

# Opioids and HIV: Effects of the COVID-19 pandemic.

**Jermaine D. Jones PhD**

Associate Professor of Clinical Neurobiology  
Columbia University Irving Medical Center &  
New York State Psychiatric Institute

# Disclosures

“This program is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling \$3,845,677 with zero percentage financed with nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS or the U.S. Government.”

# Disclosures continued

- In the past three years, Dr. Jones has received compensation in the form of partial salary support from studies supported by Cerecor Inc. and BioXcel Therapeutics, has served as a consultant to Alkermes, is the recipient of an investigator-initiated grant from Merck Pharmaceuticals, and received honoraria from the World Health Organization.

# Objectives

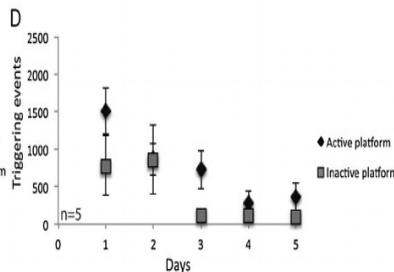
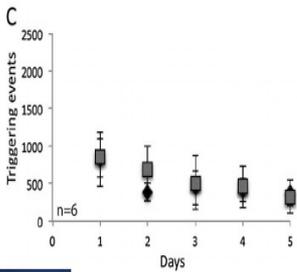
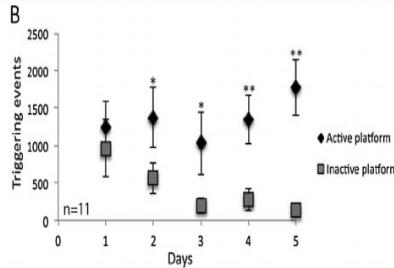
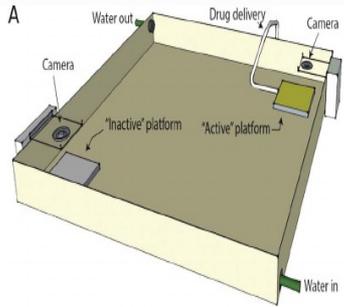
- Provide an understanding of the state of the opioid use disorder and HIV prior to the COVID-19 pandemic.
- Learn what measures were put in place to protect these populations during the pandemic.
- Understand the impact of COVID-19 on these vulnerable populations.
- Described what we learned about meeting the needs of those with HIV and opioid use disorder.

# Why People Use Opioids

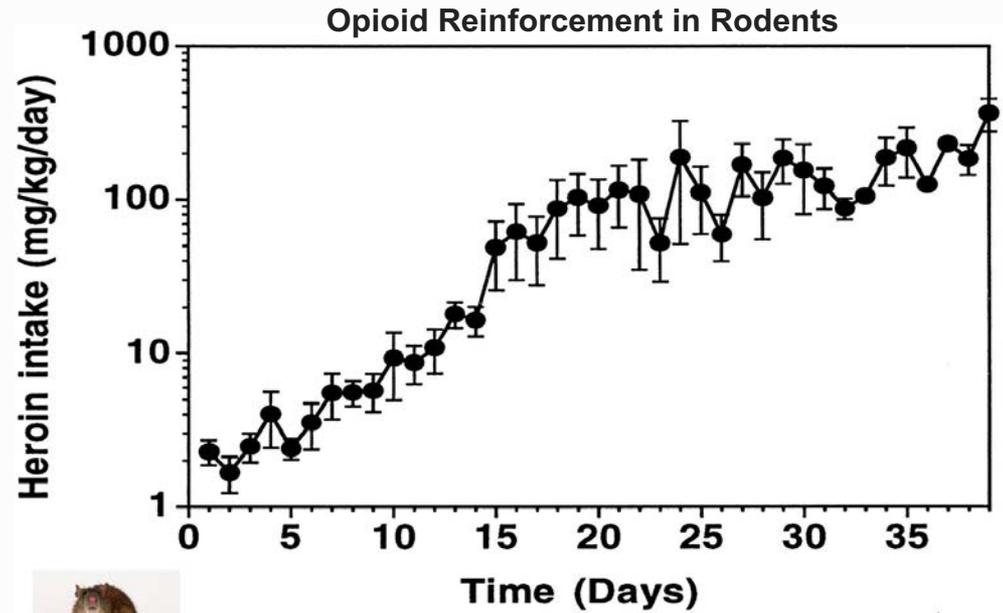
Receptor-Level Opioid Effects	
Mu <sub>1</sub> (μ <sub>1</sub> )	Analgesia, Euphoria
Mu <sub>2</sub> (μ <sub>2</sub> )	Constipation, Respiration
Kappa	Spinal Analgesia, Dysphoria, Neuroendocrine Function, Feeding, Temperature Control
Delta	Motor integration, Analgesia, Cognitive Function

# Positive and Negative Reinforcement

## Opioid Reinforcement in Zebrafish



Bosse and Peterson, 2017



Sim-Selley et al., 2000



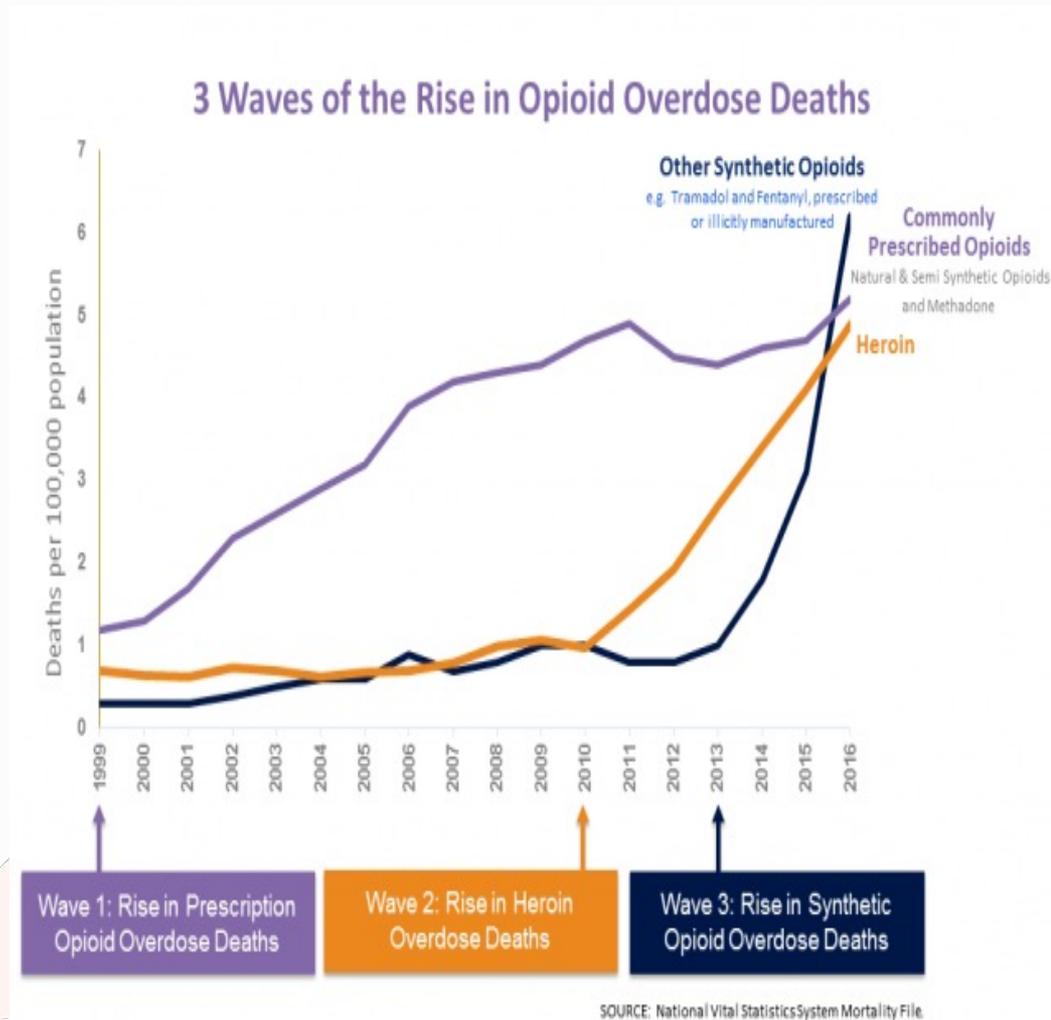
Elevated Plus-Maze Measure of Stress/Anxiety

