REGIONAL FORENSIC SCIENCE CENTER

Pathology Division
2016 Annual Report

Timothy P. Rohrig, Ph.D. - Director

Timothy S. Gorrill, M.D., Ph.D. - District Coroner-Chief Medical Examiner

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 the Autopsy Service.

As mandated by law, the District Coroner has the responsibility for investigating deaths within Sedgwick County that are a result of violence, unlawful means, suddenly when in apparent health, not regularly attended by a physician, any suspicious or unusual manner, when in police custody, or 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.

Over the last decade, the number of cases reported annually to the office has averaged 3,050, with a steady increase year after year. There has been greater than a one and half fold increase in the number of reported cases and approximately a two and half fold increase in the number of required examinations and medical records review since 1998.

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

PATHOLOGY LEADERSHIP

District Coroner-Chief Medical Examiner
Timothy S. Gorrill, MD, PhD

Chief Medical Investigator
Shari L. Beck, F-ABMDI

COUNTIES SERVED

In 2016 [Figure 1], the majority of service provided was for Sedgwick County; however, the Center does provide on a fee for service basis, autopsy examinations for many of the counties in the southcentral region of the state.

Figure 1 The Pathology Division provided service to Sedgwick County and 22 other counties in the state of Kansas.

DISTRIBUTION OF CASES: IN-COUNTY VS OUT-OF-COUNTY

The Pathology Division serves as a resource to other counties in the state of Kansas. In 2016, 25% of the examinations were performed for other counties [Figure 2]. Overall, In-County cases have shown a rise over the last 10 years.

In-County vs. Out-Of-County Postmortem Examinations

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Out-of-County	272	292	262	294	257	226	224	252	254	223
In-County	491	484	471	496	483	506	556	651	644	654
% SG County	64.4%	62.4%	64.3%	62.8%	65.3%	69.1%	71.3%	72.1%	71.7%	74.6%

Figure 2 Examinations include Full and Partial Autopsies, External Examinations, Non-human Skeletal Remains, and Records Reviews.

MEDICAL INVESTIGATIONS

The Pathology division has a Chief Medical Investigator and four Medical Investigators. The Medical Investigators are on duty year round, twenty-four hours a day, seven days a week. The Medical Investigator serves as the “eyes” and “ears” of the Coroner. The investigators triaged 3454 reported deaths. The District Coroner accepted jurisdiction or assisted in 877 cases [Figure 3] of the reported deaths. On average, over the last 10 years, accepted cases constitute 26% of the total number reported to the office.

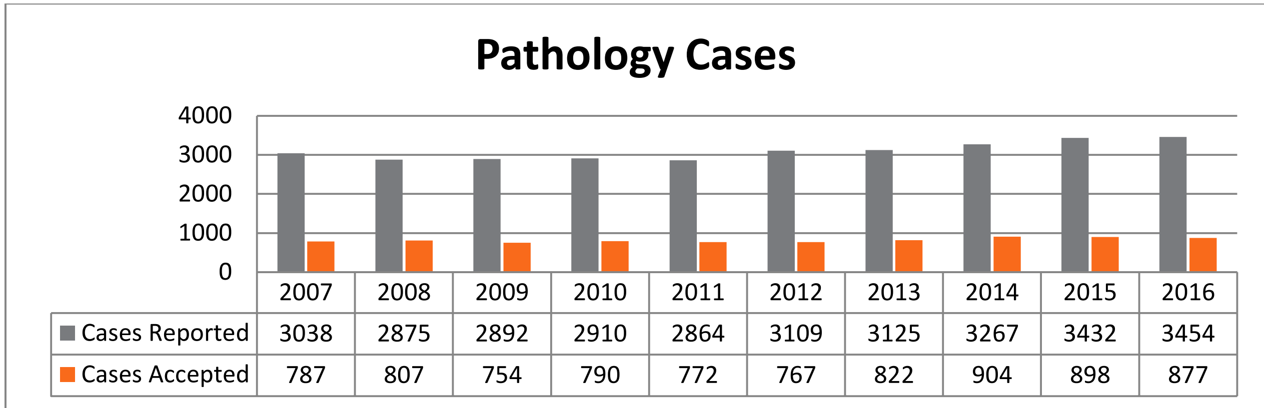


Figure 3 Records Reviews, Autopsies, Partial Autopsies, External Examinations, and Non-human Skeletal Remains.

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.

