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Health and Human
Services

**Texas Department of State
Health Services**

Evaluating the Association Between Fentanyl Exposure and Polysubstance Poisoning Deaths in Texas (2012-2022)

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Background

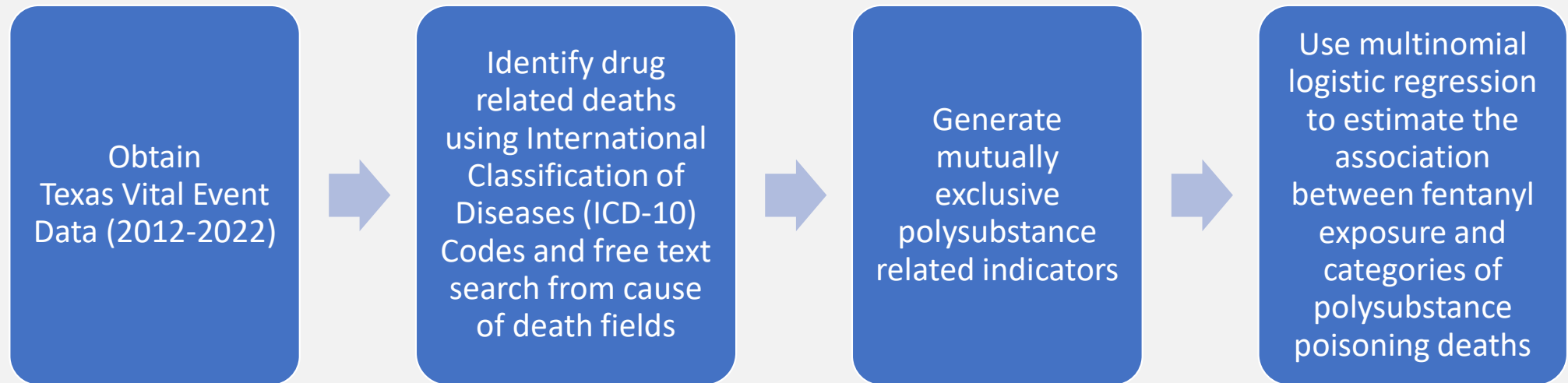
- Fentanyl accounts for a large proportion of drug-related deaths in the United States (US), with many poisonings involving multiple substances, further complicating this public health issue.
- Mixing opioids with other substances increases the risk of fatal poisonings.
- In 2022, among drug-related poisoning deaths in the US, 32% involved psychostimulants with abuse potential and 26% involved cocaine.



Objective

Evaluate the association between fentanyl exposure and different types of opioid and stimulant polysubstance poisoning deaths in Texas while adjusting for age, race and ethnicity, and sex.

