



**O B M**

**Timothy S. Keen**  
OBM Director

**Ohio**

Department of  
Taxation

**Joseph W. Testa**  
Tax Commissioner

---

October 2, 2015

**Re: 2015 State Issue 3 – § 3519.04 Estimate**

Jon Husted  
Ohio Secretary of State  
180 East Broad St., 16<sup>th</sup> Floor  
Columbus, Ohio 43215

Dear Secretary Husted,

Pursuant to Ohio Revised Code section 3519.04, this letter contains estimates by the Department of Taxation of the annual yield of proposed taxes, and estimates by the Office of Budget and Management (OBM) of the annual required expenditure of public funds of the proposed amendment to the Ohio Constitution known as State Issue 3, which would legalize both medical and recreational marijuana sales and use in the state of Ohio. This issue will appear before voters during the general election to be held on November 3, 2015. An attached report describes the method by which the estimates were made and the data sources used in creating the estimates.

To briefly restate what our offices believe are the most significant, from a tax and expenditure perspective, of the many changes to the Ohio Constitution that would be made by State Issue 3, the proposed amendment would: (i) amend the state constitution to establish the Ohio Marijuana Control Commission; (ii) establish Marijuana Testing Facilities; (iii) authorize ten Marijuana Growth, Cultivation, and Extraction (MGCE) sites at specified locations; (iv) allow for Marijuana Product Manufacturing (MPM) facilities; (v) allow for Retail Marijuana Stores (RMS); (vi) and, allow for Medical Marijuana Not-for-Profit Dispensaries (MMD). State Issue 3 would further amend the state constitution to levy and collect a special flat tax of 15 percent on gross revenue of each MGCE and MPM facility and 5 percent on gross revenue of each RMS.

Taxation and OBM estimate annual Issue 3 tax revenues of \$133.0 million to \$293.3 million; this estimate assumes all of the MGCE sites, MPM facilities, and RMS are in operation for a full year and the supply chain operates to meet the estimated demand for legal marijuana consumption. It is uncertain during what year the supply chain will be mature enough to meet the estimated demand in the new legal marijuana market (the Issue 3 market). Experience shows that newly created legal markets in a state, such as those for casino and racetrack video lottery gambling, or for medical and recreational marijuana, may take some time to fully develop.

The range of estimated annual tax revenues is fairly wide, but that range follows directly from the fact that there is significant uncertainty about several features of the newly created legal market. Two areas of uncertainty with particular significance for the revenue estimates are the

degree of vertical integration (common ownership and control of the various facilities in the supply chain, from growth through retail sale) and the degree to which legal marijuana sales capture and replace illegal sales. First, vertical integration in the supply chain matters because it may allow transactions between affiliated entities to take place at prices below those in pure arm's length transactions, and thus reduce the taxable gross revenue at the proposed 15 percent tax rate, pushing more of the gross revenue to the retail entities which would be taxed at only 5 percent. In the extreme case, almost all of the gross revenue from vertically integrated operations would be at the retail level where the tax is only 5 percent. Second, the market share captured by the newly legal purchases obviously matters because it affects the amount of gross revenue that can be taxed at either 15 percent or 5 percent.

Because of uncertainty about these two crucial parameters, our offices have estimated the tax revenue under two scenarios: an upper bound with 70 percent Issue 3 market participation and no vertical integration; and a lower bound with 50 percent Issue 3 market participation and 50 percent of manufacturing and wholesaling revenues reduced by vertical integration. At the lower bound, where the new legal market captures half of all Ohio marijuana purchases and there is a 50 percent revenue impact on manufacturing and wholesaling due to vertical integration, the estimated annual tax revenue is \$133.0 million. At the upper bound, where the new legal market captures 70 percent of all Ohio marijuana purchases and there is no vertical integration, i.e. the manufacturing, wholesale, and retail operations authorized by the amendment all operate independently and conduct arm's length transactions with no tax minimization strategy or consequences, estimated annual tax revenue would be \$293.3 million. Our belief is that the likely revenue outcome lies somewhere between those two bounds.

| Tax Revenue Estimates (in millions) |         |
|-------------------------------------|---------|
| Lower Bound                         | \$133.0 |
| Upper Bound                         | \$293.3 |

The estimated annual direct public expenditures required by the proposal are approximately \$17.7 million. This amount is less than the \$20 million to \$44 million that the proposed Ohio Marijuana Control Commission would receive as its 15 percent share of the annual estimated taxes when all entities are operating for a full year and supplying product to meet the legal market demand. As the operations of the commission are ramped up in the early years, before the Commission reaches its full operating capacity, annual expenditures may be less than the estimated \$17.7 million.

The estimated annual expenditures of \$17.7 million do not include any estimated spending on two items that are mentioned by the amendment but are not required to be funded by the Commission: testing facilities and medical marijuana dispensaries or subsidies. As explained in the detailed report, if the Commission were to request to spend state money on these items, the annual expenditure could be millions or tens of millions higher than the estimated \$17.7 million.

In the early years of the proposal, when not all manufacturers, wholesalers, and retail outlets are operating at expected full capacity and tax revenue will be less than the fully phased-in annual amounts shown above, expenditures of the Commission may exceed revenues and require an annual subsidy from other state funds. For example, this happened in the early years after the adoption of casino gambling in Ohio, when state GRF money was needed to subsidize the

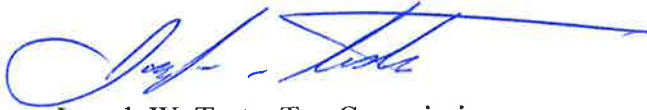
operations of the commission until tax and fee revenues were sufficient to pay for the commission's operating expenses.

The newly created Ohio Marijuana Control Commission would be a new entity that, although similar to the Ohio Casino Control Commission and the Ohio Liquor Control Commission, has no exact precedent in the state. OBM has done its best to estimate the potential costs of this commission, and of the entire proposal, but ultimately the decisions and actions of the Commission, the General Assembly, or the courts if there are legal challenges to the amendment, will determine the actual costs and expenditures of public funds.

Sincerely,

A handwritten signature in blue ink that reads "Timothy S. Keen". The signature is fluid and cursive, with a long horizontal stroke at the end.

Timothy S. Keen, Director  
Office of Budget and Management

A handwritten signature in blue ink that reads "Joseph W. Testa". The signature is cursive and includes a large, sweeping initial "J" and a long horizontal stroke.

Joseph W. Testa, Tax Commissioner  
Ohio Department of Taxation

Enclosure

## **2015 State Issue 3 – Consolidated Estimate**

### *Summarized Fiscal Analysis and Overview*

#### **Introduction**

This report contains estimates of both the tax revenues from the new excise taxes that the proposed amendment would create, and the direct expenditures that would result from the requirements of the amendment. The report relies upon a variety of sources, including analyses of proposals to legalize marijuana purchase and consumption in various states, and data on the actual experience in states where such legalization has already occurred and enough time has passed that such data is available, particularly Colorado and Washington. The preference of the authors has been to rely on actual experience wherever possible.

The authors do not attempt to estimate indirect impacts on government expenditure where such estimates were deemed to be highly speculative given the limited evidence available at this point. Examples of such impacts that are not estimated are impacts on police and incarceration costs and broad impacts on health costs. Research on the impact of marijuana legalization on such items as policing and incarceration costs certainly exists, but the impact on costs is subject to considerable uncertainty, and the legalization in Washington and Colorado is too recent and the sample too small for research to have reached a conclusion on the impact on costs based on actual experience in the states. The same is true for broader impacts on health costs due to legalization.

The report does address a narrower subset of health expenditures that would result from the proposed amendment. The amendment specifically charges the newly created Ohio Marijuana Control Commission with program spending for mental health and addiction treatment services. Since there are similar requirements for such spending in Colorado, there is data on how much Colorado's commission has spent for early intervention and substance abuse prevention, behavioral health treatment, inpatient treatment for co-occurring disorders, and for surveys and studies regarding marijuana use and its health effects. The authors have used this data to inform their estimates of spending by the proposed Ohio commission for these programs.

