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# Equity in Coverage of Local Cannabis Control Policies in California, 2020–2021

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**Objectives.** To assess whether cannabis control policies that may protect public health were adopted evenly across California localities with differing sociodemographic compositions.

**Methods.** From November 2020 to January 2021, we measured cannabis control policies for 241 localities across California and linked them to data on the characteristics of the communities affected by these policies. We evaluated whether disadvantaged communities were more likely to allow cannabis businesses and less likely to be covered by policies designed to protect public health.

**Results.** Localities with all-out bans on cannabis businesses (65% of localities) were disproportionately high-education (55.8% vs 50.5% with any college) and low-poverty (24.3% vs 34.2%), with fewer Black (4.4% vs 6.9%) and Latinx (45.6% vs 50.3%) residents. Among localities that allowed retail cannabis businesses (28%), there were more cannabis control policies in localities with more high-income and Black residents, although the specific policies varied.

**Conclusions.** Cannabis control policies are unequally distributed across California localities. If these policies protect health, inequities may be exacerbated.

**Public Health Implications.** Uniform adoption of recommended cannabis control policies may help limit any inequitable health impacts of cannabis legalization. (*Am J Public Health*. 2022;112(11): 1640–1650. https://doi.org/10.2105/AJPH.2022.307041)

As of May 2022, 38 states permit medical cannabis and 19 states permit recreational cannabis. These policies have numerous potential implications for public health, including changes in the epidemiology of cannabis consumption and associated health outcomes.[1] States regulate cannabis in varied ways, but many cede substantial powers to local governments.[2] Within the bounds of state law, local authorities may determine the number and type of commercial cannabis businesses allowed, if any. They can also regulate locations of retail cannabis outlets, hours and days of sale, types of products sold, packaging, advertising, tax rates, and clean air requirements. Guidelines for state and local cannabis control policies regulating cannabis are based on alcohol and tobacco research.[3–6] Recommended policies may protect public health by limiting cannabis availability and potency and by encouraging safer modes of use. In states with legal cannabis and local control, city and county governments can advance health equity by adopting health-promoting cannabis control policies and ensuring that they are fairly applied across the population.

Little is known about local variation in cannabis control policies or to whom these policies apply. Previous studies surveyed local cannabis control policies following recreational cannabis legalization in Colorado, Washington, and California.[6–8] All found wide variation, primarily between jurisdictions that banned commercial cannabis businesses and those that allowed all or most commercial activities. However, none of these studies characterized the populations affected by distinct policy approaches. Variation in local laws is important, because if policies that protect public health are adopted in

socially advantaged communities but not in disadvantaged communities, health disparities may be exacerbated. For example, uneven application of smoke-free tobacco laws across localities was linked to racial/ethnic and socioeconomic disparities in tobacco-related disease.[9] Anticipating such disparities can inform appropriate public health responses.

Previous studies show that cannabis outlets, particularly illegal ones, are disproportionately located in less-advantaged communities.[10–12] We investigated whether local policies might play a role in this uneven distribution. Studies from alcohol control show that local governments can play a role in both creating and mitigating undue burden of alcohol outlets in vulnerable communities through local planning, zoning, and public health regulations.[13] Similar provisions could be needed to protect communities from uneven distributions of legal or illegal cannabis outlets.

In this study, we characterized the demographic and socioeconomic characteristics of communities subject to different types of local cannabis control policies. We considered 3 levels of policy measures: overall bans on cannabis businesses, restrictions on cannabis availability, and individual cannabis control policies. We hypothesized that policies designed to protect public health would be less common in socially disadvantaged communities. We focused on 12 counties in California, where adult use of recreational cannabis was legalized on November 9, 2016, and retail sales were implemented on January 1, 2018.

## METHODS

We assessed local cannabis control polices for 12 of California's 58 counties (Alameda, Humboldt, Los Angeles, Orange, Riverside, Sacramento, San Bernardino, San Francisco, Santa Barbara, Sonoma, Tulare, and Yuba; Appendix A, Figure A, available as a supplement to the online version of this article at https://ajph.org) and all the incorporated cities within them. These counties were selected to capture a range of sizes, sociodemographic compositions, political orientations, and cannabis policy approaches.[6] City policies apply within incorporated city borders, and county policies apply to areas outside of incorporated cities (hereafter, "unincorporated county areas"). We defined "jurisdictions" as the set of incorporated cities and unincorporated county areas because these are mutually exclusive and collectively exhaustive geographic areas to which distinct policies apply. The 12 counties included 230 distinct cities and 11 unincorporated county areas (San Francisco is a consolidated city–county), covering 59% of the California population (approximately 24 million people).

