



2016

ANNUAL REPORT

Office of the Medical Examiner



ALLEGAN COUNTY
CALHOUN COUNTY
KALAMAZOO COUNTY
MUSKEGON COUNTY
ST. JOSEPH COUNTY



CONTACT INFORMATION

Office of the Medical Examiner
300 Portage St
Kalamazoo, MI 49007

Phone: (844) 337 - 6001
Fax: (844) 337 - 6001

Mailing Address:
Office of the Medical Examiner
1000 Oakland Dr
Kalamazoo, MI 49008

www.med.wmich.edu/medicalexaminer

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Department of Pathology Faculty and Leadership

Joyce L. deJong, DO
Founding Chair and Professor
Forensic Pathologist

Joseph A. Prahlow, MD
Assistant Chair and Professor
Forensic Pathologist

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

Elizabeth A. Douglas, MD
Assistant Professor
Forensic Pathologist

Amanda O. Fisher-Hubbard, MD
Assistant Professor
Co-Director, Center for Neuropathology
Forensic Pathologist
Neuropathologist

Brandy L. Shattuck, MD
Assistant Professor
Forensic Pathologist

Jered B. Cornelison, PhD
Assistant Professor
Forensic Anthropologist

Carolyn V. Isaac, PhD
Assistant Professor
Forensic Anthropologist

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

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

Abigail J. Grande, MPH
Quality & Accreditation Analyst

Lee O. Morgan
Pathology Manager

SERVICES PROVIDED

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 pathologists and all autopsies are performed by 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.

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.

CASE MANAGEMENT

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.
- *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.

MANNER OF DEATH

Manner of death determination is something that originated in the United States. Unlike the cause of death, with thousands of possibilities, 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 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.”¹

- *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.

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

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.

PUBLIC HEALTH AND SAFETY ISSUES

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.

OVERVIEW OF SCENE INVESTIGATION & FOLLOW-UP

A county medical examiner or deputy county medical examiner shall 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.

If 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, then the county medical examiner shall verify the identity of the decedent through fingerprints, dental records, DNA, or other definitive identification procedures.

- The Medical Examiner Investigator (MEI) is aware of the deaths requiring forensic autopsies and in those cases, arranges for transport to WMed for a postmortem examination.
- 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 subsequently reviewed by the on-call pathologist.
- Autopsy reports are written and signed within 60 days for 95% of cases.
- Permanent records are maintained for future use by the Office of the Medical Examiner.

NAME ACCREDITATION

The Medical Examiner's Office at WMed received accreditation from the National Association of Medical Examiner's in January of 2015. Our office will maintain this accreditation until January of 2020. Information regarding inspection and accreditation is at the website for the National Association of Medical Examiners (NAME). www.TheNAME.org.

Based upon NAME standards, 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.

COMMENTS ON METHOD AND TERMS

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 Medical Examiner Offices or Coroner Office where we do not function as the Medical Examiner, at the request of these outside entities.

- "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.

HIGHLIGHTS FROM 2016

Faculty Additions

2016 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 Drs. Rudolph Castellani and Amanda Fisher-Hubbard.

Rudolph Castellani, MD, joined us as the Director of the Center for Neuropathology and the Director of the Research Histology Laboratory. He is a professor in the Department of Pathology and a Deputy Medical Examiner for our counties. He previously held faculty positions at Case Western Reserve University, Michigan State University, and, most recently, the University of Maryland School of Medicine, where he was a professor of pathology and director of neuropathology, the director of autopsy services, the program director of the pathologist's assistant graduate program, and associate director of the pathology residency program. He received his medical degree from Wayne State University in 1990,



after which he trained in anatomic pathology at Wayne State University's Detroit Medical Center, followed by a neuropathology fellowship at Case Western Reserve University and University Hospitals of Cleveland. Throughout his career Dr. Castellani has studied the pathology and pathogenesis of neurodegenerative disease and neurotrauma, human prion diseases, Alzheimer's disease, and chronic traumatic encephalopathy (CTE). He has published more than 250 peer-reviewed research papers, reviews, and chapters, and serves on the editorial boards of numerous medical and scientific journals. He served for 6 years on the Veterans Administration study section that reviews scientific grant applications for neurodegenerative diseases and trauma, and served for two years as the study section Chair. He is presently a member of the scientific advisory committee for the International Concussion and Head Injury Research Foundation. His many honors include Educator of the Year from the Michigan State University Department of Neurology and Ophthalmology, the 2010 Alzheimer Medal from the Journal of Alzheimer's Disease, the 2011 Mark A. Smith Award for Excellence in Neuroscience, and the Harland I. Firminger Award for Excellence in Pathology Teaching.

Amanda O. Fisher-Hubbard, MD, joined WMed's Department of Pathology as an assistant professor and Deputy Medical Examiner. She is the co-director of our Center for Neuropathology. Dr. Fisher-Hubbard obtained her undergraduate degree from the University of Toledo and earned her medical degree from the Northwestern University Feinberg School of Medicine. Dr. Fisher-Hubbard, who is board certified in forensic pathology, anatomic and clinical pathology, and neuropathology, was at the University of Michigan from 2009 to 2016 and, in that time, was an anatomic and clinical pathology house officer in U-M's Department of Pathology from 2009 to 2013. She also was a forensic pathology fellow at U-M from 2013 to 2014 and was a neuropathology fellow there from 2014 to 2016. Dr. Fisher-Hubbard has multiple peer-reviewed publications and is active in educating students, residents, medical examiner investigators and other medical examiners.

County Additions

In April of 2016, St. Joseph County joined our office to become our fifth contracted county for Medical Examiner services. Data presented in this report will reflect that we were not the contracted ME for the first three months of 2016. However, we did perform some examinations for St. Joseph County during this time.

Mass Fatality Plan

Our Mass Fatality Plan is initiated with any single incident with the potential to result in five or more fatalities. This definition of a mass fatality, in the New York City model, is implemented because our allocation of resources, the potential need for additional help from transporters, additional MEIs, and altering of schedules of office personnel occurs with such incidents. The Medical Examiner's Office faced two small mass fatality situations within a matter of months in early to mid-2016. On February 20, 2016, six individuals were shot by another in multiple locations within

Kalamazoo County. The entire team responded immediately upon notification. On June 7, 2016, our mass fatality plan was again activated following a motor vehicle versus multiple bicyclists collision in Kalamazoo County. Five bicyclists died as a result of their injuries. Once again, our team was notified and responded immediately.

Center for Neuropathology & Research Histology Laboratory

In 2016, both the Center for Neuropathology and the Research Histology Laboratory were established at WMed. The Research Histology Laboratory at WMed offers full histology services specializing in preparation of autopsy, veterinary, and research specimens for histopathological examination. On-site laboratory services allow for rapid turnaround of specimens, and increased collaboration between pathologists and the laboratory to improve sample results. Laboratory histotechnologists are certified by the American Society of Clinical Pathology (ASCP).

Capabilities for routine histology include tissue trimming, processing, embedding, sectioning and conventional staining. The laboratory offers an extensive menu of special stains to aid in pathologist assessment. Frozen sample preparation and sectioning, and bone decalcification methods are available to accommodate a wide range of sample types. The histology lab also offers a variety of specialized capabilities. Immunohistochemistry (IHC) staining with a variety of antibody markers is performed using automated equipment. Method development can be performed for novel antibodies. Additionally, manual techniques are used for free-floating immunohistochemistry. Fixed and frozen sectioning is available for large specimens (up to 2"x3") using a sledge microtome.

The Center for Neuropathology at WMed was launched in 2016 and is a national referral center for the diagnostic interpretation of autopsy brains and biopsy specimens, as well as a research center dedicated to scientific investigation of causes and consequences of diseases of the human nervous system.

We provide neuropathology expertise across the spectrum of neurological diseases, encompassing dementias, vascular disease, epilepsy, cerebral palsy, and traumatic brain injury (TBI). Our research efforts are focused on the long-term consequences of sports-related concussion and traumatic brain injury, the pathogenesis of dementias, and exploring the relationship between TBI in athletes, military service members, and others, and potential downstream pathologies such as chronic traumatic encephalopathy (CTE), Alzheimer's disease, amyotrophic lateral sclerosis, Parkinson disease, and other neurodegenerative conditions.

We have substantial experience and expertise in the pathology of pediatric head trauma, and have active research efforts exploring the relationships between various mechanisms of pediatric head trauma, and their clinical and pathological substrates.

The Center for Neuropathology at Western Michigan University Homer Stryker M.D. School of Medicine is equipped to provide diagnostic services, including the interpretation of autopsy brain, eye, muscle, and nerve specimens, either as the primary interpretation or as a second opinion. We also provide second opinion for diagnostic interpretation of brain biopsies, muscle biopsies, and nerve specimens. We have ongoing research projects that address multiple questions in neuroscience, and maintain a brain tissue repository of numerous disease states, as well as controls.

ALLEGAN COUNTY

ALLEGAN COUNTY MEDICAL EXAMINER INVESTIGATORS

Judy Keizer, Lead MEI
Susan Brunsink
Timothy Franz
DeAnn Greene
Lisa Letts
Ashley Shade
Tamara Shoemaker
Paul Smith, D-ABMDI
Meredith Visser

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

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

Summary of All Allegan County Cases with a Comparison of Past Years, 2010 - 2016

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015	2016
Total Deaths in the County ^A	607	549	602	657	705	775	727
Deaths Reported to the Medical Examiner	164	172	162	182	193	176	203
Deaths Investigated	*	*	145	164	189	170	192
MEI Scene Investigations	147	155	143	160	177	152	174
Death Certificates by ME	98	83	78	76	97	77	85
Bodies Transported to Morgue	80	68	63	58	74	66	62
Complete Autopsy	57	51	43	49	63	32	36
Limited Autopsy	4	2	6	1	2	2	5
External Examination	16	13	11	5	7	18	17
Storage Only	3	2	3	3	2	14	4
Total Cases with Toxicology	70	51	54	54	70	47	52
Unidentified Remains After Exam	0	0	0	0	2	1	0
Referrals to Gift of Life	14	35	38	32	62	64	63
Tissue Donations	4	3	4	0	5	8	5
Cornea Donations	1	3	5	0	6	7	4
Unclaimed Bodies	0	2	2	1	2	3	0
Exhumations	0	0	0	0	0	0	0
Cremation Permits	287	300	299	350	409 ²	404	442

^A These numbers represent approximate numbers of deaths, as they are the actual number of death certificates filed in each county in the given year

