

# OPIOIDS 101

Communities in Crisis: PA's Opioid Epidemic

Center for Rural Pennsylvania

Harrisburg, PA

02 October 2018

Bradley J Miller, DO, FAAFP

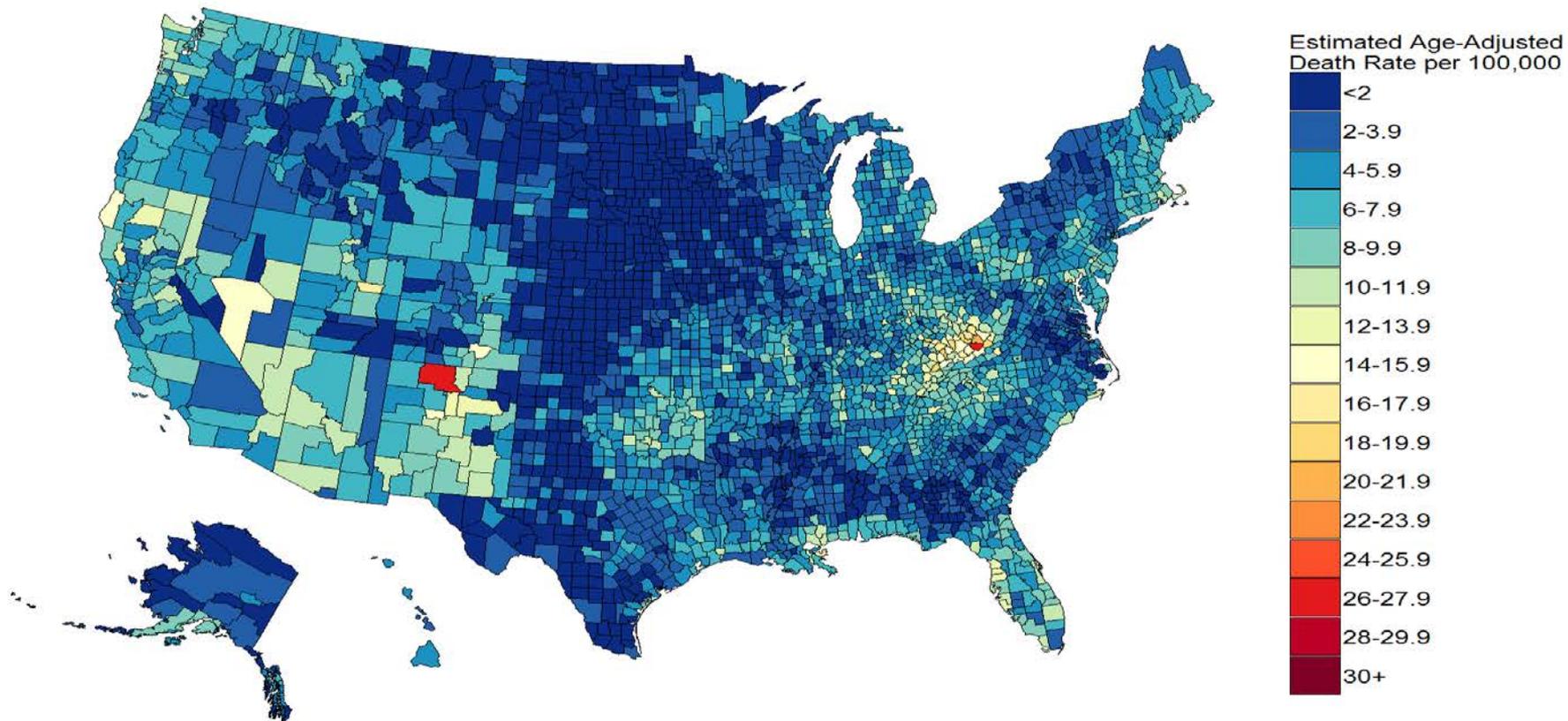
# Disclosures

- There are no disclosures.

# Objectives

- Brief history of opioid use
- History of opioid crisis development
- Define addiction as a chronic illness
- Overview of current treatment strategies
- What can you do?

