



Pacific Southwest

RURAL OPIOID TECHNICAL
ASSISTANCE REGIONAL CENTER

The Impact of Stimulant Use on Rural Communities and Effective Treatment Approaches and Recovery Supports (Part 2)

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What Do We Hope You Learn Today?

- Patterns and trends in stimulant use in rural communities.
- Acute and chronic physical and psychological effects of stimulant use
- Behavioral treatment interventions and recovery approaches proven to be effective in treating people with a stimulant use disorder



Before we talk about stimulants, let's discuss the impact of stigma



What is Stigma???

- **Stigma** is a social phenomenon in which a negative attitude or belief discredits a person or group because of an attribute (including an identity or health condition). (Goffman, 1963)
 - Assumes that the person who is the target of the stigma will experience discrimination due to the identified attribute



SAMHSA defines stigma as:

‘the complex of attitudes, beliefs, behaviors, and structures that interact at different levels of society (i.e., individuals, groups, organizations, systems) and manifest in prejudicial attitudes about and discriminatory practices against people with mental and substance use disorders’

(National Academies of Sciences, Engineering and Medicine, 2016)

STIGMA



- **‘Addiction’** is one of the most stigmatized conditions, globally (Barry et al, 2014; Room et al, 2001)
- Illicit drug use – **MOST** stigmatized (#1)
- Alcohol use - #4 (after HIV+ and criminal record)
- The long-lasting negative attitudes toward people with SUDs are reinforced through **media** (McGinty et al, 2019)



Why the Strong Relationship Between Stigma and SUDs?

- **Blame***
 - Assumption that people with SUDs caused their illness
 - *She brought it on herself*
- **Poor Prognosis* and Need for Continued Care***
 - Assumption that treatment won't help, at least not without lasting a lifetime
 - *Addicts always relapse*
- **Social Distance***
 - Reluctance to form close attachments
 - *I don't want my child dating an addict*
- **Fear***
 - Fear that people with SUDs are dangerous* or fear that SUD could happen to anyone
 - *We're a good family – that will never happen to my kids*



Language: A Powerful Tool to Reduce Stigma

- Use person-first language
- Use objective terms, rather than values- or morality-based words
- Avoid fear-based or sensational language
- Avoid slang or derogatory terms



‘With **20%** of the **U.S. population** being rural, and even more than that coming from a rural background, every clinician & peer support specialist will face the influence of rural culture...’

Smalley & Warren, 2012



POWER OF
INFLUENCE

The Scope of Stimulant Use in the United States and Beyond



What we know...globally

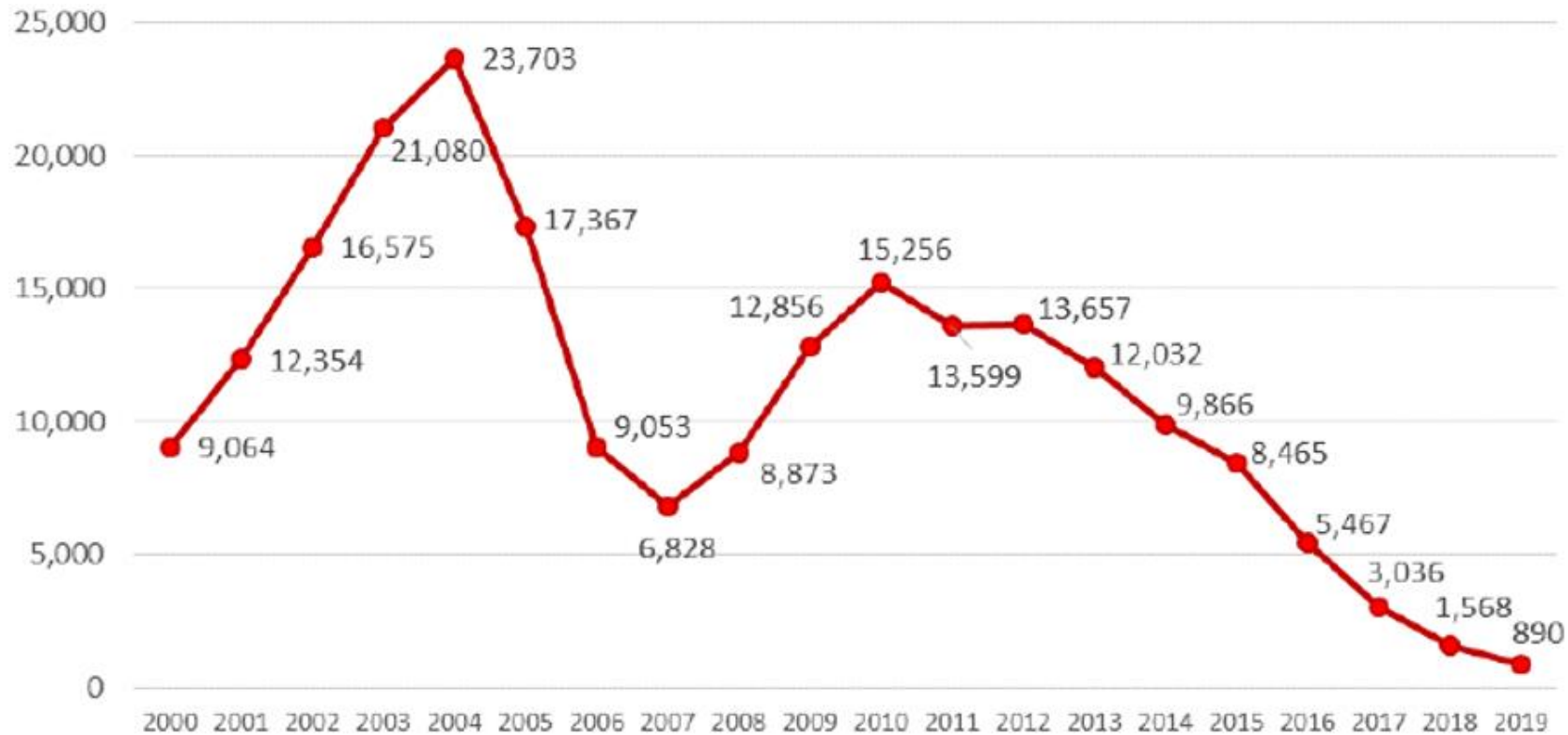
- Amphetamine-type stimulants (ATS) constitute the 3rd most widely used illicit drug category in the world, following cannabis and opioids
- The type of ATS used varies by region
 - Amphetamines in Europe and the Middle East
 - Methamphetamine in the US, Australia, and SE Asia
- Different precursors used in the manufacturing process



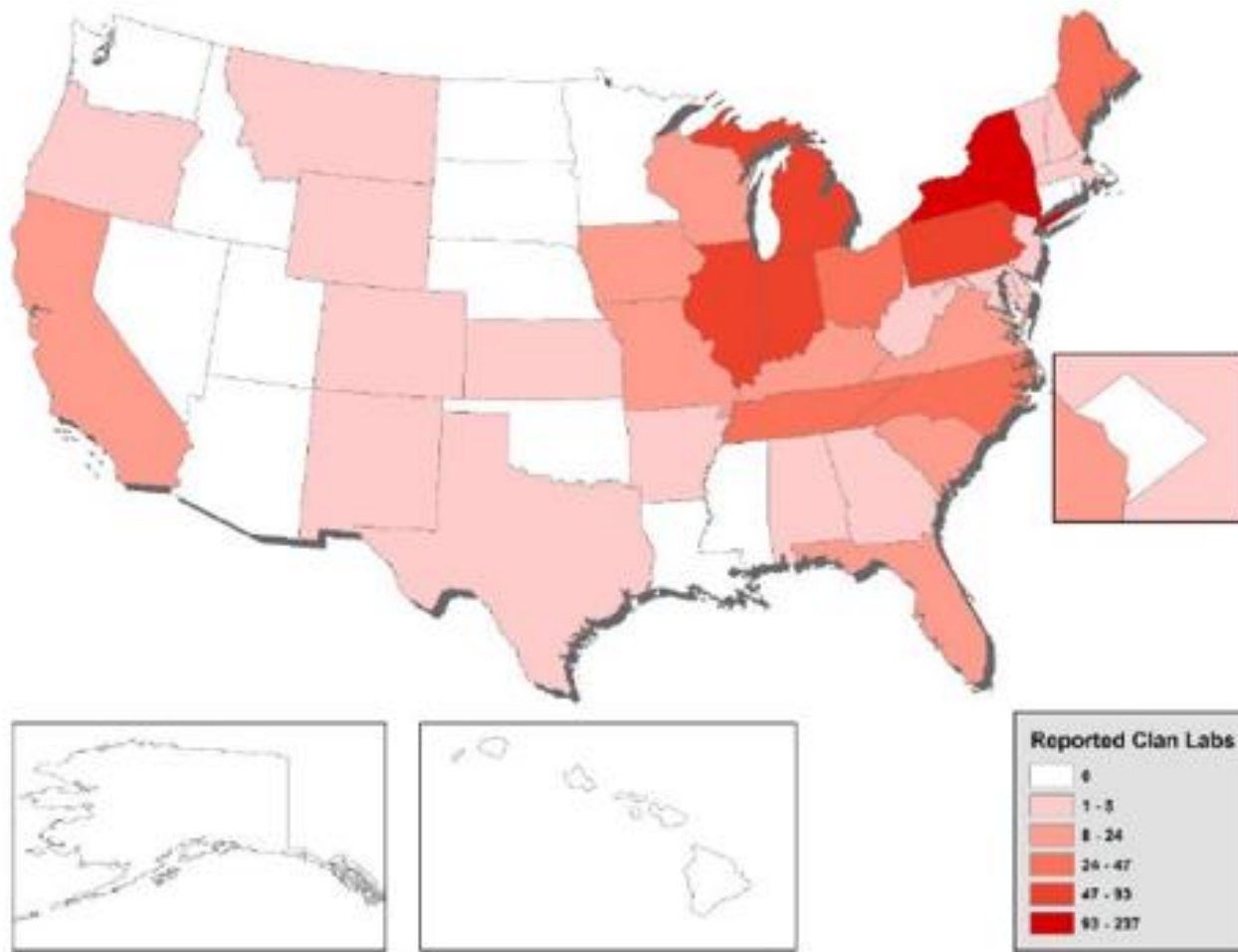
Substance use is a public health crisis in the rural United States and has been identified as one of the top 10 priorities *Rural Healthy People 2020*



