

2019

ANNUAL REPORT

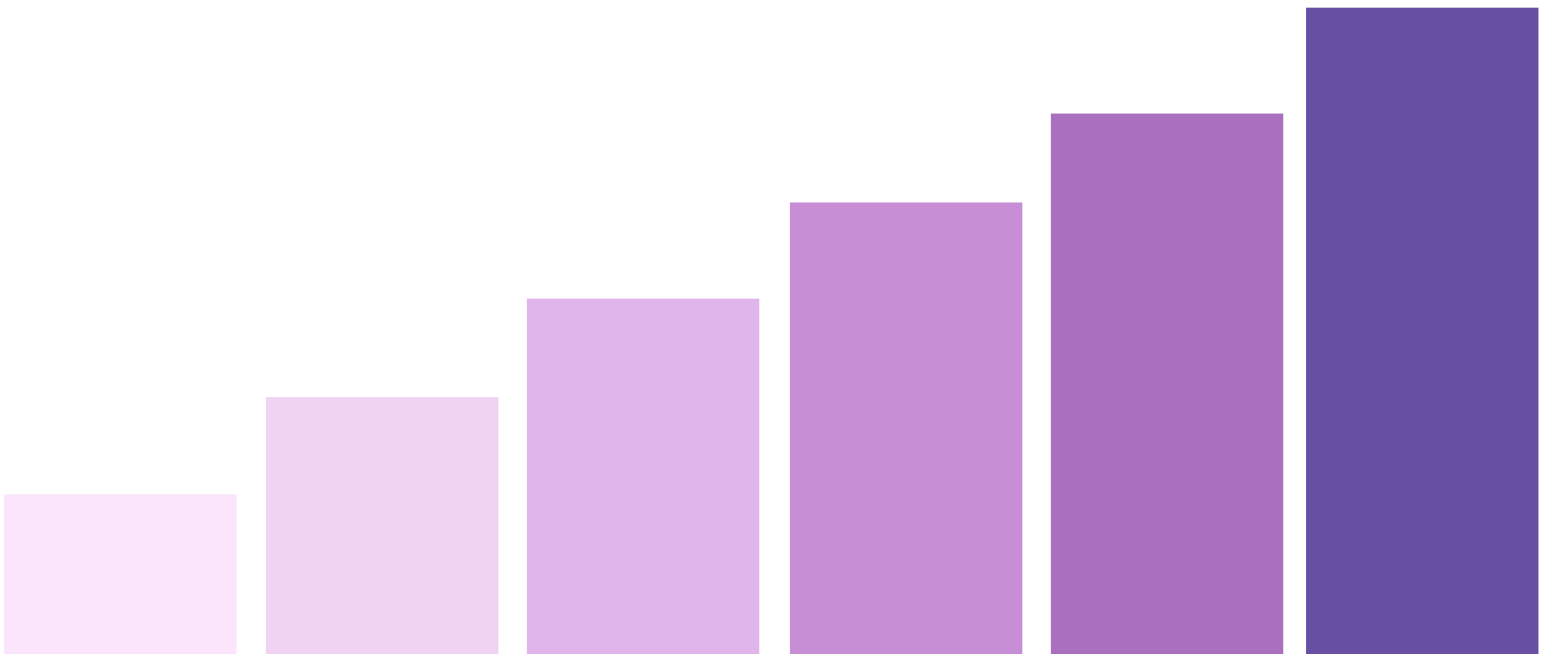


WESTERN MICHIGAN UNIVERSITY
Homer Stryker M.D.
SCHOOL OF MEDICINE

MEDICAL EXAMINER AND
FORENSIC SERVICES

Office of the Medical Examiner

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





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Editor's note: Every effort has been made to provide the most accurate data in this report.

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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 National Association of Medical Examiners (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.



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 (MEI) responds to nearly all of the death scenes. The medical examiner investigator 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

MCL 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.

Unclaimed Investigations

When a death occurs, there is not always someone available who is willing and able to claim the decedent and arrange for final disposition with a funeral director. The process varies with whether the decedent had resources to cover the cost of final disposition. If not, our staff members work with the State of Michigan DHHS and area funeral directors to have the decedent cremated. As this process results in an accumulation of unclaimed cremains, we started working with St. Martin of Tours Episcopal Church in Kalamazoo, Michigan in 2019 to bury the cremains. The names of each of the decedents buried in small coffins on the grounds of the church are located on a plaque on the outside of the church. This annual event did not occur in 2020 due to COVID-19; however, we hope to resume this respectful disposition of remains as soon as it is safe to do so.

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.
- Racial categories are identified with abbreviations, including: White (W), Black/African American (B) and Hispanic (H).

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	2019
<i>Total Deaths in the County</i>	607	549	602	657	705	753	745	788	772	818 ¹
<i>Deaths Reported to the ME</i>	164	172	162	182	193	176	203	188	197	219
<i>Deaths Investigated</i>	N/A	N/A	145	164	189	170	192	164	191	199
<i>MEI Scene Investigations</i>	147	155	143	160	177	152	174	158	185	179
<i>Death Certificates by ME</i>	98	83	78	76	97	77	85	76	88	88
<i>Bodies Transported to WMed</i>	80	68	63	58	74	66	62	69	72	69
<i>Complete Autopsy</i>	57	51	43	49	63	32	36	45	41	37
<i>Limited Autopsy</i>	4	2	6	1	2	2	5	2	2	3
<i>External Examination</i>	16	13	11	5	7	18	17	13	24	21
<i>Storage Only at WMed</i>	3	2	3	3	2	14	4	9	5	8
<i>Total Cases with Toxicology</i>	70	51	54	54	70	47	52	54	59	55
<i>Unidentified Remains After Exam</i>	0	0	0	0	2	1	0	0	1	2
<i>Referrals to Gift of Life</i>	14	35	38	32	62	64	63	73	61	55
<i>Tissue Donations</i>	4	3	4	0	5	8	5	6	4	11
<i>Cornea Donations</i>	1	3	5	0	6	7	4	7	4	5
<i>Unclaimed Investigations</i>	0	2	2	1	2	3	1	2	2	8
<i>Exhumations</i>	0	0	0	0	0	0	0	0	0	0

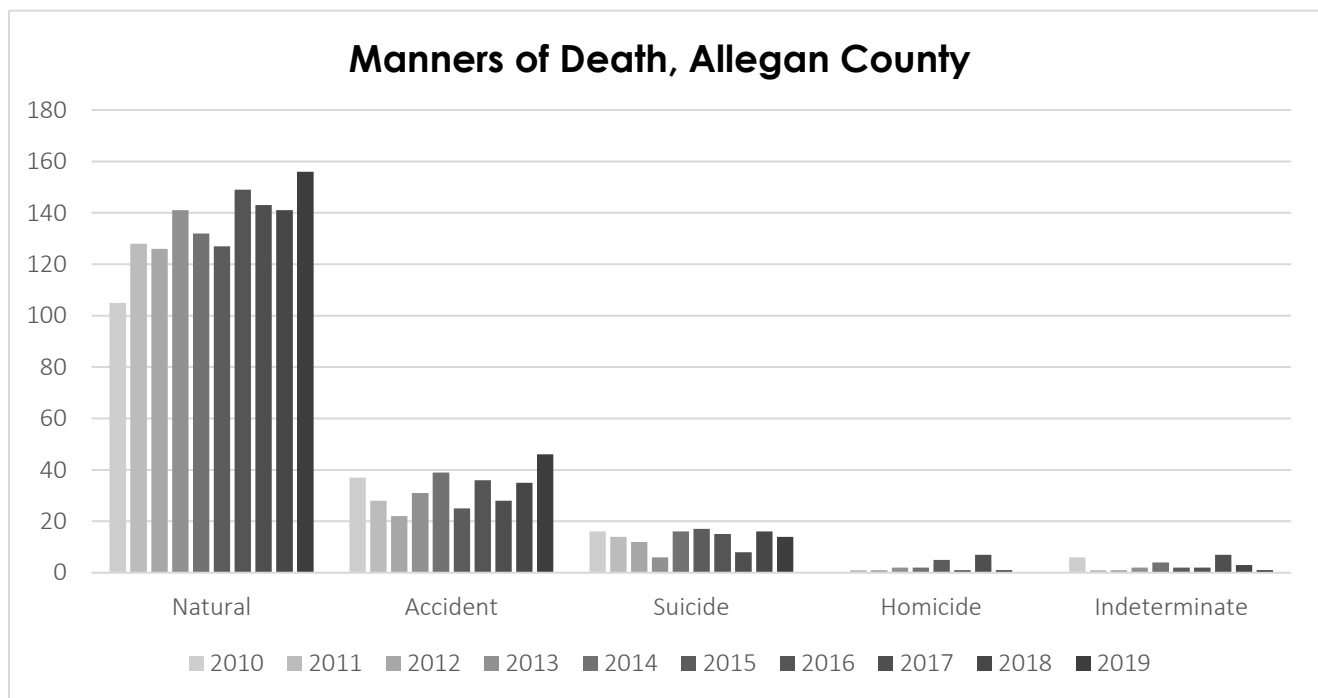
Cremation Permit Authorizations, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Cremation Permits</i>	287	300	299	350	409	404	442	469	487	519
<i>% of Total Deaths with Cremation</i>	47%	55%	50%	53%	58%	54%	60%	59%	63%	63%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Natural</i>	105	128	126	141	132	127	149	143	141	156
<i>Accident</i>	37	28	22	31	39	25	36	28	35	46
<i>Suicide</i>	16	14	12	6	16	17	15	8	16	14
<i>Homicide</i>	0	1	1	2	2	5	1	2	1	0
<i>Indeterminate</i>	6	1	1	2	4	2	2	7	3	1 ¹
Total	164	172	162	182	193	176	203	188	196	217²



Deaths Reported by Age (in years), Allegan County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	0	0	1	1	9	21	55	74
2011	0	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) Interstitial pneumonitis associated with unsafe sleep environment

² Does not include: (1) Unidentified, preserved fetal remains; (1) Skeletal remains, historical

³ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

2015	0	1	1	5	7	15	59	87
2016	0	1	0	0	5	26	58	112
2017	3	1	0	2	3	17	54	106
2018	1	3	0	2	4	29	55	102
2019 ¹	1	0	0	0	6	22	57	131

Pediatric Deaths, Allegan County

The one death of individuals under 18 years of age include:

1. <1 year old
 - a. (1) Interstitial pneumonitis associated with unsafe sleep; indeterminate

Accidental Deaths by Mechanism, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Vehicle</i>	15	12	13	9	11	10	9	12	12	9
<i>Drug-Related</i>	6	7	3	10	20	7	11	10	9	17 ²
<i>Drowning</i>	1	2	0	1	1	0	1	3	3	1
<i>Fall</i>	7	4	2	7	5	5	10	3	10	12
<i>Fire</i>	3	2	3	1	0	0	0	0	0	1
<i>Environmental Exposure</i>	0	0	0	2	0	2	1	0	0	1
<i>Asphyxia</i>	3	2	1	0	0	0	2	0	2	3 ³
<i>Other</i>	2	0	0	2	2	1	2	0	0	2 ⁴
Total	37	29	22	31	39	25	36	28	35⁵	46

¹ Does not include: (1) Unidentified, preserved fetal remains; (1) Skeletal remains, historical

² Includes (1) mixed drug intoxication associated with hypothermia

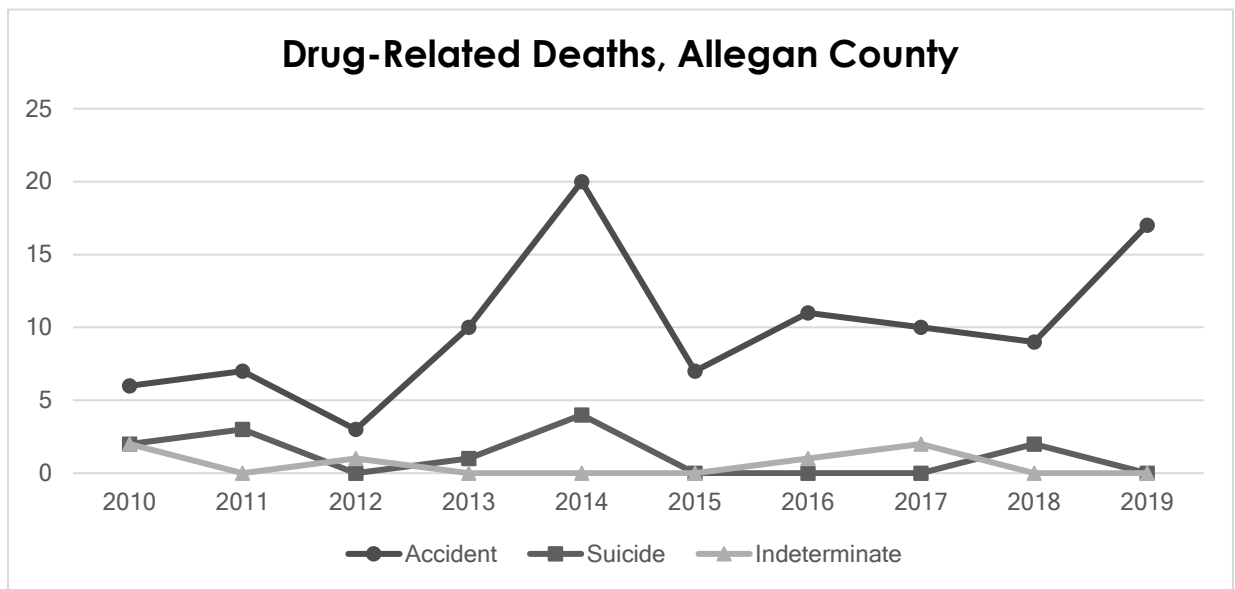
³ (1) Asphyxia due to choking; (1) Crushing injuries and traumatic asphyxia sustained while pinned between farm machinery; (1) Asphyxia due to wedging between bed and wall

⁴ (1) Blunt force injuries sustained by an unmanned forklift/wood splitter; (1) Blunt force injuries sustained while cutting down trees

⁵ One death categorized twice, as both drowning and drug-related

Drug-Related Deaths by Manner, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Accident</i>	6	7	3	10	20	7	11	10	9	17
<i>Suicide</i>	2	3	0	1	4	0	0	0	2	0
<i>Indeterminate</i>	2	0	1	0	0	0	1	2	0	0
Total	10	10	4	11	24	7	12	12	11	17
<i>Total involving opioid(s)</i>	N/A	N/A	N/A	N/A	N/A	6	8	6	8	13
<i>% of Accidental and Indeterminate Deaths Involving Opioids</i>	N/A	N/A	N/A	N/A	N/A	86%	67%	50%	78%	76%



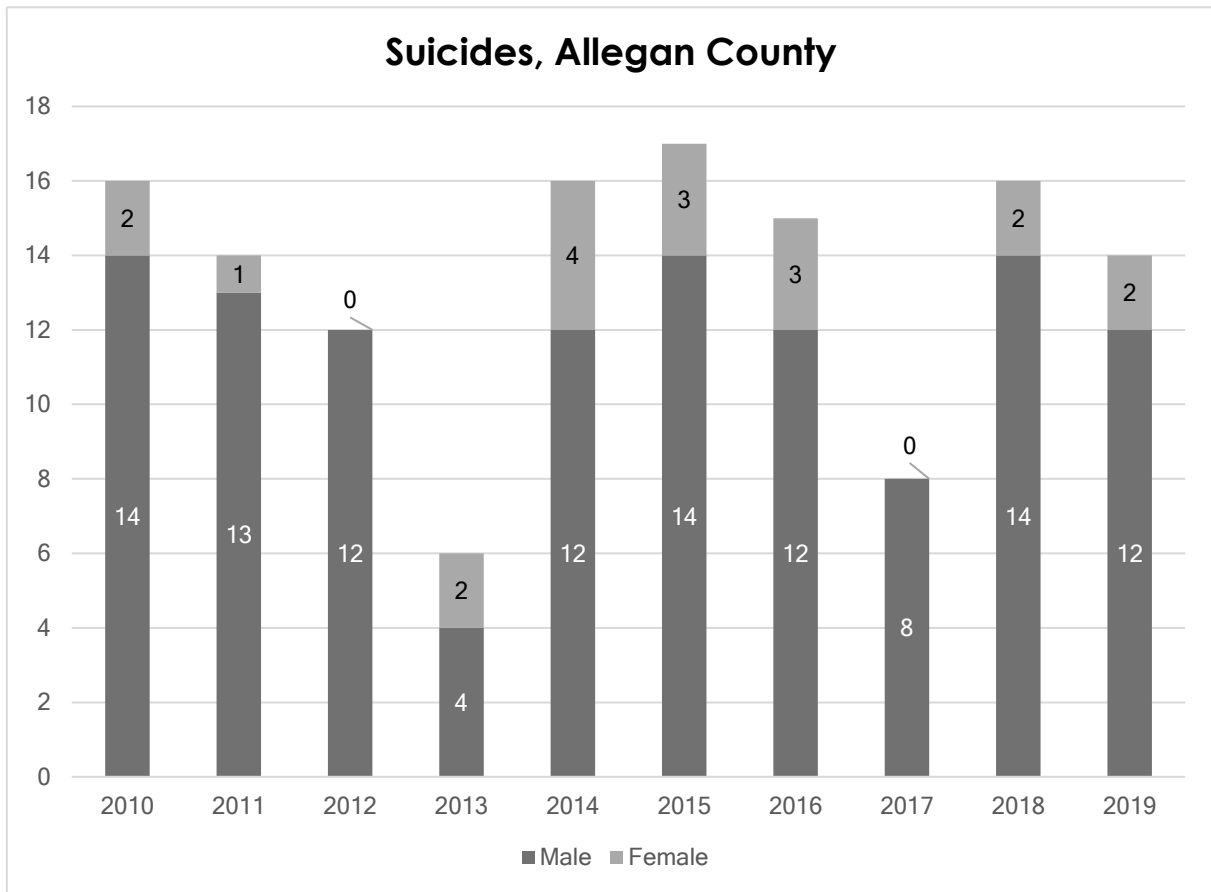
Drug-Related Accidental Deaths, Allegan County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
19	F	W	49419	Buprenorphine, norbuprenorphine, pregabalin	Y
26	M	W	49323	Alcohol, fentanyl, morphine	Y
26	M	H	49423	Alcohol, clozapine	N
28	M	W	49080	Alprazolam, morphine	Y
29	M	W	49348	Methamphetamine	N
30	M	H	49423	Alprazolam, hydrocodone	Y
32	F	W	49078	Alprazolam, amphetamine, citalopram, methamphetamine	N
33	M	W	49348	Cocaine, methadone, opiates	Y
35	M	W	49344	Acetyl fentanyl, fentanyl, heroin, hydromorphone, methamphetamine	Y

