



Department of Forensic Pathology
Office of the Medical Examiner

2017 Drug Report





Introduction

Drug-Related Deaths - Defined

We define drug deaths as those which are caused or contributed to by the physiologic effects of acute intoxication. Included here too 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 intoxication.

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 identified as present played a causal role in the death. In short, this means that in a given case, the substances listed as having caused death are not necessarily all-inclusive of the total substances identified as present in the body at the time of death or incident.

Occasionally, 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 obtained at admission to the hospital for the overdose incident, so that the toxicology results reflect what was in the body at the time the overdose occurred.

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

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

Highlights

Unless otherwise noted, all comparisons here are made to the data from 2016. Though this is the first report of its kind issued by our office, the data from previous years is available for comparison. 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 4.4% (7 fewer)
- Opioid-related deaths **decreased** by 3.8% (5 fewer)
- Heroin-related² deaths **decreased** by 28.6% (14 fewer)
- Fentanyl-related deaths **increased** by 53.8% (21 more)
- Methadone-related deaths **decreased** by 42.1% (8 fewer)
- Cocaine-related deaths **decreased** by 11.1% (4 fewer)
- Amphetamine/Methamphetamine-related³ deaths **increased** by 30.0% (3 more)
- Fentanyl analogue-related deaths **decreased** by 61.1% (11 fewer)
- Benzodiazepine-related deaths **decreased** by 4.8% (3 fewer)
- Fentanyl analogues identified as having caused or contributed to death in 2017 included: U47700, acetylfentanyl, acrylfentanyl, carfentanil, cyclopropylfentanyl
- **80.9%** of all drug-related deaths were due to two or more substances
- **43.2%** of all opioid-related deaths also involved at least one benzodiazepine
- **17.6%** of all opioid-related deaths also involved ethanol (alcohol)

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

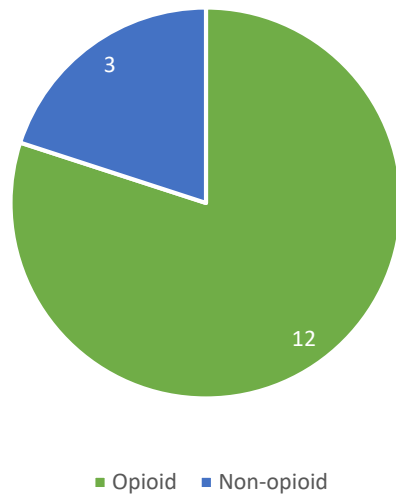
Drug-Related Deaths

2017 Eaton County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Male	15	heroin	Accident
Female	23	heroin, fentanyl, clonazepam	Accident
Female	26	alprazolam, loperamide, tramadol	Undetermined
Female	28	chlorpheniramine, dextromethorphan, diphenhydramine, naproxen	Accident
Male	30	amphetamine, clonazepam, ethanol, fentanyl, heroin	Accident
Male	30	fentanyl, morphine (likely from heroin), clonazepam, diphenhydramine, ethanol	Accident
Male	31	fentanyl, cocaine, ethanol	Accident
Male	31	alprazolam, fentanyl	Accident
Male	33	alprazolam, fentanyl, heroin	Accident
Male	36	fentanyl	Accident
Male	36	methamphetamine	Accident
Male	37	amphetamine, fentanyl	Accident
Male	41	fentanyl, methamphetamine	Accident
Male	54	fentanyl, methamphetamine	Accident
Male	73	citalopram, diphenhydramine, metoprolol, zolpidem	Suicide

