HEALTH MANAGEMENT ASSOCIATES

Stimulant Use Disorders: Harm Reduction Strategies and Evidence-based Interventions

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INTRODUCTION

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Faculty	Nature of Commercial Interest
Shannon Robinson, MD	Dr. Robinson discloses that she is an employee of Health Management Associates, a national research and consulting firm providing technical assistance to a diverse group of healthcare clients.
Charles Robbins, MBA	Mr. Robbins discloses that he is an employee of Health Management Associates, a national research and consulting firm providing technical assistance to a diverse group of healthcare clients.

LEARNING OBJECTIVES

At the end of this webinar, the learner will:

- ❑ Recognize the risks associated with stimulant use
- ❑ Relate substance use practices to increased risk of acquiring or spreading HIV & HCV
- ❑ Discuss the importance of harm reduction interventions
- ❑ Summarize evidence-based treatment of stimulant use disorder

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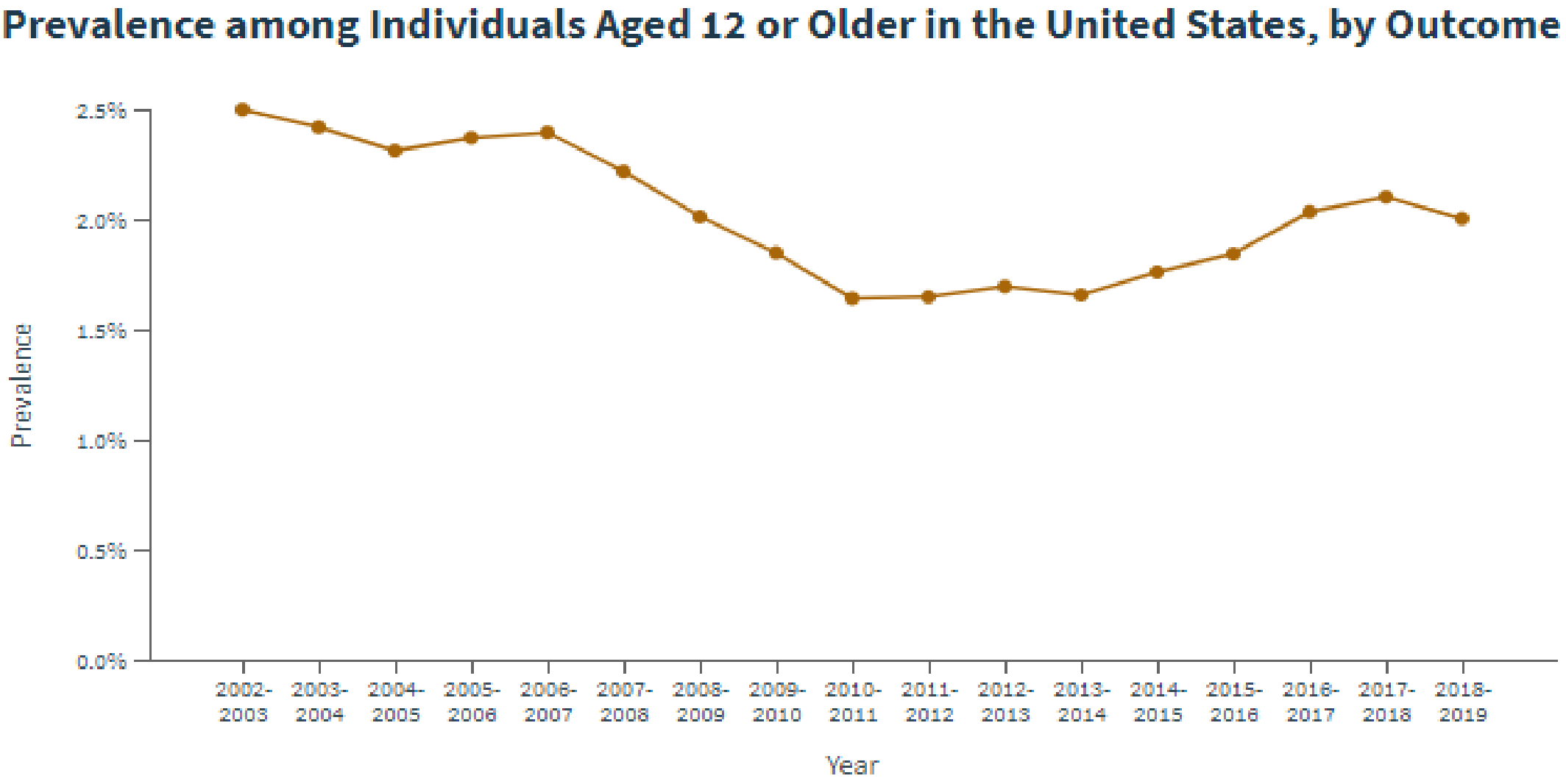
COCAINE USE NATIONALLY



Source: https://pdas.samhsa.gov/saes/state

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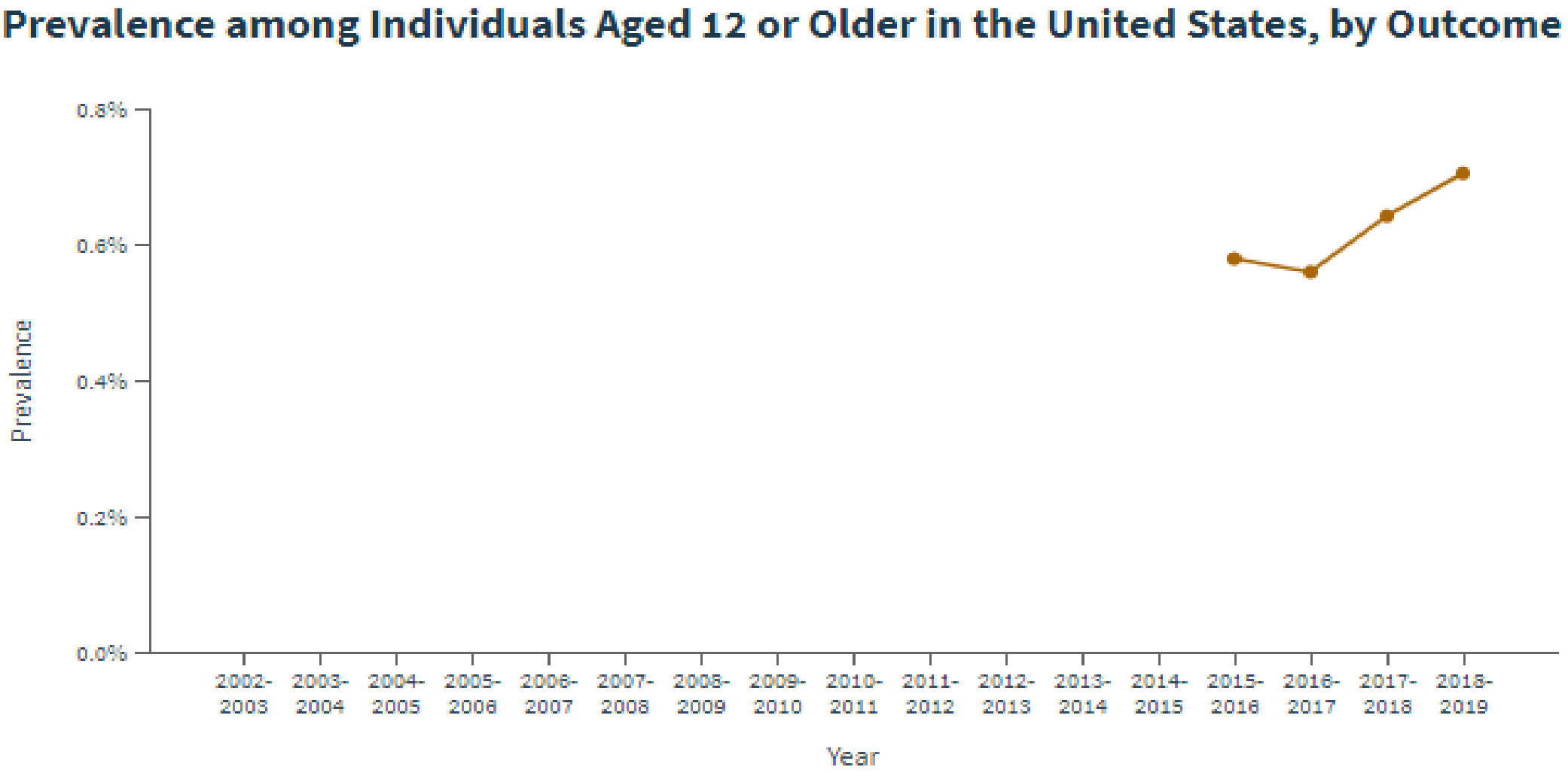
METHAMPHETAMINE USE CONTINUES TO RISE NATIONALLY



