Opioid Misuse and Overdose Report

Philadelphia, PA

*last updated November 1st, 2018

Department of Public Health
CITY OF PHILADELPHIA

Executive Summary

The purpose of this report is to describe trends in opioid misuse and overdose in Philadelphia, PA. Since 2003, unintentional drug related overdoses have increased dramatically in the City, likely as a result of a rise in the sale of selected pharmaceutical opioids. Between 2000 and 2015, selected opioid sales quadrupled in Philadelphia, the main driver of which has been oxycodone.

The number of unintentional drug related deaths increased from 311 in 2003 to 1,217 in 2017. The primary driver of this increase has been deaths involving opioids. In 2003, just 211 deaths involved opioids, but this number climbed to 561 in 2015, 752 in 2016, and 1,074 in 2017. Since 2011, the majority of opioid related deaths have included heroin, and since 2014 there has been a steady increase in the number of deaths involving fentanyl. While the rate of unintentional opioid related death is highest among 45-54 year old, white, non-Hispanic males, no Philadelphia subpopulation has remained untouched by the epidemic.

In parallel to the increase in unintentional drug related deaths, rates of drug related emergency department (ED) visits also increased from 3.19 drug-related ED visits per 1,000 ED visits in 2007 to 7.66 per 1,000 ED visits in 2017. Likewise, hospitalizations attributable to opioid poisoning have increased from under 300 in 2002 to more than 550 in 2016. Visits and hospitalizations are highest among 25-34 year old males.

The number of fatal unintentional drug related overdoses would be higher if not for availability of the overdose reversal drug, naloxone. In 2017 alone, more than 4,000 individuals were administered naloxone by Philadelphia Emergency Medical Services (EMS). Individuals receiving naloxone from EMS were most often 25-54 year old males and more than 90% were transported to an area hospital after receipt of the drug.

Finally, concurrent with the increases in opioid overdose has been other adverse outcomes including increasing rates of neonatal abstinence syndrome (NAS) and hepatitis C virus (HCV) transmission. In 2002, there were 3.09 cases of neonatal abstinence syndrome for every 1,000 live born hospital births, and by 2016, this rate had increased to 13.7 per every 1,000 live born hospital births. Additionally, the rate of women giving birth that were opioid dependent or using opioids increased from 2.65 per every 1,000 live born hospital births to 15.15 in 2015. Although the rate of NAS continued to increase in 2016, the rate of women giving birth that were opioid dependent or using opioids decreased to 14.01 per 1,000 live born hospital births in 2016. Finally, through sharing of injection equipment, there is also potential for infectious disease transmission among persons who inject drugs. Among cases of acute HCV infection, more than 60% self-reported ever injecting drugs.