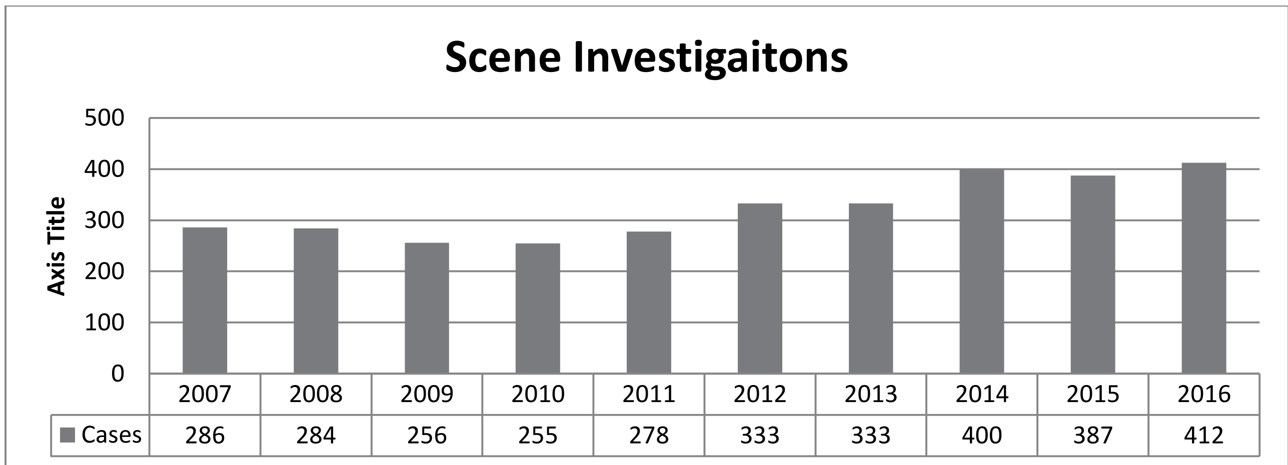


Figure 4 Number of scenes that Medical Investigators worked.

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 K.S.A. 22a-215, Sedgwick County is required to decently bury/cremate 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 burials/cremations. The Center maintains a contract with a local mortuary service to handle the disposition of the remains.

Sedgwick County will not be a guarantor of burial/cremation expenses for any claimed body. As of 2015, the Center will cremate all unclaimed bodies under its jurisdiction. The cremains are retained indefinitely and in a respectful manner.

Figure 5 reflects the disposition of indigent decedents.

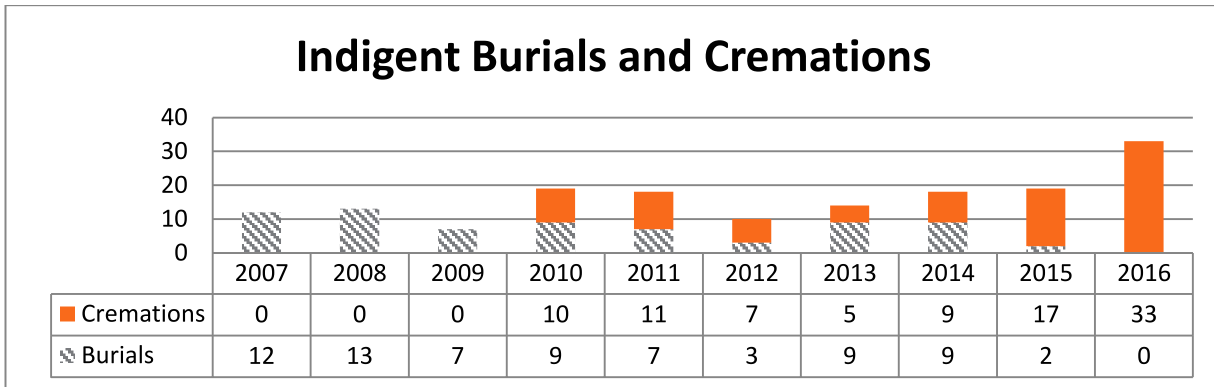
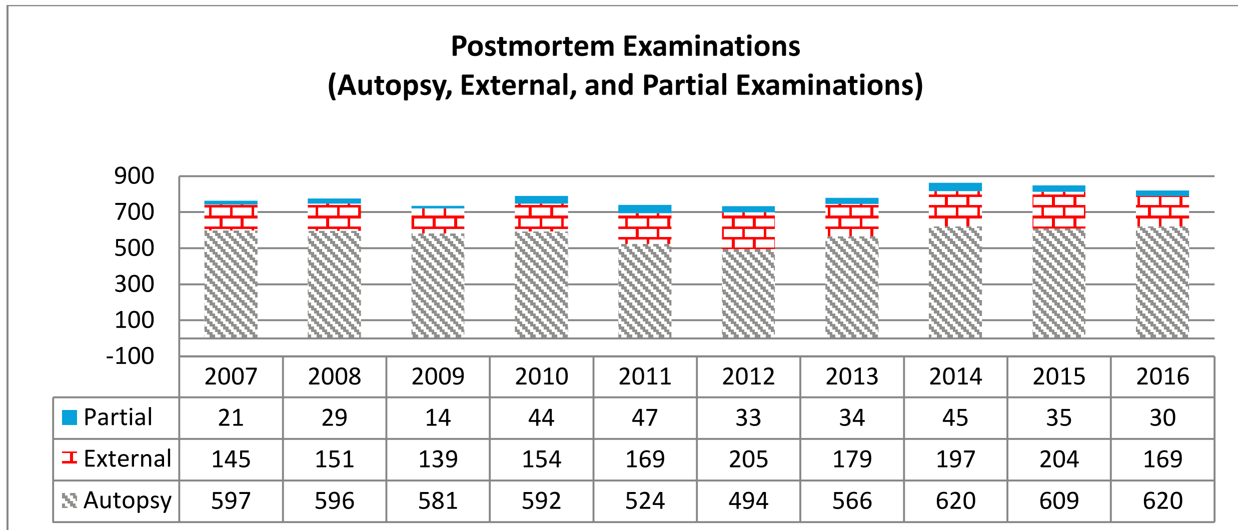


Figure 5 Number of Indigent Burials/Cremations for which the Center took responsibility.

