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Racial, ethnic, and neighborhood socioeconomic disparities in local cannabis retail policy in California

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Abstract

Background: Policies governing legal cannabis commerce can vary widely within a U.S. state when local control exists. Disproportionate distribution of policies allowing retail sale, protecting public health, or promoting equity in licensing may contribute to differences in health and economic outcomes between sociodemographic subgroups. This cross-sectional study jointly examined racial, ethnic, and neighborhood socioeconomic characteristics of Californians subject to specific local cannabis policies to identify such disparities.

Methods: Local laws in effect January 1, 2020, governing retail cannabis sales (bans, expanding buffers from youth-serving sites, restricting advertising, promoting equity in licensing, and capping outlets) were determined for California's 539 jurisdictions. The number of Asian, Black, Latinx, and white residents in socioeconomic advantaged versus disadvantaged neighborhoods (Census block groups) was determined using 2015–2019 American Community Survey data. We estimated proportions of the sociodemographic subpopulations covered by specific policies based on the block group's jurisdiction. To ascertain disparities in coverage proportions were compared across subgroups using Z-tests with the Bonferroni correction.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics approval

The authors declare that the work reported herein did not require ethics approval because it did not involve animal or human participation.

Results: Residents of socioeconomically advantaged neighborhoods were more likely to live in jurisdictions allowing retail cannabis commerce than those in disadvantaged neighborhoods (61.7% versus 54.8%). Black residents in advantaged neighborhoods were most likely to live where retailing was allowed (69%), and white residents in disadvantaged neighborhoods least likely (49%). Latinx and Black populations from disadvantaged neighborhoods were most likely to live in jurisdictions with stronger advertising restrictions (66%). Equity in licensing policy was more prevalent for Black residents living in advantaged neighborhoods (57%) than disadvantaged neighborhoods (49%).

Conclusions: Local cannabis policies potentially protecting public health and social equity are unequally distributed across race, ethnicity, and socioeconomic characteristics in California. Research examining whether differential policy exposure reduces, creates, or perpetuates cannabis-related health and socioeconomic disparities is needed.

Keywords

Intersectionality in Drug Policy Research; Cannabis Policy Disparities; Local Cannabis Regulations; Public Health and Cannabis Distribution

Introduction

California's 2016 ballot Proposition 64 (California Proposition 64, Marijuana Legalization (2016), n.d.) legalized growing or possessing cannabis for recreational use by persons aged 21 and older. It established a framework for legal cannabis commerce, which commenced in January 2018. The state created a regulatory system for licensing and criteria for operations, but cities and counties retained local control (California Proposition 64, Marijuana Legalization (2016), n.d.). While some municipalities prohibit all commercial cannabis activities, many jurisdictions developed their own cannabis regulations, creating a patchwork of local policies with unclear distributional equity (A. Padon et al., 2022). Many provisions considered to be best practices in tobacco control remain largely absent from the regulatory landscape (A. Padon et al., 2022). Mitigating harms inflicted by the discriminatory practices of the War on Drugs, which disproportionately affect Black (Alexander, 2012; American Civil Liberties Union, 2020) and Latinx communities (Motivans, 2020; Taxy et al., 2015), has been a widely cited rationale for cannabis legalization (Earp et al., 2021; Miron & Partin, 2021). While major progress has been made on reducing cannabis-related arrests and expunging criminal convictions, as of 2020, only 5% of California's 539 cities and counties had adopted licensing policies to advance social justice for affected communities by supporting their entry into the legal cannabis industry (A. Padon et al., 2022). Simultaneously, concern exists that concentrating cannabis retailers in economically disadvantaged or racially or ethnically marginalized communities could have harmful consequences, as has occurred with alcohol and tobacco retailers (Kong et al., 2019; Ribisl et al., 2017; Romley et al., 2007).

Differential distribution of local cannabis policies across demographic groups could mitigate, create or exacerbate social injustice and health disparities. Cannabis use, especially when frequent, has been associated with negative health outcomes (National Academies of Sciences, Engineering, and Medicine, 2017), and among Californians, any and frequent use

rates have typically been highest among non-Latinx Black and white populations (Padwa et al., 2022). Low-income communities, already more vulnerable to health disparities (Phelan et al., 2010), may be at greater risk if their local laws have fewer public health protections. It remains unclear which cannabis policies will be associated with positive versus negative long-term health and social outcomes.

Diverse social identities are experienced simultaneously, necessitating an intersectional examination of differential policy exposure (Crenshaw, 1989; Krieger et al., 1993). This study jointly examines the proportion of California residents from different racial, ethnic, and socioeconomic subgroups living under laws allowing cannabis retail commerce, protecting public health, and facilitating licensing equity to identify possible disparities in this natural experiment of local cannabis law exposure.

Methods

This cross-sectional study examined exposure by sociodemographics to local cannabis policies in place in California as of January 1, 2020. The Public Health Institute Institutional Review Board determined it was not human subjects research.

Measures

Policy data were derived from reviewing cannabis laws passed by January 1, 2020 in all 539 California cities and counties using methodology comprehensively described elsewhere (A. Padon et al., 2022). Briefly, information on local laws was collected from Fyllo's Regulatory Database (Fyllo™, 2022), complemented by analyzing jurisdictions' municipal codes (California | Municode Library, n.d.) and outreach to jurisdiction staff when necessary; county laws applied to unincorporated areas only. State-level 2020 policies were verified through California's cannabis portal (California Department of Cannabis Control, 2019). Data collection and analysis occurred January-September, 2020.

