ANNUAL REPORT 2018

Office of the Medical Examiner

Allegan, Barry, Calhoun, Grand Traverse, Kalamazoo, Leelanau, Mason, Muskegon, Osceola, St. Joseph and Van Buren Counties

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*This report was amended on June 4th, 2019, to correct a death that had previously been categorized as an accidental drug-related death in Calhoun County, but actually occurred in Kalamazoo County.

MESSAGE FROM DR. JOYCE DEJONG

The Annual Report for the Medical Examiner Office provides a statistical analysis and reporting of the deaths reported to our office in 2018 for Allegan, Barry, Calhoun, Grand Traverse, Kalamazoo, Leelanau, Mason, Muskegon, Osceola, St. Joseph and Van Buren Counties. On January 1, 2018, we began providing Barry County with medical examiner services. In April of 2018, we began providing medical examiner services to Osceola County. Our office serves as forensic pathology and forensic anthropology consultants to a number of other counties in Michigan and northern Indiana.

The National Association of Medical Examiners (NAME) accreditation standard requires 95% of examination reports to be completed within 60 days; however, our office is proud to say that, on average, over 85% of our examination reports are completed within 30 days, rather than 60 days. We provide answers to families, law enforcement, public health, and other interested parties 30 days sooner than most medical examiner offices, including our own just two years ago. In addition, we remain fully accredited by the National Association of Medical Examiners.

Much like 2016 and 2017, drug-related deaths, primarily from opioids, remained high in 2018. More so than any other counties in Michigan, we continue to participate in the Swift Toxicology for Opioid-Related Mortalities (STORM) surveillance project funded by the State of Michigan to allow public health and law enforcement rapid access to opioids showing up in their communities. Between these results, which are ready within a few days, and our autopsy reports, typically ready within 30 days, we provide data and reports to various agencies who are working to combat this crisis, a crisis that overall is showing no significant evidence that it is waning.

Each of our counties has a Child Death Review Team that meets with a frequency reflective of the number of child deaths in the county. Law enforcement, public health, child protective services, hospital personnel, school representatives and many others attend these meetings. When I cannot personally attend the meeting, another forensic pathologist is almost always able to step in to attend these meetings, working with others in the community to identify why children die and what can be done to prevent deaths in the future.

I am especially proud of our continued very high referral rate to Gift of Life for deaths occurring outside of a health care facility. In some counties, it appears the numbers declined a bit, but in reality, our referral process simply became more refined to include deaths that meet the criteria for donation of tissues, heart valves and corneas. Our partners at Gift of Life assure us that our counties remain amongst the top referring counties in the state, providing opportunities for families to possibly have their grief tempered by the knowledge that their loved one gave a gift that helped others.

Finally, and perhaps most importantly, I recognize that this document is full of numbers, tables and charts. It is not lost on us that each number represents the death of a person, someone who was possibly a parent, grandparent, spouse, child, relative or friend to others. The deaths also represent a loss to our communities. We dedicate this report to the memory of those lost and to those who have suffered the loss of a friend or relative in 2018.

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Which Deaths Do We Investigate?

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

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

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

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

> "Show me the manner in which a nation cares for its dead and I will measure with mathematical exactness the tender mercies of its people, their respect for the laws of the land, and their loyalty to high ideals."
>
> *Sir William Ewart Gladstone*

Identification of Decedent

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

Indications for Complete Autopsy

The decision regarding whether a complete autopsy should be performed is based on the NAME Autopsy Performance Standards. Consequently, an autopsy is performed when the:

1. Death is known or suspected to have been caused by apparent criminal violence.
2. Death is unexpected and unexplained in an infant or child.
3. Death is associated with police action.
4. Death is apparently non-natural and in custody of a local, state, or federal institution.
5. Death is due to acute workplace injury.
6. Death is caused by apparent electrocution.
7. 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.
8. Death is caused by unwitnessed or suspected drowning.
9. Body is unidentified and the autopsy may aid in identification.
10. Body is skeletonized.
11. Body is charred.
12. Forensic pathologist deems a forensic autopsy is necessary to determine cause or manner of death, or document injuries/disease, or collect evidence.
13. Deceased is involved in a motor vehicle incident and an autopsy is necessary to document injuries and/or determine the cause of death.

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

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

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

- *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.

The Death Investigation Process

As we mentioned above, a medical examiner investigator responds to nearly all of the death scenes. The medical examiner investigator (MEI) is trained to recognize the vast majority of the deaths requiring postmortem examinations and, in those cases, immediately arranges for transport to WMed for a postmortem examination. Homicides, infant deaths, and drug overdoses are examples of the deaths that are immediately sent.

If the death does not appear to meet the requirements for a postmortem examination, the MEI contacts the on-call medical examiner to discuss the case before releasing the body to a funeral home. The MEI writes a report documenting their findings and uploads images obtained at the investigation. These reports and photos are reviewed by the medical examiner or deputy medical examiner.

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

- *Declined Jurisdiction*: A reported death classified as an attended natural death should be documented as a Declined Jurisdiction case.
- *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 a funeral home has been chosen. If family cannot be found or if the family does not take responsibility for the disposition of the remains, an unclaimed remains process ensues.
- *External Examination*: An external examination includes a careful evaluation of the circumstances of the death and an examination of the external surfaces of the body, with possible laboratory/toxicology testing. This includes the production of a written report.
- *Limited Examination*: A limited examination generally is within an anatomic boundary (such as a brain only examination) to recover a foreign body or to answer specific questions. This type of examination may also include toxicology testing. This type of exam is rare and used in only special circumstances. This includes the production of a written report.

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

Cremation Permit Authorizations

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

Public Health and Safety

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

An Elder Death Review Team is now operational in Kalamazoo County. As the process to identify and effectively review deaths of the elderly and vulnerable adults is improved, with a goal of identifying how to improve care for these populations in our communities, we plan to expand this to all of our counties. Public Act 171 of 2012 allows the Medical Examiner to create elder death review teams and it provides legal protections for members of the team.

Terms

- "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 may not allow for a scene investigation, involved an investigation beyond the initial report of the 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.

IMPORTANT NOTE REGARDING THE DATA IN THIS REPORT:

The data reflects the county 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. If a motor vehicle collision occurs in County A, and an individual injured in the collision is transported to and eventually reported dead in County B, the death is reported to the Medical Examiner of County B. Consequently, counties with major medical centers typically have a much higher number of deaths with injuries that may have occurred in another county.

ALLEGAN COUNTY

Summary of All Allegan County Cases

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Deaths in the County	607	549	602	657	705	753	745	788	772[1]
Deaths Reported to the ME	164	172	162	182	193	176	203	188	197
Deaths Investigated	N/A	N/A	145	164	189	170	192	164	191
MEI Scene Investigations	147	155	143	160	177	152	174	158	185
Death Certificates by ME	98	83	78	76	97	77	85	76	88
Bodies Transported to WMed	80	68	63	58	74	66	62	69	72
Complete Autopsy	57	51	43	49	63	32	36	45	41
Limited Autopsy	4	2	6	1	2	2	5	2	2
External Examination	16	13	11	5	7	18	17	13	24
Storage Only	3	2	3	3	2	14	4	9	5
Total Cases with Toxicology	70	51	54	54	70	47	52	54	59
Unidentified Remains After Exam	0	0	0	0	2	1	0	0	1[2]
Referrals to Gift of Life	14	35	38	32	62	64	63	73	61
Tissue Donations	4	3	4	0	5	8	5	6	4
Cornea Donations	1	3	5	0	6	7	4	7	4
Unclaimed Investigations	0	2	2	1	2	3	1	2	2
Exhumations	0	0	0	0	0	0	0	0	0

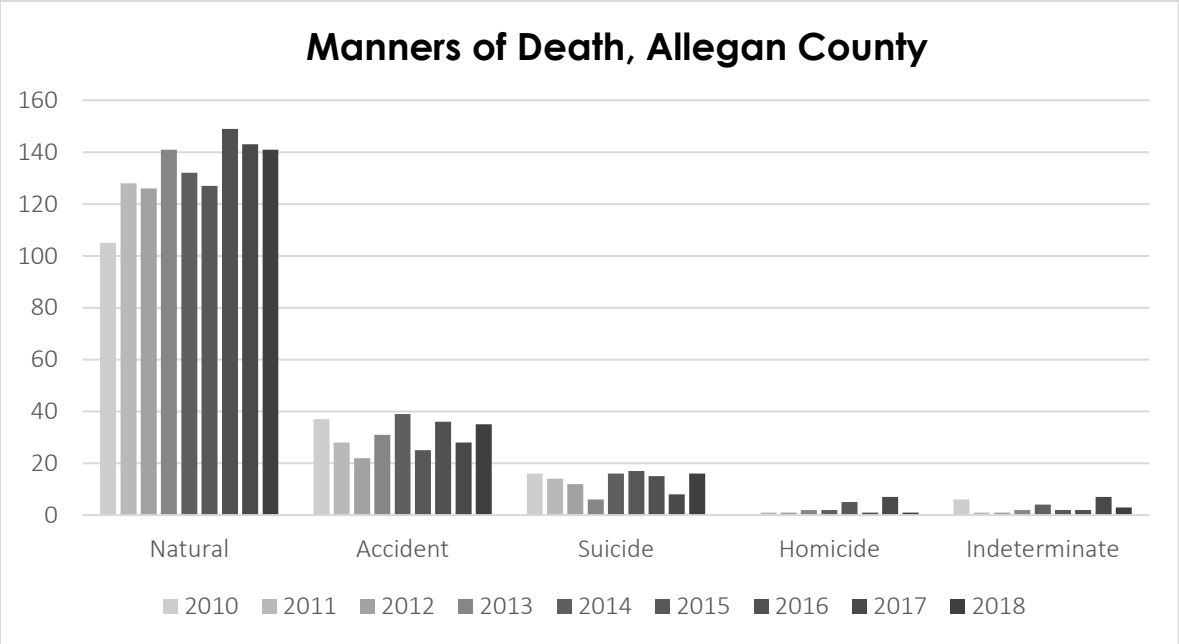
Cremation Permit Authorizations, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cremation Permits	287	300	299	350	409	404	442	469	487
% of Total Deaths with Cremation	47%	55%	50%	53%	58%	54%	60%	59%	63%

[1] Provisional total number of deaths occurring in the county
[2] Unidentified human skull, non-forensic

Manners of Death Reported, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Natural	105	128	126	141	132	127	149	143	141
Accident	37	28	22	31	39	25	36	28	35
Suicide	16	14	12	6	16	17	15	8	16
Homicide	0	1	1	2	2	5	1	2	1
Indeterminate	6	1	1	2	4	2	2	7	3[1]
Total	**164**	**172**	**162**	**182**	**193**	**176**	**203**	**188**	**196[2]**



Deaths Reported by Age (in years), Allegan County

	< 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

[1] (1) Drowning in river; (1) Probable complications of unknown neurologic disorder (family objected to exam); (1) Inhalation of products of combustion in house fire
[2] (1) Unidentified human skull not included, non-forensic

2015	0	1	1	5	7	15	59	87
2016	1	1	0	0	5	26	58	112
2017	4	1	0	2	3	17	54	106
2018[1]	1	3	0	2	4	29	55	102

Pediatric Deaths, Allegan County

The six deaths of individuals under 18 years of age include:

1. <1 year old
   a. (1) Skeletal dysplasia consistent with type 2 collagenopathy; natural
2. 1-5 years old
   a. (1) Sudden Unexplained Death of Childhood (SUDC); natural
   b. (1) Multiple injuries, bicyclist struck by motor vehicle; accident
   c. (1) Bronchiolitis due to Parainfluenza 1 Virus; natural
3. 11-17 years old
   a. (1)Multiple blunt force injuries, passenger in motor vehicle collision; accident
   b. (1) Influenza Type A; natural

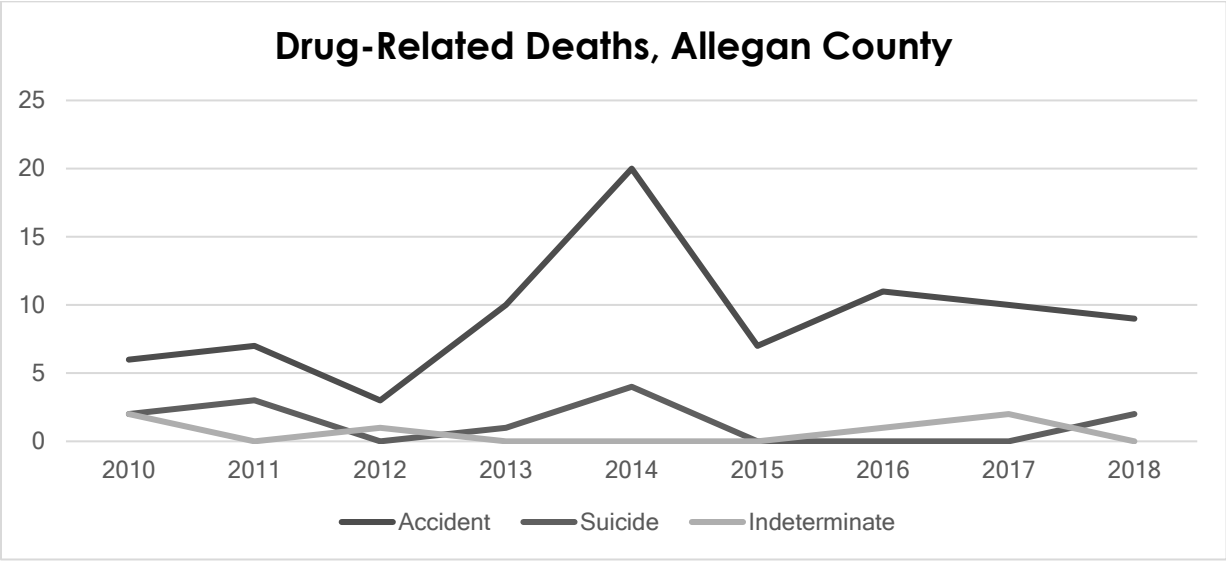
Accidental Deaths by Mechanism, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vehicle	15	12	13	9	11	10	9	12	12
Drug-Related	6	7	3	10	20	7	11	10	9
Drowning	1	2	0	1	1	0	1	3	3
Fall	7	4	2	7	5	5	10	3	10
Fire	3	2	3	1	0	0	0	0	0
Environmental Exposure	0	0	0	2	0	2	1	0	0
Asphyxia	3	2	1	0	0	0	2	0	2[2]
Other	2	0	0	2	2	1	2	0	0
Total	**37**	**29**	**22**	**31**	**39**	**25**	**36**	**28**	**35**[3]

