

Opioid Polysubstance Overdose Deaths in Texas: 2010-2019

Texas Department of State Health Services
Center for Health Statistics
Agency Analytics Unit



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1. Introduction

Opioids, including heroin, prescription opioids and, more recently, synthetic opioids like fentanyl, have been the main cause of overdose deaths in Texas and the United States (U.S.) over the past decade. However, focusing in on solely opioids fails to illustrate the role played in overdose deaths by other substances, including non-opioids, and two or more drugs used in combination. Combining opioids with other drugs can lead to harmful drug interactions and may increase the risk of both non-fatal and fatal overdose. These overdose deaths, sometimes called polysubstance overdoses, have been on the rise in recent years. Looking at this trend individually can help inform stakeholders of the risks and help guide programming efforts across the state. This brief highlights trends in death rates and death counts for opioid-related polysubstance drug overdose deaths involving at least two substances in Texas from 2010 to 2019. All data were derived from the Texas Department of State Health Services Vital Statistics Section (DSHS VSS) death certificate data. Each death certificate includes multiple causes of death 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. DSHS VSS queried the death certificate data to identify overdose-related causes of death based on International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) codes following the National Center for Health Statistics (NCHS) guidance (Appendix A). These ICD-10 codes include accidental overdose of drug, wrong drug given or taken in error, drug taken inadvertently; accidents in the use of drugs; accidental poisoning by unspecified drugs, medications, and biological substances (ICD-10, Chapter XX). Polysubstance opioid overdose deaths increased, almost doubling from 2011 to 2019 with some year-to-year variations among different drug combinations. The rate of polysubstance opioid overdose deaths has increased steadily since 2013. From 2010 to 2019, 54 percent of all opioid-related overdose deaths in Texas involved two or more substances. Among those, most deaths involved a combination of an opioid and a non-opioid substance. The most prevalent drug combinations were commonly prescribed opioids (hydrocodone, oxycodone, etc.) and benzodiazepines, followed by commonly prescribed opioids and psychotropics (including psychostimulants) and commonly prescribed opioids and cocaine. The category of psychotropic drugs includes psychostimulants (e.g., amphetamine, methamphetamine), which are the primary drivers of deaths for this drug category.

While polysubstance overdoses involving commonly prescribed opioids in combination with other substances remained a consistent issue in Texas from 2010 to 2019, dramatic increases in overdose deaths involving both heroin and synthetic

opioids since 2016 are of particular concern. Deaths attributed to heroin and multiple other substances rose steadily throughout the period 2010-2019 with cocaine- and psychostimulant-involved polysubstance deaths becoming increasingly prevalent over the second half of the period studied. Benzodiazepines can be especially dangerous when used in combination with opioids, and the increase in deaths attributed to benzodiazepines and opioids requires further attention. Synthetic opioids (e.g., fentanyl) have played a dominant role in the high rates of overdose deaths nationally since 2013; and findings in this report indicate synthetic opioids have played an increasingly larger role in polysubstance overdose deaths in Texas since at least 2016.

2. Polysubstance Opioid Overdose Death Trends

Polysubstance Opioid Overdose Deaths

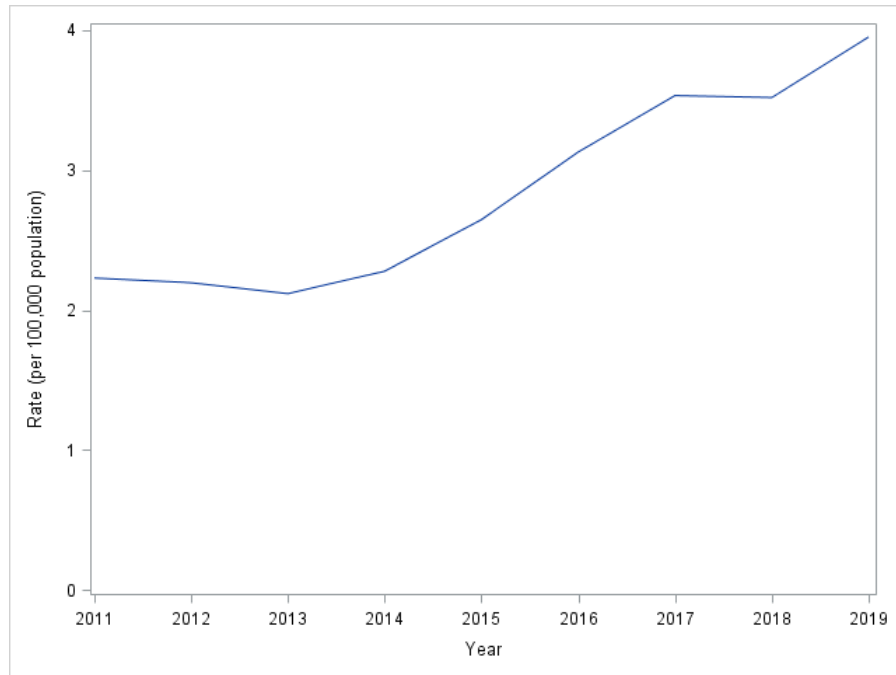
After remaining relatively stable from 2011 to 2014, opioid polysubstance overdose deaths in Texas began climbing in 2015. The rate of opioid polysubstance overdose deaths nearly doubled from 2011 to 2019 (Figure 1).

Most fatal opioid polysubstance overdoses, including both opioid and non-opioid overdoses, as well as overdoses involving two or more opioids, were among people ages 18 to 44, followed by people ages 45 to 64 (Figure 2). While most of these overdose deaths occurred in the 18 to 44 age group, deaths also increased in the 45 to 64 and 65 to 74 age groups during 2010-2019. Polysubstance overdose deaths among those younger than age 18 and older than age 75 remained low over the period.

Most opioid polysubstance overdose deaths occurred among Texas males, but deaths among Texas females rose specifically over the period 2015-2019 (Figure 3). Males also accounted for most fatal overdoses across nearly all the drug combinations analyzed; however, females made up 56 percent of fatal overdoses involving both commonly prescribed opioids and psychotropics.