Using a legal epidemiological approach,[14,15] we systematically coded characteristics of cannabis policies in all 241 jurisdictions and then linked these policies to data on demographic and socioeconomic factors to characterize the affected populations. For each jurisdiction, we identified the corresponding local government's online searchable database of currently applicable laws. All code and ordinances are publicly available under the California Public Records Act.[16] We downloaded all legal text pertaining to cannabis by using the search term "cannabis OR marijuana OR marihuana." Across jurisdictions, relevant legal text ranged in length from 1 paragraph to thousands of pages. Five authors (E. C. M., L. M. M., C. F., S. Z., and D. E. A.) reviewed the text using a structured data collection instrument to capture the presence or absence and content of prespecified provisions in each jurisdiction's cannabis law.

Policy data were collected and managed using REDCap electronic data capture tools hosted at the University of California San Francisco.[17,18] The data collection instrument was iteratively piloted and refined as new policy approaches were uncovered. To ensure accuracy, all jurisdictions were double-coded by 2 analysts until achieving greater than 95% agreement.[19] Policy data collection and coding were conducted from November 2020 to January 2021. The complete protocol and data collection instrument are provided in Appendices B and C (available as supplements to the online version of this article at https://ajph.org).

## Policy Measures

California state law specifies a minimum set of policies that apply to medical and recreational cannabis statewide. However, localities retain considerable discretion. We collected cannabis policy measures, guided by an established taxonomy of all possible cannabis policies developed by affiliates of the Alcohol Policy Information System.[20] From this comprehensive taxonomy, we measured all policies that (1) could be applied at the local level in California given state law, (2) varied across jurisdictions within California, (3) were more restrictive than state law, and (4) were plausibly related to public health according to previous evidence, recommended public health best practices, and expert opinion.[6,7,20] We captured the greatest detail on restrictions related to cannabis availability and retail sales, because these

are major levers for modifying population-level consumption,[1,3–6,21,22] and existing evidence suggests that policies regulating retail sales are the key component of state laws linking legalization to consumption and problems.[23,24] Appendix A, Table A (available as a supplement to the online version of this article at https://ajph.org) describes these local policies, relative to state law.

Coded policy variables were summarized in 3 ways:

1. Bans on cannabis businesses: This dichotomous variable reflects whether the local government allowed any medical or recreational cannabis businesses offering retail, cultivation, distribution, manufacture, or testing to operate within their jurisdiction.
2. Restrictiveness of cannabis availability: For those jurisdictions allowing retail businesses for medical or recreational cannabis, we summed the 19 dichotomous policy variables related to cannabis availability and retail sales (Appendix A, Table A) and dichotomized the resulting score at the median (8 or more policies adopted vs 7 or fewer). In sensitivity analyses, we broke the policy score into quarters instead of halves.
3. Individual cannabis control policies: For jurisdictions allowing retail sales, we examined each of 19 dichotomous policy variables related to cannabis availability and retail sales in turn.

## Sociodemographic Characteristics

To characterize the populations exposed to different policy approaches, we included a range of demographic and socioeconomic characteristics from sources including the US Census Bureau and Geolytics. We considered sociodemographic characteristics related to health disparities, including age, race/ethnicity, gender, educational attainment, poverty, unemployment, median income, household composition, urbanicity (population density), home ownership, and population change. We also assessed the density of social organizations (e.g., religious organizations, charities, interest groups) as a measure of social capital[25] and density of general retail businesses as a measure of economic development.[26] Appendix A, Table B (available as a supplement to the online version of this article at https://ajph.org) provides additional detail on each covariate.

In addition to considering each sociodemographic characteristic individually, to help synthesize the overall pattern of results, we created a binary measure of social advantage by entering all of the jurisdiction-level sociodemographic measures into a principal components analysis and dichotomizing the resulting first component at the median. In sensitivity analyses, we considered measures of social advantage dichotomized at the 75th and 90th percentiles.

## Database Development

We merged the policy and predictor data by jurisdiction. Because county characteristics are typically reported for the county overall, not for the unincorporated areas alone, we used population characteristics data at the census block group level and aggregated up to the jurisdiction level (see Appendix A, "Database development," for detail). Three small jurisdictions had no residential populations and were excluded from analyses describing population characteristics.

