



Opioid Crisis Abatement: A Public Health Response to an Epidemic of Addiction

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Brandeis University

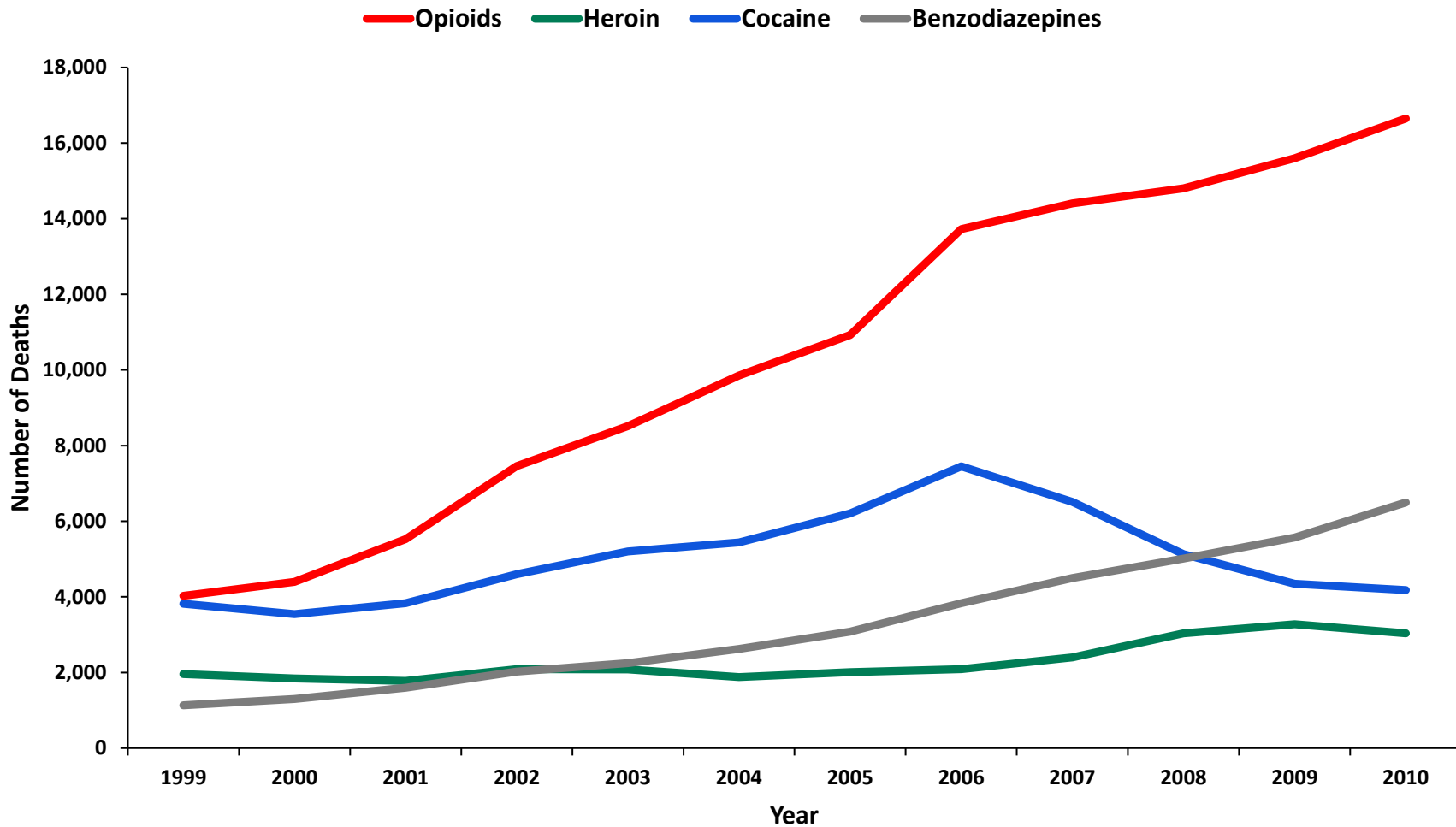
President, Physicians for Responsible Opioid Prescribing



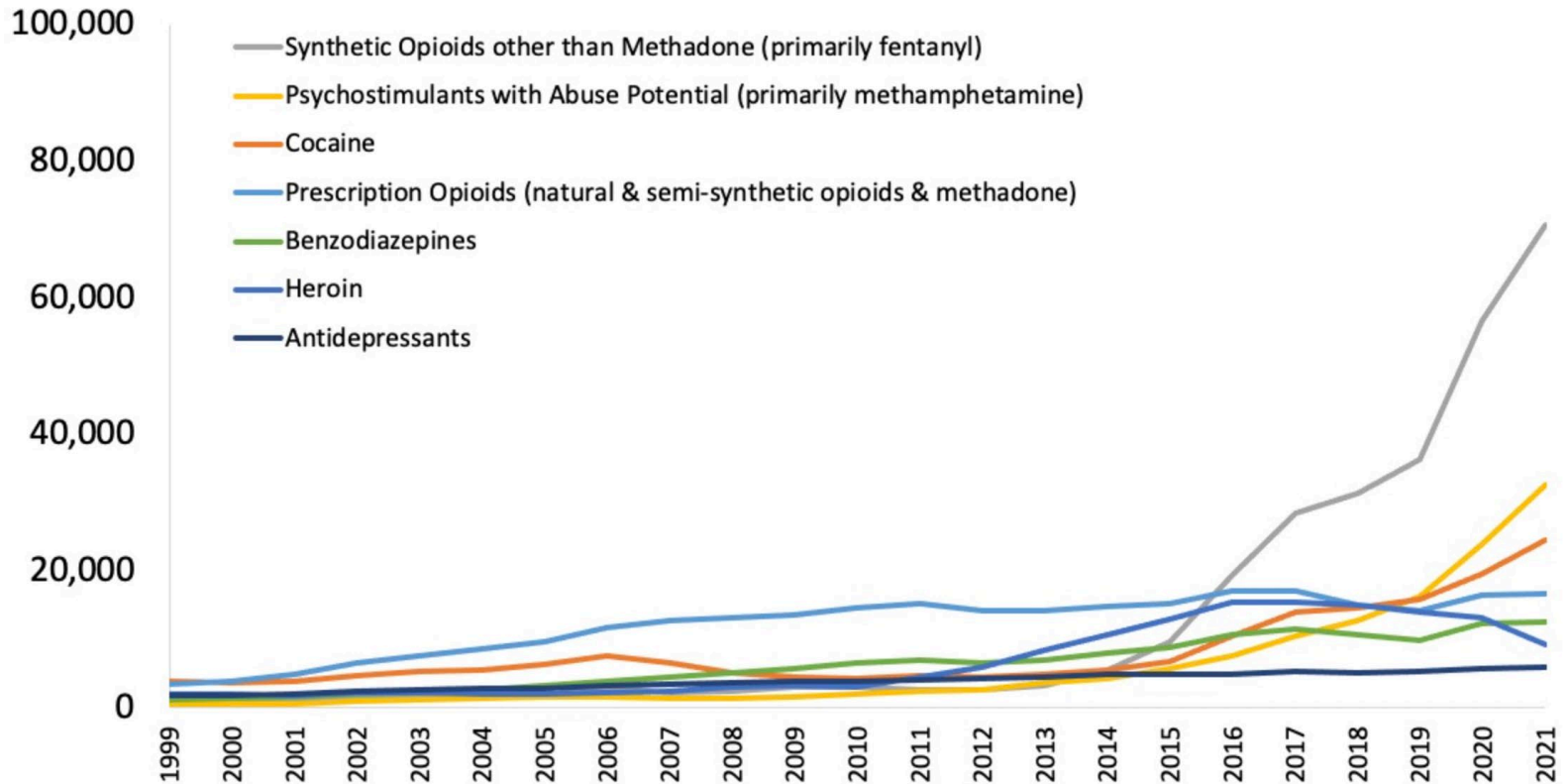
Opium



Drug Overdose Deaths by Major Drug Type, United States, 1999–2010

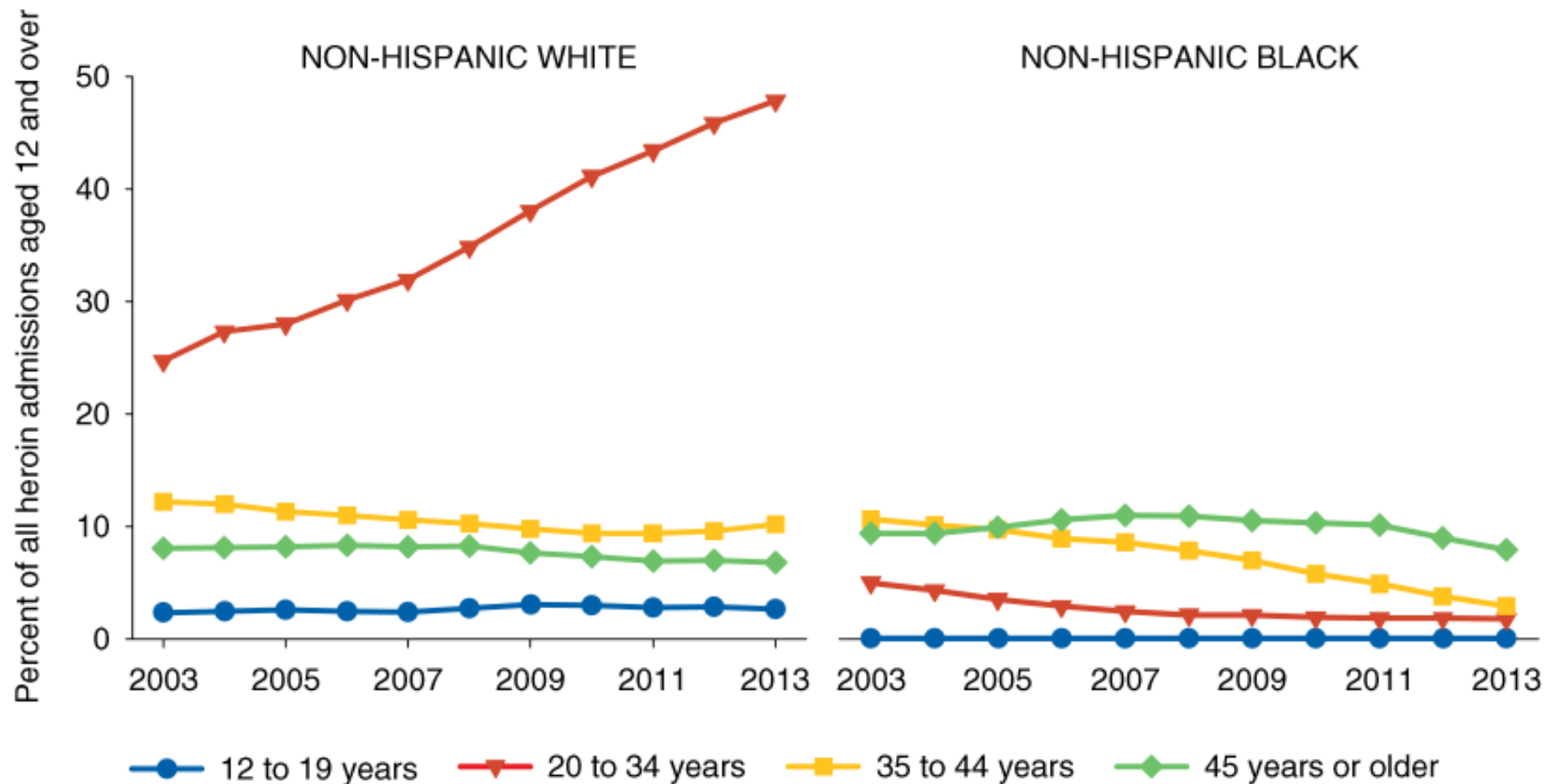


National Drug-Involved Overdose Deaths by Specific Category—Number Among All Ages, 1999-2021