On the tax revenue side, the report estimates the annual yield of only the proposed taxes in this amendment: the new excise tax on gross revenue from marijuana cultivation, manufacturing, and retail. The report does not contain estimates of the amendment's impact on already existing state and local taxes.

We note that the express language of Section E states: "Such facilities and stores shall also pay the state commercial activities [sic] tax and all other local taxes, assessments, fees and charges as apply to businesses in general." "No additional taxes, assessments, fees or charges shall be levied on the operations, revenue, or distributed income of a marijuana establishment, other than the license fees authorized under this section."

## **Part I: Estimated annual yield of proposed taxes**

Section 3519.04 of the Ohio Revised Code<sup>1</sup> requires the Tax Commissioner to estimate the annual yield of proposed taxes in a constitutional amendment. This report constitutes the Tax Commissioner's estimate of the annual yield of proposed taxes in Issue 3 for the November 2015, statewide ballot. The ballot language, argument for, argument against, summary, and full text is available on the Ohio Secretary of State's website.<sup>2</sup>

### **Overview**

Part 1 is divided into three sections. The first section presents and describes the estimates of the current illegal market for marijuana in Ohio. The second section analyzes the supply and demand implications if Issue 3 were to become part of the Ohio Constitution. The final section provides estimates of the annual yield of Issue 3's proposed taxes.

State Issue 3 would amend the state constitution to:

- Establish the Ohio Marijuana Control Commission (Commission);
- Establish a minimum of six Marijuana Testing Facilities (MTF);
- Allow ten Marijuana Growth, Cultivation, and Extraction (MGCE) sites at specified locations;
- Allow for Marijuana Product Manufacturing (MPM) facilities;
- Allow for Retail Marijuana Stores (RMS) to sell marijuana products purchased from MPMs and MGCE sites; and
- Allow for Medical Marijuana Not-For-Profit Dispensaries (MMD).

Issue 3 requires the state to levy and collect a special flat tax of 15 percent on gross revenue of each MGCE facility and MPM facility and 5 percent on gross revenue of each RMS. Gross revenue, as stated in division (E) of Issue 3, means 100 percent of all revenue received without deduction for any expenses or distribution of any profit.

The full allocation of tax on the gross revenue of marijuana facilities would be as follows:

- 55 percent to the Municipal and Township Stabilization Fund;
- 30 percent to the Strong County Fund; and
- 15 percent to the Marijuana Control Commission Fund.

In order to estimate the annual yield of proposed taxes from the initiative, some general assumptions were made.

- The estimate assumes that Issue 3 is implemented without any official action materially affecting, severing, precluding, or prohibiting the implementation of Issue 3's provisions.<sup>3</sup>

---

<sup>1</sup> Ohio Revised Code Section 3519.04 Estimate of annual expenditure of public funds proposed and annual yield of proposed taxes; <http://codes.ohio.gov/orc/3519.04>

<sup>2</sup> Jon Husted, Ohio Secretary of State, Elections & Voting: Legislation & Ballot Issues: Ohio Ballot Board, available at <https://www.sos.state.oh.us/SOS/LegnAndBallotIssues/BallotBoard.aspx> (last visited September 1, 2015).

<sup>3</sup> See, *Nebraska & Oklahoma v. Colorado*, Case No. 220144 ORG (U.S. December 22, 2014).

- It is also assumed that the regulatory structures and operations specified in Issue 3 would be implemented in accordance with the timelines specified in the amendment.
- In surrounding states current policies related to marijuana are assumed to continue (currently, Michigan and Illinois permit medical marijuana).
- The annual yield of tax revenue is assumed to be a year in which all ten MCGE facilities and MPMs are operating and producing a supply sufficient to meet consumer demand in the Issue 3 market and in which RMS and MMD are open and operating. Initially, it is assumed that marijuana prices in the Issue 3 market equalize or are quite close to prices on the existing illegal market. The logic behind this assumption is that there are offsetting forces that could make Issue 3 market prices higher or lower than illegal market prices. On the one hand, sellers and consumers in the Issue 3 market would face taxation and regulatory costs that would tend to result in higher prices. On the other hand, sellers and consumers in the Issue 3 market would presumably benefit from avoiding costs associated with running an illegal operation and also benefit from lower unit costs associated with efficiencies of scale. These opposing forces are assumed to balance each other such that Issue 3 market prices are close to illegal market prices.

## **Section 1: Current Market**

Marijuana remains an illegal substance under U.S. law. The Controlled Substances Act of 1970 classifies marijuana as a Schedule I drug; federal offenses and penalties exist for possession of marijuana and other prohibited acts.<sup>4</sup> Marijuana is also an illegal substance under Ohio law.<sup>5</sup>

Because of marijuana’s illegality, obtaining verifiable market data relevant to supply and demand in Ohio is infeasible. The estimate of the current Ohio market, in terms of quantity, relies on data from the National Survey on Drug Use and Health (NSDUH) conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S. Department of Health and Human Services. NSDUH is the primary source of data on alcohol, tobacco, and illegal drug use and abuse in the U.S. civilian, non-institutionalized population, age 12 and older.<sup>6</sup>

### **Quantity**

#### ***Frequent consumers***

According to NSDUH data, of Ohio’s population of individuals 18 and older, in 2012-2013, an estimated 666,000 (7.6 percent of Ohio’s population 18 and older) reported using marijuana in the past month.<sup>7</sup> Restricted-use data from the NSDUH provides a breakdown by days per month

---

<sup>4</sup> 21 U.S.C. Chapter 13, Subchapter I – Control and Enforcement.

<sup>5</sup> Ohio Rev. Code Chapter 2925.

<sup>6</sup> Substance Abuse and Mental Health Services Administration, Population Data/NSDUH (last modified January 1, 2015), available at <http://www.samhsa.gov/data/population-data-nsduh>

<sup>7</sup> Substance Abuse and Mental Health Services Administration, *2012-2013 National Surveys on Drug Use and Health: Model-Based Estimated Totals (in Thousands) (50 States and the District of Columbia)* available at <http://www.samhsa.gov/data/sites/default/files/NSDUHsaeTotals2013/NSDUHsaeTotals2013.pdf>

of marijuana use (“use day”) of those who reported marijuana use in the past month.<sup>8</sup> The proportions for the four cohorts were applied to the total of past-month marijuana users in Ohio, as shown in Table 1 below.

| <b>Table 1. Number of Days Usage of Marijuana in Past Month</b> |  |                             |                         |
|---|--|-----------------------------|-------------------------|
| <b>Days</b>   | <b>Nationwide Users (in thousands)</b> | <b>Share of Total Users</b> | <b>Monthly OH Users</b> |
| 1-2   | 24,070                                 | 24.8%                       | 165,279                 |
| 3-5   | 16,375                                 | 16.9%                       | 112,441                 |
| 6-19  | 20,924                                 | 21.6%                       | 143,677                 |
| 20-30   | 35,622                                 | 36.7%                       | 244,603                 |
| <b>Total Users</b>  | <b>96,991</b>                          |                             | <b>666,000</b>          |

Source: National Survey on Drug Use and Health

Next, assumptions were made regarding the quantity of marijuana used by each of the four cohorts identified in the table. Analysis performed by the RAND Corporation for the state of Washington cited data from the precursor to the NSDUH, the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) from 2001.<sup>9</sup> Outcomes from this survey have been used with other related data to estimate the average quantity of marijuana “joints” consumed per day for each cohort. Based on this research, a grams-to-joint ratio of 0.45 was assumed. Table 2 below shows the joints per day assumptions and the estimated monthly grams consumed per user, derived from multiplying the number of monthly users by respective grams per joint and median number of days in each cohort.

| <b>Table 2. Estimation of Grams Consumed by Monthly Users in Ohio, 2013</b> |                      |                       |                                |                    |                      |
|---|----------------------|-----------------------|--------------------------------|--------------------|----------------------|
| <b>Days</b>   | <b>Monthly Users</b> | <b>Joints per Day</b> | <b>Estimated Grams per Day</b> | <b>Median Days</b> | <b>Monthly Grams</b> |
| <b>1-2</b>  | 165,279              | 1.68                  | 0.756                          | 1.5                | 187,427              |
| <b>3-5</b>  | 112,441              | 1.92                  | 0.864                          | 4.0                | 388,596              |
| <b>6-19</b>   | 143,677              | 1.92                  | 0.864                          | 12.5               | 1,551,713            |
| <b>20-30</b>  | <u>244,603</u>       | 3.87                  | 1.742                          | 25.0               | <u>10,649,386</u>    |
|   | <b>666,000</b>       |                       |                                |                    | <b>12,777,122</b>    |

Source (for joints per day and grams per joint): Kilmer, Beau, et al. *Before the Grand Opening: Measuring Washington State’s Marijuana Market in the Last Year Before Legalized Commercial Sales*. The RAND Corporation 2013.

