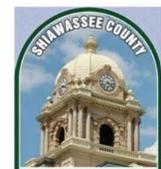




Department of Forensic Pathology
Office of the Medical Examiner

2019 Drug Report



Introduction

Drug-Related Deaths - Defined

We define drug deaths as those which result entirely or partially from the physiologic effects of acute toxicity. Therefore, included here are deaths which resulted from a combination of natural disease and acute intoxication (e.g. lung disease complicated by opioid intoxication). Our definition does not include deaths by violence, in which the violent behavior may have been caused or contributed to by intoxication (e.g. death due to injury from motor vehicle crash in which the at-fault driver was intoxicated). We also do not include deaths related to the effects of chronic substance use (e.g. deaths due to alcoholic liver disease or heart disease which may have been contributed to by chronic cocaine use) if not combined with acute toxicity.

Methods

The majority of the drug deaths reported are due to more than one substance, as you will see in the detailed tables that follow. Often, decedents have even more substances present in their body at the time of death or overdose incident than just the substances listed as having caused or contributed to death. After autopsy and review of records, including toxicology report, the medical examiner assigned to the case determines which of the substances present played a causal role in the death. Thus, there may be substances present in a given case which are not included in the cause of death statement.

Occasionally, intoxicated decedents survive in the hospital for a time prior to death, following acute drug intoxication. In these cases, all efforts are made to obtain and test the earliest blood and urine available from their time in the hospital for the overdose incident, so that the toxicology results reflect what was in the body at the time the overdose occurred.

New information occasionally becomes available after a “final” cause of death was determined, which sometimes, albeit rarely, results in a change to the “final” cause of death. As such, the statistics contained herein may be subject to change at any time.

The extent of toxicology testing is determined by the medical examiner assigned to the case, based upon the circumstances of death. During the period reported, our office used Axis Forensic Toxicology for toxicology testing.¹

Manner Determination

Drug-related deaths are conventionally certified as accidents (unless otherwise indicated by investigation on a case by case basis) and rarely, if ever, Homicide. A decedent’s intentions in the interval immediately preceding death may be impossible to ascertain. A common example is a person who has a well-documented history of suicidal ideation or attempts but also abuses drugs recreationally. In such cases a fatal overdose may be intentional or unintentional, and therefore may be best certified as indeterminate.

¹ If you have questions about what drugs we are currently capable of detecting, please visit www.axisfortox.com or email michelle.fox@sparrow.org

Highlights

Unless otherwise noted, all comparisons here are made to the data from 2018. As stated above, most drug-related deaths are due to a combination of more than one substance. As such, numerous deaths fall into multiple of the below statistical categories (i.e. *all* heroin, fentanyl, methadone, and fentanyl analogue-related deaths are included in the opioid-related deaths category, and many deaths involved both heroin and fentanyl, and are included in both specific categories).

- Total drug-related deaths **decreased** by 8.7% (14 less)
- Opioid-related deaths **decreased** 1.6% (2 less)
- Heroin-related² deaths **increased** by 16.1% (5 more)
- Fentanyl-related deaths **increased** by 4.6% (4 more)
- Methadone-related deaths **increased** by 7.1% (1 more)
- Cocaine-related deaths **decreased** by 4.8% (2 less)
- Amphetamine/Methamphetamine-related³ deaths **increased** by 45% (9 more)
- Fentanyl analogue-related deaths **increased** by 44% (8 more). In all but one death the fentanyl analogue was paired with fentanyl; fentanyl analogues detected included acetylfentanyl (26) and butyrylfentanyl (1)
- Benzodiazepine-related deaths **decreased** by 29.5% (13 fewer)
- **79.6%** of all drug-related deaths were due to two or more substances (-1.8% from 2018)
- **21.1%** of all opioid-related deaths also involved at least one benzodiazepine (-8.5% from 2018)
- **17.1%** of all opioid-related deaths also involved ethanol (alcohol) (+3.5% from 2018)

² Heroin is rapidly metabolized to morphine. As such, this may result in some under-reporting of heroin, and over-reporting of morphine

³ Methamphetamine is metabolized to amphetamine in the body, thus, it is not always clear what the presence of amphetamine indicates (illicit methamphetamine use vs. prescription amphetamine use)

Eaton County

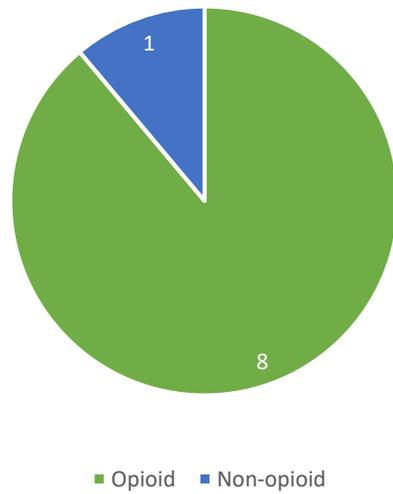
Drug-Related Deaths

2019 Eaton County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of Death
Male	27	fentanyl	Accident
Female	31	acetylfentanyl, diphenhydramine, fentanyl, morphine	Accident
Male	32	alprazolam, fentanyl	Accident
Male	33	cocaine, ethanol, fentanyl	Indeterminate
Female	40	alprazolam, cocaine, morphine	Accident
Male	41	fentanyl, acetylfentanyl, cocaine, diphenhydramine	Accident
Female	48	codeine, ethanol, hydrocodone, pseudoephedrine	Suicide
Female	52	cocaine	Accident
Male	59	acetylfentanyl, fentanyl, cocaine	Accident

