Sparrow

Office of the Medical Examiner

2018 Annual Report

Executive Summary

Eaton County Ingham County Ionia County
Isabella County Shiawassee County

We are pleased to present our 2018 Annual Report. This report reflects the work of the Office of the Medical Examiner during the 2018 calendar year. Only those deaths that fall within the geographical jurisdiction of the Medical Examiner, which is based on the county in which death was pronounced, are included.

We pride ourselves on providing outstanding service to the communities we serve. Our commitment to excellence was recognized in 2009, when our office was granted full accreditation by the National Association of Medical Examiners (NAME), and that full accreditation status was renewed by NAME in 2014. We have developed a regional system that delivers consistency and standardization. Thanks to leadership provided by Sparrow Forensic Pathology, there is an expected process which ensures quality, compassionate care when people need it most.

It would not be possible for the Office of the Medical Examiner to operate efficiently without our dedicated staff, including our investigators who are essential to our success and to whom we are grateful for their service. The investigators are listed by county in the text of this report.

Sparrow Forensic Pathology

Office of the Medical Examiner - 2018 Staff

Michael A. Markey, M.D.—Medical Examiner and Medical Director
Patrick A. Hansma, D.O. – Deputy Medical Examiner

Luke R. Vogelsberg, D-ABMDI - Chief Investigator and Supervisor
Holly Marsh - Administrative Assistant
Debra Parsons - Team Advisor & Autopsy Assistant
Brittany Buchholz – Autopsy Assistant & In-House Investigations
Samantha Schaeffer - Autopsy Assistant
Krystin Smith - Autopsy Assistant
Claire Mutch – Autopsy Assistant
Emily Richards – Autopsy Assistant

Medical Examiner Services

Investigation of Deaths

As the Office of the Medical Examiner for five counties in Michigan, we perform autopsies and other postmortem examinations as an important part of the death investigation process. Each county in Michigan has a licensed Physician, appointed by the County Commissioners to serve as Medical Examiner, who is responsible for investigating deaths as defined by the Michigan Compiled Laws.

In general, the deaths investigated by our office include those that are thought to result from injury or poisoning (such as homicide, suicide, and accidental deaths), and those deaths that are sudden, unexpected, and not readily explainable at the time of death. Because deaths occur around the clock, the Office of the Medical Examiner is staffed 24 hours a day, 365 days a year.

The typical sequence of events that occurs following a death is:

- A death is reported to the on-call Medical Examiner Investigator (MEI).
- The MEI assesses whether we have legal authority and duty to investigate the death.
- The death scene is visited and investigated, if indicated.
- Investigative information is obtained about the decedent's medical and social history, as well as other information surrounding the events that were associated with the death.
- If an examination is indicated, the body is transported to the Forensic Pathology Laboratory at Sparrow Hospital in Lansing, MI.
- If the investigator believes the death does not require a postmortem examination, the on-call Medical Examiner or Chief Investigator may be contacted to discuss the case before the body is released to the funeral home.
- An investigative report is written by the MEI.
- When applicable, the decedent’s primary care physician is contacted and notified of the death, and medical history is confirmed.

- A death certificate is generated by either the decedent's personal physician, the attending physician in the medical facility, or the assigned Medical Examiner or Deputy Medical Examiner.
- If a postmortem examination is performed, following receipt and review of all appropriate test results and records, a postmortem examination report is written.
- Permanent records are maintained for future use, as needed, and distributed to those who have requested a copy of the report and are authorized to receive the report.

Some deaths require additional follow-up investigations, which are conducted by our In-House Investigators based at Sparrow Hospital. For 2018, this function was performed by Brittany Buchholz and Luke Vogelsberg.

Death Certification

The main focus of our investigation is to determine the cause and manner of death, and to clarify circumstances surrounding the death. The cause of death is related to the underlying disease or injury that resulted in the individual's death. The manner of death, in the state of Michigan, is limited to these five options: natural, accident, suicide, homicide, or indeterminate. In addition, information gathered during the investigation of event(s) before death and/or evidence collected may be critical for future legal proceedings.

Case Management Approach

A board-certified Forensic Pathologist is assigned to each death and determines the level of medical investigation required. Cases are handled by one of the following approaches:

Direct Release - The body is released directly from the scene to the funeral director. The MEI is typically at the scene and views the body. Based upon scene and medical history information, and generally in consultation with the the on-call Medical Examiner or Chief Investigator, a decision may be made to release a body directly to the funeral home chosen by the family, without further examination.

External Examination – An external examination includes a detailed record of external observations of the body and in many cases laboratory/toxicology testing. A report of external exam and laboratory findings is written by the responsible pathologist.

Autopsy – An autopsy includes an external examination as described above, as well as an internal examination. This internal examination may be a "limited" or "partial" autopsy, or a "full" or "complete" autopsy. A limited autopsy is an internal examination within a specific anatomic boundary (e.g. head-only examination). Most often, limited autopsies are performed to recover a foreign body, surgical hardware, or answer specific questions. A full autopsy includes internal examination of all organs and body cavities. An autopsy usually includes laboratory/toxicology testing and may include histologic examination and additional examination by a subspecialty consultant (e.g. cardiac or neuropathologist). A report of examination and laboratory findings is written by the responsible pathologist.

Decision to Autopsy

The Medical Examiners and Deputy Medical Examiners use standards established by the National Association of Medical Examiners (NAME) to determine whether an autopsy is indicated. The standards, most recently revised in September 2016, state:
The Forensic Pathologist shall perform a forensic autopsy when:

- The death is known or suspected to have been caused by apparent criminal violence.
- The death is unexpected and unexplained in an infant or child.
- The death is associated with police action.
- The death is apparently non-natural and in custody of a local, state, or federal institution.
- The death is due to acute workplace injury.*
- The death is caused by apparent electrocution.*
- The 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.
- The death is caused by unwitnessed or suspected drowning.*
- The body is unidentified and the autopsy may aid in identification.
- The body is skeletonized.
- The body is charred.

- The forensic pathologist deems a forensic autopsy is necessary to determine cause or manner of death, or document injuries/disease, or collect evidence.
- The deceased is involved in a motor vehicle incident and an autopsy is necessary to document injuries and/or determine the cause of death.

* unless sufficient antemortem medical evaluation has adequately documented findings and issues of concern that would otherwise have required autopsy performance

Accreditation

All of the Medical Examiners' offices that contract for services with Sparrow Forensic Pathology are accredited by the National Association of Medical Examiners (NAME).

Manner of Death

Guidelines for classifying the manner of death include:

- Natural deaths are due solely or nearly totally to disease and/or the aging process.
- Accident applies when an injury or poisoning (including drug overdoses) causes death and there is little or no evidence that the injury or poisoning occurred with intent to harm or cause death. In essence, the fatal outcome was unintentional.
- Suicide results from an injury or poisoning as a result of an intentional self-inflicted act committed to do self-harm or cause the death of one's self.
- 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.

Cremation Permit Authorizations

Michigan law requires funeral directors to obtain a signed cremation permit from the Medical Examiner. Our office reviews thousands of cremation permit requests each year. We review the death certificates to ensure 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.

Testimony at Trials

The Medical Examiner and Deputy Medical Examiners are often called upon to provide testimony in criminal and civil matters. They meet regularly with members of law enforcement, prosecutors, defense attorneys and civil litigators.

Public Health and Safety Issues

Although 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 Michigan Child Death Review process in all counties, providing significant information regarding how children died, with the goal of preventing future deaths.

Education

We have a strong affiliation with Michigan State University. We routinely have medical students from Michigan State University (and occasionally other medical schools) rotate through our office to gain experience and exposure to forensic pathology. We provide lectures to forensic science students at the university. Additionally, we participate in many programs designed to teach youth about careers in forensic pathology.

Comment on Methods and Terms

This annual report reflects the activities of our medical examiner offices during a given calendar year. With rare exception (e.g., deaths reported to the wrong medical examiner office), the data

include only those cases over which the county's medical examiner can exercise jurisdiction. Jurisdiction is determined by where the individual was pronounced dead rather than the county of residence or the county in which the incident leading to death might have occurred. Furthermore, the data reflects the calendar year in which the deaths were reported to the respective medical examiner offices, regardless of the year in which the death actually occurred. The category "Total Deaths in the County" is based upon numbers provided by that County Clerk's Office. Occasionally, these numbers may change after the time of publication of this report.

The category "Referrals to Gift of Life" refers to the number of deaths in our medical examiner database that were automatically referred to the organ/tissue procurement agency using pre-established criteria. For "Accidental Deaths," the subcategory "Vehicle" consists of deaths that were classified as transportation-related fatalities and include all forms of transport; drivers/operators, passengers, and pedestrians; this category does not include types of death that might otherwise fall into a different subclassification, such as vehicle fires and traumatic asphyxia.

Eaton County

Medical Examiner

Michael A. Markey, M.D.

Deputy Medical Examiners

Patrick A. Hansma, D.O.

Chief Investigator

Luke R. Vogelsberg, D-ABMDI

Medical Examiner Investigators

Kenneth Barnes
Erica Betts, DO, MPH
Ruth Grant, D-ABMDI
Kevin Hearld
Lynne Mark, D-ABMDI
Jessica Nicholson
Daniel Sowles, D-ABMDI
Mary Stevens

Eaton County

Summary of Cases

	2014	2015	2016	2017	2018
TOTAL DEATHS IN THE COUNTY	838	903	817	783	817
DEATHS REPORTED TO THE ME	167	183	170	191	201
CASES ACCEPTED FOR INVESTIGATION[1]	159	176	154	176	185
MEI SCENE INVESTIGATIONS	154	172	158	187	193
DEATH CERTIFICATES SIGNED BY ME	84	88	84	91	102
BODIES TRANSPORTED TO SPARROW	66[2]	69	78	85	99
COMPLETE AUTOPSY	47	55	64	56	74
LIMITED AUTOPSY	2	3	2	4	5
EXTERNAL EXAMINATION	9	9	7	13	11
STORAGE ONLY	6	2	5	12	9
UNCLAIMED BODIES	1	1	2	4	3
REFERRALS TO GIFT OF LIFE	49	68	61	53	63
TISSUE/CORNEA DONORS	7	19	16	11	11
CREMATION PERMITS REVIEWED	407	482	452	450	498

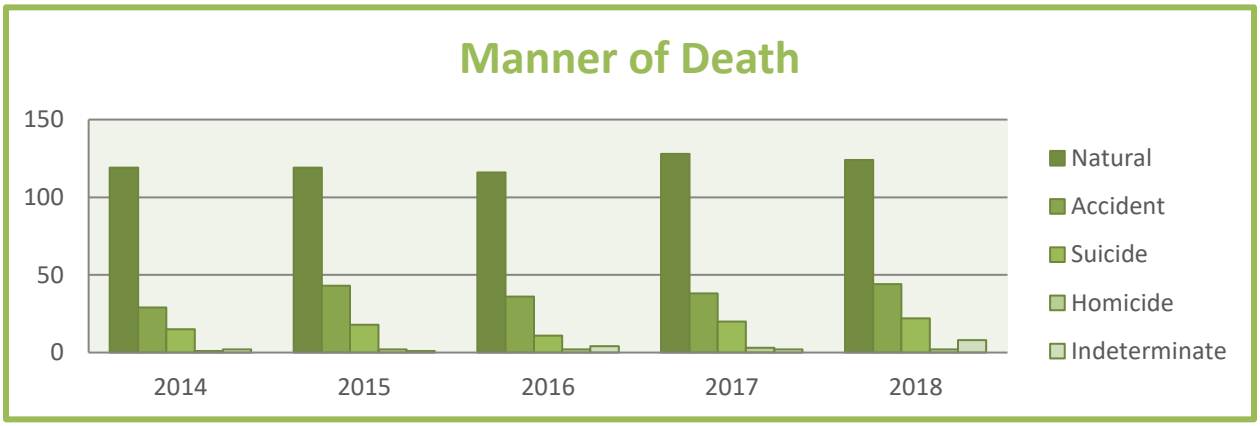
[1] Not every case that is reported to the Medical Examiner's office falls within our jurisdiction. We accept cases for investigation based on the circumstances surrounding the death and the law that governs the Medical Examiner's authority (MCL 52.202). We declined jurisdiction in 16 cases that were reported to us in 2018.

