

# Economic and Revenue Impact of Marijuana Legalization in NYS — A Fresh Look

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## Preface

In 2021, New York is likely to join the ranks of the states that have legalized recreational-use marijuana. This report generates original estimates of New York market demand for marijuana sales over the 2020 to 2027 period. We customize the parameters of a regional input-output model to develop New York-specific estimates of the employment, income, and economic impact of the adult-use marijuana supply chain. We estimate New York tax revenues related to marijuana sales and estimate the state and local tax revenues related to the economic activity generated by the marijuana supply chain. Our analysis is informed by the experience of other states where adult-use marijuana sales are legal.

## Executive Summary

Legal cannabis sales for both medical and recreational use in the U. S. were estimated to be worth between \$16 and \$19 billion in 2020, with recreational marijuana's share roughly 60 percent and rising. While marijuana is still considered a Schedule 1 controlled substance under federal law, 31 states including New York have decriminalized possession of small amounts of marijuana, and 36 states including New York have legalized marijuana sale and use for medical purposes. All fifty states allow some use of cannabidiol (CBD), a non-psychoactive naturally-occurring chemical found in cannabis plants.

In 2021, New York is likely to join the ranks of 15 states that have legalized recreational marijuana for adult-use. In 2020, four states, including New Jersey, acted to legalize adult-use marijuana, and elected officials in other states are moving in that direction. Legalization first occurred in Colorado, Washington, and other Western states, but in recent years Northeastern and Midwestern states have also approved legal adult-use sale.

Legalization, far from being a resolution of how to address cannabis use, entails a range of policy choices. In making these choices, policy makers are faced with concerns ranging from public health and social equity to economic and employment opportunities, to tax revenue generation.

Legalization has the potential to strengthen local economies and redress existing inequities in both urban and rural New York. The proposals advanced by the Governor and the legislature both aim to provide economic opportunities to communities that have been disproportionately affected by the war on drugs.

Legalization will open up small retail opportunities in urban neighborhoods throughout the state that have experienced widespread pandemic-related restaurant and other small business closures. State policy makers can wield considerable influence in shaping the industry's market structure and economic opportunities in a manner that benefits communities that have disproportionately borne the adverse consequences of marijuana criminalization. In designing its licensing system

and facilitating access to capital, the state can ensure that low-income Black and brown communities benefit from the newly-legal adult-use economy. Likewise, state policy makers can boost local economies in New York's rural areas by ensuring that small-scale cultivators are able to thrive in the legal market. The success of small-scale farmers will keep cannabis dollars re-circulating through rural New York communities.

Estimating the potential tax revenue and economic impact of legalizing adult-use marijuana over the next several years involves several assumptions about usage, prices, and the rise in legal market share relative to total legal and illicit sales. We estimated total usage based on the latest National Survey of Drug Use and Health and factored in assumptions about the daily usage of frequent users who account for the bulk of total market demand, assuming that there would be a slight increase in per capita usage as the legal market expands. Thus, we estimate that the physical units of marijuana demand as expressed in ounces would rise an average of 2.6 percent annually from 2020 to 2027. Since legalization is now accelerating throughout the Northeast and legal cultivation is rapidly expanding, we assumed a market price at the low end of recent estimates, with prices declining by two percent annually.

We estimate total market demand at about \$3.7 billion in the current fiscal year (2021), with demand in nominal dollars rising to \$3.9 billion by FY 2027. However, because legal sales would grow over time and gain market share at the expense of illicit sales, sales in the legal market would rise from \$566 million in the first full fiscal year of implementation (FY 2023) to \$2.6 billion four years later (FY 2027). We modeled the rise in New York's legal market share based on the experience in Oregon and Washington, two of the first states to legalize adult-use. We assume the legal market's share reaches 14 percent in FY 2023 and rises to 62 percent four years later (FY 2027.) The legal market would continue rising beyond the first five years and could reach \$3.8 billion in FY 2032. On a per-user basis, our New York estimates for first-year legal sales are lower than for Illinois and Michigan during those states' first year of legal sales. New York's actual legal market growth depends on many factors, including the regulatory structure and framework for licensing market participants that the State puts in place.

Using our estimates for legal market demand and the Governor's proposed tax structure, we estimate that recreational marijuana State tax revenue would be \$159 million in FY 2023, rising to \$765 million in FY 2027. We also estimate the State tax yield from the legislature's proposal: \$102 million in FY 2023 and \$469 million in FY 2027. The Governor's proposal to apply the sales tax to adult-use cannabis sales will generate an estimated \$25 million in local sales taxes in FY 2023, rising to \$114 million in FY 2027, and the legislature's excise tax flowing to local governments would provide an estimated \$23 million in FY 2023 and \$104 million in FY 2027. (The chart below summarizes our tax revenue projections.)

Particularly given the Covid-19-damaged economy and the pronounced adverse impact sustained in urban communities of color and among Black-owned businesses, the economic and employment impacts of legalizing recreational-use marijuana are significant. Modifying a widely-used regional input-output model (IMPLAN) to reflect 100 percent in-state cultivation and processing of all marijuana flower, and marijuana-infused edibles and oils, we estimate that \$2.6 billion in retail sales will generate 50,806 jobs, \$2.2 billion in employee compensation, \$4.7

billion in value added, and \$6.1 billion in total economic output. The value added that is generated translates into income streams including wages and benefits, business income to small business owners and corporations, and taxes to the federal, state, and local governments associated with the marijuana supply chain (separate from the excise taxes on retail sales).

Estimated first-year recreational-use sales of \$566 million would generate an estimated \$40 million in state taxes above and beyond the taxes on marijuana sales, and about \$31 million for local governments in the form of sales, property and income taxes. By the fifth year, cannabis economic activity would generate \$155 million in additional state revenue and \$121 million in local taxes. For each \$100 million in excise and sales taxes on marijuana sales, an additional \$30 million in state and local income, property, and sales taxes are created. Payroll taxes supporting New York’s unemployment insurance and workers’ comp funds would also be generated.

Another way to look at the tax implications is that for every \$100 million generated in FY 2023 in adult-use cannabis sales related taxes under the Governor’s proposal tax structure, an additional \$25 million in other state taxes are generated and local governments receive \$35 million in revenue.

#### **New York tax revenues from adult-use marijuana sales and economic activity (\$millions)**

<b>State revenues from sales</b>	<b>2023</b>	<b>2027</b>
Governor's tax rates	\$159	\$765
Legislature's tax rates	\$102	\$469
<b>Local revenues from sales</b>		
Governor's tax rates	\$25	\$114
Legislature's tax rates	\$23	\$104
<b>Revenues from supply chain economic activity</b>		
State tax revenue	\$40	\$155
Local tax revenue	\$31	\$121

The employment, income, and state and local tax impact of legalizing adult-use cannabis will be greater to the extent that New York’s leaders make policy choices that encourage locally-owned cannabis cultivators, processors, distributors, and dispensaries, and, as with medical marijuana, opt for a labor peace provision that makes it more likely that workers throughout the cannabis supply chain will enjoy fair pay, benefits, and labor protections.

## 1. Introduction

Legal cannabis sales for both medical and recreational use in the U. S. were estimated to be worth between \$16 and \$19 billion in 2020. Recreational marijuana’s share was estimated to be 60 percent and growing.<sup>1</sup> In recent years, while marijuana is still considered a Schedule 1 controlled substance under federal law, 31 states (including New York) have decriminalized possession of small amounts of marijuana, and 36 states (including New York) have legalized marijuana sale and use for medical purposes. All fifty states allow some use of cannabidiol (CBD), a non-psychoactive naturally-occurring chemical found in cannabis plants.

As of the end of 2020, fifteen states have legalized adult recreational marijuana cultivation, sale, and use.<sup>2</sup> Adult-use legalization began in the West when Colorado and Washington legalized the sale of adult-use cannabis through ballot measures in 2012.<sup>3</sup> The trend spread among other Western states, then moved to some of the New England states, gained a foothold in the Midwest through Michigan and Illinois in 2019, and is now spreading to Northeastern and other states. In November 2020, voters in Arizona, Montana, New Jersey, and South Dakota approved measures legalizing or regulating recreational use.<sup>4</sup> See Figure 1. In addition, Canada legalized recreational cannabis sales in 2018.<sup>5</sup>

In New York, the governor and the state legislature actively considered legalization in 2019, and it was on the agenda in 2020 but was derailed by the pandemic. It is a major policy focus as the 2021 legislative session gets underway.<sup>6</sup> By a 60-32 margin, New York voters supported legalizing the recreational use of marijuana in a mid-November Siena College poll.<sup>7</sup>

Among neighboring states, New Jersey recently joined Massachusetts and Vermont in legalizing recreational use. Connecticut will also be considering legalization in 2021. Outside of the Northeast, New Mexico is also considering legalization. While Oklahoma has only legalized

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<sup>1</sup> Eli McVey, “US retail marijuana sales on pace to rise 40% in 2020, near \$37 billion by 2024, Marijuana Business Daily, June 30, 2020.

<sup>2</sup> National Conference of State Legislatures, see webpages on decriminalization, medical marijuana and legalizing adult recreational use. <https://www.ncsl.org/bookstore/state-legislatures-magazine/marijuana-deep-dive.aspx>

<sup>3</sup> Jack Healy. “Voters Ease Marijuana Laws in 2 States, but Legal Questions Remain.” *New York Times*. November 7, 2012. <https://www.nytimes.com/2012/11/08/us/politics/marijuana-laws-eased-in-colorado-and-washington.html>

<sup>4</sup> Marijuana Policy Project. Marijuana Tax Revenue in States that Regulate Marijuana for Adult Use, December 2020. <https://www.mpp.org/issues/legalization/marijuana-tax-revenue-states-regulate-marijuana-adult-use/>

<sup>5</sup> Dan Bilefsky. “Legalizing Recreational Marijuana, Canada Begins a National Experiment.” *New York Times*. October 17, 2018. <https://www.nytimes.com/2018/10/17/world/canada/marijuana-pot-cannabis-legalization.html>

<sup>6</sup> Governor Andrew M. Cuomo, “Governor Cuomo Announces Proposal to Legalize and Create an Equitable Adult-use Cannabis Program as Part of the 2021 State of the State,” Press Release, January 6, 2021.

