Cannabis Markets
Post-Legalization:
Youth Use and Public Health

Cannabis Advisory Committee
Subcommittee on Public Health and Youth
San Francisco
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Getting it Right from the Start’s Mission

To collaboratively develop and test models of cannabis policy with the goal of reducing harms, youth and problem use. Models are based on the best scientific evidence and protection of public health, youth, social equity and safety.
Marijuana legalization in California has been characterized by

- Insufficient attention to public health concerns
- Explosive market growth and unsafe product diversification
- Failure to learn from tobacco control
- Lack of social or economic equity focus
Why Decriminalize?
Should we legalize?

- Profound Racism in Drug Policy
- Mass Incarceration
- Trafficking Related Violence
- Prohibition didn’t work
Most California residents can now access to legal cannabis.

49% of California’s 540 jurisdictions, with 56% of residents, had legalized some form of retail cannabis commerce by January 2019, 37% allow adult use retail.

All cities and counties obligated to accept delivery under current regulation, pending court outcomes.

Source: (Silver, Preliminary data not for citation, 2019)
Why Worry?
Some Proven Evidence of Benefit – generally at modest doses

Chemotherapy induced nausea

Recently approved pharmaceutical Epidiolex (cannabidiol) for rare difficult to control form of epilepsy

Certain forms of chronic pain

Source NASEM 2017; FDA 2018
But
Substantial Evidence of Harm with Use

- Low birth weight
- Schizophrenia and psychoses
- Increased motor vehicle crashes
- Respiratory illness, including severe lung disease with vaping
- Problem use associated with early onset of use and frequency of use

Source: National Academies of Science, Engineering, and Medicine, 2017, CDC 2019
Rapidly emerging evidence

- Cognitive, academic accidental ingestion and social effects
- Accidental ingestion and overdose
- Cardiovascular disease
Marijuana and Brain Development: the most vulnerable periods are pregnancy, adolescence and young adulthood
Use Rising in Pregnant California Women

- From 2009 to 2016, cannabis use among pregnant women increased from 4% to 7%
- 22% of pregnant females younger than 18 years and 19% of pregnant females aged 18 to 24 years screened positive for cannabis use in 2016
- Declining perception of risk for use during pregnancy - and in general

Source: Young-Wolff et al, JAMA 2017
Frequency of Cannabis Use Before Age 17 and Adverse Outcomes at 30 years (n=2500-3700)

Consistent dose-response associations between frequency of adolescent cannabis use and adverse outcomes

Source: Silins E et al., The Lancet September 2014
Marijuana use is also linked to risk for and early onset of psychotic disorders, such as schizophrenia. The risk for psychotic disorders increases with frequency of use, potency of the marijuana product, and as the age at first use decreases.

“The risks of physical dependence, addiction, and other negative consequences increase with exposure to high concentrations of THC and the younger the age of initiation. Higher doses of THC are more likely to produce anxiety, agitation, paranoia, and psychosis.”

“maternal marijuana use was associated with a 50% increased risk of low birth weight.”

“No amount of marijuana use during pregnancy or adolescence is known to be safe”

(Surgeon General VADM Jerome Adams, August 29, 2019)
Depression and Suicidal Ideation

Key Points

**Question** Is adolescent cannabis consumption associated with risk of depression, anxiety, and suicidality in young adulthood?

**Findings** In this systematic review and meta-analysis of 11 studies and 23,317 individuals, adolescent cannabis consumption was associated with increased risk of developing depression and suicidal behavior later in life, even in the absence of a premorbid condition. There was no association with anxiety.

**Meaning** Preadolescents and adolescents should avoid using cannabis as use is associated with a significant increased risk of developing depression or suicidality in young adulthood; these findings should inform public health policy and governments to apply preventive strategies to reduce the use of cannabis among youth.
National Youth Marijuana Use at 35 Year High in 2018

MARIJUANA USE AMONG U.S. COLLEGE-AGE STUDENTS IN 2018

FULL-TIME COLLEGE STUDENTS age 19-22
- 43% reported using marijuana sometime in the last 12 months
- 25% reported using marijuana at least once in the last 30 days

SAME-AGE HIGH SCHOOL GRADUATES age 19-22
- 43% reported using marijuana sometime in the last 12 months
- 27% reported using marijuana at least once in the last 30 days
Major Increases in Daily Use by US Youth

> 1 in ten 19-22 y.o. not in college & 1 in 20 college students and 12th graders

FIGURE 2
MARIJUANA
Trends in 30-Day Prevalence of Daily Use among College Students and Noncollege Youth 1 to 4 Years beyond High School

Source: The Monitoring the Future study, the University of Michigan.
Vaping of marijuana and of nicotine each doubled for U.S. college students between 2017 and 2018.