35	M	W	49453	Cocaine, fentanyl, heroin, methamphetamine	Y
38	M	B/W	49344	Alcohol, cocaethylene, cocaine, fentanyl	Y
42	F	B/ American Indian	49344	Alcohol, cocaethylene, cocaine, fentanyl	Y
45	M	W	49406	Methamphetamine, methylenedioxymethamphetamine (MDMA)	N
45	M	W	49010	Gabapentin, methamphetamine, tramadol	Y
49	M	W	49080	Alcohol, amphetamine, fentanyl, gabapentin, methamphetamine	Y
55	M	W	49010	Gabapentin, hydrocodone, tramadol	Y
56	M	W	49423	Morphine	Y

Suicides by Sex & Age, Allegan County

Year	Total	Male	Female	0 – 17	18 - 25	26 - 44	45 - 64	65 +
2010	16	14	2	0	3	8	2	3
2011	14	13	1	0	1	7	4	2
2012	12	12	0	0	1	3	6	2
2013	6	4	2	0	1	2	2	1
2014	16	12	4	0	1	4	8	3
2015	17	14	3	2	4	1	5	5
2016	15	12	3	0	3	6	3	3
2017	8	8	0	0	2	0	3	3
2018	16	14	2	0	0	7	7	2
2019	14	12	2	0	3	4	3	4



Suicides by Mechanism, Allegan County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Firearm</i>	6	6	9	3	11	11	10	7	8	6
<i>Hanging</i>	6	3	3	0	1	4	4	0	5	6
<i>Carbon Monoxide</i>	1	1	0	1	0	0	1	1	0	0
<i>Drug Intoxication</i>	2	2	0	1	4	0	0	0	1	0
<i>Motor Vehicle</i>	1	2	0	1	0	0	0	0	1	0
<i>Sharp Force Trauma</i>	0	0	0	0	0	0	0	0	0	1
<i>Asphyxia/Suffocation</i>	0	0	0	0	0	2	0	0	0	0
<i>Other</i>	0	0	0	0	0	0	0	0	1	1
Total	16	14	12	6	16	17	15	8	16	14

BARRY COUNTY

Summary of All Barry County Cases¹

	2015	2016 ²	2018	2019
<i>Total Deaths in the County</i>	416	399	390	398 ³
<i>Deaths Reported to the ME</i>	125	130	146	121
<i>Deaths Investigated</i>	118	124	131	108
<i>MEI Scene Investigations</i>	112	120	128	103
<i>Death Certificates by ME</i>	53	57	52	54
<i>Bodies Transported to WMed</i>	43	47	41	38
<i>Complete Autopsy</i>	35	37	25	28
<i>Limited Autopsy</i>	1	0	1	2
<i>External Examination</i>	6	8	12	8
<i>Storage Only at WMed</i>	1	2	3	0
<i>Total cases with Toxicology</i>	N/A	N/A	35	37
<i>Unidentified Remains After Exam</i>	N/A	N/A	0	0
<i>Referrals to Gift of Life</i>	40	48	44	22
<i>Tissue Donations⁴</i>	6	17	3	3
<i>Cornea Donations</i>	N/A	N/A	0	1
<i>Unclaimed Investigations</i>	1	0	1	0
<i>Exhumations</i>	N/A	N/A	0	0

Cremation Permit Authorizations, Barry County

	2018	2019
<i>Cremation Permits</i>	262	251
<i>% of Total Deaths with Cremation</i>	67%	63%

¹ Data for 2017 is not available at the time this report is authored

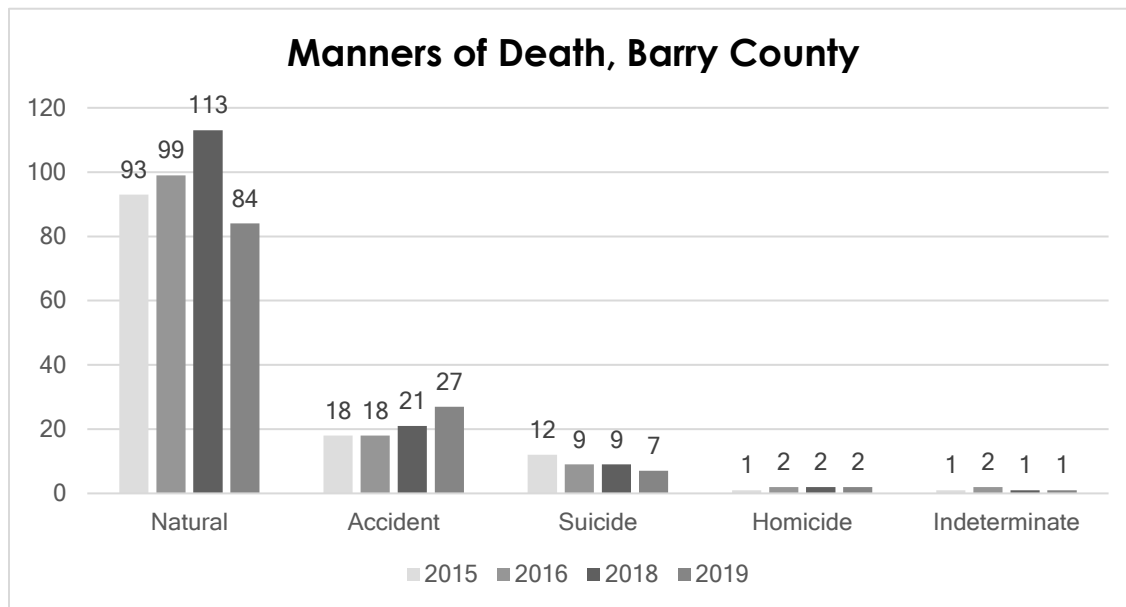
² Data from years 2015-2016 obtained from Sparrow Hospital

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 County¹

	2015	2016	2018	2019
<i>Natural</i>	93	99	113	84
<i>Accident</i>	18	18	21	27
<i>Suicide</i>	12	9	9	7
<i>Homicide</i>	1	2	2	2
<i>Indeterminate</i>	1	2	1	1 ²
Total	125	130	146	121



Deaths Reported by Age (in years), Barry County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	0	0	0	1	0	8	46	89
2019	1	0	0	2	5	12	30	71

Pediatric Deaths, Barry County

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

1. <1 year old
 - a. (1) Multiple blunt force injuries, passenger in motor vehicle collision; accident

¹ Data from years 2015-2016 obtained from Sparrow Hospital

² (1) Mixed drug intoxication

³ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

2. 11-17 years old
 - a. (1) Shotgun wound of head; suicide
 - b. (1) Multiple blunt force injuries, passenger in motor vehicle collision; accident

Accidental Deaths by Mechanism, Barry County

	2018	2019
<i>Vehicle</i>	7	11
<i>Drug-Related</i>	4	5
<i>Drowning</i>	0	3
<i>Fall</i>	8	4
<i>Fire</i>	0	1
<i>Environmental Exposure</i>	0	1
<i>Asphyxia</i>	1	2 ¹
<i>Other</i>	1	0
Total	21	27

Drug-Related Deaths by Manner, Barry County

	2018	2019
<i>Accident</i>	4	5
<i>Suicide</i>	0	0
<i>Indeterminate</i>	1	1
Total	5	6
<i>Total involving opioid(s)</i>	2	4
<i>% of Accidental and Indeterminate Deaths Involving Opioids</i>	40%	67%

Drug-Related Accidental & Indeterminate Deaths, Barry County

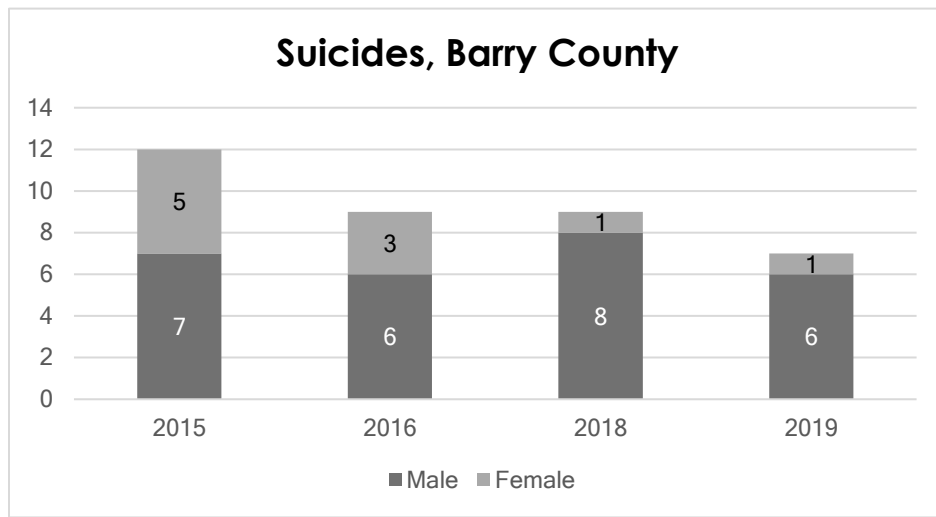
Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
18	M	W	49058	Methamphetamine	N
26	F	W	49058	Acetyl fentanyl, alprazolam, diphenhydramine, fentanyl, heroin, norfentanyl	Y
31	F	W	49058	Alcohol, alprazolam, buprenorphine, mitragynine, quetiapine	Y
36	F	W	49080	Fentanyl, methamphetamine	Y

¹ (1) Asphyxia due to choking; (1) Asphyxia due to entrapment (in corn silo)

45	M	B	49058	Methamphetamine	N
57	M	W	49046	Acetyl fentanyl, cocaine, fentanyl	Y

Suicides by Sex & Age, Barry County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	25 - 64	65 +
2015	12	7	5	1	0	7	4	0
2016	9	6	3	1	0	1	5	2
2018	9	8	1	1	0	1	4	3
2019	7	6	1	1	1	0	3	2



Suicides by Mechanism, Barry County

	2015	2016	2018	2019
<i>Firearm</i>	7	7	7	4
<i>Hanging</i>	3	1	1	3
<i>Carbon Monoxide</i>	0	0	0	0
<i>Drug Intoxication</i>	2	1	0	0
<i>Motor Vehicle</i>	0	0	0	0
<i>Sharp Force Trauma</i>	0	0	0	0
<i>Asphyxia/Suffocation</i>	0	0	0	0
<i>Other</i>	0	0	1	0
Total	12	9	9	7

BERRIEN COUNTY

Summary of All Berrien County Cases

	2019
Total Deaths in the County	1,622 ¹
Deaths Reported to the ME	430
Deaths Investigated	399
MEI Scene Investigations	353
Death Certificates by ME	152
Bodies Transported to WMed	132
Complete Autopsy	90
Limited Autopsy	5
External Examination	26
Storage Only at WMed	11
Total Cases with Toxicology	110
Unidentified Remains After Exam	1
Referrals to Gift of Life	80
Tissue Donations	7
Cornea Donations	4
Unclaimed Investigations	10
Exhumations	1

Cremation Permit Authorizations, Berrien County

	2019
Cremation Permits	1,045
% of Total Deaths with Cremation	64%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Berrien County

2019

<i>Natural</i>	321
<i>Accident</i>	71
<i>Suicide</i>	21
<i>Homicide</i>	8 ¹
<i>Indeterminate</i>	9
<i>Total</i>	430²

Deaths Reported by Age (in years), Berrien County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2019	6	1	1	2	6	58	108	246

Pediatric Deaths, Berrien County

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

1. <1 year old
 - a. (1) Asphyxia, slid down into car seat straps; accident
 - b. (1) Sudden unexplained infant death with possible associated unsafe sleep and bacterial organism; indeterminate
 - c. (1) Sudden unexplained infant death with possible unsafe sleep and congenital atypical heart; indeterminate
 - d. (1) Extreme prematurity, history of maternal assault; indeterminate
 - e. (1) Trisomy 13, prematurity; natural
 - f. (1) Positional asphyxia due to unsafe sleep; accident
2. 1-5 years old
 - a. (1) Sepsis; natural
3. 6-10 years old
 - a. (1) Multiple injuries, passenger in motor vehicle collision; accident
4. 11-17 years old
 - a. (1) Drowning; accident
 - b. (1) Mixed drug intoxication; suicide

¹ Includes (1) exhumation of 1988 homicide investigation for DNA analysis; (1) homicide investigation occurring on 12/31/2018, with examination on 01/02/2019

² Does not include (1) fetal tissue from spontaneous abortion

³ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Accidental Deaths by Mechanism, Berrien County

2019

Vehicle	21 ¹
Drug-Related	23
Drowning	4
Fall	12
Fire	2
Environmental Exposure	3 ²
Asphyxia	3 ³
Other	3 ⁴
Total	71

Drug-Related Deaths by Manner, Berrien County

2019

Accident	23
Suicide	2
Indeterminate	1
Total	26
Total involving opioid(s)	22
% of Accidental and Indeterminate Deaths Involving Opioids	92%

Drug-Related Accidental & Indeterminate Deaths, Berrien County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
24	F	W	49038	Acetyl fentanyl, fentanyl, heroin, mitragynine	Y
28	M	W	49120	Methadone	Y
29	M	W	49120	Fentanyl, heroin	Y
31	M	W	49085	Fentanyl, methamphetamine	Y
32	M	W	49038	Diazepam, methadone	Y

¹ Includes (1) Multiple blunt force injuries, wheel fell off of passing semi striking pedestrian

² Includes (1) Hypothermia associated with acute intoxication and natural disease

³ (1) Hanging due to apparent autoerotic asphyxia; (1) Asphyxia due to sliding down into car seat straps; (1) Positional asphyxia due to unsafe sleep

⁴ (1) High voltage electrocution; (1) Carbon monoxide inhalation; (1) Sharp force neck injury via chainsaw

32	M	W	49111	Flualprazolam, heroin	Y
33	F	W	49085	Chlorpromazine, clonazepam, fentanyl, imipramine	Y
35	M	W	49022	Fentanyl	Y
35	F	W	49103	Fentanyl, heroin, methamphetamine	Y
36	M	W	49085	Acetaminophen, gabapentin, morphine, phentermine, oxycodone	Y
36	F	W	49113	Clonazepam, heroin, methamphetamine	Y
37	M	W	49120	Alcohol, cyclobenzaprine, fentanyl, morphine	Y
38	F	W	49022	Butalbital, fentanyl, methadone, suvorexant	Y
39	F	W	49111	Methadone	Y
39	M	W	49117	Alcohol, cocaine	N
39	M	W	49120	Diazepam, fentanyl	Y
40	M	W	49120	Heroin	Y
43	F	W	49103	Acetyl fentanyl, diphenhydramine, fentanyl, morphine	Y
44	M	B	49022	Fentanyl, heroin	Y
48	F	W	49120	Methamphetamine	N
48	F	W	49085	Acetyl fentanyl, fentanyl, methamphetamine	Y
55	M	W	49117	Amphetamine, gabapentin, hydrocodeine, hydrocodone, paroxetine, phenylpropanolamine, quetiapine	Y
63	M	B	49107	Alcohol, fentanyl, heroin	Y
68	F	W	49120	Hydrocodone, methadone	Y