Declines in the Domestic Production of Methamphetamine: 2000-2019

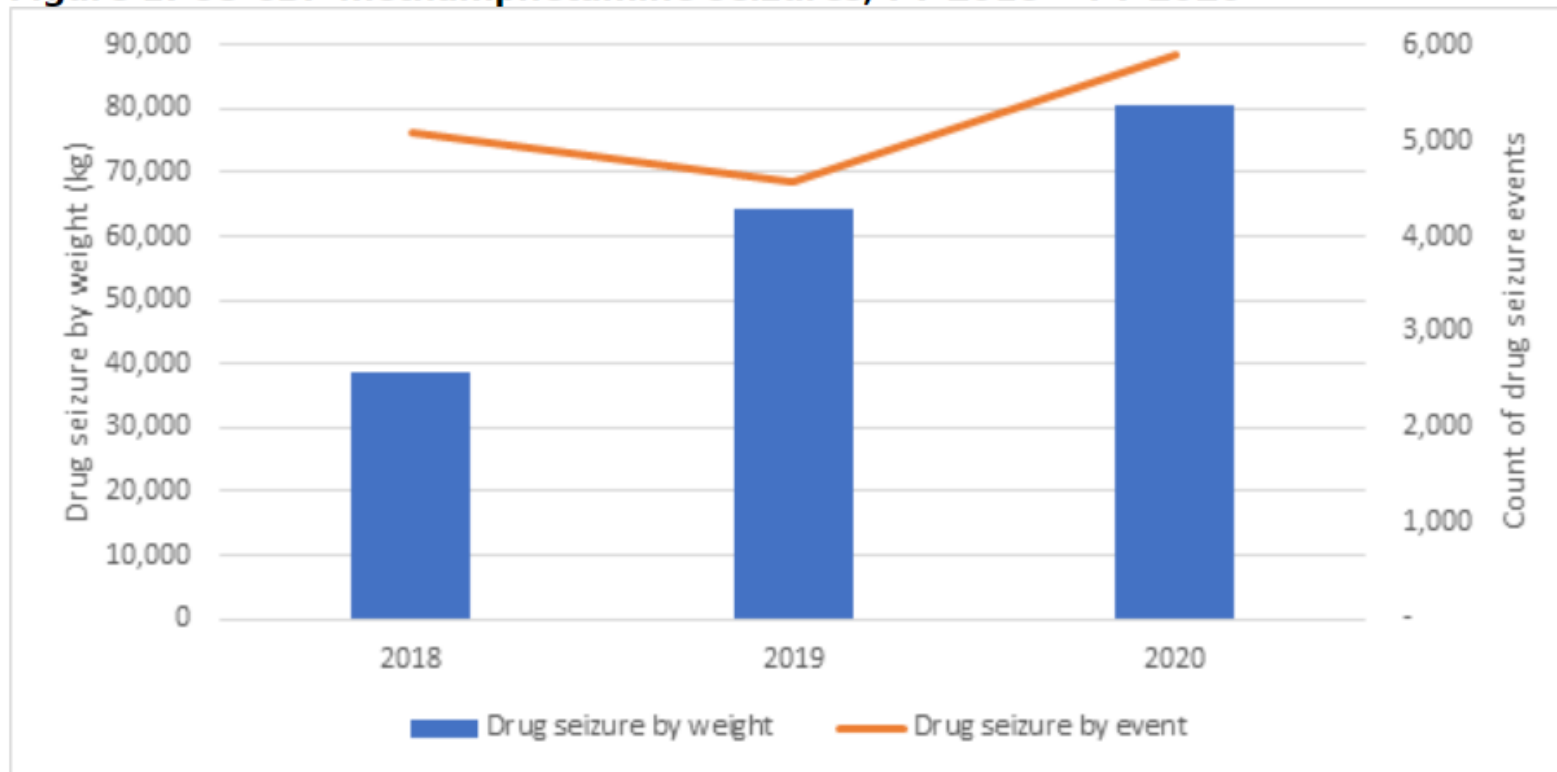


U.S. Methamphetamine Lab Incidents: 2019

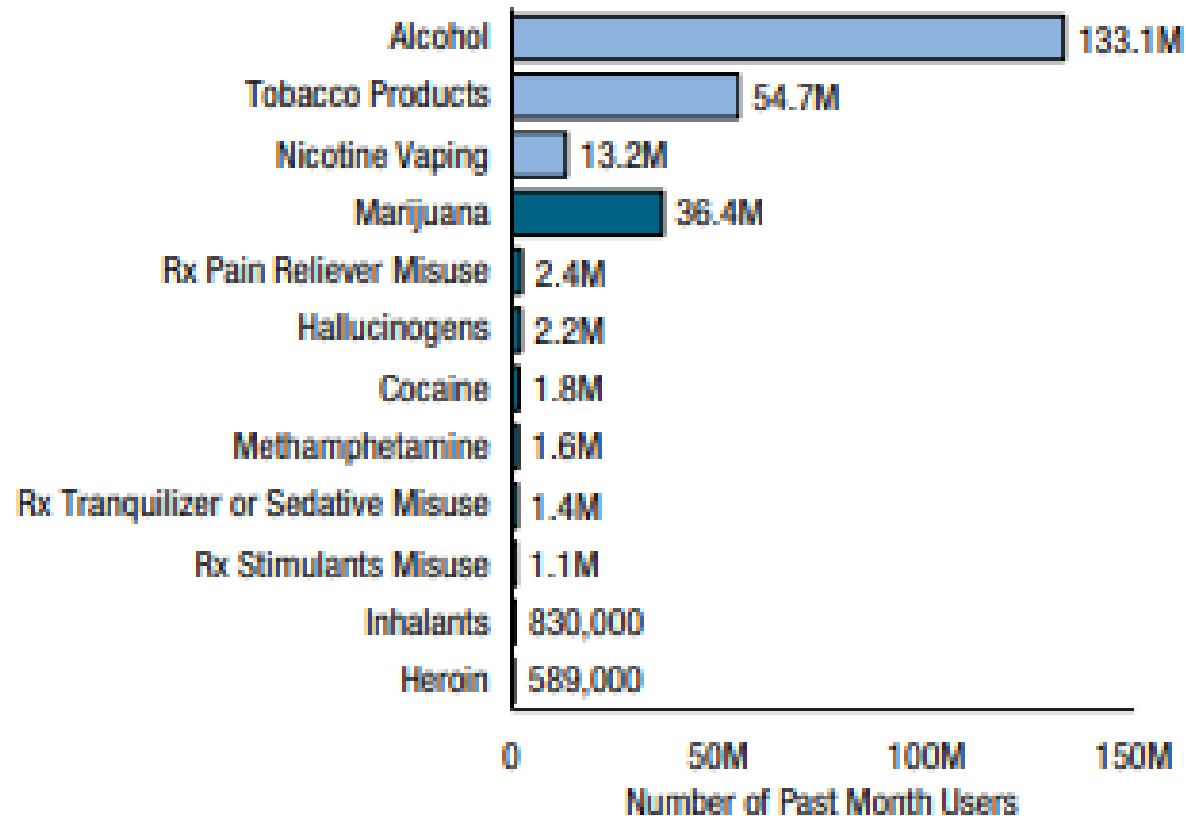


A More than Doubling of Meth Seizures along U.S.-Mexico Border

Figure 1: US CBP methamphetamine seizures, FY 2018 – FY 2020*



Numbers of People Reporting Past Month Substance Use among those Aged 12 or Older: 2021



Rx = prescription.

Note: The estimated numbers of current users of different substances are not mutually exclusive because people could have used more than one type of substance in the past month.



Increases in Treatment Admissions Seen for Select Psychoactive Substances, 2010-2020

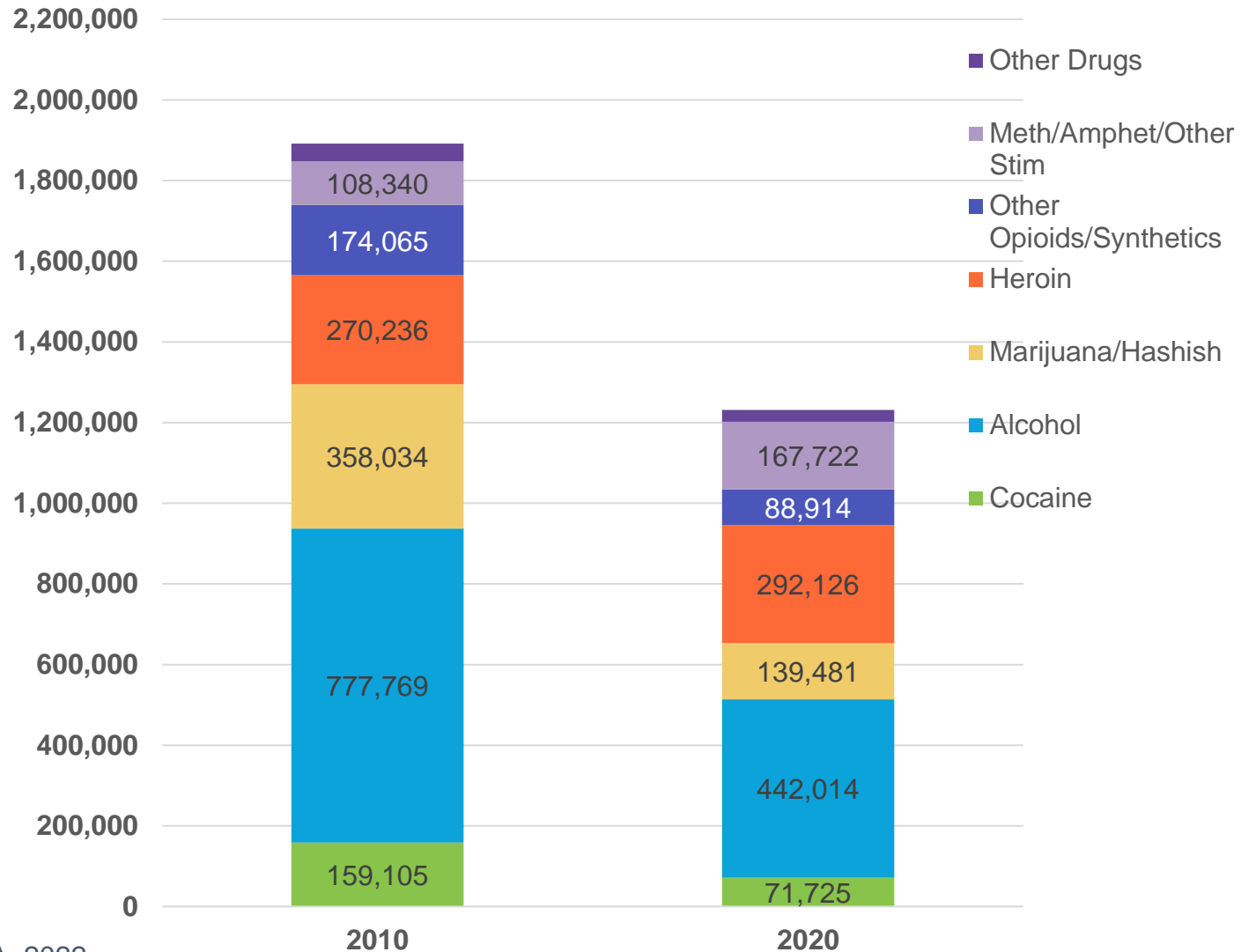
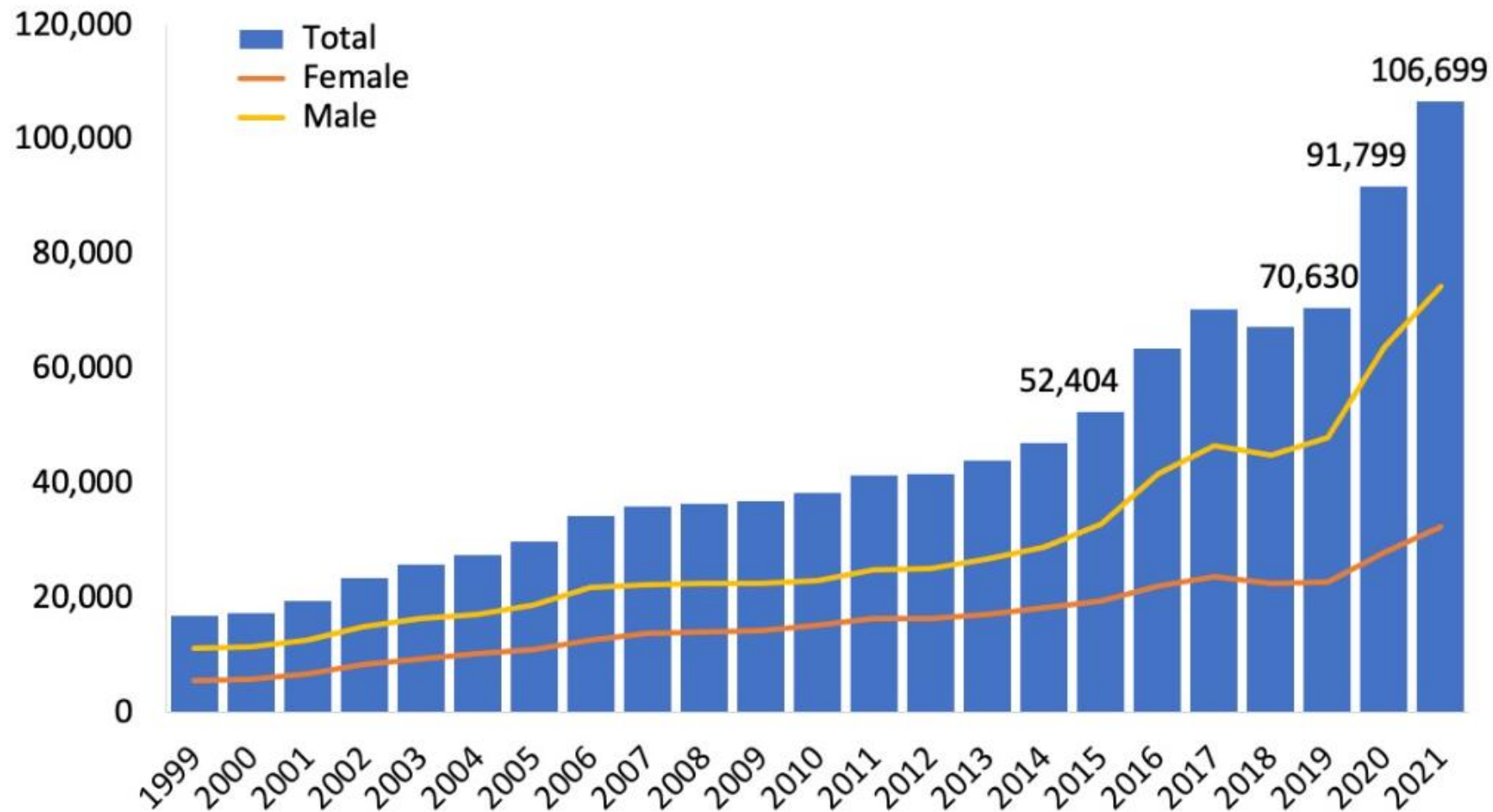


Figure 1. National Drug-Involved Overdose Deaths*, Number Among All Ages, by Gender, 1999-2021

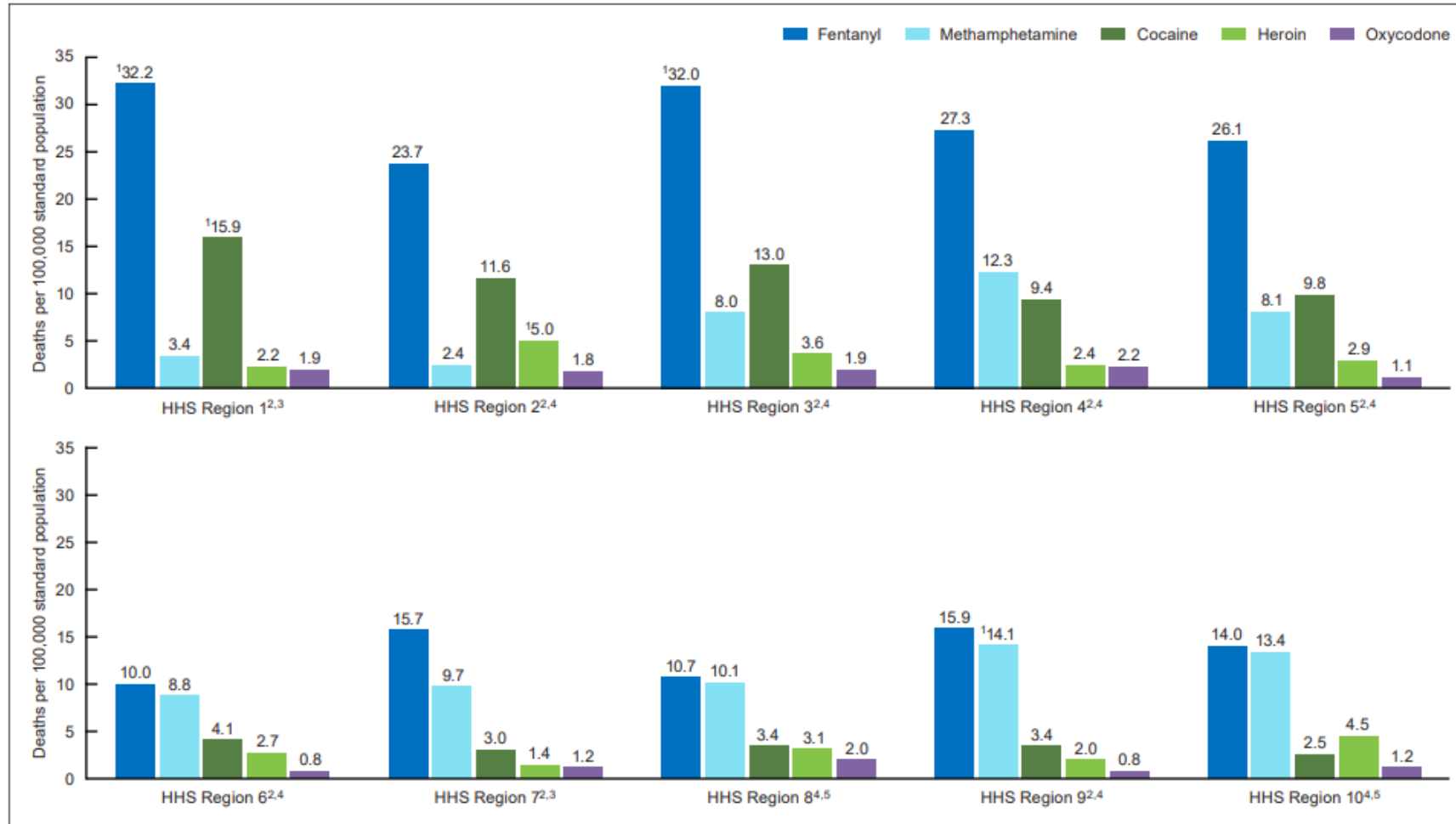


*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2021 on CDC WONDER Online Database, released 1/2023.

