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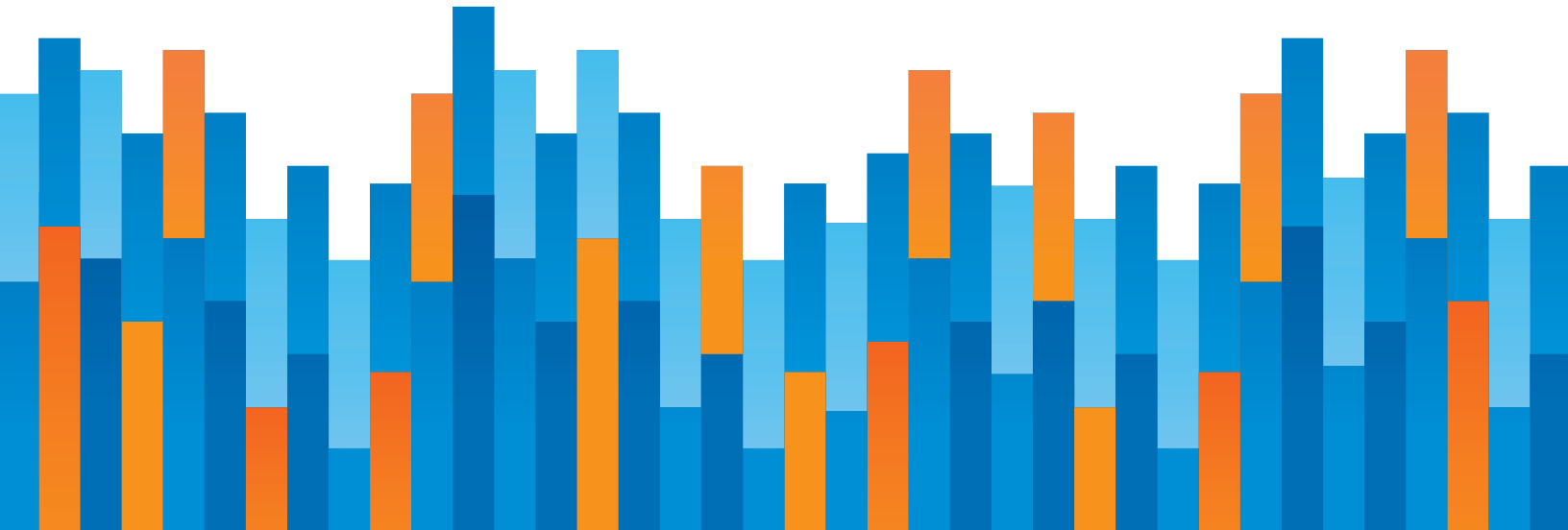
PRECISION ADVOCACY

THE IMPACT OF CALIFORNIA CANNABIS TAXES ON PARTICIPATION WITHIN THE LEGAL MARKET

by Geoff Lawrence

May 2022



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Good Farmers, Great Neighbors (GFGN) is an alliance of mostly outdoor, sun-grown cannabis farmers and auxiliary businesses throughout the central coast that advocates for a supportive legal and regulated market. GFGN's network of 'best in class' expertise unites cannabis farmers in the region who are committed to exceeding the required environmental and public health standards and spurring economic growth and community development.

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Precision Advocacy is a Sacramento-based lobbying firm that brings over two decades of experience in state legislative and regulatory development, and public affairs at the state and local levels. Precision's Founding Principal Amy O'Gorman Jenkins is legislative advocate to the California Cannabis Industry Association (CCIA), which was formed to unite the legal cannabis industry to help educate and act as a resource to lawmakers and state regulators. Its unified voice includes over 400 California businesses representing over 600 brands and approximately 15,000 employees. As CCIA's legislative advocate, Amy has spearheaded policy and legislation, including bills to reduce barriers to entry into California's compliant cannabis marketplace, advance critical environmental protections to protect cannabis farmers, bolster enforcement against unlicensed operators, and expand access to social equity grant funding.

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FOREWORD

Back in the days before legal marijuana, I undertook to investigate how it might be legalized, taxed, and regulated. While I was partial to a free-market model (as opposed to government monopoly,) it seemed apparent that marijuana should logically be taxed like other legal intoxicants such as alcohol and tobacco, both to cover the social costs of its abuse, and to offer non-using voters a solid reason to back legalization. There being no better data at the time, I took a clue from the 1893 British Indian Hemp Drugs Report, the most thorough published investigation of an actual, historical legal cannabis regime in British India. The report examined various Indian states' regimes, ranging from laissez-faire to prohibition. It concluded by commending the state of Bengal as having the most successful and effective system. Bengal exacted licensing fees from producers and vendors and imposed a weight-based excise tax on the wholesale crop. With this in mind, I tried to devise the best comparable tax for marijuana in a modern legal market. Like other cannabis policy wonks at the time, I was worried that the retail price of marijuana might precipitously collapse if it were legalized along the same free-market lines as comparable agricultural crops such as parsley, herbs, or tea. In that case, it appeared retail prices could easily fall as low as a dime per joint. This seemed far too small a value to place on a widely treasured and enjoyable, but potentially habit-forming and impairing, crop. Based on back-of-the-envelope numbers, I figured that an excise tax of about $1.00 per joint or $50 per ounce would be sufficient to sustain a reasonable retail price for the herb.

When California finally legalized cannabis under Prop. 64, lo and behold, it turned out that I had vastly underestimated the cost of the regulations imposed by the new law. In addition to state and local licensing fees, there were elaborate rules on cultivation, retailing, transportation, manufacture, testing, facility siting, ownership, security, storage, on-site consumption, wholesale distribution, seed-to-sale tracking, waste disposal, labeling, packaging, environmental compliance, water usage, etc. ad nauseam. No way was the price of marijuana in danger of plummeting to pennies per joint; rather, it was becoming costly. Nonetheless, on top of that Prop 64 imposed an ambitious package of cultivation and excise taxes aimed at raising some $1 billion per year for various state programs, and local governments were authorized to levy even more taxes on their own. The situation was further exacerbated by local dispensary bans and licensing delays, which left the state with half as many adult-use dispensaries as there were medical collectives before Prop. 64 was passed. As a result, California's legal industry has been hard pressed to compete with untaxed, unregulated providers on the underground market. So dire is the current situation that advocates now fear that the cannabis industry in California faces an "existential crisis" in the absence of meaningful tax reform.

The roots of this crisis are amply documented in Reason Foundation's timely new report on cannabis taxes in California. The author has helpfully compiled comprehensive data on cannabis prices, taxes, revenues, licensees, and demand that weren't available in the days before Prop 64. Finding that California lags behind other legal states in licensed cannabis sales, the report estimates that the illegal market accounts for roughly two-thirds of total sales in the state. Based on a survey of various local tax regimes from around the state, it finds that the effective tax rate ranges from $42 to $90 per ounce—more than the wholesale production cost of $35. Analyzing a variety of different tax scenarios, beginning with elimination of the cultivation tax and then progressive reductions in the excise tax, the report provides a helpful roadmap for cannabis tax reform in California. In the end, it projects that even with substantial tax reductions, the state can expect total revenues to rise substantially in the next two years due to increased consumer demand. Substantive tax cuts therefore seem to be a feasible strategy for reducing demand for the illicit market, while still retaining reasonable revenues for the state programs funded in Prop. 64. May this timely report from Reason Foundation prove enlightening to the state's lawmakers.

Dale Gieringer, Ph.D.
Director, California NORML
April 10, 2022

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PART 1

INTRODUCTION

In November 2016, California voters approved Proposition 64 to enact a regulated, adult-use cannabis market in the Golden State. At the time, four other states had already created adult-use cannabis markets, including Alaska, Colorado, Oregon, and Washington. California already had a largely unregulated medical cannabis market in place, following voters' historic passage of Proposition 215 in 1996, which was the first medical marijuana law in the nation to go into effect. Since Proposition 64 required specific regulations to govern inventory tracking, licensing, testing and more, these regulatory provisions would have to extend to the unregulated legacy medical market. If not, market participants could subvert the regulatory intent contained in Proposition 64 simply by remaining in the unregulated medical market.

Realizing this need, California lawmakers responded in early 2017 by passing the Medicinal and Adult Use Cannabis Regulation and Safety Act (MAUCRSA). MAUCRSA superseded prior legislation from 2015 called the Medical Cannabis Regulation and Safety Act, which sought to create a regulatory structure for the medical market, but never took effect due to passage of Proposition 64 and MAUCRSA. MAUCRSA largely built on the regulatory approach that had been developed within that prior legislation, but also extended it to the newly authorized adult-use market.

The statutory language contained in Proposition 64 and MAUCRSA combine to create the legal framework for California's commercial cannabis industry. Regulations governing the industry must be consistent with these authorizing statutes. Proposition 64 contained important provisions that strongly affect California's commercial cannabis market that

cannot be changed through regulatory action alone. Chiefly, these include imposing two new excise taxes and devolving authority to local governments to regulate or outright ban certain or all types of commercial cannabis activity within their jurisdictions.

Taxes affect both consumers' and producers' decisions in the legal market primarily by introducing a price disparity between legal cannabis products and comparable cannabis products offered through the illicit market. Similarly, local bans on legal sales over extended geographic areas can drive consumers without access to legal products within a reasonable distance of their homes to purchase substitute goods on the illicit market.

Taxes affect both consumers' and producers' decisions in the legal market primarily by introducing a price disparity between legal cannabis products and comparable cannabis products offered through the illicit market.

This analysis develops an empirical model to estimate the degree to which California's tax regime affects participation within its commercial cannabis market, and how participation may change through differing approaches to taxation. Part 2 details the various tax structures currently facing legal cannabis enterprises in California and how those tax structures have performed in yielding public revenue. Part 3 examines the key factors that influence consumer decisions to participate in the legal or illegal market. Part 4 reviews the existing literature on consumer price sensitivity for cannabis products and calculates a price sensitivity for consumers of legal products in California and Oregon. Part 5 uses data calculated in prior sections to model California consumers' expected behavior due to changes in retail price in response to a change in tax policy. Finally, Part 6 concludes with recommendations for improving the performance of California's legal cannabis market.

PART 2

CURRENT TAX STRUCTURE AND PERFORMANCE

Cannabis licensees in California are subject to a wide array of taxes at the federal, state, and local levels. These taxes cascade rapidly into the final price of legal cannabis products, whereas illicit market suppliers generally face no tax burden at all.

2.1 STATE EXCISE TAXES

Proposition 64 imposed a wholesale tax on cannabis cultivation for adult use at an initial rate of $9.25 per ounce ($148 per pound) of flower and $2.75 per ounce ($44 per pound) of leaves or trim. These tax rates are indexed to inflation and have risen to $10.08 per ounce ($161.28 per pound) of flower and $3 per ounce ($48 per pound) of leaves for calendar year 2022.[1] The second tax imposed by Proposition 64 is a retail excise tax assessed at 15% of the estimated value of a retail sale to an end-use consumer.[2]

1 "Tax Guide for Cannabis Businesses," California Department of Tax and Fee Administration, https://www.cdtfa.ca.gov/industry/cannabis.htm (March 17, 2022).

2 The calculation and collection of California retail excise taxes is convoluted in that they are not assessed on actual sales and remitted by the retailer making those sales. Instead, the final distributor that transfers the inventory to a retailer is responsible for remitting the tax and calculates this tax based on an assumed markup of 80% from the wholesale price at which the inventory is sold to the retailer. Effectively, this may mean that tax liabilities are claimed and remitted before the ultimate retail sale ever occurs, including in cases where the

In addition to these excise taxes, commercial cannabis sales in California are subject to the general sales and use tax, which varies across jurisdiction but averages 8.82% of the final sales price for 2022 according to data from the Tax Foundation.[3] Previous analyses by Reason Foundation have estimated that the combined effect of state-level sales and excise taxes increase the retail price of legal cannabis by $727 per pound.[4]

2.2 INCOME TAXES

However, legal cannabis businesses pay many taxes in addition to these sales and excise taxes, including both federal and state income tax and locally assessed taxes. Marijuana businesses are penalized on federal income taxes by Internal Revenue Code 280E, which precludes any taxpayer that traffics in a Schedule I or II federally controlled substance from claiming deductions under the "ordinary and necessary" standard that applies to most businesses. Generally, if an expense is considered both ordinary and necessary to carry on the particular trade that a business is engaged in, that expense is deductible from gross income when calculating federal income tax liabilities. For state-licensed cannabis businesses, this is not the case. Instead, cannabis businesses may only deduct the costs directly incurred to purchase or produce inventory.

> *"... cannabis businesses effectively pay much higher federal income tax rates than similarly situated businesses in other industries."*

These regulations force cannabis businesses to calculate federal income tax liabilities on a modified gross-receipts basis rather than net income, as many expenses ranging from employee salaries and benefits to rent or legal and accounting expenses may not be

inventory is never sold by the retailer prior to the end of its shelf life. For details, see: Geoffrey Lawrence, "LAO Report: California's Taxes and Rules Mean Legal Marijuana Can't Compete with Black Market Prices," Reason Foundation commentary, January 6, 2020, https://reason.org/commentary/lao-report-californias-taxes-and-rules-mean-legal-marijuana-cant-compete-with-black-market-prices/.