## Statistical Analysis

We conducted statistical analysis in R version 4.0.4 (R Foundation for Statistical Computing, Vienna, Austria). We characterized the populations residing in jurisdictions with differing policy approaches for each of the 3 levels of policy measures (bans on cannabis businesses, restrictiveness of cannabis availability, individual cannabis control policies). For the jurisdictions in each category of each policy measure, we calculated an overall population-weighted summary statistic for each sociodemographic characteristic (e.g., the median age across all people residing in study jurisdictions banning cannabis businesses). We also measured the average difference in each population characteristic across jurisdictions, comparing jurisdictions with differing policy approaches (e.g., jurisdictions with vs without bans on cannabis businesses), using linear regressions of the policy measure on each population characteristic separately. For analyses of the individual cannabis control policies, we calculated the proportion of jurisdictions adopting the given policy, comparing jurisdictions with greater than versus less than median social advantage.

## RESULTS

We found substantial local variation in cannabis control policies. Of 241 jurisdictions, 83 permitted at least 1 form of commercial medical or recreational cannabis business (retail, cultivation, distribution, manufacture, or testing; Figure 1, Appendix A, Figure A). The
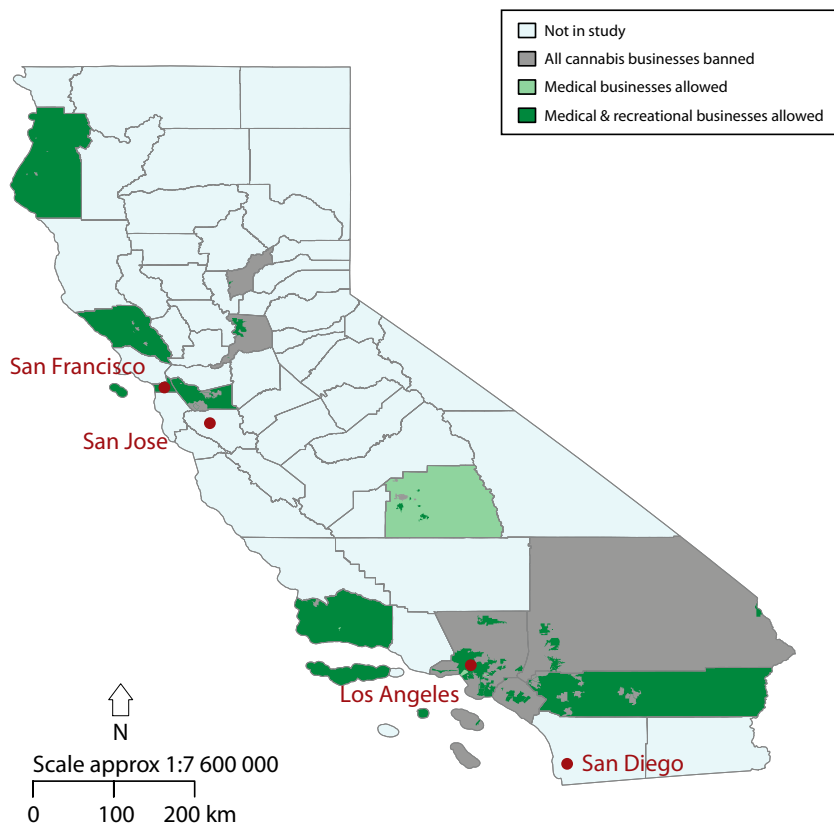
**FIGURE 1—**  **Study Cities and Counties by Policy on Cannabis Businesses: California, 2020–2021**

*Note.* The total number of jurisdictions was 241. The gray lines indicate the boundaries of counties. The counties included in this study were Alameda, Humboldt, Los Angeles, Orange, Riverside, Sacramento, San Bernardino, San Francisco, Santa Barbara, Sonoma, Tulare, and Yuba.

largest distinction in regulatory approaches across jurisdictions was between those that banned all forms of medical and recreational cannabis businesses (n = 158; 66%) and those that permitted them all (n = 59; 22%). Between these extremes, 5 jurisdictions permitted all types of medical businesses but not recreational businesses; 14 permitted cultivation, distribution, manufacture, and testing but not retail; and 5 permitted retail only.

Jurisdictions with nonzero residential populations permitting at least one form of medical or recreational retail cannabis (n = 68) enacted a range of cannabis control policies (Figure 2). Most jurisdictions required local

permits for retail sales (99%), limited hours of sale (77%), taxed retail purchases (62%), restricted the density of outlets permitted per land area or population (58%), and adopted operating standards for upkeep (58%) and safety (94%). Bans on on-site consumption, which protect workers and visitors from health hazards such as secondhand smoke exposure, were present in 74% of jurisdictions. Less common were public health tools such as restrictions on marketing or advertising (43%), server training requirements (6%), limits on product types or potency (e.g., bans on edibles or flavors, maximum tetrahydrocannabinol [THC] concentrations; 6%), or social host liability

(holding adults responsible for hosting underage consumption on their property; 7%).

