



- Cannabis Legalization
- in San Francisco
- A Health Impact Assessment



Office of Policy and Planning  
San Francisco Department of Public Health

**Final Report**  
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# Introduction and Purpose

On November 8, 2016, California voters passed Proposition 64, the “Adult Use of Marijuana Act”. This proposition made it legal for individuals age 21 and older to use, possess, and make non-medical cannabis available for retail sale.<sup>a</sup> While the legalization of adult use cannabis may have direct benefits to communities, from the regulation and taxation of cannabis sales to the substance’s continued decriminalization, the public health impacts of legalization are lessor known. There is an emerging body of evidence on the health and social impacts associated with cannabis use, especially for youth.<sup>1–3</sup> The evidence regarding these impacts is growing, but there is limited and conflicting evidence on the public health implications of legalization, as it is relatively new in the United States.

This report assesses the most up-to-date health information and draws together evidence from multiple sources to better understand the potential health impacts from adult use cannabis legalization in San Francisco. The report aims to inform discussions on the legalization process by providing a health lens to better understand its implications. This report uses a health impact assessment (HIA) framework to evaluate the potential health effects or harms to communities from legalization and strategies for their preventions and/or mitigation. The following goals were used to provide an overall structure to guide the project:

- Prevent youth access and exposure to cannabis
- Minimize potential harms to communities from cannabis use
- Prevent the renormalization of tobacco product use and reverse of declining use rates
- Ensure perceptions of cannabis recognize risks associated with use

Based on these goals, the following research question was formulated for the analysis: What are the health impacts of *adult use cannabis retailers* on San Francisco communities? More specifically, the report wanted to evaluate: How does the density of and proximity to adult use cannabis retailers impact youth exposure and neighborhood quality

<sup>a</sup> The proposition allows for the possession, transportation, purchase and consumption (up to one ounce of adult use cannabis and eight grams of adult use cannabis concentrates), and personal cultivation of cannabis (up to six plants in a private residence).



of life<sup>b</sup>? And how does allowing onsite consumption of adult use cannabis impact youth exposure and neighborhood quality of life? For the latter question, evidence in the literature was sparse and key informant feedback was somewhat limited, thus it was not a focal point of the report.

The assessment draws together evidence from multiple different data sources to develop a holistic understanding of the health impacts associated with cannabis legalization and answer the report’s research questions. Data sources for the assessment included local and national epidemiologic data, scientific literature, expert and key informant opinions collected from interviews and focus groups, and diverse quantitative indicators associated with health and the neighborhood environment. These data were analyzed for population wide trends and stratified to examine potential disproportionate impacts on different sub-populations (e.g. age, race/ethnicity) in following with the goals of the report. Based on the assessment findings, evidence-informed recommendations are proposed that aim to mitigate the identified health risks associated with legalization, especially as it relates to youth exposure and cannabis retailers, and any disproportionate impacts they may have on certain populations and/or communities.

**As aforementioned, adult use cannabis in the United States is an emerging industry that has raised certain public health concerns. To-date, there is limited evidence of the public health impacts associated with adult use legalization and the impacts of new specialized cannabis services such as onsite consumption. This report uses the most current evidence to provide a health lens to the decision-making process for the implementation of adult use cannabis legalization in San Francisco.**

<sup>b</sup> Neighborhood quality of life refers to issues such as crime, nuisances (e.g. noise, double parking, etc.), and traffic related injuries (e.g. pedestrian, bike, and vehicle-related injuries).



# Scope of the Project

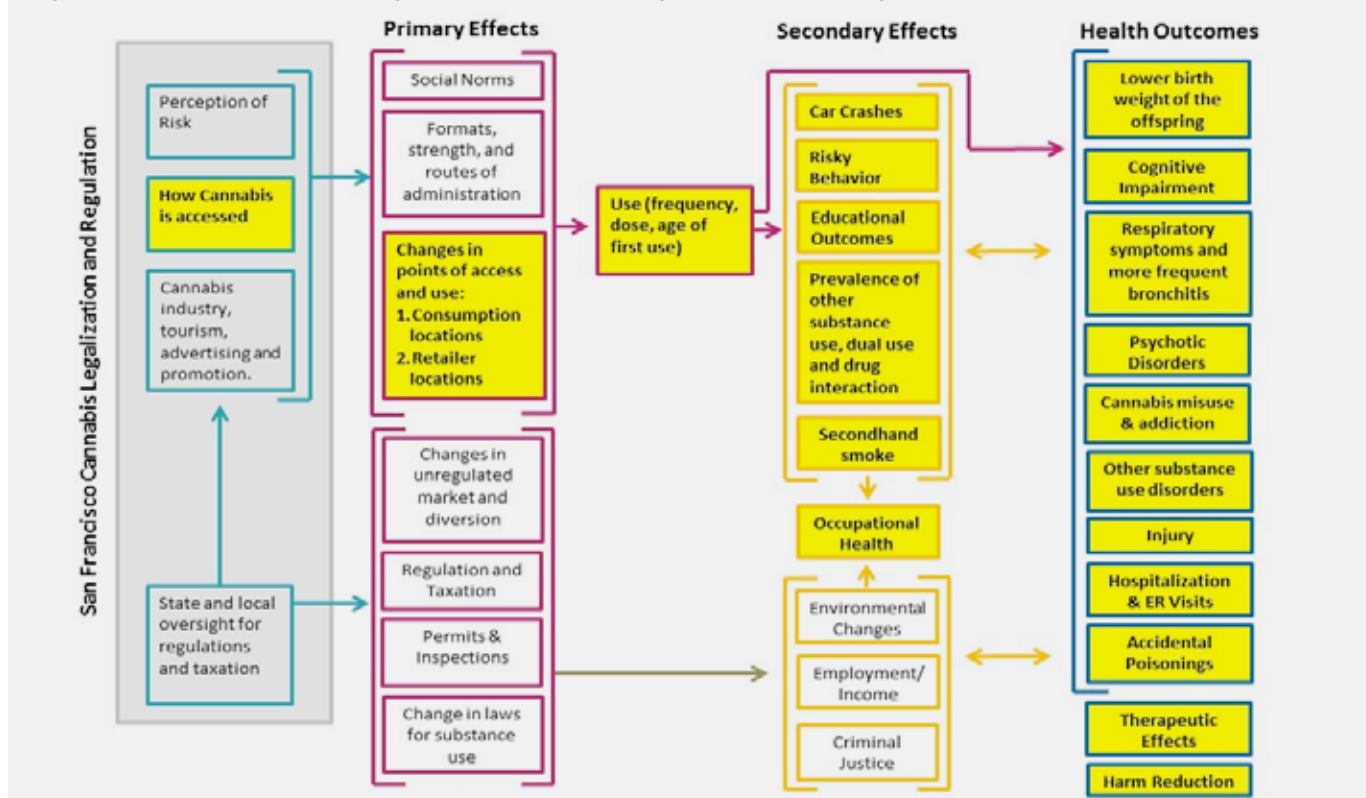
The scoping phase of the HIA provides a framework for the assessment and the research methods to identify potential risks being evaluated. Figure 1 provides an illustration of the scoping diagram that highlights the policy decision assessed and the potential health impacts from the decision. The diagram’s pathways were developed from existing scientific literature and the health outcomes were chosen based on the strength of their scientific evidence.<sup>2</sup> The outcomes’ directionality (i.e. positive or negative impact) are not specified because they may be contingent on how legalization is implemented in San Francisco. Additionally, the impacts associated with changes in the economic opportunity landscape, criminal justice system, and medicinal cannabis environment are not explored in this pathway diagram, but are recognized.<sup>c</sup>

c. To explore the interplay between income, employment, incarceration and health, refer to “Social Epidemiology” (2014)<sup>4</sup>. To explore the current scientifically support therapeutic uses of medically cannabis, refer to the National Academy of Sciences 2017 cannabis report.<sup>2</sup>

