

CANNABIS USE AMONG YOUTH IN THE AMERICAS: FINDINGS FROM THE 2019 REPORT ON DRUG USE IN THE AMERICAS

BACKGROUND

Cannabis policy in the Americas continues to evolve. For several decades, OAS member states and their subnational jurisdictions have reformed cannabis laws or initiated earnest citizen discussions to that end. Policies range from the reduction or omission of criminal penalties for a variety of use-related acts (e.g., possession for personal use or home cultivation of a few plants), to legalizing medical cannabis for qualifying patients, to allowing regulated non-medical (i.e., recreational) markets that sell cannabis and cannabis products to adults through licensed retailers. Within these various options, a subset of choices about who can distribute or access what forms of cannabis and when adds further shading to an already diverse set of policies. Others maintain criminal penalties for the personal possession or use of cannabis. In short, the panorama of cannabis policy across the Americas is much more diverse than it was ten years ago.

As policies shift, so will social attitudes regarding the use of cannabis as well as access to the substance. Policy and attitudes are often shaped by each other. Therefore, social attitudes toward cannabis

and cannabis policy design will shape many social outcomes, and the most important design question is determining what role, if any, private commercial interests play in the drug's supply. Commercialism will likely bring wider product innovation and access to new forms of cannabis-derived products (e.g., concentrates, tinctures, extracts, edibles, etc.) that were uncommon just a few years ago. These intermediate factors of attitudes and access will likely affect outcomes relevant to public safety and health (e.g., public intoxication, motor vehicle safety, illicit markets and violence, changes in prevalence rates and frequency of use, use of other intoxicants, etc.).

Here we examine an important public health outcome of use of cannabis by children and adolescents. Individuals whose brains are still developing important cognitive reasoning skills are of particular concern to public health and policy when it comes to cannabis use. Though the topic of shifting cannabis policy is one of great public debates in some parts of the Americas, various stakeholders whether in favor or against, often agree that minors should not consume

or be exposed to others that consume cannabis in order to safeguard their development.

These concerns are valid as research has shown that early initiation and heavy use of cannabis prior to or during early adulthood is associated with a variety of negative outcomes later in life, including lower educational and occupational attainment, reductions in intelligence, and psychosis.^{1 2 3 4} These fears may be even of greater concern as cannabis has gotten cheaper while its potency (as measured by amount of the active ingredient known as tetrahydrocannabinol or THC) has increased in some markets that have become legal in the United States.⁵ For the same reasons tobacco and alcohol are prohibited for those under age of majority (generally 18 or 21 years depending on the jurisdiction), changing cannabis policies often prohibit access and use of cannabis for those who are underage. There are exceptions for medical cannabis, which is sometimes used to treat underage patients with certain conditions such as refractory epilepsy or alleviate chemotherapy sickness for children with cancer; however, for underage patients, most rules require additional approvals from physicians and parents.

From a public health and policy perspective, there is a concern that changing cannabis laws may shape youth use of cannabis in various ways. First, normalization of cannabis use by adults may signal to children the approval of use (reducing perception of harm). Second, increased access in the adult market may spillover into

youth populations as there is now more, and cheaper, cannabis in circulation. Third, some minors (as well as adults) may unintentionally ingest cannabis-infused edibles, resulting in acute cannabis overdose. Fourth, maturing commercial cannabis markets are able to bring economies of scale, competition, and product innovation to reduce price and promote products that may appeal to youth.

FINDINGS FROM THE REPORT ON DRUG USE IN THE AMERICAS AND REMAINING GAPS IN REGIONAL DATA

In March of 2019, the Inter-American Drug Abuse Control Commission (known by its Spanish language acronym, CICAD) of the Organization of American States (OAS) published the *Report on Drug Use in*

1 Patton GC, Coffey C, Lynskey MT, Reid S, Hemphill S, Carlin JB, et al. Trajectories of adolescent alcohol and cannabis use into young adulthood. *Addiction*. 2007; 102(4):607–15.

2 Stefanis NC, Delespaul P, Henquet C, Bakoula C, Stefanis CN, Os JV. Early adolescent cannabis exposure and positive and negative dimensions of psychosis. *Addiction*. 2004; 99(10):1333–41.

3 Malone DT, Hill MN, Rubino T. Adolescent cannabis use and psychosis: epidemiology and neurodevelopmental models. *British journal of pharmacology*. 2010; 160(3):511–22.