Overdose Rates by Substance and HHS Region

Vital Statistics Surveillance Report

Figure 5. Age-adjusted rates of drug overdose deaths, by selected drugs and public health region: United States, 2021



¹Rate of deaths involving this drug is significantly higher than all other regions ($p < 0.05$).

²Rate of deaths involving fentanyl was highest compared with the rate of deaths involving methamphetamine, cocaine, heroin, and oxycodone ($p < 0.05$).

³Rate of deaths involving oxycodone was lowest compared with the rate of deaths involving fentanyl, methamphetamine, and cocaine ($p < 0.05$).

⁴Rate of deaths involving oxycodone was lowest compared with the rate of deaths involving fentanyl, methamphetamine, cocaine, and heroin ($p < 0.05$).

⁵Rate of deaths involving fentanyl was highest compared with the rate of deaths involving cocaine, heroin, and oxycodone ($p < 0.05$).

NOTES: The 10 U.S. Department of Health and Human Services (HHS) public health regions are: Region 1 (CT, MA, ME, NH, RI, and VT); Region 2 (NJ and NY); Region 3 (DC, DE, MD, PA, VA, and WV); Region 4 (AL, FL, GA, KY, MS, NC, SC, and TN); Region 5 (IL, IN, MI, MN, OH, and WI); Region 6 (AR, LA, NM, OK, and TX); Region 7 (IA, KS, MO, and NE); Region 8 (CO, MT, ND, SD, UT, and WY); Region 9 (AZ, CA, HI, and NV); and Region 10 (AK, ID, OR, and WA). Drug overdose deaths are identified using *International Classification of Diseases, 10th Revision (ICD-10)* underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Deaths may involve other drugs in addition to the referent drug (that is, the one listed). Deaths involving more than one drug (for example, a death involving both heroin and cocaine) are included in both totals. Age-adjusted death rates were calculated using the direct method and the U.S. 2000 standard population.

The rate of deaths involving psychostimulants with abuse potential was **31%** higher in rural counties-
The rate of deaths involving natural and semisynthetic opioids was nearly **13%** higher in rural counties

Figure 3. Age-adjusted rates of drug overdose deaths, by type of drug and urban-rural status: United States, 2020

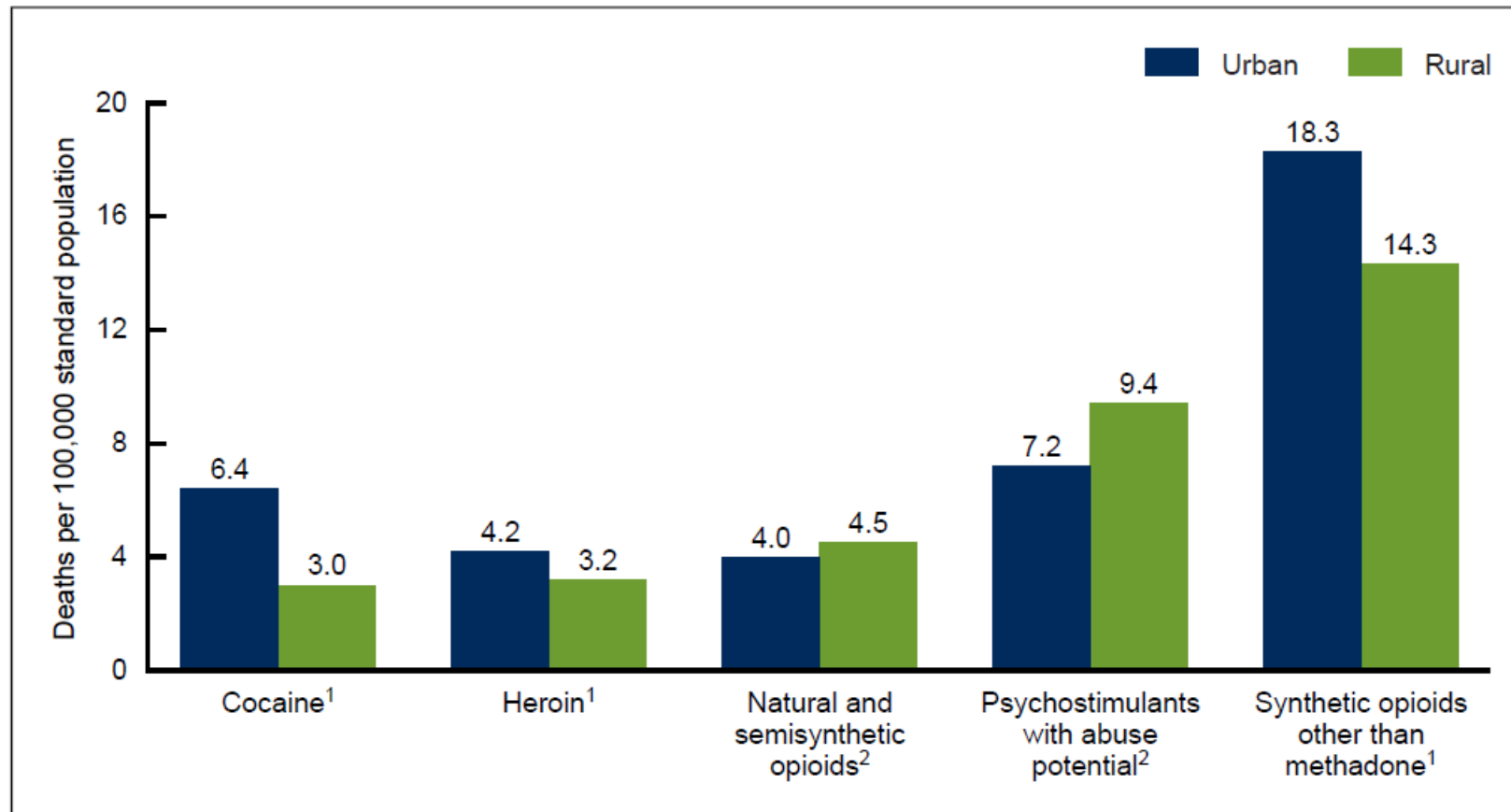
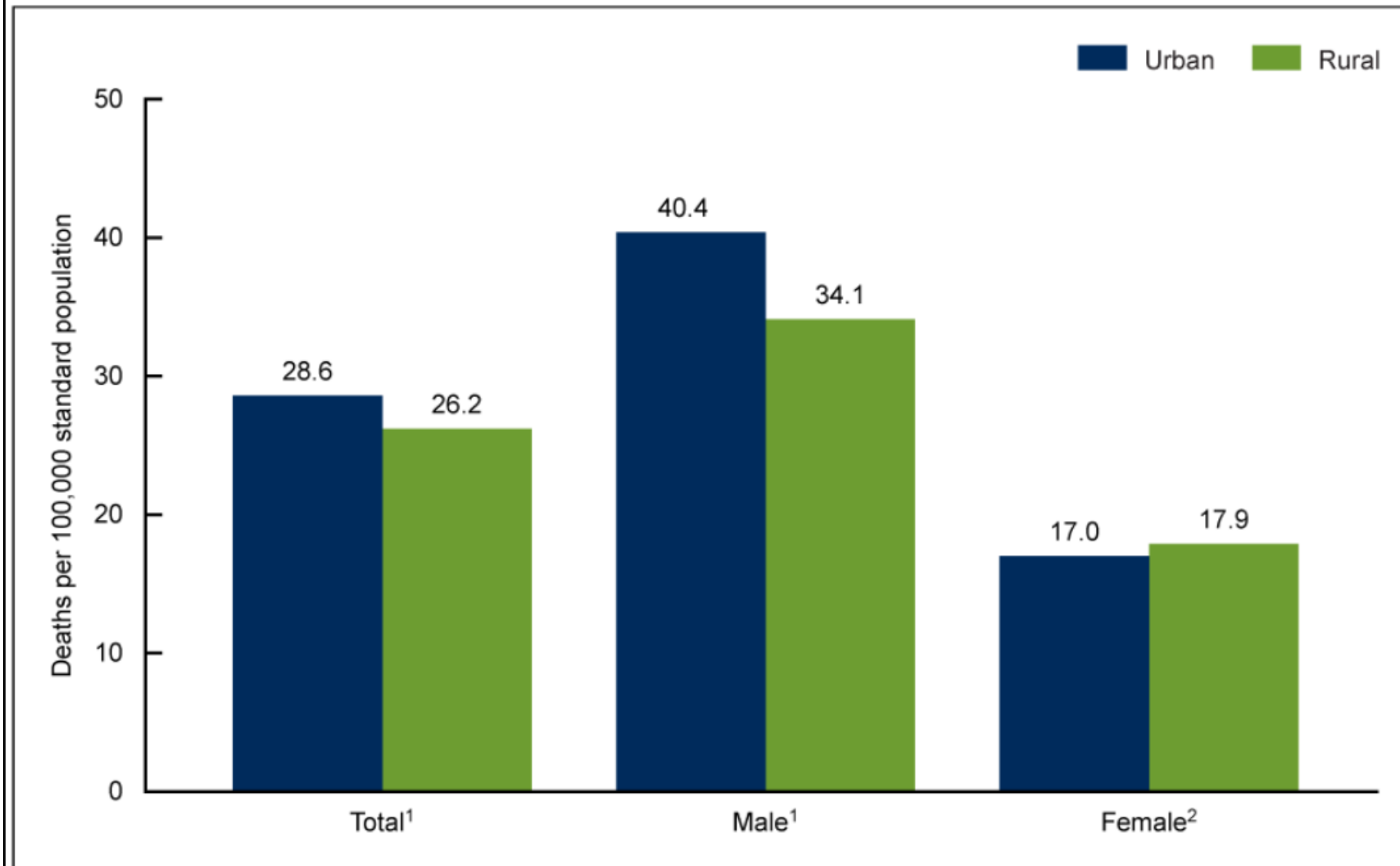


Figure 1. Age-adjusted rates of drug overdose deaths, by sex and urban–rural status: United States, 2020



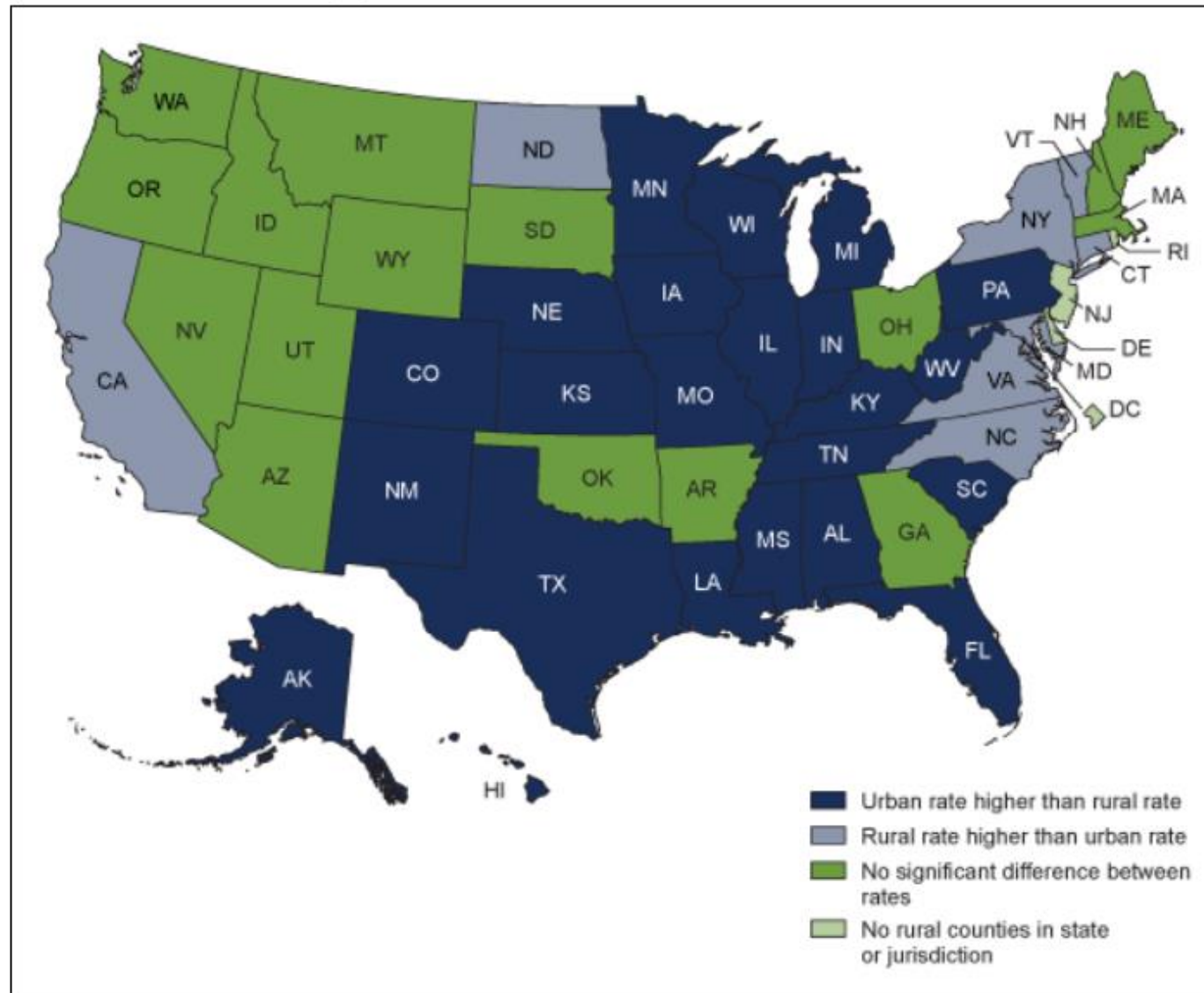
¹Rate higher in urban counties than in rural counties ($p < 0.05$).

