

Medical Cannabis — Overcoming Opioid Addiction and Managing Pain

Abstract

The opioid overdose epidemic is one of U.S. history’s worst public-health crises. The efficacy of medical cannabis in overcoming opioid addiction and managing pain in the U.S. and elsewhere, and the role of medical communities and policymakers in shaping adoption of medical cannabis as a solution to these vexing problems are issues that must be explored with due deliberateness. The role of medical cannabis in reducing opioid use and managing the tragic crisis surrounding opioid abuse and dependency is emerging as potentially significant. A continental crisis of this magnitude warrants the immediate implementation of novel strategies that prevent opioid misuse, overdose, and death—and medical cannabis is a strong candidate for biochemical solutions worthy of comprehensive investigation and scientific research.

The Problem is Pain—and its Cousin, Opioid Dependency

Epidemiological statistics reveal, alarmingly, that chronic pain is a widespread public-health issue. Estimates indicate one in four European adults has a chronic pain condition, at least 38 million U.S. adults suffer from chronic pain, and at least 12 million U.S. adults have



used cannabis as a treatment.¹ Chronic pain is the largest segment of the medical-cannabis market. In 2016, nearly 20% of U.S. adults dealt with chronic pain, while 8% had high-impact chronic pain, according to the National Center for Complementary and Integrative Health.²

Patients who suffer chronic pain conditions continue to use opioids despite their limited long-term

¹ Americans for Safe Access, <https://www.safeaccessnow.org/veterans-cannabis>.

² <https://www.prnewswire.com/news-releases/marijuana-s-versatility-is-behind-the-continued-growth-of-the-medical-cannabis-market-803502037.html>.

efficacy; and long-term opioid use fosters risks, including opioid use disorder, overdose, and death.³ Opioid addiction is rooted in pain management; it's a deep-seated problem requiring effective solutions and alternatives.

Opioid addiction and the consequent community devastation and overdose deaths (nearly 50,000 in 2017 alone, out of a total of 72,000 drug overdose deaths for all drugs) (see **Appendix 1**) have—not surprisingly—alarmed the nation and the medical community and sparked intense and broad-based responses. Predictably, and reactively, access to legally prescribed opioids is now declining due to



addiction and overdose-death concerns, and stricter regulatory oversight of prescribing and re-filling opioid orders. That response to the crisis—by itself—is woefully inadequate as a solution, and leaves the medical community and policymakers alike desperately seeking viable methodologies capable of arresting the opioid-triggered cultural fall.

Over the years, prescription drugs, especially opioids have been used, overused, and abused. Abuse, dependency, and controlled/limited access has fostered increased demand for and use of illegal opioid alternatives like heroin and fentanyl.

Unfortunately, consumption of addictive and harmful painkillers continues and it's moving from a crisis to a full-blown nationwide epidemic.⁴

Illegal opioids are a significant and growing part of the problem. These highly addictive, life-destroying substances are coming across the U.S. southern border—both as heroin and as fake (synthetic opioids) pharmaceuticals from China (fentanyl). Fentanyl is 50 to 100 times more potent than morphine and in its prescription form is prescribed to treat severe pain, but fentanyl is also made illegally and distributed as a street drug. Synthetic opioids like fentanyl are today the most common drugs involved in U.S. drug-overdose deaths. In 2017, 59 percent of opioid-related deaths involved fentanyl compared to 14.3 percent in 2010.⁵

³ Reiman A, Welty M, Solomon P (2017) Cannabis as a substitute for opioid-based pain medication: patient self-report, *Cannabis and Cannabinoid Research* 2:1, 160–166, DOI: 10.1089/can.2017.0012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5569620/>

⁴ Nicole Skrobin, *Consumers Are Replacing Pharmaceuticals With Medical Marijuana*, The Fresh Toast, March 20, 2019, <https://thefreshtoast.com/cannabis/consumers-are-replacing-pharmaceuticals-with-medical-marijuana/>.

⁵ National Institute on Drug Abuse, *DrugFacts*, Revised February 2019, <https://www.drugabuse.gov/publications/drugfacts/fentanyl/>.

A 2018 Cannabis and Cannabinoid Research⁶ study made these documented observations about today's pressing opioid problem:

- Centers for Disease Control reports that 115 people die every day of an opioid related cause in the United States.
- The United States consumes 80% of the world's supply of prescription opioid analgesics (POAs), and opioid prescriptions have climbed by 300% since 1991.
- The spike in prescriptions has also directly contributed to an increase in the number of first-time consumers of illicit opioids (heroin, which is commonly laced with fentanyl or its analogs), which has continued to climb since the mid 1990's.
- Patients who become physically dependent upon POAs frequently switch to illicit opioids because POAs are more costly and/or difficult to obtain.
- Ease of access is a dangerous tradeoff for the lethal risk associated with synthetic opioids. Fentanyl, for instance, is 100 times more potent than morphine, which partially explains why there was a 250% increase in synthetic opioid mortality between 2012 and 2015.

The Cannabis Connection

How has the opioid crisis affected the explosion of cannabis medicine? Doctors' new reluctance to prescribe opioids for pain may be forcing users to seek/substitute illegal opiates (worsening the opioid crisis) while also increasing demand for legal pain-controlling alternatives like medical cannabis (the use of which reduces dependence on opioids and addiction-related deaths). Fortunately, as more jurisdictions legalize medical cannabis, many suffering chronic pain today can choose to transition away from pharmaceutical analgesics including opioids and move to cannabis instead—an alternative previously unavailable (legally) almost everywhere.

What evidence do we have that medical cannabis can positively impact the opioid crisis? Study after study confirms correlative links. Indications are good, but questions remain concerning the role cannabis can play, and how and what is really known about its utility in ameliorating the opioid crisis.

In a June 2017 study by Cannabis and Cannabinoid Research,⁷ researchers surveyed 2,897 medical-cannabis patients and examined cannabis use as a substitute for opioid-based pain medication and reported:

“Prescription drug overdoses are the leading cause of accidental death in the United States. Alternatives to opioids for the treatment of pain are necessary to address this

⁶ Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.

