



# **An Examination of Cannabis Consumers and Cannabis Demand in Minnesota**

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## Executive Summary

This report details the findings of a project commissioned by the Minnesota Office of Cannabis Management aimed to better understand the current state of cannabis consumers and cannabis demand in Minnesota as required under Minnesota Statutes 342.04 (a). A large population sample of Minnesota residents who use cannabis was surveyed, and comparisons were made relative to other states with similar populations and cannabis consumption regulations. Below are the key findings of this study:

- The percentage of survey participants residing in each county matched the percentage of actual Minnesota residents in each county with 99% accuracy, providing strong support for the validity of findings.
- Participants reported obtaining an average of 24.8 grams of cannabis within the past month, which is slightly higher than the national average and proximate Midwest states with adult-use laws such as Michigan and Missouri, suggesting a robust market for cannabis-related businesses.
- 83% of qualified participants (i.e., past-year cannabis consumers) consumed cannabis at least once a month and 40% consumed cannabis daily or almost daily.
- Overall cannabis consumption patterns among participants in this sample matched that of a national sample of past-year cannabis consumers, with nearly equivalent consumption of flower (11 days), edible (7 days), vape (8 days), and concentrate (5 days) cannabis products.
- 25% percent of the sample reported cultivating cannabis at home, with an average of two cannabis plants grown at a time.
- Over 50% of the sample reported using at least one alternative cannabinoid (e.g., CBD, Delta-8 THC, Delta-10 THC) within the past month, and 68% indicated use of these alternatives in the past.
- Participants reported obtaining a majority of their cannabis from a dealer (17.6%), friends and family (16.6%), or an adult-use dispensary (lower-potency hemp edible retailers) (16.1%).

## Section 1. Research Limitations

The following study is part of a national research project, wherein all U.S. states are issued the same survey questionnaire and the same proprietary survey logic to assess cannabis demand from a variety of common sources. Provided that Minnesota is the only state in the country with widely-available hemp-derived delta-9 tetrahydrocannabinol (THC-9) products at registered retailers, the specific source of “lower-potency hemp edible retailers” is *not* listed for survey respondents to record their volume of grams obtained at this source, nor frequency of visiting this source. As a result, this study does not assess consumer behavior related to accessing lower-potency hemp edible THC-9 products, nor the demand (grams) for lower-potency hemp edible THC-9 products through these specific retailers. Additional research is required to thoroughly understand Minnesota consumers’ demand for THC-9 that accounts for lower-potency hemp edible retailers as a core source. However, the study does provide value in contextualizing total demand, consumer behavior and preferences, and use patterns across all sources of THC-9 products.

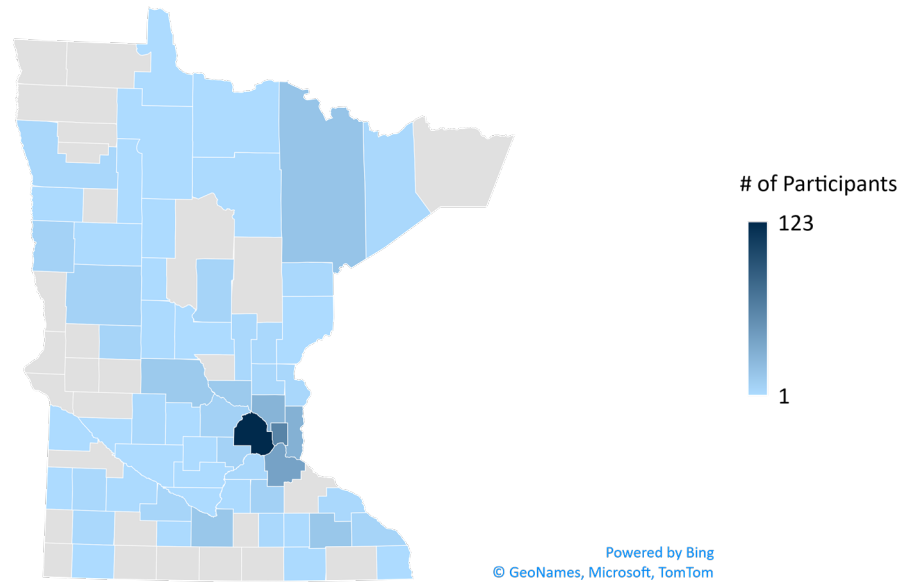
*Original cannabis demand research provided in the current report was conducted by Cannabis Public Policy Consulting, LLC.*