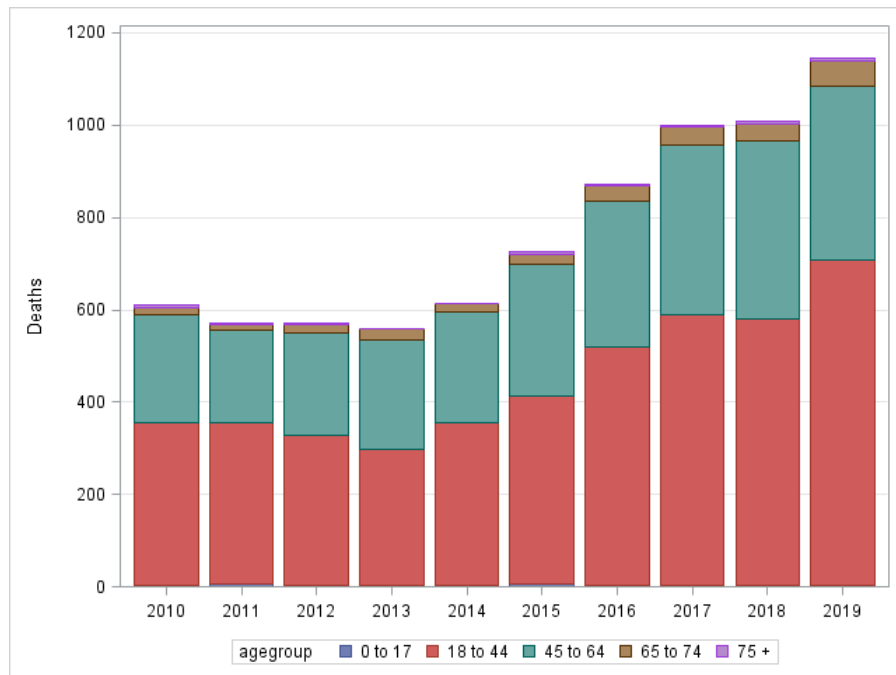
Figures 1-3 show overdose death rates and trends involving opioids and any other substance, including different classes of opioids and non-opioid substances.

Figure 1. Opioid Polysubstance Overdose Death Rates, 2011-2019*



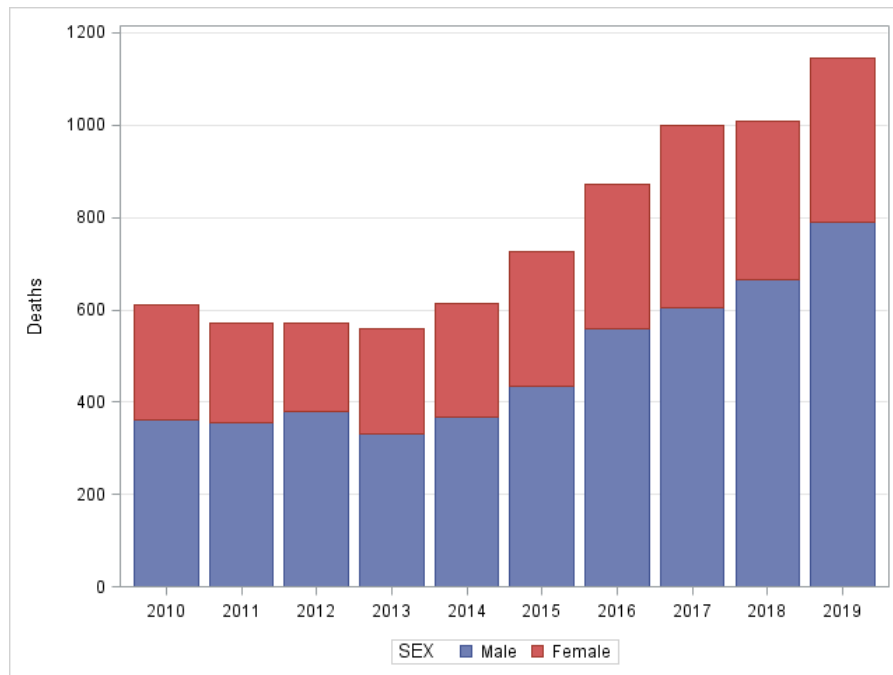
*Data Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Figure 2. Opioid Polysubstance Overdose Death Trends, 2010-2019* by Age Group



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

**Figure 3. Opioid Polysubstance Overdose Death Trends, 2010-2019*
by Sex**



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

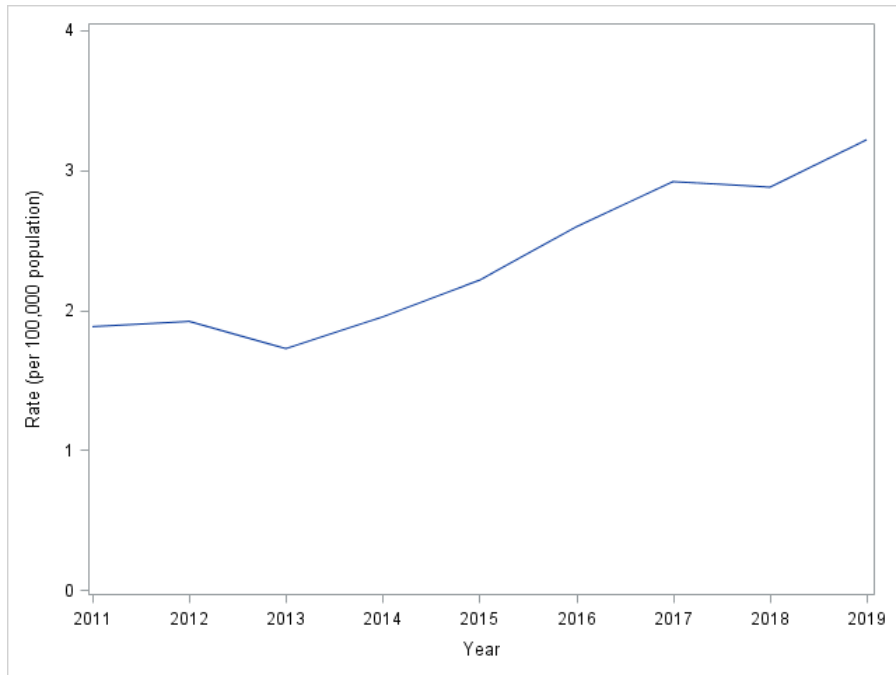
Opioid Combined with Non-Opioid Overdose Deaths