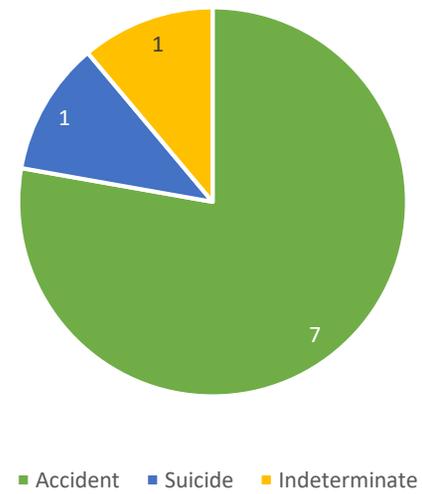
Eaton County

Drug-Related Deaths

2019 Eaton County Drug-Related Deaths -
Opioid vs. Non-opioid

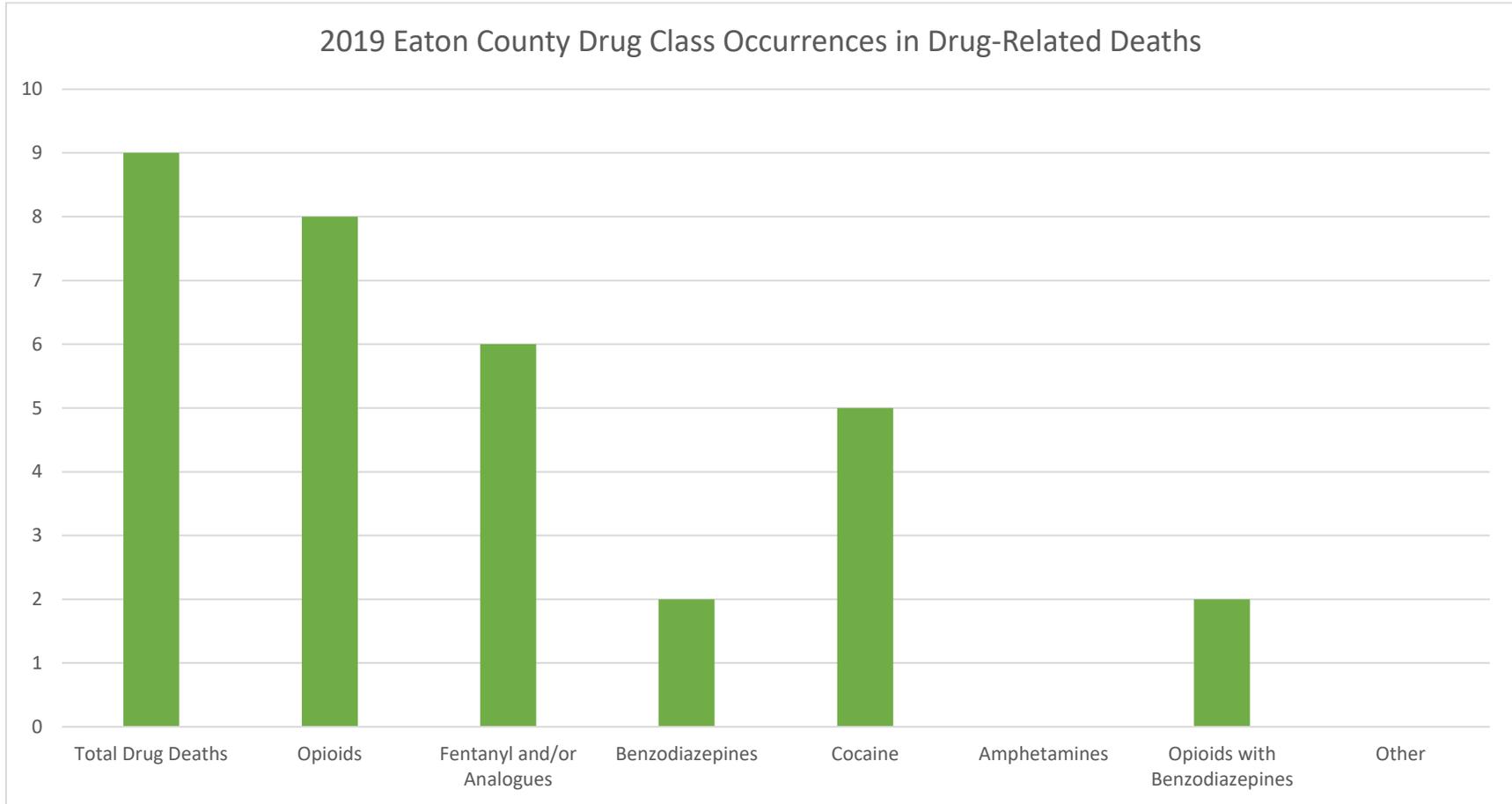


2019 Eaton County Drug-Related Deaths -
Manner of Death



Eaton County

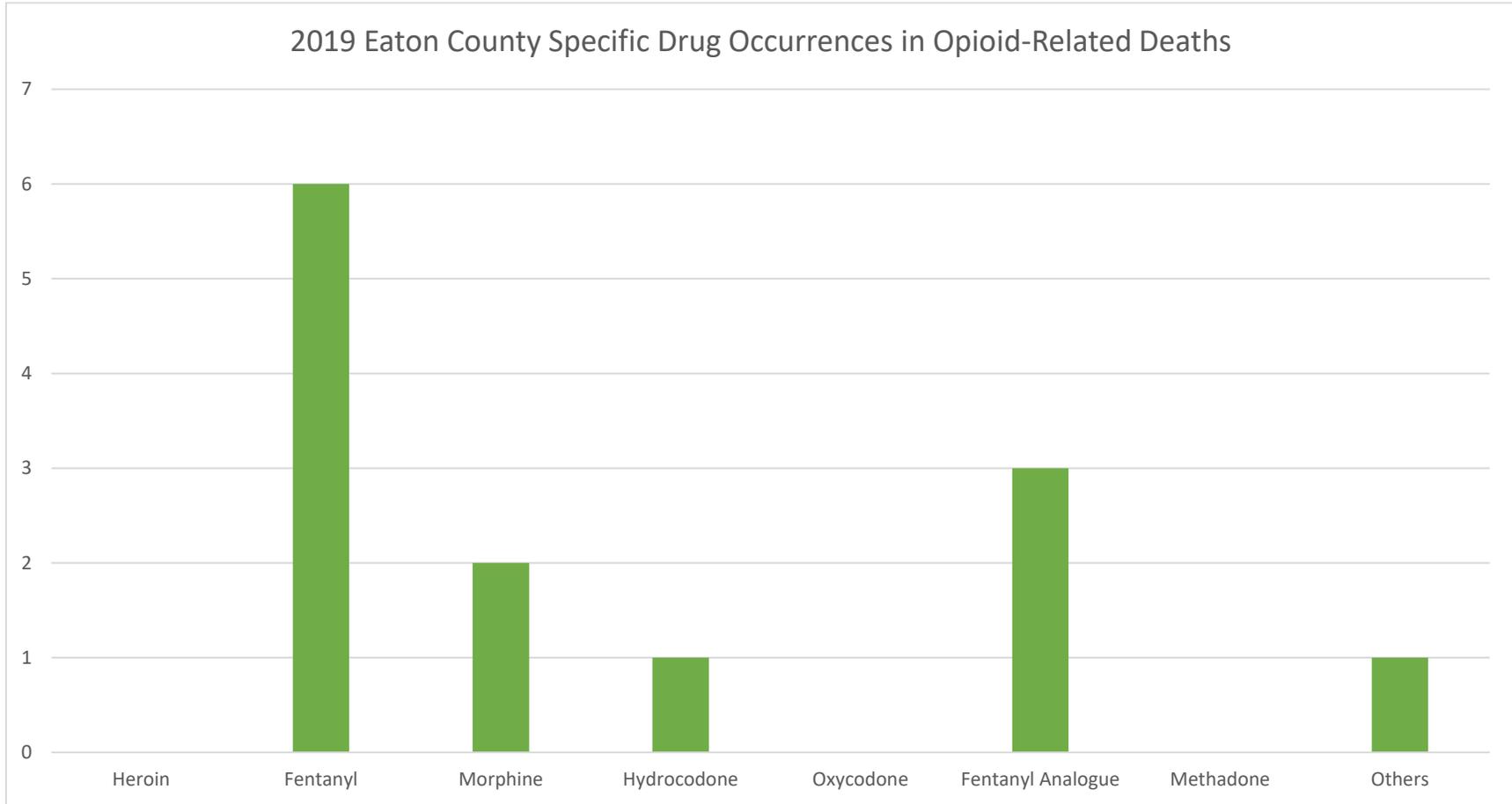
Drug-Related Deaths



This chart describes occurrences in one death of a given class of drug. As most drug-related deaths are due to two or more substances, the same death may fall into multiple categories (e.g. death due to fentanyl and alprazolam intoxication falls into the opioids, benzodiazepines, and opioids with benzodiazepines categories). Multiple of the same class of drug in the same death counts as only one occurrence of that class of drugs (e.g. death due to fentanyl and hydrocodone intoxication – both of these are opioids, so this death falls only in the opioids category, as one occurrence). The “other” category is for occurrences of drug-related deaths due *solely* to drugs which do not fall into the other listed categories.

Eaton County

Drug-Related Deaths



This chart describes occurrences in one death of a specific opioid drug. As most drug-related deaths are due to two or more substances, the same death may fall into multiple categories (e.g. death due to fentanyl and heroin intoxication falls into both the fentanyl and heroin categories). The “other” category is for occurrences of other less-frequently observed opioids, including (but not limited to) tramadol, hydromorphone, buprenorphine.