Source: Monitoring the Future 2019
Marijuana arrests decreased by 52% between 2012 and 2017

Teen use studies conflicting but probably suggest stability

HS Graduation rates not negatively impacted

**But use in young adults 18-25 rising quickly, still in period of brain maturation**

Daily or near daily use rose significantly, 7.6% in 2017 vs 6.0% in 2014, a significant increase.

One in 5 users report driving <3 hours after use

Pregnancy use up

Positive marijuana tests in suicides up from 12% to 22% 2012 to 2016

Poisonings up

Source: Colorado Division of Criminal Justice 2018
Vaping Epidemic as of 10-15-19

• 1,479 cases associated with the use of e-cigarette or vaping from 49 states, District of Columbia, and 1 territory.

• 33 deaths confirmed in 24 states, 3 in California

• While many cases are from the informal market or received from friends or family source unknown, legal products are also involved

• 54% cases are under age 24 or younger (15% under 18 years old; 21% are 18 to 20 years old; 18% are 21 to 24 years old);

• 78% reported using THC-containing products; 31% reported exclusive use of THC-containing products, 10% exclusive use nicotine products
Vaping Epidemic – CDC Position and state action

- CDCs recommends refraining from use of all e-cigarette or vaping, products
- The use of e-cigarettes, or vaping products is unsafe for all ages, including youth and young adults
- No one ingredient or product has been identified as the cause, and the lung pathology has varied
- Massachusetts has suspended all e-cigarette and cannabis vaping products; other states have prohibited flavored products
- Vaping defined as: Using an electronic device (e.g., electronic nicotine delivery system (ENDS), electronic cigarette, e-cigarette, vaporizer, vape(s), vape pen, dab pen, or other device) or dabbing to inhale substances (e.g., nicotine, marijuana, THC, THC concentrates, CBD, synthetic cannabinoids, flavorings, or other substances).
Like Tobacco: Cannabis Addiction is Real – About 1 in 10 users

• Approximately 4.0 million Americans met criteria for cannabis use disorders in 2015.

Source: S. Weiss, NIDA and 2016 National Survey on Drug Use and Health, SAMHSA
Three Dangerous Areas Where the Cannabis Industry is Borrowing from Big Tobacco’s Playbook

- Manipulating Potency thereby Increasing the Risk of Addiction and Psychosis
- Creating flavored and other diverse products aimed at attracting youth
- Shameless and misleading marketing of products
Changing Landscape of Increasing Potency and New Routes of Administration
Vastly Increasing Potency

- Flower ~4% THC in 1995 to ~17% in 2017 in seizures of illicit products
- Flower now 16% to 30% in dispensaries
- Vaping Cartridges as high as 70-90% THC

Source: El Sohly, 2016 Biological Psychiatry, Chandra 2019 Eur Arch Psychiatry, LS observation

Source: Smart et al, Addiction, 2017
Frequent or high potency cannabis (=just >10% THC!) and new psychosis

- Daily cannabis use increased odds of psychotic disorder three-fold (OR 3.2, 95% CI 2.2-4.1)
- Daily use of high-potency types of cannabis increased odds of psychotic disorder five-fold (OR 4.8, CI 2.5-6.3)
- Population attributable fraction of first episode psychosis to high potency (>10% THC):
  - 12.2% (95% CI 3.0-16.1) across the 11 sites
  - 30.3% (15.2-40.0) in London
  - 50.3% (27.4-66.0) in Amsterdam.
- Adjusted incident rates for psychotic disorder were positively correlated with the prevalence of use of high-potency cannabis ($r = 0.7; p=0.0286$) and daily use ($r = 0.8; p=0.0109$).

Source: Di Forti Lancet Psychiatry 2019
High potency cannabis associated with worse outcomes after initial psychosis

Continued high-frequency cannabis users (ie, daily use in all 24 months) of high-potency (skunk-like) cannabis had:

• increased risk for a subsequent relapse (odds ratio [OR] 3·28; 95% CI 1·22-9·18),
• more relapses (incidence rate ratio 1·77; 95% CI 0·96-3·25),
• needed more intense psychiatric care (OR 3·16; 95% CI 1·26-8·09)
• More compulsory hospitalizations

Source, Schueler, Lancet Psychiatry 2015
The entire California market is migrating to potency greater than the increased risk level
We are allowing manufacture of products that will create a substantial added burden of serious mental illness in youth.
Does this sound familiar?
Judge Kessler in US v Philip Morris

“Defendants have long known that nicotine creates and sustains an addiction to smoking and that cigarette sales, and ultimately tobacco company profits, depend on creating and sustaining that addiction..... .......Defendants have designed their cigarettes to precisely control nicotine delivery levels and provide doses of nicotine sufficient to create and sustain addiction.”