3 Janelle Cammenga, "State and Local Sales Tax Rates, 2022," Tax Foundation, February 3, 2022, https://taxfoundation.org/2022-sales-taxes/.

4 Geoffrey Lawrence and Spence Purnell, "Marijuana Taxation and Black Market Crowd-Out," Reason Foundation, 2020, https://reason.org/wp-content/uploads/marijuana-taxation-black-market-crowd-out.pdf (March 31, 2022).

eligible for deduction under the Internal Revenue Code. This means cannabis businesses effectively pay much higher federal income tax rates than similarly situated businesses in other industries. A cannabis business filing as a corporation, for instance, will apply the standard 21% corporate income tax rate to a much larger base (approximating its gross margin) than other businesses that apply that rate against net income. In fact, a cannabis business could suffer a financial loss for the tax year and still face significant federal income tax liabilities because net income is not relevant in its calculation of those liabilities.

Fortunately for cannabis licensees in California, lawmakers have amended the California corporate tax code so these businesses can deduct both their costs of purchasing or producing inventory and other "ordinary and necessary" business expenses.[5] However, licensees must still file and pay state income taxes as any other business in California at the standard rates.[6] For corporations, that rate is 8.84% of calculated net earnings in 2022.[7]

2.3 LOCAL TAXES

Finally, California cannabis licensees are subject to an array of locally assessed taxes that vary by jurisdiction. The most prominent tax instruments imposed by these entities include an annual tax per square foot of canopy under cultivation and a percentage of gross receipts earned by license types throughout the supply chain. As these taxes are assessed at each stage of production, they cascade to create much higher effective tax rates embedded within the ultimate prices facing consumers. Table 1 provides a summary of local cannabis tax rates charged by California cities and counties with prominent cannabis operations.

5 "Assembly Bill 37," California Legislature, 2019-2020 Session, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB37. See also "Bill Analysis, AB37," State of California Franchise Tax Board, https://www.ftb.ca.gov/tax-pros/law/legislation/2019-2020/AB37.pdf.

6 "Cannabis Industry," State of California Franchise Tax Board, https://www.ftb.ca.gov/file/business/industries/cannabis.html.

7 "Business Tax Rates," State of California Franchise Tax Board, https://www.ftb.ca.gov/file/business/tax-rates.html.

TABLE 1: LOCAL CANNABIS TAX RATES, SELECTED COUNTIES AND CITIES

	Canopy-Indoor	Canopy-Mixed Light	Canopy-Outdoor	Manufacturing	Distribution	Retail
Select Counties						
Contra Costa County	$7.00/ft.^{2}	$4.00/ft.^{2}	$2.00/ft.^{2}	2.5%	2%	4%
Imperial County	$15.00/ft.^{2}	$15.00/ft.^{2}	$15.00/ft.^{2}	5%		8%
Lake County	$1.00/ft.^{2}	$1.00/ft.^{2}	$1.00/ft.^{2}	2.50%	2.50%	4%
Mendocino County	2.5%	2.5%	2.5%	$2,500	$2,500	5%
Mono County	$2.00/ft.^{2}	$1.50/ft.^{2}	$0.50/ft.^{2}	2.50%	2%	4%
Monterey County	$8.00/ft.^{2}	$5.00/ft.^{2}	$2.50/ft.^{2}	2.50%	2%	4%
Nevada County	$10.00/ft.^{2}	$10.00/ft.^{2}	$10.00/ft.^{2}	10%	10%	10%
San Diego County	8%	8%	8%	8%	8%	8%
San Luis Obispo County	10%	10%	10%	10%	10%	10%
Santa Barbara County	4%	4%	4%	3%	1%	6%
Santa Cruz County	6%	6%	6%	6%	0%	
Solano County	15%	15%	15%	15%	15%	15%
Sonoma County	$12.65/ft.^{2}	$7.31/ft.^{2}	$2.25/ft.^{2}	3.00%	0%	2%
Select Cities						
Adelanto	5%	5%	5%	5%	5%	5%
Desert Hot Springs	$10.00/ft.^{2}	$10.00/ft.^{2}	$10.00/ft.^{2}			$10.00/ft.^{2}
Los Angeles	2%	2%	2%	2%	2%	10%
Merced	$25.00/ft.^{2}	$25.00/ft.^{2}	$25.00/ft.^{2}	$25.00/ft.^{2}	10%	
Modesto	2.5%			4%	2.5%	8%
Oakland	up to 5%	up to 5%	up to 5%	up to 5%	up to 4%	up to 5%
Pasadena	$10.00/ft.^{2}	$10.00/ft.^{2}	$10.00/ft.^{2}	4%	4%	6%
Sacramento	4%	4%	4%	4%	4%	4%

Source: Author's calculations based on city and county data.[8]

[8] "Cannabis Business Tax," Contra Costa County, https://www.contracosta.ca.gov/7137/Cannabis-Business-Tax, (March 17, 2022); "Voter's Pamphlet: Measure K," Lake County, http://www.lakecountyca.gov/Assets/Departments/RegistrarOfVoters/docs/Nov2018ElectionMeasures/Kv2.pdf, (March 17, 2022); Mono County, "Impartial Analysis by County Counsel: Measure D," https://monocounty.ca.gov/sites/default/files/fileattachments/elections/page/29101/2018_-_cannabis_general_tax_-_impartial_analysis_by_county_counsel.pdf, (March 17, 2022);"Commercial Cannabis Business Tax," County of Monterey, https://www.co.monterey.ca.us/government/departments-i-z/treasurer-tax-collector/commercial-cannabis-business-tax, (March 17, 2022); "Resolution No. 18-362," County of Nevada, https://www.mynevadacounty.com/DocumentCenter/View/24521/Board-of-Supervisors-Resolution-18-362---Cannabis-Business-License-Tax---Measure-for-Election, (March 17, 2022); "Cannabis Business Tax: Frequently Asked Questions," San Diego County, https://www.sandiego.gov/sites/default/files/tr_cannabis_business_tax_faq.pdf, (March 17, 2022); "Resolution No. 2018-48," County of San Luis Obispo, https://www.slocounty.ca.gov/Departments/Clerk-Recorder/Forms-Documents/Elections-and-Voting/Past-Elections/Primary-Elections/2018-06-05-Consolidated-Primary/Documents/Measure-B-18-Resolution-Adding-Measure-2018-06.pdf, (March 17, 2022); "Tax on Cannabis Operations," Santa Barbara County, https://countyofsb.org/ttcpapg/taxcoll/Cannabis.aspx#dates, (March 17, 2022); "Cannabis Business Tax," County of Santa Cruz, https://www.co.santa-cruz.ca.us/Departments/TaxCollector/CannabisBusinessTax.aspx, (March 17, 2022); "County Counsel's Impartial Analysis of Measure C," Solano County, https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=25358, (March 17, 2022); "All Cannabis Tax Rates," Sonoma County, https://sonomacounty.ca.gov/Cannabis/Taxes/All-Cannabis-Tax-Rates/, (March 17, 2022); Code of Ordinances, Chapter 3.60, "Cannabis Excise Tax," City of Adelanto, https://www.ci.adelanto.ca.us/DocumentCenter/View/865/360-Cannabis-Excise-Tax, (March 17, 2022); "Cannabis Taxes," City of Desert Hot Springs, https://wwwcity

Local taxes assessed as a percentage of a licensee's gross receipts are easy to calculate. However, as with the way the federal income tax is applied to cannabis businesses, they fail to account for a licensee's profitability. In other words, these taxes are assessed against licensees even when they are unprofitable, to the potential further exacerbation of financial losses.

Likewise, taxes based upon square footage used by the licensee fail to account for profitability, and may significantly affect the cost of production on a per-unit basis. Municipalities charging canopy-based taxes do so regardless of productive output. This means a licensee could pay the taxes to remain in good standing with the local licensing agency and never harvest inventory, or harvest very little, making the effective tax rate per pound of yield infinitely high. However, it is possible to estimate the per-unit effect of cultivation taxes assuming cultivation yields correspond to a market average for indoor cultivators operating a full capacity. A survey conducted for the Washington State Liquor and Cannabis Board has determined these market averages.[9] It estimates the market average for indoor cultivators is 38.6 grams/ft.^{2}/harvest and, for outdoor cultivators, is around 47.2 grams/ft.^{2}/harvest. With 90-day harvest cycles, the same area can host roughly four harvests per year, implying about 154.4 grams/ft.^{2}/year for indoor cultivators and 188.8 grams/ft.^{2}/year for outdoor cultivators. Converting to pounds, these figures correspond to 0.340 pounds/ft.^{2}/year and 0.416 pounds/ft.^{2}/year, respectively. Using the city of Merced as an example, each square foot of canopy is taxed at $25/ft.^{2}/year, meaning the tax cost equates to $0.16 per gram for indoor flower, or $73.45 per pound. On this basis, Table 2 calculates the per-pound equivalents of local canopy-based taxes in California.

ofdhs.org/cannabis-taxes, (March 17, 2022); "Ordinance No. 184501," City of Los Angeles, http://clkrep.lacity.org; Chapter 6.32 - Cannabis Business Tax," Mendocino County Municipal Code, https://library.municode.com/ca/mendocino_county/codes/code_of_ordinances?nodeId=MECOCO_TIT6BULIRE_CH6.32CABUTA (April 28, 2022). onlinedocs/2017/17-1100-S2_misc_12-23-16.pdf; "Measure Y," City of Merced, https://www.co.merced.ca.us/DocumentCenter/View/18131, (March 17, 2022); "Commercial Cannabis Fees and Tax Rates," City of Modesto, https://www.modestogov.com/2212/Commercial-Cannabis-Fees-and-Tax-Rates, (March 17, 2022); "2022 Cannabis Business Tax Renewal Notice," City of Oakland, https://cao-94612.s3.amazonaws.com/documents/2022-Cannabis-Bus-Tax-Renewal-Package.pdf, (March 17, 2022); "Municipal Code Chapter 5.28: Cannabis Business Tax," City of Pasadena, https://ww5.cityofpasadena.net/city-clerk/wp-content/uploads/sites/42/2018/03/2018-02-26-CC-PROPOSED-ORD-CANNABIS-BUSINESS-TAX.pdf, (March 17, 2022); "Cannabis Business Tax," City of Sacramento, https://www.cityofsacramento.org/Finance/Revenue/Business-Operation-Tax/Cannabis-Business-Tax, (March 17, 2022); "Ballot Measures: Y," City of Santa Ana, https://www.ocvote.com/fileadmin/user_upload/elections/gen 2018/measures/8518.pdf, (March 17, 2022).

9 Jonathan Caulkins, Matthew Cohen, and Luigi Zamarra, "Estimating Adequate Licensed Square Footage for Production," Prepared by BOTEC Analysis Corporation for Washington State Liquor and Cannabis Board, https://lcb.wa.gov/publications/Marijuana/BOTEC%20reports/5a_Cannabis_Yields-Final.pdf.

TABLE 2: PER-POUND EQUIVALENTS OF LOCAL CANOPY TAXES

	Indoor Annual Yield (lbs/ft/year)	Indoor Canopy Tax: Per-Pound Equivalent	Outdoor Annual Yield (lbs/ft/year)	Outdoor Canopy Tax: Per-Pound Equivalent
Contra Costa County	0.34	$20.56	0.42	$16.82
Imperial County	0.34	$44.07	0.42	$36.04
Lake County	0.34	$2.94	0.42	$2.40
Mono County	0.34	$5.88	0.42	$4.81
Monterey County	0.34	$23.50	0.42	$19.22
Nevada County	0.34	$29.38	0.42	$24.03
Sonoma County	0.34	$37.16	0.42	$30.39
Desert Hot Springs	0.34	$29.38	0.42	$24.03
Merced	0.34	$73.45	0.42	$60.06
Pasadena	0.34	$29.38	0.42	$24.03

Source: Author's calculations based on city and county data. See note 8.

This per-pound equivalent of local canopy taxes allows for an assessment of the total tax included in retail prices of legal cannabis by jurisdiction. Additional data points needed for this analysis include the wholesale price of cannabis flower, which New Leaf Data Analytics reports at $845 per pound for the week ending March 18, 2022.[10] Wholesale marijuana flower is purchased from cultivators by licensed distributors in California, and distributors also assume liability for the state cultivation tax (currently $161.28 per pound) at the point of transfer. Distributors typically pay for product testing, labeling and retail packaging, plus delivery to a retail dispensary. At the point of transfer to the dispensary, the distributor additionally assumes liability for retail excise taxes, which are paid in advance of the actual retail sale. In March 2022, the average cost to dispensaries per gram of retail cannabis flower was $3.26 and their average selling price was $6.84. Stated as pounds, these amounts translate to $1,479 and $3,103, respectively.[11] Table 1 shows the calculated tax costs per pound for all local cannabis taxes and for state excise taxes. This analysis excludes a per-pound cost of manufacturing excise taxes. Manufacturers create extracts from cannabis flower and the per-pound rate of taxation depends on extraction efficiency and markup rates for which data are elusive and expected to have wide variation. These challenges make it difficult to accurately model the tax-cost of extracts on a per-unit basis or their impact on consumer behavior and so the extracts that manufacturers produce are excluded from the analyses in this study. Table 3 shows the results of this analysis, which demonstrates that the per-pound cost of local and state excise taxes (exclusive of income tax) ranges from $677 to $1,441, depending on jurisdiction.