* Data not collected

² Estimated from combined data from Sparrow Hospital and WMed

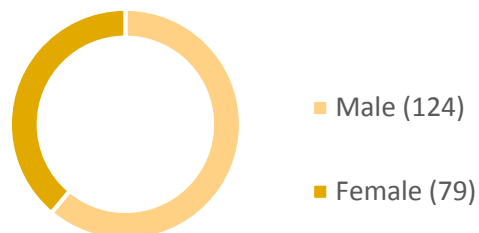
Manners of Death Reported to Allegan County Medical Examiner, 2010 - 2016

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015	2016
Natural	105	128	126	141	132	127	149
Accident	37	28	22	31	39	25	36
Suicide	16	14	12	6	16	17	15
Homicide	0	1	1	2	2	5	1 ³
Indeterminate	5 ⁴	1 ⁵	1 ⁶	2 ⁷	4 ⁸	2 ⁹	2 ¹⁰
Total	164	172	162	182	193	176	203

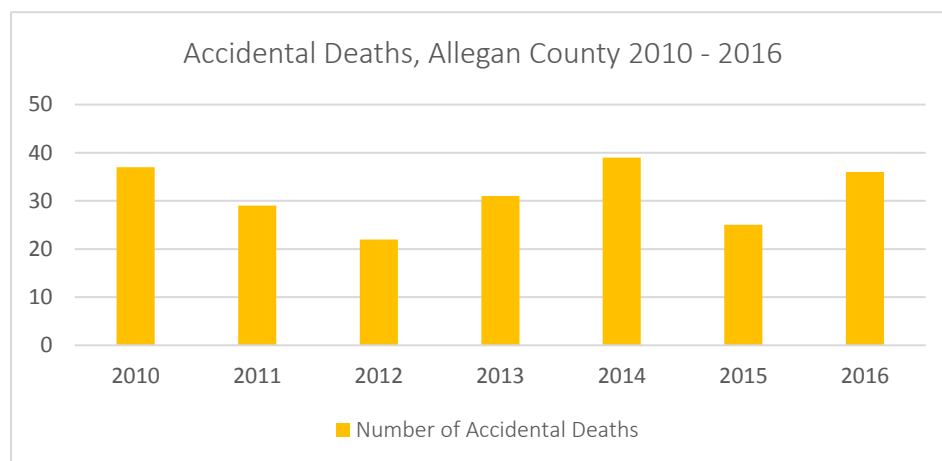
Deaths Reported to Allegan County Medical Examiner by Age, 2010 - 2016

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

Deaths Reported to the Allegan County Medical Examiner by Sex, 2016

³ (1) Medication tampering resulting in sub-therapeutic blood diazepam level causing seizure⁴ (2) Drug related; (1) Drowning; (1) Carbon monoxide; (1) Severely decomposed, Indeterminate cause of death⁵ (1) Hypothermia complicated by mixed drug intoxication⁶ (1) Mixed drug intoxication⁷ (1) SUID; (1) Indeterminate cause of death⁸ (1) SUID associated with unsafe sleep; (1) Unknown, presumed deceased; (2) Skeletal remains⁹ (2) Skeletal remains¹⁰ (1) Mixed drug intoxication; (1) Residential fire, inhalation of products of combustion

Allegan County, Accidental Deaths



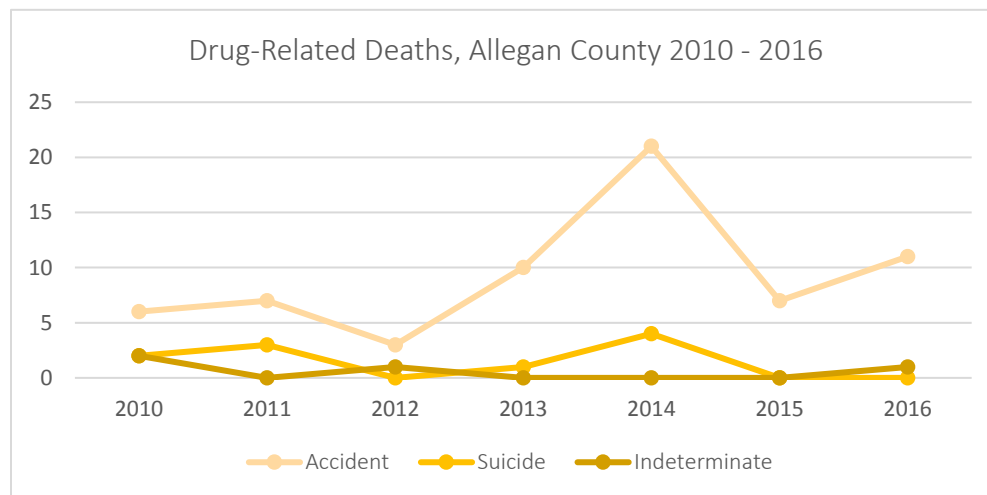
Accidental Deaths Reported to the Allegan County Medical Examiner, 2010 – 2016

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015	2016
Vehicle	15	12	13	9	11	10	9
Drug-Related	6	7	3	10	20	7	11
Drowning	1	2	0	1	1	0	1
Fall	7	4	2	7	5	5	10
Fire	3	2	3	1	0	0	0
Environmental Exposure	0	0	0	2	0	2	1
Asphyxia	3	2	1	0	0	0	2
Other	2 ¹¹	0	0	2 ¹²	2 ¹³	1 ¹⁴	2 ¹⁵
Total	37	29	22	31	39	25	36

Drug-Related Deaths

Drug-Related Deaths Reported to Allegan County Medical Examiner, 2010 – 2016

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015	2016
Accident	6	7	3	10	20	7	11
Suicide	2	3	0	1	4	0	0
Indeterminate	2	0	1	0	0	0	1
Total	10	10	4	11	24	7	12



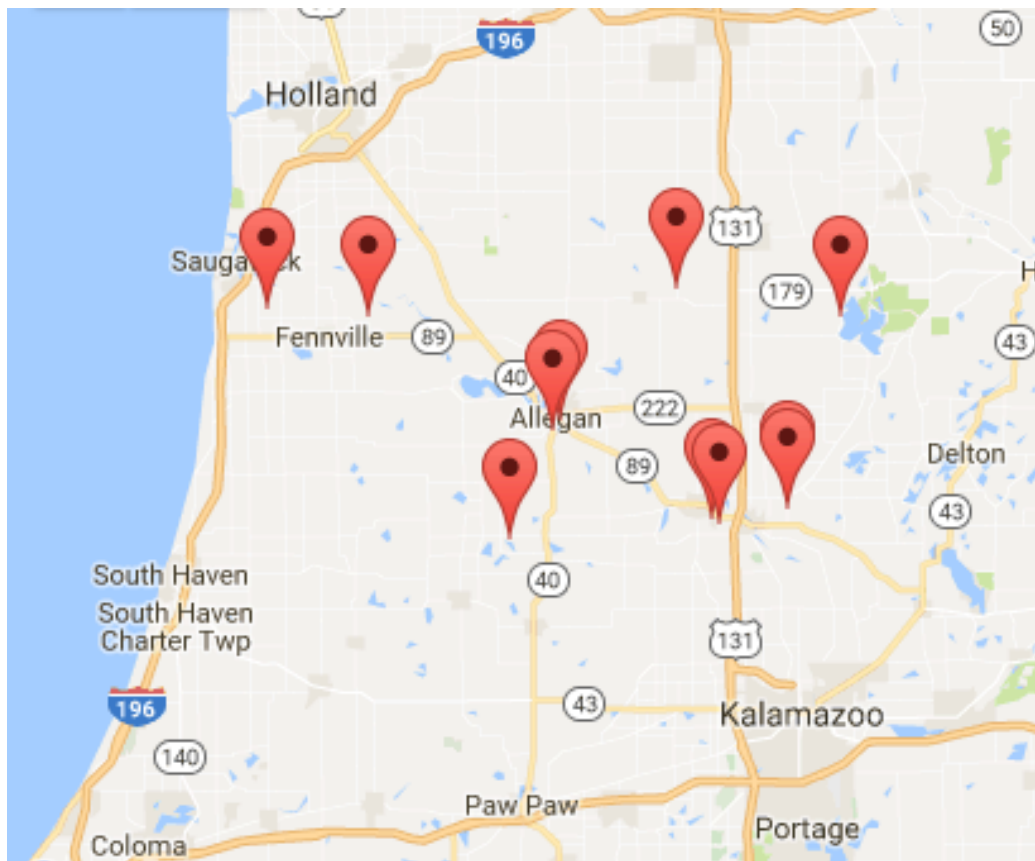
Accidental Drug-Related Deaths, 2016

	Age	Sex	Substances Contributing to Death
1	40	M	Cocaine, Cocaethylene, Ethanol
2	53	M	Hydrocodone, Oxycodone, Ethanol, Acetaminophen, Norsertraline, Trazodone, Chlorophenylpiperazine
3	37	F	Alprazolam, Methadone, Morphine, Codeine, Doxylamine, Dextromethorphan
4	63	M	Amphetamine(s)
5	28	M	Heroin, Bupropion, Hydroxyzine
6	34	F	Fentanyl, Promethazine, Trazodone, Citalopram, Oxycodone, Morphine, Temazepam, Oxazepam
7	51	M	Methamphetamine
8	37	M	Heroin, Fentanyl
9	57	M	Alprazolam, Hydrocodone, Oxycodone, Duloxetine, Amlodipine
10	61	M	Methadone, Alprazolam
11	35	F	Alprazolam, Methadone

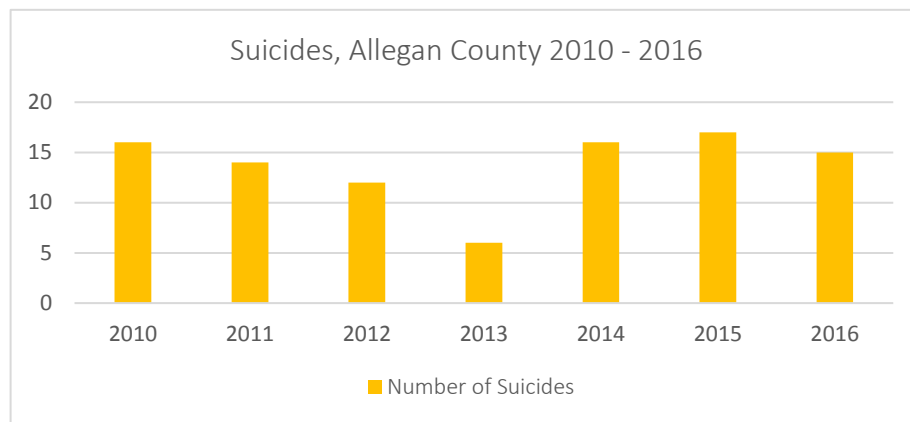
Drug-Related Deaths, Manner: Indeterminate, 2016

