PATRICK KENNEALLY'S RESPONSE TO REPRESENTATIVE KELLY CASSIDY, SPEAKER PRO TEMPORE JEHAN GORDON-BOOTH, FORMER SENATOR TOI HUTCHINSON, AND FORMER SENTATOR HEATHER STEANS

When we first set out to legalize and regulate cannabis for adult use, we were immediately labeled the "marijuana moms" as we each had kids ranging from toddlerhood to adulthood. And we embraced that label, acknowledging that youth use of cannabis has shown to decrease in effectively regulated markets. We also faced our fair share of outlandish "chicken little" arguments from opponents to legalization such as the southern Illinois sheriff who claimed legalization would require drug sniffing dogs to be euthanized. Recently McHenry County State's Attorney Patrick Kenneally decided to join the disinformation brigade.

Kenneally's Response: We should start with the disarming and endearing "Marijuana Moms" nickname they suggest they had no role coining or publicizing. The name itself is just manipulative public relations by "brand association." "Motherhood," like "medicine," likely fares well in favorability polling, so well-played to the Marijuana Moms for appropriating the positive image of motherhood and projecting it onto the marijuana industry's legislative agenda.

In the mid-1930's, then Federal Bureau of Narcotics Commissioner Harry Anslinger infamously vilified cannabis as a catalyst for violence, and unscientifically attributed half of violent crimes in minority communities to the consumption of "marihuana." He spent decades misdirecting federal enforcement powers to promote fear over scientific evidence, and successfully prohibited cannabis throughout the nation. As his primary basis for doing so, he loosely associated the cannabis plant to unverified acts of violence, immoral behavior, and even "satanic music" – such as jazz.[2]
Now nearly a century later, Kenneally takes another swing from the Anslinger playbook. In an announcement that he will force state-licensed cannabis dispensaries in McHenry County to post unscientific warnings to consumers about cannabis, Kenneally claims "half of the county's recent homicides involve cannabis or cannabis-induced psychosis." Like Anslinger a century before him, Kenneally's connection of cannabis consumption to these tragedies is unexplained.

Kenneally's Response: While they get to play the plucky and adorable role of Marijuana Moms, unfortunately, there is no role in their public relations performance for the "Consumer Protection Dad" or "Dad for Mental Health." No, I have been assigned to play the part of Henry Anslinger, the menacing reactionary and anti-jazz black-hat. Very well-played Marijuana Moms.

With respect to "half of the county's recent homicides invol[ing] cannabis or cannabis-induced psychosis, allow me to explain.

Here is case of Billy Bishop, one example that I can speak about because the case is no longer pending. https://www.shawlocal.com/northwest-herald/news/2022/10/19/man-

charged-with-murder-told-police-he-smoked-marijuana-the-day-of-the-fatal-2020-crash-outside-hebron/. After vaping a considerable amount of high-concentration THC-oil, the defendant believed Howard Stern through the radio told him to veer into oncoming traffic, which he did. He killed a father of two and permanently disabled another man so severely he will likely never leave the bed in the rehab facility in which he currently lies. The defendant's THC content was 10.8 ng/dL, twice the legal limit.

His defense in the case, supported by two licensed psychiatrists, was insanity on the grounds that he was suffering from cannabis induced psychosis. There are multiple other cases like this currently pending in McHenry County.

While the story of how Mr. Bishop and the victims ultimately ended up colliding at 80 mph on a rural McHenry County highway, to be sure, is "complex," injecting high-concentration THC into the complex reality certainly did not help any.

In a meandering editorial, Kenneally carelessly conflates cannabis use with the most complex societal issues that our own Illinois researchers, institutions, and community leaders work collectively every day to further understand and improve upon. To the McHenry State's Attorney, the tragedies of violent crime, addiction, mental illness, and suicide can be narrowed down to one oversimplified, unbelievably obvious common denominator – *they're all a bunch of pot users*.

Kenneally's Response: As to the "over-simplification" of "complex societal issues," it is interesting that the Marijuana Moms are now just discovering nuance. In their effort to legalize cannabis, the Marijuana Moms, and other cannabis advocates, have touted legalization as the antidote to the any number of intricate and tangled social ills, including racism, mass incarceration, the "drug war" and its impact on communities, state debt, the opioid epidemic, and the illicit drug market. Marijuana Mom and Speaker Pro Tempore Jehan Gordon-Booth was not exactly exercising the careful intellectual moderation and measured perspective this complicated subject deserves when she stated at the June 25, 2019 press conference after the bill's signing:

> **What cannabis legalization has meant in this country before today was that wealthy white men would get rich and black men would get arrested, they would get arrested, they would be incarcerated, and they would be forced to live in permanent second-class citizenship because of convictions and forced to face those collateral consequences everywhere they went everywhere they lived and anywhere they tried to send their children to school. They changed because of this bill here today. What we are doing here today is about reparations. This about repairing harm, harm that has been done to communities as a part of the failed war on drugs.**

My actual view, if I may say so in my own words, is that complicated social problems can have many causes. I believe that addressing one cause, while not a silver bullet capable of entirely eradicating the problem, can lessen human misery and suffering,

which is a good thing. So, when gold-standard, scientific literature clearly and repeatedly demonstrates an association between cannabis use and debilitating mental illnesses, I believe the state, acting out of prudence and goodwill toward its citizens, should warn consumers of these dangers. I believe further that cannabis dispensaries are required to warn consumers under the Illinois Consumer Fraud and Deceptive Practices Act and products liability law.

At best, Kenneally misleads weekend editorial readers. At worst, he continues an unfortunate tradition in American history of using hyperbole to vilify cannabis use and possession, including for medical purposes.