## Section 2. Research Design

This report uses data collected from the June 2023 and September 2023 [Regulatory Determinants of Cannabis Outcomes Survey \(RDCOS\)](https://www.cannabispolicyconsulting.com/our-data/) (<https://www.cannabispolicyconsulting.com/our-data/>). The RDCOS is a comprehensive tool for gathering state-specific data on cannabis-related outcomes and is administered on a quarterly basis to ensure the most up-to-date data. In total, data from 494 participants who resided in Minnesota and completed the full survey were included in this sample. All participants were past-year cannabis consumers. Figure 1 shows the geographic distributions of participants by county. The percentage of survey participants residing in each county is almost perfectly correlated with the percentage of actual Minnesota residents in each county ( $r = .99$ ), which suggests that the recruitment of Minnesota residents is geographically consistent with actual county populations in the state.

Key demographic characteristics of the general Minnesota population can be found on the [U.S. Census Bureau’s website](https://www.census.gov/quickfacts/MN) (<https://www.census.gov/quickfacts/MN>). Most of the respondents in this survey were white (64.4%) and slightly over half were female (53.0%). Several historically underrepresented groups were intentionally oversampled compared to the general Minnesota population, including those who indicated that they are Black or African American, American Indian, Native American, or Alaska Native, and Multi-Race. Median age of this sample was 26 years, which is younger than that of the Minnesota population. Thirteen percent indicated that they have served in the U.S. Armed Forces, Military Reserves, or National Guard. Nearly 42% identified as Hispanic or Latino. Select deviations from Minnesota population demographics lend strength to the study findings as the deviated variables correlate with cannabis consumption, the primary population of interest necessary for quantifying demand.

**Figure 1. Geographic Distribution of Survey Respondents.**



## Section 3. Cannabis Consumption Patterns in Minnesota

### 3.1. Cannabis Use and Prevalence

To qualify for participation in this study, all respondents must have indicated that they have consumed cannabis within the past year. Eighty-three percent of qualified participants consumed cannabis at least monthly and 40% consumed cannabis daily or almost daily. Forty percent of the total sample indicated that they are a current medical cannabis patient. However, this figure is likely not representative of an absolute prevalence of past-month cannabis consumption among past-year consumers in the state, nor of medical cannabis participants in the broader cannabis consuming population. Rather, the RDCOS was successful in oversampling for frequent consumers, lending confidence in quantifying total demand.

**Figure 2. Cannabis Use Frequency Among Respondents.**

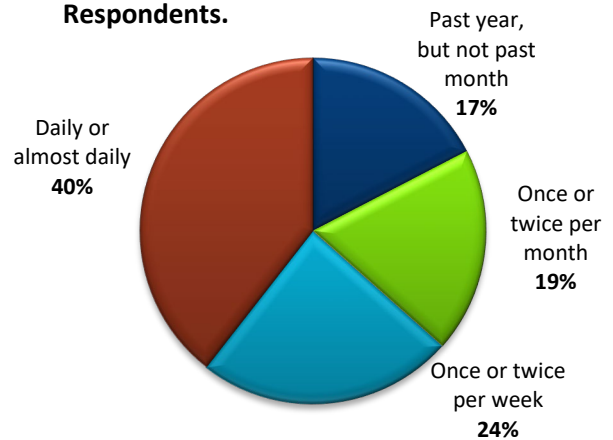


Table 1 summarizes findings from those who reported consuming cannabis products at least 1 day within the past month. When examining cannabis use patterns among individuals in other U.S. states with similar medical and adult-use cannabis regulations, the data from this sample was nearly parallel to the national data. Individuals in this sample consumed flower and concentrate products slightly less often (11 days versus 12 days and 5 days versus 6 days, respectively). The average cannabis potency participants reported consuming within the past month was 28% THC.

**Table 1. Consumption Patterns (Days in The Last Month) Comparing Minnesota to National Data.**

	<b>Flower</b>	<b>Edibles</b>	<b>Vape</b>	<b>Concentrates</b>
<b>Minnesota</b>	11 days	7 days	8 days	5 days
<b>National Data</b>	12 days	7 days	8 days	6 days

Twenty-five percent of the sample reported cultivating cannabis at home. Of these respondents who report growing cannabis at home, the average number of cannabis plants participants reported obtaining was 2 plants. When comparing these data to a national sample of respondents from states with similar adult-use regulations, 24.7% report cultivating cannabis at home and obtain an average of 1.2 cannabis plants at any given time, very similar to findings from this sample of Minnesota residents.

