

Overdose Deaths Involving Pharmaceutical Opioids in Washington State from 2010-2021



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Key Points

- **While sales of and deaths involving pharmaceutical opioids have decreased from peak levels, these indicators are similar to or even higher than two decades ago.**
 - Sales of commonly prescribed opioid pain medications declined from a peak in 2011 to 2021, yet the average number of daily doses per person is net unchanged comparing 1999 and 2021.
 - The overall rate of overdose deaths involving pharmaceutical opioids has declined from its peak in 2006, yet the rate in 2019-2021 is still higher than in 1999-2001.
 - The overall rate of deaths involving the subset of commonly prescribed opioids declined 25% from 2010 to 2021 but has net doubled from 1999 to 2021.
- **The number of overdose deaths involving commonly prescribed opioids *without* major illicit drugs decreased 65% from 2010 to 2021. In the same period, the number of deaths involving commonly prescribed opioids *with* major illicit drugs increased 300%.**
 - These general patterns were similar among those under the age of 30 and those aged 30 and older.
 - These data indicate shifts in who is dying with pharmaceutical opioids from primarily those without illicit substances to those with the co-presence of illicit substances.
- **Ongoing high pharmaceutical opioid mortality suggests that diverse providers should offer naloxone to all individuals who use opioids and non-judgmentally educate:**
 - people with prescriptions about the potential risks of poisoning with opioids.
 - people who may be misusing opioids or have opioid use disorder about effective treatments and harm reduction services.

Background

In 1996, the Washington State Medical Quality Assurance Commission (MQAC) issued *Guidelines for Management of Pain* that recognized the negative impacts of under-treating pain and provided physicians with specific advice for the appropriate use of opioids to treat medical conditions involving substantial pain. Mirroring similar changes in medical policy and practice across the United States, opioid prescribing in Washington State subsequently increased, peaking in 2011, as initially noted in a 2003 report from the University of Washington Addictions, Drug & Alcohol Institute (ADA I)ⁱ. Parallel to increases in opioid prescribing in WA State, morbidity and mortality also increased. Beginning in 2007, the Washington State Agency Medical Director’s Group issued a series of guidelines and rules to address concerns about opioid prescribing, and prescribing began declining within a few yearsⁱⁱ.

As opioid prescribing declined, the focus largely switched to deaths involving heroin, which began rising in 2011 and almost perfectly offset the declines seen in deaths involving pharmaceutical opioids. More recently, the focus has turned to illicitly manufactured fentanyl and its association with an unprecedented rise in overdose and mortality rates.

With this current attention on illicit opioids, it is valuable to reassess trends related to pharmaceutical opioids. This report examines overdose deaths involving pharmaceutical opioids over the past decade to assess changes in death rates and the characteristics of those dying. Within each section we define key terms that are used very precisely and carefully to describe what the data do and do not indicate. These data sets often involve very complex measurements, so additional detail can be found in the Terminology section at the end of this report and on ADAI's Interactive Data website: <https://adai.uw.edu/wadata/>.

Key indicators related to pharmaceutical opioids

1. Sales of pharmaceutical opioids to hospitals and pharmacies in Washington State

Understanding the data: Data from the Automation of Reports and Consolidated Orders System (ARCOS) capture the sale of drugs to hospitals and pharmacies reported to the Drug Enforcement Administration (DEA). This represents the de facto legal supply of **pharmaceutical opioids**, those made and distributed for use in health care. By contrast, "non-pharmaceutical" opioids include heroin and illicitly manufactured fentanyl/fentanyl-related compounds.

