

**Act 169 Dual Use of Cannabis Task Force
Permitted Interaction Group**

Public Health and Safety Working Group

September 26, 2022

Table of Contents

Executive Summary	4
Working Group Recommendations	8
Adopt APHA Recommendations for Monitoring and Addressing Cannabis-Related Problems.....	8
Establish Comprehensive Surveillance to Monitor Public Use and Public Health Harms	9
Convene a Public Health Advisory Committee	10
Background and Scope of Report	12
Working Group Members	12
Working Group Report	14
Introduction	14
Health Impacts Related to Cannabis Use or Exposure	15
Adolescents and Young Adults	15
Pregnancy and Breastfeeding.....	17
Cancer	17
Cardiovascular Effects.....	18
Gastrointestinal Effects.....	18
Respiratory Effects.....	18
Neurological, Cognitive and Mental Health Effects.....	18
Drug-Drug Interactions	19
Public Safety Concerns.....	20
Impaired Driving	20
Second-Hand Smoke	21
Protecting Vulnerable Populations.....	21
Children and Youth	21
Pregnant Women.....	23
Older Adults	24
Product Safety.....	24
Additives/Ingredients	24
THC Concentration.....	25
Packaging and Labeling.....	25

Laboratory Testing	25
Energy and Environmental Impacts.....	26
Energy Use	26
Water Use	26
Land Use.....	27
Waste Management	27
Air Quality	28
Nuisance Odors.....	29
A Final Word	30
Signatures	31
Endnotes	32
Bibliography	48
Appendices	74
Appendix 1. Key Points – June 27, 2022	74
Appendix 2. Drug Interaction Table	76
Appendix 3. Health & Safety Impacts	85
Appendix 4. State Attorneys General Support Protecting Children from Cannabis	91

Executive Summary

In accordance with Act 169 SLH 2021, the Department of Health (DOH), Office of Medical Cannabis Control and Regulation (OMCCR) convened a task force to explore the development of a dual system program for legalized adult-use in addition to medical-use. The task force, referred to as “Dual Use of Cannabis Task Force,” formed the Public Health and Safety Working Group (“PHSWG”) to identify and recommend policies to safeguard public and consumer health and safety. Toward that objective, the PHSWG focused its investigation on evidence-based adverse health, safety, and environmental impacts.

A wide range of public health and safety harms associated with cannabis use have been identified. A major concern identified by the Substance Use and Mental Health Services Administration (SAMHSA) National Survey on Drug Use and Health (NSDUH) are developmental impacts on adolescents and young adults, for which substantial or moderate evidence show cognitive and academic impairment; increased risk of developing psychotic and other mental health disorders, including schizophrenia and more suicidal thoughts or attempts; and greater likelihood of progression to substance use disorders for cannabis, alcohol, tobacco, and other drugs in adulthood. Equally concerning are adverse fetal development outcomes resulting from cannabis consumption during pregnancy and breastfeeding. Biological evidence shows passage of THC through the placenta and breastmilk, and studies have shown resulting low birthweight, reduced cognitive function, decreased IQ and academic ability and attention problems among exposed offspring.

NSDUH research, as well as that of numerous other mental health specialists, has established association of cannabis use with neurological, cognitive, and mental health disorders among adults also. Individuals using cannabis have been associated with increased memory, learning, and attention impairments; psychotic disorders and symptoms; and higher depressive disorders, PTSD, and suicide. Cannabis use disorder can develop, particularly with increasing frequency of use, and prolonged use can lead to cyclic vomiting (i.e., cannabinoid hyperemesis syndrome) and heavy cannabis smoking to chronic bronchitis. Other adverse effects on physical health include increased risk of ischemic stroke among individuals under 55 years of age, and increased risk of cancer. Furthermore, clinically important drug-drug interactions between cannabis and multiple medications pose health complications for children and adults.

The National Institute on Drug Abuse (NIDA) continues to emphasize the traffic safety concerns that increased access to cannabis following legalization of adult-use presents. After alcohol, cannabis is the substance most often associated with impaired driving, and substantial evidence exists for increased risk of motor vehicle crash. Among individuals using cannabis less than weekly, smoking or orally ingesting ≥ 10 mg meaningfully impair driving ability. Combined use of cannabis and alcohol increases impairment and motor vehicle crash than use of either substance alone. There is evidence of a positive relationship between THC blood level and motor vehicle crash risk. A blood THC level of 2-5 ng/mL has a meaningful driving impairment effect. Among the studies examining the number of hours required to resolve or nearly resolve THC-induced driving impairment, substantial evidence found 8 hours after oral ingesting and 6 hours after smoking ≤ 18 mg THC, and moderate evidence shows 6 hours after smoking 35 mg THC, among those who use less-than-weekly. Blood THC levels among cannabis-impaired drivers are now higher than in the past.

The American Lung Association and U.S. Centers for Disease Control and Prevention (CDC) underscore the fact that cannabis smoke shares the same carcinogenic chemicals as tobacco smoke. Like tobacco smoke, cannabis smoke can cause a range of illnesses to not only the individual who smoke, but others exposed to secondhand smoke in the same household and multi-unit residences. Detectable THC concentrations have been found in children living in households with a parent, relative or caretaker who uses cannabis. A study on tobacco smoke reported that half of residents in multi-unit buildings experienced smoke entering their units despite smoke-free policies.

While legalized adult-use can have extensive public health effects, children, youth, pregnant women and elderly are among the most vulnerable populations needing protection. The American Academy of Pediatrics (AAP) highlights unintentional exposure in children can lead to significant clinical effects requiring medical attention. States with increased legal access have seen rises in unintentional pediatric poisoning. Use of child resistant packaging can reduce unintentional exposure, as has been found with pharmaceutical and other hazardous household products. Among U.S. adolescents, cannabis is the most widely used illicit drug, with over one in five children reporting current use in 2019. States and jurisdictions have implemented policies to reduce youth access, including restricting sales to licensed dispensaries; limiting retailer hours; applying extensive advertisement restrictions;

prohibiting retail near schools, youth centers, parks and playgrounds; and controlling products forms and packaging so that they are not attractive to children and youth. Cannabis is the most used illicit drug also among pregnant women, of who between 3-7% report use. Studies show increasing acceptance of use during pregnancy despite recommendations by the American College of Obstetricians and Gynecologists (ACOG) to discourage pregnant women from use due to its potential impact on the developing fetus. Increasing cannabis use has also been documented among adults ages 65 and above, whose chronic medical conditions and general decline in functioning places them at higher vulnerability for potential adverse effects. Product safety guidelines and policies can be established early and prior to adult-use access to ensure public safety and consumer protections. In addition to child-resistant packaging, labeling requirements are needed to prohibit unsubstantiated health claims. Laboratory testing requirements for contaminants currently in place for medical use products can be applied also to adult-use retail products. Also, because greater THC concentration has greater likelihood of adverse health outcomes, consumer protection can further be achieved through THC concentration caps and/or taxation of sales based on THC concentration.

Environmental impacts and their management are important considerations for expansion of the legal market to include adult-use. Cannabis cultivation and product manufacturing requires intensive energy use, especially if cultivated in a controlled indoor environment, which requires artificial lighting for at least a half-day, heating ventilation, air-conditioning, etc. As with any agricultural-based industry, there will be water and land use demand for cannabis. Effective management of water resources in other state requires automated watering producing less than 20% water runoff and filtration and reuse of wastewater. Proper land use management would ensure the long-term health of the land and soil. Specific attention should be paid to pesticides and heavy metals, which can be stored in cannabis and hemp plant material and become concentrated in manufactured products. Waste management best practices can be implemented, such as on-site composting and fermentation, minimizing universal and hazardous waste through source-reduction and substitution (e.g., using LEDs insets of mercury-containing fixtures), and use of recyclable or biodegradable packaging materials. Air quality control options include carbon filtration for indoor cultivation facilities that are sealed and applying mass balance calculations to estimate and limit volatile organic compound (VOC) emissions from the manufacturing of products. VOC emissions from cannabis cultivation produces strong odors for

which DOH regularly receives complaints. Although difficult to regulate, odors can be managed through chemical masking or neutralizing agents. Plans for odor reduction can help improve quality of life for those living near cultivation facilities.

There may be additional important health, social and environmental impacts not yet known given that research on the effects of cannabis have been limited globally. Working with the evidence currently available, the PHSWG recommends a multisector response to provide protection to the public and endorses the 2020 American Public Health Association (APHA) Policy Statement, “A Public Health Approach to Regulating Commercially Legalized Cannabis”. APHA recommendations include policy actions and regulations to protect children, youth and other vulnerable populations, minimize harm to the public, and monitor public health and safety outcomes. **To guide the public health response in the State of Hawaii, the PHSWG recommends the establishment of a Public Health Advisory Committee comprising of health care professionals with medical and scientific expertise in fields that interest with cannabis use, as well as comprehensive surveillance to monitor legalized adult-use public health and social impacts.**

There are real challenges to regulating adult-use alongside protecting medical use. The modest effects that have been observed thus far across states that have legalized adult-use cannot be assumed to predict long term effects of commercialization. Continual collaboration and coordination of multiple government agencies, the industry, and the public can assist to navigate the State through complex undertakings to safeguard public health.

Working Group Recommendations

Adopt APHA Recommendations for Monitoring and Addressing Cannabis-Related Problems

The PHSWG endorses the recommendations of the 2020 American Public Health Association Policy Statement, “A Public Health Approach to Regulating Commercially Legalized Cannabis” (Policy Number 20206), which calls for the following policy actions for the regulation of “commercial adult use markets” at the state level.

- Provide protection to children and youth and other vulnerable and marginalized populations through careful regulation of:
 - (1) The availability of and access to cannabis products;
 - (2) Advertising and marketing;
 - (3) Product potency, form, and characteristics; and
 - (4) Packaging and labeling
- Minimize harm to the public through:
 - (1) Effective prevention education;
 - (2) Protection of clean indoor air;
 - (3) Prevention of impaired driving;
 - (4) Adoption of policies to promote and protect health equity; and
 - (5) Investment in public health and safety programs
- Monitor patterns of cannabis use and related public health and safety outcomes through:
 - (1) Population-based surveys;
 - (2) Syndromic surveillance; and
 - (3) Other data sources

Although the issues related to cannabis use continue to evolve, the following evidence-based strategies for monitoring and addressing impacts remain relevant.

- Require age restrictions and enhanced reinforcement to limit access to commercial cannabis among adolescents.
- Counsel women on the potential implications of cannabis use during pregnancy and while breastfeeding.
- Restrict cannabis-related advertising to the maximum extent allowable under U.S. and state law, incorporating lessons learned from alcohol and tobacco control.
- Require messaging about potential overconsumption to reduce overdose and poisoning resulting from the increasing THC content in cannabis products.

- Prohibit product forms and characteristics that may attract youth, including fruit flavors and flavor-sounding brand names (e.g., “Girl Scout Cookie”), shapes and forms that imitate existing products marketed to children or youth (e.g., flavored gummies), and products with images of people, animals, or cartoons.
- Require plain and opaque packaging subject to small, approved, and limited brand elements that discloses all ingredients, including flavoring agents and diluents, as well as the percentage and milligrams for THC, CBD (cannabidiol), and any other psychoactive cannabinoid. Following the lead of tobacco and alcohol packaging, require specific warnings about health risks with substantial evidence of harm to be prominent on all cannabis product packages and prominently posted in retail locations and advertisements.
- Link taxes to THC doses or THC content to discourage market trends toward higher potency, help price adolescents out of the market, and reduce overconsumption and problem consumption.
- Dedicate funding from taxation of cannabis products to support evidence-based drug prevention and health education campaigns.
- Maintain the tobacco smoke-free air achievements of denormalizing smoking and protecting workers, children, and adult nonsmokers from secondhand smoke. Protect these major public health gains from threats by public cannabis smoking and vaping, outdoor cannabis events, and consumption lounges, as well as renormalizing the perception of smoking among youth and the public.
- Require and monitor for retailer compliance with minimum age requirements and enforce laws against underage sales to help prevent motor vehicle accidents related to impaired driving.
- Keep health equity and social justice at the forefront of all public health policies and enforcement efforts.

Establish Comprehensive Surveillance to Monitor Public Use and Public Health Harms

A comprehensive surveillance program is needed to monitor the use of and exposure to cannabis and associated health and social impacts. While DOH is best positioned to establish and implement surveillance, the data needed is spread across multiple DOH programs and other State and County agencies. Dedicated partnerships with relevant agencies to collect and provide required data will be key to ensuring comprehensive monitoring of legalized adult-use impacts. The surveillance program should include:

- Systematic surveillance that monitors cannabis use and exposure trends and risk associations among Hawaii’s population.
- Quantification of adverse events, including but not limited to:
 - (1) Cannabis-attributable hospitalizations and emergency department visits;
 - (2) Traffic-related fatalities and impaired driving; and
 - (3) Cannabis dependence or addiction treatment rates.
- Monitoring of adverse effects from prolonged cannabis use, particularly cannabinoid hyperemesis syndrome or cyclic vomiting, and outcomes among medical use patients, such as drug interactions.

To achieve effective and equitable policy and programming, surveillance systems should identify health disparities associated with cannabis use, and operational research should be conducted as needed to identify effective interventions and programs that prevent cannabis-related harms across specific populations. Adverse event monitoring should give particular attention to youths and pregnant women, so that there is at minimum systematic tracking of accidental pediatric ingestion of cannabis and adverse birth outcomes among mothers who use cannabis, as well as the impacts on elderly (i.e., tracking of injuries resulting from falls, etc.).

This information should be used to evaluate and guide the development of policies, implementation of programs, and health messaging to ensure protection of the public’s health and safety and to monitor the impacts of legalization (i.e., demand, use, product type and safety, etc.); and the impact of policies on cannabis-related social outcomes, including arrests or other criminal violations and school graduation rates, attendance, and discipline incidents. It will be important also to evaluate messaging and communication campaigns aimed at improving public knowledge and awareness.

Convene a Public Health Advisory Committee

DOH should convene a Public Health Advisory Committee analogous to the Colorado Department of Public Health and Environment (CDPHE) Retail Marijuana Public Health Advisory Committee (RMPHAC) comprised of health care professionals, appointed by CDPHE, who have expertise in fields that intersect with cannabis use.

Backgrounds of current RMPHAC members include: the director of the Rocky Mountain Poison and Drug Safety; a professor of medicine with research background in the effects of tobacco and cannabis on lung health; co-director of the Colorado School of Public Health Program for Injury Prevention, Education, and Research; a staff neuropsychologist at the University of Colorado Hospital Neuropsychology Clinic; the CDPHE State Marijuana Laboratory Sciences Program Manager; a professor of natural products pharmacology; a pediatrician and neonatologist; an emergency medical physician and toxicologist; the Medical Director of the Consultation-Liaison Psychiatry Service at Denver Health Medical Center; the associate director of Denver Public Health; a board-certified addiction psychiatrist; and an assistant professor of pediatrics with board certifications in pediatrics, pediatric emergency medicine, and medical toxicology.

RMPHAC duties include:

- Review of the scientific literature currently available on health effects of marijuana use.
- Judge and openly discuss the science using expert medical and scientific opinion.
- Come to consensus on population health effects of marijuana use based on current science.
- Come to consensus on translation of the science into public health messages.
- Recommend public-health-related policies based on the current science and expert opinion and present these in a report every two years.
- Identify and prioritize gaps in the science important to public health.

Background and Scope of Report

Act 169 SLH 2021 charged the Department of Health (DOH), Office of Medical Cannabis Control and Regulation (OMCCR) with convening a task force (“Dual Use of Cannabis Task Force”) to explore the development of a dual system program for the legalization of cannabis, i.e., legalized adult-use in addition to medical-use, and the impacts of the legalization of cannabis on qualifying patients, including access to medical cannabis by qualifying patients. OMCCR is required to submit a report of task force findings and recommendations, including any proposed legislation, to the legislature no later than twenty days before the convening of the regular session of 2023.

The Public Health and Safety Working Group (“PHSWG”) was formed at the June 27, 2022 Dual Use of Cannabis Task Force meeting. PHSWG was charged with identifying and making recommendations on policies to “safeguard public and consumer health and safety, including preventing youth access, impaired driving, use disorder, and impacts to mental health.” In alignment with the Hawaii Department of Health’s goal of promoting and preserving a clean, healthy, and natural environment, the PHSWG report includes energy and environmental impacts of the cannabis industry.

Due to the competing priorities of its members, PHSWG met only once, on June 27, 2022, and only four of six members were able to attend. A summary of key points from that meeting is attached as Appendix 1. Due to the limited input received from members, this report was written solely by the Chair and circulated for review and approval by PHSWG members.

This report takes no position on the merits or drawbacks of the legalization of a dual-use system of cannabis. This report seeks only to inform the Dual Use Task Force, legislators, and the public of the impacts on health, safety, and the environment that should be addressed in responsibly expanding from medical-use to a dual-use system that includes legalized adult-use.

Working Group Members

- Michele Nakata, Chair (michele.nakata@doh.hawaii.gov)
Hawaii Department of Health

- Senator Joy San Buenaventura (sensanbuenaventura@capitol.hawaii.gov)
Hawaii Senate District 2
- Dr. James Ireland (james.ireland@honolulu.gov)
Representing City & County of Honolulu Mayor Rick Blangiardi
- Barett Otani (barett.otani@hawaiicounty.gov)
Representing County of Hawaii Mayor Mitch Roth
- Randy Gonce (director@808hicia.org)
Hawaii Cannabis Industry Association
- Jared Redulla (Jared.K.Redulla@hawaii.gov)
Hawaii Department of Public Safety

Working Group Report

Introduction

As of August 2022, 19 states, the District of Columbia, Guam, and the Northern Mariana Islands have legalized adult-use cannabis. An additional 20 states allow for medical use, leaving only 11 states that either do not allow any form of cannabis or only cannabidiol/low THC (delta-9 tetrahydrocannabinol) for medical use. Several of these have impending legislation that may legalize medical- or adult-use this fall.

The purpose of this report is to inform the Dual Use of Cannabis Task Force on the range of public health and safety harms associated with cannabis use and the increased access to cannabis that comes with legalization, as well as the larger community and environmental impacts resulting from expanded cannabis cultivation, manufacturing, and consumption. As such, this investigation focuses on science- and evidence-based negative health, safety, and environmental impacts. Health impacts for which such evidence is limited, mixed, insufficient, or lacking are not included. In addition, therapeutic benefits, as well as harms resulting from social inequities are not a part of this report. Where possible, practices and policies to help mitigate impacts are suggested. What is not included in this report are health impacts for which such evidence is limited, mixed, insufficient, or lacking. Also not included are therapeutic benefits, as well as harms resulting from social inequities.

According to the 2020 National Survey on Drug Use and Health (NSDUH)¹, an estimated 49.6 million people aged 12 or older (17.9 percent of the U.S. population) reported using cannabis in the past year, including 2.8 million first-time users, 1.0 million of whom were adolescents aged 12 to 17. An estimated 32.8 million reported past month or “current” use. Although 70.7% of the U.S. adult population perceived great risk of harm associated with smoking one or more packs of cigarettes a day and 68.7% with having four or five alcoholic drinks nearly every day, only 27.4% perceived great risk from smoking cannabis weekly.

Along with the prevalence of use and the lack of perceived risk associated with cannabis use, the increasing intensity of use is cause for growing concern. The 2017 National Academies of Sciences, Engineering, and Medicine (2017 NASEM) report² found that among current cannabis users, the proportion of heavy or “daily/near-daily” users increased from about one in nine in 1992 to more than one in three in

2014. By one estimate, heavy users accounted for three-quarters of cannabis-related expenditures.³ Cannabis products come in an increasing myriad of forms and are consumed in various ways, from smoking or inhaling to ingestion or absorption through the skin or mucosal tissues. These forms can vary widely in their THC and other cannabinoid content. The route of administration can affect the onset, intensity, and duration of effects and their addictive potential.⁴ The lack of information to guide individuals in making appropriate personal choices regarding cannabis use compared to other substances such as alcohol and tobacco is a significant public health concern, especially for vulnerable populations such as pregnant women and adolescents.

Although molds, yeast, bacteria, heavy metals, growth enhancers, and pest control chemicals are common contaminants introduced during cultivation, manufacturing processes can also result in pesticide and residual solvent contamination of products. In addition, delivery systems such as vape hardware can be the source of heavy metals that leach into vape liquid and subsequently into the aerosol produced and inhaled by users. Finally, ingredients such as flavorings and excipients which may be considered safe for use in foods may not be similarly safe for inhalational use, as evidenced by the strong association of Vitamin E acetate, a fat-soluble vitamin that occurs naturally in many foods, with the 2019 outbreak of e-cigarette or vaping associated lung injury (EVALI).

Health Impacts Related to Cannabis Use or Exposure

This section draws heavily from two primary sources of information: 1) The 2017 NASEM report⁵ and 2) Evidence Statements of the Colorado Department of Health and the Environment, Retail Marijuana Public Health Advisory Committee (RMPHAC).⁶ Methodology for RMPHAC's literature process may be found at: <https://marijuanahealthinfo.colorado.gov/our-process>. A summary table of the health and safety impacts, including those with limited evidence, is attached as Appendix 2.

Adolescents and Young Adults

- **Cognitive and Academic Effects:** MODERATE evidence that adolescents and young adults who use cannabis weekly or more frequently are more likely than non-users to have ongoing impairment of cognitive and academic abilities for at least 28 days after last use.^{7, 8, 9}

- **College Completion:** MODERATE evidence that adolescents and young adults who use cannabis weekly or more frequently are less likely than non-users to attain a college degree.^{10, 11, 12, 13, 14, 15, 16}
- **High School Graduation:** SUBSTANTIAL evidence that adolescents who use cannabis weekly or more frequently are less likely than non-users to graduate from high school.^{17, 18, 19, 20, 21, 22, 23, 24, 25, 26}
- **Psychotic Disorders:** SUBSTANTIAL evidence that adolescents and young adults who use cannabis daily or near-daily are more likely than non-users to develop future psychotic disorders like schizophrenia in adulthood.^{27, 28, 29, 30, 31, 32, 33}
- **Psychotic Symptoms:** SUBSTANTIAL evidence that adolescents and young adults who use cannabis are more likely than non-users to develop future psychotic symptoms, and this likelihood increases with more frequent use.^{34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48}
- **Suicide:** MODERATE evidence that adolescents and young adults who use cannabis are more likely than non-users to have suicidal thoughts or attempt suicide.^{49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64}
- **THC Concentration and Future Cannabis Use:** MODERATE evidence that adolescents and young adults who use cannabis with higher THC concentration (>10% THC) are more likely than non-users to continue use.^{65, 66, 67, 68}
- **THC Concentration and Mental Health:** MODERATE evidence that adolescent and young adults who use cannabis with higher THC concentration (>10% THC) are more likely than non-users to develop future mental health symptoms and disorders.^{69, 70, 71}
- **Alcohol Use:** MODERATE evidence that adolescent and young adult cannabis users are more likely than non-users to use alcohol or have alcohol use disorder in adulthood.^{72, 73, 74, 75, 76, 77}
- **Cannabis Use Disorder:** SUBSTANTIAL evidence that cannabis users can develop cannabis use disorder, including adolescent and young adult users.^{78, 79, 80, 81, 82, 83, 84, 85}
- **Future Cannabis Use:** SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to increase their use and to develop cannabis use disorder in adulthood.^{86, 87, 88, 89, 90, 91, 92, 93, 94}
- **Other Drug Use:** SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to use or have a substance use disorder for other drugs in adulthood.^{95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107}

- **Tobacco Use:** SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to use tobacco or have tobacco use disorder in adulthood.^{108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119}

Pregnancy and Breastfeeding

- **Low Birthweight:** SUBSTANTIAL evidence of association between maternal cannabis smoking and lower birth weight of offspring¹²⁰
- **Small for Gestational Age:** MODERATE evidence that maternal use of cannabis during pregnancy is associated with infants being born small for gestational age (birth weight less than 10th percentile for gestational age)^{121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135}
- **Academic Ability:** MODERATE evidence that maternal cannabis use during pregnancy is associated with decreased academic ability of exposed offspring^{136, 137, 138, 139}
- **Attention Problems:** MODERATE evidence that maternal use of cannabis during pregnancy is associated with attention problems in exposed offspring^{140, 141, 142, 143, 144, 145}
- **Cognitive Function:** MODERATE evidence that maternal use of cannabis during pregnancy is associated with reduced cognitive function in exposed offspring^{146, 147, 148}
- **IQ:** MODERATE evidence that maternal use of cannabis during pregnancy is associated with decreased IQ scores in exposed offspring^{149, 150}
- **THC Passage from Mother to Fetus:** BIOLOGICAL evidence shows that THC is passed through the placenta of women who use cannabis during pregnancy and that the fetus absorbs and metabolize the THC and passes THC metabolites in the meconium^{151, 152, 153, 154, 155, 156}
- **THC in Breastmilk:** BIOLOGICAL evidence shows that infants who drink breast milk containing THC absorb and metabolize the THC¹⁵⁷
- **THC in Breastmilk:** BIOLOGICAL evidence shows that THC is present in the breast milk of women who use cannabis and may persist for several weeks after reported last use^{158, 159, 160, 161}

Cancer

- **Pre-Cancerous Lesions:** SUBSTANTIAL evidence that daily or near-daily cannabis smoking is associated with pre-malignant lesions in the airway^{162, 163, 164}
- **Cannabis Smoke:** SUBSTANTIAL evidence that cannabis smoke, both mainstream and sidestream, contains many of the same cancer-causing chemicals as tobacco smoke^{165, 166, 167, 168, 169}

- **Testicular Cancer:** MODERATE evidence that cannabis use among adult males is associated with an increased risk of non-seminoma testicular cancer.^{170, 171, 172, 173, 174, 175}

Cardiovascular Effects

- **Stroke:** MODERATE evidence that cannabis use increases risk of ischemic stroke in individuals younger than 55 years of age.^{176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190}

Gastrointestinal Effects

- **Cyclic Vomiting:** MODERATE evidence that long-time, daily or near-daily cannabis use is associated with severe recurrent vomiting (cannabinoid hyperemesis syndrome).^{191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206}

Respiratory Effects

- **Chronic Bronchitis:** SUBSTANTIAL evidence that heavy cannabis smoking is associated with chronic bronchitis, including chronic cough, sputum production, and wheezing.^{207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217}

Neurological, Cognitive and Mental Health Effects

- **Learning, Memory, and Attention:**
SUBSTANTIAL evidence that adults who use cannabis daily or near-daily are more likely than non-users to have memory impairments for at least seven days after last use.^{218, 219, 220, 221, 222, 223, 224, 225, 226}
MODERATE evidence of association between acute cannabis use and impairment in learning, memory, and attention.²²⁷
- **Psychotic Disorders and Symptoms:**
SUBSTANTIAL evidence that THC intoxication can cause acute psychotic symptoms, which are worse with higher doses.^{228, 229, 230, 231, 232, 233, 234, 235}
SUBSTANTIAL evidence that adults who use cannabis daily or near-daily are more likely than non-users to be diagnosed with a psychotic disorder, such as schizophrenia.^{236, 237, 238, 239, 240, 241, 242}
MODERATE evidence that individuals who use cannabis with THC concentration >10% THC are more likely than non-users to be diagnosed with a psychotic disorder, such as schizophrenia.^{243, 244, 245}
- **Cannabis Use Disorder:**
SUBSTANTIAL evidence of association between increases in cannabis use frequency and progression to developing cannabis use disorder.²⁴⁶

SUBSTANTIAL evidence that cannabis users can develop cannabis use disorder.^{247, 248, 249, 250, 251, 252, 253, 254, 255}

- **Withdrawal Symptoms:** SUBSTANTIAL evidence that individuals who use cannabis daily or near-daily can experience withdrawal symptoms when abstaining from cannabis.^{256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272}
- **Bipolar Disorders:** MODERATE evidence of association between regular cannabis use and increased symptoms of mania and hypomania in individuals diagnosed with bipolar disorders.²⁷³
- **Depressive Disorders:** MODERATE evidence of association between cannabis use and a small increased risk for development of depressive disorders.²⁷⁴

MODERATE evidence that major depressive disorder is a risk factor for the development of cannabis use disorder.²⁷⁵

- **PTSD:** MODERATE evidence of association between cannabis use disorder and increased severity of posttraumatic stress disorder symptoms.²⁷⁶
- **Social Anxiety Disorder:** MODERATE evidence of association between regular cannabis use and increased incidence of social anxiety disorder.²⁷⁷
- **Suicide:**
MODERATE evidence of association between cannabis use and increased incidence of suicidal ideation and suicide attempts, with a higher incidence among heavier users.²⁷⁸
MODERATE evidence of association between cannabis use and increased incidence of suicide completion.²⁷⁹

Drug-Drug Interactions

- **Interactions with Medications:** There is credible evidence of clinically important drug-drug interactions between cannabis and the following medications: chlorpromazine, clobazam, clozapine, CNS depressants (e.g., barbiturates, benzodiazepines), disulfiram, hexobarbital, hydrocortisone, ketoconazole, MAO inhibitors, phenytoin, protease inhibitors (e.g., indinavir, nelfinavir), theophylline, tricyclic antidepressants and warfarin. The lack of a cited interaction does not preclude the possibility that drug interactions exist; it simply means no studies have yet reported an interaction with that particular drug.^{280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297}

See the RMPHAC Drug Interactions Table at:

<https://marijuanahealthinfo.colorado.gov/drug-interaction-table>. A summary table of the Drug Interactions Table is attached as Appendix 3.

Public Safety Concerns

Impaired Driving

After alcohol, cannabis is the substance most often associated with impaired driving.²⁹⁸ Cannabis use can impair important skills required for safe driving by slowing reaction time and ability to make decisions, impairing coordination, and distorting perception.

