



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

The landscape for evaluation of programs and policies to reduce the consequences of the opioid epidemic

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Acknowledgments

- ▶ Bloomberg American Health Initiative
- ▶ Bloomberg Opioid Initiative and partners (Pew Charitable Trusts, Vital Strategies, CDC Foundation)
- ▶ JHSPH colleagues for slides and knowledge (Brendan Saloner, Beth McGinty, Colleen Barry, Sachini Bandara, Alene Kennedy-Hendricks)

Outline

- ▶ What is the current state of the crisis?
- ▶ What are some potential solutions, and what is being done?
- ▶ What don't we know?
- ▶ How are statisticians involved, or could be involved?

The Opioid Epidemic Is Hard to Miss

The New York Times



The Class of 2000 'Could Have Been Anything'

The high school yearbook is a staple of teenage life. But for some, it reflects the devastating toll of the opioid crisis.

25°

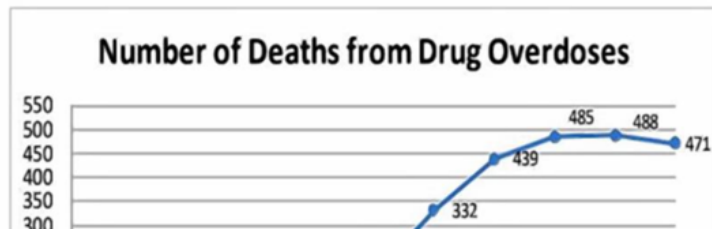
CONCORD MONITOR

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News > State

Toxic cocktail: Overdose deaths from mixing fentanyl with other drugs on the rise in N.H.



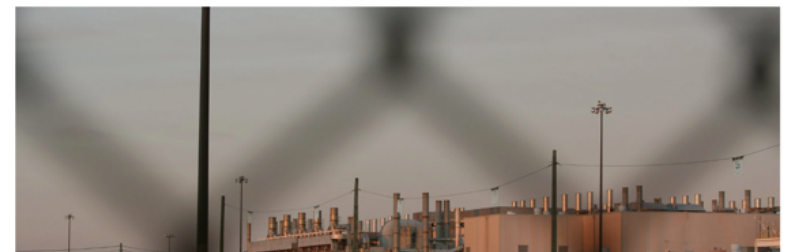
San Diego Walgreens Contributed to Opioid Crisis: DEA

Around the height of the opioid epidemic in 2009, drug giant Walgreens handled nearly 1 in 5 oxycodone and hydrocodone pills

The New York Times

Opioid Deaths Rise When Auto Plants Close, Study Shows

Research found 85 percent more deaths among those of prime working age in places where car factories closed compared with where they stayed open.



Drug Deaths in America Are Rising Faster Than Ever

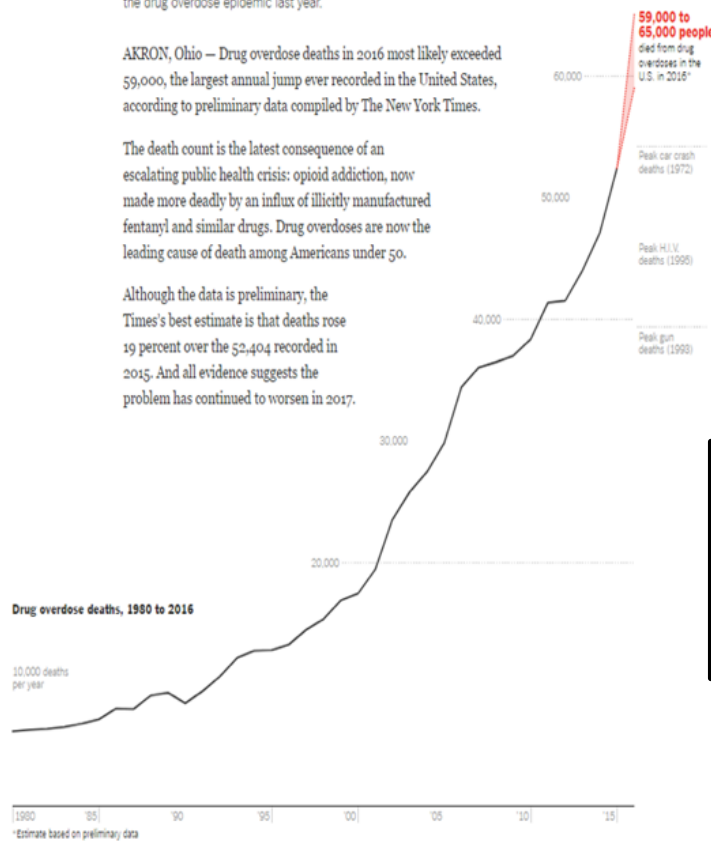
By JOSH KATZ JUNE 5, 2017

New data compiled from hundreds of health agencies reveals the extent of the drug overdose epidemic last year.

AKRON, Ohio — Drug overdose deaths in 2016 most likely exceeded 59,000, the largest annual jump ever recorded in the United States, according to preliminary data compiled by The New York Times.

The death count is the latest consequence of an escalating public health crisis: opioid addiction, now made more deadly by an influx of illicitly manufactured fentanyl and similar drugs. Drug overdoses are now the leading cause of death among Americans under 50.

