

# Local Laws Regulating Cannabis in California Two Years Post Legalization: Assessing Incorporation of Lessons from Tobacco Control

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## ABSTRACT

**Introduction:** As cannabis legalization continues to spread, best regulatory practice remains ill-defined and elusive, exposing the population to potential harms. **Methods:** We conducted an annual, statewide, cross-sectional survey to assess cannabis-related laws in effect by January 1, 2020, in local California jurisdictions and at the state level and measured adoption of potential best practices. **Results:** The current laws of all 539 jurisdictions were located; 276 jurisdictions allowed any retail sales (storefront or delivery) covering 58% of the population, an increase of 20 jurisdictions (8%) from year 1 of legalization (2018). Half allowed sales of medical cannabis, whereas slightly fewer jurisdictions ( $n = 225$ ) allowed adult-use sales. Only 9 jurisdictions imposed any restrictions on products stricter than state regulations. Cannabis temporary special events were allowed in 22 jurisdictions, up from 14 in the year prior. Thirty-three jurisdictions required additional health warnings for consumers. Just over half of legalizing jurisdictions taxed cannabis locally and little revenue was captured for prevention. No new jurisdictions established a potency-linked tax. Of jurisdictions allowing storefront retailers ( $n = 162$ ), 114 capped outlet licenses, and 49 increased the state-specified buffers between storefronts and schools. Thirty-six allowed on-site consumption, up from 29. As of January 2020, the state had not updated its regulations of key provisions addressed in this paper. **Conclusions:** In year 2 of legalized adult-use cannabis sales in California, the state remained split between retail bans and legal sale. Local policy continued to vary widely on protective measures, and State policy remained misaligned with protection of youth and public health.

**Key words:** cannabis; cannabis policy; tobacco control; cannabis regulation; cannabis law; marijuana policy

Since the first report was published on the California cannabis local laws passed in 2018 (Silver et al., 2020), the first year of legalized adult-use sales in the state, legalization of cannabis has continued to sweep the nation. As of June of 2021, only 3 states in the U.S. had not legalized cannabis in some form, and 18 states had legalized adult-use cannabis retail sales (Hartman, 2021), though not all have yet reached the licensing stage. Though the promise of legalization includes access to medicinal cannabis for some valid medical applications and decriminalization to reduce inequitable and excessive punishments in drug

policy, it also raises serious concerns about the potential risk of harms, especially to vulnerable populations such as youth and those exposed in utero. Many calls have been issued for applying lessons of tobacco control to the cannabis market (Barry & Glantz, 2016; California Tobacco Education and Research Oversight Committee (TEROC), 2018; Richter & Levy, 2014; Silver et al., 2020), such as: avoiding the product diversification and marketing trends that have characterized the tobacco industry (Ayers et al., 2019), controlling conflicts of interest (Bowling & Glantz, 2019), and others have recommended limiting the rapid

increases in product potency that have characterized the cannabis market and may increase risk of psychosis and other harms (Murray & Di Forti, 2016; Volkow et al., 2016).

Cannabis is the most commonly used illicit drug among adolescents in the U.S. (Johnston et al., 2021). In California, past 30 day use among 12-17 year olds rose significantly from 13.3% in 2016/17, just as adult-use legalization was coming to fruition, to 15.8% in 2018/19 (Substance Abuse and Mental Health Services Administration (SAMHSA), 2020). Adjusted rates of use among pregnant women in Northern California increased from 4.1% in 2009 to 8.7% in 2018 and adjusted rates of co-use of cannabis and alcohol during pregnancy also rose from 1.1% in 2009 to 1.9% in 2018, despite overall declines in prenatal alcohol use during the same time period (Young-Wolff et al., 2022).

In a 2017 meta-analysis, the National Academies of Science, Engineering and Medicine (NASEM) found substantial evidence supporting an association between cannabis use and serious harms such as psychosis, schizophrenia, and cannabis use disorder, among others, especially when use is initiated during adolescence and used frequently (National Academies of Sciences, Engineering, and Medicine, 2017). Since that review, evidence continues to mount indicating an association between use during adolescence and poorer later life outcomes (Chan et al., 2021); significant associations with psychosis incidence (Forti et al., 2019), especially with higher potency products; associations with myocardial infarction (Ladha et al., 2021); increased depression and suicidality (Gobbi et al., 2019); and use of other substances (Thrul et al., 2020; Wardell et al., 2020). There is emerging evidence of an association with significant long-term neurological effects after in utero exposure (Paul et al., 2020).