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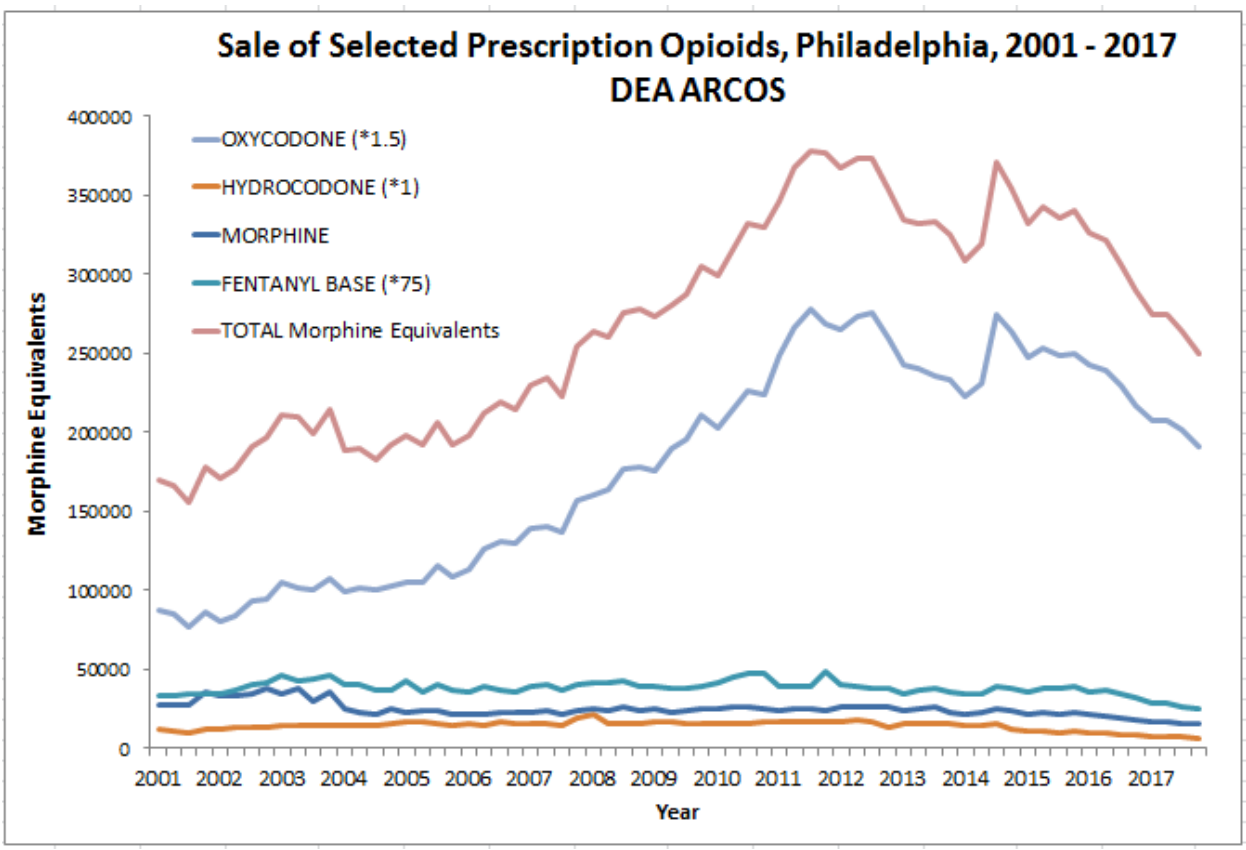
I. Opioid Sales and Prescriptions