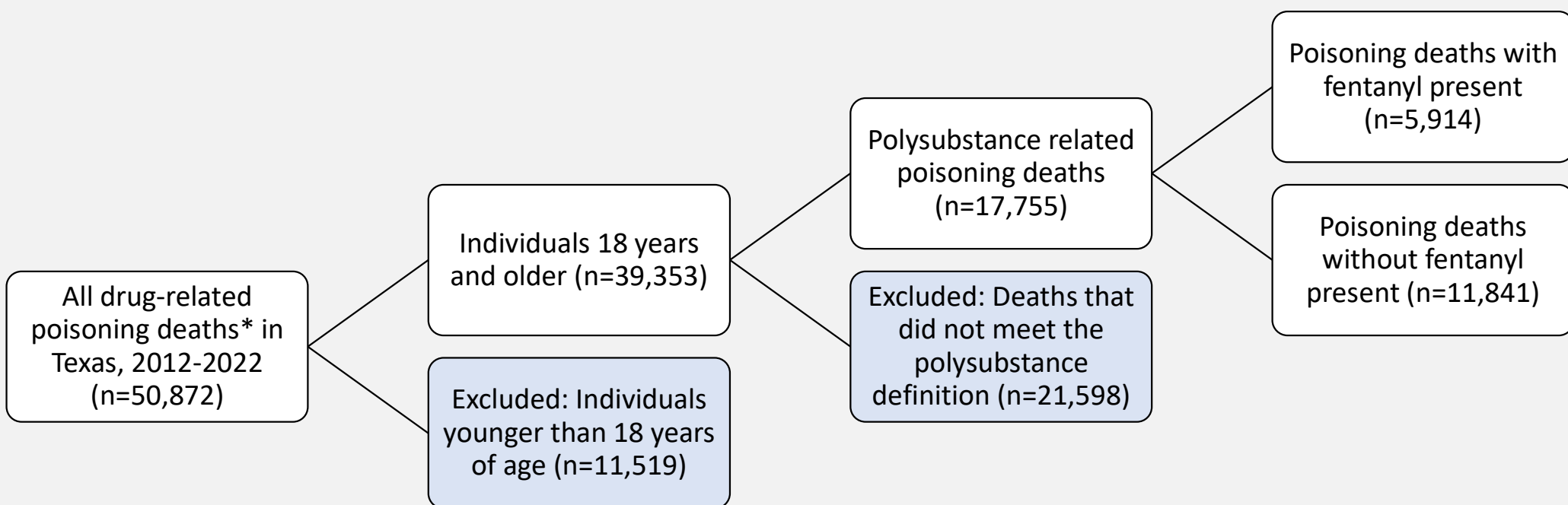
Methods Overview



Texas Vital Event Data, 2012-2022. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas. 2025.

CDC. ICD-10. Classification of Diseases, Functioning, and Disability. June 7, 2024. Accessed April 17, 2025. https://www.cdc.gov/nchs/icd/icd-10/index.html#cdc_generic_section_4-resources

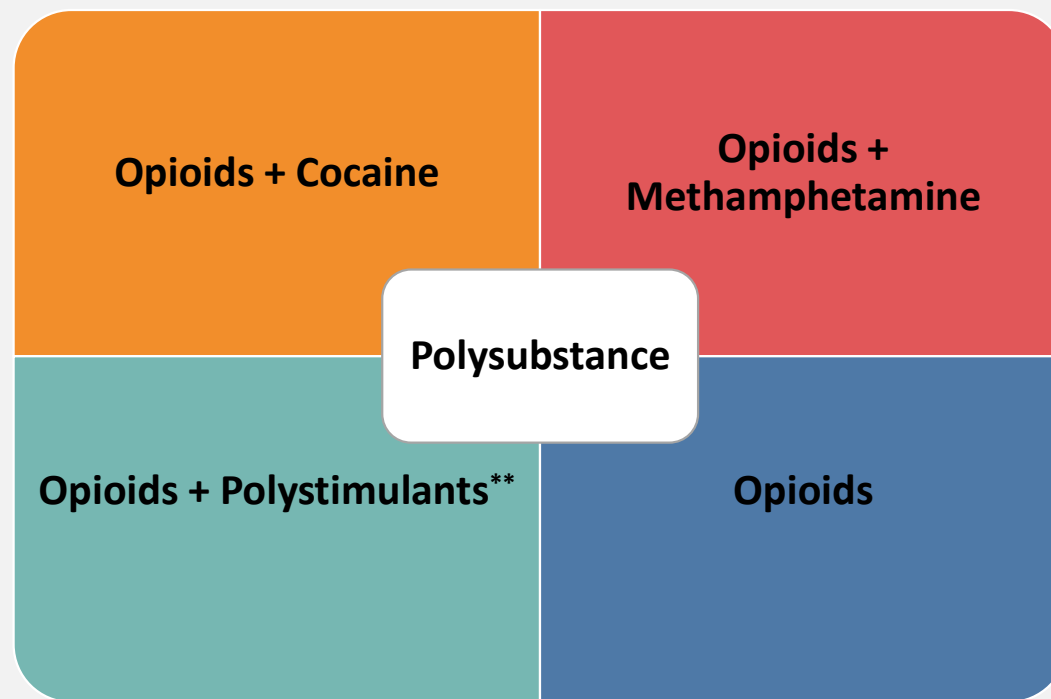
Study Population



*Drug-related poisoning deaths are identified using ICD-10 underlying cause-of-death codes: X40-X44, X60-X64, X85, and Y10-Y14, as well as alcohol poisoning codes (X45, X65, Y15), and deaths where "Fentanyl" or "Fentanil" is present in the record.

Texas Vital Event Data, 2012-2022. Texas Department of State Health Services, Center for Health Statistics, Austin, Texas. 2025.