The timing for Kenneally to issue an editorial calling medical cannabis "elaborate dupery" was poor, to say the least. Just days *before* his op-ed landed, the U.S. Food and Drug Administration (FDA) officially recognized the medical benefits of marijuana following an evidence-based review, recommending to the U.S. Drug Enforcement Agency (DEA) that marijuana be rescheduled as a Schedule III substance, because it has a medical utility and low potential for abuse.

<u>Kenneally's Response</u>: First, the FDA recommended that cannabis be rescheduled by the DEA from a Schedule I (no currently accepted medical use and high potential for abuse) to a Schedule III (drugs with a moderate to low potential for physical and psychological dependence). This recommendation is unlikely to be followed as the DEA, under the Obama administration, last evaluated rescheduling cannabis in 2016 and found overwhelming evidence it should remain in is current schedule. The evidence for its current schedule has only gotten stronger over the past seven years.

Second, the timing of the recommendation is curious in view of the financial benefit rescheduling would bestow upon the cannabis industry and its muscular lobby backed by a massive, ultra-hip public relations apparatus. If marijuana moves to a Schedule IIII, the part of the tax code prohibiting cannabis companies from taking credits or deductions other than those for the cost of goods sold would no longer apply, meaning an enormously reduced tax burden for the industry.

As legislators who have investigated this topic substantially ourselves, we don't need to wait for the full federal scheduling report and findings to understand an integral part of the utility of medical cannabis. We have seen and heard the human experiences in our own offices: Late-stage cancer patients restored to a quality of life. Debilitating seizure disorders become a distant memory. Our own Illinois veterans pleading for relief from the side effects of pharmaceutical drugs, and an alternative, legal pathway to medical cannabis following active combat.

During this time, we have watched the nation's registered medical cannabis patient population grow to exceed 5 million, now spanning 38 different states from coast to coast and in between. As the number of positively touched lives increases, we have witnessed public support for medical cannabis now hovering at 90%, covering all demographics and across party lines.

<u>Kenneally's Response</u>: On the one hand, the Marijuana Moms laud the FDA's recent rescheduling recommendation, yet refuse to acknowledge the reality that the FDA has not approved cannabis to treat a single medical condition because there is no convincing medical literature supporting that cannabis is medicine. No matter, the Marijuana Moms, who have apparently "investigated the topic" themselves, are basing their medical conclusions off the "human experiences" of those they interact with at their offices.

Like the Marijuana Moms, I do sincerely believe those suffering from medical conditions, invariably one that causes pain or discomfort, when they swear that cannabis helps them. It just does not prove anything.

Here is the most recent systematic review/meta-analysis on <u>ALL</u> reliable studies dealing with cannabis and pain published in the preeminent medical journal JAMA in 2022, https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799017. Researchers found that cannabis was effective at treating pain. The problem was that cannabis was no more effective at treating pain than the placebo. The placebo effect is a real and powerful medical phenomenon that truly makes patients "feel" better. In fact, the more the patients given the cannabis placebo had read about the medicinal properties of cannabis prior to "treatment," the greater the reduction in pain.

As such, holding out those who "feel" better after ingesting a euphoria-inducing, dopamine dumping intoxicant that they strongly believe is medicinal is neither a scientific nor convincing argument.

I have no wish to vilify or belittle those with a debilitating medical condition who are legally using cannabis in a palliative way to ease suffering.

But there is a bigger issue at play here. Specifically, a cannabis industry in lockstep with the Illinois legislature who seek to hide the devastatingly real dangers of cannabis by having (very cleverly) rebranded it as "medicine." After all, what is safer and better for you than "medicine"? What must you take every day, even on those days when your conscience is saying, "maybe getting stoned is not the best way to spend the next few hours"?

Further, as legislators who have worked collectively for the better part of a decade to build a strictly regulated, consumer protection-focused medical and adult-use cannabis industry in Illinois, we take particular umbrage with the assertion that the state has "warned no one and done nothing" about the potential public health impacts of cannabis.

<u>Kenneally's Response</u>: Respectfully, neither the Marijuana Moms nor the any other legislator have worked "for decades" to "build a strictly regulated, consumer protection-focused medical and adult-use cannabis industry in Illinois." Marijuana Mom Cassidy confirmed as much at the June 15, 2019 press conference:

> **More than six years ago, I got a call from a lawyer at the Marijuana Policy Project [D.C. Based Marijuana advocacy group], and [Senator Steans] just mentioned him. Chris Lindsay. He had a bold idea, and he and [another Illinois-based lobbyist] pitched this idea for a path toward legalization for the State of Illinois, we actually thought it was probably going to take about seven years, so we're ahead of schedule. I want to thank Chris for their confidence in me to start this process so long ago. The team that we built, the access to your literal walking encyclopedia of cannabis law and your seeming ability to write all night as we needed drafts done over and over again.**

The "cannabis industry," therefore, was "built" by a D.C. based lobbying firm representing national industry interests, the Marijuana Policy Project, who selected its minions in the Illinois General Assembly (who blushed with pride over earning the "confidence" of the powerful D.C. interest group) to pass a bill that they wrote.

Let us focus, though, a little closer, and not look away, at the enactment process and its aftermath. Marijuana lobbyists, including the Marijuana Policy Project, donated over $630,000 to Illinois lawmakers, tens of thousands of which ended up in the political coffers of the Marijuana Moms. Governor Pritzker's sister, Joby Pritizker, sits on the board of the Marijuana Policy Project, the organization that wrote the bill! One month after legalization, Marijuana Mom Cassidy's wife was hired as vice-president of Revolution Florida, a cannabis grower and sister company to Revolution Enterprises that was started and is based in Illinois!! Marijuana Mom Hutchinson retired from the Illinois Senate after cannabis legalization and is currently the President CEO of the Marijuana Policy Project!!!

