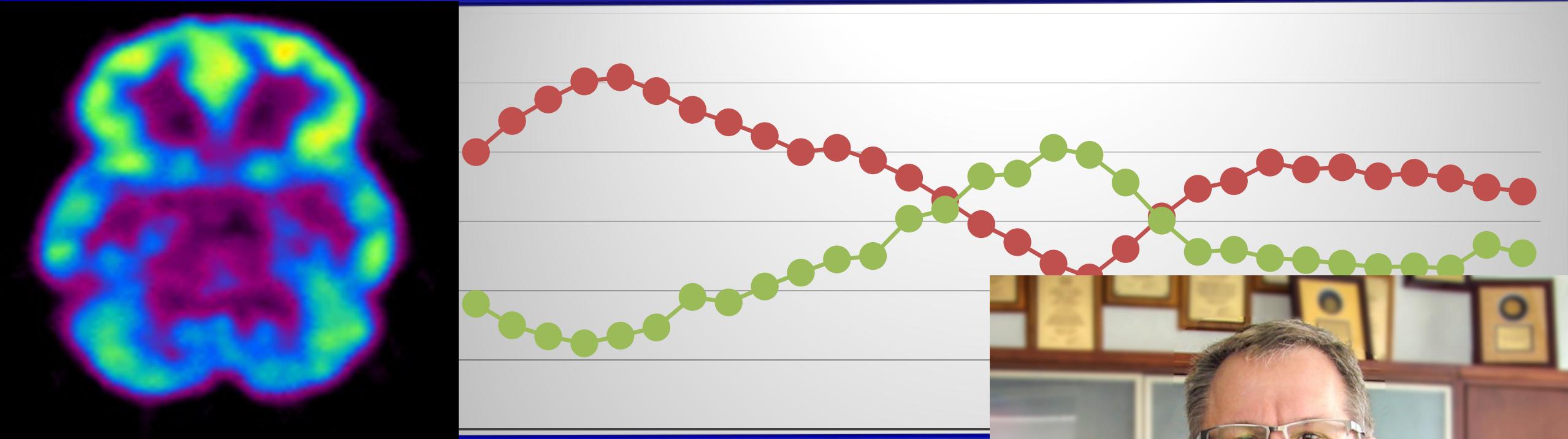


U.S. Opioid Crisis



Wilson M. Compton, M.D., M.P.E.

Deputy Director

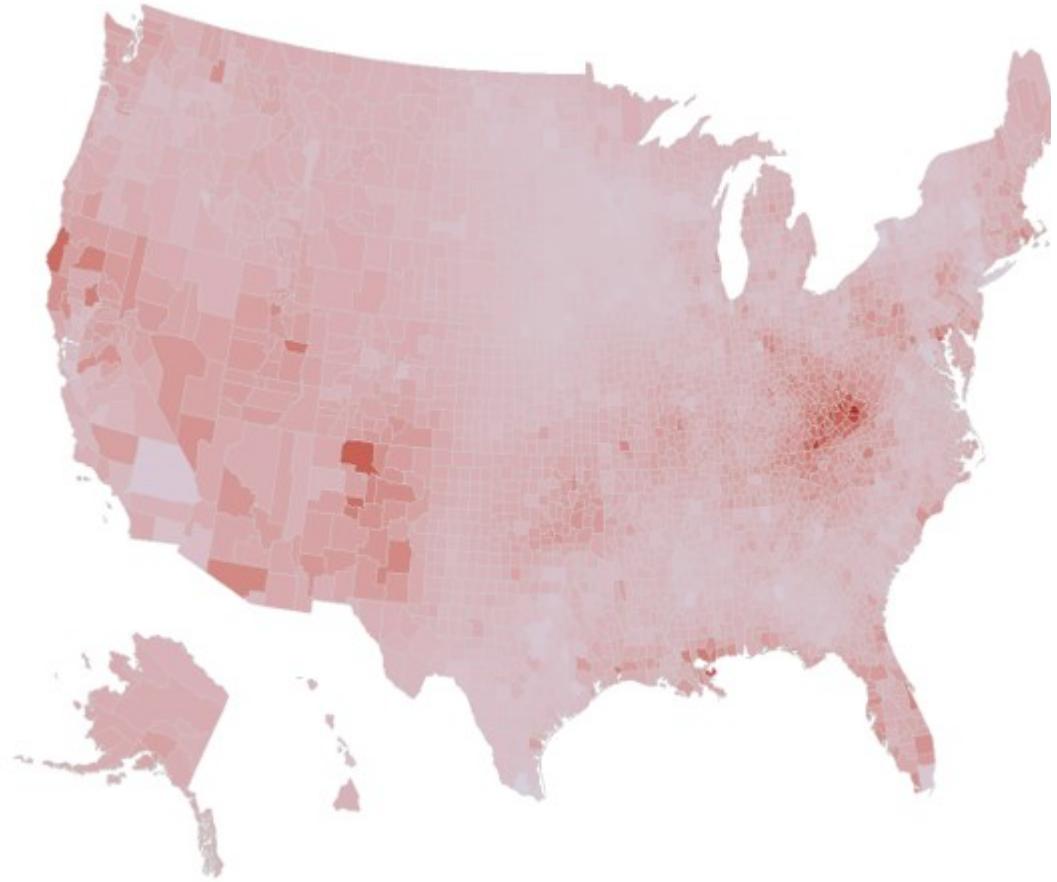
National Institute on Drug Abuse



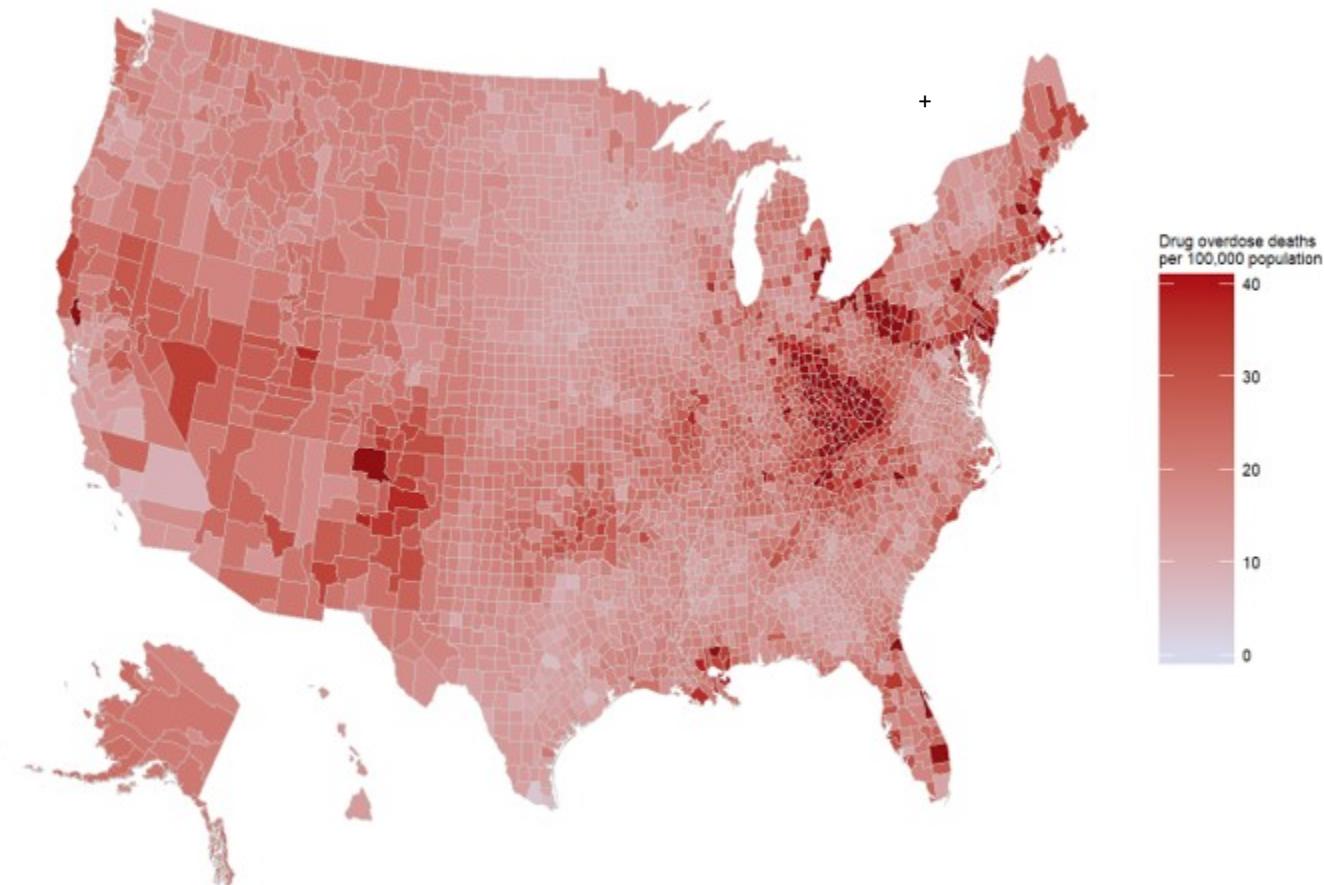
Increased Drug *Overdose* Death Rates

Estimated Age-adjusted Death Rates per 100,000 for Drug Poisoning by County.

2003



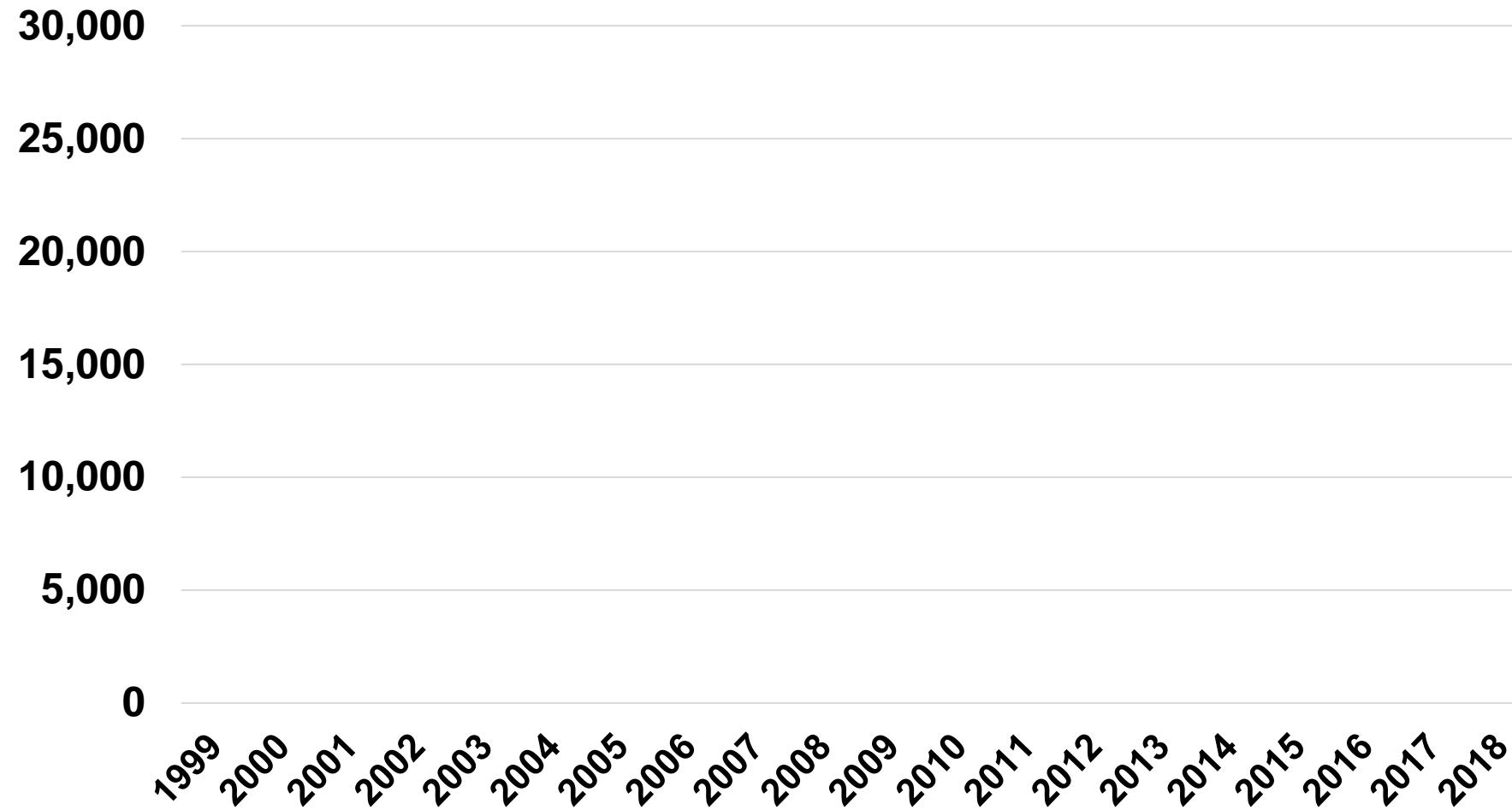
2017



SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data (<http://www.cdc.gov/nchs/deaths.htm>).

