

# 2019



KNOX COUNTY  
REGIONAL FORENSIC CENTER



## DRUG RELATED DEATH STATISTICS

Knox and Anderson counties, Tennessee

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From the Desk of  
**The Chief Medical Examiner**  
of Knox and Anderson Counties

In 2016, the Regional Forensic Center introduced the Yearly Drug-Related Mortality Report to identify overdose trends in the community and identify the individual and societal forces behind substance abuse and drug addiction related deaths. Recent data confirms that drug overdose mortality is an accurate reflection of the general health status of a community and society at large.

In 2019, the Knox County overdose deaths decreased 9.8% compared to the 3.2% increase in 2018, though raw data collected during the first two quarters in 2020 do project a surge in the other direction. Anderson County drug overdose deaths dropped 11.6 % in 2019, which a smaller decrease compared to the 30% decline in 2018.

Fentanyl and its analogues continue to be responsible for most deaths in Knox County; the same was true for Anderson County. In keeping with the previous year's trend, fentanyl, with or without analogues and/or heroin, is frequently combined with methamphetamine as the preferred "speedball" combination. Moreover, these drugs continue to play an important role in other terminal events such as motor vehicle accidents, falls, firearm injuries and suicides (by a variety of methods).

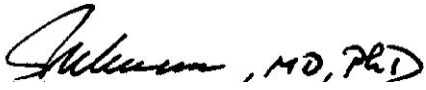
In both service counties, men continued to be disproportionately affected by drug overdose compared to women (65% men/35% women in Knox County and 54% men/46% women in Anderson County). In more of an urban area such as Knox County, the ratio of black to white overdose deaths is 1 to 9, which is reflective of the community's demographic makeup.

As federal regulatory agencies tighten the rules and policies with respect to fentanyl and fentanyl analogues, new synthetic drugs have begun to flood the illicit drug market. This office was the first Regional Forensic Center in Tennessee to identify two new strong drugs in overdose deaths; these were isotonitazene (a novel synthetic opioid) and flualprazolam (a benzodiazepine analogue), which will be discussed more extensively in next year's Drug-Related Death Report.

It is important to note that snorting or intravenous application remain the two main modes of administration for these drugs; these methods enable the introduction of a sudden surge of concentrated powerful drugs to the body's circulation. Frequently, individuals utilizing these methods collapse and die before they can snort or inject their entire dose. In these situations, naloxone might not work regardless of how quickly or how much of a drug has been administered, as shown in the table on the last page of this report. The addicts who do survive overdose frequently succumb to other medical complications such as bacterial endocarditis with or without sepsis, strokes, hepatitis C resulting in cirrhosis, among other circumstances.

# 2019 Drug Related Death Statistics

The purpose of making this data widely available is to advance the discussion regarding addiction and invite our communities to find measures to further curb and prevent drug-related deaths.



Darinka Mileusnic-Polchan, MD, PhD



## 2019 Key Findings

The overdose epidemic in Knox County, which is analogous to the national epidemic overall, continues to grow in magnitude, but is also changing its character<sup>1</sup>. In 2019, 293 people died from drug overdose in Knox County and 28 people died in Anderson County. Preliminary data for drug-deaths in 2020 does unfortunately indicate an upward trend for drug-related death cases in Knox County. Drug overdose deaths increasingly involve synthetic opioids (fentanyl and fentanyl analogs) with the numbers of prescription opioids (oxycodone, oxymorphone, hydrocodone, etc.) decreasing.

## 2019 Report Highlights for Knox and Anderson Counties:

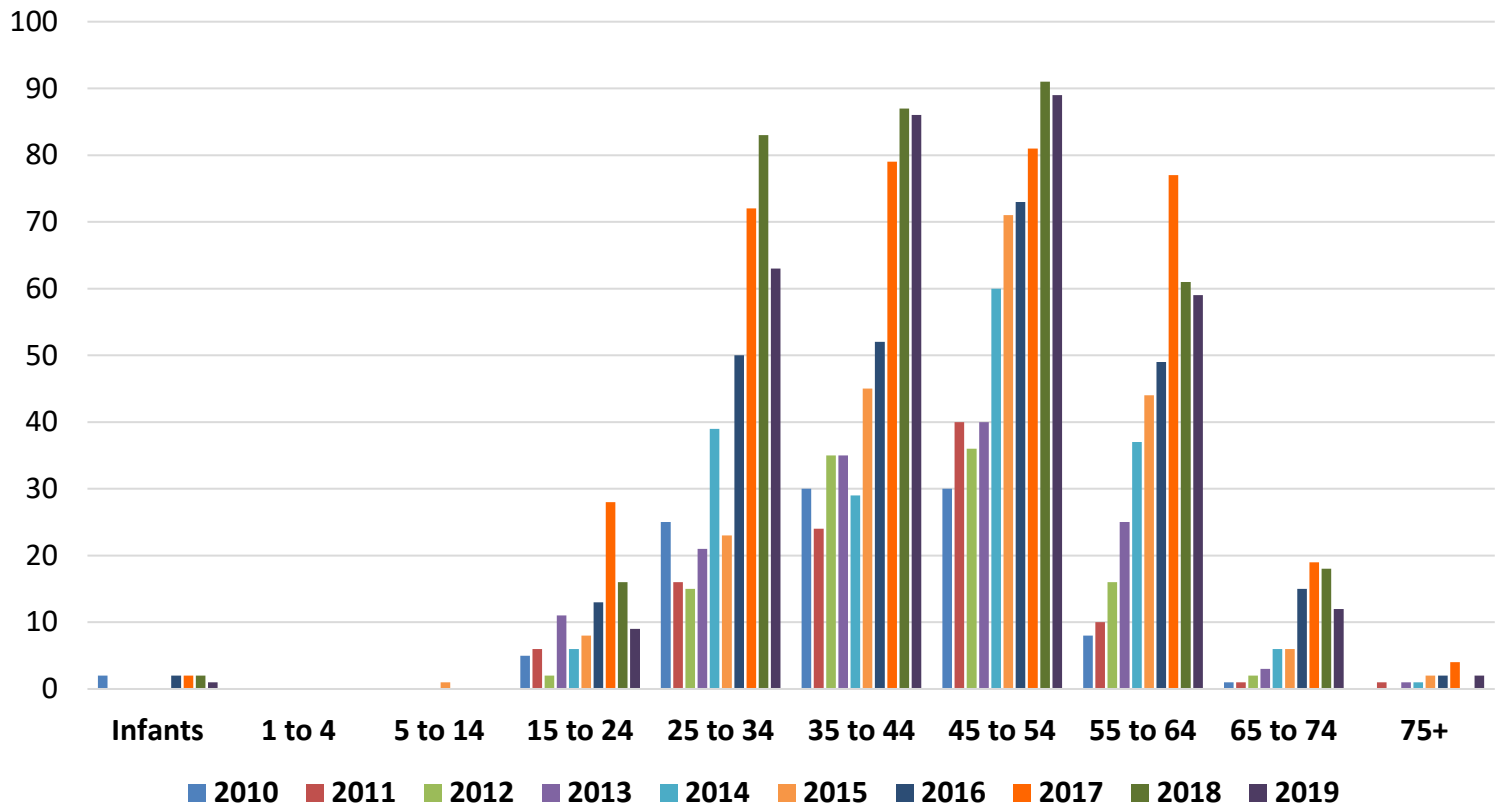
- Knox County showed a 9.8% *decrease* in drug-related deaths from 2018 to 2019; Anderson County showed a 11.6% *decrease* in drug-related deaths from in that same time.
- Fentanyl and fentanyl analogues (synthetic opioids) were the most frequently identified drugs in drug-related deaths in 2019.
- Polypharmacy, which is when more than one drug is responsible for death, was involved in 69% of Knox County and 71% of Anderson County overdose deaths.
- The five most common drugs identified in drug-related deaths in 2019 were synthetic opioids, methamphetamine, alcohol/ethanol, heroin and cocaine.
- Prescription opioid related deaths continue to decrease in RFC jurisdictions.
- People 45-54 years old experienced the most drug related deaths in Knox County, but the sharpest increase was in people age 35-44. The sharpest decrease was people 15-24 and 25-34.