Retail Allowed—Local cannabis retail policy was characterized using 3 dichotomous variables: 1) any storefront sales allowed; 2) only delivery sales allowed, regardless of whether the delivery retailer's premises could be located inside the jurisdiction; and 3) storefront and/or delivery retail sales allowed.

Enhanced Advertising Restrictions—California law prohibited marketing cannabis in ways that appeal to youth or encourage use by people under 21, but language specifying which advertising tactics appeal to minors was vague (A. A. Padon et al., 2018; Tan et al., 2022). State law also restricted cannabis billboards on most highways, as well as outdoor advertising within 1000 feet of a daycare, K-12 school, playground, or youth center. Jurisdictions allowing retail were coded as having enhanced advertising restrictions if local policy prohibited youth-appealing advertising with details beyond state law or restricted billboard placement or content; business signage; branded merchandise; and/or TV, radio, internet, or print advertisements beyond state law requirements.

Equity Provisions—Equity provisions typically aim to support communities most harmed by cannabis criminalization. Jurisdictions were considered to have equity provisions if they

prioritized licenses for “equity applicants,” reduced or deferred their licensing fees, or required prioritizing employment of economically or socially disadvantaged workers. Equity applicant eligibility varied by jurisdiction (California Department of Cannabis Control, n.d.; Los Angeles, CA, Municipal Code § 104.20, n.d.; Oakland, CA, Municipal Code § 5.80.010, n.d.). As of January 1, 2020, there were no state-level equity provisions.

Robust Storefront Cap—Jurisdictions allowing storefront sales were categorized as having a robust storefront cap if they allowed no more than 1 retailer per 20,000 residents, the mean ratio of storefronts to population; those below 20,000 residents were considered robust if only 1 storefront retailer was permitted. State law did not cap retailers.

Expanded Youth-Serving Site Buffers—California law requires a buffer of 600 feet between cannabis retailers and K-12 schools, daycares, and youth centers. Jurisdictions allowing storefront retailers were categorized as having expanded buffers when the buffer was greater than 600 feet or other sites were added (e.g., libraries, playgrounds).

Neighborhood Socioeconomic Advantage—Neighborhood socioeconomic advantage was derived from the Area Deprivation Index (ADI), a composite of 17 neighborhood socioeconomic characteristics. ADI has shown good reliability and external validity and provides a comprehensive approach to measuring area disadvantage (Singh, 2003; Singh et al., 2013). We used the University of Wisconsin’s Neighborhood Atlas ADI dataset (Kind & Buckingham, 2018; University of Wisconsin School of Medicine and Public Health, 2019), which weights 5-year average (2015–2019) American Community Survey (ACS) measures at the census block group level. Socioeconomic advantage was operationalized in two ways: 1) for the main analysis, California’s state decile ADI ranks were dichotomized at the median: less socioeconomic advantage (ADI≥6th decile; hereafter “disadvantaged”) versus more socioeconomic advantage (ADI≤5th decile; hereafter “advantaged”); and 2) for the sensitivity analyses, ADI was divided into quintiles (quintile 1= most disadvantaged; 5 = most advantaged). Approximately 1.6% of California’s population had a missing ADI based on University of Wisconsin’s suppression criteria used to address potential bias (Supplementary material 1, Text 1), resulting in a sample size of 38,638,060.

Race and Ethnicity—Race and ethnicity population estimates of residents identified as “of Hispanic, Latino, or Spanish origin” (hereafter “Latinx”); non-Latinx Asian (hereafter “Asian”); non-Latinx Black (hereafter “Black”); non-Latinx white (hereafter, “white”) were retrieved from the 2015–2019 block group level ACS dataset accessed through IPUMS (Manson et al., 2021; US Department of Commerce, 2019) (Supplementary material 1, Text 1).

Statistical Analysis

Policy Population Coverage—Percentages of persons in jurisdictions allowing retail were calculated by summing the population of each block group/block group part whose matched jurisdiction enacted such policies, then dividing it by the total California population (Supplementary material 1, Text 2). Population percentages covered by enhanced advertising restrictions or equity provisions were calculated from jurisdictions allowing any retail.

Percentage with robust storefront caps and expanded buffers were limited to jurisdictions allowing storefronts. Percentage of demographic subgroups subject to these policies was derived using the same methods, using the subgroup's total population as the denominator. Examining policy coverage relative to each subgroup's total population facilitated more granular comparisons across subgroups. We calculated 95% confidence levels using U.S. Census Bureau guidance (U.S. Census Bureau, 2020).

Z-tests (alpha=0.05) were used to compare proportions of each subpopulation subject to each policy. Comparisons were conducted by neighborhood advantage (1 test: advantaged versus disadvantaged), race and ethnicity (6 tests: Latinx versus Asian, Latinx versus Black, Latinx versus white, Asian versus Black, Asian versus white, Black versus white), and their intersection (28 tests: e.g., advantaged Latinx versus disadvantaged Latinx, advantaged Latinx versus advantaged Asian) using U.S. Census Bureau guidance (U.S. Census Bureau, 2020). The Bonferroni method was used to adjust for pairwise multiple comparisons (VanderWeele & Mathur, 2019).

Sensitivity Analysis—To explore dose-response trends between socioeconomic advantage, race, ethnicity, and local cannabis laws, all analyses were repeated using social advantage as defined by ADI quintiles.

