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The Effects of Legalization of Recreational Cannabis in Illinois

Stephanie Chambers-Baltz

Southern Illinois University Carbondale, stephanie.chambers-baltz@siu.edu

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The Simon Review

THE EFFECTS OF LEGALIZATION OF RECREATIONAL CANNABIS IN ILLINOIS

By Stephanie Chambers-Baltz
Celia M. Howard Fellow, 2020-2021

Paper #60 – May 2021

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THE SIMON REVIEW

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Paul Simon Public Policy Institute
Southern Illinois University Carbondale
Mail Code 4429
1231 Lincoln Drive
Carbondale, Illinois 62901

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The Effects of Legalization of Recreational Marijuana in Illinois

INTRODUCTION

In 2019, the Illinois House passed the Cannabis Regulation and Tax Act that legalized the recreational use of cannabis. The Cannabis Regulation and Tax Act became law in the state of Illinois as of January 1, 2020, making Illinois the first state to establish such a law via state legislation, as opposed to a ballot measure approved by voters. This law allows adults aged 21 and older to legally purchase cannabis for recreational purposes. This law has significant implications for social equity and for public health. The Cannabis Regulation and Tax Act was intentionally designed to address and repair some of the inequities that the War on Drugs created. The Act also includes an emphasis on public health, with efforts toward prevention of cannabis abuse and treatment of cannabis use disorders. This paper will explore the unique context of the Cannabis Regulation and Tax Act after the War on Drugs, the law and its implementation, and the potential public health impact Illinois may experience because of the legalization of recreational cannabis.

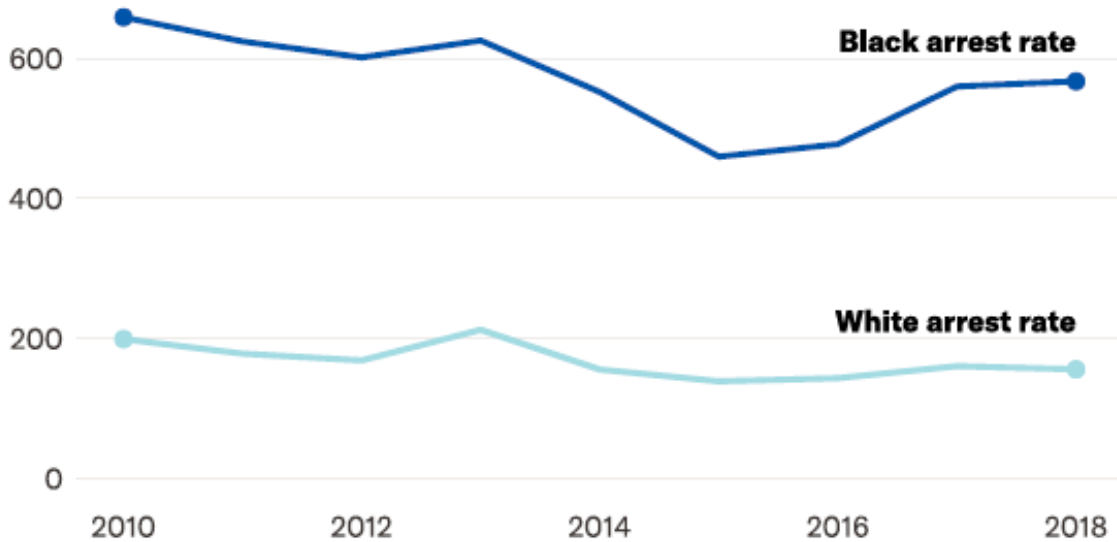
CONTEXT OF THE LAW: THE WAR ON DRUGS

The American Civil Liberties Union (2020) generated a report on marijuana possession arrests based on data from the Federal Bureau of Investigation's Uniform Crime Reporting Program, supplementary data from additional jurisdictions, and the United States Census. Their findings show that marijuana arrests decreased by 18% since 2010. However, there is still a large number of marijuana arrests, for example, in 2018, 43% of all drug arrests were related to marijuana. Most marijuana arrests, nine out of 10, were for possession. Figure 1 depicts the rates of Black and White marijuana possession arrests per 100,000 people in the United States

between 2010 and 2018. There are significant racial disparities in marijuana arrests, with a Black person being 3.64 times more likely to be arrested for marijuana possession than a White person. In 2018, 567 Black people per 100,000 were arrested for marijuana possession, compared to 156 White people per 100,000. However, Black and White people use marijuana at similar rates (SAMHSA, 2019). On average, the states that have legalized marijuana show lower disparity rates in marijuana possession arrests (1.7x) than in states that have not legalized marijuana (3.2x).

Figure 1

Rates of Black and White Marijuana Possession Arrests per 100k People



The data analysis from 2010-2018 show that Illinois has the third highest rate of racial disparities in arrests for marijuana possession in the United States. Figure 2 depicts the rates of marijuana possession arrests of Black and White people in Illinois. Results indicate that in 2018, a Black person in Illinois was 7.51 times more likely to be arrested for marijuana possession than a White person in Illinois. Notably, this racial disparity existed after 2016, when marijuana was decriminalized in the state of Illinois. Figure 3 illustrates the marijuana arrest rates as compared

to all other drug arrest rates between the years of 2010 and 2018.

Figure 2

Rates of Black Arrests Compared to White Arrests for Marijuana Possession, per 100k People