### **3.2. Alternative Cannabinoid Consumption**

The frequency of various alternative-cannabinoid product consumption is listed in Table 2 below. While many of those listed are included and featured in many regulated cannabis products, participants were asked to report use of products that contained a majority of cannabinoids other than Delta-9 THC, which are typically sold in convenience stores, online, and in tobacco shops. The catalogue of alternative cannabinoids is extensive and continuously evolving; although this is not an exhaustive list, it represents the most commonly used products in recent surveys. Important to note is that CBD is not known to produce intoxicating effects, and others (e.g., CBN) are considered “mild intoxicants.” Over 68% of those surveyed indicated use of these alternatives in the past, and 56% have used these in the past month. These data are similar, albeit slightly higher, when compared to other states from the national sample. For example, when compared to all states with adult-use regulations sampled in the September 2023 RDCOS, 50.3% of respondents reported using an alternative cannabinoid within the past month. Specifically, 47.7% of those in New Mexico, 46% of those in Missouri, 49.5% in Illinois, 46.6% in Massachusetts, and 50.4% in Washington consumed an alternative cannabinoid within the past month. It is important to note that this survey provides preliminary data on the topic of alternative cannabinoids and future surveys are warranted to accurately capture the state and demand for this market.

Minnesota law allows for the sale of lower-potency hemp edibles containing hemp-derived THC and certain alternative cannabinoids. These hemp products can contain no more than 5mg of hemp-derived delta-9 THC or delta-8 THC, 25mg of CBD, and 25mg of CBG per serving. Lower-potency hemp edibles, which are intended to be eaten or consumed as a beverage, can only be sold to adults 21 years and older. Lower-potency hemp beverages can contain up to 10mg of THC per container (2 servings), and edibles may contain up to 50 mg of THC per package (10 servings). Lower-potency hemp edibles, unlike in other states without a regulated intoxicating hemp program, can be legally sold in a variety of non-dispensary businesses, such as grocery stores, bars, liquor stores, and restaurants with a valid registration from the Department of Health.

**Table 2. Frequency of Alternative Cannabinoid Consumption Among Respondents.**

Alternative cannabinoid product	I used this in the past month	I used this before, but not in the past month	I've never used this	I don't know if I've ever used this
Delta-8 THC	32%	33%	20%	15%
Delta-8 THCO	12%	22%	35%	31%
Delta-10 THC	16%	25%	35%	24%
THCP	13%	16%	37%	34%
THCV	10%	15%	38%	37%
CBD	31%	40%	15%	15%
CBN	10%	15%	37%	38%
HHC	13%	13%	37%	36%

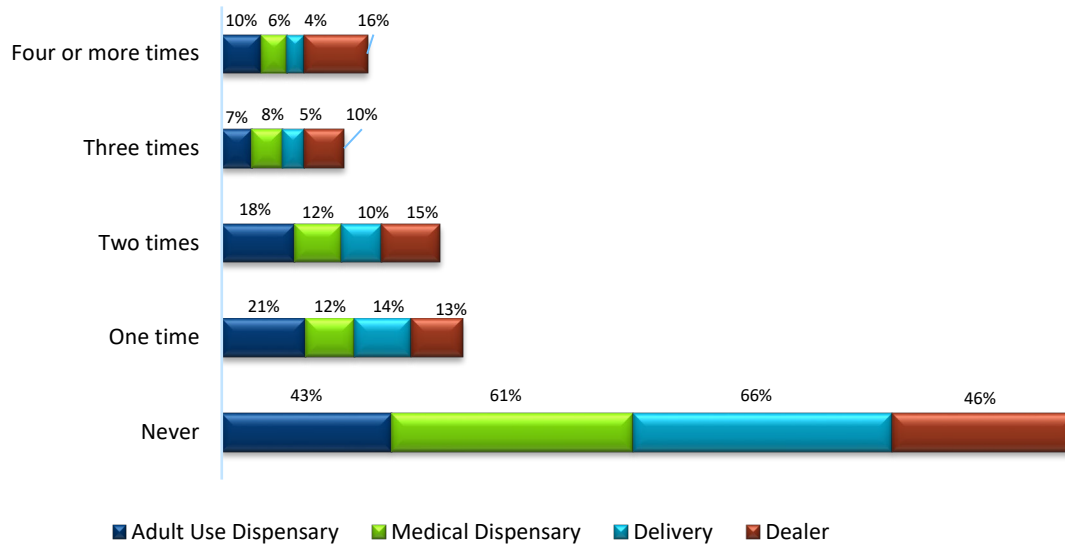
### 3.3. Legal and Illicit Cannabis Obtainment

