



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

MEDICAL EXAMINER AND
FORENSIC SERVICES



ANNUAL REPORT

2022

Allegan
Barry
Berrien
Calhoun
Cass

Grand Traverse
Kalamazoo
Leelanau
Mason

Muskegon
Osceola
St. Joseph
Van Buren

Office of the Medical Examiner
Western Michigan University
Homer Stryker M.D. School of Medicine



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MEDICAL EXAMINER AND
FORENSIC SERVICES

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CONTENTS

Which Deaths Do We Investigate? _____	7
Identification of Decedent _____	7
Indications for Complete Autopsy _____	8
What is the difference between Cause of Death & Manner of Death? _____	8
The Death Investigation Process _____	9
Cremation Permit Authorizations _____	10
Public Health & Safety _____	10
Unclaimed Investigations _____	10
Terms _____	11
Important note regarding the data in this report: _____	11
ALLEGAN COUNTY _____	12
Summary of All Allegan County Cases _____	12
Cremation Permit Authorizations, Allegan County _____	12
Manners of Death Reported, Allegan County _____	13
Deaths Reported by Age (in years), Allegan County _____	13
Pediatric Deaths, Allegan County _____	14
Accidental Deaths by Mechanism, Allegan County _____	14
Drug-Related Deaths by Manner, Allegan County _____	14
Drug-Related Accidental Deaths, Allegan County _____	15
Suicides by Sex & Age, Allegan County _____	15
Suicides by Mechanism, Allegan County _____	16
BARRY COUNTY _____	17
Summary of All Barry County Cases _____	17
Cremation Permit Authorizations, Barry County _____	17
Manners of Death Reported, Barry County _____	18
Deaths Reported by Age (in years), Barry County _____	18
Pediatric Deaths, Barry County _____	19
Accidental Deaths by Mechanism, Barry County _____	19
Drug-Related Deaths by Manner, Barry County _____	19
Drug-Related Accidental Deaths, Barry County _____	20
Suicides by Sex & Age, Barry County _____	20
Suicides by Mechanism, Barry County _____	21
BERRIEN COUNTY _____	22
Summary of All Berrien County Cases _____	22
Cremation Permit Authorizations, Berrien County _____	22
Manners of Death Reported, Berrien County _____	23
Deaths Reported by Age (in years), Berrien County _____	23
Pediatric Deaths, Berrien County _____	23
Accidental Deaths by Mechanism, Berrien County _____	24
Drug-Related Deaths by Manner, Berrien County _____	24
Drug-Related Accidental & Indeterminate Deaths, Berrien County _____	25

Suicides by Sex & Age, Berrien County _____	26
Suicides by Mechanism, Berrien County _____	27
CALHOUN COUNTY _____	28
Summary of All Calhoun County Cases _____	28
Cremation Permit Authorizations, Calhoun County _____	28
Manners of Death Reported, Calhoun County _____	29
Deaths Reported by Age (in years), Calhoun County _____	29
Pediatric Deaths, Calhoun County _____	30
Accidental Deaths by Mechanism, Calhoun County _____	30
Drug-Related Deaths by Manner, Calhoun County _____	30
Drug-Related Accidental & Indeterminate Deaths, Calhoun County _____	31
Suicides by Sex & Age, Calhoun County _____	32
Suicides by Mechanism, Calhoun County _____	33
CASS COUNTY _____	34
Summary of All Cass County Cases _____	34
Cremation Permit Authorizations, Cass County _____	34
Manners of Death Reported, Cass County _____	35
Deaths Reported by Age (in years), Cass County _____	35
Pediatric Deaths, Cass County _____	35
Drug-Related Deaths by Manner, Cass County _____	35
Drug-Related Accidental Deaths, Cass County _____	36
Suicides by Sex & Age, Cass County _____	36
Suicides by Mechanism, Cass County _____	36
Accidental Deaths by Mechanism, Cass County _____	37
GRAND TRAVERSE COUNTY _____	38
Summary of All Grand Traverse County Cases _____	38
Cremation Permit Authorizations, Grand Traverse County _____	38
Manners of Death Reported, Grand Traverse County _____	39
Deaths Reported by Age (in years), Grand Traverse County _____	39
Pediatric Deaths, Grand Traverse County _____	40
Accidental Deaths by Mechanism, Grand Traverse County _____	40
Drug-Related Deaths by Manner, Grand Traverse County _____	40
Drug-Related Accidental Deaths, Grand Traverse County _____	41
Suicides by Sex & Age, Grand Traverse County _____	42
Suicides by Mechanism, Grand Traverse County _____	42
KALAMAZOO COUNTY _____	43
Summary of All Kalamazoo County Cases _____	43
Cremation Permit Authorizations, Kalamazoo County _____	43
Manners of Death Reported, Kalamazoo County _____	44
Deaths Reported by Age (in years), Kalamazoo County _____	44
Pediatric Deaths, Kalamazoo County _____	45
Accidental Deaths by Mechanism, Kalamazoo County _____	46
Drug-Related Deaths by Manner, Kalamazoo County _____	46

Drug-Related Accidental & Indeterminate Deaths, Kalamazoo County _____	47
Suicides by Sex & Age, Kalamazoo County _____	49
Suicides by Mechanism, Kalamazoo County _____	50
LEELANAU COUNTY _____	51
Summary of All Leelanau County Cases _____	51
Cremation Permit Authorizations, Leelanau County _____	51
Manners of Death Reported, Leelanau County _____	52
Deaths Reported by Age (in years), Leelanau County _____	52
Accidental Deaths by Mechanism, Leelanau County _____	53
Drug-Related Deaths by Manner, Leelanau County _____	53
Suicides by Sex & Age, Leelanau County _____	54
Suicides by Mechanism, Leelanau County _____	54
MASON COUNTY _____	55
Summary of All Mason County Cases _____	55
Cremation Permit Authorizations, Mason County _____	55
Manners of Death Reported, Mason County _____	56
Deaths Reported by Age (in years), Mason County _____	56
Accidental Deaths by Mechanism, Mason County _____	57
Drug-Related Deaths by Manner, Mason County _____	57
Drug-Related Accidental & Indeterminate Deaths, Mason County _____	58
Suicides by Sex & Age, Mason County _____	58
Suicides by Mechanism, Mason County _____	59
MUSKEGON COUNTY _____	60
Summary of All Muskegon County Cases _____	60
Cremation Permit Authorizations, Muskegon County _____	60
Manners of Death Reported, Muskegon County _____	61
Deaths Reported by Age (in years), Muskegon County _____	61
Pediatric Deaths, Muskegon County _____	62
Accidental Deaths by Mechanism, Muskegon County _____	62
Drug-Related Deaths by Manner, Muskegon County _____	63
Drug-Related Accidental & Indeterminate Deaths, Muskegon County _____	63
Suicides by Sex & Age, Muskegon County _____	65
Suicides by Mechanism, Muskegon County _____	66
OSCEOLA COUNTY _____	67
Summary of Osceola County Cases _____	67
Cremation Permit Authorizations, Osceola County _____	67
Manners of Death Reported, Osceola County _____	68
Deaths Reported by Age (in years), Osceola County _____	68
Pediatric Deaths, Osceola County _____	69
Accidental Deaths by Mechanism, Osceola County _____	69
Drug-Related Deaths by Manner, Osceola County _____	69
Suicides by Sex & Age, Osceola County _____	70
Suicides by Mechanism, Osceola County _____	71

ST. JOSEPH COUNTY _____	72
Summary of St. Joseph County Cases _____	72
Cremation Permit Authorizations, St. Joseph County _____	72
Manners of Death Reported, St. Joseph County _____	73
Deaths Reported by Age (in years), St. Joseph County _____	73
Pediatric Deaths, St. Joseph County _____	74
Accidental Deaths by Mechanism, St. Joseph County _____	74
Drug-Related Deaths by Manner, St. Joseph County _____	74
Drug-Related Accidental Deaths, St. Joseph County _____	75
Suicides by Sex & Age, St. Joseph County _____	75
Suicides by Mechanism, St. Joseph County _____	76
VAN BUREN COUNTY _____	77
Summary of Van Buren County Cases _____	77
Cremation Permit Authorizations, Van Buren County _____	77
Manners of Death Reported, Van Buren County _____	78
Deaths Reported by Age (in years), Van Buren County _____	78
Pediatric Deaths, Van Buren County _____	79
Accidental Deaths by Mechanism, Van Buren County _____	79
Drug-Related Deaths by Manner, Van Buren County _____	79
Drug-Related Accidental Deaths, Van Buren County _____	80
Suicides by Sex & Age, Van Buren County _____	80
Suicides by Mechanism, Van Buren County _____	81
ADDITIONAL SERVICES & STATS _____	82
Division of Neuropathology _____	82
Forensic Anthropology _____	82
Hospital/Private/Consultant Postmortem Examinations _____	83
Referrals to organ procurement organization (Gift of Life Michigan), 2022 _____	83
Comparison of All Medical Examiner Counties, 2022 _____	84
Forensic Postmortem Examinations, 2022 _____	85
Manners of Death, All Medical Examiner Counties, 2022 _____	86
Significant Death Statistics, 2022 _____	87

Editor’s note: Every effort has been made to provide the most accurate data in this report by the Senior Manager of Research and Autopsy Operations within the Department of Pathology, Abigail Grande, MPH.

If you have any questions or would like to schedule a meeting, please contact us at Pathology@wmed.edu or contact Dr. deJong directly at Joyce.deJong@wmed.edu.

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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 & 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.

- **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

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. Jurisdiction is declined when the death does not meet the required reporting criteria per Michigan statutes.
- **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.
- **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.
- **Complete Autopsy:** A complete examination includes external and internal examination, with toxicology.

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. We provide monthly detailed reports to the counties that charge for cremation permits to allow them to send invoices, as needed.

Public Health & 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.

With funding from the Michigan Department of Health and Human Services (MDHHS), our team grew in 2020 to include a Drug Fatality & Surveillance Analyst specifically to assist with tackling the evolving opioid epidemic. This has involved increased surveillance of all drug-related deaths and more detailed death certification in these types of cases across each county we serve. Our team is working with MDHHS, the Michigan Public Health Institute (MPHI), and multiple counties to progress legislation for the creation and support of Opioid Fatality Review Teams across the state. This opioid-specific review team will identify demographical and geographical trends of drug-related deaths to guide prevention efforts.

In 2020, with funding from the Council of State and Territorial Epidemiologists and the Centers for Disease Control and Prevention (CDC), our team grew to include a Public Health Project Coordinator that has been working to better assess respiratory infections in the communities we serve, specifically that of deceased individuals. This surveillance has been crucial throughout the COVID-19 pandemic and has helped to inform public health agencies across the state and the U.S.

In 2021 and 2022, again with funding from MDHHS, our office has established multiple Elder Death Review Teams throughout the counties that we serve. This team coordinates with outside agencies, including the Michigan Department of Licensing and Regulatory Affairs (LARA), to systematically review elder and vulnerable adult deaths to identify gaps in reporting, communication, and improve death investigations in this population. These teams also identify trends and opportunities for the prevention of premature death.

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 plaques on the outside of the church. This annual event did not occur in 2020 due to the COVID-19 pandemic; however, we were able to resume this respectful disposition of remains in October of 2021.

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.
- Drug-related deaths specifically refer to deaths that are directly caused by an acute or mixed drug intoxication or in situations where drug intoxications directly impact or exacerbate existing medical conditions causing death.

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.

Additionally, there are limitations to the data presented in this report. For example, the sex and race provided (pertaining specifically to drug-related fatalities) is what is reported to our office at the time of the death. At times, this is not accurate or representative of what the decedent may have identified as. Our office continues to work diligently to provide the most accurate information about and to the communities that we serve. The following abbreviations are used to quickly identify sex and race in this report: Female (F), Male (M), Unknown (Unk), White (W), African American/Black (AA/B), Hispanic (H), and American Indian/Alaskan Native (AI/AN).

ALLEGAN COUNTY

Summary of All Allegan County Cases

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Deaths in the County	657	705	753	745	788	772	819	974	958 ¹	985 ²
Deaths Reported to the ME	182	193	176	203	188	197	219	291	279	279
Deaths Investigated	164	189	170	192	164	191	199	278	264	272
MEI Scene Investigations	160	177	152	174	158	185	179	250	228	240
Death Certificates by ME	76	97	77	85	76	88	88	120	108	122
Bodies Transported to WMed	58	74	66	62	69	72	69	90	80	100
Complete Autopsy	49	63	32	36	45	41	37	54	51	54
Limited Autopsy	1	2	2	5	2	2	3	6	3	3
External Examination	5	7	18	17	13	24	21	23	19	24
Storage Only at WMed	3	2	14	4	9	5	8	7	7	19
Total Cases with Toxicology	54	70	47	52	54	59	55	79	69	75
Unidentified Remains After Exam	0	2	1	0	0	1	2	0	0	0
Referrals to Gift of Life	32	62	64	63	73	61	55	97	103	138
Tissue Donations	0	5	8	5	6	4	11	9	8	12
Cornea Donations	0	6	7	4	7	4	5	5	2	5
Unclaimed Investigations	1	2	3	1	2	2	8	9	10	10
Exhumations	0	0	0	0	0	0	0	0	0	0

Cremation Permit Authorizations, Allegan County

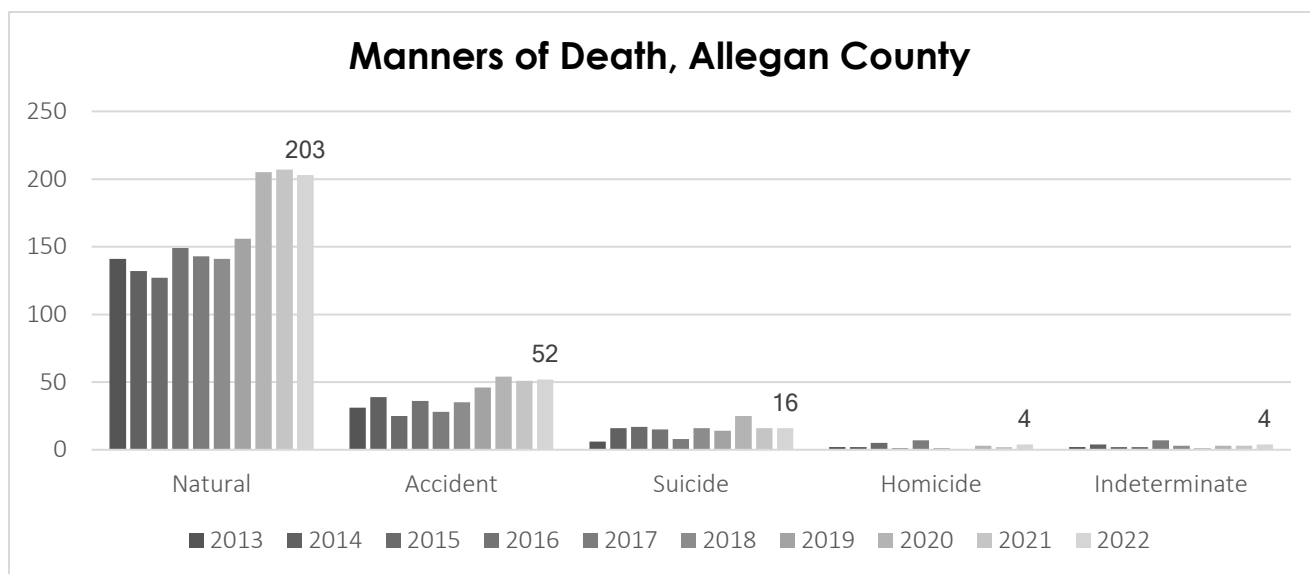
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cremation Permits	350	409	404	442	469	487	519	650	644	665
% of Total Deaths with Cremation	53%	58%	54%	60%	60%	63%	63%	67%	67%	68%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Allegan County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Natural	141	132	127	149	143	141	156	205	207	203
Accident	31	39	25	36	28	35	46	54	51	52
Suicide	6	16	17	15	8	16	14	25	16	16
Homicide	2	2	5	1	2	1	0	3	2	4
Indeterminate	2	4	2	2	7	3	1	3	3	4 ¹
Total	182	193	176	203	188	196	217	290	279	279



Deaths Reported by Age (in years), Allegan County²

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2013	2	0	0	0	7	17	57	99
2014	3	0	0	1	6	16	73	92
2015	0	1	1	5	7	15	59	87
2016	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	0	0	0	6	22	57	131
2020	0	0	0	4	7	33	99	147
2021	0	0	0	1	3	30	89	156
2022	1	0	0	0	7	28	78	165

¹ (1) Unexplained sudden death associated with unsafe sleep; (1) Partially skeletonized remains, cause and manner of death could not be determined; (1) Found dead in bed, cause and manner could not be determined; (1) Found dead outdoors, family objection to autopsy, cause and manner of death could not be determined

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

Pediatric Deaths, Allegan County

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

1. <1 year old
 - a. (1) Unexplained sudden death associated with unsafe sleep; indeterminate

Accidental Deaths by Mechanism, Allegan County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vehicle	9	11	10	9	12	12	9	18	8	18 ¹
Drug-Related	10	20	7	11	10	9	17	14	13	15
Drowning	1	1	0	1	3	3	1	3	6	0
Fall	7	5	5	10	3	10	12	15	21	16
Fire	1	0	0	0	0	0	1	0	2	1
Environmental Exposure	1	0	2	1	0	0	1	2	0	0
Asphyxia	0	0	0	2	0	2	3	2	0	1 ²
Other	2	2	1	2	0	0	2	0	1	1 ³
Total	31	39	25	36	28	35⁴	46	54	51	52

Drug-Related Deaths by Manner, Allegan County⁵

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accident	10	20	7	11	10	9	17	14	13	15
Suicide	1	4	0	0	0	2	0	0	0	1
Indeterminate	0	0	0	1	2	0	0	2	0	0
Total	11	24	7	12	12	11	17	16	13	16
Total involving opioid(s)	N/A	N/A	6	8	6	8	13	11	9	9
% of Accidental and Indeterminate Deaths Involving Opioids	N/A	N/A	86%	67%	50%	78%	76%	69%	69%	60%

¹ Includes (1) Blunt head and neck trauma due to jump from moving vehicle

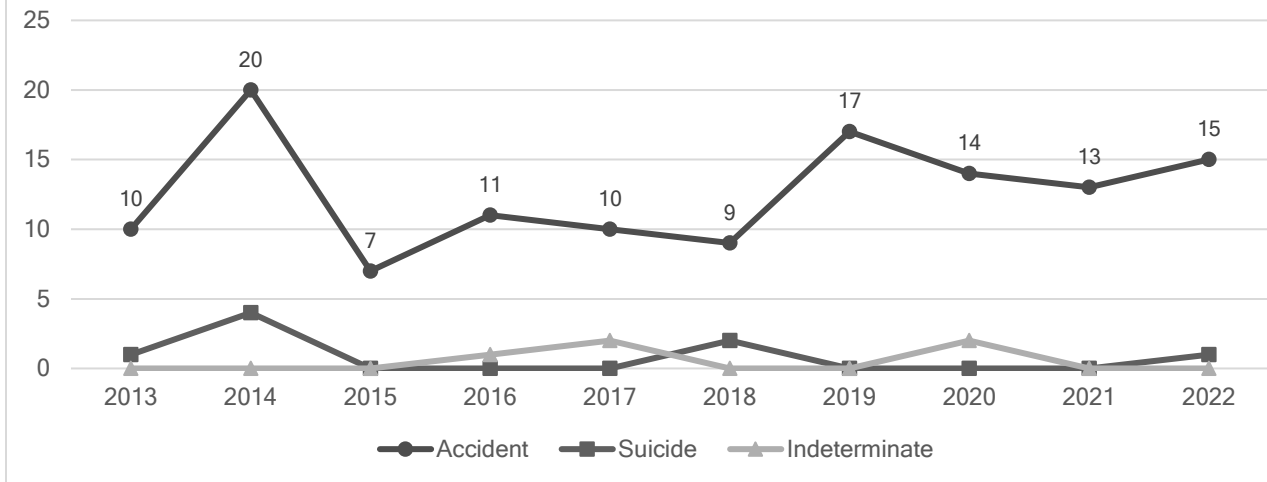
² Positional asphyxia associated with Parkinson's Disease, wedged between fixed objects

³ Carbon monoxide poisoning

⁴ (1) Death categorized twice (drowning & drug-related)

⁵ Acute alcohol intoxications are considered drug-related deaths and are included in this data

Drug-Related Deaths, Allegan County



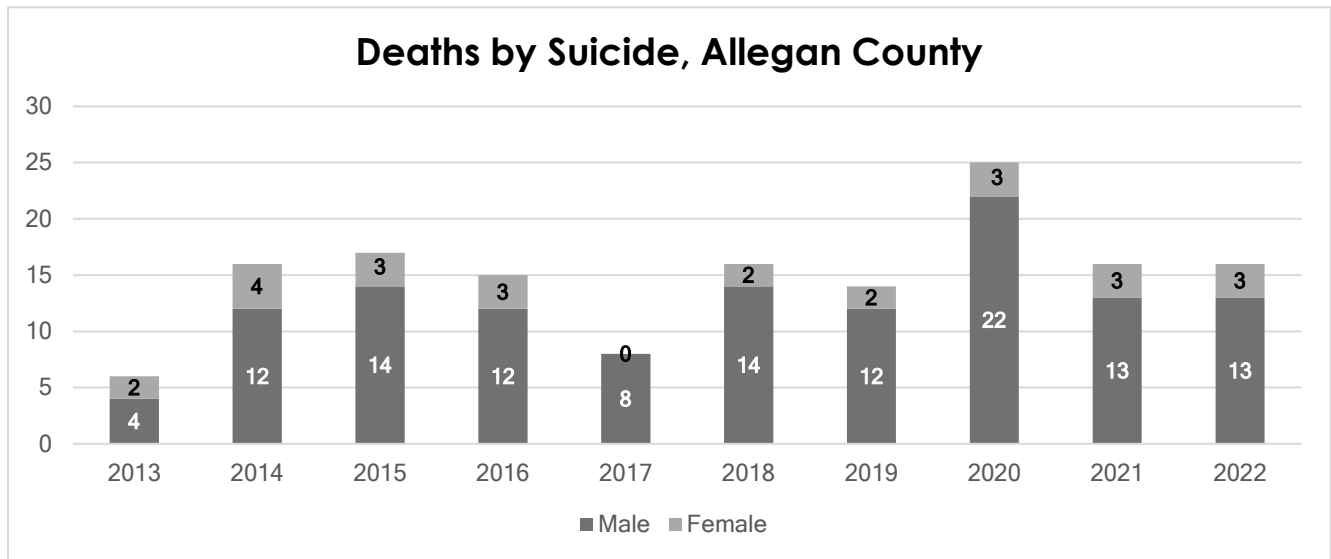
Drug-Related Accidental Deaths, Allegan County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
28	M	W	49080	Methamphetamine	N
34	M	W	49010	1,1-Difluoroethane	N
35	M	W	49423	Cocaine	N
36	M	H	49423	Fentanyl, Heroin	Y
37	F	W	49450	Methamphetamine	N
40	F	W	49423	Fentanyl, Xylazine	Y
40	F	W	49056	Fentanyl	Y
41	F	W	49080	Diphenhydramine, Lorazepam, Morphine, Oxycodone	Y
44	M	W	49328	Fentanyl, Methamphetamine	Y
47	M	W	49344	Fentanyl, Methamphetamine	Y
57	M	W	49464	Fentanyl	Y
57	M	W	49056	Gabapentin, Oxycodone	Y
59	M	W	49070	Fentanyl, Methadone	Y
61	M	W	49010	Methamphetamine	N
69	M	W	49348	Methamphetamine	N

