Milwaukee County Opioid-Related Overdose Report

January 1, 2012—June 30, 2018

MILWAUKEE

COPE

COMMUNITY OPIOID PREVENTION EFFORT

For additional information or if you have questions about the data presented in this report, please contact:
Nicole Fumo, MPH
mkecommunityopioid@gmail.com
Visit our website: http://www.mcw.edu/MilwaukeeCOPE
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Version Release Date: 1.18.2019

Executive Summary

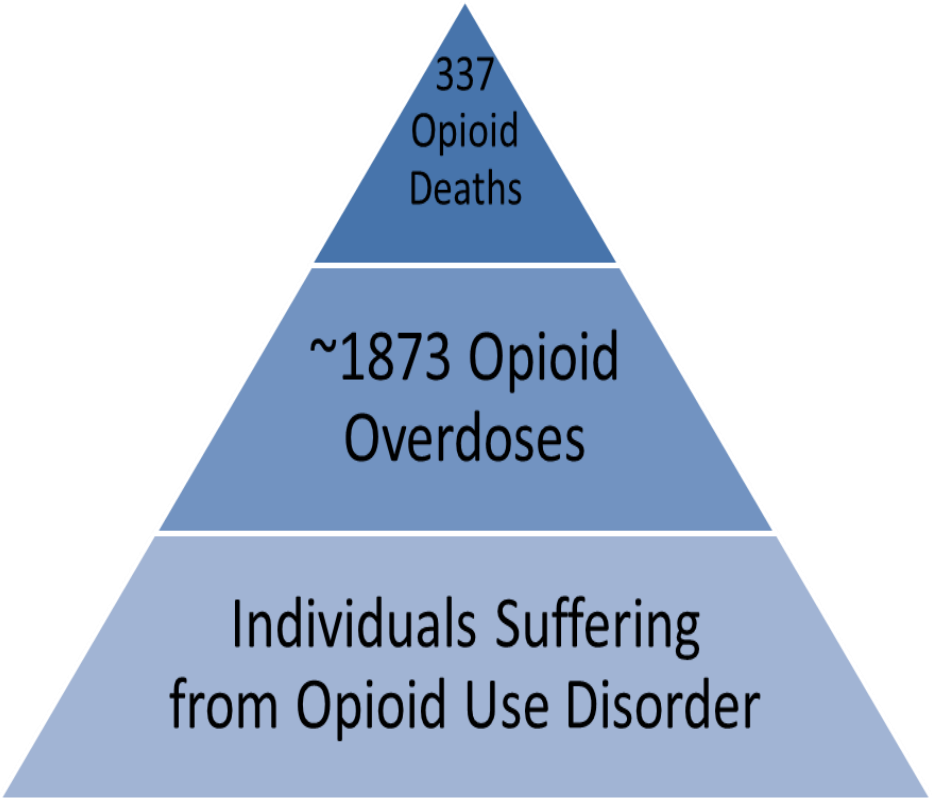
This report shows that while the opioid crisis in Milwaukee County continues to be a public health issue, fatal and non-fatal opioid-related overdoses appear to be leveling off in our community. In the first 6 months of 2018, there were 154 opioid-related overdose deaths. If the trend continues, opioid-related overdose deaths will see a 9% decrease from 2017 to 2018. The deaths only illustrate a small part of the effect the opioid crisis has on the Milwaukee community. In 2017, we estimated that for every death, there were approximately 5 additional people who experienced an overdose that required naloxone and survived. Overdose is an indicator of the prevalence of opioid use disorder in our community. Unfortunately, it is unknown how many people in our community have opioid use disorder. In the first six months of 2018, 552 individuals who sought treatment for substance use disorder reported heroin or another opioid as their primary substance of use, a projected 11% decrease over 2017.

The majority of those who die are found to have taken multiple drugs that contributed to their death. In particular, fentanyl remains a key contributor to opioid-related overdose deaths. In the first six months of 2018, 59% of all overdose deaths (n=91) involved the drug fentanyl alone or in combination with other drugs. If this trend continues, fentanyl-related deaths will see a slight decrease (3%) from 2017 to 2018. This is following a 93% increase from 2016 to 2017: (n=97) and (n=187), respectively.

In 2017, state legislation expanded the limited amnesty for bystanders present during an overdose to include the victim. The effects of this legislation may not have yet been realized since in the first six months of 2018, as was seen in 2017, 1 in 5 peer reversals reported not calling 9-1-1.

In 2016, the rate of opioid overdose death in Milwaukee County per 100,000 population (30.1) was double the rate for the state of Wisconsin (14.3); the same is true for opioid-related hospital encounters. Further, 90% of those treated for an overdose in Milwaukee County reside in Milwaukee County. This illustrates that this crisis is disproportionately impacting Milwaukee County and its citizens.

While much effort has been put into addressing the opioid crisis, and projected fatal and non-fatal overdoses appear to be decreasing, more is needed. To address this crisis we must continue to reduce recreational drug use, work with providers to prevent those taking opioid pain medications from developing opioid use disorder, create systems for ensuring that individuals suffering from opioid use disorder have access to comprehensive treatment, and work to ensure that those who overdose have access to lifesaving treatments.



Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths, Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database, Milwaukee County Behavioral Health Division, and AIDS Resource Center of Wisconsin Needle Exchange Program Surveys

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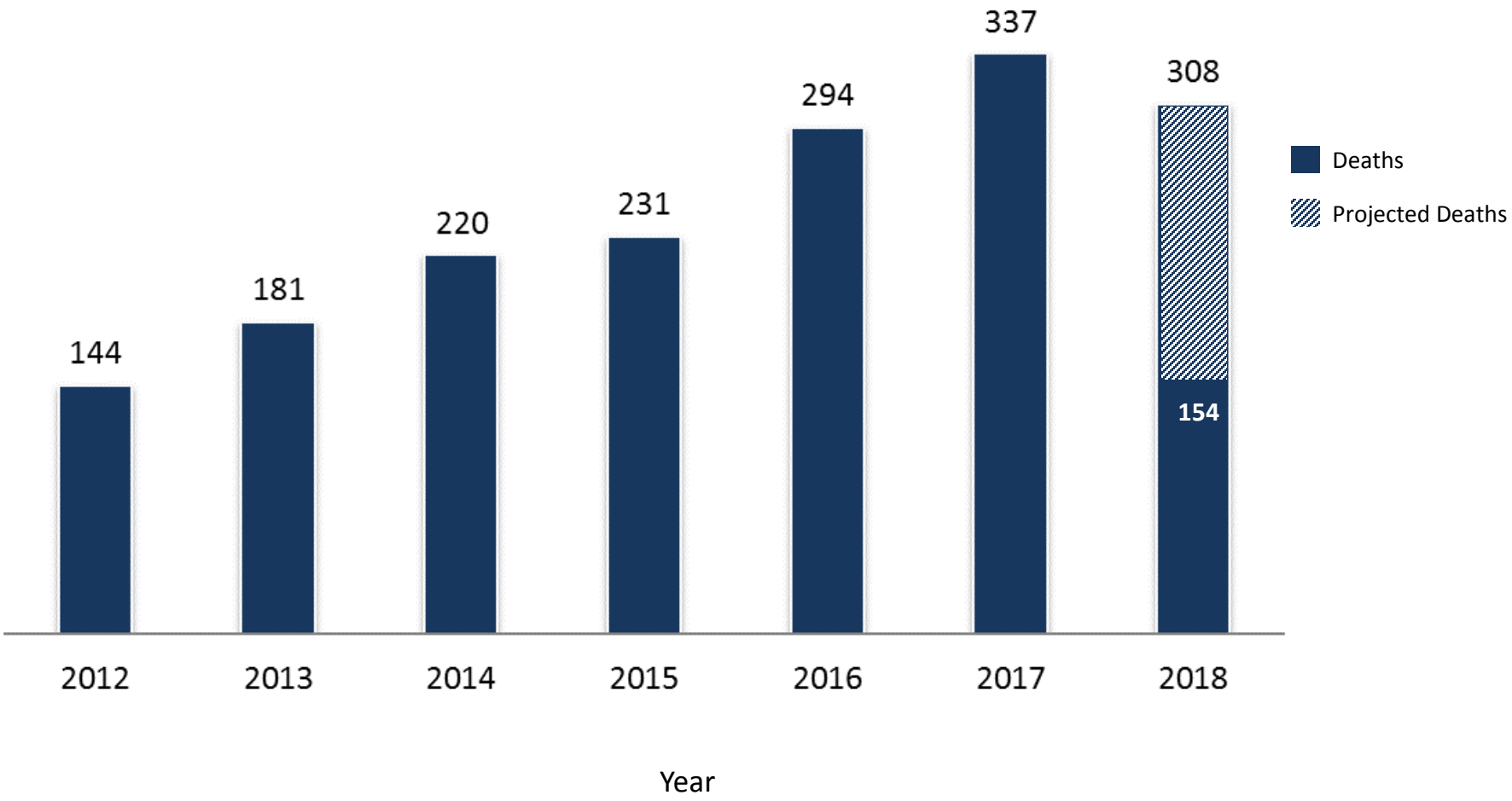
Summary of Milwaukee County Medical Examiner Data for Opioid-Related Overdose Deaths

Version Release Date: 1.18.2019

Number of Opioid-Related Overdose Deaths
January 1, 2012—June 30, 2018 (N=1,561)



Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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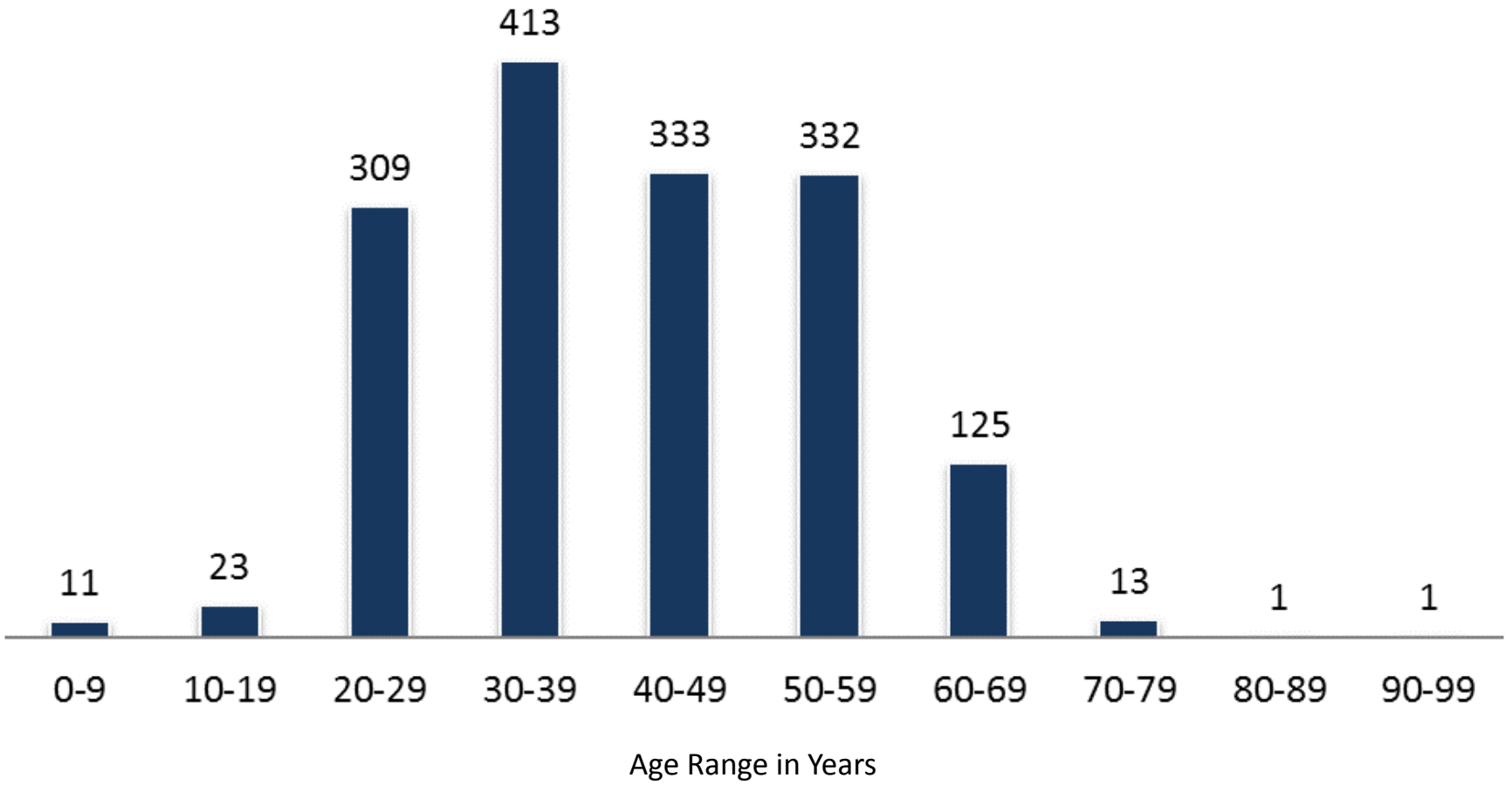
Number of Opioid-Related Overdose Deaths by Age
January 1, 2012—June 30, 2018 (N=1,561)



The majority of opioid-related overdose deaths (89%) occur between 20-59 years of age.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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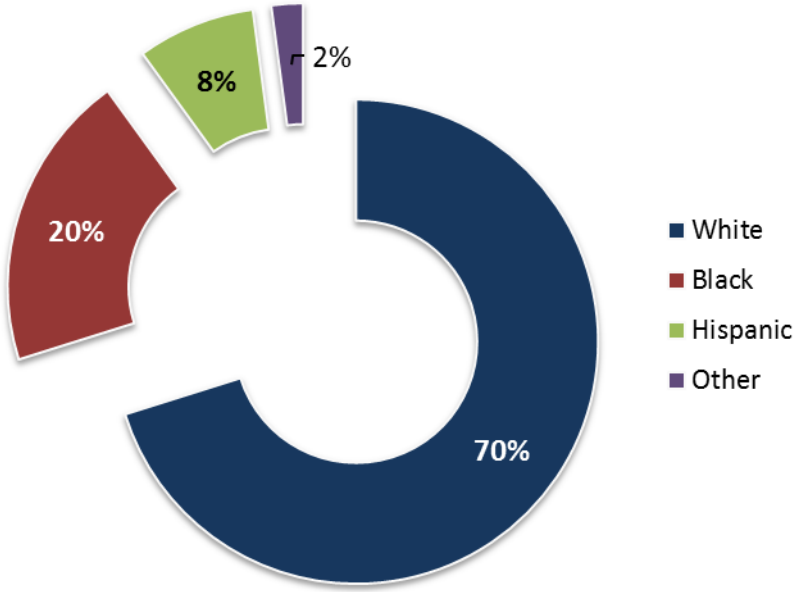
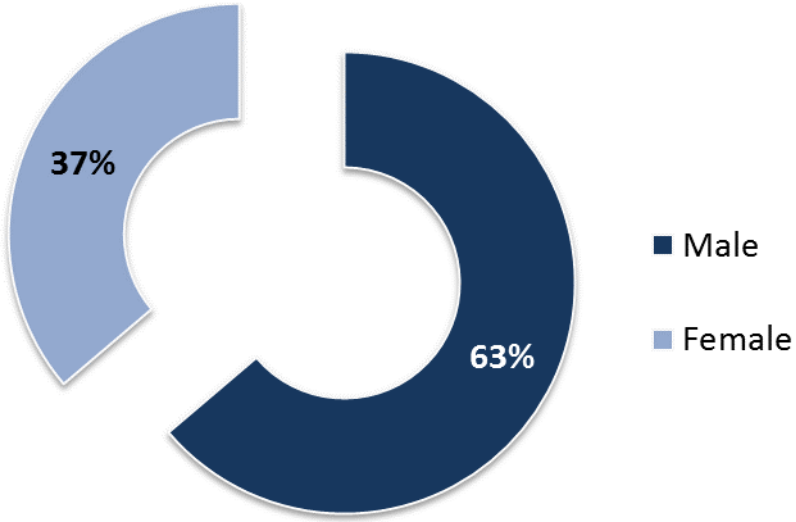
Percent Opioid-Related Overdose Deaths by Race/Ethnicity

January 1, 2012—June 30, 2018



Percent Opioid-Related Overdose Deaths by Sex

January 1, 2012—June 30, 2018



Of the 1,561 opioid-related overdose deaths between 2012 and June 30, 2018, nearly half were white males.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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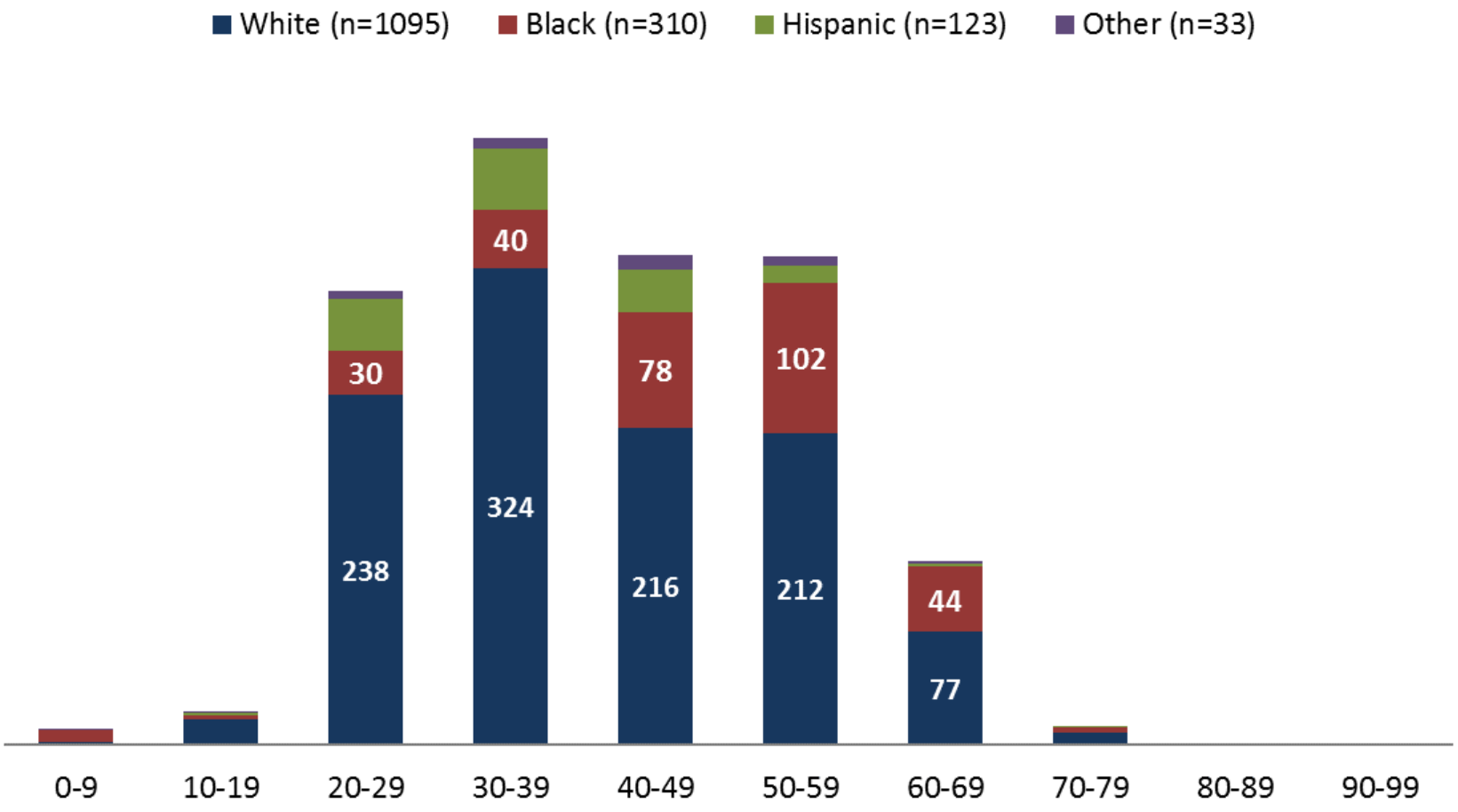
Number of Opioid-Related Overdose Deaths by Age Range and Race/Ethnicity
January 1, 2012—June 30, 2018 (N=1,561)