## Data and Methods

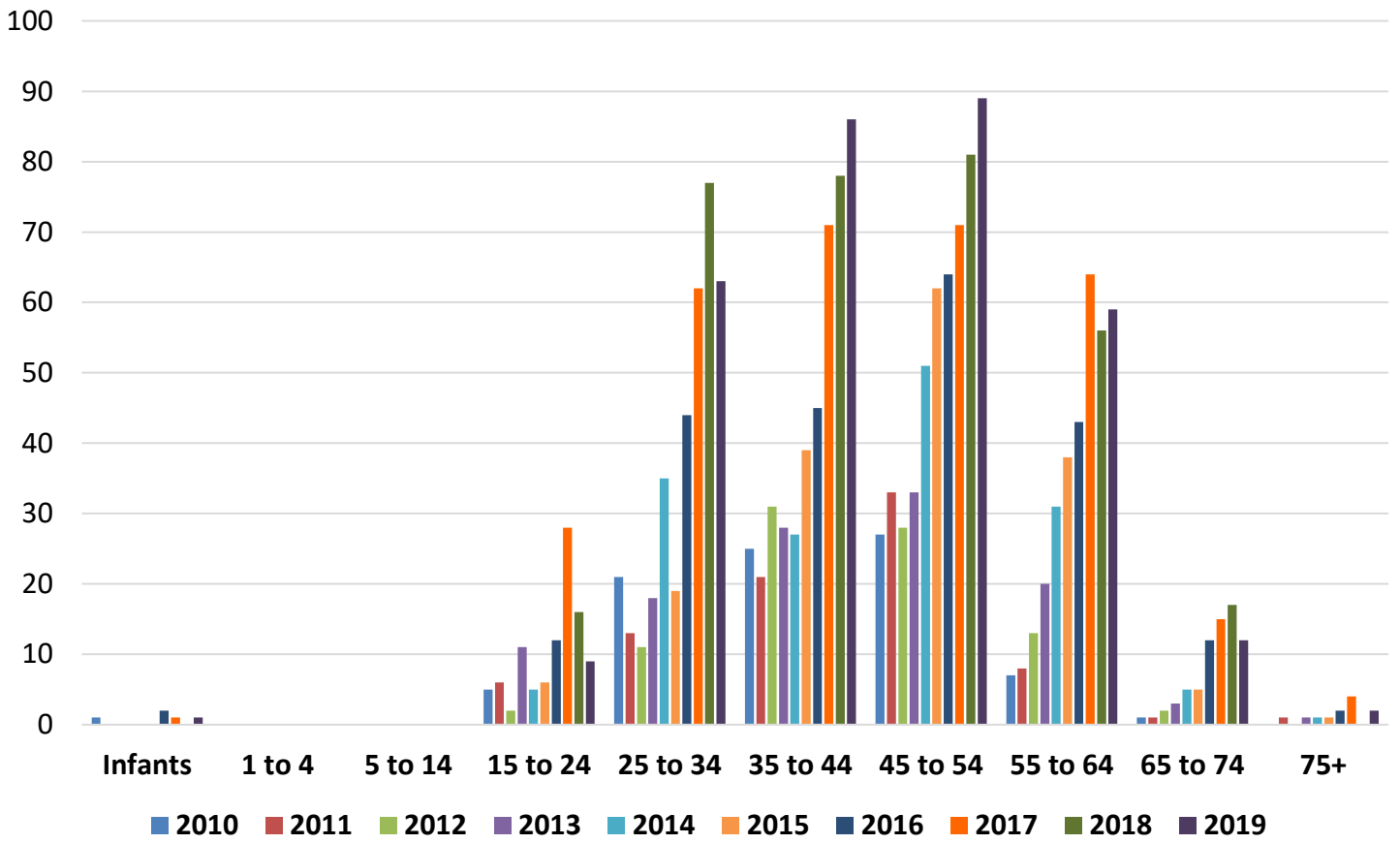
The Knox and Anderson County Medical Examiner database (MDILog) was queried for possible drug related causes of death for cases accepted as medical examiner jurisdiction for January 1, 2019, through December 31, 2019. The initial query included non-motor vehicle accidents, undetermined and suicide manners of death. The initial data set was examined to ensure that all cases included were drug-related deaths, as determined by the forensic pathologist of record. Causes of death related to chronic effects of drugs and alcohol such as bacterial endocarditis, chronic ethanol use and others, were excluded from this dataset.

<sup>1</sup> NIHCM 2019 <https://www.nihcm.org/categories/the-evolution-of-the-opioid-crisis-2000-2017>

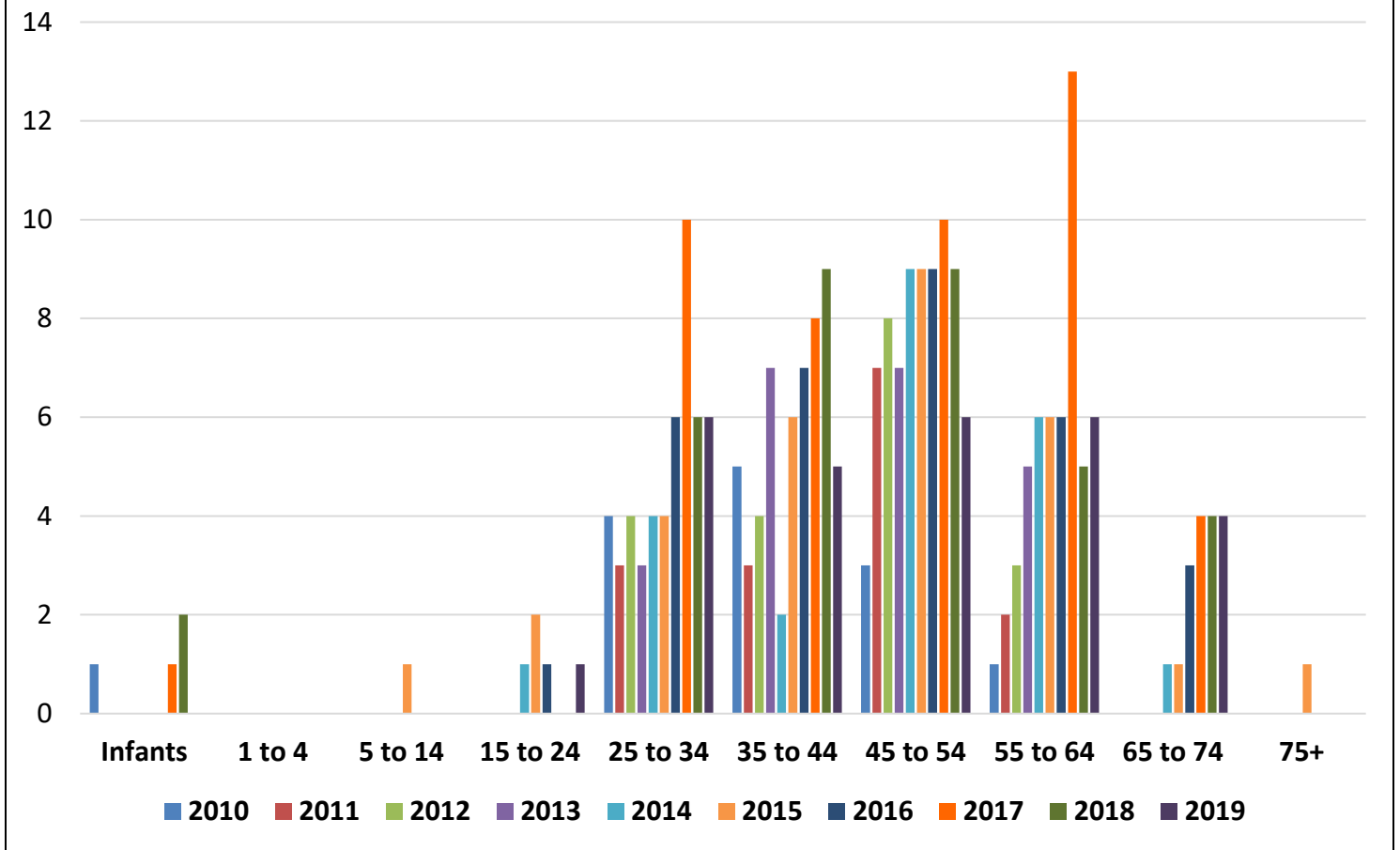
## Knox and Anderson Counties Age Distribution for Drug Related Cases 2010-2019