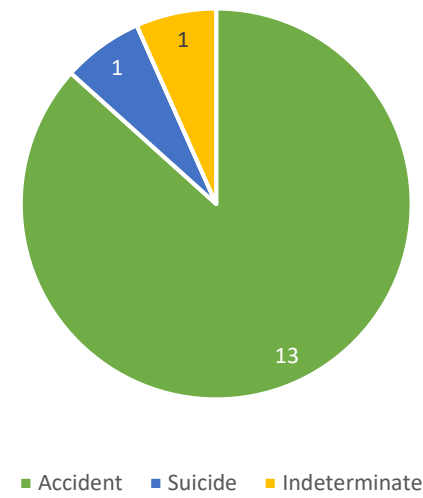
Eaton County

Drug-Related Deaths

2017 Eaton County Drug-Related Deaths -
Opioid vs. Non-opioid

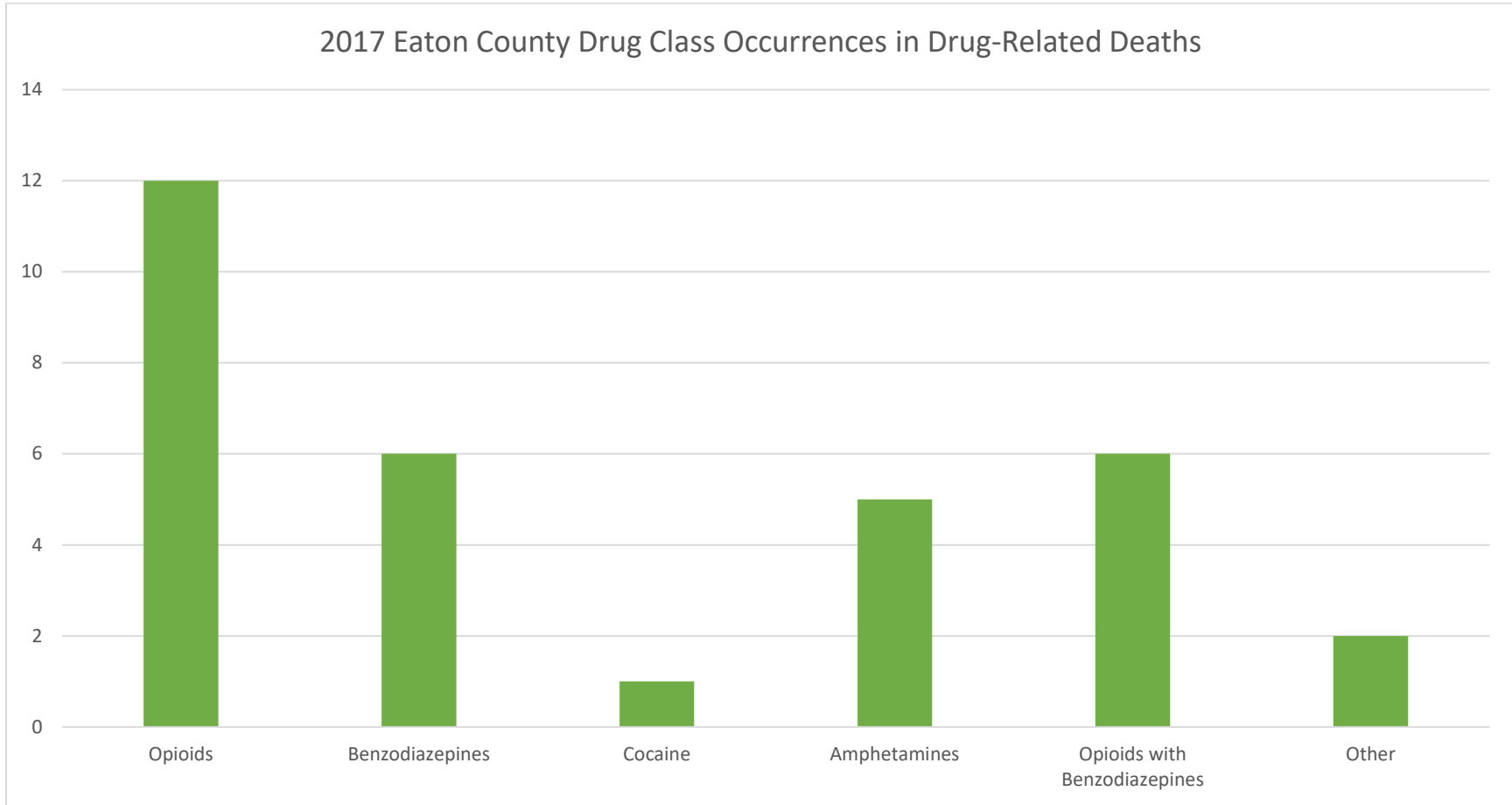


2017 Eaton County Drug-Related Deaths -
Manner of Death



Eaton County

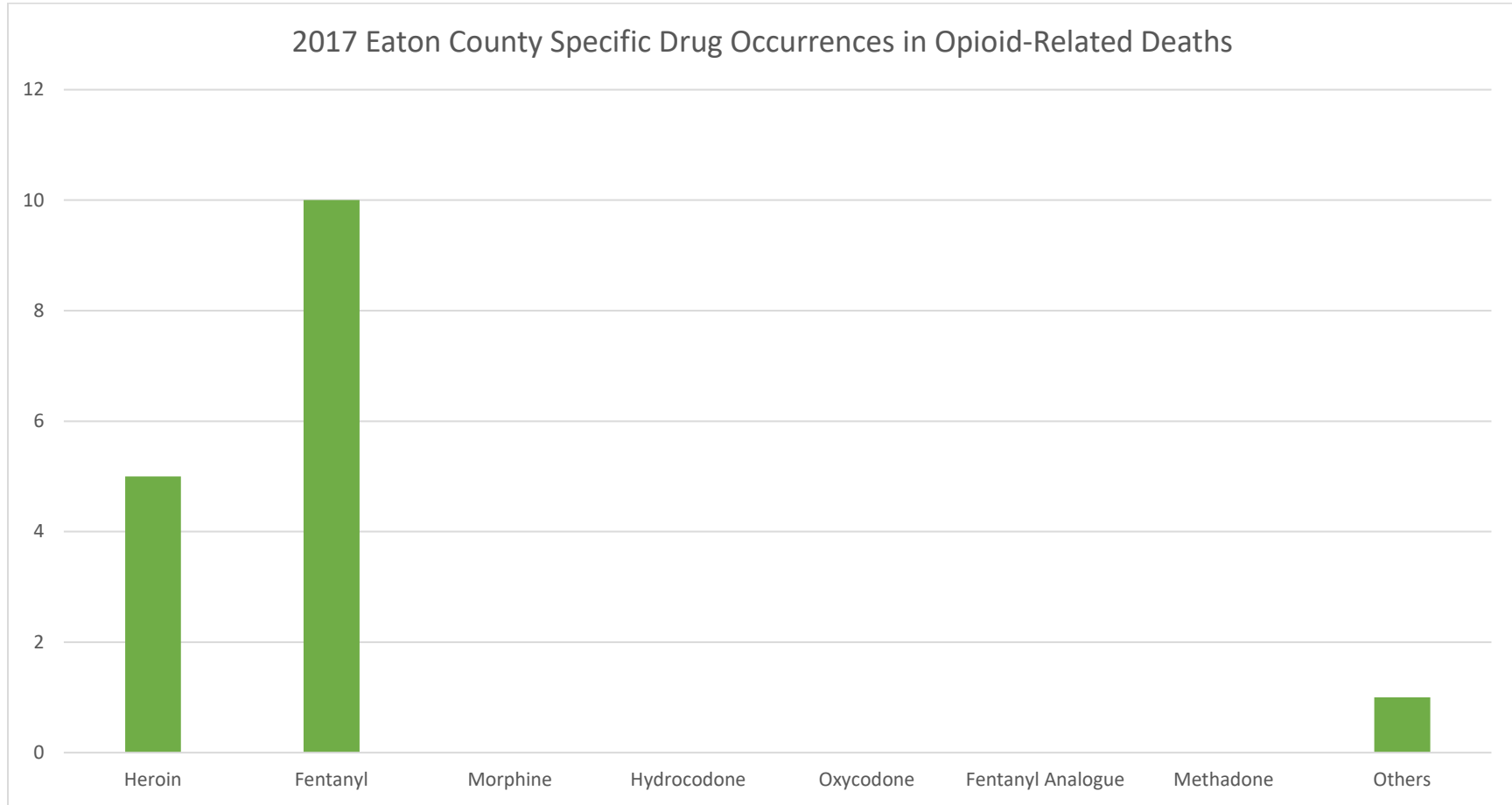
Drug-Related Deaths



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 and 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, etc.

Ingham County

Drug-Related Deaths

2017 Ingham County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Male	19	probable heroin, cocaine, alprazolam	Accident
Male	20	alprazolam, clonazepam, fentanyl	Accident
Male	22	alprazolam, cyclopropylfentanyl, U47700	Accident
Female	23	heroin, cocaine	Accident
Female	24	diphenhydramine	Suicide
Male	25	difluoroethane	Accident
Male	25	heroin, alprazolam, ethanol	Accident
Male	26	alprazolam, fentanyl	Accident
Male	26	cocaine, diazepam, heroin, 3,4-methylenedioxymethamphetamine	Accident
Male	26	fentanyl, heroin	Accident
Male	27	heroin, fentanyl, cocaine, diazepam	Accident
Male	28	cocaine, heroin	Accident
Male	28	fentanyl, heroin	Accident
Male	28	fentanyl, heroin, dextromethorphan	Accident
Female	29	fentanyl	Accident
Male	29	fentanyl, cocaine, ethanol, tramadol, sertraline, diphenhydramine	Accident