<https://www.governor.ny.gov/news>

<sup>7</sup> <https://scri.siena.edu/2020/11/24/5216/>

medical marijuana at this point, 10 percent of the state’s adult population has received patient medical certification, and medical sales were nearly \$800 million in 2020.<sup>8</sup>

Although cannabis sales are legal in an increasing number of states, marijuana possession is still illegal at the federal level. This has shaped state-level legal cannabis markets in various ways. Interstate trade in cannabis is prohibited. Industry revenues cannot be deposited in FDIC-insured institutions, and banking restrictions have made start-up loans difficult to obtain. These restrictions result in a largely cash-only industry, a feature that entails additional security and cash transportation expenses. Cannabis business owners are also limited in the extent to which they can take advantage of federal tax deductions.<sup>9</sup>

**Figure 1**  
**States that have legalized sale of recreational-use marijuana**

State	Year legalized	1st legal sale
Colorado	2012	Jan. 2014
Washington	2012	Jul. 2014
Alaska	2014	Feb. 2015
Oregon	2014	Oct. 2016
Nevada	2016	Jul. 2017
California	2016	Jan. 2018
Massachusetts	2016	Nov. 2018
Maine	2016	Oct. 2020
Michigan	2018	Dec. 2019
Vermont	2018	Oct. 2022 or later
Illinois	2019	Jan. 2020
Arizona	2020	Jan. 2021
Montana	2020	Jan. 2022
South Dakota	2020	Apr. 2022 or later
New Jersey	2020	

Because of the federal prohibition on interstate marijuana trade, the cannabis business is forced to conduct inter-firm transfers entirely intra-state. This has an upside in boosting the in-state economic impact of the marijuana trade. This situation could change if the federal prohibition on marijuana is relaxed. If this occurs, the boost to production could intensify the downward

<sup>8</sup> <https://www.mpp.org/issues/medical-marijuana/state-by-state-medical-marijuana-laws/medical-marijuana-patient-numbers/>

<sup>9</sup> Heather Trela. Clash of Laws: The Growing Dissonance between State and Federal Marijuana Policies. Rockefeller Institute of Government. January 25, 2018; Ulrik Boesen. “Marijuana Revenues Could Take a Hit.” Tax Foundation. September 26, 2019. <https://taxfoundation.org/safe-banking-act-state-marijuana-revenues/>; MPG. The Economic Impact of Marijuana Legalization in Colorado. October 2016; Rene Chun. “Ending Weed Prohibition Hasn’t Stopped Drug Crimes,” *The Atlantic*. January/February 2019. <https://www.theatlantic.com/magazine/archive/2019/01/california-marijuana-crime/576391/>; Stephen Fishman. “Can Medical Marijuana Dispensaries Deduct Their Business Expenses?” Nolo. <https://www.nolo.com/legal-encyclopedia/can-medical-marijuana-dispensaries-deduct-their-business-expenses.html>, Mike Coner. “How Cannabis Dispensaries Can Maximize Federal Tax Deductions.” EZGreen. May 21, 2019. <https://www.ezgreencompliance.com/how-cannabis-dispensaries-can-maximize-federal-tax-deductions/>

pressure on prices.<sup>10</sup> New York and other states that have already legalized adult use likely will engage federal officials to maintain a reasonable degree of state control.

The current wave of liberalization can be attributed to a number of factors. Public support for legalizing the use of marijuana has steadily increased over recent decades, rising from 16 percent in 1989 to 67 percent in 2019.<sup>11</sup> Legalization promises the possibility of reducing, if not eliminating, the illegal market, bringing both producers and consumers into a regulated market. Further, a rapidly growing cannabis market makes legalization of sales and the attendant tax revenue attractive for state and local leaders.

Concerns about social equity also drive marijuana reform policy. Blacks and whites use marijuana at roughly similar rates. In 2018, among survey respondents aged 18 and up, 12.8 percent of Blacks and 10.8 percent of whites reported having used marijuana in the past month.<sup>12</sup> According to an American Civil Liberties Union analysis, though, Blacks were 3.64 times more likely than whites to be arrested for marijuana possession in 2018.<sup>13</sup> In New York during the first half of 2019, Black and Latinx people accounted for 75 percent of those arrested for low-level marijuana, despite being only 33 percent of the state's population.<sup>14</sup> In all 50 states, Blacks had higher marijuana possession arrest rates. A Human Rights Watch report cites 2003 data showing that Blacks in the U.S. were sent to state prisons on drug charges at ten times the rate of whites.<sup>15</sup>

Disparities in arrest and imprisonment rates serve to perpetuate broader social inequities. Even once a prison sentence is completed, a conviction can continue to claim a price, serving as a barrier in many aspects of life including voting, jury service, employment, student loans, and housing.

Advocates argue that legalization is not sufficient to address the legacy of past and present inequities, but that affirmative policies need to be adopted. These range from expungement of criminal records to ensuring that communities disproportionately impacted by the federal War on

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<sup>10</sup> Ulrik Boesen. "Marijuana Revenues Could Take a Hit." Tax Foundation. September 26, 2019. <https://taxfoundation.org/safe-banking-act-state-marijuana-revenues/>

<sup>11</sup> Andrew Daniller. "Two-thirds of Americans support marijuana legalization." November 14, 2019. Pew Research Center. <https://www.pewresearch.org/fact-tank/2019/11/14/americans-support-marijuana-legalization/>

<sup>12</sup> Substance Abuse and Mental Health Services Administration. Results from the 2018 National Survey on Drug Use and Health: Detailed Tables. <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHDetailedTabs2018R2/NSDUHDetailedTabs2018.pdf>

<sup>13</sup> American Civil Liberties Union. A Tale of Two Countries: Racially Targeted Arrests in the Era of Marijuana Reform. <https://www.aclu.org/report/tale-two-countries-racially-targeted-arrests-era-marijuana-reform>

<sup>14</sup> Drug Policy Alliance, "Marijuana Reform in New York," <https://drugpolicy.org/new-york/marijuana-reform>.

<sup>15</sup> Jamie Fellner. Human Rights Watch. "Race, Drugs, and Law Enforcement in the United States." <https://www.hrw.org/news/2009/06/19/race-drugs-and-law-enforcement-united-states#>



Drugs and criminal prosecution and incarceration benefit from the booming legal cannabis industry.<sup>16</sup>

Section 2 summarizes the policy choices New York faces in legalizing recreational use. In Section 3, we present our estimates of recreational-use market demand in New York, and Section 4 examines the economic and employment implications. The addition of 40,000 to 50,000 jobs over the next few years would be welcome in light of the lingering adverse economic impacts of the Covid-19 pandemic, particularly in communities of color hard hit by business closings and job loss. New York may have a limited window to develop an in-state industry as state-by-state legalization is accelerating and support grows for the federal government to legalize marijuana use, sale, and interstate trade.

Section 5 presents our marijuana excise and sales tax estimates over the first five years of legal recreational-use sales and examines those projections in light of the trajectory of revenue streams for other states. In addition to estimating tax revenues related to the sale of marijuana, Section 6 discusses our estimates of the state and local tax revenues related to the economic activity itself—the taxes stemming from the earnings of those involved (directly and indirectly) in producing, processing, and selling legal marijuana, and from the multiplier effects in inducing additional economic activity as those earnings are spent in the local economy. Local revenue estimates depend on whether a locality opt in to allow marijuana businesses.

State legalization of marijuana involves closely regulating all phases of the supply chain from cultivation through processing, distribution, testing, and retail sales to consumers. New York's policy makers have significant latitude in how they shape the marijuana supply chain, and with it the implications for employment, tax revenue, and social equity considerations. The State faced many of these considerations in regulating medical marijuana in the Compassionate Care Act signed into law in July 2014. However, there is much more at stake in legalizing recreational use since the recreational market is potentially 10-20 times the size of the medical market, although that market has been limited by the number of providers, limits on qualifying treatments, and the exclusion of marijuana flower from medical uses. Social equity concerns also loom large with regard to recreational use legalization. To help inform the policy discussions related to how New York chooses to structure the recreational marijuana market, Section 7 explores the economic and tax effects of different industry structures and discusses the marginal in-state economic benefits from a unionized workforce.

Section 8 provides a conclusion and recaps the policy choices involved in decisions regarding how to regulate and structure a legalized recreational-use marijuana industry in New York.

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<sup>16</sup> Makada Henry-Nickie and John Hudak. It is time for a Cannabis Opportunity Agenda. March 23, 2020. Brookings Institution. <https://www.brookings.edu/policy2020/bigideas/it-is-time-for-a-cannabis-opportunity-agenda/>

## 2. Policy choices New York faces in regulating and structuring the legal marijuana market

Legalization, far from being a resolution of how to address cannabis use, entails a range of policy choices. In making these choices, policy makers are faced with concerns ranging from public health and social equity, to economic and employment opportunities, to tax revenue generation.

The form that cannabis markets will take is not a given, and policy choices can shape market structure. For-profit systems have been adopted thus far in the U.S., but in Canada both private and state-owned stores operate.<sup>17</sup> States have diverged with respect to vertical integration, the consolidation in one company of two or more stages of production, with the practice being allowed, prohibited, or even required depending on the jurisdiction.

Licensing practices can be used to achieve social equity goals, such as in California, where the state and local governments have funded social equity programs.<sup>18</sup> The City of Los Angeles' program offers benefits including expedited business license application and renewal processing, business license and compliance assistance, and fee deferrals based on criteria such as income, residence, and conviction for a cannabis-related offense prior to legalization.<sup>19</sup> When states act to open up new business opportunities on any significant scale as is the case here, great care needs to be taken to withstand inevitable legal challenges.

In his State of the State this year, Governor Andrew Cuomo pledged that his legalization plan would include “Robust social and economic equity benefits to ensure New York’s law will create an egalitarian adult-use market structure that does not just facilitate market entry but ensures sustained market share for entrepreneurs in communities that have been most harmed by cannabis prohibition.”<sup>20</sup>

Legalization will open up small retail opportunities in urban neighborhoods throughout the state that have experienced widespread pandemic-related restaurant and other small business closures. State policy makers are in a position to wield considerable influence in shaping the industry’s

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<sup>17</sup> Reuters staff. “Pot Nation: Canadian provinces’ legal cannabis store regulations.” October 17, 2018. <https://www.reuters.com/article/us-canada-marijuana-factbox/pot-nation-canadian-provinces-legal-cannabis-store-regulations-idUSKCN1MR213>

<sup>18</sup> Marijuana Business Daily. April 21, 2020. <https://mjbizdaily.com/california-provides-another-30m-for-marijuana-social-equity-programs/>

<sup>19</sup> City of Los Angeles Department of Cannabis Regulation. Social Equity Program. <https://cannabis.lacity.org/licensing/social-equity-program-2>

<sup>20</sup> Governor Andrew M. Cuomo, State of the State, Reimagine Rebuild Renew, January 2021, pp. 84-85.

market structure and economic opportunities in a manner that could benefit communities that have disproportionately borne the adverse consequences of marijuana criminalization.

Licensing policies bear not only on retail outcomes but also those of cultivators. For example, the ballot proposition that legalized cannabis in California included a protection for small farmers, many of whom had been cultivating cannabis for decades. Small legacy operators feared that a newly-legalized market would bring about the entry of large firms and wipe them out.<sup>21</sup>

Small farming interests in New York have voiced similar concerns, pointing out the local economic benefit of small businesses whose owners are more likely to spend profits in communities where their businesses are located. Many New York hemp farmers, encouraged by a 2017 state program to expand hemp production, are eyeing the prospect of expanding into adult-use cannabis production.<sup>22</sup> Permitting home grow will also mean business for local gardening suppliers.