## Populations With and Without Bans

For the 238 jurisdictions with nonzero residential populations, Table 1 compares the population characteristics of jurisdictions banning all cannabis businesses versus those that permitted 1 or more. All-out bans on all cannabis businesses were more common in areas with higher socioeconomic status. Populations in jurisdictions permitting commercial cannabis, by contrast, were on average less educated, with lower median income, more poverty, higher unemployment, and more crowded housing. Cities and unincorporated areas allowing cannabis businesses were also slightly older and had greater proportions of Black and Latinx residents, and fewer Asian and White residents. Population density, population growth, renters, nonfamily households, and densities of general retail and social organizations were also greater in jurisdictions permitting cannabis businesses.

## Populations by Cannabis Availability

For the 68 jurisdictions with nonzero residential populations that permitted at least 1 form of cannabis retail, Table 2 shows the characteristics of populations residing in jurisdictions with varying numbers of public health restrictions on retail sales and cannabis availability. Estimated associations were imprecise because of the small number of units (jurisdictions permitting retail) that were included in the analysis,
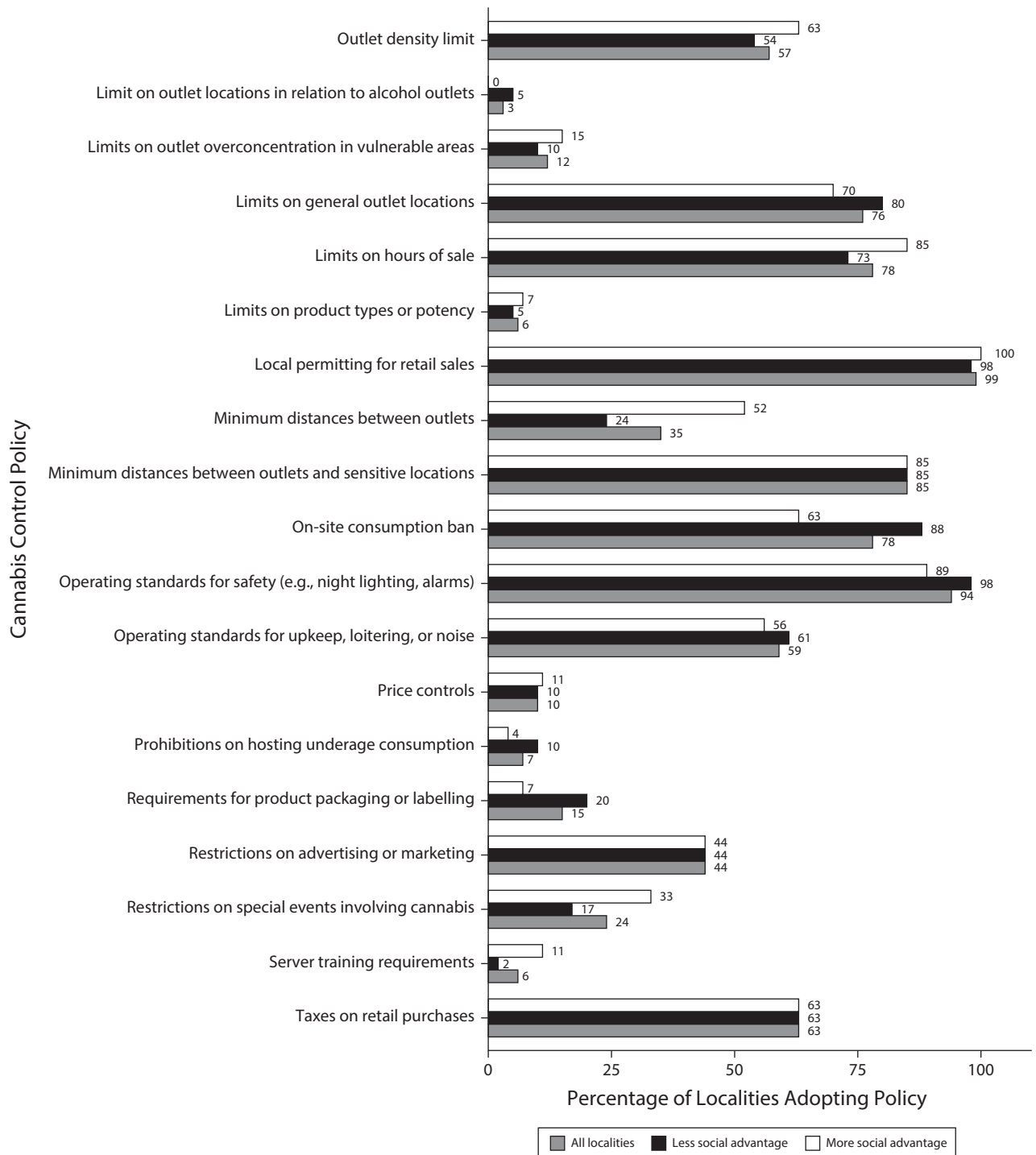
**FIGURE 2—** Percentage of Localities Adopting Cannabis Control Policies, by Level of Social Advantage, Among 68 Localities Permitting Retail Sales: California, 2020–2021