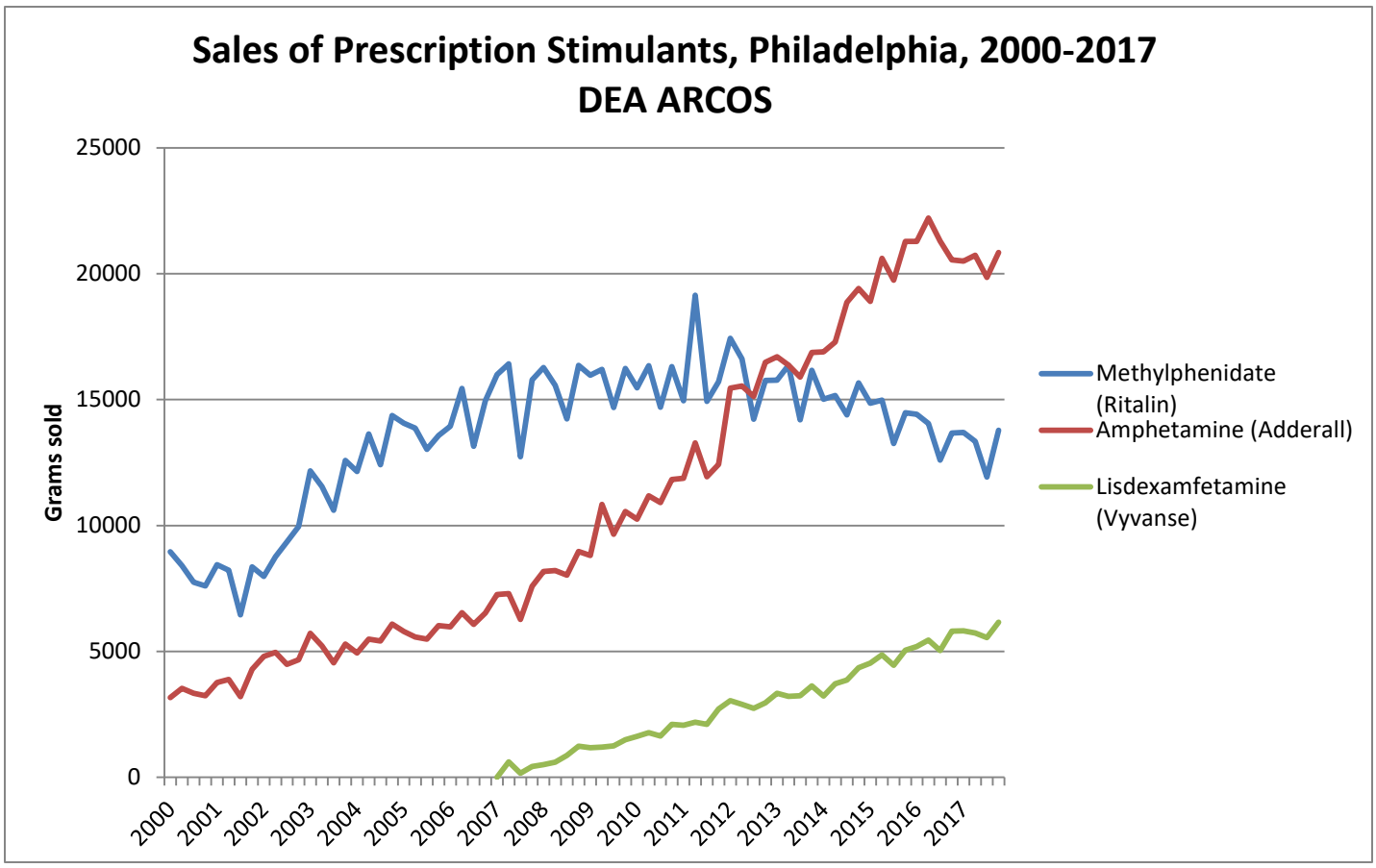
Prescription drug manufacturers and distributors of bulk and/or dosage form controlled substances are required to report inventories, acquisitions, and dispositions of all Schedule I and II substances, and Schedule III narcotic and Gamma-Hydroxybutyric Acid (GHB) substances to the DEA Automated Reports and Consolidated Ordering System (ARCOS). This system provides total drug amounts (in grams) distributed to retail registrants in each state by three digit zip code. The drug amounts are converted to morphine equivalents. This report includes data from zip codes beginning with 191 and is complete through December 31, 2017.

There are two primary limitations associated with the ARCOS dataset. First, ARCOS data includes opioid used in veterinary medicine, and thus may overestimate the amount available for human consumption. Additionally, ARCOS does not distinguish between routes of administration (i.e. oral, IV, or sublingual) which can impact a drug's potential for abuse and/or diversion.

