

2023



REGIONAL FORENSIC SCIENCE CENTER PATHOLOGY DIVISION ANNUAL REPORT

PATHOLOGY DIVISION 2023 ANNUAL REPORT

REGIONAL FORENSIC SCIENCE CENTER
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HISTORY/OVERVIEW

The Regional Forensic Science Center officially opened on December 21st, 1995. The Center houses the Pathology Division (including the Office of the District Coroner) and the Forensic Science Laboratories. The Pathology Division is organized into two sections: Medical Investigations and Autopsy Services.

As mandated by law [KSA 22a-231], the District Coroner has the responsibility for investigating deaths within Sedgwick County that occur as a result of violence, by unlawful means, suddenly when in apparent health, in a suspicious or unusual manner, or when in police custody. The Coroner's jurisdiction also applies to deaths of individuals not regularly attended by a physician, any and when the determination of the cause of death is held to be in the public interest. The primary goal of investigation and the postmortem examination is to determine cause and manner of death in order to generate a death certificate.

Cause of death is the injury or disease that results in death. Manner of death is determined by circumstances in which the death occurred and includes natural, accident, homicide, suicide, and undetermined. Undetermined manner of death is used when circumstances are unknown or are unclear.

Since 2013, the number of cases reported annually to the office has averaged 3,564, with a 28.8% increase in deaths reported and a 39.0% increase in cases falling under Coroner jurisdiction (cases accepted). While no significant change in cases reported or accepted occurred compared to the year prior, a fairly significant increase for each has occurred since 2019.

The Pathology Division has been accredited by the National Association of Medical Examiners (NAME) since 2001.

MISSION

The Forensic Science Center strives to provide the highest quality medicolegal and advanced forensic laboratory services to Sedgwick County. Death Investigation and Forensic Autopsy services are conducted in a compassionate and objective manner to achieve accurate certification of cause and manner of death. The Forensic Laboratory services provide unbiased and accurate analytical testing to support the resolution of criminal cases. As an independent agency operating under the Division of Public Safety, the Forensic Science Center collaborates with public health and criminal justice stakeholders to reduce crime and prevent deaths.

PATHOLOGY LEADERSHIP

Director

Shelly Steadman, PhD

District Coroner-Chief Medical Examiner

Timothy S. Gorrill, MD, PhD

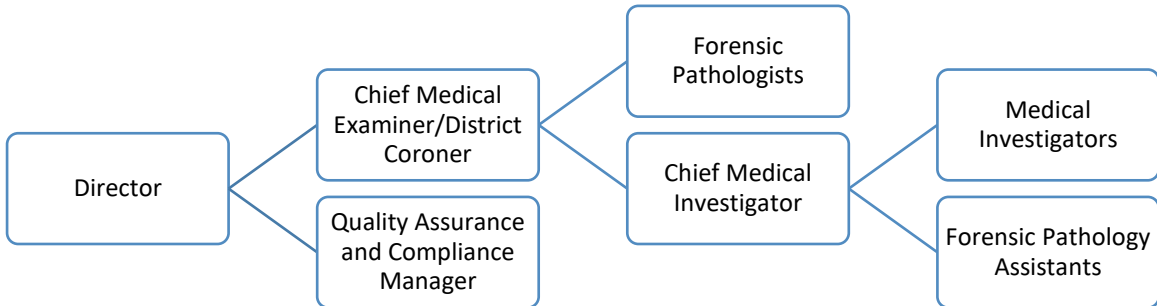
Chief Medical Investigator

Shari L. Beck, F-ABMDI

Quality Assurance and Compliance Manager

Robert C. Hansen II, M.S.F.S.

PATHOLOGY ORGANIZATION



MEDICAL INVESTIGATIONS

The Pathology division has a Chief Medical Investigator and six Medical Investigators. The Medical Investigators are on duty every day, twenty-four hours a day, and seven days a week. On behalf of the District Coroner, the Medical Investigators triage all reported deaths, which totaled 4016 in 2023. When a death is determined to be under the jurisdiction of the Coroner they report to death scenes to document the scene, and collect any evidence pertinent to the death investigation.

The District Coroner accepted jurisdiction or assisted in 1048 [Figure 3] of the deaths reported. On average, over the last 10 years, coroner accepted cases cumulatively constitute 26.9% of the total number reported to the office. Also, when compared to 2014 there has been a 22.9% increase in the number of reported deaths and a 15.5% increase in the number of coroner cases accepted for examination in 2023.

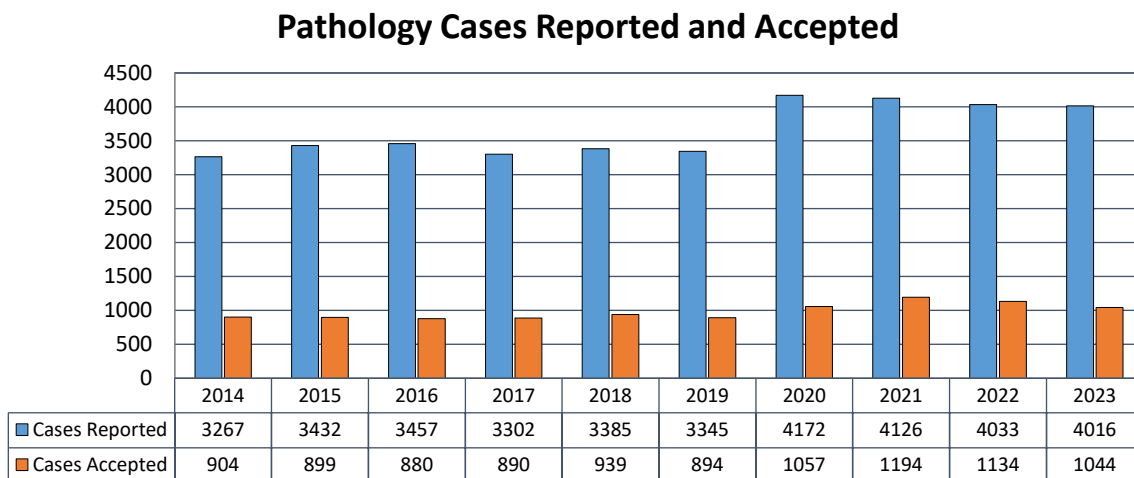


Figure 3: Pathology cases reported include all deaths that were reported to the Center. Pathology cases accepted include Records Reviews, Autopsies, Partial Autopsies, External Examinations, and Non-human Skeletal Remains.

Medical Investigators may attend the scene of a death when it occurs outside of a hospital setting. Pertinent circumstantial and physical observations are documented and photographed, and items of evidence are collected in accordance with state law, good forensic principles and accreditation requirements established by the National Association of Medical Examiners [NAME]. The number of scene investigations by Medical Investigators per year [Figure 4] has shown a steady increase over the last 10 years, although the number was essentially flat in 2023 compared to the year prior. Also, between 2014 and 2023 there has been a 43.0% increase in the number of death scenes attended by medical investigators.

Scene Investigations

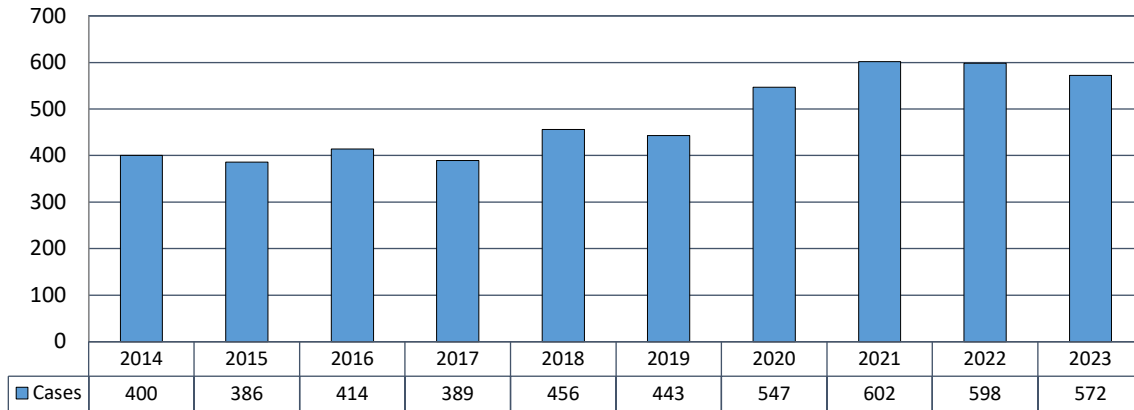


Figure 4: Number of scenes attended by Medical Investigators.

