OFFICE OF THE MEDICAL EXAMINER

ANNUAL REPORT 2015

Allegan County

Calhoun County

Kalamazoo County

Muskegon County

Accredited by the National Association of Medical Examiners

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SERVICES WE PROVIDE

INVESTIGATIONS OF DEATHS REPORTED TO OUR OFFICE

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 Pathologist.

In general, the deaths investigated by our office include those that are thought to result from injury or drug toxicities, and those deaths that are sudden, unexpected, often times violent, and occasionally not readily explainable at the time of death.

Since deaths occur regardless of time or day, the medical examiner's office responds to deaths 24 hours per day, 365 days per year.

The typical sequence of events that occurs following a death is presented in Figure 1.

Occasionally, some deaths require follow-up investigations, which for most of our counties are conducted by our Chief Investigators and in-house investigators based at WMed in Kalamazoo.

DEATH CERTIFICATION

The main focus of our investigation is to determine the cause and manner of death, and to clarify 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 APPROACH

The Medical Examiner or Deputy Medical Examiner, who are also board-certified forensic pathologists, is assigned to each case and generally uses one of these approaches in each of the deaths for which our office is responsible:

- 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.

- External or Limited Examination – an external examination includes a detailed record of observations of the body, possible laboratory/toxicology testing and a dictated report. 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. These examinations may also include toxicology testing.

- Complete Autopsy – a complete examination includes external and internal examination, with toxicology (if the appropriate specimens are available).

NAME ACCREDITATION

The Medical Examiner's Office at Western Michigan University Homer Stryker M.D. School of Medicine received accreditation from the National Association of Medical Examiner's after a site visit in 2015. Information regarding inspection and accreditation is at the website for the National Association of Medical Examiners (NAME). www.TheNAME.org.

MANNER OF DEATH

Guidelines for classifying the manner of death:

- Natural deaths are due solely or nearly totally to disease and/or the aging process.
- Accident applies when an injury or poisoning (including drug overdoses) 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.

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.

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 process in all counties, providing significant information regarding how children died with the goal of preventing future deaths. Our office anticipates increased involvement with elder death review teams in future years.

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 are dually appointed as faculty with associated teaching and mentoring duties. Medical students 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.

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 include only those cases over which the county's medical examiner can exercise jurisdiction, which is based on where the individual was pronounced dead 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.

"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 not requiring a scene investigation, did involve 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 include all forms of transport; drivers/operators, passengers, and pedestrians; and types of death that might otherwise fall into a different subclassification, such as vehicle fires and traumatic asphyxia. Finally, "SUID" stands for Sudden Unexplained Infant Death.

HIGHLIGHTS FROM 2015

2015 was a year of growth and achievements for the Pathology Department and Medical Examiner's Office at the Western Michigan University Homer Stryker M.D. School of Medicine. Our department with the addition of Dr. Joseph Prahlow. Dr. Prahlow is a forensic pathologist who recently completed 16 years of service at the South Bend Medical Foundation. He served as a faculty member at Indiana University School of Medicine - South Bend, located at the University of Notre Dame. Dr. Prahlow received his undergraduate education at Valparaiso University, attended medical school at Indiana University, completed his pathology residency at Wake Forest University in Winston-Salem, North Carolina, and participated in a forensic pathology fellowship at the University of Texas-Southwestern Medical Center in Dallas, Texas. He is board-certified by the American Board of Pathology in anatomic, clinical, and forensic pathology. He has published over 100 peer-reviewed papers in medical/scientific journals and over 12 chapters in various forensic textbooks/publications. In 2010, he published a textbook entitled Forensic Pathology for Police, Death Investigators, Attorneys, and Forensic Scientists. Most recently, Dr. Prahlow collaborated with world-renowned forensic pathologist Dr. Roger Byard of Australia on a forensic pathology atlas. Dr. Prahlow is active in a number of professional organizations, including the National Association of Medical Examiners (NAME), the American Academy of Forensic Sciences (AAFS), the College of American Pathologists, and the American Society for Clinical Pathology. He is a past chair of the pathology/biology section within the AAFS, and served as president (2007) and chair of the board (2008) of NAME.

MEDICAL EXAMINER, DEPUTY MEDICAL EXAMINERS, FORENSIC ANTHROPOLOGISTS, CHIEF INVESTIGATOR AND PATHOLOGY MANAGER

MEDICAL EXAMINER

Joyce L. deJong, D.O.

DEPUTY MEDICAL EXAMINERS

Elizabeth Douglas, M.D

Joseph Prahlow, M.D.

Brandy Shattuck, M.D.

FORENSIC ANTHROPOLOGISTS

Jered Cornelison, PhD

Carolyn Isaac, PhD

CHIEF INVESTIGATOR AND PATHOLOGY MANAGER

Jo Catania, Chief Investigator

Lee Morgan, Pathology Manager

OVERVIEW OF INVESTIGATED DEATHS AND FOLLOWING THE SCENE INVESTIGATION

Death Reported and Investigated

- 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 2 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

Following the Scene Investigation

- 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
- 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