Suicides by Sex & Age, Allegan County

	Total	Male	Female	0-17	18-25	26-44	45-64	65+
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
2020	25	22	3	2	1	5	14	3
2021	16	13	3	0	1	5	7	3
2022	16	13	3	0	2	6	5	3



Suicides by Mechanism, Allegan County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Firearm	3	11	11	10	7	8	6	15	12	8
Hanging	0	1	4	4	0	5	6	7	3	5
Carbon Monoxide	1	0	0	1	1	0	0	1	0	2
Drug Intoxication	1	4	0	0	0	1	0	0	0	1
Motor Vehicle	1	0	0	0	0	1	0	1	0	0
Sharp Force Trauma	0	0	0	0	0	0	1	0	1	0
Asphyxia/Suffocation	0	0	2	0	0	0	0	0	0	0
Other	0	0	0	0	0	1	1	1	0	0
Total	6	16	17	15	8	16	14	25	16	16

BARRY COUNTY

Summary of All Barry County Cases¹

	2015	2016 ²	2018	2019	2020	2021	2022
Total Deaths in the County	416	399	390	399	453	530 ³	442 ⁴
Deaths Reported to the ME	125	130	146	121	161	155	135
Deaths Investigated	118	124	131	108	147	143	123
MEI Scene Investigations	112	120	128	103	132	135	116
Death Certificates by ME	53	57	52	54	52	53	64
Bodies Transported to WMed	43	47	41	38	35	41	55
Complete Autopsy	35	37	25	28	22	23	32
Limited Autopsy	1	0	1	2	2	1	1
External Examination	6	8	12	8	7	13	19
Storage Only at WMed	1	2	3	0	4	4	3
Total cases with Toxicology	N/A	N/A	35	37	28	35	44
Unidentified Remains After Exam	N/A	N/A	0	0	0	0	0
Referrals to Gift of Life	40	48	44	22	44	54	72
Tissue Donations ⁵	6	17	3	3	2	6	9
Cornea Donations	N/A	N/A	0	1	1	4	5
Unclaimed Investigations	1	0	1	0	4	2	4
Exhumations	N/A	N/A	0	0	0	0	0

Cremation Permit Authorizations, Barry County

	2018	2019	2020	2021	2022
Cremation Permits	262	251	303	354	293
% of Total Deaths with Cremation	67%	63%	67%	67%	66%

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

² Data from years 2015-2016 obtained from Sparrow Hospital

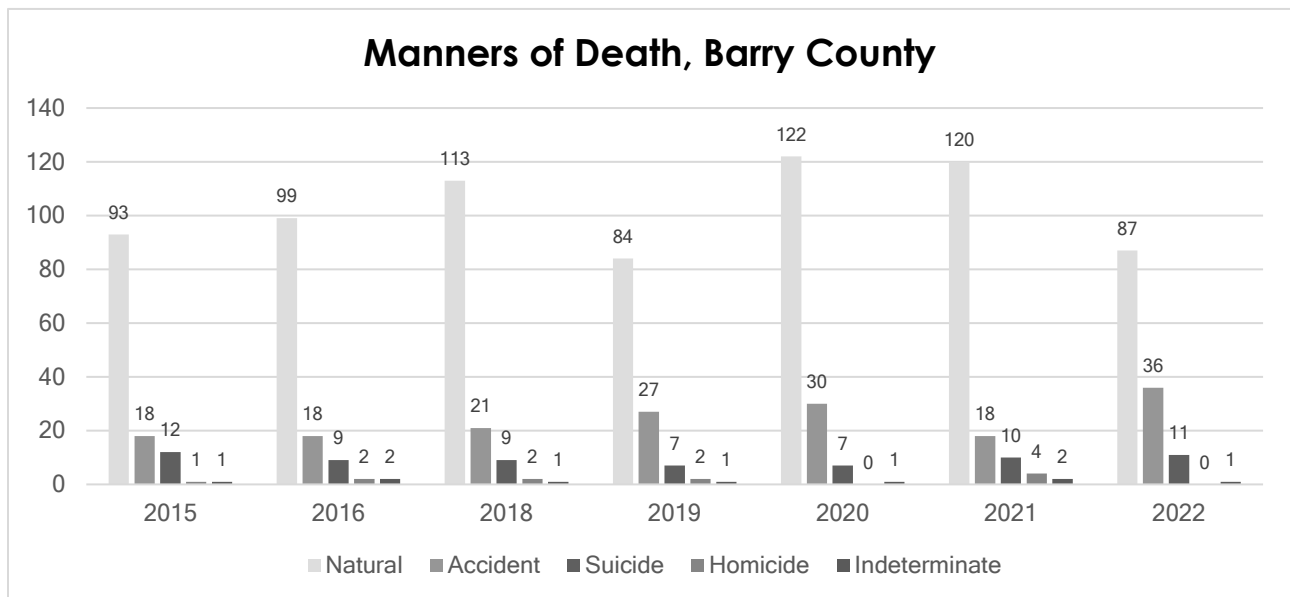
³ Updated total number of deaths occurring in the county

⁴ Provisional total number of deaths occurring in the county

⁵ 2015 and 2016 data include both tissue and cornea donations combined

Manners of Death Reported, Barry County¹

	2015	2016	2018	2019	2020	2021	2022
Natural	93	99	113	84	122	120	87
Accident	18	18	21	27	30	18	36
Suicide	12	9	9	7	7	10	11
Homicide	1	2	2	2	0	4	0
Indeterminate	1	2	1	1	1	2	1 ²
Total	125	130	146	121	160	154	135



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
2020	3	0	0	0	4	13	42	98
2021	0	0	0	2	3	13	33	103
2022	0	0	1	2	3	17	30	82

¹ Data from years 2015-2016 obtained from Sparrow Hospital

² Status post-surgical procedure, cause and manner of death could not be determined

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, Barry County

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

1. 6-10 years old
 - a. (1) Blunt trauma of head (struck by bulldozer); accident
2. 11-17 years old
 - a. (1) Smoke and soot inhalation associated with thermal injuries (residential fire); accident
 - b. (1) Multiple blunt force injuries due to motor vehicle collision, passenger; accident

Accidental Deaths by Mechanism, Barry County

	2018	2019	2020	2021	2022
Vehicle	7	11	6	4	13 ¹
Drug-Related	4	5	10	4	8
Drowning	0	3	1	2	1
Fall	8	4	10	7	3
Fire	0	1	0	0	1
Environmental Exposure	0	1	0	0	3
Asphyxia	1	2	1	0	3 ²
Other	1	0	2	1	4 ³
Total	21	27	30	18	36

Drug-Related Deaths by Manner, Barry County⁴

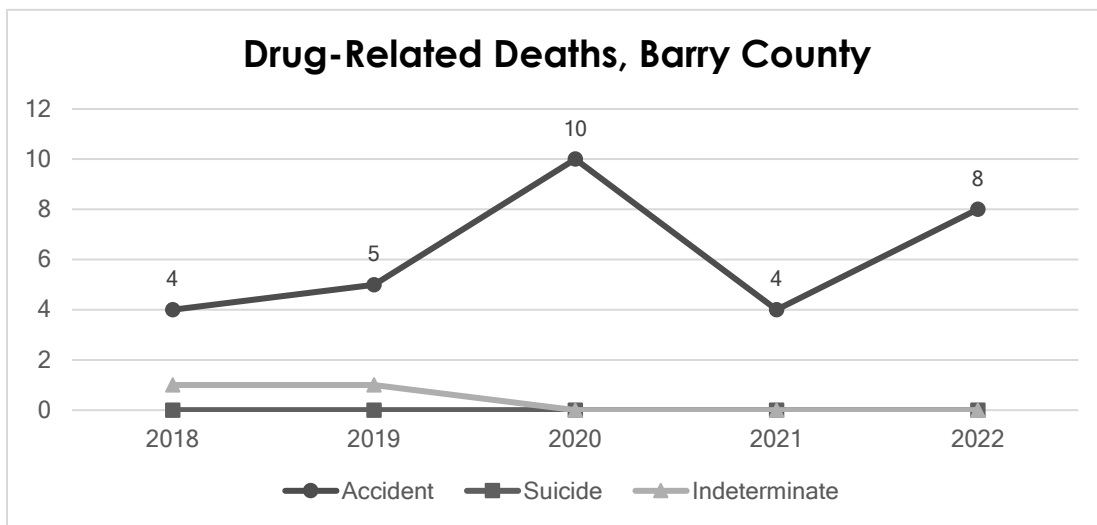
	2018	2019	2020	2021	2022
Accident	4	5	10	4	8
Suicide	0	0	0	0	0
Indeterminate	1	1	0	0	0
Total	5	6	10	4	8
Total involving opioid(s)	2	4	8	4	7
% of Accidental and Indeterminate Deaths Involving Opioids	40%	67%	80%	100%	88%

¹ Includes (1) Blunt force trauma due to being struck by bulldozer; (1) Blunt force trauma with compressive asphyxia due to ATV accident and associated with acute alcohol intoxication

² (2) Choking; (1) Positional and mechanical asphyxia due to falling into recently dug hole

³ (2) Blunt force trauma due to being struck by falling tree branch; (1) Blunt force chest trauma due to entrapment between forklift and fixed object; (1) Ruptured varicose vein due to blunt force trauma of lower extremity

⁴ Acute alcohol intoxications are considered drug-related deaths and are included in this data

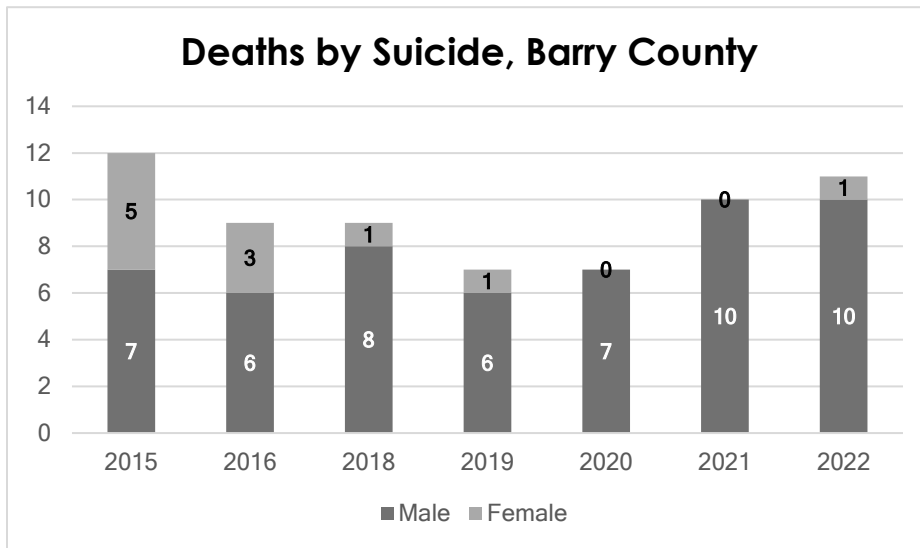


Drug-Related Accidental Deaths, Barry County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
24	M	W	49348	Fentanyl, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
26	M	W	49333	Fentanyl	Y
27	M	W	49058	Fentanyl, para-Fluorofentanyl	Y
29	F	W/H	49073	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
30	F	W	49058	Methamphetamine	N
39	M	W	49073	Alprazolam, Fentanyl, Heroin, para-Fluorofentanyl	Y
41	M	W	49050	Fentanyl, Gabapentin, para-Fluorofentanyl, Xylazine	Y
60	M	W	49333	Cocaine, Fentanyl, Heroin, para-Fluorofentanyl	Y

Suicides by Sex & Age, Barry County

	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 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
2020	7	7	0	0	1	2	3	1
2021	10	10	0	1	1	1	3	4
2022	11	10	1	0	0	6	2	3



Suicides by Mechanism, Barry County

	2015	2016	2018	2019	2020	2021	2022
Firearm	7	7	7	4	4	9	5
Hanging	3	1	1	3	2	1	3
Carbon Monoxide	0	0	0	0	1	0	2
Drug Intoxication	2	1	0	0	0	0	0
Motor Vehicle	0	0	0	0	0	0	0
Sharp Force Trauma	0	0	0	0	0	0	1
Asphyxia/Suffocation	0	0	0	0	0	0	0
Other	0	0	1	0	0	0	0
Total	12	9	9	7	7	10	11

BERRIEN COUNTY

Summary of All Berrien County Cases

	2019	2020	2021	2022
Total Deaths in the County	1,622	1,873	1,916 ¹	1,898 ²
Deaths Reported to the ME	430	596	604	631
Deaths Investigated	399	540	548	563
MEI Scene Investigations	353	461	484	498
Death Certificates by ME	152	207	215	271
Bodies Transported to WMed	132	152	159	191
Complete Autopsy	90	103	116	138
Limited Autopsy	5	4	3	5
External Examination	26	25	26	32
Storage Only at WMed	11	20	14	16
Total Cases with Toxicology	110	126	134	156
Unidentified Remains After Exam	1	3	1	1 ³
Referrals to Gift of Life	80	137	156	182
Tissue Donations	7	8	7	8
Cornea Donations	4	7	4	4
Unclaimed Investigations	10	19	17	18
Exhumations	1	0	2	0

Cremation Permit Authorizations, Berrien County

	2019	2020	2021	2022
Cremation Permits	1,045	1,218	1,219	1,263
% of Total Deaths with Cremation	64%	65%	64%	67%

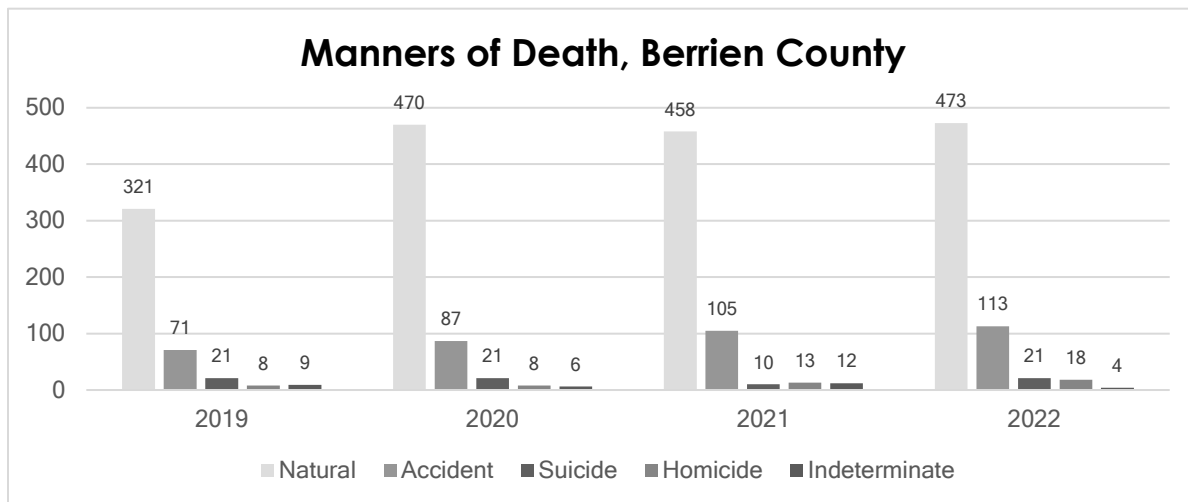
¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

³ Partial skeletal remains found on Lake Michigan shoreline

Manners of Death Reported, Berrien County

	2019	2020	2021	2022
Natural	321	470	458	473
Accident	71	87	105	113
Suicide	21	21	10	21
Homicide	8	8	13	18
Indeterminate	9	6	12	4 ¹
Total	430	592	598	629²



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
2020	2	2	0	5	16	55	172	340
2021	5	0	0	4	12	60	152	367
2022	1	2	2	7	14	66	181	356

Pediatric Deaths, Berrien County

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

1. <1 year old
 - a. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
2. 1-5 years old
 - a. (1) Complications of chronic/remote hypoxic-ischemic brain injury due to remote cardiopulmonary arrest of unknown etiology; indeterminate

¹ (1) Unexplained sudden death associated with unsafe sleep; (1) Mixed drug intoxication; (1) Complications of chronic/remote hypoxic-ischemic brain injury due to remote cardiopulmonary arrest of unknown etiology; (1) Pneumonia due to complications of extreme prematurity (in adulthood)

² Does not include (1) fetal tissue associated with miscarriage while in custody; (1) Unidentified human remains

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

- b. (1) Complications of Moebius syndrome, disconnected from necessary medical devices; homicide
- 3. 6-10 years old
 - a. (1) Status Asthmaticus due to acute and chronic asthmatic bronchitis; natural
 - b. (1) Caregiver neglect; homicide
- 4. 11-17 years old
 - a. (2) Drowning; accident
 - b. (2) Multiple gunshot wounds; homicide
 - c. (1) Hanging; suicide
 - d. (1) Acute drug intoxication; accident
 - e. (1) Complications of cerebral palsy; natural

Accidental Deaths by Mechanism, Berrien County

	2019	2020	2021	2022
Vehicle	21	15	24	9
Drug-Related	23	37	36	50
Drowning	4	9	3	5
Fall	12	15	34	39 ¹
Fire	2	2	1	0
Environmental Exposure	3	4	2	4
Asphyxia	3	4	3	2 ²
Other	3	1	2	4 ³
Total	71	87	105	113

Drug-Related Deaths by Manner, Berrien County⁴

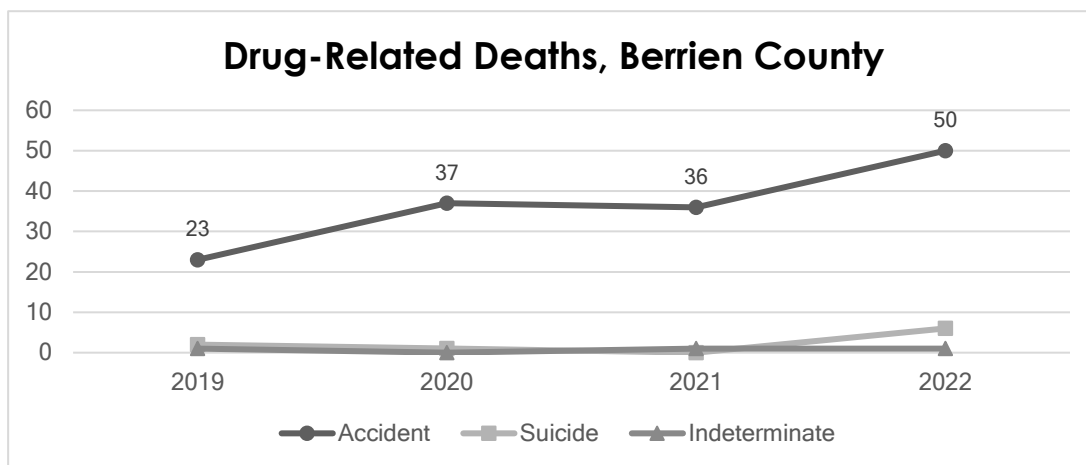
	2019	2020	2021	2022
Accident	23	37	36	50
Suicide	2	1	0	6
Indeterminate	1	0	1	1
Total	26	38	37	57
Total involving opioid(s)	22	29	28	46
% of Accidental and Indeterminate Deaths Involving Opioids	92%	78%	76%	86%

¹ Includes (1) Complications of hypothermia and cervical spine fracture due to unwitnessed fall outdoors; (1) Cervical spine fracture associated with probable positional asphyxia

² (1) Positional asphyxia due to hyperflexion of neck associated with acute alcohol intoxication; (1) Positional asphyxia due to wedging between fixed objects

³ (2) Cardiovascular disease associated with seizure disorder due to remote head trauma; (1) Cardiovascular disease associated with humerus fracture while opening jar; (1) Anaphylaxis due to bee/wasp sting

⁴ Acute alcohol intoxications are considered drug-related deaths and are included in this data