CASE EXAMINATIONS

Figure 5 shows the number of postmortem exams, that includes full autopsies, partial autopsies, and external examinations. External examinations are performed in cases where scene investigation, circumstances, medical history, and the exam are sufficient to certify the death.

In 2023, approximately 74.1% of the examinations were full autopsies, 20.8% were external examinations, and 4.9% were partial examinations.

Autopsy, External, and Partial Examinations

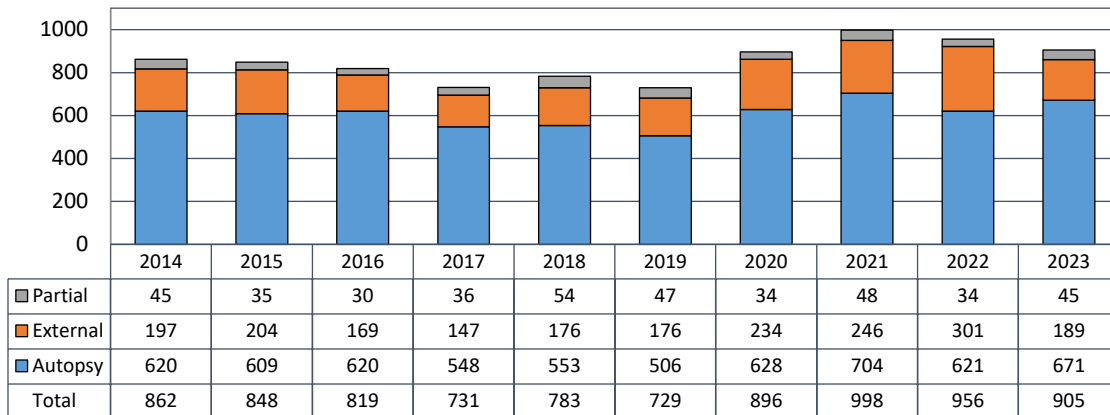


Figure 5: Postmortem examination type excluding records reviews and non-human skeletal remains.

AUTOPSY REPORTS

One important metric to monitor the work efficiency of the Pathology Division is the percentage of autopsy reports completed within 90 days of the examination. Usually, the percentage of cases that meet this mark is dependent upon how quickly the Toxicology Laboratory can complete testing and how quickly the case pathologist can complete his/her autopsy reports following the toxicology report being issued. In 2023, the pathology division saw an increase in the percentage of cases that meet the goal of 90% cases completed within 90 days from examination [Figure 6].

Percent of Autopsy Reports Issued Within 90 Days per Examination Year and Percent of Toxicology Post-mortem Reports Issued Within 60 and 90 Days per Submission Year

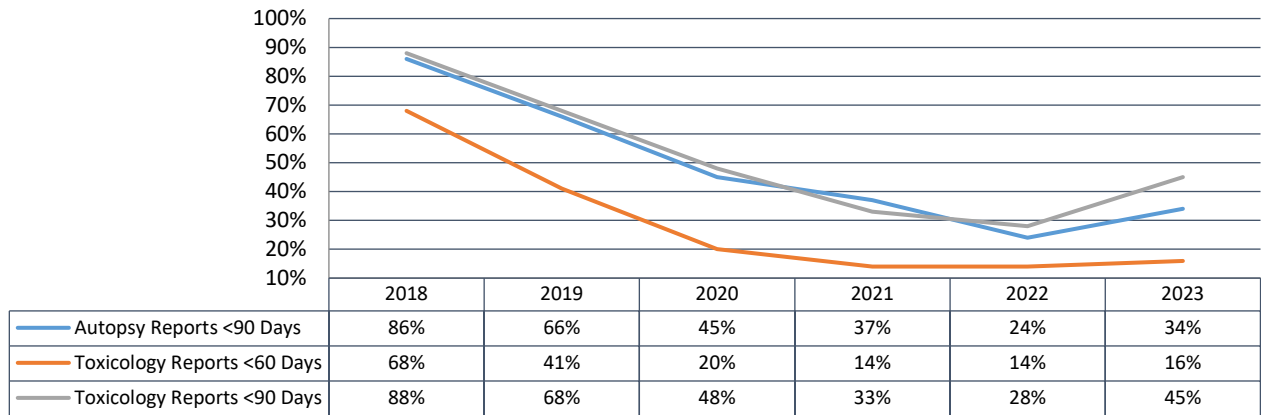


Figure 6: Percentage of autopsy reports issued within 90 days from examination per examination year and the percentage of Toxicology Postmortem reports issued within 60 days of submission per submission year. The goal for the autopsy reports is to have 90% of reports issued within 90 days from examination and the goal of the Toxicology Laboratory is to complete 90% of cases within 60 days from submission.

INDIGENT BURIALS AND CREMATIONS

Bodies that are under the jurisdiction of the Coroner shall be delivered to the immediate family or the next of kin of the deceased. If after a diligent search, no family member or concerned party is found that is willing to claim the remains, pursuant to KSA 22a-215, Sedgwick County is required to provide final disposition for the bodies of unclaimed deceased persons. In accordance with this statute, a procedure has been established by the Center to facilitate the necessary arrangements regarding indigent cremations. The Center maintains a contract with a local mortuary service to handle the disposition of the remains.

As of 2016, the Center cremates all unclaimed bodies under its jurisdiction [Figure 7]. The cremains are retained indefinitely in a respectful manner.

Compared to 2014 there was an approximate 417% increase in the number of indigent burials and cremations dispositioned by the Center in 2023.

Indigent Burials and Cremations

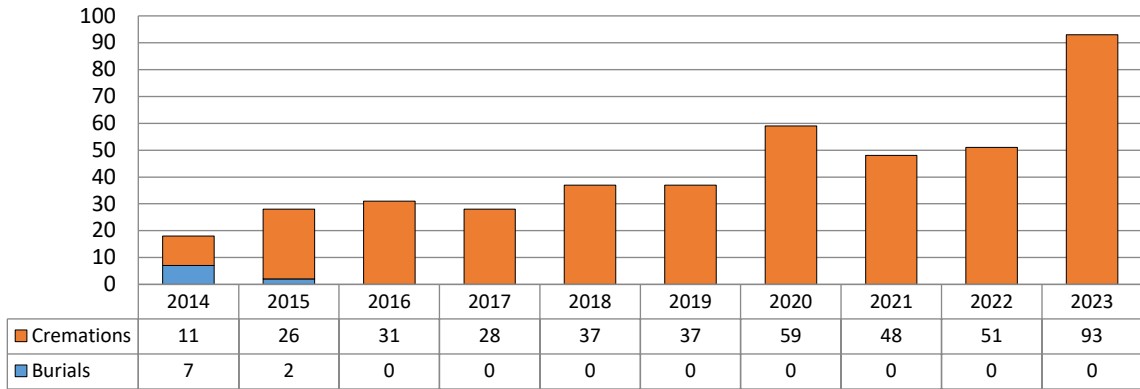


Figure 7: Number of Indigent Burials/Cremations for which the Center was responsible. In 2016, the County changed policy to cremation only for final disposition.

Cremation Permits

In the state of Kansas, the Coroner is also charged with the investigation of death if the body is to be cremated. The investigation involves confirmation that the death certificate is appropriately executed, and that no further circumstances exist which may have contributed to the death. This may involve interviews with medical personnel, families or other interested parties, and/or a review of medical records. If the cause of death is unclear or falls under the jurisdiction of the Coroner, a postmortem examination and issuance of a revised death certificate may be required prior to cremation. **Figure 8** illustrates the number of cremations were similar for 2022 and 2023; however, permits increased approximately 56.0% since 2014.