Another Way

- Uruguay, flower only, 8% THC Limit

- Quebec, 30% THC potency, no flavors, no candies, chocolates or sweets, prominent warnings, information on safer use
Sprig – “Cannabis Orange Soda”
Hi-Fi Hops comes in two dosages: one with 10mg THC and one with 5mg THC / 5mg CBD

Heineken’s Lagunitas is launching Hi-Fi Hops, an ‘IPA-inspired’ sparkling water infused with cannabis: saying it is the first time a major brewery has successfully been represented in the THC-infused beverage space.

The zero calorie, non-alcoholic beverage comes in two versions: one infused with a mix of THC and CBD and one infused solely with THC.
Dabs for every occasion

How to Choose the Best Dab Rig for You

Dabbing is evolving fast, and it seems like every other day there’s a new tool, technique, or technology. One day it’s nothing but titanium nails, torches, and BHO; the next it’s quartz bangers, e-nails, and rosin. Its rapid evolution can be a lot to keep up with, and if you’re like me, you probably switch up how you dab depending on what the situation calls for, and how much you’re willing to spend on your dab set-up.

When a friend visits and wants to socialize over fresh-squeezed rosin, my
Wax pens
Flavors are used to attract youth: Why on earth when we are trying to ban flavored tobacco are we introducing legal flavored marijuana (and wrappers)?

Ex. Stillzy grape flavor vape with 380mg THC in 0.02 oz.
Flavored Products – Proven Strategy to Hook Kids

- **Flavored tobacco product** use was highest in **youth** (80%, aged 12-17 years); and young adult **tobacco** users (73%, aged 18-24 years); and lowest in older adult **tobacco** users aged ≥65 years (29%).

- Flavor was a primary reason for using a given **tobacco product**, particularly among **youth**.

- Eighty-one percent of **youth** and 86% of young adult ever **tobacco** users reported that their **first product** was **flavored** versus 54% of **adults** aged ≥25 years.

- Reporting that one’s first tobacco product was flavored associated with a 32% higher prevalence of current **tobacco** use among adult ever users.

- **Banning flavored cigarettes lead to reductions in use**

Source: Villanti AJPM 2017, Courtemance, AJPM 2017
Intensive Marketing
Sex Appeal

BEST BUDS

IGNITE CANNABIS CO.

NOW AVAILABLE IN DISPENSARIES
Snob Appeal

LA is full of brilliant people.
We deliver them pot.

Marijuana delivered | eaze.com

eaze
Delivering more joy than dogs & babies combined.

Marijuana delivered | eaZe.com
Appeal to youth
Joe Camel’s Appeal to Youth Resurrected
Will fix whatever ails a young woman of color
Framing as “Wellness” or “Lifestyle” product & misleading claims

“Fortunately, cannabis has been shown to improve depression (no matter how severe), and it can do so quickly and affordably.”

“With a sour citrus and floral aroma, Ghost Train Haze delivers a potent dose of THC to knock out pain, depression, and appetite loss....

“Owner Valentia Valentine ... spoke in favor of the Synchronicity Holistics proposal, arguing that it was really a “health center” rather than a “recreational pot shop”
Health and Therapeutic Claims are Driving Teen Use

• “It helps with, I believe, schizophrenia as well, like helps people calm down, mellow what they say...”

• “If it wasn't meant to be good it wouldn't be used”

• “There are some long term effects, of course. Liked developing brain matter in your brain and stuff, but that's just a minor issue. If you look at [the] broad spectrum, it’s provided benefits from marijuana.”

• “You know medical cannabis is an alternative to opioids... So I feel like cannabis is a cleaner way and a safer way to relieve pain and some issues.”

• “For athletes trying to recover, that helps. Because if there's a soreness, if you're sore, it might help you get through to the next training part without being too messed up.”

Source: Public Health Institute, preliminary 2019 focus group data, not for citation
Quality control, testing and pesticide residues, while important, will not be the most important determinant of health impacts.
The biggest determinants of health impact of legalization will be:

• How many people the industry gets to use cannabis, how intensely, and at what age – just like tobacco

• How many people still go to jail for cannabis
So what do we do?

How can we get the benefits of ending incarceration without creating a new tobacco industry?
2017-2019 Focused on Creating a Legal System
Now it’s time for the guardrails to protect youth and public health
Cannabis Common Sense 101

Legalizing

Does Not Have to Mean

Allowing any product or claim that can be imagined
To protect children and youth and reduce use of legal but harmful products, decades of tobacco control have proven that product, price and environmental policies work best, education is essential but insufficient
In this setting, what does a public health & equity approach mean?