Participants were prompted to report the number of grams of cannabis they obtained within the past month from a variety sources (legal and illicit). Since the numerical response options presented to participants slightly differed between the June RDCOS (in which numerical response options were presented in a categorical manner) and September RDCOS (in which numerical response options were presented in a continuous manner), the data was weighted proportionally across the two recruitment samples to provide more accurate estimations of cannabis demand. Across the total sample, participants reported obtaining 24.77 grams of cannabis within the past month. This is slightly higher than the national average, as well as proximate Midwest states with adult-use laws like Michigan and Missouri, suggesting a robust market for cannabis-related businesses.

Of those who reported obtaining any amount (>0 grams) of cannabis within the past month, the most frequently reported sources individuals obtained cannabis were from friends and family (67.6%), an adult-use dispensary (61.3%) (what is assumed to be viewed as lower-potency hemp edible retailers by respondents), a dealer (53.4%), and a medical dispensary (42.7%). Participants were most likely to report going to a dealer more than once within the past month compared to reported frequency of visiting other sources. Forty-one percent of those visiting a dealer to purchase cannabis within the past month reported going two or more times, compared to 35% for those visiting an adult-use dispensary, and 26% for those visiting a medical-dispensary. Please refer to Figure 3 on the next page for more detailed information.



**Figure 3. Number of Times Visiting Each Source to Purchase Cannabis Per Month.**



In terms of the number of grams obtained within the past month, participants indicated that they obtained an average of 4.4 grams (17.6%) from a dealer, 4.1 grams (16.6%) from friends and family, 4.0 grams (16.1%) from an adult-use dispensary (assumed as lower-potency hemp edible retailers), and 2.8 grams (11.3%) from a medical dispensary within the past month. Please refer to Table 3 for a more detailed breakdown of the data. Excluding cannabis purchased from a dealer, it can be conservatively estimated that all grams obtained within the past month were obtained in a legal manner. It is important to note that among respondents who indicated that they were not medical patients, there were reports of obtaining cannabis from a medical dispensary, a caregiver, and a delivery service. Therefore, it is possible that individuals may be obtaining regulated cannabis in an illicit manner. These findings are not uncommon in other states as adult use possession and gifting laws become effective and the perceived risk of criminality is reduced while adult-use sources are not available. However, additional data is necessary to establish definitive findings on the prevalence of illicit medical cannabis obtainment illicit delivery sources, and such preliminary data points should not be misconstrued as anything other than information.

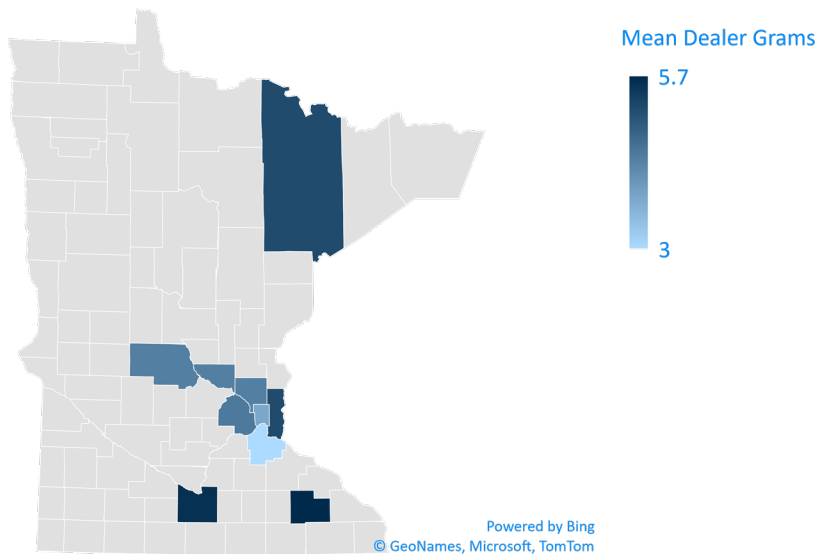
Importantly, these data suggest an overall high prevalence of obtaining cannabis from a dealer, an illicit source, among Minnesota residents, which stands to reason as legal adult-use sources are not fully available. For instance, the highest proportion of cannabis obtained by participants was from a dealer (17.6%) and participants reported the highest likelihood of visiting a dealer more than once a month to purchase cannabis compared to other source types. Those in Olmsted County (5.7 grams), Blue Earth County (5.6 grams), Washington County (5.2 grams), St. Louis County (5.2 grams), Hennepin County (4.5 grams), and Sherburne County (4.4 grams) reported the highest average number of grams obtained via a dealer source in the past month (only counties with 10 or more respondents were included in this analysis). These counties may especially benefit from the presence of adult-use retail stores.