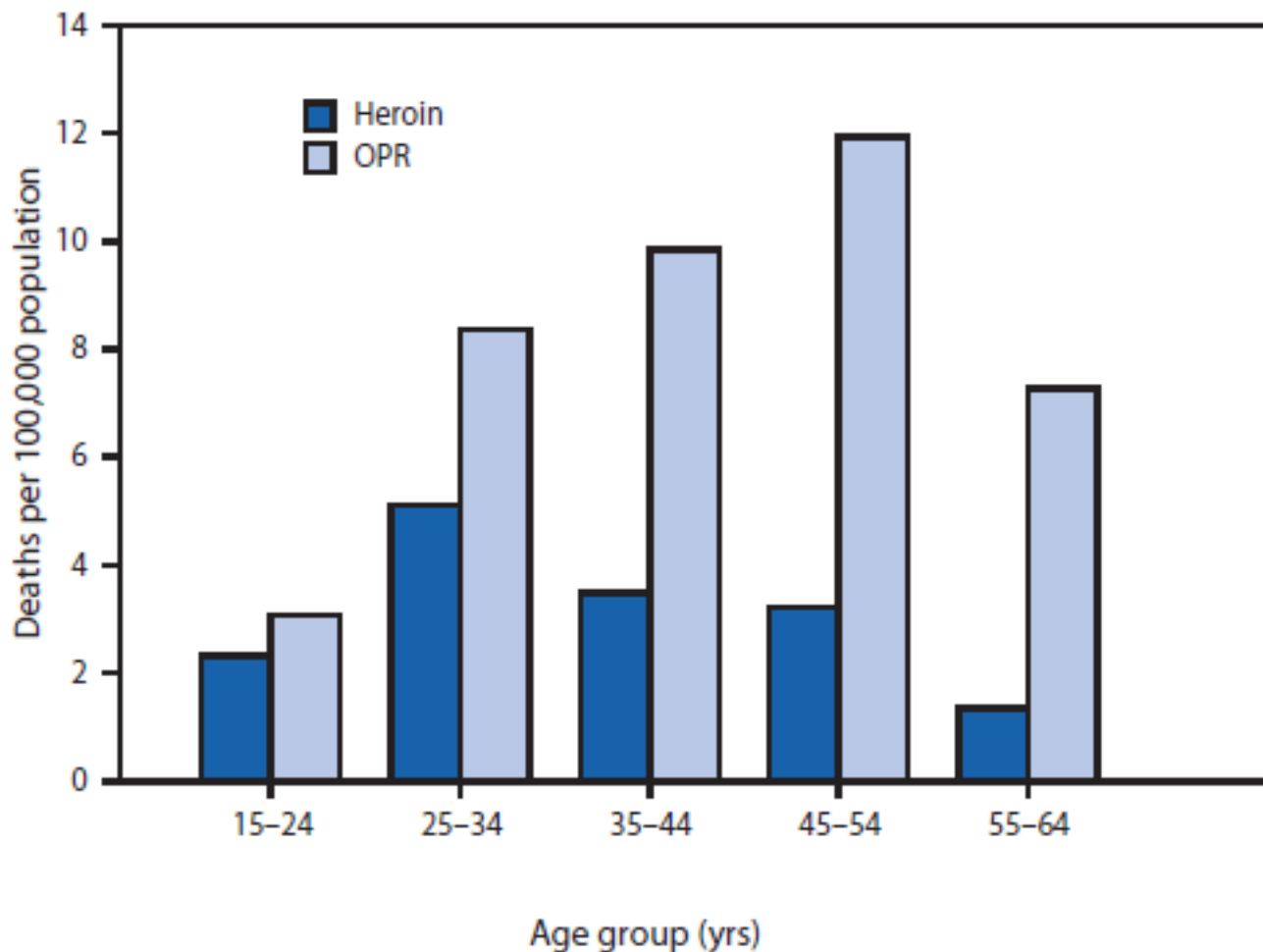
*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999–2021 on CDC WONDER Online Database, released 1/2023.

Heroin treatment admissions : 2003-2013



SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 01.23.15.

Death rates from overdoses of heroin or prescription opioid pain relievers (OPRs), by age group



SOURCE: CDC. *Increases in Heroin Overdose Deaths — 28 States, 2010 to 2012*
MMWR. 2014, 63:849-854

12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: United States

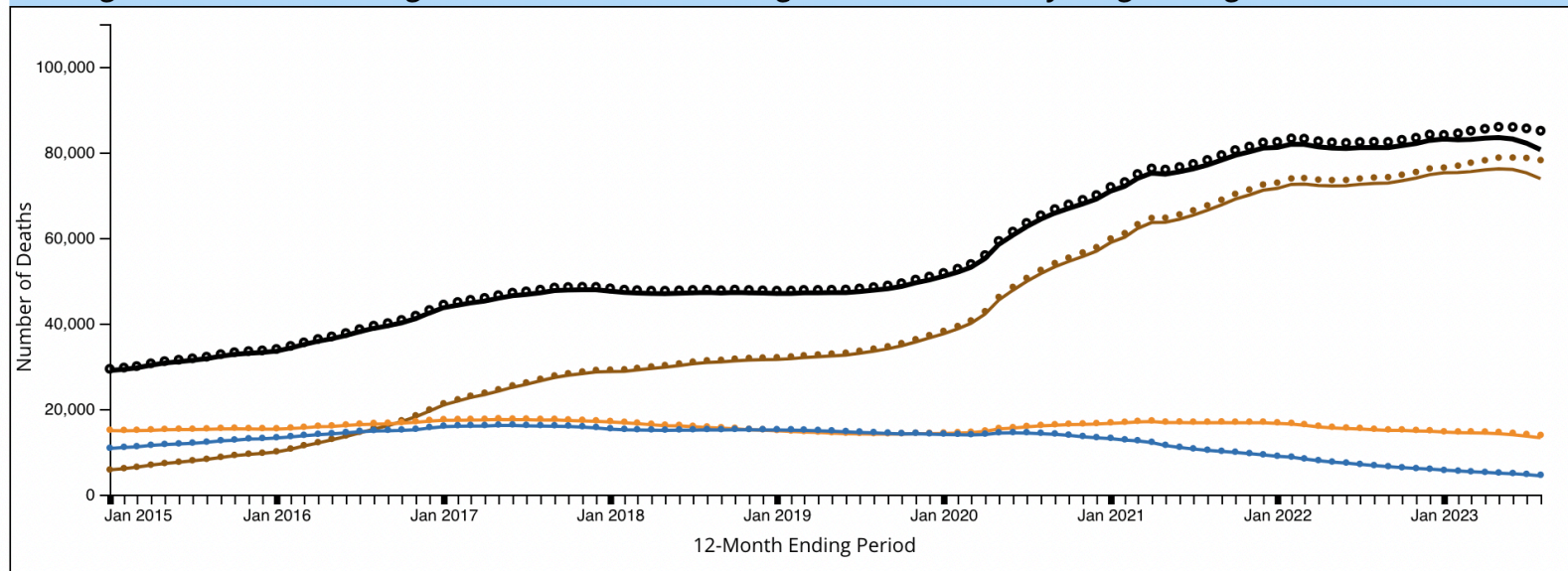
Select Jurisdiction

United States

Select specific drugs or drug classes

Select drug class

Figure 2. 12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: United States



Legend for Drug or Drug Class

Heroin (T40.1)

Natural & semi-synthetic opioids, incl. methadone (T40.2, T40.3)

Opioids (T40.0-T40.4, T40.6)

Synthetic opioids, excl. methadone (T40.4)

--- Reported Value

○ Predicted Value

12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: Arizona

12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class

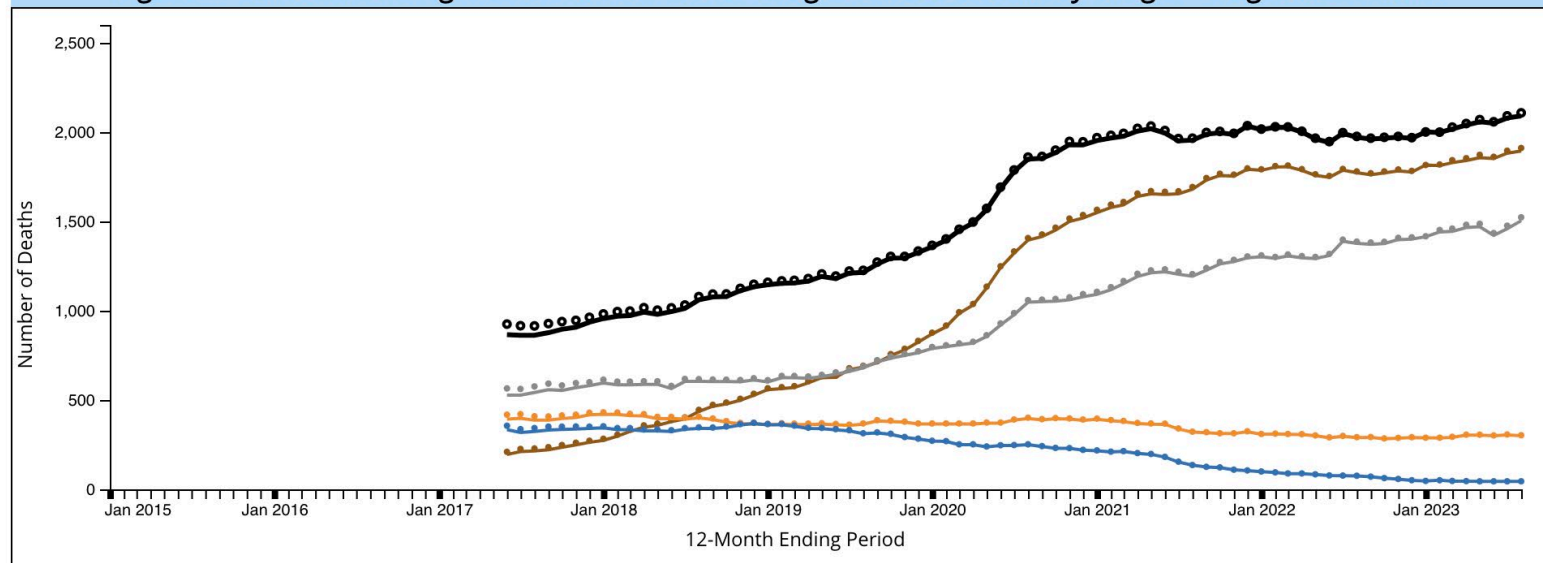
Based on data available for analysis on: January 7, 2024

After opening the *drug class dropdown*, click the top of the dropdown menu again to make the checkboxes disappear.

Select Jurisdiction:

Select specific drugs or drug classes:

Figure 2. 12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: Arizona



Legend for Drug or Drug Class

- Heroin (T40.1)
- Natural & semi-synthetic opioids, incl. methadone (T40.2, T40.3)
- Opioids (T40.0-T40.4, T40.6)
- Psychostimulants with abuse potential (T43.6)
- Synthetic opioids, excl. methadone (T40.4)

- Reported Value
- Predicted Value

Three Opioid-Addicted Cohorts

1. 20-40 y/o, disproportionately white, significant heroin use, opioid addiction began with Rx use (addicted after 1995)
2. 40 y/o & up, disproportionately white, mostly Rx opioids, opioid addiction began with Rx use (addicted after 1995)
3. 50 y/o & up, disproportionately non-white, mostly heroin users, opioid addiction began in teen years with heroin use (addicted before 1995)

In one year, drug overdoses killed more Americans than the entire Vietnam War did

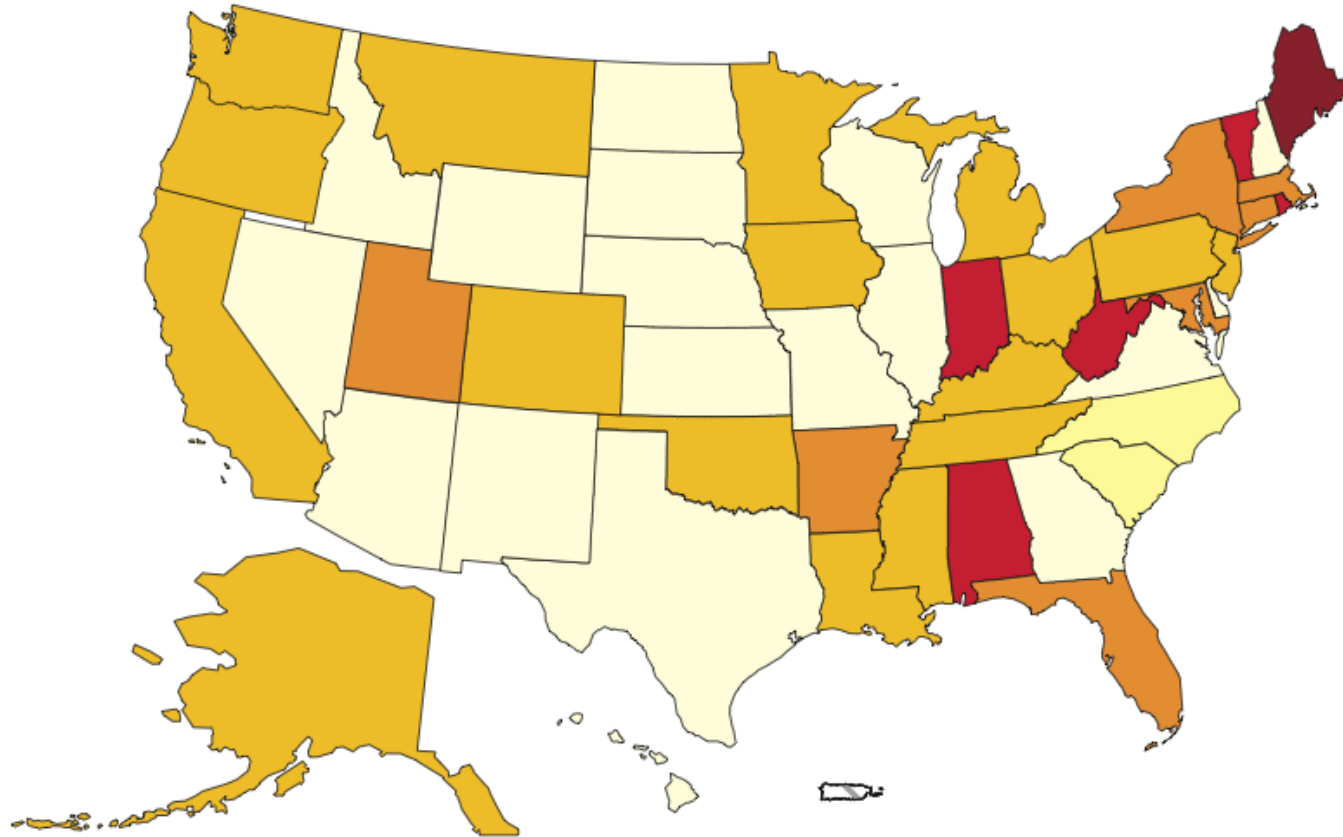
Dramatic Increases in Maternal Opioid Use and Neonatal Abstinence Syndrome

Children of the Opioid Epidemic Are Flooding Foster Homes. America Is Turning a Blind Eye.