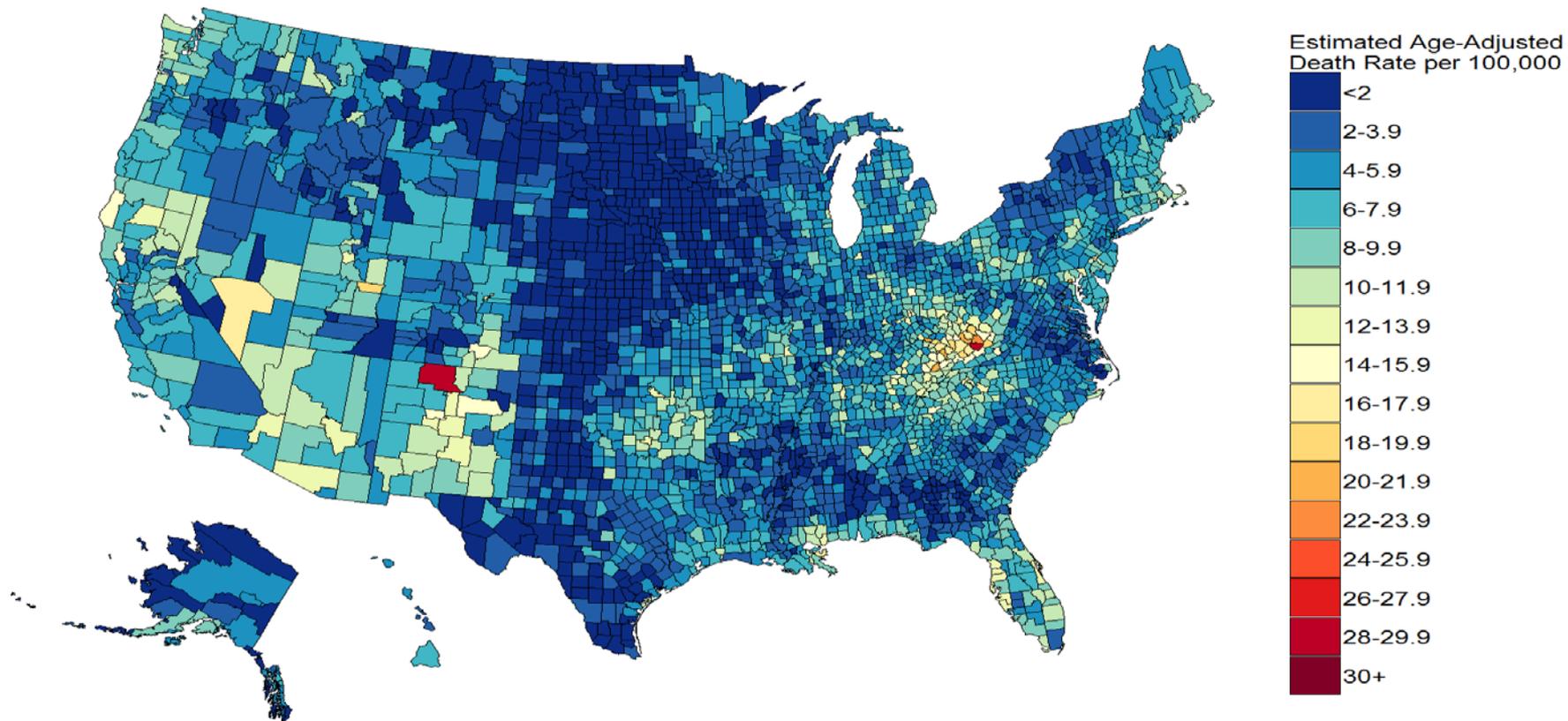
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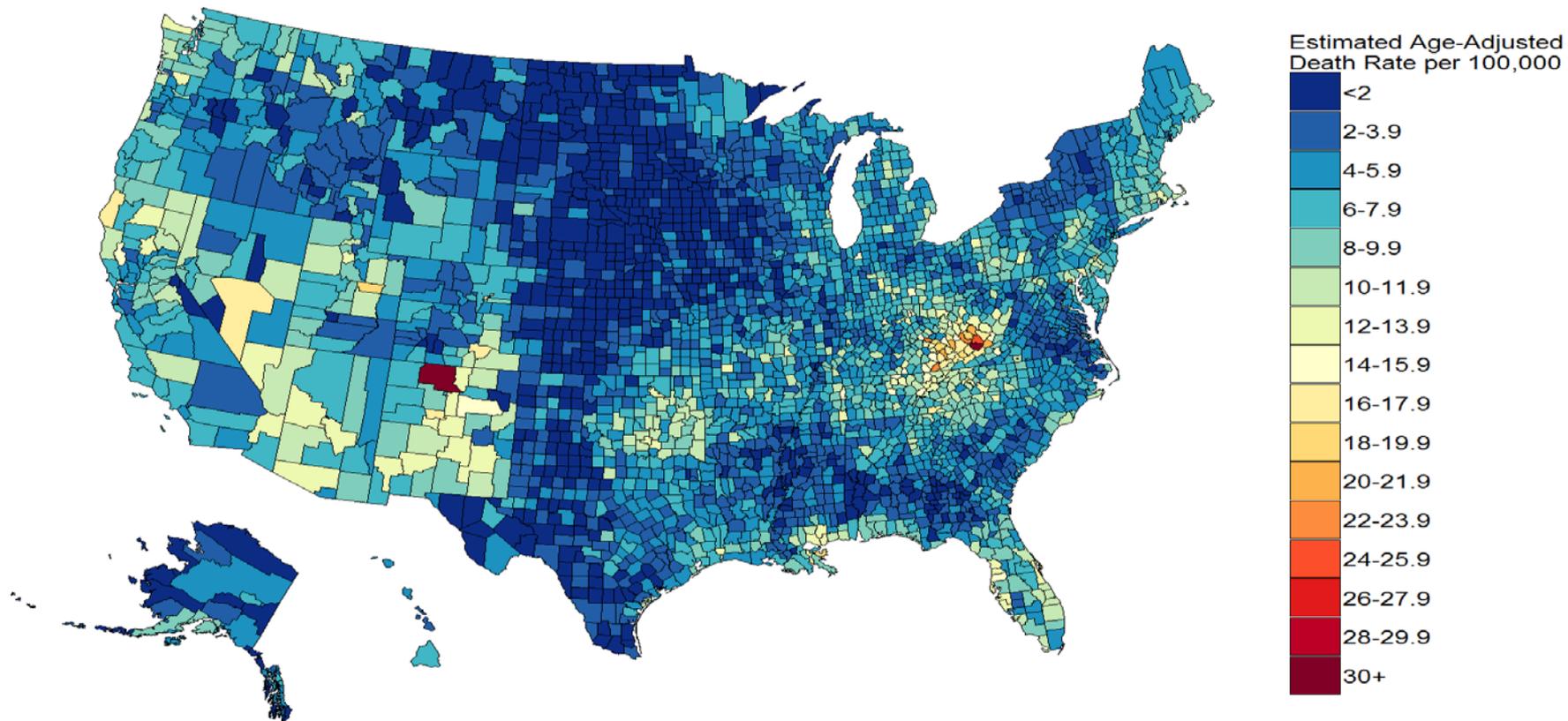
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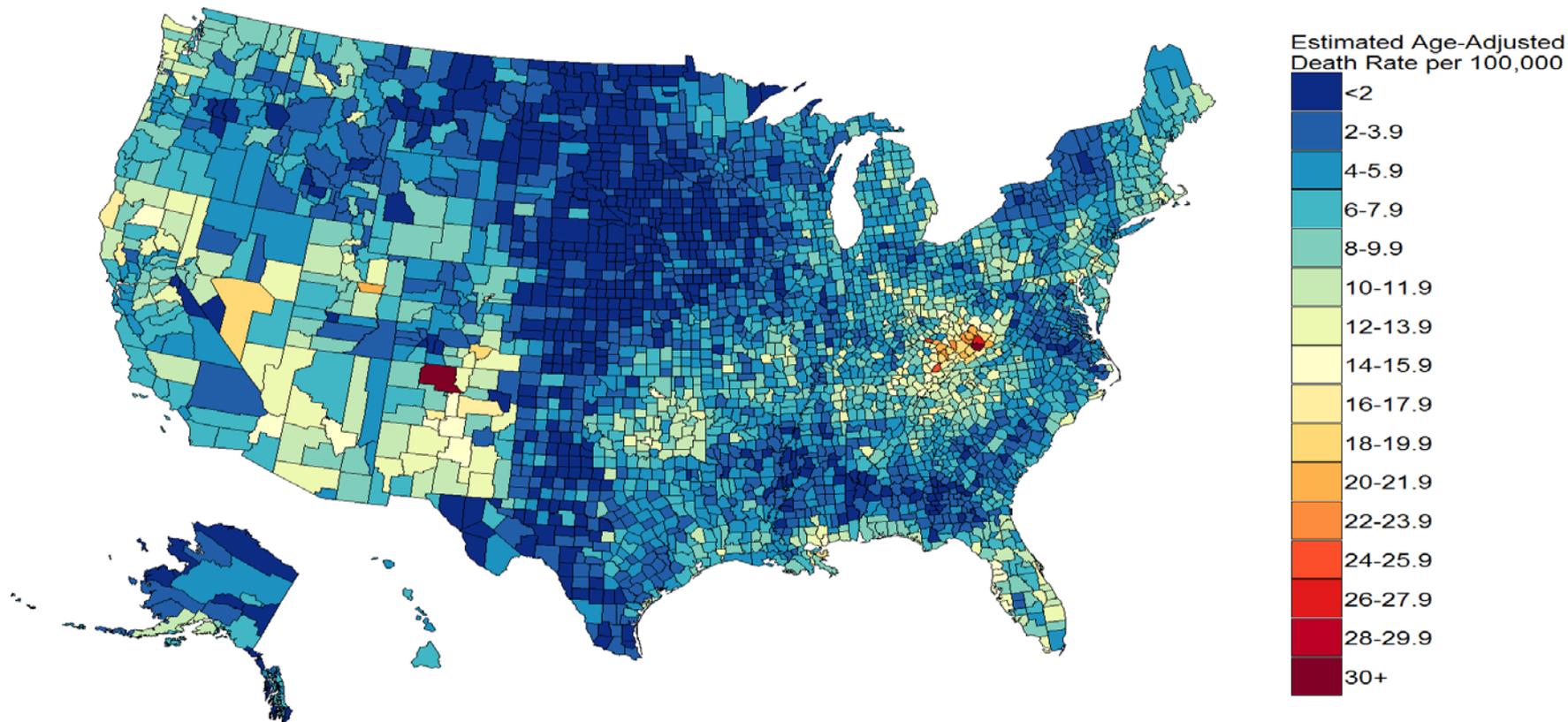
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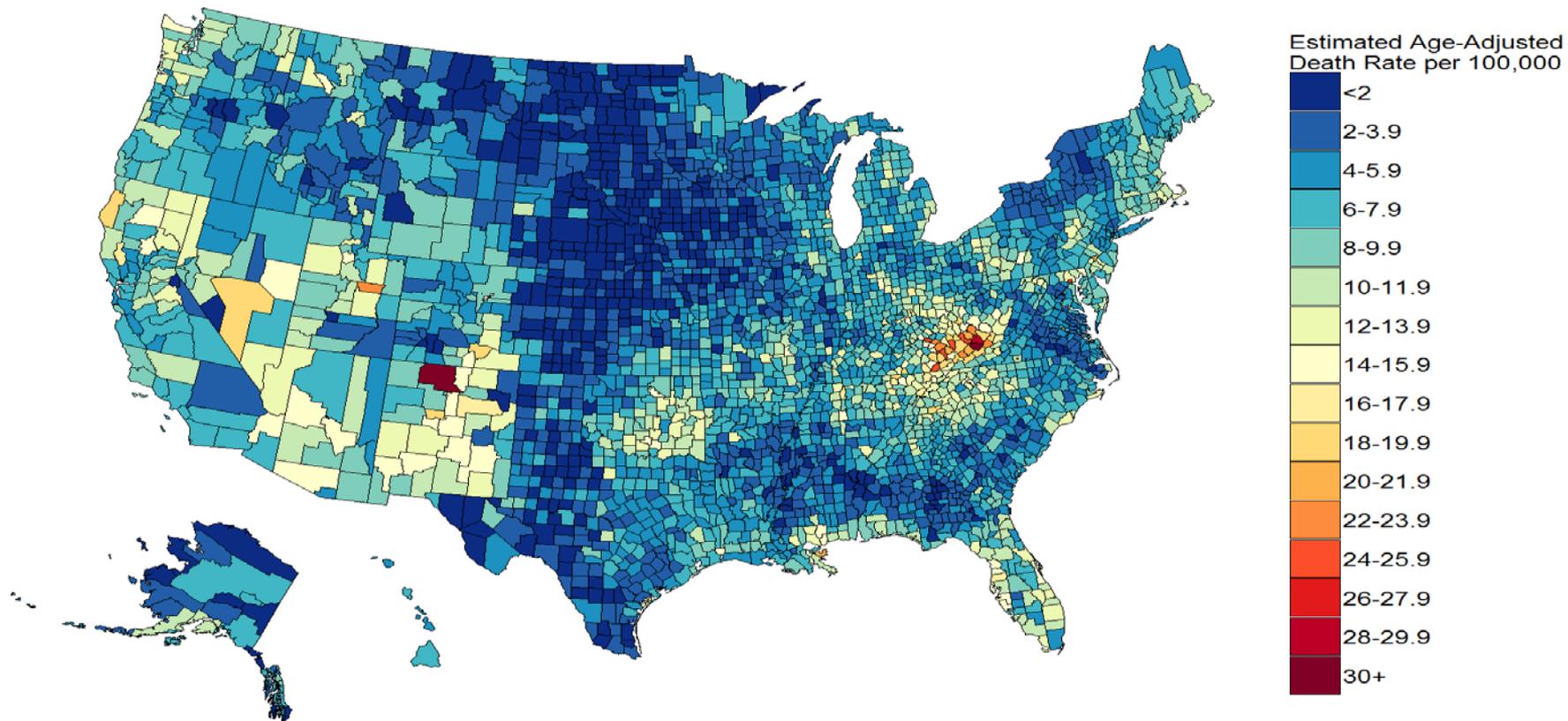
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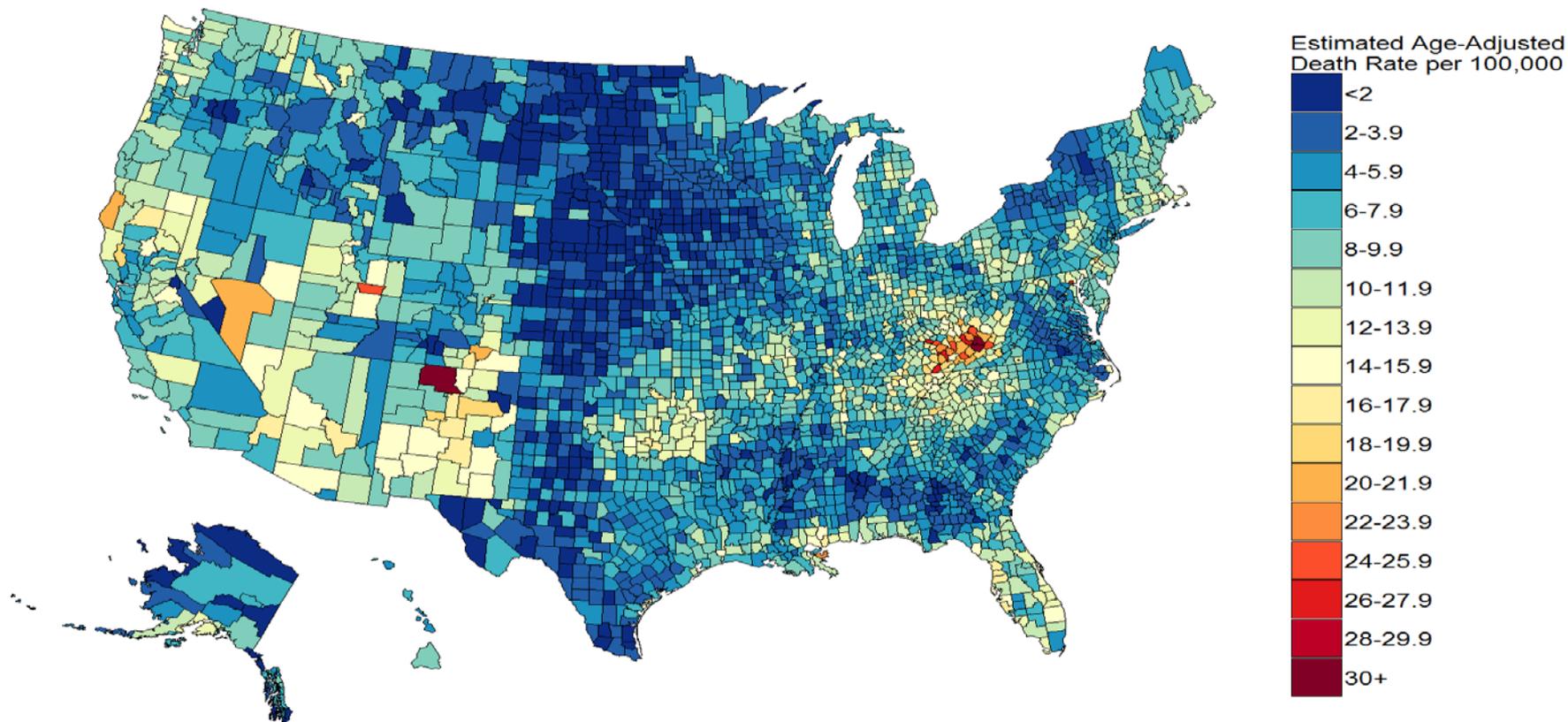
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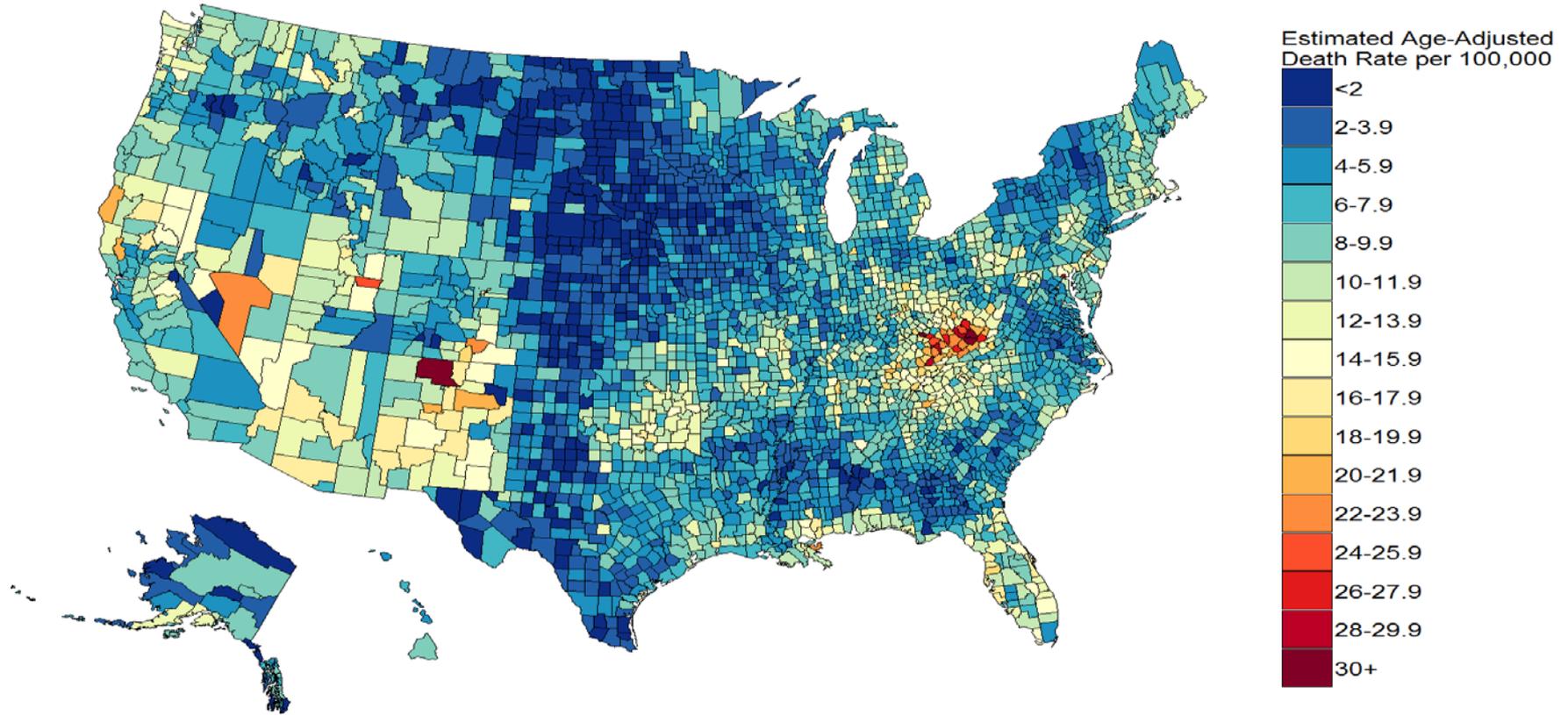