10 New Leaf Data Analytics, "Cannabis Benchmarks Spot Price Snapshot: March 18, 2022," Available at: https://premium.cannabisbenchmarks.com/.

11 Data obtained from Headset Analytics.

TABLE 3: EFFECTIVE TAX PER-POUND OF CANNABIS FLOWER

	Canopy - Indoor	Distribution	Retail	State Cultivation Tax	State Excise Tax	Total State and Local Tax
Select Counties						
Contra Costa County	$20.56	$29.58	$124.11	$161.28	$465.42	**$800.96**
Imperial County	$44.07	-	$248.23	$161.28	$465.42	**$919.00**
Lake County	$2.94	$36.98	$124.11	$161.28	$465.42	**$790.73**
Mendocino County	$21.13	Incalculable	$155.14	$161.28	$465.42	**$802.97**
Mono County	$5.88	$29.58	$124.11	$161.28	$465.42	**$786.27**
Monterey County	$23.50	$29.58	$124.11	$161.28	$465.42	**$803.90**
Nevada County	$29.38	$147.92	$310.28	$161.28	$465.42	**$1,114.28**
San Diego County	$67.60	$118.33	$248.23	$161.28	$465.42	**$1,060.86**
San Luis Obispo County	$84.50	$147.92	$310.28	$161.28	$465.42	**$1,169.40**
Santa Barbara County	$33.80	$14.79	$186.17	$161.28	$465.42	**$861.46**
Santa Cruz County	$50.70	-	-	$161.28	$465.42	**$677.40**
Solano County	$126.75	$221.87	$465.42	$161.28	$465.42	**$1,440.75**
Sonoma County	$37.16	-	$62.06	$161.28	$465.42	**$725.92**
Select Cities						
Adelanto	$42.25	$73.96	$155.14	$161.28	$465.42	**$898.05**
Desert Hot Springs	$29.38	-	Incalculable*	$161.28	$465.42	**$656.08***
Los Angeles	$16.90	$29.58	$310.28	$161.28	$465.42	**$983.47**
Merced	$73.45	$147.92	-	$161.28	$465.42	**$848.06**
Modesto	$21.13	$36.98	$248.23	$161.28	$465.42	**$933.03**
Oakland	$42.25	$59.17	$155.14	$161.28	$465.42	**$883.26**
Pasadena	$29.38	$59.17	$186.17	$161.28	$465.42	**$901.42**
Sacramento	$33.80	$59.17	$124.11	$161.28	$465.42	**$843.78**
Santa Ana	$50.70	$88.75	$248.23	$161.28	$465.42	**$1,014.38**
West Hollywood	$63.38	$110.94	$232.71	$161.28	$465.42	**$1,033.73**

***Desert Hot Springs charges retailers a tax based on square footage. This cannot equate to a tax per pound.**

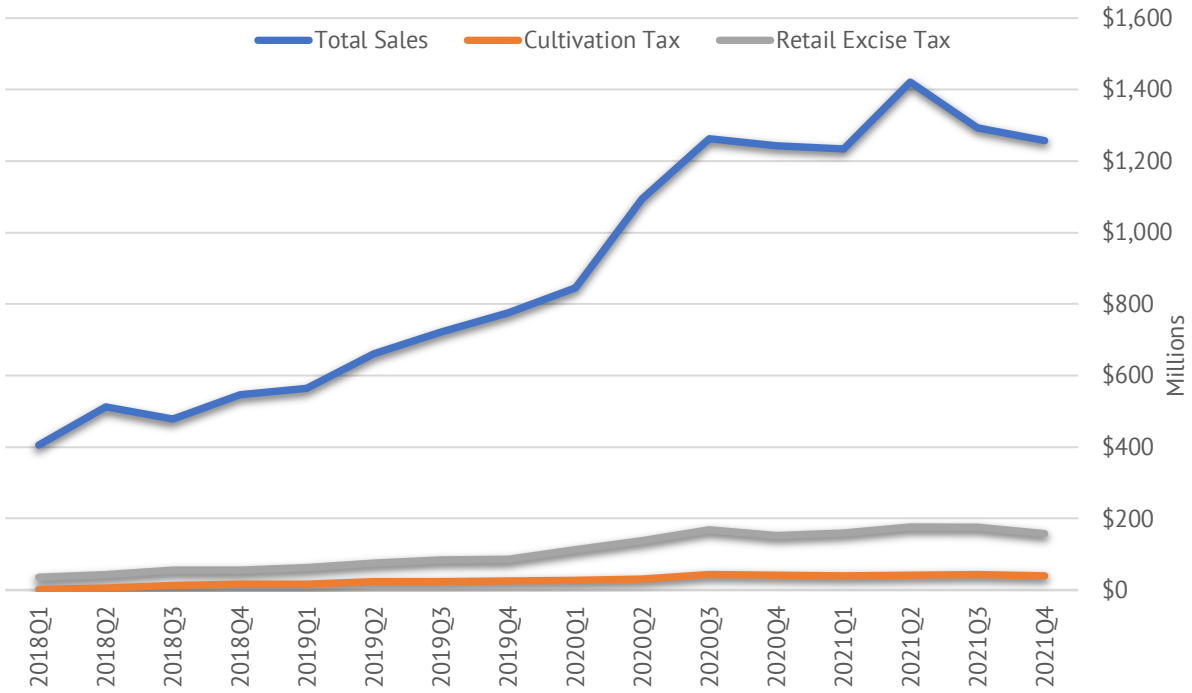
Source: Author's calculations based on city and county data. See note 8.

2.4 REVENUE PERFORMANCE

The state of California collected a cumulative $3.441 billion in cannabis-related taxes from January 2018 to December 2021. This included $432 million in cultivation taxes, $1.742 billion in retail excise taxes, and $1.267 billion in regular sales taxes. These figures were the result of $14.314 billion in cumulative retail cannabis sales over the same period.[12]

12 "Cannabis Tax Revenues," California Department of Tax and Fee Administration, https://www.cdtfa.ca.gov/dataportal/charts.htm?url=CannabisTaxRevenues, (March 31, 2022).

FIGURE 1: CALIFORNIA LEGAL CANNABIS SALES AND TAX COLLECTIONS 2018-2021 (QUARTERLY)



Source: Author's calculations based on data from California Department of Tax and Fee Administration, "Cannabis Tax Revenues."

This level of tax revenue collection has generally fallen short of expectations. Although tax collections have grown over time, the Executive Branch has been forced to revise downward forecasts of cannabis-related tax revenue in successive fiscal years.[13]

The Legislative Analyst's Office (LAO) estimated in November 2016 that taxes on adult-use cannabis under Proposition 64 would yield more than $1 billion annually, although the LAO cautioned that this level of tax revenue would not materialize immediately. Further, the LAO warned that tax revenue growth would depend greatly on local governments allowing cannabis sales within their jurisdictions and individuals making the choice to switch from illegal to legal cannabis suppliers in their purchasing decisions. The LAO optimistically posited that legal status would result in more efficient production and lower risk premiums demanded by suppliers. These improvements would lower the cost of production and

[13] Amy DiPierro, "Gov. Gavin Newsom's Latest Budget Projections Harsh Pot Optimists' Revenue Vibe," *Palm Springs Desert Sun*, May 10, 2019, https://www.desertsun.com/story/money/2019/05/10/california-state-cannabis-pot-weed-marijuana-tax-revenue-below-projection-gavin-newsom-budget-shows/1164970001/.

bestow a price advantage on legal retailers, thus, driving consumers toward legal products.[14] Part 4 examines prices charged on the legal market in greater detail, but it is clear that the LAO's anticipated price advantages have not materialized and many consumers have failed to transition toward legal retailers. Existing tax structures and rates may be a key reason why.

…it is clear that the LAO's anticipated price advantages have not materialized and many consumers have failed to transition toward legal retailers. Existing tax structures and rates may be a key reason why.

Even if illegal suppliers demand a risk premium to engage in criminal activity, which drives upward the prices of illegal products, these illegal suppliers evade tax and regulatory costs imposed on their legal competitors. These tax costs can be significant when the cumulative effect of those assessed at the state and local levels are considered together, ranging as high as $1,441 per pound, as shown previously. By contrast, the wholesale production costs of cannabis cultivated indoors under the existing regulatory framework calculate to approximately $564 per pound.[15] Distributors and retailers bear additional costs for packaging, labeling, compliance testing, distribution, advertising, and selling. However, for legal operators, the tax cost of cannabis production clearly remains a significant disadvantage that may overwhelm the risk premium demanded by illegal producers and retailers.

14 "Proposition 64," California Legislative Analyst's Office, November 8, 2016, https://lao.ca.gov/ballot/2016/Prop64-110816.pdf (March 21, 2022).

15 Lawrence and Purnell, "Marijuana Taxation and Black Market Crowd-Out."

PART 3

PARTICIPATION IN THE LEGAL MARKET

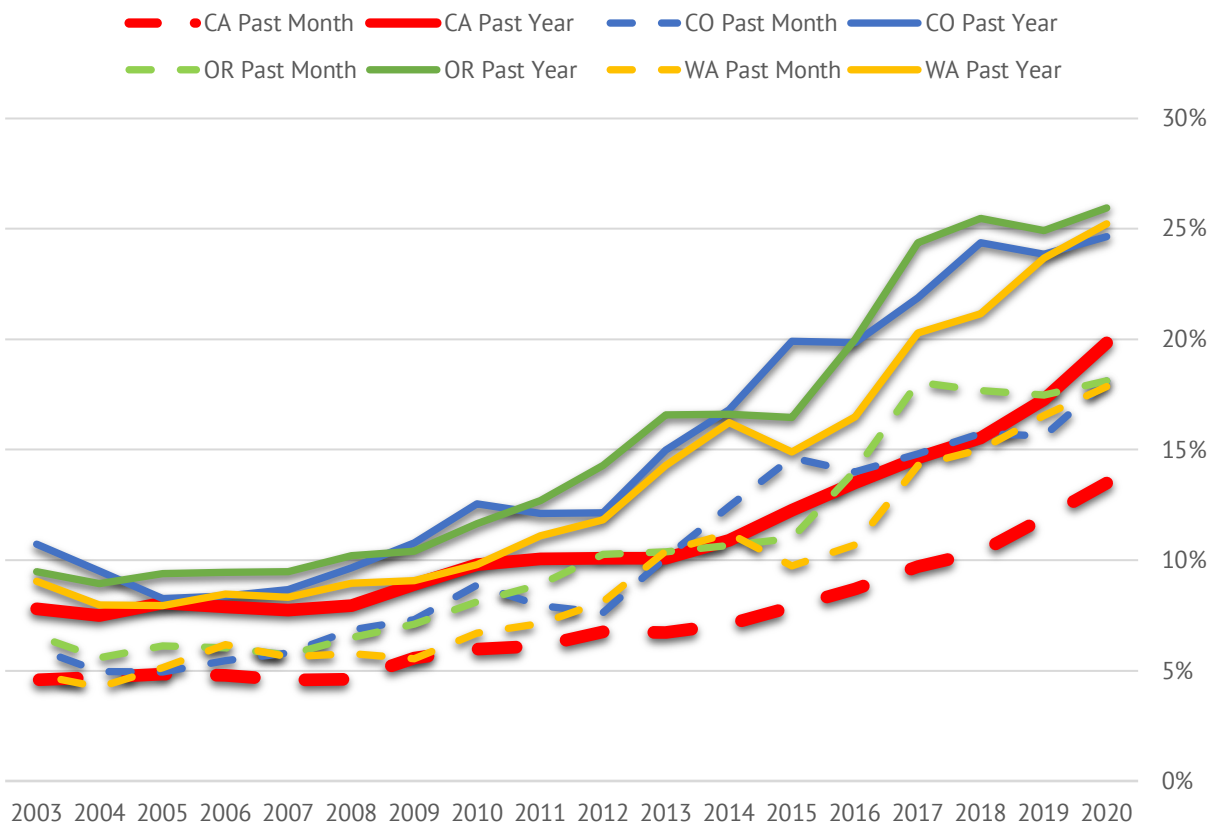
Parts 3 and 4 examine available data to determine whether usage patterns and purchasing behavior in California vary substantially from those found in other states with regulated markets for adult-use cannabis, and whether any such differences may reasonably be attributed to tax policy. This analysis uses several data sets including some that are publicly available as well as proprietary data.

