

# AN ASSESSMENT OF THE MARKET AND TAX REVENUE POTENTIAL OF RECREATIONAL CANNABIS IN MONTANA

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BUREAU OF BUSINESS AND  
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## **ACKNOWLEDGEMENTS**

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## SUMMARY

This report presents the findings of research intended to quantify the potential size of the recreational cannabis marketplace in Montana, and the potential tax revenue that could be collected in the event that recreational cannabis achieves legal status as envisioned in initiatives CI-118 and I-190 on the November ballot. This independent effort conducted by the Bureau of Business and Economic Research at the University of Montana was commissioned by New Approach Montana, a political campaign aimed at passing the initiatives. The research uses publicly available data and draws on similar research conducted in other states.

Montana Sales and Tax Revenue Projections,  
2022-26 Recreational Cannabis, Total (\$mill.)

Year	Residents		Nonresident Leisure Visitors		TOTAL	
	Sales	Revenue	Sales	Revenue	Sales	Revenue
2022	\$187.5	\$37.5	\$29.7	\$5.9	\$217.2	\$43.4
2023	\$188.9	\$37.8	\$38.6	\$7.7	\$227.5	\$45.5
2024	\$184.4	\$36.9	\$49.6	\$9.9	\$234.0	\$46.8
2025	\$180.1	\$36.0	\$63.4	\$12.7	\$243.5	\$48.7
2026	\$176.0	\$35.2	\$83.8	\$16.8	\$259.8	\$52.0

Our basic finding is that a 20 percent tax levied on legalized sales of cannabis, as envisioned in the initiatives, has the potential to collect between \$43.4 and \$52.0 million per year in revenues to the state in the years 2022-26. As shown in the table above, these revenues reflect cannabis sales to both Montana residents and to visitors to the state. In dollar volume, the recreational cannabis market total sales between \$217.2 and \$259.8 million over the five year period shown.

It should be emphasized that these are sales in compliance with the structure of the initiatives. Specifically, only sales to those of age 21 and older (referred to as adults for simplicity) are considered in the analysis. No changes to Montana’s existing medical marijuana system are part of the scenario we analyze.

Extensive data on use, frequency of use, and daily usage of cannabis of both Montana resident and leisure-oriented visitors to the state went into these findings. Like research on cannabis usage in other western states, we find for Montana that:

- More adults say that they use cannabis than the national average – the most recent National Survey of Drug Use and Health reports that 14.3 percent of adults in Montana said that they used marijuana in the last 30 days, compared to the national average of 9.3 percent.
- While those who use cannabis daily or near daily make up only 22 percent of all cannabis users in the state, their consumption represents more than two thirds of total cannabis consumption of all users.
- Over 15 percent of leisure-oriented visitors to states with legal recreational cannabis visit retail stores.

The focus of this report is on the existing and potential cannabis marketplace in Montana, and on the tax revenue potential of a 20 percent tax on legalize retail sales. The BBER neither endorses or opposes any legislative bill or ballot initiative, including the two initiatives that pertain to recreational cannabis legalization. This research is intended to give those making those decisions information that can inform their choice.

## About the Bureau of Business and Economic Research

The Bureau of Business and Economic Research (BBER) is the preeminent business research organization in the state of Montana. Founded in 1948 as the research arm of the University of Montana's School of Business Administration. The Bureau's mission statement states,

*"The purpose of the Bureau is to serve the general public, as well as people in business, labor, and government, by providing an understanding of the environment in which Montanans live and work."*

BBER has since grown to become one of the most sought-after sources of information and analysis on the Montana economy. The Bureau has published the *Montana Business Quarterly*, an award-winning business periodical, since 1962, and has conducted the Montana Economic Outlook Seminars, a half-day program on the economic outlook presented in 10 cities states wide, on an annual basis since 1976.

# 1. INTRODUCTION AND OVERVIEW

This is a study of the potential for sales and tax revenues in the state of Montana in the event that recreational cannabis production, distribution, sales, and consumption become legal, as envisioned in ballot initiatives CI-118 and I-190 that appear on the November ballot. It was sponsored by New Approach Montana, a political campaign engaged in supporting the initiatives. Using publicly available data and drawing on the research and experience of other states and countries, the Bureau of Business and Economic Research at the University of Montana (BBER) has independently assessed the potential for revenue collected from a 20 percent tax on sales of cannabis used for recreational purposes, in a manner that is thoroughly documented and as transparent as possible. This report contains our findings.

The BBER takes no position on the desirability or feasibility of legalized recreational cannabis production and use in Montana. Our purpose in conducting this study is to provide information to decisionmakers around the state. We address the “what if” question concerning the passage and successful implementation of the initiative. That is, what levels of taxable sales and state revenue collection can be reasonably expected if the legalization scenario spelled out in the initiatives comes to pass? As we shall see, the question is not an easy one to definitively answer. But having a better understanding of the revenue potential from legalized recreational cannabis is important in forming informed opinions on the issue, and it has always been the mission of the BBER to provide such information to those facing policy decisions.

The growing acceptance of a legal status for marijuana by states in recent years makes further loosening of legal restrictions in Montana a real possibility. To date seven states prohibit marijuana for any use – Idaho, Wyoming, South Dakota, Kansas, Wisconsin, Tennessee, Alabama and South Carolina. Eleven states and Washington, DC have legalized recreational marijuana – Colorado and Washington being the first. Canada legalized recreational marijuana in 2018. Montana and the remaining states permit cannabis use for medical purposes. Texas has legalized cannabidiol, or CBD (the non-intoxicating chemical in cannabis) but not THC, for medicinal use. Montana medical marijuana law was passed by ballot initiative in 2004.

Support for these changes has generally rested on a combination of arguments, one of which is the generation of tax revenue. Giving the illicit production, distribution and sale of cannabis legal status, it is said, can offer some new resources to cash-strapped state and local governments. But since the commercial activity of the black market is by its very nature undocumented, assessing the size of the marketplace and the likely revenue from a policy of legalization and taxation of cannabis commerce is not straightforward.

This study has benefitted greatly from the research conducted in other states, most notably Washington and Colorado, that have already made the decision to legalize recreational cannabis and are administering mature systems of taxation. While important differences would exist between Montana and those states should the ballot initiatives here pass and be implemented, as western states there are similarities as well. Moreover, because Colorado and Washington were the first states to legalize recreational marijuana more data is available for these states.

Our assessment of the market and tax revenue potential for legalized recreational cannabis in Montana divides the market into two pieces: demand by residents, and demand by non-resident visitors to the state. Using survey-based data on cannabis use, frequency of use, and consumption per use, we build up to an aggregate estimate of taxable sales and revenue that recreational cannabis sales would generate. While many caveats and assumptions are made to produce these estimates, in each case we have tried to err on the side of being conservative, and to reject or discount factors that would make the estimates higher. In an uncertain informational environment, these decisions appeared wise and prudent to us.

The report is organized as follows. We take up the resident demand in the next two sections of the report. First, we consider the overall size of the cannabis marketplace, and secondly, we examine how large a piece of that market is likely to be served by (legalized) vendors of recreational cannabis. We then take up the issues and evidence for deriving the demand of nonresident leisure visitors to our state. Finally, we combine these two segments to obtain a sales and revenue estimate for the entire state.

## 2. ASSESSING THE MARKET SIZE OF CANNABIS IN MONTANA

In order to assess the potential tax revenue that could be obtained from a sales tax on recreational cannabis, one must produce an estimate of total sales. Since the proposal for legalized cannabis is directed at those aged 21 and over, we restrict our attention to the market for those in this age group, which we refer to as the adult population. We further restrict our analysis to Montana residents in this section – sales to nonresident visitors to the state are considered in section 4.