²Rate lower in urban counties than in rural counties ($p < 0.05$).

NOTES: Drug overdose deaths were identified using *International Classification of Diseases, 10th Revision* underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. Age-adjusted death rates were calculated using the direct method and the 2000 U.S. standard population. Decedent's county of residence was classified as urban or rural based on the 2013 NCHS Urban–Rural Classification Scheme for Counties. Access data table for Figure 1 at: <https://www.cdc.gov/nchs/data/databriefs/db440-tables.pdf#1>.

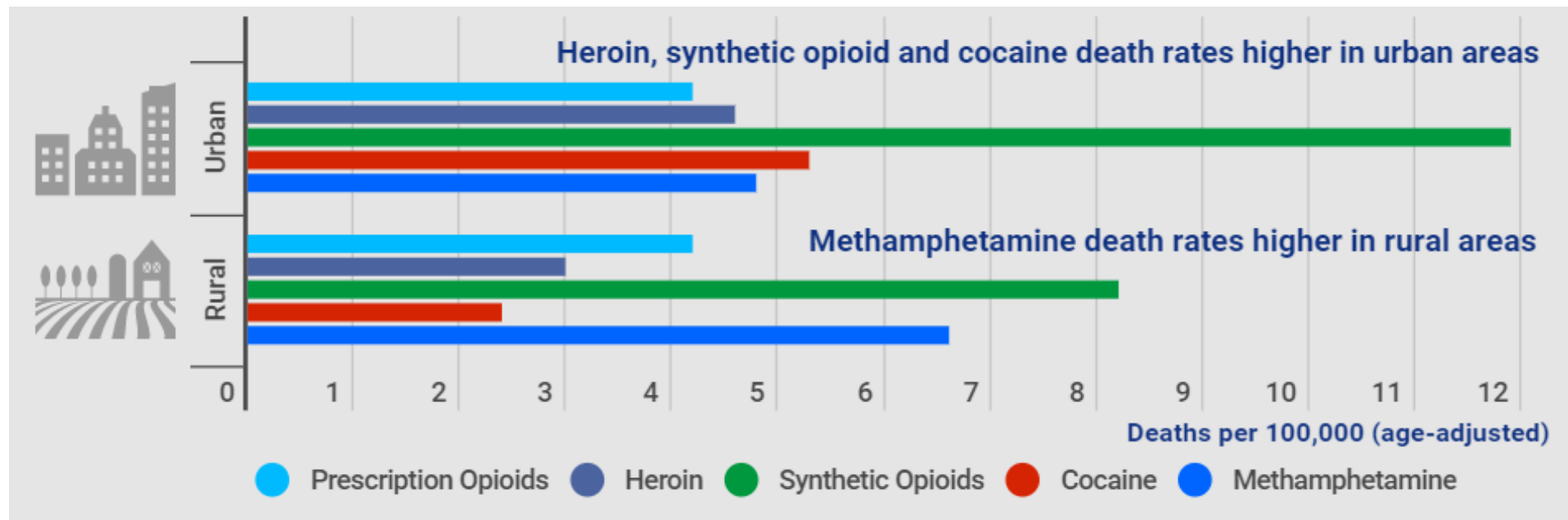
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

Figure 4. Urban–rural differences in age-adjusted rates of drug overdose deaths, by jurisdiction of residence: United States, 2020



Spencer MR, Garnett MF, Miniño AM. Urban–rural differences in drug overdose death rates, 2020. NCHS Data Brief, no 440. Hyattsville, MD: National Center for Health Statistics. 2022

Differential Drug-Related Death Rates in Rural vs. Urban Areas



Stimulants: What are We Talking About?



The Broader Classification: Stimulants

Methamphetamine



Powder and Crack Cocaine



Forms of Cocaine

- Powder cocaine (Hydrochloride salt)
- Smokable cocaine (Crack, rock, freebase)
- Cocaine half-life: ~1-2 hours



Methamphetamine



Methamphetamine Powder

*Description: Beige/yellowy/
off-white powder*

Base / Paste Methamphetamine

*Description: 'Oily', 'gunky', 'gluggy' gel,
moist, waxy*

Crystalline Methamphetamine

*Description: White/clear crystals/rocks;
'crushed glass' / 'rock salt'*



Cocaine vs. Methamphetamine

Methamphetamine

- Stimulant
- Man-made
- Smoking produces a long-lasting high
- 50% of drug is removed from body in 12 hours
- Increases dopamine release and blocks dopamine re-uptake
- Limited medical use

Cocaine

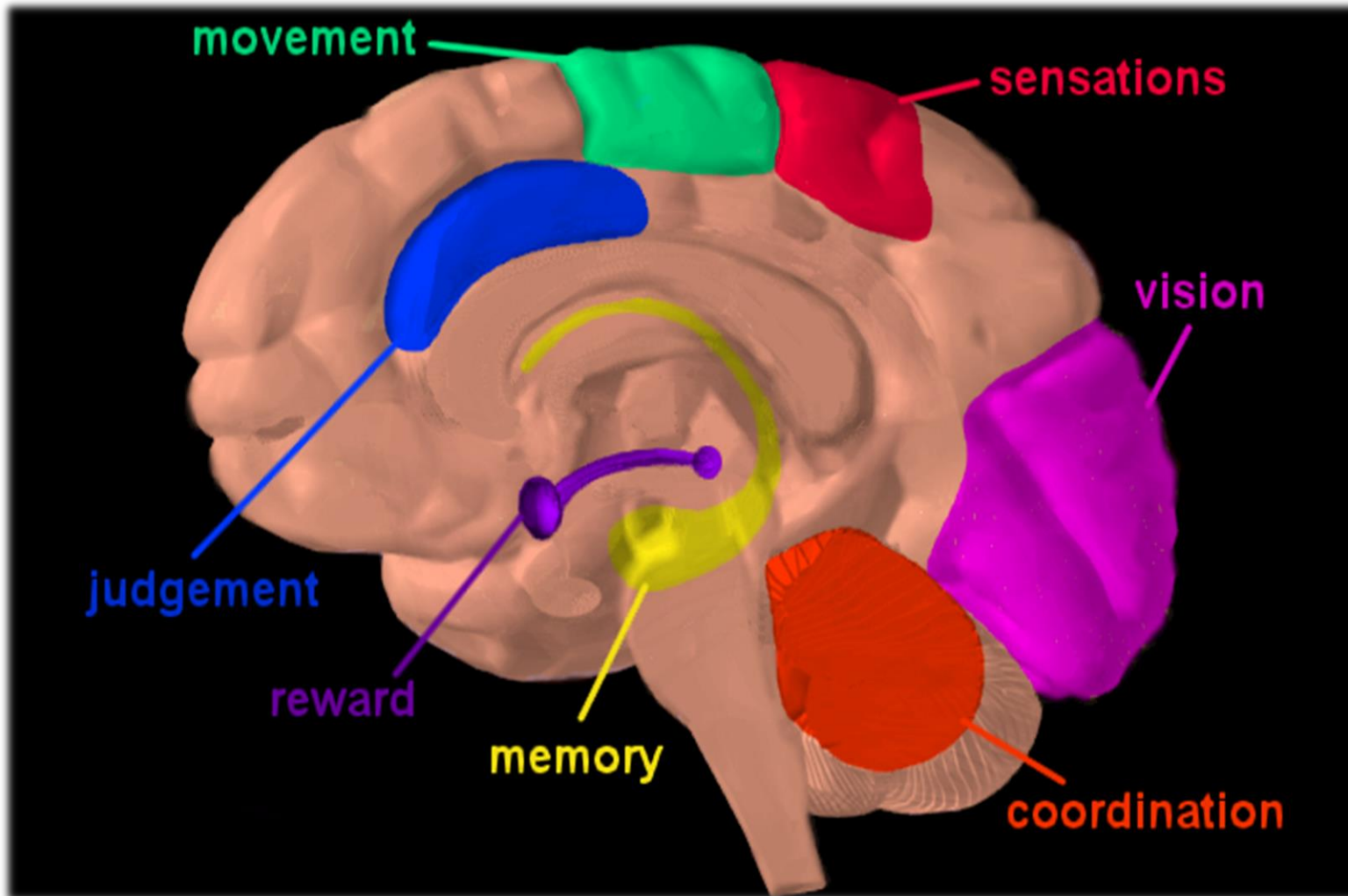
- Stimulant and local anesthetic
- Plant-derived
- Smoking produces a brief high
- 50% of drug is removed from body in 1 hour
- Blocks dopamine re-uptake
- Limited use as a local anesthetic (surgical)



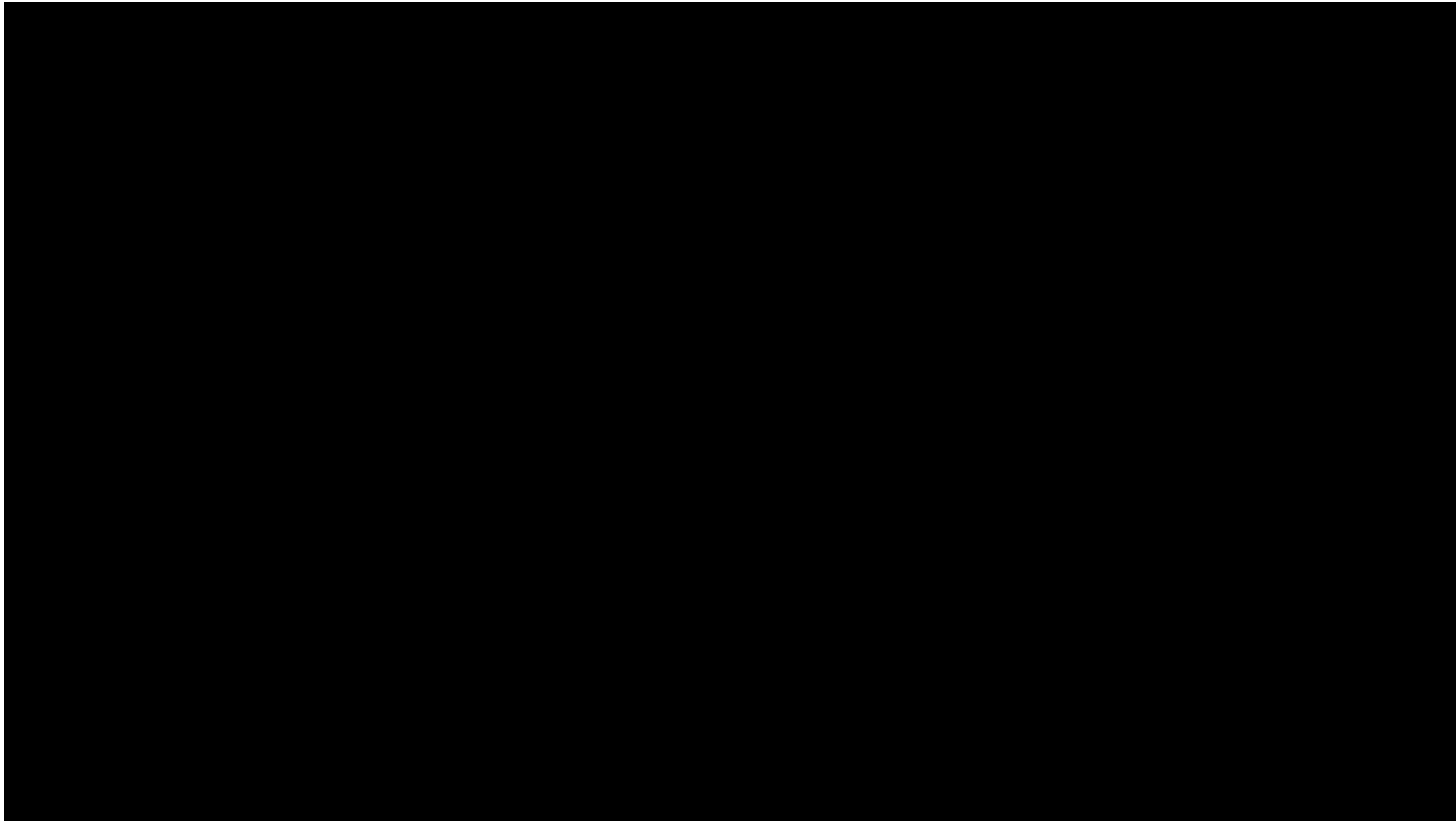
The Impact of Stimulants on the Brain and Body