I am a deeply flawed man who has made countless mistakes in my role as a lesser public servant in a modest Illinois county the Marijuana Moms, with their incredibly influential stations, likely rarely consider. That said, Marijuana Moms, if I may address you directly, can you not see the cynicism and despair that this type of self-dealing leavens that so demoralizes the residents of this state that we have just come to expect this type of soft corruption as a constituent feature of Illinois state government? Politics and recrimination aside, can we really not do better?

In fact, since the inception of Illinois' strictly regulated medical cannabis program in 2013 mandatory product labels and dispensary signage are required to conspicuously warn patients and purchasers that:

> *Cannabis is only for registered medical patients or adults 21 and over; cannabis can impair cognition and may be habit forming; cannabis should not be used by pregnant or*

We further mandated child-resistant containers, strict prohibitions against marketing or advertising to minors, independent lab testing of all products for safety, labeling of potency and serving sizes, real-time inventory controls and electronic tracking of cannabis to prevent diversion, and electronically scanned age verification at all dispensaries, to name a few.[6]

We also make no apology for the economic and reinvestment dollars into Illinois communities. Our state's legal cannabis industry now produces over $500 million annually in state and local tax revenue for the benefit of Illinois, surpassing alcohol tax revenue. For the first time in the state's history, tens of millions of dollars *in sustained funding* are being reinvested into Illinois' most historically disinvested communities every year. The revenues go to build youth recreational centers, support anti-violence programs in partnerships with local law enforcement, job training programs, and fund mental health and substance abuse clinics, as a few examples. In addition, a significant portion of the revenue supports training and DUI enforcement. SA Kenneally's vague claim about increased DUIs could be because there is adequate training and resources to enforce against intoxicated driving now.

Kenneally's Response: Other states that have not legalized cannabis cannot fund these types of programs? What does any of this have to do with whether it is wise to warn consumers about the mental health dangers of cannabis?

The State of Illinois will continue to follow the science in making regulatory considerations. The law was built for regulators to update its consumer safety protocols accordingly. In doing so, we will remain careful not to compel government speech on private businesses in violation of well established First Amendment protections, simply because certain businesses may not see the world from our eyes, nor use our selective reading of publicly available literature to accomplish the same.

Kenneally's Response: If the Cannabis Moms truly wish to "follow the science in making regulatory consideration," and it is my prayer that they do, here it is:

CANNABIS AND PSYCHOSIS/SCHIZOPHRENIA

The National Academy of Science declared in 2017, "[t]here is a substantial evidence of statistical association between cannabis use and the development of schizophrenia or other psychoses, with the highest risk among the most frequent users." NAT'L ACAD. SCIENCES, ENG'G, AND MED., *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*, xvii, 1 (Nat'l Acad. Press eds., 2017).

The National Institute on Drug Abuse has observed, "[s]everal studies have linked marijuana use to increased risk for psychiatric disorders, including psychosis (schizophrenia), depression, anxiety, and substance use disorders." NAT. INST. ON DRUG ABUSE, *Is There a Linke Between Marijuana Use and Psychiatric Disorders?* (2020).

The. U.S. Surgeon General has recognized that the risk for psychotic disorders related to cannabis use "increases with frequency of use, potency of marijuana product, and as the age at first use decreases." *U.S. Surgeon General's Health Advisory: Marijuana Use and the Developing Brain*, U.S. Dept of Health and Human Services (2019).

The Canadian Government advised in 2018, "there is strong evidence that using cannabis may increase the risk of an individual developing psychosis and schizophrenia." Government of Canada, *Cannabis Resource Series: Does cannabis use increase the risk of developing psychosis or schizophrenia?*, (2018).

Carsten Hjorthoj, et al., *Association Between Cannabis Use Disorder and Schizophrenia Stronger in Young Males Than Females*, Psychological Medicine, First View, pp. 1-7, (2023)

Researchers from the National Institute of Drug Abuse and the Mental Health Services of Denmark analyzed health records data for more than 6.9 million Danes spanning five decades, an enormous data set. Researchers found strong evidence of an association between cannabis use disorder and schizophrenia among men and women, though the association was must stronger among young men. Using statistical models, researchers estimated that as many as 30% of the cases of schizophrenia among men aged 21-30 and 15% of cases among men 16-49 might have been prevented by averting cannabis use disorder. Researchers stated, "the study adds to our growing understanding that cannabis use is not harmless, and that the risks are not fixed at one point in time."

S. Andréasson et al., *Cannabis and schizophrenia. A Longitudinal Study of Swedish Conscripts*, LANCET, 2 (85274): 1483-6 (Dec. 26 1987)

The bedrock study initially illuminating the profound impact cannabis use has on the development of long-term psychosis. Here, researchers examined the effect of drug use on Swedish military conscripts who had enlisted in 1969-1970 and filled out extensive questionnaires regarding their upbringing, education, and drug use. To examine the effect of cannabis, researchers tracked the hospitalizations and psychiatric inpatient registries for these conscripts in 1983. Of the nearly 45,000 Swedish conscripts considered, researchers found that those who had used cannabis on fifty or more occasions in 1969-1970 had a six times greater risk of having developed schizophrenia by 1983. Importantly, researchers found that the relative risk of schizophrenia was dose dependent, increasing with increased cannabis consumption. Even when statistically controlling for other confounding factors such as prior psychiatric illness, social background, and prior family history of mental illness, researchers found a persistent association with cannabis that more than doubled the risk of developing schizophrenia.

