

Alcohol-Related Polysubstance Overdose Deaths in Texas: 2010-2019

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1. Introduction

Polysubstance use refers to the consumption of multiple drugs--either simultaneously, sequentially, or unknowingly--when consuming a drug that may contain other unknown substances or contaminants. Simultaneous use of multiple drugs, such as prescription opioids (e.g., hydrocodone, oxycodone), benzodiazepines, psychotropic drugs (antidepressants, antipsychotics, mood stabilizers, and psychostimulants), and illicit drugs, including cocaine, heroin, and synthetic opioids (e.g., fentanyl), contributes substantially to overdose morbidity and mortality. Interactions between different types of substances have been well documented; however, less is known about how these types of polysubstance uses are involved in overdose deaths in Texas.

This report highlights the trends in polysubstance overdose deaths involving alcohol and at least one other substance occurring in Texas from 2010 to 2019. All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes multiple causes of deaths as assessed by medical certifiers. The data contain all deaths that occurred in Texas, including deaths of non-Texas residents; and deaths of Texas residents that occurred outside of Texas. This analysis prioritized assessing overall state trends in alcohol-related polysubstance overdose deaths in Texas; however, data were stratified by sex, age, and race/ethnicity for this report.

From 2010 to 2019, opioids accounted for the largest proportion of overdose deaths. During this period, there were 12,881 opioid-related overdose deaths and 4,603 alcohol-related deaths involving at least one other drug. Among all opioid-related overdose deaths, 1,683 (13 percent) involved a combination of alcohol and an opioid.

Alcohol co-involvement with opioid deaths was common and mostly increased since 2010. Alcohol co-involvement varied by opioid subtype, with synthetic opioids presenting the greatest increase since 2010.

Alcohol co-involvement with other substances, such as cocaine and benzodiazepines, also increased from 2010 to 2019. Alcohol co-involvement among psychostimulant-related overdose deaths steadily increased from 2016 to 2019.

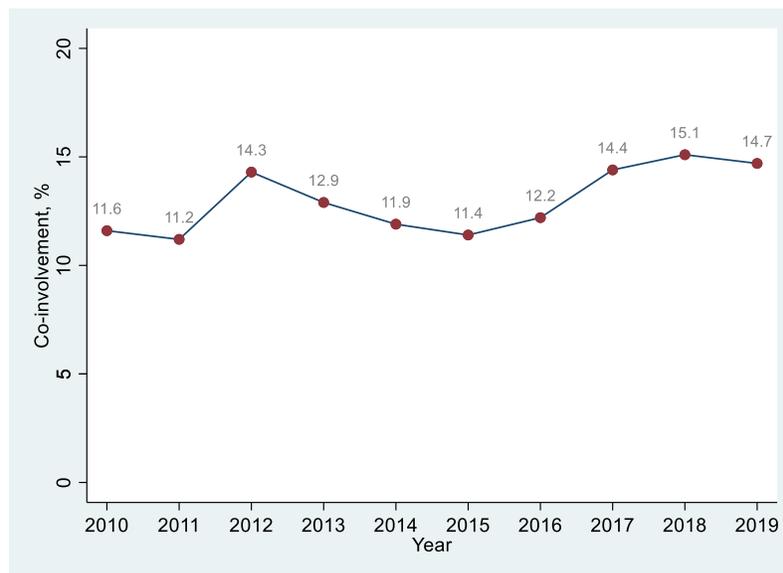
2. Alcohol-Related Overdose Deaths

Alcohol Co-involvement with Opioids

One of the most common and dangerous side effects of opioid misuse is respiratory depression (Gudin et al., 2013). When alcohol is used in combination with opioids, the risk of respiratory depression increases due to additive depressant effects (Jones et al., 2011).

From 2010 to 2019 in Texas, the largest proportion of polysubstance alcohol deaths involved both an opioid and alcohol (1683 deaths; 37 percent). Of these, 1,302 (77 percent) occurred among males and 381 (23 percent) occurred among females. Alcohol co-involvement for all opioid deaths in Texas increased from 12 percent in 2010 to 15 percent in 2019 (Figure 1).