*Note.* Degree of social advantage was measured by entering all the demographic and socioeconomic population characteristics into a principal components analysis and dichotomizing the resulting first component at the median.

**TABLE 1—** Characteristics of Populations Residing in Localities Permitting Versus Banning Cannabis Businesses: California, 2020–2021

| Characteristic | Population Residing in Localities That Ban All Cannabis Businesses | Population Residing in Localities Allowing Cannabis Businesses | Average Difference Across Localities (95% CI) |
|---|---|---|---|
| Total population size, no. | | | |
|    Localities | 156 | 82 | . . . |
|    People | 11 595 680 | 12 754 287 | 81 209 (4 677, 157 740) |
|    Households | 3 699 248 | 4 307 589 | 28 818 (2 784, 54 853) |
| **Demographic characteristics** | | | |
| Median age, y | 36.6 | 37.7 | −2.1 (−4.1, −0.2) |
| % women | 50.4 | 50.3 | −0.3 (−0.9, 0.2) |
| Race/ethnicity, %[a] | | | |
|    Asian | 14.6 | 12.2 | −6.5 (−10.5, −2.5) |
|    Black | 4.4 | 6.9 | 1.5 (0.1, 2.9) |
|    Latinx | 45.6 | 50.3 | 11.0 (3.9, 18.1) |
|    White | 55.7 | 50.6 | −2.5 (−7.6, 2.5) |
| Population density (per 10 sq mi) | 9 933 | 16 619 | 1 528 (−132, 3 187) |
| Population mobility and household composition, % | | | |
|    Population change since 2000 | 9.2 | 11.4 | 5.2 (2.4, 7.9) |
|    Renters | 34.6 | 47.3 | 10.4 (6.6, 14.2) |
|    Family households | 77.1 | 68.6 | −5.3 (−8.3, −2.2) |
| Average household size | 3.2 | 3.1 | 0.0 (−0.1, 0.2) |
| **Socioeconomic characteristics** | | | |
| Education, % | | | |
|    With a high school degree | 20.1 | 18.8 | 2.2 (0.6, 3.8) |
|    With some college or associate degree | 30.4 | 26.2 | −1.8 (−3.7, 0.2) |
|    With bachelor's degree | 25.4 | 24.3 | −7.6 (−12.0, −3.3) |
| Poverty and income | | | |
|    % with income below 150% of poverty level | 24.3 | 34.2 | 9.8 (6.3, 13.3) |
|    Median income, $ | 75 044 | 61 536 | −21 879 (−29 747, −14 011) |
|    Unemployment rate, % | 4.8 | 5.3 | 1.0 (0.5, 1.4) |
| % crowded households | 26.5 | 40.7 | 7.2 (1.3, 13.2) |
| Density of general retail outlets (per 10 sq mi) | 1 377 | 1 698 | 4 658 (−1 326, 10 641) |
| Density of social organizations (per 10 sq mi) | 196.6 | 308.3 | 748.3 (7.2, 1 489.5) |

*Note.* CI = confidence interval. Results reported in this table are for the 238 jurisdictions with nonzero residential populations. The "Average difference across localities" column reports the difference between the average value of the population characteristic for jurisdictions allowing cannabis businesses and the average value of the population characteristic for jurisdictions banning cannabis businesses. Average differences were computed with linear regressions of the dichotomous bans variable on each population characteristic separately.

[a]Racial/ethnic categories are not mutually exclusive. Asian, Black, and White racial groups include all people identifying as the corresponding race irrespective of Latinx identity. The Latinx group includes people identifying as Latinx irrespective of racial identity.

but are meaningful for the study jurisdictions.