Although the data is preliminary, the Times's best estimate is that deaths rose 19 percent over the 52,404 recorded in 2015. And all evidence suggests the problem has continued to worsen in 2017.



PUBLIC HEALTH

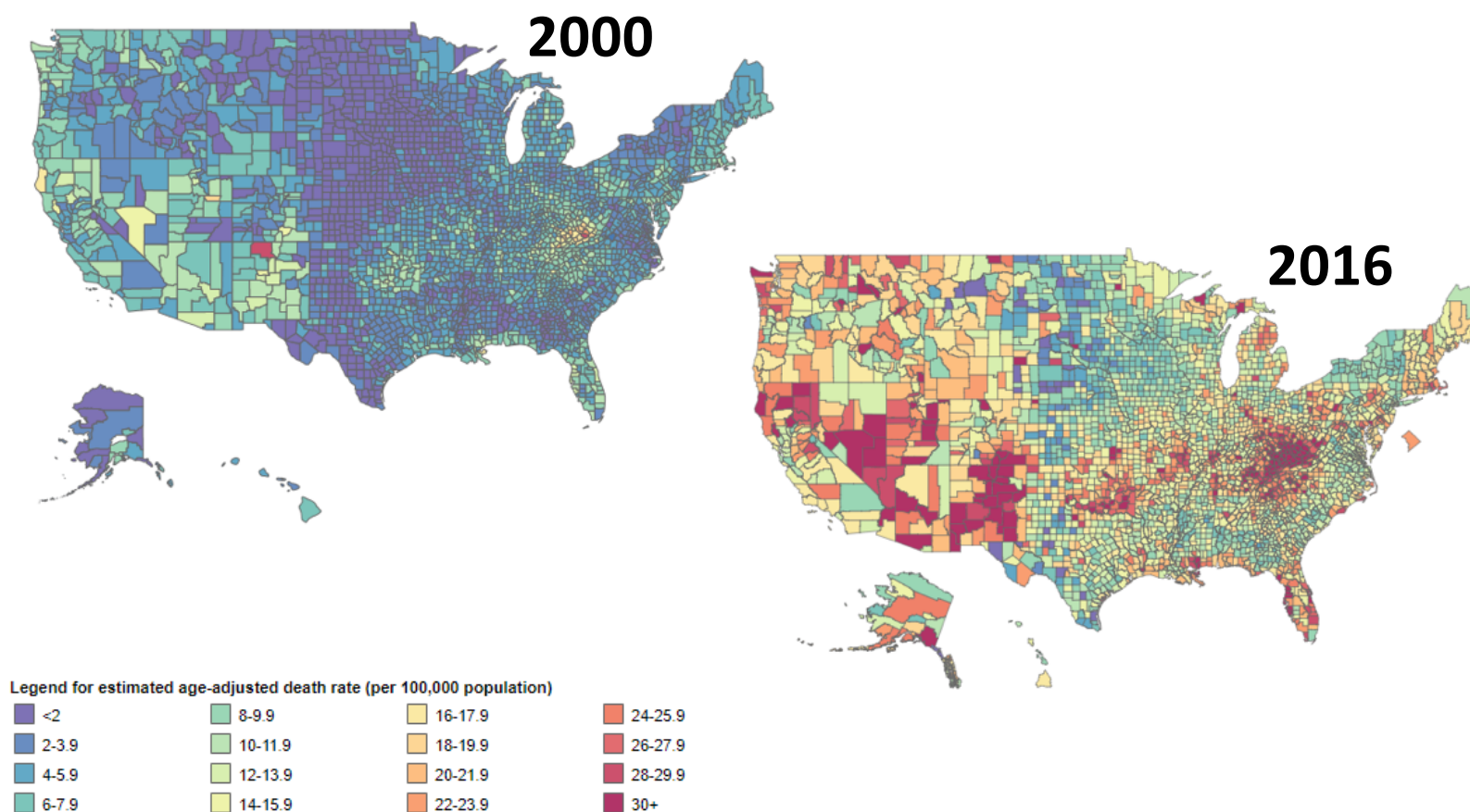
Life Expectancy In U.S. Drops For First Time In Decades, Report Finds