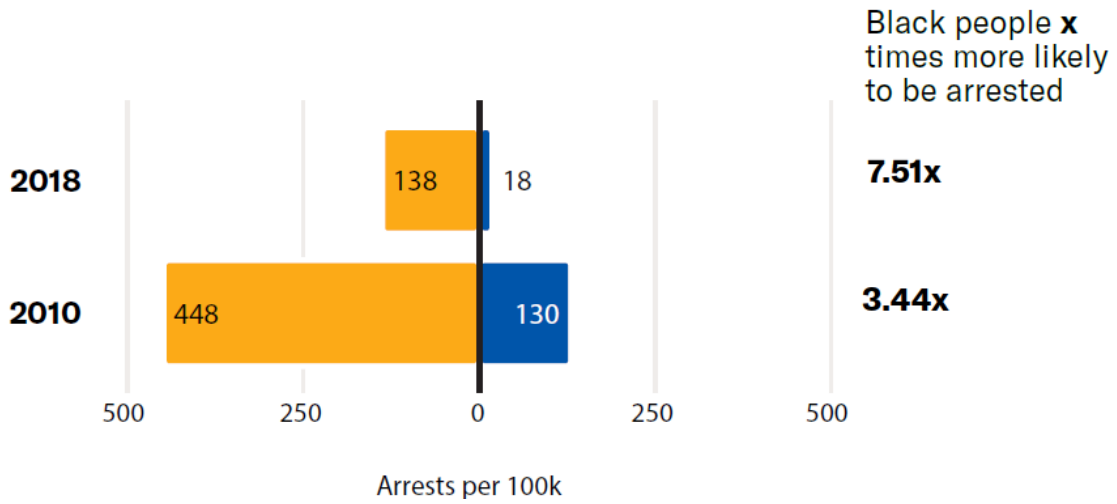
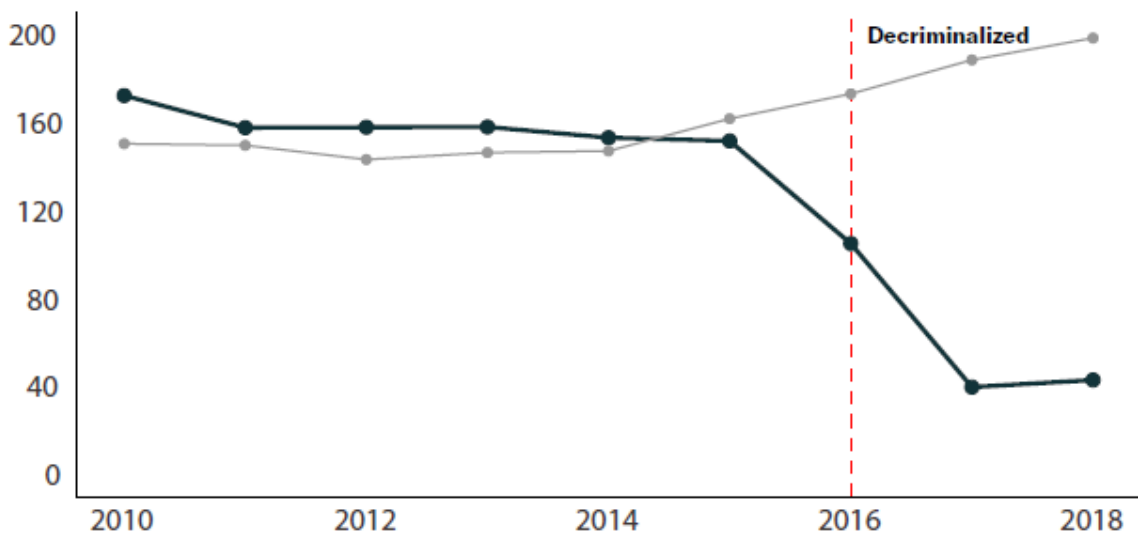


Figure 3

Statewide Marijuana Possession Arrest Rates Compared to all Other Drug Arrest Rates, per 100k People.



The racial disparities in marijuana possession arrests can be traced back to 1970. In 1970, President Nixon classified marijuana as a Schedule I drug, a class of drugs with high potential for abuse and little or no medical value. Drugs in this class include heroin, ecstasy, and PCP. This classification was not based on scientific evidence. Instead, it was done to control and criminalize specific communities. As John Ehrlichman, counsel to President Nixon, stated,

We knew we couldn't make it illegal to be against the war (Vietnam) or Black, but by getting the public to associate the hippies with marijuana and the Blacks with heroin, and then criminalizing both heavily, we could disrupt those communities. We could arrest their leaders, raid their homes, break up their meetings, and vilify them night after night on the evening news. Did we know we were lying about the drugs? Of course we did (Baum, 2016).

Classifying marijuana as a Schedule 1 drug resulted in an increase in cannabis-related crimes and arrests. The War on Drugs also reduced funding for substance use treatment while increasing funding for the antidrug campaign. For these reasons, the ACLU recommends that marijuana be legalized at the state and federal level for individuals who are 21 and older. They recommend that there should not be a system of fines, fees and arrests for marijuana use and possession. The ACLU recommends that individuals who are incarcerated for marijuana convictions be granted clemency and that all prior marijuana convictions be expunged. Additionally, the ACLU recommends that legalization repair the harms committed against communities of color in the war on marijuana by ensuring legal market benefits to those communities.

THE CANNABIS REGULATION AND TAX ACT

Illinois' recreational cannabis law is in line with the ACLU recommendations to repair

the harms committed against communities of color because it includes expungement and resentencing processes, ensures legal market benefits to communities most harmed by the war on drugs, and directs grants to promote equity. The Cannabis Regulation and Tax Act (2019) includes several components. Adults aged 21 and older can legally purchase cannabis for recreational use from licensed dispensaries in Illinois. The law created the community college cannabis vocational pilot program. This program provides community colleges a license. Students who graduate from these programs will receive a career in cannabis certificate. The law created a \$30 million low-interest loan program. Through this law, Illinois is investing in the communities that were most harmed by the drug war by creating a fair licensing structure so that business owners from these communities benefit from this growing industry. This law designated a “social equity applicant” licensing status for individuals who meet specific criteria.

The law created the Restore, Reinvest, and Renew (R3) Program. The R3 program was designed to, “address the impact of economic disinvestment, violence, and the historical overuse of the criminal justice responses to community and individual needs by providing resources to support local design and control of community-based response to these impacts system” (Cannabis Regulation and Tax Act, 2019, p. 43). The R3 Program Board solicits grant applications from designated R3 Areas, reviews applications, approves the distribution of resources, and monitors and evaluates R3 programs. The R3 grants are used to address economic development, violence prevention services, re-entry services, youth development, and civil legal aid.

The Cannabis Regulation and Tax Act (2019) also provides relief for minor cannabis convictions. The law expunges arrest records for possession of less than 30 grams, convictions for possession or possession with intent to deliver up to 30 grams, and the opportunity for

individuals and state's attorneys to file motions with recourse to vacate convictions for possession up to 500 grams. However, cannabis offenses that were connected to a violent crime are excluded from the automatic expungement process.

The Cannabis Regulation and Tax Act (2019) allocated state tax revenue to a variety of places. First, the cannabis tax revenue will be deposited in the Cannabis Regulation Fund and will cover the cost of the cannabis program. The remaining state tax revenue will be distributed as follows: 35%, or any remaining balance, will be transferred to the General Revenue Fund; 25% will be transferred to the Criminal Justice Information Projects Fund to support the R3 program; 20% will be transferred to the Department of Human Services Community Services Fund to address substance and mental health issues; 10% will be transferred to the Budget Stabilization Fund; 8% will be transferred to the Local Government Distributive Fund to fund crime prevention programs, training, and detection and enforcement relating to the illegal cannabis market and driving under the influence of cannabis; and 2% will be transferred to the Drug Treatment Fund to fund public education and to support data collection and analysis of the public health effects of legalizing the recreational use of cannabis.