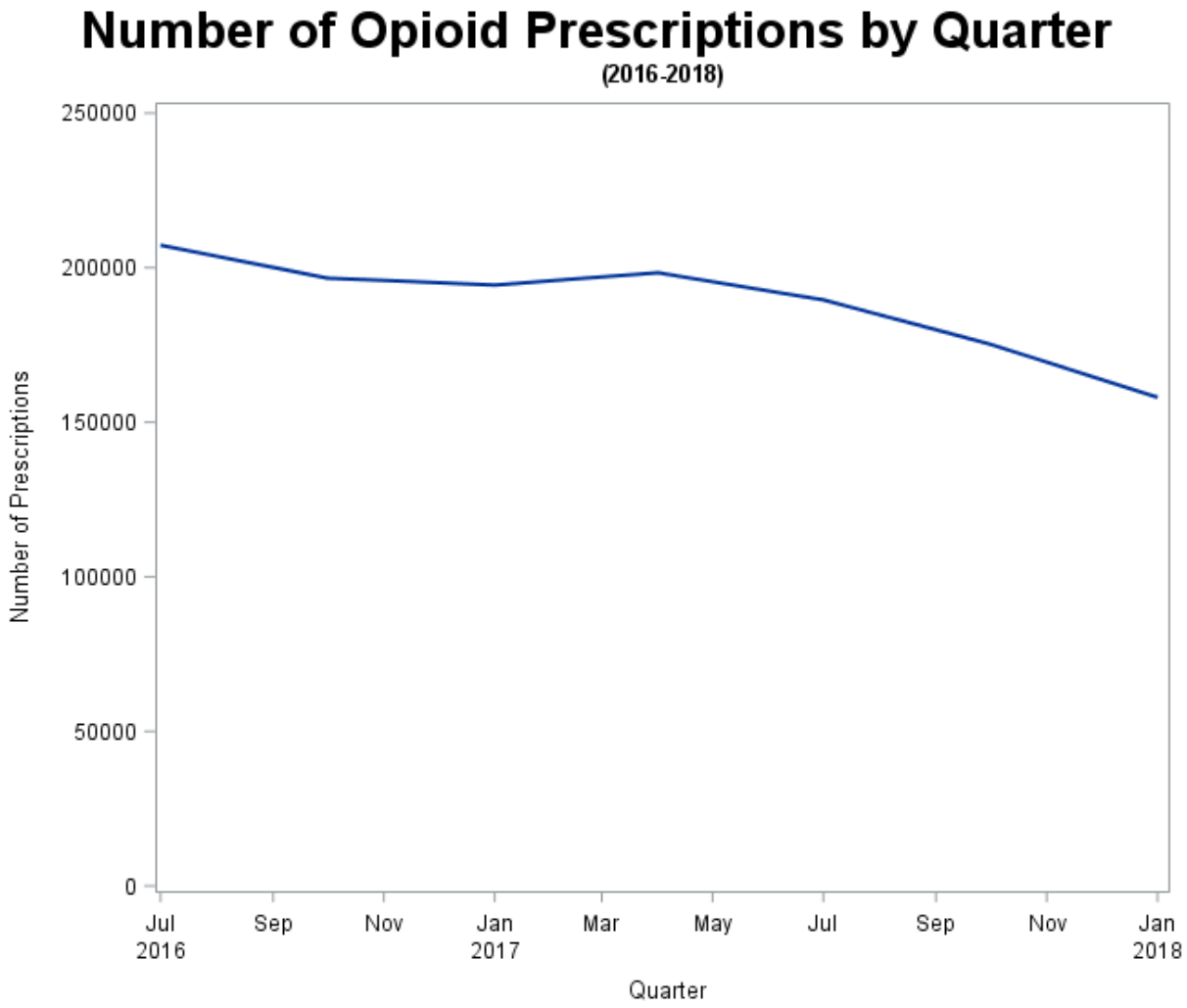
Pennsylvania's Prescription Drug Monitoring Program (PDMP) collects information on all filled prescriptions for controlled substances. In July 2016, PA launched a new and much more robust PDMP. This report includes Philadelphia-based opioid prescribing data collected from July 2016 to March 2018. Data has been filtered to include only Philadelphia residents.