Opioids have been the primary driver of Texas overdose deaths during the past decade; however, rising numbers of overdose deaths involving a combination of opioids and non-opioids, particularly over the period 2014-2019, warrant closer attention. Non-opioids include substances such as cocaine, benzodiazepines, psychotropics, and psychostimulants (amphetamine/methamphetamine).

The rate of opioid plus non-opioid polysubstance deaths increased by more than half from 2011 to 2019 with a rate of approximately 3.2 per 100,000 in 2019 (Figure 4). Mirroring the opioid polysubstance graphs above, most fatal polysubstance overdoses involving non-opioids occurred among people ages 18 to 44, followed by people ages 45 to 64 (Figure 5).

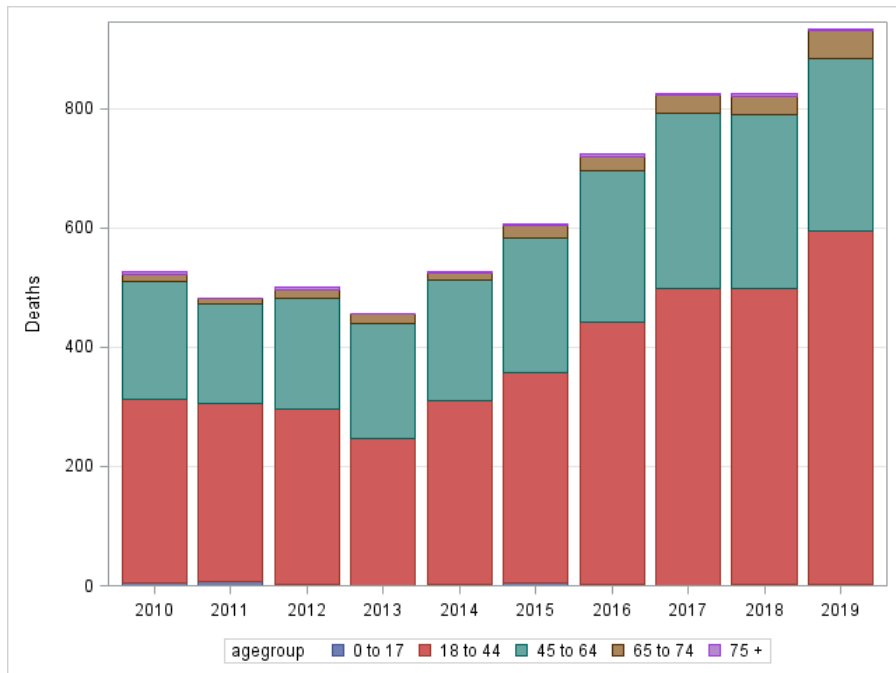
Overdose deaths involving opioids and non-opioids increased among both males and females, albeit with overall deaths higher among males (Figure 6). Overdose death rates depicted in the graphs below (Figures 4-6) include deaths attributed to the various classes of opioids, in combination with at least one non-opioid substance.

Figure 4. Opioid Combined with Non-opioid Overdose Death Rates, 2011-2019*



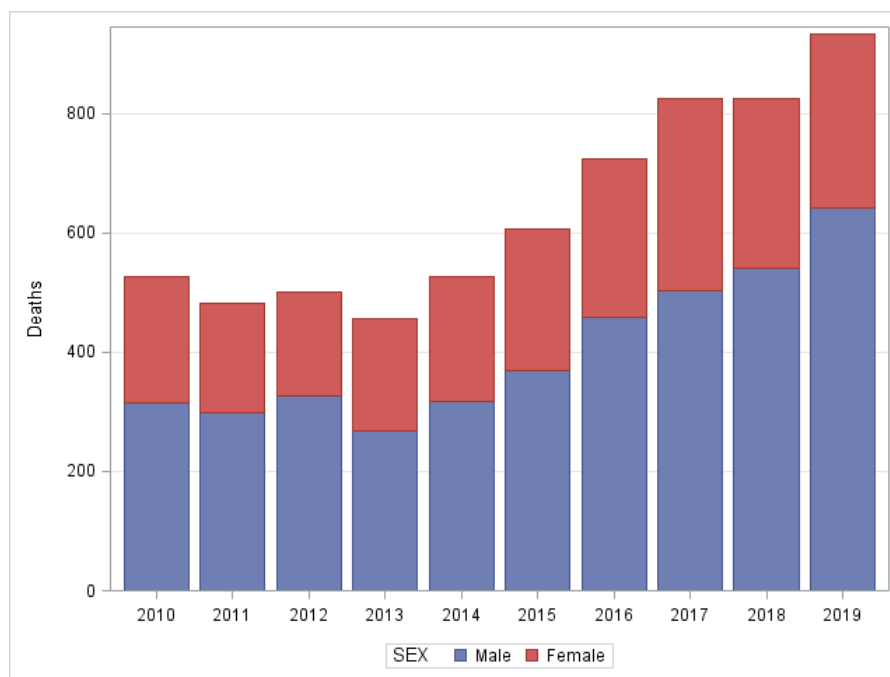
*Data Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Figure 5. Opioid Combined with Non-opioid Overdose Death Trends, 2010-2019* by Age Group



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

Figure 6. Opioid Combined with Non-opioid Overdose Death Trends, 2010-2019* by Sex