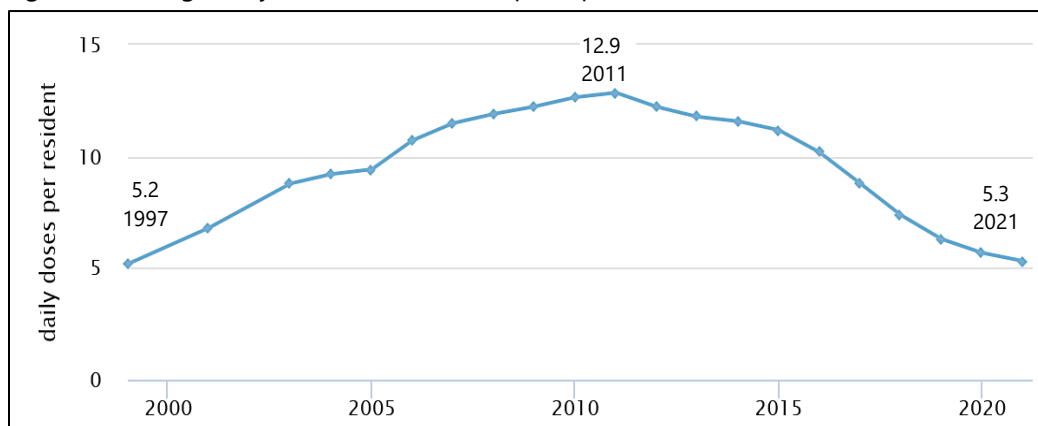
Data are converted to a measurement called the **average daily dose**, which varies by opioid type. This allows for comparison across types of opioid medication. For instance, the average daily dose for codeine is 100mg yet only 15mg for hydrocodone, a higher strength opioid.

Common opioid pain medications exclude methadone and buprenorphine which are predominantly used for the treatment of opioid use disorder (see more in the Terminology section).

To put overdose death and other data into context, it is important to understand the broader availability of pharmaceutical opioids through the legal supply chain. Figure 1 shows the average daily doses of the nine most common opioid pain medications, in aggregate, sold to hospitals and pharmacies (i.e., "retail level") each year in WA State.¹ Data are available from 1997 onwards, the year after MQAC released its *Guidelines for Management of Pain*.

The average daily doses of opioids sold to hospitals and pharmacies in WA State was virtually identical in 1997 and 2021 (5.2 doses and 5.3 doses per resident/year respectively), with a peak of 12.9 doses per person in 2011. For a sense of scale, approximately 87 million total daily doses of opioids were sold in 2011 and 41 million in 2021.

Figure 1. Average daily doses of common opioid pain medications distributed to retail level



Source: <https://adai.uw.edu/wadata/>

¹ See <https://adai.washington.edu/WAdata/ARCOSopiates.htm#doses> for detail of the 9 most common opioid types.

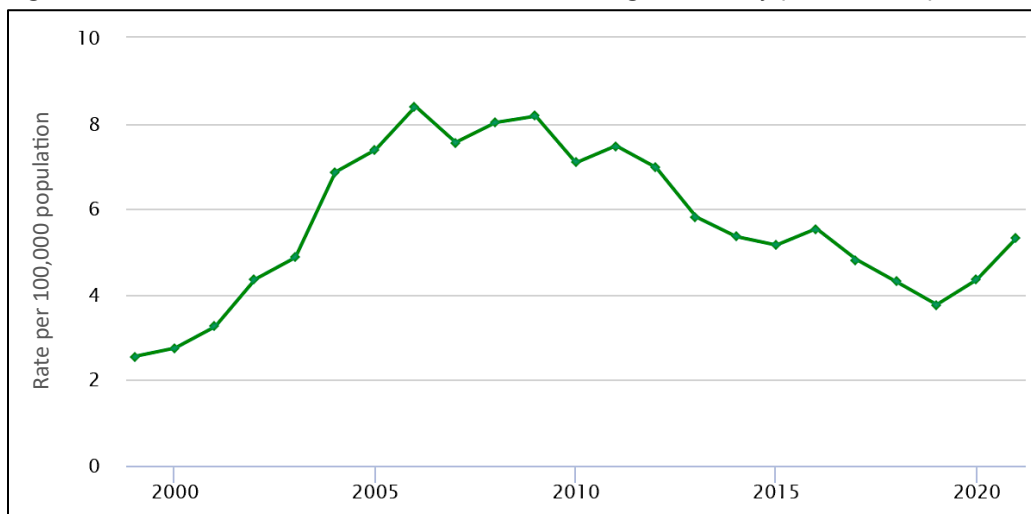
2. Opioid-involved overdose/poisoning deaths