Female	29	cocaine	Accident
Female	29	fentanyl, clonazepam	Accident
Male	29	clonazepam, methadone	Accident
Male	31	acrylfentanyl, sertraline	Accident
Male	31	unknown	Accident
Female	31	cocaine, diphenhydramine, olanzapine, trazodone	Suicide
Male	31	morphine, hydromorphone, lorazepam, pregabalin	Indeterminate

Ingham County

Drug-Related Deaths

Male	31	U47700, cyclopropylfentanyl, alprazolam, cocaine	Accident
Male	32	fentanyl	Accident
Female	32	fentanyl, morphine, hydrocodone, cocaine, ethanol	Accident
Male	32	ethanol, heroin	Accident
Female	33	cocaine, heroin	Accident
Male	33	fentanyl	Accident
Male	33	ethanol	Accident
Female	33	cocaine, heroin, methamphetamine	Indeterminate
Male	34	alprazolam, fentanyl, heroin	Accident
Male	35	heroin, ethanol	Accident
Male	35	fentanyl	Accident
Male	37	heroin, cocaine, hydrocodone, clonazepam	Accident
Male	37	heroin	Accident
Female	37	cocaine, fentanyl, methadone	Accident
Female	38	loperamide	Accident
Male	38	cocaine, fentanyl, alprazolam	Accident
Male	39	methadone, cocaine, bupropion, gabapentin, olanzapine	Accident
Male	40	carfentanil, ethanol	Accident
Male	40	heroin, fentanyl, cocaine, clonazepam, diazepam	Accident
Male	41	morphine, hydromorphone	Accident
Male	42	fentanyl	Accident
Male	42	heroin	Accident
Female	44	alprazolam, cocaine	Accident