[2] Includes one non-human tissue case

Eaton County

Manner of Death

The data on the following pages refers to those deaths that were reported to the Medical Examiner's Office.



Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
NATURAL	119	119	116	128	124
ACCIDENT	29	43	36	38	44
SUICIDE	15	18	11	20	22
HOMICIDE	1	2	2	3	2
INDETERMINATE	2	1	4[3]	2[4]	8
TOTAL	166[5]	183	170[6]	191	201[7]

[3] (2) multiple drug intoxication, (1) multiple injuries - pedestrian struck by motor vehicle, (1) undetermined cause; severely decomposed body

[4] (1) multiple drug intoxication, (1) sudden unexplained infant death

[5] Cases with no manner of death: (1) non-human tissue

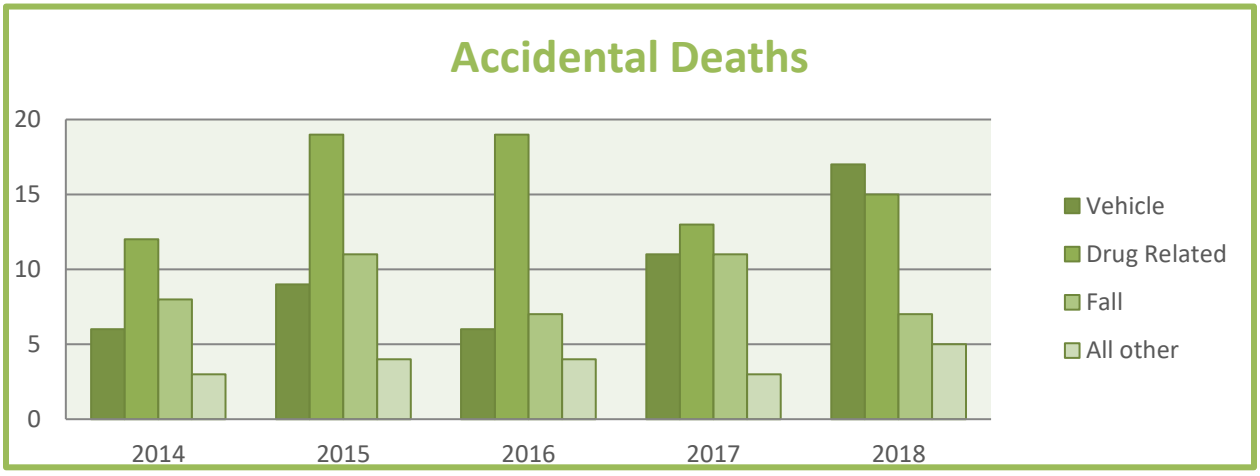
[6] Cases with no manner of death: (1) non-human bones

[7] Includes 1 case of mummified fetal remains for which a manner of death was not assigned

Eaton County

Accidental Deaths

	2014	2015	2016	2017	2018
VEHICLE	6	9	6	11	17[8]
DRUG-RELATED	12	19	19	13	15[9]
DROWNING	0	0	0	1	3
FALL	8	11	7	11	7
FIRE	1	2	0	0	0
ASPHYXIA	2	0	0	0	0
HYPOTHERMIA	0	1	2	0	0
OTHER	0	1[10]	2[11]	2[12]	2[13]
TOTAL	29	43	36	38	44



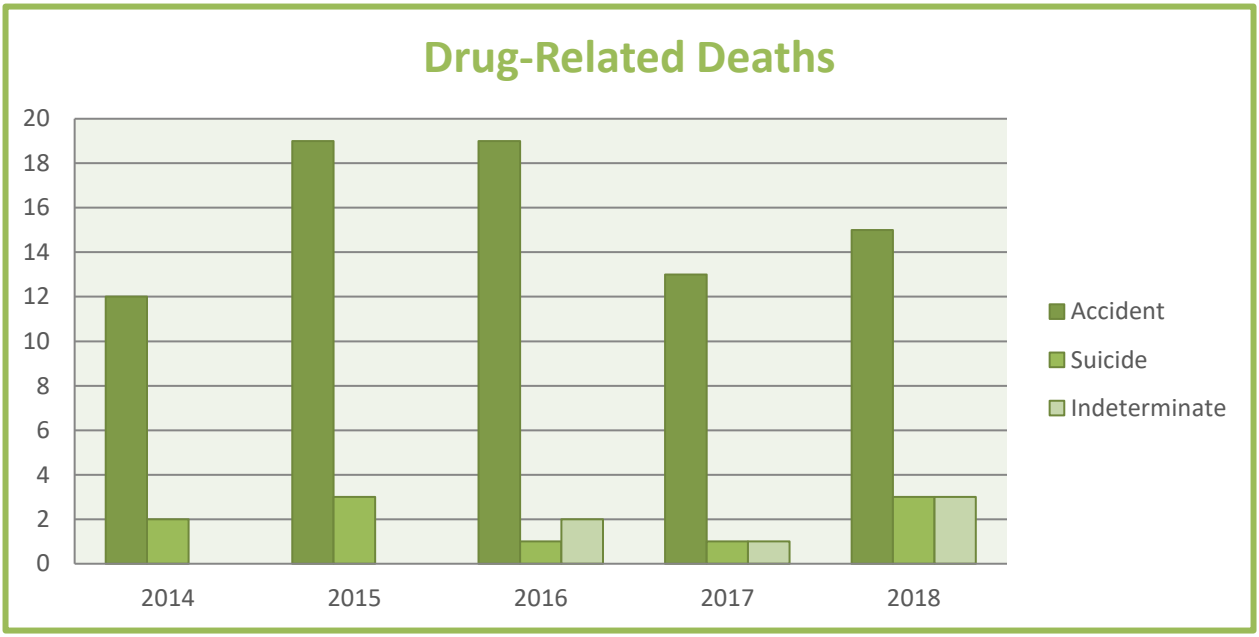
[8] Does not include one car passenger listed in other category (see below)
[9] Does not included two drowning cases in which ethanol intoxication was involved (categorized as drowning); includes one case of ethanol intoxication with associated hypothermia
[10] (1) farm machinery accident
[11] (1) rib fractures due to injury from back brace, (1) ruptured quadriceps tendon following syncopal episode
[12] (1) natural disease complicated by environmental exposure, (1) delayed complications of anaphylaxis
[13] (1) injuries sustained when struck by falling tree branch; (1) head injury due to head striking car window, not in car crash

Eaton County

Drug-Related Deaths

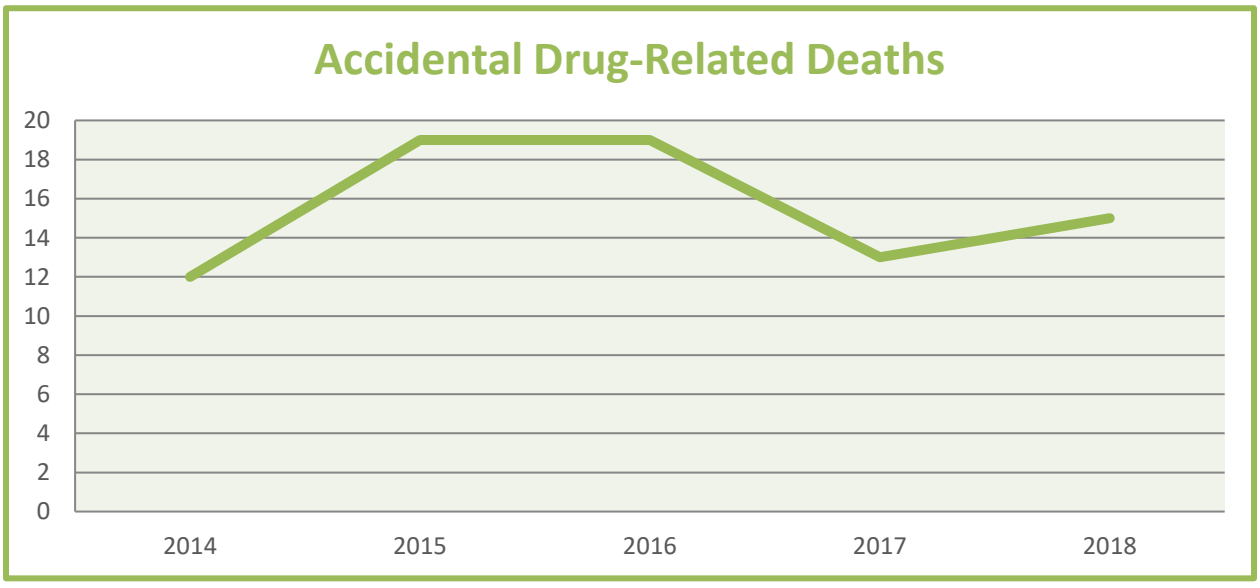
For purposes of this report, drug-related fatalities are deaths in which an overdose of a combination of drugs or a single drug caused or contributed to the death. These deaths do not include situations in which intoxication might have been a factor in an incident leading to death, such as motor vehicle crashes, falls, choking while eating, or environmental exposures.

Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
ACCIDENT	12	19	19	13	15
SUICIDE	2	3	1	1	3
INDETERMINATE	0	0	2	1	3
TOTAL	14	22	22	15	21



Eaton County

2018 Drug-Related Deaths Summary	
TOTAL	21 cases
SEX	11 female, 10 male
RACE	19 white, 2 black
AGE RANGE	23-70 years
AVERAGE AGE	49.5 years
MEDIAN AGE	51 years
OPIOID-RELATED	14 cases involved an opiate or opioid (67%)
MANNER OF DEATH	15 Accidents, 3 Suicide, 3 Indeterminate



Eaton County

Suicides

Suicide Totals by Year

2014	2015	2016	2017	2018
15	18	11	20	22

Suicide Methods

	2014	2015	2016	2017	2018
FIREARM	7	7	9	12	9
HANGING	5	4	1	7	5
DRUG INTOXICATION	2	3	1	1	3
SHARP FORCE INJURY	0	1	0	0	3
SUFFOCATION	1	2	0	0	0
OTHER	0	1[14]	0	0	2[15]

Suicides by Age

	2014	2015	2016	2017	2018
0 – 17	1	2	2	1	0
18 – 25	2	1	0	4	4
26 – 44	6	8	1	6	6
45 – 64	5	4	6	7	5
65 +	1	3	2	2	7

[14] Drove in front of train

[15] (1) carbon monoxide inhalation (1) ethylene glycol ingestion

Eaton County

Reported Deaths of Children

Reported Deaths of Children by Age

	2014	2015	2016	2017	2018
Stillborn	0	0	0	0	2[16]
<1 year	1	0	0	1	1
1-5	1	0	0	0	1
6-10	0	0	0	0	0
11-17	2	5	2	2	1
TOTAL	4	5	2	3	5

Reported Deaths of Children by Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	1	0	0	0	0
ACCIDENT	2	2	0	1	1
SUICIDE	1	2	2	1	0
HOMICIDE	0	1	0	0	0
INDETERMINATE	0	0	0	1	2

[16] Includes one mummified fetal remains discovered in funeral home

Eaton County

Reported Deaths of Children – Cause and Manner of Death

AGE	*SEX*	*CAUSE OF DEATH 2018*	*MANNER*
Stillbirth	U	Presumed stillbirth (mummified remains)	N/A
Stillbirth	F	Stillbirth	N/A
3 months	F	Undetermined (possibly unsafe sleep)	Indeterminate
3 years	F	Undetermined (possible seizure with URI)	Indeterminate
14 years	M	Drowning	Accident

Ingham County

Medical Examiner

Michael A. Markey, M.D.