⁷ Reiman A, Welty M, Solomon P (2017) Cannabis as a substitute for opioid-based pain medication: patient self-report, *Cannabis and Cannabinoid Research* 2:1, 160–166, DOI: 10.1089/can.2017.0012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5569620/>

issue. Cannabis can be an effective treatment for pain, greatly reduces the chance of dependence, and eliminates the risk of fatal overdose compared to opioid-based medications. Medical cannabis patients report that cannabis is just as effective, if not more, than opioid-based medications for pain.”

Study respondents who were opioid-based pain medication users “overwhelmingly reported that cannabis provided relief on par with their other medications, but without the unwanted side effects.” Patients using cannabis and opioids report they can use less opioids and that cannabis causes fewer negative side effects than their opioid-based medication. Ninety-seven percent of respondents “strongly agreed/agreed” they can reduce opiate consumption when they also use cannabis, and 81% “strongly agreed/agreed” that cannabis by itself was “more effective at treating their condition than taking cannabis with opioids.” Similar results were reported by those using cannabis with nonopioid-based pain medications.⁸

The Study also made the following pertinent observations:

- Used in combination with opioid pain medications, cannabis can lower opioid side effects, cravings, and withdrawal severity, as well as enhance the analgesic effects of opioids, thereby allowing for lower doses and less risk of overdose.⁹
- A previous study reported that their subjects' pain “was significantly decreased after the addition of vaporized cannabis” and suggested that cannabis treatment “may allow for opioid treatment at lower doses with fewer [patient] side effects.” The authors concluded that their results “demonstrate that inhaled cannabis safely augments the analgesic effects of opioids.”¹⁰
- Research published last year found that 80% of medical cannabis users reported substituting cannabis for prescribed medications, particularly among patients with pain-related conditions.¹¹
- Numerous scholarly studies have demonstrated the efficacy of cannabis for multiple conditions, including the management of pain, while concurrently reducing the reliance on opioid medications and nonopioid medications.¹²

Study authors concluded “future research should track clinical outcomes where cannabis is offered as a

⁸ *Id.*

⁹ Degenhardt L, Lintzeris N, Campbell G, et al. Experience of adjunctive marijuana use for chronic non-cancer pain: findings from the Pain and Opioids IN Treatment (POINT) study. *Drug Alcohol Depend.* 2015;147:44–150, <https://www.ncbi.nlm.nih.gov/pubmed/25533893>; Haroutounian S, Ratz Y, Ginosar Y, et al. The effect of medicinal marijuana on pain and quality of life outcomes in chronic pain: a prospective open-label study. *Clin J Pain.* 2016;32:1036–1043, <https://www.ncbi.nlm.nih.gov/pubmed/26889611>.

¹⁰ Abrams D, et al. Cannabinoid-opioid interaction in chronic pain. *Clin Pharmacol Ther.* 2011;90:844–851, <https://www.ncbi.nlm.nih.gov/pubmed/22048225>.

¹¹ Haroutounian S, Ratz Y, Ginosar Y, et al. The effect of medicinal marijuana on pain and quality of life outcomes in chronic pain: a prospective open-label study. *Clin J Pain.* 2016;32:1036–1043, <https://www.ncbi.nlm.nih.gov/pubmed/26889611>.

¹² Boehnke KF, Litinas E, Clauw DJ. Medical cannabis associated with decreased opiate medication use in retrospective cross-sectional survey of chronic pain patients. *J Pain.* 2016; DOI: 10.1016/j.jpain.2016.03.002, <https://www.ncbi.nlm.nih.gov/pubmed/27001005>.

viable substitute for pain treatment and examine the outcomes of using cannabis as a medication assisted treatment for opioid dependence.” They further stated that providing patients the cannabis pain-treatment option alongside opioids might assist with pain relief in a safer environment with less risk, noting that fewer opioid-dependent people will result in fewer public-health harms.

In jurisdictions providing a less-stigmatized and easily accessible environment for medical cannabis use to treat pain (i.e., where it is sanctioned rather than illegal), evidence suggests a correlated decrease in three public-health indicators: opioid-related mortality, spending on opioids, and traffic fatalities.¹³ This clearly indicates that when medical cannabis is available to patients without risk of stigma or legal problems, patients *will use it* as a substitute for or as a balancing agent in combination with opioids. Likewise, it indicates that legal restrictions on accessibility prevent/discourage many who could benefit from cannabis and want to diminish their use of (dependence on) opioids from doing so—thus perpetuating opioid-associated societal harms.

In another study on the impact of medical cannabis use by patients with chronic pain on opioid medication use published in the *Journal of Pain* (2016),¹⁴ researchers conducted a cross-sectional retrospective survey of 244 medical cannabis patients with chronic pain. Among study participants, medical cannabis use was associated with a 64% decrease in opioid use, decreased number medications, fewer side effects, and an improved quality of life (45%).

A 2015 study found that medical-cannabis laws are associated with significantly lower state-level opioid overdose mortality rates (US states with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate compared to states without medical cannabis laws), noting that U.S. opioid analgesic overdose mortality continues to rise, driven by chronic pain, and that since chronic pain is a major indication for medical cannabis, laws establishing access to medical cannabis may change overdose mortality related to opioid analgesics in states that have enacted them.¹⁵ The study suggested further investigation to determine how medical cannabis laws interact with policies aimed at preventing opioid overdose.

¹³ Reiman A, Welty M, Solomon P (2017) Cannabis as a substitute for opioid-based pain medication: patient self-report, *Cannabis and Cannabinoid Research* 2:1, 160–166, DOI: 10.1089/can.2017.0012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5569620/>.

¹⁴ Medical Cannabis Use Is Associated With Decreased Opiate Medication Use in a Retrospective Cross-Sectional Survey of Patients With Chronic Pain, Boehnke, Kevin F. et al., *The Journal of Pain*, Volume 17, Issue 6, 739 – 744, [https://www.jpain.org/article/S1526-5900\(16\)00567-8/fulltext](https://www.jpain.org/article/S1526-5900(16)00567-8/fulltext) and <https://www.ncbi.nlm.nih.gov/pubmed/27001005>.