There have been mixed findings on the effects of legalization on cannabis use among certain populations more vulnerable to harms such as youth, pregnant women and individuals at risk for cannabis use disorder (Ammerman et al., 2015; Anderson et al., 2019; Berg et al., 2018; Cerdá et al., 2017, 2019; Chu, 2014; Coley et al., 2019; Dilley et al., 2018; Schlienz & Lee, 2018; Shi, 2016; Stolzenberg et al., 2016), perhaps due in part to varied research methods and cannabis policy environments across the U.S. (Berg et al., 2018). The diversification of products in the legal

cannabis market, including the trend towards high potency concentrates and edibles, raises new questions about long-term safety and effects (Alzghari et al., 2017; Meier et al., 2019; Monte et al., 2019; Reboussin et al., 2019; Rup et al., 2021), and adoption of regulatory solutions to these concerns are, to date, scarce (Silver et al., 2020; Soroosh et al., 2020).

Today, protecting youth and public health in cannabis legalization may be less about being for or against, but rather about “how.” Proposition 64, a California ballot initiative (*California Proposition 64, Marijuana Legalization*, 2016), legalized use of “adult-use” cannabis in November of 2016, and production and sale of cannabis in January of 2018, while incorporating relatively few best practices from tobacco control. Cities and counties retained broad discretion to allow legal cannabis commerce, or not, and to regulate its practice, despite ongoing unsuccessful regulatory and legislative attempts to curtail local control, including a regulation allowing delivery everywhere that was challenged and subsequently limited (McGreevy, 2020). If a local jurisdiction does not implement cannabis policy, state law allowing commerce will apply. Generally local government can only be stricter than the state, but in certain areas, such as buffers, they may also be more lenient.

Beginning in January of 2018 when the first legal adult-use storefronts in California opened, the California Local Cannabis Law Database was initiated as a tool for research and community engagement, collecting data on cannabis-related state and local laws in all 539 of California’s cities and counties (Silver, Naprawa, & Padon, 2020). The database supports assessment of health outcomes in relation to the natural experiment of policy variation, tracking evolution of local policy as an outcome in its own right and identification and sharing of local policy innovation. In 2020, the first report using this database examined the extent to which recommendations from the public health community and potential lessons from tobacco control and other legal but harmful products had been adopted in the first year of legal adult-use sales (Silver et al., 2020). Almost half of jurisdictions had allowed some retail sale of cannabis, providing legal access to 57% of the state’s population. Just under two-thirds of jurisdictions that allowed storefront outlets to operate imposed a cap on the number of storefronts

licenses, a policy found to be effective at reducing youth initiation of tobacco use (Henriksen et al., 2008). Potentially undermining smoke-free air progress, some authorized consumption of cannabis at storefronts, and one in ten allowed permits for cannabis-related temporary events such as at county fairs or concerts. Only 28% imposed greater buffers between storefronts and schools than the state-mandated 600 feet, only 2 city blocks, and over half did not tax retail sales locally. Despite public support for equity in licensing (e.g., prioritizing those who had been convicted of cannabis-related crimes), only 5 cities had adopted such provisions. Finally, conspicuously absent across state and local law were regulatory constraints on three cannabis industry behaviors directly adopted from tobacco industry practices: manufacturing or sale of products that attract youth, increases in the amount of the addictive component (percentage of tetrahydrocannabinol [THC]), and aggressive marketing (Silver et al., 2020).

The purpose of this project was to assess whether cannabis regulators shifted their focus from the initial challenge of creating a legal system to strengthening public health protections. In conducting this year 2 assessment, we addressed a criticism that the literature contains a lack of reproducible surveillance of the cannabis policy environment (Berg et al., 2018).