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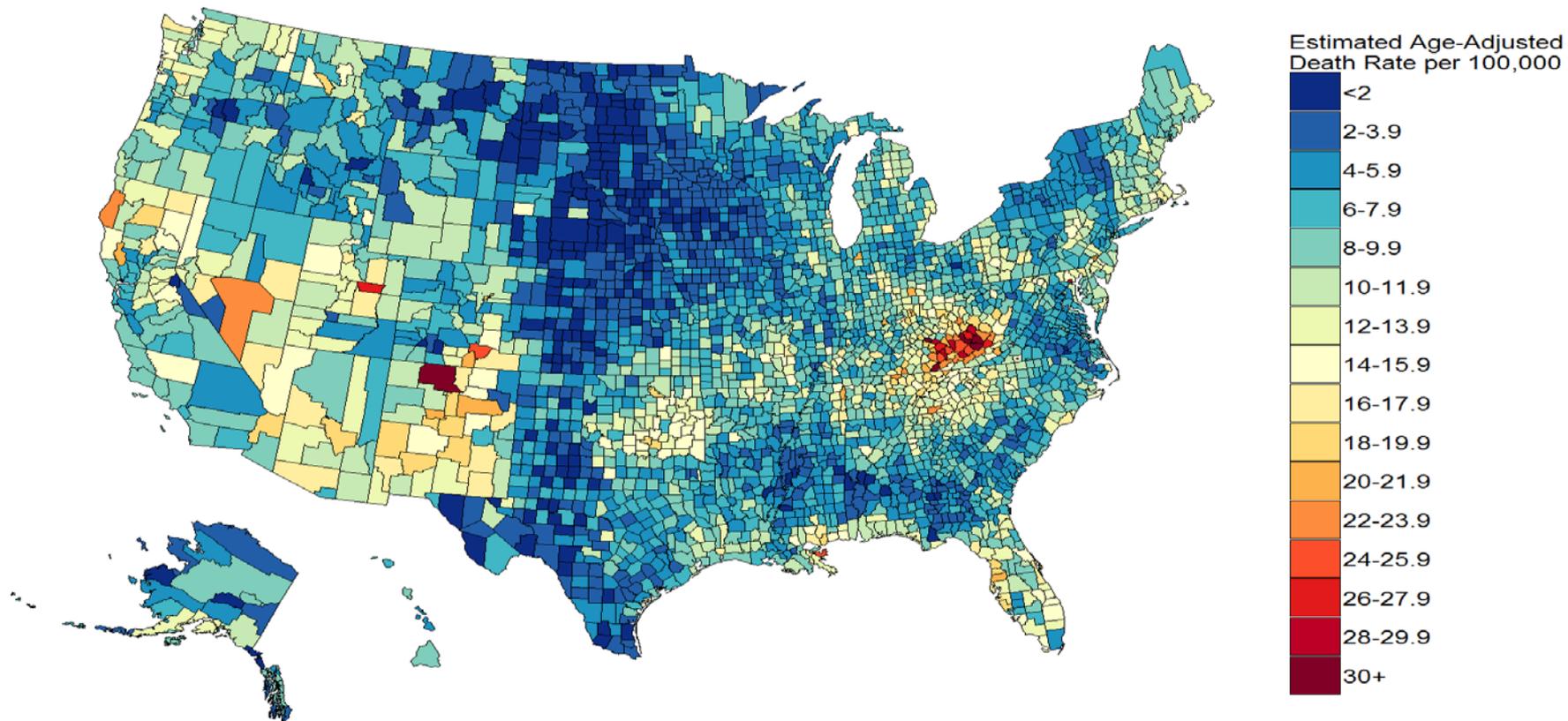
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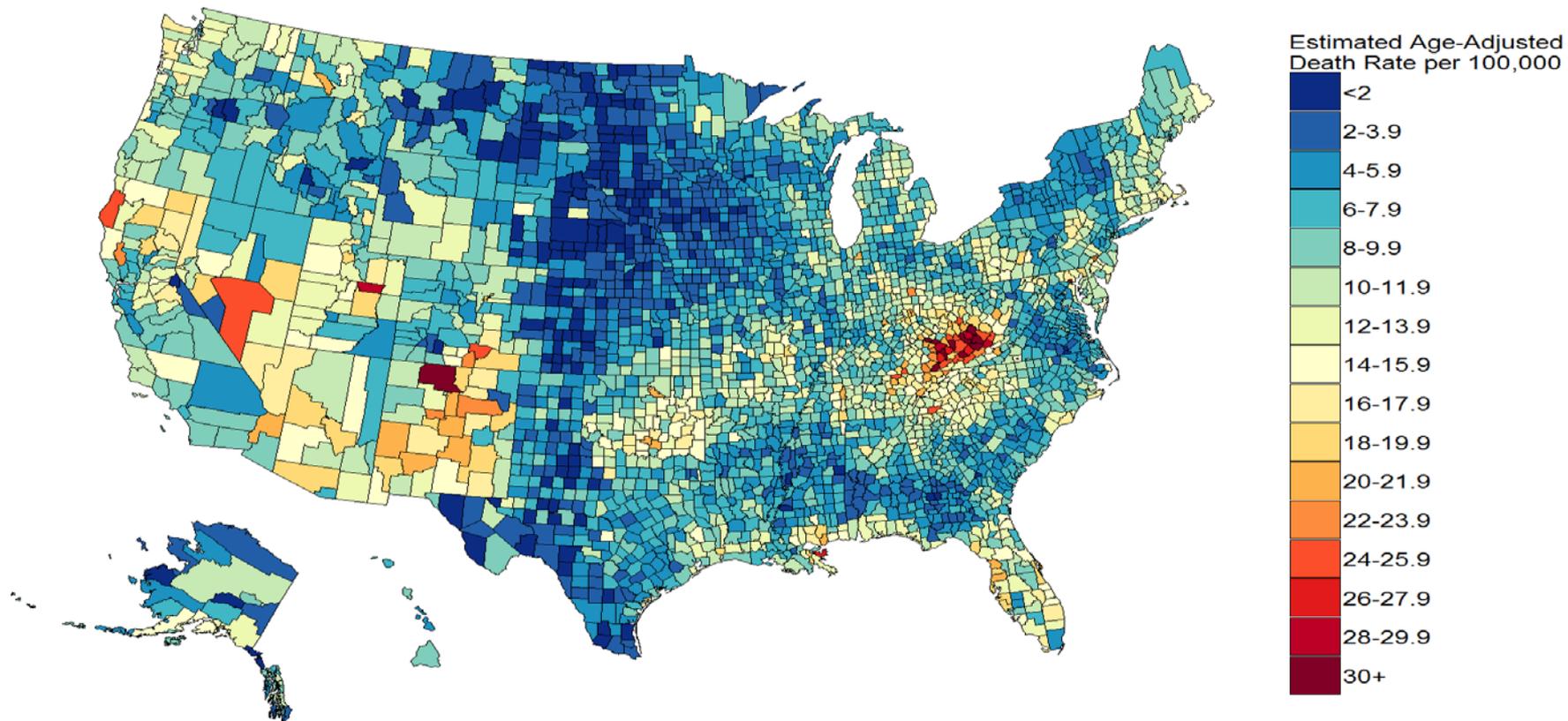
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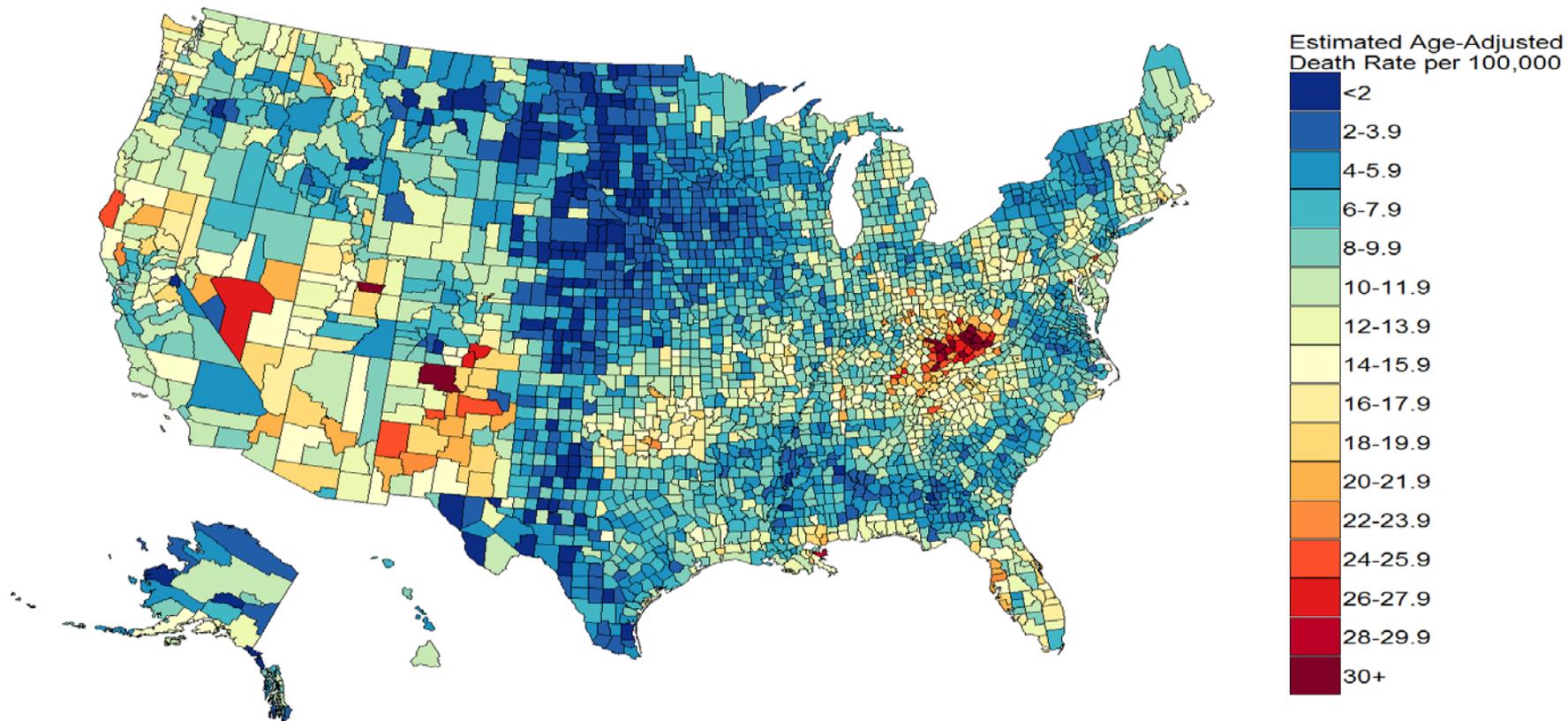
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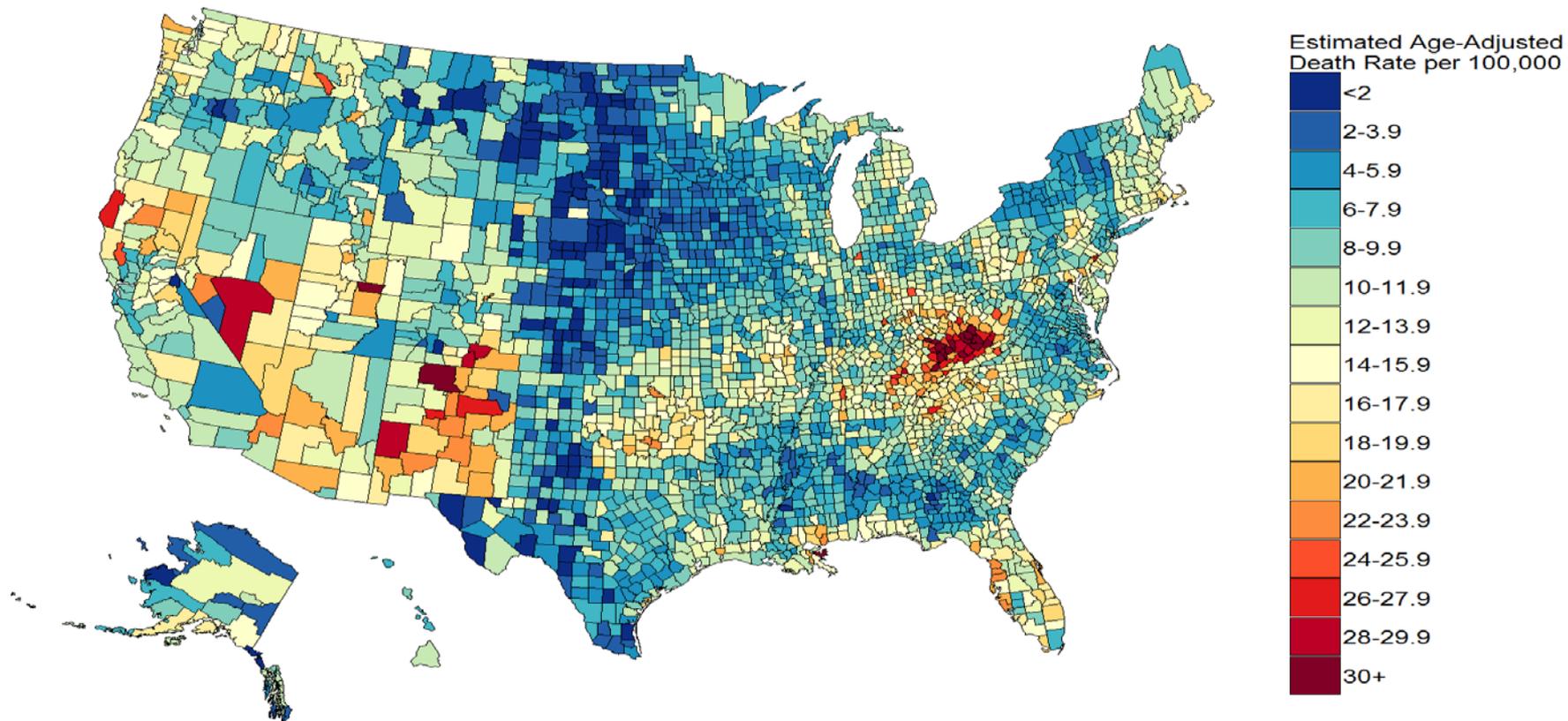
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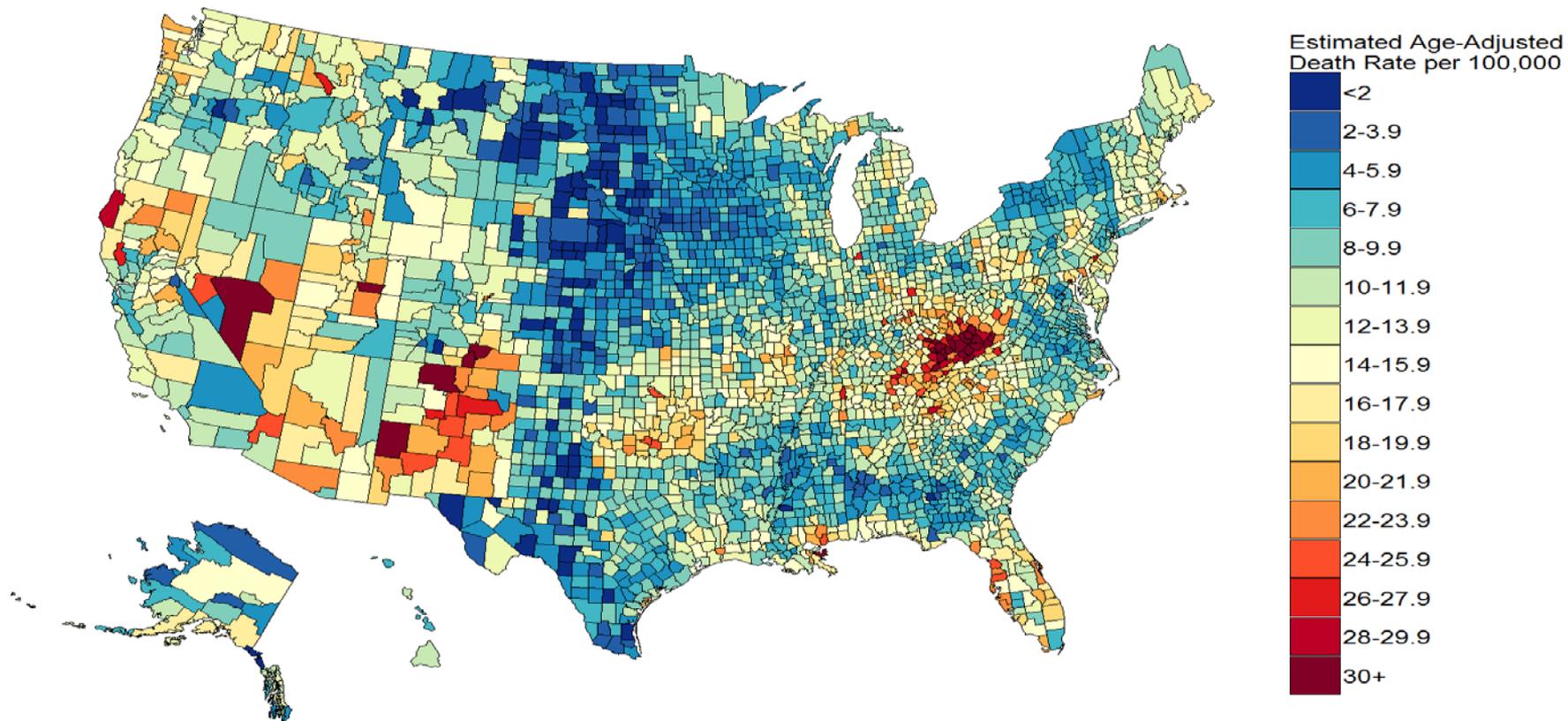
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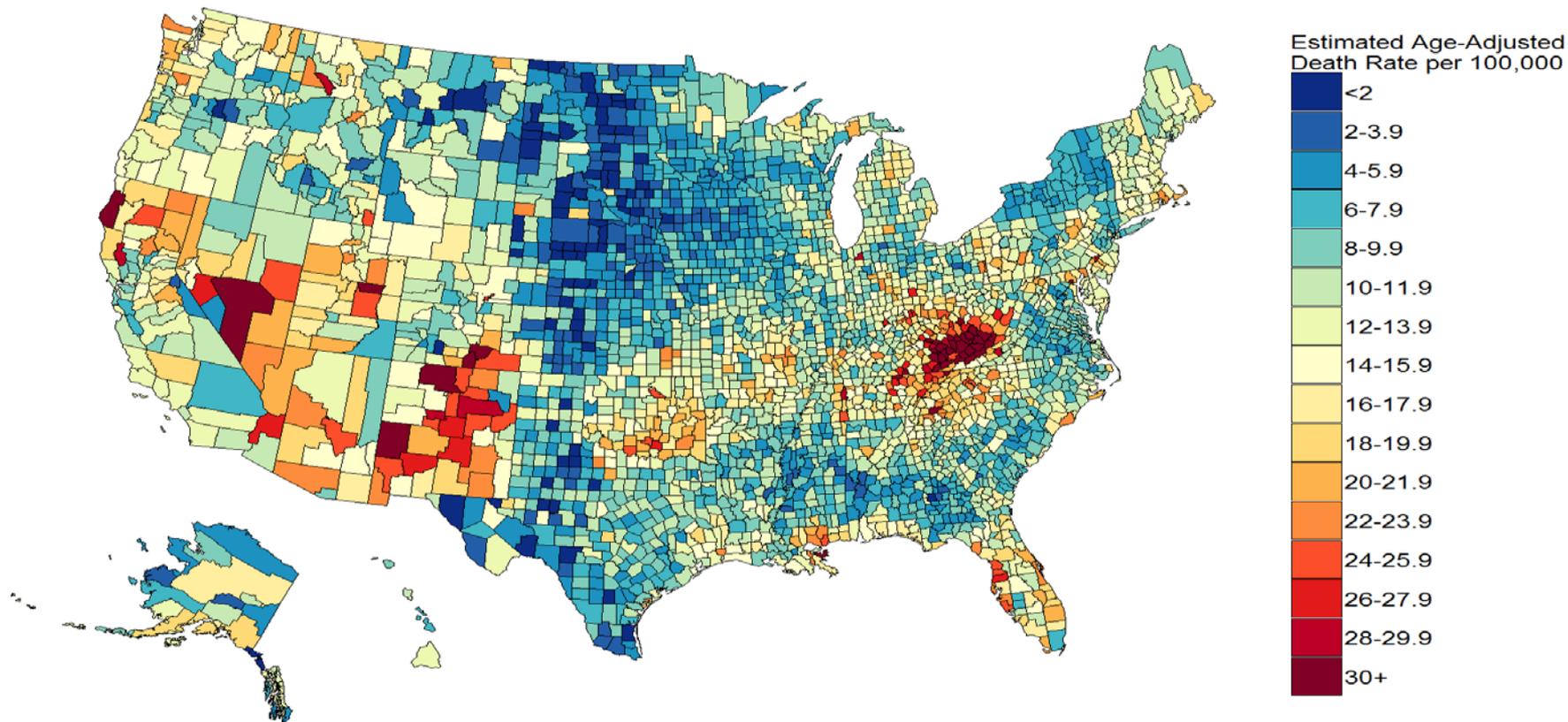