All final statistical analyses were conducted August 2023 using Stata/SE 17.0 (StataCorp, 2021).

Results

Demographics

Table 1 presents demographic characteristics across the analytic sample, representing approximately 98.4% (margin of error=±0.2) of California's population. The majority of white (59.0%) and Asian (69.8%) residents lived in advantaged neighborhoods, whereas the majority of Black (63.3%) and Latinx (69.2%) residents lived in disadvantaged neighborhoods. All differences within racial and ethnic categories were statistically significant ($p<0.001$).

Policy Coverage

Figures 1 and 2 present the percentages and 95% confidence intervals of California's overall population and across racial, ethnic, and neighborhood advantage subgroups covered by local cannabis policies (Supplementary material 1, Table 1). Pairwise comparisons across subgroups were mostly significant (Supplementary material 1, Table 2).

Policies Allowing Cannabis Retail

By January 2020 about 58.1% of California's population lived where some form of cannabis retail sales was legal, 46.1% in a jurisdiction allowing storefronts, and 56.7% in a jurisdiction allowing delivery. Those in advantaged neighborhoods were more likely to live where retail was allowed than those in disadvantaged neighborhoods. In the overall sample, Black, then Latinx individuals were most likely to live where retail was allowed, followed

by Asian and white individuals. This was consistent within racial and ethnic groups by advantage, except for Asian populations. Black individuals from advantaged neighborhoods were consistently most likely to live in a jurisdiction allowing storefronts and/or delivery, while white individuals in disadvantaged neighborhoods were least likely.

With respect to delivery, the difference between advantaged and disadvantaged neighborhoods was particularly high for white and Black populations (+16.9% [white], +11.6% [Black], +8.6% [Latinx], −0.6% [Asian], +9.7% [All races and ethnicities]).

Enhanced Ad Restrictions

Over half of Californians living where retail was allowed were covered by enhanced ad restrictions. Latinx residents were most likely to be covered by these policies, followed by Black, white, and Asian residents. In general, and within the same racial and ethnic populations, a higher percentage of people in disadvantaged neighborhoods had enhanced ad restrictions than those in advantaged neighborhoods, except for white populations.

Equity Provisions

Only 37.5% of those living where retail was allowed were covered by any local equity provisions. Black residents were most likely to be covered, followed by Asian, Latinx, and white residents. In general, and comparing within subgroups, a higher percentage of advantaged neighborhoods were covered by local equity provisions. Black individuals in advantaged neighborhoods had the highest coverage (57.2%) and white individuals from disadvantaged neighborhoods had the lowest (21.0%).

Robust Storefront Caps

About 40.3% of those living where storefronts were allowed had a robust storefront cap in their area; differences between subpopulations were small. In the overall sample, Asian residents were most likely to live in a jurisdiction with a robust cap, followed by white, Black, and Latinx residents. Highest coverage was among Asian populations from advantaged neighborhoods (47.6%) and lowest for Latinx populations from advantaged neighborhoods (35.4%). Apart from Asian populations, within racial and ethnic groups, a greater percentage of individuals in disadvantaged neighborhoods lived with robust storefront caps than those in advantaged neighborhoods.

Expanded Storefront Buffers from Youth-Serving Sites

About three-quarters (75.7%) of those living in a jurisdiction allowing storefronts were covered by expanded storefront buffers from youth-serving sites. White and Black residents were least likely to be covered by expanded buffers and Asian and Latinx residents were most likely. Highest coverage was among Asian individuals from disadvantaged neighborhoods (83.5%) and lowest among Black individuals from advantaged neighborhoods (72.9%). A greater percentage of Asian, Black, and white populations from disadvantaged neighborhoods had expanded buffers than their advantaged counterparts (+9.8%, +1.9%, +0.2%, respectively), whereas Latinx populations in disadvantaged neighborhoods had a lower percentage of coverage than their advantaged counterparts (−9.0%).

Sensitivity Analyses

Using quintile-based measures of neighborhood advantage yielded fairly consistent results to median-based measures (Table 2). As neighborhood advantage increased, percentage of residents living with any retail or covered by equity provisions increased with a dose-response trend consistent with the main analysis. Similar trends were present across quintiles within Latinx, Black, and white populations. One notable inconsistency was expanded buffer coverage between disadvantaged and advantaged neighborhoods. While the median-based analysis found 1.1% difference (76.3% versus 75.2%, respectively), the quintile-based analysis showed an inverted U-shape of coverage across neighborhoods. Residents in middle advantage neighborhoods (Q3) had the highest buffer coverage (84.9%) and residents in neighborhoods of either extreme had the lowest coverage (Q1: 68.2%; Q5: 66.5%).

Discussion

California's local cannabis policy landscape varied greatly throughout the state and across socioeconomic, racial, and ethnic groups. When jointly considering these demographic characteristics, a more nuanced distribution of policy coverage was revealed.

Retail Legalization

For the most part, in California, legalization of storefront cannabis retailers, and to an even greater extent, delivery, was most common in socioeconomically advantaged communities. Findings differ from Matthay and colleagues who found that, in California, any cannabis business type legalization was most common in impoverished areas (Matthay, Mousli, Fu, et al., 2022). This difference may stem from our examination of storefront and delivery cannabis retailer policies in the universe of jurisdictions, in contrast to Matthay's examination of all business types in a more limited sample of 241 (45%) California jurisdictions (Matthay, Mousli, Fu, et al., 2022).