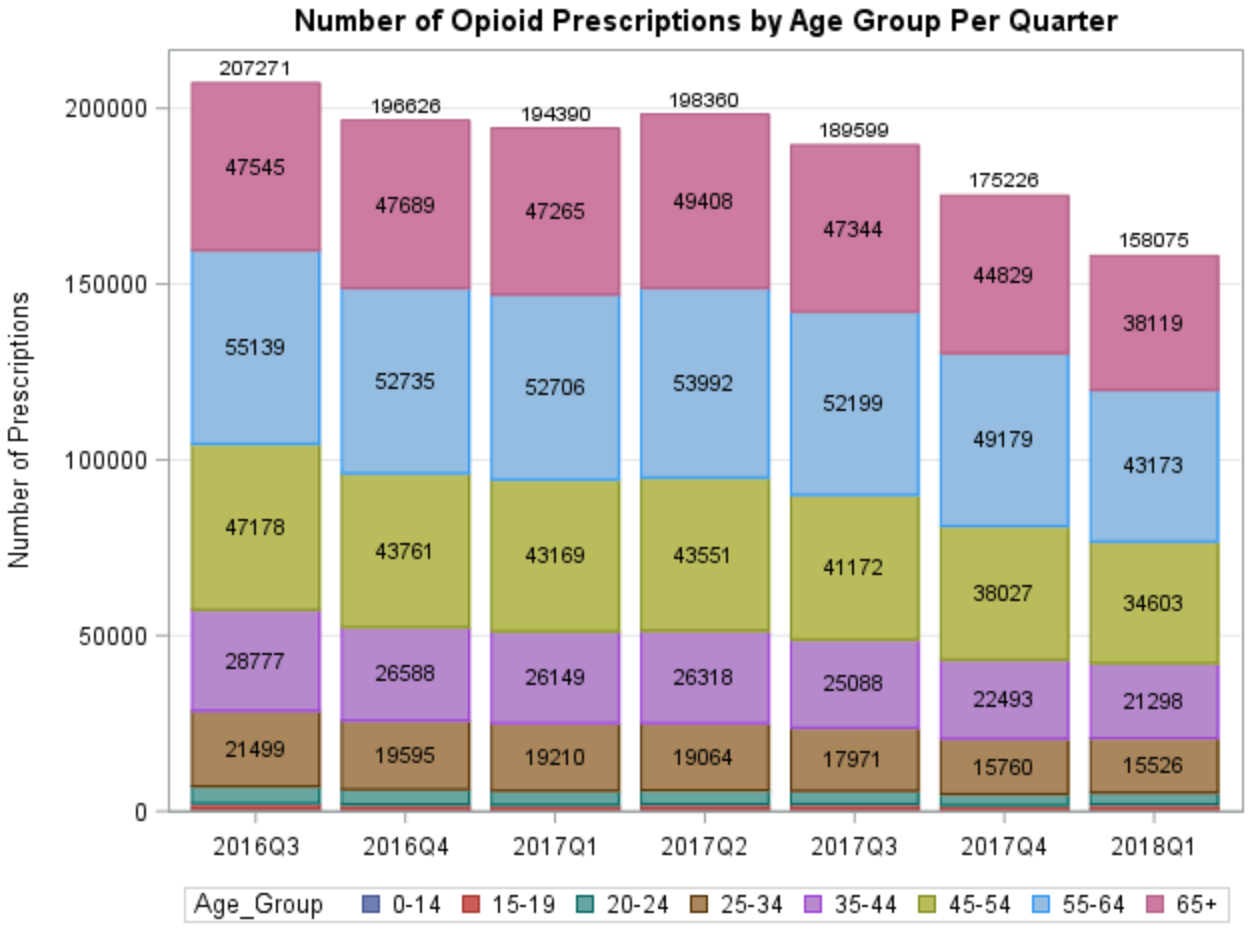
Between 2000 and 2015, sales of selected prescription opioids increased. Each selected opioid displays the potency based on morphine equivalents. Hydrocodone had the lowest potency equivalent to morphine with a 1:1 ratio whereas fentanyl had the highest potency of 75:1 morphine ratio. In 2017, sales of selected opioids continued to decline.