While the age distribution of white overdose deaths mirrors the overall age distribution, deaths among black victims appears to skew older.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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Percent of Opioid-Related Overdose Deaths Occurring at the Victims' Residence in Milwaukee County
January 1, 2012—June 30, 2018

Year	2012	2013	2014	2015	2016	2017	2018
Death at residence	106	131	150	162	190	212	105
Total opioid deaths	144	181	220	231	294	337	154
Percent	74%	72%	68%	70%	65%	63%	68%

From 2012 through June 30, 2018, 68% of people who experienced a fatal opioid-related overdose died in their place of residence. Twenty three cases did not have a place of residence recorded.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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Drugs Attributed to Cause of Death Based on Toxicology Results from January 1, 2012—June 30, 2018

Toxicology Results	Number of Cases	Percent of Total Deaths (n=1,561)
Other Drug, Other Opioid	220	14%
Heroin	210	13%
Other Drug , Heroin	146	9%
Other Opioid	94	6%
Cocaine, Heroin	77	5%
Fentanyl	76	5%
Fentanyl, Heroin	65	4%
Other Drug, Cocaine, Heroin	59	4%
Other Drug, Morphine/Codeine	50	3%
Fentanyl, Cocaine	47	3%
Other Drug, Other Opioid, Heroin	45	3%
Other Drug, Fentanyl	43	3%
Morphine/Codeine	42	3%
Other Drug, Morphine/Codeine , Other Opioid	40	3%
Fentanyl, Cocaine, Heroin	30	2%
Heroin, Other Opioid	29	2%
Morphine/Codeine , Other Opioid	29	2%
Other Drug, Fentanyl, Heroin	29	2%
Other Drug, Fentanyl, Cocaine	27	2%
Other Drug, Cocaine, Other Opioid	21	1%
Cocaine, Other Opioid	17	1%
Other Drug, Fentanyl, Other Opioid	15	1%
Fentanyl, Other Opioid	13	1%
Other Drug, Cocaine, Other Opioid, Heroin	11	1%
22 combinations with less than 10 cases are not represented in this table	126	8%

Notes on Drug Categories

Fentanyl: includes; Acetal-Fentanyl, Fentanyl, Furanyl-Fentanyl, 4-ANPP, Cyclopropyl Fentanyl, U-47700

Morphine/Codeine: Cannot be distinguished from heroin depending on time of death.

Other Opioid: includes; Buprenorphine, Hydrocodone, Hydromorphone, Loperamide, Methadone, Oxymorphone, Oxycodone, Tramadol. The victim may have taken 1 or more of these drugs.

Other Drug: includes; Alcohol, Alprazolam, Amitriptyline, Amphetamine, Carbamazepine, Carisoprodol, Chlordiazepoxide, Citalopram, Clonazepam, Cyclobenzaprine, Desipramine, Diazepam, Diphenhydramine, Doxylamine, Duloxetine, Ephedrine, Fluoxetine, Gabapentin, Hydroxyzine, Ketamine, Levetiracetam, Lorazepa, MDMA, Meprobamate, Mirtazapine, Nordiazepam, Olanzapine, Oxazepam, Paroxetine, Phenobarbital, Pseudoephedrine, Quetiapine, Sertraline, Temazepam, Topiramate, Trazadone, Venlafaxine, Ziprasidone, Zolpidem. The victim may have taken 1 or more of these drugs.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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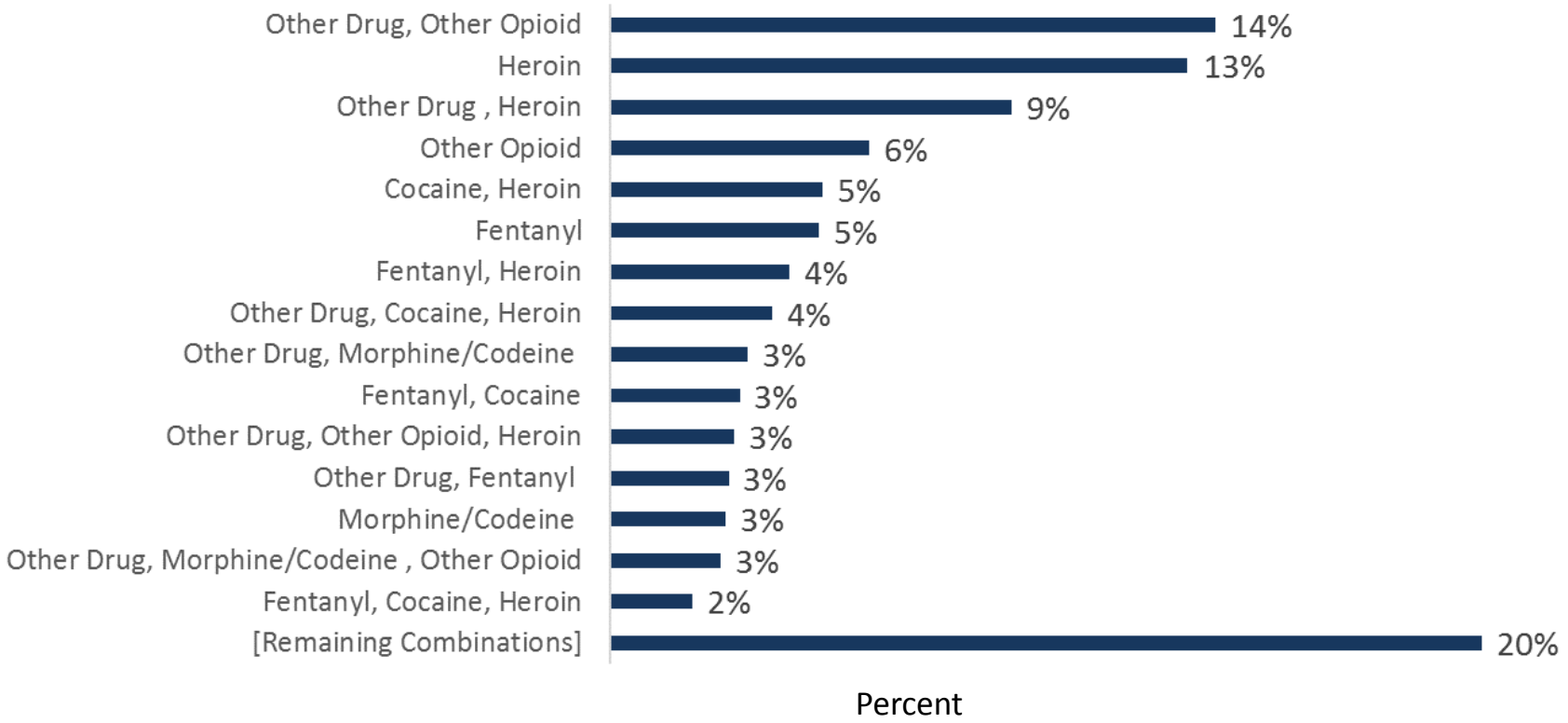
Fifteen Most Common Drug Combinations Attributed to Cause of Death Based on Toxicology Results

January 1, 2012—June 30, 2018



Drug categories defined on page 9

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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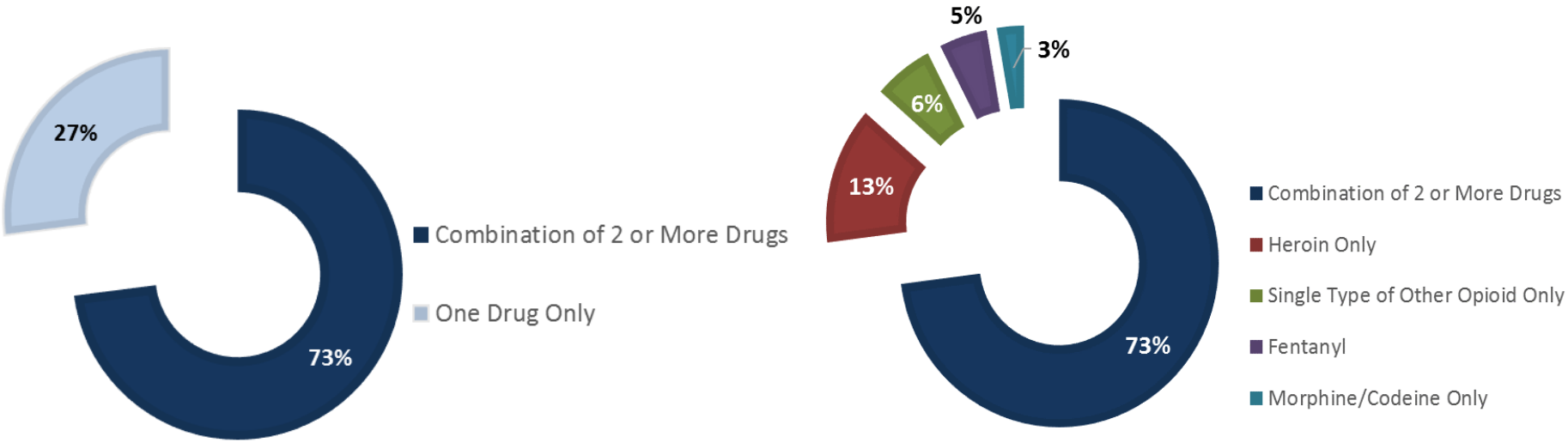
Percent of Cases with a Single Drug Attributed to the Cause of Death Compared to Those with a Combination of Two or More Drugs
January 1, 2012—June 30, 2018



Of the 1,561 opioid-related overdose deaths from 2012 through June 30, 2018, 1,139 (73%) died from a combination of 2 or more drugs.

Note: "Single Type of Other Opioid Only" could involve any one of the following: Buprenorphine, Hydrocodone, Hydromorphone, Loperamide, Methadone, Oxycodone, Oxymorphone, or Tramadol.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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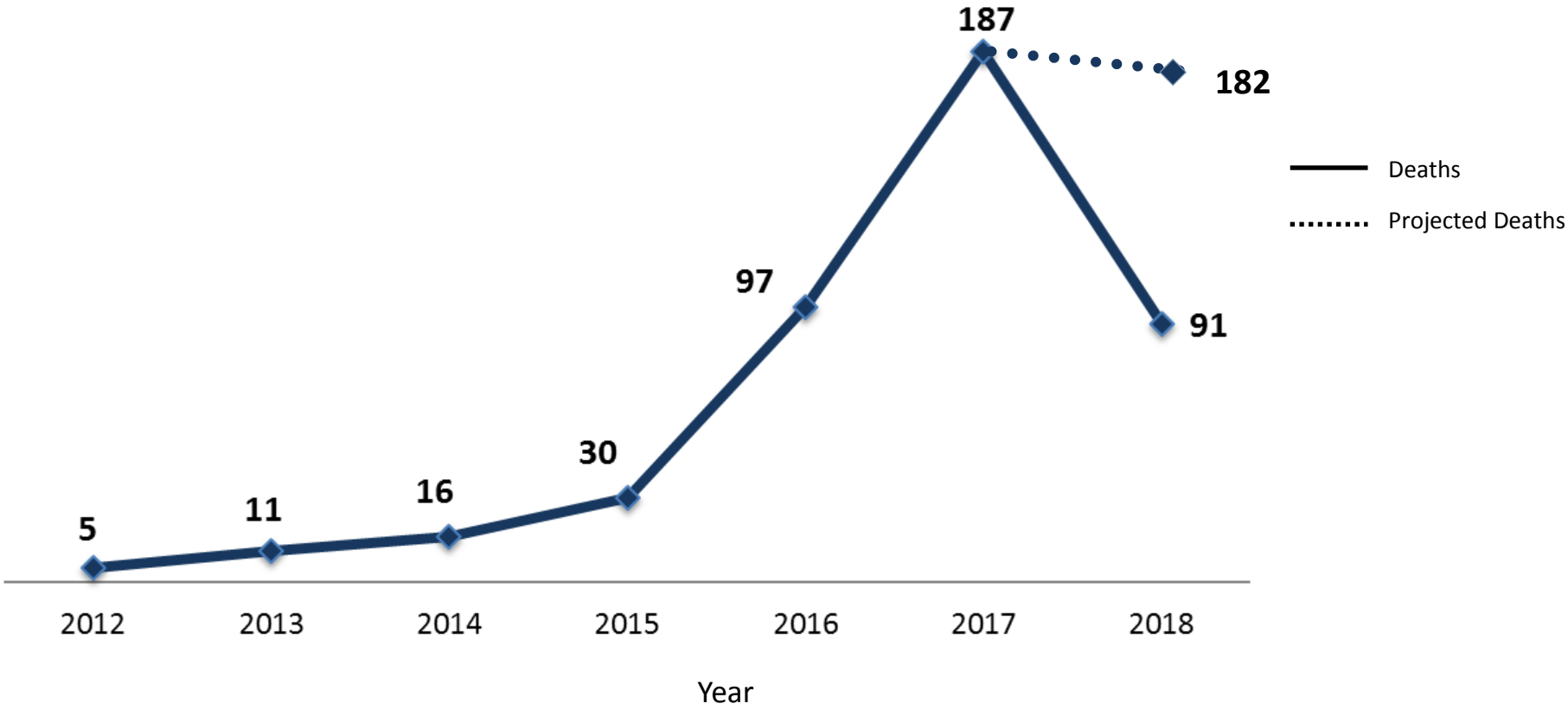
Number of Overdose Deaths Where Fentanyl was Attributed as a Cause of Death Alone or In Combination with Other Drugs (N=1,561) January 1, 2012—June 30, 2018



Of the 154 opioid-related overdose deaths in 2018, 59% (91) involved the drug fentanyl, compared to 55% in 2017. In the first six months of 2018, 17 deaths involved fentanyl alone, the remaining were in combination with other drugs.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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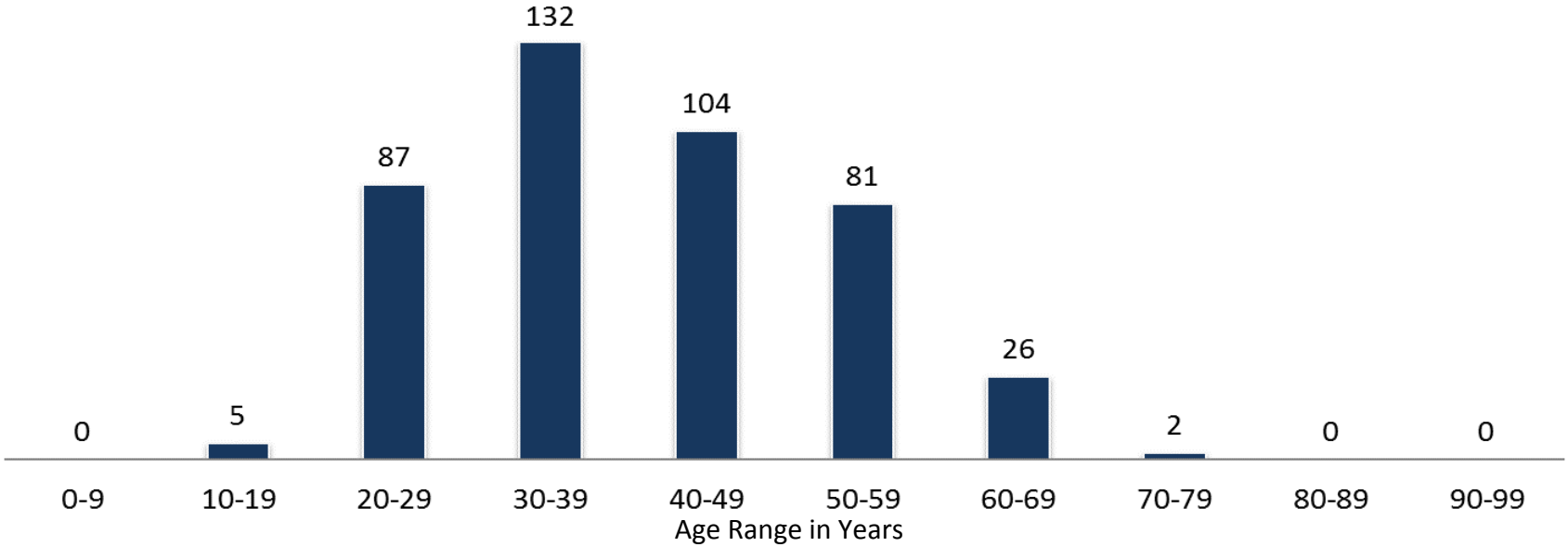
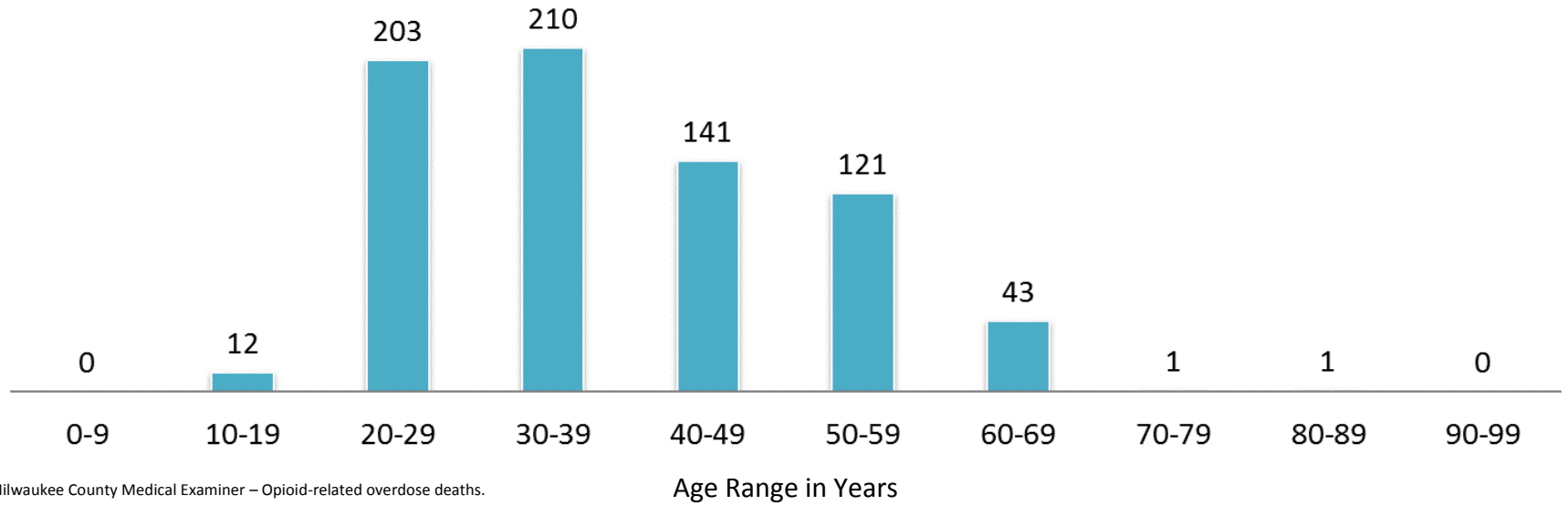
Number of Overdose Deaths Where Fentanyl was Attributed as a Cause of Death Alone or In Combination with Other Drugs by Age Range from January 1, 2012—June 30, 2018 (N=1,561 n=437)



