2017

ANNUAL REPORT

Office of the Medical Examiner

ALLEGAN COUNTY

BENZIE COUNTY

CALHOUN COUNTY

GRAND TRAVERSE COUNTY

KALAMAZOO COUNTY

LEELANAU COUNTY

MASON COUNTY

MUSKEGON COUNTY

ST. JOSEPH COUNTY

VAN BUREN COUNTY

WESTERN MICHIGAN UNIVERSITY
Homer Stryker M.D.
SCHOOL OF MEDICINE

MEDICAL EXAMINER AND FORENSIC SERVICES

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Letter from the Medical Examiner

Welcome to the Annual Report for the Medical Examiner Offices. This report provides a statistical breakdown of the deaths reported to our office in 2017 for Allegan, Benzie, Calhoun, Grand Traverse, Kalamazoo, Leelanau, Mason, Muskegon, Saint Joseph, and Van Buren Counties. Our department also provides forensic pathology and forensic anthropology services to a number of other counties in Michigan and Indiana.

If you compare this report to last year, you will notice we added five counties over the course of the year: Benzie, Grand Traverse, Leelanau, and Mason. Not all of the counties were with us for the entire year, and this report will include details only for the months we served as their medical examiner. In addition, because of the growth of our caseload, we added another Deputy Medical Examiner, Dr. Ted Brown. Dr. Brown, is a board-certified forensic pathologist, as are the five other Deputy Medical Examiners in our department. Given there are only about 500 forensic pathologists practicing in the USA, the Western Michigan University Homer Stryker M.D. School of Medicine (WMed) employs over 1% of the total to provide service to counties in Michigan and Indiana. Given the severe shortage of forensic pathologists in the country, we feel very fortunate to be fully staffed.

Late in 2017, we insituted a goal of having 95% of our autopsy reports comleted within 30 days of the examination. This is a goal we are proud to say we are achieving. The NAME accreditation standard requires 95% of cases be completed within 60 days, however, we are providing answers to families, law enforcement, public health and other interested parties 30 days sooner than we were a year ago.

Much like 2016, drug-related deaths, primarily from opioids, remain extremely high in 2017. Many counties saw increases in the numbers of deaths while a few saw slight decreases. This epidemic stresses medical examiner offices across the country due to the need for adequate cooler space, increased staff, and complex toxicology testing for new substances.

In 2017, representatives from our office were active in the Medical Examiner Working Group. This group, with representatives from every organization or agencies with an interest in the work product of Michigan Medical Examiners, such as the Prosecuting Attorneys Association of Michigan, the Michigan Association of Counties, Law Enforcement, Public Health, the Michigan Funeral Directors Association and Gift of Life (just to name a few), have worked over the past few years to put forth recommendations to improve death investigation in Michigan. The legislation the Working Group developed has not yet been introduced, however, if it is, the counties we serve as the Medical Examiner will see few changes in day-to-day operations as all of the requirements are currently being met.

Our system works so well because we have an amazing team of individuals, including the investigators who respond to death scenes 24/7/365, our administrative staff, the medical examiners, the quality and data analyst, the in-house investigative staff and those who provide us forensic technical support. These individuals are incredibly dedicated and every day they strive to provide excellent and professional quality death investigations.

Finally, and perhaps most importantly, this document is full of numbers, tables, and charts. It is not lost on any of us who serve your county that each case contributing to a number represents the death of a person, someone who was possibly a parent, grandparent, spouse, child, relative or friend to others. The deaths also represent a loss to our communities. We dedicate this report to the memory of those who suffered the loss of a friend or relative in 2017.

Respectfully,

Joyce deJong DO

Joyce L. deJong, D.O.
Medical Examiner

Department of Pathology Faculty

Joyce L. deJong, DO
Founding Chair and Professor
Medical Examiner

Theodore Brown, MD
Assistant Professor
Director of Operational Excellence
Deputy Medical Examiner

Jered B. Cornelison, PhD
Assistant Professor
Forensic Anthropologist

Amanda O. Fisher-Hubbard, MD
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Co-Director, Center for Neuropathology
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Brandy L. Shattuck, MD
Assistant Professor
Deputy Medical Examiner

Joseph A. Prahlow, MD
Vice Chair and Professor
Deputy Medical Examiner

Rudolph J. Castellani, MD
Professor
Director, Center for Neuropathology
Director, Research Histology Laboratory

Elizabeth A. Douglas, MD
Assistant Professor
Deputy Medical Examiner

Carolyn V. Isaac, PhD
Assistant Professor
Forensic Anthropologist

Department of Pathology Leadership Team

Kristi L. Bailey, BS, HTL (ASCP)
Lead Histotechnologist

T.J. Franz
Deputy Chief Medical Examiner Investigator

Lee O. Morgan
Pathology Manager

Joanne M. Catania, MPA, D-ABMDI
Chief Medical Examiner Investigator

Abigail J. Grande, MPH
Quality & Accreditation Analyst

About the Medical Examiner System

Investigations of Deaths Reported

Each county in Michigan is required to have a licensed physician, appointed by the county commissioners to serve as the Medical Examiner. The Office of the Medical Examiner is responsible for investigating deaths reported based upon the Michigan Compiled Laws. In our counties, the Medical Examiner and the Deputy Medical Examiners are board-certified forensic pathologists.

In general, the deaths investigated by our office include those that are sudden, unexpected, often times violent, and occasionally not readily explainable at the time of death. Many of the deaths reported are believed to be related to drug use.

Since deaths occur regardless of time or day, the medical examiner's office responds to deaths 24 hours per day, 365 days per year. These deaths are investigated by Medical Examiner Investigators (MEIs) that arrive to death scenes to obtain information from families and law enforcement that will be relayed to forensic pathologists for case management.

Occasionally, some deaths require follow-up investigations, which for most of our counties are conducted by our in-house investigators, under the direction of our Chief Investigator, based at Western Michigan University Homer Stryker M.D. School of Medicine (WMed) in Kalamazoo.

Which deaths do we investigate?

The Michigan Compiled Laws (MCL 52.202) require the county medical examiner or deputy county medical examiner to investigate the cause and manner of death of an individual under each of the following circumstances:

- The individual dies by violence.
- The individual's death is unexpected.
- The individual dies without medical attendance by a physician, or the individual dies while under home hospice care without medical attendance by a physician or a registered nurse during the 48 hours immediately preceding the time of death, unless the attending physician, if any, is able to determine accurately the cause of death.
- The individual dies as the result of an abortion, whether self-induced or otherwise.
- If a prisoner in a county or city jail dies while imprisoned, the county medical examiner or deputy county medical examiner, upon being notified of the death of the prisoner, shall examine the body of the deceased prisoner.

We also consider the NAME standards in deciding which deaths to investigate which include all:

- Deaths due to violence.
- Known or suspected non-natural deaths.
- Unexpected or unexplained deaths when in apparent good health.
- Unexpected or unexplained deaths of infants and children.
- Deaths occurring under unusual or suspicious circumstances.
- Deaths of persons in custody.
- Deaths known or suspected to be caused by diseases constituting a threat to public health.
- Deaths of persons not under the care of a physician.

Identification of Decedent

In Michigan, MCL 52.205 requires a scientific identification in cases where visual identification of a decedent is impossible as a result of burns, decomposition, or other disfiguring injuries or the death is the result of an accident that involved two or more individuals who were approximately the same age, sex, height, weight, hair color, eye color, and race. In these cases, the county medical examiner is required to verify the identity of the decedent through fingerprints, dental records, DNA, or another definitive identification procedure.

Indications for Complete Autopsy

The decision regarding whether a complete autopsy should be performed is based on the National Association of Medical Examiners Autopsy Performance Standards. Consequently, an autopsy is performed when the:

- Death is known or suspected to have been caused by apparent criminal violence.
- Death is unexpected and unexplained in an infant or child.
- Death is associated with police action.
- Death is apparently non-natural and in custody of a local, state, or federal institution.
- Death is due to acute workplace injury.
- Death is caused by apparent electrocution.
- Death is by apparent intoxication by alcohol, drugs, or poison, unless a significant interval has passed and the medical findings and absence of trauma are well documented.
- Death is caused by unwitnessed or suspected drowning.
- Body is unidentified and the autopsy may aid in identification.
- Body is skeletonized.
- Body is charred.
- Forensic pathologist deems a forensic autopsy is necessary to determine cause or manner of death, or document injuries/disease, or collect evidence.
- Deceased is involved in a motor vehicle incident and an autopsy is necessary to document injuries and/or determine the cause of death.

Death Certification

The main focus of our investigation is to determine the cause and manner of death, and to clarify or confirm circumstances surrounding the death. The cause of death is related to the underlying disease and/or injury that resulted in the individual's death. The manner of death, in the state of Michigan, is limited to these possibilities: natural, accident, suicide, homicide, or indeterminate.

What is the difference between Cause of Death and Manner of Death?

The Cause of Death is (a) the disease or injury that initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence that produced fatal injury.[1]

Manner of death determination is something that originated in the United States. Unlike the cause of death, with thousands of possibilities, in Michigan, manner of death is limited to: Natural, Suicide, Accident, Homicide, and Indeterminate. The fundamental purpose for determining the manner of death is for public health surveillance and vital

[1] Medical Examiners' and Coroners' Handbook on Death Registration and Fetal Death Reporting. Centers for Disease Control and Prevention. 2003 Revision

statistics.

"The inference of manner is much like the inference of cause of death. One creates the equivalent of a differential diagnosis, ranks and prunes the possibilities, and comes to a conclusion as to which is most likely. The difference is in the degree to which the determination relies on external information. There is often little about a bullet hole that tells one who created it; many wounds are equally consistent with homicide, suicide, or even accident. It is necessary to consider investigational data, scene data, and history."[2]

- *Natural* deaths are due solely or nearly totally to disease and/or the aging process.

- *Accident* applies when an injury or poisoning (such as a drug overdose) causes death and there is little or no evidence that the injury or poisoning occurred with intent to harm or cause death. In essence, the fatal outcome was unintentional.

- *Suicide* results from an injury or poisoning as a result of an intentional, self-inflicted act.

- *Homicide* occurs when the death results from a volitional act committed by another person to cause fear, harm, or death. Intent to cause death is a common element but is not required for classification as a homicide. It has to be emphasized that the classification of homicide for the purpose of death certification is a "neutral" term and neither indicates nor implies criminal intent, which remains a determination within the province of legal processes.

- *Indeterminate* is a classification used when the information pointing to one manner of death is no more compelling than one or more other competing manners of death, in thorough consideration of all available information.

  In general, when death involves a combination of natural processes and external factors, such as injury or poisoning, preference is given to the non-natural manner of death.

Case Management

As we mentioned above, a Medical Examiner Investigator responds to nearly all of the death scenes. They gather information and apply office policies and consult with the Medical Examiner.

- The Medical Examiner Investigator (MEI) is trained to recognize the vast majority of the deaths requiring postmortem examinations and in those cases, immediately arranges for transport to WMed for a postmortem examination. Homicides, infant deaths, and drug overdoses are examples of the deaths that are immediately sent.
- If the death does not appear to meet the requirements for a postmortem examination, the MEI contacts the on-call Medical Examiner to discuss the case before releasing the body to a funeral home.
- The MEI writes a report documenting their findings and uploads images obtained at the investigation. These reports and photos are reviewed by the medical examiner or deputy medical examiner.

The Medical Examiner or a Deputy Medical Examiner is assigned to each case and generally uses one of the following approaches in each of the deaths for which our office is responsible:

- *Declined Jurisdiction* - A reported death classified as an attended natural death should be documented as a Declined Jurisdiction case.

[1] Oliver, W. R. (2014). Manner Determination in Forensic Pathology. Academic Forensic Pathology, 4(4), 480-491.

- *Direct Release - The body is released directly from the scene to the funeral home. The MEI at the scene views the body and collects information on the scene, medical history, and social history. This information is provided to the on-call Medical Examiner who may decide to release a body directly to the funeral home chosen by the family.*

  - *Storage* - The body will be taken to WMed for temporary storage until one has been chosen. If family cannot be found or if the family does not take responsibility for the disposition of the remains, an unclaimed remains process ensues.

  - *External Examination* - An external examination includes a careful evaluation of the circumstances of the death and an examination of the external surfaces of the body, with possible laboratory/toxicology testing. This includes the production of a written report.

  - *Limited Examination* - A limited examination generally is within an anatomic boundary (such as a brain only examination) to recover a foreign body or to answer specific questions. This type of examination may also include toxicology testing. This type of exam is rare and used in only special circumstances. This includes the production of a written report.

  - *Complete Autopsy* – A complete examination includes external and internal examination, with toxicology. This includes the production of a written report.

Cremation Permit Authorizations

Michigan compiled law 52.210 requires funeral directors and embalmers to obtain a signed permit from the medical examiner for the county in which the death occurred. Our office reviews thousands of cremation permit requests each year. The requests for authorization to cremate involves reviewing the death certificate provided by the funeral director to ascertain that deaths that should have been reported to our office were, in fact, reported. Deaths that were not properly reported are investigated before cremation is authorized.

There is a range between counties, however, in sum, cremations occur in two-thirds of all deaths in the counties we serve. Consequently, although full investigations occur in only a fraction of these, we review the deaths of the majority of deaths occurring in our counties.

Public Health and Safety

The major purpose of the Medical Examiner's Office is to conduct death investigations. The information obtained from individual death investigations may also be studied collectively to gather information that may be used to address public health and safety issues. Our office participates with the Child Death Review Team in all counties, providing significant information regarding how children died with the goal of preventing future deaths.

An Elder Death Review Team is now operational in Kalamazoo County. As the process to identify and effectively review deaths of the elderly and vulnerable adults is improved, with a goal of identifying how to improve care for these populations in our communities, we plan to expand this to all of our

counties. Public Act 171 of 2012 allows the Medical Examiner to create elder death review teams and it provides legal protections for members of the team.

Education

Our Medical Examiner's Office has strong affiliations with academic institutions. As part of the Western Michigan University Homer Stryker M.D. School of Medicine (WMed), our Medical Examiner and Deputy Medical Examiners hold appointments as faculty with associated teaching and mentoring duties. Medical students, residents, and other students in advanced degree programs have the opportunity to fulfill electives in the Medical Examiner's Office to gain experience and exposure to forensic pathology, forensic anthropology, and the medicolegal community. The education of medical students and residents in the Medical Examiner's Office is one that is done with great attention to respect for our "patients" and their families. The education is done by learning through observation and explanation of activities that would occur regardless of whether a student was present.

NAME Accreditation

The Medical Examiner's Office at WMed received accreditation from the National Association of Medical Examiners (NAME) in January of 2015. Each year, we re-submit information and each year since, we have maintained our full accreditation. NAME Accreditation requires hundreds of elements including facility features, adequate and appropriately trained and credentialed staff, and safety policies, just to name a few. A full on-site inspection will occur again in 2020. Information regarding inspection and accreditation is at the website for the National Association of Medical Examiners (NAME). www.TheNAME.org.

Comments on Methods and Terms Contained in this Report

This annual report reflects the activities of our Medical Examiner's Offices during a given calendar year. With rare exception, the data includes only those cases over which the county's medical examiner can exercise jurisdiction, which is based on the county where the individual was pronounced deceased rather than the county of residence or the county in which the incident leading to death might have occurred. Furthermore, the data reflects the calendar year in which the deaths were reported to the respective medical examiner's office, regardless of the year in which the death actually occurred.

Additionally, our office also performs postmortem examinations for Coroner and Medical Examiner Offices where we do not function as the Coroner or Medical Examiner. We are consultants to these professionals, and provided a needed service for their counties.

- "MEI Scene Investigations" are those reported deaths for which an MEI went to the death scene.
- "Deaths Investigated" include MEI Scene Investigations as well as reported deaths that, while no longer allowing for a scene investigation, involved an investigation beyond the initial report of death, usually in the form of a records review in response to information provided as part of a cremation request.
- The category "Referrals to Gift of Life" does not include in-hospital deaths reported to the Medical Examiner's Office, which are referred to Gift of Life by hospital staff rather than the Medical Examiner's Office.
- For "Accidental Deaths," the subcategory "Vehicle" consists of deaths that were classified as transportation-related fatalities, and includes all forms of transport; drivers/operators, passengers, and pedestrians; and types of death that might otherwise fall into a different sub-classification, such as vehicle fires and traumatic asphyxia.

Changes in 2017

Faculty Additions

2017 was a year of growth and achievements for the Pathology Department and Medical Examiner's Office at WMed. Our faculty increased with the addition of Theodore T. Brown, MD. Dr. Brown is a forensic pathologist. He completed his undergraduate education at the University of Notre Dame and medical school at Indiana University School of Medicine. He completed his anatomic and clinical pathology residency at the University of Michigan and served as the Chief Resident during his final year. He completed his forensic pathology fellowship at the Miami-Dade County Medical Examiner's Office. From 2016-2017, he was an assistant professor of pathology at the University of Michigan. He is currently an assistant professor of pathology at Western Michigan University Homer Stryker M.D. School of Medicine. Dr. Brown has also been appointed as the Director of Operational Excellence of the Department of Pathology at Western Michigan University Homer Stryker M.D. School of Medicine.