Methods: Outcome



**Polystimulants: Cocaine and Methamphetamine present in death record
Opioids can include one or more opioids and any other substance excluding cocaine and methamphetamine

Methods: Covariates

Age Groups

- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 65+ years

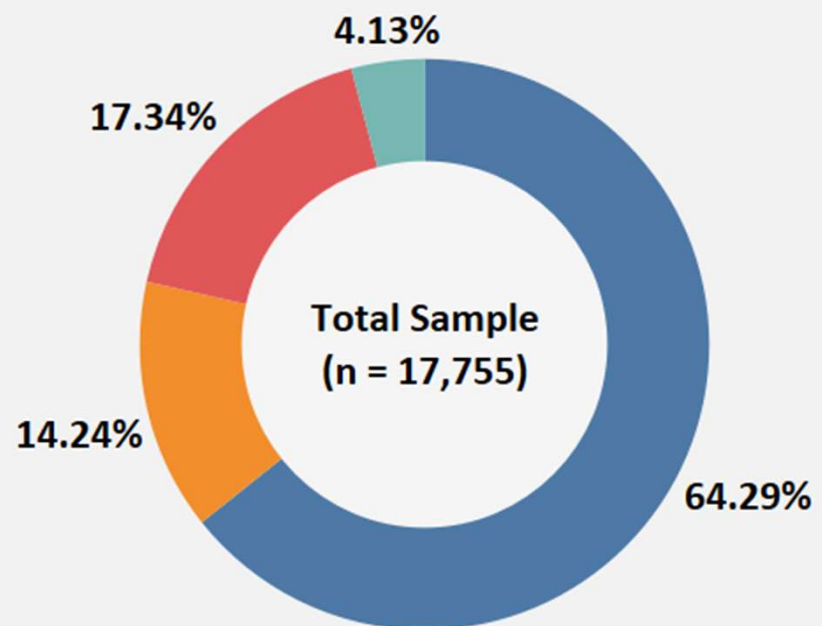
Race and Ethnicity

- Non-Hispanic (NH) White
- NH Black
- Hispanic
- Other/ Unknown

Sex

- Female
- Male

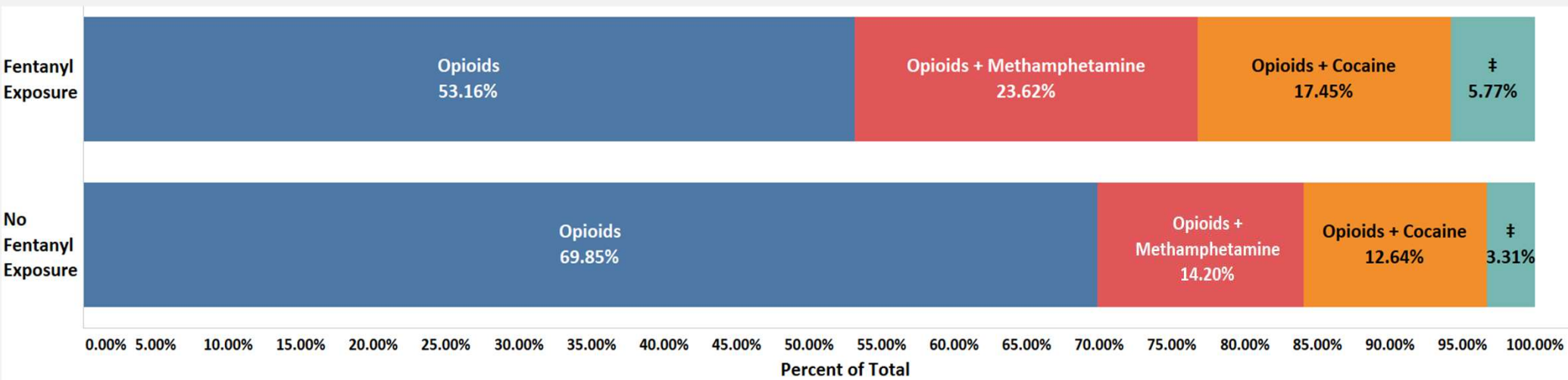
Percentage of Poisoning Deaths by Polysubstance Category in Texas (2012-2022)