## Knox County Age Distribution for Drug Related Cases 2010-2019

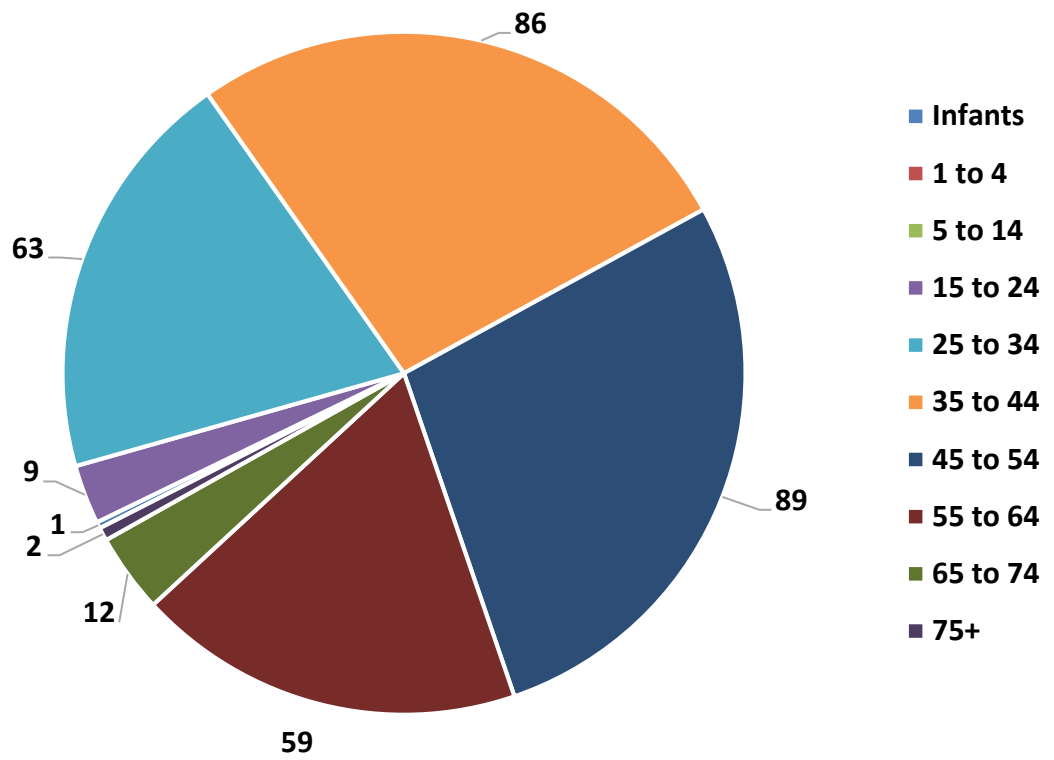


## Anderson County Age Distribution for Drug Related Cases 2010-2019

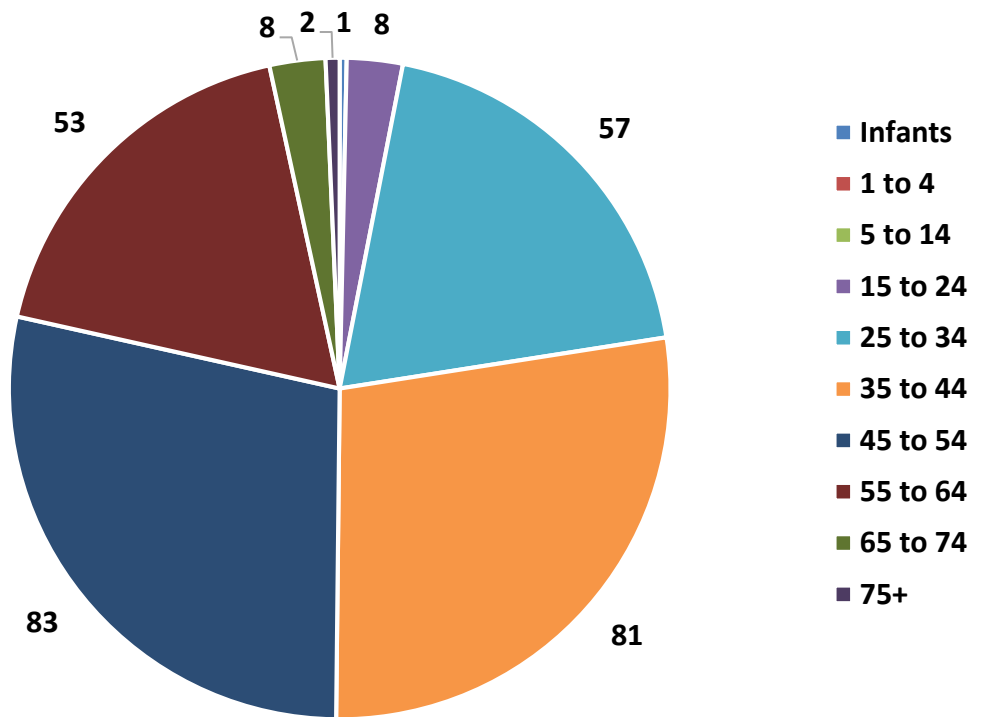




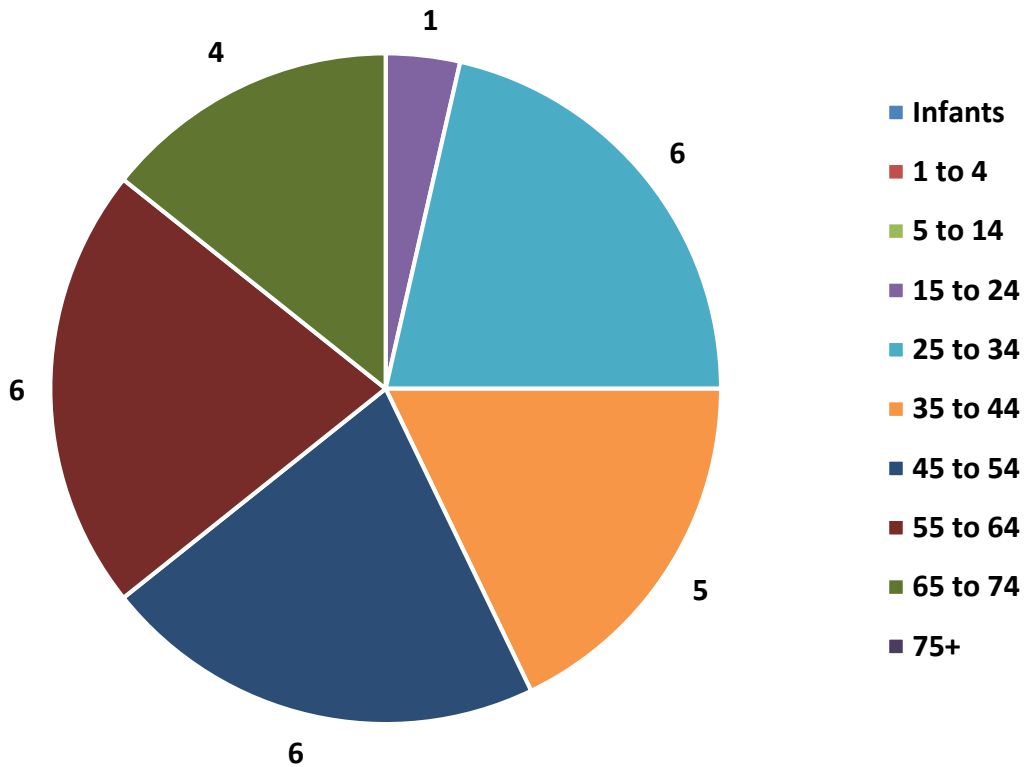
### Knox and Anderson Counties 2019 Drug Related Deaths by Age Distribution