## METHODS

Repeating the cross-sectional design used to study laws and regulations in California in year 1 of legalization (Silver et al., 2020), we studied local and state California law to examine the extent to which recommendations for potential best practices had been incorporated into active cannabis legislation passed by January 1, 2020. Silver et al. (2020) identified these potential best practices through a comprehensive literature review and 62 key informant interviews conducted over 2 years. Selected practices included buffer zones between storefronts and sensitive use sites like schools, parks, or residential areas; restrictions on density of storefronts and their operation, certain product types, delivery, and marketing; preservation of smoke-free air; provision of health warnings; pricing and taxation measures; controls on conflicts of interest; and equity policies in

licensing, hiring and revenue capture (Antman Elliott et al., n.d.; Bowling & Glantz, 2019; California Tobacco Education and Research Oversight Committee (TEROC), 2018; Centers for Disease Control and Prevention, 2014; Drug Policy Alliance, 2017; Health Canada & Task Force on Cannabis Legalization and Regulation, 2016; U.S. Department of Health and Human Services, 2000; World Health Organization, 2005).

*Verification of laws:* Active local laws of 539 California cities and counties were verified using the Fyllo (formerly *CannaRegs*) commercial database, a compilation of proactively collected cannabis-related bills, ordinances, regulations, and rules from local jurisdictions in California and across the US (Fyllo™ | Regulatory Database for Cannabis, 2022). Their database was complemented by verification on jurisdictions' websites and their municipal codes. When status remained unclear, city or county clerks were contacted directly. Because San Francisco is both city and county, it was counted only as a county, leaving a universe of 539 jurisdictions: 58 counties and 481 cities. State law and regulation was verified through examination of law and regulations posted on the state cannabis portal in effect January 1, 2020 (California, 2022) in California Health and Safety and Business and Professions Code. Random samples of cities (5%) and counties (10%) were iteratively coded by two independent coders and tested for inter-rater reliability, with 94% agreement. Remaining jurisdictions were coded by a single public health lawyer. Laws were coded as affirmatively allowed, affirmatively prohibited, or silent, which meant state law would apply, except in the cases of on-site consumption and temporary events which require affirmative local permission. This research was determined not to be human subjects research by the Institutional Review Board of the project's Institution.

## RESULTS

*Cannabis Retail Businesses.* (See Table 1) The cannabis laws passed through 1/1/2020 of all 539 of California's cities and counties were successfully identified. Of these, 276 jurisdictions allowed any retail sale of cannabis, covering 58% of the state's population, an increase of 20 jurisdictions (8%) from year 1. Two hundred and twenty-five jurisdictions allowed sales of adult-

use cannabis, up from 194, and 270 allowed medical sales, compared to 251 in year 1. By cannabis and retailer type, 162 allowed storefront sales, with 147 allowing both medicinal and adult-use cannabis sales, 9 allowed only medicinal sales, and 6 allowed only adult-use sales. Twelve jurisdictions prohibited all delivery, but only allowing cannabis retailing by delivery (prohibiting storefronts) was a common practice used by 114 jurisdictions. Of these, 76 allowed deliveries of both medicinal and adult-use cannabis, and 42 allowed medicinal only.

*Cannabis Non-Retail Businesses.* The number of jurisdictions allowing non-retail cannabis businesses also increased between years 1 and 2. Cultivation increased from 167 to 175 jurisdictions, manufacturing from 174 to 193, distribution from 181 to 195, and testing from 201 to 219. As of January 1, 2020, 224 jurisdictions continued to prohibit cannabis businesses or sales of any kind.

*Density and location of storefront retailers.* (See Table 2) Of jurisdictions allowing any storefront businesses (n = 162), 114 limited the maximum number of licenses to be issued, an increase from 97 in year 1, averaging a maximum of 1 store for every 19,845 residents in the jurisdictions with such a regulatory cap. The State imposed no limits on the number of storefront or delivery businesses that could be licensed. Six additional jurisdictions (beyond the 43 from year 1) imposed a buffer between storefronts and schools greater than the state regulated 600 feet, yet 8 (up from 6) made use of a state exception for a local jurisdiction to specify a different radius and allowed storefronts to locate closer to schools, averaging 293 feet. One hundred and ten (up from 100) jurisdictions added establishments to the state's list of sites from which storefronts must be distanced (i.e., K-12 schools, day care or youth centers). Locally adopted examples included colleges, public beaches, libraries, residential zones, and tutoring centers. Buffers between storefronts were imposed by 63 jurisdictions, with a median of 700 ft, down 100 ft from year 1.