4 Gonzalez R, Swanson JM. Long-term effects of adolescent-onset and persistent use of cannabis. *PNAS*. 2012 Oct 2; 109(40):15970–1.

5 Smart R, Caulkins JP, Kilmer B, Davenport S, Midgett G. Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington State. *Addiction [Internet]*. 2017 Jul 4 [cited 2017 Oct 4]; Available from: <http://onlinelibrary.wiley.com.proxy-um.researchport.umd.edu/doi/10.1111/add.13886/abstract>

the Americas 2019. The Report's summary of drug use prevalence, perceptions of risk, and cannabis accessibility for various population groups, including secondary school and university-aged students, helps shed some insight into the possible impacts of changing cannabis policy. Prevalence reported referred mostly to use in the past year. A useful measure of heavy use would be past month or daily/near-daily use of cannabis. At this time, most countries report past year use, but not all countries report past month use with regular frequency. This measure will become increasingly important as jurisdictions continue to change their respective cannabis policies.

Data reported show that past year prevalence for secondary school students has increased in recent years in several member states currently debating or actively changing cannabis policy. These include a jump from 15 to nearly 35 percent in Chile between 2009 and 2015 and from 13 to 17 percent in Uruguay between 2011 and 2014. Past year youth use in the United States has remained flat between 2008 and 2016 at just above 20 percent, though there were some fluctuations during intervening years. Trends were not reported for Canada, but that country reported the highest share of past year use in the 12-17 age group at over 15%. Past year prevalence rates for university students was only reported in a handful of countries. Peru and Bolivia reported modest increases between 2009 and 2016, rising to about 5 percent. Rates in Colombia nearly doubled from 11 to 21 percent and rates in Ecuador nearly tripled from 4 to 12 percent.

In terms of perceptions of risk of occasional cannabis use, countries with higher past year prevalence rates generally reported lower perceptions of risk in secondary school-aged populations. Students in Uruguay, Chile, and the United States had a perception

of risk below 20 percent. Similarly, secondary school-aged populations in countries with higher prevalence rates reported that cannabis was easy to access. About half to sixty percent of respondents in Uruguay, Chile, and the United States said cannabis was easy to access.

Though measures of prevalence, perceptions of harm, and accessibility are useful in understanding the dimensions of cannabis use across or within a country over time, they fail to capture additional details that may be equally important for understanding public health impacts and policy design. For example, many countries lack the resources needed to regularly conduct statistically powered surveys of cannabis use to measure past month and daily use in school-aged populations. Few government household surveys ask about intensity of use (e.g., amount consumed in a given use day) or about the types of products consumed (e.g., flower, concentrates, edibles, etc.) or their potency.

Asking more precisely about frequency and intensity of use are important as they are positively correlated; that is, the more often one uses cannabis the more cannabis is used per use episode.⁶ Past year use estimates may fail to capture the trends related to heavy use as an individual who uses 300 times in the past year is treated similarly as an individual who used five times in the last year. Trends in heavy-use cohorts are not captured in these measures. For example, the percentage of past-month users in the US general population reporting daily or near-daily use has risen from 33 to 42 percent between 2003 and 2017.⁷ Having a better understanding of heavy use in at-risk and young populations can help inform policy responses to ensure they are optimized for at-risk youth who are heavy users.

6 Kilmer B, Caulkins JP, Midgette G, Dahlkemper L, MacCoun RJ, Pacula RL. *Before the Grand Opening* [Internet]. RAND Corporation; 2013 [cited 2017 Feb 28]. Available from: http://www.rand.org/pubs/research_reports/RR466.html

7 SAMHSA. *Results from the 2017 National Survey on Drug Use and Health* [Internet]. Substance Abuse and Mental Health Services Administration; 2018 Nov. Available from: <https://www.samhsa.gov/data/report/2017-nsduh-detailed-tables>

IMPLICATIONS FOR RESEARCH AND POLICY

Past-year prevalence estimates provide rough insights into the overall scope of cannabis use; however, it is hard to determine the relationship between changing rates and changing policy. Respondents may feel more inclined to answer surveys honestly after policies were enacted to allow individuals to obtain and use cannabis. On the other hand, rising prevalence rates may reflect shifting currents in social attitudes, which may result in changes in policy. Irrespective as to the reason, mere past-year prevalence measures may not be very helpful when it comes to shaping policy.