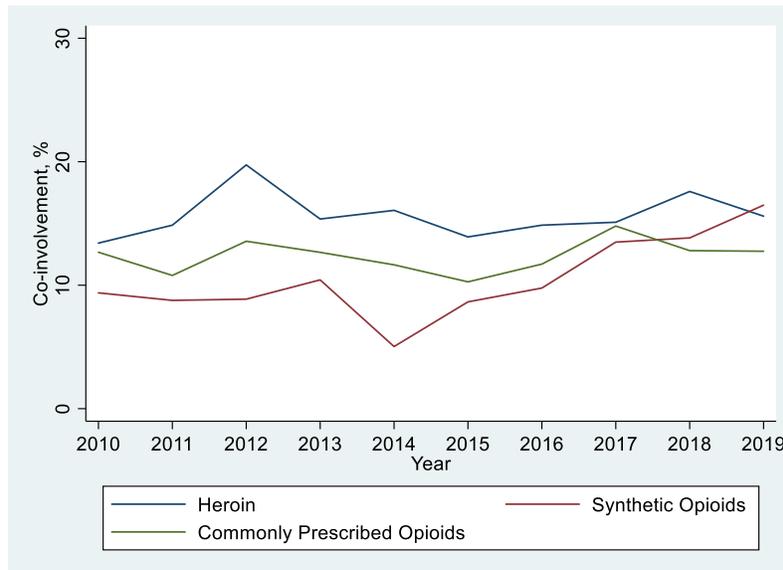
Figure 1. Percent of All Opioid Overdose Deaths Involving Alcohol in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

The trends in Texas for alcohol co-involvement were different by opioid subtype (Figure 2). Alcohol co-involvement with heroin overdose deaths fluctuated during the years analyzed, ranging from 13 to 20 percent. Alcohol co-involvement among opioid overdose deaths involving synthetic opioids, such as fentanyl, increased from 9 percent in 2010 to 17 percent in 2019. For opioid overdose deaths involving commonly prescribed opioids, alcohol co-involvement ranged from 10 to 15 percent, with 2017 recording the highest percentage of alcohol co-involvement.

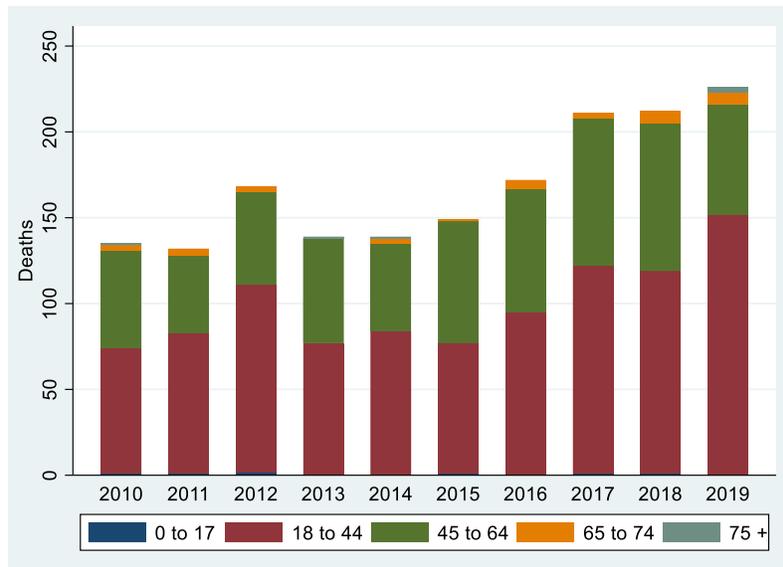
Figure 2. Percent of All Opioid Overdose Deaths Involving Alcohol by Opioid Type in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Alcohol co-involvement with opioids was most common among people aged 18 to 44, followed by those aged 45 to 64 (Figure 3).