The assessment of market size is, of course, complicated by the fact that the non-medical market for cannabis in Montana is supplied by what we shall refer to as the black market, consisting of home growers, local production, and imports from other states and countries. Thus there is no reliable data on sales volume. There are online resources that purport to record prices, but their representativeness and accuracy is unknown as price data is voluntarily submitted by buyers, for example, [www.priceofweed.com](http://www.priceofweed.com).

We follow the approach of Colorado and pursue a demand-based approach (Light, et. al., 2014). Using the survey data on incidence of marijuana usage in the adult population in Montana, and relying on national studies on reporting and daily usage, we ultimately derive an estimate of market size for resident users of all types.

Our finding is that the total market consumption of cannabis in Montana by adult residents is between 30.4 and 32.8 metric tons per year. This makes no distinction between medical cannabis, which is legal, and consumption for recreational purposes, which is not. At retail prices in the neighborhood of \$270 per ounce, this translates into total sales of approximately \$290 million per year to adult residents.

We now detail the data and methods used to produce these estimates.

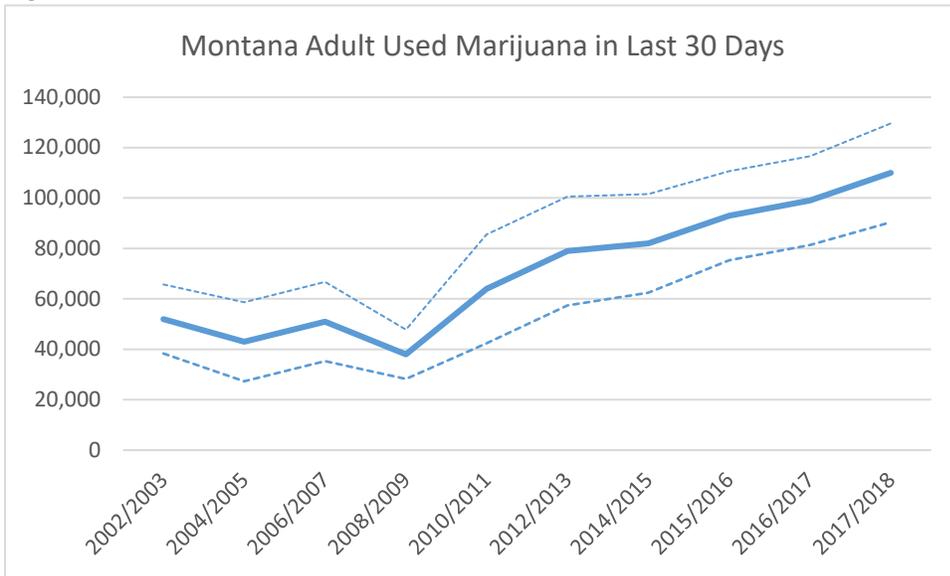
### a. Incidence

The National Survey on Drug Use and Health (NSDUH) has gathered information on marijuana use by individuals for almost 20 years. With some limitations, the data are available at the state level. We utilized this resource for two purposes: (i) to estimate the fraction of the adult population who consume marijuana, and (ii) to further classify marijuana users according to their frequency of use.

The NSDUH publishes state-level estimates of incidence based on responses to two questions: have you used marijuana in the last month, and have you used marijuana in the last year. Unfortunately, the standard tables produced by NSDUH give age detail only for those aged 18 and older. To obtain incidence information for those aged 21 and older, one must run a special cross-tabulation using the Restricted-use Data Analysis System (RDAS). In some cases, as we shall see, this imposes some limits on data availability for a small population state such as Montana.

The number of adult Montanans who say that they have used marijuana in the last 30 days has been growing, as can be seen from the NSDUH/RDAS data show in Figure 2.1. The 2017/18 survey, the most recent available, estimates that 110,000 adult Montanans answered yes to this question. That represents 14.3 percent of the 21 and older population. The dotted lines on the graph depict a 95 percent confidence interval about the survey estimates. Some caution must be used in interpreting the graph as the survey years are not evenly spaced.

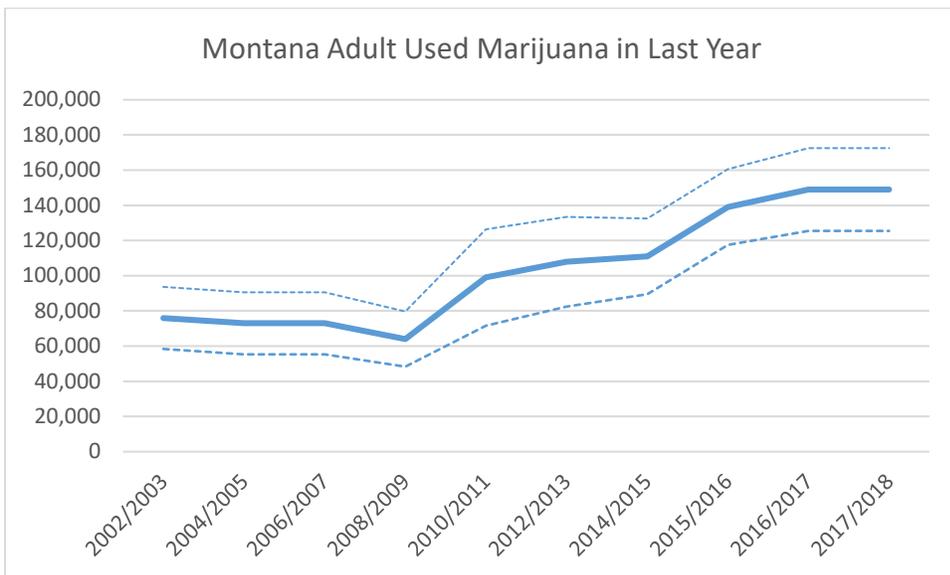
Figure 2.1



Source: National Survey on Drug Use and Health.

Both the number of people and the fraction of the Montana adult population who say they have used marijuana in the last month have grown over the last decade. Montana is also a state with a higher incidence than the national average. In the 2017/2018 survey, 9.8 percent of the national adult population said that they had used marijuana in the last 30 days.

Figure 2.2



Source: National Survey on Drug Use and Health

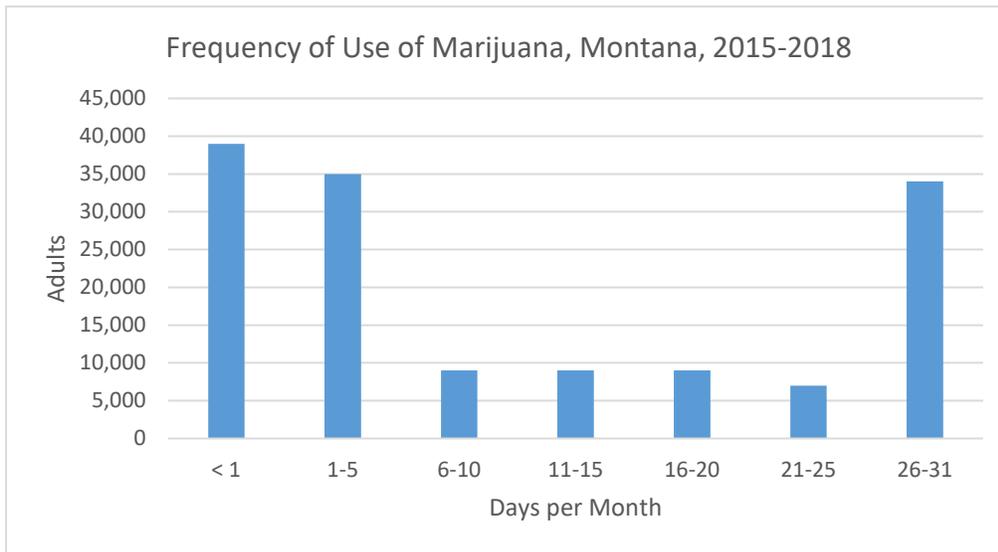
When one adds to these estimates the casual users, who report they have used marijuana in the last year, as show in Figure 4.2, the estimated user population grows to 149,000 in the most recent NSDUH survey. This is an overall incidence of 19.3 percent, higher than the U.S. figure of 14.9 percent. There is

some evidence of a slowing of growth in overall usage in the most recent survey, with a shift of users from less than once a month to monthly use. The evidence for this shift is weak, however.