On May 31 of 2019, the Illinois House passed legislation legalizing recreational use of marijuana. Governor JB Pritzker (2019) stated, "the state of Illinois just made history, legalizing adult-use cannabis with the most equity-centric approach in the nation. This will have a transformational impact on our state, creating opportunity in the communities that need it most and giving so many a second chance." Later in 2019, on December 31, Governor Pritzker issued 11,017 pardons to individuals with misdemeanor convictions for possessing less than 30 grams of cannabis (NPR, 2020).

On January 1, 2020, the Cannabis Regulation and Tax Act (2019) became law in the state

of Illinois. This allowed adults who were over the age of 21 to legally purchase cannabis for recreational purposes. The law promotes equity within cannabis businesses by providing low-interest loans, establishing a social equity applicant status, waiving fees, reducing up-front costs, and providing a licensing timeline for new entrants to the adult-use cannabis market.

Pritzker stated on July 14, 2020, “since January, over \$239 million has been spent on recreational cannabis in Illinois translating to \$52 million in tax revenue, and a portion of every dollar spent will be reinvested in communities that have suffered from decades of disinvestment.” On October 13, 2020, the state of Illinois had collected \$100 million in tax revenue from adult-use cannabis sales (Pritzker). With the tax revenue generated from the Cannabis Regulation and Tax Act (2019), the Pritzker Administration dispensed 80 grants totaling \$31.5 million to the R3 program (2021).

Cook County, Illinois, partnered with Code for America to expedite the expungement of cannabis convictions (NPR, 2019). Code for America is helping to analyze conviction data and automatically populate forms to vacate cannabis convictions. Individuals with a conviction for possessing more than 30 grams of cannabis can file a petition to have their record expunged. By the end of 2020, 492,129 non-felony cannabis-related arrest records were expunged at the state level (Pritzker, 2021). Governor Pritzker also pardoned 9,219 low-level cannabis conviction records. In total, the governor has pardoned 20,236 cannabis conviction records.

There are many benefits to the legalization of marijuana through the Cannabis Regulation and Tax Act (2019), including promotion of equity for new entrants to the cannabis market, grant programs to promote social justice, and expungement of arrest and conviction records. However, it is important to note the outcomes of the law, and not just the intended outcomes. Additionally, there are potential public health consequences to the legalization of recreational cannabis.

IMPACT OF PERSISTENT CANNABIS USE

In order to study the long-term effects of cannabis use, researchers have used data collected from the Dunedin Longitudinal Study that explores the health and behavior of 1,037 individuals born between 1972 and 1973 in Dunedin, New Zealand (Cerdá et al., 2016; Hancox et al., 2010; Meier et al., 2012; Meier et al., 2016; Thomson et al., 2008). Thomson and colleagues (2008) explored the relationship between cannabis use and periodontal disease. Cannabis use was assessed between 18 and 32 years of age. Dental exams were conducted at 26 and 32 years of age. Results indicated that smoking cannabis was strongly associated with periodontal disease.

Hancox and colleagues (2010) explored the relationship between cannabis use and lung function. Cannabis use and tobacco use was assessed between the ages of 18 and 32. Lung functioning was measured at age 32. Results indicated that cannabis use was associated with hyperinflation and increase large airway resistance, but it was not associated with an obstruction of airflow or gas trapping. Results indicated that smoking tobacco was associated with airflow obstruction and gas trapping. These findings suggest that cannabis has a different physiological consequence on the lungs than tobacco.

Meier and colleagues (2012) explored the relationship between regular cannabis use and neuropsychological decline. Cannabis use was assessed between the ages of 18 to 38. Neuropsychological tests were conducted at age 13 and at age 38. Results showed that for adolescent-onset users, persistent cannabis use was associated with neuropsychological decline, and that more persistent users demonstrated greater rates of neuropsychological decline.

In 2016, Meier and colleagues analyzed data collected between the ages of 18 and 38. Cannabis use was assessed between 18 and 32 years of age. Physical health measures were

collected at ages 26 and 38. The researchers obtained laboratory measures of periodontal health, lung function, systemic inflammation, and metabolic health in addition to self-reported physical health. Results showed that periodontal health was the only physical health effect that was significantly negatively associated with persistent cannabis use.

Cerdá and colleagues (2016) explored the relationship between cannabis use and socioeconomic difficulties. Cannabis use was measured between the ages of 18 and 38. Economic and social problems were measured at age 38. Results indicated that regular cannabis use and cannabis dependence were associated with downward economic mobility, increased financial difficulties, workplace problems, and relationship conflicts.

Lynskey and Hall (2000) conducted a literature review to explore the effects of adolescent cannabis use on educational attainment. Findings from cross-sectional studies showed a significant relationship between cannabis use and lower grade point average, less satisfaction with school, negative attitudes toward school, increased rates of school absenteeism, and poor school performance. Findings from longitudinal studies show that cannabis use significantly increases the risk of poor school performance and significantly increases the risk of leaving school early.

Fergusson and colleagues (2015) explored the psychosocial impact of cannabis use. They analyzed data collected from a longitudinal study of 1,265 children born in 1977 in Christchurch, New Zealand. Their results showed that individuals who use cannabis regularly and individuals who started using cannabis at an early age have an increased risk of lower levels of educational attainment, welfare dependence and unemployment, using other illicit drugs, and psychotic symptomology.

Li and colleagues (2012) conducted a meta-analysis of nine epidemiologic studies that

explored the relationship between marijuana use and motor vehicle crash risk. Their results indicate that driver marijuana use is associated with a significant increase in risk for being in a motor vehicle crash. Additionally, findings suggest that as dose and frequency of marijuana use increase, so too does the risk for being in a motor vehicle crash.

Hall (2014) explored the adverse health effects of cannabis use. He conducted a literature review of epidemiology studies published between 1993 and 2013 that examined the consequences of cannabis use. Results indicated that driver cannabis intoxication doubles the risk of a car crash. Findings also show that on average, one in 10 individuals who use cannabis regularly will develop dependence. Regular cannabis use during adolescence significantly increases the risk of leaving school early, of having a cognitive impairment as an adult, and of experiencing psychosis as an adult. Additionally, regular cannabis use during adolescence is strongly correlated with use of other illicit drugs.