- **Cannabis Plus Alcohol Crash Risk:** SUBSTANTIAL evidence that the combined use of cannabis and alcohol increases impairment and motor vehicle crash risk more than use of either substance alone.^{299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310}
- **Blood THC and Crash Risk:** MODERATE evidence for a positive relationship between THC blood level and motor vehicle crash risk.^{311, 312, 313}
- **Blood THC and Driving Impairment:** SUBSTANTIAL evidence that for cannabis users who use less-than-weekly and/or with a whole blood THC of 2-5 ng/mL, there is meaningful driving impairment.^{314, 315, 316, 317, 318, 319, 320}
- **Blood THC in Impaired Drivers:** MODERATE evidence that blood THC levels of cannabis-impaired drivers are higher now than in the past.³²¹
- **Crash Risk:** SUBSTANTIAL evidence that recent cannabis use by a driver increases their risk of motor vehicle crash.^{322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332}
- **Ingesting and Driving Impairment:** SUBSTANTIAL evidence that for cannabis users who use less-than-weekly, orally ingesting 10 mg or more of THC is likely to meaningfully impair driving ability.^{333, 334, 335, 336}
- **Smoking and Driving Impairment:** SUBSTANTIAL evidence that for cannabis users who use less-than-weekly, smoking more than about 10 mg THC (or part of a currently available cannabis joint) is likely to meaningfully impair driving ability.^{337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350}
- **Time Before Driving – Ingestion:** SUBSTANTIAL evidence that delaying driving at least 8 hours after oral ingestion of less than 18 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly.^{351, 352, 353, 354}
- **Time Before Driving – Smoking 35mg THC:** MODERATE evidence that delaying driving at least 6 hours after smoking about 35 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly.^{355, 356, 357}
- **Time Before Driving – Smoking <18mg THC:** SUBSTANTIAL evidence that delaying driving for at least 6 hours after smoking less than 18 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly.^{358, 359, 360, 361, 362, 363, 364}

Second-Hand Smoke

There is SUBSTANTIAL evidence that cannabis smoke, both mainstream and sidestream, contains many of the same cancer-causing chemicals as tobacco smoke.^{365, 366, 367, 368, 369} Exposure to cannabis smoke can cause respiratory symptoms, exacerbate respiratory conditions such as asthma, bronchitis, and chronic obstructive pulmonary disease (COPD),^{370, 371, 372} and increase the risk of stroke.³⁷³ Heavy passive exposure to cannabis smoke can result in measurable concentrations of THC in nonusers' blood serum and urine.³⁷⁴ Exemptions for cannabis smoking or vaping in state or local smoke-free laws is a public health concern that this will expose the public to secondhand cannabis smoke and renormalize smoking.³⁷⁵

- **Multi-Unit Residential Settings:** Secondhand smoke, whether from tobacco or cannabis spreads through multi-unit dwellings, impacting the health of other residents. Although property owners have the legal authority to adopt smoke-free policies which can include smoking or vaping of medical or adult-use cannabis,³⁷⁶ a study reported that 50 percent of residents in multi-unit buildings where smoke-free policies were enforced experienced smoke entering their units from adjacent units.³⁷⁷
- **Household Exposures:** In addition to the same toxic and cancer-causing chemicals found in tobacco smoke, secondhand cannabis smoke also contains THC which can be passed on to other household members including infants and children. Studies have found strong associations between having someone in the home who uses cannabis (e.g., a parent, relative, or caretaker) and children having detectable levels of THC.^{378, 379} States should ensure that early care and education setting regulations include protections for children from unintended cannabis exposure as well as impaired childcare providers.³⁸⁰

Protecting Vulnerable Populations

Children and Youth

Preventing unintentional exposure of cannabis among children and preventing youth use are critical public health priorities. Increases in unintentional pediatric exposures after legalization are well documented. Canada found pediatric emergency department exposures that were 7 times higher than the rates reported

in Colorado after adult-use legalization and with increased severity requiring hospitalization, despite strict regulations that largely exceed requirements in the U.S.³⁸¹ Cannabis is the most widely used illicit drug by adolescents in the United States. In 2019, 21.7% of high school students reported current (past 30-day use) cannabis use.³⁸² Cannabis use during adolescence and young adulthood can harm the developing brain and some of these effects may be permanent.^{383, 384}

- **Unintentional Exposures in Children:** SUBSTANTIAL evidence that more unintentional cannabis exposures for children occur in states with increased legal access to cannabis; and the exposures can lead to significant clinical effects requiring medical attention.^{385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396}
- **Child-Resistant Packaging:** MODERATE evidence that the use of child-resistant packaging reduces unintentional pediatric poisonings from a wide range of hazardous household products including pharmaceutical products.^{397, 398, 399}
- **Underage Access:** The American Academy of Pediatrics “strongly recommends strict enforcement of rules and regulations that limit access, marketing, and advertising to youth.”⁴⁰⁰ To reduce youth access, states and jurisdictions should restrict sales to only licensed dispensaries, and limit retailer hours and manner of delivery. A recent assessment of retail cannabis dispensary compliance with underage access and marketing restrictions in California found that 67.9% of the 700 retail locations assessed failed to comply with the age-limit signage requirement.⁴⁰¹ In addition, although retail locations were generally compliant with ID checks, most did not check IDs until customers entered the premises, a practice that allows entering minors to be exposed to advertisements, products, packaging, and paraphernalia, etc.⁴⁰² Delivery services pose the additional challenge of age verification of order recipients.
- **Advertising Restrictions:** The perceived harmfulness of using cannabis is softening and adolescents are likely to be influenced by advertisements to accept and normalize substance use behaviors. 58.7% of adolescents who responded to the questions about exposure to cannabis advertisements on the combined 2014 and 2015 Monitoring the Future studies reported exposure to cannabis advertisements on storefronts, magazines or newspapers, billboards, internet, television, and radio. Increased exposure to tobacco and alcohol marketing is strongly associated with increases in youth use of these products.^{403, 404, 405, 406, 407, 408, 409, 410} Similarly, exposure to cannabis advertisements is significantly associated with current use among adolescents.^{411, 412} Cannabis advertising should be limited by:

- (1) Content-neutral advertising restrictions;⁴¹³
 - (2) Restricting advertising content, messages, or imagery; and
 - (3) Time, place, or manner restrictions.⁴¹⁴
- **Location and Density of Retail Locations:** Expansion to legalized adult-use will result in increased numbers of retail locations. The location and numbers of these will depend on the state’s implementation of license and density limits and zoning rules. Most states have siting restrictions that require minimum distancing from schools, childcare, youth centers, parks, and playgrounds. Many include additional requirements to comply with county or municipal ordinances, and some leave this to local communities. Oregon explicitly prohibits retail and wholesale licensed premises from exclusively residential zones. Retailer proximity and density has been with increases in current and frequent use among adults and young adults, as well as increased use by pregnant women.^{415, 416, 417}
 - **Product Forms and Packaging Attractive to Youth:** Cannabis products with added fruit- and candy-like flavorings and scents are likely to be attractive to youth.⁴¹⁸ A study commissioned by the Washington State Liquor and Cannabis Board, found that children are attracted to food packaging that includes color, novel shapes such as stars or animals, and cartoon or promotional characters, and products that smell sweet, fruity, or like candy.⁴¹⁹ Efforts to reduce youth-appealing marketing and implementation of plain packaging laws for tobacco products have led to reductions in youth tobacco use.^{420, 421} Similarly, cannabis products can be made less attractive to children and youth by restricting names, flavors, images, shapes, colors, logos, and branding on packaging,⁴²² and prohibiting products and packaging that imitate commercial non-cannabis products.⁴²³ As emphasized in the June 2022 letter to Congress from a bipartisan coalition of attorneys general in response to copycat cannabis products mimicking major snack brands contributing to increased child poisonings, reprehensible packaging practices “pose a grave risk to the health, safety, and welfare of our children.” A copy of the letter is attached as Appendix 4. Product forms and packaging that are attractive to youth should be prohibited using clear, detailed, and enforceable regulations.

Pregnant Women

Cannabis is the most used illicit drug during pregnancy.⁴²⁴ National estimates show that between 3–7% of pregnant women report using cannabis while pregnant.^{425, 426}

In August 2019, the U.S. Surgeon General issued an advisory against the use of cannabis during pregnancy, citing the 2018 American Academy of Pediatrics recommendation that cannabis should not be used during pregnancy due to its potential impact on the developing fetus⁴²⁷ and the American College of Obstetricians and Gynecologists recommendation that pregnant women be encouraged to discontinue cannabis use and counseled about the potential adverse health consequences of continued use during pregnancy.⁴²⁸ Despite these recommendations, with the increasing acceptance and accessibility of cannabis and the perceived lack of risk, use among pregnant women has continued to increase.^{429, 430, 431, 432, 433, 434} Evidence suggests that concerns about how substances may affect their baby can motivate women to reduce or discontinue use, however, studies have found that health care professionals may not counsel women who disclose cannabis use during pregnancy.^{435, 436 437}

Older Adults

Cannabis use among older adults (aged 65 and above) continues to increase.⁴³⁸ The safety of cannabis use in this population is important because aging is associated with changes in metabolism, increasing chronic medical conditions and prescription medication use, and a general decline in functioning.⁴³⁹ As a result, older adults may be especially vulnerable to potential adverse effects from cannabis.⁴⁴⁰

Product Safety

Additives/Ingredients

Manufactured products (with exception of kief and hashish) often require the use of solvents for extraction and additives such as propylene glycol, polyethylene glycol, vegetable glycerin, medium-chain triglycerides, vitamin E acetate, and terpenes from non-cannabis plant sources.⁴⁴¹ In addition, edible cannabis products are made with food ingredients and are subject to the same quality control risks as conventional food items.⁴⁴² The potential health risks associated with additives was sharply emphasized by the nationwide outbreak of lung-injury associated with THC-containing e-cigarette, or vaping, products (EVALI),⁴⁴³ that resulted in 2,807 cases and 68 confirmed deaths. Vitamin E acetate, an additive in vaping products was strongly linked to the illnesses. Resulting state responses have included: banning some or all excipients or diluents from vaped products, including terpenes, or strictly limiting levels to those which would naturally occur in the plant; allowing only items on FDA's list of inactive ingredients approved for use in drug products in

aerosolized products; requiring pre-approval of all new products; implementing additional controls on the heating elements of vaping device; and expanding product testing requirements.

THC Concentration

The effects of cannabis are determined primarily by the amount of THC, and to a lesser extent other cannabinoids, as well as the mode of delivery (e.g., inhaled vs. consumed, etc.) and individual response of the consumer. The concentration of THC in cannabis plants has steadily increased over the past few decades.^{444, 445, 446, 447} Similarly, THC concentrate products have been found to have increasingly higher levels of THC.^{448, 449} As described above, young people and those with certain pre-existing mental health conditions are especially vulnerable to the adverse effects of THC. The bottom line is – the greater the concentration of THC in cannabis products, the greater the likelihood of adverse health effects. In addition to targeted health messaging, state approaches to addressing this concern have focused primarily on implementation of THC caps in manufactured products and taxation of sales based on THC concentration to discourage the purchase of high THC products.

Packaging and Labeling

Packaging should be regulated to reduce youth access by requiring packaging to be tamper-resistant, opaque, resealable, child-resistant consistent with the Poison Prevention Packaging Act. Labeling of cannabis-infused edibles should, at a minimum, include nutrition facts and serving sizes, ingredient and allergen lists, expiration dates, and lot numbers, and explicitly prohibit false statements or unsubstantiated health claims.⁴⁵⁰ Labeling should also include clear and large written and pictorial warnings of the adverse health effects of cannabis use and a prominent universal cannabis symbol.⁴⁵¹

Laboratory Testing

Laboratory testing is a key part of assuring the safety of cannabis products.⁴⁵² Fungal contamination may cause pneumonia^{453, 454, 455, 456, 457} and aflatoxins, which may survive smoking, are carcinogenic.^{458, 459} Heavy metals may be bioaccumulated by cannabis plants during cultivation, cross-contamination during processing,⁴⁶⁰ or leach into products from packaging or product components such as vapes. Pesticides, growth regulators, and other chemical contaminants can result from the use of these in cultivation, cleaning and maintenance of facilities, and manufacturing.^{461, 462, 463} A significant challenges of implementing testing requirements is the lack of standardized methods and the ever-increasing types of

matrices that cannabis products represent. Another layer of complexity is regulating the testing laboratories themselves. More states are moving toward establishing a reference or quality assurance laboratory and implementing proficiency testing processes to ensure that testing is accurate, reliable, and reproducible.

Energy and Environmental Impacts

Cannabis cultivation and manufacturing of cannabis products can have significant impacts on energy consumption and the environment. Protecting Hawaii's unique environment and precious natural resources, as well as the enjoyment of these by residents and visitors, are important considerations for expansion of the legal market to include adult-use. The following are key, but not exhaustive, issues related to energy and the environment that the legislature will need to keep in mind in enacting dual use of cannabis legislation.

Energy Use

Indoor cannabis cultivation is very energy-intensive, and the energy demands from indoor cultivation are the greatest contributor to the cannabis industry's environmental footprint. However, the controlled environment of indoor cultivation can help to safeguard plant quality, as well as reduce production time by one-third, helping to ensure a consistent supply. Optimizing yield significantly impacts the resulting cost of cannabis flower and manufactured products. Indoor cultivation relies heavily on electricity to run artificial lights, heating, ventilation, air-conditioners, and dehumidifiers, with lighting and HVAC/DH systems encompassing 50-80% of the energy used in cultivation facilities.⁴⁶⁴ Cannabis in the vegetative stage, when plants are growing, are kept under a minimum of 12-18 hours of growing light, while plants undergoing flowering are kept below 12 hours of light. Since energy consumption is responsible for generating a large portion of greenhouse gases and other air pollutants, attention should be given to requiring energy efficiency in the industry. Best practices identified include tracking individual licensee energy usage to establish baseline metrics and requiring HVAC/DH efficiency minimums or design requirements.

Water Use

Article XI, Section 7, of the State Constitution provides that "The State has an obligation to protect, control and regulate the use of Hawaii's water resources for the benefit of its people."⁴⁶⁵ Water for irrigation is a necessity for any agricultural-

based industry and irrigated agriculture accounts for the bulk of surface and groundwater consumption in the United States.⁴⁶⁶ Water for irrigation must first be suitable for use on cannabis crops to avoid the introduction of elemental, microbial, and chemical contaminants.⁴⁶⁷ Then water must be efficiently delivered to plants to limit wastage.⁴⁶⁸ And finally, in indoor cultivation facilities, opportunities to reclaim and recycle irrigation effluent and condensate expired by the growing plants should be considered.⁴⁶⁹ Given Hawaii's long history with water rights issues, strong consideration should be given to ensure the effective management of water resources by the industry. Requirements implemented in other states include automated watering systems that allow for no more than 20% water runoff and filtration and reuse of wastewater.

Land Use

"Proper land-use planning is the foundation upon which sustainable practices are built."⁴⁷⁰ According to the State of Hawaii Office of Planning and Sustainable Development, Land Use Division, all land in the State is designated as either urban, rural, agricultural, or conservation, with 47% of the land in Hawaii designated as agricultural. While the land use impact of cannabis cultivation is typically much lower than traditional agriculture, attention should be given to proper land use management to ensure the long-term health of the land and soil. Agricultural runoff can contain pesticides, heavy metals, nutrients, and other pollutants. Regulating cultivation sites for use of fertilizers, herbicides, and insecticides can help to minimize these contributions to nonpoint source pollution of coastal and groundwater. Additionally, cannabis and hemp have the capacity to remove pesticides and heavy metal contamination from soil. However, it should be cautioned that cannabis and hemp will store these in the plant material which may become concentrated in manufactured products. Therefore, cannabis grown for remediation, or in potentially contaminated soils should *never* be used for human consumption. Finally, an important consideration in the siting of cannabis and hemp cultivation operations is the potential for cross-pollination between the two crops which has already resulted in lawsuits in other states.

Waste Management

The cannabis industry generates three categories of waste: plant waste, consumer packaging, and universal and hazardous waste. A high volume of unusable plant waste is to be expected from cannabis. Due to diversion concerns, most states, including Hawaii, require cannabis waste to be rendered "unusable and unrecognizable" by grinding and mixing 50/50 with non-cannabis waste before disposal. To minimize the volume of resulting plant waste, some states have

moved to allow low-THC plant components (stalks, stems, fan leaves, and rootballs) to bypass the 50/50 mixing requirement. In addition to off-site landfill or certified composter disposal, on-site composting and Bokashi fermentation are increasingly practiced as environmentally sustainable disposal methods. Universal and hazardous waste includes spent solvents, solvent-soaked plant material, pesticides, growth media, mercury-containing light fixtures and ballasts, batteries, and other electronic waste. Minimizing universal and hazardous waste is best managed by source-reduction and substitution, e.g., using LEDs instead of mercury-containing fixtures. As with most other industries, consumer packaging represents a significant downstream waste source. Even if made of recyclable material, the shape and size of cannabis packaging is not conducive to consumer recycling. The use of child-resistant primary packaging helps to eliminate the need for an additional exit package. In addition to compostable or biodegradable packaging materials, incentivized take-back programs are a sustainable option.

Air Quality

Direct air quality impacts from the cannabis industry include plant emissions and solvent use during extraction procedures. Cannabis plants naturally emit terpenes, a form of volatile organic compounds (VOCs) and sulfur-containing compounds called thiols as they grow.⁴⁷¹ Although these compounds are not unique to cannabis, they occur naturally in many other types of plants and trees, it is the combination of these compounds that give cannabis plants its characteristic smell. Manufactured products such as concentrates, edibles, lotions, and tinctures are produced via solvent-based or solvent-less methods. Solvent-less methods involve the use of physical agitation or heat and pressure, whereas solvent-based processes employ solvents to remove the terpenes and cannabinoids from plant material. Common solvents used in the cannabis industry include propane, butane, ethanol, and isopropyl alcohol. Even in closed-loop systems, up to 20-30% of solvents may be lost to air emissions. Particulates from mechanical extraction and evaporation from solvent-based extraction can adversely impact ambient air quality which is an occupational safety hazard in addition to an environmental concern. Carbon filtration is the best technology for reducing VOC emissions and odors in indoor cultivation facilities but is not feasible in greenhouses because they cannot be sealed. A recommended practice to control emissions from solvent extractions is to require mass balance calculations to determine the extent of air emissions.⁴⁷²

Nuisance Odors

Cannabis cultivation produces strong odors that can pose a nuisance to surrounding communities, cause complaints from the public, and impact the quality of life. As described in the section on Air Quality, these odors are the result of VOCs emitted from the plant and anyone who has spent time in proximity to cannabis plants can attest that cannabis terpenes are “sticky,” and cannabis odors tend to persist. In addition to second-hand cannabis smoke complaints, the Department of Health regularly receives complaints regarding cannabis plant odors coming from a neighbor’s yard. Plant odor complaints can also trigger law enforcement inquiries into medical patient home grows. Due to the subjective nature of quantifying and classifying odor, odor is very difficult to regulate, and most complaints do not result in a violation, but public concerns still need to be addressed. Although not intoxicating or a threat to human health or the environment, cannabis odor can interfere with a person’s comfortable enjoyment of life and property. The best technology for odor control in indoor facilities is carbon filtration. Ozone generators are also effective, but ozone is toxic to human health and the environment. The best available option for greenhouses and outdoor cultivations are chemical masking or neutralizing agents which attempt to cover up the odor by releasing a stronger or complementary smell. Implementing a plan to reduce odors can help to reduce community complaints and build better relationships with those living near a cultivation facility.

A Final Word

Regulating medical use in Hawaii has been and continues to be a significant public health and safety challenge. Expansion to a dual use system that allows for adult-use, while continuing to protect medical use, will be an extremely complex undertaking, requiring the collaboration and coordination of multiple governmental agencies, the industry, and the public. While it makes sense to learn from experiences of those who legalized before us and the lessons learned from regulating other substances that impact the public's health and safety, *"it would be unwise to assume that the modest effects of cannabis legalization observed to date will predict its longer term effects."*⁴⁷³ Since cannabis remains federally illegal, the full effects of commercialization remain unknown and the resulting impacts on public health will not be realized for some time. The Precautionary Principle should apply to all aspects of legalization.

William Tilburg, Executive Director, Maryland Medical Cannabis Commission commenting on the larger public health challenges currently facing states that have legalized cannabis for medical or adult-use.

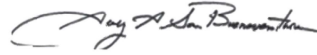
"I want to highlight (...) the regulatory challenge of balancing health and safety measures and market forces. There is a misconception that cannabis legalization is starting something new. This isn't really true because there is a healthy illicit market. The illicit market involves products that are not subjected to safety standards and is often associated with criminal activity. When legalizing cannabis, part of a state's rationale is to increase product safety with reassures like safety standards, testing, and labeling. However, a parallel goal is to decrease the market share of the illicit trade in cannabis. Now if the regulatory burden created by the health and safety measures is too great, it creates an increase in operating costs that is passed on to the consumers. If this results in a product that is not competitively priced, people will remain or return to the illicit market. So, there is a real challenge to regulate in a way that balances the need for health and safety regulations, while being conscious of the need to be price competitive with the illicit market."

SIGNATURES

Respectfully submitted by the Public Health and Safety Working Group this
26th day of September 2022.



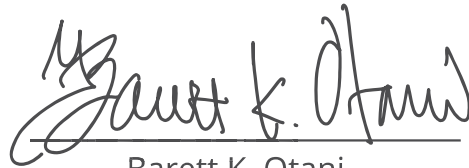
Michele N. Nakata, Chair



Senator Joy A. San Buenaventura



James H. Ireland, M.D.



Barrett K. Otani



Randy A. Gonce



Jared K. Redulla

Endnotes

- ¹ Substance Abuse and Mental Health Services Administration, 2021, *Key substance use and mental health indicators in the United States: Results from the 2020 National Survey on Drug Use and Health*.
- ² National Academies of Sciences, Engineering, and Medicine, 2017, *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ³ Davenport, S., 2016, Evolution of the United States marijuana market in the decade of liberalization before full legalization.
- ⁴ Ehrler, M. R., 2015, Subjective and cognitive effects of cannabinoids in marijuana smokers.
- ⁵ National Academies of Sciences, Engineering, and Medicine, 2017, *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ⁶ Colorado Department of Public Health and the Environment. (n.d.). *Evidence Statements*. Monitoring Health Concerns Related to Marijuana.
- ⁷ Bolla, K. I., 2002, Dose-related neurocognitive effects of marijuana use.
- ⁸ Medina, K. L., 2007, Neuropsychological functioning in adolescent marijuana users: subtle deficits detectable after a month of abstinence.
- ⁹ Pope, H. G., Jr., 2003, Early-onset cannabis use and cognitive deficits: what is the nature of the association?
- ¹⁰ National Academies of Sciences, Engineering, and Medicine 2017.
- ¹¹ Baggio, S., 2015, Not in Education, Employment, or Training status among young Swiss men. Longitudinal associations with mental health and substance use.
- ¹² Fergusson, D. M., 2008, Cannabis use and later life outcomes.
- ¹³ Horwood, L. J., 2010, Cannabis use and educational achievement: findings from three Australasian cohort studies.
- ¹⁴ Patrick, M. E., 2016, High School Substance Use as a Predictor of College Attendance, Completion, and Dropout: A National Multi-cohort Longitudinal Study.
- ¹⁵ Schaefer, J. D., et al., 2021, Associations between adolescent cannabis use and young-adult functioning in three longitudinal twin studies.
- ¹⁶ Wilhite, E.R., 2017, Freshman year alcohol and marijuana use prospectively predict time to college graduation and subsequent adult roles and independence.
- ¹⁷ National Academies of Sciences, Engineering, and Medicine 2017.
- ¹⁸ Brook, J. S., 1999, The risks for late adolescence of early adolescent marijuana use.
- ¹⁹ Ehrenreich, H., 2015, Marijuana Use from Middle to High School: Co-occurring Problem Behaviors, Teacher-Rated Academic Skills and Sixth-Grade Predictors.
- ²⁰ Fergusson, D. M., 2003, Cannabis and educational achievement.
- ²¹ Green, K.M., 2017, Long-term consequences of adolescent cannabis use: Examining intermediary processes.
- ²² Horwood, L. J., 2010, Cannabis use and educational achievement: findings from three Australasian cohort studies.
- ²³ Lynne-Landsman, S. D., 2010, Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment.
- ²⁴ Melchior, M., 2017, Early cannabis initiation and educational attainment: is the association causal? Data from the French TEMPO study.
- ²⁵ Silins, E., 2014, Young adult sequelae of adolescent cannabis use: an integrative analysis.
- ²⁶ Stiby, A. I., 2015, Adolescent cannabis and tobacco use and educational outcomes at age 16: birth cohort study.
- ²⁷ Arranz, S., 2018, The relationship between the level of exposure to stress factors and cannabis in recent onset psychosis.
- ²⁸ Di Forti, M., 2015, Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study.
- ²⁹ Godin, S. L., et al., 2022, Adolescent cannabis use and later development of schizophrenia: An updated systematic review of longitudinal studies.
- ³⁰ Marconi, A., 2016, Meta-analysis of the Association Between the Level of Cannabis Use and Risk of Psychosis.
- ³¹ Mustonen, A., 2018, Adolescent cannabis use, baseline prodromal symptoms and the risk of psychosis.

-
- ³² van Os, J., 2002, Cannabis use and psychosis: a longitudinal population-based study.
- ³³ Zammit, S., 2002, Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: historical cohort study.
- ³⁴ Arseneault, L., 2004, Causal association between cannabis and psychosis: examination of the evidence.
- ³⁵ Bourque, J., 2017, Cannabis use and psychotic-like experiences trajectories during early adolescence: the coevolution and potential mediators.
- ³⁶ Carlyle, M., et al., 2021, Cannabis-induced dysphoria/paranoia mediates the link between childhood trauma and psychotic-like experiences in young cannabis users.
- ³⁷ Fergusson, D. M., 2005, Tests of causal linkages between cannabis use and psychotic symptoms.
- ³⁸ Henquet, C., 2005, Prospective cohort study of cannabis use, predisposition for psychosis, and psychotic symptoms in young people.
- ³⁹ Jones, H. J., 2018, Association of Combined Patterns of Tobacco and Cannabis Use in Adolescence With Psychotic Experiences.
- ⁴⁰ Kiburi, S. K., et al., 2021, Cannabis use in adolescence and risk of psychosis: Are there factors that moderate this relationship? A systematic review and meta-analysis.
- ⁴¹ Kuepper, R., 2011, Continued cannabis use and risk of incidence and persistence of psychotic symptoms: 10 year follow-up cohort study.
- ⁴² Marconi, A., 2016, Meta-analysis of the Association Between the Level of Cannabis Use and Risk of Psychosis.
- ⁴³ McGrath, J., 2010, Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of young adults.
- ⁴⁴ Pardo, M., et al., 2021, Early onset psychosis and cannabis use: Prevalence, clinical presentation and influence of daily use.
- ⁴⁵ Quattrone, D., et al., 2020, Daily use of high-potency cannabis is associated with more positive symptoms in first-episode psychosis patients: the EU-GEI case-control study.
- ⁴⁶ van Gastel, W. A., 2014, Change in cannabis use in the general population: a longitudinal study on the impact on psychotic experiences.
- ⁴⁷ van Os, J., 2002, Cannabis use and psychosis: a longitudinal population-based study.
- ⁴⁸ Wainberg, M., et al., 2021, Cannabis, schizophrenia genetic risk, and psychotic experiences: a cross-sectional study of 109,308 participants from the UK Biobank.
- ⁴⁹ Borges, G., 2016, A literature review and meta analyses of cannabis use and suicidality.
- ⁵⁰ Borges, G., 2017, Alcohol, cannabis and other drugs and subsequent suicide ideation and attempt among young Mexicans.
- ⁵¹ Buckner, J.D., 2017, Cannabis use and suicidal ideation: Test of the utility of the interpersonal-psychological theory of suicide.
- ⁵² C. M. Sellers, A. Diaz-Valdes Iriarte, A. Wyman Battalen and K.H.M. O'Brien, 2019, Alcohol and marijuana use as daily predictors of suicide ideation and attempts among adolescents prior to psychiatric hospitalization.
- ⁵³ Consoli, A., 2013, Suicidal behaviors in depressed adolescents: role of perceived relationships in the family.
- ⁵⁴ Gobbi, G., 2019, Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis.
- ⁵⁵ Gukasyan, N., et al., 202, Relationship between cannabis use frequency and major depressive disorder in adolescents: Findings from the National Survey on Drug Use and Health 2012-2017.
- ⁵⁶ Guo, L., et al., 2020, Associations of Substance Use Behaviors With Suicidal Ideation and Suicide Attempts Among US and Chinese Adolescents.
- ⁵⁷ Han, B., et al., 2021, Associations of Suicidality Trends With Cannabis Use as a Function of Sex and Depression Status.
- ⁵⁸ Hengartner, M.P., et al., 2020, Cannabis use during adolescence and the occurrence of depression, suicidality and anxiety disorder across adulthood: Findings from a longitudinal cohort study over 30 years.
- ⁵⁹ Kokkevi, A., 2012, Multiple substance use and self-reported suicide attempts by adolescents in 16 European countries.
- ⁶⁰ Labuhn, M. et al., 2021, Trends and instigators among young adolescent suicide in the United States.

-
- ⁶¹ Sampasa-Kanyinga, H., 2017, Prevalence and correlates of suicidal ideation and attempts among children and adolescents.
- ⁶² Silins, E., 2014, Young adult sequelae of adolescent cannabis use: and integrative analysis.
- ⁶³ Weeks, M., 2017, Predictors of Suicidal Behaviors in Canadian Adolescents with No Recent History of Depression.
- ⁶⁴ Zhang, X., 2014, Suicidal ideation and substance use among adolescents and young adults: a bidirectional relation?
- ⁶⁵ Barrington-Trimis, J. L., et al., 2020, Risk of Persistence and Progression of Use of 5 Cannabis Products After Experimentation Among Adolescents.
- ⁶⁶ Di Forti, M., 2015, Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study.
- ⁶⁷ Di Forti, M., 2019, The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study.
- ⁶⁸ Hines, L.A., et al., 2020, Association of High-Potency Cannabis Use With Mental Health and Substance Use in Adolescence.
- ⁶⁹ Di Forti, M., 2015, Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study.
- ⁷⁰ Di Forti, M., 2019, The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study.
- ⁷¹ Quattrone, D., et al., 2020, Daily use of high-potency cannabis is associated with more positive symptoms in first-episode psychosis patients: the EU-GEI case-control study.
- ⁷² Brook, J. S., 1999, The risks for late adolescence of early adolescent marijuana use.
- ⁷³ Guttmanova, K., 2017, The association between regular marijuana use and adult mental health outcomes.
- ⁷⁴ Lynne-Landsman, S.D., 2010, Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment.
- ⁷⁵ Otten, R., 2017, The social exigencies of the gateway progression to the use of illicit drugs from adolescence into adulthood.
- ⁷⁶ Silins, E., 2017, A prospective study of the substance use and mental health outcomes of young adult former and current cannabis users.
- ⁷⁷ Swift, W., 2012, Cannabis and progression to other substance use in young adults: findings from a 13-year prospective population-based study.
- ⁷⁸ Forman-Hoffman, V.L., 2017, Marijuana Use, Recent Marijuana Initiation, and Progression to Marijuana Use Disorder Among Young Male and Female Adolescents Aged 12-14 Living in US Households.
- ⁷⁹ Hasin, D.S., 2015, Prevalence of Marijuana Use Disorders in the United States Between 2001-2002 and 2012-2013.
- ⁸⁰ Marel, C., 2019, Conditional probabilities of substance use disorders and associated risk factors: Progression from first use to use disorder on alcohol, cannabis, stimulants, sedatives and opioids.
- ⁸¹ Millar, S.R. et al., 2021, Relationships between age at first substance use and persistence of cannabis use and cannabis use disorder.
- ⁸² Richter, L., 2017, Assessing the risk of marijuana use disorder among adolescents and adults who use marijuana.
- ⁸³ Schuermeyer, J., 2014, Temporal trends in marijuana attitudes, availability and use in Colorado compared to non-medical marijuana states: 2003-11.
- ⁸⁴ Simpson, K.A., et al., 2021, The association of type of cannabis product used and frequency of use with problematic cannabis use in a sample of young adult cannabis users.
- ⁸⁵ Swift, W., 2008, Adolescent cannabis users at 24 years: trajectories to regular weekly use and dependence in young adulthood.
- ⁸⁶ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ⁸⁷ Brook, J. S., 1999, The risks for late adolescence of early adolescent marijuana use.

-
- ⁸⁸ Feingold, D., et al., 2020, Probability and correlates of transition from cannabis use to DSM-5 cannabis use disorder: Results from a large-scale nationally representative study.
- ⁸⁹ Lanza, H.I., 2021, Tobacco and cannabis poly-substance and poly-product use trajectories across adolescence and young adulthood.
- ⁹⁰ Lynne-Landsman, S.D., 2010, Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment.
- ⁹¹ Millar, S.R. et al., 2021, Relationships between age at first substance use and persistence of cannabis use and cannabis use disorder.
- ⁹² Silins, E., 2014, Young adult sequelae of adolescent cannabis use: an integrative analysis.
- ⁹³ Silins, E., 2017, A prospective study of the substance use and mental health outcomes of young adult former and current cannabis users.
- ⁹⁴ Simpson, K.A., et al., 2021, The association of type of cannabis product used and frequency of use with problematic cannabis use in a sample of young adult cannabis users.
- ⁹⁵ Fergusson, D.M., 2000, Does cannabis use encourage other forms of illicit drug use?
- ⁹⁶ Fergusson, D.M., 2006, Cannabis use and other illicit drug use: testing the cannabis gateway hypothesis.
- ⁹⁷ Fiellin, L.E., Previous use of alcohol, cigarettes, and marijuana and subsequent abuse of prescription opioids in young adults.
- ⁹⁸ Lynne-Landsman, S.D., 2010, Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment.
- ⁹⁹ Moss, H.B., 2014, Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample.
- ¹⁰⁰ Nakawaki, B., 2012, Predicting adolescents' persistence, non-persistence, and recent onset of nonmedical use of opioids and stimulants.
- ¹⁰¹ Schepis, T.S., 2008, Characterizing adolescent prescription misusers: a population-based study.
- ¹⁰² Shanahan, L., et al., 2021, Frequent teenage cannabis use: Prevalence across adolescence and associations with young adult psychopathology and functional well-being in an urban cohort.
- ¹⁰³ Silins, E., 2014, Young adult sequelae of adolescent cannabis use: an integrative analysis.
- ¹⁰⁴ Silins, E., 2017, A prospective study of the substance use and mental health outcomes of young adult former and current cannabis users.
- ¹⁰⁵ Swift, W., 2012, Cannabis and progression to other substance use in young adults: findings from a 13-year prospective population-based study.
- ¹⁰⁶ Taylor, M., 2017, Patterns of cannabis use during adolescence and their association with harmful substance use behaviour: findings from a UK birth cohort.
- ¹⁰⁷ Zaman, T., 2015, Co-Occurrence of Substance-Related and Other Mental Health Disorders Among Adolescent Cannabis Users.
- ¹⁰⁸ Berg, C.J., 2018, Cigarette use trajectories in young adults: Analyses of predictors across system levels.
- ¹⁰⁹ Brook, J. S., 1999, The risks for late adolescence of early adolescent marijuana use.
- ¹¹⁰ Cornacchione Ross, J., 2020, Longitudinal associations between marijuana and cigar use in young adults.
- ¹¹¹ Guttmanova, K., 2017, The association between regular marijuana use and adult mental health outcomes.
- ¹¹² Lanza, H.I., 2021, Tobacco and cannabis poly-substance and poly-product use trajectories across adolescence and young adulthood.
- ¹¹³ Mayer, M.E., et al., 2019, Blunt and Non-Blunt Cannabis Use and Risk of Subsequent Combustible Tobacco Product Use Among Adolescents.
- ¹¹⁴ Otten, R., 2017, The social exigencies of the gateway progression to the use of illicit drugs from adolescence into adulthood.
- ¹¹⁵ Rubinstein, M.L., 2014, Frequent marijuana use is associated with greater nicotine addiction in adolescent smokers.
- ¹¹⁶ Silins, E., 2017, A prospective study of the substance use and mental health outcomes of young adult former and current cannabis users.