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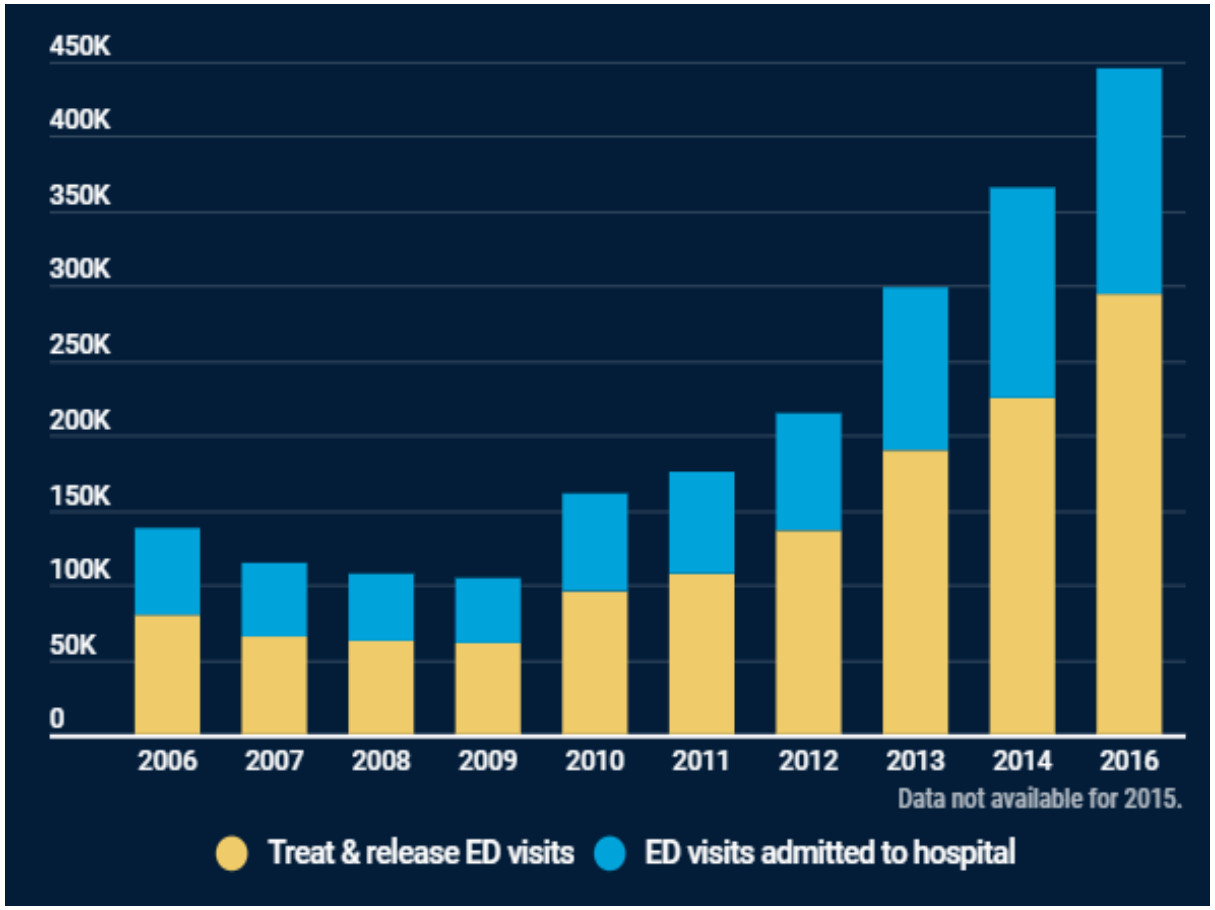
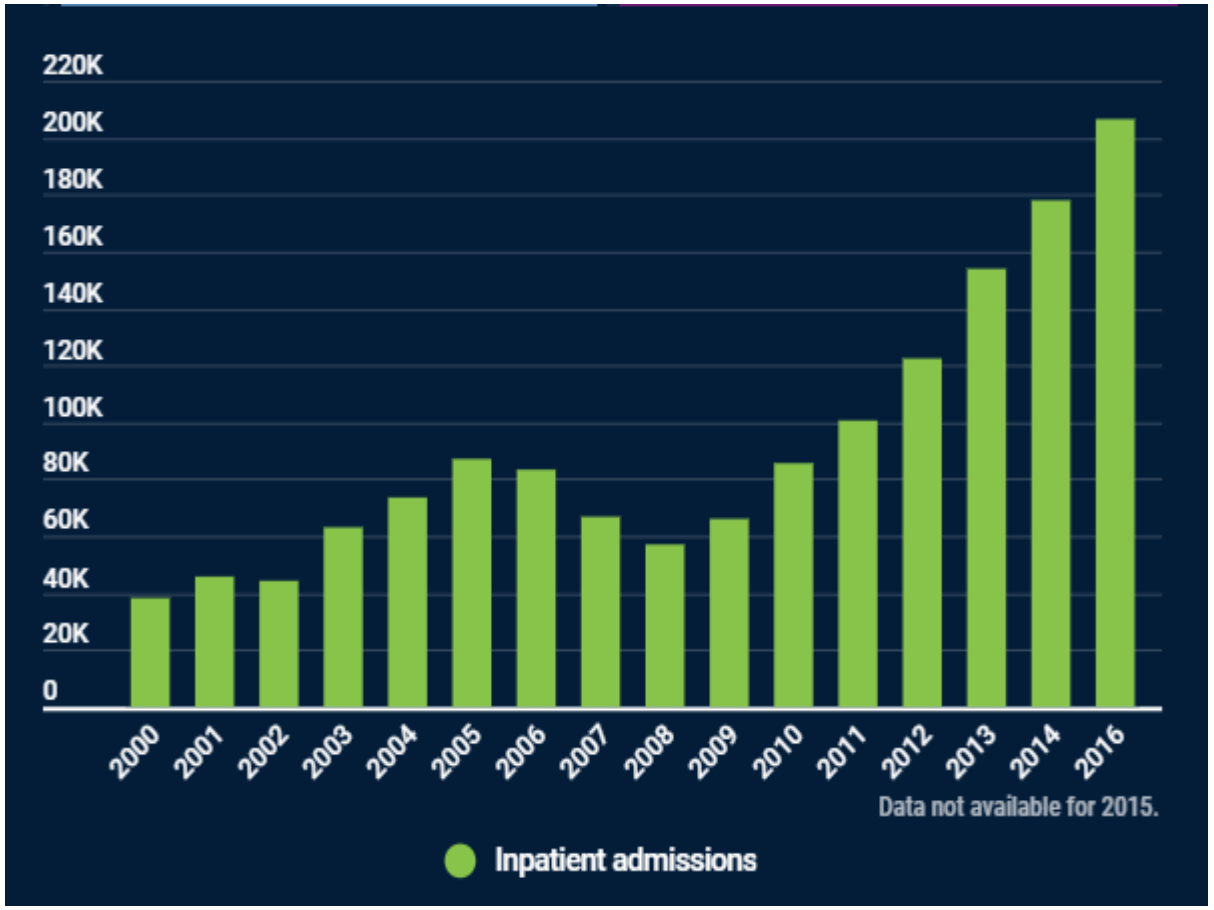
METHAMPHETAMINE USE EMERGENCY VISITS & HOSPITAL UTILIZATION





Source: https://www.nihcm.org/categories/beyond-opioids-rapid-increase-in-drug-deaths-involving-stimulants