As countries move to change their respective cannabis policies—especially if they are considering commercial access for non-medical purposes—they should start collecting and assessing appropriate measures of regular use. Daily use, especially during adolescence and early adulthood, is associated with poorer social, health, and occupational outcomes. Going forward, researchers and public health authorities should consider expanding the type of questions asked, removing those that aren't especially useful (e.g., lifetime use) as well as employing innovative measures to supplement household or school-based surveys. The Inter-American Observatory on Drugs Section (known

by its Spanish language acronym, OID) of CICAD has recognized this and has started the process of asking more detailed questions on cannabis use, including frequency and quantity consumed. Between 2016 and 2017, three countries carried out household drug use surveys that included questions aimed at ascertaining measures of frequency and quantity with respect to cannabis use. In addition, there was a question on lifetime consumption of edibles and other forms of cannabis. The OID plans to revise its standard drug use survey methodologies that comprise the Inter-American Uniform Drug Use Data System (known by its Spanish language acronym, SIDUC) by including, among other things, more questions that measure the frequency and intensity of cannabis use.

Innovative web surveys that ask users to estimate the amount consumed on a typical day (as verified with scaled depictions of standardized doses of cannabis) can help researchers and policymakers better understand the amount consumed. One innovative web survey of a non-representative sample of heavy users in Washington State used this method to ascertain the amount of dried cannabis consumed on a typical day of use. Authors report that, on average, daily or near daily users consumed 1.6g a day⁶. This method has been recently fielded elsewhere reporting nearly similar results in amount used per typical use-day.⁸

Knowing the frequency and intensity of cannabis use in heavy user populations can help inform policies aimed at moderating use. Daily or near-daily users are estimated to consume roughly 80 percent of the total volume consumed, spending a sizeable amount of

⁸ Pardo B, Kilmer B, Caulkins J. The Amount of Cannabis Consumption Consumed in New York State: Insights Estimates from a Monte Carlo Simulation. In progress;

their disposable income on cannabis.^{9 10} Heavy users and youth (which often do not have much in the way of income) are price sensitive. Knowing the share of heavy users and the amount they are estimated to consume can help inform pricing and taxation policies to help discourage heavy use. Knowing even more about what types of products are consumed and their potency could further inform policy decisions. For example, taxing high potency products (as measured by THC content) could help discourage moderate or heavy use. Other sets of policies can help reduce access to youth by shaping or prohibiting promotion, especially promotion of products that appeal to youth (e.g., sweets, colorful candies or those shaped like animals, etc.).

In terms of accidental ingestion of cannabis products, surveys fail to capture these trends. Instead, public health authorities are starting to look at emergency department episodes and calls to poison control centers. Using these public health data, researchers have found that changes in cannabis policy in some U.S. states are associated with increases in calls to poison control centers or emergency department episodes.^{11 12}

Going forward, jurisdictions that are adjusting their cannabis policies should start to gather baseline outcome data while considering new and innovative measures related to heavy use, especially in populations that are at risk of long-term harm from early initiation and chronic use. Use of cannabis by those whose brains are still developing is one such population. Nobody knows the long-term impacts

of cannabis normalization on future generations; however, collecting better measures of frequency and intensity of use can offer some immediate insights into how to shape emerging policy.

9 Caulkins JP, Kilmer B, Kleiman MAR. *Marijuana Legalization: What Everyone Needs to Know*[®]. 2 edition. New York, NY: Oxford University Press; 2016. 304 p.

10 Davenport SS, Caulkins JP. Evolution of the United States Marijuana Market in the Decade of Liberalization Before Full Legalization. *Journal of Drug Issues* [Internet]. 2016 Aug 2 [cited 2016 Dec 14]; Available from: <http://journals.sagepub.com/doi/abs/10.1177/0022042616659759>

11 Wang GS, Roosevelt G, Heard K. Pediatric Marijuana Exposures in a Medical Marijuana State. *JAMA Pediatr*. 2013 Jul 1;167(7):630–3.

12 Wang GS, Davies SD, Halmo LS, Sass A, Mistry RD. Impact of Marijuana Legalization in Colorado on Adolescent Emergency and Urgent Care Visits. *Journal of Adolescent Health* [Internet]. 2018 Mar 30 [cited 2018 Jul 11]; Available from: <http://www.sciencedirect.com/science/article/pii/S1054139X18300041>

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