Deputy Medical Examiners

Patrick A. Hansma, D.O.

Chief Investigator

Luke R. Vogelsberg, D-ABMDI

Medical Examiner Investigators

Ashley Ault
Kenneth Barnes
Erica Betts, D.O., MPH
Megan Bohnett
Kathleen Brooks
Mark Chojnowski
Joy Dempsey, D-ABMDI
Steve Dexter, RN
Ruth Grant, D-ABMDI
Brett Ramsden, D-ABMDI
Lynne Mark, D-ABMDI
Jessica Nicholson
Karen Phelps
Dan Sowles, D-ABMDI
Mary Stevens

Ingham County

Summary of Cases

	2014	2015	2016	2017	2018
TOTAL DEATHS IN THE COUNTY	2763	2717	2655	2872	2870
DEATHS REPORTED TO THE ME	826	843	824	916	888
CASES ACCEPTED FOR INVESTIGATION[17]	704	672	660	677	647
MEI SCENE INVESTIGATIONS	634	654	677	752	709
DEATH CERTIFICATES SIGNED BY ME	452	407	424	422	393
BODIES TRANSPORTED TO SPARROW	342	328	267[18]	250	325
COMPLETE AUTOPSY	244	255	286	232	220
LIMITED AUTOPSY	4	5	9	12	13
EXTERNAL EXAMINATION	34	40	46	42	31[19]
STORAGE ONLY	48	28	32	55	61
UNCLAIMED BODIES	24	21	20	34	28
REFERRALS TO GIFT OF LIFE	243	292	308	326	292
TISSUE/CORNEA DONORS	45	74	95	92	48
CREMATION PERMITS REVIEWED	1582	1717	1721	1920	1934

[17] Not every case that is reported to the Medical Examiner's office falls within our jurisdiction. We accept cases for investigation based on the circumstances surrounding the death and the law that governs the Medical Examiner's authority (MCL 52.202). We declined jurisdiction in 241 cases that were reported to us in 2018.

[18] In previous years, this number was listed as the sum of exams (complete, limited, external) and bodies for storage only. In 2016, this number was obtained from the contracted transport provider, and thus excludes decedents who died at Sparrow hospital and would have been transported to the Sparrow morgue by Sparrow staff irrespective of their status as a ME or non-ME case.

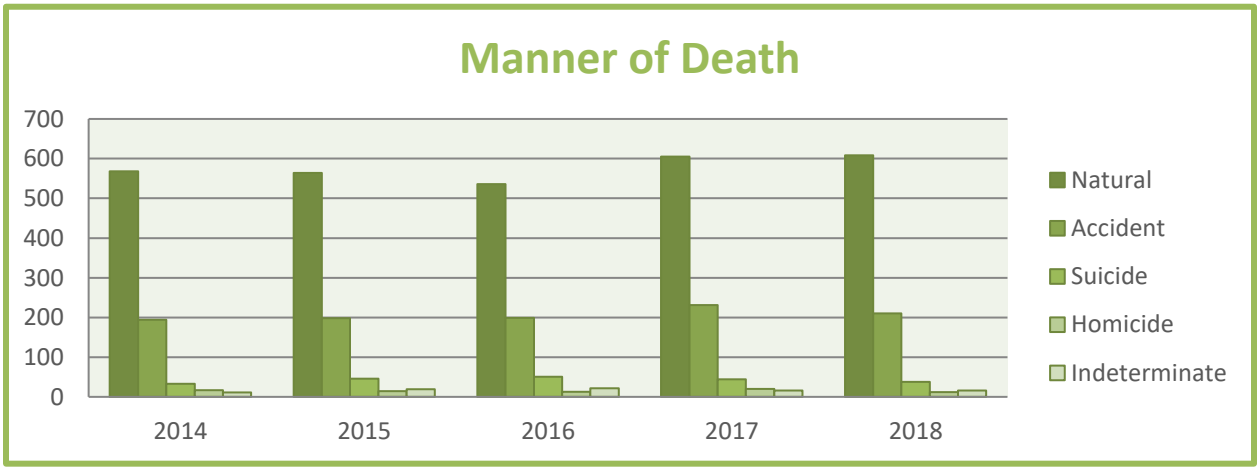
[19] One case examined by anthropology only for identification

Ingham County

Manner of Death

The data on the following pages refers to those deaths that were reported to the Medical Examiner's Office.

Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
NATURAL	568	564	535	605	608
ACCIDENT	194	198	199	231	210
SUICIDE	33	46	51	44	38
HOMICIDE	17	14	13	20[20]	12
INDETERMINATE	11	19	22	16[21]	16
TOTAL	823[22]	841[23]	820[24]	916[25]	884[26]

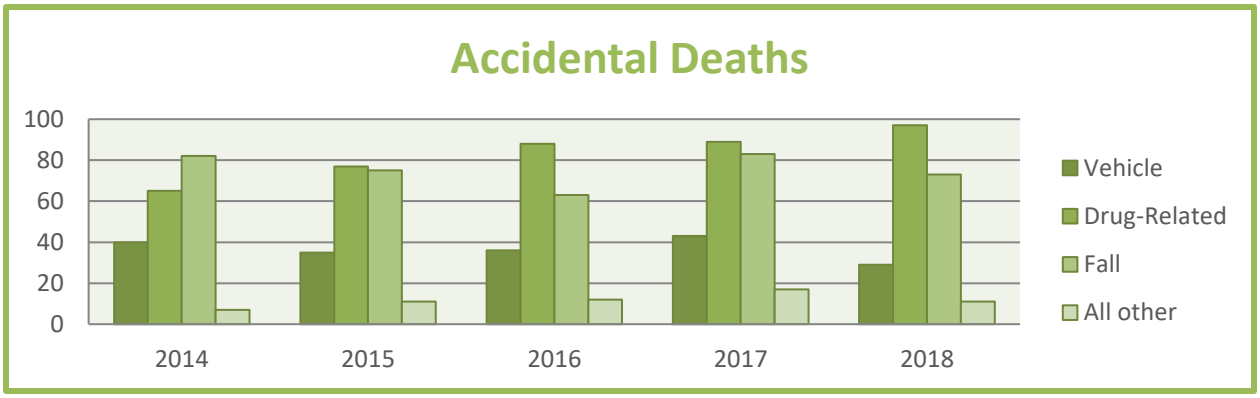


[20] Based on new investigative information, one manner of death was changed from indeterminate to homicide on 12/06/2018.
[21] Based on new investigative information, one manner of death was changed from indeterminate to homicide on 12/06/2018.
[22] Cases with no manner of death: (2) stillbirths; (1) non-human bones
[23] Cases with no manner of death: (1) products of conception; (1) stillbirth
[24] Cases with no manner of death: (3) stillbirths; (1) human bone of no contemporary forensic interest
[25] Cases with no manner of death: (1) stillbirth
[26] Cases with no manner: (2) stillbirths; (1) non-human animal remains; (1) cremation permit authorization for death outside country

Ingham County

Accidental Deaths

	2014	2015	2016	2017	2018
VEHICLE	40	35	36	43	29
DRUG-RELATED	65	77	88	89	97
DROWNING	2	2	3	3	2
FALL	82	75	63	83	73
FIRE	1	0	1	0	2
ASPHYXIA	3	1	3	4	3
HYPOTHERMIA	0	1	2[27]	1	0
OTHER	1[28]	7[29]	3[30]	9[31]	4[32]
TOTAL	194	198	199	231	210



[27] Both decedents also acutely intoxicated with ethanol (these cases not included in drug-related category)

[28] (1) injuries from falling tree

[29] (2) gunshot wound deaths; (1) struck by person falling from a ladder; (1) bowel obstruction by foreign object; (1) perforated bowel; (1) remote diving accident; (1) injuries from falling tree

[30] (1) heart disease associated with anabolic androgenic steroid use; (1) methadone therapy contributing to complications of chronic ethanol abuse; (1) carbon monoxide intoxication

[31] (1) complications of injury from boxing; (1) fall off bicycle; (1) multiple injuries – struck by falling chimney; (1) pneumonia associated with acute and chronic ethanol use; (1) ingestion of poisonous mushroom; (1) rectal perforation from enema; (1) fell into wedged position on railroad – blunt and compressive injuries; (1) esophageal rupture from acute and chronic ethanol use

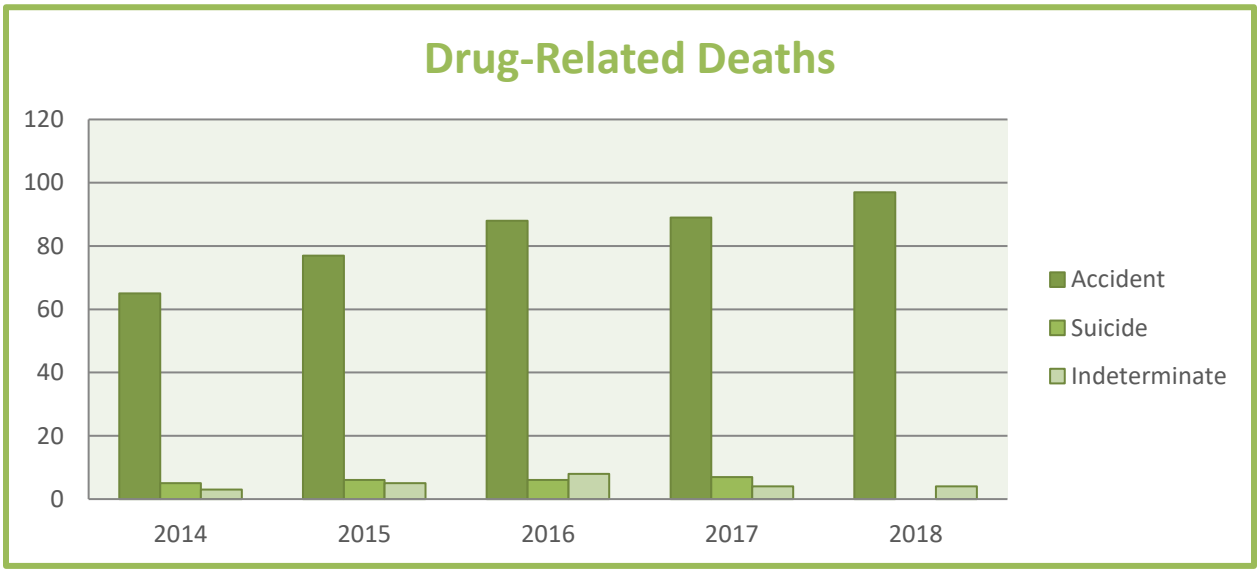
[32] (1) carbon monoxide intoxication; (1) injuries from airplane crash; (2) remote neck injuries – 1 wrestling and 1 swimming