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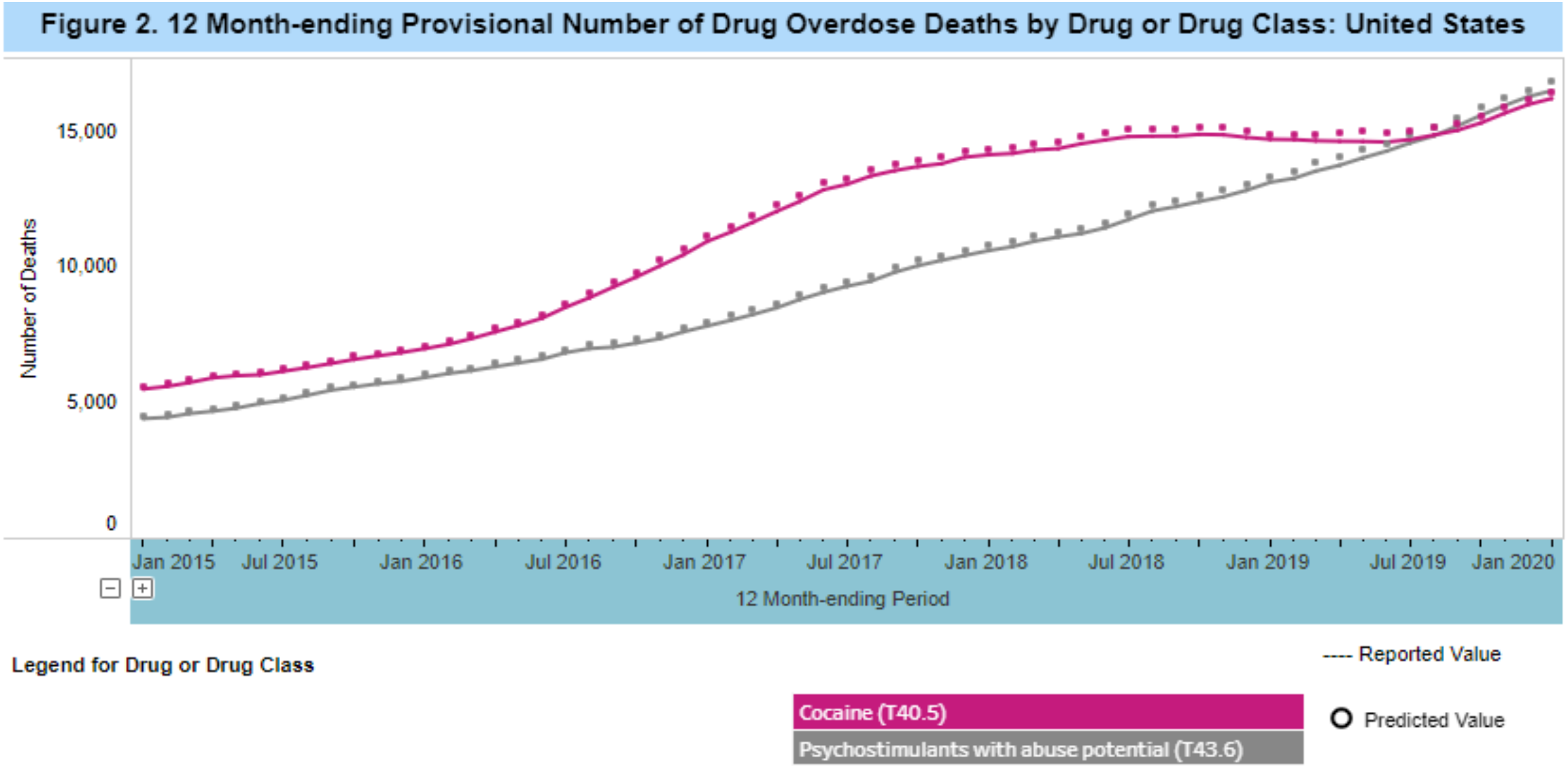
STIMULANT OVERDOSE DEATHS CONTINUE TO RISE NATIONALLY & LOCALLY



Source: https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm#dashboard

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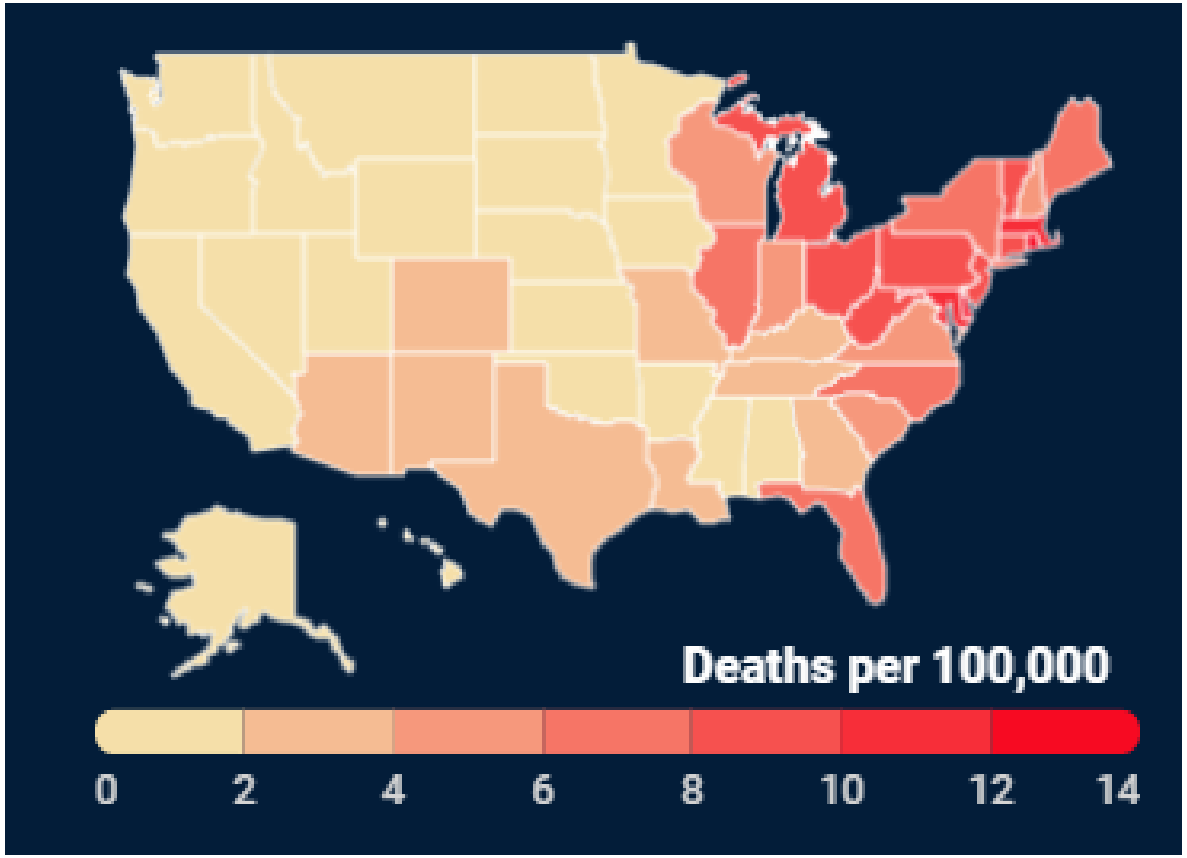
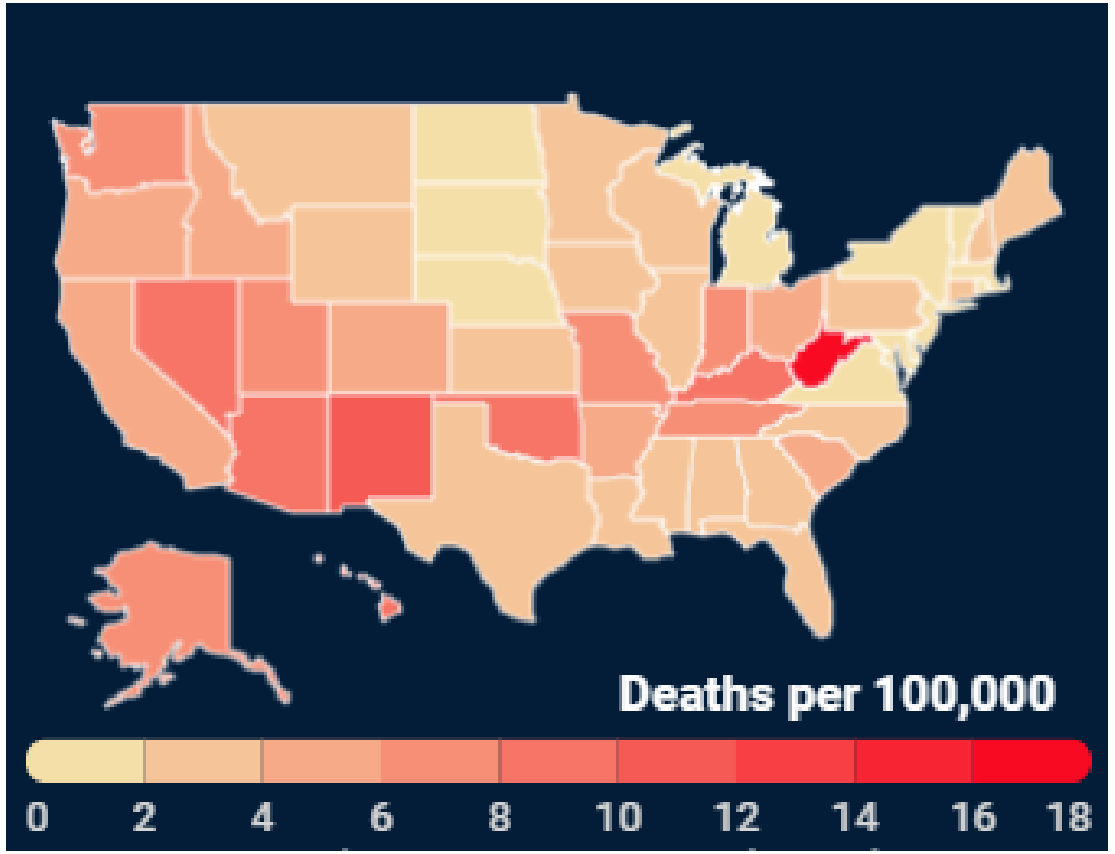
GEOGRAPHIC VARIANCE IN STIMULANT RELATED DEATHS