	Age	Sex	Substances Contributing to Death
1	61	F	Bupropion, Fluoxetine, Olanzapine, Quetiapine

Locations of Accidental Drug-Related Deaths
Allegan County Medical Examiner, 2016



Allegan County, Suicides



Suicides Reported to the Allegan County Medical Examiner, 2010 – 2016

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

Allegan County Suicides by Age, 2010 - 2016

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

CALHOUN COUNTY

CALHOUN COUNTY MEDICAL EXAMINER INVESTIGATORS

Elizabeth Sherman, Lead MEI
Scott Blanchard
Aleatha Devriendt
Timothy Franz
Richard Knox
Robin Quick
Ashley Shade
Suzanne Thorne-Odem
Allen Williamson

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

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

Summary of All Calhoun County Cases
with a Comparison of Past Years, 2014 - 2016

CALHOUN COUNTY	2014	2015	2016
Total Deaths in the County ^A	1390	1411	1428
Deaths Reported to the Medical Examiner	377	429	411
Deaths Investigated	335	392	361
MEI Scene Investigations	296	311	307
Death Certificates by ME	178	180	186
Bodies Transported to Morgue	138	164	165
Complete Autopsy	103	109	103
Limited Autopsy	1	5	4
External Examination	20	28	36
Storage Only	14	20	22
Total Cases with Toxicology	122	131	113
Unidentified Remains After Exam	0	0	0
Referrals to Gift of Life	119	115	118
Tissue Donations	8	3	11
Cornea Donations	8	8	11
Unclaimed Bodies	13	8	9
Exhumations	1	0	0
Cremation Permits	721	742	811

^A These numbers represent approximate numbers of deaths, as they are the actual number of death certificates filed in each county in the given year

Manners of Death Reported to Calhoun County Medical Examiner, 2014 - 2016

CALHOUN COUNTY	2014	2015	2016
Natural	278	313	288
Accident	60	80	79
Suicide	21	25	28
Homicide	5	2	5
Indeterminate	12 ¹⁶	9 ¹⁷	11 ¹⁸
Total	377	429	411

Deaths Reported to Calhoun County Medical Examiner by Age, 2014 - 2016

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 ¹⁹	0	1	6	11	59	128	215
2016	15 ²⁰	0	2	2	9	53	122	208

Deaths Reported to the Calhoun County Medical Examiner by Sex, 2016²¹

¹⁶ (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

¹⁷ (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

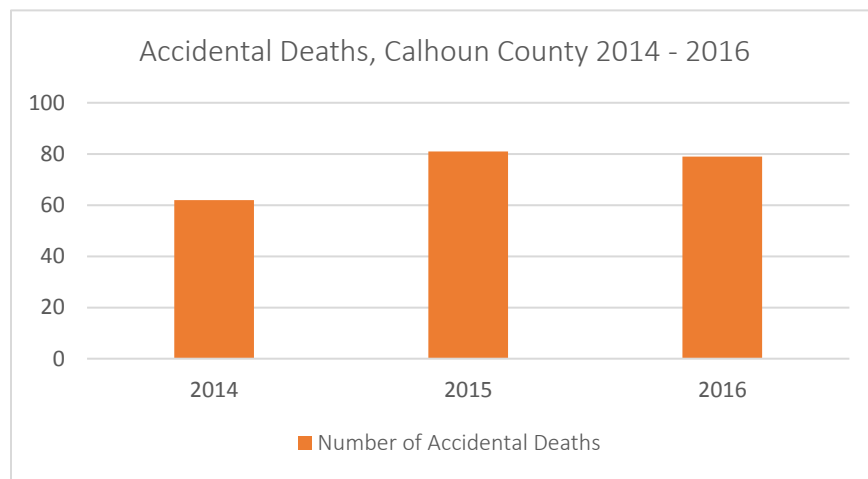
¹⁸ (1) Toxic effects of Alprazolam associated with cardiomegaly; (3) Mixed drug intoxication; (1) Indeterminate cause of death; (1) Complications of severe global ischemic brain damage of uncertain etiology; (6) Inhalation of products of combustion in residential fire; (1) Severe ischemic brain injury 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

¹⁹ Including (5) stillbirth investigations without trauma or exam

²⁰ Including (12) stillbirth investigations without trauma or exam

²¹ (11) stillbirths not included, as sex was indeterminate

Calhoun County, Accidental Deaths



Accidental Deaths Reported to the Calhoun County Medical Examiner, 2014 – 2016

CALHOUN COUNTY	2014	2015	2016
Vehicle	10	21	20
Drug-Related	26	44	38
Drowning	0	2	2
Fall	16	11	14
Fire	5	0	1
Environmental Exposure	2	0	0
Asphyxia	2	0	2
Other	1 ²²	1 ²³	2 ²⁴
Total	62	81	79

²² (1) Sharp force injuries from falling into window

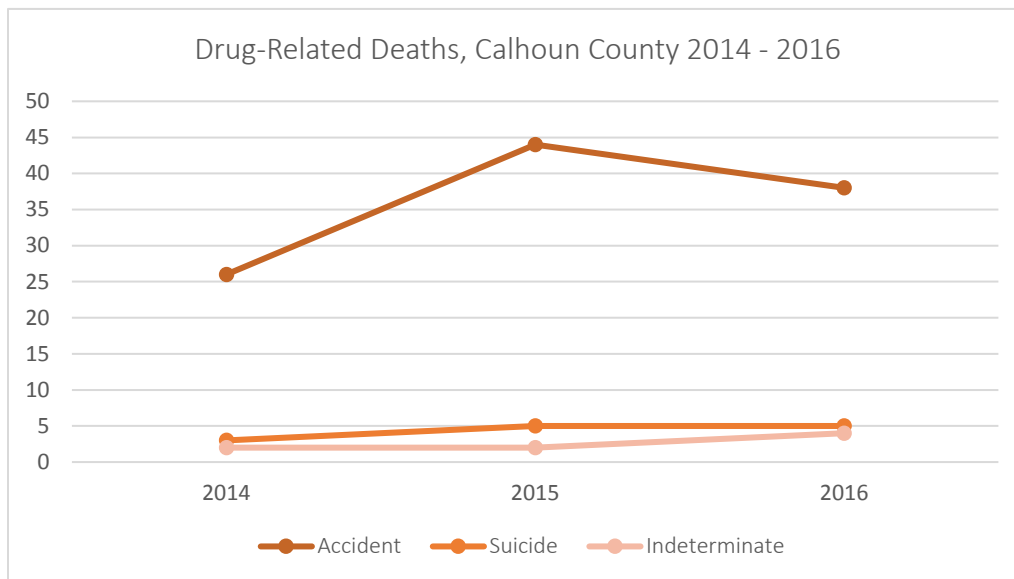
²³ (1) Airplane operator in aircraft crash

²⁴ (1) Cardiovascular disease associated with blunt force injury of great toe; (1) Self-inflicted gunshot wound of trunk

Drug-Related Deaths

Drug-Related Deaths Reported to Calhoun County Medical Examiner, 2014 – 2016

CALHOUN COUNTY	2014	2015	2016
Accident	26	44	38
Suicide	3	5	5
Indeterminate	2	2	4
Total	31	51	47



Accidental Drug-Related Deaths, 2016

	Age	Sex	Substances Contributing to Death
1	36	M	Ethanol
2	48	M	Fentanyl, Cocaine Metabolite, Morphine
3	31	M	Hydrocodone, Alprazolam
4	49	M	Fentanyl, Alprazolam, Oxycodone
5	27	M	Methamphetamine, Fentanyl, Cocaine Metabolite, Oxycodone, Oxymorphone
6	53	M	Cocaine
7	59	M	Heroin
8	42	M	Fentanyl, Cocaine, Hydrocodone, Heroin
9	35	F	Alprazolam, Morphine
10	51	M	Cocaine
11	50	F	Opiates
12	30	M	Heroin, Methadone, Fentanyl

13	33	F	Fentanyl, Heroin
14	34	F	Cocaine, Opiates
15	32	M	Heroin, Cocaine Metabolite
16	26	M	Alprazolam, Fentanyl, Heroin, Oxycodone
17	40	F	Alprazolam, Hydrocodone
18	49	M	Oxycodone
19	37	F	Cocaine
20	48	M	Heroin, Cocaine
21	24	F	Methadone
22	57	F	Hydrocodone, Oxycodone, Acetaminophen
23	42	F	Phenobarbital, Tramadol, Gabapentin, Venlafaxine
24	49	M	Fentanyl, Heroin, Clonazepam
25	59	M	Alprazolam, Buprenorphine, Gabapentin, Amitriptyline, Bupropion, Sertraline, Zolpidem, Dextromethorphan
26	30	F	Clonazepam, Alprazolam, Methadone
27	37	M	Alprazolam, Methadone, Oxycodone, Gabapentin
28	35	M	Heroin
29	57	F	Alprazolam, Hydrocodone, Hydromorphone, Temazepam, Lorazepam, Nordiazepam, Oxazepam
30	41	M	Heroin, Alprazolam, Cyclobenzaprine
31	37	F	Heroin
32	46	F	Alprazolam, Hydrocodone
33	39	F	Cocaine, Oxycodone
34	60	M	Ethanol, Fentanyl, Heroin, Methadone
35	34	M	Heroin
36	50	M	Heroin, Nordiazepam, Lorazepam, Cyclobenzaprine, Amitriptyline, Trazodone, Chlorophenylpiperazine
37	28	F	Heroin
38	37	F	Clonazepam, Cocaine, Heroin, Hydrocodone, Ethanol