[1] (1) Unidentified human skull not included, unknown age
[2] (1) Asphyxia due to Compression; (1) Asphyxia due to choking
[3] One death is categorized twice, as both drowning and drug-related

Drug-Related Deaths by Manner, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Accident	6	7	3	10	20	7	11	10	9
Suicide	2	3	0	1	4	0	0	0	2[1]
Indeterminate	2	0	1	0	0	0	1	2	0
Total	**10**	**10**	**4**	**11**	**24**	**7**	**12**	**12**	**11**
% of Accidental and Indeterminate Deaths Involving Opioids	N/A	N/A	N/A	N/A	N/A	86%	67%	50%	78%



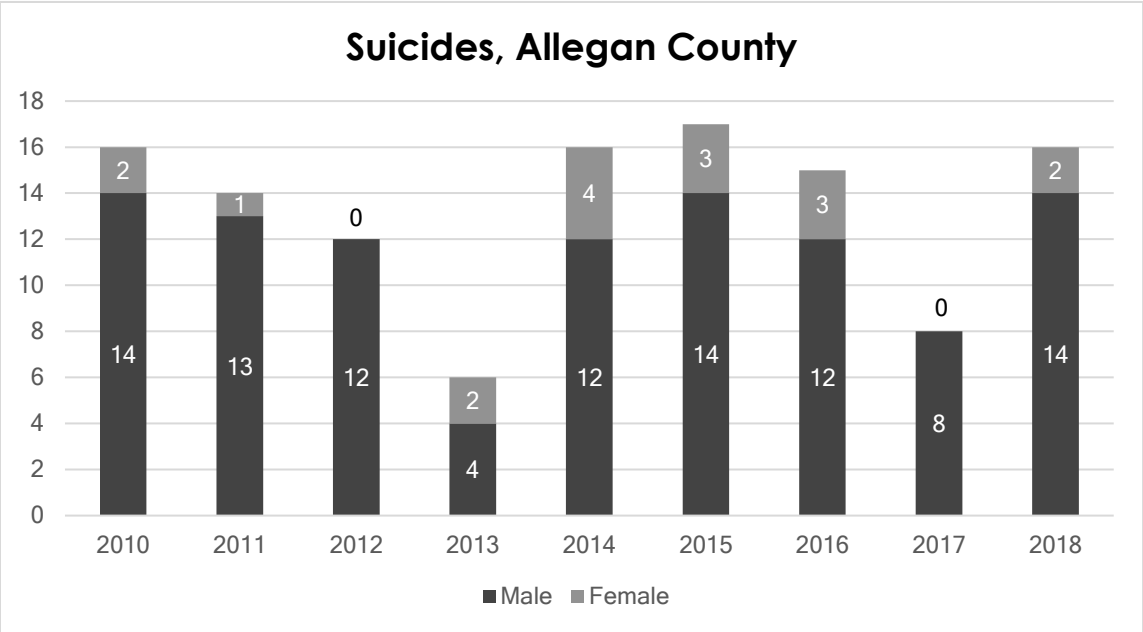
Drug-Related Accidental Deaths, Allegan County

Age	Sex	Race	Substances contributing to death	Opioid
23	M	W	Alcohol, diazepam, gabapentin, oxycodone	Y
27	M	W	Fentanyl, heroin	Y
32	M	W	Fentanyl, methadone, methamphetamine	Y
36	M	W	Fentanyl	Y
40	M	W	Methamphetamine	N
44	M	W	Acetylfentanyl, fentanyl, heroin	Y
49	M	W	Methamphetamine	N
52	F	W	Cocaine, fentanyl, methamphetamine	Y
72	M	W	Fentanyl	Y

[1] Both deaths involve multi-modality suicide; (1) Drowning associated with mixed drug intoxication; (1) Sharp force injuries associated with acute drug intoxication

Suicides, Allegan County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2010	16	14	2	0	13	3
2011	14	13	1	0	12	2
2012	12	12	0	0	10	2
2013	6	4	2	0	5	1
2014	16	12	4	0	13	3
2015	17	14	3	2	10	5
2016	15	12	3	0	12	3
2017	8	8	0	0	5	3
2018	16	14	2	0	14	2



Homicides by Mechanism, Allegan County

	2016	2017	2018
Firearm	0	1	1
Homicidal Means	0	1	0
Other	1	0	0
Total	**1**	**2**	**1**

BARRY COUNTY

Summary of All Barry County Cases[1]

	2015	2016[2]	2018
Total Deaths in the County	416	399	390[3]
Deaths Reported to the ME	125	130	146
Deaths Investigated	118	124	131
MEI Scene Investigations	112	120	128
Death Certificates by ME	53	57	52
Bodies Transported to WMed	43	47	41
Complete Autopsy	35	37	25
Limited Autopsy	1	0	1
External Examination	6	8	12
Storage Only	1	2	3
Total cases with Toxicology	N/A	N/A	35
Unidentified Remains After Exam	N/A	N/A	0
Referrals to Gift of Life	40	48	44
Tissue Donations[4]	6	17	3
Cornea Donations	N/A	N/A	0
Unclaimed Investigations	1	0	1
Exhumations	N/A	N/A	0

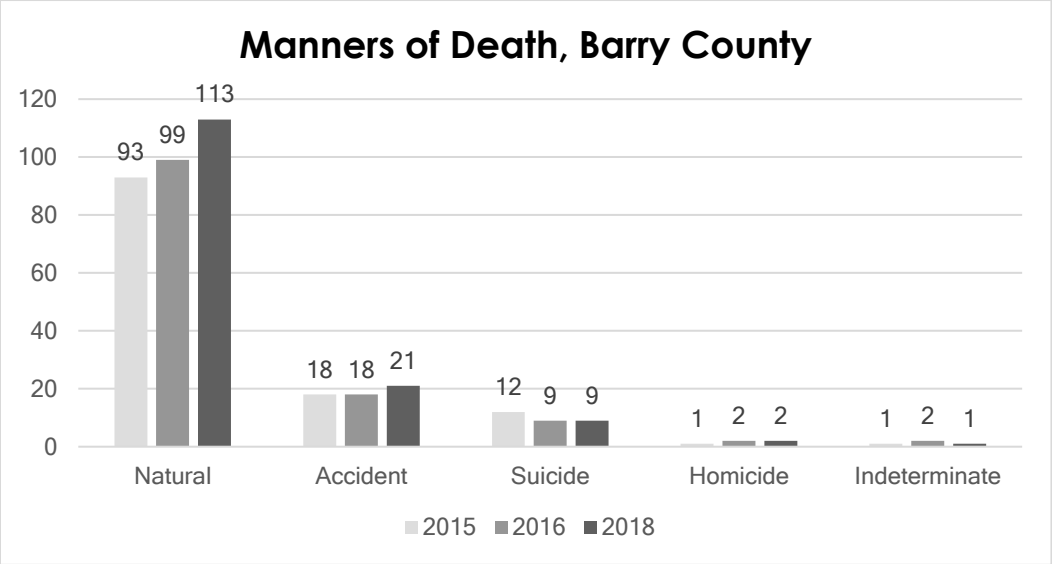
Cremation Permit Authorizations, Barry County

	2018
Cremation Permits	262
% of Total Deaths with Cremation	67%

[1] Data for 2017 is not available at the time this report is authored
[2] Data from years 2015-2016 obtained from Sparrow Hospital
[3] Provisional total number of deaths occurring in the county
[4] 2016 and 2017 data include both tissue and cornea donations combined

Manners of Death Reported, Barry County[1]

	2015	2016	2018
Natural	93	99	113[2]
Accident	18	18	21
Suicide	12	9	9
Homicide	1	2	2
Indeterminate	1	2	1[3]
Total	**125**	**130**	**146**



Deaths Reported by Age (in years), Barry County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	2	0	0	1	0	8	46	89

Pediatric Deaths, Barry County

The three deaths of individuals under 18 years of age include:

1. <1 year old
   a. (2) Stillbirth investigations (cremation permit authorizations)
2. 11-17 years old
   a. (1) Gunshot wound of head; suicide

[1] Data from years 2015-2016 obtained from Sparrow Hospital
[2] Includes (2) stillbirth investigations (cremation permit authorizations)
[3] (1) Mixed drug intoxication associated with coronary artery atherosclerosis

Accidental Deaths by Mechanism, Barry County

	2018
Vehicle	7
Drug-Related	4
Drowning	0
Fall	8
Fire	0
Environmental Exposure	0
Asphyxia	1[1]
Other	1[2]
Total	**21**

Drug-Related Deaths by Manner, Barry County

	2018
Accident	4
Suicide	0
Indeterminate	1
Total	**5**
% of Accidental and Indeterminate Deaths Involving Opioids	40%

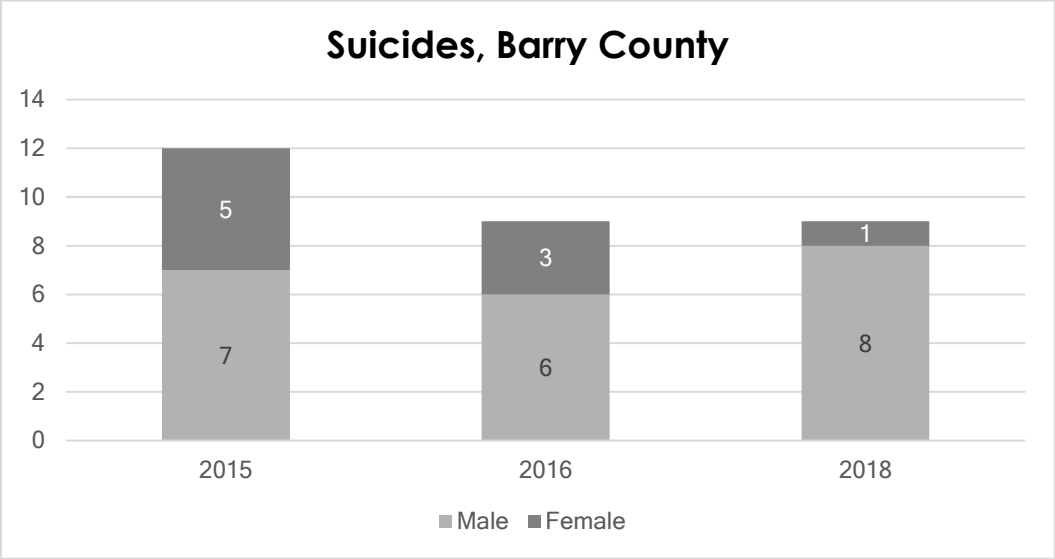
Drug-Related Accidental & Indeterminate Deaths, Barry County

Age	Sex	Race	Substances contributing to death	Opioid
39	M	W	Diazepam, fentanyl, heroin, mitragynine	Y
40	M	W	Alcohol, amitriptyline, bupropion, cyclobenzaprine	N
42	M	W	Fentanyl	Y
56	M	W	Methamphetamine	N
58	M	W	Methamphetamine	N

[1] (1) Inhalation of motor vehicle exhaust
[2] (1) 1965 death, reportedly vehicle-related

Suicides, Barry County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2015	12	7	5	1	11	0
2016	9	6	3	1	6	2
2018	9	8	1	0	5	3



Homicides by Mechanism, Barry County

	2018
Firearm	2
Blunt Force Trauma	0
Other	0
Total	**2**

CALHOUN COUNTY

Summary of All Calhoun County Cases

	2014	2015	2016	2017	2018
Total Deaths in the County	1,390	1,378	1,427	1,396	1,495[1]
Deaths Reported to the ME	377	429	411	443	475
Deaths Investigated	335	392	361	400	415
MEI Scene Investigations	296	311	307	352	387
Death Certificates by ME	178	180	186	191	200
Bodies Transported to WMed	138	164	165	176	170
Complete Autopsy	103	109	103	102	103
Limited Autopsy	1	5	4	3	8
External Examination	20	28	36	46	38
Storage Only	14	20	22	25	21
Total Cases with Toxicology	122	131	113	141	139
Unidentified Remains After Exam	0	0	0	0	0
Referrals to Gift of Life	119	115	118	146	107
Tissue Donations	8	3	11	10	11
Cornea Donations	8	8	11	8	9
Unclaimed Investigations	13	8	11	23	24
Exhumations	1	0	0	0	0