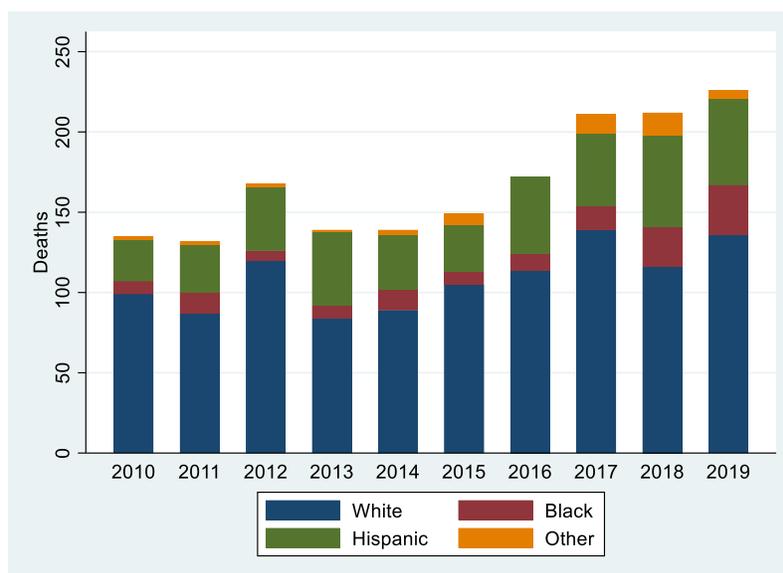
Figure 3. Alcohol in Combination with Opioid Overdose Death Trends by Age Group in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Most deaths for alcohol and opioid co-involvement were seen among people who were White, followed by Hispanic, and Black (Figure 4).

Figure 4. Alcohol in Combination with Opioid Overdose Death Trends by Race/Ethnicity in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

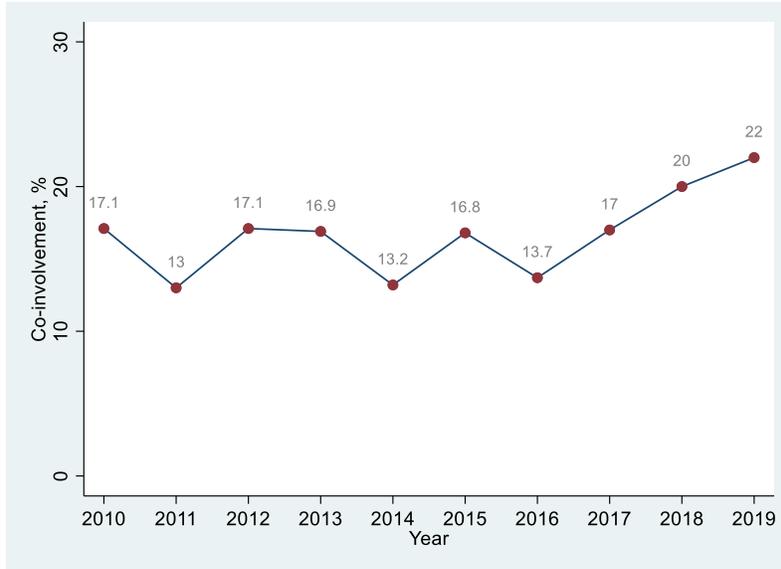
Alcohol Co-involvement with Cocaine

Cocaine is commonly involved in unintentional overdoses and overdose deaths involving cocaine have increased since 2003 (CDC, 2021). Mixing alcohol with cocaine can produce dangerous interactions, including increased toxicity from the formation in the body of active metabolites such as cocaethylene¹ (Farré et al., 1997).

From 2010 to 2019, 927 (17 percent) of all cocaine-related deaths in Texas involved alcohol. Alcohol co-involvement with cocaine ranged from 13 to 22 percent during the analysis period and steadily increased since 2016 (Figure 5).

¹ Cocaethylene is the ethyl ester of benzoylecgonine. It is structurally similar to cocaine, which is the methyl ester of benzoylecgonine.

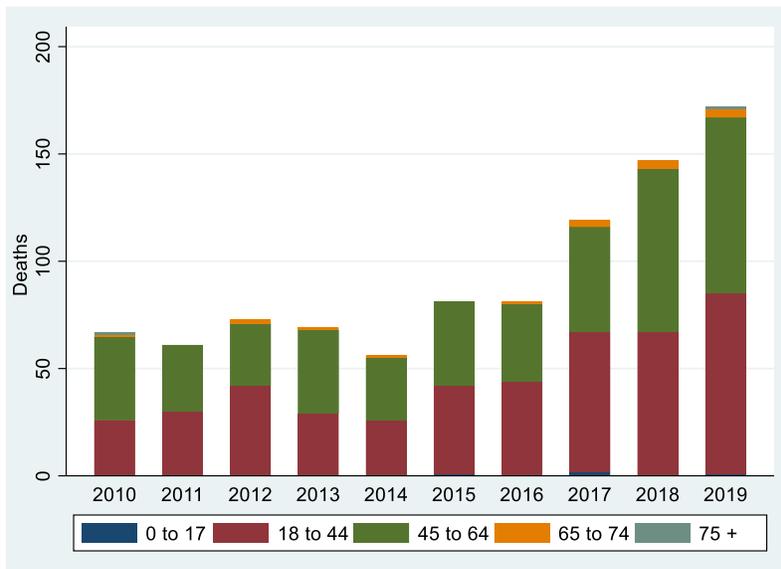
Figure 5. Percent of All Cocaine Overdose Deaths Involving Alcohol in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Alcohol co-involvement with cocaine deaths was highest among persons aged 18 to 44, followed by those aged 45 to 64 (Figure 6). In Texas, this type of overdose was most common among males (762 deaths or 82 percent) from 2010 to 2019.