<sup>8</sup> Inter-university Consortium for Political and Social Research, *SAMHSA restricted-use data analysis system (R-DAS) (2002 to 2003, 2004 to 2005, 2006 to 2007, 2008 to 2009, 2010 to 2011, and 2012 to 2013)*. Analysis completed on 2015-07-09 using SDA 3.5: Tables, available at <http://www.icpsr.umich.edu/icpsrweb/ICPSR/index.jsp>

<sup>9</sup> Beau Kilmer et al., *Before the Grand Opening: Measuring Washington State’s Marijuana Market in the Last Year Before Legalized Commercial Sales*, RAND Corporation; Prepared for the Washington State Liquor Control Board/BOTEC Analysis Corporation (2013).



The estimated quantity of grams consumed was then increased by 22.5 percent to account for underreporting and observed survey bias.<sup>10</sup> This adjustment results in an estimate of marijuana grams consumed each month in Ohio of 15.7 million.

The monthly data was converted into annual amounts. Some individuals reporting marijuana use one or two days in the past month may not have used marijuana one or two days in *every* month of the year. Therefore, grams used were multiplied by a reasonable number of months: nine for lighter users, and twelve for more frequent users. The calculated annual grams consumed by usage cohort is shown in Table 3 below, along with the percentage each cohort represents of total grams consumed.

| <b>Days</b>  | <b>Monthly Grams</b> | <b>Under-reporting factor (22.5%)</b> | <b>Assumed Months</b> | <b>Annual Grams Consumed</b> | <b>Share of Total Grams Consumed</b> |
|--------------|----------------------|---------------------------------------|-----------------------|------------------------------|--------------------------------------|
| <b>1-2</b>   | 187,427              | 229,598                               | 9                     | 2,066,382                    | 1.1%                                 |
| <b>3-5</b>   | 388,596              | 476,030                               | 9                     | 4,284,266                    | 2.3%                                 |
| <b>6-19</b>  | 1,551,713            | 1,900,848                             | 12                    | 22,810,174                   | 12.3%                                |
| <b>20-30</b> | <u>10,649,386</u>    | <u>13,045,498</u>                     | 12                    | <u>156,545,978</u>           | 84.3%                                |
|              | <b>12,777,122</b>    | <b>15,651,974</b>                     |                       | <b>185,706,800</b>           |                                      |

***Non-frequent consumers***

A separate estimate was completed of the grams of marijuana consumption of those in Ohio who reported using in the past year but not in the past month (less frequent consumers), about 448,000 individuals (5.1 percent) over 18 years of age.<sup>11</sup> Estimated annual consumption of this cohort is 1.95 million grams. This estimate relied upon the same NESARC survey data on usage amounts. As with monthly consumers, a 22.5 percent upward adjustment was made to account for underreporting.

***Total retail demand***

Adding the estimated annual consumption of non-monthly consumers, 1.95 million grams, to the estimated 185.7 million grams consumed by more frequent users, total estimated grams consumed is estimated at 187.7 million in 2013.

---

<sup>10</sup> Ibid. According to Kilmer et al., an upward adjustment of 25% is common, though studies have indicated that using anywhere from 20% to 35% may be appropriate depending upon the drug(s) in question and the region. Recent studies conducted for Oregon and Florida regarding legalization used a factor of 20%. The 22.5% rate was selected due to it being the midpoint between the often used 25% and the more recently used 20%, as well as it being the midpoint in the RAND analysis conducted for Washington (2% to 43%).

<sup>11</sup> The ballot initiative language does not allow for sales of marijuana to individuals under 21 years of age, except for certain medical cases. This estimate assumes that 18 to 21 year olds continue to contribute to marijuana demand.



Finally, consumption from home growers was subtracted in order to estimate purchases of marijuana in the market.<sup>12</sup> Issue 3 allows for persons 21 years of age or older to grow and cultivate an amount not to exceed four flowering marijuana plants at a given time, so long as such persons have obtained a license pursuant to Commission rules and regulations.<sup>13</sup> It is assumed that consumption from home grown plants is minimal due to the effort required to grow and cultivate and the number of plants allowed. This assumption reduced the quantity demanded of purchased marijuana to 180.3 million grams. Table 4 below summarizes the estimated market demand for purchased marijuana in Ohio in 2013.

| <b>Table 4. Total Estimated Grams Purchased in Ohio</b> |                                |
|---|--------------------------------|
|   | <b>Grams</b><br>(in millions)* |
| <b>Broad Usage Cohort</b>                               |                                |
| Used past month   | 185.71                         |
| Used past year  | 1.95                           |
| <b>Total Grams Consumed</b>                             | <b>187.66</b>                  |
| Home growers (3.9%)                                     | -7.32                          |
| <b>Total Quantity Demand (2013)</b>                     | <b>180.34</b>                  |

\*Grams represented in millions equal metric tons.

## Price

Marijuana prices vary depending on several factors including geographic location, quality, and product. As marijuana remains illegal in Ohio, verifiable market pricing data is unavailable. This analysis relies on data from secondary sources to estimate marijuana prices in Ohio. The average price of marijuana sold in Ohio was estimated to be \$270.00 per ounce.<sup>14</sup> Bulk purchases of marijuana are less expensive than small-weight purchases.<sup>15</sup> A weighted average price per gram

---

<sup>12</sup> Miles K. Light et al., *Market Size and Demand for Marijuana in Colorado*; prepared by the Marijuana Policy Group, July 2014, for the Colorado Department of Revenue. According to this report, the product of home growers accounted for 3.9% of marijuana consumed nationwide.

<sup>13</sup> Issue 3 states “Commission-promulgated rules and regulations, which include, at a minimum, registration requirements and rules ensuring that home grown marijuana is not grown or consumed within public view and that home growing takes place in an enclosed, locked space inaccessible to persons under the age of 21.”

<sup>14</sup> These price-per-ounce amounts are in line with data obtained from the Ohio Department of Public Safety, State Highway Patrol, from marijuana seizures made under the federal High Intensity Drug Trafficking Area (HIDTA) program. This data, obtained from the Patrol’s Hub Intelligence Unit, shows that the average price per ounce (for those seizures where the prices were known and with some adjustments) is roughly \$270.

<sup>15</sup> Caulkins, Jonathan P. et al. *Considering Marijuana Legalization, Insights for Vermont and Other Jurisdictions*. The RAND Corporation, 2015. Also confirmed by marijuana prices listed on [www.mjcharts.com](http://www.mjcharts.com).

was calculated to account for variable pricing.<sup>16</sup> The result, after conversion into grams, is an average price of \$10.50 per gram.

### Current market estimate

The estimate of the overall marijuana market in Ohio is obtained by multiplying the estimated weighted average price per gram (\$10.50) by the total estimated number of grams purchased (180.3 million grams). The result is a 2013 market estimate of \$1.89 billion in Ohio expenditures, displayed in Table 5 below.