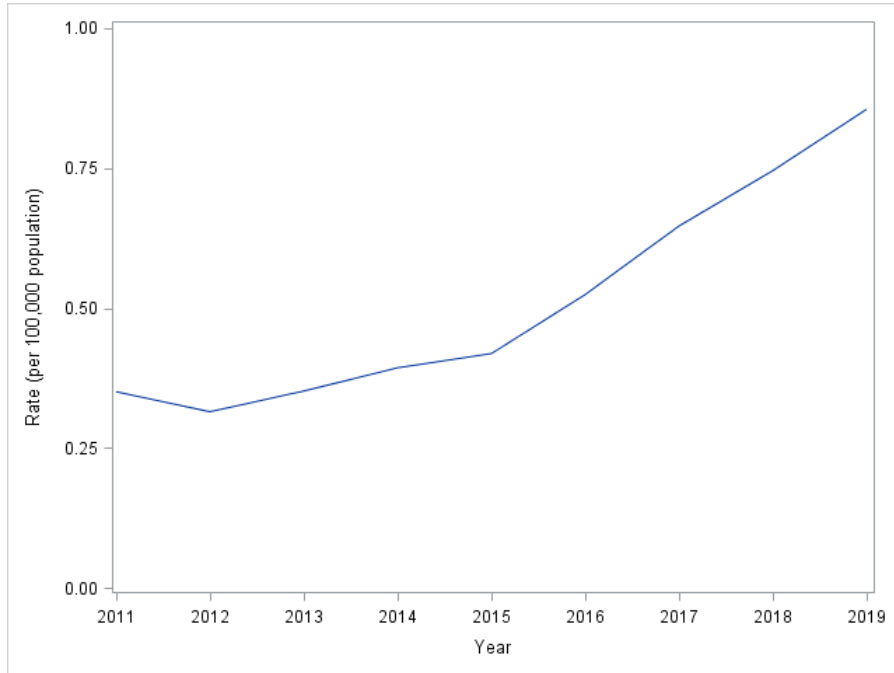
*Data Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Opioid Co-Occurrence Deaths

Overdose deaths frequently involve more than one class of opioids used in combination. This use can be either intentional or unintentional (e.g., the person does not know they are using different opioids simultaneously). These overdoses can include heroin, commonly prescribed opioids, or synthetic opioids like fentanyl. After a period of relative stability, multi-opioid overdose deaths rose during the period 2015-2019. The rate of these deaths more than doubled from 2011, rising to approximately 0.86 per 100,000 people in 2019 (Figure 7).

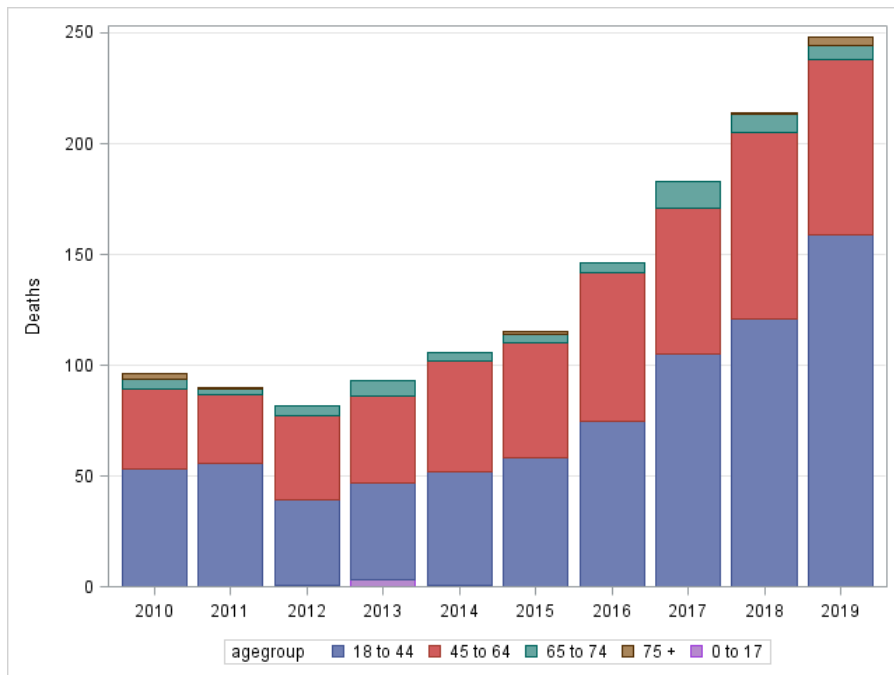
Increases in multi-opioid overdose deaths largely occurred among people ages 18 to 44 and ages 45 to 64 (Figure 8), and among males (Figure 9). These trends intensified after 2015.

Figure 7. Opioid Co-Occurrence Overdose Death Rates, 2011-2019*



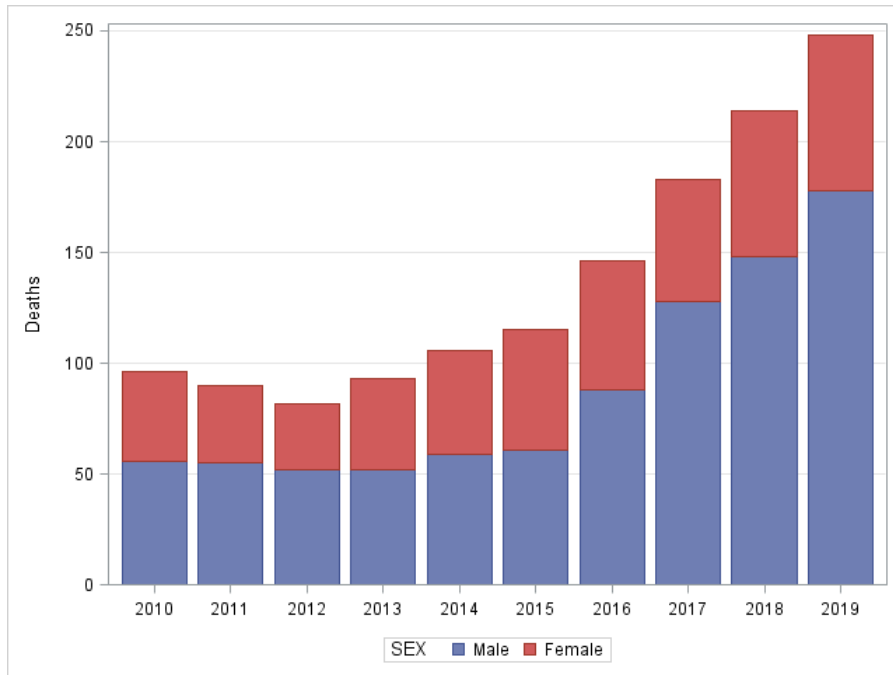
*Data Source: Department of State Health Services Vital Statistics Section death certificate data.