67,367 Deaths in 2018
46,802 from Opioids (Prescription and Illicit)

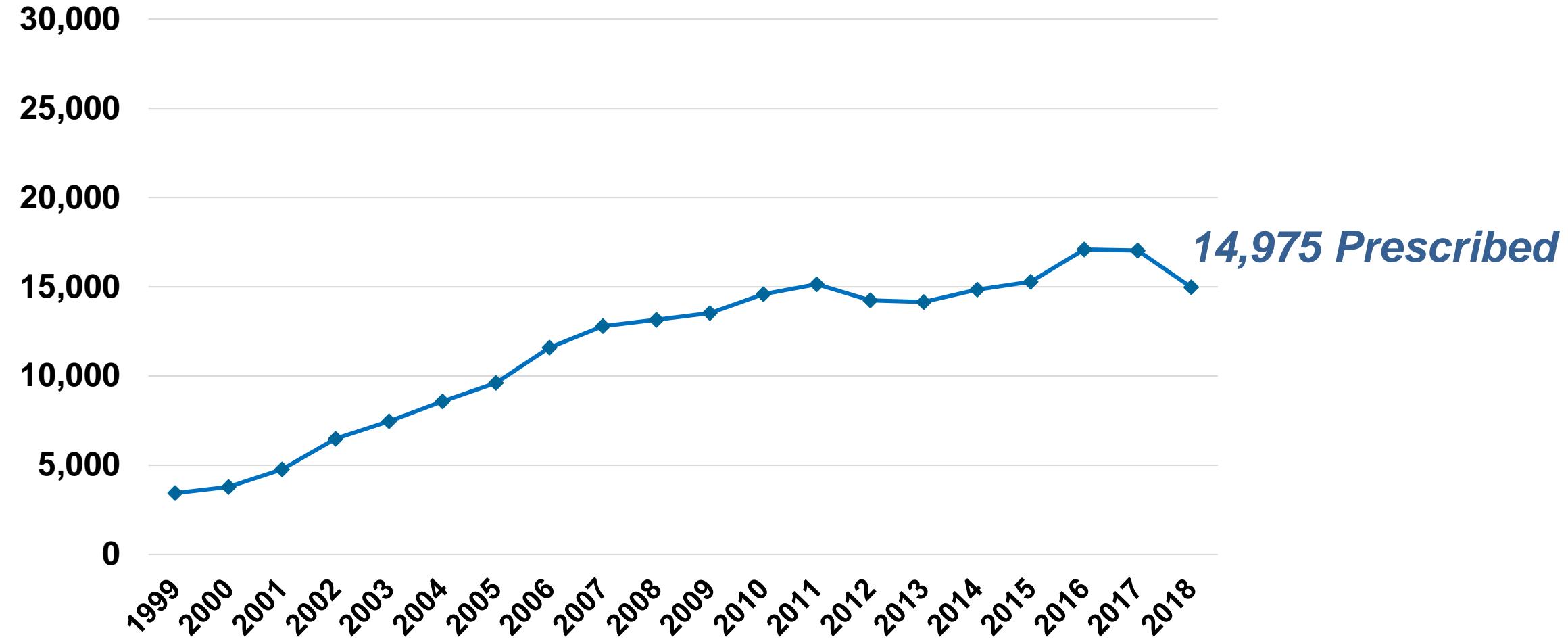
Evolution of Drivers of Overdose Deaths:



See: Compton WM & Jones CM, Ann NY Acad Sci, 2019;

Updated for 2018 from WONDER Database and Hedegaard et al. NCHS Data Brief, no 356. January, 2020

Evolution of Drivers of Overdose Deaths: Analgesics

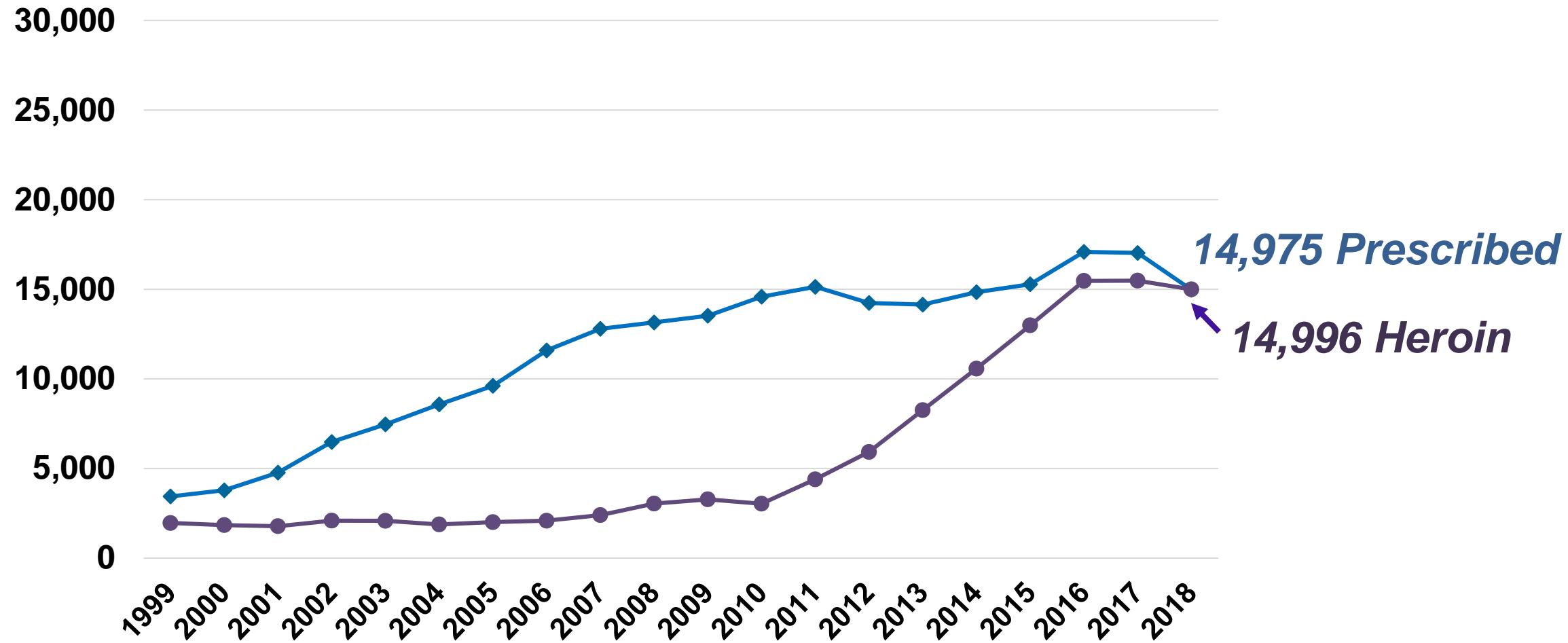


See: Compton WM & Jones CM, Ann NY Acad Sci, 2019;

Updated for 2018 from WONDER Database and Hedegaard et al. NCHS Data Brief, no 356. January, 2020

Evolution of Drivers of Overdose Deaths:

Analgesics → *Heroin*

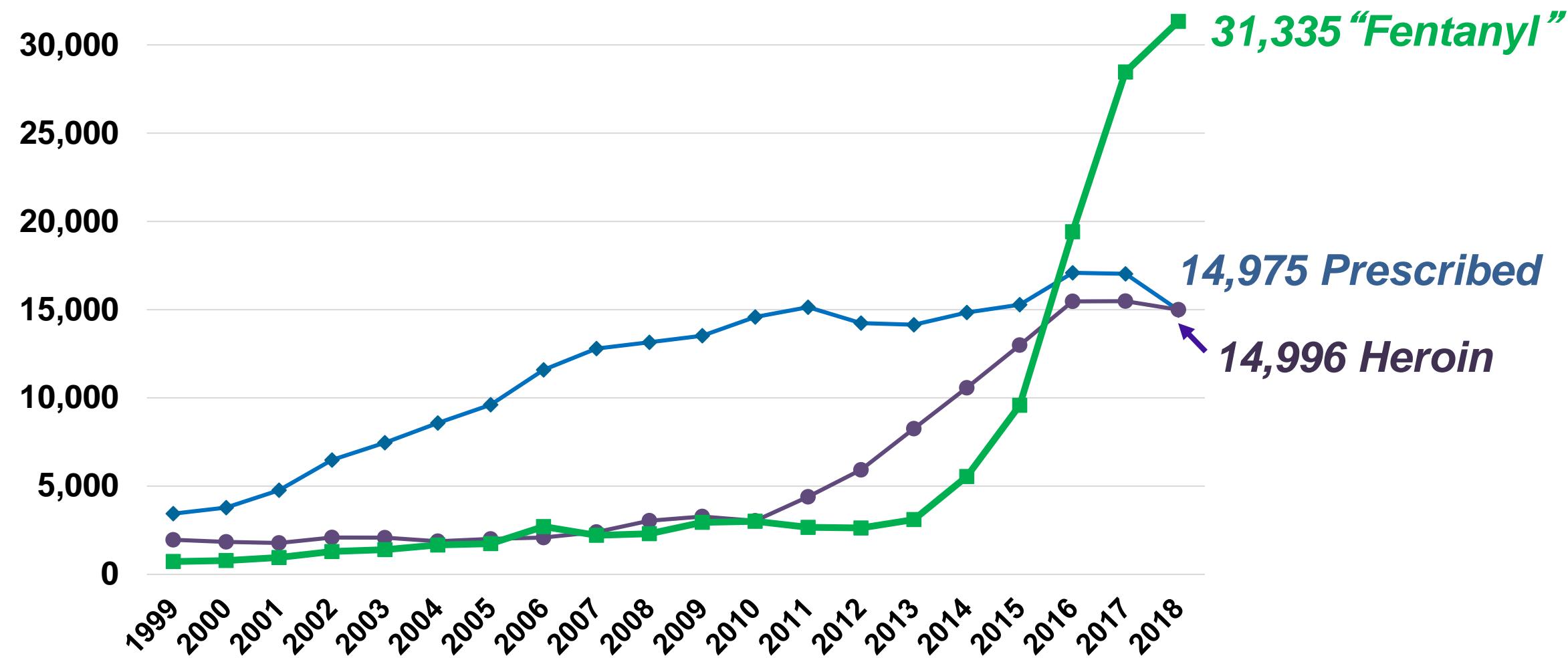


See: Compton WM & Jones CM, Ann NY Acad Sci, 2019;

Updated for 2018 from WONDER Database and Hedegaard et al. NCHS Data Brief, no 356. January, 2020

Evolution of Drivers of Overdose Deaths:

Analgesics → *Heroin* → “*Fentanyl*”



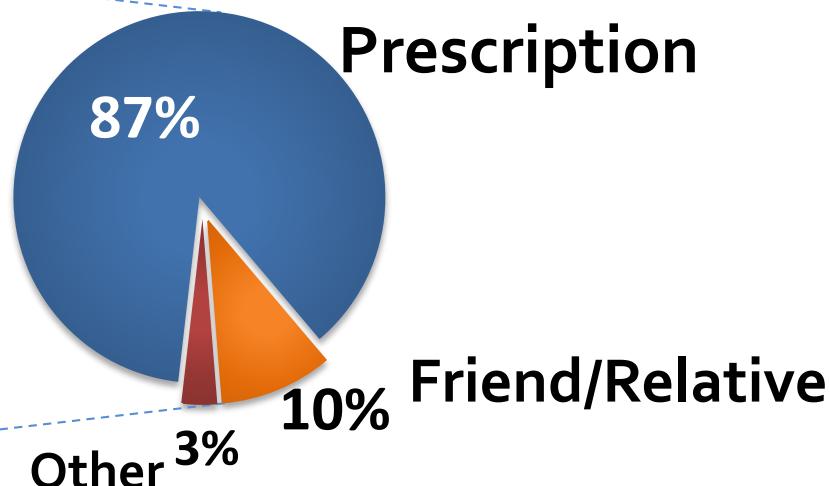
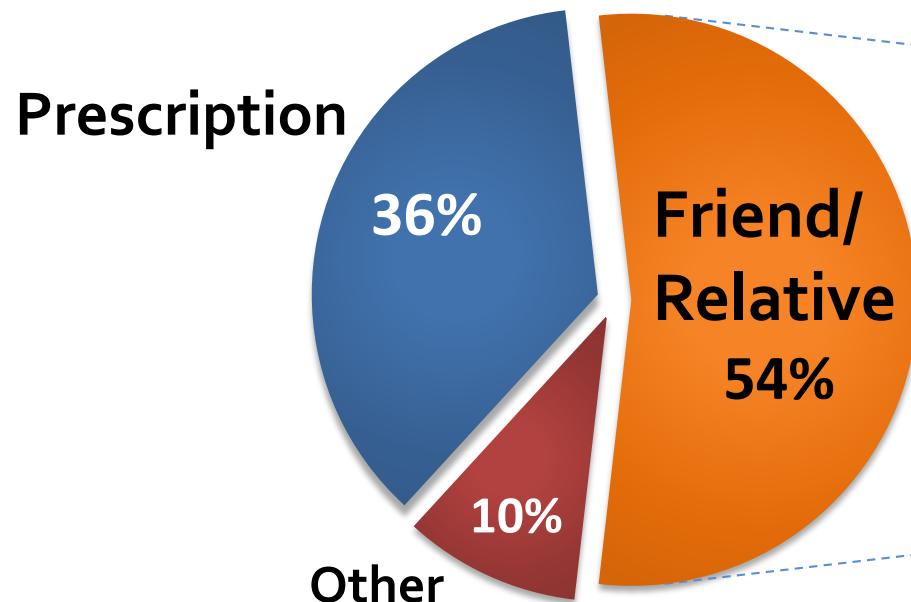
See: Compton WM & Jones CM, Ann NY Acad Sci, 2019;

Updated for 2018 from WONDER Database and Hedegaard et al. NCHS Data Brief, no 356. January, 2020

Direct and Indirect Pathways from Prescriptions to Misuse

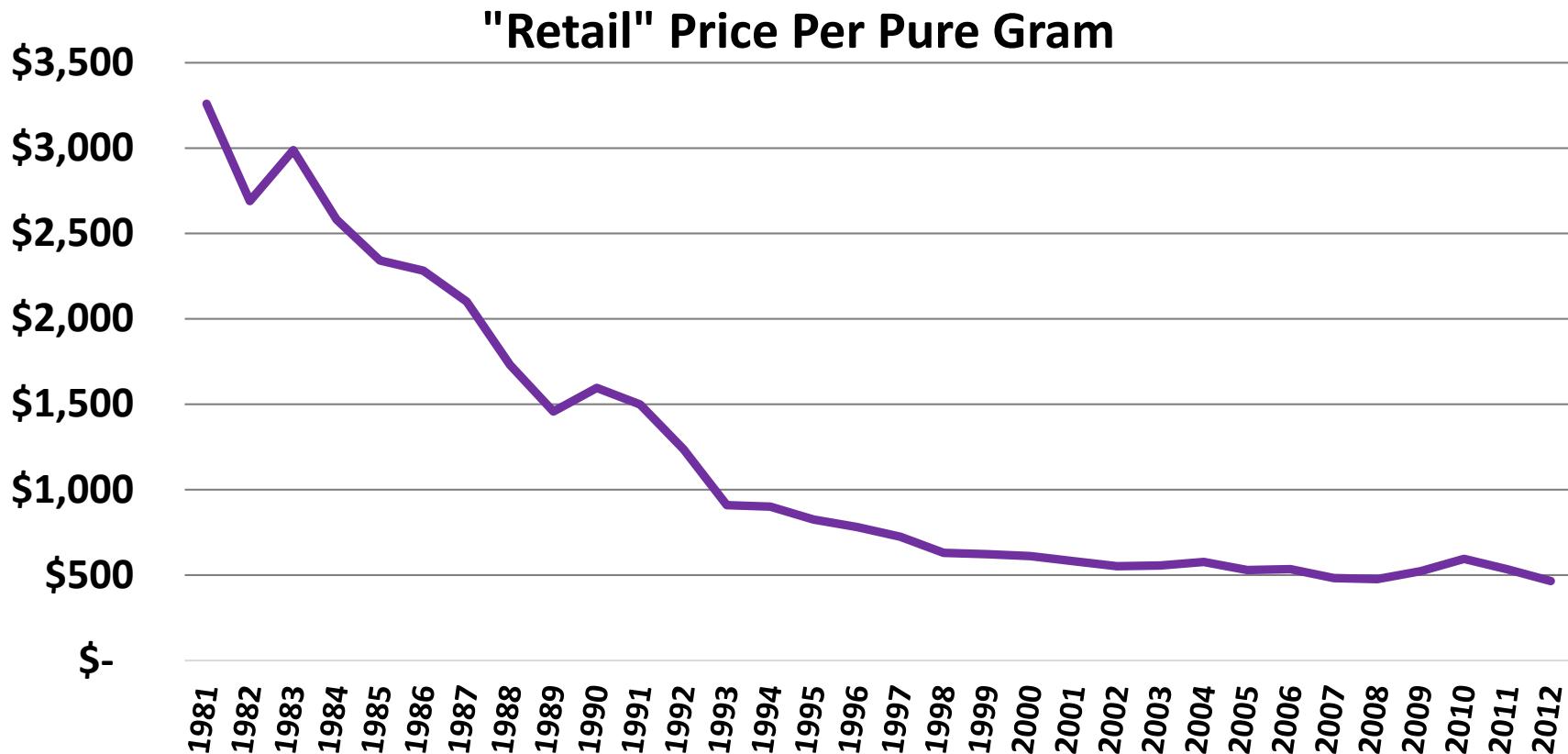
- People misusing analgesics *Directly & Indirectly* obtain them by prescription