¹⁵ Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010, Bachhuber MA, Saloner B, Cunningham CO, Barry CL, *JAMA Intern Med.* 2014 Oct;174(10):1668-73. doi: 10.1001/jamainternmed.2014.4005, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4392651/>.

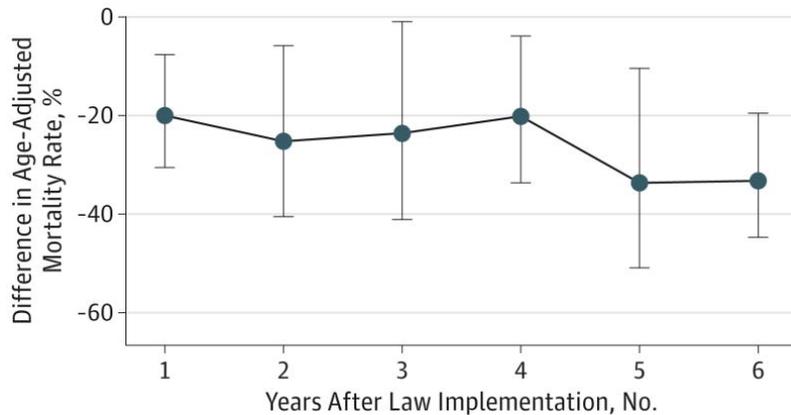


Figure 2¹⁶

One research team examining 2009 – 2015 mortality records studied whether—in states with medical-cannabis laws—the presence of operating dispensaries in *counties* affected deaths from prescription opioids, synthetic opioids and heroin. Counties with dispensaries were found to experience six to eight percent fewer opioid overdose deaths overall and 10 percent fewer heroin overdose deaths.¹⁷ This indicates that local access for patients (pain-sufferers, opiate addicts) to medical cannabis through operating dispensaries can reduce opioid-related deaths, when controlling for counties in legal states that don't allow dispensaries to operate. The mere legalization of medical cannabis by a state isn't sufficient, especially in states that allow counties to proscribe dispensary operations; it take the presence of operating dispensaries providing patient access to negatively impact opioid deaths.

One theory for this outcome is that medical cannabis' availability reduces the chance that a person will start taking prescription painkillers at all thus averting the prospect of opioid dependence/addiction.¹⁸

A [2019 study](#),¹⁹ published in *the Harm Reduction Journal*, surveyed 2,000 adult Canadian medical cannabis patients registered with Tilray, a federally authorized medical cannabis production, distribution, and research company located in Nanaimo, BC. It focused on the use of standardized, government-regulated medical cannabis by patients registered in Canada's federal medical-cannabis program, and was the largest polling of Canadian medical-cannabis patients to date. Study participants were asked if they used cannabis as a substitute for prescription or illicit drugs.

Of the 610 study participants using opioid medications, 59.3% self-reported they stopped using opioids

¹⁶ Association Between Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in Each Year After Implementation of Laws in the United States, 1999–2010, [Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999–2010](#), JAMA Intern Med. ;174(10):1668-1673. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4392651/>.

¹⁷ Kyle Jaeger, *Marijuana Dispensaries Reduce Local Opioid Overdose Rates, Study Finds*, Marijuana Moment, November 27, 2018, <https://www.marijuanamoment.net/marijuana-dispensaries-reduce-local-opioid-overdose-rates-study-finds/>.

¹⁸ *Id.*

¹⁹ Philippe Lucas, Eric P. Baron, Nick Jikomes, Medical cannabis patterns of use and substitution for opioids & other pharmaceutical drugs, alcohol, tobacco, and illicit substances; results from a cross-sectional survey of authorized patients, *Harm Reduction Journal*, January 28, 2019, <https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-019-0278-6>.

completely (100% substitution), and 18.4% reduced their use of opioids by 75%, when using cannabis. The most important reason participants substituted cannabis for prescription drugs was the belief that *cannabis is a safer alternative than prescription drugs* (ranked #1 by 51.2%). Fewer adverse side-effects was most important to 39.7% of participants; better symptom management (19.5%), and fewer withdrawal symptoms (11.4%).

Study authors also made these telling observations:

“This study’s findings on the self-reported reduction of opioid use are particularly significant to public health and safety. The past decade has seen the rapid growth of an opioid epidemic in North America, and currently drug overdose is the leading cause of accidental death in Canada and the US, with many of these deaths resulting from both prescription and illicit opioids. In 2015, there were 52,404 drug overdose deaths in the USA, including 33,091 (63.1%) overdose deaths related to opioids. In Canada, it is estimated 4000 people died of an opioid overdose in 2017, 1450 of which were in British Columbia alone, and opioid overdose now results in an average of 16 hospitalizations per day, a 53% increase in opioid-related hospitalizations over the last 10 years. Cannabis may not only reduce the prescription and use of opioids in medical and non-medical users, it may also reduce the odds of transitioning to more problematic substances and patterns of use. Recent evidence suggests that cannabis use may reduce opioid withdrawal and improve outcomes of opioid-replacement therapies (methadone/Suboxone) for those seeking treatment for opioid use disorder thereby reducing the public health impacts of the current opioid overdose crisis.”

Presented above are only a few illustrations of the many studies demonstrating similar results concerning the impact of cannabis usage as treatment for pain or on the consumption/abuse of opioids. The bottom line: the studies’ “clinical and pre-clinical data suggest that analgesic synergy produced by co-administered cannabis and opioids could be harnessed to achieve clinically relevant pain relief at doses that would normally be subanalgesic. This strategy could have significant impacts on the opioid epidemic, given that it could entirely prevent two of the hallmarks of opioid misuse: dose escalation and physical dependence.”²⁰

Today cannabis is used primarily to treat chronic pain, arthritis, Alzheimer's, cancer, and migraines, among other conditions. Energias Market Research has compiled research revealing that the global medical-cannabis market is projected to grow from USD 8.28 billion in 2017 to USD 28.07 billion in 2024—and at a 19.1% CAGR over that seven years.²¹ As interest and awareness grows, so do funding and R&D initiatives, further educating, motivating and expanding the market.