Cocaine related deaths



Methamphetamine related deaths



Source: https://nihcm.org/publications/beyond-opioids-rapid-increase-in-drug-deaths-involving-stimulants

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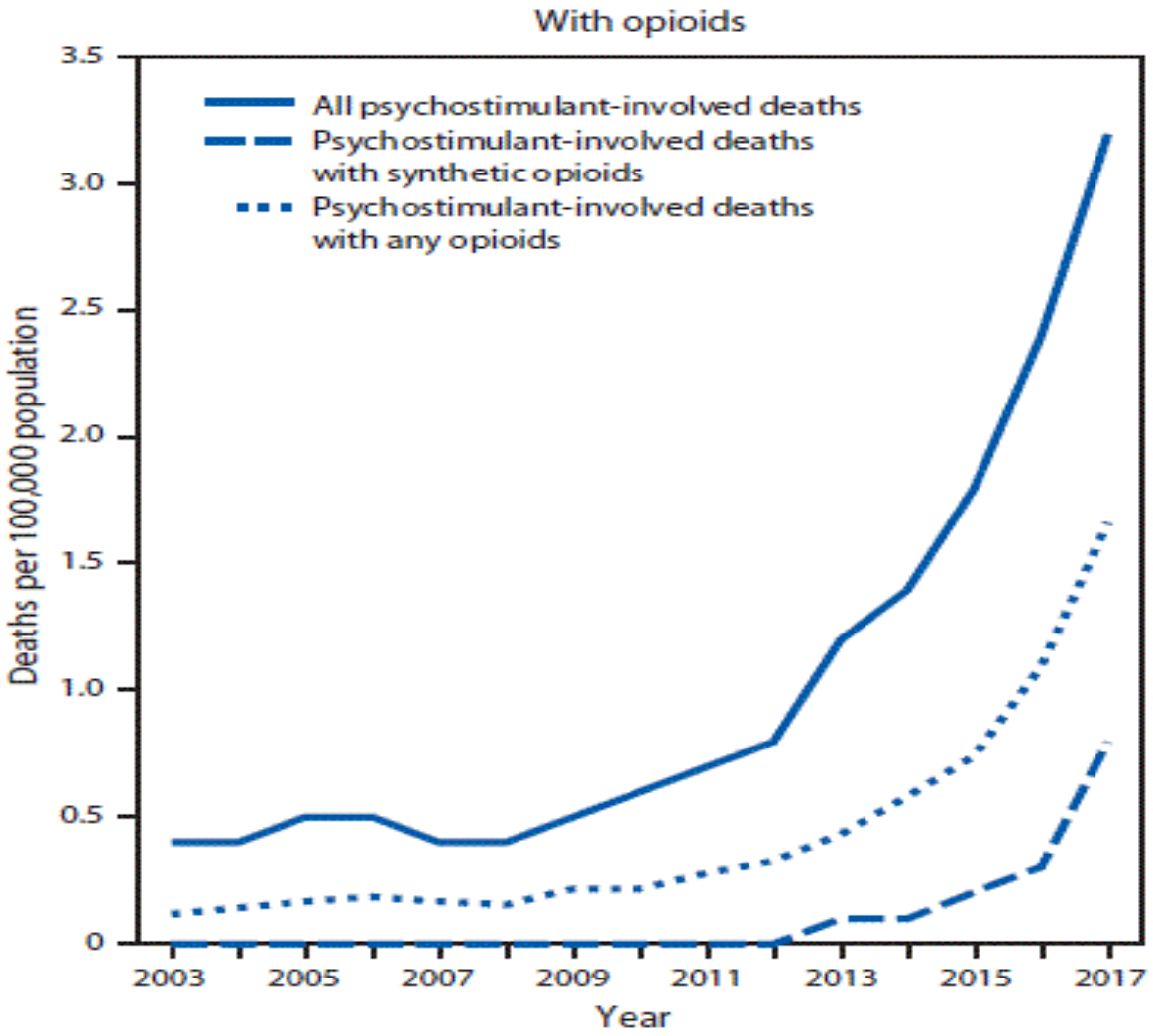
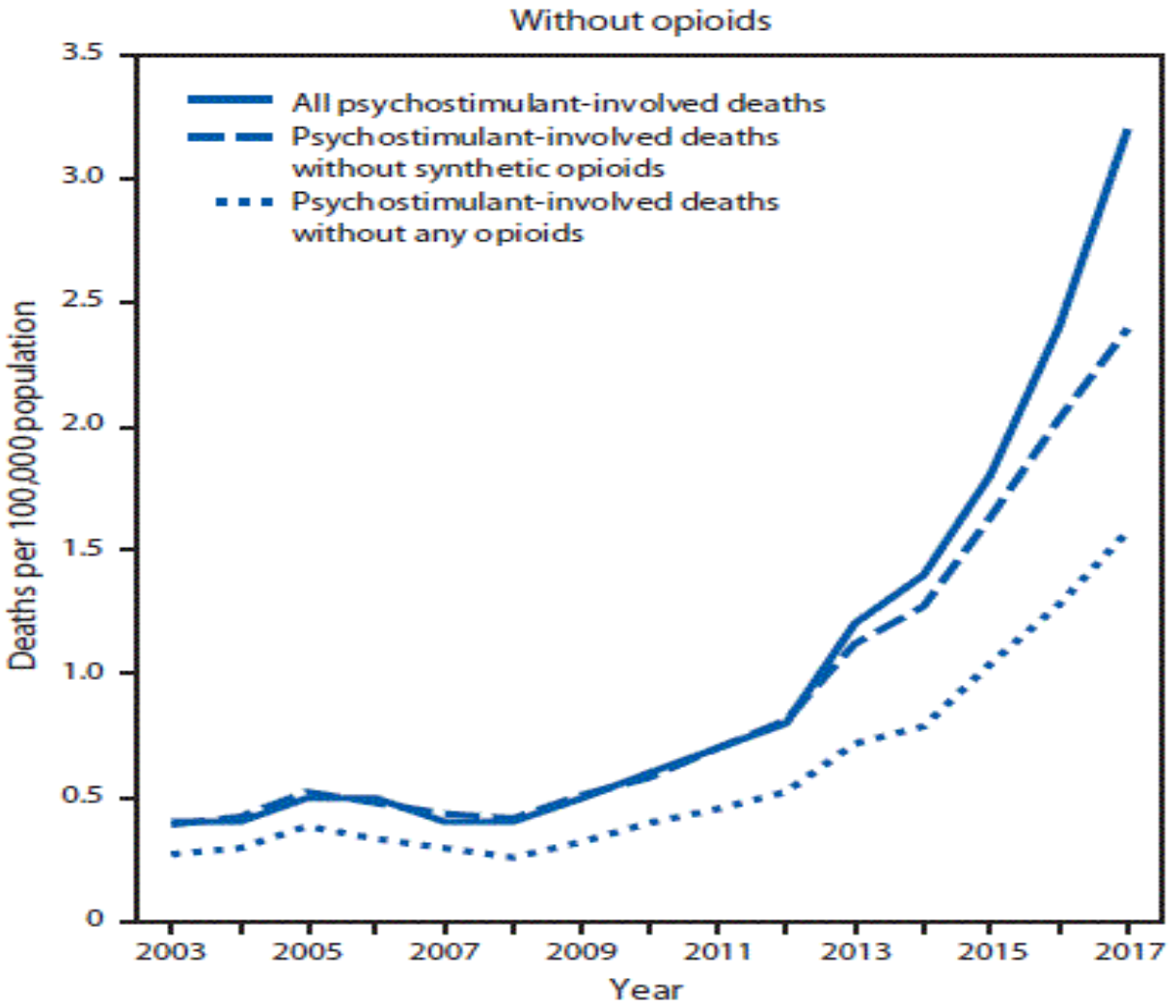
AGE ADJUSTED STIMULANT OD RATES 2003-2017 UNITED STATES WITH AND WITHOUT OPIOIDS





Source: National Vital Statistics System, Mortality File. https://wonder.cdc.gov/.

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WHAT ARE STIMULANTS?