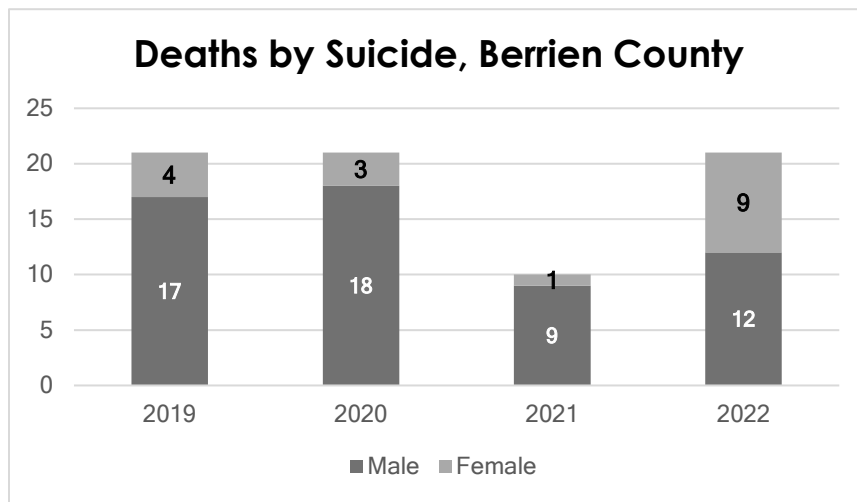
Drug-Related Accidental & Indeterminate Deaths, Berrien County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
15	M	W & AA/B	49120	Fentanyl	Y
19	F	W	49127	Alcohol	N
20	M	W	49120	Para-Fluorofentanyl	Y
22	M	AA/B	49120	Fentanyl, Methamphetamine	Y
24	M	W	49107	Fentanyl, Oxycodone	Y
26	F	W	49022	Acetyl fentanyl, Fentanyl, Xylazine	Y
28	M	W	49085	Bromazolam, Fentanyl, Heroin, Methamphetamine, Xylazine	Y
30	F	W	49022	Fentanyl	Y
31	F	W	49022	Fentanyl, Methamphetamine	Y
32	M	W	49085	Alcohol, Fentanyl, Mitragynine, para-Fluorofentanyl, Xylazine	Y
32	F	AA/B	49085	Cocaine, Fentanyl	Y
33	M	AA/B	49022	Cocaine, Fentanyl	Y
33	M	W	49107	Fentanyl, Heroin, para-Fluorofentanyl, Xylazine	Y
34	M	W	49127	Alcohol, Alprazolam, Cocaethylene, Cocaine, Cyclobenzaprine, Fentanyl, Gabapentin	Y
34	M	W	49107	Acetyl fentanyl, Fentanyl, Methamphetamine	Y
35	M	W	49085	Fentanyl, Methamphetamine	Y
35	M	W	49022	Alcohol, Fentanyl, Xylazine	Y
36	M	W	49022	Alcohol, Fentanyl	Y
36	M	W	49038	Fentanyl, Gabapentin, Mitragynine, para-Fluorofentanyl, Xylazine	Y
37	M	W	49022	Alcohol, Fentanyl	Y
37	M	W	49103	Fentanyl	Y
38	F	AA/B	49022	Fentanyl, para-Fluorofentanyl	Y
39	F	W	49120	Alcohol, Fentanyl, Gabapentin, Hydrocodone, Methadone	Y
39	M	AA/B	49022	Cocaine, Fentanyl, Methamphetamine, Xylazine	Y

39	M	W	49022	Fentanyl, Methamphetamine	Y
40	F	W	49022	Fentanyl, Methamphetamine	Y
41	M	AA/B	49022	Cocaine, Fentanyl, para-Fluorofentanyl	Y
41	M	W	49120	Alprazolam, Fentanyl, Heroin, Xylazine	Y
42	M	AA/B	49085	Fentanyl	Y
42	M	AA/B	49022	Alcohol, Cocaine, Fentanyl	Y
42	M	W	49120	Fentanyl, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
43	F	W	49098	Acetyl fentanyl, Fentanyl, Methamphetamine, Morphine, Xylazine	Y
43	M	AA/B	49022	Methamphetamine	N
44	F	W	49022	Acetyl fentanyl, Fentanyl, Methamphetamine	Y
44	F	W	49125	Alcohol	N
45	M	AA/B	49022	Alcohol, Cocaine, Fentanyl	Y
47	M	W	49022	Fentanyl, Methamphetamine	Y
49	F	W	49098	Methamphetamine	N
52	F	W	49113	Fentanyl, Gabapentin, Methamphetamine	Y
52	M	AA/B	49022	Cocaine	N
54	M	W	49126	Fentanyl, Methamphetamine	Y
56	M	W	49098	Fentanyl, Methamphetamine	Y
58	M	AA/B	49085	Cocaine	N
59	F	W	49038	Fentanyl, Heroin, Hydrocodone, Gabapentin, Oxymorphone, para-Fluorofentanyl, Trazodone	Y
59	F	W	49085	Diazepam, Hydrocodone	Y
60	M	W	49120	Clonazepam, Fentanyl, Gabapentin	Y
60	M	AA/B	49120	Fentanyl	Y
60	M	W	49107	Alcohol, Fentanyl	Y
66	M	AA/B	49022	Fentanyl	Y
69	F	AA/B	49022	Cocaine	N
71	F	W	49120	Fentanyl, Oxycodone, Oxymorphone	Y

Suicides by Sex & Age, Berrien County

	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2019	21	17	4	1	0	9	4	7
2020	21	18	3	1	2	4	8	6
2021	10	9	1	1	2	3	0	4
2022	21	12	9	1	1	6	10	3



Suicides by Mechanism, Berrien County

	2019	2020	2021	2022
Firearm	16	14	7	7
Hanging	3	5	3	4
Carbon Monoxide	0	0	0	0
Drug Intoxication	2	1	0	6
Motor Vehicle	0	0	0	1
Sharp Force Trauma	0	0	0	1
Asphyxia/Suffocation	0	0	0	0
Other	0	1	0	2 ¹
Total	21	21	10	21

¹ (2) Drowning

CALHOUN COUNTY

Summary of All Calhoun County Cases

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Deaths in the County	1,390	1,378	1,427	1,396	1,495	1,521	1,786	1,799 ¹	1,712 ²
Deaths Reported to the ME	377	429	411	443	475	508	585	582	544
Deaths Investigated	335	392	361	400	415	442	518	534	473
MEI Scene Investigations	296	311	307	352	387	381	450	444	408
Death Certificates by ME	178	180	186	191	200	176	194	244	225
Bodies Transported to WMed	138	164	165	176	170	146	172	188	193
Complete Autopsy	103	109	103	102	103	81	112	112	121
Limited Autopsy	1	5	4	3	8	8	6	3	3
External Examination	20	28	36	46	38	32	27	45	41
Storage Only at WMed	14	20	22	25	21	25	27	27	28
Total Cases with Toxicology	122	131	113	141	139	112	136	156	145
Unidentified Remains After Exam	0	0	0	0	0	0	0	0	0
Referrals to Gift of Life	119	115	118	146	107	72	102	135	186
Tissue Donations	8	3	11	10	11	6	11	9	13
Cornea Donations	8	8	11	8	9	3	5	10	9
Unclaimed Investigations	13	8	11	23	24	29	40	32	32
Exhumations	1	0	0	0	0	0	0	0	0

Cremation Permit Authorizations, Calhoun County

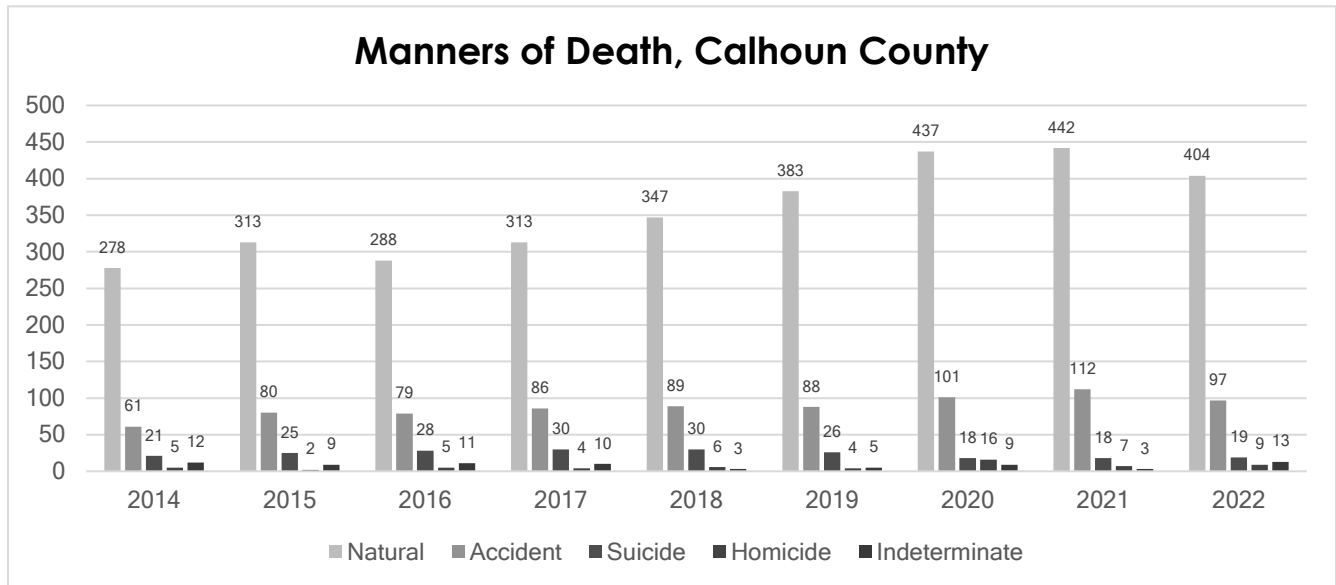
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cremation Permits	721	742	811	857	901	997	1,176	1,224	1,171
% of Total Deaths with Cremation	52%	54%	57%	61%	60%	66%	66%	68%	68%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Calhoun County

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Natural	278	313	288	313	347	383	437	442	404
Accident	61	80	79	86	89	88	101	112	97
Suicide	21	25	28	30	30	26	18	18	19
Homicide	5	2	5	4	6	4	16	7	9
Indeterminate	12	9	11	10	3	5	9	3	13 ¹
Total	377	429	411	443	475	506	581	582	542²



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
2020	6	2	0	0	12	63	184	314
2021	3	0	0	0	10	67	173	329
2022	4	2	1	3	11	50	147	324

¹ (2) Mixed drug intoxication; (1) Multiple blunt force injuries, pedestrian versus train; (1) Unexplained sudden death associated with unsafe sleep; (1) Unexplained sudden death possibly associated with hypothyroidism; (1) Multiple blunt force injuries associated with mixed drug intoxication; (3) Found in advanced stage of decomposition, cause and manner of death could not be determined; (2) Found dead in hotel (together), unclear circumstances with natural disease present, cause and manner of death could not be determined; (1) Found deceased after episode of fever and vomiting, cause and manner of death could not be determined; (1) Died in ER after being distraught/inconsolable, cause and manner of death could not be determined

² Does not include (2) stillbirth 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, Calhoun County

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

1. <1 year old
 - a. (1) Extreme prematurity; natural
 - b. (1) Unexplained sudden death possibly associated with hypothyroidism; indeterminate
 - c. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
 - d. (1) Complications of Trisomy 18 associated with multiple congenital anomalies; natural
2. 1-5 years old
 - a. (2) Cause and manner of death could not be determined; indeterminate
3. 6-10 years old
 - a. (1) Multiple blunt force injuries, passenger in motor vehicle rollover; accident
4. 11-17 years old
 - a. (1) Homicide by unspecified means; homicide
 - b. (1) Intraoral gunshot wound; suicide
 - c. (1) Gunshot wound of face; homicide

Accidental Deaths by Mechanism, Calhoun County

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vehicle	11	21	20	14	15	15	20	17	23 ¹
Drug-Related	26	44	38	44	49	40	50	59	42
Drowning	0	2	2	3	1	4	2	1	1 ²
Fall	15	11	14	19	19	20	19	28	27 ³
Fire	2	0	1	0	1	1	0	0	1
Environmental Exposure	2	0	0	0	0	3	5	2	1
Asphyxia	4	2	2	5	3	2	4	1	2 ⁴
Other	1	1	2	1	1	3	1	4	0
Total	61	81⁵	79	86	89	88	101	112	97

Drug-Related Deaths by Manner, Calhoun County⁶

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accident	26	44	37	44	49	40	50	59	42
Suicide	3	2	5	3	3	3	2	1	3
Indeterminate	2	2	4	5	2	0	2	0	2
Total	31	48	46	52	54	43	54	60	47
Total involving opioid(s)	N/A	42	40	48	48	36	46	49	38
% of Accidental and Indeterminate Deaths Involving Opioids	N/A	91%	88%	94%	92%	88%	87%	83%	74%

¹ Includes (1) Multiple blunt force injuries, driver of jet-propelled motor vehicle that malfunctioned

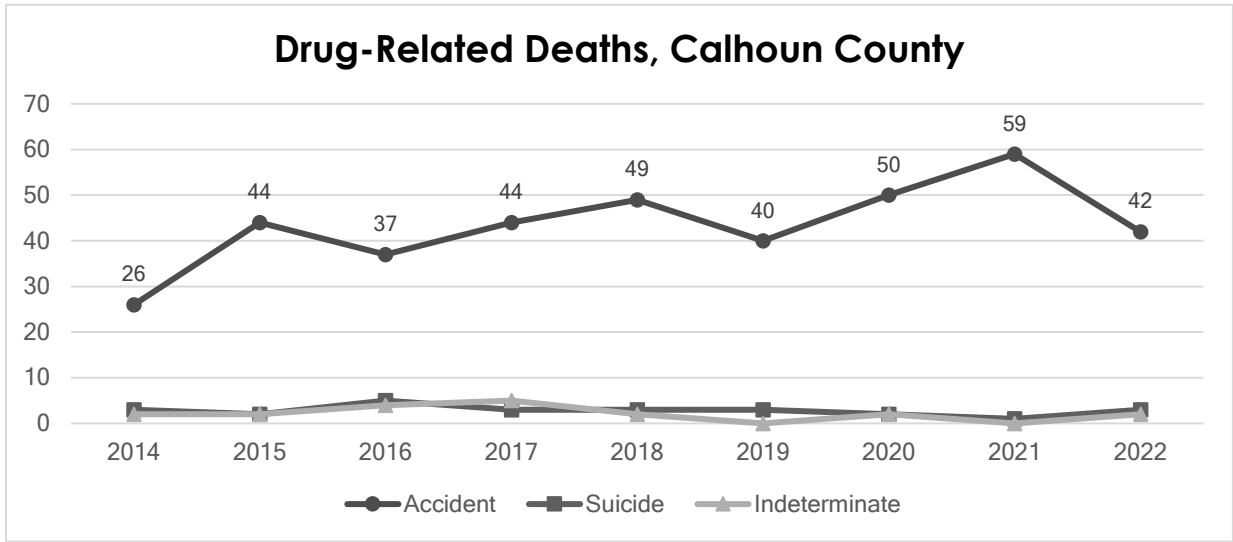
² Drowning associated with acute drug intoxication

³ Includes (1) Craniocerebral trauma associated with acute and chronic alcohol use

⁴ (2) Asphyxia due to choking

⁵ (1) Death categorized twice (drowning and drug)

⁶ Acute alcohol intoxications are considered drug-related deaths and are included in this data



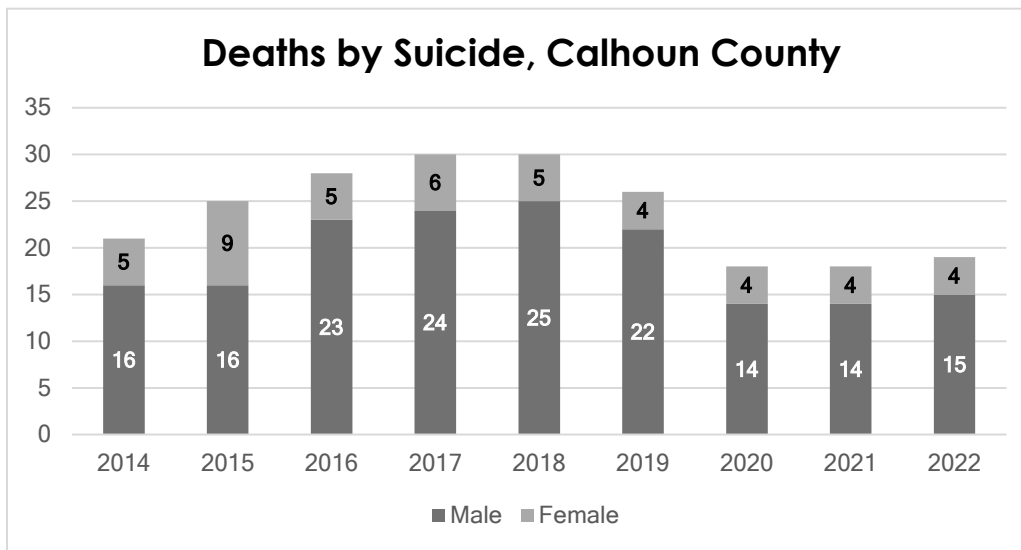
Drug-Related Accidental & Indeterminate Deaths, Calhoun County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
21	M	W	49015	Fentanyl	Y
22	F	AA/B	49037	Alcohol, Cocaine, Fentanyl	Y
23	F	W	49015	7-Aminoclonazepam, Dihydrocodeine, Fentanyl, Heroin, Hydrocodone, Hydromorphone, Methamphetamine	Y
25	M	W	49015	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
25	F	AA/B	49224	Cocaine, Fentanyl, Morphine, Xylazine	Y
26	M	AA/B	49014	Fentanyl, Heroin, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
28	F	W	49037	Alcohol, Cocaine, Fentanyl, Heroin, Xylazine	Y
28	M	W	49017	Fentanyl	Y
30	F	W	49068	Fentanyl, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
30	M	W	49037	Cocaine, Fentanyl, para-Fluorofentanyl	Y
32	M	W	49014	Fentanyl, Heroin, para-Fluorofentanyl	Y
33	F	W	49014	Fentanyl, Methamphetamine	Y
35	M	W/H	49014	Fentanyl, Heroin, para-Fluorofentanyl, Xylazine	Y
36	F	W	49014	Cocaine, Fentanyl, para-Fluorofentanyl, Xylazine	Y
36	M	W	49068	Alcohol, Fentanyl	Y
36	M	W	49037	Fentanyl	Y
38	F	W	49037	1,1-Difluoroethane	N
38	M	W	49015	Fentanyl, Xylazine	Y
39	F	W	49037	Methamphetamine	N
39	M	W	49015	Acetaminophen, Mitragynine	Y
39	M	W	49017	Alcohol, 1,1-Difluoroethane, Nordiazepam	N

41	M	W	49037	Fentanyl, Xylazine	Y
41	M	W	49014	Fentanyl, Hydrocodone	Y
44	M	W	49015	Fentanyl, Methamphetamine, Xylazine	Y
45	M	W	49015	Alcohol, Cocaethylene, Cocaine, Fentanyl	Y
45	M	AA/B	49037	Cocaine	N
47	M	W	49017	Alcohol, Fentanyl, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
47	M	AA/B	49017	Methamphetamine	N
48	M	W	49014	Acetyl fentanyl, Alcohol, Fentanyl, Methamphetamine	Y
48	M	W	49017	Fentanyl	Y
49	M	W	49015	Fentanyl	Y
52	M	H	49017	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
54	F	W	49224	Methamphetamine	N
54	F	W	49014	Alcohol, Cocaine	N
55	M	W	49017	Cocaine, Fentanyl, Morphine, Xylazine	Y
58	F	W	49017	Cocaine	N
58	M	W	49015	Cocaine, Fentanyl, Xylazine	Y
59	M	W	49037	Diphenhydramine, Fentanyl, Heroin, para-Fluorofentanyl, Xylazine	Y
60	M	AA/B	49037	Cocaine, Fentanyl, Methamphetamine, Morphine, Xylazine	Y
61	F	W	49068	Alprazolam, Hydrocodone	Y
63	M	W	49015	Cocaine, Fentanyl, Hydrocodone, Xylazine	Y
69	M	AA/B	49037	Fentanyl, Heroin, Xylazine	Y
73	M	W	49014	Codeine, Fentanyl	Y
77	F	W	49224	Clonazepam, Hydrocodone, Oxycodone	Y

Suicides by Sex & Age, Calhoun County

	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
2020	18	14	4	0	2	9	7	0
2021	18	14	4	0	1	6	5	6
2022	19	15	4	1	0	5	7	6



Suicides by Mechanism, Calhoun County

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Firearm	11	14	14	12	17	16	11	11	11
Hanging	7	5	6	10	10	5	4	6	5
Carbon Monoxide	0	0	2	0	0	0	0	0	0
Drug Intoxication	3	2	5	3	3	3	2	1	3
Motor Vehicle	0	0	1	2	0	1	1	0	0
Sharp Force Trauma	0	0	0	1	0	0	0	0	0
Asphyxia/Suffocation	0	2	0	1	0	0	0	0	0
Other	0	2	0	1	0	1	0	0	0
Total	21	25	28	30	30	26	18	18	19

Summary of All Cass County Cases

	2021 ¹	2022
Total Deaths in the County	420 ²	399 ³
Deaths Reported to the ME	147	157
Deaths Investigated	143	149
MEI Scene Investigations	140	140
Death Certificates by ME	66	75
Bodies Transported to WMed	46	56
Complete Autopsy	28	39
Limited Autopsy	1	2
External Examination	13	13
Storage Only at WMed	4	2
Total Cases with Toxicology	42	50
Unidentified Remains After Exam	0	0
Referrals to Gift of Life	56	66
Tissue Donations	4	7
Cornea Donations	2	2
Unclaimed Investigations	4	4
Exhumations	0	0

Cremation Permit Authorizations, Cass County

	2021 ⁴	2022
Cremation Permits	262	266
% of Total Deaths with Cremation	63%	67%

¹ Data provided includes January 1 to December 31, 2021, but WMed served as ME for only February 1 to December 31, 2021

² Updated total number of deaths occurring in the county

³ Provisional total number of deaths occurring in the county

⁴ Data provided includes February 1 to December 31, 2021

Manners of Death Reported, Cass County

	2021 ¹	2022
Natural	105	112
Accident	30	35
Suicide	7	7
Homicide	3	2
Indeterminate	1	1 ²
Total	146	157

Deaths Reported by Age (in years), Cass County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
2021	0	1	0	1	8	20	43	73
2022	1	0	0	2	4	24	44	82

Pediatric Deaths, Cass County

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

1. <1 year old
 - a. (1) Cause and manner of death could not be determined; indeterminate
2. 11-17 years old
 - a. (1) Multiple blunt force injuries, driver of motor vehicle that was impacted by tree branch; accident
 - b. (1) Gunshot wound of head; suicide

Drug-Related Deaths by Manner, Cass County⁴

	2021	2022
Accident	7	8
Suicide	1	0
Indeterminate	1	0
Total	9	8
Total involving opioid(s)	8	6
% of Accidental and Indeterminate Deaths Involving Opioids	88%	75%