In Figure 1 (below), the diagram’s highlighted boxes depict the pathways and health outcomes examined in this project. Adult use cannabis legalization and the attendant changes in the regulatory environment are hypothesized to impact cannabis access, primarily through the addition of cannabis retailer locations.<sup>d</sup> This change in access could then impact people’s cannabis use (as measured by the frequency, dose, and age of first use), leading to direct and indirect health and social outcomes, as mediated through factors such as changes in risk of car crashes, educational outcomes, exposure to second hand smoke, and the increased co-use with other substances. Direct and indirect health outcomes associated with cannabis use include, but are not limited to: lower birth weight of offspring, cognitive impairment, respiratory symptoms, psychotic disorders, cannabis misuse and addiction, other substance use disorders, injury, hospitalization and emergency room visits, and accidental poisonings.<sup>2</sup> The impacts on youth can be more significant, as the brains of young people do not fully develop until the mid-20s.<sup>5</sup> Research shows that regular cannabis use by youth can harm memory, learning, and attention, with some studies suggesting these impacts can

d. The extension of adult use cannabis sales to delivery may also impact access, but it is not specifically examined by the assessment. Of note, 10 of the 38 permitted medical cannabis dispensaries in San Francisco are delivery only.

**Figure 1: Health Pathway Diagram of Cannabis Legalization and Regulation in San Francisco**





“I’m scared about how young students are when they start using. They don’t have the information about the issue because they’re starting so young.”

– Youth Focus Group Participant

be permanent.<sup>6</sup> Cannabis use has also been found to be more addictive and harder to stop if started at a younger age.<sup>7</sup> Refer to Appendix A for a comprehensive summary of health outcomes associated with cannabis use and the level of supporting scientific evidence.

## Methods

The HIA employed a mixed methods research approach to answer the assessment’s research questions. Specific methods included:

*Literature Review:* The review examined existing literature of systematic reviews, review of reviews, and single studies on community-level impacts associated with cannabis use. Particular focus was given to cannabis retailers and medical dispensaries, locations allowing onsite cannabis consumption, the interplay of tobacco and cannabis, and impacts on youth from legalization.

*Quantitative and Geographic Assessment:* Quantitative data on cannabis-related hospitalizations and emergency room visits and youth substance use rates were examined

for population wide-trends and stratified to identify any disproportionate impacts on different sub-populations. Additionally, an analysis of the distribution of medical cannabis dispensaries, zoning districts where dispensaries are allowed<sup>e</sup>, and proposed expansion to these zones per a new ordinance (Ordinance 171041 as introduced 9/26/2017) in San Francisco was conducted. This analysis examined whether dispensaries and specified zoning districts are disproportionately located in certain communities, and whether those areas have higher poverty rates, concentrations of residents of color, and/or concentrations of youth populations. Ordinance 171041 was introduced September 26, 2017 by the Mayor’s Office with Supervisor Jeff Sheehy, and provides new rules overseeing adult use and medical cannabis in San Francisco.

*Focus Groups and Key Stakeholders Interviews:* Qualitative evidence was collected on the current impacts of cannabis use and potential impact of adult use cannabis legalization through interviews with 11 local key informants, six outside jurisdictions that recently legalized adult use cannabis, and a focus group with 12 local youth, aged 14-22.

<sup>e</sup> Zoning districts allowing MCDs are sometimes referred to as “green zones”. This term is used throughout the report.

# Findings

## Youth Use of Cannabis in San Francisco

Cannabis use among youth can have significant health and social impacts.<sup>1-3,5-7</sup> Evaluating baseline youth rates and patterns of use will help to understand any impacts of adult use cannabis legalization on youth and identify sub-populations at-risk for these impacts. This analysis examines cannabis use patterns among San Francisco Unified School District (SFUSD) middle and high school students between 2008 and 2015 using survey data gathered using the Youth Risk Behavior Survey (YRBS). The survey provides baseline data of youth cannabis use rates before legalization, insights into cannabis use patterns in youth, and highlights where there are disparities in use by gender, race/ethnicity, and sexual orientation. Refer to Appendix B for more information on the survey methods and complete findings on San Francisco middle and high school youth substance use trends.

### Middle School Students Cannabis Use Trends

Between 2008 and 2014, the percentage of middle school students in San Francisco who have ever used cannabis has remained relatively stable. In 2014, 6.9% of students reported ever using cannabis. Males and females had similar rates of cannabis use. Among racial/ethnic groups, Black/African American, Native Hawaiian/other Pacific Islander, and Latino/Hispanic groups reported having the highest percentages that ever used cannabis, with rates of 22.7%, 21.6% and 16.2%, respectively. Students who self-identify as gay, lesbian, or bisexual had the highest percentage reporting to have ever used cannabis among sexual orientation groups, with rates of 32.7%. Overall San Francisco middle school student cannabis use rates were statistically similar to Colorado, where adult use cannabis is already legalized. Among Colorado middle school students in 2015, an estimated 4.4% were currently using cannabis and an estimated 7.6% had ever used cannabis.<sup>8</sup> Nationwide data on middle school rates were not identified.

### High School Students Cannabis Use Trends

Between 2009 and 2015, the percentage of high school students in San Francisco who have ever used or currently use cannabis remained relatively stable. In 2014, 28.7% of students reported ever using cannabis and 16.8% reported current use. These rates are lower than national rates, where 40.7% of high school students reported having ever used cannabis and 21.7% reported current cannabis use.<sup>9</sup> San Francisco's high school student use rates are also lower than, or similar to, rates in states that have legalized



adult use cannabis. In 2015, approximately 38% of Colorado high school students reported having ever used cannabis and 21% reported using in the past 30 days.<sup>8</sup> In Washington State, 26% of 12th graders and 17% of 10th graders reported current cannabis use in 2015.<sup>10</sup> Several analyses on the initial impacts of adult-use cannabis legalization in these states have shown the legalization has not had a demonstrated impact on overall use rates and risk perception.<sup>11-17</sup> Among youth in Colorado, Washington, Oregon and Alaska, survey data suggests there were no significant increases in cannabis use post-legalization.<sup>13</sup> One analysis found that while there has been a downward trend in perception of risk among these states, these downward trends predated legalization.<sup>16</sup>

While overall cannabis use rates among San Francisco youth may be lower than national rates, significant disparities by race/ethnicity and sexual orientation were observed during the 2009-2015 time period. Among racial/ethnic groups in San Francisco, American Indian/Alaska Native, Black and African Americans, and Whites students had the highest rates of current use, with rates of 49.2% (estimate has large confidence interval due to small population), 37.4%, and 34.5%, respectively. Latino/Hispanic and Native Hawaiian/other Pacific Islander also had higher rates than the City's overall high school student rate, with 29.3% and 27.2% reporting current use. Use