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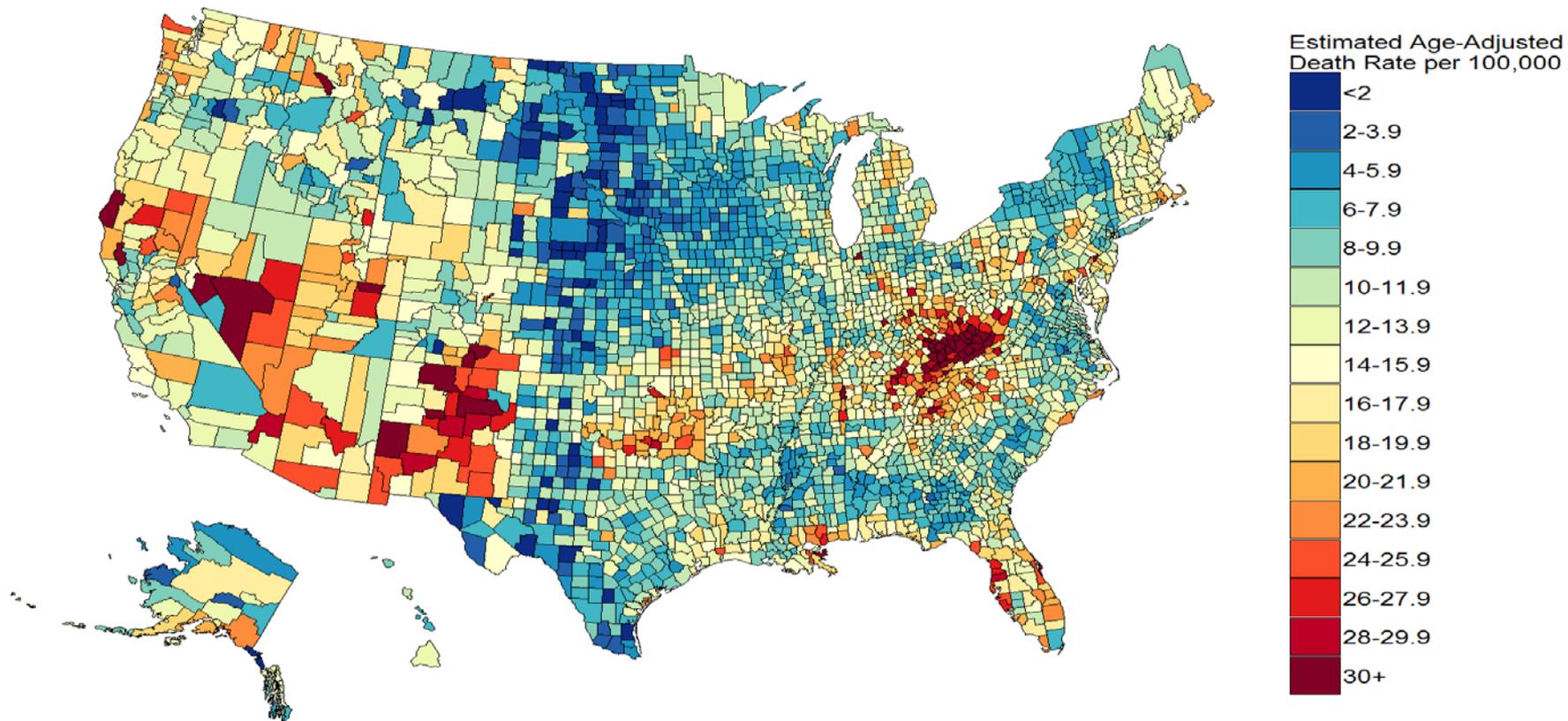
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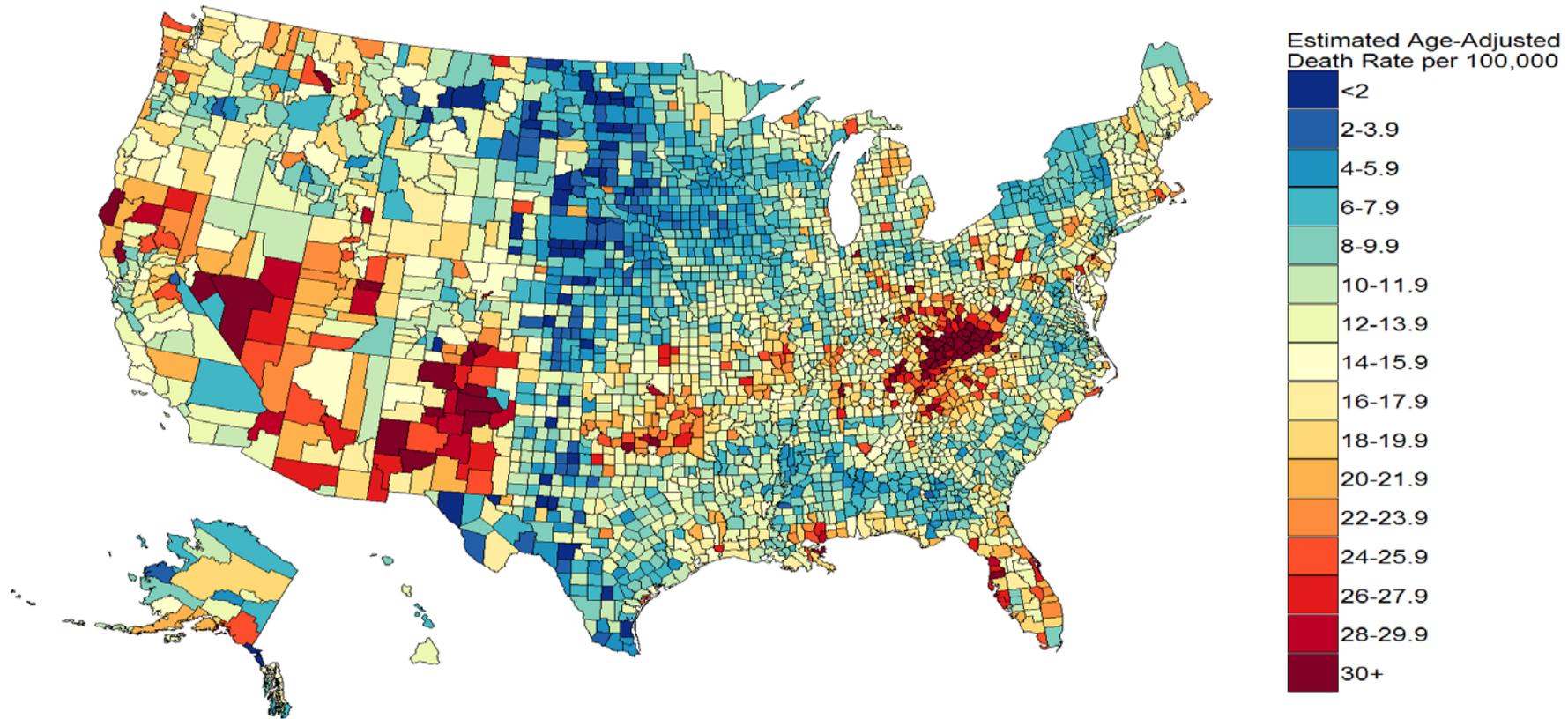
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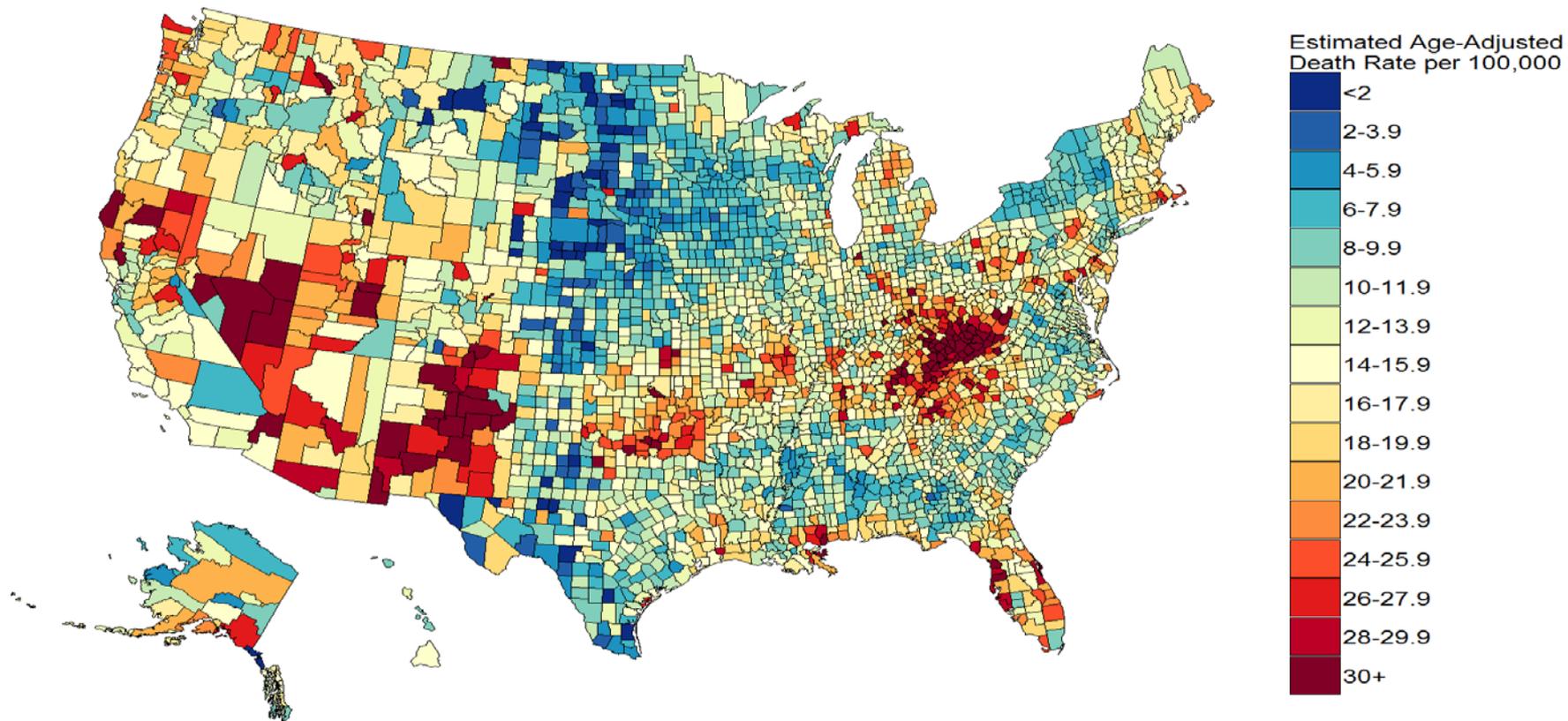
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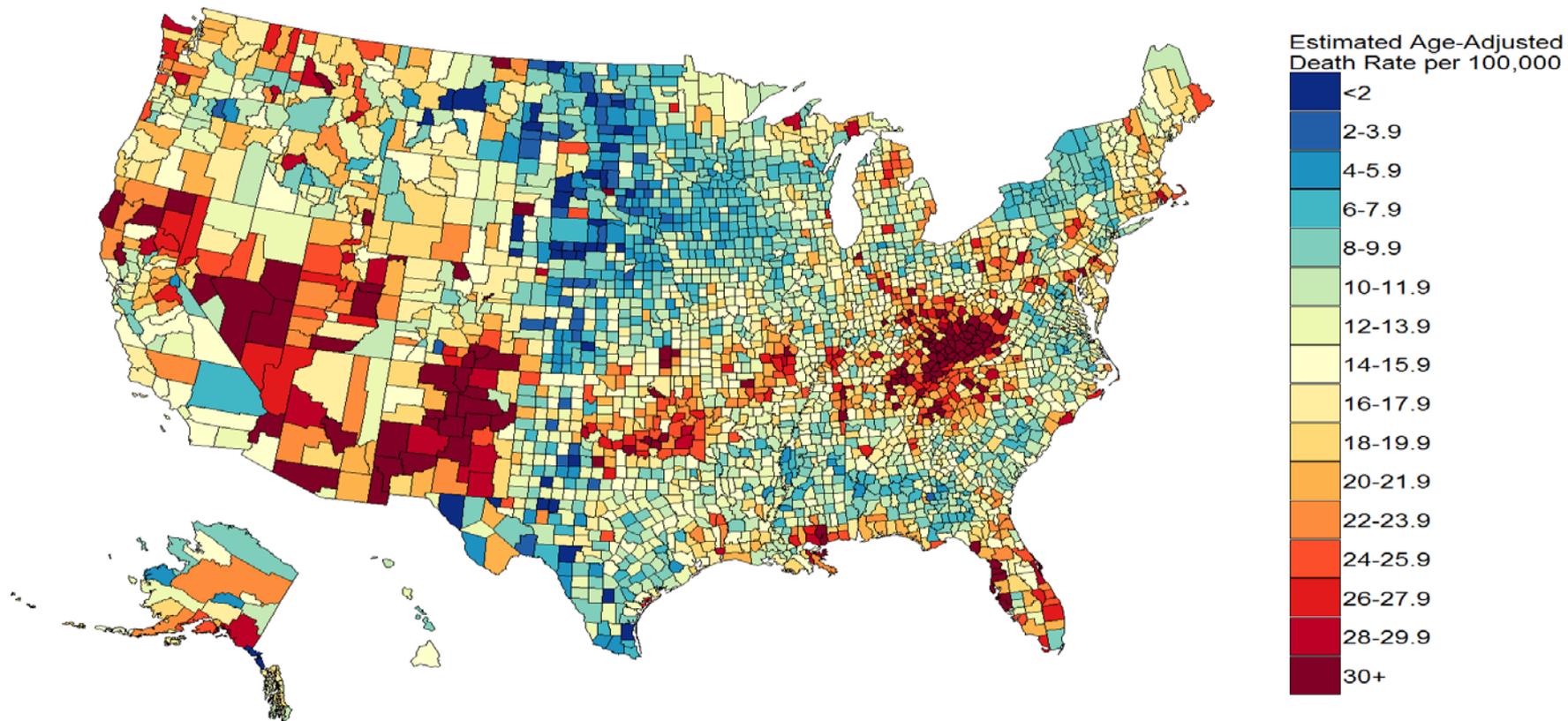
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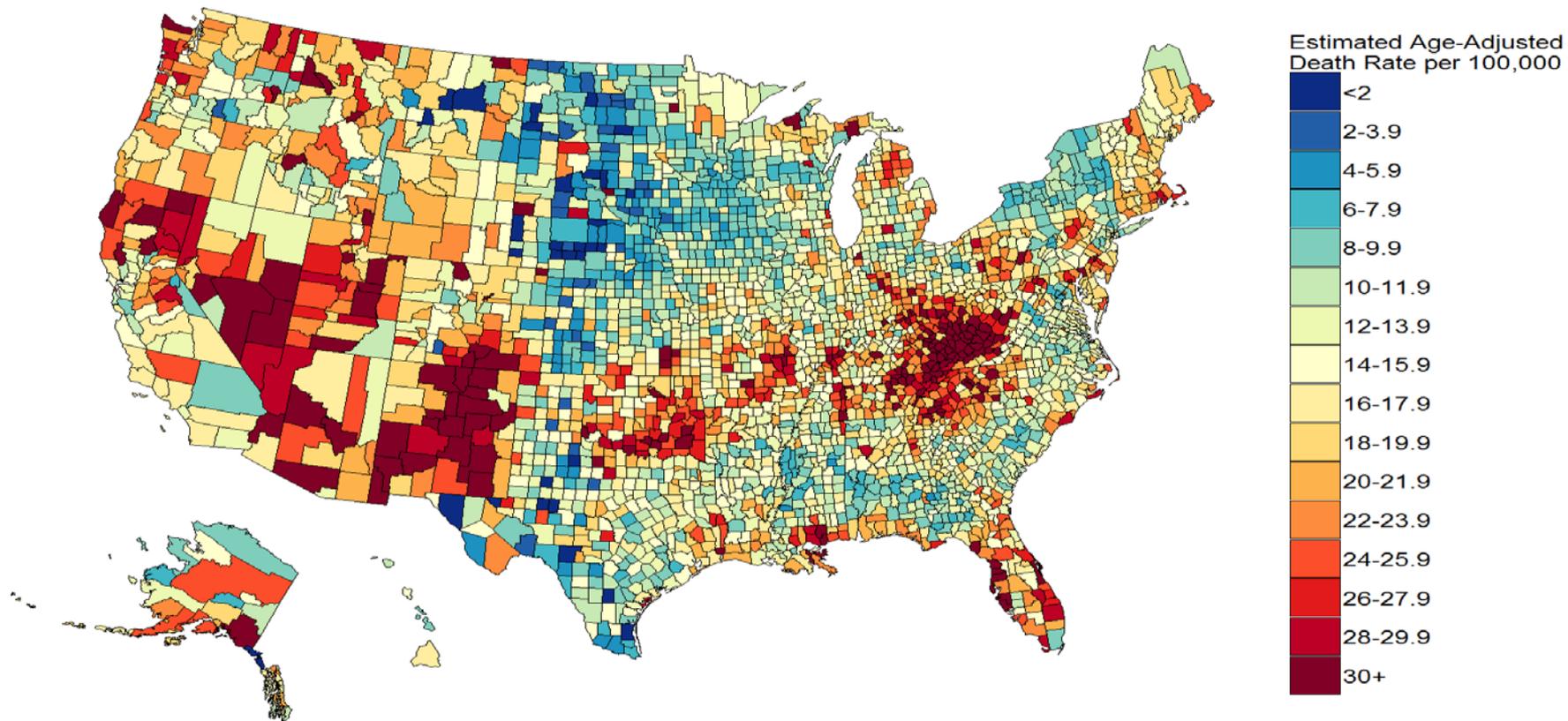
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# WHAT ARE OPIOIDS?

