

Fiscal Impact of Question 9: Potential State-Revenue Implications

Prepared by

R. Keith Schwer, Ph.D.

Mary Riddel, Ph.D.

Jason Henderson, Graduate Assistant

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The Center for Business and Economic Research
University of Nevada, Las Vegas

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Dissatisfaction with the illegal status of marijuana has resulted in its legalization (Europe), recommendations for legalization (Canada), and referendums for legalization (Nevada). For any community of concerned citizens faced with similar decisions, such as Nevada, issues surround proposals to legalize small amounts of marijuana, for example, referendum #9 on the November 2002 ballot.

One issue, namely the potential tax revenues, may be especially important to Nevadans. Nevada has recently faced sharp revenue shortfalls, a rapidly depleting rainy-day fund, and a future of structural-budget deficits. Therefore, in order to accomplish the task of uncovering the potential fiscal impacts on our community due to the legalization of marijuana, the nature of the inquiry undertaken must strictly be an economic one.

While the multitude of discussions on marijuana-drug control has focused on usage rates, potential health effects, criminal justice, impacts of usage by youth as a gateway to increased smoking, problem drinking, and other illicit drug behavior, the vast array of potential social costs and benefits lies outside our scope. Though these are important issues for voters to understand, this policy brief focuses more narrowly on potential revenue issues for the state of Nevada. To our knowledge, estimates of this potential revenue source are not currently available for Nevada.

The literature on the potential value of a legalized market for marijuana has, however, been addressed at the national level. Caputo and Ostrum (1994) estimated the potential tax revenue of a regulated marijuana market to range from 2.55 to 9.09 billion dollars at 1991 price levels. These estimates rest on survey findings suggesting that 10 million

Americans regularly use marijuana and 20 million occasionally use it (Caputo and Ostrum, 1994). Of course, findings of black-market activities present difficulties for researchers since survey participants may want to obscure their behavior. Still, attempting to get at the demand for marijuana in a regulated market is a first step, and, as such, current activities provide a base line on which some reasonable estimates can be built.

Estimating Nevada's Demand for Marijuana

In estimating the demand for marijuana in the state of Nevada and the subsequent tax implication, we have chosen conservative numbers for every step of this process. This has been done with the intention of producing a tax-revenue dollar value that is a minimum given the information available to us. The first step in this process is to provide a demographic base line from which to work. In order to accomplish this task the 2000 U.S. Census number for total population 21 years and over for the state of Nevada was used. The Nevada population for this age category is 1,411,378 as of April 2000. Moreover, because of the large amount of tourism in the state the population base line above received a boost of 10 percent.

The 10 percent boost is conservative and defensible. First, the majority of the tourists that visit the state of Nevada do so for gaming reasons. As such, it is reasonable to estimate the bulk of visitors as 21 years of age and over. Additionally, we use the number of rooms and the subsequent occupancy rates for Nevada as the rationale for the 10 percent number. This ensures a conservative, bottom-line type of estimate. The Nevada Tourism Commission and the Las Vegas Visitors and Convention Authority estimate the current total room inventory for Nevada at 174,235. Current total occupancy rates are approximately 80 percent, which suggests at least 139,388 tourists are visiting Nevada daily given one person per room. This conservative estimate is roughly 10 percent of the resident population of 1.4 million. Thus, our demographic

for potential marijuana users, both resident and visitors, is approximately 1.5 million people.

The next step in the demand-side estimation of Nevada's potential marijuana market is to identify and define the potential users of the commodity. Utilizing the criteria similar in the Caputo and Ostrum piece, this brief follows the National Institute of Drug Abuse Research in the assumption that "essentially all individuals who have used marijuana in the last month are regular users." (1994) Individuals who "use irregularly" are those who have "used marijuana in the past year, but not the past month." (1994) Thus, we base usage rates on those who use regularly and exclude those who use occasionally in our estimates.

