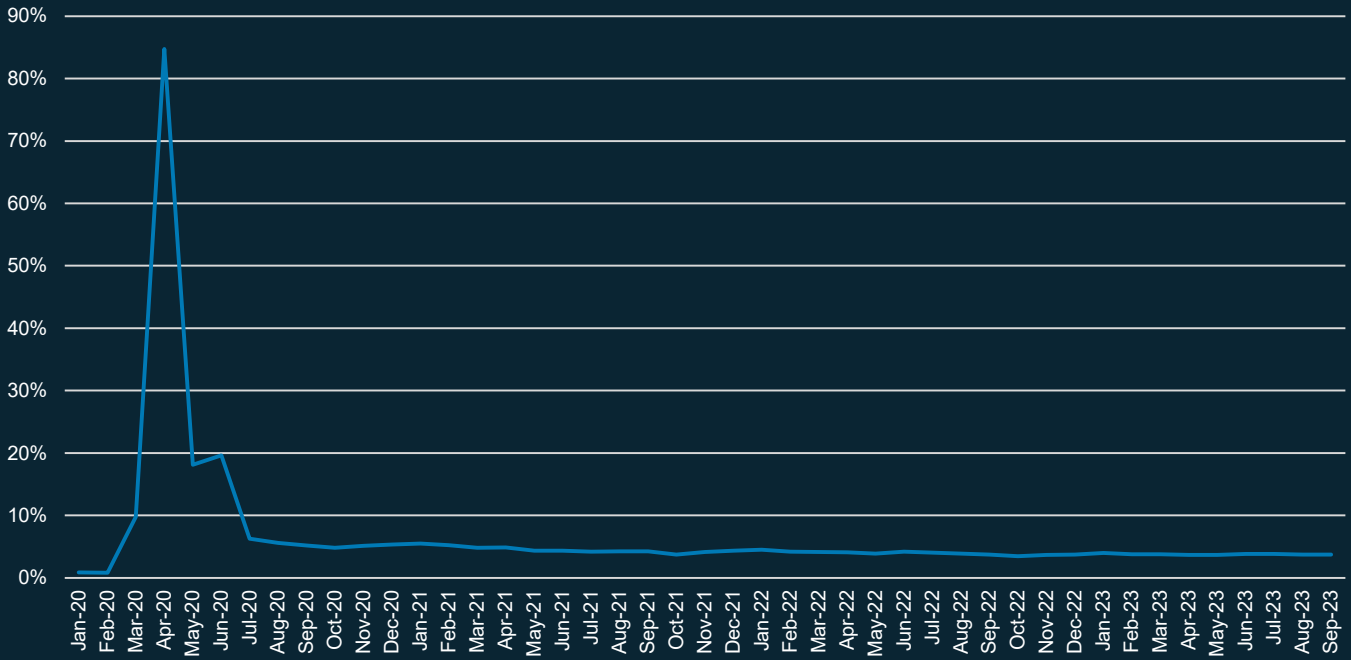
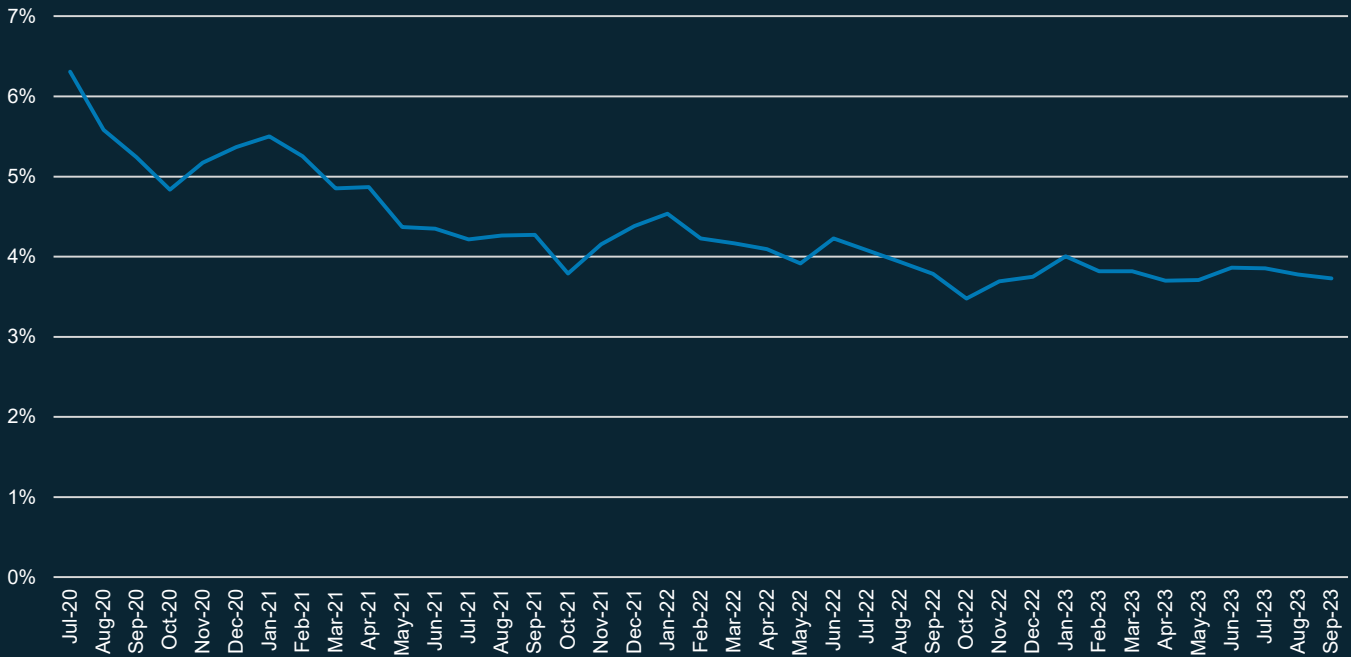


FIGURE 3: DELIVERY AS PERCENT OF TOTAL SALES, JULY 2020 TO SEPTEMBER 2023.





## Adult-Use

In 2022, the adult-use market generated over \$861 million in sales. Following overall market trends, monthly sales peaked in April 2021, followed by a slow decline and a recent leveling out.

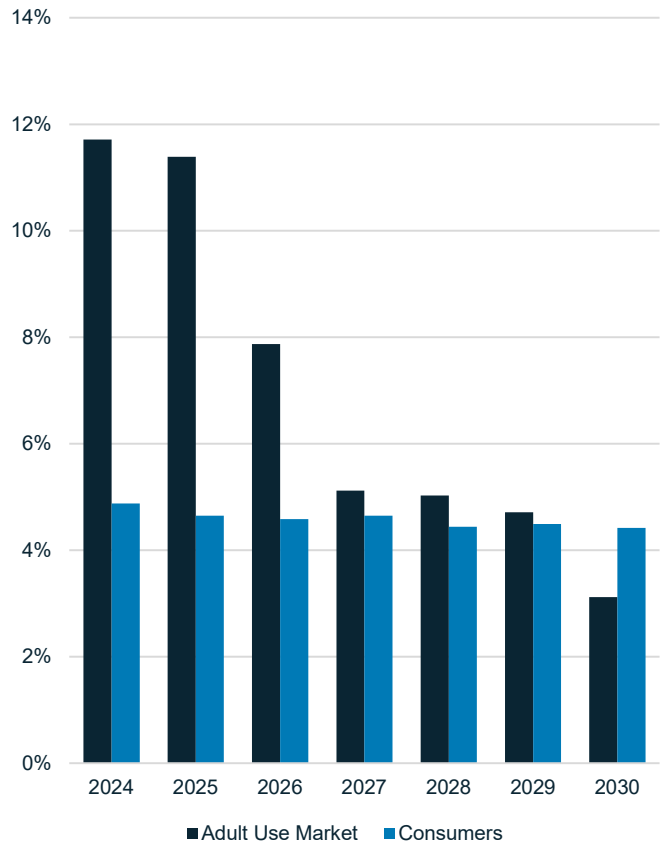
While sales appear to have leveled out in the short term, projections from Equio by New Frontier Data show a reversal of that trend, with growth estimated to continue through 2030, as well as a projected increase in the number of consumers. Moreover, continuing to convert illicit sales to legal sales will provide the opportunity for further growth of the industry.

FIGURE 4: MONTHLY SALES, ADULT-USE, JANUARY 2020 TO SEPTEMBER 2023.



Source: Nevada CCB, calculations by TPMA

FIGURE 5: PROJECTED YEAR-OVER-YEAR CHANGE IN THE NEVADA ADULT-USE MARKET



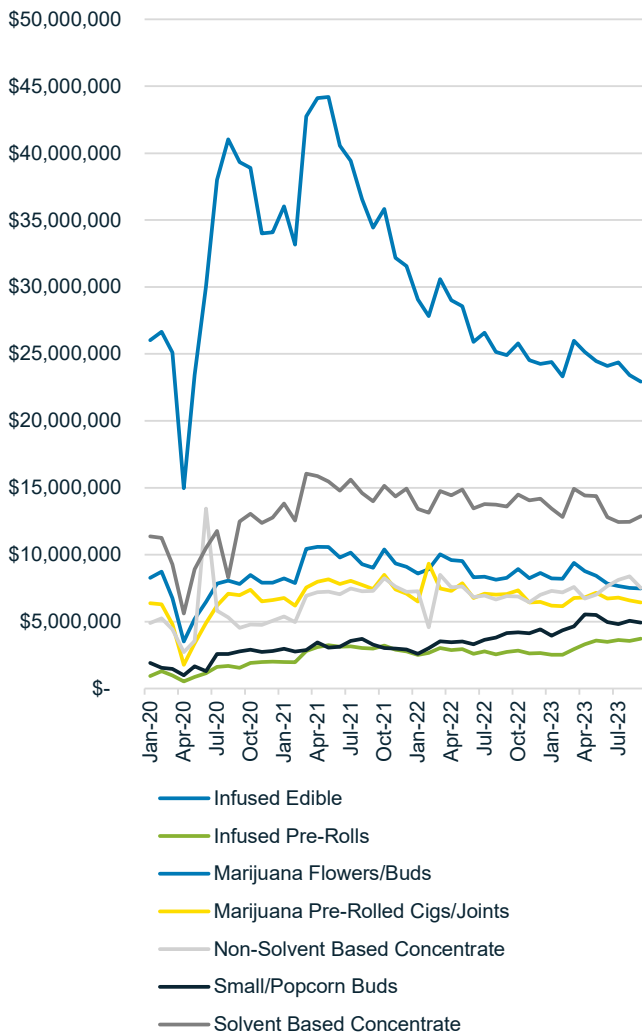
Source: Equio by New Frontier Data

## Adult-Use Sales by Product Type

Consumers can choose between many different product types in the Nevada market. By monthly sales, flowers/buds are the most popular, although monthly sales are decreasing, from a peak of \$44 million in April and May 2021 to just under \$23 million per month in September 2023.

Marijuana flowers/buds represent the largest share of sales by product type. As other products came onto market, the market share captured by sales of marijuana flowers/buds has been decreasing from 51% of sales in July 2020 to 34% in September 2023. Conversely, other products, such as small/popcorn buds and infused pre-rolls are capturing a growing share of the market.

FIGURE 6: MONTHLY SALES BY PRODUCT TYPE, ADULT-USE, JANUARY 2020 TO SEPTEMBER 2023<sup>2</sup>

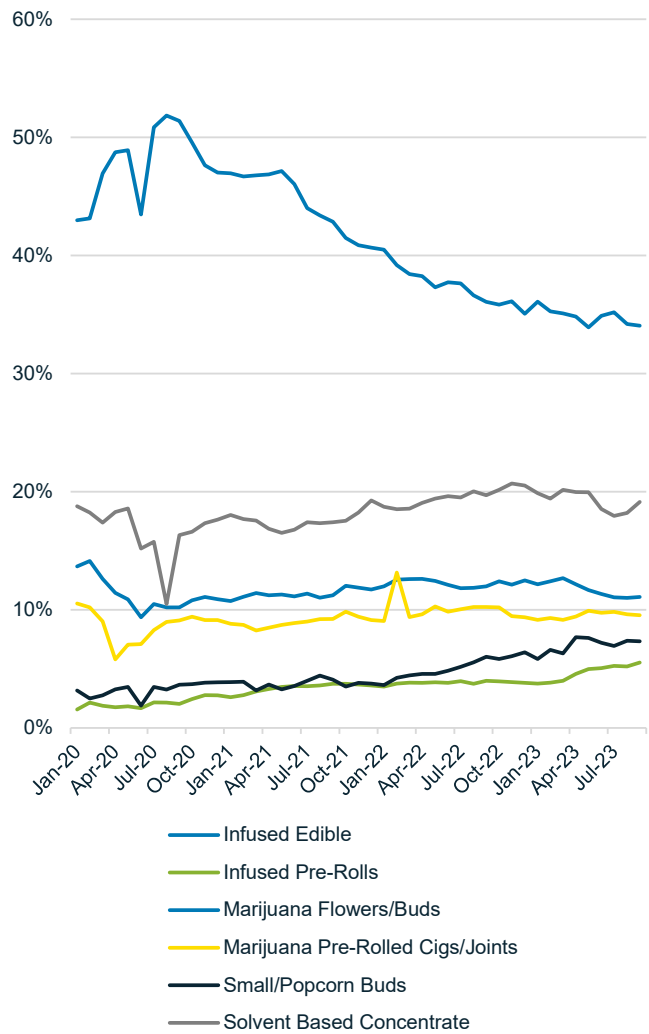


Source: Nevada CCB, calculations by TPMA

2 For readability, products with monthly sales less than \$1 million per month have been excluded. A figure with all product types can be found in Appendix A.

Not surprising given the decrease in overall sale by dollar amount, most products have experienced price decreases. For example, from October 2020 to August 2021, marijuana flowers/buds sold for over \$4,000 per pound, on average. Prices have since dropped and are near \$3,000 per pound on average.

FIGURE 7: SHARE OF MONTHLY SALES BY PRODUCT TYPE, ADULT-USE, JANUARY 2020 TO SEPTEMBER 2023.<sup>3</sup>



Source: Nevada CCB, calculations by TPMA

3 For legibility, products representing less than 5% of monthly sales have been excluded. A figure with all products can be found in Appendix B.

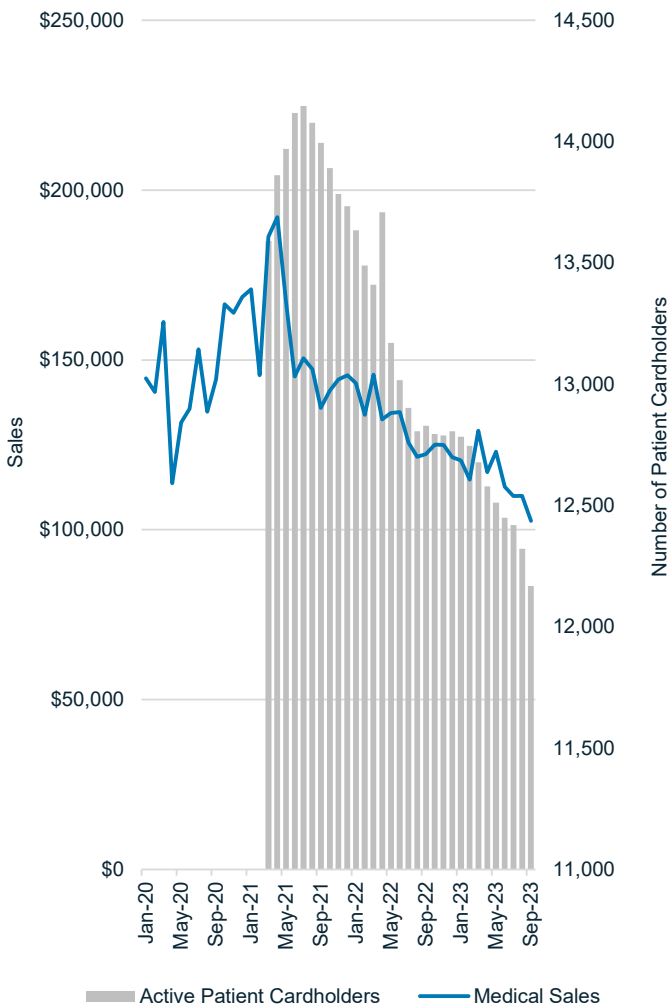
## Medical

The medical cannabis market is much smaller than the adult-use market, totaling about \$1.6 million in sales in 2022.<sup>4</sup> Monthly sales peaked in April 2021, and have been decreasing ever since, to a low of \$102,600 in September 2023. Similarly, the number of active patient cardholders has declined by 14%, from just under 14,150 to 12,169 in September 2023.

Moreover, the monthly sales per active patient cardholder have also been declining.