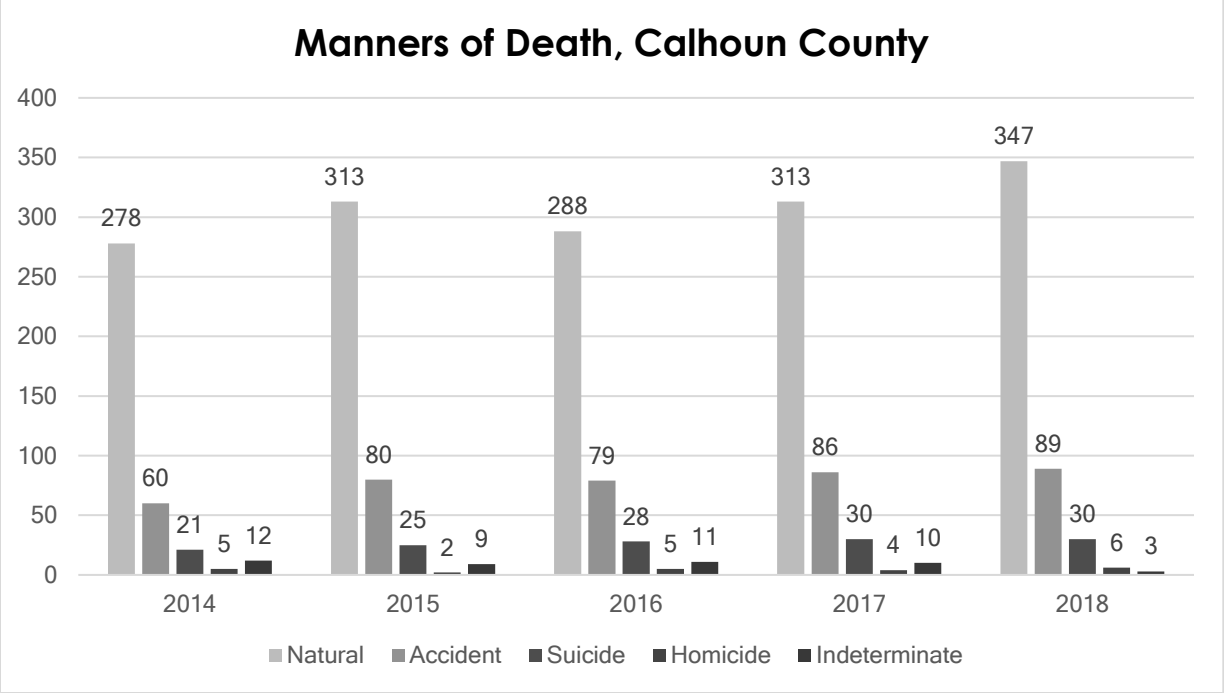
Cremation Permit Authorizations, Calhoun County

	2014	2015	2016	2017	2018
Cremation Permits	721	742	811	857	901
% of Total Deaths with Cremation	52%	54%	57%	61%	60%

[1] Provisional total number of deaths occurring in the county

Manners of Death Reported, Calhoun County

	2014	2015	2016	2017	2018
Natural	278	313	288	313	347[1]
Accident	60	80	79	86	89
Suicide	21	25	28	30	30
Homicide	5	2	5	4	6
Indeterminate	12	9	11	10	3[2]
Total	**377**	**429**	**411**	**443**	**475**



Deaths Reported by Age (in years), Calhoun County

	< 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	0	1	6	11	59	128	215
2016	15	0	2	2	9	53	122	208
2017	15	1	1	1	14	65	140	206
2018	12	0	2	2	9	45	164	241

[1] Includes (11) stillbirth investigations (cremation permit authorizations)
[2] (2) Mixed drug intoxication; (1) Found deceased outdoors, unknown cause and manner of death

Pediatric Deaths, Calhoun County

The 16 deaths of individuals under 18 years of age include:

1. <1 year old
   a. (11) Stillbirth investigations (cremation permit authorizations)
   b. (1) Asphyxia due to unsafe sleep; accident
2. 6-10 years old
   a. (1) Drowning, swimming pool; accident
   b. (1) Adrenal crisis due to primary adrenal insufficiency; natural
3. 11-17 years old
   a. (1) Asphyxia due to hanging; suicide
   b. (1) Complications of metachromatic leukodystrophy; natural

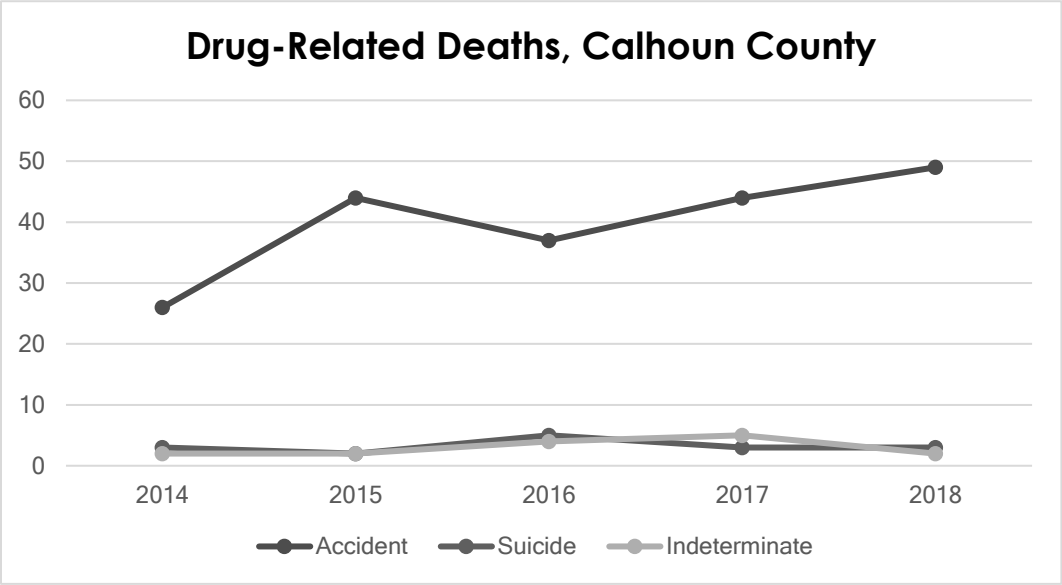
Accidental Deaths by Mechanism, Calhoun County

	2014	2015	2016	2017	2018
Vehicle	10	21	20	14	15
Drug-Related	26	44	38	44	49
Drowning	0	2	2	3	1
Fall	16	11	14	19	19
Fire	5	0	1	0	1
Environmental Exposure	2	0	0	0	0
Asphyxia	2	0	2	5	3[1]
Other	1	1	2	1	1[2]
Total	**62**	**81**	**79**	**86**	**89**

Drug-Related Deaths by Manner, Calhoun County

	2014	2015	2016	2017	2018
Accident	26	44	37	44	49
Suicide	3	2	5	3	3
Indeterminate	2	2	4	5	2
Total	**31**	**48**	**46**	**52**	**54**
% of Accidental and Indeterminate Deaths Involving Opioids	N/A	91%	88%	94%	92%

[1] (1) Asphyxia due to unsafe sleep; (1) Autoerotic asphyxia hanging; (1) Traumatic asphyxia, pinned beneath vehicle
[2] (1) Exsanguination due to leg avulsion; entangled in bulldozer tracks



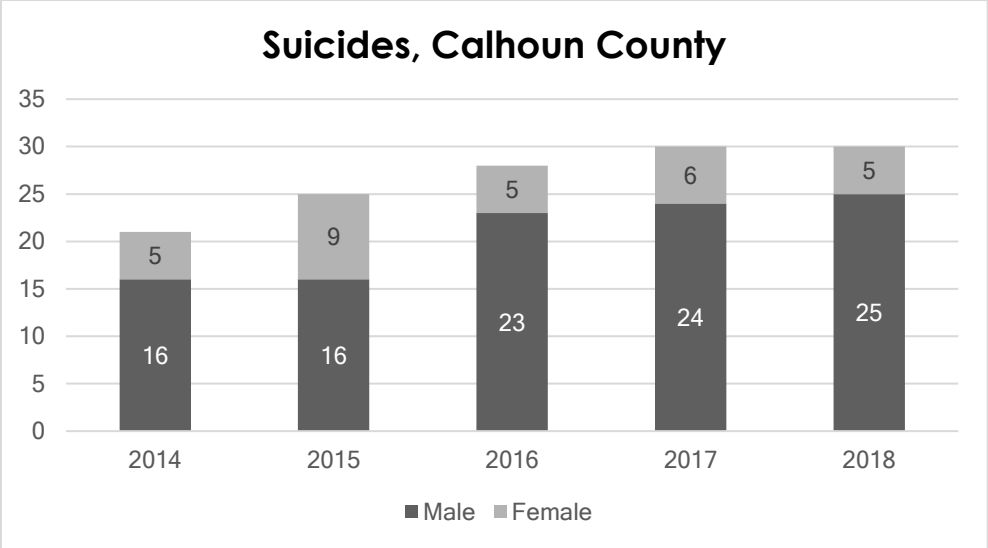
Drug-Related Accidental & Indeterminate Deaths, Calhoun County

Age	Sex	Race	Substances contributing to death	Opioid
25	M	W	Alcohol, cocaine, heroin	Y
26	M	W	Fentanyl, heroin, methamphetamine	Y
27	M	W	Fentanyl	Y
29	M	W	Alcohol, cocaethylene, cocaine, fentanyl	Y
32	F	W	Acetylfentanyl, fentanyl, heroin	Y
32	M	W	Alprazolam, fentanyl	Y
33	M	W	Acetylfentanyl, alcohol, diphenhydramine, fentanyl, heroin	Y
33	M	W	Cocaine, fentanyl, hydrocodone	Y
33	M	W	Alcohol, fentanyl, heroin	Y
35	F	W	Acetylfentanyl, alprazolam, diphenhydramine, fentanyl, heroin, hydrocodone	Y
35	F	W	Acetylfentanyl, alprazolam, fentanyl, methamphetamine, morphine, pregabalin	Y
36	F	W	Fentanyl, heroin	Y
38	F	W	Alprazolam, diphenhydramine, fentanyl, gabapentin, hydrocodone	Y
39	M	AA/B	Clonazepam, cocaine, fentanyl, heroin	Y
39	F	W	Fentanyl, heroin	Y
39	F	W	Hydrocodone	Y
40	M	W	Acetylfentanyl, fentanyl, heroin	Y
40	M	W	Alprazolam, fentanyl	Y
40	M	AA/B	Fentanyl	Y
41	M	W	Acetylfentanyl, fentanyl	Y

41	F	W	Acetylfentanyl, alcohol, fentanyl, morphine	Y
42	F	W	Amphetamine, benzodiazepines, and opioids	Y
42	M	W	Alcohol, heroin	Y
42	M	W	Fentanyl	Y
44	M	W	Acetylfentanyl, fentanyl	Y
44	F	W	Acetylfentanyl, clonazepam, fentanyl, heroin, tramadol	Y
45	F	W	Alprazolam, cyclobenzaprine, hydrocodone, pregabalin	Y
45	F	W	Acetylfentanyl, alcohol, cocaine, fentanyl	Y
45	M	W	Alprazolam, fentanyl	Y
49	M	W	Oxycodone, tramadol	Y
49	F	W	Cocaine	N
49	F	AA/B	Cocaine, opioids	Y
49	M	W	Cocaine, fentanyl	Y
49	F	AA/B	Cocaine	N
49	F	W	Cyclobenzaprine, fentanyl, gabapentin, hydroxyzine, morphine	Y
50	F	W	Acetylfentanyl, fentanyl, methamphetamine, nortriptyline, pregabalin	Y
50	M	W	Fentanyl, heroin, pregabalin	Y
50	M	W	Cocaine, fentanyl, gabapentin	Y
52	M	W	Fentanyl, morphine	Y
52	M	W	Cyclobenzaprine, fentanyl, morphine, trazodone	Y
53	M	W	Cocaine, fentanyl	Y
54	M	W	Diazepam, fentanyl, gabapentin, hydrocodone	Y
55	M	W	Alprazolam, cocaine, fentanyl, mirtazapine, tramadol	Y
56	F	W	Cyclobenzaprine, fentanyl	Y
57	M	W	Acetylfentanyl, alprazolam, fentanyl, heroin	Y
59	M	W	Cocaine, methamphetamine	N
60	F	W	Methamphetamine	N
63	F	W	Hydrocodone	Y
65	F	W	Alprazolam, duloxetine, mitragynine	Y
65	M	AA/B	Acetylfentanyl, alcohol, cocaine, fentanyl, morphine	Y
68	M	W	Fentanyl, nordiazepam, oxycodone	Y

Suicides, Calhoun County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2014	21	16	5	1	19	1
2015	25	16	9	2	16	7
2016	28	23	5	1	22	5
2017	30	24	6	0	23	7
2018	30	25	5	1	22	7



Homicides by Mechanism, Calhoun County

	2016	2017	2018
Firearm	2	3	3
Blunt Force Trauma	3	0	2
Sharp Force Trauma	0	0	1
Other	0	1	1[1]
Total	**5**	**4**	**6[2]**

[1] (1) Blunt injuries and inhalation of products of combustion, house fire following assault
[2] One death is categorized twice, as cause of death included both blunt and sharp force injuries