We have based tax-revenue estimates from the passage of referendum #9 on the estimated population of regular users. Although frequency-of-use estimates are available for them, occasional users have been left out of this analysis due to the difficulties in estimating the amounts they would use over time. It is worth noting that over the last 20 years occasional users have doubled nationally (Caputo and Ostrum, 1994) and, thus, would still add substantially to the tax revenues. However, the dollar amounts they would contribute would be subject to variations from year to year that would be difficult to estimate given the nature of legalizing a formerly illegal market.

Moreover, legalization may increase the demand for marijuana. Of the limited amount of credible literature available on this subject, it appears that there would be an increase in demand due to legalization. Saffer and Chaloupka conducted a study in which "marijuana decriminalization was found to increase the probability of marijuana participation by about 3 percent." (1999) The same team conducted another study (The Demand for Illicit Drugs, 1999) in which they found the demand effects of marijuana decriminalization to be increased usage by 8.4 percent for regular users and 7.6 percent for occasional users. Although these types of

increases are not accounted for in our approach, they are worth noting as available evidence that suggests higher-revenue possibilities.

For our purposes, however, the marijuana market is defined as regular users of the drug. Although the number of regular users has fallen since the 1970s, marijuana usage has remained fairly consistent (SAMHSA: National Household Survey on Drug Abuse). Regular users are consistent consumers of the commodity and, thus, are the core contributors to potential tax revenues. That is, the amounts that they purchase are consistent and continuous and, as such, form the solid tax base for the marijuana market. We used the most recent data on this group of consumers as the foundation for our estimate.

In estimating the total number of regular users 21 and older, we use a 5 percent usage rate based on the data from National Household Survey on Drug Abuse and the literature review we conducted. The 5 percent estimate is in line with the estimated number of regular users in our region of the country and similar to the national average; and by looking at Table 1 from the National Household Survey on Drug Abuse, we find that total past-month users represent

5.6 percent of the relevant age categories of Nevada's total population. Therefore, although 5 percent is an estimate, it is clearly the best number we have at this time.

We estimate the total number of regular users in the state by multiplying the 5 percent usage rate by 1.5 million people, yielding an estimate of approximately 75,000 regular users of marijuana in Nevada.

From the estimate of 75,000 regular users in the state we can derive an estimate of the total usage of marijuana for the month using national-frequency-of-use percentages for 2000 provided by the National Household Survey on Drug Abuse. We have taken the population of

regular users and multiplied it by the mean rate of use for each category of regular users weighted by the percentage of consumers in each category. This yields an estimate of approximately 870,712 uses per month. Following the lead of Caputo and Ostrom, the amount of marijuana that equates to one use is, on average, equivalent to one gram of marijuana according to the National Commission on Marijuana and Drug Abuse (1994). Thus, the monthly usage of marijuana in the state of Nevada is estimated at 870,712 grams per month. The data and formula used to arrive at this estimate appears in Table 2.

State Revenue Implications of Nevada's Marijuana Demand

The conversion of regular marijuana usage from grams to ounces is the next step in estimating the revenue available for taxation. We have done this because the current retail pricing of marijuana is available in ounces. By reviewing sources on the pricing of marijuana (Caputo and Ostrom, 1994 / Gieringer, 1994) we were able to decide on a conservative estimate of \$100 - \$500 an ounce by excluding very high and low marijuana prices. This range of retail value is attributable to the quality of the marijuana being sold. Because "the price of marijuana tends to be proportional to potency" (Gieringer, 1994) and, thus, the amounts needed for consumption will vary with quality, we took the average of this range and used it as a consistent measure of retail value per ounce. Therefore, our estimate is based on an average price of \$250 per ounce.

Converting grams to ounces yields a monthly usage rate of 30,713.5 ounces. At an average cost of \$250 per ounce, the retail market for marijuana produces a revenue stream of approximately \$7.68 million per month. Annually this results in a total revenue of around \$92.2 million from the retail sale of marijuana, and assuming a 20 percent markup at retail yields an estimate of the wholesale value of roughly \$73.7 million. By basing the taxation of

marijuana sales on the structure used for other tobacco products a two-part tax-revenue stream becomes available to the state of Nevada through the sale of marijuana.