The majority of sales in the medical market are for infused edibles, representing at least 60% of sales each month. The next most commonly purchased type is flowers/buds, which have represented about 10% of sales, though has recently seen an increase in sales, to 17% in September 2023.

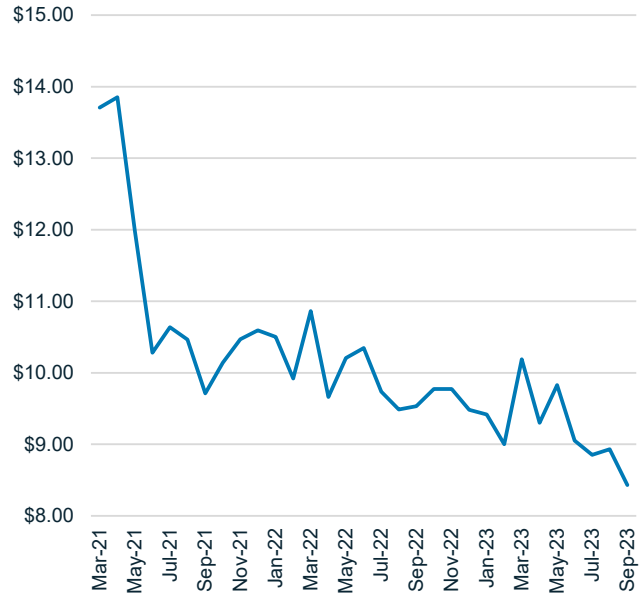
FIGURE 8: MONTHLY MEDICAL USE SALES AND NUMBER OF ACTIVE PATIENT CARDHOLDERS, JANUARY 2020 TO SEPTEMBER 2023.



Source: Nevada CCB and Department of Human Health Services Nevada Division of Public and Behavioral Health, calculations by TPMA

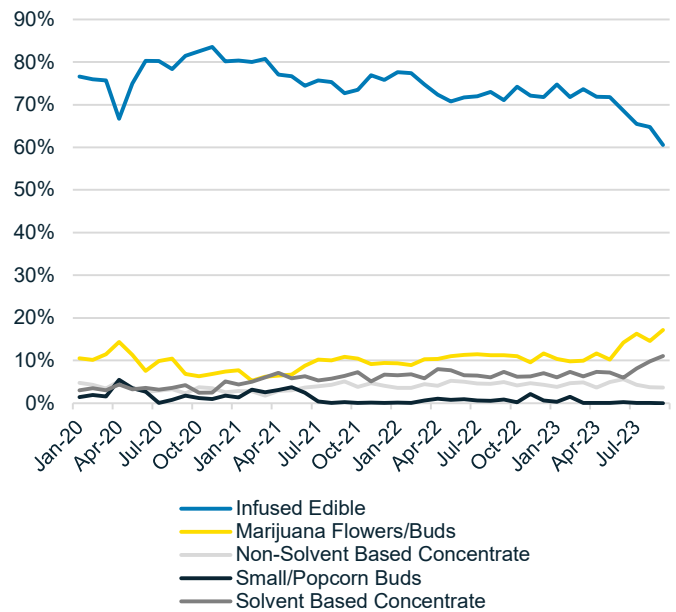
<sup>4</sup> Monthly sales data reviewed for this report is limited to medical grade purchases only and does not include patient purchases of adult-use products.

FIGURE 9: SALES PER ACTIVE PATIENT CARDHOLDER, MARCH 2021 TO SEPTEMBER 2021



Source: Nevada CCB, calculations by TPMA

FIGURE 10: SHARE OF MONTHLY SALES BY PRODUCT TYPE, MEDICAL USE, JANUARY 2020 TO SEPTEMBER 2023.<sup>5</sup>



Source: Nevada CCB, calculations by TPMA

<sup>5</sup> For readability, this figure is limited to only products representing at least 5% of sales in at least one month.



## Cannabis Licenses

Trends in the market significantly impact businesses through consumer behavior, demand, and competitive dynamics. The number of active cannabis licenses, a trailing indicator, peaked in 2022. In 2023, active licenses decreased by 12%, to 665.

Cultivation licenses, for both the medical and adult-use market,<sup>6</sup> accounted for almost half of this decrease. Production facilities also saw a significant decrease in license numbers. Dispensaries were largely unaffected, with only two licenses being lost for medical dispensaries and retail dispensaries gaining one active license.

TABLE 1: CANNABIS LICENSES BY TYPE, SEPTEMBER 2021-2023

	2021	2022	2023
MEDICAL CULTIVATION	156	153 (-2%)	125 (-18%)
MEDICAL DISPENSARY	67	67 (0%)	65 (-3%)
MEDICAL LABORATORY	10	10 (0%)	9 (-10%)
MEDICAL PRODUCTION	110	109 (-1%)	90 (-17%)
RETAIL CULTIVATION	150	148 (-1%)	129 (-13%)
RETAIL DISPENSARY	84	99 (18%)	100 (1%)
RETAIL DISTRIBUTOR	50	50 (0%)	45 (-10%)
RETAIL LABORATORY	10	10 (0%)	9 (-10%)
RETAIL PRODUCTION	108	108 (0%)	93 (-14%)
GRAND TOTAL	745	754 (1%)	665 (-12%)

<sup>6</sup> One business can hold multiple license types, meaning that one operator may hold both a medical cultivation and a retail cultivation license.

Source: Nevada CCB, calculations by TPMA



# Market Supply

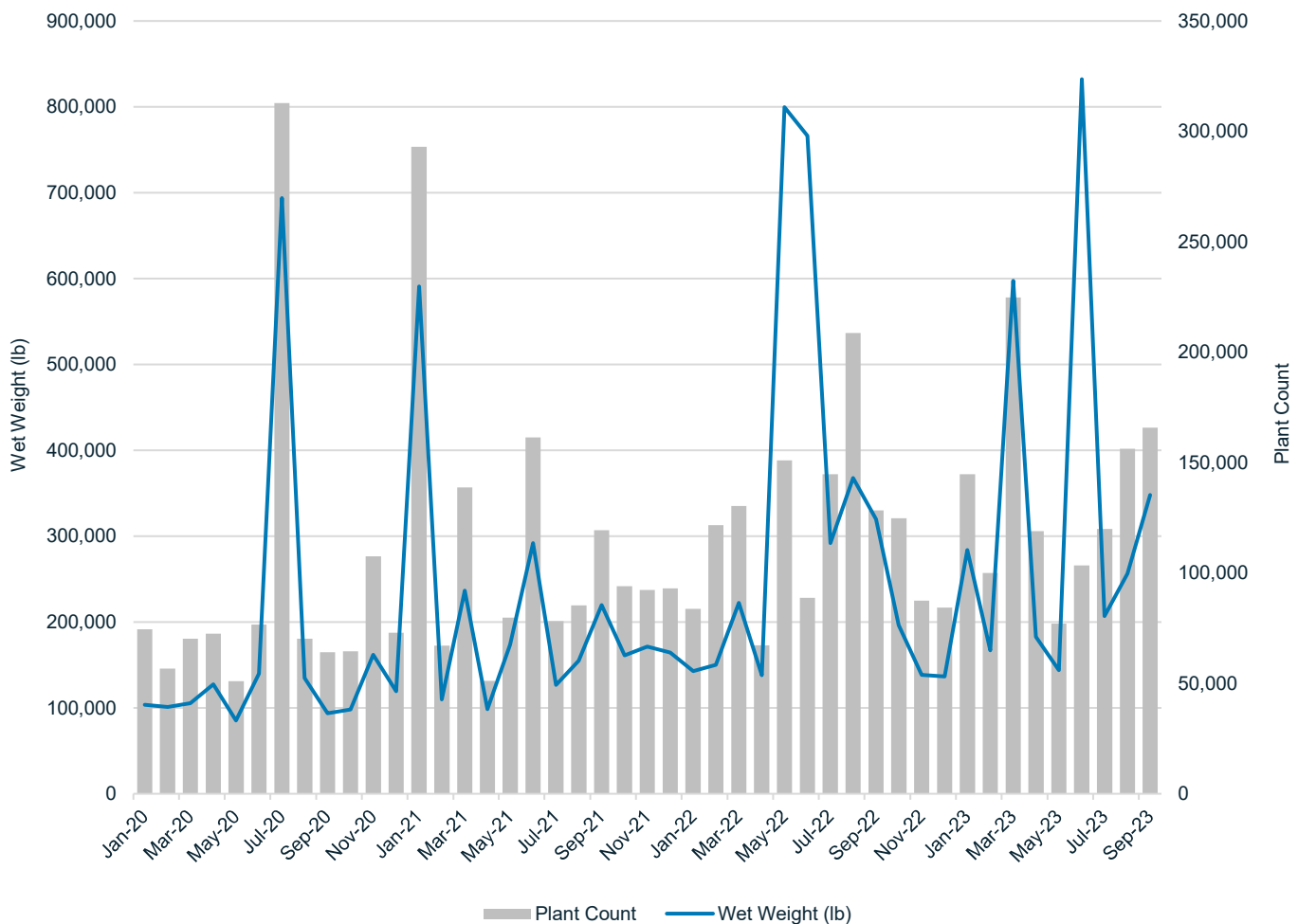
The data show a noticeable increase in wet weight harvests over time, despite a decrease in the number of cultivation licenses, as well as an upward trend in the number of plants harvested per month. There is also significant seasonality in harvests, with large harvests in the early summer.

This trend becomes more apparent when viewing the wet weight of the cannabis harvested annually, as well as the monthly average.<sup>7</sup> The average monthly harvests in 2022 and 2023 were nearly double that in 2020 and 2021, though some of the difference may be attributed to limitations due to the Covid-19 pandemic. However, the size of increase suggests advancements in cultivation and harvest techniques.

Moreover, results from the survey conducted as part of this study (discussed in more detail later in the report) indicate that there is additional capacity with current cultivators. While nearly half of the cultivators said that they were utilizing all their potential cultivation area, the remaining half can expand cultivation, including 12% of the industry survey respondents who are utilizing less than 25% of their cultivation capacity.

7 Data for 2023 covers January 2023 to September 2023.

FIGURE 11: MONTHLY CANNABIS HARVEST, JANUARY 2020 TO SEPTEMBER 2023



Source: Nevada CCB, calculations by TPMA

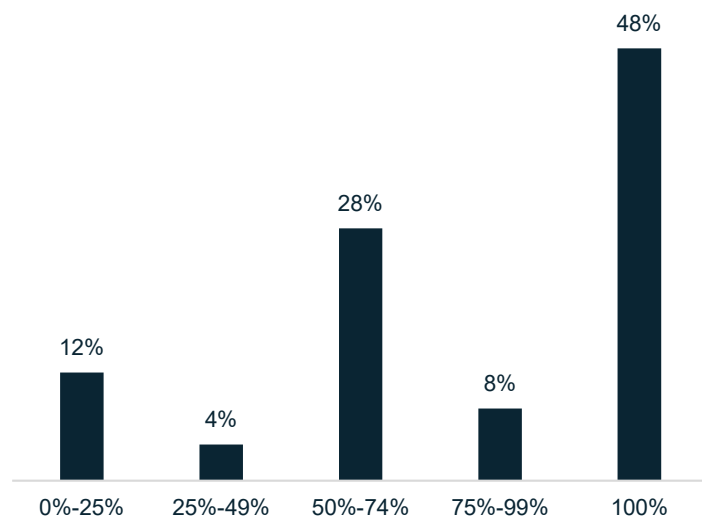


TABLE 2: ANNUAL CANNABIS HARVESTS, 2022-2023

	<i>Wet Weight (lb)</i>	<i>Average per Month</i>
2020	2,619,718	218,310
2021	3,332,022	277,669
2022	4,893,561	407,797
2023	4,025,423	447,269

Source: Nevada CCB, calculations by TPMA

FIGURE 12: ACTIVE CULTIVATION AREA AS A PERCENTAGE OF TOTAL AVAILABLE CULTIVATION AREA



Source: TPMA Cannabis Employer/Employee Survey, 2023

# Estimated Consumer Demand

As part of this project, TPMA, conducted a survey of cannabis consumers in Nevada.<sup>8</sup> As part of this survey, respondents were asked about their cannabis usage and were asked to estimate the amount of flower, liquid concentrate, oil cartridges or vape pens, solid concentrate, edibles, cannabis beverages, and tinctures or topical ointments they used in the past month. For standardization purposes, all products other than flower were converted to grams of tetrahydrocannabinol (THC) and grams of flower. After removing outliers, the average respondent used approximately 61 grams of cannabis per month.<sup>9</sup>

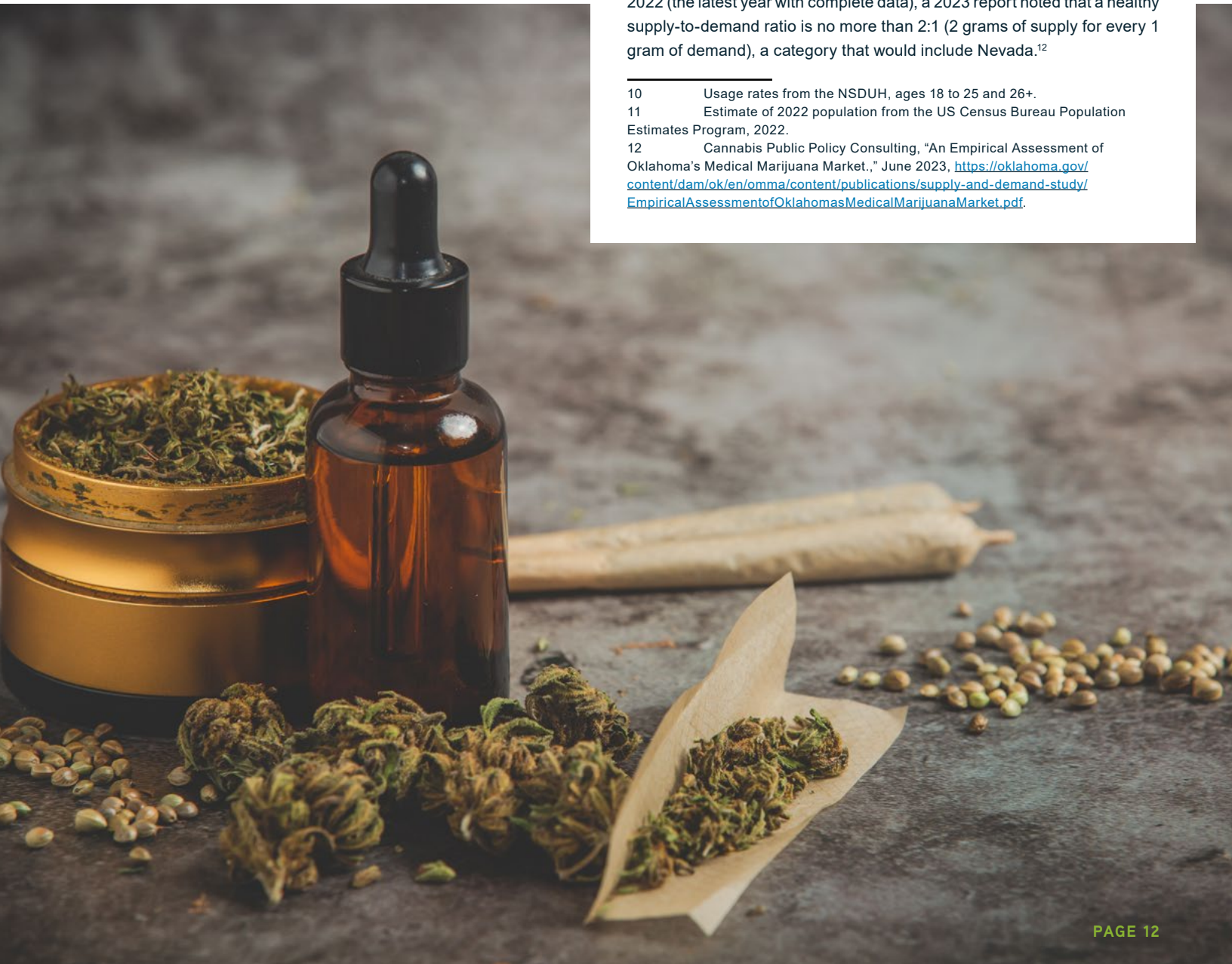
<sup>8</sup> See Appendix B for more information on the survey.  
<sup>9</sup> Please see Appendix A for more information on study limitations.

The number of cannabis users was estimated using results from the National Survey on Drug Use and Health (NSDUH). The percent of individuals who have reported using cannabis at least once in the past month and in the past year were multiplied by the estimated number of individuals ages 21 years of age or older, to generate low and high estimates.<sup>10,11</sup> This equates to 500,667 Nevada residents who have used cannabis in the past month and 690,878 who have used cannabis in the past year.