Ingham County

Drug-Related Deaths

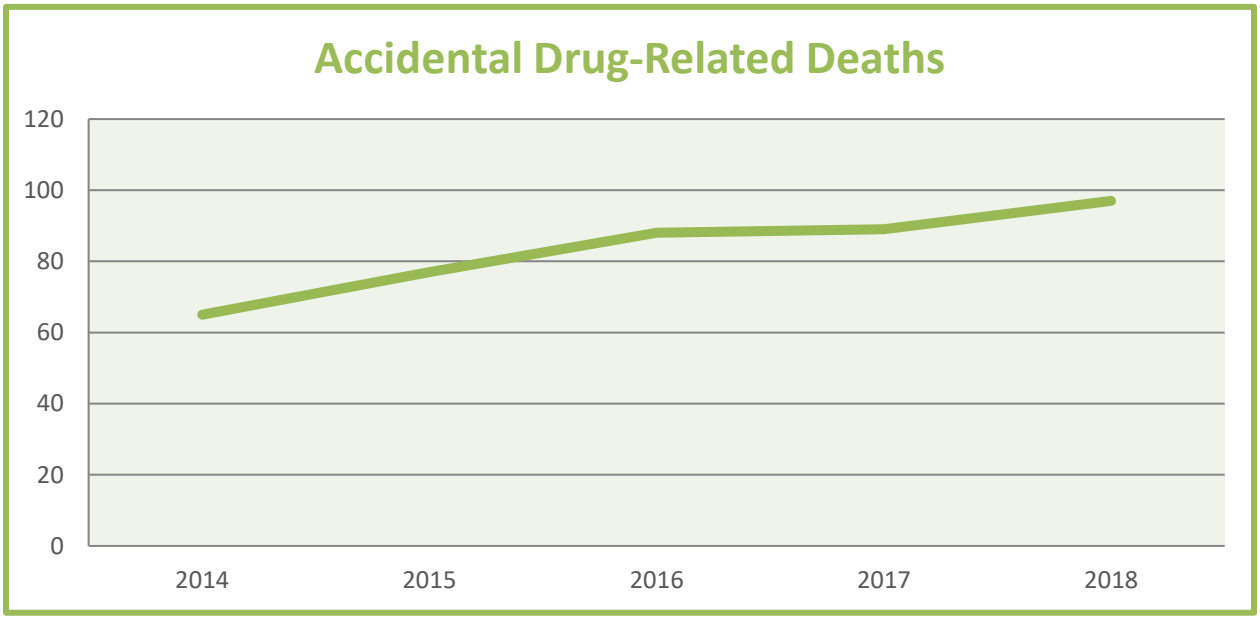
For purposes of this report, drug-related fatalities are deaths in which an overdose of a combination of drugs or a single drug caused or contributed to the death. These deaths do not include situations in which intoxication might have been a factor in an incident leading to death, such as motor vehicle crashes, falls, choking while eating, or environmental exposures.

Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
ACCIDENT	65	77	88	89	97
SUICIDE	5	6	6	8	0
INDETERMINATE	3	5	8	4	4
TOTAL	73	88	102	101	101



Ingham County

2018 Drug-Related Deaths	
TOTAL	101 cases
SEX	35 female, 66 male
RACE	83 white, 16 black, 2 mixed race
AGE RANGE	19-72 years
AVERAGE AGE	41.5 years
MEDIAN AGE	39 years
OPIOID-RELATED	83 cases involved an opiate or opioid (82.2%)
MANNER OF DEATH	97 accidents, 0 suicides, 4 indeterminate



Ingham County

Suicides

Suicide Totals by Year

2014	2015	2016	2017	2018
33	46	51	44	38

Suicide Methods

	2014	2015	2016	2017	2018
FIREARM	16	19	26	18	21
HANGING	11	16	10	13	13
DRUG INTOXICATION	5	6	6	8	0
SUFFOCATION	0	2	3	1	1
SHARP FORCE INJURY	0	1	1	1	0
JUMP FROM HEIGHT	1	1	3	2	2
DROWNING	0	0	0	0	0
MOTOR VEHICLE CRASH	0	0	1	1	0
CARBON MONOXIDE	0	0	0	0	0
STRUCK BY TRAIN	0	1	0	0	1
OTHER	0	0	1[33]	0	0

Suicides by Age

	2014	2015	2016	2017	2018
0 – 17	1	2	3	2	3
18 – 25	3	9	9	9	10
26 – 44	10	12	21	12	12
45 – 64	16	18	7	18	7
65 +	3	5	11	3	6

[33] Penetrating head trauma – shot self with nail gun

Ingham County

Reported Deaths of Children

Sudden Unexplained Infant Death (SUID) refers to the death of an infant less than one year of age in which investigation, autopsy, medical history, review, and appropriate laboratory testing fails to identify a specific cause of death. SUID includes deaths that meet the definition of sudden infant death syndrome (SIDS).

Reported Deaths of Children by Age

	2014	2015	2016	2017	2018
Stillborn	5	2	3	1	3
<1 year	7	8	10	8	3
1-5	0	5	6	3	4
6-10	2	1	2	1	3
11-17	3	6	10	4	8
TOTAL	17	22	31	17	21

Reported Deaths of Children by Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	4	8	9	7	7
ACCIDENT	1	2	5	4	5
SUICIDE	1	2	3	2	3
HOMICIDE	2	1	4	1	2
INDETERMINATE	4	7	7	2	1

Ingham County

Reported Deaths of Children – Cause and Manner of Death

AGE	SEX	CAUSE OF DEATH	MANNER
		2018	
0	U	Intrauterine fetal demise	N/A (stillbirth)
0	U	Intrauterine fetal demise	N/A (stillbirth)
0	M	Intrauterine fetal demise	N/A (stillbirth)
1 day	M	Congenital Malformations	Natural
4 months	M	Blunt Force Injuries	Homicide
4 months	M	Multisystem Organ Dysfunction- Etiology Undetermined	Indeterminate
1 year	F	Complications of Drowning	Accident
2 years	F	Congenital Malformation	Natural
3 years	F	Congenital Malformation	Natural
4 years	M	Smoke Inhalation – House Fire	Accident
6 years	M	Injuries/Neglect	Homicide
8 years	F	Tumor – Neuroblastoma	Natural
10 years	F	Intracranial Hemorrhage – Vascular Malformation – Congenital Syndrome	Natural
11 years	F	Injuries – Motor Vehicle Collision	Accident
14 years	M	Injuries – Struck by Train	Suicide
15 years	F	Aspiration pneumonia/Epilepsy	Natural
16 years	F	Injuries – Motor Vehicle Crash	Accident
16 years	F	Injuries – Motor Vehicle Crash	Accident
17 years	M	Congenital Malformation – Chiari Type 1	Natural
17 years	M	Hanging	Suicide
17 years	F	Hanging	Suicide

Ionia County

Medical Examiner

Michael A. Markey, M.D.

Deputy Medical Examiners

Patrick A. Hansma, D.O.

Chief Investigator

Luke R. Vogelsberg, D-ABMDI

Medical Examiner Investigators

Erica Betts, DO, MPH
James Buxton
Katharine Dernocoeur
Rob Fisk
Kaley Kasper
Matthew Kasper, D-ABMDI
Derek Schroeder
John Sigg
Dan Sowles, D-ABMDI
Timothy Thelen
Mitchell Tolan, D-ABMDI
Thomas Wodarek

Ionia County

Summary of Cases

Our contract with Ionia began in mid-January, 2014. The 2014 data reflect deaths that occurred between Jan. 22, 2014, and Dec. 31, 2014.

	2014	*2015*	*2016*	*2017*	*2018*
TOTAL DEATHS IN THE COUNTY	316	321	324	348	328
DEATHS REPORTED TO THE ME	86	92	95	113	96
CASES ACCEPTED FOR INVESTIGATION[34]	85	91	92	110	90
MEI SCENE INVESTIGATIONS	60	69	92	109	92
DEATH CERTIFICATES SIGNED BY ME	46	48	47	59	50
BODIES TRANSPORTED TO SPARROW	45	42	38	54	44
COMPLETE AUTOPSY	36	36	33	36	33
LIMITED AUTOPSY	2	0	2	2	5
EXTERNAL EXAMINATION	3	4	2	13	5
STORAGE ONLY	3	2	1	3	1
UNCLAIMED BODIES	2	0	1	1	1
REFERRALS TO GIFT OF LIFE	34	40	34	49	24
TISSUE/CORNEA DONORS	5	9	13	9	9
CREMATION PERMITS REVIEWED	173	166	196	221	214

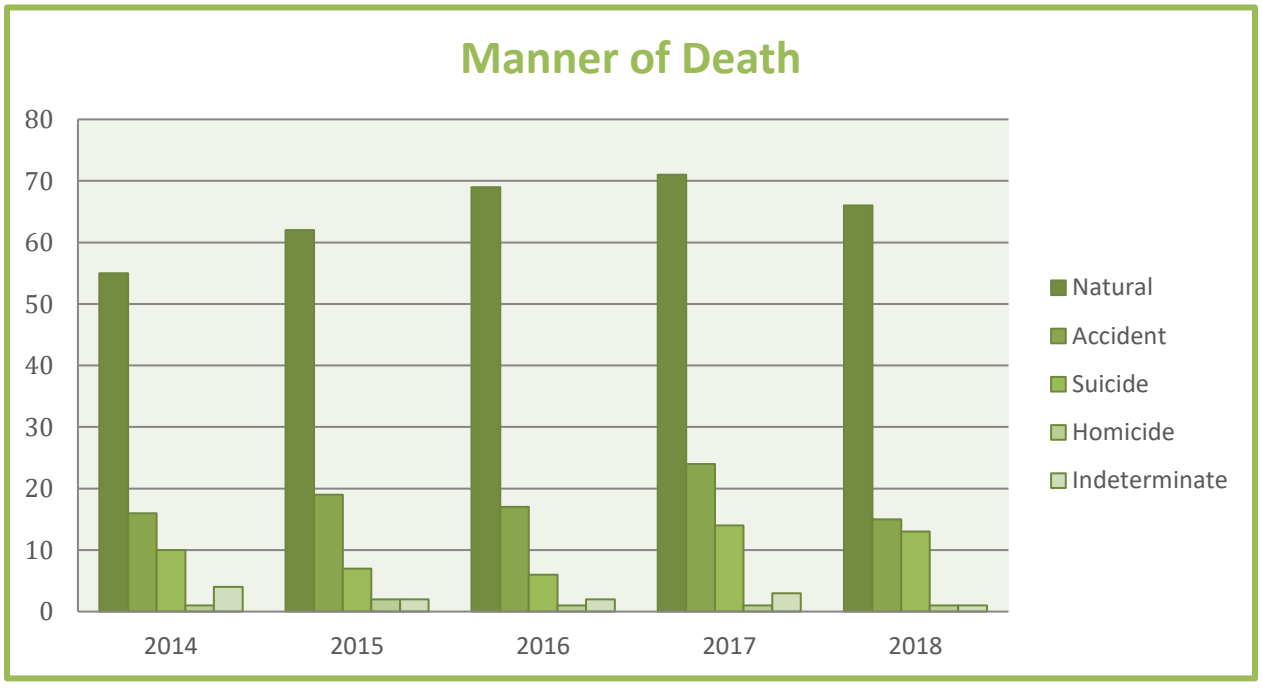
[34] Not every case that is reported to the Medical Examiner's office falls within our jurisdiction. We accept cases for investigation based on the circumstances surrounding the death and the law that governs the Medical Examiner's authority (MCL 52.202). We declined jurisdiction in 6 cases that were reported to us in 2018.