# Contributors to Problematic Use

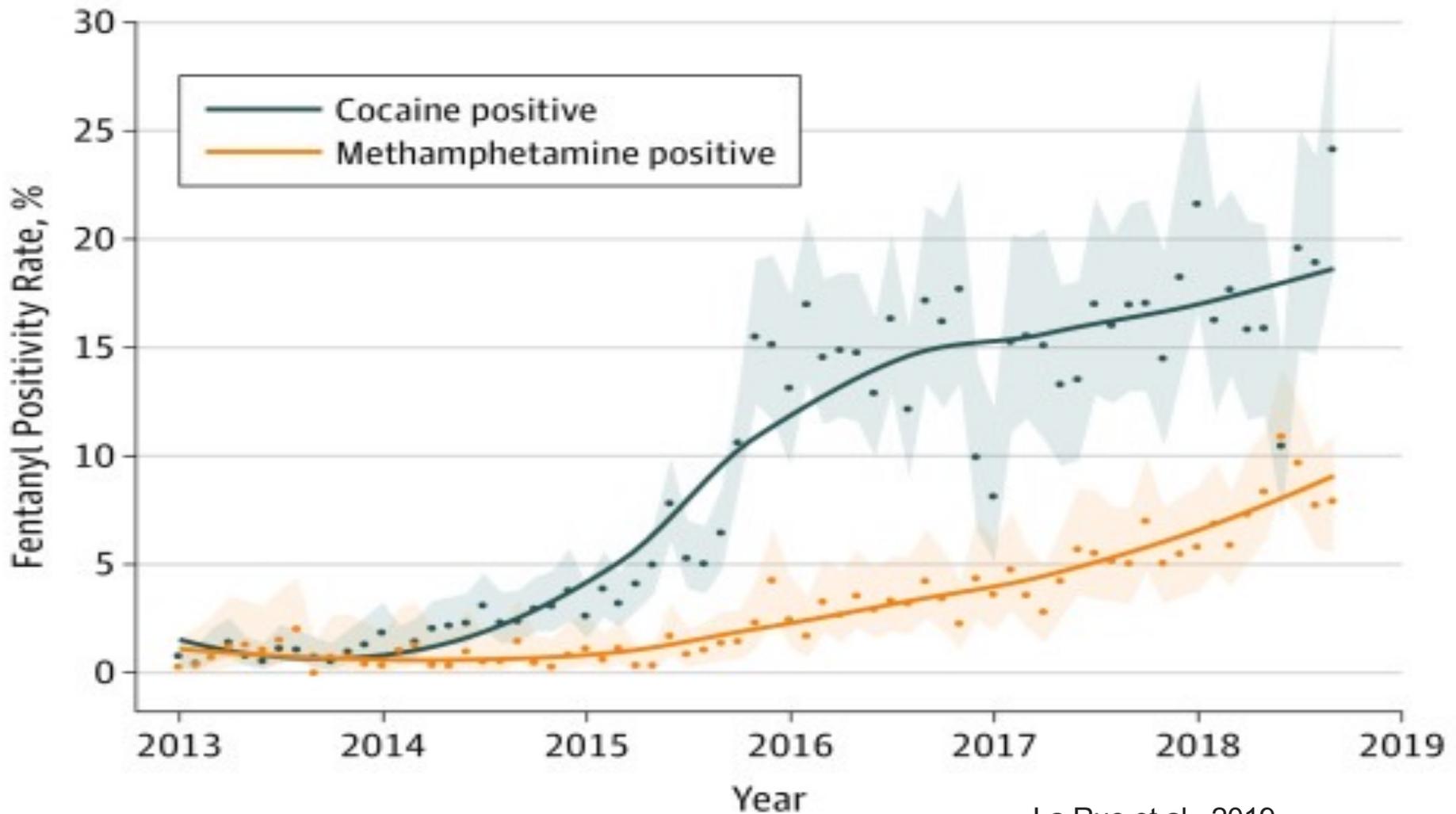
- Tolerance: The need for increasing amounts in order to achieve the same effect.
  - Analgesic tolerance is commonly seen in management of chronic pain with opioids.
- Dependence: A physiologic adaptation such that removing a drug precipitates an abstinence syndrome.
  - Opioid dependence is characterized by the appearance of withdrawal symptoms, usually within 12 hours of abstinence from opioids.
    - restlessness ● yawning ● lacrimation ● rhinorrhea ● chills ● sweating ● nausea
    - vomiting ● diarrhea ● muscle pain.

# Understanding the Epidemic

- **Wave 1:** Increased prescribing of opioids in the 1990s and increases in Rx Opioid deaths
- **Wave 2:** Increased overdose deaths involving heroin in 2000s.
- **Wave 3:** Increased overdose deaths involving synthetic opioids (Fentanyl).