David M. Fergusson et al., *Cannabis and Psychosis*, BMJ, 332:172-6 (2006)

Perhaps the most comprehensive longitudinal study ever conducted, the Dunedin, New Zealand Multidisciplinary Health and Development Study (which is still ongoing),

similarly found a conclusive link between cannabis use and subsequent psychosis. The study has been following approximately 1,000 children born in 1972-1973 from birth. The children were assessed at ages 5, 7, 9, 11, 13, 15, 18, 21, and 26. Researchers found that cannabis use was associated with a threefold risk of developing schizophrenia or schizophreniform disorders even after controlling for those subjects who had shown psychotic symptoms prior to cannabis use.

David M. Fergusson et al., *Tests of causal linkages between cannabis use and psychotic symptoms*, ADDICTION, 100(3):354-66 (Mar. 2005)
Another New Zealand study reached similar results. A longitudinal 25-year study of 265 children found that, even after controlling for previous psychotic symptoms, daily users of cannabis had rates of psychotic symptoms that were nearly twice that of non-users of cannabis. Regression models indicated that cannabis use had a "positive and significant" effect on psychotic symptoms suggesting that increasing cannabis use was associated with increased symptom levels. Moreover, after controlling for several confounding factors, including anxiety disorder, deviant peer affiliations exposure to childhood sexual or physical abuse, educational achievement and, most importantly, psychotic symptoms at a previous assessment, the association remained strong and significant. The authors concluded:

> the findings are clearly consistent with the view that heavy cannabis use may make a causal contribution to the development of psychotic symptoms since they show that, independently of pre-existing psychotic symptoms and a wide range of social and contextual factors, young people who develop cannabis dependence show an elevated rate of psychotic symptoms.

J. van Os et al., *Cannabis Use and Psychosis: A longitudinal population-based study*, AM. J. EPIDEMIOL, 156(4): 319-27 (Aug. 15, 2002)
A three-year, population-based study of the incidence, course, and consequences of psychiatric disorders in over 4,000 randomly-selected adult Danes reported that baseline history of cannabis use significantly increased the risk of a "follow-up psychosis outcome" three years later by a factor of nearly three. This risk remained significant after statistical adjustments for a range of factors including ethnic group, marital status, educational level, urbanicity, and discrimination. The authors found a dose-response relationship between schizophrenia and schizophreniform and cannabis use such that for the most frequent cannabis users the risk was nearly seven times higher. The authors concluded, "cannabis use is an independent risk factor for the emergence of psychosis in psychosis free persons and may be responsible for as much as half the serious psychosis in previously healthy adults."

Theresa H. M. Moore, et al., *Cannabis use and risk of psychotic or affective mental health outcomes: A systematic review*, LANCET, 370(1474-547; 9584):319-28 (July 28, 2007)
A systematic review and meta-analysis of population-based and longitudinal studies reported a 40% increased risk of any psychotic outcome in individuals who had ever used

cannabis compared with non-users. As with other studies, the more cannabis used, the greater the risk.

Glen P. Davis et al., ***Association between cannabis use, psychosis, and schizotypal personality disorder: findings from the National Epidemiological Survey of Alcohol and Related Conditions*****, SCHIZOPHR RES., (Dec., 2013)**
An examination of a nationally representative U.S. sample of approximately 34,653 adults derived from a 2001-2002 epidemiologic survey and a 2004-2005 follow-up also found a dose-dependent relationship between the level of cannabis use and psychosis such that cannabis dependent subjects had the highest risk, four-fold, of developing psychosis.

S. Filatova et al., ***A comparison of the cumulative incidence and early risk factors for psychotic disorder in young adults in the Northern Finland Birth Cohorts 1966 and 1986*****, EPIDEMIOLOGY AND PSYCHIATRIC SCIENCES, 26(3), 314-24 (Jun. 2017)**
A Finland study examining rates of schizophrenia or other psychosis in all children born in 1966 and 1986 in two provinces by age 27 found that prevalence went from 1.0% to 1.9%. In other words, between 1993 and 2013, schizophrenia rates in Finland doubled. Surveys show that marijuana use doubled among Finnish teens and young adults between 1992 and 2002 and remained at the higher levels through 2010. A subsequent Danish study found that the incidence of schizophrenia related disorders increased by 30% between 2002 and 2012. This increase corresponds with an increase in cannabis use in Denmark. Specifically between 1994 and 2010, the rate of cannabis use among those 16 to 24 doubled.

Carsten Hjorthøj et al., ***Development Over Time of the Population—Attributable Risk Fraction for Cannabis Use Disorder in Schizophrenia in Denmark*****, JAMA PSYCHIATRY, 78(9):1013-1019 (Sep. 1, 2021)**
A distressing study examining the proportion of schizophrenia cases in Denmark, which has seen a significant increase in the potency and use of cannabis, that were attributable to cannabis use disorder. Researchers reviewed the nationwide mental health records from all people born in in Denmark prior to 2001 who were alive and 16 years or older at some point from January 1, 1972 to December 31, 2016. Researchers found that having been diagnosed with cannabis use disorder increased the risk of developing psychosis by a factor of four. Researchers found further that the proportion of schizophrenia cases associated with cannabis use disorder increased from 2.0% in 1995 to 6.0% to 8.0% since 2010, a three- to four-fold increase during the past two decades.
GS Wang et al, ***Cannabis Legalization and Cannabis-Involved Pregnancy Hospitalizations in Colorado*****, Prev. Med., 156, 106993 (2022)**
Colorado study found that as recreational dispensaries per 10,000 residents increased, the rate of emergency room visits for psychosis increased 24%.