In summary, persistent use of cannabis has a range of negative consequences (Hall, 2014). Research from Dunedin Longitudinal Study indicates that persistent use of cannabis is correlated with a range of psychosocial consequences. These consequences include periodontal disease (Meier et al., 2016; Thomson et al., 2008), restricted lung functioning (Hancox et al., 2010), neuropsychological decline (Meier et al., 2012), and socioeconomic problems (Cerdá et al., 2016). Additional research indicates that persistent use of cannabis negatively impacts educational attainment (Lynskey & Hall, 2000), has a range of psychosocial consequences (Fergusson et al., 2015), and increases the risk for being in a car crash (Li et al., 2012).

1.1 CANNABIS USE IMPACT ON WOMEN

Persistent use of cannabis has unique consequences for women. Women use cannabis at lower rates compared to men (SAMHSA, 2020a) and are admitted for cannabis abuse treatment

at lower rates than men (SAHMSA, 2017). If women are addicted to cannabis, they tend to have more panic attacks (Thomas, 1996) and anxiety disorders (Buckner et al., 2012; Buckner et al., 2006) compared to men. Additionally, women tend to develop a cannabis use disorder more quickly after their first use as compared to men (Hernandez-Avila et al., 2004). Cannabis use impacts women's reproductive health in unique ways. Studies have shown that cannabis use may be linked to infertility and early onset menopause (Stickrath, 2019).

For women who are pregnant, using cannabis is associated with potential risks to the fetus and no potential benefits. Varner et al., (2014) conducted a case-control study examining the impact of illicit drug and smoking use during pregnancy on stillbirth. Results showed that cannabis use during pregnancy was associated with a 2.3 times greater risk of stillbirth.

Marijuana use during pregnancy may be associated with spontaneous preterm birth, stillbirth, and neonatal intensive care unit admission (Metz & Borgelt, 2018). While the scientific findings regarding marijuana use during pregnancy are heterogenous, using marijuana while pregnant may potentially harm the fetus.

The American College of Obstetricians and Gynecologists Committee on Obstetric Practice (2017) recommends that women refrain from using marijuana during pregnancy and lactation because there is inconclusive or insufficient evidence about the potential safety and health effects during pregnancy. Due to the lack of evidence, more data are needed about marijuana use during pregnancy to inform public policy and public health initiatives.

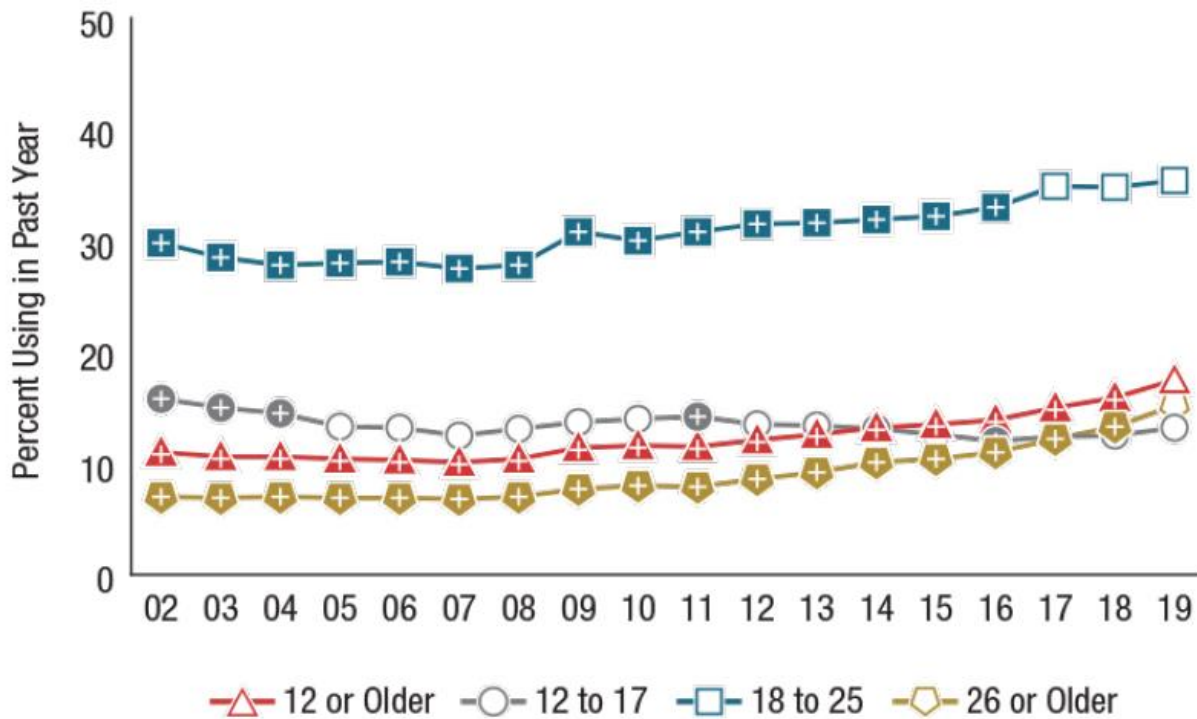
CANNABIS USE RATES IN THE UNITED STATES

Cannabis is the most commonly used illicit drug in the United States (SAMHSA, 2020a). Data from the National Survey on Drug Use and Health indicate that marijuana use rates in the United States are increasing. In 2017, 43.5 million people (15%) in the U.S. ages 12 and older

reported using marijuana within the past year (SAMHSA, 2019). In 2018, there was a significant increase of use with 41 million people (15.9%) reported using marijuana within the past year (SAMHSA, 2020a). In 2019, there was another significant increase of use with 48.2 million people (17.5%) in the U.S reported using marijuana within the past year (SAMHSA, 2020a). See Figure 4 for more details (SAMHSA, 2020b).

Figure 4

Past-Year Cannabis Use Among People Aged 12 or Older: 2002-2019.