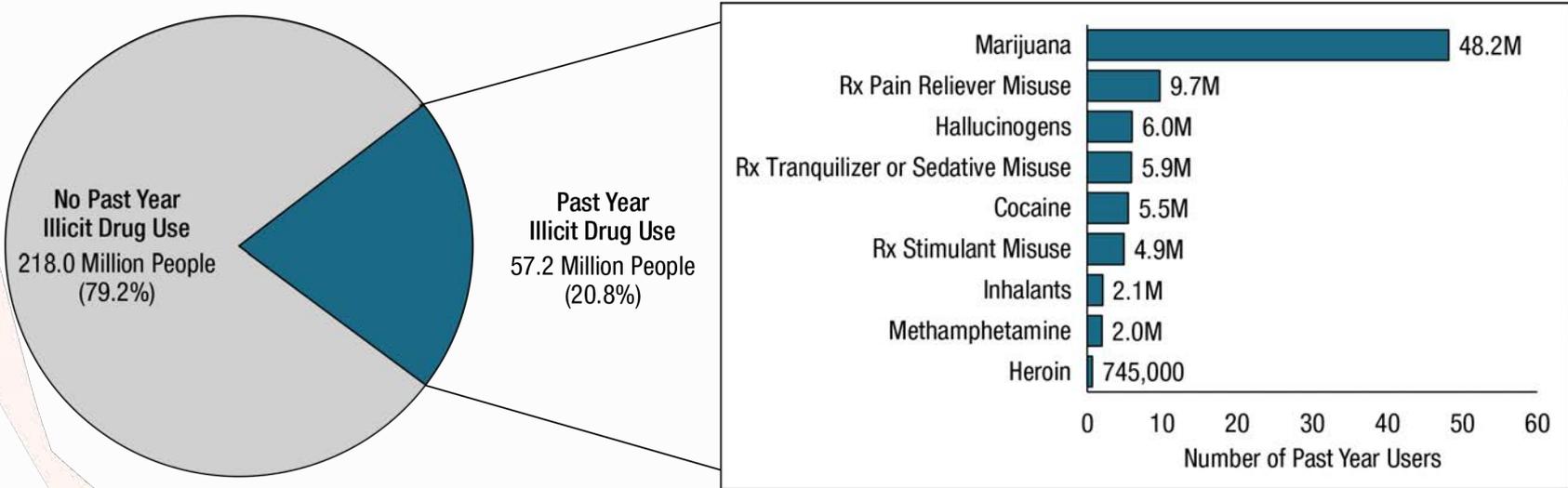


# A Fourth Wave?



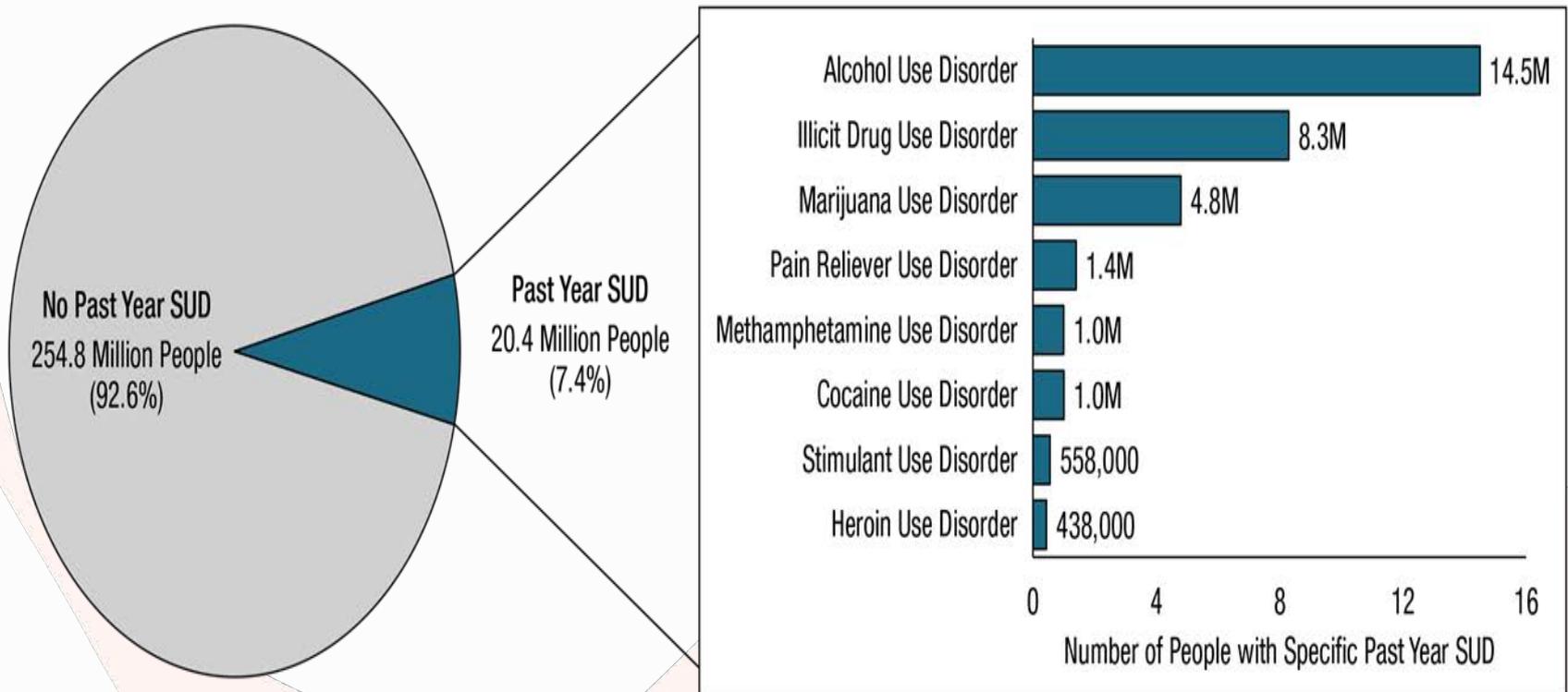
La Rue et al., 2019

# Pre-Pandemic: Substance Use



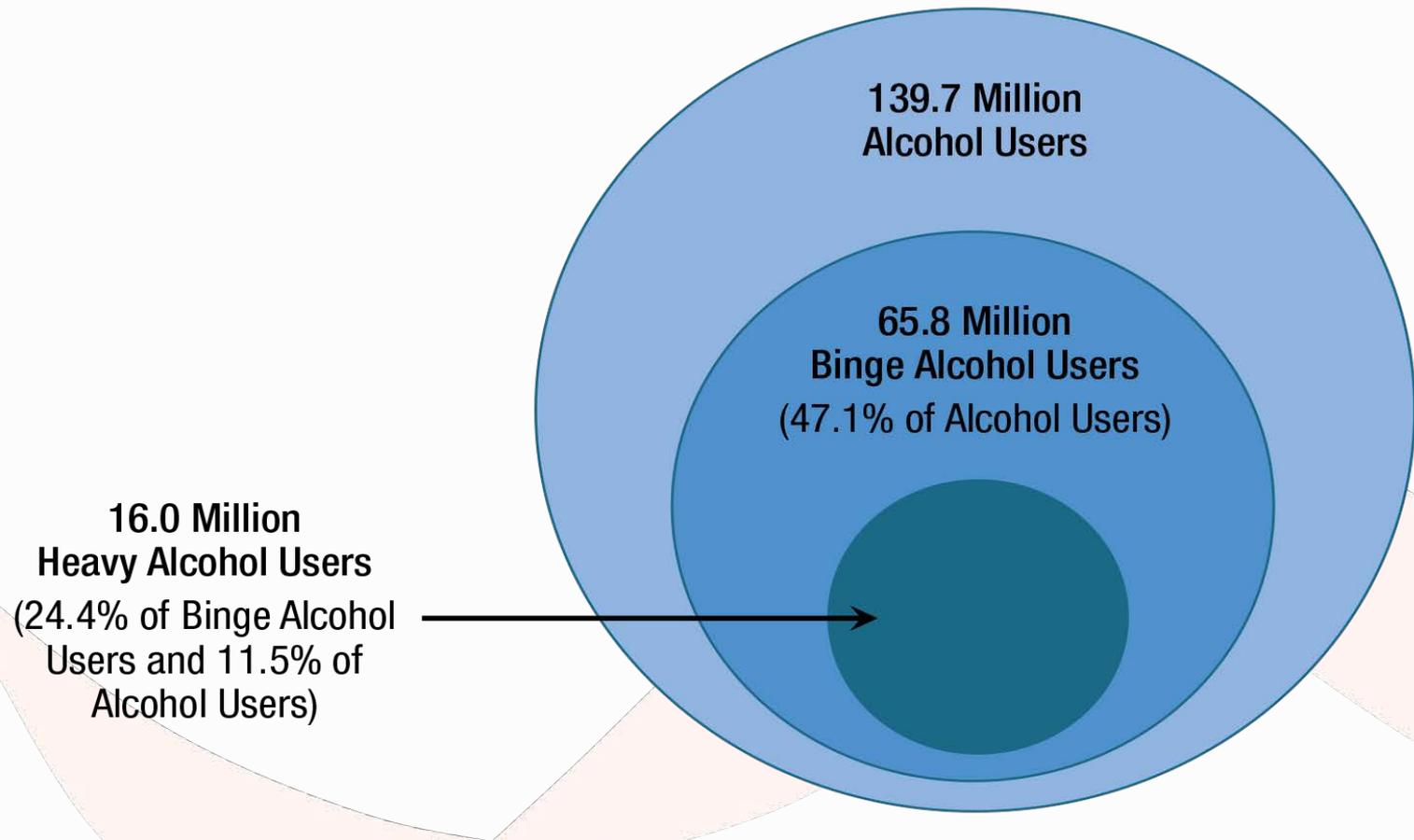
Past Year Substance Use among People Aged 12 or Older  
National Survey of Drug Use and Health 2019