Ionia County

Manner of Death

The data on the following pages refers to those deaths that were reported to the Medical Examiner's Office.

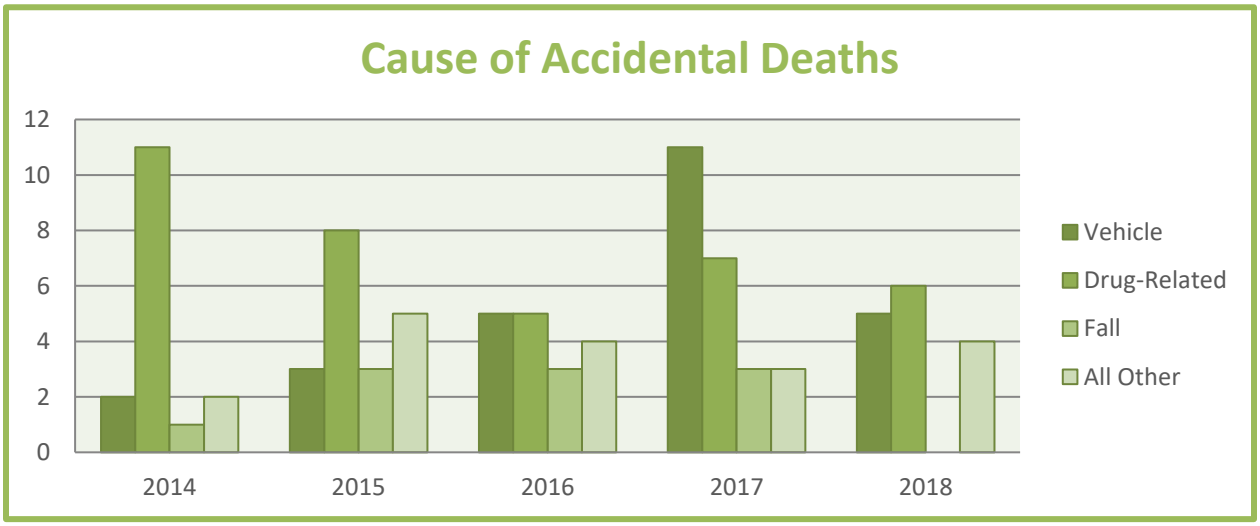
Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
NATURAL	55	62	69	71	66
ACCIDENT	16	19	17	24	15
SUICIDE	10	7	6	14	13
HOMICIDE	1	2	1	1	1
INDETERMINATE	4	2	2	3	1
TOTAL	86	92	95	113	96



Ionia County

Accidental Deaths

	2014	2015	2016	2017	2018
VEHICLE	2	3	5	11	5
DRUG-RELATED[35]	11	8	5	7	6
DROWNING	0	1	0	1	4
FALL	1	3	3	3	0
FIRE	0	2	2	1	0
ASPHYXIA	1	1	1	1	0
WATER INTOXICATION	1	0	0	0	0
HYPOTHERMIA	0	0	1	0	0
INDUSTRIAL ACCIDENT	0	1	0	0	0
TOTAL	16	19	17	24	15



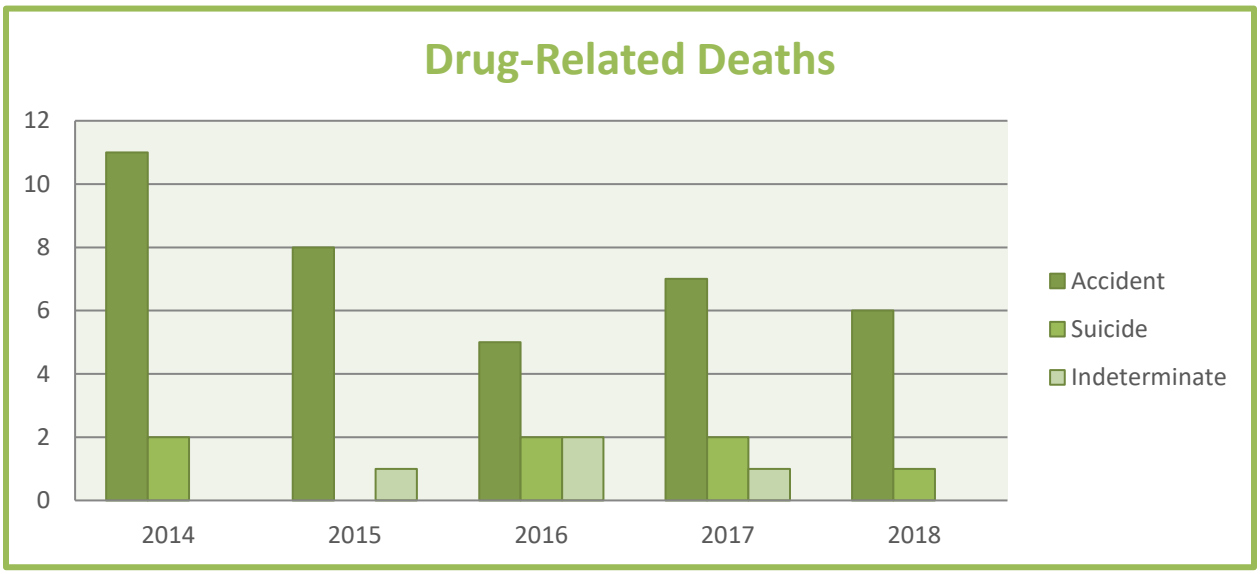
[35] One motor vehicle related fatality in 2018 had drug intoxication listed as a contributing condition; as the death was not directly related to the toxic effects of the drug(s) it is not included as a drug fatality in this report.

Ionia County

Drug Related Deaths

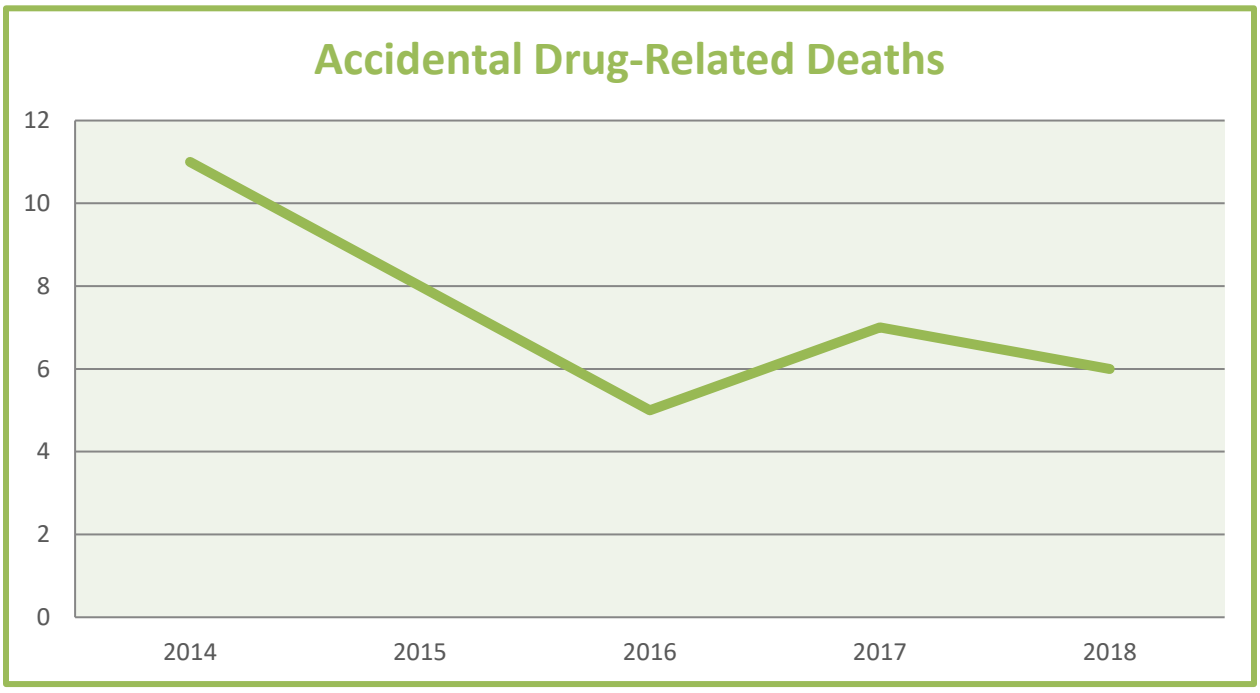
For purposes of this report, drug related fatalities are deaths in which an overdose of a combination of drugs or a single drug caused or contributed to the death. These deaths do not include situations in which intoxication might have been a factor in an incident leading to death, such as motor vehicle crashes, falls, choking while eating, or environmental exposures.

	2014	2015	2016	2017	2018
ACCIDENT	11	8	5	7	6
SUICIDE	2	0	2	2	1
INDETERMINATE	0	1	2	1	0



Ionia County

2018 Drug Related Deaths	
TOTAL	7 cases
SEX	2 female, 5 male
RACE	6 white, 1 other/multiracial
AGE RANGE	25-64 years
AVERAGE AGE	42.3 years
MEDIAN AGE	40 years
OPIOID-RELATED	4 cases involved an opiate or opioid (57%)
MANNER OF DEATH	6 accidents and 1 suicide



Ionia County
Suicides

Suicide Totals by Year

2014	2015	2016	2017	2018
10	7	6	14	13

Suicide Methods

	2014	2015	2016	2017	2018
FIREARM	5	2	4	3	9
HANGING	3	3	0	6	3
DRUG INTOXICATION	2	0	2	2	1
CARBON MONOXIDE	0	1	0	2	0
MOTOR VEHICLE	0	1	0	0	0
OTHER	0	0	0	1[36]	0

Suicides by Age

Age	2014	2015	2016	2017	2018
0 – 17	1	0	0	0	0
18 – 25	3	1	0	2	0
26 – 44	3	4	4	4	5
45 – 64	1	2	0	5	6
65+	2	0	2	3	2

[36] (1) pedestrian struck by train

Ionia County

Reported Deaths of Children

Sudden Unexplained Infant Death (SUID) refers to the death of an infant less than 1 year of age in which investigation, autopsy, medical history, review, and appropriate laboratory testing fails to identify a specific cause of death. SUID includes deaths that meet the definition of sudden infant death syndrome (SIDS).