**Table 3. Average Number of Grams and Proportion of Grams Obtained Per Source Within the Past Month.**

Source	Grams	% of Total Grams
Dealer	4.354	17.6%
Given for free or purchased from friends or family	4.106	16.6%
Adult-Use Dispensary*	3.967	16.1%
Medical Dispensary	2.809	11.3%
Caregiver	2.739	11.1%
Delivery	2.518	10.2%
Home-grow	2.259	9.1%
Other	2.008	8.1%
<b>Total Grams</b>	<b>24.769</b>	

*\*Assumed lower-potency hemp edible retailers*

**Figure 4. Counties with the Highest Average Number of Grams Obtained from a Dealer Source Within the Past Month.**



### **3.4. Access and Transportation to Purchase Cannabis**

Respondents indicated that they travel 18 minutes, on average, each way to purchase cannabis. This is similar to findings from the national sample. Those in Olmsted County reported the lowest proximity to travel, at approximately 10 minutes each way to purchase cannabis, whereas those in Stearns County reported the longest proximity to purchase cannabis, at approximately 25 minutes each way (only counties with 10 or more respondents were included in this analysis). When prompted with a question inquiring about whether they have traveled to a different state or jurisdiction within the past month to purchase cannabis, nearly 12% of respondents reported that they have traveled to a different state outside of Minnesota to purchase cannabis. Among our national sample of individuals who reported traveling to a different state to purchase cannabis and did not reside in Minnesota (n = 4830), 4.8% (23 respondents) reported traveling to Minnesota within the past month to purchase cannabis. Most of these individuals indicated residing in Michigan (5 respondents) and North Dakota (5 respondents). Overall, these data suggest a relatively low proportion of individuals from surrounding states traveling to Minnesota to obtain cannabis.

Participants in this sample reported spending a median of \$40 on cannabis within the past month. This figure is slightly lower than respondents in states with similar adult-use laws from the national sample, who report spending a median of \$75.50 on cannabis within the past month. Anoka County residents reported the highest median amount spent on cannabis within the past month (\$100), followed by Blue Earth, Hennepin, Sherburne, Stearns, and Olmsted counties (\$75.50). Those in Dakota County reported spending the lowest median amount of money on cannabis within the past month (\$20.50) (only counties with 10 or more respondents were included in this analysis).

## **Section 4. Cannabis Demand in Minnesota and Other States Licensing**

The framework for a regulated cannabis market in Minnesota includes the implementation of competitive licensing, suggesting limited availability of licenses under Chapter 63. There is currently no precise, validated methodology to determine the ratio of supply to demand necessary to capture demand through the regulated market across any of the supply chain activities (cultivation, product manufacturing, retail). Similarly, there is no evidence to suggest that open licensing policies are more effective in reducing the illicit market in the long-term than limited licensing policies. Both models have advantages and disadvantages, however the largest limitation of the limited licensing model is the absence of exact science for determining what is adequate to serve the market. Moreover, Minnesota has a unique feature of legalization that is currently operating and will impact the availability of THC-9 product supply, as well as availability, beyond the existing licensing paradigm observed across the U.S. Put simply, lower-potency hemp edible manufacturers and retailers will likely impact consumer behavior as a competing or substitute market. As a result of this unique production and availability of THC-9 products, it is impossible at this time to understand the necessary supply of cannabis vs. hemp needed to accommodate to total demand without further research. Until the adult use market is launched and sales for both types of outlets can be thoroughly assessed, estimates of adequate product supply and outlets for the adult use program will likely be inaccurate.

Assessing the volume of current or total licenses that states with launched adult-use markets utilize may add context for Minnesota in determine licensing limitations for each activity of the supply chain. Table 4 below offers adult-use states with readily available licensing data.