Cannabis researchers today build on decades of grass-roots home-grown experimentation with cannabis

²⁰ Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.

²¹ <https://www.prnewswire.com/news-releases/marijuana-s-versatility-is-behind-the-continued-growth-of-the-medical-cannabis-market-803502037.html>.

by pain patients and those suffering many other medical conditions to explore the therapeutic uses of medical cannabis to combat pain, opioids, and expensive medical treatments. An emerging scientific consensus on cannabis' therapeutic value is based on growing numbers of successful clinical trials and preclinical research. Research, patient experience, and medical professional observations reveal that cannabis safely treats *many* medical conditions, often more effectively than conventional pharmaceuticals.²² More than 15,000 published peer-reviewed scientific articles/studies on cannabis chemistry and pharmacology indicate cannabis offers medical value when treating patients for serious conditions like AIDS, glaucoma, cancer, epilepsy, and chronic pain, and neurological disorders like multiple sclerosis, Parkinsonism, and ALS. Between 1975 and 2009, over 300 studies established that cannabinoids and cannabis help patients experiencing chronic pain.²³

Doctors treating pain patients observe that cannabis can have an important opioid-sparing effect—patients prescribed high doses of opioid analgesics can significantly reduce reliance on opioids and improve their daily functioning by using cannabis in their pain-care regimen. Because cannabis suppresses the nausea and vomiting associated with opioid treatment, and reduces the pain associated with prolonged nausea, cannabis treatment increases the patient's ability to comply/continue with the primary treatment, thus avoiding dire consequences.²⁴

Cannabis is a natural alternative for pain and anxiety management. All pain medications, especially opioids, have potentially dangerous side effects damaging to organs and other body parts. Worse, they're often addictive. One key and widely accepted conclusion of the medical community about the use and benefit of cannabis to reduce dependence on opioids is that—while the best alternative analgesics are frequently potentially dangerous, addictive and lethal opioids—cannabis use never produces a serious toxic reaction. While marijuana is addictive, its addiction rates are far lower than addiction rates for opioids (50% or less). Moreover, tens of thousands die by overdosing with opioids each year, while no documented marijuana overdose death exists.

Marijuana's versatility is a big part of why the medical-cannabis market continues to grow—it's leading U.S. jurisdictions and even entire countries (e.g., Canada) to explore the increasingly clear opportunities for medical benefits and solutions in cannabis. A key component of this versatility, and perhaps the most urgent one, is its utility as a replacement for opioid use and prospects for diminishing the terrible human costs of opioid addiction. National Institutes of Health has appropriated funds just for this purpose.

Cannabis is a first-line analgesic. Its prospects as a tempering agent in the fight to reduce opioid dependence and abuse is well explained in the 2018 Cannabis and Cannabinoid Research study [Emerging Evidence for Cannabis' Role in Opioid Use Disorder](#):

“The primary use for both prescription opioids and cannabis is analgesia. Currently, up to 90% of patients in state-level medical cannabis registries list chronic pain as their qualifying condition for the medical program. In an exhaustive review, the National

²² Americans for Safe Access, <https://www.safeaccessnow.org/veterans-cannabis>.

²³ *Id.*

²⁴ Americans for Safe Access, <https://www.safeaccessnow.org/veterans-cannabis>, Harvey L. Rose, M.D.

Academies of Science and Medicine recently confirmed the efficacy of cannabis for chronic pain in adults. Interestingly, when given access to cannabis, individuals currently using opioids for chronic pain decrease their use of opioids by 40–60% and report that they prefer cannabis to opioids. Patients in these studies reported fewer side effects with cannabis than with their opioid medications (including a paradoxical improvement in cognitive function) and a better quality of life with cannabis use, compared to opioids. Despite the vast array of cannabis products and administration routes used by patients in states with medical cannabis laws, cannabis has been consistently shown to reduce the opioid dose needed to achieve desirable pain relief.”²⁵

Even as cannabis becomes more accepted in the United States to treat pain, federal regulations have not kept up with advances in medical understanding of cannabis’ utility as a treatment for chronic medical conditions. Because cannabis remains an illegal Drug Enforcement Administration Schedule I controlled substance, large-scale clinical trials on its medicinal properties and efficacy/utility are difficult to conduct by mainstream medical and research organizations—and the resources to conduct such trials are not available. While recent clinical and systematic reviews acknowledge—and show moderate evidence for—cannabis’ prospective promise as a standardized pain treatment, advocates and researchers acknowledge the limitations of small sample sizes and lack of controlled studies—and therefore advocate/lobby for additional research through standardized clinical trials.²⁶

Beyond cannabis’ potential as a pain remedy, a recent review in [Cannabis and Cannabinoid Research](#),²⁷ presents preliminary evidence showing cannabis may help with the treatment of opioid addiction symptoms per se, such as withdrawal and cravings. This means there is great promise for developing and using cannabis-based medicines in treating opioid addiction. Yet, no randomized controlled trials evaluating cannabis specifically for treatment of opioid addiction have been conducted. The [Journal of the American Medical Association \(JAMA\)](#)²⁸ has recently argued that substituting cannabis for evidence-based opioid-addiction treatments could be harmful because discontinuing already-established treatments, such as methadone and buprenorphine, could be life-threatening. From a medical-standards perspective, using cannabis as a treatment for opioid addiction is not consistent with the practice of evidence-based medicine.²⁹ Yet, more research is warranted, since emerging evidence suggests cannabis may be helpful in treating opioid addiction.

A DEA change of classification or transfer of jurisdiction to the Food and Drug Administration would likely open the floodgates of medicinal research on cannabis—permitting the scientific exploration of all

²⁵ Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.

²⁶ Reiman A, Welty M, Solomon P (2017) Cannabis as a substitute for opioid-based pain medication: patient self-report, *Cannabis and Cannabinoid Research* 2:1, 160–166, DOI: 10.1089/can.2017.0012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5569620/>.

²⁷ Wiese B, supra.

²⁸ <https://jamanetwork.com/journals/jama/article-abstract/2723649>.