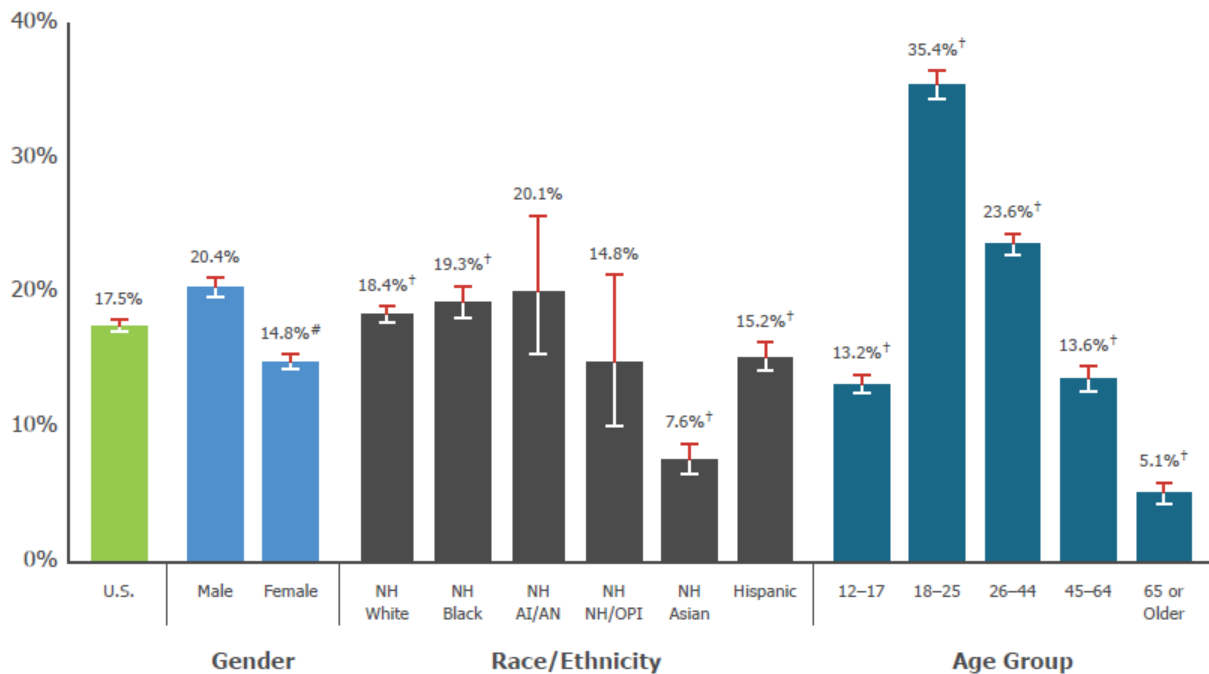
Note The following symbol, +, indicates that the difference between this estimate and the 2019 estimate is statistically significant at the .05 level.*

Demographic groups reported past-year cannabis use at varying rates (SAMHSA, 2020c). Of the 48.2 million people aged 12 and older who used marijuana in 2019, marijuana use was lower among women (14.8%) compared to men (20.4%). Non-Hispanic White (18.4%) and Black people (19.3%) reported higher rates of marijuana use compared to non-Hispanic Asian

people (7.6%) and among Hispanic people (15.2%). Additionally, young adults aged 18-25 (35.4%) and adults aged 26-44 (23.6%) reported higher rates of marijuana use than youth aged 12-17 (13.2%), adults aged 45-64 (13.6%), and adults aged 65 or older (5.1%). See Figure 6 for more details (SAMHSA, 2020c).

Figure 5

Past-Year Marijuana Use Among People Aged 12 or Older in the United States, by Gender, Race/Ethnicity, and Age Group: 2019



Error bars indicate 95% confidence interval of the estimate.
 U.S. = United States; NH = non-Hispanic; NH AI/AN = NH American Indian or Alaska Native; NH NH/OPI = NH Native Hawaiian or Other Pacific Islander.
 # Estimate is significantly different from the estimate for males ($p < .05$).
 † Estimate is significantly different from the national average ($p < .05$).
 * Omitted due to low precision of data.

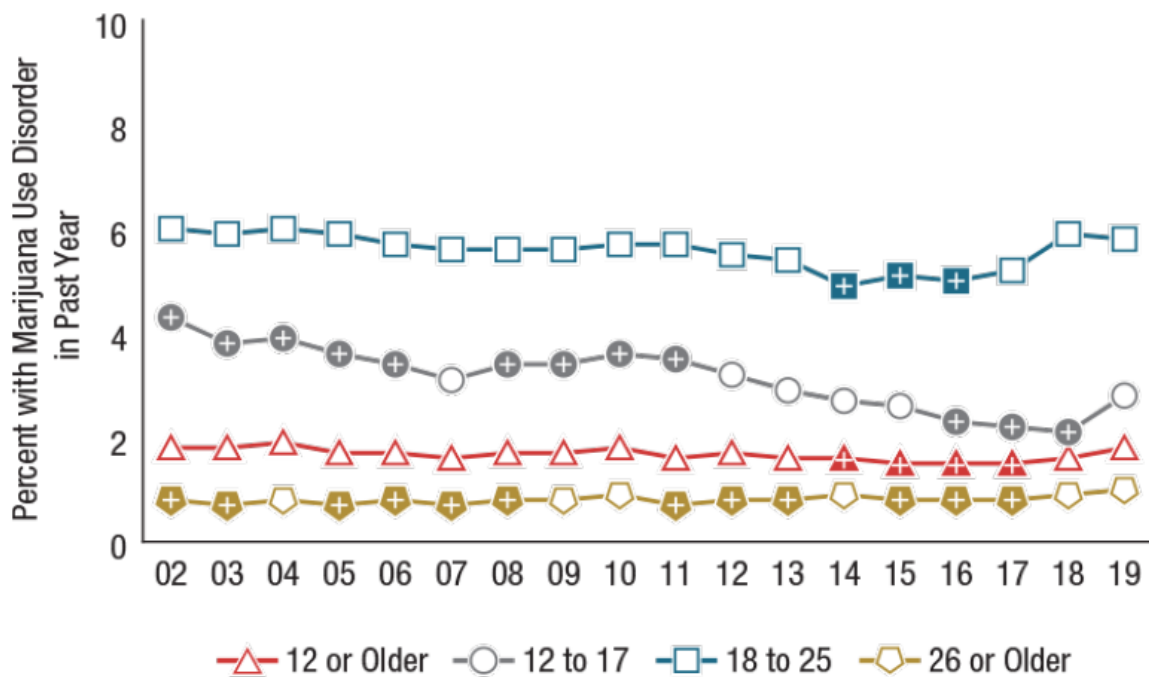
Cannabis use disorder has not significantly increased for adults but has increased among youth. Rates of cannabis use disorder have remained relatively stable for young adults 18-25 at 2 million (5.8%) and for adults 26 and older at 2.2 million (1%) (SAMHSA, 2020a). Cannabis use disorder has significantly increased for youth ages 12-17. In 2019, 699,000 (2.8%) of youth ages 12-17 were diagnosed with cannabis use disorder. This is a statistically significant increase from

previous years when the rates of cannabis use disorder were 584,000 (2.3%) in 2016, 557,000 (2.2%) in 2017, and 512,000 (2.1%) in 2018. See Figure 5 for more details (SAHMSA, 2020b).