This analysis examines survey data that asks respondents about their marijuana consumption patterns, among other issues. This Substance Abuse and Mental Health Services Administration (SAMSHA) survey is conducted annually and is frequently cited within the literature on drug use rates because it is the longest-running and most standardized survey on the topic. The survey asks respondents whether they have consumed marijuana within the past year and within the past 30 days, and whether they have consumed marijuana for the first time in their life within the past year. These results are divided into cross tabs by three age groups: for respondents aged 12 to 17, 18 to 25, and 26 and up.[16] This study considers only respondents aged 26 and up because only this group is fully eligible for participation within regulated, adult-use markets.

[16] "National Survey on Drug Use and Health," U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health.

This analysis focuses particularly on whether usage rates in California vary substantially from those found in other states with mature markets for adult-use cannabis. The data reveal that respondents in California indicated lower usage rates than those in Colorado, Oregon, and Washington throughout the time series, but particularly since 2011. In 2020, roughly 20% of the California population indicated use of marijuana within the past year compared to roughly 25% in the other three states. Likewise, past-month usage in California was lower, at 13.5%, versus roughly 18% in the other three states. Based on these data, it may be reasonable to expect that Californians spend less on marijuana, on an average per capita basis, than residents of the other three states. Moreover, since the SAMSHA survey makes no distinction between the methods by which respondents procure their marijuana, it implies that this expectation is relevant to both the legal and illegal marijuana markets in sum.

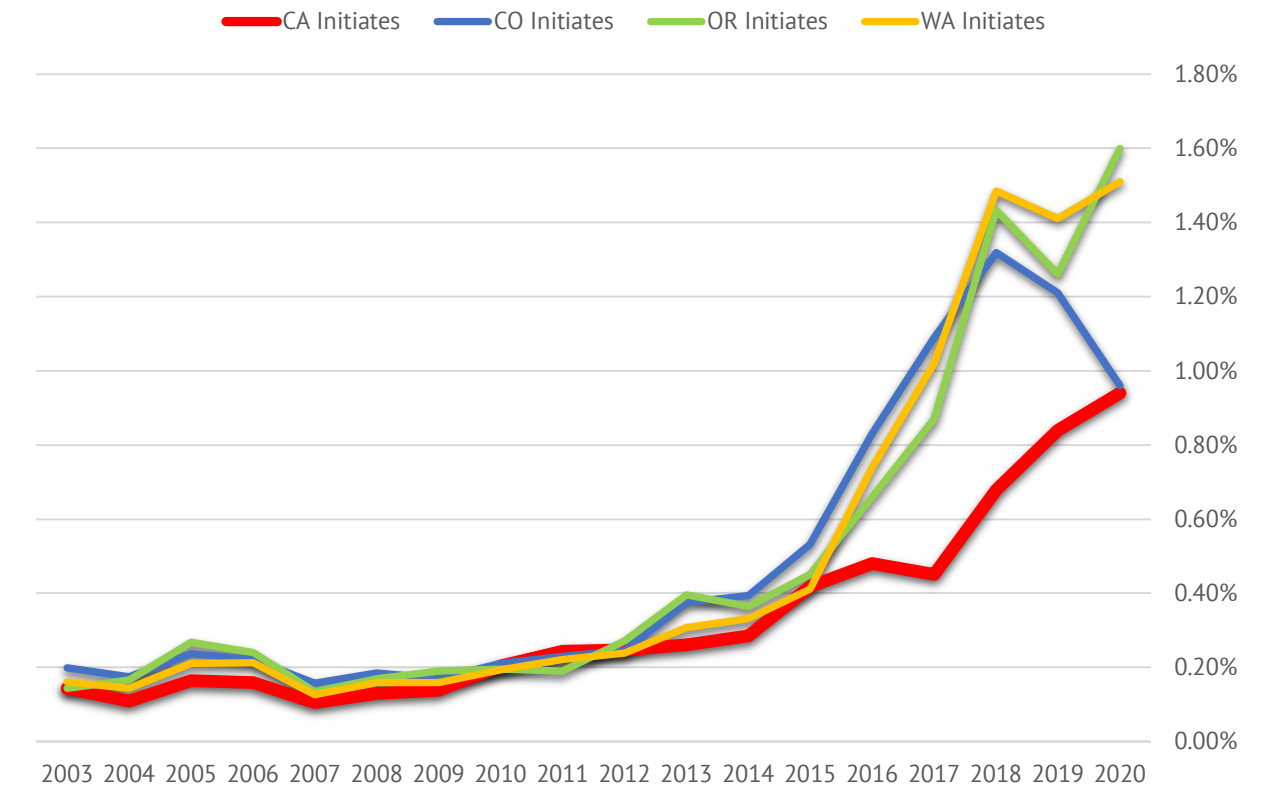
FIGURE 2: PREVALENCE OF MARIJUANA USAGE IN PAST MONTH AND PAST YEAR (RESPONDENTS AGED 26+), 2003-2020



Source: Author's calculations based on data from National Survey on Drug Use and Health, U.S. Department of Health and Human Services.

Additionally, the SAMSHA data indicate that the total market for cannabis in California may be growing slower than in these other states, as the prevalence of new initiates, or those who consumed marijuana for the first time, is lower in California than in Colorado, Oregon, and Washington. This prevalence has grown in all four states since 2012. However, it has exceeded 1% of the population in Colorado, Oregon, and Washington in recent years (and exceeded 1.5% in Oregon and Washington) but reached a maximum of 0.94% in California in 2020.

FIGURE 3: PREVALENCE OF FIRST-TIME USERS AS % OF POPULATION (AGED 26+), 2003-2020



Source: Author's calculations based on data from National Survey on Drug Use and Health, U.S. Department of Health and Human Services.

The SAMSHA data lead to the expectation that spending per capita on cannabis products in California is around 20% lower than those found in Colorado, Oregon, and Washington if roughly similar proportions of sales occurred through legal retailers. This analysis tested this by obtaining publicly available sales data reported by regulatory agencies in Colorado

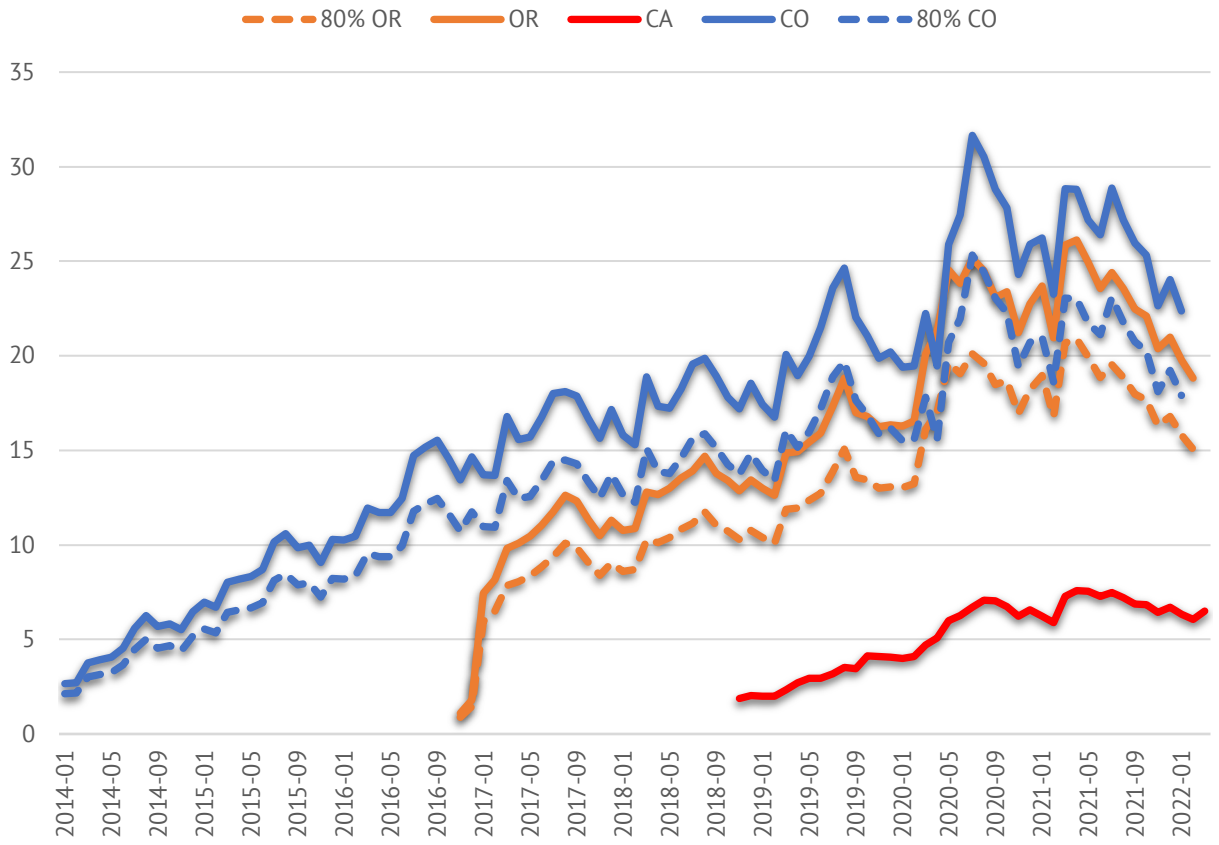
and Oregon.[17] Neither California nor Washington makes these data publicly available, but this study obtained data for California from Headset, a proprietary, third-party source of data that monitors the inventory and sales levels of licensed retailers through an integration into their point-of-sale and seed-to-sale tracking systems. Unfortunately, the author was unable to obtain comparable data for Washington State, leaving Colorado and Oregon as the only comparable states for the remainder of the analysis. Each of these datasets was available on a monthly basis. Dividing total monthly sales within each state by the Census estimated state population for the corresponding time period to generate estimated per-capita spending on legal marijuana products within each state.

The results, presented in Figure 4, indicate that residents in Colorado and Oregon spend roughly 3.35 to 3.78 times more than California residents on legal cannabis products per capita. SAMSHA data on usage rates indicate that Californians consume cannabis around 20% less frequently than Coloradans and Oregonians, so the observation that Coloradans and Oregonians spend 335% to 378% more per capita in legal dispensaries reveals a disparity in purchasing behavior that cannot be fully explained by a difference in usage rates. Based on this discrepancy, it's reasonable to conclude that Californians purchase a large share of their cannabis products from unlicensed sources.

Headset data report that $3.281 billion in legal cannabis sales were made in California during calendar year 2021, which equates to a monthly per-capita expense of $6.94 (including even non-consumers of cannabis within the denominator). The corresponding monthly per-capita spending (averaged across the year) for Colorado and Oregon were $26.22 and $23.25, respectively. If Californians purchased legal cannabis at the same rate as Oregonians in 2021, total sales would have amounted to $10.948 billion. Reducing Oregon's per-capita sales trends by 20% to account for the difference in consumption rates witnessed in SAMSHA data and transposing those sales trends onto the California market, one should expect 2021 sales in California to amount to $8.758 billion. When compared to Colorado, which witnessed a higher per-capita spend than Oregon, those figures would be $12.348 billion and $9.878 billion, respectively.

[17] "Marijuana Data," Colorado Department of Revenue, https://cdor.colorado.gov/data-and-reports/marijuana-data (March 7, 2022); "Oregon Recreational Marijuana Market Data," Oregon Liquor and Cannabis Commission, https://www.oregon.gov/olcc/marijuana/Pages/Marijuana-Market-Data.aspx (March 7, 2022).

FIGURE 4: ADULT-USE CANNABIS SALES PER RESIDENT (TOTAL MARKET) JAN 2014 - MAR 2022 (MONTHLY)



Source: Author's calculations based on data from Colorado Department of Revenue, Oregon Liquor and Cannabis Commission, Headset and U.S. Census Bureau. See note 17.

In other words, this analysis estimates that California's legal market is around one-third the size of expectations based on differences in surveyed usage rates. A likely explanation is that the illegal market continues to dominate the legal market in California, accounting for roughly two-thirds of cannabis sales. These figures comport with other recent estimates on the relative sizes of the legal and illegal markets in California, providing additional support for this supposition.[18]

Previous research by Reason Foundation has shown the cost per pound of state-level taxation in Colorado and Oregon is substantially lower than California.[19] Colorado and

[18] See, e.g., Alexander Nieves, "California's Legal Weed Industry Can't Compete with Illicit Market," *Politico*, October 23, 2021, https://www.politico.com/news/2021/10/23/california-legal-illicit-weed-market-516868.

[19] Lawrence and Purnell, "Marijuana Taxation and Black Market Crowd-Out."

Oregon both exempt cannabis transactions from general state sales taxes. Colorado assesses a 15% wholesale transfer tax and a 15% retail excise tax while Oregon assesses only a 17% retail excise tax. Based on prevailing market prices at the time, Reason Foundation estimated that these tax instruments amounted to $526 per pound in Colorado and $340 per pound in Oregon (lowest in the nation).[20] Part 2 of this study analyzed both state and local taxes, finding that the tax cost per pound in California ranges from $677 to $1,441. Thus, California bears a significant disadvantage in terms of per-pound tax cost of legal cannabis relative to its peers with mature, adult-use markets. Media reports have indicated that Oregon, with the lowest per-pound tax cost among states with adult-use markets, has also been most successful in transitioning cannabis sales from the illegal to the legal market.[21] These figures make a strong argument that California should consider reducing its overall tax burden on its legal cannabis industry.