# Pre-Pandemic: Substance Use Disorder



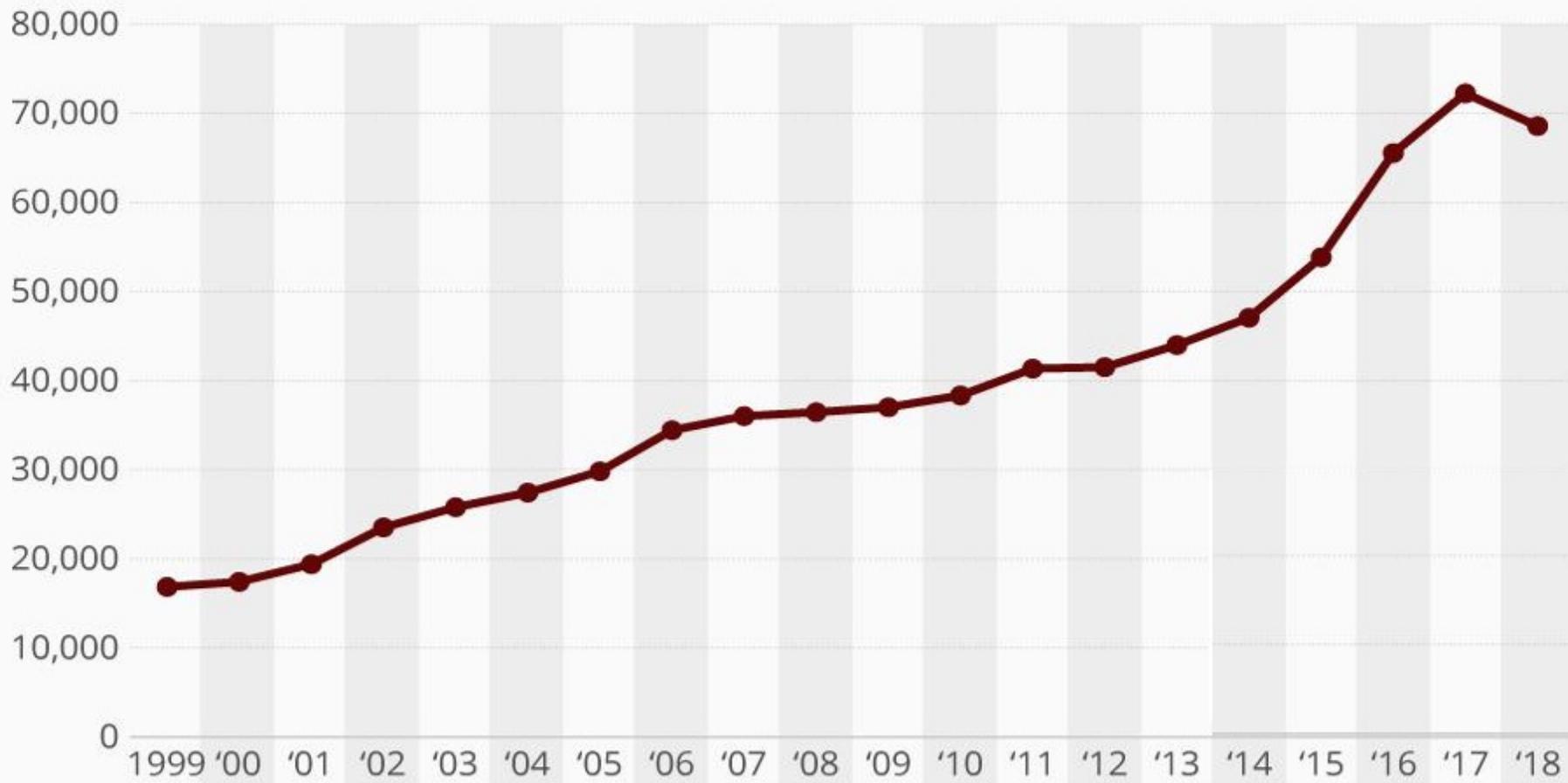
Past Year Substance Use Disorder among People Aged 12 or Older  
National Survey of Drug Use and Health, 2019

# Alcohol Use among People Aged 12 or Older: 2019



National Survey of Drug Use and Health, 2019

# Pre-Pandemic: Overdose



Overdose Deaths in the U.S. From 1999-2018

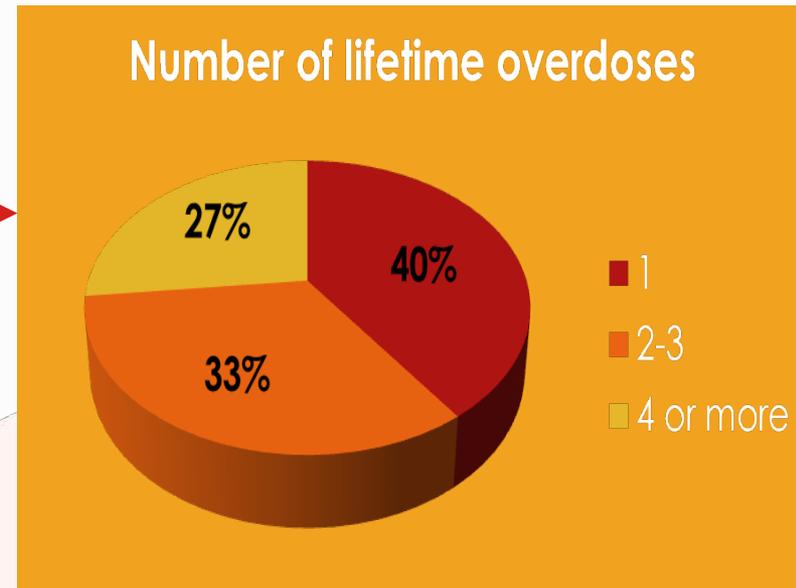
Source: CDC.GOV

# Non-Fatal Overdose (OD)

- U.S. hospital OD discharges increased substantially during the past two decades.
  - 2016: 58,850 patients with non-fatal opioid overdose hospital admission (Petersen et al., 2019).

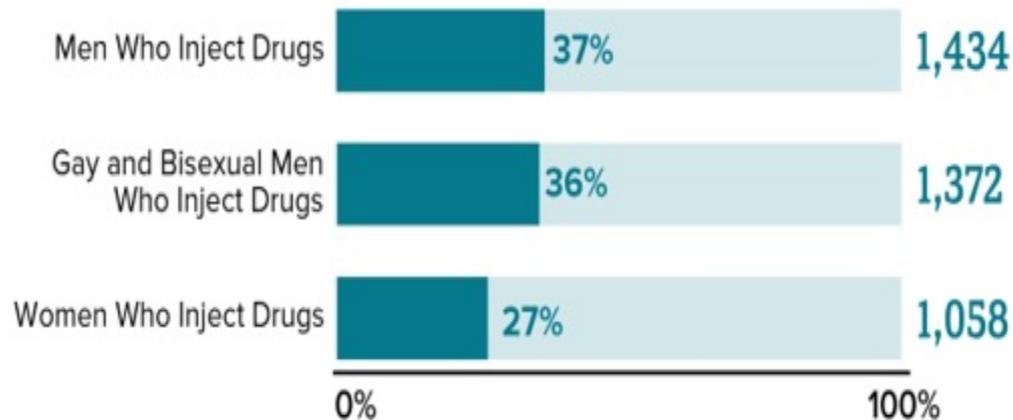
- 41.5% of users report ever experiencing an opioid overdose (Wagner et al., 2015).

- Of patients administered naloxone, 9.4% die within a year.
  - 34.7% of drug-related causes
  - Decedents were younger and more likely to have had repeat non-fatal events (Marion County, Indiana: Ray et al., 2018).



# Pre-Pandemic: HIV Rates

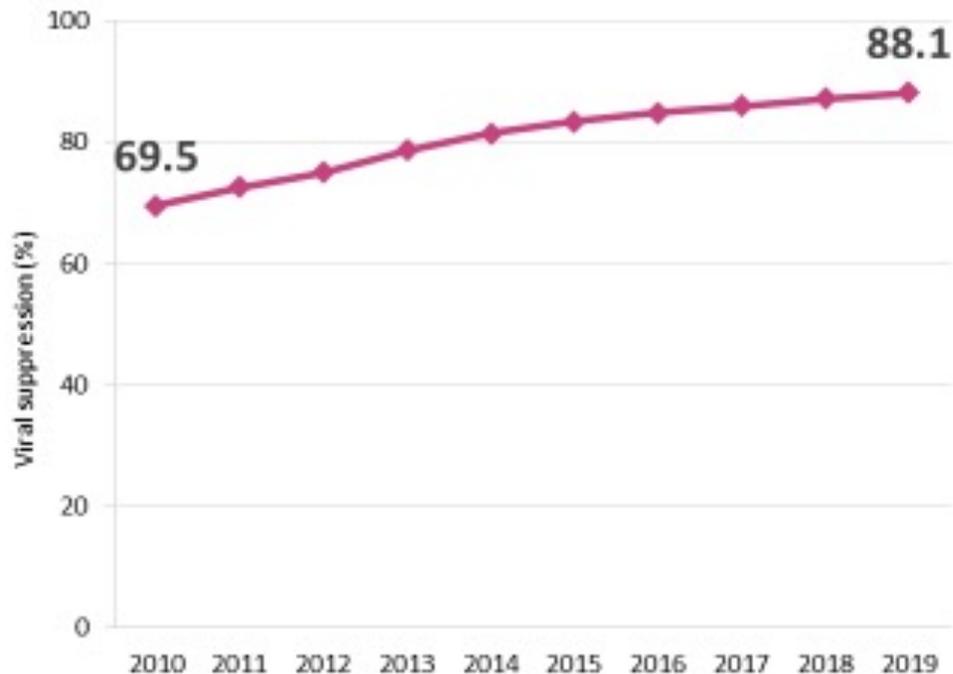
## New HIV Diagnoses Among People Who Inject Drugs in the US and Dependent Areas by Sex, 2018\*



Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2018 (updated). *HIV Surveillance Report* 2020;31.