b. Usage frequency

Estimating the number of adult cannabis consumers is of interest, but it does not reveal how much each person consumes. We can get further information on this from another NSDUH question, asking respondents to recall how many times in the last 30 days they used marijuana. To avoid data suppression, it was necessary to combine the 2017/18 and the 2015/16 surveys to give this level of detail for the Montana adult population.

Figure 2.3



Source: National Survey on Drug Use and Health

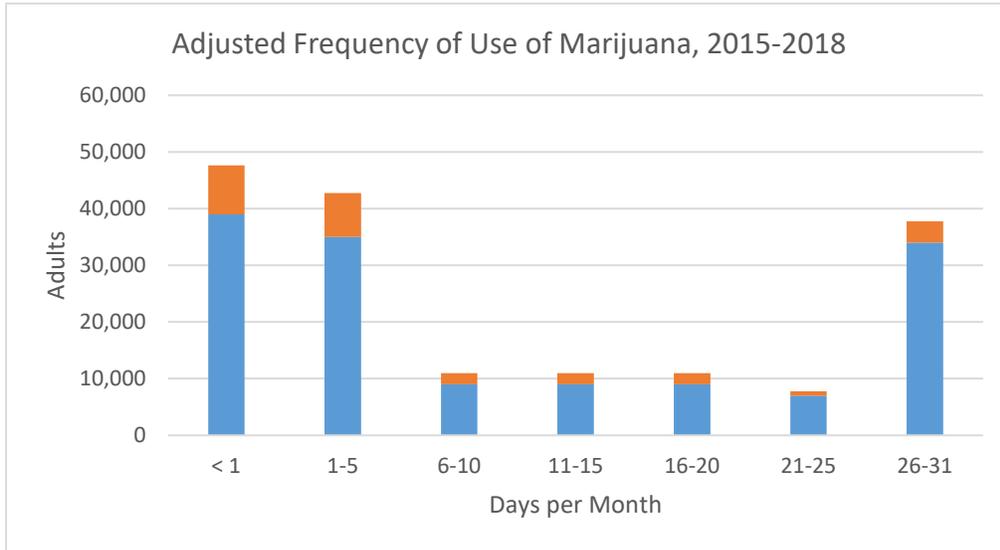
The data shown in Figure 2.3 reveal a bimodal pattern of usage frequency. Most marijuana consumers report casual use – either less frequently than once per month, or less than five days per month. But, as the Figure shows, there is also another group of daily or near daily users. As we shall see, those who use marijuana more frequently make up a large proportion of total consumption.

It is usually recognized that survey-based estimates of drug use in general, and marijuana use in particular, understate actual usage. According to a recent poll by the Pew Research Center 67% of Americans now support legalizing marijuana, up from 32% ten years ago (Daniiller, 2019). Nevertheless, it remains illegal to produce, consume, and transport it in many circumstances. There is also some social stigma that may inhibit individuals from truthfully reporting usage, even in an anonymous survey setting.

In deriving market size estimates that are ultimately the foundation for tax revenue estimation, these factors need to be considered. We have used the same adjustments to correct for underreporting that were employed in the Colorado market demand study (Light, et. al., 2014). These, in turn, were an average of adjustments that have been used in a half dozen published studies.

We have assumed that the true number of light and moderate users of cannabis (20 or fewer days per month) is 22.2 percent higher than NSDUH-based survey estimates. Because heavy usage is perhaps more difficult to conceal, the adjustment factor used to correct for underreporting for those users is 11.1 percent. The effect of these adjustments is shown in the modified bars in Figure 2.4.

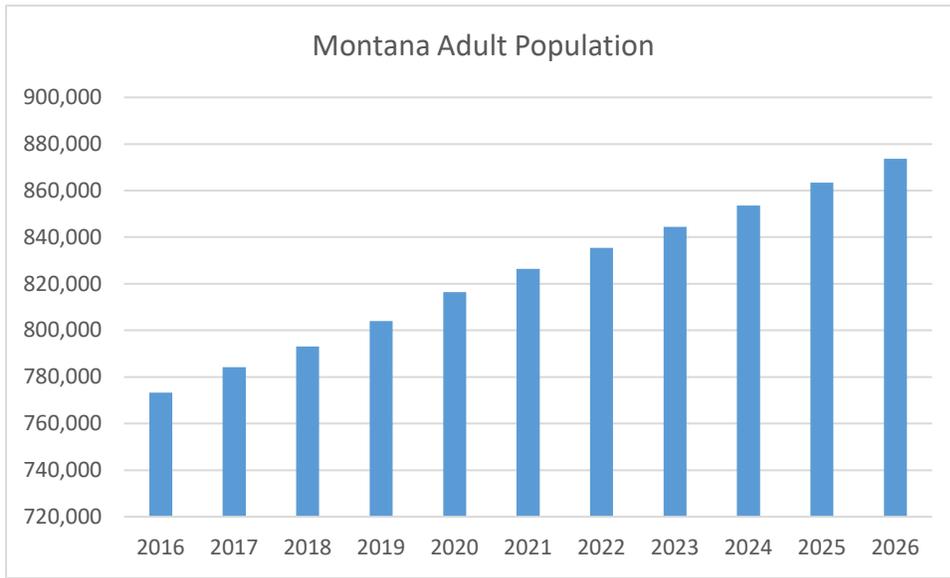
Figure 2.4



Source: National Survey on Drug Use and Health and author assumptions.

For the 2015-18 period, we estimate that there were approximately 169,000 adult users of cannabis who were Montana residents, with approximately 22 percent of this total being daily or near-daily users. There is one more adjustment that is relevant to the estimation of market size for the purpose of revenue estimation. That is to adjust for population growth. Between the midpoint of the 2015-18 period for which the NSDUH-based estimates pertain and the year 2022, when legalized recreational cannabis could be expected to be fully implemented, the Montana adult population is projected to grow by approximately 6 percent (see Figure 2.5). As can be seen from the Figure, that growth continues through the current decade. Assuming that incidence and frequency of use patterns in the state continue as indicated in the NSDUH 2015-18 data, this results in a user population of just over 181,000 in 2022, with some growth continuing forward. Table 2.1 shows projection of the number and frequency of adult users in Montana from 2020 to 2026.

Figure 2.5



Source: U.S. Census Bureau and University of Montana Bureau of Business and Economic Research.

