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SUICIDE IN US

Suicide is an outcome of depression, anxiety, and other mental health concerns including substance use. Suicide is the 10th leading cause of death in the US and the annual age-adjusted suicide rate is 13.42 per 100,000 individuals. Each year 44,965 Americans die by suicide. For every suicide 25 attempt and suicide costs the US $ 69 Billion annually. In 2016, the highest US suicide rate (19.72) was among adults between 45 and 54 years of age. The second highest rate (18.98) occurred in those 85 years or older. The highest US suicide rate (15.17) was among Whites and the second highest rate (13.37) was among American Indians and Alaska Natives. Much lower and roughly similar rates were found among Asians and Pacific Islanders (6.62), and Black or African Americans (6.03). Younger groups have had consistently lower suicide rates than middle-aged and older adults. In 2016, adolescents and young adults aged 15 to 24 had a suicide rate of 13.15.

- Men die by suicide 3.53x more often than women.
- On average, there are 123 suicides per day.
- White males accounted for 7 of 10 suicides in 2016.
- Firearms account for 51% of all suicides in 2016.
- The rate of suicide is highest in middle age — white men in particular.

Based on the 2015 Youth Risk Behaviors Survey, 8.6% of youth in grades 9-12 reported that they had made at least one suicide attempt in the past 12 months. Girls attempted twice as often as boys (11.6% vs. 5.5%) and teens of Hispanic origin reported the highest rate of attempt (11.3%), especially Hispanic females (15.1%) when compared with white students (6.8%) and White females (9.8%). Approximately 2.8 percent reported making a suicide attempt that required treatment by a doctor or nurse. For those requiring treatment, rates were highest for Hispanic students with black males (4.0%) and Hispanic males (2.9%) having higher rates than white male (0.9%) students. The suicide rate for farmers is more than double that of veterans.
Suicide is the primary cause of death among females aged 15 to 19 years\(^3\). In the United States, approximately 12% of adolescents report having thoughts about attempting suicide, and 4% have made a nonfatal suicide attempt\(^4\). Previous research has examined a number of risk and factors of child and adolescent suicide, including religious/spiritual belief known to be associated with lower rates of suicide since Durkheim’s 1966 pioneering work and numerous other studies\(^5\). A recent study suggests a parent’s religiosity may be associated with lower suicide ideation and attempts in offspring\(^6\).
OPIOD EPIDEMIC DEATH OF DISPAIR

The drug most abused in the opioid group is heroin\textsuperscript{7}. Other derivatives include morphine, codeine, hydrocodone, oxycodone, hydromorphone, phentanyl, meperidine, methadone, and opium which is one of the most commonly abused substances in US is a mixture of morphine, codeine, tebaine, papaverine, noscapine, and other alkaloids is one of the most commonly abused substances in US\textsuperscript{8}.

Deaths from drug overdoses surged 21\% to more than 63,600 in 2016, spurred by widespread black-market availability of deadly synthetic opioids including fentanyl, according to the Centers for Disease Control and Prevention\textsuperscript{9}. US overdose deaths from all drugs increased to about 72,000 in 2017\textsuperscript{10}. A total of 37,461 people died in motor vehicle crashes in 2016 and the estimated annual economic cost of crashes is $242 billion dollars, according to the US Department of Transportation\textsuperscript{11}.

Worldwide, an estimated 69,000 people die from opioid overdose each year\textsuperscript{12}. There are many reasons for this increase in death due to drug overdose. Economic conditions, easy availability and low cost of the illicit drugs, and the social dysfunctions, such as loss of meaning in the interconnected work and family life resulting from a prolonged economic distress. Economic conditions may play less of a role in the scourge of recent opioid overdose deaths than the easy availability and low cost of the illicit drugs, according to a report\textsuperscript{13}. Last year (2017), President Donald Trump declared addiction to opioids like fentanyl, heroin and oxycodone a public health emergency, and the White House Council of Economic Advisers estimated that the economic cost of the opioid crisis was $504 billion in 2015, or 2.8\% of gross domestic product.
MARIJUANA & DEMENTIA

Marijuana (Cannabis sativa) is also called weed, herb, pot, grass, bud, ganja, Mary Jane, and a vast number of other slang terms. It is a greenish-gray mixture of the dried flowers, and is smoked in hand-rolled cigarettes called joints, in pipes, water pipes (sometimes called bongs), or in blunts (marijuana rolled in cigar wraps). Marijuana can also be used to brew tea and, particularly when it is sold or consumed for medicinal purposes, is frequently mixed into foods (edibles) such as brownies, cookies, or candies. Vaporizers are also increasingly used to consume marijuana. Stronger forms of marijuana include sinsemilla (from specially tended female plants) and concentrated resins containing high doses of marijuana’s active ingredients, including honeylike hash oil, waxy budder, and hard amberlike shatter. These resins are increasingly popular among those who use them both recreationally and medically.14

In US, Marijuana is the most commonly used illicit drug and 22.2 million people per month use it according to the 2015 National Survey on Drug Use and Health. Marijuana use is widespread among adolescents and young adults, more prevalent among men than women, and the gender gap has widened in the years 2007 to 2014. In 2011, there were nearly 456,000 marijuana-related emergency department visits in the United States.15