- **Cocaine**
- **“Psychostimulants with abuse potential”**
  - **Ephedra/ mahaung & khat plants that contain**
    - Pseudoephedrine, ephedrine & cathinone & cathine
  - **Amphetamines**
    - Amphetamine (dextro/ levo)
    - Methamphetamine (dextro / levo)
    - MDMA/ecstasy = Molly = methylenedioxy-methamphetamine…
    - Phenetrazine= Preludin™
    - Methylphenidate = Ritalin™
  - **Methylxanthines**
    - Caffeine (coffee)
    - Theophylline (tea)
    - Theobromine (chocolate)


Coca plant

Powder cocaine/ methamphetamines


Free Base Cocaine


Mahuang


Ephedra


Khat


Bath Salts


Bath Salts

Every class of stimulants has medicinal uses, but not every stimulant has medicinal uses

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SOME CONSEQUENCES ARE DEPENDENT UPON MODE OF USE

Smoking and injection increase likelihood of developing dependence

- **Smoking**
  - Burned lips
  - Throat problems
  - Lung problems- acute (50% of those who smoke cocaine) and chronic
- **Injection**
  - Skin & heart infections
  - Hepatitis or HIV
- **Snorting**
  - Sinus infections
  - Holes in nasal septum
  - Nosebleeds
  - Hoarseness

Among those who smoke, 1 of 6 users will become dependent on cocaine

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ACUTE EFFECTS OF STIMULANT INTOXICATION

- **Increased**
  - alertness/vigilance, concentration, mental acuity
  - energy, locomotion
  - sensory awareness & sexual desire
  - self confidence, grandiosity, anxiety, irritability, paranoia
  - heart rate & blood pressure, irregular heartbeat, vasoconstriction
  - breathing rate, temperature, pupil size & blood sugar
  - electrical activity, seizures
- **Euphoria**
- **Toxic effects on muscles**
- **Abnormal movements**
  - Dystonia, tremors, stereotypy
- **Decreased**
  - brain blood flow & glucose metabolism
  - appetite & sleep
  - judgment & complex multi-tasking
  - defecation and urination

Rx Amphetamine dosing:
ADHD 2.5 to 70mg/ day
Narcolepsy 5 to 60 mg/day
Illicit use 1 g per/ day

Rx Methamphetamine dosing:
ADHD 5 to 25 mg/ day
approved but not often used

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EFFECTS OF STIMULANT INTOXICATION

Amphetamines & Violence

- Review of 28 studies
- Amphetamine vs no amphetamine use
- 2-fold increase in violence
- Risk of violence associated with
  - Frequent use
  - Psychotic symptoms
  - Psychosocial problems
  - Impulsivity
  - Other drug or alcohol use

Source: Foulds et al. 2020

Treatment of Intoxication

- **Talk down the client in a calm environment**
- Treat agitation with benzodiazepines

<u>Importance for public safety officers:</u>

- Severe agitation may require injections
- Restraints can be counter productive, because people will fight against them
  - further increasing damage to muscles
  - further increasing temperature
- There are no reversal agents

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STIMULANT INTOXICATION: TREAT THE PRESENTING SIGN/ SYMPTOM

Overdose:

- **Hypertensive (HTN) crisis**
- **Cardiac arrythmia**
- **Myocardial infarction (MI)**
- **Cerebrovascular Accident (CVA)**
- **Psychosis**

Treatment of Overdose:

- ✓ Treat HTN with alpha and/ or beta blockers
- ✓ Treat arrythmias with antiarrhythmics
- ✓ Treat vasoconstriction with nitroglycerin
- ✓ Treat psychosis with antipsychotics

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STIMULANT INTOXICATION: SYMPTOMS PROCEEDING DEATH

Symptoms Preceding Death

- Collapse
- Breathing difficulty
- Hyperthermia
- Chest pain
- Palpitations
- Cough
- Coughing up blood

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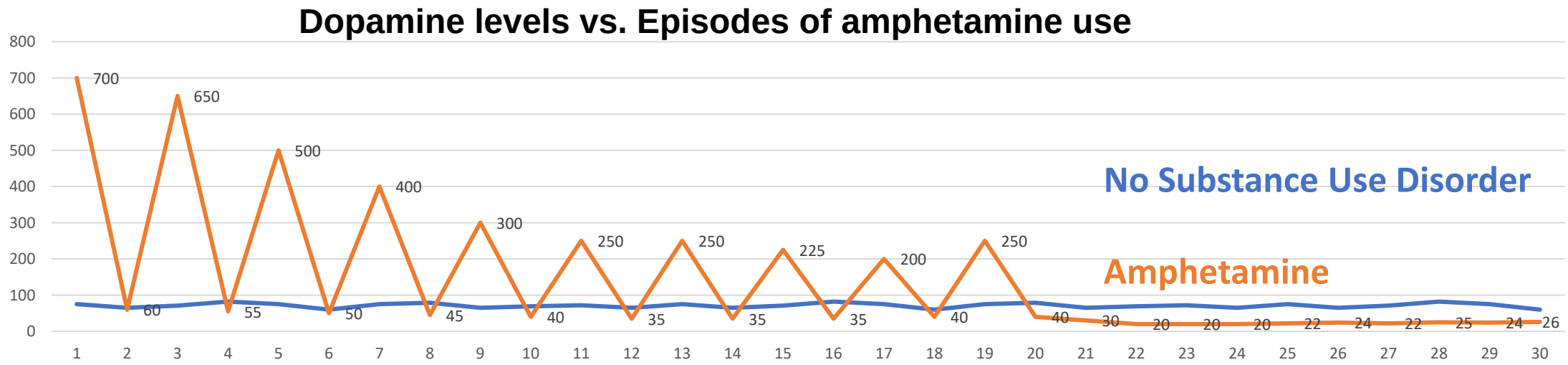
LONG TERM PSYCHOLOGICAL EFFECTS OF CONTINUAL USE OF ILLICIT STIMULANTS

+ Tolerance to euphoria and appetite suppression
+ Loss of ability to concentrate & severe memory loss
+ Loss of ability to feel pleasure without drug



+ Paranoia and psychosis (hallucinations & delusions)
+ Insomnia and fatigue
+ Irritable and angry
+ Depression (suicidal ideation)
+ Impulsive, reckless sexual behavior

Use of stimulants in doses approved by FDA for treatment of medical conditions do not result in this effect

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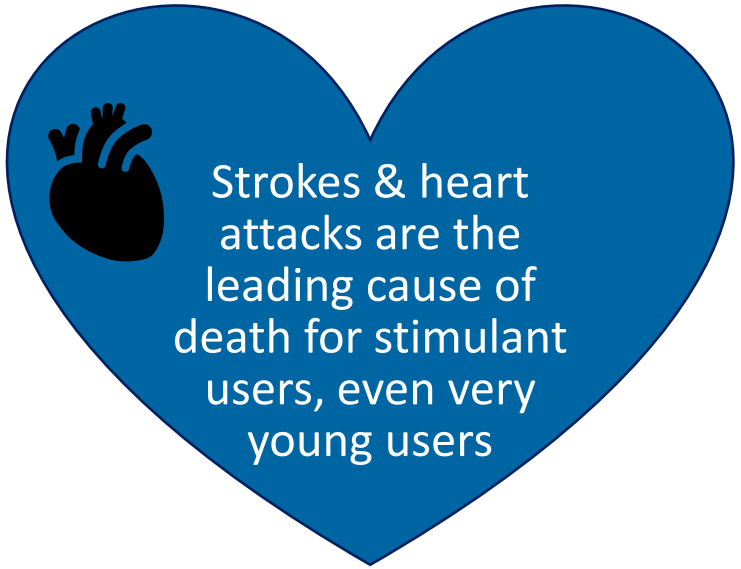
LONG TERM PHYSICAL EFFECTS OF CONTINUAL USE OF STIMULANTS

- **Dry mouth, severe dental decay and gum problems**
- **Bruxism**
- Weight loss
- Increased sweating; oily skin
- Skin lesions from injection & formication (leading to skin picking)
- Headaches
- Seizures

- **Strokes (hemorrhagic) and heart attacks**
- Irregular heart beats
- Cardiomyopathy
- Kidney & liver failure
- Pulmonary hypertension
- Damaged brain cells
- Maternal and neonatal effects
- Addiction



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CESSATION FROM STIMULANTS

- Acute withdrawal: 4 days
  - No medication intervention recommended
    - Increased appetite
    - Increased sleep & dreaming
    - Decreased activity & energy
    - Depression & anhedonia, anxiety
    - Decreased concentration
    - Craving
- Protracted withdrawal up to 10 weeks
- Lingering effects on the brain; may be permanent
    - Psychosis
    - Movement Disorders
    - Cognitive Issues

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2/3 OF PEOPLE WITH AMPHETAMINE USE DISORDER HAVE COGNITIVE IMPAIRMENT

Impairment is associated with

- Older age
- Earlier onset of use
- Longer duration of use
- Greater frequency of use

Impairments are due to

- Damage cell structures
  - Mitochondria in neurons & microglia
- Damage DNA caused by chromosomal alterations
- Inflammation of microglia
- Disruption of blood brain barrier
  - Inflammatory markers in peripheral blood
- Cell death

Cognitive impairments may limit ability to follow through on treatment related to

- Attention
- Memory
- Learning efficiency
- Visual- spatial processing
- Processing speed
- Psychomotor speed
- Executive dysfunction
  - Trouble sequencing events

Source: Paulus, M (2020) Neurobiology, clinical presentation, and treatment of methamphetamine use disorder a review. JAMA Psychiatry 77(9): 959-66.