# Viral Suppression

## Viral Suppression among Clients Served by the Ryan White HIV/AIDS Program (non-ADAP), 2010–2019—United States and 3 Territories<sup>a</sup>



Viral suppression:  $\geq 1$  OAH visit during the calendar year and  $\geq 1$  viral load reported, with the last viral load result  $< 200$  copies/mL.

<sup>a</sup> Guam, Puerto Rico, and the U.S. Virgin Islands.

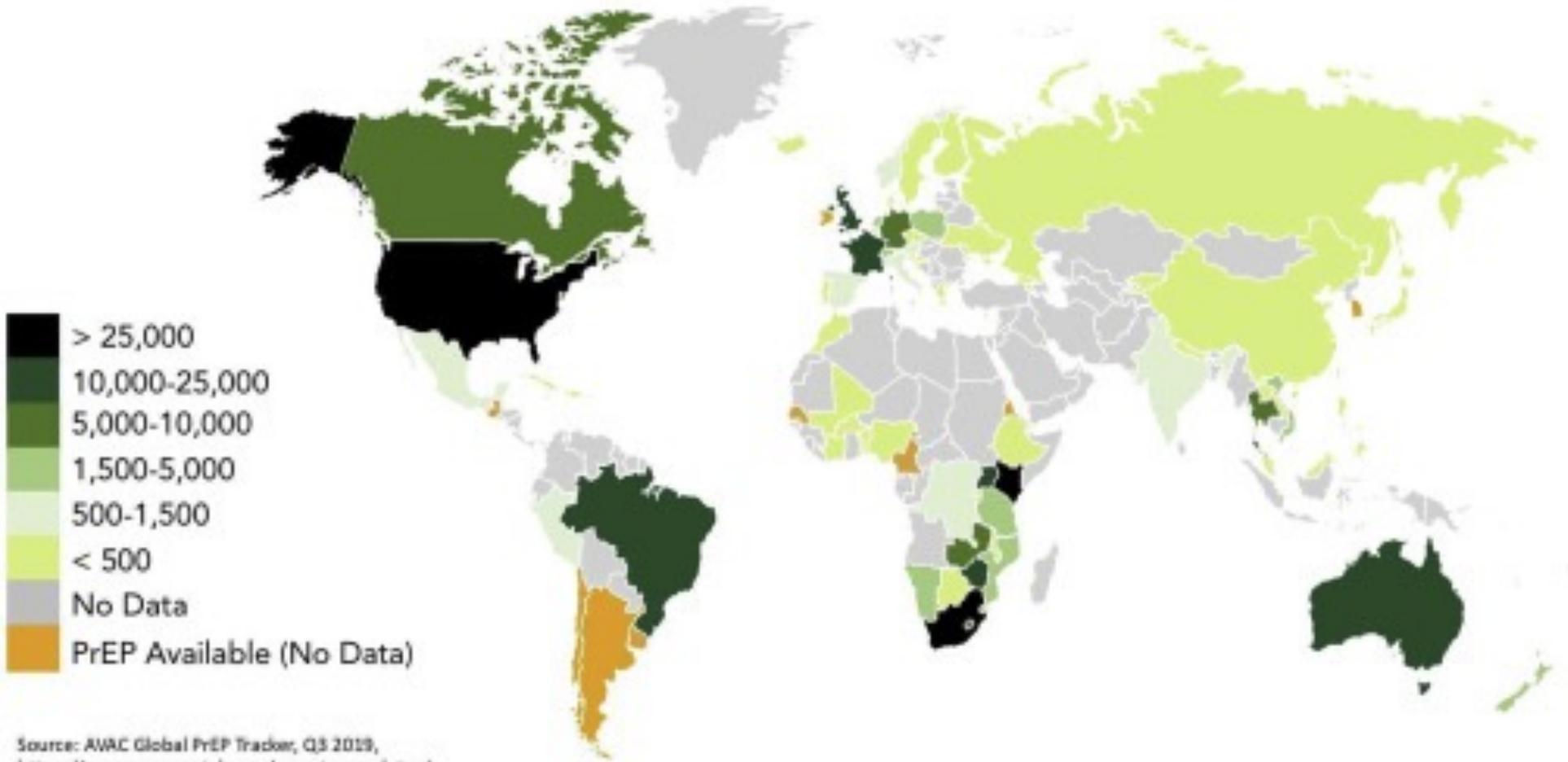


Source: HRSA, Ryan White HIV/AIDS Program Data Report (RDR) 2019. Does not include AIDS Drug Assistance Program data.

15

# Antiretroviral Pre-exposure Prophylaxis (PrEP)

## PrEP Initiations by Country, October 2019



Source: AWAC Global PrEP Tracker, Q3 2019,  
<https://www.prepwatch.org/country-updates/>

# The Global Pandemic



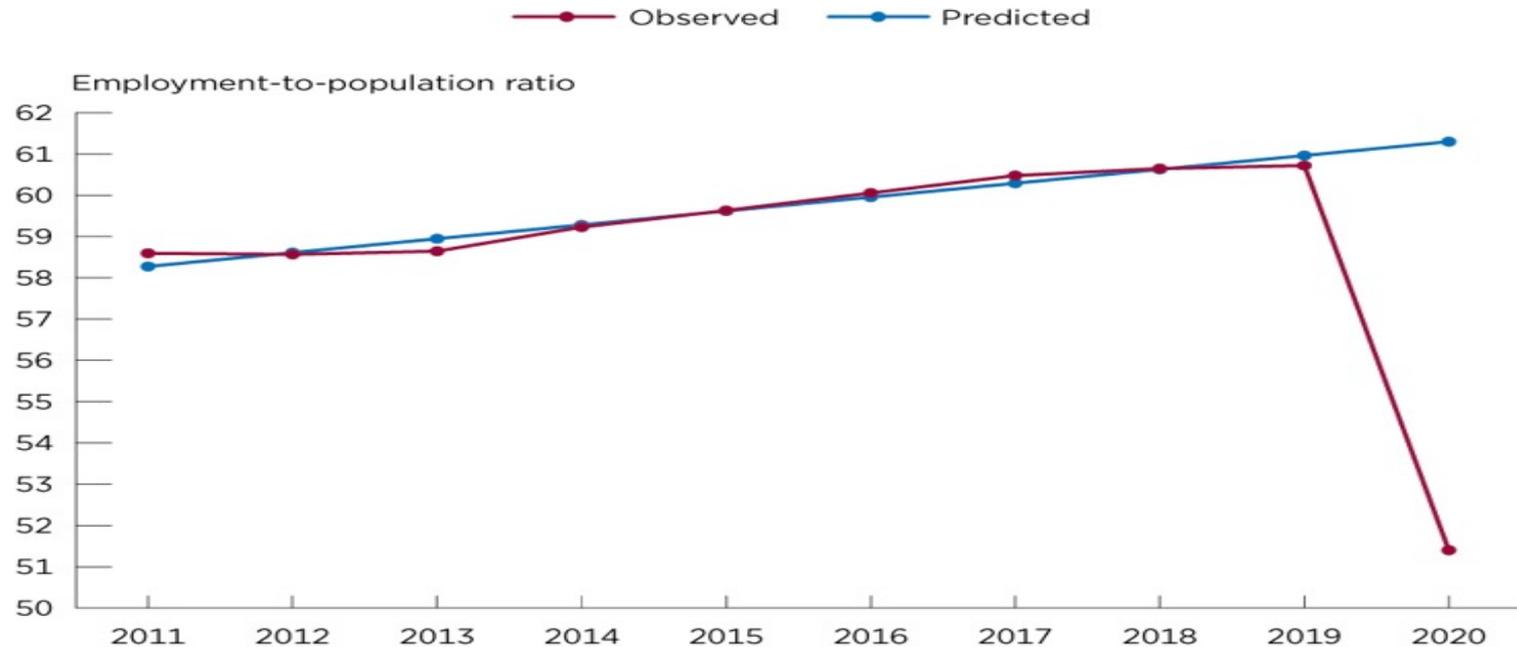
- Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- Symptoms of COVID-19 often include fever, cough, headache, fatigue, breathing difficulties, and loss of smell and taste.
- Symptoms may begin one to fourteen days after exposure to the virus.
- Of those people who develop symptoms:
  - 81% develop mild to moderate symptoms (up to mild pneumonia)
  - 14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging), and
  - 5% suffer critical symptoms (respiratory failure, shock, or multi-organ dysfunction).