An average annual consumption growth rate of 1.2 percent was calculated based on a comparison of 2002-03 and 2012-13 survey data with adjustments to account for changes in reported drug use.<sup>17</sup> Applying the 1.2 percent growth rate and the same weighted average price of \$10.50 per gram, by 2016, the estimated market is approximately 187.0 million grams, and the market value is estimated to be about \$1.96 billion. The estimated market of \$1.96 billion is based on the current market structure.

|                                       |                       |
|---------------------------------------|-----------------------|
| Total Quantity Demand in Grams (2013) | 180.3 million         |
| Weighted Average Price (per gram)     | \$10.50               |
| Estimated Market Size (2013)          | \$1.89 billion        |
| <b>Estimated Market Size (2016)</b>   | <b>\$1.96 billion</b> |

### Projected market estimate

An adjustment was made to account for the increase in consumption following passage of Issue 3. This adjustment was applied only to the cohorts of non-frequent users (those using less than 20 days in a month).<sup>18</sup> For these cohorts, estimated grams consumed were increased by 7.7

---

<sup>16</sup> The weighted average price per gram was calculated using data used by BOTEK for the state of Washington from priceofweed.com, which showed purchases by quantity. According to this data about half of purchases by individuals were for an entire ounce. The next most purchased quantities were eighths, half ounces, five-grams, and quarter ounces. These quantities accounted for about 90% of purchases.

<sup>17</sup> Substance Abuse and Mental Health Administration, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health: Comparison of 2002-2003 and 2012-2013, Model-Based Prevalence Estimates, Ohio, Table 2 and Table 3. Reports have mentioned that the increases may be a combination of actual increase in usage with simply increases in reporting – that with usage of marijuana growing in general societal acceptance, individuals are more willing to admit they use it. Also, studies have noted that drug use rates have been increasing among individuals in their fifties and sixties.

<sup>18</sup> No adjustment was made for the cohort of heavy users (20-30 days in the last month); it was assumed that these users are already consuming the amount of marijuana they would prefer and would not consume more if Issue 3 were to pass (Miron, Jeffrey A. and Waldo, Katherine. *The Budgetary Impact of Ending Drug Prohibition*. CATO Inst. 2010).

percent.<sup>19</sup> When applied to the 16.8 percent of reported consumers that use marijuana fewer than 20 days per month, the result is a post-legalization market estimate of \$1.99 billion.

Finally, the 1.2 percent annual growth rate was applied for five years after 2016, during which time it is assumed that growers, product manufacturers, and retail sellers will have established a mature supply chain to meet demand in the Issue 3 market. This market size is estimated at about \$2.11 billion.

|                                     |               |
|-------------------------------------|---------------|
| Estimated Market Size (2013)        | \$1.89        |
| Estimated Market Size (2016)        | \$1.96        |
| With Issue 3 Increase (2016)        | \$1.99        |
| <b>Estimated Market Size (2021)</b> | <b>\$2.11</b> |

## **Section II: Issue 3 markets**

### **Market Segmentation**

The estimated market demand for marijuana in Ohio was divided into two components: purchases in the Issue 3 market, and purchases elsewhere. If Issue 3 passes, there would remain a non-Issue 3 marijuana market consisting of purchases from a current dealer, a resale market, or home grown without a license. The percentage of sales that switch to Issue 3 markets is a function of price (i.e., inter-market price elasticity), economies of scale, perception of risk, and unknown regulation, the quantity and actual locations of RMS and MMD, and the response of existing market suppliers. Each of these factors is a function of other unknown variables. Estimating the percentage of market sales absorbed into the Issue 3 market over time is difficult and subject to high estimation error, and therefore a range is utilized to develop upper and lower bound estimates.

The estimate assumes that after five years of supply chain development, the Issue 3 markets would account for 50 percent to 70 percent of the total market, or \$1.1 billion to \$1.5 billion. This range is an estimate based upon multiple sources. An estimate from Colorado suggests that

---

<sup>19</sup> This rate was based on increases in Colorado and Washington reported usage (23.7% and 19.5%, respectively, according to NSDUH surveys from 2011-2012 and 2012-2013) after legalization of marijuana usage occurred, but with adjustments reducing the rate to account for (1) the nationwide increase in usage reporting (4.8%) during that time, (2) increases in usage rates in other states that had no changes to their marijuana policies (Georgia registered the highest increase in reported usage (34%) and that Missouri, Maryland, and Maine registered increases in reported usage of between 20% and 25%), (3) assumed increases in home-growers if Issue 3 were to pass, and (4) to account for the qualitative assumption among researchers that some increases in reported usage are only due to increases in reporting and not necessarily usage.

in the first year of general legalization, the legalized market supplied 60 percent of demand.<sup>20</sup> While not yet confirmed as actual, this suggests that a regulated market could achieve over 50 percent participation. If accurate, a 60 percent participation rate in the legal market in Colorado likely had much to do with the state already having a medical marijuana infrastructure that matured over more than ten years. An analysis conducted for the state of Washington suggests that the legal market in that state would account for only 30 percent of the total market in the first year, increasing from two to five percentage points each subsequent year, depending upon scenarios with different prices and tax levels.<sup>21</sup> This assumed steady increase in participation in the regulated market would result in 50 percent to 70 percent legal market participation after about ten years. It is reasonable to assume that the Issue 3 market would develop slower than Colorado's because of that state's building of a medical marijuana industry over a decade with established supply channels and store locations, but quicker than estimated for Washington due to the timelines established in the ballot language and the designated growing sites.

## **Gross revenues**

### ***Retail marijuana stores (RMS)***

In order to estimate gross revenues from RMS, the analysis begins with the estimated Issue 3 market of \$1.1 billion to \$1.5 billion. Certain adjustments were made to account for sales of products from MPM facilities, sales made through MMD to individuals with physician certificates, sales of accessories, and sales to out-of-state customers.

First, an upward adjustment was made to account for sales of products containing marijuana (e.g., edible products). This was accomplished via assumptions regarding the percentage of marijuana sold from MGCE sites to MPM facilities and the likely mark-ups at the grower, manufacturer, and retail levels. The assumptions regarding the MGCE sites and MPM facilities are described in more detail below. At the retail level, a 35 percent mark-up was assumed, and the result was an increase in the estimate of \$113 million to \$158 million, or 11 percent.<sup>22</sup>

Next, retail sales from MMD were estimated and subtracted, as these medical marijuana sales would not be subject to the 5 percent gross revenue tax. This adjustment was made after the prior adjustment since MPM products can be sold at MMD. Estimated sales at MMD would account

---

<sup>20</sup> Light, Miles K. et al. *Market Size and Demand for Marijuana in Colorado*; prepared by the Marijuana Policy Group, July 2014, for the Colorado Department of Revenue.

<sup>21</sup> Caulkins, Jonathan, Andrzejewski, Susan, and Dahlkemper, Linden. *How much revenue could the cannabis tax generate, under different scenarios?* BOTE Analysis Corp. I-502 Project #430-8b, June 28, 2013, Final.

<sup>22</sup> Gettman, Jon. "Marijuana Production in the United States." DrugScience.org (2006). Data presented in this report indicate a retail mark-up ranging from 20% to 50%, depending upon the value captured at the wholesale levels; therefore, a midpoint assumption of 35% was used (<http://www.drugscience.org/Archive/bcr2/estproc.html>).

for 12.4 percent of total Issue 3 market sales, representing a downward adjustment of between \$145 million and \$203 million.<sup>23</sup>

A 5 percent upward adjustment was made to account for accessories sold at RMS locations. It is assumed that consumers generally have already purchased accessories by which to consume marijuana. But, the presence of retail stores with displays may induce consumers to replace their accessories and also provide purchase options for new consumers of the product.

A final 5 percent upward adjustment was used to account for RMS purchases made by out-of-state visitors. An estimate for Colorado showed a 7.3 percent increase due to out-of-state visitors. An analysis issued for the state of Washington assumed 5 percent.<sup>24</sup>

These adjustments are shown in Table 7 below.

| <b>Table 7. Adjustments from Total Estimated Market to Arrive at Estimated RMS Market Size, Lower and Upper Bounds (in millions)</b> |                                |                  |                                |                  |
|--|--------------------------------|------------------|--------------------------------|------------------|
| <b>Markets and Adjustments</b>   | <b>Adjustments Lower Bound</b> | <b>Market</b>    | <b>Adjustments Upper Bound</b> | <b>Market</b>    |
| <b>Total Estimated Market</b>  |                                | <b>\$2,112.2</b> |                                | <b>\$2,112.2</b> |
| Assumed Issue 3 Market   | <b>50%</b>                     | \$1,056.1        | <b>70%</b>                     | \$1,478.6        |
| Adjusted for Marijuana Products  | + \$113.1                      | \$1,169.2        | + \$158.4                      | \$1,636.9        |
| Less Est. Medical Market   | - \$145.1                      | \$1,024.1        | - \$203.2                      | \$1,433.7        |
| Accessories adjustment   | + 51.2                         | \$1,075.3        | + 71.7                         | \$1,505.4        |
| Out-of-state customers   | + 53.8                         | \$1,129.1        | + 75.3                         | \$1,580.7        |
| <b>Total Estimated RMS Sales</b>   |                                | <b>\$1,129.1</b> |                                | <b>\$1,580.7</b> |

Figures may not add-up exactly due to rounding.