December 8, 2016 · 12:02 AM ET

Heard on Morning Edition

The New York Times

CDC drug overdose death count for 2017:
70,237



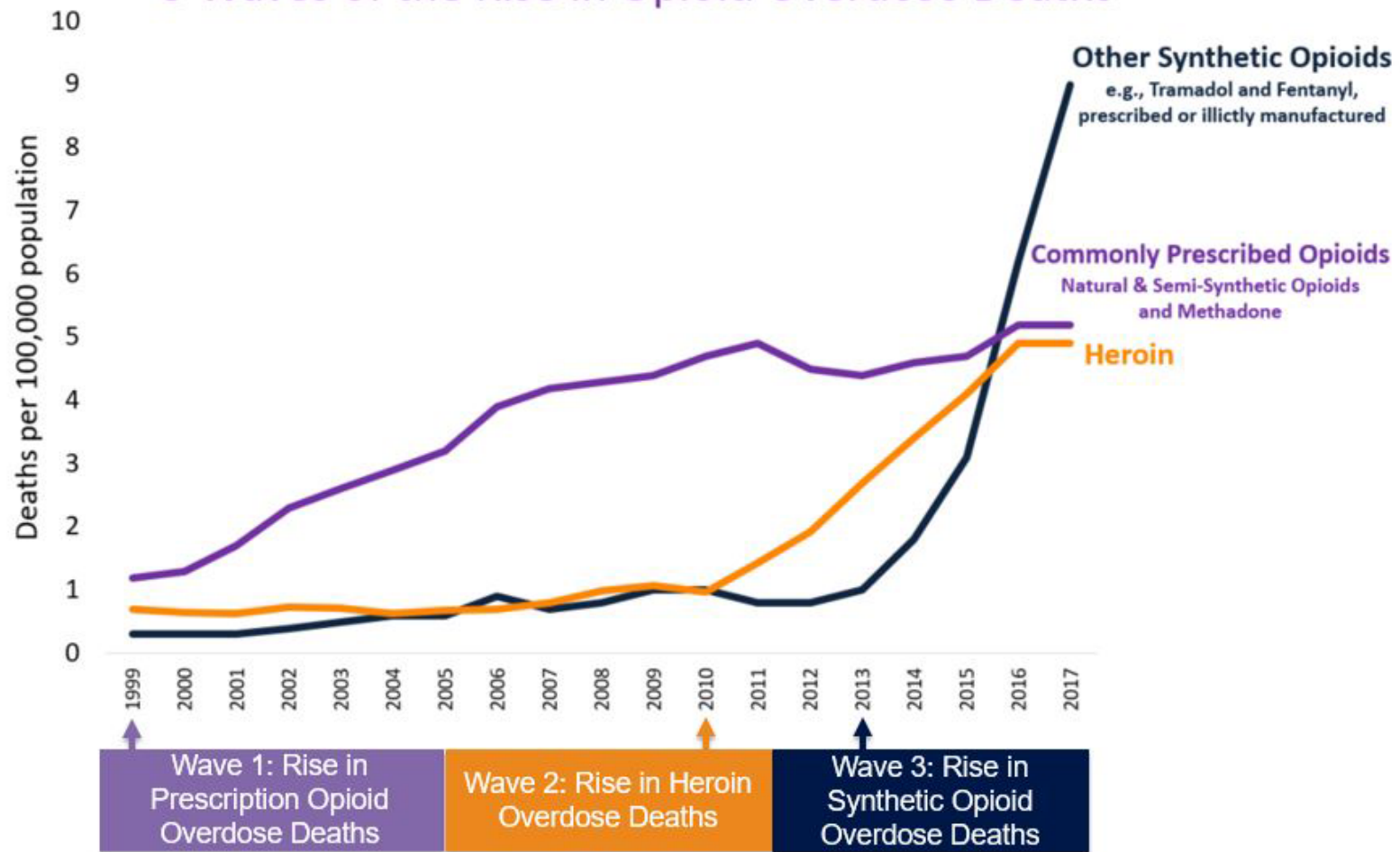
Source: <https://www.cdc.gov/nchs/data-visualization/drug-poisoning-mortality/>



Major Barriers to Combat Epidemic

1. High rates of stigma
2. Lack of understanding that opioid addiction is a chronic, relapsing illness, but responsive to evidence-based medication treatment
3. Poor access to medication treatment in most communities in America
4. The epidemic is evolving

3 Waves of the Rise in Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.

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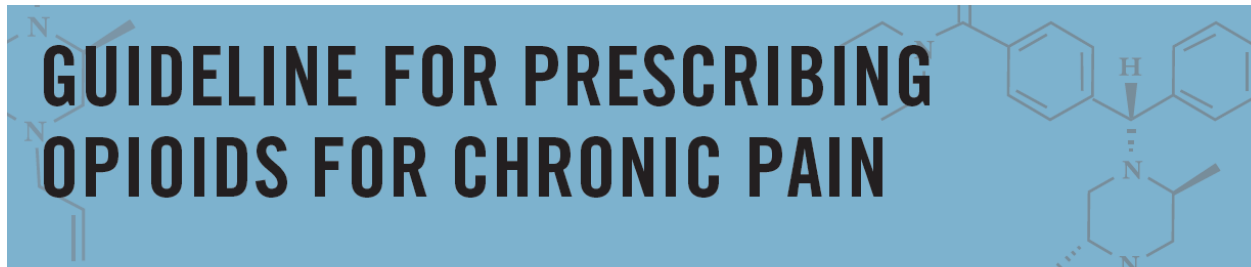
Evidence-based Responses to the Opioid Epidemic

1. Treatment Response: Improve availability of evidence-based pharmacotherapies for opioid use disorder
2. Rescue Response: Improve availability of lifesaving naloxone, other overdose prevention strategies
3. Prevention Response: Safer prescribing, dispensing, monitoring and disposal of opioids
4. Recovery Response: Better access to peer recovery coaches, other supports to help maintain people in long-term, evidence-based treatment

Solutions to the Epidemic?

Policies designed to curb opioid prescribing?

Clinical guidelines:



IMPROVING PRACTICE THROUGH RECOMMENDATIONS

CDC's *Guideline for Prescribing Opioids for Chronic Pain* is intended to improve communication between providers and patients about the risks and benefits of opioid therapy for chronic pain, improve the safety and effectiveness of pain treatment, and reduce the risks associated with long-term opioid therapy, including opioid use disorder and overdose. The Guideline is not intended for patients who are in active cancer treatment, palliative care, or end-of-life care.