- Natural opiates (from poppy plant)
  - heroin, morphine, codeine
- Synthetic/semi-synthetic opioids (chemically synthesized in lab)
  - Prescription pain medications (“painkillers”)
    - OxyContin, Percocet, Vicodin, Dilaudid, Fentanyl, Methadone, etc
  - Addiction Treatments:
    - Methadone
    - Buprenorphine (Suboxone, Subutex)
- **NOT** OTC pain medications (NSAIDs or acetaminophen)

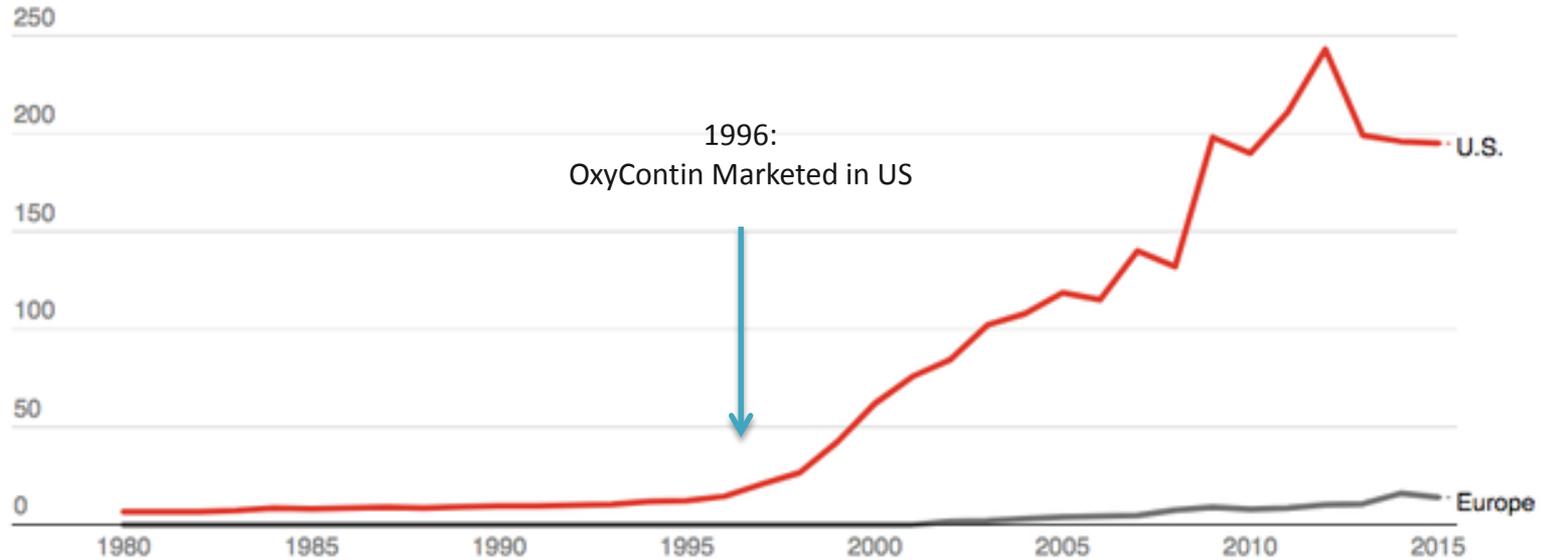
# HOW DID WE GET HERE?