Suicides by Sex & Age, Berrien County

<i>Year</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>0 - 17</i>	<i>18 - 25</i>	<i>26 - 44</i>	<i>45 - 64</i>	<i>65 +</i>
2019	21	17	4	1	0	9	4	7

Suicides by Mechanism, Berrien County

2019

<i>Firearm</i>	16
<i>Hanging</i>	3
<i>Carbon Monoxide</i>	0
<i>Drug Intoxication</i>	2
<i>Motor Vehicle</i>	0
<i>Sharp Force Trauma</i>	0
<i>Asphyxia/Suffocation</i>	0
<i>Other</i>	0
<i>Total</i>	21

CALHOUN COUNTY

Summary of All Calhoun County Cases

	2014	2015	2016	2017	2018	2019
<i>Total Deaths in the County</i>	1,390	1,378	1,427	1,396	1,495	1,517 ¹
<i>Deaths Reported to the ME</i>	377	429	411	443	475	508
<i>Deaths Investigated</i>	335	392	361	400	415	442
<i>MEI Scene Investigations</i>	296	311	307	352	387	381
<i>Death Certificates by ME</i>	178	180	186	191	200	176
<i>Bodies Transported to WMed</i>	138	164	165	176	170	146
<i>Complete Autopsy</i>	103	109	103	102	103	81
<i>Limited Autopsy</i>	1	5	4	3	8	8
<i>External Examination</i>	20	28	36	46	38	32
<i>Storage Only at WMed</i>	14	20	22	25	21	25
<i>Total Cases with Toxicology</i>	122	131	113	141	139	112
<i>Unidentified Remains After Exam</i>	0	0	0	0	0	0
<i>Referrals to Gift of Life</i>	119	115	118	146	107	72
<i>Tissue Donations</i>	8	3	11	10	11	6
<i>Cornea Donations</i>	8	8	11	8	9	3
<i>Unclaimed Investigations</i>	13	8	11	23	24	29
<i>Exhumations</i>	1	0	0	0	0	0

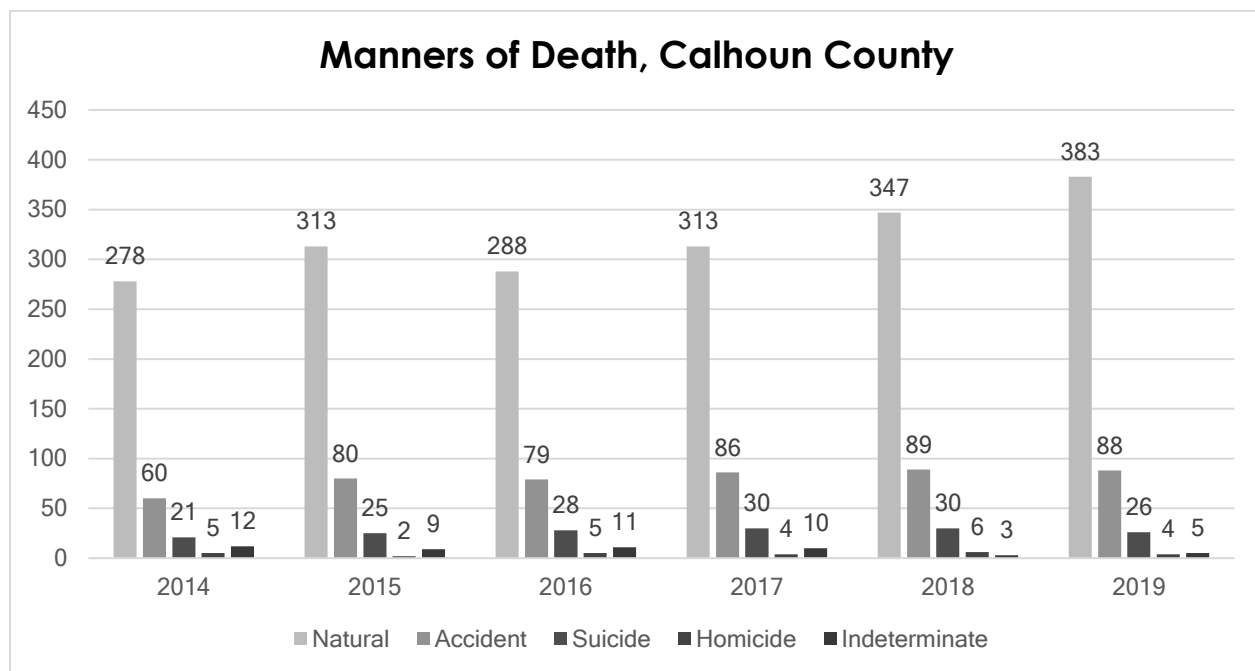
Cremation Permit Authorizations, Calhoun County

	2014	2015	2016	2017	2018	2019
<i>Cremation Permits</i>	721	742	811	857	901	997
<i>% of Total Deaths with Cremation</i>	52%	54%	57%	61%	60%	66%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Calhoun County

	2014	2015	2016	2017	2018	2019
<i>Natural</i>	278	313	288	313	347	383
<i>Accident</i>	60	80	79	86	89	88
<i>Suicide</i>	21	25	28	30	30	26
<i>Homicide</i>	5	2	5	4	6	4
<i>Indeterminate</i>	12	9	11	10	3	5 ¹
Total	377	429	411	443	475	506²



Deaths Reported by Age (in years), Calhoun County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2014	6	4	0	3	8	34	148	171
2015	4	0	1	6	11	59	128	215
2016	4	0	2	2	9	53	122	208
2017	3	1	1	1	14	65	140	206
2018	1	0	2	2	9	45	164	241
2019	0	0	1	0	12	53	157	283

¹ (1) Inhalation of products of combustion (house fire); (1) Multiple injuries, pedestrian versus motor vehicle; (1) Sustained multiple gunshot wounds and self-inflicted shotgun wound (altercation with law enforcement); (2) Cause and manner of death could not be determined

² Does not include (2) stillbirth investigations (cremation authorizations)

³ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Pediatric Deaths, Calhoun County

The one death of individuals under 18 years of age include:

1. 6-10 years old
 - a. (1) Inhalation of products of combustion (house fire); indeterminate

Accidental Deaths by Mechanism, Calhoun County

	2014	2015	2016	2017	2018	2019
<i>Vehicle</i>	10	21	20	14	15	15
<i>Drug-Related</i>	26	44	38	44	49	40 ¹
<i>Drowning</i>	0	2	2	3	1	4 ²
<i>Fall</i>	16	11	14	19	19	20
<i>Fire</i>	5	0	1	0	1	1
<i>Environmental Exposure</i>	2	0	0	0	0	3
<i>Asphyxia</i>	2	0	2	5	3	2 ³
<i>Other</i>	1	1	2	1	1	3 ⁴
Total	62	81	79	86	89	88

Drug-Related Deaths by Manner, Calhoun County

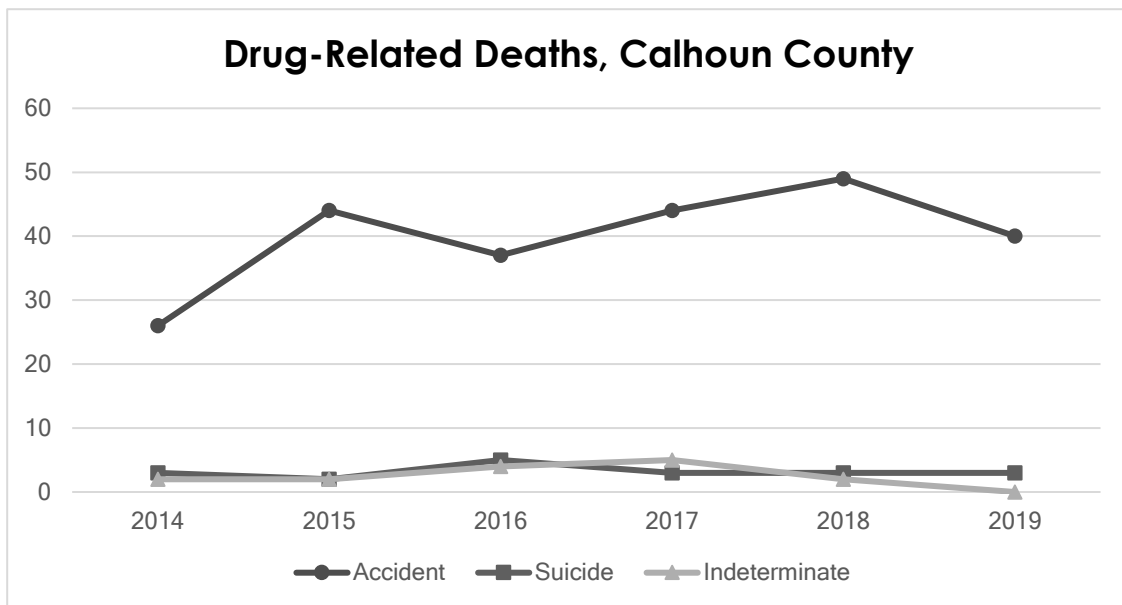
	2014	2015	2016	2017	2018	2019
<i>Accident</i>	26	44	37	44	49	40
<i>Suicide</i>	3	2	5	3	3	3
<i>Indeterminate</i>	2	2	4	5	2	0
Total	31	48	46	52	54	43
<i>Total involving opioid(s)</i>	N/A	42	40	48	48	36
<i>% of Accidental and Indeterminate Deaths Involving Opioids</i>	N/A	91%	88%	94%	92%	88%

¹ Includes (1) mixed drug intoxication associated with positional asphyxia

² Includes (2) Drowning associated with mixed drug intoxication

³ (2) Asphyxia due to choking

⁴ (2) Carbon monoxide inhalation; (1) Blunt force head injuries, struck by falling tree



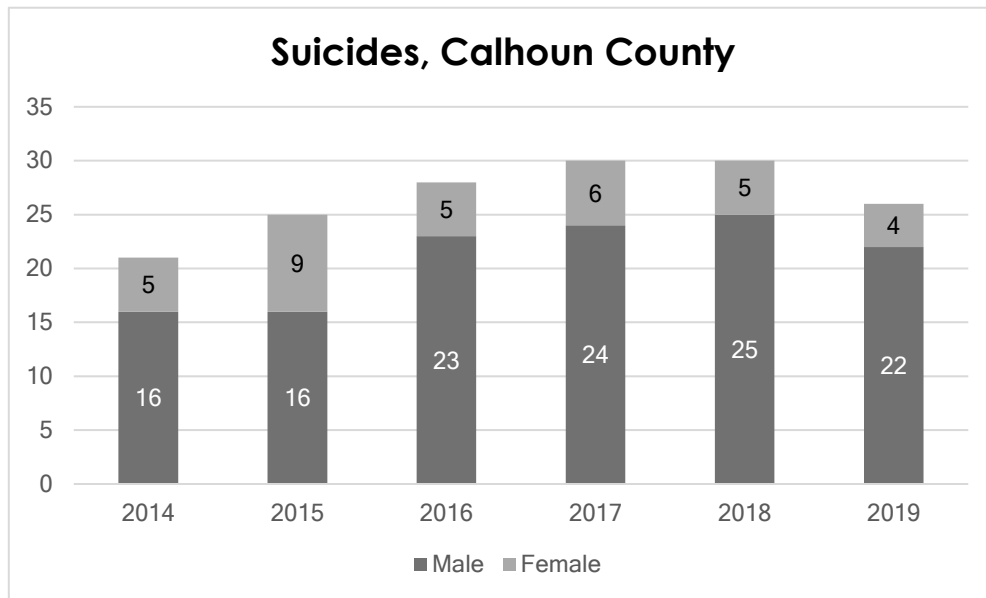
Drug-Related Accidental Deaths, Calhoun County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
29	F	B	49015	Alprazolam, diazepam, methadone, oxycodone	Y
30	M	W	49017	Acetyl fentanyl, fentanyl	Y
32	M	W	49037	Acetyl fentanyl, fentanyl, loperamide	Y
33	M	W	49017	Acetyl fentanyl, fentanyl, methamphetamine	Y
33	M	W	49245	Acetyl fentanyl, alprazolam, fentanyl, heroin	Y
33	M	W	49017	Cocaine, diphenhydramine, fentanyl, xylazine	Y
33	M	W	49017	Fentanyl, morphine	Y
36	M	W	49037	7-Aminoclonazepam, fentanyl	Y
37	M	B	49037	Fentanyl, morphine	Y
38	M	W	49014	Fentanyl	Y
38	M	B	49017	Alcohol, cocaethylene, cocaine, fentanyl	Y
38	M	W	49015	Methamphetamine	N
39	F	W	49017	Alcohol, cocaine, cyclobenzaprine, fentanyl, heroin	Y
39	F	W	49014	Alprazolam, amphetamine, buprenorphine, fentanyl	Y
40	M	W	49017	Fentanyl, methamphetamine	Y
40	M	W	49020	Acetyl fentanyl, alcohol, cocaine, fentanyl, mitragynine	Y
42	M	W	49017	Acetyl fentanyl, alprazolam, fentanyl, morphine	Y
44	M	W	49017	Acetyl fentanyl, alprazolam, fentanyl, morphine	Y

44	M	W	49037	Cocaine, fentanyl, valeryl fentanyl	Y
44	F	W	49037	Alprazolam, amphetamine, methamphetamine, phenylpropanolamine, tramadol	Y
44	M	B	49224	Cocaine, fentanyl	Y
45	M	B	49014	Alcohol, fentanyl, morphine, trihexyphenidyl	Y
45	M	W	49015	Diphenhydramine, methamphetamine	N
46	M	W	49015	Acetyl fentanyl, fentanyl, heroin	Y
49	M	W	49017	Alcohol, methamphetamine	N
52	M	American Indian	49015	Acetyl fentanyl, alcohol, fentanyl, heroin, methamphetamine	Y
53	M	W	49037	Acetyl fentanyl, clonazepam, fentanyl, heroin, methamphetamine, risperidone	Y
54	F	W	49017	Alcohol, amphetamine, fentanyl	Y
54	M	B	49017	Cocaine	N
55	M	W	49017	Acetyl fentanyl, fentanyl, methamphetamine	Y
57	F	B	49037	Acetyl fentanyl, clonazepam, cocaine, diphenhydramine, fentanyl, heroin, mitragynine	Y
57	M	W	49015	Cocaethylene, cocaine	N
58	F	B	49017	Fentanyl, heroin	Y
59	M	W	49037	Alcohol, buprenorphine, chlordiazepoxide	Y
59	M	W	49017	Fentanyl, methamphetamine, morphine	Y
61	M	W	49037	Acetyl fentanyl, buprenorphine, fentanyl, heroin	Y
62	M	B	49014	Acetyl fentanyl, alcohol, fentanyl, morphine	Y
63	M	B	49037	Acetyl fentanyl, fentanyl, morphine	Y
66	M	W	49037	Alcohol, cocaine, fentanyl	Y
71	F	W	49014	Oxycodone	Y

Suicides by Sex & Age, Calhoun County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2014	21	16	5	1	4	7	8	1
2015	25	16	9	2	2	7	7	7
2016	28	23	5	1	2	8	12	5
2017	30	24	6	0	4	12	7	7
2018	30	25	5	1	2	5	15	7
2019	26	22	4	0	4	9	9	4



Suicides by Mechanism, Calhoun County

	2014	2015	2016	2017	2018	2019
<i>Firearm</i>	11	14	14	12	17	16
<i>Hanging</i>	7	5	6	10	10	5
<i>Carbon Monoxide</i>	0	0	2	0	0	0
<i>Drug Intoxication</i>	3	2	5	3	3	3
<i>Motor Vehicle</i>	0	0	1	2	0	1
<i>Sharp Force Trauma</i>	0	0	0	1	0	0
<i>Asphyxia/Suffocation</i>	0	2	0	1	0	0
<i>Other</i>	0	2	0	1	0	1 ¹
Total	21	25	28	30	30	26

¹ (1) Inhalation of products of combustion (lit own residence on fire)