State policies to curb opioid prescribing e.g.,: Prescription Drug Monitoring Programs, Prescribing cap laws, Pill Mill Laws

SUBSTANCE USE

By Yuhua Bao, Yijun Pan, Aryn Taylor, Sharmini Radakrishnan, Feijun Luo, Harold Alan Pincus, and
Bruce R. Schackman

Prescription Drug Monitoring Programs Are Associated With Sustained Reductions In Opioid Prescribing By Physicians

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

State Legal Restrictions and Prescription- Opioid Use among Disabled Adults

Ellen Meara, Ph.D., Jill R. Horwitz, Ph.D., J.D., M.P.P., Wilson Powell, A.B.,
Lynn McClelland, J.D., M.P.H., Weiping Zhou, M.S., A. James O'Malley, Ph.D.,
and Nancy E. Morden, M.D., M.P.H.

Opioid Overdose Deaths and Florida's Crackdown on Pill Mills

*Alene Kennedy-Hendricks, PhD, Matthew Richey, PhD, Emma E. McGinty, PhD, MS, Elizabeth A. Stuart, PhD, Colleen L. Barry, PhD, MPP, and
Daniel W. Webster, ScD, MPH*

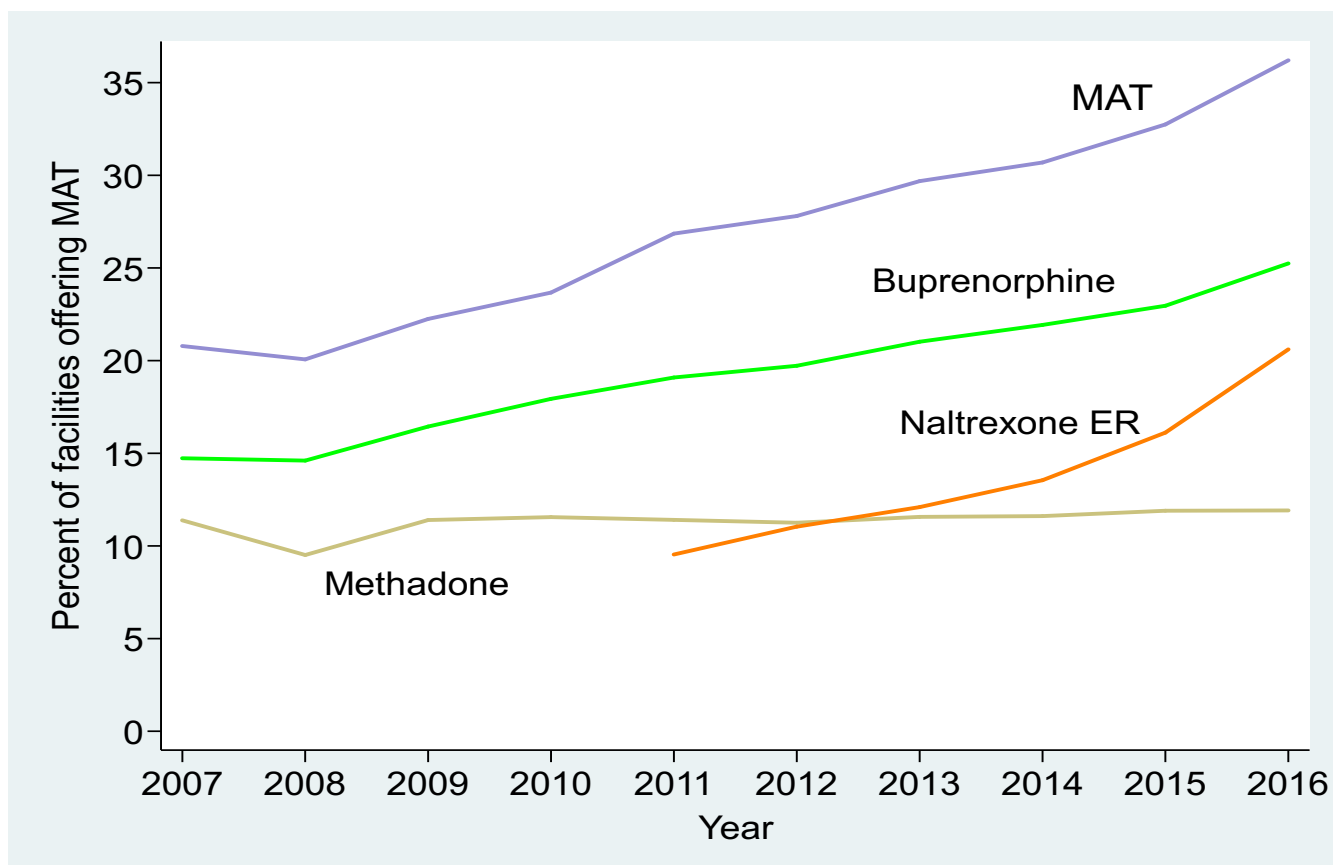
Medication treatment for opioid use disorder (OUD)

- Pharmacologic treatment for OUD include
 - opioid agonists - methadone or buprenorphine
 - opioid antagonists - naltrexone ER
- Can be used in conjunction with behavioral therapies