²⁹ Jonathan N. Stea, *Can Cannabis Solve the Opioid Crisis*, March 15, 2019, <https://blogs.scientificamerican.com/observations/can-cannabis-solve-the-opioid-crisis/>.

its potential remedial properties and propensities. The National Center for Complementary and Integrative Health (NCCIH) said in a March 2019 budget justification document, “A growing body of literature suggests that the cannabis plant has pain-relieving properties; however, as a schedule I substance with known psychoactive effects, research on the potential pain-relieving properties of cannabis has been slow.”

Because increasing numbers of physician practices are tied to major hospital systems, the protocols and standards of those institutions—and their corporate image—act as a barrier to untested (and presently illegal at the federal level) unconventional medical practices, advice or prescriptions. Consequently, they will be the last group to embrace medical marijuana. Regrettably, such corporate postures—while understandable—also impose a negative pull on the pace of productive medical-cannabis research.

Increasingly, and perhaps inevitably, medical cannabis is becoming a legitimate treatment tool for serious medical conditions. The sooner cannabis’ properties and medicinal capabilities are fully and methodically researched and understood, the better for patients trying to manage chronic pain, escape opioid addiction, and remedy other medical conditions.

An emerging body of evidence suggests that cannabis can have a positive impact on the well-being of people with opioid use disorder, and private funding is increasingly being devoted to serious academic research on cannabis’ medical uses and propensities. It’s also clear that our unprecedented public-health crisis justifies investigating novel sustainable interventions that can directly address the current opioid misuse crisis, complement current treatment strategies, and prevent future misuse through alternative first line analgesics.³⁰ Unfortunately, until recently such serious research was difficult to conduct without running a regulatory gauntlet and taking legal risks—which essentially stopped research from generating a body of verified scientific knowledge on much of cannabis’ potential in medicine.

Momentum for Cannabis Use/Research Builds

In several states (New York, New Jersey, and Pennsylvania), cannabis is allowed as a treatment for opioid addiction by patients using heroin, fentanyl and other opioids. In early 2019, the Maryland General Assembly is considering adding opioid use disorder to the list of qualifying medical conditions for cannabis use.

The largest supplier of legal medical marijuana in Canada, based in Ontario, in late 2018 committed to address the opioid crisis by funding research on medical cannabis—by creating a professorship of cannabis science at the University of British Columbia.³¹ The professorship will be funded by the grower’s \$2.5 million grant and another \$500,000 from the B.C. government, and will lead clinical trials to explore the role of cannabis in helping struggling opioid users.

³⁰ Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.

³¹ Sandor Gyarmati, *Can cannabis help with opioid addiction?*, <https://www.vancouverisawesome.com/2018/11/30/cannabis-opioid-addiction-research-bc/>, November 30, 2018.

“The therapeutic benefits of cannabis are only just beginning to be understood. Early research has shown that it could have a stabilizing impact for people with opioid use disorder, improving their quality of life and offering a pathway to long-term treatment solutions,” said Dr. MJ Milloy, the first recipient of the cannabis professorship, a recognized leader in the field of epidemiology, and a research scientist at the British Columbia Centre on Substance Use. Dr. Milloy added, “In the midst of an overdose crisis, we have a scientific imperative to build upon this research.”

This first-of-its-kind professorship will lead research and clinical trials on how cannabis products can be used to address the opioid overdose crisis. Through this kind of focused research evidence-based cannabis solutions to medical problems can be refined and improved to meet patients’ pain-management needs and manage treatment options.

Because cannabis is now fully legalized in Canada (under the Canada Cannabis Act effective October 17, 2018), cannabis researchers can finally conduct investigations that previously risked legal entanglements and find the financial support to fund research. Moreover, provincial and local governments can sponsor the procurement of focused/core research to validate/corroborate what the industry already knows (from anecdotal observation and short-term studies) and to discern the medicinal benefits of cannabis for other medical conditions.

Removing statutory barriers in Canada means that Canada may now become a boom town for cannabis research—with a significant economic impact. Canada may reap more than cannabis, namely a lot of research dollars, and the economic activity that follows. Because the U.S. government continues to ignore the issue and maintains its regulatory barrier—the Schedule I classification of cannabis—the U.S. will continue to see cannabis research dollars flee to cannabis-friendly jurisdictions. Not only does the U.S. lose this economic activity, it falls further behind in developing cannabis products derived from the research, in attaining long-sought medical solutions, and in securing the economic benefits of their production by U.S. companies.



The U.S. continues to make cannabis research too difficult to conduct.

“As the first G-7 nation to slacken cannabis laws, Canada has bolted to the front lines of the plant’s methodical scrutiny and investigation. No longer at risk of censure or lacking access to specimens, researchers can transcend the narrow parameters of scientific study once considered acceptable, namely, clinical research, to explore social, biological, genetic and agricultural questions. From botanists to phytochemists, microbiologists to epidemiologists, scientists of all sorts are free to openly pursue a greater quantity and

quality of cannabis science than ever before.”³²

The Canada Cannabis Act has made it very easy for researchers to conduct cannabis research without restriction and has triggered large-scale trials in Canada on cannabis’ medical propensities. It has rapidly created a flurry of economic activity around cannabis product development. Foreign companies are quickly moving to form joint ventures with Canadian companies and researchers. The Canadian government is funding 14 new studies on cannabis and set aside millions of dollars for research grants on a wide range of substantive medical cannabis topics.³³

With legal barriers and risks removed, Canada is poised to become a global leader in cannabis research and development, which could leave the U.S. in the dust (economically and medically) if the U.S. Congress doesn’t get on board and change the Schedule I classification. Canada’s scientific community will have the cannabis jobs, not the U.S.’s best and brightest. Canada will lead the way in refining and deepening our understanding of the ancient drug plant, how it can improve lives, and what its economic and cultural implications are. In this position, Canada could control much of the worldwide cannabis industry’s economic engine.