Annual Cremation Permits

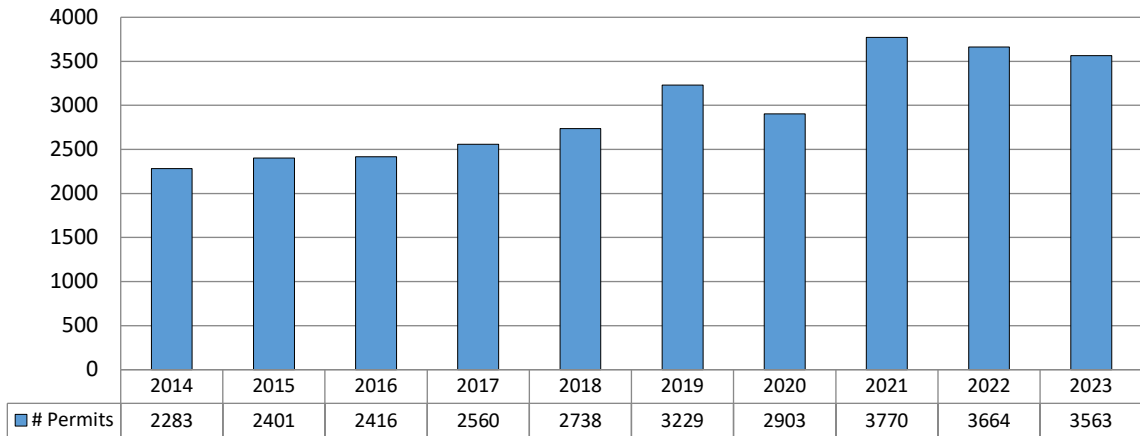


Figure 8: The number of cremation permits per year over a 10 year period.

CAUSE AND MANNER OF DEATH

Cause of Death

The cause of death is a term used to indicate the medical cause of death. It lists the disease(s) or injuries that caused death. Specific cause of death information is recorded on the death certificate and is entered into the Vital Statistics System of the State of Kansas.

The reason(s) why an accident occurred, a person took their own life, or why one person killed another person are not investigated by the medical examiner for the purpose of death certification.

Manner of Death

The District Coroner's Office is responsible for determining the manner of death, which is a way to categorize death as required by the Kansas Department of Health and Environment. The classifications of manner of death are natural, accidental, suicide, homicide, and undetermined.

Figure 9 shows the breakdown of the deaths by manner from all case types, including full autopsies, partial autopsies, external autopsies, and records reviews.

Homicides are deaths that result from injuries caused by the actions by another person. Homicides constituted 5.9% of the cases for 2023. The majority (83.9%) of these deaths resulted from gunshot wounds.

Suicides are defined as deaths that result from a purposeful action to end one's own life. In 2023, approximately 11.1% of the cases were certified as suicides, down slightly from 2022.

Approximately, 48.5% of deaths were certified as accidents, which are those that resulted from an unintentional event or chain of events. This category includes most motor vehicle accidents, falls, and accidental drug overdoses.

Natural deaths are those that are solely caused by natural disease and constituted approximately 30.0% of the cases. The most common cause of death in cases of sudden, unexpected natural death is coronary artery disease.

Cases that were classified as an undetermined manner of death constituted approximately 4.5% of the total caseload.

Manner of Death Per Examination Year

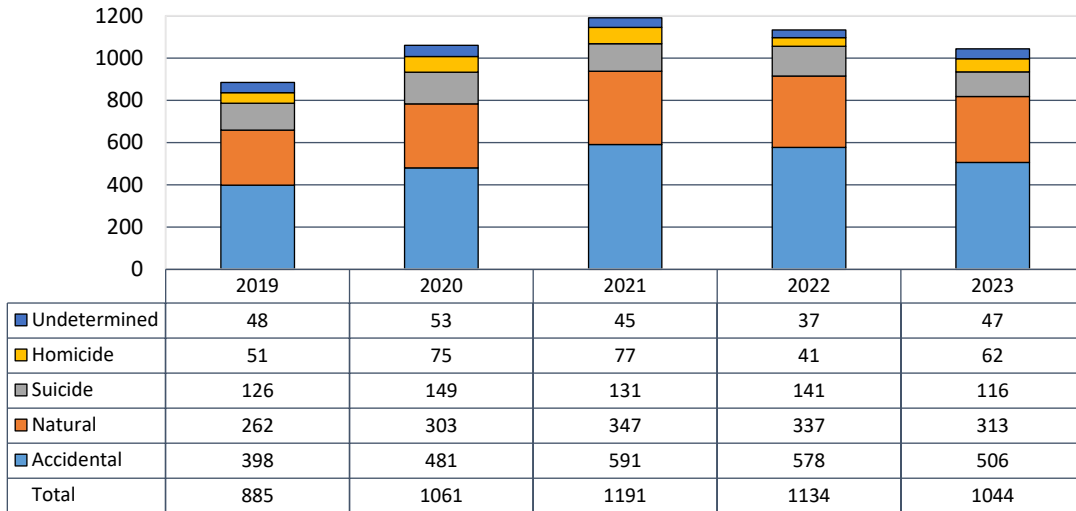


Figure 9: Count of each manner of death per examination year.

The manner of death (MOD) can be placed into two general categories, determined or undetermined. Figure 10 illustrates the percentages of these two categories for cases with a cause of death that is non-natural.

Determined vs. Undetermined MOD in Non-natural Death Cases

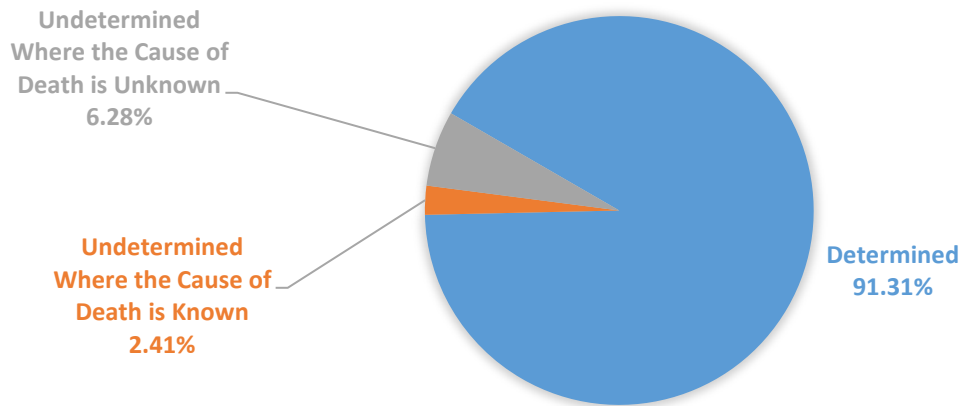


Figure 10: Percentage of determined versus undetermined manners of death.

Accidents

In 2023, there were 397 autopsied cases that were determined to have an accidental manner of death. **Table 1** illustrates that approximately 16.8% of all accidental deaths were related to motor vehicle accidents (MVA) and approximately 57.9% were overdoses/drug related.

Method of Death	Number of Deaths	Percentage of Total
<i>Overdose/Drug Related</i>	230	57.9
<i>Motor Vehicle</i>	67	16.8
<i>Medical Miscellaneous</i>	18	4.5
<i>Drowning</i>	14	3.5
<i>Fall</i>	12	3.0
<i>Blunt Force Trauma</i>	11	2.7
<i>Ethanol Toxicity</i>	9	2.2
<i>Thermal Injuries</i>	9	2.2
<i>Cardio Vascular Disease</i>	7	1.7
<i>Fire Exposure</i>	5	1.2
<i>CO Poisoning</i>	4	1.0
<i>Hypothermia</i>	3	0.7
<i>Hyperthermia</i>	2	0.5
<i>Suffocation Asphyxia</i>	2	0.5
<i>Environmental Exposure</i>	1	0.2
<i>Mechanical Restraint</i>	1	0.2
<i>Undetermined</i>	1	0.2
<i>Other</i>	1	0.2

Table 1: Number of accidental deaths and the respective percentage of each mechanism of injury for all accidental deaths.

Homicides

In 2023, there were 62 homicides that were examined by the District Coroner’s Office, an increase of approximately 51.2% from the prior year. As illustrated in **Figure 11**, most homicides originated within Sedgwick County. **Figure 12** and **Figure 13** classify 2023 homicide victims by sex and race.