Understanding the data: **Opioid-involved** means that an opioid was listed on the death certificate as explicitly contributing to a death, whether it was the only drug or one of many drugs. When multiple substances are present at the time of death, it is typically difficult to assign a single substance as the “main” cause of death. Therefore, these deaths are generally determined to be due to the “combined effects” of the substances that are present and could have potentially contributed to the death.

Opioid-involved poisoning deaths indicate those due to sudden overdose (i.e., acute intoxication). Overdose literally means more dose than the body can handle. They do not include deaths related to injuries due to opioid use or diseases resulting from chronic opioid use.

Drug overdose death rates per 100,000 population for commonly prescribed opioids are presented in Figure 2. Commonly prescribed opioids, primarily indicated to manage pain, include morphine, codeine, oxycodone, and hydrocodone (see more in the Terminology section). These deaths peaked between 2006-2009, then generally declined, and then increased again in 2020 and 2021. This latest increase likely reflects the significant increase in overdoses involving illicitly manufactured fentanyl, sometimes in combination with commonly prescribed opioids.

Figure 2. Statewide rates of overdose deaths involving commonly prescribed opioids



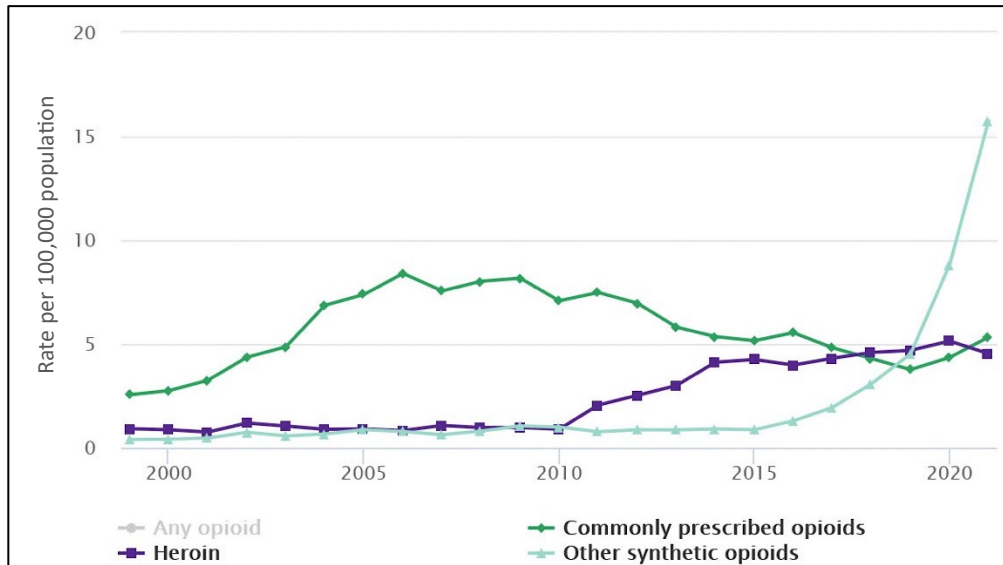
Source: <https://adai.uw.edu/wadata/>

3. Overdose deaths involving commonly prescribed opioids versus illicit opioids

Understanding the data: We present data separately for these deaths that do and do not also involve illicit drugs. Mortality data cannot directly indicate the form, source, history of, or motivation for use of a substance. The presence of illicit substances in a death does not prove that a person has a substance use disorder, but it may suggest misuse of pharmaceutical and/or illicit substances.