Of the youth who were admitted to substance use disorder treatment, 89% involved cannabis as a primary, secondary, or tertiary substance (SAMHSA, 2017). The proportion of youth admitted for marijuana use disorder increased from 65% in 2005 to 76% in 2015. However, the number of adolescent marijuana admissions decreased from 96,129 in 2005 to 49,730 in 2015.

Figure 6

Cannabis Use Disorder in the Past Year Among People Aged 12 or Older: 2002-2018



*Note** The following symbol, +, indicates that the difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

1.2 CANNABIS USE RATES AMONG YOUTH

According to data from the National Survey on Drug Use and Health (2020), cannabis

use rates for youth are increasing. In 2016 and 2017, 1.6 million (6.5%) of youth ages 12 to 17 reported using marijuana in the past month. In 2018, the number of youths who reported using marijuana in the past month increased slightly to 1.7 million (6.7%). In 2019, there was a statistically significant increase with 1.8 million (7.4%) youths reporting using marijuana in the past month.

Keyes and colleagues (2017) explored racial and ethnic differences in adolescents' marijuana use. The researchers analyzed data collected via the Monitoring the Future survey from 2006 to 2015. The Monitoring the Future Survey is an annual cross-sectional survey of a nationally representative sample of eighth, 10th, and 12th grade students. The researchers examined past-month marijuana use by racial and ethnic group. In 2006, White and multiracial students' past-month marijuana use was significantly higher than Black and Hispanic students' past-month marijuana use. Over time, Black students' past-month marijuana use in 10th and 12th grades increased and White students' past-month use did not increase. The past-month marijuana use of Hispanic and multiracial students in 12th grade increased over time. The past-month marijuana use of Black students was greater among those in large class sizes. The past-month marijuana use of Hispanic students was greater for those in urban areas and with large class sizes. Additionally, for students who lived in states that passed medical marijuana laws, the increase in past-month marijuana use for Black and multiracial students was greater than for White students. Their study indicates that there are no racial/ethnic differences in marijuana use among adolescents, except that Asian students use marijuana at significantly lower rates than other racial and ethnic groups. The authors recommend that public health workers consider the change in demographics of adolescents who use marijuana when developing programming and interventions.

Sarvet and colleagues (2018) examined how adolescent marijuana use and risk perceptions have changed over time. The researchers analyzed data collected from two nationally representative surveys. They used data from the Monitoring the Future cross-sectional survey of eighth, 10th, and 12th graders between 1991 and 2015. They also analyzed data from the National Survey on Drug Use and health of eighth, 10th, and 12th graders between 2002 and 2014. Results from both surveys indicate that there is a significant increase in the number of students who perceive no risk of harm in using marijuana. In 2014 to 2015, one fifth of 12th graders perceived there to be no risk of harm in using marijuana. While perceptions of no harm have increased, rates of adolescents' past-three-day marijuana use have remained relatively stable at around 5%-6%.

1.3 CANNABIS USE RATES AMONG ADULTS

Data from the NSDUH (2019; 2020) indicate that marijuana use rates among adults age 26 and older in the United States are increasing. The past-year marijuana use rates for adults age 26 and older have significantly increased from 26 million (12.2%) in 2017, to 28.5 million (13.3%) in 2018, to 33 million (15.2%) in 2019. The past-month marijuana use rates have also significantly increased for adults age 26 and older. In 2017, there were 17 million (7.9%) adults age 26 and older who used marijuana in the past month. In 2018, there were 18.5 million (8.6%) and in 2019 there were 22 million (10.2%). Past-year daily or almost daily use by adults age 26 and older was also significantly higher in 2019 at 7.3 million (3.4%) as compared to 5.9 million (2.8%) in 2018. For young adults ages 18-25, marijuana use rates have not significantly changed from previous years (NSDUH, 2019; 2020). In 2019, 7.7 million (23%) young adults ages 18 to 25 reported using marijuana within the past month. Also, in 2019, 2.5 million (7.5%) young adults reported daily or almost daily use within the past year.

Hasin and colleagues (2017) explored changes in adult use of cannabis, rates of cannabis use disorder, and medical marijuana laws over time. The researchers analyzed three cross-sectional adult surveys that were administered from 1991-1992, 2001-2002, and 2012-2013. Results indicate that between 1991-1992 and 2001-2002 rates of cannabis use decreased and rates of cannabis use disorder did not change significantly. Between 2001-2002 and 2012-2013 both cannabis use and cannabis use disorder increased. For states with medical marijuana laws, the rates of increase in cannabis use and cannabis use disorder were higher than the rates of increase in states without medical marijuana laws. The authors conclude that the need for treatment of cannabis use disorder is increasing.

1.4 CANNABIS USE RATES AMONG WOMEN

Cannabis is the most commonly used illicit drug among women, and use rates among women are increasing (SAMHSA, 2020a). In 2019, 21 million women (14.8%) reported using cannabis in the past year. Data from 2019 indicate that 9.1 million (14.7%) nonpregnant women reported using cannabis in the past month, which is a significant increase from the previous year. Among pregnant women, 112,000 (5.4%) reported using cannabis in the past month. Daily or near-daily cannabis use has increased among both pregnant and nonpregnant women as compared to 2018, with 2.7 million (4.4%) nonpregnant women and 36,000 (1.7%) of pregnant women reported daily or near-daily cannabis use.

Volkow and colleagues (2019) explored how pregnant women's self-reported cannabis use rates have changed over time. They analyzed data collected by the National Survey of Drug Use and Health between 2002 and 2017. Their results indicate that past-month cannabis use, daily/near-daily cannabis use, and number of days of cannabis use have all increased among women, those both pregnant and nonpregnant, ages 12 to 44. Prevalence of cannabis use rates

among pregnant women has increased between 2002 to 2017: past-month cannabis use increased from 3.4% to 7.0%, past-month daily/near-daily cannabis use increased from 0.9% to 3.4%, and past-month mean number of days of cannabis use increased from 0.4 to 1.1 days. In summation, cannabis use has more than doubled among pregnant women from 2010 to 2017.