Homicides by Jurisdiction

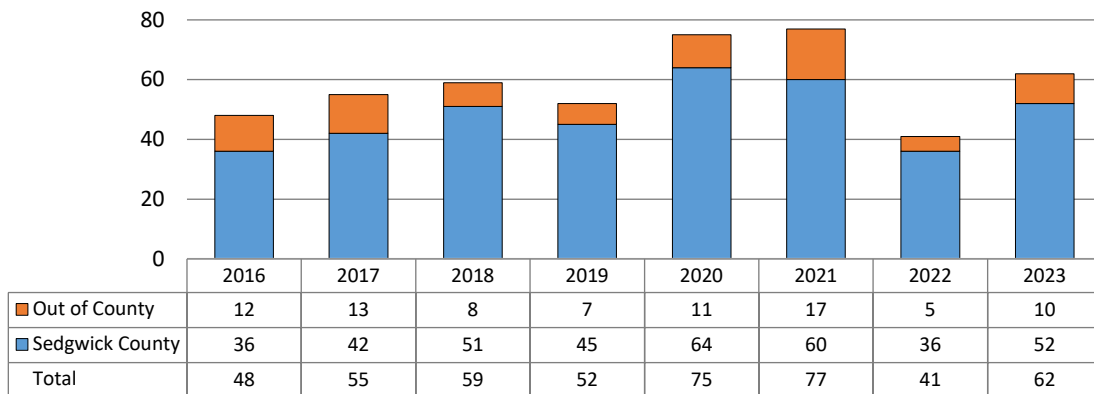


Figure 11: The number of homicides examined categorized as originating in Sedgwick County versus all other counties.

Figure 12 illustrates the percentage of homicides by decedent sex.

Homicides Categorized by Sex of Decedent

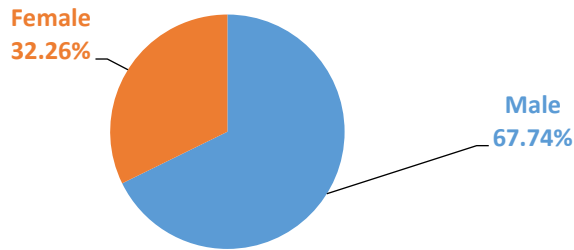


Figure 12: Percentage of homicides in 2023 categorized by sex of the decedent.

Figure 13 illustrates the percentage of homicides by race.

Homicides Categorized by Race of Decedent

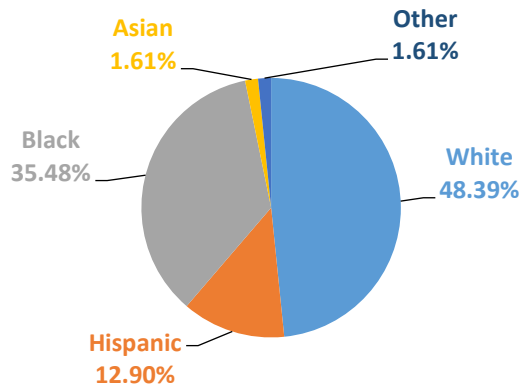


Figure 13: Percentage of 2023 homicides categorized by decedent race.

Figures 14 and 15 illustrate the number of homicides categorized by decedent sex and race over the past 9 years.

Male Homicides Categorized by Race

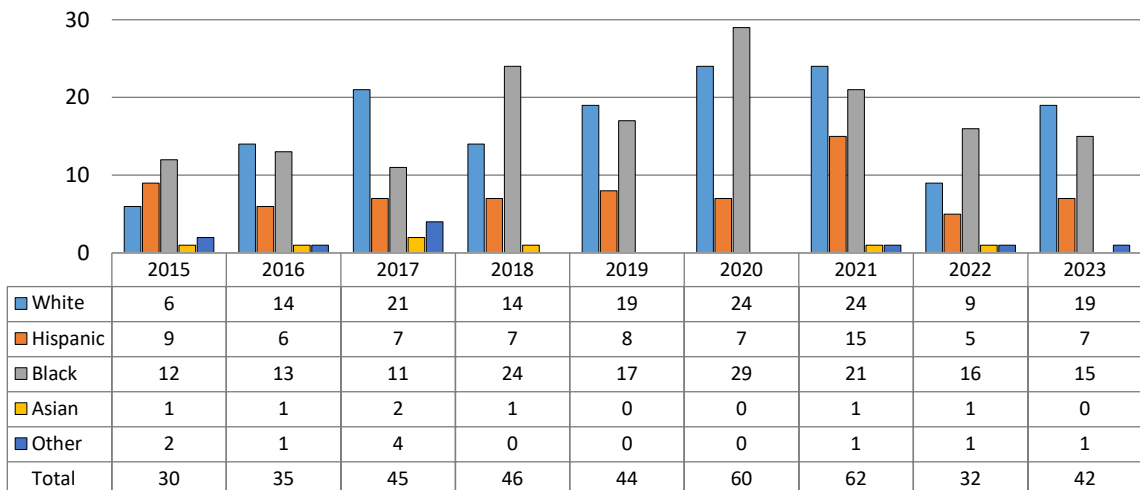


Figure 14: The number of males that died by homicide categorized by race over the past 9 years.

Female Homicides Categorized by Race

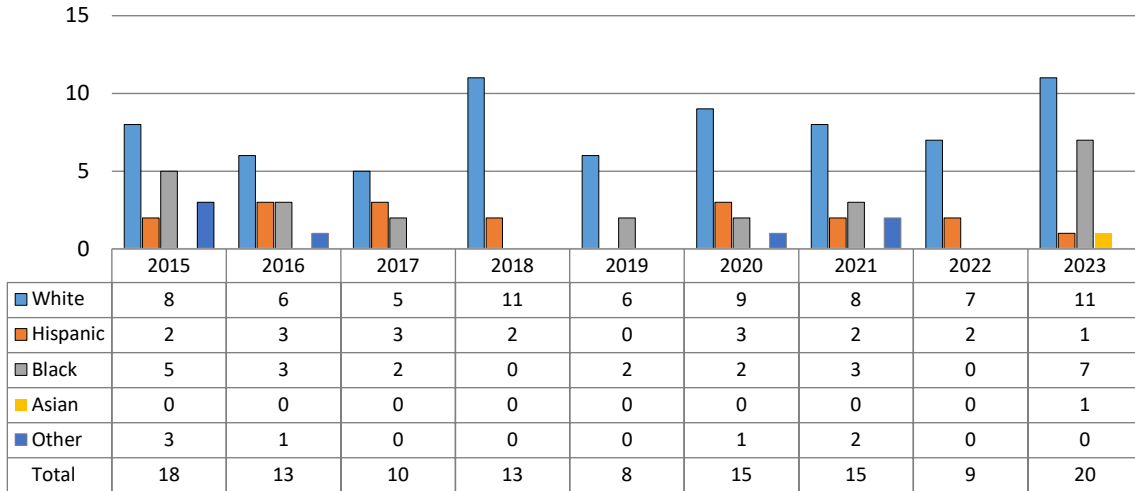


Figure 15: The number of females that died by homicide categorized by race over the past 8 years.

There were 62 homicide cases examined in 2023. **Figure 16** illustrates the number of cases categorized by age group. As depicted, most homicides involved decedents within the age group of 19-29 years old.

Homicides Examined Categorized by Age Group

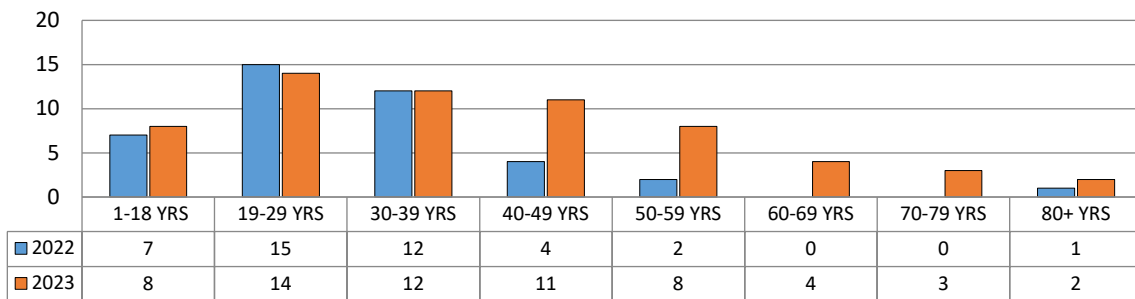


Figure 16: The number of homicides examined categorized by the decedent age.