ALLEGAN COUNTY

ALLEGAN COUNTY MEDICAL EXAMINER INVESTIGATORS IN 2015

Robert Borowski
Tammy Bruce
Lisa Letts
Judy Keizer
Paul Smith
Meredith Visser

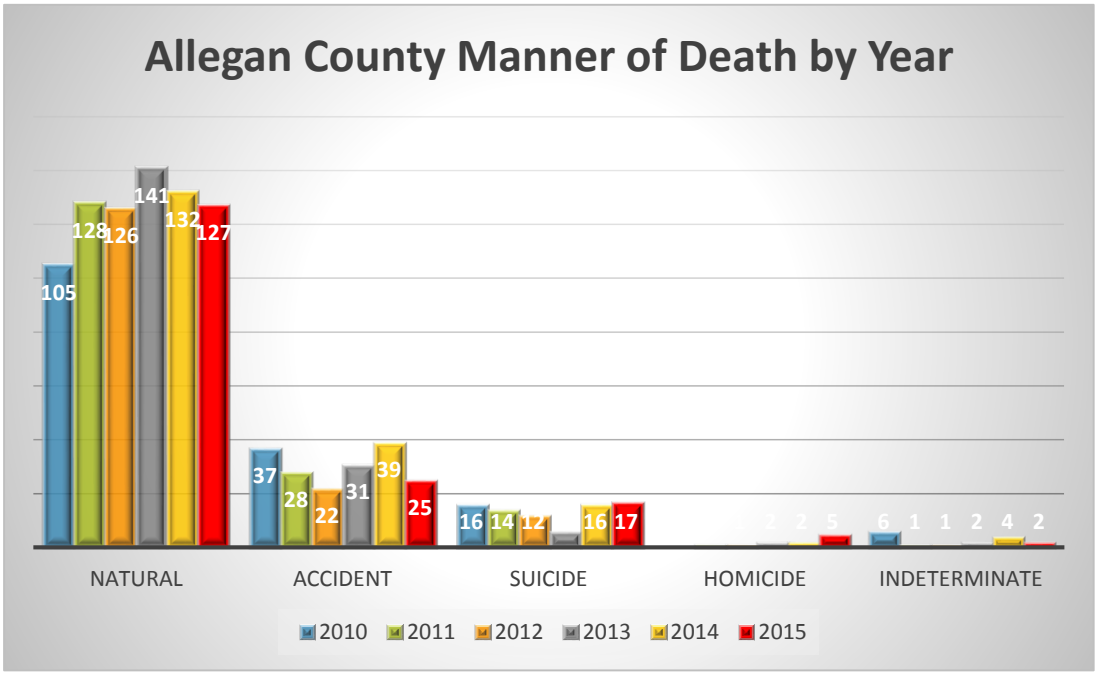
SUMMARY OF ALL CASES WITH A COMPARISON OF PAST YEARS – ALLEGAN

ALLEGAN COUNTY	2010	2011	2012	2013	2014	2015
Total Deaths in the County	607	598	602	657	705	701
Deaths Reported to the Medical Examiner	164	172	162	182	193	176
Deaths Investigated	*	*	145	164	189	170
MEI Scene Investigations	147	155	143	160	177	152
Death Certificates by ME	98	83	78	76	97	77
Bodies Transported to Morgue	80	68	63	58	74	66
Complete Autopsy	57	51	43	49	63	32
Limited Autopsy	4	2	6	1	2	2
External Examination	16	13	11	5	7	18
Storage Only	3	2	3	3	2	14
Total Cases with Toxicology	70	51	54	54	70	47
Unidentified Remains After Exam	0	0	0	0	2	1
Referrals to Gift of Life	14	35	37	32	74	64
Tissue/Cornea Donations	2	3	7	0	9	8
Unclaimed Bodies	0	2	2	1	2	3
Exhumations	0	0	0	0	0	0
Cremation Permits	287	300	299	350	409[1]	404

[1] Estimated from combined numbers from Sparrow and WMed

MANNERS OF DEATHS REPORTED TO ALLEGAN COUNTY MEDICAL EXAMINER

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



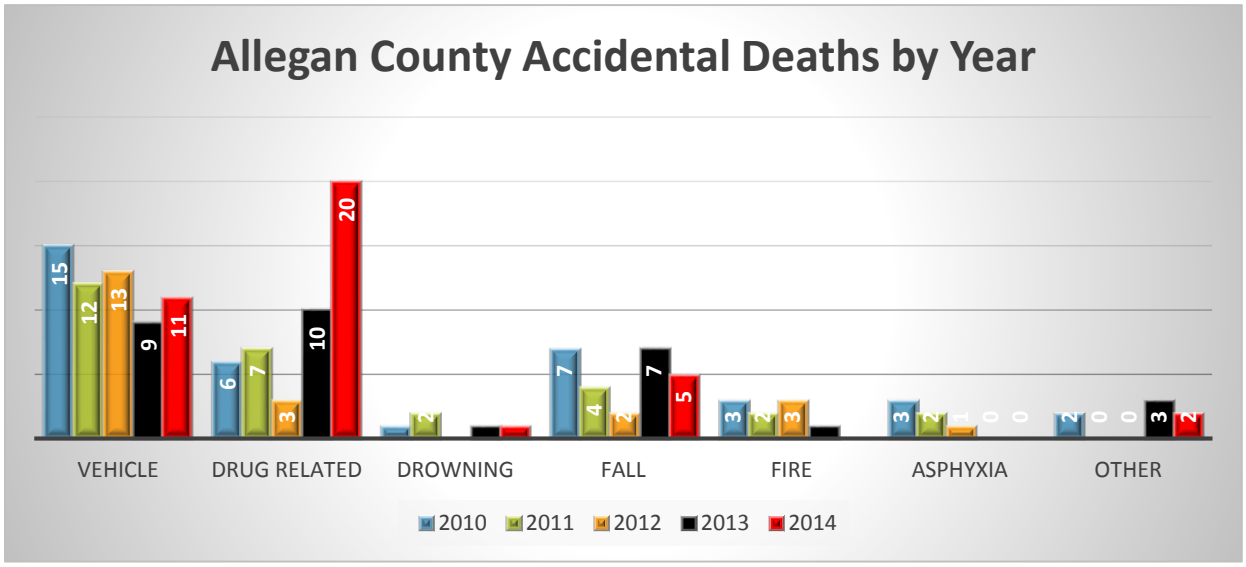
[2] (2) Drug related; (1) Drowning; (1) Carbon monoxide; (1) Non-human bones; (1) Severely decomposed, cause and manner could not be determined
[3] (1) Hypothermia complicated by mixed drug intoxication
[4] (1) Ingested multiple prescription drugs
[5] (1) SUDDEN UNEXPLAINED INFANT DEATH ; (1) Indeterminate cause of death
[6] (1) SUDDEN UNEXPLAINED INFANT DEATH associated with unsafe sleep; (1) unknown, presumed dead; (1) Skeletal remains
[7] (2) Skeletal remains

Age of Decedents

Age	< 1	1 to 5	6 to 10	11 to 17	18 to 25	26-44	45 to 64	65 plus
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

ACCIDENTAL DEATHS – SUBCLASSIFICATION – ALLEGAN COUNTY

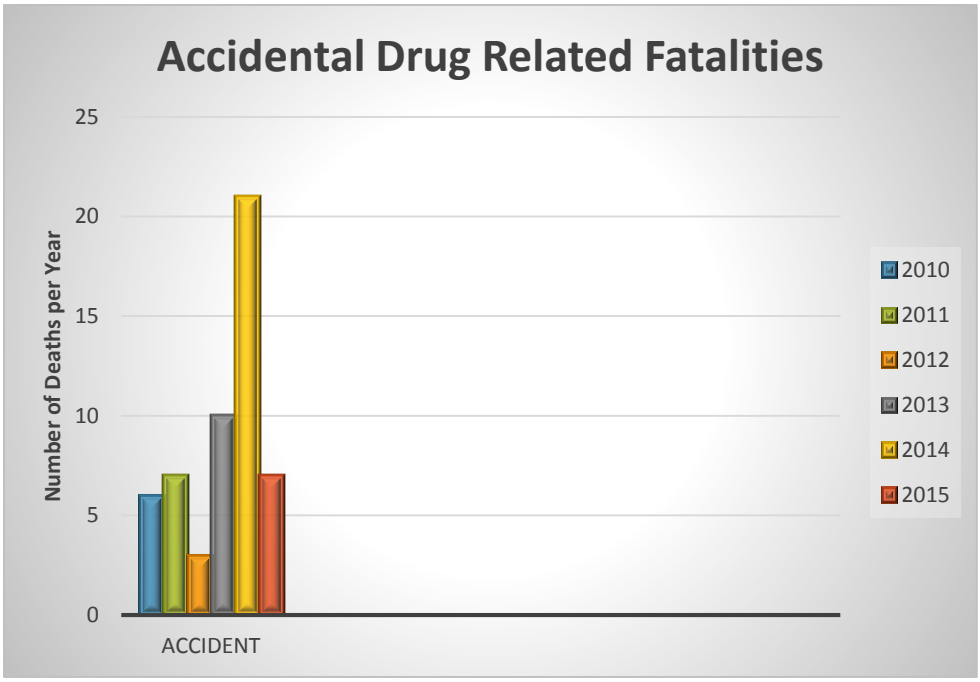
ALLEGAN	2010	2011	2012	2013	2014	2015
Vehicle	15	12	13	9	11	10
Drug Related	6	7	3	10	20	7
Drowning	1	2	0	1	1	0
Fall	7	4	2	7	5	5
Fire	3	2	3	1	0	0
Asphyxia	3	2	1	0	0	0
Other	2[8]	0	0	3[9]	2[10]	3[11]
Total	**37**	**29**	**22**	**31**	**39**	**25**