To add context to the rate of overdose deaths involving commonly prescribed opioids, Figure 3 shows heroin-involved deaths and those where “other synthetic opioids”/fentanyl were present. Heroin-involved deaths increased from 2010 through 2014 and then began to level off. Around this same time, overdose deaths involving commonly prescribed opioids leveled off. Over subsequent years, the rates of overdose deaths from commonly prescribed opioids and heroin have been relatively similar and steady at about 5 per 100,000.

Figure 3. Statewide opioid death rates from commonly prescribed opioids versus illicit opioids

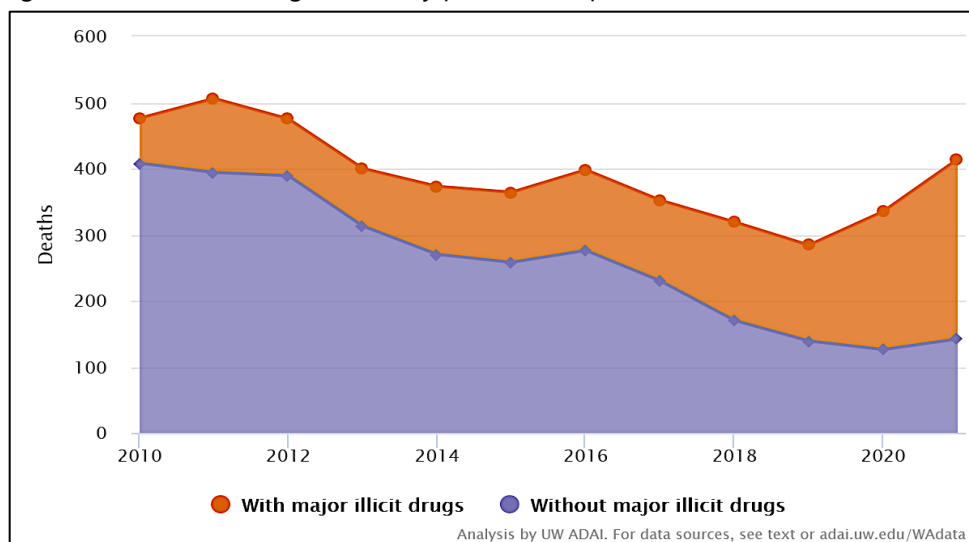


Source: <https://adai.uw.edu/wadata/>

4. Overdose deaths involving commonly prescribed opioids with and without illicit drugs

Figure 3 above shows an overall decline in overdose deaths involving commonly prescribed opioids, from 7.1 per 100,000 in 2010, down to 3.8 per 100,000 in 2019, followed by two years of increases in 2020 and 2021. Figure 4 below shows two different patterns within this overall downward trend. The number of overdose deaths involving commonly prescribed opioids *without* major illicit drugs (shown in blue) decreased 65% from 408 deaths in 2010 to 142 in 2021. Conversely, the number of deaths involving commonly prescribed opioids *with* major illicit drugs (shown in orange) increased 300% from 68 to 272 from in the same period.

Figure 4. Deaths involving commonly prescribed opioids, with and without illicit drugs