Source where pain relievers obtained for most recent misuse



Source: Han, Compton, et al. Annals of Internal Medicine 2017

ECONOMICS: Heroin Increases Due to Lower Price



National Drug Control Strategy--Data Supplement 2014.

https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/ndcs_data_supplement_2014.pdf

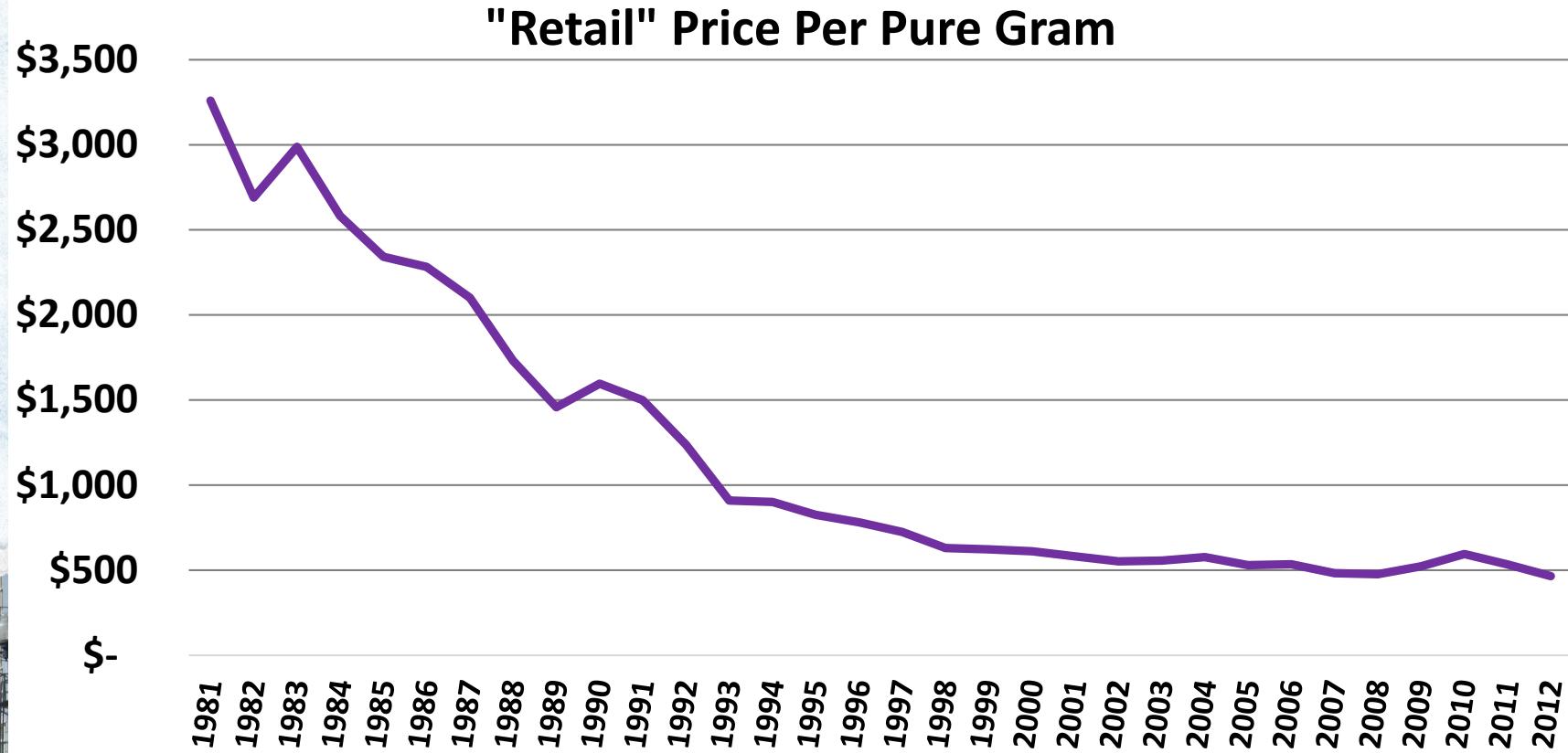
ECONOMICS: Heroin Increases Due to Lower Price and Greater Availability

The relentless marketing of pain pills. Crews from one small Mexican town selling heroin like pizza. The collision has led to America's greatest drug scourge.

The True Tale of America's Opiate Epidemic

DREAM LAND

SAM QUINONES



National Drug Control Strategy--Data Supplement 2014.
https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/ndcs_data_supplement_2014.pdf

ECONOMICS: CHEAP Fentanyl Precursor Chemicals

Criminal Chemistry

Traffickers manufacturing fentanyl often purchase the key ingredient from China, which doesn't regulate its sale. Here's how the chemical building blocks become a highly profitable street drug.

The key ingredient is **NPP**,
25 grams of which can be
bought from China for
about \$87*



NPP can be combined with
about \$720 of **other**
chemicals[†] to produce
fentanyl.

The resulting 25 grams of
fentanyl cost about \$810 to
produce...

...and are equivalent to up to
\$800,000 of pills on the black
market.

*Average current price from Chinese suppliers

†Prices from U.S. suppliers

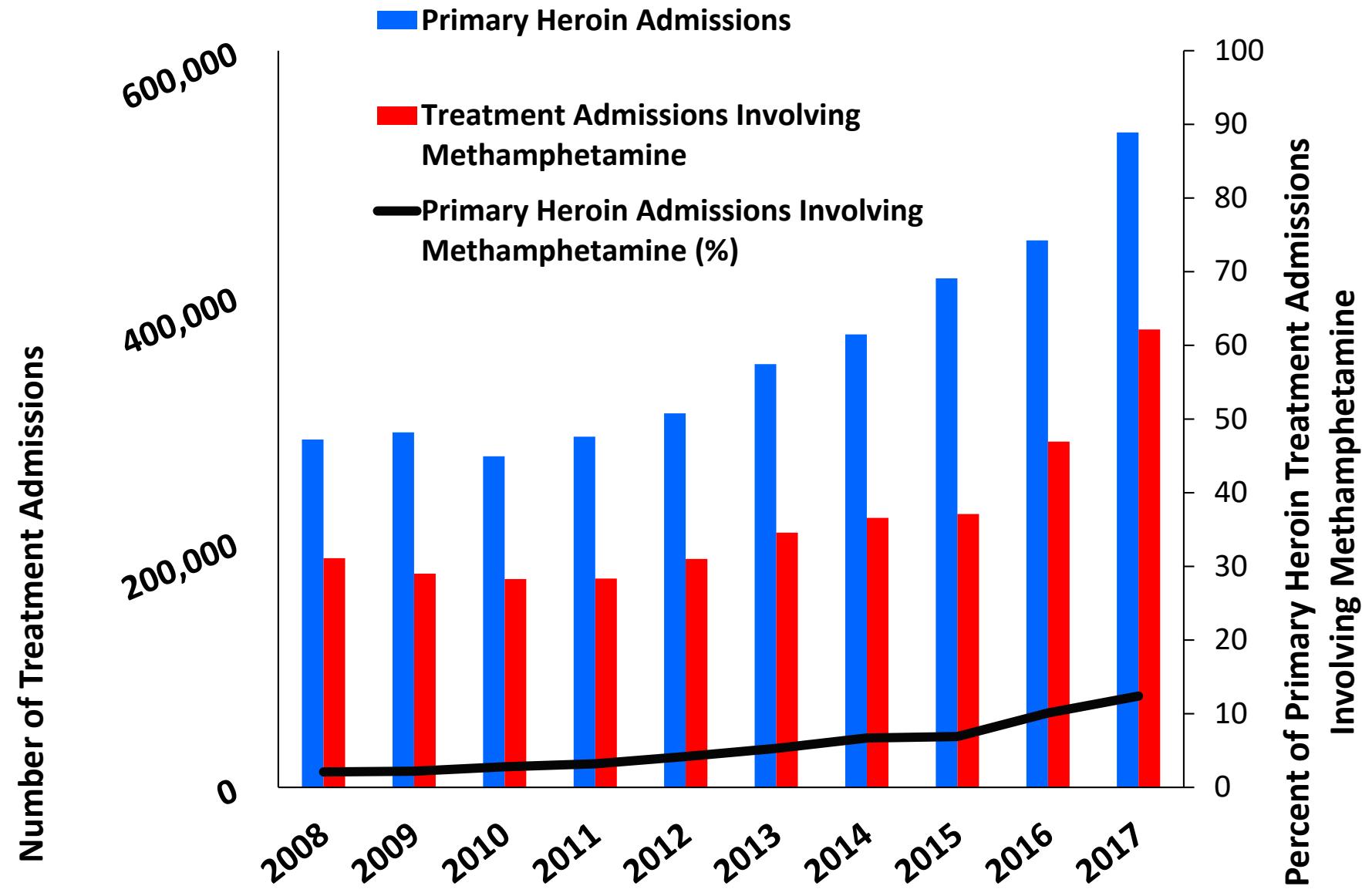
Sources: NES Inc.; Drug Enforcement Administration;
Calgary Police

THE WALL STREET JOURNAL.

Methamphetamine (*and other stimulants*): An Emerging Issue

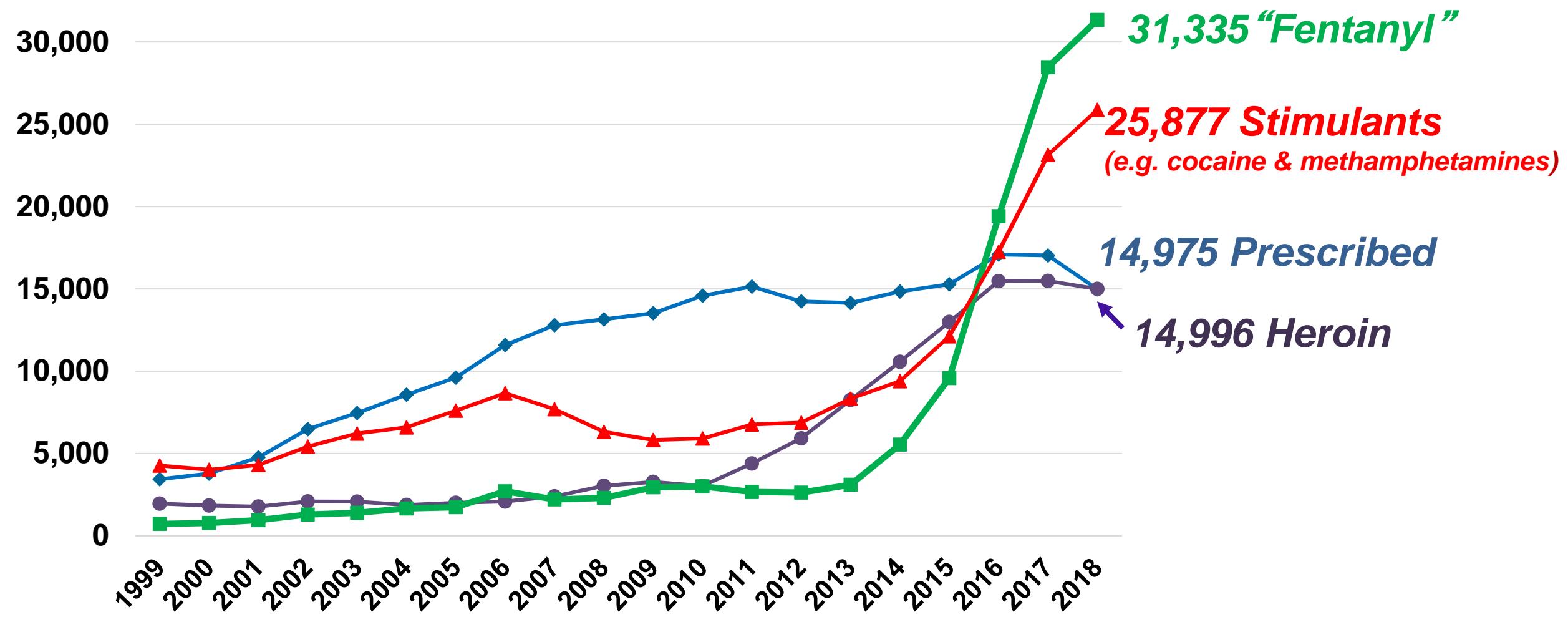
Heroin and Methamphetamine Treatment Admissions in the U.S.

Jones, Underwood,
Compton Addiction
2019



Evolution of Drivers of Overdose Deaths:

Analgesics → **Heroin** → **“Fentanyl”** → **Stimulants**

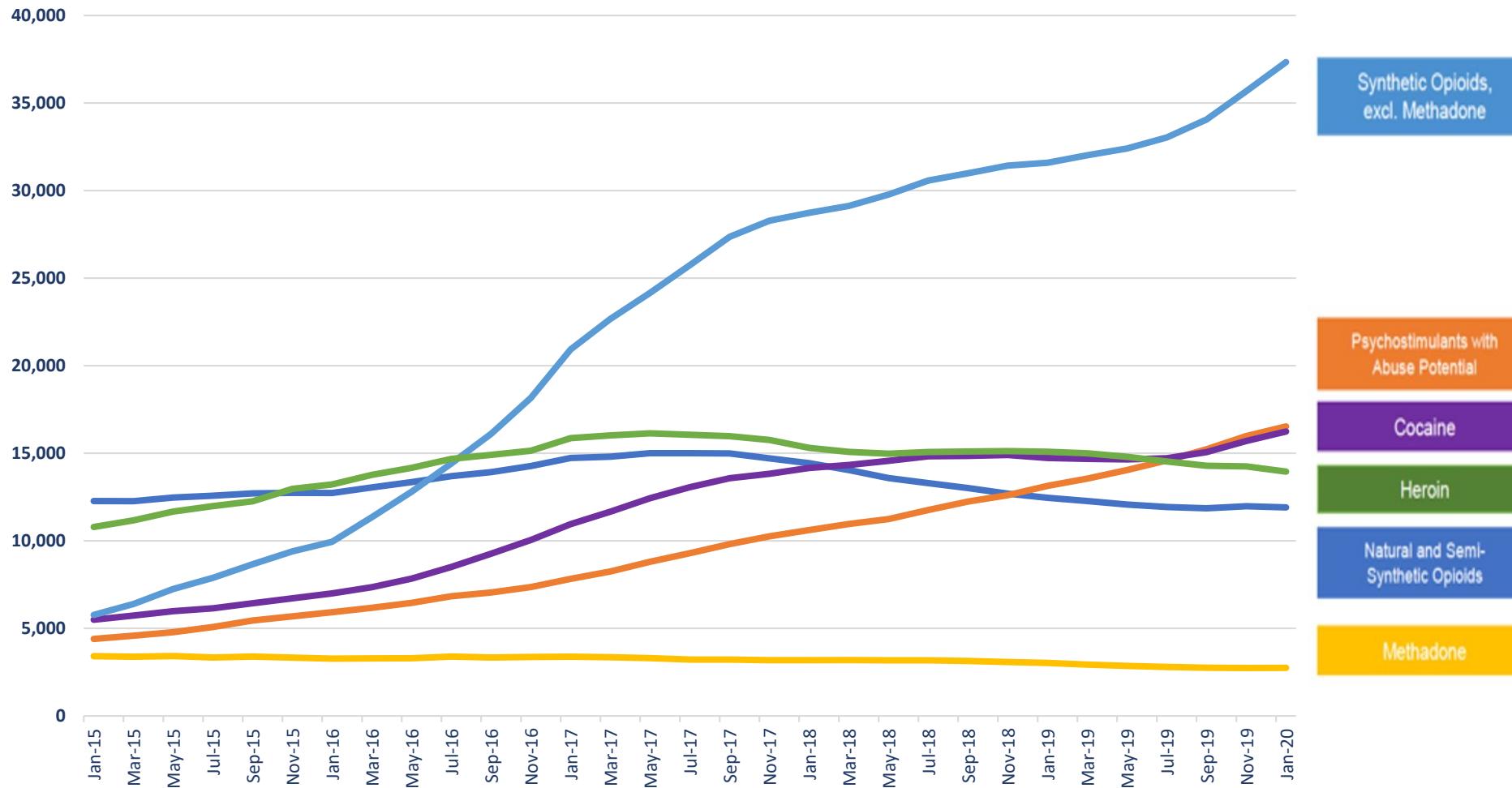


See: Compton WM & Jones CM, Ann NY Acad Sci, 2019;