Our finding that Black residents were most likely to live in jurisdictions permitting storefronts than any other racial and ethnic group is consistent with the findings of Matthay and colleagues (Matthay, Mousli, Fu, et al., 2022; Matthay, Mousli, Ponicki, et al., 2022). However, as with the overall socioeconomic findings, Black residents of more advantaged neighborhoods were more likely than those of more disadvantaged neighborhoods to live where storefronts were allowed.

More prevalent legalization of sales where Black residents live may reflect a social response to the War on Drugs and the disproportionate burden of arrests and incarceration (American Civil Liberties Union, 2020). Conservative, predominantly white communities in California's rural areas may have retained more support for anti-cannabis policies, perhaps explaining why white residents in disadvantaged neighborhoods were least likely to live in jurisdictions allowing retail. Alternatively, socioeconomically disadvantaged communities, long exposed to high tobacco and alcohol outlet concentration, may have been more opposed to allowing cannabis retailers. The opportunity of drug tourism, as seen in Amsterdam and Jamaica, may influence populous jurisdictions with large tourism industries to allow legal

cannabis sales (Silverman et al., 2023). Future research should examine distributions of policies by rurality in addition to socioeconomic status, race, and, ethnicity.

Enhanced Ad Restrictions

Latinx and Black populations in disadvantaged neighborhoods were the most likely to have enhanced advertising restrictions. This finding is promising, since exposure to advertisements increases interest in use among youth (Trangenstein et al., 2021), and tobacco and alcohol research suggests that ads are often specifically tailored to demographic groups (Cohen et al., 2011; Cruz et al., 2019; Gardiner, 2004) and cluster in areas with lower socioeconomic status and higher Black and Latinx composition (Lee et al., 2015; Pasch et al., 2009; Wilson & Till, 2012). In contrast, a smaller percentage of white residents (49.5%) living in disadvantaged communities, despite having some of the highest rates of recent cannabis use in California (UCLA Center for Health Policy Research, n.d.), are protected by ad regulations than Black (65.7%) and Latinx (65.8%) populations in neighborhoods of the same socioeconomic level. This may reflect heightened awareness in Black and Latinx communities of past targeted advertisement used by other industries.

Equity Provisions in Licensing and Hiring

Equity provisions for cannabis licensing and hiring, while not widespread, were most prevalent where Black residents lived in advantaged neighborhoods, perhaps reflecting the advocacy power of the socioeconomic advantage in Black communities seeking racial justice with respect to cannabis. Insufficient financial resources for establishing a new business is a common obstacle for people of color (Phillips Pantin, 2017), especially those who suffered cannabis-related incarceration (Harris et al., 2010). While more advantaged Black (and Latinx) residents may be financially positioned to benefit from equity licensing provisions, even those in disadvantaged communities without capital may benefit from reduced fees and equitable hiring practices (Levy-Pounds, 2010). In 2022, California created cannabis license fee waivers for equity applicants and established grants for jurisdictions to develop social equity programs (California Department of Cannabis Control, 2022). However, as of April 2023, only 114 storefront retailers were equity licensees (about 10%) (California Department of Cannabis Control, 2023), suggesting that direct economic benefits of cannabis legalization continue to be limited for those most harmed by criminalization of cannabis.

Among places that have implemented equity licensing policies, many are not as effective as they could be because of poor administrative infrastructure, overinclusive or vague eligibility categories, and preference toward larger businesses with better resources (Patterson et al., 2024). Equity businesses may also have lower access to commercial, tourist, and affluent areas (Patterson et al., 2024). Whether owned and operated by residents or by outside investors, the public health concerns of legal cannabis retailers in communities most affected by the War on Drugs remain. Evidence shows, for example, that pregnant women living in closer proximity to cannabis retailers are more likely to use cannabis (Young-Wolff et al., 2021), which may negatively impact birthweight and child development (Avalos et al., 2024; Bassalov et al., 2024; Paul et al., 2021). This may further exacerbate Black-white perinatal health disparities, which are rooted in structural racism (Brown et al., 2021).

To date, the public debate on what "equity" in cannabis policy means has largely neglected consideration of social or health inequities unrelated to cannabis business opportunities. Decriminalization and automatic expungement may bring the largest equity benefits for Black and Latinx communities, removing barriers to employment and advancement for far more people than prioritizing individuals for work in the cannabis industry itself (Kilmer et al., 2021), one which continues to carry social stigma, even in the legal environment (Patterson et al., 2024). Cannabis possession arrest rates have declined dramatically over a decade (American Civil Liberties Union, 2020), and as of January 10, 2023, about 93.3% of eligible cannabis-related convictions in California had been expunged (Bonta, 2023). Investment of California cannabis tax revenues in childcare, youth programs, substance use prevention, and community reinvestment may also have positive equity impacts. The overall equity impact of a weakly regulated for-profit cannabis industry remains to be determined.

Strengths—Our findings fill important gaps in the literature by identifying subtle but meaningful differences in Californians' exposure to local cannabis policies across intersecting racial and ethnic identities and neighborhood advantage. These policies may systematically affect health and economic disparities. We examined the universe of California's 539 jurisdictions and included both storefront and delivery retail policy. Previous research was primarily limited to examining storefronts serving subsets of jurisdictions or populations (Matthay, Mousli, Fu, et al., 2022; Matthay, Mousli, Ponicki, et al., 2022). Given that access via delivery may reach more people than storefronts (A. Padon et al., 2022), storefront analysis alone provides an inadequate picture of legal access.