Table 2.1

Montana Marijuana User Population by Year and Frequency of Use

Days per Month	2020	2021	2022	2023	2024	2025	2026
< 1	49,970	50,575	51,128	51,682	52,244	52,839	53,468
1-5	44,845	45,388	45,884	46,381	46,886	47,420	47,984
6-10	11,532	11,671	11,799	11,927	12,056	12,194	12,339
11-15	11,532	11,671	11,799	11,927	12,056	12,194	12,339
16-20	11,532	11,671	11,799	11,927	12,056	12,194	12,339
21-25	8,154	8,253	8,343	8,434	8,525	8,622	8,725
26-31	39,607	40,086	40,524	40,963	41,409	41,881	42,379
TOTAL	177,171	179,315	181,275	183,240	185,232	187,343	189,573
21+ pop	816,477	826,360	835,391	844,444	853,628	863,356	873,632

c. Total consumption

A physical measure of the amount of cannabis that is used by the resident Montana adult population can be derived from the user population by utilizing data on daily consumption by user type. Such data strongly support the notion that heavy users consume significantly more per day than casual users. While the estimates of use per day based on surveys conducted in other states show some variation, the surveys conducted in Colorado (Marijuana Policy Group, 2014) and Washington (Kilmer, et.al., 2015)

support the assumptions made in the Colorado market assessment study (Light, et.al., 2014) shown in Table 2.2.

Table 2.2

Marijuana Use Per Day by User Type	
Days per Month	Per Day Estimate (gm)
< 1	0.3
1-5	0.67
6-10	0.67
11-15	0.67
16-20	0.67
21-25	1.6
26-31	1.6

Source: Light, et.al., 2014.

The information from this table can be used as follows. First, we convert the intervals shown for user types to their midpoints. We used 0.5 days per month for the consumers who reported less than one day per month of usage. Multiplying this figure times the use per day shown in Table 2.2 gives usage per month, which when multiplied times 12 gives annual usage. Finally, multiplying annual usage times the number of consumers in Table 2.3 gives the total state consumption for the user category.

Table 4.3

Days per month	Montana Marijuana Total Consumption by Year and User Type						
	Usage by user type (thous. of grams)						
	2020	2021	2022	2023	2024	2025	2026
< 1	89.9	91.0	92.0	93.0	94.0	95.1	96.2
1-5	1081.7	1094.8	1106.7	1118.7	1130.9	1143.8	1157.4
6-10	741.7	750.7	758.9	767.1	775.5	784.3	793.6
11-15	1205.3	1219.9	1233.2	1246.6	1260.1	1274.5	1289.7
16-20	1668.8	1689.1	1707.5	1726.0	1744.8	1764.7	1785.7
21-25	3600.9	3644.5	3684.4	3724.3	3764.8	3807.7	3853.0
26-31	21292.5	21550.3	21785.8	22021.9	22261.4	22515.1	22783.0
<b>TOTAL</b>	<b>29680.9</b>	<b>30040.2</b>	<b>30368.5</b>	<b>30697.6</b>	<b>31031.4</b>	<b>31385.1</b>	<b>31758.6</b>

The results of these calculations are shown in Table 2.3. As can be seen from the table, the heavier and more frequent usage by those who consume marijuana on a daily or near-daily basis gives them a dominant share of the total consumption. In year 2022, more than two thirds of the total market of 30.3 metric tons is accounted for by roughly 21 percent of the total users – those who report using marijuana 26-31 times per month. Because of light use, the larger number of casual users who consume less frequently account for a share of total consumption much smaller than their numbers alone would suggest.

#### d. Discussion

It should be clear that the seeming precision of the estimates presented in Table 2.3 is illusory. There are in fact many factors that inject considerable uncertainty into the assessment of the marketplace depicted in the table. Not only are the estimates based on surveys which contain, at best, random sampling error, but there have also been a number of assumptions made in putting the market size estimates together, as we have explained the process in this section of the report.

It is useful to highlight some of the assumptions either explicitly or implicitly made in producing these estimates, and to highlight the effect of changing them.

First, it should be noted that the market for cannabis is larger than the consumption of residents. We consider the demand of nonresident visitors to Montana in the next section. The combination of the two will underly the tax base for a sales tax on recreational cannabis.

We need to emphasize that the total consumption estimates for adult residents set forth in this section do not specify the source of the product. Medical marijuana serves the needs of a sizable fraction of Montana cannabis consumers. Sources of black market cannabis products are undocumented, and doubtless come from both inside and outside the state.

We have made a very conservative assumption in projecting market demand for cannabis, and that is to freeze incidence of use at the levels of 2017. Much has happened since that time to suggest that the fraction of the adult population who use marijuana would rise above those levels. Indeed, the ability to observe and perhaps to sample the recreational cannabis products available in states that have legalized, in addition to continually changing norms about marijuana use, are factors suggesting that incidence rates will trend up. In that case, the actual market size will exceed the figures shown here.

We have made no adjustment for price in the marketplace for these estimates. (We do take prices into account in the revenue estimation section). The market size estimates presented here imply that prices are stable, yet the scale and efficiency of production in an economy where such activities could become legal holds the promise of price declines that could spur greater consumption.

The increasing popularity of non-smoked forms of cannabis consumption, which such as vaping, oils, edibles, and a whole host of other innovative variants, can be expected to increase both incidence and daily consumption for cannabis. Those impacts would also make actual consumption in the years ahead higher than what is reported here.

Finally, we must comment on marketing. Even though retailers for recreational cannabis are banned from advertising as envisioned by Montana's twin ballot initiatives, the physical presence of stores in high traffic areas, not to mention the word-of-mouth communications between prospective consumers, will certainly raise the presence of the products in communities. The convenience, the more consistent quality, and the improved information about products that is the essence of effective retailing can be expected to support additional demand that is not taken into account in the assessments reported here.

## Summary

We have applied a demand-based approach to assessing the total market size for cannabis in Montana, based on surveys on incidence, frequency of use, and daily use. We estimate that the total market size in Montana from adult residents is between 30.4 and 32.8 metric tons per year. The estimates do not consider a variety of factors that can be expected to raise cannabis consumption, including changing prices, changing social norms and the attractiveness of non-smoked cannabis products.

### 3. PROJECTING TAX REVENUE FROM RECREATIONAL CANNABIS CONSUMPTION BY MONTANA RESIDENTS

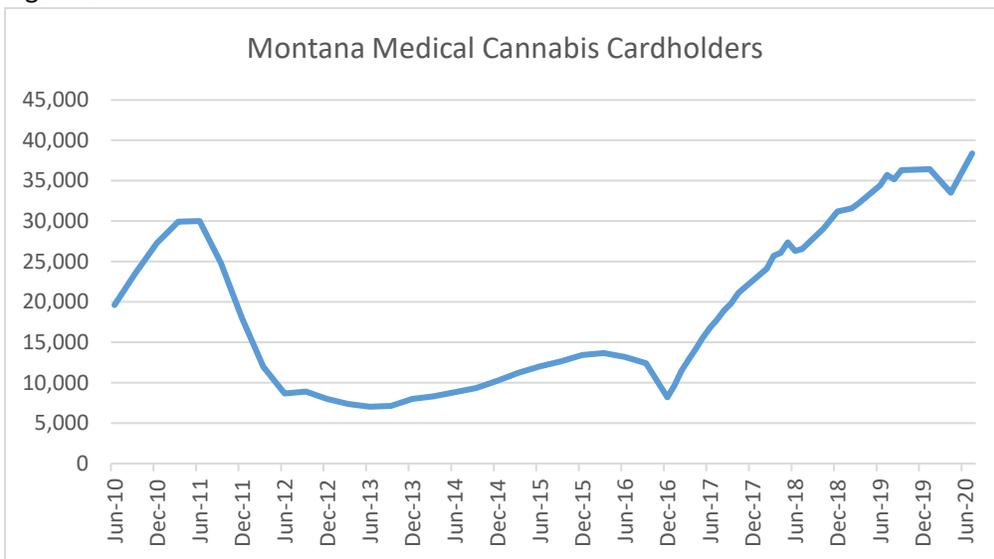
The estimate of market size for cannabis in Montana informs, but does not by itself determine, taxable sales of legalized recreational cannabis. The latter estimate depends, among other things, on how the market segments for cannabis – medical, recreational and black market – interact. There is some evidence on these interactions from other states that have legalized and decriminalized recreational consumption, but the tax treatment of the different products and other historical factors make drawing simple conclusions from their experiences difficult.