CASE SUBMISSIONS

In 2016, 3454 deaths from Sedgwick County and referring counties were reported. For Sedgwick County deaths, analysis of the scene, circumstances of the death and the decedent's medical history were key factors in determining coroner's jurisdiction. Coroner's jurisdiction for the referring counties was determined by the referring county Coroner. Jurisdiction was assumed or assistance was provided in 877 cases, of which 620 were complete autopsies. Figure 6 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, and medical history and the exam are sufficient to certify the death.

The District Coroner also performed postmortem examinations for other counties within the state of Kansas [See Figure 2].

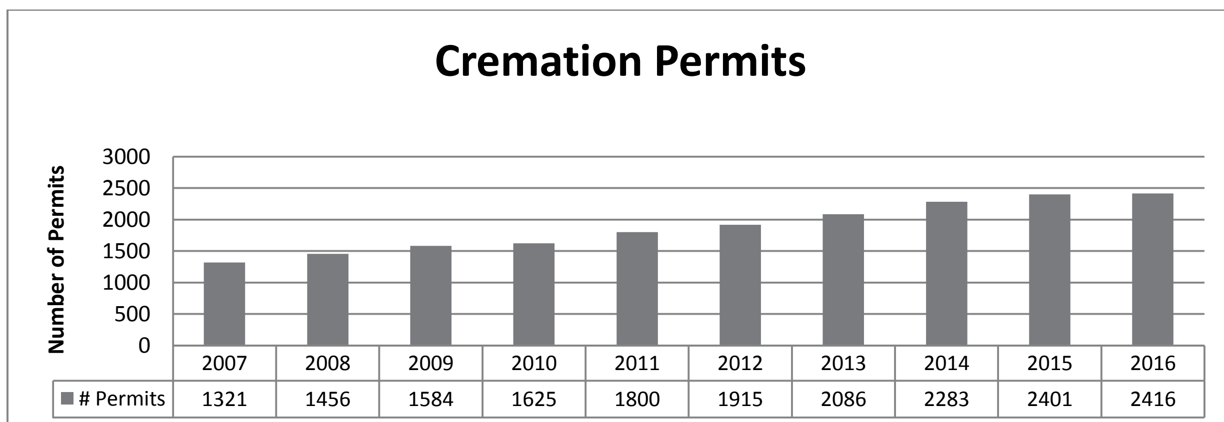


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Partial	21	29	14	44	47	33	34	45	35	30
External	145	151	139	154	169	205	179	197	204	169
Autopsy	597	596	581	592	524	494	566	620	609	620

Figure 6 Compared to 2007, there was a 4% increase in the number of Full Autopsies in 2016.

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. Figure 7 illustrates the steady increase of cremation permits signed by the Coroner.

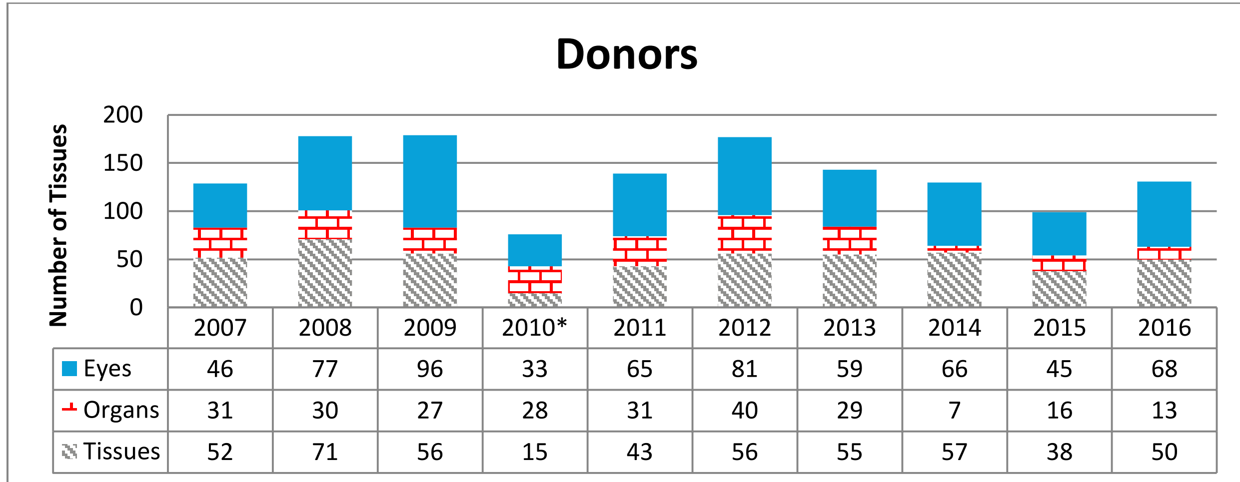


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
# Permits	1321	1456	1584	1625	1800	1915	2086	2283	2401	2416

Figure 7 The number of cremation permits is steadily increasing year after year.

TISSUE DONATIONS

The Pathology Division works in cooperation with procurement agencies [Kansas Eye Bank, Midwest Transplant Network, and Heartland Lions Eye Bank] to facilitate organ and tissue donation in cases where the death falls under the jurisdiction of the Coroner.