County Additions

Dr. deJong was appointed as the Medical Examiner (and Drs. Brown, Douglas, Fisher-Hubbard, Prahlow and Shattuck as Deputy Medical Examiners) for:

- Benzie County – January of 2017 (until April of 2017)
- Grand Traverse County – January of 2017
- Leelanau County – January of 2017
- Van Buren County – March of 2017
- Mason County – March of 2017

Data presented in this report will reflect only our time as the Medical Examiner

ALLEGAN COUNTY

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

Theodore T. Brown, MD
Elizabeth A. Douglas, MD
Amanda O. Fisher-Hubbard, MD
Joseph A. Prahlow, MD
Brandy L. Shattuck, MD

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER INVESTIGATORS

Judy Keizer, Lead MEI
Mitch Anderson Terry
Susan Brunsink
DeAnn Greene
Lisa Letts
Tamara Shoemaker
Paul Smith, D-ABMDI
Meredith Visser
Jennifer Williams

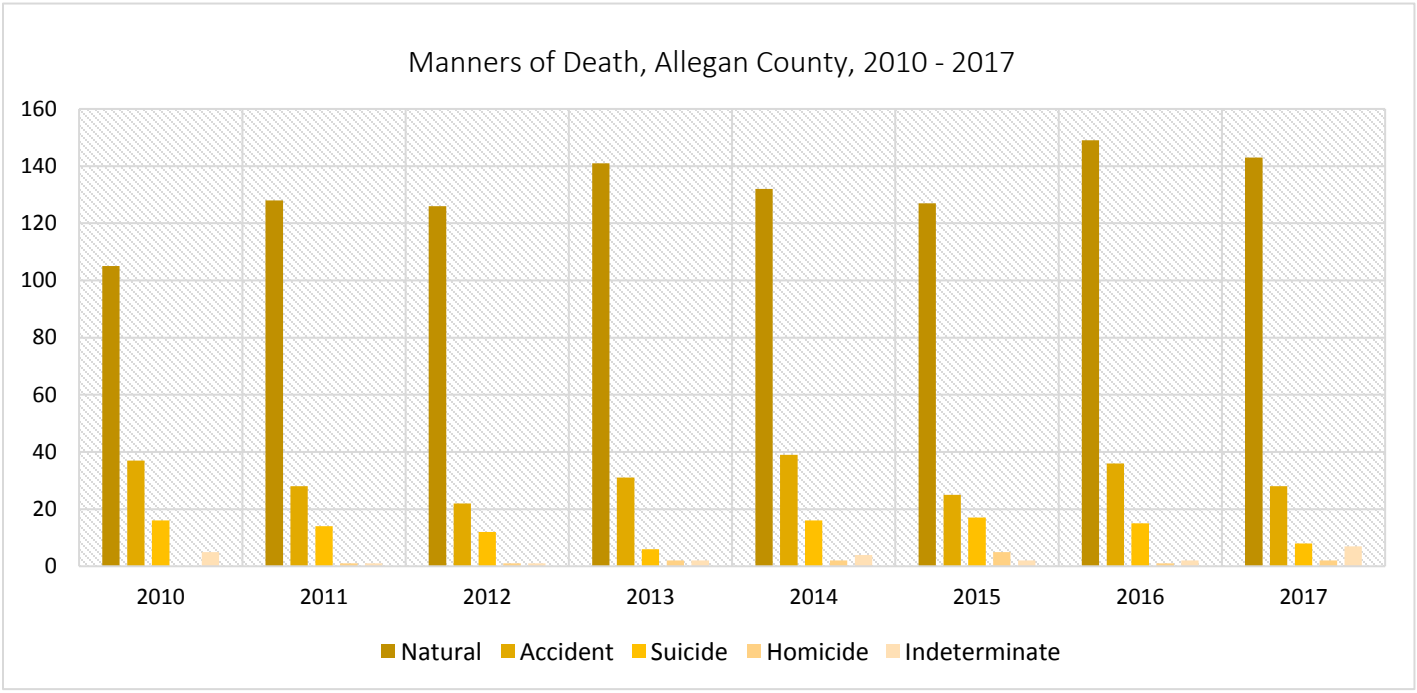
Summary of All Allegan County Cases with a Comparison of Past Years, 2010 - 2017

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015	2016	2017
Total Deaths in the County[1]	607	549	602	657	705	753	745	800
Deaths Reported to the Medical Examiner[2]	164	172	162	182	193	176	203	188
Deaths Investigated	---	---	145	164	189	170	192	164
MEI Scene Investigations	147	155	143	160	177	152	174	158
Death Certificates by ME	98	83	78	76	97	77	85	76
Bodies Transported to Morgue	80	68	63	58	74	66	62	69
Complete Autopsy	57	51	43	49	63	32	36	45
Limited Autopsy	4	2	6	1	2	2	5	2
External Examination	16	13	11	5	7	18	17	13
Storage Only	3	2	3	3	2	14	4	9
Total Cases with Toxicology	70	51	54	54	70	47	52	54
Unidentified Remains After Exam	0	0	0	0	2	1	0	0
Referrals to Gift of Life	14	35	38	32	62	64	63	73
Tissue Donations	4	3	4	0	5	8	5	6
Cornea Donations	1	3	5	0	6	7	4	7
Unclaimed Bodies & Investigations	0	2	2	1	2	3	1	2
Exhumations	0	0	0	0	0	0	0	0
Cremation Permits	287	300	299	350	409[3]	404	442	469
% of Total Deaths with Cremations	47%	55%	50%	53%	58%	54%	60%	59%

--- Data not collected

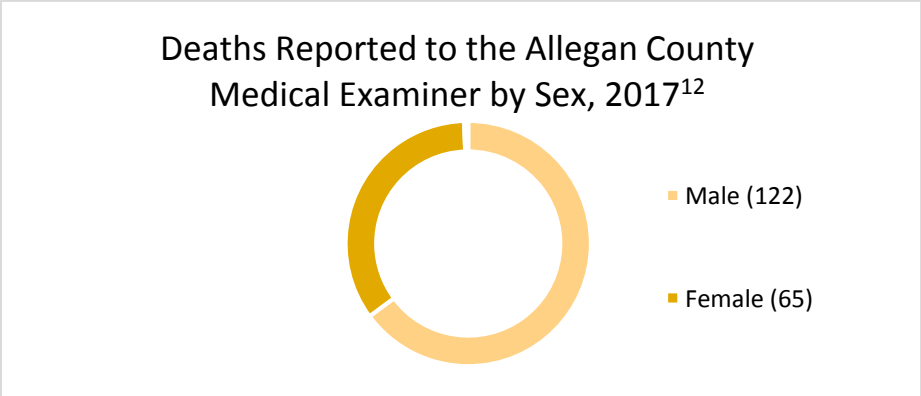
Manners of Death Reported to Allegan County Medical Examiner, 2010 - 2017

Manner of Death	2010	2011	2012	2013	2014	2015	2016	2017
Natural	105	128	126	141	132	127	149	143
Accident	37	28	22	31	39	25	36	28
Suicide	16	14	12	6	16	17	15	8
Homicide	0	1	1	2	2	5	1	2
Indeterminate	6[4]	1[5]	1[6]	2[7]	4[8]	2[9]	2[10]	7[11]
Total	**164**	**172**	**162**	**182**	**193**	**176**	**203**	**188**

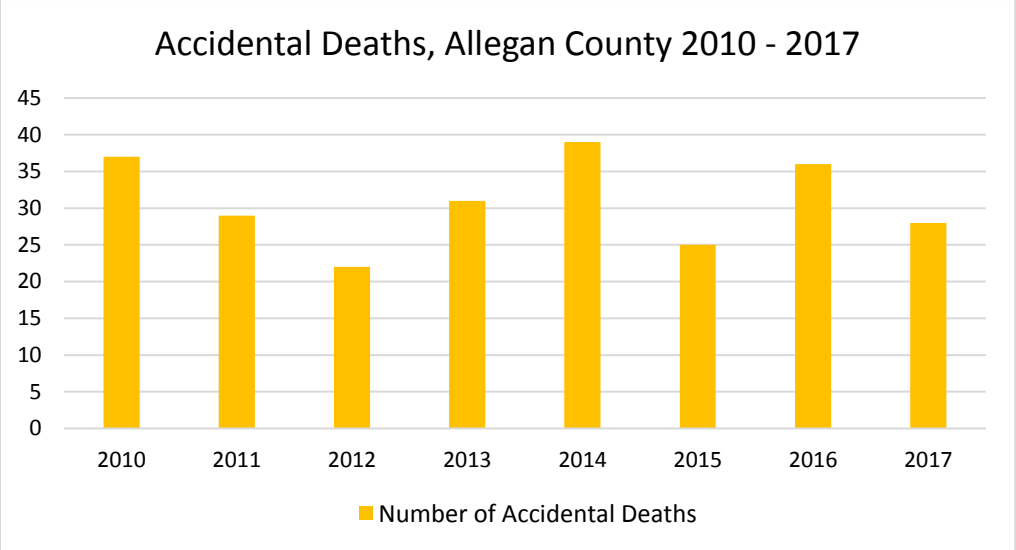


Deaths Reported to Allegan County Medical Examiner by Age, 2010 - 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	0	0	1	1	9	21	55	74
2011	1	0	1	3	9	14	49	95
2012	0	0	0	0	5	20	63	74
2013	2	0	0	0	7	17	57	99
2014	3	0	0	1	6	16	73	92
2015	0	1	1	5	7	15	59	87
2016	1	1	0	0	5	26	58	112
2017	4	1	0	2	3	17	54	106



Allegan County, Accidental Deaths



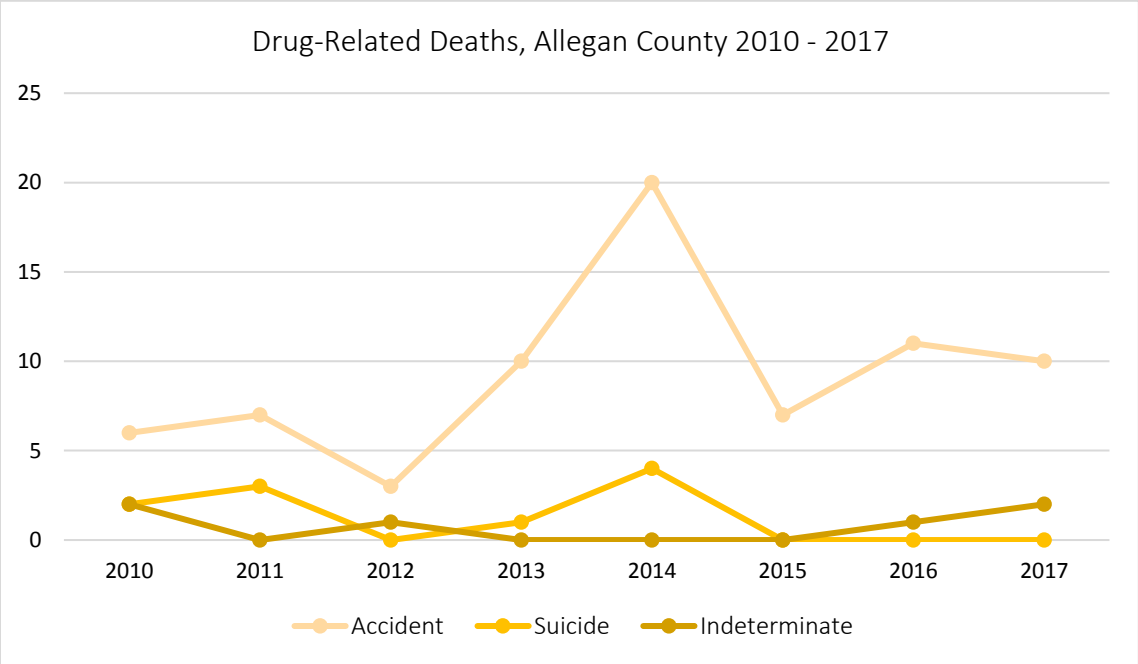
Accidental Deaths Reported to the Allegan County Medical Examiner, 2010 – 2017

Mechanism	2010	2011	2012	2013	2014	2015	2016	2017
Vehicle	15	12	13	9	11	10	9	12
Drug-Related	6	7	3	10	20	7	11	10
Drowning	1	2	0	1	1	0	1	3
Fall	7	4	2	7	5	5	10	3
Fire	3	2	3	1	0	0	0	0
Environmental Exposure	0	0	0	2	0	2	1	0
Asphyxia[13]	3	2	1	0	0	0	2	0
Other	2[14]	0	0	2[15]	2[16]	1[17]	2[18]	0
Total	**37**	**29**	**22**	**31**	**39**	**25**	**36**	**28**

Drug-Related Deaths

Drug-Related Deaths Reported to Allegan County Medical Examiner, 2010 – 2017[19]

Manner of Death	2010	2011	2012	2013	2014	2015	2016	2017
Accident	6	7	3	10	20	7	11	10
Suicide	2	3	0	1	4	0	0	0
Indeterminate	2	0	1	0	0	0	1	2
Total	**10**	**10**	**4**	**11**	**24**	**7**	**12**	**12**
% Involving Opioids	---[4]	---	---	---	---	86%	67%	50%



Drug-Related Deaths; Manner: Accident, 2017

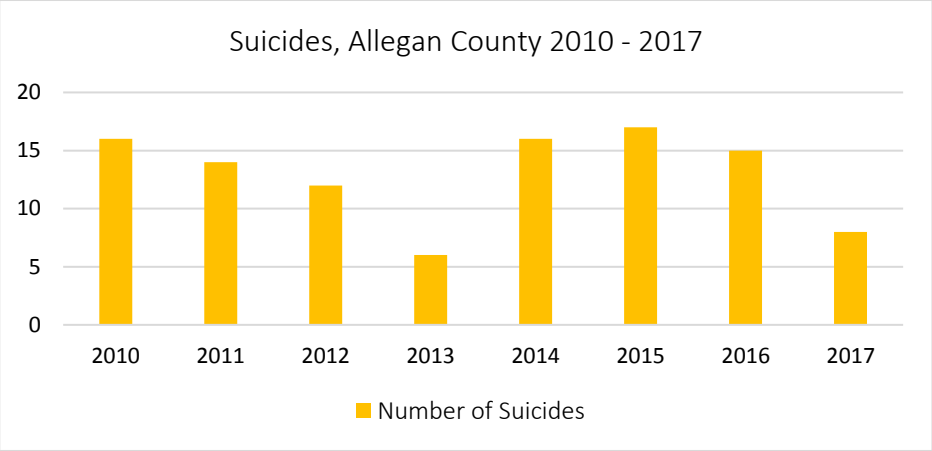
	Age	Sex	Substances Contributing to Death
1	55	M	Oxycodone, Methadone
2	49	M	Methadone, Hydrocodone, Chlordiazepoxide, Alcohol
3	29	M	Amphetamine, Methamphetamine
4	51	F	Amphetamine, Alprazolam, Acetaminophen, Cyclobenzaprine, Topiramate, Pregabalin, Nortriptyline, Diphenhydramine, Doxylamine, Quetiapine, Dextromethorphan, Orphenadrine
5	54	M	Fentanyl, Hydrocodone, Oxycodone
6	39	F	Clonazepam, Baclofen, Lamotrigine, Quetiapine, Amphetamine, Methamphetamine
7	56	M	Amphetamine, Methamphetamine, Hydrocodone, Hydromorphone
8	34	M	Cocaine, Fentanyl
9	50	M	Hydrocodone, Amitriptyline, Gabapentin, Alprazolam
10	44	M	Alprazolam, Alcohol

--- Data not collected

Drug-Related Deaths; Manner: Indeterminate, 2017

	Age	Sex	Substances Contributing to Death
1	39	M	Butalbital, Alprazolam, Alcohol, Gabapentin, Bupropion
2	27	M	Insulin (Probable)

Allegan County, Suicides



Suicides Reported to the Allegan County Medical Examiner, 2010 – 2017

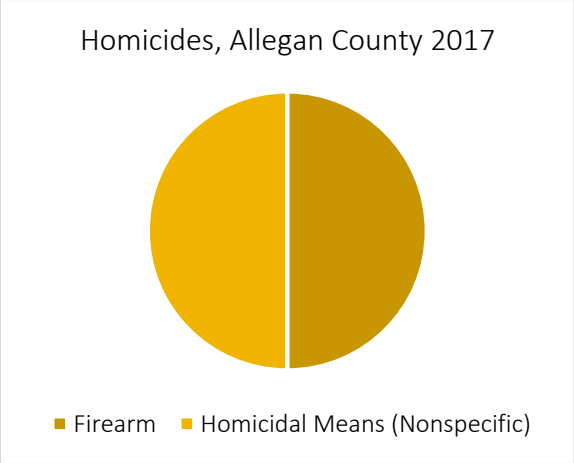
Mechanism	2010	2011	2012	2013	2014	2015	2016	2017
Firearm	6	6	9	3	11	11	10	7
Hanging	6	3	3	0	1	4	4	0
Carbon Monoxide	1	1	0	1	0	0	1	1
Drug Intoxication	2	2	0	1	4	0	0	0
Motor Vehicle	1	2	0	1	0	0	0	0
Sharp Force Trauma	0	0	0	0	0	0	0	0
Asphyxia/Suffocation	0	0	0	0	0	2	0	0
Other	0	0	0	0	0	0	0	0
Total	**16**	**14**	**12**	**6**	**16**	**17**	**15**	**8**

Allegan County Suicides by Age, 2010 - 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	0	3	8	2	3
2011	0	1	7	4	2
2012	0	1	3	6	2
2013	0	1	2	2	1
2014	0	1	4	8	3
2015	2	4	1	5	5
2016	0	3	6	3	3
2017	0	2	0	3	3

Allegan County, Homicides

Mechanism	2016	2017
Firearm	0	1
Homicidal Means (Nonspecific)	0	1
Other	1[20]	0
Total	**1**	**2**



Appendix A, Allegan County

[1] This number was obtained from the County Clerk's Office and was generated using the date of death on the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
--- Data not collected
[3] Estimated from combined data from Sparrow Hospital and WMed
[4] (2) Drug related; (1) Drowning; (1) Carbon monoxide; (1) Severely decomposed, Indeterminate cause of death; (1) Non-human bone

[5] (1) Hypothermia complicated by mixed drug intoxication
[6] (1) Mixed drug intoxication
[7] (1) SUID; (1) Indeterminate cause of death
[8] (1) SUID associated with unsafe sleep; (1) Unknown, presumed deceased; (2) Skeletal remains
[9] (2) Skeletal remains
[10] (1) Mixed drug intoxication; (1) Residential fire, inhalation of products of combustion
[11] (1) Non-human skeletal remains; (1) Hanging; (1) Indeterminate cause of death; (1) Pneumonia, blunt force head injuries, and pulmonary thromboemboli related to prolonged stasis and caregiver neglect; (1) SUID associated with unsafe sleep and interstitial pneumonitis; (1) Probable insulin intoxication; (1) Mixed drug intoxication
[12] Not including (1) Non-human bones
[13] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[14] (1) Gunshot wound of wrist and hand; (1) Shot by another many years previous
[15] (2) Struck by falling timber
[16] (1) Aircraft crash; (1) Acute GI illness associated with consumption of wild mushrooms
[17] (1) Tree branch fell on head
[18] (1) Multiple blunt force injuries in workplace accident, crushed by heavy machinery; (1) Cardiovascular disease associated with complications related to foot injury
[19] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present; May be nonspecific due to extended periods of time spent in a medical facility following incident.
[20] (1) Medication tampering resulting in sub-therapeutic blood diazepam level causing seizure

BENZIE COUNTY

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Jamie Warnes

The data presented for Benzie County represents only January – March of 2017.