Canada’s historic approach to cannabis research—which has historically tolerated research albeit with more regulatory hoops than under the Canada Cannabis Act—has already fostered much research activity and gained a strong foothold, advancing cannabis scholarship. Canada is essentially “the de facto source of research-grade cannabis around the world,” asserts Philippe Lucas, head of research for Canadian producer Tilray, which exports to 10 countries.³⁴ Tobacco giant Altria, owner of Marlboro brand cigarettes, announced in December 2018 its decision to invest \$1.8 billion in Canadian marijuana grower Cronos Group—taking a 45 percent ownership position—as it looks to other markets for growth beyond its slowing tobacco lines.³⁵ This investment will boost Cronos’ investments in research and development for new cannabis brands and products. Other Canadian cannabis growers are being courted by large consumer brands as well. The implications of these global brand diversification strategies on cannabis research and product development are significant.

By comparison, the U.S. has by policy and law choked cannabis research and is rapidly losing its competitive position and opportunities.

Jumpstarting cannabis research in the U.S. by federal-level legalization is essential to generate the reliable empirical scientific information necessary to inform policymakers and allow them to wisely navigate the clash between cultural inertia pushing popular support and the cannabis-data blackout left to us by 100+ years of cannabis prohibition. Without the benefit of robust cannabis research, policymakers and the laws they make or advocate will remain in the dark—uninformed, ineffective in minimizing potential adverse impacts, and complicit in denying the American people helpful, life-saving

³² Amanda Siebert, *Canada’s Grand Cannabis Experiment Has Set Scientists Free*, The New York Times, November 20, 2018, <https://www.nytimes.com/2018/11/20/opinion/cannabis-science-legal-marijuana-canada.html> .

³³ *Id.*

³⁴ *Id.*

³⁵ Paul R. LaMonica, *Marlboro owner Altria invests \$1.8 billion in cannabis company Cronos*, CNN Business, December 7, 2018, <https://www.cnn.com/2018/12/07/investing/altria-cronos-investment-marijuana/index.html> .

medical products.

VA is Taking a Leading Role in Cannabis Research—With a Boost from Congress

In January 2019, lawmakers in the U.S. House of Representatives introduced legislation (The VA Medicinal Cannabis Research Act, H.R. 747,) *requiring* the U.S. Department of Veterans Affairs (VA) to conduct studies (clinical trials) on the benefits of medical marijuana for military veterans. Specifically, H.R. 747 calls for research on conditions commonly suffered by veterans like chronic pain and post-traumatic stress disorder.³⁶

Another House bill introduced by Rep. Matt Gaetz (R-Florida) in January 2019 (H.R. 601) would increase the number of manufacturers registered under the Controlled Substances Act to grow cannabis for research purposes and allow the VA to inform veterans of clinical trials. Reps. Lou Correa (D-CA) and Clay Higgins (R-LA)—co-sponsors of 747—believe the research is necessary to ensure the safety and effectiveness of medical cannabis for veterans, and that it’s imperative to veterans’ health and safety to find alternative treatments for chronic pain and service-related injuries.³⁷

Still another House bill introduced by Sen. [Brian Schatz](#) (D-Hawaii) and Rep. [Barbara Lee](#) (D-Calif.) in February 2019 would allow doctors at the Department of Veterans Affairs to recommend/ medical marijuana in the 33 states that already allow medical marijuana—lifting the federal ban for VA doctors in those states.³⁸ It would also direct the VA to study medical cannabis’ utility in treating chronic pain, and reducing the need to prescribe opioids.

The introduction of these bills signals growing U.S. legislative momentum to stage research on medical cannabis and allow military doctors to recommend cannabis—which reflects a growing recognition that cannabis is increasingly viewed as a potentially effective alternative to opioids for pain management.

Mirroring these calls to permit VA physicians to recommend cannabis to veterans, a new Massachusetts nonprofit, Alternative Treatment for Veterans, is a coalition formed to teach veterans about cannabis’ medical benefits, and to advocate for increased access to medical cannabis. ATV advocates note that veterans have a particularly difficult time accessing medical marijuana—despite its many benefits—because it is still illegal under federal law. For veterans receiving health care through the VA, their doctors can’t prescribe medical cannabis, their benefits don’t cover it, and they may lose access to other medications if they test positive for cannabis use.

Since these bills were introduced, the Veteran’s Administration has undertaken or arranged for hundreds separate studies involving the utility of medical cannabis in meeting veterans’ medical needs.

³⁶ <https://www.marijuanamoment.net/new-congressional-bill-requires-va-to-study-medical-marijuana-for-veterans/>.

³⁷ Patricia Kime, *Lawmakers Race to Introduce Veterans’ Medical Marijuana Bills in New Congress*, January 24, 2019, Military.com, <https://www.military.com/daily-news/2019/01/24/lawmakers-race-introduce-veterans-medical-marijuana-bills-new-congress.html>

³⁸ Peter Sullivan, *Dems unveil bill to let VA doctors prescribe medical marijuana*, The Hill, February 13, 2019, <https://thehill.com/policy/healthcare/429873-dems-unveil-bill-to-allow-va-doctors-to-prescribe-medical-marijuana>.

Conclusion

Medical cannabis has undergone a remarkable and unprecedented transformation in the last five years—in terms of attention, focus, and legitimacy. It's rapidly going mainstream and the trend is becoming irreversible. Old social mores and fears concerning cannabis generally (borne of Prohibition-era thinking and fear-mongering) are collapsing bit by bit, in large part because of the medical and research community's long-awaited—albeit still somewhat reluctant/cautious—emerging recognition and embrace of cannabis' many real medicinal benefits.

