

# Methamphetamine

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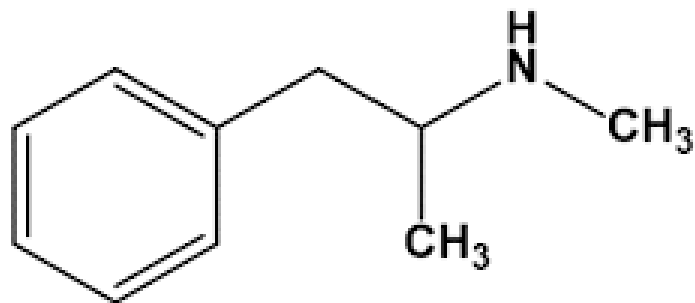
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# Objectives

- Understand specifics of Methamphetamine use
- Understand trends in Methamphetamines
- Understand treatment options



# Methamphetamine



(C<sub>10</sub>H<sub>15</sub>N; molecular weight = 149.24)



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# History

- Amphetamine-type stimulants dates back for thousands of years
- Methamphetamine first synthesized in Japan in 1918
- Utilized to combat soldier's fatigue in WWII



## Methods of Use

- Inhalation (Smoking)
- Insufflation (Snorting)
- Intravenously (Shooting)
- Orally
- Transdermal



# Metabolism

- Smoking
  - Reaches brain in 6-8 seconds
- Intravenous
  - Instantaneous, very intense effects
  - Peaks in 4-7 minutes
- Snorting
  - Slowest onset, less peak effect, and longer half life
- Metabolized by the liver
  - CYP2D6/3A4
- Eliminated through urine



# Intoxication Symptoms

- **Euphoria**
- Increased energy and alertness
- Decreased need for sleep
- Decreased appetite



# Intoxication Signs

- Increased HR and blood pressure
- Pupillary dilation
- Hyperthermia
- Psychomotor excitation
- Analgesia





# Withdrawal

- Withdrawal is not life threatening
- Treatment is supportive
- Depression, anhedonia
  - Suicidality in severe cases
- Fatigue, increased need for sleep
- Vivid dreams
- Sleep disturbance
- Increased appetite



# Medical Consequences of Methamphetamine Use

- Rhabdomyolysis
  - Hyperthermia, seizures, decreased oral intake
  - Usually the result of acute intoxication
- Severe intoxication: grand mal seizures, stroke, cardiac arrhythmia, hyperpyrexia, death



# Psychiatric Consequences

- Psychiatric
  - Psychosis
    - \*Large contributor to inpatient psych hospitalization
- Poor inhibitory control
- Impaired attention
- Impaired risk-reward decision making



- Powder Methamphetamine
- Liquid Methamphetamine



## "Backpack Meth Lab"



FOX ten  
news



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## Liquid Meth

- Foreign or domestic lab
- 99% pure
- Much cheaper and widely available
- Much deadlier



# Methamphetamine in Oklahoma

- Methamphetamine is considered Oklahoma's greatest illicit drug threat
  - 2 is prescription opioids, with heroin as an emerging threat
  - 3 is marijuana
- 330 methamphetamine deaths in 2017
  - 157 in Tulsa County
- Treatment admissions: 5,620

# Methamphetamine in Oklahoma

- Domestic production has decreased over the past few years
- Most methamphetamine comes up from Mexico
  - Controlled by Mexican DTO's
  - Fewer “seized labs” but that’s because more of it is being produced in Mexico. Purity has increased
  - 7,175 seizures of methamphetamine by law enforcement in 2020 representing a 6.9% decrease compared to 2018
- Price: \$40-\$100 per gram