Another policy choice concerns how cannabis products will be taxed. Taxation is not only a source of revenue but also a tool for shaping the market. The three primary forms through which cannabis is taxed are by price, by weight, and by potency (i.e., the level of THC, the main psychoactive compound of cannabis). Most states have opted to tax on the basis of price (ad valorem). Alaska taxes by weight, and Illinois is the only state to currently tax on the basis of potency. Some states levy the ad valorem tax on the wholesale transaction, and some levy their general sales tax in addition to the excise tax. In addition, some states allow localities to also levy a tax.<sup>23</sup> Taxation can occur along the entire supply chain to help reduce leakage of cannabis into the illicit market and maximize revenue collection. Lack of access to banking complicates tax collection.<sup>24</sup>

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<sup>21</sup> Under the provisions of the ballot proposition, sales of licenses were to be restricted to farms of one acre or smaller for the first five years of legalization. However, the state Department of Food and Agriculture subsequently issued a rule permitting applicants to seek an unlimited number of small-farm licenses, thus circumventing the initiative’s intent. Research from the University of California, Berkeley’s Cannabis Research Center indicates that “larger farms pressure all farms to get bigger, go underground or get out.” Los Angeles Times Editorial Board. “California’s new pot rules violate the promise to small farmers.” December 16, 2017, <https://www.latimes.com/opinion/editorials/la-ed-marijuana-farms-20171216-story.html>; Michael Polson. “Don’t let big agriculture squeeze out small cannabis farms.” UC Berkeley Blog. <https://blogs.berkeley.edu/2020/02/18/dont-let-big-agriculture-squeeze-out-small-cannabis-farms/>.

<sup>22</sup> New York Small Farm Alliance of Cannabis Growers and Supporters (aka NY Small Farma Ltd.), “Creating Opportunity and Justice with Regenerative Cannabis: A Challenge to New York,” December 2020, <https://nysmallfarma.org/talkingpoints>; New York Cannabis Growers and Processors Association, <https://nycgpa.org/>. Small farm advocates also point out the energy-intensive nature of indoor cultivation as compared to field cultivation.

<sup>23</sup> Tax Policy Center. “Tax Policy Center Briefing Book: How do marijuana taxes work?” <https://www.taxpolicycenter.org/briefing-book/how-do-marijuana-taxes-work>

<sup>24</sup> Marissa Cooper, Paul Ghazal, and Anna Sherman-Weiss. Legalizing Marijuana in Vermont: A Spectrum of Economic Possibilities. Policy Research Shop Briefing 1516-06. March 10, 2016. The Nelson A. Rockefeller Center at Dartmouth College. <https://rockefeller.dartmouth.edu/report/legalizing-marijuana-vermont>

In New York, Governor Cuomo’s revised cannabis legalization proposal includes a potency tax as well as an excise tax and state and local sales tax applicability. The New York State Senate and Assembly bills introduced in the new session continue their previous proposal for a 22 percent excise tax (including four percent for local governments). Section 5 discusses the New York revenue proposals in greater detail.

Choosing tax structures can involve trade-offs. As markets expand and prices drop, revenue from an ad valorem tax may still grow, but at a decreasing rate. Taxing by weight risks inducing users to consume higher potency products. A potency tax offers the advantage of countering “the tendency of the cannabis market to move toward more-potent products.”<sup>25</sup> A tax that is very low may encourage excessive use because there is some price elasticity of demand (a low cost, everything else being equal, will result in increased demand and, possibly, usage). A tax that is very high may keep users from entering the legal market or, where the option exists, may drive them to the medicinal market, where cannabis is generally just taxed at the standard sales tax rate without a separate excise tax. It is believed that California’s effective tax rate of around 40 percent was too high to draw consumers away from the illicit market.<sup>26</sup>

Establishment of a legal market in no way ensures the rapid elimination of the illicit one. Undermining the illicit market hinges on users being drawn to the legal market by the assurance of quality, safety and fair prices. In most states that have legalized adult-use cannabis, the majority of sales are still estimated to be in the illegal market.<sup>27</sup> One exception may be Colorado,

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<sup>25</sup> Beau Kilmer and Mark A.R. Kleiman, “Navigating Cannabis Legalization 2.0,” <https://www.rand.org/blog/2018/12/navigating-cannabis-legalization-20.html>

<sup>26</sup> Ulrik Boesen, “A Road Map to Recreational Marijuana Taxation,” Tax Foundation, Fiscal Fact No. 713, June 2020, p. 9.

<sup>27</sup> BDS Analytics and Arcview Market Research as cited in Patrick McGreevy. “California now has the biggest legal marijuana market in the world. Its black market is even bigger,” Los Angeles Times. August 15, 2019. <https://www.latimes.com/california/story/2019-08-14/californias-biggest-legal-marijuana-market> New Frontier Data. “Canna Bit: U.S. Cannabis Cultivation in California--2019 Supply and Demand.” November 10, 2019. <https://newfrontierdata.com/cannabis-insights/u-s-cannabis-cultivation-in-california/>. Naomi Martin. “Why most Mass. marijuana sales are on the black market, two years after legalization,” Boston Globe. February 2, 2019. <https://www.bostonglobe.com/news/marijuana/2019/02/02/illicit-pot-market-remains-stubbornly-robust/Fqq5baxLvqkrTB1ABJRbEL/story.html> Oregon Liquor Control Commission. 2019 Recreational Marijuana Supply and Demand Legislative Report. January 21, 2019. [https://www.oregon.gov/olcc/marijuana/Documents/Bulletins/2019%20Supply%20and%20Demand%20Legislative%20Report%20FINAL%20for%20Publication\(PDFA\).pdf](https://www.oregon.gov/olcc/marijuana/Documents/Bulletins/2019%20Supply%20and%20Demand%20Legislative%20Report%20FINAL%20for%20Publication(PDFA).pdf). Beau Kilmer et al. “After the Grand Opening: Assessing Cannabis Supply and Demand in Washington State.” RAND Corporation, 2019. [https://www.rand.org/pubs/research\\_reports/RR3138.html](https://www.rand.org/pubs/research_reports/RR3138.html)

where one analysis concluded that in 2017 the illegal market had been “fully absorbed into the regulated market.”<sup>28</sup>

Local ordinances banning cannabis dispensaries can undermine the development of a successful legal market, depending on the degree of geographical concentration of the bans. In California, as of May 2019, 76 percent of cities and 69 percent of counties were reported to have prohibited cannabis stores.<sup>29</sup> However, regulations adopted that year allow licensed delivery into all cities.<sup>30</sup>

In New York’s 2014 Compassionate Care Act legalizing medical marijuana, a labor peace provision was included under which an employer agrees to remain neutral in a union organizing campaign and the union agrees not to picket or engage in an economic action such as a strike against the employer. California and Illinois have included labor peace provisions in their legislation legalizing recreational use marijuana. Such agreements have been used in several industries, including shipbuilding, communications, hotels, and casinos, including in New York. Most of New York’s medical marijuana firms have been unionized and are represented by Local 338 of the United Food and Commercial Workers, whose parent union represents roughly 10,000 cannabis workers in more than a dozen states.<sup>31</sup> Unionized cannabis workers typically receive much better compensation and benefits than non-union retail, manufacturing, and agricultural workers.

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<sup>28</sup> Marijuana Policy Group. Market Size and Demand for Marijuana in Colorado—2017 Market Update. n.d. <https://www.colorado.gov/pacific/sites/default/files/MED%20Demand%20and%20Market%20Study%2020082018.pdf>

<sup>29</sup> Patrick McGreevy. More cannabis shops in ‘weed desert’ cities? California lawmakers just sank that idea.” Los Angeles Times. May 30, 2019. <https://www.latimes.com/politics/la-pol-ca-bill-requiring-cities-permit-pot-shops-20190528-story.html>

<sup>30</sup> Los Angeles Times Editorial Board. “Why can’t California find the pot tax sweet spot?” December 29, 2019. <https://www.latimes.com/opinion/story/2019-12-29/marijuana-california-potency-tax>

<sup>31</sup> Josh Marcus, “Meet America’s Most Powerful Cannabis Union,” *Rolling Stone*, June 14, 2019.

### 3. New York market demand

Our focus in this report on the economic and tax revenue impacts begins with a baseline estimate of New York legal market demand for marijuana. Legislation enacted in 2021 would require a year or more for the development and implementation of regulations and licensing. Legal sales could possibly commence during state fiscal year 2023, which begins April 1, 2022. As the businesses involved in the supply chain get established, the volume of legally supplied and sold marijuana would expand incrementally over subsequent years. We model New York marijuana demand from 2020-2027, and legal market sales from 2023-2027. Since we want to relate legal market sales to state and local tax revenues, *all of our modeling is presented here on a state fiscal year basis*. The discussion below is presented in terms of the major steps in estimating market demand. Appendix Figure 1 details the estimates for each step.

*Users* The annual National Survey on Drug Use and Health (NSDUH) is widely used to estimate marijuana usage, both legal and illegal. We draw on pooled data from the 2018 and 2019 surveys that indicate that 11.36 percent of New Yorkers ages 18 and over had used marijuana in the prior month.<sup>32</sup> Applying this to New York’s 2019 population of people ages 21 and over (14.59 million) yields an estimate of 1.66 million adult marijuana users. Since it is reasonable to assume that legalization and state-monitored quality control will lead to increased social acceptability and usage, we gradually increase the usage rate from 11.36 percent in 2019 to 14 percent by 2027. This is a fairly conservative estimate considering that the usage rates are greater than New York’s for the six states where recreational usage has been legal since 2018 (CA, CO, MA, NV, OR, and WA.) See Figure 2. We assume the 21+ age New York population remains constant so that a usage rate of 14 percent in 2027 would mean 2.04 million marijuana users.

*Usage and market demand (units)* The 2018 New York Department of Health report modeled a range of 5.0 to 7.9 ounces for average annual usage. It is important to recognize that the bulk of cannabis is consumed by a minority of users. Household survey data indicate that 20 percent of people who report using marijuana in the past year consume 80 percent of the marijuana consumed.<sup>33</sup> Therefore, undermining the illicit market hinges on these users being drawn to enter the legal one. The January 2019 RAND report for New York surveyed regular New York users and estimated that daily or near-daily users had much greater than average consumption. The RAND study estimated average annual New York usage of 9.046 ounces. We modeled a lower bound estimate using the 7.9 ounce figure and the RAND 9.046 value for the upper bound.