To find cannabis demand per year, the average monthly use was multiplied by the estimated number of monthly cannabis users, by twelve months, to arrive at 365,960,000 to 504,993,000 grams per year.

For comparison to supply, this was converted to pounds of cannabis. Then, data from the CCB was used to account for drying and waste. This showed that on average, the total packaged weight is 25% of the wet weight. Using these figures, the estimated total demand, in wet weight, is 3,260,500 to 4,499,200 pounds. While the estimated demand is lower than the supply in 2022 (the latest year with complete data), a 2023 report noted that a healthy supply-to-demand ratio is no more than 2:1 (2 grams of supply for every 1 gram of demand), a category that would include Nevada.<sup>12</sup>

<sup>10</sup> Usage rates from the NSDUH, ages 18 to 25 and 26+.  
<sup>11</sup> Estimate of 2022 population from the US Census Bureau Population Estimates Program, 2022.  
<sup>12</sup> Cannabis Public Policy Consulting, "An Empirical Assessment of Oklahoma's Medical Marijuana Market.," June 2023, <https://oklahoma.gov/content/dam/ok/en/omma/content/publications/supply-and-demand-study/EmpiricalAssessmentofOklahomasMedicalMarijuanaMarket.pdf>.



# Tax Structures

## Price Elasticity of Demand

One of the benefits of cannabis legalization is the tax revenue that can be generated. However, understanding the price elasticity of demand is critical when considering the potential tax revenue. While there has previously been some work in academic literature to understand the price elasticity of demand, to the project team's knowledge, none of these efforts took place in Nevada. Conducting an analysis limited to the Nevada market can help inform policymakers when considering changes to the current tax structure.

Price elasticity of demand measures the change in demand for a good in relation to a change in its own price. Demand is considered elastic when a 1% change in price leads to more than a 1% change in quantity demanded. Conversely, demand is considered inelastic when a 1% change in price results in a less than 1% change in the quantity demanded.

To estimate the price elasticity of demand for cannabis in Nevada, this study uses a dataset of approximately 1.96 million retail cannabis flower sales transactions from January 2023 to September 2023, provided by the CCB. This dataset includes sales made by one arm of a vertically integrated company to another. To ensure that the information is not biased by these "pseudo-sales" and other outliers, sales that were less than \$1 and those with prices per pound less than \$10 and more than \$1,000,000 were excluded from the dataset. After those removals, the dataset included about 1.86 million transactions.

In Nevada, demand for cannabis is inelastic, with a price elasticity estimate of -0.74. In other words, a 10% increase in the price of cannabis could result in about a 7% decrease in the amount of cannabis consumed. Similarly, a study of 23,000 marijuana transactions across the United States found price elasticity of demand estimates between -0.67 and -0.79, aligning with the findings from this study.<sup>13</sup> This finding also aligns with those for other recreational substances, such as beer and cigarettes, which also have inelastic demand.<sup>14,15</sup>



Understanding the price elasticity of demand has two important implications for policymakers when considering tax policies. The more inelastic demand for a good is, the more revenue can be generated by raising the tax revenue on that specific good. However, conversely, if the goal is to discourage use, having more inelastic demand decreases the effectiveness of a tax-induced price increase in reducing usage. A study of the Washington cannabis market, with a 37% excise tax at the point of retail sales, concluded that, "If supply and demand characteristics are similar...our results suggest that significant state revenue may be left on the table in...other states."<sup>16</sup>

13 Adam J. Davis, Karl R. Geisler, and Mark W. Nichols, "The Price Elasticity of Marijuana Demand: Evidence from Crowd-Sourced Transaction Data," *Empirical Economics* 50, no. 4 (June 1, 2016): 1171–92, <https://doi.org/10.1007/s00181-015-0992-1>.

14 Christopher J. Ruhm et al., "What U.S. Data Should Be Used to Measure the Price Elasticity of Demand for Alcohol?," Working Paper Series 17578 (National Bureau of Economic Research, November 2011), <https://doi.org/10.3386/w17578>.

15 Christopher J. Ruhm et al., "What U.S. Data Should Be Used to Measure the Price Elasticity of Demand for Alcohol?," Working Paper Series (National Bureau of Economic Research, November 2011), <https://doi.org/10.3386/w17578>.

16 Benjamin Hansen, Keaton Miller, and Caroline Weber, "The Taxation of Recreational Marijuana: Evidence from Washington State," NBER Working Paper Series, 2017, <https://www.ssrn.com/abstract=3006807>.

# Illicit Market

## Estimated Illicit Market Size

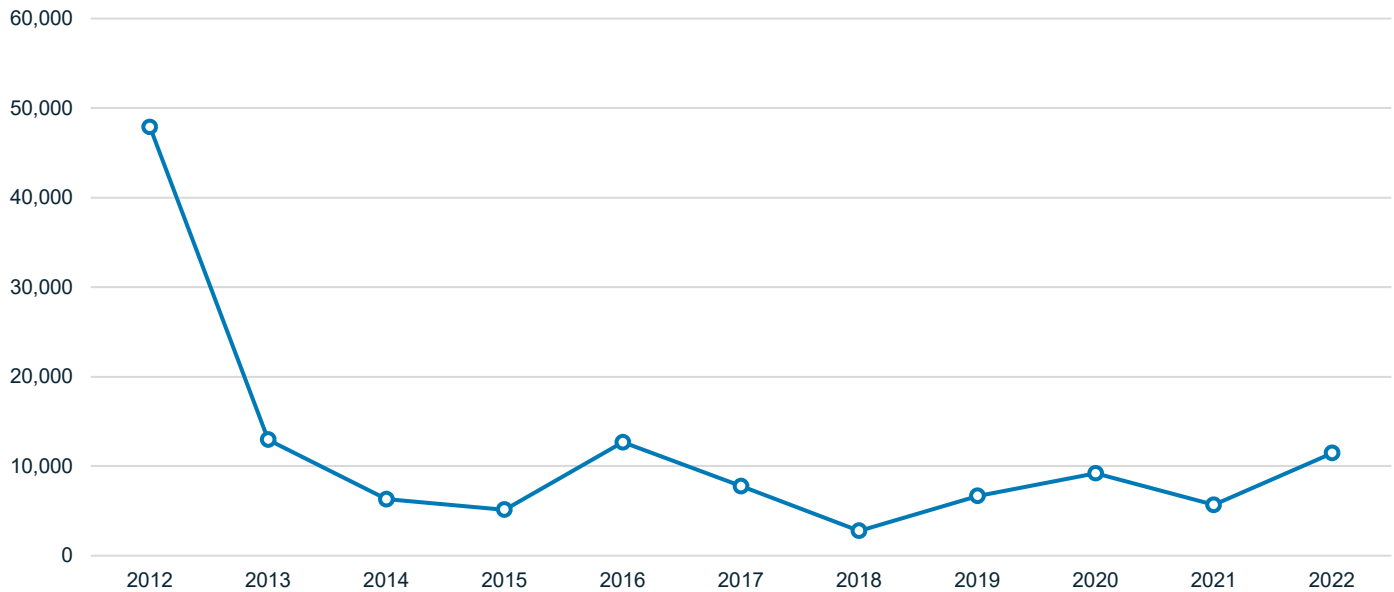
Due to its hidden nature, estimating the size of the illicit market in Nevada, or anywhere else, is inherently challenging. In 2022, the US Drug Enforcement Administration (DEA) eradicated nearly 5.7 million illegal marijuana plants cross the United States.<sup>17</sup> In Nevada, 11,471 plants were eradicated, up from 5,686 plants in 2021. Trends in Nevada are similar to those nationwide, which has seen an increase in the number of plants eradicated annually since 2018, despite an increasing number of states with legal cannabis.

While these numbers provide some insight into the illicit market, they do not encompass the entirety of the illicit market; they do not capture cross-state illicit trade, nor those that escaped detection.

Rather than focusing on cultivation, consumer demand can be used to estimate the size of the illicit market. As mentioned previously, estimating the exact size of the illicit market is an imprecise science at best. Thus, this report presents rough estimates of the illicit market from three sources.

As reported earlier, the CCB administered a cannabis consumer survey as part of this study. As part of that survey, respondents were asked if they purchased cannabis from an illicit source. Those data, in conjunction with estimates from the National Survey on Drug Use and Health (NSDUH) were used to estimate the size of the illicit market. Results from the 2021-2022 NSDUH show that 29.54% of Nevada adults ages 18 and older have used cannabis in the past year.<sup>18</sup> This was combined with the estimated 2022 adult population from the Census Bureau's Population Estimates Program.<sup>19</sup> Using this information, 733,660 Nevada residents ages 18 and older have used cannabis in the past year. Then, based on responses from the cannabis consumer survey administered by the CCB, approximately 14 to 16% of respondents have used cannabis from an illicit source. Based on that figure, there are approximately 102,000 to 119,000 users of illicit cannabis per year. However, due to the low number of responses to the consumer survey, this should be viewed as a rough estimate.

FIGURE 13: CULTIVATED CANNABIS PLANTS ERADICATED, 2012 - 2022



Source: US DEA Domestic Cannabis Eradication/Suppression Program Statistical Reports, 2012 – 2022.

17 U.S. Drug Enforcement Agency, "2022 Final Domestic Cannabis Eradication/Suppression Program Statistical Report," n.d., <https://www.dea.gov/sites/default/files/2023-04/FY2022%20DCE-SP%20Stats%20%28004%29.pdf>.

18 SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2021 and 2022.

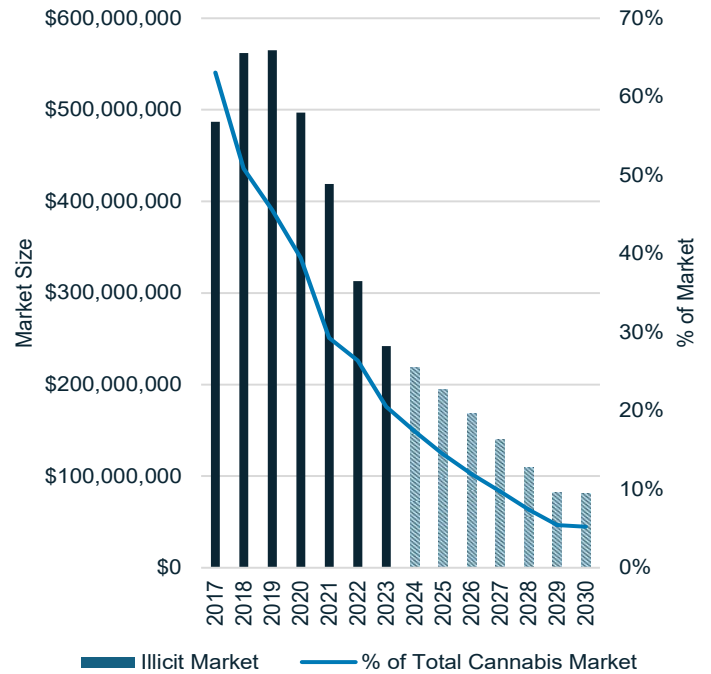
19 U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population by Single Year of Age and Sex for Nevada: April 1, 2020 to July 1, 2023 (SC-EST2023-SYSEX-32).

Equio by New Frontier Data produces annual reports that estimate the illicit, adult-use, and medical markets nationwide. Their 2023 market projections show an estimated illicit market size of \$242 million, or about 21% of the total cannabis market in Nevada. Notably, they estimate that the illicit market has been decreasing since 2019, a trend that they forecast to continue through 2030.

The final estimate comes from the Regulatory Determinants of Cannabis Outcomes Survey (RDCOS). The RDCOS is a quarterly, cross-sectional survey on cannabis use, nationwide. Based on data from the June 2023 survey, approximately 30% of cannabis purchased in Nevada is illicit.<sup>20</sup> Using this percentage, based on 2022 sales, the estimated illicit market size would be \$370 million. Similarly, Equio by New Frontier Data estimated the illicit market to be \$313 million in 2022.

20 Cannabis Public Policy Consulting, "Percent of Total Cannabis That Is Regulated in the United States," June 2023, <https://www.cannabispolicyconsulting.com/wp-content/uploads/2023/09/2023-June-RDCOS-Factsheet.pdf>.

FIGURE 14: ESTIMATED ILLEGAL MARKET SIZE, 2017 – 2030 (PROJECTED)



Source: Equio by New Frontier Data



# Elasticity of Demand

The cross-price (or cross) elasticity of demand measures the change in demand for one product given a change in price for another product. In the cannabis market, understanding the effects of pricing in the legal and illicit markets is critical for considering the regulation of the legal market, maximizing tax revenues, and inhibiting the illicit market.

A 2018 study of cannabis users in the United States found significant positive linear cross-price elasticities, meaning that both legal and illicit are considered substitutes for one another. However, substitutability was asymmetric, where the presence of legal cannabis significantly decreased demand for illegal cannabis, whereas the reverse was also true, but to a much smaller degree. The presence of illegal cannabis increased the price sensitivity for legal cannabis by 12.5%, while the presence legal cannabis increased the price sensitivity for illegal cannabis by 64%.<sup>21</sup> Further, in a 2018 study of cannabis users in Canada, when prices of legal and illicit cannabis are similar, legal cannabis was highly preferred, depressing the illicit market.<sup>22</sup> This highlights the importance of price, and maintaining price similarity between the illicit and the legal market. Results from the cannabis consumer survey support this finding with 29% percentage of respondents saying they would purchase more cannabis from the illicit market if the price of legal cannabis were to increase.

# Factors Contributing to the Illicit Market

## Prices

While demand for cannabis is inelastic, consumers are sensitive to prices, as demonstrated by the substitution between illicit and legal cannabis. Moreover, prices and the lack of taxes were the most frequently cited factors in the decision to purchase from an illicit dealer according to the cannabis consumer survey conducted by TPMA. Because those in the illicit market do not have to adhere to regulatory requirements nor pay taxes, they can often sell cannabis at a lower price than those in the legal market.

## Perceived Quality

Cannabis demand is impacted by perceived quality, with users willing to pay more for higher quality products.<sup>23</sup> Product quality impacts consumers' decision to purchase from illicit sources. For survey respondents, "higher quality" was the third most commonly cited factor as part of the decision-making process to purchase from a dealer.

## Convenience

When choosing goods, consumers are more likely to choose the good that saves them time, money, and effort. Respondents to the cannabis consumer survey cited convenience as a factor in purchasing from a dealer. Moreover, the National Retail Federation's 2020 Consumer View<sup>24</sup> reported that 93% of consumers are more likely to choose a retailer based on convenience. Those living in rural areas of the state may have to travel significant distances purchase cannabis legally, creating a disincentive. Regardless of the purchase type, consumers are more likely to make a purchase that is convenient to them.

## State and Local Policies

While regulations, including licensing, tracking, and testing, protect consumers, they also increase the cost of doing business for legal cannabis businesses. Moreover, because municipalities are allowed to decide if they want to allow the use and sale of adult-use cannabis, this may create a patchwork network where consumers are not able to conveniently access legal cannabis, providing an opportunity for the proliferation of illicit cannabis.

21 Michael Amlung et al., "Price Elasticity of Illegal versus Legal Cannabis: A Behavioral Economic Substitutability Analysis," *Addiction* 114, no. 1 (2019): 112–18, <https://doi.org/10.1111/add.14437>.

22 Michael Amlung and James MacKillop, "Availability of Legalized Cannabis Reduces Demand for Illegal Cannabis among Canadian Cannabis Users: Evidence from a Behavioural Economic Substitution Paradigm," *Canadian Journal of Public Health* 110, no. 2 (April 1, 2019): 216–21, <https://doi.org/10.17269/s41997-018-0160-4>.

23 Paula C. Vincent et al., "The Effects of Perceived Quality on Behavioral Economic Demand for Marijuana: A Web-Based Experiment," *Drug and Alcohol Dependence* 170 (January 1, 2017): 174–80, <https://doi.org/10.1016/j.drugalcdep.2016.11.013>.

24 National Retail Federation, "Convenience and the Consumer," *Consumer View*, Winter 2020, <https://cdn.nrf.com/sites/default/files/2020-01/cv8-convenience-final-jan-9-2020.pdf>.



# Comparative Analysis

## State Comparison

The selections of states for the comparative analysis were informed through discussions with the CCB and stakeholders and by project team research. Through these various channels, three states were identified: Oregon, California, and Colorado. This analysis will identify similarities and differences within the cannabis markets in these states, to provide a better understanding of how the market operates in some of Nevada's peer states.

For consistency, data on sales and the illicit market are sourced from Equio by New Frontier Data, to ensure uniformity across states.