# A Decentralized Strategy

- Quarantines
- Mask Mandates
- Shutdowns
- Lock Downs
- Test and Trace

# Financial Impact

## U.S. Share of Population Working Full-time or Part-time: April 2011-2020

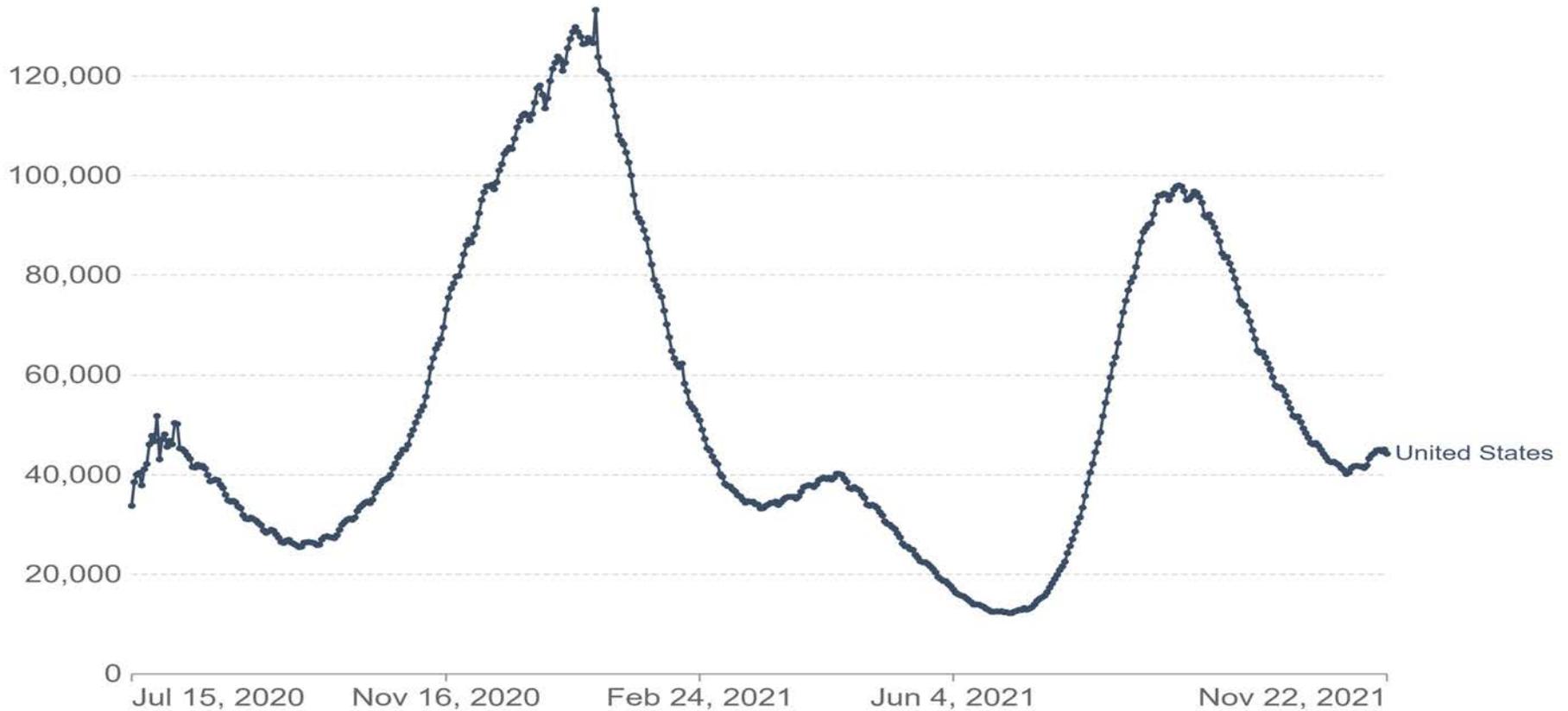


Source: "Initial economic damage from the COVID-19 pandemic in the United States is more widespread across ages and geographies than initial mortality impacts." Maria Polyakova, Geoffrey Kocks, Victoria Udalova, and Amy Finkelstein. *Proceedings of the National Academy of Sciences* 117, no. 45 (2020): 27934-27939: <[www.pnas.org/content/117/45/27934](http://www.pnas.org/content/117/45/27934)>.

# Hospitalizations

Number of COVID-19 patients in hospital

Our World  
in Data

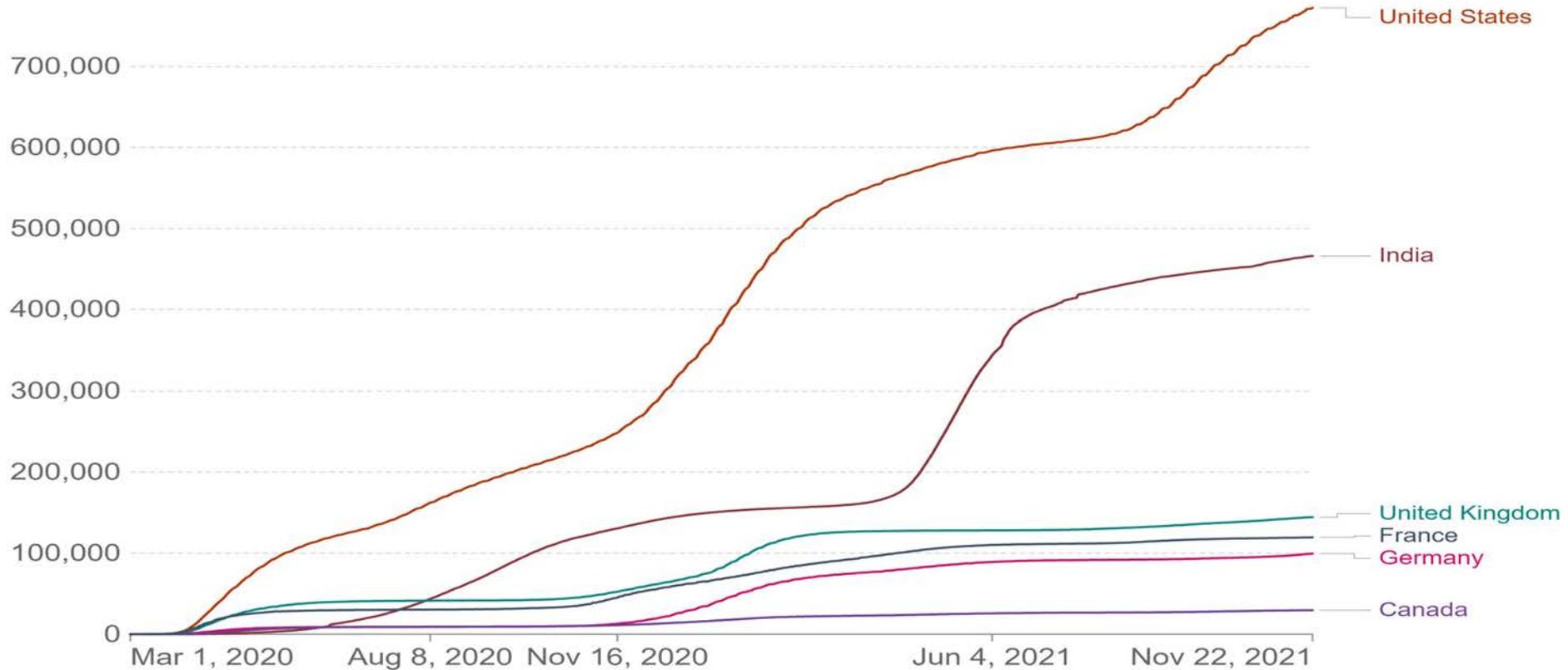


Source: European CDC for EU countries, government sources for other countries – Last updated 23 November 2021, 12:50 (London time)  
OurWorldInData.org/coronavirus • CC BY