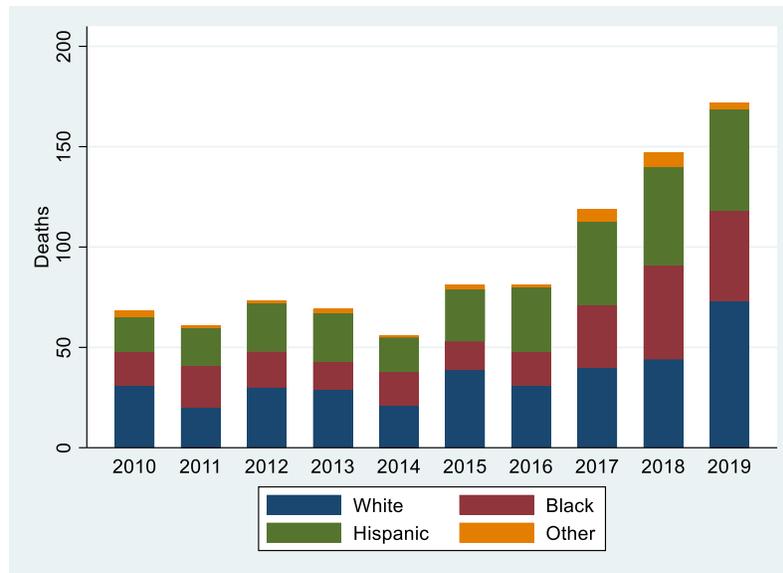
Figure 6. Alcohol in Combination with Cocaine Overdose Death Trends in Texas by Age Group, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Overdose deaths involving both cocaine and alcohol in Texas were most common among people who were White (Figure 7); however, similar proportions of alcohol co-involvement with cocaine were seen among White, Hispanic, and Black people for most years across all cocaine-related overdose deaths.

Figure 7. Alcohol in Combination with Cocaine Overdose Death Trends in Texas by Race/Ethnicity, 2010–2019



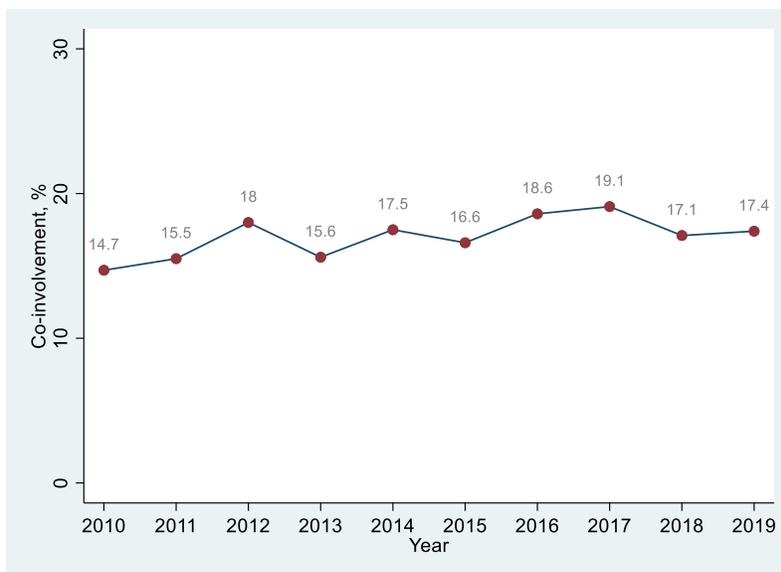
Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Alcohol Co-involvement with Benzodiazepines

Benzodiazepine use and misuse in the United States has increased in recent years (Maust et al., 2019). As both alcohol and benzodiazepines are central nervous system depressants, their combined use increases the risk of life-threatening events (Tanaka, 2002).