Updated for 2018 from WONDER Database and Hedegaard et al. NCHS Data Brief, no 356. January, 2020

OVERDOSE DEATHS BY DRUG (CDC, August 2020)

12 MONTH-ENDING PROVISIONAL NUMBER OF DRUG OVERDOSE DEATHS BY DRUG OR DRUG CLASS, UNITED STATES

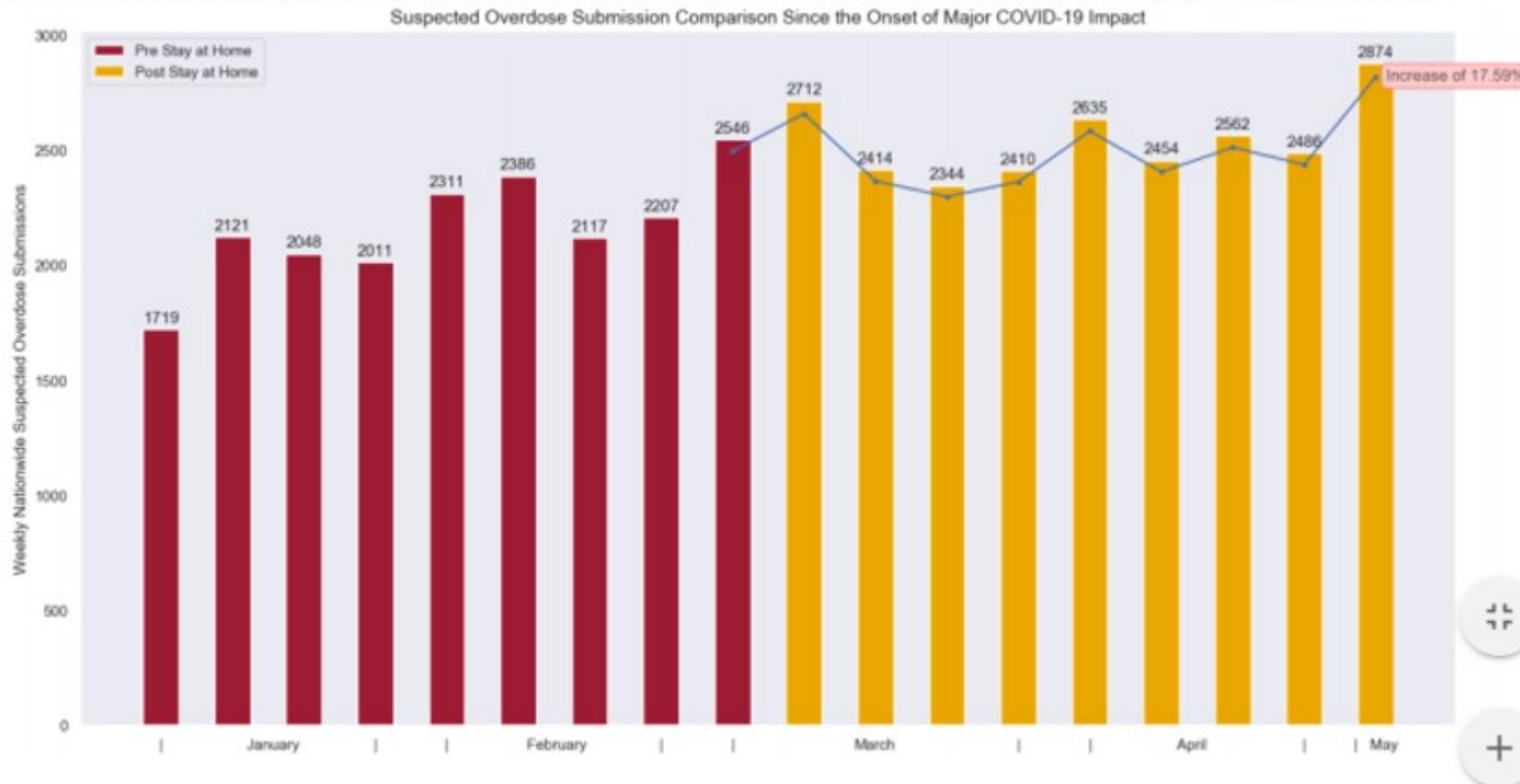


- National provisional estimates include deaths occurring within the 50 states and the District of Columbia
- All 50 states reported and of year final data through 2019.

	ALL DRUGS	HEROIN	NAT & SEMI-SYNTHETIC	METHADONE	SYNTHETIC OPIOIDS	COCAINE	OTHER PSYCHO-STIMULANTS
JANUARY 2019 *	68,211	15,205	12,566	3,058	31,961	14,876	13,323
JANUARY 2020*	72,707	14,144	12,075	2,789	38,015	16,496	16,854
Change	6.59%	-6.98%	-3.91%	-8.80%	18.94%	10.89%	20.95%

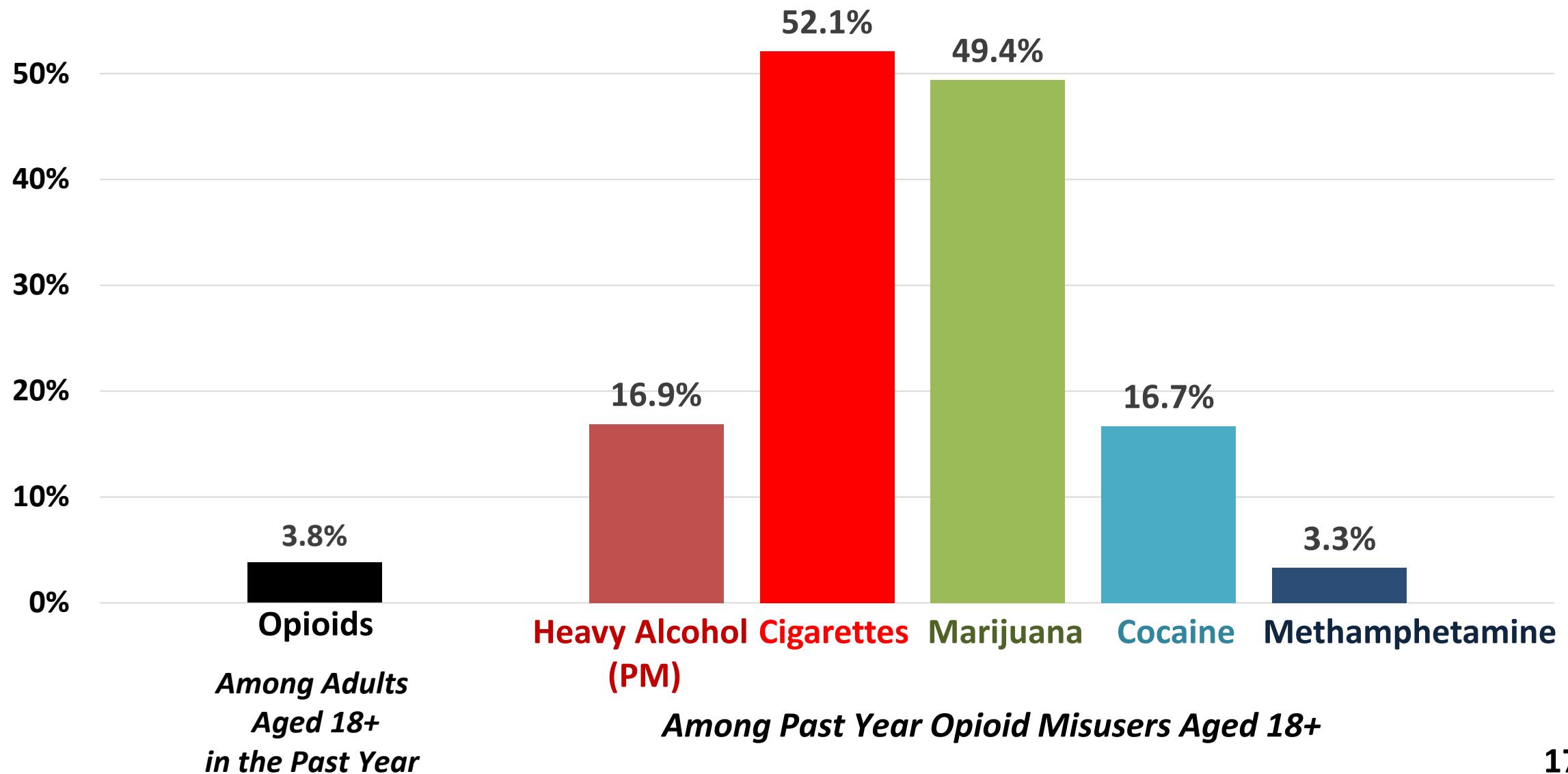
COVID-19 AND OVERDOSE ANALYSIS: ODMAP

Figure 2: ODMAP submissions January 1, 2020 to March 18, 2020 compared to March 19, 2020 to May 19, 2020

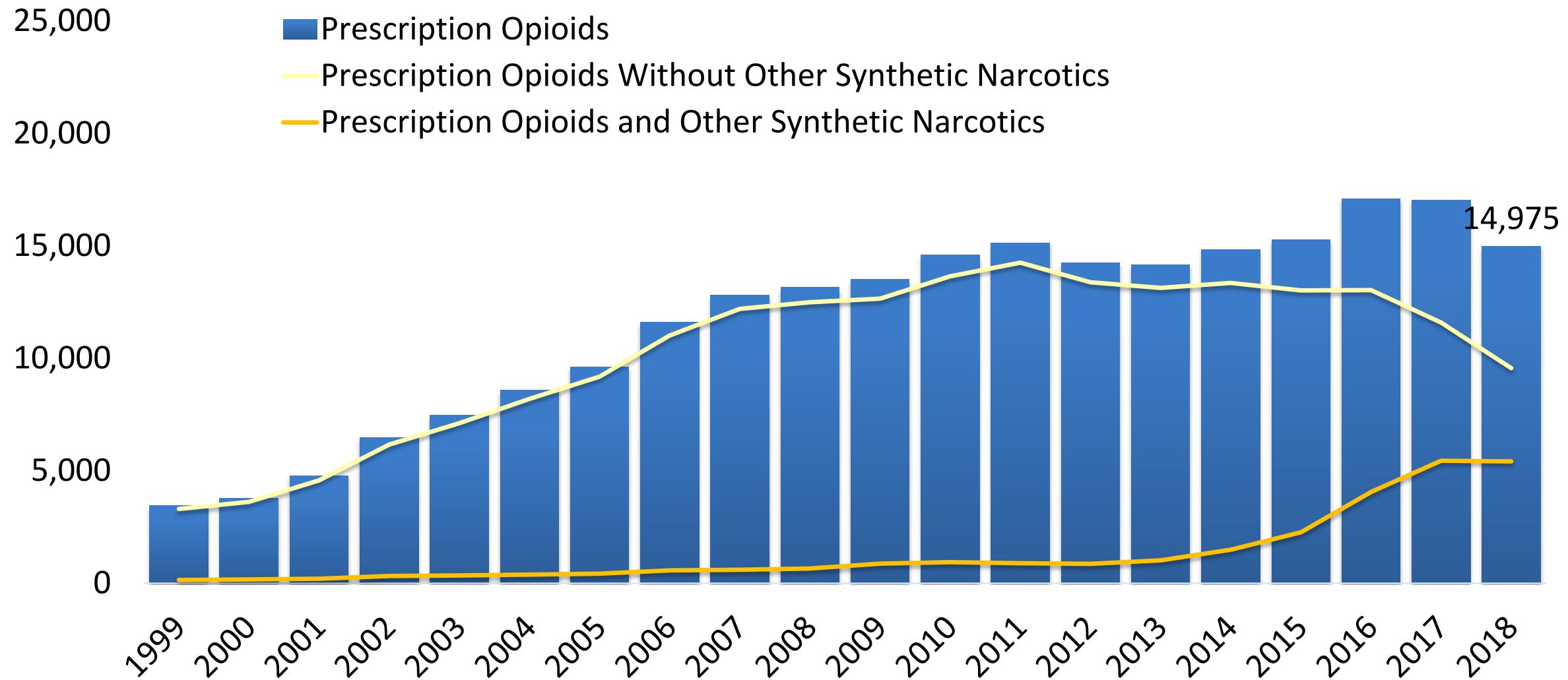


- 61% of ODMAP participating counties reported an increase in overdoses after stay-at-home orders issued
- There was a 17.59% total increase in that timeframe