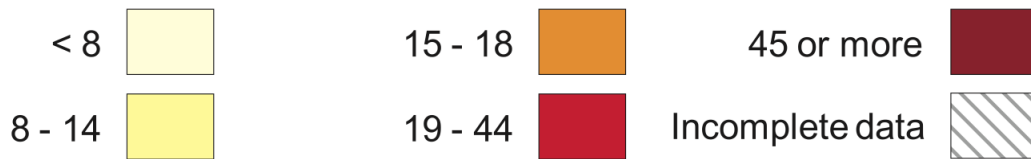
Drug overdose deaths jump in 2019 to nearly 71,000, a record high, CDC says

How the opioid crisis decimated the American workforce

Primary non-heroin opiates/synthetics admission rates, by State (per 100,000 population aged 12 and over)

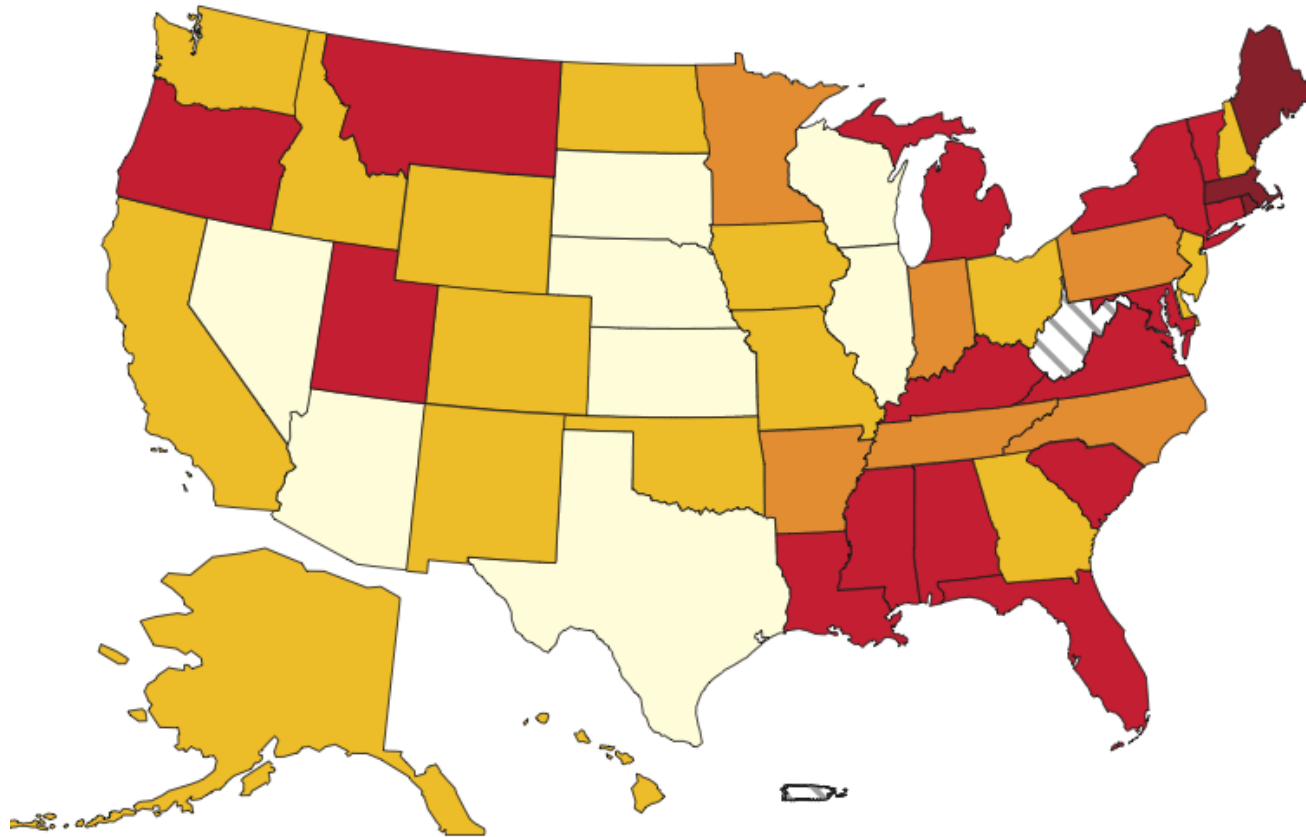


1999
(range 1 - 50)



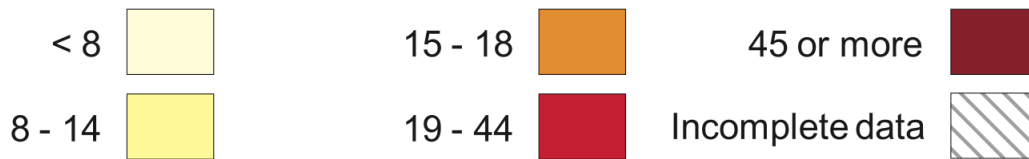
SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

Primary non-heroin opiates/synthetics admission rates, by State (per 100,000 population aged 12 and over)



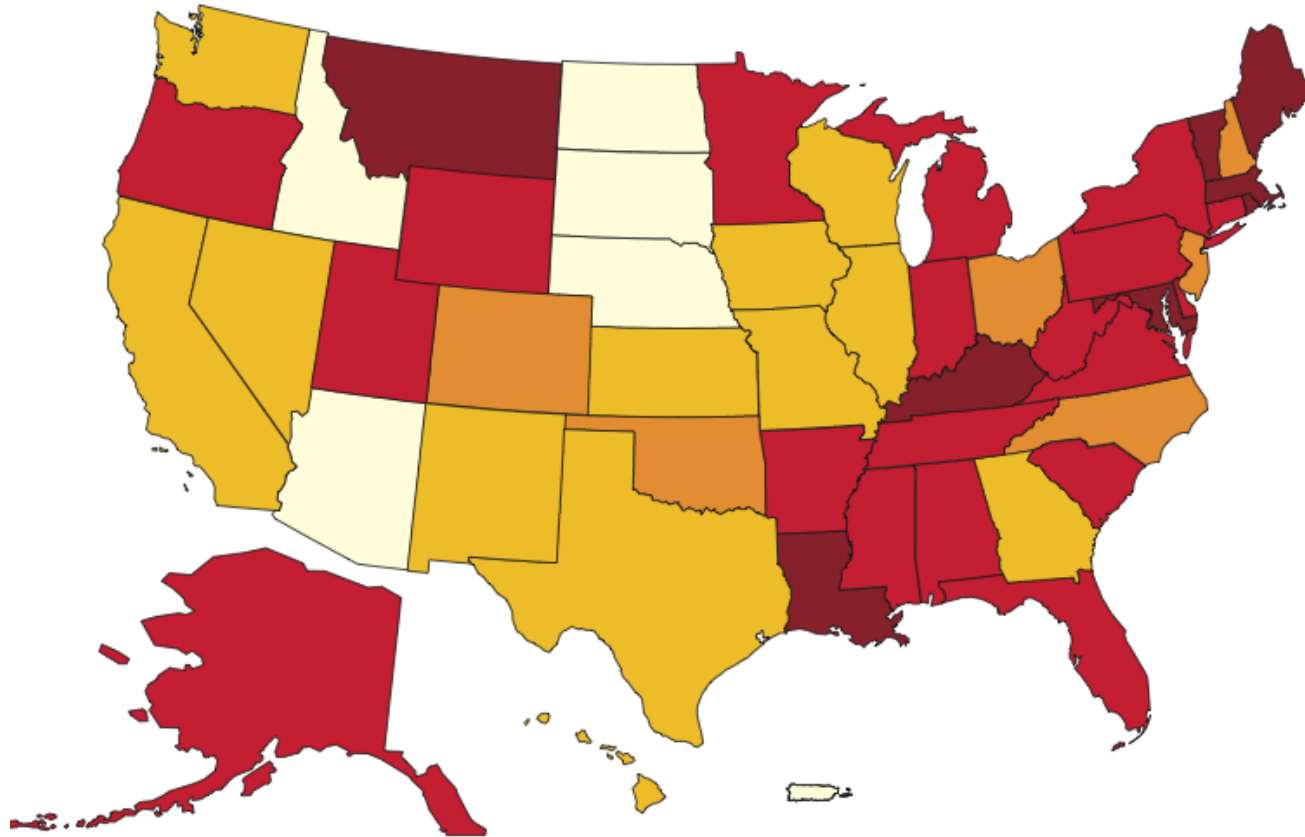
2001

(range 1 – 71)



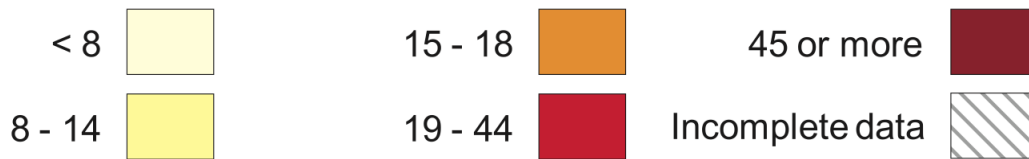
SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

Primary non-heroin opiates/synthetics admission rates, by State (per 100,000 population aged 12 and over)



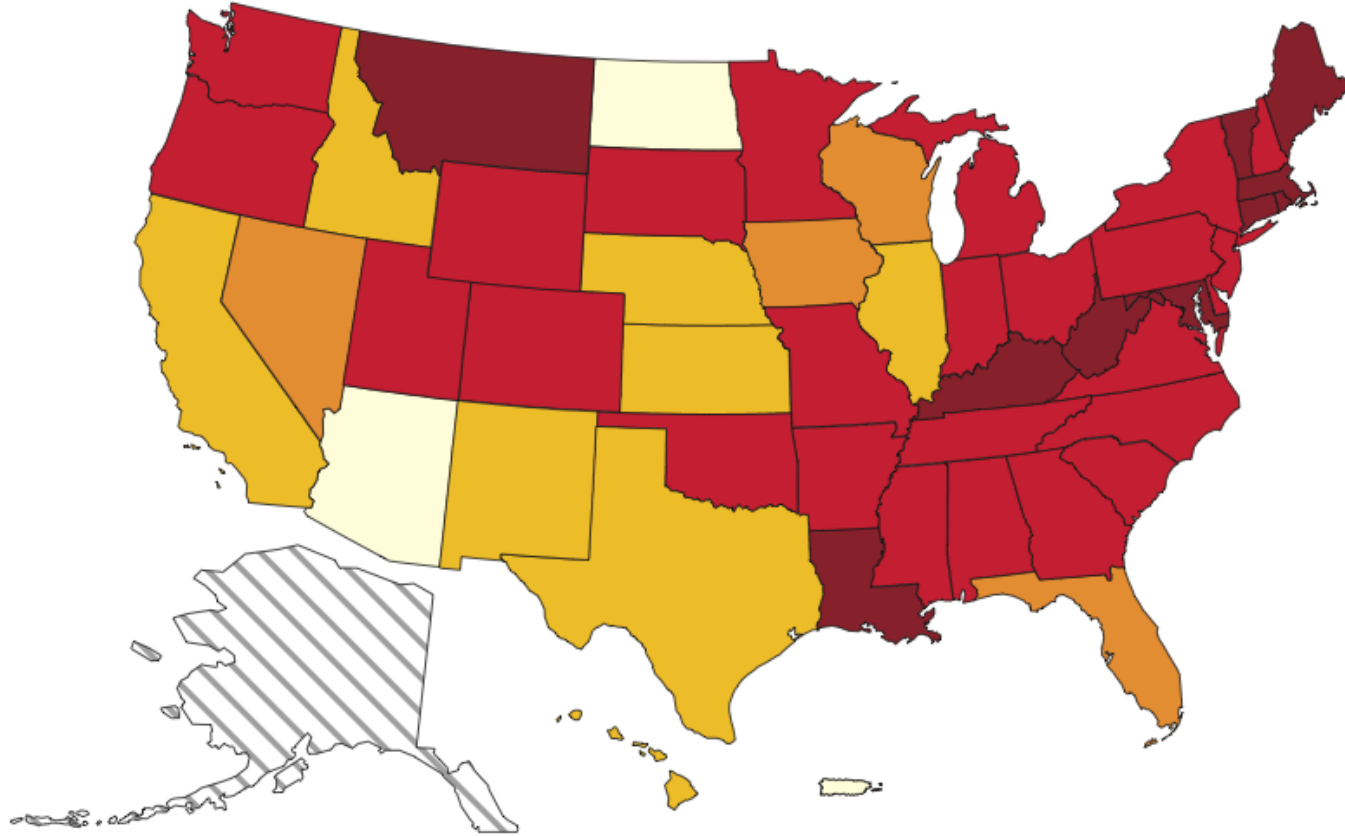
2003

(range 2 – 139)