-
- ¹¹⁷ Swift, W., 2012, Cannabis and progression to other substance use in young adults: findings from a 13-year prospective population-based study.
- ¹¹⁸ Taylor, M., 2017, Patterns of cannabis use during adolescence and their association with harmful substance use behaviour: findings from a UK birth cohort.
- ¹¹⁹ Yu. B., 2018, Dynamic transitions between marijuana use and cigarette smoking among US adolescents and emerging adults.
- ¹²⁰ National Academies of Sciences, Engineering, and Medicine 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24625>.
- ¹²¹ Alhusen, J. L., 2013, Intimate partner violence, substance use, and adverse neonatal outcomes among urban women.
- ¹²² Bandoli, G., et al., 2021, Cannabis-related diagnosis in pregnancy and adverse maternal and infant outcomes.
- ¹²³ Corsi, D., 2019, Association Between Self-reported Prenatal Cannabis Use and Maternal, Perinatal, and Neonatal Outcomes.
- ¹²⁴ Hayatbakhsh, M. R., 2012, Birth outcomes associated with cannabis use before and during pregnancy.
- ¹²⁵ Kharbanda, E. O., et al., 2020, Birth and early developmental screening outcomes associated with cannabis exposure during pregnancy.
- ¹²⁶ Koto, P., et al., 2022, Maternal Cannabis Use During Pregnancy and Maternal and Neonatal Outcomes: A Retrospective Cohort Study.
- ¹²⁷ Luke, S., 2019, Cannabis Use in Pregnancy in British Columbia and Selected Birth Outcomes.
- ¹²⁸ Marchand, G., et al., 2022, Birth Outcomes of Neonates Exposed to Marijuana in Utero: A Systematic Review and Meta-analysis.
- ¹²⁹ Nguyen, V. H., et al., 2021, Prenatal cannabis use and infant birth outcomes in the Pregnancy Risk Assessment Monitoring System.
- ¹³⁰ Rodriguez, C. E., et al., 2019, Marijuana use in young mothers and adverse pregnancy outcomes: a retrospective cohort study.
- ¹³¹ Sasso, E. B., et al., 2021, Marijuana use and perinatal outcomes in obstetric patients at a safety net hospital.
- ¹³² Saurelo Cubizolles, M. J., 2014, Cannabis use during pregnancy in France in 2010.
- ¹³³ Shi, Y., et al., 2021, The associations between prenatal cannabis use disorder and neonatal outcomes.
- ¹³⁴ Straub, H. L., et al., 2019, Maternal Marijuana Exposure and Birth Weight: An Observational Study Surrounding Recreational Marijuana Legalization.
- ¹³⁵ Warshak, C. R., 2015, Association between marijuana use and adverse obstetrical and neonatal outcomes.
- ¹³⁶ Betts, K. S., et al., 2021, Prenatal cannabis use disorders and offspring primary and secondary educational outcomes.
- ¹³⁷ Fried, P. A., 1997, Reading and language in 9- to 12-year olds prenatally exposed to cigarettes and marijuana.
- ¹³⁸ Goldschmidt, L., 2004, Prenatal marijuana and alcohol exposure and academic achievement at age 10.
- ¹³⁹ Goldschmidt, L., 2012, School achievement in 14-year-old youths prenatally exposed to marijuana.
- ¹⁴⁰ Cioffredi, L. A., et al., 2022, Prenatal cannabis exposure predicts attention problems, without changes on fMRI in adolescents.
- ¹⁴¹ El Marroun, H., 2009, Intrauterine cannabis exposure affects fetal growth trajectories: the Generation R Study.
- ¹⁴² Fried, P. A., 2001, A literature review of the consequences of prenatal marihuana exposure. An emerging theme of a deficiency in aspects of executive function.
- ¹⁴³ Goldschmidt, L., 2004, Prenatal marijuana and alcohol exposure and academic achievement at age 10.
- ¹⁴⁴ Noland, J. S., 2005, Prenatal drug exposure and selective attention in preschoolers.
- ¹⁴⁵ Paul, S. E., et al., 2020, Associations Between Prenatal Cannabis Exposure and Childhood Outcomes: Results From the ABCD Study.
- ¹⁴⁶ Fried, P. A., 2003, Differential effects on cognitive functioning in 13- to 16-year-olds prenatally exposed to cigarettes and marihuana.
- ¹⁴⁷ Smith, A. M., 2004, Effects of prenatal marijuana on response inhibition: an fMRI study of young adults.

-
- ¹⁴⁸ Willford, J. A., 2010, Effects of prenatal tobacco, alcohol and marijuana exposure on processing speed, visual-motor coordination, and interhemispheric transfer.
- ¹⁴⁹ Day, N. L., 1994, Effect of prenatal marijuana exposure on the cognitive development of offspring at age three.
- ¹⁵⁰ Goldschmidt, L., 2008, Prenatal marijuana exposure and intelligence test performance at age 6.
- ¹⁵¹ ElSohly, M. A., 1998, delta 9-THC metabolites in meconium: identification of 11-OH-delta 9-THC, 8 beta,11-diOH-delta 9-THC, and 11-nor-delta 9-THC-9-COOH as major metabolites of delta 9-THC.
- ¹⁵² ElSohly, M. A., 1999, Immunoassay and GC-MS procedures for the analysis of drugs of abuse in meconium.
- ¹⁵³ Falcon, M., 2012, Maternal hair testing for the assessment of fetal exposure to drug of abuse during early pregnancy: Comparison with testing in placental and fetal remains.
- ¹⁵⁴ Joya, X., 2010, Gas chromatography-mass spectrometry assay for the simultaneous quantification of drugs of abuse in human placenta at 12th week of gestation.
- ¹⁵⁵ Kim, J., 2018, Detection of in utero cannabis exposure by umbilical cord analysis.
- ¹⁵⁶ Marchei, E., 2006, Quantification of Delta9-tetrahydrocannabinol and its major metabolites in meconium by gas chromatographic-mass spectrometric assay: assay validation and preliminary results of the "meconium project".
- ¹⁵⁷ Perez-Reyes, M., 1973, Pharmacology of orally administered 9 -tetrahydrocannabinol.
- ¹⁵⁸ Moss, M. J., et al., 2021, Cannabis use and measurement of cannabinoids in plasma and breast milk of breastfeeding mothers.
- ¹⁵⁹ Perez-Reyes, M., 1982, Presence of delta9-tetrahydrocannabinol in human milk.
- ¹⁶⁰ Sempio, C., et al., 2020, Detection of Cannabinoids by LC-MS-MS and ELISA in Breast Milk.
- ¹⁶¹ Wymore, E. M., 2021, Persistence of Δ-9-Tetrahydrocannabinol in Human Breast Milk.
- ¹⁶² Barsky, S. H., 1998, Histopathologic and molecular alterations in bronchial epithelium in habitual smokers of marijuana, cocaine, and/or tobacco.
- ¹⁶³ Fligel, S. E., 1997, Tracheobronchial histopathology in habitual smokers of cocaine, marijuana, and/or tobacco.
- ¹⁶⁴ Gong, H., Jr., 1987, Tracheobronchial changes in habitual, heavy smokers of marijuana with and without tobacco.
- ¹⁶⁵ Gieringer, D., 1996, Waterpipe Study.
- ¹⁶⁶ Gieringer, D., 2004, Cannabis Vaporizer Combines Efficient Delivery of THC with Effective Suppression of Pyrolytic Compounds.
- ¹⁶⁷ Lee, M. L., 1976, Gas chromatography/mass spectrometric and nuclear magnetic resonance spectrometric studies of carcinogenic polynuclear aromatic hydrocarbons in tobacco and marijuana smoke condensates.
- ¹⁶⁸ Moir, D., 2008, A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions.
- ¹⁶⁹ Sparacino, C. M., 1990, Chemical and Biological Analysis of Marijuana Smoke Condensate.
- ¹⁷⁰ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ¹⁷¹ Callaghan, R. C., 2017, Cannabis Use and Incidence of Testicular Cancer: A 42-Year Follow-up of Swedish Men between 1970 and 2011.
- ¹⁷² Daling, J. R., 2009, Association of marijuana use and the incidence of testicular germ cell tumors.
- ¹⁷³ Gurney, J., 2015, Cannabis exposure and risk of testicular cancer: a systematic review and meta-analysis.
- ¹⁷⁴ Lacson, J. C. A., 2012, Population-based case-control study of recreational drug use and testis cancer risk confirms an association between marijuana use and nonseminoma risk.
- ¹⁷⁵ Trabert, B., 2011, Marijuana use and testicular germ cell tumors.
- ¹⁷⁶ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ¹⁷⁷ Barber, P. A., 2013, Cannabis, ischemic stroke, and transient ischemic attack: a case-control study.
- ¹⁷⁸ Desai, R., et al., 2019, Stroke in young cannabis users (18-49 years): National trends in hospitalizations and outcomes.
- ¹⁷⁹ Geller, T., 2004, Cerebellar infarction in adolescent males associated with acute marijuana use.
- ¹⁸⁰ Hackam, D. G., 2015, Cannabis and stroke: systematic appraisal of case reports.

-
- ¹⁸¹ Hemachandra, D., 2016, Heavy cannabis users at elevated risk of stroke: evidence from a general population survey.
- ¹⁸² Kalla, A., 2018, Cannabis use predicts risks of heart failure and cerebrovascular accidents: results from the National Inpatient Sample.
- ¹⁸³ Parekh, T., et al., 2020, Marijuana Use Among Young Adults (18-44 Years of Age) and Risk of Stroke: A Behavioral Risk Factor Surveillance System Survey Analysis.
- ¹⁸⁴ Rumalla, K., 2016, Recreational marijuana use and acute ischemic stroke: A population-based analysis of hospitalized patients in the United States.
- ¹⁸⁵ Shah, S., et al., 2020, Association of Marijuana Use and Cardiovascular Disease: A Behavioral Risk Factor Surveillance System Data Analysis of 133,706 US Adults.
- ¹⁸⁶ Thanvi, B. R., 2009, Cannabis and stroke: is there a link?
- ¹⁸⁷ van Winkel, R., 2011, Family-based analysis of genetic variation underlying psychosis-inducing effects of cannabis: sibling analysis and proband follow-up.
- ¹⁸⁸ Vin-Raviv, N., 2017, Marijuana use and inpatient outcomes among hospitalized patients: analysis of the nationwide inpatient sample database.
- ¹⁸⁹ Westover, A. N., 2007, Stroke in young adults who abuse amphetamines or cocaine: a population-based study of hospitalized patients.
- ¹⁹⁰ Wolff, V., 2013, Cannabis-related stroke: myth or reality?.
- ¹⁹¹ Allen, J.H., 2004, Cannabinoid hyperemesis: cyclical hyperemesis in association with chronic cannabis abuse.
- ¹⁹² Bhandari, S., 2017, Clinical Characteristics, Comorbidities and Hospital Outcomes in Hospitalizations with Cyclic Vomiting Syndrome: A Nationwide Analysis.
- ¹⁹³ Contreras Narvaez, C., 2016, Cannabinoid hyperemesis syndrome. A report of six new cases and a summary of previous reports.
- ¹⁹⁴ Donnino, M.W., 2011, Cannabinoid hyperemesis: a case series.
- ¹⁹⁵ Kim, H.S., 2015, Cyclic vomiting presentations following marijuana liberalization in Colorado.
- ¹⁹⁶ Klassen, J., 2018, Cannabinoid Hyperemesis Syndrome Masquerading as Uremia: An Educational Case Report.
- ¹⁹⁷ Lonsdale, H., et al., 2020, Pediatric Cannabinoid Hyperemesis : A Single Institution 10-Year Case Series.
- ¹⁹⁸ Monte, A.A., 2019, Acute Illness Associated With Cannabis Use, by Route of Exposure: An Observational Study.
- ¹⁹⁹ Nicolson, S.E., 2012, Cannabinoid hyperemesis syndrome: a case series and review of previous reports.
- ²⁰⁰ Nourbakhsh, M., 2018, Cannabinoid Hyperemesis Syndrome: Reports of Fatal Cases.
- ²⁰¹ Rotella, J.A., et al., 2022, Cannabinoid hyperemesis syndrome : A 6-year audit of adult presentations to an urban district hospital.
- ²⁰² Russo, E.B., 2021, Cannabinoid Hyperemesis Syndrome Survey and Genomic Investigation.
- ²⁰³ Simonetto, D.A., 2012, Cannabinoid hyperemesis: a case series of 98 patients.
- ²⁰⁴ Soriano-Co, M., 2010, The cannabis hyperemesis syndrome characterized by persistent nausea and vomiting, abdominal pain, and compulsive bathing associated with chronic marijuana use: a report of eight cases in the United States.
- ²⁰⁵ Von Both, I., et al., 2021, Death of a young woman with cyclic vomiting: a case report.
- ²⁰⁶ Wallace, E.A., 2011, Cannabinoid hyperemesis syndrome: literature review and proposed diagnosis and treatment algorithm.
- ²⁰⁷ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ²⁰⁸ Aldington, S., 2007, Effects of cannabis on pulmonary structure, function and symptoms.
- ²⁰⁹ Bloom, J. W., 1987, Respiratory effects of non-tobacco cigarettes.
- ²¹⁰ Kempker, J. A., 2015, The effects of marijuana exposure on expiratory airflow. A study of adults who participated in the U.S. National Health and Nutrition Examination Study.
- ²¹¹ Macleod, J., 2015, Cannabis, tobacco smoking, and lung function: a cross-sectional observational study in a general practice population.
- ²¹² Moore, B. A., 2005, Respiratory effects of marijuana and tobacco use in a U.S. sample.

-
- ²¹³ Morris, M. A., 2018, Marijuana Use Associations with Pulmonary Symptoms and Function in Tobacco Smokers Enrolled in the Subpopulations and Intermediate Outcome Measures in COPD Study (SPIROMICS).
- ²¹⁴ Roth, M. D., 1998, Airway inflammation in young marijuana and tobacco smokers.
- ²¹⁵ Sherrill, D. L., 1991, Respiratory effects of non-tobacco cigarettes: a longitudinal study in general population.
- ²¹⁶ Tashkin, D. P., 1987, Respiratory symptoms and lung function in habitual heavy smokers of marijuana alone, smokers of marijuana and tobacco, smokers of tobacco alone, and nonsmokers.
- ²¹⁷ Taylor, D. R., 2000, The respiratory effects of cannabis dependence in young adults.
- ²¹⁸ Auer, R., 2016, Association Between Lifetime Marijuana Use and Cognitive Function in Middle Age: The Coronary Artery Risk Development in Young Adults (CARDIA) Study.
- ²¹⁹ Bolla, K. I., 2002, Dose-related neurocognitive effects of marijuana use.
- ²²⁰ Pope, H. G., Jr., 2001, Neuropsychological performance in long-term cannabis users.
- ²²¹ Rodgers, J., 2001, Differential effects of Ecstasy and cannabis on self-reports of memory ability: a web-based study.
- ²²² Roebke, P. V., 2014, Verbal learning in marijuana users seeking treatment: a comparison between depressed and non-depressed samples.
- ²²³ Sanchez-Torres, A. M., 2013, Lifetime cannabis use and cognition in patients with schizophrenia spectrum disorders and their unaffected siblings.
- ²²⁴ Schoeler, T., 2016, The effects of cannabis on memory function in users with and without a psychotic disorder: findings from a combined meta-analysis.
- ²²⁵ Solowij, N., 2002, Cognitive Functioning of Long-term Heavy Cannabis Users Seeking Treatment.
- ²²⁶ Thames, A. D., 2014, Cannabis use and neurocognitive functioning in a non-clinical sample of users.
- ²²⁷ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ²²⁸ Curran, H. V., 2018, Which biological and self-report measures of cannabis use predict cannabis dependency and acute psychotic-like effects?
- ²²⁹ D'Souza, D. C., 2004, The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: implications for psychosis.
- ²³⁰ Englund, A., 2016, The effect of five day dosing with THCV on THC-induced cognitive, psychological and physiological effects in healthy male human volunteers: A placebo-controlled, double-blind, crossover pilot trial.
- ²³¹ Mason, O., 2009, Acute cannabis use causes increased psychotomimetic experiences in individuals prone to psychosis.
- ²³² Morgan, C. J., 2010, Hyper-priming in cannabis users: a naturalistic study of the effects of cannabis on semantic memory function.
- ²³³ Morrison, P. D., 2009, The acute effects of synthetic intravenous Delta9-tetrahydrocannabinol on psychosis, mood and cognitive functioning.
- ²³⁴ Morrison, P. D., 2011, Synthetic delta-9-tetrahydrocannabinol elicits schizophrenia-like negative symptoms which are distinct from sedation.
- ²³⁵ Nestoros, J.N., 2017, Long lasting effects of chronic heavy cannabis abuse.
- ²³⁶ Di Forti, M., 2015, Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study.
- ²³⁷ Di Forti, M., 2019, The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study.
- ²³⁸ Giordano, G. N., 2015, The association between cannabis abuse and subsequent schizophrenia: a Swedish national co-relative control study.
- ²³⁹ Hjorthøj, C., et al., 2021, Development Over Time of the Population-Attributable Risk Fraction for Cannabis Use Disorder in Schizophrenia in Denmark.
- ²⁴⁰ Nielsen, S. M., 2017, Association between alcohol, cannabis, and other illicit substance abuse and risk of developing schizophrenia: a nationwide population based register study.
- ²⁴¹ Sideli, L., 2018, Interaction between cannabis consumption and childhood abuse in psychotic disorders: preliminary findings on the role of different patterns of cannabis use.

-
- ²⁴² van Os, J., 2002, Cannabis use and psychosis: a longitudinal population-based study.
- ²⁴³ Di Forti, M., 2015, Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study.
- ²⁴⁴ Di Forti, M., 2019, The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study.
- ²⁴⁵ Sideli, L., 2018, Interaction between cannabis consumption and childhood abuse in psychotic disorders: preliminary findings on the role of different patterns of cannabis use.
- ²⁴⁶ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ²⁴⁷ Blanco, C., 2016, Cannabis Use and Risk of Psychiatric Disorders: Prospective Evidence From a US National Longitudinal Study.
- ²⁴⁸ Buu, A., 2017, Predictive validity of cannabis consumption measures: Results from a national longitudinal study.
- ²⁴⁹ Callaghan, R.C., et al., 2020, Quantity and frequency of cannabis use in relation to cannabis-use disorder and cannabis-related problems.
- ²⁵⁰ Feingold, D., et al., 2020, Probability and correlates of transition from cannabis use to DSM-5 cannabis use disorder: Results from a large-scale nationally representative study.
- ²⁵¹ Hasin, D.S., 2015, Prevalence of Marijuana Use Disorders in the United States Between 2001-2002 and 2012-2013.
- ²⁵² Leung, J., et al., 2020, What is the prevalence and risk of cannabis use disorders among people who use cannabis? A systematic review and meta-analysis.
- ²⁵³ Lopez-Quintero, C., 2011, Probability and predictors of transition from first use to dependence on nicotine, alcohol cannabis, and cocaine: results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).
- ²⁵⁴ Richter, L., 2017, Assessing the risk of marijuana use disorder among adolescents and adults who use marijuana.
- ²⁵⁵ Schuermeyer, J., 2014, Temporal trends in marijuana attitudes, availability and use in Colorado compared to non-medical marijuana states: 2003-11.
- ²⁵⁶ Bahji, A., et al., 2020, Prevalence of Cannabis Withdrawal Symptoms Among People With Regular or Dependent Use of Cannabinoids: A Systematic Review and Meta-analysis.
- ²⁵⁷ Budney, A.J., 1998, Adults seeking treatment for marijuana dependence: a comparison with cocaine-dependent treatment seekers.
- ²⁵⁸ Budney, A.J., 1999, Marijuana withdrawal among adults seeking treatment for marijuana dependence.
- ²⁵⁹ Budney, A.J., 2003, The time course and significance of cannabis withdrawal.
- ²⁶⁰ Budney, A.J., 2007, Oral delta-9-tetrahydrocannabinol suppresses cannabis withdrawal symptoms.
- ²⁶¹ Budney, A.J., 2008, Comparison of cannabis and tobacco withdrawal: severity and contribution to relapse.
- ²⁶² Cousijn, J., 2018, Cognitive and Mental Health Predictors of Withdrawal Severity During an Active Attempt to Cut Down Cannabis Use.
- ²⁶³ Greene, M.C., 2014, The prevalence of cannabis withdrawal and its influence on adolescents' treatment response and outcomes: a 12-month prospective investigation.
- ²⁶⁴ Hasin, D.S., 2008, Cannabis withdrawal in the United States: results from NESARC.
- ²⁶⁵ Herrmann, E.S., 2015, Sex differences in cannabis withdrawal symptoms among treatment-seeking cannabis users.
- ²⁶⁶ Jacobus, J., 2017, Changes in marijuana use symptoms and emotional functioning over 28-days of monitored abstinence in adolescent marijuana users.
- ²⁶⁷ Livne, O., 2018, DSM-5 cannabis withdrawal syndrome: Demographic and clinical correlates in U.S. adults.
- ²⁶⁸ Perron, B.E., 2019, Mental health functioning and severity of cannabis withdrawal among medical cannabis users with chronic pain.
- ²⁶⁹ Sexton, M., 2018, A Survey of Cannabis Acute Effects and Withdrawal Symptoms: Differential Responses Across User Types and Age.
- ²⁷⁰ Vandrey, R.G., 2005, A cross-study comparison of cannabis and tobacco withdrawal.

-
- ²⁷¹ Vandrey, R.G., 2008, A within-subject comparison of withdrawal symptoms during abstinence from cannabis, tobacco, and both substances.
- ²⁷² Vandrey, R.G., 2005, Cannabis withdrawal in adolescent treatment seekers.
- ²⁷³ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ²⁷⁴ Ibid.
- ²⁷⁵ Ibid.
- ²⁷⁶ Ibid.
- ²⁷⁷ Ibid.
- ²⁷⁸ Ibid.
- ²⁷⁹ Ibid.
- ²⁸⁰ Abramovici, H., 2018, Information of Health Care Professionals: Cannabis (marihuana, marijuana) and the cannabinoids.
- ²⁸¹ Benowitz, N.L., 1980, Metabolic and psychophysiologic studies of cannabidiol-hexobarbital interaction.
- ²⁸² Bland, T.M., 2005, CYP2C-catalyzed delta9-tetrahydrocannabinol metabolism: kinetics, pharmacogenetics and interaction with phenytoin.
- ²⁸³ Brown, G.W., et al., 2020, Δ-9-tetrahydrocannabinol dose increase leads to warfarin drug interaction and elevated INR.
- ²⁸⁴ Chetty, M., 1994, Smoking and body weight influence the clearance of chlorpromazine.
- ²⁸⁵ Cornelius, J.R., 2010, Double-blind fluoxetine trial in comorbid MDD-CUD youth and young adults.
- ²⁸⁶ D'Souza, D.C., 2008, Blunted psychotomimetic and amnesic effects of delta-9-tetrahydrocannabinol in frequent users of cannabis.
- ²⁸⁷ Gardner, M.J., 1983, Effects of tobacco smoking and oral contraceptive use on theophylline disposition.
- ²⁸⁸ Ge, B., 2014, Updates on the clinical evidenced herb-warfarin interactions.
- ²⁸⁹ Geffrey, A.L., 2015, Drug-drug interaction between clobazam and cannabidiol in children with refractory epilepsy.
- ²⁹⁰ Jessen, K., 2004, Recreational use of phenytoin, marijuana, and alcohol: a case report.
- ²⁹¹ Jusko, W.J., 1979, Factors affecting theophylline clearances: age, tobacco, marijuana, cirrhosis, congestive heart failure, obesity, oral contraceptives, benzodiazepines, barbiturates, and ethanol.
- ²⁹² Kosel, B.W., 2002, The effects of cannabinoids on the pharmacokinetics of indinavir and nelfinavir.
- ²⁹³ Stott, C., 2013, A Phase I, open-label, randomized, crossover study in three parallel groups to evaluate the effect of Rifampicin, Ketoconazole, and Omeprazole on the pharmacokinetics of THC/CBD oromucosal spray in healthy volunteers.
- ²⁹⁴ AbbVie Inc. MARINOL (dronabinol) capsules for oral use, CIII (package insert), 2017.
- ²⁹⁵ Wilens, T.E., 1997, Case study: adverse effects of smoking marijuana while receiving tricyclic antidepressants.
- ²⁹⁶ Yamreudeewong, W., 2009, Probably interaction between warfarin and marijuana smoking.
- ²⁹⁷ Zullino, D.F., 2002, Tobacco and cannabis smoking cessation can lead to intoxication with clozapine or olanzapine.
- ²⁹⁸ Azofeifa A., 2018. Driving Under the Influence of Marijuana and Illicit Drugs Among Persons Aged ≥16 Years – United States, 2018.
- ²⁹⁹ Chihuri, S., 2017, Interaction of marijuana and alcohol on fatal motor vehicle crash risk: a case-control study.
- ³⁰⁰ Chihuri, S., et al., 2020, Direct and indirect effects of marijuana use on the risk of fatal 2-vehicle crash initiation.
- ³⁰¹ Drummer, O.H., 2004, The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes.
- ³⁰² Drummer, O.H., 2020, Odds of culpability associated with use of impairing drugs in injured drivers in Victoria, Australia.
- ³⁰³ Dubois, S., 2015, The combined effects of alcohol and cannabis on driving: Impact on crash risk.
- ³⁰⁴ Fierro, I., 2014, The relationship between observed signs of impairment and THC concentration in oral fluid.
- ³⁰⁵ Hartman, R.L., 2015, Cannabis effects on driving lateral control with and without alcohol.
- ³⁰⁶ Laumon, B., 2005, Cannabis intoxication and fatal road crashes in France: population based case-control study.

-
- ³⁰⁷ Li, G., 2017, Role of alcohol and marijuana use in the initiation of fatal two-vehicle crashes.
- ³⁰⁸ Mura, P., 2003, Comparison of the prevalence of alcohol, cannabis and other drugs between 900 injured drivers and 900 control subjects: results of a French collaborative study.
- ³⁰⁹ Romano, E., 2017, Cannabis and crash responsibility while driving below the alcohol per se legal limit.
- ³¹⁰ Sewell, R.A., 2009, The effect of cannabis compared with alcohol on driving.
- ³¹¹ Drummer, O.H., 2004, The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes.
- ³¹² Kuypers, K.P., 2012, A case-control study estimating accident risk for alcohol, medicines and illegal drugs.
- ³¹³ Laumon, B., 2005, Cannabis intoxication and fatal road crashes in France: population based case-control study.
- ³¹⁴ Arkell, T.R., et al., 2020, Effect of Cannabidiol and $\Delta 9$ -Tetrahydrocannabinol on Driving Performance: A Randomized Clinical Trial.
- ³¹⁵ Berghaus, G. 1995, Effects of cannabis on psychomotor skills and driving performance – a metaanalysis of experimental studies.
- ³¹⁶ Berghaus, G., 2011, Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving.
- ³¹⁷ Brooks-Russell, A., 2021, Simulated driving performance among daily and occasional cannabis users.
- ³¹⁸ Grotenhermen, F., 2007, Developing limits for driving under cannabis.
- ³¹⁹ Hartman, R.L., 2013, Cannabis effects on driving skills.
- ³²⁰ Ortiz-Peregrina, S., 2020, Effects of Smoking Cannabis on visual function and Driving Performance. A Driving-simulator Based Study.
- ³²¹ Vindenes, V., 2013, How the intake of THC by cannabis users changed over the last decade? Evidence of increased exposure by analysis of blood THC concentrations in impaired drivers.
- ³²² Asbridge, M., 2012, Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis.
- ³²³ Chihuri, S., 2017, Interaction of marijuana and alcohol on fatal motor vehicle crash risk: a case-control study.
- ³²⁴ Chihuri, S., 2020, Direct and indirect effects of marijuana use on the risk of fatal 2-vehicle crash initiation.
- ³²⁵ Del Balzo, G., 2018, “Positive” urine testing for Cannabis is associated with increased risk of traffic crashes.
- ³²⁶ Drummer, O.H., et al., 2020, Odds of culpability associated with use of impairing drugs in injured drivers in Victoria, Australia.
- ³²⁷ Gjerde, H., 2015, Driving Under the Influence of Non-Alcohol Drugs—An Update Part I: Epidemiological Studies.
- ³²⁸ Hartman, R.L., 2013, Cannabis effects on driving skills.
- ³²⁹ Li, G., 2017, Role of alcohol and marijuana use in the initiation of fatal two-vehicle crashes.
- ³³⁰ Preuss, U.W., et al., 2021, Cannabis Use and Car Crashes: A Review.
- ³³¹ Rogeberg, O., 2018, A meta-analysis of the crash risk of cannabis-positive drivers in culpability studies-Avoiding interpretational bias.
- ³³² Romano, E., 2017, Cannabis and crash responsibility while driving below the alcohol per se legal limit.
- ³³³ Berghaus, G., 2011, Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving.
- ³³⁴ Bosker, W.M., 2012, Medicinal Delta(9) -tetrahydrocannabinol (dronabinol) impairs on-the-road driving performance of occasional and heavy users but is not detected in Standard Field Sobriety Tests.
- ³³⁵ Curran, H.V., 2002, Cognitive and subjective dose-response effects of acute oral Delta 9-tetrahydrocannabinol (THC) in infrequent cannabis users.
- ³³⁶ Menetrey, A., 2005, Assessment of driving capability through the use of clinical and psychomotor tests in relation to blood cannabinoid levels following oral administration of 20 mg dronabinol or of a cannabis decoction made with 20 or 60 mg Delta9-THC.
- ³³⁷ Berghaus, G. 1995, Effects of cannabis on psychomotor skills and driving performance – a metaanalysis of experimental studies.
- ³³⁸ Berghaus, G., 2011, Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving.