In 2016, 9.4 percent of 8th graders reported marijuana use in the past year and 5.4 percent in the past month (current use). Among 10th graders, 23.9 percent had used marijuana in the past year and 14.0 percent in the past month. Rates of use among 12th graders were higher still: 35.6 percent had used marijuana during the year prior to the survey and 22.5 percent used in the past month; 6.0 percent said they used marijuana daily or near-daily.16

Marijuana plants have 400 different chemicals known as cannabinoids, the two main chemicals are tetrahydrocannabinol (THC) and cannabidiol (CBD). THC is the chemical responsible for most of marijuana's psychological17 and pleasurable effects18. CBD doesn't cause such high19.
Rat brain image reveals high levels of cannabinoid receptors in many areas, including the cortex, hippocampus, cerebellum, and nucleus accumbens (ventral striatum)\(^2\). Memory impairment from marijuana use occurs because THC alters how the hippocampus, a brain area responsible for memory formation, processes information. Rats exposed to THC in utero, soon after birth, or during adolescence, show notable problems with specific learning/memory tasks later in life. Moreover, cognitive impairment in adult rats is associated with structural and functional changes in the hippocampus from THC exposure during adolescence. Marijuana significantly impairs judgment, motor coordination, and reaction time, and studies have found a direct relationship between blood THC concentration and impaired driving ability\(^2\)1.

As people age, they lose neurons in the hippocampus, which decreases their ability to learn new information. Chronic THC exposure may hasten age-related loss of hippocampal neurons. Rats exposed to THC every day for 8 months (approximately 30% of their lifespan) showed a level of nerve cell loss at 11 to 12 months of age that equaled that of unexposed animals twice their age. Marijuana use is likely to precede the use of other licit and illicit substances and the development of addiction to other substances. A study using longitudinal data from the National Epidemiological Study of Alcohol Use and Related Disorders found that adults who reported marijuana use during the first wave of the survey were more likely than adults who did not use marijuana to develop an alcohol use disorder within 3 years; people who used marijuana and already had an alcohol use disorder at the outset were at greater risk of their alcohol use disorder worsening. Marijuana use is also linked to other substance use disorders including nicotine addiction. Early exposure to cannabinoids in adolescent rodents decreases the reactivity of brain dopamine reward centers later in adulthood. To the extent that these findings generalize to humans, this could help explain the increased vulnerability for addiction to other substances of misuse later in life that most epidemiological studies have reported for people who begin marijuana use early in life. It is also consistent with animal experiments showing THC’s ability to prime the brain for enhanced responses to other drugs. Rats previously administered THC show a phenomenon called cross-sensitization that is a heightened behavioral...
response not only when further exposed to THC but also when exposed to other drugs such as morphine, indicating marijuana is a gateway drug\(^2\). However, cross-sensitization is not unique to marijuana. Alcohol and nicotine also prime the brain for a heightened response to other drugs and are, like marijuana, also typically used before a person progresses to other, more harmful substances\(^3\).

Between 2009-2016, 739 different New Psychoactive Substances (NPSs) were reported and in 2015 alone, 500 NPSs were on the market worldwide, including synthetic cannabinoids. Some synthetic cannabinoids are much more potent and toxic than THC, with intoxications, including hospitalizations and fatalities.

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1 Suicide Statistics: [https://afsp.org/about-suicide/suicide-statistics/](https://afsp.org/about-suicide/suicide-statistics/)

2 Why suicide is on the rise in the U.S.—even as it falls in Europe, Could inequality be to blame? [https://www.popsci.com/suicide-on-rise-in-america/](https://www.popsci.com/suicide-on-rise-in-america/)


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Economic Woes, Drive Opioid Overdose Deaths, Paper Argues


In 2016, speeding was a factor in 10,111 overdose deaths. The percentage of crash deaths involving speeding was higher on minor roads (32 percent) than on interstates and freeways (27 percent) or on other major roads (24 percent).

Brain computed tomographic scan findings in acute opium overdose patients. Brain computed tomographic scan findings in acute opium overdose patients. svob et al., Association of Parent and Offspring Religiosity With Offspring Suicide Ideation and Attempts, JAMA Psychiatry (8 August 2018).


HEROIN, MORPHINE AND OPIATES [https://www.history.com/topics/history-of-heroin-morphine-and-opiates](https://www.history.com/topics/history-of-heroin-morphine-and-opiates)


14 What is marijuana? [https://www.drugabuse.gov/publications/research-reports/marijuana/what-marijuana](https://www.drugabuse.gov/publications/research-reports/marijuana/what-marijuana)

16 Id.

17 Is there a link between marijuana use and psychiatric disorders?
18 What are marijuana effects? https://www.drugabuse.gov/publications/research-reports/marijuana/there-link-between-marijuana-use-psychiatric-disorders

19 Medical Marijuana https://www.webmd.com/brain/ss/slideshow-medical-marijuana?ecd=wnl_day_081318&ctr=wnl-day-081318_nsl-ld-stry&mb=sf30a26bW4bX4A6f20TmCQ%40HnVev1mhCIfxQ3xyXZ4k%3d

20 What are marijuana's long-term effects on the brain? https://www.drugabuse.gov/publications/research-reports/marijuana/what-are-marijuanas-long-term-effects-brain

21 Does marijuana use affect driving? https://www.drugabuse.gov/publications/research-reports/marijuana/does-marijuana-use-affect-driving


23 Is marijuana addictive? https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-addictive