GRAND TRAVERSE COUNTY

Summary of All Grand Traverse County Cases

	2017	2018
Total Deaths in the County	1,306	1,413[1]
Deaths Reported to the ME	380	350
Deaths Investigated	249	252
MEI Scene Investigations	122	206
Death Certificates by ME	153	126
Bodies Transported to WMed	77	58
Complete Autopsy	56	45
Limited Autopsy	2	0
External Examination	19	13
Storage Only	0	0
Total Cases with Toxicology	73	53
Unidentified Remains After Exam	1	2[2]
Referrals to Gift of Life	44	37
Tissue Donations	4	3
Cornea Donations	4	2
Unclaimed Investigations	5	7
Exhumations	0	0

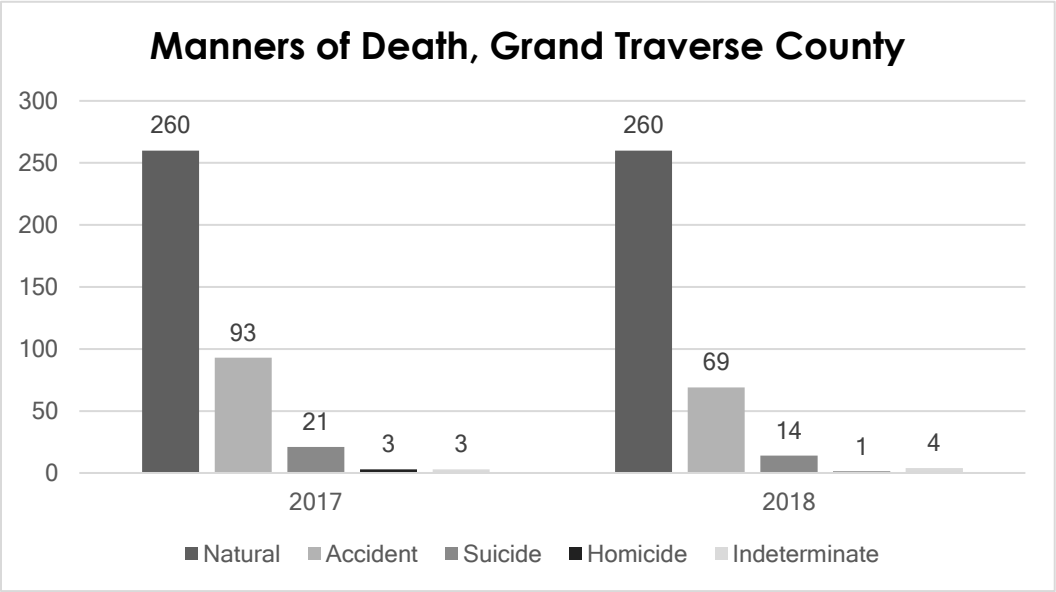
Cremation Permit Authorizations, Grand Traverse County

	2017	2018
Cremation Permits	1,005	1,108
% of Total Deaths with Cremation	76%	78%

[1] Provisional total number of deaths occurring in the county
[2] (2) Unidentified human skeletal remains, non-forensic, historical burials

Manners of Death Reported, Grand Traverse County

	2017	2018
Natural	260	260[1]
Accident	93	69
Suicide	21	14
Homicide	3	1
Indeterminate	3	4[2]
Total	**380**	**348[3]**



Deaths Reported by Age (in years), Grand Traverse County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	17	0	0	0	7	32	94	229
2018[4]	16	0	0	2	7	22	85	216

[1] Includes (11) stillbirth investigations (cremation permit authorizations)
[2] (2) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep; (1) Dilated cardiomyopathy and chronic alcoholism associated with post-traumatic seizure disorder related to a reported assault years prior (details unknown); (1) Thermal injuries and inhalation of heated gases, house fire
[3] Does not include (2) Unidentified human skeletal remains, non-forensic, historical burials
[4] Does not include (2) Unidentified human skeletal remains, non-forensic, historical burials

Pediatric Deaths, Grand Traverse County

The 18 deaths of individuals under 18 years of age include:

1. <1 year old
   a. (11) Stillbirth investigations (cremation permit authorizations)
   b. (2) Sudden Unexplained Infant Deaths (SUIDs); indeterminate
      i. Unsafe sleep, placed on pillow on adult bed
      ii. Unsafe sleep, sleeping in rock'n'play
   c. (1) Prematurity; natural
   d. (1) Prematurity with Potter's Syndrome; natural
   e. (1) Asphyxia due to bedsharing; accident
2. 11-17 years old
   a. (1) Gunshot wound of head; suicide
   b. (1) Hanging; suicide

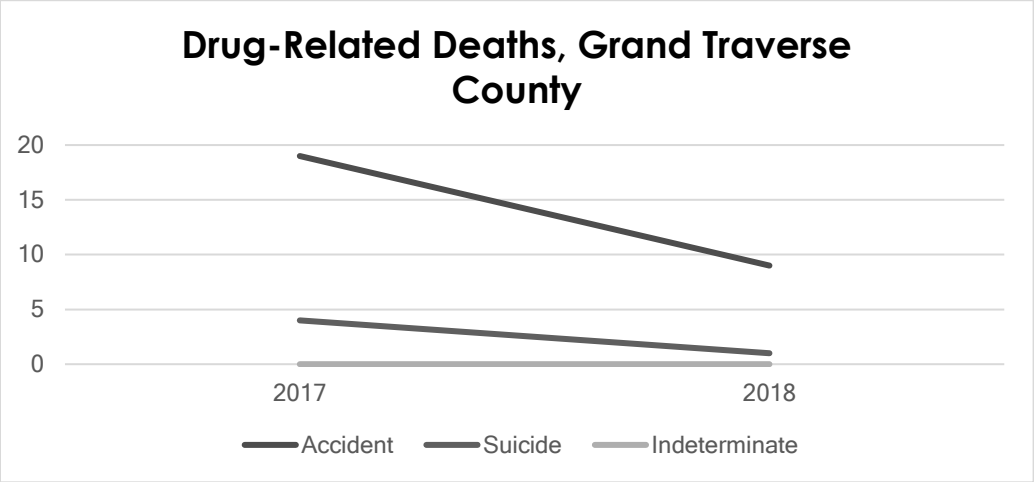
Accidental Deaths by Mechanism, Grand Traverse County

	2017	2018
Vehicle	23	15
Drug-Related	19	9
Drowning	2	2
Fall	44	35
Fire	2	1
Environmental Exposure	0	1
Asphyxia	1	3[1]
Other	2	3[2]
Total	**93**	**69**

Drug-Related Deaths by Manner, Grand Traverse County

	2017	2018
Accident	19	9
Suicide	4	1
Indeterminate	0	0
Total	**23**	**10**
% of Accidental and Indeterminate Deaths Involving Opioids	84%	89%

[1] (2) Asphyxia due to choking; (1) Asphyxia due to bedsharing
[2] (1) Electrocution (cherry picker contacted live power line); (1) Blunt force complications (cutaneous injury with infection); (1) Crushing injuries of chest, pinned between bucket and cab of tractor

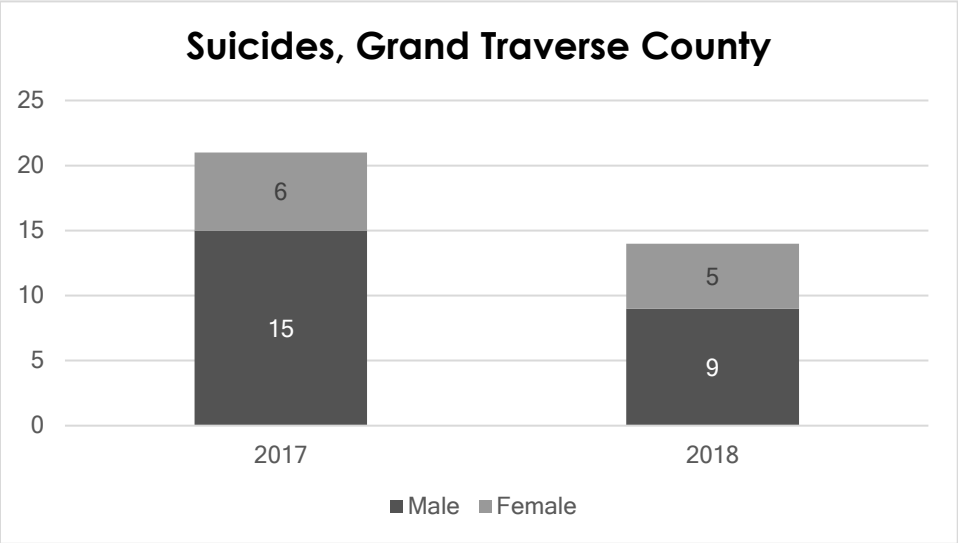


Drug-Related Accidental Deaths, Grand Traverse County

Age	Sex	Race	Substances Contributing to Death	Opioid
19	F	W	Acetylfentanyl, cocaine, fentanyl	Y
22	M	W	Opioid, NOS	Y
24	M	W	Mitragynine	Y
27	M	W	Acetylfentanyl, buprenorphine, cocaine, fentanyl	Y
28	M	W	Cocaine, heroin	Y
36	M	W	Fentanyl	Y
45	F	W	Clonazepam, fentanyl, morphine	Y
62	M	W	Butyrylfentanyl, cyclopropylfentanyl, fentanyl, furanylfentanyl, heroin, methoxyacetylfentanyl	Y
64	M	W	Cocaine	N

Suicides, Grand Traverse County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2017	21	15	6	0	15	6
2018	14	9	5	2	12	0



Homicides by Mechanism, Grand Traverse County

	2017	2018
Firearm	1	1
Blunt Force Trauma	1	0
Sharp Force Trauma	1	0
Total	**3**	**1**

KALAMAZOO COUNTY

Summary of All Kalamazoo County Cases

	2011	2012	2013	2014	2015	2016	2017	2018
Total Deaths in the County	2,582	2,540	2,668	2,684	2,733	2,879	2,840	2,977[1]
Deaths Reported to the ME	828	778	777	750	810	975	991	1,068
Deaths Investigated	N/A	556	580	560	646	745	733	782
MEI Scene Investigations	498	503	549	411	434	560	627	677
Death Certificates by ME	394	362	358	355	306	390	406	405
Bodies Transported to WMed	244	233	241	253	247	318	307	330
Complete Autopsy	178	187	193	174	142	192	189	187
Limited Autopsy	10	4	4	6	7	7	4	9
External Examination	50	34	37	37	52	60	64	68
Storage Only	6	8	7	36	46	59	50	62
Total Cases with Toxicology	198	212	222	198	174	222	238	238
Unidentified Remains After Exam	14	0	0	0	0	0	0	1[2]
Referrals to Gift of Life	9	46	65	95	113	161	156	129
Tissue Donations	3	4	4	6	9	22	16	16
Cornea Donations	2	4	9	9	9	20	10	7
Unclaimed Investigations	14	9	7	10	10	10	13	41
Exhumations	0	0	0	0	0	1	0	0

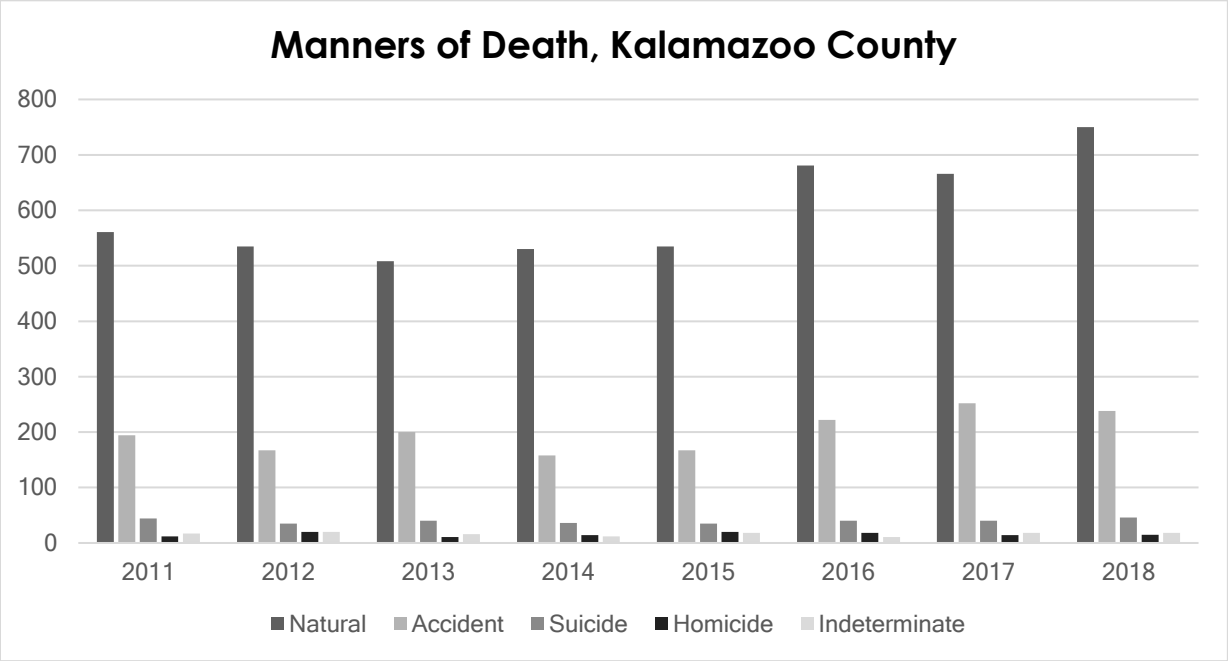
Cremation Permit Authorizations, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018
Cremation Permits	1,485	1,467	1,740	1,782	1,672	1,856	1,920	2,101
% of Total Deaths with Cremation	58%	58%	65%	66%	61%	64%	68%	71%