Analysis by UW ADAI. For data sources, see text or adai.uw.edu/Wadata

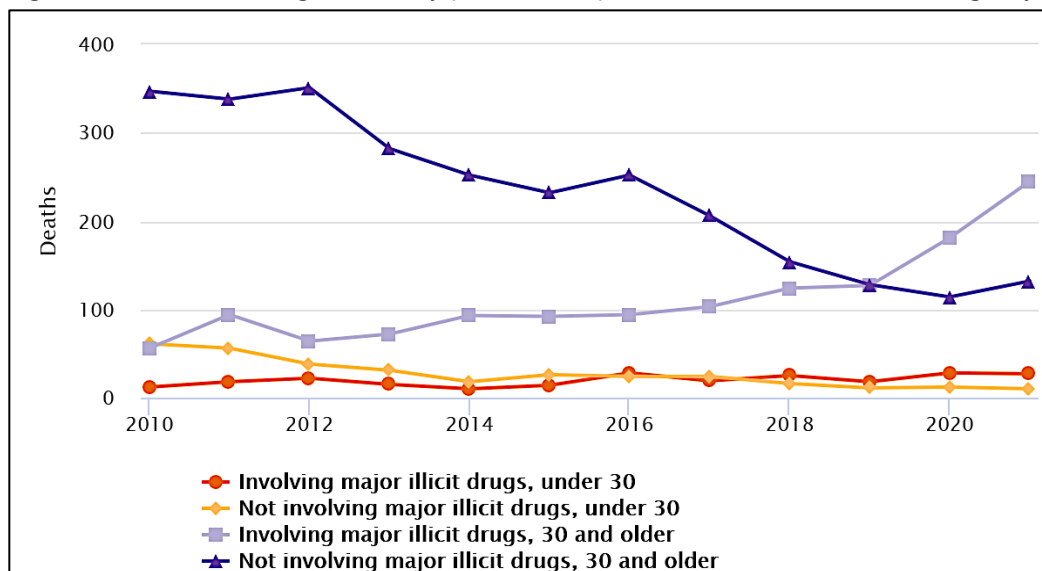
Another perspective on deaths involving commonly prescribed opioids is the co-presence of anti-depressants. Individuals cannot misuse or develop a substance use disorder from anti-depressants, and there is virtually no illicit market for anti-depressants. Anti-depressants in a death, therefore, may suggest a person recently received medical care and likely obtained commonly prescribed opioids from a prescriber. Among overdose deaths in which commonly

prescribed opioids were detected, 25% of deaths in 2010 also had an anti-depressant present; this declined to 13% in 2021. This decline in the co-presence of anti-depressants may also indicate a decline in the proportion of deaths involving commonly prescribed opioids from a licit/prescribed source.

5. Deaths involving commonly prescribed opioids with and without illicit drugs, by age group

Figure 5 presents data separately for those under age 30 (shown in orange) and 30 and older (shown in blue), to show differences in the association with major illicit drugs over time with age. The overall trend is the same in both age groups: deaths involving major illicit opioids increased while those not involving major illicit drugs decreased. Those 30 and older consistently represented most deaths throughout this period, between 85% and 92% of all deaths involving commonly prescribed opioids.

Figure 5. Deaths involving commonly prescribed opioids, with or without illicit drugs, by age group



Source: <https://adai.uw.edu/wadata/>

Implications of these data

Sales and mortality associated with pharmaceutical opioids persist even as major changes have occurred in policy and practice to moderate opioid prescribing. Sales of commonly prescribed opioid pain medications declined from the peak in 2011, yet the average number of daily doses per person is net unchanged comparing 1999 and 2021. Even as opioid prescribing increased and then returned to baseline, the mortality rate for poisoning deaths involving pharmaceutical opioids in 2021 was double that in 1999.

Focusing on the period when opioid prescribing decreased, the number of deaths involving commonly prescribed opioids combined *with* major illicit drugs increased 300% from 68 to 272 from 2010 to 2021. At the same time, the number of deaths involving commonly prescribed opioids *without* major illicit drugs decreased 65% from 408 to 142 from 2010 to 2021. Declining opioid prescribing rates were associated with a decline in deaths involving commonly prescribed opioids without the presence of major illicit drugs.

A decline in deaths is not the only impact of changes in opioid prescribing. A decline in opioid prescribing is not in and of itself good or bad. Critical information that is not available is the degree to which acute and chronic pain have been

adequately treated over the past two decades. Pain can be associated with lower quality of life, particularly for those with chronic pain conditions. This is an important gap in the data presented here.

For the mortality analyses presented here, we describe the type of opioid, but the source or motivation/indication for use is not known. For example, opioids may have been prescribed to a person and used for a pain condition or used for other reasons. Pharmaceutical opioids may not have been prescribed to the person who died but given to them or purchased illegally. The source may have been in Washington State or elsewhere.