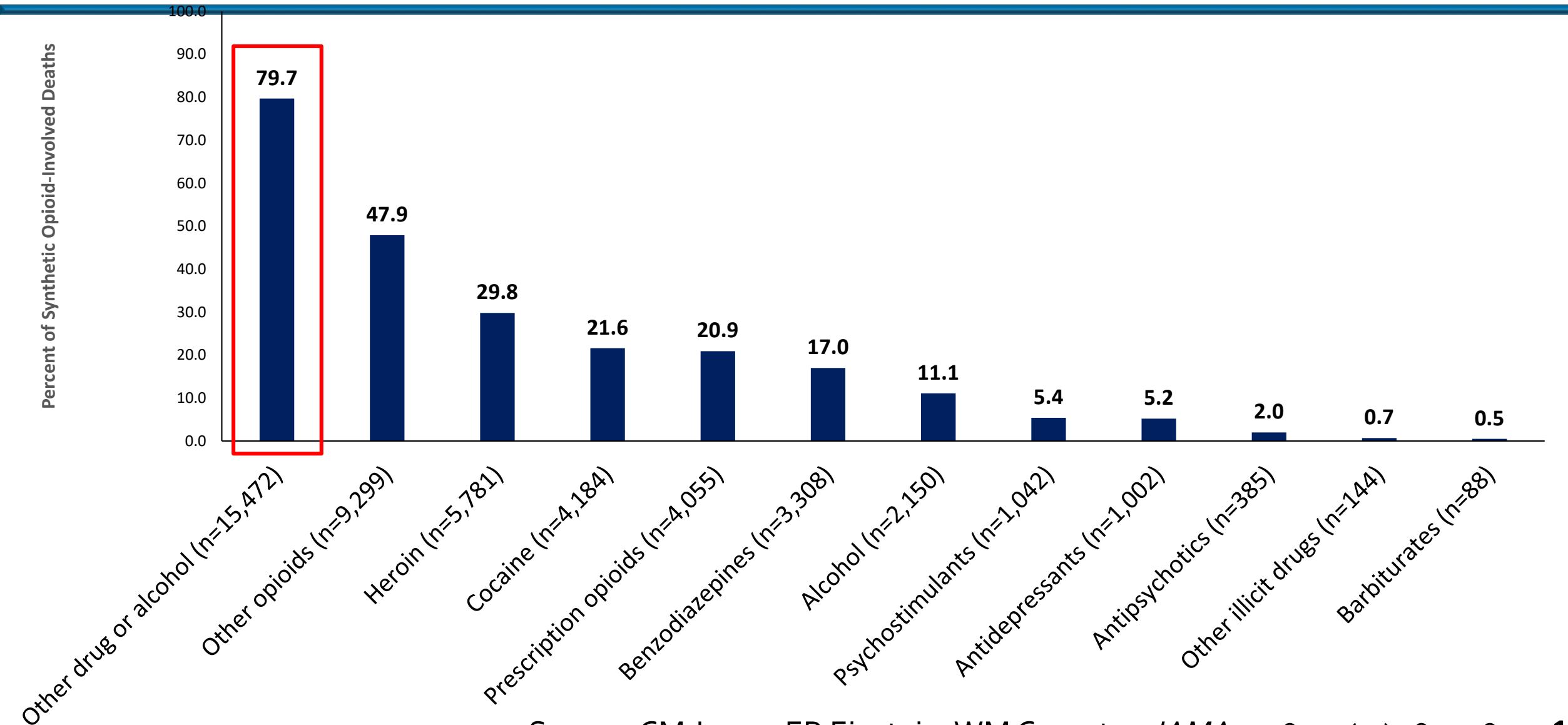
Polydrug Use is Common: Other Substance Use Among Past Year Opioid Misusers Aged 18+ (NSDUH, 2018)



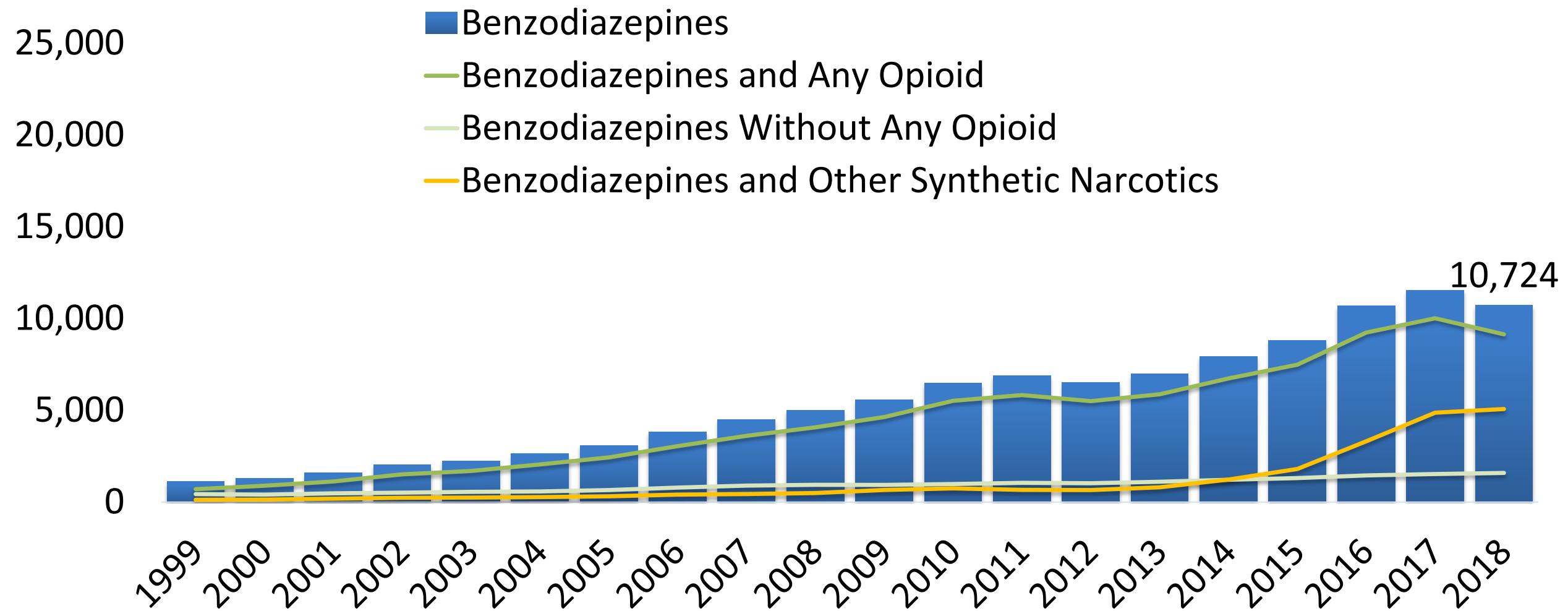
National Drug Overdose Deaths Involving Prescription Opioids, Number Among All Ages, 1999-2018



Percent of Synthetic Opioid-Related Overdose Deaths Involving Illicit or Psychotherapeutic Drugs or Alcohol, United States, 2016



National Drug Overdose Deaths Involving Benzodiazepines, by Opioid Involvement Number Among All Ages, 1999-2018



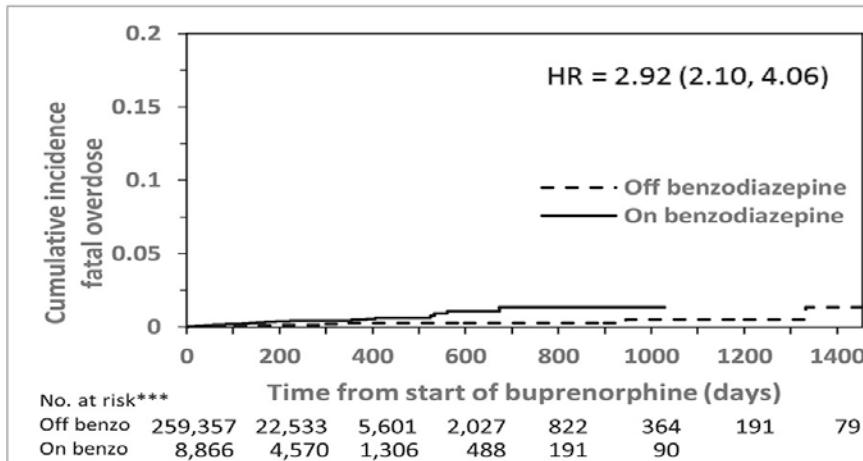
Benzodiazepine Use Among U.S. Adults: Correlates with Opioids

Characteristics	Adults with Benzodiazepine Use Weighted % (SE)	Adults without Benzodiazepine Use Weighted % (SE)	Benzodiazepine Use vs. No Use OR (95% CI)
Rx opioid			
PY use disorders	60.4 (2.27)	39.6 (2.27)	27.7
PY misuse only	36.1 (0.99)	63.9 (0.99)	10.2
PY use, lifetime misuse	30.6 (1.25)	69.4 (1.25)	8.0
PY use, no lifetime misuse	18.9 (0.34)	81.1 (0.34)	4.2
LT use, no PY use	9.0 (0.25)	91.0 (0.25)	1.8
Never use+	5.2 (0.17)	94.8 (0.17)	1.0
Heroin			
PY heroin use or disorders	60.5 (3.21)	39.5 (3.21)	11.2
LT use, no PY use	28.9 (1.67)	71.1 (1.67)	3.0
Never heroin use+	12.0 (0.15)	88.0 (0.15)	1.0

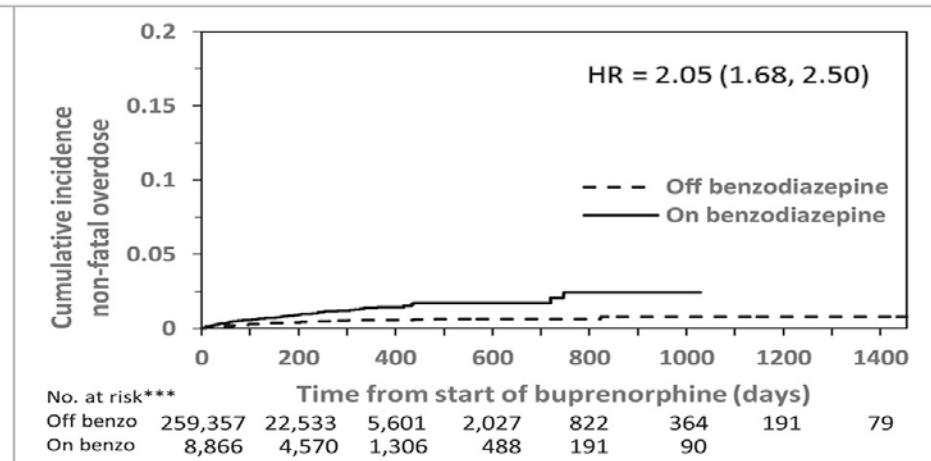
Source: Blanco C, Han B, Jones CM, Johnson K, Compton WM. Prevalence and correlates of benzodiazepine use, misuse, and use disorders among adults in the U.S. *Journal of Clinical Psychiatry* 2018;79(6):18m12174.

Prescribed Benzodiazepines, OD Deaths and Buprenorphine Discontinuation among People Receiving Buprenorphine Treatment

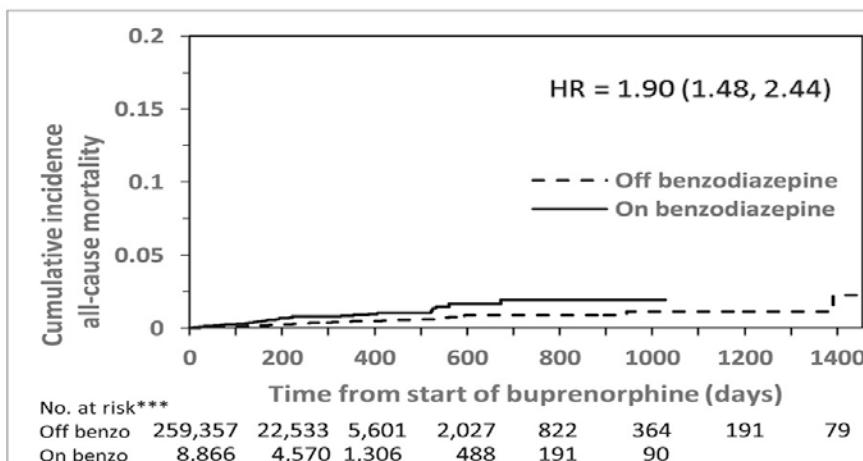
a. Fatal opioid overdose**



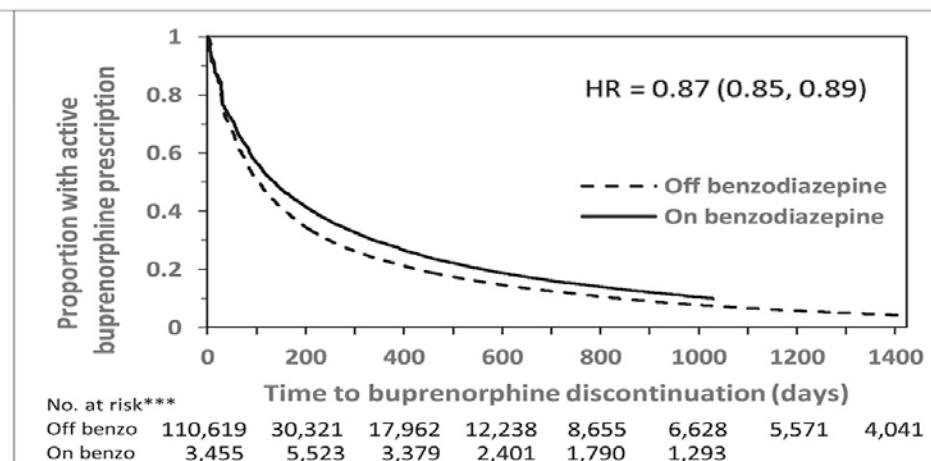
b. Non-fatal opioid overdose**



c. All-cause mortality**



d. Buprenorphine discontinuation



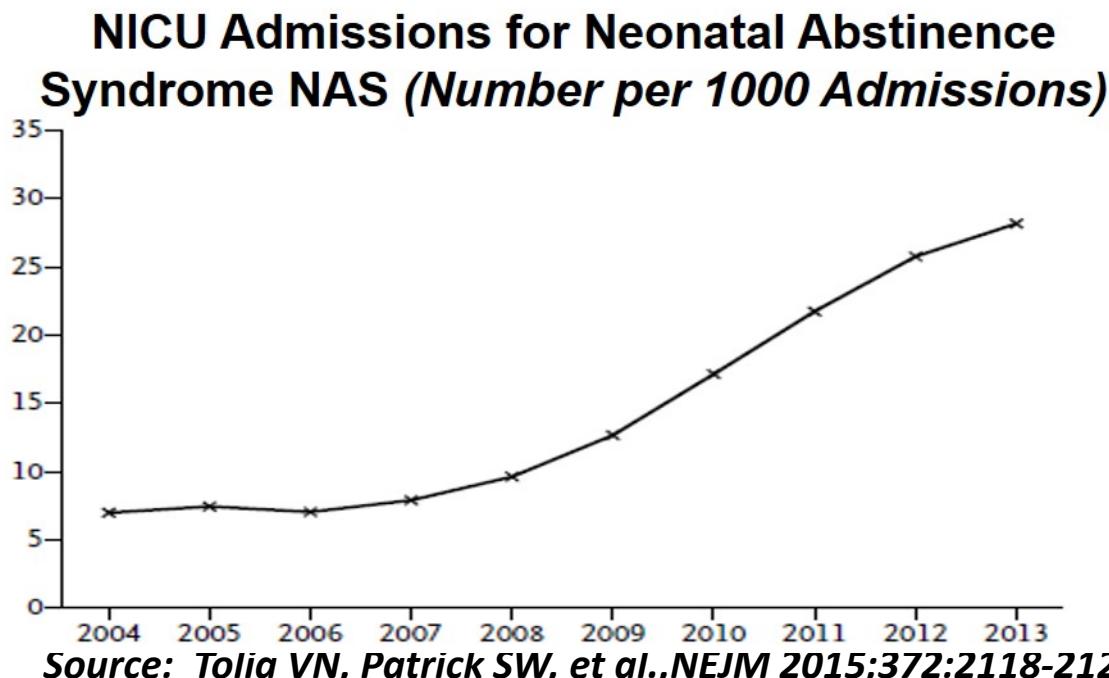
Addiction, Volume: 115, Issue: 5, Pages: 924-932, First published: 08 January 2020,
DOI: (10.1111/add.14886)

*Adjusted for sex, age, race, Medicaid receipt, diagnosis of depressive disorder, anxiety disorder, bipolar/psychotic disorder, SSRI receipt, time-varying buprenorphine dose, and recent hospital-based mental health encounter (Supplement Table 2 shows full model results).