Ingham County

Drug-Related Deaths

Male	44	fentanyl, diazepam, chlordiazepoxide, lorazepam	Accident
Female	45	morphine, alprazolam, gabapentin, citalopram, diphenhydramine, methylphenidate	Accident
Male	45	hydrocodone, cyclobenzaprine	Accident
Male	46	ehanol, diazepam, nordiazepam, demoxepam	Accident
Female	46	amitriptyline, butalbital, acetaminophen	Suicide
Female	47	fentanyl, probable heroin, ethanol	Accident
Female	47	methamphetamine	Accident
Male	47	fentanyl	Accident
Female	48	diphenhydramine	Accident
Female	48	baclofen	Suicide
Female	48	tramadol, alprazolam	Suicide
Female	49	fentanyl, methamphetamine/amphetamine, pseudoephedrine	Accident
Female	49	cyclobenzaprine, lorazepam, morphine, sertraline	Accident
Male	49	ethanol, fentanyl, cocaine	Accident
Male	50	ethanol	Accident
Male	50	methamphetamine, fentanyl	Accident
Male	51	cocaine	Accident
Female	51	diphenhydramine	Accident
Female	51	fentanyl, ethanol	Accident
Female	51	diphenhydramine, oxycodone	Accident
Male	52	hydrocodone, cyclobenzaprine, dextromethorphan, doxylamine	Accident
Female	52	Fentanyl	Accident
Male	52	hydrocodone, lorazepam	Suicide

Ingham County

Drug-Related Deaths

Female	53	ethanol, alprazolam	Accident
Male	53	cocaine, buprenorphine, clonazepam, diazepam, tramadol, cyclobenzaprine, gabapentin, quetiapine, methylphenidate	Accident
Female	53	heroin, fentanyl	Accident
Male	54	ethanol, hydrocodone, diphenhydramine	Accident
Female	54	salicylate	Accident
Male	54	cocaine	Accident
Female	55	ethanol, hydrocodone, clonazepam	Indeterminate
Female	56	cocaine, morphine, venlafaxine	Accident
Female	57	methadone, gabapentin, pregabalin, O-desmethylvenlafaxine	Accident
Male	58	heroin, methadone	Accident
Male	58	ethanol, chlordiazepoxide	Accident
Female	59	fentanyl, clonazepam	Accident
Male	60	ethanol, methadone, gabapentin	Accident
Male	60	hydrocodone, tramadol, gabapentin	Accident
Female	61	dextromethorphan, lorazepam, oxycodone, promethazine, trazodone	Accident
Male	61	amitriptyline, cyclobenzaprine, cocaine, heroin	Accident
Male	61	fentanyl, lorazepam, ethanol	Accident
Female	61	eszopiclone, gabapentin, clonazepam, tramadol, lamotrigine, ethanol	Suicide
Male	61	ethanol, fentanyl, methadone, morphine	Accident
Female	61	morphine, lorazepam	Suicide
Male	62	fentanyl, gabapentin, trazodone, citalopram	Accident
Female	62	fentanyl	Accident
Female	62	methadone, clonazepam, cyclobenzaprine, gabapentin, duloxetine, mirtazapine	Accident

Ingham County

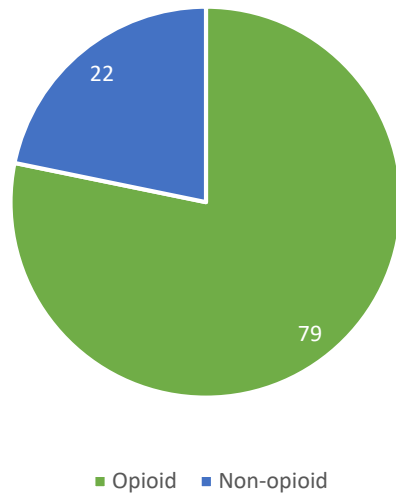
Drug-Related Deaths

Female	63	alprazolam, fentanyl	Accident
Female	64	cocaine	Accident
Male	64	dihydrocodeine, fluoxetine, hydrocodone, methadone, pregabalin	Accident
Female	64	codeine, hydrocodone, carisoprodol, trazodone, pregabalin	Accident
Male	64	cocaine	Accident
Female	65	morphine, clonazepam	Indeterminate
Male	65	fentanyl, heroin	Accident
Male	65	heroin, gabapentin	Accident
Female	74	baclofen	Accident