## Legal Market

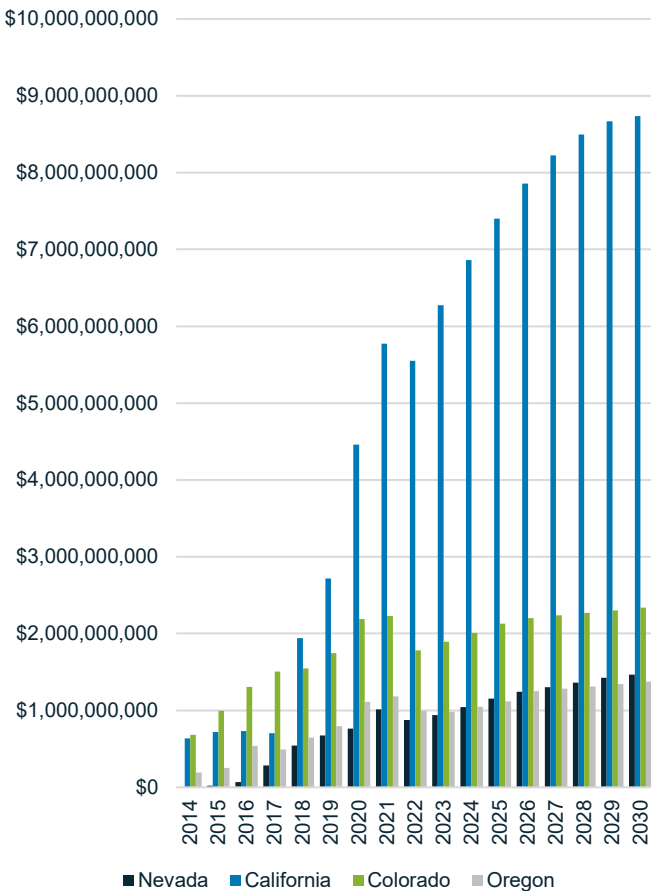
Prior to 2018, Colorado had the largest legal market size.<sup>25</sup> By 2018, California had overtaken Colorado, and continues to have the largest legal market size. Of the four states, Nevada has the smallest market; however, Nevada is also the smallest in terms of population.

To provide a more standardized view, the four states can be compared on a per capita basis.<sup>26</sup> As seen in Figure 16, despite having the largest legal market, since 2016, California has had the smallest legal market on a per capita basis. Nevada's per capita market has grown, to a peak of \$433 per person 21+ in 2021, and becoming the second largest market per capita, second to Colorado.

When limited to only the adult use market, the same trends hold, as seen in Figure 17 and Figure 18.

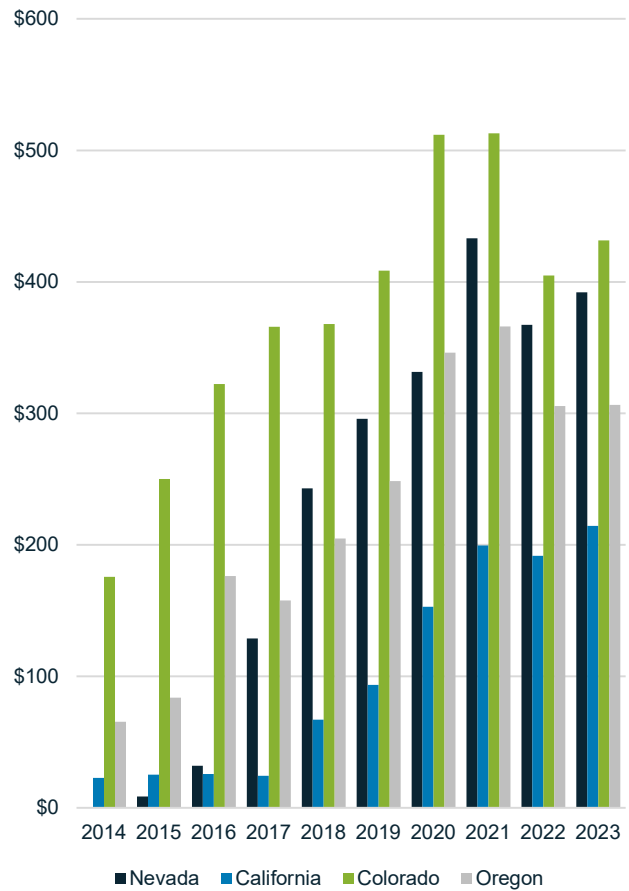
<sup>25</sup> Includes both adult use and medical.  
<sup>26</sup> Per capita sales are calculated based on the 21+ population in each state.

FIGURE 15: LEGAL MARKET SIZE, 2014 TO 2030 (PROJECTED)



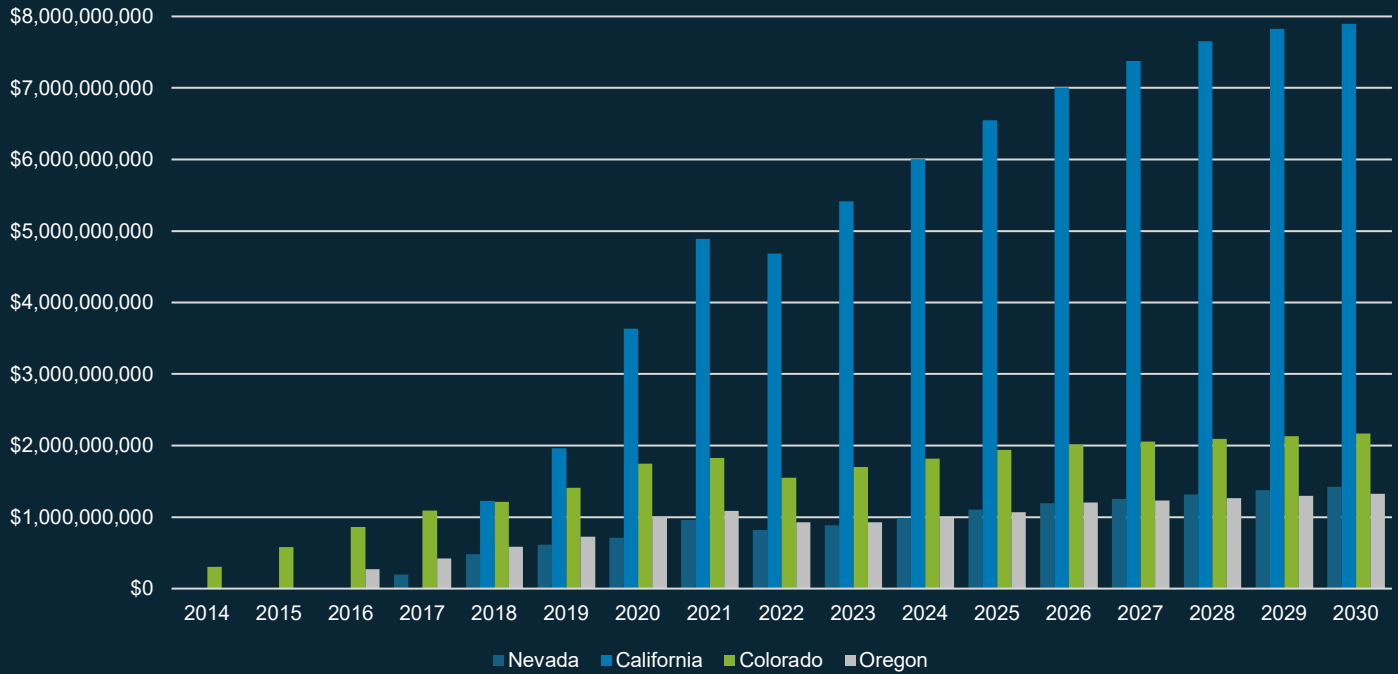
Source: Equio by New Frontier Data

FIGURE 16: LEGAL MARKET SIZE PER CAPITA (21+), 2014 TO 2023



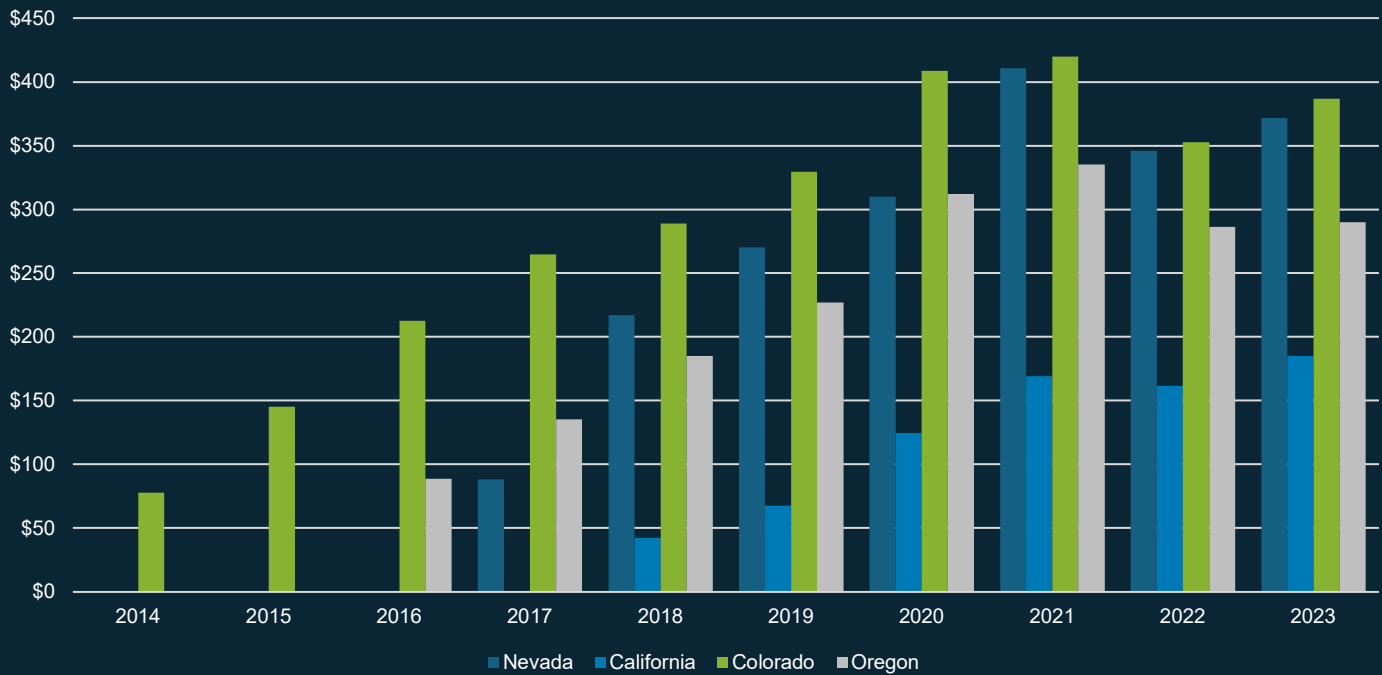
Source: Equio by New Frontier Data, 2014-2019, 2021-2022 American Community Survey 1-Year Estimates, Decennial Census, Esri Business Analyst.

FIGURE 17: ADULT USE MARKET SIZE, 2014 TO 2030 (PROJECTED)



Source: Equio by New Frontier Data

FIGURE 18: PER CAPITA ADULT USE MARKET SIZE (21+), 2014 TO 2023

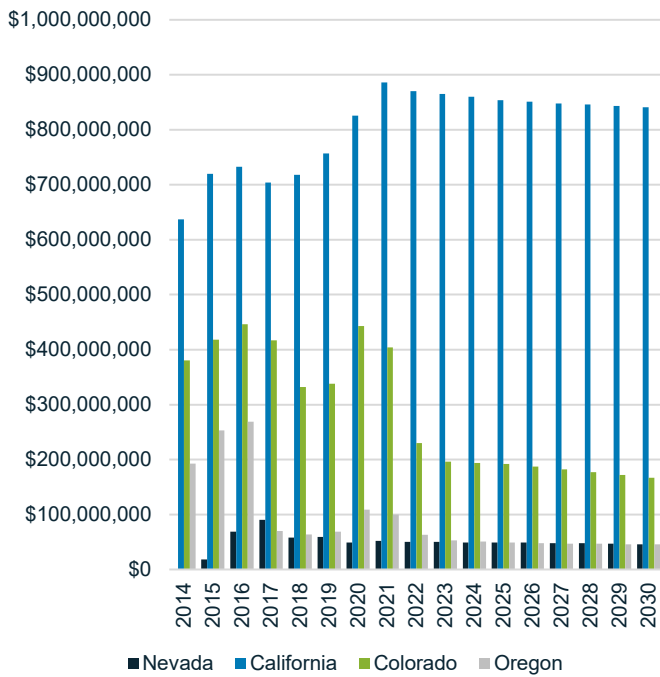


Source: Equio by New Frontier Data, 2014-2019, 2021-2022 American Community Survey 1-Year Estimates, Decennial Census, Esri Business Analyst.

The medical use market follows similar trends, with California having the largest market size, followed by Colorado.

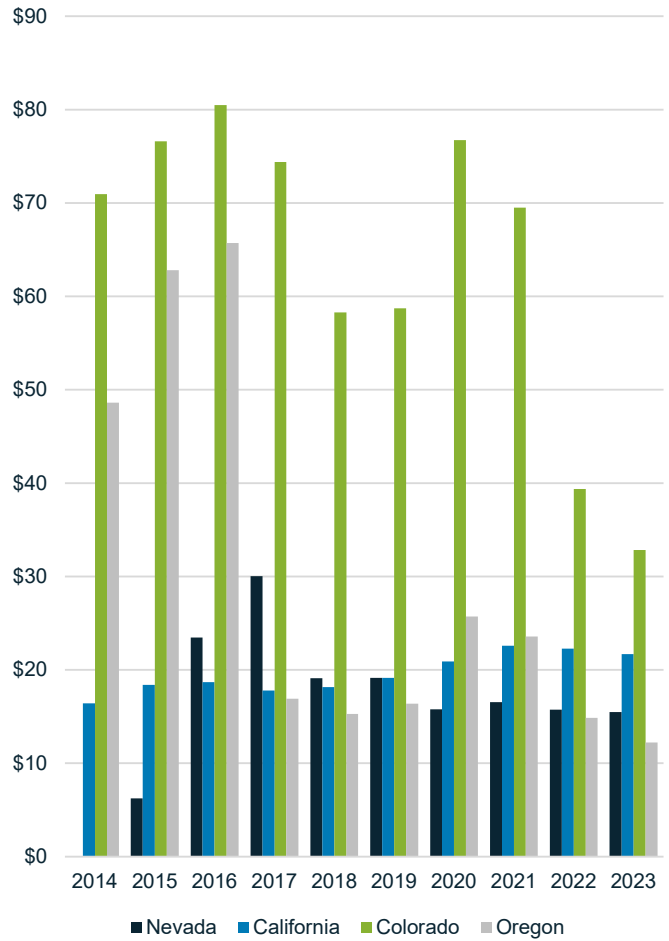
When looking at the medical use market on a per capita basis, Colorado has the largest medical market. Between 2017 and 2021, Colorado's market was more than double that of the other states. However, following 2021, the medical use market, on per capita basis, greatly decreased. The medical use market in Nevada is on the smaller size, though relatively similar to California and Oregon.

FIGURE 19: MEDICAL USE MARKET SIZE, 2014 TO 2030 (PROJECTED)



Source: Equio by New Frontier Data

FIGURE 20: PER CAPITA MEDICAL USE MARKET SIZE, 2014 TO 2023.



Source: Equio by New Frontier Data, 2014-2019, 2021-2022 American Community Survey 1-Year Estimates, Decennial Census, Esri Business Analyst.

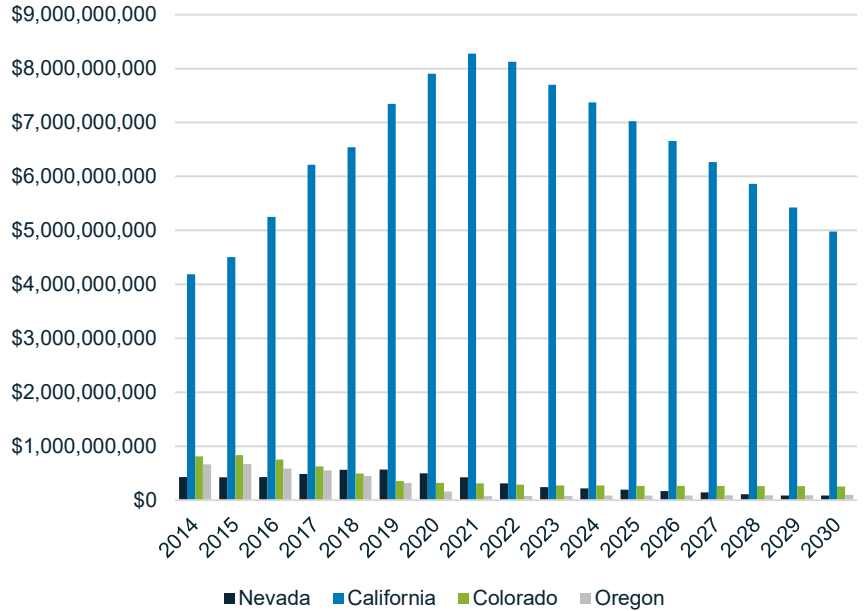


## Illicit Market

In all four states, the illicit market size is estimated to be decreasing. The estimated illicit market in California is the largest, greatly overshadowing that of the other three states. Estimates from Equio by New Frontier data show that the illicit market size in Nevada has been declining since 2019, a trend that is projected to continue.