Summary of Benzie County Cases, January 1 – March 31, 2017

BENZIE COUNTY	2017*
Total Deaths in the County[1]	41
Deaths Reported to the Medical Examiner[2]	8
Deaths Investigated	8
MEI Scene Investigations	1
Death Certificates by ME	1
Bodies Transported to Morgue	0
Complete Autopsy	0
Limited Autopsy	0
External Examination	0
Storage Only	0
Total Cases with Toxicology	0
Unidentified Remains After Exam	0
Referrals to Gift of Life	3
Tissue Donations	1
Cornea Donations	1
Unclaimed Bodies & Investigations	0
Exhumations	0
Cremation Permits	26

Manners of Death Reported to Benzie County Medical Examiner, Jan 1 – March 31, 2017

Manner of Death	**2017***
Natural	7
Accident	0
Suicide	0
Homicide	0
Indeterminate	1[3]
Total	8

Deaths Reported to Benzie County Medical Examiner by Age, Jan 1 – March 31, 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017*	0	0	0	0	1	0	3	4

Appendix B, Benzie County

* Partial year data
[1] This number was obtained from the County Clerk's Office and was generated using the date of death on the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] Decedent pronounced via court order (missing for >10 years)

CALHOUN COUNTY

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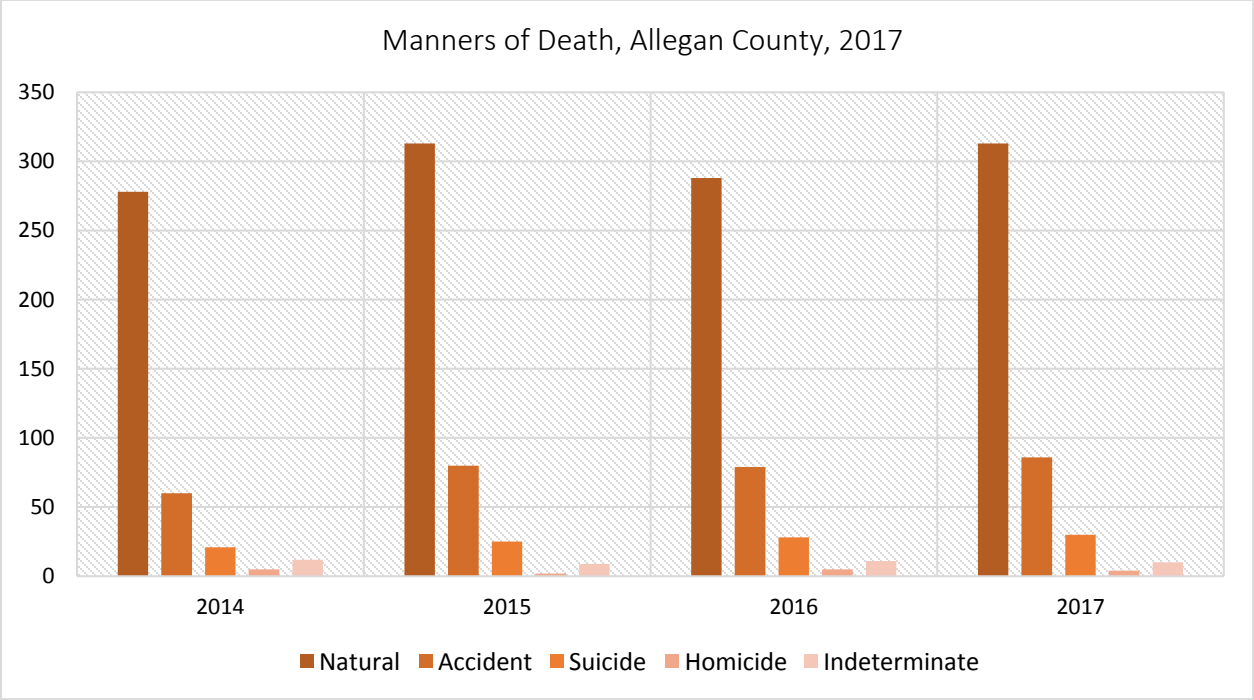
Renee Jaquays
Richard Knox
Robin Quick
Jim Ritchie
Nicholas Stratton
Suzanne Thorne-Odem
Mathew Whitcomb
Allen Williamson

Summary of All Calhoun County Cases with a Comparison of Past Years, 2014 - 2017

CALHOUN COUNTY	2014	2015	2016	2017
Total Deaths in the County[1]	1,390	1,378	1,427	1,396
Deaths Reported to the Medical Examiner[2]	377	429	411	443
Deaths Investigated	335	392	361	400
MEI Scene Investigations	296	311	307	352
Death Certificates by ME	178	180	186	191
Bodies Transported to Morgue	138	164	165	176
Complete Autopsy	103	109	103	102
Limited Autopsy	1	5	4	3
External Examination	20	28	36	46
Storage Only	14	20	22	25
Total Cases with Toxicology	122	131	113	141
Unidentified Remains After Exam	0	0	0	0
Referrals to Gift of Life	119	115	118	146
Tissue Donations	8	3	11	10
Cornea Donations	8	8	11	8
Unclaimed Bodies & Investigations	13	8	11	23
Exhumations	1	0	0	0
Cremation Permits	721[3]	742	811	857
% of Cremations for Deaths in County	52%	54%	57%	61%

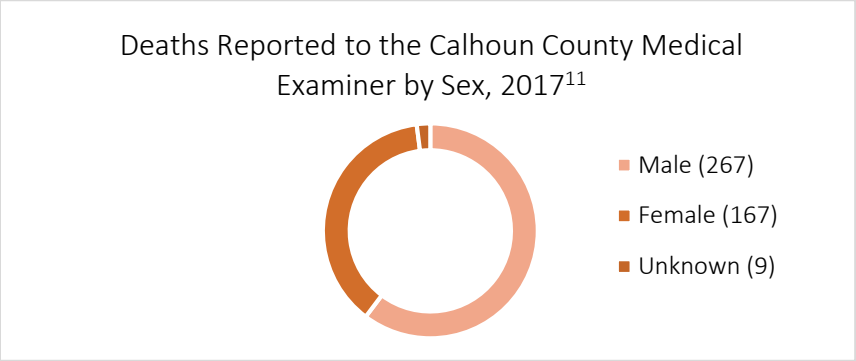
Manners of Death Reported to Calhoun County Medical Examiner, 2014 - 2017

Manner of Death	2014	2015	2016	2017
Natural	278	313	288	313
Accident	60	80	79	86
Suicide	21	25	28	30
Homicide	5	2	5	4
Indeterminate	12[4]	9[5]	11[6]	10[7]
Total	**377**	**429**	**411**	**443**



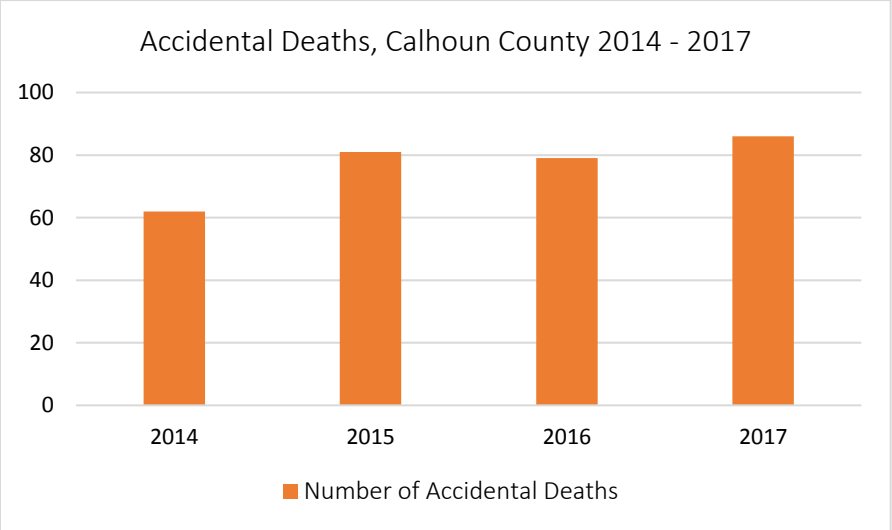
Deaths Reported to Calhoun County Medical Examiner by Age, 2014 - 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2014	8	4	0	3	8	34	148	171
2015	9[8]	0	1	6	11	59	128	215
2016	15[9]	0	2	2	9	53	122	208
2017	15[10]	1	1	1	14	65	140	206



The vast majority of deaths with the sex "unknown" are stillborn fetuses.

Calhoun County, Accidental Deaths



Accidental Deaths Reported to the Calhoun County Medical Examiner, 2014 – 2017

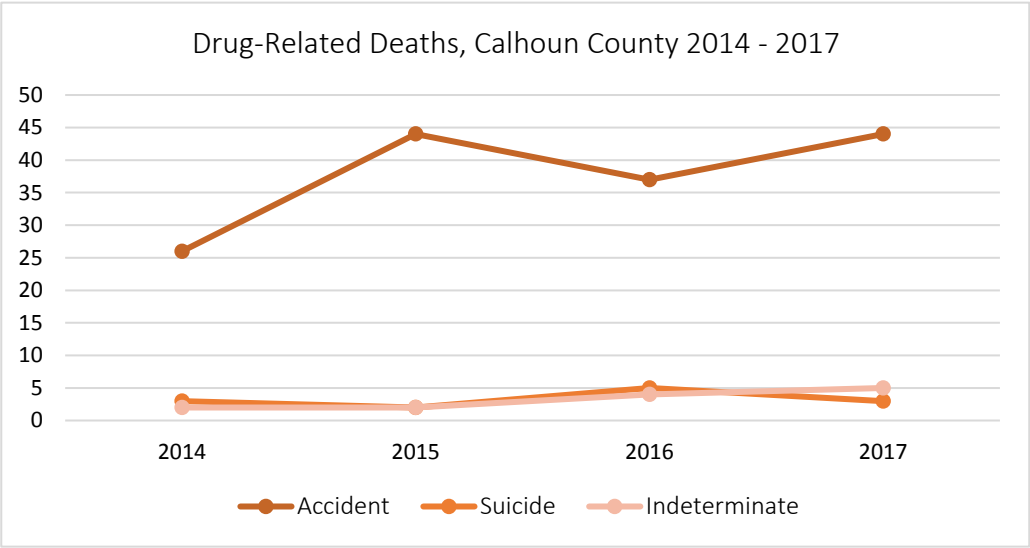
Mechanism	2014	2015	2016	2017
Vehicle	10	21	20	14
Drug-Related	26	44	38	44
Drowning	0	2	2	3
Fall	16	11	14	19
Fire	5	0	1	0
Environmental Exposure	2	0	0	0
Asphyxia[12]	2	0	2	5
Other	1[13]	1[14]	2[15]	1[16]
Total	**62**	**81**	**79**	**86**

Drug-Related Deaths

Drug-Related Deaths Reported to Calhoun County Medical Examiner, 2014 – 2017[17]

Manner of Death	2014	2015	2016	2017
Accident	26	44	37	44
Suicide	3	2	5	3
Indeterminate	2	2	4	5
Total	**31**	**48**	**46**	**52**
% of Accidental and Indeterminate Deaths Involving Opioids	**---**	**85%**	**87%**	**92%**

--- Data not collected



Drug-Related Deaths; Manner: Accident, 2017

	Age	Sex	Substances Contributing to Death
1	23	F	Heroin, Fentanyl, Carfentanil
2	43	M	Fentanyl, Morphine
3	38	M	Heroin, Fentanyl, Furanylfentanyl, Alcohol
4	24	M	Carfentanil
5	31	F	Alprazolam, Fentanyl, Heroin, Cyclobenzaprine, Lamotrigine, Temazepam, Nordiazepam, Oxazepam
6	39	F	Cocaine, Carfentanil, Cocaethylene
7	54	M	Carfentanil, Alcohol
8	39	M	Cocaine
9	59	F	Alprazolam, Cocaine Metabolite, Codeine, Cyclobenzaprine, Azithromycin, Gabapentin, Mirtazapine, Amlodipine, Dextromethorphan, Temazepam, Nordiazepam, Oxazepam, Morphine, Hydrocodone, Tramadol
10	32	M	Heroin, Methadone, Alprazolam
11	33	M	Heroin, Fentanyl
12	47	M	Alcohol, Hydrocodone, Cyclobenzaprine
13	37	M	1,1-difluoroethane 11
14	29	M	Fentanyl, Heroin, Alcohol, Pregabalin
15	35	M	Heroin, Cocaine, Fentanyl
16	49	M	Cocaine Metabolite, Fentanyl, Heroin
17	40	F	Methamphetamine, Cocaine Metabolite, Fentanyl, Heroin, Amphetamine, Clonazepam
18	39	M	Alprazolam, Methadone, Temazepam, Hydrocodone, Hydromorphone
19	30	F	Opioids (Probable)
20	47	M	Cocaine, Cocaine Metabolite, Fentanyl, Morphine, Alcohol, Doxepin, Nordoxepin, Venlafaxine
21	28	F	Heroin, Cocaine
22	39	F	Carfentanil, Fentanyl, Clonazepam, Alprazolam, Cocaine Metabolite
23	36	M	Buprenorphine, Alcohol
24	32	M	Fentanyl, Hydrocodone
25	36	M	Fentanyl, Heroin
26	37	F	Fentanyl, Morphine, Cocaine Metabolite
27	25	M	Fentanyl, Methamphetamine
28	72	F	Tramadol, Paroxetine, Metoprolol, Alprazolam
29	35	M	Methamphetamine, Alprazolam, Morphine

30	57	M	Fentanyl
31	25	M	Fentanyl, Heroin, Pregabalin, Alcohol
32	49	M	Fentanyl, Morphine, Gabapentin, Bupropion
33	35	F	Tramadol, Morphine, Zolpidem
34	60	M	Cocaine, Heroin, Fentanyl, Alcohol, Venlafaxine, Diphenhydramine, Chlorophenylpiperazine
35	29	F	Fentanyl, Heroin, Methamphetamine, Amphetamine
36	48	F	Diazepam, Nordiazepam, Alprazolam, Fentanyl, Oxycodone, Alcohol, Cyclobenzaprine
37	36	M	Alprazolam, Cocaine Metabolite, Fentanyl, Meprobamate, Gabapentin, Heroin
38	42	M	Methamphetamine, Amphetamine, Fentanyl, Gabapentin
39	49	F	Heroin, Alcohol
40	26	F	Fentanyl, Heroin, Alprazolam
41	23	F	Alcohol, Alprazolam, Oxycodone
42	57	F	Alprazolam, Fentanyl, Acetylfentanyl, Heroin
43	54	M	Fentanyl, Alcohol
44	43	M	Heroin, Cocaine 30

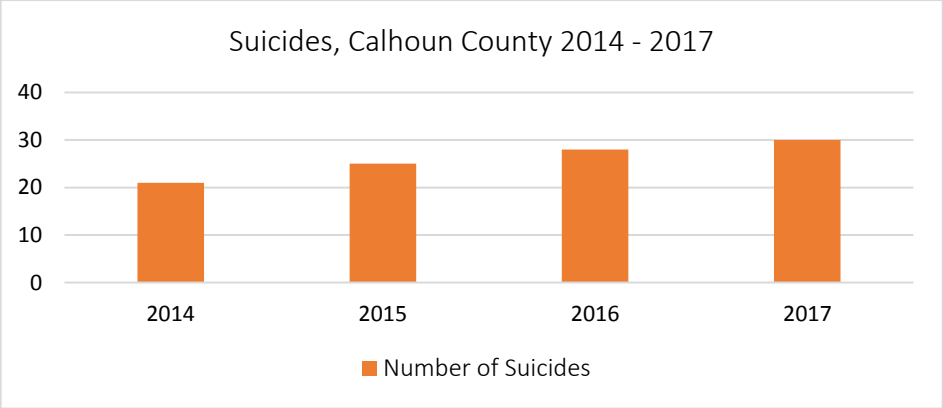
Drug-Related Deaths; Manner: Suicide, 2017

	Age	Sex	Substances Contributing to Death
1	25	M	Ethylene Glycol
2	43	F	Clonazepam, Alprazolam, Oxycodone, Duloxetine, Chlorphenylpiperazine, Quetiapine
3	54	M	Cocaine, Fentanyl

Drug-Related Deaths, Manner: Indeterminate, 2017

	Age	Sex	Substances Contributing to Death
1	67	M	Heroin, Cocaine Metabolite, Methamphetamine
2	64	M	Fentanyl, Methadone, Alprazolam
3	51	F	Diazepam, Alprazolam, Morphine, Tramadol, Cyclobenzaprine, Topiramate, Duloxetine
4	40	M	Cocaine
5	27	F	Methamphetamine, Fentanyl, Alcohol, Heroin

Calhoun County, Suicides



Suicides Reported to the Calhoun County Medical Examiner, 2014 – 2017

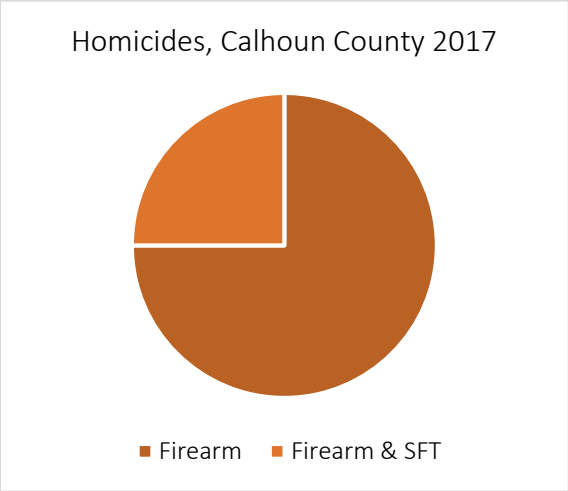
Mechanism	2014	2015	2016	2017
Firearm	11	14	14	12
Hanging	7	5	6	10
Carbon Monoxide	0	0	2	0
Drug Intoxication	3	2	5	3
Motor Vehicle	0	0	1	2
Sharp Force Trauma	0	0	0	1
Asphyxia/Suffocation	0	2[18]	0	1
Other	0	2[19]	0	1[20]
Total	21	25	28	30

Calhoun County Suicides by Age, 2014 - 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2014	1	4	7	8	1
2015	2	2	7	7	7
2016	1	2	8	12	5
2017	0	4	12	7	7

Calhoun County, Homicides

Mechanism	2016	2017
Firearm	2	3
Blunt Force Trauma (BFT)	3	0
Firearm & Sharp Force Trauma (SFT)	0	1
Total	5	4



Appendix C, Calhoun County

[1] This number was obtained from the County Clerk's Office and was generated using the date of death on the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] Estimated from combined data from Sparrow Hospital and WMed
[4] (2) Inhalation of products of combustion in residential fire; (1) Aortic hemorrhage; (2) Indeterminate cause of death; (1) SUID; (1) SUID associated with unsafe sleep; (2) Mixed drug intoxication; (1) Multiple blunt force injuries; (1) Complications of tracheomalacia with loss of ventilatory support
[5] (3) SUID; (2) Mixed drug intoxication; (1) Shotgun wound of neck; (1) Thermal injuries and inhalation of heated gases; (1) Found dead, cause and manner of death unknown; (1) Possible fall vs. natural death
[6] (1) Toxic effects of Alprazolam associated with cardiomegaly; (3) Mixed drug intoxication; (1) Indeterminate cause of death; (1) Complications of severe global ischemic brain damage of uncertain etiology; (6) Inhalation of products of combustion in residential fire; (1) Severe ischemic brain injury due to respiratory arrest of uncertain etiology; (1) Thermal and inhalation injuries in residential fire; (1) Mixed-etiology dementia associated with head injuries sustained in 2010 assault; (1) Multiple injuries due to pedestrian vs. motor vehicle
[7] (4) Mixed drug intoxications; (2) Indeterminate cause of death; (1) SUID associated with unsafe sleep; (1) Chronic alcoholism with scalp trauma of unknown etiology; (1) Complications of subdural hematoma of unknown etiology associated with natural disease; (1) Possible cocaine-induced intracranial hemorrhage
[8] Including (5) stillbirth investigations without trauma or exam
[9] Including (12) stillbirth investigations without trauma or exam
[10] Including (12) stillbirth investigations without trauma or exam
[11] Includes (9) Stillbirths of indeterminate sex
[12] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[13] (1) Sharp force injuries from falling into window
[14] (1) Airplane operator in aircraft crash
[15] (1) Cardiovascular disease associated with blunt force injury of great toe; (1) Self-inflicted gunshot wound of trunk
[16] (1) Anaphylaxis following iopamidol administration
[17] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.
[18] Including (1) Asphyxia due to plastic bag over head associated with drug intoxication
[19] (2) Drowning associated with mixed drug intoxication
[20] (1) Drowning