Figure 17 illustrates the percentage of homicides occurring in 2023 categorized by what was determined to be the cause of death. As depicted, most homicides were caused by the use of firearms.

Homicides Categorized by Cause

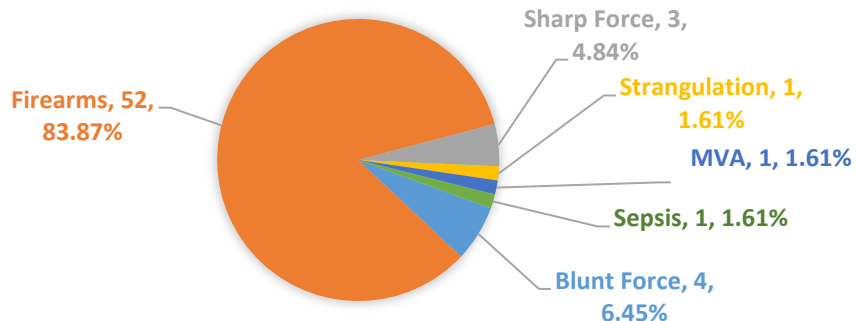


Figure 17: Homicides by cause.

Suicides

There were 116 cases were certified as suicide occurring in 2023, compared to 140 in 2022. **Figure 18** shows a range of 109 to 150 of total suicides, representing various suicide rates, over the past nine years.

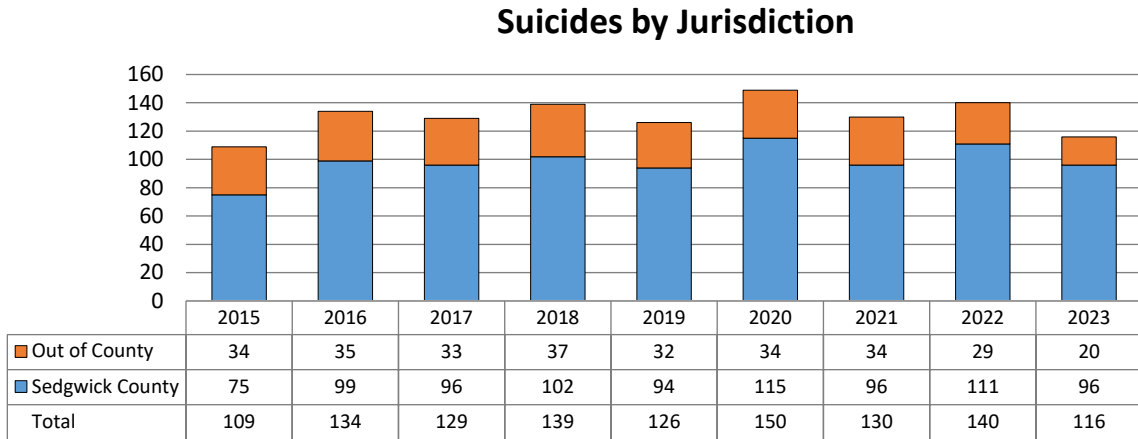


Figure 18: Suicides by county jurisdiction (Sedgwick County vs. Out of County).

Figure 19 provides the percentage of suicides by gender. In 2023, males committed approximately 75.8% of suicides and females committed 23.2%.

Suicides by Categorized by Decedent Sex

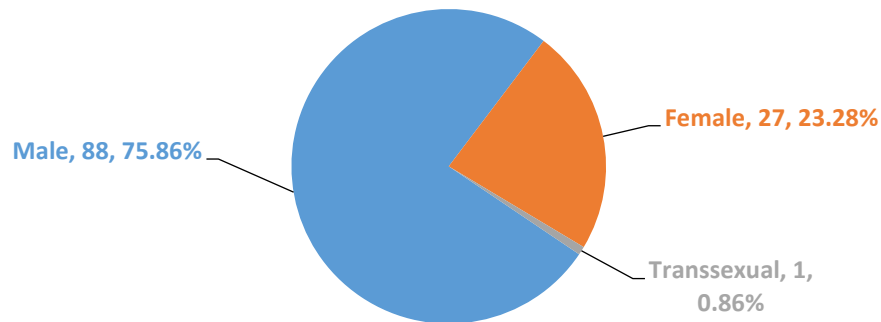


Figure 19: Percentage of suicides categorized by decedent sex.

Figure 20 provides the percentage of suicides by race. The race that committed the greatest percentage of suicides is White (74.1%).

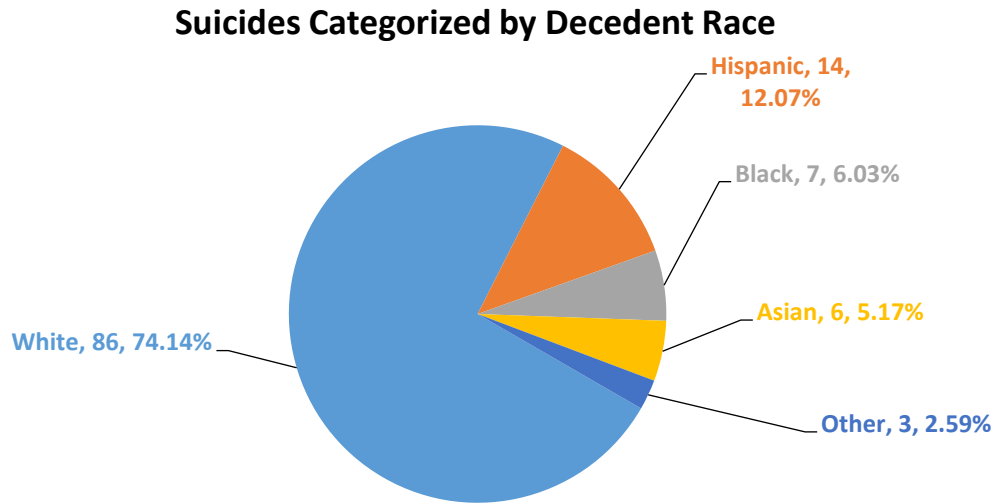


Figure 20: Suicide percentages categorized by race.

Figures 21 and 22 provide the number of suicides of each males and females, broken down by race.

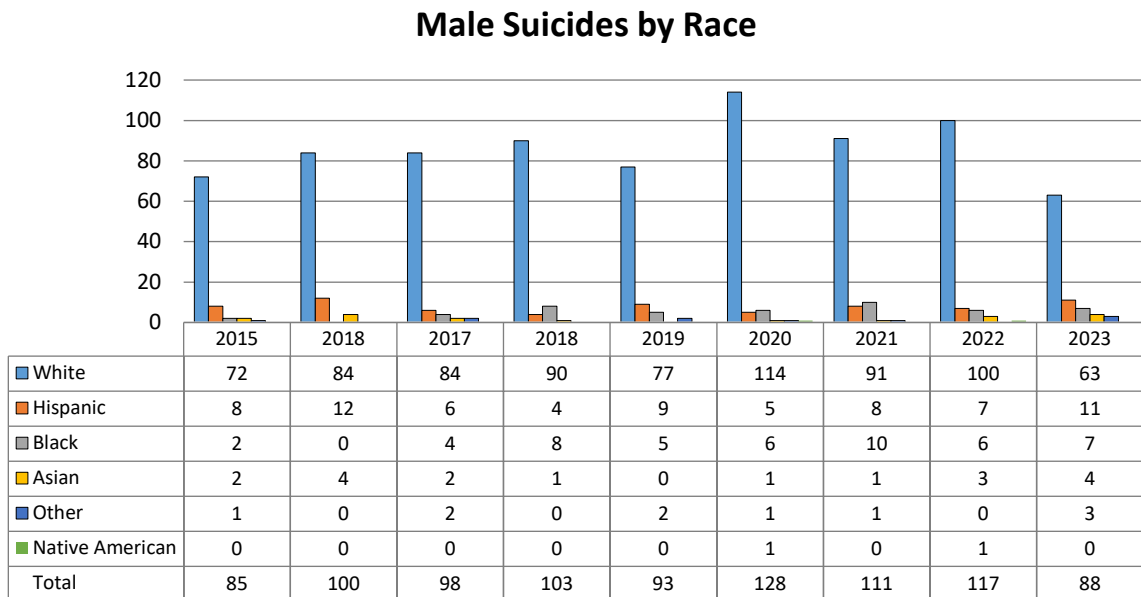


Figure 21: Number of suicides committed by males categorized by race per year of death.