Figure 8. Opioid Co-Occurrence Overdose Death Trends, 2010-2019* by Age Group



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

**Figure 9. Opioid Co-Occurrence Overdose Death Trends, 2010-2019*
by Sex**



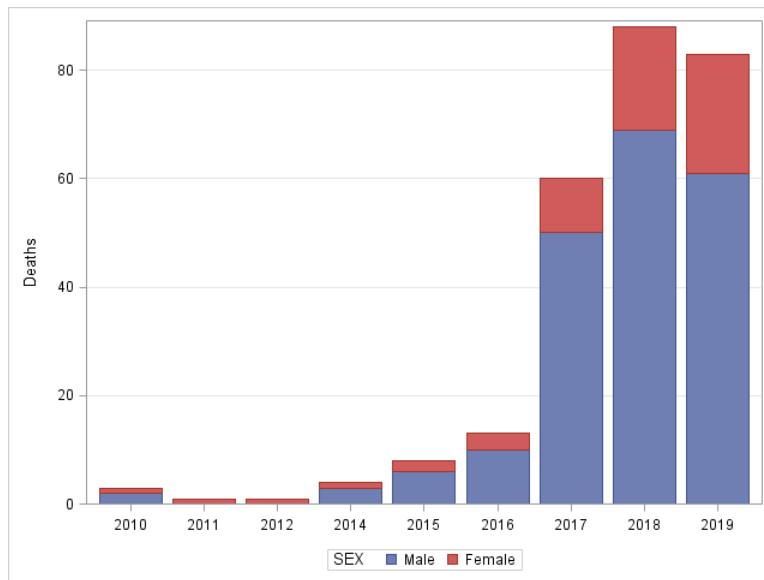
*Data Source: Texas Department of State Health Services Vital Statistics Section death certificate data.

Heroin, Synthetic Opioids, and Commonly Prescribed Opioids Overdose Deaths

Deaths from varied drug combinations are presented in this report to illustrate patterns of specific drug co-occurrences in Texas. Overdose deaths involving both heroin and synthetic opioids, largely fentanyl and related analogues, increased across the U.S. beginning in 2013; however, in Texas, the frequency of this category of overdose remained low until an increase of more than five-fold from 2016 to 2017 (Figure 10).

Overdose deaths attributed to both heroin and synthetic opioids increased among both males and females with the highest number of deaths among males; however, rising levels of this type of overdose among females remain a concern.

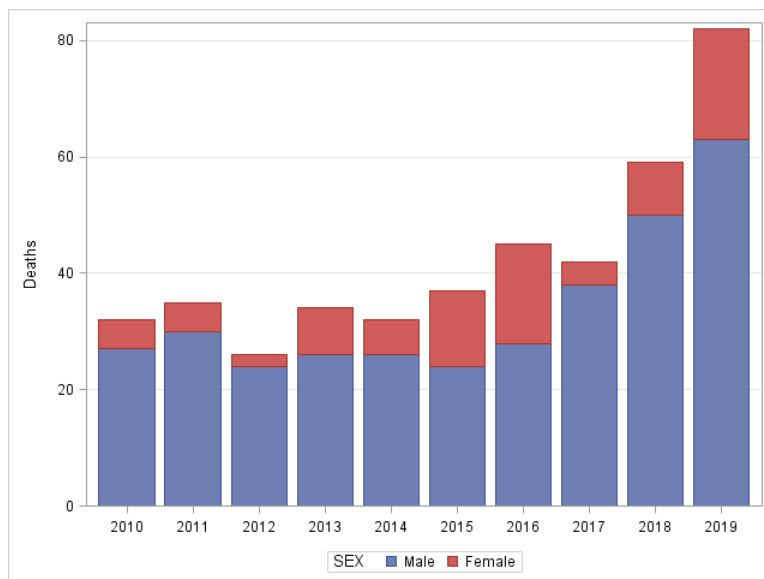
Figure 10. Heroin and Synthetic Opioids Overdose Death Trends, 2010-2019*



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

Overdose deaths involving heroin and commonly prescribed opioids (e.g., hydrocodone, oxycodone) remained largely stable during the 2010-2016 period but doubled between 2017 and 2019 (Figure 11). This category of polysubstance overdose death shows more variation among females than males, with higher levels among males in 2018-2019 than previous years.

