

# SUBSTANCE USE DISORDER 101

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# GRATITUDE

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# LEARNING OBJECTIVES

At the end of this session, learners will be able to

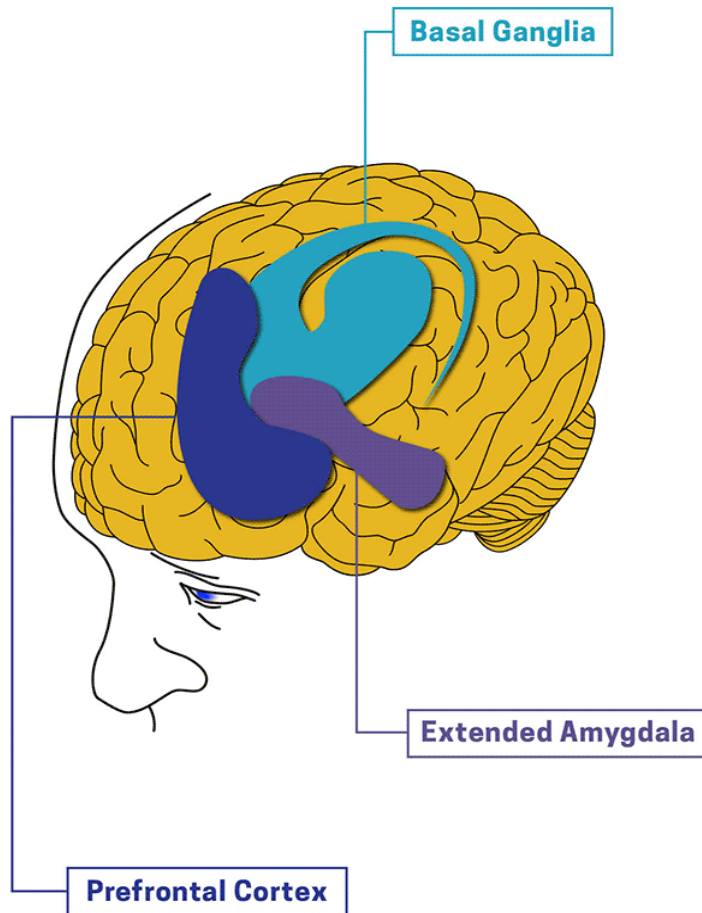
- 1.** Understand the mechanism of Substance Use Disorder (SUD) in the brain
- 2.** Describe drug classification and routes of administration
- 3.** Identify problems associated with substance use disorder
- 4.** Opioid overdose trends
- 5.** Understand SUD prevention strategies

# SUBSTANCE USE DISORDER

## ■ What is Substance Use Disorder?

A chronic disease characterized by drug seeking and use that is compulsive, or difficult to control, despite harmful consequences.

# What happens to the brain when a person takes drugs?



Source: Facing Addiction in America:  
The Surgeon General's Report on  
Alcohol, Drugs, and Health

**Basal ganglia:** reward circuit

**Extended amygdala:** stressful feelings like anxiety, withdrawal

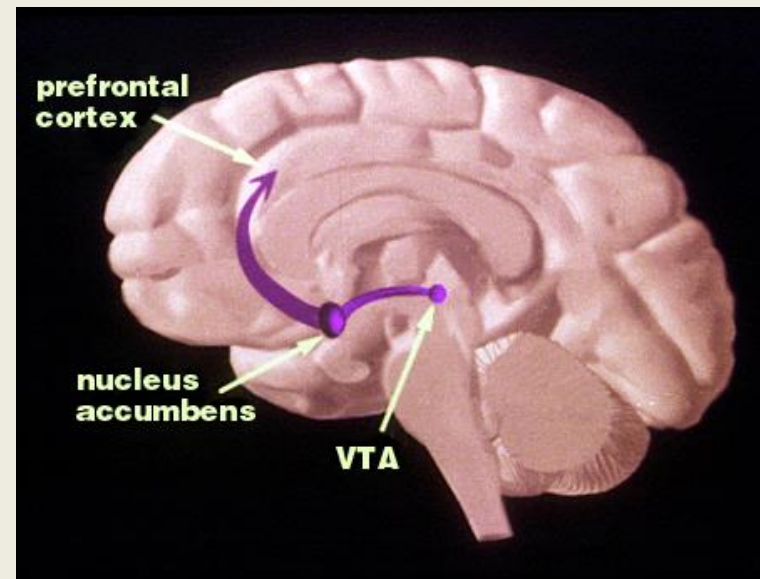
**Prefrontal cortex:** powers the ability to think, plan, solve problems, make decisions, and exert self-control over impulses.