Despite its misbegotten legal/medicinal status for the last 100 years, and the U.S. government's resistance to restoring cannabis to its place in the US Pharmacopoeia, Cannabis use as an analgesic began at least 5,000 years ago; even government research studies show the "use of cannabis for purposes of healing predates recorded history" and that it was included in "the 15th century BC Chinese Pharmacopoeia, the Rh-Ya." Ancient Egypt, India and Persia all made medical use of it more than 2,000 years ago. In 1890, Queen Victoria's personal physician, Sir Russell Reynolds, wrote in the first issue of *The Lancet*, "When pure and administered carefully, [it is] one of the most valuable medicines we possess."³⁹

Consistent with this long history, patients today often report that cannabis delivers significant pain relief, even when conventional pain therapies don't.⁴⁰ Pain management presents several challenges. One is eliminating/reducing the pain. Another is minimizing the common and debilitating side effects of pain therapies, like the nausea associated with opioids. For many pain patients, cannabis delivers a multi-pronged solution—it relieves the pain, controls nausea and dizziness, and enhances the effectiveness of opioid therapy.⁴¹

Existing studies and evidence reveal the potential of cannabis to ease opioid withdrawal symptoms, reduce opioid consumption, ameliorate opioid cravings, prevent opioid relapse, improve opioid use disorder treatment retention, and reduce overdose deaths. Its greatest potential to counter the opioid epidemic may be its promising role as a first-line analgesic substitute for or addition to opioids. While its comparative efficacy is not yet well characterized, no other intervention, policy, pharmacotherapy, or treatment paradigm has been as impactful as cannabis legislation has been on the rates of opioid consumption, overdose, and death.⁴²

It is no longer useful or accurate to consider cannabis as a single "good" or "bad" substance—something political policymakers are accustomed to regarding Schedule 1 drugs—since it's actually a mixture of [over 500 chemicals](#)⁴³ with varying dosage combinations. Cannabis' complexity harbors great potential

³⁹ Americans for Safe Access, <https://www.safeaccessnow.org/veterans-cannabis>.

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.

⁴³ <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/information-medical-practitioners/information-health-care-professionals-cannabis-cannabinoids.html>.

for medical science, and its one-dimensional policy treatment for so long has likely fostered countless lost medical/scientific opportunities.

Cannabis therapy is more accessible than traditional treatments for opioid use disorder, and access to cannabis medicine is rapidly growing as more U.S. states roll back prohibition. Yet, a major barrier in universal patient access and improvement in the opioid epidemic is cannabis' status as a Schedule I controlled substance. This fact limits the additional high-quality clinical evidence is needed to further support the use of cannabis to combat OUD—because federal grant funding supporting such clinical trials is outside the scope of the National Institutes of Health (because of Schedule I, cannabis is federally considered to have no medical benefit). Moreover, questions concerning the reliability/validity of existing federally-funded cannabis research in the United States arise because it is all conducted using a single source of cannabis (NIDA drug supply), which is notoriously low in potency and quality, and does not resemble the staggering phytochemical variability in whole-plant cannabis products available in regulated state markets. These barriers to research funding and access to “real world” cannabis for clinical research directly and needlessly limit our ability to address the opioid epidemic with an apparently safe and effective tool.⁴⁴

Cannabis' efficacy in pain management and its increasing recognition as a viable substitute for opioids is driving the current explosive, gigantic and *inevitable* transition into cannabis medicine. The sudden reawakened public focus, research and economic activity surrounding cannabis as medicine is akin to California's 1849 gold rush (everyone's seeking the gold in medical cannabis). Given the emergent renaissance in cannabis studies, this trend should continue and will likely accelerate—hopefully to the great advantage of medical science. The horse is out of the barn. It won't be turned back, but many uncertainties remain about where the horse is going.

⁴⁴ Wiese B, Wilson-Poe AR. Emerging Evidence for Cannabis' Role in Opioid Use Disorder. *Cannabis Cannabinoid Res.* 2018;3(1):179-189. Published 2018 Sep 1. doi:10.1089/can.2018.0022, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135562/>.



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Thank you.

Appendix 1

(Source: <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>)

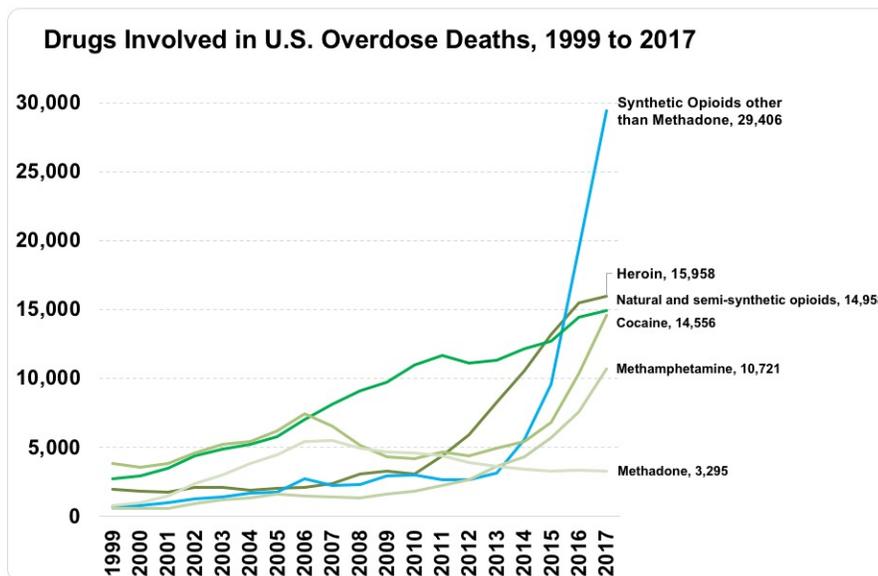
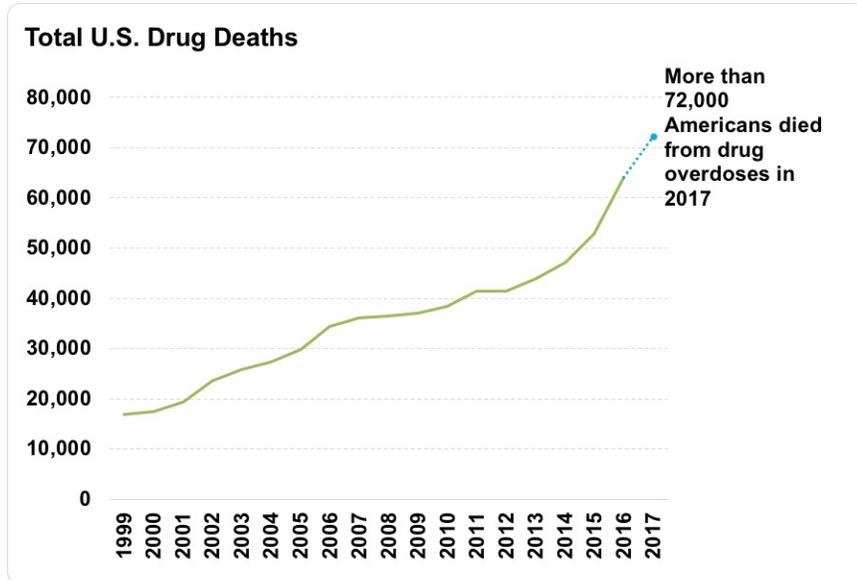
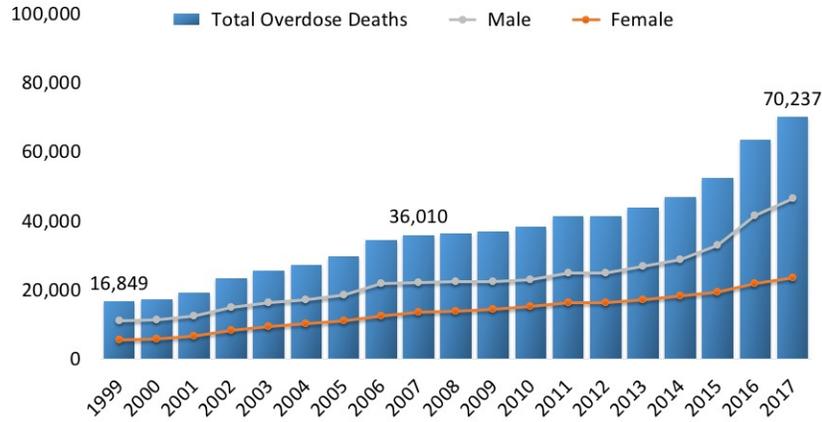
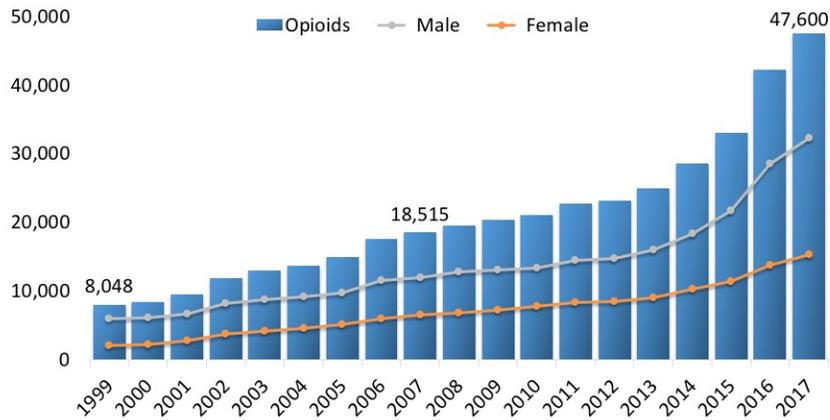