[8] (1) Accidental gunshot wounds; (1) Shot self; (1) Shot by another many years previous
[9] (2) Struck by falling timber; (1) Hypothermia
[10] (1) Aircraft crash; (1) Acute GI illness associated with consumption of wild mushrooms
[11] (2) Hypothermia (locked in unheated garage and found outside home); (1) tree branch fell on head

ALLEGAN COUNTY DRUG RELATED FATALITIES

ALLEGAN	2010	2011	2012	2013	2014	2015
Accident	6	7	3	10	21	7
Suicide	2	3	0	1	4	0
Indeterminate	2	0	1	0	0	0



THE 7 DRUG RELATED FATALITIES – ACCIDENTS – ALLEGAN COUNTY - 2015
HEROIN, AMPHETAMINE, AMITRIPTYLINE, CITALOPRAM
HEROIN, AMPHETAMINE, ETHANOL, CLONAZEPAM
FENTANYL, CYCLOBENZAPRINE, GABAPENTIN, AND FLUOXETINE
HEROIN, AMPHETAMINE, ALPRAZOLAM, AND CYCLOBENZAPRINE
ALPRAZOLAM, MORPHINE, GABAPENTIN
CLONAZEPAM, DIAZEPAM, ALPRAZOLAM, MORPHINE, AND OXYCODONE
ISOPROPANOL, ZOLPIDEM, AND VENLAFAXINE

ALLEGAN COUNTY – SUICIDES

SUICIDE TOTALS BY YEAR – ALLEGAN COUNTY

ALLEGAN	2010	2011	2012	2013	2014	2015
TOTAL	16	14	12	6	16	17

SUICIDE METHOD – ALLEGAN COUNTY

ALLEGAN	2010	2011	2012	2013	2014	2015
Firearm	6	6	9	3	11	11
Hanging	6	3	3	0	1	4
Drug Intoxication	2	2	0	1	4	0
Carbon Monoxide	1	1	0	1	0	0
Motor Vehicle	1	2	0	1	0	0
Suffocation	0	0	0	0	0	2

SUICIDE BY AGE – ALLEGAN COUNTY

ALLEGAN	2010	2011	2012	2013	2014	2015
11-17	0	0	0	0	0	2
18-25	3	1	1	1	1	4
26-44	8	7	3	2	4	1
45-64	2	4	6	2	8	5
65+	3	2	2	1	3	5

CALHOUN COUNTY

CALHOUN COUNTY MEDICAL EXAMINER INVESTIGATORS - 2015

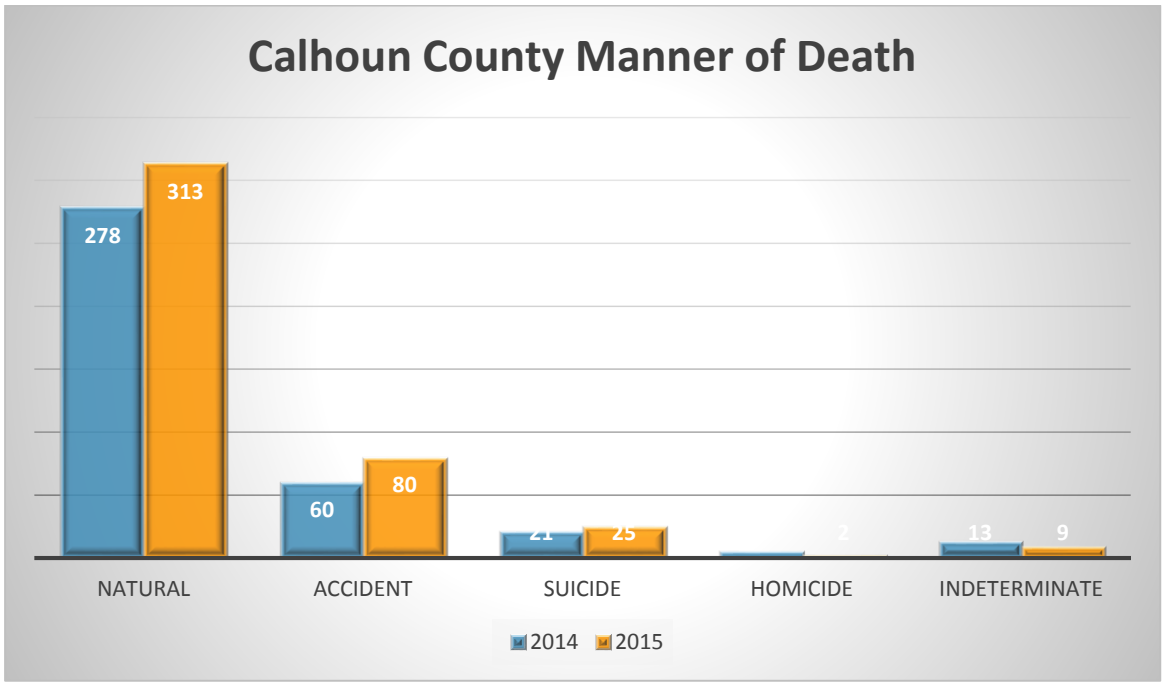
Kai Cronin
Aleatha Devriendt
Robin Quick
Elizabeth Sherman
Phil Allen
Suzy Thorne-Odem
Greg Dutcher

SUMMARY OF ALL CASES – CALHOUN COUNTY

CALHOUN COUNTY	2014	2015
Total Deaths in the County	1387	1382
Deaths Reported to the Medical Examiner	377	429
Deaths Investigated	335	392
MEI Scene Investigations	296	311
Death Certificates by ME	178	180
Bodies Transported to Morgue	138	164
Complete Autopsy	103	109
Limited Autopsy	1	5
External Examination	20	28
Storage Only	14	20
Total Cases with Toxicology	122	131
Unidentified Remains After Exam	0	0
Referrals to Gift of Life	119	115
Tissue/Cornea Donations	18	3
Unclaimed Bodies	13	8
Exhumations	1	0
Cremation permits	721	742

MANNERS OF DEATHS FOR DEATHS REPORTED TO CALHOUN COUNTY MEDICAL EXAMINER

CALHOUN COUNTY	2014	2015
Natural	278	313
Accident	60	80
Suicide	21	25
Homicide	5	2
Indeterminate	13[12]	9[13]
Total	**377**	**429**