	2007	2008	2009	2010*	2011	2012	2013	2014	2015	2016
Eyes	46	77	96	33	65	81	59	66	45	68
Organs	31	30	27	28	31	40	29	7	16	13
Tissues	52	71	56	15	43	56	55	57	38	50

Figure 8 *Drop in number for 2010 is a reflection of inability to track numbers due to lack of in-house procurement associated with remodeling of the tissue suite.

MANNER OF DEATH

In addition to determining cause of death, the District Coroner is responsible for determining the manner of death. Figure 9 shows the breakdown of the deaths by manner. Homicides are deaths that result from injuries that are a result of the actions by another person. Homicides constituted 5.6% of the cases for 2016. The majority (81.3%) of these deaths resulted from gunshot wounds [Figure 10]. Suicides are defined as deaths that result from a purposeful action to end one's own life. In 2016, 15.2% of the cases were certified as suicides. Approximately, 43% 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 30.3% 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 5.6% of the total caseload.

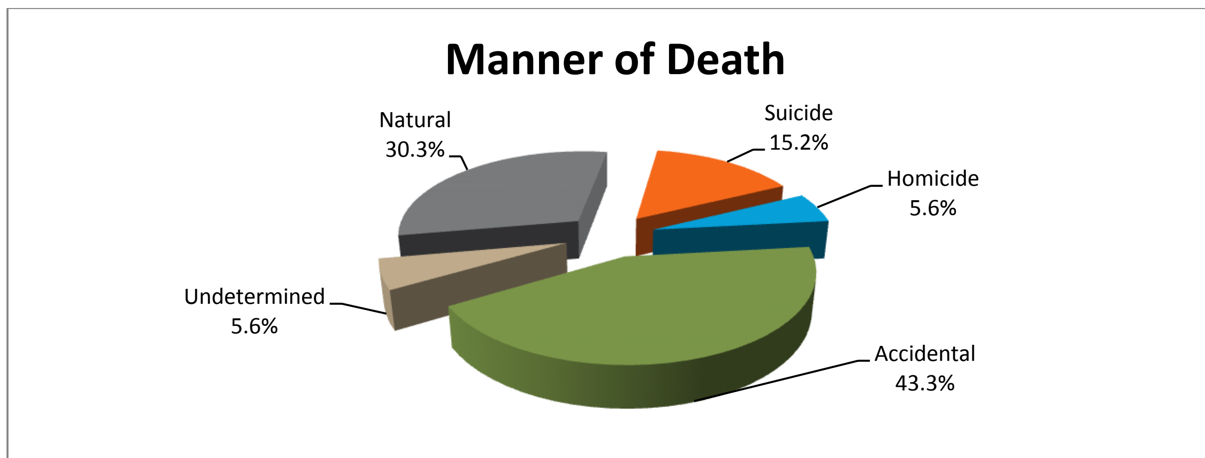


Figure 9 Accidental was the leading percentage of manner of death reported by the Center.

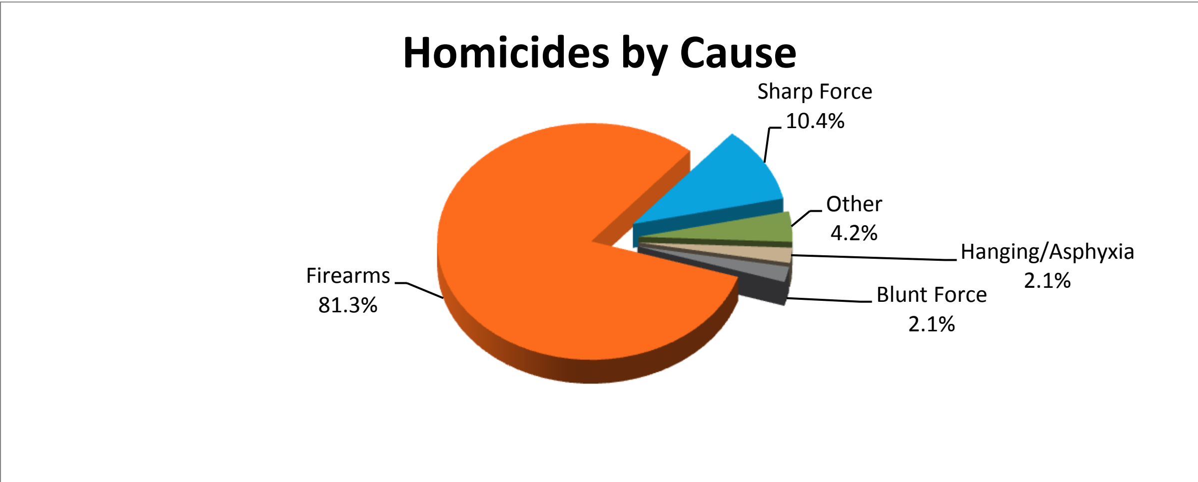


Figure 10 Firearms were utilized the greatest percentage of the time in homicides.