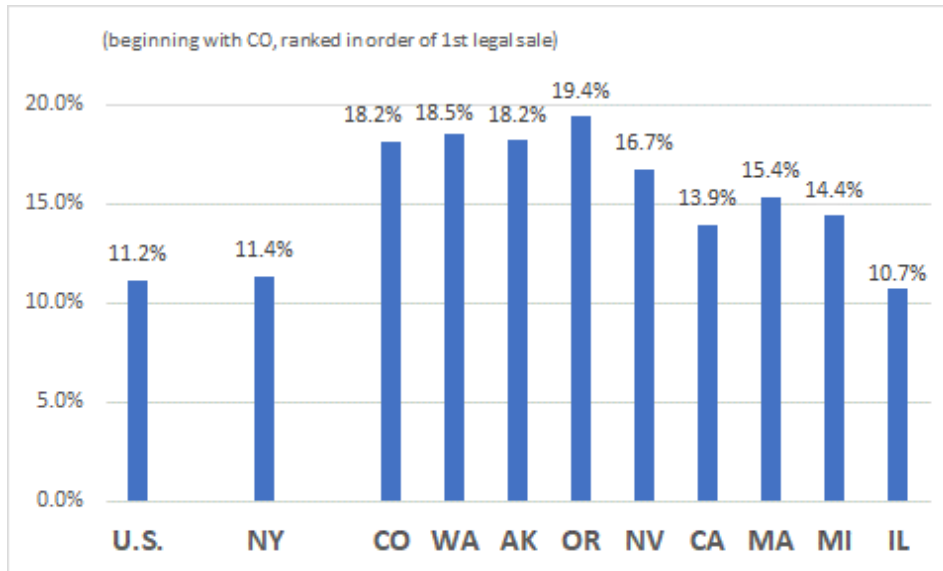
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<sup>32</sup> The NYS Department of Health’s 2018 report cited a usage rate of 8.5 percent for New Yorkers ages 12 and older for 2013-14. The Pardo, Kilmer, and Caulkins 2019 paper cited a 9.68 percent usage rate for 18+ from the 2015-16 NSDUH. (complete citations)

<sup>33</sup> Pardo, Kilmer and Caulkins op cit.

Appendix Figure 1 shows the midpoint of that range of 8.473 ounces. The range is +/- 6.8 percent around the midpoint value.

**Figure 2**  
**Marijuana usage rates (18 years +), 2018-19**



Source: National Survey on Drug Use and Health, 2018-19.

Multiplying the midpoint value of 8.473 by the estimated number of adult users resulted in a 2019 estimate of the New York market demand of a little over 14 million ounces, and a 2020 estimate of 14.2 million ounces. Our assumption regarding the gradual increase in the number of users generates a 2027 market demand of 17.3 million ounces. This translates into an average annual growth in the physical units of market demand of 2.8 percent from 2020 to 2027.

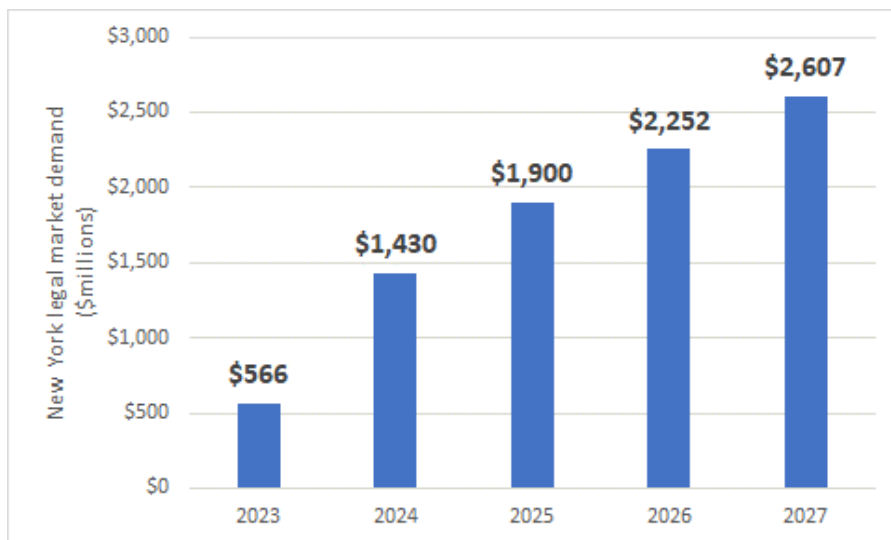
To recap our assumptions so far in estimating New York recreational use marijuana demand: we assume a slight increase in the percent of adult users but constant values for the 21+ adult population and for average usage (as a midpoint in a range.) We also implicitly assume that the average THC content of legal marijuana is constant over the 2020-2027 period.

*Price and market demand (value)* Marijuana prices are inherently difficult to predict with precision, but we assume that the accelerated pace of legalization underway across several states and possible legalization at the federal level will entail a corresponding increase in legal market supply that will put downward pressure on legal market prices. We assume a \$280 per ounce average price for 2020 and model a *two percent annual reduction in prices* for 2021 through 2027 (reducing the price to \$243 per ounce in 2027).

Since the average price decline of 2 percent is nearly as much as the average 2.8 percent physical unit growth in market demand, the dollar value of total market demand increases only slightly over the 2020-2027 period. We estimate that market demand value of \$3.98 billion in 2020 will increase at an average pace of about 0.8 percent, reaching \$4.21 billion in 2027.

*Legal market share and demand* A major objective of legalization is for the legal market to grow at the expense of the illegal market. As experience has shown, this occurs gradually, in part because it takes some time to expand the supply of legal marijuana, for retail dispensaries to be established, and for consumer acceptance to be established and broaden. We looked at the experience of two of the states that were among the first to legalize—Oregon and Washington—and modeled the average pace of legal market expansion for those two states. Over the first five years of legalization, this entailed a legal market share of 14 percent in the first year (FY 2023) rising to 62 percent in the fifth year (projected to be 2027 in New York’s case).<sup>34</sup> This phase-in for legal market share translates to \$566 million in legal market demand in 2023, rising to \$2.6 billion in 2027. See Figure 3.

**Figure 3**  
**Estimated growth in recreational-use marijuana demand in New York, 2020-2027**



Source: Authors’ estimates

The New York legal market demand for recreational-use marijuana likely would keep growing beyond 2027. While some illicit market activity might continue, if that legal market share was 62 percent in 2027, it could keep expanding until it reached 90 percent or more of the total market

<sup>34</sup> Appendix Figure 1 indicates the legal market shares of 35 percent in FY 2024, 46 percent in FY 2025, and 54 percent in FY 2026.



demand. In that case, there would be another 50 percent or so increase beyond the 2027 level to something in the neighborhood of \$3.9 billion.

The volume of legal market demand we have modeled should be considered a conservative estimate when compared to the experience of the eight major states that had recreational sales in 2020. The large urban industrial states of Illinois and Michigan make useful comparators for New York. In 2020, the first full year of legal sales for both states, Illinois had legal marijuana sales of \$580 million and Michigan had \$450 million in sales. See Figure 4.

We do not consider the effect of home production on the size of the legal market or potential tax revenue. Colorado, California, and Canada permit limited home production of recreational marijuana for personal use, and the best available data suggest that only one to four percent of users engage in home production with little impact on the retail marketplace.<sup>35</sup> (In New York, the legislature’s recreational-use legalization bills allow for limited home production, but the Governor’s bill does not.)

Our first-year estimate of \$566 million for New York is much lower than Illinois or Michigan when adjusted for the number of regular marijuana users. Adjusted for the number of adult users,

**Figure 4**  
**Legal recreational-use marijuana sales, 8 leading states**

	CO	WA	OR	NV	CA	MA	MI	IL
Date sales commenced	Jan. 2014	Jul. 2014	Oct. 2016	Jul. 2017	Jan. 2018	Nov. 2018	Dec. 2019	Jan. 2020
FY 2014	\$684							
2015	\$996	\$260						
2016	\$1,307	\$537	\$103					
2017	\$1,508	\$851	\$351					
2018	\$1,546	\$973	\$411	\$530	\$1,094			
2019	\$1,748	\$1,047	\$511	\$639	\$1,755	\$130		
2020	\$1,830	\$1,266	\$666	\$685	\$2,984	\$481	\$450	\$580

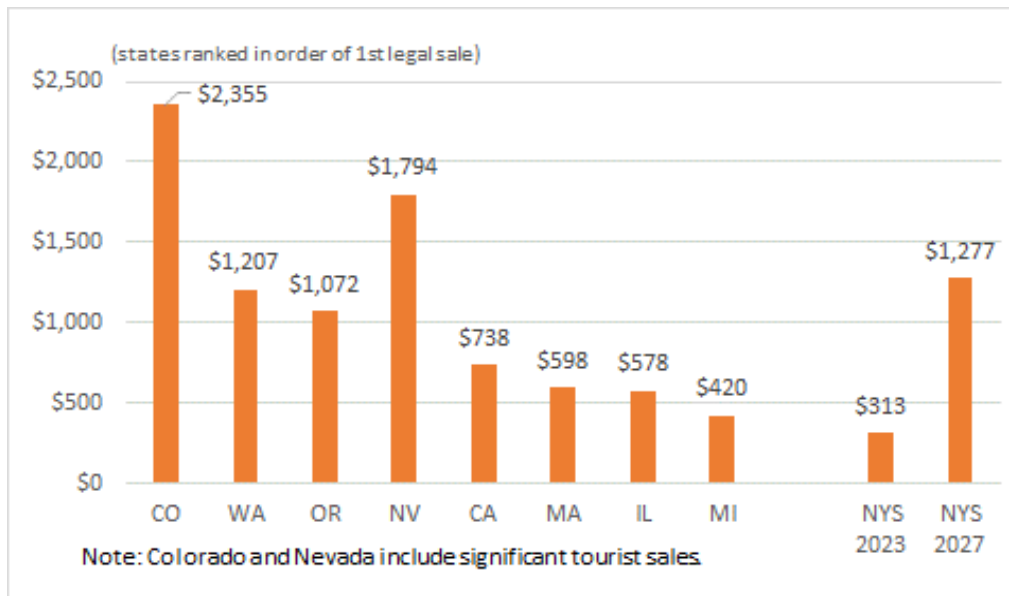
Sources: State revenue reports.

New York’s first-year average sales would be \$313 per user, just a little over half the \$578 in per user consumption in Illinois and about three-fourths of the \$420 average users spend in Michigan. Our fifth-year estimate (FY 2027) for New York is \$1,277, close to the Washington level and below the per user sales for Colorado and Nevada. See Figure 5.

<sup>35</sup> Timothy P. Nadreau and T. Randall Fortenbery, “2020 Contributions of the Washington Cannabis Sector,” Washington State University, School of Economic Sciences, 2020, p. 19.

## Figure 5

Per user recreational marijuana annual sales for 8 leading states in 2020, and projected for New York State 2023 and 2027



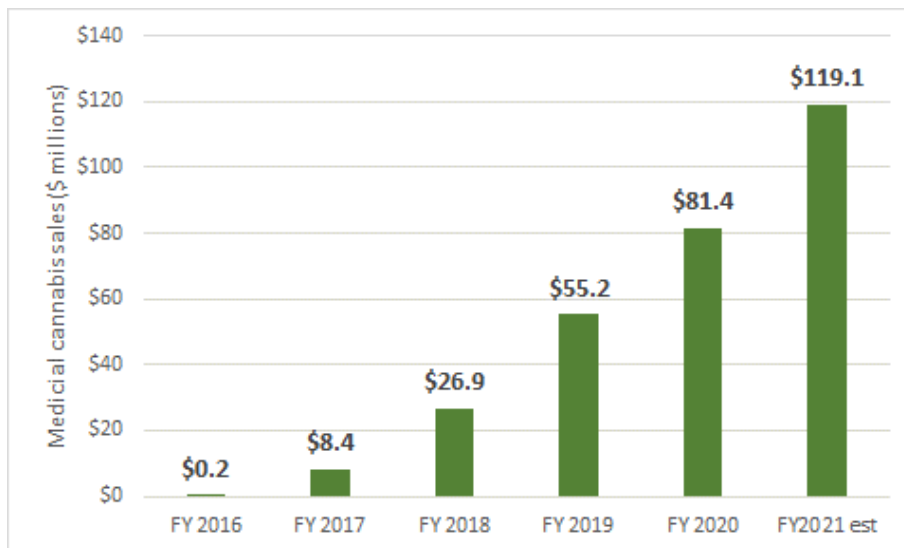
Sources: 2020 sales figures from Figure 4; per user data from the National Survey of Drug Use and Health, 2019; and 21+ population data from the American Community Survey.