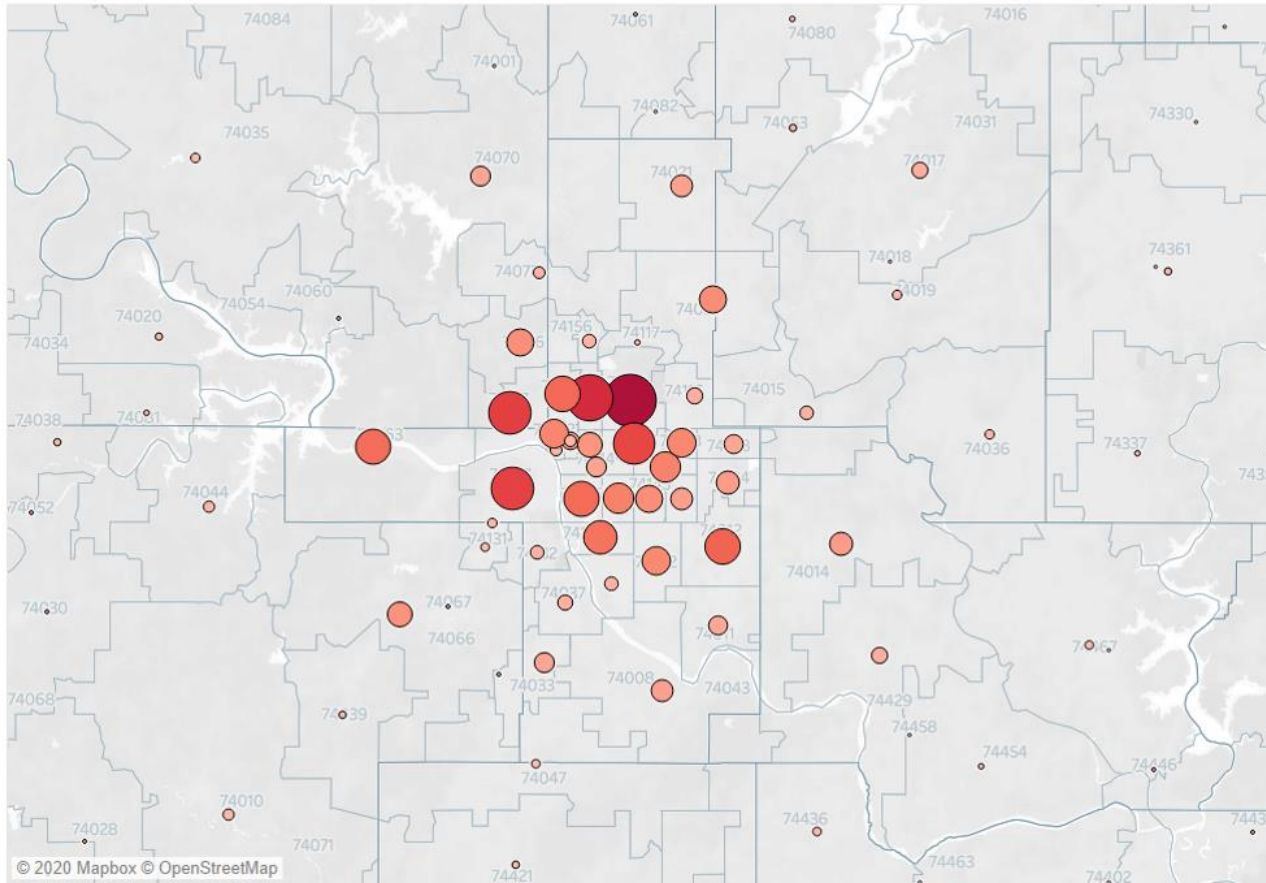
2018

More Oklahomans died of  
methamphetamine overdose than  
prescription opioid overdose



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# Meth Arrests by County, 2010-2019