*On-site consumption.* Despite California laws prohibiting smoking cannabis in most workplaces or in any place where smoking tobacco is prohibited by law, 35 jurisdictions, up from 29, allowed on-site cannabis consumption in some form at cannabis business locations. Of these, 1 allowed edibles consumption only, arguably the

only method that would protect other customers and employees from exposure to smoke or vapor, 1 allowed vaping and edibles only, 30 allowed any product type to be consumed, and 4 allowed staff-use only. The State allows on-site consumption where locally authorized.

*Delivery restrictions.* Of the 266 jurisdictions that allowed delivery sales, most (n = 202) required some form of permitting. Of the 114 jurisdictions that allowed delivery-only, prohibiting storefront retailers, 31 allowed deliveries originating from businesses based inside and outside the jurisdiction, 7 allowed only deliveries originating inside their jurisdiction, and 76 allowed only those originating outside. Among those 76 that only allowed outside-originating delivery, 41 imposed no permitting or other registration requirements on delivery sales to their residents. The state allows delivery licensees to sell anywhere, but respecting local restrictions.

*Health claims and warnings.* The State continues to require only a limited health warning in hard-to-read 6-point font on packages, however 7 more local jurisdictions, totaling 29, required additional health warnings be posted or handed out in stores or by delivery, and 2 new, totaling 6, required additional health warnings on packages. No jurisdiction required warnings on advertising in either year of legalization. Only Mono County has prohibited all health-related claims on cannabis labels, advertising, and marketing and in retailer names since year 1. While the state's Cannabis Advisory Committee had recommended in March of 2018 that adult-use cannabis businesses not be allowed to make health claims in advertising, this recommendation was not adopted by the state regulatory agency.

*Restrictions on products allowed for sale.* In both year 1 and 2 of legalization, jurisdictions imposing limits on products with characteristics attractive to children or youth, the "Cannabis Kids Menu" (e.g., flavored products, infused beverages, and other products with youth appeal such as those typically consumed by or marketed to kids such as Rice Krispie treats, sugary cereal, candy) were sparse: 1 prohibited flavored products for combustion or inhalation (Contra Costa County), 4 prohibited cannabis-infused beverages, or "cannapops," (Pasadena, San Diego County, Mono County and Chula Vista) and Mono County also restricted products appealing to youth as

Table 1. *Commercial Cannabis Activities Allowed in California Cities and Counties (n = 539) in Year 1 (2018) and Year 2 (2019) of Legalization*

Activity Type Allowed		Medical & adult-use allowed	Adult-use banned, medical only allowed	Medical banned, adult-use only allowed	Any legal allowed
		n (%)	n (%)	n (%)	n (%)
Retail Sale					
Storefront-only sales (Delivery not allowed)	2018	8 (2)	6 (1)	3 (1)	17 (3)
	2019	6 (1)	1 (0)	3 (1)	10 (2)
Delivery-only sales (Storefronts not allowed) <sup>a</sup>	2018	66 (12)	42 (8)	0 (0)	108 (20)
	2019	72 (13)	42 (8)	0 (0)	114 (21)
<b>Any retail sales (storefront-only, delivery-only, or both)</b>	<b>2018</b>	<b>189 (35)</b>	<b>62 (12)</b>	<b>5 (1)</b>	<b>256 (48)</b>
	<b>2019</b>	<b>219 (41)</b>	<b>51 (10)</b>	<b>6 (1)</b>	<b>276 (51)</b>
Cultivation businesses	2018	145 (27)	17 (3)	5 (1)	167 (31)
	2019	161 (30)	13 (2)	1 (0)	175 (33)
Manufacturing businesses	2018	156 (29)	16 (3)	2 (0)	174 (32)
	2019	180 (33)	12 (2)	1 (0)	193 (36)

*Note.* Data includes 58 counties and 481 cities. If a jurisdiction was silent then state law applied. The City and County of San Francisco were treated as a county.