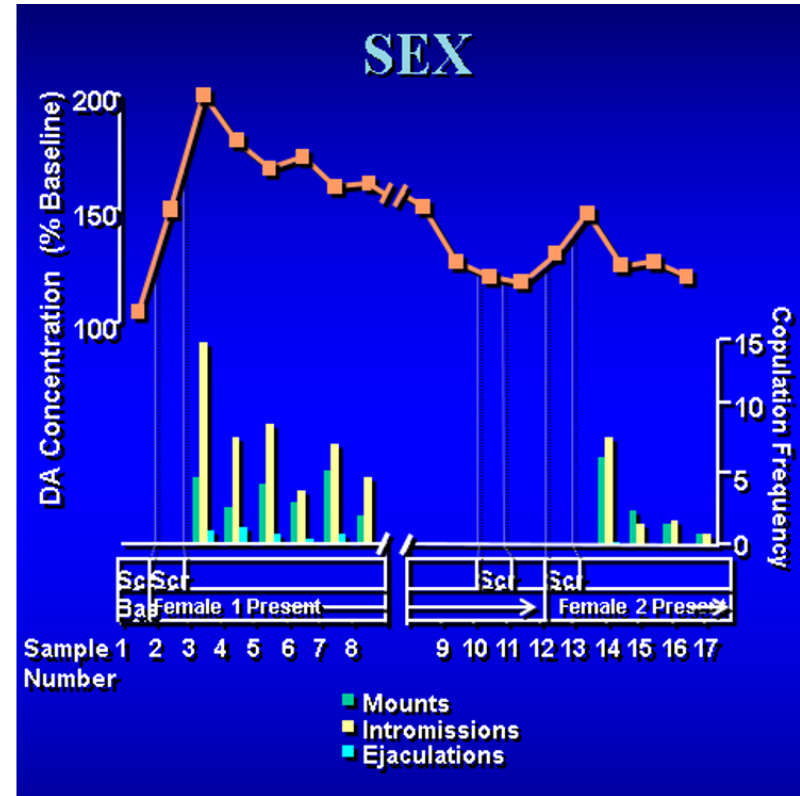
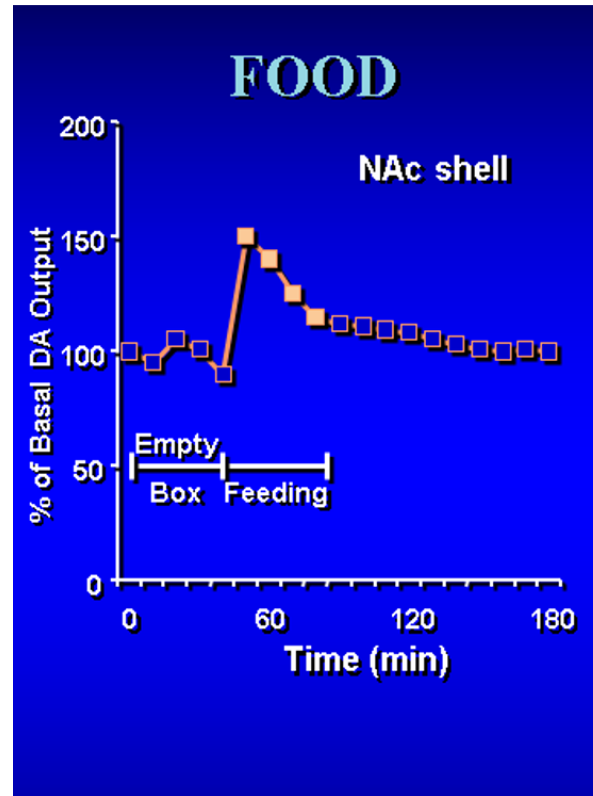
Brain Areas Affected by Psychoactive Substances



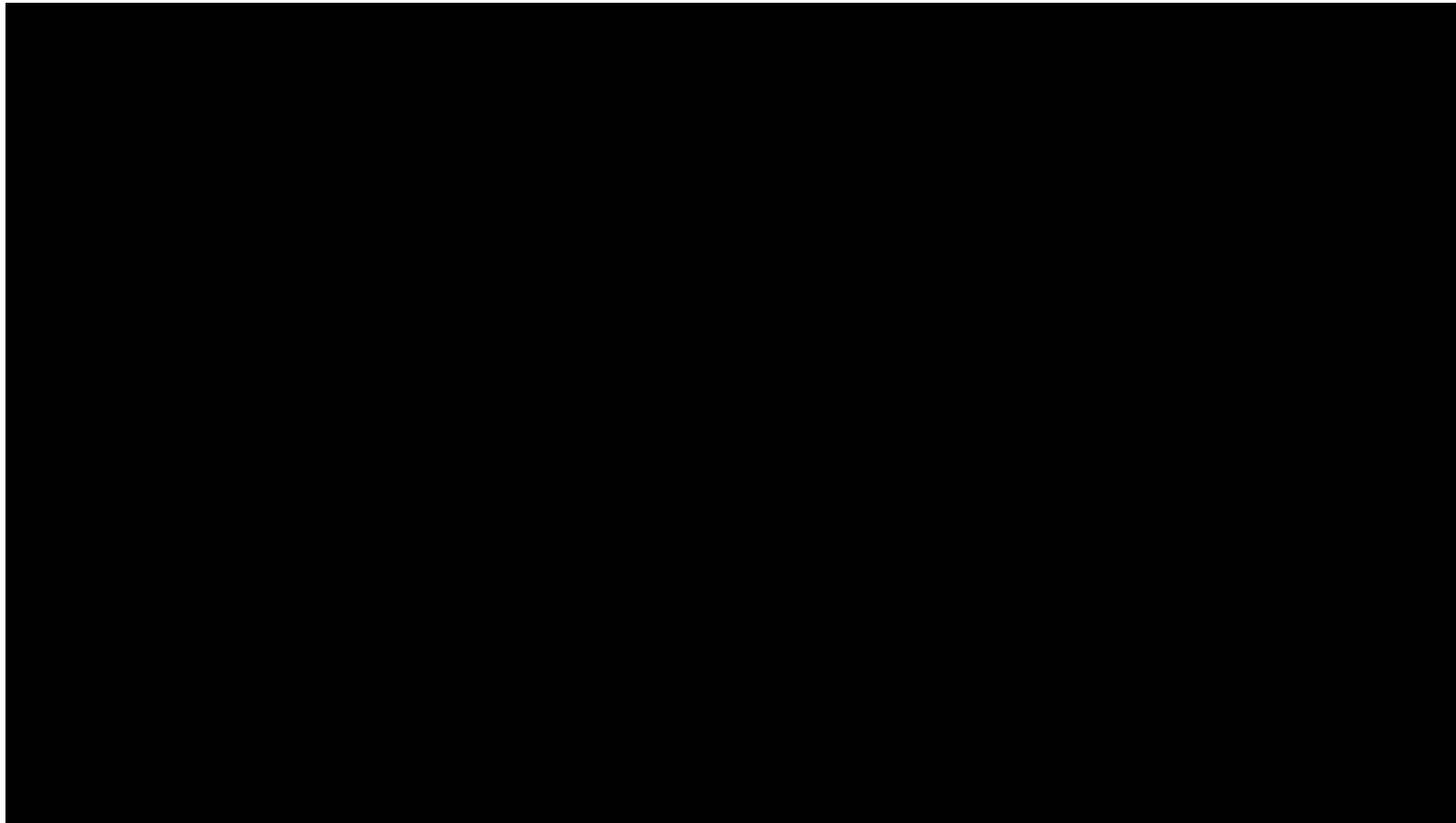
Let's First Take a Look at Normal Dopamine Functioning