[1] Provisional total number of deaths occurring in the county
[2] (1) Possible products of conception located near a separate death scene investigation

Manners of Death Reported, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018
Natural	561	535	508	530	588	681	666	750[1]
Accident	194	167	200	158	151	222	252	238
Suicide	44	35	40	36	38	40	40	46
Homicide	12	20	11	14	14	18	14	15
Indeterminate	17	20	16	12	19	11	18	17[2]
Total	**828**	**777**	**775**	**750**	**810**	**971**	**990**	**1066[3]**



Deaths Reported by Age (in years), Kalamazoo County

	< 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

[1] Includes (51) stillbirth investigations (cremation permit authorizations)
[2] (3) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep; (3) Mixed drug intoxication; (2) Single drug intoxication; (1) SUID associated with Influenza A and unsafe sleep; (1) Intracerebral hemorrhage associated with drug use; (1) Seizure disorder with new onset, possibly trauma-related; (1) Multiple blunt force injuries, pedestrian versus motor vehicle; (1) Found dead, unknown cause and manner of death; (1) Multiple blunt force injuries, motor vehicle versus tree; (1) Sepsis due to decubitus ulcers, uncertain circumstances; (1) Multisystem organ failure due to cardiogenic shock associated with drug use; (1) Hypertensive and atherosclerotic cardiovascular disease associated with probable steroid use
[3] Two cases not included: (1) Cause/manner remains pending at the time this report is authored; (1) Possible products of conception located near a separate death scene investigation

2014	9	3	5	5	29	61	239	399
2015	30	5	3	7	21	82	220	441
2016	58	5	3	12	37	95	269	494
2017	62	6	3	10	35	103	259	513
2018[1]	64	5	1	9	23	97	297	571

Pediatric Deaths, Kalamazoo County

The 79 deaths of individuals under 18 years of age include:

1. <1 year old
    a. (51) Stillbirth investigations (cremation permit authorizations)
    b. (4) Sudden Unexplained Infant Death (SUID); indeterminate
        i. Influenza A and unsafe sleep
        ii. Bedsharing
        iii. Unsafe sleep
        iv. Unsafe sleep
    c. (2) Head and neck injuries; homicide
    d. (1) Multiple injuries, restrained passenger in motor vehicle collision; accident
    e. (1) Macrocephaly; natural
    f. (1) Tracheal atresia and prematurity; natural
    g. (1) Extreme prematurity; natural
    h. (1) Parainfluenza and prematurity; natural
    i. (1) Asphyxia due to airway obstruction by bedding; accident
    j. (1) Pending cause and manner of death at this time
2. 1-5 years old
    a. (2) Drowning in a pool; accident
    b. (1) Acute lymphocytic leukemia; natural
    c. (1) Prader-Willi Syndrome; natural
    d. (1) Blunt force injuries, fell from moving tractor; accident
3. 6-10 years old
    a. (1) Complications of cerebral palsy; natural
4. 11-17 years old
    a. (3) Multiple injuries; accident
        i. Unrestrained passenger in vehicle vs vehicle collision
        ii. Passenger (unknown if restrained) in vehicle vs vehicle collision
        iii. Pedestrian struck by train
    b. (2) Hanging; suicide
    c. (1) Asphyxia due to sand dune collapse; accident
    d. (1) Osteosarcoma; natural
    e. (1) Gunshot wound of neck; homicide
    f. (1) Asphyxia, including strangulation; homicide

[1] Does not include (1) Possible products of conception located near a separate death scene investigation

Accidental Deaths by Mechanism, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018
Vehicle	46	48	60	35	46	58	72	51
Drug-Related	33	34	47	35	33	72	61	63
Drowning	5	2	2	3	1	4	7	9
Fall	92	67	76	77	57	80	92	100
Fire	5	2	8	3	3	4	5	4
Environmental Exposure	2	4	1	1	1	1	2	3
Asphyxia	6	3	4	2	7	3	6	6[1]
Other	6	7	3	4	3	1	7	3[2]
Total	**195**	**167**	**200**	**160**	**151**	**223**	**252**	**238[3]**

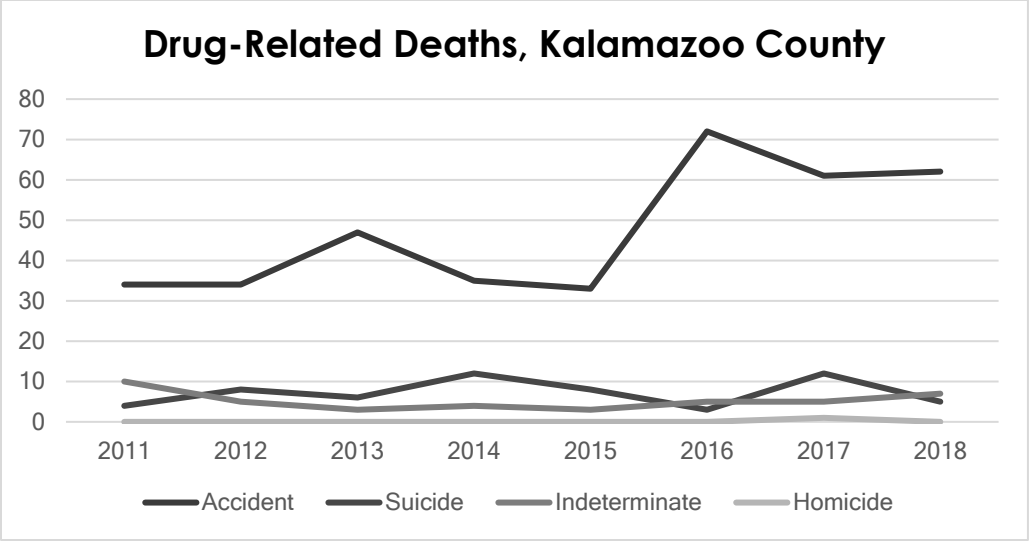
Drug-Related Deaths by Manner, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018
Accident	34	34	47	35	33	72	61	63
Suicide	4	8	6	12	8	3	12	5
Homicide	0	0	0	0	0	0	1	0
Indeterminate	10	5	3	4	3	5	5	7
Total	**48**	**47**	**56**	**51**	**44**	**80**	**79**	**75**
% of Accidents and Indeterminate Deaths Involving Opioids	N/A	N/A	N/A	N/A	83%	82%	74%	73%

[1] (2) Asphyxia due to choking; (1) Airway obstruction by bedding material; (1) Autoerotic asphyxial hanging; (1) Body entrapment with probable positional asphyxia; (1) Asphyxia with suffocation, aspiration and compression, collapse of sand dune

[2] (1) Multiple blunt force injuries, struck by tree limb; (1) Craniocerebral trauma, struck by tree limb; (1) Complications of blunt force leg injury sustained while riding moped

[3] One death is categorized twice, as both drowning and vehicle-related; vehicle left roadway and entered water



Drug-Related Accidental & Indeterminate Deaths, Kalamazoo County

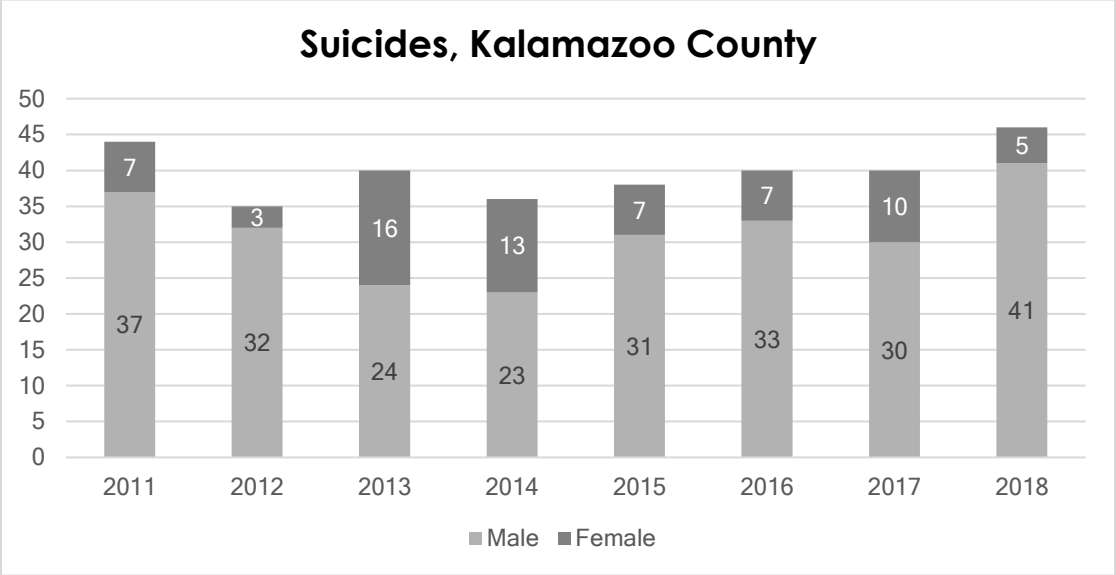
Age	Sex	Race	Substances Contributing to Death	Opioid
21	F	W	Acetylfentanyl, fentanyl, nitrous oxide	Y
22	M	W	Heroin	Y
22	F	W	Methamphetamine	N
23	M	W	Opioids NOS	Y
23	F	W	Acetylfentanyl, fentanyl	Y
24	M	W	Fentanyl	Y
26	M	W	7-aminoclonazepam, gabapentin, methadone	Y
26	F	W	Amphetamines, benzodiazepines, opioids NOS	Y
26	F	W	Acetylfentanyl	Y
28	F	W	Acetylfentanyl, fentanyl	Y
28	M	W	Methamphetamine	N
29	M	W	Acetylfentanyl, fentanyl, methamphetamine	Y
29	F	AA/B	Acetylfentanyl, alcohol, cocaine, fentanyl, heroin	Y
29	M	W	Demoxepam, fentanyl, heroin, nordiazepam	Y
30	M	W	Alcohol, alprazolam, oxycodone	Y
30	M	W	Fentanyl	Y
30	M	W	Diazepam, fentanyl, hydrocodone	Y
30	F	W	Acetylfentanyl, fentanyl, morphine	Y
30	M	W	Acetylfentanyl, fentanyl, methamphetamine, morphine	Y
31	F	W	Alcohol, alprazolam, cocaine, cyclobenzaprine, dextromethorphan, fentanyl, heroin	Y
32	M	W	Alprazolam, diphenhydramine, duloxetine, mirtazapine, morphine, oxycodone	Y
32	F	W	Cyclobenzaprine, fentanyl, gabapentin, morphine	Y

33	F	W	Fentanyl	Y
34	M	W	Fentanyl, methoxyacetylfentanyl, U47700	Y
35	F	W	Diazepam, diphenhydramine, fentanyl, mirtazapine, nordiazepam	Y
35	F	W	Acetylfentanyl, alcohol, fentanyl, methamphetamine	Y
35	M	W	Alcohol, fentanyl	Y
35	F	W	Alprazolam, clonazepam, methadone	Y
36	M	W	Cyclopropylfentanyl, methoxyacetylfentanyl	Y
36	M	W	Drug related death; unable to determine specific drugs	Unknown
36	F	W	Oxycodone	Y
37	F	W	Demoxepam, lorazepam, morphine	Y
37	M	W	Fentanyl	Y
37	F	W	Cocaine, fentanyl, tramadol	Y
38	M	AA/B	Acetylfentanyl, fentanyl, methamphetamine	Y
38	M	W	Acetylfentanyl, fentanyl	Y
38	F	W	Amitriptyline, methamphetamine	N
40	M	W	Fentanyl	Y
42	M	W	Fentanyl	Y
42	M	W	Loperamide	N
42	M	W	Methamphetamine	N
43	M	AA/B	Acetylfentanyl, cocaine, dextromethorphan, fentanyl, methamphetamine, morphine, quetiapine	Y
46	M	AA/B	Cocaine	N
46	M	AA/B	Acetylfentanyl, fentanyl, methadone, methamphetamine	Y
47	M	W	Methamphetamine	N
48	F	W	Methamphetamine	N
49	M	W	Methadone	Y
49	M	W	Methamphetamine, morphine	Y
50	M	W	Alcohol	N
52	F	W	Methamphetamine	N
53	M	AA/B	Cocaine	N
53	M	W	Alprazolam, fentanyl, heroin, methamphetamine	Y
54	M	W	Amphetamine, cyclopropylfentanyl, fentanyl, methamphetamine	Y
54	M	W	Fentanyl, heroin	Y
55	M	W	Alprazolam, methadone	Y
55	M	AA/B	Fentanyl, heroin, methamphetamine	Y
57	F	W	Acetylfentanyl, fentanyl, methamphetamine	Y
57	M	W	Methamphetamine	N

57	M	W	Amphetamine	N
59	M	W	Heroin	Y
60	F	W	Hydrocodone, methamphetamine	Y
61	M	W	Hydrocodone	Y
61	M	AA/B	Cocaine, methamphetamine	N
62	M	W	Alcohol	N
62	M	W	Alprazolam, amlodipine, atenolol, citalopram, dextromethorphan, nortriptyline	N
63	F	W	Amphetamine, methamphetamine	N
64	F	AA/B	Promethazine	N
64	M	W	Gabapentin, hydromorphone, morphine, oxycodone	Y
65	F	W	Acetaminophen, codeine	Y
66	M	AA/B	Fentanyl, morphine	Y