# LIMBIC SYSTEM: REWARD SYSTEM

## 3 key functions

### Allows for SURVIVAL

- Identify danger/ threats
- Identify pleasure – “natural rewards”

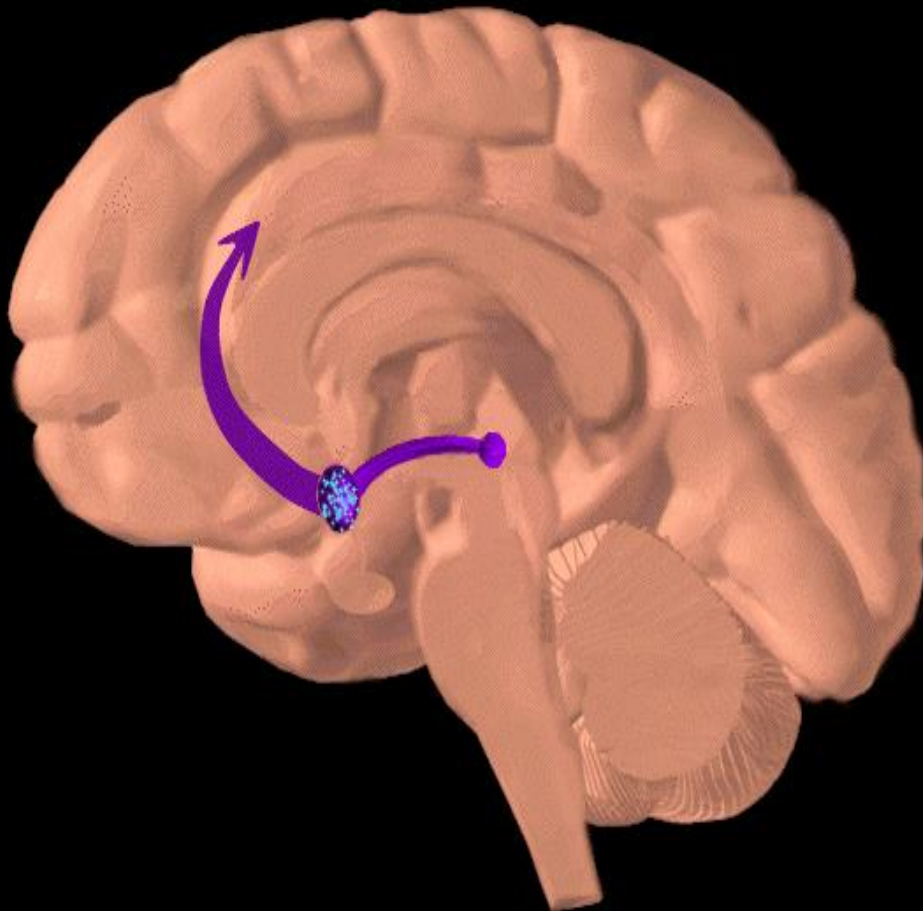


# MECHANISM OF SUD IN THE BRAIN

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=NxHNX  
MJV2BQ](https://www.youtube.com/watch?v=NxHNXmJv2BQ)

[Video clip](#)  
(4:15)

# REWARD PATHWAY



- The site for most drugs
- Alcohol, heroin, nicotine
- Dopamine neurons in the VTA



**Some drugs affect other brain areas, such as opioids disrupt the brain stem, which controls basic functions, including heart rate, breathing, and sleeping.**

**Opioid overdoses can cause depressed breathing and death.**

# DRUG CLASSIFICATION (DEA)

- **Central Nervous System Depressants:**  
alcohol, barbiturates
- **Central Nervous System Stimulants:**  
nicotine, caffeine, cocaine, amphetamine,  
methamphetamine