3.1 CONSUMER ACCESS TO LEGAL RETAILERS

There is reason to believe that taxes are not the only reason California's legal cannabis market is dwarfed by its illegal market. A second likely explanatory variable is consumers' access to legal retailers, or lack thereof in certain geographic areas. Proposition 64 and MAUCRSA allow local governments to ban any or all cannabis license types within their jurisdictions, and reports indicate that a large majority of municipalities have done so. A 2019 analysis by *Marijuana Business Daily* indicated that 390 out of 482 local governments surveyed had banned retail sales while slightly lower percentages had banned other license types.[22] Since wholesale production can be performed anywhere within the state, bans on these license types are expected to have little effect on the volume of retail sales, but a legal retailer's proximity to an individual's place of residence likely greatly affects their propensity to purchase cannabis from a legal versus illegal seller. In this respect, both the overall number and geographic distribution of legal retailers are likely to strongly influence the volume of legal sales.

20 Ibid.

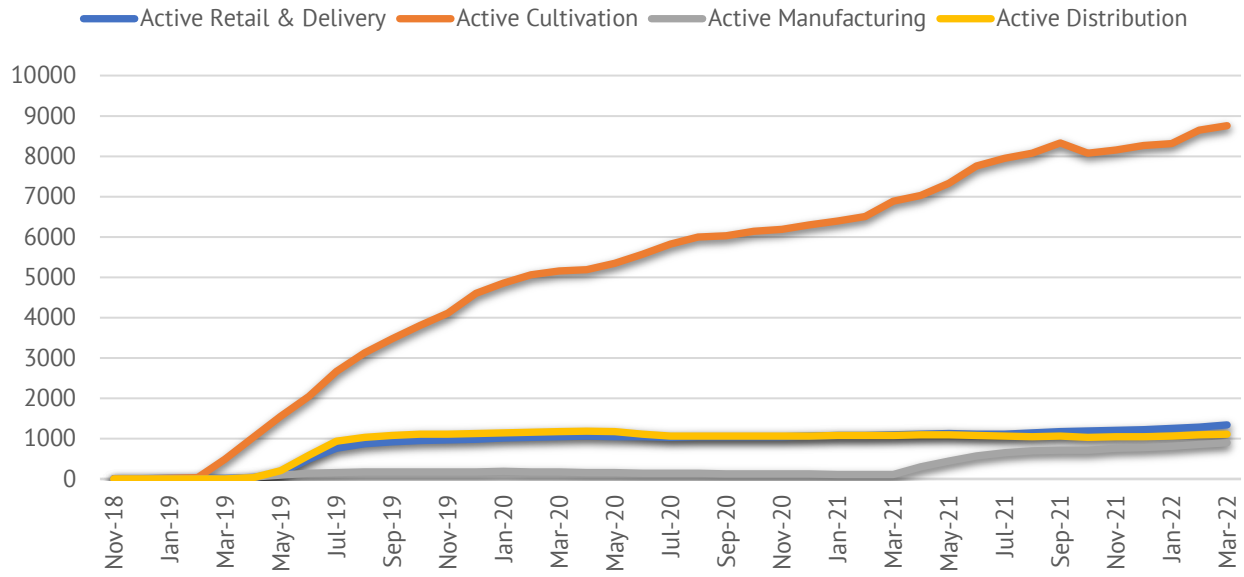
21 Natalie Fertig, Interview on National Public Radio: On Point Series, August 21, 2019. "Why Illicit Marijuana Sales Are Up—In States Where It's Legal." Available at: https://www.npr.org/podcasts/510053/on-point (March 12, 2022).

22 *Marijuana Business Daily*, "Chart: Most California Municipalities Ban Commercial Cannabis Activity," February 18, 2019 (Updated December 17, 2021), https://mjbizdaily.com/chart-most-of-california-municipalities-ban-commercial-cannabis-activity/.

The California Bureau of Cannabis Control, which was reorganized into the Department of Cannabis Control in 2021, retains data regarding the number and types of annual licenses awarded. Before these agencies began issuing annual licenses, they issued (temporary) provisional licenses during the time the agencies were first establishing the legal market. Unfortunately, they do not make available data on provisional licensees that largely preceded annual licensees. However, the database of annual licensees shows these licenses began to be issued in late 2018. Since then their numbers have grown steadily, even if the overall numbers of licensees per capita is not high relative to other states with adult-use markets.

The data, presented in Figure 5, show that the number of active retail licenses in California grew from eight in November 2018 to 487 by June 2019 and 988 by December 2019, as mostly provisional licensees were awarded annual licenses. Since then, the rate of growth has slowed, with a total of 1,340 active retail licenses as of March 2022. In addition, 197 retail locations have closed since being awarded an annual license.[23]

FIGURE 5: CALIFORNIA ACTIVE ANNUAL LICENSES, BY TYPE NOVEMBER 2018 - MARCH 2022 (MONTHLY)



Source: Author's calculations based on data from California Department of Cannabis Control, "Cannabis Unified License Search."

[23] "Cannabis Unified License Search," California Department of Cannabis Control, https://search.cannabis.ca.gov/ (March 5, 2022).

As of February 2022, Oregon reports having 691 active retailers while Colorado reports 420 active retailers.[24] These figures imply that Colorado boasts one legal retailer per 13,838 residents while Oregon boasts one retailer per 6,145 residents. California, by contrast, boasts one legal retailer per 29,282 residents, indicating a dramatic undersupply of legal retailers in the Golden State.

TABLE 4: CANNABIS RETAILERS BY JURISDICTION (AS OF MARCH 2022)

Eureka	11
La Mesa	15
Lompoc	14
Long Beach	30
Los Angeles	108
Modesto	13
Moreno Valley	12
Oakland	14
Palm Springs	32
Perris	11
Sacramento	30
San Diego	23
San Francisco	56
Santa Ana	28
Santa Rosa	21
Vallejo	12
Van Nuys	11
Vista	11
All Others (with <10 total)	477
Total Storefronts	**929**
Delivery Services	402
Total Retailers	**1,331**

Source: Author's calculations based on data from California Department of Cannabis Control, "Cannabis Unified License Search."

Moreover, because the concentration of retailers is heavily skewed by jurisdiction in California, this undersupply is unevenly distributed. A summary of California licensee data by jurisdiction, presented in Table 4, indicates more than half of the 929 storefront

[24] "MED Licensed Facilities," Colorado Department of Revenue, https://sbg.colorado.gov/med/licensed-facilities (March 12, 2022); "Oregon Recreational Marijuana Market Data," Oregon Liquor and Cannabis Commission, https://www.oregon.gov/olcc/marijuana/Pages/Marijuana-Market-Data.aspx (March 5, 2022).

dispensaries are located in just 18 cities. An additional 402 delivery-only licensees may make deliveries to customers beyond their home jurisdiction, but most deliver only within regional metropolitan areas and none deliver to all locations in California.

Such a discrepancy indicates there are large geographic “cannabis deserts” wherein residents do not have access to a legal retailer within a reasonable distance of their homes. Within these cannabis deserts, illegal retailers are likely to thrive as the only parties capable of fulfilling local demand.

While tax cost is a key reason why California has been relatively ineffective at transitioning cannabis sales from the illegal to the legal market, lack of access to legal retailers is an additional hurdle for market participants that cannot be ignored.

PART 4

COMPARATIVE PRICES AND PRICE ELASTICITY

Taxes increase the price facing consumers of legal cannabis relative to illegal cannabis. Few studies have attempted to measure consumers' price sensitivity for cannabis because the data are elusive. Prior to the creation of regulated markets in Colorado and Washington after 2012, all sales of adult-use cannabis were illegal while sales by unregulated retailers remain illegal across the United States. However, economists have made some notable attempts to measure consumers' price sensitivity for cannabis.

In 1972, UCLA professors Charles Nisbet and Firouz Vakil anonymously surveyed university students to determine how their cannabis buying habits might change at various price points. They concluded their students' price elasticity of demand was somewhere between -0.40 and -1.51, meaning that students would purchase somewhere between 0.4 to 1.51% less cannabis for every 1% increase in its price.[25] More recently, economists from the University of Nevada and California State University at Northridge used self-reported, anonymous data crowdsourced on the website www.priceofweed.com to calculate consumers' price elasticity of demand and estimated those values between -0.3 and -0.6.[26]

[25] Charles T. Nisbet and Firouz Vakil, "Some Estimates of Price and Expenditure Elasticities of Demand for Marijuana Among U.C.L.A. Students," *The Review of Economics and Statistics*, Vol. 54, Issue 4 (1972), 473-475, Available at: https://econpapers.repec.org/article/tprrestat/v_3a54_3ay_3a1972_3ai_3a4_3ap_3a473-75.htm.

[26] Adam J. Davis and Mark W. Nichols, "The Price Elasticity of Marijuana Demand," University of Nevada at Reno Economics Working Paper Series, Working Paper No. 13-004 (2013). Available at: https://econpapers.repec.org/

However, these estimates measure only the degree to which consumers will stop purchasing cannabis altogether in response to an increase in price. To determine the effect of tax rates on consumers' choice to purchase cannabis from a legal versus an illegal retailer, the cross-price elasticity is more relevant. Only one study to date has been able to estimate a cross-price elasticity, which it accomplished by examining the effect of a 2015 change in tax policy in Washington State. Prior to 2015, Washington had assessed cannabis taxes at each stage of production, but in 2015 it consolidated these taxes into a single excise tax at retail of 37%. The change affected market prices of legal cannabis products relative to competing illegal products, allowing researchers from the University of Oregon to estimate a cross-price elasticity of demand of -0.85. Notably, this study finds that consumers are more sensitive to price changes on the legal market than prior studies have shown for the illegal market. As the authors note, "This is somewhat larger than most of the illegal or medical marijuana estimates. In the current legal recreational markets more substitutes are available."[27]

4.1 PRICES PER EQUIVALENT UNIT

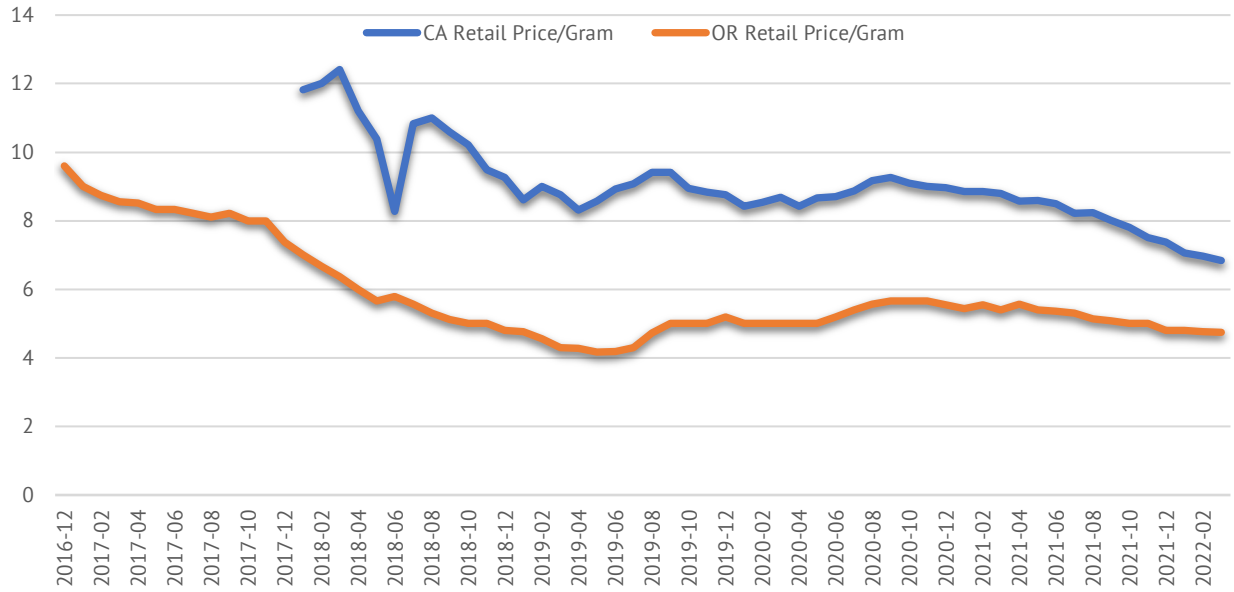
This analysis models consumer behavior and price sensitivity within California's legal cannabis market first by collecting data regarding the price per equivalent unit of legal cannabis goods, measured in grams. These data were obtained from Headset's proprietary database, which reports average prices paid for cannabis flower and concentrates at retail within legal California dispensaries. Comparing the two, using comparable data for Oregon from the Oregon Liquor and Cannabis Commission, reveals higher prices in California.[28] These data are presented in Figures 6 and 7.

paper/unrwpaper/13-004.htm; Dennis Halcoussis et al. "Estimating the Price Elasticity of Demand for Cannabis: A Geographical and Crowdsourced Approach." *Revista de Metodos Cuantitativos para la Economia y la Empresa*, Vol. 23 (2017), 119-136. Available at: https://pdfs.semanticscholar.org/250e/cce6fef2243d944e13e46637537e575a0968.pdf.