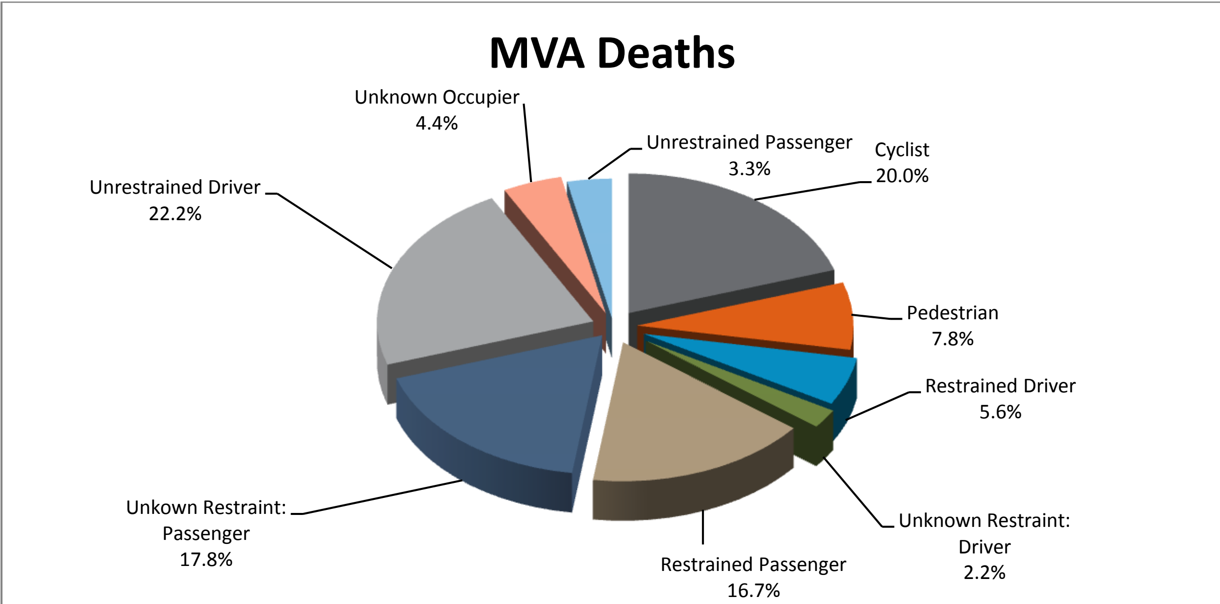


Figure 11 Unrestrained drivers and cyclists accounted for the largest percentage of MVA deaths.

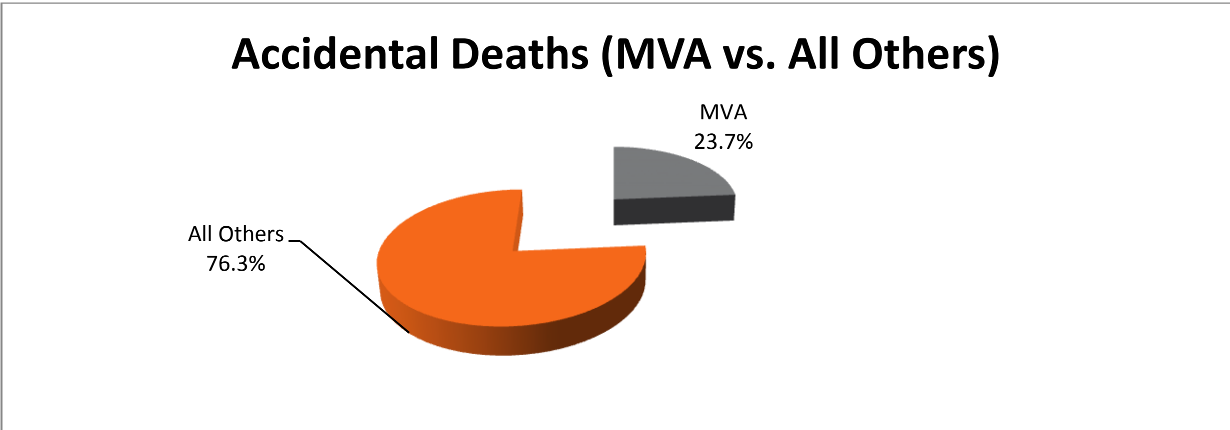


Figure 12 MVA deaths accounted for 24% of all accidental deaths.