Suicides, Kalamazoo County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2011	44	37	7	0	36	8
2012	35	32	3	1	26	8
2013	40	24	16	5	28	7
2014	36	23	13	0	29	7
2015	38	31	7	3	28	7
2016	40	33	7	3	32	5
2017	40	30	10	1	31	8
2018	46	41	5	2	31	13



Homicides by Mechanism, Kalamazoo County

	2016	2017	2018
Firearm	12	9	8
Blunt Force Trauma	3	1	3
Sharp Force Trauma	2	1	3
Other	1	3	1[1]
Total	**18**	**14**	**15**

[1] (1) Asphyxia, including strangulation

LEELANAU COUNTY

Summary of All Leelanau County Cases

	2017	2018
Total Deaths in the County	148	175[1]
Deaths Reported to the ME	39	46
Deaths Investigated	36	45
MEI Scene Investigations	24	41
Death Certificates by ME	21	15
Bodies Transported to Morgue	10	9
Complete Autopsy	9	7
Limited Autopsy	1	0
External Examination	0	2
Storage Only	0	0
Total Cases with Toxicology	10	8
Unidentified Remains After Exam	0	0
Referrals to Gift of Life	6	8
Tissue Donations	0	1
Cornea Donations	0	0
Unclaimed Investigations	0	0
Exhumations	0	0

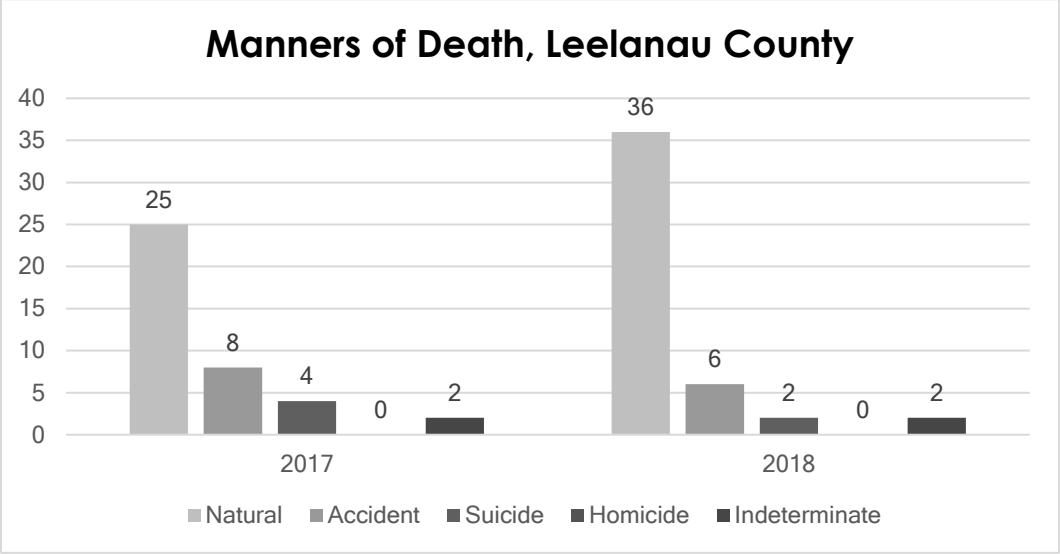
Cremation Permit Authorizations, Leelanau County

	2017	2018
Cremation Permits	105	130
% of Total Deaths with Cremation	71%	74%

[1] Provisional total number of deaths occurring in the county

Manners of Death Reported, Leelanau County

	2017	2018
Natural	25	36
Accident	8	6
Suicide	4	2
Homicide	0	0
Indeterminate	2	2[1]
Total	**39**	**46**



Deaths Reported by Age (in years), Leelanau County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	0	0	0	1	3	3	7	25
2018	0	0	1	0	1	3	7	34

Pediatric Deaths, Leelanau County

The one death of an individual under 18 years of age includes:

1. 6-10 years old
    a. (1) Multiple injuries, restrained passenger in a vehicle versus vehicle/fixed object; accident

[1] (2) Court ordered death certificates, deaths declared by court, neither body ever located

Accidental Deaths by Mechanism, Leelanau County

	2017	2018
Vehicle	2	1
Drug-Related	1	1
Drowning	0	2
Fall	0	1
Fire	0	0
Environmental Exposure	0	0
Asphyxia	0	1[1]
Other	1	0
Total	**4**	**6**

Drug-Related Deaths by Manner, Leelanau County

	2017	2018
Accident	1	1
Suicide	0	0
Indeterminate	0	0
Total	**1**	**1**
% of Accidents and Indeterminate Manners Involving Opioids	100%	0%

Drug-Related Accidental Deaths, Leelanau County

Age	Sex	Race	Substances contributing to death	Opioid
37	F	W	Alcohol	N

Suicides, Leelanau County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2017	4	4	0	1	1	2
2018	2	2	0	0	0	2

[1] (1) Positional asphyxia

MASON COUNTY

Summary of All Mason County Cases

	2018
Total Deaths in the County	311[1]
Deaths Reported to the ME	107
Deaths Investigated	92
MEI Scene Investigations	88
Death Certificates by ME	53
Bodies Transported to Morgue	37
Complete Autopsy	29
Limited Autopsy	0
External Examination	6
Storage Only	2
Total cases with Toxicology	32
Unidentified Remains After Exam	0
Referrals to Gift of Life	16
Tissue Donations	3
Cornea Donations	0
Unclaimed Investigations	1
Exhumations	0

Cremation Permit Authorizations, Mason County

	2018
Cremation Permits	231
% of Total Deaths with Cremation	74%

[1] Provisional total number of deaths occurring in the county

Manners of Death Reported, Mason County

	2018
Natural	84[1]
Accident	16
Suicide	7
Homicide	0
Indeterminate	0
Total	**107**

Deaths Reported by Age (in years), Mason County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	1	0	0	3	2	13	25	63

Pediatric Deaths, Mason County

The four deaths of individuals under 18 years of age include:

1. <1 year old
   a. (1) Stillbirth investigation (cremation permit authorization)
2. 11-17 years old
   a. (1) Asthma; natural
   b. (1) Hanging; suicide
   c. (1) Multiple injuries, passenger in motor vehicle collision; accident

Suicides, Mason County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2018	7	4	3	1	6	0

[1] Includes (1) stillbirth investigation (cremation permit authorization)

Accidental Deaths by Mechanism, Mason County

	2018
Vehicle	5
Drug-Related	7
Drowning	1
Fall	3
Fire	0
Environmental Exposure	1
Asphyxia	0
Other	0
Total	16[1]

Drug-Related Deaths by Manner, Mason County

	2018
Accident	7
Suicide	1
Indeterminate	0
Total	8
% of Accidents and Indeterminate Deaths Involving Opioids	57%

Drug-Related Accidental Deaths, Mason County

Age	Sex	Race	Substances contributing to death	Opioid
24	M	W	Acetylfentanyl, alprazolam, dihydrocodeine, fentanyl	Y
31	M	Amer Ind	Acetylfentanyl, alprazolam, heroin	Y
34	M	W	Alcohol, cocaine, heroin	Y
35	F	W	Cyclobenzaprine, diazepam, fentanyl, morphine	Y
56	F	W	Alcohol, alprazolam, diphenhydramine, methamphetamine	N
60	M	Amer Ind	Cocaine	N
71	M	W	Alcohol	N

[1] One death is categorized twice, as drug-related and environmental exposure (hypothermia)

MUSKEGON COUNTY

Summary of All Muskegon County Cases

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Deaths in the County	1,625	1,693	1,600	1,730	1,707	1,784	1,759	1,784	1,841[1]
Deaths Reported to the ME	544	440	481	527	524	605	585	629	662
Deaths Investigated	N/A	N/A	412	424	453	530	504	468	504
MEI Scene Investigations	353	310	384	420	444	501	469	425	463
Death Certificates by ME	213	201	203	216	228	251	231	234	235
Bodies Transported to Morgue	163	161	132	148	178	159	167	159	161
Complete Autopsy	135	122	106	120	144	120	114	108	117
Limited Autopsy	5	10	2	6	2	4	2	4	4
External Examination	22	21	22	18	18	35	41	43	35
Storage Only	1	8	2	4	4	0	10	4	4
Total Cases with Toxicology	147	153	119	142	152	160	136	140	147
Unidentified Remains After Exam	0	0	0	0	0	0	0	0	0
Referrals to Gift of Life	27	70	81	93	156	139	109	122	128
Tissue Donations	3	7	8	9	14	17	12	9	15
Cornea Donations	3	8	11	12	16	20	11	7	8
Unclaimed Investigations	0	4	4	3	6	5	7	12	15
Exhumations	0	0	0	0	0	0	0	0	0

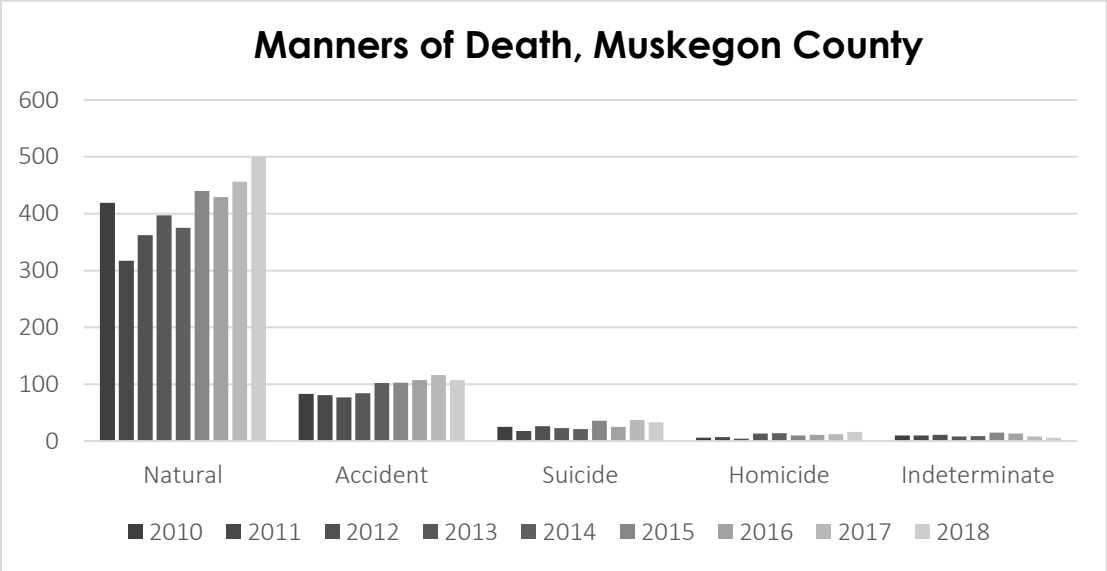
Cremation Permit Authorizations, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cremation Permits	893	812	952	986	1,007	1,116	1,138	1,188	1,264
% of Total Deaths with Cremation	55%	48%	60%	57%	59%	63%	65%	67%	55%

[1] Provisional total number of deaths occurring in the county

Manners of Death Reported, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Natural	419	317	362	397	375	440	429	456	500[1]
Accident	83	81	77	84	102	103	107	116	107
Suicide	25	18	26	23	21	36	25	37	33
Homicide	6	7	4	13	14	10	11	12	16
Indeterminate	10	10	11	8	9	15	13	8	6[2]
Total	**544**	**440**	**480**	**525**	**524**	**604**	**585**	**629**	**662**



Deaths Reported by Age (in years), Muskegon County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	21	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	1	2	2	24	61	199	304
2016	17	2	1	5	18	55	184	303
2017	13	1	0	8	14	81	168	344
2018	18	2	3	1	16	88	190	344

[1] Includes (17) stillbirth investigations (cremation permit authorizations)
[2] (2) Unknown cause and manner of death; (1) Mixed drug intoxication; (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep; (1) Smoke and soot inhalation, residential fire; (1) Multiple injuries associated with drug use and natural disease

Pediatric Deaths, Muskegon County

The 24 deaths of individuals under 18 years of age include:

1. <1 year old
   a. (17) Stillbirth investigations (cremation permit authorizations)
   b. (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep and bronchiolitis; indeterminate
2. 1-5 years old
   a. (1) Bronchopneumonia associated with multicystic encephalopathy; natural
   b. (1) Bronchiolitis due to Respiratory Syncytial Virus (RSV); natural
3. 6-10 years old
   a. (1) Complications of remote brain injuries; homicide
   b. (1) Multiple blunt force injuries, bicyclist struck by motor vehicle; accident
   c. (1) Cecal volvulus; natural
4. 11-17 years old
   a. (1) Gunshot wound of chest; homicide