## Medical Cannabis Dispensaries, Cannabis Retailers, and Zoning District Analysis

### Literature Review Findings

The scientific literature examining the impacts of cannabis retailers and medical cannabis dispensaries (MCDs) is limited, provides some mixed findings, and focuses predominantly on MCDs.<sup>1</sup> Studies have found that, similar to the impacts of alcohol and tobacco outlets, their proximity to and/or density within communities is positively associated with current cannabis use<sup>18</sup>, recent cannabis use by certain adolescents groups (8<sup>th</sup> and 10<sup>th</sup> graders)<sup>19</sup>, lower age of cannabis use onset<sup>20</sup>, cannabis use disorder hospitalizations<sup>21</sup>, and frequency of child physical abuse.<sup>22</sup> Recent studies have also found that neighborhoods with lower household incomes, higher proportion of racial/ethnic minorities, higher crime, or greater density of on premise alcohol outlets have greater densities of MCDs.<sup>23,24</sup> A recent study of Colorado adult use cannabis retailers found that retailers were more likely to be located in neighborhoods with lower proportions of young people, higher proportions of racial/ethnic minorities, lower household incomes, higher crime rates, or greater densities of on premise alcohol

rates among several of these groups surpass nationwide rates. In 2015, the national prevalence of current cannabis use among Black and African Americans and Whites was 27.1% and 19.9%, respectively.<sup>9</sup> Significant disparities were also observed among sexual orientation groups, with San Francisco students who self-identify as gay, lesbian or bisexual having current use rates about twice the overall rate, with rates of 28.0% and 37.2%, respectively. Males and females have had similar rates of cannabis use. Refer to Table 1 for more details regarding high school student use rates in San Francisco.

*1. No systematic reviews on the topic area, for either cannabis retailers or medical dispensaries, were identified. Literature on the impacts of onsite cannabis consumption was sparser, with no US-based studies identified.*

**Table 1: Current Cannabis Use Rates among San Francisco High School Students, 2009-2015\***

Category		2009-2015	2009-2011	2013-2015
<b>Total</b>		16.9%	17.0%	16.8%
<b>Sex</b>	Female	16.7%	16.5%	17.0%
	Male	16.8%	17.1%	16.5%
<b>Race</b>	American Indian/ Alaska Native	49.2%	.	62.5%
	Black or African American	37.4%	32.4%	42.9%
	Chinese	3.1%	3.4%	2.8%
	Filipino	14.4%	16.0%	12.8%
	Latino/ Hispanic	29.3%	30.7%	28.1%
	Multiple - non-Hispanic	21.9%	21.9%	21.9%
	Native Hawaiian/ other Pacific Islander	27.2%	36.0%	.
	Other Asian	11.7%	12.9%	10.5%
	White	34.5%	35.5%	33.6%
<b>Grade</b>	9th grade	10.4%	12.5%	8.2%
	10th grade	14.8%	14.7%	14.9%
	11th grade	18.7%	18.4%	19.1%
	12th grade	23.0%	21.6%	24.2%
<b>Sexual Orientation</b>	Bisexual	37.2%	44.2%	30.5%
	Gay or Lesbian	28.0%	28.9%	27.0%
	Heterosexual	15.9%	15.5%	16.2%
	Not sure/Missing	15.1%	15.9%	14.5%

\*Percentage of students who used cannabis one or more times over the past 30 days.



outlets.<sup>25</sup> Conversely, a very limited amount of studies have also found no association between the density and/or proximity of MCDs and issues such as violent or property crimes<sup>26</sup>, recent cannabis use by certain adolescents groups (12<sup>th</sup> graders)<sup>19</sup>, or lifetime cannabis use.<sup>18</sup> A recent study even found that MCD closings were associated with increases in crime in the surrounding area.<sup>27</sup> The literature on the impacts of alcohol outlets is more robust and may provide insight into potential impacts of MCDs and cannabis retailers. Reviews have found that increases in outlet density is positively associated with increases in alcohol consumption and alcohol related harms, including, but not limited to crime, injuries and alcohol misuse.<sup>28–30</sup> Research has also shown these retail types impact youth exposure to harmful substances, with studies on tobacco retailers demonstrating that their density influences minors' perception of tobacco acceptability and availability, as well as their likelihood of purchasing tobacco products.<sup>18–22</sup> For more information regarding these impacts, refer to Appendix C.

### MCD and Green Zone Distribution Analysis Findings

As discussed, the densities of alcohol and tobacco retailers have been found to influence youth exposure to these substances and have been associated with other community health harms. These retail types have also been found to disproportionately impact certain communities and concentrate in low income communities of color. Increasing evidence suggest that MCDs and adult use cannabis retailers could have similar impacts. The following analysis examines whether distributional patterns found with alcohol outlets and tobacco retailers are being reproduced in San Francisco with MCDs, and how the current proposal to change land use rules overseeing MCDs and cannabis retailers (per Ordinance 171041, as introduced Sept 26, 2017)<sup>9</sup> could impact that distribution. The analysis excluded delivery-only dispensaries as the scientific literature has mostly focused on relationship between storefront retail and surrounding communities. Of note, studies examining the impact of home delivery of alcohol have found that delivery is associated with higher rates of access for youth.<sup>29, 30</sup> For more information on the analysis methods and the complete set of findings, refer to Appendix D.

As of August 2017, there are a total of 28 licensed MCDs (excludes 10 delivery only licensed MCDs) operating in San Francisco. MCDs are not spread throughout

the City evenly, with several neighborhoods containing a disproportionate share (refer to Figure 2 for map of locations). MCDs are located in 12 different neighborhoods, with 64% operating in just four neighborhoods: South of Market (28%, n=8), Mission (14%, n=4), Outer Mission (11%, n=3), and Financial District (11%, n=3). MCDs were found to follow similar distributional patterns as alcohol outlets and tobacco retailers throughout San Francisco. Neighborhoods with some of the highest concentrations of MCDs were also the ones with some of the highest densities of alcohol outlets and tobacco retailers (SOMA, Mission, and the Financial District). Of note, MCDs were found to concentrate to a higher degree in SOMA, Financial District, and Outer Mission in comparison with alcohol and tobacco retailers. Similar to the geographic distribution of MCDs, areas zoned to allow dispensaries are not distributed equally across the city. Three neighborhoods contain 46% of the zoned area that allow for new MCDs to open: South of Market (19.5%), Financial District (15.7%), and North Beach (10.4%). While there is overlap with where MCDs and green zones are located, MCDs are not distributed in proportion with where they are zoned.