The projections made above regarding the size of New York’s legal recreational-use marijuana market are based on what we consider the best available information but are not offered as precise predictions. They should be considered as within a range of plus or minus 20 percent, depending on a number of factors, including the specifics of the final legislation and policy choices on business requirements and taxation levels, as well as consumer market factors such as usage trends and legal market prices.

*Medical marijuana* Dispensing began under New York’s medical cannabis program in FY 2016. The program is administered by the State Department of Health, which currently regulates the number of registered manufacturing and distribution organizations. The 2014 Compassionate Care Act establishing the medical cannabis program required vertically integrated businesses, with each registered manufacturer permitted to have four retail dispensing facilities. Currently there are 10 registered organizations (nine of the 10 are multistate operators, while one is independent) and 40 medical dispensaries, with 11 in New York City.<sup>36</sup>

<sup>36</sup> For a list, see [https://www.health.ny.gov/regulations/medical\\_marijuana/application/selected\\_applicants.htm](https://www.health.ny.gov/regulations/medical_marijuana/application/selected_applicants.htm)

**Figure 6**  
**New York medical marijuana sales**



Source: NYS Department of Tax and Finance, FY 2021 estimate based on 9 months data

As of January 19, 2021, there were 3,120 registered practitioners and 136,090 certified patients. Medical cannabis has been approved for treating a limited number of medical conditions, with chronic pain the most common (53 percent), followed by neuropathies (15 percent) and cancer (12 percent).<sup>37</sup> New York’s medical marijuana program has been considered one of the most restrictive in the country with a ban on smokable flower, patient-access issues, and a relatively small number of dispensaries. New York levies a seven percent excise tax on the gross receipts of medical cannabis. Based on tax receipts through December 2020, medical cannabis collections are projected to total \$8.3 million and total sales to reach \$119 million for FY 2021. See Figure 6. In contrast, Florida, which started a medical marijuana program about the same time as New York and has a roughly comparable population, has 435,000 certified patients, 286 dispensaries, and projected annual sales of over \$750 million.<sup>38</sup>

<sup>37</sup> [https://www.health.ny.gov/regulations/medical\\_marijuana/about.htm](https://www.health.ny.gov/regulations/medical_marijuana/about.htm)

<sup>38</sup> Jeff Smith, “Could New York’s limited medical cannabis program hamper a new adult-use market?” *Marijuana Business Daily*, October 28, 2020.

#### 4. Economic impact of a legal cannabis supply chain

The economic impact of the legalization of adult-use cannabis in New York was modeled using IMPLAN, a widely-used input-output platform. IMPLAN incorporates detailed Bureau of Economic Analysis data that identify the production relationships between U.S. industries. Through IMPLAN, users can estimate how a change in economic activity will impact the larger economy with respect to output, employment, income, and taxes at a local or state level.

Economic impacts are classified as direct, indirect, and induced. In the cannabis industry, economic impacts begin with consumer purchases at a retailer or dispensary. The money consumers spend and the jobs the store create are both direct impacts. Indirect impacts result from the business to business purchases in the supply chain resulting from the initial consumer purchase. A retailer's purchases from a wholesale distributor, for example, prompt the distributor to order product and support employment at the firm. Finally, the household spending by both the retailer's employees and the employees of businesses in the retailer's supply chain constitute induced effects.

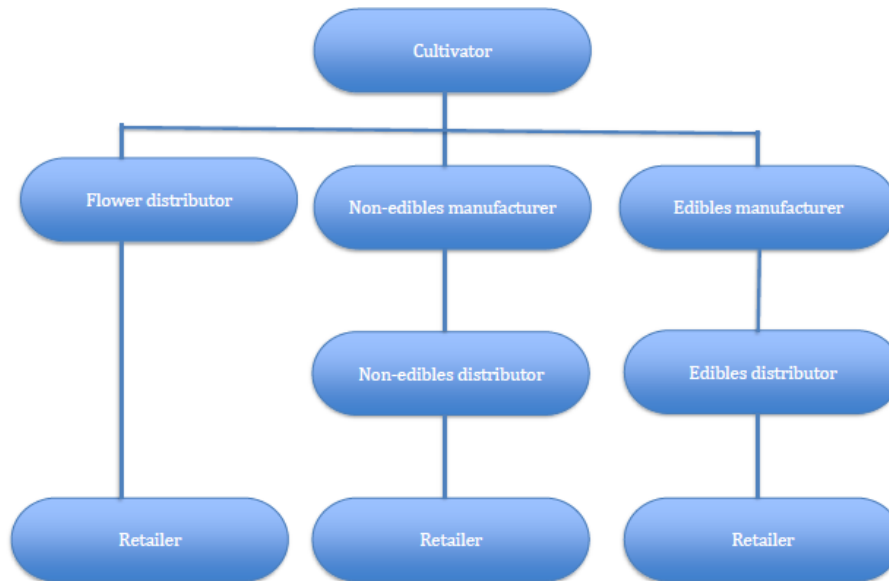
Because marijuana is still illegal under federal law, federal agencies such as the Census Bureau and the Bureau of Labor Statistics do not collect all the types of data pertaining to the cannabis industry that are typically available for other industries.<sup>39</sup> Therefore, to model the cannabis industry, analysts need to either collect their own data or adapt other standard data sources to approximate the cannabis industry. For this analysis, both were done.

The cannabis industry comprises four main segments: cultivation, manufacturing, distribution, and retail. Cannabis products fall into three broad categories: flower and other unmanufactured plant material, manufactured non-edible products (such as concentrate), and manufactured edible products. Therefore, three distinct supply chains were modeled as depicted in Figure 7. The market shares of the three product categories were estimated using detailed product data obtained from a California cannabis dispensary and statewide estimates from California, Colorado, and Oregon.<sup>40</sup> They were apportioned as follows: flower (50 percent), non-edible manufactured product (35 percent), and edible manufactured product (15 percent).

<sup>39</sup> The State of Oregon Employment Department has begun including data on employment and wages in the state's legal cannabis industry in the Quarterly Census of Employment and Wages (QCEW), as state departments of labor nationwide do for all other formal employment. See Guy Tauer, State of Oregon Employment Department, "Oregon's Marijuana Industry and Employment Trends." June 8, 2020. <https://www.qualityinfo.org/-/oregon-s-marijuana-industry-and-employment-trends>

<sup>40</sup> BDS Analytics. "Breaking Down Year 1 of California Adult-Use Sales." <https://bdsa.com/breaking-down-year-1-of-california-adult-use-cannabis-sales-2/>; Roy Bingham and Jessica Lukas. "BDS Analytics' Top Ten Cannabis

**Figure 7**  
**Cannabis supply chain**



Industry categories available within IMPLAN were selected to match the cannabis industry segments as closely as possible. See Figure 8. Estimates for the costs of intermediate inputs (goods and services used to produce products) and labor were obtained for cannabis cultivators in the U.S. and Canada and from the California cannabis dispensary. The spending patterns of the cultivators and retailers modeled in IMPLAN were adjusted to reflect these cannabis-specific data. For the cultivation, distribution, and manufacturing segments, the model was adjusted with the aim to capture the fact that all cannabis would be grown and purchased within New York.

While the cannabis industry supply chain logically begins with the cultivators, the modeling process starts with consumer purchases from the retailer. Those purchases put in motion an economic process, as consumer demand is translated into output, employment, and tax impacts all along the supply chain. Beyond cannabis products, a dispensary also spends money on items

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Market Trends for 2019.” <https://bdsanalytics.com/wp-content/uploads/2019/01/BDS-Analytics-Top-10-Trends-2019.pdf> ; MPG and Leeds School of Business. “2019 Regulated Market Update.” <https://www.colorado.gov/pacific/sites/default/files/2019%20Regulated%20Marijuana%20Market%20Update%20Report%20Final.pdf> ; Oregon Liquor Control Commission. 2019 Recreational Marijuana Supply and Demand Legislative Report. [https://www.oregon.gov/olcc/marijuana/Documents/Bulletins/2019%20Supply%20and%20Demand%20Legislative%20Report%20FINAL%20for%20Publication\(PDFA\).pdf](https://www.oregon.gov/olcc/marijuana/Documents/Bulletins/2019%20Supply%20and%20Demand%20Legislative%20Report%20FINAL%20for%20Publication(PDFA).pdf)

## Figure 8

<u>Cannabis industry segment</u>	<u>Selected IMPLAN industry category</u>
Cultivation	Greenhouse, nursery, and floriculture production
Non-edible manufacturing	Medicinal and botanical manufacturing
Edible manufacturing	All other food manufacturing
Distribution	Wholesale - Other nondurable goods merchant wholesalers
Retail	Miscellaneous store retailers

such as rent, advertising, marketing, and legal costs. Likewise, a cannabis wholesale distributor requires storage space and purchased or leased vehicles. Other costs include fuel, vehicle maintenance, logistics software, and security. Cannabis products manufacturers require equipment and packaging materials; they are also typically legally mandated to have their products tested for safety and potency by an independent laboratory. Cultivators' purchases vary according to their growing methods, with indoor and large-scale industrial operations requiring more inputs and hardware, but all operations involve acquiring seeds or clones (immature cannabis plants). In this way, the different segments of the cannabis industry impact a wide range of businesses throughout the economy. Collectively, these purchases represent the indirect—or business to business—impacts associated with the cannabis industry.

Modeling the supply chain requires estimating industry gross margins in order to estimate markup rates.<sup>41</sup> Employee compensation was estimated based on the data from the cannabis cultivators and retailer, as well as New York-specific data within IMPLAN.

Figure 9 summarizes the employment and economic impact estimates for New York associated with \$1 billion in cannabis retail sales. The bulk of jobs and economic output are projected to be in the retail sector, followed by cultivation. Each \$1 billion in consumer sales supports 14,498 jobs in the cannabis supply chain, 2,333 jobs in indirect industries that supply the cannabis sector, and 2,650 induced jobs that result from the spending of incomes directly and indirectly created by cannabis retail sales. In the model, a billion dollars in marijuana sales generates a total of \$2.337 billion in economic output in the New York economy.

These results can be linearly scaled to reflect varying levels of sales. Thus, the sales estimate for FY 2023 of \$566 million translates to a total employment estimate of 11,026 jobs. Similarly, the FY 2027 sales estimate of \$2,608 million would result in 50,806 total jobs. See Figure 10.

Value added refers to the amount by which the value of a product increases in a given stage of the production process. It excludes the value of products used to produce the final product. For instance, in manufacturing cannabis gummies, a manufacturing facility adds value to the

<sup>41</sup> Gross margin estimates were derived within IMPLAN and from the cannabis retailer's data, cannabis firms' quarterly earnings reports, CSI Market.com, and the website of corporate finance expert Aswath Damodaran of New York University Stern School of Business.