# DRUG CLASSIFICATION

- **Hallucinogens:**

LSD, ecstasy and ketamine

- **Opiates/Opioids:**

heroin, codeine, morphine

- **Cannabis:**

marijuana

# ROUTES OF ADMINISTRATION

- Oral
- Smoking
- Snorting
- Injection
- Skin contact or mucus membrane

# PROBLEMS ASSOCIATED WITH SUBSTANCE USE DISORDER

- Psychological dependence
- Physical dependence

**Which dependence is the most difficult part of SUD to treat and why?**

# PROBLEMS ASSOCIATED WITH SUBSTANCE USE DISORDER

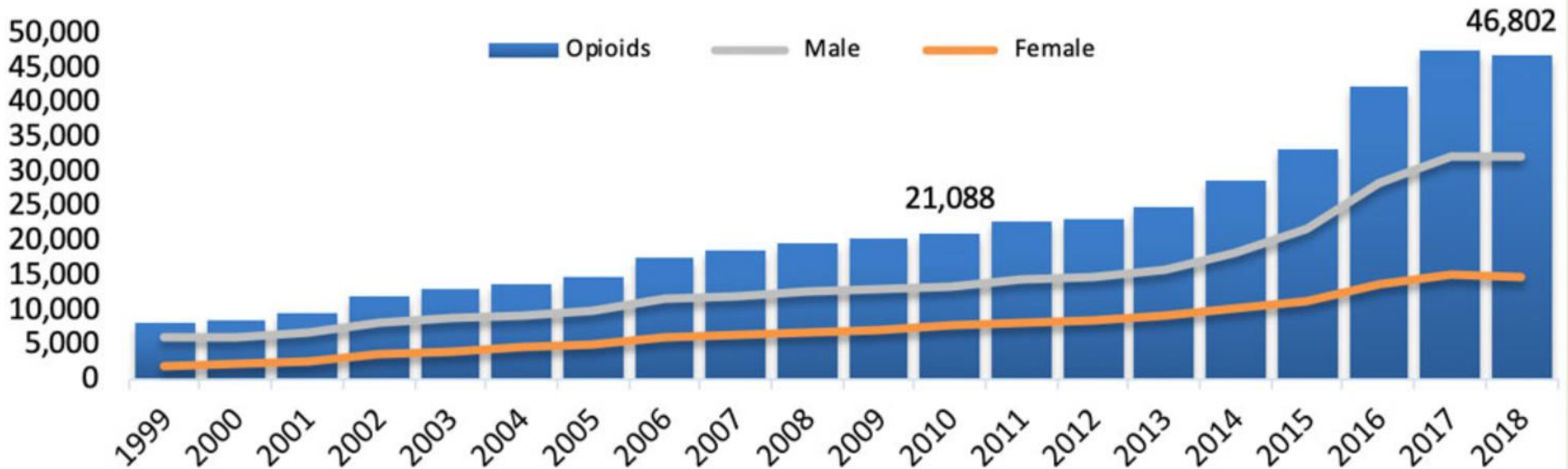
**Tolerance**

**Overdose**

**Withdrawal**

# Opioid Overdose Deaths

**National Drug Overdose Deaths  
Involving Any Opioid**  
Number Among All Ages, by Gender, 1999-2018

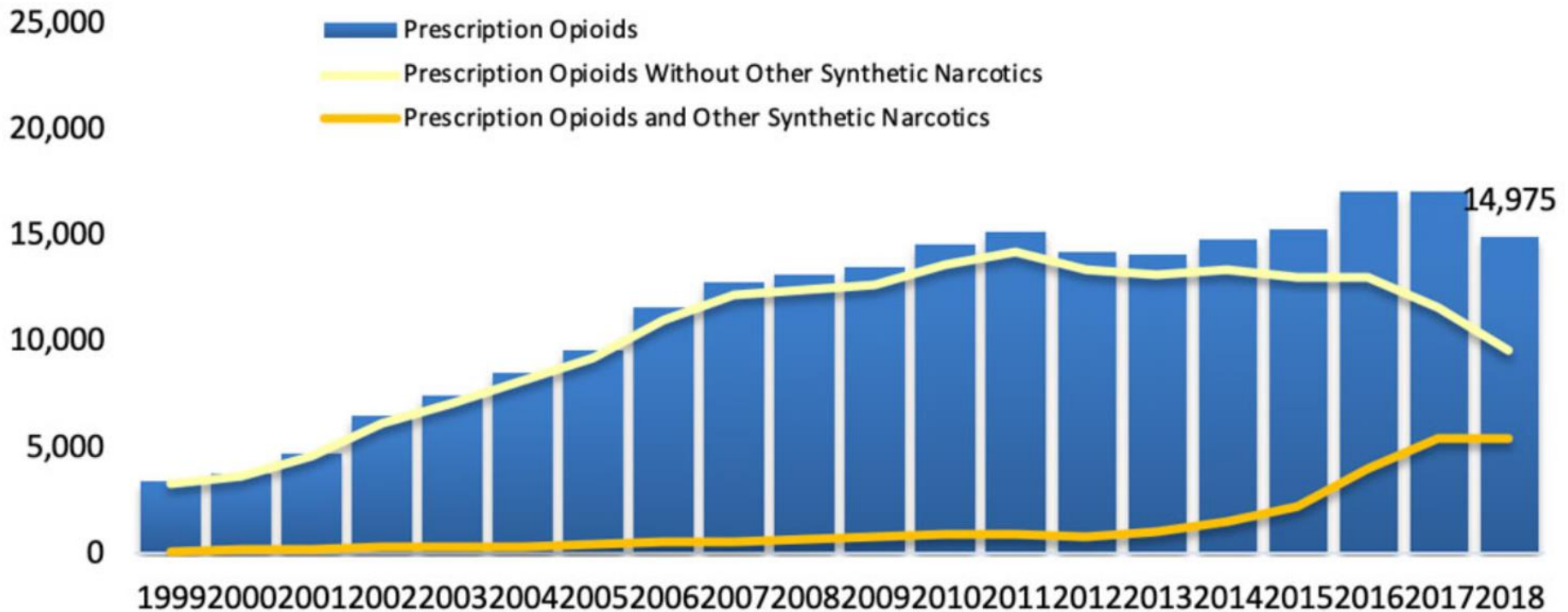


Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2018 on CDC WONDER Online Database, released January, 2020