<sup>a</sup>Of the 114 jurisdictions that only allowed delivery retail sales, 76 only allowed delivery from businesses based outside the jurisdiction.

determined by the County. Four jurisdictions imposed restrictions on edibles beyond state regulations: Palm Springs limited edibles' descriptions to generic food names; Pasadena defined products attractive to youth as a type typically consumed by, or marketed to, children or youth, such as a specific candy or baked treat; Salinas prohibited products requiring refrigeration or hot-holding (i.e., heating to a temperature at which food is safe for consumption); and San Diego County prohibited the sale of edibles as of 1/1/2020. By year 2, 2 prohibited the sale of vaporizers (Contra Costa County and Pomona), though Pomona did not ban the sale of vapor cartridges. No jurisdictions limited potency of products sold, but per resolution 11067, the city of San Luis Obispo awards more points in the application selection process to businesses who committed to offering lower dose THC products. State regulations continue without restriction on potency or flavors, other than a standard edible dose, and there is no pre-market product review system. While the state's Cannabis Advisory Committee recommended in 2020 the creation of a scientific

task force without conflicts of interest to review the evidence on increasing potency of cannabis and cannabis products and make recommendations for regulation, the regulatory agency has declined to act to date.

*Equity in licensing and criminal justice.* Whereas provisions to promote economic equity and diversity in cannabis licensing were limited to five of the largest cities in the first year of legalization, by 1/1/2020, that small number had more than tripled and twelve additional jurisdictions (17 total) had established some equity provisions. A definition of "equity" applicants was developed by 15 jurisdictions, for example, prioritizing those who had been convicted of cannabis related crimes or had someone in their immediate family convicted, or resided in impacted neighborhoods. Nine gave priority in licensing to equity applicants, 10 established some hiring requirements related to worker income, transitional status, or local hires, and 7 new (11 total) implemented reduced or deferred licensing fees or other costs for equity applicants. The State regulatory agency did not establish any equity licensing system, but in 2019,

Table 2. Adoption of Potential Best Regulatory Practices Beyond State Law in Cannabis Regulation in California Jurisdictions as of January 1, 2020

Regulatory Practice <sup>a</sup>	2018 N (%)	2019 N (%)
<i>Among jurisdictions that allow storefront retail</i>		
<b>Cap on storefronts</b>	<b>n = 148</b>	<b>n = 162</b>
<b>Ratio of storefront cap to population (Mean (Min-Max))</b>	97 (66)	114 (70)
<b>Buffers from schools</b>	1:20,788	1:19,845
	(1:154-1:355,143)	(1:154-1:355,143)
>600 ft state rule	43 (29)	49 (31)
<600 ft state rule	6 (4)	8 (5)
<b>Additional sensitive-use sites identified<sup>b</sup></b>	100 (68)	110 (68)
<b>Buffers between stores (Median (Min-Max))</b>	800 (50-5280)	700 (50-1500)
<b>On-site consumption prohibitions</b>		
Allowed	29 (20)	35 (22)
Banned	79 (53)	92 (57)
Silent	40 (27)	35 (22)
<i>Among jurisdictions that allow delivery retail<sup>c</sup></i>		
<b>Delivery permit required</b>	--	<b>n = 264</b>
<b>Delivery origination</b>	--	202 (76)
Outside-only	--	81 (31)
Inside-only	--	32 (12)
Inside and outside	--	67 (25)
<i>Among jurisdictions that allow any retail</i>		
<b>Health claims' restrictions</b>	<b>n = 256</b>	<b>n = 276</b>
<b>Additional health warnings required</b>	1 (0)	2 (1)
<b>Restrictions on products</b>	26 (10)	33 (12)
Any below	8 (3)	9 (3)
Attractive to Youth	1 (0)	1 (0)
Flavors	1 (0)	1 (0)
Beverages	4 (2)	4 (1)
Potency	0 (0)	1 (0)
Edibles	4 (2)	4 (1)
Vapor products	0 (0)	2 (1)
<b>Equity considerations</b>	5 (2)	17 (6)
<b>Conflicts of interest considerations</b>	58 (23)	69 (25)
<b>Price discounts prohibited</b>	4 (2)	3 (1)
<b>Minimum price required</b>	0 (0)	0 (0)
<b>Any tax on retail</b>	121 (47)	140 (51)
<i>Among jurisdictions that allowed any retail and passed a local gross receipts tax on retail</i>		
<b>Retail tax (Median % (Min-Max))<sup>d</sup></b>	<b>n = 120</b>	<b>n = 138</b>
	5% (0-18)	5% (0-18)
<i>Among all jurisdictions</i>		
<b>Temporary special events prohibited</b>	<b>N = 539</b>	<b>N = 539</b>
	21 (4)	28 (5)
<b>Advertising restrictions</b>	81 (15)	104 (19)