About five thousand years ago.....



## Oxycodone consumption, mg/capita

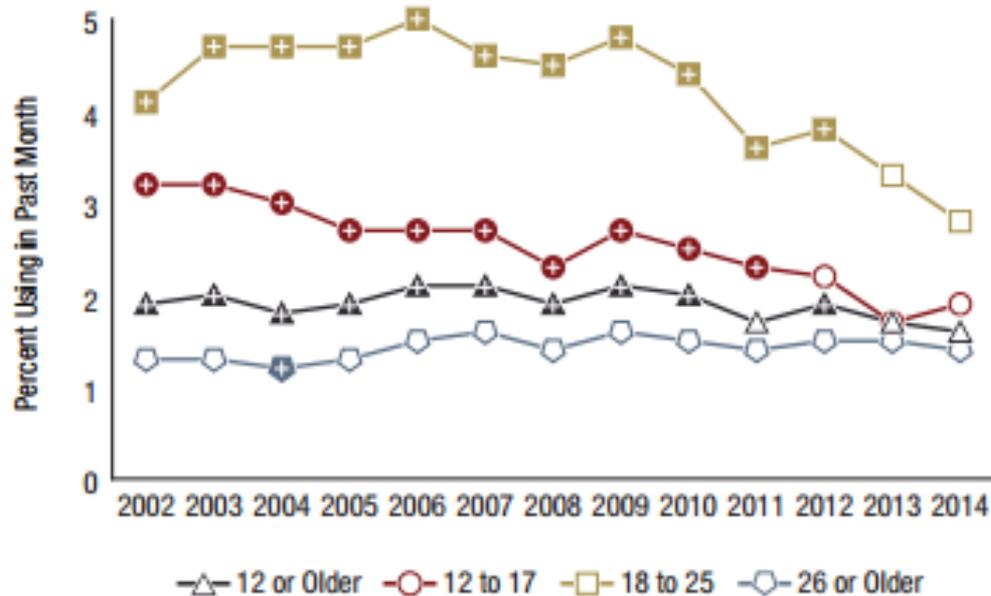
Despite a decline in recent years, U.S. per capita opioid consumption remains much higher than oxycodone consumption in Europe.



Source: [The International Narcotics Control Board](#) / **THE CONVERSATION**, CC-BY-ND

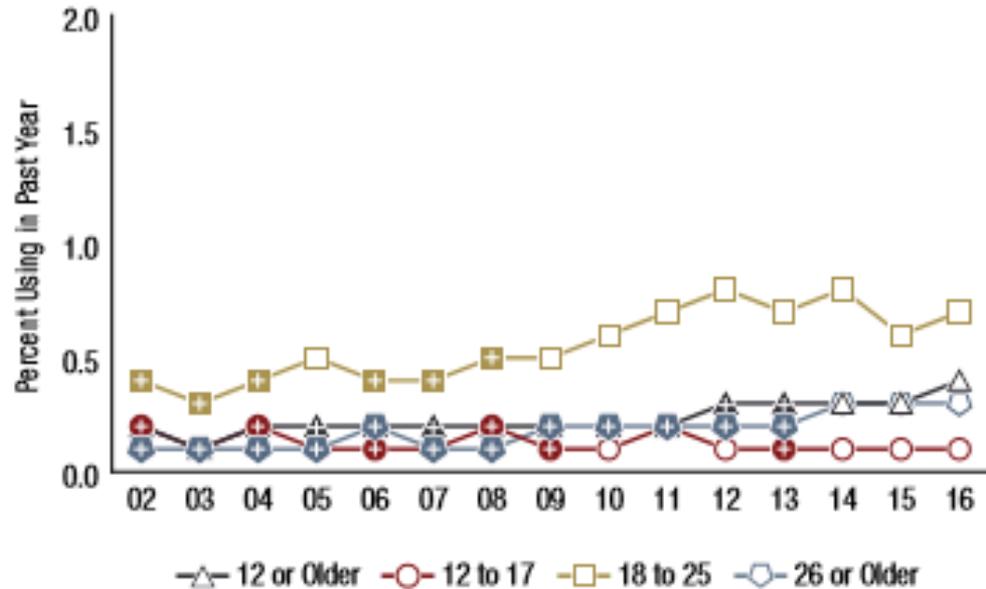
# National Trends

**Figure 6. Past Month Nonmedical Use of Pain Relievers among People Aged 12 or Older, by Age Group: Percentages, 2002-2014**



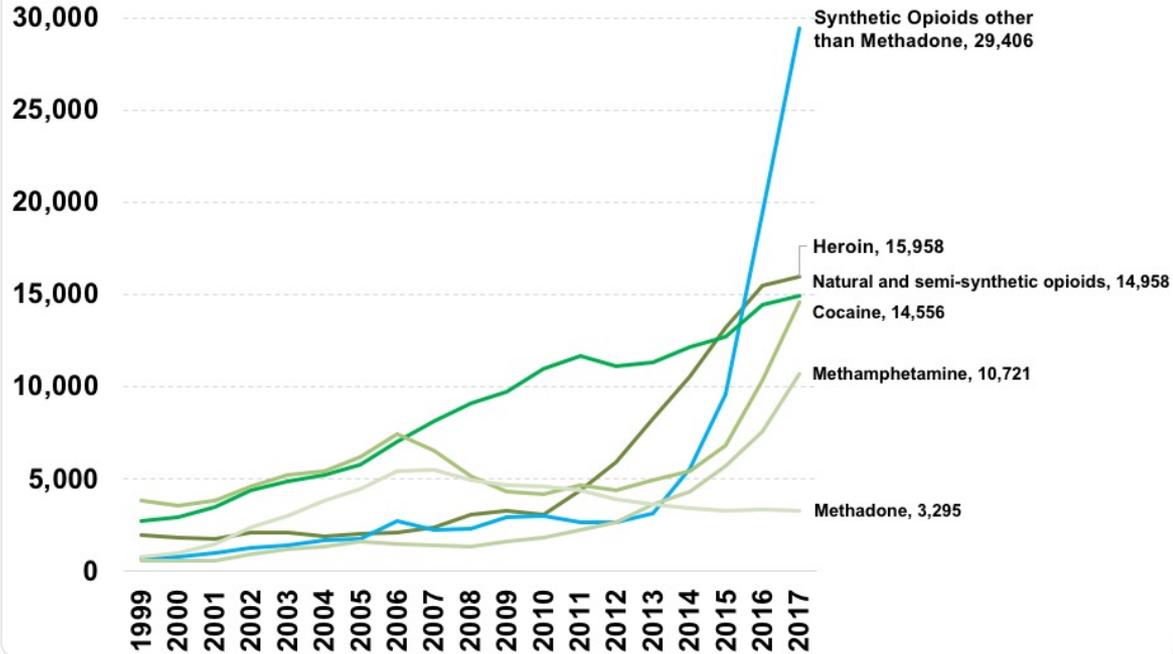
# National Trends

**Figure 29. Past Year Heroin Use among People Aged 12 or Older, by Age Group: Percentages, 2002-2016**



+ Difference between this estimate and the 2016 estimate is statistically significant at the .05 level.