There is also the crucial role of market prices in determining taxable sales. Experience in Washington and Colorado shows that bringing recreational cannabis within the legal commercial sphere induces efficiencies and scale that lowers prices. These have the effect of inducing greater quantity demanded by consumers, but at the same time reducing the dollar sales for any given physical quantity consumed. As with any product, the ultimate impact of price changes on total sales depends on the price elasticity of demand for recreational cannabis.

#### a. Medical Cannabis in Montana

The brief history of medical marijuana in Montana since it was legalized by ballot initiative in 2004 is a tale of changing regulatory actions. Those regulations have stabilized in the past three years and there has been considerable growth. While unaffected legally by the ballot initiatives pertaining to recreational cannabis, the markets do produce the same product and can be expected to interact.

Figure 3.1

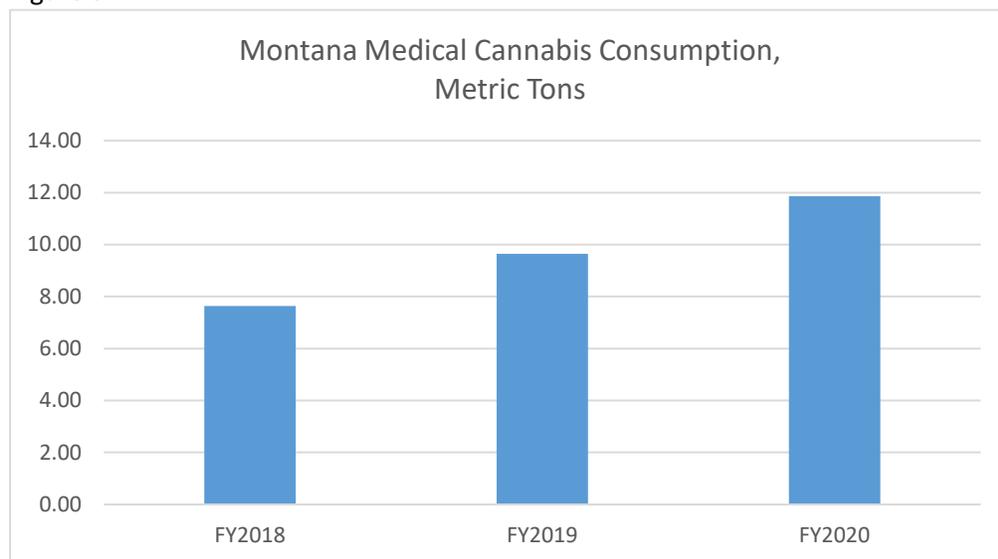


Source: Montana Medical Marijuana Program.

The volatility and, more recently, growth in cardholders since 2016 is apparent from Figure 3.1. There has been nearly a four-fold increase in the number of cardholders since that year (note that dates on the graph are not evenly spaced), with card holders now representing more than 20 percent of the user population as estimated in the previous section.

Trends in taxable marijuana sales in Montana are available only for the comparatively short period for which taxes have been imposed. But they also show considerable growth. For the state’s last fiscal year, which ended on June 30, the medical market accounted for almost 12 metric tons of cannabis consumption. This was almost 40 percent of the total market, using estimates of the latter from the previous section. This finding is consistent with the notion that medical cannabis consumers tend to be heavier and more frequent users.

Figure 3.2



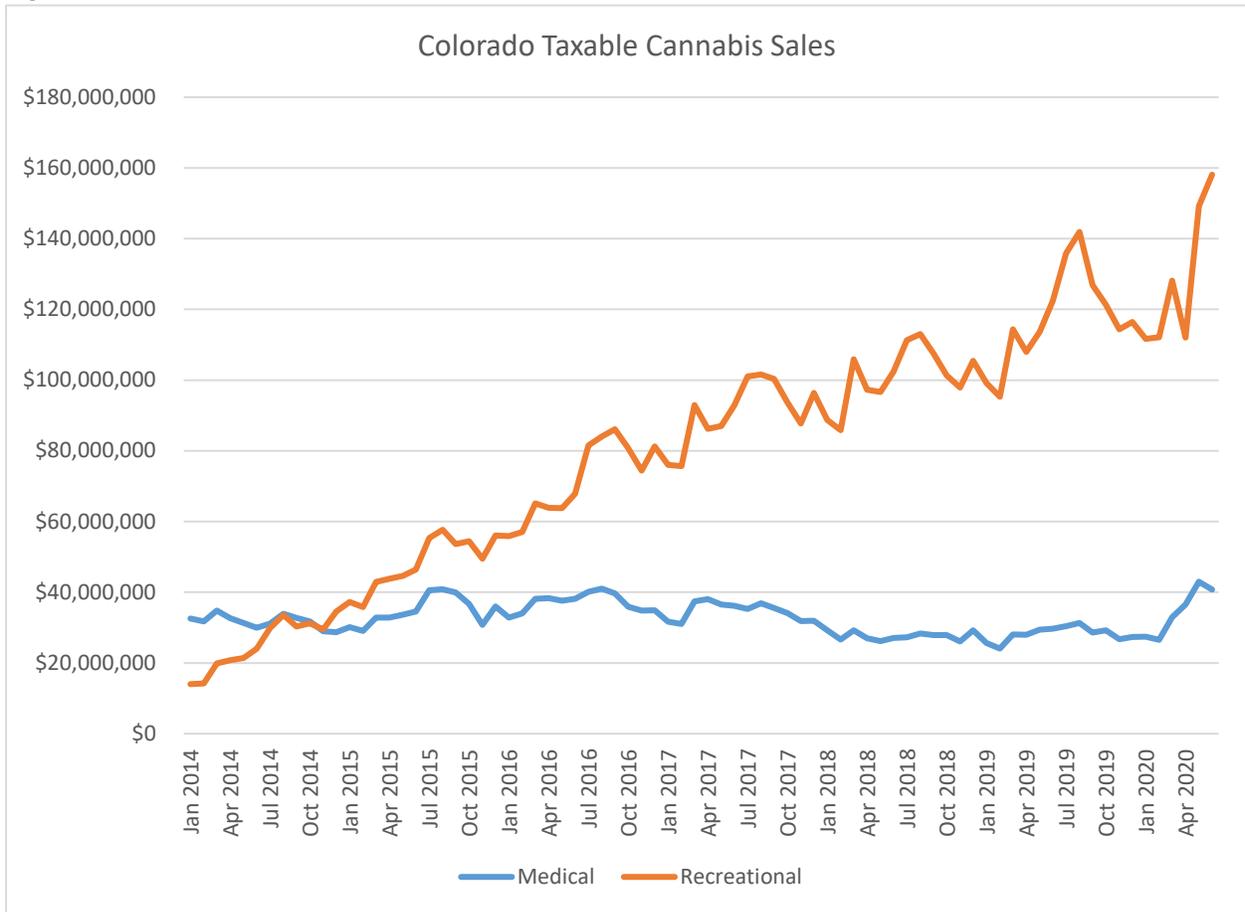
Source: Montana Department of Revenue

How would this growth be affected by the legalization of recreational cannabis? There is fragmentary evidence on this question from Colorado, a state which legalized recreational cannabis in 2012 and began retail sales in 2014. Washington, which also introduced legalized recreational cannabis into a marketplace that had medical cannabis sales, has a reporting system that does not allow sales into each segment to be separately identified.