¹ Data provided includes January 1 to December 31, 2021, but WMed served as ME for only February 1 to December 31, 2021

² (1) Infant found dead in bassinet, cause and manner of death could not be determined

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

⁴ Acute alcohol intoxications are considered drug-related deaths and are included in this data

Drug-Related Accidental Deaths, Cass County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
26	M	W	49031	Fentanyl	Y
35	M	W	49120	Fentanyl, para-Fluorofentanyl, Xylazine	Y
37	M	W	49047	Fentanyl, para-Fluorofentanyl	Y
42	M	W	49047	Alcohol, Cocaethylene, Cocaine	N
42	M	W	49047	Alprazolam, Hydrocodone	Y
43	M	AI/AN	49061	Methamphetamine	N
62	M	W	49045	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
64	M	AA/B	49047	Alcohol, Cocaine, Fentanyl	Y

Suicides by Sex & Age, Cass County

	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
2021	7	5	2	0	0	3	2	2
2022	7	7	0	1	0	2	2	3

Suicides by Mechanism, Cass County

	2021	2022
Firearm	4	6
Hanging	1	1
Carbon Monoxide	0	0
Drug Intoxication	1	0
Motor Vehicle	0	0
Sharp Force Trauma	1	0
Asphyxia/Suffocation	0	0
Other	0	0
Total	7	7

Accidental Deaths by Mechanism, Cass County

	2021	2022
Vehicle	17	13
Drug-Related	7	8
Drowning	0	2 ¹
Fall	1	6
Fire	3	0
Environmental Exposure	1	0
Asphyxia	0	1 ²
Other	1	5 ³
Total	30	35

¹ Includes (1) Drowning associated with acute drug intoxication

² Positional asphyxia associated with acute alcohol intoxication

³ (3) Carbon monoxide poisoning; (1) Anaphylaxis due to yellow jacket sting; (1) Gunshot wound of chest

GRAND TRAVERSE COUNTY

Summary of All Grand Traverse County Cases

	2017	2018	2019	2020	2021	2022
Total Deaths in the County	1,306	1,413	1,345	1,572	1,782 ¹	1,668 ²
Deaths Reported to the ME	380	350	384	495	579	532
Deaths Investigated	249	252	278	375	396	397
MEI Scene Investigations	122	206	212	211	246	247
Death Certificates by ME	153	126	131	158	159	179
Bodies Transported to WMed	77	58	65	69	80	80
Complete Autopsy	56	45	52	53	60	54
Limited Autopsy	2	0	2	3	2	6
External Examination	19	13	12	13	17	20
Storage Only at WMed	0	0	0	0	1	0
Total Cases with Toxicology	73	53	61	64	75	77
Unidentified Remains After Exam	1	2	0	1	0	0
Referrals to Gift of Life	44	37	43	49	75	99
Tissue Donations	4	3	1	7	4	2
Cornea Donations	4	2	0	2	0	2
Unclaimed Investigations	5	7	10	12	13	9
Exhumations	0	0	0	0	0	0

Cremation Permit Authorizations, Grand Traverse County

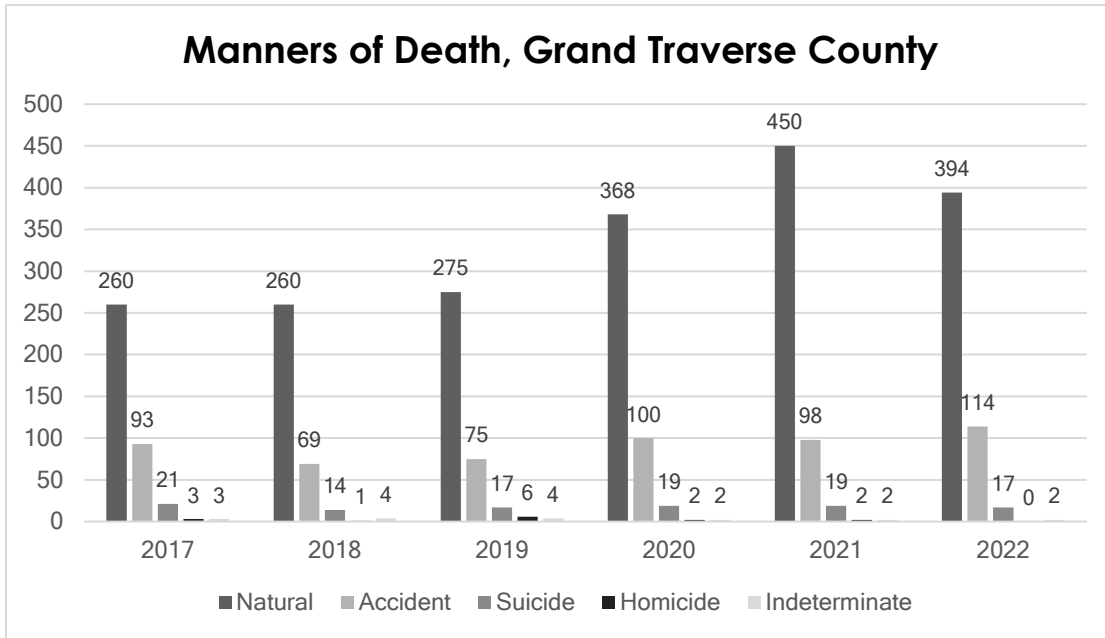
	2017	2018	2019	2020	2021	2022
Cremation Permits	1,005	1,108	1,077	1,283	1,426	1,370
% of Total Deaths with Cremation	76%	78%	80%	82%	80%	82%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Grand Traverse County

	2017	2018	2019	2020	2021	2022
Natural	260	260	275	368	450	394
Accident	93	69	75	100	98	114
Suicide	21	14	17	19	19	17
Homicide	3	1	6	2	2	0
Indeterminate	3	4	4	2	2	2 ¹
Total	380	348	377	491	571	528²



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
2020	7	0	0	1	10	37	122	314
2021	0	2	0	3	6	45	115	400
2022	7	0	0	0	8	42	115	355

¹ (1) Infant found dead in bed in prone position, cause and manner of death could not be determined; (1) Sepsis due to pneumonia associated with multiple medical conditions, some with unknown etiologies

² Does not include (5) stillbirth 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 seven deaths of individuals under 18 years of age include:

1. <1 year old
 - a. (5) Prematurity; natural
 - b. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
 - c. (1) Hypoxic-ischemic encephalopathy; natural

Accidental Deaths by Mechanism, Grand Traverse County

	2017	2018	2019	2020	2021	2022
Vehicle	23	15	22	18	23	24
Drug-Related	19	9	10	19	16	22
Drowning	2	2	2	6	3	2 ¹
Fall	44	35	34	47	46	52
Fire	2	1	1	1	1	1
Environmental Exposure	0	1	0	4	2	4 ²
Asphyxia	1	3	4	3	3	4 ³
Other	2	3	2	2	4	5 ⁴
Total	93	69	75	100	98	114

Drug-Related Deaths by Manner, Grand Traverse County⁵

	2017	2018	2019	2020	2021	2022
Accident	19	9	10	19	16	22
Suicide	4	1	2	3	3	0
Indeterminate	0	0	0	0	0	0
Total	23	10	12	22	19	22
Total involving opioid(s)	18	8	8	15	16	20
% of Accidental and Indeterminate Deaths Involving Opioids	84%	89%	70%	68%	100%	91%

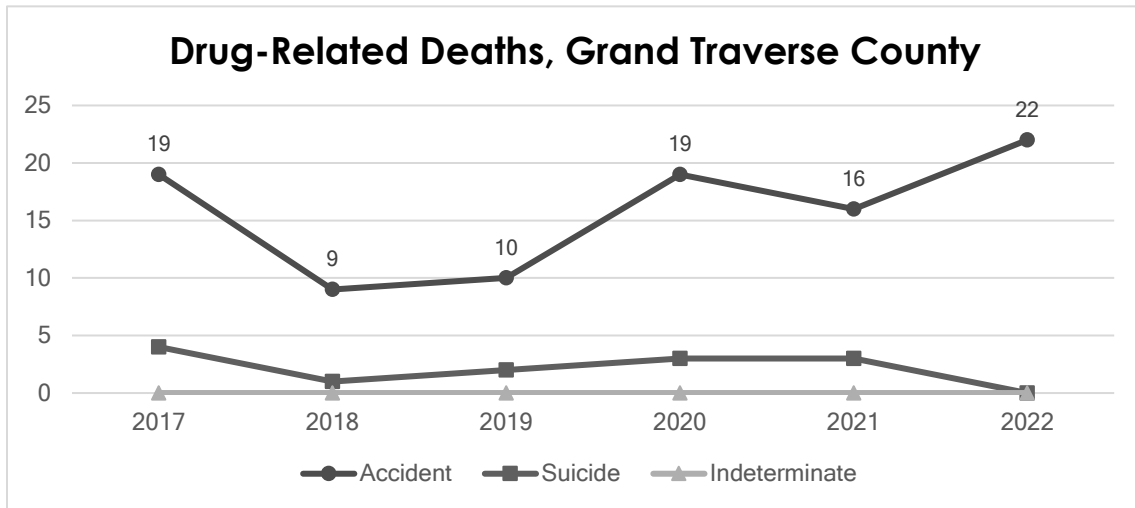
¹ Includes (1) Drowning associated with hypothermia

² Includes (1) Hypothermia associated with acute alcohol intoxication

³ (3) Asphyxia due to choking; (1) Positional asphyxia associated with seizure disorder

⁴ (2) Probable inhalation of toxic fumes due to mixing of multiple chemicals; (1) Multiple blunt force injuries sustained in bicycle collision with fixed object; (1) Blunt force head and neck injuries sustained in bicycle collision with another bicyclist; (1) Paraspinal hematoma due to injury while moving large object

⁵ Acute alcohol intoxications are considered drug-related deaths and are included in this data

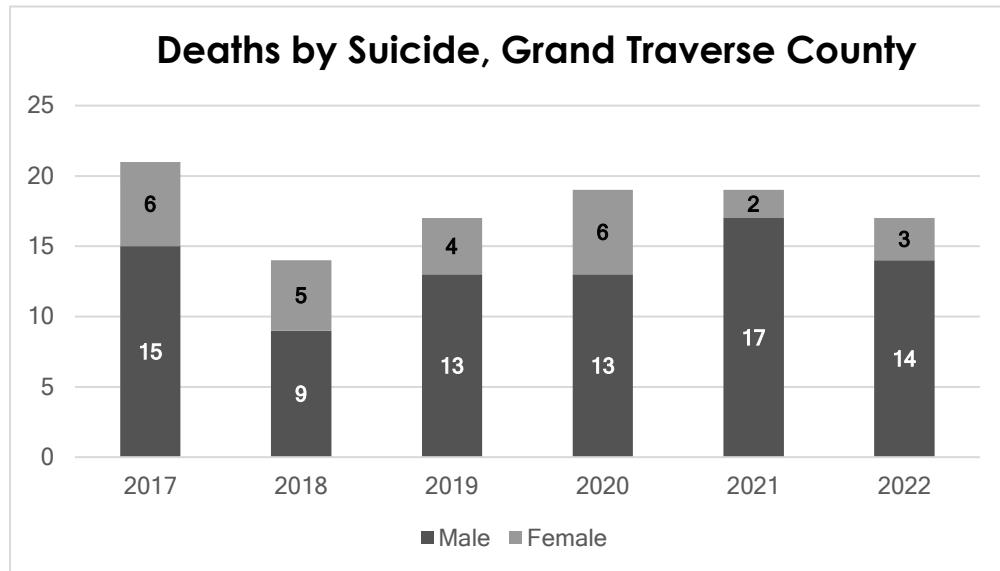


Drug-Related Accidental Deaths, Grand Traverse County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
24	M	W	49696	Fentanyl, para-Fluorofentanyl	Y
25	F	AI/AN	49684	Fentanyl	Y
31	M	W	49649	Fentanyl, Methamphetamine	Y
31	M	W	49643	Fentanyl, Methamphetamine	Y
33	M	W	49686	Fentanyl, Methamphetamine	Y
33	M	W	49637	Fentanyl, Gabapentin, Methamphetamine	Y
33	M	W	49685	Fentanyl, Heroin, Mitragynine	Y
35	F	W	49684	Fentanyl	Y
35	M	W	49686	Fentanyl, Methamphetamine	Y
35	M	W	49686	Cocaine, Fentanyl	Y
37	F	W	49684	Fentanyl	Y
38	M	W	49685	Fentanyl	Y
39	M	W	49686	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
40	M	W	49690	Alprazolam, Fentanyl, Heroin, Methamphetamine, para-Fluorofentanyl	Y
45	M	W	49696	Fentanyl, Heroin	Y
47	M	W	49696	Cocaine, Fentanyl	Y
50	M	W	49686	Fentanyl, Methamphetamine	Y
50	M	W	49684	Alcohol, 7-Aminoclonazepam, Cocaine, Fentanyl, Heroin, para-Fluorofentanyl, U-51754	Y
60	M	W	49684	Methamphetamine	N
62	F	W	49685	Alprazolam, Buprenorphine, Cyclobenzaprine, Gabapentin	Y
62	M	W	49685	Alcohol	N
70	F	W	49685	Alprazolam, Morphine, Oxycodone	Y

Suicides by Sex & Age, Grand Traverse County

	Total	Male	Female	0 - 17	18 - 25	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
2020	19	13	6	0	3	8	7	1
2021	19	17	2	2	1	5	4	7
2022	17	14	3	0	2	8	3	4



Suicides by Mechanism, Grand Traverse County

	2017	2018	2019	2020	2021	2022
Firearm	11	5	9	7	7	9
Hanging	4	5	4	5	6	6
Carbon Monoxide	0	0	1	0	2	0
Drug Intoxication	4	1	2	3	3	0
Motor Vehicle	1	1	0	1	0	0
Sharp Force Trauma	1	1	0	3	0	1
Asphyxia/Suffocation	0	0	0	0	0	0
Other	0	1	1	0	1	1 ¹
Total	21	14	17	19	19	17

¹ Drowning

KALAMAZOO COUNTY

Summary of All Kalamazoo County Cases

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Deaths in the County	2,668	2,684	2,733	2,879	2,840	2,977	2,921	3,446	3,587 ¹	3,261 ²
Deaths Reported to the ME	777	750	810	975	991	1,068	1,060	1,242	1,283	1,132
Deaths Investigated	580	560	646	745	733	782	781	931	1,002	893
MEI Scene Investigations	549	411	434	560	627	677	650	746	821	780
Death Certificates by ME	358	355	306	390	406	405	401	449	496	499
Bodies Transported to WMed	241	253	247	318	307	330	290	302	366	347
Complete Autopsy	193	174	142	192	189	187	180	188	222	201
Limited Autopsy	4	6	7	7	4	9	7	6	5	15
External Examination	37	37	52	60	64	68	62	60	82	82
Storage Only at WMed	7	36	46	59	50	62	41	44	55	49
Total Cases with Toxicology	222	198	174	222	238	238	224	236	292	265
Unidentified Remains After Exam	0	0	0	0	0	1	0	1	0	0
Referrals to Gift of Life	65	95	113	161	156	129	136	161	226	311
Tissue Donations	4	6	9	22	16	16	17	17	19	20
Cornea Donations	9	9	9	20	10	7	7	10	12	9
Unclaimed Investigations	7	10	10	10	13	41	40	48	51	67
Exhumations	0	0	0	1	0	0	0	0	0	0

Cremation Permit Authorizations, Kalamazoo County

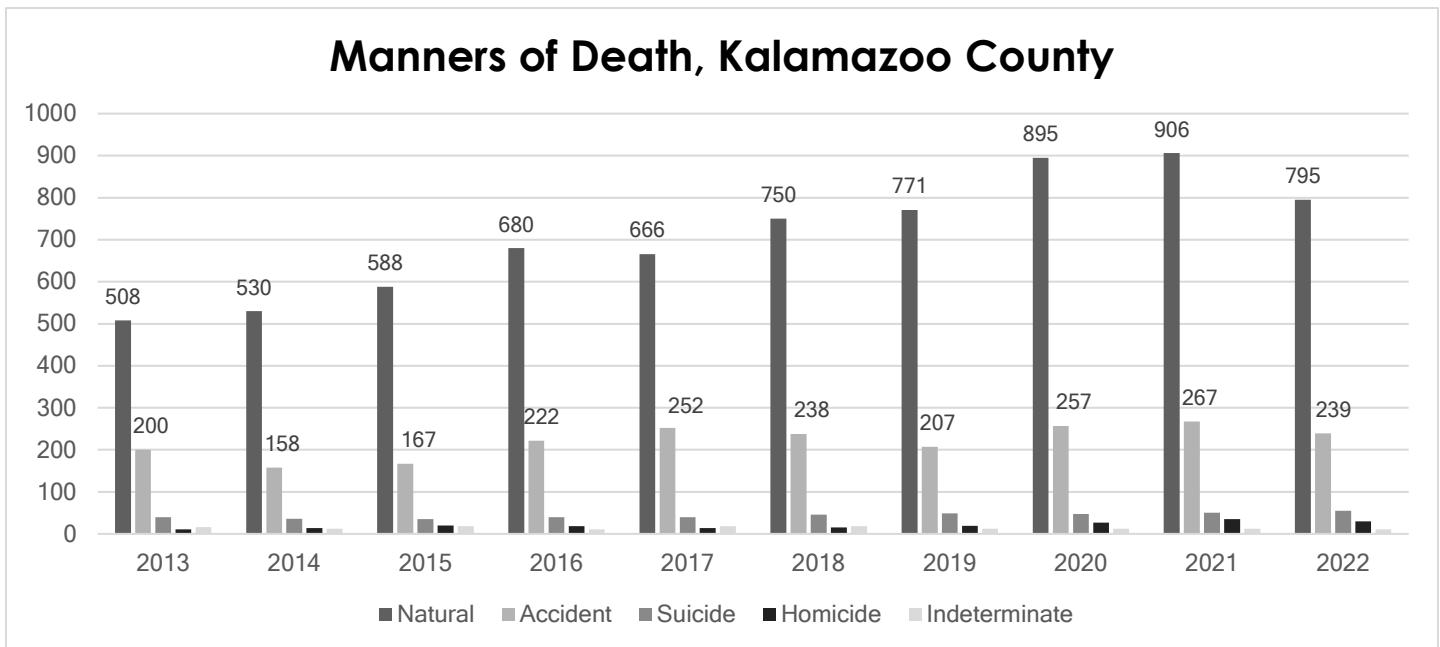
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cremation Permits	1,740	1,782	1,672	1,856	1,920	2,101	2,028	2,492	2,594	2,436
% of Total Deaths with Cremation	65%	66%	61%	64%	68%	71%	70%	72%	72%	75%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Kalamazoo County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Natural	508	530	588	680	666	750	771	895	906	795
Accident	200	158	151	222	252	238	207	257	267	239
Suicide	40	36	38	40	40	46	49	47	50	55
Homicide	11	14	14	18	14	15	19	27	35	30
Indeterminate	16	12	19	11	18	17	12	12	12	11 ¹
Total	775	750	810	971	990	1,066	1,058	1,238	1,270	1,130²



Deaths Reported by Age (in years), Kalamazoo County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
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

¹ (2) Mixed drug intoxication; (1) Bacterial pneumonia associated with acute drug intoxication; (1) Complications of COVID-19 associated with developmental delay and multifactorial malnutrition; (1) Multiple injuries, pedestrian versus train; (1) Complications of diabetes mellitus, could not exclude a component of neglect; (1) Unexplained sudden death associated with unsafe sleep; (1) Complications of blunt force injuries, remote history of fall and motor vehicle collision; (1) Cardiovascular disease associated with remote history of gunshot wound of head; (1) Complications of remote motor vehicle collision; (1) Found dead at home, cause and manner of death could not be determined

² Does not include (2) stillbirth 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

2020	11	4	4	9	28	130	343	709
2021	5	5	1	5	36	153	371	696
2022	8	4	4	8	25	130	279	672

Pediatric Deaths, Kalamazoo County

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

1. <1 year old
 - a. (1) Congenital heart disease; natural
 - b. (1) Multiple injuries, restrained passenger in motor vehicle collision; accident
 - c. (1) Asphyxia due to unsafe sleep; accident
 - d. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
 - e. (1) Noonan syndrome; natural
 - f. (1) Endocardial fibroelastosis with dilated cardiomyopathy associated with COVID-19 infection and prematurity; natural
 - g. (1) Influenza A; natural
 - h. (1) Globoid cell leukodystrophy; natural
2. 1-5 years old
 - a. (1) Blunt force head trauma; homicide
 - b. (1) Gunshot wound of head; homicide
 - c. (1) Multiple injuries, passenger in motor vehicle collision; accident
 - d. (1) Dehydration due to hyperthermia; accident
3. 6-10 years old
 - a. (1) Gunshot wound of head; homicide
 - b. (1) Positional asphyxia due to cerebral palsy and developmental delay; accident
 - c. (1) Complications of COVID-19 associated with developmental delay and multifactorial malnutrition; indeterminate
 - d. (1) Aicardi syndrome; natural
4. 11-17 years old
 - a. (1) Gunshot wound of head; homicide
 - b. (1) Multiple Congenital Cerebrospinal Malformations; natural
 - c. (1) Multiple blunt force injuries, driver in motor vehicle collision with fixed object; accident
 - d. (1) Drowning; accident
 - e. (1) Complications of projectile injury of head; homicide
 - f. (2) Gunshot wound of head; suicide
 - g. (1) Complications of diabetes mellitus, could not exclude a component of neglect; indeterminate

Accidental Deaths by Mechanism, Kalamazoo County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vehicle	60	35	46	58	72	51	45	40	74	52 ¹
Drug-Related	47	35	33	72	61	63	47	69	84	62
Drowning	2	3	1	4	7	9	5	5	0	2
Fall	76	77	57	80	92	100	85	123	86	106 ²
Fire	8	3	3	4	5	4	5	6	4	1
Environmental Exposure	1	1	1	1	2	3	5	5	2	5 ³
Asphyxia	4	2	7	3	6	6	12	6	7	3 ⁴
Other	3	4	3	1	7	3	3	3	10	8 ⁵
Total	200	160	151	223	252	238⁶	207	257	267	239