GRAND TRAVERSE COUNTY

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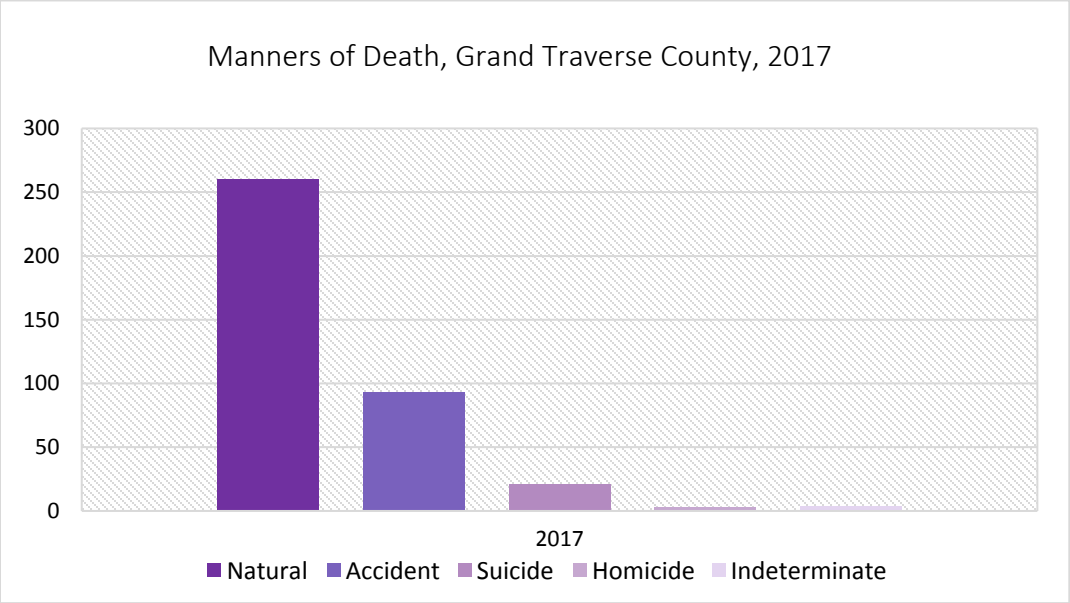
Summary of All Grand Traverse County Cases, 2017

GRAND TRAVERSE COUNTY	**2017**
Total Deaths in the County[1]	1,314
Deaths Reported to the Medical Examiner[2]	380
Deaths Investigated	249
MEI Scene Investigations	122
Death Certificates by ME	153
Bodies Transported to Morgue	77
Complete Autopsy	56
Limited Autopsy	2
External Examination	19
Storage Only	0
Total Cases with Toxicology	73
Unidentified Remains After Exam	1[3]
Referrals to Gift of Life	44
Tissue Donations	4
Cornea Donations	4
Unclaimed Bodies & Investigations	5
Exhumations	0
Cremation Permits	1,005

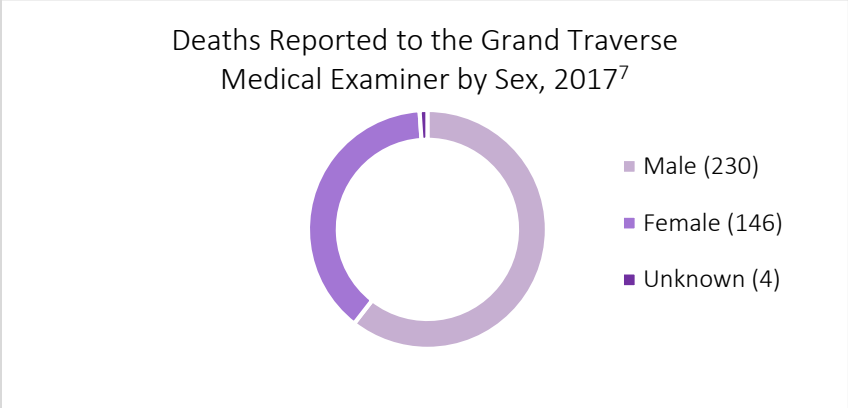
Manners of Death Reported to Grand Traverse County Medical Examiner, 2017

Manner of Death	2017
Natural	260
Accident	93
Suicide	21
Homicide	3
Indeterminate	3[4]
Total	380



Deaths Reported to Grand Traverse County Medical Examiner by Age, 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +	Unknown
2017	17[5]	0	0	0	7	32	94	229	1[6]



The vast majority of deaths with the sex "unknown" are stillborn fetuses.

Grand Traverse County, Accidental Deaths

Accidental Deaths Reported to the Grand Traverse County Medical Examiner, 2017

Mechanism	2017
Vehicle	23[8]
Drug-Related	19
Drowning	2
Fall	44
Fire	2
Environmental Exposure	0
Asphyxia[9]	1
Other	2[10]
Total	**93**

Drug-Related Deaths

Drug-Related Deaths Reported to Grand Traverse County Medical Examiner, 2014 – 2017[11]

Manner of Death	2017
Accident	19
Suicide	4[12]
Indeterminate	0
Total	**23**
% of Accidental and Indeterminate Manner Deaths Involving Opioids	84%

Drug-Related Deaths; Manner: Accident, 2017

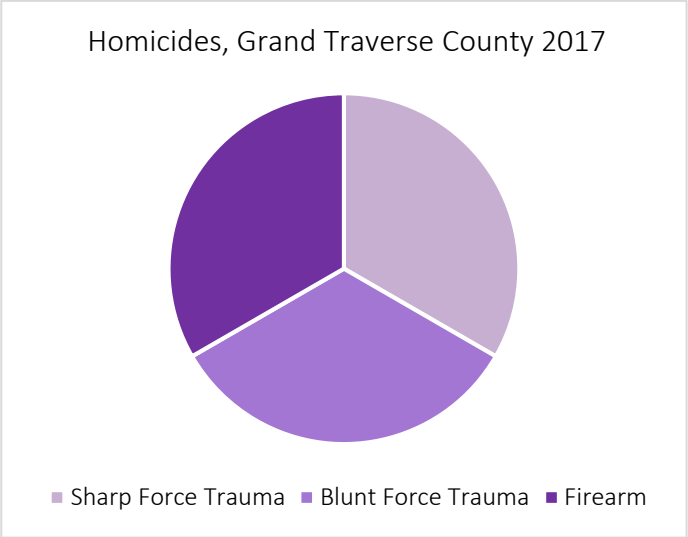
	Age	Sex	Substances Contributing to Death
1	33	M	Methamphetamine, Fentanyl
2	84	F	Opioids
3	33	M	Cocaine, Amphetamine, Alprazolam, Cyclobenzaprine, Lamotrigine, Gabapentin, Sertraline
4	27	F	Amphetamine, Methamphetamine, Cocaine Metabolite, Fentanyl, Morphine, Alprazolam Metabolite
5	49	F	Multiple Drugs
6	61	F	Amlodipine, Cyclobenzaprine, Fentanyl, Lamotrigine, Nortriptyline
7	29	M	Methamphetamine, Pseudoephedrine, Clonazepam, Cocaine Metabolite, Fentanyl, Morphine, Tramadol
8	30	M	Alcohol, 1,1-Difluoroethane
9	39	F	Fentanyl, Methamphetamine, Amphetamine
10	56	F	Fentanyl, Alcohol, Alprazolam, Citalopram, Duloxetine, Mirtazapine
11	32	F	Methamphetamine, Cocaine, Heroin, Fentanyl
12	29	M	Fentanyl
13	35	M	Fentanyl, Morphine, U47700, Alcohol
14	40	M	Butyrylfentanyl, U-47700, Alcohol
15	53	F	Oxycodone, Tramadol, Gabapentin, Sertraline, Quetiapine, Methylphenidate
16	65	F	Tramadol
17	23	M	Fentanyl, Heroin
18	32	M	Fentanyl, Acetylfentanyl, Morphine, Gabapentin
19	51	M	Cocaine, Alcohol, Fentanyl

Drug-Related Deaths; Manner: Suicide, 2017

	Age	Sex	Substances Contributing to Death
1	71	F	Alprazolam, Codeine, Hydrocodone, Acetaminophen, Tramadol, Diphenhydramine, Metoprolol, Propanolol, Promethazine
2	64	M	Insulin
3	51	M	Propanolol
4	25	M	Acetylfentanyl, Betahydroxyfentanyl, Methoxyacetylfentanyl

Grand Traverse County, Homicides

Mechanism	2017
Firearm	1
Blunt Force Trauma	1
Sharp Force Trauma	1
Total	**3**



Grand Traverse County, Suicides

Suicides Reported to the Grand Traverse County Medical Examiner, 2017

Mechanism	2017
Firearm	11
Hanging	4
Carbon Monoxide	0
Drug Intoxication	4
Motor Vehicle	1
Sharp Force	1
Asphyxia/Suffocation	0
Other	0
Total	**21**

Grand Traverse County Suicides by Age, 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	0	3	3	9	6

Appendix D, Grand Traverse County

[1] This number was generated by the County Clerk's Office using the file date of the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] (1) Unidentified anatomical teaching skeleton
[4] (1) Unidentified anatomical teaching skeleton; (1) Drowning in submerged vehicle; (1) Septic shock due to immobility & neglect
[5] (17) Stillbirths investigated without trauma or exam
[6] (1) Unidentified anatomical teaching skeleton
[7] Includes (3) stillbirths of indeterminate sex and (1) unidentified anatomical teaching skeleton
[8] Including (2) drowning deaths following high speed motor vehicle collision
[9] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[10] (1) Anaphylaxis due to an unknown external factor; (1) Sequelae of quadriplegia due to hang-glider crash
[11] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.
[12] Includes (1) mixed modality suicide (mixed drug intoxication & asphyxiation)

KALAMAZOO COUNTY

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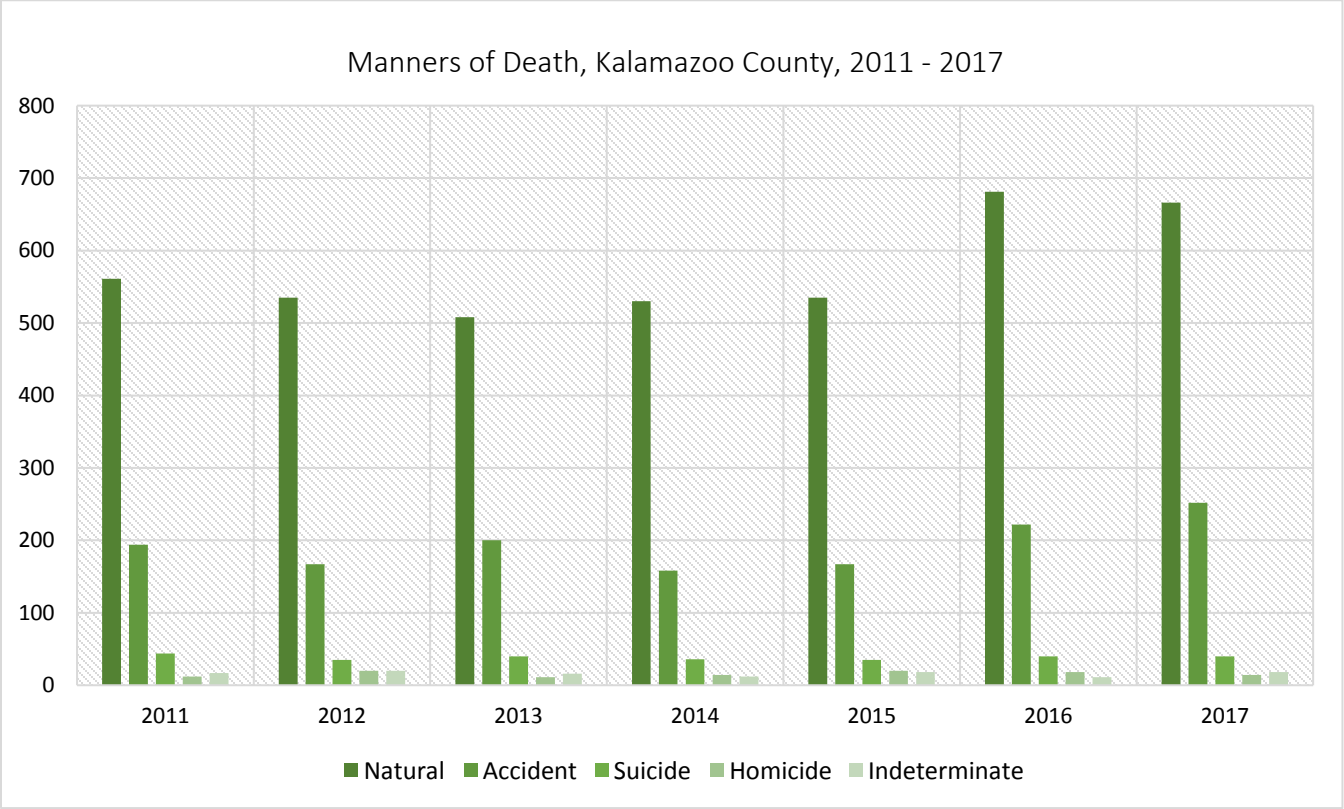
Summary of All Kalamazoo County Cases with a Comparison of Past Years, 2011 - 2017

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016	2017
Total Deaths in the County[1]	2,582	2,540	2,668	2,684	2,733	2,879	2,831
Deaths Reported to the Medical Examiner[2]	828	778	777	750	810	975	991
Deaths Investigated	---	556	580	560	646	745	733
MEI Scene Investigations	498	503	549	411	434	560	627
Death Certificates by ME	394	362	358	355	306	390	406
Bodies Transported to Morgue	244	233	241	253	247	318	307
Complete Autopsy	178	187	193	174	142	192	189
Limited Autopsy	10	4	4	6	7	7	4
External Examination	50	34	37	37	52	60	64
Storage Only	6	8	7	36	46	59	50
Total Cases with Toxicology	198	212	222	198	174	222	238
Unidentified Remains After Exam	14	0	0	0	0	0	0
Referrals to Gift of Life	9	46	65	95	113	161	156
Tissue Donations	3	4	4	6	9	22	16
Cornea Donations	2	4	9	9	9	20	10
Unclaimed Bodies & Investigations	14	9	7	10	10	10	13
Exhumations	0	0	0	0	0	1	0
Cremation Permits	1,485	1,467	1,740	1,782[3]	1,672	1,856	1,920
Percent of Total Deaths with Cremation	58%	58%	65%	66%	61%	64%	68%

--- Data not collected

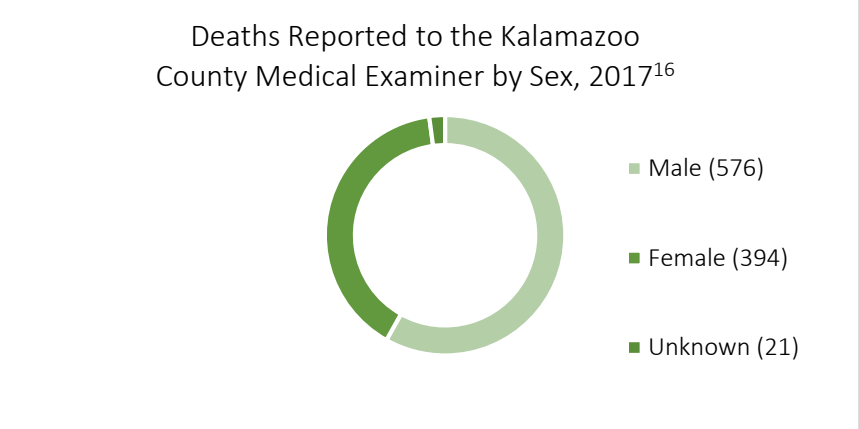
Manners of Death Reported to Kalamazoo County Medical Examiner, 2011 - 2017

Manner of Death	2011	2012	2013	2014	2015	2016	2017
Natural	561	535	508	530	588	681	666
Accident	194	167	200	158	151	222	252
Suicide	44	35	40	36	38	40	40
Homicide	12	20	11	14	14	18	14
Indeterminate	17[4]	20[5]	16[6]	12[7]	19[8]	11[9]	18[10]
Total	828	777	775	750	810	971[11]	990[12]



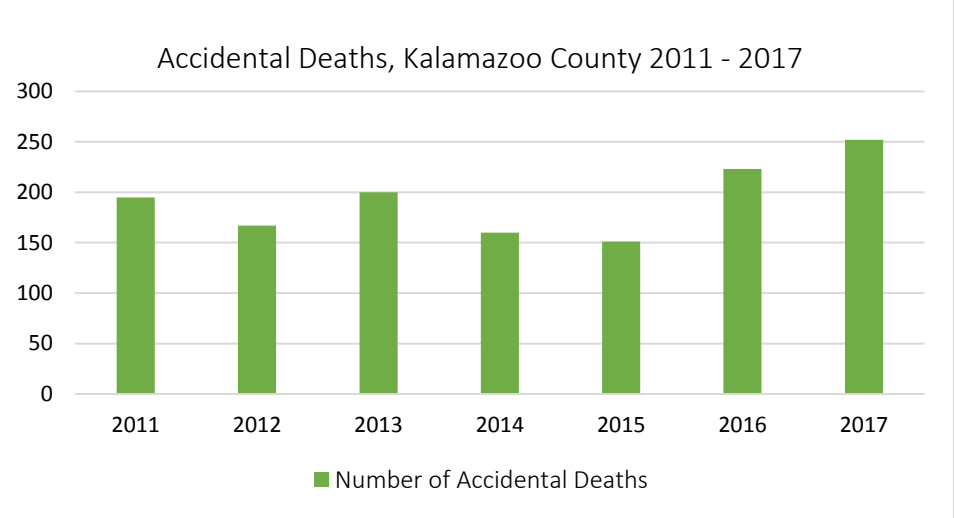
Deaths Reported to Kalamazoo County Medical Examiner by Age, 2011 - 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2011	9	6	2	3	32	74	240	461
2012	12	4	3	7	34	79	235	403
2013	15	8	0	11	29	76	209	429
2014	9	3	5	5	29	61	239	399
2015	30[13]	5	3	7	21	82	220	441
2016	58[14]	5	3	12	37	95	269	494
2017	62[15]	6	3	10	35	103	259	513



The vast majority of deaths with the sex "unknown" are stillborn fetuses.