Ingham County

Drug-Related Deaths

2019 Ingham County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of Death
Male	20	morphine, codeine, alprazolam, lorazepam, nordiazepam, cocaine	Accident
Female	21	lithium	Accident
Female	22	venlafaxine	Suicide
Male	22	fentanyl	Accident
Female	24	methamphetamine, fentanyl	Accident
Female	25	fentanyl, heroin, ethanol	Accident
Male	25	ethanol, clonazepam, alprazolam, diphenhydramine	Accident
Male	25	fentanyl	Accident
Male	26	fentanyl, ethanol	Accident
Male	26	fentanyl, acetylfentanyl, mitragynine, etizolam	Accident
Male	27	acetylfentanyl, clonazepam, fentanyl, ketamine, methamphetamine	Accident
Female	28	cyclobenzaprine, diphenhydramine, fentanyl, morphine	Indeterminate
Female	28	methamphetamine, cocaine, acetyl fentanyl, fentanyl, cyclobenzaprine	Accident
Female	28	fentanyl, heroin, cocaine, U47700, acetylfentanyl, butyrylfentanyl	Accident
Male	28	heroin	Accident
Male	29	acetylfentanyl, cocaine, fentanyl, methamphetamine	Accident
Male	29	acetylfentanyl, fentanyl, heroin	Accident
Male	30	fentanyl, acetylfentanyl, heroin, alprazolam	Accident
Female	31	fentanyl	Accident
Female	31	alprazolam, diphenhydramine, hydrocodone, oxycodone, promethazine	Accident
Female	32	alprazolam, cocaine, heroin, methamphetamine	Accident
Male	32	cocaine, fentanyl, heroin	Accident
Male	32	fentanyl	Accident

Female	33	fentanyl, morphine, ethanol	Accident
Male	33	alprazolam, cocaine, fentanyl, methadone, morphine	Accident
Male	33	mitragynine	Accident
Female	34	fentanyl, heroin, gabapentin	Accident
Female	34	acetylfentanyl, cocaine, diphenhydramine, fentanyl	Indeterminate
Female	34	fentanyl, acetylfentanyl, methamphetamine	Accident
Female	34	methamphetamine, cocaine, MDMA, fentanyl, heroin	Accident
Male	34	ethanol, fentanyl, heroin, hydrocodone, methamphetamine, oxycodone, tramadol	Accident
Male	34	heroin, cocaine, diphenhydramine, oxcarbazepine	Accident
Female	35	acetylfentanyl, cocaine, ethanol, fentanyl, hydroxyzine, methamphetamine	Accident
Male	35	loperamide	Accident
Male	35	methamphetamine, fentanyl, heroin	Accident
Male	35	methamphetamine	Accident
Male	35	fentanyl, morphine	Accident
Female	36	acetylfentanyl, alprazolam, dextromethorphan, diphenhydramine, fentanyl, codeine	Accident
Male	36	fentanyl, heroin	Accident
Male	37	ethanol, gabapentin	Accident
Female	38	hydrocodone, hydroxyzine, mitragynine	Suicide
Female	38	lorazepam, methamphetamine, quetiapine	Accident
Male	38	cocaine, fentanyl, heroin	Accident
Female	39	fentanyl, hydrocodone, methamphetamine, cocaine, diphenhydramine	Accident
Female	39	acetylfentanyl, fentanyl, cocaine	Accident
Male	39	pentobarbital	Suicide
Male	39	cyclobenzaprine, fentanyl, heroin, methadone, orphenadrine	Accident
Male	40	heroin, fentanyl	Accident
Male	40	kava, clonazepam, lorazepam, dextromethorphan	Accident
Male	40	clonazepam, cyclobenzaprine, fentanyl, probable heroin	Indeterminate
Male	41	buprenorphine, methamphetamine, morphine	Accident
Male	41	fentanyl	Accident
Female	43	cocaine, ethanol, fentanyl, heroin	Accident

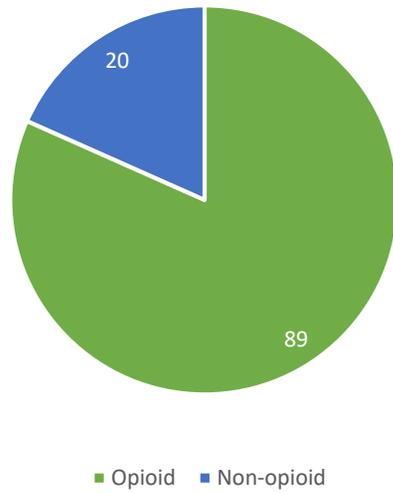
Female	43	methamphetamine	Accident
Male	43	fentanyl, heroin, tramadol	Accident
Male	43	cocaine	Accident
Female	44	cocaine, fentanyl, morphine, ethanol	Accident
Male	44	methamphetamine	Accident
Male	44	ethanol	Accident
Male	45	fentanyl, cocaine, morphine, diphenhydramine	Accident
Male	46	fentanyl, cocaine	Accident
Male	47	fentanyl, heroin, methadone	Accident
Female	48	alprazolam, cocaine, methadone	Accident
Male	48	fentanyl, acetylfentanyl	Accident
Male	49	ethanol, hydromorphone, gabapentin, amitriptyline	Accident
Female	50	morphine, fentanyl, clonazepam	Accident
Male	50	methamphetamine, cocaine, heroin, ethanol	Accident
Male	50	cocaine, fentanyl	Accident
Male	50	cyclobenzaprine, gabapentin	Accident
Female	51	cocaine, fentanyl	Accident
Male	51	ethanol, fentanyl, heroin	Accident
Male	51	fentanyl	Accident
Female	52	fentanyl, butalbital, gabapentin, hydrocodone, oxycodone, ethanol	Accident
Female	52	ephedrine, lorazepam, methadone	Accident
Female	52	methamphetamine, fentanyl	Accident
Female	52	methamphetamine, methadone	Accident
Male	52	fentanyl, acetylfentanyl, cocaine, ethanol	Accident
Male	52	fentanyl, ethanol	Accident
Male	52	ethanol, fentanyl	Accident
Male	53	methamphetamine, morphine	Accident
Male	54	alprazolam, fentanyl, morphine	Accident
Male	55	methadone	Accident
Male	56	ethanol	Accident

Female	57	cocaine, ethanol	Accident
Female	58	fentanyl, acetylfentanyl, methamphetamine, cocaine, dextromethorphan, amitriptyline, nordiazepam	Accident
Female	59	cocaine	Accident
Male	59	alprazolam, ethanol	Suicide
Male	59	ethanol, fentanyl, morphine	Indeterminate
Male	59	heroin, cocaine	Accident
Male	59	acetylfentanyl, cocaine	Accident
Male	59	fentanyl, heroin, hydrocodone	Accident
Female	60	lorazepam, diphenhydramine, mirtazapine, trazodone, chlorpromazine, fluphenazine, ethanol	Suicide
Male	60	methamphetamine	Accident
Female	62	meperidine	Suicide
Female	62	amphetamine, diazepam, diphenhydramine, hydroxychloroquine, oxycodone	Accident
Male	62	cocaine, fentanyl	Accident
Male	62	fentanyl, morphine, diphenhydramine	Accident
Male	63	clonazepam, hydrocodone, promethazine	Accident
Male	63	fentanyl, heroin, hydrocodone	Accident
Female	64	acetaminophen, oxycodone, hydrocodone, morphine	Suicide
Male	64	acetylfentanyl, fentanyl, morphine	Accident
Male	64	cocaine, fentanyl, heroin	Accident
Male	65	fentanyl, methadone	Accident
Female	66	ethanol, fentanyl, heroin	Accident
Male	66	methadone, hydrocodone	Accident
Male	67	alprazolam, heroin, fentanyl	Accident
Female	68	cocaine, fentanyl, heroin	Accident
Male	70	fentanyl	Accident
Male	73	heroin, methadone, alprazolam	Accident