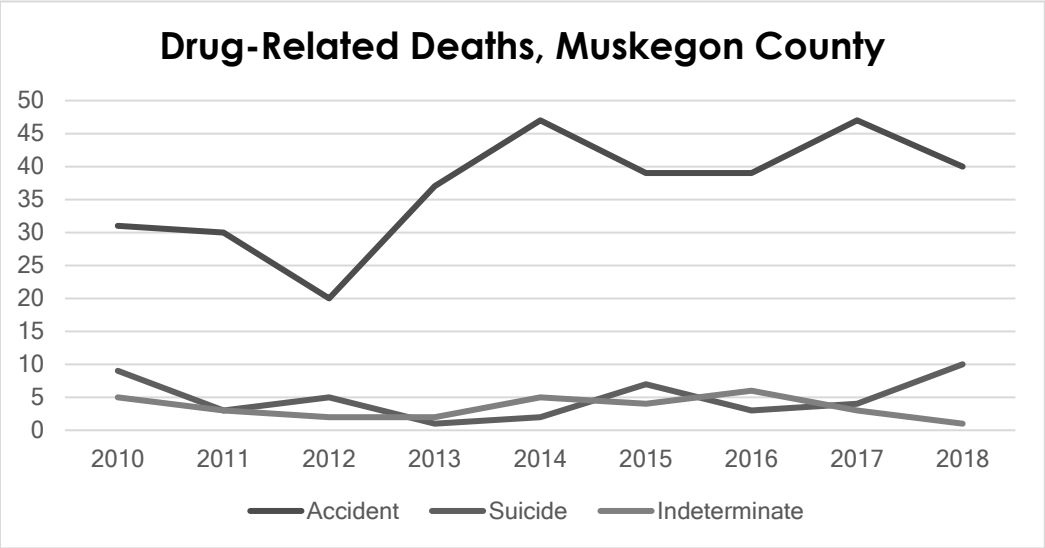
Accidental Deaths by Mechanism, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vehicle	16	25	18	13	18	22	22	22	21
Drug-Related	31	30	20	37	47	39	40	47	40
Drowning	3	4	4	4	4	4	2	4	2
Fall	21	17	27	26	29	29	32	38	37
Fire	3	3	0	0	1	3	1	0	0
Environmental Exposure	0	0	0	0	1	1	4	0	1
Asphyxia	6	1	4	2	2	3	4	2	5
Other	2	1	3	0	1	2	2	3	2
Total	**82**	**81**	**76**	**82**	**103**	**103**	**107**	**116**	**107**[1]

Drug-Related Deaths by Manner, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Accident	31	30	20	37	47	39	39	47	40
Suicide	9	3	5	1	2	7	3	4	10[2]
Indeterminate	5	3	2	2	5	4	6	3	1
Total	**45**	**36**	**27**	**40**	**54**	**50**	**48**	**54**	**51**
% of Accidents and Indeterminate Deaths Involving Opioids	N/A	N/A	N/A	N/A	N/A	95%	87%	84%	85%

[1] One death is categorized twice, as both drug-related and drowning
[2] Includes (3) multi-modality suicides: (1) Mixed drug intoxication associated with carbon monoxide poisoning; (1) Mixed drug intoxication associated with positional asphyxia; (1) Asphyxia (nitrogen gas suffocation) associated with acute drug intoxication



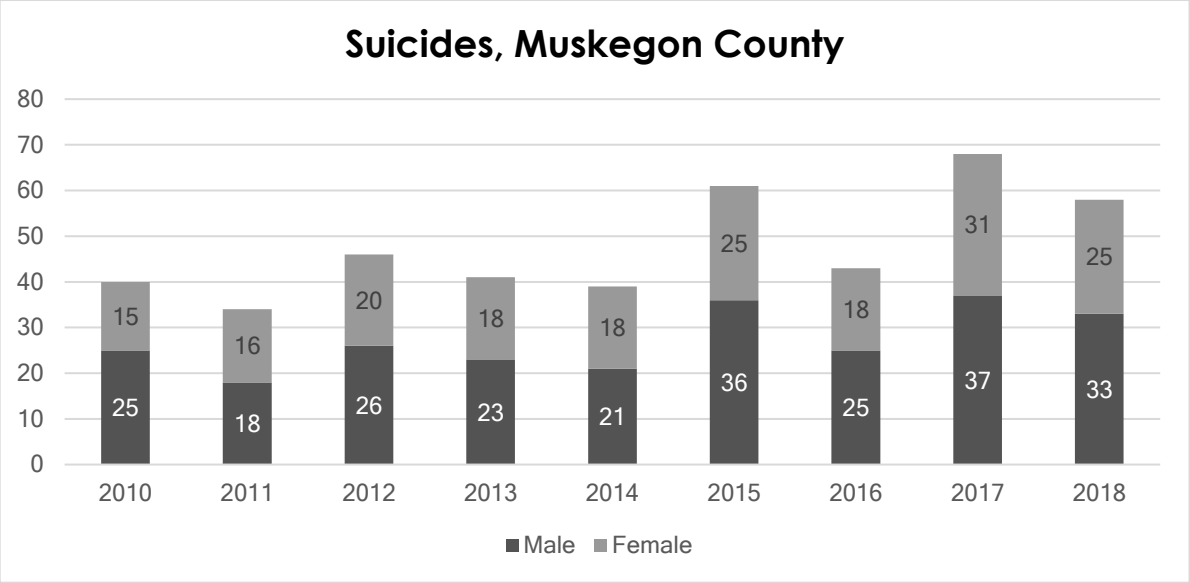
Drug-Related Accidental & Indeterminate Deaths, Muskegon County

Age	Sex	Race	Substances contributing to death	Opioid
22	M	W	Alcohol, fentanyl	Y
24	M	W	Heroin	Y
25	M	W	Heroin	Y
27	M	W	Fentanyl, methadone, methamphetamine	Y
28	M	AA/B	Cocaine, fentanyl	Y
28	M	W	Fentanyl, heroin, methamphetamine	Y
28	M	AA/B	Heroin	Y
29	F	AA/B	Alcohol, cocaine, fentanyl, hydrocodone, morphine	Y
29	M	AA/B	Opioids NOS	Y
30	M	W	Alprazolam, methadone	Y
30	M	AA/B	Alcohol, cocaine	N
31	M	W	Cocaine	N
32	M	W	Clonazepam, cocaine, gabapentin	N
34	F	AA/B	Heroin	Y
34	M	W	Alcohol, opioids NOS	Y
34	M	W	Clonazepam, heroin, methamphetamine, mitragynine, orphenadrine	Y
35	F	W	Alprazolam, amphetamine, cocaine, diazepam, diphenhydramine, gabapentin, heroin, nordiazepam, zolpidem	Y
35	F	W	Acetylfentanyl, fentanyl, heroin, methadone	Y
35	F	W	Alcohol, diphenhydramine, fentanyl, lorazepam, zolpidem	Y
36	F	W	Methadone	Y
37	M	W	Cocaine, heroin	Y
37	M	W	Alcohol, demoxepam, heroin, nordiazepam	Y

38	M	W	Alprazolam, fentanyl, heroin	Y
39	M	W	Acetylfentanyl, fentanyl, methamphetamine	Y
40	M	W	Methoxyacetylfentanyl	Y
40	F	W	Acetylfentanyl, clonazepam, diphenhydramine, fentanyl, methadone, pregabalin	Y
41	M	W	Acetylfentanyl, fentanyl	Y
41	M	AA/B	Morphine	Y
41	F	AA/B	Cocaine	N
42	F	W	Fentanyl	Y
44	M	W	Cocaine, methamphetamine	N
47	F	W	Morphine	Y
47	M	W	Cocaine, fentanyl	Y
48	M	W	Methamphetamine	N
49	M	W	Alcohol, cocaine, fentanyl	Y
53	M	W	Acetylfentanyl, cyclobenzaprine, fentanyl, heroin	Y
57	M	W	Hydrocodone	Y
59	M	W	Aminoclonazepam, bupropion, diltiazem, hydromorphone, pseudoephedrine, quetiapine, zolpidem	Y
61	M	AA/B	Acetylfentanyl, alcohol, fentanyl	Y
62	M	W	Acetylfentanyl, fentanyl, hydrocodone, methadone	Y
84	F	W	Aminoclonazepam, diphenhydramine, gabapentin, hydrocodone, zolpidem	Y

Suicides, Muskegon County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2010	25	15	10	0	19	6
2011	18	16	2	2	13	3
2012	26	20	6	1	19	6
2013	23	18	5	0	19	4
2014	21	18	3	3	16	2
2015	36	25	11	0	25	11
2016	25	18	7	0	19	6
2017	37	31	6	3	29	5
2018	33	25	8	0	27	6



Homicides by Mechanism, Muskegon County

	2016	2017	2018
Firearm	8	8	12
Blunt Force Trauma	1	1	1
Sharp Force Trauma	0	1	3
Other	2	2	0
Total	**11**	**12**	**16**

OSCEOLA COUNTY

Summary of Osceola County Cases

	2018[1]
Total Deaths in the County	187[2]
Deaths Reported to the ME	62
Deaths Investigated	58
MEI Scene Investigations	55
Death Certificates by ME	31
Bodies Transported to Morgue	17[3]
Complete Autopsy	12[4]
Limited Autopsy	0
External Examination	4
Storage Only	1[5]
Total Cases with Toxicology	16
Unidentified Remains After Exam	1[6]
Referrals to Gift of Life	10
Tissue Donations	1
Cornea Donations	1
Unclaimed Investigations	0
Exhumations	0

Cremation Permit Authorizations, Osceola County[7]

	2018
Cremation Permits	86
% of Total Deaths with Cremation	46%

[1] Data provided includes January 1 to December 31, 2018, but WMed served as the ME for only April 1 – December 31, 2018
[2] Provisional total number of deaths occurring in the county
[3] Includes (1) Decedent taken to Kent County Medical Examiner Office for examination, prior to April 1, 2018
[4] Includes (1) Decedent taken to Kent County Medical Examiner Office for examination, prior to April 1, 2018
[5] (1) Unidentified human skull, non-forensic
[6] (1) Unidentified human skull, non-forensic
[7] Data includes only those cremation permits reviewed and approved at WMed

Manners of Death Reported, Osceola County

	2018
Natural	44
Accident	13
Suicide	3
Homicide	0
Indeterminate	1[1]
Total	**61[2]**

Deaths Reported by Age (in years), Osceola County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018[3]	1	1	0	1	0	4	13	41

Pediatric Deaths, Osceola County

The three deaths of individuals under 18 years of age include:

1. <1 year old
   a. (1) Asphyxia due to unsafe sleep; accident
2. 1-5 years old
   a. (1) Blunt force head injury, television fell onto decedent; accident
3. 11-17 years old
   a. (1) Gunshot wound of head; suicide

Suicides, Osceola County

Year	Total	Male	Female	0-17	18-64	65+
2018	3	2	1	1	2	0

[1] (1) Probable inhalation of exhaust gases associated with atherosclerotic cardiovascular disease
[2] (1) Unidentified human skull not included, non-forensic
[3] (1) Unidentified human skull not included, non-forensic, unknown age

Accidental Deaths by Mechanism, Osceola County

	2018
Vehicle	4
Drug-Related	2
Drowning	0
Fall	3
Fire	0
Environmental Exposure	0
Asphyxia	2[1]
Other	2[2]
Total	13

Drug-Related Deaths by Manner, Osceola County

	2018
Accident	2
Suicide	0
Indeterminate	0
Total	2
% of Accidents and Indeterminate Deaths Involving Opioids	50%

Drug-Related Accidental Deaths, Osceola County

Age	Sex	Race	Substances contributing to death	Opioid
43	F	W	Amphetamine	N
60	F	W	Hydrocodone	Y

[1] (1) Asphyxia due to unsafe sleep; (1) Asphyxia due to compression, tree fell onto decedent
[2] (1) Multiple blunt force injures, struck by falling pipe; (1) Blunt force head injury, television fell onto decedent

ST. JOSEPH COUNTY

Summary of St. Joseph County Cases

	2017	2018
Total Deaths in the County	508	530[1]
Deaths Reported to the ME	164	157[2]
Deaths Investigated	155	150[3]
MEI Scene Investigations	147	141[4]
Death Certificates by ME	66	69
Bodies Transported to Morgue	56	67[5]
Complete Autopsy	34	39
Limited Autopsy	1	2
External Examination	14	20
Storage Only	7	5
Total Cases with Toxicology	43	55
Unidentified Remains After Exam	2	0
Referrals to Gift of Life	53	45
Tissue Donations	7	6
Cornea Donations	2	3
Unclaimed Investigations	1	4
Exhumations	0	0

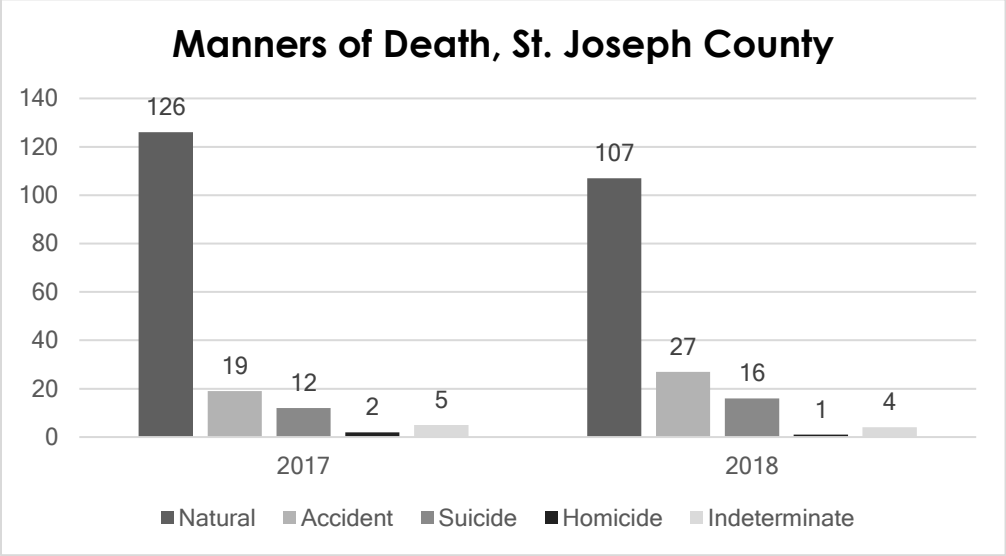
Cremation Permit Authorizations, St. Joseph County