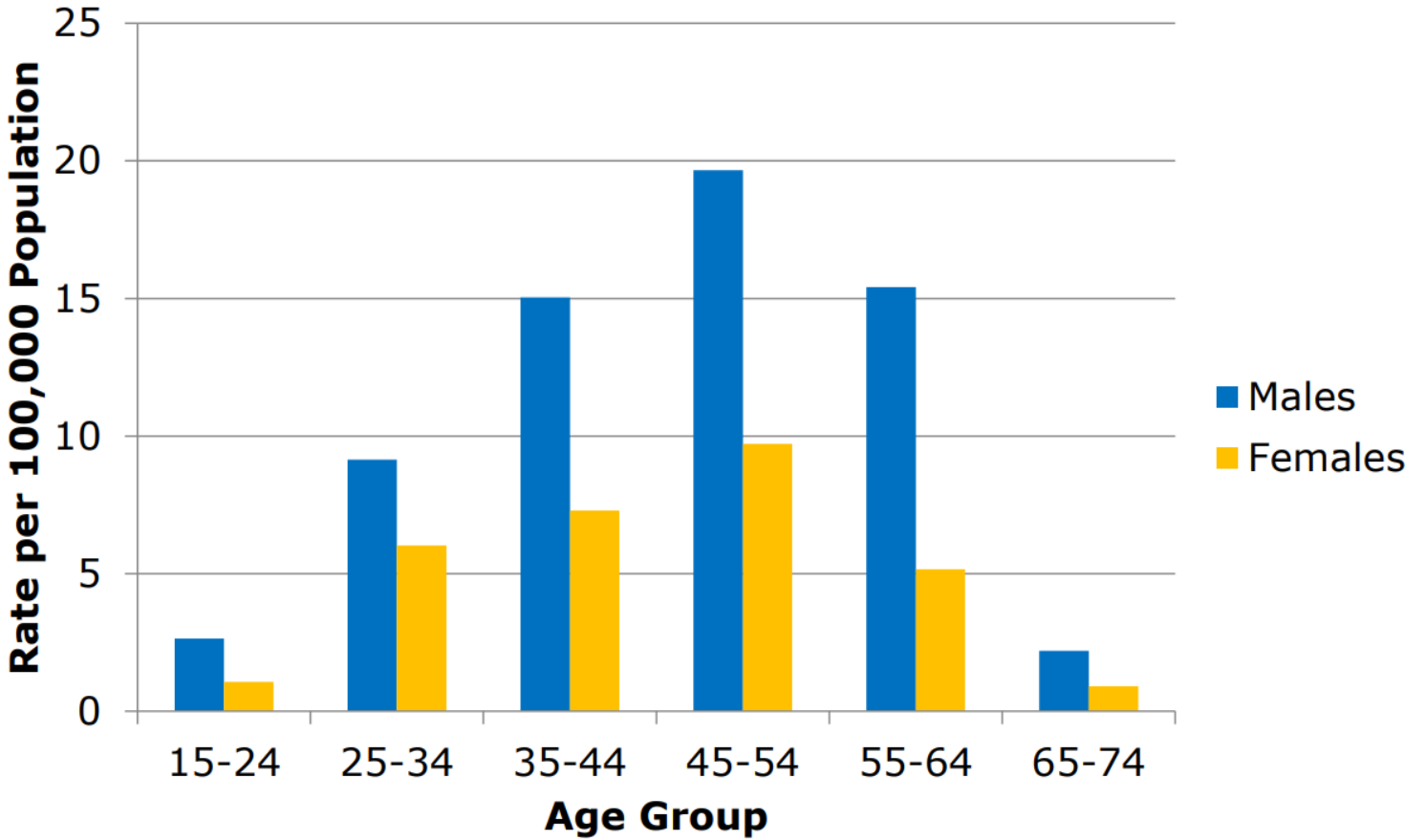
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# Methamphetamine Deaths

Drug	Number of Deaths		Total
	2008	2017	
Prescription	509	342	5312
Prescription opioid	457	277	4653
Anti-anxiety	153	95	1616
Alcohol	98	119	1152
<b>Methamphetamine</b>	<b>37</b>	<b>307</b>	<b>1613</b>
Illicit opiates	11	69	295