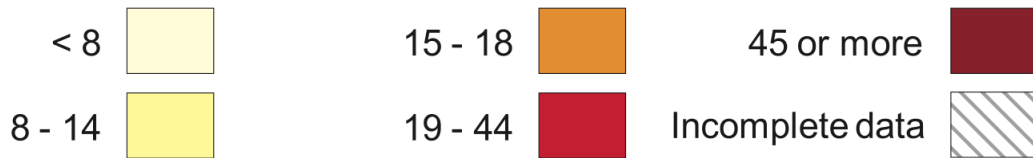
SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

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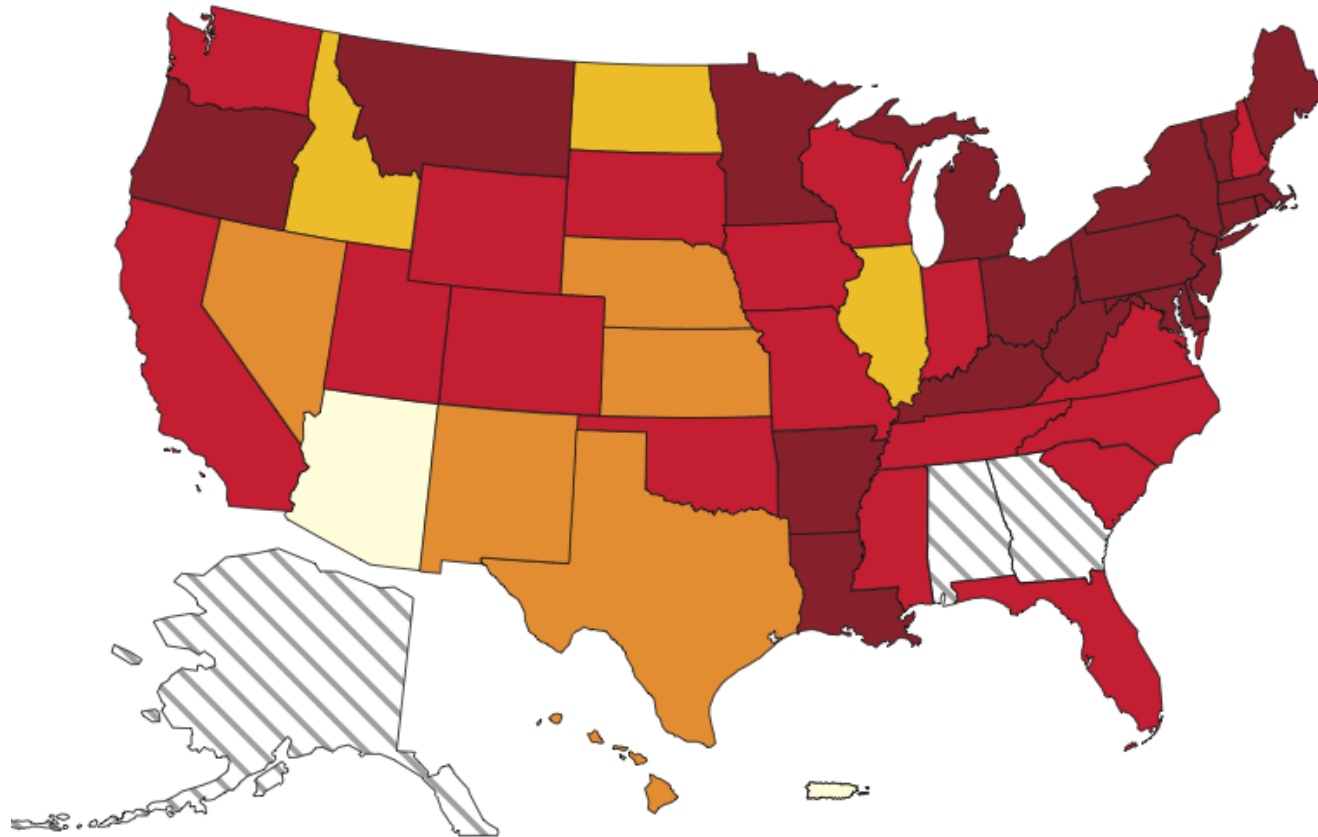
2005

(range 0 – 214)

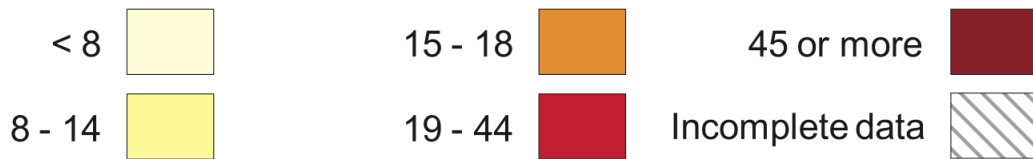


SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

Primary non-heroin opiates/synthetics admission rates, by State (per 100,000 population aged 12 and over)

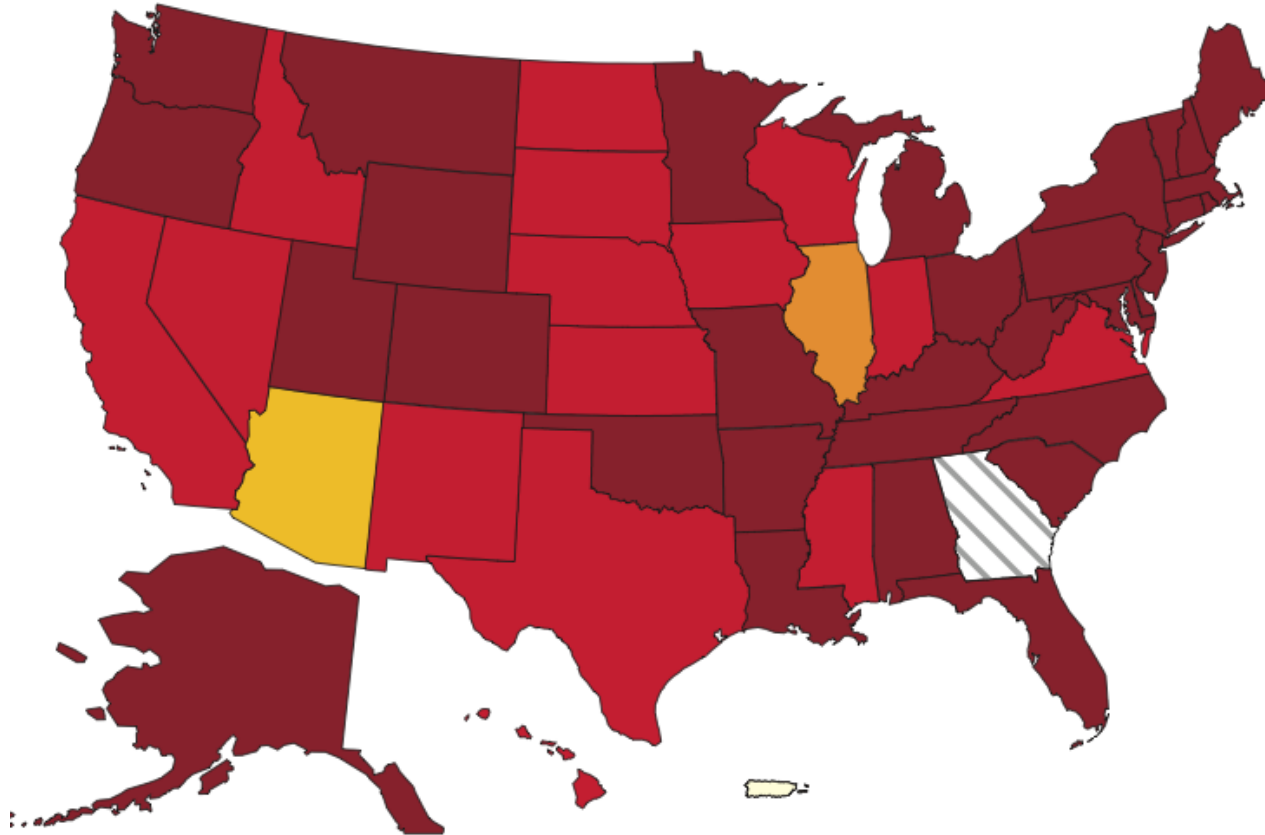


2007
(range 1 – 340)



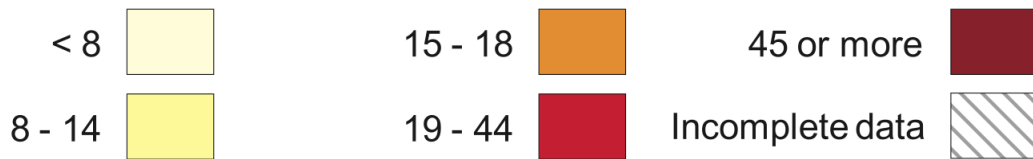
SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

Primary non-heroin opiates/synthetics admission rates, by State (per 100,000 population aged 12 and over)



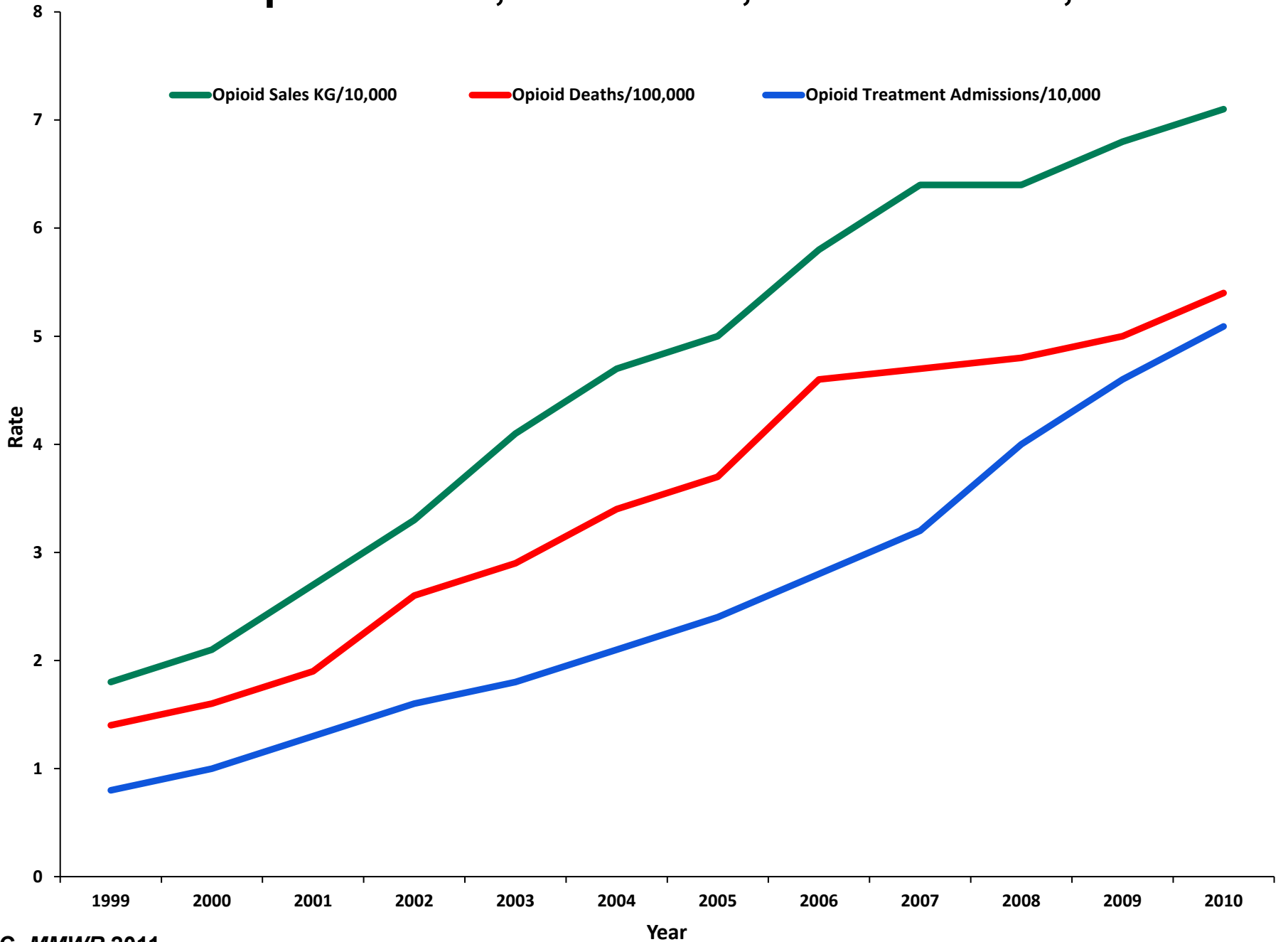
2009

(range 1 – 379)