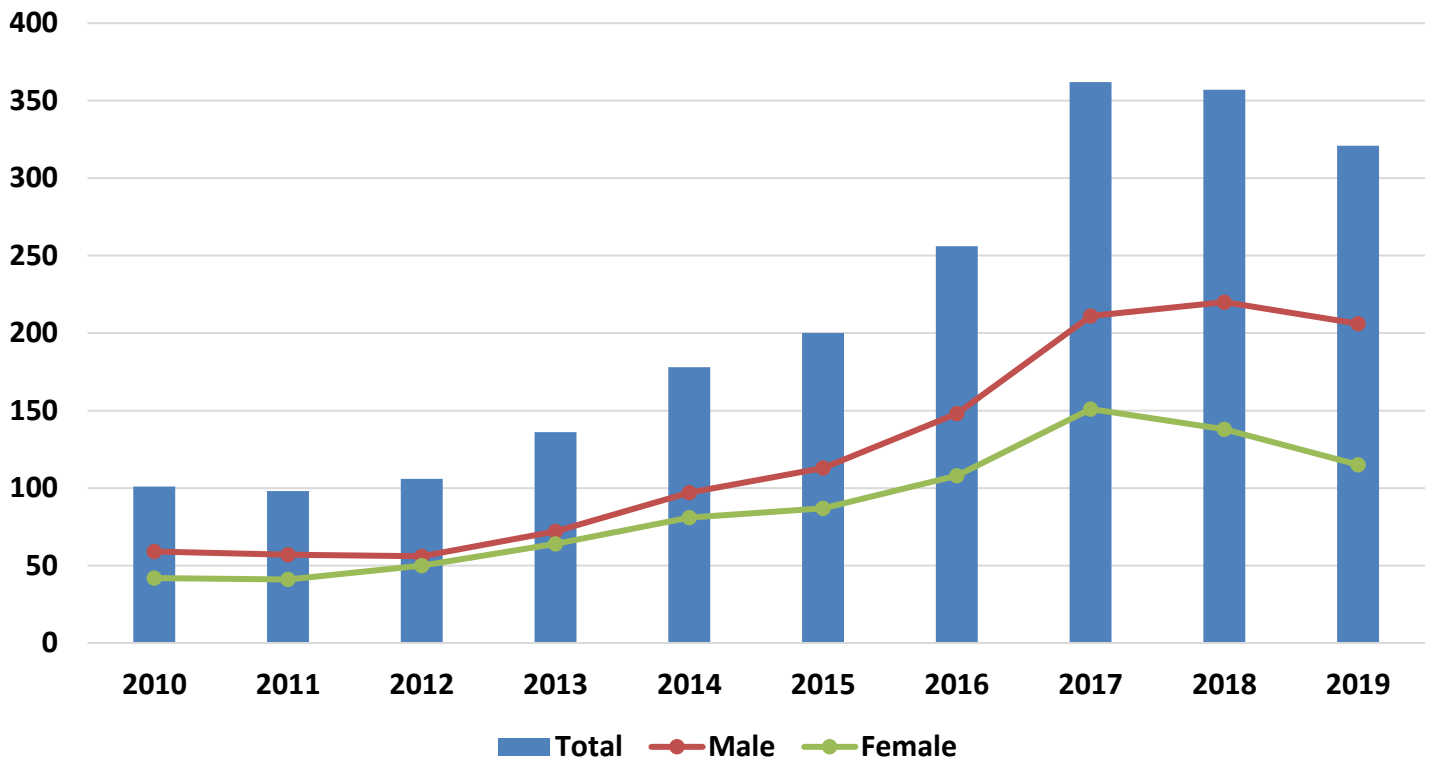
### Knox County 2019 Drug Related Deaths by Age Distribution