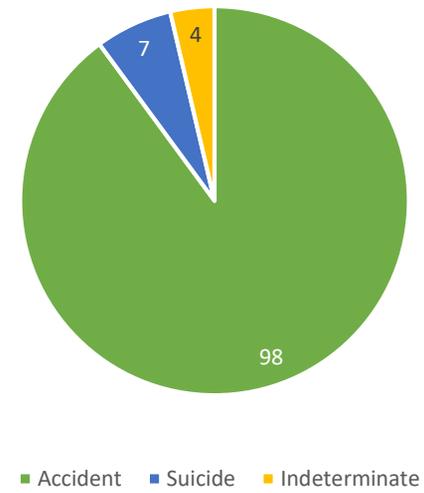
Ingham County

Drug-Related Deaths

2019 Ingham County Drug-Related Deaths
- Opioid vs. Non-opioid

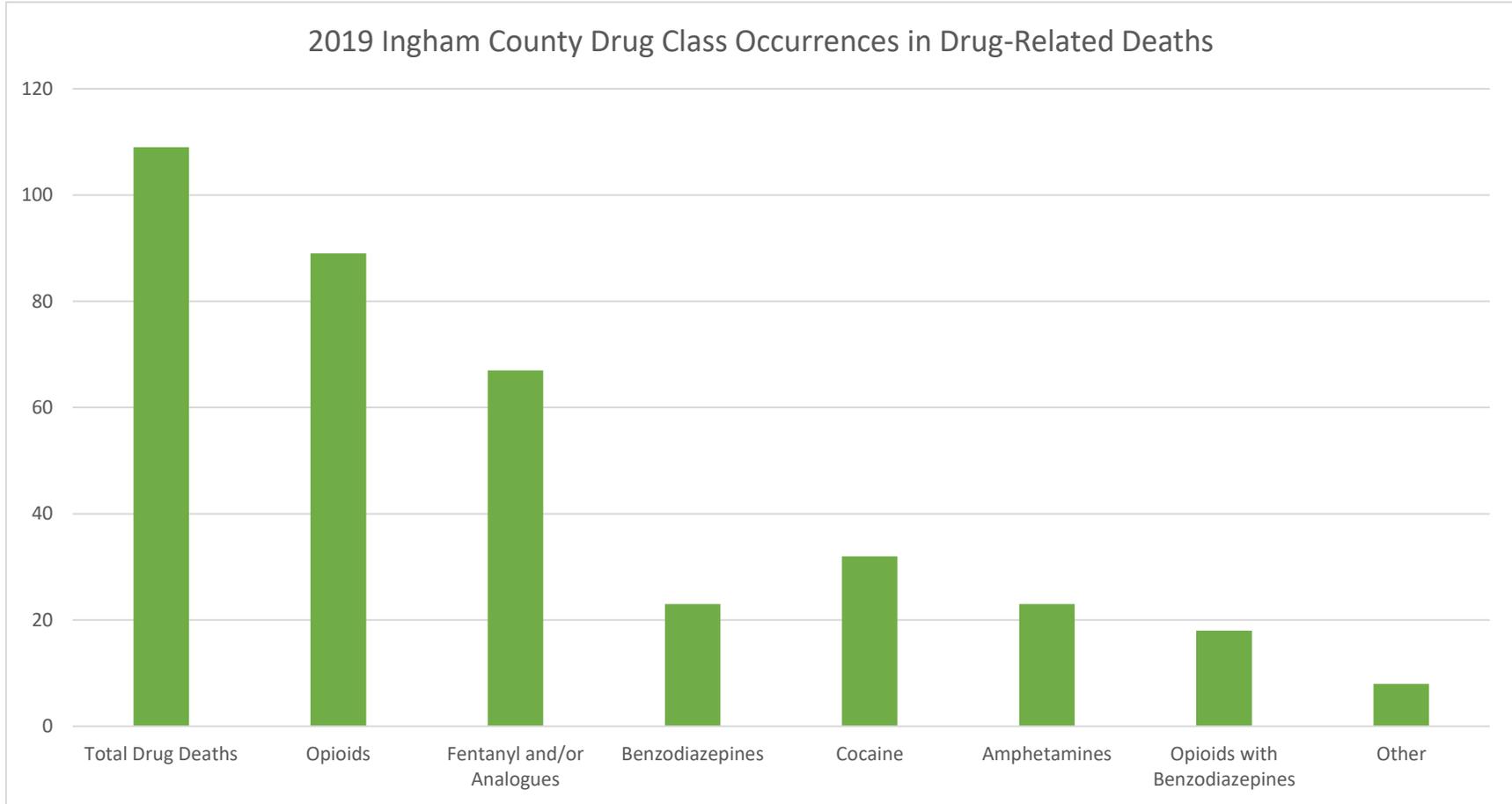


2019 Ingham County Drug-Related Deaths -
Manner of Death



Ingham County

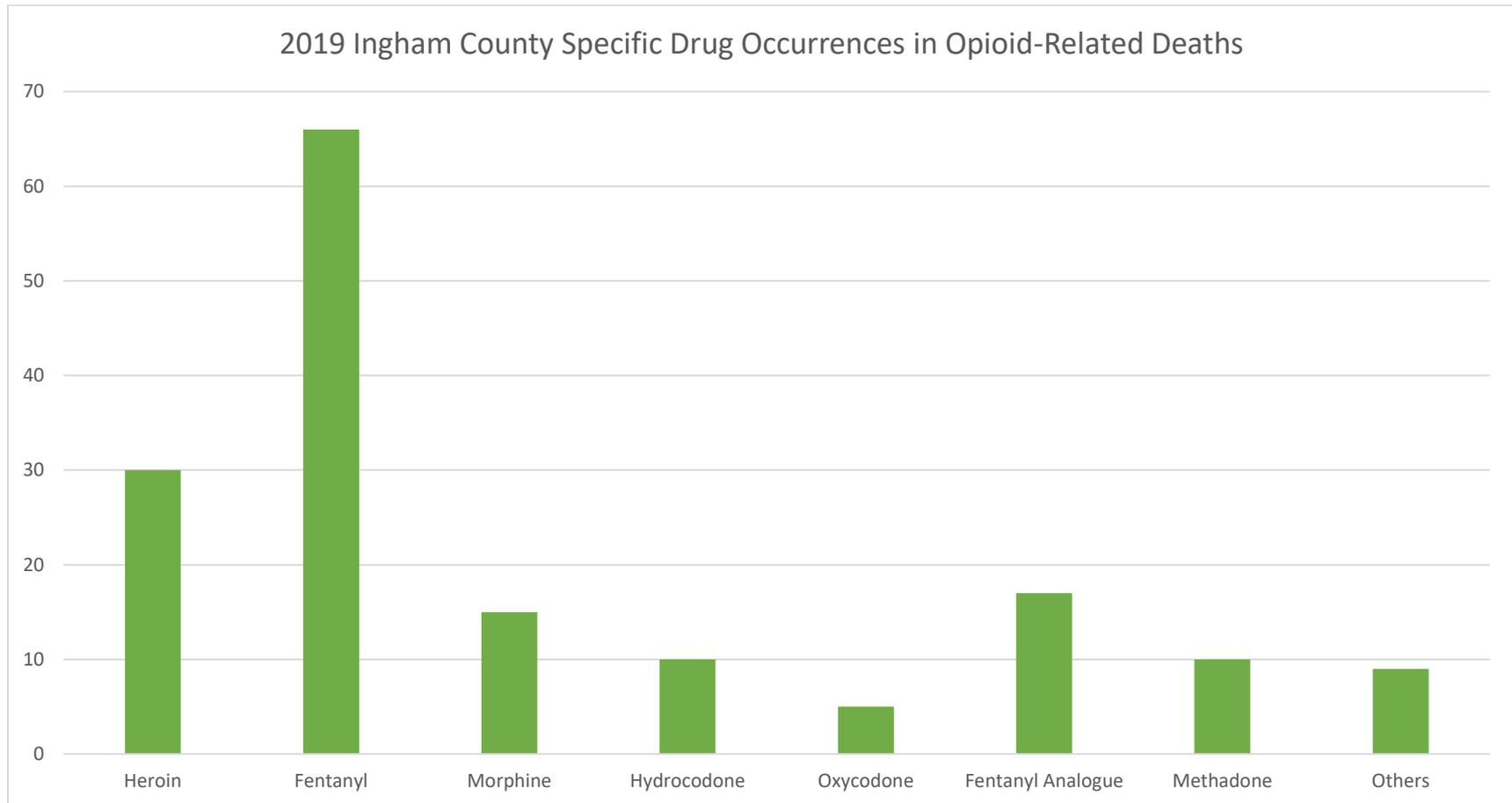
Drug-Related Deaths



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Ingham County

Drug-Related Deaths



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Ionia County

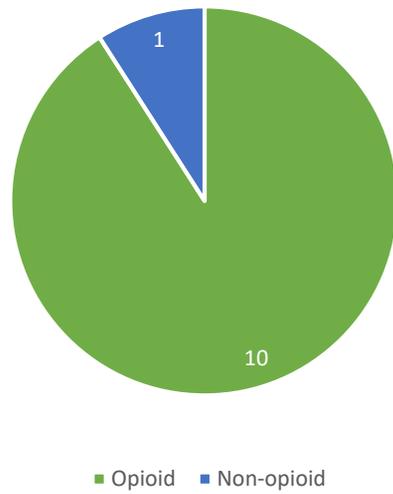
Drug-Related Deaths

2019 Ionia County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Female	32	fentanyl	Accident
Male	33	ethanol, heroin	Accident
Male	34	fentanyl, heroin, U-47700	Accident
Female	37	fentanyl, morphine, hydrocodone, ethanol	Accident
Male	40	fentanyl, acetylfentanyl	Accident
Female	40	bupropion	Suicide
Female	47	fentanyl, acetylfentanyl, cyclobenzaprine, gabapentin	Accident
Female	49	cyclobenzaprine, diazepam, methadone, tramadol	Accident
Male	50	fentanyl	Accident
Male	51	ethanol, fentanyl, acetylfentanyl	Accident
Male	51	heroin, oxycodone, cyclobenzaprine, gabapentin, duloxetine, pregabalin	Accident