**Table 4. Select Adult-Use States**

Adult Use State	State Population 21+ Years old	Year of AU Sales	Licensing Model
Illinois	9,395,645	Jan-20	<i>Limited</i>
Maine	1,030,858	Oct-22	Open
Michigan	7,374,595	Dec-19	Open
Missouri	4,471,589	Feb-23	<i>Limited</i>
Oregon	3,108,216	Oct-15	Open
Vermont	476,146	Oct-22	Open
Washington	5,482,380	Jul-14	Open

Product usage data from the RDCOS indicates that products outside of lower-potency edibles will still be in high demand (flower, concentrates, etc.).

To better understand the canopy size to be spread across the medical and adult use cultivation (30,000 sq. ft.), mezzobusiness (15,000 sq. ft.), and microbusiness (5,000 sq. ft.), and medical combination businesses (60,000 sq. ft.), the legislature may look to other state’s capacity per capita 21 years or older in Table 5 on the next page. § 342.02 Subd. 2.(18) provides the office authority to adjust plant canopy to meet market demand.

**Table 5. Select Adult-Use States Cultivation Licensing and Canopy Capacity**

Adult-Use State	State Population 21+ Years old	Licensed AU Cultivators	Maximum Canopy Size Allowed for License Type	Maximum Statewide Canopy Size for Current Licensees (sq. ft.) *Assumes 1 plant = 2 sq. ft.	Total Canopy Sq. Ft.	Sq. Ft. Per Capita 21+
<a href="#">Michigan</a>	7,374,595.00	9 class a	100 plants	1,800.00	3,850,800.00	0.52
		105 class b	500 plants	105,000.00		
		840 class c	2000 plants	3,360,000.00		
		96 excess	2000 plants	384,000.00		
<a href="#">Illinois</a>	9,395,645.00	63	5,000 sq ft	315,000.00	4,935,000.00	0.53
		21	210,000 sq ft	4,620,000.00		
<a href="#">Missouri</a>	4,471,589.00	51	30,000 sq ft	1,530,000.00	1,530,000.00	0.34
<a href="#">Vermont</a>	476,146	306	1,000 sq ft (tier 1)	306,000.00	741,000.00	1.56
		52	2,500 sq ft (tier 2)	130,000.00		
		19	5,000 sq ft (tier 3)	95,000.00		
		3	10,000 sq ft (tier 4)	30,000.00		
		9	20,000 sq ft (tier 5)	180,000.00		
		0	37,500 sq ft (tier 6)	0		
<a href="#">Oregon</a>	3,108,216	1416	40,000 sq ft max	9,000,000.00	9,000,000.00	2.9
<a href="#">Maine</a>	1,030,858	9	500 sq ft (Tier 1)	4,500.00	476,500.00	0.46
		37	2,000 sq ft (Tier 2)	74,000.00		
		34	7,000 sq ft (Tier 3)	238,000.00		
		8	20,000 sq ft (Tier 4)	160,000.00		

While there has been no evaluation to say what ratio of manufacturers are necessary per sq. ft. of canopy for optimal market outcomes, the legislature may look to the same states to understand how other programs have accommodated in Table 6.

**Table 6. Select Adult-Use States Manufacturing Licenses Per 100,000 Sq. Ft. of Canopy**

Adult Use State	State Population 21+ Years old	Licensed Manufacturers/Processors in Operation	Total Canopy Sq. Ft.	Manufacturers/Processors Per 100,000 Sq. Ft. of Canopy
Michigan	7,374,595.00	249	3,850,800.00	6.47
Illinois	9,395,645.00	60	4,935,000.00	1.22
Missouri	4,471,589.00	77	1,530,000.00	5.03
Vermont	476,146.00	76	624,552.00	12.17
Oregon	3,108,216.00	100	9,000,000.00	1.11
Maine	1,030,858.00	68	2,486,000.00	2.74

Chapter 63 requires local governments to make available no less than one retail registration for every 12,500 residents. When evaluating city population size for each of the [913 local governments](https://www.minnesota-demographics.com/cities_by_population) ([https://www.minnesota-demographics.com/cities\\_by\\_population](https://www.minnesota-demographics.com/cities_by_population)), there will be no less than 381 retail registrations. However, many local governments may seek to have more retail registrations than the statutory minimum. As such, the legislature may consider a larger number than the statutory minimum.