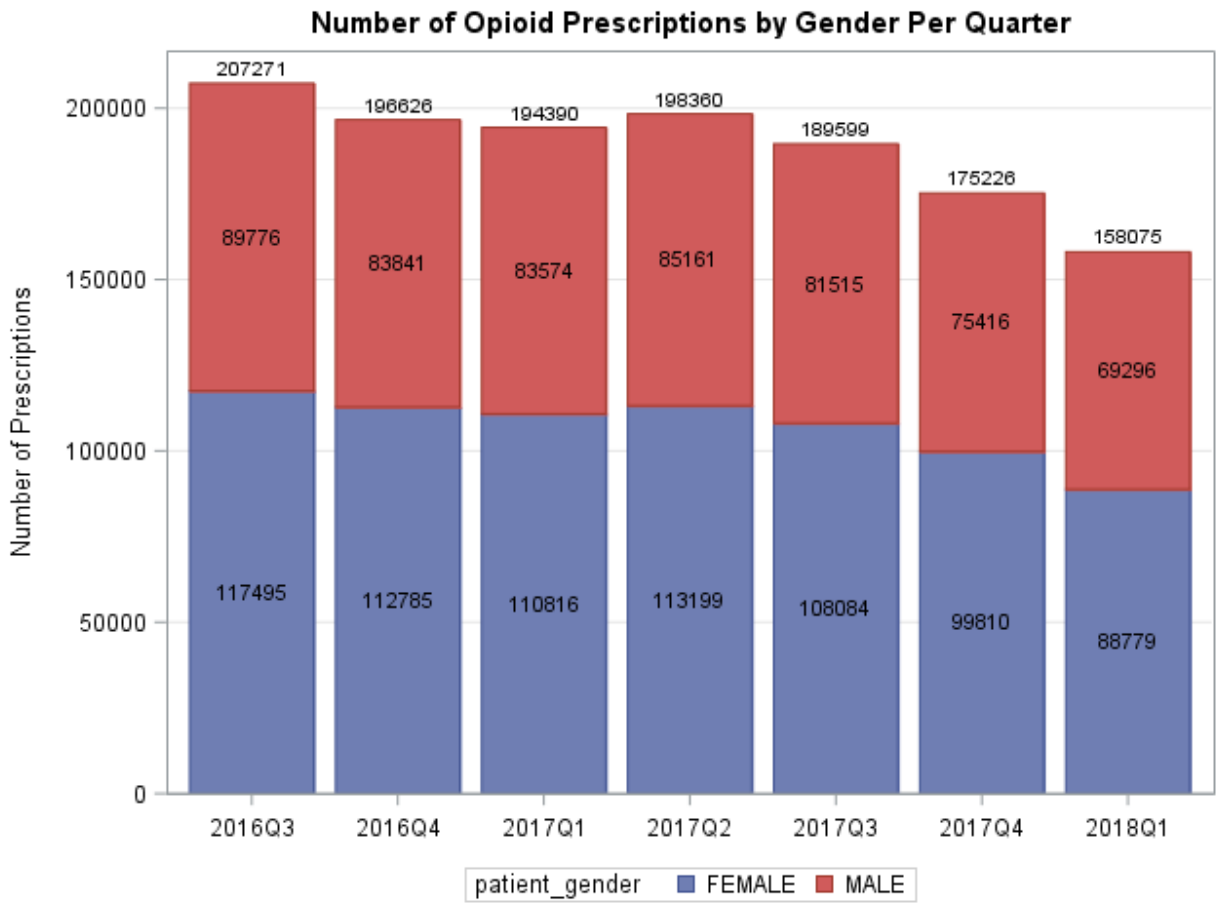
Beginning in 2007, the sales of stimulants began to increase. Sales of amphetamine surpassed the sale of methylphenidate in 2014.