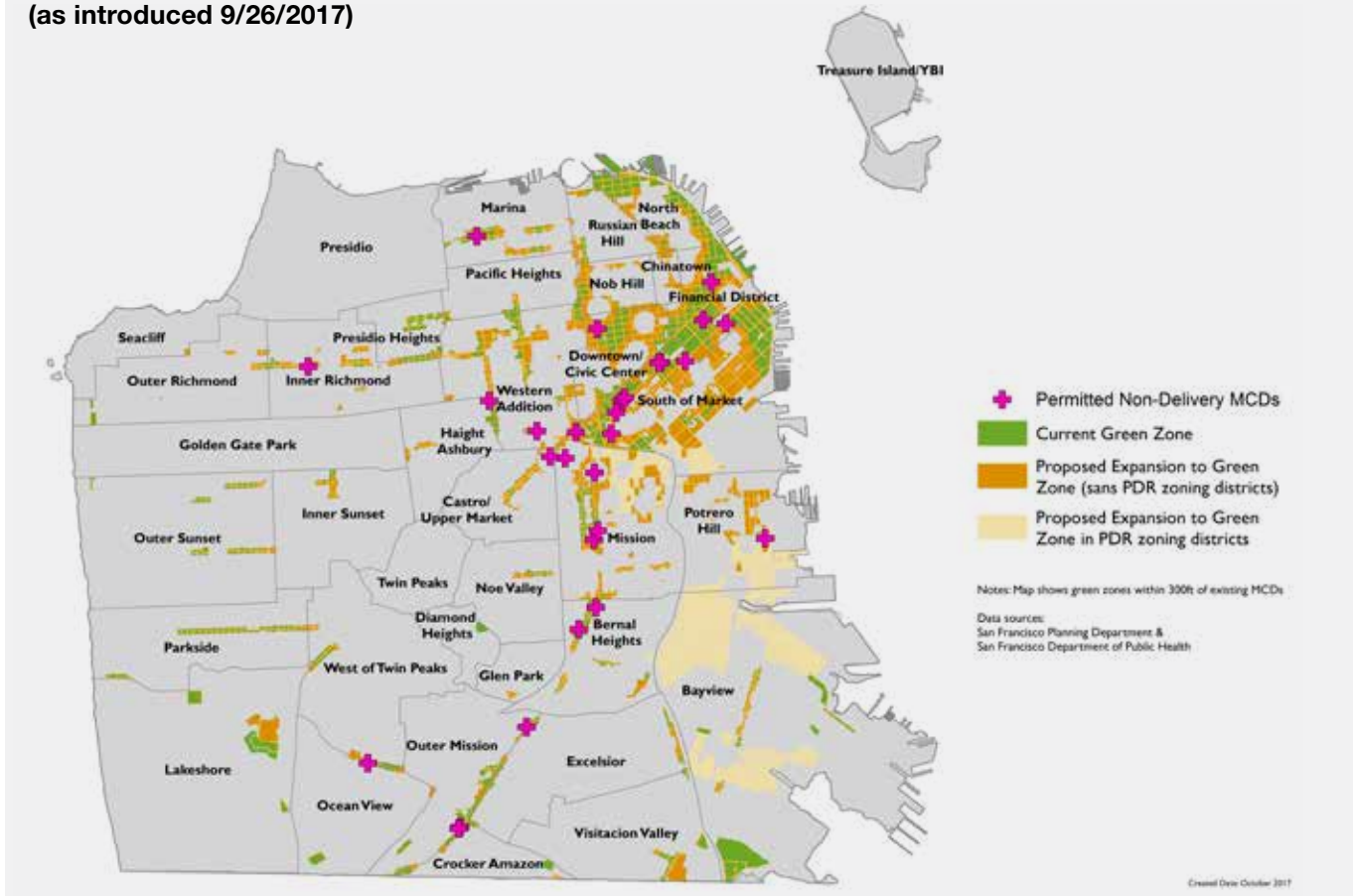


*g. The Ordinance would permit MCDs in some Neighborhood Commercial Districts in which they are currently prohibited, PDR Zoning Districts, and most Mixed Use Districts. In addition, this ordinance would prohibit a cannabis retailers or MCD from locating within 600 feet of a school, public or private (down from 1,000 feet) and with 300 feet of existing MCD or cannabis retailers. Further, it would not require a minimum distance between a cannabis retail use or MCD and a day care center or youth center.*



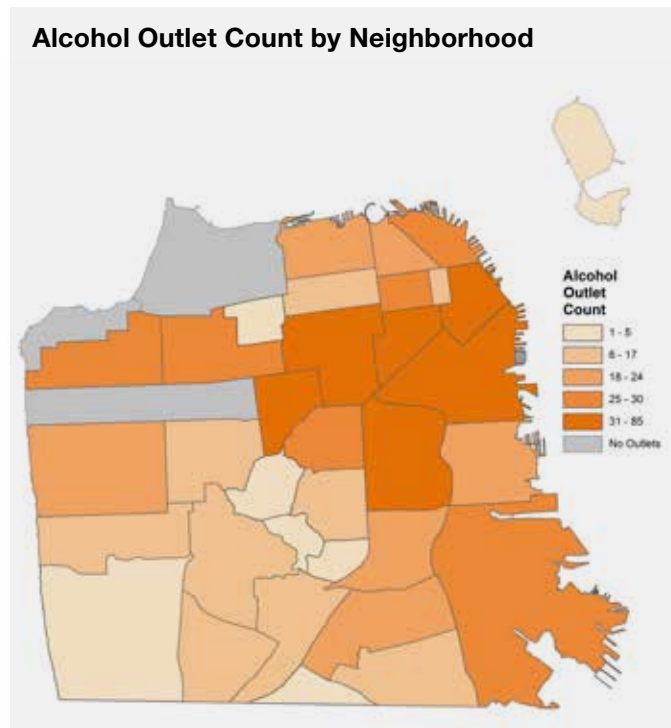


**Figure 2: MCD Locations and Current/Proposed Green Zones under Ordinance 171041 (as introduced 9/26/2017)**



The analysis of areas surrounding MCDs and green zones found that community composition differed across several demographic indicators (refer to Table 2 for more detail). Communities surrounding MCDs were found to have higher poverty rates (35.1% vs 27.0%) and higher concentrations of people of color (64.4% vs 58.5%) in comparison to areas without MCDs. There were differences in the percentage of youth populations between the two areas, with areas without an MCD having a lower percentage of youth population (11.4% vs. 13.5%). When examined by specific racial/ethnic categories, the areas surrounding MCDs were more likely to have higher percentages of Black/African American (6.8% vs 5.3%) and Latino/Hispanic (19.9% vs. 15.1%) populations compared to areas without MCDs. Communities surrounding areas zoned for MCDs were found to have higher rates of poverty (29.8% vs 25.9%), but similar percentages of people of color (59.2% vs 58.5%). There were differences in the percentage of youth populations between the two areas, with areas not containing green zones having a lower percentage of youth population (12.0% vs. 14.3%).

**Alcohol Outlet Count by Neighborhood**





**Table 2: Characteristics of Areas Surrounding MCDs and Current/Proposed Green Zones**

Community Geography	Percentage of Total City Population	Percentage in Poverty <sup>1</sup>	Percentage People of Color <sup>2</sup>	Percentage Youth <sup>3</sup>
Contains MCD	4.5%	35.1%	64.4%	11.4%
No MCD	95.5%	27.0%	58.5%	13.5%
Current Green Zone	38.0%	29.9%	59.3%	12.0%
Outside Current Green Zone	62.0%	25.9%	58.4%	14.2%
Proposed Green Zone	56.6%	30.6%	58.6%	11.9%
Outside Proposed Green Zone	43.4%	23.2%	58.9%	15.4%
Proposed Green Zone plus PDR	57.6%	30.9%	59.2%	12.1%
Outside Proposed Green Zone plus PDR	42.4%	22.5%	58.1%	15.2%
Citywide	100.0%	27.4%	58.8%	13.4%

(1) percentage of population below 200% federal poverty level; (2) % of population non-white; (3) % of population under age 18

Under Ordinance 171041, South of Market, Financial District, and Downtown/Civic Center would have the most area zoned for MCDs and cannabis retailers, and would contain 43.1% of the proposed additions to the green zone (calculations exclude PDR zoning allowances). Areas surrounding the proposed green zones were found to have higher rates of poverty (30.6% vs 23.2%), similar percentages of people of color (58% vs 58%), and a lower percentage of youth (11.9% vs 15.4%). In these proposed zones, there would be similar proportions of African Americans and Whites, and differences in the percentage of Asians (32% vs 35%) and Latinos (16% vs 13%).