Reported Deaths of Children by Age

	2014	2015	2016	2017	2018
Stillborn	0	0	0	0	0
<1 year	2	0	0	1	1
1-5	1	0	0	0	0
6-10	0	0	0	0	0
11-17	2	0	0	2	0
TOTAL	5	0	0	3	1

Reported Deaths of Children by Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	2	0	0	1	0
ACCIDENT	1	0	0	0	0
SUICIDE	1	0	0	0	0
HOMICIDE	0	0	0	1	0
INDETERMINATE	1	0	0	1	1

Reported Deaths of Children – Cause and Manner of Death

AGE	SEX	CAUSE OF DEATH	MANNER
2018			
1 month	F	Undetermined – possible unsafe sleep	Indeterminate

Isabella County

Medical Examiner

Michael A. Markey, M.D.

Deputy Medical Examiners

Patrick A. Hansma, D.O.

Chief Investigator

Luke R. Vogelsberg, D-ABMDI

Medical Examiner Investigators

Richard Clark
Matthew Drake
Kari Duman
Gerardo Esquivel
Taylor Maylee Hoekwater
Christy Mead
Philip Nartker
Robert Schumacker
Shelly Travis

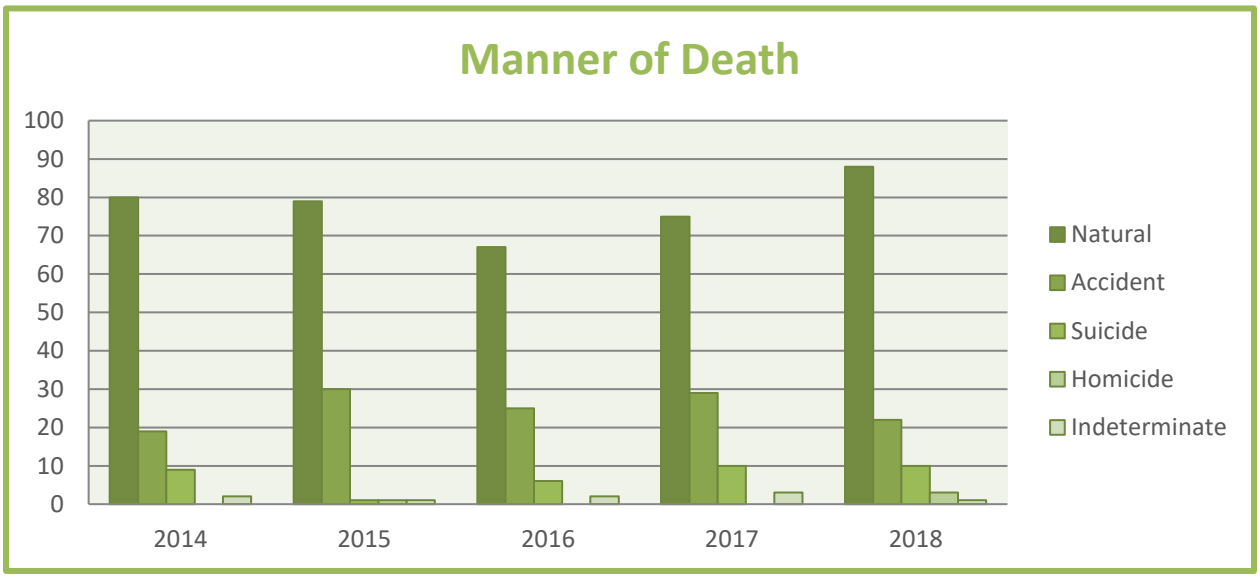
Isabella County
Summary of Cases

	2014	2015	2016	2017	2018
TOTAL DEATHS IN THE COUNTY	475	485	507	528	549
DEATHS REPORTED TO THE ME	110	113	100	118	125
CASES ACCEPTED FOR INVESTIGATION[37]	106	104	91	110	106
MEI SCENE INVESTIGATIONS	65	100	93	105	111
DEATH CERTIFICATES SIGNED BY ME	59	54	48	56	50
BODIES TRANSPORTED TO SPARROW	39	46	41	45	42
COMPLETE AUTOPSY	30	44	35	38	28
LIMITED AUTOPSY	0	1	1	2	4
EXTERNAL EXAMINATION	9	1	3	5	6
STORAGE ONLY	0	0	2	0	4
UNCLAIMED BODIES	0	4	2	1	1
REFERRALS TO GIFT OF LIFE	33	53	40	51	38
TISSUE/CORNEA DONORS	2	6	8	10	2
CREMATION PERMITS REVIEWED	269	277	267	315	352

[37] Not every case that is reported to the Medical Examiner's office falls within our jurisdiction. We accept cases for investigation based on the circumstances surrounding the death and the law that governs the Medical Examiner's authority (MCL 52.202). We declined jurisdiction in 18 cases that were reported to us in 2018.

Isabella County
Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	80	79	66	75	88
ACCIDENT	19	30	25	29	22
SUICIDE	9	1	6	10	10
HOMICIDE	0	1	0	0	3
INDETERMINATE	2	1	2	3	1
TOTAL	110	112[38]	100[39]	118[40]	124[41]

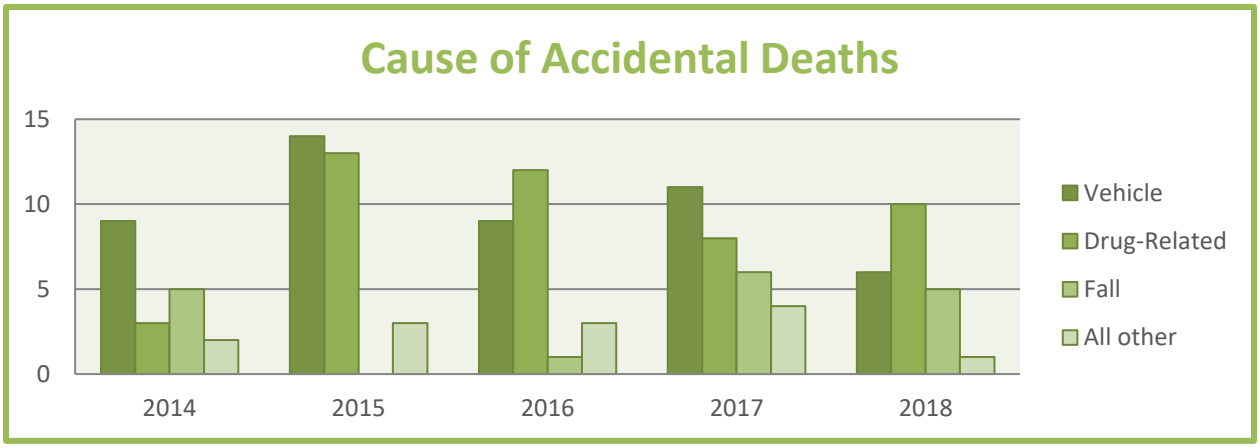


[38] Case with no manner of death: stillborn following motor vehicle crash
[39] Case with no manner of death: stillbirth
[40] Case with no manner of death: stillbirth
[41] Case with no manner of death: stillbirth in another county; reported to office due to burial in county

Isabella County

Accidental Deaths

	2014	2015	2016	2017	2018
VEHICLE	9	14	9	11	6[42]
DRUG-RELATED	3	13	12	8	10[43]
DROWNING	1	1	0	2	1[44]
FALL	5	0	1	6	5
ASPHYXIA	0	1	0	2	0
HYPOTHERMIA	0	1	1	0	0
ANIMAL	1	0	0	0	0
FALLING TREE	0	0	1	0	0
PINNED IN MACHINERY	0	0	1	0	0
TOTAL	19	30	25	29	22



[42] (1) motor vehicle death was due to a post-crash fire (included here as a vehicle fatality and not as a fire fatality)

[43] (1) drowning while intoxicated with drugs (included here as a drowning fatality and not a drug intoxication death as the death was not directly related to the toxic effects of the drug(s) it is not included as a drug fatality in this report

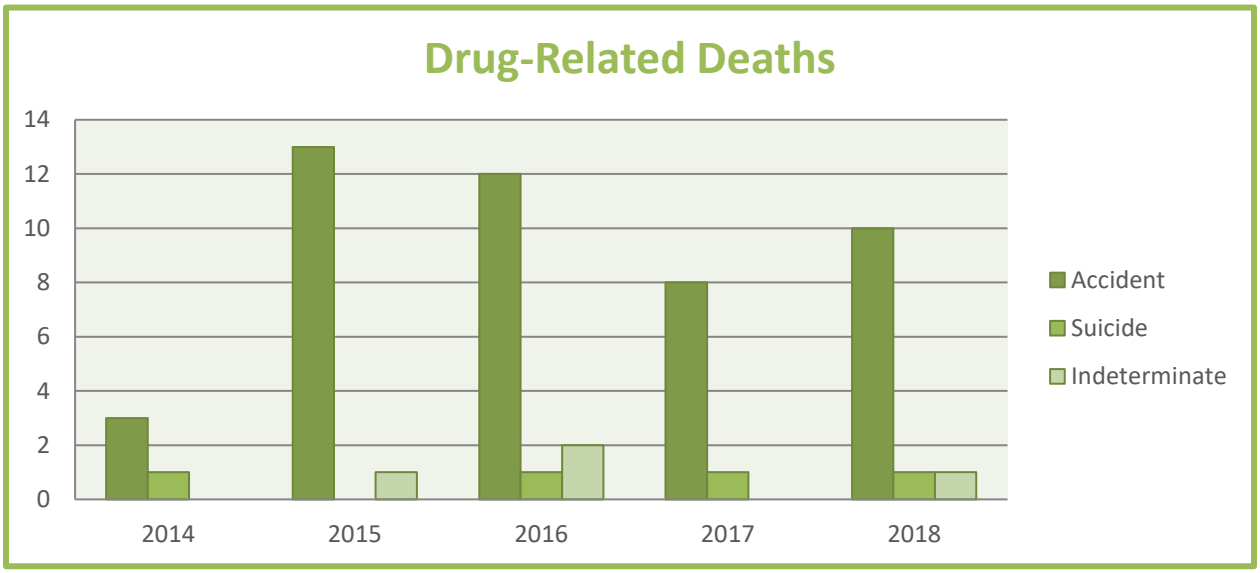
[44] (1) drowning while intoxicated with drugs (included here as a drowning fatality)