Kalamazoo County, Accidental Deaths



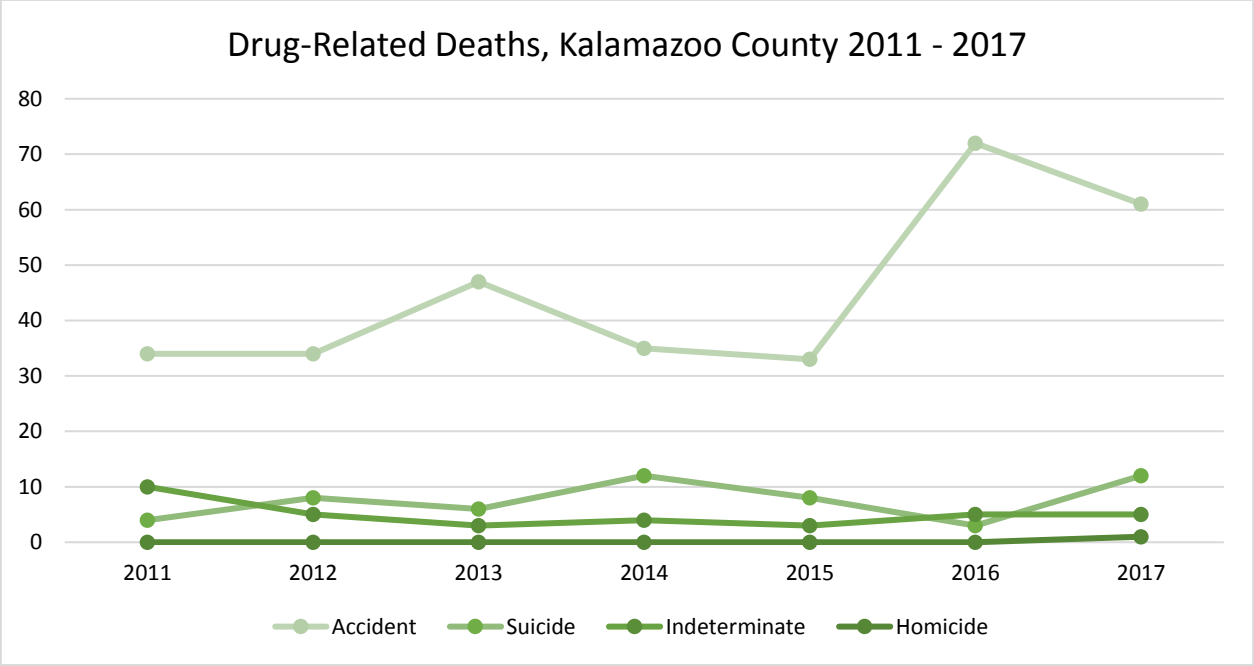
Accidental Deaths Reported to the Kalamazoo County Medical Examiner, 2011 – 2017

Mechanism	2011	2012	2013	2014	2015	2016	2017
Vehicle	46	48	60	35	46	58	72[17]
Drug-Related	33	34	47	35	33	72	61
Drowning	5	2	2	3	1	4	7
Fall	92	67	76	77	57	80	92
Fire	5	2	8	3	3	4	5
Environmental Exposure	2	4	1	1	1	1	2
Asphyxia[18]	6	3	4	2	7	3	6[19]
Other	6[20]	7[21]	3[22]	4[23]	3[24]	1[25]	7[26]
Total	**195**	**167**	**200**	**160**	**151**	**223**	**252**

Drug-Related Deaths

Drug-Related Deaths Reported to Kalamazoo County Medical Examiner, 2011 – 2017[27]

Manner of Death	2011	2012	2013	2014	2015	2016	2017
Accident	34	34	47	35	33	72	61
Suicide	4	8	6	12	8	3	12
Homicide	0	0	0	0	0	0	1
Indeterminate	10	5	3	4	3	5	5
Total	**48**	**47**	**56**	**51**	**44**	**80**	**79**
% of Accidents and Indeterminate Manners Involving Opioids	---	---	---	---	68%	80%	75%



Drug-Related Deaths; Manner: Accident, 2017

	Age	Sex	Substances Contributing to Death
1	50	M	Cocaine, Alcohol
2	49	M	Methamphetamine, Amphetamine, Clonazepam, Fentanyl, Paroxetine, Cocaine Metabolite, Methadone, Heroin
3	23	F	Methamphetamine, Alprazolam, Fentanyl, Morphine, Diphenhydramine, Codeine, Hydromorphone
4	25	M	Fentanyl
5	43	F	Fentanyl
6	32	M	Opiates (Presumed Heroin)

--- Data not collected

7	43	M	Fentanyl, Alcohol
8	46	M	Heroin
9	58	M	Fentanyl, Alcohol
10	51	M	Methamphetamine, Oxycodone
11	25	M	Fentanyl, Sertraline, Morphine
12	30	M	Methamphetamine, Pseudoephedrine, Diazepam, Fentanyl, Methadone
13	53	F	Fentanyl, Alprazolam
14	25	M	Methamphetamine, Fentanyl
15	42	M	Fentanyl, Acetylfentanyl
16	25	F	Methamphetamine, Fentanyl
17	24	M	Opiate(s)
18	32	M	Fentanyl, Clonazepam
19	60	M	Methamphetamine, Amphetamine, Oxycodone, Gabapentin, Oxymorphone
20	62	F	Cocaine (Probable)
21	21	F	Cocaine, Cocaethylene, Fentanyl
22	28	M	Methamphetamine
23	23	F	Methamphetamine, Alprazolam, Fentanyl, Morphine
24	50	F	Methadone, Alcohol
25	88	F	Alcohol
26	37	F	Methadone, Amitriptyline, Nortriptyline
27	38	F	Heroin
28	29	F	Methamphetamine, Heroin, Fentanyl
29	63	F	Clonazepam Metabolite, Alcohol, Duloxetine, Hydroxyzine
30	43	M	Oxcarbazepine Metabolite, Quetiapine
31	33	M	Methamphetamine, Morphine, Gabapentin, Bupropion
32	56	F	Methamphetamine
33	53	M	Methamphetamine
34	34	F	Fentanyl, Morphine
35	40	F	Fentanyl
36	32	M	Fentanyl
37	32	M	Fentanyl, Morphine, Methamphetamine
38	16	M	Fentanyl, Cocaine Metabolite
39	47	M	Fentanyl
40	24	M	Alprazolam, Fentanyl
41	22	M	Fentanyl, Alcohol
42	35	M	Fentanyl
43	39	F	Amphetamine, Methamphetamine
44	58	F	Methamphetamine, Amphetamine, Oxycodone, Gabapentin, Amlodipine
45	27	M	Heroin, Fentanyl
46	60	M	Alcohol, Fentanyl, Morphine
47	62	M	Methamphetamine
48	25	M	Fentanyl
49	56	M	Fentanyl, Hydrocodone, Amitriptyline
50	29	F	Methamphetamine, Amphetamine, Alprazolam, Morphine (Probable Heroin)
51	39	M	Alcohol
52	64	M	Methamphetamine
53	55	M	Morphine, 7-Aminoclonazepam, Diazepam, Gabapentin, Amitriptyline, Citalopram
54	65	M	Cocaine, Morphine, Fentanyl
55	54	M	Fentanyl
56	46	M	Methamphetamine, Fentanyl
57	49	M	Methadone, Gabapentin

58	45	M	Fentanyl
59	54	M	Methamphetamine
60	33	M	Fentanyl
61	36	M	Alprazolam, Morphine, Methoxyacetylfentanyl

Drug-Related Deaths; Manner: Suicide, 2017

	Age	Sex	Substances Contributing to Death
1	56	F	Insulin
2	30	F	Tramadol, Venlafaxine, Nortriptyline
3	43	F	Tramadol, Fluoxetine
4	49	M	Tramadol, Cyclobenzaprine, Gabapentin, Citalopram, Potassium
5	81	F	Alprazolam, Hydrocodone, Acetaminophen
6	34	F	Alprazolam, Hydrocodone, Acetaminophen, Tramadol, Gabapentin, Topiramate, Citalopram, Quetiapine, Dihydrocodeine, Zolpidem
7	44	M	Alcohol, Naproxen, Diphenhydramine
8	57	M	Alcohol, Morphine, Hydrocodone, Oxycodone, Acetaminophen
9	42	M	Atenolol
10	77	F	Oxycodone, Codeine, Trazodone
11	47	F	Cyclobenzaprine, Bupropion, Fluoxetine, Citalopram
12	59	M	Oxycodone, Acetaminophen, Amitriptyline

Drug-Related Deaths, Manner: Indeterminate, 2017

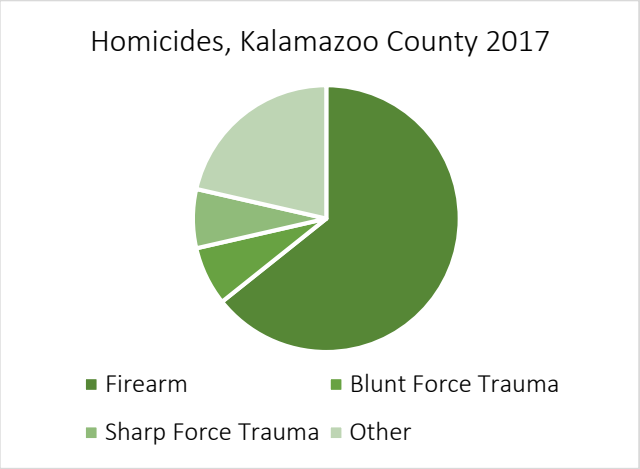
	Age	Sex	Substances Contributing to Death
1	55	F	Oxycodone, Acetaminophen, Doxepin, Venlafaxine, Promethazine, Diazepam
2	62	F	Baclofen, Alprazolam, Warfarin, Zolpidem
3	52	M	Tricyclic Antidepressant (Presumed)
4	32	M	Methylenedioxymethamphetamine (MDMA), Heroin
5	61	F	Phenobarbital

Drug-Related Deaths; Manner: Homicide, 2017

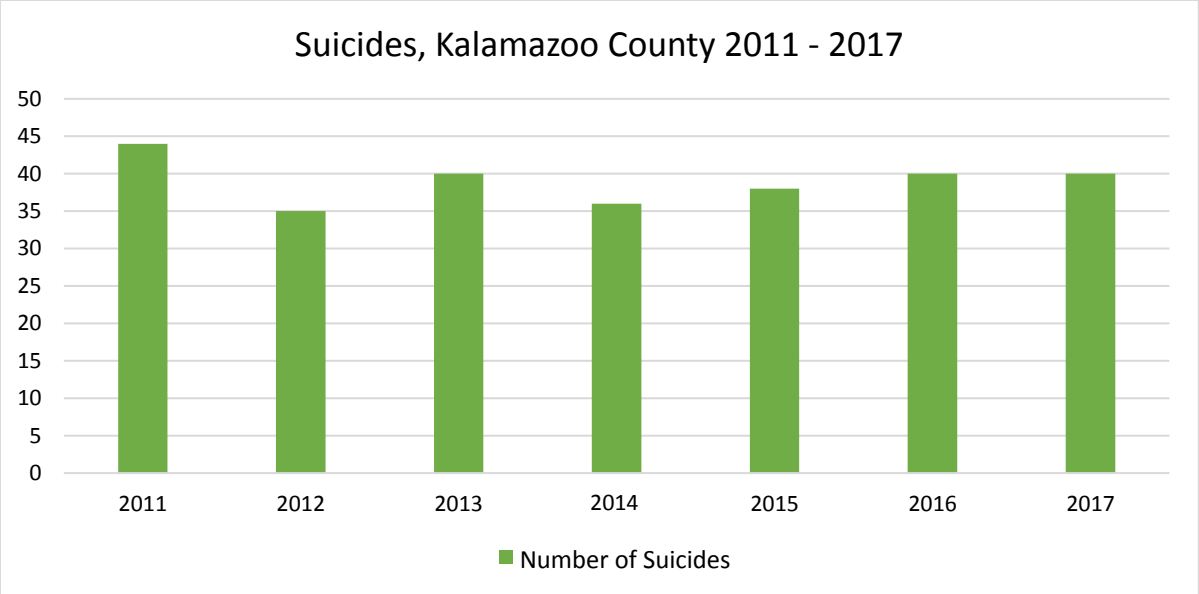
	Age	Sex	Substances Contributing to Death
1	87	F	Morphine, Hydrocodone, Lorazepam, Chlorpheniramine

Kalamazoo County, Homicides

Mechanism	2016	2017
Firearm	12	9
Blunt Force Trauma	3	1
Sharp Force Trauma	2	1
Other	1[28]	3[29]
Total	**18**	**14**



Kalamazoo County, Suicides



Suicides Reported to the Kalamazoo County Medical Examiner, 2011 – 2017

Mechanism	2011	2012	2013	2014	2015	2016	2017
Firearm	20	15	15	14	19	19	14
Hanging	12	8	13	7	9	13	12
Carbon Monoxide	2	1	0	0	1	2	0
Drug Intoxication	4	8	6	12	8	3	12
Motor Vehicle	0	0	1	1	1	0	0
Sharp Force	3	1	2	0	0	2	2
Asphyxia/Suffocation	1	1	3	1	0	0	0
Other	1[30]	1[31]	0	1[32]	0	1[33]	0
Total	44	35	40	36	38	40	40

Kalamazoo County Suicides by Age, 2011 - 2017

AGE	0 – 17	18 – 25	26 - 44	45 - 64	65 +
2011	0	7	13	16	8
2012	1	3	11	12	8
2013	5	12	4	12	7
2014	0	7	12	10	7
2015	3	6	8	14	7
2016	3	7	13	12	5
2017	1	3	14	14	8

Appendix E, Kalamazoo County

[1] This number was generated by the County Clerk's Office using the file date of the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] Estimated using combined data from Sparrow Hospital and WMed
[4] (2) Indeterminate cause of death; (9) Drug intoxication; (1) SUID; (1) SUID associated with unsafe sleep; (1) Complications of caustic substance ingestion; (2) Fire injuries; (1) Acute renal failure of unknown etiology
[5] (9) Indeterminate cause of death; (5) Drug intoxication; (2) SUID; (1) Unsafe sleep environment; (1) Left leg fractures; (1) Drowning; (1) Carbon Monoxide poisoning
[6] (3) SUID; (4) SUID associated with unsafe sleep; (3) Drug intoxication; (2) Fire-related; (1) Indeterminate cause of death; (1) Struck by train; (1) Vehicle struck bridge abutment; (1) Splenic rupture of unclear circumstances
[7] (2) Fire injuries; (1) Gunshot wound of head; (5) Mixed drug intoxication; (1) Drowning; (2) SUID; (1) SUID associated with unsafe sleep
[8] (3) Indeterminate cause of death; (5) SUID associated with unsafe sleep; (2) Mixed drug intoxication; (1) Single drug intoxication; (1) Blunt force injuries from fall, including compression fracture of spine; (1) Blunt force head injuries; (1) Hemoperitoneum due to colon rupture due to blunt force abdominal trauma of unknown etiology; (1) Multiple injuries of unknown etiology; (1) Bronchiolitis & interstitial pneumonia with respiratory virus in infant, associated with unsafe sleep; (1) SUID; (1) Thermal injuries & inhalation of heated gases in house fire; (1) Non-osseous fragments
[9] (1) Indeterminate cause of death; (1) SUID; (3) Mixed drug intoxication; (2) Single drug intoxication; (1) Gunshot wound of head; (1) Complications of ruptured cerebral aneurysm following fall; (1) Craniocerebral injuries and chronic Alcohol use with hepatic cirrhosis; (1) Complications related to spinal cord injury with paralysis due to gunshot wound of trunk

[10] (5) Drug intoxications; (4) SUID; (1) SUID associated with unsafe sleep; (1) Indeterminate cause of death; (1) Multiple injuries sustained while exiting moving vehicle; (3) Fire-related injuries; (1) Subdural hematoma of unknown etiology; (1) Pneumonia associated with remote ischemic brain injury of unknown etiology
[11] Not included in this data due to no manner of death concluded: (1) Non-osseous fragments; (1) Anatomical specimen (fetus in jar); (1) Investigated death, hospital autopsy performed at WMed; (1) Stillborn infant with examination
[12] (1) death not yet included in annual data due to pending cause and manner of death at this time
[13] Including (17) stillbirth investigations without trauma or exam
[14] Including (53) stillbirth investigations without trauma or exam
[15] Includes (47) stillbirth investigations without trauma or exam
[16] Includes (21) stillbirths of indeterminate sex
[17] Includes (1) drowning due to motor vehicle flipping into creek with submersion of vehicle; (2) Tractor-related injuries
[18] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[19] Includes (2) choking deaths, (1) of which is associated with an acute mixed drug intoxication; (1) Asphyxia due to car falling onto decedent working underneath; (1) Positional asphyxia associated with blunt force injuries
[20] (2) Dog bite; (2) Blunt force head injuries (kicked by horse); (1) Ingestion of citronella oil; (1) Probable necrotizing fasciitis & sepsis
[21] (1) Falling tree branch on head; (1) Struck & pinned by tree falling; (1) Complications of spleen laceration during endoscopic procedure; (1) Complications, perforated colon, status post colon biopsies; (2) Explosions (suspected drug lab & vehicle fuel tank); (1) Unknown how pelvis was fractured
[22] (1) Complications of heat stroke; (1) Carbon monoxide toxicity
[23] (1) Construction staple into head; (1) Struck in head by tree branch and fell off ladder; (1) Sharp force injury from kicking glass door; (1) Anaphylaxis caused by exposure to smoke and burning poison ivy
[24] (1) Tree limb fell on head; (2) Complications related to general anesthesia during finger amputation
[25] (1) Blunt impacts to head and trunk due to being struck by tree branch
[26] (1) Craniocerebral injuries caused by airplane propeller; (1) Air embolus during liver resection; (1) Pulmonary thromboemboli associated with fractured foot; (1) Craniocerebral trauma due to being struck in head with tank valve; (1) Exsanguination due to spontaneous AV fistula bleed; (1) Pulmonary thromboembolism associated with patellar dislocation; (1) Multiple injuries sustained in work explosion
[27] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.
[28] (1) Blunt and Thermal injuries
[29] (1) Intentional administration of excessive medication; (1) Asphyxia due to chest compression; (1) Multiple injuries including asphyxia and possible hyperthermia
[30] (1) Fall from balcony
[31] (1) Drowning
[32] (1) Ignited self after pouring accelerant on self
[33] (1) Thermal injuries due to dousing self with gasoline and igniting self

LEELANAU COUNTY

MEDICAL EXAMINER

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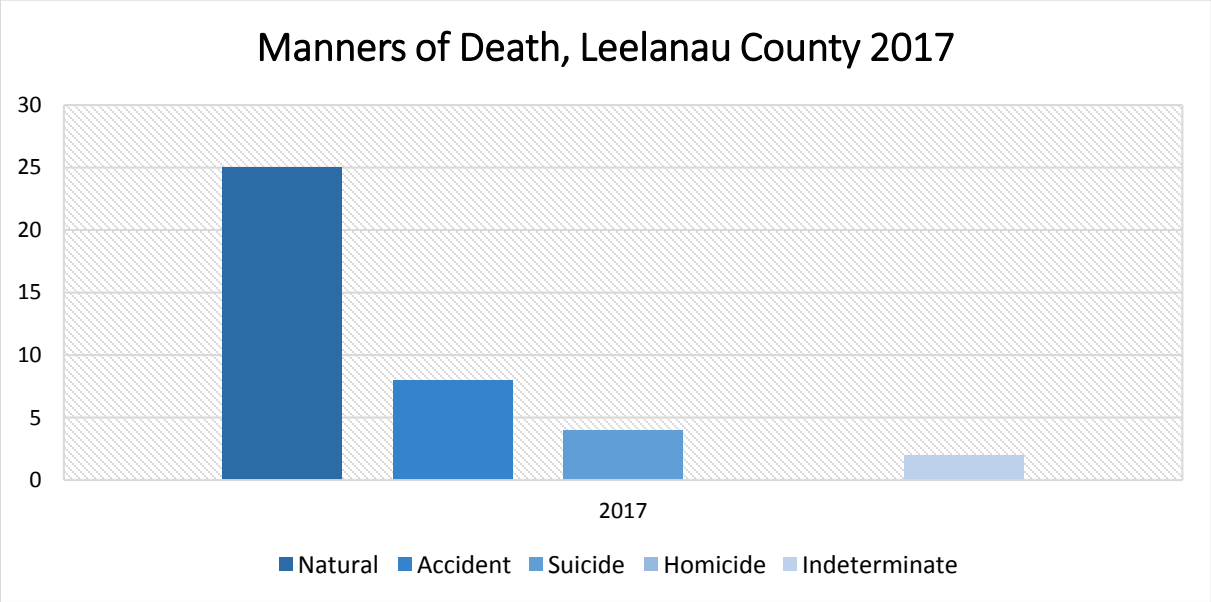
Joshua Salyer
Olga Topash
Jamie Warnes

Summary of All Leelanau County Cases, 2017

LEELANAU COUNTY	**2017**
Total Deaths in the County[1]	147
Deaths Reported to the Medical Examiner[2]	39
Deaths Investigated	36
MEI Scene Investigations	24
Death Certificates by ME	21
Bodies Transported to Morgue	10
Complete Autopsy	9
Limited Autopsy	1
External Examination	0
Storage Only	0
Total Cases with Toxicology	10
Unidentified Remains After Exam	0
Referrals to Gift of Life	6
Tissue Donations	0
Cornea Donations	0
Unclaimed Bodies & Investigations	0
Exhumations	0
Cremation Permits	105
Percentage of Deaths cremated	71%