But: Poor Availability of Treatment

- ▶ Medication treatments (especially buprenorphine and methadone) cut overdose risk in half
- ▶ Many patients do not receive medications and, if they do, quality of care is often poor
- ▶ Many communities lack any treatment providers
- ▶ Stigma against medications is pervasive (“substitutes one addiction for another”), and news media often inaccurate in reporting



Harm Reduction Programs

- ▶ Harm reduction programs help people who use drugs to increase their safety:
 - ▶ Naloxone
 - ▶ Sterile syringes
 - ▶ Fentanyl test strips
- ▶ At their best, harm reduction programs offer comprehensive health care services and low-barrier entry to treatment
- ▶ Harm reduction programs are not adequately scaled-up in many communities or coordinated with other systems

SF safe injection sites expected to be first in nation, open around July 1

By Heather Knight | February 5, 2018 | Updated: February 6, 2018 8:26am

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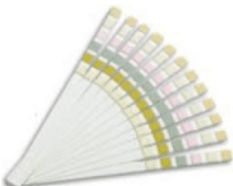


Photo: DARRYL DYCK, AP

Drug users interested in cheap test strips that can detect deadly fentanyl



By Kristi King (<https://wtop.com/author/kristi-king/>) | @KingWTOP (<https://twitter.com/KingWTOP>)
February 8, 2018 4:33 am



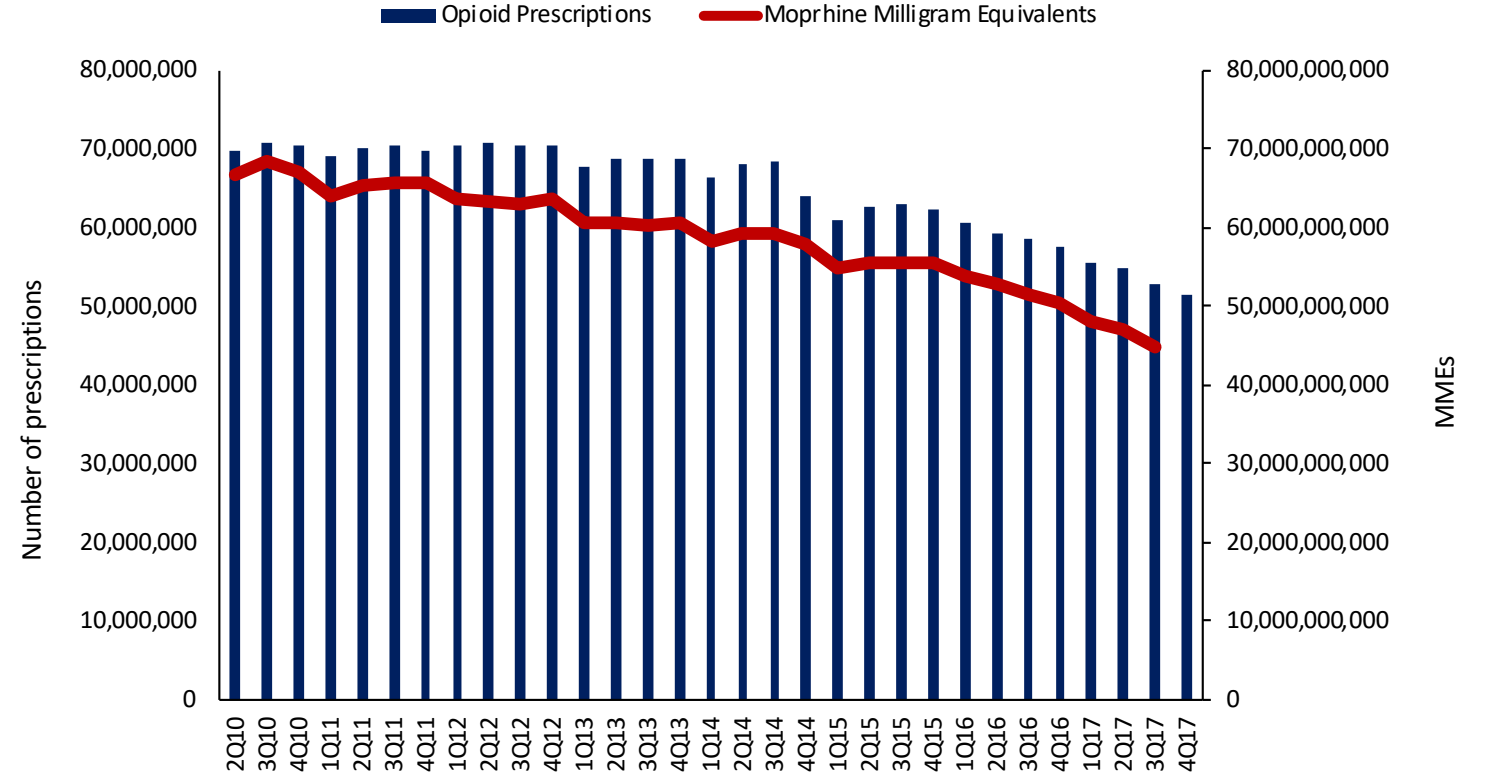
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**LEGAL INTERVENTIONS TO REDUCE OVERDOSE MORTALITY: NALOXONE ACCESS AND
OVERDOSE GOOD SAMARITAN LAWS**