Brad A. Roberts, *Legalized Cannabis in Colorado Emergency Departments: A Cautionary Review of Negative Health and Safety Effects*, WEST J. EMERG. MED. 20(4):557 (Jul. 2019)
Study showing that states that have seen increasing cannabis use due to legalizing cannabis for medical and recreational purposes are already seeing an onslaught of deteriorating mental health in their hospital systems. For example, in Colorado, emergency room visits and hospitalizations with marijuana-related billing codes have increased 116%, from 274 to 593 per 100,000 hospitalizations, between 2000 and 2015. In addition, the prevalence of mental illness was five-fold higher for emergency room visits and nine-fold higher for hospital admissions for patients with marijuana related billing codes compared to those without.

Arianna Marconi et al., *Meta-analysis of the Association Between the Level of Cannabis Use and Risk of Psychosis*, SCHIZOPHR. BULL., (Sept. 2016)
A 2016 meta-analysis of cohort and cross-sectional studies assessing cannabis and psychosis also revealed a four-fold increase in the risk of developing psychosis for the heavier users and a two-fold increase in risk for the average cannabis user.

John McGrath et al., *Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of young adults*, ARCH GEN PSYCHIATRY (May, 2010)
An analysis of 228 sibling pairs in Australia, all born at the same hospital between 1981 and 1984 and who were evaluated at ages 5, 14, and 21, focused on the difference between the age of first cannabis use and the Peters Delusion Inventory (PDI) score. Compared with their siblings, those with more years since first cannabis use were more likely to have higher PDI total scores with every additional year of divergence between the sibling pairs in terms of onset of cannabis use increasing the variance in PDI scores.

Marta Di Forti et al., *Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study*, LANCET PSYCHIATRY, 2(3):233-8 (Mar. 2015)
It is not just the frequency or length of cannabis use that increases the risk of psychosis, it is also the potency or THC concertation. In a case-cohort study, daily cannabis use of high potency cannabis containing 16% THC or higher was associated with a greater risk of developing psychosis when compared with lower potencies. After controlling for use of other intoxicants, education, gender, and prior employment history, those who used of high potency cannabis were three times more likely to develop psychosis when compared to non-users. Researchers concluded that as much as 24% of the psychotic disorders in the study population were attributable to high potency cannabis use.

Marta Di Forti et al., *The contribution of Cannabis Use to Variation in the Incidence of Psychotic Disorder Across Europe: A Multicentre Case-Control Study*, LANCET PSYCHIATRY, Vol. 6, Issue 5 (May, 2019)

A 2019 study published in the Lancet examined nearly 1,000 patients presenting with first episode psychosis at 11 sites across Europe and Brazil between 2010 and 2015. The study found that daily cannabis use was associated with 3.2 times increased odds of presenting with a psychotic disorder when compared with never users. For daily users of high potency cannabis, the risk increased to 4.8 times. The study found further that the population attributable fraction of high potency cannabis, in other words the percentage of psychosis cases that could be prevented if high potency cannabis were no longer available, was 12.2% across the entire sample, rising to 50.3% in Amsterdam and 30.3% in London.

Tabea Schoeler et al., ***Continued versus discontinued cannabis use in patients with psychosis: A systematic review and meta-analysis*****, LANCET PSYCHIATRY, 3(3):215-25 (Mar. 2016)**

Cannabis increases the risk of causing and/or exacerbating psychosis in those who are already vulnerable to such a diagnosis. A recent systematic review and meta-analysis, which included 24 studies and over 16,000 participants who had suffered at least one psychotic episode, showed that independent of the state of psychotic illness, continued cannabis use was associated with a greater increase in psychosis relapse when compared to patients who never used or who discontinued use. Continued use was also associated with longer hospital admissions.

Tabea Schoeler et al., ***Effects of continuation, frequency, and type of cannabis use on relapse in the first 2 years after onset of psychosis: An observational study*****, LANCET PSYCHIATRY 3(10):947-953 (Aug. 23, 2016)**

A observational study of 256 patients, 18-65 years of age, with first episode psychosis showed that regular users of cannabis who stopped using after the onset of psychosis had the most favorable illness course with regards to relapse, whereas continued high-frequency use (i.e. daily use of high potency cannabis) was associated with the worst outcomes. High frequency, high potency users had an over three times greater chance of a subsequent relapse and more intense psychiatric care after the onset of psychosis as well as fewer months until a relapse occurred.

Matthew Large et al., ***Cannabis Use and Earlier Onset of Psychosis: A Systematic Meta-Anlaysis*****, ARCH GEN. PSYCHIATRY, 68(6):555-561 (2011)**

A meta-analysis of studies examining the effect of cannabis use on the onset of psychotic illness found that the age of onset of psychosis for cannabis users was nearly three years younger than for nonusers while alcohol use was not associated with a younger age at onset. The authors commented:

> Our findings do not support the view that people with a propensity to develop psychosis at a young age are simply more likely to use all substances…The result of this systematic review and meta-analysis represents strong scientific evidence for an association between substance use, particularly the use of cannabis, and an earlier age of onset of psychotic illnesses…The results of this study provide strong evidence that

> reducing cannabis use could delay or even prevent some cases of psychosis. Reducing the use of cannabis could be one of the few ways of altering the outcome of the illness because earlier onset of schizophrenia is associated with a worse prognosis and because other factors associated with age at onset, such as family history and sex, cannot be changed…*The results of this confirm the need for a renewed public health warning about the potential for cannabis use to bring on psychotic illness* [italics added].

Health Canada, *Information for Healthcare Professionals: Cannabis (Marihuana, Marijuana) and the Cannabinoids*, 87 (2018)
The Cannabis Legalization and Regulation Branch of Health Canada after its synthesis of dozens of clinical studies found that cannabis users developed schizophrenia an average of 1.5 years earlier than non-users.