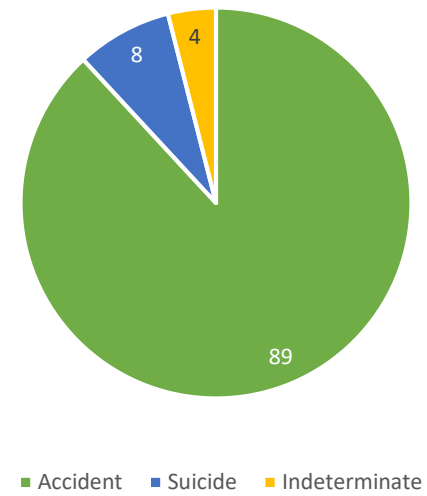
Ingham County

Drug-Related Deaths

2017 Ingham County Drug-Related Deaths
- Opioid vs. Non-opioid

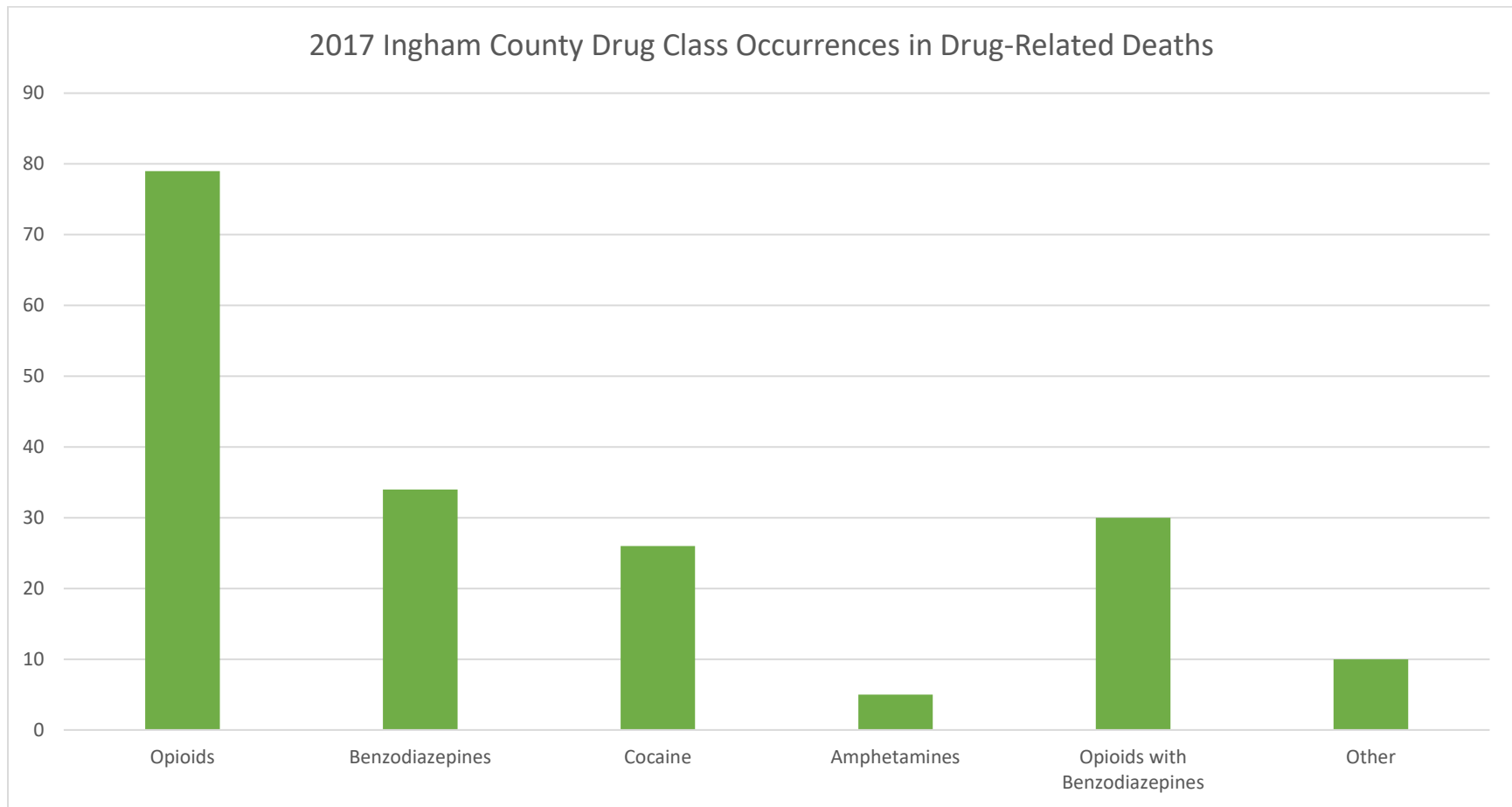


2017 Ingham County Drug-Related Deaths -
Manner of Death



Ingham County

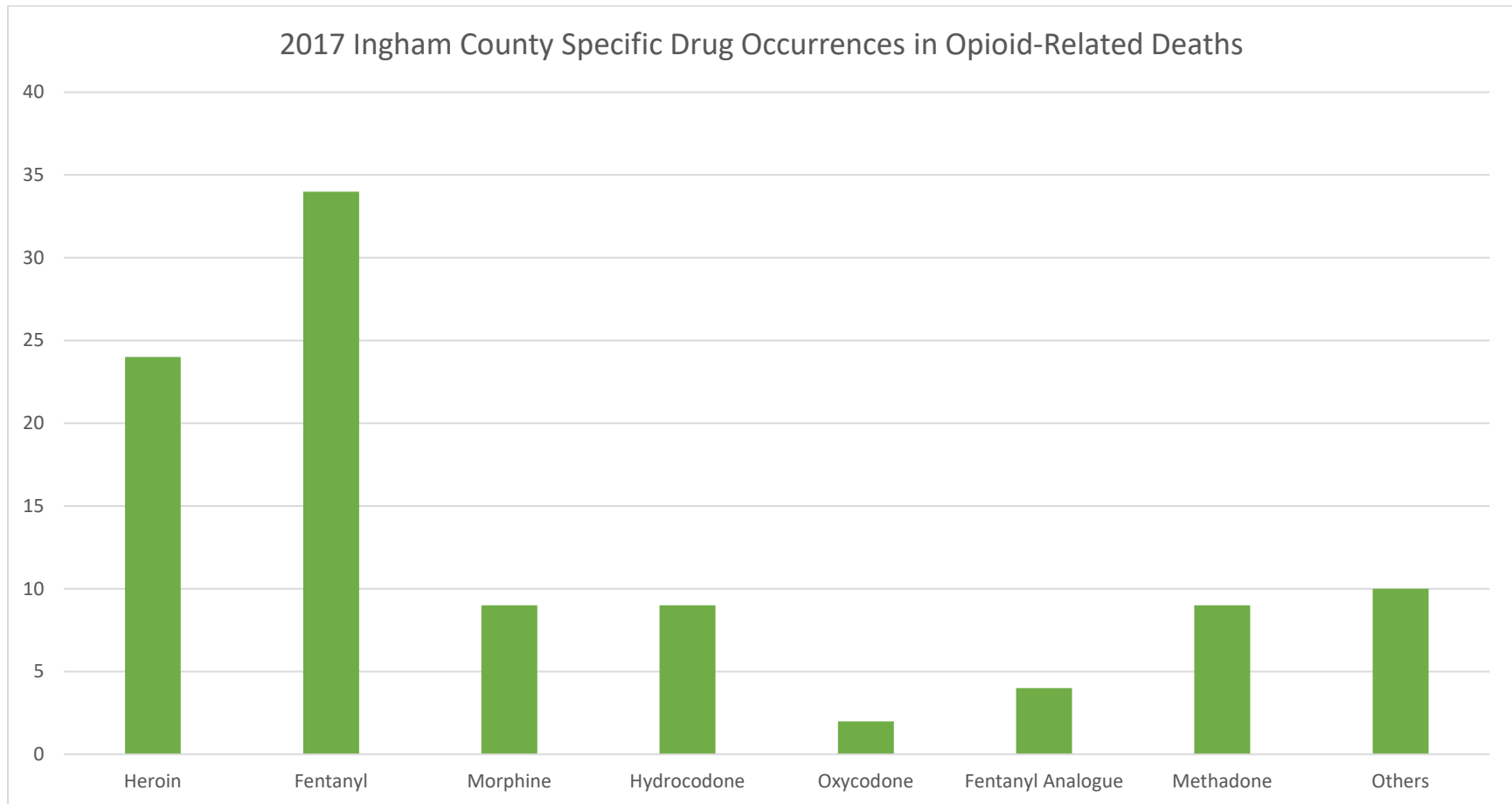
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Ingham County

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Ionia County

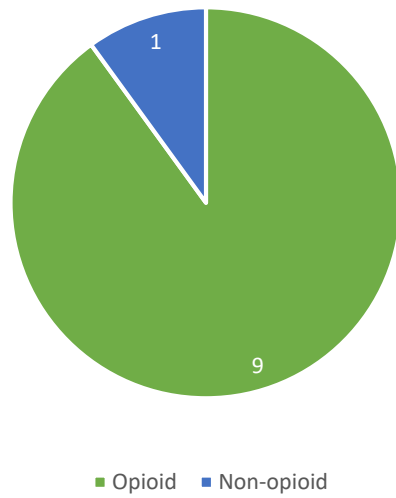
Drug-Related Deaths

2017 Ionia County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Female	26	citalopram, gabapentin, heroin, venlafaxine	Accident
Male	26	heroin, fentanyl, diphenhydramine, hydroxyzine	Accident
Male	28	fentanyl	Accident
Female	31	citalopram, cyclobenzaprine, diphenhydramine	Indeterminate
Male	33	diazepam, fentanyl, morphine, oxycodone	Accident
Male	37	fentanyl, acetylfentanyl, alprazolam	Accident
Male	37	fentanyl	Accident
Female	41	codeine, morphine, hydrocodone, dihydrocodeine, alprazolam, diazepam, cyclobenzaprine	Accident
Female	62	diazepam, fentanyl, hydrocodone, oxycodone	Suicide
Female	68	ethanol, oxycodone, orphenadrine, gabapentin, sertraline	Suicide