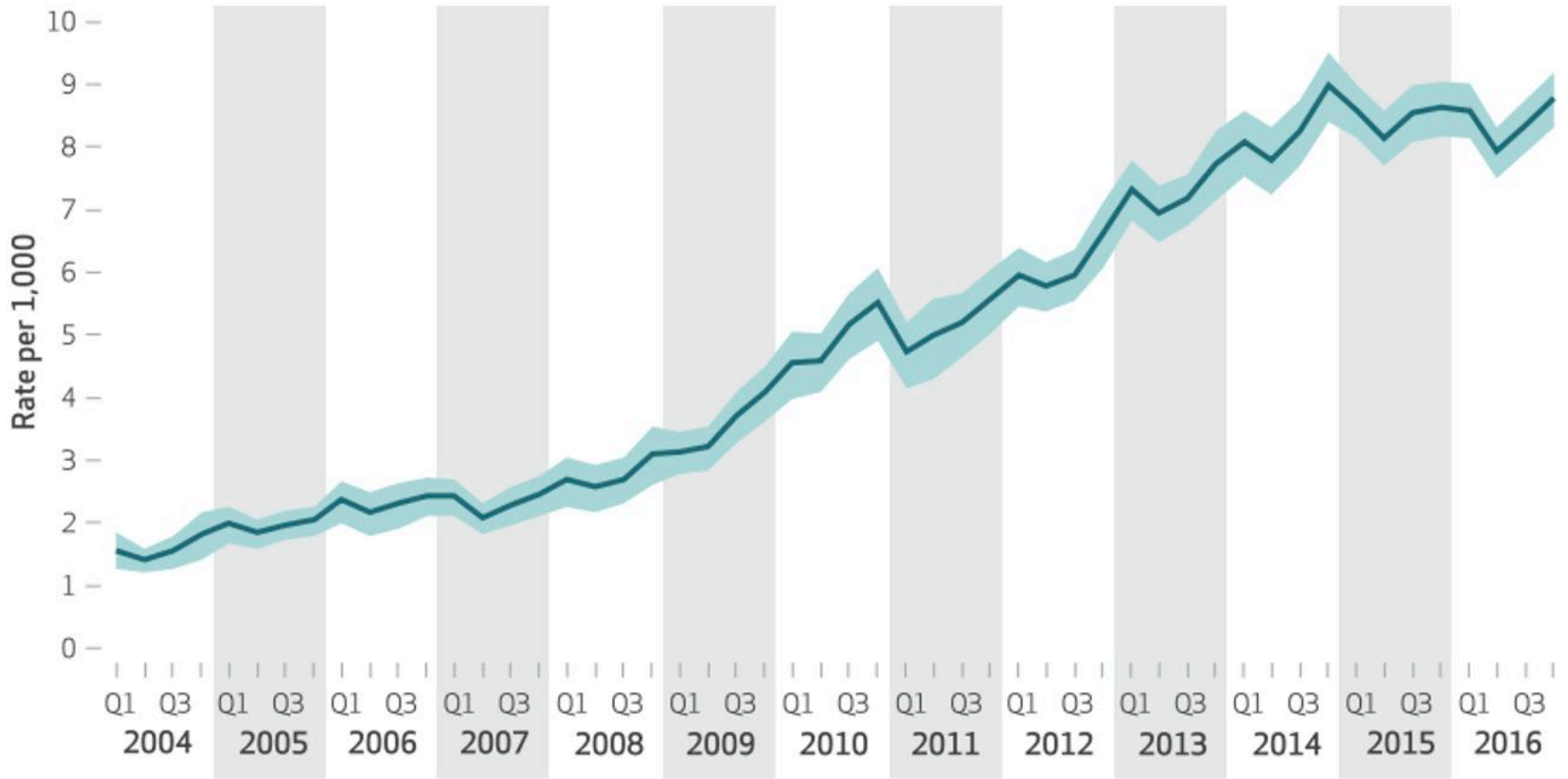


SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Data received through 11.03.10.

Rates of Opioid Sales, OD Deaths, and Treatment, 1999–2010



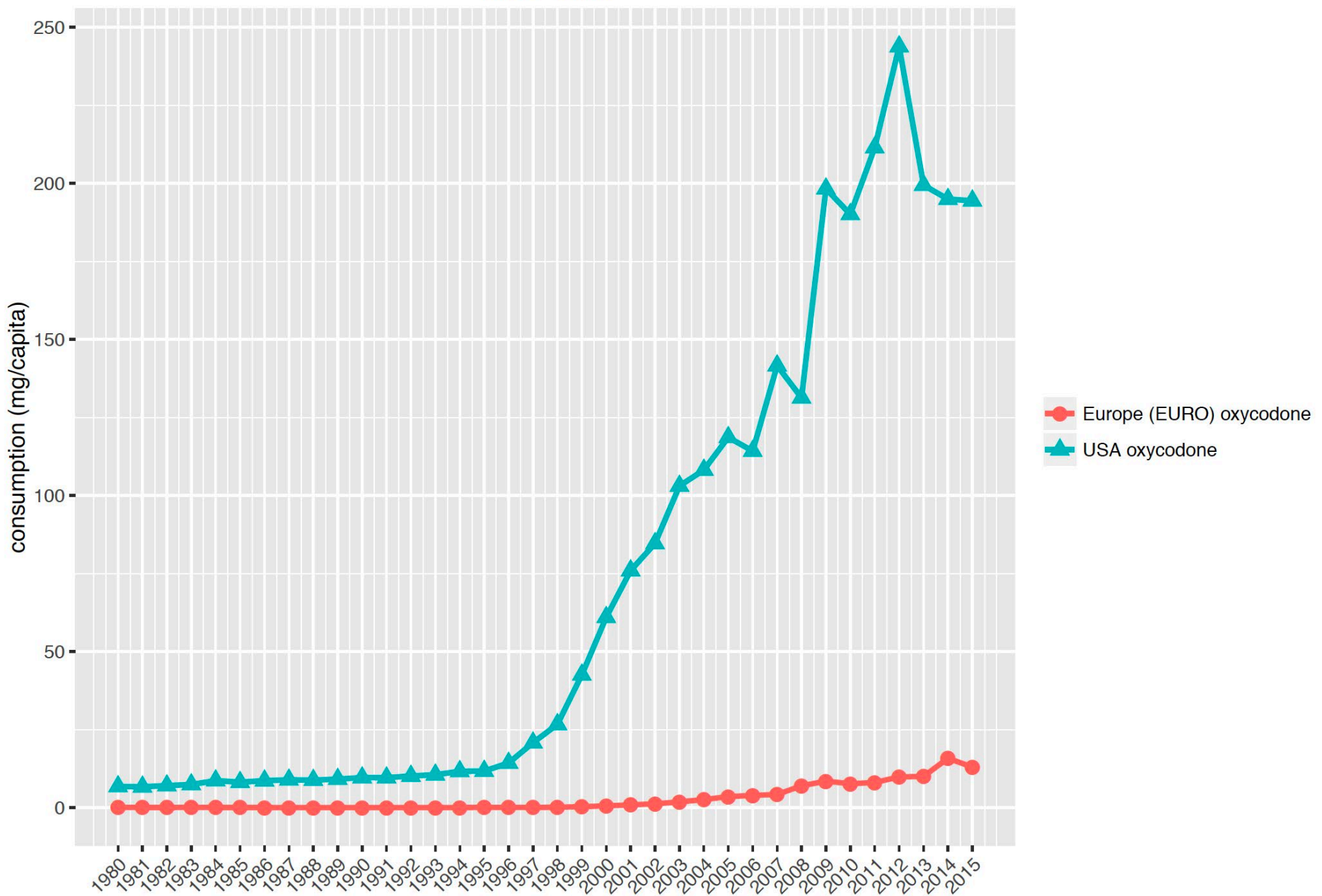
Rates of neonatal abstinence syndrome per 1,000 US in-hospital births, 2004-16



SOURCE Authors' analysis of data from the National Inpatient Sample, Healthcare Cost and Utilization Project. **NOTE** The shaded area indicates 95% confidence intervals.

Leech AA, Cooper WO, McNeer E, Scott TA, Patrick SW. Neonatal Abstinence Syndrome In The United States, 2004-16. *Health Aff (Millwood)*. 2020 May;39(5):764-767.

USA oxycodone consumption (mg/capita) 1980–2015



Industry-funded “educational” messages

- Physicians are needlessly allowing patients to suffer because of “opiophobia.”
- Opioid addiction is rare in pain patients.
- Opioids can be easily discontinued.
- Opioids are safe and effective for chronic pain.

Industry-funded organizations campaigned for greater use of opioids

- Pain Patient Groups
- Professional Societies
- The Joint Commission
- The Federation of State Medical Boards



“The risk of addiction is much less than 1%”

Porter J, Jick H. *Addiction rare in patients treated with narcotics*. N Engl J Med. 1980 Jan 10;302(2):123

Cited 824 times (Google Scholar)

N Engl J Med. 1980 Jan 10;302(2):123.

ADDICTION RARE IN PATIENTS TREATED WITH NARCOTICS

To the Editor: Recently, we examined our current files to determine the incidence of narcotic addiction in 39,946 hospitalized medical patients¹ who were monitored consecutively. Although there were 11,882 patients who received at least one narcotic preparation, there were only four cases of reasonably well documented addiction in patients who had no history of addiction. The addiction was considered major in only one instance. The drugs implicated were meperidine in two patients,² Percodan in one, and hydromorphone in one. We conclude that despite widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction.

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Boston Collaborative Drug
Surveillance Program

Waltham, MA 02154

Boston University Medical Center

1. Jick H, Miettinen OS, Shapiro S, Lewis GP, Siskind Y, Slone D. Comprehensive drug surveillance. *JAMA*. 1970; 213:1455-60.
2. Miller RR, Jick H. Clinical effects of meperidine in hospitalized medical patients. *J Clin Pharmacol*. 1978; 18:180-8.



Comparative Effectiveness Review
Number 229

Opioid Treatments for Chronic Pain



AHRQ Comparative Effectiveness Review on Opioid Treatments for Chronic Pain

Key Messages

Purpose of Review

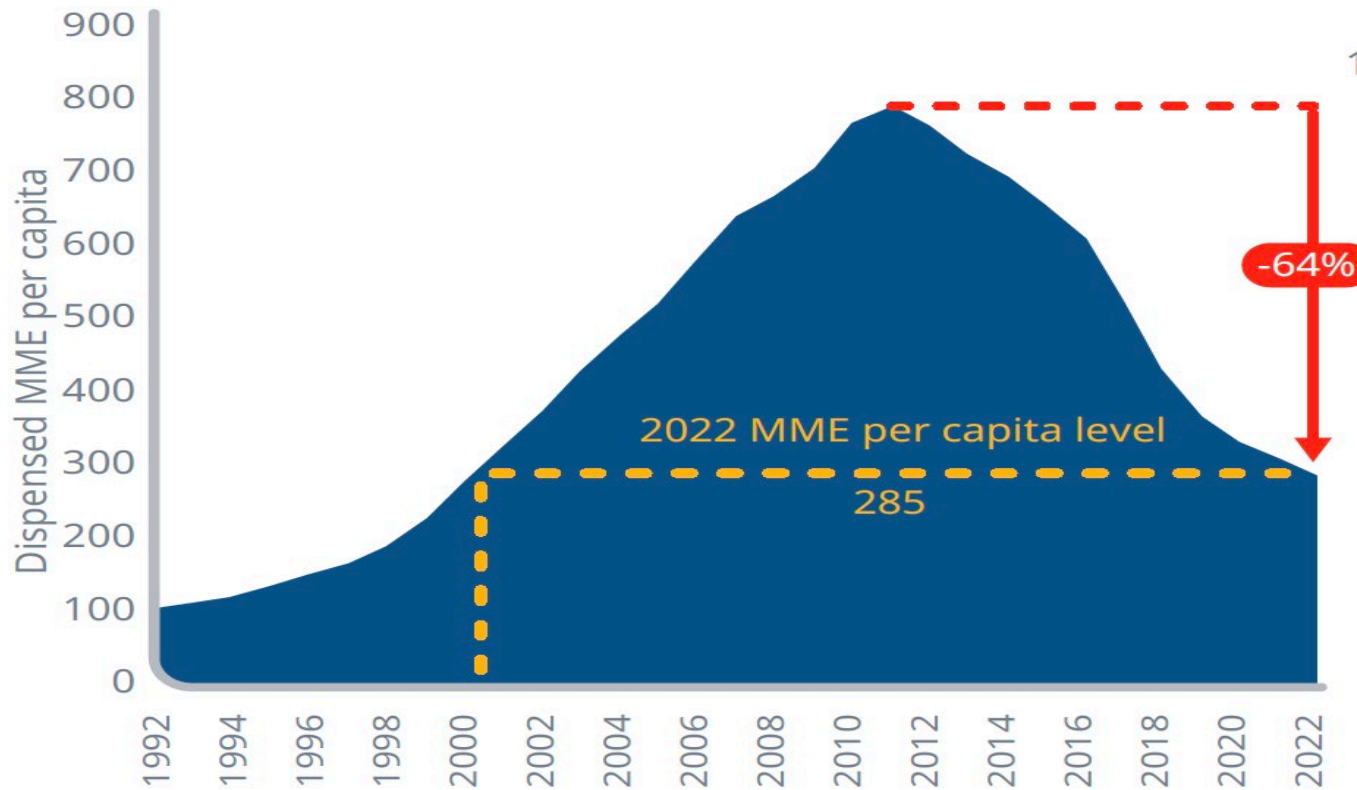
To assess the effectiveness and harms of opioid therapy for chronic noncancer pain, alternative opioid dosing strategies, and risk mitigation strategies