GRAND TRAVERSE COUNTY

Summary of All Grand Traverse County Cases

	2017	2018	2019
<i>Total Deaths in the County</i>	1,306	1,413	1,341 ¹
<i>Deaths Reported to the ME</i>	380	350	384
<i>Deaths Investigated</i>	249	252	278
<i>MEI Scene Investigations</i>	122	206	212
<i>Death Certificates by ME</i>	153	126	131
<i>Bodies Transported to WMed</i>	77	58	65
<i>Complete Autopsy</i>	56	45	52
<i>Limited Autopsy</i>	2	0	2
<i>External Examination</i>	19	13	11 ²
<i>Storage Only at WMed</i>	0	0	0
<i>Total Cases with Toxicology</i>	73	53	61
<i>Unidentified Remains After Exam</i>	1	2	0
<i>Referrals to Gift of Life</i>	44	37	43
<i>Tissue Donations</i>	4	3	1
<i>Cornea Donations</i>	4	2	0
<i>Unclaimed Investigations</i>	5	7	10
<i>Exhumations</i>	0	0	0

Cremation Permit Authorizations, Grand Traverse County

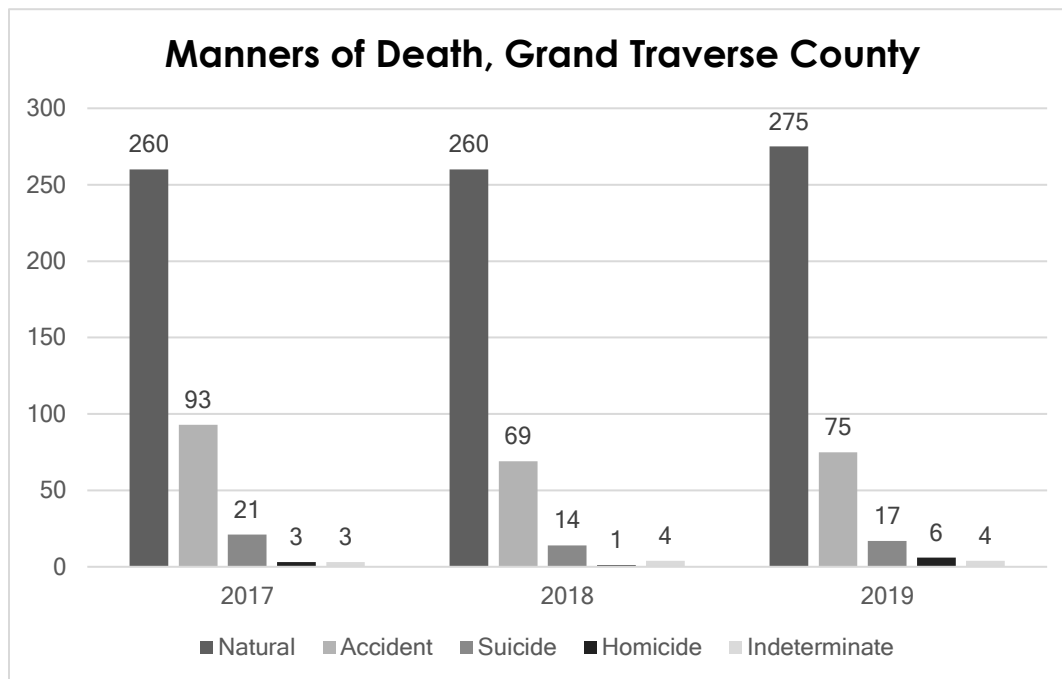
	2017	2018	2019
<i>Cremation Permits</i>	1,005	1,108	1,077
<i>% of Total Deaths with Cremation</i>	76%	78%	80%

¹ Provisional total number of deaths occurring in the county

² Does not include (1) suicide investigation that occurred on 12/31/2019 with examination on 01/01/2020

Manners of Death Reported, Grand Traverse County

	2017	2018	2019
<i>Natural</i>	260	260	275
<i>Accident</i>	93	69	75
<i>Suicide</i>	21	14	17
<i>Homicide</i>	3	1	6
<i>Indeterminate</i>	3	4	4 ¹
Total	380	348	377²



Deaths Reported by Age (in years), Grand Traverse County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	0	0	0	0	7	32	94	229
2018	5	0	0	2	7	22	85	216
2019	4	0	0	4	3	34	94	238

¹ (1) Asphyxia due to hanging; (1) Gunshot wound of head; (1) Prematurity possibly associated with maternal motor vehicle collision and drug use; (1) Complications of subdural hematoma of unknown etiology

² Does not include (6) stillbirth investigations (cremation permit investigations)

³ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Pediatric Deaths, Grand Traverse County

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

1. <1 year old
 - a. (1) Multiple injuries; homicide
 - b. (1) Prematurity; natural
 - c. (1) Multiple congenital anomalies, including cardiac defect; natural
 - d. (1) Extreme prematurity potentially associated with maternal trauma and drug use; indeterminate
2. 11-17 years old
 - a. (1) Gunshot wound of head; suicide
 - b. (2) Hanging; suicide
 - c. (1) Sudden cardiac death of uncertain etiology; natural

Accidental Deaths by Mechanism, Grand Traverse County

	2017	2018	2019
<i>Vehicle</i>	23	15	22 ¹
<i>Drug-Related</i>	19	9	10
<i>Drowning</i>	2	2	2 ²
<i>Fall</i>	44	35	34
<i>Fire</i>	2	1	1
<i>Environmental Exposure</i>	0	1	0
<i>Asphyxia</i>	1	3	4 ³
<i>Other</i>	2	3	2 ⁴
<i>Total</i>	93	69	75

Drug-Related Deaths by Manner, Grand Traverse County

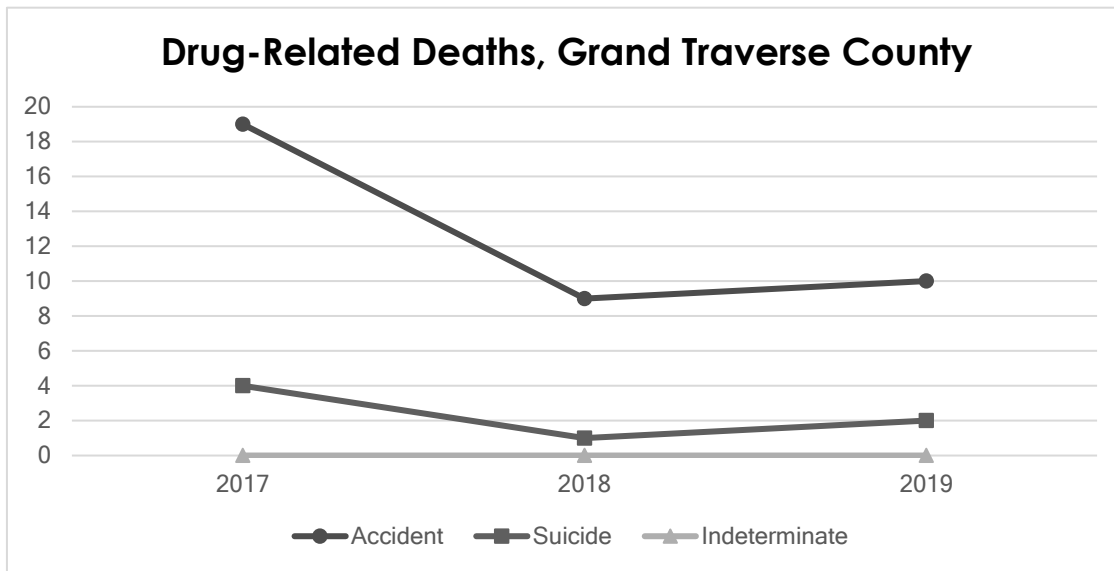
	2017	2018	2019
<i>Accident</i>	19	9	10
<i>Suicide</i>	4	1	2
<i>Indeterminate</i>	0	0	0
<i>Total</i>	23	10	12
<i>Total involving opioid(s)</i>	18	8	8
<i>% of Accidental and Indeterminate Deaths Involving Opioids</i>	84%	89%	70%

¹ Includes (1) Passenger of watercraft that fell into water and was struck by propeller

² Includes (1) Drove into pond while intoxicated

³ (3) Asphyxia due to choking; (1) Compression asphyxia, pinned by dresser

⁴ (1) Electrocution; (1) Blunt force injuries, struck snow machine while downhill skiing



Drug-Related Accidental Deaths, Grand Traverse County

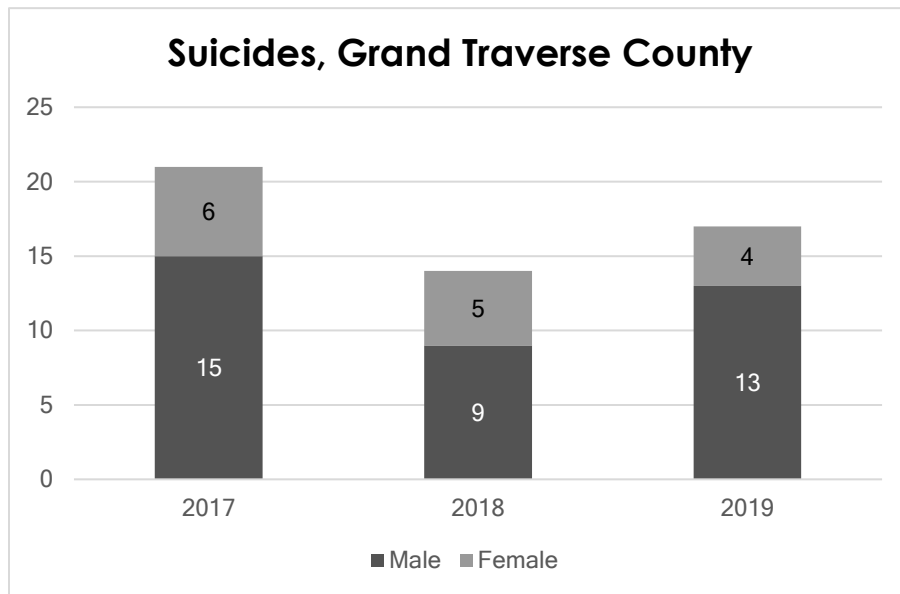
Age	Sex	Race	Zip Code of Death	Substances Contributing to Death	Opioid (Y/N)
25	F	W	49684	Fentanyl, methamphetamine	Y
25	M	W	49686	Alcohol, fentanyl	Y
26	M	W	49684	Alcohol	N
30	M	W	49690	Loperamide	Y
31	M	W	49620	Alcohol, alprazolam, fentanyl, morphine	Y
31	M	W	49684	Amphetamine, fentanyl, methamphetamine	Y
43	M	W	49696	Fentanyl, methadone, methamphetamine	Y
55	F	W	49686	Alcohol, venlafaxine	N
60	M	W	49685	Buprenorphine, chlorpheniramine, diazepam	Y
86	M	W	49684	Baclofen, gabapentin, levetiracetam, trazodone	N

Suicides by Sex & Age, Grand Traverse County

Year	Total	Male	Female	0 - 17	18 - 64	26 - 44	45 - 64	65 +
2017	21	15	6	0	3	3	9	6
2018	14	9	5	2	1	6	5	0
2019	17	13	4	3	0	9	3	2

Suicides by Mechanism, Grand Traverse County

	2017	2018	2019
<i>Firearm</i>	11	5	9
<i>Hanging</i>	4	5	4
<i>Carbon Monoxide</i>	0	0	1
<i>Drug Intoxication</i>	4	1	2
<i>Motor Vehicle</i>	1	1	0
<i>Sharp Force Trauma</i>	1	1	0
<i>Asphyxia/Suffocation</i>	0	0	0
<i>Other</i>	0	1	1 ¹
Total	21	14	17



¹ (1) Asphyxia due to displacement of oxygen by carbon dioxide and airway occlusion via plastic bag

KALAMAZOO COUNTY

Summary of All Kalamazoo County Cases

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Total Deaths in the County</i>	2,582	2,540	2,668	2,684	2,733	2,879	2,840	2,977	2,911 ¹
<i>Deaths Reported to the ME</i>	828	778	777	750	810	975	991	1,068	1,060
<i>Deaths Investigated</i>	N/A	556	580	560	646	745	733	782	781
<i>MEI Scene Investigations</i>	498	503	549	411	434	560	627	677	650
<i>Death Certificates by ME</i>	394	362	358	355	306	390	406	405	401
<i>Bodies Transported to WMed</i>	244	233	241	253	247	318	307	330	290
<i>Complete Autopsy</i>	178	187	193	174	142	192	189	187	180
<i>Limited Autopsy</i>	10	4	4	6	7	7	4	9	7
<i>External Examination</i>	50	34	37	37	52	60	64	68	62
<i>Storage Only at WMed</i>	6	8	7	36	46	59	50	62	41
<i>Total Cases with Toxicology</i>	198	212	222	198	174	222	238	238	224
<i>Unidentified Remains After Exam</i>	14	0	0	0	0	0	0	1	0
<i>Referrals to Gift of Life</i>	9	46	65	95	113	161	156	129	136
<i>Tissue Donations</i>	3	4	4	6	9	22	16	16	17
<i>Cornea Donations</i>	2	4	9	9	9	20	10	7	7
<i>Unclaimed Investigations</i>	14	9	7	10	10	10	13	41	40
<i>Exhumations</i>	0	0	0	0	0	1	0	0	0

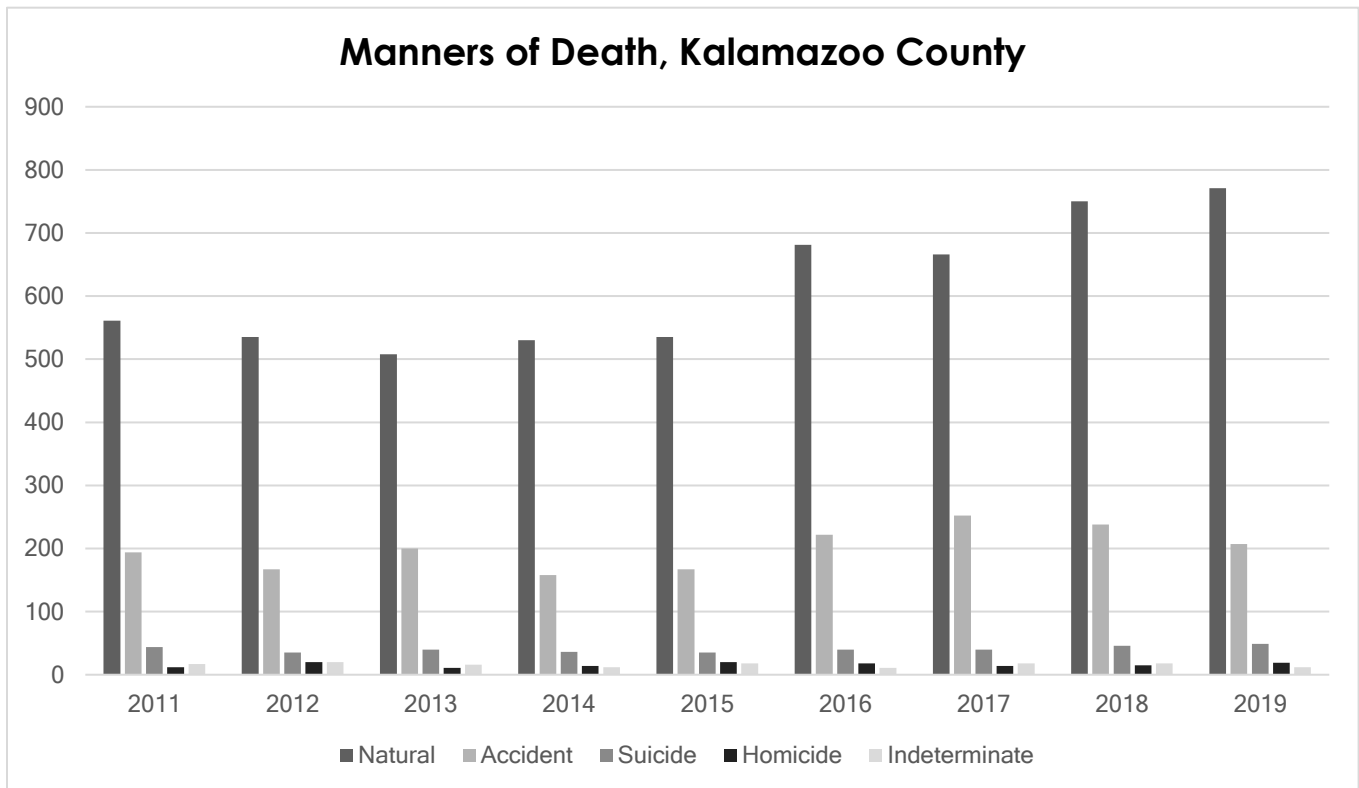
Cremation Permit Authorizations, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Cremation Permits</i>	1,485	1,467	1,740	1,782	1,672	1,856	1,920	2,101	2,028
<i>% of Total Deaths with Cremation</i>	58%	58%	65%	66%	61%	64%	68%	71%	70%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Natural</i>	561	535	508	530	588	681	666	750	771
<i>Accident</i>	194	167	200	158	151	222	252	238	207
<i>Suicide</i>	44	35	40	36	38	40	40	46	49
<i>Homicide</i>	12	20	11	14	14	18	14	15	19
<i>Indeterminate</i>	17	20	16	12	19	11	18	17	12
Total	828	777	775	750	810	971	990	1066	1058¹