Reduce risk of addiction and other negative health effects through product, retail and fiscal regulation

Eliminate products known to be especially attractive to youth – the “on-ramp” for initiation
Specific Recommendations
Restrict potency and dial the market back down

- Consider limits on flower, and manufactured products, in cultivation, manufacturing and sales
- Consider dialing back agricultural production potency
- Act cautiously, learn more
- Optimal limits unclear but current trends are too dangerous to permit
- Urgent need for scientific and regulatory guidance and leadership on potency best practices
If high potency products are allowed, their use can be discouraged through taxation policy.

For example:
- Raise taxes in by % THC
- Or charge by gram THC or standard dose
Recommendation #1
A scientific task force, free of conflicts of interest, should review the state of the science of health effects of potency, inhaled cannabis products, and product attractiveness to youth, and formulate recommendations for regulatory action and education to improve the safety of the market.

The University of California, as the research arm of the State, Office of the President, is the best setting to convene such a task force.

Enforcing agencies should participate as ex-officio members.
Recommendation #2
Act now to prohibit **SPECIFIC** product classes designed to attract youth – Join other states

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**A) Do not allow flavored products targeting youth**
- FDA banned flavored cigarettes and
- San Francisco banned e-cigarettes and flavored products
- Contra Costa County, CA prohibited all flavored cannabis products intended for inhalation or vaporization

**B) Do not allow “sounds like” flavored strain or product names:** Mango, Bubble Gum, Cherry Pie, Banana, etc
C) Do not allow sale of “Cannapops”

**Cannabis Infused Beverages:**

- Pasadena and Mono County prohibited cannabis-infused beverages
- Modeled after “alcopops” marketed to initiate teen drinking
Recommendation #3 Inform the public accurately

1) of health risks by requiring prominent in-store health warnings, graphic package warnings and warnings on ads

**Are you pregnant of breastfeeding?** According to the U.S. Centers for Disease Control (CDC), marijuana use during pregnancy can be harmful to your baby’s health, including causing low birth weight and developmental problems.

**Driving while high is a DUI.** Marijuana use increases your risk of motor vehicle crashes.

**Not for Kids!** Starting marijuana use young or using frequently can lead to problem use, and according to the CDC may harm the developing teen brain.

Marijuana use is associated with greater risk of developing **schizophrenia** or other psychoses. Risk is highest for frequent users and those who start young.

Smoking marijuana long term can make **breathing problems worse** and **vaping has been associated with severe lung disease.**

This message is provided as public service by the State of California.
Accurate public information Pt. 2
Do not allow ANY health or therapeutic claims on cannabis other than FDA approved medications
Follow up on existing subcommittee recommendation

61% of teens we interviewed are using cannabis to reduce stress and anxiety

“Top Shelf Bubble Gum Galaxy Joint...enjoy this expertly rolled joint for its natural healing effects...perfect for those experiencing stress, pain and depression.”
• At a minimum - Respect Prop 64:
  • A licensee shall not:
    “Advertise or market on a billboard or similar advertising device located on an Interstate Highway or on a State Highway which crosses the California border.”

  • The BCC regulations rewrite:
    • all outdoor signs, including billboards, shall:
    • (3) Not be located within a 15-mile radius of the California border on an Interstate Highway or on a State Highway that crosses the California border.
Price is known to drive teen use despite prohibited < 21 law
Prohibit discounting

Recommendation #4

- Adopt bans on discounting/coupons/happy hour etc.
- Already used for tobacco (RI, NYC, others) and in some CA counties for cannabis
Price and Taxation

- Highly effective in tobacco control, part of the Global Framework Convention for Tobacco Control
- Rapid price falls post legalizations linked to overproduction suggest higher taxes may be needed
- Do not call for lower taxes
Uncertainty

• Best practices to protect youth and public health are still uncertain
• But we know a lot from alcohol & tobacco
• The body of evidence of harm grows daily
• These regulatory ideas are starting to be adopted
• We should start far more cautiously
• It will be much harder to tighten up later
Key Recommendation Summary

Create a scientific task force, free of conflicts of interest, should review the state of the science of health effects of potency, inhaled cannabis products, and product attractiveness to youth, and formulate recommendations for regulatory action and education to improve the safety of the market; The University of California, as the research arm of the State, Office of the President, is the best setting to convene such a task force; Enforcing agencies should participate as ex-officio members.

Act now to prohibit specific product classes designed to attract youth, including flavored products for inhalation and combustion and products that sound like they are flavored (e.g. bubble gun, cherry pie, mango) even if it is a strain name, and cannapops or cannabis infused beverages mimicking alcopops, well known to attract youth use and initiation.

Act now to inform the public more accurately by 1) Inform the public accurately of health risks by requiring prominent in-store health warnings, graphic package warnings and warnings on ads; 2) Following up and strengthening the existing committee recommendation passed last year by not allowing any health or therapeutic claims on cannabis other than FDA approved medications; and c) respecting the original prop 64 language disallowing on billboards on interstate and certain state highways, revoking the regulatory language which weakened those provisions.
Thank you

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