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The Impact of State-level U.S. Legalization Initiatives on Illegal Drug Flows

We begin by briefly discussing the criminalization of cannabis in the United States through a series of laws from the 1930s through the 1970s. Next, we describe the subsequent efforts to repeal these laws—especially at the subnational level—starting in the 1970s, as well as the activist and scholarly research supporting the idea that legalization would diminish illicit production and trafficking of cannabis. With this foundation, we present our primary research question: What has been the effect of U.S. cannabis legalization on the production and flows of cannabis and other drugs from Mexico to the United States? Our hypotheses assert that cannabis legalization in the United States has been accompanied by decreasing production and trafficking of cannabis (as evidenced by decreasing eradication and seizures), but also by increasing production and trafficking of other illicit drugs that have helped to make up the difference. Upon presenting the descriptive and inferential data supporting these hypotheses,

category that is deemed as having the greatest potential for abuse.⁴ This legal classification became the basis for President Richard Nixon's declaration of the "war on drugs," and contributed to a decades-long escalation of counter-drug measures in the United States and around the world.⁵

Since the beginning, a significant portion of U.S. counter-drug efforts have focused on cannabis, the most commonly used illicit drug in the United States.⁶ Given its prevalent usage, cannabis has been the primary focus of U.S. domestic counterdrug efforts. Cannabis offenses accounted for 52% of all drug arrests in 2010 and—despite the legalization of recreational cannabis in several states beginning in 2012—accounted for 43% of all drug arrests as recently as 2018.⁷ Civil libertarian groups underscore the fact that arrest rates have been consistently higher for racial and ethnic minorities, with African Americans being more than two or three as likely to be arrested for cannabis offenses as whites.⁸

Meanwhile, although U.S. domestic producers have always supplied a large if not a majority share

responsible for the production and transit of illicit drugs. ¹⁰ Yet, these counterdrug efforts now face a shifting tide, as its nearest neighboring countries—Canada and Mexico, which have historically accounted for the largest share of illicit cannabis smuggled into the United States—have both moved to legalize cannabis production, distribution, and consumption just across the U.S. border.¹¹ At the same time, state-level legalization initiatives in the United States have similarly begun to erode the federal prohibition regime, contributing to a dramatic increase in availability in legal medical and recreational cannabis over the past three decades.

The first U.S. cannabis legalization initiative came in 1972, when a referendum titled Proposition 19 posited the state-wide legalization of cannabis in California. Prop 19 proposed

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Table 1: List of State Level Medical and Recreational Cannabis Legalization Initiatives, 1970-2021 (Successful initiatives marked in bold print)

Year	State	Initiative/ Proposition	Medical/ Recreational	Year	State	Initiative/ Proposition	Medical/ Recreational
1972	CA	Proposition 19	Recreational	2015	OH	Issue 3	Recreational
1986							

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2010	CA	Proposition 19	Recreational		2020	MT	CI-118	Recreational
2010	SD	Initiative 13	Medical		2020	MT	I-90	Recreational
2012	AR	Issue 5	Medical		2020	NJ	Public Question 1	Recreational
2012	CO	Amendment 64	Recreational		2020	SD	Amendment A	Medical
2012	MA	Question 3	Medical		2021	NY	Senate Bill 854 - A	Recreational
2012	WA	Marijuana Legalization & Regulation Initiative	Recreational		2021	VA	Senate Bill 1406	Recreational
2014	AL	Ballot Measure 2	Recreational		2021	NM	House Bill 2	Recreational
2014	FL	Amendment 2	Medical		2021	CT	Joint Bill 1201	Recreational

reformers in other states to follow suit with initiatives in other states. ¹⁶

Indeed, thereafter, the tide clearly began to turn in favor of legalizing recreational cannabis, with successful legalization initiatives in Colorado and Washington in 2012; in Oregon and Alaska in 2014; and California, Maine, Massachusetts, and Nevada in 2016; Michigan in 2018; and Arizona, Montana, and New Jersey in 2020.¹⁷ In 2020, South Dakota also approved a law permitting medical cannabis. In 2021, four states— Connecticut, New Mexico, New York, and Virginia (all of which previously allowed medical cannabis use)—voted to legalize recreational use of cannabis, and one state—Alabama—passed a medical use bill.¹⁸ Out of 16 state-level ballot measures attempting to legalize recreational use of cannabis after 2010, only three failed to achieve majority support from voters: Ohio’s Proposition 205 in 2016, Arizona’s Proposition 205 in 2016, and North Dakota’s Measure 3 in 2018.