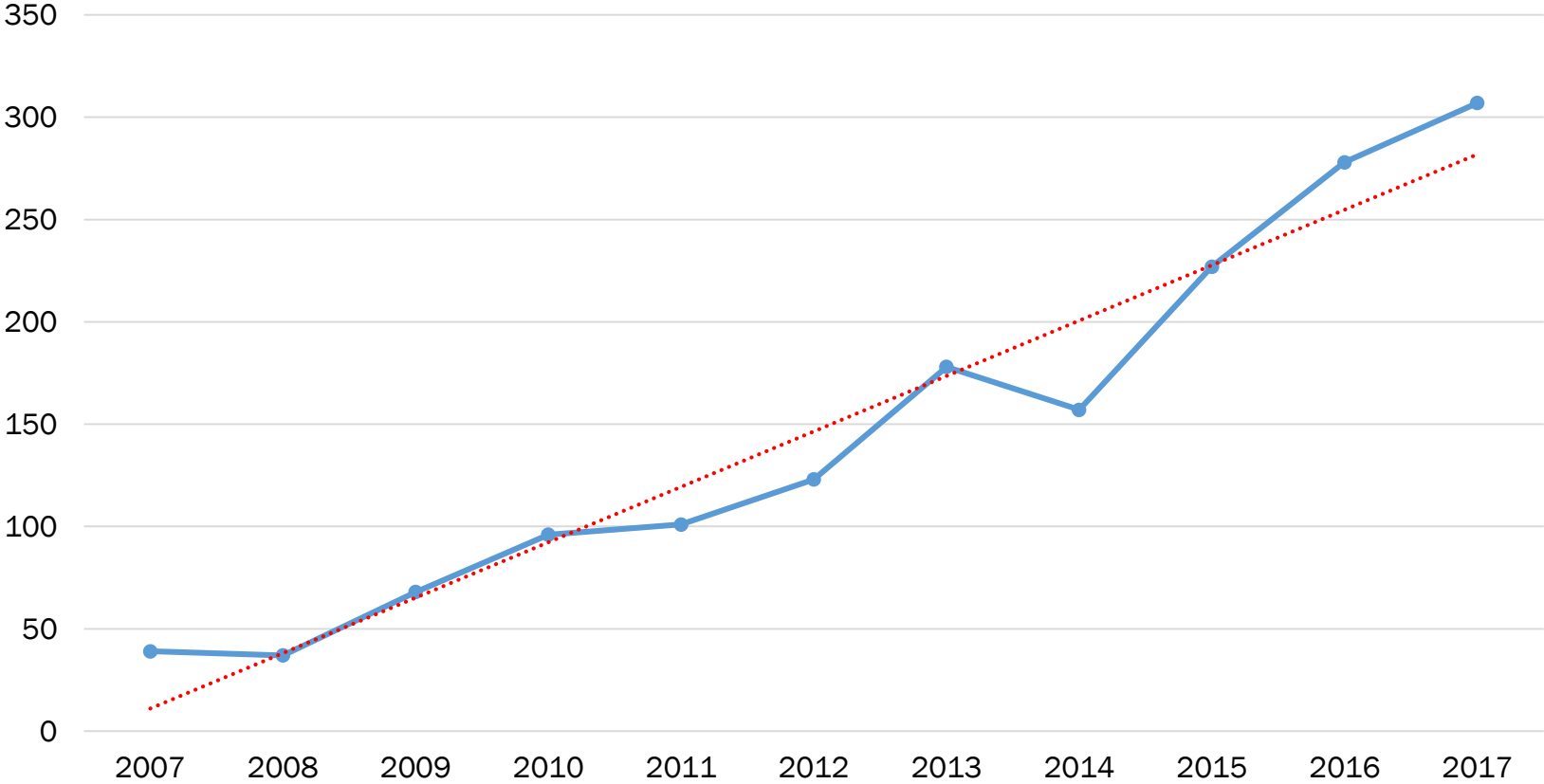
# Unintentional Methamphetamine Overdose Death Rates by Age Group\* and Gender, Oklahoma, 2013-2017



Source: OSDH, Injury Prevention Service, Fatal Unintentional Poisoning Surveillance System (Abstracted from Medical Examiner reports)