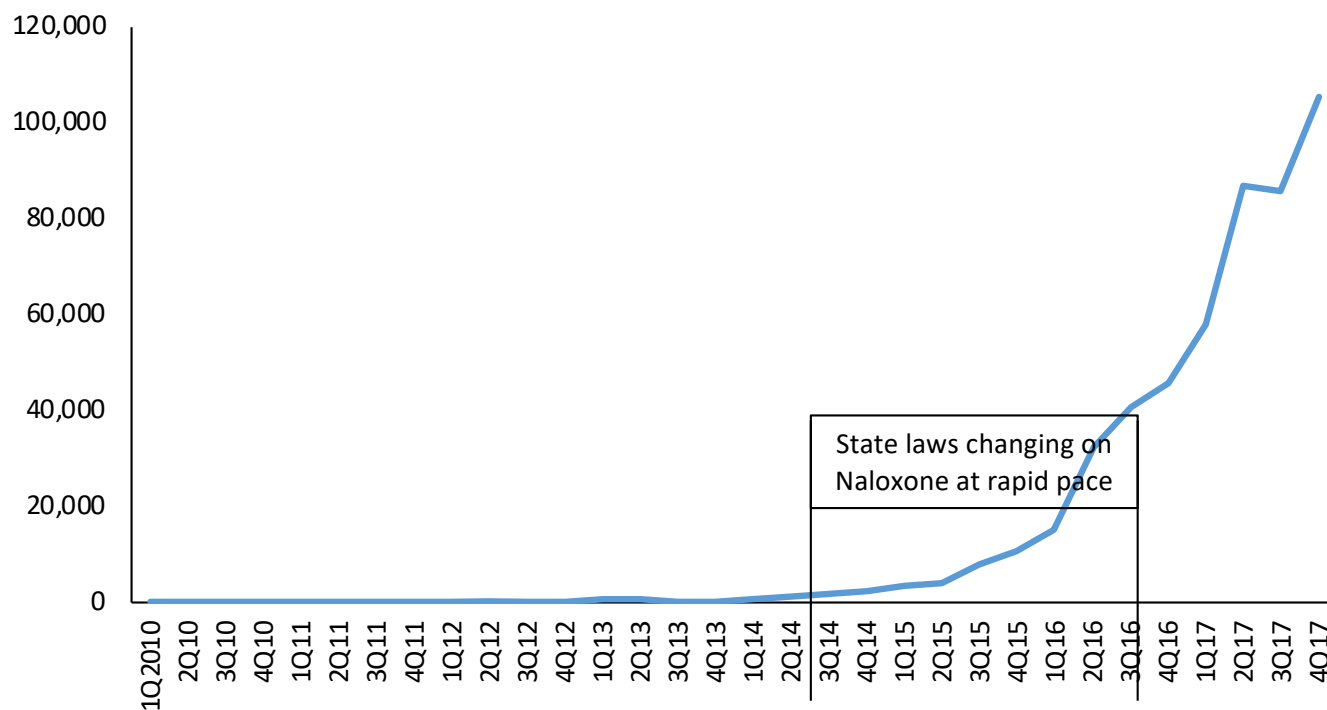
Opioid prescriptions going down



Source: IQVIA National Prescription Audit, data extracted 2016-2018



Increasing naloxone prescriptions



Source: IQVIA National Prescription Audit, data extracted 2016-2018



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A lot!

- ▶ This is a complex situation, with lots of moving parts
 - ▶ Epidemic itself evolving rapidly (e.g., concerns rising about methamphetamines)
 - ▶ LOTS of funds and funders
 - ▶ Initiatives at local, state, and federal levels
- ▶ Data is limited/missing
 - ▶ Hard to link across systems
 - ▶ Information on local drug supplies limited (e.g., fentanyl potency)
 - ▶ Very little known about individual's transitions from different states (e.g., likelihood of relapse, transitions from opioids to heroin or back), especially over long time spans
 - ▶ Medical examiner data often challenging; not always systematized
- ▶ Have some knowledge about what works, but much unknown
 - ▶ Which state policies are most effective?
 - ▶ What are the most effective things for local areas to do?

Policy context complex

Recent relevant Congressional action:

- Comprehensive Addiction and Recovery Act (CARA) - July 2016
- 21st Century Cures – Dec 2016
- International Narcotics Trafficking Emergency Response by Detecting Incoming Contraband with Technology Act (INTERDICT) – Jan 2018
- Substance use-disorder prevention that promotes opioid recovery and treatment for patients and communities act (SUPPORT) – Oct 2018