Polysubstance Category

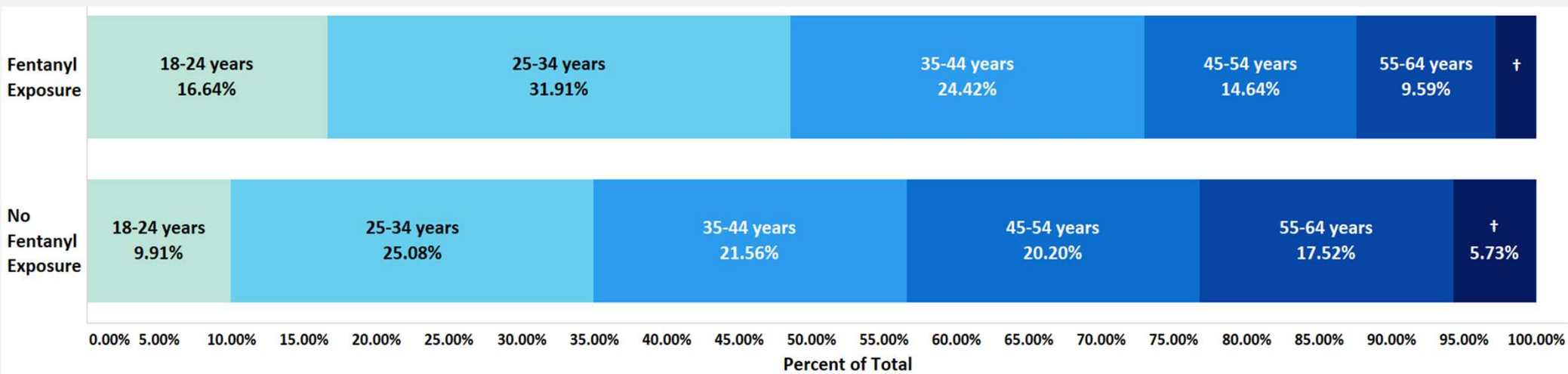
- Opioids
- Opioids + Cocaine
- Opioids + Methamphetamine
- Opioids + Polystimulants

Percentage of Poisoning Deaths by Polysubstance Category and Fentanyl Exposure in Texas (2012-2022)



‡: Opioids + Polystimulants

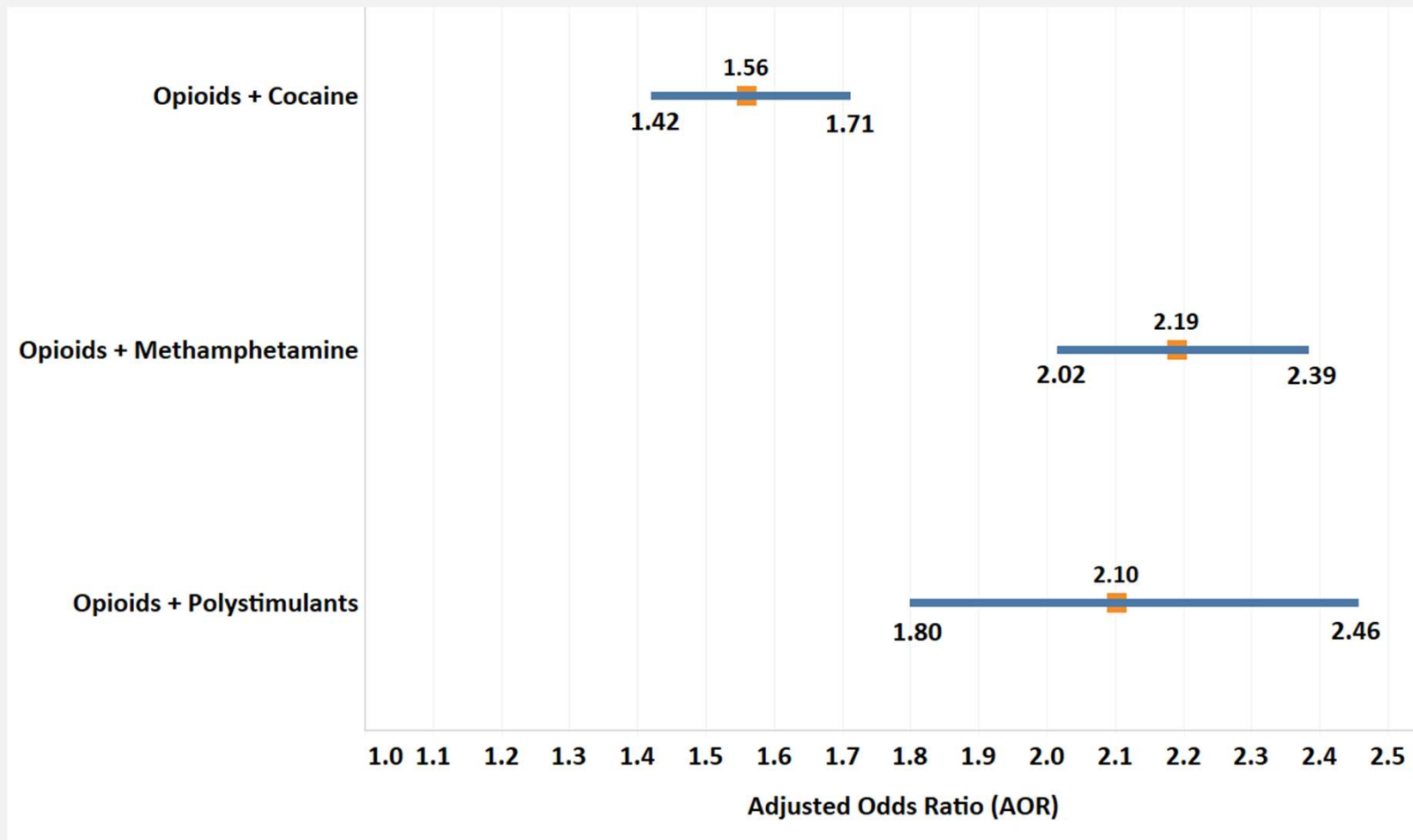
Percentage of Poisoning Deaths by Age Group and Fentanyl Exposure in Texas (2012-2022)