In short, by 2021, 16 states allowed the cultivation, distribution, possession, and consumption of cannabis for both medical and recreational purposes, while fully prohibitionist states were in the minority. As illustrated in Figure 2, cannabis legalization across the U.S. lacks uniformity, though it is worth noting that three out of four states that border Mexico (except Texas) all have legal access to marijuana. Moreover, it is quite likely that—despite laws requiring prescriptions, age limits, and the like—the availability of regulated cannabis allows for some degree of unauthorized use, as well as “spillover” into states fully prohibiting cannabis. For practical purposes, then, legal cannabis is much more accessible in recent years than at any point since the 1930s, raising important questions about the impacts of this change.

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¹⁶ John Walsh, “California’s Proposition 19 Falls Short, but Moves the Marijuana Policy Debate Forward,” Commentary, Washington Office on Latin America, November 3, 2010. Retrieved June 11, 2021. <https://www.wola.org/analysis/californias-proposition-19-falls-short-but-moves-the-marijuana-policy-debate-forward/>

¹⁷ Montana passed two separate laws—CI-118 and I-90—dealing with recreational cannabis, as well as one (I-182) dealing specifically with medical cannabis.

¹⁸ Kris Kane, “2021: The Least Eventful”

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amount of research has focused on the effects of cannabis legalization on the black market among adolescents.²¹ Others have studied the impacts of cannabis legalization on other aspects of public health (e.g., unintentional ingestion of edibles), commercial retail trends, and regulatory practices.²²

However, there has been relatively little attention to the ways that legalization has impacted illicit drug producers and traffickers in countries like Mexico, which has been a longtime

legalized cannabis in the United States may lead to diminished demand and revenue for Mexican cannabis.

On the other hand, experts have pointed to the ingenious adaptability of organized crime

Our alternative hypotheses contend that the legalization of the medical and/or recreational production, sale, possession, and consumption of cannabis will have a two-part effect. On the one hand, greater U.S. access to legalized cannabis will be associated with a measurable decrease in cannabis production in Mexico and cannabis trafficking into the United States. On the other hand, greater U.S. access to legalized cannabis will be associated with a measurable

spanning from 1995 to 2020³² Using total state-level population figures reported by the U.S. Census during that time frame, we calculated the annual proportion of the U.S. population with legal access to either medical or recreational.³³

Access to cannabis is difficult to measure precisely because it involves many factors, including state and local regulations terms of production and distribution, the number and type of distributors available in any state, the type and quality of product sold, the varying lag time from policy change to policy implementation across different jurisdictions, and also the variable level of demand across different markets. It is also difficult to account for grey market and spill over usage by individuals who utilize legally purchases cannabis illegally, such as minors and individuals who use medically prescribed cannabis without a valid health condition.³⁴ Thus, we recognize that relying on the percentage of the population that lives in a state where cannabis has been made available for medical or recreational use does adequately account for these many differences in per capita access. However, compiling more complete information to account for these differences would be exceedingly cumbersome, and it is not clear that this would significantly improve the findings of this study. Thus, we rely on the overall percentage of the population in legalizing states as a crude proxy indicator of the general accessibility of cannabis.

As illustrated in Figure 4, as legalization efforts were successful in more states over time, the percentage of the U.S. population with legal access to cannabis began to rise, with notable increases in 2011 and 2016. In each state, laws permitting the production, distribution, and consumption of legalized medical or recreational cannabis typically came into force the year after legislation was approved. Thus, in 1996, California's initial legalization of the medicinal use of cannabis meant that at least 12% of the total U.S. population had a limited form of legal access to cannabis since 1997. In 2021, at least 42% of the U.S. population had access to medical

³² National Conference of State Legislatures. Cannabis Overview (Accessed December 15, 2021), <https://www.ncsl.org/research/civil-and-criminal-justice/marijuana-overview.aspx>; National Conference of State Legislatures, State medical marijuana laws (Accessed December 15, 2021), <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>; Ballotpedia, Marijuana on the Ballot (Accessed December 15, 2021), https://ballotpedia.org/Marijuana_on_the_ballot

³³ United States Census Bureau. State and county intercensal tables: 1990-2000 [Census.gov](https://www.census.gov/data/tables/time-series/demo/popest/intercensal-1990-2000-state-and-county-totals.html). (October 8, 2021), Retrieved May 14, 2021, <https://www.census.gov/data/tables/time-series/demo/popest/intercensal-1990-2000-state-and-county-totals.html>; United States Census Bureau. State intercensal tables: 2000-10 [Census.gov](https://www.census.gov/data/tables/time-series/demo/popest/intercensal-2000-10.html). (October 8, 2021), Retrieved June 14, 2021, <https://www.census.gov/data/tables/time-series/demo/popest/intercensal-2000-10.html>

cannabis, while 21% of the population had access to recreational and medical cannabis. Thus, in total, the proportion of the U.S. population with legal access to cannabis jumped to over 60% in 2017 and largely plateaued thereafter.