In 2017, the Centers for Disease Control and Prevention collected and analyzed data from eight states that participated in the Pregnancy Risk Assessment Monitoring System (Ko et al., 2020). These states were Alaska, Illinois, Maine, New Mexico, New York, North Dakota, Pennsylvania, and West Virginia. Results from the marijuana supplement indicated that 9.8% of women reported using marijuana before pregnancy, 4.2% reported using marijuana during pregnancy, and 5.5% of women reported using marijuana after pregnancy. Of the 765 women who reported about their marijuana use before and during pregnancy, 41.2% continued to use during pregnancy and 58.8% ceased use during pregnancy. The women reported several reasons for their marijuana use, and the most common reasons were to relieve stress or anxiety, nausea or vomiting, and pain. Results showed that smoking was the most common mode of use. Women who reported continued marijuana use during pregnancy compared to women who ceased marijuana use during pregnancy were more like to identify as non-Hispanic White or other race/ethnicity than non-Hispanic Black, unmarried, having equal to or less than 12 years of education as compared to greater than 12 years of education, and use of cigarettes during pregnancy.

From analyzing data collected by the National Survey of Drug Use and Health between 2007 and 2012, Ko and colleagues (2015) found that almost 70% of pregnant and nonpregnant women of reproductive age who used marijuana in the past year perceived that there is slight or no risk of harm from using marijuana once a month or once or twice a week. Additionally, of the

women who reported using marijuana in the past year, 18.1% of pregnant women met criteria for marijuana abuse or dependence and 11.4% of nonpregnant women met criteria for marijuana abuse or dependence.

EFFECTS OF LEGALIZATION OF RECREATIONAL CANNABIS

In a comparison of national survey data and Colorado survey data, Colorado rates of cannabis use were significantly higher (SAMHSA, 2020a). Colorado had higher rates of cannabis use in the following categories: past-month marijuana use (18-25 y), past-year daily marijuana use (18-25y), past-month marijuana use (>26y), and marijuana use disorder (18+). Cannabis use is increasing in general and may be increasing at greater rates in states that have legalized recreational marijuana use. The effects of legalization of recreational marijuana may impact specific demographic groups differently. The following sections explore the effects on individuals aged 12 and older, adolescents, college students, pregnant women, and parents.

1.5 INDIVIDUALS AGED 12 AND OLDER

Smart and Pacula (2019) conducted a narrative review of 42 quasi-experimental studies that explored the impact of medical cannabis laws and recreational cannabis laws on cannabis use, cannabis disorders, and use of alcohol, opioids, and tobacco. Results indicate that in states with medical marijuana legalization (MML), adult cannabis use increased, but adolescent cannabis use did not. Their findings suggest that for states with recreational marijuana legalization (RML), adolescents' cannabis use is not affected but that college students' cannabis use may increase. The authors state that evidence is still inconclusive about the public health impacts of MCLs and RCLs, including how MMLs and RMLs impact rates of cannabis use disorder and risky cannabis use behavior.

Cerdá and colleagues (2020) conducted the first national study to explore how

recreational marijuana legalization in the U.S. impacted rates of marijuana use and cannabis use disorder. They analyzed data collected between 2008 and 2016 from 505,796 adolescents ages 12-17, young adults ages 18-25, and adults over the age of 26 who lived in states with RML (i.e., Colorado, Washington, Alaska, and Oregon). They compared responses about marijuana use from before and after the legalization of recreational marijuana. Results indicated that cannabis use disorder increased slightly among the 12-17-year-old participants after RML. For participants ages 26 and older, their past-month marijuana use, past-month frequent marijuana use, and past-year cannabis use disorder increased after RML. The researchers highlight the importance of investing in substance use prevention and treatment for cannabis use disorder.

1.6 ADOLESCENTS

Cerdá and colleagues (2017) explored how legalization of recreational marijuana impacted adolescent marijuana use. The authors analyzed data collected from the Monitoring the Future survey, a national cross-sectional survey of eighth, 10th, and 12th graders, from 2010 to 2015. They compared results from students in Colorado and Washington to students in the 45 other states that had not legalized recreational marijuana during the timeframe. The perceived harmfulness of marijuana significantly decreased for eighth and 10th graders in Washington compared to eighth and 10th graders in the other states. They found no differences for 12th graders' perception of harmfulness in Washington or any student in Colorado compared to students in other states. The rate of past-month marijuana use increased, at a nonsignificant rate, for eighth and 10th graders in Washington after recreational marijuana was legalized. There was no significant increase in marijuana use from 2001 to 2012 in Colorado or Washington compared to other states without legalized recreational marijuana. The researchers recommend that states with legalized recreational marijuana should also invest in evidence-based adolescent substance

use prevention programs.

1.7 COLLEGE STUDENTS

Miller et al. (2017) conducted research at a university in Washington exploring how RML impacted college student marijuana use. Their results showed that undergraduate students' marijuana use increased after RML and that the increase was more than was predicted from national trends in marijuana use rates. These findings suggest that RML results in an increase in marijuana use among college students.

Kerr and colleagues (2017) examined undergraduate marijuana use at one university in Oregon and six institutions in states without legalization of recreational marijuana. Results showed that undergraduates' marijuana use in Oregon did increase after legalization of recreational marijuana use, but only for students who also reported heavy alcohol use.

Kerr and colleagues (2018) explored undergraduates' 30-day marijuana use and frequency of use before and after RML. They examined college students' marijuana use rates in Oregon, prior to and after RML, and compared it to college students' marijuana use rates in other states. Results indicated that college students' marijuana use rates increased more in Oregon than in states without RML and the increase was due to increases in sporadic use (e.g., 1-5 days in the past month) rather than heavier use (e.g., 10 or more days in the past month). College students aged 18-20 reported similar use rates to students 21 and older.

Bae and Kerr (2020) analyzed data collected from the National College Health Assessment survey between 2008-2018. They examined past 30-day marijuana use rates of 1,198,412 undergraduate students from 135 four-year colleges and universities in 48 states. The results showed that students who lived in states with RML had greater increase in marijuana use compared to students who lived in states without RML and states prior to RML. Results also

indicated that RML was significantly and positively associated with frequency of past-month marijuana use, with students in states with RML reporting higher levels of frequency (e.g., 20 or more days) than lower levels of frequency (e.g., less than 20 days) compared to students in states without RML. Increases in marijuana use after RML were significantly higher for females compared to males, for students aged 21 and older compared to students under age 21, and for students living off campus compared to students living on campus.

In response to Bae and Kerr's (2020) article, Cerdá (2020) wrote about the importance of examining how different states operationalize the legalization of recreational marijuana. She argues that researchers need to examine the policy effects to determine who is benefiting the most and the least from RML. She calls for additional research that examines which types of RML policies promote the greatest public health.