Sheweta Patel, et al., The Association Between Cannabis Use and Schizophrenia: Causative or Curative? A Systematic Review, PMC Pub Med Central 12(7)(July, 2020)
After a 2020 meta-analysis of 12 high-quality studies the authors concluded that cannabis use can alter the typical age and onset of schizophrenia symptoms, cannabis-induced psychosis can eventually convert to clinical schizophrenia, frequent use of cannabis at a young age can double the chances of developing schizophrenia, and daily use of high-potency THC may result in a 5 times higher chance of developing a psychotic illness.

Tabea Schoeler, et al., *Rates and Correlates of Cannabis-Associated Psychotic Symptoms in over 230,000 People Who Use Cannabis*, TRANSLATIONAL PSY, 12:369 (Sept. 6, 2022)
A 2022 study found that nearly 0.5% of cannabis users experienced an episode of psychotic symptoms that required emergency medical treatment. The study found further that risk for experiencing such an episode increased by nearly 14 times for those who have previously been diagnosed with a psychotic disorder, more than 4 times for a person diagnosed with bipolar, nearly three times for an individual diagnosed with anxiety or depression when compared to cannabis smokers without a mental health diagnosis.

Kate Petrilli et al., *Association of Cannabis Potency With Mental Ill Health and Addiction: A Systemic Review*, THE LANCET 9:9(736-750)(July 25, 2022)
A 2022 meta-analysis of studies analyzing the association of cannabis potency with mental health and addiction found that the use of high potency cannabis relative to low potency cannabis, was associated with an increased risk of psychosis and cannabis use disorder.

CANNABIS AND SUICIDE

The American Psychiatric Association stated, "[a]mong people with depression, cannabis use is associated with increased rates of suicidal ideation and attempts." AM. PSYCHIATRIC ASS., *Cannabis: Understanding the Risks* (2021).

The Centers for Disease Control has recognized that "[m]arijuana use has also been linked to depression; social anxiety; and thoughts of suicide, suicide attempts and suicide." CENTERS FOR DISEASE CONTROL, *Marijuana, and Public Health: Mental Health*, (Sept. 21, 2023).

The National Academy of Sciences in its definitive review of the association between cannabis use and major depression found that there is "moderate evidence of a statistical association between cannabis use and increased incidence of suicidal ideation and suicide attempts, with higher incidence among heavier users." NAT'L ACAD. SCIENCES, ENG'G, AND MED., *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*, xvii, 1 (Nat'l Acad. Press eds., 2017).

Edmund Silins et al., *Young Adult Sequalae of Adolescent Cannabis Use: An Integrative Analysis,* LANCET PSYCHIATRY, 1(4): 286-293 (Sept., 2014)
A study with a combined 3 longitudinal data sets involving 6 to 9 assessments over a period of 15 years that found a 6.9-fold increase in the risk for subsequent suicide attempts in those using marijuana daily before age 17.

Mary Catherine Clarke at al., *The Impact of Adolescent Cannabis Use, Mood Disorder and Lack of Education on Attempted Suicide in Young Adulthood,* WORLD PSYCHIATRY, 13(3): 322-323 (Oct. 1, 2014)
A longitudinal study with a follow-up time of 8 years found, after controlling for a number of variables including a history of any mood disorder, a 7.5-fold increase in the risk for a suicide attempt for those who began using marijuana in their teen years.

Gabriella Gobbi et al., *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 (February 13, 2019)
A subsequent meta-analysis of all longitudinal studies evaluating cannabis use prior to the age of 18 found a near 3.5 times increase in the risk of suicide attempts during young adulthood in those with no pre-existing suicidal behaviors, depression, or anxiety.

Geoffrey Kahn and Holly Wilcox, *Marijuana Use is Associated with Suicidal Ideation and Behavior Among US Adolescents at Rates Similar to Tobacco and Alcohol,* ARCHIVES OF SUICIDE RESEARCH 26(2): 520-533 (Aug. 11, 2020)
A recent study involving a large and ethnically mixed population of U.S. high school students that effectively controlled for a variety of confounding factors found that those students who had smoked marijuana 20 or more days per month had an over 2.5 increased risk of suicide attempt.

Guilherme Borges at al. *A Literature Review and Meta-Analyses of Cannabis Use and Suicidality,* J. OF AFFECTIVE DISORDERS, 195:63-74 (May, 2016)

A meta-analysis of a mix of longitudinal and case-control studies worldwide found that heavy users of cannabis were over three times more likely to attempt suicide than non-users.

Mikkel Arendt et al., ***Mortality Following Treatment For Cannabis Use Disorders: Predictors and Causes*****, J. OF SUBSTANCE ABUSE TREATMENT, 44(4): 400-406 (April, 2013)**
A study of Danish individuals who were followed after having been discharged from treatment for cannabis use disorder revealed a 5.3-fold increase for completed suicide.

Nathan Kimbrel, ***Cannabis Use Disorder and Suicide Attempts in Iraq/Afghanistan-Era Veterans*****, J. OF PSYCHIATRY RESEARCH, 89: 1-5 (Jun. 1, 2018)**
A study of over 3,000 veterans found that cannabis use disorder was significantly associated with both current suicidal ideation and lifetime suicide attempts even after accounting for the effects of sex, posttraumatic stress disorder, depression, alcohol use disorder, non-cannabis drug use disorder, childhood sexual abuse, and combat exposure.

Ben Han, ***et al.*****,** ***Associations of Suicidality Trends With Cannabis Use as a Function of Sex and Depression Status,*** **JAMA Network Open (June 22, 2021)**
Study of adults aged 18 to 34 found that those with cannabis use disorder, daily cannabis use, and nondaily cannabis use were associated with high prevalence of past-year suicidal ideation, plan, and attempt. Importantly, the risk remained even in people who were not experiencing depression. Strikingly, found that prevalence of suicidal ideation for women with cannabis use disorder was 14%.