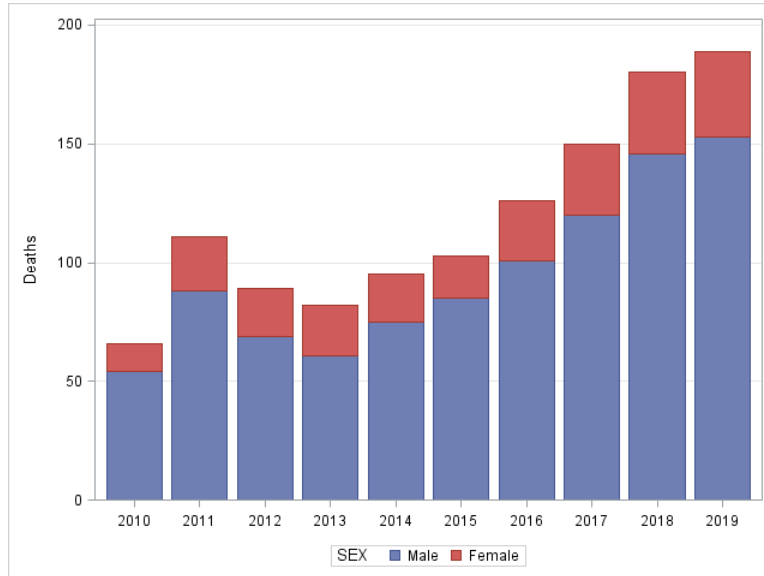
Figure 11. Heroin and Commonly Prescribed Opioids Overdose Death Trends, 2010-2019* by Sex



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

From 2013 to 2019, overdose deaths attributed to a combination of heroin and cocaine rose steadily (Figure 12). Increases in this type of polysubstance overdose deaths were largely driven by increases among males.

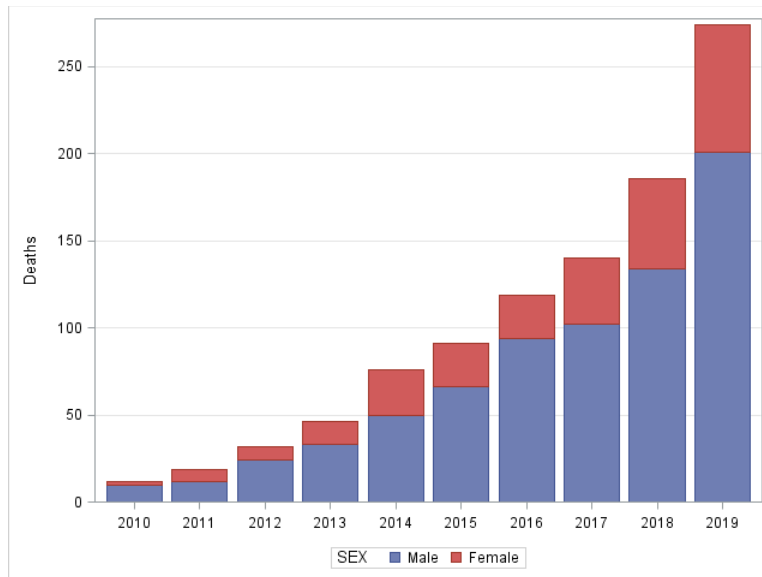
Figure 12. Heroin and Cocaine Overdose Death Trends, 2010-2019* by Sex



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

Polysubstance deaths involving heroin and psychostimulants, a class of drugs that includes amphetamine and methamphetamine, have increased annually since 2010, with 2019 seeing nearly 30 times as many deaths as 2010 (Figure 13). While most of this increase is occurring among males, this type of polysubstance overdose has also increased among females.

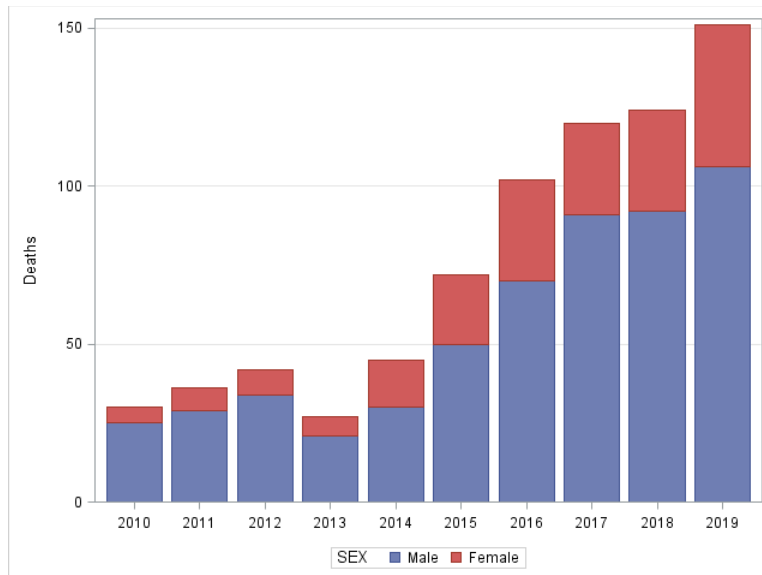
Figure 13. Heroin and Psychostimulants Overdose Death Trends, 2010-2019* by Sex



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

Like overdose deaths involving both heroin and psychostimulants, polysubstance overdoses involving heroin and benzodiazepines increased after 2013 with 2019 counts more than three times as high as 2014 (Figure 14). Deaths among this class of polysubstance overdoses increased among both males and females over the 2010-2019 period.

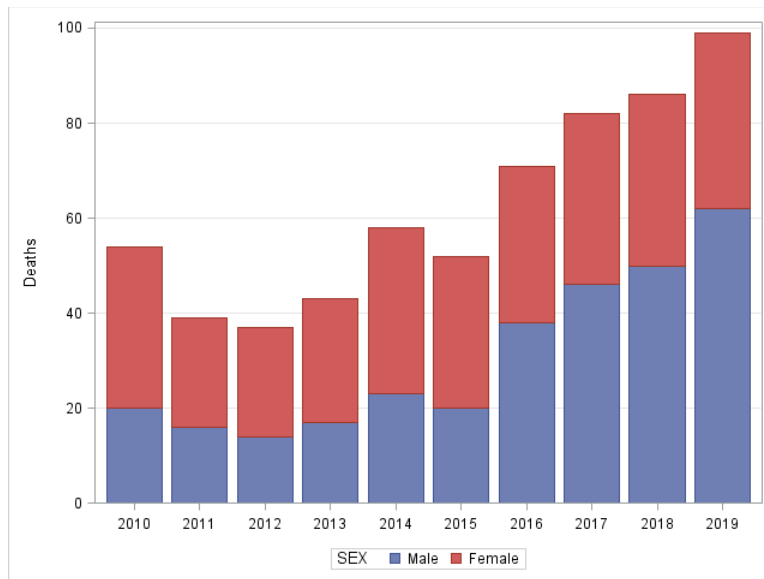
Figure 14. Heroin and Benzodiazepine Overdose Death Trends, 2010-2019* by Sex



*All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes literal text causes of deaths provided 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.