### Cannabis-Related Hospitalizations and Emergency Room Visits in San Francisco

Hospitalizations and emergency room (ER) visits from cannabis use disorder and poisonings<sup>h</sup> are health outcomes associated with cannabis use.<sup>2,8</sup> This analysis examines the burden of cannabis-related hospitalizations and emergency room (ER) visits among San Francisco residents, as measured by hospitalizations and ER visits where cannabis could be a causal, contributing, or coexisting factor noted by the physician during the ER visit or hospitalization. Hospitalization and ER data was obtained from the Office of State Health Planning and Development (OSHPD). Refer to Appendix E for more information regarding the analysis’s methods and complete set of findings.

<sup>h</sup> Drug poisoning refers to a state of major disturbance of consciousness level, vital functions, and behavior following the administration in excessive dosage (deliberate or accidentally) of a psychoactive substance. The risk for acute toxicity of cannabinoids is considered to be low and there are no reports of fatal overdoses in the epidemiological literature from cannabis. The most common acute adverse effects of cannabis include anxiety, panic reactions, and psychotic symptoms. There are reports of cannabis intake resulting in coma in children, and in other cases, resulting in cardiac arrhythmia, acute myocardial infarction, and transitory ischemic attack.<sup>38,39,3</sup>

Over the past ten years of available data, cannabis-related hospitalizations and ER visits increased substantially. Between 2006-2010 and 2011-2015, hospitalization counts increased 50%, the percentage of hospitalizations increased 45%, and age-adjusted rates increased 45%. ER visit counts increased 185%, the percentage ER visits increased 140%, and age-adjusted rates increased 180%. Cannabis use disorder diagnoses were found to be responsible for most cannabis-related hospitalizations and ER visits. Between 2011 and 2015, cannabis use disorder diagnoses accounted for an estimated 99% of all cannabis-related hospitalizations and 95% of all cannabis-related ER visits. Hospitalizations and ER visits with a cannabis-





related primary diagnosis represent a small fraction of cannabis-related cases. Between 2011 and 2015, 1% of all cannabis-related hospitalizations and an estimated 10% of all cannabis-related ER visits had cannabis-related primary diagnoses. Refer to Table 3 for counts and rates of cannabis-related hospitalizations and ER visits.

Significant disparities by demographic groups were found when hospitalization and ER rates were stratified. By sex, males had the highest cannabis-related hospitalization and ER visit rates. Between 2011 and 2015, males had 1.8 times the age-adjusted hospitalization rate and 2.1 times the ER visit rate as females. By race and ethnicity, Black and African Americans had the highest cannabis-related hospitalizations and ER visits rates. Between 2011 and 2015, Black and African Americans had 5.8 times the age-adjusted hospitalization rate and 5.2 times the ER visit rate as the overall population. Young adults age 18-20 and adults age 21-24 had the highest hospitalization and ER rates among all age groups. Between 2011 and 2015, these age groups had hospitalization rates about two times the overall cannabis hospitalizations rate, and ER rates over three times the overall cannabis ER visit rates. When examined by cause, cannabis use disorder conditions were the primary drivers of most age-specific rates and counts of hospitalizations and ER visits. Hospitalization and ER visit rates also varied by resident living locations. Residents from zip codes 94102 (Downtown Civic Center, Western Addition) and 94103 (South of Market, Mission, Financial District, Mission Bay) had the highest hospitalization rates, with rates of 29 hospitalizations per 1,000 total hospitalizations and 30 hospitalizations per 1,000 total hospitalizations. Residents from zip codes 94104 (Financial District) and 94117 (Haight Ashbury, Western Addition) had the highest ER visit rates, with rates of 8.3 visits per 1,000 total ER visits and 11.6 visits per 1,000 total ER visits.

Overall, the burden of cannabis-related hospitalizations is relatively small compared to hospitalizations associated with other substances, and was found to be much lower



than the hospitalization rates for alcohol use disorder. Between 2012 and 2014, the age-adjusted hospitalization rate due to alcohol use disorder in adults, age 18-plus, was 8.37 per 10,000 residents.<sup>40</sup> In comparison, between 2011 and 2015, the hospitalization rate where cannabis was a primary diagnosis was 0.11 per 10,000 residents.<sup>i</sup> Additionally, the risk for fatalities due to cannabis are considerably less compared to other substances, including alcohol, opioids, and methamphetamines.<sup>41</sup>

### Qualitative Analysis: Key Informant Interviews and Youth Focus Group

As part of the mixed methods approach used by this assessment, a qualitative-based analysis was conducted to better understand the current cannabis environment in San Francisco. The qualitative analysis highlighted potential impacts associated with the legalization of adult use cannabis, and identified potential recommendations to

*i. Note that this estimate includes all age groups while the alcohol abuse rate includes only those age 18 and over.*

**Table 3: Cannabis-Related Hospitalizations and ER Visits in San Francisco, 2006-2015 (September)\***

Cannabis-Related Diagnoses	Admission Type	2006-2010		2011-2015 (September)*	
		Count <sup>3</sup>	Rate <sup>4</sup>	Count	Rate
Cannabis Use Disorder <sup>1</sup>	Hospitalizations	3,771	8.6	5,671	12.85
	ED Visits	1,702	3.93	4,985	11.46
Poisoning <sup>2</sup>	Hospitalization	21	0.05	52	0.12
	ED Visits	133	0.32	251	0.6

(1) Cannabis use disorders listed as primary or secondary diagnosis; (2) Cannabis poisoning listed as primary or secondary diagnosis; (3) Note that counts are not mutually exclusive (i.e. visits may have been coded with multiple cannabis related diagnosis codes.); (4) Age-adjusted rate per 10,000 residents; \*Data available only up through September, 2015;



prevent and/or mitigate any resulting harms. Hour-length semi-structured interviews were conducted with 11 different local informants regarding the current and future impacts of cannabis and recommendations for their mitigation (refer to Appendix F for key informant interview guide and for a summary table of key themes). Key informants included two physicians with focuses on substance use issues, one physician who studies impacts of medical cannabis, two representatives from local regulatory agencies, a neighborhood organization, three youth serving organizations, cannabis/tobacco policy researchers, and a cannabis industry representative. An hour-length focus group was also held with 14 local youth, age 14 to 22 (refer to Appendix G for the focus group interview guide and for a summary table of key themes). Finally, hour-length semi-structured interviews were conducted with health agency representatives from six outside government jurisdictions where adult use cannabis has been legalized (refer to Appendix H for the interview guide). Jurisdictions included Washington State, King County (WA), Oregon, Multnomah (OR), Colorado, and Denver (CO). Interview transcripts were coded and analyzed for key themes using MaxQDA.