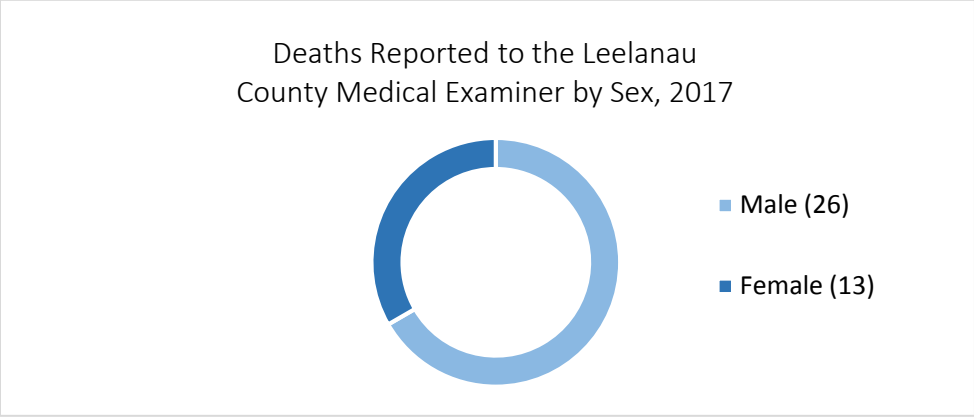
Manners of Death Reported to Leelanau County Medical Examiner, 2017

Manner of Death	2017
Natural	25
Accident	8
Suicide	4
Homicide	0
Indeterminate	2[3]
Total	**39**



Deaths Reported to Leelanau County Medical Examiner by Age, 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	0	0	0	1	3	3	7	25



Leelanau County, Accidental Deaths

Accidental Deaths Reported to the Leelanau County Medical Examiner, 2017

Mechanism	2017
Vehicle	2
Drug-Related	1
Drowning	1
Fall	4
Fire	0
Environmental Exposure	0
Asphyxia[4]	0
Other	0
Total	**8**

Drug-Related Deaths

Drug-Related Deaths Reported to Leelanau County Medical Examiner, 2017[5]

Manner of Death	2017
Accident	1
Suicide	0
Indeterminate	0
Total	**1**
% Opioid Involvement	100%

Drug-Related Deaths; Manner: Accident, 2017

	Age	Sex	Substances Contributing to Death
1	31	M	Fentanyl, Alcohol

Leelanau County, Suicides

Suicides Reported to the Leelanau County Medical Examiner, 2017

MECHANISM	2017
Firearm	2
Hanging	1
Carbon Monoxide	0
Drug Intoxication	0
Motor Vehicle	0
Sharp Force	0
Asphyxia/Suffocation	0
Other	1[6]
Total	**4**

Leelanau County Suicides by Age, 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	1	0	0	1	2

Appendix F, Leelanau County

[1] This number was generated by the County Clerk's Office using the file date of the death certificate
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] (2) Smoke and soot inhalation with thermal injuries due to residential fire
[4] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[5] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.
[6] (1) Drowning

MASON COUNTY

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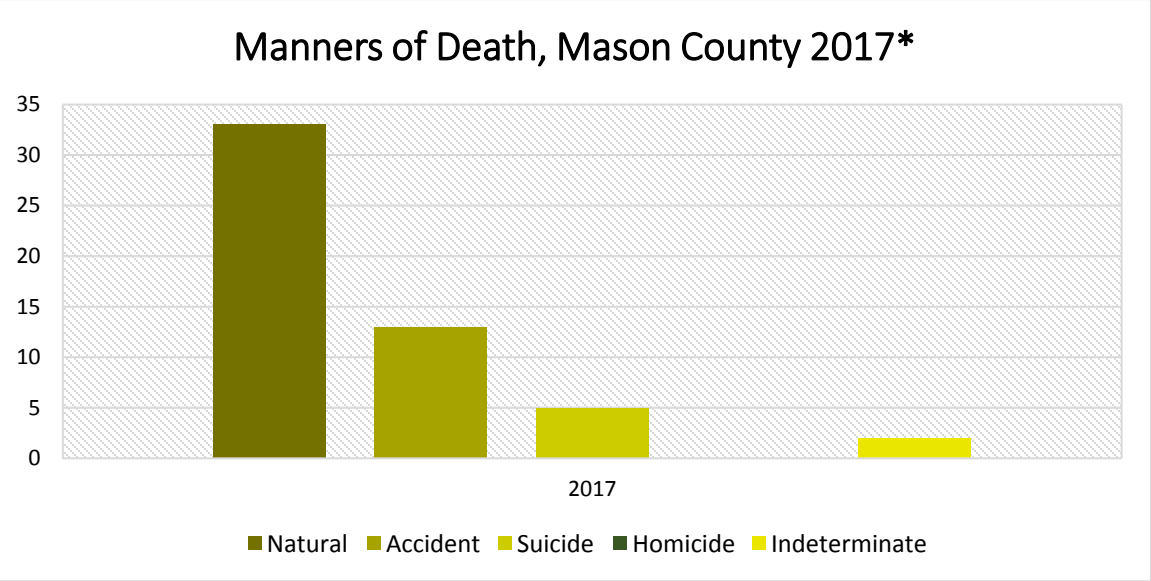
Ladinia Davis, D-ABMDI

Summary of All Mason County Cases, August 15 – December 31, 2017

MASON COUNTY	2017
Total Deaths in the County[1]	131
Deaths Reported to the Medical Examiner[2]	53
Deaths Investigated	47
MEI Scene Investigations	47
Death Certificates by ME	30
Bodies Transported to Morgue	24
Complete Autopsy	16
Limited Autopsy	1
External Examination	6
Storage Only	1
Total Cases with Toxicology	21
Unidentified Remains After Exam	0
Referrals to Gift of Life	16
Tissue Donations	3
Cornea Donations	1
Unclaimed Bodies & Investigations	0
Exhumations	0
Cremation Permits	99

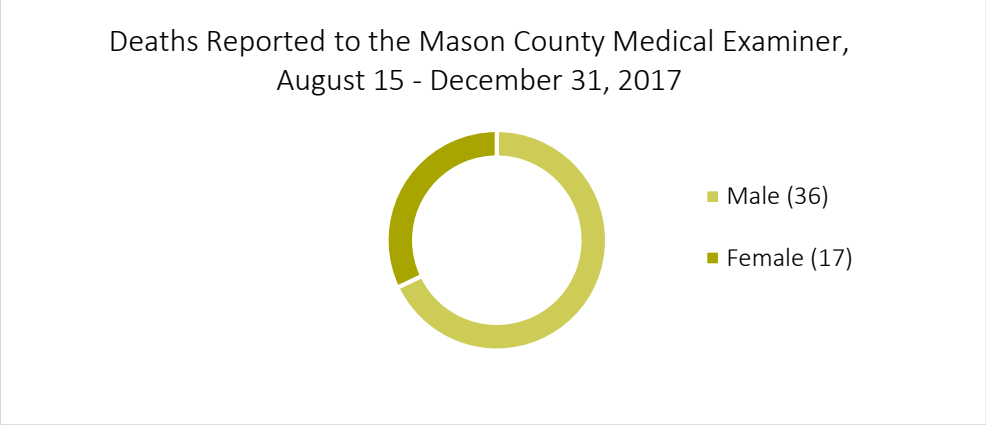
Manners of Death Reported to Mason County Medical Examiner, August 15 – December 31, 2017

Manner of Death	2017
Natural	33
Accident	13
Suicide	5
Homicide	0
Indeterminate	2[3]
Total	**53**



Deaths Reported to Mason County Medical Examiner by Age, August 15 – December 31, 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	2	0	0	0	2	9	14	26



Mason County, Accidental Deaths

Accidental Deaths Reported to the Mason County Medical Examiner, August 15 – December 31, 2017

MASON COUNTY	2017
Vehicle	5
Drug-Related	4
Drowning	0
Fall	3
Fire	0
Environmental Exposure	0
Asphyxia[4]	0
Other	1[5]
Total	13

Drug-Related Deaths

Drug-Related Deaths Reported to Mason County Medical Examiner, August 15 – December 31, 2017[6]

MASON COUNTY	2017
Accident	5
Suicide	0
Indeterminate	1
Total	6
% Opioid Involvement	33%

Drug-Related Deaths; Manner: Accident, August 15 – December 31, 2017

	Age	Sex	Substances Contributing to Death
1	55	M	Alprazolam, Heroin
2	28	M	Methamphetamine
3	56	M	Alcohol
4	36	M	Clonazepam, Diazepam, Nordiazepam, Cocaine Metabolite, Methadone, Pregabalin

Drug-Related Deaths; Manner: Suicide, August 15 – December 31, 2017

	Age	Sex	Substances Contributing to Death
1	75	F	Propafenone

Drug-Related Deaths, Manner: Indeterminate, August 15 – December 31, 2017

	Age	Sex	Substances Contributing to Death
1	62	F	Nortriptyline, Duloxetine, Alcohol

Mason County, Suicides

Suicides Reported to the Mason County Medical Examiner, August 15 – December 31, 2017

MECHANISM OF DEATH	2017
Firearm	3
Hanging	1
Carbon Monoxide	0
Drug Intoxication	1
Motor Vehicle	0
Sharp Force	0
Asphyxia/Suffocation	0
Other	0
Total	**5**

Mason County Suicides by Age, August 15 – December 31, 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	0	0	1	1	3

Appendix G, Mason County

[1] This number was obtained from the County Clerk's Office and generated using the date of death on filed death certificates
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] (1) Mixed drug intoxication; (1) Thermal injuries due to house fire
[4] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[5] (1) Sequelae of quadriplegia due to previous "chicken fighting" spinal injury
[6] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.

MUSKEGON COUNTY

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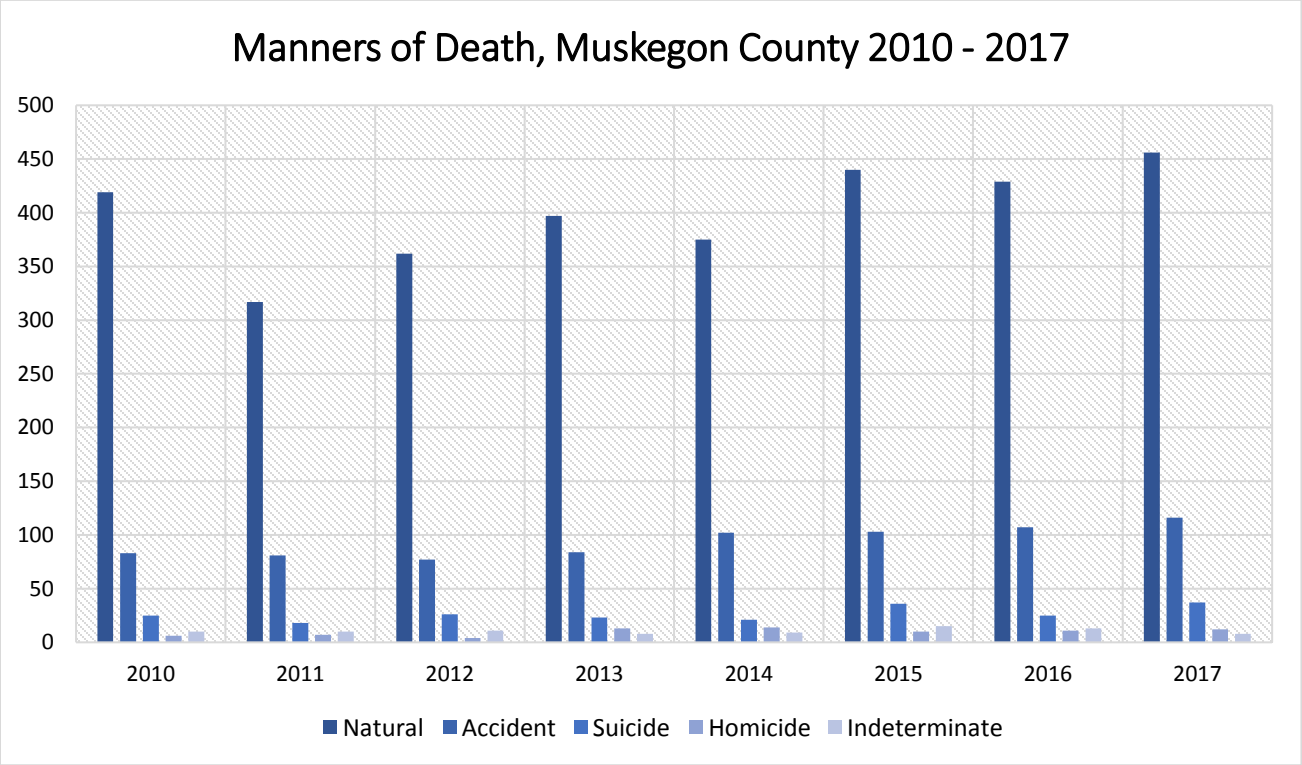
Summary of All Muskegon County Cases with a Comparison of Past Years, 2010 - 2017

MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015	2016	2017
Total Deaths in the County[1]	1,625	1,693	1,600	1,730	1,707	1,784	1,759	1,775
Deaths Reported to the Medical Examiner[2]	544	440	481	527	524	605	585	629
Deaths Investigated	---	---	412	424	453	530	504	468
MEI Scene Investigations	353	310	384	420	444	501	469	425
Death Certificates by ME	213	201	203	216	228	251	231	234
Bodies Transported to Morgue	163	161	132	148	178	159	167	159
Complete Autopsy	135	122	106	120	144	120	114	108
Limited Autopsy	5	10	2	6	2	4	2	4
External Examination	22	21	22	18	18	35	41	43
Storage Only	1	8	2	4	4	0	10	4
Total Cases with Toxicology	147	153	119	142	152	160	136	140
Unidentified Remains After Exam	0	0	0	0	0	0	0	0
Referrals to Gift of Life	27	70	81	93	156	139	109	122
Tissue Donations	3	7	8	9	14	17	12	9
Cornea Donations	3	8	11	12	16	20	11	7
Unclaimed Bodies & Investigations	0	4	4	3	6	5	7	12
Exhumations	0	0	0	0	0	0	0	0
Cremation Permits	893	812	952	986	1,007[3]	1,116	1,138	1,188
Percentage of Cremations	55%	48%	60%	57%	59%	63%	65%	67%

--- Data not collected

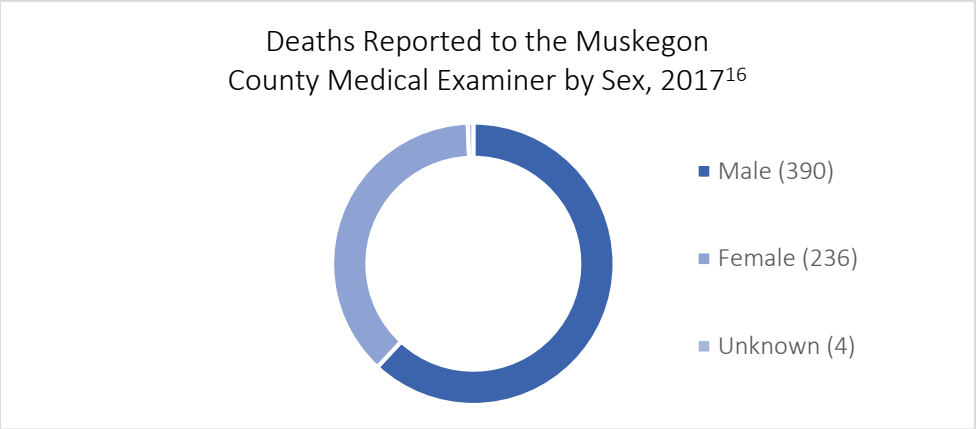
Manners of Death Reported to Muskegon County Medical Examiner, 2010 - 2017

MANNER OF DEATH	2010	2011	2012	2013	2014	2015	2016	2017
Natural	419	317	362	397	375	440	429	456
Accident	83	81	77	84	102	103	107	116
Suicide	25	18	26	23	21	36	25	37
Homicide	6	7	4	13	14	10	11	12
Indeterminate	10[4]	10[5]	11[6]	8[7]	9[8]	15[9]	13[10]	8[11]
Total	**544**	**440**	**480**	**525**	**524**	**604**	**585**	**629**



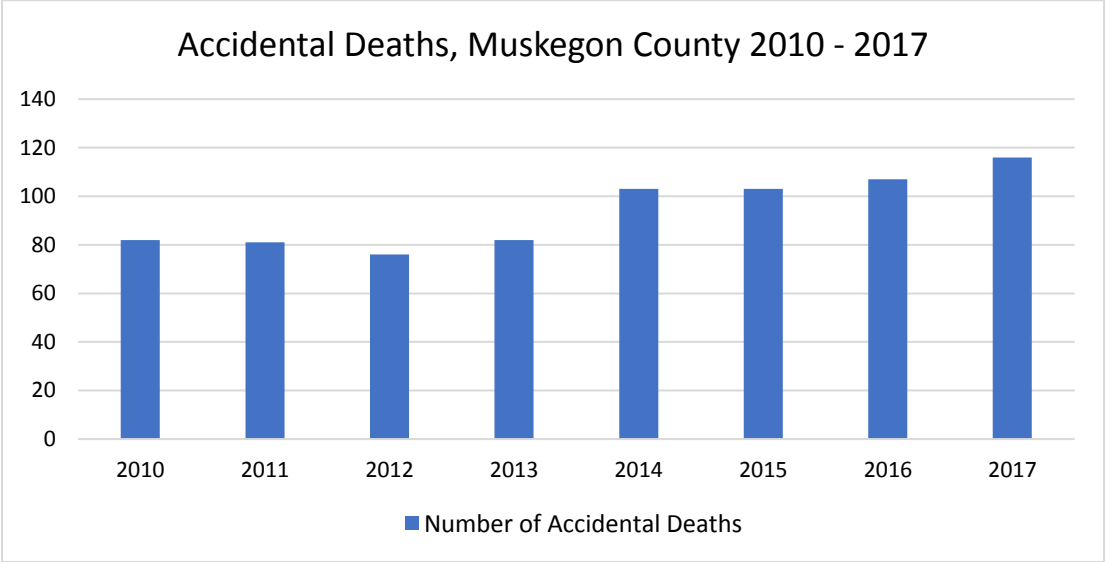
Deaths Reported to Muskegon County Medical Examiner by Age, 2010 - 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	21[12]	0	2	4	11	47	151	306
2011	3	1	1	4	14	59	134	217
2012	4	3	1	3	14	44	144	267
2013	5	0	0	4	13	48	170	286
2014	4	0	0	8	15	66	155	273
2015	10[13]	1	2	2	24	61	199	304
2016	17[14]	2	1	5	18	55	184	303
2017	13[15]	1	0	8	14	81	168	344



The vast majority of deaths with the sex "unknown" are stillborn fetuses.