Female Suicides by Race

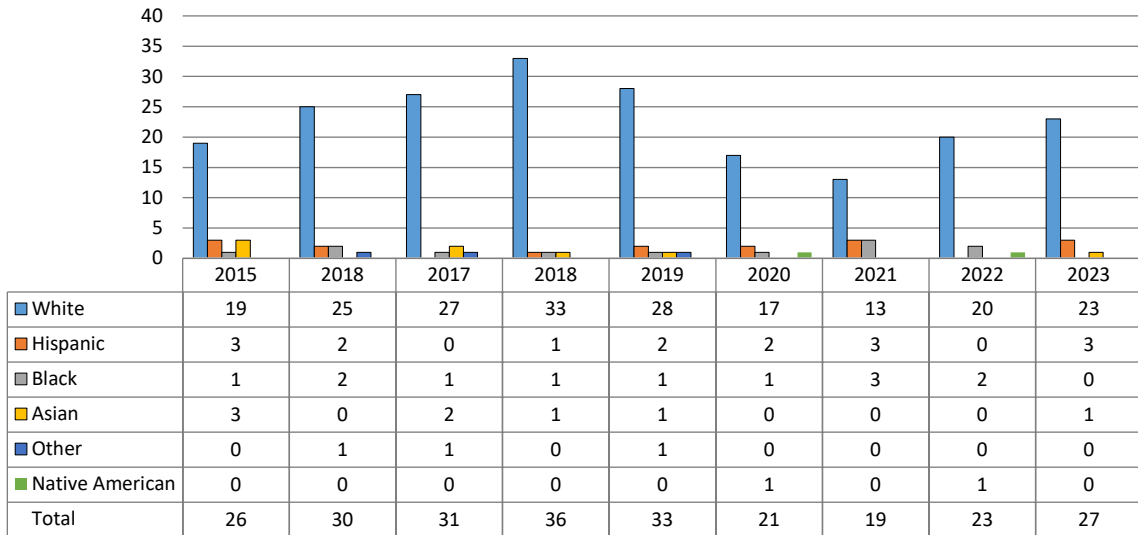


Figure 22: Number of suicides committed by females categorized by race per year of death.

As shown in **Figure 23**, most suicides were committed by people between the ages of 19 to 39.

Suicides by Age Group

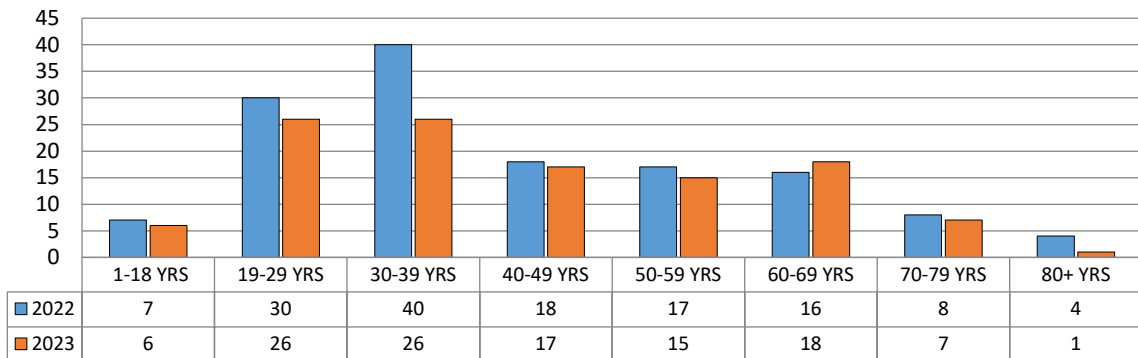


Figure 23: The number of suicides categorized by the decedent age.

In 2023, the most common suicide methods were use of firearms (75) followed by asphyxia (hanging, strangulation, suffocation, or CO poisoning) (29) [**Figure 24**].

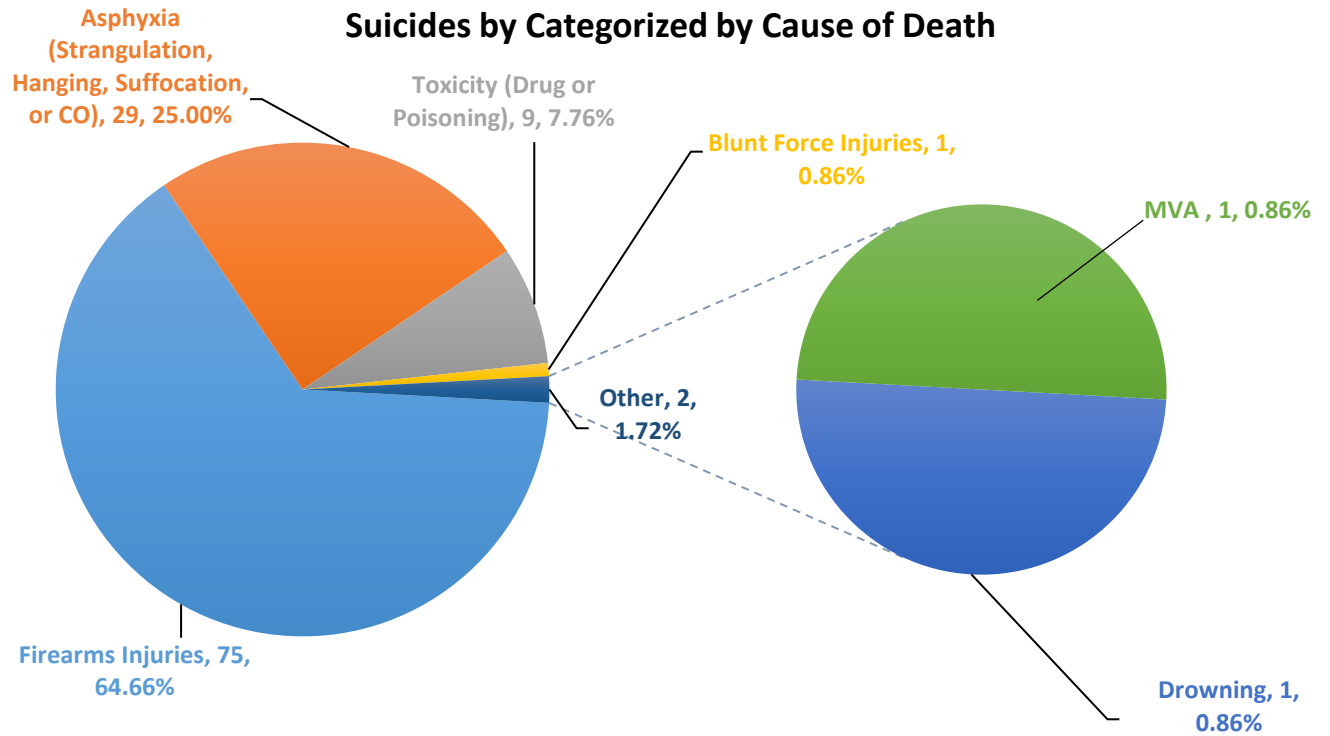


Figure 24: Suicides by cause.

TOXICOLOGY

In 2023, there were 911 pathology cases submitted to the toxicology laboratory for analysis. The chart shows a range of 728 in 2017 to 975 in 2022[Figure 25].