### Current Local Environment

Local key informants and focus group members discussed a diverse array of issues related to the current cannabis environment in San Francisco. Almost uniformly, local informants specified that there are negative impacts to individuals from cannabis use, especially cognitive impacts on youth. They specified that there are disparities in these impacts, especially by age and race. According to one substance use physician, “even though 6% of the population is black, they account for 20-30% of treatment population in every addiction treatment program in the City”. Youth focus group participants also believed that there were negative impacts from use, and raised the issue that information is not being provided about what they are. Local informants also specified cannabis was widely available, its use already de-facto legalized, and believed there is a low perception of risk among the public about the harms associated with its use. According to another substance use physician, “marijuana is seen as natural, nicotine isn’t. Pills aren’t natural, but marijuana is. They think of it like ‘basil’”. Among youth in the focus group, cannabis was also perceived as easy to obtain, with its use perceived as normalized and associated with being “chill” and “cool” among youth.

Key informants had diverse views on medical cannabis dispensaries and believed their impact on surrounding communities was either minimal (e.g. don’t contribute crime; most adhere to rules; any issues are mostly quality of life issues), positive (e.g. improved block; lowered crime through activation and security), or negative (e.g. clusters

in certain neighborhoods; crowds out other retail; attracts problem clientele; have normalizing effect on youth). According to the observations of one youth organization key informant, “MCDs are open early in the morning. The exposure to kids when they walk by makes a difference. Cannabis becomes normalized when they walk by it every day. If you see cannabis every day, young people may not realize that it still needs to be consumed responsibly”. Among youth focus group participants, MCDs were perceived as having a negative impact on neighborhoods. Specifically, they highlighted that MCDs were an increasing presence, disproportionately locating in communities of color, and not benefiting existing community members.

### Future Environment Post-Legalization

Almost all local key informants and focus group participants raised concerns about the legalization of adult use cannabis, with most concerned about its potential harms on specific populations (e.g. youth, low income communities, communities of color, and communities with high prevalence of mental illness). Many informants also specified there would be positive impacts, including impacts associated with cannabis’s decriminalization and increases in tax revenue.

Multiple local informants specified that legalization could have various health harms. Most notably, informants believed that it would lead to an increase in cannabis use, especially among youth due to increased exposure to cannabis and the normalization of use. Concern was also raised regarding risk from accidental overdoses from cannabis products. There was also concern regarding the potential harms from cannabis retailers (e.g. increase in youth access and exposure, clustering that crowds out other retail types) and allowing onsite consumption (e.g. employee exposure to smoke, public intoxication). Key informants and focus group participants believed that these potential harms from legalization would disproportionately impact high risk/vulnerable communities, including communities with high rates of mental illness, chronic disease, substance use disorders, and violence.

Local informants also raised concern about the increasing influence of the cannabis industry, and their potential to roll back regulations (e.g. clean air laws), crowd out of small retailers, and create new products attractive to youth. There was also concern regarding widespread cannabis advertising campaigns and the targeting of youth and communities of color with marketing and misinformation. One youth organization representative noted: “I think about the impact of the tobacco industry, and how young people of color are the target of advertisements, having the product more readily available, and available in more acceptable manner”.



“95% of people who are going to use cannabis are already using cannabis. There isn’t going to be a huge expansion of it. It’s already been effectively legal and available for 20 years.”

– Substance Use Physician

While most local informants noted potential negative impacts from legalization, informants also specified positive impacts from legalization, including economic benefits, decriminalization of cannabis, and the de-medicalization of cannabis. Some of these informants also believed that there could be unintentional harms if regulations are too restrictive. For example, there was concern that not providing legal place to consume cannabis (especially for tourists), could lead to unsafe and public consumption. Several informants also believed that adult use cannabis legalization would not have substantial impact because cannabis use is already de-facto legal in San Francisco. According to one substance use physician, “95% of people who are going to use cannabis are already using cannabis. There isn’t going to be a huge expansion of it. It’s already been effectively legal and available for 20 years”

Key informants were asked about the impact legalization on tobacco use and norms. While some informants noted concern about its impact on tobacco use, this was not major theme in interviews. Most concerns about tobacco were related to the roll back of clean air laws established to reduce tobacco smoke exposure.

### Recommendations for Mitigating Potential Impact and Preventing Harm

Overall, a plurality of local key informants suggested that initial regulations for adult use cannabis should take a “restrictive” approach, and that it should be slowly legalized. A minority of informants held positions at the other end of the spectrum and suggested rule-making take

a liberalized approach, and that adult use cannabis should not be over regulated (e.g. overly strict zoning controls) or over-taxed.

Among local informants and youth focus group participants, there was near unanimous agreement for education and awareness of legalization and cannabis’s impacts. Participants specified that the education needs to explain what the health impacts of cannabis use are, especially on youth, and that this information needs to be fact-based and not sensational. One informant noted that “We need to break myth the cannabis is harmless. Education doesn’t need to go reefer madness route. There is enough evidence to make solid case otherwise”. Additionally, informants specified that education needs to target both youth and adults, explain legalization and what the rules are, educate parents how to talk to youth, focus on targeting youth early, focus on de-normalizing use, and use peer-led models for youth education. According a school official, “It’s confusing to students and students need to understand that it’s not allowed and they need to be informed about what the law is”. Informants also specified that education should take a non-punitive approach that focuses on reducing the negative impacts associated with drug use.

There was near unanimous agreement among local informants and youth focus group participants for placing restrictions for retailers, especially to ensure they don’t disproportionately impact low-income communities, communities of color, and communities with health-risks (e.g. substance use issues, violence, chronic disease). Many informants specified that there should be land-use restrictions for MCDs and retailers, including rules on: anti-clustering, anti-density, and sensitive site buffers (e.g. schools, youth serving facilities). Other recommendations gleaned from interviews and the focus group included ensuring there is interdepartmental coordination in cannabis rule-making and educational messaging, providing prevention and treatment programming (especially for youth), developing advertising restrictions to prevent saturation campaigns, predatory marketing, and youth targeted marketing, and ensuring there are strong product controls, especially with regards to dosing and labeling to prevent accidental overdoses and targeting of youth.

### Perspectives from Outside Jurisdictions with Legalized Adult Use Cannabis

In the interviews with outside jurisdictions that have legalized adult use cannabis, interviewees discussed a range of topics including issues arising from cannabis advertising, youth education, retailers/dispensaries<sup>j</sup>, and

<sup>j</sup> None of the places that had legalized cannabis had formally permitted on-site consumption at the time of the interviews.