# Deaths

## Cumulative confirmed COVID-19 deaths

Our World  
in Data

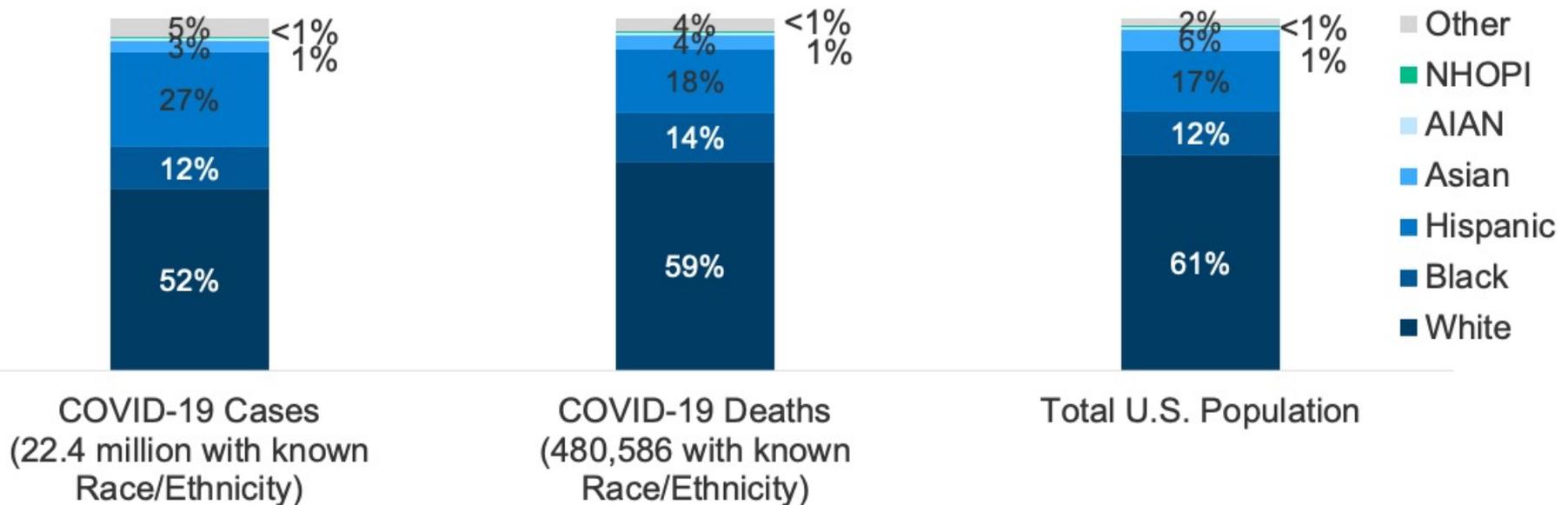


Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

# Deaths

## COVID-19 Cases, Deaths, and Total Population in the United States by Race/Ethnicity, as of October 5, 2021



SOURCE: Centers for Disease Control and Prevention, Demographic Trends of COVID-19 cases and deaths in the US reported to CDC, data as of October 5, 2021, accessed October 6, 2021, <https://covid.cdc.gov/covid-data-tracker/#demographics>

# COVID-19 Among People Who Use Drugs (PWUDs)

- An analysis of electronic health records from more than 73 million patients found that while people with Substance Use Disorders (SUD) made up only 10.3% of the sample, they accounted for 15.6% of COVID-19 diagnosis.
- People with SUDs were more likely to experience severe COVID-19 outcomes including hospitalization (41% versus 30%) and death (9.6% versus 6.6%).

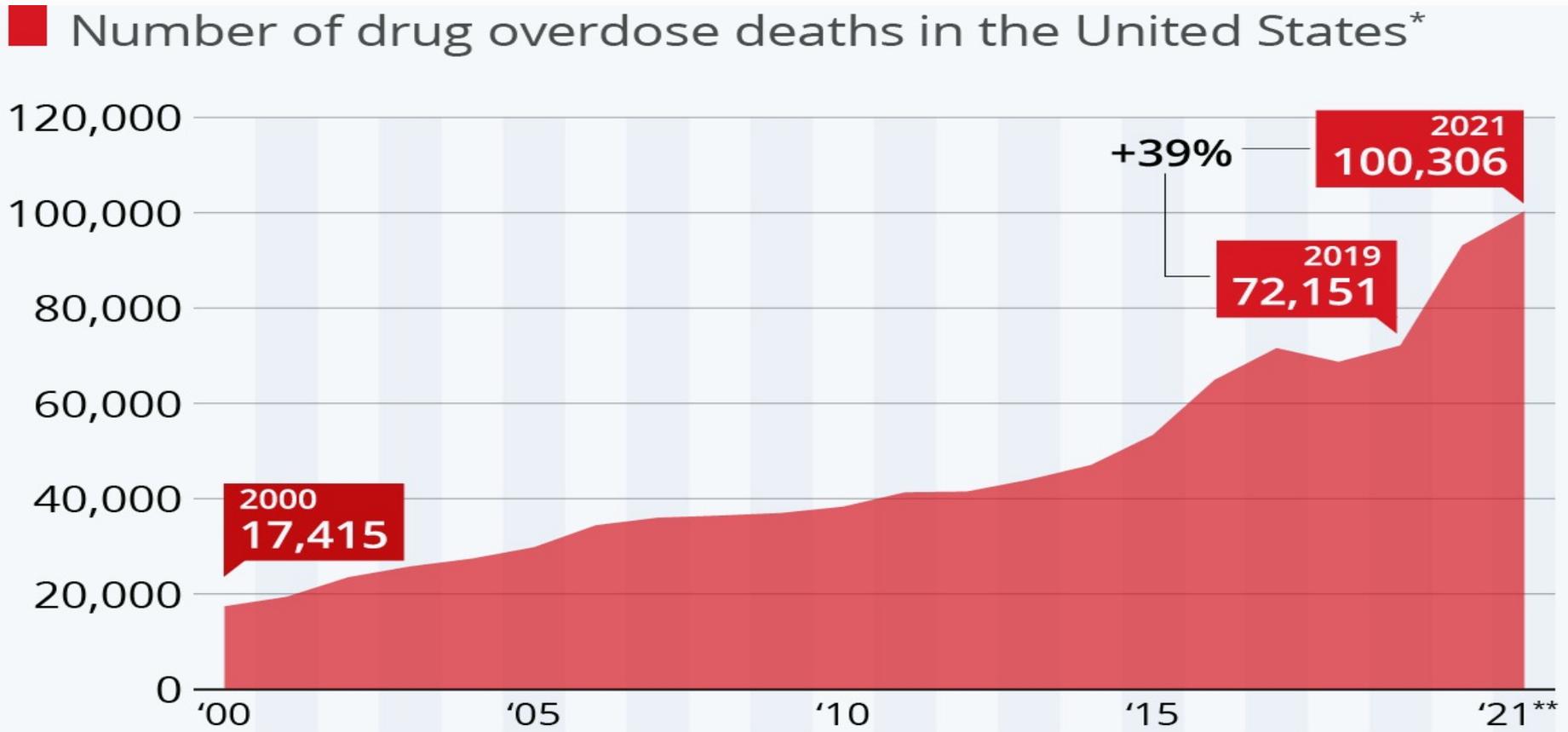
# What Steps Were Taken to Protect PWUDs?

- Prior to the pandemic, only 27% of specialty addiction treatment facilities in the United States reported having telehealth capabilities.
- Among individuals with private insurance and Medicare, telehealth was used in 0.1% of addiction treatment visits.

# What Steps Were Taken to Protect PWUDs?

- Substance Abuse and Mental Health Services Administration allowed for buprenorphine initiation without an in-person assessment.
  - A similar exception was not made for methadone.
- Patients undergoing intake at a new provider who were already taking methadone could undergo an intake assessment via telehealth.
- Virtual overdose education and naloxone distribution by mail.