From 2010 to 2019, 705 (17.2 percent) of all benzodiazepine-related deaths in Texas involved alcohol. Alcohol co-involvement with benzodiazepines ranged from 14.7 percent to 19.1 percent among all benzodiazepine-related overdose deaths in Texas (Figure 8).

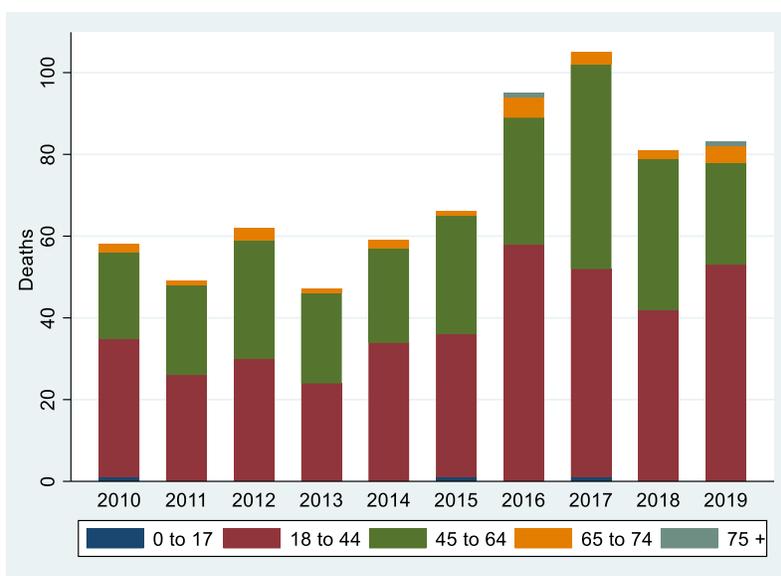
Figure 8. Percent of All Benzodiazepine Overdose Deaths Involving Alcohol in Texas, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

In Texas from 2010 to 2019, alcohol co-involvement with benzodiazepines was mostly seen among males (479 deaths or 68 percent). Most of these deaths occurred among people aged 18 to 44, followed by those aged 45 to 64 (Figure 9).

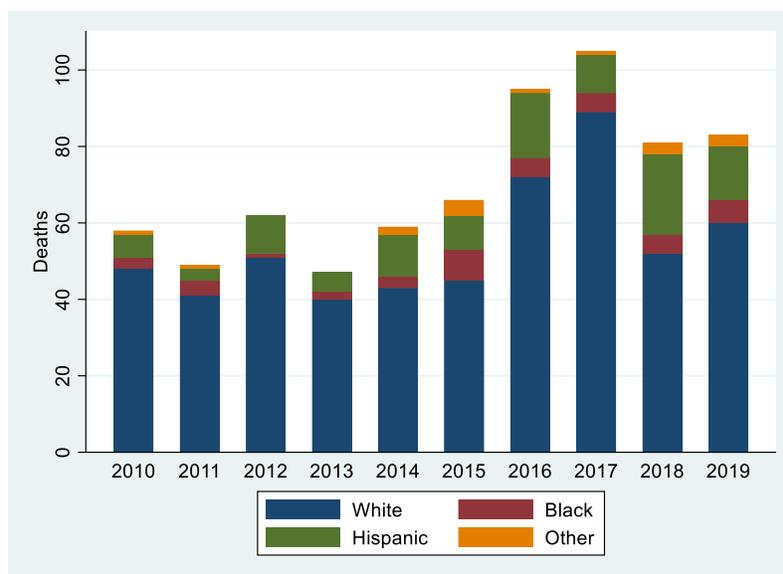
Figure 9. Alcohol in Combination with Benzodiazepine Overdose Death Trends in Texas by Age Group, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

The largest proportion of overdose deaths involving alcohol and benzodiazepines in Texas occurred among people who were White, followed by Hispanic and Black (Figure 10).