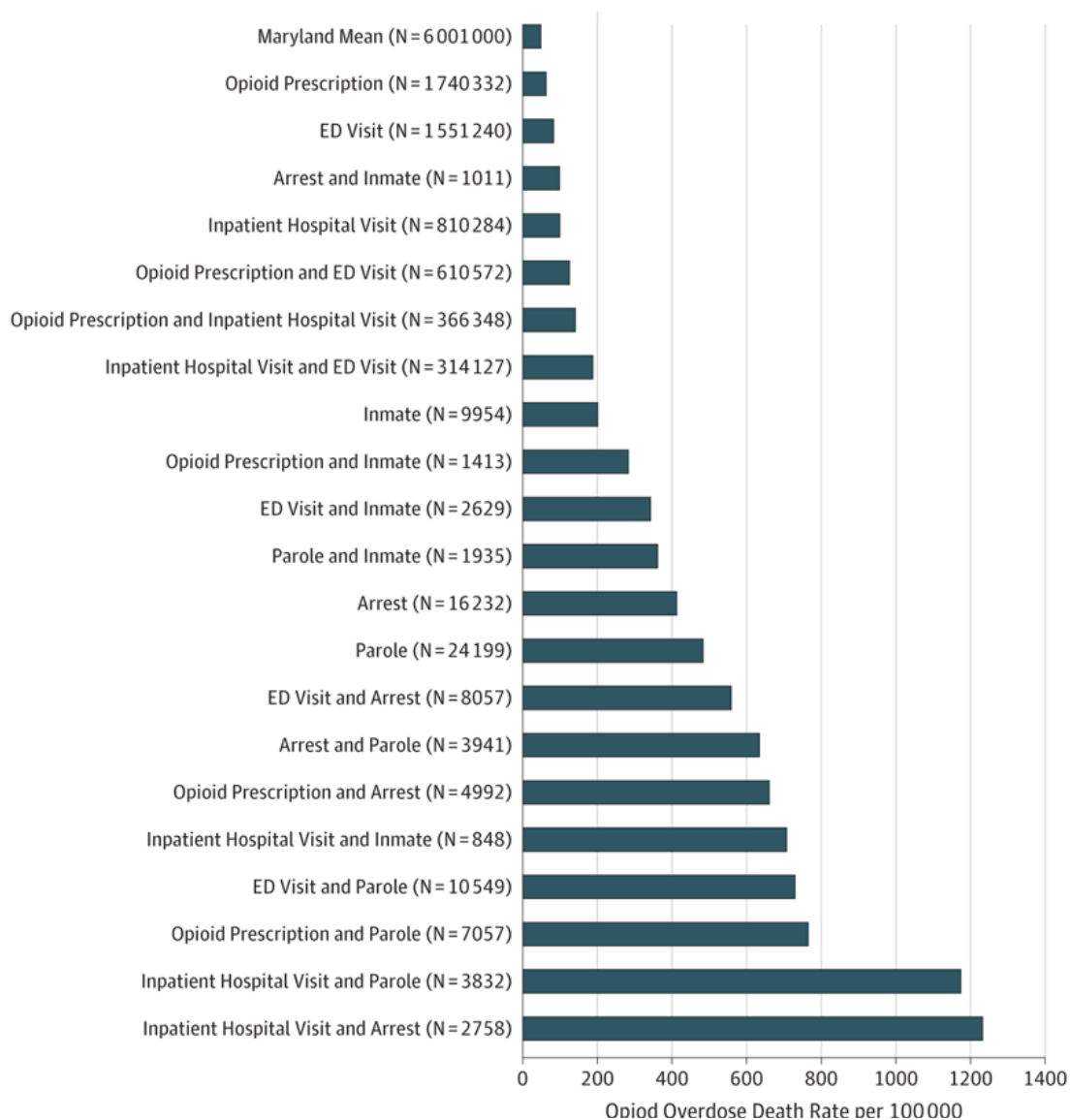
Federal drug control budget (FY 2019)

Total \$33 Billion. Major pieces:

- Dept of Health and Human Services: \$14,822 million
- Department of Justice: \$8,290 million
- Department of Homeland Security: \$5,120 million
- Plus 12 other agencies!

More specific federal initiatives...not exhaustive!

- ▶ Drug Free Communities Program
- ▶ School Climate Transformation Grants (\$55 million)
- ▶ High Intensity Drug Trafficking Areas (HIDTA)
- ▶ Overdose Data 2 Action (OD2A; CDC): \$900m, to 47 states and 16 counties and cities
- ▶ Substance use prevention and treatment block grant (\$1.9 billion); to 60 communities
- ▶ State opioid response grants (\$1.5 billion); to 10 of the hardest hit communities
- ▶ Health Resources and Services Administration Community Health Center (\$350 million)
- ▶ Rural Communities Opioid Response Program (RCORP); \$24 million to 120 projects
- ▶ CMS facilitating Medicaid expansion in 36 states + DC, with enhanced funding for mental health and substance use
- ▶ Additional NIH funding for research (e.g., HEAL, including intensive efforts in 4 HEAL states)
- ▶ Other players: States, Counties, Cities, Arnold Ventures, Bloomberg Philanthropies, etc.



Combining information from multiple sources can give valuable insights, especially combining hospital and criminal justice data

Eisenberg, M. D., Saloner, B., Krawczyk, N., Ferris, L., Schneider, K. E., Lyons, B. C., & Weiner, J. P. (2019). Use of Opioid Overdose Deaths Reported in One State's Criminal Justice, Hospital, and Prescription Databases to Identify Risk of Opioid Fatalities. *JAMA internal medicine*.