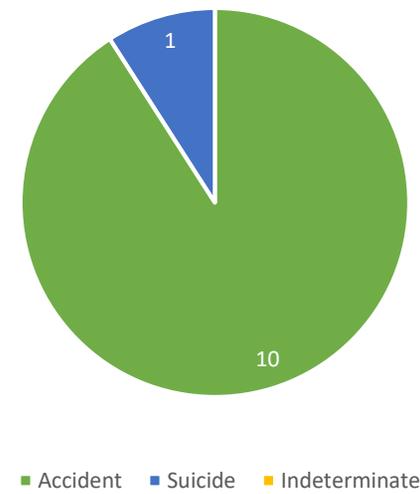
Ionia County

Drug-Related Deaths

2019 Ionia County Drug-Related Deaths -
Opioid vs. Non-opioid

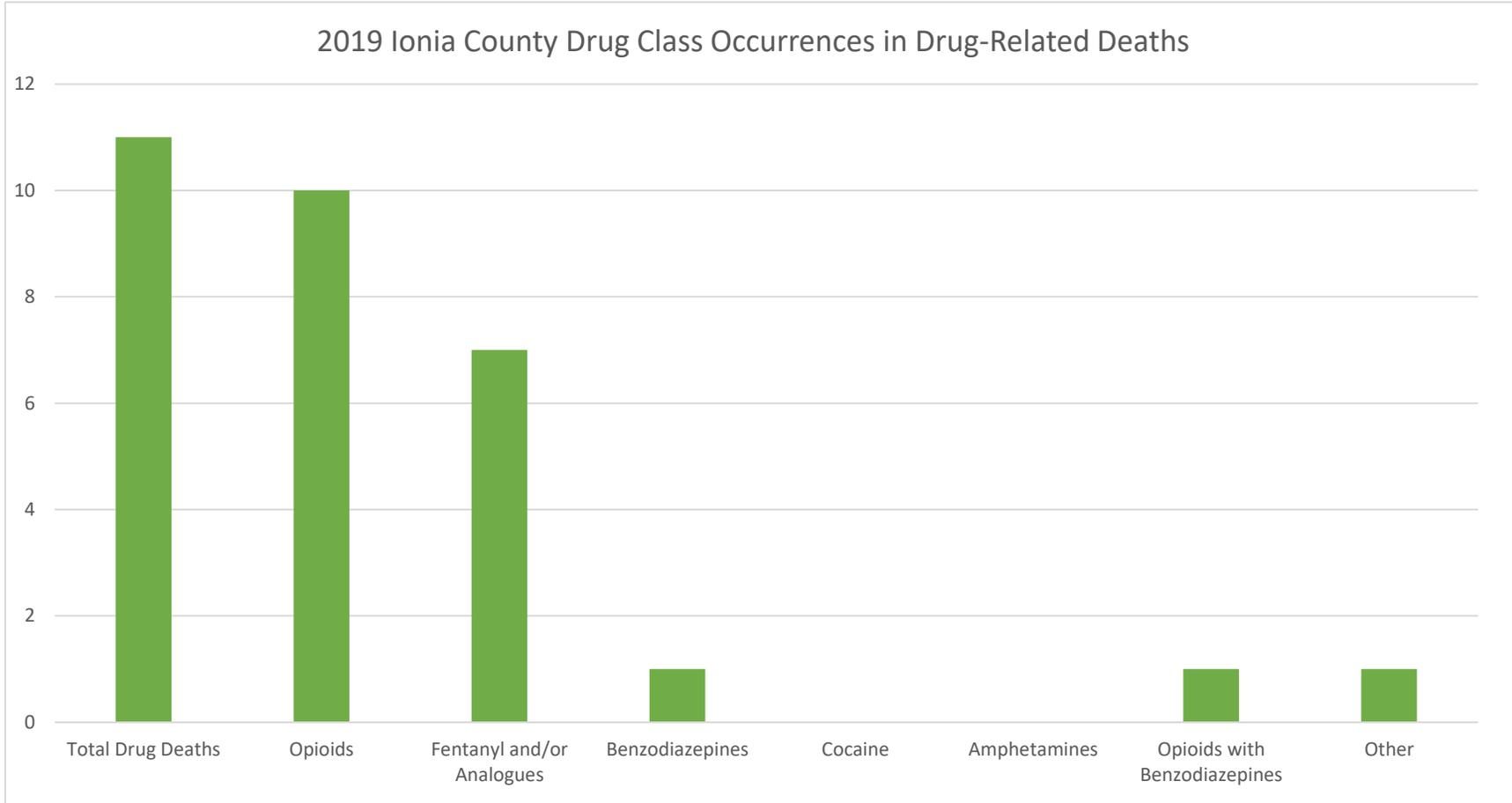


2019 Ionia County Drug-Related Deaths -
Manner of Death



Ionia County

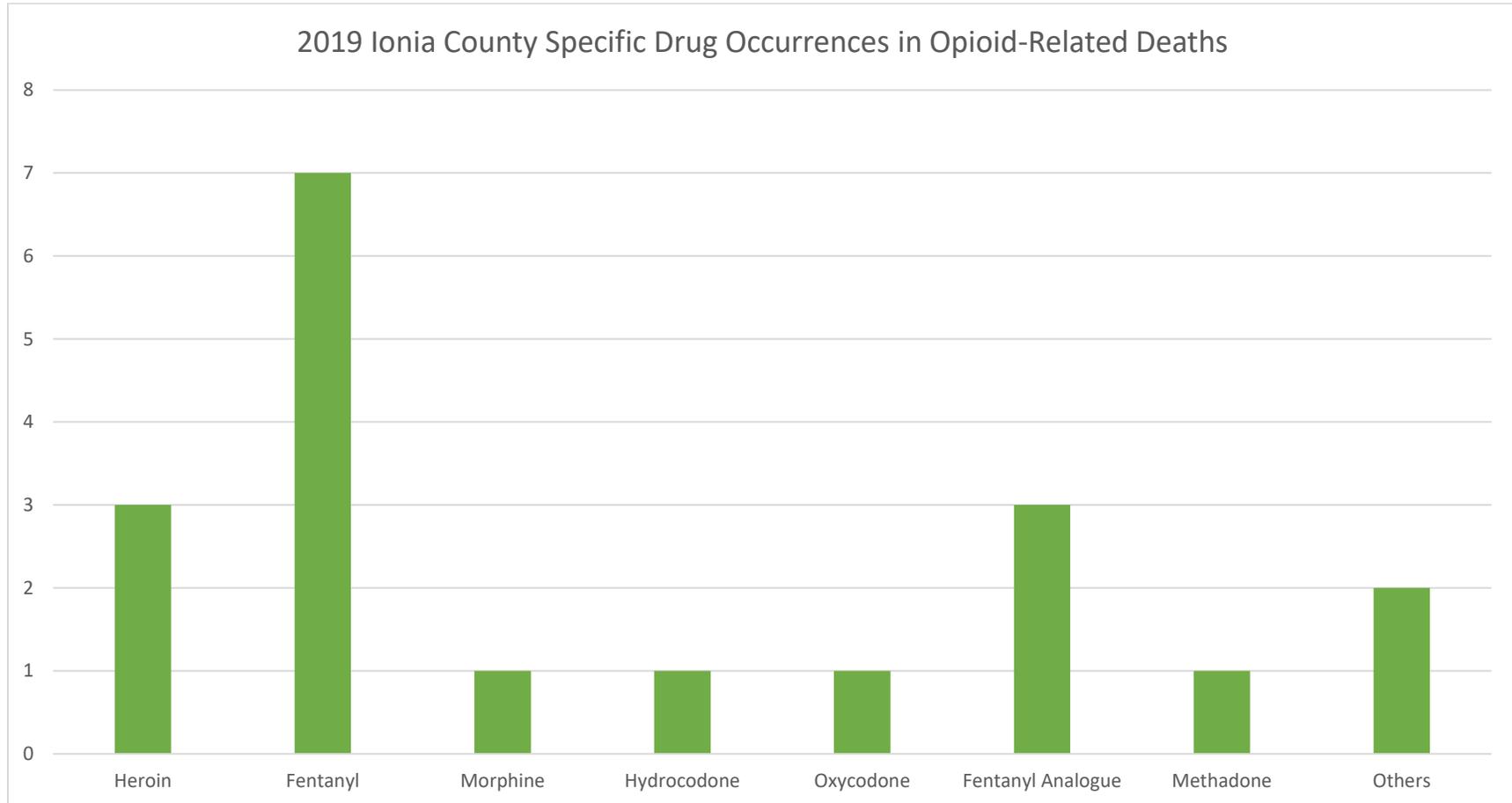
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Ionia County

Drug-Related Deaths



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Isabella County

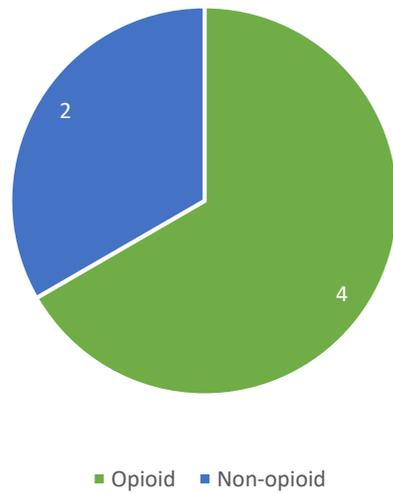
Drug-Related Deaths

2019 Isabella County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of Death
Female	24	fentanyl, heroin	Accident
Male	26	fentanyl	Accident
Male	33	fentanyl, ethanol	Accident
Female	34	methadone	Accident
Male	46	cocaine, methamphetamine	Accident
Male	47	methamphetamine, cyclobenzaprine	Accident