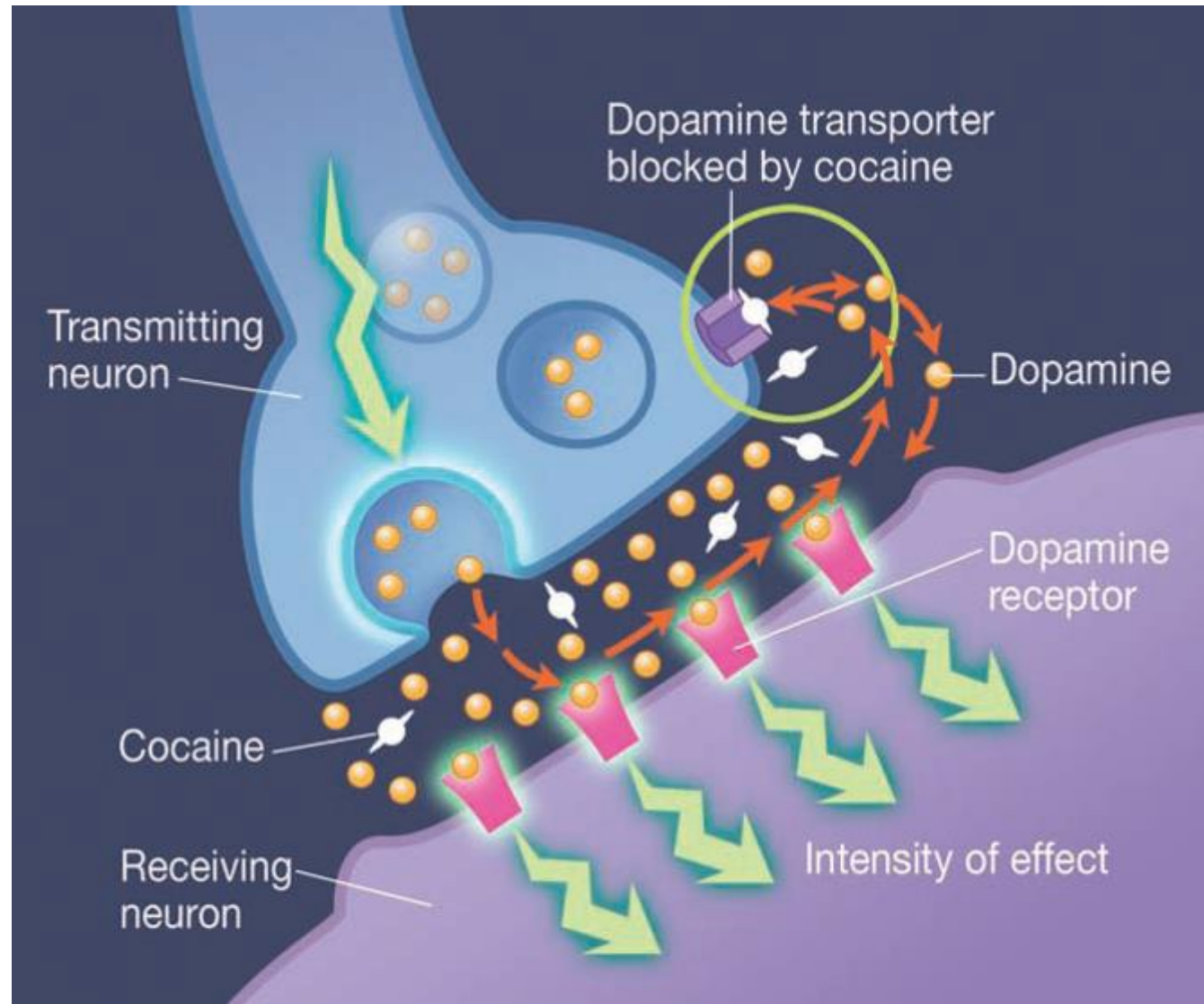
Natural Rewards Elevate Dopamine Levels



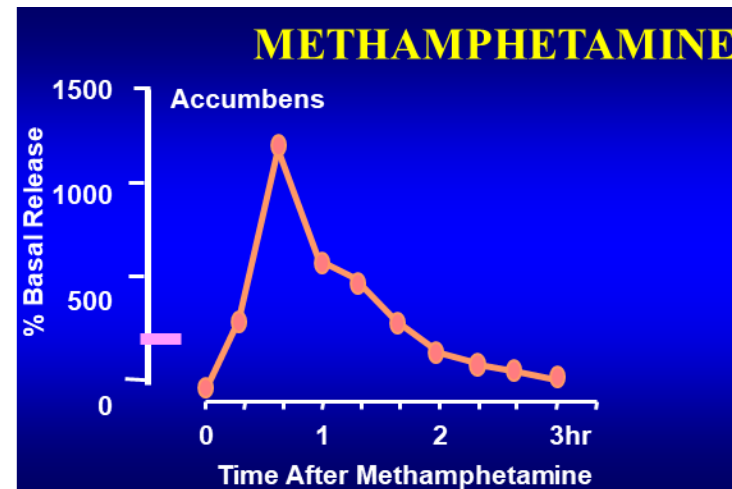
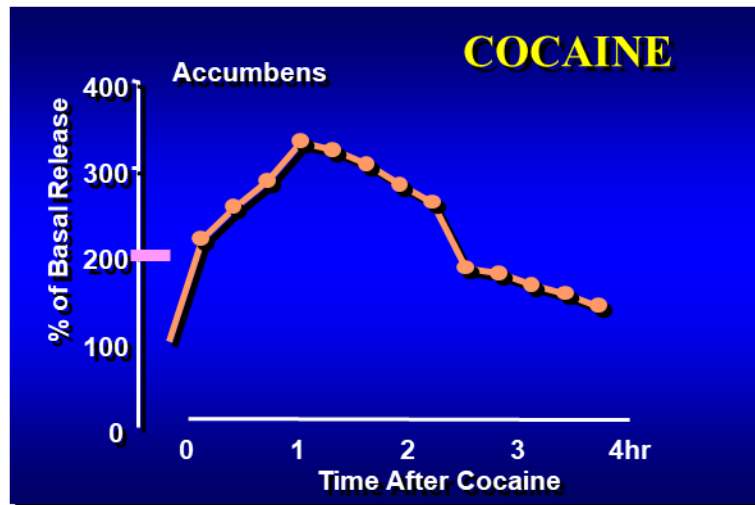
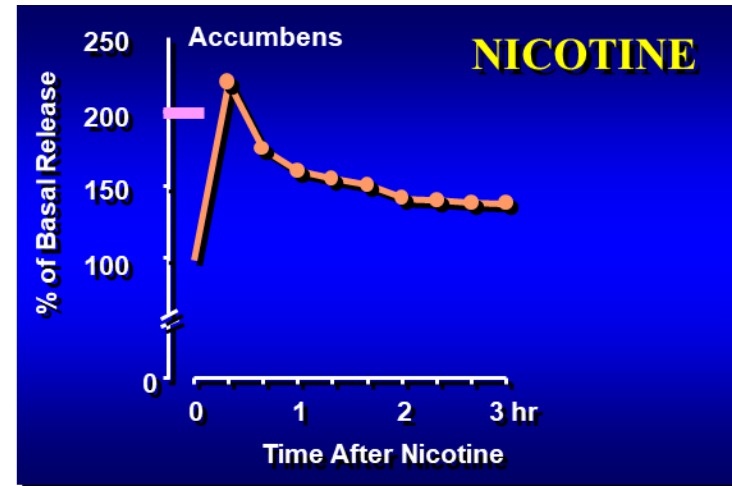
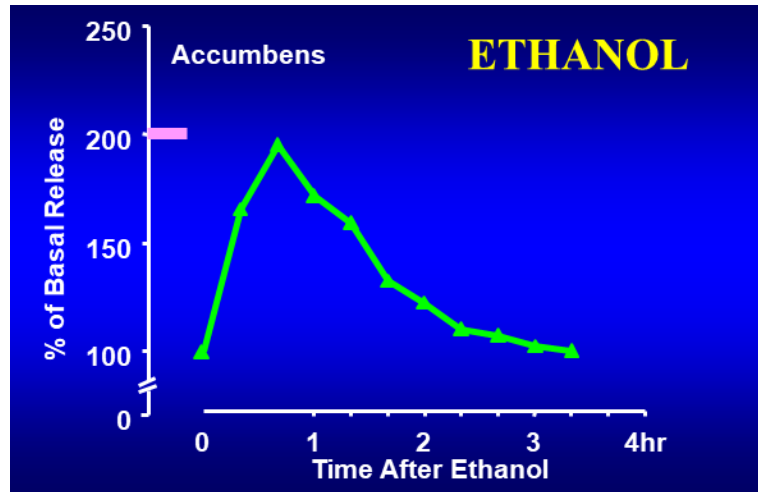
How the Brain Responds to Methamphetamine



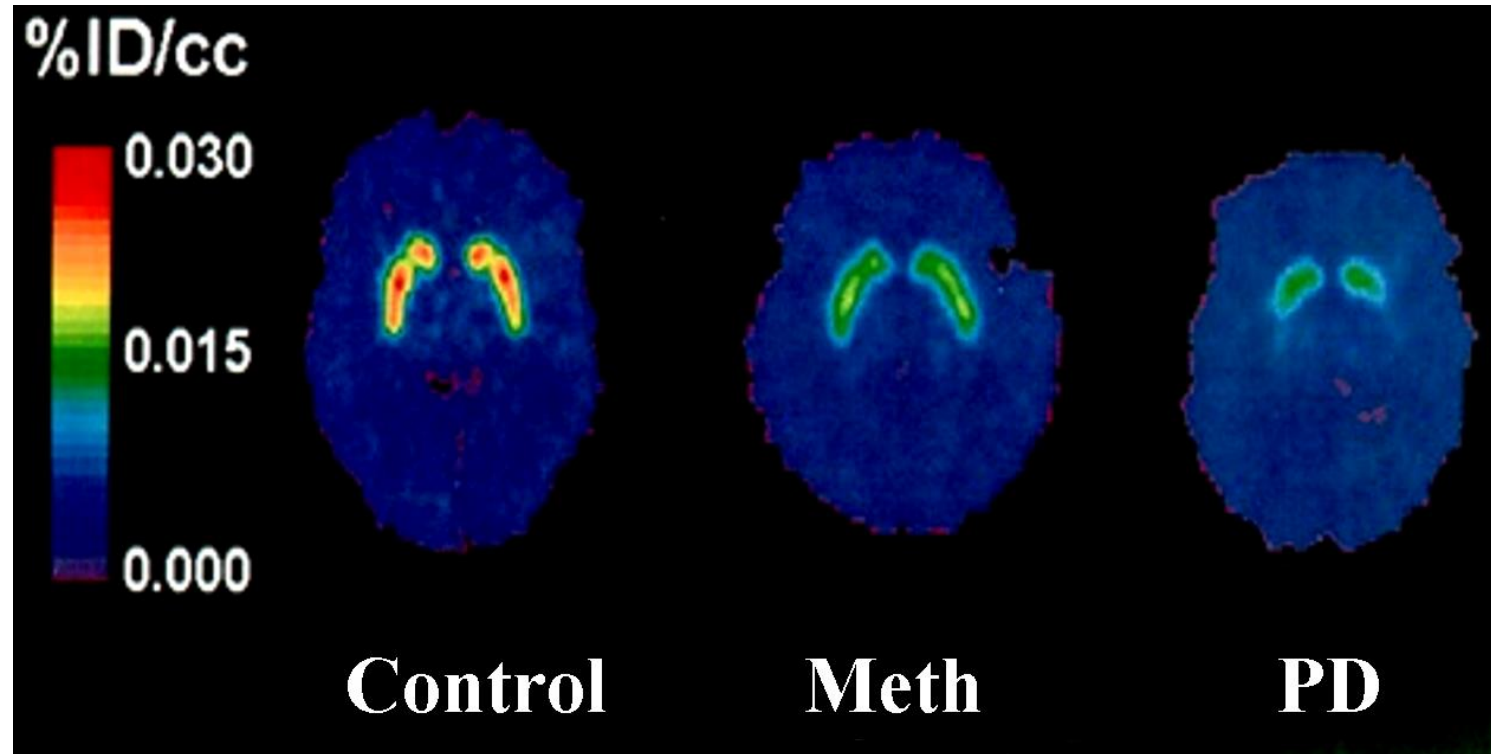
How Does Cocaine Produce its Effects?



Effects of Drugs on Dopamine Release



Decreased Dopamine Transporter Binding: Use of Meth and Parkinson's Disease



What Do Newer Research Studies Say?

- A 2011 study examined 300,000 hospital records spanning 16 years and found that patients with methamphetamine use disorders were **75% more likely** to develop Parkinson's disease.
- A 2015 study in Utah found that people who use methamphetamine were **300% more likely** to develop Parkinson's disease compared to those who did not use drugs or those who used cocaine.
 - Study also found that risk may be higher for females.
- A 2018 study concluded that methamphetamine use, along with other risk factors that a person may have, **may be an initiating event** in the development of Parkinson's Disease.



Acute and Chronic Effects of Stimulants

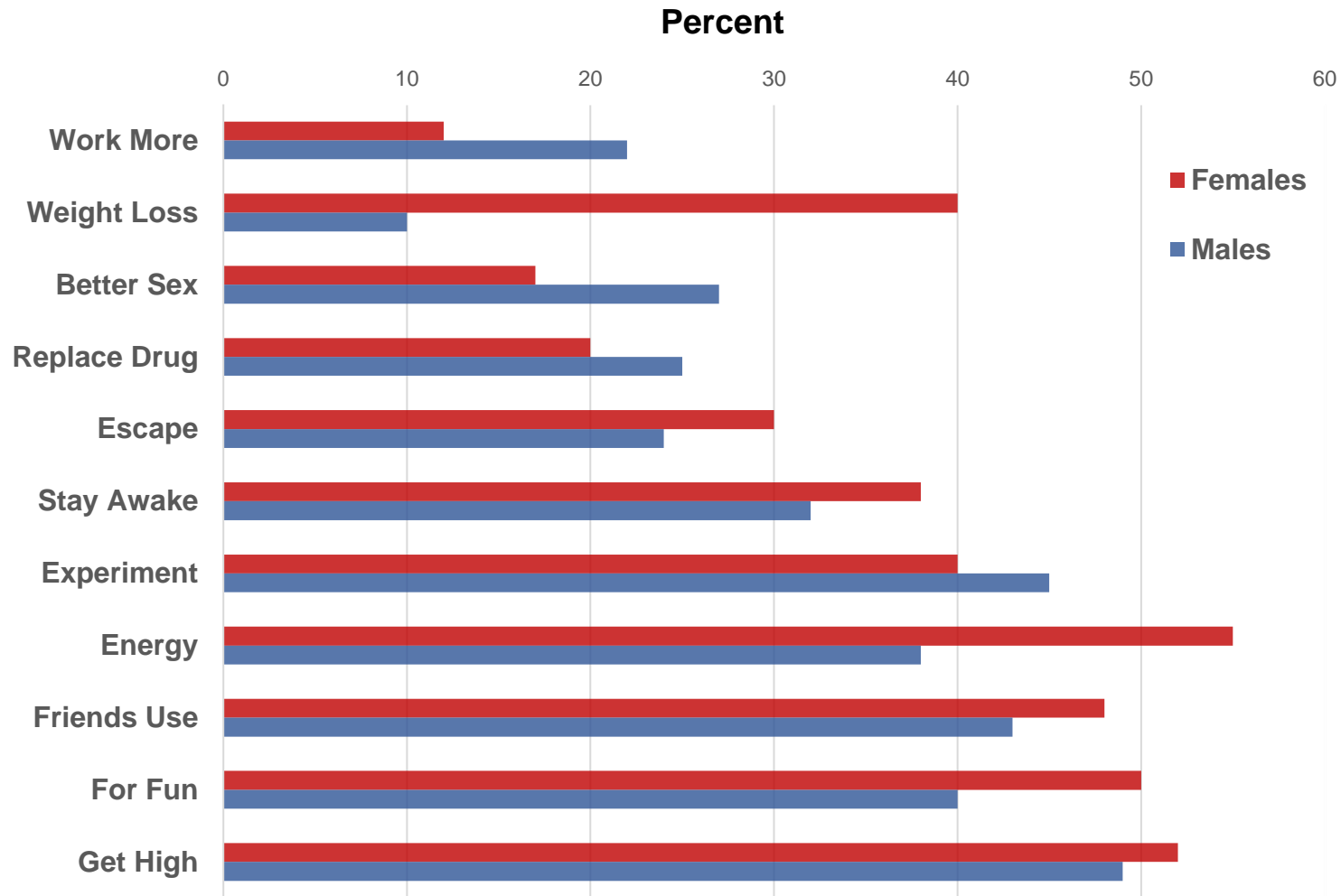


Women

- In the United States, rates of amphetamine use among women **approach the rates** among men.
- Women frequently use amphetamine for **weight loss** and to control symptoms of **depression**.
- Women tend to begin using methamphetamine at an **earlier age** than do men.
- Women are also **less likely to switch** to another drug when they lack access to methamphetamine.



Primary Reasons for Using Stimulants



Top 5 Risk Factors for Men and Women Who Recently Entered Treatment for Meth (1)

MEN

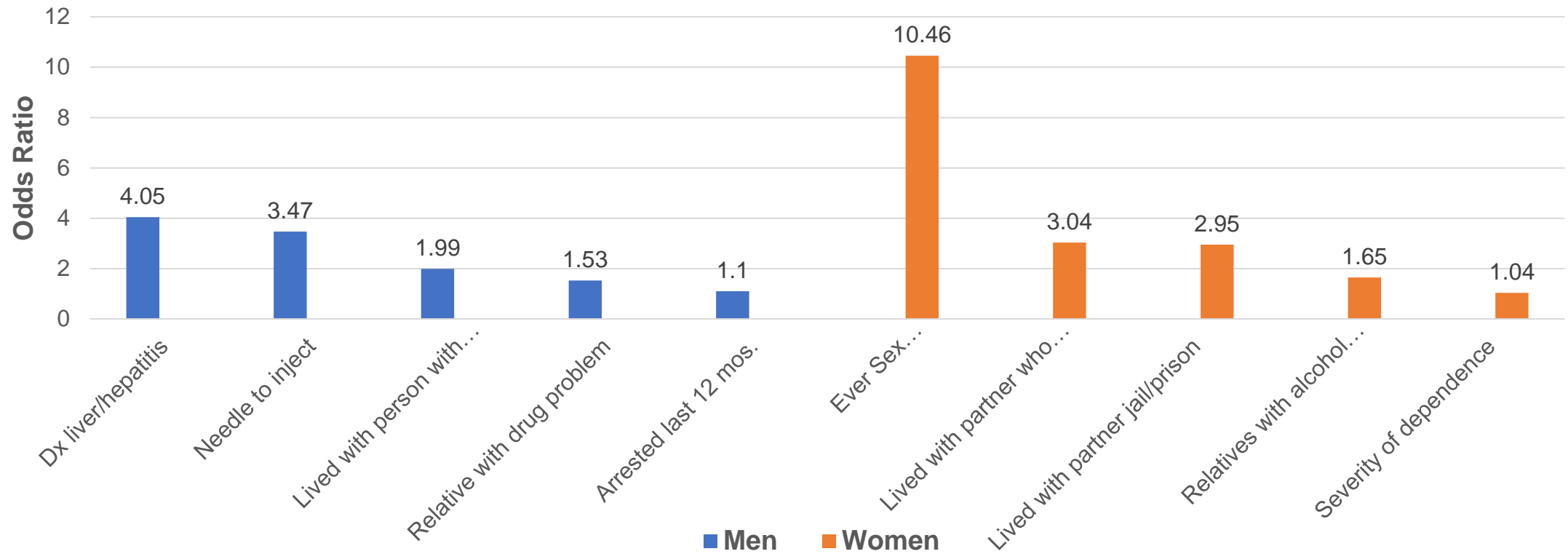
- Ever diagnosed with liver problem or hepatitis (**OR=4.05**)
- Ever used needle to inject drugs (**OR=3.47**)
- Lived with a person with alcohol, drug, or psychiatric problem (**OR=1.99**)
- Had relatives with drug problems (**OR=1.53**)
- Arrested in last 12 months (**OR=1.10**)