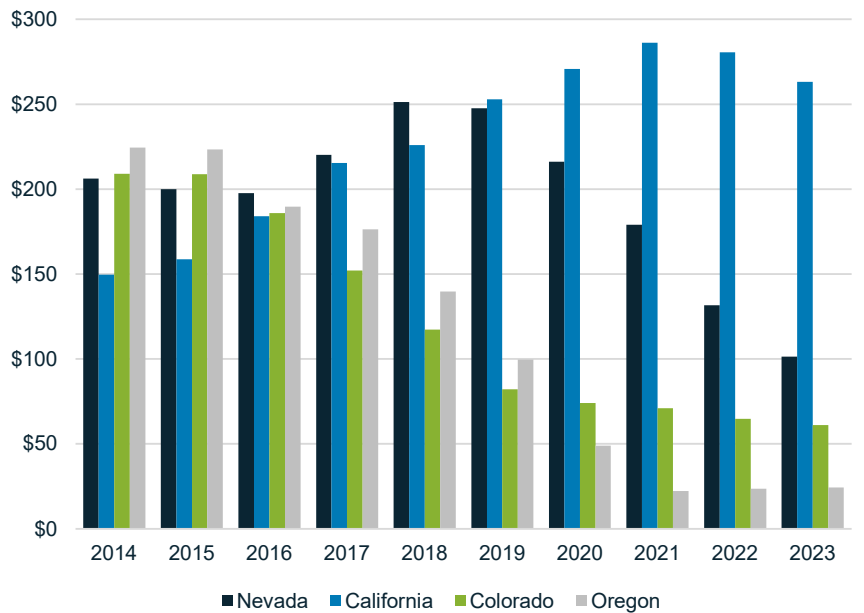
When compared to the other three states, in recent years, Nevada has had the second largest per capita illicit market size, second to California.

FIGURE 21: ILLICIT MARKET SIZE, 2014 TO 2030 (PROJECTED)



Source: Equio

FIGURE 22: PER CAPITA ILLICIT MARKET SIZE (21+), 2014 TO 2023.

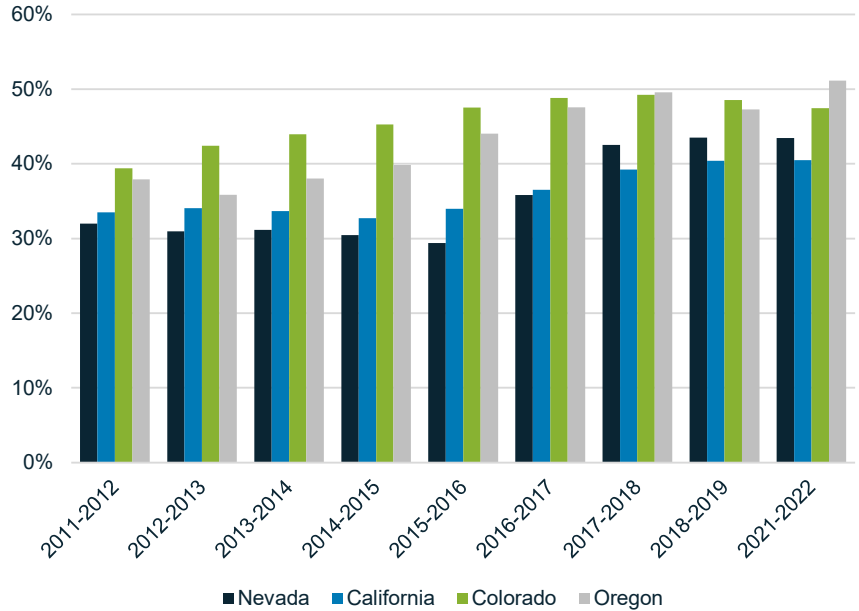


## Cannabis Use

Prior to legalization of adult-use cannabis in Nevada, the state had the lowest cannabis usage rates of the four for those ages 18 to 25, ranging from 29% to 32% depending on the year. Following legalization, the percent of the population that had used cannabis in the past year rose annually. In 2021-2022, Nevada had the second highest usage rates for this age group among the peer states, 45%, second to Oregon, 45%.

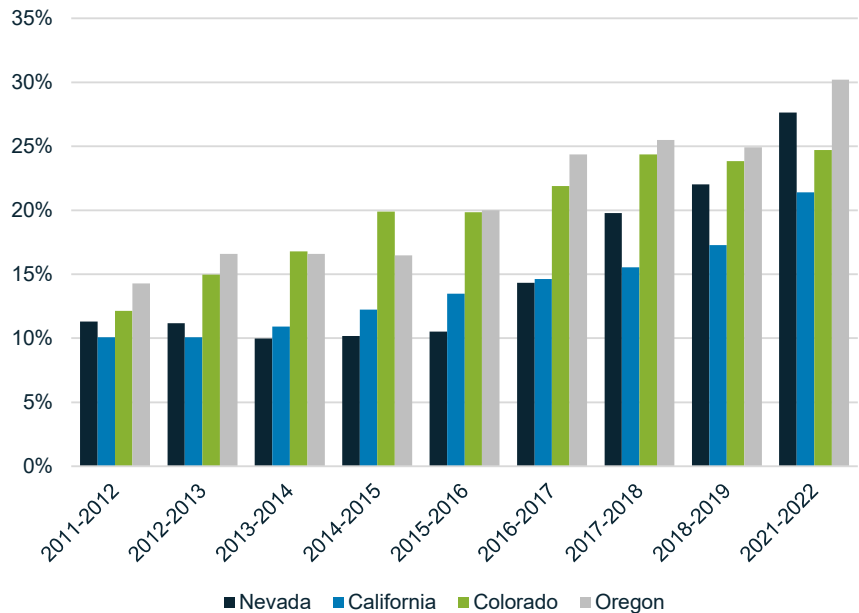
Trends are similar for those ages 26+, however, the increase in usage rates has been smaller, from 11% in 2015 to 2016 to 22% in 2018 to 2019. In 2021-2022, usage rates were 23%, matching those in Colorado.

FIGURE 23: CANNABIS USE IN THE PAST YEAR, AGES 18-25<sup>27</sup>



Source: Substance Abuse and Mental Health Services Administration National Survey on Drug Use and Health.

FIGURE 24: CANNABIS USE IN THE PAST YEAR, AGES 26+<sup>28</sup>



Source: Substance Abuse and Mental Health Services Administration National Survey on Drug Use and Health.

27 Due to changes in the NSDUH survey methodology, estimates from 2021-2022 are not comparable to estimates from previous years.

28 Due to changes in the NSDUH survey methodology, estimates from 2021-2022 are not comparable to estimates from previous years.

## Taxation

Throughout the US, cannabis taxes vary widely, with no standard state and local taxes, such as with alcohol. Of the four states, three (Nevada, Oregon, and Colorado) use a percentage-of-price tax, based on the final retail price paid by the consumer.<sup>29</sup> Due to similarity with existing sales tax structures, these types of taxes have the benefit of being relatively simple to administer. However, because they are based on purchase price, cannabis prices will impact the amount of tax revenue collected. In many markets, cannabis prices decrease over time, which can create volatility in tax revenues.<sup>30</sup>

California uses a gross receipts tax, which are taxes based on the sale price, including all charges related to the sale (such as delivery fees), and local cannabis business taxes, but does not include sales tax. This method is more complex and can be more burdensome on business owners.

Nevada and Colorado both have a 15% excise tax levied on cultivators. For affiliate sales, these are weight-based taxes based on average wholesale prices. Two states, California and Oregon previously had weight-based taxes, which they repealed.

Additionally, all adult-use sales in Nevada and California are subject to sales tax, while those in Oregon are dependent on the locality. In all four states, medical sales are exempt from most excise or state sales taxes, though the specifics vary from state to state.

While all four states have excise taxes, policymakers should be aware that these can impact the industry's ability to compete with the illicit market. Cannabis taxes can also be significant sources of revenue, offsetting any additional expenses associated with industry regulation or the legal market itself, or as a tool to moderate or manage cannabis consumption. With this in mind, governments should carefully consider their broader goals and needs when designing tax policies.



NEVADA

15% excise tax on the first wholesale sale based on Fair Market Value or actual sales price

Sales tax (6.85% - 8.375% depending on locality)

10% retail excise tax based on purchase price

Medical patients are exempt from retail excise tax



OREGON

17% retail sales tax

Additional 3% retail sales tax, depending on locality

Medical patients are exempt from state and local sales tax



COLORADO

15% retail excise tax on the first sale from a cultivation facility based on Average Market Rate or contract price

15% retail marijuana sales tax based on purchase price

Medical patients pay 2.9% state sales tax

Recreational sales are exempt from state sales tax

Local and special districts taxes (imposed by some local governments; varies)



CALIFORNIA

15% cannabis excise tax on the gross receipt of retail sales

Sales and use tax (7.250% - 10.750%)

Cannabis business tax (imposed by some local governments; varies)

Medical patients are exempt from sales and use tax

<sup>29</sup> Nevada also has an excise tax paid by cultivators, discussed later.

<sup>30</sup> Richard Auxier and Nikhita Airi, "The Pros and Cons of Cannabis Taxes" (Tax Policy Center, Urban Institute & Brookings Institute, September 2022), [https://www.urban.org/sites/default/files/2022-09/Pros%20and%20Cons%20of%20Cannabis%20Taxes\\_0.pdf](https://www.urban.org/sites/default/files/2022-09/Pros%20and%20Cons%20of%20Cannabis%20Taxes_0.pdf).

# Jurisdiction Comparison within Nevada

As the population and tourism center, Clark County generates the majority of cannabis sales, as well as supports the largest number of cannabis-related businesses in Nevada. As seen in Table 3, regardless of the license type, Clark County holds the highest number of licenses.

However, when examining the number of active licenses per 1,000 people, Clark County no longer has the highest number. Esmeralda County has the highest number of cultivation and production licenses per 1,000 people, while Nye County has the highest number of distributor licenses per capita. For dispensaries, due to its low population, Storey has the highest number of retail dispensaries per capita, despite having just one active retail dispensary license. Similarly, White Pine has the highest number of medical dispensary licenses per 1,000 people, again, despite having just one active medical dispensary license.

TABLE 3: ACTIVE LICENSES BY COUNTY, SEPTEMBER 2023<sup>31</sup>

	CULTIVATION		DISPENSARY		DISTRIBUTOR	LABORATORY		PRODUCTION	
	<i>Medical</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>
CARSON CITY	3	4	2	2	2	0	0	3	4
CHURCHILL	0	0	1	0	0	0	0	0	0
CLARK	81	84	46	71	34	7	7	59	63
ELKO	2	2	1	2	0	0	0	0	0
ESMERALDA	2	1	0	0	0	0	0	2	1
HUMBOLDT	1	1	0	2	0	0	0	0	0
LANDER	4	4	0	0	0	0	0	3	3
LINCOLN	3	3	0	0	0	0	0	2	2
LYON	1	1	1	2	0	0	0	1	1
MINERAL	1	0	0	0	0	0	0	1	0
NYE	9	11	1	2	3	0	0	4	5
STOREY	0	0	0	1	0	0	0	0	0
WASHOE	18	18	12	17	6	2	2	15	14
WHITE PINE	0	0	1	1	0	0	0	0	0

Source: Nevada CCB

TABLE 4: ACTIVE LICENSES PER 1,000 PEOPLE BY COUNTY, SEPTEMBER 2023

	CULTIVATION		DISPENSARY		DISTRIBUTOR	LABORATORY		PRODUCTION	
	<i>Medical</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>	<i>Medical</i>	<i>Retail</i>
CARSON CITY	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
CHURCHILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLARK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELKO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESMERALDA	2.7	1.4	0.0	0.0	0.0	0.0	0.0	2.7	1.4
HUMBOLDT	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
LANDER	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.5
LINCOLN	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.4	0.4
LYON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINERAL	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
NYE	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.1
STOREY	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
WASHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WHITE PINE	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0

Source: Nevada CCB, Census Bureau Population Estimates Program



The State of Nevada limits the number of dispensaries, both medical and adult-use, based on population.

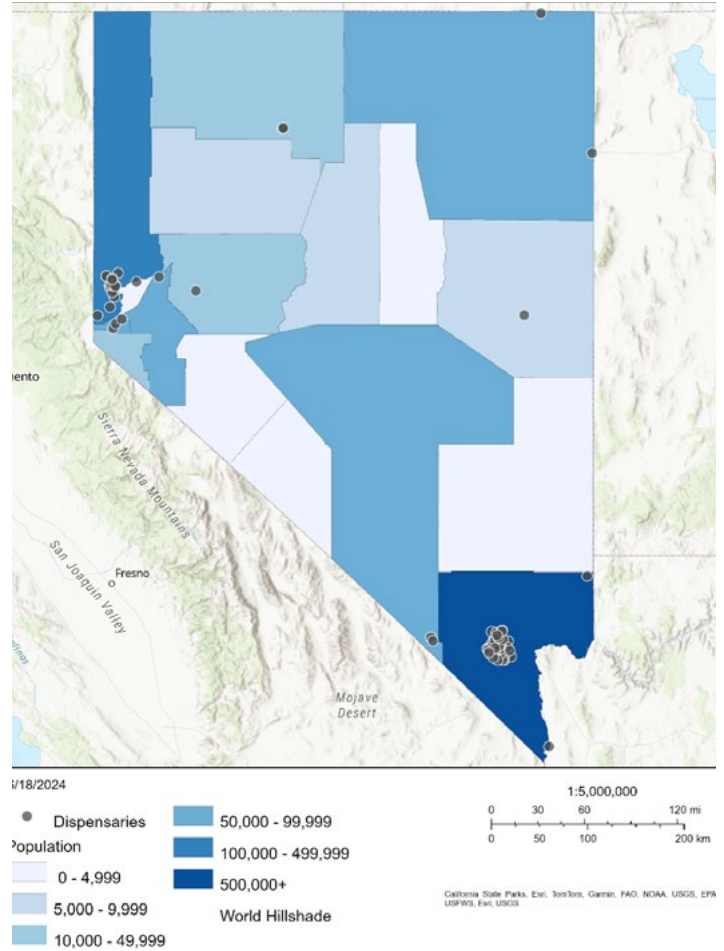
**TABLE 5: LIMITATION ON CANNABIS LICENSE BY POPULATION FOR JURISDICTIONS**

Population	Medical	Adult-Use
700,000 OR MORE	40	80
100,000 - 699,999	10	20
55,000 - 99,999	2	4
<55,000	1	2
FOR EACH INCORPORATED CITY IN A COUNTY WHOSE POPULATION IS LESS THAN 100,000	1	-

Source: Nevada Revised Statutes 678B.220 and 678B.260

With these rules, dispensaries are clustered in population centers, with the highest concentration in Clark County, followed by Washoe County, as shown in Figure 25. However, the current geographic distribution of dispensaries, as well as limitations created by jurisdictional moratoriums, leaves a large number of residents without access to a dispensary.

**FIGURE 25: MAP OF DISPENSARIES AND POPULATION BY COUNTY.**



Source: Nevada CCB, Census Bureau Population Estimates Program



# Federal Legalization

State cannabis markets, from legalization through present, exist in virtual silos. Entire operations- from cultivation to processing to packaging to retail and distribution- are self-contained within the borders of a single state. Current federal scheduling of Cannabis precludes any legal interstate commerce of the commodity, leading to a series of disadvantages for entrepreneurs and business owners in the industry, including inadequate access to banking, over-burdensome federal tax policies on goods produced/ sold, and lack of access to national supply chains/distribution networks of scale.

The federal regulatory environment, it appears, is on the verge of change, however. With the Biden administration announcing recently plans to reschedule cannabis from Schedule I to the much-less-restrictive Schedule III<sup>32</sup>, the door for expanded research on cannabis opens quickly and a potential entering of pharmaceutical companies into already established, legal medical state markets could follow shortly thereafter. And while it is impossible to predict with absolute certainty what the potential longer-term impact of federal re/de-scheduling on state marketplaces, based on a review of contemporary research and analysis, several key trends emerge as likely results of federal changes:

32 Julie Tsirkin and Monica Alba, "Biden Administration Plans to Reclassify Marijuana, Easing Restrictions Nationwide," NBC News, April 30, 2024, <https://www.nbcnews.com/politics/joe-biden/biden-administration-plans-reclassify-marijuana-easing-restrictions-na-rcna149424>.