**Note truncated y-axis for fatal overdose, non-fatal opioid overdose, and all-cause mortality.

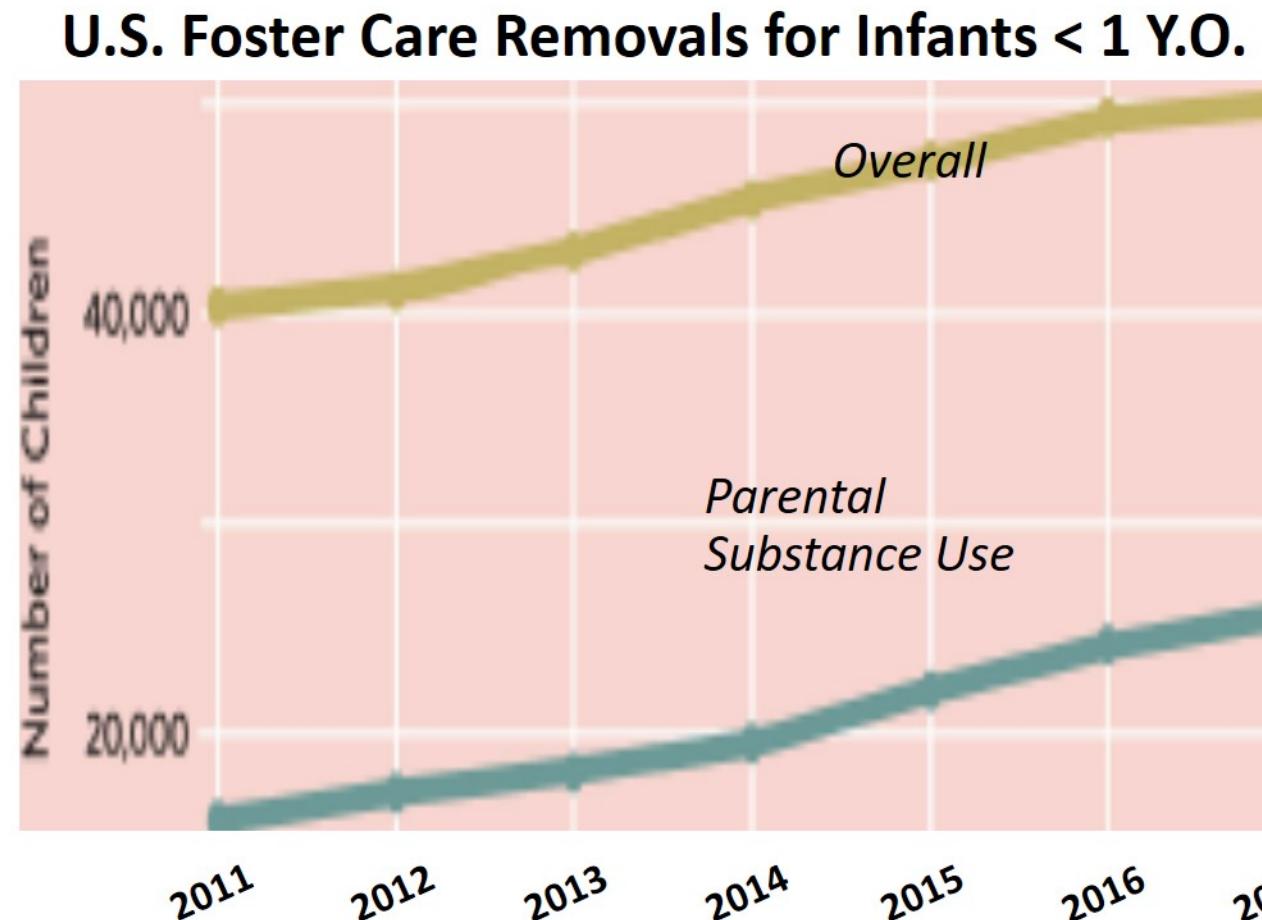
***Denotes number of buprenorphine treatment episodes

Opioid Use and Misuse During Pregnancy



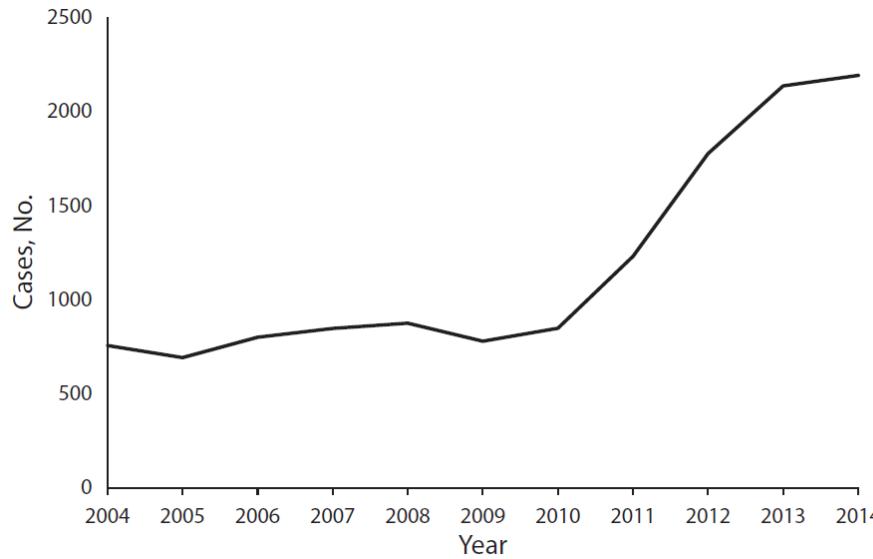
17% of pregnant women are prescribed an opioid during pregnancy

Increasing Foster Care Removals



Source: Patrick SW, Frank RG, et al. Hospital Pediatrics, 2019.

Rising rates of HCV

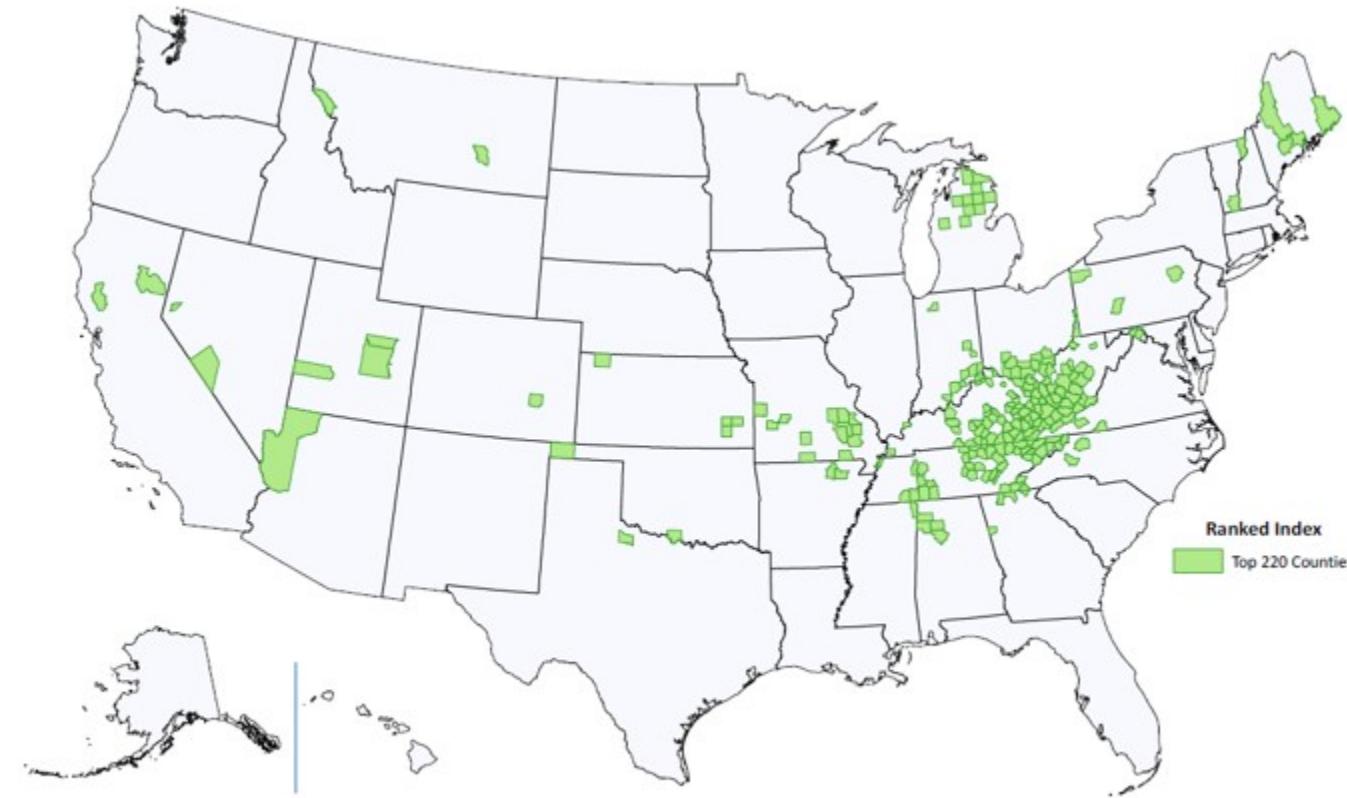


Zibbell et al.
Am J Public Health 2018;108:175-181

HIV (and **Hepatitis C**) Outbreak Linked
to Oxymorphone Injection Use in
Indiana, 2015

Peters et al.
The New England Journal of Medicine
2016;375:229-239

Counties Deemed Highly **Vulnerable** to Rapid Dissemination of HCV or HIV



Source: Van Handel et al, JAIDS 2016

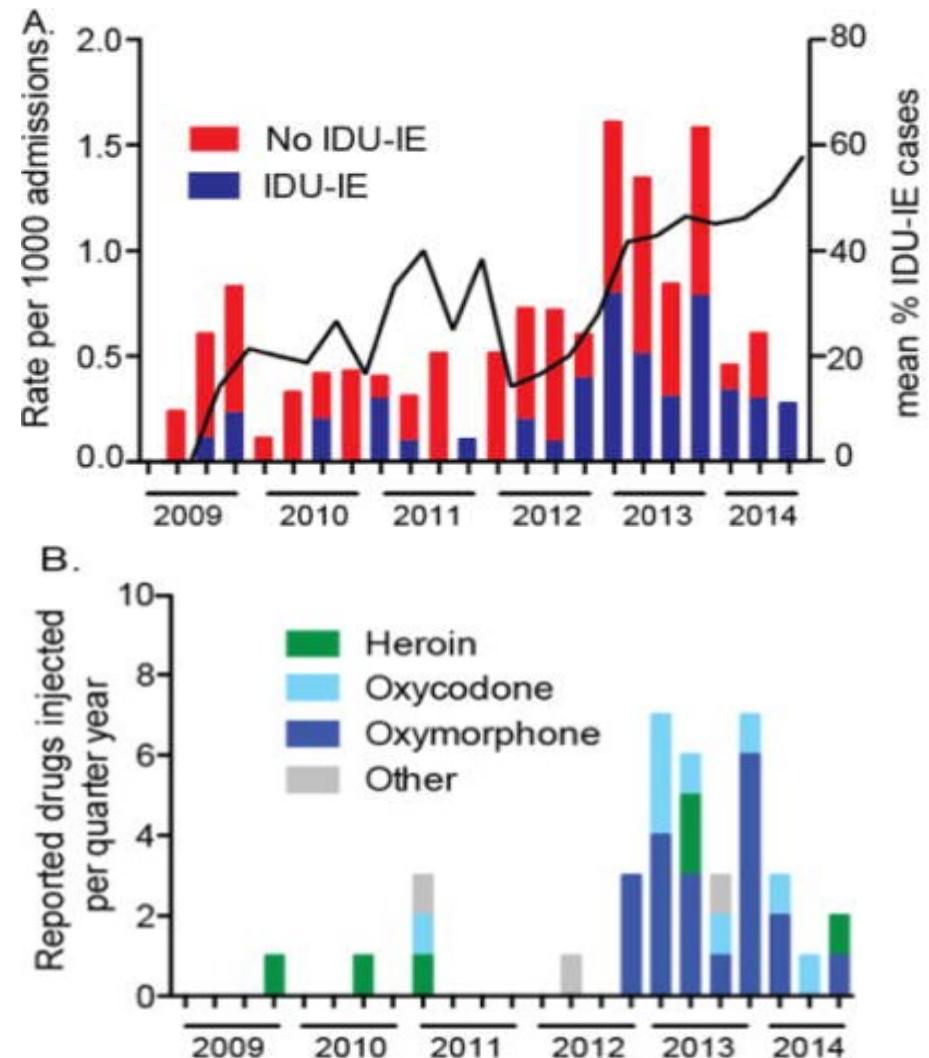
Other Adverse Outcomes Associated with Injection Drug Use

Injection of Rx opioids (and attendant crushing, cooking, and injection practices) are associated with:

- Scarring
- Abscesses and cutaneous infections
- Endocarditis
- Thrombotic microangiopathies