Number of Overdose Deaths Where Heroin was Attributed as a Cause of Death Alone or In Combination with Other Drugs by Age Range from January 1, 2012—June 30, 2018 (N=1,561 n=732)



Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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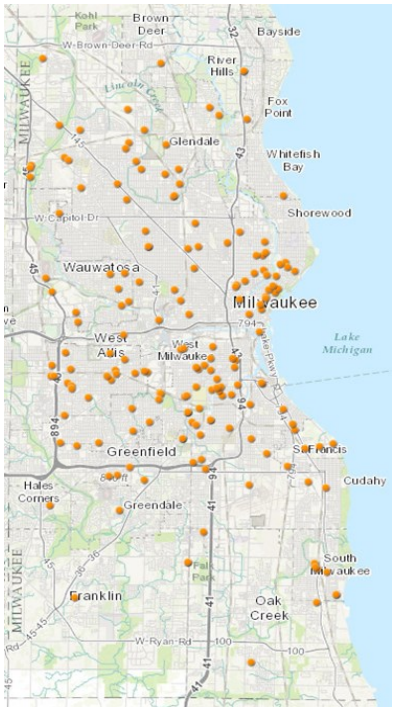
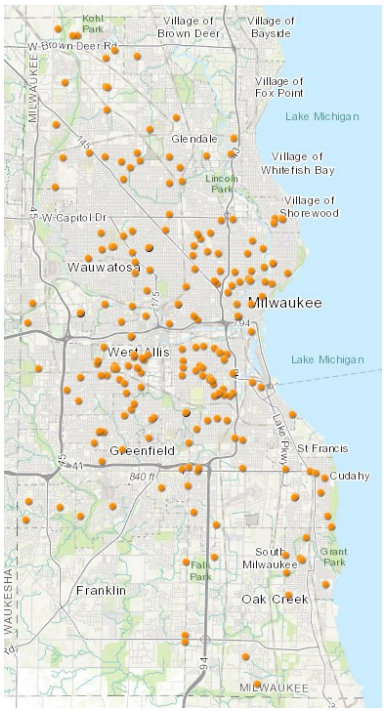
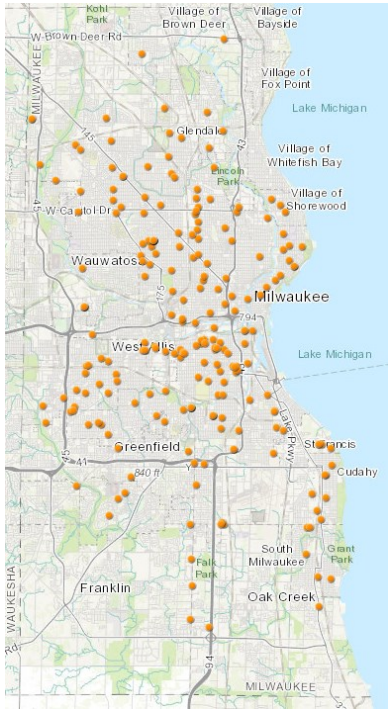
Death Location for Opioid-Related Overdose Deaths in Milwaukee County 2014—2017



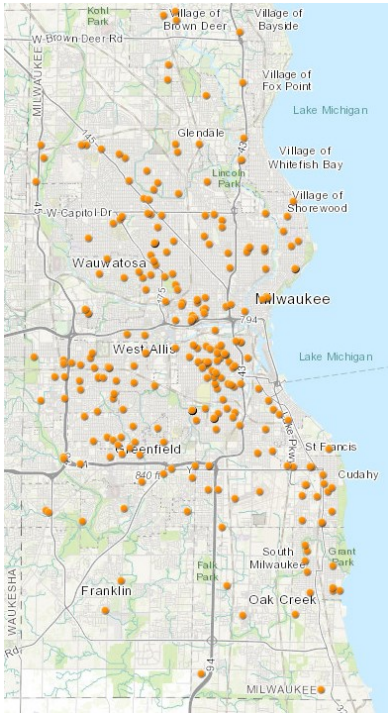
2013



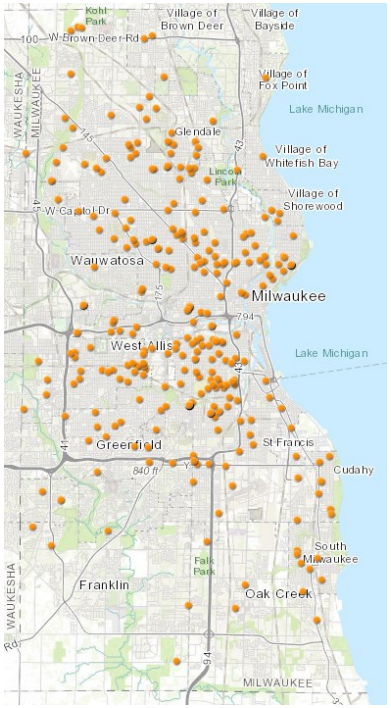
2014



2015*



2016



2017

Note: This map reflects the locations of the victim when they died. It may not reflect where the overdose occurred, especially for those treated at a hospital.

LEGEND

Death

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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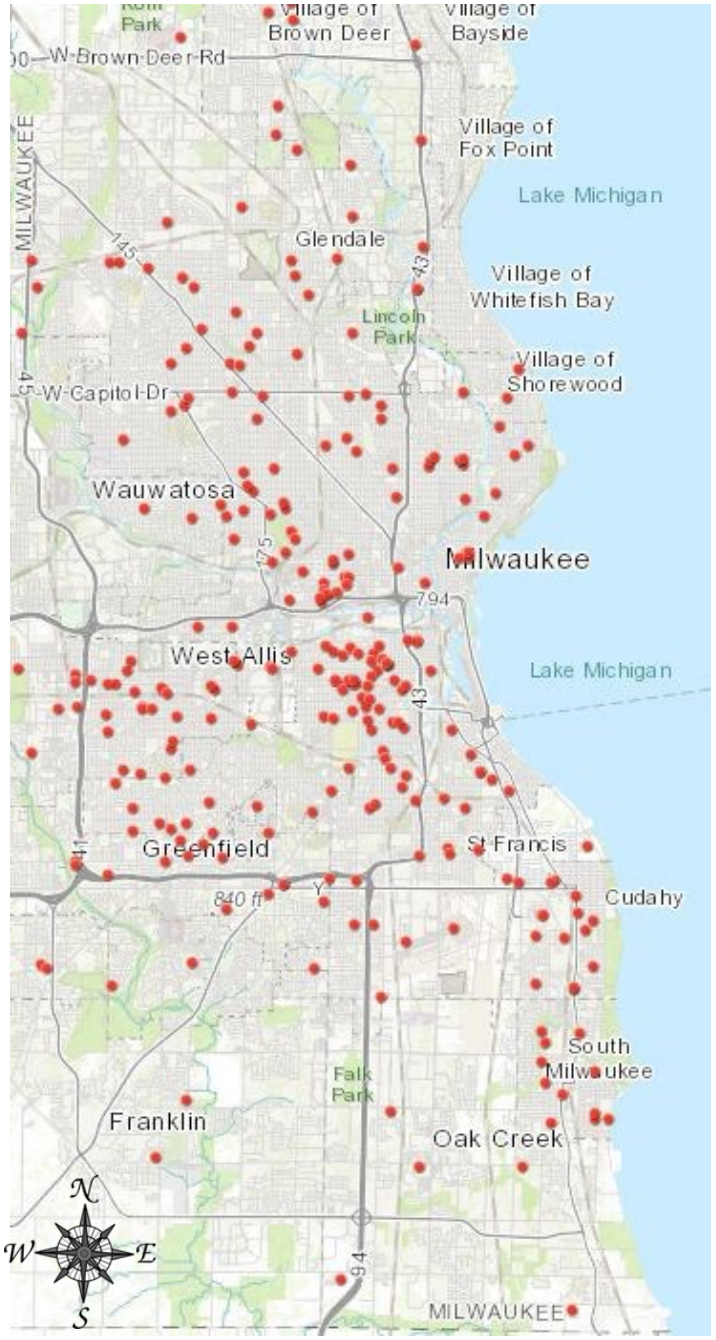
*One case in 2015 died outside of Milwaukee County

Incident Location for Opioid-Related Overdose Deaths in Milwaukee County

2016

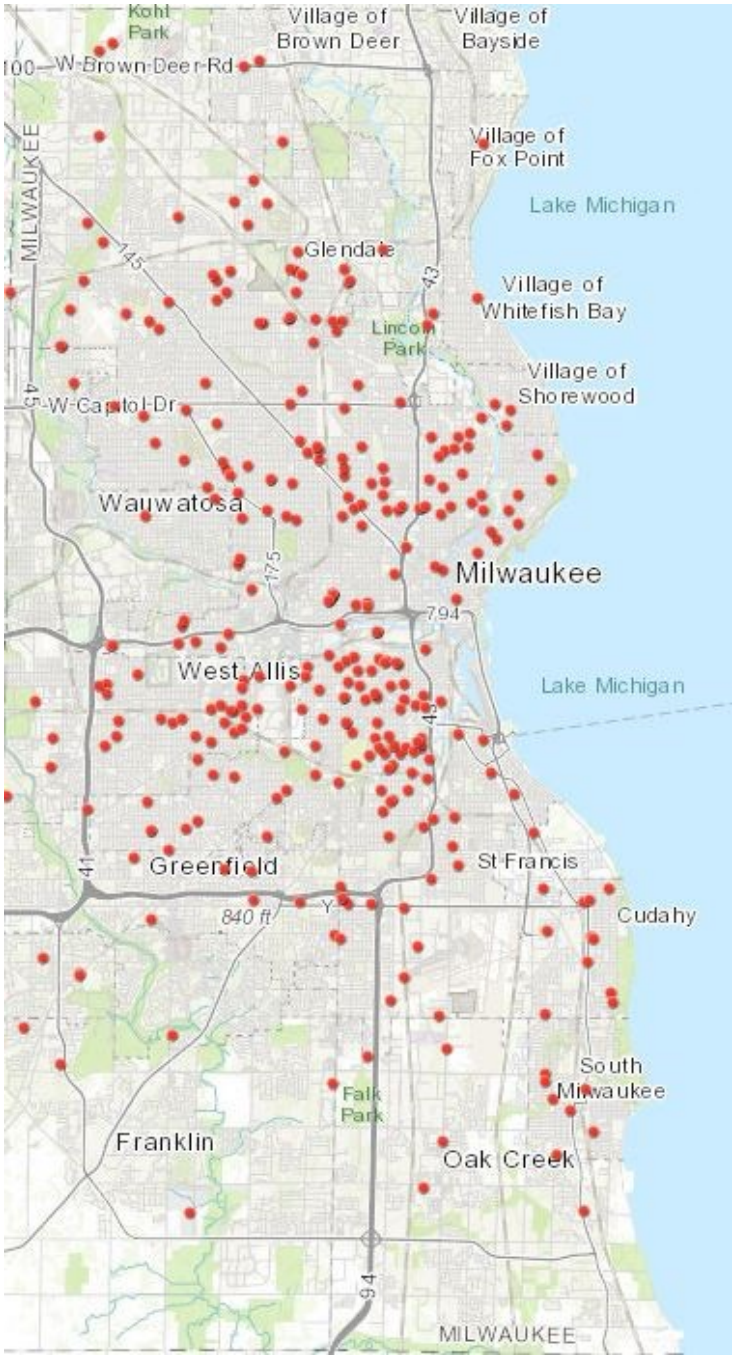


LEGEND

Incident

Note: Incident location is the location where the overdose occurred and is only available for 2016 and 2017.

2017



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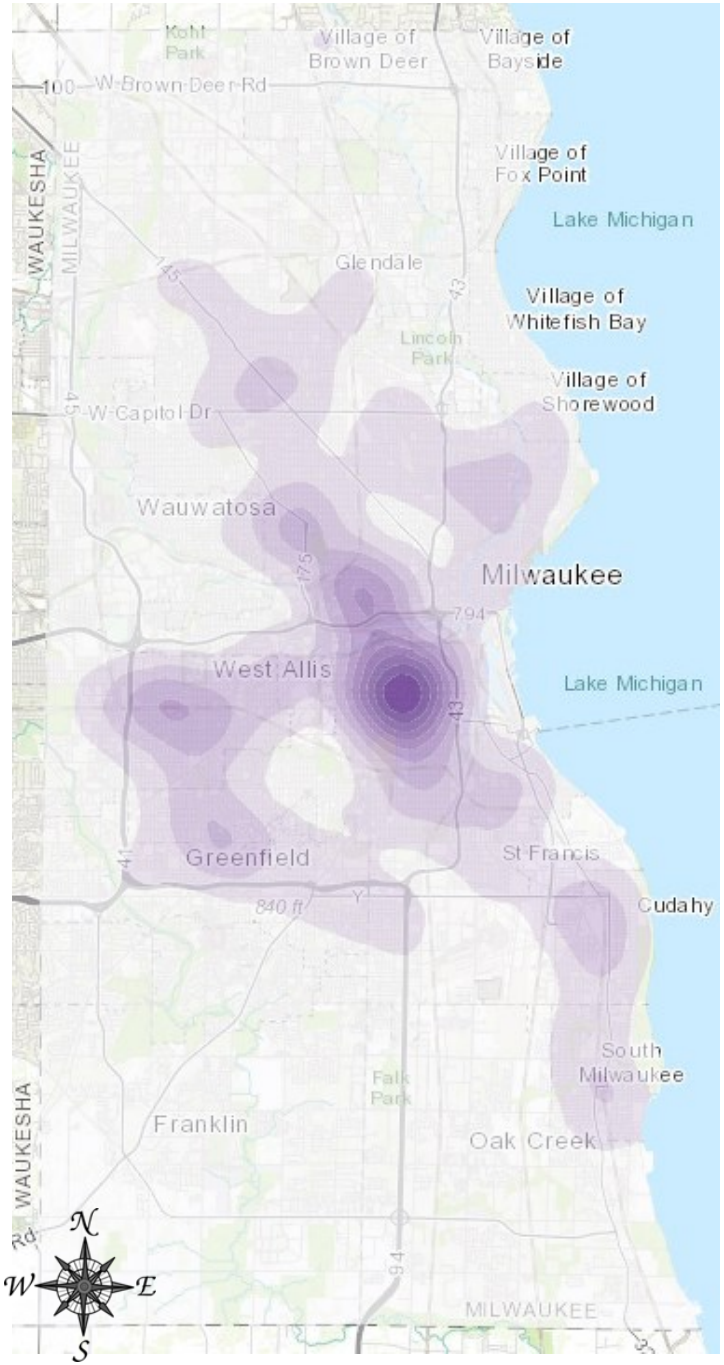
Incident Location for Opioid-Related Overdose Deaths in Milwaukee County

2016



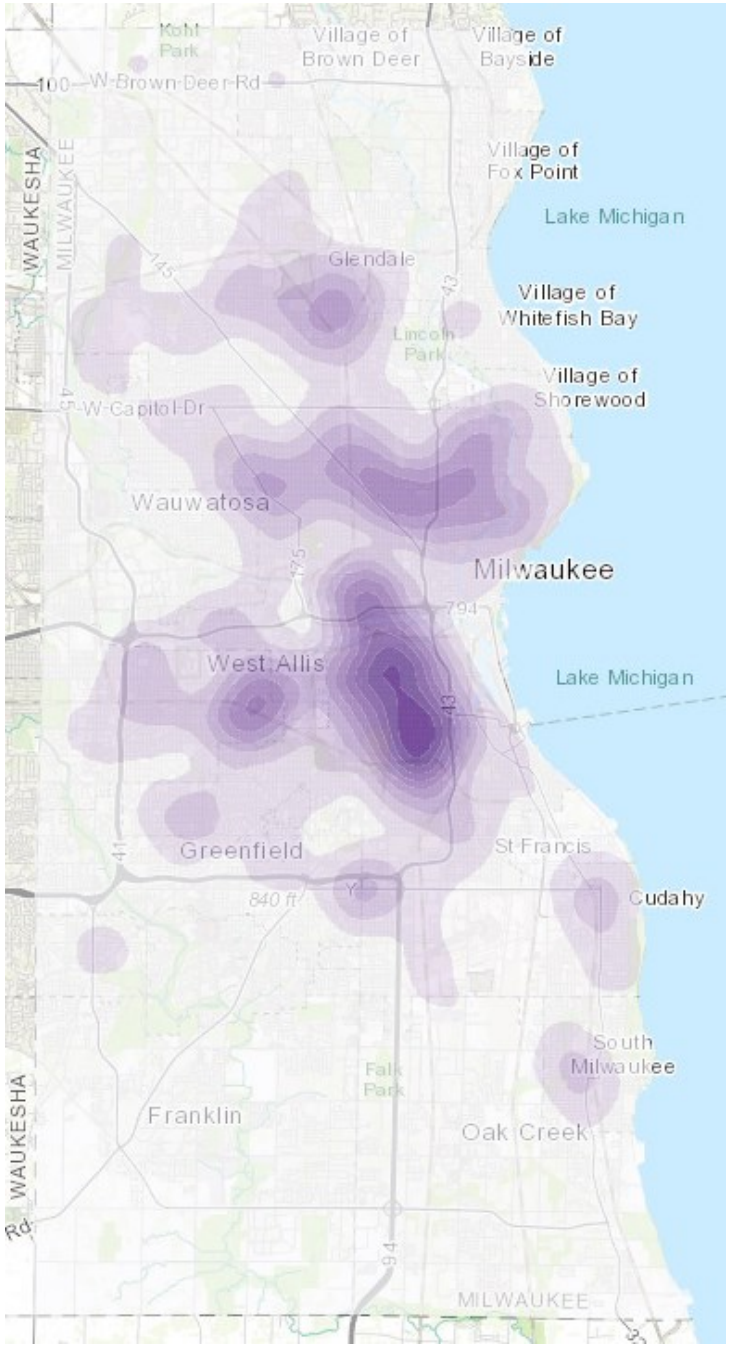
Legend
Incident Density 2016

0 – 1	Low
1 – 2	
2 – 4	
4 – 5	
5 – 6	
6 – 8	
8 – 9	
9 – 10	
10 – 12	
12 – 13	High

Legend
Incident Density 2017

0 – 1	Low
1 – 2	
2 – 3	
3 – 5	
5 – 6	
6 – 7	
7 – 8	
8 – 10	
10 – 11	
11 – 12	High