Catherine Marco et al., ***The Perils of Recreational Marijuana Use: Relationships with Mental Health Among Emergency Department Patients*****, J. OF AM. COLLEGE OF EMERGENCY PHYSICIANS OPEN, (Mar. 8, 2020)**
A data summary of case reports of those admitted to the hospital over a four-month period with self-reported history of marijuana use revealed that nearly 10% professed having experienced suicidal ideation in the last 30 days.

Christina Sellers, ***Alcohol and Marijuana Use as Daily Predictors of Suicide Ideation and Attempts Among Adolescents Prior to Psychiatric Hospitalization*****, PYSCHIATRY RESEARCH, 273: 672-674 (Mar., 2019)**
A study finding that of cannabis using teens, use of marijuana on a particular day is reported to be a "significant" predictor of a suicide attempt on that day.

CANNABIS AND MENTAL HEALTH

The National Institute on Drug Abuse has observed that [m]arijuana use has also been linked to other mental health problems, such as depression, anxiety, and suicidal

thoughts among teens." NAT. INST. ON DRUG ABUSE, *Is There a Linke Between Marijuana Use and Psychiatric Disorders?* (2020).

Samantha J. Broyd et al., *Acute and chronic effects of cannabinoids on human cognition—a systematic review*, BIOLOGICAL PSYCHIATRY, 79(1), 557-567 (2016)

In a systematic review into the empirical research on cannabis and cognition published between 2004 and 2015, researchers found that verbal learning, working memory, reasoning, problem solving, and attention were "most consistently impaired by acute and chronic exposure to cannabis." In addition, psychomotor function, which include things like reaction time and motor control, are similarly impaired. The authors concluded:

> Nevertheless, it is clear from the literature reviewed that cognitive impairment on a range of domains can persist beyond the period of acute intoxication and potentially affect daily functioning in cannabis users and hence the range of adverse education and other psychosocial outcomes identified and associated with require use, in particular for adolescent users.

Rebecca D. Crean et al., *An Evidence Based Review of Acute and Long-Term Effects of Cannabis Use on Executive Cognitive Functions*, J. ADDICT. MED., 5(1):1-8 (Mar. 1, 2011)

In a comprehensive meta-analysis of contemporary literature related to cannabis and its effects on cognition, authors found that acute intoxication (i.e. ingesting cannabis within the last six hours), was persistently associated with significant impairment of an individual's attention/concentration, inhibition, working memory, and verbal fluency. Though studies were mixed regarding the non-acute, long-term impacts of cannabis on cognition, the authors did note that abiding impairments were "most clearly demonstrated" in "chronic, heavy cannabis users, as opposed to light, occasional users."

Nora D. Volkow et al., *Effects of Cannabis Use on Human Behavior, Including Cognition, Motivation, and Psychosis: A Review*, JAMA Psychiatry, 73(3):292-97 (Mar. 2016)

In her review of the literature on cannabis and cognition, Nora Volkow, head of the National Institute of Health, stated that "cannabis use causes acute impairment of learning and memory, attention, and working memory" and that heavy cannabis users "have fairly consistently shown" to perform worse on "neuropsychological tests." Dr. Volkow found further that "there is both preclinical and clinical evidence supporting the view that cannabis use is associated with an amotivational state." In view of the clear scientifically established dangers associated with cannabis, Dr. Volkow laments:

> Current efforts to normalize cannabis user are being driven largely by a combination of grassroots activism, pharmacological ingenuity, and private profiteering, with a worrisome disregard for scientific evidence, gaps in our knowledge, or the possibility of unintended consequences.

Emese Kroon et al., *The short-term and long-term effects of cannabis on cognition: recent advances in the field*, CURRENT OPINION IN PSYCHOLOGY, 38:49-55 (Apr. 2021)

Most recently in 2021, a team of scientists from Amsterdam reviewed the literature with regard the effect of cannabis on cognition and found the evidence "sufficient" to sustain the conclusions that recent cannabis use impairs learning and memory, attentional control, motor inhibition, emotional processing and recognition and that long-term, heavy cannabis use impairs learning and memory and attention.

Melanie Gibbs et al., ***Cannabis use and mania symptoms: a systematic review and meta-analysis*****, J. Affect Disord., 171:39-47 (Jan. 15, 2015)**
One 2015 systematic review of the scientific literature found that cannabis use worsens the course of bipolar disorder by increasing the likelihood, severity, and/or the duration of manic phases. This finding persists after controlling for baseline symptoms, which suggests that cannabis use is causative and not merely a symptom or attempt at self-medication.

Zorrilla et al., ***Cannabis and bipolar disorder: does quitting cannabis use during manic/mixed episode improve clinical/functional outcomes?*****, ACTA PSYCHIATR. SCAND. 131:100-110 (2015)**
In a study of over 1,922 bipolar patients enrolled in a 2-year prospective observational study, cannabis users were found to have lower rates of recovery and remission, higher rates of recurrence, and higher rates of work impairment.

Deepak Cyril D'Souza et al., ***The psychotomimetic effects of intravenous delta-9-tetrahydrocannabinol in healthy individuals: implications for psychosis*****, NEUROPSYCHOPHARMACOLOGY, 29(8):1558-72 (Aug. 2004)**
One of the first studies demonstrating the anxiety-inducing effects of recent cannabis use was performed in 2004 and centered around a group of 22 healthy individuals. In a 3-day double-blind, randomized procedure study, 22 volunteers were asked to score their feelings using a clinically verified anxiety test after ingesting cannabis. The results showed a statistically significant increase in VAS-A scores of "anxious," the scores increasing in a dose-dependent manner.