<sup>23</sup> Estimate based on data from Michigan as reported on the web site [www.procon.org](http://www.procon.org). According to this data, about 1.5% of Michigan’s residents were medical marijuana patients in 2013. When the 1.5% rate is applied to Ohio’s population, and controlling for Michigan’s overall higher marijuana usage rates relative to Ohio, Ohio’s estimated medical population would be 138,274 individuals, which represents 12.4% of the 1,114,000 individuals that reported using marijuana in the past month or year in the 2012-2013 NSDUH survey. <http://medicalmarijuana.procon.org/view.resource.php?resourceID=005889>, Number of Legal Medical Marijuana Patients, accessed August 25, 2015, based on email communication from Michigan’s Medical Marijuana Program.

It does not quite fit to use the current ratios of Washington’s and Colorado’s medical to non-medical marijuana sales as a proxy to estimate the percentage of MMD sales in Ohio under the ballot initiative. Since both states had fairly well developed medical marijuana markets for about a decade prior to general marijuana legalization, their medical marijuana sales continue to account for a disproportionately high percentage of total sales. It’s important to note that under Ohio’s ballot initiative, medical and general retail operations would open simultaneously.

<sup>24</sup> Washington State BOTE Analysis Reports, Dynamic simulation scenario model spreadsheet, “Parameters” sheet: [http://liq.wa.gov/marijuana/botec\\_reports](http://liq.wa.gov/marijuana/botec_reports). Reports on Colorado marijuana sales have cited significant sales to out-of-state consumers, however there are large differences between the Colorado and Ohio tourism industries. A more conservative measure of tourist demand is used in this estimate.

### ***Supply chain organization (vertical integration)***

Due to uncertainty over the business structure of taxpayers, gross revenue and tax revenue were calculated under two different scenarios. The first scenario assumes that all transactions (from the MGCEs to the MPMs, RMS, and MMD; and from the MPMs to the RMS and MMD) are “arm’s length” transactions, i.e. that all products are sold and purchased at market prices.

The second scenario assumes partial vertical integration, that the companies owning the MGCEs control half of the MPMs and half of the RMS in the state. Businesses may integrate vertically to have greater control of inputs in the supply chain, and thus to control the cost, quality and delivery times of those inputs. They may also integrate at least in part to avoid taxation, through the use of non-arm’s length pricing (“transfer pricing”) between the businesses under common ownership and control. Prices between related entities may be set artificially low in order to minimize gross revenue. There does not appear to be any language in the ballot initiative that would prohibit companies from vertically integrating businesses in the Issue 3 supply chain.<sup>25</sup>

### ***Product manufacturing facilities (MPMs)***

Under Issue 3, the manufacturing, processing, and packaging of products containing marijuana occurs at MPM facilities. To estimate the gross revenues of MPM facilities, the estimated value of the total marijuana retail market was used as a starting point. This amount ranges from \$1.1 billion to \$1.5 billion, as stated earlier under the 50 percent and 70 percent Issue 3 market scenarios, and includes the total resident market plus out-of-state visitors. Of this estimated value of marijuana to be consumed, it is assumed that 20 percent – \$221.8 million to \$310.5 million – is used as inputs by MPM facilities to create a variety of products, while the other 80 percent is sold as useable product.<sup>26</sup>

The estimated range of purchases for MPM products was reduced to account for the assumed 35 percent retail mark-up.<sup>27</sup> Assuming a price discount for bulk purchases made by MPM facilities, it is estimated that MPMs would purchase \$139.6 million to \$195.5 million worth of marijuana from MGCE facilities.<sup>28</sup>

Finally, it is assumed that the MPM mark-up on sales of products to the retail level is 60 percent. The 60 percent mark-up reflects a review of prices charged on edible marijuana products available at a San Francisco dispensary and a BOTEC analysis of standard quality infused

---

<sup>25</sup> However, it is uncertain to what degree the General Assembly or the Commission could, through legislation or administrative rule, attempt to prohibit such integration, or to allow for it, but with price controls at the wholesale level to ensure that companies do not use below-market transfer prices.

<sup>26</sup> This assumption is based on assumptions made in BOTEC reports for Washington State (Ibid) as well as reported sales in Colorado in 2014 ([https://www.colorado.gov/pacific/sites/default/files/2014%20MED%20Annual%20Report\\_1.pdf](https://www.colorado.gov/pacific/sites/default/files/2014%20MED%20Annual%20Report_1.pdf)).

<sup>27</sup> See earlier footnote. It is assumed that the retail mark-up on sales of all useable marijuana from MGCEs and marijuana products from MPMs is 35%.

<sup>28</sup> Bulk discounts confirmed by Caulkins, Jonathan P. et al (2015) and by prices listed on [www.mjcharts.com](http://www.mjcharts.com).

goods.<sup>29</sup> Using this mark-up assumption, the gross revenue of MPMs is estimated to range from \$111.7 million under the assumption of 50 percent vertical integration and 50 percent legal market share to \$312.8 million assuming no vertical integration and all arm’s length transactions.

***Marijuana Growth, Cultivation & Extraction (MGCE) facilities***

To estimate gross revenues of MGCE facilities, the analysis relies upon the mark-up assumptions of 35 percent at retail and 60 percent by the MPM.<sup>30</sup> From these two assumptions, as well as the assumption that 80 percent of marijuana would be sold directly to the retail level and 20 percent to MPMs, (with an assumed bulk discount) an estimate of MGCE facility gross revenue was calculated. Based on these assumptions and adjustments, the gross revenue of MGCEs is estimated to range from \$398.4 million with a 50 percent legal market share and 50 percent vertical integration to \$1,115.5 million assuming a 70 percent legal market share and no vertical integration.

**Section III: Tax revenue estimates**

The range of tax estimates presented here account for both assumptions about the Issue 3 legal market share and for both scenarios regarding vertical integration. The estimates assume tax revenues for a full year in which all of the entities in the Issue 3 market are competitive and operating efficiently. When applying the ballot-specified tax rates to the estimated gross revenues of the facilities, total taxes on the gross revenue from businesses in the Issue 3 market range from \$133.0 million (under the 50 percent vertical integration and 50 percent legal market share scenario) to \$293.3 million (under the 70 percent market share and all arm’s length transactions scenario), as shown in Table 8 below.

| <b>Table 8. Tax Revenue Estimates (in millions)</b> |              |             |            |                |
|---|--------------|-------------|------------|----------------|
| <b>Scenario</b>                                     | <b>MGCEs</b> | <b>MPMs</b> | <b>RMS</b> | <b>Total</b>   |
| <b>50% Issue 3 Market</b>                           |              |             |            |                |
| 50% Vertical Integration                            | \$59.8       | \$16.8      | \$56.5     | <b>\$133.0</b> |
| <b>70% Issue 3 Market</b>                           |              |             |            |                |
| No Vertical Integration                             | \$167.3      | \$46.9      | \$79.0     | <b>\$293.3</b> |

Finally, Table 9 below shows the associated estimated distributions into funds established by the Issue 3 ballot language, in accordance to the percentages specified in ballot. The table accounts for both vertical integration scenarios and the 50 percent and 70 percent legal market share assumptions.

---

<sup>29</sup> This estimated mark-up is subject to considerable uncertainty, as different marijuana products could have significant differences in the required labor and supplies necessary to manufacture each product.