Levying an excise tax of marijuana of 30 percent at wholesale yields an annual tax-revenue stream of about \$22.1 million per year. Sales-tax collections on retail sales would yield revenues of about \$6.5 million per year assuming an average of 7 percent sales-tax rate across Nevada counties. Taken together, legalizing marijuana yields a total tax-revenue stream of approximately \$28.6 million annually.

Additional Revenue Implications: Licencing Fees

The taxation of sales at retail and wholesale, estimated to conservatively yield at least \$28.6 million, is only part of the sources of possible future revenue. Though these are expected to be major revenue sources, the state could also levy license fees on private producers or establish a state-run operation. In either case, additional revenues would be generated. Regulation issues such as these would have to be worked out in the state legislature; and, as a result, we have not included these possible revenues. It is clear, however, that the potential for further state revenue exists. All in all, the expected revenues of \$28.6 compares with \$18.8 million for liquor-related revenues and \$61.1 million for tobacco the fiscal year 2000-2001.

Conclusion

We conservatively estimate that the legalization of marijuana would create state revenues of at least \$28.6 million per year. This estimate is based on sales taxes at retail and wholesale. Other possible revenue sources are not considered. Furthermore, we used conservative estimates of usage rates and price. Our estimates would place revenue collections on the legalization of marijuana between the current revenue collections for tobacco and liquor products.

Table 1. Estimates from the National Survey on Drug Abuse Relating to Selected Substance Use, Perceptions of Great Risk, and Average Annual Rates of First Marijuana Use in the Past 24 Months in Nevada, by Age Group.

Drug Characteristic	Total	Age 12-17	Age 18-25	Age 26+
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Population Estimates (In Percentages)

ILLICIT DRUG USE

Past month marijuana	5.6	11.6	11.7	4
Average rate of 1 st use	1.7	8	5.3	0.2

PERCEPTIONS OF GREAT RISK

Smoking marijuana once a month	34.8	29.8	26.6	36.6
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Population Estimates (In Thousands)

ILLICIT DRUG USE

Past month marijuana	83	17	20	46
Average annual # of initiates	15	9	5	1

PERCEPTIONS OF GREAT RISK

Smoking marijuana once a month	518	43	46	429
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Note: Estimates are based on a survey-weighted hierarchical Bayes estimation approach.

Average Annual Rate=(First Use of Marijuana in Past 24 Months)/(First Use of Marijuana in Past 24 Months *0.5)+Never Used Marijuana)/2. Both of the computation components, first use of marijuana in past 24 months and never used marijuana, are based on a survey-weighted hierarchical Bayes estimation approach.

Source: SAM-ISA, Office of Applied Studies, National Household Survey on Drug Abuse, 1999, CAL

Table 2: Use of Marijuana Among Past-Year and Past-Month Users. Findings from the 1999-2000 National Survey on Drug Abuse

Frequency of Use	1999	2000
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Number of days used in past year among past-year users

1 to 11 uses	36.1	34.1
12 to 49 uses	21.7	20.4
50 to 99 uses	10.6	10.8
100 to 299 uses	21.4	23
300 or more uses	10.2 ^a	11.7

Number of days used in past month among past-month users

1 to 2 uses	28.9	27.3
3 to 5 uses	19.9	20
6 to 19 uses	21.5	22.4
20 or more uses	29.6	30.4

^aLow precision; no estimate reported.

^b Difference between estimate and 2000 estimate is statistically significant at the .05 level.

^c Difference between estimate and 2000 estimate is statistically significant at the .01 level.

Source: SAM-ISA, Office of Applied Studies, National Household Survey on Drug Abuse, 1999 and 2000.