WOMEN

- Ever sexually mistreated, abused, or raped as adult (**OR=10.46**)
- Ever lived with partner who sold drugs (**OR=3.04**)
- Ever lived with partner who spent time in jail or prison (**OR=2.95**)
- Had relatives with alcohol problem (**OR=1.65**)
- Severity of dependence scale (**OR=1.04**)



Top 5 Risk Factors for Men and Women Who Recently Entered Treatment for Meth



Perceived Risks and Benefits of Methamphetamine Use

RISKS

- Cognitive impairment (74.8%)
- Addiction/Dependence (38.3%)
- Paranoia (37.9%)
- Depression (35.1%)
- Arrested in last 12 months (35.1%)

BENEFITS

- Increased energy/stay awake (57.1%)
- Enhanced sexual experience (43.3%)
- The high (40.0%)
- Fun/good time (34.3%)
- Enhanced mood/euphoria (28.6%)



Acute Physical Effects of Stimulants

Increases

- Heart rate
- Blood pressure
- Pupil size
- Respiration
- Sensory acuity
- Energy

Decreases

- Appetite
- Sleep
- Reaction Time



Acute Psychological Effects of Stimulants

Increases

- Confidence
- Alertness
- Mood/Euphoria
- Sex drive
- Energy
- Talkativeness

Decreases

- Boredom
- Loneliness
- Timidity



Chronic Physical Effects of Stimulants

- Tremor
- Weakness
- Dry mouth
- Weight loss
- Cough
- Sinus infection
- Dental Problems
- Sweating
- Burned lips; sore nose
- Oily skin/complexion
- Headaches
- Diarrhea
- Anorexia



Chronic Psychological Effects of Stimulants

- Confusion
- Concentration
- Hallucinations
- Fatigue
- Memory loss
- Insomnia
- Irritability
- Paranoia
- Panic reactions
- Depression
- Anger
- Psychosis



Chronic Stimulant Use (2)

Organ system damage

- **Respiratory** (pulmonary hypertension, difficulty breathing, pleuritic chest pain, decreased capacity)
- **Neurological** (stroke, seizure, hemorrhage, cerebral vasculitis)
- **Renal failure** (resulting from rhabdomyolysis)
- **Hepatic failure** (resulting from rhabdomyolysis)
- **Cardiac** (tachycardia, arrhythmia, reduced heart rate variability, myocardial infarction, heart failure)

Psychological effects

- **Psychosis** (hallucinations, delusions)
- **Affective** (depression, suicidal ideation, mania)



Other Chronic Methamphetamine Problems



- Eye ulcers
- Over-heating
- Anorexia / weight loss



Did I Mention Skin Problems?

- Grayish leathery texture to skin
- Increased sweating (hyperhidrosis)
- Repetitive or compulsive skin picking
 - “Speed bumps” / Formication



Use of Methamphetamine Leads to Severe Tooth Decay



- Methamphetamine-related dental issues are characterized by severe tooth decay and gum disease
- Teeth often break or fall out



Effects of Stimulant Use During Pregnancy



- Maternal migraines and seizures
- Premature membrane rupture
- Separation of placental lining from uterus prior to delivery
- High blood pressure
- Edema and seizures
- Spontaneous miscarriage
- Preterm labor
- Difficult delivery



Additional Effects of Methamphetamine



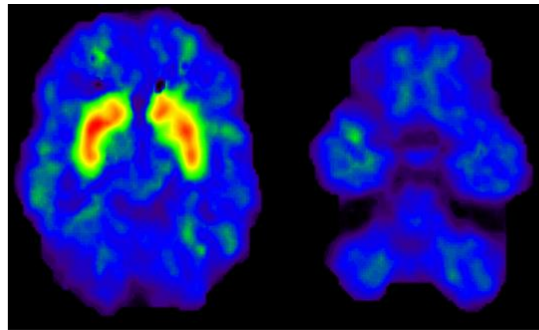
- Cardiac and brain abnormalities
- Neurological problems
 - Decreased arousal
 - Increased stress
 - Attention impairments



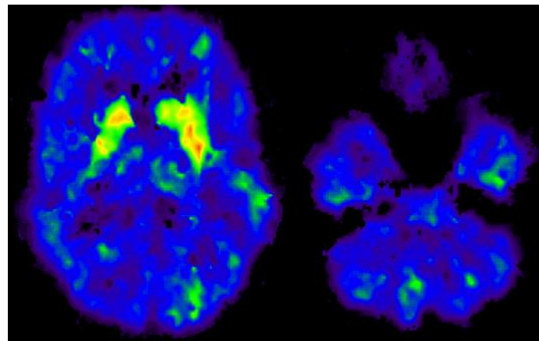
Cognitive and Memory Effects of Stimulant Use



Dopamine Transporters in People who Use Methamphetamine

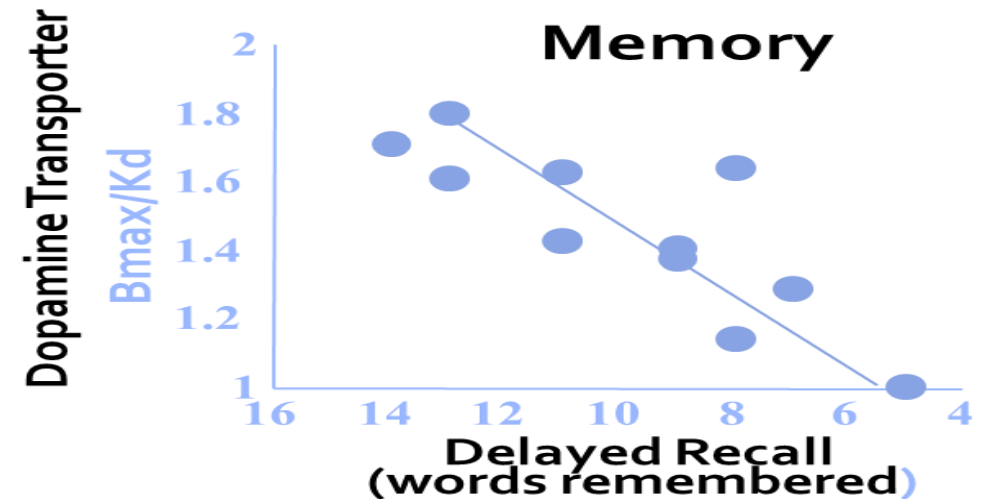
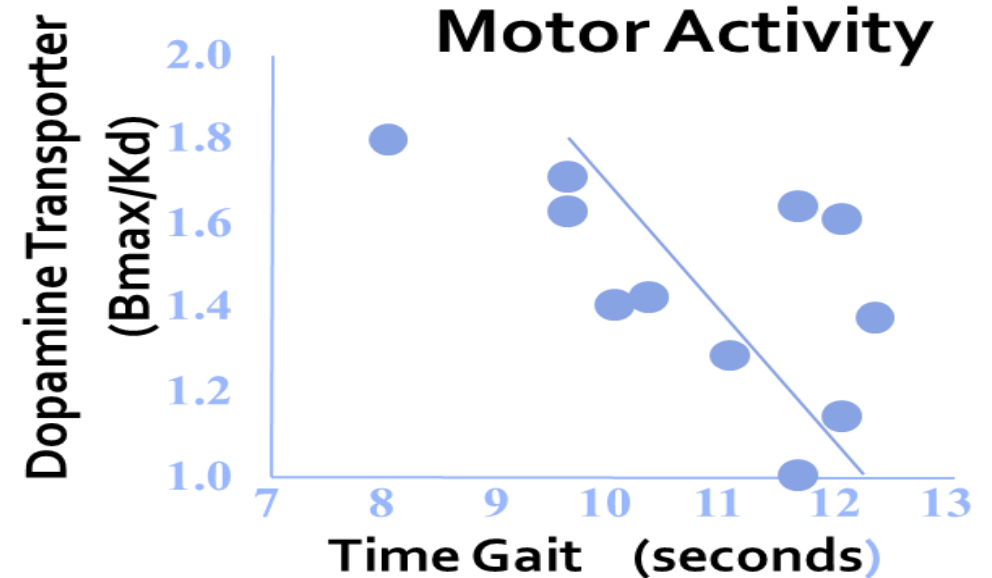


Normal Control



Methamphetamine Abuser

$p < 0.0002$



Cognitive Deficits in Methamphetamine Use Disorder



- Compared 108 methamphetamine treatment seekers and 50 matched controls.
- Methamphetamine use was associated with **impulsive decision making** and **disinhibition**.
- Greater disinhibition associated with **longer durations of methamphetamine use**.



Methamphetamine Use and Violence

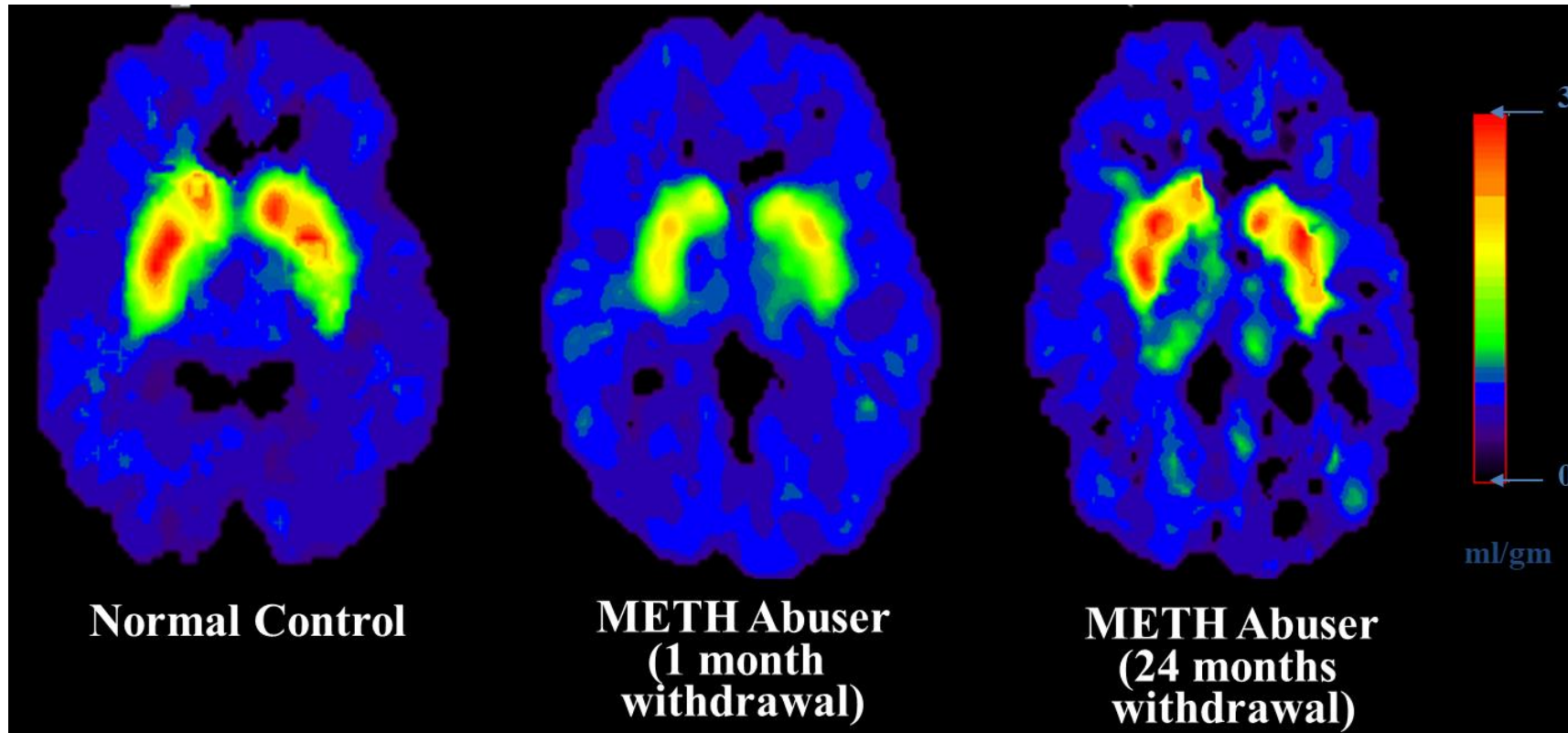
- Compared to no use, amphetamines use was associated with a **2-fold increase** in the odds of **hostility or violence**
- Frequent use **increases the risk of violent behavior**
- Other risk factors included: psychotic symptoms, alcohol or other drug use, psychosocial problems, and impulsivity
- People who use methamphetamine are also more likely to be **victims of abuse or violent acts**
- **Women** who used methamphetamine are **significantly more likely to experience partner abuse/violence**