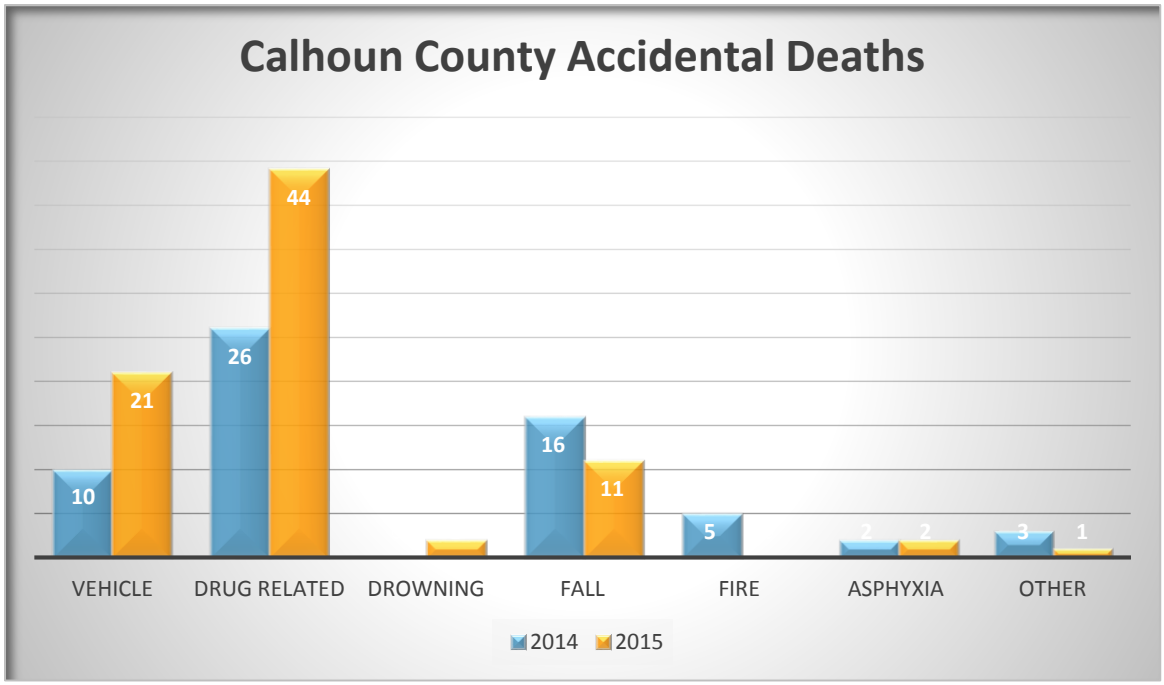


[12] (2) Inhalation of products of combustion in residential fire; (1) Aortic hemorrhaging; (2) Indeterminate cause of death; (1) SUID; (2) SUID associated with unsafe sleep; (2) Mixed drug intoxication; (1) Multiple blunt force injuries; (1) Non-human; (1) Complications of tracheomalacia, loss of ventilatory support

[13] (3) Sudden Unexplained Infant Death; (2) Mixed Drug Intoxication; (1) Shotgun wound of neck; (1) Thermal Injuries and Inhalation of Heated Gases; (1) Found dead – cause unknown; (1) Possible fall vs natural

ACCIDENTAL DEATHS – SUBCLASSIFICATION – CALHOUN COUNTY

CALHOUN	2014	2015
Vehicle	10	21
Drug Related	26	44
Drowning	0	2
Fall	16	11
Fire	5	0
Asphyxia (choked on food)	2	2
Other	3[14]	1[15]
Total	**62**	**81**



[14] (1) Sharp force injuries from falling into window; (1) Complications of chronic alcohol abuse, pulmonary emphysema, hypothermia; (1) Hypertensive and atherosclerotic cardiovascular disease, environmental cold exposure, dementia

[15] Airplane operator – aircraft versus ground

CALHOUN COUNTY DRUG RELATED FATALITIES

CALHOUN	2014	2015
Accident	26	44
Suicide	3	5
Indeterminate	2	2

DRUGS FOUND IN THE 44 DRUG RELATED FATALITIES CLASSIFIED AS ACCIDENT IN CALHOUN COUNTY IN 2015	
1	HYDROCODONE, FENTANYL, TEMAZEPAM, LORAZEPAM, GABAPENTIN, COCAINE METABOLITE, MIRTAZAPINE, AMLODIPINE, AND METOPROLOL
2	TEMAZEPAM, LORAZEPAM, OXYCODONE, NORTRIPTYLINE, AND QUETIAPINE
3	ALPRAZOLAM, METHADONE, TOPIRAMATE AND CITALOPRAM
4	HEROIN AND DIAZEPAM
5	ALPRAZOLAM, TRAMADOL, CARBAMAZEPINE, PREGABALIN, AMITRIPTYLINE, MIRTAZAPINE, HYDROXYZINE, AND OLANZAPINE
6	HEROIN
7	HEROIN, HYDROCODONE, HYDROMORPHONE, OXYCODONE, AND ACETAMINOPHEN
8	7--AMINOCLONAZEPAM, ALPRAZOLAM, COCAINE, AND HEROIN
9	ALPRAZOLAM, METHADONE, TOPIRAMATE, FLUOXETINE, AND TRAZODONE
10	ALPRAZOLAM AND HEROIN
11	COCAINE, HEROIN, AND DEXTROMETHORPHAN
12	ALPRAZOLAM, CLONAZEPAM, FENTANYL, HEROIN, HYDROCODONE
13	METHAMPHETAMINE, ALPRAZOLAM, METHADONE, AND HEROIN
14	CLONAZEPAM, HEROIN, AND ETHANOL
15	ALPRAZOLAM, HYDROCODONE, AND CYCLOBENZAPRINE
16	HEROIN
17	HEROIN AND CLONAZEPAM
18	AMPHETAMINE
19	HEROIN, OXYCODONE, AND DOXEPIN
20	COCAINE
21	MORPHINE, HYDROCODONE, ETHANOL, CYCLOBENZAPRINE, GABAPENTIN, AMITRIPTYLINE, AND BUPROPION
22	ALPRAZOLAM, MORPHINE, AND HYDROCODONE

23	ETHANOL AND HEROIN
24	HYDROCODONE AND ACETAMINOPHEN
25	HEROIN, COCAINE METABOLITE, AND AMITRIPTYLINE
26	METHADONE, ALPRAZOLAM, AND CYCLOBENZAPRINE
27	HEROIN, HYDROCODONE, COCAINE METABOLITES, AND AMLODIPINE
28	ALPRAZOLAM AND MORPHINE)
29	COCAINE, HEROIN, AND CYCLOBENZAPRINE
30	CLONAZEPAM, FENTANYL, HEROIN, AND ETHANOL
31	ALPRAZOLAM, COCAINE METABOLITE, METHADONE, AND OXYCODONE
32	COCAINE
33	ETHANOL, HYDROCODONE, BUPRENORPHINE, GABAPENTIN, AND SERTRALINE
34	METHADONE AND DIPHENHYDRAMINE
35	ALPRAZOLAM, COCAINE, AND METHAONE
36	HEROIN
37	HEROIN, ETHANOL, GABAPENTIN, DULOXETINE, TRAZODONE, CHLOROPHENYLPIPERAZINE, AND OLANZAPINE
38	FENTANYL
39	MORPHINE; OTHER SIGNIFICANT CONDITIONS: HYPERTENSIVE AND ATHEROSCLEROTIC CARDIOVASCULAR DISEASE, DIABETES MELLITUS, PULMONARY EMPHYSEMA
40	FENTANYL, METHAMPHETAMINE, MORPHINE, CYCLOBENZAPRINE, AND GABAPENTIN
41	FENTANYL, COCAINE AND DIAZEPAM
42	HEROIN, ALPRAZOLAM, ETHANOL, AND CYCLOBENZAPRINE
43	ALPRAZOLAM, 7-AMINOCLONAZEPAM, DIAZEPAM, TEMAZEPAM, METHADONE AND HEROIN
44	ALCOHOL