2017



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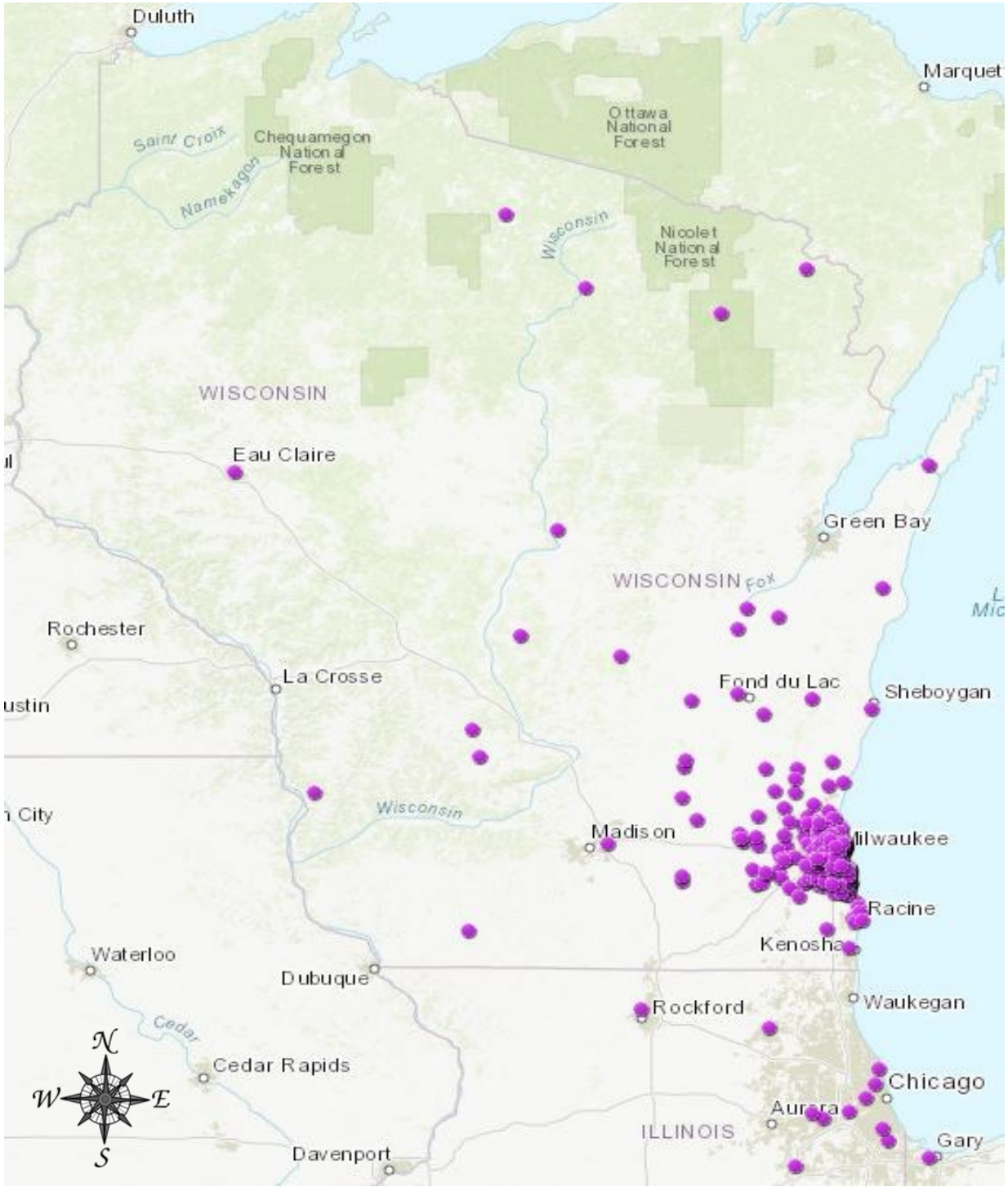
Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.



Residence of Opioid-Related Overdose Victims Who Died in Milwaukee County

January 1, 2012—June 30, 2018

Of the 1,561 opioid-related deaths in Milwaukee County, 98 (6.3%) had a documented residence outside of the county and 43 (2.8%) lived outside of Wisconsin. 23 (1.5%) victims who died of an opioid-related overdose in Milwaukee County did not have a residential address and are not included in the map.

LEGEND

Residence

14 cases are out of view and not included on this map

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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Review of Medical Examiner Narratives for all 2016 Opioid-Related Overdose Deaths: Circumstances Surrounding the Overdose That May Have Contributed to Death

	Number of Cases with The Factor	Percent of all Deaths (N=294)	Percent of Total Cases With the Factor Documented that Were Positive for the Factor*
Resuscitation attempted prior to declaring death (documented=294, 100%)	123	42%	42%
Victim transported to the hospital (documented=294, 100%)	43	15%	15%
Victim transported to the hospital by EMS	31	11%	72%
Received Naloxone during resuscitation (documented=252, 86%)	32	11%	43%
By EMS	20	7%	63%
By bystander	7	2%	22%
By hospital provider	3	1%	9%
By Police	2	<1%	6%
Drug paraphernalia visible at the time of resuscitation (documented=70)	54	18%	77%
Victim alone at the time of overdose (documented=261, 89%)	188	64%	72%
Victim not alone at the time of overdose	73	25%	28%
Victim thought to be sleeping at the time of death	28	10%	38%
Location of overdose (documented=294, 100%)			
Home/Residence	247	84%	84%
In a Vehicle	15	5%	5%
Outside	10	3%	3%
Public Building	10	3%	3%
Hotel/Motel	5	2%	2%
Physician Office/Clinic/Hospital	3	1%	1%
Unknown	4	1%	1%

***Note:** This data was abstracted from unstructured narratives. Not all variables were documented in every case. When not all cases have a variable documented it may or may not mean that the factor was not present for that case. Therefore the percent of cases for a given factor is given for all deaths in 2016 and for all cases with the factor documented.

Version Release Date: 1.18.2019

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

Review of Medical Examiner Narratives for all 2016 Opioid-Related Overdose Deaths: Victims' Documented Medical History Prior to Death

	Number of Cases with The Factor	Percent of all Deaths (N=294)	Percent of Total Cases With the Factor Documented that Were Positive for the Factor*
History of tobacco use (documented=225, 77%)	188	64%	84%
History of substance use (documented=228, 78%)	282	96%	98%
Alcohol	171	58%	61%
Heroin	158	54%	56%
Prescription Other	109	37%	39%
Other	103	35%	37%
Prescription Opioids	101	34%	36%
Cocaine	85	29%	30%
Benzodiazepines	75	26%	27%
Marijuana	57	19%	20%
Unknown	23	8%	8%
Methamphetamines	7	2%	2%
History of previous overdose (documented=76, 26%)	50	17%	66%
History of substance use disorder treatment or rehabilitation (documented=73, 25%)	71	24%	97%
History of pain management (documented=53, 18%)	49	17%	92%

***Note:** This data was abstracted from unstructured narratives. Not all variables were documented in every case. When not all cases have a variable documented it may or may not mean that the factor was not present for that case. Therefore the percent of cases for a given factor is given for all deaths in 2016 and for all cases with the factor documented.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

Version Release Date: 1.18.2019

Review of Medical Examiner Narratives for all 2016 Opioid-Related Overdose Deaths: Victims' Documented Social History Prior to Death

	Number of Cases with The Factor	Percent of all Deaths (N=294)	Percent of Total Cases With the Factor Documented that Were Positive for the Factor*
Marital status (documented=162, 55%)			
Married/in a relationship	96	33%	60%
Single	33	11%	20%
Divorced/separated	29	10%	18%
Widowed	4	1%	2%
Employment status (documented =75, 26%)			
Employed	41	14%	55%
Unemployed	30	10%	40%
On disability	4	1%	5%
Victim was homeless (documented =294, 100%)	7	7%	7%
Victim had children (documented=116, 39%)	100	34%	86%

***Note:** This data was abstracted from unstructured narratives. Not all variables were documented in every case. When not all cases have a variable documented it may or may not mean that the factor was not present for that case. Therefore the percent of cases for a given factor is given for all deaths in 2016 and for all cases with the factor documented.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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Summary of Opioid-Related Overdose Deaths in Milwaukee County by Year

	All Opioid Overdoses 2012-2017		2012		2013		2014		2015		2016		2017		2018	
Total	1,561		144		181		220		231		294		337		154	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Sex																
Male	995	63%	87	60%	102	56%	133	60%	149	65%	196	67%	222	66%	106	31%
Female	565	37%	57	40%	79	44%	87	40%	81	35%	98	33%	115	34%	48	69%
Age Range																
under 9	11	1%	0	0%	2	1%	0	0%	1	0%	5	2%	3	1%	0	0%
10-19	23	2%	2	1%	5	3%	1	0%	4	2%	5	2%	6	2%	0	0%
20-29	309	20%	23	16%	35	19%	50	23%	45	19%	64	22%	67	20%	25	16%
30-39	413	27%	36	25%	32	18%	48	22%	64	28%	90	31%	98	29%	45	29%
40-49	333	21%	30	21%	53	29%	44	20%	46	20%	48	16%	72	21%	40	26%
50-59	332	21%	42	29%	42	23%	49	22%	42	18%	60	20%	65	19%	32	21%
60-69	125	8%	9	6%	9	5%	24	11%	26	11%	20	7%	25	7%	12	8%
70-79	13	1%	2	1%	3	2%	3	1%	3	1%	1	0%	1	<1%	0	0%
80-89	1	0%	0	0%	0	0%	1	0%	0	0%	0	0%	0	0%	0	0%
90-99	1	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%	0	0%
Race/Ethnicity																
White	1,095	70%	95	66%	126	70%	157	71%	169	73%	211	72%	226	67%	110	71%
Black	310	20%	33	23%	34	19%	46	21%	47	20%	56	19%	67	20%	27	18%
Hispanic	123	8%	11	8%	16	9%	14	6%	9	4%	24	8%	36	10%	14	9%
Other	33	2%	5	3%	5	3%	3	1%	5	2%	3	1%	8	3%	2	1%

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.

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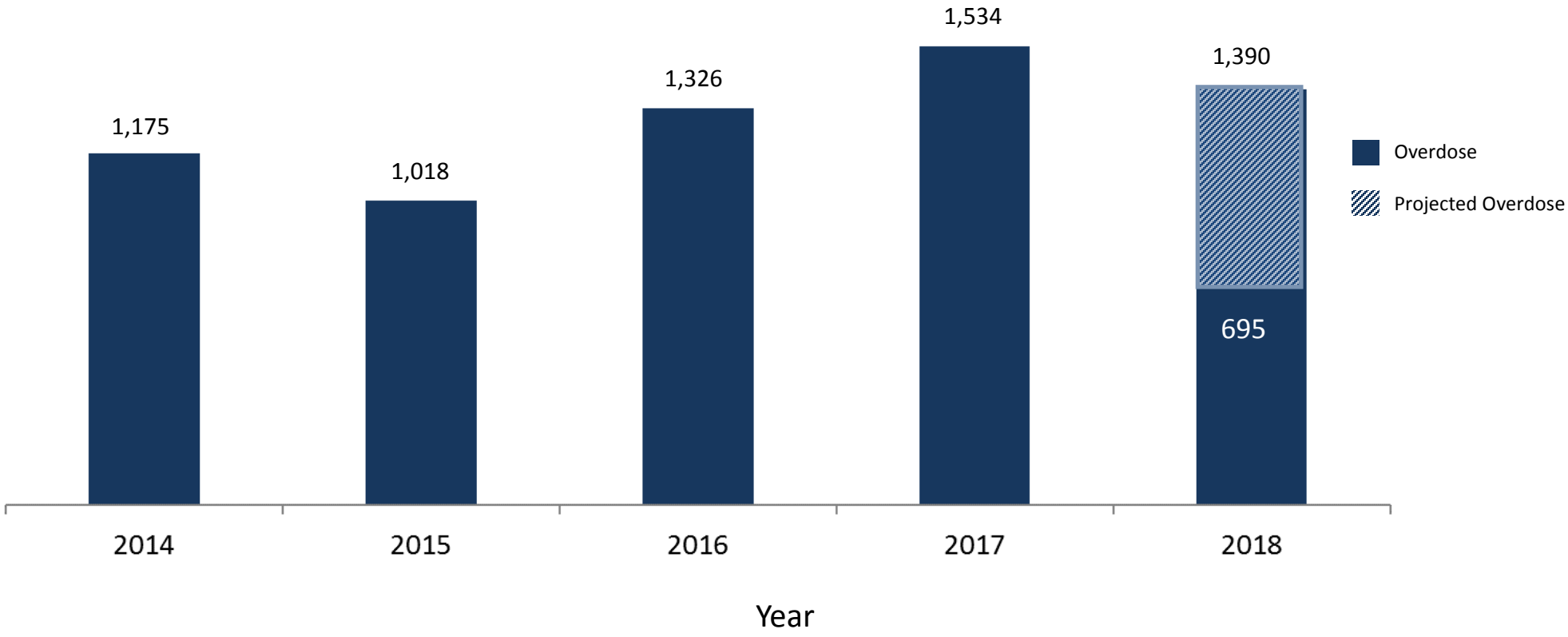
Summary of Milwaukee County Emergency Medical Services Data for Suspected Opioid-Related Overdose

Version Release Date: 1.18.2019

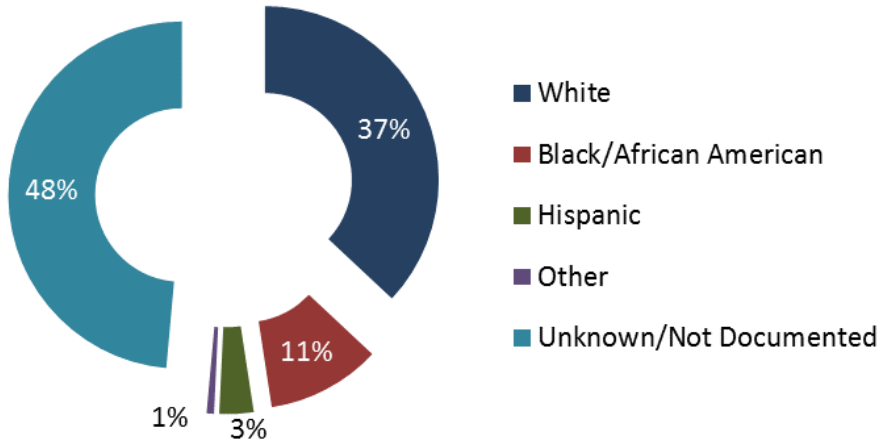
Number of EMS Suspected Opioid-Related Overdose Based on Naloxone Administration

January 1, 2014—June 30, 2018 (N=5,748)

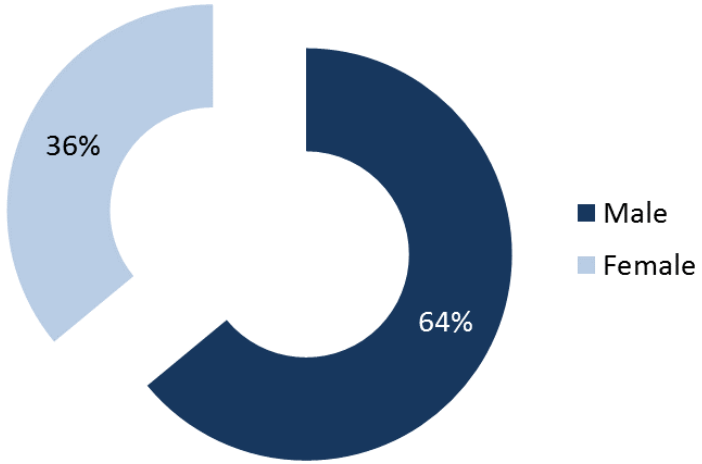


Version Release Date: 1.18.2019

Percent of Suspected Opioid-Related Overdose Based on EMS Naloxone Administration by Race/Ethnicity January 1, 2014—June 30, 2018



Percent of Suspected Opioid-Related Overdose Based on EMS Naloxone Administration by Sex January 1, 2014—June 30, 2018

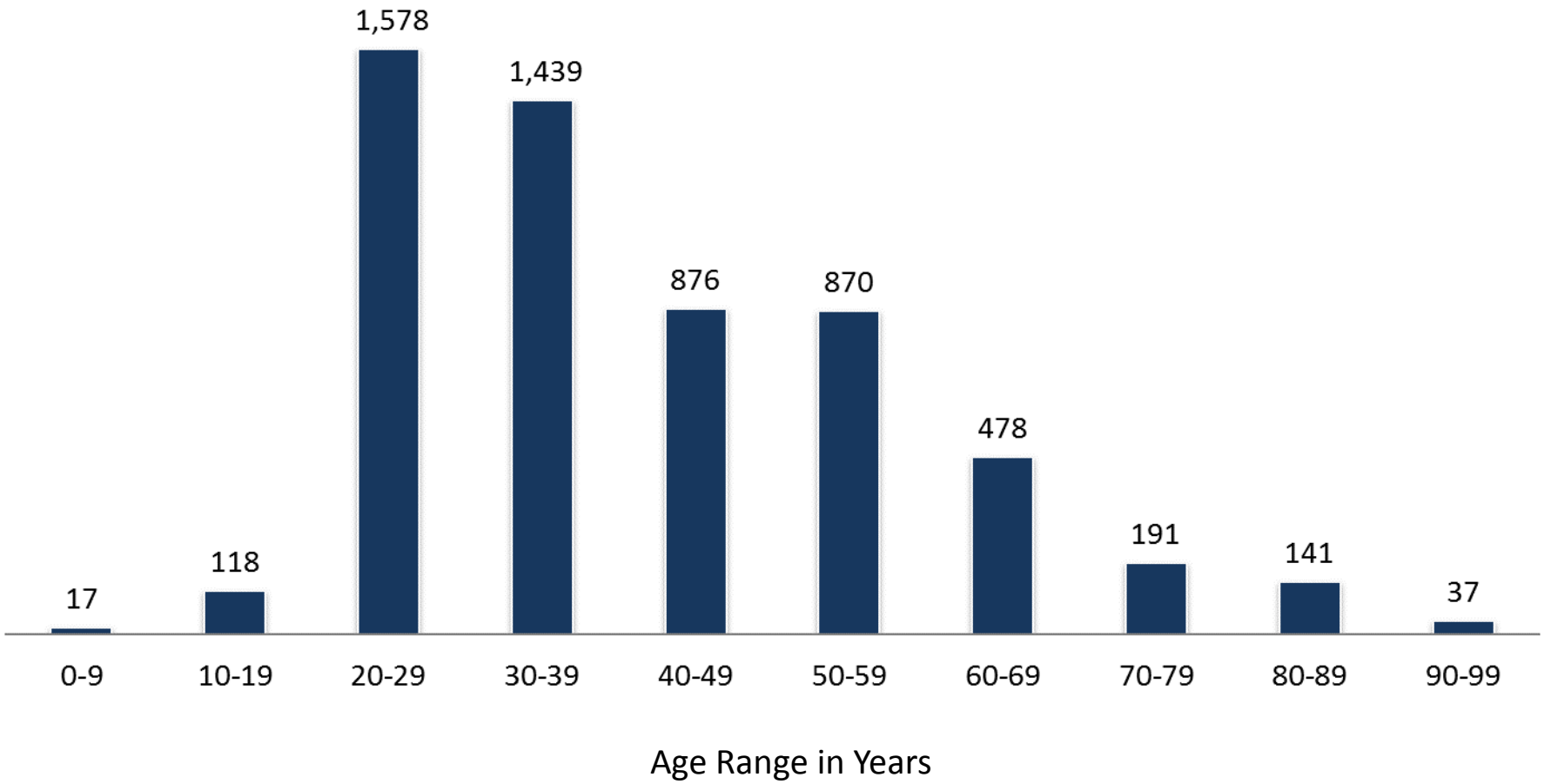


Of the 5,748 EMS cases between 2012 and June 30, 2018, there were a large number with unknown/not specified race. The race distribution among those that were known (N=2,957) were consistent with the race distribution of overdose deaths. When unknown cases were removed, the distribution was: White: 72%, Black: 21%, Hispanic/Latino: 6% and 1% other.