Limitations—While use of the Area Deprivation Index, a well-established, validated area-level measure of neighborhood socioeconomic advantage (Singh, 2003; Singh et al., 2013), captured a more comprehensive view of socioeconomic context than single socioeconomic measures, the index may misrepresent neighborhood conditions if extreme disparities exist between residents within the same block group, which may bias results in varied directions (Hannan et al., 2023). Our intersectional analysis of racial and ethnic identity and socioeconomic advantage avoids the pitfalls of common approaches (Bauer, 2014), but categorizing racial and ethnic identities into 4 broad groups may obscure within group differences, such as by immigrant status or origin (Rubin et al., 2018). Evidence suggests that American Indian and Alaska Native (AIAN) residents, who make up 1% of California's population (Manson et al., 2023), are at higher risk for cannabis use, early initiation, and cannabis use disorder than other populations (Montgomery et al., 2022; Swaim & Stanley, 2018), underscoring the need to track their cannabis policy exposure. Because a non-negligible proportion of AIAN Californians live on American Indian Reservations and Off-Reservation Trust Land (US Department of Commerce, n.d.) and the cannabis policy dataset does not include Tribal policies, this group was not included in our analysis. Measuring exposure based on neighborhood groups captures residents' immediate environmental context but does not account for proximity to jurisdictions with different policies (Perchoux et al., 2013). We also examined policy passage, but not implementation or actual retail infrastructure. While our study of the universe of California's jurisdictions allows for high confidence in the validity and reliability of our estimates within the state, California's unique policy and sociodemographic distribution limits broad generalizability.

Conclusion

Two years after California's adult-use market opened, individuals from more socioeconomically advantaged neighborhoods were most likely to live where cannabis retail was allowed. Potentially protective policies were neither widespread nor equally distributed across neighborhood advantage levels or race and ethnicity. Equity considerations in licensing and hiring were even less widespread, and more prevalent for Black residents from more advantaged neighborhoods. How these disparities in legalization and protective policies will affect disparities in cannabis use and related adverse health outcomes, as well as socioeconomic conditions in communities impacted by discriminatory law enforcement practices, remains unclear and merits future research.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- First study on distribution of cannabis policies using an intersectional approach
- Black residents in privileged areas were most likely to live where retail was allowed
- Equity provisions were rare but most common for Black residents in privileged areas
- Strict ad policies were most common for Latinx and Black residents in poorer areas
- The impact of cannabis policy disparities on public health remains uncertain

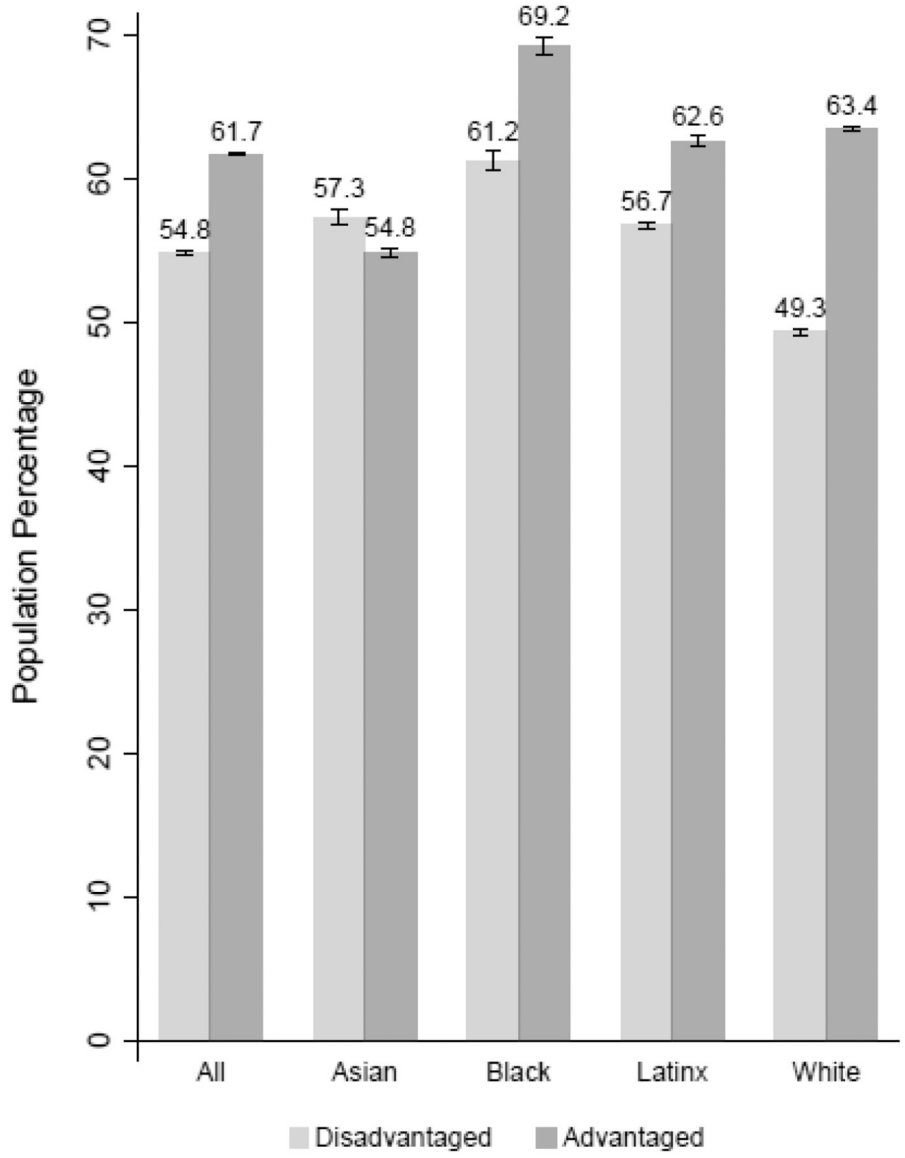

Figure 1.