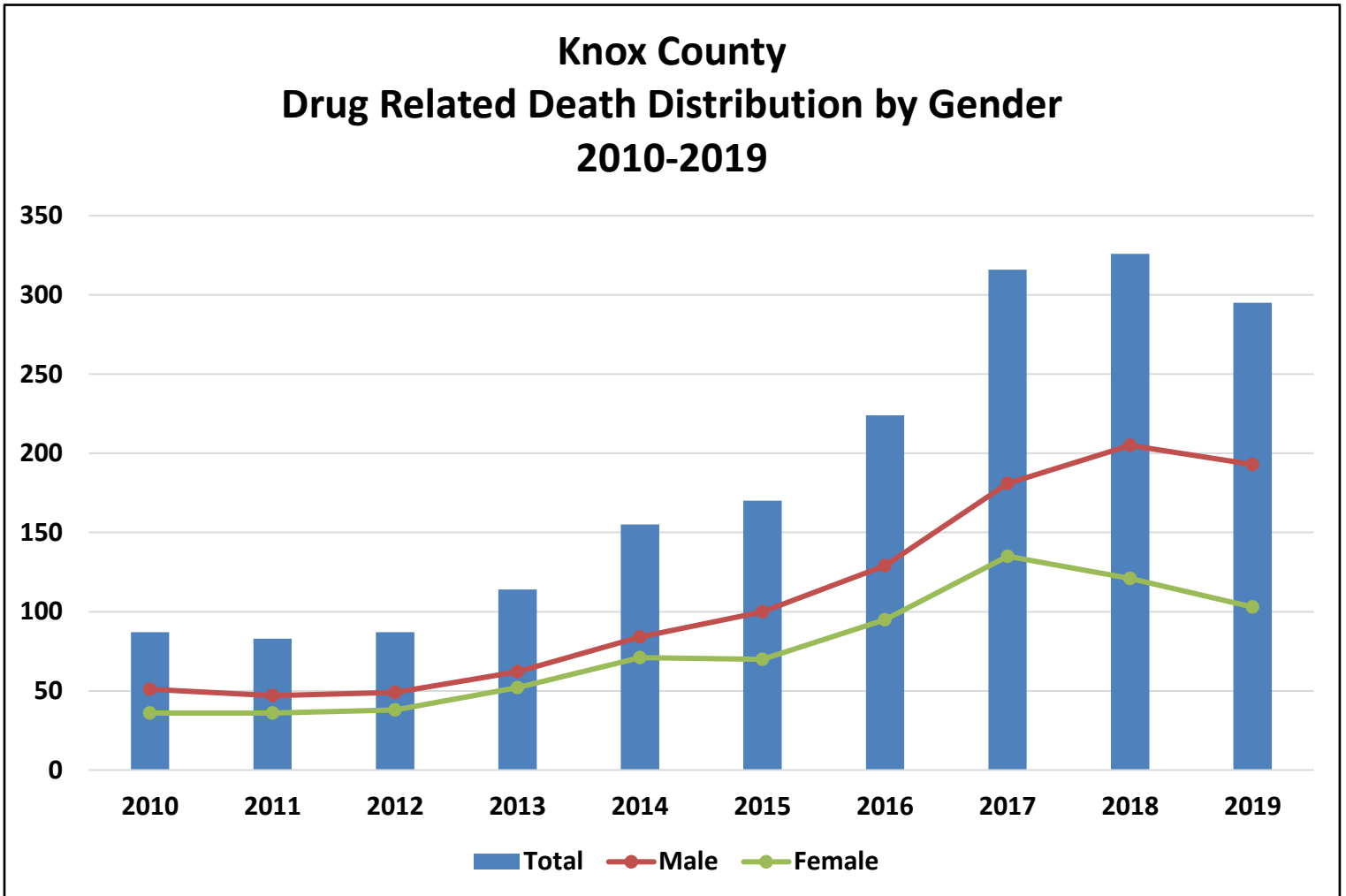


### Anderson County 2019 Drug Related Deaths by Age Distribution

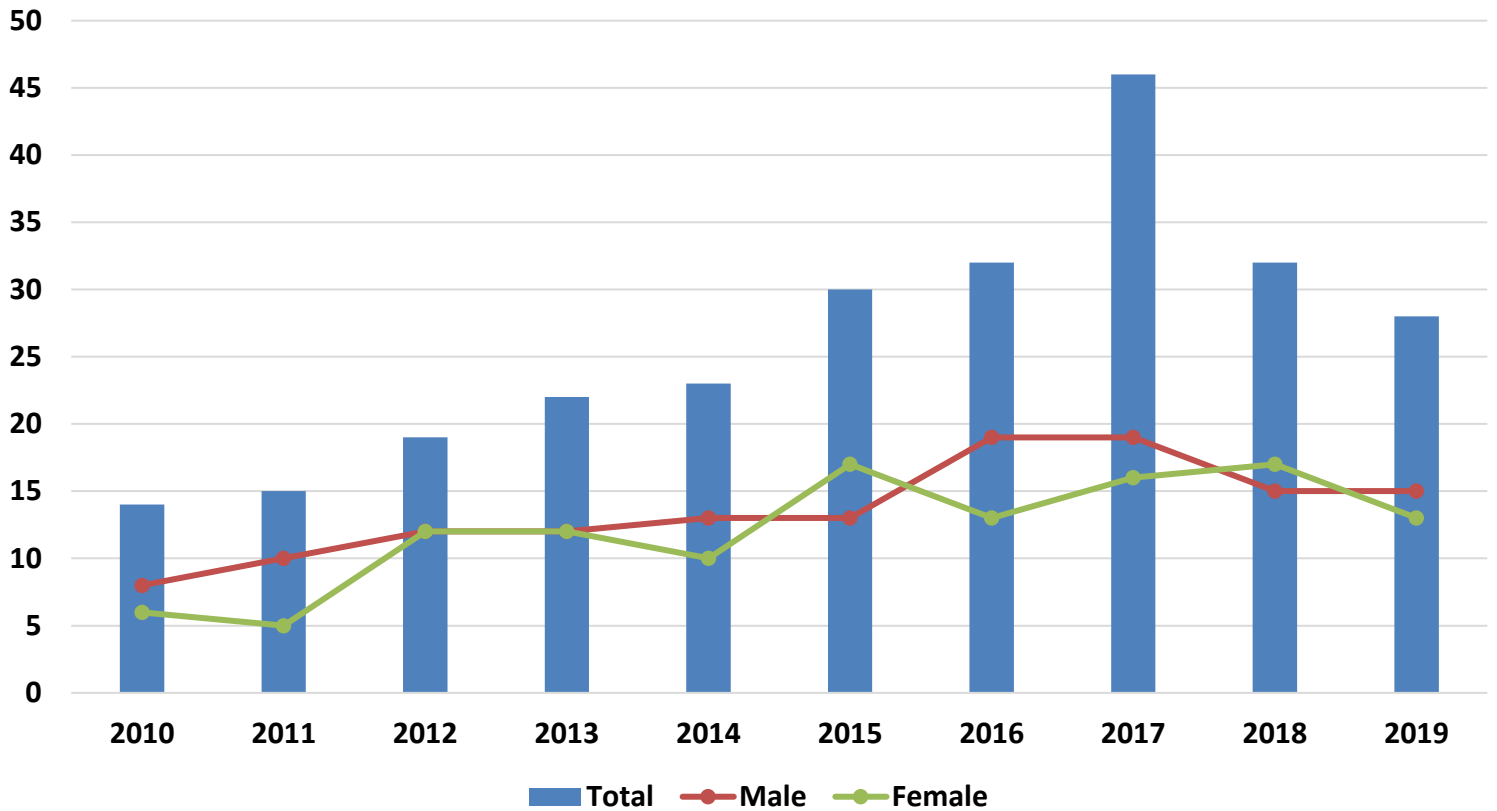


## Knox and Anderson Counties Drug Related Death Distribution by Gender 2010-2019

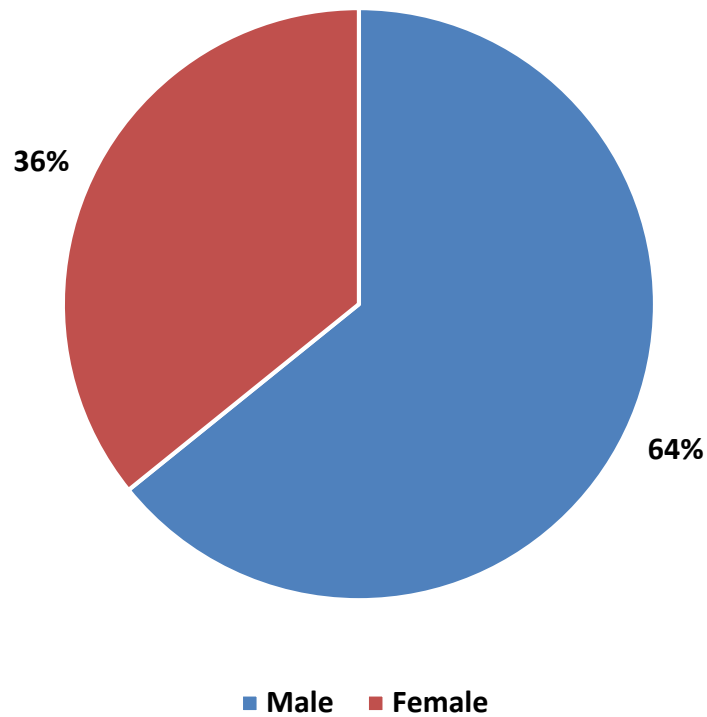




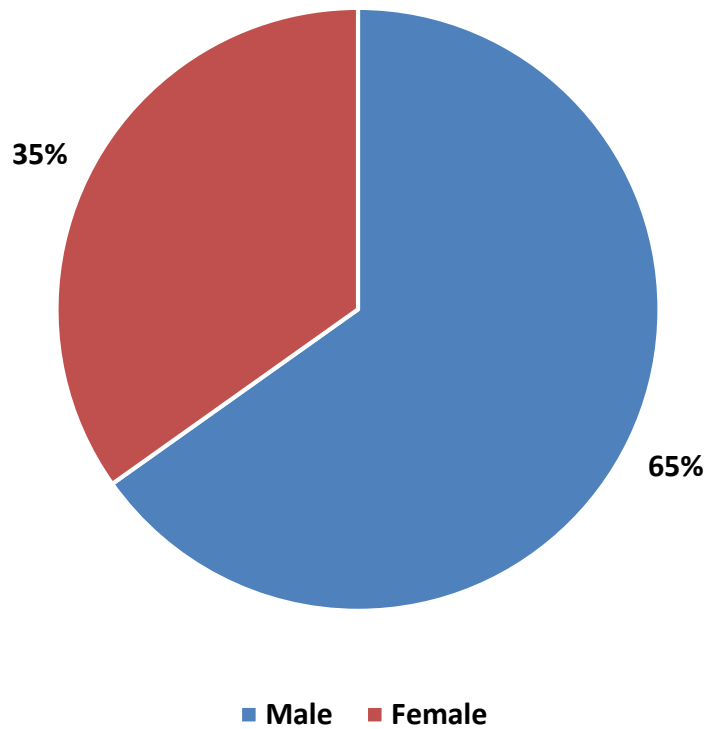
### Anderson County Drug Related Death Distribution by Gender 2010-2019