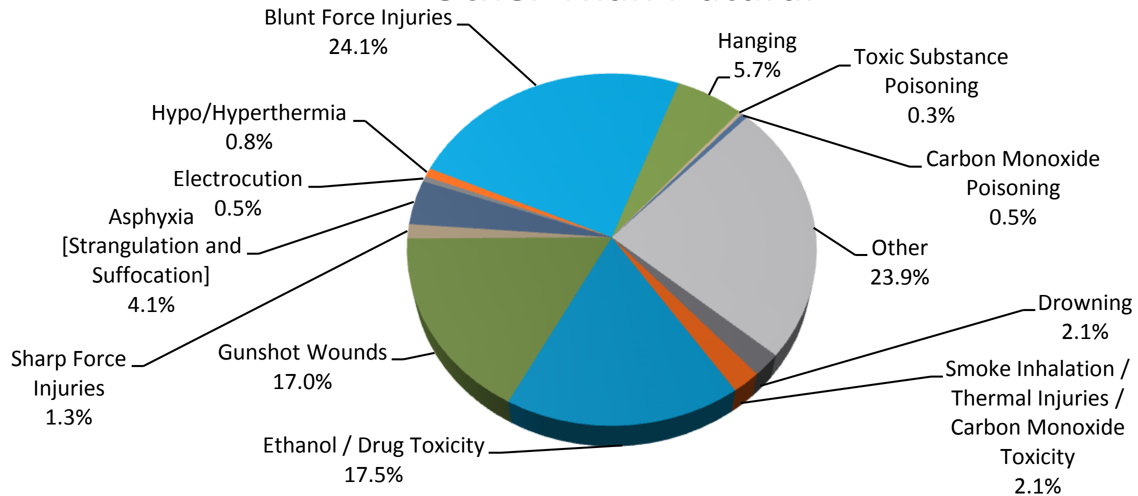


Figure 13 Blunt Force Injuries was the leading cause of non-natural deaths.

SUICIDES

In 2016, 134 cases were certified as suicide. The vast majority of suicides were white male adults [Figure 14, Figure 15, and Figure 16].

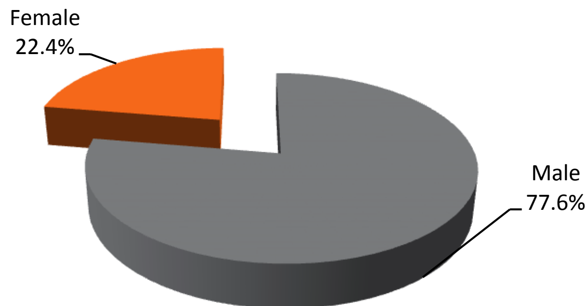


Figure 14 Males committed the greatest percentage of suicides.

Figure 15 The race that committed the greatest percentage of suicides is White, with Asians being the lowest percentage reported.

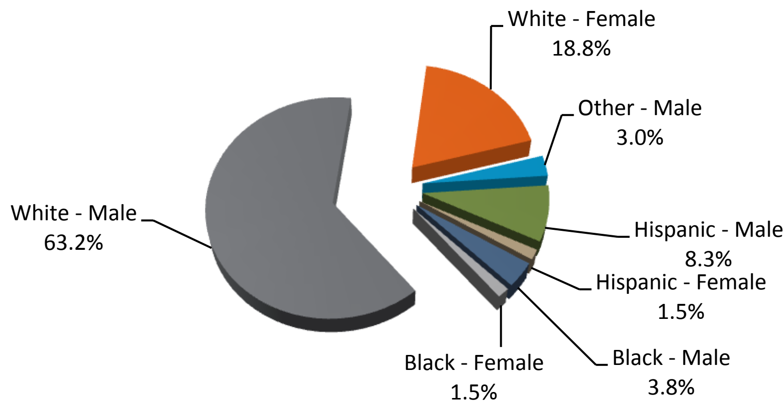
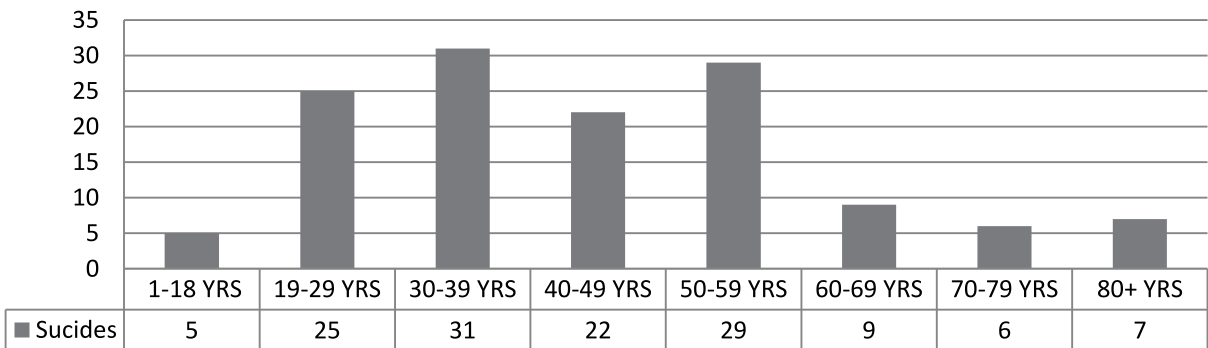


Figure 16 Males in general and white males in particular committed the greatest percentage of suicides



	1-18 YRS	19-29 YRS	30-39 YRS	40-49 YRS	50-59 YRS	60-69 YRS	70-79 YRS	80+ YRS
Sucides	5	25	31	22	29	9	6	7

Figure 17 Most suicides were committed by people between the ages of 30 and 39.

In 2016, the predominate suicide methods were firearms, hanging, and drug-related deaths.