Figure 10. Alcohol in Combination with Benzodiazepine Overdose Death Trends in Texas by Race/Ethnicity, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

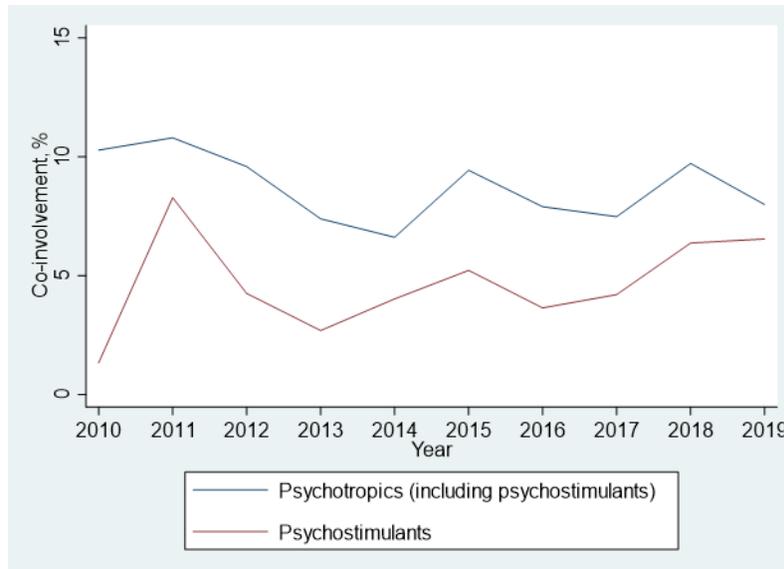
Alcohol Co-involvement with Psychotropics

Psychotropics, a category of drugs that includes antidepressants, antipsychotics, mood stabilizers, and psychostimulants, are commonly prescribed to treat mental health disorders that impact mood and behavior; however, mixing psychotropics with alcohol can increase the risk of adverse interactions (Moore, et al., 2007; Weathermon and Crabb, 1999).

Psychostimulants, such as methamphetamines which can be prescribed or illegally obtained, have been increasingly identified in overdose fatalities in recent years, leading to great concern about psychostimulant-related polysubstance use (CDC, 2019). Research has shown that the co-use of psychostimulants and alcohol can have severe health impacts (Althobaiti & Sari 2016), which may themselves contribute to higher risk of overdose over time.

While co-involvement of alcohol with psychotropics slightly decreased from 10 percent in 2010 to 8 percent in 2019 in Texas, alcohol co-involvement among psychostimulant-related deaths increased after 2016 (Figure 11).

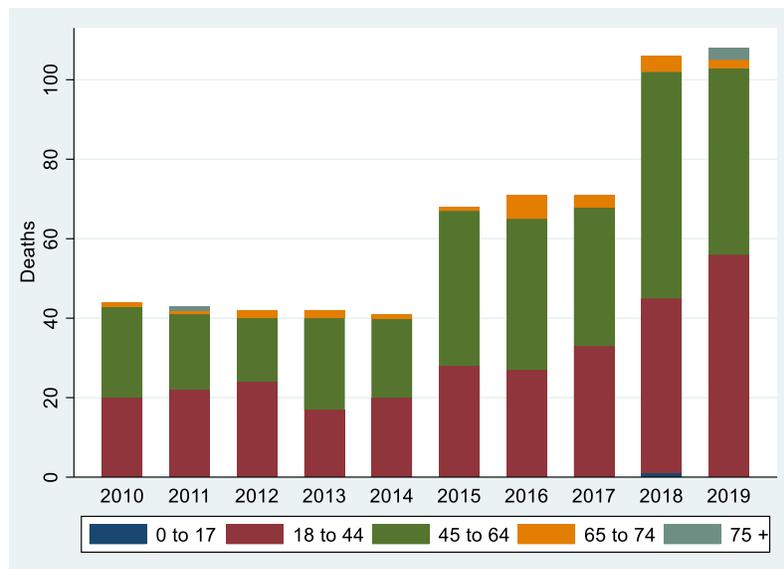
Figure 11. Percent of All Psychotropic and Psychostimulant Overdose Deaths Involving Alcohol, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

In Texas, this type of overdose was most common among males (376 deaths; 59 percent) from 2010 to 2019. Overdose deaths involving alcohol used in combination with psychotropics were similarly common among people aged 18 to 44 and those aged 45 to 64, followed by those aged 65 to 74 (Figure 12).