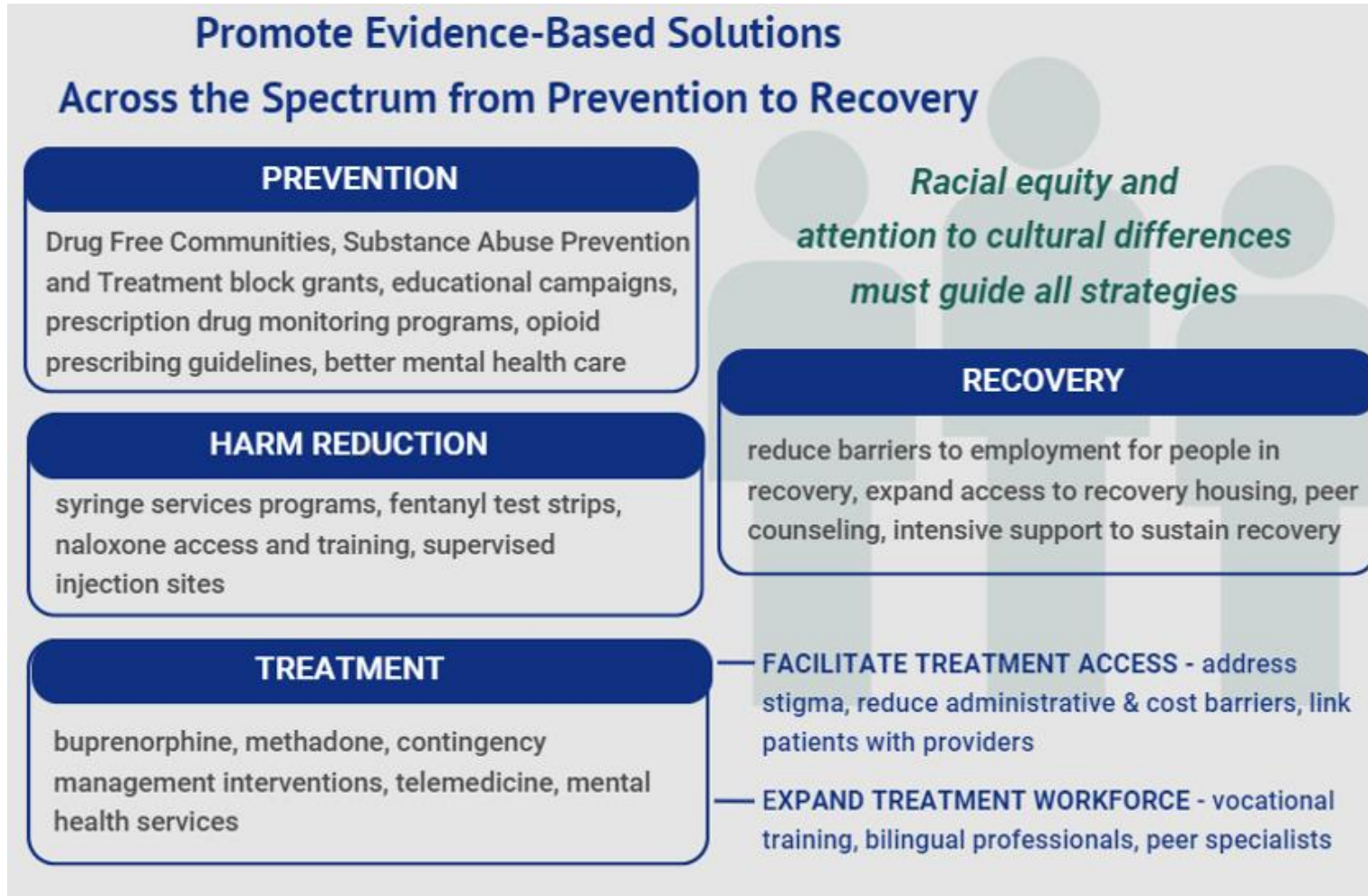
Treatment Considerations and Recovery Supports for People Who Use Stimulants



Partial Recovery of Brain Dopamine Transporters Following Protracted Abstinence



The Importance of Evidence-Based Solutions When Working with People Who Use Stimulants



Behavioral Treatments

- Contingency Management
- Community Reinforcement Approach
- Cognitive Behavioral Therapy/Relapse Prevention
- Motivational Interviewing
- Matrix Model
- Exercise
- Mindfulness



More (Recent) Evidence for Contingency Management as a Response to Stimulant Use (1)

- A 2020 systemic review of 27 studies found that contingency management has broad benefits in:
 - Greater drug adherence
 - Higher utilization of other treatments and medical services
 - Reductions in risky sexual behavior
- Recommendation: Outpatient programs that offer treatment to people with a methamphetamine use disorder should **prioritize adoption and implementation of contingency management**



More (Recent) Evidence for Contingency Management as a Response to Stimulant Use (2)

Results A total of 157 studies comprising 402 treatment groups and 15 842 participants were included.

Only contingency management programs were significantly associated with an increased likelihood of having a negative test result for the presence of cocaine (OR, 2.13; 95%)

Conclusions In this meta-analysis, contingency management programs were associated with reductions in cocaine use among adults.

Responding to Global Stimulant Use: Challenges and Opportunities

- Psychosocial interventions other than contingency management have weak and non-specific effects on stimulant problems
- No effective pharmacotherapies have been approved
- Substantial research investment is needed to develop more effective, innovative, and impactful prevention and treatment



Exercise for Methamphetamine Dependence Study Design

Research has demonstrated benefit of aerobic exercise for improving depression, anxiety, cognitive deficits, and substance use outcomes.

Methods:

- All 135 study participants received treatment as usual for MUD in a residential treatment program
- They were randomly assigned to either:
 - an 8-week, 3x/week structured aerobic and resistance exercise intervention
 - an 8-week health education condition.
- Outcome measure collected through study enrollment and for 12 weeks follow-up.

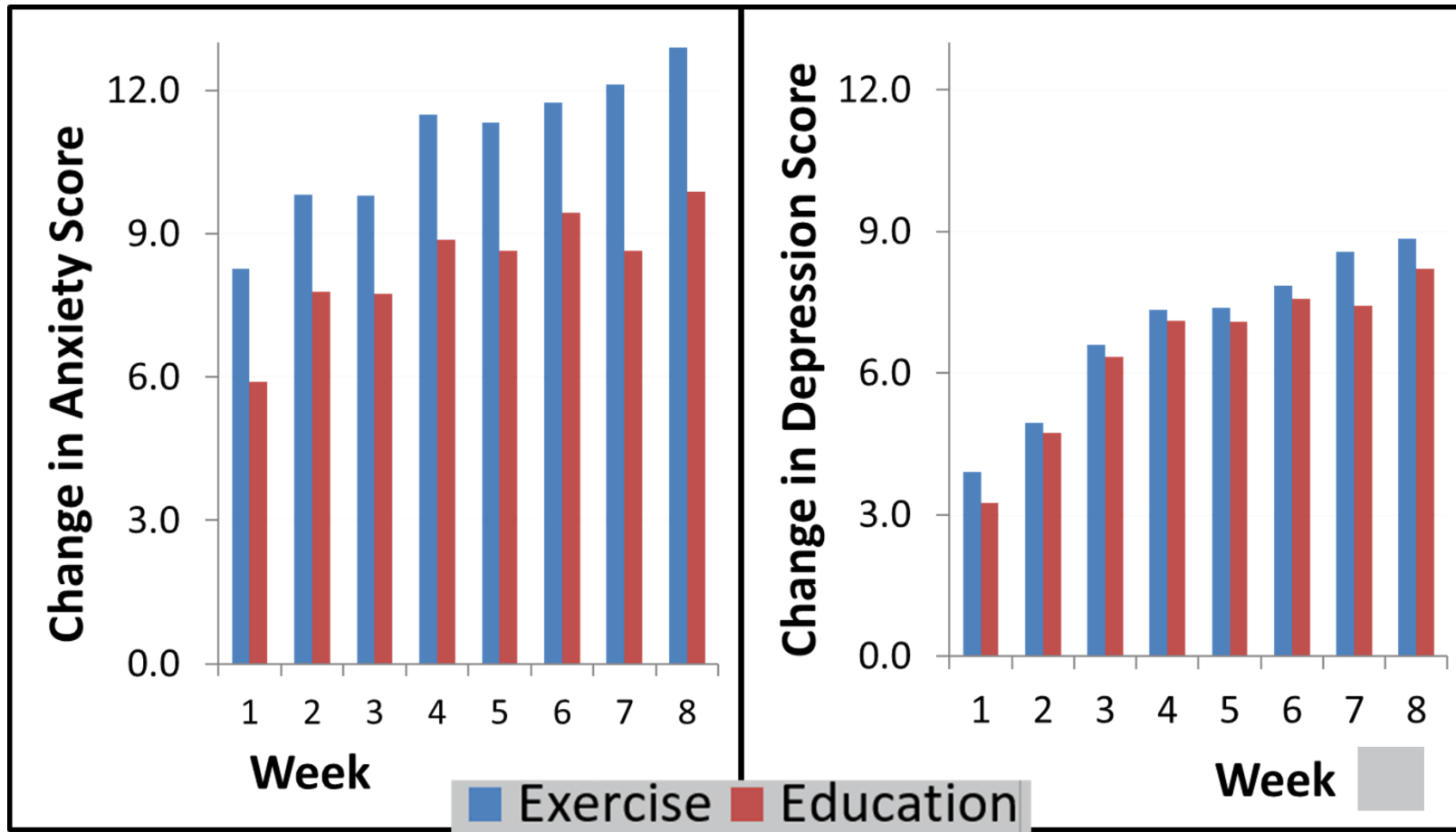


Does Exercise Improve Outcomes Post-Treatment?

- Yes!
- Fewer exercise participants returned to meth use compared to the education participants at 1-, 3-, and 6-months post-discharge (not statistically significant)
- Significant interaction found for self-reported meth use and meth urine drug test results – lower severity users in the exercise group reported using meth significantly fewer days at the three post-discharge time points than lower severity users in the education group
- Lower severity users in the exercise group also had a lower percentage of positive urine results at the three time points than the lower severity users in the education group (relationships not seen in higher severity groups)



The Impact of Exercise on Depression and Anxiety Symptoms



General Conclusions: Exercise and Mood for Patients with MUD

- Results support the role of a structured exercise program as an effective intervention for improving mood symptoms associated with MA abstinence
- Exercise Program:
 - May have greater value for patients with symptoms of anxiety than for those with symptoms of depression
 - More attendance in exercise sessions resulted in greater reduction in symptoms of anxiety and depression



3 Levels of Social Support – Patients in Rural Settings

Level 1. Assistance volunteered by a patient's immediate/extended family, friends, and neighbors.

Level 2. Support provided by a group or organization (e.g., civic organizations, homemakers' clubs, faith community, youth groups) in which members assist each other during times of need (e.g., volunteering expertise, providing food, contributing financially, assisting with field work/farm chores).

Level 3. Consists of formal support, such as services provided by health departments, home health and hospice agencies, community nursing services, mental health centers, physicians, and hospitals.



Specific Recommendations for Practicing in Rural Areas...

- Rural residents go to the doctor when they must, not before.
- [A provider] may only get one shot, so how he/she interacts will make a difference in whether [the patient] comes back.
- [Providers] need to understand how a rural community works. Talk in layman's terms to make patients feel comfortable enough to ask questions.
- The rural patient has lost time and money to see a provider and they can't easily get that back. Rushing the visit is insulting to them. Rural pace is slower and needs time for relationship building.



Additional Recommendations for Practicing in Rural Areas...

- Courtesy is the standard in a rural community. “Urban people may read that as though everybody is snoop and in everyone’s business, but the way I look at it is that everyone is concerned and somewhat protective of their neighbors.”
- “You know one rural community, you know one rural community.” Belief in traditional values and roles, conservatism, and influence of faith are viewed as part of rural culture but also as factors currently changing in many communities



Behavioral Health Professionals Should Consider...

- Knowing the specific substance use and mental health burdens that disproportionately affect rural populations (methamphetamine use, suicide, depression, etc.)
- Being aware that residents of rural areas frequently present with more severe symptoms and later in the course of a mental disorder
- Being prepared to face ethical dilemmas that frequently occur in rural areas
- Ways to counteract the burden of stigma in rural areas (having an office in a remote location, with a concealed parking lot, or housed with other agencies/health care providers, etc.)
- Exploring ways to better connect with physicians, improve referral mechanisms, and promote the importance of mental health screening in primary care settings



Remember

- Be aware of the potential effects of rural living on personality characteristics, including self-reliance and avoidance of help-seeking behaviors – so it is NOT resistance but self-reliance
- Explore religion as appropriate with rural clients
 - Do not assume patients are or are not religious, but be mindful of the fact that religious beliefs may enter in the therapeutic discussion
- Don't make assumptions about a patient's SES just because they live in a rural area and poverty rates are higher



SAMHSA's Guiding Principles of Recovery



Responding to the Impact of Long-Term Stimulant Use

- Awareness of the challenges of early recovery
 - Overloading people with paperwork or complex tasks
- Patience with the healing process for each individual
 - From themselves
 - From behavioral health community
 - From family and friends



Issues Related to Trauma

- Many people with stimulant use disorder have extensive experience with trauma
 - One study showed that 42.9% of people with cocaine dependence met the criteria for lifetime PTSD
 - People with PTSD are more likely to use crystal methamphetamine across their lifetimes
- Recovery approaches should be trauma-informed
 - How safe does a person feel in the setting they are in and the people they are with?
 - Counseling for trauma may be needed



A new resource...



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SUD Keys to Education – Stimulants

<https://mtplainsattc.org/sud-keys/>

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Resources for Continued Learning

- ATTC Network's *Focus on Stimulant Misuse* Web Page:
<https://attcnetwork.org/centers/global-attc/focus-stimulant-misuse>
- *Evidence-Based Resource Guide Series: Treatment of Stimulant Use Disorders*:
<https://store.samhsa.gov/product/Treatment-of-Stimulant-Use-Disorder/PEP20-06-01-001>
- Northwest ATTC's *Contingency Management for Healthcare Settings Self-Paced Online Course*:
<https://healthknowledge.org/course/search.php?search=Contingency+Management>
- *Treatment for Stimulant Use Disorders (TIP 33 Update)*:
https://store.samhsa.gov/sites/default/files/SAMHSA_Digital_Download/PEP21-02-01-004.pdf





‘... it is time to decrease health disparities, improve health equity, and advance public health because the bottom line is this ... what’s good for rural residents is good for us all.



Pacific Southwest

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Thank you!

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