# Opioid Overdose Deaths

## -Prescription Opioids

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

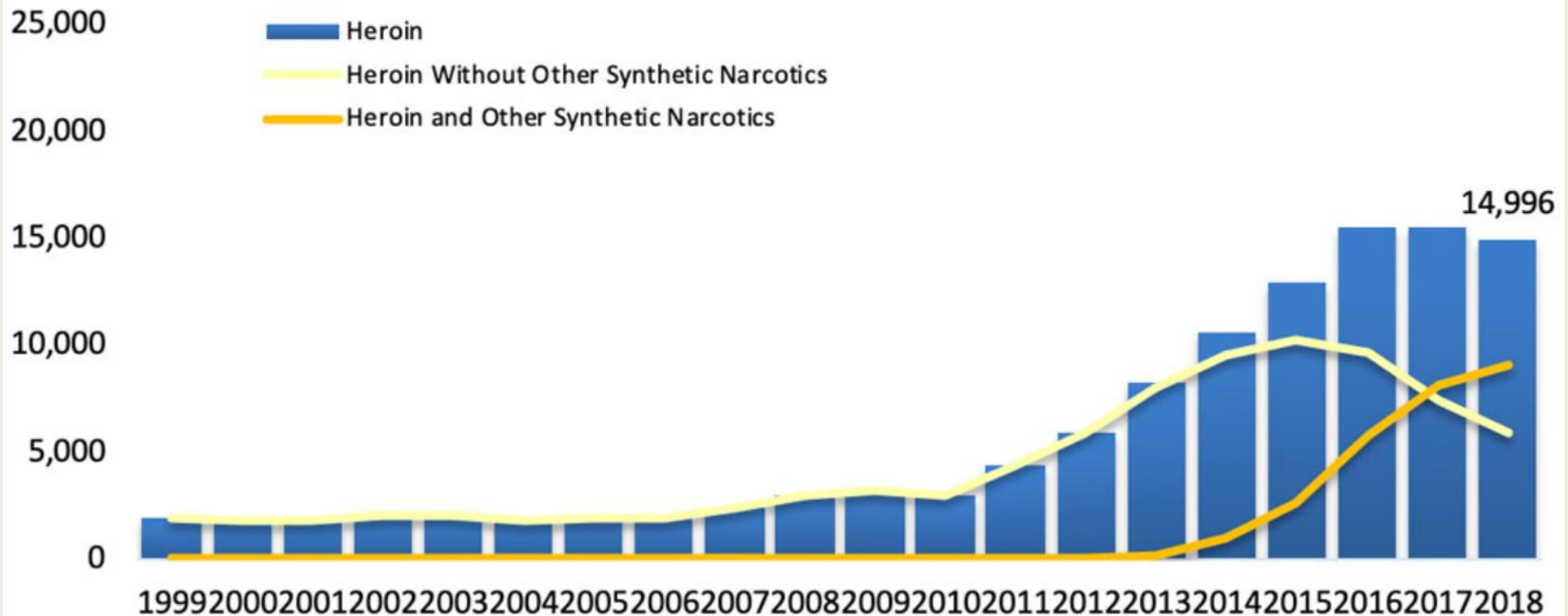


Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2018 on CDC WONDER Online Database, released January, 2020