References

- Caputo, Michael R. and Ostrom, Brian J., "Potential Tax Revenue from a Regulated Marijuana Market: A Meaningful Revenue Source," *American Journal of Economics and Sociology*, 53(4), 1994, 475-90.
- Gieringer, Dale, "Economics of Cannabis Legalization," http://www.norml.org/index.cfm?Group_ID=4421, <http://www.norml.org>, June, 1994, 10 / 1 / 2002.
- "Nevada Bring It On," http://www.travelnevada.com/index_early.asp, in *News*, Nevada Commission on Tourism, Discover the facts.
- "Nevada Department of Taxation," <http://tax.state.nv.us/taxnew/pubs.htm>, 10 / 3 / 2002.
- Saffer, Henry and Chaloupka, Frank, "The Demand for Illicit Drugs," *Economic Inquiry*, 37(3), 1999, 401.
- Saffer, Henry and Chaloupka, Frank, "State Drug Control Spending and Illicit Drug Participation," <http://www.nber.org/papers/w7114>, *NBER Working Paper Series, Working Paper 7114*(JEL No.I1), 1999, pg. 4, 9 / 3 / 2002.
- "SAMSHA: Substance Abuse and Mental Health Services Administration," <http://www.drugabusestatistics.samhsa.gov/>, in *Data on Alcohol, Tobacco, and Illicit Drugs*, National Household Survey on Drug Abuse, U.S. Department of Health and Human Services.
- "U.S. Census Bureau," <http://factfinder.census.gov/>, in *Profile of General Demographic Characteristics*, Census 2000 Summary File 1 (SF 1) 100-Percent Data, Nevada.

Question 9



Nevadans for Responsible Law Enforcement

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CARSON CITY -- A UNLV study released today said Nevada would receive \$28.6 million a year in additional revenue if voters approved Question 9 and the state taxed marijuana.

The study by the Center for Business & Economic Research based its conclusions on 75,000 people, 5 percent of the adult population, using an average of 12 grams, less than a half-ounce, of marijuana per month.

Question 9, if approved by voters Nov. 5 and again in 2004, would allow people age 21 and older to possess up to 3 ounces of the drug. Driving under the influence of the drug, use in public and use by those younger than 21 would be prohibited.

R. Keith Schwer of the Center of Business and Economic Research said the study did not take into consideration that marijuana is an illegal substance banned under federal law.

Law enforcement authorities have said that because of the federal law, Nevada could not sell or tax the sale of marijuana.

Schwer said the study was done at the request of Nevadans for Responsible Law Enforcement, the organization that gathered signatures from 110,000 residents to put Question 9 on the general election ballot. The organization paid \$5,000 for the study.

"This had nothing to do with the center's view on marijuana," Schwer said. "People who vote on this issue should know what we found."

Billy Rogers, leader of Nevadans for Responsible Law Enforcement, had estimated 150,000 regular marijuana users were in the state. Rogers said Tuesday that the earlier estimate of 110,000 to 150,000 regular users included juveniles. He said Schwer is being conservative in his estimate of users.

"I thought they were extremely careful in their study," Rogers said. "Twenty-eight million dollars would buy a lot of textbooks for children, and it certainly would help fund education."

Question 9 calls for the state Legislature to devise regulations "for the cultivation, taxation, sale and distribution" of marijuana to adults. Marijuana would be bought from state licensed stores.

The tax rate, set in the ballot initiative, would be the same as the tax for tobacco products. The UNLV center based the average retail price for marijuana at \$250 per ounce. At that rate, the state would reap annual marijuana taxes of \$22.1 million and \$6.5 million in additional sales taxes, according to the report.

A marijuana tax could not be levied before 2005, when the Legislature would meet to vote on regulations.

Legislative Counsel Brenda Erdoes said the state has a marijuana tax of \$250 per gram that allows the state to cash in when large amounts of marijuana are confiscated from drug dealers. The tax brings in less than \$2,000 a year.

"The constitution does not prohibit the state from doing something like that (enacting a new marijuana tax)," Erdoes said. "But the enforcement of federal law might be a problem."

In coming up with 75,000 marijuana users, Schwer counted tourists as 10 percent of the users.

Language in the ballot question does not deny marijuana to visitors. It says only that persons older than 21 can possess the drug without fear of arrest. But another section in the question prohibits people from transporting marijuana in or out of Nevada.