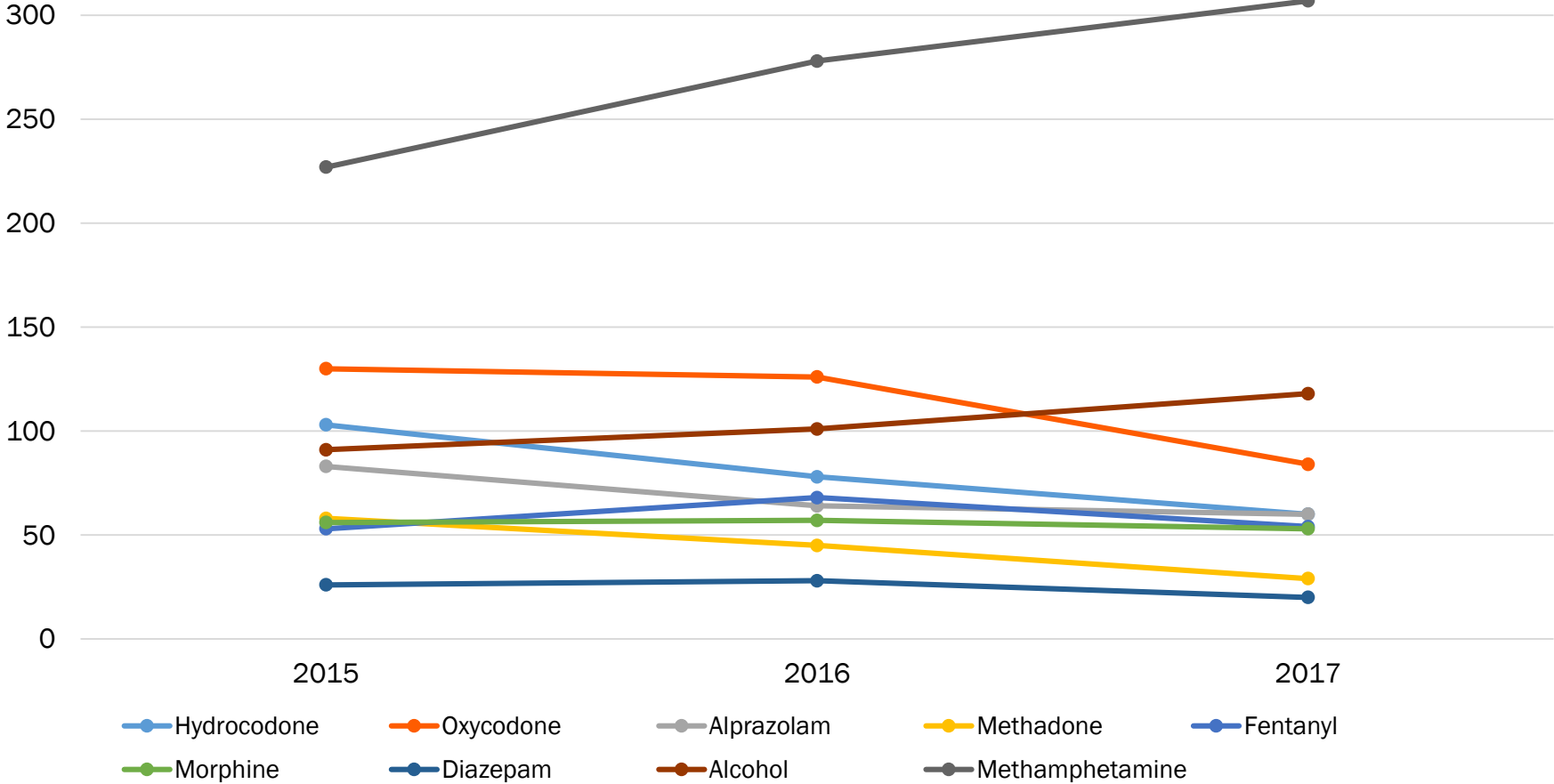
# Methamphetamine Deaths from 2007-2017 in Oklahoma