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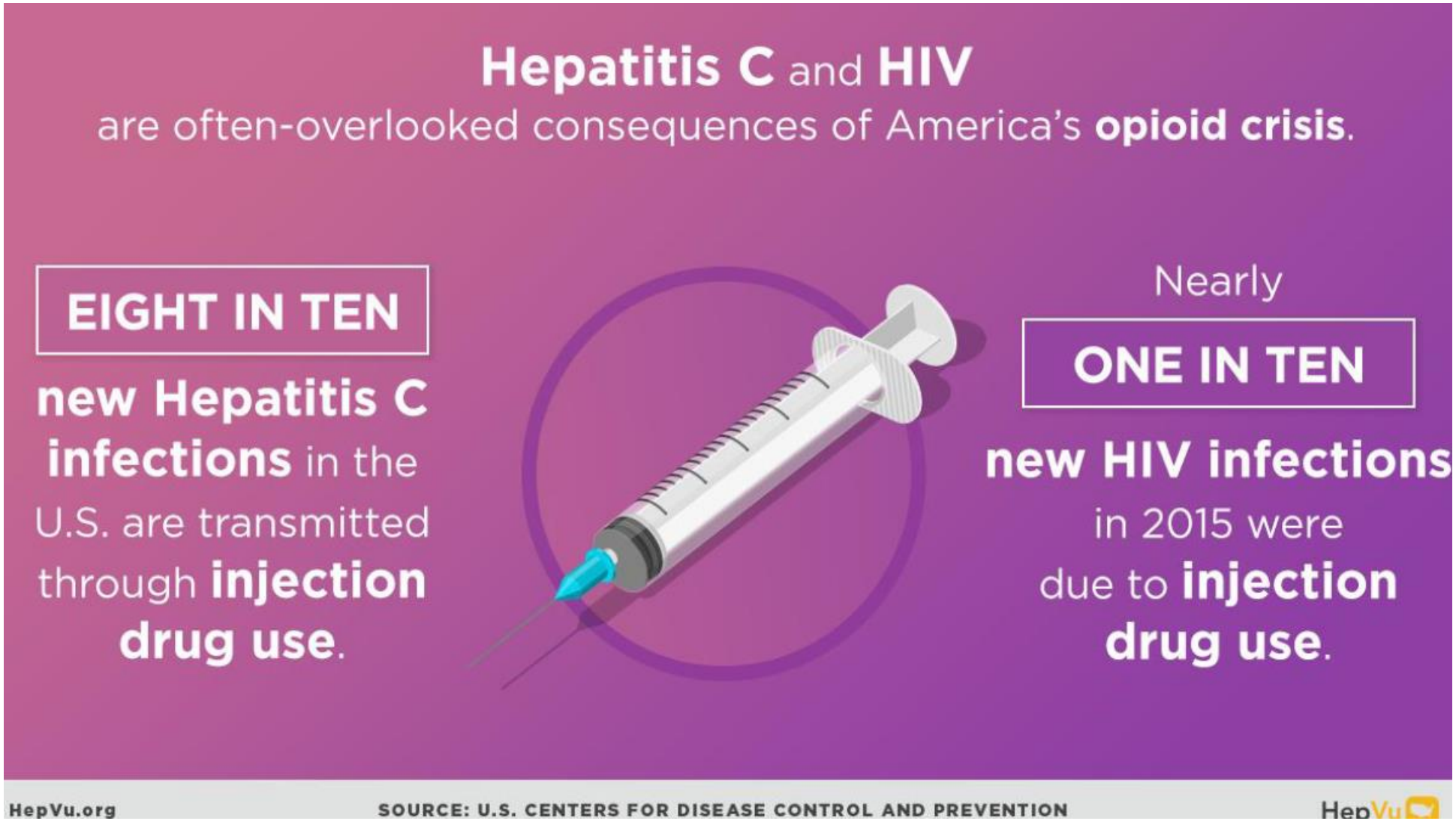
Sharing is NOT caring



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HEPATITIS C (HVC)

- Most common blood-borne infection in US: 2.4 million chronically infected[1]
- **57,000** acute infections estimated in 2019
- Not vaccine preventable
- The highest rates occurred in persons 20–39 years, consistent with age groups most impacted by the nation's opioid crisis
- Most people exposed to hepatitis C virus will develop chronic infection

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

- 1.2 million people in the USA have HIV
- 14% of people with HIV are unaware of their HIV status
- **37,968** people were newly diagnosed with HIV in 2018
- The annual number new HIV diagnoses decreased by 7% from 2014 to 2018
- Men who have sex with men (MSM), particularly black/African American MSM, are most affected by the HIV epidemic (42% of new infections)

[1]Hofmeister MG et al, Hepatology 2018; [2]Kim HS et al, J Viral Hepat 2019 May; 26(5): 596-602

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HEPATITIS C (HVC)

- Injection drug use: 60% of cases[1]
- Blood transfusion prior to 1992
- Receipt of solid organ transplantation or factor concentrates made before 1987
- Male-to-male sex
- Body tattoos
- Intranasal cocaine use

Highest risk: sharing needles and syringes

Can also occur with sharing injection paraphernalia such as water, cookers, and cotton filters

[1]Hofmeister MG et al, Hepatology 2018; [2]Kim HS et al, J Viral Hepat 2019 May; 26(5): 596-602

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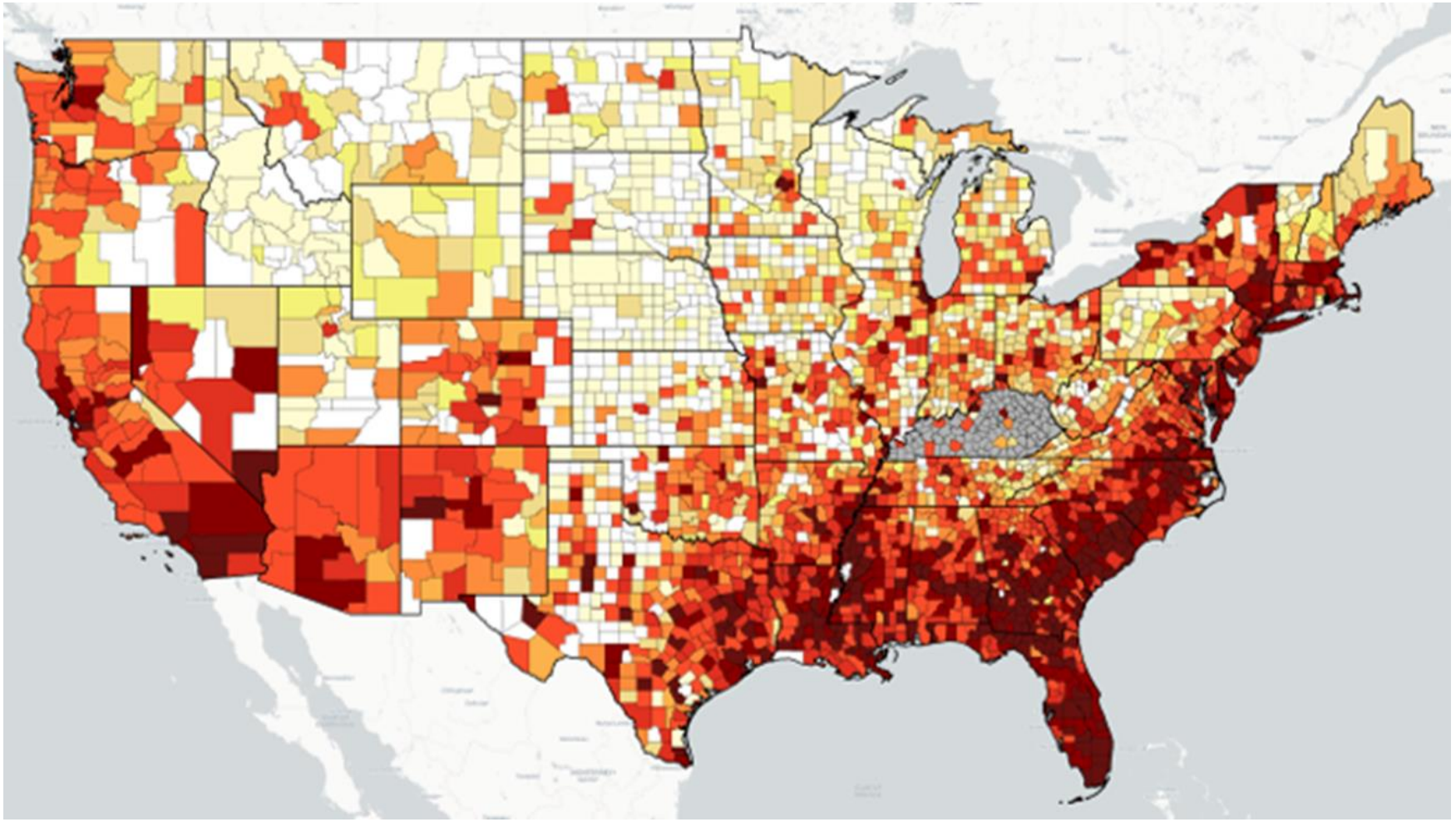
PREVALENCE OF HIV



https://map.aidsvu.org/map

*To protect privacy due to low case number and/or small population. †State health department requested to not release data.