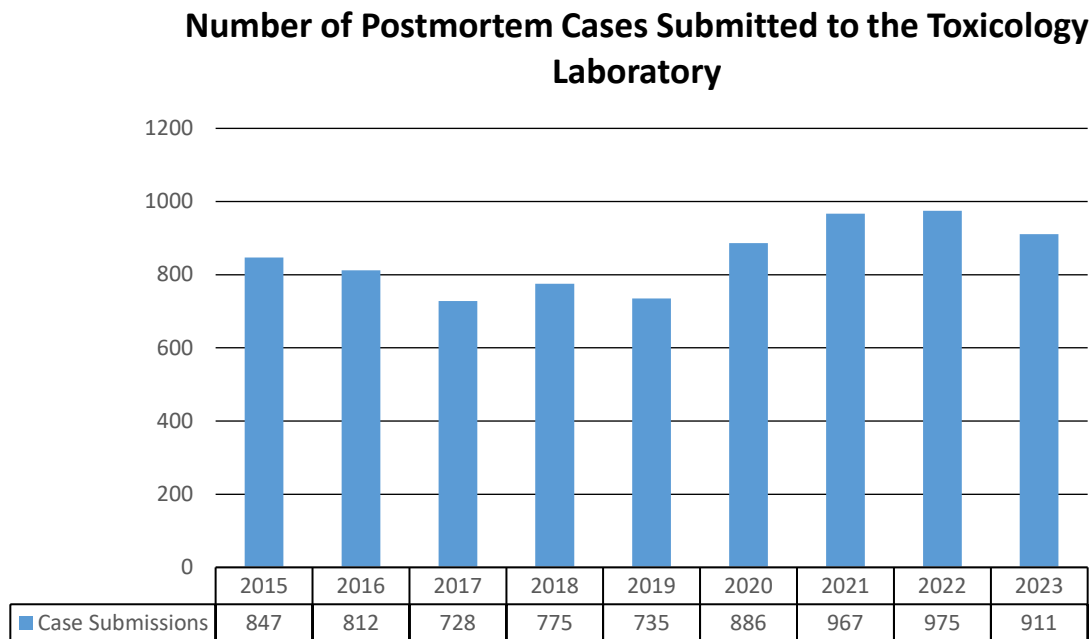


Figure 25: Number of Postmortem case submitted to the Toxicology Laboratory since 2015.

Drivers

In 2023, there were specimens from 65 postmortem cases submitted for analysis to the toxicology laboratory from decedents of motor vehicle related deaths. [Figure 26] depicts the results of testing for ethanol (EtOH) and drugs.

Twenty-five (25) decedents from motor vehicle related deaths tested positive for drugs with no EtOH detected, 9 were positive for EtOH with no drugs detected, 6 were positive for EtOH and drugs, and in 25 decedents neither EtOH nor drugs were detected. Additionally, there were 2 vehicle related cases that did not undergo toxicological testing.

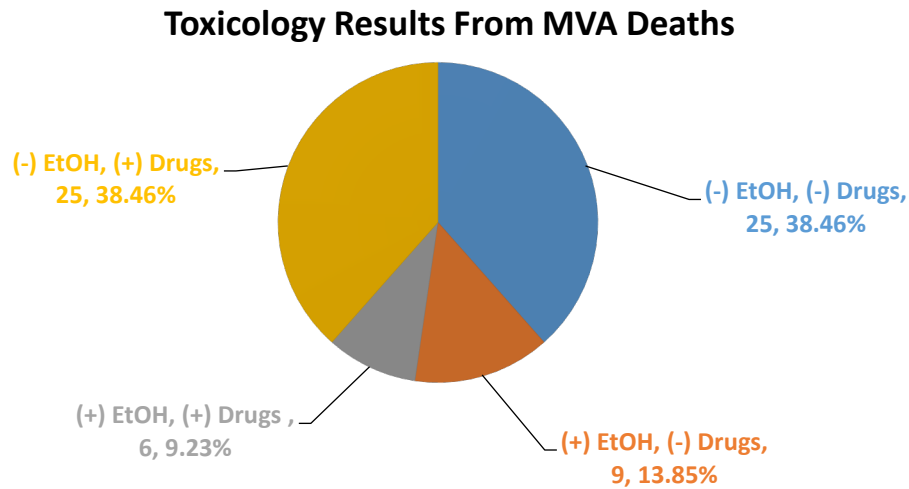


Figure 26: Ethanol and drug results from fatally injured drivers and/or occupants.

Of the EtOH positive blood specimens [Figure 27], 5 resulted in values in the range of 0.24 gm% or higher, 4 cases fell into the 0.16 to 0.23 gm% range, 2 cases were in the 0.08 to 0.15 gm% range, and 4 cases tested below 0.08 gm%. The highest blood alcohol result was 0.426 gm%.

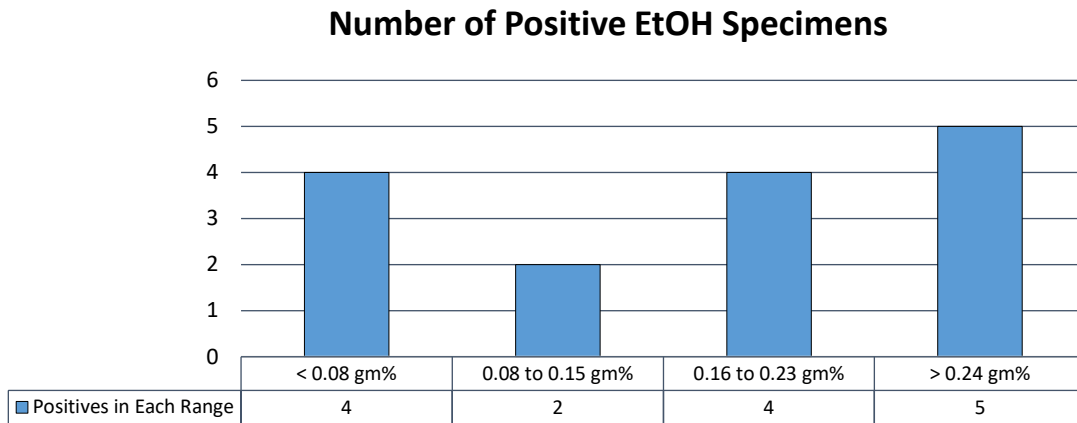


Figure 27: Illustrates the number of positive EtOH specimens within categorized as below the legal limit (< 0.08 gm%), above the legal limit (0.08 to 0.15 gm%), twice the legal limit (0.16 to 0.23 gm%), and three times or more over the legal limit (> 0.24 gm%).

Drug Related Deaths

Drug related deaths is a general term for deaths caused by drug use. These deaths may include, but not necessarily limited to, overdoses, deliberate poisonings, accidental poisonings, suicides, health issues related to drug use, deaths due to accidents, or other deaths where a drug is detected in a Toxicology Postmortem specimen.

In drug related deaths, it is very common for the Toxicology Laboratory to detect opioids, methamphetamine, and/or a benzodiazepine in the specimens collected at autopsy or the hospital. These drugs are especially common in cases determined to be overdoses, although they are not necessarily detected in every case.

Of particular interest for public health and public safety are overdose deaths and other death types that had either an opioid, methamphetamine, or a benzodiazepine detected. Information about these are provided below.

Overdoses

Overdose deaths are a type of drug related death that can be either accidental or intentional. In 2023, there were a total of 243 overdose fatalities [Figure 28], which equates to an approximate 89.8% increase since 2015. However, these case types in 2023 decreased by approximately 17.0% compared to 2022 [Figure 28].