-
- ³³⁹ Curran, H.V., 2002, Cognitive and subjective dose-response effects of acute oral Delta 9-tetrahydrocannabinol (THC) in infrequent cannabis users.
- ³⁴⁰ Hartman, R.L., 2015, Cannabis effects on driving lateral control with and without alcohol.
- ³⁴¹ Hunault, C.C., 2009, cognitive and psychomotor effects in males after smoking a combination of tobacco and cannabis containing up to 69 mg delta-9-tetrahydrocannabinol (THC).
- ³⁴² Kelly, T.H., 1993, Performance-based testing for drugs of abuse: dose and time profiles of marijuana, amphetamine, alcohol, and diazepam.
- ³⁴³ Lenne, M.G., 2010, The effects of cannabis and alcohol on simulated arterial driving: Influences of driving experience and task demand.
- ³⁴⁴ Micallef, J., 2018, Cannabis smoking impairs driving performance on the simulator and real driving: a randomized, double-blind, placebo-controlled, crossover trial.
- ³⁴⁵ Ramaekers, J.G., 2006, cognition and motor control as a function of Delta9-THC concentration in serum and oral fluid: limits of impairment.
- ³⁴⁶ Ramaekers, J.G., 2006, High-potency marijuana impairs executive function and inhibitory motor control.
- ³⁴⁷ Ramaekers, J.G., 2009, Neurocognitive performance during acute THC intoxication in heavy and occasional cannabis users.
- ³⁴⁸ Ronen, A., 2008, Effects of THC on driving performance, physiological state and subjective feelings relative to alcohol.
- ³⁴⁹ Tank, A., 2019, On the impact of cannabis consumption on traffic safety: a driving simulator study with habitual cannabis consumers.
- ³⁵⁰ Weinstein, A., 2008, A study investigating the acute dose-response effects of 13 mg and 17 mg Delta 9-tetrahydrocannabinol on cognitive-motor skills, subjective and autonomic measures in regular users of marijuana.
- ³⁵¹ Berghaus, G., 2011, Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving.
- ³⁵² Curran, H.V., 2002, Cognitive and subjective dose-response effects of acute oral Delta 9-tetrahydrocannabinol (THC) in infrequent cannabis users.
- ³⁵³ Huestis, M.A., 2007, Human cannabinoid pharmacokinetics.
- ³⁵⁴ Menetrey, A., 2005, Assessment of driving capability through the use of clinical and psychomotor tests in relation to blood cannabinoids levels following oral administration of 20 mg dronabinol or of a cannabis decoction made with 20 or 60 mg Delta9-THC.
- ³⁵⁵ Hunault, C.C., 2009, Cognitive and psychomotor effects in males after smoking a combination of tobacco and cannabis containing up to 69 mg delta-9-tetrahydrocannabinol (THC).
- ³⁵⁶ Ramaekers, J.G., 2006, Cognition and motor control as a function of Delta9-THC concentration in serum and oral fluid: limits of impairment.
- ³⁵⁷ Ramaekers, J.G., 2009, Neurocognitive performance during acute THC intoxication in heavy and occasional cannabis users.
- ³⁵⁸ Berghaus, G. 1995, Effects of cannabis on psychomotor skills and driving performance – a metaanalysis of experimental studies.
- ³⁵⁹ Berghaus, G., 2011, Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving.
- ³⁶⁰ Cone, E.J., 1986, Acute effects of smoking marijuana on hormones, subjective effects and performance in male human subjects.
- ³⁶¹ Hartman, R.L., 2013, Cannabis effects on driving skills.
- ³⁶² Ramaekers, J.G., 2006, Cognition and motor control as a function of Delta9-THC concentration in serum and oral fluid: limits of impairment.
- ³⁶³ Ramaekers, J.G., 2006, High-potency marijuana impairs executive function and inhibitory motor control.
- ³⁶⁴ Tank, A., 2019, On the impact of cannabis consumption on traffic safety: a driving simulator study with habitual cannabis consumers.
- ³⁶⁵ Gieringer, D., 1996, Waterpipe Study.

-
- ³⁶⁶ Gieringer, D., 2004, Cannabis Vaporizer Combines Efficient Delivery of THC with Effective Suppression of Pyrolytic Compounds.
- ³⁶⁷ Lee, M.L., 1976, Gas chromatography/mass spectrometric and nuclear magnetic resonance spectrometric studies of carcinogenic polynuclear aromatic hydrocarbons in tobacco and marijuana smoke condensates.
- ³⁶⁸ Moir, D., 2008, A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions.
- ³⁶⁹ Sparacino, C.M., 1990, Chemical and Biological Analysis of Marijuana Smoke Condensate.
- ³⁷⁰ Holitzki, H., 2020, Health effects of exposure to second- and third-hand marijuana smoke: a systematic review.
- ³⁷¹ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ³⁷² American Nonsmokers' Rights Foundation, 2022, Secondhand Marijuana Smoke.
- ³⁷³ Malek, A.M., 2015, Secondhand Smoke Exposure and Stroke: The Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study.
- ³⁷⁴ Pacula, R.L., 2014, Developing public health regulations for marijuana: lessons from alcohol and tobacco.
- ³⁷⁵ Steinberg, J., 2020, A Tobacco Control Framework for Regulating Public Consumption of Cannabis: Multistate Analysis and Policy Implications.
- ³⁷⁶ Douglas, C.E., 2010, Smoke-free Environments Law Project: Restricting the Use of Medical Marijuana in Multi-Unit Residential Settings: Legal and Practical Considerations.
- ³⁷⁷ Gentzke, A.S., 2018, Attitudes and Experiences with Secondhand Smoke and Smoke-Free Policies Among Subsidized and Market-Rate Multiunit Housing Residents Living in Six Diverse Communities in the USA.
- ³⁷⁸ Moore, C., 2011, Cannabinoids in oral fluid following passive exposure to marijuana smoke. *Forensic Science International*.
- ³⁷⁹ Broyd, S.J., 2016, Acute and chronic effects of cannabinoids on human cognition—a systematic review. *Biological Psychiatry*.
- ³⁸⁰ Grossman, E.R., 2018, Childcare Providers' Possession or Use of Marijuana, Tobacco, or Alcohol While Caring for Children: A Comparison of US State Regulations.
- ³⁸¹ Myran, D.T., 2022, Unintentional Pediatric Cannabis Exposures After Legalization of Recreational Cannabis in Canada.
- ³⁸² Jones, C.M., 2019, Prescription Opioid Misuse and Use of Alcohol and Other Substances Among High School Students — Youth Risk Behavior Survey, United States, 2019.
- ³⁸³ National Academies of Sciences, Engineering, and Medicine, 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*.
- ³⁸⁴ Batalla, A., 2013, Structural and functional imaging studies in chronic cannabis users: a systematic review of adolescent and adult findings.
- ³⁸⁵ Dean, D., 2021, Pediatric Cannabis single-Substance Exposures Reported to the Michigan Poison Center From 2008-2019 After Medical Marijuana Legalization.
- ³⁸⁶ Myran, D.T., 2022, Unintentional Pediatric cannabis exposures after legalization of recreational cannabis in Canada.
- ³⁸⁷ Onders, B., 2015, Marijuana Exposure Among Children Younger Than Six Years in the United States.
- ³⁸⁸ Thomas, A.A., 2018, Unintentional Pediatric Marijuana Exposures at a Tertiary Care Children's Hospital in Washington State: A Retrospective Review.
- ³⁸⁹ Ibid.
- ³⁹⁰ Wang, G.S., 2013, Pediatric marijuana exposures in a medical marijuana state.
- ³⁹¹ Wang, G.S., 2014, Association of unintentional pediatric exposures with decriminalization of marijuana in the United States.
- ³⁹² Wang, G.S., 2016, Unintentional Pediatric Exposures to Marijuana in Colorado, 2009-2015.
- ³⁹³ Wang, G.S., 2019, The Continued Impact of Marijuana Legalization on Unintentional Pediatric Exposures in Colorado.
- ³⁹⁴ Wang, G.S., 2019, Marijuana exposures in Colorado, reported to regional poison centre, 2000-2018.
- ³⁹⁵ Whitehill, J.M., 2021, Edible Cannabis Exposures Among Children: 2017-2019.

-
- ³⁹⁶ Whitehill, J.M., 2019. Incidence of Pediatric Cannabis Exposure Among Children and Teenagers Aged 0 to 19 Years Before and After Medical Marijuana Legalization in Massachusetts.
- ³⁹⁷ Breault, H.J., 1974, Five years with 5 million child-resistant containers.
- ³⁹⁸ Clark, A., 1979, Effect of safety packaging on aspirin ingestion by children.
- ³⁹⁹ Rogers, G.B., 2002, The effectiveness of child-resistant packaging for aspirin.
- ⁴⁰⁰ Ammerman, S., 2015, The impact of marijuana policies on youth: clinical, research, and legal update.
- ⁴⁰¹ Shi, Y., 2021, Assessment of Recreational Cannabis Dispensaries' Compliance With Underage Access and Marketing Restrictions in California.
- ⁴⁰² Ibid.
- ⁴⁰³ Dai, H., 2016, Exposure to advertisements and susceptibility to electronic cigarette use among youth.
- ⁴⁰⁴ Duke, J.C., 2016, Exploring differences in youth perceptions of the effectiveness of electronic cigarette television advertisements.
- ⁴⁰⁵ Pucci, L.G., 1999, Siegel M. Exposure to brand-specific cigarette advertising in magazines and its impact on youth smoking.
- ⁴⁰⁶ Soneji, S., 2017, Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults: A systematic review and meta-analysis.
- ⁴⁰⁷ Anderson, P., 2009, Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies.
- ⁴⁰⁸ Snyder, L.B., 2006, Effects of alcohol advertising exposure on drinking among youth.
- ⁴⁰⁹ Jernigan, D., 2017, Alcohol marketing and youth alcohol consumption: A systematic review of longitudinal studies published since 2008.
- ⁴¹⁰ Sargent, J. D., 2020, Alcohol marketing and youth drinking: Is there a causal relationship, and why does it matter?
- ⁴¹¹ Dai, H. Exposure to Advertisements and Marijuana Use Among US Adolescents. *Prev Chronic Dis* 2017;14:170253. DOI: <http://dx.doi.org/10.5888/pcd14.170253>.
- ⁴¹² Ayers, J. W., 2019, The need for federal regulation of marijuana marketing.
- ⁴¹³ Public Health Law Center, 2022, Content-Neutral Advertising Laws.
- ⁴¹⁴ Public Health Law Center, 2022, Restricting Tobacco Advertisement.
- ⁴¹⁵ Everson, E.M., 2019. Post-Legalization Opening of Retail Cannabis Stores and Adult Cannabis Use in Washington State, 2009-2016. *Am J Public Health*.
- ⁴¹⁶ Pedersen, E.R., 2021, Examining Associations Between Licensed and Unlicensed Outlet Density and Cannabis Outcomes From Preopening to Postopening of Recreational Cannabis Outlets.
- ⁴¹⁷ Young-Wolff, K.C., 2021, Association of Cannabis Retailer Proximity and Density With Cannabis Use Among Pregnant Women in Northern California After Legalization of Cannabis for Recreational Use.
- ⁴¹⁸ Substance Abuse and Mental Health Services Administration, 2021, *Preventing Marijuana Use Among Youth*.
- ⁴¹⁹ University of Washington, 2016, Factors that might attract children to marijuana edibles. *Science Daily*.
- ⁴²⁰ Dunlop, S. M., 2014, Impact of Australia's introduction of tobacco plain packs on adult smokers' pack-related perceptions and responses: results from a continuous tracking survey.
- ⁴²¹ Hammond, D., 2013, Tobacco packaging and mass media campaigns: Research needs for Articles 11 and 12 of the WHO Framework Convention on Tobacco Control.
- ⁴²² Story, M., 2004, Food advertising and marketing directed at children and adolescents in the US.
- ⁴²³ Orenstein, D. G., 2018, Regulating cannabis manufacturing: Applying public health best practices from tobacco control.
- ⁴²⁴ American College of Obstetricians and Gynecologist, 2017, ACOG Committee Opinion No. 722: Marijuana use during pregnancy and lactation.
- ⁴²⁵ Volkow, N. D., 2019, Self-reported medical and nonmedical cannabis use among pregnant women in the United States.
- ⁴²⁶ Substance Abuse and Mental Health Services Administration, 2019, *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health*.

-
- ⁴²⁷ National Institute on Drug Abuse, 2019. U.S. Surgeon General Warning on Marijuana Use in Adolescence and During Pregnancy.
- ⁴²⁸ American College of Obstetricians and Gynecologists, 2017, ACOG Committee Opinion No. 722: Marijuana use during pregnancy and lactation.
- ⁴²⁹ Jarlenski, M., 2017, Trends in perception of risk of regular marijuana use among US pregnant and nonpregnant reproductive-aged women.
- ⁴³⁰ Chang, J.C., 2019, Beliefs and attitudes regarding prenatal marijuana use: perspectives of pregnant women who report use.
- ⁴³¹ Ko, J.Y., 2015, Prevalence and patterns of marijuana use among pregnant and nonpregnant women of reproductive age.
- ⁴³² Brown, Q.L., 2014, Trends in Marijuana Use Among Pregnant and Nonpregnant Reproductive-Aged Women, 2002-2014.
- ⁴³³ Volkow N.D., 2019, Self-reported Medical and Non-medical Cannabis Use Among Pregnant Women in the United States.
- ⁴³⁴ Young-Wolff, K.C., 2016. Trends in Self-reported and Biochemically Tested Marijuana Use Among Pregnant Females in California From 2009-2016.
- ⁴³⁵ Higgins, P. G., 1995, Changes in health behaviors made by pregnant substance users.
- ⁴³⁶ Forray, A., 2015, Perinatal substance use: A prospective evaluation of abstinence and relapse.
- ⁴³⁷ Holland, C.L., 2016, Obstetric health care providers' counseling responses to pregnant patient disclosures of marijuana use.
- ⁴³⁸ Han, B.H., 2020, Trends in Cannabis Use Among Older Adults in the United States, 2015-2018.
- ⁴³⁹ Solomon, H.V., 2021, Cannabis Use in Older Adults: A Perspective.
- ⁴⁴⁰ Minerbi, A., 2019, Medical cannabis for older patients.
- ⁴⁴¹ Russo, E.B., 2016, Current therapeutic cannabis controversies and clinical trial design issues.
- ⁴⁴² Soroosh, A.J., 2021, Mitigating potential public health problems associated with edible cannabis products through adequate regulation: A landscape analysis.
- ⁴⁴³ Centers for Disease Control and Prevention. Outbreak of Lung Injury Associated with the Use of e-Cigarette, or Vaping, Products.
- ⁴⁴⁴ Smart, R., 2017, Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington State.
- ⁴⁴⁵ Mehmedic, Z., 2010, Potency trends of Δ 9-THC and other cannabinoids in confiscated cannabis preparations from 1993 to 2008.
- ⁴⁴⁶ Cascini, F., 2012, Increasing delta-9-tetrahydrocannabinol (Δ -9-THC) content in herbal cannabis over time: systematic review and meta-analysis.
- ⁴⁴⁷ ElSohly, M.A., 2016. Changes in Cannabis Potency Over the Last 2 Decades (1995-2014): Analysis of Current Data in the United States.
- ⁴⁴⁸ Chandra, S., 2019, New trends in cannabis potency in USA and Europe during the last decade (2008-2017).
- ⁴⁴⁹ Colorado Department of Revenue. Market Size and Demand for Marijuana in Colorado 2017 Market Update. 2018.
- ⁴⁵⁰ Substance Abuse and Mental Health Services Administration, 2021, *Preventing Marijuana Use Among Youth*.
- ⁴⁵¹ Orenstein, D. G., 2018, Regulating cannabis manufacturing: Applying public health best practices from tobacco control.
- ⁴⁵² Dryburgh, L.M., 2018, Cannabis contaminants: sources, distribution, human toxicity and pharmacologic effects.
- ⁴⁵³ Llamas, R. 1978, Allergic bronchopulmonary aspergillosis associated with smoking moldy marijuana.
- ⁴⁵⁴ Hamadeh, R, 1988, Fatal aspergillosis associated with smoking contaminated marijuana, in a marrow transplant recipient.
- ⁴⁵⁵ Remington, T.L, 2016, Chronic necrotizing pulmonary aspergillosis in a patient with diabetes and marijuana use.
- ⁴⁵⁶ Thompson, G.R., 2017, A microbiome assessment of medical marijuana.
- ⁴⁵⁷ Gargani, Y., 2011, Too many mouldy joints – marijuana and chronic pulmonary aspergillosis.

-
- ⁴⁵⁸ Stone D., 2014, Cannabis, pesticides and conflicting laws: the dilemma for legalized states and implications for public health.
- ⁴⁵⁹ Llewellyn, G.C., 1977, Examination of fungal growth and aflatoxin production on marihuana.
- ⁴⁶⁰ McPartland, J.M., 2017, Contaminants of concern in cannabis: microbes, heavy metals and pesticides.
- ⁴⁶¹ Russo, E.B., 2016, Current therapeutic cannabis controversies and clinical trial design issues.
- ⁴⁶² Stone D., 2014, Cannabis, pesticides and conflicting laws: the dilemma for legalized states and implications for public health.
- ⁴⁶³ Sullivan, N., 2013, Determination of pesticide residues in cannabis smoke.
- ⁴⁶⁴ Cannabis Sustainability Work Group, City of Denver, 2021, Cannabis Environmental Best Management Practices Guide (October 2021).
- ⁴⁶⁵ Hawaii Constitution. Article XI, § 7.
- ⁴⁶⁶ National Cannabis Industry Association, 2020, Environmental Sustainability in the Cannabis Industry (October 2020).
- ⁴⁶⁷ Cannabis Sustainability Work Group, City of Denver, 2021, Cannabis Environmental Best Management Practices Guide (October 2021).
- ⁴⁶⁸ Ibid.
- ⁴⁶⁹ Ibid.
- ⁴⁷⁰ National Cannabis Industry Association, 2020, Environmental Sustainability in the Cannabis Industry (October 2020).
- ⁴⁷¹ Cannabis Sustainability Work Group, City of Denver, 2021, Cannabis Environmental Best Management Practices Guide (October 2021).
- ⁴⁷² Environmental Protection Agency (Ireland), 2017. Good Practice for Solvent Mass Balance and Fugitive Emission Assessments for EPA Licensed Sites.
<https://www.epa.ie/pubs/advice/air/emissions/air%20advise%20no%201.pdf>
- ⁴⁷³ Hall, W., 2020, Assessing the public health impacts of legalizing recreational cannabis use: the US experience.

Bibliography

- AbbVie Inc. MARINOL (dronabinol) capsules for oral use, CIII (package insert), 2017. Reference ID 4145204. Revised 08/2017.
https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/018651s029lbl.pdf. Accessed September 25, 2022.
- Abramovici, H., Lamour, S.-A., Mammen, G. (2018). Information for Health Care Professionals: Cannabis (marihuana, marijuana) and the cannabinoids. Health Canada, October 2018,
<https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-medication/cannabis/information-medical-practitioners/information-health-care-professionals-cannabis-cannabinoids-eng.pdf>. Accessed September 25, 2022.
- Aldington, S., Williams, M., Nowitz, M., Weatherall, M., Pritchard, A., McNaughton, A., Robinson, G., & Beasley, R. (2007). Effects of cannabis on pulmonary structure, function and symptoms. *Thorax*, *62*(12), 1058–1063. <https://doi.org/10.1136/thx.2006.077081>
- Alhusen, J. L., Lucea, M. B., Bullock, L., & Sharps, P. (2013). Intimate partner violence, substance use, and adverse neonatal outcomes among urban women. *The Journal of pediatrics*, *163*(2), 471–476. <https://doi.org/10.1016/j.jpeds.2013.01.036>
- Allen, J. H., de Moore, G. M., Heddle, R., & Twartz, J. C. (2004). Cannabinoid hyperemesis: cyclical hyperemesis in association with chronic cannabis abuse. *Gut*, *53*(11), 1566–1570. <https://doi.org/10.1136/gut.2003.036350>
- American College of Obstetricians and Gynecologist. (2017). Committee Opinion No. 722: Marijuana Use During Pregnancy and Lactation. *Obstetrics and gynecology*, *130*(4), e205–e209. <https://doi.org/10.1097/AOG.0000000000002354>
- American Nonsmokers' Rights Foundation. Secondhand Marijuana Smoke (factsheet). (2022). Secondhand Marijuana Smoke Fact Sheet - American Nonsmokers' Rights Foundation | no-smoke.org. Accessed on September 25, 2022.
- Ammerman, S., Ryan, S., Adelman, W. P., & Committee on Substance Abuse, the Committee on Adolescence (2015). The impact of marijuana policies on youth: clinical, research, and legal update. *Pediatrics*, *135*(3), e769–e785. <https://doi.org/10.1542/peds.2014-4147>
- Anderson, P., de Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies. *Alcohol and alcoholism (Oxford, Oxfordshire)*, *44*(3), 229–243. <https://doi.org/10.1093/alcalc/agn115>
- Arkell, T. R., Vinckenbosch, F., Kevin, R. C., Theunissen, E. L., McGregor, I. S., & Ramaekers, J. G. (2020). Effect of Cannabidiol and Δ^9 -Tetrahydrocannabinol on Driving Performance: A Randomized Clinical Trial. *JAMA*, *324*(21), 2177–2186. <https://doi.org/10.1001/jama.2020.21218>
- Arranz, S., Monferrer, N., Jose Algora, M., Cabezas, A., Sole, M., Vilella, E., Labad, J., & Sanchez-Gistau, V. (2018). The relationship between the level of exposure to stress factors and cannabis in recent onset psychosis. *Schizophrenia research*, *201*, 352–359. <https://doi.org/10.1016/j.schres.2018.04.040>
- Arseneault, L., Cannon, M., Witton, J., & Murray, R. M. (2004). Causal association between cannabis and psychosis: examination of the evidence. *The British journal of psychiatry: the journal of mental science*, *184*, 110–117. <https://doi.org/10.1192/bjp.184.2.110>
- Asbridge, M., Hayden, J. A., & Cartwright, J. L. (2012). Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis. *BMJ (Clinical research ed.)*, *344*, e536. <https://doi.org/10.1136/bmj.e536>
- Auer, R., Vittinghoff, E., Yaffe, K., Künzi, A., Kertesz, S. G., Levine, D. A., Albanese, E., Whitmer, R. A., Jacobs, D. R., Jr, Sidney, S., Glymour, M. M., & Pletcher, M. J. (2016). Association Between Lifetime

- Marijuana Use and Cognitive Function in Middle Age: The Coronary Artery Risk Development in Young Adults (CARDIA) Study. *JAMA internal medicine*, 176(3), 352–361.
<https://doi.org/10.1001/jamainternmed.2015.7841>
- Ayers, J. W., Caputi, T. L., & Leas, E. C. (2019). The Need for Federal Regulation of Marijuana Marketing. *JAMA*, 321(22), 2163–2164. <https://doi.org/10.1001/jama.2019.4432>
- Azofeifa, A., Rexach-Guzmán, B. D., Hagemeyer, A. N., Rudd, R. A., & Sauber-Schatz, E. K. (2019). Driving Under the Influence of Marijuana and Illicit Drugs Among Persons Aged ≥16 Years - United States, 2018. *MMWR. Morbidity and mortality weekly report*, 68(50), 1153–1157.
<https://doi.org/10.15585/mmwr.mm6850a1>
- Baggio, S., Iglesias, K., Deline, S., Studer, J., Henchoz, Y., Mohler-Kuo, M., & Gmel, G. (2015). Not in Education, Employment, or Training status among young Swiss men. Longitudinal associations with mental health and substance use. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine*, 56(2), 238–243. <https://doi.org/10.1016/j.jadohealth.2014.09.006>
- Bahji, A., Stephenson, C., Tyo, R., Hawken, E. R., & Seitz, D. P. (2020). Prevalence of Cannabis Withdrawal Symptoms Among People With Regular or Dependent Use of Cannabinoids: A Systematic Review and Meta-analysis. *JAMA network open*, 3(4), e202370.
<https://doi.org/10.1001/jamanetworkopen.2020.2370>
- Bandoli, G., Jelliffe-Pawlowski, L., Schumacher, B., Baer, R. J., Felder, J. N., Fuchs, J. D., Oltman, S. P., Steurer, M. A., & Marienfeld, C. (2021). Cannabis-related diagnosis in pregnancy and adverse maternal and infant outcomes. *Drug and alcohol dependence*, 225, 108757.
<https://doi.org/10.1016/j.drugalcdep.2021.108757>
- Barber, P. A., Pridmore, H. M., Krishnamurthy, V., Roberts, S., Spriggs, D. A., Carter, K. N., & Anderson, N. E. (2013). Cannabis, ischemic stroke, and transient ischemic attack: a case-control study. *Stroke*, 44(8), 2327–2329. <https://doi.org/10.1161/STROKEAHA.113.001562>
- Barrington-Trimis, J. L., Cho, J., Ewusi-Boisvert, E., Hasin, D., Unger, J. B., Miech, R. A., & Leventhal, A. M. (2020). Risk of Persistence and Progression of Use of 5 Cannabis Products After Experimentation Among Adolescents. *JAMA network open*, 3(1), e1919792.
<https://doi.org/10.1001/jamanetworkopen.2019.19792>
- Barsky, S. H., Roth, M. D., Kleerup, E. C., Simmons, M., & Tashkin, D. P. (1998). Histopathologic and molecular alterations in bronchial epithelium in habitual smokers of marijuana, cocaine, and/or tobacco. *Journal of the National Cancer Institute*, 90(16), 1198–1205.
<https://doi.org/10.1093/jnci/90.16.1198>
- Batalla, A., Bhattacharyya, S., Yücel, M., Fusar-Poli, P., Crippa, J. A., Nogué, S., Torrens, M., Pujol, J., Farré, M., & Martin-Santos, R. (2013). Structural and functional imaging studies in chronic cannabis users: a systematic review of adolescent and adult findings. *PLoS one*, 8(2), e55821.
<https://doi.org/10.1371/journal.pone.0055821>
- Berg, C. J., Haardörfer, R., Lanier, A., Childs, D., Foster, B., Getachew, B., & Windle, M. (2020). Tobacco Use Trajectories in Young Adults: Analyses of Predictors Across Systems Levels. *Nicotine & tobacco research: official journal of the Society for Research on Nicotine and Tobacco*, 22(11), 2075–2084.
<https://doi.org/10.1093/ntr/ntaa048>
- Berghaus, G., Scheer, N., & Schmidt, P. (1995). Effects of cannabis on psychomotor skills and driving performance—a metaanalysis of experimental studies. In *Proceedings of the 13th International Conference on Alcohol, Drugs and Traffic Safety* (Vol. 1, pp. 403–409).
- Berghaus, G., Sticht, G., Grellner, W., Lenz D., Naumann, T., Wiesenmuller, S. (2010). Meta-analysis of empirical studies concerning the effects of medicines and illegal drugs including pharmacokinetics on safe driving. DRUID 6th Framework Programme. Available from
https://www.bast.de/Druid/EN/deliverables-list/downloads/Deliverable_1_1_2_B.html.

- Betts, K. S., Kisely, S., & Alati, R. (2022). Prenatal cannabis use disorders and offspring primary and secondary educational outcomes. *Addiction (Abingdon, England)*, *117*(2), 425–432. <https://doi.org/10.1111/add.15629>
- Bhandari, S., & Venkatesan, T. (2017). Clinical Characteristics, Comorbidities and Hospital Outcomes in Hospitalizations with Cyclic Vomiting Syndrome: A Nationwide Analysis. *Digestive diseases and sciences*, *62*(8), 2035–2044. <https://doi.org/10.1007/s10620-016-4432-7>
- Blanco, C., Hasin, D. S., Wall, M. M., Flórez-Salamanca, L., Hoertel, N., Wang, S., Kerridge, B. T., & Olfson, M. (2016). Cannabis Use and Risk of Psychiatric Disorders: Prospective Evidence From a US National Longitudinal Study. *JAMA psychiatry*, *73*(4), 388–395. <https://doi.org/10.1001/jamapsychiatry.2015.3229>
- Bland, T. M., Haining, R. L., Tracy, T. S., & Callery, P. S. (2005). CYP2C-catalyzed delta9-tetrahydrocannabinol metabolism: kinetics, pharmacogenetics and interaction with phenytoin. *Biochemical pharmacology*, *70*(7), 1096–1103. <https://doi.org/10.1016/j.bcp.2005.07.007>
- Bloom, J. W., Kaltensborn, W. T., Paoletti, P., Camilli, A., & Lebowitz, M. D. (1987). Respiratory effects of non-tobacco cigarettes. *British medical journal (Clinical research ed.)*, *295*(6612), 1516–1518. <https://doi.org/10.1136/bmj.295.6612.1516>
- Bolla, K. I., Brown, K., Eldreth, D., Tate, K., & Cadet, J. L. (2002). Dose-related neurocognitive effects of marijuana use. *Neurology*, *59*(9), 1337–1343. <https://doi.org/10.1212/01.wnl.0000031422.66442.49>
- Borges, G., Bagge, C. L., & Orozco, R. (2016). A literature review and meta-analyses of cannabis use and suicidality. *Journal of affective disorders*, *195*, 63–74. <https://doi.org/10.1016/j.jad.2016.02.007>
- Borges, G., Benjet, C., Orozco, R., Medina-Mora, M. E., & Menendez, D. (2017). Alcohol, cannabis and other drugs and subsequent suicide ideation and attempt among young Mexicans. *Journal of psychiatric research*, *91*, 74–82. <https://doi.org/10.1016/j.jpsychires.2017.02.025>
- Bosker, W. M., Kuypers, K. P., Theunissen, E. L., Surinx, A., Blankespoor, R. J., Skopp, G., Jeffery, W. K., Walls, H. C., van Leeuwen, C. J., & Ramaekers, J. G. (2012). Medicinal $\Delta(9)$ -tetrahydrocannabinol (dronabinol) impairs on-the-road driving performance of occasional and heavy cannabis users but is not detected in Standard Field Sobriety Tests. *Addiction (Abingdon, England)*, *107*(10), 1837–1844. <https://doi.org/10.1111/j.1360-0443.2012.03928.x>
- Bourque, J., Afzali, M. H., O'Leary-Barrett, M., & Conrod, P. (2017). Cannabis use and psychotic-like experiences trajectories during early adolescence: the coevolution and potential mediators. *Journal of child psychology and psychiatry, and allied disciplines*, *58*(12), 1360–1369. <https://doi.org/10.1111/jcpp.12765>
- Breault H. J. (1974). Five years with 5 million child-resistant containers. *Clinical toxicology*, *7*(1), 91–95. <https://doi.org/10.3109/15563657408987980>
- Brook, J. S., Balka, E. B., & Whiteman, M. (1999). The risks for late adolescence of early adolescent marijuana use. *American journal of public health*, *89*(10), 1549–1554. <https://doi.org/10.2105/ajph.89.10.1549>
- Brooks-Russell, A., Brown, T., Friedman, K., Wrobel, J., Schwarz, J., Dooley, G., Ryal, K.A., Steinhart, B., Amioka, E., Milavetz, G., Wang, G.S., & Kosnett, M. J. (2021). Simulated driving performance among daily and occasional cannabis users. *Accident Analysis & Prevention*, *160*, 106326.
- Brown, G. W., Bellnier, T. J., Janda, M., & Miskowitz, K. (2021). Δ -9-tetrahydrocannabinol dose increase leads to warfarin drug interaction and elevated INR. *Journal of the American Pharmacists Association: JAPhA*, *61*(1), e57–e60. <https://doi.org/10.1016/j.japh.2020.07.028>
- Brown, Q. L., Sarvet, A. L., Shmulewitz, D., Martins, S. S., Wall, M. M., & Hasin, D. S. (2017). Trends in Marijuana Use Among Pregnant and Nonpregnant Reproductive-Aged Women, 2002–2014. *JAMA*, *317*(2), 207–209. <https://doi.org/10.1001/jama.2016.17383>

- Broyd, S. J., van Hell, H. H., Beale, C., Yücel, M., & Solowij, N. (2016). Acute and Chronic Effects of Cannabinoids on Human Cognition-A Systematic Review. *Biological psychiatry*, *79*(7), 557–567. <https://doi.org/10.1016/j.biopsych.2015.12.002>
- Buckner, J. D., Lemke, A. W., & Walukevich, K. A. (2017). Cannabis use and suicidal ideation: Test of the utility of the interpersonal-psychological theory of suicide. *Psychiatry research*, *253*, 256–259. <https://doi.org/10.1016/j.psychres.2017.04.001>
- Budney, A. J., Moore, B. A., Vandrey, R. G., & Hughes, J. R. (2003). The time course and significance of cannabis withdrawal. *Journal of abnormal psychology*, *112*(3), 393–402. <https://doi.org/10.1037/0021-843x.112.3.393>
- Budney, A. J., Novy, P. L., & Hughes, J. R. (1999). Marijuana withdrawal among adults seeking treatment for marijuana dependence. *Addiction (Abingdon, England)*, *94*(9), 1311–1322. <https://doi.org/10.1046/j.1360-0443.1999.94913114.x>
- Budney, A. J., Radonovich, K. J., Higgins, S. T., & Wong, C. J. (1998). Adults seeking treatment for marijuana dependence: a comparison with cocaine-dependent treatment seekers. *Experimental and clinical psychopharmacology*, *6*(4), 419–426. <https://doi.org/10.1037//1064-1297.6.4.419>
- Budney, A. J., Vandrey, R. G., Hughes, J. R., Moore, B. A., & Bahrenburg, B. (2007). Oral delta-9-tetrahydrocannabinol suppresses cannabis withdrawal symptoms. *Drug and alcohol dependence*, *86*(1), 22–29. <https://doi.org/10.1016/j.drugalcdep.2006.04.014>
- Budney, A. J., Vandrey, R. G., Hughes, J. R., Thostenson, J. D., & Bursac, Z. (2008). Comparison of cannabis and tobacco withdrawal: severity and contribution to relapse. *Journal of substance abuse treatment*, *35*(4), 362–368. <https://doi.org/10.1016/j.jsat.2008.01.002>
- Buu, A., Hu, Y. H., Pampati, S., Arterberry, B. J., & Lin, H. C. (2017). Predictive validity of cannabis consumption measures: Results from a national longitudinal study. *Addictive behaviors*, *73*, 36–40. <https://doi.org/10.1016/j.addbeh.2017.04.014>
- Callaghan, R. C., Allebeck, P., Akre, O., McGlynn, K. A., & Sidorchuk, A. (2017). Cannabis Use and Incidence of Testicular Cancer: A 42-Year Follow-up of Swedish Men between 1970 and 2011. *Cancer epidemiology, biomarkers & prevention: a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*, *26*(11), 1644–1652. <https://doi.org/10.1158/1055-9965.EPI-17-0428>
- Callaghan, R. C., Sanches, M., & Kish, S. J. (2020). Quantity and frequency of cannabis use in relation to cannabis-use disorder and cannabis-related problems. *Drug and alcohol dependence*, *217*, 108271. <https://doi.org/10.1016/j.drugalcdep.2020.108271>
- Cannabis Sustainability Work Group, City of Denver. (2021). Cannabis Environmental Best Management Practices Guide (October 2021). https://www.denvergov.org/files/assets/public/climate-action/documents/2021_cannabis-bmp-guide_rev-11-23.pdf. Accessed on September 25, 2022.
- Carlyle, M., Constable, T., Walter, Z. C., Wilson, J., Newland, G., & Hides, L. (2021). Cannabis-induced dysphoria/paranoia mediates the link between childhood trauma and psychotic-like experiences in young cannabis users. *Schizophrenia research*, *238*, 178–184. <https://doi.org/10.1016/j.schres.2021.10.011>
- Cascini, F., Aiello, C., & Di Tanna, G. (2012). Increasing delta-9-tetrahydrocannabinol (Δ -9-THC) content in herbal cannabis over time: systematic review and meta-analysis. *Current drug abuse reviews*, *5*(1), 32–40. <https://doi.org/10.2174/1874473711205010032>
- Centers for Disease Control and Prevention. Outbreak of Lung Injury Associated with the Use of e-Cigarette, or Vaping, Products. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html. Accessed on September 25, 2022.
- Chandra, S., Radwan, M. M., Majumdar, C. G., Church, J. C., Freeman, T. P., & ElSohly, M. A. (2019). New trends in cannabis potency in USA and Europe during the last decade (2008-2017). *European*