Cities and unincorporated county areas that had 8 (the median) or more cannabis control policies generally had greater population density, more renters, fewer family households, more crowded households, and higher densities of social organizations compared with jurisdictions with fewer policies. More restrictive jurisdictions were also older, with more Asian and Black residents, and fewer Latinx and White residents. Again, cannabis control policies followed socioeconomic status: populations in areas that permitted retail cannabis business but were covered by more cannabis control policies

**TABLE 2—** Characteristics of Populations Residing in Localities Adopting Cannabis Control Policies, Among the 68 Localities Permitting Retail Sales: California, 2020–2021

| | Population Residing in Localities Adopting < the Median No. of Cannabis Control Policies | Population Residing in Localities Adopting ≥ the Median No. of Cannabis Control Policies | Average Difference Across Localities (95% CI) |
|---|---|---|---|
| Total population size, no. | | | |
| Localities | 30 | 38 | . . . |
| People | 1 486 000 | 9 657 000 | 204 586 (−35 298, 444 471) |
| Households | 475 700 | 3 335 196 | 71 912 (−10 624, 154 447) |
| **Demographic characteristics** | | | |
| Median age, y | 34.4 | 38.6 | 3.3 (0.0, 6.6)[a] |
| % women | 50.2 | 50.4 | 0.5 (−0.3, 1.3) |
| Race/ethnicity, %[b] | | | |
| Asian | 6.3 | 12.6 | 2.6 (−2.3, 7.6) |
| Black | 2.5 | 7.9 | 3.5 (1.1, 5.9) |
| Latinx | 55.9 | 49.6 | −9.7 (−22.6, 3.2) |
| White | 59.5 | 49.1 | −0.6 (−9.1, 7.9) |
| Population density (per 10 sq mi) | 9 224 | 18 806 | 1 890 (−1 889, 5 669) |
| Population mobility and household composition, % | | | |
| Population change since 2000 | 11.0 | 11.3 | −1.3 (−5.8, 3.2) |
| Renters | 40.4 | 49.7 | −1.5 (−7.5, 4.5) |
| Family households | 73.4 | 66.6 | −2.6 (−9.8, 4.6) |
| Average household size | 3.3 | 3.1 | −0.2 (−0.6, 0.1) |
| **Socioeconomic characteristics** | | | |
| Education, % | | | |
| With a high school degree | 21.0 | 18.3 | 0.0 (−2.9, 2.9) |
| With some college or associate degree | 27.3 | 25.5 | 2.0 (−1.4, 5.3) |
| With bachelor's degree | 19.8 | 24.8 | 2.7 (−4.0, 9.5) |
| Poverty and income | | | |
| % with income below 150% of poverty level | 34.9 | 35.3 | −7.5 (−14.1, −0.9) |
| Median income, $ | 57 314 | 60 745 | 8 217 (−257, 16 691) |
| Unemployment rate, % | 5.9 | 5.2 | −0.7 (−1.6, 0.2) |
| % crowded households | 29.0 | 44.4 | −1.6 (−12.5, 9.4) |
| Density of general retail outlets (per 10 sq mi) | 330.4 | 3 095.3 | −5177.4 (−19 666.5, 9 311.7) |
| Density of social organizations (per 10 sq mi) | 49.3 | 606.8 | 840.7 (−1 042.6, 2 724.1) |

*Note.* CI = confidence interval. Results reported in this table are for the 68 jurisdictions with nonzero residential populations and that permit at least 1 form of retail cannabis business. The "Average difference across localities" column reports the difference between the average value of the population characteristic for jurisdictions adopting greater than the median number of cannabis control policies and the average value of the population characteristic for jurisdictions adopting fewer than the median number of cannabis control policies. Average differences were computed using linear regressions of the dichotomous fewer versus more cannabis control policies variable on each population characteristic separately.

[a]CI includes 0.
[b]Racial/ethnic categories are not mutually exclusive. Asian, Black, and White racial groups include all people identifying as the corresponding race irrespective of Latinx identity. The Latinx group includes people identifying as Latinx irrespective of racial identity.

were more educated with less poverty and higher median income. Results of sensitivity analyses breaking the policy score into quarters instead of halves showed patterns consistent with the main results, with the most pronounced differences for jurisdictions with the fewest cannabis control policies (Appendix A, Table C, available as a supplement to the online version of this article at https://ajph.org).