## Section 5. Public Health

While the Office does not yet have comprehensive information to provide a full report on driving safety and legal and arrest implications at this time, the survey conducted did address prevalence of cannabis use disorder (CUD) and prevalence of driving under the influence of cannabis (DUIC) within the sample. Additionally, the Office is committed to reporting information regarding traffic safety and legal implications in future reports and plans to coordinate with the Department of Public Safety as the agency implements a pilot project to assess tools to track impaired driving due to cannabis in the state.

A revised version of the Cannabis Use Disorder Identification Task (CUDIT-SF) was used to assess prevalence of cannabis use disorder (CUD). Forty-seven percent of the total sample qualified for CUD. When examining prevalence of driving under the influence of cannabis (DUIC), nearly half (43%) of the sample reported at least one day of DUIC within the past month. Among the total sample, the average number of DUIC days within the past month was 4.3 days; however, among those who reported at least 1 DUIC day, the average number of DUIC days within the past month was 10 days. Twenty-eight percent of the total sample reported consuming cannabis right before or during work within the past month, compared to 51% of those with at least 1 DUIC day within the past month. Altogether, those reporting

any DUIC days within the past month were more likely to report a higher number of DUIC days and consuming cannabis before or during work.

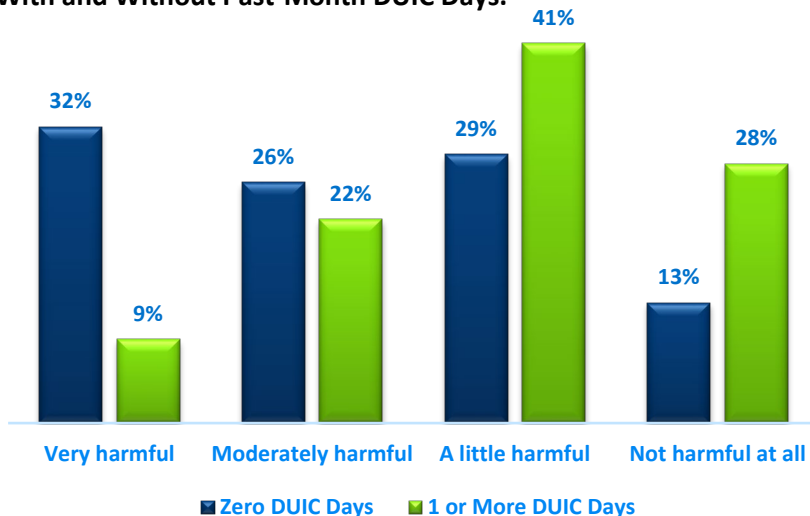
Participants were presented with questions inquiring about their perceived risk of harm for a variety of cannabis consumption behaviors on a scale from “not harmful at all” to “very harmful”. Overall, participants rated “using cannabis while pregnant” as *most* harmful (62.4% rated this as at least moderately harmful) and “consuming cannabis every day” as *least* harmful (32.8% rated this as at least moderately harmful). Please refer to Table 7 for detailed findings.

Among those with *zero* DUIC days within the past month - 32% of these respondents endorsed driving under the influence of cannabis as “very harmful”, 26% endorsed DUIC as “moderately harmful”, 29% endorsed DUIC as “a little harmful”, and 13% endorsed DUIC as “not harmful at all”.

Among those with *at least one* DUIC day within the past month - 9% of these respondents endorsed driving under the influence of cannabis as “very harmful”, 22% endorsed DUIC as “moderately harmful”, 41% endorsed DUIC as “a little harmful”, and 28.2% endorsed DUIC as “not harmful at all”.

As demonstrated in Figure 8, those with zero DUIC days rated DUIC as overall more harmful than those with at least one DUIC day. The differences in ratings of DUIC risks between those who have zero DUIC days and those who have at least one DUIC day are statistically significantly different.

**Figure 8. Perception of Harm Ratings for DUIC Among Participants With and Without Past-Month DUIC Days.**



**Table 7. Perception of Harm Ratings Across a Variety of Cannabis Consumption Behaviors.**

	Not harmful at all	A little harmful	Moderately harmful	Very harmful
<b>Driving under the influence of cannabis</b>	19.4%	34%	24.3%	22.3%
<b>Consuming cannabis every day</b>	33.4%	33.8%	21.1%	11.7%
<b>Using cannabis while pregnant</b>	16%	21.7%	24.5%	37.9%
<b>Cannabis use as an adolescent (under 16 years old)</b>	14%	28.7%	28.3%	28.9%