Drug-Related Suicides, 2016

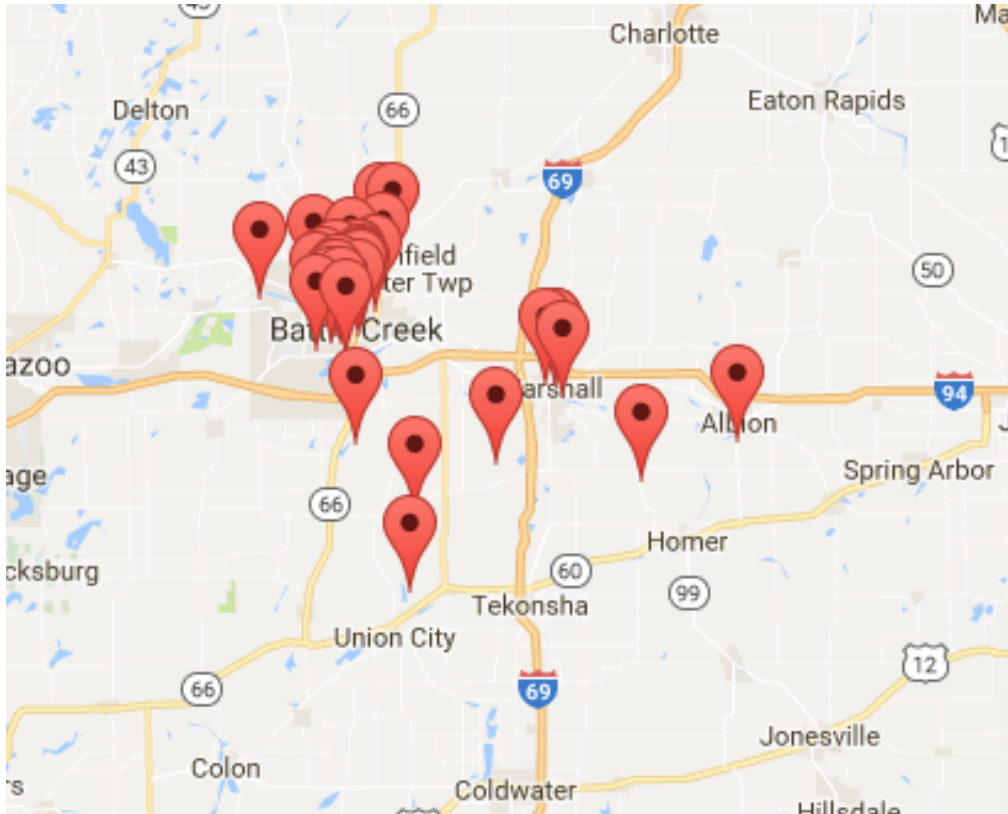
	Age	Sex	Substances Contributing to Death
1	74	M	Oxycodone, Oxymorphone, Acetaminophen, Primidone, Pregabalin, Phenobarbital
2	62	M	Ethanol, Morphine, Fentanyl
3	66	F	Metoprolol, Citalopram, Ethanol
4	65	M	Methadone, Alprazolam
5	55	F	Morphine, Hydrocodone, Gabapentin, Sertraline

Drug-Related Deaths, Manner: Indeterminate, 2016

	Age	Sex	Substances Contributing to Death
1	31	F	Alprazolam
2	54	M	Heroin, Cocaine
3	55	F	Oxycodone, Alprazolam, Ethanol
4	37	F	Methadone, Clonazepam, Fluoxetine, Olanzapine, Amlodipine

Locations of Accidental Drug-Related Deaths

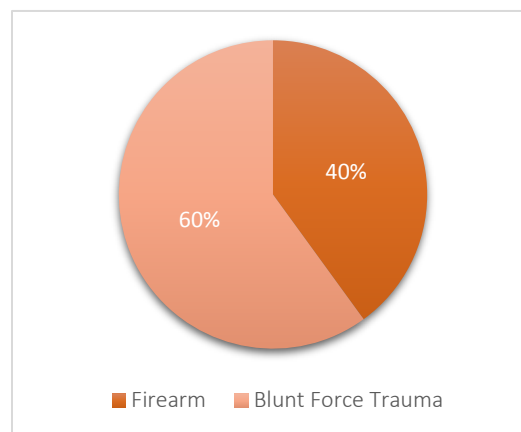
Calhoun County Medical Examiner, 2016



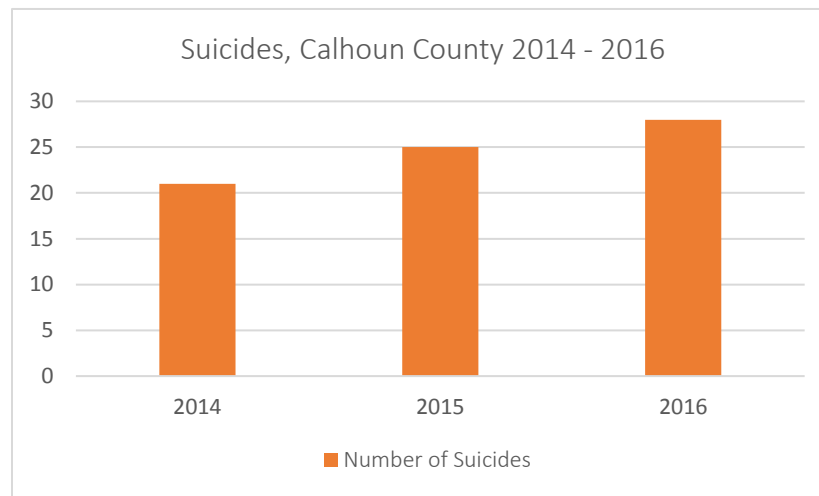
Calhoun County, Homicides

Homicides, Calhoun County 2016

CALHOUN COUNTY	2016
Firearm	2
Blunt Force Trauma	3
Total	5



Calhoun County, Suicides



Suicides Reported to the Calhoun County Medical Examiner, 2014 – 2016

CALHOUN COUNTY	2014	2015	2016
Firearm	11	14	14
Hanging	7	5	6
Carbon Monoxide	0	0	2
Drug Intoxication	3	4	5
Motor Vehicle	0	0	1
Sharp Force	0	0	0
Asphyxia/Suffocation	0	2	0
Other	0	0	0
Total	21	25	28

Calhoun County Suicides by Age, 2014 - 2016

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

KALAMAZOO COUNTY

KALAMAZOO COUNTY MEDICAL EXAMINER INVESTIGATORS

James Matteson, D-ABMDI; Lead MEI
Chris (Ryan) Davis
Richard Elsmann
Timothy Franz
David Kubacki
Gabriel Podolsky
Ken Rourke, D-ABMDI
Ashley Shade

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

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

Summary of All Kalamazoo County Cases with a Comparison of Past Years, 2011 - 2016

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016
Total Deaths in the County ^A	2582	2540	2668	2684	2760	2884
Deaths Reported to the Medical Examiner	828	778	777	750	848	975
Deaths Investigated	*	556	580	560	646	745
MEI Scene Investigations	498	503	549	411	434	560
Death Certificates by ME	394	362	358	355	306	390
Bodies Transported to Morgue	244	233	241	253	247	318
Complete Autopsy	178	187	193	174	142	192
Limited Autopsy	10	4	4	6	7	7
External Examination	50	34	37	37	52	60
Storage Only	6	8	7	36	46	59
Total Cases with Toxicology	198	212	222	198	174	222
Unidentified Remains After Exam	14	0	0	0	0	0
Referrals to Gift of Life	9	46	65	95	113	161
Tissue Donations	3	4	4	6	9	22
Cornea Donations	2	4	9	9	9	20
Unclaimed Bodies	14	9	7	10	10	8
Exhumations	0	0	0	0	0	1
Cremation Permits	1485	1467	1740	1782 ²⁵	1672	1856

^A These numbers represent approximate numbers of deaths, as they are the actual number of death certificates filed in each county in the given year

* Data not collected

²⁵ Estimated from combined data from Sparrow Hospital and WMed

Manners of Death Reported to Kalamazoo County Medical Examiner, 2011 - 2016

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016
Natural	561	535	508	530	535	681
Accident	194	167	200	158	167	222
Suicide	44	35	40	36	35	40
Homicide	12	20	11	14	20	18
Indeterminate	17 ²⁶	20 ²⁷	16 ²⁸	12 ²⁹	18 ³⁰	11 ³¹
Total	828	777	775	750	777	971 ³²

Deaths Reported to Kalamazoo County Medical Examiner by Age, 2011 - 2016

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 ³³	5	3	7	21	82	220	441
2016	58 ³⁴	5	3	12	37	95	269	494

Deaths Reported to the Calhoun County Medical Examiner by Sex, 2016³⁵

²⁶ (2) Indeterminate cause of death; (5) Mixed drug intoxication; (4) Single drug intoxication; (1) SUID; (1) SUID associated with unsafe sleep; (1) Complications of caustic substance ingestion ("Drano"); (1) Thermal injuries; (1) Smoke & Soot inhalation associated with house fire; (1) Acute renal failure of unknown etiology

²⁷ (9) Indeterminate cause of death; (5) Drug intoxication; (2) SUID; (1) Unsafe sleep environment; (1) Left leg fractures; (1) Drowning; (1) Carbon Monoxide poisoning

²⁸ (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

²⁹ (2) Thermal inhalation injuries; (1) Gunshot wound of head; (5) Mixed drug intoxication; (1) Drowning; (2) SUID; (1) SUID associated with unsafe sleep

³⁰ (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

³¹ (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 ethanol use with hepatic cirrhosis; (1) Complications related to spinal cord injury with paralysis due to gunshot wound of trunk

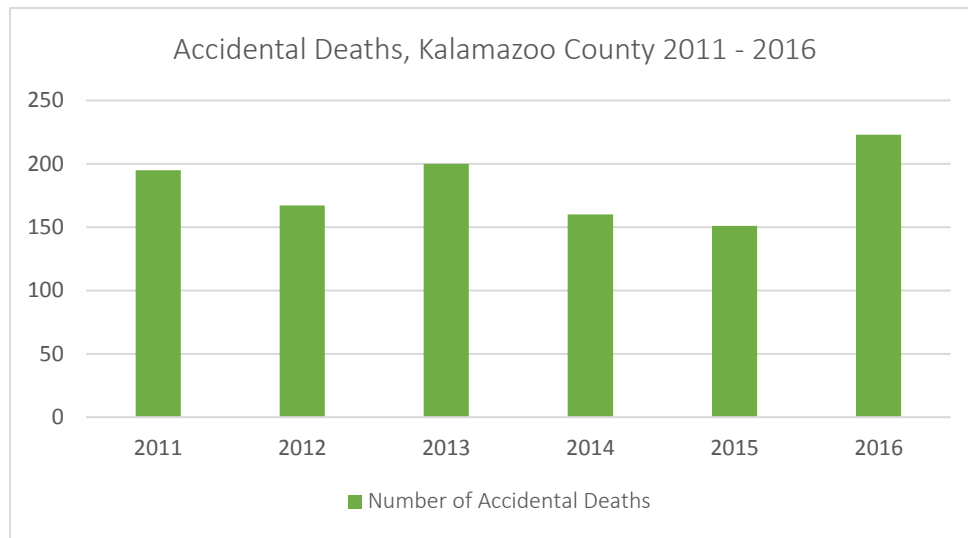
³² Not included in this data due to no manner of death concluded: (1) Non-osseous fragments; (1) Anatomical specimen (fetus in jar); (1) Investigated death, hospital autopsy performed at WMed; (1) Stillborn infant with examination