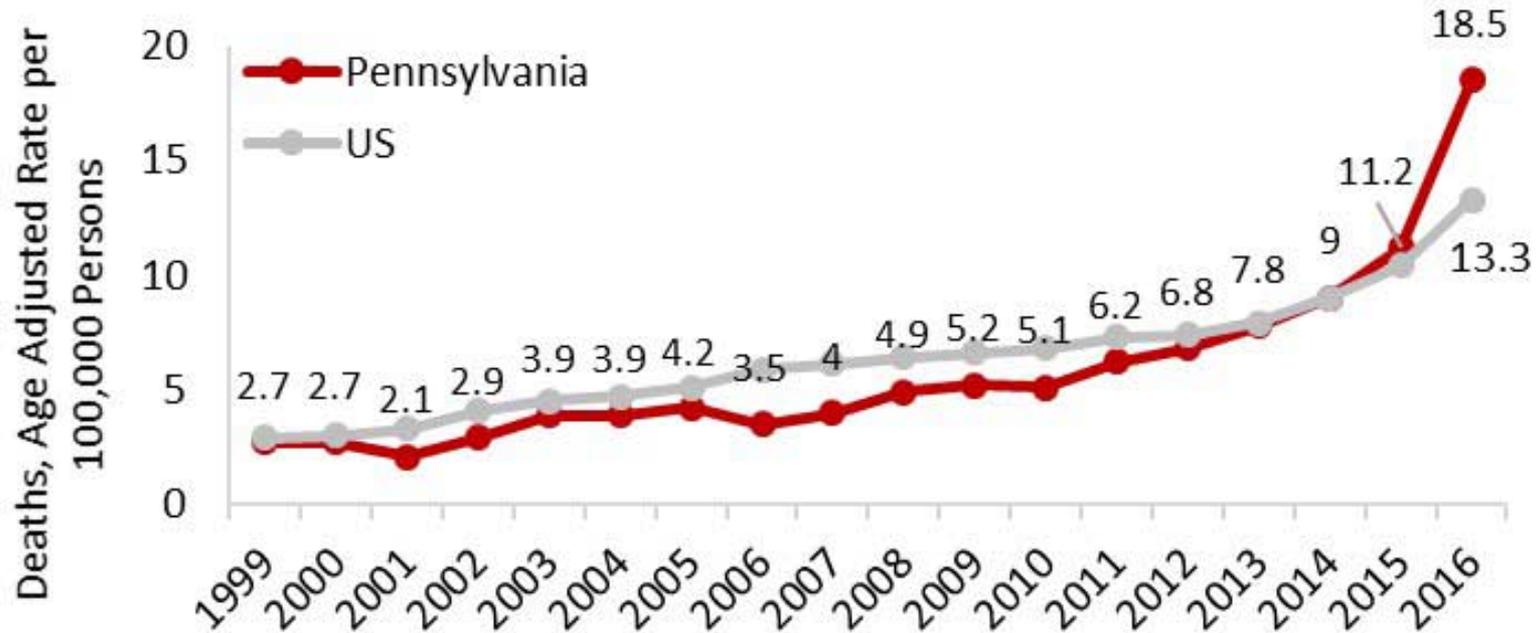
## Drugs Involved in U.S. Overdose Deaths, 1999 to 2017



72,000  
Deaths  
in 2017

Drugs Involved in U.S. Overdose Deaths\* - Among the more than 72,000 drug overdose deaths estimated in 2017\*, the sharpest increase occurred among deaths related to fentanyl and fentanyl analogs (synthetic opioids) with nearly 30,000 overdose deaths. Source: CDC WONDER

## Rate of Opioid Related Overdose Deaths in Pennsylvania



Source: CDC WONDER \*Data unreliable

# Common scenario

- Acute pain → Prescriptions for opioid → Addiction → Prescription Ends → Heroin
- One of the major causes of opioid addiction is the use of legitimately prescribed opioid medications

**HOW ARE HEROIN AND PRESCRIPTION  
PAIN MEDICATIONS SIMILAR/DIFFERENT?**

Prescription opioid pain medications and heroin *affect the brain in the same way and same place*

- Any differences in effect are due to:
  - **POTENCY** : How powerful is it?
  - **DOSE** : How much of it was taken?
  - **METHOD OF ADMINISTRATION** : How was it taken? (Oral, Inhaled, Nasal, Intravenous)



# Opioid Epidemic



Lagisetty, P, et.al. Inpatient Notes: The Opioid Epidemic – What’s a Hospitalist to Do? Ann Intern Med. 2017; 167:HO2-HO3. doi 10.7326/M17-1564

# WHAT IS ADDICTION?

# IS NOT



## Physical Dependence

### Withdrawal symptoms

- Opioid withdrawal is rarely fatal, but awful enough to do almost anything to avoid
- Can be experienced after only 6-8 hours of no use

### Tolerance

The need for more and more of the substance to get the same effect

# IS



## Behavior

**Compulsive use** despite consequences

**Cannot stop** despite repeated attempts

**Significantly disrupts functioning and relationships**– time spent finding, taking, and recovering from substance

- Can result in unethical/illegal activities



DO NOT DRINK ALCOHOLIC BEVERAGES WHEN TAKING THIS MEDICATION

Rx 250 CROSS TAKEN TWICE

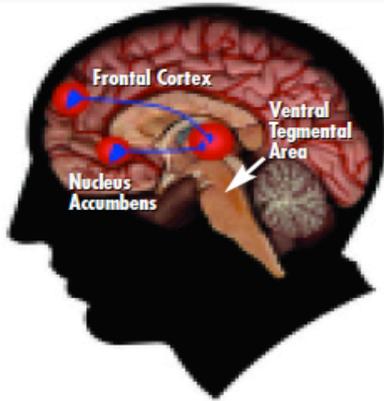
Keep note of the medication that is recommended may cause serious harmful side effects. Do not use an pregnant or nursing increasing pregnancy. You should discuss the same of medication with your doctor or pharmacist. This medicine may impair your ability to drive or operate machinery. Use care until you know it affects you. Exp: 01/18/2017 Manufactured by: 02/12/2017 Lot: 01/18/2018 Round Pink K 66

**HOW CAN ONE TELL PHYSICAL  
DEPENDENCE FROM ADDICTION?**

**OFTEN, ONE CAN'T....  
HUGE DILEMMA FOR PRESCRIBERS**

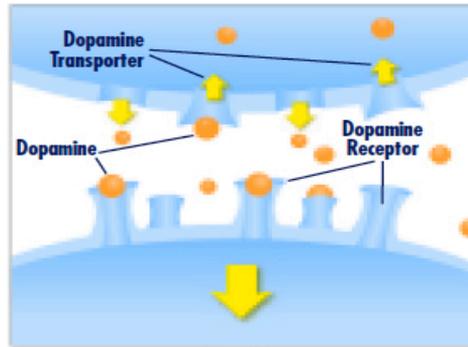
# DRUGS OF ABUSE TARGET THE BRAIN'S PLEASURE CENTER

## Brain reward (dopamine) pathways

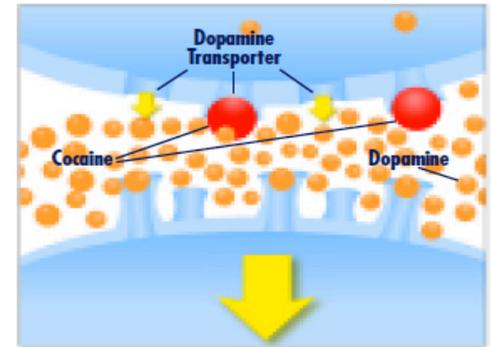


These brain circuits are important for natural rewards such as food, music, and sex.

## Drugs of abuse increase dopamine



**FOOD**



**COCAINE**

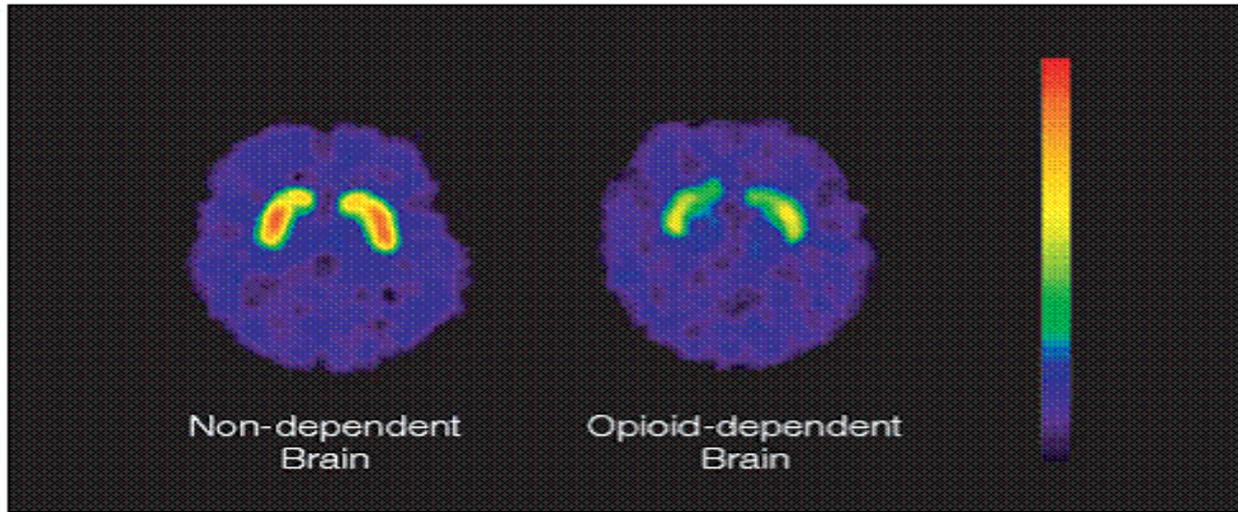
Typically, dopamine increases in response to natural rewards such as food. When cocaine is taken, dopamine increases are exaggerated, and communication is altered.

\*National Institute of Drug Abuse:

<https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain>

# Opioid Dependence Causes Changes in Brain

## Non-Opioid-Dependent and Opioid-Dependent Brain Images



PET scan images

The lack of red in the opioid-dependent brain shows that chronic opioid use has reduced dopamine receptor concentration

PET=Positron Emission Tomography

Wang GJ et al. *Neuropsychopharmacology*. 1997;16(2):174-182.

# The evolution of dopamine reward...

- The midbrain of the human is almost identical to that of an amphibian.
  - All animals have the same basic reward wiring.
  - Behaviors that are rewarding:
    - Warm Body
    - Eating → Full Belly
    - Reproductive activity
  - The brain provides a reward of “well being” to reinforce these behaviors that are positively associated with SURVIVAL.
- 2. Physiologic Range of reward is on a scale of 1-50. Food → Sex
- 3. Supra-physiologic range of reward with drugs and alcohol.
  - Range of **50-10,000**.
  - DEEP IMPRINT for Reward behaviors = Difficult to forget

# What Is Addiction: ASAM Definition<sup>1</sup>



## ASAM

American Society of Addiction Medicine

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### Public Policy Statement: Definition of Addiction

#### Short Definition of Addiction

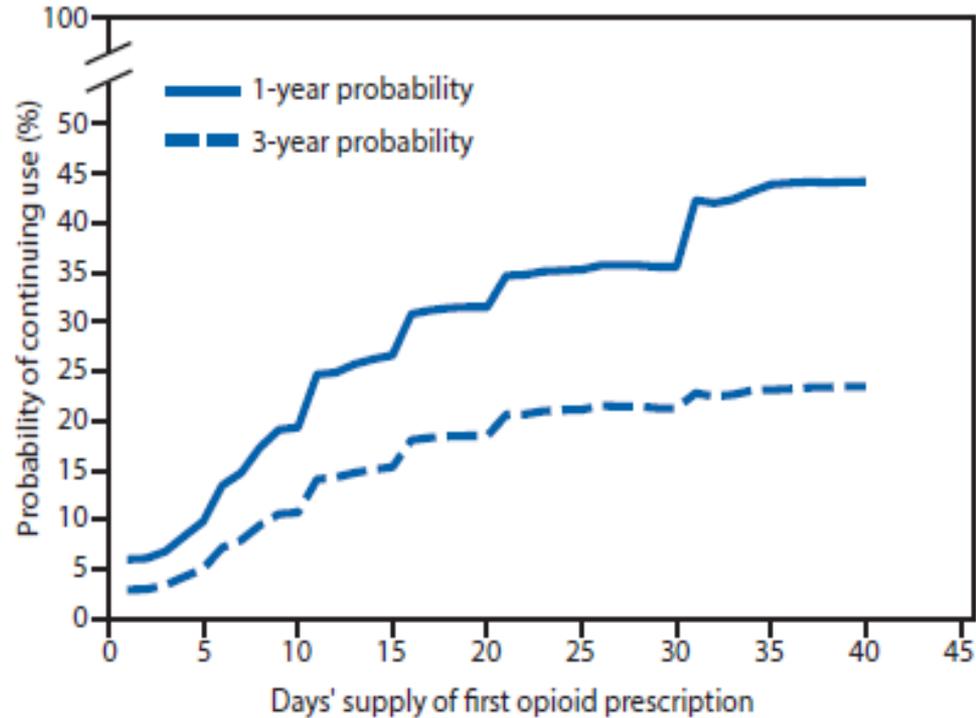
Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

*Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.”*

1. American Society of Addiction Medicine. [http://www.asam.org/docs/public-policy-statements/1definition\\_of\\_addiction\\_long\\_4-11.pdf?sfvrsn=2](http://www.asam.org/docs/public-policy-statements/1definition_of_addiction_long_4-11.pdf?sfvrsn=2); accessed April 13, 2012

**HOW LONG/ HOW MUCH DOES IT  
TAKE TO BECOME ADDICTED?  
(WHAT IS SAFE?)**

# Length of Initial Opioid Rx



\* Days' supply of the first prescription is expressed in days (1–40) in 1-day increments. If a patient had multiple prescriptions on the first day, the prescription with the longest days' supply was considered the first prescription.