We consider each of these broader likely trends in greater detail on the following pages, each with their own short section.



The emergence of **national cannabis marketplace**, with competition for in-state providers from out-of-state/national conglomerates



Significant changes in **market prices**, as a result of increased competition, likely further reducing the cost of both legal and illicit cannabis



Additional **focus on social justice** and individuals impacted by the prior criminalization of cannabis



**Challenges to state autonomy** on cannabis regulation, testing, and consumer protections



# Emergence of a National Marketplace

National legalization of cannabis would, almost undoubtedly, lead to a national marketplace- instead of the current, more isolated, state-only marketplaces. Several studies<sup>33</sup> point to the likelihood that the elimination of state lines as the sole defining boundary of a fully legal marijuana processing and supply chain will lead to an explosion of cross-state commerce, as companies adjust economies of scale to leverage resources, material, and manpower in a way that mirrors virtually all other industry supply chains in the country.

While the benefits in reduced cost and shared resources/economies of scale, particularly with regard to back office and administration functions and distribution networks could be realized, there are of course risks that monopolies could develop. Tobacco manufacturers, as an example, have taken steps toward the cannabis marketplace, with Altria (manufacturer of Marlboro cigarettes and other tobacco products) as perhaps the best example<sup>34</sup>. While the tobacco giant has retreated recently from its purchase of Canadian marijuana producer Cronos, they remained engaged in the development of proprietary technology for the delivery of cannabis. Should full legalization of cannabis consumption nationwide become a reality, with seasoned lobbyists and extensive experience dealing with myriad federal and state regulations that must be navigated as part of the tobacco market, it is reasonable to suspect a much larger, longer-term play from the tobacco industry into the cannabis market will occur.

# Market Price Movement

Closely related to the emergence of a national marketplace, it is likely, given the basic relationship between supply and demand, that if cannabis becomes legal to produce, distribute, and sell nationwide the overall cost of the product will decline with heightened competition from legal suppliers nationwide. While a state could take steps to subsidize or support legal producers already established within its borders, bolstering their competitive advantage, outright protectionism and blocking the import of cannabis produced in a different state would be difficult, if not impossible. Pointing again to the power of the *Dormant Commerce Clause*, a legal precedent accepted by the courts as implicit in the Commerce Clause in Article I of the US Constitution that prohibits state legislation that either prohibits or unduly burdens interstate commerce, authors Tobin and Kline (2022) argue the emergence of interstate Cannabis is all but inevitable following de/re-scheduling<sup>35</sup>. In a capitalist market, and assuming little intervention from governments either federal or state, as supply increases and stabilizes, the final cost to the consumer should gradually decline in the face of increased competition for a finite population of consumers.

In addition to the likely downward pressure on pricing faced by legal providers of cannabis that will come with competition from other legal, out-of-state providers, there is also evidence that the illicit market will see an additional reduction in the price charged to its consumers. Pointing to the Canadian experience, after the nation fully legalized the medicinal and recreational use of cannabis, researchers found the illicit market responded by increasing potency AND lowering the prices charged. More than that, as part of the analysis of potency and cost vis-à-vis the legal market, the same study found that within two months of nationwide legalization, that illicit products- including both flower and edibles- were both, on average, more potent and cheaper than comparable products offered at legal retailers.<sup>36</sup>

While market prices might be driven downward once a fully competitive national economy for cannabis emerges, there are some offset benefits cannabis businesses can reap as well, namely the changing of the federal tax code to lower taxes paid by producers, moving away from the current model of federal taxes on gross sales toward one enjoyed by all other industries: taxes only on profits after expenses.

33 See, for example: Abraham Kruger, "High Time for Change: How Federal Cannabis Prohibition Dooms the Legal Cannabis Industry," *Journal of Business & Technology Law* 19, no. 1 (January 1, 2023), <https://digitalcommons.law.umaryland.edu/jbtl/vol19/iss1/6>, and Jeremy Berke et al., "Regulating Cannabis Interstate Commerce: Perspectives on How the Federal Government Should Respond," *Ohio State Legal Studies Research Paper* (OSU Moritz College of Law Drug Enforcement and Policy Center, 2022), <https://www.ssrn.com/abstract=4188089>.

34 See, for example: Chris Roberts, "How Tobacco Giant Altria Is Becoming A Cannabis Company," *Forbes*, February 10, 2021, <https://www.forbes.com/sites/chrisroberts/2021/02/09/tobacco-giant-altria-is-pushing-marijuana-reform-on-congress-and-state-lawmakers/>.

35 Tommy Tobin and Andrew Kline, "A Sleeping Giant: How the Dormant Commerce Clause Looms Over the Cannabis Marketplace," *Yale Law & Policy Review*, January 3, 2022, [https://yalelawandpolicy.org/inter\\_alia/sleeping-giant-how-dormant-commerce-clause-looms-over-cannabis-marketplace](https://yalelawandpolicy.org/inter_alia/sleeping-giant-how-dormant-commerce-clause-looms-over-cannabis-marketplace).

36 Syed Mahamad et al., "Availability, Retail Price and Potency of Legal and Illegal Cannabis in Canada after Recreational Cannabis Legalisation," *Drug and Alcohol Review* 39, no. 4 (2020): 337–46, <https://doi.org/10.1111/dar.13069>.

# Changes in State Authority over Cannabis

With national de-scheduling, and ultimate legalization, the cannabis industry and its regulation will, perhaps cynically but likely unavoidably, be cast into the broader discussion of federal oversight and the over-burdening of states and/or business owners. The very real risk of overlapping- or perhaps competing- requirements, restrictions, and testing processes between states and federal agencies would likely add to the burden on business owners and would-be entrepreneurs.

The role the federal government could play in product testing, certification, and ensuring consumer safety, for example, in the form of oversight from the US Food and Drug Administration, will be significant. While universal standards and testing are designed to ensure safety and consistency in quality, the reach of the agency and its reliance on “precise analytical characterization” with regard to active and inactive ingredients could prove problematic for providers, particularly when it comes to promotion of the “entourage effects” associated with medicinal use<sup>37</sup>. Moreover, questions of timeliness of any new testing requirements, changes to packaging, and limitations on marketing that might flow from the US FDA raise concern as well. How long it takes to make rules, publish rules, and allow providers and states to respond to changes and how these changes will disrupt established, fully operational markets, like the one in Nevada, are concerns associated with any transition period as well.

Finally, as alluded to above, when discussing the risk of monopolization, nationalization could have a serious detrimental impact on any state initiatives to encourage and protect small businesses or minority owned businesses in the industry. As currently constituted, states have, within established legal limits, the absolute authority to establish policies and rules that can intentionally shape an inclusive or small-business friendly market within their borders. In the absence of these protections, the risk that small producers could be pushed from the industry is real.

# Social & Justice-related Implications

Touched on above as a potential consideration in the prevention of monopolization of a national market, the restorative justice potential for those previously convicted of marijuana-related crimes should also be considered as a stand-alone impact of national legalization. While a precise estimate of the final count is beyond this summary, suffice it to say that the vacating of convictions, expungement of records, and termination of incarcerations related to cannabis can have an immediate, positive impact on hundreds of thousands of citizens across the country, now unburdened by a criminal record and all that the stigma entails.

In addition to these very personal impacts on individuals, the resources dedicated to the arrest, conviction, and incarceration of individuals for cannabis related offenses can be redistributed to programs designed to bolster and reinforce social justice programming and resources. For example, Shaleena Title<sup>38</sup> argues that communities should ensure that individuals who were adversely impacted by the criminalization of marijuana offenses be granted special carve outs and consideration as part of the licensing process for cultivation, processing, distribution, and retail operations. Devoting additional resource to social welfare, addiction, and recovery services that otherwise would be spent on enforcement of prior marijuana laws is an open-ended and easy approach to improving social equity as well, in a manner to be determined by states to address their specific and unique needs. This approach, granting states autonomy over social equity policies and programs, could also be supplemented, or superseded by federal guidelines. The precise impact of any new federal requirements for social justice/social equity programming is not knowable, however, it is important to note that with the foray of a federal, executive agency into the mix, policies, approaches, and requirements can and will change with the administration occupying the White House.

Finally, with regard to the broader societal impact of widespread, national legalization, it is important to note what apparently does *NOT* happen, as a rule, with the onset of cannabis legalization. In a landmark 2017 study<sup>39</sup>, researchers collected data on crime rates and the onset of state policies of decriminalization, legalization of a medicinal marketplace, and legalization of recreational marketplace and found no link between pro-Cannabis policies and violent or property crime rates.

37 Sean M. O'Connor and Erika Lietzan, “The Surprising Reach of FDA Regulation of Cannabis, Even after Descheduling,” *American University Law Review* 68, no. 3 (2019), <https://doi.org/10.2139/ssrn.3242870>.

38 Shaleen Title, “Fair and Square: How to Effectively Incorporate Social Equity Into Cannabis Laws and Regulations,” *Ohio State Legal Studies Research Paper (OSU Mortiz College of Law Drug Enforcement and Policy Center, December 2021)*, <https://papers.ssrn.com/abstract=3978766>.

39 Shana L. Maier, Suzanne Mannes, and Emily L. Koppenhofer, “The Implications of Marijuana Decriminalization and Legalization on Crime in the United States,” *Contemporary Drug Problems* 44, no. 2 (June 1, 2017): 125–46, <https://doi.org/10.1177/0091450917708790>.

# Recommendations

## Analyze underserved areas to identify licensing opportunities

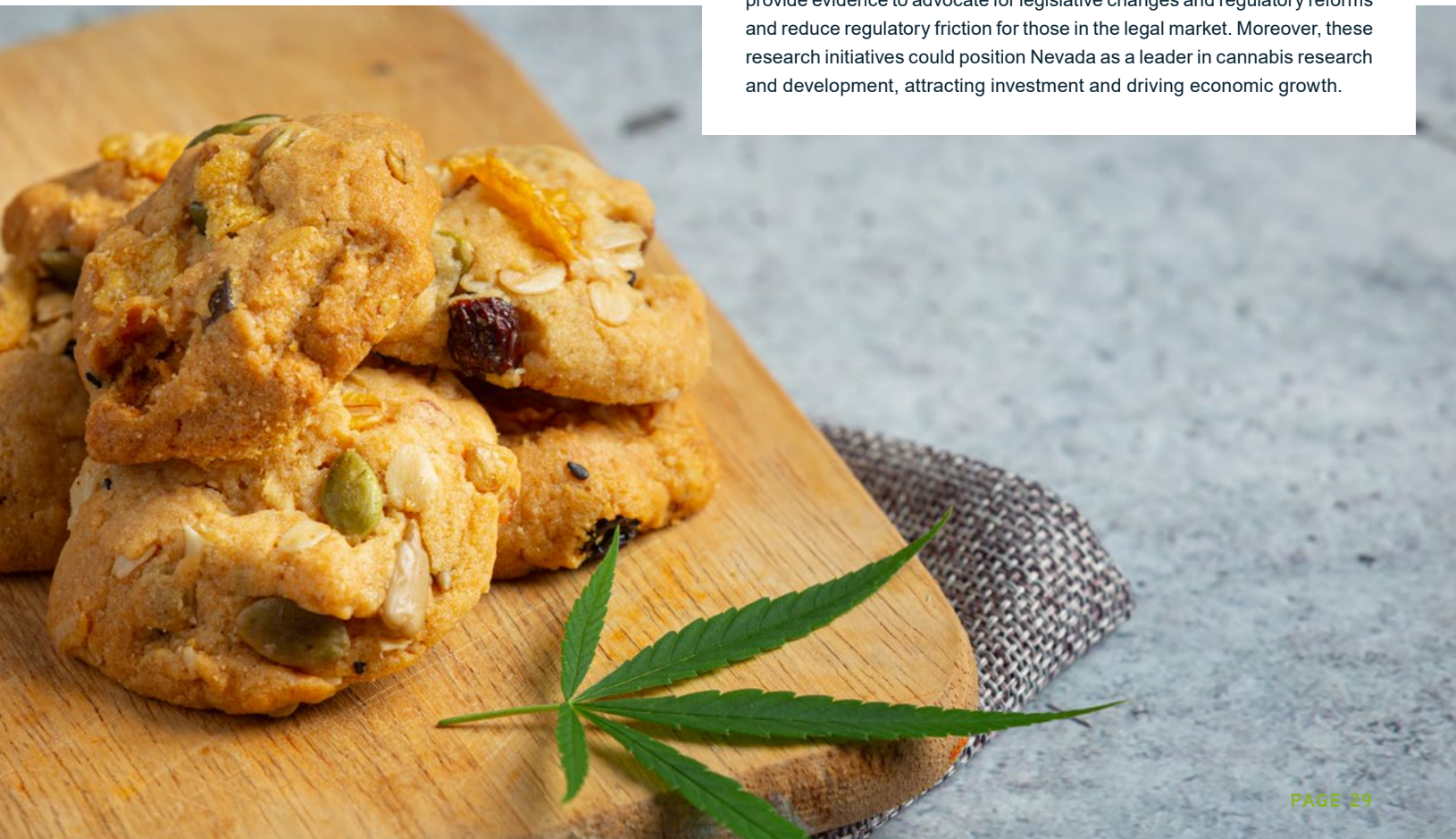
Counties outside of the traditional tourist destinations are comparatively underserved as these locations were not the focus of the post-legalization boom. This report recommends that market decision-makers undertake a comprehensive analysis of rural and other underserved areas to identify potential licensing opportunities. Then, gaps in these opportunities can be filled through incentive programs that could encourage entrepreneurs to open dispensaries and cultivation facilities in locations with less of a cannabis market presence. However, it is important to note that due to the low population density, there may not be enough demand in rural areas to sustain cannabis businesses without additional support.

Partnerships with local chambers of commerce and economic development agencies could be advantageous for new dispensaries as these local entities would provide important local context and input, as well as local support for the job creation offered by the cannabis industry. This report also recommends pursuing partnerships with rural agencies and community organizations because these groups would be able to provide their neighbors with trustworthy information about legal cannabis options, thus reducing misinformation and stigma.

Another option for expanding the cannabis industry to underserved markets is to address the friction points that make it more difficult to acquire safe cannabis products in these areas. Rural consumers live further away from cannabis providers, and often have less disposable income for cannabis tourism when compared to urban peers. Working with state leaders to expand regulations and pilot broader cannabis delivery services would allow the legal cannabis industry to fill the gaps in remote and underserved customers' access. Delivery services may not only expand the market during the time needed to build brick-and-mortar dispensaries in these areas, but also, they may help to familiarize rural Nevada communities with legal cannabis.

## Partner with local universities and research institutes on cannabis research initiatives

The state should consider collaborating with universities and research institutions to promote cannabis research initiatives that address consumer demand and regulatory compliance. The findings of such research could provide evidence to advocate for legislative changes and regulatory reforms and reduce regulatory friction for those in the legal market. Moreover, these research initiatives could position Nevada as a leader in cannabis research and development, attracting investment and driving economic growth.





## Conduct a public awareness campaign

Consumers are prone to view the cannabis provided on the illicit market as better quality or a more cost-effective choice. Some consumers expressed a distrust of the legal market and did not connect the government's oversight to increased safety. A targeted public awareness campaign would inform consumers that the illicit market does not guarantee the same safety as the regulated dispensaries by educating them about all the safety measures that the legal market has in place, as well as of the risks of consuming unregulated cannabis. A deftly constructed campaign may go a long way to building consumer distrust of illicit products and explain how taxes ensure the purity and quality of legal products.

## Consider the impact of taxes on the illicit market

While cannabis taxes can serve as a significant source of revenue for the state, they also increase the total price paid by the consumer, inhibiting the ability of the legal market to compete with the illicit market. When thinking about tax policy, policymakers should consider the aims of cannabis taxes and align policies to achieve those goals, with the knowledge that increased taxes may encourage some consumers to seek out the illicit market.

# Conclusion

The Nevada cannabis industry has cooled since its peak in 2021. Market trends hint at potential saturation or evolving consumer preferences, signaling the need for strategic adaptation.

Geographic insights reveal disparities in access, with dispensaries concentrated in urban areas, leaving segments of the population underserved. Stakeholders, including public officials and community leaders, see potential in leveraging cannabis marketing for tourism, aiming to position Nevada as a cannabis-friendly destination to boost the local economy.

To address these challenges and opportunities, a multifaceted approach is crucial. It should involve expanding market access, enhancing regulatory support to foster business growth, tackling the persistent issue of the illicit market through increased enforcement and consumer education, and the thoughtful consideration of the purpose and aim of cannabis taxes.