³³ Including (17) stillbirth investigations without trauma or exam

³⁴ Including (53) stillbirth investigations without trauma or exam

³⁵ Not included in this data due to indeterminate sex: (22) stillbirths; (1) Non-osseous fragments; (1) Anatomical specimen (fetus in jar)

Kalamazoo County, Accidental Deaths



Accidental Deaths Reported to the Kalamazoo County Medical Examiner, 2011 – 2016

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016
Vehicle	46	48	60	35	46	58
Drug-Related	33	34	47	35	33	72
Drowning	5	2	2	3	1	4
Fall	92	67	76	77	57	80
Fire	5	2	8	3	3	4
Environmental Exposure	2	4	1	1	1	1
Asphyxia	6	3	4	2	7	3
Other	6 ³⁶	7 ³⁷	3 ³⁸	4 ³⁹	3 ⁴⁰	1 ⁴¹
Total	195	167	200	160	151	223

³⁶ (2) Dog bite injuries; (2) Blunt force head injuries (hit wall & kicked by horse); (1) Ingestion of citronella oil; (1) Probable necrotizing fasciitis & sepsis

³⁷ (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

³⁸ (1) Complications of heat stroke; (1) Carbon monoxide toxicity

³⁹ (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

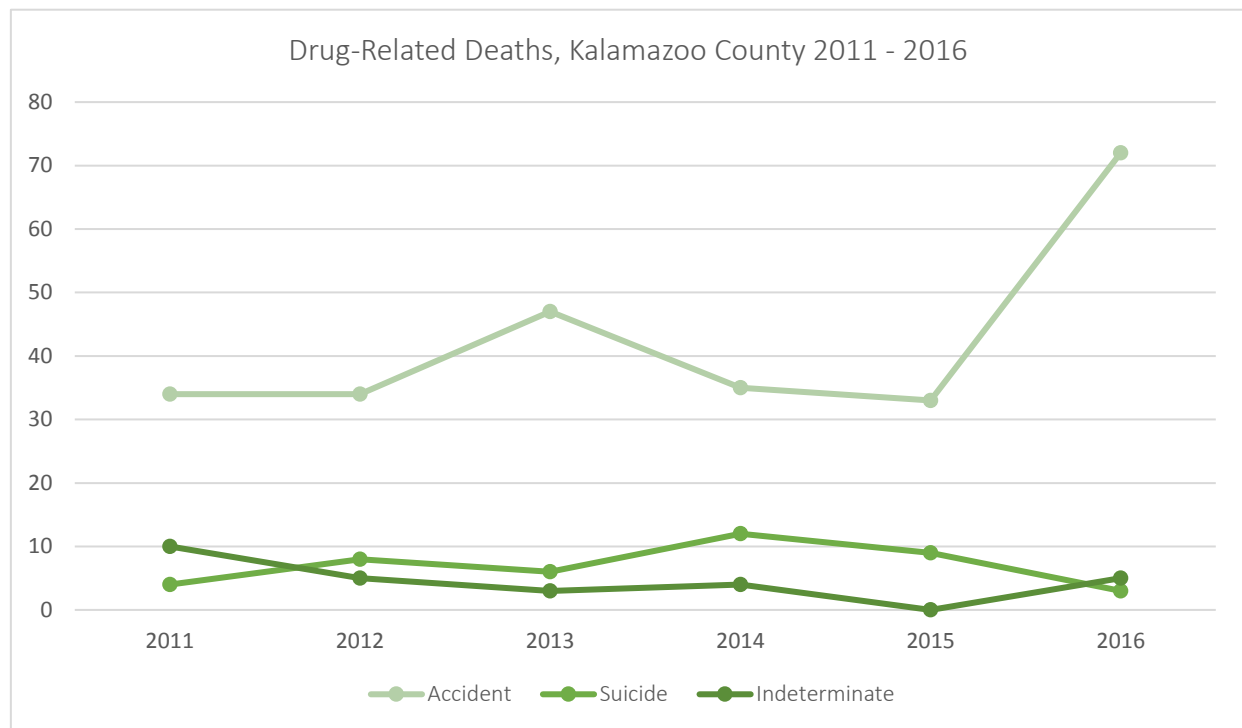
⁴⁰ (1) Tree limb fell on head; (2) Complications related to general anesthesia during finger amputation

⁴¹ (1) Blunt impacts to head and trunk due to being struck by tree branch

Drug-Related Deaths

Drug-Related Deaths Reported to Kalamazoo County Medical Examiner, 2011 – 2016

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016
Accident	34	34	47	35	33	72
Suicide	4	8	6	12	9	3
Indeterminate	10	5	3	4	0	5
Total	48	47	56	51	42	80



Accidental Drug-Related Deaths, 2016

	Age	Sex	Substances Contributing to Death
1	42	F	Methadone, Morphine, Hydrocodone, Oxycodone
2	33	M	Methamphetamine, Clonazepam, Hydromorphone, Gabapentin
3	40	M	Ethanol, Oxycodone, Acetaminophen, Amitriptyline, Citalopram
4	26	F	Methamphetamine, Alprazolam, Hydrocodone, Gabapentin
5	43	M	Morphine, Alprazolam
6	27	M	Hydrocodone, Fentanyl
7	62	M	Ethanol
8	55	M	Heroin, Fentanyl
9	50	M	Methamphetamine

10	54	M	Ethanol
11	54	F	Morphine, Amitriptyline, Paroxetine
12	25	M	Alprazolam, Fentanyl, Heroin
13	19	M	Methadone, Cyclobenzaprine, Gabapentin, Paroxetine
14	30	M	Clonazepam, Chlordiazepoxide, Fentanyl, Ethanol
15	29	M	Heroin , Alprazolam, Ethanol
16	42	M	Heroin , Fentanyl
17	45	M	Heroin , Hydrocodone
18	32	M	Heroin
19	29	M	Fentanyl, Nordiazepam
20	51	F	Alprazolam, Methadone, Gabapentin, Trazodone, Venlafaxine, Citalopram, Chlorphenylpiperazine, Olanzapine, Quetiapine, Amlodipine, Dextromethorphan, Hydroxyzine
21	53	M	Ethanol
22	32	M	Morphine, Hydrocodone
23	55	M	Morphine, Hydrocodone, Ethanol, Gabapentin, Quetiapine, Amlodipine
24	65	F	Butalbital, Alprazolam, Morphine, Hydromorphone, Trazodone, Diphenhydramine
25	39	F	Heroin
26	40	M	Fentanyl, Morphine, Hydrocodone
27	26	M	Methadone, Alprazolam
28	57	M	Nordiazepam, Chlordiazepoxide, Ethanol
29	51	F	Amphetamines (Methamphetamine)
30	30	F	Clonazepam, Tramadol, Gabapentin, Amitriptyline, Diphenhydramine, Hydroxyzine, Quetiapine, Alprazolam
31	28	F	Amphetamine, Methamphetamine, Alprazolam, Morphine, Codeine, Hydromorphone, Oxycodone, Oxymorphone, Ibuprofen, Venlafaxine, Diphenhydramine
32	21	M	Heroin , Cocaine
33	41	M	Methamphetamine, Methadone
34	28	F	Ethanol
35	32	F	Methamphetamine, Fentanyl, Morphine
36	49	M	Clonazepam, Methadone, Acetaminophen, Ibuprofen, Pregabalin, Verapamil
37	23	M	Fentanyl
38	36	M	Heroin
39	20	M	Morphine
40	26	M	Probable Mixed Drug Intoxication; specific types unknown due to hospital stay
41	57	M	Cocaine, Fentanyl
42	46	M	Fentanyl, Cocaine, Opiates
43	47	F	Methamphetamine, Hydrocodone
44	32	F	Fentanyl, Morphine, Citalopram, Trazodone, Cocaine Metabolite
45	46	F	Clonazepam, Fentanyl, Diphenhydramine
46	35	F	Cocaine
47	49	F	Methamphetamine, Morphine, Fentanyl, Hydrocodone, Alprazolam
48	53	M	Methamphetamine, Heroin , Fentanyl
49	35	F	Heroin , Hydrocodone, Alprazolam
50	44	F	Methadone, Codeine
51	54	M	Morphine, Fentanyl, Cocaine, Heroin
52	43	M	Cocaine
53	41	M	Alprazolam, Bupropion, Fentanyl, Oxycodone
54	56	F	7-Aminoclonazepam, Fentanyl, Oxycodone, Acetaminophen, Gabapentin
55	59	M	Methamphetamine, Cyclobenzaprine, Cocaine
56	46	F	Morphine, Diazepam, Fluoxetine, Trazodone
57	54	M	Heroin
58	40	M	Alprazolam, Heroin , Ethanol

59	35	M	Heroin, Ethanol
60	33	M	Heroin, Methamphetamine
61	60	M	Opiates
62	36	M	Methamphetamine, Heroin, Diazepam
63	37	M	Fentanyl, Diazepam, Ethanol
64	42	M	Heroin, Methadone, Citalopram
65	49	M	Diazepam, Morphine, Hydrocodone, Cyclobenzaprine
66	43	M	Clonazepam, Methadone, Morphine, Gabapentin, Quetiapine
67	45	M	Diazepam, Alprazolam, Heroin, Hydrocodone, Dihydrocodeine
68	29	F	Fentanyl
69	56	M	Cocaine
70	21	M	Morphine, Fentanyl
71	41	F	Ethanol
72	34	F	Opiates