Isabella County

Drug Related Deaths

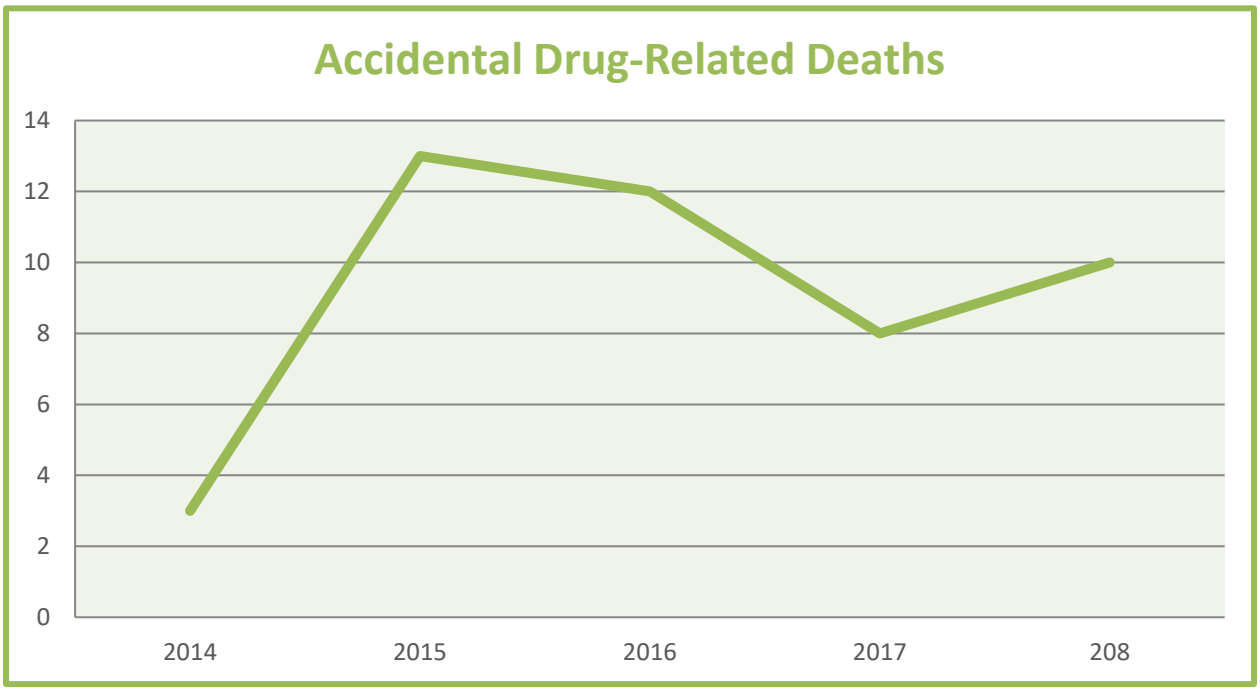
For purposes of this report, drug related fatalities are deaths in which an overdose of a combination of drugs or a single drug caused or contributed to the death. These deaths do not include situations in which intoxication might have been a factor in an incident leading to death, such as motor vehicle crashes, falls, choking while eating, or environmental exposures.

Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
ACCIDENT	3	13	12	8	10
SUICIDE	1	0	1	1	1
INDETERMINATE	0	1	2	0	1



Isabella County

2018 Drug Related Deaths	
TOTAL	12 cases
SEX	7 female, 5 male
RACE	7 white, 5 Native American
AGE RANGE	19 - 57 years
AVERAGE AGE	35.8 years
MEDIAN AGE	36.5 years
OPIOD-RELATED	8 cases involved an opiate or opioid (75%)
MANNER OF DEATH	10 accidents, 1 suicide, 1 indeterminate



Isabella County
Suicides

Suicide Totals by Year

2014	2015	2016	2017	2018
9	1	6	10	10

Suicide Methods

	2014	2015	2016	2017	2018
FIREARM	5	1	3	7	5
HANGING	3	0	1	2	3
ASPHYXIA	0	0	1	0	0
DRUG INTOXICATION	1	0	2	1	1
MOTOR VEHICLE/FIRE	0	0	0	0	1

Suicides by Age

Age	2014	2015	2016	2017	2018
0 – 17	0	0	0	0	0
18 – 25	4	0	1	0	2
26 – 44	2	0	3	3	3
45 – 64	1	0	2	6	4
65+	2	1	0	1	1

Isabella County

Reported Deaths of Children

Sudden Unexplained Infant Death (SUID) refers to the death of an infant less than 1 year of age in which investigation, autopsy, medical history, review, and appropriate laboratory testing fails to identify a specific cause of death. SUID includes deaths that meet the definition of sudden infant death syndrome (SIDS).

Reported Deaths of Children by Age

	2014	2015	2016	2017	2018
Stillborn	0	2	1	1	0
<1 year	0	1	0	0	0
1-5	1	0	0	1	0
6-10	0	0	0	0	0
11-17	0	4	0	1	1
TOTAL	1	7	1	3	1

Reported Deaths of Children by Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	0	1	0	0	0
ACCIDENT	1	4	0	2	1
SUICIDE	0	0	0	0	0
HOMICIDE	0	0	0	0	0
INDETERMINATE	0	0	0	0	0

Reported Deaths of Children – Cause and Manner of Death

AGE	SEX	CAUSE OF DEATH	MANNER
2018			
16	M	Blunt Force Injuries/MVC	Accident

Shiawassee County

Medical Examiner

Michael A. Markey, M.D.

Deputy Medical Examiners

Patrick A. Hansma, D.O.

Chief Investigator

Luke R. Vogelsberg, D-ABMDI

Medical Examiner Investigators

Mark Pendergraff, D-ABMDI
Dennis Campbell
Joy Dempsey, D-ABMDI
Amanda Dwyer
Lawrence Goff
Shane Grinnell
Mary Valentine

Shiawassee County

Summary of Cases

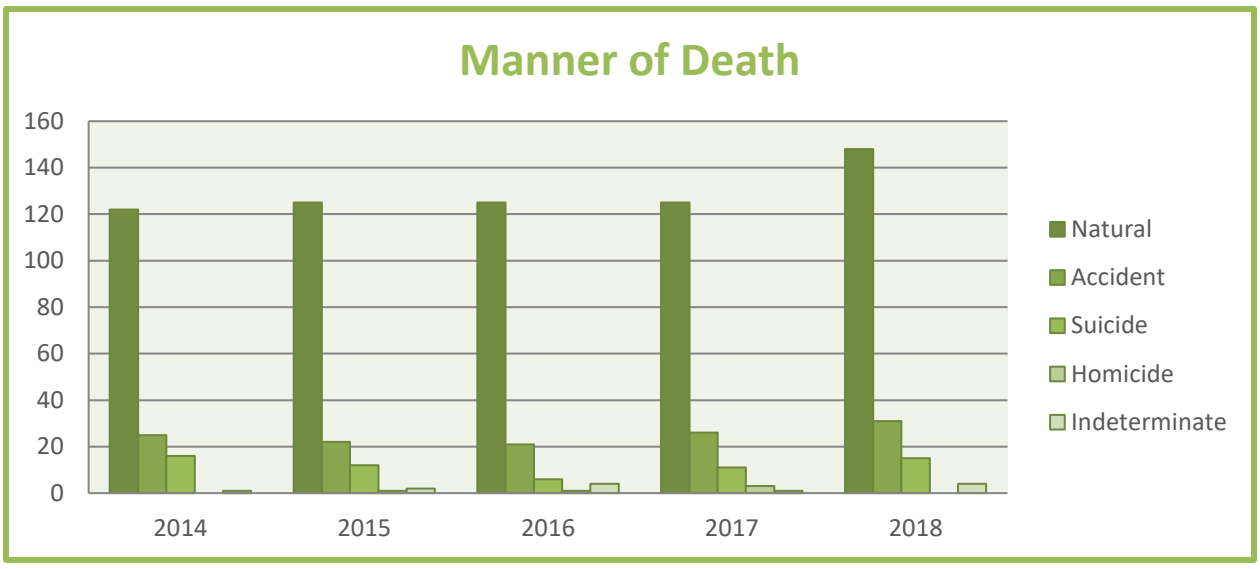
	2014	2015	2016	2017	2018
TOTAL DEATHS IN THE COUNTY	651	600	629	618	704
DEATHS REPORTED TO THE ME	164	162	158	168	200
CASES ACCEPTED - INVESTIGATION[45]	145	142	130	151	175
MEI SCENE INVESTIGATIONS	137	138	133	151	180
DEATH CERTIFICATES SIGNED BY ME	81	72	64	66	74
BODIES TRANSPORTED TO SPARROW	54	52	48	57	57
COMPLETE AUTOPSY	39	45	44	41	40
LIMITED AUTOPSY	4	1	1	7	8
EXTERNAL EXAMINATION	11	5	2	3	5
STORAGE ONLY	0	1	1	6	4
REFERRALS TO GIFT OF LIFE	31	28	43	44	40
TISSUE/CORNEA DONORS	2	7	15	8	6
UNCLAIMED BODIES	1	0	1	0	1
CREMATION PERMITS REVIEWED	308	298	375	356	436

[45] Not every case that is reported to the Medical Examiner's office falls within our jurisdiction. We accept cases for investigation based on the circumstances surrounding the death and the law that governs the Medical Examiner's authority (MCL 52.202). We declined jurisdiction in 25 cases that were reported to us in 2018.

Shiawassee County

Manner of Death

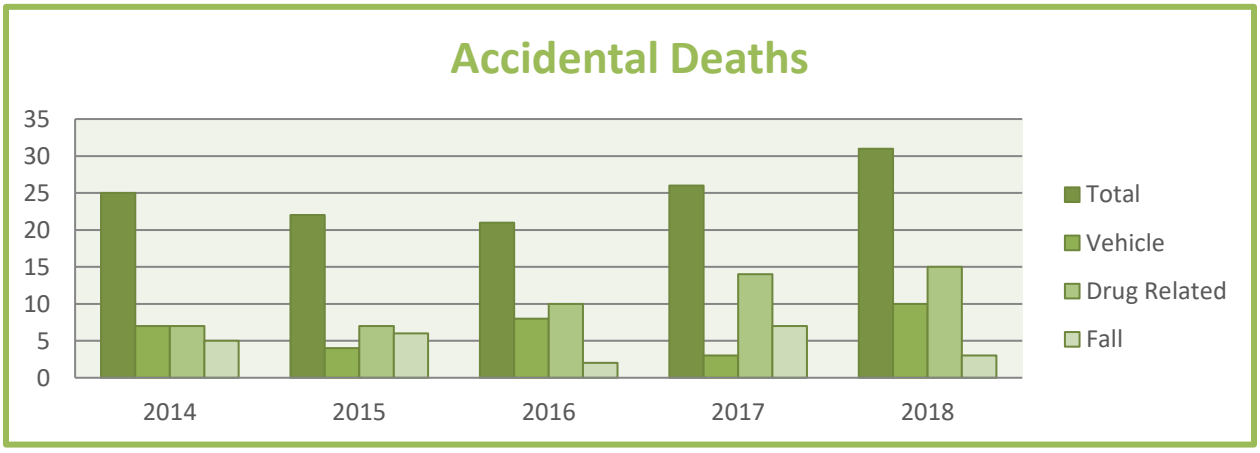
Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
NATURAL	122	125	125	125	148
ACCIDENT	25	22	21	26	31
SUICIDE	16	12	6	11	15
HOMICIDE	0	1	1	3	0
INDETERMINATE	1	2	4	1	4
TOTAL	164	162	158[46]	168[47]	198[48]



[46] Cases with no manner of death: stillbirth
[47] Cases with no manner of death: (1) stillbirth; (1) found "trophy" human skull of no contemporary forensic interest
[48] Cases with no manner of death: (2) stillbirths

Shiawassee County
Accidental Deaths

	2014	2015	2016	2017	2018
VEHICLE	7	4	8	3	10
DRUG-RELATED	7	7	10	14	15
DROWNING	0	0	0	0	1
FALL	5	6	2	7	3
FIRE	2	0	1	1	0
ASPHYXIA	3	1	0	0	0
INSECT STING(S)	0	2	0	0	0
HYPOTHERMIA	1	0	0	0	1
OTHER	0	2[49]	0	1[50]	1[51]
TOTAL	25	22	21	26	31