## Policies by Level of Social Advantage

Figure 2 and Appendix A, Table D (available as a supplement to the online version of this article at https://ajph.org) present the proportion of jurisdictions adopting each cannabis control policy, by level of social advantage, among jurisdictions with nonzero residential populations that permitted at least 1 type of cannabis retail (n = 68). Cannabis control policies were not universally more common in jurisdictions with greater social advantage but rather depended on the policy. At one extreme, requirements on minimum distances between outlets were far more common in jurisdictions with social advantage greater than or equal to the median (52%) compared with jurisdictions with less than median social advantage (24%; average difference in policy prevalence across jurisdictions with more vs less social advantage: 27.5%; 95% confidence interval [CI] = 4.8, 50.1).

At the other extreme, bans on on-site consumption were more common in jurisdictions with less social advantage (88%) compared with those with more social advantage (63%; average difference in policy prevalence across jurisdictions: 24.8%; 95% CI = 5.3, 44.4). For other policies, associations were less

precise and CIs included the null. More socially advantaged jurisdictions generally had more event restrictions, limits on hours of sale, outlet density limits, server training requirements, and limits on outlet overconcentration in vulnerable areas. Less socially advantaged jurisdictions generally had more outlet location limits, operating standards for safety and upkeep, and social host laws. Results of sensitivity analyses dichotomizing the social disadvantage score at the 75th and 90th percentiles showed similar patterns to the main results (Appendix A, Tables E and F, available as supplements to the online version of this article at https://ajph.org).

## DISCUSSION

We examined local variation in the adoption of cannabis control policies in relation to social advantage for 241 of California's 539 cities and unincorporated county areas. Following statewide recreational cannabis legalization, a majority (65%) of these jurisdictions banned all cannabis businesses. The 25% of jurisdictions that allowed retail cannabis businesses varied widely in their adoption of 19 policies (e.g., taxes, limits on operating hours, marketing controls). This study is among the first to investigate patterns in local cannabis control policies relative to socioeconomic and demographic characteristics. We found that all-out bans on cannabis businesses were more common in localities with higher income and education levels, and communities with disproportionately more Asian residents and fewer Black and Latinx residents. Among jurisdictions permitting retail cannabis businesses, recommended cannabis control policies were more frequently adopted in jurisdictions with less poverty and more Black

residents, although there was variation by policy. This uneven application of cannabis control policies has the potential to exacerbate cannabis-related health disparities in communities already at higher risk of poor health outcomes.

Recreational cannabis legalization has been framed as a way to repair racial injustices stemming from discriminatory drug policies,[27–29] but just implementation of cannabis legalization is also a concern. Commercial cannabis may offer business opportunities, which has motivated some jurisdictions to offer priority licensing for people negatively impacted by historical cannabis criminalization.[28] Communities with more Black and Hispanic residents have more illegal cannabis outlets that may not comply with requirements such as product safety standards[12,30]; legalizing cannabis outlets allows localities to regulate them and thereby potentially promote public health.[12]

Yet our findings also suggest potential for legalization to exacerbate longstanding racial/ethnic and socioeconomic inequities. Cannabis is not harmless. Cannabis use disorder occurs in 20% of lifetime cannabis users, with 11% of these cases severe enough to prevent individuals from participating in major life activities (e.g., employment, caregiving).[31,32] While valid medicinal uses exist, cannabis use has been linked to potential harms including motor vehicle crashes, psychotic disorders, respiratory disease, and low birth weight.[33,34] Thus, communities that increase access to cannabis by permitting cannabis businesses—particularly commercial retail—may experience increases in cannabis use and associated negative health consequences.[1] Communities with less social advantage may have

less power to resist policies that enable legal or illicit cannabis sales, consistent with research showing that cannabis outlets are disproportionately located in neighborhoods with more low-income and racial/ethnic minority residents.[10–12]

Economically disadvantaged communities were more likely to allow commercial cannabis businesses, and on average less likely to deploy recommended policies that curb the availability of commercial cannabis and exposure to some of its harms. This finding is consistent with previous research showing that higher-socioeconomic-status communities were more likely to have comprehensive tobacco smoke-free air laws.[9] Jurisdictions with greater proportions of Black residents adopted significantly more cannabis control policies regulating retail cannabis businesses, if allowed. This finding may have positive implications for health disparities and may reflect that some cities with previous experience of social activism to promote local alcohol control (e.g., Oakland) are translating these lessons to cannabis.