**Figure 9****Estimated employment and economic impact of legal marijuana cultivation and sale in New York State per \$1 billion in retail sales**

<b>BASELINE</b>	<b>TOTAL</b>	<b>Cultivator</b>	<b>Manufacturer</b>	<b>Distributor</b>	<b>Dispensary</b>
<b>Market sales (\$M)</b>	<b>\$1,000</b>				<b>\$1,000</b>
<b>Employment</b>					
Direct	14,498	4,778	563	248	8,909
Indirect	2,333	753	690	201	688
Induced	2,650	817	350	173	1,310
<b>Total jobs</b>	<b>19,481</b>	<b>6,349</b>	<b>1,603</b>	<b>622</b>	<b>10,907</b>
<b>Output (\$1M)</b>					
1 - Direct	\$1,296	\$343	\$204	\$92	\$657
2 - Indirect	\$565	\$156	\$191	\$40	\$177
3 - Induced	\$477	\$146	\$63	\$31	\$237
<b>Total output (\$M)</b>	<b>\$2,337</b>	<b>\$645</b>	<b>\$458</b>	<b>\$163</b>	<b>\$1,071</b>

Source: Authors' analysis based on modifications to IMPLAN regional input-output model.

production chain through the labor and equipment used. The value added in this stage of production does not include that of the raw cannabis or the flavoring or gelling agents; including these would result in double-counting, as they have already been accounted for when produced by their respective industry segments.

**Figure 10****Employment and economic impacts for projected FY 23 and FY 27 sales**

		projected FY 2023	projected FY 2027
<b>Market sales (\$M)</b>	<b>\$1,000</b>	<b>\$566</b>	<b>\$2,608</b>
<b>Employment</b>			
Direct	14,498	8,206	37,810
Indirect	2,333	1,320	6,084
Induced	2,650	1,500	6,912
<b>Total jobs</b>	<b>19,481</b>	<b>11,026</b>	<b>50,806</b>
<b>Output (\$1M)</b>			
1 - Direct	\$1,296	\$733	\$3,379
2 - Indirect	\$565	\$320	\$1,472
3 - Induced	\$477	\$270	\$1,244
<b>Total output (\$M)</b>	<b>\$2,337</b>	<b>\$1,323</b>	<b>\$6,096</b>

Source: Authors' analysis based on modifications to IMPLAN regional input-output model.

Value added comprises four components: Employee Compensation (wages and benefits), Proprietor Income, Other Property Income (such as corporate profits, rent, and interest), and Taxes on Production and Imports. The last category includes all payments to governments other than payroll and end of year income/profit taxes. So, for example, as Figure 11 indicates, for each \$1 billion in legal cannabis retail sales, an estimated \$848 million in employee compensation would be added to the New York economy. Figure 11 also shows the value added and income stream components for projected FY 2023 and FY 2027 legal market sales.

### Figure 11

#### New York total marijuana supply chain value added components for \$1 billion in retail sales, and for projected FY 2023 and FY 2027 sales

<b>\$ millions</b>		projected FY 2023	projected FY 2027
<b>Market sales</b>	<b>\$1,000</b>	<b>\$566</b>	<b>\$2,608</b>
<b>Value added</b>			
Direct	\$1,068	\$604	\$2,784
Indirect	\$363	\$206	\$948
Induced	\$390	\$221	\$1,016
<b>Total value added</b>	<b>\$1,821</b>	<b>\$1,031</b>	<b>\$4,748</b>
<b>Income streams</b>			
Employee compensation	\$848	\$480	\$2,211
Proprietor's income	\$331	\$187	\$863
Other property income	\$474	\$268	\$1,235
Taxes on production	\$169	\$95	\$439
<b>Total income streams</b>	<b>\$1,821</b>	<b>\$1,031</b>	<b>\$4,748</b>

Source: Authors' analysis based on modifications to IMPLAN regional input-output model.



## 5. New York tax revenue impact from recreational-use marijuana sales

This section discusses the expected state and local marijuana-related tax revenues, that is, revenue from taxes levied on the sale of marijuana. The next section estimates the state and local tax revenues generated by the economic activity related to the marijuana supply chain. As noted earlier, marijuana excise taxes can take three forms: ad valorem, by weight, or by potency (i.e., the level of THC, the main psychoactive compound of cannabis). In addition to excise taxes on marijuana sales, sales taxes are also applied to marijuana retail sales in most states that have legalized recreational-use. Appendix Figure 2 (attached) shows the marijuana excise tax rates, sales tax rates (if applicable), and a combined effective tax rate (as estimated in a recent report for the state of Virginia) for 12 of the states that have legalized recreational use.

For medical cannabis, New York State levies a state excise tax of seven percent that is paid by the dispensary. Sales tax is not charged on medical marijuana in New York.

In their respective legislative proposals for 2021, Governor Andrew Cuomo and the companion bills introduced in the Assembly and Senate proposed different adult-use cannabis taxes. We consider these in turn and apply the respective proposed taxes to the estimates of legal market demand developed in Section 3.

The Governor's January 2021 program bill calls for two taxes: (1) a potency tax based on the milligrams of total THC in adult-use cannabis products applied at the wholesale level; and (2) a 10.25 percent excise tax applied to the retail selling price. *In addition, adult-use cannabis products would be subject to State and local sales taxes.*<sup>42</sup>

The Governor's potency tax would vary by product category: edibles would be taxed at a rate of \$0.04 per milligram of THC, concentrates at \$0.01 per milligram of total THC, and cannabis flower at a rate of \$0.007 per milligram of THC.

Illinois is the only other state with a potency tax. However, Illinois applies an excise tax of 10 percent on cannabis products intended to be smoked if the THC content is less than 35 percent and one of 25 percent if the THC content is 35 percent or greater. Illinois taxes cannabis products not intended to be smoked (e.g., edibles and oils) at 20 percent, regardless of THC content.<sup>43</sup>

The potency of cannabis has risen considerably over the years. One study found that THC content in cannabis products rose from an average of four percent in 1995 to twelve percent in 2014. Also, Colorado reports that THC content has continued to rise under legalization.<sup>44</sup> While more costly to administer since it requires precise testing, a potency tax approach is appropriate considering the rapid proliferation of derivative products with varying THC content, and since

<sup>42</sup> See Part H, Enact the Cannabis Regulation and Taxation Act, in NYS Division of the Budget, FY 2022 New York State Executive budget, Revenue Article VII Legislation; and NYS Division of the Budget, FY 2022 New York State Executive Budget, Revenue Article VII Legislation Memorandum in Support, Part H, pp. 12-15.

<sup>43</sup> James Prieger, et.al., Cannabis Potency Tax Feasibility Study, A report for the Washington State Liquor & Cannabis Board, Submitted by BOTEC Analysis, LLC, October 2019, p. 7.

<sup>44</sup> Boesen, A Road Map to Recreational Marijuana Taxation, June 2020, p. 4.

accelerating production volume as more states legalize adult-use likely will put downward pressure on retail prices that will reduce the yield of ad valorem taxes. A potency tax will help stabilize the tax base. From the point of view of tax policy, excise taxes are justified in order to tax an externality, such as potential societal harm from consumption of an intoxicating product such as alcohol or THC-laden cannabis. Basing the tax on potency is a more effective way to target the externality.<sup>45</sup>

Assembly bill A-01248 (Peoples-Stokes) and the companion Senate bill S-00854 (Krueger), the Marijuana Regulation and Taxation Act (MRTA), would levy at the time of sale at the wholesale level to the dispensary an 18 percent tax to be paid by the retail dispensary (based on the price charged to the retail consumer). The proceeds of the 18 percent excise tax will flow to the State, a one percent excise tax will apply for the benefit of New York City or the county in which the retail sale takes place, and a three percent tax will apply for the benefit of the town, village, or city where the dispensary is located. *The Legislature's bill would exempt adult-use marijuana from the State/local sales and use tax.*

For the purposes of estimating the revenue yield under the Governor's potency tax, we assumed an average THC potency of 20 percent by weight for cannabis flower and that yield would be approximately the same for the THC content in cannabis edibles and concentrates. Those assumptions translate to a per ounce potency tax of \$39.69.<sup>46</sup> The potency tax is in addition to the 10.25 percent excise tax and sales taxes in the Governor's proposal.

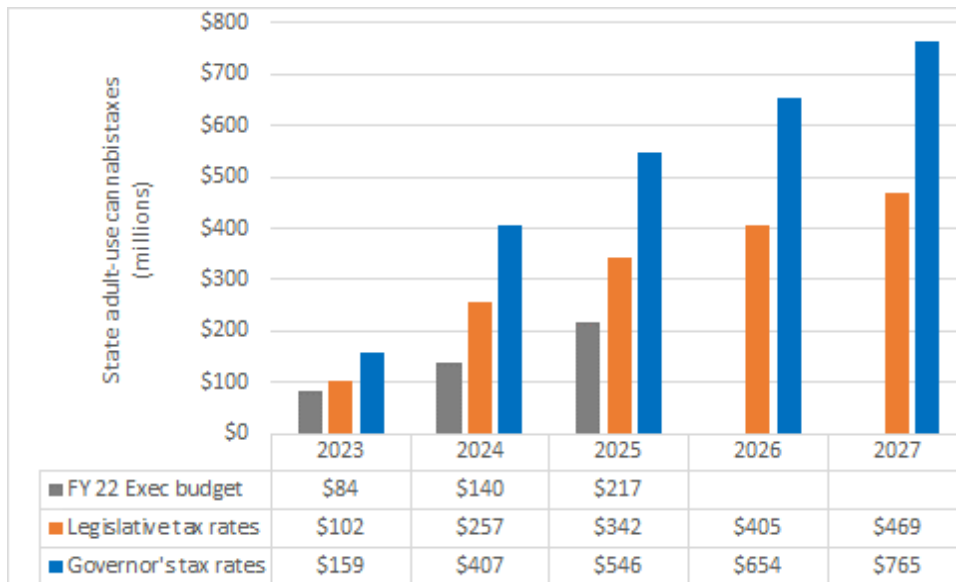
Figure 12 details estimates of state tax revenue for FY 2023-2027 calculated based on the respective proposals applied to our estimates of retail sales for each year. Figure 12 also shows the adult-use cannabis tax projections for FY 2023-2025 contained in the Governor's proposed FY 2022 Executive Budget. While the Executive Budget did not indicate projected retail adult-use cannabis sales volumes, for FY 2023, the Budget's implicit sales volume must be just over half of our estimated sales value. The FY 2022 Executive Budget forecasts includes, in addition to the taxes shown here, \$20 million in license revenue for FY 2022 and FY 2023.

As with other states, New York is likely to require all recreational marijuana businesses to be licensed by the State and pay a licensing fee. Licensing fees are usually intended to be at least sufficient to cover the governmental costs of administration and regulation but could also be intended to generate additional revenues above and beyond that. Given the heightened fiscal pressures the State is under in the wake of the pandemic, some policymakers may seek to generate significant revenues through high license fees that could be realized in the next year or two before a significant volume of excise tax revenues related to retail sales are generated. We would caution, however, that it is much more important to strike the right balance in designing

<sup>45</sup> Gabriel Petek, California Legislative Analyst Office, *How High? Adjusting California's Cannabis Taxes*, December 2019; and Boesen, *op.cit.*, June 2020.