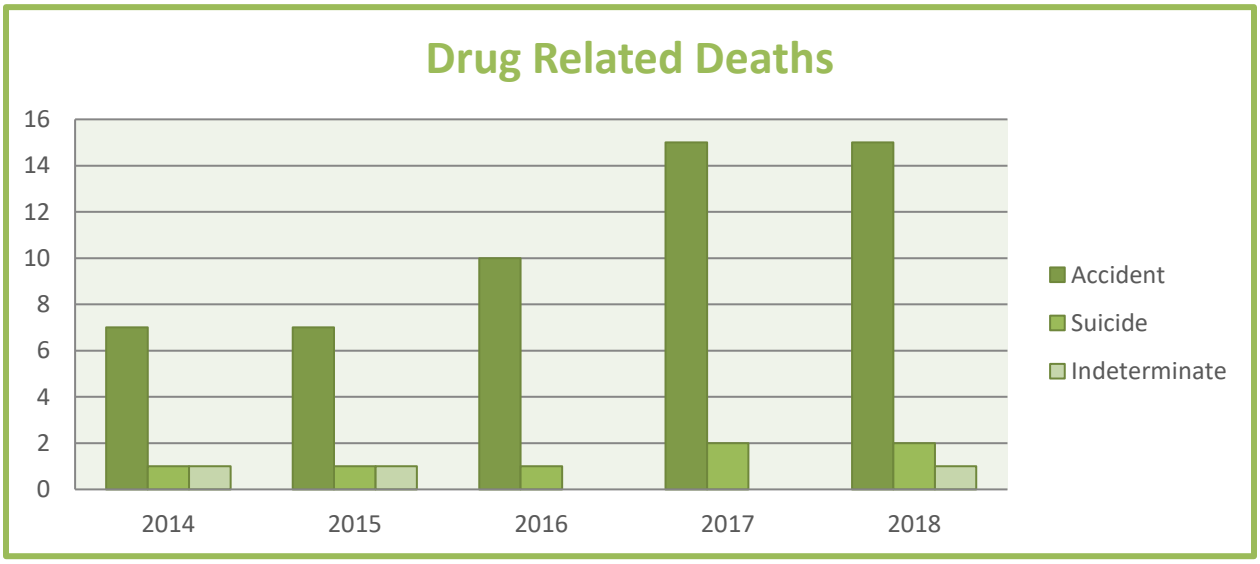
[49] (1) perforated artery during attempt at catheter placement; (1) compressed by machinery
[50] Hypothermia complicated by multiple drug intoxication, blunt head trauma, and cardiopulmonary disease
[51] Blunt force head trauma; car fell from jack

Shiawassee County

Drug Related Deaths

For purposes of this report, drug related fatalities are deaths in which an overdose of a combination of drugs or a single drug caused or contributed to the death. These deaths do not include situations in which intoxication might have been a factor in an incident leading to death, such as motor vehicle crashes, falls, choking while eating, or environmental exposures.

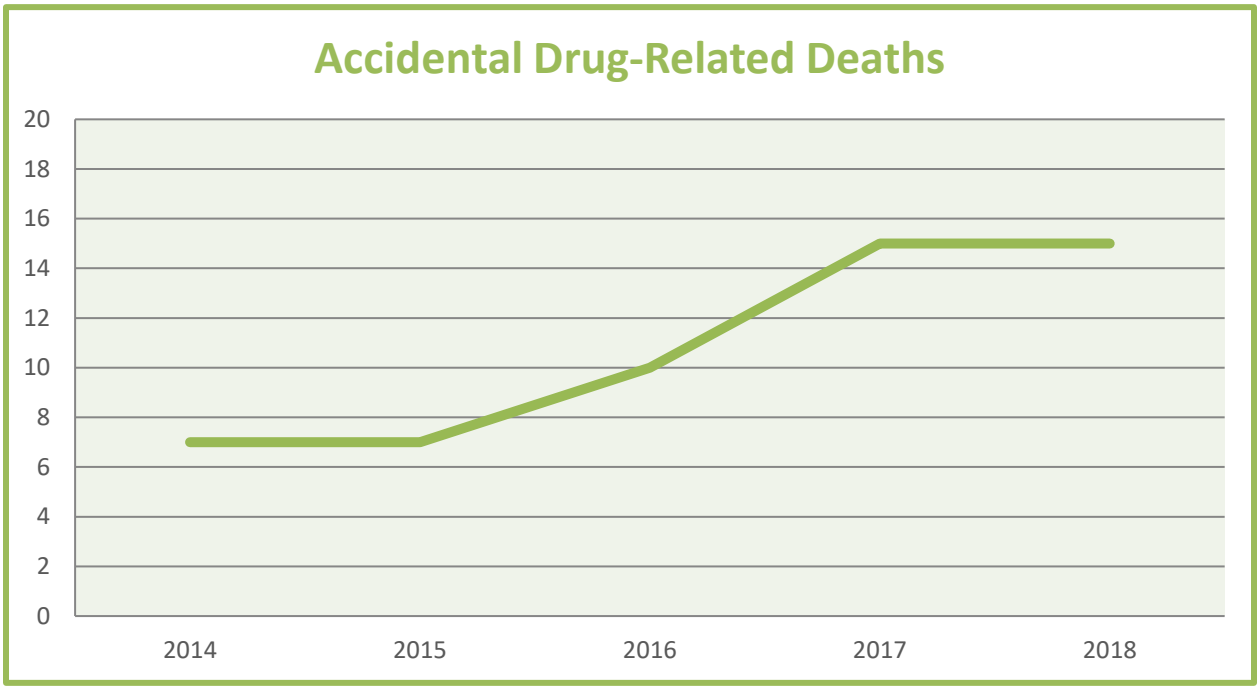
Manner of Death	*2014*	*2015*	*2016*	*2017*	*2018*
ACCIDENT	7	7	10	15[52]	15
SUICIDE	1	1	1	2	2
INDETERMINATE	1	1	0	0	1
TOTAL	9	9	11	17	18



[52] (1) case is multifactorial – hypothermia complicated by multiple drug intoxication, blunt head injuries, and cardiopulmonary disease (explains discrepancy in total number of accidental drug-related deaths between this chart and that on previous page)

Shiawassee County

2018 Drug Related Deaths	
TOTAL	18 cases
SEX	6 female, 12 male
RACE	18 white
AGE RANGE	27 - 70 years
AVERAGE AGE	45.2 years
MEDIAN AGE	41.5 years
OPIOD-RELATED	15 cases involved an opiate or opioid (83.3%)
MANNER OF DEATH	15 accidents, 2 suicides, 1 indeterminate



Shiawassee County

Suicides

Suicide Totals by Year

2014	2015	2016	2017	2018
16	12	6	11	15

Suicide Methods

	2014	2015	2016	2017	2018
FIREARM	7	4	3	9	12
HANGING	7	6	1	0	1
DRUG INTOXICATION	1	1	1	2	2
CARBON MONOXIDE	1	0	0	0	0
MOTOR VEHICLE CRASH	0	0	0	0	0
STRUCK BY TRAIN	0	1	1[53]	0	0

Suicides by Age

Age	2014	2015	2016	2017	2018
0 – 17	1	0	0	0	2
18 – 25	2	1	0	1	1
26 – 44	7	6	1	3	2
45 – 64	4	3	5	4	6
65+	2	2	0	3	4

[53] Motor vehicle parked on train trucks – struck by train in motor vehicle

Shiawassee County

Reported Deaths of Children

Reported Deaths of Children by Age

	2014	2015	2016	2017	2018
Stillborn	1	0	1	1	2[54]
<1 year	1	1	2	1	0
1-5	0	0	0	0	0
6-10	0	0	1	0	0
11-17	1	0	0	0	4
TOTAL	3	1	4	2	8

Reported Deaths of Children by Manner of Death

Manner of Death	2014	2015	2016	2017	2018
NATURAL	0	0	0	0	1
ACCIDENT	1	0	1	0	1
SUICIDE	1	0	0	0	2
HOMICIDE	0	0	1	0	0
INDETERMINATE	0	1	1	1	2

[54] Two additional mummified previable infants/fetuses were discovered (unable to determine is stillborn or died after birth); therefore, age is not classified on these two cases

Shiawassee County

Reported Deaths of Children – Cause and Manner

AGE	*SEX*	*CAUSE OF DEATH*	*MANNER*
		2018	
0	F	Stillbirth – intrauterine fetal demise	N/A (stillbirth)
0	M	Stillbirth – intrauterine fetal demise	N/A (stillbirth)
13	M	Gunshot Wound of Head	Suicide
14	F	Niemann Pick Disease	Natural
16	F	Complications of Drowning – Delayed	Accident
17	M	Shotgun Wound of Head	Suicide
U	U	Indeterminate Mummified Fetal Remains	Indeterminate
U	U	Indeterminate Mummified Fetal Remains	Indeterminate

Comparisons Across Counties

	Eaton	*Ingham*	*Ionia*	*Isabella*	*Shiawassee*
POPULATION[55]	107,759	280,895	63,905	70,311	70,648
TOTAL DEATHS	817	2,870	328	549	704
DEATHS REPORTED TO THE ME (% OF TOTAL DEATHS)	201 (24.6%)	888 (30.9%)	96 (29.3%)	125 (22.8%)	200 (28.4%)
CASES ACCEPTED FOR INVESTIGATION	185	647	90	106	175
MEI SCENE INVESTIGATION	193	709	92	111	180
DEATH CERTIFICATES SIGNED BY ME	102	393	50	50	74
TOTAL EXAMS (% OF CASES ACCEPTED)	90 (48.6%)	264 (40.8%)	43 (47.8%)	38 (35.8%)	53 (30.3%)
NATURAL DEATHS (% OF DEATHS REPORTED)	124 (61.7%)	607 (68.4%)	66 (68.8%)	88 (70.4%)	148 (74.0%)
ACCIDENTAL DEATHS (% OF DEATHS REPORTED)	44 (21.9%)	210 (23.6%)	15 (15.6%)	22 (17.6%)	31 (15.5%)
SUICIDES (% OF DEATHS REPORTED)	22 (10.9%)	38 (4.3%)	13 (13.5%)	10 (8.0%)	15 (7.5%)
HOMICIDES (% OF DEATHS REPORTED)	2 (1.0%)	12 (1.4%)	1 (1.0%)	3 (2.4%)	0 (0.0%)

[55] Population statistics provided by suburbanstats.org

Comparisons Across Counties

	Eaton	*Ingham*	*Ionia*	*Isabella*	*Shiawassee*
INDETERMINATE (% OF DEATHS REPORTED)	8 (4.0%)	16 (1.8%)	1 (1.0%)	1 (0.8%)	4 (2.0%)
DRUG-RELATED DEATHS (% OF DEATHS REPORTED)	15 (7.5%)	101 (11.4%)	7 (7.3%)	12 (9.6%)	18 (9.0%)
REFERRALS TO GIFT OF LIFE	63	292	24	38	40
TISSUE/CORNEA DONORS	11	48	9	2	6
UNCLAIMED BODIES	3	28	1	1	1

Additional Information

In the five counties for which Sparrow Forensic Pathology served as the Office of the Medical Examiner in 2018:

- No bodies were exhumed for examination
- Three bodies remained unidentified at the time a final disposition for the remains was determined (all three mummified fetal remains)
- Toxicology testing was performed in 464 of the 488 (95.1%) examinations performed[56]

[56] Toxicology testing is performed in nearly all cases in which an examination is performed. Exceptions to this may include (but are not limited to): cases sent in for identification purposes only, apparent natural deaths sent in for external examination to rule out trauma, and cases for which adequate toxicology specimens cannot be obtained (due to prolonged stay in hospital following initial event or decomposition).