Cannabis control policies were also more common in places with higher population density. Urban areas in California are more politically liberal and, thus, more likely to adopt a variety of public health policies, including those pertaining to cannabis. Larger cities may also have more capacity to consider public health concerns and develop more extensive regulatory approaches.[35] The optimal policy strategy for local cannabis is unknown, as most local cannabis policies have not yet been evaluated. However, if lessons learned from alcohol and tobacco apply to cannabis,[3–6,21,22] then cities covered by more cannabis control policies may benefit while rural areas may face more exposure to health harms.

We found notable patterns in the types of cannabis control policies adopted by more and less socially advantaged jurisdictions. More advantaged jurisdictions generally adopted more restrictions on physical cannabis access (event restrictions, limits on hours of sale, outlet density limits, server training requirements, and limits on outlet overconcentration in vulnerable areas). Less advantaged jurisdictions generally had more restrictions related to retail cannabis's presence in the neighborhood environment (operating standards for safety and upkeep, prohibitions on hosting underage consumption, and outlet location limits). These distinct policy combinations may be motivated by different underlying interests (e.g., focusing on protecting public health vs preventing crime).

Local policy patterning may also reflect the "not-in-my-backyard" (NIMBY) phenomenon. Wealthy, White, and socially advantaged groups within local jurisdictions often have a disproportionate voice in local politics, allowing them to influence decision-making in the interests of keeping commercial cannabis out of their own neighborhoods. If NIMBYism is at play, it would be consistent with other areas of health—NIMBYism has been shown to thwart public health equity in local policymaking on issues ranging from homelessness to AIDS, alcohol control, and air pollution,[36–39] and is a manifestation of structural racism.[40] Public health researchers and health equity advocates should therefore monitor this concern in local cannabis policymaking going forward. As with other areas, ensuring equitable local policies may involve combatting NIMBYism through public policy or engagement strategies.[39,41]

## Limitations

This study has limitations. First, local cannabis policies have evolved since legalization, but our assessment was cross-sectional. Evaluating temporal trends in local cannabis policies is an area for future investigation. Second, our analysis covered 241 of California's 539 localities; the findings may not generalize to other parts of California or other states. Third, our summary measure of social advantage has not been validated; alternative measures may produce different findings. Fourth, populations may be affected by the policies in neighboring jurisdictions. While such spillover effects have been unsubstantiated for tobacco,[42] whether this phenomenon occurs for cannabis remains to be determined. Finally, our statistical analysis involved tests of multiple population characteristics. However, our analysis was descriptive, and whether adjustments for multiple comparisons are necessary remains debated.[43]

## Conclusions

Local authority over cannabis can benefit public health because local policymakers may be more directly responsive to their constituents' desires than state or federal policymakers.[44,45] Local cannabis policymaking also presents an opportunity to reduce inequities by extending land use planning strategies for unhealthy commodities—including alcohol, tobacco, firearms, and fast food[46]—to commercial cannabis. However, California had uneven application of cannabis control policies that could exacerbate cannabis-related health inequities. More advantaged communities were less likely to permit cannabis businesses, and if they did, they were generally more likely to regulate those businesses. Local policies

may help explain why outlets are disproportionately located in low-income communities and communities of color. To prevent local decision-making from exacerbating health inequities, there should be more uniform adoption of cannabis control policies across localities. This could be achieved by advocating local adoption of model ordinances or by raising statewide requirements. Common standards are increasingly important as more US states consider legalization and federal lawmakers discuss national decriminalization.

Our results suggest that local policy differences may help explain why cannabis businesses are disproportionately located in low-income communities of color. Further research is needed to determine whether similar local policy patterns occur across other regions and to examine the relationships between local laws, outlet density, and cannabis-related health inequities. If local laws prove to be an important factor in health inequities, the laws can be changed in ways that help close the gap. **AJPH**

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## PUBLICATION INFORMATION

## CONTRIBUTORS

## ACKNOWLEDGMENTS

## CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

## HUMAN PARTICIPANT PROTECTION

Population data in this study were based entirely on publicly available secondary data, and this study was therefore exempt from institutional review board review.
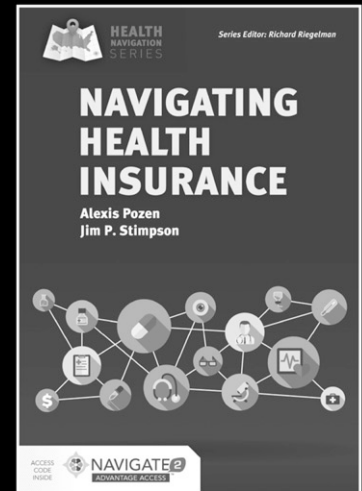
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