27 Benjamin Hansen et al. "The Legal Market for Marijuana: Evidence on Tax Incidence, and the Elasticity of Demand from Washington State." July 2017. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_ id=3006807.

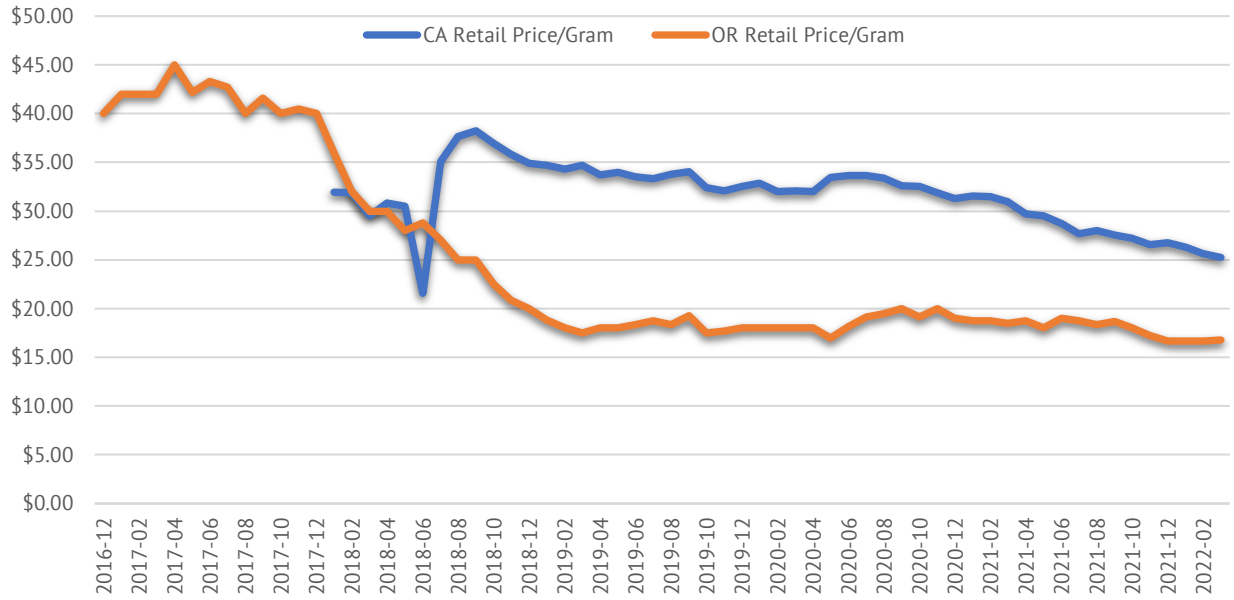
28 "Oregon Recreational Marijuana Market Data," Oregon Liquor and Cannabis Commission, https://www.oregon.gov/olcc/marijuana/Pages/Marijuana-Market-Data.aspx.

FIGURE 6: CALIFORNIA VS. OREGON: AVERAGE PRICE PER GRAM, MARIJUANA FLOWER AT RETAIL, 2016 - 2022 (MONTHLY)



Source: Author's calculations based on data from Oregon Liquor and Cannabis Commission and Headset. See note 23.

FIGURE 7: CALIFORNIA VS. OREGON: AVERAGE PRICE PER GRAM, MARIJUANA CONCENTRATES AT RETAIL, 2016 - 2022 (MONTHLY)



Source: Author's calculations based on data from Oregon Liquor and Cannabis Commission and Headset. See note 23.

Figures 6 and 7 make it visibly evident that prices paid at retail for equivalent units of similar products are around 20% higher in California than in Oregon for a majority of the time series. The same data can be used to calculate a price elasticity of demand within each market by comparing month-over-month changes in average price to the total sales volume for each product type in each state. Some extreme outliers and months in which reported prices experienced no change were removed from this calculation to yield more reliable results. The analysis shows that Oregonians exhibit similar price sensitivity to Californians and both are within the range of previous findings for same-price elasticity of demand, which helps validate the results. From February 2018 to March 2022, Californians exhibited a price elasticity of -0.766 for cannabis flower, while Oregonians exhibited a price elasticity of -0.765 for similar products over the period from February 2017 to February 2022.

TABLE 5: PRICE ELASTICITY OF DEMAND FOR FLOWER-BASED CANNABIS PRODUCTS IN CALIFORNIA AND OREGON

California	**-0.766**
Oregon	-0.765

Data regarding illegal cannabis transactions are unavailable to calculate corresponding same-price elasticities for illegal products or cross-price elasticities for legal and illegal products. However, since illegal retailers continue to serve a large majority of the cannabis market in California, it may be safe to assume that there remains substantial unmet demand within the marketplace for legal retailers. On that basis, Part 5 uses the calculated elasticities presented herein to estimate the additional sales volume (and taxable transactions) that might be generated in response to changes in retail price resulting from prospective changes in tax policy.

… since illegal retailers continue to serve a large majority of the cannabis market in California, it may be safe to assume that there remains substantial unmet demand within the marketplace for legal retailers.

PART 5

QUANTITATIVE MODELING OF PROSPECTIVE TAX CHANGE POLICIES

This section models the effect of tax changes on overall market performance and tax revenue collection over a range of possible scenarios. The models assume that the cost of taxation is fully built into the retail prices of legal cannabis products, and that a reduction in tax rates would lead to a corresponding reduction in retail prices. As retail prices decline, California consumers respond by purchasing greater quantities of legal cannabis products according to the price elasticities calculated in Part 4.

This behavior is modeled first by examining the impact of lower prices and higher quantities demanded on the size of the overall market on a monthly basis. Subsequently, the analysis forecasts the tax revenues that state-level tax instruments would yield between an assumed date of tax policy change (April 2022) and December 2024.

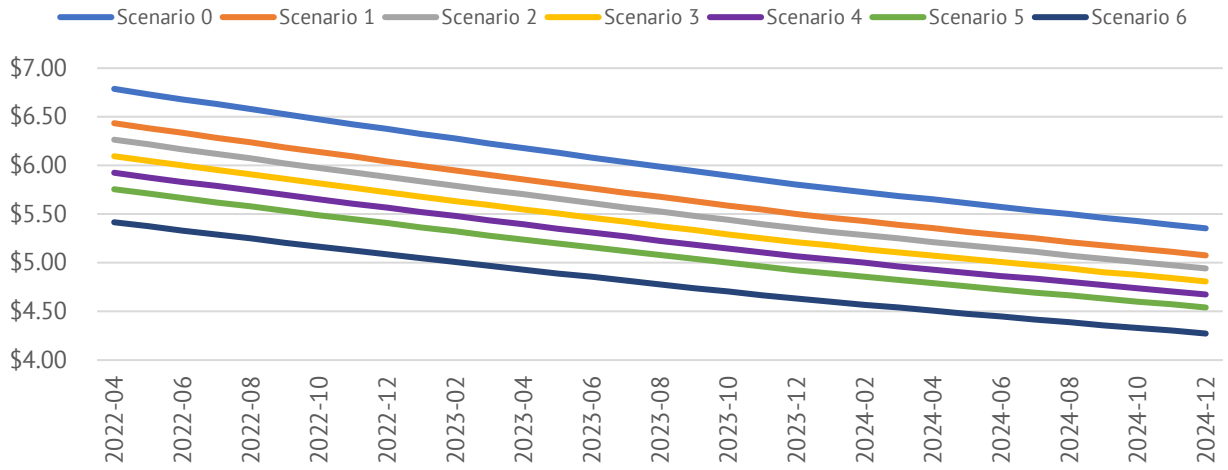
We model these changes over seven possible scenarios:

- **Scenario 0** is a base case in which no changes in tax policy are made.
- **Scenario 1** eliminates the wholesale cultivation tax while the retail excise tax remains unchanged.

- **Scenario 2** eliminates the wholesale cultivation tax and reduces the retail excise tax from 15% to 12.5%.
- **Scenario 3** eliminates the wholesale cultivation tax and reduces the retail excise tax from 15% to 10%.
- **Scenario 4** eliminates the wholesale cultivation tax and reduces the retail excise tax from 15% to 7.5%.
- **Scenario 5** eliminates the wholesale cultivation tax and reduces the retail excise tax from 15% to 5%.
- **Scenario 6** eliminates both the wholesale cultivation tax and the retail excise tax.

There are important caveats to these analyses. First, tax costs are not the only determinant of changes in retail price. Retail prices have declined steadily on a month-to-month basis throughout the Headset data on which the analysis relies. This downward trend reflects increasing efficiency and competition within the marketplace. This trend is considered exogenous to tax policy and is carried forward throughout the analysis at rates similar to what we observe in the historical data. This rate of decline is slowing throughout the historical dataset, which is also continued within the forecasts. In other words, it is assumed that retail prices per gram will continue to decline, but they will decline at a slower pace as the market moves toward greater levels of efficiency and competition. Figure 8 presents the findings of this analysis.

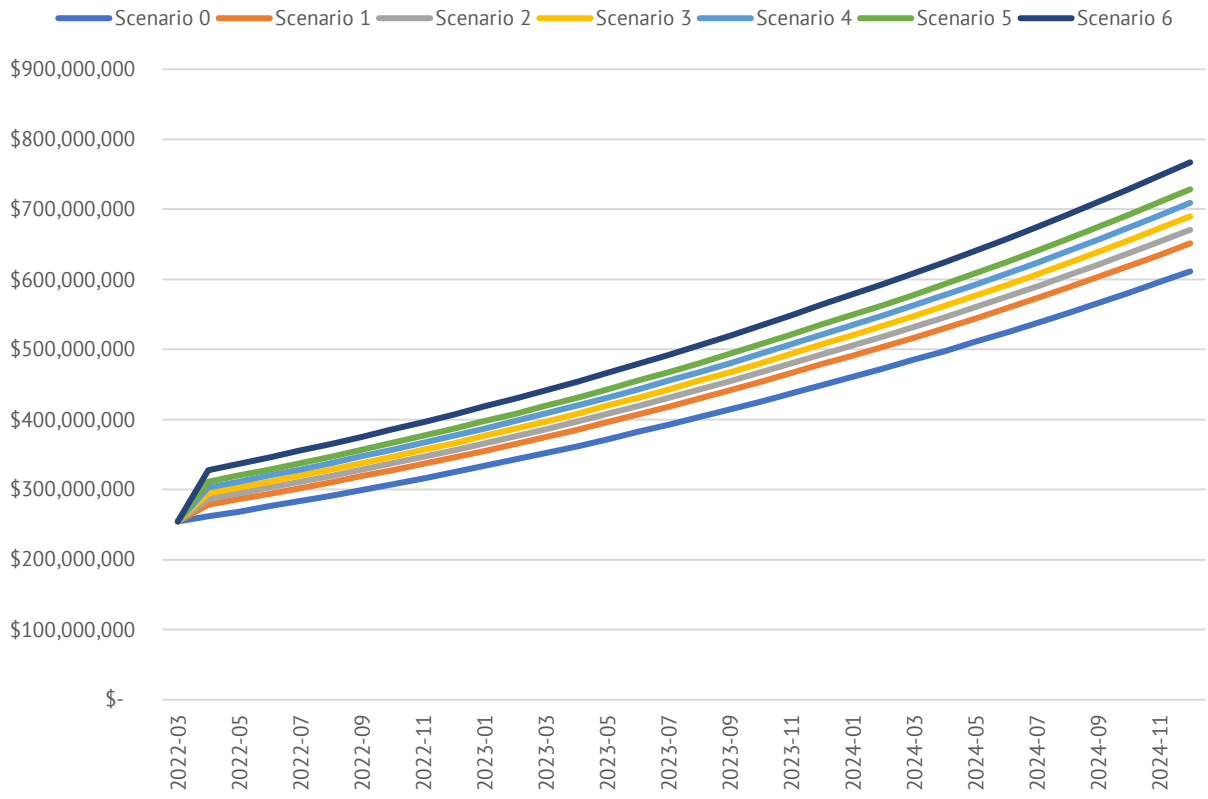
FIGURE 8: FORECAST PRICES PER GRAM FOLLOWING TAX CHANGES BY SCENARIO, APR. 2022 - DEC. 2024



Source: Author's calculations based on data from Headset Insights.