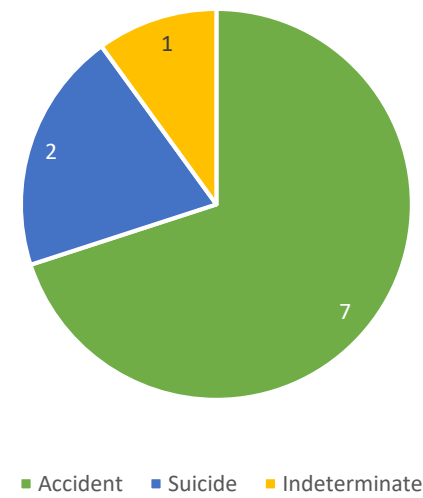
Ionia County

Drug-Related Deaths

2017 Ionia County Drug-Related Deaths -
Opioid vs. Non-opioid

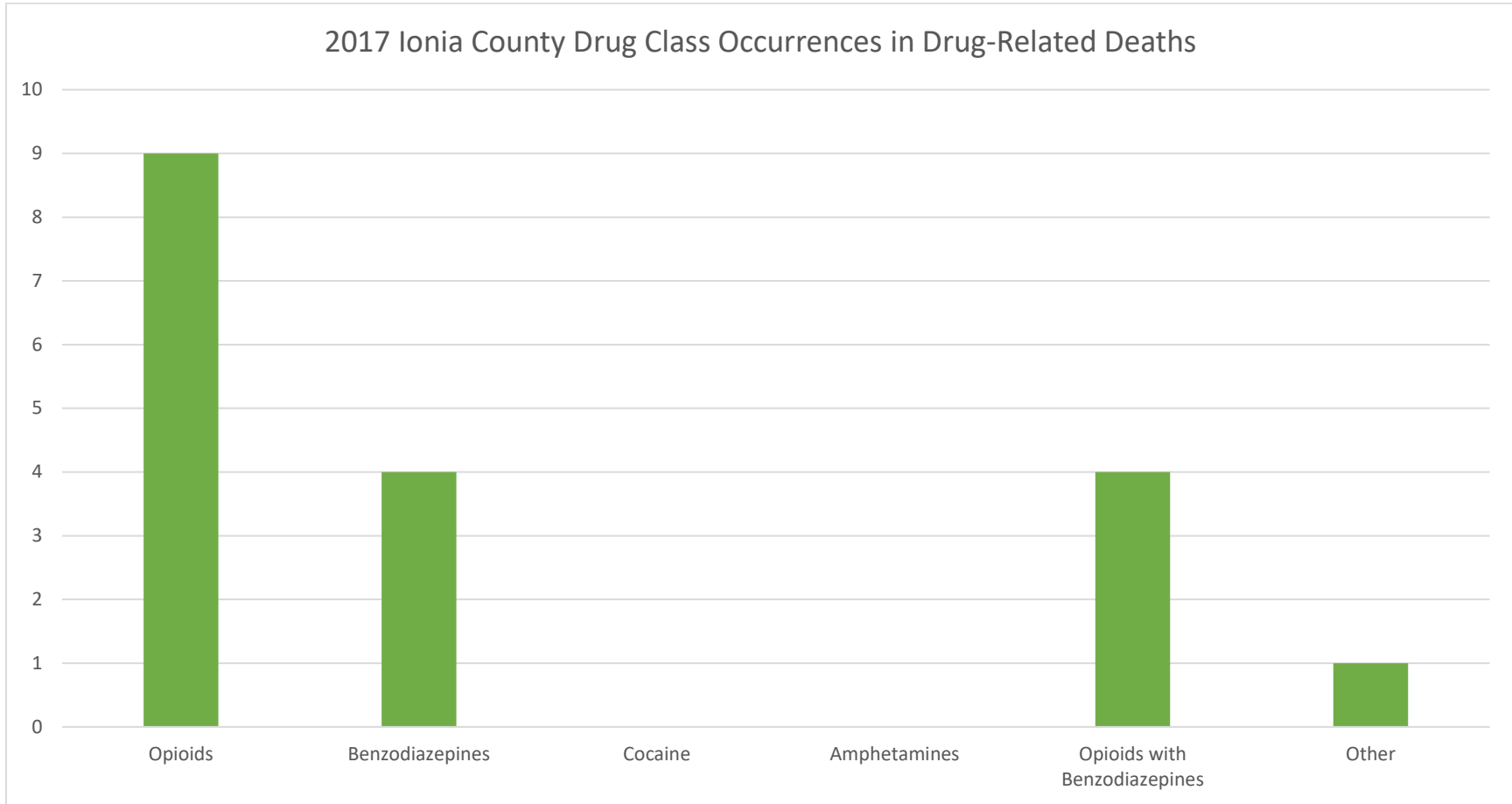


2017 Ionia County Drug-Related Deaths -
Manner of Death



Ionia County

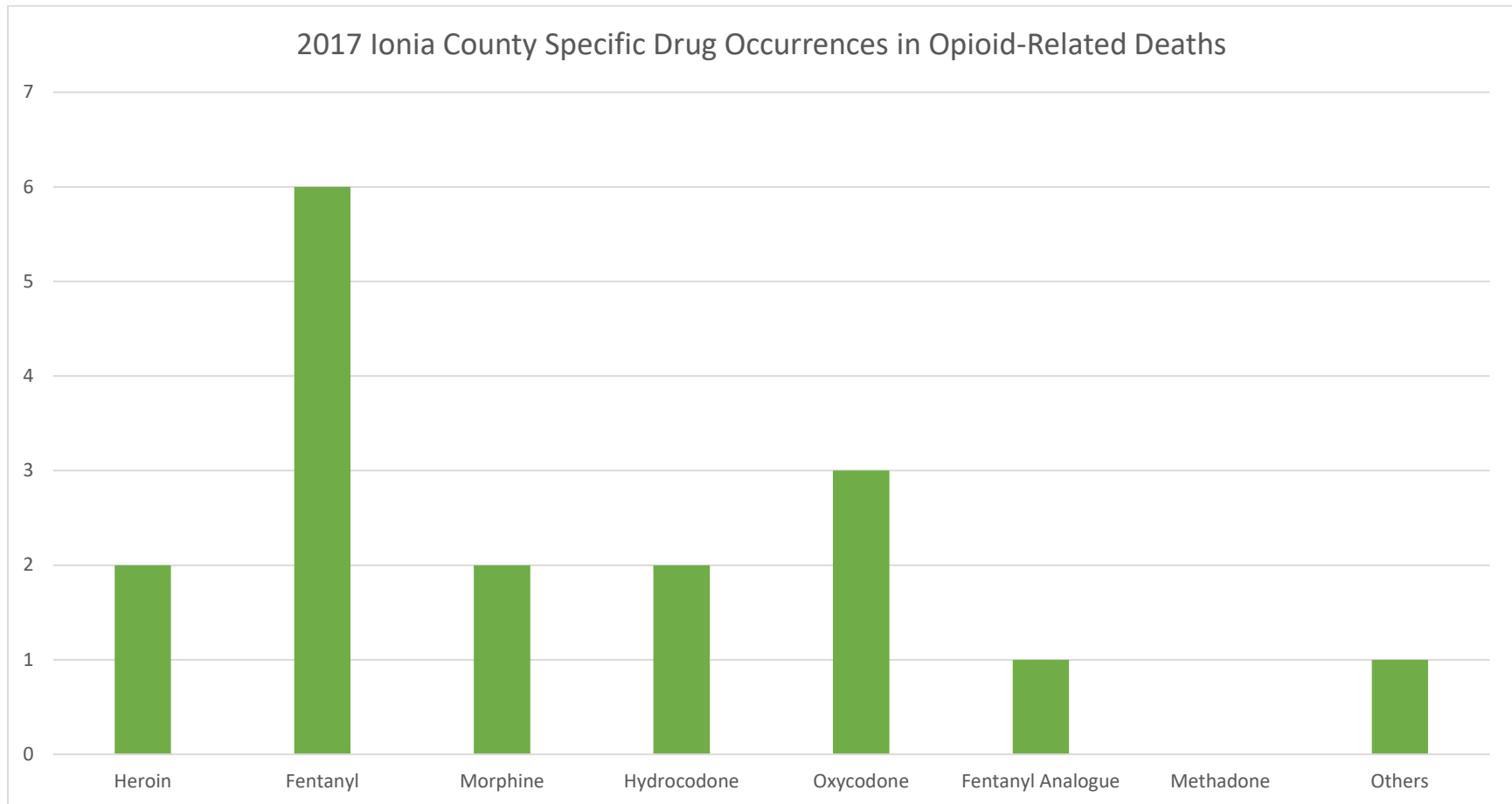
Drug-Related Deaths



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Ionia County

Drug-Related Deaths



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Isabella County

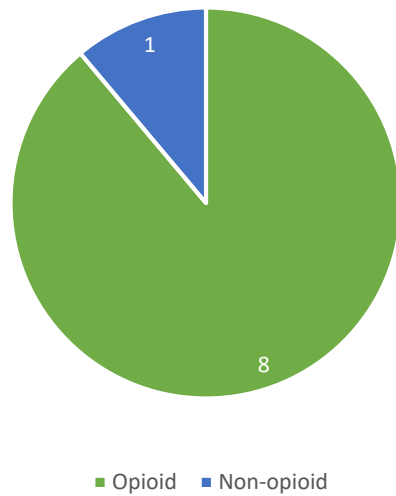
Drug-Related Deaths

2017 Isabella County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Male	23	methadone	Accident
Male	27	alprazolam, carfentanil, hydrocodone	Accident
Male	35	ethanol, fentanyl	Accident
Female	36	dicyclomine, gabapentin	Suicide
Female	39	diphenhydramine, fentanyl, hydrocodone, venlafaxine	Accident
Male	40	fentanyl, methamphetamine, alprazolam, diazepam, clonazepam	Accident
Male	43	cocaine, ethanol, fentanyl	Accident
Female	48	alprazolam, gabapentin, hydrocodone, trazodone, quetiapine	Accident
Female	54	tramadol, dextromethorphan, cyclobenzaprine, duloxetine, olanzapine	Accident