Key Messages

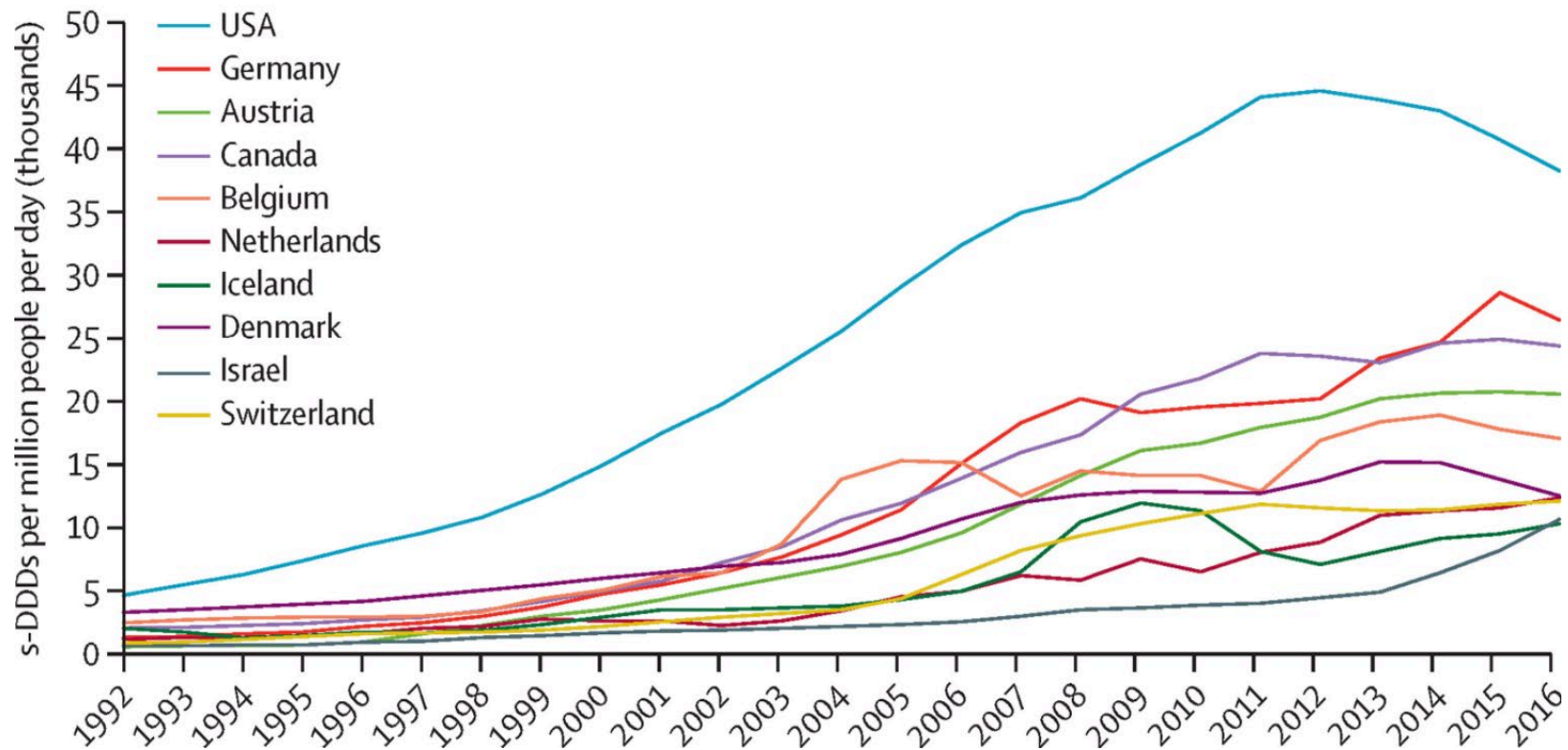
- Opioids are associated with small improvements versus placebo in pain and function, and increased risk of harms at short-term (1 to <6 months) followup; evidence on long-term effectiveness is very limited, and there is evidence of increased risk of serious harms that appear to be dose dependent.
- At short-term followup, evidence showed no differences between opioids versus nonopioid medications in improvement in pain, function, mental health status, sleep, or depression.
- Evidence on the effectiveness and harms of alternative opioid dosing strategies and the effects of risk mitigation strategies is lacking, although provision of naloxone to patients might reduce the likelihood of opioid-related emergency department visits, a taper support intervention might improve functional outcomes compared to no taper support, and co-prescription of benzodiazepines and gabapentinoids might increase risk of overdose.
- No instrument has been shown to be associated with high accuracy for predicting opioid overdose, addiction, abuse, or misuse.

U.S. Opioid Analgesic Consumption

Morphine Milligram Equivalents (MME) per capita, 1992–2022

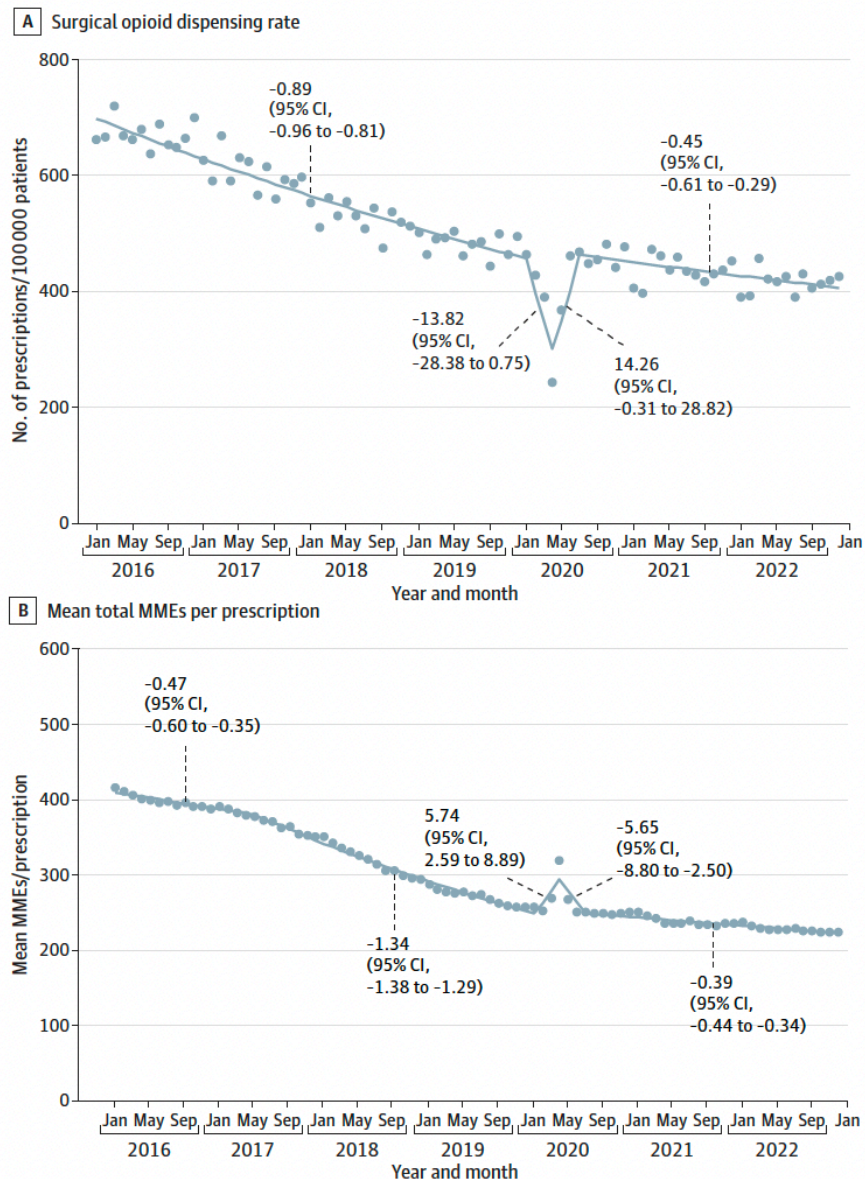


Source: IQVIA Xponent, IQVIA National Prescription Audit, Sep 2022; IQVIA Institute, Mar 2023; National Institute on Drug Abuse, Feb 2023.



Source: International Narcotics Control Board

Figure. Rate and Dosing of Dispensed Opioid Prescriptions From US Surgeons, 2016-2022



During 2016 to 2022, the rate and size of opioid prescriptions from US surgeons declined.

But these declines were slower after mid-2020 compared with before 2020

Opioids After Surgery in the United States Versus the Rest of the World

The International Patterns of Opioid Prescribing (iPOP) Multicenter Study

Objective: The International Patterns of Opioid Prescribing study compares postoperative opioid prescribing patterns in the United States (US) versus the rest of the world.

Summary of Background Data: The US is in the middle of an unprecedented opioid epidemic. Diversion of unused opioids contributes to the opioid epidemic.

Methods: Patients ≥ 16 years old undergoing appendectomy, cholecystectomy, or inguinal hernia repair in 14 hospitals from 8 countries during a 6-month period were included. Medical records were systematically reviewed to identify: (1) preoperative, intraoperative, and postoperative characteristics, (2) opioid intake within 3 months preoperatively, (3) opioid prescription upon discharge, and (4) opioid refills within 3 months postoperatively. The median/range and mean/standard deviation of number of pills and OME were compared between the US and non-US patients.

Results: A total of 4690 patients were included. The mean age was 49 years, 47% were female, and 4% had opioid use history. Ninety-one percent of US patients were prescribed opioids, compared to 5% of non-US patients ($P < 0.001$). The median number of opioid pills and OME prescribed were 20 (0–135) and 150 (0–1680) mg for US versus 0 (0–50) and 0 (0–600) mg for

non-US patients, respectively (both $P < 0.001$). The mean number of opioid pills and OME prescribed were 23.1 ± 13.9 in US and 183.5 ± 133.7 mg versus 0.8 ± 3.9 and 4.6 ± 27.7 mg in non-US patients, respectively (both $P < 0.001$). Opioid refill rates were 4.7% for US and 1.0% non-US patients ($P < 0.001$). **Conclusions:** US physicians prescribe alarmingly high amounts of opioid medications postoperatively. Further efforts should focus on limiting opioid prescribing and emphasize non-opioid alternatives in the US.