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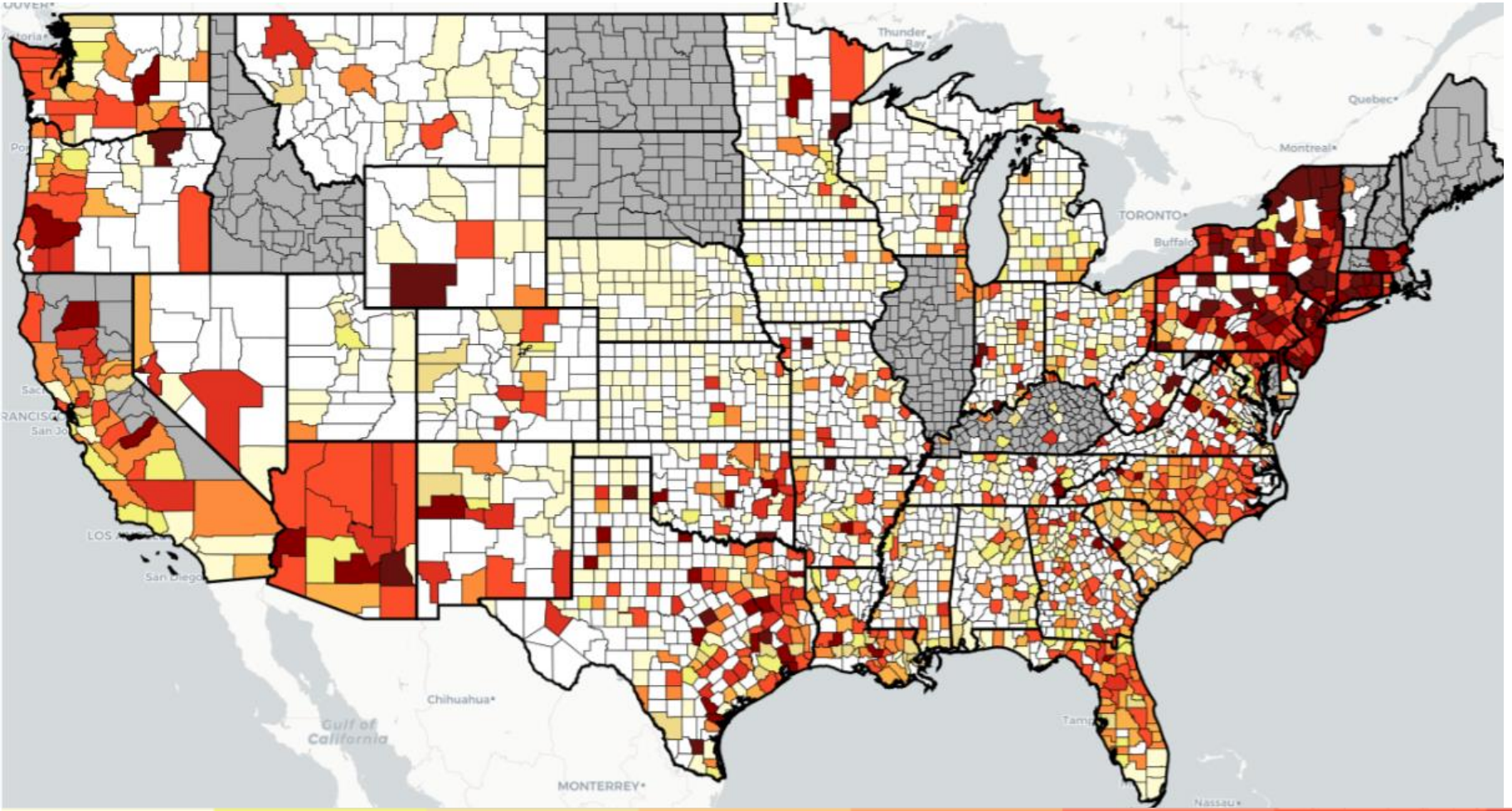
PREVALENCE OF HIV ATTRIBUTED TO IDU



Percent of Persons Living with HIV Attributed to Injection Drug Use

0 - 7.0	7.1 - 8.0	8.1 - 9.0	9.1 - 10.0	10.1 - 12.0	12.1 - 14.0	14.1 - 16.0	16.1 - 20.0	20.1 - 27.0	27.1+

Source: https://map.aidsvu.org/map

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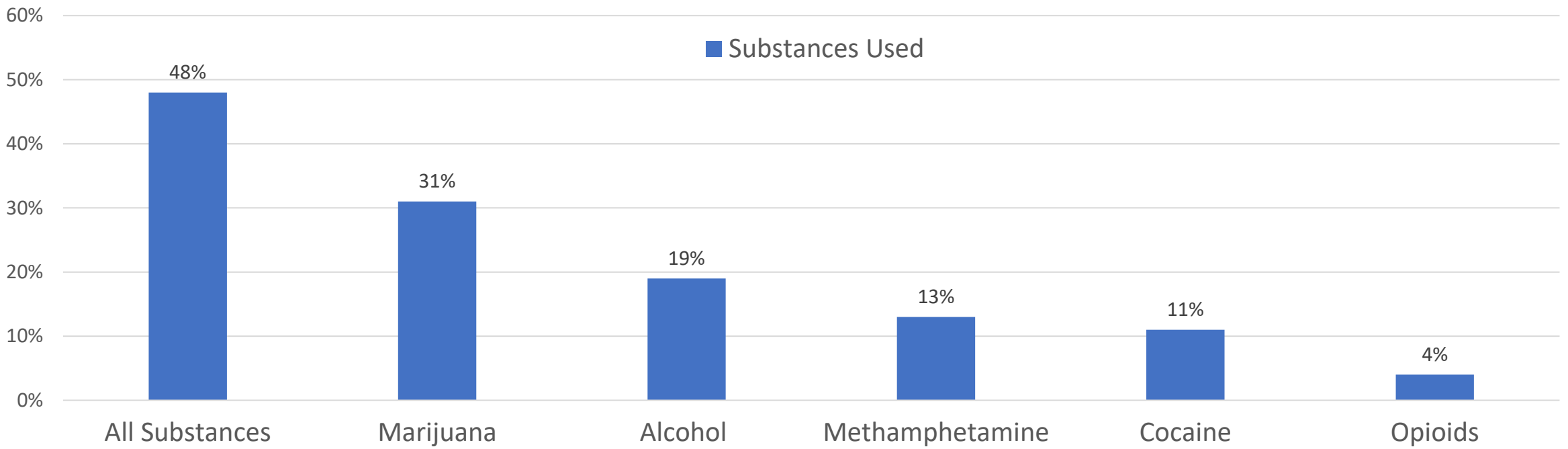
HIV AND SUBSTANCE USE

- 2017 review of HIV care enrollees (N=10,652) in 7 sites across the U.S.
  - 48% met criteria for a substance use disorder (range 21-71%)
- Younger age and male gender predicted greater substance use
- Approximately 20% met criteria for multiple substance use disorders



Source: Hartzler et al., 2017

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- Substance Use Disorders among HIV+ individuals increase risk of HIV transmission due to:
  - Sharing of syringes and other paraphernalia
  - Intoxicated involvement in unprotected sex
  - Sexual violence and victimization
  - Unaware of HIV status
  - Unsuppressed viral load

Not only is HIV a risk factor for substance use, but substance use is also a risk factor for HIV transmission

Source: Hartzler et al., 2017

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Recent HIV outbreak in Minnesota

- Hennepin County is the midst of a new HIV outbreak
- 54 people have tested positive for HIV in the past two years
- Typical year, the county averages less than three
- The population impacted most by the outbreak is homeless people living in encampments who inject opioids or spread HIV through sexual transmission

Important to consider given the intersection of risk factors (substance use disorder, mental health issues, homelessness, etc.)