CALHOUN COUNTY – SUICIDES

SUICIDE TOTALS BY YEAR – CALHOUN COUNTY

CALHOUN	2014	2015
TOTAL	21	25

SUICIDE METHOD AND SUICIDES DIVIDED BY AGE – CALHOUN COUNTY

CALHOUN	2014	2015
Firearm	11	14
Hanging	7	5
Drug Intoxication	**3**	**5**
Bag over head	0	1

CALHOUN	2014	2015
0-17	1	2
18-25	4	2
26-44	7	7
45-64	8	7
65+	1	7

KALAMAZOO COUNTY

MEDICAL EXAMINER INVESTIGATORS in 2015

Kai Cronin
Ryan Davis
Richard Elsman

James Matteson, D-ABMDI
Ken Rourke, D-ABMDI

SUMMARY OF ALL CASES WITH A COMPARISON OF PAST YEARS – KALAMAZOO

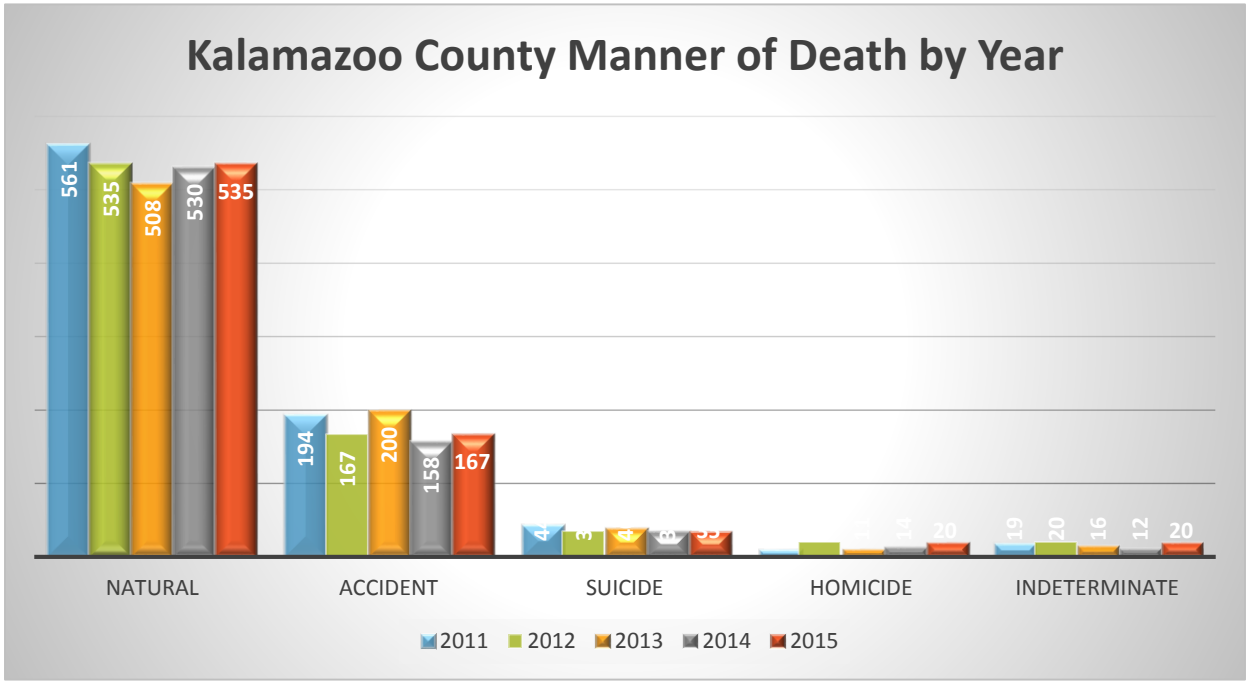
KALAMAZOO COUNTY	2010	2011	2012	2013	2014	2015
Total Deaths in the County	2752	2590	2539	2668	2683	2669
Deaths Reported to the Medical Examiner	*	828	778	777	750	848
Deaths Investigated	*	*	556	580	560	646
MEI Scene Investigations	*	498	503	549	411	434
Death Certificates by ME	*	394	362	358	355	306
Bodies Transported to Morgue	*	244	233	241	253	247
Complete Autopsy	*	178	187	193	174	142
Limited Autopsy	*	10	4	4	6	7
External Examination	*	50	34	37	37	52
Storage Only	*	6	8	7	36	46
Total Cases with Toxicology	*	198	212	222	198	174
Unidentified Remains After Exam	*	14	0	0	0	0
Referrals to Gift of Life	*	9	46	65	153	113
Tissue/Cornea Donations	*	3	9	7	25	9
Unclaimed Bodies	*	14	9	7	10	10
Exhumations	*	0	0	0	0	0
Cremation Permits	*	1485	1467	1740	1782[A]	1672

*Data not collected.

[A]Estimated from combined numbers from Sparrow and WMed.

MANNERS OF DEATHS REPORTED TO KALAMAZOO COUNTY MEDICAL EXAMINER

KALAMAZOO COUNTY	2011	2012	2013	2014	2015
Natural	561	535	508	530	535
Accident	194	167	200	158	167
Suicide	44	35	40	36	35
Homicide	10	20	11	14	20
Indeterminate	19	20[16]	16[17]	12[18]	20
Total	**828**	**777**	**775**	**750**	**777**