Drug-Related Deaths by Manner, Kalamazoo County⁷

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accident	47	35	33	72	61	63	47	69	84	62
Suicide	6	12	8	3	12	5	11	4	6	8
Homicide	0	0	0	0	1	0	0	0	0	0
Indeterminate	3	4	3	5	5	7	3	1	2	3
Total	56	51	44	80	79	75	61	74	92	73
Total involving opioid(s)	N/A	N/A	30	64	59	51	32	56	63	43
% of Accidents and Indeterminate Deaths Involving Opioids	N/A	N/A	83%	82%	74%	73%	60%	80%	69%	60%

¹ Includes (1) Drowning due to motor vehicle rollover that subsequently entered water

² Includes (1) Blunt force injuries due to fall/jump from moving vehicle

³ Includes (1) Hypothermia associated with acute alcohol intoxication

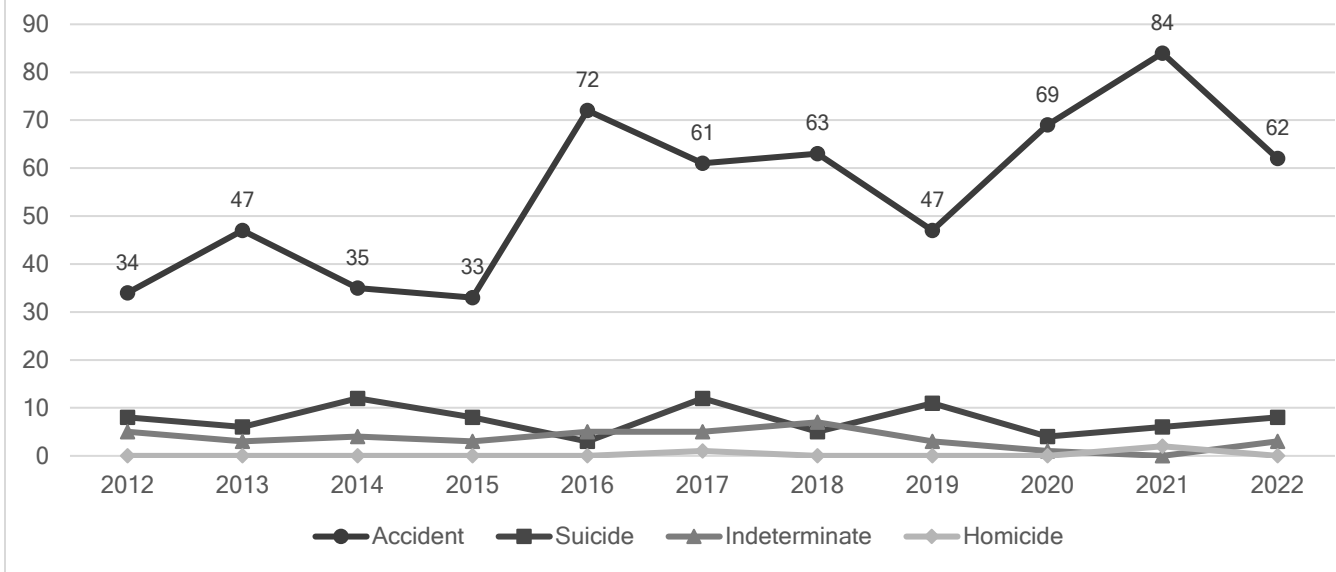
⁴ (1) Positional asphyxia due to cerebral palsy and developmental delay; (1) Asphyxia due to choking on object; (1) Asphyxia due to unsafe sleep

⁵ (1) Surgical/treatment complication; (1) Complications of hip fracture while walking; (1) Complications of quadriplegia due to being struck by lightning; (1) Blunt force head injury due to being struck by vehicle hatch; (1) Sepsis due to puncture wound; (1) Cancer associated with spine fracture while lifting hay; (1) Multiple blunt force injuries due to being struck by falling tree branch; (1) Carbon monoxide poisoning

⁶ (1) death is categorized twice (drowning and vehicle-related; vehicle left roadway and entered water)

⁷ Acute alcohol intoxications are considered drug-related deaths and are included in this data

Drug-Related Deaths, Kalamazoo County



Drug-Related Accidental & Indeterminate Deaths, Kalamazoo County

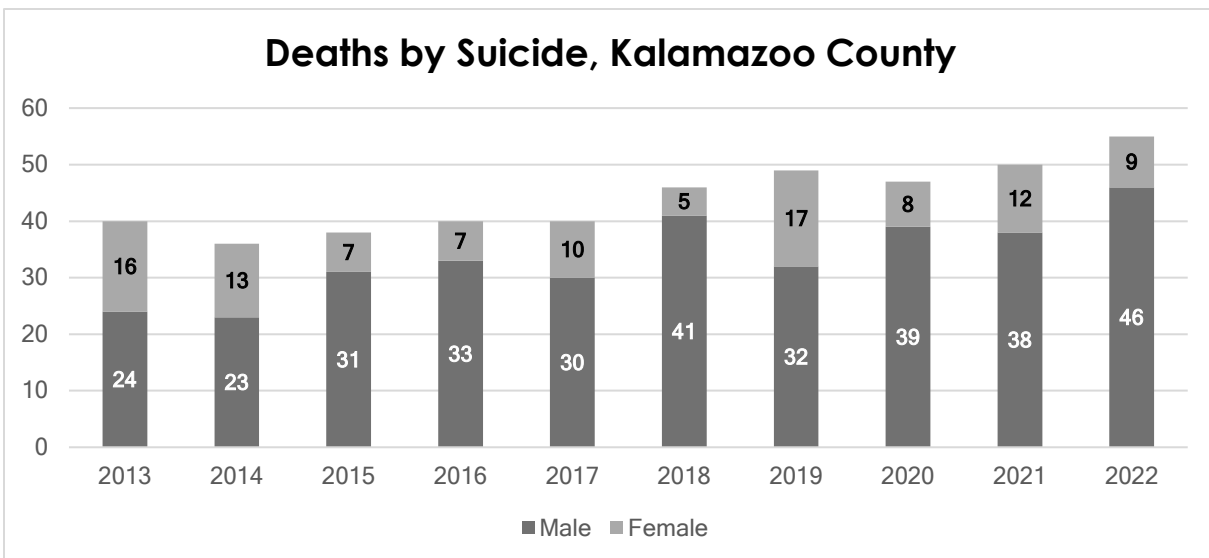
Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
21	F	W	49048	Fentanyl	Y
22	M	W	49007	Methamphetamine	N
23	F	W	49048	Alcohol	N
27	M	W	49001	Methadone, Methamphetamine	Y
27	M	W	49008	Fentanyl, Methamphetamine	Y
28	M	W	49002	Bromazolam, Fentanyl	Y
28	M	AA/B	49007	Fentanyl, Methamphetamine	Y
28	M	W	49007	Fentanyl, para-Fluorofentanyl, Xylazine	Y
28	M	W	49001	Etizolam, Methamphetamine	N
29	M	AA/B	49006	Alcohol, Cocaethylene, Cocaine, Fentanyl, para-Fluorofentanyl	Y
29	M	AA/B	49007	Fentanyl	Y
29	F	AA/B	49001	Cocaine, para-Fluorofentanyl	Y
29	F	W	49007	Methamphetamine	N
29	M	W	49001	Methamphetamine	N
31	M	W	49001	Fentanyl, Xylazine	Y
31	M	AA/B	49007	Amphetamine	N
33	M	AA/B	49048	Methamphetamine	N
34	F	W	49001	Fentanyl, Methamphetamine, para-Fluorofentanyl, Venlafaxine	Y
35	F	W	49007	Fentanyl, Methamphetamine	Y
35	M	W	49006	Fentanyl, Methamphetamine, Xylazine	Y

35	F	W	49048	Methamphetamine	N
36	M	AA/B	49007	Fentanyl	Y
36	F	AA/B	49007	Fentanyl	Y
37	M	W	49007	Acetyl fentanyl, Fentanyl	Y
38	M	W	49007	Alcohol, Fentanyl, Methamphetamine, Xylazine	Y
38	F	W	49048	Alcohol, Fentanyl, Methamphetamine	Y
38	M	AA/B	49007	Methamphetamine	N
38	M	W	49001	Cocaine, MDA	N
39	M	W	49007	Amphetamine, Clonazepam, Fentanyl	Y
40	M	Unk	49006	Cocaine, Heroin, Para-Fluorofentanyl	Y
41	M	AA/B	49048	Fentanyl, Methamphetamine	Y
41	F	W	49009	Buprenorphine, Butalbital, Butyrylfentanyl, Cocaine, Fentanyl, para-Fluorofentanyl	Y
42	F	W	49048	Methamphetamine	N
43	M	AA/B	49001	Cocaine, Fentanyl	Y
43	M	W	49048	Methamphetamine	N
43	F	W	49097	Methamphetamine	N
44	F	W	49048	Fentanyl, Oxycodone	Y
45	M	W	49007	Fentanyl, Heroin, Methamphetamine, para-Fluorofentanyl	Y
45	F	W	49048	Methamphetamine	N
47	M	W	49001	Fentanyl, Methamphetamine	Y
48	F	W	49048	Methamphetamine	N
49	F	AA/B	49007	Acetyl fentanyl, Fentanyl	Y
50	M	W	49048	Alcohol, Alprazolam, Diphenhydramine	N
51	F	W	49001	Methamphetamine	N
52	M	AA/B	49008	Cocaine, Fentanyl, para-Fluorofentanyl	Y
52	M	W	49048	Methamphetamine	N
54	F	W	49002	Fentanyl, Heroin, Methamphetamine, Oxycodone, Xylazine	Y
54	M	W	49024	Fentanyl	Y
54	M	W	49009	Alcohol, Gabapentin	N
55	M	W	49024	Dihydrocodeine/Hydrocodone, Hydrocodone	Y
56	M	W	49004	Methamphetamine	N
56	M	W	49007	Methamphetamine	N
58	M	W	49007	Fentanyl	Y
60	M	W	49002	Oxymorphone	Y
60	M	AA/B	49048	Cocaine, Fentanyl	Y
60	F	W	49048	Methamphetamine	N
66	M	W	49048	Alprazolam, Clonazepam, Fentanyl	Y

66	F	W	49007	Fentanyl, Methadone, Methamphetamine	Y
66	F	AA/B	49007	Cocaine	N
66	M	AA/B	49007	Alcohol, Cocaine	N
69	F	W	49001	Fentanyl, Methadone, Methamphetamine	Y
69	M	W	49048	Amphetamine	N
72	M	AA/B	49001	Fentanyl	Y
74	M	W	49048	Acetaminophen, Diazepam, Hydrocodone, Morphine	Y
88	F	W	49001	Citalopram/Escitalopram, Diphenhydramine	N

Suicides by Sex & Age, Kalamazoo County

	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
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
2020	47	39	8	3	5	15	19	5
2021	50	38	12	1	8	20	17	4
2022	55	46	9	2	5	17	21	10



Suicides by Mechanism, Kalamazoo County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Firearm	15	14	19	19	14	26	22	21	22	30
Hanging	13	7	9	13	12	13	12	21	17	12
Carbon Monoxide	0	0	1	2	0	0	0	1	0	0
Drug Intoxication	6	12	8	3	12	5	11	4	6	8
Motor Vehicle	1	1	1	0	0	0	2	0	2	1
Sharp Force Trauma	2	0	0	2	2	0	0	0	1	2
Asphyxia/Suffocation	3	1	0	0	0	1	1	0	0	1 ¹
Other	0	1	0	1	0	1	1	0	2	1 ²
Total	40	36	38	40	40	46	49	47	50	55

¹ Asphyxia due to rubber band ligature associated with helium inhalation and acute alcohol intoxication

² Drowning

LEELANAU COUNTY

Summary of All Leelanau County Cases

	2017	2018	2019	2020	2021	2022
Total Deaths in the County	148	175	145	187	213 ¹	204 ²
Deaths Reported to the ME	39	46	33	45	61	56
Deaths Investigated	36	45	33	44	60	55
MEI Scene Investigations	24	41	28	31	43	37
Death Certificates by ME	21	15	13	11	24	25
Bodies Transported to WMed	10	9	8	7	12	16
Complete Autopsy	9	7	6	1	9	11
Limited Autopsy	1	0	0	0	0	0
External Examination	0	2	2	6	3	5
Storage Only	0	0	0	0	0	0
Total Cases with Toxicology	10	8	8	6	11	15
Unidentified Remains After Exam	0	0	0	0	0	0
Referrals to Gift of Life	6	8	6	7	14	21
Tissue Donations	0	1	1	1	1	2
Cornea Donations	0	0	0	0	0	1
Unclaimed Investigations	0	0	0	0	0	0
Exhumations	0	0	0	0	0	0

Cremation Permit Authorizations, Leelanau County

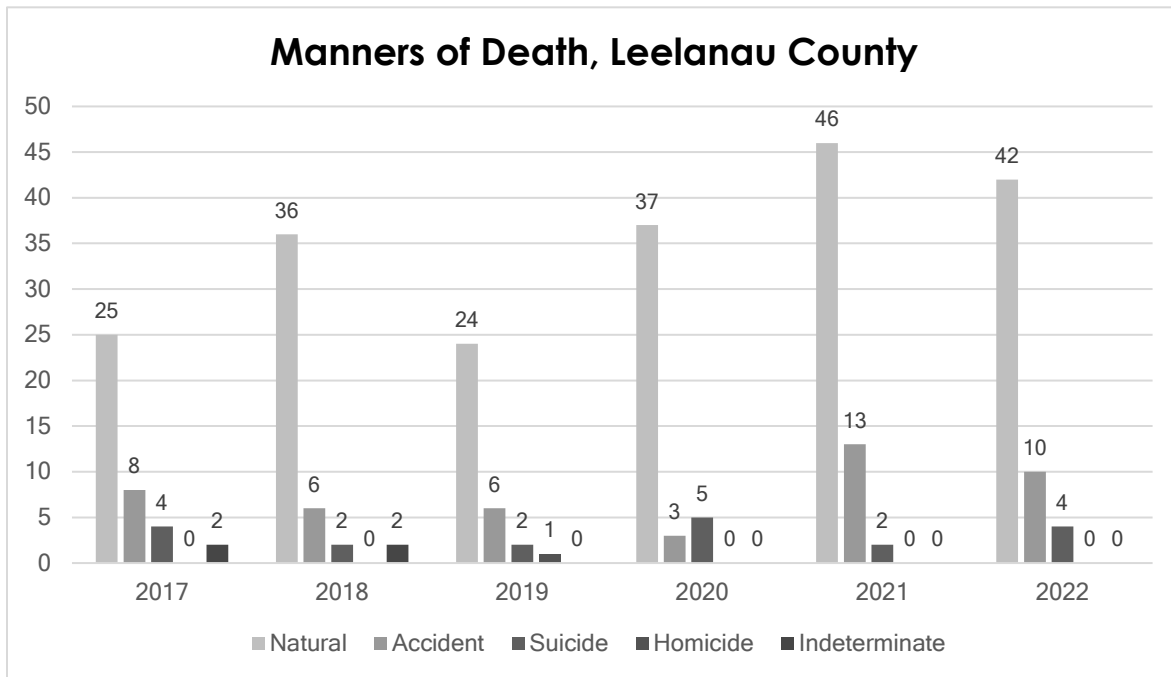
	2017	2018	2019	2020	2021	2022
Cremation Permits	105	130	102	132	164	141
% of Total Deaths with Cremation	71%	74%	70%	71%	77%	69%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Leelanau County

	2017	2018	2019	2020	2021	2022
Natural	25	36	24	37	46	42
Accident	8	6	6	3	13	10
Suicide	4	2	2	5	2	4
Homicide	0	0	1	0	0	0
Indeterminate	2	2	0	0	0	0
Total	39	46	33	45	61	56



Deaths Reported by Age (in years), Leelanau County¹

	< 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
2020	0	0	0	0	0	2	10	33
2021	0	1	0	1	1	7	11	40
2022	0	0	0	0	0	5	12	39

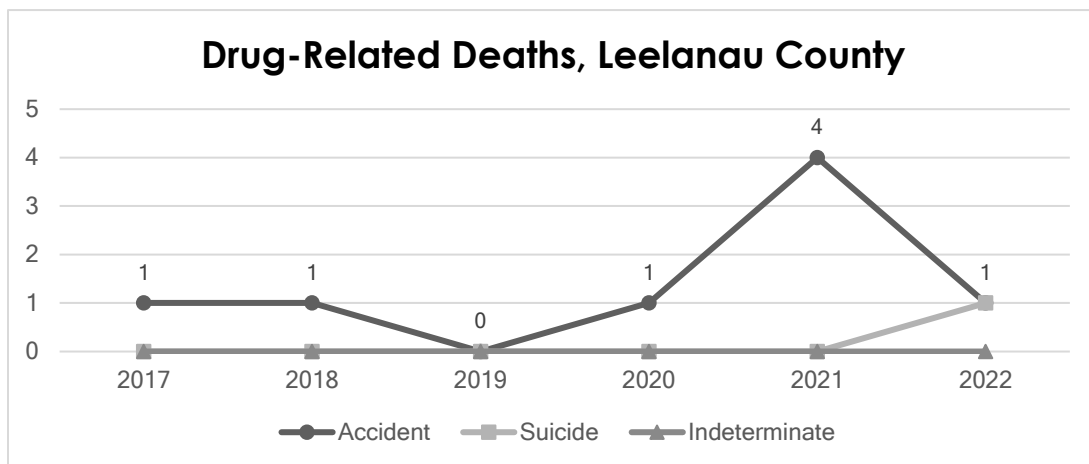
¹ All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year

Accidental Deaths by Mechanism, Leelanau County

	2017	2018	2019	2020	2021	2022
Vehicle	2	1	3	1	1	4
Drug-Related	1	1	0	1	4	1
Drowning	0	2	2	0	1	1
Fall	0	1	1	0	5	2
Fire	0	0	0	0	0	0
Environmental Exposure	0	0	0	0	1	2
Asphyxia	0	1	0	1	0	0
Other	1	0	0	0	1	0
Total	4	6	6	3	13	10

Drug-Related Deaths by Manner, Leelanau County¹

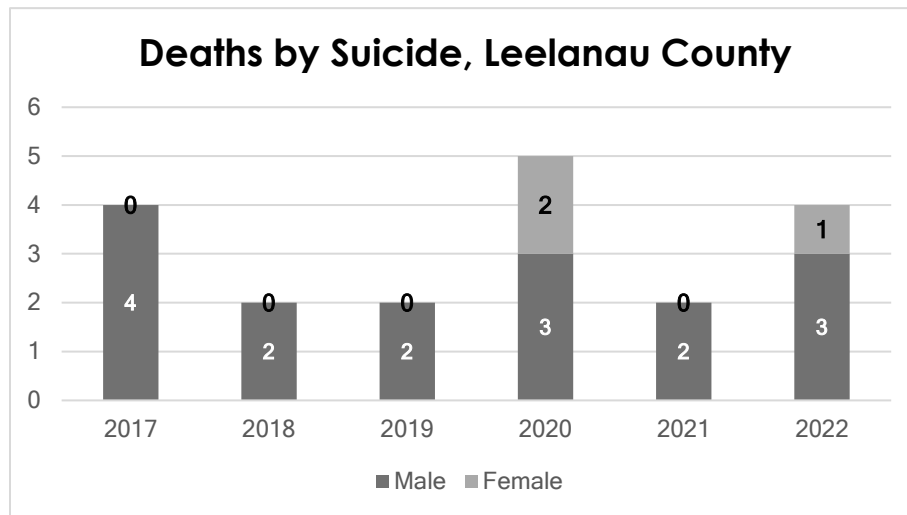
	2017	2018	2019	2020	2021	2022
Accident	1	1	0	1	4	1
Suicide	0	0	0	0	0	1
Indeterminate	0	0	0	0	0	0
Total	1	1	0	1	4	2
Total involving opioid(s)	1	0	0	1	3	2
% of Accidents and Indeterminate Manners Involving Opioids	100%	0%	0%	100%	75%	100%



¹ Acute alcohol intoxications are considered drug-related deaths and are included in this data

Suicides by Sex & Age, Leelanau County

	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
2020	5	3	2	0	0	1	1	3
2021	2	2	0	1	0	1	0	0
2022	4	3	1	0	0	1	2	1



Suicides by Mechanism, Leelanau County

	2017	2018	2019	2020	2021	2022
Firearm	2	2	2	3	0	1
Hanging	1	0	0	2	2	1
Carbon Monoxide	0	0	0	0	0	0
Drug Intoxication	0	0	0	0	0	1
Motor Vehicle	0	0	0	0	0	0
Sharp Force Trauma	0	0	0	0	0	0
Asphyxia/Suffocation	0	0	0	0	0	0
Other	1	0	0	0	0	1 ¹
Total	4	2	2	5	2	4

¹ Drowning

MASON COUNTY

Summary of All Mason County Cases

	2018	2019	2020	2021	2022
Total Deaths in the County	311	287	344	373 ¹	345 ²
Deaths Reported to the ME	107	110	111	139	115
Deaths Investigated	92	93	97	124	98
MEI Scene Investigations	88	84	83	111	88
Death Certificates by ME	53	52	34	44	39
Bodies Transported to WMed	37	34	22	32	25
Complete Autopsy	29	25	12	20	15
Limited Autopsy	0	0	3	1	0
External Examination	6	7	7	7	10
Storage Only	2	2	0	4	0
Total cases with Toxicology	32	31	21	28	22
Unidentified Remains After Exam	0	0	1	0	0
Referrals to Gift of Life	16	10	19	26	26
Tissue Donations	3	2	0	2	2
Cornea Donations	0	1	0	1	1
Unclaimed Investigations	1	0	0	6	1
Exhumations	0	0	0	0	0