Drug-Related Suicides, 2016

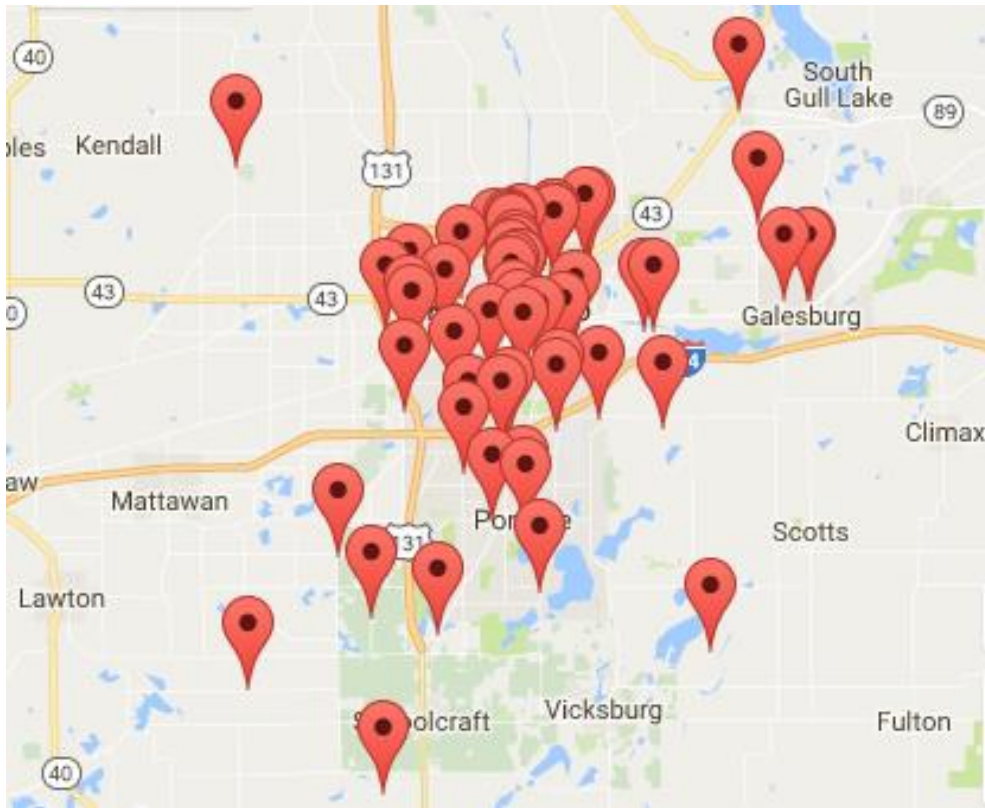
	Age	Sex	Substances Contributing to Death
1	41	F	Alprazolam, Naproxen, Citalopram
2	51	F	Probable Insulin
3	55	M	Hydrocodone, Cyclobenzaprine

Drug-Related Deaths, Manner: Indeterminate, 2016

	Age	Sex	Substances Contributing to Death
1	51	M	Morphine
2	67	F	Tramadol
3	53	M	Pseudoephedrine, Morphine, Codeine, Lorazepam, Hydromorphone
4	54	F	Opiates, Methadone, Benzodiazepines
5	30	F	Specific types unknown due to multi-week ICU stay

Locations of Accidental Drug-Related Deaths

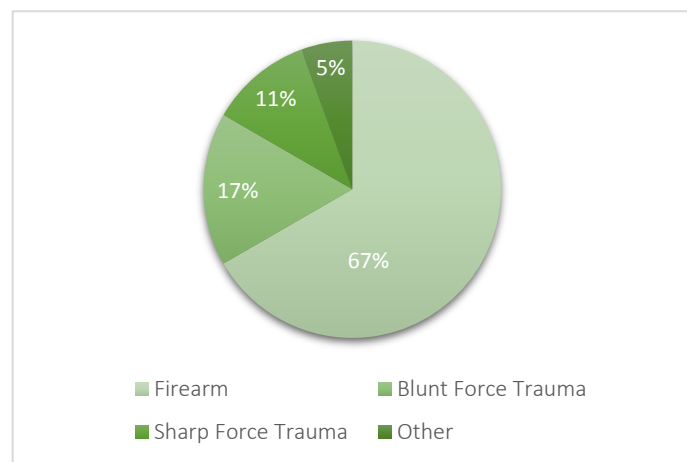
Kalamazoo County Medical Examiner, 2016



Kalamazoo County, Homicides

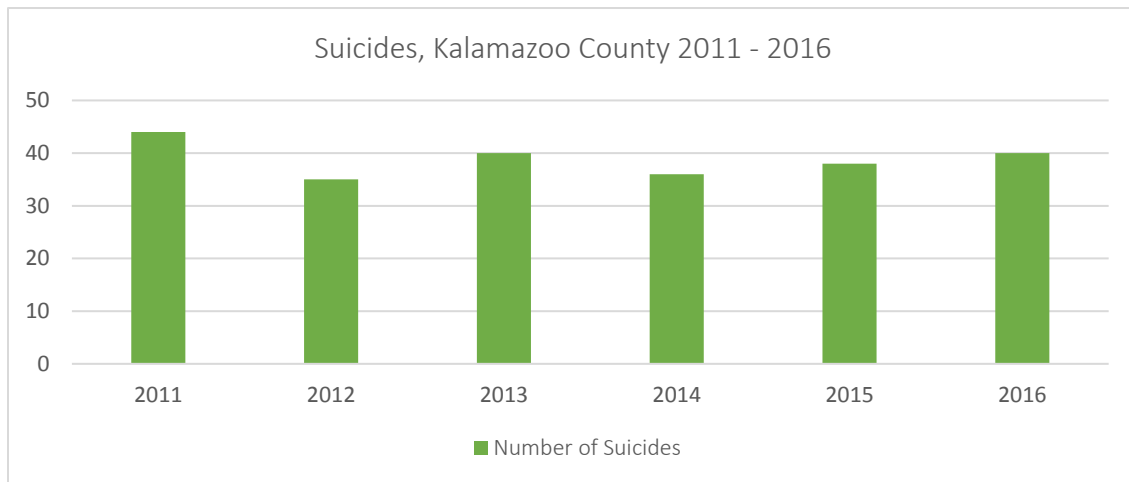
Homicides, Kalamazoo County 2016

KALAMAZOO COUNTY	2016
Firearm	12
Blunt Force Trauma	3
Sharp Force Trauma	2
Other	1 ⁴²
Total	18



⁴² (1) Blunt and thermal (hot water) injuries

Kalamazoo County, Suicides



Suicides Reported to the Kalamazoo County Medical Examiner, 2011 – 2016

KALAMAZOO COUNTY	2011	2012	2013	2014	2015	2016
Firearm	20	15	15	14	19	19
Hanging	12	8	13	7	9	13
Carbon Monoxide	2	1	0	0	0	2
Drug Intoxication	4	8	6	12	9	3
Motor Vehicle	0	0	1	1	1	0
Sharp Force	3	1	2	0	0	2
Asphyxia/Suffocation	1	1	3	1	0	0
Other	1 ⁴³	1 ⁴⁴	0	1 ⁴⁵	0	1 ⁴⁶
Total	44	35	40	36	38	40

Kalamazoo County Suicides by Age, 2011 - 2016

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

⁴³ (1) Fall from balcony⁴⁴ (1) Drowning⁴⁵ (1) Ignited self after pouring accelerant on self⁴⁶ (1) Thermal injuries due to dousing self with gasoline and igniting self

MUSKEGON COUNTY

MUSKEGON COUNTY MEDICAL EXAMINER INVESTIGATORS

William Mastenbrook, Lead MEI
Chris Anderson
Asa Carr
Molly Essebaggers
Robert Huss
David Lopez
Jen Portell
Todd Rake
Mike Spofford
Brad Walters, D-ABMDI

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

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

Summary of All Muskegon County Cases with a Comparison of Past Years, 2010 - 2016

MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015	2016
Total Deaths in the County ^A	1625	1693	1600	1730	1707	1817	1764
Deaths Reported to the Medical Examiner	544	440	481	527	524	605	585
Deaths Investigated	*	*	412	424	453	530	504
MEI Scene Investigations	353	310	384	420	444	501	469
Death Certificates by ME	213	201	203	216	228	251	231
Bodies Transported to Morgue	163	161	132	148	178	159	167
Complete Autopsy	135	122	106	120	144	120	114
Limited Autopsy	5	10	2	6	2	4	2
External Examination	22	21	22	18	18	35	41
Storage Only	1	8	2	4	4	0	10
Total Cases with Toxicology	147	153	119	142	152	160	136
Unidentified Remains After Exam	0	0	0	0	0	0	0
Referrals to Gift of Life	27	70	81	93	156	139	109
Tissue Donations	3	7	8	9	14	17	12
Cornea Donations	3	8	11	12	16	20	11
Unclaimed Bodies	0	4	4	3	6	5	6
Exhumations	0	0	0	0	0	0	0
Cremation Permits	893	812	952	986	1007 ⁴⁷	1116	1138

^A These numbers represent approximate numbers of deaths, as they are the actual number of death certificates filed in each county in the given year

* Data not collected

⁴⁷ Estimated from combined data from Sparrow Hospital and WMed

Manners of Death Reported to Muskegon County Medical Examiner, 2010 - 2016

MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015	2016
Natural	419	317	362	397	375	440	429
Accident	83	81	77	84	102	103	107
Suicide	25	18	26	23	21	36	25
Homicide	6	7	4	13	14	10	11
Indeterminate	10 ⁴⁸	10 ⁴⁹	11 ⁵⁰	8 ⁵¹	9 ⁵²	15 ⁵³	13 ⁵⁴
Total	544	440	480	525	524	604	585

Deaths Reported to Muskegon County Medical Examiner by Age, 2010 - 2016

AGE	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	21 ⁵⁵	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 ⁵⁶	1	2	2	24	61	199	304
2016	17 ⁵⁷	2	1	5	18	55	184	303

Deaths Reported to the Muskegon County Medical Examiner by Sex, 2016⁵⁸

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

⁴⁹ (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)

⁵⁰ (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

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

⁵² (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

⁵³ (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

⁵⁴ (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

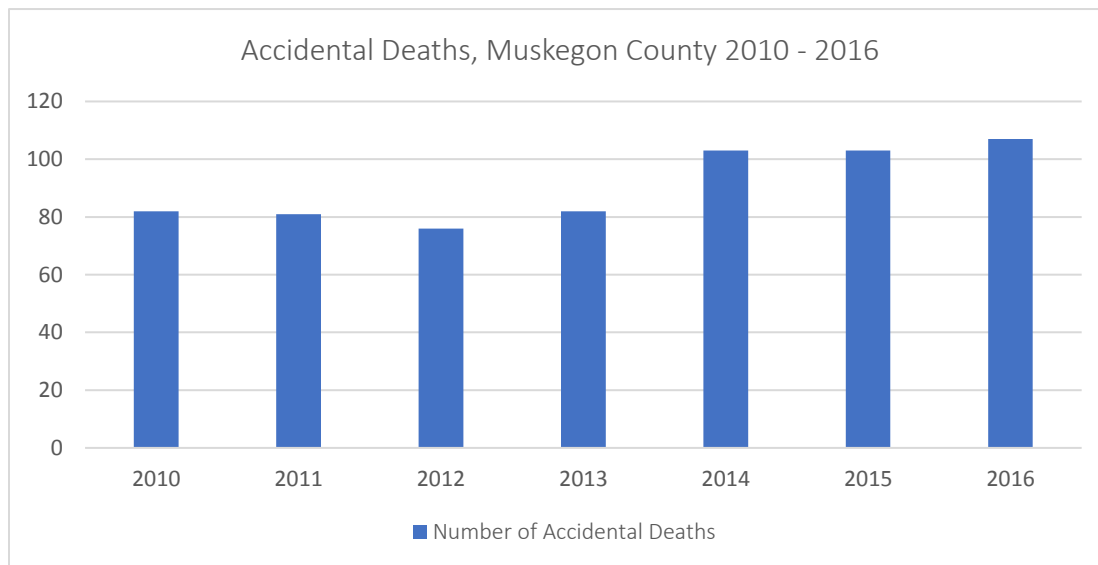
⁵⁵ Including (10) stillbirth investigations without trauma or exam