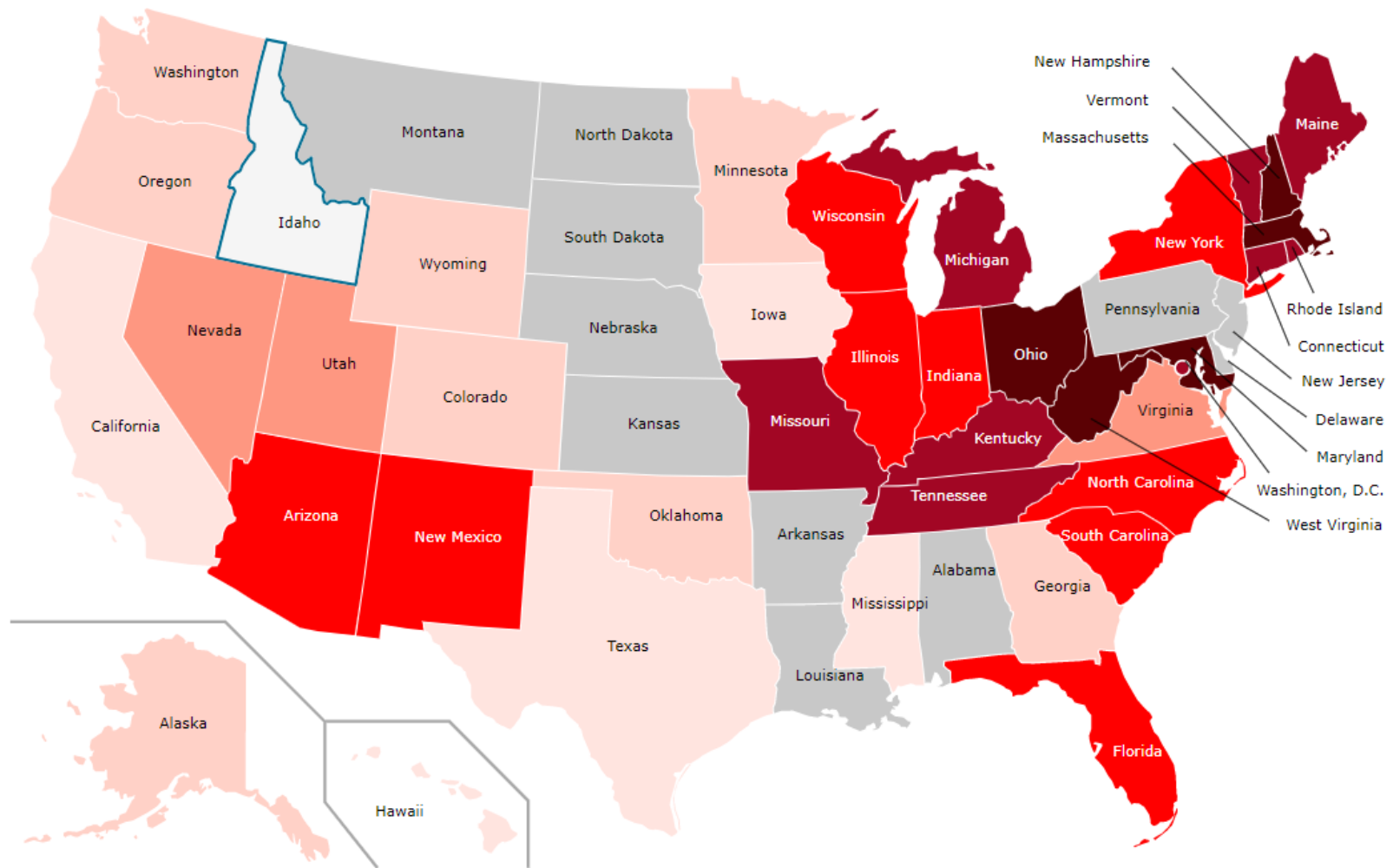
# Opioid Overdose Deaths -Heroin

**National Drug Overdose Deaths Involving Heroin**  
Number Among All Ages, 1999-2018



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2018 on CDC WONDER Online Database, released January, 2020