Muskegon County, Accidental Deaths



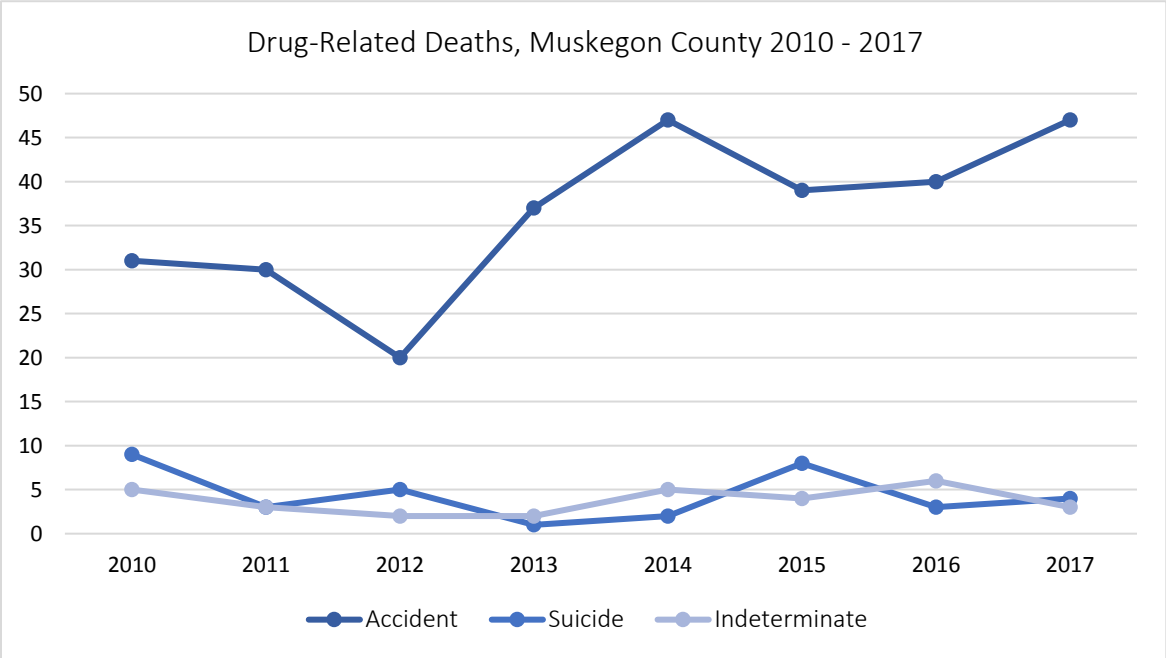
Accidental Deaths Reported to the Muskegon County Medical Examiner, 2010 – 2017

MECHANISM OF DEATH	2010	2011	2012	2013	2014	2015	2016	2017
Vehicle	16	25	18	13	18	22	22	22
Drug-Related	31	30	20	37	47	39	40	47
Drowning	3	4	4	4	4	4	2	4
Fall	21	17	27	26	29	29	32	38
Fire	3	3	0	0	1	3	1	0
Environmental Exposure	0	0	0	0	1	1	4	0
Asphyxia[17]	6	1	4	2	2	3	4	2
Other	2[18]	1[19]	3[20]	0	1[21]	2[22]	2[23]	3[24]
Total	**82**	**81**	**76**	**82**	**103**	**103**	**107**	**116**

Drug-Related Deaths

Drug-Related Deaths Reported to Muskegon County Medical Examiner, 2010 – 2017[25]

MANNER OF DEATH	2010	2011	2012	2013	2014	2015	2016	2017
Accident	31	30	20	37	47	39	39	47
Suicide	9	3	5	1	2	7	3	4
Indeterminate	5	3	2	2	5	4	6	3
Total	**45**	**36**	**27**	**40**	**54**	**50**	**48**	**54**
% Opioid Involvement	---	---	---	---	---	95%	85%	80%



--- Data not collected

Drug-Related Deaths; Manner: Accident, 2017

	Age	Sex	Substances Contributing to Death
1	30	M	Carfentanil
2	34	F	Cocaine, Fentanyl
3	50	M	Alcohol
4	33	F	Amphetamine, Pseudoephedrine, Alprazolam, Methadone
5	34	M	Heroin, Cocaine, Alcohol
6	36	F	Hydrocodone
7	26	F	Methadone, Hydrocodone, Fluoxetine
8	22	F	Fentanyl, Cocaine
9	36	F	Clonazepam, Cocaine Metabolite, Fentanyl, Heroin
10	33	M	Fentanyl, Methadone, Heroin, Gabapentin
11	42	F	Morphine, Cyclobenzaprine, Diphenhydramine, Zolpidem
12	33	F	Heroin, Cocaine
13	46	M	Heroin
14	22	M	Morphine, Cocaine
15	34	F	Cocaine, Morphine (Both probable)
16	53	M	Heroin
17	42	M	Morphine, Hydrocodone, Alprazolam, Amitriptyline
18	38	M	Cocaine, Cocaine Metabolite, Alcohol, Atenolol, Temazepam, Nordiazepam, Oxazepam, Morphine, Codeine
19	40	M	Fentanyl, Morphine, Alcohol
20	46	M	Fentanyl
21	66	F	Diazepam, Alprazolam, Alcohol, Gabapentin, Fluoxetine, Fluvoxamine, Chlorpromazine, Olanzapine, Benztropine, Trihexyphenidyl, Zolpidem
22	29	M	Heroin
23	44	M	Fentanyl
24	38	M	Alcohol in combination with presumed drug overdose
25	39	M	Heroin, Amitriptyline, Nortriptyline, Pregabalin, Metoprolol, Alcohol
26	22	F	Methamphetamine, Cocaine, Heroin
27	39	M	Heroin, Methamphetamine
28	91	M	Salicylate(s)
29	23	M	Clonazepam, Cocaine, Heroin
30	42	F	Methamphetamine
31	47	F	Heroin, Alcohol, Cocaine Metabolite, Fluoxetine, Hydroxyzine
32	25	M	Methoxyacetylfentanyl
33	29	F	Methamphetamine
34	36	M	Methadone
35	37	M	Fentanyl, Cocaine
36	35	F	Cocaine, Fentanyl, Methadone, Morphine, Hydrocodone, Carisoprodol, Cyclobenzaprine, Gabapentin, Venlafaxine
37	33	M	Fentanyl, Morphine, Gabapentin
38	55	M	Alprazolam, Fentanyl, Morphine
39	58	M	Fentanyl, Alcohol
40	38	M	Fentanyl, Morphine
41	41	M	Opiate(s), Amphetamine
42	48	M	Methoxyacetylfentanyl
43	36	M	Fentanyl, Heroin

44	34	F	Diazepam, Morphine, Hydrocodone
45	28	M	Fentanyl, Acetylfentanyl, Morphine
46	39	M	Methadone, Alprazolam
47	33	M	Cocaine

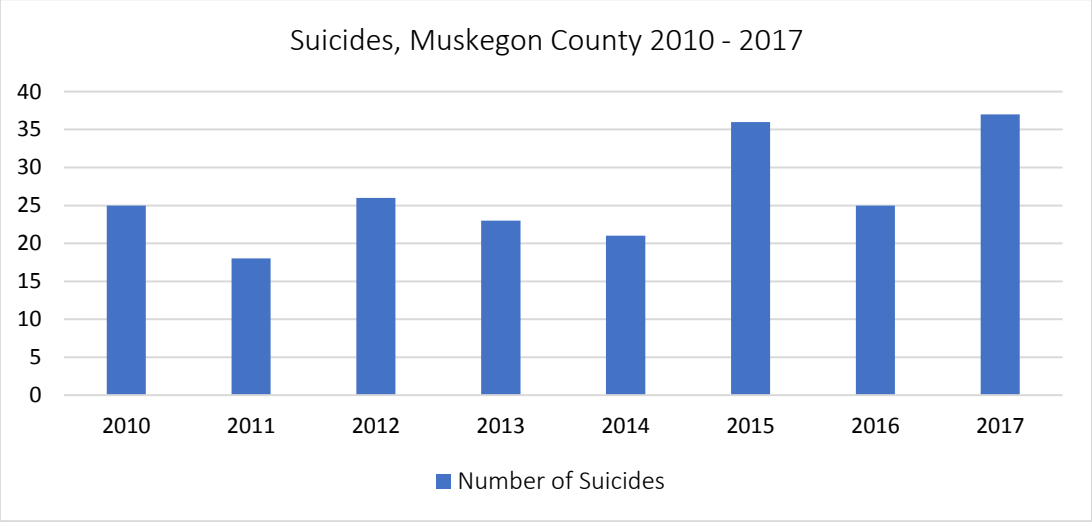
Drug-Related Deaths; Manner: Suicide, 2017

	Age	Sex	Substances Contributing to Death
1	24	F	Diphenhydramine
2	40	M	Pseudoephedrine, Diphenhydramine
3	61	F	Morphine, Citalopram, Diphenhydramine
4	53	M	Olanzapine, Quetiapine, Atenolol, Metoprolol, Ibuprofen, Citalopram

Drug-Related Deaths, Manner: Indeterminate, 2017

	Age	Sex	Substances Contributing to Death
1	39	F	Pseudoephedrine, Temazepam, Lorazepam, Hydrocodone, Tramadol, Gabapentin, Quetiapine
2	33	M	Morphine, Oxycodone, Oxymorphone, Venlafaxine, Hydroxyzine
3	28	F	7-Aminoclonazepam, Bupropion, Citalopram, Cyclobenzaprine, Diphenhydramine

Muskegon County, Suicides



Suicides Reported to the Muskegon County Medical Examiner, 2010 – 2017

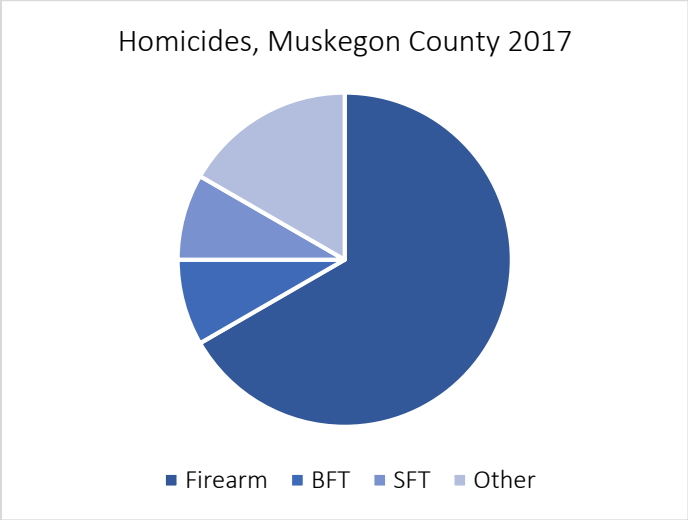
MECHANISM	2010	2011	2012	2013	2014	2015	2016	2017
Firearm	9	10	13	9	10	11	15	19
Hanging	5	4	7	7	7	15	5	10
Carbon Monoxide	2	0	0	1	0	1	1	1
Drug Intoxication	9	3	5	1	3	7	2	4
Motor Vehicle	0	0	0	2	1	2	0	0
Sharp Force	0	0	0	3	0	2	1	0
Asphyxia/Suffocation	0	1	1	0	0	0	1	1
Other	0	0	0	0	0	0	0	2[26]
Total	**25**	**18**	**26**	**23**	**21**	**36**	**25**	**37**

Muskegon County Suicides by Age, 2010 - 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	0	1	9	9	6
2011	2	1	7	5	3
2012	1	2	9	8	6
2013	0	2	10	7	4
2014	3	4	3	9	2
2015	0	7	10	8	11
2016	0	2	6	11	6
2017	3	4	10	15	5

Muskegon County, Homicides

MECHANISM	2016	2017
Firearm	8	8
Blunt Force Trauma (BFT)	1	1
Sharp Force Trauma (SFT)	0	1
Other	2[27]	2[28]
Total	**11**	**12**



Appendix H, Muskegon County

[1] This number was generated by the County Clerk's Office using the file date of the death certificate
--- Data not collected

[2] This includes human and non-human remains reported to the Office of the Medical Examiner

[3] Estimated from combined data from Sparrow Hospital and WMed

[4] (2) SUID; (2) SUID associated with unsafe sleep (1) Complications of anoxic encephalopathy of undetermined etiology; (4) Mixed drug intoxication; (1) Single drug intoxication

[5] (1) SUID; (3) Mixed drug intoxication; (1) Inhalation of products of combustion in house fire; (3) Drowning; (1) Ruptured spleen; (1) Multiple injuries in MVA (driver)

[6] (1) Complications of right femur and humerus fractures; (4) Indeterminate cause of death; (1) Dehydration, failure to thrive; (2) Mixed drug intoxication; (1) SUID; (1) Stress cardiomyopathy of unknown etiology; (1) Acute renal failure, uncertain if external factors/injuries played a role

[7] (1) SUID; (4) Indeterminate cause of death; (2) Mixed drug intoxication; (1) Drove car into river

[8] (1) Blunt injury of head, torso and extremities; (1) Complications of blunt impacts of head; (1) Bilateral pneumonia and pulmonary abscess complicating pulmonary emphysema; (1) Sudden death following exertion; (4) Mixed drug intoxication; (1) SUID

[9] (4) SUID associated with unsafe sleep; (1) SUID; (4) Mixed drug intoxication; (1) Exsanguination due to perforation of arteriovenous dialysis fistula following trauma of unknown origin; (1) Complications of subdural hemorrhage due to traumatic brain injury of unknown etiology; (3) Thermal and inhalation injuries in house fire; (1) Skeletal remains

[10] (3) SUID associated with unsafe sleep; (1) SUID; (1) Bilateral pulmonary emboli due to probable DVT; (5) Mixed drug intoxication; (1) Complications of single drug intoxication (heroin); (1) Indeterminate cause of death; (1) Drowning

[11] (3) Mixed drug intoxications; (1) Thermal and inhalation injuries due to house fire; (1) Drowning; (1) Multiple injuries due to motor vehicle collision; (2) Gunshot wounds

[12] Including (10) stillbirth investigations without trauma or exam

[13] Including (2) stillbirth investigations without trauma or exam
[14] Including (13) stillbirth investigations without trauma or exam
[15] Including (10) stillbirth investigations without trauma or exam
[16] Includes (4) stillbirths of indeterminate sex
[17] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[18] (1) Splenic injury during colonoscopy; (1) Medical complications of being trapped under an object
[19] (1) Multiple injuries in work accident
[20] (1) Jail inmate requiring restraint; (1) Crushed in industrial steam chest mold; (1) Head injury in soccer game
[21] (1) Pulmonary thromboembolic disease
[22] (2) Carbon Monoxide poisoning due to faulty furnace
[23] (1) Complications of cleaning solution ingestion; (1) Cardiovascular disease with restrictive lung disease and improperly-functioning left ventricular assist device
[24] (1) Blunt force chest injury at work; (1) Anaphylaxis due to probable insect venom allergy; (1) Subdural hematoma associated with chronic anticoagulation therapy and minor head trauma
[25] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present. May be nonspecific due to extended periods of time spent in a medical facility following incident.
[26] (1) Fall from height; (1) Drowning
[27] (1) Asphyxia; (1) Blunt & sharp force trauma
[28] (1) Asphyxia due to neck compression; (1) Multiple injuries including blunt force trauma and possible asphyxia

ST. JOSEPH COUNTY

MEDICAL EXAMINER

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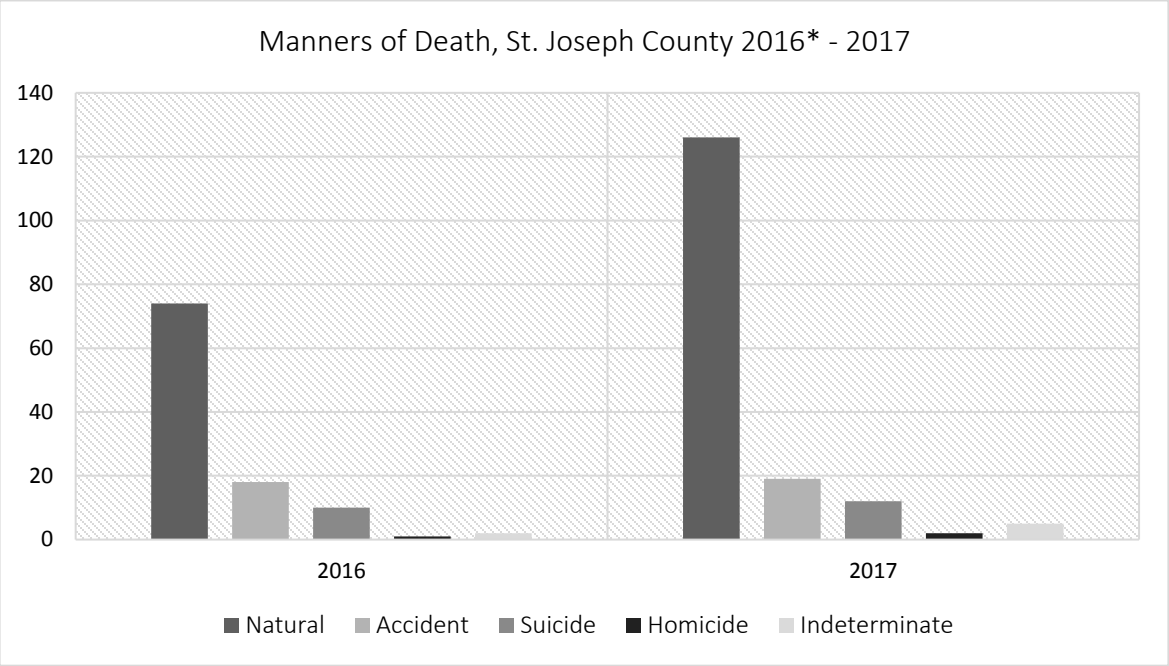
Summary of All St. Joseph County Cases, 2016 - 2017

ST. JOSEPH COUNTY	2016*	2017
Total Deaths in the County[1]	514[2]	502
Deaths Reported to the Medical Examiner[3]	105	164
Deaths Investigated	98	155
MEI Scene Investigations	67	147
Death Certificates by ME	36	66
Bodies Transported to Morgue	36	56
Complete Autopsy	18	34
Limited Autopsy	2	1
External Examination	10	14
Storage Only	5	7
Total Cases with Toxicology	22	43
Unidentified Remains After Exam	0	2[4]
Referrals to Gift of Life	36	53
Tissue Donations	3	7
Cornea Donations	3	2
Unclaimed Bodies & Investigations	2	1
Exhumations	0	0
Cremation Permits	232	309
Percentage Of Deaths with Cremation	45%	62%

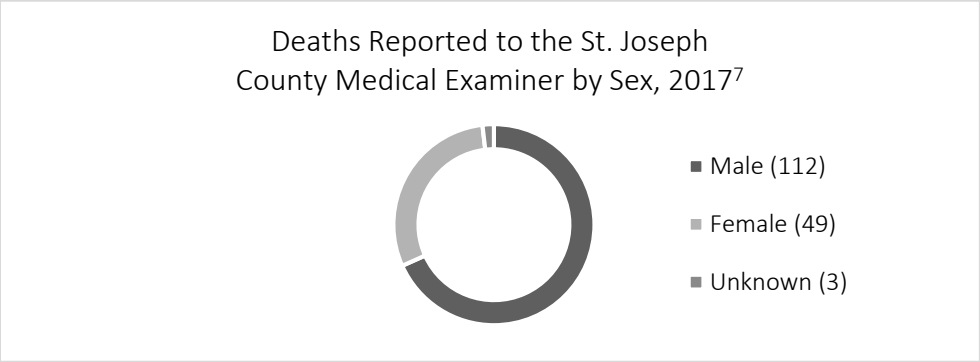
Manners of Death Reported to St. Joseph County Medical Examiner, 2016 - 2017

MANNER OF DEATH	2016*	2017
Natural	74	126
Accident	18	19
Suicide	10	12
Homicide	1	2
Indeterminate	2[5]	5[6]
Total	**105**	**164**



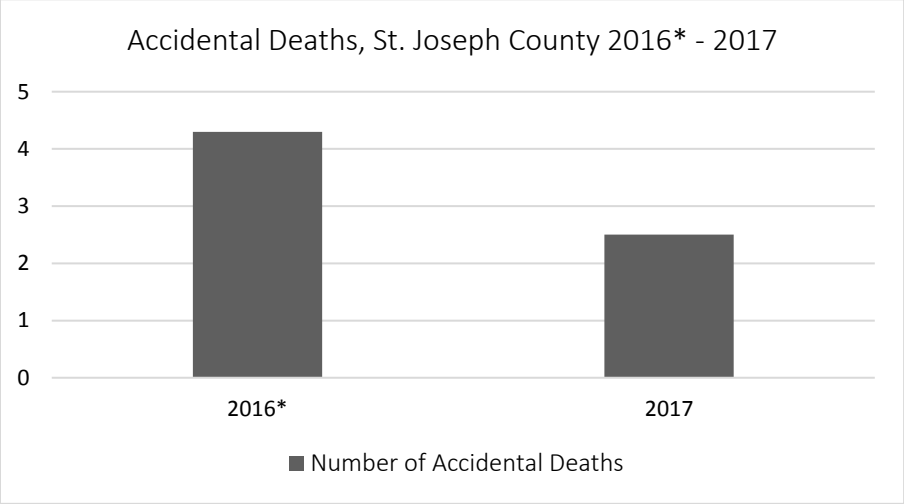
Deaths Reported to St. Joseph County Medical Examiner by Age, 2016 - 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2016*	4	1	0	0	3	13	27	57
2017	2	0	0	1	2	19	60	78



The vast majority of deaths with the sex "unknown" are stillborn fetuses.