⁵⁶ Including (2) stillbirth investigations without trauma or exam

⁵⁷ Including (13) stillbirth investigations without trauma or exam

⁵⁸ (4) stillbirths not included, as sex was indeterminate

Muskegon County, Accidental Deaths



Accidental Deaths Reported to the Muskegon County Medical Examiner, 2010 – 2016

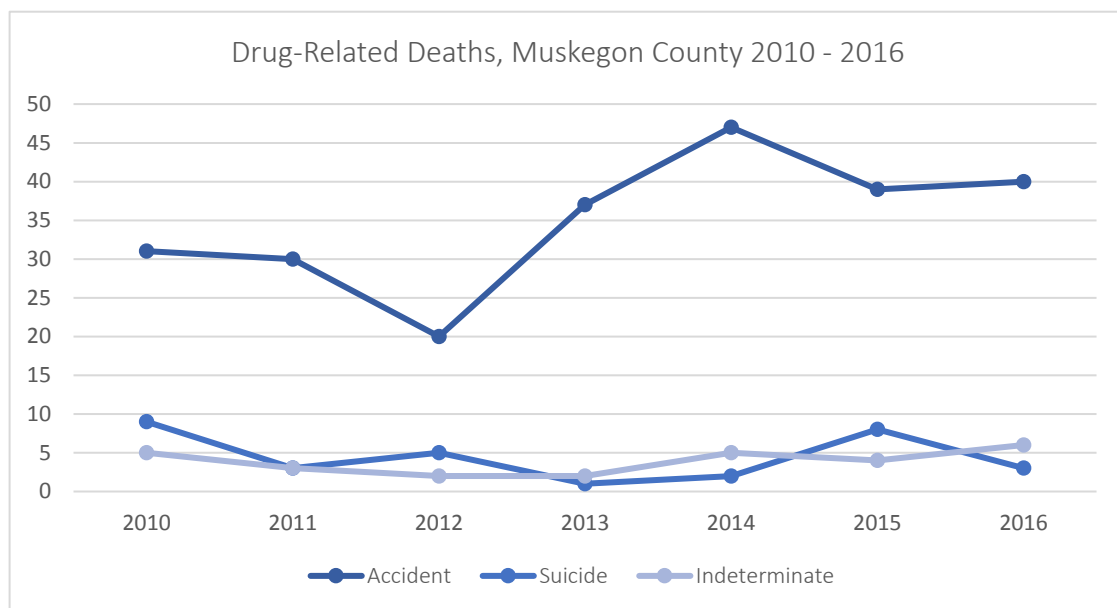
MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015	2016
Vehicle	16	25	18	13	18	22	22
Drug-Related	31	30	20	37	47	39	40
Drowning	3	4	4	4	4	4	2
Fall	21	17	27	26	29	29	32
Fire	3	3	0	0	1	3	1
Environmental Exposure	0	0	0	0	1	1	4
Asphyxia	6	1	4	2	2	3	4
Other	2 ⁵⁹	1 ⁶⁰	3 ⁶¹	0	1 ⁶²	2 ⁶³	2 ⁶⁴
Total	82	81	76	82	103	103	107

⁵⁹ (1) Splenic injury during colonoscopy; (1) Medical complications of being trapped under an object⁶⁰ (1) Multiple injuries in work accident⁶¹ (1) Jail inmate requiring restraint; (1) Crushed in industrial steam chest mold; (1) Head injury in soccer game⁶² (1) Pulmonary thromboembolic disease⁶³ (2) Carbon Monoxide poisoning due to faulty furnace⁶⁴ (1) Complications of cleaning solution ingestion; (1) Cardiovascular disease with restrictive lung disease and improperly-functioning left ventricular assist device

Drug-Related Deaths

Drug-Related Deaths Reported to Muskegon County Medical Examiner, 2010 – 2016

MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015	2016
Accident	31	30	20	37	47	39	40
Suicide	9	3	5	1	2	8	3
Indeterminate	5	3	2	2	5	4	6
Total	45	36	27	40	54	51	49



Accidental Drug-Related Deaths, 2016

	Age	Sex	Substances Contributing to Death
1	51	F	Methadone
2	33	M	Heroin
3	34	M	Heroin
4	34	F	Fentanyl, Methadone, Morphine, Hydromorphone, Cyclobenzaprine
5	26	F	Opiates, Cocaine
6	33	F	Methadone, Hydrocodone, Diazepam, Cyclobenzaprine, Buspirone
7	21	M	Methadone
8	31	M	Heroin
9	39	M	Heroin, Alprazolam
10	46	M	Cocaine, Morphine, Fentanyl, Heroin
11	39	M	Olanzapine, Buprenorphine
12	25	M	Cocaine, Heroin
13	48	M	Cocaine, Ethanol

14	60	M	Fentanyl, Alprazolam
15	51	M	Cocaine Metabolite, Morphine, Cyclobenzaprine, Gabapentin, Trazodone, Hydromorphone
16	69	M	Cocaine, Ethanol
17	38	M	Heroin
18	29	M	Methadone, Cocaine Metabolite
19	22	M	Alprazolam, Diazepam, Methadone, Fluoxetine, Trazodone, Temazepam, Oxazepam
20	62	M	Hydrocodone, Hydromorphone, Carisoprodol
21	50	F	Alprazolam, Methadone, Hydrocodone, Gabapentin, Fluoxetine, Hydroxyzine, Ethanol
22	56	F	Alprazolam, Methadone, Hydrocodone, Trazodone
23	32	M	Heroin
24	63	M	Hydrocodone, Dihydrocodeine, Alprazolam, Acetaminophen
25	35	M	Heroin
26	47	M	Opiate/Opioid
27	51	M	Heroin, Cocaine
28	42	F	Morphine, Diphenhydramine
29	46	M	Cocaine, Heroin
30	45	M	Naproxen, Gabapentin, Duloxetine, Diphenhydramine, Ethanol
31	52	M	Cocaine
32	37	F	Methadone
33	60	M	Heroin, Ethanol
34	62	M	Fentanyl
35	27	M	Clonazepam, Buprenorphine
36	22	M	Ethanol
37	44	M	Methadone, Hydrocodone, Ethanol
38	34	M	Heroin, Fentanyl, Clonazepam
39	48	M	Tramadol, Benzodiazepines
40	50	F	Cocaine Metabolites

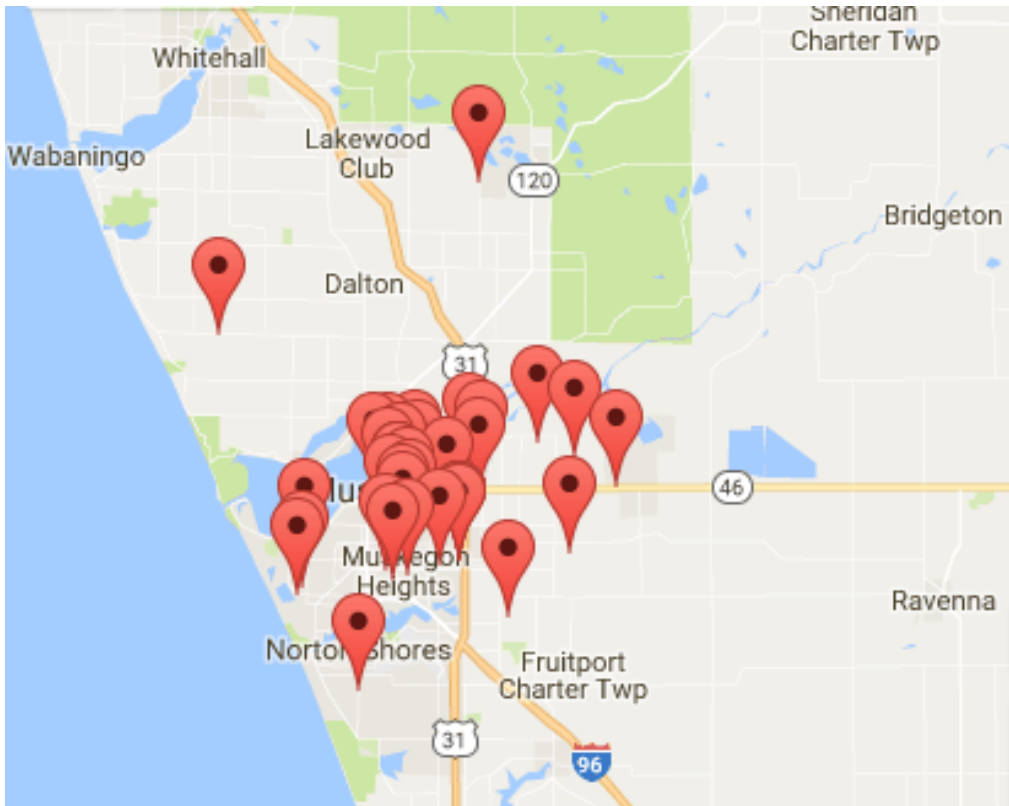
Drug-Related Suicides, 2016

	Age	Sex	Substances Contributing to Death
1	45	F	Clonazepam, Morphine, Lamotrigine, Gabapentin, Trazodone, Citalopram
2	51	F	Ethanol, Fluoxetine, Venlafaxine, Dextromethorphan, Diphenhydramine
3	57	F	Alprazolam, Amlodipine, Baclofen, Gabapentin, Heroin, Metoprolol

Drug-Related Deaths, Manner: Indeterminate, 2016

	Age	Sex	Substances Contributing to Death
1	24	M	Fentanyl, Morphine
2	63	M	Cocaine, Fentanyl, Heroin, Hydrocodone
3	63	F	Morphine (Heroin)
4	40	F	Clonazepam, Hydrocodone, Topiramate, Pregabalin, Promethazine
5	54	M	Cocaine, Heroin, Ethanol
6	37	M	Amphetamine, Clonazepam, Mirtazapine, Trazodone