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

Number of Responses for Suspected Opioid-Related Overdose Based on EMS Naloxone Administration by Age-Range
January 1, 2014—June 30, 2018 (N=5,748)



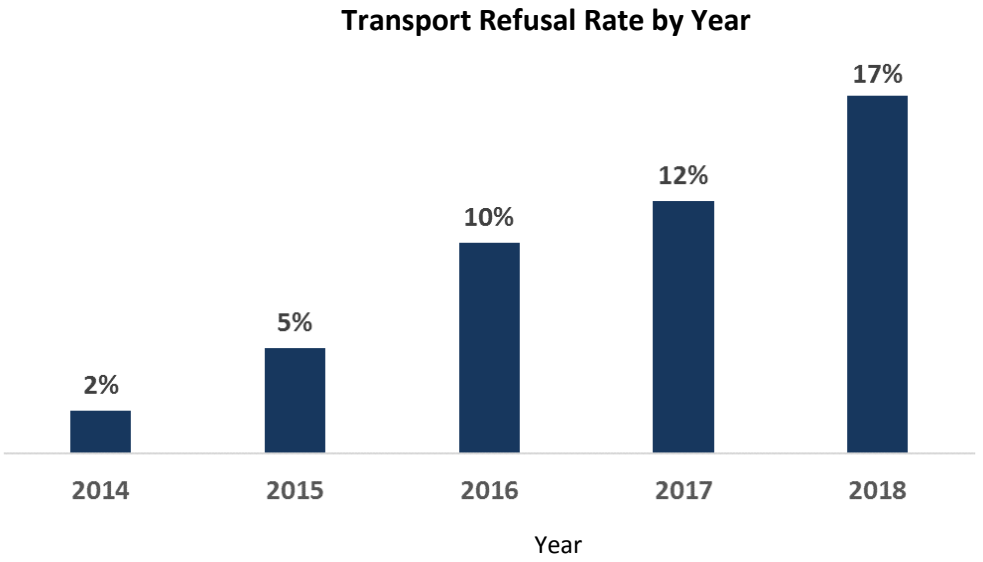
Of the 5,748 suspected opioid-related overdoses between 2012 and June 30, 2018, 52% (3,017) occurred between the ages of 20-39.

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

Percent of EMS Transport Destinations for Suspected Opioid-Related Overdose Victims Who Received Naloxone between January 1, 2014—June 30, 2018

Transport Destination	Number of calls (N=5,748)
Hospital Emergency Department	4,996 (87%)
Refused Transport	490 (9%)
Medical Examiner	188 (3%)
Other/Unknown	74(1%)



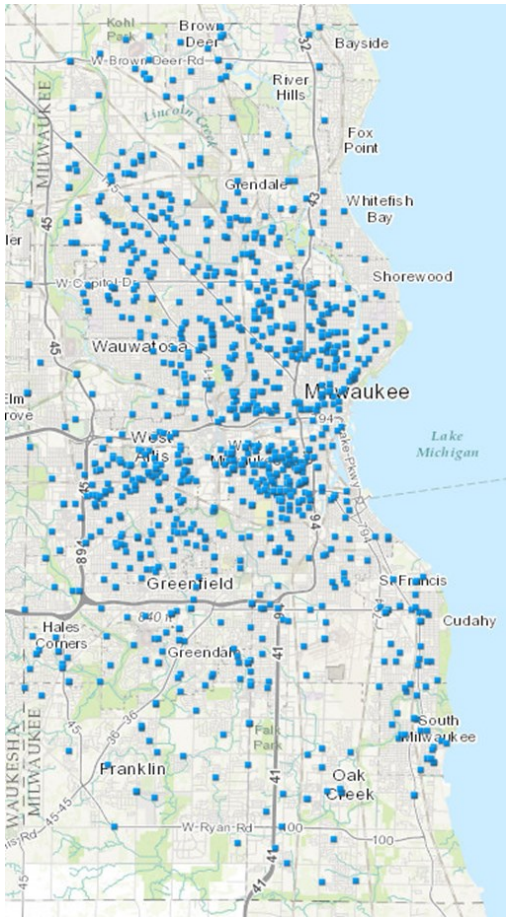
On January 1, 2017, in response to an increase in fentanyl-related overdoses in the community, the Milwaukee County EMS protocols were reviewed and revised for naloxone administration. This included removing the maximum dose EMS could give a patient during an overdose event.

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

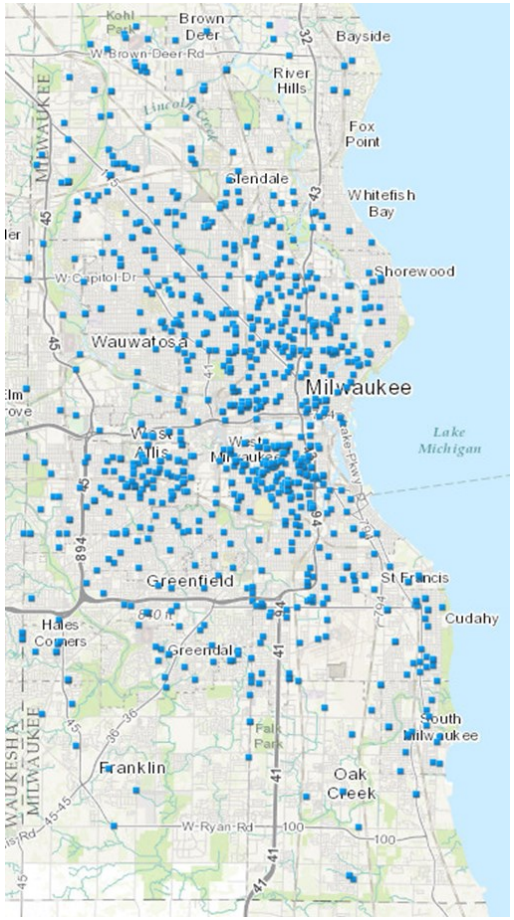
Version Release Date: 1.18.2019

Location of EMS Responses for Suspected Opioid-Related Overdose Based on Naloxone Administration

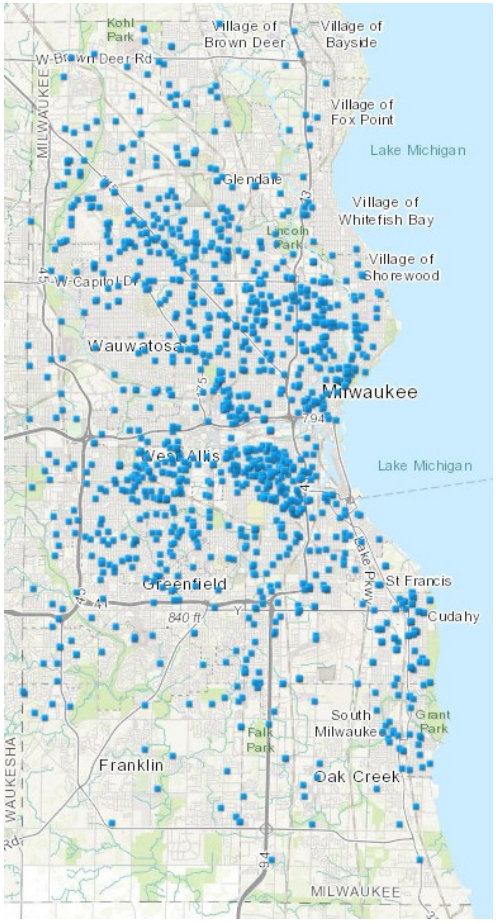
2014—2017



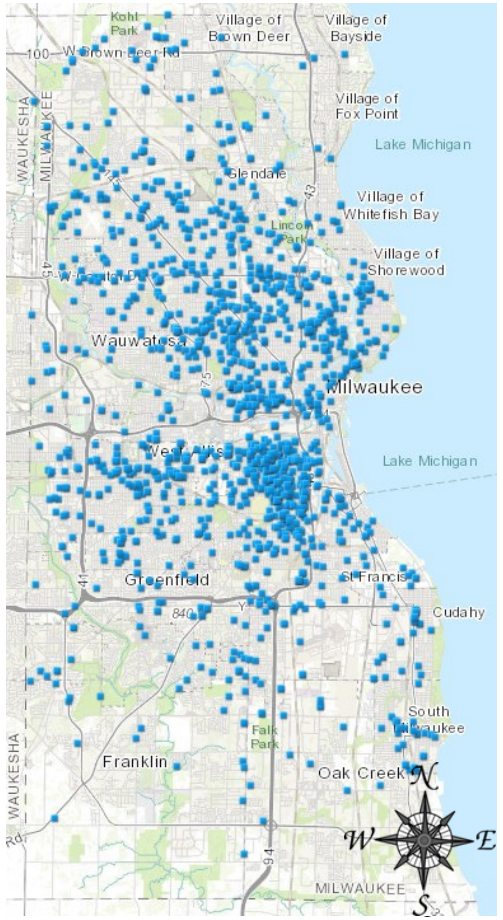
2014



2015



2016*



2017

* One location in 2016 is out of range

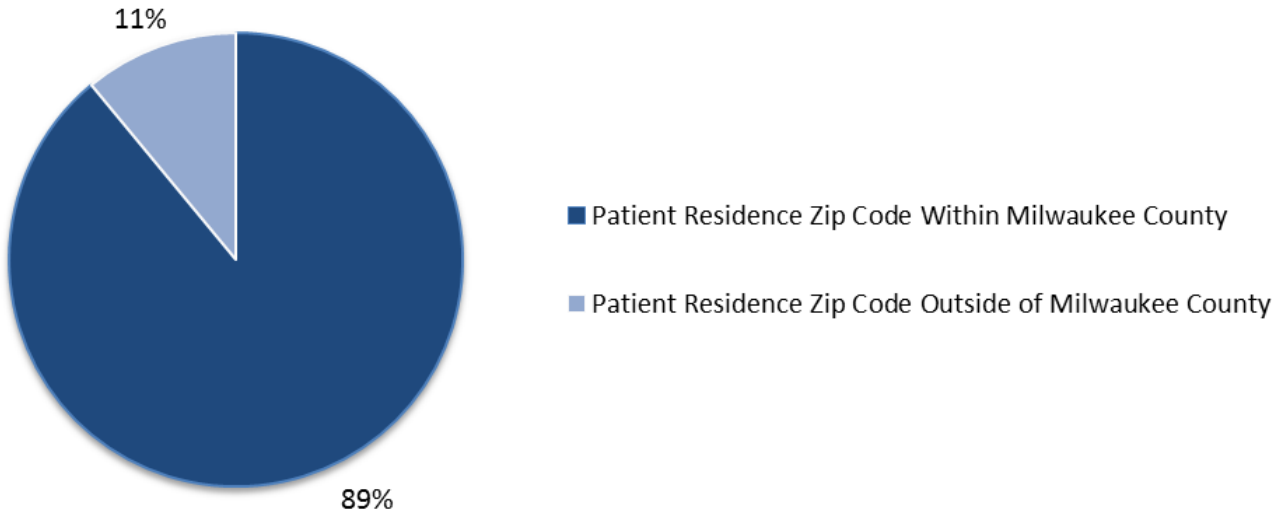
LEGEND

EMS Response

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

Comparison of Patient Residence and Overdose Location by Zip Code for all EMS Responses in Milwaukee County Between January 1, 2014—June 30, 2018 for Suspected Opioid-Related Overdose Based on Naloxone Administration



EMS patients whose overdose location was in the same zip code as their residence.	61%
EMS patients whose overdose location was NOT in the same zip code as their residence, and residence was **within** Milwaukee County.	28%
EMS patients whose overdose location was NOT in the same zip code as their residence, and residence was **outside** of Milwaukee County.	11%

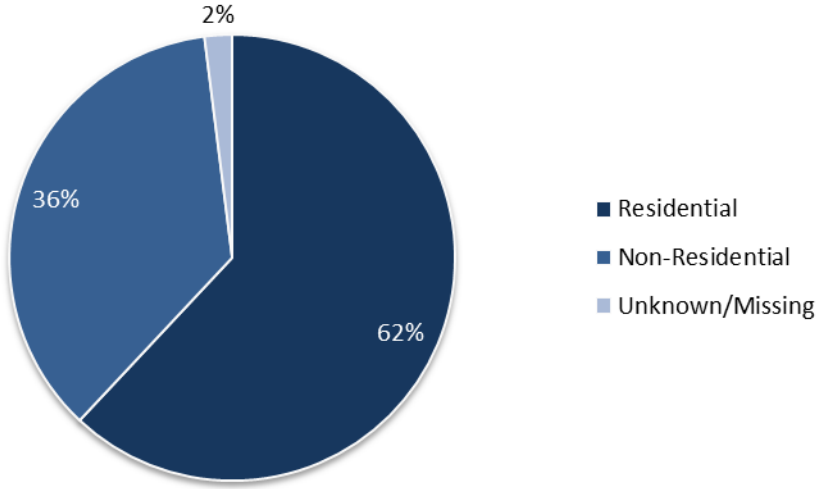
Between 2014 and June 30, 2018 there were 5,748 EMS responses in Milwaukee County for a suspected opioid-related overdose based on naloxone being administered. Among those patients, 89% had a residence zip code within Milwaukee County. Further, 61% of overdoses occurred in the same zip code as the victim's documented residence.

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

Comparison of Overdose Location by Location Type for all EMS Responses in Milwaukee County in 2017 for Suspected Opioid-Related Overdose Based on Naloxone Administration

Percent of Residential and Non-Residential Location for EMS Response to Suspected Overdose



EMS Documented Overdose Location Type

Residential	61%
Road, Highway, or Other Type of Street	19%
Private Business or other Private Location	7%
Other/Unknown/Unspecified	6%
Public Space or Public Building	4%
Medical Facility	1%
Residential Institution	1%
School	<1%
Prison	<1%

Residential: Apartment, single-family home, mobile home, nursing home, or institutional residential location.

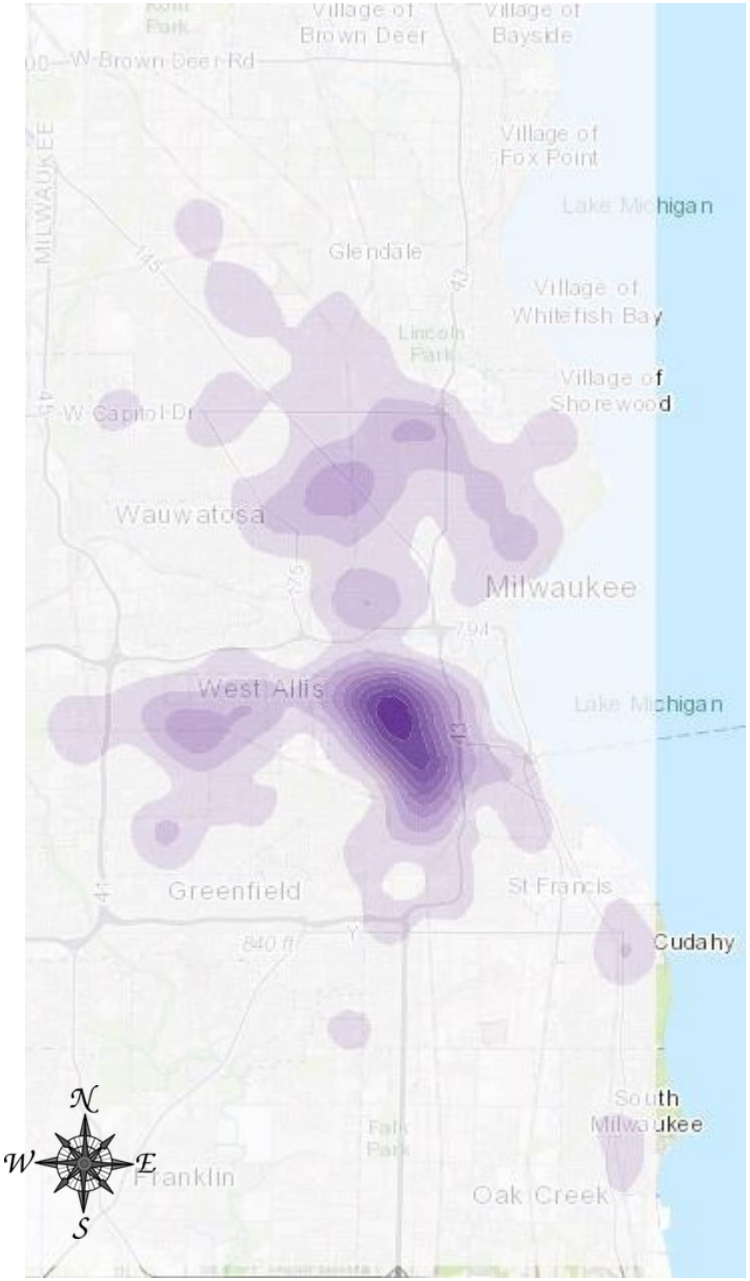
Non-Residential: Medical facilities (clinic, hospital, etc.), public buildings, public spaces (parks, parking lots, sidewalks, bus-shelters, etc.), private businesses (supermarket, restaurant/bar, etc.), school, street/highway/roadways,

Note: EMS codes for location type are not entirely uniform. There were 94 cases, (6%), that were categorized as some variation of other or unspecified. For these cases, the narrative was read and the location type was re-coded if there was enough information present to determine **residential or non-residential** only (depicted in pie chart above). Further, cases were broken down by specific type of residential and non-residential location in the above chart. **Only cases with an EMS determined specific location (restaurant, supermarket, public building, etc.) were included in this table**—those that were documented as other by EMS, remained in the "other/unspecified" category, n=94 (6%).