Colorado’s experience with the two market segments show very different trends in each. As can be seen from Figure 3.3, recreational cannabis has grown sharply almost since inception of the market, whereas medical consumption has edged downward until the last few months. With the exception of the last few months, perhaps reflecting the impacts of COVID-19 restrictions, there is some evidence that recreational has gained a small fraction of the market share from the medical cannabis market.

The tax rate on recreational cannabis sales that is specified in the ballot initiative is 20 percent. The current tax rate on medical cannabis is 4 percent, slated to fall to 2 percent next year. Even when factoring in the costs of obtaining a card to purchase medical cannabis, from a cost point of view, it would appear that existing medical users have little economic justification for switching products.

Figure 3.3



Source: Colorado Department of Revenue

Yet the convenience of recreational cannabis as an alternative could be expected to impact the consumption decisions of future potential medical consumers, despite the differential tax treatment. The lagged response of medical consumption in Colorado to the introduction of legal recreational cannabis supports this notion. We have assumed in this study that 10 percent of medical consumption is ultimately lost to the recreational side of the market. While there is little formal basis for this assumption, it is reasonable to conclude that some loss occurs, and the actual assumption we make has a small impact on our findings.

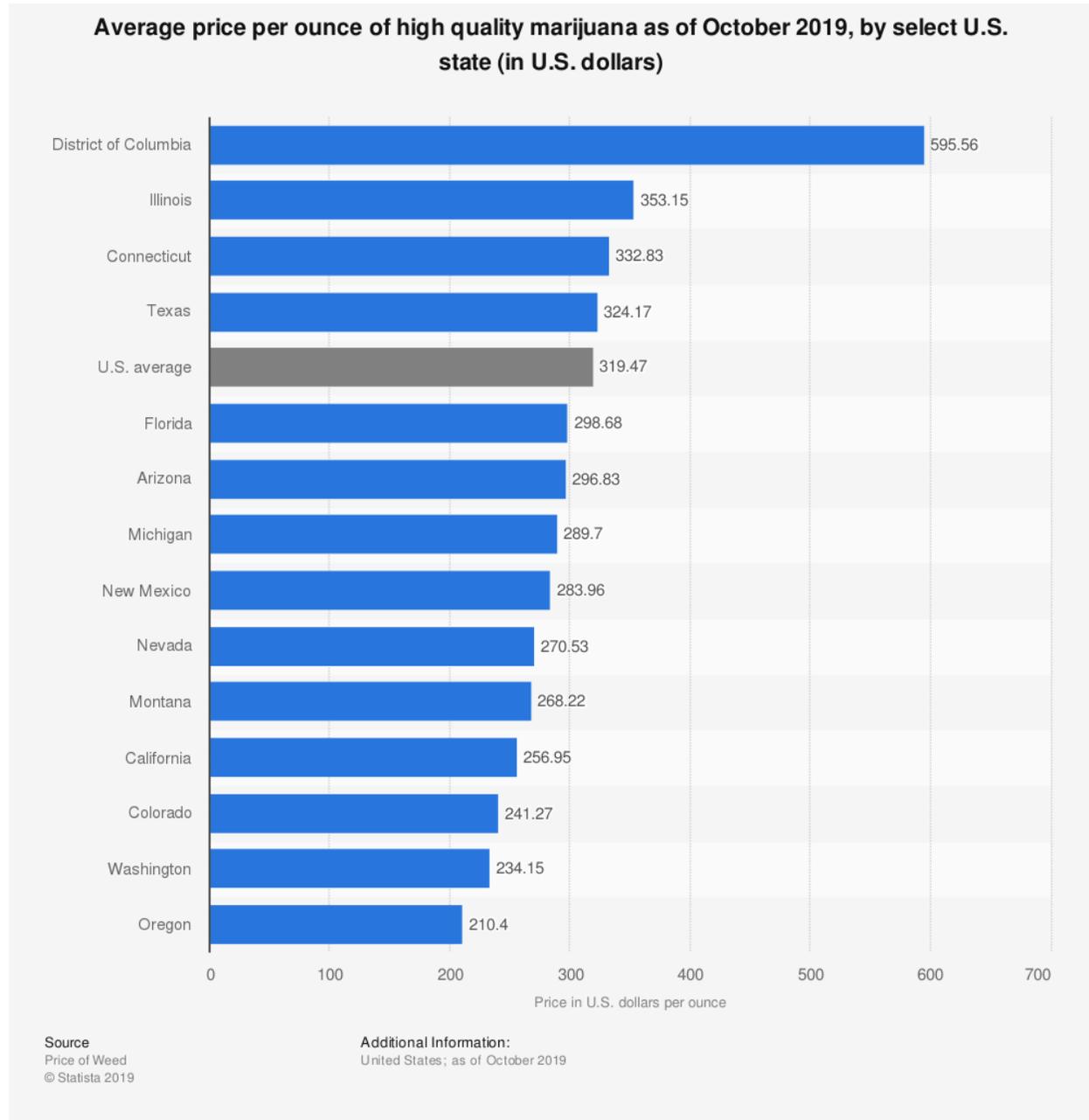
b. Retail Prices

Revenue estimates depend critically on prices, since Montana’s sales tax on recreational cannabis is levied on retail value and not physical quantity. The response of suppliers to legalization holds the promise of lowering prices, yet given the lack of consistent, transparent measures of cannabis prices, the degree to which this could occur is uncertain.

There are a number of web-based price measures for marijuana that give state-by-state comparisons of prices. While other factors are undoubtedly at play, a comparison of prices in states that have legal production and those that do not at least provides a rough test of the notion that legalization produces efficiency and scale gains that lead to lower production costs and lower prices. The comparison made

by the web site Price of Weed is a case in point. As shown in Figure 3.4, in 2019 the prices of cannabis per ounce in Colorado, Washington and Oregon – three states with legal recreational cannabis – was lower for that year than Montana, which has not legalized.

Figure 3.4



We have assumed that the retail price for cannabis per ounce will be \$270 in the year 2022 when recreational cannabis sales would be implemented in Montana, with subsequent years seeing price declines (not inflation corrected) of 4 percent per year. This rate of decline would bring (after tax) Montana prices down to Colorado levels by the year 2030.

c. Taxable Sales and Revenues from Montana Adult Residents

The reaction of consumers to changes in prices is captured in the concept of price elasticity, defined as the percentage change in quantity demanded in response to a one percent change in price. Following the research of Pacula (2014), we use a price elasticity estimate of 0.8 for our sales and revenue analysis. This means that a one percent decrease in price of cannabis will produce, all things being equal, a 0.8 percent increase in demand. Since the elasticity is less than one, the decline in prices that is projected for cannabis following legalization of recreational production, sale and consumption will produce slightly lower total sales.

This report has little to say about the precise timing and ramp-up of recreational cannabis in Montana. Not only is this subject to administrative actions that are difficult to predict, but it is also subject to the risk-taking behavior and investment capacity of producers, distributors and retailers. To the extent that bottlenecks arise in the rolling out of the necessary legal steps or the infrastructure for retailing the products, the projections offered in this report will be too optimistic. Nonetheless, as measures of sales and revenue potential, we argue that they still have value.