Percentage of Californians living where cannabis retail sales allowed (January 1, 2020), by demographics

Note: 95% confidence intervals are indicated. Advantage is a neighborhood measure of socioeconomic status defined by Area Deprivation Index (ADI). "Disadvantaged" corresponds to neighborhoods with ADI ≥6th decile and "advantaged" to neighborhoods with ADI ≤5th decile. Latinx=Latino/a/x or Hispanic; Asian=non-Latinx Asian; Black=non-Latinx Black; White=non-Latinx white.

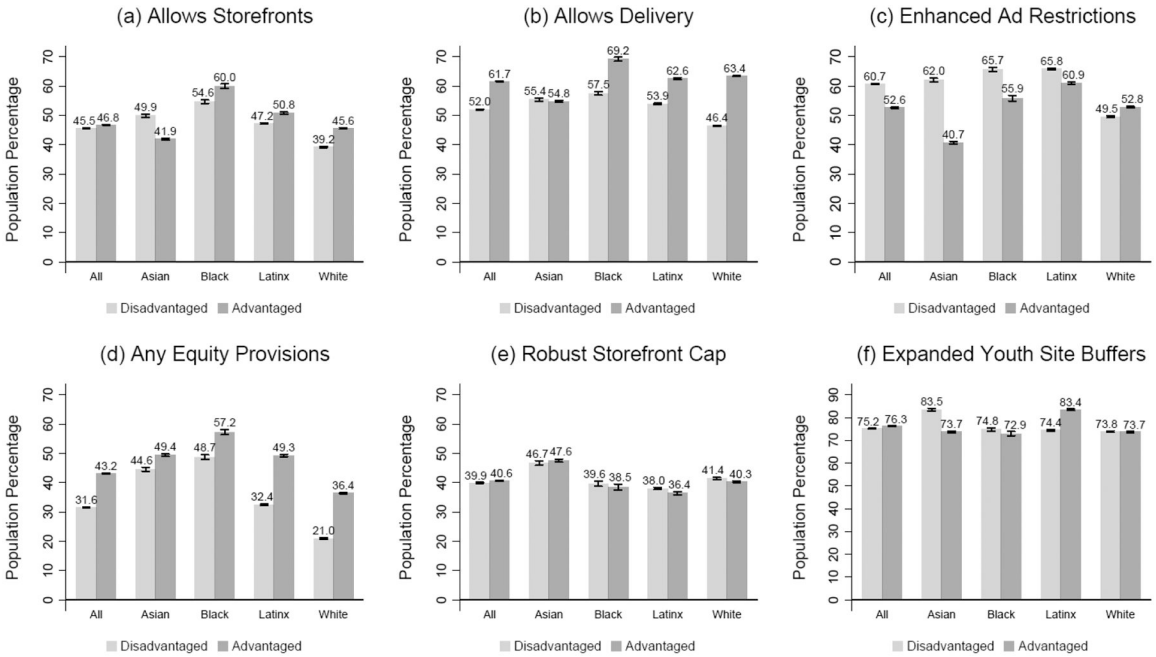

Figure 2.

Percentage of Californians covered by cannabis policies (January 1, 2020), by demographics Note: 95% confidence intervals are indicated. Advantage is a neighborhood measure of socioeconomic status defined by Area Deprivation Index (ADI). "Disadvantaged" corresponds to neighborhoods with ADI ≥6th decile and "advantaged" to neighborhoods with ADI ≤5th decile. Latinx=Latino/a/x or Hispanic; Asian=non-Latinx Asian; Black=non-Latinx Black; white=non-Latinx white. Denominator of (a) and (b) was the full sample; denominator of (c) and (d) was among those in the subpopulation living in a jurisdiction allowing cannabis retail sales; and denominator of (e) and (f) among those living in a jurisdiction allowing cannabis storefronts.

Table 1.

Demographic characteristics of California analytic sample

	Population		Percentage	
	Estimate	**Margin of Error[a]**	**Estimate**	**Margin of Error[a]**
California	39,283,497	_[b]	100	_[b]
California (sample)	38,638,060	73,866	98.4	0.2
Subpopulations				
Neighborhood Socioeconomic Advantage				
Disadvantaged	20,051,796	56,918	51.9	0.1
Advantaged	18,586,264	47,080	48.1	0.1
Race and ethnicity				
Asian	5,528,891	29,560	14.3	0.1
Black	2,090,728	21,250	5.4	0.1
Latinx	15,115,873	_[b]	39.1	_[b]
White	14,367,887	40,560	37.2	0.1
Neighborhood Socioeconomic Advantage by Race and Ethnicity				
Asian				
Disadvantaged	1,669,771	17,279	30.2	0.2
Advantaged	3,859,120	23,984	69.8	0.2
Black				
Disadvantaged	1,323,883	17,208	63.3	0.4
Advantaged	766,845	12,469	36.7	0.4
Latinx				
Disadvantaged	10,465,583	48,482	69.2	0.2
Advantaged	4,650,290	31,690	30.8	0.1
White				
Disadvantaged	5,888,915	27,531	40.1	0.1
Advantaged	8,478,972	29,785	59.0	0.1

Source: 2015–2019 American Community Survey (ACS) 5-year Estimates

Note: Neighborhood socioeconomic advantage was defined by Area Deprivation Index (ADI), a composite measure of 17 census block group-level characteristics. “Disadvantaged” corresponds to neighborhoods with ADI ≥6th decile and “advantaged” to neighborhoods with ADI ≤5th decile.