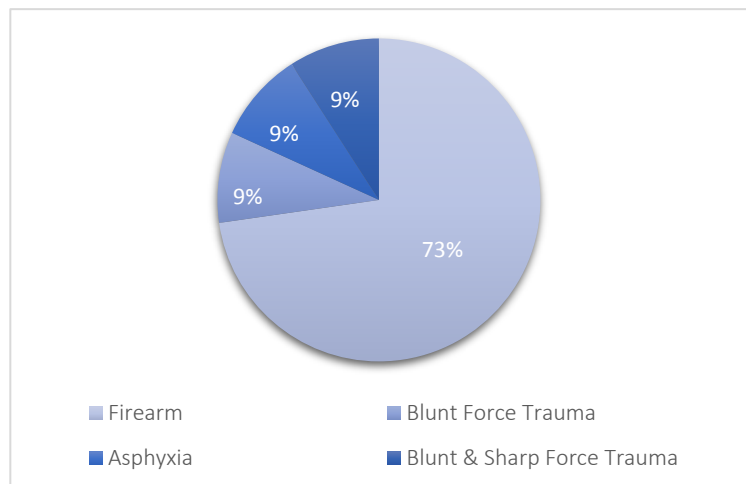
Locations of Accidental Drug-Related Deaths
Muskegon County Medical Examiner, 2016



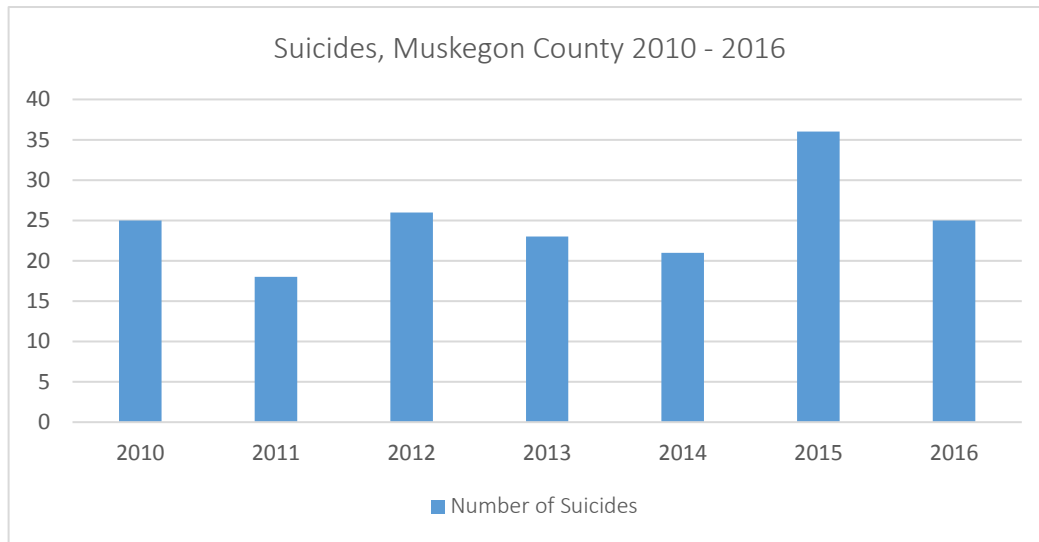
Muskegon County, Homicides

Homicides, Muskegon County 2016

MUSKEGON COUNTY	2016
Firearm	8
Blunt Force Trauma	1
Asphyxia	1
Blunt & Sharp Force Trauma	1
Total	11



Muskegon County, Suicides



Suicides Reported to the Muskegon County Medical Examiner, 2010 – 2016

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

Muskegon County Suicides by Age, 2010 - 2016

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

ST. JOSEPH COUNTY

ST. JOSEPH COUNTY MEDICAL EXAMINER INVESTIGATORS

David Alli
Timothy Franz
Aaron Moore
Robin Quick
Ashley Shade
Samuel Smallcombe

CHIEF MEDICAL EXAMINER INVESTIGATOR

Joanne M. Catania, MPA, D-ABMDI

MEDICAL EXAMINER

Joyce L. deJong, DO

DEPUTY MEDICAL EXAMINERS

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

Summary of All St. Joseph County Cases
April 1 – December 31, 2016

ST. JOSEPH COUNTY	2016
Total Deaths in the County ^A	515 ⁶⁵
Deaths Reported to the Medical Examiner	105
Deaths Investigated	98
MEI Scene Investigations	67
Death Certificates by ME	36
Bodies Transported to Morgue	36
Complete Autopsy	18
Limited Autopsy	2
External Examination	10
Storage Only	5
Total Cases with Toxicology	22
Unidentified Remains After Exam	0
Referrals to Gift of Life	36
Tissue Donations	3
Cornea Donations	3
Unclaimed Bodies	0
Exhumations	0
Cremation Permits	232

^A These numbers represent approximate numbers of deaths, as they are the actual number of death certificates filed in each county in the given year

⁶⁵ Includes all deaths occurring in 2016

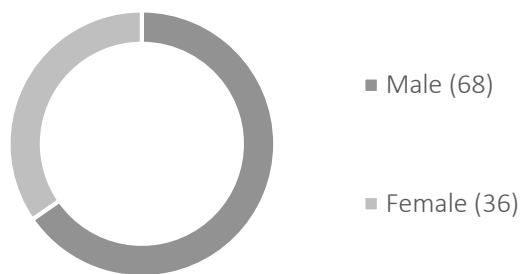
Manners of Death Reported to St. Joseph County Medical Examiner
April 1 – December 31, 2016

ST. JOSEPH COUNTY	2016
Natural	74
Accident	18
Suicide	10
Homicide	1 ⁶⁶
Indeterminate	2 ⁶⁷
Total	105

Deaths Reported to St. Joseph County Medical Examiner by Age
April 1 – December 31, 2016

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

Deaths Reported to the St. Joseph County
Medical Examiner by Sex, 2016⁶⁸



⁶⁶ (1) Multiple stab wounds

⁶⁷ (2) Mixed drug intoxication⁶⁶ (4) stillbirths not included, as sex was indeterminate

⁶⁸ (1) Stillbirth not included, as sex was indeterminate

St. Joseph County, Accidental Deaths

Accidental Deaths Reported to the St. Joseph County Medical Examiner
April 1 – December 31, 2016

ST. JOSEPH COUNTY	2016
Vehicle	4
Drug-Related	5
Drowning	2
Fall	3
Fire	0
Environmental Exposure	2
Asphyxia	1
Other	1 ⁶⁹
Total	18

Drug-Related Deaths

Drug-Related Deaths Reported to St. Joseph County Medical Examiner
April 1 – December 31, 2016

ST. JOSEPH COUNTY	2016
Accident	5
Suicide	0
Indeterminate	2
Total	7

Accidental Drug-Related Deaths; April 1 – December 31, 2016

	Age	Sex	Substances Contributing to Death
1	38	M	Clonazepam, Diazepam, Nordiazepam, Tramadol, Cyclobenzaprine, Norfluoxetine, Nersertraline, Amlodipine
2	47	M	Methamphetamine, Morphine
3	27	M	Ethanol
4	28	M	Methamphetamine
5	43	M	Oxycodone, Alprazolam, Ethanol

⁶⁹ (1) Multiple injuries due to dog attack

Drug-Related Deaths, Manner: Indeterminate; April 1 – December 31, 2016

	Age	Sex	Substances Contributing to Death
1	34	F	Tramadol, Acetaminophen, Doxylamine, Propanolol, Dextromethorphan
2	55	F	Alprazolam, Ethanol, Hydrocodone, Gabapentin, Zolpidem

Locations of Accidental Drug-Related Deaths

St. Joseph County Medical Examiner; April 1 – December 31, 2016



St. Joseph County, Suicides

Suicides Reported to the St. Joseph County Medical Examiner April 1 – December 31, 2016

ST. JOSEPH COUNTY	2016
Firearm	5
Hanging	5
Total	10

St. Joseph County Suicides by Age April 1 – December 31, 2016

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

Comparison & Summary of All Counties, 2016

	Allegan	Calhoun	Kalamazoo	Muskegon	St. Joseph*	Total
Total Population	111,408	136,146	250,331	172,188	61,295	731,368
Deaths in the County	727	1428	2884	1764	515 ⁷⁰	7318
Deaths Reported to the Medical Examiner	203	411	976	585	105	2280
Deaths Investigated	192	361	746	504	98	1901
MEI Scene Investigations	174	307	560	469	67	1577
Death Certificates by ME	85	186	390	231	36	928
Postmortem Examinations ⁷¹	58 (8%)	143 (10%)	259 (9%)	157 (9%)	36 ⁷²	653 (9%)
Cardiovascular Consultations	0	0	0	0	0	2 ⁷³
Referrals to Gift of Life	63	118	161	109	36	487
Tissue Donations	5	11	22	12	3	53
Cornea Donations	4	11	20	11	3	49
Unclaimed Investigations	6	18	24	13	2	63
Cremation Permits	442	811	1856	1138	232	4479
Natural	149	288	681	429	74	1621
Accident	36	79	223	107	18	463
Suicide	15	28	40	25	10	118
Homicide	1	5	18	11	1	36
Indeterminate	2	11	11	13	2	39
Accidental Drug-Related Deaths	11	38	72	42	5	168
Heroin-Related Deaths	2	17	19	17	0	55
Traffic-Related Deaths	9	22	57	22	4	114

* Data reflective of deaths from April 1 to December 31, 2016

⁷⁰ Includes all deaths occurring in 2016⁷¹ Postmortem examination includes all complete autopsies, limited, and external examinations performed.⁷² St. Joseph County excluded from percentage; only partial year.⁷³ Cardiovascular consultations performed on cases from counties not contracted with our office

Additional Examinations Performed at WMed

	2016
Postmortem Examinations for WMed Forensic Cases	653
Postmortem Examinations for Forensic Cases of Non-contracted Counties (Complete Autopsies)	258
Hospital Autopsies (Bronson Methodist Hospital)	10
Private Postmortem Examinations	4
Total Postmortem Examinations Performed at WMed	925

Forensic Anthropology at WMed

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
Radiographic Positive Identifications	46
Trauma Analyses	23
Recoveries	2
Non-human	9
Biological Profile	2
Total	82

Center for Neuropathology

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

NEUROPATHOLOGY EXAMINATIONS	2016
WMed Forensic Cases	43
Consulting Forensic Cases (outside of WMed)	84
Hospital Specimens	11
Research Cases/Projects	277
Private Examinations	5
Total	420

Office of the Medical Examiner
300 Portage St
Kalamazoo, MI 49007

Phone: (844) 337 - 6001
Fax: (844) 337 - 6001

Mailing Address:
Office of the Medical Examiner
1000 Oakland Dr
Kalamazoo, MI 49008

www.med.wmich.edu/medicalexaminer