The increase in polysubstance overdose deaths attributed to synthetic opioids has accelerated in recent years, including polysubstance overdoses involving synthetic and commonly prescribed opioids. These varied slightly over the period 2010-2014 but increased following 2015 (Figure 15). Unlike other types of polysubstance overdose deaths, males and females make up a comparable proportion of the deaths; however, increases among males since 2016 remain of concern.

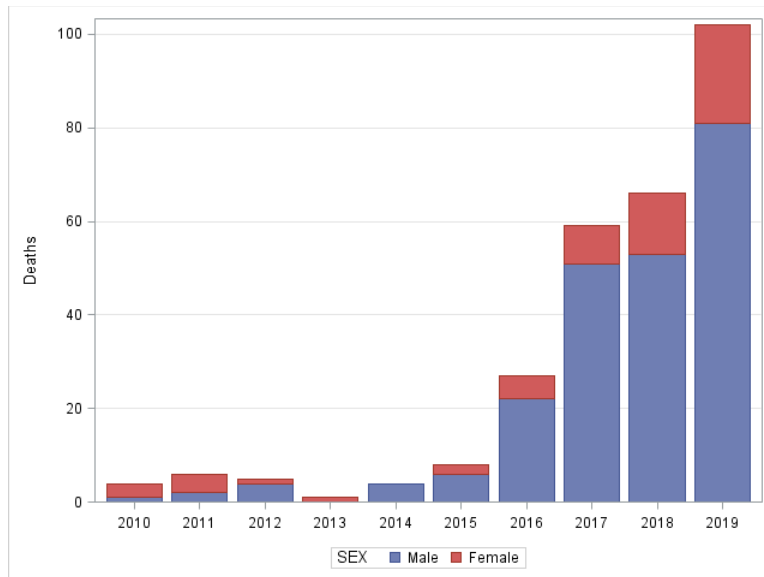
Figure 15. Synthetic Opioids and Commonly Prescribed Opioids Overdose Death Trends, 2010-2019* by Sex



*All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes literal text causes of deaths provided 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.

Overdose deaths attributed to synthetic opioids and cocaine were relatively low before seeing a small increase in 2016 (Figure 16); however, from 2016 to 2019 these deaths increased nearly three-fold. Increases in this class of polysubstance overdose deaths were largely among males; however, a more recent increase among females was also seen between 2015 to 2019.

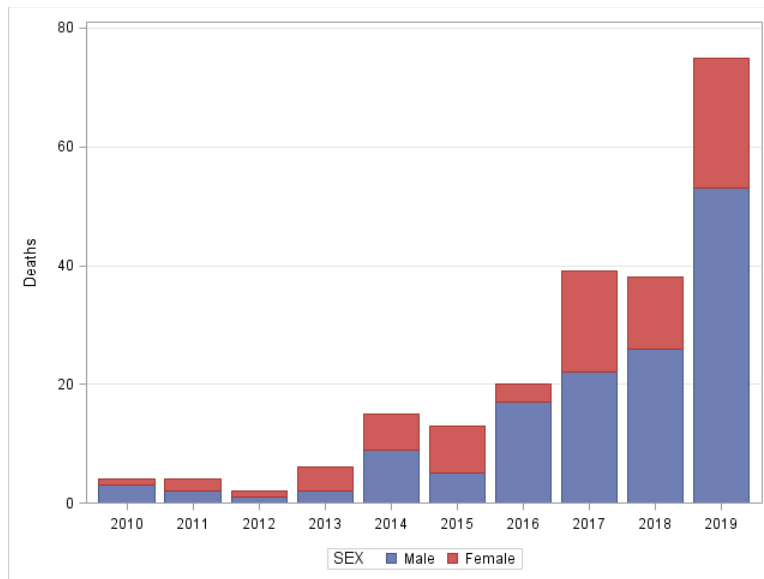
Figure 16. Synthetic Opioids and Cocaine Overdose Death Trends, 2010-2019* by Sex



*All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes literal text causes of deaths provided 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.

While the number of polysubstance overdose deaths involving synthetic opioids and psychostimulants are relatively low compared to other types of overdose deaths, the frequency of these deaths has been increasing. Synthetic opioid and psychostimulant overdose deaths almost doubled from 2016 to 2017 and continued to rise; in 2019 there were nearly four times as many deaths from these substances as 2016 (Figure 17).

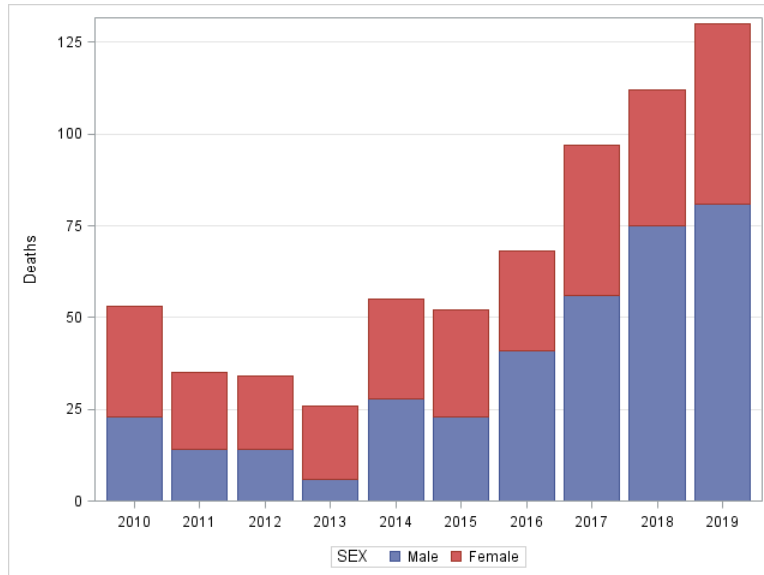
Figure 17. Synthetic Opioids and Psychostimulants Overdose Death Trends, 2010-2019* by Sex



*All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes literal text causes of deaths provided 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.