Figure 4: Percent of U.S. Population Living in States with Legal Access to Medical or Recreational Cannabis

Source: Author compilation of data from U.S. Census and various state ballot initiatives.

Compiling and analyzing data on drug production in Mexico and flows across the U.S. -Mexico

POEs. USBP is the law enforcement agency within CBP that is tasked with securing the border between POEs and seizing illicit substances smuggled outside of POEs³⁹ Data on OFO and USBP seizures are accessible through the publicly available CBP Enforcement Statistics published through the official CBP Newsroom dating back to Fiscal Year 2012. Additional figures dating back to Fiscal Year 2004 are available through the Department of Homeland Security's "Independent Review of the U.S. Customs and Border Protection's Reporting of

includes the percentage of the population with one or the other (given that all states allowing recreational consumption also allow medical use).

FINDINGS

If U.S. demand for illicit cannabis were to decrease over time along with increased availability of legal cannabis in U.S. states, we might expect to see evidence of that in the form of declining cannabis eradication and seizures by Mexican and U.S. border authorities. Consistent with this initial hypothesis, the data from the Mexican government show a general decline in cannabis eradication of cannabis between 2001 and 2020 (See Figure 5), as well as a general decline in cannabis seizures over that same time period (See Figure 6). With regard to our other set of hypotheses, given declining revenues from illicit cannabis trafficking, we expect to see increased seizures of cocaine, heroin, and/or methamphetamine as organized crime groups diversified into these areas. Mexican government seizures of cannabis and, to a lesser extent,

Figure 6: Total Mexican Government Seizures of Cannabis (in Metric Tons), FY2001 to FY2020

Source: Annual Report of the Mexican President (various years).

Figure 7: Total Mexican Government Seizures of Cocaine (in Metric Tons), FY2001 to FY2020

Source: Annual Report of the Mexican President (various years).

It is also clear that cannabis has long represented the vast majority of bulk tonnage in illicit drug seizures by U.S. border authorities, especially outside of ports of entry where other illicit drugs represent a tiny—indeed, almost invisible—fraction of all seizures. This is not surprising, given that cannabis has long been the most widely consumed federally prohibited illicit drug in the United States. By some estimates between a third and half of U.S. residents over the age of five consume cannabis in their lifetime, with at least one in twenty reporting current use within the last month. By comparison, generally no more than 15% of U.S. residents report prior use of any other prohibited psychotropic substances.⁴³

At the same time, there are also clearly changing dynamics over time, and the volume of cannabis seizures has clearly decreased substantially even as other drug seizures have increased substantially. At the apex of illicit cannabis flows in 2009, the roughly 3.3 million pounds of cannabis seized that year represented 98% of the approximately 3.4 million pounds of illicit drugs seized at U.S. borders. Yet, by 2020, illicit cannabis seizures dropped to 600,000 pounds—their lowest level in decades—

tests allowed us to assess the validity of our alternate hypotheses that there is a relationship between increased access to legalized cannabis in the United States and greater seizures of other drugs in Mexico (H3) and by U.S. border authorities (H4), presumably indicating a shift by traffickers to other sources of revenue.

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Table 4: Effect of % U.S. Population with Access to Medical or Recreational Cannabis on Heroin Seizures in Mexico and at U.S. -Mexico Border

	Model 8: Mexican Heroin Eradication (ha)	Model 9: Mexican Heroin Seizures (kg)	Model 10: U.S. Border Patrol Heroin Seizures (lbs.)	Model 11: U.S. Port of Entry (POE) Heroin Seizures (lbs.)
Constant				

Table 5: Effect of % U.S. Population with Access to Medical or Recreational Cannabis on Methamphetamine Seizures in Mexico and at U.S. -Mexico Border

	Model 12: Mexican Meth Seizures (kg)	Model 13: U.S. Border Patrol Meth Seizures (lbs.)	Model 14: U.S. Port of Entry (POE) Meth Seizures (lbs.)
Constant	3241.317(.265)	-6872.269 (.040)	

Table 6: Effect of % U.S. Population with Access to Medical or Recreational Cannabis on Fentanyl Seizures at U.S.-Mexico Border