**Knox and Anderson Counties  
2019 Drug Related Death Distribution  
By Gender**

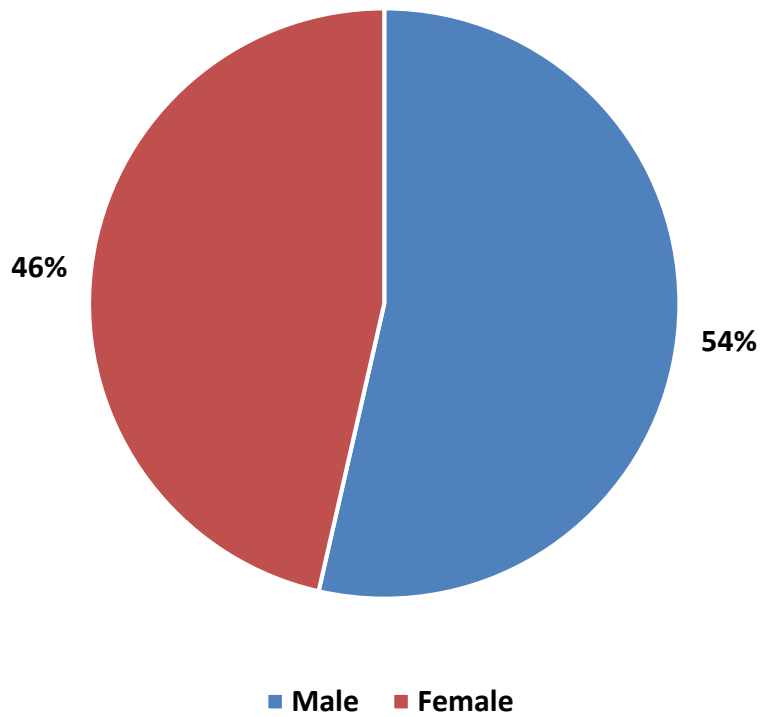


### Knox County 2019 Drug Related Death Distribution By Gender

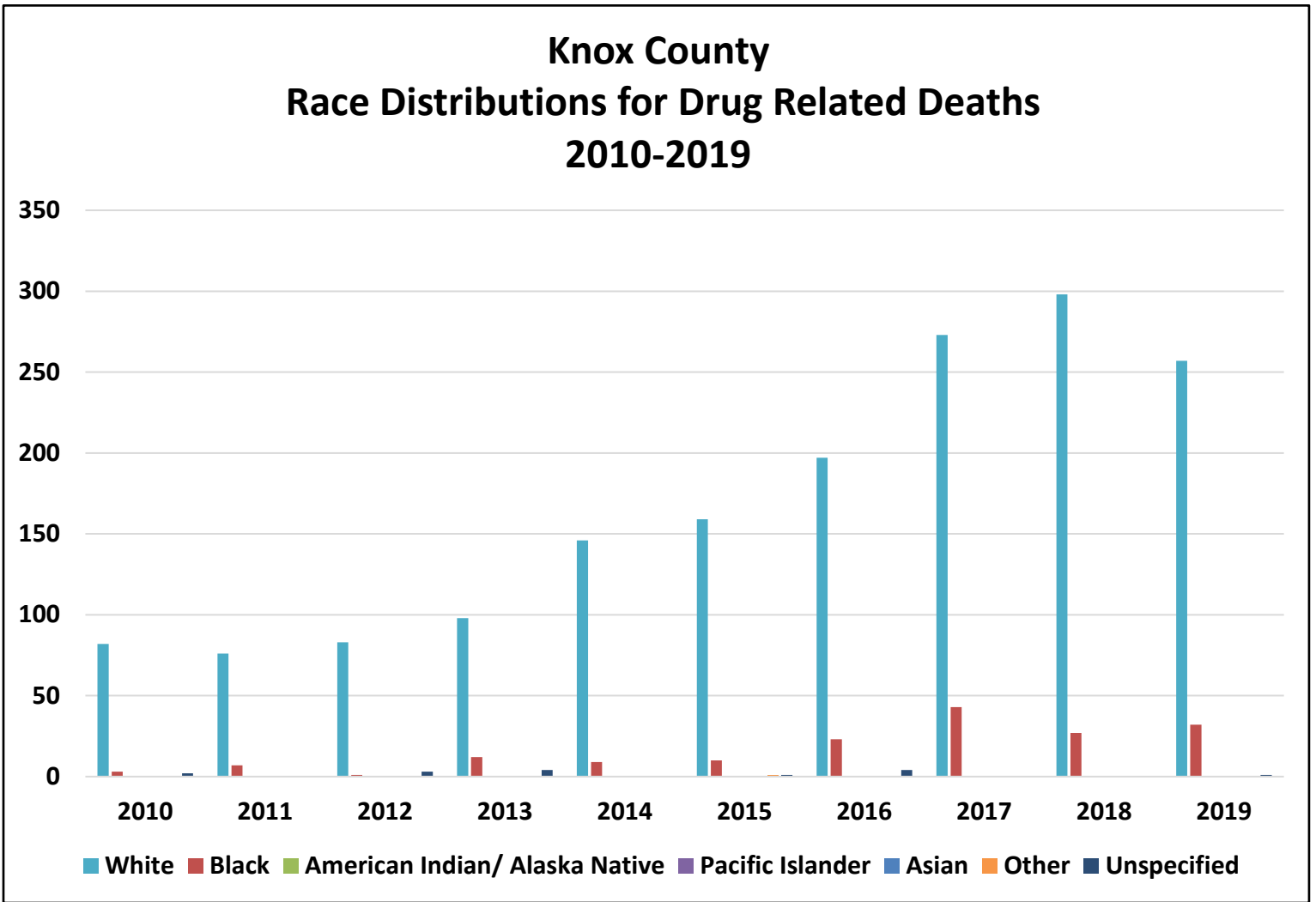




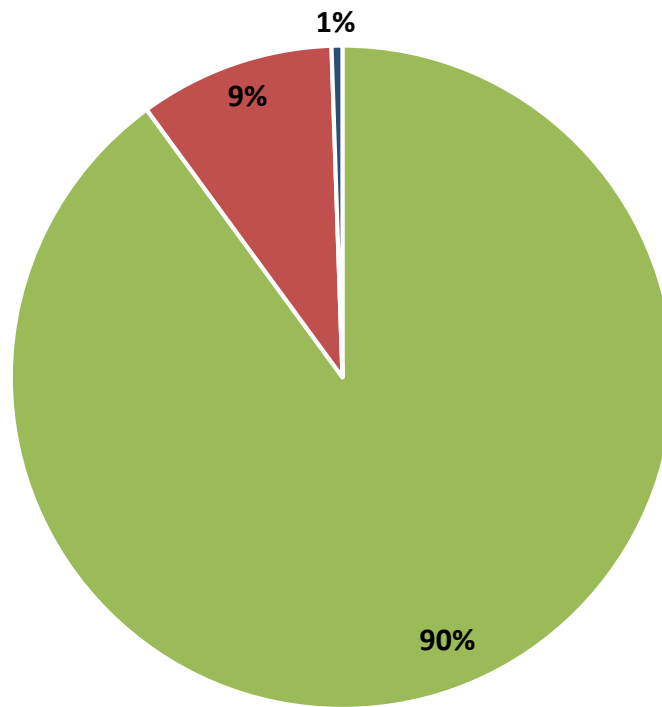
### Anderson County 2019 Drug Related Death Distribution by Gender