Isabella County

Drug-Related Deaths

2019 Isabella County Drug-Related Deaths
- Opioid vs. Non-opioid

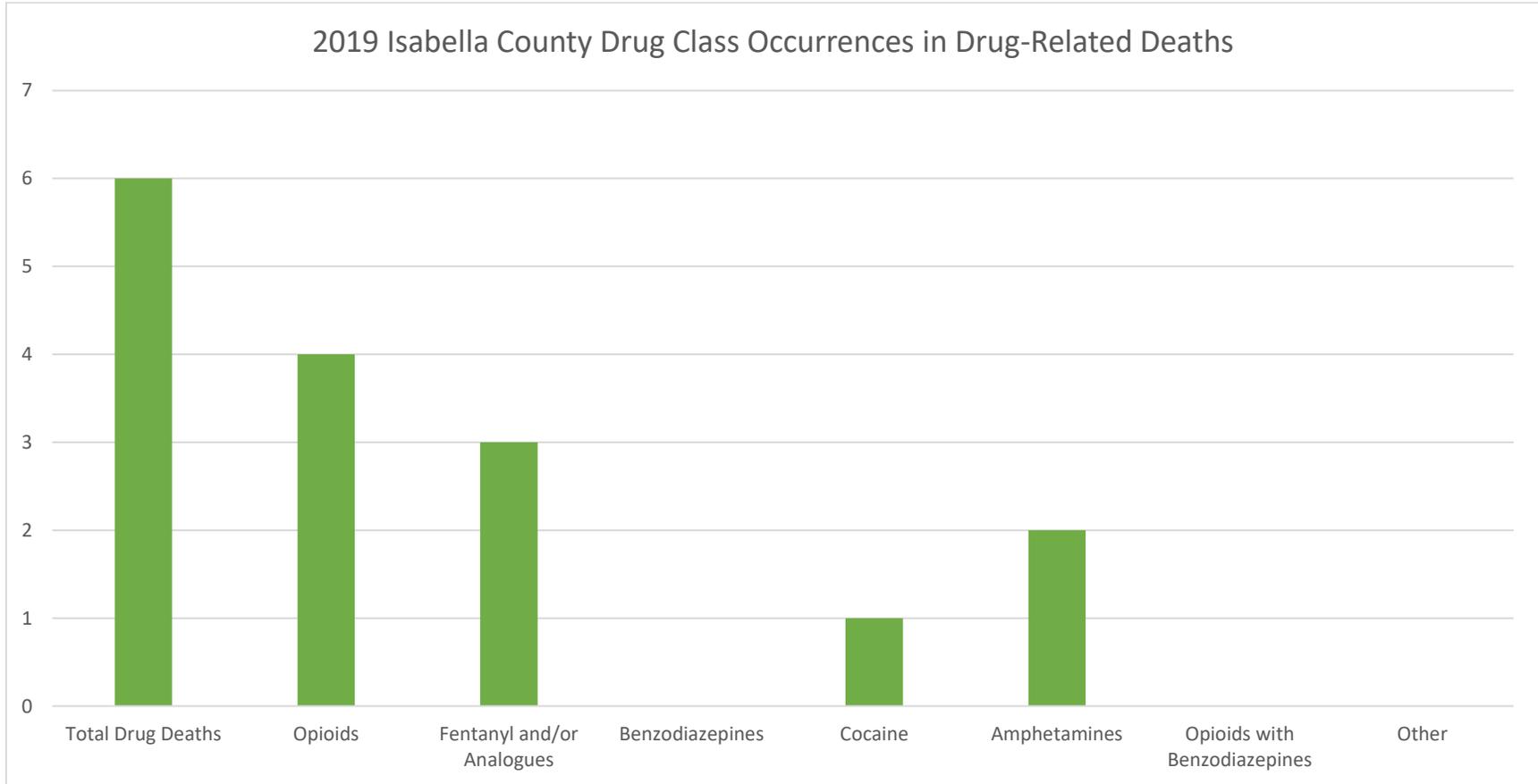


2019 Isabella County Drug-Related Deaths -
Manner of Death



Isabella County

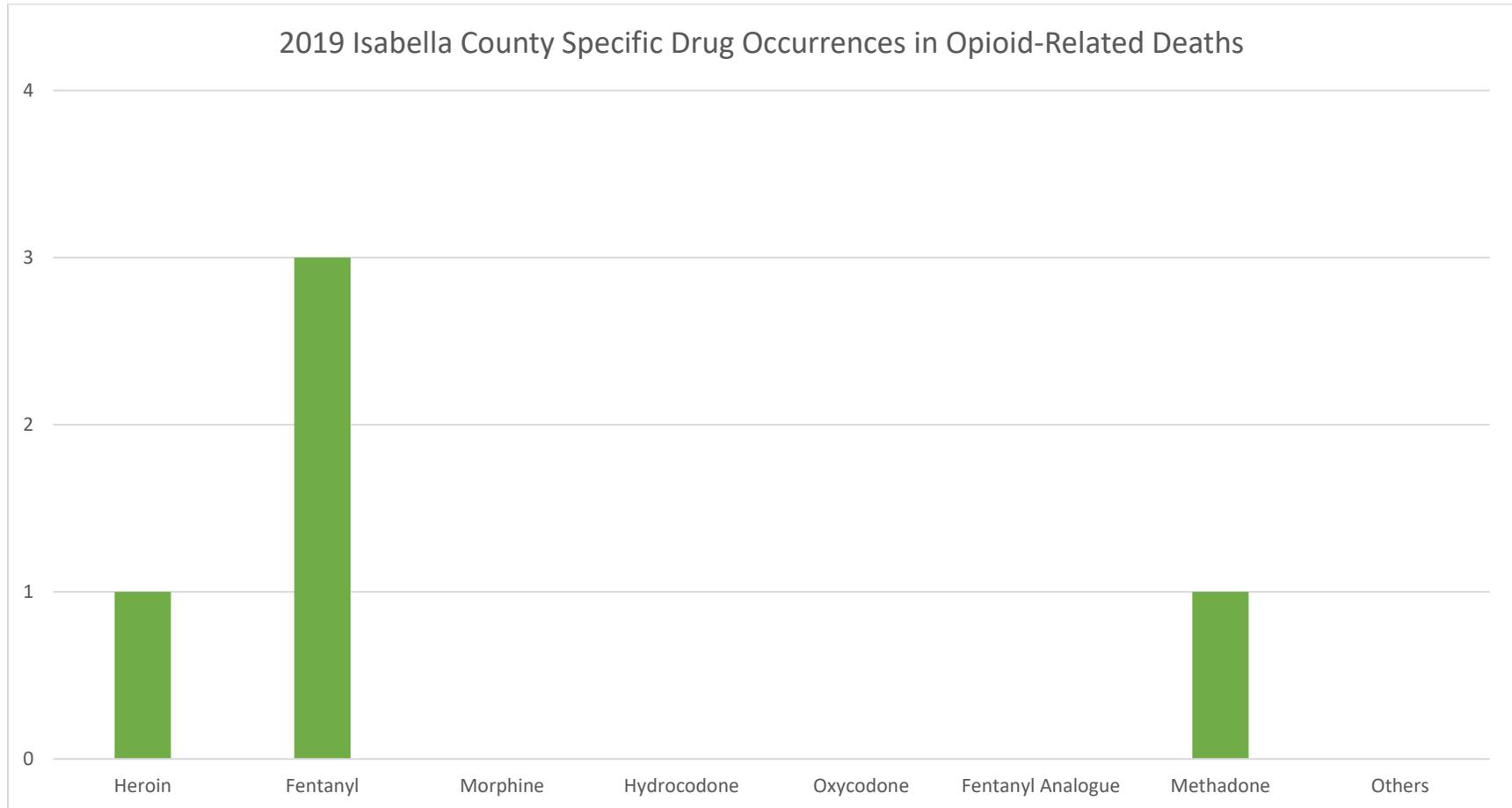
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Isabella County

Drug-Related Deaths



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Shiawassee County

Drug-Related Deaths

2019 Shiawassee County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of Death
Male	21	fentanyl, methamphetamine	Accident
Female	24	acetylfentanyl, fentanyl, heroin	Accident
Male	26	fentanyl, cocaine, amphetamine, clonazepam, diphenhydramine	Accident
Male	28	fentanyl, alprazolam	Accident
Female	30	fentanyl, clonazepam, gabapentin	Suicide
Female	41	methamphetamine, methadone, cyclobenzaprine, gabapentin	Accident
Male	45	acetylfentanyl, fentanyl, alprazolam, methamphetamine	Accident
Female	50	oxycodone, cyclobenzaprine, pregabalin, sertraline, chlorophenylpiperazine	Indeterminate
Female	51	fentanyl, methadone, hydromorphone, codeine, cyclobenzaprine, alprazolam	Accident
Male	55	fentanyl, acetylfentanyl, methadone, pregabalin, diphenhydramine	Accident
Female	57	morphine, gabapentin, diphenhydramine	Accident
Female	60	fentanyl, heroin, cocaine, doxylamine	Accident