Latinx=Latino/a/x or Hispanic; Asian=non-Latinx Asian; Black=non-Latinx Black; White=non-Latinx white.

[a]Margin of error at a 95% confidence level

[b]Estimate was controlled to be equal to a fixed value according to ACS methodology, so it has no sampling error.

Table 2.

Percentage of California jurisdictions and subgroup populations covered by specific cannabis policies, January 1, 2020.

	All jurisdictions (n=539)			Jurisdictions allowing retail (n=273)		Jurisdictions allowing storefronts (n=151)	
	Allows storefronts	**Allows delivery**	**Allows retail sales**	**Enhanced ad restrictions**	**Any equity provisions**	**Robust storefront cap**	**Expanded youth-serving site buffers**
# Jurisdictions (% Jurisdictions)	151 (28.0)	266 (49.4)	273 (50.7)	100 (36.6)	14 (5.3)	36 (24.0)	77 (51.0)
% Population[a] (95% CI)							
Total population	46.1 (46.0,46.2)	56.7 (56.6,56.7)	58.1 (58.0,58.2)	56.6 (56.4,56.7)	37.5 (37.4,37.6)	40.3 (40.1,40.4)	75.7 (75.6,75.8)
Subpopulations							
Neighborhood socioeconomic advantage							
Q1 (Least advantage)	44.1 (43.9,44.3)	49.9 (49.7,50.2)	53.9 (53.7,54.2)	52.1 (51.8,52.4)	27.1 (26.8,27.4)	47.6 (47.2,47.9)	68.2 (67.8,68.5)
Q2	47.5 (47.3,47.7)	53.7 (53.4,53.9)	56.4 (56.2,56.6)	65.9 (65.6,66.1)	35.3 (35.1,35.6)	35.8 (35.4,36.1)	77.5 (77.3,77.8)
Q3	47.4 (47.2,47.6)	56.5 (56.3,56.7)	56.8 (56.6,57.1)	66.6 (66.4,66.9)	35.8 (35.6,36.1)	37.1 (36.8,37.4)	84.9 (84.7,85.1)
Q4	45.7 (45.5,45.9)	57.4 (57.2,57.6)	57.5 (57.3,57.7)	59.0 (58.8,59.3)	42.1 (41.9,42.4)	43.7 (43.4,44.0)	79.2 (79.0,79.5)
Q5 (Most advantage)	45.8 (45.6,46.0)	67.0 (66.9,67.2)	67.0 (66.9,67.2)	38.9 (38.6,39.1)	46.5 (46.2,46.7)	38.1 (37.8,38.4)	66.5 (66.2,66.7)
Race and ethnicity							
Asian	44.3 (44.1,44.6)	55.0 (54.7,55.2)	55.5 (55.3,55.8)	47.3 (47.0,47.7)	47.9 (47.5,48.2)	47.3 (46.8,47.7)	77.0 (76.7,77.4)
Black	56.6 (56.1,57.1)	61.8 (61.3,62.3)	64.1 (63.7,64.6)	61.8 (61.2,62.4)	52.1 (51.5,52.6)	39.2 (38.5,39.8)	74.1 (73.5,74.7)
Latinx	48.3 (48.1,48.5)	56.6 (56.4,56.8)	58.5 (58.4,58.7)	64.2 (64.0,64.4)	38.0 (37.8,38.2)	37.5 (37.2,37.8)	77.3 (77.1,77.6)
White	42.9 (42.8,43.1)	56.4 (56.3,56.6)	57.6 (57.5,57.8)	51.7 (51.5,51.9)	31.0 (30.8,31.2)	40.7 (40.5,40.9)	73.7 (73.5,73.9)
Neighborhood Socioeconomic							
Advantage by Race and Ethnicity							
Asian							
Q1 (Least advantage)	54.7 (53.7,55.8)	59.6 (58.5,60.6)	62.2 (61.2,63.2)	54.7 (53.3,56.0)	56.7 (55.3,58.1)	55.7 (54.3,57.2)	85.3 (84.1,86.4)
Q2	52.1 (51.3,53.0)	56.2 (55.4,57.0)	58.7 (57.9,59.4)	66.3 (65.3,67.3)	44.3 (43.3,45.3)	43.5 (42.3,44.6)	81.0 (80.2,81.8)
Q3	45.0 (44.4,45.5)	52.5 (51.9,53.1)	52.8 (52.2,53.4)	63.3 (62.5,64.1)	37.5 (36.8,38.2)	45.2 (44.2,46.2)	85.7 (85.1,86.3)
Q4	41.3 (40.7,41.8)	50.7 (50.2,51.2)	50.7 (50.2,51.2)	47.7 (46.9,48.4)	49.8 (49.1,50.4)	48.9 (48.0,49.8)	78.7 (78.1,79.4)
Q5 (Most advantage)	40.7 (40.2,41.1)	58.7 (58.3,59.2)	58.7 (58.3,59.2)	27.1 (26.6,27.6)	52.0 (51.4,52.7)	46.3 (45.6,47.0)	63.6 (62.9,64.2)