### Knox County Race Distributions for Drug Related Deaths 2010-2019

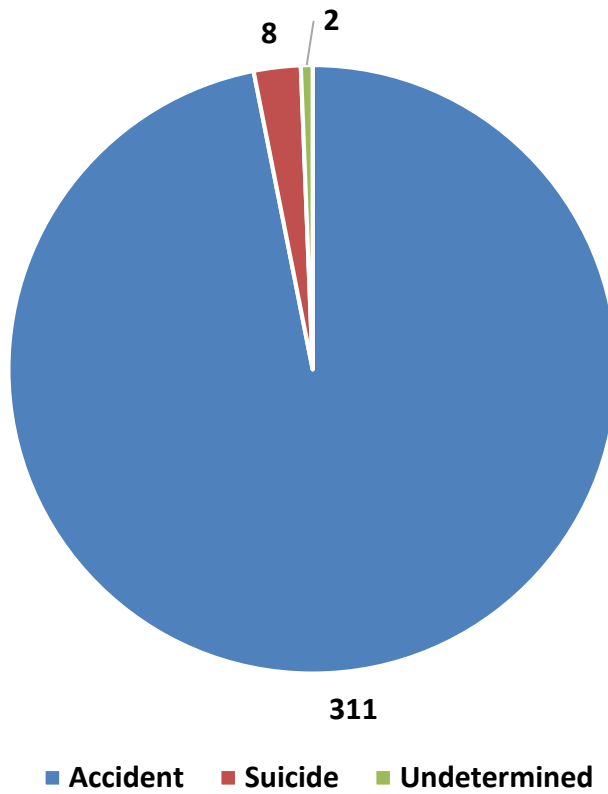


### Knox County 2019 Drug Death Distribution by Race

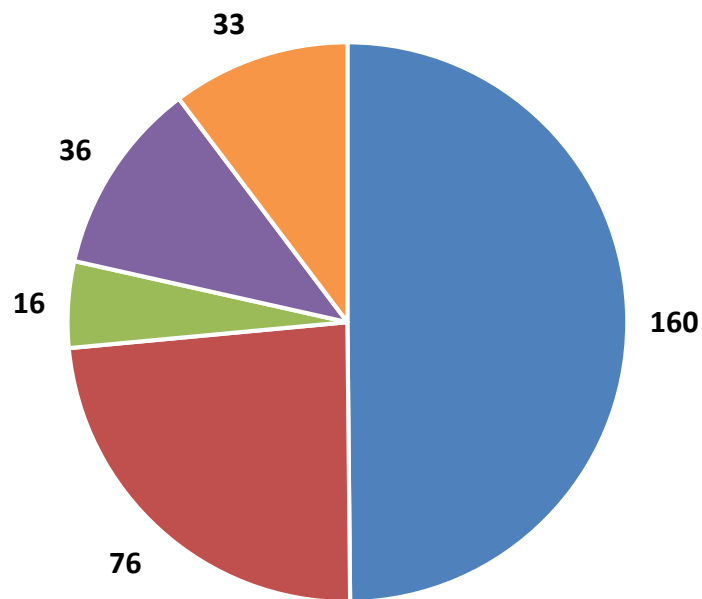


■ White ■ Black ■ American Indian/ Alaska Native ■ Pacific Islander ■ Asian ■ Other ■ Unspecified

### Knox and Anderson Counties Manner of Drug Related Death 2019



## Knox and Anderson County Location Types Where 2019 Drug Related Deaths Occurred



■ Decedents Residence ■ Hospital ■ Hotel/Motel ■ Other Residence ■ Other

# 2019 Drug Related Death Statistics

## Zip Code Distribution and Heat Maps by Year and County

The following zip code data represents the home addresses, location of injury and death locations for drug related deaths in Knox and Anderson counties, which had an autopsy or examination at the Knox County Regional Forensic Center in 2019. The data source and notes are listed here for the zip code related pages.

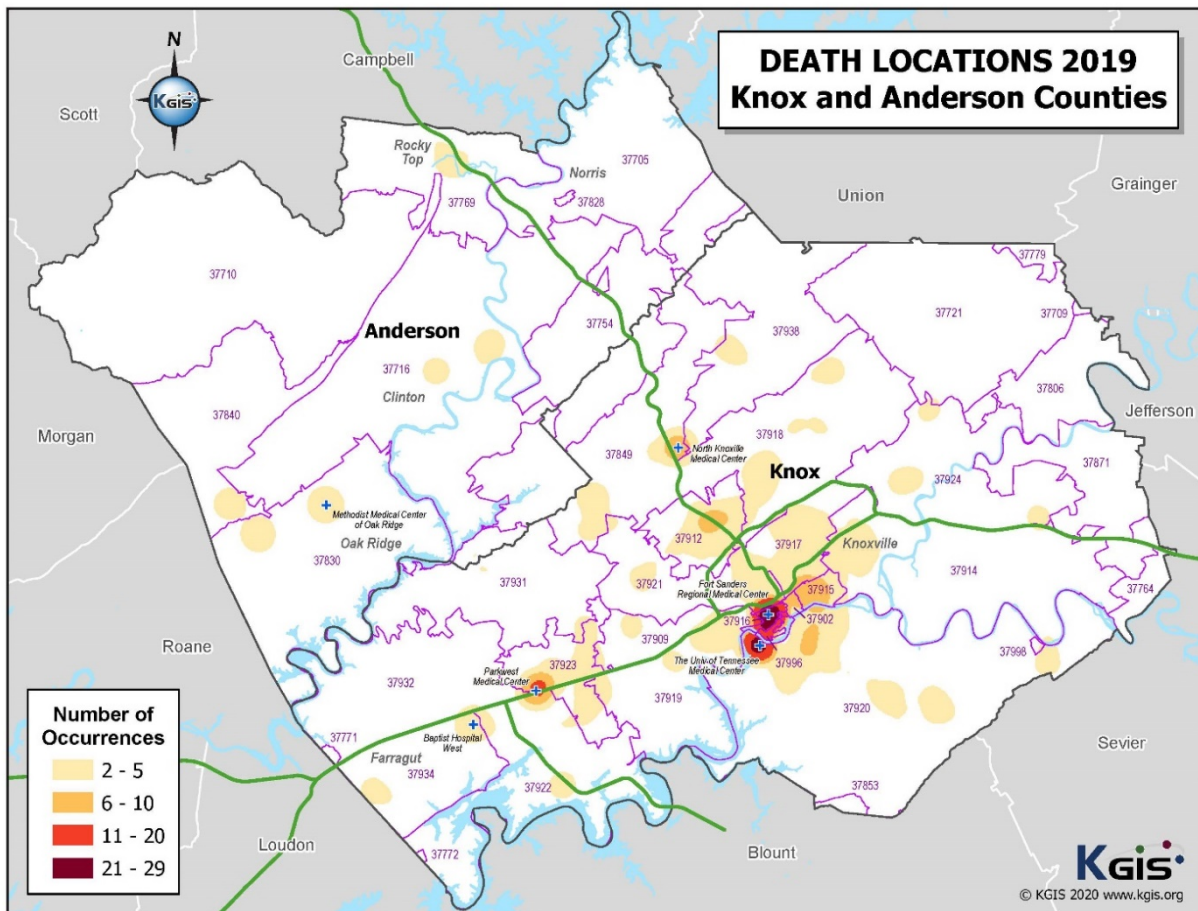
KGIS assisted by creating the enclosed heat maps. These maps represent drug related deaths based on home address, location of injury, or location of death.