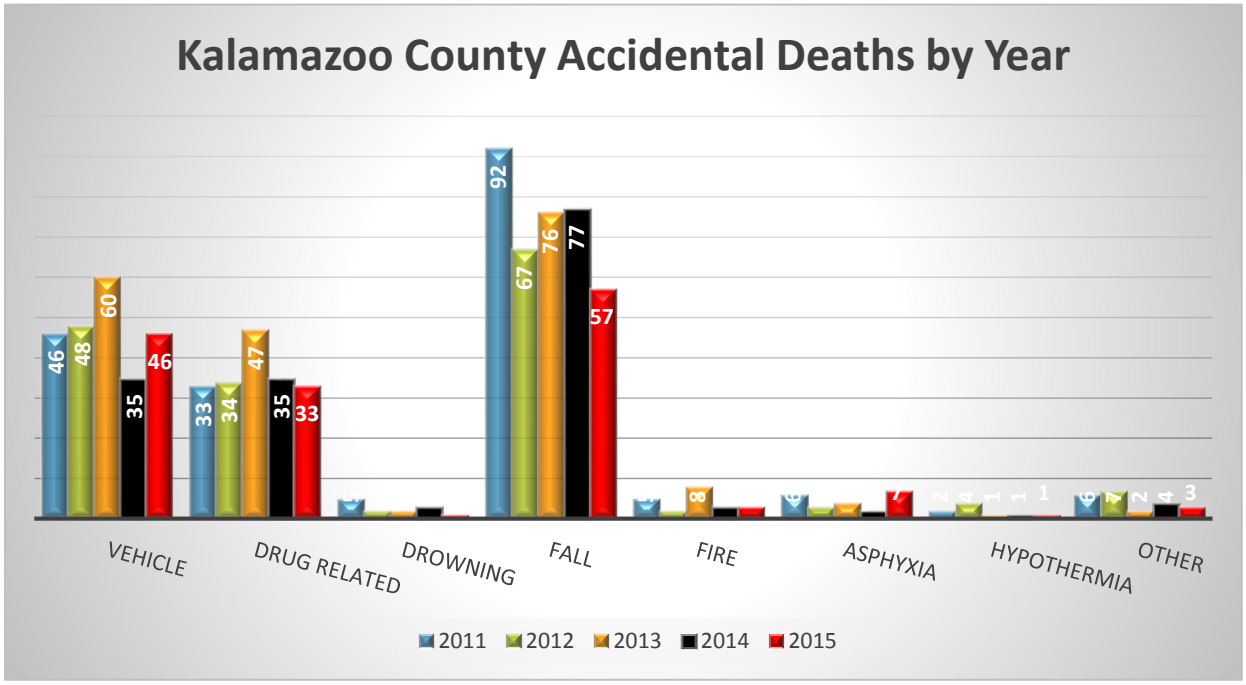
[16] (9) Indeterminate cause of death; (5) Drug intoxication; (2) Sudden Unexplained Infant Death ; (1) Unsafe sleep environment; (1) Left leg fractures; (1) Drowning; (1) Carbon monoxide

[17] (7) Sudden Unexplained Infant Death; (3) Drug intoxication; (2) Fire; (1) Indeterminate cause of death; (1) Struck by train; (1) Vehicle struck bridge abutment; (1) Splenic rupture under unclear circumstances

[18] (2) Thermal inhalation injuries; (1) Gunshot wound to head; (5) Drug intoxication; (1) Drowning; (3) Sudden Unexplained Infant Death

ACCIDENTAL DEATHS – SUBCLASSIFICATION – KALAMAZOO COUNTY

KALAMAZOO	2011	2012	2013	2014	2015
Vehicle	46	48	60	35	46
Drug Related	33	34	47	35	33
Drowning	5	2	2	3	1
Fall	92	67	76	77	57
Fire	5	2	8	3	3
Asphyxia	6	3	4	2	7
Hypothermia	2	4	1	1	1
Other	6[19]	7[20]	3[21]	4[22]	3[23]
Total[E24]	**195**	**167**	**200**	**160**	**151**



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

[20] (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 and vehicle fuel tank); (1) Unknown how pelvis was fractured.

[21] (1) Complications of heat stroke; (1) Carbon monoxide toxicity

[22] (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

[23] (2) Tree limb fell on head; (2) Complications related to general anesthesia during finger amputation

[24] Some deaths are classified as more than one.

KALAMAZOO COUNTY DRUG RELATED FATALITIES

KALAMAZOO	2011	2012	2013	2014	2015
Accident	34	34	47	35	33
Suicide	4	8	6	12	9
Indeterminate	10	5	3	4	0

DRUGS PRESENT IN THE ACCIDENTAL DRUG RELATED DEATHS FOR KALAMAZOO COUNTY - 2015
ETHANOL
AMPHETAMINES AND FENTANYL
HEROIN AND COCAINE
HEROIN AND BENZODIAZEPINES
ALPRAZOLAM, MORPHINE, HYDROMORPHONE, COCAINE
CLONAZEPAM, TRAMADOL, OXCARBAZEPINE, TOPIRAMATE, LEVETIRACETAM
HEROIN, FENTANYL, AND COCAINE METABOLITE
METHAMPHETAMINE
CLONAZEPAM, HYDROMORPHONE, OXYCODONE, LAMOTRIGINE, DOXEPIN AND CITRALOPAM
MORPHINE
OPIATE
HEROIN AND COCAINE
FENTANYL
HEROIN AND ETHANOL
ALPRAZOLAM, 7-AMINOCLONAZEPAM, GABAPENTIN, AND HEROIN
COCAINE, HEROIN, GABAPENTIN, AMITRIPTYLINE, DULOXETINE, HYDROXYZINE, ATOMOXETINE AND QUETIAPINE
ALPRAZOLAM, TRAMADOL, LAMOTRIGINE, GABAPENTIN, BUPROPION, AND CITALOPRAM
ALPRAZOLAM, BUPRENORPHINE, ETHANOL AND GABAPENTIN
CLONAZEPAM, METHADONE, GABAPENTIN AND QUETIAPINE
METHAMPHETAMINE, ALPRAZOLAM, FENTANYL, FLUOXETINE, AND CITALOPRAM
ALPRAZOLAM AND FENTANYL
METHAMPHETAMINE, 7-AMINOCLONAZEPAM, ALPRAZOLAM, GABAPENTIN, AMITRIPTYLINE, DULOXETINE, NORFLUOXETINE, PAROXETINE, AND METOPROLOL
METHADONE, MORPHINE, AND PAROXETINE
ALPRAZOLAM, METHADONE, MORPHINE, HYDROCODONE, FLUOXETINE, TRAZODONE, CYCLOBENZAPRINE, DIPHENHYDRAMINE AND METOCLOPRAMIDE
HEROIN
METHADONE, CARBAMAZEPINE, GABAPENTIN, AND QUETIAPINE
ALPRAZOLAM, 7-AMINOCLONAZEPAM, FENTANYL, OXYCODONE, TRAMADOL, AND NORFLUOXETINE
MORPHINE, DIAZEPAM, BUPROPION, AND CYCLOBENZAPRINE
HEROIN AND COCAINE
ALPRAZOLAM, METHADONE, MORPHINE, AND GABAPENTIN
METHADONE AND COCAINE METABOLITES
OPIATES AND BENZODIAZEPINES
ETHANOL

KALAMAZOO COUNTY – SUICIDES

SUICIDE TOTALS BY YEAR – KALAMAZOO COUNTY

KALAMAZOO	2011	2012	2013	2014	2015
TOTAL	44	35	40	36	38

SUICIDE METHOD – KALAMAZOO COUNTY

KALAMAZOO	2011	2012	2013	2014	
Firearm	20	15	15	14	19
Hanging	12	8	13	7	9
Drug Intoxication	4	8	6	12	9
Carbon Monoxide	2	1	0	0	0
Motor Vehicle	0	0	1	1	1
Sharp Force Injuries	3	1	2	0	0
Asphyxia	1	1	3	1	0
Other	1[25]	1[26]	0	1[27]	0