Version Release Date: 1.18.2019

Comparison of Overdose Location by Location Type—Residential and Non-Residential—for all EMS Responses in Milwaukee County in 2017 for Suspected Opioid-Related Overdose Based on Naloxone Administration

Residential



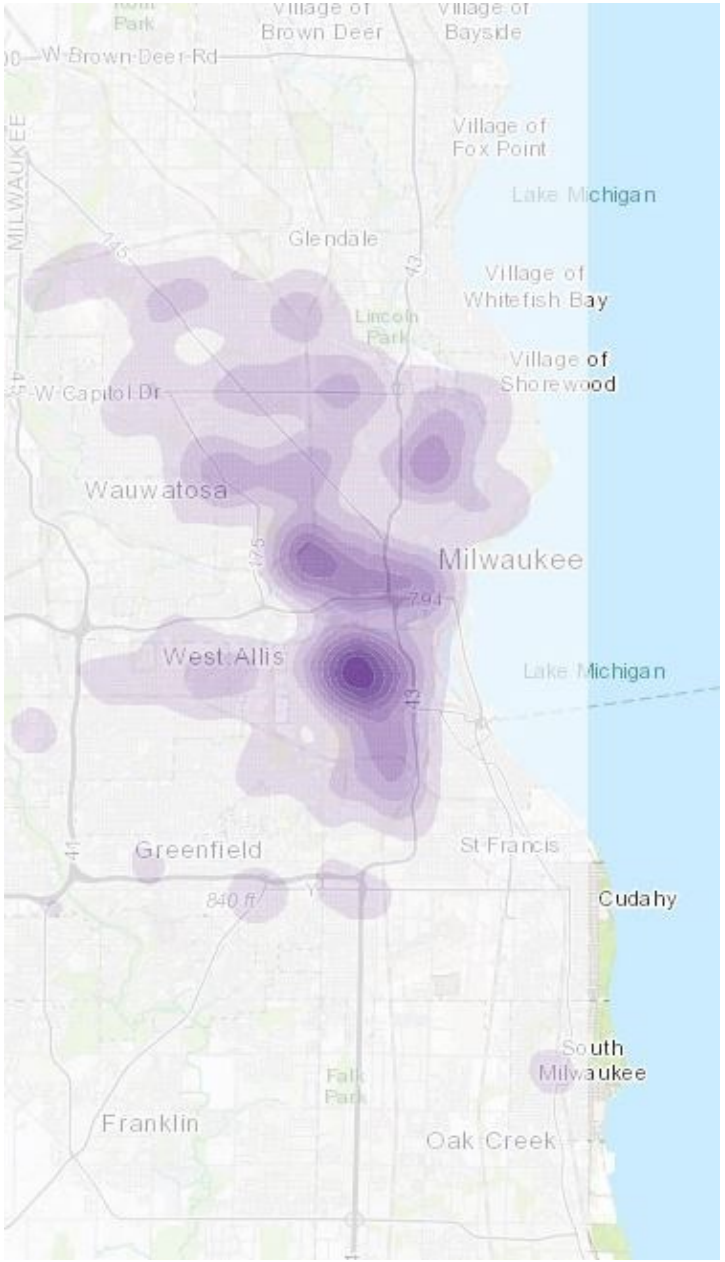
Legend
Residential Density

0 – 6	Low
6 – 12	
12– 18	
18 – 24	
24– 30	
30 – 37	
37 – 43	
43 – 49	
49– 55	
55– 61	High

Legend
Non-Residential Density

0 – 3	Low
3 – 6	
6 – 9	
9 – 12	
12– 15	
15 – 18	
18 – 21	
21 – 24	
24– 27	High

Non-Residential



Version Release Date: 1.18.2019

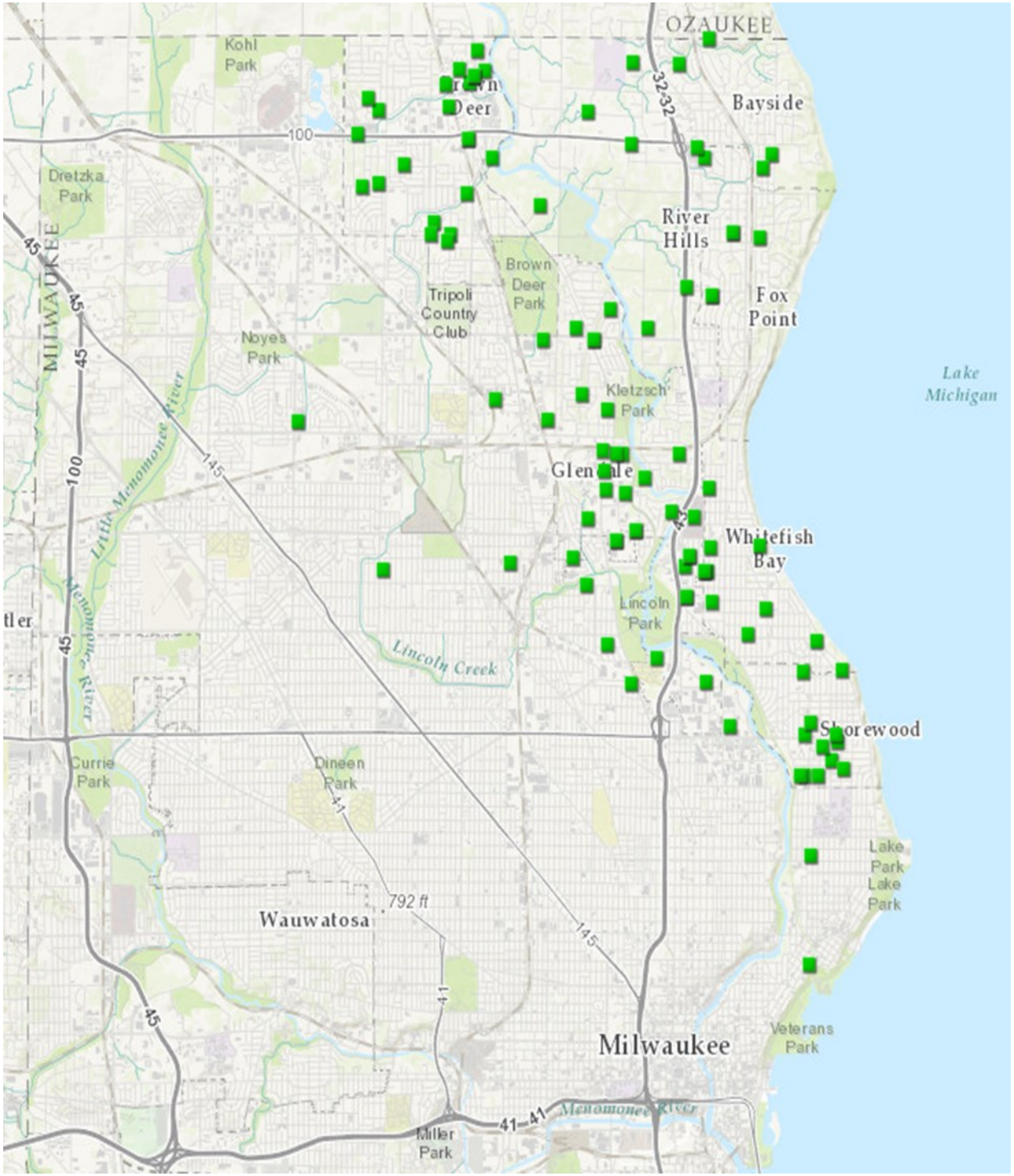
Summary of EMS Responses for Suspected Opioid-Related Overdose Based on Naloxone Administration

	All Suspected Opioid Overdoses 2014-2017		2014		2015		2016		2017		2018	
Total	5,748		1,175		1,018		1,326		1,534		695	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Sex												
Male	3,675	64%	676	58%	650	64%	852	64%	1,025	67%	472	68%
Female	2,066	36%	495	42%	367	36%	474	36%	507	33%	223	32%
Age Range												
under 9	17	<1%	1	<1%	3	<1%	6	<1%	11	1%	2	<1%
10-19	118	2%	26	2%	27	3%	27	2%	23	1%	9	1%
20-29	1,578	27%	276	23%	315	31%	398	30%	284	19%	178	26%
30-39	1,439	25%	231	20%	219	22%	348	26%	368	24%	191	28%
40-49	876	15%	172	15%	154	15%	188	14%	293	19%	121	17%
50-59	870	15%	198	17%	161	16%	183	14%	300	20%	105	15%
60-69	478	8%	111	9%	80	8%	109	8%	113	7%	60	9%
70-79	191	3%	84	7%	32	3%	38	3%	13	1%	14	2%
80-89	141	2%	59	5%	21	2%	22	2%	1	<1%	11	2%
90-99	37	1%	17	1%	6	1%	7	1%	1	<1%	2	<1%
Race/Ethnicity												
White	2,125	37%	483	41%	457	45%	544	41%	421	27%	220	32%
Black	610	11%	196	17%	142	14%	144	11%	79	5%	49	7%
Hispanic	183	3%	49	4%	27	3%	42	3%	44	3%	21	3%
Other	39	1%	7	1%	4	<1%	13	1%	10	<1%	5	<1%
Unknown	2,791	49%	440	37%	388	38%	583	44%	980	64%	400	58%

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

EMS Responses for Suspected Opioid-Related Overdose in the North Shore Region of Milwaukee County for Years 2014— 2016



EMS responses in this analysis were identified using EMS medical record data that was submitted to Milwaukee County's Office of Emergency Management (OEM) (N=102). Cases identified were those that received a response from a Fire Department based EMS Unit and were documented to have received Naloxone. In the North Shore Region of Milwaukee, they use the data management and analysis tool First Watch® (https://www.firstwatch.net/what-we-do/ems/) to identify overdoses in their region. First Watch reviews both key variables (e.g., primary/secondary impression and medication administration) and narratives for key words to identify potential opioid overdose victims. We compared our identified cases from the Milwaukee County OEM-EMS medical records database to those from the First Watch® search and found that the two methods for identifying cases were equivalent, with the exception of one case. This case was likely not identified in the county data due to a documentation error.

LEGEND

EMS Response Location

Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

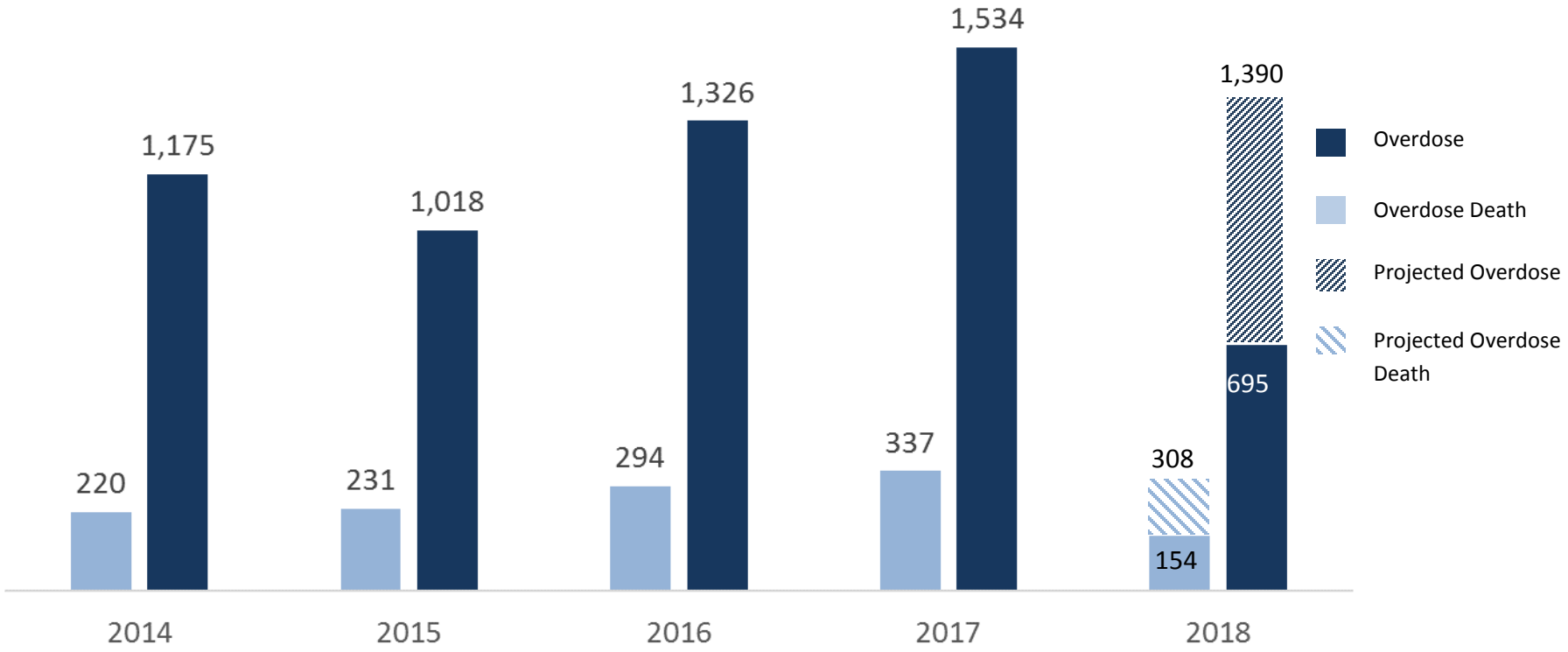
Version Release Date: 1.18.2019

Comparison of Opioid-Related Overdose Data from Milwaukee County Medical Examiner and Milwaukee County EMS

Version Release Date: 1.18.2019

Comparison of Number of Opioid-Related Overdose Deaths and EMS Naloxone Administrations

January 1, 2014—June 30, 2018



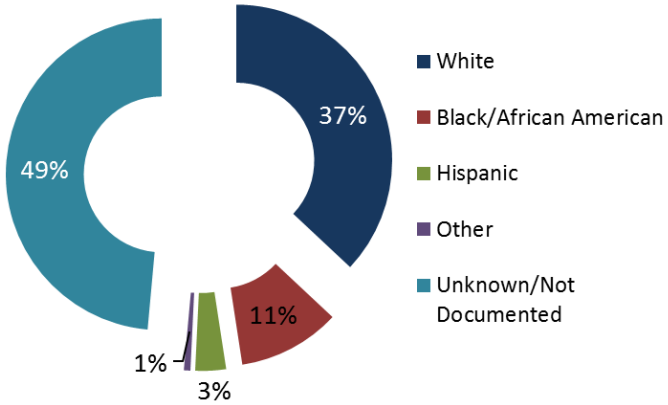
EMS protocol indicates that best practice is to treat cardiac arrest prior to administration of Naloxone. This information was highlighted in a 2014 EMS refresher. However, the cases outlined above **include** those in cardiac arrest at the time of EMS response. Some medical examiner cases may have been treated by EMS prior to the victim being declared dead and thus would be represented in both columns if they received Naloxone.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.
Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

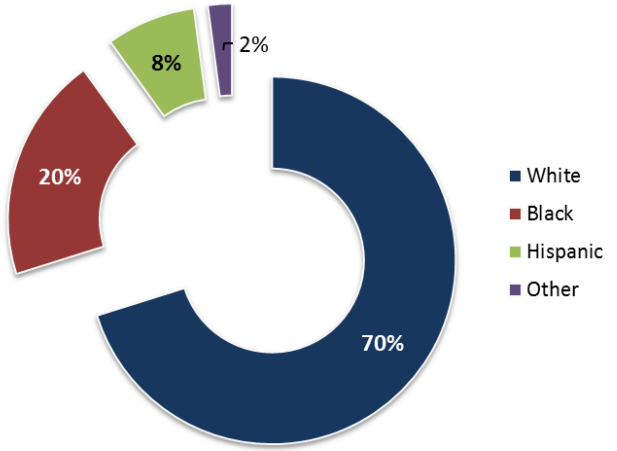
Comparison of Medical Examiner and Milwaukee County EMS Data by Race/Ethnicity and Sex
January 1, 2014—June 30, 2018

Percent of EMS Response for Suspected Opioid Overdose based on Naloxone Administration by Race/ Ethnicity

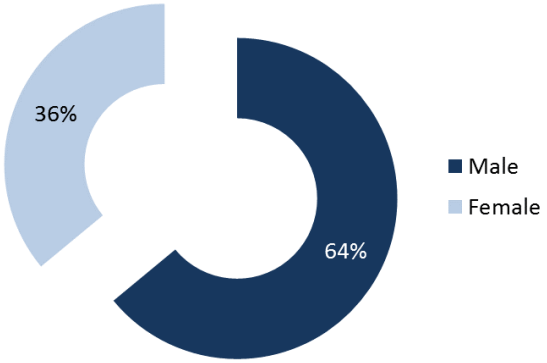


There were a large number of EMS cases with unknown/not specified race, the race distribution among those that were known (N=2,957) is consistent with the race distribution of overdose deaths. When unknown cases were removed, the distribution was: White: 72%, Black: 21%, Hispanic/Latino: 6%, Other: 1%.

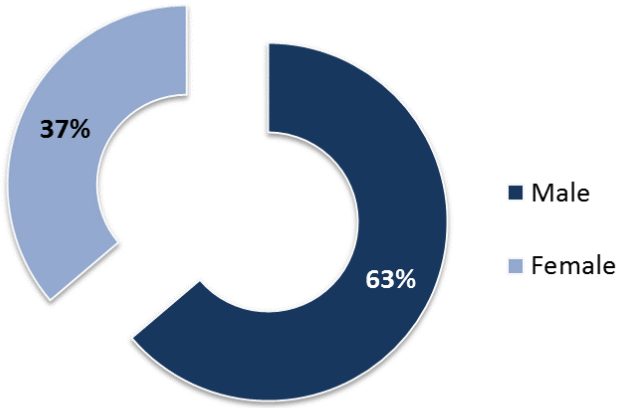
Percent of Opioid-Related Overdose Deaths by Race/Ethnicity



Percent of EMS Response for Suspected Opioid Overdose based on Naloxone Administration by Sex



Percent of Opioid-Related Overdose Deaths by Sex



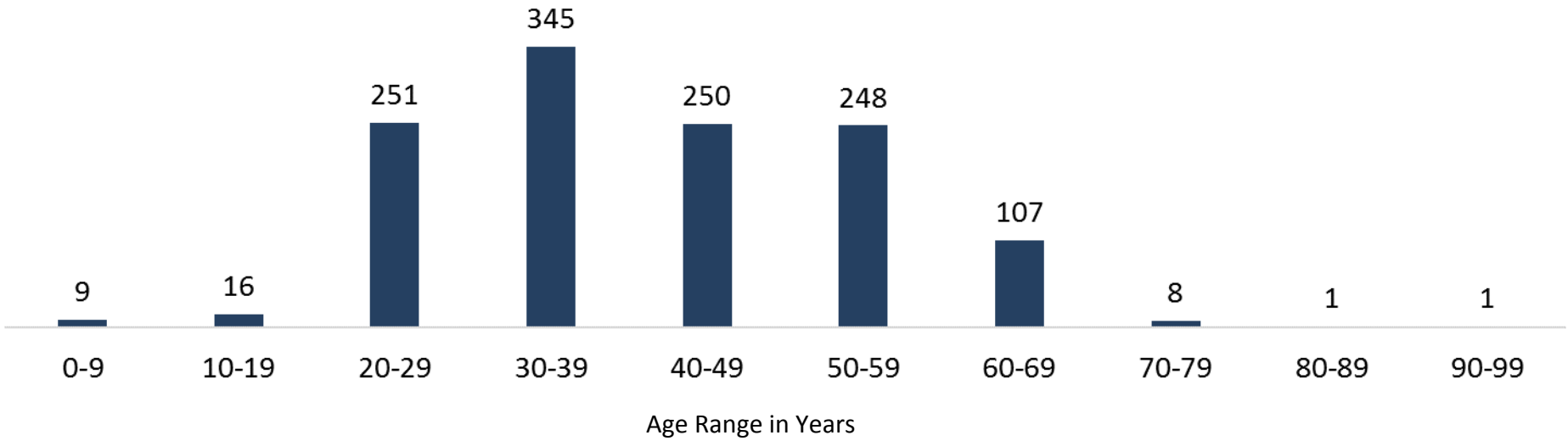
Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.
Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