St. Joseph County, Accidental Deaths



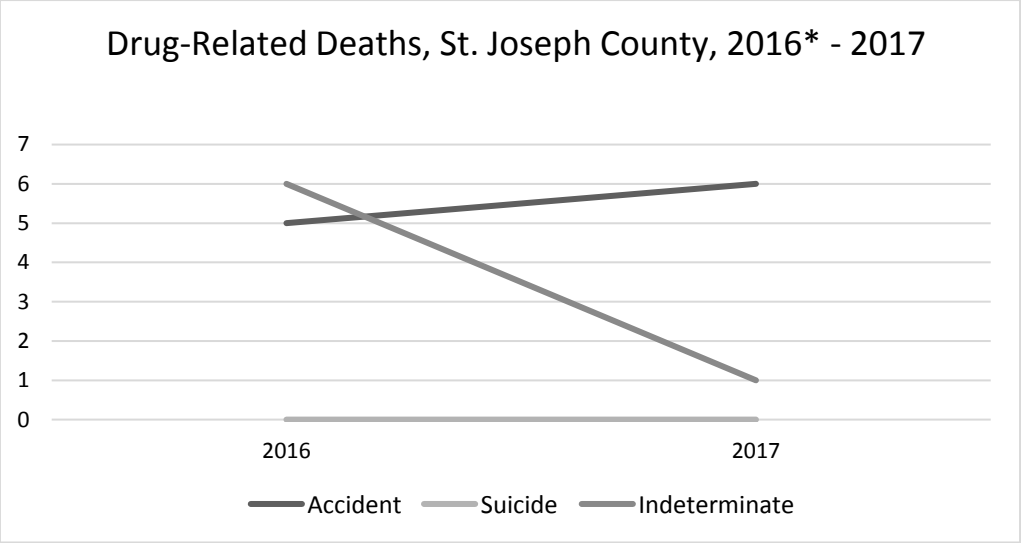
Accidental Deaths Reported to the St. Joseph County Medical Examiner, 2016 - 2017

MECHANISM OF DEATH	2016*	2017
Vehicle	4	8
Drug-Related	5	6
Drowning	2	2
Fall	3	1
Fire	0	1
Environmental Exposure	2	0
Asphyxia[8]	1	1[9]
Other	1[10]	0
Total	**18**	**19**

Drug-Related Deaths

Drug-Related Deaths Reported to St. Joseph County Medical Examiner, 2016 – 2017[11]

ST. JOSEPH COUNTY	2016*	2017
Accident	5	6
Suicide	0	0
Indeterminate	2	1
Total	**7**	**7**
% Opioid Involvement	71%	86%



Drug-Related Deaths; Manner: Accident, 2017

	Age	Sex	Substances Contributing to Death
1	34	F	Fentanyl, Heroin, Acetylfentanyl
2	30	M	Methamphetamine, Amphetamine, Hydrocodone, Carfentanil
3	55	F	Morphine, Oxycodone, Phentermine, Cyclobenzaprine, Gabapentin, Topiramate, Fluoxetine, Chlorpheniramine, Dextromethorphan
4	55	M	Fentanyl, Heroin, Alcohol, Paroxetine
5	46	F	Methamphetamine, Amphetamine, Fentanyl, Gabapentin
6	37	M	Methamphetamine

Drug-Related Deaths, Manner: Indeterminate, 2017

	Age	Sex	Substances Contributing to Death
1	27	F	Methamphetamine, Fentanyl, Morphine

St. Joseph County, Homicides

MECHANISM	2016*	2017
Firearm	0	2
Other	1[12]	0
Total	**1**	**2**

St. Joseph County, Suicides

Suicides Reported to the St. Joseph County Medical Examiner, 2016 - 2017

MECHANISM	2016*	2017
Firearm	5	4
Hanging	5	5
Carbon Monoxide	0	3
Drug Intoxication	0	0
Motor Vehicle	0	0
Sharp Force	0	0
Asphyxia/Suffocation	0	0
Other	0	0
Total	**10**	**12**

St. Joseph County Suicides by Age, 2016 - 2017

AGE	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2016*	0	3	4	1	2
2017	0	1	6	3	2

Appendix I, St. Joseph County

[1] This number was generated by the County Clerk's Office using the file date of the death certificate
[2] Includes all 2016 deaths in St. Joseph County
[3] This includes human and non-human remains reported to the Office of the Medical Examiner
[4] (2) Unidentified skulls
[5] (2) Mixed drug intoxication
[6] (2) Unidentified skulls; (1) Mixed drug intoxication; (1) Hypothermia associated with acute alcohol intoxication and acute subdural hematoma; (1) Stillbirth temporally associated with maternal drug use
[7] Includes: (1) stillbirth of unknown sex; (2) Unidentified skulls
[8] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[9] (1) Traumatic asphyxia due to car falling onto decedent working underneath
[10] (1) Multiple injuries due to dog attack
[11] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present; May be nonspecific due to extended periods of time spent in a medical facility following incident.
[12] (1) Multiple stab wounds

VAN BUREN COUNTY

MEDICAL EXAMINER

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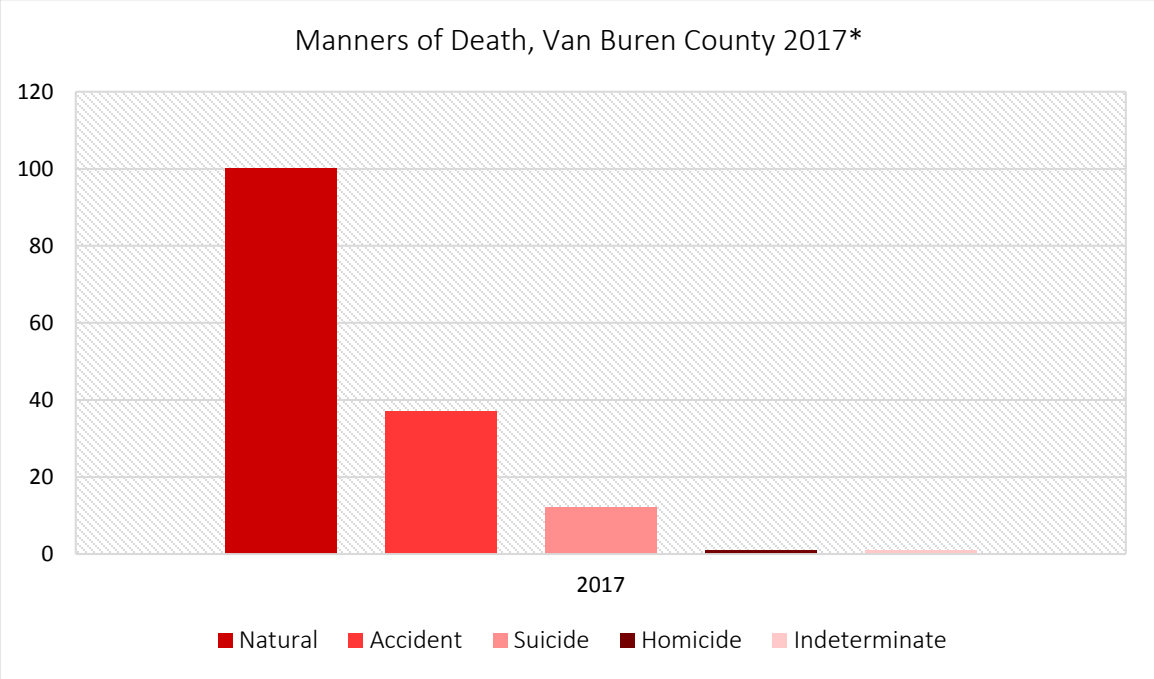
Chester Wilds

Summary of All Van Buren County Cases, March 14 – December 31, 2017

VAN BUREN COUNTY	2017*
Total Deaths in the County[1]	462
Deaths Reported to the Medical Examiner[2]	151
Deaths Investigated	137
MEI Scene Investigations	126
Death Certificates by ME	70
Bodies Transported to Morgue	53
Complete Autopsy	35
Limited Autopsy	2
External Examination	14
Storage Only	2
Total Cases with Toxicology	46
Unidentified Remains After Exam	1[3]
Referrals to Gift of Life	86
Tissue Donations	5
Cornea Donations	4
Unclaimed Bodies & Investigations	1
Exhumations	0
Cremation Permits	292
Percentage of Deaths with Cremation	63%

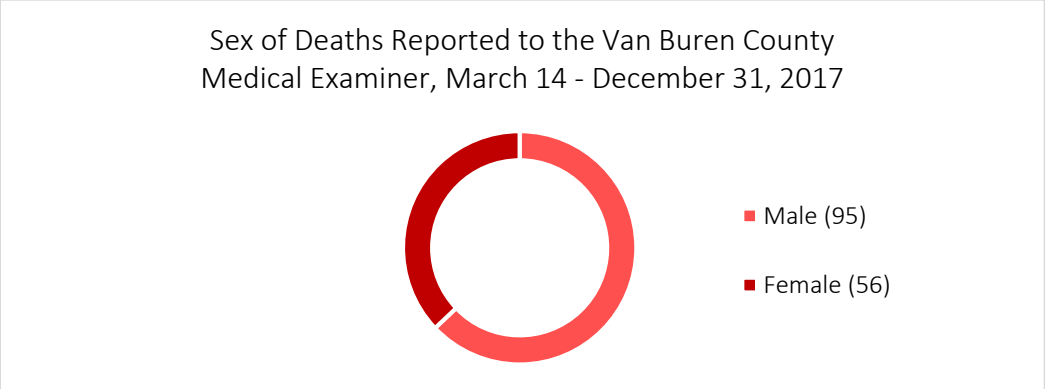
Manners of Death Reported to Van Buren County Medical Examiner, March 14 – December 31, 2017

MANNER O FDEATH	2017*
Natural	100
Accident	37
Suicide	12
Homicide	1
Indeterminate	1[4]
Total	**151**



Deaths Reported to Van Buren County Medical Examiner by Age, March 14 – December 31, 2017

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +	Unknown
2017*	0	1	1	2	8	18	44	76	1[5]



Van Buren County, Accidental Deaths

Accidental Deaths Reported to the Van Buren County Medical Examiner, March 14 – December 31, 2017

MECHANISM	2017*
Vehicle	14[6]
Drug-Related	14
Drowning	0
Fall	9
Fire	0
Environmental Exposure	0
Asphyxia[7]	0
Other	0
Total	**37**

Drug-Related Deaths

Drug-Related Deaths Reported to Van Buren County Medical Examiner, March 14 – December 31, 2017[8]

MANNER	2017*
Accident	14
Suicide	5
Indeterminate	0
Total	**19**
% of Accidents and Indeterminate Manner	74%

Drug-Related Deaths; Manner: Accident, March 14 – December 31, 2017

	Age	Sex	Substances Contributing to Death
1	62	F	Nordiazepam, Demoxepam, Alprazolam, Hydrocodone, Hydromorphone, Acetaminophen, Gabapentin, Dihydrocodeine, Oxazepam, Oxymorphone
2	23	M	Heroin, Methamphetamine, Diazepam
3	45	M	Alcohol
4	54	F	Opiate(s), Benzodiazepine(s)
5	61	F	Alprazolam, 7-Aminoclonazepam, Oxycodone, Promethazine, Dextromethorphan
6	37	F	Methamphetamine
7	59	F	Hydrocodone
8	32	F	Amphetamine, Methamphetamine, Clonazepam, Fentanyl, Morphine
9	35	M	Fentanyl, Methadone, Heroin, Alprazolam
10	59	F	Cocaine, Fentanyl, Alcohol
11	60	M	Hydrocodone, Dihydrocodeine, Oxycodone, Oxymorphone
12	54	F	Methamphetamine, Pseudoephedrine
13	40	M	Fentanyl, Tramadol
14	48	M	Methamphetamine

Drug-Related Deaths; Manner: Suicide, March 14 – December 31, 2017

	Age	Sex	Substances Contributing to Death
1	54	M	Hydrocodone, Alcohol, Thioridazine
2	62	F	Hydrocodone, Alcohol, Olanzapine
3	60	M	Fentanyl
4	67	F	Lorazepam, Hydrocodone, Metoprolol
5	42	F	Doxepin, Alcohol, Estazolam, 7-Aminoclonazepam

Van Buren County, Suicides

Suicides Reported to the Van Buren County Medical Examiner, March 14 – December 31, 2017

MECHANISM	2017*
Firearm	3
Hanging	3
Carbon Monoxide	0
Drug Intoxication	5
Motor Vehicle	1
Sharp Force	0
Asphyxia/Suffocation	0
Other	0
Total	12

Van Buren County Suicides by Age, March 14 – December 31, 2017

Age	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017*	0	2	3	5	2

Appendix J, Van Buren County

[1] This number was obtained from the County Clerk's Office and generated using the date of death on filed death certificates
[2] This includes human and non-human remains reported to the Office of the Medical Examiner
[3] (1) Unidentified male skeleton taken into Medical Examiner's Office care from local law enforcement (remains originally located in 1987)
[4] (1) Unidentified male skeleton taken into Medical Examiner's Office care from local law enforcement (remains originally located in 1987)
[5] (1) Unidentified male skeleton of unknown age taken into Medical Examiner's Office care from local law enforcement (remains originally located in 1987)
[6] Includes (1) Drowning following motor vehicle entering lake
[7] This includes choking deaths, carbon monoxide poisonings, and positional or traumatic asphyxia deaths, etc.
[8] Substances listed are those identified on the death certificate as contributing to the death and are in the order that they are presented on the death certificate; May not include all specimens present; May be nonspecific due to extended periods of time spent in a medical facility following incident.

Comparison & Summary of All Counties, 2017

	Allegan	Benzie*	Calhoun	Grand Traverse	Kalamazoo	Leelanau	Mason*	Muskegon	St. Joseph	Van Buren*	Total
Total Population (2017 Estimates)	116,447	17,573	134,128	91,807	262,985	21,657	29,073	173,693	60,947	75,353	**983,663**
Total Square Miles	1,833	860	718	601	580	2,532	1,242	1,459	521	1,090	**11,436**
Deaths in the County	800	41	1,396	1,314	2,831	147	131	1,775	502	462	**9,399**
Deaths Reported to ME[1]	188 (24%)	8 (20%)	443 (32%)	381 (29%)	991 (35%)	39 (27%)	53 (40%)	629 (35%)	164 (33%)	151 (33%)	**3,047**
Deaths Investigated	164	8	400	249	733	36	47	468	155	137	**2,397**
MEI Scene Investigations	158	1	352	122	627	24	47	425	147	126	**2,029**
Death Certificates by ME	76	1	191	153	406	21	30	234	66	70	**1,248**
Complete Autopsy	45	0	102	56	189	9	16	108	34	35	**594**
Limited Examination	2	0	3	2	4	1	1	4	1	2	**20**
External Examination	13	0	46	19	64	0	6	42	14	14	**218**
Total ME Postmortem Examinations[2]	60	0	151	77	257	10	23	155	49	51	**833**
Cardiovascular Consultations	0	0	0	1	2	0	0	0	0	0	**3**
Referrals to Gift of Life	73	3	146	44	156	6	16	122	53	69	**688**
Tissue Donations	6	1	10	4	16	0	3	9	7	5	**61**
Cornea Donations	7	1	8	4	10	0	1	7	2	4	**44**
Unclaimed Investigations	2	0	23	5	13	0	0	12	1	1	**57**
Cremation Permits	469	26	857	1,005	1,920	105	99	1,188	309	292	**6,270**
Natural	143	7	313	260	666	25	33	456	126	100	**2,129**
Accident	28	0	86	93	252	8	13	116	19	37	**652**
Suicide	8	0	30	21	40	4	5	37	12	12	**169**
Homicide	2	0	4	3	14	0	0	12	2	1	**38**
Indeterminate	7	1	10	4	18	2	2	8	5	1	**58**
Accidental Drug-Related Deaths	10	0	44	19	61	1	5	47	6	14	**207**
Indeterminate Drug-Related Deaths	2	0	5	1	5	0	1	3	1	0	**18**
Opioid-Related Deaths	6	0	48	17	59	1	2	43	3	14	**193** (76%)
Traffic-Related Deaths	12	0	16	24	71	2	5	23	8	15	**176**
Consultant Postmortem Examinations of Counties***	---	---	---	---	---	---	---	---	---	---	**201**
Hospital Postmortem Examinations	---	---	---	---	---	---	---	---	---	---	**7**
Private Postmortem Examinations	---	---	---	---	---	---	---	---	---	---	**16**

Additional Examinations Performed at WMed

Forensic Anthropology

Forensic anthropology services are provided to all WMed Medical Examiner counties. These services include: human versus non-human bone identification; search and recovery of remains; comparative medical and dental radiography for positive identification of remains; complete skeletal analyses to determine the sex, age, ancestry and stature of skeletal remains; skeletal trauma reconstructions and analyses; and input and case management of unidentified individuals in the National Missing and Unidentified Persons System (NamUs).

FORENSIC ANTHROPOLOGY	2016	2017
Radiographic Positive Identifications	46	79
Trauma Analyses	23	7
Recoveries	2	5
Non-human	9	8
Biological Profile	2	5

Center for Neuropathology

The Center for Neuropathology, established in 2016, performed a wide range of examinations in 2017, including forensic cases, private consultations for concerned families, hospital consultations, and countless research consultations.

NEUROPATHOLOGY EXAMINATIONS	2016	2017
WMed Forensic Cases	43	79
Consulting Forensic Cases	84	166
Hospital Specimens	11	3
Research Cases/Projects	277	325
Private Neuropathological Examinations	5	8
Total	**420**	**581**

Appendix K

* All data based on partial year: Benzie (Jan 1 – Mar 31, 2017); Mason (Aug 15 – Dec 31, 2017); Van Buren (Mar 14 – Dec 31, 2017)
[1] Percentage provided refers to the percentage of all deaths that were reported to the ME Office
[2] Postmortem examination includes all complete autopsies, limited, and external examinations performed.

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