<sup>30</sup> Gettman, Jon (Ibid)



| <b>Table 9. Tax Revenue Distribution Estimates (in millions)</b> |                |  |  |  |
|--|----------------|--|--|--|
| <b>Scenario</b>  | <b>Total</b>   | <b>“Municipal and Township Government Stabilization Fund”<sup>31</sup></b> | <b>“Strong County Fund”<sup>32</sup></b> | <b>“Marijuana Control Commission Fund”</b> |
| <b><i>Distribution Percentages</i></b>                           |                | <b><u>55%</u></b>  | <b><u>30%</u></b>                        | <b><u>15%</u></b>                          |
| Lower Bound Estimate   | <b>\$133.0</b> | \$73.1   | \$39.9                                   | \$19.9                                     |
| Upper Bound Estimate   | <b>\$293.3</b> | \$161.3  | \$88.0                                   | \$44.0                                     |

---

<sup>31</sup> Distributions from the Municipal and Township Government Stabilization Fund shall be made to all municipalities and townships on a per capita basis to be used for public safety and health, including police, fire and emergency medical services, road and bridge repair, and other infrastructure improvements.

<sup>32</sup> Distributions from the Strong County Fund to be made to all counties on a per capita basis to be used for public safety and health, including police, fire and emergency medical services, road and bridge repair, and other infrastructure improvements.

## **Part II: Estimated annual expenditure of public funds**

This section of the report contains estimates of the public expenditures required by the proposed amendment. Actual costs will be based on both the availability of revenues and choices made by the proposed Ohio Marijuana Control Commission. Additionally, all amounts are ultimately subject to the appropriation authority of the General Assembly, and thus rely on future decisions by that body.

### **Cost of New Ohio Marijuana Control Commission**

As proposed by constitutional amendment, the Ohio Marijuana Control Commission would be established and would be responsible for regulating the acquisition, growth, cultivation, extraction, production, processing, manufacture, testing, distribution, retail sales, licensing, and taxation of medical marijuana, recreational marijuana, marijuana-infused products, the operation of marijuana establishments, and the growth and cultivation of home grown marijuana. The commission would consist of seven members to be appointed by the Governor. The members shall all be Ohio residents, and shall include: (i) a member that is a licensed Ohio physician; (ii) a member that is a sworn Ohio law enforcement officer; (iii) a member that is an attorney admitted to the practice of law in Ohio and experienced in administrative law; (iv) a member who is a patient advocate; (v) a member who is experienced in business ownership, development, and management; (vi) a member who is experienced in the legal marijuana industry; (vii) a public member. It is provided, however, that no members have served as elected public officials in the eight years prior to their appointment.

To support the activities of the Commission, the proposal collects 15 percent of revenues on special marijuana taxes assessed by the State in a Marijuana Control Commission Fund. Revenues placed in the Marijuana Control Commission Fund are to be used for the operating costs of the Marijuana Control Commission, to provide additional funding for mental health and addiction treatment services, and to fund a marijuana innovation and business incubator.

While there would be a phase-up of costs as the Commission reached full-staffing and Issue 3 was implemented, this analysis specifically estimates costs based on a fully staffed and functioning agency that is collecting sufficient revenue to support the activities and costs detailed in the analysis.

Based upon a review of the organizational structures of similar regulatory agencies within Ohio, the size of other states' marijuana control divisions, and the duties specifically associated with licensing and regulating legalized marijuana in Ohio, OBM projects Commission staffing needs of 86 full time employees (FTEs) and 7 Board members. The Enforcement Division in charge of enforcing criminal statutes would consist of 48 FTEs, the Compliance Division in charge of enforcing regulatory statutes would consist of 11 FTEs, and the Licensure Division in charge of issuing and renewing licenses for marijuana facilities, as well as home growers, would consist of 6 FTEs.

The remaining staff estimates would provide the following:

- Administrative services and support (12 FTEs);
- Board members (7 non-FTEs)
- Legal services (5 FTEs);
- Program administration (4 FTEs).

Based on the staffing estimate, the ongoing cost of a fully-staffed agency at this level would be approximately \$6.6 million annually (see Table 13).

**Main Assumptions for Commission Administration Structure estimates (Table 13)**

- The salary assumptions are taken from the Ohio Hiring Management System Library of Job Classification Descriptions;
- The Marijuana Enforcement Agents and Marijuana Enforcement Investigator positions are based on the Gaming Enforcement Agents and Gaming Enforcement Investigator job classifications;
- Fringe benefits are calculated at 34 percent of the base salary – the average across all State of Ohio agencies;
- Commission members’ pay is calculated at 60 hours annually;
- The Executive Director, Deputy Directors, and Commission Member positions assume highest salaries with the prospective pay grade;
- Unless otherwise noted, the salary for a given position is the average wage across all steps at the classification’s pay grade;
- While there would be an initial phase-up of staff and costs, the estimate is based on a fully staffed and functioning agency that is collecting sufficient revenue to support the employees estimated.

The proposed amendment language specifically tasks the Ohio Marijuana Control Commission with establishing and implementing a system for real-time tracking and monitoring of all marijuana, medical marijuana, and marijuana-infused products from initial germination through the final customer transaction. Colorado and Washington have both implemented their own “seed-to-sale” tracking systems. Colorado reported spending \$1.5 million<sup>33</sup> in upfront costs on their inventory tracking system, while Washington’s system is reported to have cost the state

---

<sup>33</sup> Gilboy, Cecelia, “High Anxiety: The State of a Highly Regulated Industry,” Boulder Weekly, October 23, 2014. As of September 1, 2015: <http://www.boulderweekly.com/article-13544-the-difference-between-regulations-and-a-death-gri.html>

more than \$850,000.<sup>34</sup> Ohio should expect upfront costs for a tracking system as well as provide for some ongoing costs related to system maintenance and equipment replacement. Marijuana facilities in Colorado and Washington have assumed some ongoing costs related to inventory tracking.

In order to determine the non-payroll operating costs, the cost allocations were evaluated for the State Medical Board of Ohio, the Ohio Casino Control Commission, the State of Ohio Board of Nursing, the Ohio State Board of Pharmacy, and the Ohio Ethics Commission. In each case, the costs of each agency were broken down as a percentage of the total budget, excluding subsidies and shared revenue. The averages of each category were taken across the five state entities. The results were used to project non-payroll operating costs on an ongoing basis. The non-payroll operating costs were estimated to total approximately \$1.3 million (see Tables 10 & 11). An additional \$1 million was then added to Purchased Services to account for costs related to retaining qualified third parties, bringing the total non-payroll operating costs estimate to \$2.3 million. The Issue 3 amendment language specifically allows for the retention of qualified third parties, including experts to perform its duties. This analysis included costs for a variety of services including individuals to assist the Commission in functioning as a clearing house for scientific and medical industry research, policy-setting, research, and outside legal counsel. Due to the contentious nature of legalized marijuana, outside legal counsel for potential legal services is a significant anticipated cost, with the Commission likely requiring legal services beyond the need of other state agencies.

| <b>Table 10. Operational Cost Breakdown</b> |             |
|---|-------------|
| Personal Services                           | 83.7%       |
| Supplies and Maintenance                    | 13.6%       |
| Purchased Services                          | 2.0%        |
| Equipment                                   | 0.5%        |
| Transfers                                   | 0.2%        |
| <b>Total</b>                                | <b>100%</b> |

---

<sup>34</sup> Caulkins, Jonathan P., Beau Kilmer, Mark A. R. Kleiman, Robert J. MacCoun, Gregory Midgette, Pat Oglesby, Rosalie Liccardo Pacula and Peter H. Reuter. Considering Marijuana Legalization: Insights for Vermont and Other Jurisdictions. Santa Monica, CA: RAND Corporation, 2015. [http://www.rand.org/pubs/research\\_reports/RR864](http://www.rand.org/pubs/research_reports/RR864)

| <b>Table 11. Projected Costs of Marijuana Control Commission</b> |                    |
|--|--------------------|
| Personal Services  | \$6,599,240        |
| Supplies and Maintenance   | \$1,072,278        |
| Purchased Services*  | \$1,157,688        |
| Equipment  | \$39,422           |
| Transfers  | \$15,769           |
| <b>Total</b>   | <b>\$8,884,397</b> |

\*An additional \$1 million has been added to account for costs related to retaining qualified third parties.