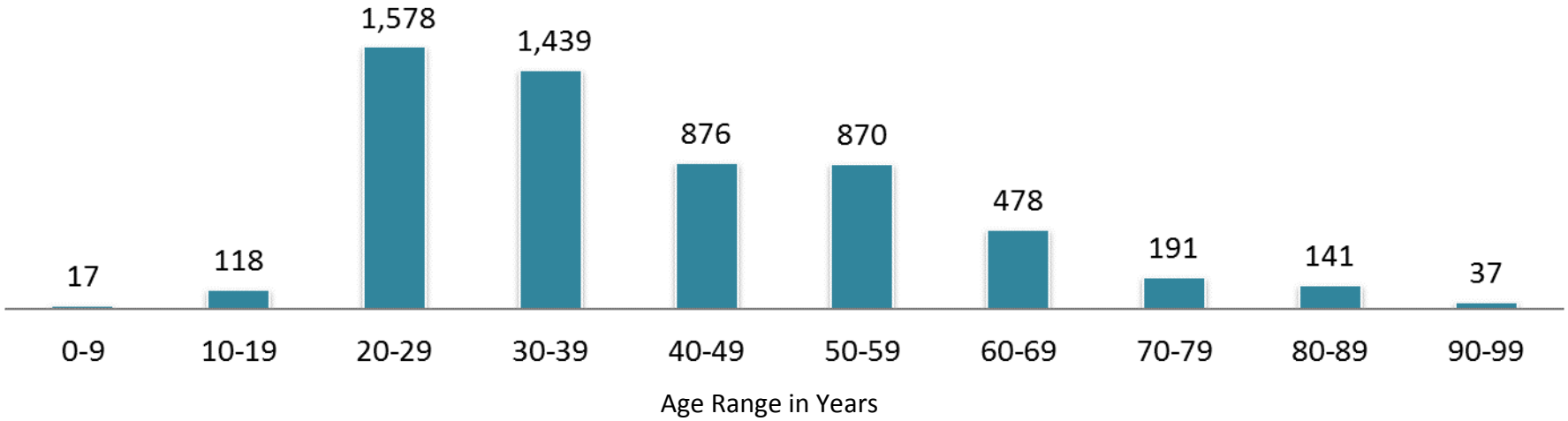
Comparison Medical Examiner and Milwaukee County EMS Data by Age Range

January 1, 2014—June 30, 2018

Number of Opioid-Related Overdose Deaths by Age Range



Number of EMS Responses for Suspected Opioid-Related Overdose Based on Naloxone Administration by Age Range

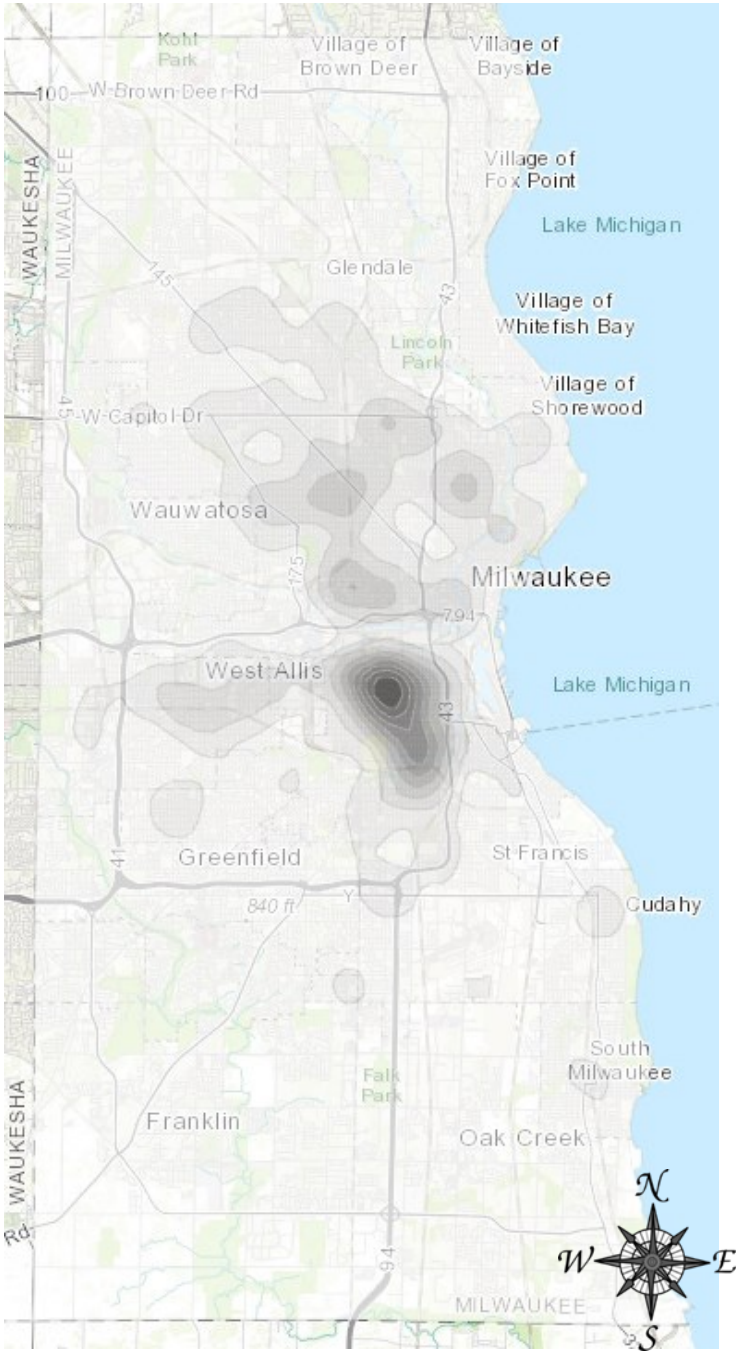


Between 2014 and June 30, 2018, 20% of opioid-related overdose deaths occurred among victims 20-29 years of age compared to 27% of EMS responses for suspected opioid-related overdose for the same age range.

Data Source: Milwaukee County Medical Examiner – Opioid-related overdose deaths.
Data Source: Milwaukee County Office of Emergency Management's (OEM) Countywide EMS Medical Record Database

Version Release Date: 1.18.2019

Location of EMS Responses for Suspected Opioid-Related Overdose Based on Naloxone Administration for 2017



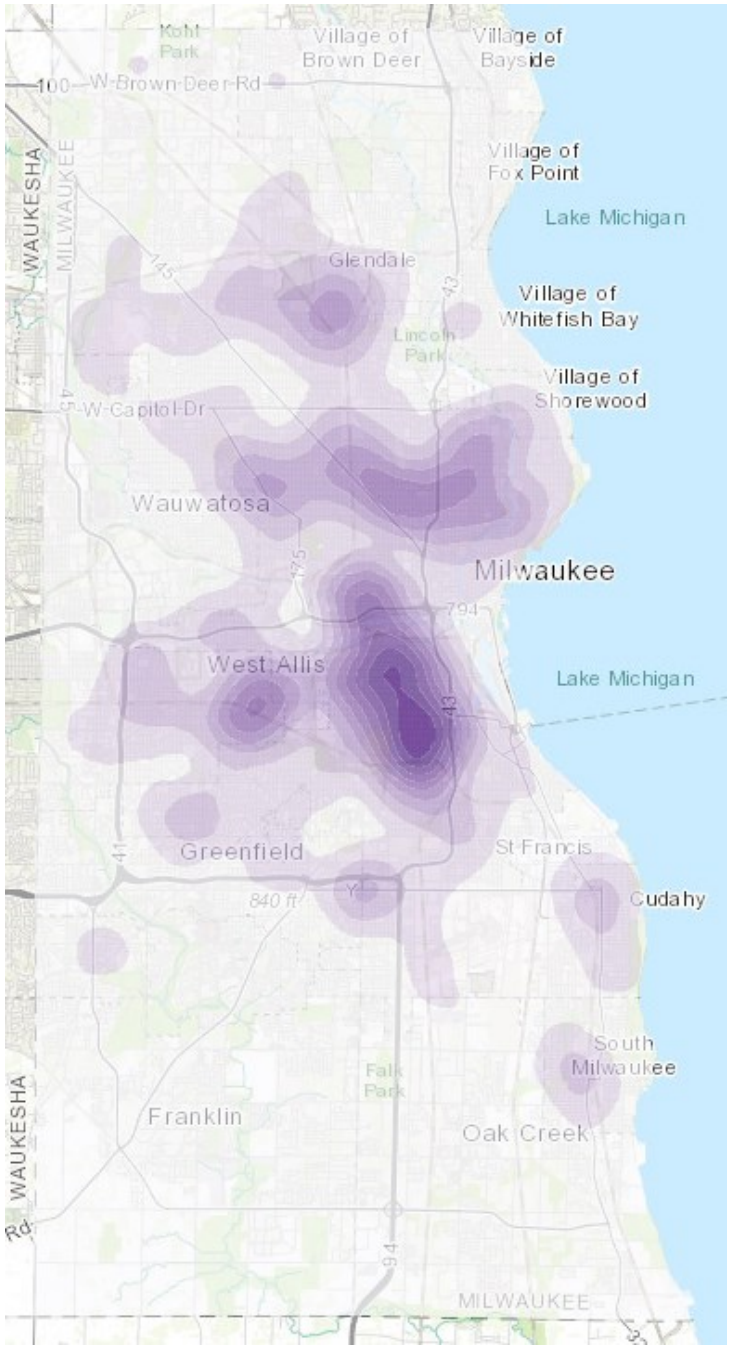
Legend
EMS Call Location Density

0 – 10	Low
10 – 20	
20 – 31	
31 – 41	
41 – 51	
51 – 62	
62 – 72	
72 – 83	
83 – 93	
93 — 103	High

Legend
Incident Density 2017

0 – 1	Low
1 – 2	
2 – 3	
3 – 5	
5 – 6	
6 – 7	
7 – 8	
8 – 10	
10 – 11	
11 – 12	High

Incident Location for Opioid-Related Overdose Deaths in Milwaukee County Medical Examiner for 2017



Version Release Date: 1.18.2019

Comparison of Milwaukee County and Wisconsin Opioid-Related Hospital Encounters and Deaths

Version Release Date: 1.18.2019

Comparison of 2016 Opioid-Related Overdose Deaths and Hospital Encounters for Milwaukee County and WI

Table 1. Opioid-related hospital encounters by opioid characteristics, Milwaukee County and Wisconsin, 2016

	Milwaukee County		Wisconsin	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000
All opioid-related hospital encounters	8,140	856.5	27,101	469.3
Any opioid poisoning	1,280	134.7	4,212	72.9
Prescription opioids poisoning	717	75.4	2,483	43.0
Heroin poisoning	574	60.4	1,769	30.6

Table 2. Opioid-related deaths by opioid characteristics*, Milwaukee versus Wisconsin, 2016

	Milwaukee County		Wisconsin	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000
Drug Overdose Death	323	34.0	1,031	17.9
Drug overdose death involving **any opioid***	286	30.1	827	14.3
Drug overdose death involving **prescription opioids***	191	20.1	568	9.8
Drug overdose death involving **heroin***	136	14.3	371	6.4
Drug overdose death involving **synthetic opioids***	103	10.8	275	4.8

Note: Location information is based on residence of patient/decedent for opioid-related hospital encounters and overdose death data.

*Categories are not mutually exclusive

Data Source: DHS WISH

Version Release Date: 1.18.2019

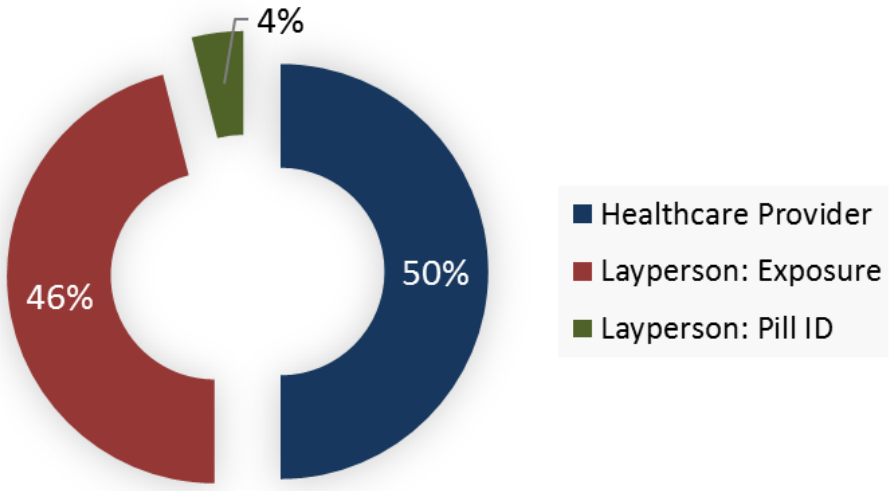
Summary of Wisconsin Poison Control Center (PCC) Calls Regarding Opioid Exposure in Milwaukee County

Version Release Date: 1.18.2019

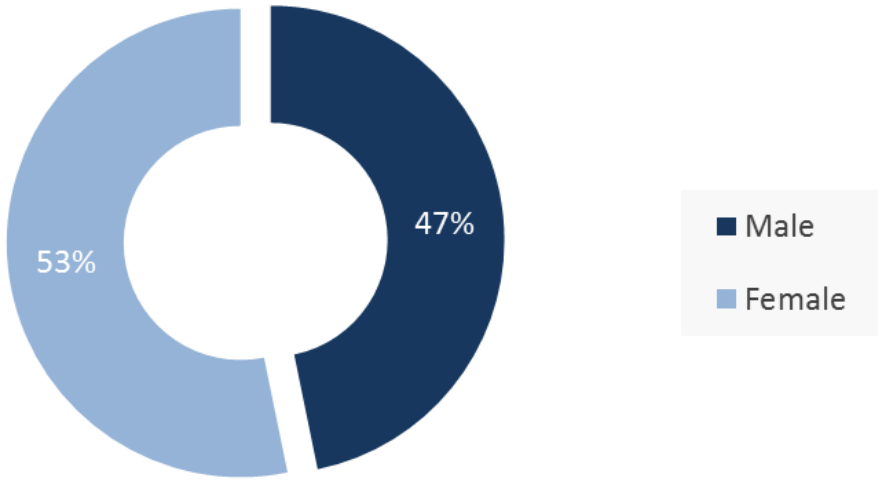
Wisconsin Poison Control Center (PCC) Calls Regarding Opioids in Milwaukee County 2014-2017

Between 2014 and 2017, 570 calls were received by the Wisconsin PCC regarding opioid exposures in Milwaukee County. These calls include healthcare providers calling from a healthcare facility, laypersons calling from home in regard to a suspected opioid exposure, and laypersons calling for information regarding pill identification.

Percent of Calls to Wisconsin PCC Regarding Opioids by Call Type



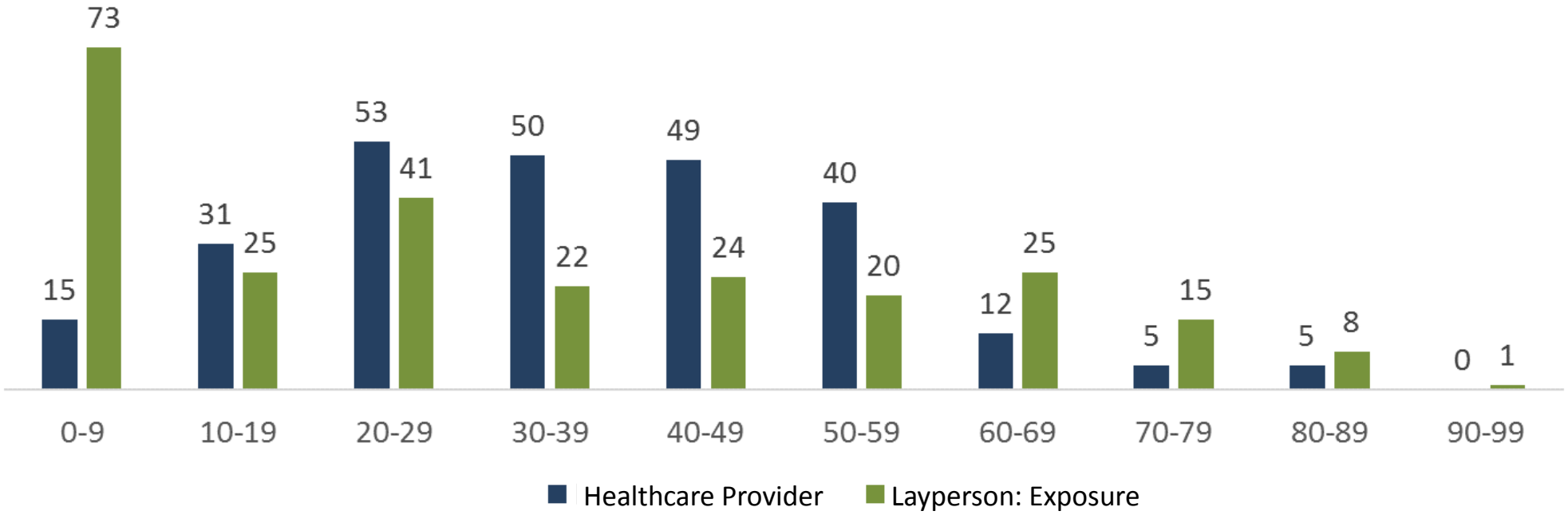
Percent of Calls to Wisconsin PCC Regarding Opioids by Sex of Person with Suspected Exposure



Version Release Date: 1.18.2019

Number of Calls to Wisconsin PCC Regarding Opioids by Age-Range of Person with Suspected Exposure in Milwaukee County

2014-2017



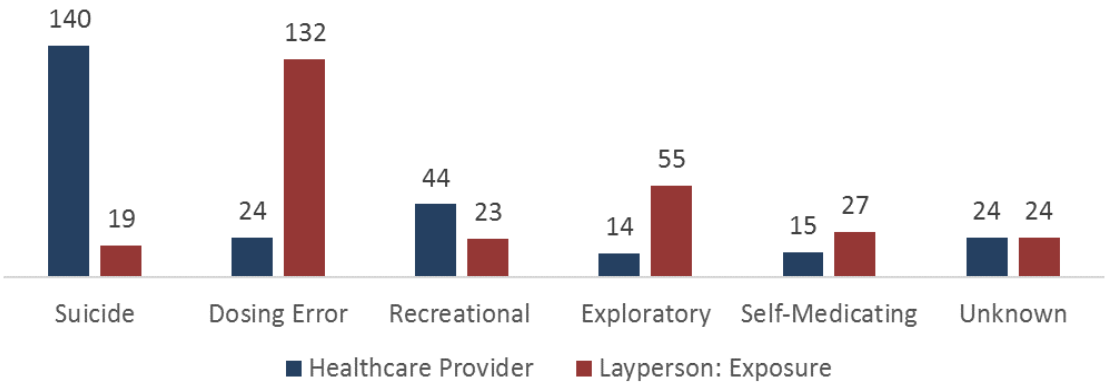
Between 2014 and 2017, 35% of calls from laypersons regarding opioid exposures were concerning a person under the age of 20, compared to 18% from healthcare providers. Healthcare providers called more often for patients between the ages of 20-59, compared to laypersons who called regarding exposures at younger ages.

Version Release Date: 1.18.2019

Wisconsin Poison Control Center (PCC) Calls Regarding Opioid Exposures in Milwaukee County

2014-2017

Number of Calls to Wisconsin PCC by Reported Exposure Type in Milwaukee County



Reported Exposure Definitions

Suicide: Exposure to of one or more substances in a suspected suicide attempt.

Dosing Error: Unintentional error using their own prescription.

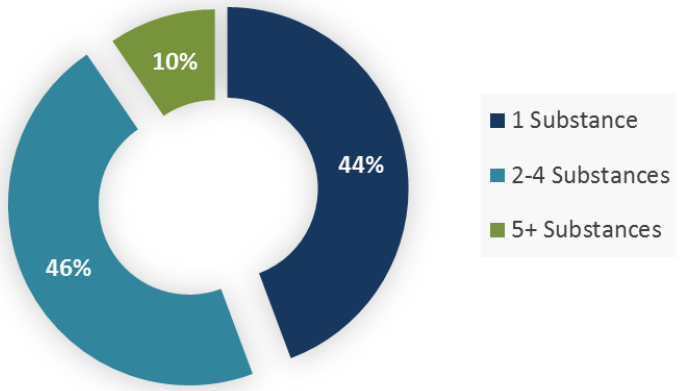
Recreational: Using prescription medication or illicit drugs in an attempt to get high.