	Model 1: U.S. Border Patrol Fentanyl Seizures (lbs.)	Model 2: U.S. Port of Entry (POE) Fentanyl Seizures (lbs.)
Constant	-506.763 (.554)	-3850.544 (.063)
% of U.S. Population w/ access to either Recreational or Medical Cannabis	14.304 (.391) --	101.073 (.018) *

findings are suggestive that cannabis legalization has reduced cannabis production in Mexico and flows of illicit cannabis from Mexico to the United States. At the same time, we find that cannabis legalization is positively correlated with Mexican and U.S. border authority seizures of heroin, methamphetamine, and fentanyl. Our models account for a substantial share of the variation in the production and seizure of these drugs (as much as 80% in the case of methamphetamine seizures by Border Patrol), indicating that the trend toward legalized cannabis is at least partially associated with increased production and flows across the border. These increased seizures, which have been widely reported in news outlets because of their contribution to the current public health crisis surrounding opioids and methamphetamines, suggests that DTOs have diversified their product lines in the course of cannabis legalization.⁵⁴

However, there are obvious limitations to this study, and these conclusions require further consideration. The data analyzed here are proxies for the phenomena we wish we could more clearly and accurately observe and measure: 1) the size of the market for legal medical and recreational cannabis in the United States, and 2) the illicit production and distribution of cannabis from Mexico. On one hand, our proxy measure for the size of the US legal cannabis market is admittedly crude. Every state that has legalized medical or recreational cannabis has very specific rules regulating production facilities, operation of dispensaries, and acceptable consumption practices, which creates varying conditions that affect the number of people that may consume cannabis. Thus, trying to calculate the size of legal cannabis markets and actual patterns of consumption of legal cannabis across different states would require an enormous amount of effort, with potentially limited gains in analytical precision. The models we used—relying on the total share of population for each state—had very strong statistical robustness, even without a more precise measure of legal cannabis consumption. On the other hand, law enforcement data from both Mexico and the United States are often incomplete and frequently lack geographic and temporal specificity, making it impos-

Department, a Mexican security consultant, and a Mexican former-intelligence officer confirmed that there indeed has been less emphasis on anticannabis enforcement in Mexico in recent years, due to the greater focus on opioids and psychostimulants by both governments.⁵⁵ Still, even if U.S. and Mexican authorities partially or fully abandoned their efforts to eradicate and seize cannabis in Mexico, appears to at least partly reflect a response to changes in the market due to cannabis legalization.

Meanwhile, it seems unlikely that U.S. border inspection efforts to detect and seize cannabis have diminished. U.S. customs and border patrol processes cast a wide net in search of any and all contraband, and U.S. border enforcement measures have been greatly increasing for the past two decades.

entry would help to gain a better understanding of the nature of cross-border smuggling networks.

Conclusion

The results of this paper provide a novel approach to understanding the impact of cannabis legalization on drug production and trafficking. According to our findings, as medical and recreational cannabis has been legalized in a growing number of U.S. states, Mexican authorities have seized decreasing amounts of cannabis domestically and U.S. authorities have seized correspondingly smaller amounts of cannabis trafficking at and between ports of entry. This trend suggests that there has been a major shift in the drug war, due largely to U.S. state level reforms that have moved away from criminalizing and prohibiting cannabis, the most widely used psychotropic substance in the United States. In this sense, to the extent that cannabis legalization advocates sought to reduce the cannabis revenues of international drug trafficking organizations, these efforts appear to have been successful.

However, criminal organizations involved in drug trafficking have proved themselves to be nimble and innovative, with undesirable consequences for U.S. counter-drug efforts. They have responded by ramping up the illicit production and flows of other drugs – such as heroin, and synthetic opioids and psychostimulants – contributing to an epidemic that resulted in 100,000 annual U.S. overdose deaths in 2021. Certainly, cannabis legalization was not the sole factor contributing to this devastating public health crisis. Yet, this study strongly suggests that the negative impact of cannabis legalization on the illicit revenues of criminal organizations has led to drug traffickers seek out alternative sources of income.

This is an important and relevant finding as policy makers weigh the next steps in drug policy reform. The legalization of more potent drugs – like opioids and psychostimulants – for medical and/or recreational use may similarly aid in reducing these revenue streams for organized crime groups in countries like Mexico. However, doing so will almost certainly lead those same criminal organizations to seek alternative sources of income that are similarly or more problematic, including extortion, kidnapping, industrial theft, and other predatory crimes. In this sense, any drug legalization strategy should be linked to other policy initiatives that bolster the capabilities of law enforcement to respond effectively to new and different challenges.

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