Yih-Ing Hser et al., ***Reductions in Cannabis Use Are Associated with Improvements in Anxiety, Depression, and Sleep Quality, But Not Quality of Life*****, J. SUBST. ABUSE TREAT., 81:53-58 (Oct. 2017)**
A 2018 study of 302 adults between the ages of 18-50 over a 12-week period found, after controlling for demographics, treatment condition, and tobacco and alcohol use, that there was a "significant association" between cannabis use worsening symptoms of anxiety, depression, and sleep quality.

Ethan Moitra et al, ***Reductions in Cannabis Use are Associated with Mood Improvement in Female Emerging Adults*****, DEPRESS. ANXIETY, 33(4):332-38 (Apr. 2016)**

Similarly, a 2015 study of 332 female adults, ages 18-25, found that reductions in cannabis use was significantly associated with reductions in depression symptoms among those reporting at least mild depression symptoms.

S. Lev-Ran et al., ***The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies*****, PSYCHOL. MED. 44(4):797-810 (Mar. 2014)**
A meta-analysis of all methodologically reliable literature examining the relationship between depression and cannabis use through 2012 found that cannabis use was associated with a small increase in risk for depressive outcomes. The review found further a dose-response relationship, with a slightly higher increased risk observed for heavy cannabis users.

George C. Patton et al., ***Cannabis use and mental health in young people: cohort study*****, BMJ 325(7374):1195-98 (Nov. 23 2002)**
A cohort study following students, ages 14-15, in 44 schools in Australia over a period of seven years found that daily cannabis use in young women was associated with an over five-fold increase in the odds of reporting a state of depression and anxiety and that weekly or more frequent cannabis use in teenagers predicted an approximately twofold increase in the risk for later depression and anxiety after controlling for alcohol use, antisocial behavior, parental separation, and parental education, and teenagers' depression and anxiety at 14-15 years old.

David M. Fergusson & Joseph M. Boden, ***Cannabis use and later life outcomes*****, ADDICTION 103(6):969-76 (Jun. 2008)(available at pubmed.ncbi.nlm.nih.gov/18482420)**
The New Zealand birth cohort was also used to assess cannabis use and its association with various quality of life metrics. Researchers found that increased cannabis use at ages 14-21 were "significantly associated" with lower income at age of 25, higher levels of welfare dependence, higher unemployment, lower levels of relationship satisfaction, lower levels of life satisfaction that persisted even after controlling for confounding variables such as family socio-economic background, family functioning, exposure to child abuse, early adolescent academic achievement, mental disorders, and substance abuse.

George Mammen et al., ***Association of Cannabis With Long-Term Clinical Symptoms in Anxiety and Mood Disorders: A Systematic Review of Prospective Studies*****, THE JOURNAL OF CLINICAL PSYCHIATRY 79(4) (Jun. 2018)**
A 2018 systematic review of prospective studies examined the longitudinal associations between cannabis use and symptomatic outcomes among individuals with anxiety or mood disorders at baseline. After inclusion of 12 studies (with a total of 11,959 individuals), the authors found that "recent" cannabis use was associated with higher symptomatic levels of posttraumatic stress disorder, panic disorder, bipolar disorder, and depressive disorder over time relative to comparison groups. The review found

further that cannabis was also associated with less symptomatic improvement from treatment.

Daniel Feingold et al., ***The Association Between Cannabis Use and Anxiety Disorders: Results From a Population-Based Representative Sample*****, EUR. NEUROPSYCHOPHARMACOL. 26(3):493-505 (Mar. 2016)**

Jesse R. Cougle et al., ***Quality of life and risk of psychiatric disorders among regular users of alcohol, nicotine, and cannabis: An analysis of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC)*****, J. PSYCHIATRY RES. 66-67:135-41 (Jul-Aug, 2015)**

In a longitudinal U.S. study of a nationally representative sample of 34,000 adults of 18 years or older researchers investigated the prospective associations of cannabis use in the past 12 months with anxiety disorders 3 years later. Researchers adjusted for sociodemographic characteristics, family history of substance use disorder, disturbed family environment, childhood parental loss, low self-esteem, social deviance, education, recent trauma, past and present psychiatric disorders, and respondent's history of divorce. The researchers found that cannabis those who had used cannabis in the last year had a nearly three-fold risk of reporting social anxiety disorder. Using the same data set, a different group of authors found that regular cannabis use increased the risk of developing panic disorder with agoraphobia and social phobia by nearly a factor of two.

Lauren Dutra et al., ***Medical Cannabis Legalization and State-Level Prevalence of Serious Mental Illness in the National Survey on Drug Use and Health (NSDUH) 2008-2015*****, INT. REVIEW OF PSYCHIATRY, 30(3): 203-215 (July 16, 2018)**

Like psychosis, these increased rates of mental health disorders associated with cannabis use are being observed at the population level. A study in 2017 found that states with liberalized medical cannabis laws were "significantly associated with higher prevalence of [serious mental illnesses]." The researchers found further that the increased past-year use of cannabis by state residents was "significantly associated with higher prevalence of [serious mental illnesses]."

Oskar Hougaard Jefsen, et al., ***Cannabis Use Disorder and Subsequent Risk of Psychotic and Nonpsychotic Unipolar Depression and Bipolar Disorder*****, JAMA Psychiatry (2023)**

A 2023 recent study, the largest of its kind, of the 6.6 million Danish health records data set found that having cannabis use disorder doubled or even tripled the odds for most form of depression and bipolar disorder.