Keywords: analgesics, narcotics, opioid, postoperative pain, prescription
(*Ann Surg* 2020;xx:xxx–xxx)

The United States (US) is in the midst of an unprecedented opioid epidemic. In 2016, drug overdoses (mostly opioids) resulted in 65,000 deaths, a number much higher than that caused by human immunodeficiency disease in 1995, at the peak of that epidemic.¹ The etiology of the opioid epidemic that commenced 2 decades ago is multifactorial and includes misleading marketing strategies by a few pharmaceutical companies that advocated for opioids as a risk-free optimal solution to pain, and a concomitant recognition by the

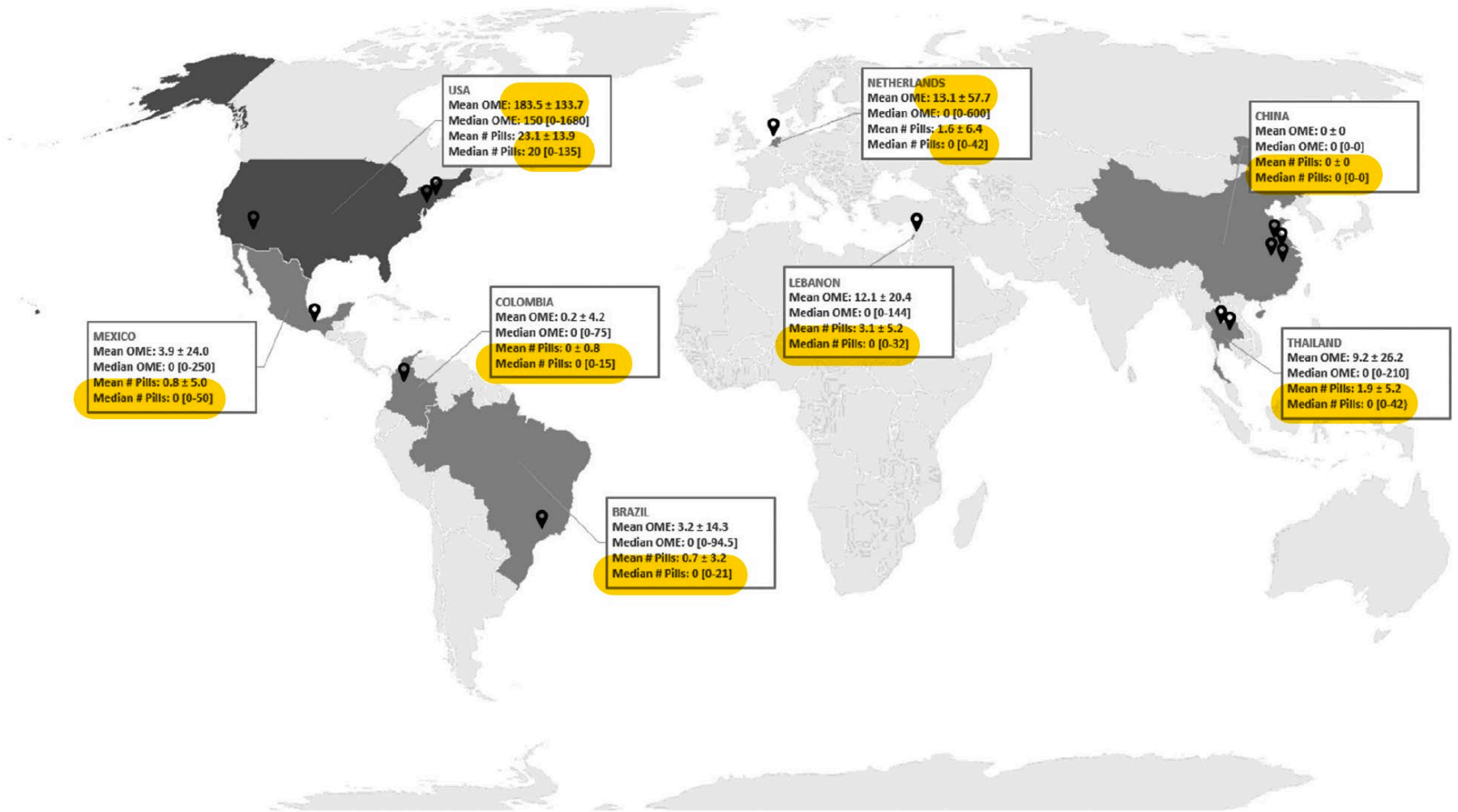
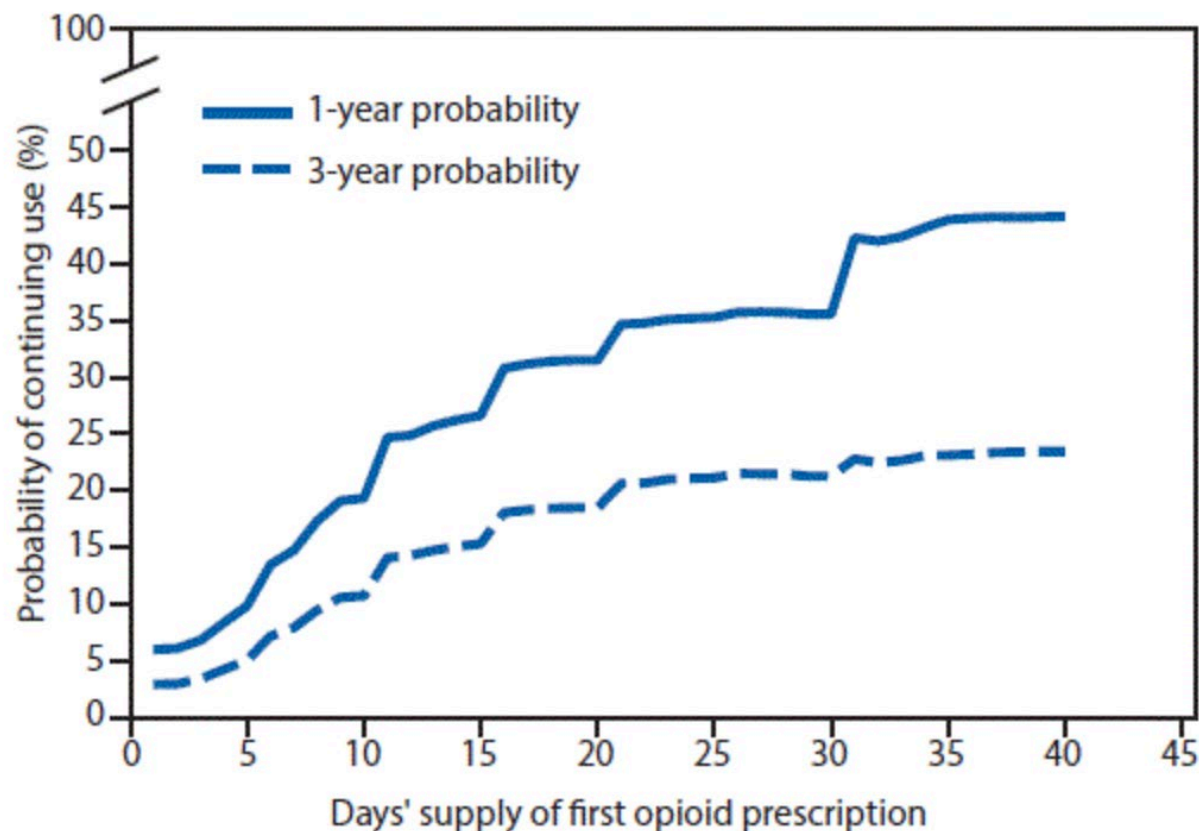


FIGURE 1. Site-specific map detailing opioid pills prescribed and OME in the United States versus internationally. OME indicates oral morphine equivalents.

Kaafarani HMA, Han K, El Moheb M, et al. Opioids After Surgery in the United States Versus the Rest of the World: The International Patterns of Opioid Prescribing (iPOP) Multicenter Study [published online ahead of print, 2020 Jul 9]. *Ann Surg.*

One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of days' supply* of the first opioid prescription — United States, 2006–2015



* Days' supply of the first prescription is expressed in days (1–40) in 1-day increments.

Source: Shah A, Hayes CJ, Martin BC. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. *MMWR Morb Mortal Wkly Rep* 2017;66:265–269.

Effect of a Single Dose of Oral Opioid and Nonopioid Analgesics on Acute Extremity Pain in the Emergency Department: A Randomized Clinical Trial

Andrew K. Chang, MD, MS; Polly E. Bijur, PhD; David Esses, MD; Douglas P. Barnaby, MD, MS; Jesse Baer, MD

Key Points

Question Do any of 4 oral combination analgesics (3 with different opioids and 1 opioid-free) provide more effective reduction of moderate to severe acute extremity pain in the emergency department (ED)?

Findings In this randomized clinical trial of 411 ED patients with acute extremity pain (mean score, 8.7 on the 11-point numerical rating scale), there was no significant difference in pain reduction at 2 hours. Mean pain scores decreased by 4.3 with ibuprofen and acetaminophen (paracetamol); 4.4 with oxycodone and acetaminophen; 3.5 with hydrocodone and acetaminophen; and 3.9 with codeine and acetaminophen.

Meaning For adult ED patients with acute extremity pain, there were no clinically important differences in pain reduction at 2 hours with ibuprofen and acetaminophen or 3 different opioid and acetaminophen combination analgesics.

Table 2. Numerical Rating Scale (NRS) Pain Scores and Decline in Pain Scores by Treatment Group

| | NRS Pain Score, Mean (95% CI) ^a | | | | P Value ^f |
|--|--|--|--|--|----------------------|
| | Ibuprofen and Acetaminophen ^b | Oxycodone and Acetaminophen ^c | Hydrocodone and Acetaminophen ^d | Codeine and Acetaminophen ^e | |
| No. of patients ^g | 101 | 104 | 103 | 103 | |
| Primary end point: decline in score to 2 h | 4.3 (3.6 to 4.9) | 4.4 (3.7 to 5.0) | 3.5 (2.9 to 4.2) | 3.9 (3.2 to 4.5) | .053 |
| Baseline score | 8.9 (8.5 to 9.2) | 8.7 (8.3 to 9.0) | 8.6 (8.3 to 9.0) | 8.6 (8.2 to 8.9) | .47 |
| Score at 1 h | 5.9 (5.3 to 6.6) | 5.5 (4.9 to 6.2) | 6.2 (5.6 to 6.9) | 5.9 (5.2 to 6.5) | .25 |
| Score at 2 h | 4.6 (3.9 to 5.3) | 4.3 (3.6 to 5.0) | 5.1 (4.5 to 5.8) | 4.7 (4.0 to 5.4) | .13 |
| Decline in score to 1 h | 2.9 (2.4 to 3.5) | 3.1 (2.6 to 3.7) | 2.4 (1.8 to 3.0) | 2.7 (2.1 to 3.3) | .13 |

Systematic review of the relative efficacy of non-steroidal anti-inflammatory drugs and opioids in the treatment of acute renal colic

Anna Holdgate, Tamara Pollock

Results 20 trials totalling 1613 participants were identified. Both NSAIDs and opioids led to clinically important reductions in patient reported pain scores. Pooled analysis of six trials showed a greater reduction in pain scores for patients treated with NSAIDs than with opioids. Patients treated with NSAIDs were significantly less likely to require rescue analgesia (relative risk 0.75, 95% confidence interval 0.61 to 0.93). Most trials showed a higher incidence of adverse events in patients treated with opioids. Compared with patients treated with opioids, those treated with NSAIDs had significantly less vomiting (0.35, 0.23 to 0.53). Pethidine was associated with a higher rate of vomiting.

Conclusions Patients receiving NSAIDs achieve greater reductions in pain scores and are less likely to require further analgesia in the short term than those receiving opioids. Opioids, particularly pethidine, are associated with a higher rate of vomiting.

What is already known on this topic

Both non-steroidal anti-inflammatory drugs (NSAIDs) and opioids provide analgesia in acute renal colic

NSAIDs have well recognised side effects

What this study adds

NSAIDs achieve slightly greater reductions in pain scores than opioids in patients with renal colic

Patients with renal colic are less likely to need rescue analgesia if treated with NSAIDs

Opioids, particularly pethidine, are associated with a higher rate of vomiting and other adverse effects

BMJ, doi:10.1136/bmj.38119.581991.55 (published 3 June 2004)

Pain Management for Third-Molar Extractions

Moore & Hersh Systematic Review (2015)

- Ibuprofen + APAP more effective than either one alone
- Ibuprofen + APAP more effective w/less side effects than opioid combos

Source: Moore PA, Hersh EV. Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions: translating clinical research to dental practice. J Am Dent Assoc. 2013 Aug;144(8):898-908.