Exploratory: Young children at developmental stage using oral exploration or individuals with developmental or cognitive delay or dementia.

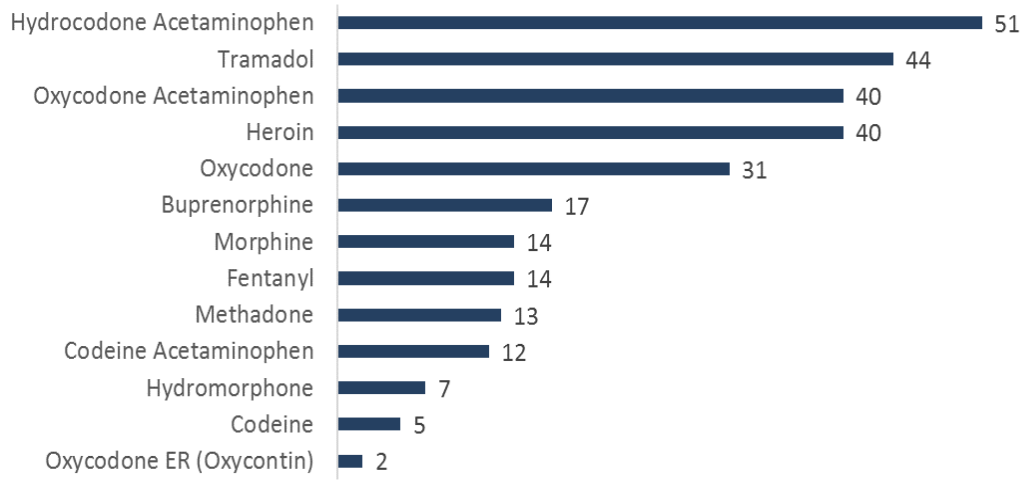
Self-Medicating: The use of an opioid or a prescription that is not their own to treat symptoms.

Unknown: Exposure is unknown or not reported.

Percent of Calls to Wisconsin PCC by Reported Number of Co-ingestants in Milwaukee County



Number of Calls to Wisconsin PCC by Type of Opioid Reported in Milwaukee County



Version Release Date: 1.18.2019

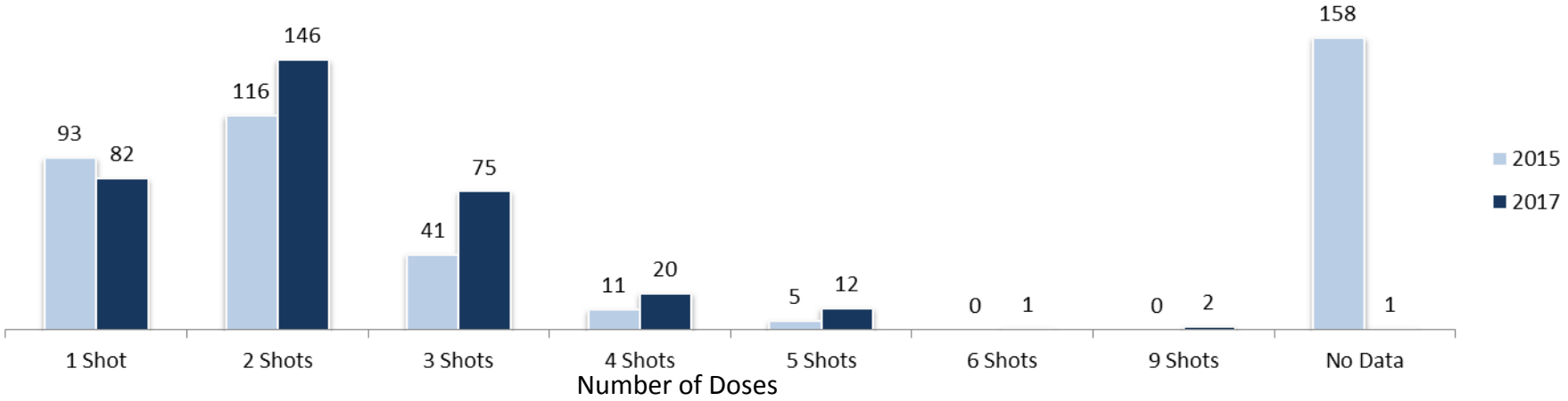
Summary of Additional Opioid-Related Data from the Milwaukee Community

Version Release Date: 1.18.2019

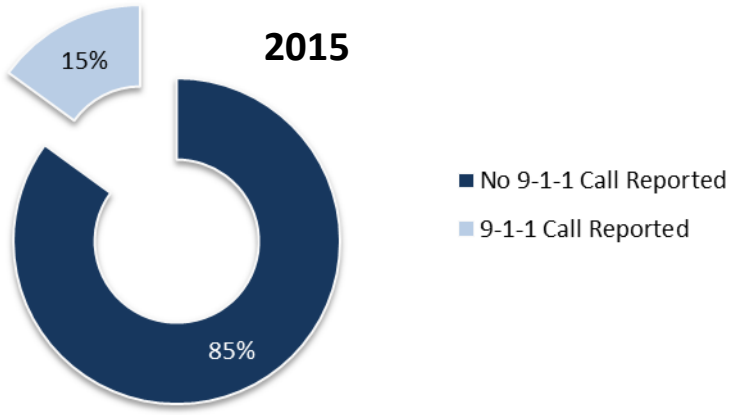
Laypeople Overdose Reversal Attempts Using Naloxone in Milwaukee County

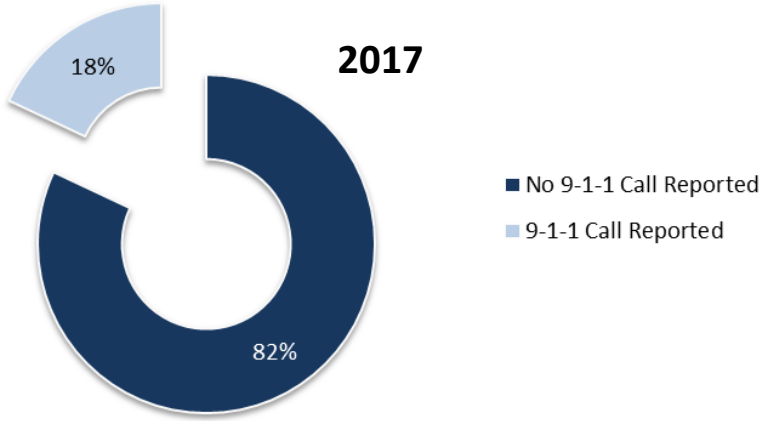
In 2015 and 2017, **424 and 339 laypeople reported using Naloxone** to reverse an overdose, respectively. This data was collected by the AIDS Resource Center of Wisconsin (ARCW) through self-reported surveys collected by the Needle Exchange Program when replacement Naloxone was requested. Within the state of Wisconsin, they recorded 1,135 and 1,749 peer saves for years 2015 and 2017, respectively.

2015 and 2017 Self-Reported Number of 0.4mg Naloxone doses given Intramuscularly by Laypeople to Reverse an Overdose



2015 and 2017 Self-Reported 9-1-1 Calls Following Laypeople Administering Naloxone to Reverse an Overdose





In 2016, ARCW collected self-reported data indicating 192 overdose reversal attempts. This number is significantly lower than those reported in 2015 but is considered an under-estimate. During 2016, the program was out of Naloxone for approximately two months, new staff were being trained on data collection methods, and a new database was implemented. However, despite likely under-reporting, a similar proportion of individuals (12%) reported calling 9-1-1 at the time of the overdose. It is also important to note that based on additional survey questions, 6% reported taking the victim to the hospital in 2016.

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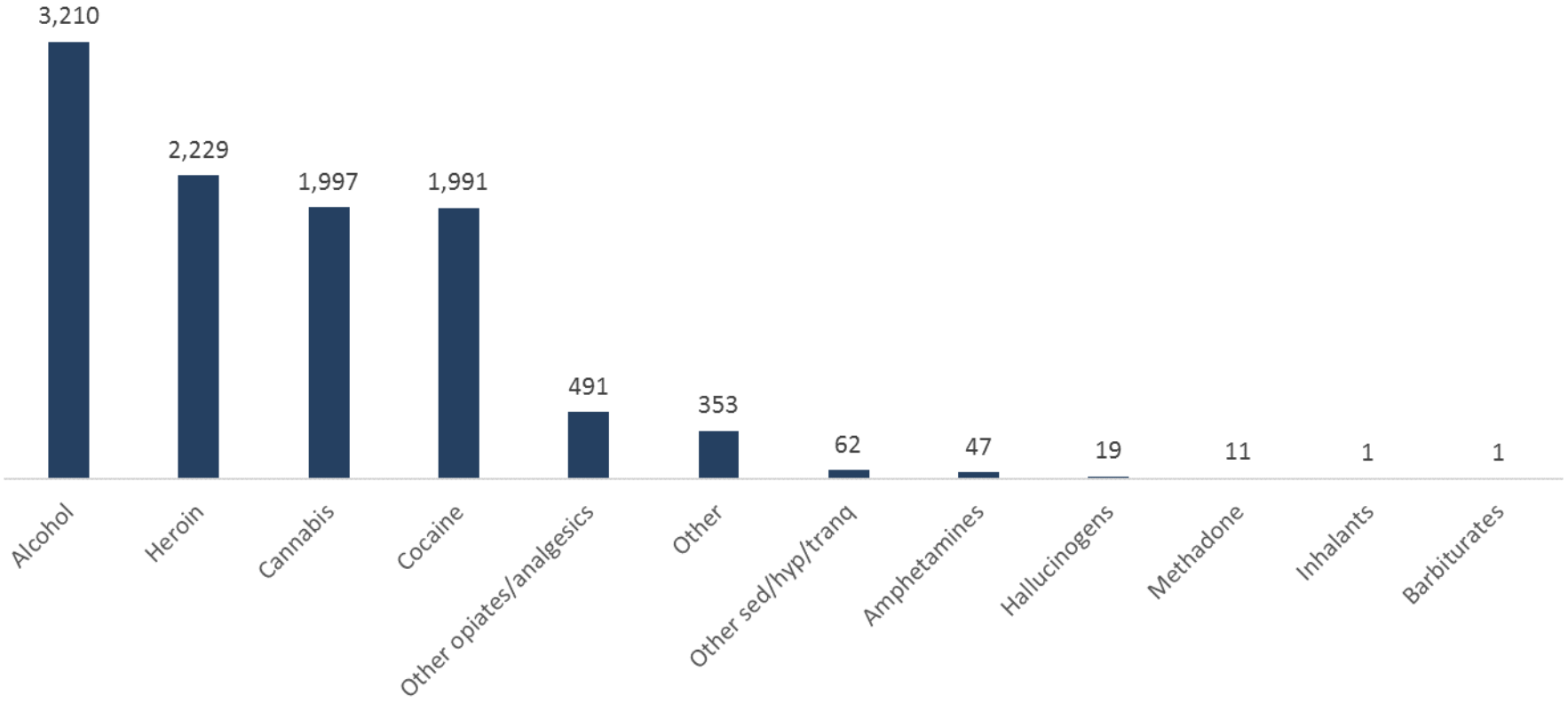
Number of Individuals Seeking Assistance from Milwaukee Behavioral Health Division Community Access to Recovery Services

January 1, 2016— June 30, 2018

- Between 2016—June 30, 2018, 10,412 individuals sought assistance with a self-reported primary substance of use.
  - Of those, 26% (n=2,731) reported heroin or another opioid as their primary substance of use.
- In the first six months of 2018, 552 individuals reported heroin or another opioid as their primary substance of use. If this trend continues, there will be a projected 11% decrease over 2017; compared to a 32% increase from 2016 to 2017

Primary Substance of Use Among All Individuals Seeking Assistance



Data Source: Milwaukee County Behavioral Health Division: Community Access and Recovery Services

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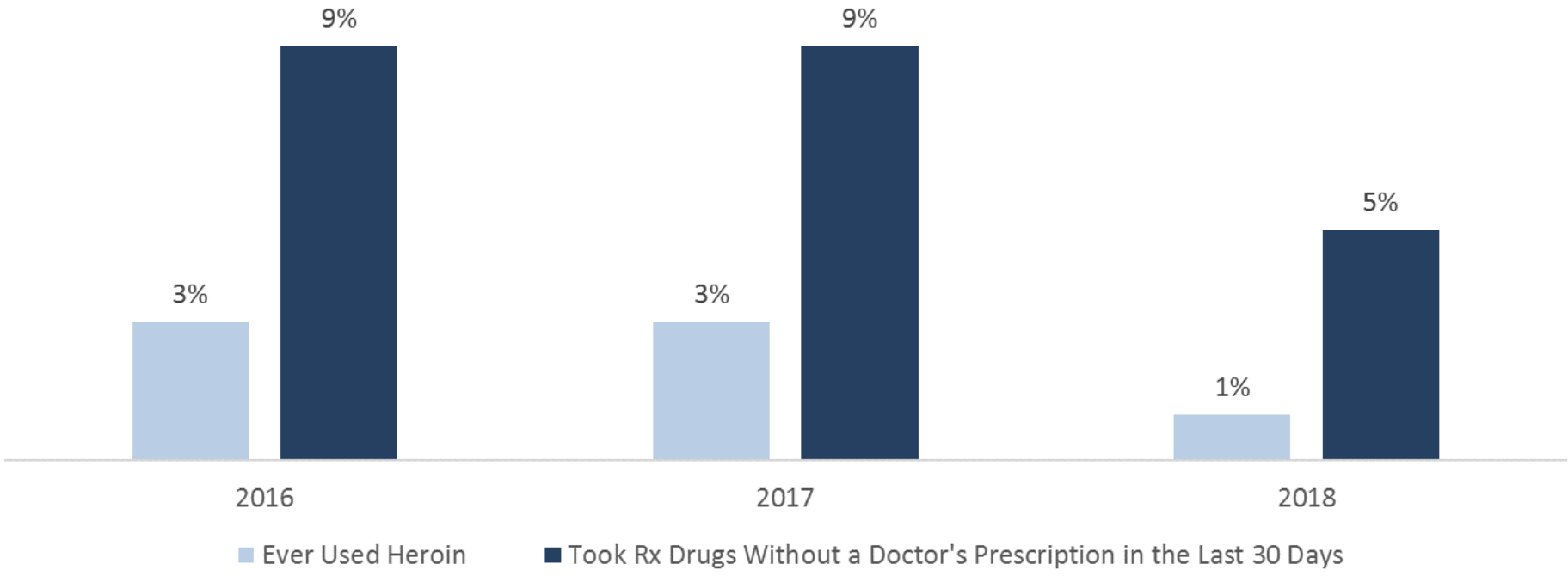
Milwaukee Youth Risk Behavior Surveillance System (YRBSS) Survey Data



This data reflects Milwaukee area students who participated in the Milwaukee survey from 2016 to 2018. The YRBSS monitors priority health risk behaviors among youth that could contribute to the leading causes of death, disability, and social problems in the Unites States.

Centers for Disease Control and Prevention: High School Youth Risk Behavior Survey, Milwaukee 2011, 2013

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Beyond the Numbers: Stories from the Community

Milwaukee woman's account of drug use, treatment attempts, and recovery success

I started using drugs when I was a teenager, and started taking pain pills from my mom's prescriptions when I was in high school. When she stopped using pills I switched to heroin – I stopped using heroin completely in May. All in all I'd say I'd used drugs for 10 years.

I heard about a mobile needle exchange program from my boyfriend, who was also using at the time. We had the van come to my house a couple times a month, which was good because we'd been sharing a lot of needles and supplies. I know I would've gotten Hepatitis C if we hadn't started getting clean rigs. They also trained us with naloxone. Neither of us ever overdosed, but we had to use it three times on other people.

We are now both at a methadone clinic and have been for 6 months. We'd tried a lot of different programs including a Suboxone doctor and also in-patient treatment, none of which worked. I wasn't ready for a long time, but my son is almost 5 now and I am using that as motivation. The staff at the needle exchange helped me get on the waiting list at all of the methadone clinics, and it's working really well for me. I'm looking forward to starting to job hunt and make money again and move into my own place, and to being present for my son's last year before school.

Local emergency department physician recounts their experience as a front-line provider

I am Milwaukee area emergency department physician, I treat opioid overdoses regularly. It can be so challenging to save someone life after an overdose and to have them want to leave my care as quickly as possible for fear of arrest, or needing the next fix to prevent withdrawal, or so many other complicated reasons .

I had one patient whose heart had stopped beating and when we brought him back his first question was "where are my glasses?" His family was not surprised that he had overdose a relayed how guilty they felt that they had given him his first opioids to treat a headache. It was a family member's prescription, but she had thought that since it helped her it would help him. Now here they were in my emergency department where I could bring him back to life but had very few options for helping to address his substance use disorder. It breaks my heart to watch those patients leave to search out their next high.

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Beyond the Numbers: Stories from the Community

One man's road to recovery

I moved to America when I was 8 years old and I grew up in a very loving and supportive Russian immigrant family. I had an intense passion for music growing up and was obsessed with playing my guitar. I was convinced that I would become a professional musician and do what I loved for a living. That all started to change once I started experimenting with drugs and alcohol when I was 16 years old. By the age of 24, I was but a shell of the person I once was. It didn't happen overnight and it started out innocent and fun. First came the Vicodin here and there at parties and social gatherings. Then, OxyContin and the small circle of friends that liked to get "faded". The final destination was IV heroin. There were no longer any friends or a guitar in site. I pawned everything I could get my hands on and my parents were on the verge of mental breakdowns everyday; no matter how hard they tried to help, the heroin always won.

Through the years, I entered countless outpatient programs and two residential treatment facilities. Each and every time the most I could stay clean was about 3 months, if that. On November 26th 2014, the day before Thanksgiving, my dad miraculously found me in the bathroom of their house - overdosed, slumped on the floor, with a needle by my side. I am so lucky that he came home. EMS came and revived me with Narcan and took me to jail where I sat for the next week. As crazy as it sounds, this experience did not initially make me quit using, however it did kick off the series of events that would lead to my recovery. With a felony possession on my record it became harder and harder for me to successfully use without going to jail. I'm not sure when it happened or how but I had a moment of clarity where I realized that I had a choice be sober in jail, or get sober at home.

I slowly started getting involved in Alcoholics Anonymous, started an outpatient program, and most importantly was willing to actually listen to people and follow direction. Just like my gradual decline into addiction, I experienced the same gradual process into recovery. I got a sponsor, started working the steps, and went to meetings all the time. I participated in the Waukesha County Drug court program to reduce my felony charge and ended up graduating the year long program without a single infraction.

I don't know exactly how it happened or what single event made it happen but I experienced a change in perception and a change in thinking. Today I live an unbelievable life where I get to have an amazing relationship with my parents and have people in my life that inspire and motivate me to be the best that I can be and live my life to its full potential. I am a professional guitar player, something I could have never imagined while I was using. My sobriety date is June 2nd 2015, I get to live all of my childhood dreams of doing what I love all because of what happened that day before thanksgiving of 2014. My story could have ended the day of my overdose, however it was just a then beginning of another chapter of my life.