### Data Source

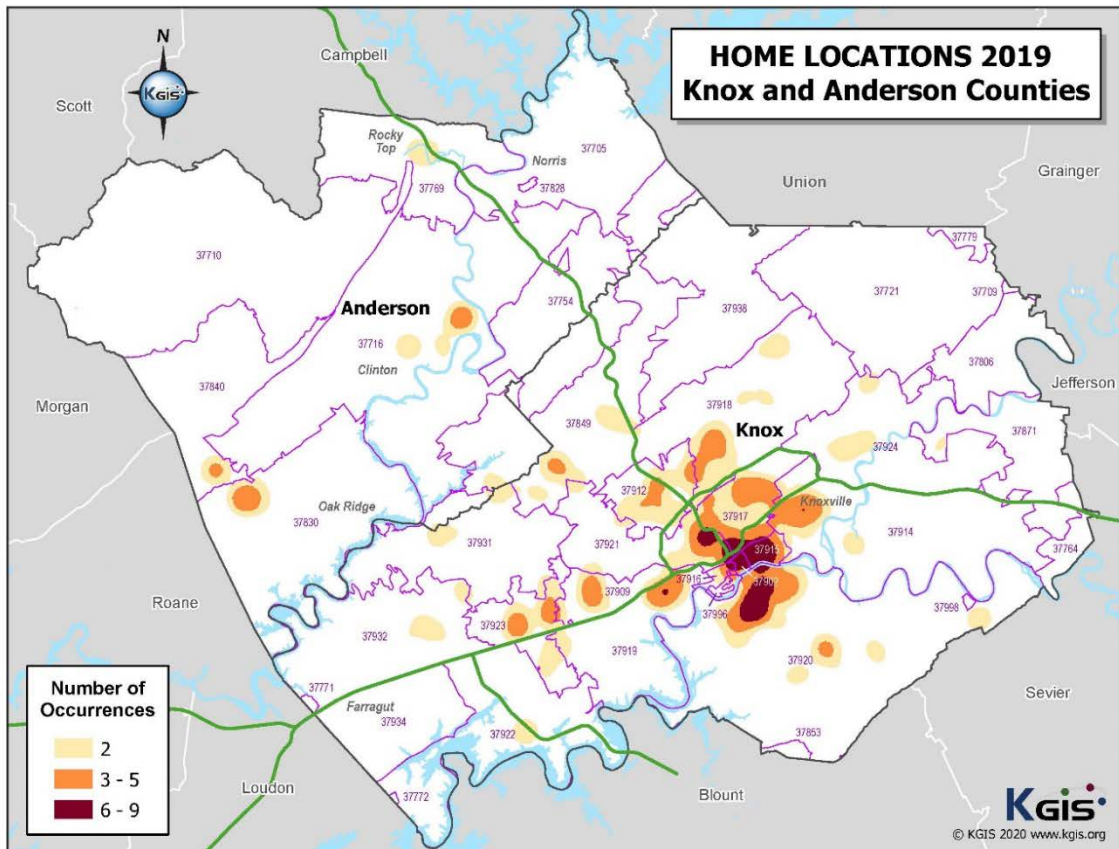
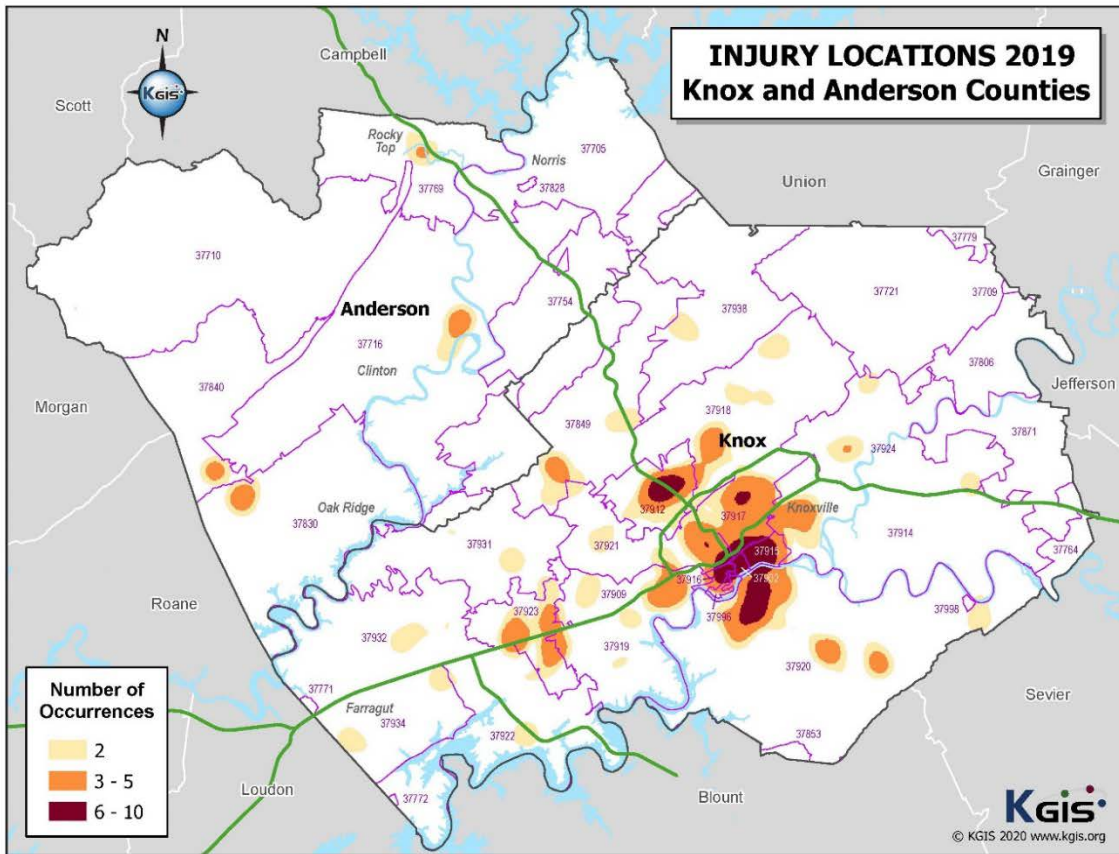
2019 Maps: MDILog Database and Knox County RFC Medical Examiner Database, 2019. Knoxville, TN.

### Notes

1. The home address location maps represent the address at which the people who died of a drug related death resided.
2. The location of injury maps represent the address where drug related injury occurred.
3. The death location maps represent where people died from the drug related death. Hospital locations were added to the maps for reference.



# 2019 Drug Related Death Statistics



## Knox and Anderson Counties Top 10 Drugs Found in Drug Related Deaths by Year

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#1	Oxycodone	Oxycodone	Oxycodone	Oxycodone	Oxycodone	Oxycodone	Fentanyl & Analogues	Fentanyl & Analogues	Fentanyl & Analogues	Fentanyl & Analogues*
#2	Alprazolam	Oxymorphone	Morphine	Morphine	Oxymorphone	Oxymorphone	Oxymorphone	Cocaine	Methamphetamine	Methamphetamine
#3	Morphine	Cocaine	Cocaine	Alprazolam	Alprazolam	Alprazolam	Oxycodone	Methamphetamine	Heroin	Alcohol/Ethanol
#4	Methadone	Alprazolam	Oxymorphone	Cocaine	Morphine	Cocaine	Alprazolam	Heroin	Cocaine	Heroin
#5	Oxymorphone	Morphine	Alprazolam	Oxymorphone	Cocaine	Heroin	Methamphetamine	Oxymorphone	Alcohol/Ethanol	Cocaine
#6	Cocaine	Methadone	Methadone	Methadone	Methadone	Morphine	Cocaine	Alprazolam	Alprazolam	Oxymorphone
#7	Alcohol/Ethanol	Alcohol/Ethanol	Fentanyl	Hydrocodone	Fentanyl	Fentanyl	Hydrocodone	Oxycodone	Oxycodone	Alprazolam
#8	Hydrocodone	Hydrocodone	Hydrocodone	Alcohol/Ethanol	Hydrocodone	Hydrocodone	Morphine	Alcohol/Ethanol	Oxymorphone	Oxycodone
#9	Diazepam	Benzodiazepine (NOS)	Alcohol/Ethanol	Opiate (NOS)	Alcohol/Ethanol	Alcohol/Ethanol	Alcohol/Ethanol	Morphine	Morphine	Gabapentin
#10	Carisoprodol	Diazepam	Diazepam	Methamphetamine	Diazepam	Methadone	Heroin	Hydrocodone	Methadone	Diphenhydramine
			Amitriptyline		Buprenorphine					
			Methamphetamine							

\*Includes fentanyl, acetyl fentanyl, butyrylfentanyl, carfentanil and methoxy acetyl fentanyl

Data Source: Knox County RFC Medical Examiner Database 2010-2016 and MDILog Database 2016-2019 Knoxville, TN

- Note: 1. This report only notes the presence of the drugs contributing to death, but does not indicate the appropriate or legal use of a drug  
 2. Drug poisoning deaths may involve more than one specific substance.  
 3. Some drugs are listed as Not Otherwise Specified (NOS) because information was obtained from sources that did not define the drug type.



Knox County Regional Forensic Center			
Frequency of Drugs Found in Drug Related Deaths in 2019			
Drug	Total Cases (N=321)		
	Knox (N=293)	Anderson (N=28)	Total
<b>Fentanyl and Analogues</b>	248	14	259
Fentanyl	171	11	189
Acetyl Fentanyl	71	3	74
Methoxyacetyl fentanyl	1	0	1
Carfentanil	4	0	4
Butyrylfentanyl	1	0	1
Methamphetamine	100	11	111
Alcohol/Ethanol	60	0	60
Heroin	54	5	59
Gabapentin	35	13	48
Oxymorphone	38	6	44
Cocaine	43	1	44
Oxycodone	35	7	42
Alprazolam	37	5	42
Diphenhydramine	16	4	20
Diazepam	13	3	16
Buprenorphine	12	2	14
Hydrocodone	13	0	13
Methadone	9	2	11
Morphine	8	0	8
Tramadol	4	0	4
U-47700	3	0	3

## Naloxone in Drug Related Deaths in 2019

2019 DRD Cases with Naloxone Use and Drug Type					
	Naloxone- Rx Drug Only	Naloxone-Illicit Drug Only	Naloxone- Rx and Illicit Drug	Naloxone-Alcohol	Total
Knox	5	32	24	1	62
Anderson	1	1	3	0	5
<b>Total</b>	<b>6</b>	<b>33</b>	<b>27</b>	<b>1</b>	<b>67</b>

This report is also available online at

<http://www.knoxcounty.org/rfc/reports.php>.

\*Acknowledgements to Will Fontanez at KGIS, and Anna Hoekstra at the RFC.