Source: Hartman et al 2016

Endocarditis and IDU



HHS Five-Point Opioid Strategy



Better addiction prevention, treatment, and recovery services



Better data



Better pain management



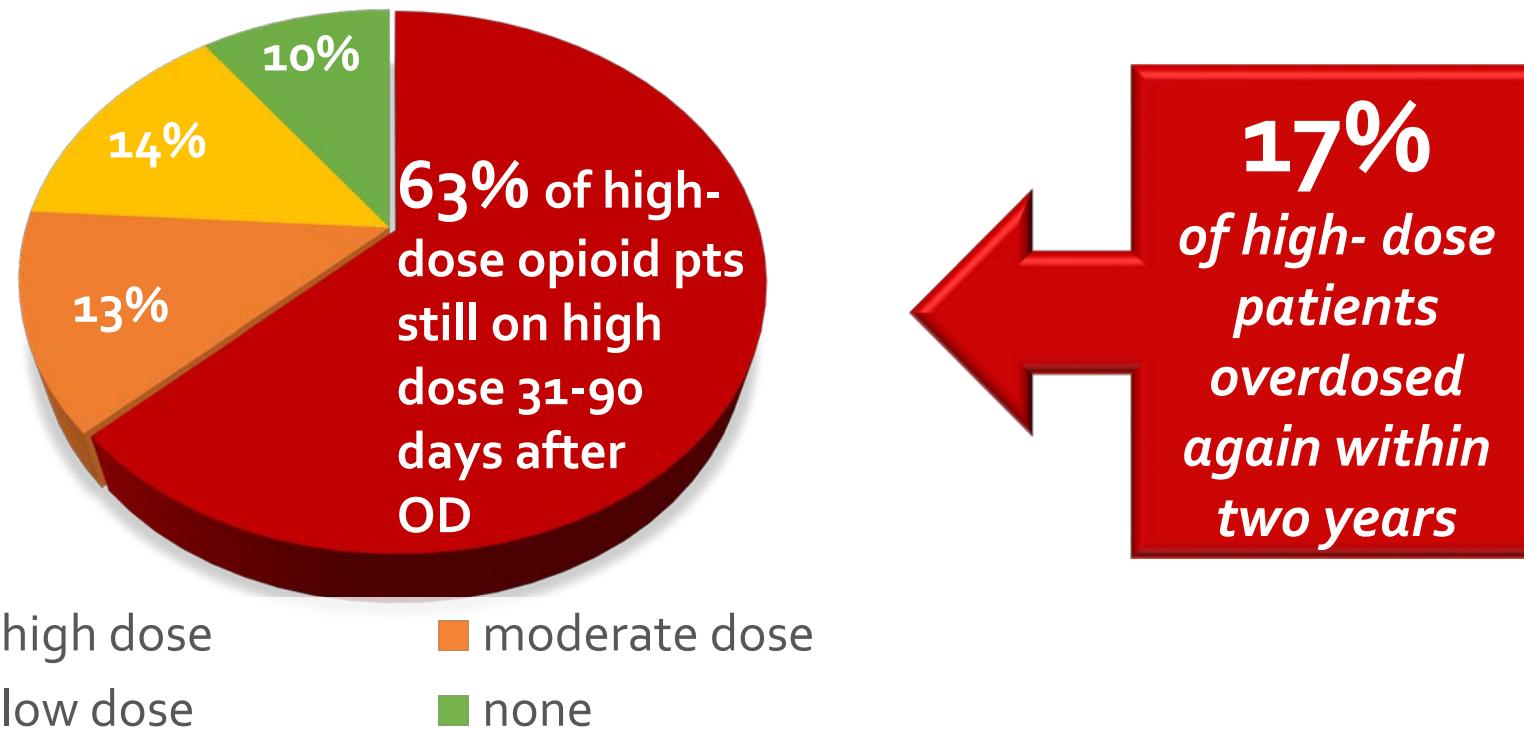
Better targeting of overdose reversing drugs



Better research

Doctors Continue to Prescribe Opioids for Ninety-one Percent of Overdose Patients

In a 2-year follow-up of 2848 commercially insured patients who had a nonfatal opioid overdose during long-term opioid therapy :



➤ **33-39% of those with active opioid prescriptions during follow-up also were prescribed benzodiazepines.**

Source:
Larochelle et al.
Ann Intern Med.
2016;164(1):1-9.

Solutions toward *Responsible Prescribing*: Guidance



Opioid Prescribing Guidelines

March 2016

- Intended for primary care providers
- Applies to patients >18 years old in chronic pain outside of end-of-life care
- **Focuses on:**
 - Determining when to initiate or continue opioids for chronic pain
 - Opioid selection, dosage, duration, follow-up and discontinuation
 - Assessing risk and addressing harms of opioid use



Dowell, Compton, Giroir.
2019;322(19):1855–1856

Patient-Centered Reduction or Discontinuation of Long-term Opioid Analgesics:

The HHS Guide for Clinicians

Focuses on:

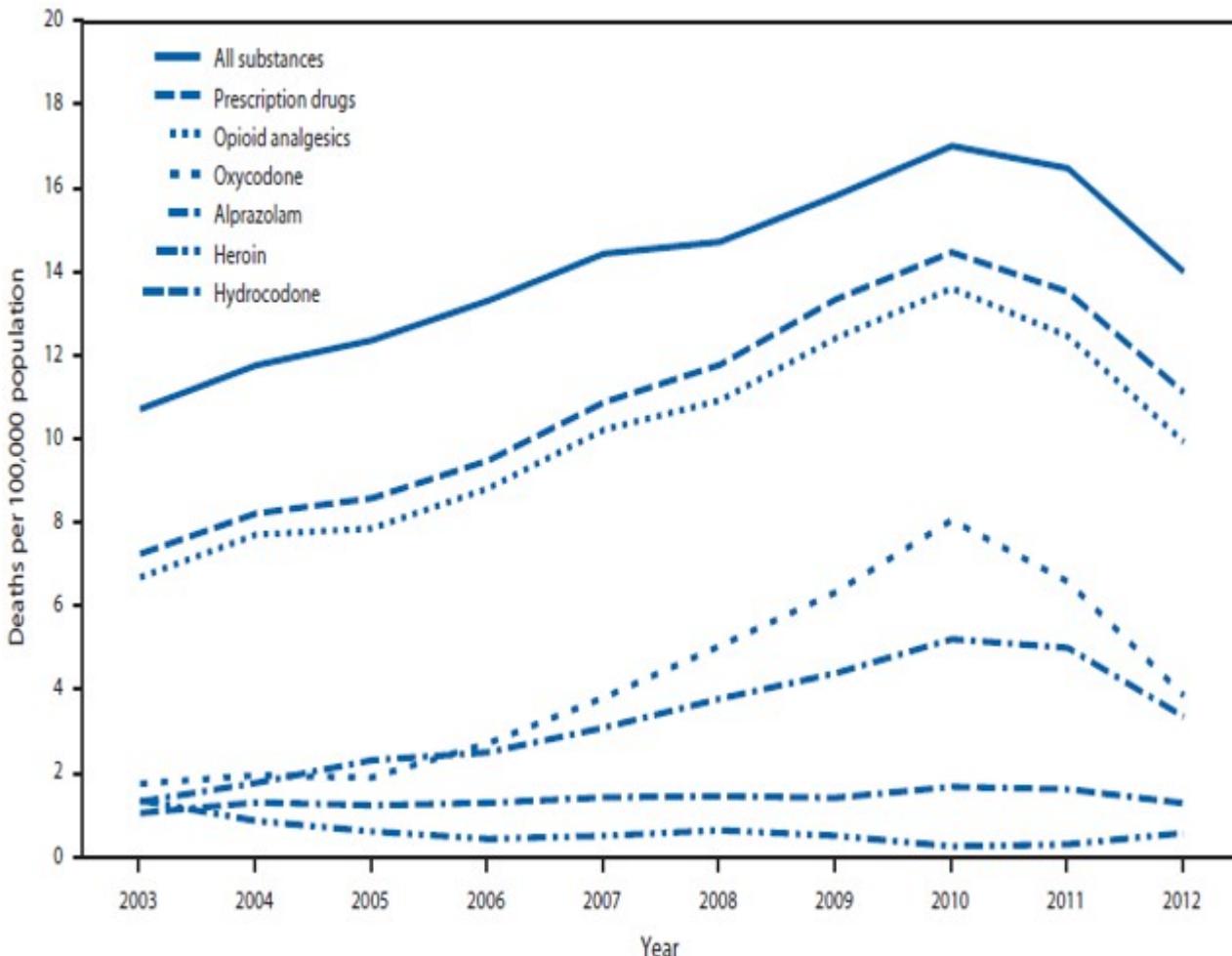
- (1) Criteria for reducing or discontinuing opioid therapy
- (2) Considerations prior to deciding to taper opioids
- (3) Ensuring patient safety prior to initiating taper
- (4) Shared decision-making with patients
- (5) Rate of opioid taper
- (6) Opioid withdrawal management
- (7) Behavioral health support
- (8) Challenges to tapering

Dosage changes, particularly rapid reductions in dose, can harm patients or put them at risk if not made in a thoughtful, deliberative, collaborative, and measured manner.

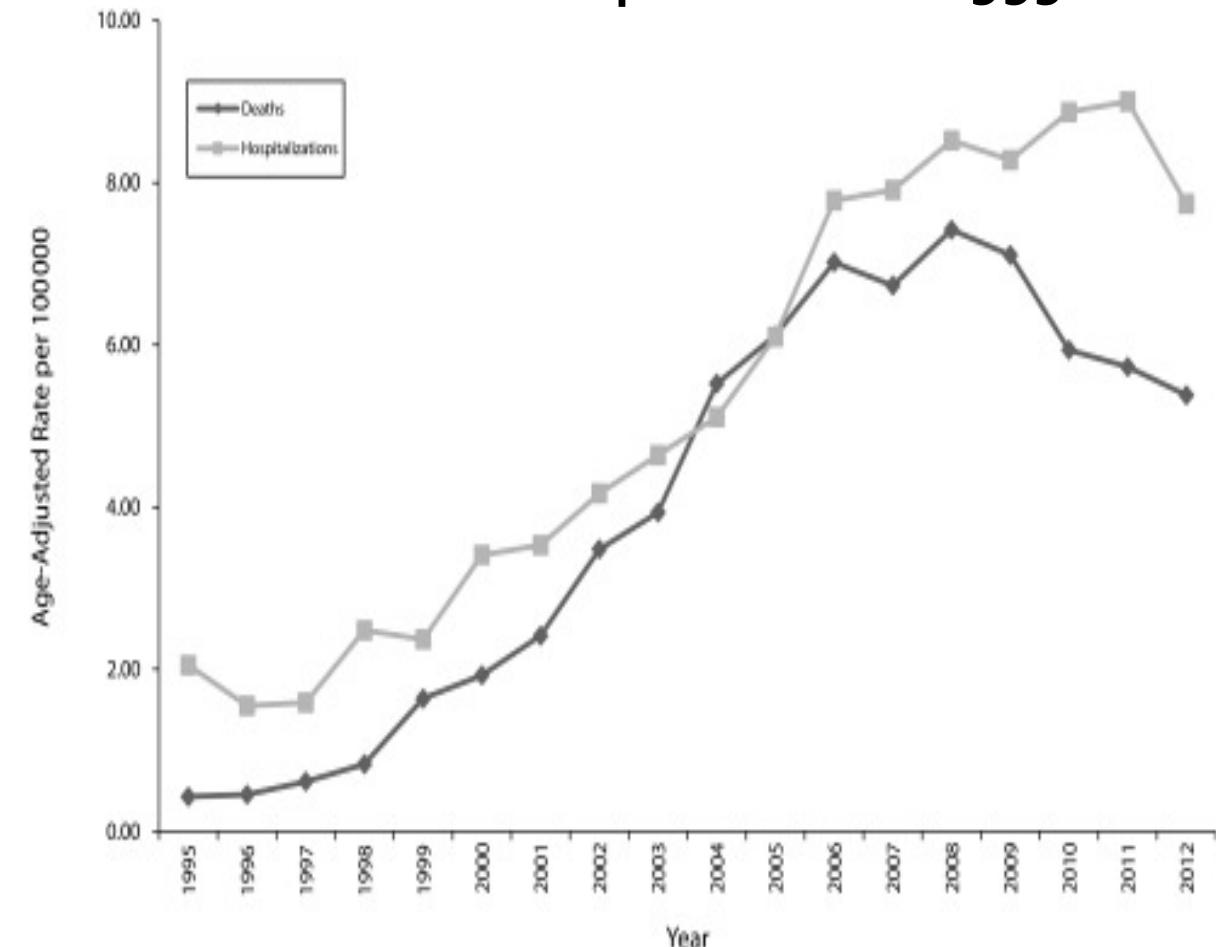
State Policy, Practice and Legal Changes Appear to Help:

FL and WA Examples of State Efforts to Address Opioid Analgesic Overdose

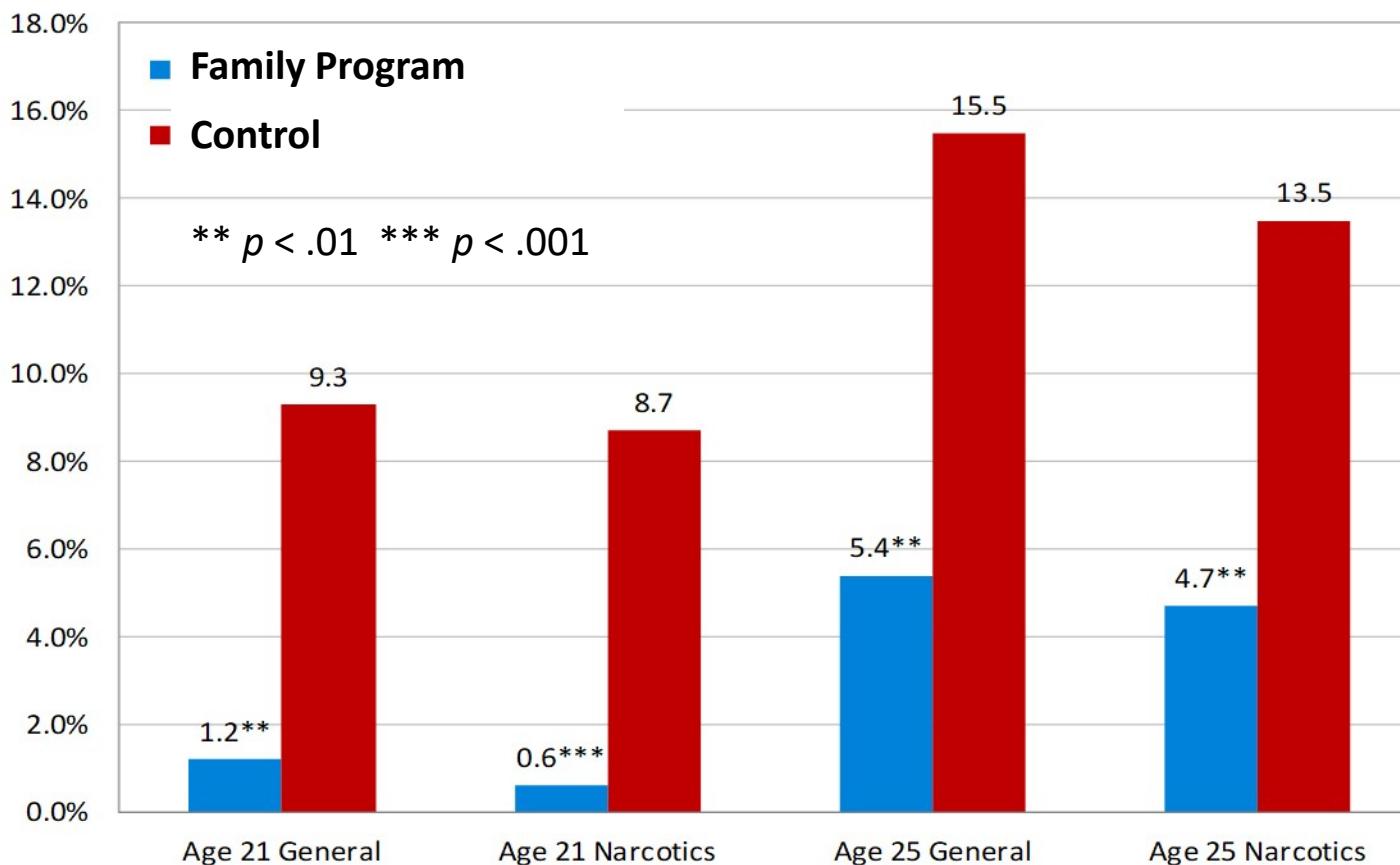
Florida Prescription-Related OD Deaths 2003-2012