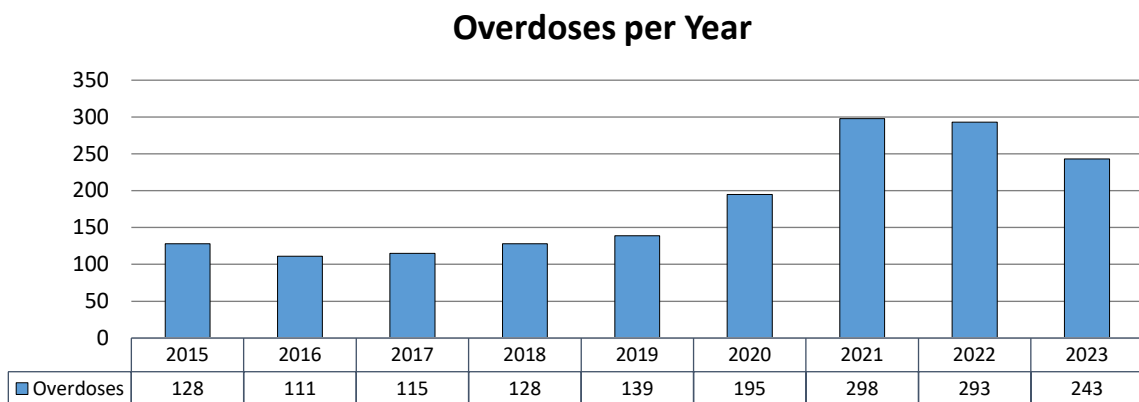


Figure 28: The number of certified overdose deaths for the past 8 years.

Table 2 illustrates the count of overdose deaths in 2023 within various age groups. The greatest number of overdose deaths occurred in the 30 to 49 year old age groups.

	Age Group	Number of Deaths (All Counties)	Number of Deaths (Sedgwick County)
2023	0-18	12	11
	19-29	25	23
	30-39	61	51
	40-49	60	46
	50-59	47	43
	60-69	33	29
	70-79	3	3
	80-89	2	2

Table 2: Illustrates the number of overdose deaths within each age group for all cases examined and how many of those were from Sedgwick County.

Opioid Positive Postmortem Cases

Deaths where an opioid was detected were at an all-time high in 2022 with a total of 298 (previous high was 259 in 2021); however, cases trended downward in 2023 with a total of 256. The range of opioid positive postmortem cases over the past nine years is 136 to 298 with an average of approximately 183. **Figure 29** provides the count of opioid related deaths with the number of fentanyl positive cases being highlighted.

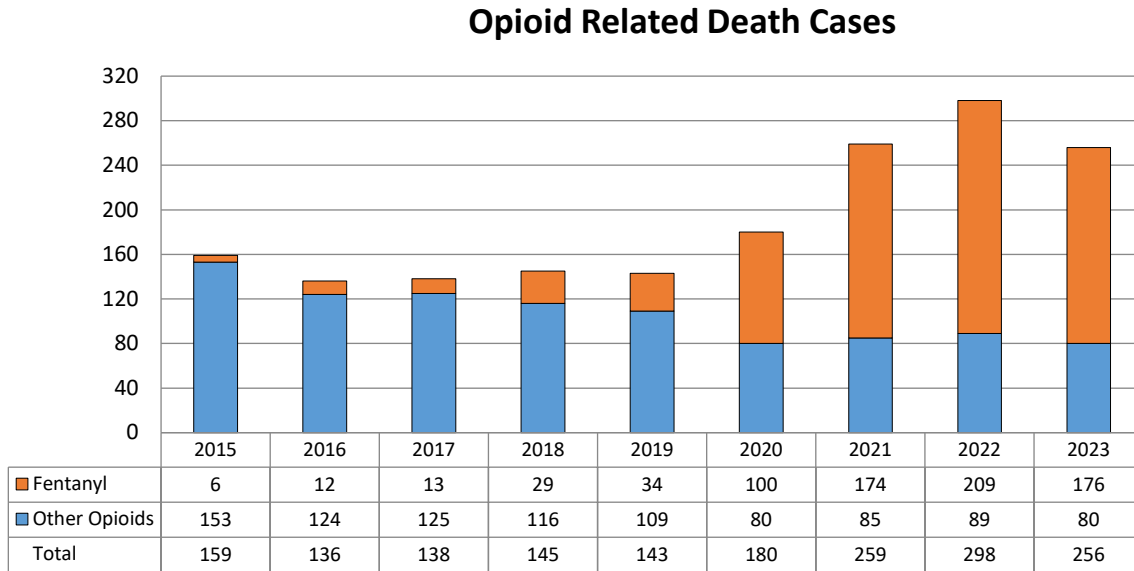


Figure 29: Opioids detected in Postmortem Toxicology cases. The graph depicts all opioid positive cases with the number of fentanyl positive cases being highlighted.

Table 3 illustrates the count of fentanyl positive drug related postmortem cases in 2023 within each age group. The greatest number of deaths in which fentanyl was detected occurred in the 30 to 49 year old age groups.

	Age Group	Number of Deaths (All Counties)	Number of Deaths (Sedgwick County)
2023	0-18	11	10
	19-29	17	16
	30-39	44	37
	40-49	41	33
	50-59	26	23
	60-69	11	10
	70-79	3	3

Table 3: Illustrates the number of fentanyl positive drug related postmortem cases within each age group for all cases examined and how many of those were from Sedgwick County.

Table 4 illustrates the count of opioid positive postmortem cases per non-natural manner and cause of death. Additionally, there were 40 cases determined to be natural that the decedent had an opioid detected in their toxicology specimens.

	Manner of Death	Cause of Death	Number of Deaths
2023	Accidental	OD Substance Toxicity	168
	Accidental	Medical Miscellaneous	8
	Accidental	MVA	7
	Accidental	Blunt Force Injuries	3
	Accidental	Fall	2
	Accidental	Thermal Injuries	2
	Accidental	Drowning	1
	Accidental	Hypothermia	1
	Homicide	Firearms Injuries	3
	Homicide	MVA	1
	Homicide	Sepsis	1
	Suicide	Firearms Injuries	8
	Suicide	OD Substance Toxicity	3
	Suicide	Hanging Asphyxia	1
	Undetermined	Undetermined	4
	Undetermined	OD Substance Toxicity	2
	Undetermined	Medical Miscellaneous	1

Table 4: Number of non-natural opioid positive postmortem cases categorized by manner of death and cause of death.

Methamphetamine Positive Postmortem Cases

In 2023, there were 177 postmortem cases that tested positive for methamphetamine. The range of methamphetamine positive postmortem cases over the past eight years is 71 in 2015 to 199 in 2022 .

Table 5 illustrates the count of methamphetamine related deaths per non-natural manner and cause of death. Additionally, there were 5 cases determined to be natural where methamphetamine was detected in the decedent’s toxicology specimens.

	Manner of Death	Cause of Death	Number of Deaths
2023	Accidental	OD Substance Toxicity	118
	Accidental	MVA	12
	Accidental	Medical Miscellaneous	7
	Accidental	Drowning	3
	Accidental	Blunt Force Injuries	1
	Accidental	Thermal Injuries	1
	Accidental	Cardiovascular Disease	1
	Accidental	CO Poisoning	1
	Homicide	Firearms Injuries	8
	Homicide	Sharp Force Injuries	1
	Suicide	Hanging Asphyxia	7
	Suicide	Firearms Injuries	7
	Suicide	OD Substance Toxicity	2
	Undetermined	OD Substance Toxicity	2
	Undetermined	Firearms Injuries	1

Table 5: The number of non-natural methamphetamine positive postmortem cases categorized by manner of death and cause of death.

Benzodiazepine Positive Postmortem Cases

There were a total of 54 benzodiazepine positive postmortem cases that had a non-natural manner of death. The range of benzodiazepine positive postmortem cases over the past nine years is 38 in 2015 to 118 in 2022.

Table 6 illustrates the count of benzodiazepine related deaths per non-natural manner and cause of death. Additionally, there were 10 cases determined to be natural where a benzodiazepine was detected in the decedent's toxicology specimens.

	Manner of Death	Cause of Death	Number of Deaths
2023	Accidental	OD Substance Toxicity	26
	Accidental	Blunt Force Injuries	3
	Accidental	Medical Miscellaneous	3
	Accidental	MVA	3
	Accidental	Ethanol Toxicity	2
	Accidental	Drowning	2
	Accidental	Hyperthermia	1
	Accidental	Fall	1
	Homicide	Firearm Injuries	1
	Suicide	Hanging Asphyxia	1
	Suicide	Firearms Injuries	6
	Suicide	OD Substance Toxicity	2
	Undetermined	Undermined	3

Table 6: The number of non-natural benzodiazepine positive postmortem cases categorized by manner of death and cause of death.