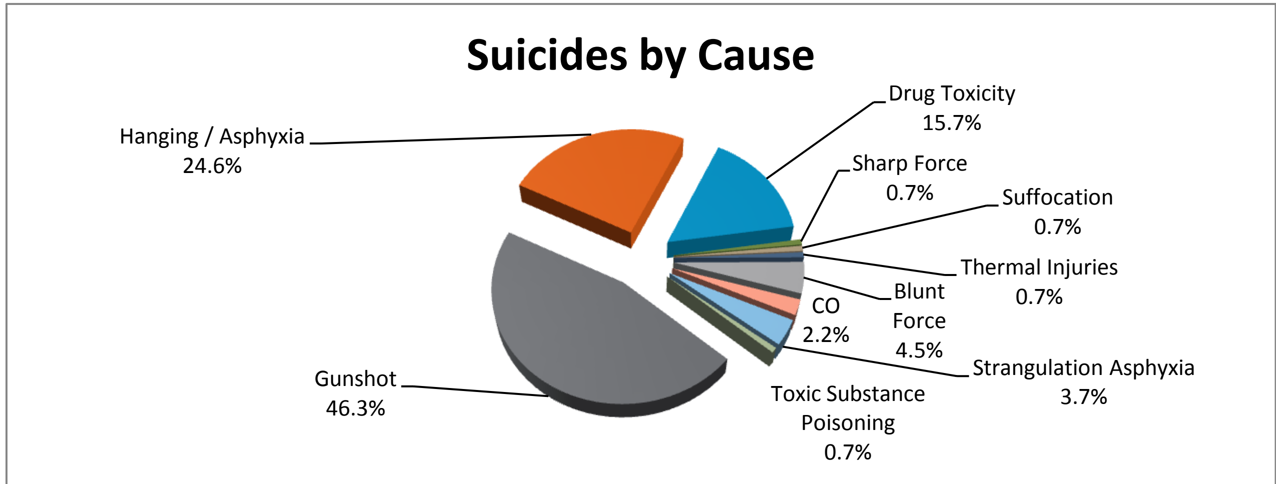


Figure 18 Most suicides are committed by the use of a firearm.

TOXICOLOGY

In 2016, there were 826 pathology cases submitted to the toxicology laboratory. Not all cases require toxicological analyses [Fig. 19]; the majority of these are associated with extended hospital stays following the initial event.

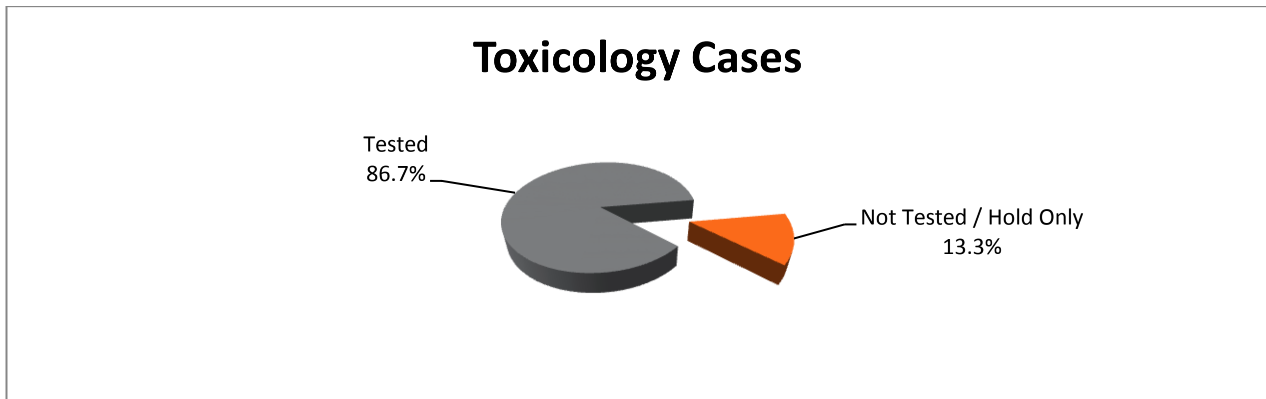


Figure 19 Seven hundred sixteen (716) of the eight hundred twenty-six (826) pathology cases submitted to the toxicology laboratory were analyzed.

In 2016, there were specimens from twenty-six (26) post-mortem cases submitted for testing to the toxicology laboratory from drivers of motor vehicle deaths. [Figure 20] depicts the results of testing for Ethanol (EtOH), Tetrahydrocannabinol (THC) / Carboxytetrahydrocannabinol (THCA), and other drugs. Approximately 55% of fatally injured drivers had alcohol and/or drugs in their system. As shown in the figure, tests resulted in ten (10) drivers testing negative for EtOH and negative for drugs, three (3) were positive for EtOH and negative for drugs, two (2) were positive for EtOH and positive for drugs, and seven (7) were negative for EtOH and positive for drugs. Four (4) cases were not analyzed due to delayed death.

Of the EtOH positive blood specimens, three (3) resulted in values of 0.24 gm% or higher range and one (1) in the 0.16 to 0.23 gm% range, and one (1) in the 0.08 to 0.15 gm% range.