Washington Prescription Opioids OD Deaths and Hospitalizations 1995-2012



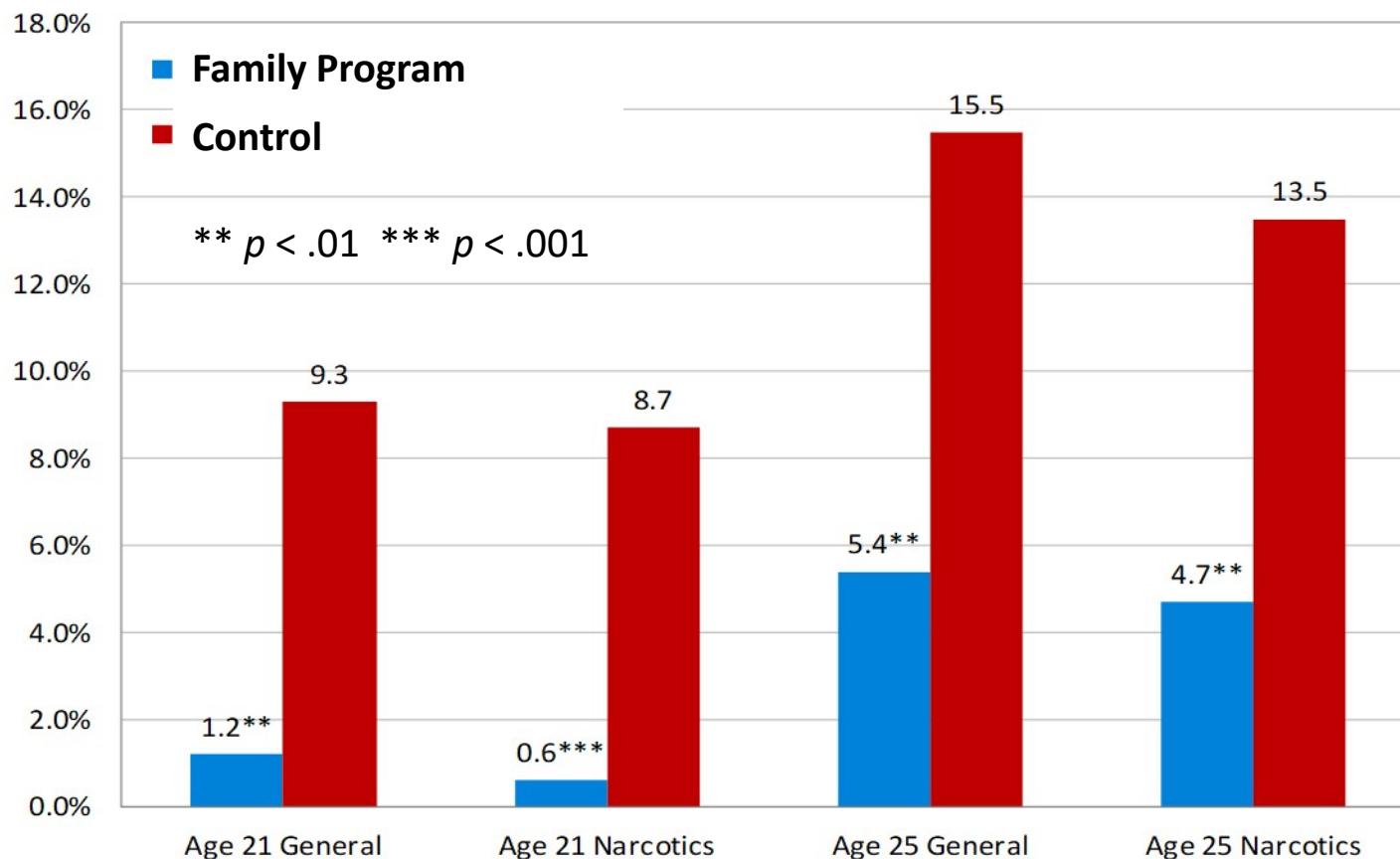
Universal Drug Use Prevention: Three studies suggest impact of universal prevention on Rx drug misuse



In this study, for 100 young adults in general population starting Rx misuse, only 35 young adults from an intervention community started.

Universal Drug Use Prevention:

Three studies suggest impact of universal prevention on Rx drug misuse



Targeting Youth to Prevent Later Substance Use Disorder: An Underutilized Response to the US Opioid Crisis

Compton WM, Jones CM, Baldwin GT, Harding FM, Blanco C, Wargo EM
American Journal of Public Health
2019;109:S185-S189.

In this study, for 100 young adults in general population starting Rx misuse, only 35 young adults from an intervention community started.

Notes: General=Misuse of opioids or CNS depressants or stimulants. Source: R Spoth et al. American Journal of Public Health 2013



Naloxone Distribution



Direct intervention to save lives:
Nasal spray and Auto-injector formulations



April 5, 2018

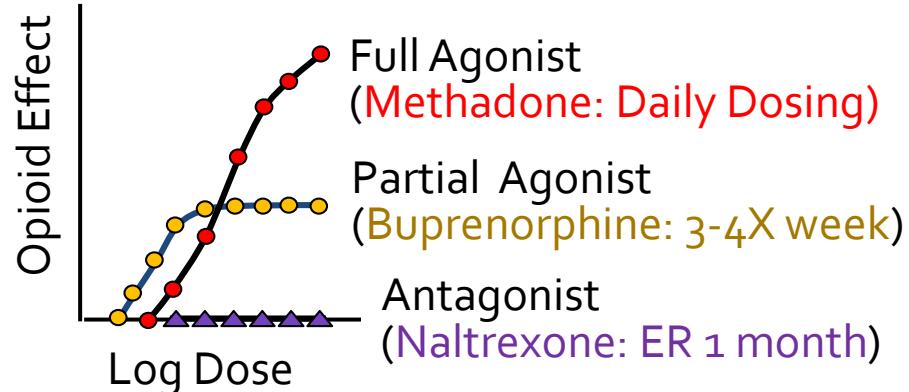
Surgeon General's Advisory on Naloxone and Opioid Overdose

I, Surgeon General of the United States Public Health Service, VADM Jerome Adams, am emphasizing the importance of the overdose-reversing drug naloxone. For patients currently taking high doses of opioids as prescribed for pain, individuals misusing prescription opioids, individuals using illicit opioids such as heroin or fentanyl, health care practitioners, family and friends of people who have an opioid use disorder, and community members who come into contact with people at risk for opioid overdose, **knowing how to use naloxone and keeping it within reach can save a life.**

BE PREPARED. GET NALOXONE. SAVE A LIFE.

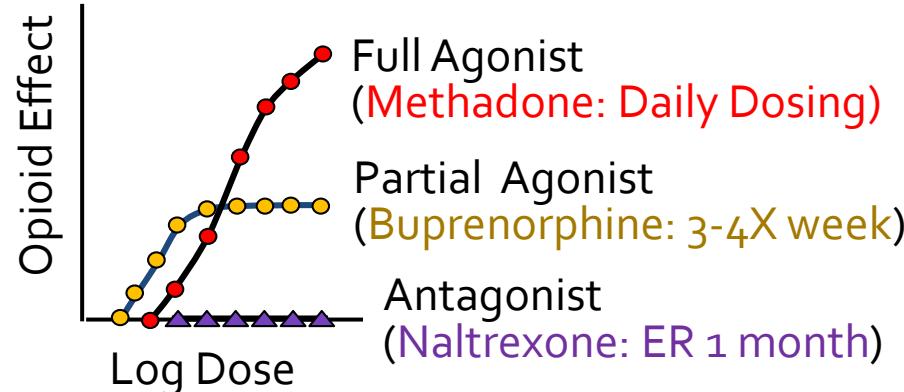


Medication Assisted Treatment (MAT)



- **DECREASES:**
 - Opioid use
 - Opioid-related overdose deaths
 - Criminal activity
 - Infectious disease transmission
- **INCREASES**
 - Social functioning
 - Retention in treatment

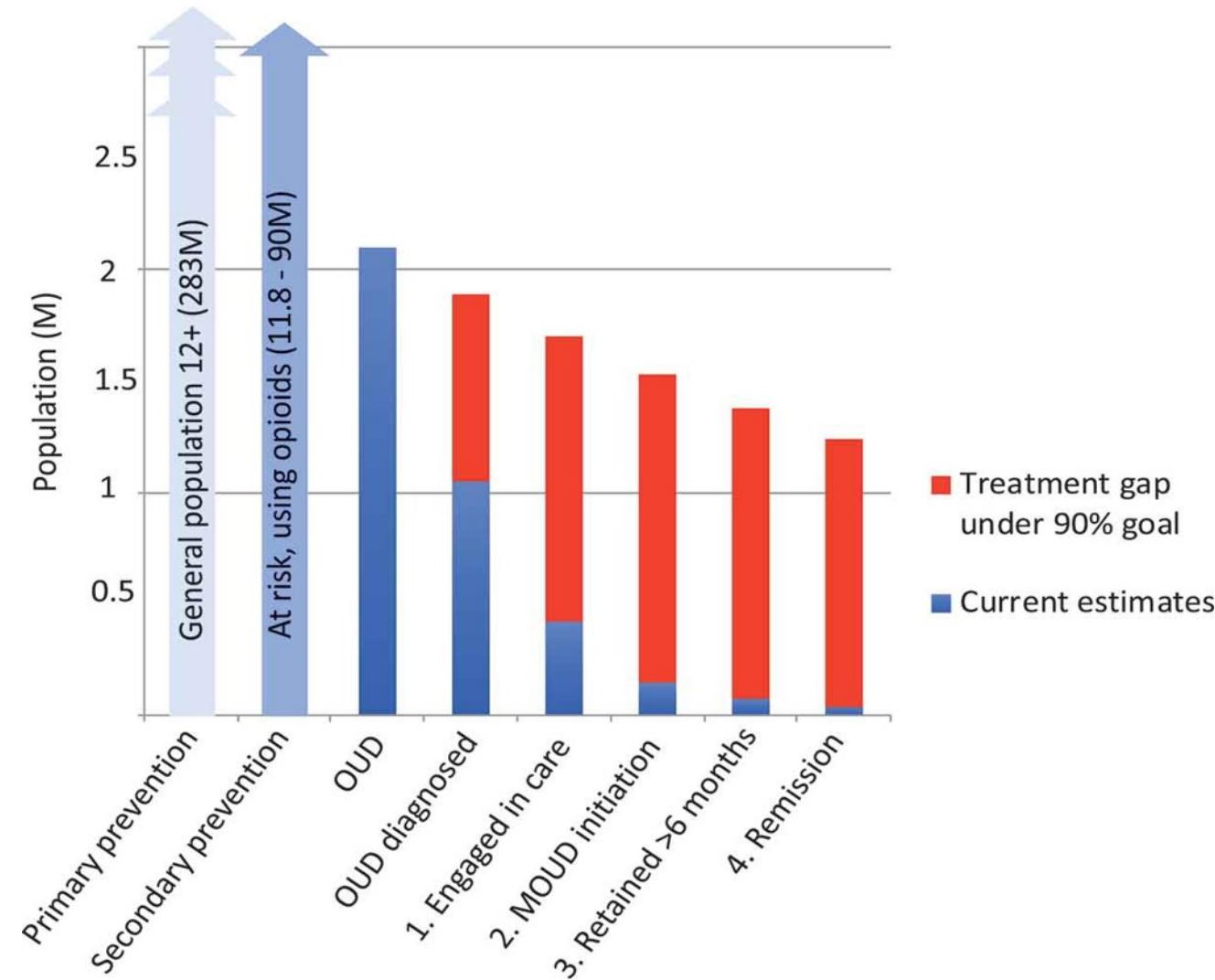
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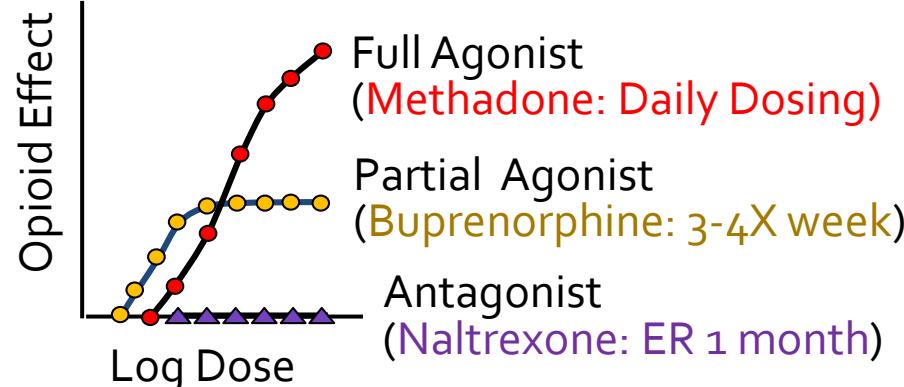
But MAT is highly underutilized!
Relapse rates are very high!

Opioid Treatment “Cascade of Care”



Williams, Nunes, Bisaga, Levin Am J Drug Alcohol Abuse 2019

Medication Assisted Treatment (MAT)



- DECREASES:
 - Opioid use
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HELPING END ADDICTION LONG TERMSM (HEAL) Initiative



ENHANCING PAIN MANAGEMENT

Advance Effective Treatments For Pain Through Clinical Research

Accelerate Discovery And Development Of Pain Treatments

IMPROVING TREATMENTS FOR MISUSE AND ADDICTION

Expand Therapeutic Options

Enhance Treatments for Infants with NAS/NOWS

Develop New and Improved Prevention & Treatment Strategies

Optimize Effective Treatments

Office of Science and Technology Policy

October 24, 2019



HEALTH RESEARCH AND DEVELOPMENT TO STEM THE OPIOID CRISIS: A NATIONAL ROADMAP

A Report by the

FAST TRACK ACTION COMMITTEE ON HEALTH SCIENCE AND
TECHNOLOGY RESPONSE TO THE OPIOID CRISIS

COMMITTEE ON SCIENCE

of the

NATIONAL SCIENCE & TECHNOLOGY COUNCIL

- 1. Biology and Chemistry of Pain and Opioid Addiction***
- 2. Non-Biological Contributors to Opioid Addiction***
- 3. Pain Management***
- 4. Prevention of Opioid Addiction***
- 5. Treatment of Opioid Addiction and Sustaining Recovery***
- 6. Overdose Prevention and Reversal***
- 7. Community Consequences of Opioid Addiction***
- 8. Opportunities for Enhanced Coordination***

Summary:

- The opioid crisis remains driven by illicit fentanyl, as stimulant overdose deaths are also rising
- Evidence-based prescribing practices and mitigation of co-occurring conditions are required to reduce harms
- Prevention interventions, naloxone distribution, and medication treatment are key to addressing the opioid crisis
- Ongoing research will build future solutions

www.drugabuse.gov

Science = Solutions

www.nih.gov/heal-initiative