SUICIDE BY AGE – KALAMAZOO COUNTY

KALAMAZOO	2011	2012	2013	2014
0-17	0	1	5	0
18-25	7	3	12	7
26-44	13	11	4	12
45-64	16	12	12	10
65+	8	8	7	7

[25] (1) Fall from balcony
[26] (1) Drowning
[27] (1) Ignited self after pouring accelerant on self

MUSKEGON COUNTY

MUSKEGON COUNTY MEDICAL EXAMINER INVESTIGATORS - 2015

William Mastenbrook D-ABMDI

Todd Rake

Jen Portell

Brad Walters

Richard Duell

Chris Anderson

Molly Essebaggers

Robert Huss, D-ABMDI

SUMMARY OF ALL CASES WITH A COMPARISON OF PAST YEARS

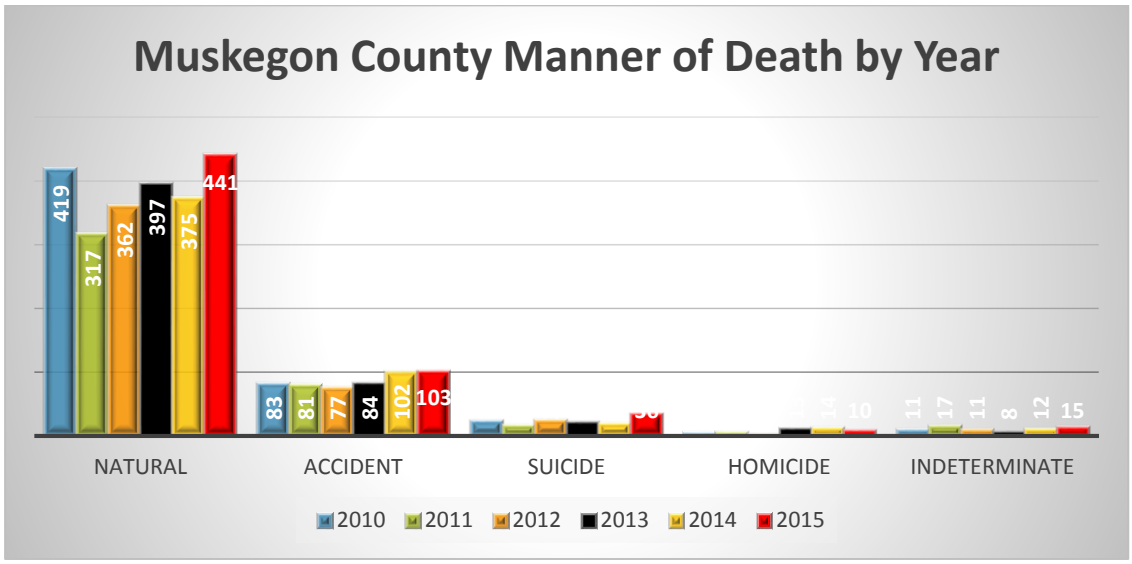
MUSKEGON COUNTY	2010	2011	2012	2013	2014	2015
Total Deaths in the County	1637	1693	1600	1730	1707	1702
Deaths Reported to the Medical Examiner	544	440	481	527	524	605
Deaths Investigated	*	*	412	424	453	530
MEI Scene Investigations	353	310	384	420	444	501
Death Certificates by ME	213	201	203	216	228	251
Bodies Transported to Morgue	163	161	132	148	178	159
Complete Autopsy	135	122	106	120	144	120
Limited Autopsy	5	10	2	6	2	4
External Examination	22	21	22	18	18	35
Storage Only	1	8	2	4	4	0
Total Cases with Toxicology	147	153	119	142	152	160
Unidentified Remains After Exam	0	0	0	0	0	0
Referrals to Gift of Life	27	70	81	93	156	139
Tissue/Cornea Donations	3	7	13	18	24	17
Unclaimed Bodies	0	4	4	3	6	5
Exhumations	0	0	0	0	0	0
Cremation Permits	893	812	952	986	1007[28]	1116

*Data not collected

[28] Estimated from combined numbers from Sparrow and WMed.

MANNERS OF DEATHS REPORTED TO MUSKEGON COUNTY MEDICAL EXAMINER

MUSKEGON	2010	2011	2012	2013	2014	2015
Natural	419	317	362	397	375	441
Accident	83	81	77	84	102	103
Suicide	25	18	26	23	21	36
Homicide	6	7	4	13	14	10
Indeterminate	11[29]	17[30]	11[31]	8[32]	12[33]	15[34]
Total	**544**	**440**	**480**	**525**	**524**	**481**



[29] (4) SUID ; (1) Non-human bones; (1) Complications of anoxic encephalopathy of undetermined etiology; (5) Drug-related

[30] (1) SUID ; (3) Drug-related; (1) Inhalation, products of combustion – house fire; (3) Drowning; (7) Non-human bones; (1) Ruptured spleen; (1) Multiple injuries, driver, motor vehicle accident

[31] (1) Complications of right femur & 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

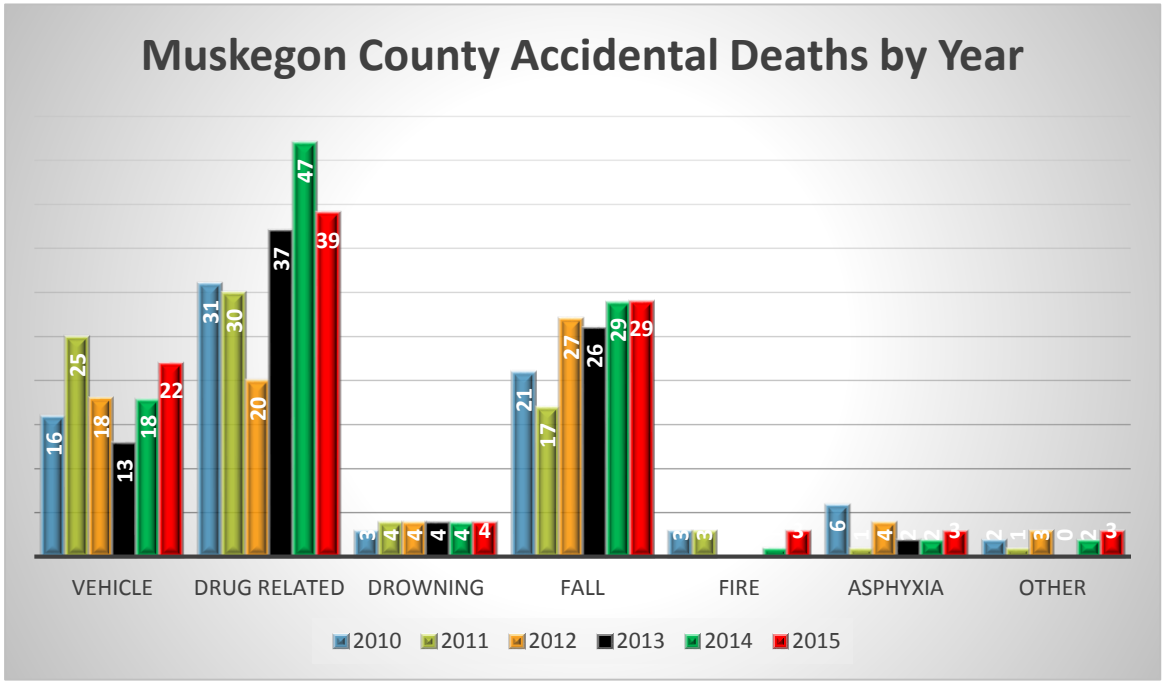
[32] (1) SUID ; (4) Indeterminate cause of death; (2) Mixed drug intoxication; (3) Drove car into river