Similarly, the legal market is assumed to grow naturally over time due to factors beyond retail price as more retail outlets become available or consumers become familiar with how to purchase from legal retailers. The historical data support this trend, as the overall retail market has grown at an average of 3.45% monthly while prices per gram have declined at an average of only 0.91% monthly. These factors are assumed to remain relevant throughout the forecast period. The forecasts therefore assume the legal market will continue to grow at half its historical rate even absent any change in retail prices. *Importantly, this growth is largely dependent on a continuing expansion of legal retailers so consumers gain increased access to legal products*. To the extent local governments continue to prohibit legal retailers, overall market growth would be imperiled. Figure 9 presents this study's forecast of overall consumer spending in the legal market under each scenario, with a surge in demand from the base case following the period of prospective tax changes, as well as escalating market growth throughout the time series due to lower taxes.

FIGURE 9: FORECAST MONTHLY CANNABIS SALES IN LEGAL MARKET UNDER TAX CHANGE SCENARIOS, MARCH 2022 - DECEMBER 2024



Source: Author's calculations based on data from Headset Insights.

Each alternative tax treatment scenario eliminates the wholesale cultivation tax (consistent with Reason Foundation's general recommendations to levy cannabis taxes only at retail[29]), while modeling retail excise taxes at different rates. One constant within each model is the statewide general sales tax rate of 7.25%. As reductions in the cultivation and retail excise taxes drive overall market growth, revenues realized from the general sales tax grow in both proportional and absolute terms, partially offsetting revenue loss from the tax reductions. While Scenario 0 still yields the highest amount of tax revenue, eliminating the cultivation tax results in only a 5.15% reduction in revenue by December 2024 relative to the base case. Relative to March 2022 revenues, Scenario 1 would grow tax revenues by 223.2% by December 2024. However, even under a complete elimination of both the cultivation and retail excise tax (Scenario 6), total monthly tax revenues from cannabis sales by December 2024 are still within 15% of their March 2022 levels due to growth in general sales tax receipts. Table 6 presents total monthly tax revenues by December 2024 under each scenario.

TABLE 6: TOTAL MONTHLY TAX REVENUE, DECEMBER 2024

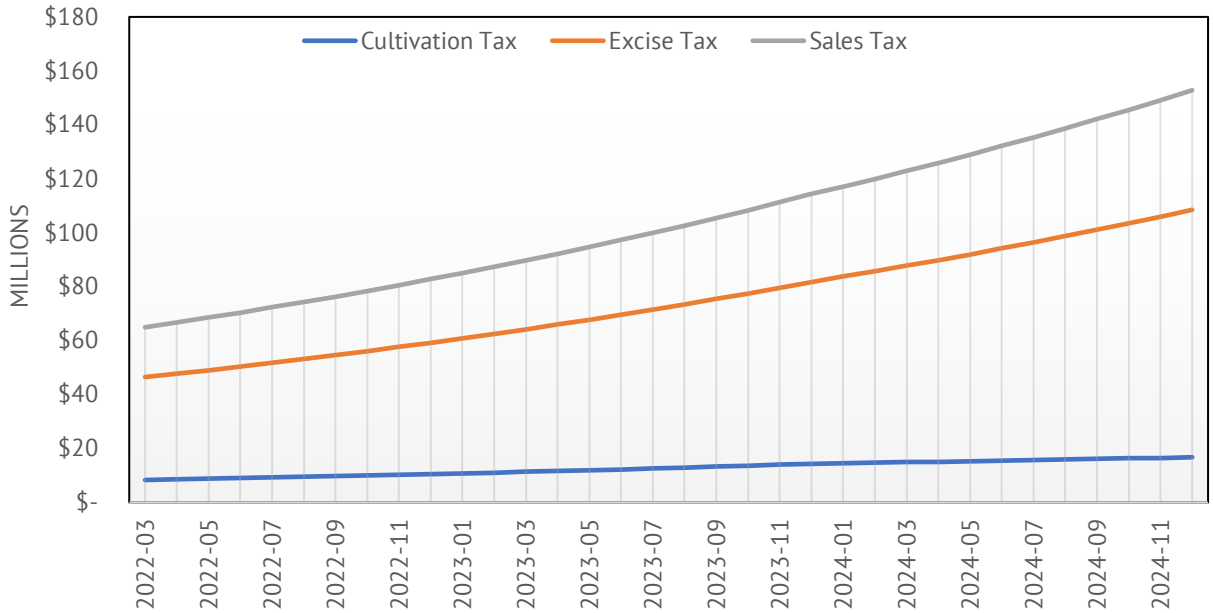
	2024-12 Revenues	2024-12 Revenues as % of 2022-03 Revenues
Scenario 0	$ 152,824,985	235.3%
Scenario 1	$ 144,958,777	223.2%
Scenario 2	$ 132,475,108	204.0%
Scenario 3	$ 119,028,443	183.3%
Scenario 4	$ 104,618,782	161.1%
Scenario 5	$ 89,246,125	137.4%
Scenario 6	$ 55,611,823	85.6%

Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

Figures 10 through 16 present scenario results as stacked line charts, in which each component of tax receipts contributes toward the cumulative total, represented by the top line on each chart. Scenarios that represent larger adjustments to tax rates display steeper immediate declines in tax receipts, as one might intuitively expect, but result in more dramatic growth in tax receipts thereafter as consumers move from the illegal to the legal market.

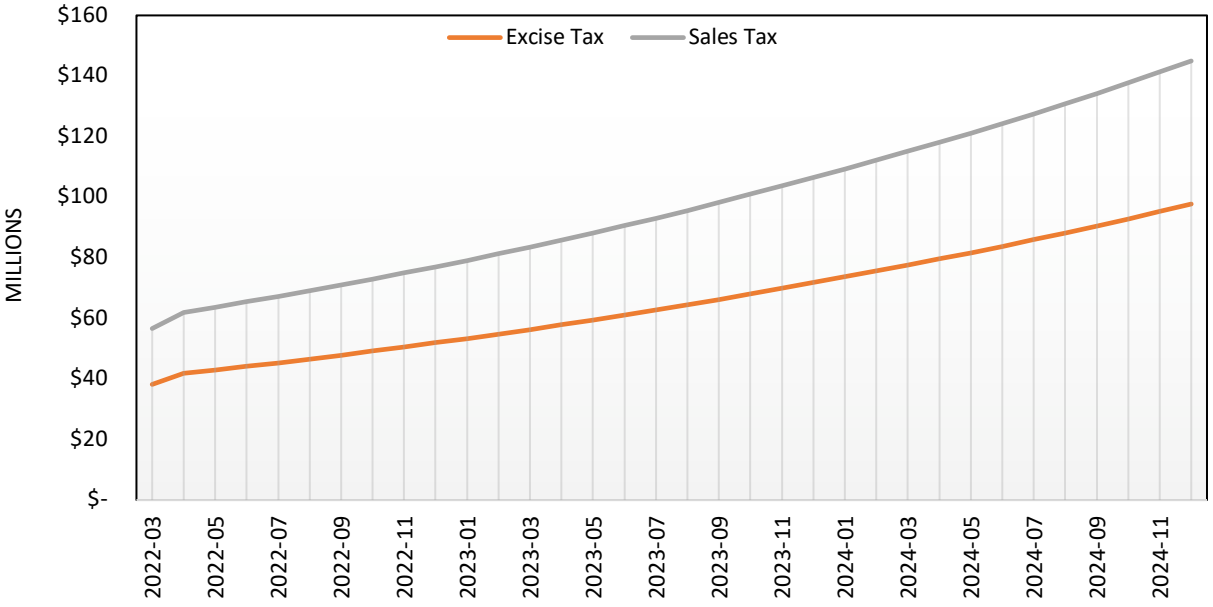
[29] Geoffrey Lawrence and Matt Harrison, "A Conceptual Framework for State Efforts to Legalize and Regulate Cannabis," Reason Foundation, 2019, https://reason.org/wp-content/uploads/conceptual-framework-state-efforts-to-legalize-regulate-cannabis.pdf (March 31, 2022).

FIGURE 10: SCENARIO 0 (STATUS QUO): FORECAST TAX REVENUES



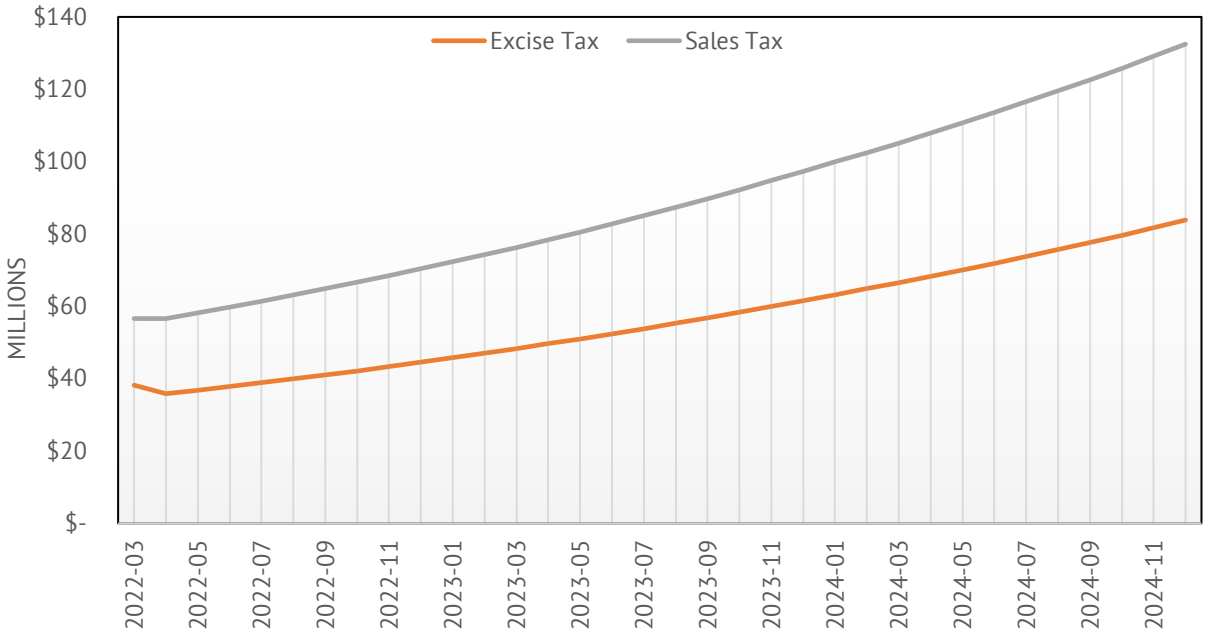
Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 11: SCENARIO 1 (0% CULTIVATION; 15% EXCISE): FORECAST TAX REVENUES



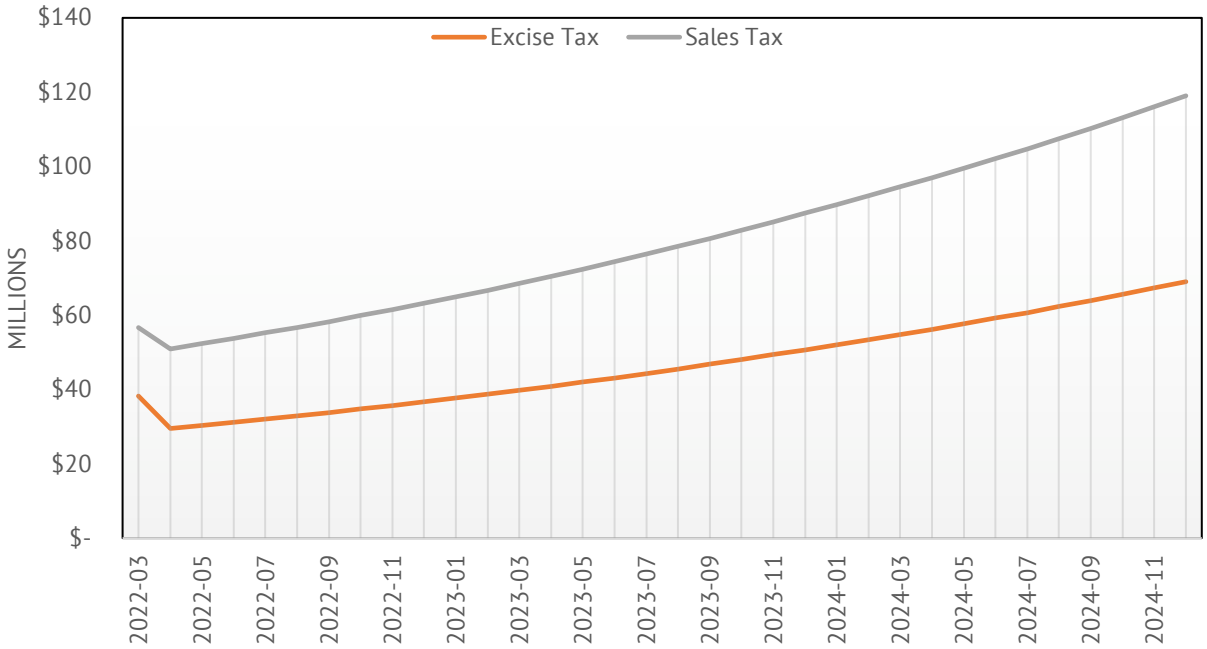
Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 12: SCENARIO 2 (0% CULTIVATION; 12.5% EXCISE): FORECAST TAX REVENUES