Elizabeth Page Brumley/ Las Vegas Review-Journal

**“Every corner of San Francisco is touched by mental health issues, drug abuse/addiction. Why bring something in that can only exacerbate these issues, unless you can have real controls on cannabis retailers?”**

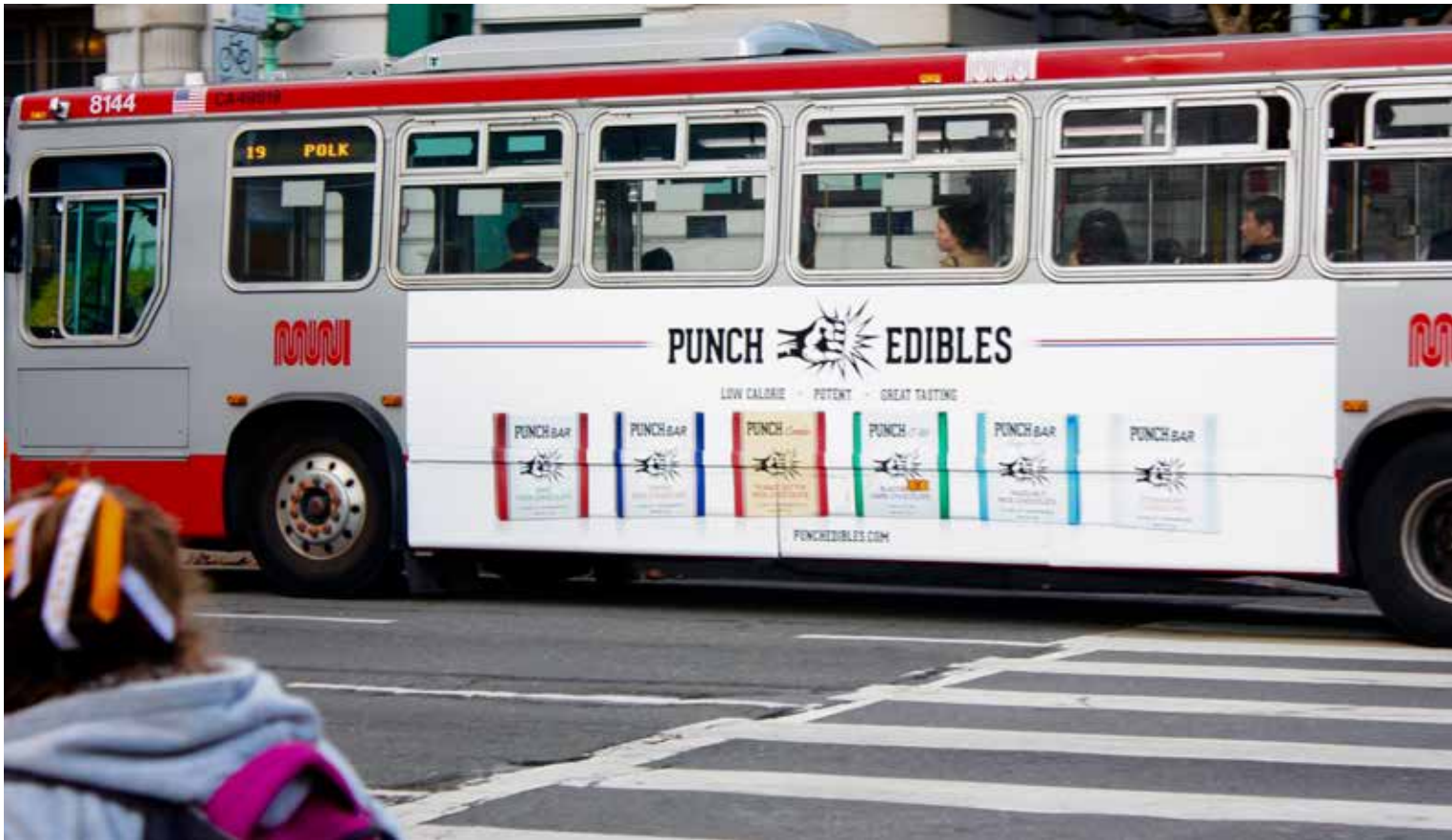
**– Community Organization Representative**

edibles. Overall, most jurisdictions interviewed believed that the retail sales of cannabis were rolled out too quickly and there was not adequate time to prepare. Some noted that prevention and awareness efforts couldn't be implemented from the start of legalization because of the delay in receiving prevention funds, which were contingent on funds raised by their excise tax.

Almost uniformly cannabis poisonings from edibles were seen as a significant health problem. Many of the jurisdictions believed they should have had better control over the cannabis market with regard to concentration of THC, packaging and availability. Jurisdictions also discussed their experience with cannabis retailers, with many highlighting associated equity issues. Many residents in places that legalized cannabis felt that starting a cannabis business was very expensive and opportunities were limited to the wealthy and non-minorities. These inequities were often perpetuated with prohibitions against individuals getting cannabis dispensary licenses if owner had prior convictions. Some jurisdictions also noted that there were neighborhood issues with the clustering of cannabis dispensaries. These jurisdictions recommended instituting de-concentration ordinances geared towards reducing density in certain neighborhoods. While some local jurisdictions believed there was a reduction in crime after legalization, cannabis retailers were seen as being frequent targets to robberies because most of them are cash businesses. Finally, most jurisdictions said the number one community complaint associated with retailers was

odor, with some also mentioning retailer issues associated with the pesticide use and violation of the clean air act.

Most of the jurisdictions interviewed thought that they had put successful youth education campaigns in place (materials available online). One jurisdiction noted that their initial campaign failed because it overstated the health risk associated with cannabis and warned other jurisdictions conducted health awareness campaigns should not focus on “dramatic health impacts”. Many of the jurisdictions recommended having very strict advertising laws in place, which helps to support their health focused messaging. These jurisdictions saw significant increases in advertisements, with many advertising restriction loopholes being exploited by the cannabis industry. Finally, while most jurisdictions saw a reduction in tobacco use, they stated that there should be no leeway with tobacco laws. Some jurisdictions even saw an increase of e-cigarette use.



## Cross-cutting Key Findings

### Disproportional Impacts

Certain communities, especially communities of color, are disproportionately impacted by the location of existing medical cannabis dispensaries (MCDs), current cannabis youth use rates, and negative health outcomes associated with cannabis use.

**Youth Cannabis Use Rates:** In San Francisco, by race and ethnicity, Black/African Americans, Native Hawaiian/other Pacific Islander, and Latino/Hispanic groups reported having the highest percentages that ever used cannabis in San Francisco middle schools. In San Francisco high schools, American Indian/Alaska Native, Black and African Americans, and Whites have the highest rates of current cannabis use among racial/ethnic groups. Both local key informants and focus group participants noted that there is low perception of risk associated with cannabis use among youth. This follows nationwide trends of decreasing

perceptions of risk associated with cannabis use among youth.<sup>42</sup>

**MCD Locations:** Land use planning and zoning can influence location and density of retail in the built environment, which may impact health. The densities of alcohol and tobacco retailers have been found to influence youth exposure to these substances and have been associated with other community health harms. These retail types have also been found to disproportionately impact certain communities and concentrate in low income communities of color. Increasing evidence suggest that MCDs and adult use cannabis retailers could have similar impacts. In San Francisco MCDs are not spread throughout the San Francisco evenly, with 64% of dispensaries operating in just four neighborhoods (South of Market, Mission, Outer Mission and Financial District). The areas surrounding MCDs were found to have higher poverty rates and higher concentrations of people of color in comparison to areas without MCDs. Specifically, areas around MCDs were more likely to have higher percentages of Black/African American and Latino/Hispanic populations.

Historically in the United States, specific land use policies have contributed to negative impacts on communities, especially low income communities and communities of



“There are complaints among community members that the industry has too much freedom regarding advertising. There has been concern that youth are seeing advertisements too much, possibly leading to more interest and normalization of the behavior.”