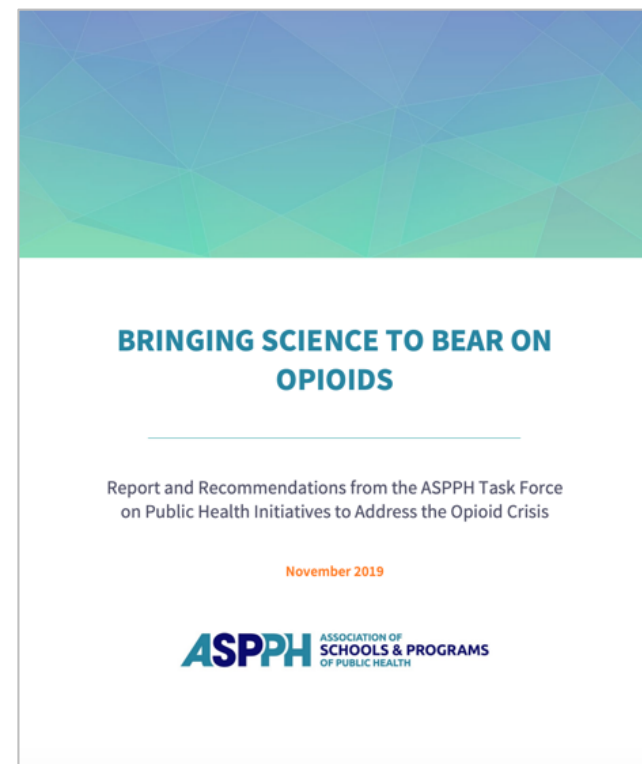
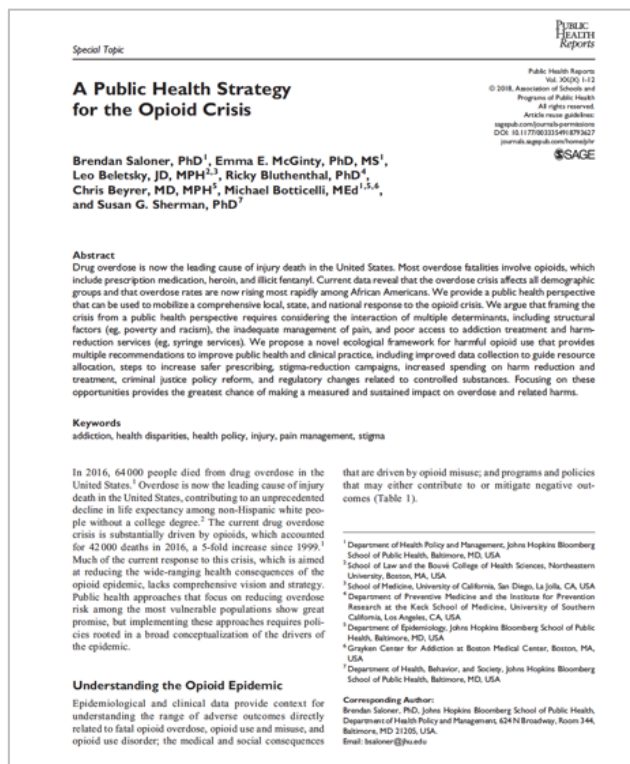
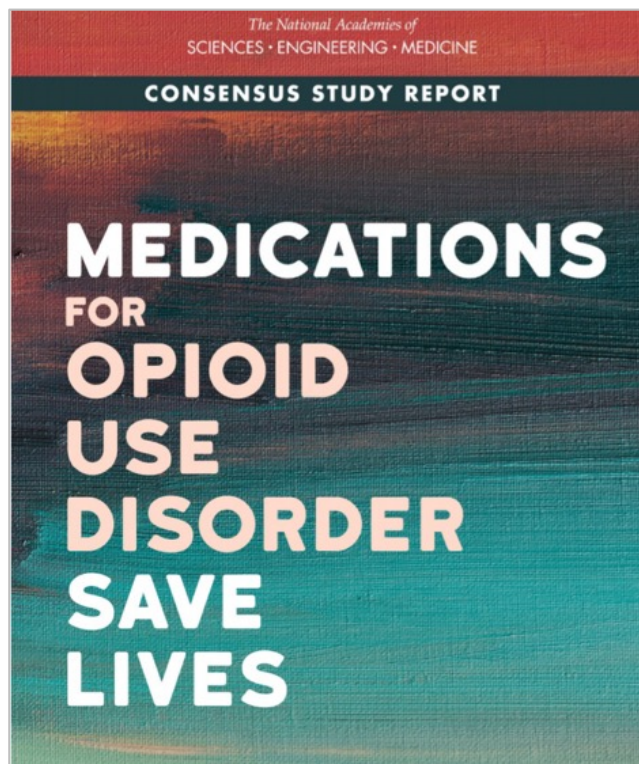
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Lots of opportunities for work as statisticians

- ▶ Innovative methods for combining data
 - ▶ See work by Carol DeFrances, Shannon Harrer, Benjamin Tyndall
- ▶ Systems models
 - ▶ See work by Magdalena Cerdá
- ▶ Spatial and other models, especially around drug supply
 - ▶ See work by David Kline, Staci Hepler, Lance Waller, Colin Hubbard, Gregg Gonsalves
- ▶ Comparative interrupted time series methods for state or local policy evaluation
 - ▶ See work by Laura Hatfield, Avi Feller, Beth Ann Griffin, Megan Schuler, Beth McGinty

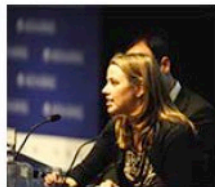
To learn more...



And to talk up work and opportunities at Hopkins...post-doc openings currently too!

Reach out @lizstuartdc, estuart@jhu.edu

**Center for Mental Health and Addiction
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<https://www.jhsph.edu/research/centers-and-institutes/center-for-mental-health-and-addiction-policy-research/index.html>

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challenge... again.**