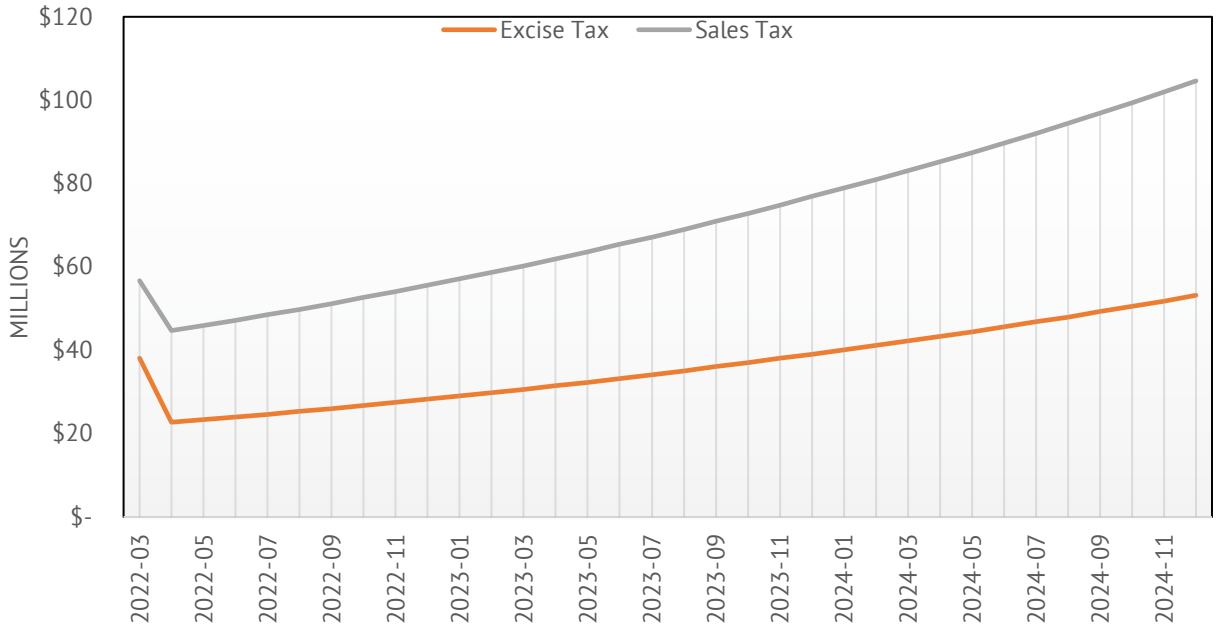
Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 13: SCENARIO 3 (0% CULTIVATION; 10% EXCISE): FORECAST TAX REVENUES



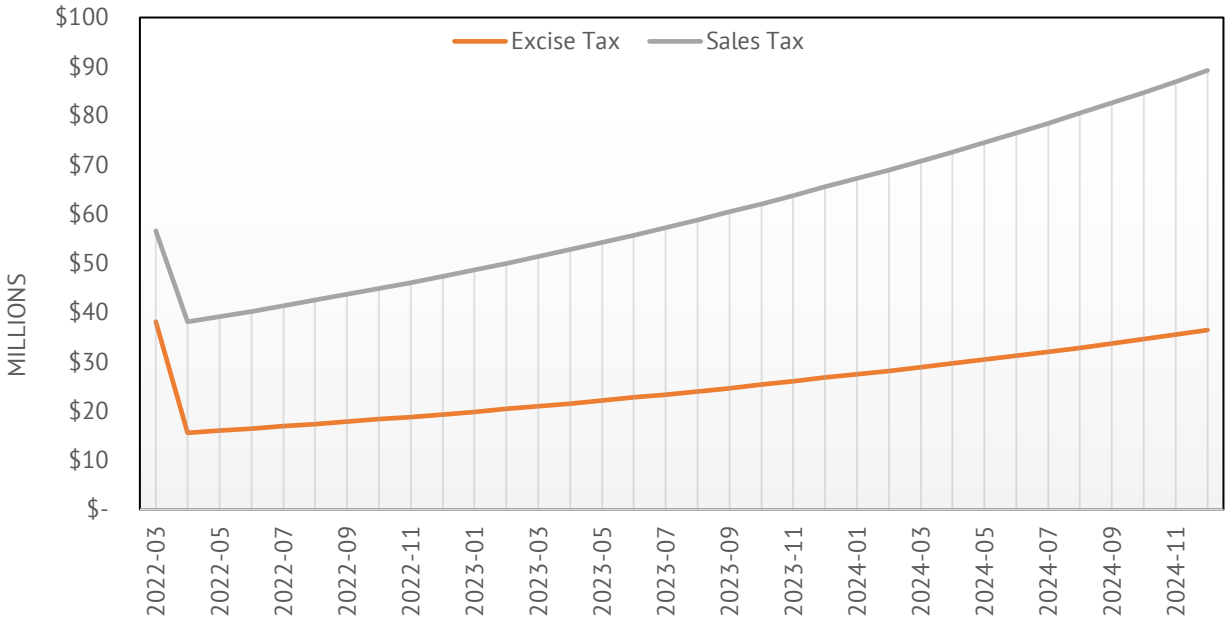
Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 14: SCENARIO 4 (0% CULTIVATION; 7.5% EXCISE): FORECAST TAX REVENUES



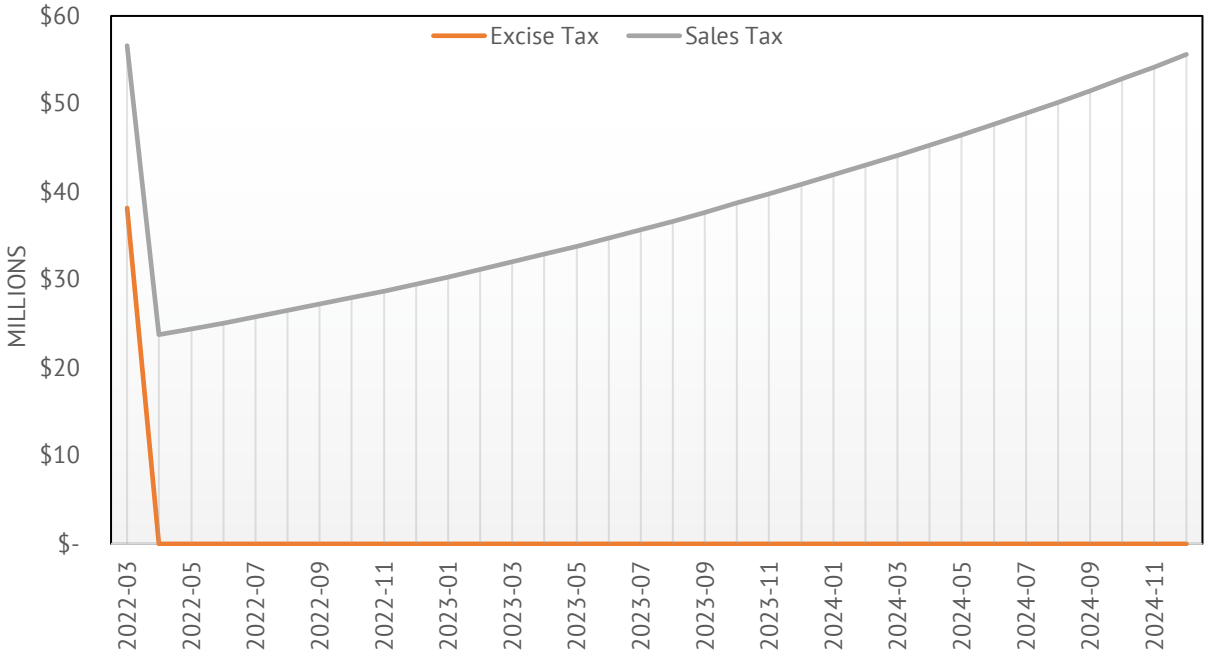
Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 15: SCENARIO 5 (0% CULTIVATION; 5% EXCISE: FORECAST TAX REVENUES



Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

FIGURE 16: SCENARIO 6 (0% CULTIVATION; 0% EXCISE): FORECAST TAX REVENUES



Source: Author's calculations based on data from Headset and California Department of Tax and Fee Administration, "Cannabis Tax Revenues," including author's stated assumptions for future tax-revenue growth.

PART 6

CONCLUSION AND RECOMMENDATIONS

The analysis presented in Part 5 makes clear that California's adult-use cannabis market should be expected to grow more quickly in response to a reduction in tax rates. Part 2 shows that California's tax rates are high compared to other states with mature markets and that local assessments quickly compound with state assessments such that the per-pound equivalent of cannabis taxes in California can range as high as $1,441. Parts 3 and 4 demonstrate that retail prices in California are higher than in other states with established cannabis markets, and that consumer spending per capita on legal cannabis products is significantly lower. Lower per-capita spending in California is not fully explained by differences in usage rates, implying through the data that Californians spend roughly twice as much on illegal cannabis products as on legal ones. Tax costs are a significant component of retail prices and this analysis shows that a reduction in taxes can make legal products more price-competitive with illegal products and lure more consumers into the regulated market. This overall market growth will quickly displace the lost revenue resulting from a reduction in tax rates.

Moreover, policymakers may wish to consider a reduction in California's cannabis taxes for reasons beyond economic or fiscal impacts. High taxes on legal products, combined with a paucity of legal retailers in many regions of the state, encourage consumers and producers to frequent the illegal market. Transactions on the illegal market are unregulated and may be a threat to public safety. Illegal products are untested and may be contaminated. Participants in illegal markets have no legal recourse to peaceably resolve disputes and

sometimes resort to violence. International drug cartels may become prominent suppliers of illegal products in extraordinarily high-tax areas or those without legal retailers.

> *Tax costs are a significant component of retail prices and this analysis shows that a reduction in taxes can make legal products more price-competitive with illegal products and lure more consumers into the regulated market.*

For all these reasons, California lawmakers should consider major changes to the state's cannabis taxes.

1. **Repeal or suspend the cultivation tax.** As Reason Foundation has noted previously, wholesale cannabis taxes are hidden from the ultimate consumer, and difficult to administer and audit and pyramid up the supply chain. This analysis makes additionally clear that repealing the cultivation tax will result in faster growth of the legal market and will quickly result in more total tax revenue than the state receives currently. If the cultivation tax is eliminated and no other changes are made, total monthly state revenue from taxes on cannabis transactions by December 2024 will be more than double their March 2022 level.
2. **Reduce retail excise taxes.** Part 3 compared California's cannabis market performance to two states—Colorado and Oregon—that levy retail excise taxes but that exempt cannabis sales from general sales taxes. California applies both taxes to retail transactions on cannabis, raising its effective tax rate substantially above competing markets. Policymakers needn't fully eliminate the retail excise tax, but reducing its rate combined with eliminating the cultivation tax could lead to much faster growth of the legal market and displacement of the illegal market. Under Scenario 3, a reduction of the excise tax from 15% to 10% would still yield $119 million in monthly state tax revenue from cannabis sales by December 2024, which is nearly double its current level.
3. **Explore methods to induce greater participation by local governments.** Proposition 64 and MAUCRSA allow local governments to ban cannabis enterprises within their

jurisdictions, with a shocking number of California's local governments doing so. Part 3 shows more than half of the state's legal retailers are concentrated into just 18 jurisdictions. Meanwhile, massive cannabis deserts exist across the state in which consumers have no access to a legal retailer within a reasonable distance of their home. Without legal alternatives, these consumers are likely to patronize illegal retailers.

Removing the authorities granted to local governments under current law would be a fundamental change to the state's cannabis market, but several states allow local governments only to reasonably regulate the times and manner of cannabis enterprise operations without imposing outright bans. However, lawmakers needn't go that far, as alternative approaches might help induce more local governments to participate. For example, the state could direct a portion of its cannabis tax revenues toward a revenue-sharing pool in which local governments can participate proportionally along with the sales volume that occurs within their jurisdictions. At the same time, however, state lawmakers should seek to limit the additional layers of taxation assessed by local governments because these taxes compound to make legal products uncompetitive on a price basis with illegal products. In other words, the state may be able to creatively displace local government tax revenues such that a reduction in state taxes is not offset by further increases in local tax rates.

ABOUT THE AUTHOR

Geoffrey Lawrence is managing director of drug policy at Reason Foundation. Previously, Lawrence was chief financial officer of the first fully reporting, publicly traded marijuana licensee to be listed on a U.S. exchange and was senior appointee to the Nevada Controller's Office where he oversaw the state's external financial reporting. Lawrence also spent a decade as a policy analyst on labor, fiscal, and energy issues between North Carolina's John Locke Foundation and the Nevada Policy Research Institute. Lawrence is additionally founder and president of an accounting and advisory firm with expertise in the licensed marijuana and hemp industries. Lawrence holds an M.S. and B.S. in accounting, an M.A. in international economics and a B.A. in international relations. He lives in Las Vegas with his wife and two children and enjoys baseball and mixed martial arts.