<sup>a</sup> These provisions refer to measures that are stricter than state law.

<sup>b</sup> Jurisdictions that identified additional sensitive-use sites to the state's list of sites from which storefronts must be distanced, which consisted of K-12 schools, day care or youth centers. Examples included colleges, public beaches, libraries, residential zones, and tutoring centers.

<sup>c</sup> Origination of delivery and delivery permitting restrictions were not captured in year 1 of legalization.

<sup>d</sup> Retail tax represents the median gross receipts tax rate in % across jurisdictions that allowed retail sales and implemented a local tax on cannabis sales at retailers. This figure excluded the 2 jurisdictions that taxed retail activities solely by square footage of the storefront business

the legislature established the Cannabis Equity Grants Program for Local Jurisdictions to aid local equity program efforts (California Governor's Office of Business and Economic Development, 2021). Proposition 64 established the right to expunge certain past cannabis convictions, and in response to limited use of the opportunity, state legislation subsequently approved a process for automatic expungement via Assembly Bill 1793, however in many cases the courts have failed to meet the July 1, 2020 deadline to clear convictions (Bill Text - AB-1793 Cannabis Convictions: Resentencing., 2018; Health and Safety Code §11361.9. Division 10. Uniformed Controlled Substances Act. Chapter 6. Offenses and Penalties. Article 2. Cannabis, 2019; Sacramento Bee Editorial Board, 2021). We did not identify any separate expungement provisions in local law.

*Conflicts of interest.* Sixty-nine, up from 58, jurisdictions added some form of conflict of interest rule, such as prohibiting physicians from being available in storefronts to issue medical cannabis identification cards, or owners/employees from participating on oversight committees. The State prohibited those involved in cannabis regulation, enforcement or appeals from holding cannabis licenses or having a financial interest in a cannabis business, but the state has not prohibited those with cannabis financial interests from participation in advisory bodies, and such participation is occurring. Persons licensed for testing laboratories may not hold other cannabis licenses, per State regulation.

*Price and taxation measures.* Of 315 jurisdictions legalizing any commercial cannabis activity (including retail, cultivation, manufacturing, distribution, or testing), 53% did not tax cannabis activity locally, down from 55% after year 1 of legalization. Of those that did pass a local tax, 91% passed a "general" tax, which in California is a tax without a legally binding use and 2% passed a special tax, dedicated to uses such as police/law enforcement, fire services, parks and recreation, repairing city streets or enhancing community centers. The median tax rate collected locally on gross receipts from retail sales remained steady at 5%. As of 1/1/2020, Cathedral City was still the only jurisdiction to impose a higher tax on higher THC potency cannabis products. Only 3 jurisdictions prohibited discounting (Imperial Beach, Pomona and

Pasadena), such as redemption of coupons, discount days or other promotions, and none implemented a minimum price law which has been used effectively in tobacco control globally (Farrelly et al., 2008; Licht et al., 2011). The state continues to prohibit distribution of free products but has implemented no other price control policies and has not adjusted its original 15% excise tax on retail sales. In fiscal year 2020-2021, cannabis tax revenues increased by 55% in one year to an estimated \$817 million (Kerstein, 2021). In that year, \$178M was allocated to a youth education, prevention and treatment of youth substance abuse disorder and school retention fund, of which \$125 million went to subsidized childcare, approximately \$33M to youth substance use disorder prevention and outreach grants, \$12M was allocated to cannabis surveillance and education, and \$8M to natural resource youth programs. An additional \$40M went to the state department of community corrections, some of which was used for youth programs and additional funds supported traffic safety and parks and recreation programs (Office of the Governor, 2020). Although the amounts for youth have increased, together with other funds channeled to youth through the corrections system, they remain only a modest part of cannabis tax revenues.