<sup>46</sup> Given our forecast for recreational marijuana price sin FY 2023, the potency tax adds approximately 14 percent to the final consumer price. This would bring the total taxes under the Governor's proposal to nearly 33 percent, considerably higher than the total tax rate of 20 percent applied in Massachusetts.

**Figure 12**  
**Projected NYS recreational marijuana excise and sales taxes**



Note: The second two bars in each cluster show tax rates applied to our retail sales estimates; fiscal years.

Source: Authors' estimates.

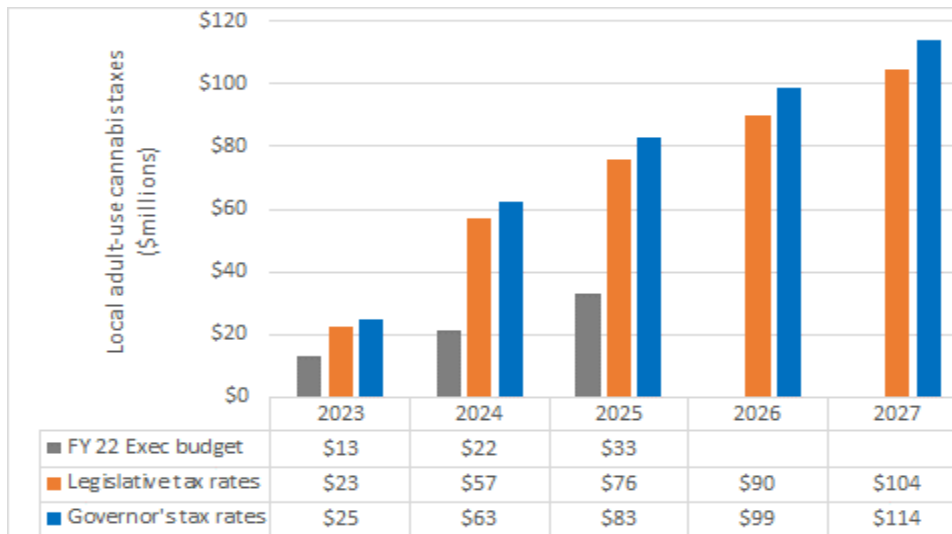
the regulatory and market structure (and corresponding license fee structure) in order to best realize the economic and employment potential of the industry and to achieve important social equity priorities than to prioritize immediate high revenue levels.

One of the paramount goals of legalization is to replace the substantial illicit market with transactions through regulated dispensaries. Policymakers need to ensure that tax rates will not push up the final price of recreational marijuana such that users have no incentive to exit the illicit market. In addition, given the rapid expansion of legalization to more and more states, including in the Northeast, New York needs to keep an eye on tax rates in neighboring states so as to avoid driving consumers to out-of-state retailers.

Both the Governor's and the Legislature's cannabis tax proposals will generate additional local tax revenues. The Governor's proposal does this through applying State and local sales taxes to adult-use cannabis sales. For purposes of the estimates for local government cannabis revenues shown in Figure 13, we used an average local sales tax rate of 4.375 percent. The Legislature's proposal includes a one percent excise tax for counties and New York City (the five boroughs are each counties) and a three percent excise tax for municipal governments in localities where retail dispensaries are located. We imputed a local sales tax yield for FY 2023-2025 to correspond to the Governor's projected state tax revenues. Local revenue estimates depend on whether a locality opt in to allow marijuana businesses.

The New York first-year recreational-use tax projection presented in Figure 12 (\$104 million) is in line with the first full year projections for Massachusetts, Michigan, and Illinois, as shown in

**Figure 13**  
**Projected New York local government recreational marijuana taxes**



Note: The second two bars in each cluster show tax rates applied to our retail sales estimates; under the Governor's proposal for local sales taxes, we used an average local rate of 4.375 percent; fiscal years shown.  
 Source: Authors' estimates.

Figure 13 (FY 2020 was the first full-year of legalization for Massachusetts). If anything, our estimate is likely on the conservative side, considering that New York's population is greater than those of those states. Our New York tax projections for the first five years of legalization are based on growth in the legal share of the overall market for recreational marijuana consistent with the average market share growth for Oregon and Washington. Even in "mature" markets with four or more years of legalized sales, tax revenue growth averaged 19-38 percent in 2020, an indication of the resilience of legalized sales despite business restrictions and dislocations created by the pandemic.

**Figure 14**  
**State recreational-use marijuana tax revenues**

state	basis for recreational data	sales began	marijuana excise and sales taxes (\$ millions)							2020 growth
			2014	2015	2016	2017	2018	2019	2020 *	
Colorado	CY	Jan. 2014	\$56	\$116	\$180	\$234	\$254	\$290	\$376	29%
Washington	FY	Jul. 2014		\$92	\$241	\$395	\$457	\$492	\$586	19%
Alaska **	FY	Feb. 2015				\$2	\$11	\$19	\$24	27%
Oregon	CY	Oct. 2016				\$78	\$109	\$134	\$184	38%
Nevada	CY	Jul. 2017					\$87	\$107	\$118	10%
California	CY	Jan. 2018					\$397	\$637	\$1,083	70%
Massachusetts	FY	Nov. 2018						\$26	\$86	232%
Michigan	CY	Dec. 2019							\$74	n.a.
Illinois	CY	Jan. 2020							\$98	n.a.

\* projected: CA, NV and OR based on 9 months, CO and IL based on 11 months

\*\* AK revenue for 2015 and 2016 reported as 2017 tax revenue.

## 6. State and local tax impact of the economic activity generated in the cannabis supply chain

The previous section dealt with projected excise and sales tax revenues related to the sale of adult-use marijuana. Legalizing such sales in New York will also foster the development of a new industry comprising businesses and employees. Section 4 above on the economic impact estimated that each \$1 billion in retail sales would add \$1.8 billion in value-added to the state economy, and as part of that, increase employee compensation by about \$850 million and proprietors' income by about \$330 million. This new economic activity, in turn, will generate increased state and local tax revenues in New York in addition to the marijuana excise tax revenues discussed in the previous section.

We estimate that the economic activity associated with each \$1 billion in recreational marijuana retail sales will generate approximately \$125 million in state and local tax revenues, with about 45 percent of that amount flowing to local governments in the form of sales and property taxes and to New York City via personal and business income taxes. See Figure 15.

For the first full year of recreational cannabis sales, we estimate that the business activity represented by the cannabis supply chain will generate about \$71 million in state and local income, sales, and property taxes (Figure 15), in addition to the \$159 million in state sales and excise taxes related to retail sales (Figure 12) and \$25 million in local sales taxes related to retail sales (Figure 13). The latter two estimates are based on the Governor's proposed cannabis taxes. These combined first year state and local retail sales and business activity tax revenues equal \$255 million.

### Figure 15

#### New York State and local taxes generated by marijuana business activity (other than excise and sales taxes based on retail adult-use sales)

Market sales (\$M)	\$1,000	projected	projected
		FY 23	FY 27
		\$566	\$2,208
Sales taxes on intermediate goods	\$21	\$12	\$47
Property taxes paid by businesses	\$28	\$16	\$61
Corporate income taxes	\$17	\$10	\$38
Personal state and local income taxes	\$50	\$28	\$110
Other state and local taxes	\$9	\$5	\$20
<b>Total business activity taxes</b>	<b>\$125</b>	<b>\$71</b>	<b>\$276</b>
<b>Local taxes include in above</b>	<b>\$55</b>	<b>\$31</b>	<b>\$121</b>

Source: Authors' analysis based on modifications to IMPLAN regional input-output model.

## 7. Economic and tax effects of market structure and other policy choices

Policy choices regarding cannabis supply chain market structure have effects on the broader economic and revenue impact of the industry. Policymakers, therefore, need to address the role of large, multi-state corporations; labor standards; opportunities for minority-owned small businesses; and small- and midscale cultivators.

The industry's rapid expansion in recent years and the prospect for continued expansion in the years ahead has attracted a lot of interest from investors and has led to the development of a number of large vertically-integrated companies with operations in multiple states. While these firms are often better-capitalized and thus capable of more quickly establishing operations across the entire supply chain in a newly-legalized state, their presence may also foreclose opportunities for locally-owned businesses.

All else equal, a locally-owned company will have a greater in-state economic impact than a large, multi-state operator based in another state or in Canada. This is both because the management and headquarters functions of a locally-owned company will be in-state as opposed to partly out-of-state and because the profits flowing to a multi-state corporation are more likely to leak out of New York, lessening the local consumer spending and tax impacts.

Legalization will create the opportunity to expand the fledging medical marijuana industry and, to some extent, develop an entirely new legal adult-use cannabis industry. One of the policy choices made with regard to legalizing medical marijuana was the inclusion of a labor peace provision in the request-for-proposals for companies seeking to enter the medical market. This has helped create an industry with better employee wages, fringe benefits, and worker protections ranging from health and safety to greater compliance with anti-discrimination statutes. A labor peace provision does not mandate union recognition, but it does allow for voluntary agreements between an employer and a union under which an employer agrees to remain neutral in a union organizing campaign while the union agrees not to picket or engage in an economic action such as a strike against the employer. California and Illinois have included labor peace provisions in their legislation legalizing recreational use marijuana, and such agreements have been used in several other industries, including frequently in New York.

As of early January 2021, four of New York's ten medical marijuana firms have collective bargaining agreements, and three others are in negotiations with Local 338 of the United Food and Commercial Workers, whose parent union represents roughly 10,000 cannabis workers in more than a dozen states.<sup>47</sup> Workers at nonunion marijuana cultivation facilities rarely make more than \$15-\$17 an hour, and their employers usually offer unaffordable health benefits. Dispensary workers are more likely to be paid \$15 an hour. On the other hand, starting pay under

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<sup>47</sup> Josh Marcus, "Meet America's Most Powerful Cannabis Union," *Rolling Stone*, June 14, 2019.