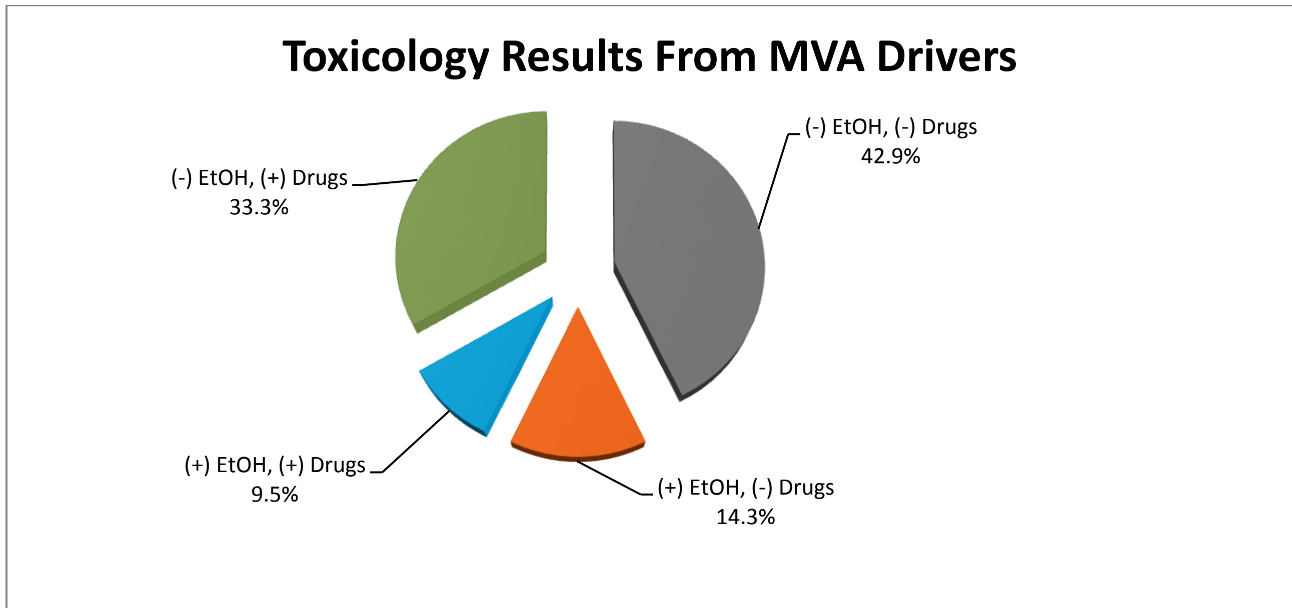
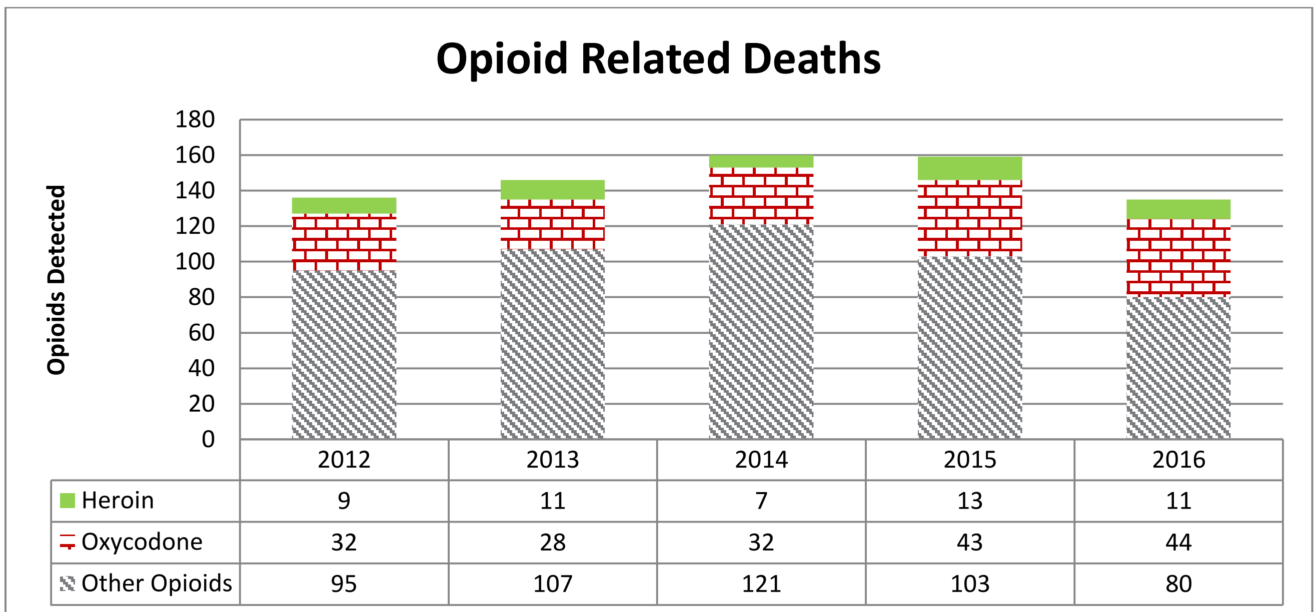


Figure 20 Alcohol and drug results from fatally injured drivers.

OPIOID RELATED DEATHS

Opioid deaths remained high for 2016 with a total of 135. The range of opioid related deaths over the past five years is 135 to 160 with an average of 147 deaths.



	2012	2013	2014	2015	2016
Heroin	9	11	7	13	11
Oxycodone	32	28	32	43	44
Other Opioids	95	107	121	103	80

Figure 21 Opioid related deaths detected in Postmortem Toxicology cases.

Acknowledgments

Statistical information was compiled by Robert C. Hansen II and reviewed by Shari Beck and Timothy S. Gorrill, M.D., Ph.D. The report was approved by Timothy P. Rohrig, Ph.D.