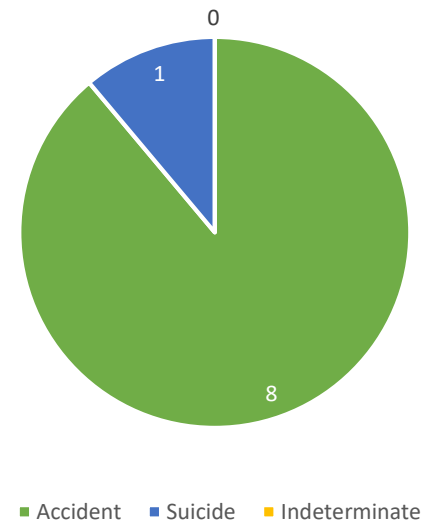
Isabella County

Drug-Related Deaths

2017 Isabella County Drug-Related Deaths
- Opioid vs. Non-opioid

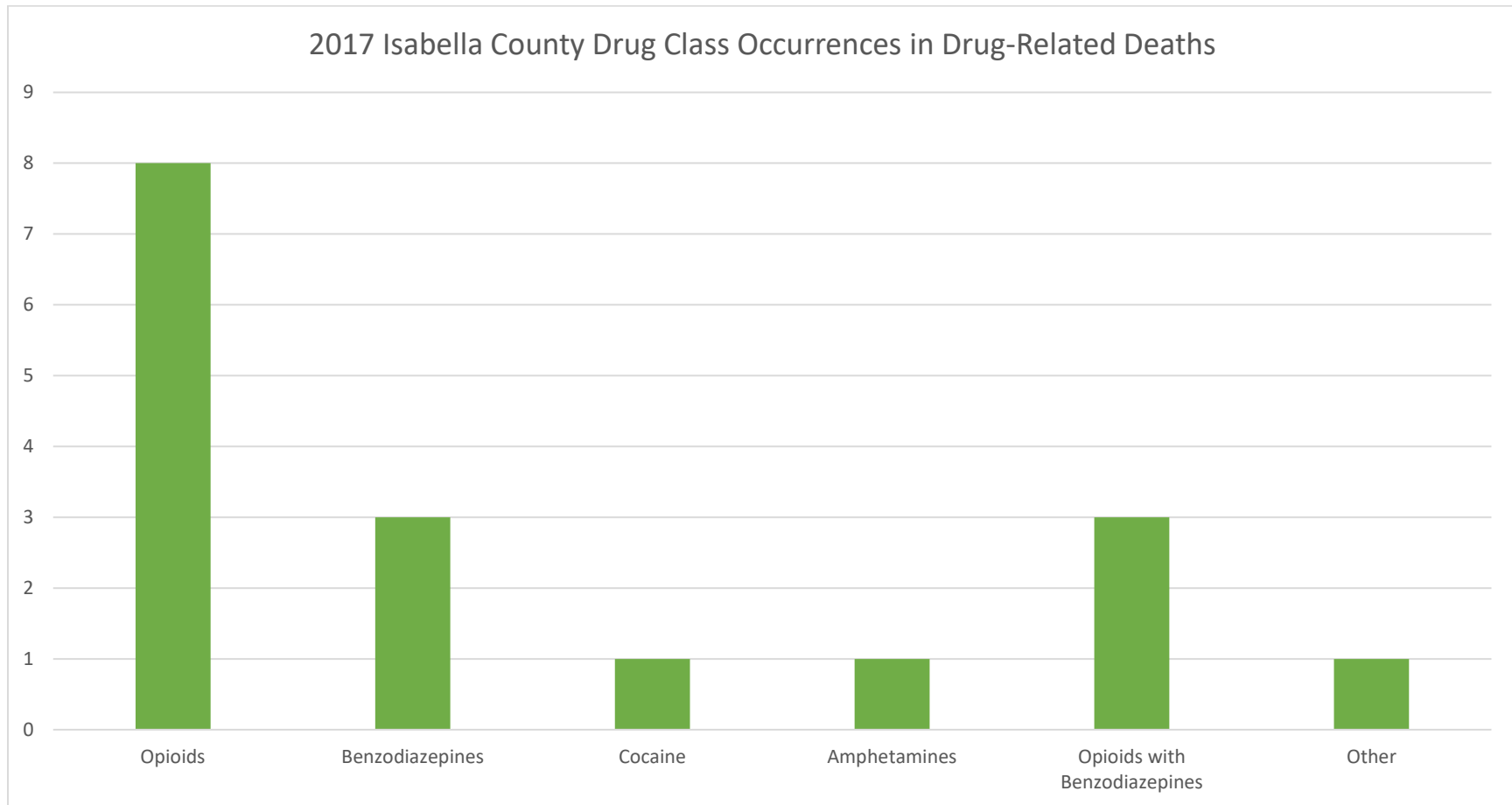


2017 Isabella County Drug-Related Deaths -
Manner of Death



Isabella County

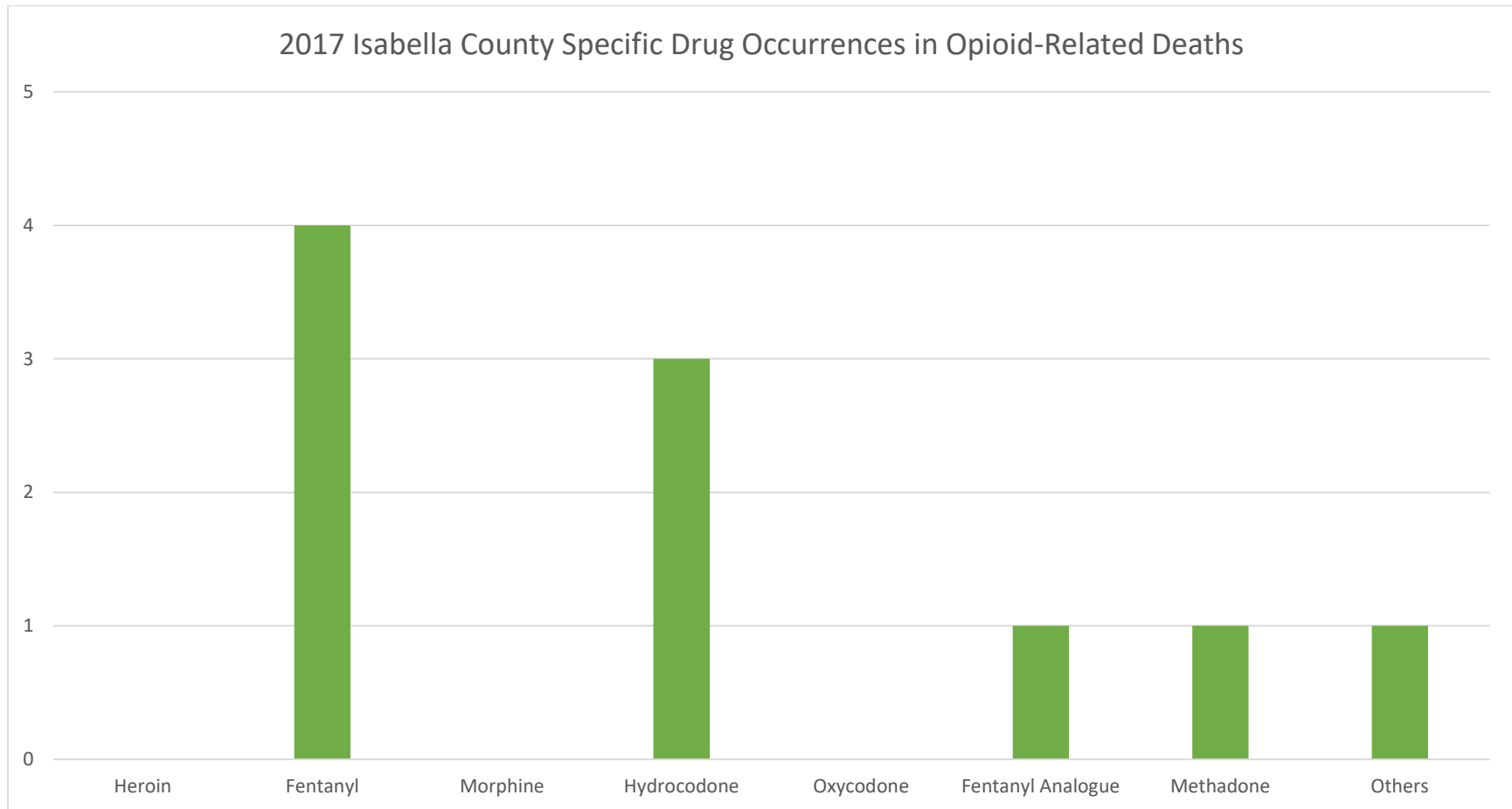
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Isabella County

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Shiawassee County

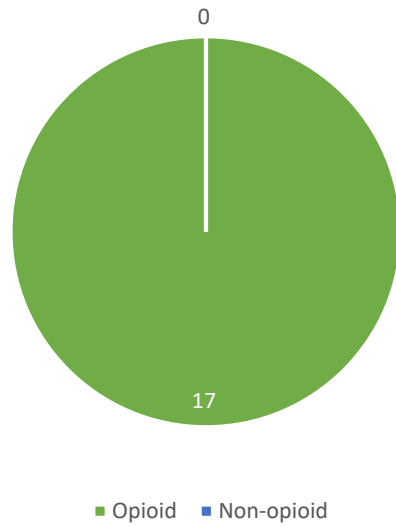
Drug-Related Deaths

2017 Shiawassee County Drug-Related Deaths			
Sex	Age	Substance(s) Causing Death	Manner of death
Male	21	fentanyl, methamphetamine	Accident
Male	28	fentanyl, cocaine, alprazolam, clonazepam	Accident
Male	31	carfentanil, alprazolam	Accident
Female	32	alprazolam, methadone	Accident
Male	33	alprazolam, cocaine, clonazepam, diazepam, fentanyl, heroin, hydrocodone	Accident
Male	33	cyclobenzaprine, tramadol	Suicide
Male	37	alprazolam, diazepam, heroin	Accident
Female	46	hydrocodone, diphenhydramine, lorazepam	Accident
Female	47	citalopram, cyclobenzaprine, doxylamine, fentanyl, morphine, oxycodone	Accident
Male	50	cocaine, morphine, temazepam, alprazolam, gabapentin	Accident
Female	50	hydrocodone, tramadol, gabapentin, duloxetine, trazodone, ethanol	Accident
Male	51	alprazolam, diphenhydramine, duloxetine, heroin and hydrocodone	Accident
Female	57	benzodiazepine, hydrocodone, orphenadrine	Accident
Male	57	clonazepam, fentanyl, tramadol	Accident
Male	57	heroin, methamphetamine, pseudoephedrine	Accident
Male	68	fentanyl, cocaine, doxylamine, dextromethorphan	Accident
Male	72	alprazolam, oxycodone, duloxetine, diphenhydramine, gabapentin	Suicide