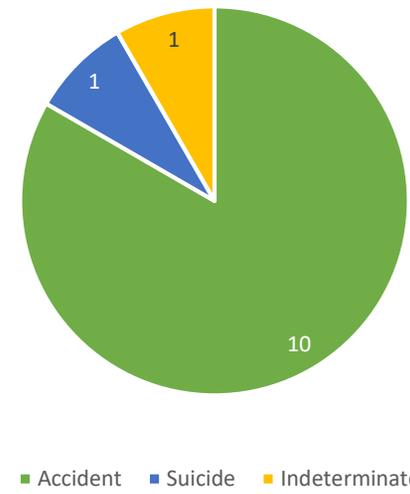
Shiawassee County

Drug-Related Deaths

2019 Shiawassee County Drug-Related Deaths - Opioid vs. Non-opioid

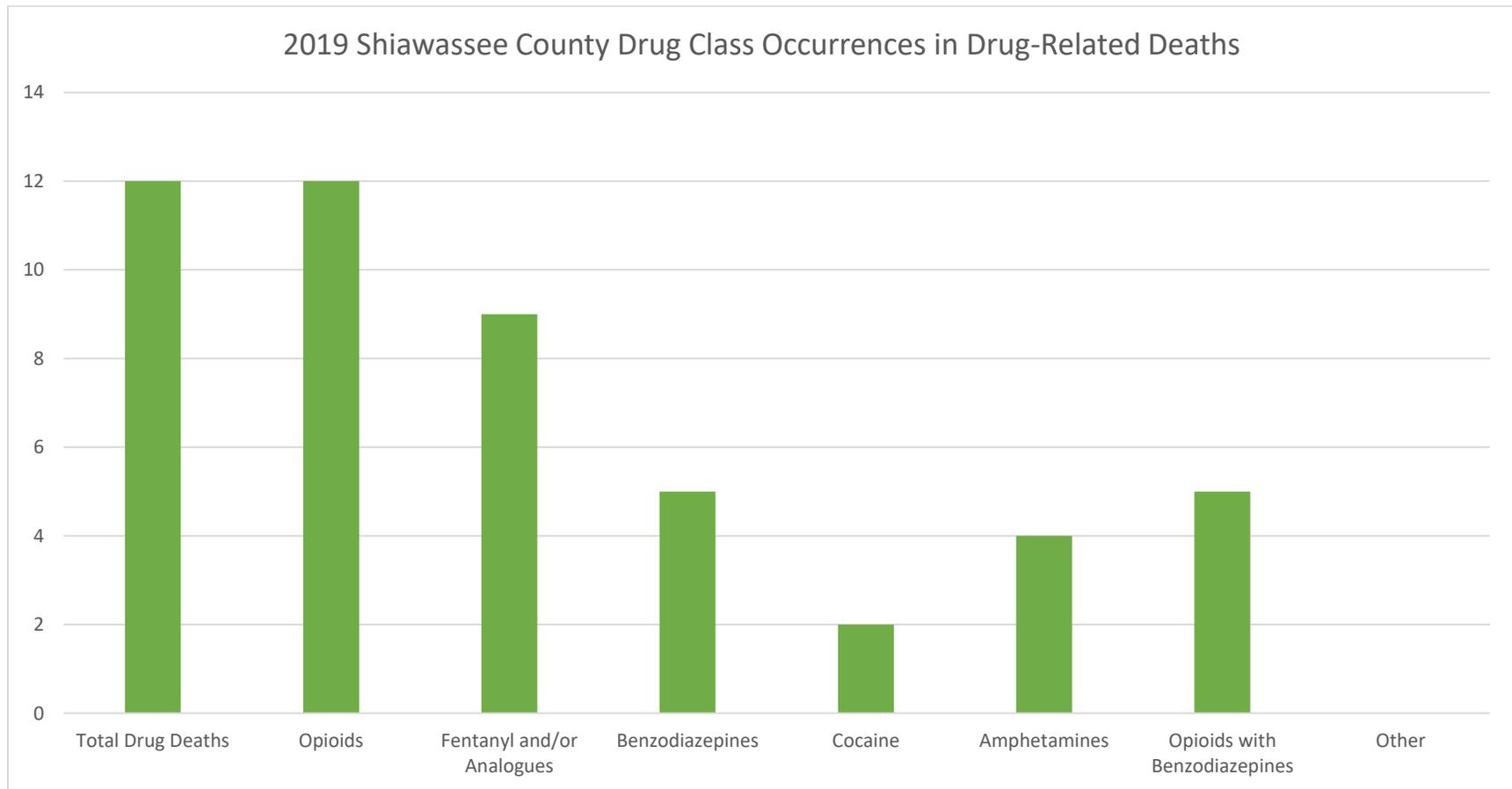


2019 Shiawassee County Drug-Related Deaths - Manner of Death



Shiawassee County

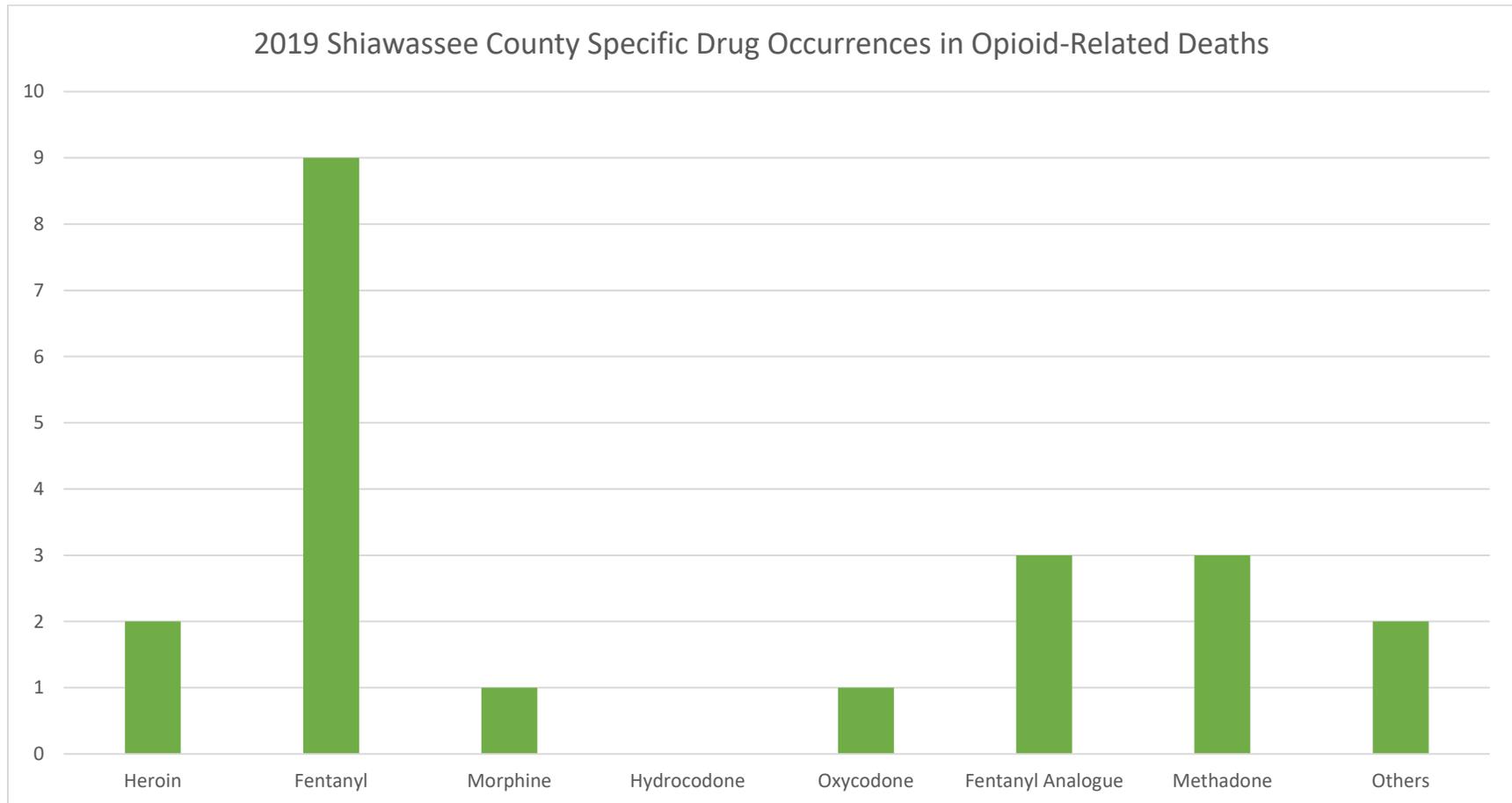
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Shiawassee County

Drug-Related Deaths



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