*Temporary special events.* Twenty-two jurisdictions in California (up from 14) established a permit system for cannabis-related temporary special events (e.g., cannabis booths displaying and selling products and allowing on-site consumption at fairs or outdoor concerts), while 28 banned them (an increase of 7) and most were silent.

*Restrictions on advertising.* An increase of 23 jurisdictions, totaling 104, limited advertising in some way; 95 of them through limiting business signage. Twelve restricted billboards or other outdoor advertising, and 20 banned cannabis advertising on billboards, primarily through an existing general billboard ban. No new jurisdictions limited advertising on TV, radio, online or in print in year 2 (n = 4), though 7, an increase of 2, prohibited advertisements attractive to youth more explicitly than the State. The State did not require warnings on ads and in January of 2019 used regulation to weaken Proposition 64's prohibition on billboards on highways which cross state borders, limiting

application to roads within 15 miles of the state border (*California Code of Regulations, Title 16 - Division 42, § 5040(b)(3), Advertising Placement*, 2019). In November of 2020, however, a judge found the regulation inconsistent with state law, leading to subsequent withdrawal (“California Judge Rules against Cannabis Billboard Ads on Interstate Highways,” 2020). In September of 2021 the state legislature voted to allow cannabis billboards again, a measure whose legality was then questioned as inconsistent with the voter-approved ballot initiative (Michael Colantuono, 2021), and which was ultimately vetoed by the Governor for this reason (Gavin Newsom & Office of the Governor, 2021).

## DISCUSSION

This review reveals an evolving landscape of cannabis legalization across California cities and counties. While possession and cultivation of up to 6 plants is legal everywhere, the state continued to be almost equally divided between communities that legalized cannabis retail commerce and those that prohibited it. Allowance of legal cannabis businesses increased slightly across the state, bringing job opportunities, and capturing tax revenue, although also potentially increasing cannabis associated harms. There have been modest shifts both towards and away from protection of vulnerable populations, reflecting the ongoing tension between legalization that prioritizes economic opportunity versus prioritizing public health and youth. Regulation of the legal market is often cited as contributing to the persistence of the illicit market however there is little evidence to support the idea that less taxation or regulation, particularly of public health-focused rules, will lead to more rapid elimination of the illegal market. Further, as yet there is insufficient information on the countervailing costs of legalization, such as negative health or social impacts, against its economic benefits.

As in the first year of legalization, fundamental lessons from tobacco control to limit harm and prevent youth use have been left out of cannabis policy across state agencies, the legislature, and many local governments in California. There is little evidence of a shift from the initial focus on structuring the legal market to better protecting health or promoting equity and

social justice. Policies that had been widely and long since abandoned for tobacco such as allowing indoor smoking in lounges or storefronts near schools are being adopted for cannabis. Jurisdictions allowing cannabis consumption inside of storefronts increased 21% from the first year of legalization. On-site consumption provisions may attempt to address legitimate concerns that without designated cannabis smoking/vaping areas somewhere, there could be increases in public use, or use in multi-unit housing posing risks to vulnerable groups like children and the elderly, or/and more policing and displacement of low-income and minority residents for cannabis use in their rental units or in public, exacerbating housing or criminal justice disparities. Yet, there is strong evidence that cannabis smoke contains similar toxins to tobacco smoke and that cannabis smoke and cannabis vapor produce emission rates of secondhand smoke/vapor greater than that of cigarettes (Ott et al., 2021), and it is not feasible to assure safe indoor air quality with current ventilation or engineering techniques (ASHRAE Environmental Tobacco Smoke Position Document Committee, 2020). There was a 33% increase in jurisdictions permitting cannabis temporary events, often held in formerly smoke-free public parks, at fairs and concerts, which present greater opportunities for youth exposure to public use, marketing, and youth access compared to storefronts with robust security and transactions taking place out of the public eye.