Figure 3.1

Montana Sales and Revenue Projections, 2022-26  
Recreational Cannabis, Montana Residents (\$mill.)

Year	Sales	Revenue
2022	\$187.5	\$37.5
2023	\$188.9	\$37.8
2024	\$184.4	\$36.9
2025	\$180.1	\$36.0
2026	\$176.0	\$35.2

Our projections for sales and tax revenues for recreational sales to Montana residents are shown in Table 3.1. The implementation of legal recreational cannabis is assumed to take place in 2022, with sales of \$187.5 million occurring in that year. There are slight increases in demand that occur because of population growth and because of price declines that commence after that year. In dollar terms, however, it nets to a slight decline in both sales and revenues because the price declines reduce the value of every physical unit sold.

These estimates suffer from the limitations discussed for market demand in the previous section, as well as the hazards in making specific assumptions about the behavior of medical marijuana consumers and consumers overall. They also do not represent the full tax revenue impacts from recreational cannabis legalization, since they do not incorporate visitor spending. We now turn to that segment of the market.

## 4. DEMAND AND TAX REVENUE POTENTIAL FROM LEISURE VISITORS

Another impact of legalizing marijuana is the potential revenue generated by tourists purchasing cannabis in the state. The impact on state revenues is two-fold. First, and most obvious, is tax dollars coming to Montana from other regions. Secondly, legalization will likely lead to Montana recreational consumers spending their tax dollars in Montana, effectively repatriating cannabis expenditures. Raw data on tourists who consume cannabis in a state with legal recreational marijuana does not exist, but a small number of surveys have been conducted to determine the percentage of visitors who either purchased cannabis on vacation or plan to.

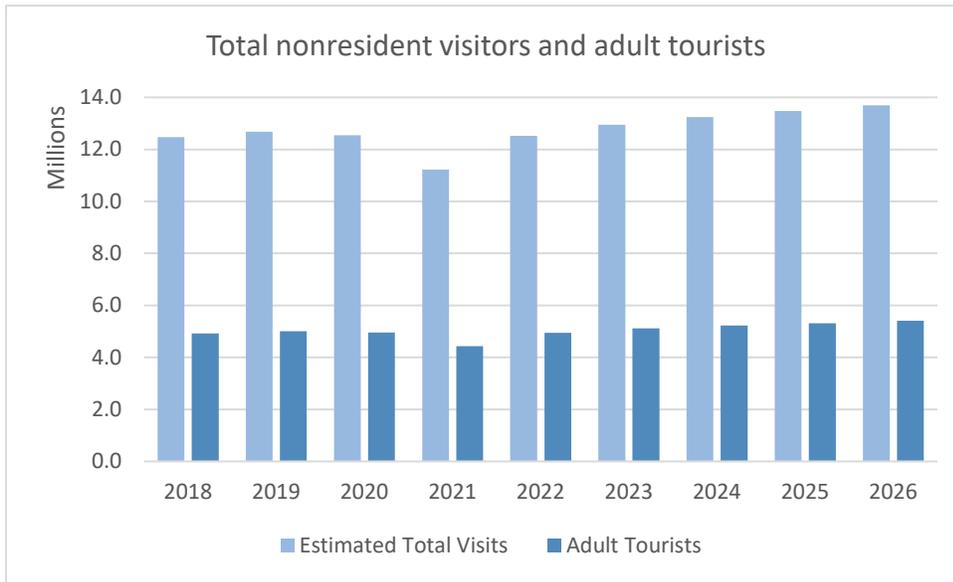
To estimate Montana tax revenues associated with tourism, we first need to forecast the number of tourists coming to Montana. The Institute for Tourism and Recreational Research at the University of Montana produces data for the number of nonresident visitors to the state. However, this represents the total number of nonresident visitors which, in addition to tourists, includes business travelers, individuals passing through the state, and those visiting friends and family. The surveys which assess the marijuana spending and consumption of nonresident visitors pertain to tourists, which in Montana accounted for about 47% of all visitors to the state in 2019.<sup>1</sup> Furthermore, roughly 84% of nonresident visitors are over the age of 21, the proposed legal age to purchase cannabis. Our estimates restrict the usable sample to the adult aged tourist subset of total nonresident visitors.

Figure 4.1 shows the forecast of the number of total visitors to the state and adult tourist population, which is the basis for our analysis. The forecasts include the impacts of the Covid-19 pandemic. The lighter bars are estimated total visits. In this figure we include two pre-Covid years to illustrate the impact of the pandemic on state tourism. Darker bars are the estimated adult tourist population.

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<sup>1</sup> Interactive Data, Institute for Tourism and Recreation Research, University of Montana (<https://itrr.umt.edu/interactive-data/default.php>).

Figure 4.1



(source: BBER estimates using data from the ITRR, BEA, BLS, and IHS Markit)

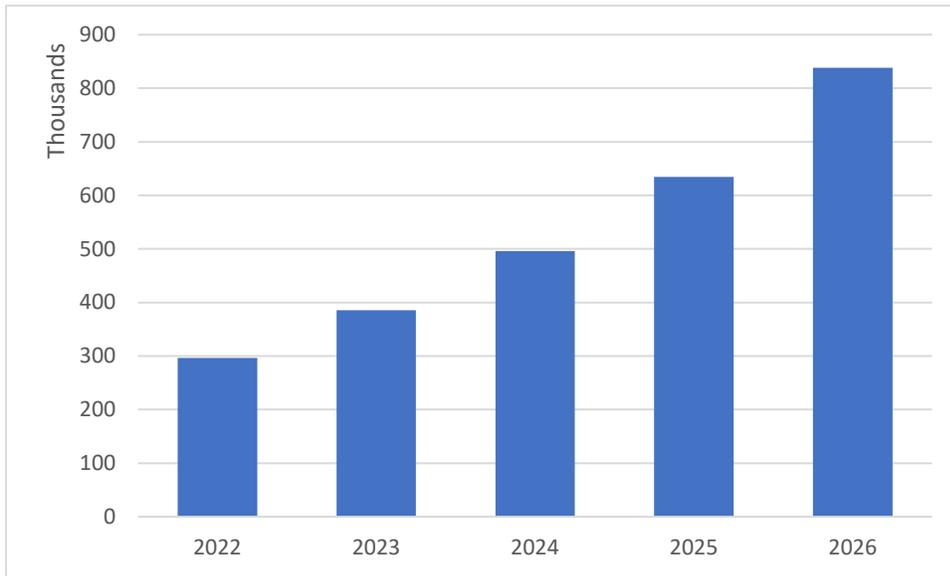
From the number of adult leisure visitors we can calculate the number of potential cannabis consumers. Using assumptions based on survey data conducted by the Colorado Tourism Office (CO-TO) published in 2019, we calculate the number of “cannabis eligible tourists”. The CO-TO survey estimated that about 6.2% of tourists stated that legal marijuana was *one* of the main reasons for traveling to Colorado. The survey also found that on average 15.5% of *all* tourists visited a dispensary.

Given that Colorado is a relatively mature market it is unreasonable to assume the percentage of cannabis consuming tourists traveling to Montana will initially be as high as 15.5%. We therefore assume that the percentage of tourists consuming marijuana in the state will grow from 6% to 15.5% over the five year period 2022 – 2026 as the industry matures. Our calculations, in Figure 4.2, show that in 2022 there will be about 300 thousand cannabis eligible tourists in Montana growing to about 850 thousand by 2026.<sup>2</sup> The growth is due to both the more tourists visiting the state and a larger percentage of those tourists purchasing cannabis.