- archives of psychiatry and clinical neuroscience*, 269(1), 5–15. <https://doi.org/10.1007/s00406-019-00983-5>
- Chang, J. C., Tarr, J. A., Holland, C. L., De Genna, N. M., Richardson, G. A., Rodriguez, K. L., Sheeder, J., Kraemer, K. L., Day, N. L., Rubio, D., Jarlenski, M., & Arnold, R. M. (2019). Beliefs and attitudes regarding prenatal marijuana use: Perspectives of pregnant women who report use. *Drug and alcohol dependence*, 196, 14–20. <https://doi.org/10.1016/j.drugalcdep.2018.11.028>
- Chetty, M., Miller, R., & Moodley, S. V. (1994). Smoking and body weight influence the clearance of chlorpromazine. *European journal of clinical pharmacology*, 46(6), 523–526. <https://doi.org/10.1007/BF00196109>
- Chihuri, S., & Li, G. (2020). Direct and indirect effects of marijuana use on the risk of fatal 2-vehicle crash initiation. *Injury epidemiology*, 7(1), 49. <https://doi.org/10.1186/s40621-020-00276-9>
- Chihuri, S., Li, G., & Chen, Q. (2017). Interaction of marijuana and alcohol on fatal motor vehicle crash risk: a case-control study. *Injury epidemiology*, 4(1), 8. <https://doi.org/10.1186/s40621-017-0105-z>
- Cioffredi, L. A., Anderson, H., Loso, H., East, J., Nguyen, P., Garavan, H., & Potter, A. (2022). Prenatal cannabis exposure predicts attention problems, without changes on fMRI in adolescents. *Neurotoxicology and teratology*, 91, 107089. <https://doi.org/10.1016/j.ntt.2022.107089>
- Clarke, A., & Walton, W. W. (1979). Effect of safety packaging on aspirin ingestion by children. *Pediatrics*, 63(5), 687–693.
- Colorado Department of Public Health and the Environment. (n.d.). *Evidence Statements*. Monitoring Health Concerns Related to Marijuana. <https://marijuanahealthinfo.colorado.gov/literature-review/evidence-statements>. Accessed on September 6, 2022.
- Colorado Department of Revenue. Market Size and Demand for Marijuana in Colorado 2017 Market Update. 2018. <https://spl.cde.state.co.us/artemis/revmonos/rev132si92018internet/Market%20Size%20and%20Demand%20for%20Marijuana%20in%20Colorado%202017%20Market%20Update.pdf>. Accessed on September 25, 2022.
- Cone, E. J., Johnson, R. E., Moore, J. D., & Roache, J. D. (1986). Acute effects of smoking marijuana on hormones, subjective effects and performance in male human subjects. *Pharmacology, biochemistry, and behavior*, 24(6), 1749–1754. [https://doi.org/10.1016/0091-3057\(86\)90515-0](https://doi.org/10.1016/0091-3057(86)90515-0)
- Consoli, A., Peyre, H., Speranza, M., Hassler, C., Falissard, B., Touchette, E., Cohen, D., Moro, M. R., & Révah-Lévy, A. (2013). Suicidal behaviors in depressed adolescents: role of perceived relationships in the family. *Child and adolescent psychiatry and mental health*, 7(1), 8. <https://doi.org/10.1186/1753-2000-7-8>
- Contreras Narváez, C., Mola Gilbert, M., Batlle de Santiago, E., Bigas Farreres, J., Giné Servén, E., & Cañete Crespillo, J. (2016). Cannabinoid hyperemesis syndrome. A report of six new cases and a summary of previous reports. Síndrome de hiperemesis cannabinoide. Reporte de seis nuevos casos clínicos y resumen de casos previos publicados. *Adicciones*, 28(2), 90–98. <https://doi.org/10.20882/adicciones.776>
- Cornacchione Ross, J., Sutfin, E. L., Suerken, C., Walker, S., Wolfson, M., & Reboussin, B. A. (2020). Longitudinal associations between marijuana and cigar use in young adults. *Drug and alcohol dependence*, 211, 107964. Advance online publication. <https://doi.org/10.1016/j.drugalcdep.2020.107964>
- Cornelius, J. R., Bukstein, O. G., Douaihy, A. B., Clark, D. B., Chung, T. A., Daley, D. C., Wood, D. S., & Brown, S. J. (2010). Double-blind fluoxetine trial in comorbid MDD-CUD youth and young adults. *Drug and alcohol dependence*, 112(1-2), 39–45. <https://doi.org/10.1016/j.drugalcdep.2010.05.010>

- Corsi, D. J., Walsh, L., Weiss, D., Hsu, H., El-Chaar, D., Hawken, S., Fell, D. B., & Walker, M. (2019). Association Between Self-reported Prenatal Cannabis Use and Maternal, Perinatal, and Neonatal Outcomes. *JAMA*, *322*(2), 145–152. <https://doi.org/10.1001/jama.2019.8734>
- Cousijn, J., & van Duijvenvoorde, A. (2018). Cognitive and Mental Health Predictors of Withdrawal Severity During an Active Attempt to Cut Down Cannabis Use. *Frontiers in psychiatry*, *9*, 301. <https://doi.org/10.3389/fpsy.2018.00301>
- Curran, H. V., Brignell, C., Fletcher, S., Middleton, P., & Henry, J. (2002). Cognitive and subjective dose-response effects of acute oral Delta 9-tetrahydrocannabinol (THC) in infrequent cannabis users. *Psychopharmacology*, *164*(1), 61–70. <https://doi.org/10.1007/s00213-002-1169-0>
- Curran, H. V., Hindocha, C., Morgan, C., Shaban, N., Das, R. K., & Freeman, T. P. (2019). Which biological and self-report measures of cannabis use predict cannabis dependency and acute psychotic-like effects?. *Psychological medicine*, *49*(9), 1574–1580. <https://doi.org/10.1017/S003329171800226X>
- D'Amico, E. J., Rodriguez, A., Tucker, J. S., Dunbar, M. S., Pedersen, E. R., Shih, R. A., Davis, J. P., & Seelam, R. (2020). Early and Late Adolescent Factors that Predict Co-use of Cannabis with Alcohol and Tobacco in Young Adulthood. *Prevention science : the official journal of the Society for Prevention Research*, *21*(4), 530–544. <https://doi.org/10.1007/s11121-020-01086-7>
- D'Souza, D. C., Perry, E., MacDougall, L., Ammerman, Y., Cooper, T., Wu, Y. T., Braley, G., Gueorguieva, R., & Krystal, J. H. (2004). The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: implications for psychosis. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology*, *29*(8), 1558–1572. <https://doi.org/10.1038/sj.npp.1300496>
- D'Souza, D. C., Ranganathan, M., Braley, G., Gueorguieva, R., Zimolo, Z., Cooper, T., Perry, E., & Krystal, J. (2008). Blunted psychotomimetic and amnestic effects of delta-9-tetrahydrocannabinol in frequent users of cannabis. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology*, *33*(10), 2505–2516. <https://doi.org/10.1038/sj.npp.1301643>
- Dai, H. (2017). Exposure to Advertisements and Marijuana Use Among US Adolescents. *Preventing chronic disease*, *14*, E124. <https://doi.org/10.5888/pcd14.170253>
- Dai, H., & Hao, J. (2016). Exposure to Advertisements and Susceptibility to Electronic Cigarette Use Among Youth. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*, *59*(6), 620–626. <https://doi.org/10.1016/j.jadohealth.2016.06.013>
- Daling, J. R., Doody, D. R., Sun, X., Trabert, B. L., Weiss, N. S., Chen, C., Biggs, M. L., Starr, J. R., Dey, S. K., & Schwartz, S. M. (2009). Association of marijuana use and the incidence of testicular germ cell tumors. *Cancer*, *115*(6), 1215–1223. <https://doi.org/10.1002/cncr.24159>
- Davenport, S. S., & Caulkins, J. P. (2016). Evolution of the United States Marijuana Market in the Decade of Liberalization Before Full Legalization. *Journal of Drug Issues*, *46*(4), 411–427. <https://doi.org/10.1177/0022042616659759>
- Day, N. L., Richardson, G. A., Goldschmidt, L., Robles, N., Taylor, P. M., Stoffer, D. S., Cornelius, M. D., & Geva, D. (1994). Effect of prenatal marijuana exposure on the cognitive development of offspring at age three. *Neurotoxicology and teratology*, *16*(2), 169–175. [https://doi.org/10.1016/0892-0362\(94\)90114-7](https://doi.org/10.1016/0892-0362(94)90114-7)
- Del Balzo, G., Gottardo, R., Mengozzi, S., Dorizzi, R. M., Bortolotti, F., Appolonova, S., & Tagliaro, F. (2018). "Positive" urine testing for Cannabis is associated with increased risk of traffic crashes. *Journal of pharmaceutical and biomedical analysis*, *151*, 71–74. <https://doi.org/10.1016/j.jpba.2017.12.059>
- Desai, R., Singh, S., Patel, K., Goyal, H., Shah, M., Mansuri, Z., Patel, S., Mahuwala, Z. K., Goldstein, L. B., & Qureshi, A. I. (2020). Stroke in young cannabis users (18-49 years): National trends in hospitalizations and outcomes. *International journal of stroke : official journal of the International Stroke Society*, *15*(5), 535–539. <https://doi.org/10.1177/1747493019895651>

- Di Forti, M., Marconi, A., Carra, E., Fraietta, S., Trotta, A., Bonomo, M., Bianconi, F., Gardner-Sood, P., O'Connor, J., Russo, M., Stilo, S. A., Marques, T. R., Mondelli, V., Dazzan, P., Pariante, C., David, A. S., Gaughran, F., Atakan, Z., Iyegbe, C., Powell, J., ... Murray, R. M. (2015). Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study. *The lancet. Psychiatry*, *2*(3), 233–238. [https://doi.org/10.1016/S2215-0366\(14\)00117-5](https://doi.org/10.1016/S2215-0366(14)00117-5)
- Di Forti, M., Quattrone, D., Freeman, T. P., Tripoli, G., Gayer-Anderson, C., Quigley, H., Rodriguez, V., Jongsma, H. E., Ferraro, L., La Cascia, C., La Barbera, D., Tarricone, I., Berardi, D., Szöke, A., Arango, C., Tortelli, A., Velthorst, E., Bernardo, M., Del-Ben, C. M., Menezes, P. R., ... EU-GEI WP2 Group (2019). The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study. *The lancet. Psychiatry*, *6*(5), 427–436. [https://doi.org/10.1016/S2215-0366\(19\)30048-3](https://doi.org/10.1016/S2215-0366(19)30048-3)
- Donnino, M. W., Cocchi, M. N., Miller, J., & Fisher, J. (2011). Cannabinoid hyperemesis: a case series. *The Journal of emergency medicine*, *40*(4), e63–e66. <https://doi.org/10.1016/j.jemermed.2009.07.033>
- Douglas, C.E. (2010). Smoke-free Environments Law Project: Restricting the Use of Medical Marijuana in Multi-Unit Residential Settings: Legal and Practical Considerations. Retrieved from <http://www.mismokefreeapartment.org/MManalysis.pdf> on September 23, 2022.
- Drummer, O. H., Gerostamoulos, J., Batziris, H., Chu, M., Caplehorn, J., Robertson, M. D., & Swann, P. (2004). The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes. *Accident; analysis and prevention*, *36*(2), 239–248. [https://doi.org/10.1016/s0001-4575\(02\)00153-7](https://doi.org/10.1016/s0001-4575(02)00153-7)
- Drummer, O. H., Gerostamoulos, J., Batziris, H., Chu, M., Caplehorn, J., Robertson, M. D., & Swann, P. (2004). The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes. *Accident; analysis and prevention*, *36*(2), 239–248. [https://doi.org/10.1016/s0001-4575\(02\)00153-7](https://doi.org/10.1016/s0001-4575(02)00153-7)
- Drummer, O. H., Gerostamoulos, D., Di Rago, M., Woodford, N. W., Morris, C., Frederiksen, T., Jachno, K., & Wolfe, R. (2020). Odds of culpability associated with use of impairing drugs in injured drivers in Victoria, Australia. *Accident; analysis and prevention*, *135*, 105389. <https://doi.org/10.1016/j.aap.2019.105389>
- Dryburgh, L. M., Bolan, N. S., Grof, C., Galettis, P., Schneider, J., Lucas, C. J., & Martin, J. H. (2018). Cannabis contaminants: sources, distribution, human toxicity and pharmacologic effects. *British journal of clinical pharmacology*, *84*(11), 2468–2476. <https://doi.org/10.1111/bcp.13695>
- Dubois, S., Mullen, N., Weaver, B., & Bédard, M. (2015). The combined effects of alcohol and cannabis on driving: Impact on crash risk. *Forensic science international*, *248*, 94–100. <https://doi.org/10.1016/j.forsciint.2014.12.018>
- Duke, J. C., Allen, J. A., Eggers, M. E., Nonnemaker, J., & Farrelly, M. C. (2016). Exploring Differences in Youth Perceptions of the Effectiveness of Electronic Cigarette Television Advertisements. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, *18*(5), 1382–1386. <https://doi.org/10.1093/ntr/ntv264>
- Dunlop, S. M., Dobbins, T., Young, J. M., Perez, D., & Currow, D. C. (2014). Impact of Australia's introduction of tobacco plain packs on adult smokers' pack-related perceptions and responses: results from a continuous tracking survey. *BMJ open*, *4*(12), e005836. <https://doi.org/10.1136/bmjopen-2014-005836>
- Ehrenreich, H., Nahapetyan, L., Orpinas, P., & Song, X. (2015). Marijuana Use from Middle to High School: Co-occurring Problem Behaviors, Teacher-Rated Academic Skills and Sixth-Grade Predictors. *Journal of youth and adolescence*, *44*(10), 1929–1940. <https://doi.org/10.1007/s10964-014-0216-6>

- Ehrler, M., McGlade, E., Yurgelun-Todd, D. (2015). Subjective and Cognitive Effects of Cannabinoids in Marijuana Smokers. In: Campolongo, P., Fattore, L. (eds) *Cannabinoid Modulation of Emotion, Memory, and Motivation*. Springer, New York, NY. https://doi.org/10.1007/978-1-4939-2294-9_7
- El Marroun, H., Tiemeier, H., Steegers, E. A., Jaddoe, V. W., Hofman, A., Verhulst, F. C., van den Brink, W., & Huizink, A. C. (2009). Intrauterine cannabis exposure affects fetal growth trajectories: the Generation R Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *48*(12), 1173–1181. <https://doi.org/10.1097/CHI.0b013e3181bfa8ee>
- ElSohly, M. A., & Feng, S. (1998). delta 9-THC metabolites in meconium: identification of 11-OH-delta 9-THC, 8 beta,11-diOH-delta 9-THC, and 11-nor-delta 9-THC-9-COOH as major metabolites of delta 9-THC. *Journal of analytical toxicology*, *22*(4), 329–335. <https://doi.org/10.1093/jat/22.4.329>
- ElSohly, M. A., Mehmedic, Z., Foster, S., Gon, C., Chandra, S., & Church, J. C. (2016). Changes in Cannabis Potency Over the Last 2 Decades (1995-2014): Analysis of Current Data in the United States. *Biological psychiatry*, *79*(7), 613–619. <https://doi.org/10.1016/j.biopsych.2016.01.004>
- Englund, A., Atakan, Z., Kralj, A., Tunstall, N., Murray, R., & Morrison, P. (2016). The effect of five day dosing with THCv on THC-induced cognitive, psychological and physiological effects in healthy male human volunteers: A placebo-controlled, double-blind, crossover pilot trial. *Journal of psychopharmacology (Oxford, England)*, *30*(2), 140–151. <https://doi.org/10.1177/0269881115615104>
- Environmental Protection Agency (Ireland). (2017). Good Practice for Solvent Mass Balance and Fugitive Emission Assessments for EPA Licensed Sites. Retrieved from <https://www.epa.ie/pubs/advice/air/emissions/air%20advise%20no%201.pdf> on September 25, 2022.
- Everson, E. M., Dilley, J. A., Maher, J. E., & Mack, C. E. (2019). Post-Legalization Opening of Retail Cannabis Stores and Adult Cannabis Use in Washington State, 2009-2016. *American journal of public health*, *109*(9), 1294–1301. <https://doi.org/10.2105/AJPH.2019.305191>
- Falcon, M., Pichini, S., Joya, J., Pujadas, M., Sanchez, A., Vall, O., García Algar, O., Luna, A., de la Torre, R., Rotolo, M. C., & Pellegrini, M. (2012). Maternal hair testing for the assessment of fetal exposure to drug of abuse during early pregnancy: Comparison with testing in placental and fetal remains. *Forensic science international*, *218*(1-3), 92–96. <https://doi.org/10.1016/j.forsciint.2011.10.022>
- Feingold, D., Livne, O., Rehm, J., & Lev-Ran, S. (2020). Probability and correlates of transition from cannabis use to DSM-5 cannabis use disorder: Results from a large-scale nationally representative study. *Drug and alcohol review*, *39*(2), 142–151. <https://doi.org/10.1111/dar.13031>
- Fergusson, D. M., & Boden, J. M. (2008). Cannabis use and later life outcomes. *Addiction (Abingdon, England)*, *103*(6), 969–978. <https://doi.org/10.1111/j.1360-0443.2008.02221.x>
- Fergusson, D. M., Horwood, L. J., & Beautrais, A. L. (2003). Cannabis and educational achievement. *Addiction (Abingdon, England)*, *98*(12), 1681–1692. <https://doi.org/10.1111/j.1360-0443.2003.00573.x>
- Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Tests of causal linkages between cannabis use and psychotic symptoms. *Addiction (Abingdon, England)*, *100*(3), 354–366. <https://doi.org/10.1111/j.1360-0443.2005.01001.x>
- Fierro, I., González-Luque, J. C., & Alvarez, F. J. (2014). The relationship between observed signs of impairment and THC concentration in oral fluid. *Drug and alcohol dependence*, *144*, 231–238. <https://doi.org/10.1016/j.drugalcdep.2014.09.770>
- Fligiel, S. E., Roth, M. D., Kleerup, E. C., Barsky, S. H., Simmons, M. S., & Tashkin, D. P. (1997). Tracheobronchial histopathology in habitual smokers of cocaine, marijuana, and/or tobacco. *Chest*, *112*(2), 319–326. <https://doi.org/10.1378/chest.112.2.319>

- Forray, A., Merry, B., Lin, H., Ruger, J. P., & Yonkers, K. A. (2015). Perinatal substance use: a prospective evaluation of abstinence and relapse. *Drug and alcohol dependence, 150*, 147–155. <https://doi.org/10.1016/j.drugalcdep.2015.02.027>
- Forman-Hoffman, V. L., Glasheen, C., & Batts, K. R. (2017). Marijuana Use, Recent Marijuana Initiation, and Progression to Marijuana Use Disorder Among Young Male and Female Adolescents Aged 12-14 Living in US Households. *Substance abuse : research and treatment, 11*, 1178221817711159. <https://doi.org/10.1177/1178221817711159>
- Fried, P. A., & Smith, A. M. (2001). A literature review of the consequences of prenatal marijuana exposure. An emerging theme of a deficiency in aspects of executive function. *Neurotoxicology and teratology, 23*(1), 1–11. [https://doi.org/10.1016/s0892-0362\(00\)00119-7](https://doi.org/10.1016/s0892-0362(00)00119-7)
- Fried, P. A., Watkinson, B., & Gray, R. (2003). Differential effects on cognitive functioning in 13- to 16-year-olds prenatally exposed to cigarettes and marijuana. *Neurotoxicology and teratology, 25*(4), 427–436. [https://doi.org/10.1016/s0892-0362\(03\)00029-1](https://doi.org/10.1016/s0892-0362(03)00029-1)
- Fried, P. A., Watkinson, B., & Siegel, L. S. (1997). Reading and language in 9- to 12-year olds prenatally exposed to cigarettes and marijuana. *Neurotoxicology and teratology, 19*(3), 171–183. [https://doi.org/10.1016/s0892-0362\(97\)00015-9](https://doi.org/10.1016/s0892-0362(97)00015-9)
- Gardner, M. J., Tornatore, K. M., Jusko, W. J., & Kanarkowski, R. (1983). Effects of tobacco smoking and oral contraceptive use on theophylline disposition. *British journal of clinical pharmacology, 16*(3), 271–280. <https://doi.org/10.1111/j.1365-2125.1983.tb02161.x>
- Gargani, Y., Bishop, P., & Denning, D. W. (2011). Too many mouldy joints - marijuana and chronic pulmonary aspergillosis. *Mediterranean journal of hematology and infectious diseases, 3*(1), e2011005. <https://doi.org/10.4084/MJHID.2011.005>
- Ge, B., Zhang, Z., & Zuo, Z. (2014). Updates on the clinical evidenced herb-warfarin interactions. *Evidence-based complementary and alternative medicine : eCAM, 2014*, 957362. <https://doi.org/10.1155/2014/957362>
- Geffrey, A. L., Pollack, S. F., Bruno, P. L., & Thiele, E. A. (2015). Drug-drug interaction between clobazam and cannabidiol in children with refractory epilepsy. *Epilepsia, 56*(8), 1246–1251. <https://doi.org/10.1111/epi.13060>
- Geller, T., Loftis, L., & Brink, D. S. (2004). Cerebellar infarction in adolescent males associated with acute marijuana use. *Pediatrics, 113*(4), e365–e370. <https://doi.org/10.1542/peds.113.4.e365>
- Gentzke, A. S., Hyland, A., Kiviniemi, M., & Travers, M. J. (2018). Attitudes and experiences with secondhand smoke and smoke-free policies among subsidised and market-rate multiunit housing residents living in six diverse communities in the USA. *Tobacco control, 27*(2), 194–202. <https://doi.org/10.1136/tobaccocontrol-2016-053374>
- Gieringer D. Marijuana research: Water pipe study. *Bulletin of the Multidisciplinary Association for Psychedelic Studies 1996*;6:59-66.
- Gieringer, D., St. Laurent J., Goodrich, S. (2004) Cannabis Vaporizer Combines Efficient Delivery of THC with Effective Suppression of Pyrolytic Compounds, *Journal of Cannabis Therapeutics, 4*:1, 7-27, DOI: 10.1300/J175v04n01_02
- Giordano, G. N., Ohlsson, H., Sundquist, K., Sundquist, J., & Kendler, K. S. (2015). The association between cannabis abuse and subsequent schizophrenia: a Swedish national co-relative control study. *Psychological medicine, 45*(2), 407–414. <https://doi.org/10.1017/S0033291714001524>
- Gjerde, H., Strand, M. C., & Mørland, J. (2015). Driving Under the Influence of Non-Alcohol Drugs--An Update Part I: Epidemiological Studies. *Forensic science review, 27*(2), 89–113.
- Gobbi, G., Atkin, T., Zytynski, T., Wang, S., Askari, S., Boruff, J., Ware, M., Marmorstein, N., Cipriani, A., Dendukuri, N., & Mayo, N. (2019). Association of Cannabis Use in Adolescence and Risk of Depression, Anxiety, and Suicidality in Young Adulthood: A Systematic Review and Meta-analysis. *JAMA psychiatry, 76*(4), 426–434. <https://doi.org/10.1001/jamapsychiatry.2018.4500>

- Godin, S. L., & Shehata, S. (2022). Adolescent cannabis use and later development of schizophrenia: An updated systematic review of longitudinal studies. *Journal of clinical psychology, 78*(7), 1331–1340. <https://doi.org/10.1002/jclp.23312>
- Goldschmidt, L., Richardson, G. A., Cornelius, M. D., & Day, N. L. (2004). Prenatal marijuana and alcohol exposure and academic achievement at age 10. *Neurotoxicology and teratology, 26*(4), 521–532. <https://doi.org/10.1016/j.ntt.2004.04.003>
- Goldschmidt, L., Richardson, G. A., Willford, J., & Day, N. L. (2008). Prenatal marijuana exposure and intelligence test performance at age 6. *Journal of the American Academy of Child and Adolescent Psychiatry, 47*(3), 254–263. <https://doi.org/10.1097/CHI.0b013e318160b3f0>
- Goldschmidt, L., Richardson, G. A., Willford, J. A., Severtson, S. G., & Day, N. L. (2012). School achievement in 14-year-old youths prenatally exposed to marijuana. *Neurotoxicology and teratology, 34*(1), 161–167. <https://doi.org/10.1016/j.ntt.2011.08.009>
- Gong, H., Jr, Fligiel, S., Tashkin, D. P., & Barbers, R. G. (1987). Tracheobronchial changes in habitual, heavy smokers of marijuana with and without tobacco. *The American review of respiratory disease, 136*(1), 142–149. <https://doi.org/10.1164/ajrccm/136.1.142>
- Green, K. M., Doherty, E. E., & Ensminger, M. E. (2017). Long-term consequences of adolescent cannabis use: Examining intermediary processes. *The American journal of drug and alcohol abuse, 43*(5), 567–575. <https://doi.org/10.1080/00952990.2016.1258706>
- Greene, M. C., & Kelly, J. F. (2014). The prevalence of cannabis withdrawal and its influence on adolescents' treatment response and outcomes: a 12-month prospective investigation. *Journal of addiction medicine, 8*(5), 359–367. <https://doi.org/10.1097/ADM.0000000000000064>
- Grossman, E. R., Gonzalez-Nahm, S., Frost, N., & Benjamin-Neelon, S. E. (2018). Childcare Providers' Possession or Use of Marijuana, Tobacco, or Alcohol While Caring for Children: A Comparison of US State Regulations. *American journal of public health, 108*(6), 748–753. <https://doi.org/10.2105/AJPH.2018.304351>
- Grotenhermen, F., Leson, G., Berghaus, G., Drummer, O. H., Krüger, H. P., Longo, M., Moskowitz, H., Perrine, B., Ramaekers, J. G., Smiley, A., & Tunbridge, R. (2007). Developing limits for driving under cannabis. *Addiction (Abingdon, England), 102*(12), 1910–1917. <https://doi.org/10.1111/j.1360-0443.2007.02009.x>
- Gukasyan, N., & Strain, E. C. (2020). Relationship between cannabis use frequency and major depressive disorder in adolescents: Findings from the National Survey on Drug Use and Health 2012-2017. *Drug and alcohol dependence, 208*, 107867. <https://doi.org/10.1016/j.drugalcdep.2020.107867>
- Guo, L., Wang, W., Du, X., Guo, Y., Li, W., Zhao, M., Wu, R., & Lu, C. (2021). Associations of Substance Use Behaviors With Suicidal Ideation and Suicide Attempts Among US and Chinese Adolescents. *Frontiers in psychiatry, 11*, 611579. <https://doi.org/10.3389/fpsyt.2020.611579>
- Gurney, J., Shaw, C., Stanley, J., Signal, V., & Sarfati, D. (2015). Cannabis exposure and risk of testicular cancer: a systematic review and meta-analysis. *BMC cancer, 15*, 897. <https://doi.org/10.1186/s12885-015-1905-6>
- Guttmanova, K., Kosterman, R., White, H. R., Bailey, J. A., Lee, J. O., Epstein, M., Jones, T. M., & Hawkins, J. D. (2017). The association between regular marijuana use and adult mental health outcomes. *Drug and alcohol dependence, 179*, 109–116. <https://doi.org/10.1016/j.drugalcdep.2017.06.016>
- Hackam D. G. (2015). Cannabis and stroke: systematic appraisal of case reports. *Stroke, 46*(3), 852–856. <https://doi.org/10.1161/STROKEAHA.115.008680>
- Hall, W., & Lynskey, M. (2020). Assessing the public health impacts of legalizing recreational cannabis use: the US experience. *World psychiatry: official journal of the World Psychiatric Association (WPA), 19*(2), 179–186. <https://doi.org/10.1002/wps.20735>

- Hamadeh, R., Ardehali, A., Locksley, R. M., & York, M. K. (1988). Fatal aspergillosis associated with smoking contaminated marijuana, in a marrow transplant recipient. *Chest*, *94*(2), 432–433. <https://doi.org/10.1378/chest.94.2.432>
- Hammond, D., Wakefield, M., Durkin, S., & Brennan, E. (2013). Tobacco packaging and mass media campaigns: research needs for Articles 11 and 12 of the WHO Framework Convention on Tobacco Control. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, *15*(4), 817–831. <https://doi.org/10.1093/ntr/nts202>
- Han, B., Compton W.M., Einstein E.B., Volkow N.D. (2021). Associations of Suicidality Trends With Cannabis Use as a Function of Sex and Depression Status. *JAMA Netw Open*. *4*(6):e2113025. doi:10.1001/jamanetworkopen.2021.13025
- Han, B. H., & Palamar, J. J. (2020). Trends in Cannabis Use Among Older Adults in the United States, 2015–2018. *JAMA internal medicine*, *180*(4), 609–611. <https://doi.org/10.1001/jamainternmed.2019.7517>
- Hartman, R. L., Brown, T. L., Milavetz, G., Spurgin, A., Pierce, R. S., Gorelick, D. A., Gaffney, G., & Huestis, M. A. (2015). Cannabis effects on driving lateral control with and without alcohol. *Drug and alcohol dependence*, *154*, 25–37. <https://doi.org/10.1016/j.drugalcdep.2015.06.015>
- Hartman, R. L., & Huestis, M. A. (2013). Cannabis effects on driving skills. *Clinical chemistry*, *59*(3), 478–492. <https://doi.org/10.1373/clinchem.2012.194381>
- Hasin, D. S., Keyes, K. M., Alderson, D., Wang, S., Aharonovich, E., & Grant, B. F. (2008). Cannabis withdrawal in the United States: results from NESARC. *The Journal of clinical psychiatry*, *69*(9), 1354–1363. <https://doi.org/10.4088/jcp.v69n0902>
- Hasin, D. S., Saha, T. D., Kerridge, B. T., Goldstein, R. B., Chou, S. P., Zhang, H., Jung, J., Pickering, R. P., Ruan, W. J., Smith, S. M., Huang, B., & Grant, B. F. (2015). Prevalence of Marijuana Use Disorders in the United States Between 2001–2002 and 2012–2013. *JAMA psychiatry*, *72*(12), 1235–1242. <https://doi.org/10.1001/jamapsychiatry.2015.1858>
- Hawaii Constitution. Article XI, § 7.
- Hayatbakhsh, M. R., Flenady, V. J., Gibbons, K. S., Kingsbury, A. M., Hurrion, E., Mamun, A. A., & Najman, J. M. (2012). Birth outcomes associated with cannabis use before and during pregnancy. *Pediatric research*, *71*(2), 215–219. <https://doi.org/10.1038/pr.2011.25>
- Hemachandra, D., McKetin, R., Cherbuin, N., & Anstey, K. J. (2016). Heavy cannabis users at elevated risk of stroke: evidence from a general population survey. *Australian and New Zealand journal of public health*, *40*(3), 226–230. <https://doi.org/10.1111/1753-6405.12477>
- Hengartner, M. P., Angst, J., Ajdacic-Gross, V., & Rössler, W. (2020). Cannabis use during adolescence and the occurrence of depression, suicidality and anxiety disorder across adulthood: Findings from a longitudinal cohort study over 30 years. *Journal of affective disorders*, *272*, 98–103. <https://doi.org/10.1016/j.jad.2020.03.126>
- Henquet, C., Krabbendam, L., Spauwen, J., Kaplan, C., Lieb, R., Wittchen, H. U., & van Os, J. (2005). Prospective cohort study of cannabis use, predisposition for psychosis, and psychotic symptoms in young people. *BMJ (Clinical research ed.)*, *330*(7481), 11. <https://doi.org/10.1136/bmj.38267.664086.63>
- Herrmann, E. S., Weerts, E. M., & Vandrey, R. (2015). Sex differences in cannabis withdrawal symptoms among treatment-seeking cannabis users. *Experimental and clinical psychopharmacology*, *23*(6), 415–421. <https://doi.org/10.1037/pha0000053>
- Higgins, P. G., Clough, D. H., Frank, B., & Wallerstedt, C. (1995). Changes in health behaviors made by pregnant substance users. *The International journal of the addictions*, *30*(10), 1323–1333. <https://doi.org/10.3109/10826089509105137>
- Hines, L. A., Freeman, T. P., Gage, S. H., Zammit, S., Hickman, M., Cannon, M., Munafo, M., MacLeod, J., & Heron, J. (2020). Association of High-Potency Cannabis Use With Mental Health and Substance