Source: OSDH



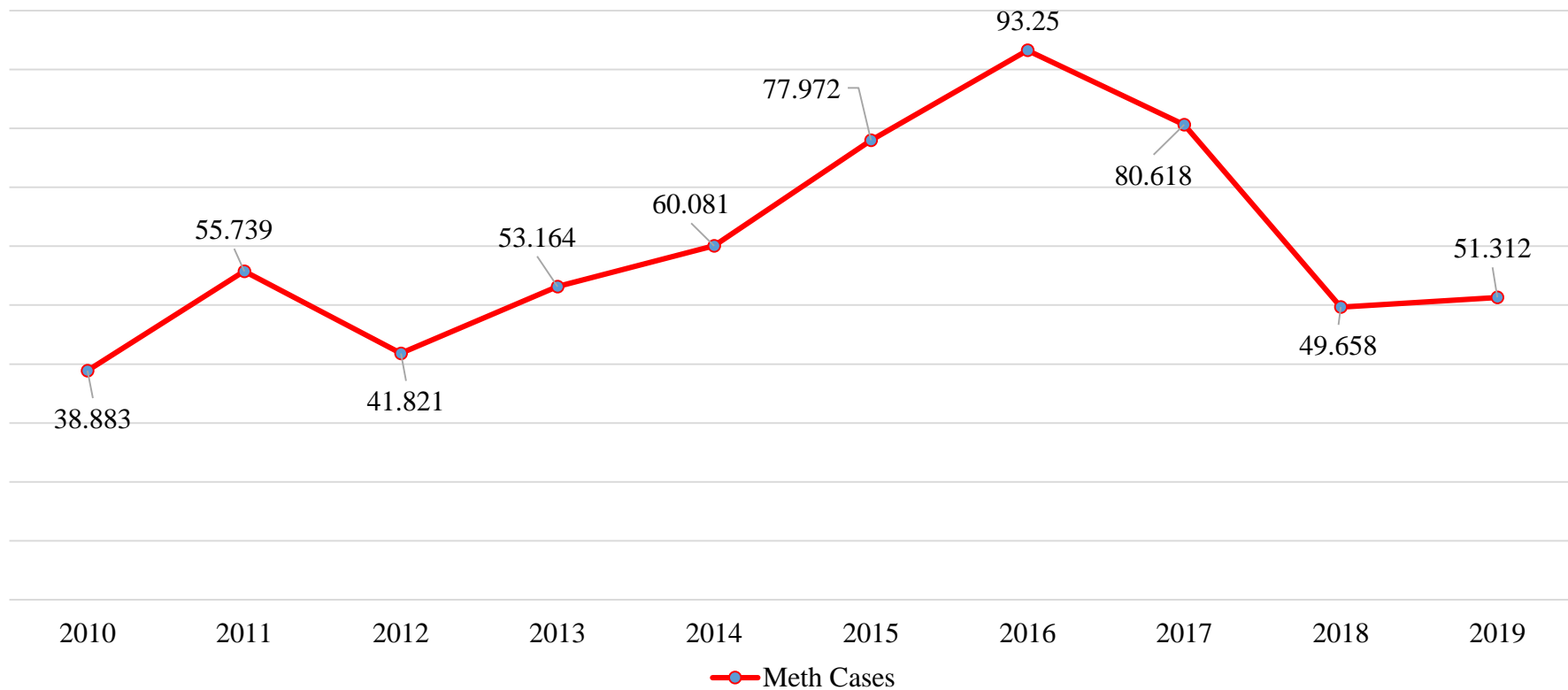
# Most Common Substances by Year of Death, Oklahoma, 2015-2017



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Source: OSDH

# Average Number of Methamphetamine Cases per 100K Across from 2010-2019



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# Treatment of Methamphetamine

- No FDA approved medications
- Residential programs or inpatient
- CBT
  - Even 1-2 sessions has shown benefit
- Contingency Management
  - Demonstrated to have a significant reduction used alone or with CBT
- Motivational interviewing
- 12 step groups
  - Narcotics Anonymous
- Psychosocial therapies are not sustained following session
- Less effective for severe disorder
  - Long duration
  - Frequent use





## Conclusion

- Methamphetamine is one of the deadliest substances of abuse
- Methamphetamine has changed over time
- Treatment options are evolving



# Questions

**Questions?**

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