Cremation Permit Authorizations, Mason County

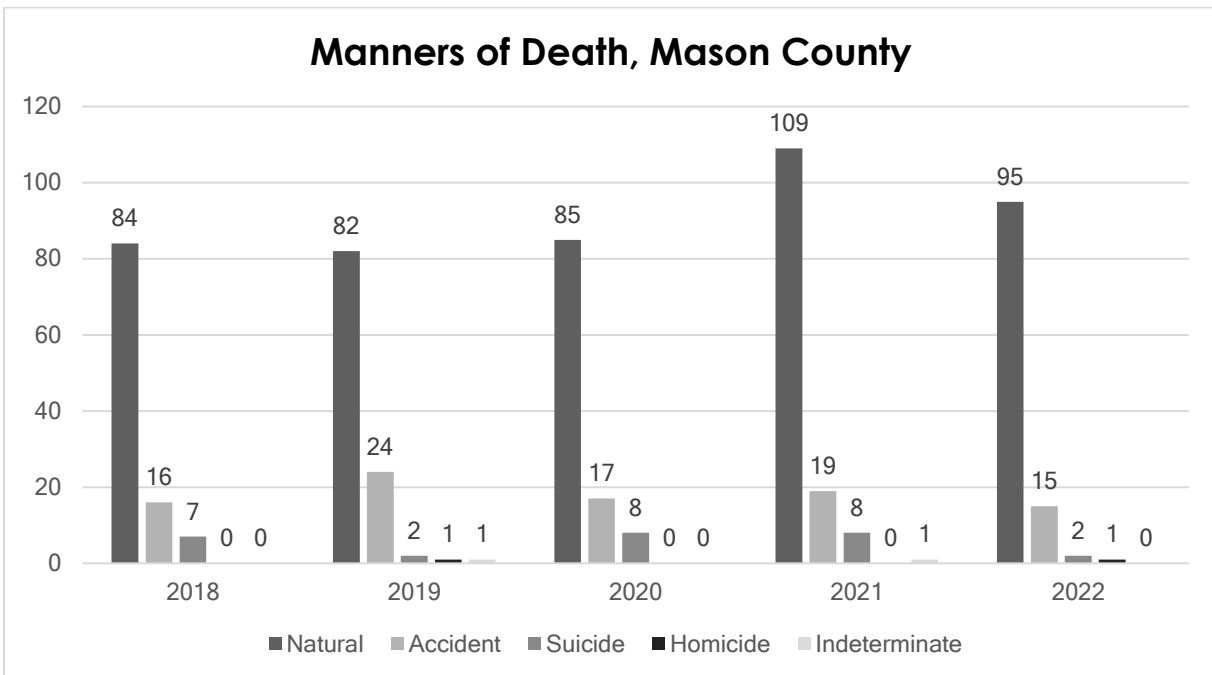
	2018	2019	2020	2021	2022
Cremation Permits	231	224	288	300	255
% of Total Deaths with Cremation	74%	78%	84%	80%	74%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Mason County

	2018	2019	2020	2021	2022
Natural	84	82	85	109	95
Accident	16	24	17	19	15
Suicide	7	2	8	8	2
Homicide	0	1	0	0	1
Indeterminate	0	1	0	1	0
Total	107	110	110	137	113¹



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
2020	0	0	0	0	1	10	28	71
2021	0	0	0	1	2	15	31	88
2022	0	0	0	0	0	12	23	78

¹ Does not include (1) stillbirth investigation; (1) non-human skeletal remains

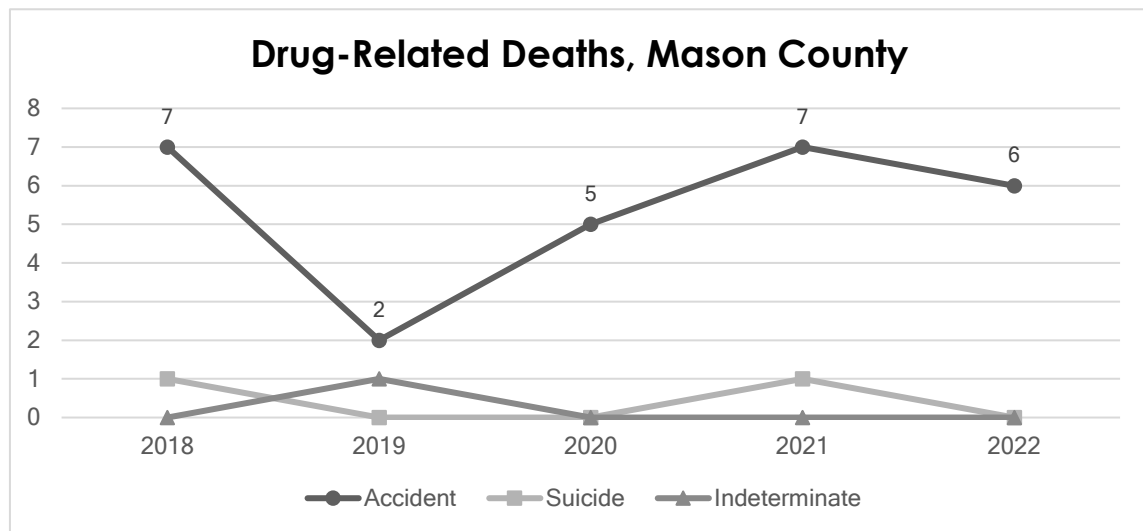
² All stillbirths and spontaneous abortions (miscarriages) investigated but not requiring an examination have been removed from this table for a more accurate representation of deaths reported under the age of one year

Accidental Deaths by Mechanism, Mason County

	2018	2019	2020	2021	2022
Vehicle	5	6	4	5	8
Drug-Related	7	2	5	7	6
Drowning	1	7	2	2	0
Fall	3	6	4	4	1
Fire	0	0	0	0	0
Environmental Exposure	0	3	0	0	0
Asphyxia	0	0	1	1	0
Other	0	0	1	0	0
Total	16¹	24	17	19	15

Drug-Related Deaths by Manner, Mason County²

	2018	2019	2020	2021	2022
Accident	7	2	5	7	6
Suicide	1	0	0	1	0
Indeterminate	0	1	0	0	0
Total	8	3	5	8	6
Total involving opioid(s)	4	1	5	7	4
% of Accidents and Indeterminate Deaths Involving Opioids	57%	33%	100%	100%	67%



¹ (1) death is categorized twice (drug-related and environmental exposure)

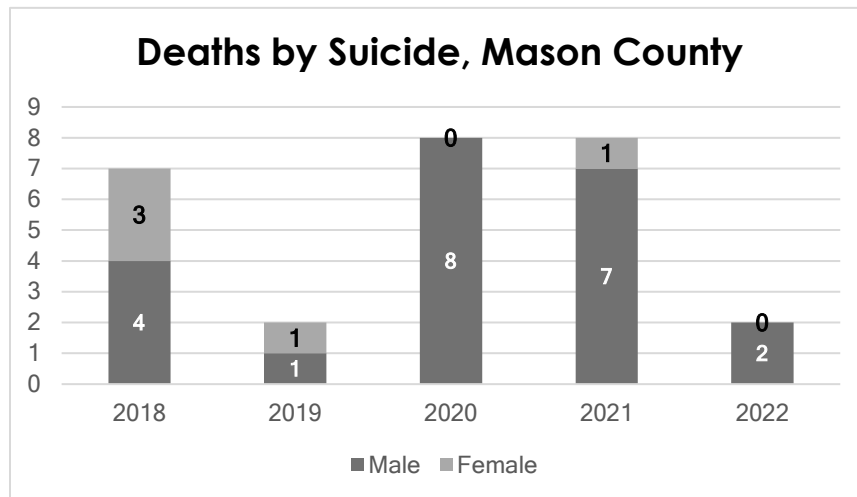
² Acute alcohol intoxications are considered drug-related deaths and are included in this data

Drug-Related Accidental Deaths, Mason County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
36	M	W	49431	Fentanyl, Methamphetamine	Y
41	M	W	49431	Fentanyl, Heroin	Y
42	M	W	49660	Alcohol, Buspirone, Duloxetine	N
50	M	W	49431	Alprazolam, Dihydrocodeine/Hydrocodol, Hydrocodone, Loperamide	Y
52	M	W	49431	Fentanyl, Methamphetamine	Y
60	F	W	49431	Methamphetamine	N

Suicides by Sex & Age, Mason County

	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
2020	8	8	0	0	0	2	4	2
2021	8	7	1	1	0	3	4	0
2022	2	2	0	0	0	2	0	0



Suicides by Mechanism, Mason County

	2018	2019	2020	2021	2022
Firearm	2	2	6	4	0
Hanging	4	0	2	2	2
Carbon Monoxide	0	0	0	0	0
Drug Intoxication	1	0	0	1	0
Motor Vehicle	0	0	0	0	0
Sharp Force Trauma	0	0	0	1	0
Asphyxia/Suffocation	0	0	0	0	0
Other	0	0	0	0	0
Total	7	2	8	8	2

MUSKEGON COUNTY

Summary of All Muskegon County Cases

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Deaths in the County	1,730	1,707	1,784	1,759	1,784	1,841	1,846	2,222	2,176 ¹	2,078 ²
Deaths Reported to the ME	527	524	605	585	629	662	670	804	842	786
Deaths Investigated	424	453	530	504	468	504	523	628	642	620
MEI Scene Investigations	420	444	501	469	425	463	467	538	537	532
Death Certificates by ME	216	228	251	231	234	235	248	255	292	317
Bodies Transported to WMed	148	178	159	167	159	161	177	167	191	222
Complete Autopsy	120	144	120	114	108	117	134	125	137	162
Limited Autopsy	6	2	4	2	4	4	5	4	4	11
External Examination	18	18	35	41	43	35	30	34	39	45
Storage Only	4	4	0	10	4	4	8	4	11	4
Total Cases with Toxicology	142	152	160	136	140	147	160	158	179	213
Unidentified Remains After Exam	0	0	0	0	0	0	0	0	1	0
Referrals to Gift of Life	93	156	139	109	122	128	104	137	155	176
Tissue Donations	9	14	17	12	9	15	12	9	12	15
Cornea Donations	12	16	20	11	7	8	6	4	8	1
Unclaimed Investigations	3	6	5	7	12	15	14	19	20	21
Exhumations	0	0	0	0	0	0	0	0	2	0

Cremation Permit Authorizations, Muskegon County

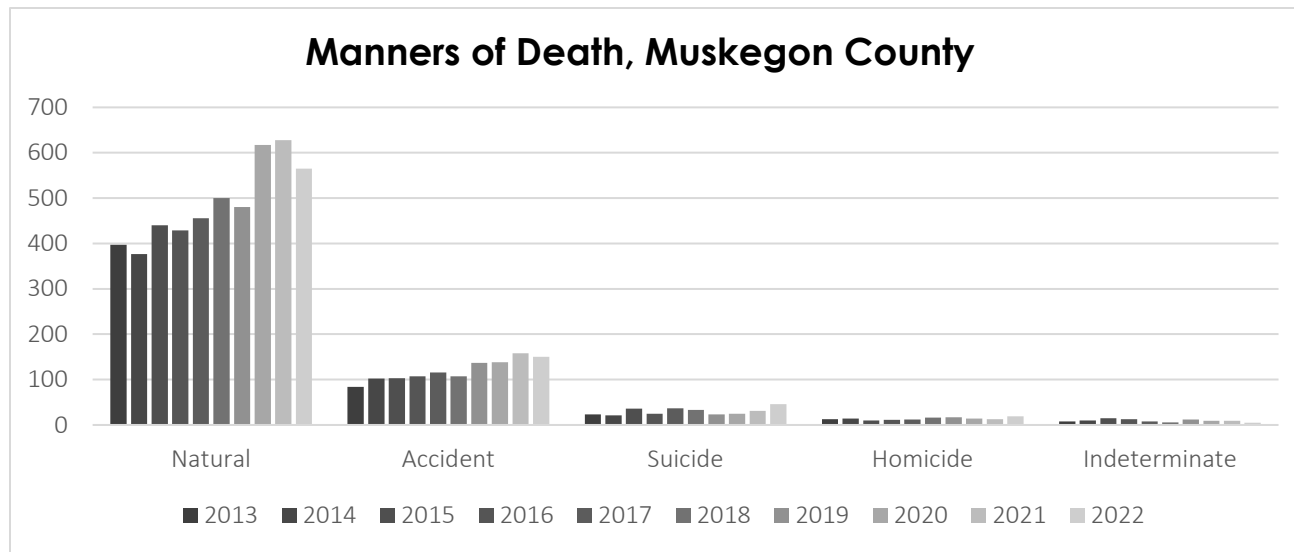
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cremation Permits	986	1,007	1,116	1,138	1,188	1,264	1,383	1,600	1,637	1,582
% of Total Deaths with Cremation	57%	59%	63%	65%	67%	68%	75%	72%	75%	76%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Muskegon County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Natural	397	377	440	429	456	500	480	617	628	565
Accident	84	102	103	107	116	107	137	138	158	150
Suicide	23	21	36	25	37	33	23	25	31	46
Homicide	13	14	10	11	12	16	17	14	13	19
Indeterminate	8	10	15	13	8	6	12	9	9	5 ¹
Total	525	524	604	585	629	662	669	803	839	785²



Deaths Reported by Age (in years), Muskegon County³

	< 1	1 - 5	6 - 10	11 - 17	18 - 25	26 - 44	45 - 64	65 +
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
2020	6	0	1	6	16	87	199	488
2021	5	0	0	1	20	92	236	485
2022	4	1	0	4	20	98	203	455

¹ (1) Drowning within vehicle that entered pond; (1) Acute drug intoxication; (1) Sepsis with decubitus ulcers and pneumonia associated with dehydration and malnourishment; (1) Unexplained sudden death associated with unsafe sleep; (1) Found dead in multiple plastic bags in advanced stage of decomposition, cause and manner of death could not be determined

² Does not include (1) stillbirth investigation

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, Muskegon County

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

1. <1 year old
 - a. (1) Blunt force head trauma; homicide
 - b. (1) Alobar holoprosencephaly; natural
 - c. (1) Extreme prematurity due to placental abruption; natural
 - d. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
2. 1-5 years old
 - a. (1) Respiratory viral infection including SARS-CoV-2; natural
3. 11-17 years old
 - a. (1) Hanging; suicide
 - b. (1) Gunshot wound of face; homicide
 - c. (1) Multiple blunt force injuries, unrestrained passenger in motor vehicle collision with fixed object; homicide
 - d. (1) Dehydration, extreme emaciation due to malnutrition and starvation associated with hypothermia; homicide

Accidental Deaths by Mechanism, Muskegon County

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Vehicle	13	18	22	22	22	21	33	27	28	21
Drug-Related	37	47	39	40	47	40	46	57	59	71
Drowning	4	4	4	2	4	2	5	4	6	5 ¹
Fall	26	29	29	32	38	37	43	38	51	42 ²
Fire	0	1	3	1	0	0	1	3	1	1
Environmental Exposure	0	1	1	4	0	1	2	4	7	4 ³
Asphyxia	2	2	3	4	2	5	4	4	3	2 ⁴
Other	0	1	2	2	3	2	3	1	3	4 ⁵
Total	82	103	103	107	116	107⁶	137	138	158	150

¹ Includes (1) Drowning associated with acute drug intoxication; (1) Drowning associated with cerebral palsy and seizure disorder

² Includes (1) Intracerebral hemorrhage due to fall from motorized tricycle

³ Includes (1) Influenza A associated with hypothermia

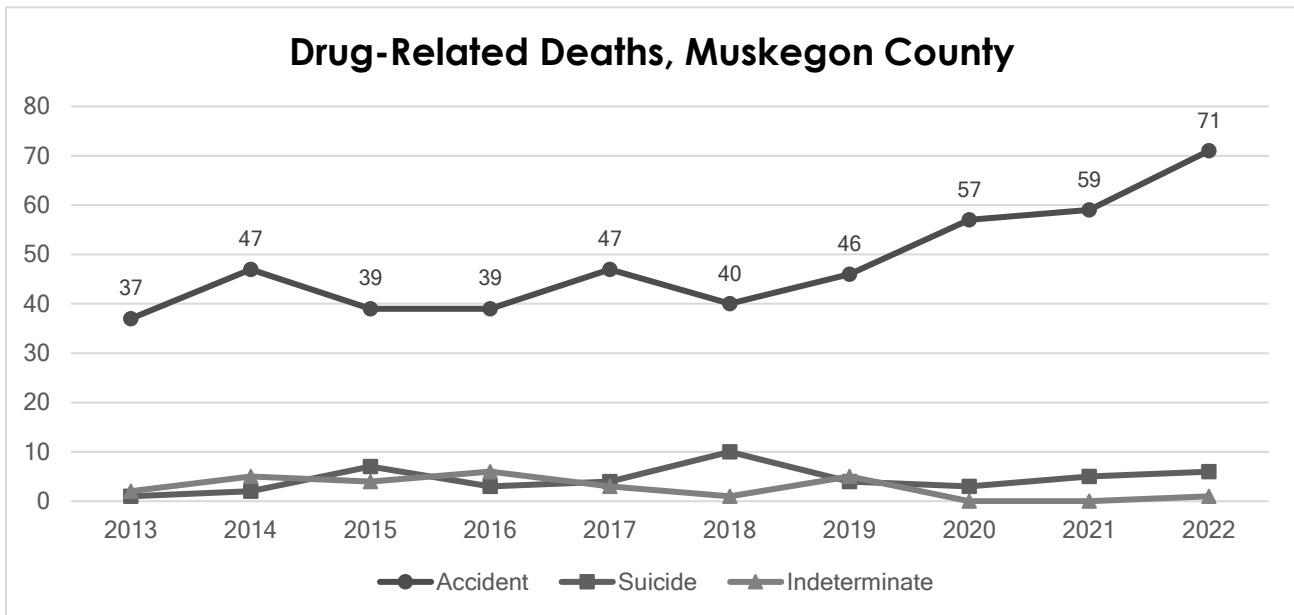
⁴ (1) Asphyxia due to choking; (1) Hanging

⁵ (1) Gunshot wound of back; (1) Blunt chest injury due to entrapment with unknown downtime; (2) Surgical/treatment complication

⁶ (1) Death is categorized twice (drug-related and drowning)

Drug-Related Deaths by Manner, Muskegon County¹

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Accident	37	47	39	39	47	40	46	57	59	71
Suicide	1	2	7	3	4	10	4	3	5	6
Indeterminate	2	5	4	6	3	1	5	0	0	1
Total	40	54	50	48	54	51	55	60	64	78
Total involving opioid(s)	N/A	N/A	43	41	43	39	43	50	54	64
% of Accidents and Indeterminate Deaths Involving Opioids	N/A	N/A	95%	87%	84%	85%	84%	88%	88%	83%



Drug-Related Accidental & Indeterminate Deaths, Muskegon County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
20	F	W	49441	Cocaine, Fentanyl, Heroin, para-Fluorofentanyl	Y
23	F	AA/B	49444	Fentanyl, Heroin, Hydrocodone, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
28	M	W	49442	Fentanyl, Methamphetamine	Y
29	F	W	49444	Fentanyl	Y
30	M	W	49457	Fentanyl	Y
30	F	AA/B	49444	Cocaine, Fentanyl, para-Fluorofentanyl	Y
30	M	W	49441	Alcohol, Cocaine, Fentanyl, Mitragynine, para-Fluorofentanyl, Xylazine	Y
30	M	AA/B	49445	Cocaine	N
30	F	AA/B	49444	Alcohol, Cocaethylene, Cocaine	N

¹ Acute alcohol intoxications are considered drug-related deaths and are included in this data

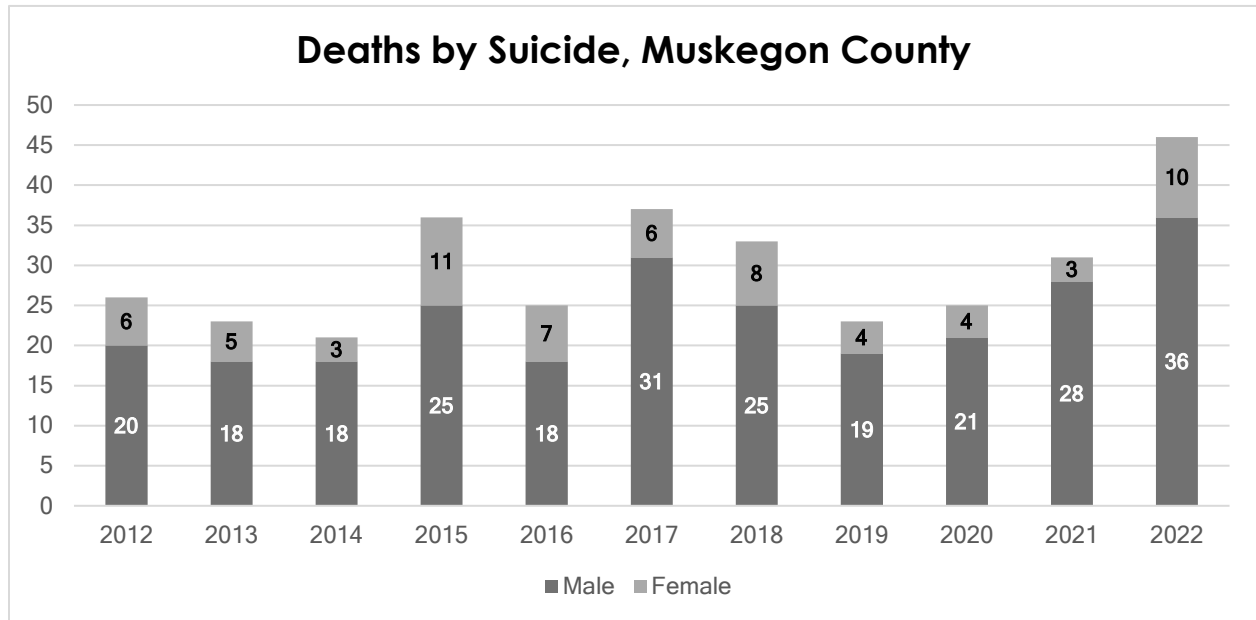
31	M	W	49444	Fentanyl	Y
32	M	W	49441	Amphetamine, Fentanyl, Methamphetamine	Y
32	F	AA/B	49444	Cocaine, Fentanyl, Methamphetamine	Y
32	M	W	49444	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
33	M	W	49441	Fentanyl, Methamphetamine, para-Fluorofentanyl	Y
33	M	AA/B	49444	Methamphetamine	N
34	M	W	49444	Cocaine, Fentanyl, Methamphetamine, Xylazine	Y
34	M	W	49457	Methamphetamine	N
35	F	W	49442	Fentanyl, Methamphetamine, Xylazine	Y
36	F	AA/B	49444	Cocaine, Fentanyl	Y
36	F	W	49444	Fentanyl, Morphine, para-Fluorofentanyl	Y
36	F	W	49442	Cocaine, Fentanyl, Methamphetamine	Y
37	M	AA/B	49444	Cocaethylene, Cocaine, Fentanyl	Y
37	F	AA/B	49442	Alcohol, Cocaethylene, Cocaine, Fentanyl, Methamphetamine	Y
38	M	AA/B	49441	Alcohol, Fentanyl	Y
38	M	W	49444	7-Aminoclonazepam, Fentanyl, Meprobamate, Methamphetamine, Mitragynine, Xylazine	Y
39	M	W	49442	Fentanyl, Mitragynine, para-Fluorofentanyl	Y
39	F	AA/B	49442	Cocaine, Fentanyl, para-Fluorofentanyl	Y
40	M	W	49441	Fentanyl, Heroin, Methamphetamine, para-Fluorofentanyl	Y
40	M	W	49457	Fentanyl	Y
40	M	AA/B	49442	Cocaine, Diazepam, Fentanyl, Hydrocodone	Y
40	M	W	49442	Fentanyl	Y
41	M	AA/B	49444	Amphetamine, Hydrocodone, Methamphetamine, MDA, MDMA	Y
41	M	W	49442	Fentanyl, Flualprazolam, para-Fluorofentanyl, Xylazine	Y
42	F	W	49444	Cocaine, Fentanyl, Gabapentin	Y
42	M	W	49444	Cocaine, Fentanyl, Methamphetamine	Y
42	F	AA/B	49442	Cocaine, Fentanyl	Y
42	M	W	49445	Cocaine, Fentanyl, Heroin	Y
43	F	W	49444	Cocaine, Fentanyl, Hydroxyzine, Gabapentin	Y
43	F	W	49451	Fentanyl	Y
45	M	W	49444	Cocaine, Fentanyl, para-Fluorofentanyl, Xylazine	Y
45	M	W	49442	Diphenhydramine, Fentanyl	Y
45	F	W	49442	Fentanyl, Methamphetamine	Y
46	F	W	49445	Fentanyl, Heroin, Methamphetamine	Y
46	F	AA/B	49440	Cocaine	N
47	M	AA/B	49461	Cocaine, Fentanyl	Y
48	F	W	49444	Alcohol, Methadone	Y