# 2018 Opioid-Involved Overdose Death Rates (per 100,000 people)<sup>1</sup>



**Opioid overdose death rate: Tennessee 19.9 per 100,000 in 2018 (US 14.6)**

# TENNESSEE OPIOID OVERDOSE DEATHS

Category:

- Count
- Rate

Fatal Overdose Type:

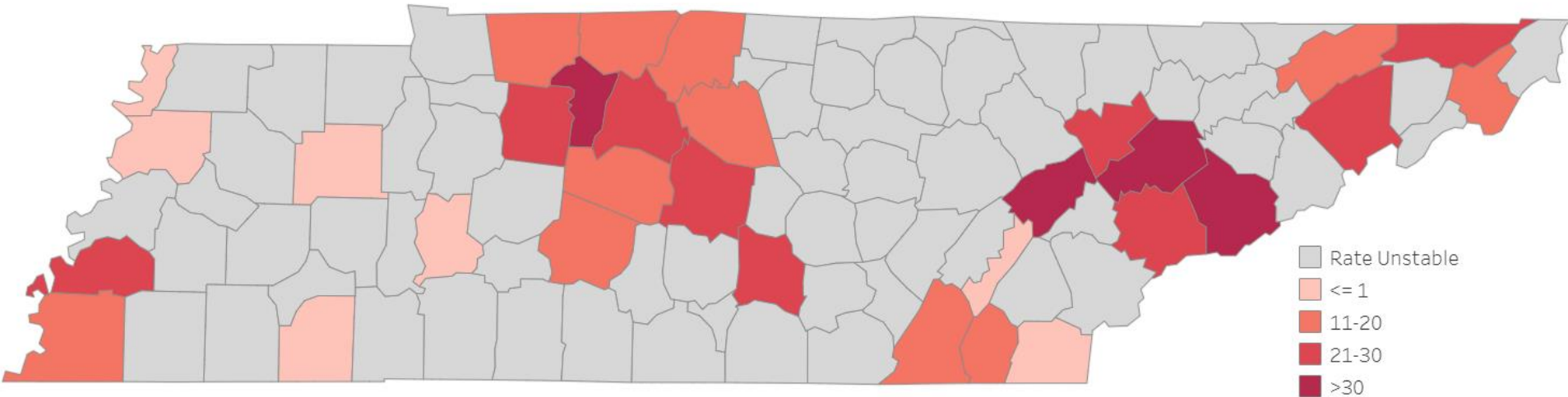
Drug Overdose Deaths Involving O...

Year:

2018



Drug Overdose Deaths Involving Opioids- Rate in Tennessee in 2018



**East Tennessee: 22 per 100,000 in 2018**

# CAN SUD BE CURED OR PREVENTED?

- SUD is treatable and can be successfully managed.
- Research shows that combining SUD treatment medicines with behavioral therapy ensures the best chance of success for most patients.
- SUD is preventable.

# PREVENTION STRATEGIES

- Information dissemination
- Prevention education
- Alternative activities
- Community-based process
- Environmental strategies
- Problem identification and referral

# EXAMPLES OF OPIOID USE DISORDER AND PREVENTION

- Community engagement
- Expand MOUD providers/services
- Prescribing guidelines
  - Reducing opioid Rx, use alternate pain relief
  - Fewer pills per Rx
- Prescription surveillance system
  - Pharmacy/Physician database
- Overdose education and naloxone distribution programs & supporting laws (Carroll, Green et al. 2018)

Carroll, J. J., Green, T. C., & Noonan, R. K. (2018). Evidence-based strategies for preventing opioid overdose: what's working in the United States. Retrieved from <https://www.cdc.gov/drugoverdose/pdf/pubs/2018-evidence-based-strategies.pdf>

# WRAP UP & EVALUATION

- Gain better understanding about SUD and people with SUD
- Know prevention strategies, what and why
- Work on reducing stigma