Controlling the epidemic: Primary Prevention

**Primary Prevention is preventing a disease
from occurring**

Strategies for preventing OUD include:

- Promoting more cautious prescribing**
- Informing public about opioid risks**
- Social marketing campaigns to dramatize negative consequences**

Controlling the epidemic: Secondary Prevention

**Secondary Prevention is catching a disease
early in its course**

Strategies include:

- **Screening & active case finding**
- **Linking people to treatment**
- **Social marketing campaigns to engage people in treatment**

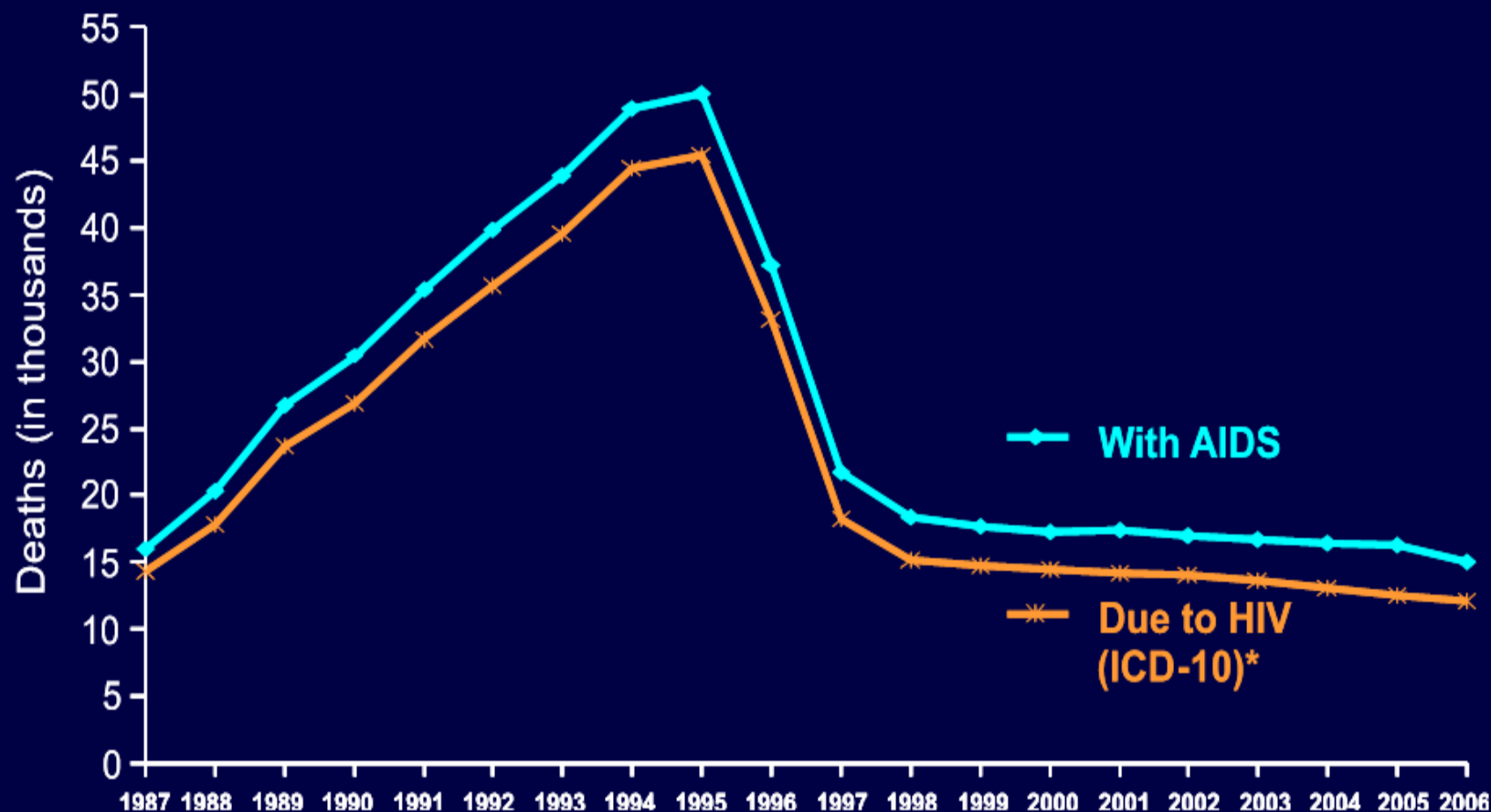
Controlling the epidemic: Tertiary Prevention

Tertiary Prevention is treatment (and harm reduction) to prevent most severe outcomes

Strategies include:

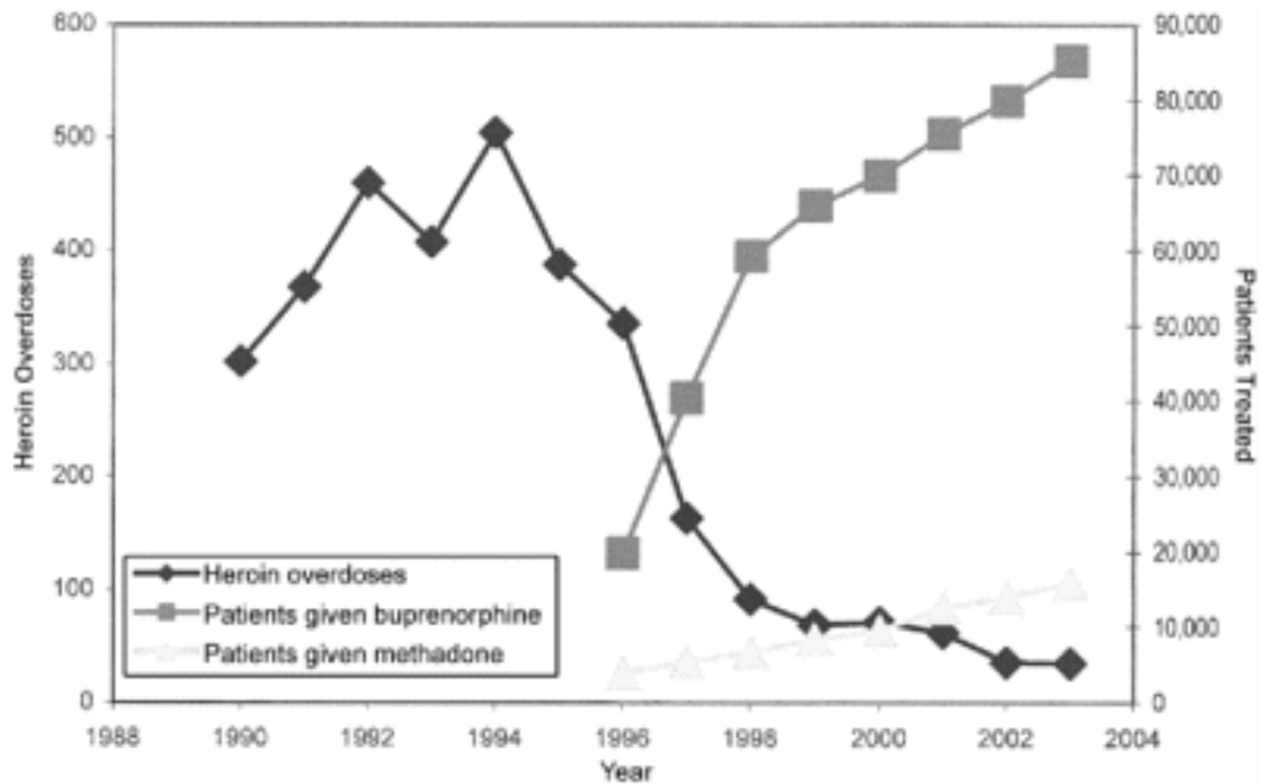
- Low threshold treatment access**
- Syringe exchange**
- Naloxone**

Comparison of Mortality Data from AIDS Case Reports and Death Certificates in Which HIV Disease Was Selected as the Underlying Cause of Death, United States, 1987–2006



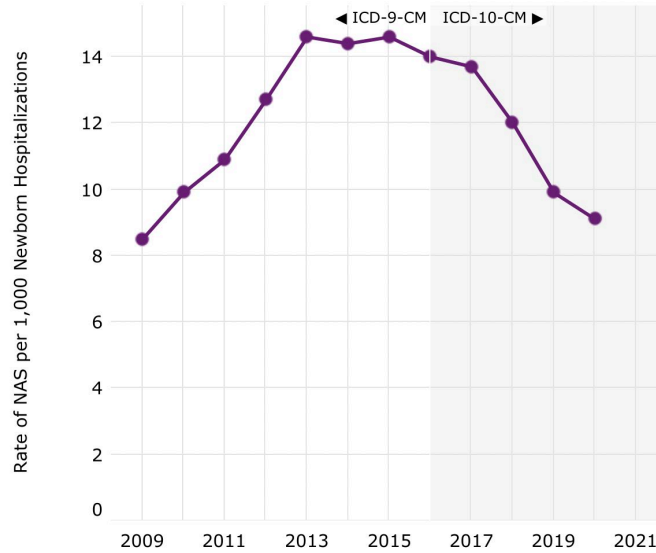
*For comparison with data for 1999 and later years, data in the bottom (red) line for 1987–1998 were modified to account for ICD-10 rules instead of ICD-9 rules.





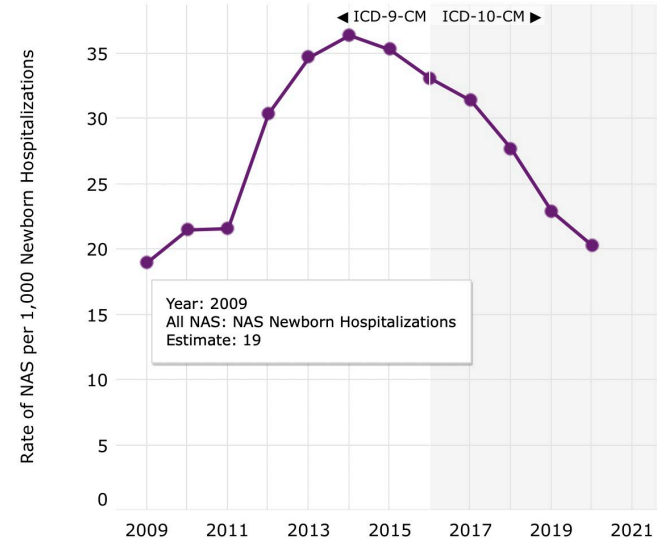
From: Buprenorphine Use: The International Experience
 Clin Infect Dis. 2006;43(Supplement_4):S197-S215. doi:10.1086/508184
 Clin Infect Dis | © 2006 by the Infectious Diseases Society of America

Massachusetts: Rate of NAS per 1,000 Newborn Hospitalizations by All NAS, 2009 to 2020



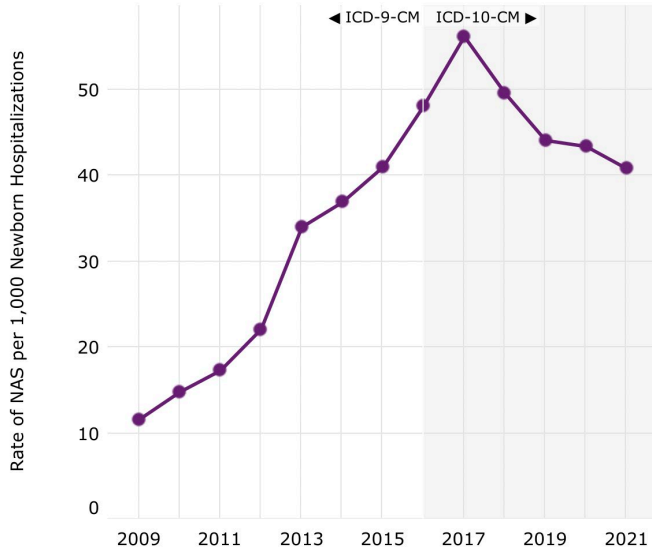
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) 2009 to 2020 (all available data as of 10/18/2022). Abbreviation: NAS, neonatal abstinence syndrome.

Maine: Rate of NAS per 1,000 Newborn Hospitalizations by All NAS, 2009 to 2020



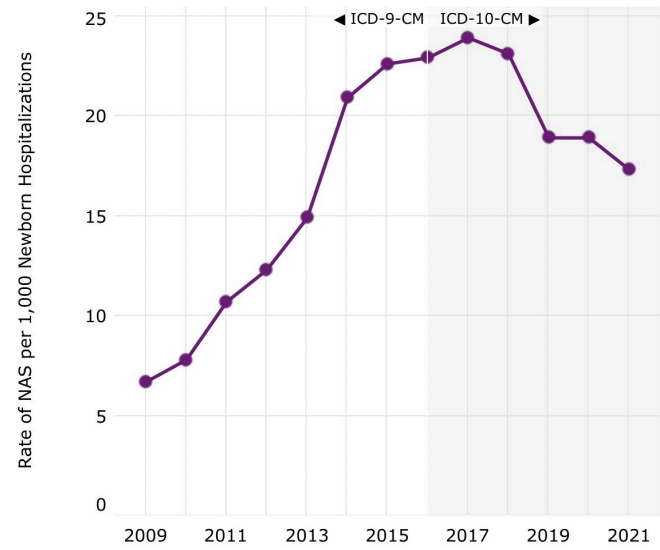
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) 2009 to 2020 (all available data as of 10/18/2022). Abbreviation: NAS, neonatal abstinence syndrome.

West Virginia: Rate of NAS per 1,000 Newborn Hospitalizations by All NAS, 2009 to 2021



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) 2009 to 2021 (all available data as of 10/18/2022). Abbreviation: NAS, neonatal abstinence syndrome.

Kentucky: Rate of NAS per 1,000 Newborn Hospitalizations by All NAS, 2009 to 2021



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) 2009 to 2021 (all available data as of 10/18/2022). Abbreviation: NAS, neonatal abstinence syndrome.

Summary

- The U.S. is in the midst of a severe epidemic of opioid addiction and overdose deaths
- To bring the epidemic to an end:
 - We must prevent new cases of opioid addiction
 - We must improve access to treatment for people already addicted