50	M	W	49442	Fentanyl, Methamphetamine	Y
51	M	AA/B	49444	Fentanyl, Hydroxyzine, Xylazine	Y
52	M	W	49441	Cocaine, Fentanyl	Y
52	F	W	49425	Tramadol	Y
52	M	W	49441	Fentanyl, Hydrocodone, Methamphetamine	Y
53	M	AA/B	49444	Cocaine, Fentanyl	Y
54	F	W	49444	Cocaine, Fentanyl	Y
55	M	W	49444	Opioid(s)	Y
55	F	AA/B	49442	Amphetamine, Cocaine	N
56	M	W	49442	Fentanyl, Methamphetamine	Y
56	F	AA/B	49444	Cocaine	N
56	M	W	49441	Alcohol, Cocaine, Methamphetamine	N
58	M	AA/B	49444	Alcohol, Cocaine, Fentanyl	Y
60	F	W	49442	Tramadol	Y
60	M	W	49444	Gabapentin, Methamphetamine	N
61	M	AA/B	49442	Alcohol, Cocaine, Fentanyl	Y
62	M	AA/B	49442	Fentanyl	Y
63	M	W	49444	Alcohol, Cocaine, Fentanyl	Y
64	M	AA/B	49444	Alcohol, Cocaine, Fentanyl	Y
64	F	W	49444	Acetaminophen, Cyclobenzaprine	N
66	F	AA/B	49442	Cocaine, Fentanyl	Y
69	F	AA/B	49442	Methadone	Y
69	M	AA/B	49442	Cocaine, Fentanyl	Y
70	M	AA/B	49441	Cocaine, Fentanyl, Methadone	Y
74	M	W	49442	Cocaine	N
91	M	W	49442	Naproxen	N

Suicides by Sex & Age, Muskegon County

	Total	Male	Female	0 - 17	18 - 25	26 - 44	45 - 64	65 +
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

2020	25	21	4	0	3	9	6	7
2021	31	28	3	0	3	12	10	6
2022	46	36	10	1	7	20	12	6



Suicides by Mechanism, Muskegon County

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Firearm	13	9	10	11	15	19	14	13	8	10	23
Hanging	7	7	7	15	5	10	9	5	9	9	13
Carbon Monoxide	0	1	0	1	1	1	0	0	1	2	2
Drug Intoxication	5	1	3	7	2	4	7	4	3	5	6
Motor Vehicle	0	2	1	0	0	0	0	0	0	0	1
Sharp Force Trauma	0	3	0	2	1	0	0	1	0	1	0
Asphyxia/Suffocation	1	0	0	0	1	1	0	0	2	1	1 ¹
Other	0	0	0	0	0	2	3	0	2	3	0
Total	26	23	21	36	25	37	33	23	25	31	46

¹ Suffocation by placing head in bag insufflated with nitrogen gas

OSCEOLA COUNTY

Summary of Osceola County Cases

	2018 ¹	2019	2020	2021	2022
Total Deaths in the County	187	175	211	153 ²	204 ³
Deaths Reported to the ME	62	72	78	60	69
Deaths Investigated	58	63	72	54	65
MEI Scene Investigations	55	62	66	47	60
Death Certificates by ME	31	29	32	14	30
Bodies Transported to WMed	17	23	22	12	21
Complete Autopsy	12	12	13	10	15
Limited Autopsy	0	2	1	0	2
External Examination	4	7	8	2	4
Storage Only	1	2	0	0	0
Total Cases with Toxicology	16	20	21	12	20
Unidentified Remains After Exam	1	1	0	0	0
Referrals to Gift of Life	10	16	16	14	23
Tissue Donations	1	1	1	0	1
Cornea Donations	1	1	1	1	1
Unclaimed Investigations	0	1	2	0	4
Exhumations	0	0	0	0	0

Cremation Permit Authorizations, Osceola County

	2018 ⁴	2019	2020	2021	2022
Cremation Permits	86	128	151	113	138
% of Total Deaths with Cremation	46%	73%	72%	74%	68%

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

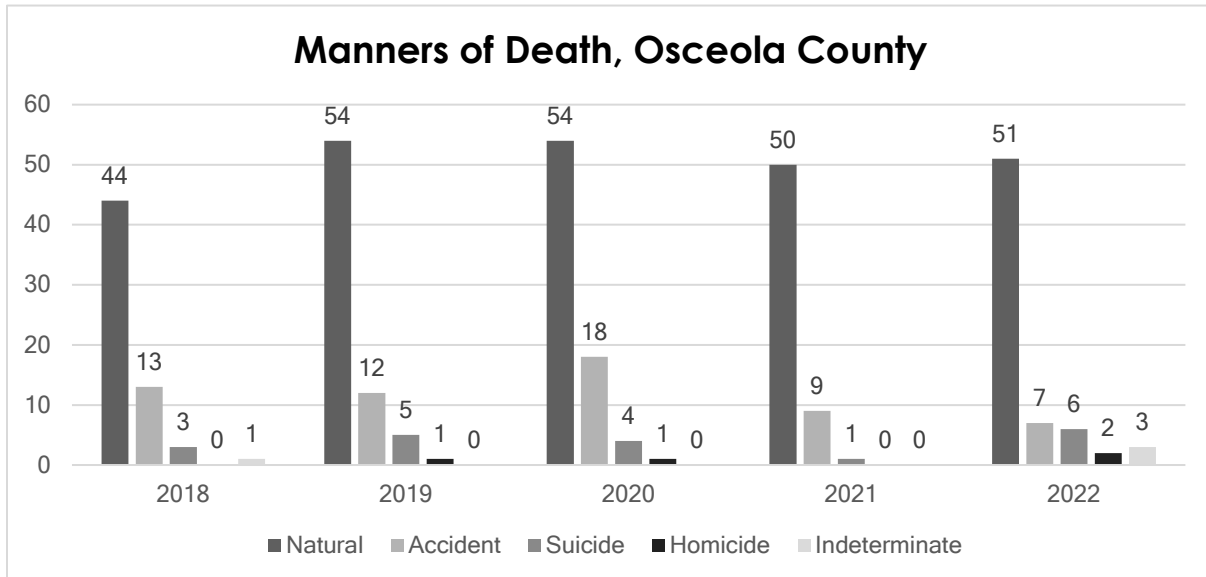
² Updated total number of deaths occurring in the county

³ Provisional total number of deaths occurring in the county

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

Manners of Death Reported, Osceola County

	2018	2019	2020	2021	2022
Natural	44	54	54	50	51
Accident	13	12	18	9	7
Suicide	3	5	4	1	6
Homicide	0	1	1	0	2
Indeterminate	1	0	0	0	3 ¹
Total	61	72	77	60	69



Deaths Reported by Age (in years), Osceola County²

	< 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
2020	0	0	0	0	4	11	21	41
2021	0	0	0	0	0	5	20	35
2022	2	1	0	0	0	7	17	42

¹ (1) Unexplained sudden death associated with unsafe sleep and a congenital disease known to be fatal in adulthood; (1) Unexplained sudden death associated with unsafe sleep; (1) Motor vehicle collision of unknown intentionality

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

Pediatric Deaths, Osceola County

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

1. <1 year old
 - a. (1) Unexplained sudden death associated with unsafe sleep and a congenital disease known to be fatal in adulthood; indeterminate
 - b. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
2. 1-5 years old
 - a. (1) Acute bronchiolitis with bronchopneumonia due to mixed respiratory infection (including Parainfluenza and Respiratory Syncytial Virus); natural

Accidental Deaths by Mechanism, Osceola County

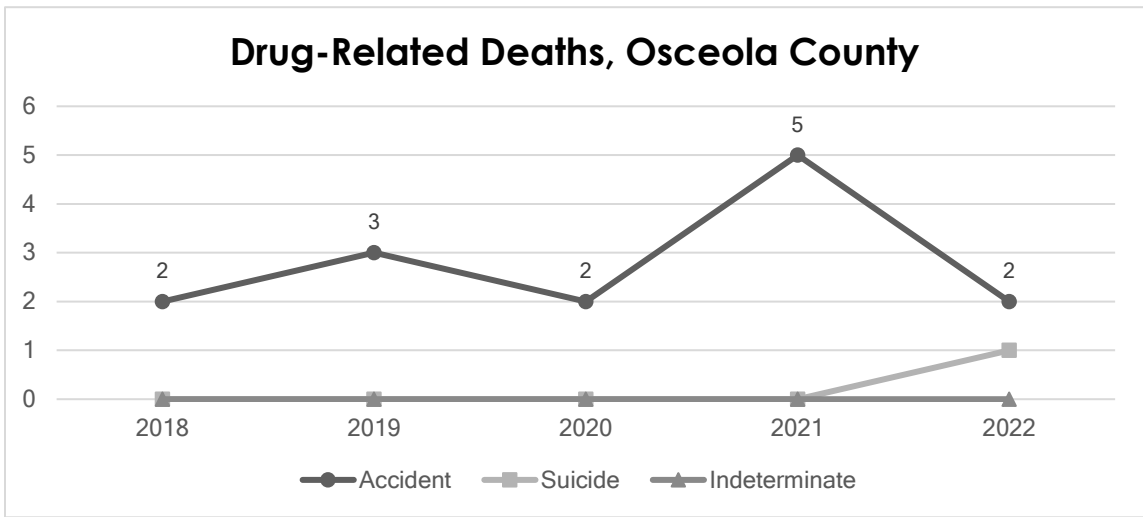
	2018	2019	2020	2021	2022
Vehicle	4	6	11	1	2
Drug-Related	2	3	2	5	2
Drowning	0	2	0	1	0
Fall	3	0	4	0	2
Fire	0	0	0	0	0
Environmental Exposure	0	0	1	2	0
Asphyxia	2	1	0	0	1 ¹
Other	2	0	0	0	0
Total	13	12	18	9	7

Drug-Related Deaths by Manner, Osceola County²

	2018	2019	2020	2021	2022
Accident	2	3	2	5	2
Suicide	0	0	0	0	1
Indeterminate	0	0	0	0	0
Total	2	3	2	5	3
Total involving opioid(s)	1	2	0	4	1
% of Accidents and Indeterminate Deaths Involving Opioids	50%	66%	0%	80%	50%

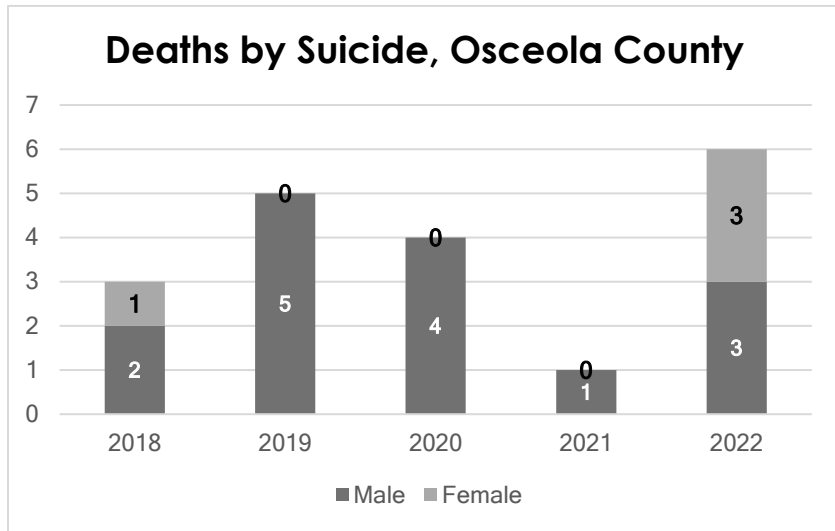
¹ Positional asphyxia due to seizure disorder

² Acute alcohol intoxications are considered drug-related deaths and are included in this data



Suicides by Sex & Age, Osceola County

	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
2020	4	4	0	0	1	0	2	1
2021	1	1	0	0	0	1	0	0
2022	6	3	3	0	0	3	1	2



Suicides by Mechanism, Osceola County

	2018	2019	2020	2021	2022
Firearm	2	4	3	1	5
Hanging	1	1	1	0	0
Carbon Monoxide	0	0	0	0	0
Drug Intoxication	0	0	0	0	1
Motor Vehicle	0	0	0	0	0
Sharp Force Trauma	0	0	0	0	0
Asphyxia/Suffocation	0	0	0	0	0
Other	0	0	0	0	0
Total	3	5	4	1	6

ST. JOSEPH COUNTY

Summary of St. Joseph County Cases

	2017	2018	2019	2020	2021	2022
Total Deaths in the County	508	530	507	541	604 ¹	562 ²
Deaths Reported to the ME	164	157	150	200	220	198
Deaths Investigated	155	150	145	196	191	184
MEI Scene Investigations	147	141	134	172	173	161
Death Certificates by ME	66	69	70	74	73	80
Bodies Transported to WMed	56	67	61	64	54	64
Complete Autopsy	34	39	34	42	30	39
Limited Autopsy	1	2	3	4	1	4
External Examination	14	20	17	11	16	11
Storage Only	7	5	7	7	7	10
Total Cases with Toxicology	43	55	51	54	45	50
Unidentified Remains After Exam	2	0	1	0	0	0
Referrals to Gift of Life	53	45	41	71	70	102
Tissue Donations	7	6	6	4	7	5
Cornea Donations	2	3	4	1	5	5
Unclaimed Investigations	1	4	8	6	4	6
Exhumations	0	0	0	0	0	0

Cremation Permit Authorizations, St. Joseph County

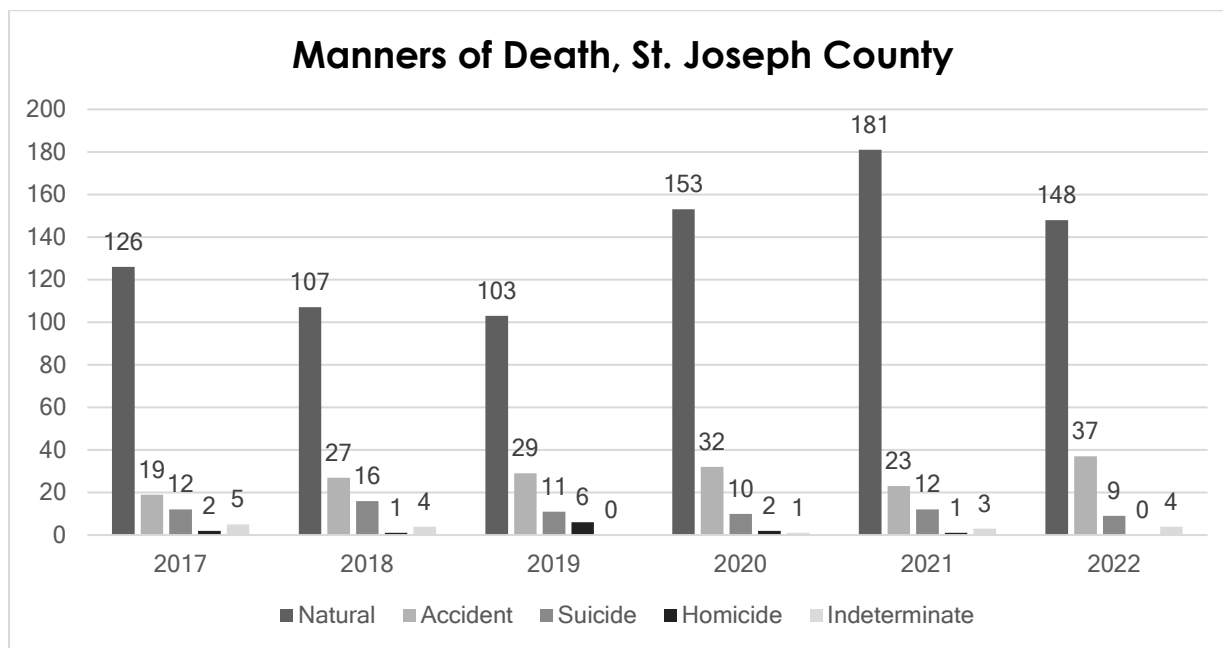
	2017	2018	2019	2020	2021	2022
Cremation Permits	309	306	327	386	424	408
% of Total Deaths with Cremation	61%	58%	65%	71%	71%	73%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, St. Joseph County

	2017	2018	2019	2020	2021	2022
Natural	126	107	103	153	181	148
Accident	19	27	29	32	23	37
Suicide	12	16	11	10	12	9
Homicide	2	1	6	2	1	0
Indeterminate	5	4	0	1	3	4 ¹
Total	164	155	149	198	220	198



Deaths Reported by Age (in years), St. Joseph County²

	< 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
2020	2	1	0	1	6	38	66	94
2021	1	0	0	1	3	18	71	126
2022	2	2	0	2	5	15	58	114

¹ (1) Unexplained sudden death associated with prematurity, aspiration, periventricular leukomalacia, maternal hypertension and maternal substance use during pregnancy; (1) Unexplained sudden death associated with unsafe sleep; (1) Found dead outside, cause and manner of death could not be determined; (1) Found dead in freezing temperatures, cause and manner of death could not be determined

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

Pediatric Deaths, St. Joseph County

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

1. <1 year old
 - a. (1) Unexplained sudden death associated with prematurity, aspiration, periventricular leukomalacia, maternal hypertension and maternal substance use during pregnancy; indeterminate
 - b. (1) Unexplained sudden death associated with unsafe sleep; indeterminate
2. 1-5 years old
 - a. (2) Smoke and soot inhalation associated with thermal injuries, residential fire; accident
3. 11-17 years old
 - a. (1) Dislocation of cervical spine, driver in motor vehicle collision; accident
 - b. (1) Multiple blunt force injuries, passenger in motor vehicle collision; accident

Accidental Deaths by Mechanism, St. Joseph County

	2017	2018	2019	2020	2021	2022
Vehicle	8	15	11	13	6	10
Drug-Related	6	4	10	11	6	11
Drowning	2	1	3	2	3	3 ¹
Fall	1	3	4	3	5	7
Fire	1	4	0	2	0	4
Environmental Exposure	0	0	1	0	0	1
Asphyxia	1	1	0	1	1	0
Other	0	0	0	0	2	1 ²
Total	19	27³	29	32	23	37

Drug-Related Deaths by Manner, St. Joseph County⁴

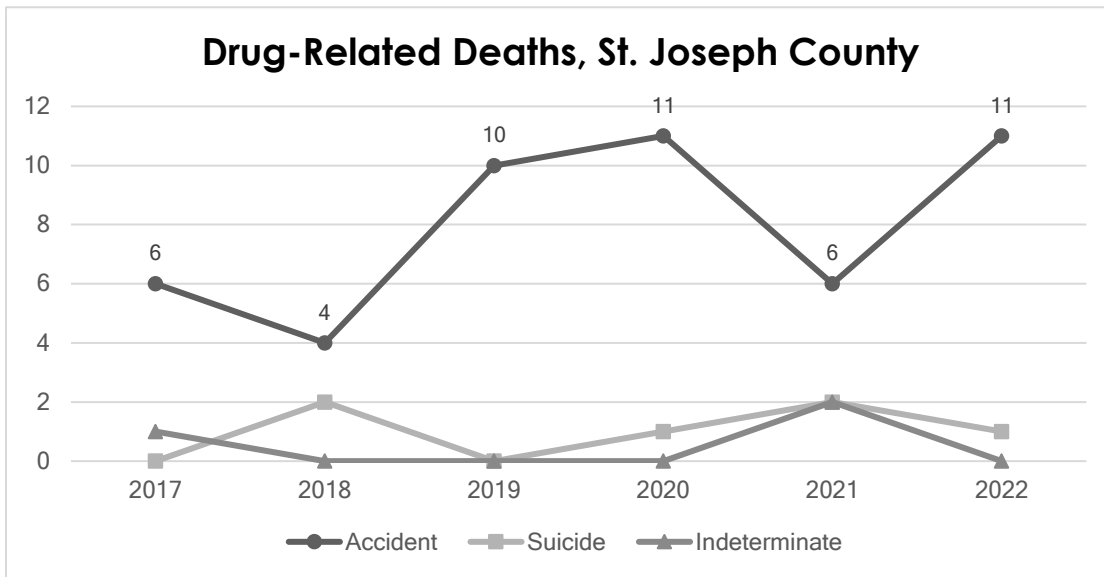
	2017	2018	2019	2020	2021	2022
Accident	6	4	10	11	6	11
Suicide	0	2	1	1	2	1
Indeterminate	1	0	0	0	2	0
Total	7	6	11	12	10	12
Total involving opioid(s)	6	4	4	11	7	5
% of Accidents and Indeterminate Deaths Involving Opioids	86%	75%	40%	91%	88%	45%