	All jurisdictions (n=539)			Jurisdictions allowing retail (n=273)		Jurisdictions allowing storefronts (n=151)	
	Allows storefronts	Allows delivery	Allows retail sales	Enhanced ad restrictions	Any equity provisions	Robust storefront cap	Expanded youth-serving site buffers
Black							
Q1 (Least advantage)	50.1 (49.0,51.1)	53.0 (51.8,54.1)	57.2 (56.1,58.4)	61.8 (60.6,63.1)	44.9 (43.6,46.2)	46.4 (44.8,48.0)	69.6 (68.2,71.0)
Q2	57.8 (56.8,58.7)	59.2 (58.3,60.2)	63.7 (62.8,64.7)	70.0 (68.9,71.1)	51.3 (50.2,52.4)	34.6 (33.4,35.8)	76.1 (75.1,77.2)
Q3	58.8 (57.8,59.8)	65.7 (64.8,66.7)	66.0 (65.1,67.0)	62.8 (61.5,64.1)	50.2 (49.1,51.4)	38.9 (37.5,40.3)	81.4 (80.4,82.5)
Q4	57.4 (56.4,58.5)	66.6 (65.6,67.6)	66.6 (65.6,67.6)	55.4 (54.0,56.9)	57.1 (55.8,58.5)	43.1 (41.6,44.6)	71.4 (70.0,72.9)
Q5 (Most advantage)	63.5 (62.0,64.9)	74.7 (73.4,76.0)	74.7 (73.4,76.0)	48.2 (46.3,50.1)	64.7 (62.9,66.4)	31.0 (29.1,32.9)	64.8 (62.7,66.9)
Latinx							
Q1 (Least advantage)	45.9 (45.5,46.3)	51.7 (51.4,52.1)	56.1 (55.7,56.5)	56.0 (55.6,56.5)	24.5 (24.1,24.9)	49.6 (49.1,50.2)	65.1 (64.6,65.6)
Q2	49.0 (48.7,49.4)	56.0 (55.7,56.3)	58.3 (58.0,58.7)	71.9 (71.5,72.3)	38.1 (37.7,38.5)	32.3 (31.8,32.7)	78.7 (78.3,79.1)
Q3	50.1 (49.7,50.5)	58.1 (57.7,58.5)	58.4 (58.0,58.8)	73.3 (72.9,73.8)	41.9 (41.5,42.4)	29.1 (28.5,29.6)	87.1 (86.8,87.5)
Q4	48.3 (47.8,48.8)	58.8 (58.3,59.3)	58.8 (58.3,59.3)	61.5 (60.9,62.1)	49.8 (49.1,50.4)	40.3 (39.6,41.1)	83.8 (83.3,84.3)
Q5 (Most advantage)	49.2 (48.5,49.9)	69.9 (69.3,70.6)	69.9 (69.3,70.6)	40.9 (40.1,41.7)	50.8 (50.0,51.7)	37.4 (36.4,38.4)	70.8 (69.9,71.6)
White							
Q1 (Least advantage)	37.2 (36.8,37.6)	43.9 (43.5,44.3)	47.5 (47.2,47.9)	42.0 (41.4,42.5)	19.2 (18.8,19.7)	42.1 (41.5,42.7)	68.9 (68.3,69.5)
Q2	40.9 (40.5,41.2)	47.3 (47.0,47.7)	50.6 (50.2,50.9)	52.5 (52.0,53.0)	21.7 (21.3,22.1)	40.2 (39.6,40.7)	74.3 (73.8,74.7)
Q3	43.0 (42.7,43.3)	54.3 (54.0,54.6)	54.8 (54.5,55.1)	60.4 (60.0,60.9)	24.5 (24.2,24.9)	44.1 (43.5,44.6)	82.5 (82.1,82.8)
Q4	44.8 (44.5,45.0)	58.5 (58.2,58.8)	58.5 (58.3,58.8)	62.7 (62.3,63.0)	33.0 (32.6,33.3)	43.6 (43.2,44.0)	77.6 (77.2,78.0)
Q5 (Most advantage)	46.1 (45.9,46.4)	69.4 (69.2,69.6)	69.4 (69.2,69.6)	42.4 (42.1,42.7)	42.3 (42.0,42.6)	35.6 (35.2,36.0)	66.7 (66.3,67.1)

Note: CI=confidence interval. Allows retail sales=allows storefronts and/or delivery. Neighborhood socioeconomic advantage was defined by Area Deprivation Index (ADI), a composite measure of 17 census block group-level characteristics, which was divided into California-based quintiles of advantage. Most advantage quintile corresponds to neighborhoods with 1st or 2nd ADI decile and least advantage to neighborhoods with 9th or 10th decile. Latinx=Latino/a/x or Hispanic; Asian=nonLatinx Asian; Black=non-Latinx Black; White=non-Latinx white.

[a]Percentage of population or subpopulation living in a jurisdiction with a specific policy, where the denominator is the total population living in jurisdictions where the specific policies could be adopted (i.e., all, those allowing retail, those allowing storefronts).