Figure 1. National Drug Overdose Deaths Number Among All Ages, by Gender, 1999-2017



Source : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 3. National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2017

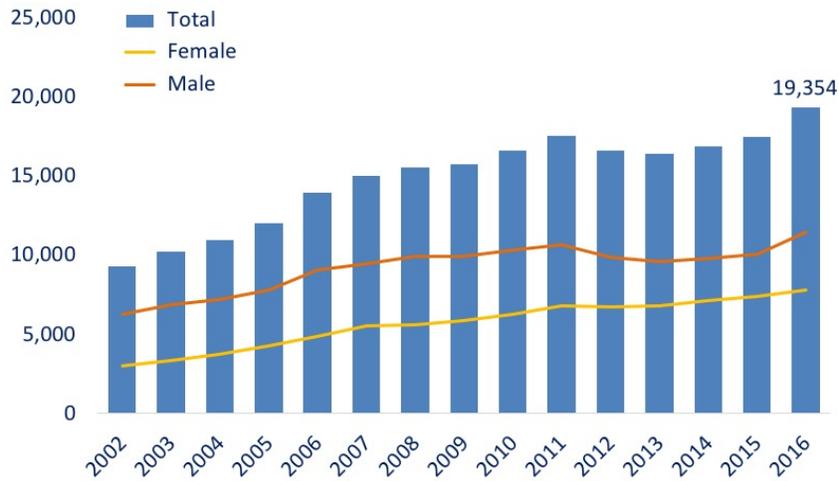


Source : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018



National Overdose Deaths

Number of Deaths Involving
Opioid Pain Relievers (excluding non-methadone synthetics)

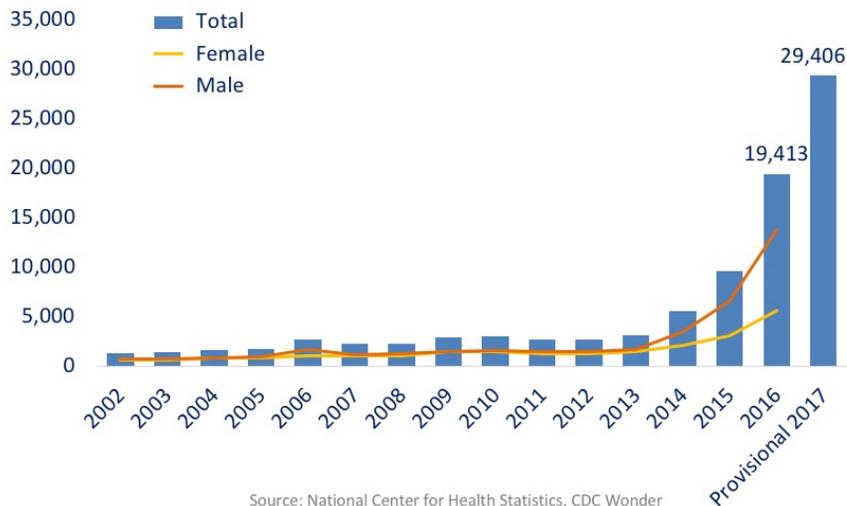


Source: National Center for Health Statistics, CDC Wonder



National Overdose Deaths

Number of Deaths Involving
Other Synthetic Opioids (Predominately Fentanyl)



Source: National Center for Health Statistics, CDC Wonder