¹ Does not include (2) stillbirth investigations (cremation authorizations)

Deaths Reported by Age (in years), Kalamazoo County¹

	< 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	14	8	0	11	29	76	209	429
2014	7	3	5	5	29	61	239	399
2015	14	5	3	7	21	82	220	441
2016	5	5	3	12	37	95	269	494
2017	15	6	3	10	35	103	259	513
2018	13	5	1	9	23	97	297	571
2019	6	6	3	5	37	98	293	610

Pediatric Deaths, Kalamazoo County

The 20 deaths of individuals under 18 years of age include:

1. <1 year old
 - a. (3) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep; indeterminate
 - b. (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep, bronchiolitis, and bronchopneumonia; indeterminate
 - c. (1) Complications of ileal atresia; natural
 - d. (1) Positional asphyxia due to wedging; accident
2. 1-5 years old
 - a. (1) Complications of multiple congenital anomalies; natural
 - b. (1) Complications of congenital heart disease (truncus arteriosus); natural
 - c. (1) Multiple injuries; homicide
 - d. (1) Multiple injuries, passenger in horse drawn vehicle collision with motor vehicle; accident
 - e. (1) Complications of Epstein-Barr virus Encephalitis; natural
 - f. (1) Complications of atypical teratoid rhabdoid tumor; natural
3. 6-10 years old
 - a. (1) Complications of megacolon; natural
 - b. (2) Drowning, involuntary passenger in motor vehicle intentionally driven into river; homicide
4. 11-17 years old
 - a. (3) Hanging; suicide
 - b. (1) Hanging; indeterminate
 - c. (1) Multiple blunt force injuries, motor vehicle collision while operating motorized bicycle; accident

¹ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Accidental Deaths by Mechanism, Kalamazoo County

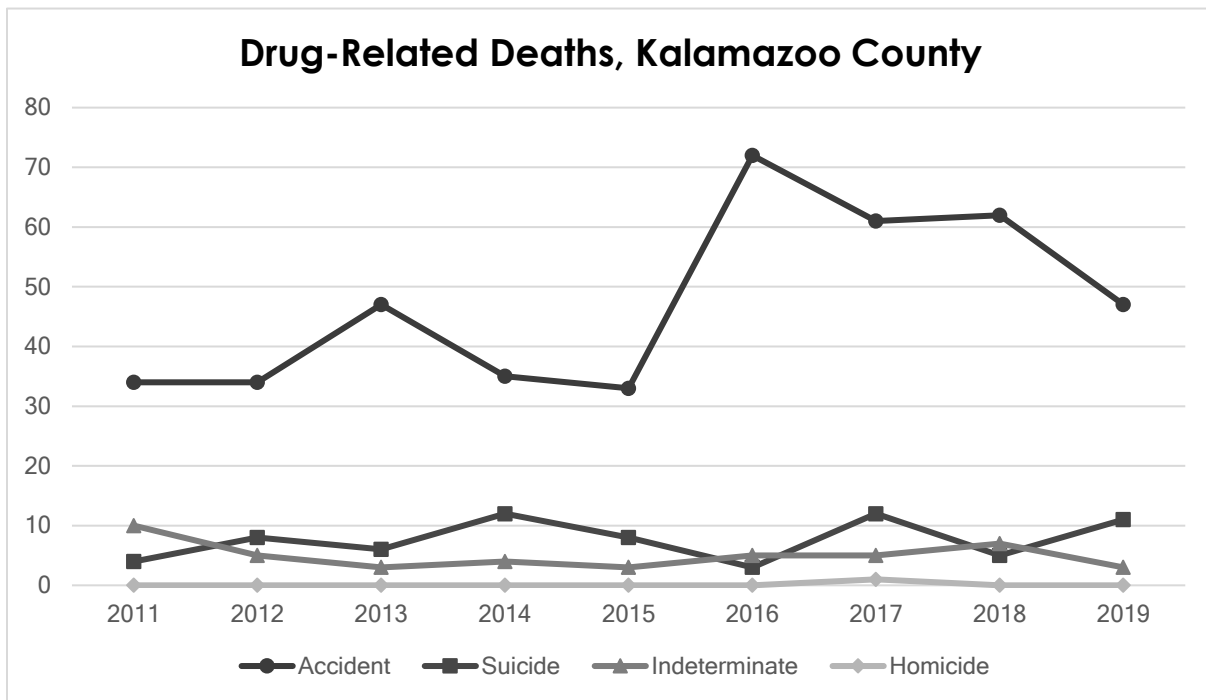
	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Vehicle</i>	46	48	60	35	46	58	72	51	45
<i>Drug-Related</i>	33	34	47	35	33	72	61	63	47
<i>Drowning</i>	5	2	2	3	1	4	7	9	5
<i>Fall</i>	92	67	76	77	57	80	92	100	85
<i>Fire</i>	5	2	8	3	3	4	5	4	5
<i>Environmental Exposure</i>	2	4	1	1	1	1	2	3	5
<i>Asphyxia</i>	6	3	4	2	7	3	6	6	12 ¹
<i>Other</i>	6	7	3	4	3	1	7	3	3 ²
Total	195	167	200	160	151	223	252	238	207

Drug-Related Deaths by Manner, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Accident</i>	34	34	47	35	33	72	61	63	47
<i>Suicide</i>	4	8	6	12	8	3	12	5	11
<i>Homicide</i>	0	0	0	0	0	0	1	0	0
<i>Indeterminate</i>	10	5	3	4	3	5	5	7	3
Total	48	47	56	51	44	80	79	75	61
<i>Total involving opioid(s)</i>	N/A	N/A	N/A	N/A	30	64	59	51	32
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	N/A	N/A	N/A	N/A	83%	82%	74%	73%	60%

¹ (9) Asphyxia due to choking; (2) Positional asphyxia; (1) Asphyxia due to wedging

² (1) Carbon monoxide inhalation; (1) Post-traumatic seizure disorder of unknown etiology due to multiple closed head injuries; (1) Multiple injuries due to compression by heavy machinery



Drug-Related Accidental & Indeterminate Deaths, Kalamazoo County

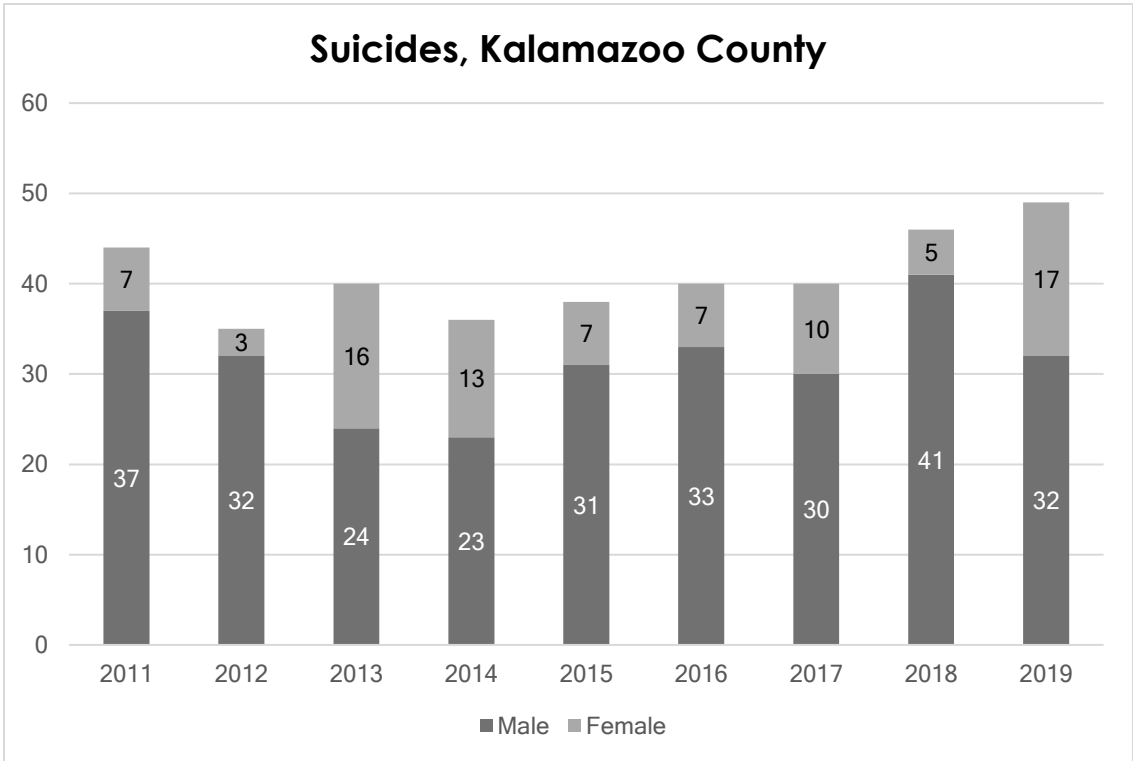
Age	Sex	Race	Zip Code of Death	Substances Contributing to Death	Opioid (Y/N)
20	F	W	49009	Alcohol, cocaethylene, cocaine, dextro/levo methorphan	N
22	F	W	49007	Heroin	Y
25	M	W	49007	Acetyl fentanyl, fentanyl, heroin	Y
25	M	H	49001	Fentanyl, xylazine	Y
25	M	W	49007	Methamphetamine	N
26	M	W	49048	Acetyl fentanyl, alprazolam, clonazepam, fentanyl, methamphetamine	Y
26	M	W	49007	Acetyl fentanyl, alcohol, fentanyl	Y
28	M	W	49048	Fentanyl, methamphetamine, mitragynine	Y
29	F	W	49007	Heroin	Y
29	M	W	49007	Fentanyl	Y
29	M	W	49024	Fentanyl, methadone, mitragynine, morphine	Y
29	M	W	49001	Methamphetamine	N
31	F	W	49048	Alcohol, fentanyl, methamphetamine	Y
32	M	W	49009	1,1-Difluoroethane	N
34	M	W	49083	Acetaminophen, alcohol, diphenhydramine, hydrocodone, mitragynine, prochlorperazine, trazodone, venlafaxine	Y
34	M	H	49007	Fentanyl, xylazine	Y
36	M	W	49001	Amphetamine, ephedrine, methamphetamine	N

38	F	W	49048	Alprazolam, diazepam, methadone	Y
38	M	W	49048	Methamphetamine	N
39	M	W	49048	Cocaine, methamphetamine	N
41	F	W	49002	Cocaethylene, cocaine, gabapentin, methadone, venlafaxine, zolpidem	Y
42	M	W	49001	Fentanyl, para-fluoroisobutyrylfentanyl	Y
43	F	W	49024	Alcohol, amlodipine, dextromethorphan, fluoxetine, lurasidone	N
43	F	W	49001	Acetyl fentanyl, alcohol, cocaine, fentanyl	Y
48	M	W	49007	Fentanyl, morphine	Y
48	M	W	49053	Acetyl fentanyl, fentanyl, methamphetamine	Y
49	F	W	49048	Methamphetamine	N
49	M	W	49009	Fentanyl, heroin, methamphetamine, methoxyacetylfentanyl	Y
49	F	W	49001	Methamphetamine, nordiazepam, trazodone	N
50	M	W	49009	Acetyl fentanyl, diazepam, diphenhydramine, fentanyl, trazodone	Y
51	F	W	49048	Fentanyl, methamphetamine	Y
52	M	W	49007	Methamphetamine	N
52	F	B	49001	Cocaethylene, cocaine, quetiapine	N
53	F	W	49024	Alcohol, diphenhydramine, fentanyl, heroin, nitrous oxide	Y
53	F	W	49004	Amphetamine, diazepam, 1,1-difluoroethane, hydrocodone, methamphetamine	Y
54	F	B	49007	Alcohol, cocaethylene, cocaine, diphenhydramine, fentanyl, hydrocodone, morphine	Y
54	M	W	49052	Methamphetamine	N
55	F	B	49048	Cocaine	N
56	M	H	49007	Acetyl fentanyl, alcohol, fentanyl, heroin, methamphetamine, xylazine	Y
57	M	W	49001	Fentanyl, methamphetamine	Y
57	F	B	49007	Acetyl fentanyl, cocaine, fentanyl, heroin, methamphetamine	Y
57	M	W	49007	Methamphetamine	N
60	F	B	49006	Cocaine	N
61	M	W	49048	Methamphetamine	N
61	M	W	49002	Alcohol, hydrocodone, methadone	Y
61	M	W	49048	Ephedrine, methamphetamine	N
64	M	B	49007	Acetyl fentanyl, cocaine, fentanyl, norfentanyl	Y
64	M	B	49048	Diphenhydramine, fentanyl, gabapentin, morphine, trazodone, xylazine	Y

67	M	W	49007	Methamphetamine	N
71	M	W	49048	Methamphetamine	N

Suicides by Sex & Age, Kalamazoo County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2011	44	37	7	0	7	13	16	8
2012	35	32	3	1	3	11	12	8
2013	40	24	16	5	12	4	12	7
2014	36	23	13	0	7	12	10	7
2015	38	31	7	3	6	8	14	7
2016	40	33	7	3	7	13	12	5
2017	40	30	10	1	3	14	14	8
2018	46	41	5	2	9	11	11	13
2019	49	32	17	3	13	14	13	6



Suicides by Mechanism, Kalamazoo County

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Firearm</i>	20	15	15	14	19	19	14	26	22
<i>Hanging</i>	12	8	13	7	9	13	12	13	12
<i>Carbon Monoxide</i>	2	1	0	0	1	2	0	0	0
<i>Drug Intoxication</i>	4	8	6	12	8	3	12	5	11
<i>Motor Vehicle</i>	0	0	1	1	1	0	0	0	2
<i>Sharp Force Trauma</i>	3	1	2	0	0	2	2	0	0
<i>Asphyxia/Suffocation</i>	1	1	3	1	0	0	0	1	1 ¹
<i>Other</i>	1	1	0	1	0	1	0	1	1 ²
Total	44	35	40	36	38	40	40	46	49

¹ (1) Ligature strangulation

² (1) Drowning (drove into river)

LEELANAU COUNTY

Summary of All Leelanau County Cases

	2017	2018	2019
<i>Total Deaths in the County</i>	148	175	145 ¹
<i>Deaths Reported to the ME</i>	39	46	33
<i>Deaths Investigated</i>	36	45	33
<i>MEI Scene Investigations</i>	24	41	28
<i>Death Certificates by ME</i>	21	15	13
<i>Bodies Transported to Morgue</i>	10	9	8
<i>Complete Autopsy</i>	9	7	6
<i>Limited Autopsy</i>	1	0	0
<i>External Examination</i>	0	2	2
<i>Storage Only</i>	0	0	0
<i>Total Cases with Toxicology</i>	10	8	8
<i>Unidentified Remains After Exam</i>	0	0	0
<i>Referrals to Gift of Life</i>	6	8	6
<i>Tissue Donations</i>	0	1	1
<i>Cornea Donations</i>	0	0	0
<i>Unclaimed Investigations</i>	0	0	0
<i>Exhumations</i>	0	0	0

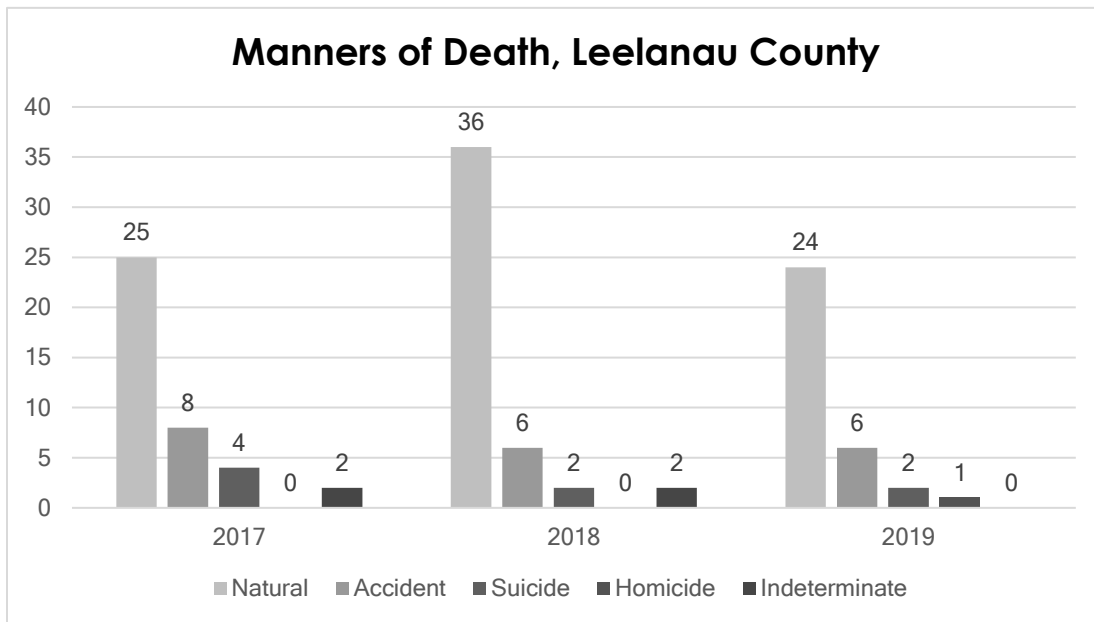
Cremation Permit Authorizations, Leelanau County