In total, annual operating costs for the operation of the Ohio Marijuana Control Commission are estimated at approximately \$8.9 million annually once the commission is fully staffed and start-up costs have been covered. Commission funding is from a portion of the state collection of taxes on marijuana gross revenue. Revenue from this tax will not be received until marijuana production and retail facilities are operational. Therefore, as Ohio experienced with the Casino Control Commission, initial start-up costs and other costs that occur before dedicated taxes are collected must be subsidized from other state funds. The Commission would see some costs as early as the current fiscal year (FY 2016).

In addition to costs associated with the creation and operation of the Ohio Marijuana Control Commission, the Marijuana Control Commission Fund is to be used to fund additional mental health and addiction treatment services as well as a marijuana innovation and business incubator.

In the past fiscal year, the Ohio Department of Mental Health and Addiction Services spent \$5 million on problem gambling. More than \$3 million of this amount was spent on gambling addiction prevention, with \$1.5 million spent on gambling addiction treatment, and the remainder spent on operations and management. In Colorado, an average of \$2.6 million annually has been appropriated for a marijuana public education campaign, an average of \$2.1 million annually has been appropriated for school-based early intervention and substance abuse prevention, an average of \$1.9 million annually has been appropriated for behavioral health treatment, an average of \$956,000 has been appropriated for inpatient treatment for co-occurring disorders, and an additional \$1.1 million has been spent on surveys and studies regarding marijuana use and its health effects.<sup>35</sup> While the amount of money spent on additional mental health and addiction treatment services would be scaled based on the availability of funding, even before revenues were available Ohio would likely fund prevention programming similar to

---

<sup>35</sup> Wheat, Alice, Colorado Office of State Planning & Budgeting, email communication with the author, August 28, 2015.

Colorado’s public education campaign. When a full complement of retail stores were functional, Ohio would likely eclipse the \$5 million spent on problem gambling and spend at least an equal amount to Colorado considering the population difference between Ohio (approximately 11,594,000 residents in 2014) and Colorado (approximately 5,356,000 residents in 2014).<sup>36</sup> Colorado funds spent on mental health and addiction prevention and treatment came from special marijuana tax revenues and this estimate assumes Ohio’s spending on these services would also be scaled based on available dedicated revenues. Future decisions made by state officials could require additional spending on mental health and addiction prevention and treatment. Additionally, due to Ohio’s higher population density and the nature of its media markets, a public education campaign could result in materially higher costs than those seen by Colorado.

| <b>Table 12. Colorado Annualized Mental Health and Addiction Costs</b> |                    |
|--|--------------------|
| Public Education Campaign  | \$2,611,203        |
| Early Intervention & Prevention  | \$2,130,000        |
| Behavioral Health Treatment  | \$1,915,222        |
| Inpatient Treatment for Co-occurring Disorders                         | \$955,806          |
| <b>Total</b>   | <b>\$7,612,231</b> |

\*An additional \$1.1 million spent in one-time costs on surveys and studies.

The proposed marijuana innovation and business incubator would serve the purpose of awarding support to Ohio-based companies, colleges and universities, nonprofit medical centers, and other nonprofit research institutions for projects relating to engaging in research and development, the creation of new products, companies, and jobs associated with the medical and recreational marijuana industries in Ohio. Based on the average costs of incubators currently supported by the Ohio Development Services Agency, the incubator itself is projected to cost around \$1 million annually.<sup>37</sup> This amount of funding would support a small staff, provide for a physical location, and allow the incubator to provide sufficient programming to support Ohio-based companies, educational organizations, and other nonprofit organizations. Based on the availability of further funding, the incubator could offer grants and awards. The upward bound on this amount would be limited only by the availability of funding.

The Issue 3 amendment defines “marijuana testing facilities,” outlines where six such facilities shall be located, and sets up basic functions and prohibitions for these facilities. The amendment

---

<sup>36</sup> United States Census Bureau, Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2014 (NST-EST2014-01) <http://www.census.gov/popest/data/state/totals/2014/index.html>

<sup>37</sup> Chagnon, Norman, Ohio Development Services Agency, phone conversation with the author, September 3, 2015.

states that these facilities are licensed by the commission, but does not indicate that they receive state funding. Of the states that have legalized medical marijuana, seven have mandated laboratory testing similar to the requirements in the proposed amendment.<sup>38</sup> As a result, there are companies operating in multiple states operating marijuana testing facilities. It is reasonable to assume that these companies would be interested in operating in Ohio. If Ohio was required to operate these testing facilities, the costs related to capital, equipment, and ongoing operating costs would range from millions to tens of millions of dollars annually.

The proposed amendment allows for the commission to fund the operating costs of not-for-profit medical marijuana dispensaries and to establish a program to provide low-cost medical marijuana to qualifying patients unable to afford the full cost of prescribed medical marijuana. For the purpose of this analysis we do not assume any expenses related to medical marijuana subsidies. While policy makers could decide to subsidize not-for-profit dispensaries, or to establish the aforementioned program, it is not a required cost and would be subject to the availability of funding.

In addition to the costs outlined in the amendment, The Ohio Department of Agriculture would see increased costs as a result of the passage of Issue 3. The Ohio Department of Agriculture would see costs associated with testing edible marijuana products and seed quality control. Oregon's Agriculture Department expects to spend \$100,000 annually on costs associated with edible products<sup>39</sup> and Colorado's Department of Agriculture is appropriated \$157,000 annually for regulation of the marijuana industry.<sup>40</sup> A reasonable estimate of costs for the Ohio Department of Agriculture related to marijuana legalization is \$200,000. This amount would allow for the hiring of additional staff and other operating costs related to testing.

---

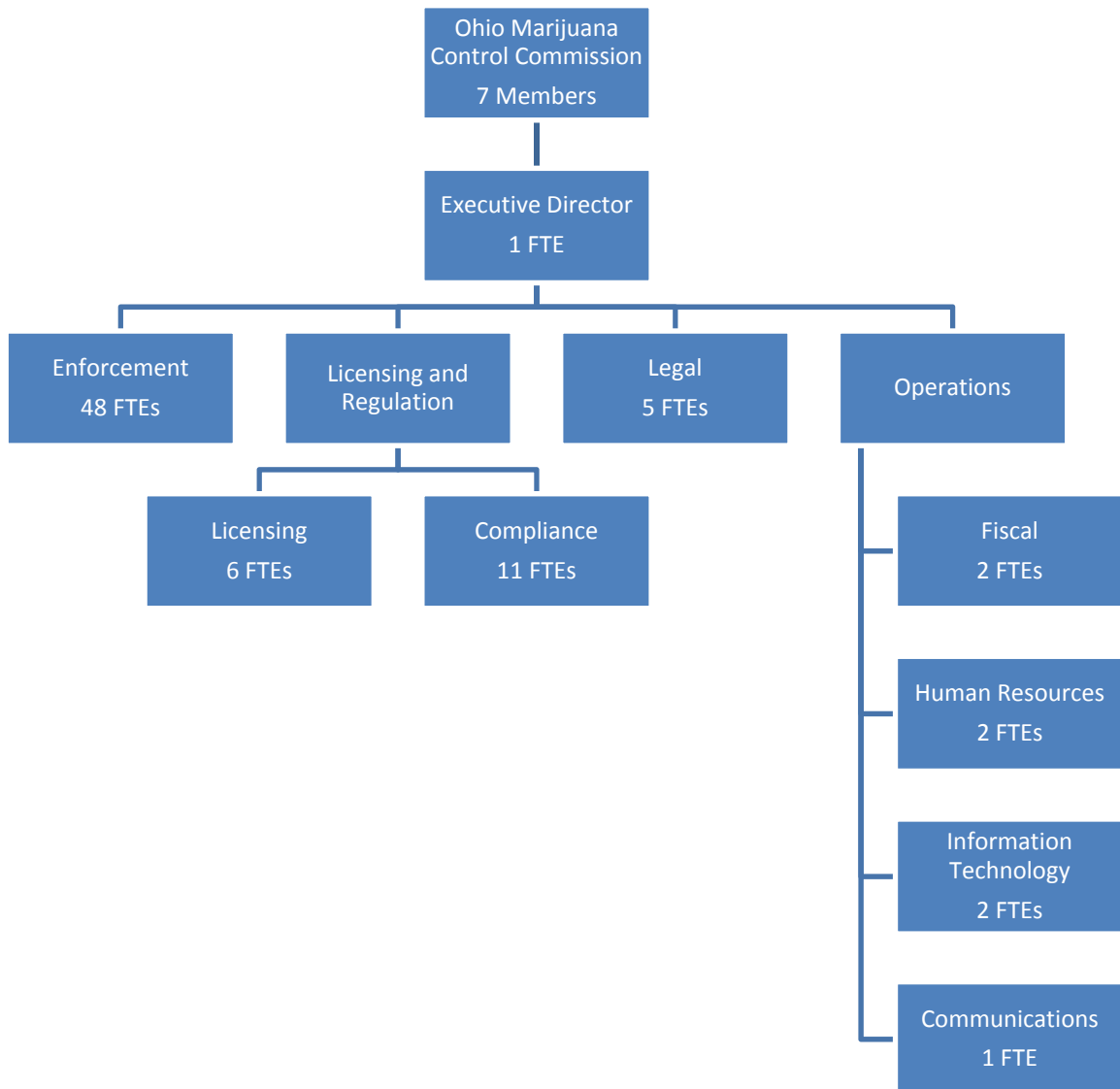
<sup>38</sup> Wardarski, Jessie and Dom DiFurio, "Testing Marijuana for Contaminants Debated," Public Source, August 30, 2015. As of September 9, 2015: <http://publicsource.org/investigations/testing-marijuana-for-contaminants-debated#.VfA-06PD-UI>