- Use in Adolescence. *JAMA psychiatry*, 77(10), 1044–1051.
<https://doi.org/10.1001/jamapsychiatry.2020.1035>
- Hjorthøj, C., Posselt, C. M., & Nordentoft, M. (2021). Development Over Time of the Population-Attributable Risk Fraction for Cannabis Use Disorder in Schizophrenia in Denmark. *JAMA psychiatry*, 78(9), 1013–1019. <https://doi.org/10.1001/jamapsychiatry.2021.1471>
- Holland, C. L., Rubio, D., Rodriguez, K. L., Kraemer, K. L., Day, N., Arnold, R. M., Tarr, J. A., & Chang, J. C. (2016). Obstetric Health Care Providers' Counseling Responses to Pregnant Patient Disclosures of Marijuana Use. *Obstetrics and gynecology*, 127(4), 681–687.
<https://doi.org/10.1097/AOG.0000000000001343>
- Holitzki, H., Dowsett, L. E., Spackman, E., Noseworthy, T., & Clement, F. (2017). Health effects of exposure to second- and third-hand marijuana smoke: a systematic review. *CMAJ open*, 5(4), E814–E822. <https://doi.org/10.9778/cmajo.20170112>
- Horwood, L. J., Fergusson, D. M., Hayatbakhsh, M. R., Najman, J. M., Coffey, C., Patton, G. C., Silins, E., & Hutchinson, D. M. (2010). Cannabis use and educational achievement: findings from three Australasian cohort studies. *Drug and alcohol dependence*, 110(3), 247–253.
<https://doi.org/10.1016/j.drugalcdep.2010.03.008>
- Huestis M. A. (2007). Human cannabinoid pharmacokinetics. *Chemistry & biodiversity*, 4(8), 1770–1804.
<https://doi.org/10.1002/cbdv.200790152>
- Hunault, C. C., Mensinga, T. T., Böcker, K. B., Schipper, C. M., Kruidenier, M., Leenders, M. E., de Vries, I., & Meulenbelt, J. (2009). Cognitive and psychomotor effects in males after smoking a combination of tobacco and cannabis containing up to 69 mg delta-9-tetrahydrocannabinol (THC). *Psychopharmacology*, 204(1), 85–94. <https://doi.org/10.1007/s00213-008-1440-0>
- Jacobus, J., Squeglia, L. M., Escobar, S., McKenna, B. M., Hernandez, M. M., Bagot, K. S., Taylor, C. T., & Huestis, M. A. (2017). Changes in marijuana use symptoms and emotional functioning over 28-days of monitored abstinence in adolescent marijuana users. *Psychopharmacology*, 234(23-24), 3431–3442. <https://doi.org/10.1007/s00213-017-4725-3>
- Jarlenski, M., Koma, J. W., Zank, J., Bodnar, L. M., Bogen, D. L., & Chang, J. C. (2017). Trends in perception of risk of regular marijuana use among US pregnant and nonpregnant reproductive-aged women. *American journal of obstetrics and gynecology*, 217(6), 705–707.
<https://doi.org/10.1016/j.ajog.2017.08.015>
- Jernigan, D., Noel, J., Landon, J., Thornton, N., & Lobstein, T. (2017). Alcohol marketing and youth alcohol consumption: a systematic review of longitudinal studies published since 2008. *Addiction (Abingdon, England)*, 112 Suppl 1, 7–20. <https://doi.org/10.1111/add.13591>
- Jessen K. (2004). Recreational use of phenytoin, marijuana, and alcohol: a case report. *Neurology*, 62(12), 2330. <https://doi.org/10.1212/01.wnl.0000130334.79514.ea>
- Jones, C. M., Clayton, H. B., Deputy, N. P., Roehler, D. R., Ko, J. Y., Esser, M. B., Brookmeyer, K. A., & Hertz, M. F. (2020). Prescription Opioid Misuse and Use of Alcohol and Other Substances Among High School Students - Youth Risk Behavior Survey, United States, 2019. *MMWR supplements*, 69(1), 38–46. <https://doi.org/10.15585/mmwr.su6901a5>
- Jones, H. J., Gage, S. H., Heron, J., Hickman, M., Lewis, G., Munafò, M. R., & Zammit, S. (2018). Association of Combined Patterns of Tobacco and Cannabis Use in Adolescence With Psychotic Experiences. *JAMA psychiatry*, 75(3), 240–246. <https://doi.org/10.1001/jamapsychiatry.2017.4271>
- Joya, X., Pujadas, M., Falcón, M., Civit, E., Garcia-Algar, O., Vall, O., Pichini, S., Luna, A., & de la Torre, R. (2010). Gas chromatography-mass spectrometry assay for the simultaneous quantification of drugs of abuse in human placenta at 12th week of gestation. *Forensic science international*, 196(1-3), 38–42. <https://doi.org/10.1016/j.forsciint.2009.12.044>
- Jusko, W. J., Gardner, M. J., Mangione, A., Schentag, J. J., Koup, J. R., & Vance, J. W. (1979). Factors affecting theophylline clearances: age, tobacco, marijuana, cirrhosis, congestive heart failure,

- obesity, oral contraceptives, benzodiazepines, barbiturates, and ethanol. *Journal of pharmaceutical sciences*, 68(11), 1358–1366. <https://doi.org/10.1002/jps.2600681106>
- Kalla, A., Krishnamoorthy, P. M., Gopalakrishnan, A., & Figueredo, V. M. (2018). Cannabis use predicts risks of heart failure and cerebrovascular accidents: results from the National Inpatient Sample. *Journal of cardiovascular medicine (Hagerstown, Md.)*, 19(9), 480–484. <https://doi.org/10.2459/JCM.0000000000000681>
- Kelly, T. H., Foltin, R. W., Emurian, C. S., & Fischman, M. W. (1993). Performance-based testing for drugs of abuse: dose and time profiles of marijuana, amphetamine, alcohol, and diazepam. *Journal of analytical toxicology*, 17(5), 264–272. <https://doi.org/10.1093/jat/17.5.264>
- Kempker, J. A., Honig, E. G., & Martin, G. S. (2015). The effects of marijuana exposure on expiratory airflow. A study of adults who participated in the U.S. National Health and Nutrition Examination Study. *Annals of the American Thoracic Society*, 12(2), 135–141. <https://doi.org/10.1513/AnnalsATS.201407-333OC>
- Kharbanda, E. O., Vazquez-Benitez, G., Kunin-Batson, A., Nordin, J. D., Olsen, A., & Romitti, P. A. (2020). Birth and early developmental screening outcomes associated with cannabis exposure during pregnancy. *Journal of perinatology : official journal of the California Perinatal Association*, 40(3), 473–480. <https://doi.org/10.1038/s41372-019-0576-6>
- Kiburi, S.K., Molebatsi, K., Ntlantsana K., Lynskey, M.T. (2021) Cannabis use in adolescence and risk of psychosis: Are there factors that moderate this relationship? A systematic review and meta-analysis, *Substance Abuse*, 42:4, 527-542, DOI: 10.1080/08897077.2021.1876200
- Kim, H. S., Anderson, J. D., Saghafi, O., Heard, K. J., & Monte, A. A. (2015). Cyclic vomiting presentations following marijuana liberalization in Colorado. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*, 22(6), 694–699. <https://doi.org/10.1111/acem.12655>
- Kim, J., de Castro, A., Lendoiro, E., Cruz-Landeira, A., López-Rivadulla, M., & Concheiro, M. (2018). Detection of in utero cannabis exposure by umbilical cord analysis. *Drug testing and analysis*, 10(4), 636–643. <https://doi.org/10.1002/dta.2307>
- Klassen, J., & Wilson, G. (2018). Cannabinoid Hyperemesis Syndrome Masquerading as Uremia: An Educational Case Report. *Canadian journal of kidney health and disease*, 5, 2054358118791146. <https://doi.org/10.1177/2054358118791146>
- Ko, J. Y., Farr, S. L., Tong, V. T., Creanga, A. A., & Callaghan, W. M. (2015). Prevalence and patterns of marijuana use among pregnant and nonpregnant women of reproductive age. *American journal of obstetrics and gynecology*, 213(2), 201.e1–201.e10. <https://doi.org/10.1016/j.ajog.2015.03.021>
- Kokkevi, A., Richardson, C., Olszewski, D., Matias, J., Monshouwer, K., & Bjarnason, T. (2012). Multiple substance use and self-reported suicide attempts by adolescents in 16 European countries. *European child & adolescent psychiatry*, 21(8), 443–450. <https://doi.org/10.1007/s00787-012-0276-7>
- Kosel, B. W., Aweeka, F. T., Benowitz, N. L., Shade, S. B., Hilton, J. F., Lizak, P. S., & Abrams, D. I. (2002). The effects of cannabinoids on the pharmacokinetics of indinavir and nelfinavir. *AIDS (London, England)*, 16(4), 543–550. <https://doi.org/10.1097/00002030-200203080-00005>
- Koto, P., Allen, V. M., Fahey, J., & Kuhle, S. (2022). Maternal cannabis use during pregnancy and maternal and neonatal outcomes: A retrospective cohort study. *BJOG : an international journal of obstetrics and gynaecology*, 129(10), 1687–1694. <https://doi.org/10.1111/1471-0528.17114>
- Kuepper, R., van Os, J., Lieb, R., Wittchen, H. U., Höfler, M., & Henquet, C. (2011). Continued cannabis use and risk of incidence and persistence of psychotic symptoms: 10 year follow-up cohort study. *BMJ (Clinical research ed.)*, 342, d738. <https://doi.org/10.1136/bmj.d738>
- Kuypers, K. P., Legrand, S. A., Ramaekers, J. G., & Verstraete, A. G. (2012). A case-control study estimating accident risk for alcohol, medicines and illegal drugs. *PLoS one*, 7(8), e43496. <https://doi.org/10.1371/journal.pone.0043496>

- Labuhn, M., LaBore, K., Ahmed, T., & Ahmed, R. (2021). Trends and instigators among young adolescent suicide in the United States. *Public health, 199*, 51–56. <https://doi.org/10.1016/j.puhe.2021.08.004>
- Lacson, J. C., Carroll, J. D., Tuazon, E., Castelao, E. J., Bernstein, L., & Cortessis, V. K. (2012). Population-based case-control study of recreational drug use and testis cancer risk confirms an association between marijuana use and nonseminoma risk. *Cancer, 118*(21), 5374–5383. <https://doi.org/10.1002/cncr.27554>
- Lanza, H. I., Bello, M. S., Cho, J., Barrington-Trimis, J. L., McConnell, R., Braymiller, J. L., Krueger, E. A., & Leventhal, A. M. (2021). Tobacco and cannabis poly-substance and poly-product use trajectories across adolescence and young adulthood. *Preventive medicine, 148*, 106545. <https://doi.org/10.1016/j.ypmed.2021.106545>
- Laumon, B., Gadegbeku, B., Martin, J. L., Biecheler, M. B., & SAM Group (2005). Cannabis intoxication and fatal road crashes in France: population based case-control study. *BMJ (Clinical research ed.)*, *331*(7529), 1371. <https://doi.org/10.1136/bmj.38648.617986.1F>
- Lee, M. L., Novotny, M., & Bartle, K. D. (1976). Gas chromatography/mass spectrometric and nuclear magnetic resonance spectrometric studies of carcinogenic polynuclear aromatic hydrocarbons in tobacco and marijuana smoke condensates. *Analytical chemistry, 48*(2), 405–416. <https://doi.org/10.1021/ac60366a048>
- Lenné, M. G., Dietze, P. M., Triggs, T. J., Walmsley, S., Murphy, B., & Redman, J. R. (2010). The effects of cannabis and alcohol on simulated arterial driving: Influences of driving experience and task demand. *Accident; analysis and prevention, 42*(3), 859–866. <https://doi.org/10.1016/j.aap.2009.04.021>
- Leung, J., Chan, G., Hides, L., & Hall, W. D. (2020). What is the prevalence and risk of cannabis use disorders among people who use cannabis? a systematic review and meta-analysis. *Addictive behaviors, 109*, 106479. <https://doi.org/10.1016/j.addbeh.2020.106479>
- Li, G., Chihuri, S., & Brady, J. E. (2017). Role of alcohol and marijuana use in the initiation of fatal two-vehicle crashes. *Annals of epidemiology, 27*(5), 342–347.e1. <https://doi.org/10.1016/j.annepidem.2017.05.003>
- Livne, O., Shmulewitz, D., Lev-Ran, S., & Hasin, D. S. (2019). DSM-5 cannabis withdrawal syndrome: Demographic and clinical correlates in U.S. adults. *Drug and alcohol dependence, 195*, 170–177. <https://doi.org/10.1016/j.drugalcdep.2018.09.005>
- Llamas, R., Hart, D. R., & Schneider, N. S. (1978). Allergic bronchopulmonary aspergillosis associated with smoking moldy marihuana. *Chest, 73*(6), 871–872. <https://doi.org/10.1378/chest.73.6.871>
- Llewellyn, G. C., & O'Rear, C. E. (1977). Examination of fungal growth and aflatoxin production on marihuana. *Mycopathologia, 62*(2), 109–112. <https://doi.org/10.1007/BF01259400>
- Lonsdale, H., Kimsey, K. M., Brown, J. M., Dey, A., Peck, J., Son, S., & Wilsey, M. (2021). Pediatric Cannabinoid Hyperemesis: A Single Institution 10-Year Case Series. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine, 68*(2), 255–261. <https://doi.org/10.1016/j.jadohealth.2020.09.024>
- Lopez-Quintero, C., Pérez de los Cobos, J., Hasin, D. S., Okuda, M., Wang, S., Grant, B. F., & Blanco, C. (2011). Probability and predictors of transition from first use to dependence on nicotine, alcohol, cannabis, and cocaine: results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Drug and alcohol dependence, 115*(1-2), 120–130. <https://doi.org/10.1016/j.drugalcdep.2010.11.004>
- Luke, S., Hutcheon, J., & Kendall, T. (2019). Cannabis Use in Pregnancy in British Columbia and Selected Birth Outcomes. *Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC, 41*(9), 1311–1317. <https://doi.org/10.1016/j.jogc.2018.11.014>

- Lynne-Landsman, S. D., Bradshaw, C. P., & Jalongo, N. S. (2010). Testing a developmental cascade model of adolescent substance use trajectories and young adult adjustment. *Development and psychopathology*, 22(4), 933–948. <https://doi.org/10.1017/S0954579410000556>
- Macleod, J., Robertson, R., Copeland, L., McKenzie, J., Elton, R., & Reid, P. (2015). Cannabis, tobacco smoking, and lung function: a cross-sectional observational study in a general practice population. *The British journal of general practice : the journal of the Royal College of General Practitioners*, 65(631), e89–e95. <https://doi.org/10.3399/bjgp15X683521>
- Malek, A. M., Cushman, M., Lackland, D. T., Howard, G., & McClure, L. A. (2015). Secondhand Smoke Exposure and Stroke: The Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study. *American journal of preventive medicine*, 49(6), e89–e97. <https://doi.org/10.1016/j.amepre.2015.04.014>
- Marchand, G., Masoud, A. T., Govindan, M., Ware, K., King, A., Ruther, S., Brazil, G., Ulibarri, H., Parise, J., Arroyo, A., Coriell, C., Goetz, S., Karrys, A., & Sainz, K. (2022). Birth Outcomes of Neonates Exposed to Marijuana in Utero: A Systematic Review and Meta-analysis. *JAMA network open*, 5(1), e2145653. <https://doi.org/10.1001/jamanetworkopen.2021.45653>
- Marchei, E., Pellegrini, M., Pacifici, R., Palmi, I., Lozano, J., García-Algar, O., & Pichini, S. (2006). Quantification of Delta9-tetrahydrocannabinol and its major metabolites in meconium by gas chromatographic-mass spectrometric assay: assay validation and preliminary results of the "meconium project". *Therapeutic drug monitoring*, 28(5), 700–706. <https://doi.org/10.1097/01.ftd.0000245380.95186.13>
- Marconi, A., Di Forti, M., Lewis, C. M., Murray, R. M., & Vassos, E. (2016). Meta-analysis of the Association Between the Level of Cannabis Use and Risk of Psychosis. *Schizophrenia bulletin*, 42(5), 1262–1269. <https://doi.org/10.1093/schbul/sbw003>
- Marel, C., Sunderland, M., Mills, K. L., Slade, T., Teesson, M., & Chapman, C. (2019). Conditional probabilities of substance use disorders and associated risk factors: Progression from first use to use disorder on alcohol, cannabis, stimulants, sedatives and opioids. *Drug and alcohol dependence*, 194, 136–142. <https://doi.org/10.1016/j.drugalcdep.2018.10.010>
- Mason, O., Morgan, C. J., Dhiman, S. K., Patel, A., Parti, N., Patel, A., & Curran, H. V. (2009). Acute cannabis use causes increased psychotomimetic experiences in individuals prone to psychosis. *Psychological medicine*, 39(6), 951–956. <https://doi.org/10.1017/S0033291708004741>
- Mayer, M. E., Kong, G., Barrington-Trimis, J. L., McConnell, R., Leventhal, A. M., & Krishnan-Sarin, S. (2020). Blunt and Non-Blunt Cannabis Use and Risk of Subsequent Combustible Tobacco Product Use Among Adolescents. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, 22(8), 1409–1413. <https://doi.org/10.1093/ntr/ntz225>
- McGrath, J., Welham, J., Scott, J., Varghese, D., Degenhardt, L., Hayatbakhsh, M. R., Alati, R., Williams, G. M., Bor, W., & Najman, J. M. (2010). Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of young adults. *Archives of general psychiatry*, 67(5), 440–447. <https://doi.org/10.1001/archgenpsychiatry.2010.6>
- McPartland, J.M., McKernan, K.J. (2017). Contaminants of Concern in Cannabis: Microbes, Heavy Metals and Pesticides. In: Chandra, S., Lata, H., ElSohly, M. (eds) Cannabis sativa L. - Botany and Biotechnology. Springer, Cham. https://doi.org/10.1007/978-3-319-54564-6_22
- Medina, K. L., Hanson, K. L., Schweinsburg, A. D., Cohen-Zion, M., Nagel, B. J., & Tapert, S. F. (2007). Neuropsychological functioning in adolescent marijuana users: subtle deficits detectable after a month of abstinence. *Journal of the International Neuropsychological Society : JINS*, 13(5), 807–820. <https://doi.org/10.1017/S1355617707071032>
- Mehmedic, Z., Chandra, S., Slade, D., Denham, H., Foster, S., Patel, A. S., Ross, S. A., Khan, I. A., & ElSohly, M. A. (2010). Potency trends of Δ9-THC and other cannabinoids in confiscated cannabis

- preparations from 1993 to 2008. *Journal of forensic sciences*, 55(5), 1209–1217.
<https://doi.org/10.1111/j.1556-4029.2010.01441.x>
- Melchior, M., Bolze, C., Fombonne, E., Surkan, P. J., Pryor, L., & Jauffret-Roustide, M. (2017). Early cannabis initiation and educational attainment: is the association causal? Data from the French TEMPO study. *International journal of epidemiology*, 46(5), 1641–1650.
<https://doi.org/10.1093/ije/dyx065>
- Ménétreay, A., Augsburger, M., Favrat, B., Pin, M. A., Rothuizen, L. E., Appenzeller, M., Buclin, T., Mangin, P., & Giroud, C. (2005). Assessment of driving capability through the use of clinical and psychomotor tests in relation to blood cannabinoids levels following oral administration of 20 mg dronabinol or of a cannabis decoction made with 20 or 60 mg Delta9-THC. *Journal of analytical toxicology*, 29(5), 327–338. <https://doi.org/10.1093/jat/29.5.327>
- Micallef, J., Dupouey, J., Jouve, E., Truillet, R., Lacarelle, B., Taillard, J., Daurat, A., Authié, C., Blin, O., Rascol, O., Philip, P., & Mestre, D. (2018). Cannabis smoking impairs driving performance on the simulator and real driving: a randomized, double-blind, placebo-controlled, crossover trial. *Fundamental & clinical pharmacology*, 32(5), 558–570. <https://doi.org/10.1111/fcp.12382>
- Millar, S. R., Mongan, D., Smyth, B. P., Perry, I. J., & Galvin, B. (2021). Relationships between age at first substance use and persistence of cannabis use and cannabis use disorder. *BMC public health*, 21(1), 997. <https://doi.org/10.1186/s12889-021-11023-0>
- Minerbi, A., Häuser, W., & Fitzcharles, M. A. (2019). Medical Cannabis for Older Patients. *Drugs & aging*, 36(1), 39–51. <https://doi.org/10.1007/s40266-018-0616-5>
- Moir, D., Rickert, W. S., Levasseur, G., Larose, Y., Maertens, R., White, P., & Desjardins, S. (2008). A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. *Chemical research in toxicology*, 21(2), 494–502.
<https://doi.org/10.1021/tx700275p>
- Monte, A. A., Shelton, S. K., Mills, E., Saben, J., Hopkinson, A., Sonn, B., Devivo, M., Chang, T., Fox, J., Brevik, C., Williamson, K., & Abbott, D. (2019). Acute Illness Associated With Cannabis Use, by Route of Exposure: An Observational Study. *Annals of internal medicine*, 170(8), 531–537.
<https://doi.org/10.7326/M18-2809>
- Moore, B. A., Augustson, E. M., Moser, R. P., & Budney, A. J. (2005). Respiratory effects of marijuana and tobacco use in a U.S. sample. *Journal of general internal medicine*, 20(1), 33–37.
<https://doi.org/10.1111/j.1525-1497.2004.40081.x>
- Moore, C., Coulter, C., Uges, D., Tuyay, J., van der Linde, S., van Leeuwen, A., Garnier, M., & Orbita, J., Jr (2011). Cannabinoids in oral fluid following passive exposure to marijuana smoke. *Forensic science international*, 212(1-3), 227–230. <https://doi.org/10.1016/j.forsciint.2011.06.019>
- Morgan, C. J., Rothwell, E., Atkinson, H., Mason, O., & Curran, H. V. (2010). Hyper-priming in cannabis users: a naturalistic study of the effects of cannabis on semantic memory function. *Psychiatry research*, 176(2-3), 213–218. <https://doi.org/10.1016/j.psychres.2008.09.002>
- Morris, M. A., Jacobson, S. R., Kinney, G. L., Tashkin, D. P., Woodruff, P. G., Hoffman, E. A., Kanner, R. E., Cooper, C. B., Drummond, M. B., Barr, R. G., Oelsner, E. C., Make, B. J., Han, M. K., Hansel, N. N., O'Neal, W. K., & Bowler, R. P. (2018). Marijuana Use Associations with Pulmonary Symptoms and Function in Tobacco Smokers Enrolled in the Subpopulations and Intermediate Outcome Measures in COPD Study (SPIROMICS). *Chronic obstructive pulmonary diseases (Miami, Fla.)*, 5(1), 46–56.
<https://doi.org/10.15326/jcopdf.5.1.2017.0141>
- Morrison, P. D., & Stone, J. M. (2011). Synthetic delta-9-tetrahydrocannabinol elicits schizophrenia-like negative symptoms which are distinct from sedation. *Human psychopharmacology*, 26(1), 77–80.
<https://doi.org/10.1002/hup.1166>
- Morrison, P. D., Zois, V., McKeown, D. A., Lee, T. D., Holt, D. W., Powell, J. F., Kapur, S., & Murray, R. M. (2009). The acute effects of synthetic intravenous Delta9-tetrahydrocannabinol on psychosis, mood

- and cognitive functioning. *Psychological medicine*, 39(10), 1607–1616.
<https://doi.org/10.1017/S0033291709005522>
- Moss, M. J., Bushlin, I., Kazmierczak, S., Koop, D., Hendrickson, R. G., Zuckerman, K. E., & Grigsby, T. M. (2021). Cannabis use and measurement of cannabinoids in plasma and breast milk of breastfeeding mothers. *Pediatric research*, 90(4), 861–868. <https://doi.org/10.1038/s41390-020-01332-2>
- Mura, P., Kintz, P., Ludes, B., Gaulier, J. M., Marquet, P., Martin-Dupont, S., Vincent, F., Kaddour, A., Goullé, J. P., Nouveau, J., Moulisma, M., Tilhet-Coartet, S., & Pourrat, O. (2003). Comparison of the prevalence of alcohol, cannabis and other drugs between 900 injured drivers and 900 control subjects: results of a French collaborative study. *Forensic science international*, 133(1-2), 79–85. [https://doi.org/10.1016/s0379-0738\(03\)00052-5](https://doi.org/10.1016/s0379-0738(03)00052-5)
- Mustonen, A., Niemelä, S., Nordström, T., Murray, G. K., Mäki, P., Jääskeläinen, E., & Miettunen, J. (2018). Adolescent cannabis use, baseline prodromal symptoms and the risk of psychosis. *The British journal of psychiatry : the journal of mental science*, 212(4), 227–233. <https://doi.org/10.1192/bjp.2017.52>
- Myran, D. T., Cantor, N., Finkelstein, Y., Pugliese, M., Guttman, A., Jesseman, R., & Tanuseputro, P. (2022). Unintentional Pediatric Cannabis Exposures After Legalization of Recreational Cannabis in Canada. *JAMA network open*, 5(1), e2142521. <https://doi.org/10.1001/jamanetworkopen.2021.42521>
- National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on the Health Effects of Marijuana: An Evidence Review and Research Agenda. (2017). *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*. Washington (DC): National Academies Press (US); 2017 Jan 12. 2, Cannabis. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK425762/>
- National Cannabis Industry Association. (2020). Environmental Sustainability in the Cannabis Industry (October 2020). <https://thecannabisindustry.org/wp-content/uploads/2020/11/NCIA-Environmental-Policy-BMP-October-17-final.pdf#:~:text=The%20NCIA%20environmental%20committee%20was%20formed%20to%20write,national%20levels%20and%20to%20help%20inform%20environmental%20policy>. Accessed on September 25, 2022.
- National Institute on Drug Abuse. (2020). What are the effects of secondhand exposure to marijuana smoke? <https://nida.nih.gov/publications/research-reports/marijuana/what-are-effects-secondhand-exposure-to-marijuana-smoke>. Accessed on September 25, 2022.
- National Institute on Drug Abuse. (2019). U.S. Surgeon General Warning on Marijuana Use in Adolescence and During Pregnancy. <https://nida.nih.gov/news-events/emerging-trend/us-surgeon-general-warning-marijuana-use-in-adolescence-during-pregnancy>. August 30, 2019. Accessed on September 25, 2022.
- Nestoros, J. N., Vakonaki, E., Tzatzarakis, M. N., Alegakis, A., Skondras, M. D., & Tsatsakis, A. M. (2017). Long lasting effects of chronic heavy cannabis abuse. *The American journal on addictions*, 26(4), 335–342. <https://doi.org/10.1111/ajad.12529>
- Nicolson, S. E., Denysenko, L., Mulcare, J. L., Vito, J. P., & Chabon, B. (2012). Cannabinoid hyperemesis syndrome: a case series and review of previous reports. *Psychosomatics*, 53(3), 212–219. <https://doi.org/10.1016/j.psych.2012.01.003>
- Nielsen, S. M., Toftdahl, N. G., Nordentoft, M., & Hjorthøj, C. (2017). Association between alcohol, cannabis, and other illicit substance abuse and risk of developing schizophrenia: a nationwide population based register study. *Psychological medicine*, 47(9), 1668–1677. <https://doi.org/10.1017/S0033291717000162>

- Nguyen, V. H., & Harley, K. G. (2022). Prenatal Cannabis Use and Infant Birth Outcomes in the Pregnancy Risk Assessment Monitoring System. *The Journal of pediatrics*, 240, 87–93. <https://doi.org/10.1016/j.jpeds.2021.08.088>
- Noland, J. S., Singer, L. T., Short, E. J., Minnes, S., Arendt, R. E., Kirchner, H. L., & Bearer, C. (2005). Prenatal drug exposure and selective attention in preschoolers. *Neurotoxicology and teratology*, 27(3), 429–438. <https://doi.org/10.1016/j.ntt.2005.02.001>
- Nourbakhsh, M., Miller, A., Gofton, J., Jones, G., & Adeagbo, B. (2019). Cannabinoid Hyperemesis Syndrome: Reports of Fatal Cases. *Journal of forensic sciences*, 64(1), 270–274. <https://doi.org/10.1111/1556-4029.13819>
- Onders, B., Casavant, M. J., Spiller, H. A., Chounthirath, T., & Smith, G. A. (2016). Marijuana Exposure Among Children Younger Than Six Years in the United States. *Clinical pediatrics*, 55(5), 428–436. <https://doi.org/10.1177/0009922815589912>
- Orenstein, D. G., & Glantz, S. A. (2018). Regulating Cannabis Manufacturing: Applying Public Health Best Practices from Tobacco Control. *Journal of psychoactive drugs*, 50(1), 19–32. <https://doi.org/10.1080/02791072.2017.1422816>
- Ortiz-Peregrina, S., Ortiz, C., Castro-Torres, J. J., Jiménez, J. R., & Anera, R. G. (2020). Effects of Smoking Cannabis on Visual Function and Driving Performance. A Driving-Simulator Based Study. *International journal of environmental research and public health*, 17(23), 9033. <https://doi.org/10.3390/ijerph17239033>
- Otten, R., Mun, C. J., & Dishion, T. J. (2017). The social exigencies of the gateway progression to the use of illicit drugs from adolescence into adulthood. *Addictive behaviors*, 73, 144–150. <https://doi.org/10.1016/j.addbeh.2017.05.011>
- Pacula, R. L., Kilmer, B., Wagenaar, A. C., Chaloupka, F. J., & Caulkins, J. P. (2014). Developing public health regulations for marijuana: lessons from alcohol and tobacco. *American journal of public health*, 104(6), 1021–1028. <https://doi.org/10.2105/AJPH.2013.301766>
- Parekh, T., Pemmasani, S., & Desai, R. (2020). Marijuana Use Among Young Adults (18–44 Years of Age) and Risk of Stroke: A Behavioral Risk Factor Surveillance System Survey Analysis. *Stroke*, 51(1), 308–310. <https://doi.org/10.1161/STROKEAHA.119.027828>
- Pardo, M., Matalí, J. L., Sivoli, J., Regina, V. B., Butjosa, A., Dolz, M., Sánchez, B., Barajas, A., Del Cacho, N., Baños, I., Ochoa, S., & Usall, J. (2021). Early onset psychosis and cannabis use: Prevalence, clinical presentation and influence of daily use. *Asian journal of psychiatry*, 62, 102714. <https://doi.org/10.1016/j.ajp.2021.102714>
- Patrick, M. E., Schulenberg, J. E., & O'Malley, P. M. (2016). High School Substance Use as a Predictor of College Attendance, Completion, and Dropout: A National Multi-cohort Longitudinal Study. *Youth & society*, 48(3), 425–447. <https://doi.org/10.1177/0044118X13508961>
- Paul, S. E., Hatoum, A. S., Fine, J. D., Johnson, E. C., Hansen, I., Karcher, N. R., Moreau, A. L., Bondy, E., Qu, Y., Carter, E. B., Rogers, C. E., Agrawal, A., Barch, D. M., & Bogdan, R. (2021). Associations Between Prenatal Cannabis Exposure and Childhood Outcomes: Results From the ABCD Study. *JAMA psychiatry*, 78(1), 64–76. <https://doi.org/10.1001/jamapsychiatry.2020.2902>
- Pedersen, E. R., Firth, C. L., Rodriguez, A., Shih, R. A., Seelam, R., Kraus, L., Dunbar, M. S., Tucker, J. S., Kilmer, B., & D'Amico, E. J. (2021). Examining Associations Between Licensed and Unlicensed Outlet Density and Cannabis Outcomes From Preopening to Postopening of Recreational Cannabis Outlets. *The American journal on addictions*, 30(2), 122–130. <https://doi.org/10.1111/ajad.13132>
- Perez-Reyes, M., Lipton, M. A., Timmons, M. C., Wall, M. E., Brine, D. R., & Davis, K. H. (1973). Pharmacology of orally administered 9 -tetrahydrocannabinol. *Clinical pharmacology and therapeutics*, 14(1), 48–55. <https://doi.org/10.1002/cpt197314148>