Collaboration among industry players, policymakers, and regulators is essential for navigating these complexities and ensuring the long-term viability of the Nevada cannabis market.

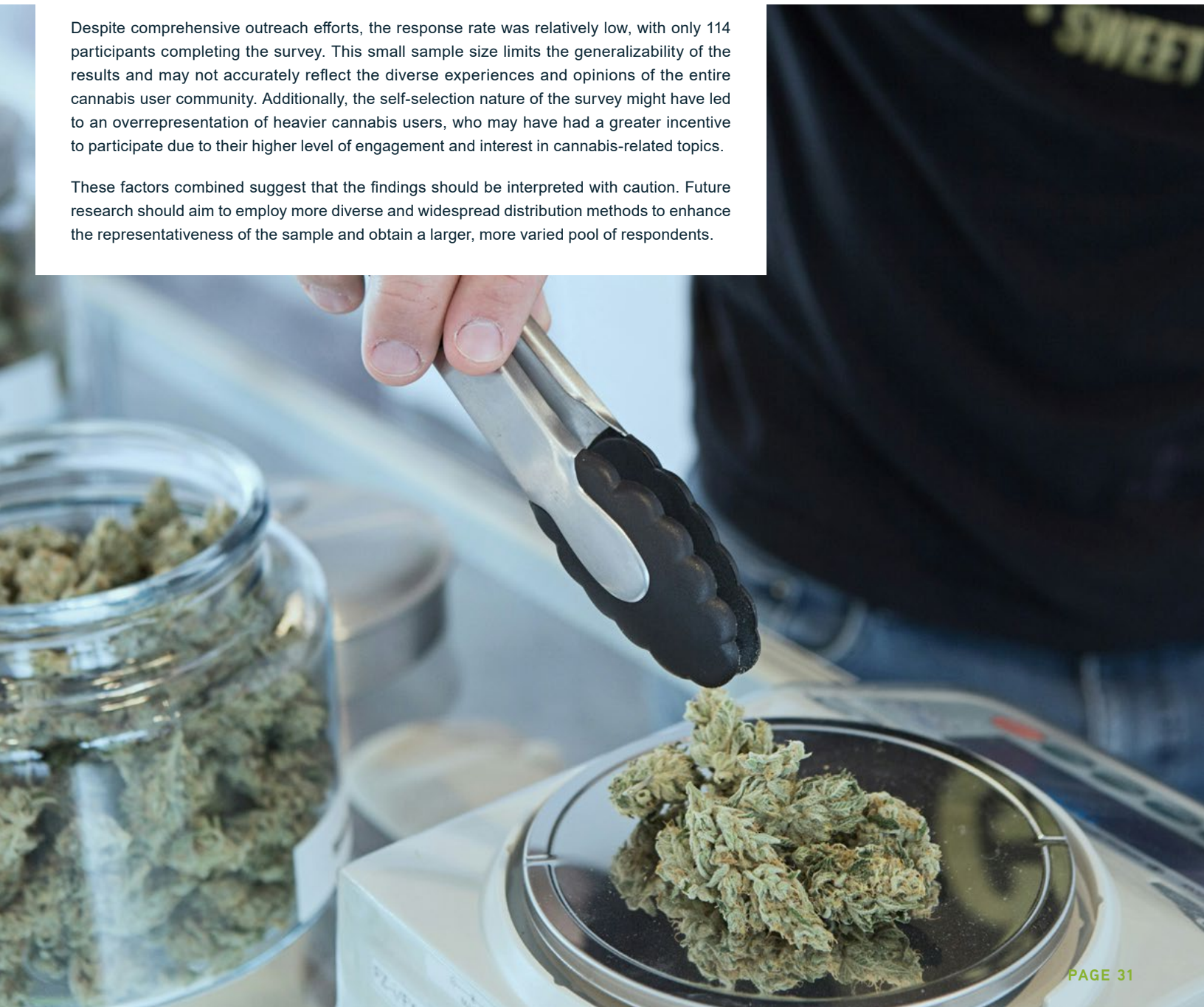
# Appendix A: Study Limitations

## Study Limitations

The cannabis survey was distributed by the CCB through their social media networks, stakeholders, and industry partners. This approach may have introduced a selection bias, as the outreach was limited to individuals already engaged with these channels. Consequently, the sample may not be representative of the broader cannabis consumer population.

Despite comprehensive outreach efforts, the response rate was relatively low, with only 114 participants completing the survey. This small sample size limits the generalizability of the results and may not accurately reflect the diverse experiences and opinions of the entire cannabis user community. Additionally, the self-selection nature of the survey might have led to an overrepresentation of heavier cannabis users, who may have had a greater incentive to participate due to their higher level of engagement and interest in cannabis-related topics.

These factors combined suggest that the findings should be interpreted with caution. Future research should aim to employ more diverse and widespread distribution methods to enhance the representativeness of the sample and obtain a larger, more varied pool of respondents.



# Appendix B: Current Market Perspectives

## Consumers and the Current Market

To learn more about cannabis consumption habits and preferences for sourcing among consumers, this project conducted a comprehensive survey targeting individuals who regularly engage with cannabis products. The survey aimed to explore various aspects of consumption, including frequency, preferred products, and methods of consumption. Additionally, respondents were asked about their preferences for sourcing cannabis, whether through licensed dispensaries, illicit dealers, or other sources. The survey was distributed electronically via an anonymous link through social media, email blasts, and other channels to encourage responses. By collecting data directly from consumers, the project sought to inform industry stakeholders and decision-makers about evolving consumer trends in the cannabis market.

The survey collected 166 responses from cannabis product consumers in Nevada. The survey respondents consisted primarily of frequent cannabis product consumers who disclosed that they had used a product within the past week, with a habitual daily consumption pattern.

Notably, a majority of respondents (60%) indicated that less than a quarter of their cannabis usage was for medicinal purposes. The most commonly reported product among respondents was flower or bud, suggesting a preference for this traditional form of cannabis consumption. These findings underscore the prevalence of recreational cannabis use among the surveyed population and highlight the dominance of flower/bud as the preferred choice among frequent consumers.

FIGURE 26: FREQUENCY OF CONSUMERS' PRODUCT USE

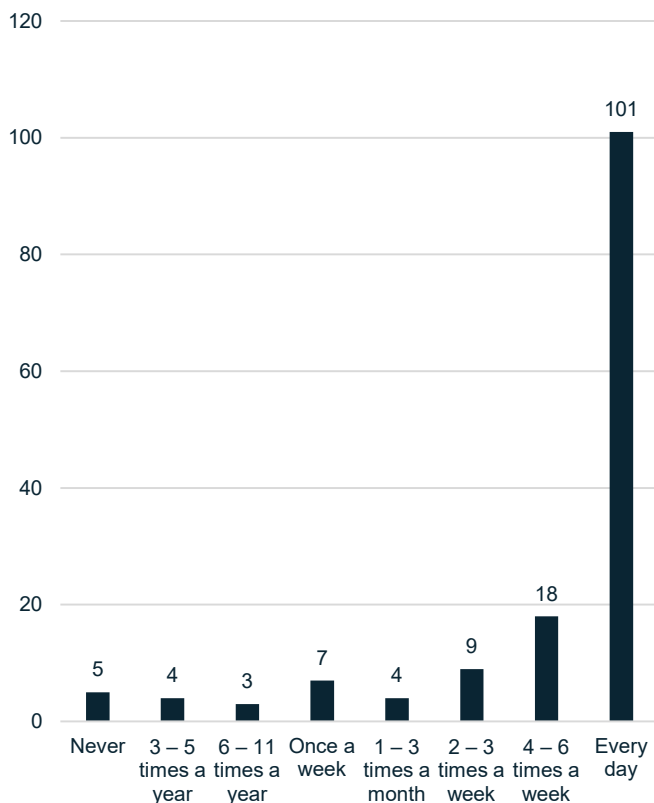


FIGURE 27: CONSUMERS' MOST RECENT USE OF PRODUCT

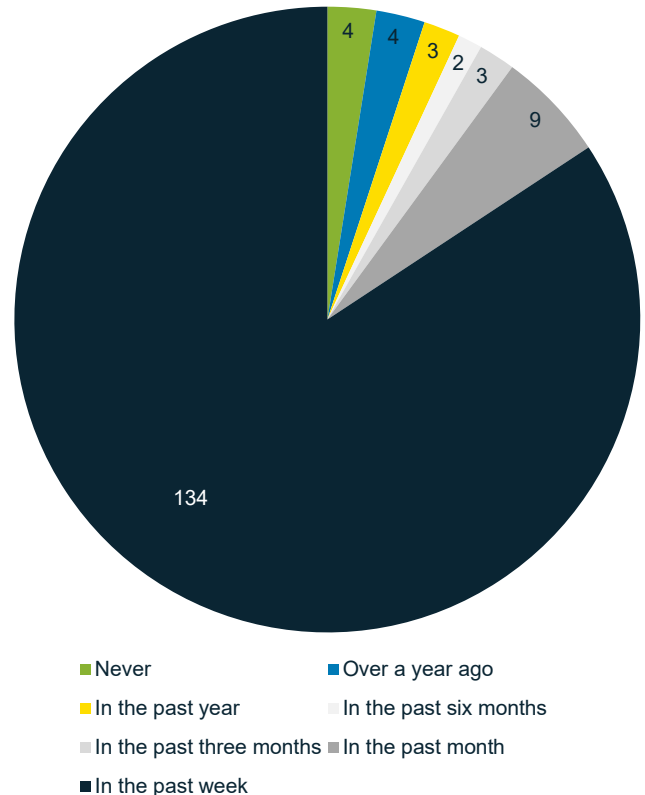




FIGURE 28: NUMBER OF CONSUMERS BY PERCENTAGE OF PRODUCT CONSUMED FOR MEDICAL PURPOSES

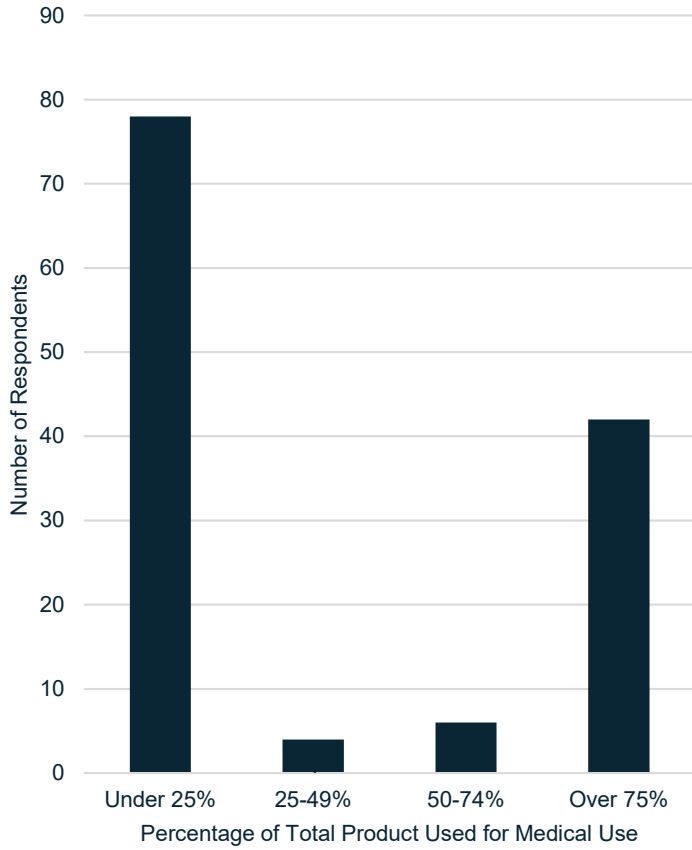
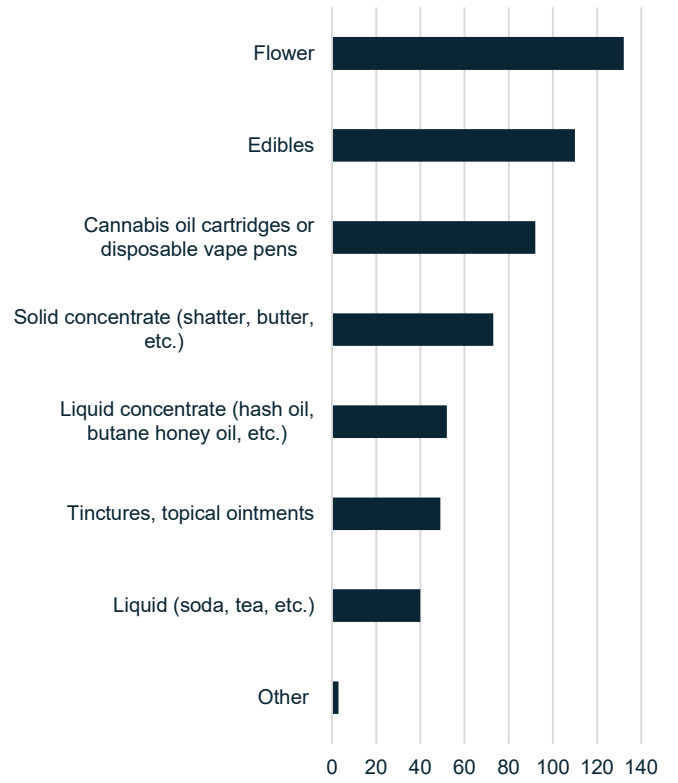


FIGURE 29: NUMBER OF CONSUMERS BY PRODUCT CONSUMED



## Importance to Consumers

In this survey, cannabis consumers were asked to rate how important various cannabis features were to them personally using a scale of 1 (not at all important) to 5 (very important). The average rating for each characteristic was compared. Analysis of the responses revealed intriguing insights into consumer priorities. Notably, cannabis quality emerged as the most critical factor, garnering the highest average rating among respondents. Safety followed closely behind as the second most important aspect, underscoring consumers' concerns regarding product purity and health implications. Surprisingly, while price often plays a significant role in consumer decision-making across industries, it ranked third in importance among cannabis consumers in this study. Conversely, potency received the lowest average rating, suggesting that consumers may prioritize other attributes over sheer potency when selecting cannabis products. The ratings for each cannabis product feature are summarized in the figure 30.

One of the key findings of the survey indicates that the majority of respondents are sensitive to changes in the price of legal cannabis. If the price were to increase, most respondents stated that they would either purchase from a dealer or consider growing their own cannabis. This suggests that price plays a significant role in consumer decision-making and that affordability is a critical factor for maintaining consumer loyalty to legal channels.

Conversely, if the price of legal cannabis were to decrease, the survey revealed that most consumers would either maintain their current purchasing behavior or increase their purchases from legal sources. This implies that lower prices may not necessarily lead to a significant shift towards illicit channels, highlighting the importance of competitive pricing strategies for legal cannabis businesses to remain competitive in the market.