Source: https://www.startribune.com/hennepin-county-is-battling-an-new-hiv-outbreak/600055396 (May 9, 2021)

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Methamphetamine use may accelerate HIV reproduction

- In test tube studies, when methamphetamine is added to immune cells, it significantly increases HIV replication
  - Particularly in CD4 cells and monocytes (white blood cells)
- In mouse models, methamphetamine activated a portion of the HIV genetic code (long terminal repeat – LPR), prompting cells to release a protein tied to more rapid HIV disease progression

Source: Toussi et al., 2009

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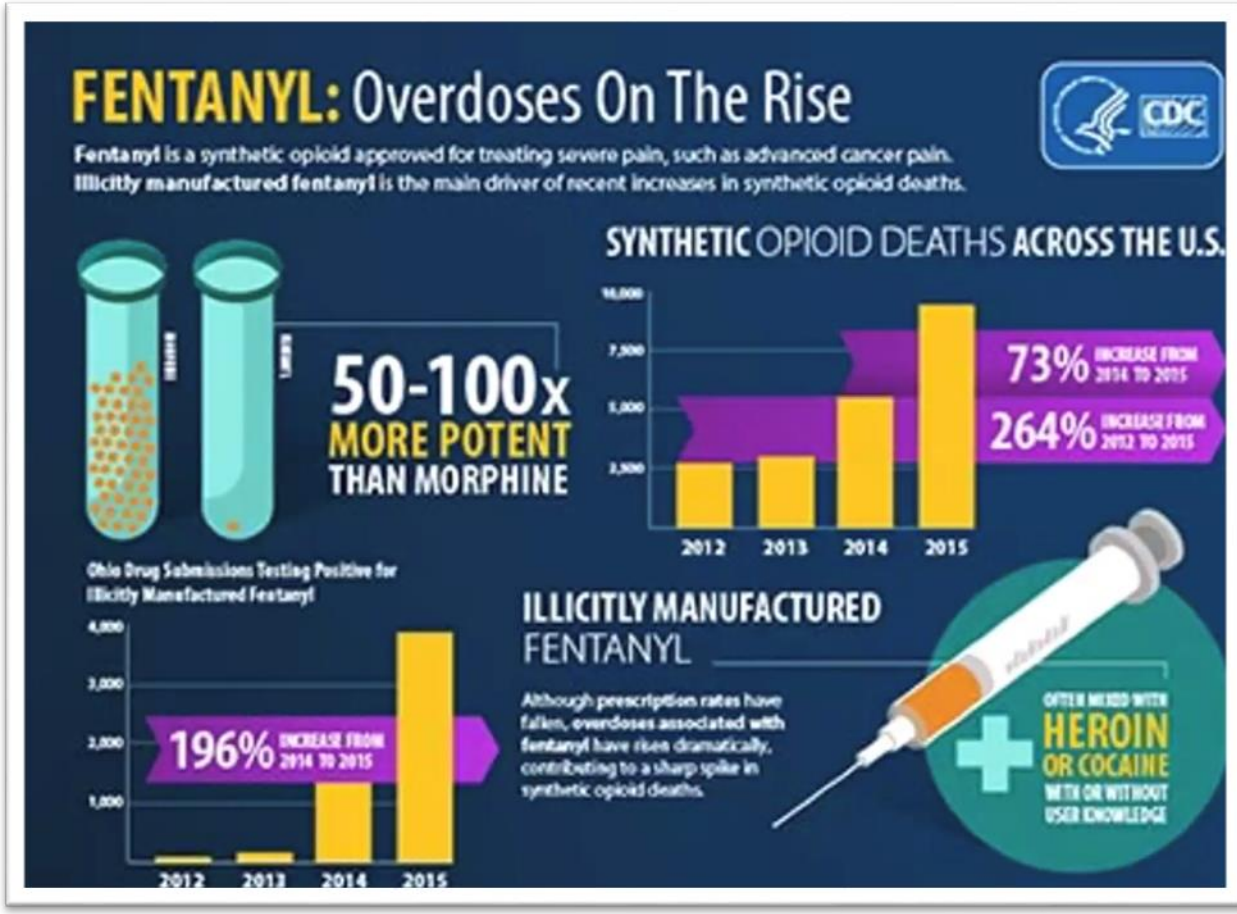
RISK OF HIV AMONG IDU AND USE OF FENTANYL

- Available as a powder, allowing “cold” preparation
  - Absence of need for heat that may deactivate HIV
  - Less rinsing of syringes because of less clogging
- More frequent injection, which can increase needle sharing
- Often sold combined with methamphetamine/other stimulants unknown to purchaser



1. Roth. Subst Use Misuse. 2017;52:1242. 2. Ciccarone. Subst Use Misuse. 2003;38:2049. 3. Lambdin. Int J Drug Policy. 2019;74:299. 4. CDC. https://www.cdc.gov/drugoverdose/pdf/pbss/PBSS-Report-072017.pdf. 5. IAS-USA Virtual Update on HIV. 2020. https://www.iasusa.org/2020/07/30/virtual-hiv-update-2020-mid-west-slides.

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Harm Reduction needed due to IV use & risk of fentanyl contamination & death

- Educational materials on psychological & physical effects
- Fentanyl test strips
- Syringe Exchange & other clean injection supplies
- Naloxone and overdose prevention education
- Quiet rooms to come down
- Showers & antibiotics for infection prevention & treatment
- Safe/safer sex practices
  - Condoms
  - Pre and post exposure prophylaxis (PrEP and PEP)
- Water for hydration
- Tooth paste and toothbrush
- Testing for HIV and HCV

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HIV Testing is Harm Reduction

- A national survey conducted from 2016-2017 by the CDC found that > 60% of US adults had never been tested for HIV[1]
  - Testing rates varied among focus jurisdictions of the Ending the HIV Epidemic initiative
  - Rural areas had lower testing and diagnosis rates than urban areas
- HIV testing is also a mechanism for engaging in HIV prevention services for at-risk individuals who test negative
  - Including PrEP and harm reduction services for people who inject drugs

Source: 1. Pitasi. MMWR Morb Mortal Wkly Rep. 2019;68:561.

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- Motivational Interviewing (MI)
  - Decreased days of stimulant use & amount of stimulant used/ day
- Cognitive Behavior Therapy (CBT)
  - Decreased quantity of stimulant use & frequency/ week
  - Decreased risky sexual behaviors
- Community Reinforcement Approach- see next slide
- Contingency Management- see next slide

STRONG EVIDENCE FOR THESE AS INDIVIDUAL INTERVENTIONS OR IN COMBINATION APPROACHES

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TREATMENT OF STIMULANT USE DISORDER: SAMHSA EVIDENCE BASED RESOURCE GUIDE

- **Community Reinforcement Approach**
  - Decreased addiction severity, drug use (weeks of use, frequency/week, $/week)
  - Increased cocaine abstinence

VA Implementation
Can earn $328;
Average Cost
$150

- **Contingency Management (CM)**
  - Decreased days of stimulant use, cravings, HIV risk behaviors
  - Data
    - 50% of vets in CM completed 14 sessions/12 weeks compared to 42% completing 2 sessions/ 1 year
    - 2 VA studies: 92% of almost 28,00 tox screens negative & of >69,000 tox screens negative

There are NO FDA approved medications for stimulant use disorders.
Best Practices and Standards of Care do NOT endorse medication for stimulant disorders at this time.

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QUESTIONS AND DISCUSSION

Send your questions to the host via the chat or Q+A window in the Zoom meeting.

Contact Us

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How does CM Work?

REMEMBER:
Measure objectively & frequently
Don't set the bar too high or low

- Select objective target behavior (attendance, abstinence)
  - Define the behaviors
    - Attendance at clinic (med appt, group appt, providing tox, participation?)
    - Abstinence from DOC? all illicit drugs? prescribed drugs? alcohol? nicotine?
- Provide immediate, consistent, tangible, desired rewards for target behavior
- Escalate size of reward for consistent behavior
- When target behavior does not occur
  - Withhold the reward
  - Reset size of reward for next occurrence of target behavior
- Example: Fishbowl Method- 250 good jobs, 209 $1, 40 $20, 1 $100

Reinforcement totaling $80 = treatment as usual.

Reinforcements of $240 improves outcomes. Petry 2004

Source: Dominick DePhilippis, Ph.D. Philadelphia CESATE: Center of Excellence in Substance Addiction Tx & Education

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Office of Inspector General Allows Payment for Contingency Management

+ Incentives can be seen as kickbacks or inducements, if they exceed a nominal amount
    + Intent of law to prevent fraud, waste and abuse- Good
+ CMS imposes annual limit on incentives of $75; some states may have additional limits but
+ “There is no OIG imposed $75 limitation on contingency management program incentives.”

If a Contingency Management (CM) incentive “does not satisfy an existing safe harbor or exception (as applicable), that does not mean that such incentive automatically violates the statutes and is illegal. CM incentive arrangements that do not comply with a safe harbor must be analyzed on a case by-case basis for compliance with the Federal anti-kickback statute and Beneficiary Inducements CMP” by OIG.

“Declining to seek an OIG advisory opinion is not evidence that parties have improper intent.”

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