- Perron, B. E., Holt, K. R., Yeagley, E., & Ilgen, M. (2019). Mental health functioning and severity of cannabis withdrawal among medical cannabis users with chronic pain. *Drug and alcohol dependence, 194*, 401–409. <https://doi.org/10.1016/j.drugalcdep.2018.09.029>
- Pope, H. G., Jr, Gruber, A. J., Hudson, J. I., Huestis, M. A., & Yurgelun-Todd, D. (2001). Neuropsychological performance in long-term cannabis users. *Archives of general psychiatry, 58*(10), 909–915. <https://doi.org/10.1001/archpsyc.58.10.909>
- Pope, H. G., Jr, Gruber, A. J., Hudson, J. I., Cohane, G., Huestis, M. A., & Yurgelun-Todd, D. (2003). Early-onset cannabis use and cognitive deficits: what is the nature of the association?. *Drug and alcohol dependence, 69*(3), 303–310. [https://doi.org/10.1016/s0376-8716\(02\)00334-4](https://doi.org/10.1016/s0376-8716(02)00334-4)
- Preuss, U. W., Huestis, M. A., Schneider, M., Hermann, D., Lutz, B., Hasan, A., Kambeitz, J., Wong, J., & Hoch, E. (2021). Cannabis Use and Car Crashes: A Review. *Frontiers in psychiatry, 12*, 643315. <https://doi.org/10.3389/fpsy.2021.643315>
- Public Health Law Center at Mitchell Hamline School of Law. (2022) Content-Neutral Advertising Laws, July 2022. <https://www.publichealthlawcenter.org/sites/default/files/resources/Content-Neutral-Advertising.pdf>. Accessed on September 23, 2022.
- Public Health Law Center at Mitchell Hamline School of Law. (2022) Restricting Tobacco Advertisement, August 2022. <https://www.publichealthlawcenter.org/sites/default/files/resources/Restricting-Tobacco-Advertising.pdf>. Accessed on September 23, 2022.
- Pucci, L. G., & Siegel, M. (1999). Exposure to brand-specific cigarette advertising in magazines and its impact on youth smoking. *Preventive medicine, 29*(5), 313–320. <https://doi.org/10.1006/pmed.1999.0554>
- Quattrone, D., Ferraro, L., Tripoli, G., La Cascia, C., Quigley, H., Quattrone, A., Jongsma, H. E., Del Peschio, S., Gatto, G., EU-GEI group, Gayer-Anderson, C., Jones, P. B., Kirkbride, J. B., La Barbera, D., Tarricone, I., Berardi, D., Tosato, S., Lasalvia, A., Szöke, A., Arango, C., ... Di Forti, M. (2020). Daily use of high-potency cannabis is associated with more positive symptoms in first-episode psychosis patients: the EU-GEI case-control study. *Psychological medicine, 51*(8), 1–9. Advance online publication. <https://doi.org/10.1017/S0033291720000082>
- Ramaekers, J. G., Kauert, G., Theunissen, E. L., Toennes, S. W., & Moeller, M. R. (2009). Neurocognitive performance during acute THC intoxication in heavy and occasional cannabis users. *Journal of psychopharmacology (Oxford, England), 23*(3), 266–277. <https://doi.org/10.1177/0269881108092393>
- Ramaekers, J. G., Kauert, G., van Ruitenbeek, P., Theunissen, E. L., Schneider, E., & Moeller, M. R. (2006). High-potency marijuana impairs executive function and inhibitory motor control. *Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology, 31*(10), 2296–2303. <https://doi.org/10.1038/sj.npp.1301068>
- Ramaekers, J. G., Moeller, M. R., van Ruitenbeek, P., Theunissen, E. L., Schneider, E., & Kauert, G. (2006). Cognition and motor control as a function of Delta9-THC concentration in serum and oral fluid: limits of impairment. *Drug and alcohol dependence, 85*(2), 114–122. <https://doi.org/10.1016/j.drugalcdep.2006.03.015>
- Remington, T. L., Fuller, J., & Chiu, I. (2015). Chronic necrotizing pulmonary aspergillosis in a patient with diabetes and marijuana use. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne, 187*(17), 1305–1308. <https://doi.org/10.1503/cmaj.141412>
- Rodgers, G. B. (2002). The effectiveness of child-resistant packaging for aspirin. *Archives of pediatrics & adolescent medicine, 156*(9), 929–933. <https://doi.org/10.1001/archpedi.156.9.929>
- Rodgers, J., Buchanan, T., Scholey, A. B., Heffernan, T. M., Ling, J., & Parrott, A. (2001). Differential effects of Ecstasy and cannabis on self-reports of memory ability: a web-based study. *Human psychopharmacology, 16*(8), 619–625. <https://doi.org/10.1002/hup.345>

- Rodriguez, C. E., Sheeder, J., Allshouse, A. A., Scott, S., Wymore, E., Hopfer, C., Hermes, A., & Metz, T. D. (2019). Marijuana use in young mothers and adverse pregnancy outcomes: a retrospective cohort study. *BJOG : an international journal of obstetrics and gynaecology*, *126*(12), 1491–1497. <https://doi.org/10.1111/1471-0528.15885>
- Roebke, P. V., Vadhan, N. P., Brooks, D. J., & Levin, F. R. (2014). Verbal learning in marijuana users seeking treatment: a comparison between depressed and non-depressed samples. *The American journal of drug and alcohol abuse*, *40*(4), 274–279. <https://doi.org/10.3109/00952990.2013.875551>
- Rogeberg O. (2019). A meta-analysis of the crash risk of cannabis-positive drivers in culpability studies- Avoiding interpretational bias. *Accident; analysis and prevention*, *123*, 69–78. <https://doi.org/10.1016/j.aap.2018.11.011>
- Romano, E., Voas, R. B., & Camp, B. (2017). Cannabis and crash responsibility while driving below the alcohol per se legal limit. *Accident; analysis and prevention*, *108*, 37–43. <https://doi.org/10.1016/j.aap.2017.08.003>
- Ronen, A., Gershon, P., Drobiner, H., Rabinovich, A., Bar-Hamburger, R., Mechoulam, R., Cassuto, Y., & Shinar, D. (2008). Effects of THC on driving performance, physiological state and subjective feelings relative to alcohol. *Accident; analysis and prevention*, *40*(3), 926–934. <https://doi.org/10.1016/j.aap.2007.10.011>
- Rotella, J. A., Ferretti, O. G., Raisi, E., Seet, H. R., & Sarkar, S. (2022). Cannabinoid hyperemesis syndrome: A 6-year audit of adult presentations to an urban district hospital. *Emergency medicine Australasia : EMA*, *34*(4), 578–583. <https://doi.org/10.1111/1742-6723.13944>
- Roth, M. D., Arora, A., Barsky, S. H., Kleerup, E. C., Simmons, M., & Tashkin, D. P. (1998). Airway inflammation in young marijuana and tobacco smokers. *American journal of respiratory and critical care medicine*, *157*(3 Pt 1), 928–937. <https://doi.org/10.1164/ajrccm.157.3.9701026>
- Richter, L., Pugh, B. S., & Ball, S. A. (2017). Assessing the risk of marijuana use disorder among adolescents and adults who use marijuana. *The American journal of drug and alcohol abuse*, *43*(3), 247–260. <https://doi.org/10.3109/00952990.2016.1164711>
- Rubinstein, M. L., Rait, M. A., & Prochaska, J. J. (2014). Frequent marijuana use is associated with greater nicotine addiction in adolescent smokers. *Drug and alcohol dependence*, *141*, 159–162. <https://doi.org/10.1016/j.drugalcdep.2014.05.015>
- Rumalla, K., Reddy, A. Y., & Mittal, M. K. (2016). Recreational marijuana use and acute ischemic stroke: A population-based analysis of hospitalized patients in the United States. *Journal of the neurological sciences*, *364*, 191–196. <https://doi.org/10.1016/j.jns.2016.01.066>
- Russo E. B. (2016). Current Therapeutic Cannabis Controversies and Clinical Trial Design Issues. *Frontiers in pharmacology*, *7*, 309. <https://doi.org/10.3389/fphar.2016.00309>
- Russo, E. B., Spooner, C., May, L., Leslie, R., & Whiteley, V. L. (2022). Cannabinoid Hyperemesis Syndrome Survey and Genomic Investigation. *Cannabis and cannabinoid research*, *7*(3), 336–344. <https://doi.org/10.1089/can.2021.0046>
- Sampasa-Kanyinga, H., Dupuis, L. C., & Ray, R. (2017). Prevalence and correlates of suicidal ideation and attempts among children and adolescents. *International journal of adolescent medicine and health*, *29*(2), /j/ijamh.2017.29.issue-2/ijamh-2015-0053/ijamh-2015-0053.xml. <https://doi.org/10.1515/ijamh-2015-0053>
- Sánchez-Torres, A. M., Basterra, V., Rosa, A., Fañanás, L., Zarzuela, A., Ibáñez, B., Peralta, V., & Cuesta, M. J. (2013). Lifetime cannabis use and cognition in patients with schizophrenia spectrum disorders and their unaffected siblings. *European archives of psychiatry and clinical neuroscience*, *263*(8), 643–653. <https://doi.org/10.1007/s00406-013-0404-5>
- Sargent, J. D., Cukier, S., & Babor, T. F. (2020). Alcohol Marketing and Youth Drinking: Is There a Causal Relationship, and Why Does It Matter? *Journal of studies on alcohol and drugs. Supplement, Sup 19*(Suppl 19), 5–12. <https://doi.org/10.15288/jsads.2020.s19.5>

- Sasso, E. B., Bolshakova, M., Bogumil, D., Johnson, B., Komatsu, E., Sternberg, J., Cortessis, V., & Mullin, P. (2021). Marijuana use and perinatal outcomes in obstetric patients at a safety net hospital. *European journal of obstetrics, gynecology, and reproductive biology*, *266*, 36–41. <https://doi.org/10.1016/j.ejogrb.2021.09.015>
- Saurel-Cubizolles, M. J., Prunet, C., & Blondel, B. (2014). Cannabis use during pregnancy in France in 2010. *BJOG : an international journal of obstetrics and gynaecology*, *121*(8), 971–977. <https://doi.org/10.1111/1471-0528.12626>
- Schaefer, J. D., Hamdi, N. R., Malone, S. M., Vrieze, S., Wilson, S., McGue, M., & Iacono, W. G. (2021). Associations between adolescent cannabis use and young-adult functioning in three longitudinal twin studies. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(14), e2013180118. <https://doi.org/10.1073/pnas.2013180118>
- Schoeler, T., Kambeitz, J., Behlke, I., Murray, R., & Bhattacharyya, S. (2016). The effects of cannabis on memory function in users with and without a psychotic disorder: findings from a combined meta-analysis. *Psychological medicine*, *46*(1), 177–188. <https://doi.org/10.1017/S0033291715001646>
- Schuermeier, J., Salomonsen-Sautel, S., Price, R. K., Balan, S., Thurstone, C., Min, S. J., & Sakai, J. T. (2014). Temporal trends in marijuana attitudes, availability and use in Colorado compared to non-medical marijuana states: 2003-11. *Drug and alcohol dependence*, *140*, 145–155. <https://doi.org/10.1016/j.drugalcdep.2014.04.016>
- Sellers, C. M., Diaz-Valdes Iriarte, A., Wyman Battalen, A., & O'Brien, K. (2019). Alcohol and marijuana use as daily predictors of suicide ideation and attempts among adolescents prior to psychiatric hospitalization. *Psychiatry research*, *273*, 672–677. <https://doi.org/10.1016/j.psychres.2019.02.006>
- Sempio, C., Wymore, E., Palmer, C., Bunik, M., Henthorn, T. K., Christians, U., & Klawitter, J. (2021). Detection of Cannabinoids by LC-MS-MS and ELISA in Breast Milk. *Journal of analytical toxicology*, *45*(7), 686–692. <https://doi.org/10.1093/jat/bkaa142>
- Sexton, M., Cuttler, C., & Mischley, L. K. (2019). A Survey of Cannabis Acute Effects and Withdrawal Symptoms: Differential Responses Across User Types and Age. *Journal of alternative and complementary medicine (New York, N.Y.)*, *25*(3), 326–335. <https://doi.org/10.1089/acm.2018.0319>
- Sewell, R. A., Poling, J., & Sofuoglu, M. (2009). The effect of cannabis compared with alcohol on driving. *The American journal on addictions*, *18*(3), 185–193. <https://doi.org/10.1080/10550490902786934>
- Shah, S., Patel, S., Paulraj, S., & Chaudhuri, D. (2021). Association of Marijuana Use and Cardiovascular Disease: A Behavioral Risk Factor Surveillance System Data Analysis of 133,706 US Adults. *The American journal of medicine*, *134*(5), 614–620.e1. <https://doi.org/10.1016/j.amjmed.2020.10.019>
- Sherrill, D. L., Krzyzanowski, M., Bloom, J. W., & Lebowitz, M. D. (1991). Respiratory effects of non-tobacco cigarettes: a longitudinal study in general population. *International journal of epidemiology*, *20*(1), 132–137. <https://doi.org/10.1093/ije/20.1.132>
- Shi, Y., & Pacula, R. L. (2021). Assessment of Recreational Cannabis Dispensaries' Compliance With Underage Access and Marketing Restrictions in California. *JAMA pediatrics*, *175*(11), 1178–1180. <https://doi.org/10.1001/jamapediatrics.2021.2508>
- Shi, Y., Zhu, B., & Liang, D. (2021). The associations between prenatal cannabis use disorder and neonatal outcomes. *Addiction (Abingdon, England)*, *116*(11), 3069–3079. <https://doi.org/10.1111/add.15467>
- Sideli, L., Fisher, H. L., Murray, R. M., Sallis, H., Russo, M., Stilo, S. A., Paparelli, A., Wiffen, B., O'Connor, J. A., Pintore, S., Ferraro, L., La Cascia, C., La Barbera, D., Morgan, C., & Di Forti, M. (2018). Interaction between cannabis consumption and childhood abuse in psychotic disorders: preliminary findings on the role of different patterns of cannabis use. *Early intervention in psychiatry*, *12*(2), 135–142. <https://doi.org/10.1111/eip.12285>

- Silins, E., Horwood, L. J., Patton, G. C., Fergusson, D. M., Olsson, C. A., Hutchinson, D. M., Spry, E., Toumbourou, J. W., Degenhardt, L., Swift, W., Coffey, C., Tait, R. J., Letcher, P., Copeland, J., Mattick, R. P., & Cannabis Cohorts Research Consortium (2014). Young adult sequelae of adolescent cannabis use: an integrative analysis. *The lancet. Psychiatry*, *1*(4), 286–293. [https://doi.org/10.1016/S2215-0366\(14\)70307-4](https://doi.org/10.1016/S2215-0366(14)70307-4)
- Silins, E., Swift, W., Slade, T., Toson, B., Rodgers, B., & Hutchinson, D. M. (2017). A prospective study of the substance use and mental health outcomes of young adult former and current cannabis users. *Drug and alcohol review*, *36*(5), 618–625. <https://doi.org/10.1111/dar.12512>
- Simonetto, D. A., Oxentenko, A. S., Herman, M. L., & Szostek, J. H. (2012). Cannabinoid hyperemesis: a case series of 98 patients. *Mayo Clinic proceedings*, *87*(2), 114–119. <https://doi.org/10.1016/j.mayocp.2011.10.005>
- Simpson, K. A., Cho, J., & Barrington-Trimis, J. L. (2021). The association of type of cannabis product used and frequency of use with problematic cannabis use in a sample of young adult cannabis users. *Drug and alcohol dependence*, *226*, 108865. <https://doi.org/10.1016/j.drugalcdep.2021.108865>
- Smart, R., Caulkins, J. P., Kilmer, B., Davenport, S., & Midgette, G. (2017). Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington state. *Addiction (Abingdon, England)*, *112*(12), 2167–2177. <https://doi.org/10.1111/add.13886>
- Solomon, H. V., Greenstein, A. P., & DeLisi, L. E. (2021). Cannabis Use in Older Adults: A Perspective. *Harvard review of psychiatry*, *29*(3), 225–233. <https://doi.org/10.1097/HRP.000000000000289>
- Solowij, N., Stephens, R. S., Roffman, R. A., Babor, T., Kadden, R., Miller, M., Christiansen, K., McRee, B., Vendetti, J., & Marijuana Treatment Project Research Group (2002). Cognitive functioning of long-term heavy cannabis users seeking treatment. *JAMA*, *287*(9), 1123–1131. <https://doi.org/10.1001/jama.287.9.1123>
- Soneji, S., Barrington-Trimis, J. L., Wills, T. A., Leventhal, A. M., Unger, J. B., Gibson, L. A., Yang, J., Primack, B. A., Andrews, J. A., Miech, R. A., Spindle, T. R., Dick, D. M., Eissenberg, T., Hornik, R. C., Dang, R., & Sargent, J. D. (2017). Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults: A Systematic Review and Meta-analysis. *JAMA pediatrics*, *171*(8), 788–797. <https://doi.org/10.1001/jamapediatrics.2017.1488>
- Soriano-Co, M., Batke, M., & Cappell, M. S. (2010). The cannabis hyperemesis syndrome characterized by persistent nausea and vomiting, abdominal pain, and compulsive bathing associated with chronic marijuana use: a report of eight cases in the United States. *Digestive diseases and sciences*, *55*(11), 3113–3119. <https://doi.org/10.1007/s10620-010-1131-7>
- Soroosh, A. J., Henderson, R., Dodson, L., Mitchell, C. S., & Fahey, J. W. (2021). Mitigating potential public health problems associated with edible cannabis products through adequate regulation: A landscape analysis. *Critical reviews in food science and nutrition*, *61*(18), 3091–3099. <https://doi.org/10.1080/10408398.2020.1793099>
- Smith, A. M., Fried, P. A., Hogan, M. J., & Cameron, I. (2004). Effects of prenatal marijuana on response inhibition: an fMRI study of young adults. *Neurotoxicology and teratology*, *26*(4), 533–542. <https://doi.org/10.1016/j.ntt.2004.04.004>
- Snyder, L. B., Milici, F. F., Slater, M., Sun, H., & Strizhakova, Y. (2006). Effects of alcohol advertising exposure on drinking among youth. *Archives of pediatrics & adolescent medicine*, *160*(1), 18–24. <https://doi.org/10.1001/archpedi.160.1.18>
- Sparacino, C. M., Hyldborg, P. A., & Hughes, T. J. (1990). Chemical and biological analysis of marijuana smoke condensate. *NIDA research monograph*, *99*, 121–140.
- Steinberg, J., Unger, J. B., Hallett, C., Williams, E., Baezconde-Garbanati, L., & Cousineau, M. R. (2020). A Tobacco Control Framework for Regulating Public Consumption of Cannabis: Multistate Analysis and

- Policy Implications. *American journal of public health*, 110(2), 203–208.
<https://doi.org/10.2105/AJPH.2019.305423>
- Stiby, A. I., Hickman, M., Munafò, M. R., Heron, J., Yip, V. L., & Macleod, J. (2015). Adolescent cannabis and tobacco use and educational outcomes at age 16: birth cohort study. *Addiction (Abingdon, England)*, 110(4), 658–668. <https://doi.org/10.1111/add.12827>
- Stone D. (2014). Cannabis, pesticides and conflicting laws: the dilemma for legalized States and implications for public health. *Regulatory toxicology and pharmacology : RTP*, 69(3), 284–288.
<https://doi.org/10.1016/j.yrtph.2014.05.015>
- Story, M., & French, S. (2004). Food Advertising and Marketing Directed at Children and Adolescents in the US. *The international journal of behavioral nutrition and physical activity*, 1(1), 3.
<https://doi.org/10.1186/1479-5868-1-3>
- Stott, C., White, L., Wright, S., Wilbraham, D., & Guy, G. (2013). A Phase I, open-label, randomized, crossover study in three parallel groups to evaluate the effect of Rifampicin, Ketoconazole, and Omeprazole on the pharmacokinetics of THC/CBD oromucosal spray in healthy volunteers. *SpringerPlus*, 2(1), 236. <https://doi.org/10.1186/2193-1801-2-236>
- Straub, H. L., Mou, J., Drennan, K. J., & Pflugeisen, B. M. (2021). Maternal Marijuana Exposure and Birth Weight: An Observational Study Surrounding Recreational Marijuana Legalization. *American journal of perinatology*, 38(1), 65–75. <https://doi.org/10.1055/s-0039-1694793>
- Substance Abuse and Mental Health Services Administration. (2019). Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/> on September 22, 2022.
- Substance Abuse and Mental Health Services Administration. (2021). *Key substance use and mental health indicators in the United States: Results from the 2020 National Survey on Drug Use and Health* (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/CBHSQrequest@samhsa.hhs.gov> on September 22, 2022.
- Substance Abuse and Mental Health Services Administration. (2021). *Preventing Marijuana Use Among Youth*. SAMHSA Publication No. PEP21-06-01-001. Rockville, MD: National Mental Health and Substance Use Policy Laboratory, Substance Abuse and Mental Health Services Administration. https://store.samhsa.gov/sites/default/files/SAMHSA_Digital_Download/PEP21-06-01-001.pdf. Accessed on September 22, 2022.
- Sullivan, N., Elzinga, S., & Raber, J. C. (2013). Determination of pesticide residues in cannabis smoke. *Journal of toxicology*, 2013, 378168. <https://doi.org/10.1155/2013/378168>
- Swift, W., Coffey, C., Carlin, J. B., Degenhardt, L., & Patton, G. C. (2008). Adolescent cannabis users at 24 years: trajectories to regular weekly use and dependence in young adulthood. *Addiction (Abingdon, England)*, 103(8), 1361–1370. <https://doi.org/10.1111/j.1360-0443.2008.02246.x>
- Swift, W., Coffey, C., Degenhardt, L., Carlin, J. B., Romaniuk, H., & Patton, G. C. (2012). Cannabis and progression to other substance use in young adults: findings from a 13-year prospective population-based study. *Journal of epidemiology and community health*, 66(7), e26.
<https://doi.org/10.1136/jech.2010.129056>
- Tank, A., Tietz, T., Daldrup, T., Schwender, H., Hellen, F., Ritz-Timme, S., & Hartung, B. (2019). On the impact of cannabis consumption on traffic safety: a driving simulator study with habitual cannabis consumers. *International journal of legal medicine*, 133(5), 1411–1420.
<https://doi.org/10.1007/s00414-019-02006-3>
- Tashkin, D. P., Coulson, A. H., Clark, V. A., Simmons, M., Bourque, L. B., Duann, S., Spivey, G. H., & Gong, H. (1987). Respiratory symptoms and lung function in habitual heavy smokers of marijuana alone,

- smokers of marijuana and tobacco, smokers of tobacco alone, and nonsmokers. *The American review of respiratory disease*, 135(1), 209–216. <https://doi.org/10.1164/arrd.1987.135.1.209>
- Taylor, D. R., Poulton, R., Moffitt, T. E., Ramankutty, P., & Sears, M. R. (2000). The respiratory effects of cannabis dependence in young adults. *Addiction (Abingdon, England)*, 95(11), 1669–1677. <https://doi.org/10.1046/j.1360-0443.2000.951116697.x>
- Taylor, M., Collin, S. M., Munafò, M. R., MacLeod, J., Hickman, M., & Heron, J. (2017). Patterns of cannabis use during adolescence and their association with harmful substance use behaviour: findings from a UK birth cohort. *Journal of epidemiology and community health*, 71(8), 764–770. <https://doi.org/10.1136/jech-2016-208503>
- Thames, A. D., Arbid, N., & Sayegh, P. (2014). Cannabis use and neurocognitive functioning in a non-clinical sample of users. *Addictive behaviors*, 39(5), 994–999. <https://doi.org/10.1016/j.addbeh.2014.01.019>
- Thanvi, B. R., & Treadwell, S. D. (2009). Cannabis and stroke: is there a link?. *Postgraduate medical journal*, 85(1000), 80–83. <https://doi.org/10.1136/pgmj.2008.070425>
- Thomas, A. A., Dickerson-Young, T., & Mazor, S. (2021). Unintentional Pediatric Marijuana Exposures at a Tertiary Care Children's Hospital in Washington State: A Retrospective Review. *Pediatric emergency care*, 37(10), e594–e598. <https://doi.org/10.1097/PEC.0000000000001703>
- Thompson, G. R., 3rd, Tuscano, J. M., Dennis, M., Singapuri, A., Libertini, S., Gaudino, R., Torres, A., Delisle, J. M., Gillice, J. D., Schupp, J. M., & Engelthaler, D. M. (2017). A microbiome assessment of medical marijuana. *Clinical microbiology and infection: the official publication of the European Society of Clinical Microbiology and Infectious Diseases*, 23(4), 269–270. <https://doi.org/10.1016/j.cmi.2016.12.001>
- Trabert, B., Sigurdson, A. J., Sweeney, A. M., Strom, S. S., & McGlynn, K. A. (2011). Marijuana use and testicular germ cell tumors. *Cancer*, 117(4), 848–853. <https://doi.org/10.1002/cncr.25499>
- University of Washington. (2016). "Factors that might attract children to marijuana edibles." ScienceDaily. ScienceDaily, 25 August 2016. www.sciencedaily.com/releases/2016/08/160825141908.htm.
- van Gastel, W. A., Vreeker, A., Schubart, C. D., MacCabe, J. H., Kahn, R. S., & Boks, M. P. (2014). Change in cannabis use in the general population: a longitudinal study on the impact on psychotic experiences. *Schizophrenia research*, 157(1-3), 266–270. <https://doi.org/10.1016/j.schres.2014.04.023>
- van Os, J., Bak, M., Hanssen, M., Bijl, R. V., de Graaf, R., & Verdoux, H. (2002). Cannabis use and psychosis: a longitudinal population-based study. *American journal of epidemiology*, 156(4), 319–327. <https://doi.org/10.1093/aje/kwf043>
- van Winkel, R., & Genetic Risk and Outcome of Psychosis (GROUP) Investigators (2011). Family-based analysis of genetic variation underlying psychosis-inducing effects of cannabis: sibling analysis and proband follow-up. *Archives of general psychiatry*, 68(2), 148–157. <https://doi.org/10.1001/archgenpsychiatry.2010.152>
- Vandrey, R. G., Budney, A. J., Hughes, J. R., & Liguori, A. (2008). A within-subject comparison of withdrawal symptoms during abstinence from cannabis, tobacco, and both substances. *Drug and alcohol dependence*, 92(1-3), 48–54. <https://doi.org/10.1016/j.drugalcdep.2007.06.010>
- Vandrey, R., Budney, A. J., Kamon, J. L., & Stanger, C. (2005). Cannabis withdrawal in adolescent treatment seekers. *Drug and alcohol dependence*, 78(2), 205–210. <https://doi.org/10.1016/j.drugalcdep.2004.11.001>
- Vandrey, R. G., Budney, A. J., Moore, B. A., & Hughes, J. R. (2005). A cross-study comparison of cannabis and tobacco withdrawal. *The American journal on addictions*, 14(1), 54–63. <https://doi.org/10.1080/10550490590899853>

- Vin-Raviv, N., Akinyemiju, T., Meng, Q., Sakhujia, S., & Hayward, R. (2017). Marijuana use and inpatient outcomes among hospitalized patients: analysis of the nationwide inpatient sample database. *Cancer medicine*, 6(1), 320–329. <https://doi.org/10.1002/cam4.968>
- Vindenes, V., Strand, D. H., Kristoffersen, L., Boix, F., & Mørland, J. (2013). Has the intake of THC by cannabis users changed over the last decade? Evidence of increased exposure by analysis of blood THC concentrations in impaired drivers. *Forensic science international*, 226(1-3), 197–201. <https://doi.org/10.1016/j.forsciint.2013.01.017>
- Volkow, N. D., Han, B., Compton, W. M., & McCance-Katz, E. F. (2019). Self-reported Medical and Nonmedical Cannabis Use Among Pregnant Women in the United States. *JAMA*, 322(2), 167–169. <https://doi.org/10.1001/jama.2019.7982>
- von Both, I., & Santos, B. (2021). Death of a young woman with cyclic vomiting: a case report. *Forensic science, medicine, and pathology*, 17(4), 715–722. <https://doi.org/10.1007/s12024-021-00410-z>
- Wainberg, M., Jacobs, G. R., di Forti, M., & Tripathy, S. J. (2021). Cannabis, schizophrenia genetic risk, and psychotic experiences: a cross-sectional study of 109,308 participants from the UK Biobank. *Translational psychiatry*, 11(1), 211. <https://doi.org/10.1038/s41398-021-01330-w>
- Wallace, E. A., Andrews, S. E., Garmany, C. L., & Jelley, M. J. (2011). Cannabinoid hyperemesis syndrome: literature review and proposed diagnosis and treatment algorithm. *Southern medical journal*, 104(9), 659–664. <https://doi.org/10.1097/SMJ.0b013e3182297d57>
- Wang, G. S., Banerji, S., Contreras, A. E., & Hall, K. E. (2020). Marijuana exposures in Colorado, reported to regional poison centre, 2000-2018. *Injury prevention: journal of the International Society for Child and Adolescent Injury Prevention*, 26(2), 184–186. <https://doi.org/10.1136/injuryprev-2019-043360>
- Wang, G. S., Le Lait, M. C., Deakyne, S. J., Bronstein, A. C., Bajaj, L., & Roosevelt, G. (2016). Unintentional Pediatric Exposures to Marijuana in Colorado, 2009-2015. *JAMA pediatrics*, 170(9), e160971. <https://doi.org/10.1001/jamapediatrics.2016.0971>
- Wang, G. S., Roosevelt, G., & Heard, K. (2013). Pediatric marijuana exposures in a medical marijuana state. *JAMA pediatrics*, 167(7), 630–633. <https://doi.org/10.1001/jamapediatrics.2013.140>
- Wang, G. S., Hoyte, C., Roosevelt, G., & Heard, K. (2019). The Continued Impact of Marijuana Legalization on Unintentional Pediatric Exposures in Colorado. *Clinical pediatrics*, 58(1), 114–116. <https://doi.org/10.1177/0009922818805206>
- Wang, G. S., Roosevelt, G., Le Lait, M. C., Martinez, E. M., Bucher-Bartelson, B., Bronstein, A. C., & Heard, K. (2014). Association of unintentional pediatric exposures with decriminalization of marijuana in the United States. *Annals of emergency medicine*, 63(6), 684–689. <https://doi.org/10.1016/j.annemergmed.2014.01.017>
- Warshak, C. R., Regan, J., Moore, B., Magner, K., Kritzer, S., & Van Hook, J. (2015). Association between marijuana use and adverse obstetrical and neonatal outcomes. *Journal of perinatology : official journal of the California Perinatal Association*, 35(12), 991–995. <https://doi.org/10.1038/jp.2015.120>
- Weeks, M., & Colman, I. (2017). Predictors of Suicidal Behaviors in Canadian Adolescents with No Recent History of Depression. *Archives of suicide research : official journal of the International Academy for Suicide Research*, 21(2), 354–364. <https://doi.org/10.1080/13811118.2016.1193076>
- Weinstein, A., Brickner, O., Lerman, H., Greeland, M., Bloch, M., Lester, H., Chisin, R., Sarne, Y., Mechoulam, R., Bar-Hamburger, R., Freedman, N., & Even-Sapir, E. (2008). A study investigating the acute dose-response effects of 13 mg and 17 mg Delta 9- tetrahydrocannabinol on cognitive-motor skills, subjective and autonomic measures in regular users of marijuana. *Journal of psychopharmacology (Oxford, England)*, 22(4), 441–451. <https://doi.org/10.1177/0269881108088194>
- Westover, A. N., McBride, S., & Haley, R. W. (2007). Stroke in young adults who abuse amphetamines or cocaine: a population-based study of hospitalized patients. *Archives of general psychiatry*, 64(4), 495–502. <https://doi.org/10.1001/archpsyc.64.4.495>