There was an increase in polysubstance overdoses attributed to synthetics and benzodiazepines from 2010 to 2019 (Figure 18). This class of polysubstance overdose deaths saw particularly large increases from 2015 onwards.

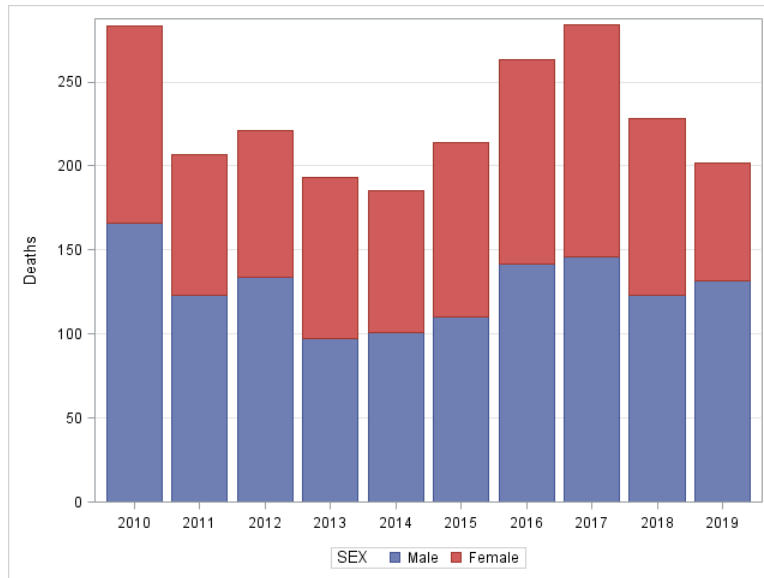
Figure 18. Synthetic Opioids and Benzodiazepines Overdose Death Trends, 2010-2019* by Sex



*All data were derived from the Texas Department of State Health Services Vital Statistics Section death certificates. Each death certificate includes literal text causes of deaths provided 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.

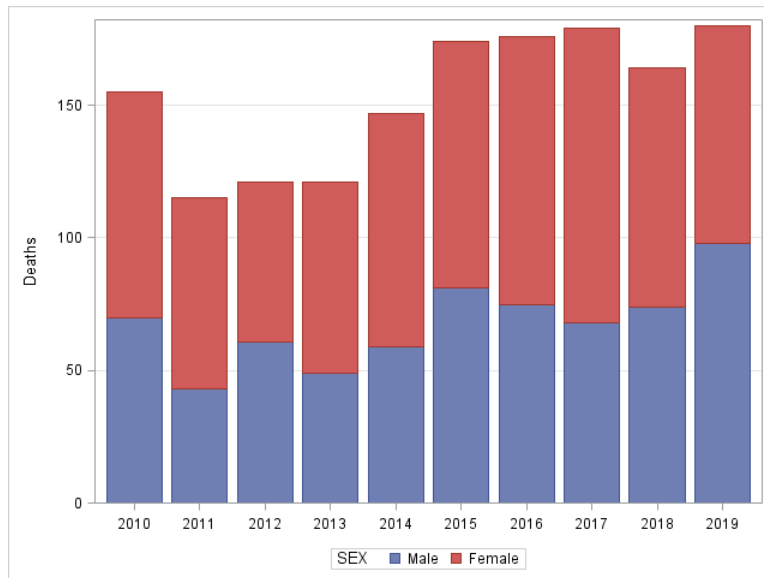
While for most categories of polysubstance overdose deaths the majority of people who die are male, a similar number of females and males die from opioid and benzodiazepine drug overdoses each year (Figure 19). When looking at the psychotropic drugs category in combination with commonly prescribed opioids, however, more females than males died over the period 2010-2019 (Figure 20).

Figure 19. Commonly Prescribed Opioids and Benzodiazepines Overdose Death Trends, 2010-2019* by Sex



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

Figure 20. Commonly Prescribed Opioids and Psychotropics Overdose Death Trends, 2010-2019* by Sex



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

3. Conclusion

Understanding polysubstance opioid use in Texas is an important step in attempting to reduce the fatalities associated with these overdoses. The treatment and management of polysubstance opioid use is more challenging than single-substance opioid use. It is crucial for public health organizations to educate healthcare providers and stakeholders to ensure they understand and recognize the prevalence of polysubstance opioid use and the risks associated with it, to better tailor prevention and intervention strategies for polysubstance opioid use.

Future analyses of Texas overdose death data might prioritize the examination of trends in polysubstance overdose stratified by race/ethnicity and, where possible, utilizing geocoded data that may indicate communities at risk for future overdose deaths. Further, there is limited data contextualizing how Texans are using these substances. For example, are most of these deaths occurring as a result of intentional or unintentional polysubstance use? Qualitative research studying how Texans are using polysubstance combinations could provide crucial information for the state, academic researchers, and healthcare providers to improve health outcomes and save lives.

With greater understanding of the complexities that surround this issue, prevention, treatment, and recovery interventions will be better equipped to manage the opioid crisis. Further research should focus on opioid co-occurrence, opioid and non-opioid drug interactions, as well as tailored treatment approaches, and the risk factors for polysubstance opioid use.

List of Acronyms

Acronym	Full Name
DSHS VSS	Department of State Health Services Vital Statistics Section
ICD-10	International Classification of Diseases 10th Revision
NCHS	National Center for Health Statistics
U.S.	United States

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	

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>