The presence of illicit substances in a death does not prove that a person has a substance use disorder. However, it may suggest misuse of pharmaceutical and illicit substances that are present. Health care providers, therefore, should engage individuals in non-judgmental conversations about substance use and offer effective treatments. Harm reduction services and supplies in community-based settings should also be readily available. The medications methadone and buprenorphine are highly effective treatments for opioid use disorder that also reduce mortality risk by at least 50% and can help support long term recovery. More about opioid use disorder and effective treatment can be found at www.learnabouttreatment.org. More about harm reduction in WA State is available here: <https://doh.wa.gov/you-and-your-family/drug-user-health>.

Many prescribers now co-prescribe naloxone to patients receiving ongoing opioid prescriptions and caution them, and their families, about the real risk of accidental poisoning. Online overdose training and a locator to find the opioid overdose antidote naloxone are online at www.stopoverdose.org.

ⁱ Banta-Green et al. (2003). Prescription Opioid Use: Pain Management and Drug Abuse in King County and Washington State. ADAI-IB-2003-03. <https://adai.washington.edu/pubs/infobriefs/ADAI-IB-2003-03.pdf>.

ⁱⁱ Franklin et al. (2015). A Comprehensive Approach to Address the Prescription Opioid Epidemic in Washington State: Milestones and Lessons Learned. Am J Public Health 105(3):463-9. doi: 10.2105/AJPH.2014.302367.

Terminology

Commonly prescribed opioids is a term used with data drawn from state death certificates. These data aggregate opioid categories that include methadone with other common opioids but exclude “other synthetic opioids” (predominantly fentanyl). Other commonly prescribed opioids, with a primary indication of pain management, include morphine, codeine, hydrocodone, and oxycodone. Data also include cases involving meperidine or tramadol.

Methadone is an opioid medication that is indicated to treat pain as well as opioid use disorder in opioid treatment programs (OTPs). It has consistently been one of the most common opioids in WA State. Complex measurement issues exist with methadone because of these two very different indications for use (chronic pain and opioid use disorder), changes in clinical practice in using methadone for pain, and because the DEA has changed how it reports methadone sales data over time. From 1997 to 2005, the DEA reported methadone sales not including OTPs, ostensibly to track only methadone used to treat chronic pain. In 2003, because of concerns about the formulation of oxycodone called OxyContin, the WA State Medicaid formulary was changed to remove OxyContin and add methadone. Since 2006 the DEA has reported sales data for methadone used for pain as well as for treating opioid use disorder in an OTP.

Buprenorphine is an opioid medication indicated for pain treatment, though this use is less frequent than its use for the treatment of opioid use disorder (which was approved in 2002). It may be prescribed, which is typical, or less commonly administered/dispensed at an OTP. DEA data on buprenorphine sales are available from 2005 onward.

Prescribed/administered/dispensed are different terms for how a medication is provided to a person. Prescriptions are written by a health care provider and typically obtained at a pharmacy. Administered is when a medication is given to a person, e.g., intravenously in a hospital or when they are directly observed taking it. Dispensed is when a medication is provided to a patient for future use under a prescriber's directions. Some examples include: a person could be administered morphine intravenously in the hospital and then could also get a prescription for morphine to take home; a person could be administered methadone in an opioid treatment program and take it in front of a nurse and they could be dispensed several days' supply to take home. DEA sales to hospitals and pharmacies cannot distinguish between these different modes of providing medication. Data are entered into the WA Prescription Monitoring Program (PMP) when a prescription medication is dispensed by a pharmacist; the PMP does not include medications dispensed or administered in a hospital or OTP.

Common opioid pain medications is a term used in data presentations that excludes methadone and buprenorphine since they are primarily used to treat opioid use disorder in WA State. This sub-category allows us to focus on the use of medications likely used for pain separately from those likely used for opioid use disorder.

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