FIGURE 30: CONSUMERS' RATINGS OF IMPORTANCE FOR PRODUCTS CHARACTERISTICS

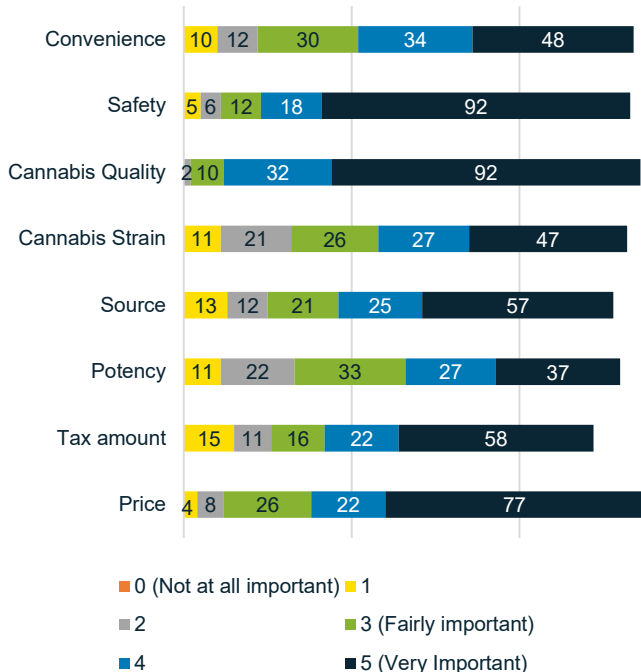


FIGURE 31: CONSUMERS' REACTIONS TO AN INCREASE IN LEGAL CANNABIS PRICING

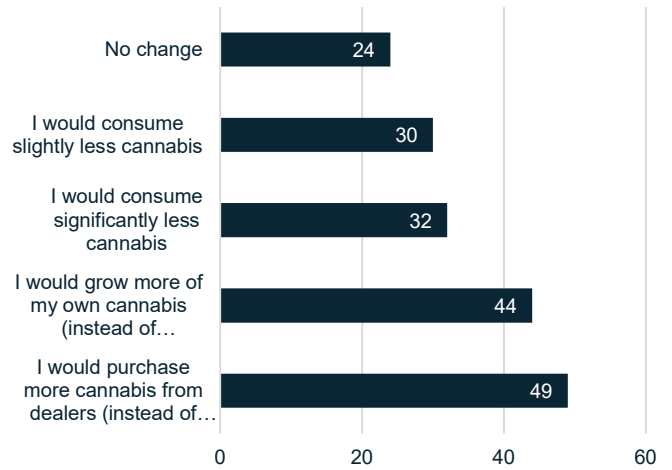
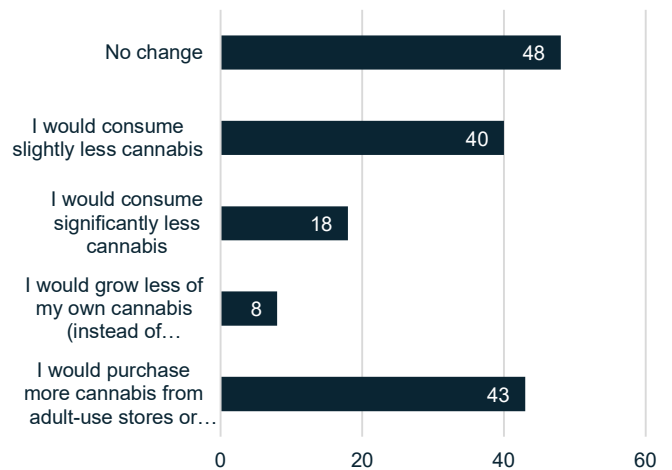


FIGURE 32: CONSUMERS' REACTIONS TO A DECREASE IN LEGAL CANNABIS PRICING



## Consumers' Choice Between the Legal and Illicit Market

The survey also provided insights into consumers' intentions regarding visiting cannabis lounges in Nevada. While 35 respondents expressed plans to visit cannabis lounges 2-5 times per year, a substantial portion of respondents, 30 in total, indicated that they have no intention of visiting these establishments. This divergence in preferences suggests that cannabis lounges may cater to a specific segment of the market, likely influenced by factors such as social acceptance and safety.

In terms of product quality, the majority of respondents rated the legally available cannabis in Nevada as either average or high quality. This positive perception bodes well for the legal cannabis market in Nevada, indicating that consumers are generally satisfied with the quality of products offered through legal channels. The finding further highlights the price sensitivity of those who purchase from the illegal market. However, maintaining product quality standards will remain essential for legal businesses to retain consumer trust and loyalty in the face of competition from illicit, lower cost sources.



FIGURE 33: COUNT OF HOW OFTEN RESPONDENTS PLAN TO VISIT NEVADA CANNABIS LOUNGES

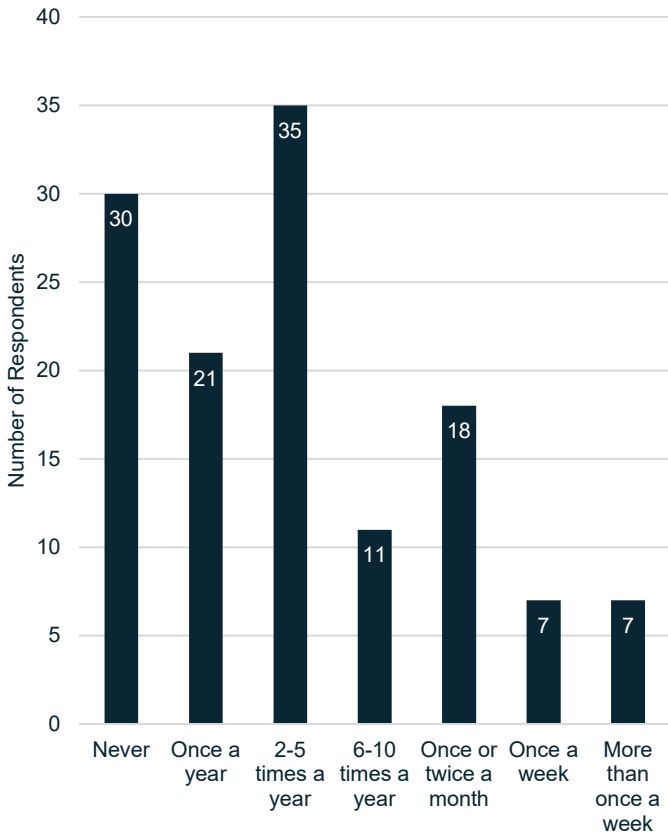


FIGURE 34: FREQUENCY OF RATINGS FOR QUALITY OF LEGALLY PURCHASED NEVADA CANNABIS

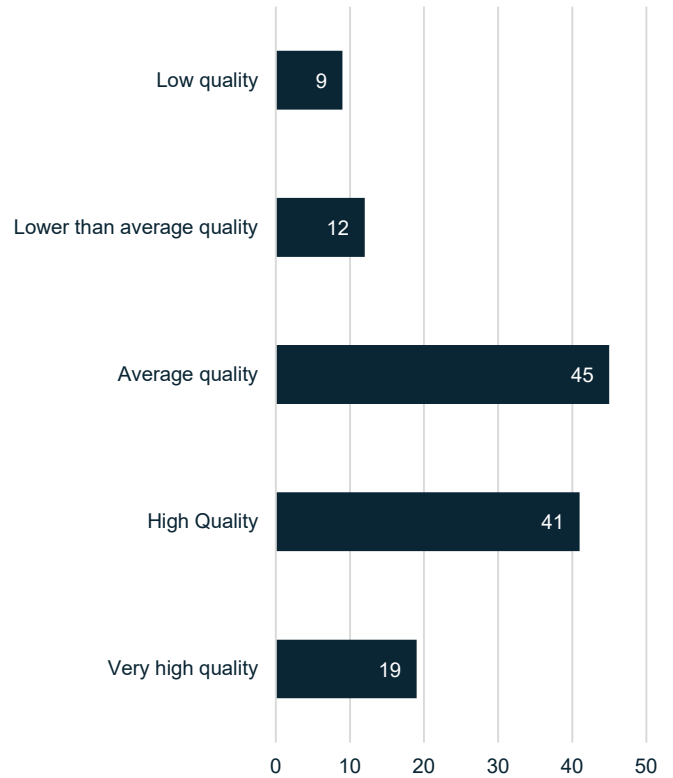


FIGURE 35: FREQUENCY OF FACTORS REPORTED AS DEFINITELY AFFECTING CHOICE TO PURCHASE FROM A DEALER

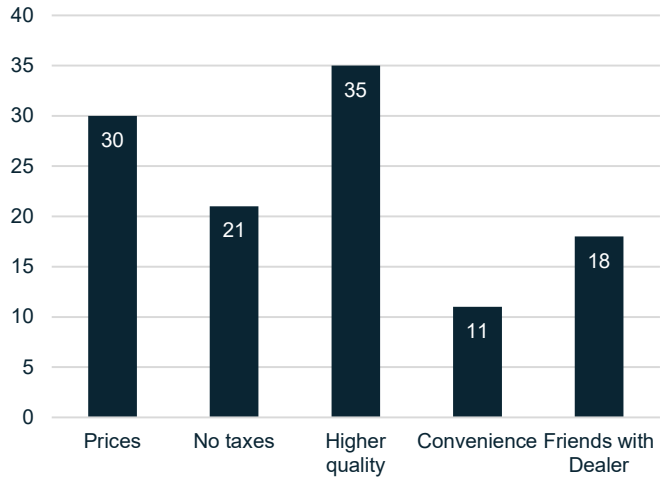
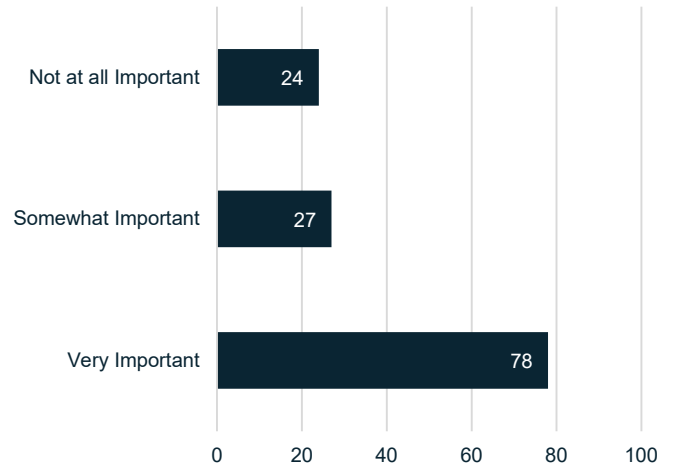


FIGURE 36: FREQUENCY OF CONSUMERS RATING HAVING A LEGAL SOURCE AS IMPORTANT



## Focus Groups

To better understand the diverse perspectives on what is affecting the commercial cannabis industry in Nevada, this project engaged stakeholders to find out their views of this changing landscape. TPMA partners referred the research team to officials who may be positioned to share their opinion of the cannabis market in Nevada. By email, the public officials, law enforcement officers, business owners, representatives from the Nevada tourism industry were invited to participate in a focus group to provide their insights into legalization, the illicit market, and the current state of the selling and purchasing cannabis products within the state.

## Public Officials

The public officials focus group was held virtually on February 13, 2024, and several major themes occurred throughout the facilitated conversation. These themes reflect the perspectives and concerns of the public officials regarding the cannabis industry in Nevada. The themes that emerged from the public officials included:

- The rapidly changing trajectory of the cannabis industry
- Communities' concerns about the industry
- Wide variance in enforcement of related laws
- Slow growth of the Nevada market compared to other states
- Challenges presented by a growth in the illicit market

The discussion amongst the public officials delved into the evolution of the cannabis industry over the past two decades, particularly the transition from medical to adult-use cannabis since 2015. The focus group participants noted rapid growth in the industry and raised concerns about smaller players struggling to compete or obtain licenses. The group surmised that cannabis sales have exceeded expectations due to reduction in the stigma surrounding its use. This led to additional discussions about the dominance of retail sales over medical.

Participants highlighted that the proliferation of retail outlets and their strategic locations in urban areas were, in their view, major contributors to industry growth. However, the officials expressed concerns about the impact of the cannabis industry on the local communities. Specially, they mentioned an influx in odor complaints and worries about the denser concentration of dispensaries near lower socioeconomic areas compared to more affluent areas.

The conversation then shifted to the legalization of adult-use cannabis and its impact on communities. An official remarked that the legal cannabis industry has created more jobs since its creation. However, the industry was showing signs of economic shrinkage in more recent years. Participants shared the opinion that the industry was making wealthy individuals richer, and there was resistance to this, as well as resistance to the cannabis industry from the casinos and other gaming establishments located near dispensaries.

Participants noted that jurisdictional variations in the cannabis industry were a major challenge to its growth and acceptance. They explained that different regions of Nevada have different perspectives on regulation and the potential impact of cannabis use on quality of life. For example, the industry in Henderson is centered on cannabis' medical benefits, but Reno's industry is beleaguered by zoning debates around dispensary placement.

## Business Owners

On February 22, 2024, a facilitated focus group involving business owners provided discussions on various facets of Nevada's cannabis industry, shedding light on the industry's opinions on both obstacles and potential avenues for advancement and expansion. The following key ideas were identified in the discussion:

- Cannabis industry is currently experiencing a decline.
- Business owners desire regulatory changes that will support industry growth. They believe Nevada's cannabis industry seems more rigid than that of other states. Variations in regulations from county to county create market disparities.
- The illicit cannabis market is a significant challenge to businesses.
- Rescheduling or descheduling cannabis at the federal level presents potential opportunities and challenges.

The trajectory of Nevada's cannabis industry over the past two decades garnered significant attention, with one participant stating that there has been a decline in total sales from a peak of about \$1 billion in 2021, reaching around \$1 billion at its peak. Factors contributing to this downturn were deliberated upon, with participants pointing to the persistence of the illicit market, regulatory constraints, and law enforcement as potential underlying causes. Concerns loomed regarding the industry's future stability, particularly following the recent closure of notable cultivators.

The business owners' discussion pivoted towards economic development strategies in light of necessary regulatory adjustments to support industry growth. One business owner stressed the importance of lifting limitations on product potency per package, citing the current 800mg per package restriction as impeding consumer preferences in their opinion. Another participant highlighted the challenge posed by the biennial nature of legislative sessions in Nevada, which constrains adjustments until 2025. Nonetheless, initiatives to pilot event sales and consumption in larger gatherings were identified as potential avenues for growth.

Comparisons with other states were drawn, with a business owner advocating for regulatory reforms by adopting best practices from states like Washington and Oregon. However, challenges such as zoning restrictions and disparities in supply and demand across different counties in Nevada were acknowledged.

The group remarked that they thought the illicit cannabis market was becoming a significant obstacle. Participants identified that broader product selection and higher quality would provide the legal market with advantages over the illicit market. Two business owners underscored the pricing advantage of the illicit market, which continues to attract consumers despite regulatory and taxation hurdles.

Federal legalization was also explored, with discussions centered on potential impacts on banking services and exporting consulting services to other states. However, uncertainties remained regarding regulatory changes and challenges associated with the rescheduling or descheduling of cannabis at the federal level.

Various perceived challenges within the industry were discussed, including testing batch size requirements, packaging regulations, and enforcement of unlicensed cannabis sales. Participants stressed the importance of streamlining regulations and bolstering enforcement efforts to combat illicit market activities.

Recent legal changes in Nevada concerning cannabis were discussed, with ongoing efforts to streamline regulations and eliminate redundant testing requirements for certain products. Participants also highlighted challenges related to labeling and packaging regulations, which impact customer experience and operational efficiency.

Overall, the focus group underscored the intricate challenges facing Nevada's cannabis industry, encompassing regulatory constraints, competition from the illicit market, and the imperative for continuous adaptation to evolving market dynamics. Nonetheless, participants expressed optimism about the potential for growth and development, particularly through regulatory reform and industry collaboration.

## Tourism Industry

The next focus group conducted on February 22, 2024, was with representatives from the tourism industry. Their comments shed light on how the various dimensions of Nevada's cannabis industry has implications for tourism and economic development. The key themes that occurred during the discussion of the cannabis and tourism included:

- Cannabis is becoming normalized and attracts increased interest from tourists.
- Tourism and local economies are believed to benefit from the cannabis industry.
- The pandemic increased demand and changed consumer behavior.
- Nevada industry faces challenges like banking issues, odor and smoking concerns, and regulatory uncertainties.
- Cannabis-friendly experiences have great marketing potential.
- Industry needs to explore how to market and advertise a positive image of cannabis to the public.

One focus group participant stated that, in their opinion, during the past two decades, Nevada's cannabis sector has witnessed burgeoning interest from both locals and tourists, even preceding its legalization. Proximity to California played a pivotal role in advocating for legalization to mitigate revenue losses to neighboring states. Despite initial moral apprehensions, there was a prevailing consensus among economic developers to embrace legalization, acknowledging its inevitability. Nevertheless, persistent challenges, such as the absence of effective methods for testing impairment while driving, remain.

Contributing to the industry's expansion are factors like enhanced accessibility and growing social acceptance. Legalization has spurred innovations in product variety, offering consumers a broader spectrum of options compared to the constrained choices during prohibition. During the COVID-19 pandemic, the industry experienced heightened demand, coupled with a surge in online availability and delivery services. However, apprehensions persist regarding market saturation and the industry's long-term viability.

The focus group participants underscored the significance of the cannabis industry for tourism, particularly in Las Vegas, aligning with the city's image as a leisure and relaxation hub. However, they felt challenges, such as regulatory conflicts with the gaming industry and ambiguities in marketing and advertising guidelines, warrant attention.

Compared to counterparts in other states, Nevada's cannabis industry harbors untapped potential, particularly in tourism and business expansion. Nevertheless, concerns by the business and tourism industries regarding the illicit market endure despite legalization. There was consensus among focus group participants that lower prices in the illicit market (spurred by skipping packaging and taxation) drives consumer demand, but that focusing on the safety of products in the legal market could be a way to combat those sales. Instituting a program targeting the prosecution of unlicensed cannabis businesses, like California's Cannabis Administrative Prosecutor Program (CAPP) was also mentioned as a possible solution to assist in the reduction of illicit sales.

The prospective federal legalization of cannabis could yield both positive and negative repercussions for tourism, including normalized consumption, banking access, and fresh business opportunities. However, focus group participants felt that there could also be challenges, such as tax scrutiny and regulatory changes.

In summary, while Nevada's cannabis industry has experienced notable growth, the journey forward demands adept navigation of legal, regulatory, and societal landscapes to ensure sustained success and seamless integration into the State's economy and tourism sector.