- Whitehill, J. M., Dilley, J. A., Brooks-Russell, A., Terpak, L., & Graves, J. M. (2021). Edible Cannabis Exposures Among Children: 2017-2019. *Pediatrics*, *147*(4), e2020019893. <https://doi.org/10.1542/peds.2020-019893>
- Whitehill, J. M., Harrington, C., Lang, C. J., Chary, M., Bhutta, W. A., & Burns, M. M. (2019). Incidence of Pediatric Cannabis Exposure Among Children and Teenagers Aged 0 to 19 Years Before and After Medical Marijuana Legalization in Massachusetts. *JAMA network open*, *2*(8), e199456. <https://doi.org/10.1001/jamanetworkopen.2019.9456>
- Wilens, T. E., Biederman, J., & Spencer, T. J. (1997). Case study: adverse effects of smoking marijuana while receiving tricyclic antidepressants. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*(1), 45–48. <https://doi.org/10.1097/00004583-199701000-00016>
- Willford, J. A., Chandler, L. S., Goldschmidt, L., & Day, N. L. (2010). Effects of prenatal tobacco, alcohol and marijuana exposure on processing speed, visual-motor coordination, and interhemispheric transfer. *Neurotoxicology and teratology*, *32*(6), 580–588. <https://doi.org/10.1016/j.ntt.2010.06.004>
- Wilhite, E. R., Ashenurst, J. R., Marino, E. N., & Fromme, K. (2017). Freshman year alcohol and marijuana use prospectively predict time to college graduation and subsequent adult roles and independence. *Journal of American college health : J of ACH*, *65*(6), 413–422. <https://doi.org/10.1080/07448481.2017.1341892>
- Wolff, V., Armspach, J. P., Lauer, V., Rouyer, O., Bataillard, M., Marescaux, C., & Geny, B. (2013). Cannabis-related stroke: myth or reality? *Stroke*, *44*(2), 558–563. <https://doi.org/10.1161/STROKEAHA.112.671347>
- Wymore, E. M., Palmer, C., Wang, G. S., Metz, T. D., Bourne, D., Sempio, C., & Bunik, M. (2021). Persistence of Δ -9-Tetrahydrocannabinol in Human Breast Milk. *JAMA pediatrics*, *175*(6), 632–634. <https://doi.org/10.1001/jamapediatrics.2020.6098>
- Yamreudeewong, W., Wong, H. K., Brausch, L. M., & Pulley, K. R. (2009). Probable interaction between warfarin and marijuana smoking. *The Annals of pharmacotherapy*, *43*(7), 1347–1353. <https://doi.org/10.1345/aph.1M064>
- Young-Wolff, K. C., Adams, S. R., Padon, A., Silver, L. D., Alexeeff, S. E., Van Den Eeden, S. K., & Avalos, L. A. (2021). Association of Cannabis Retailer Proximity and Density With Cannabis Use Among Pregnant Women in Northern California After Legalization of Cannabis for Recreational Use. *JAMA network open*, *4*(3), e210694. <https://doi.org/10.1001/jamanetworkopen.2021.0694>
- Young-Wolff, K. C., Tucker, L. Y., Alexeeff, S., Armstrong, M. A., Conway, A., Weisner, C., & Goler, N. (2017). Trends in Self-reported and Biochemically Tested Marijuana Use Among Pregnant Females in California From 2009-2016. *JAMA*, *318*(24), 2490–2491. <https://doi.org/10.1001/jama.2017.17225>
- Yu, B., Chen, X., & Wang, Y. (2018). Dynamic transitions between marijuana use and cigarette smoking among US adolescents and emerging adults. *The American journal of drug and alcohol abuse*, *44*(4), 452–462. <https://doi.org/10.1080/00952990.2018.1434535>
- Zaman, T., Malowney, M., Knight, J., & Boyd, J. W. (2015). Co-Occurrence of Substance-Related and Other Mental Health Disorders Among Adolescent Cannabis Users. *Journal of addiction medicine*, *9*(4), 317–321. <https://doi.org/10.1097/ADM.0000000000000138>
- Zammit, S., Allebeck, P., Andreasson, S., Lundberg, I., & Lewis, G. (2002). Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: historical cohort study. *BMJ (Clinical research ed.)*, *325*(7374), 1199. <https://doi.org/10.1136/bmj.325.7374.1199>
- Zhang, X., & Wu, L. T. (2014). Suicidal ideation and substance use among adolescents and young adults: a bidirectional relation? *Drug and alcohol dependence*, *142*, 63–73. <https://doi.org/10.1016/j.drugalcdep.2014.05.025>
- Zullino, D. F., Delessert, D., Eap, C. B., Preisig, M., & Baumann, P. (2002). Tobacco and cannabis smoking cessation can lead to intoxication with clozapine or olanzapine. *International clinical psychopharmacology*, *17*(3), 141–143. <https://doi.org/10.1097/00004850-200205000-00008>

Appendices

Appendix 1. Key Points – June 27, 2022

06.27.2022 Public Health and Safety Working Group Key Points

- Look into Department of Health public information campaign percentage.
 - Link to DOH Media Campaign: [Communications – Chronic Disease Prevention & Health Promotion Division | Media Campaigns \(hawaii.gov\)](#)
- Michelle Nakata will talk to DCCA regarding cryptocurrency for the limited purpose of cannabis transactions.
- Jared Redulla: DPS will look into what works in other states for cryptocurrency in banking and how they can track/ the traffic of cryptocurrency
- Members will provide ideas on the banking problems so as to prepare for the liberalization of the current laws when it comes to cannabis

List below are potential solutions from individuals who provided written/verbal testimony:

- **Potential Solutions:** one working group that could look into what options are available in the state to avoid this conflict with DEA
 - Look into our use of Medical Cannabis Act
 - Iowa and Minnesota addressed this issue to DEA with a letter.
 - The DEA denied the petition to exempt Iowa's medical marijuana program from the Controlled Substances Act in 2020.
- **Potential Solutions:** a complete reassessment of the current medical cannabis program specifically addressing improvements in access to appropriately educated providers, specialized in product categories, and increasing the qualifying condition list with the goal of expanding and supporting current and future patient populations.
- **Potential solutions:** Unintended consequences working group: to identify and make recommendations on the negative consequences that patients and end users face when they must violate federal law to participate in the state authorized use of cannabis, to include the steps the State can take to prevent such consequences.
- **Potential solutions:** Communities harmed by the disparate racial impact of the war on drugs generally, not just "cannabis criminalization" because the cannabis laws were the tip of the spear for prosecuting that larger policy racist at both the state and federal levels that flowed massive militarization police funding into Hawaii for decades. Driving cannabis cultivation deep

underground resulted in the shift to other illegal drugs to fund demonetized communities struggling for lack of educational and economic opportunities. That meant ice. The uptick of ice addiction and trafficking is a direct result of Green Harvest and other "cannabis criminalization" which then lead to further public health devastation, disproportionate mass incarceration for other drug crimes, and an environment of violence and lawlessness in low income neighborhoods, often predominantly Native Hawaiian. Social equity must include those considerations as well.

- B) As for continuity of medical access, a regulatory recommendation to continue home grows, caregivers, and coops must be specifically included in this report- as directed by the Legislature in HB2260 as enacted.
- C) The role of the hemp licensees in the future of "dual use" legalization must be considered, and specifically as to including automatic cannabis cultivation licensing as was done in the New York State social equity program.
- D) The emerging social equity program in San Diego County in California must be considered.
- E) The reasonable policy of expanding and diversifying the medical supply chain to immediately include home grown, caregiver grown, and coop grown surplus medicine must be immediately considered as a stepping stone to a future dual use regime.
- F) The possibility that patients are best served by a robust unified lightly-regulated market must be considered as an alternative to so-called "dual use."

Appendix 2. Drug Interaction Table

Drug interaction table						
<p>The Retail Marijuana Public Health Advisory Committee (RMPHAC) developed the following table to list the potential drug interactions with marijuana based on what has been documented in the peer-reviewed literature. However, the RMPHAC acknowledges this list as not comprehensive of all potential drug interactions. It is advised that individuals consult with their doctor regarding the potential for drug interactions prescribed medications may have with marijuana.</p>						
Potential Drug Interactions with Marijuana						
Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Chlorpromazine	Marijuana smoking increased clearance of chlorpromazine, as did tobacco smoking	No				Possible
Clobazam	In subjects taking cannabidiol (CBD), mean clobazam levels were about 60- 80% higher, and nCLB levels 300-500% higher. A decrease in the clobazam dose was required in subjects taking CBD.	No		Yes	Possible	

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Clozapine	Possible increased clozapine metabolism by marijuana induction of CYP1A2 (similar to tobacco). Therefore cessation may lead to increased clozapine levels and toxicity. Single case report of clozapine toxicity after tobacco and marijuana cessation.	No			Possible	Possible
CNS depressants	Additive drowsiness and CNS depression Includes: alcohol, opioids, sedative hypnotics, barbiturates, benzodiazepine, buspirone, antihistamines, muscles relaxants, and many more.	No		Yes		

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Disulfiram	Possible hypomanic/psychotic reaction.	No	Possible			
Fluoxetine	No change in fluoxetine efficacy and no serious adverse reactions in a 12 week clinical study of fluoxetine vs. placebo for marijuana-related depression.	No				

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Hexobarbital	May enhance CNS depressant effect. CBD decreased metabolism of hexobarbital but did not change its clinical effects.	No		Yes	Possible	
Hydrocortisone	THC increased serum cortisol, but effect is blunted in frequent users. Theoretical possibility of cushingoid syndrome.	No			Possible	

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Hexobarbital	May enhance CNS depressant effect. CBD decreased metabolism of hexobarbital but did not change its clinical effects.	No		Yes	Possible	
Hydrocortisone	THC increased serum cortisol, but effect is blunted in frequent users. Theoretical possibility of cushingoid syndrome.	No			Possible	

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Ketoconazole	Peak THC concentration was increased by 27%.	No	Possible	Possible		
MAO Inhibitors	Possible enhancement of orthostatic hypotension.	No				

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Phenytoin	May enhance CNS depressant effect. In vitro, decreased phenytoin levels due to induction of metabolism by THC. Therefore, phenytoin levels may rise rapidly after THC cessation, causing toxicity. Intermittent THC use may cause transient subtherapeutic phenytoin levels. Case report of phenytoin toxicity after recreational use of phenytoin concomitantly with EtOH and marijuana.	No		Yes	Possible	Possible
Protease inhibitors	Statistically significant decrease in peak concentration of indinavir and nelfinavir with THC use.	No				Possible

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Theophylline	<p>Smoked marijuana lowers theophylline concentrations, similar to tobacco.</p> <p>Unclear if only a smoking-related effect. No studies of oral marijuana/THC.</p>	No				Possible
Tricyclic antidepressants	<p>May cause transient cognitive changes, delirium, or tachycardia.</p>	No	Possible		Possible	

Concomitant Drug/Drug Class	Description of Interaction	Contra-indicated	Increased THC Effect	Increased CNS Depressant	Increased Concomitant Drug Effect	Decreased Concomitant Drug Effect
Warfarin	Possible enhanced anticoagulant effect.	No			Possible	

Appendix 3. Health & Safety Impacts

CANCER		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Testicular Cancer	MODERATE evidence that cannabis use among adult males is associated with an increased risk of non-seminoma testicular cancer	NASEM; RMPHAC
Pre-Cancerous Lesions	SUBSTANTIAL evidence that daily or near-daily cannabis smoking is associated with pre-malignant lesions in the airway	RMPHAC
Prostate Cancer	LIMITED evidence that cannabis use among adult males is associated with an increased risk of prostate cancer	RMPHAC
CARDIOMETABOLIC RISK		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Heart Attack	LIMITED evidence that acute cannabis use increases the risk of myocardial infarction	NASEM; RMPHAC
Stroke	MODERATE evidence that cannabis use increases risk of ischemic stroke in individuals younger than 55 years of age	NASEM; RMPHAC
Diabetes	LIMITED evidence of a statistical association between cannabis use and increased risk of prediabetes	NASEM
RESPIRATORY HEALTH		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
COPD	LIMITED evidence that occasional cannabis smoking is associated with an increased risk of developing chronic obstructive pulmonary disease (COPD) when controlled for tobacco use	NASEM
Cannabis Smoke	SUBSTANTIAL evidence that cannabis smoke, both mainstream and sidestream, contains many of the same cancer-causing chemicals as tobacco smoke	RMPHAC
Collapsed Lung	LIMITED evidence that daily or near-daily cannabis smoking is associated with bullous lung disease leading to pneumothorax in individuals younger than 40 years of age	RMPHAC
Bronchitis	SUBSTANTIAL evidence that heavy cannabis smoking is associated with chronic bronchitis, including chronic cough, sputum production, and wheezing	NASEM
Particulates in Smoked Cannabis	LIMITED evidence that smoking cannabis deposits more particulate matter per puff in the lungs compared to tobacco smoke	RMPHAC
Water Pipes	LIMITED evidence from simulated smoking studies that smoke from water pipes or bongos contains more cancer-causing chemicals per milligram of THC compared to smoke from unfiltered joints	RMPHAC
PRENATAL, PERINATAL, AND NEONATAL EXPOSURE		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Academic Ability	MODERATE evidence that maternal cannabis use during pregnancy is associated with decreased academic ability of exposed offspring	RMPHAC
Attention Problems	MODERATE evidence that maternal use of cannabis during pregnancy is associated with attention problems in exposed offspring	RMPHAC
Behavior Problems	LIMITED evidence that maternal cannabis use during pregnancy is associated with behavior problems in exposed offspring	RMPHAC

Cannabis Use	LIMITED evidence that maternal cannabis use during pregnancy is associated with initiation of cannabis use by exposed offspring during adolescence or young adulthood	RMPHAC
Cognitive Function	MODERATE evidence that maternal use of cannabis during pregnancy is associated with reduced cognitive function in exposed offspring	RMPHAC
Decreased Growth	LIMITED evidence that maternal use of cannabis during pregnancy is associated with decreased growth in exposed offspring	RMPHAC
Depression	LIMITED evidence that maternal use of cannabis during pregnancy is associated with increased depression symptoms in exposed offspring	RMPHAC
Heart Defects	LIMITED evidence that maternal use of cannabis during pregnancy is associated with isolated, simple ventricular septal defects (heart defects)	RMPHAC
IQ	MODERATE evidence that maternal use of cannabis during pregnancy is associated with decreased IQ scores in exposed offspring	RMPHAC
Infant Metabolism of THC in Breastmilk	BIOLOGICAL evidence shows that infants who drink breast milk containing THC absorb and metabolize the THC	RMPHAC
Low Birthweight	SUBSTANTIAL evidence of association between maternal cannabis smoking and lower birth weight of offspring	NASEM
Passage of THC From Mother to Fetus	BIOLOGICAL evidence shows that THC is passed through the placenta of women who use cannabis during pregnancy and that the fetus absorbs and metabolize the THC and passes THC metabolites in the meconium	RMPHAC
Persistence of THC in Breastmilk	BIOLOGICAL evidence shows that THC is present in the breast milk of women who use cannabis and may persist for several weeks after reported last use	RMPHAC
Pregnancy Complications	LIMITED evidence of association between maternal cannabis smoking and pregnancy complications for the mother	NASEM
Small for Gestational Age	MODERATE evidence that maternal use of cannabis during pregnancy is associated with infants being born small for gestational age (birth weight less than 10th percentile for gestational age)	RMPHAC
Stillbirth	LIMITED evidence that maternal use of cannabis during pregnancy is associated with an increased risk of stillbirth	RMPHAC

INJURY

SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Blood THC and Impairment	SUBSTANTIAL evidence that there is meaningful driving impairment in cannabis users who use less-than-weekly and/or with a whole blood THC of 2-5 ng/mL	RMPHAC
Blood THC in Impaired Drivers	MODERATE evidence that blood THC levels of cannabis-impaired drivers are higher now than in the past	RMPHAC
Cannabis and Alcohol Use	SUBSTANTIAL evidence that the combined use of cannabis and alcohol increases impairment and motor vehicle crash risk more than use of either substance alone	RMPHAC
Driving Impairment – Ingestion (edibles)	SUBSTANTIAL evidence that for cannabis users who use less-than-weekly, orally ingesting 10 mg or more of THC is likely to meaningfully impair driving ability	RMPHAC
Driving Impairment – Smoking	SUBSTANTIAL evidence that for cannabis users who use less-than-weekly, smoking more than about 10 mg THC (part of a joint) is likely to meaningfully impair driving ability	RMPHAC
Motor Vehicle Crash Risk	SUBSTANTIAL evidence that recent cannabis use by a driver increases their risk of motor vehicle crash	NASEM; RMPHAC

Motor Vehicle Crash Risk – Blood THC Level	MODERATE evidence of a positive association between THC blood level and motor vehicle crash risk	RMPHAC
Unintentional Exposures - Children	SUBSTANTIAL evidence that more unintentional cannabis exposures of children occur in states with increased legal access to cannabis; and the exposures can lead to significant clinical effects requiring medical attention	NASEM; RMPHAC
PSYCHOSOCIAL EFFECTS		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Academic Impacts	MODERATE evidence that adolescents and young adults who use cannabis weekly or more frequently are more likely than non-users to have ongoing impairment of cognitive and academic abilities for at least 28 days after last use	RMPHAC
Academic Impacts – College Completion	MODERATE evidence that adolescents and young adults who use cannabis weekly or more frequently are less likely than non-users to attain a college degree	NASEM; RMPHAC
Academic Impacts – High School Graduation	SUBSTANTIAL evidence that adolescents who use cannabis weekly or more frequently are less likely than non-users to graduate from high school	NASEM; RMPHAC
Cognitive Impacts	MODERATE evidence of association between acute cannabis use and impairment in learning, memory, and attention	NASEM
Decision-Making	LIMITED evidence that adults who use cannabis weekly are more likely than non-users to have impaired decision-making lasting up to two days after last use	RMPHAC
Executive Functioning	LIMITED evidence that adults who use cannabis are more likely than non-users to have impaired executive functioning, after not using for a short time	RMPHAC
Memory Impairment	SUBSTANTIAL evidence that adults who use cannabis daily or near-daily are more likely than non-users to have memory impairments for at least seven days after last use	RMPHAC
MENTAL HEALTH		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Anxiety	LIMITED evidence of association between near daily cannabis use and increased symptoms of anxiety	NASEM
Anxiety Disorders	LIMITED evidence of association between cannabis use and the development of any type of anxiety disorder; except social anxiety disorder	NASEM
Anxiety Disorders – Social Anxiety Disorder	MODERATE evidence of association between regular cannabis use and increased incidence of social anxiety disorder	NASEM
Bipolar Disorder	LIMITED evidence of association between cannabis use and the likelihood of developing bipolar disorder, particularly among regular or daily users	NASEM
Bipolar Disorder – Mania & Hypomania	MODERATE evidence of association between regular cannabis use and increased symptoms of mania and hypomania in individuals diagnosed with bipolar disorders	NASEM
Depression	LIMITED evidence that adolescent and young adult cannabis users are more likely than non-users to have future symptoms or a diagnosis of depression in adulthood	RMPHAC
Depressive Disorders	MODERATE evidence of association between cannabis use and a small increased risk for development of depressive disorders	NASEM
High THC Use	MODERATE evidence that adolescent and young adults who use cannabis with higher THC concentration (>10% THC) are	RMPHAC

	more likely than non-users to develop future mental health symptoms and disorders.	
Psychotic Disorders – Adolescents & Young Adults	SUBSTANTIAL evidence that adolescents and young adults who use cannabis daily or near-daily are more likely than non-users to develop future psychotic disorders like schizophrenia in adulthood	RMPHAC
Psychotic Disorders - Adults	SUBSTANTIAL evidence that adults who use cannabis daily or near-daily are more likely than non-users to be diagnosed with a psychotic disorder, such as schizophrenia.	RMPHAC
Psychotic Disorders – High THC	MODERATE evidence that individuals who use cannabis with THC concentration >10% THC are more likely than non-users to be diagnosed with a psychotic disorder, such as schizophrenia	RMPHAC
Psychotic Disorders – Schizophrenia	LIMITED evidence of association between cannabis use and symptoms of schizophrenia among individuals with psychotic disorders	NASEM
Psychotic Symptoms	SUBSTANTIAL evidence that THC intoxication can cause acute psychotic symptoms, which are worse with higher doses	RMPHAC
Psychotic Symptoms – Adolescents & Young Adults	SUBSTANTIAL evidence that adolescents and young adults who use cannabis are more likely than non-users to develop future psychotic symptoms, and this likelihood increases with more frequent use.	RMPHAC
PTSD	LIMITED evidence of association between cannabis use and increased severity of posttraumatic stress disorder symptoms among individuals with posttraumatic stress disorder	NASEM
Suicide – Adolescents & Young Adults	MODERATE evidence that adolescents and young adults who use cannabis are more likely than non-users to have suicidal thoughts or attempt suicide	RMPHAC
Suicide – Heavy Use	MODERATE evidence of association between cannabis use and increased incidence of suicidal ideation and suicide attempts, with a higher incidence among heavier users	NASEM
Suicide – Suicide Completion	MODERATE evidence of association between cannabis use and increased incidence of suicide completion	NASEM
PROBLEM CANNABIS USE		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Cannabis Use Disorder	SUBSTANTIAL evidence that cannabis users can develop cannabis use disorder, including adolescent and young adult users	RMPHAC
Cannabis Use Frequency	SUBSTANTIAL evidence of association between increases in cannabis use frequency and progression to developing cannabis use disorder	NASEM
Childhood Anxiety & Depression	LIMITED evidence that childhood anxiety and childhood depression are risk factors for developing cannabis use disorder	NASEM
Concentrate Use	LIMITED evidence that individuals who use THC concentrates are more likely to report symptoms of cannabis use disorder than those who use only non-concentrate cannabis products	RMPHAC
Future Alcohol Use Disorder	MODERATE evidence that adolescent and young adult cannabis users are more likely than non-users to use alcohol or have alcohol use disorder in adulthood	RMPHAC
Future Cannabis Use Disorder	SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to increase their use and to develop cannabis use disorder in adulthood	NASEM; RMPHAC

Future Substance Use Disorder	SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to use or have a substance use disorder for other drugs in adulthood	RMPHAC
Future Tobacco Use	SUBSTANTIAL evidence that adolescent and young adult cannabis users are more likely than non-users to use tobacco or have tobacco use disorder in adulthood	RMPHAC
High THC – Adolescents & Young Adults	MODERATE evidence that adolescents and young adults who use cannabis with higher THC concentration (>10% THC) are more likely than non-users to continue use	RMPHAC
Major Depressive Disorder	MODERATE evidence that major depressive disorder is a risk factor for the development of cannabis use disorder	NASEM
PTSD	MODERATE evidence of association between cannabis use disorder and increased severity of posttraumatic stress disorder symptoms	NASEM
Withdrawal Symptoms	SUBSTANTIAL evidence that individuals who use cannabis daily or near-daily can experience withdrawal symptoms when abstaining from cannabis	RMPHAC
OTHER IMPACTS & FINDINGS		
SUBTOPIC	EVIDENCE STATEMENT	REFERENCES
Blood THC – Concentrates	LIMITED evidence that inhaling THC concentrates yields higher blood levels of active and later inactive THC, when compared to smoking cannabis flower	RMPHAC
Blood THC – Delayed with Ingestion	SUBSTANTIAL evidence that it takes up to 4 hours after ingesting cannabis to reach peak blood THC concentrations	RMPHAC
Blood THC – Ingestion	MODERATE evidence that ingesting more than about 15 mg THC can yield a whole blood THC concentration > 5 ng/mL	RMPHAC
Blood THC - Smoking	SUBSTANTIAL evidence that inhaling more than about 10mg THC (part of a joint) is likely to yield whole blood THC concentrations near or above 5 ng/mL within 10 minutes	RMPHAC
Blood THC – Vaping	MODERATE evidence that inhaling vaporized cannabis yields blood THC levels analogous to those produced by smoking the same dose	RMPHAC
Cyclic Vomiting	MODERATE evidence that long-time, daily or near-daily cannabis use is associated with severe recurrent vomiting (cannabinoid hyperemesis syndrome)	RMPHAC
Secondhand Smoke – Impairment	LIMITED evidence that individuals passively exposed to cannabis smoke under extreme passive exposure conditions (e.g., spending one hour in an unventilated space with individuals smoking cannabis of 11% potency) experience psychomotor impairment and increased heart rate in the hour immediately following exposure	RMPHAC
Wait Time Before Driving - Ingestion	SUBSTANTIAL evidence that delaying driving at least 8 hours after oral ingestion of less than 18 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly	RMPHAC
Wait Time Before Driving – Smoking (35 mg THC)	MODERATE evidence that delaying driving at least 6 hours after smoking about 35 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly	RMPHAC
Wait Time Before Driving – Smoking (<18 mg THC)	SUBSTANTIAL evidence that delaying driving for at least 6 hours after smoking less than 18 mg THC allows THC-induced impairment to resolve or nearly resolve for users who use less-than-weekly	RMPHAC

NASEM = National Academies of Sciences, Engineering, and Medicine

RMPHAC = Colorado Department of Health and the Environment, Retail Marijuana Public Health Advisory Committee

Appendix 4. State Attorneys General Support Protecting Children from Cannabis



June 22, 2022

The Honorable Nancy Pelosi, Speaker
House of Representatives
1236 Longworth House Office Building
Washington, D.C., 20515

The Honorable Kevin McCarthy, Minority Leader
House of Representatives
2468 Rayburn House Office Building
Washington, D.C., 20515

The Honorable Chuck Schumer
322 Hart Senate Office Building
Washington, D.C., 20510

The Honorable Mitch McConnell
317 Russell Senate Office Building
Washington, D.C., 20510

Re: State Attorneys General Support Protecting Children from Cannabis

Dear Speaker Pelosi, Majority Leader Schumer, Minority Leader McCarthy, Minority Leader McConnell:

As the chief legal officers of our respective states, we the undersigned Attorneys General are gravely concerned about the dangers of copycat tetrahydrocannabinol (THC) edibles in our communities, particularly the risk they pose to our children. As contemplated by our federalist Constitution, the States have taken a wide variety of approaches to the regulation of cannabis and THC. The undersigned Attorneys General do not all agree on the best regulatory scheme for cannabis and THC generally, but we all agree on one thing: copycat THC edibles pose a grave risk to the health, safety, and welfare of our children. Congress should immediately enact legislation authorizing trademark holders of well-known and trusted consumer packaged goods to hold accountable those malicious actors who are using those marks to market illicit copycat THC edibles to children.

Individuals and businesses unlicensed by any state to enter the cannabis market, are making THC-infused edible products to mimic major snack brands that are popular with children—including Oreos cookies, Doritos chips, and Cheetos corn snacks. The products are widely-available.



As the examples reproduced above demonstrate, these dangerous products are designed to mimic well-established brands so closely that only a perspicacious adult could readily distinguish the THC copycats from the authentic brands. And that is quite intentional. Illicit operators use food-related trademarks popular with children in order to market their THC products to children. These copycats are often infused with levels of THC dramatically exceeding legal limits under state laws. The threat these THC edibles pose to the health and safety of our children is not limited to any particular State; it is nationwide and growing rapidly.

For example, on March 2, 2022, three Virginia parents took their children to the hospital for treatment after they observed lethargic behavior and discovered they had consumed THC-laden Goldfish crackers from their childcare facility. Similarly, two individuals in Oklahoma were recently hospitalized after unknowingly consuming THC-laced chips. In South Carolina in the fall of 2021, an elementary teacher inadvertently distributed to their students THC-infused candies designed to mimic the popular “Sour Patch Kids” brand. In Elkhart, Indiana, on August 3, 2021, a toddler was hospitalized after accidentally ingesting a bag of “Cheetohs” laced with more than 600mg of THC. In December 2020 a three-year-old was admitted to the ICU after consuming a copy-cat Nerds Rope, like the one pictured above.

In the first half of 2021, the American Association of Poison Control Centers reported poison control centers received over 2,622 calls for services related to young children ingesting cannabis products. This is a growing problem with no resolution in sight. In response during the fall of 2021, a bipartisan cohort of State Attorneys General issued advisory warnings to consumers within their respective jurisdictions to avoid purchasing illegal and counterfeited cannabis edibles.¹

¹ State Attorneys General from [Alaska](#), [Arkansas](#), [California](#), [Connecticut](#), [Illinois](#), and [New York](#), issued Consumer Advisory Warnings in October and November 2021.

Similarly, the federal Food and Drug Administration reported 2,362 THC exposure cases from January 1, 2021, through February 28, 2022. Of those reported exposures, 41% of involved pediatric patients. While individual States have tried to rein in these cannabis counterfeits, the States alone cannot curb this growing threat to public safety.

The deceptive tactic of copying well-known packages and selling these products through e-commerce platforms is dangerous and illegal. The above images and other evidence² reveals that these counterfeit THC edibles lack commonly accepted packaging protocols, advertise THC levels far in excess (in some instances many times over the applicable lawful limit), and are marketed directly to children. On the other hand, cannabis edible products manufactured and sold in compliance with state law are prohibited from packaging and advertising in a manner that would entice youth consumption, employ child-resistant packaging, and limit total THC content.

Consumer-packaged goods manufacturers currently lack the legal tools to hold accountable counterfeiters or the ecommerce platforms where these products are made available. The patchwork system of legality concerning cannabis' legal status under federal and state law exacerbates the confusions for consumers. More can be done to address this problem.

We respect the role the private sector can play in protecting consumers from the dangers presented by counterfeited products. A fundamental purpose of the federal trademark laws is to protect consumers from fraudulent goods through trademark registration and enforcement. State Attorneys General and federal authorities have a long-standing and cooperative role in protecting consumers.

As Congress continues its work, we urge congressional leadership to think creatively for potential solutions to this growing public safety issue of counterfeit, unlicensed, unregulated, and untested THC edibles.

At your request, we are available to directly discuss the impact these illicit THC edible products are having on our communities and potential solutions to address the problem.

Thank you for your consideration.

Sincerely,



Jason S. Miyares
Virginia Attorney General

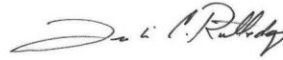


Aaron D. Ford
Nevada Attorney General

²<https://www.nyu.edu/about/news-publications/news/2022/april/copycat-cannabis-edible-study.html>;
<https://www.washingtonpost.com/business/2022/04/29/thc-infused-copycat-foods/>



Treg R. Taylor
Alaska Attorney General



Leslie C. Rutledge
Arkansas Attorney General



Robert A. Bonta
California Attorney General



Phil Weiser
Colorado Attorney General



William Tong
Connecticut Attorney General



Ashley Moody
Florida Attorney General



Daniel Cameron
Kentucky Attorney General



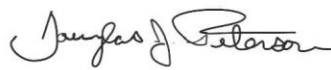
Todd Rokita
Indiana Attorney General



Thomas J. Miller
Iowa Attorney General



Aaron M. Frey
Maine Attorney General



Doug Peterson
Nebraska Attorney General



Hector Balderas
New Mexico Attorney General



Letitia James
New York Attorney General



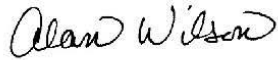
Joshua H. Stein
North Carolina Attorney General



Ellen F. Rosenblum
Oregon Attorney General



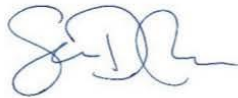
John M. O'Connor
Oklahoma Attorney General



Alan Wilson
South Carolina Attorney General



Jason R. Ravnsborg
South Dakota Attorney General



Sean D. Reyes
Utah Attorney General



Joshua R. Diamond
Vermont Acting Attorney General



Robert W. Ferguson
Washington Attorney General