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<sup>2</sup> A recent survey conducted by MMY Travel Intelligence suggests that about 18% of tourists to legal states are interested in cannabis related activities.

Figure 4.2 Cannabis eligible tourists



The next issue to discern is how much do tourists spend on cannabis while on vacation? What must be factored in is tourists’ average length of stay in Montana which is about five days. In a survey of cannabis eligible tourists in Southwest Colorado Taylor (2019) found, on average, tourists spent \$104 per visit per person. We use \$100 per leisure visit as the amount spent for each purchase.

Estimated gross sales and tax revenues for tourists can found in Table 4.1. From these estimates, assuming a 20% tax on cannabis, we then calculate the expected annual tax revenues generated by tourist purchases. Montana can expect marijuana tax revenues to grow from \$6.0 in 2022 to \$17.0 million by 2026. The \$6.0 million is roughly the same as the revenues generated through tobacco – not including cigarettes – sales (\$5.8 million in 2019) and the upper estimate of \$17 million is about \$2.0 million more than tax revenues generated through coal severance taxes (\$15.1 million). Over 2022-2026 recreational marijuana sales are projected to generate \$265 million in retail sales and \$53.0 million of tax revenues.

Table 4.1

Tourist retail sales and tax revenues (\$mill.)

	Sales	Tax
2022	\$29.7	\$5.9
2023	\$38.6	\$7.7
2024	\$49.6	\$9.9
2025	\$63.4	\$12.7
2026	\$83.8	\$16.8

The results presented here are simply direct tax revenues generated by sales of cannabis-based products to tourists, but tourists spend their dollars on other ventures as well which similarly generate more revenues outside of cannabis sales. How much additional expenditures these tourists will make during their visit is another question. A recent paper by Meehan et al (2020) found that accommodation taxes rose following the legalization of recreational marijuana, providing additional revenue for states and municipalities that legalize cannabis.<sup>3</sup>

Similarly, marijuana “experience” tourism is growing, much like adventure tourism. Legal recreational cannabis has sparked a cottage industry in marijuana tourism, see Hauser (2019). Kush tourism is a portal for cannabis tours and marijuana related activities such as cooking classes, facility tours, art classes, airport shuttle services, and growing seminars. Budandbreakfast.com is an Airbnb like webpage which allows visitors to search for marijuana friendly accommodations in Canada, Mexico, and the US.

This activity is one possible reason that the CO-TO survey found that tourists who consumed marijuana spent, on average, 3.25% more than those that did not. Table 4.2 shows the additional expenditures that the subset of cannabis eligible tourists spend compared to the same subset of tourists without legal cannabis. Through 2026 cannabis eligible tourists are projected to spend \$28 million more than if recreational marijuana remained criminalized.

Table 4.2 Additional spending by cannabis eligible tourists in Montana (\$mill.)

	Additional spending
2022	\$2.70
2023	\$3.95
2024	\$5.31
2025	\$6.96
2026	\$9.38
<b>Total</b>	<b>\$28.30</b>

There a number of caveats for these estimates. First, as above, these revenues assume that the infrastructure – regulatory framework, supply capacity, etc. – requisite for legal recreational marijuana is well established by 2022. Secondly, much of the marijuana-based tourism survey data is from a relatively mature markets with little competition and as such these markets have first mover advantage. Given that a number of states in the West, as well as Canada, have legalized, Montana may not attract the same number of cannabis eligible tourists as established states such as Colorado or Washington. On the other hand, Montana may regain some tourists who chose Colorado over Montana because

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<sup>3</sup> Using a difference-in-difference approach, Meehan et al (2020) find that legal sales of marijuana increased hotel revenues by about 11.0% in Colorado and 8.7% in Washington

cannabis is legal. This study accounts for this by increasing the percentage of cannabis eligible tourists over the forecast period. Moreover, Montana will be able to recapture some of the lost tax revenues lost because residents travel elsewhere to purchase and consume legal marijuana, effectively “exporting” revenues to other states. Finally, these results are conservative in that an underlying assumption is that *only* leisure travelers purchase cannabis products. As noted earlier, there are various types of nonresident visitors, and there is likely to be a subset of these travelers who also purchase cannabis.

## 5. ASSESSING THE REVENUE POTENTIAL FROM RECREATIONAL CANNABIS IN MONTANA

The taxable sales and tax revenue potential from recreational cannabis as envisioned in the ballot initiatives CI-118 and I-190 are the summation of the two market segments we have analyzed in this report – reflecting the demand from (a) Montana residents and (b) leisure visitors to our state. Thus the total market, in terms of sales volume, for recreational cannabis in Montana grows from about \$217 million in year 2022, the first year of full implementation, to just short of \$260 million in 2026, as shown in Table 5.1. With a 20 percent retail tax rate, this yields between \$43.4 and \$52.0 million per year in tax revenue to the state over this same time interval.

Table 5.1  
Montana Sales and Tax Revenue Projections, 2022-26  
Recreational Cannabis, Montana (\$mill.)

Year	Residents		Leisure Visitors		TOTAL	
	Sales	Revenue	Sales	Revenue	Sales	Revenue
2022	\$187.5	\$37.5	\$29.7	\$5.9	\$217.2	\$43.4
2023	\$188.9	\$37.8	\$38.6	\$7.7	\$227.5	\$45.5
2024	\$184.4	\$36.9	\$49.6	\$9.9	\$234.0	\$46.8
2025	\$180.1	\$36.0	\$63.4	\$12.7	\$243.5	\$48.7
2026	\$176.0	\$35.2	\$83.8	\$16.8	\$259.8	\$52.0

The growth in overall sales and tax revenues in this projection is consistent with the experiences of Colorado and Washington. As this analysis makes clear, the modest growth in revenues in our estimates is largely due to higher sales to nonresident leisure visitors.

We should be clear that these estimates pertain to the potential for sales and tax revenues. Delays in implementation of the law, bottlenecks in investment and the expansion of production, distribution and sales infrastructure, or other unforeseen events could delay the realization of this potential in actual sales and tax collections.

To say that there is uncertainty in these estimates is fair. We have attempted to spell out at every stage the assumptions we have made to produce these findings, and the risks involved in doing so. In every instance where such assumptions were necessary, we have opted to discount or downplay factors that would tend to boost consumption. These include: (a) the potential for significant price declines brought about by economies of scale in production, (b) the rising attractiveness of edibles, vaping, and non-smoked cannabis products, (c) the potential for cannibalization of medical marijuana market share caused by the convenience and availability of recreational cannabis, (d) the fraction of tourists who consume cannabis products, and (e) the impacts of legalization itself on social attitudes toward cannabis consumption.

Forecasting is a difficult business even when one has data available. The recreational cannabis market in Montana today, flying below the purview of the law, does not provide that. Nonetheless, the extensive

survey-based data available in Montana and other states on consumption behavior makes a reasonable estimate of the marketplace feasible, as we have demonstrated in this report.

## **6. CONCLUSION**

This report has analyzed the size of the Montana recreational cannabis market, and the revenue potential of a 20 percent tax levied on retail sales of legalized cannabis. While no readily available data on cannabis consumption in Montana exists, we have shown how extensive, publicly available data on individual behavior and attitudes can be utilized to produce estimates of the marketplace. While the path of prices, attitudes, and attractiveness of new cannabis-based products is not known with certainty, making conservative assumptions about these and other factors affecting consumer behavior allow reasonable estimates to be made.

The experience of other states has shown that legalized cannabis does have potential to generate significant tax revenues from its activities. This report offers support for the truth of this in Montana as well.

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