	2017	2018
Cremation Permits	309	306
% of Total Deaths with Cremation	61%	58%

[1] Provisional total number of deaths occurring in the county
[2] Includes (2) reported deaths of living individuals. MEI arrived on scenes to find patients breathing. One of these patients was taken to Bronson Methodist Hospital in Kalamazoo County, where he was later pronounced dead.
[3] Does not include (2) reported deaths of living individuals
[4] Does not include (2) reported deaths of living individuals
[5] Includes (1) toxicology only case

Manners of Death Reported, St. Joseph County

	2017	2018
Natural	126	107[1]
Accident	19	27
Suicide	12	16
Homicide	2	1
Indeterminate	5	4[2]
Total	**164**	**155[3]**



Deaths Reported by Age (in years), St. Joseph County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	2	0	0	1	2	19	60	78
2018[4]	7	2	1	3	9	17	46	70

Pediatric Deaths, St. Joseph County

The 13 deaths of individuals under 18 years of age include:

1. <1 year old
   a. (4) Stillbirth investigations (cremation permit investigations)
   b. (1) Complications of prematurity associated with Parainfluenza 3 infection; natural
   c. (1) Asphyxia due to wedging, unsafe sleep; accident

[1] Includes (4) stillbirth investigations (cremation permit authorizations)
[2] (2) Smoke and soot inhalation, residential fire; (1) Unknown cause and manner of death; (1) SUID associated with unsafe sleep and respiratory infection
[3] Does not include (2) reported deaths of living individuals
[4] Does not include (2) reported deaths of living individuals

d. (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep and respiratory infection; indeterminate

2. 1-5 years old
   a. (1) Complications of Pompe Disease; natural
   b. (1) Unknown cause and manner of death following complete examination; indeterminate
3. 6-10 years old
   a. (1) Inhalation of products of combustion and thermal injuries, residential fire; accident
4. 11-17 years old
   a. (2) Hanging; suicide
   b. (1) Shotgun wound of head; suicide

Accidental Deaths by Mechanism, St. Joseph County

	2017	2018
Vehicle	8	15
Drug-Related	6	4
Drowning	2	1
Fall	1	3
Fire	1	4
Environmental Exposure	0	0
Asphyxia	1	1[1]
Other	0	0
Total	**19**	**27[2]**

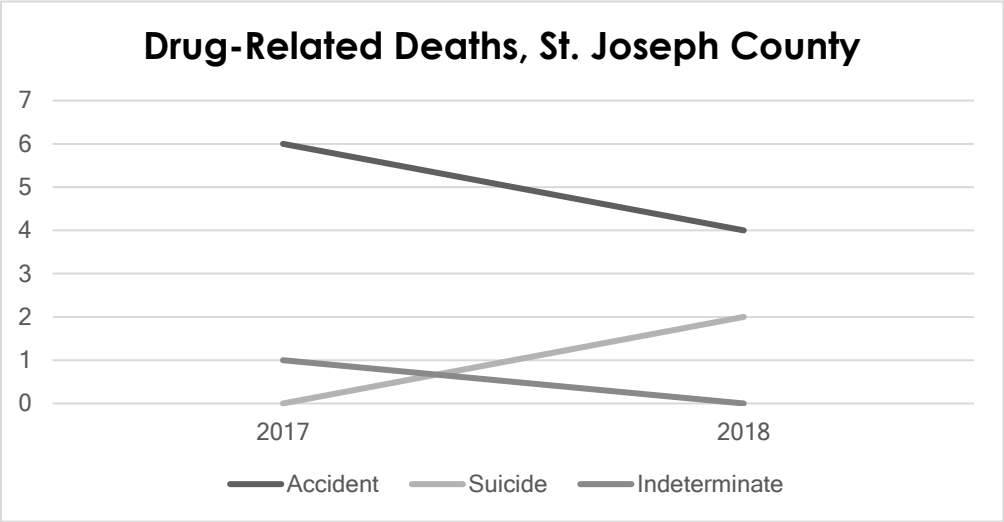
Suicides, St. Joseph County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2017	12	11	1	0	10	2
2018	16	13	3	3	11	2

[1] Asphyxia due to wedging, unsafe sleep
[2] One death is categorized twice, as both drowning and vehicle-related, motor vehicle left roadway and entered river

Drug-Related Deaths by Manner, St. Joseph County

	2017	2018
Accident	6	4
Suicide	0	2
Indeterminate	1	0
Total	**7**	**6**
% of Accidents and Indeterminate Deaths Involving Opioids	86%	75%



Drug-Related Accidental Deaths, St. Joseph County

Age	Sex	Race	Substances contributing to death	Opioid
25	F	W	Cyclobenzaprine, Methadone	Y
28	F	W	Clonazepam, fentanyl, methadone, morphine, olanzapine	Y
59	F	W	Methamphetamine	N
62	M	W	Methadone	Y

Homicides by Mechanism, St. Joseph County

	2017	2018
Firearm	2	1
Blunt Force Trauma	0	0
Other	0	0
Total	**2**	**1**

VAN BUREN COUNTY

Summary of Van Buren County Cases

	2018
Total Deaths in the County	514[1]
Deaths Reported to the ME	162
Deaths Investigated	146
MEI Scene Investigations	142
Death Certificates by ME	61
Bodies Transported to Morgue	56
Complete Autopsy	31
Limited Autopsy	2
External Examination	20
Storage Only	3
Total Cases with Toxicology	44
Unidentified Remains After Exam	0
Referrals to Gift of Life	55
Tissue Donations	8
Cornea Donations	3
Unclaimed Investigations	2
Exhumations	1

Cremation Permit Authorizations, Van Buren County

	2018
Cremation Permits	322
% of Total Deaths with Cremation	63%

[1] Provisional total number of deaths occurring in the county

Manners of Death Reported, Van Buren County

	2018
Natural	116
Accident	25
Suicide	16
Homicide	5
Indeterminate	0
Total	**162**

Deaths Reported by Age (in years), Van Buren County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	0	2	1	0	4	13	47	95

Pediatric Deaths, Van Buren County

The three deaths of individuals under 18 years of age include:

1. 1-5 years old
   a. (1) Multiple injuries, including asphyxia, dehydration, blunt force trauma and possible hyperthermia; homicide
   b. (1) Acute exacerbation of chronic asthma; natural
2. 6-10 years old
   a. (1) Craniocerebral trauma, restrained passenger in motor vehicle rollover; accident

Accidental Deaths by Mechanism, Van Buren County

	2018
Vehicle	10
Drug-Related	10
Drowning	1
Fall	4
Fire	0
Environmental Exposure	1
Asphyxia	1[1]
Other	0
Total	**25**

[1] (1) Mechanical asphyxia, pinned beneath vehicle

Drug-Related Deaths by Manner, Van Buren County

	2018
Accident	10
Suicide	1
Indeterminate	0
Total	**11**
% of Accidents and Indeterminate Deaths Involving Opioids	90%

Drug-Related Accidental Deaths, Van Buren County

Age	Sex	Race	Substances contributing to death	Opioid
25	M	AA/B	Cocaine, dextromethorphan, fentanyl	Y
31	M	AA/B	Fentanyl	Y
34	M	W	Acetylfentanyl, fentanyl, morphine	Y
36	F	Amer Ind	Alprazolam, buprenorphine, diphenhydramine, hydroxyzine	Y
46	F	W	Acetylfentanyl, dextromethorphan, diazepam, fentanyl, fluoxetine, hydroxyzine, nordiazepam, oxycodone	Y
46	F	W	Amitriptyline, citalopram, fentanyl, hydroxyzine, nortriptyline	Y
49	M	W	Acetylfentanyl, diphenhydramine, fentanyl	Y
59	F	W	Methadone	Y
61	M	W	Alprazolam, heroin	Y
75	M	W	Methamphetamine	N

Suicides, Van Buren County

Year	Total	Male	Female	0 - 17	18 - 64	65 +
2018	16	13	3	0	10	6

Homicides by Mechanism, Van Buren County

	2018
Firearm	2
Blunt force trauma	1
Sharp force trauma	1
Other	2[1]
Total	**5[2]**

[1] (1) Multiple injuries, including asphyxia, dehydration, blunt force trauma and possible hyperthermia; (1) Multiple injuries, including asphyxia (1986 cold case, exhumation)
[2] One death categorized twice, due to sustaining both blunt and sharp force injuries

ADDITIONAL SERVICES

Division of Neuropathology

The Division of Neuropathology, led by Dr. Amanda Fisher-Hubbard, performs a wide range of examinations, including those of forensic cases from WMed and outside institutions/medical examiner offices, private examinations for concerned families, hospital consultations, and is involved in several research projects.

	WMed Forensic Cases	Consulting Forensic Cases	Hospital Specimens	Research Cases/Projects	Private Neuropathological Examinations	Total
2016	43	84	11	276	4	418
2017	79	83	3	404	9	578
2018	63	99	2	492	3	659

Forensic Anthropology

Forensic Anthropology services are provided to all WMed Medical Examiner counties. These services include: human versus non-human bone identification; search and recovery of remains; comparative medical and dental radiography for the positive identification of remains; complete skeletal analyses to determine 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).

	Radiographic Positive Identifications	Trauma Analyses	Recoveries	Non-Human	Biological Profile
2016	46	23	2	9	2
2017	79	7	5	8	5
2018	97	15	9	16	8

Hospital/Private/Consultant Postmortem Examinations

Our office provides autopsy services to Bronson Healthcare hospitals, private examinations to families searching for answers, and forensic autopsies to various counties in Michigan and northern Indiana.

	Hospital (Bronson Healthcare)	Private	Consultant Counties (Forensic)
2016	10	4	257
2017	7	16	201
2018	8	9	161

Comparison of All Medical Examiner Serviced Counties, 2018

	Total Population	Total Sq. Miles	Deaths in the County	Deaths Reported	Deaths Investigated	MEI Scene Investigations	DCs by ME	Cremation Permits	Unclaimed Investigations
Allegan	117,327	1,833	772	197	191	185	88	487	2
Barry	61,157	577	390	146	131	128	52	262	1
Calhoun	134,487	718	1,495	475	415	387	200	901	24
Grand Traverse	92,573	601	1,413	350	252	206	126	1,108	7
Kalamazoo	264,870	580	2,977	1,068	782	677	405	2,101	41
Leelanau	21,764	2,532	175	46	45	41	15	130	0
Mason	29,100	1,242	311	107	92	88	53	231	1
Muskegon	173,588	1,459	1,841	662	504	463	235	1,264	15
Osceola	23,341	573	187	62	58	55	31	86	0
St. Joseph	61,043	521	530	157	150	141	69	306	4
Van Buren	75,448	1,090	514	162	146	142	61	322	2
Total	**1,054,698**	**11,726**	**10,605**	**3,432**	**2766**	**2513**	**1335**	**7,198**	**97**

Postmortem Examinations & Gift of Life Referrals, 2018

	Complete Autopsies	Limited Exams	External Exams	Total Postmortem Exams	Cardio-vascular Consults	Referrals to Gift of Life	Tissue Donations	Cornea Donations
Allegan	41	2	24	67	0	61	4	4
Barry	25	1	12	38	0	24	3	0
Calhoun	103	8	38	149	1	107	11	9
Grand Traverse	45	0	13	58	0	37	3	2
Kalamazoo	187	9	68	264	0	129	16	7
Leelanau	7	0	2	9	0	8	1	0
Mason	29	0	6	35	0	16	3	0
Muskegon	117	4	35	156	0	128	15	8
Osceola	12	0	4	16	1	10	1	1
St. Joseph	39	2	20	61	1	45	6	3
Van Buren	31	2	20	53	0	55	8	3
Consultant Counties	161	0	0	161	1	N/A	N/A	N/A
Total	**797**	**28**	**242**	**1067**	**4**	**620**	**71**	**37**

Manners of Death, All Medical Examiner Serviced Counties, 2018

	Natural	Accident	Suicide	Homicide	Indeterminate
Allegan	141	35	16	1	3
Barry	113	21	9	2	1
Calhoun	347	89	30	6	3
Grand Traverse	260	69	14	1	4
Kalamazoo	750	238	46	15	17
Leelanau	36	6	2	0	2
Mason	84	16	7	0	0
Muskegon	500	107	33	16	6
Osceola	44	13	3	0	1
St. Joseph	107	27	16	1	4
Van Buren	116	25	16	5	0
Total	**2,498**	**646**	**192**	**47**	**41**

Significant Death Statistics, 2018

	Accidental Drug-Related Deaths	Indeterminate Drug-Related Deaths	Opioid-Related Deaths	Accidental Traffic-Related Deaths	Accidental Fall-Related Deaths
Allegan	9	0	9	12	10
Barry	4	1	2	7	8
Calhoun	49	2	48	15	19
Grand Traverse	9	0	8	15	35
Kalamazoo	63	7	54	51	100
Leelanau	1	0	0	1	1
Mason	7	0	4	5	3
Muskegon	40	1	39	21	37
Osceola	2	0	1	4	3
St. Joseph	4	0	4	15	3
Van Buren	10	0	9	10	4
Total	**198**	**11**	**178**	**156**	**223**