– State Agency Representative in jurisdiction with legalized adult use cannabis

color.<sup>4</sup> In San Francisco, these policies have led to many different issues, including creating neighborhoods with high densities of alcohol and tobacco retailers. The location of these retailers are influenced by zoning laws specifying where commercial uses can locate, which are often in denser parts of the city with large populations of low-income residents and residents of color. The location of MCDs may be following these distributional patterns due to current zoning laws, and concentrating in select neighborhoods. Of note, even though many areas of the City allow for MCDs based on current zoning rules, community organization and participation in the approval process can have significant impact and varies by neighborhood.

Cannabis Related Hospitalizations: In San Francisco, by race and ethnicity, Black/African Americans had the highest cannabis-related hospitalizations and ER visits rates. Between 2010 and 2015, Black/African Americans had 5.8 times the age-adjusted hospitalization rate and 5.2 times the ER visit rate as the overall population.

Based on the key informant interviews and focus groups, none of the stakeholders representing organizations serving

communities of color, or living in these communities, believed cannabis legalization would benefit communities of color, and instead would have a negative impact and exacerbate current conditions. They specified that cannabis retailers would concentrate in these communities and place vulnerable residents at risk (e.g. youth), and that existing residents would not be able to access economic opportunities afforded by the new market (e.g. ownership of retailers).

### Concerns about Cannabis Edibles

The majority of cities and states that have legalized cannabis have experienced health impacts with the initial roll out of edibles from adult retailers, with data demonstrating increases in emergency room visits for poisonings associated with the ingestion of edibles following legalization. This issue was also a top concern among key stakeholders, especially among physicians addressing substance use disorders. While cannabis-related hospitalizations are still much lower than the hospitalization rates for alcohol use disorder, San Francisco has observed a significant increase in the rates of hospitalizations and ER visits related to cannabis poisonings over the past 10 years. Between 2006-2010 and 2011-2015, the rate of hospitalizations for cannabis-related poisonings increased 137%, with hospitalization counts increasing from 21 to 52. For the same time period, the rate of ER visits increased 88%, with ER visit counts increasing from 133 to 251.

### Youth Normalization and Advertising

Advertising is an important driver for normalizing substance use behaviors, with research demonstrating that youth and young adults are strongly influenced by heavily-advertised products. Research on effects of tobacco advertising could be instructive for understanding the potential impacts from allowing different types of cannabis advertising on youth. According to the US Surgeon General, tobacco advertising, including branding, imagery, event sponsorship, and marketing campaigns, cause the onset and progression to smoking among young people.<sup>43,44</sup> Even minimal exposure to tobacco advertising can positively influence youth attitudes and perceptions on smoking.<sup>45</sup> Cannabis-focused advertising is occurring throughout San Francisco and already being seen as a problem by stakeholders who participated in this report. Responsible advertising is key to reducing underage use of cannabis and has been shown to be an effective substance use prevention strategy. Restrictions of advertising are recognized by the World Health Organization as one of the most effective strategies for reducing tobacco product use, with complete marketing bans proving to be the most effective.<sup>46</sup> Refer to Appendix I for more information on the impacts of advertising.



# Recommendations

## 1. Take a measured approach to regulating adult-use cannabis.

The City should consider taking a measured approach in regulating the entry of new adult use cannabis retailers and the different adult use cannabis modalities (i.e. on-site consumption, delivery). This will allow for the evaluation of each modality and the ability to create a feedback loop to inform the next phase of licensing. This approach should consider:

- Ensuring current health protective laws, like tobacco regulations and clean air rules, are not reversed.
- For new adult-use cannabis retailers, after the initial licensing phase, consider instituting mechanisms that would assure only the numbers of outlets needed to serve the market are opened and prevent the over-concentration of retailers in neighborhoods. Mechanisms that exist include density ordinances and de-concentration ordinances.
- For on-site consumption, delivery, and accessory use consider having a substantial evaluative approach in order to assess emerging social and public health impacts.
- A social equity lens should guide the development and evaluation of these new modalities, and to provide input on future land use and licensing regulations. Policies should consider communities currently disproportionately and negatively impacted by issues associated with substance use and other related health harms.

## 2. Implement a robust public educational campaign.

The City should consider a robust public educational campaign that addresses cannabis legalization and cannabis use across the lifespan that encompasses targeted messages for different sub-population, including pregnant women, children, parents and seniors (e.g. for children it should focus on delay the age of the initiation of cannabis use). All public educational campaigns should be fact-based and highlight potential risks for cannabis, but not overstate negative health outcomes. This campaign should begin early- ideally the same time as permits are issued for adult use retail. If funding for public health prevention and for educational campaigns is dependent on an excise tax, there should be a mechanism to ensure upfront funding is provided (e.g. loan from the general fund) to prevent any delays in the initiative.



## 3. Integrate cannabis into youth prevention programming.

The City should consider providing youth substance use prevention programming and integrate cannabis-specific health education into current health education that leverages existing resources. Education on cannabis should start early (middle school) and should take a non-punitive approach that focuses on reducing the negative impacts associated with drug use. Programming should include peer-to-peer education modalities, especially at the high school levels.

## 4. Address potential disproportionate impacts to communities.

When considering approaches for permitting adult use retailers, especially in communities experiencing high rates of substance use disorders and other health disparities, the City should consider robust community education and engagement processes be put in place. Historically, government public input processes favor communities that are familiar with civic decision-making processes and can actively and continuously engage, leaving neighborhoods without the same experience and resources underrepresented. Underrepresented communities are more likely to be the same ones that could be vulnerable to any potential



Tender Souis, CMTL Data Portal

negative impacts of legalization, and have been shown to be at risk for the concentration of medical cannabis dispensaries and other types of retail that are associated community health harms (e.g. tobacco and alcohol retailers). There are several potential options that would lend themselves to community protections:

- *Consider providing preventative outreach that aims to enhance stakeholder engagement* to make sure that regulations are relevant for their specific neighborhood. The stakeholder engagement should take a people-centered planning approach where residents, businesses, and city agencies work together to actively shape the cannabis landscape for their neighborhoods. It would be important to be inclusive of communities that are low-income, have high rates of violent crime, high density of alcohol outlets and high rates of substance use disorders.
  - *Consider community factors related to health during the approval process* for adult use retailer permits. Factors such as low-income levels, density of alcohol and tobacco outlets, and rates of substance use disorders should be considered in the decision to issue a permit.
- 5. Strong regulation of cannabis edibles.** The City should consider strong regulations for cannabis edibles and implement and enforce all state rules, including limiting the concentration of THC, requiring clear
- and simple instructions on how to safely consume, and prohibiting products that appeal to children (e.g. candy). Efforts to augment state rules, could include requiring all products should come in plain, sealed, and in re-sealable packaging with sufficient warnings. Explore the use of active public health surveillance to monitor for incidences of poisonings and accidental overdoses, including strategies that leverage Poison Center data.
- 6. Develop advertising standards to protect youth and work to avoid creating social norms.** The City should consider regulating cannabis advertisements, as is currently done for alcohol and tobacco products. This could include a range of options such as working with the cannabis industry and other key stakeholders to adopt and comply with self-regulatory standards to reduce the extent to which cannabis advertising targets youth by both placement and content. Additionally, options could be explored for legally restricting advertising in youth-centered locations. While evidence is somewhat limited with cannabis, making consumption of tobacco less socially acceptable has been a major lesson of tobacco control over past decades. Prohibiting or reducing on-site consumption, as with tobacco, may also help to avoid creating social norms of acceptability of cannabis consumption.



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