1.8 PREGNANT WOMEN

Gnofam and colleagues (2020) explored the effects of legalization of recreational marijuana on the use rates of pregnant women in Colorado. Their results showed that pregnant women used marijuana at significantly higher rates after recreational marijuana was legalized. Their results also indicated that fetal growth restriction occurred at significantly higher rates after recreational marijuana was legalized. As most of their results are based on self-reported marijuana use, they recommend biological testing for marijuana use prior to and throughout changes in marijuana legalization.

1.9 PARENTS

Kosterman and colleagues (2016) explored parents' attitudes toward marijuana legalization, their marijuana use, and their parenting regarding marijuana in Washington State. They surveyed 395 participants from a longitudinal study, which began when participants were

10 in 1985 and when they were 39 in 2014. Survey results indicated that parents were uncertain about details of the marijuana law. A third of parents believed that the minimum legal age for using recreational marijuana was 18 when in fact it is 21. Approval of marijuana use gradually increased from 1% at age 13 to 52% at age 39, which was also the year that recreational marijuana was legalized in Washington. During the same time period, perception of harm from regular marijuana use decreased from 81% and 98% during childhood and adolescence to 65% at age 39. Participants indicated opposition to teens' use of marijuana and to using marijuana around their children. Additionally, of the parents who used marijuana, there was a significant increase in frequency of use and marijuana use disorder over time.

In a longitudinal research study, Epstein and colleagues (2020) examined the marijuana use frequency over the past year and marijuana norms of 668 biological parents from 2002 to 2018. Results showed that there was an increase in marijuana use and in pro-marijuana norms after legalizations of recreational marijuana. While marijuana use and norms increased in all states after RML, the rates of pro-marijuana norms were significantly higher for parents living in states with RML. The increase of use was attributed to a large and significant increase in use frequency from new users of marijuana and a small and significant increase in frequency from continuing users of marijuana. Researchers found Black and White parents reported significant increases in marijuana use following RML while Asian American and Native American parents did not demonstrate a significant increase in use. Marijuana use rates were similar among men and women. All demographic groups demonstrated an increase in pro-marijuana norms except for Native Americans.

In summary, cannabis use prevalence is increasing in all states, however, the rates of past-month cannabis use are increasing at steeper rates in states with RML (Cerdá et al., 2019).

There is an increase in cannabis use disorder for 12–17-year-old participants in states with RML (Cerdá et al., 2020). However, despite these findings the evidence is still inconclusive about the impacts of RML (Smart & Pacula, 2019). The lack of evidence may be due to heterogeneity of policies (Cerdá 2020; Pacula & Smart, 2017).

Pacula and Smart (2017) highlight the heterogeneity of medical marijuana and recreational marijuana laws across the United States. As these laws vary in their regulatory frameworks, so do the effects of legalization. The state and local governments' regulation of marijuana production and price will affect rates of marijuana use and abuse. Additionally, the population in each state is heterogenous so the effects of these policies on that specific population will also vary. Because of the variance of policies about marijuana and the population variance within each state, the literature is inconclusive when assessing the impact of these policies. Pacula and Smart (2017) recommend researching how specific policies impact mechanisms that then impact use, such as perceived harm, legal risk of use, ease of access and price, and disapproval of regular use.

DECREASE IN PERCEPTION OF CANNABIS HARMFULNESS

The perception of risk from using cannabis is decreasing among people aged 12 and older (SAHMSA, 2020a). Participants were asked to indicate their perception of risk of using marijuana once or twice a week as great risk, moderate risk, slight risk, or no risk. The risk of great harm has decreased at statistically significant rates each year from 2015 to 2019. The risk of great harm dropped from 36.3% in 2015, to 34% in 2016, to 31.9% in 2017, to 30.6% in 2018, to 29.2% in 2019.

Researchers analyzed data collected from a nationwide longitudinal survey that was administered to adolescents in eighth, 10th, and 12th grades (Keyes et al., 2016). Since 1991,

youth perceptions of harmfulness of marijuana use have significantly declined from 84% in 1991 to 53.8% in 2014. On average, youth who lived in states that passed medical marijuana laws were less likely to perceive marijuana as harmful compared to youth who lived in states where these laws were not passed.

Wong and Lin (2016) explored how medical marijuana laws impacted marijuana use among adolescents and adults. Adolescents, aged 12-17 years old, were more likely to report using marijuana in states where medical marijuana was legalized compared to states where medical marijuana was illegal. This same trend was observed in adults, aged 18 and older. Adults who lived in states where medical marijuana was legal were more likely to report using marijuana compared to adults who lived in states where medical marijuana use was illegal.

Sherry and McKinney (2020) explored the perspectives of adults about the use of marijuana and its health consequences. They surveyed adult patients from a dental clinic in southern Illinois in the same year that recreational marijuana was legalized in Illinois. Results indicated that 36% believe marijuana is less harmful than alcohol and 45% believe marijuana is less harmful than tobacco products. When asked about the effects of marijuana on the oral cavity, 44% of males and 46% of females indicate that marijuana can cause cancerous lesions.

COVID-19

The research cited in this paper includes data collected prior to the COVID-19 pandemic. Consequently, the impacts of the COVID-19 pandemic on cannabis use are unknown. However, researchers note their concern about the potential negative impact the pandemic may have on substance use and abuse (Chiappini et al., 2020; Zaami et al., 2020). The social isolation, psychological distress, and change in access to substance use support groups and therapy associated with the pandemic may lead to an increase in substance use. Researchers note that

individuals may have less access to some substances during the pandemic due to quarantining and due to slowed production and distribution of drugs on the black market (Chiappini et al., 2020). However, for individuals aged 21 in Illinois, cannabis remained accessible throughout the pandemic. On March 20, 2020 Governor Pritzker issued an executive order that deemed cannabis dispensaries and licensed cannabis cultivation centers in Illinois essential businesses that could remain open throughout the pandemic. The access to legal recreational cannabis in Illinois during the pandemic may have resulted in an increase in cannabis use.

CONCLUSION

In conclusion, the legalization of recreational cannabis has social justice and public health effects. The War on Drugs targeted specific communities and has had lasting negative consequences for these communities. Legalizing recreational cannabis in a way that centers on social equity is crucial in repairing the damage done to these communities. The public health effects of recreational cannabis laws are varied; however, RML has resulted in an increase in cannabis use and a decrease in the perception of harmfulness. Occasional cannabis use has not been associated with negative consequences, but persistent cannabis use is associated with a host of negative consequences. Therefore, it is important to create policies that promote the greatest public health benefits. Additionally, funding needs to be directed toward prevention of persistent cannabis use and cannabis use disorders. This is especially important when it comes to increased education for young people and university and college students.

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