	2017	2018	2019
<i>Cremation Permits</i>	105	130	102
<i>% of Total Deaths with Cremation</i>	71%	74%	70%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Leelanau County

	2017	2018	2019
<i>Natural</i>	25	36	24
<i>Accident</i>	8	6	6
<i>Suicide</i>	4	2	2
<i>Homicide</i>	0	0	1
<i>Indeterminate</i>	2	2	0
Total	39	46	33



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
2019	0	0	0	0	1	2	5	25

Accidental Deaths by Mechanism, Leelanau County

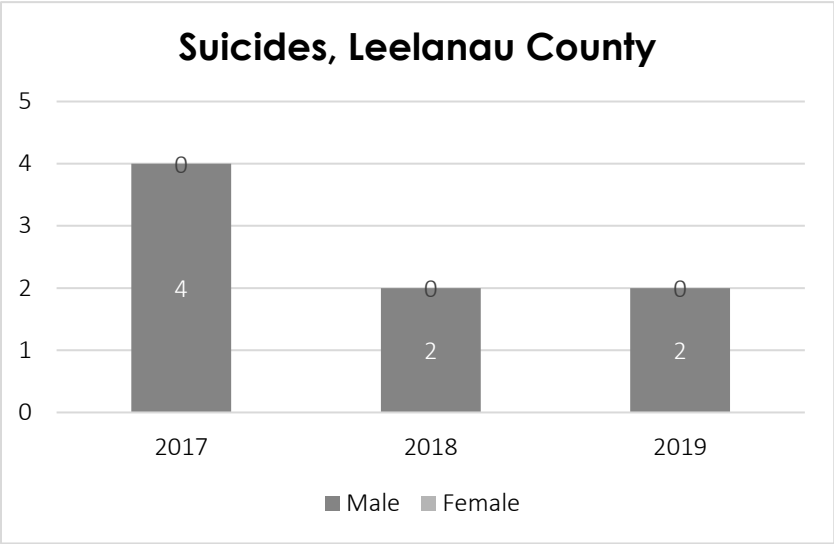
	2017	2018	2019
<i>Vehicle</i>	2	1	3
<i>Drug-Related</i>	1	1	0
<i>Drowning</i>	0	2	2
<i>Fall</i>	0	1	1
<i>Fire</i>	0	0	0
<i>Environmental Exposure</i>	0	0	0
<i>Asphyxia</i>	0	1	0
<i>Other</i>	1	0	0
Total	4	6	6

Drug-Related Deaths by Manner, Leelanau County

	2017	2018	2019
<i>Accident</i>	1	1	0
<i>Suicide</i>	0	0	0
<i>Indeterminate</i>	0	0	0
Total	1	1	0
<i>Total involving opioid(s)</i>	1	0	0
<i>% of Accidents and Indeterminate Manners Involving Opioids</i>	100%	0%	0%

Suicides by Sex & Age, Leelanau County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	4	4	0	1	0	0	1	2
2018	2	2	0	0	0	0	0	2
2019	2	2	0	0	0	1	1	0



Suicides by Mechanism, Leelanau County

	2017	2018	2019
<i>Firearm</i>	2	2	2
<i>Hanging</i>	1	0	0
<i>Carbon Monoxide</i>	0	0	0
<i>Drug Intoxication</i>	0	0	0
<i>Motor Vehicle</i>	0	0	0
<i>Sharp Force Trauma</i>	0	0	0
<i>Asphyxia/Suffocation</i>	0	0	0
<i>Other</i>	1	0	0
Total	4	2	2

MASON COUNTY

Summary of All Mason County Cases

	2018	2019
<i>Total Deaths in the County</i>	311	287 ¹
<i>Deaths Reported to the ME</i>	107	110
<i>Deaths Investigated</i>	92	93
<i>MEI Scene Investigations</i>	88	84
<i>Death Certificates by ME</i>	53	52
<i>Bodies Transported to Morgue</i>	37	34
<i>Complete Autopsy</i>	29	25
<i>Limited Autopsy</i>	0	0
<i>External Examination</i>	6	7
<i>Storage Only</i>	2	2
<i>Total cases with Toxicology</i>	32	31
<i>Unidentified Remains After Exam</i>	0	0
<i>Referrals to Gift of Life</i>	16	10
<i>Tissue Donations</i>	3	2
<i>Cornea Donations</i>	0	1
<i>Unclaimed Investigations</i>	1	0
<i>Exhumations</i>	0	0

Cremation Permit Authorizations, Mason County

	2018	2019
<i>Cremation Permits</i>	231	224
<i>% of Total Deaths with Cremation</i>	74%	78%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Mason County

	2018	2019
<i>Natural</i>	84	82
<i>Accident</i>	16	24
<i>Suicide</i>	7	2
<i>Homicide</i>	0	1
<i>Indeterminate</i>	0	1 ¹
Total	107	110

Deaths Reported by Age (in years), Mason County²

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	0	0	0	3	2	13	25	63
2019	0	0	0	1	5	7	30	67

Pediatric Deaths, Mason County

The one death of individuals under 18 years of age include:

1. 11-17 years old
 - a. (1) Drowning; accident

Accidental Deaths by Mechanism, Mason County

	2018	2019
<i>Vehicle</i>	5	6
<i>Drug-Related</i>	7	2
<i>Drowning</i>	1	7
<i>Fall</i>	3	6
<i>Fire</i>	0	0
<i>Environmental Exposure</i>	0	3
<i>Asphyxia</i>	0	0
<i>Other</i>	0	0
Total	16	24

¹ (1) Mixed drug intoxication

² All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Suicides by Sex & Age, Mason County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	7	4	3	1	0	3	3	0
2019	2	1	1	0	1	1	0	0

Suicides by Mechanism, Mason County

	2018	2019
<i>Firearm</i>	2	2
<i>Hanging</i>	4	0
<i>Carbon Monoxide</i>	0	0
<i>Drug Intoxication</i>	1	0
<i>Motor Vehicle</i>	0	0
<i>Sharp Force Trauma</i>	0	0
<i>Asphyxia/Suffocation</i>	0	0
<i>Other</i>	0	0
Total	7	2

Drug-Related Deaths by Manner, Mason County

	2018	2019
<i>Accident</i>	7	2
<i>Suicide</i>	1	0
<i>Indeterminate</i>	0	1
Total	8	3
<i>Total involving opioid(s)</i>	4	1
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	57%	33%

Drug-Related Accidental & Indeterminate Deaths, Mason County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
37	F	W	49454	Gabapentin, hydrocodone, verapamil	Y
48	M	W	49431	Cocaine, methamphetamine	N
58	M	W	49410	Methamphetamine	N

MUSKEGON COUNTY

Summary of All Muskegon County Cases

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Total Deaths in the County</i>	1,625	1,693	1,600	1,730	1,707	1,784	1,759	1,784	1,841	1,844 ¹
<i>Deaths Reported to the ME</i>	544	440	481	527	524	605	585	629	662	670
<i>Deaths Investigated</i>	N/A	N/A	412	424	453	530	504	468	504	523
<i>MEI Scene Investigations</i>	353	310	384	420	444	501	469	425	463	467
<i>Death Certificates by ME</i>	213	201	203	216	228	251	231	234	235	248
<i>Bodies Transported to Morgue</i>	163	161	132	148	178	159	167	159	161	177
<i>Complete Autopsy</i>	135	122	106	120	144	120	114	108	117	134
<i>Limited Autopsy</i>	5	10	2	6	2	4	2	4	4	5
<i>External Examination</i>	22	21	22	18	18	35	41	43	35	30
<i>Storage Only</i>	1	8	2	4	4	0	10	4	4	8
<i>Total Cases with Toxicology</i>	147	153	119	142	152	160	136	140	147	160
<i>Unidentified Remains After Exam</i>	0	0	0	0	0	0	0	0	0	0
<i>Referrals to Gift of Life</i>	27	70	81	93	156	139	109	122	128	104
<i>Tissue Donations</i>	3	7	8	9	14	17	12	9	15	12
<i>Cornea Donations</i>	3	8	11	12	16	20	11	7	8	6
<i>Unclaimed Investigations</i>	0	4	4	3	6	5	7	12	15	14
<i>Exhumations</i>	0	0	0	0	0	0	0	0	0	0

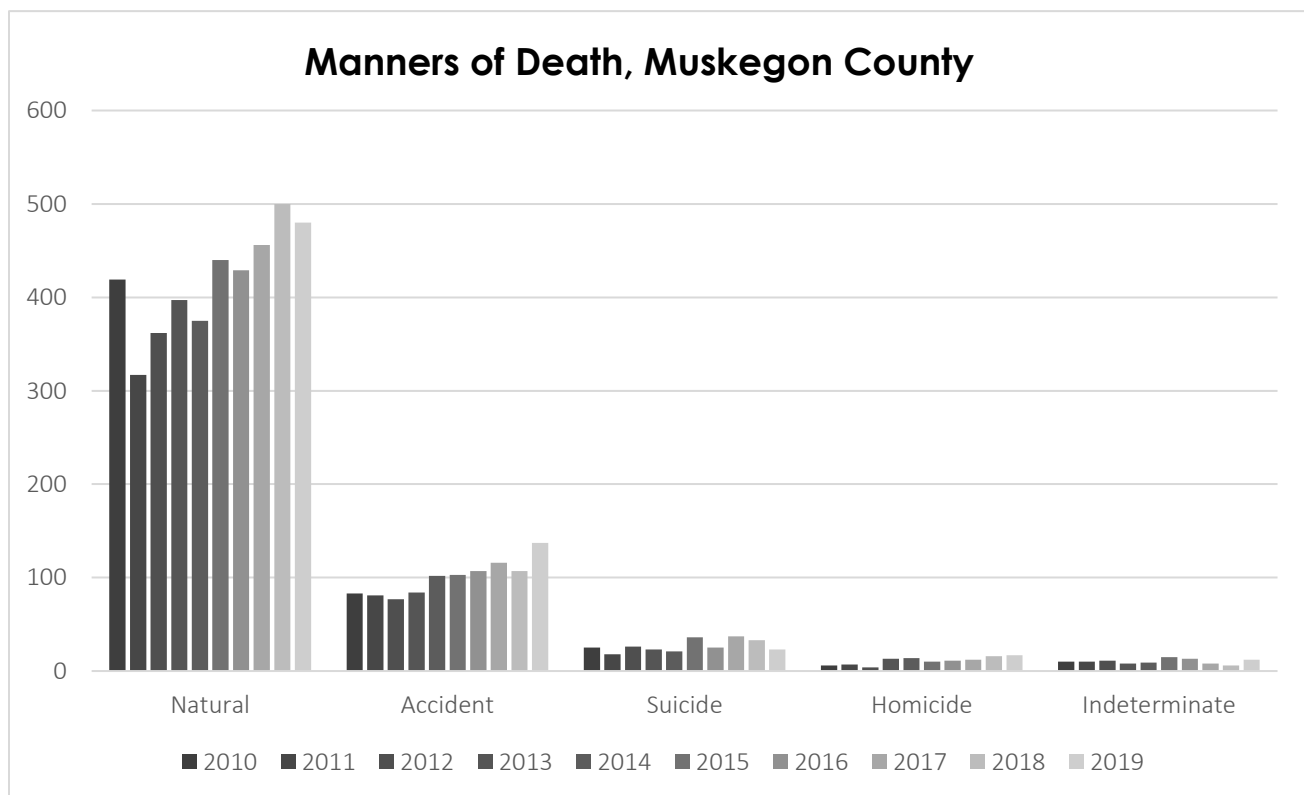
¹ Provisional total number of deaths occurring in the county

Cremation Permit Authorizations, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Cremation Permits</i>	893	812	952	986	1,007	1,116	1,138	1,188	1,264	1,383
<i>% of Total Deaths with Cremation</i>	55%	48%	60%	57%	59%	63%	65%	67%	68%	75%

Manners of Death Reported, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Natural</i>	419	317	362	397	375	440	429	456	500	480
<i>Accident</i>	83	81	77	84	102	103	107	116	107	137
<i>Suicide</i>	25	18	26	23	21	36	25	37	33	23
<i>Homicide</i>	6	7	4	13	14	10	11	12	16	17
<i>Indeterminate</i>	10	10	11	8	9	15	13	8	6	12
Total	544	440	480	525	524	604	585	629	662	669¹



¹ Does not include (1) stillbirth investigation (cremation authorization)

Deaths Reported by Age (in years), Muskegon County¹

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	8	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	9	1	2	2	24	61	199	304
2016	4	2	1	5	18	55	184	303
2017	3	1	0	8	14	81	168	344
2018	1	2	3	1	16	88	190	344
2019	2	0	0	1	22	74	177	393

Pediatric Deaths, Muskegon County

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

1. <1 year old
 - a. (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep; indeterminate
 - b. (1) Sudden Unexplained Infant Death (SUID) associated with unsafe sleep and viral bronchiolitis; indeterminate
2. 11-17 years old
 - a. (1) Gunshot wound of head; homicide

¹ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Accidental Deaths by Mechanism, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Vehicle</i>	16	25	18	13	18	22	22	22	21	33 ¹
<i>Drug-Related</i>	31	30	20	37	47	39	40	47	40	46
<i>Drowning</i>	3	4	4	4	4	4	2	4	2	5 ²
<i>Fall</i>	21	17	27	26	29	29	32	38	37	43
<i>Fire</i>	3	3	0	0	1	3	1	0	0	1
<i>Environmental Exposure</i>	0	0	0	0	1	1	4	0	1	2
<i>Asphyxia</i>	6	1	4	2	2	3	4	2	5	4 ³
<i>Other</i>	2	1	3	0	1	2	2	3	2	3 ⁴
Total	82	81	76	82	103	103	107	116	107	137

Drug-Related Deaths by Manner, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Accident</i>	31	30	20	37	47	39	39	47	40	46
<i>Suicide</i>	9	3	5	1	2	7	3	4	10	4
<i>Indeterminate</i>	5	3	2	2	5	4	6	3	1	5
Total	45	36	27	40	54	50	48	54	51	55
<i>Total involving opioid(s)</i>	N/A	N/A	N/A	N/A	N/A	43	41	43	39	43
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	N/A	N/A	N/A	N/A	N/A	95%	87%	84%	85%	84%

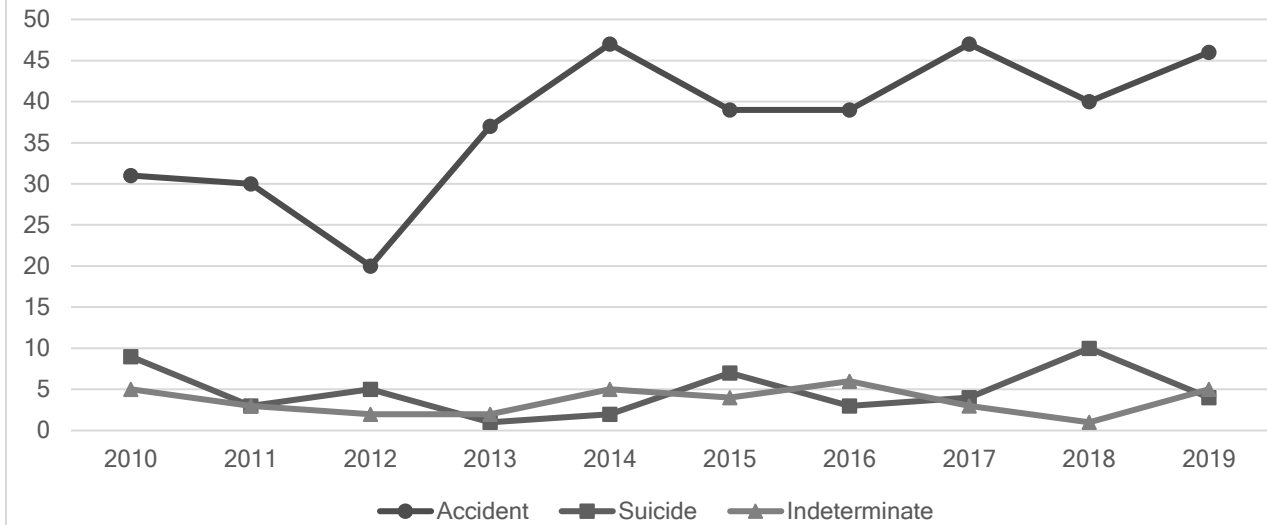
¹ Includes (1) Multiple injuries due to private airplane crash, pilot