¹ Includes (1) Drowning due to inadvertently driving vehicle into pond

² (1) Surgical/treatment complication

³ (1) Death is categorized twice (drowning and vehicle-related)

⁴ Acute alcohol intoxications are considered drug-related deaths and are included in this data

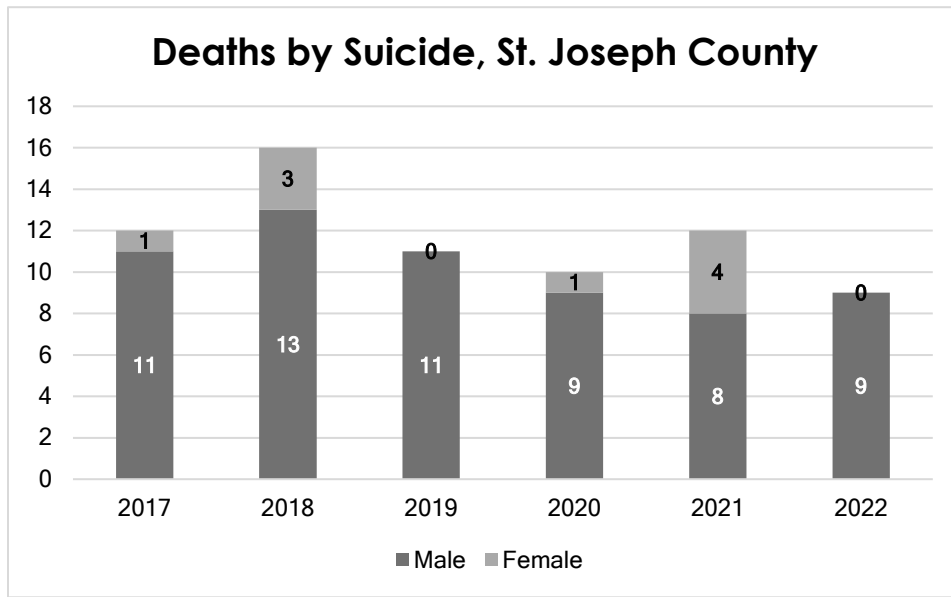


Drug-Related Accidental Deaths, St. Joseph County

Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
29	F	W	49099	Methamphetamine	N
34	M	AA/B	49093	Codeine, Fentanyl, para-Fluorofentanyl	Y
37	F	W	49093	Alcohol, Fentanyl, para-Fluorofentanyl	Y
39	M	W	49093	Alcohol, Fentanyl, para-Fluorofentanyl	Y
40	M	W	49091	Methamphetamine	N
44	F	W	49042	Mitragynine	Y
47	F	W	49093	Alcohol	N
47	M	W	49093	Fentanyl, Heroin, Methamphetamine, para-Fluorofentanyl, Xylazine	Y
52	F	W	49040	Methamphetamine	N
58	M	W	49042	Methamphetamine	N
69	M	W	49030	Methamphetamine	N

Suicides by Sex & Age, St. Joseph County

	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
2020	10	9	1	0	1	3	3	3
2021	12	8	4	1	1	4	5	1
2022	9	9	0	0	2	0	3	4



Suicides by Mechanism, St. Joseph County

	2017	2018	2019	2020	2021	2022
Firearm	4	7	8	7	2	7
Hanging	5	6	1	0	6	1
Carbon Monoxide	3	0	1	0	0	0
Drug Intoxication	0	2	1	1	2	1
Motor Vehicle	0	0	0	0	0	0
Sharp Force Trauma	0	0	0	1	1	0
Asphyxia/Suffocation	0	1	0	1	1	0
Other	0	0	0	0	0	0
Total	12	16	11	10	12	9

VAN BUREN COUNTY

Summary of Van Buren County Cases

	2018	2019	2020	2021	2022
Total Deaths in the County	514	496	605	612 ¹	606 ²
Deaths Reported to the ME	162	180	220	241	250
Deaths Investigated	146	164	203	229	238
MEI Scene Investigations	142	158	188	217	229
Death Certificates by ME	61	74	89	96	95
Bodies Transported to WMed	56	62	62	86	82
Complete Autopsy	31	40	37	54	48
Limited Autopsy	2	2	1	0	1
External Examination	20	15	17	18	22
Storage Only	3	5	6	14	11
Total Cases with Toxicology	44	53	52	69	63
Unidentified Remains After Exam	0	0	0	1	0
Referrals to Gift of Life	55	45	39	95	109
Tissue Donations	8	1	2	7	7
Cornea Donations	3	1	2	1	4
Unclaimed Investigations	2	3	4	9	11
Exhumations	1	0	0	0	0

Cremation Permit Authorizations, Van Buren County

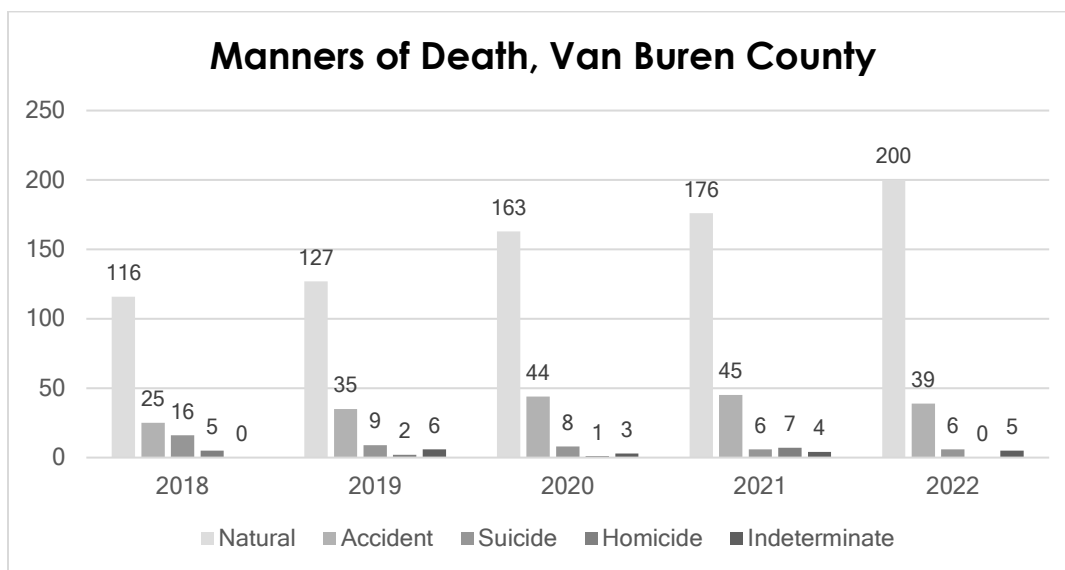
	2018	2019	2020	2021	2022
Cremation Permits	322	327	420	439	440
% of Total Deaths with Cremation	63%	67%	70%	72%	73%

¹ Updated total number of deaths occurring in the county

² Provisional total number of deaths occurring in the county

Manners of Death Reported, Van Buren County

	2018	2019	2020	2021	2022
Natural	116	127	163	176	200
Accident	25	35	44	45	39
Suicide	16	9	8	6	6
Homicide	5	2	1	7	0
Indeterminate	0	6	3	4	5 ¹
Total	162	179	219	238	250



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
2020	0	0	1	1	7	28	55	127
2021	0	0	0	0	3	30	83	122
2022	3	0	1	0	6	22	70	148

¹ (1) Multiple blunt force injuries of unknown etiology; (1) Hemoperitoneum due to spontaneous dissection/rupture of iliac artery associated with pulmonary thromboembolism and recent administration of multiple vaccines; (1) Complications of hip fracture due to fall, neglect could not be excluded; (2) Unexplained sudden death associated with unsafe sleep

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

Pediatric Deaths, Van Buren County

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

1. <1 year old
 - a. (1) Left ventricular rhabdomyoma; natural
 - b. (2) Unexplained sudden death associated with unsafe sleep; indeterminate
2. 6-10 years old
 - a. (1) Drowning; accident

Accidental Deaths by Mechanism, Van Buren County

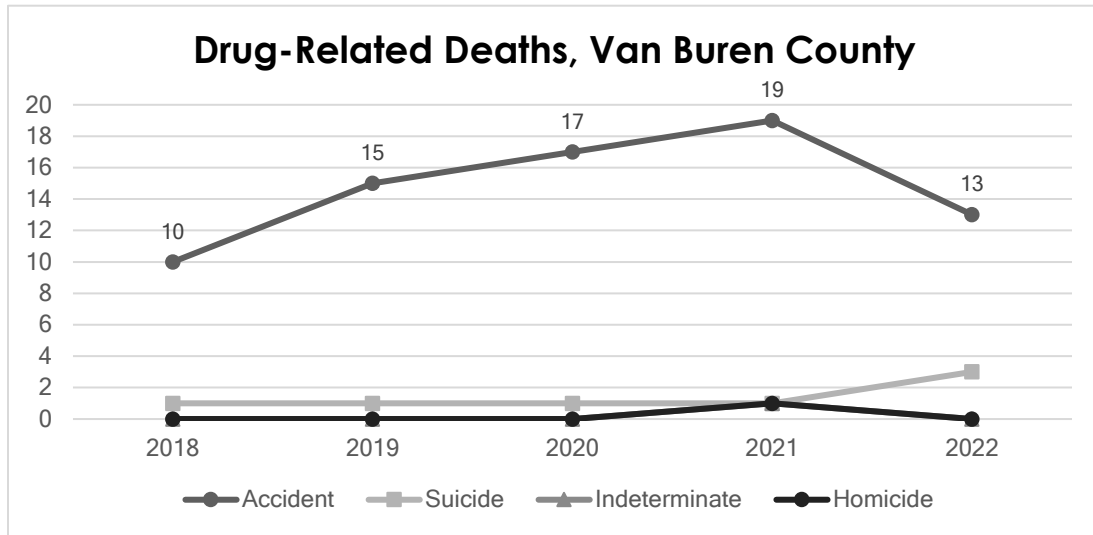
	2018	2019	2020	2021	2022
Vehicle	8	9	11	14	11 ¹
Drug-Related	10	15	17	19	13
Drowning	1	2	4	2	5
Fall	4	5	11	7	9
Fire	0	0	0	1	1
Environmental Exposure	1	2	0	1	0
Asphyxia	1	1	1	1	0
Other	0	1	0	0	0
Total	25	35	44	45	39

Drug-Related Deaths by Manner, Van Buren County²

	2018	2019	2020	2021	2022
Accident	10	15	17	19	13
Suicide	1	1	1	1	3
Indeterminate	0	0	0	1	0
Homicide	0	0	0	1	0
Total	11	16	18	22	16
Total involving opioid(s)	9	12	11	14	10
% of Accidents and Indeterminate Deaths Involving Opioids	90%	80%	59%	70%	69%

¹ Includes (1) Multiple blunt force injuries associated with acute alcohol intoxication; (2) Multiple blunt force injuries due to twin-engine aircraft crash

² Acute alcohol intoxications are considered drug-related deaths and are included in this data



Drug-Related Accidental Deaths, Van Buren County

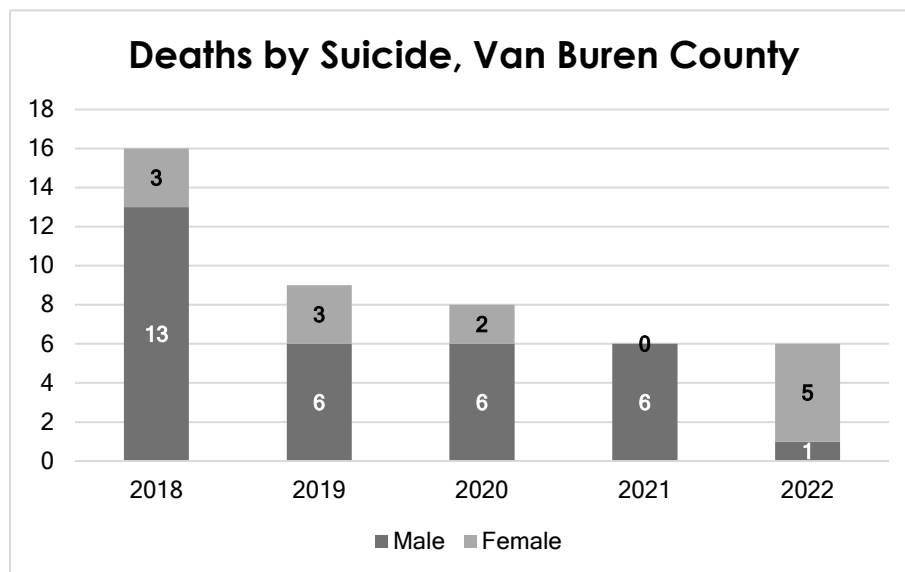
Age	Sex	Race	Zip Code of Death	Substances contributing to death	Opioid (Y/N)
28	M	W	49013	Alprazolam, Fentanyl	Y
30	M	W	49079	Fentanyl, Xylazine	Y
32	M	W	49026	Methamphetamine	N
32	M	W	49026	Methamphetamine	N
35	F	W	49079	Fentanyl	Y
45	F	W	49056	Chlordiazepoxide, Fentanyl, Lorazepam, Nordiazepam, para-Fluorofentanyl	Y
49	M	W	49057	Fentanyl, Methamphetamine	Y
52	M	W	49079	Methamphetamine	N
56	F	W	49071	Fentanyl, Methamphetamine	Y
59	F	W	49090	Fentanyl, Methamphetamine	Y
66	M	W	49043	Methamphetamine	N
66	M	W	49045	Alprazolam, Hydrocodol, Hydrocodone, Hydromorphone	Y
84	M	W	49057	Morphine	Y

Suicides by Sex & Age, Van Buren County

	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
2020	8	6	2	0	1	2	1	4
2021	6	6	0	0	1	1	4	0
2022	6	1	5	0	0	1	3	2

Suicides by Mechanism, Van Buren County

	2018	2019	2020	2021	2022
Firearm	11	5	4	2	1
Hanging	3	2	2	3	1
Carbon Monoxide	0	0	1	0	0
Drug Intoxication	1	1	1	1	3
Motor Vehicle	0	0	0	0	0
Sharp Force Trauma	0	1	0	0	0
Asphyxia/Suffocation	1	0	0	0	0
Other	0	0	0	0	1 ¹
Total	16	9	8	6	6



¹ Drowning associated with acute drug intoxication

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. Since 2016, the Division of Neuropathology at WMed has partnered with the Lieber Institute for Brain Development in Baltimore, Maryland.

	WMed Forensic Cases	Consulting Forensic Cases	Hospital Specimens	Research Specimens	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
2020	53	73	2	380	3	511
2021	57	99	1	460	2	619
2022	51	91	0	697	3	842

Forensic Anthropology

Forensic Anthropology services are provided to all WMed Medical Examiner counties led by forensic anthropologists, Drs. Jered Cornelison and Christine Pink. 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, including trauma reconstruction and analysis and determination of biological sex, age, ancestry, stature; and input and case management of unidentified individuals in the National Missing and Unidentified Persons System (NamUs). The team of forensic anthropologists at WMed also assists in the coordination of all scientific identifications performed via fingerprint or DNA analysis. As necessary, they also contribute to the determination of identification via multiple corresponding factors. In 2022, our team grew with the addition of a two-year post-doctoral fellowship program, currently filled with Dr. Jessica Juarez.

	Comparative Medical Radiography	Comparative Dental Radiography	Fingerprint Analysis	Multiple Corresponding Factors	DNA Analysis	Recoveries	Non-human	Skeletal Analysis
2016	38	12	24	2	0	2	6	14
2017	65	16	29	2	4	11	8	11
2018	55	27	48	5	4	9	17	18
2019	60	18	49	3	4	8	20	14
2020	83	10	52	5	4	7	17	15
2021	116	9	42	4	5	13	7	22
2022	135	16	27	7	4	3	14	15

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 (Forensic)	Total
2016	10	4	257	271
2017	7	16	201	224
2018	8	9	161	178
2019	10	3	104	117
2020	9	15	198	222
2021	11	12	310	333
2022	10	17 ¹	316	343

Referrals to organ procurement organization (Gift of Life Michigan), 2022

	Referrals to Gift of Life	Tissue Donations	Cornea Donations
Allegan	138	12	5
Barry	72	9	5
Berrien	182	8	4
Calhoun	186	13	9
Cass	66	7	2
Grand Traverse	99	2	2
Kalamazoo	311	20	9
Leelanau	21	2	1
Mason	26	2	1
Muskegon	176	15	1
Osceola	23	1	1
St. Joseph	102	5	5
Van Buren	109	7	4
Total	1511	103	62

¹ Includes (3) neuropathology only examinations

Comparison of All Medical Examiner Counties, 2022

	Total Population ¹	Total Sq. Miles	Deaths in the County ²	Deaths Reported	Deaths Investigated	MEI Scene Investigations	DCs by ME	Cremation Permits	Unclaimed Investigations
Allegan	120,502	1,833	985	279	272	240	122	665	10
Barry	62,423	577	442	135	123	116	64	293	4
Berrien	154,316	1,581	1,898	631	563	498	271	1,263	18
Calhoun	134,310	718	1,712	544	473	408	225	1,171	32
Cass	51,589	508	399	157	149	140	75	266	4
Grand Traverse	95,238	601	1,668	532	397	247	179	1,370	9
Kalamazoo	261,670	580	3,261	1,132	893	780	499	2,436	67
Leelanau	22,301	2,532	204	56	55	37	25	141	0
Mason	29,052	1,242	345	115	98	88	39	255	1
Muskegon	175,824	1,459	2,078	786	260	532	317	1,582	21
Osceola	22,891	573	204	69	65	60	30	138	4
St. Joseph	60,939	521	562	198	184	161	80	408	6
Van Buren	75,587	1,090	606	250	238	229	95	440	11
2022 Total	1,266,642	13,815	14,364	4,884	3,770	3,536	2,021	10,428	187
2021 Total	1,266,642	13,815	15,095	5,192	4,330	3,626	1,884	9,800	168

For all counties, about 34% of deaths are reported; jurisdiction is accepted, and deaths are investigated in about 26% of the deaths. Complete autopsies are conducted in nearly 6% of all deaths within the county and in about 19% 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 27% of deaths reported.

¹ Total county populations based on 2020 estimates by the US Census Bureau

² Provisional number of deaths occurring in each county

Forensic Postmortem Examinations, 2022

	Complete Autopsies	% Complete Autopsies ¹	Limited Exams	External Exams	Total Postmortem Exams	% Postmortem Exams ²	Cardiovascular Consults
Allegan	54	5.5%	3	24	81	8.2%	1
Barry	32	7.2%	1	19	52	11.8%	0
Berrien	138	7.2%	5	32	175	9.2%	1
Calhoun	121	7.1%	3	41	165	9.6%	1
Cass	39	9.8%	2	13	54	13.5%	0
Grand Traverse	54	3.2%	6	20	80	4.8%	0
Kalamazoo	201	6.2%	15	82	298	9.1%	2
Leelanau	11	5.4%	0	5	16	7.8%	0
Mason	15	4.3%	0	10	25	7.2%	0
Muskegon	162	7.8%	11	45	218	10.5%	4
Osceola	15	7.4%	2	4	21	10.3%	1
St. Joseph	39	6.9%	4	11	54	9.6%	0
Van Buren	48	7.9%	1	22	71	11.7%	1
Consultant Counties	316	---	0	0	316	---	1
2022 Total	1,245	6.5%	52	328	1,626	9.1%	12
2021 Total	1,182	5.8%³	24	300	1,506	7.9%⁴	7

¹ Percent of all deaths in county with complete autopsies

² Percent of all deaths in county with a postmortem examination

³ Average percentage of all deaths in county with complete autopsies

⁴ Average percentage of all deaths in county with a postmortem examination

Manners of Death, All Medical Examiner Counties, 2022

	Natural	Accident	Suicide	Homicide	Indeterminate	2022 Total
Allegan	203	52	16	4	4	279
Barry	87	36	11	0	1	135
Berrien	473	113	21	18	4	629
Calhoun	404	97	19	9	13	542
Cass	112	35	7	2	1	157
Grand Traverse	394	114	17	0	2	527
Kalamazoo	795	239	55	30	11	1130
Leelanau	42	10	4	0	0	56
Mason	95	15	2	1	0	113
Muskegon	565	150	46	19	5	785
Osceola	51	7	6	2	3	69
St. Joseph	148	37	9	0	4	198
Van Buren	200	39	6	0	5	250
2022 Total	3,569	944	219	85	53	4,870
% of 2022 Total ¹	73%	19%	4.5%	1.7%	1.0%	---
2021 Total	3,878	948	190	87	52	5,155

¹ Percent of all deaths reported to our office; this will not add up to exactly 100% due to deaths reported to our office that do not require a manner of death (e.g., stillbirth investigations)

Significant Death Statistics, 2022

	Accidental Drug-Related Deaths	Indeterminate Drug-Related Deaths	Opioid-Related Deaths	Accidental Traffic-Related Deaths	Accidental Fall-Related Deaths
Allegan	15	0	9	18	16
Barry	8	0	7	13	3
Berrien	50	1	46	9	39
Calhoun	42	2	38	23	27
Cass	8	0	6	13	6
Grand Traverse	22	0	20	24	52
Kalamazoo	62	3	43	52	106
Leelanau	1	0	2	4	2
Mason	6	0	4	8	1
Muskegon	71	1	64	21	42
Osceola	2	0	1	2	2
St. Joseph	11	0	5	10	7
Van Buren	13	0	10	11	9
2022 Total	311	7	255	208	312
2021 Total	319	7	266	222	295