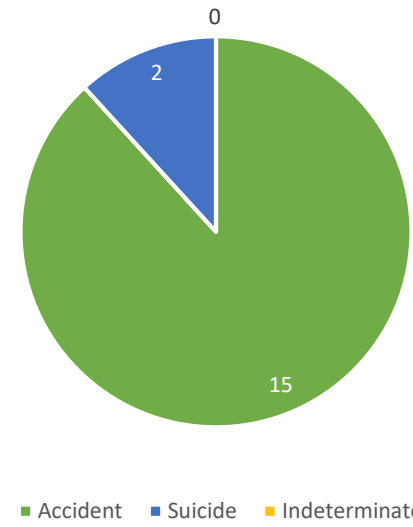
Shiawassee County

Drug-Related Deaths

2017 Shiawassee County Drug-Related Deaths - Opioid vs. Non-opioid

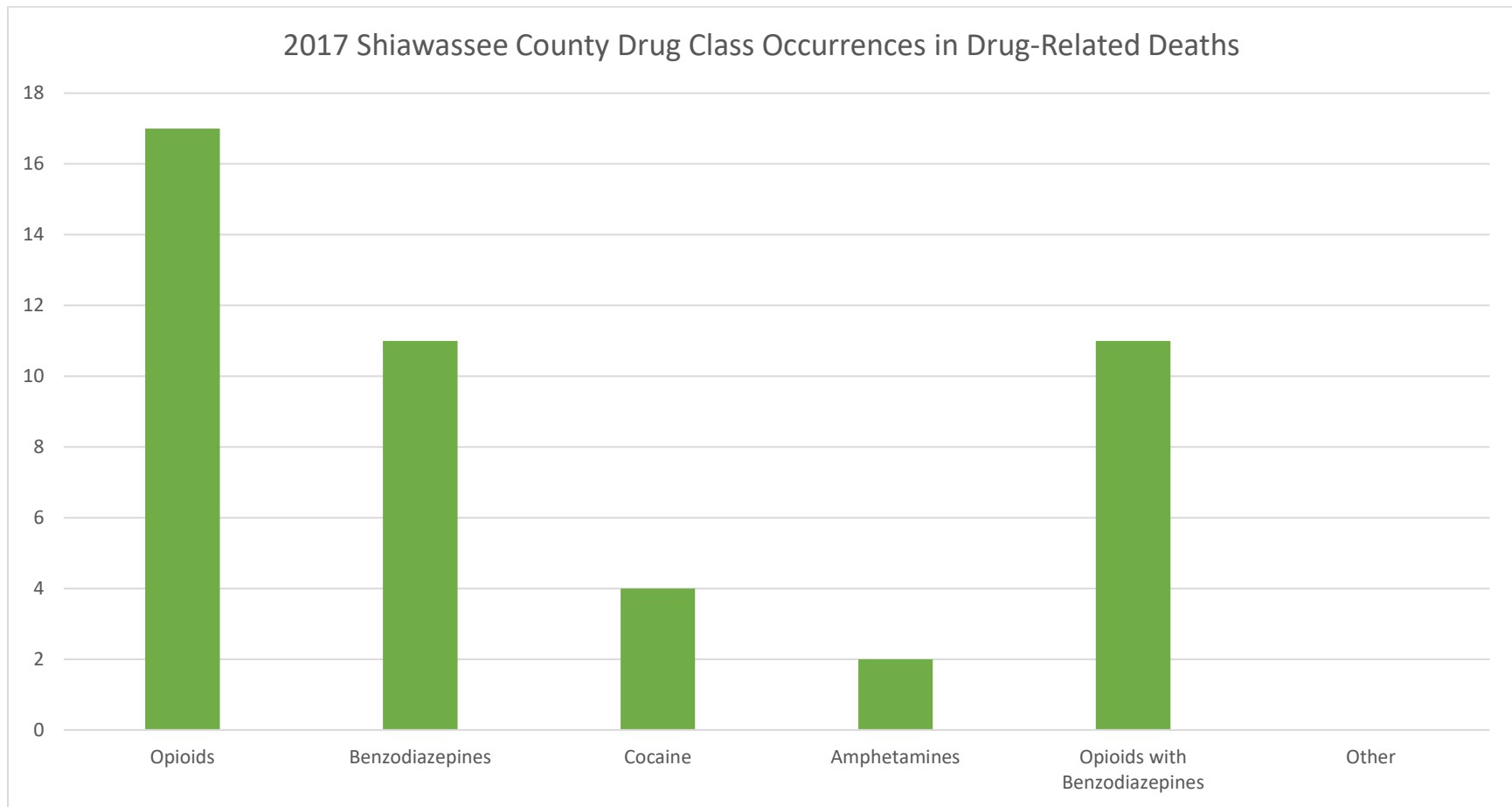


2017 Shiawassee County Drug-Related Deaths - Manner of Death



Shiawassee County

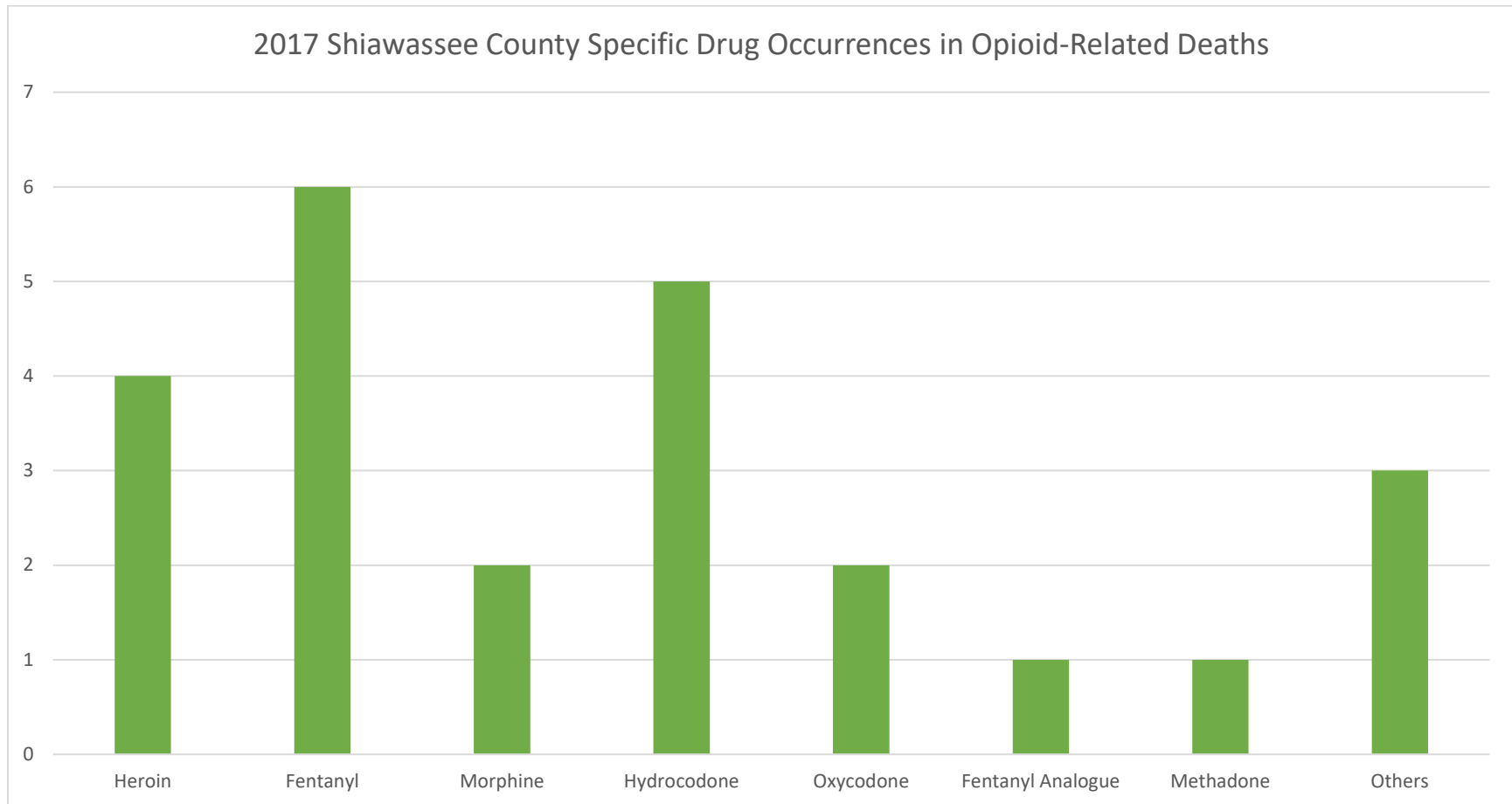
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Shiawassee County

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