**DOES EVERYONE WHO TAKES  
OPIOIDS FOR “TOO LONG”  
BECOME ADDICTED?**

**OF COURSE NOT.  
PHYSICAL DEPENDENCE,  
HOWEVER, WILL OCCUR.**

**WHY IS THE CONCEPT  
“ADDICTION IS A CHRONIC DISEASE”  
IMPORTANT?**

# Characteristics of Chronic Disease

- **Chronic = no known cure; must be managed over time**
  - long-lasting chemical changes in the brain regardless of detoxification
- **Relapsing**
  - with and without treatment, craving and compulsive, pathological pursuit of substance can return
- **Progressive**
  - gets worse over time; high fatality rates for addiction specifically

# Management of a Chronic Disease

## Chronic Disease

(Short-term)

- Acute Stabilization
- Hospitalization

(Long-term)

- Medication Treatments
- Psychosocial Treatments/  
Behavior Change

## Addiction

(Short-term)

- Detoxification
- Rehabilitation

(Long-term)

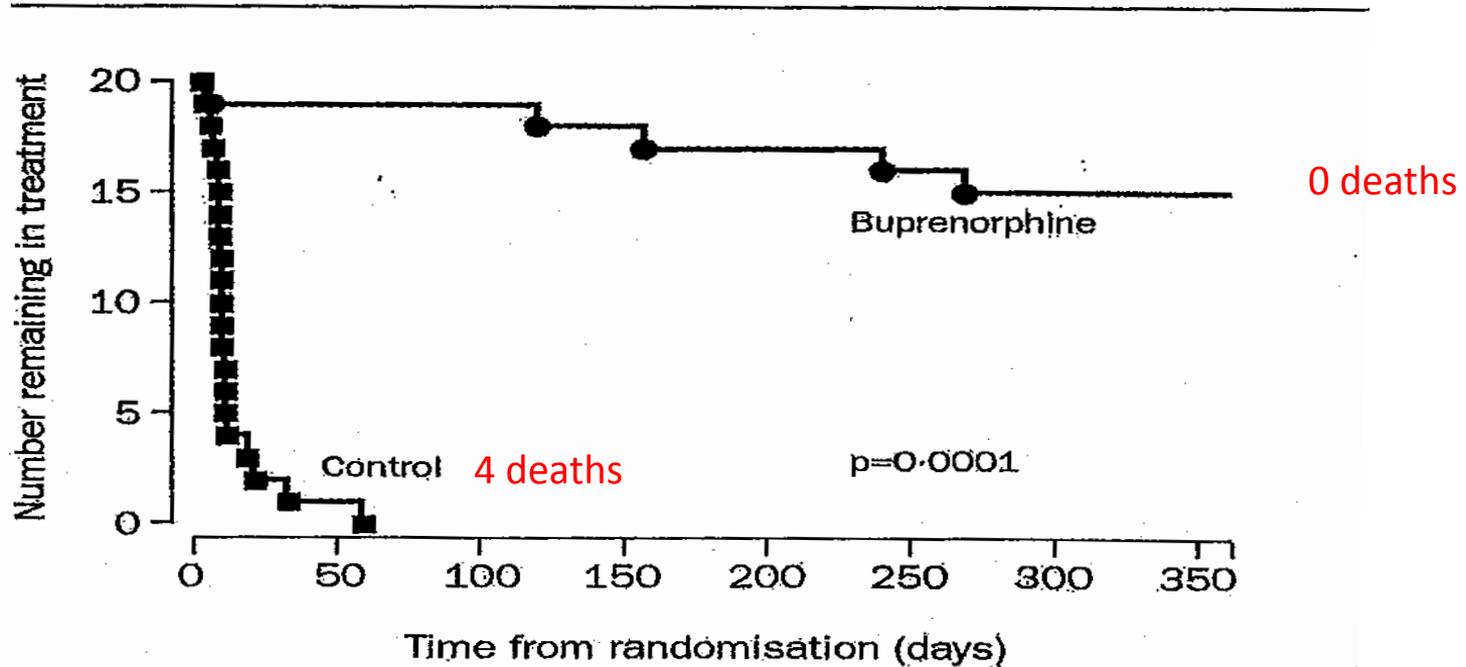
- Medication Treatments
- Psychosocial Treatments/  
Behavior Change

**WHY IS THE CONCEPT  
“ADDICTION IS A CHRONIC DISEASE”  
CONTROVERSIAL?**

**WHAT ARE THE TREATMENTS?**

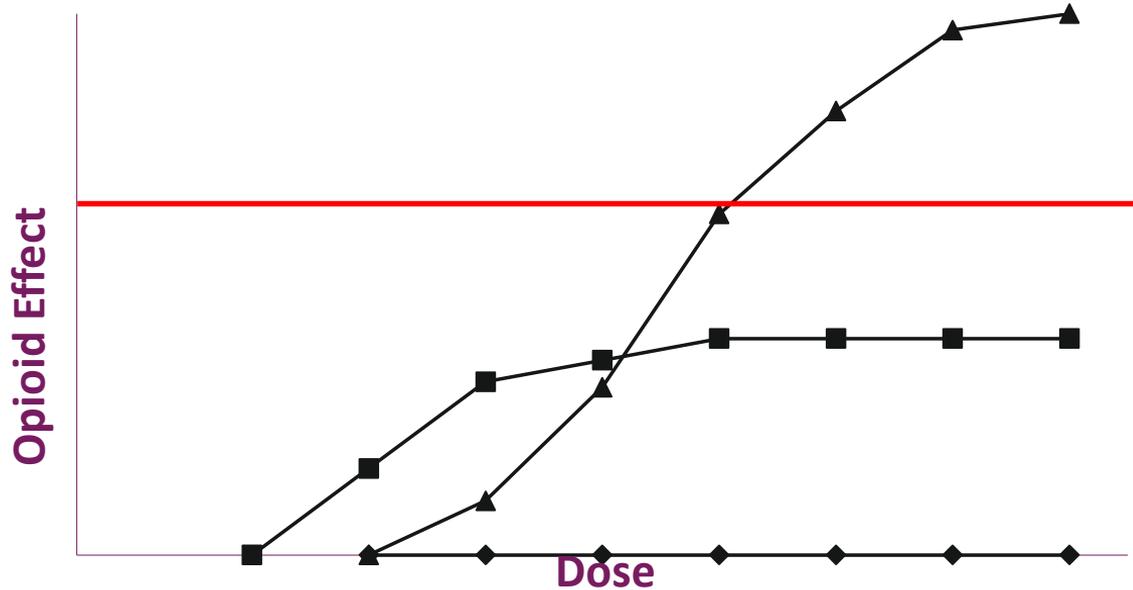
- Historically, a great divide between:
  - Abstinence-oriented treatment
    - AA, NA – Twelve-step-based
    - Use of no psychoactive substances, often including prescribed medications
  - Disease-oriented treatment
    - Medication-assisted treatment; reduce harmful symptoms physiologically
    - Recommended in conjunction with psychosocial treatment

# Kakko, Svanborg, Kreek & Heilig, 2003



Kakko et al, 2003. 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden. *Lancet*.

# Medication Treatments for Opioid Use



**Full Agonist:** (high intrinsic activity) (Oxycodone, Heroin, Methadone)

**Potentially Lethal Dose**

**Partial Agonist:** (low intrinsic activity) (Buprenorphine)

**Antagonist:** (no intrinsic activity) (Naloxone/Naltrexone/Vivitrol)

# Why are opioid medications used to treat opioid addictions?

- Long-term (permanent?) changes to opioid receptor system.
- Changed receptors may *require* an opioid to function normally.
- Effective! Opioid treatment medications reduce symptoms; promote remission.
- Long-term (for some, lifelong) medication treatment works best.

“Medication treatment is just replacing one addiction with another”

Really? Are these the same?

With Substance	With Medication
Unable to function well or at all in daily responsibilities	Able to function in daily responsibilities
Loss of job, school	Job, School
Broken relationships	Relationship repair
Crime, deceit	Pre-addiction self
Sense of desperation	Sense of normalcy

**WHY ARE METHADONE AND  
BUPRENORPHINE CONTROVERSIAL AND  
DIFFICULT TO ACCESS?**

# What about naltrexone (Vivitrol)?

- 30-Day Injection form - Promising, but scant data
  - Longer-term outcomes/issues not yet fully researched
  - (Oral form – Dismal failure for most)
- Definitely an important part of the toolbox
- Until more is known, population best served may be those who have been abstinent for a significant length of time, but are at high risk of relapse
  - Completion of incarceration
  - No opioids for some length of time

**WHY CAN'T PEOPLE JUST WEAN OFF  
OR GO THROUGH DETOX AND STOP?**

# Detoxification is not Treatment

- Detoxification does NOT “reset” the brain’s baseline
- Relapse after detoxification alone *is the norm* – upwards of 95%
- Can *increase* risk of overdose and death
- If someone is detoxified:
  - Withdrawal should be medically assisted
  - Medication treatment should be started immediately

**WHAT ARE THE DILEMMAS  
PRESCRIBERS FACE WHEN  
PRESCRIBING OPIOIDS FOR PAIN?**

**WHAT ARE THE INITIATIVES  
COMMUNITIES ARE DOING?**

- Heroin Task Forces
- Increased access to Medication Assisted Treatments
- Narcan rescue kits
- Prescriber education
- Medication take-back boxes

**HOW CAN YOU HELP?**

# Discontinue Stigmatizing Language

Instead of saying :

- **Addict** – how about “opioid use disorder” or “person with an addiction”?
- **Drug-seeker** – how about “may have a substance use disorder” or “may be experiencing cravings” or “needs to be evaluated for pain”?
- **Clean/Dirty** – how about “negative/positive”; or “in remission” and “in active use”?

# Beliefs that may *increase* overdose and fatalities

## MYTH

- People who have developed a substance use disorder are
    - Bad
    - Unworthy of our respect and care
- 

# Beliefs that may *increase* overdose and fatalities

and fatalities

substance use

## MYTH

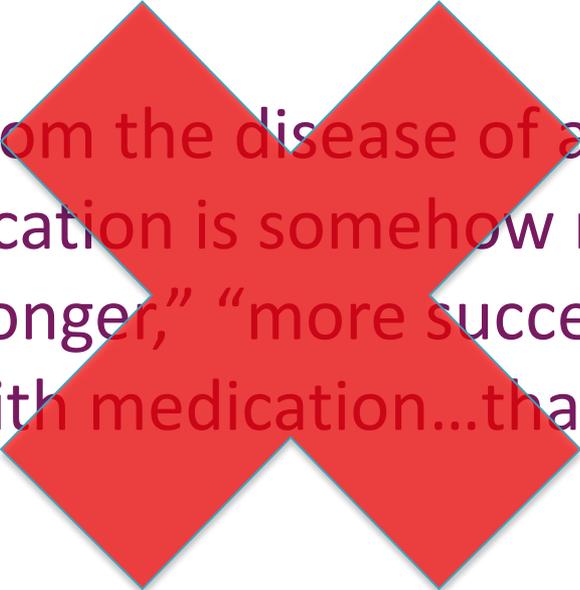
Agonist medication treatment is just replacing one addiction with another



# Beliefs that may *increase* overdose and fatalities

## MYTH

Recovering from the disease of addiction without agonist medication is somehow reflective of being “better,” “stronger,” “more successful” than recovering with medication...that medication is a “crutch”



# Beliefs that may *increase* overdose and fatalities

## MYTH

Once someone has achieved abstinence/recovery with the use of treatment medications, then he or she should be able to stop the medication



# QUESTIONS?

Brad Miller, DO

[millerbj10@upmc.edu](mailto:millerbj10@upmc.edu)

570-321-2340