<sup>39</sup> Chokshi, Niraj, "Oregon Expects Up to \$40 Million in New Revenue Annually if Voters Legalize Pot This Fall," The Washington Post, August 11, 2014. As of September 1, 2015: <http://www.washingtonpost.com/blogs/govbeat/wp/2014/08/11/oregon-expects-up-to-40-million-in-new-revenue-annually-if-voters-legalize-pot-this-fall/>

<sup>40</sup> Ibid, 33 Wheat, Alice, Colorado Office of State Planning & Budgeting, email communication with the author, August 28, 2015.



## Ohio Marijuana Control Commission Assumed Table of Organization<sup>41</sup>



---

<sup>41</sup> This table of organization is based on both the organizational structure of existing State of Ohio agencies and commissions, as well as requirements and duties of the Ohio Marijuana Control Commission in the proposed amendment. The seven Commission members are subject to Governor's appointment.

In addition to the full time employees (FTEs) displayed in the above table of organization, the following positions are not displayed, but are included in Table 13:

- Deputy Directors, 3 FTEs
- Administrative Assistants, 2 FTEs
- Management Analysts, 2 FTEs
- Office Manager, 1 FTE

| <b>Table 13. Commission's Staffing Estimates (Fully Staffed)</b> |                 |                        |                      |                               |                          |
|--|-----------------|------------------------|----------------------|-------------------------------|--------------------------|
| <b>Title</b>   | <b>Quantity</b> | <b>Hourly Pay Rate</b> | <b>Annual Salary</b> | <b>Annual Salary + Fringe</b> | <b>Total Annual Cost</b> |
| Executive Director 2   | 1               | \$49.50                | \$102,960.00         | \$137,966.40                  | \$137,966.40             |
| Administrative Assistant 3                                       | 1               | \$26.59                | \$55,307.20          | \$74,111.65                   | \$74,111.65              |
| Deputy Director 3  | 3               | \$45.31                | \$94,244.80          | \$126,288.03                  | \$378,864.10             |
| Administrative Assistant 2                                       | 1               | \$21.48                | \$44,678.40          | \$59,869.06                   | \$59,869.06              |
| Attorney 6 (Chief Legal Counsel)                                 | 1               | \$42.13                | \$87,630.40          | \$117,424.74                  | \$117,424.74             |
| Attorney 3   | 4               | \$30.19                | \$62,795.20          | \$84,145.57                   | \$336,582.27             |
| Financial Manager  | 1               | \$38.20                | \$79,456.00          | \$106,471.04                  | \$106,471.04             |
| Financial Analyst  | 1               | \$21.65                | \$45,032.00          | \$60,342.88                   | \$60,342.88              |
| IT Manager 1   | 1               | \$42.13                | \$87,630.40          | \$117,424.74                  | \$117,424.74             |
| Information Technologist 1                                       | 1               | \$21.65                | \$45,032.00          | \$60,342.88                   | \$60,342.88              |
| Human Capital Management Administrator 2                         | 1               | \$42.13                | \$87,630.40          | \$117,424.74                  | \$117,424.74             |
| Human Capital Management Analyst                                 | 1               | \$22.01                | \$45,780.80          | \$61,346.27                   | \$61,346.27              |
| Public Information Officer 2                                     | 1               | \$31.54                | \$65,603.20          | \$87,908.29                   | \$87,908.29              |
| Board/Commission Member 3  | 7               | \$49.50                | \$2,970.00           | \$3,979.80                    | \$27,858.60              |
| Administrative Officer 2   | 4               | \$34.76                | \$72,300.80          | \$96,883.07                   | \$387,532.29             |
| Marijuana Enforcement Agent                                      | 40              | \$26.90                | \$55,952.00          | \$74,975.68                   | \$2,999,027.20           |
| Marijuana Enforcement Investigator                               | 4               | \$26.90                | \$55,952.00          | \$74,975.68                   | \$299,902.72             |
| Marijuana Control Compliance Officer                             | 10              | \$21.81                | \$45,364.80          | \$60,788.83                   | \$607,888.32             |
| Marijuana Control Compliance Supervisor 1                        | 1               | \$28.64                | \$59,571.20          | \$79,825.41                   | \$79,825.41              |
| Certificate/Licensure Examiner 1                                 | 5               | \$17.42                | \$36,233.60          | \$48,553.02                   | \$242,765.12             |
| Program Administrator 1  | 1               | \$22.01                | \$45,780.80          | \$61,346.27                   | \$61,346.27              |
| Management Analyst   | 2               | \$21.65                | \$45,032.00          | \$60,342.88                   | \$120,685.76             |
| Office Manager   | 1               | \$20.21                | \$42,036.80          | \$56,329.31                   | \$56,329.31              |
| <b>Totals</b>  | <b>93</b>       |                        |                      |                               | <b>\$6,599,240.04</b>    |

| <b>Table 14. Total Ongoing Annual Costs of Proposal<sup>42</sup></b> |                     |
|--|---------------------|
| Commission Operating Costs   | \$8,884,397         |
| Mental Health and Addiction Prevention/Treatment                     | \$7,612,231         |
| Marijuana Innovation and Business Incubator                          | \$1,000,000         |
| Costs for Ohio Department of Agriculture                             | \$200,000           |
| <b>Total</b>   | <b>\$17,696,628</b> |

In addition to the ongoing annual costs, there would be one-time costs associated with the proposed amendment. Those costs would include at least the following items:

- Inventory tracking system: Washington spent over \$850,000 in setting up its tracking system, while Colorado spent \$1.5 million setting up its system. Ohio’s costs could be expected to be in the same general range.
- Initial surveys and studies: Colorado spent \$1.1 million on a study of the health effects of marijuana and an expansion of an existing survey to collect information on adolescent substance use, behavior, and perception. Ohio’s costs could be expected to be in the same general range.

---

<sup>42</sup> The Issue 3 amendment allows for the commission to fund the operating costs of not-for-profit medical marijuana dispensaries and to establish a program to provide low-cost medical marijuana to qualifying patients unable to afford the full cost of prescribed medical marijuana. For the purpose of this analysis we do not assume any expenses, the subsidy amount is assumed to be \$0. The amendment also allows for the marijuana innovation and business incubator to award support, this analysis only includes the operating costs of the incubator itself, as any grants awarded would be subject to the availability of funding.