Local 338 contracts range from \$18-22 in dispensaries, and from \$18-\$25 in cultivation and processing operations. Union workers receive family health insurance with the employer paying the full premium, as well as dental, vision, and prescription drug benefits. Because of the industry’s murky federal legal status, employers are not able to offer pension coverage or annuity funds, but contributions are made to employee 401-K plans. Union workers also receive superior paid leave compared to nonunion workers, as well as benefiting from a range of contractual protections, including for seniority, safety, anti-discrimination, and grievance procedures.<sup>48</sup>

Labor economists understand that companies have a myriad of ways to accommodate higher wages and benefits. Higher wages reduce turnover, which translates into savings on hiring and training costs, and longer job tenure is associated with higher worker productivity and improved customer service. While the IMPLAN regional input-output model does not lend itself to detailed modeling of those factors, it can be used to model the impact of an increased employee compensation that is offset by a reduction in business net income. Increasing employee compensation operates through IMPLAN to increase consumer spending, employment and wages in sectors providing consumer goods and services. Figure 16 shows various impacts resulting from a 10 percent increase in employee compensation financed by a reduction in business income. Thus, a 10 percent increase in employee compensation increases induced employment by 14.7 percent and raises employee compensation in the induced sectors by 13.6

## Figure 16

### Broader economic benefit of a 10% increase in employee compensation in the New York cannabis supply chain

Direct employee compensation	10.0%
Induced employee compensation	13.6%
Total employee compensation	8.4%
Induced proprietors income	20.8%
Total proprietors income	0.6%
<b>Total value added</b>	<b>3.7%</b>
Induced jobs	14.7%

Source: Authors’ analysis based on modifications to IMPLAN regional input-output model

percent. Reducing proprietor income has an even greater increase in induced sectors, generating a 20.8 percent increase. Overall, a 10 percent increase in employee compensation in the cannabis supply chain increases the value added by the entire production chain by 3.7 percent. It even

<sup>48</sup> Union contract information provided by a representative of UFCW Local 338, personal communication, December 18, 2020.

raises overall proprietor income, even though the employee compensation increase was partly financed by a reduction in proprietor income in the cannabis sector itself.

Criminalization of cannabis has disproportionately impacted communities of color. The legalization current wave has prompted consideration of how to ensure that these same communities benefit from the nascent legal market. This question becomes increasingly salient as legalization occurs in large urban states with sizeable communities of color.

Social equity concerns have only become more compelling during the pandemic. While the legal cannabis industry is enjoying a boom, the Covid crisis has hit minority-owned small businesses hard. The number of active business owners in the nation dropped by 22 percent between February and April 2020.<sup>49</sup> However, the decreases for Black, Latinx, and Asian owners were 44, 32, and 26 percent, respectively. The number of immigrant business owners declined 36 percent over this same period. In New York City, 85 percent of City-certified Minority- and Women-Owned Business Owners surveyed in June 2020 anticipated not being able to stay afloat another six months.<sup>50</sup> Cannabis legalization and its attendant business opportunities across the entire supply chain will not be a panacea for longstanding economic inequities and the fallout from COVID. They do, though, provide a chance for thoughtful policymaking that channels economic resources and opportunities to small business owners and communities that badly need them. Access to capital, not just preferential licensing, is often cited as a high priority.

Policy choices regarding market structure will also determine what role small- and midscale cultivators will play. Many of New York's small- and midscale hemp farmers want to enter the adult-use cannabis market. Some envision a role for small craft businesses akin to that of the state's wineries and craft breweries, attracting tourists while generating jobs and income for rural communities.<sup>51</sup> Organizations such as the New York Cannabis Growers and Processors Association and the New York Small Farm Alliance of Cannabis Growers and Supporters are concerned, however, that policies will favor large, capital-intensive operations. Low entry barriers with respect to licensing are relevant. New York can also learn from other states' experiences, where policies to keep smaller operators competitive have been circumvented by practices such as license stacking (the purchase of multiple small farm licenses) and management service agreements, through which small license holders nominally retain their license but a large operator manages the operation and receives nearly all the profits.<sup>52</sup>

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<sup>49</sup> Robert Fairlie, "The Impact of Covid-19 on Small Business Owners: Evidence from the first three months after widespread social-distancing restrictions," *Journal of Economic & Management Strategy*, 2020; 29:727-740.

<sup>50</sup> New York City Comptroller Scott M. Stringer, "Minority- and Women-Owned Businesses at Risk," accessed January 26, 2021. <https://comptroller.nyc.gov/wp-content/uploads/documents/MWBE-Survey.pdf>

<sup>51</sup> New York Small Farm Alliance of Cannabis Growers and Supporters (aka NY Small Farma Ltd.), op. cit.

<sup>52</sup> Scott Rodd, "Handful of California cannabis growers control 30% of 'small' grower licenses," accessed January 26, 2021. <https://www.bizjournals.com/sacramento/news/2018/02/05/handful-of-california-cannabis-growers-control-30.html>.



## 8. Conclusion

In 2021, New York is likely to join the ranks of 15 states that have legalized recreational marijuana for adult-use., far from being a resolution of how to address cannabis use, In making these choices, policy makers are faced with concerns ranging from public health and social equity, to economic and employment opportunities, to tax revenue generation.

Legalization has the potential to strengthen local economies and redress existing inequities in both urban and rural New York. The proposals advanced by the Governor and the legislature both aim to provide economic opportunities to communities that have been disproportionately affected by the war on drugs. Legalization could also open up small retail opportunities in urban neighborhoods throughout the state that have experienced widespread pandemic-related restaurant and other small business closures.

This report estimated the potential tax revenue and economic impact of legalizing adult-use marijuana over the next several years. We estimate total market demand at about \$3.7 billion in the current fiscal year (2021), with demand in nominal dollars rising to \$3.9 billion by FY 2027. However, because legal sales would grow over time and gain market share at the expense of illicit sales, legal market sales would rise from \$566 million in the first full fiscal year of implementation (FY 2023) to \$2.6 billion four years later (FY 2027).

Using these estimates and the Governor's proposed tax structure, we estimate that State recreational marijuana excise tax revenue would be \$159 million in FY 2023, rising to \$765 million in FY 2027. We estimated that the State tax yield from the legislature's proposal would be \$102 million in FY 2023 and \$469 million in FY 2027. The Governor's proposal to apply the sales tax to adult-use cannabis sales would generate \$25 million in local sales taxes in FY 2023, rising to \$114 million in FY 2027. Marijuana taxes need to cover the regulatory costs as well as fund essential social equity investments. In the process, the State also needs to balance its revenue needs with the priority of drawing consumers away from the illicit market and limiting the leakage of legal sales to neighboring states.

This report modified a widely-used regional input-output model (IMPLAN) to reflect 100 percent in-state cultivation and processing of all marijuana flower, and marijuana-infused edibles and oils to estimate that the \$2.6 billion in retail sales projected for FY 2027 would generate 50,806 jobs, \$2.2 billion in employee compensation, \$4.7 billion in value added, and \$6.1 billion in total economic output. In addition to the sales-related tax revenues projected above, the expansion of an entire economic sector in New York State will generate additional state and local tax revenues.

The employment, income, and state and local tax impact of legalizing adult-use cannabis will be greater to the extent that New York's leaders make policy choices that encourage locally-owned cannabis cultivators, processors, distributors, and dispensaries, and, as with medical marijuana, opt for a labor peace provision that makes it more likely that workers throughout the cannabis supply chain will enjoy fair pay, benefits, and labor protections.

## Appendix Figure 1

### Estimated size of NYS adult-use marijuana market, and growth in legal market, FY 2020-2027

New York State fiscal years	2019	2020	2021	2022	2023	2024	2025	2026	2027
NYS pop. ages 21+ (assume constant)	14,588,902	14,588,902	14,588,902	14,588,902	14,588,902	14,588,902	14,588,902	14,588,902	14,588,902
Percent users from NSDUH (2018-19)*	0.1136	0.115	0.117	0.12	0.124	0.128	0.132	0.136	0.14
Number of NY marijunana users	1,657,299	1,677,724	1,706,902	1,750,668	1,809,024	1,867,379	1,925,735	1,984,091	2,042,446
Market demand @ 8.473 oz. per user	14,042,297	14,215,353	14,462,577	14,833,412	15,327,859	15,822,306	16,316,754	16,811,201	17,305,648
<i>change from prior year</i>		1.2%	1.7%	2.6%	3.3%	3.2%	3.1%	3.0%	2.9%
Legal price/oz. (prices decline 2%/yr)		\$280.00	\$274.40	\$268.91	\$263.53	\$258.26	\$253.10	\$248.04	\$243.08
NYS market demand (\$ millions)		\$3,980	\$3,969	\$3,989	\$4,039	\$4,086	\$4,130	\$4,170	\$4,207
<i>change from prior year</i>			-0.3%	0.5%	1.3%	1.2%	1.1%	1.0%	0.9%
Legal market share (based on OR and WA market growth); legal sales begin 4-1-22					14%	35%	46%	54%	62%
<b>Legal market demand, excluding medical marijuana (\$ millions)</b>					<b>\$566</b>	<b>\$1,430</b>	<b>\$1,900</b>	<b>\$2,252</b>	<b>\$2,608</b>
<i>change from prior year</i>						153%	33%	19%	16%

\* assumes slight growth in percent of adult users

## Appendix Figure 2

### Recreational cannabis tax rates, states

	Year legalized	Sales commenced	Tax basis	Excise tax rate <sup>1</sup>	General state sales tax levied?	State sales tax rate levied, where applicable.	combined effective tax rate *
Alaska	2014	Feb. 2015	weight	\$50/oz. mature flower; \$25/oz. immature flower; \$15/oz. trim; \$1 per clone	n/a <sup>1</sup>	-----	22.2%
California	2016	Jan. 2018	mixed	15% retail excise tax; \$9.65/oz. flower cultivation tax; \$2.87/oz. leaves cultivation tax; \$1.35/oz. cannabis plant cultivation tax	Yes	7.50%	36.3%
Colorado	2012	Jan. 2014	<i>ad valorem</i>	15% excise tax (levied at wholesale by weight at average market rate); 15% excise tax (retail price)	Yes	2.9%	29.7%
Illinois	2019	Jan. 2020	<i>ad valorem</i> ; potency	7% excise tax of value at wholesale level; 10% tax on cannabis flower or products with less than 35% THC; 20% tax on products infused with cannabis, such as edible products; 25% tax on any product with a THC concentration higher than 35%	Yes (State Retailers Occupation Tax)	6.25%	29.8%
Massachusetts	2016	Nov. 2018	<i>ad valorem</i>	10.75% excise tax (retail price)	Yes	6.25%	20.0%
Michigan	2018	Dec. 2019	<i>ad valorem</i>	10% excise tax (retail price)	Yes	6%	16.0%
Nevada	2016	Jul. 2017	<i>ad valorem</i>	15% excise tax (levied at wholesale by weight at Fair Market Value); 10% excise tax (retail price)	Yes	6.85%	25.8%
Oregon	2014	Oct. 2016	<i>ad valorem</i>	17% excise tax (retail price)	n/a <sup>2</sup>	-----	20.0%
Washington	2012	Jul. 2014	<i>ad valorem</i>	37% excise tax (retail price)		6.50%	47.5%

\* MPG Consulting, cited in Key Considerations for Marijuana Legislation, Joint Legislative Audit and Review Commission, Commonwealth of Virginia, Nov. 2020, Fig. 10-1.

<sup>1</sup>Jamelle Cammenga. How High Are Taxes on Recreational Marijuana in Your State? Tax Foundation. June 10, 2020. <https://taxfoundation.org/state-excise-taxes-on-recreational-marijuana-2020/>

<sup>2</sup>Ulrik Boesen. A Roadmap to Recreational Marijuana Taxation. Fiscal Fact No. 713. Tax Foundation. June 2020. <https://taxfoundation.org/recreational-marijuana-tax/>

<sup>3</sup>California Department of Tax and Fee Administration. Cannabis Tax Revenues. <https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=CannabisTaxRevenues>

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