

The Opioid Crisis: Prevalence and Markets of Opioids

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ABSTRACT: The US opioid crisis came in three waves — prescription opioids, heroin, and illicitly manufactured fentanyl — Centers for Disease Control and Prevention resulting in the deaths of nearly 500,000 people from 1996 to 2019. In 2009, drug overdose deaths exceeded those involving automobiles. Opioid overdose deaths contributed to the decrease in life expectancy for Americans from 78.8 to 78.5 during 2014 to 2017.

The overprescribing of a schedule II prescription opioid was escalated by pharmaceutical companies promoting a growing belief that pain was an undertreated condition. In 2012, the number of opioid prescriptions peaked at 255 million and deaths exceeded 11,000 per year. The typical prescription opioid abuser was white, male, and 45–55 years of age. The hardest-hit states were in Appalachia and the Northeast. When an abuse-resistant formulation was introduced for OxyContin, the most prevalent prescription opioid, users turned to heroin.

From the early 1980s, a new pizza delivery style of Mexican trafficking in black tar heroin infiltrated many of the same states hit hardest by prescription opioids. Heroin overdose deaths reached 14,495 in 2017. As heroin abuse increased in states supplied with black tar heroin, fentanyl-contaminated white powder heroin began to appear in the Northeast. Fentanyl was quickly followed by fentanyl analogs. While heroin deaths continued to escalate through 2017, they were soon overshadowed by fentanyl overdose deaths. Finally, prescription opioid and heroin overdose deaths started to decline in 2017, though fentanyl deaths continued to increase. In late 2019, it appeared that restrictions on transportation and travel due to the COVID-19 pandemic had resulted in decreased availability of illicit drugs, but by 2020 drug abuse had escalated in many countries.

Globally, heroin was the primary opioid of abuse and only a few countries — including Canada, Germany, Austria, and Belgium — have experienced a significant increase in prescription opioids. However, illicitly manufactured fentanyl is a growing problem in North America, Europe, Australia, and Asia.

KEYWORDS: Fentanyl, heroin, opioid crisis, prescription opioids.

INTRODUCTION

The Three Waves of the Opioid Crisis

Between 1999 and 2019, nearly half a million people died from opioid overdose, over half of all US deaths due to drug overdose. The opioid crisis came in three distinct waves: prescription opioids, heroin, and illicitly manufactured fentanyl (IMFs). The first phase of the opioid crisis resulted from the release and promotion of OxyContin (OxyER), an extended-release formulation of oxycodone. OxyER was patented by Purdue Pharma, owned by several members of the Sackler family. As shown in **Figure 1**, the overprescribing of opioids, primarily OxyContin, resulted in an increase in accidental deaths by drug overdose that exceeded that of automobile deaths in 2009 [30,109,149–152]. OxyER was responsible for over 186,000 deaths between 1999 and 2019.

A patented abuse-resistant formulation of OxyContin, OxyAR, was released in 2009. The efforts were successful; overdoses of OxyContin decreased by more than 40% by 2014. However, the mitigation effort led to the second wave of the opioid crisis, heroin. Heroin was being offered at an unusually high purity and low cost. Naïve users, accustomed to prescription formulations, as well as experienced users unaccustomed to the high purity, were overdosing with their first dose. The introduction of the abuse-resistant formulation for OxyContin in 2010,

combined with the increased availability of inexpensive, relatively pure heroin, had the dire consequence of causing a spike in deaths from heroin overdose starting in 2010 (**Figure 2**) [30,149].

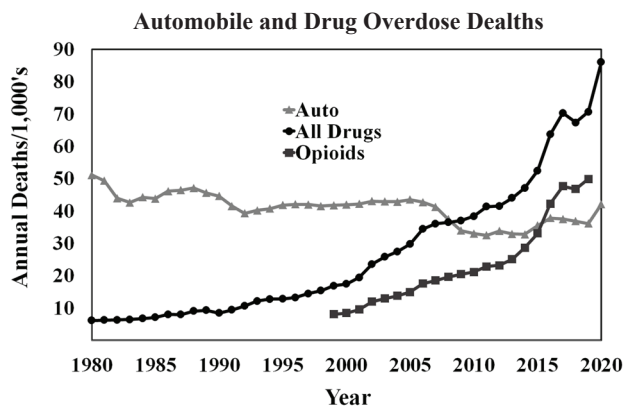


Figure 1. National automobile, drug overdose, and opioid overdose deaths from 1980–2020. Between 1999 and 2019, accidental death was the third cause of death in the US. The drug and opioid overdose deaths were adapted from *CDC Data Brief 394. Drug Overdose Deaths in the United States, 1999–2019* [30]. The number of automobile deaths were collected from the Insurance Institute for Highway Safety: Fatality Statistics [109] and National Safety Council: Preliminary Monthly Estimates [152]. The estimates for the drug and opioid deaths for 2020 were collected from the estimates provided by the CDC National Center for Health Statistics: Provisional Drug Overdose Death Counts as reported in June 2021 [149].

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