[33] (1) Blunt injury of head, torso, extremities; (3) Non-human bone; (1) Complications of blunt impacts to head; (1) Bilateral pneumonia and pulmonary abscess complicating pulmonary emphysema; (1) Sudden death following exertion; (4) Mixed drug intoxication; (1) SUID

[34] (4) Undetermined cause of death; (1) SUID; (4) Injuries with unknown histories (2) Mixed drug intoxications

ACCIDENTAL DEATHS – SUBCLASSIFICATION – MUSKEGON COUNTY

MUSKEGON	2010	2011	2012	2013	2014	2015
Vehicle	16	25	18	13	18	22
Drug Related	31	30	20	37	47	39
Drowning	3	4	4	4	4	4
Fall	21	17	27	26	29	29
Fire	3	3	0	0	1	3
Asphyxia	6	1	4	2	2	3
Other	2[35]	1	3[36]	0	2[37]	3[38]
Total	**82**	**81**	**76**	**82**	**103**	**103**



[35] (1)Splenic injury during colonoscopy; (1) Medical complications of being trapped under object
[36] (1) Jail inmate requiring restraint; (1) Crushed in an industrial steam chest mold; (1) Head injury during soccer game
[37] (1) Pulmonary thromboembolic disease; (1) Complications of hypothermia
[38] (2) CO from faulty furnace; (1) Hypothermia due to environmental exposure

MUSKEGON COUNTY DRUG RELATED FATALITIES

MUSKEGON	2010	2011	2012	2013	2014	2015
Accident	31	30	20	37	47	39
Suicide	9	3	5	1	2	8
Indeterminate	5	3	2	2	5	4

DRUGS IDENTIFIED IN THE 39 ACCIDENTAL DRUG OVERDOSES IN MUSKEGON, MICHIGAN - 2015
ALCOHOL AND BENZODIAZEPINE
COMPLICATIONS OF METHADONE AND BENZODIAZEPINES
METHADONE AND ETHANOL
CODEINE, HYDROCODONE AND ETHANOL
CLONAZEPAM, MORPHINE, CARBAMAZEPINE, PREGABALIN, AMITRIPTYLINE, AND AMLODIPINE
FENTANYL, COCAINE AND ETHANOL
HEROIN
COCAINE, HEROIN, ETHANOL, AND METHYLPHENIDATE
FENTANYL AND ETHANOL
HEROIN AND ETHANOL
COCAINE AND METHADONE
MORPHINE AND CODEINE
HEROIN AND ETHANOL
HEROIN, COCAINE METABOLITE, AND GABAPENTIN
MORPHINE
ALPRAZOLAM, METHADONE, HYDROCODONE, AMPHETAMINE, AND HEROIN
HEROIN, OXYCODONE, ETHANOL, COCAINE
ALPRAZOLAM, METHADONE, GABAPENTIN, AND DIPHENHYDRAMINE
COCAINE AND HEROIN
METHADONE
DIAZEPAM AND HEROIN
OXYCODONE, HYDROCODONE, GABAPENTIN, AND PAROXETINE
HEROIN, COCAINE AND ETHANOL
HEROIN AND FENTANYL
ALPRAZOLAM, COCAINE, FENTANYL AND METHADONE
METHADONE, HYDROCODONE, AND ETHANOL
COCAINE AND HEROIN
MORPHINE
FENTANYL, ALPRAZOLAM, GABAPENTIN, DULOXETINE, TRAZODONE, OLANZAPINE
FENTANYL AND ALCOHOL
HEROIN, FENTANYL, COCAINE AND ETHANOL
COCAINE, METHADONE, GABAPENTIN, VENLAFAXINE, DIPHENHYDRAMINE, AND QUETIAPINE
MORPHINE, COCAINE, TRAMADOL AND VENLAFAXINE
ETHANOL AND PHENCYCLIDINE
HEROIN AND FENTANYL
METHADONE, HEROIN, AND ETHANOL
METHADONE, LORAZEPAM, GABAPENTIN, NORTRIPTYLINE, AND CITALOPRAM
HEROIN, GABAPENTIN, AMITRIPTYLINE, VENLAFAXINE, HYDROXYZINE, AND PROMETHAZINE
ALPRAZOLAM, COCAINE METABOLITE, METHADONE, PREGABALIN, PAROXETINE, QUETIAPINE, AND MORPHINE

MUSKEGON COUNTY – SUICIDES

SUICIDE TOTALS BY YEAR – MUSKEGON COUNTY

MUSKEGON	2010	2011	2012	2013	2014	2015
TOTAL	25	18	26	23	21	36

SUICIDE METHOD – MUSKEGON COUNTY

MUSKEGON	2010	2011	2012	2013	2014	2015
Firearm	10	10	13	9	10	11
Hanging	5	4	7	7	7	15
Drug Intoxication	9	3	5	1	3	8
Sharp Force Injuries	0	0	0	2	0	2
Motor Vehicle	0	0	0	2	1	0
Other	1[39]	1[40]	1[41]	2	0	0

SUICIDE BY AGE – MUSKEGON COUNTY

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

[39] Inhalation of automobile exhaust
[40] Suffocation via plastic bag over head
[41] (1) Carbon monoxide; (1) Crossbow

COMPARISON OF ALL COUNTIES

	Allegan	Calhoun	Kalamazoo	Muskegon
Population	113847	134878	258818	172344
Deaths in the County	701	1382	2669	1702
Deaths Reported	176	429	848	605
Percentage of Deaths Reported	25%	31%	32%	36%
Postmortem Examinations	52	142	201	159
Percentage of Postmortem Exams	30%	33%	24%	26%
Natural	127	313	535	441
Percentage of Reported	72%	73%	63%	73%
Accident	25	80	167	103
Percentage of Reported	14%	19%	20%	17%
Suicide	17	25	35	36
Percentage of Reported	10%	6%	4%	6%
Homicide	5	2	20	10
Percentage of Reported	3%	0%	2%	2%
Indeterminate	2	9	20	15
Percentage of Reported	1%	2%	2%	2%
Accidental Drug Related Deaths	7	44	33	39
Percentage of Accidents	28%	55%	20%	38%
Heroin Related Fatalities	3	21	9	16
Percentage of Accidents	12%	26%	5%	16%
Traffic Fatalities	10	21	46	22
Percentage of Accidents	40%	26%	28%	21%

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