² Includes (2) Drowning associated with mixed drug intoxication

³ (2) Asphyxia due to choking; (2) Asphyxia due to hanging

⁴ (1) Carbon monoxide intoxication; (1) Blunt force spine injury of presumed accidental trauma; (1) Exsanguination due to severed dialysis port catheters

Drug-Related Deaths, Muskegon County



Drug-Related Accidental & Indeterminate Deaths, Muskegon County

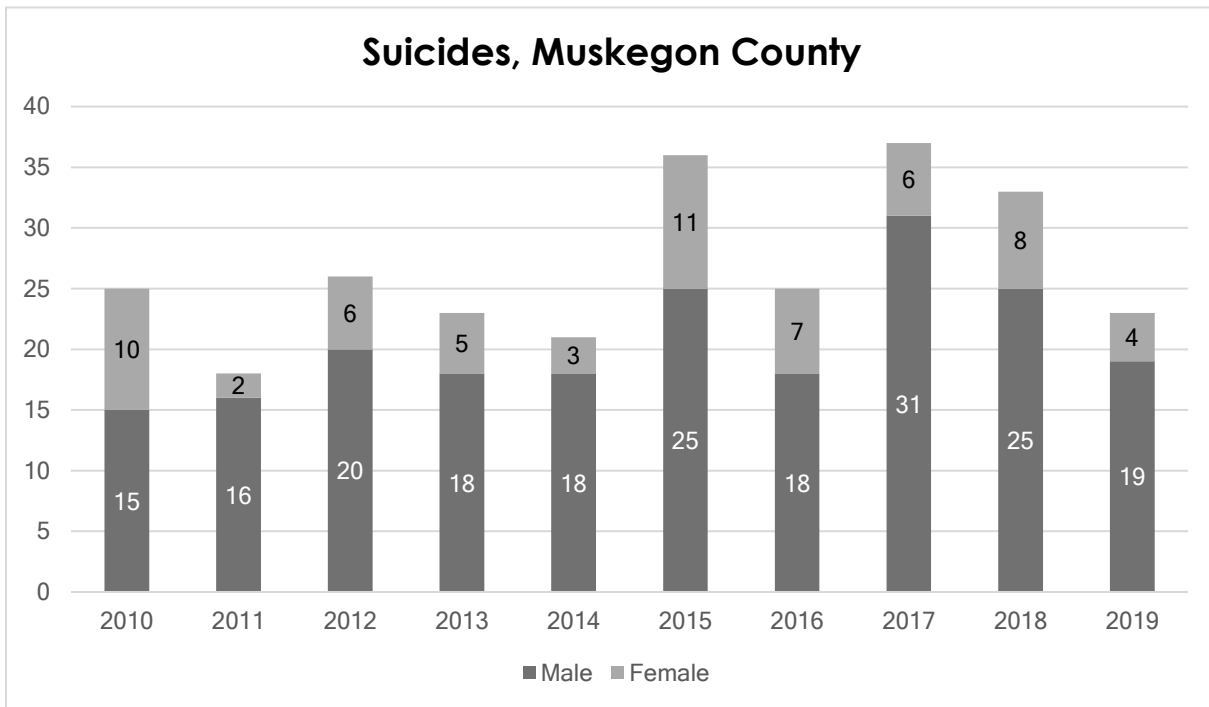
Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
18	M	W	49441	Clonazepam, fentanyl, heroin, valeryl fentanyl	Y
21	F	W	49457	Cocaine, fentanyl, heroin	Y
22	M	W	49442	Fentanyl, methamphetamine, methylenedioxymethamphetamine (MDMA)	Y
24	M	W	49442	Alprazolam, fentanyl, heroin, methadone	Y
25	M	W	49444	Clonazepam, fentanyl, heroin, methadone	Y
25	F	W	49461	Acetyl fentanyl, butyrylfentanyl, fentanyl	Y
26	M	W	49442	Fentanyl, morphine (suspected heroin)	Y
26	M	W	49444	Clonazepam, fentanyl, morphine	Y
27	M	W	49444	Amphetamine, fentanyl, methamphetamine, morphine, valeryl fentanyl	Y
28	M	B	49444	Alcohol, fentanyl, morphine	Y
28	F	W	49442	Acetyl fentanyl, alprazolam, fentanyl, methamphetamine	Y
29	M	B	49442	Cocaine, fentanyl	Y
31	M	B	49441	Heroin	Y
31	M	W	49440	Acetyl fentanyl, fentanyl, gabapentin, hydrocodone	Y
32	M	W	49442	Alcohol, cocaine, fentanyl	Y
33	M	W	49442	Acetyl fentanyl, cocaine, diphenhydramine, fentanyl, xylazine	Y
34	F	W	49444	Fentanyl	Y

34	M	W	49444	Alcohol, fentanyl, heroin	Y
34	M	W	49445	Alcohol, duloxetine, mirtazapine, quetiapine	N
35	M	W	49444	Acetyl fentanyl, cocaine, diphenhydramine, fentanyl	Y
35	M	W	49441	Cocaine, flualprazolam, heroin	Y
36	M	W	49442	Fentanyl, methamphetamine	Y
37	M	W	49425	Gabapentin, methadone, orphenadrine	Y
40	M	W	49444	Cocaine	N
41	M	W	49442	Alprazolam, heroin, hydromorphone	Y
42	M	W	49444	Fentanyl, heroin	Y
44	M	B	49441	Acetyl fentanyl, fentanyl, heroin, quetiapine	Y
44	M	W	49442	Acetyl fentanyl, alcohol, fentanyl	Y
47	M	W	49441	Fentanyl, heroin, U-47700	Y
47	M	W	49444	Methadone, temazepam	Y
48	M	W	49442	Alcohol, duloxetine, quetiapine	N
50	M	W	49444	Alcohol, fentanyl	Y
50	M	W	49441	Fentanyl	Y
50	F	B	49444	Diazepam, fentanyl, methadone	Y
50	M	W	49444	Amitriptyline, cocaine	N
51	M	W	49441	Alcohol, hydroxyzine, morphine, trazodone	Y
51	M	B	49442	Alcohol, amphetamine, fentanyl, methamphetamine	Y
52	F	B	49441	Alprazolam, diazepam, hydrocodone, methadone, pregabalin	Y
54	F	W	49442	Cocaine, cyclobenzaprine, fluoxetine, gabapentin, hydroxyzine	N
57	F	B	49442	Alcohol, methadone	Y
57	M	W	49444	Duloxetine	N
59	M	W	49440	Alprazolam, hydroxyzine, methadone, olanzapine	Y
59	M	W	49461	Hydrocodone, methamphetamine, morphine	Y
60	M	B	49441	Cocaine	N
62	F	W	49441	Alprazolam, fentanyl	Y
63	M	W	49444	Alcohol, fentanyl, heroin, U-47700	Y
66	M	B	49442	Acetyl fentanyl, fentanyl, heroin	Y
66	M	W	49441	Acetyl fentanyl, fentanyl, heroin, U-47700	Y

66	M	W	49461	Acetyl fentanyl, butyrylfentanyl, fentanyl	Y
68	M	W	49445	Methamphetamine	N
71	M	B	49444	Acetyl fentanyl, alcohol, cocaine, fentanyl	Y

Suicides by Sex & Age, Muskegon County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2010	25	15	10	0	1	9	9	6
2011	18	16	2	2	1	7	5	3
2012	26	20	6	1	2	9	8	6
2013	23	18	5	0	2	10	7	4
2014	21	18	3	3	4	3	9	2
2015	36	25	11	0	7	10	8	11
2016	25	18	7	0	2	6	11	6
2017	37	31	6	3	4	10	15	5
2018	33	25	8	0	6	12	9	6
2019	23	19	4	0	3	8	8	4



Suicides by Mechanism, Muskegon County

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Firearm</i>	9	10	13	9	10	11	15	19	14	13
<i>Hanging</i>	5	4	7	7	7	15	5	10	9	5
<i>Carbon Monoxide</i>	2	0	0	1	0	1	1	1	0	0
<i>Drug Intoxication</i>	9	3	5	1	3	7	2	4	7	4
<i>Motor Vehicle</i>	0	0	0	2	1	2	0	0	0	0
<i>Sharp Force Trauma</i>	0	0	0	3	0	2	1	0	0	1
<i>Asphyxia/Suffocation</i>	0	1	1	0	0	0	1	1	0	0
<i>Other</i>	0	0	0	0	0	0	0	2	3	0
Total	25	18	26	23	21	36	25	37	33	23

OSCEOLA COUNTY

Summary of Osceola County Cases

	2018 ¹	2019
<i>Total Deaths in the County</i>	187	175 ²
<i>Deaths Reported to the ME</i>	62	72
<i>Deaths Investigated</i>	58	63
<i>MEI Scene Investigations</i>	55	62
<i>Death Certificates by ME</i>	31	29
<i>Bodies Transported to Morgue</i>	17	23
<i>Complete Autopsy</i>	12	12
<i>Limited Autopsy</i>	0	2
<i>External Examination</i>	4	7 ³
<i>Storage Only</i>	1	2
<i>Total Cases with Toxicology</i>	16	20
<i>Unidentified Remains After Exam</i>	1	1
<i>Referrals to Gift of Life</i>	10	16
<i>Tissue Donations</i>	1	1
<i>Cornea Donations</i>	1	1
<i>Unclaimed Investigations</i>	0	1
<i>Exhumations</i>	0	0

Cremation Permit Authorizations, Osceola County

	2018 ⁴	2019
<i>Cremation Permits</i>	86	128
<i>% of Total Deaths with Cremation</i>	46%	73%

¹ Data provided in this report includes January 1 to December 31, 2018, but WMed served as ME for only April 1 to December 31, 2018.

² Provisional total number of deaths occurring in the county

³ Includes (1) unidentified skull investigated in 2018 but not examined until January of 2019

⁴ Data includes only those cremation permits reviewed and approved at WMed

Manners of Death Reported, Osceola County

	2018	2019
<i>Natural</i>	44	54
<i>Accident</i>	13	12
<i>Suicide</i>	3	5
<i>Homicide</i>	0	1
<i>Indeterminate</i>	1	0
Total	61	72

Deaths Reported by Age (in years), Osceola County

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	1	1	0	1	0	4	13	41
2019	0	1	1	3	0	5	20	42

Pediatric Deaths, Osceola County

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

1. 1-5 years old
 - a. (1) Complications of ornithine transcarbamylase deficiency; natural
2. 6-10 years old
 - a. (1) Multiple injuries, pedestrian versus motor vehicle; accident
3. 11-17 years old
 - a. (1) Complications of Cornelia de Lange syndrome; natural
 - b. (1) Sepsis due to pyelonephritis; natural
 - c. (1) Drowning; accident

Suicides by Sex & Age, Osceola County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65+
2018	3	2	1	1	0	1	1	0
2019	5	5	0	0	0	1	3	1

Suicides by Mechanism, Osceola County

	2018	2019
<i>Firearm</i>	2	4
<i>Hanging</i>	1	1
<i>Carbon Monoxide</i>	0	0
<i>Drug Intoxication</i>	0	0
<i>Motor Vehicle</i>	0	0
<i>Sharp Force Trauma</i>	0	0
<i>Asphyxia/Suffocation</i>	0	0
<i>Other</i>	0	0
Total	3	5

Accidental Deaths by Mechanism, Osceola County

	2018	2019
<i>Vehicle</i>	4	6
<i>Drug-Related</i>	2	3
<i>Drowning</i>	0	2
<i>Fall</i>	3	0
<i>Fire</i>	0	0
<i>Environmental Exposure</i>	0	0
<i>Asphyxia</i>	2	1 ¹
<i>Other</i>	2	0
Total	13	12

¹ (1) Pinned between car and tree, circumstances unclear

Drug-Related Deaths by Manner, Osceola County

	2018	2019
<i>Accident</i>	2	3
<i>Suicide</i>	0	0
<i>Indeterminate</i>	0	0
Total	2	3
<i>Total involving opioid(s)</i>	1	2
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	50%	66%

Drug-Related Accidental Deaths, Osceola County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
30	M	W	49655	Alcohol, alprazolam, fentanyl	Y
46	F	W	49677	Diphenhydramine, methadone	Y
59	F	W	49665	Alprazolam, butalbital	N

ST. JOSEPH COUNTY

Summary of St. Joseph County Cases

	2017	2018	2019
<i>Total Deaths in the County</i>	508	530	506 ¹
<i>Deaths Reported to the ME</i>	164	157	150
<i>Deaths Investigated</i>	155	150	145
<i>MEI Scene Investigations</i>	147	141	134
<i>Death Certificates by ME</i>	66	69	70
<i>Bodies Transported to Morgue</i>	56	67	61
<i>Complete Autopsy</i>	34	39	34
<i>Limited Autopsy</i>	1	2	3
<i>External Examination</i>	14	20	17
<i>Storage Only</i>	7	5	7
<i>Total Cases with Toxicology</i>	43	55	51
<i>Unidentified Remains After Exam</i>	2	0	1
<i>Referrals to Gift of Life</i>	53	45	41
<i>Tissue Donations</i>	7	6	6
<i>Cornea Donations</i>	2	3	4
<i>Unclaimed Investigations</i>	1	4	8
<i>Exhumations</i>	0	0	0

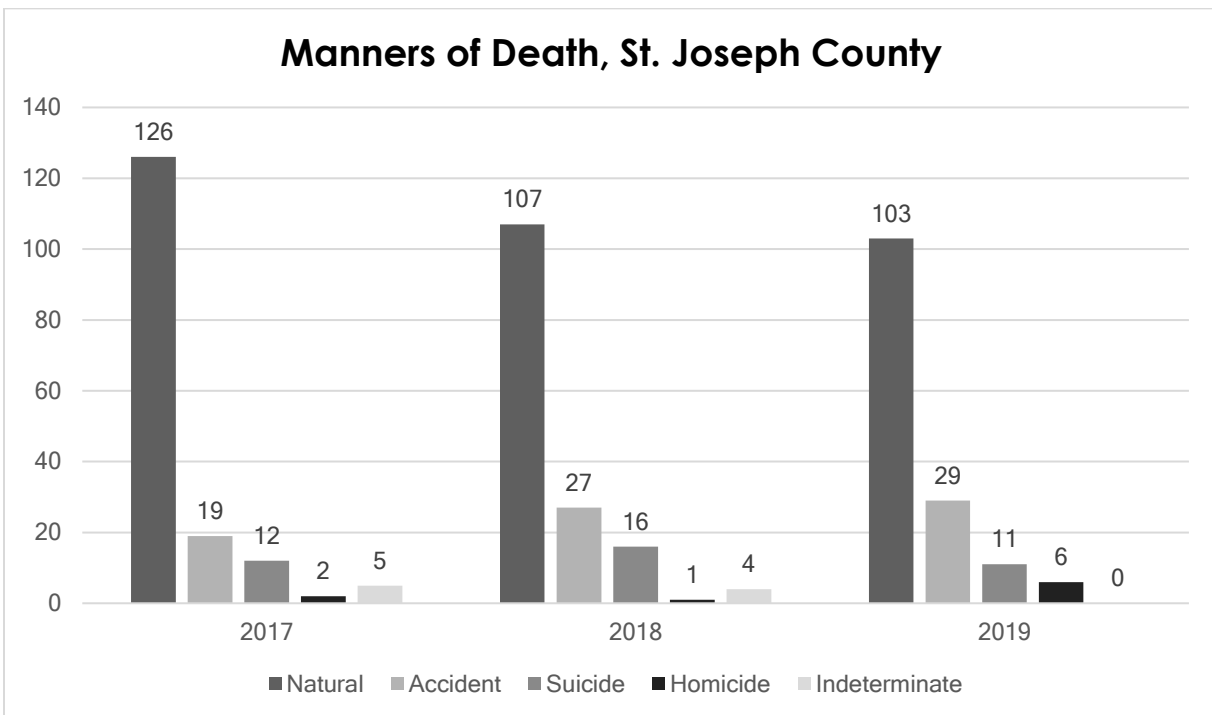
Cremation Permit Authorizations, St. Joseph County

	2017	2018	2019
<i>Cremation Permits</i>	309	306	327
<i>% of Total Deaths with Cremation</i>	61%	58%	65%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, St. Joseph County

	2017	2018	2019
<i>Natural</i>	126	107	103
<i>Accident</i>	19	27	29
<i>Suicide</i>	12	16	11
<i>Homicide</i>	2	1	6
<i>Indeterminate</i>	5	4	0
Total	164	155	149