Increases in the price of tobacco products is one of the most effective tobacco control policies in reducing tobacco use, particularly among young people (Gilbert & Cornuz, 2003; Levy et al., 2018). Yet in California, no jurisdiction implemented a price floor and few restricted discounts. Further, no local tax revenue was dedicated to prevention or education through a special tax. Only through less permanent solutions have some communities acquired revenue for youth services, prevention and/or education, such as development agreements or cannabis sub-funds created with general fund resources.

Capping the number of storefront licenses continued to be the most adopted protective policy, with most jurisdictions adopting a relatively prudent ratio of 1:19,845 residents on average. More outlets mean more competition, typically increasing marketing and lowering

prices to maximize sales. Capping licenses has led to lower rates of initiation of alcohol and tobacco use by youth, as well as decreased youth exposure to marketing (Chen et al., 2009; CounterTobacco.Org, n.d.; Truong & Sturm, 2009). More restrictive marketing policies, such as the limits on business signage instituted in 99 California jurisdictions in year 2, and reversal of highway billboard friendly policies by Governor Newsom's veto may dampen the aggressive outdoor marketing seen in year 1 (Trangenstein et al., 2021; Whitehill et al., 2020); however online, print and off-highway marketing persist. These practices may continue to increase youth substance use uptake and lower perceptions of cannabis risks (Trangenstein et al., 2021), as seen in a robust literature from alcohol and tobacco advertising studies (Jernigan et al., 2017; Paynter & Edwards, 2009; Slater et al., 2007).

At the state level, products being marketed continue to lack almost any flavor or potency restrictions, a concerning omission given the association between flavoring and youth initiation of other substances (Albers et al., 2015; Ambrose et al., 2015; California Department of Public Health, 2019), and growing evidence of a link between cannabis potency and psychosis, dependency, and other negative health impacts (Arterberry et al., 2018; Hines et al., 2020; National Academies of Sciences, Engineering, and Medicine, 2017). Other states such as Connecticut have recently acted to limit potency and to require retailers to stock lower potency products (*SB 1201 - An Act Concerning Responsible and Equitable Regulation of Adult-Use Cannabis*, n.d.). Compounding the potential for harms, residents still lack clear and salient health warnings such as those used on cannabis products in Canada or on tobacco products in the USA (Freeman & Winstock, 2015; Galli et al., 2011; Volkow et al., 2014).

Strengths of this study include the complete coverage of California jurisdictions, and the wide-ranging scope of regulatory variables collected. Regulation continues to evolve, and we will assess change annually. Nevertheless, limitations should be noted. We primarily focused on examining local cannabis laws and may have missed other local laws such as zoning or smoke-free air that indirectly affect cannabis businesses. We also analyzed only policy environment and not the number of legally operating businesses. These

findings cannot be generalized to other states or locations in which the process of legalization and extent of local authority differ from California. However, the potential best practices identified are broadly relevant for governments considering cannabis regulation. The use of required nonprofit or public monopoly models was not discussed because they do not exist in the state, but this continues to be an additional potential best practice, currently in use in the province of Quebec (Francois Gagnon, 2021). Policy surveillance provides a valuable tool for future research on California's evolving natural experiment of local control and may help answer fundamental questions of what types of cannabis policies lead to net public health benefit or harm.

## CONCLUSION

In the nation's most populous state, the legal landscape in the second year of adult-use commerce continues to largely favor economic opportunity over heeding lessons from tobacco control and other legal but harmful products to protect youth and public health. Examples of local innovation are growing, however, offering precedents for others to adopt a more cautionary approach. The health impacts of these alternate approaches must be assessed. As legalization spreads and is debated in Congress, consideration of more precautionary policy approaches is increasingly pressing to fulfill our collective responsibility to both end the War on Drugs (American Civil Liberties Union, 2020) and protect youth and health in the coming years (Barry & Glantz, 2016).

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