Fentanyl Exposure †65 years and older = 2.81%

No Fentanyl Exposure †65 years and older

Results of Multinomial Logistic Regression Analysis, Texas Vital Event Data (2012-2022)



Results of Multinomial Logistic Regression Analysis, Texas Vital Event Data (2012-2022)

	Opioids + Cocaine	Opioids + Methamphetamine	Opioids + Polystimulants
	AOR (95% CI) [¶]	AOR (95% CI)	AOR (95% CI)
Age Group			
18-24 years	Ref.	Ref.	Ref.
25-34 years	1.28 (1.11 – 1.48)	2.23 (1.91 – 2.60)	2.31 (1.71 – 3.08)
35-44 years	1.28 (1.10 – 1.49)	2.35 (2.01 – 2.75)	2.28 (1.69 – 3.08)
45-54 years	1.06 (0.90 – 1.25)	1.82 (1.54 – 2.15)	2.16 (1.58 – 2.95)
55-64 years	0.96 (0.81 – 1.15)	1.31 (1.10 – 1.57)	1.34 (0.94 – 1.90)
65+ years	0.72 (0.56 – 0.94)	0.80 (0.61 – 1.06)	0.86 (0.49 – 1.48)
Race and Ethnicity			
NH White	Ref.	Ref.	Ref.
NH Black	3.45 (3.04 – 3.91)	0.61 (0.51 – 0.71)	2.10 (1.70 – 2.61)
Hispanic	2.20 (1.98 – 2.43)	0.94 (0.85 – 1.04)	1.50 (1.25 – 1.79)
NH Other/Unknown [#]	1.83 (1.35 – 2.48)	0.98 (0.73 – 1.32)	1.69 (1.04 – 2.75)
Sex			
Female	Ref.	Ref.	Ref.
Male	1.70 (1.53 – 1.88)	1.17 (1.07 – 1.27)	1.50 (1.26 – 1.78)

[¶] AOR: Adjusted Odds Ratio, 95% CI: Confidence Interval

[#]NH Other/Unknown racial and ethnic category includes Asian or Pacific Islander, American Indian/Eskimo/Aleut, and Other

Discussion

This study found significant associations between fentanyl exposure and opioid-stimulant related poisoning deaths among adults in Texas. These findings highlight distinct demographic patterns in polysubstance poisoning deaths, which can inform targeted interventions to reduce morbidity and mortality associated with these substance use patterns.

Limitations

- Sample size was reduced due to mutually exclusive groupings for the outcome variable.
- Free text search was used to identify fentanyl-related deaths in the diagnostic codes. Although we took into account misspellings, some deaths may still be missed.
- Majority of counties in Texas rely on Justices of the Peace to certify manner and cause of death.

Thank you!

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