Deaths Reported by Age (in years), St. Joseph County¹

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	1	0	0	1	2	19	60	78
2018	3	2	1	3	9	17	46	70
2019	0	1	0	2	3	23	49	71

¹ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Pediatric Deaths, St. Joseph County

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

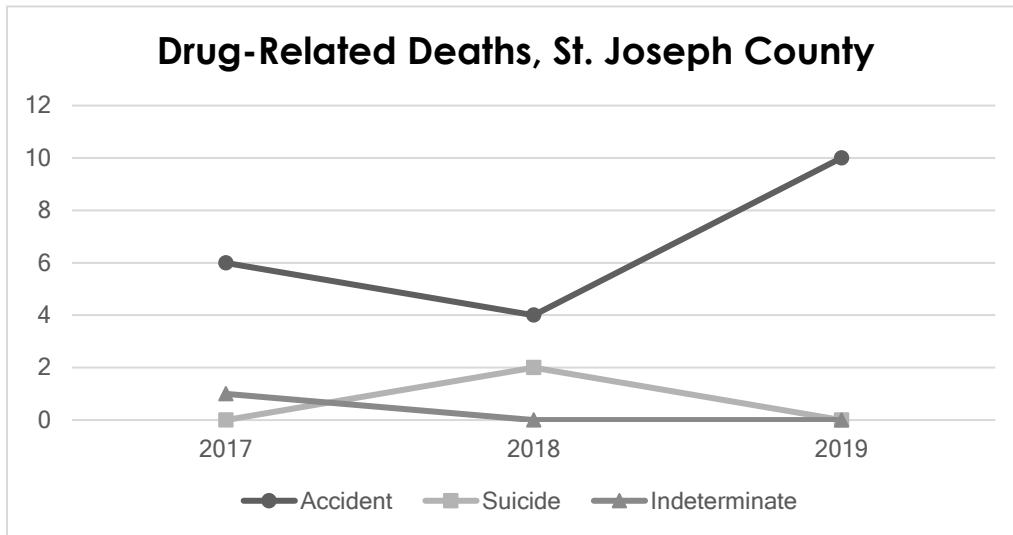
1. 1-5 years old
 - a. (1) Drowning in pool; accident
2. 11-17 years old
 - a. (1) Acute drug intoxication; suicide
 - b. (1) Blunt force injuries, occupant of go-cart pulled by all-terrain vehicle in collision with fixed object; accident

Accidental Deaths by Mechanism, St. Joseph County

	2017	2018	2019
<i>Vehicle</i>	8	15	11
<i>Drug-Related</i>	6	4	10
<i>Drowning</i>	2	1	3
<i>Fall</i>	1	3	4
<i>Fire</i>	1	4	0
<i>Environmental Exposure</i>	0	0	1
<i>Asphyxia</i>	1	1	0
<i>Other</i>	0	0	0
Total	19	27	29

Drug-Related Deaths by Manner, St. Joseph County

	2017	2018	2019
<i>Accident</i>	6	4	10
<i>Suicide</i>	0	2	1
<i>Indeterminate</i>	1	0	0
Total	7	6	11
<i>Total involving opioid(s)</i>	6	4	4
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	86%	75%	40%

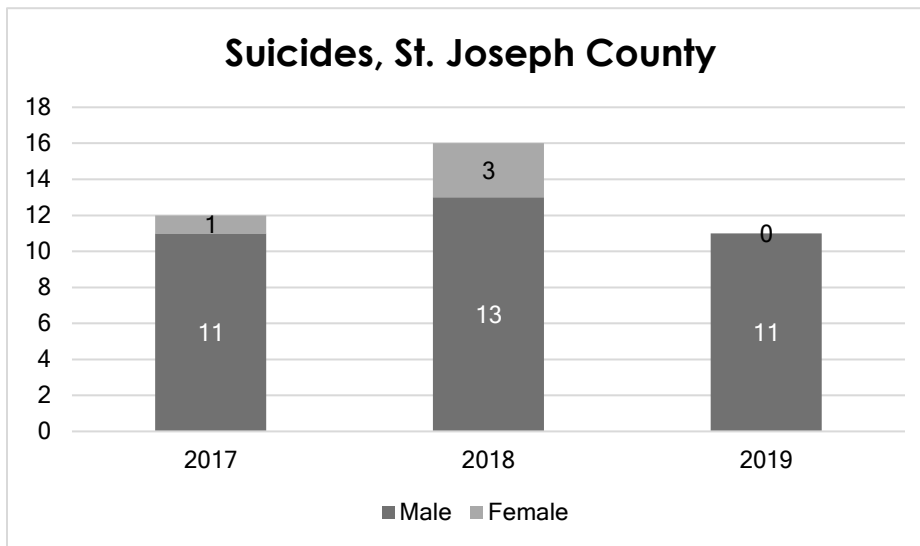


Drug-Related Accidental Deaths, St. Joseph County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
26	F	W	49072	Acetyl fentanyl, fentanyl, heroin	Y
36	F	W	49093	Alcohol	N
39	F	B	49093	Cocaine	N
45	F	W	49091	Clonazepam, desipramine, imipramine, mirtazapine, topiramate	N
51	F	W	49091	Cyclobenzaprine, diphenhydramine, hydrocodone, methamphetamine	Y
51	M	W	49093	Methamphetamine	N
55	M	W	49072	Alcohol, oxycodone	Y
56	M	W	49093	Methamphetamine	N
57	M	W	49093	Methamphetamine	N
58	M	W	49093	Diazepam, oxycodone	Y

Suicides by Sex & Age, St. Joseph County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2017	12	11	1	0	1	6	3	2
2018	16	13	3	3	3	4	4	2
2019	11	11	0	1	1	5	2	2



Suicides by Mechanism, St. Joseph County

	2017	2018	2019
<i>Firearm</i>	4	7	8
<i>Hanging</i>	5	6	1
<i>Carbon Monoxide</i>	3	0	1 ¹
<i>Drug Intoxication</i>	0	2	1
<i>Motor Vehicle</i>	0	0	0
<i>Sharp Force Trauma</i>	0	0	0
<i>Asphyxia/Suffocation</i>	0	1	0
<i>Other</i>	0	0	0
Total	12	16	11

¹ (1) Carbon monoxide inhalation while acutely intoxicated

VAN BUREN COUNTY

Summary of Van Buren County Cases

	2018	2019
<i>Total Deaths in the County</i>	514	491 ¹
<i>Deaths Reported to the ME</i>	162	180
<i>Deaths Investigated</i>	146	164
<i>MEI Scene Investigations</i>	142	158
<i>Death Certificates by ME</i>	61	74
<i>Bodies Transported to Morgue</i>	56	62
<i>Complete Autopsy</i>	31	40
<i>Limited Autopsy</i>	2	2
<i>External Examination</i>	20	15
<i>Storage Only</i>	3	5
<i>Total Cases with Toxicology</i>	44	53
<i>Unidentified Remains After Exam</i>	0	0
<i>Referrals to Gift of Life</i>	55	45
<i>Tissue Donations</i>	8	1
<i>Cornea Donations</i>	3	1
<i>Unclaimed Investigations</i>	2	3
<i>Exhumations</i>	1	0

Cremation Permit Authorizations, Van Buren County

	2018	2019
<i>Cremation Permits</i>	322	327
<i>% of Total Deaths with Cremation</i>	63%	67%

¹ Provisional total number of deaths occurring in the county

Manners of Death Reported, Van Buren County

	2018	2019
<i>Natural</i>	116	127
<i>Accident</i>	25	35
<i>Suicide</i>	16	9
<i>Homicide</i>	5	2
<i>Indeterminate</i>	0	6
Total	162	179¹

Deaths Reported by Age (in years), Van Buren County²

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	0	2	1	0	4	13	47	95
2019	0	1	0	1	6	20	52	99

Pediatric Deaths, Van Buren County

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

1. 1-5 years old
 - a. (1) Drowning in pool; accident
2. 6-10 years old
 - a. (1) Drowning in lake; accident

¹ Does not include (1) stillbirth investigation (cremation authorization)

² All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year.

Accidental Deaths by Mechanism, Van Buren County

	2018	2019
<i>Vehicle</i>	8	9
<i>Drug-Related</i>	10	15
<i>Drowning</i>	1	2
<i>Fall</i>	4	5
<i>Fire</i>	0	0
<i>Environmental Exposure</i>	1	2
<i>Asphyxia</i>	1	1 ¹
<i>Other</i>	0	1 ²
Total	25	35

Drug-Related Deaths by Manner, Van Buren County

	2018	2019
<i>Accident</i>	10	15
<i>Suicide</i>	1	1
<i>Indeterminate</i>	0	0
Total	11	16
<i>Total involving opioid(s)</i>	9	12
<i>% of Accidents and Indeterminate Deaths Involving Opioids</i>	90%	80%

Drug-Related Accidental Deaths, Van Buren County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
18	M	W	49071	Alcohol	N
21	M	H	49056	Alcohol	N
25	M	W	49045	Alcohol, cocaine, heroin	Y
28	F	W	49079	Fentanyl, methoxyacetylfentanyl, morphine	Y
36	M	W	49090	7-Aminoclonazepam, cocaine, fentanyl, heroin, methadone, methamphetamine, methylenedioxymethamphetamine (MDMA)	Y
39	F	W	49064	Diazepam, diphenhydramine, gabapentin, hydromorphone, morphine, oxycodone, promethazine, trazodone	Y

¹ (1) Asphyxia due to compression of trunk via heavy machinery

² (1) Carbon monoxide inhalation

39	M	W	49090	Diphenhydramine, fentanyl	Y
44	F	W	49043	Alprazolam, fentanyl, gabapentin, Heroin	Y
48	F	W	49090	Fentanyl, oxycodone	Y
52	M	W	49079	Diphenhydramine, fentanyl, flualprazolam, heroin	Y
53	M	B	49090	Hydrocodone	Y
56	M	W	49057	Diazepam, fentanyl, heroin, hydroxyzine, methamphetamine	Y
56	M	W	49090	Acetyl fentanyl, alcohol, fentanyl, heroin, methamphetamine	Y
64	M	W	49067	Methamphetamine	N
69	M	W	49090	Cyclobenzaprine, fentanyl, morphine, zolpidem	Y

Suicides by Sex & Age, Van Buren County

Year	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2018	16	13	3	0	1	2	7	6
2019	9	6	3	0	0	4	1	4

Suicides by Mechanism, Van Buren County

	2018	2019
<i>Firearm</i>	11	5
<i>Hanging</i>	3	2
<i>Carbon Monoxide</i>	0	0
<i>Drug Intoxication</i>	1	1
<i>Motor Vehicle</i>	0	0
<i>Sharp Force Trauma</i>	0	1
<i>Asphyxia/Suffocation</i>	1	0
<i>Other</i>	0	0
Total	16	9

ADDITIONAL SERVICES & STATS

Division of Neuropathology

The Division of Neuropathology, led by Division Chief, 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
2019	41	59	2	530	2	634

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 biological 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
2019	76	14	11	20	5

Hospital/Private/Consultant Postmortem Examinations

Our office provides autopsy services to Bronson Healthcare Group and Spectrum Health Lakeland, private examinations to families searching for answers, and forensic autopsies to various counties in Michigan, including the Upper Peninsula, and northern Indiana.

	Hospital	Private	Consultant Counties (Forensic)	Total
2016	10	4	257	271
2017	7	16	201	224
2018	8	9	161	178
2019	10	3 ¹	104	117

Referrals to organ procurement organization (Gift of Life Michigan), 2019

	Referrals to Gift of Life	Tissue Donations	Cornea Donations
Allegan	55	11	5
Barry	22	3	1
Berrien	80	7	4
Calhoun	72	6	3
Grand Traverse	43	1	0
Kalamazoo	136	17	7
Leelanau	6	1	0
Mason	10	2	1
Muskegon	104	12	6
Osceola	16	1	1
St. Joseph	41	6	4
Van Buren	45	1	1
Total	630	68	33

¹ Includes two neuropathology only examinations

Comparison of All Medical Examiner Serviced Counties, 2019

	Total Population ¹	Total Sq. Miles	Deaths in the County	Deaths Reported	Deaths Investigated	MEI Scene Investigations	DCs by ME	Cremation Permits	% Cremated	Unclaimed Investigations
Allegan	118,081	1,833	818	219	199	179	88	519	63%	8
Barry	61,550	577	398	121	108	103	54	251	63%	0
Berrien	153,401	1,581	1,622	430	399	353	152	1,045	64%	10
Calhoun	134,159	718	1,517	508	442	381	176	997	66%	29
Grand Traverse	93,088	601	1,341	384	278	212	131	1,077	80%	10
Kalamazoo	265,066	580	2,911	1,060	781	650	401	2,028	70%	40
Leelanau	21,761	2,532	145	33	33	28	13	102	70%	0
Mason	29,144	1,242	287	110	93	84	52	224	78%	0
Muskegon	173,566	1,459	1,844	670	523	467	248	1,383	75%	14
Osceola	23,460	573	175	72	63	62	29	128	73%	1
St. Joseph	60,964	521	506	150	145	134	70	327	65%	8
Van Buren	75,677	1,090	491	180	164	158	74	327	67%	3
Total	1,209,917	13,307	12,055	3,937	3,228	2,811	1,488	8,408	70% Average	123

For all counties, about 33% of deaths are reported; jurisdiction is accepted, and deaths are investigated in about 27% of the deaths in the counties. Complete autopsies are conducted in about 6% of all deaths within the county and in about 18% of deaths reported. A formal external or limited examination occurs in another 3% of deaths in the county. In total, a postmortem examination occurs in about 25% of deaths reported.

¹ Total county populations based on 2019 estimates by the US Census Bureau

Postmortem Examinations, 2019

	Complete Autopsies	% Complete Autopsies ¹	Limited Exams	External Exams	Total Postmortem Exams	% Postmortem Exams ²	Cardiovascular Consults	Court Appearances ³
Allegan	37	4.5%	3	21	61	7.4%	1	0
Barry	28	7.0%	2	8	38	9.5%	0	0
Berrien	90	5.5%	5	26	121	7.4%	1	6
Calhoun	81	5.3%	8	32	121	8.0%	0	7
Grand Traverse	52	3.9%	2	11	65	4.8%	1	1
Kalamazoo	180	6.2%	7	62	249	8.5%	0	8
Leelanau	6	4.1%	0	2	8	5.5%	0	0
Mason	25	8.7%	0	7	32	11.1%	0	2
Muskegon	134	7.3%	5	30	169	9.2%	0	4
Osceola	12	6.9%	2	7	21	12.0%	0	0
St. Joseph	34	6.7%	3	17	54	10.7%	0	2
Van Buren	40	8.1%	2	15	57	11.6%	0	1
Total	719	6.2% Average	39	238	996	8.8% Average	3	31

¹ Percent of all deaths in county with complete autopsies

² Percent of all deaths in county with a postmortem examination

³ Court appearances refer to the number of times pathologists testified in court for a death or incident that occurred in the county listed; does not include depositions or pretrial meetings; consultant counties includes counties that we provided medical examiner services for in the past

Manners of Death, All Medical Examiner Serviced Counties, 2019

	Natural	Accident	Suicide	Homicide	Indeterminate	Total
Allegan	156	46	14	0	1	217
Barry	84	27	7	2	1	121
Berrien	321	71	21	8	9	430
Calhoun	383	88	26	4	5	506
Grand Traverse	275	75	17	6	4	377
Kalamazoo	771	207	49	19	12	1,058
Leelanau	24	6	2	1	0	33
Mason	82	24	2	1	1	110
Muskegon	480	137	23	17	12	669
Osceola	54	12	5	1	0	72
St. Joseph	103	29	11	6	0	149
Van Buren	127	35	9	2	6	179
Consultant Counties	35	46	5	8	9	103 ¹
Total	2,895	803	191	75	60	4,024
% of Total	71.9%	20.0%	4.7%	1.9%	1.5%	N/A

¹ Does not include (1) mandible only

Significant Death Statistics, 2019

	Accidental Drug-Related Deaths	Indeterminate Drug-Related Deaths	Opioid-Related Deaths	Accidental Traffic-Related Deaths	Accidental Fall-Related Deaths
Allegan	17	0	13	9	12
Barry	5	1	4	11	4
Berrien	23	1	22	21	12
Calhoun	40	0	36	15	20
Grand Traverse	10	0	8	22	34
Kalamazoo	47	3	32	45	85
Leelanau	0	0	0	3	1
Mason	2	1	1	6	6
Muskegon	46	5	43	33	43
Osceola	3	0	2	6	0
St. Joseph	10	0	4	11	4
Van Buren	15	0	12	9	5
Total	218	11	177	191	226