# Overdose After the Pandemic



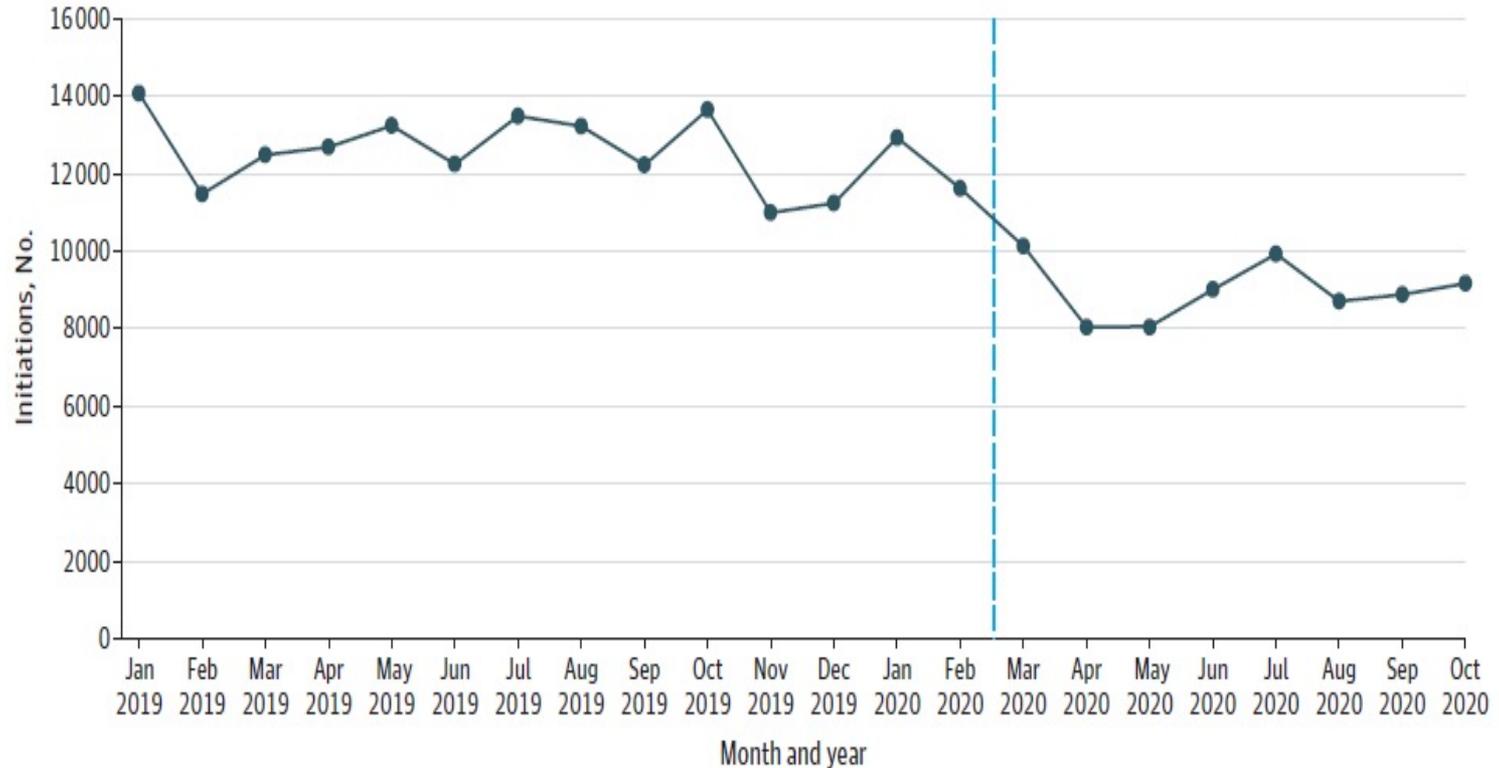
\* Estimates for 2020 and 2021 are based on provisional data.

\*\* 2021 estimate refers to 12-month period ending April 2021

Source: Centers for Disease Control and Prevention

# What Happened?

Initiation of Treatment in Specialty Addiction Treatment Facilities in California, January 1, 2019, to October 31, 2020



Dotted blue line indicates the beginning of the COVID-19 period.

Mark et al., 2021

# What Happened?

- Persistent stress of COVID-19 may have led to increased demand for mental health services.
- According to the Centers for Disease Control and Prevention, 13% of Americans reported starting or increasing substance use as a way of coping with stress or emotions related to COVID-19.
- Unemployment and economic hardships likely increased levels of poverty, marginalization, and social exclusion.
- Diminished health exaggerated mortality rates (up to 15 times higher for injecting drug users than for the general population (Costa-Storti et al., 2020).



# COVID-19 Among People with HIV

	Overall (n=1 436 622)	People with HIV (n=13 170)	People without HIV (n=1 423 452)	p value
(Continued from previous page)				
<b>Clinical spectrum outcomes</b>				
COVID-19 death	26 130 (1.82%)	445 (3.38%)	25 685 (1.80%)	<0.0001
COVID-19 hospitalisation	262 331 (18.26%)	3724 (28.28%)	258 607 (18.17%)	<0.0001
<b>COVID-19 disease severity</b>				
Unaffected	476 250 (33.15%)	6395 (48.56%)	469 855 (33.01%)	<0.0001
Mild† or moderate	895 491 (62.33%)	6209 (47.15%)	889 282 (62.47%)	..
Severe‡	25 054 (1.74%)	475 (3.61%)	24 579 (1.73%)	..
Unknown	39 827 (2.77%)	91 (0.69%)	39 736 (2.79%)	..
<b>HIV factors (n=1544)</b>				
<b>Most recent CD4 count, cells per µL§</b>				
>500	920 (59.59%)	920 (59.59%)	..	..
200–500	445 (28.82%)	445 (28.82%)	..	..
<200	179 (11.59%)	179 (11.59%)	..	..
Most recent viral suppression, <200 copies per mL§	1265 (81.93%)	1265 (81.93%)	..	..

Data are median (IQR) or n (%). NA=not applicable. \*Per National COVID Cohort Collaborative Policy, we removed the unknown category because this category included less than 20 individuals in the people living with HIV group.

†Includes both the mild (outpatient, WHO severity 1–3) and mild emergency department (outpatient with emergency department visit, WHO severity ~3) categories. ‡Includes both severe (hospitalised with invasive ventilation or extracorporeal membrane oxygenation, WHO severity 7–9) and mortality or hospice (hospital mortality or discharge to hospice, WHO severity 10) categories based on WHO criterion. §Defined as the most recent value in the 18 months before initial COVID-19 diagnosis.

**Table 1: Characteristics of adult COVID-19 cases by HIV status in National COVID Cohort Collaborative data, Jan 1, 2020, to May 8, 2021**

Yang et al., 2021

# What Steps Were/Should Be Taken to Protect People with HIV

- Mobile Clinics
- Co-Located Health Care Services
- Self-Administered Tests And Medications
- Patient Assistance Programs

# What Steps Should Be Taken To Protect PWUD

- Providing depot buprenorphine (e.g., weekly and monthly formulations) rather than daily sublingual buprenorphine dosing or supervised methadone dosing.
- Providing additional take-away (non-supervised) doses of both buprenorphine and methadone.
- Ensuring people who use drugs continue to have access to clean injecting equipment and other harm-reduction services.
  - Providing bulk syringes and other sterile injecting equipment.
- Where face-to-face services cannot be provided, vending machines are an efficient method to maintain service delivery around the clock with reduced staffing requirements.
- Current harm should be updated to reduce the spread of COVID-19:
  - e.g., sharing of equipment such as glass pipes, joints/cigarettes, cash, and straws for 'snorting' drugs.
  - encourage good hand hygiene by providing hand sanitizer.

# Conclusions

- COVID-19 has highlighted demonstrated disparate effects due to structural inequities.
- While HIV itself may not alter one's risk for acquiring COVID-19, people living with HIV often face multiple comorbidities that heighten the risk for severe illness from COVID-19.
- People living with HIV are also at risk for discontinuing anti-retroviral therapy (ART) during the pandemic.
  - Those that discontinue ART are more likely to develop severe HIV disease, which may put them at risk of developing severe COVID-19.
  - People who are immune-suppressed, are also at increased risk for SARS-CoV2 infection.

# Conclusions

- The prevalence of COVID-19 continues to be high in prisons and jails.
  - PWUD are more likely to be criminal justice-system involved.
- The pandemic has fast tracked the opportunity for upscaling the use of digital health interventions.
- Telehealth has the potential to overcome many barriers preventing access to, and provision of healthcare services for substance use disorders.

# Acknowledgements

- Sandra Comer
- Shanthy Mogali
- Jeanne Manubay
- Felipe Castillo
- Claudia Tindall
- Laura Brandt
- Suky Martinez
- Nicholas Allwood
- Freymon Perez
- Rebecca Abbot