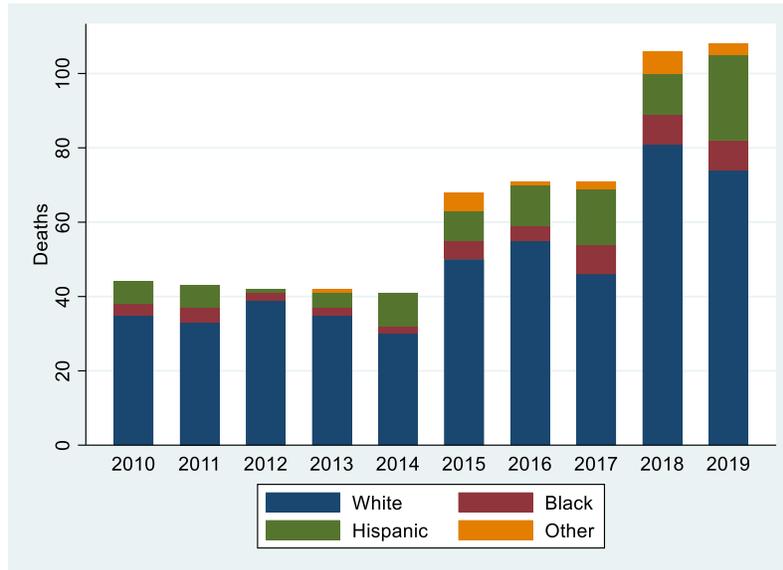
Figure 12. Alcohol in Combination with Psychotropic Overdose Death Trends by Age Group, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

The highest alcohol co-involvement with psychotropics in Texas was observed among people who were White, followed by Hispanic and Black.

Figure 13. Alcohol in Combination with Psychotropic Overdose Death Trends by Race/Ethnicity, 2010–2019



Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

3. Conclusion

Alcohol co-involvement with opioids and other drugs increased during the last decade in Texas. The consumption of alcohol in combination with these substances represents an important, modifiable risk factor that should be the target of public health campaigns. First responders, clinicians, counselors, and laypersons would benefit from widespread public health messaging that underscores the dangers and consequences of mixing alcohol with opioids or other drugs.

Understanding alcohol consumption patterns and drug co-use among individuals who use opioids and other substances may prevent future overdose morbidity and mortality. Universities and other research institutions should focus their research on polysubstance use in combination with alcohol at the individual and population level. Additionally, qualitative research among people who use alcohol with other drugs should be prioritized in order to assess trends at the point of use. Research should also focus on identifying potential evidence-based interventions to manage and treat co-use of alcohol and opioids. Moreover, there is a need to improve the data that are collected on overdoses and alcohol-related deaths to inform more tailored public health interventions by population group and minority status (sexual and gender, race, ethnicity, place, socioeconomic status, education level, etc.).

List of Acronyms

Acronym	Full Name
CDC	Centers for Disease Control and Prevention
ICD-10	International Classification of Diseases 10th Revision
NCHS	National Center for Health Statistics

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Appendix A. Causes of Death Classification

Cause of Death Categories	ICD-10 Codes	Notes
Any Opioid	T40.0, T40.1, T40.2, T.40.3, T40.4, T40.6	
Opium	T40.0	Also included in the Any Opioids category
Heroin	T40.1	Also included in the Any Opioids category
Commonly Prescribed Opioids (Natural and Semi-Synthetic Opioids)	T40.2 and T40.3	Also included in the Any Opioids category
Synthetic Opioids other than Methadone	T40.4	Also included in the Any Opioids category
Other and Unspecified Narcotics (Opioids)	T40.6	Also included in the Any Opioids category
Cocaine	T40.5	
Cannabis	T40.7	
Benzodiazepines	T42.4	
Psychostimulants	T43.6	Also included in the Psychotropic category
Psychotropic	T43	
Any Alcohol	T51.0, T51.1, T51.2, T51.3, T51.8, T51.9	
Ethanol	T51.0	Included in the Any Alcohol category
Methanol	T51.1	Included in the Any Alcohol category
Propanol	T51.2	Included in the Any Alcohol category

Cause of Death Categories	ICD-10 Codes	Notes
Fusel Oil	T51.3	Included in the Any Alcohol category
Other Alcohols	T51.8	Included in the Any Alcohol category
Unspecified Alcohol	T51.9	Included in the Any Alcohol category
Accidental Alcohol Poisoning	X45	Included in the Any Alcohol category
Intentional Alcohol Self-Poisoning	X65	Included in the Any Alcohol category
Undetermined Alcohol Poisoning	Y15	Included in the Any Alcohol category

Source: Ahmad FB, Rossen LM, Sutton P. Provisional drug overdose death counts. National Center for Health Statistics. 2021.

<https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>