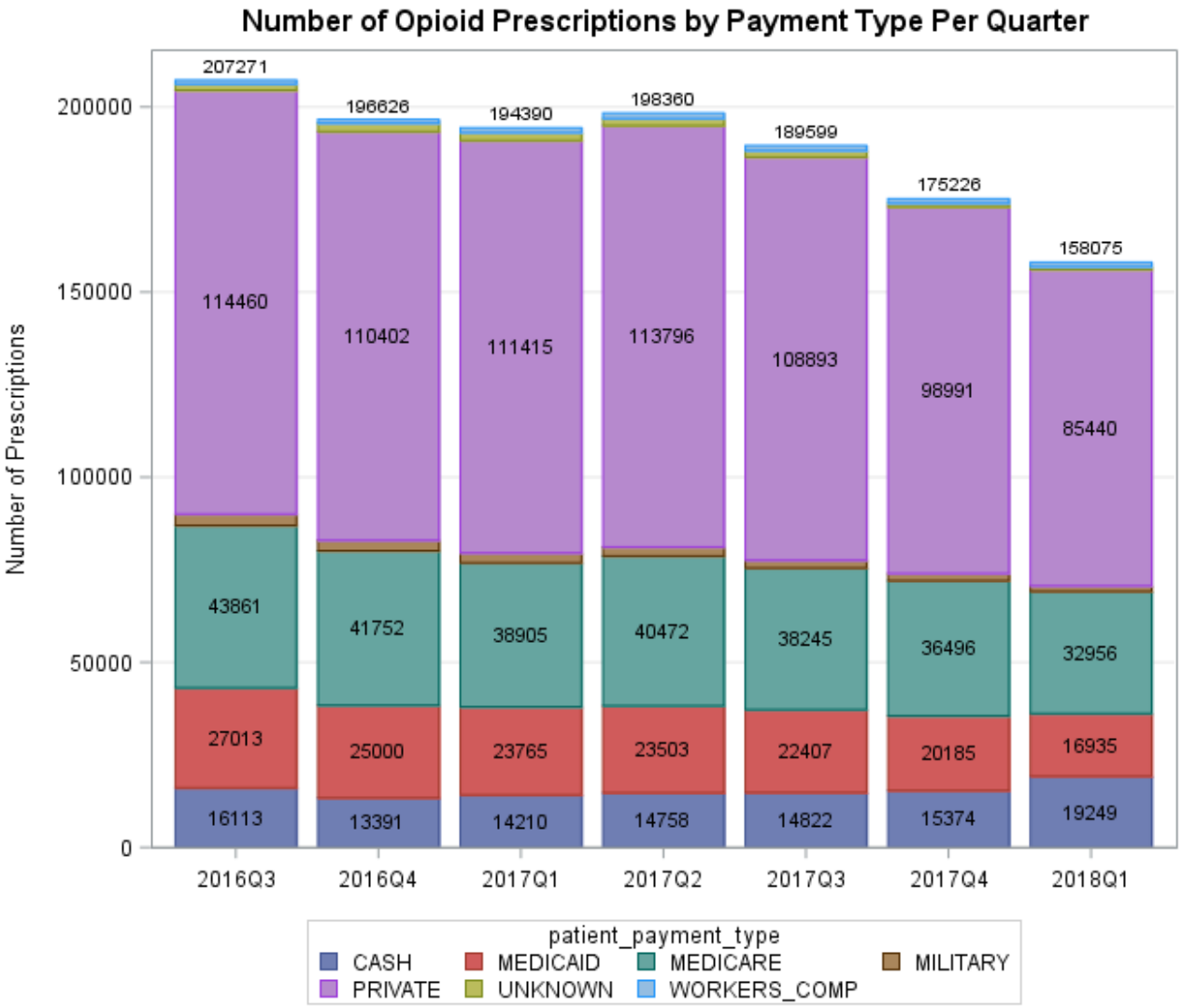
The number of opioid prescriptions remained stable during July 2016 to June 2017 before beginning to decrease in July 2017.



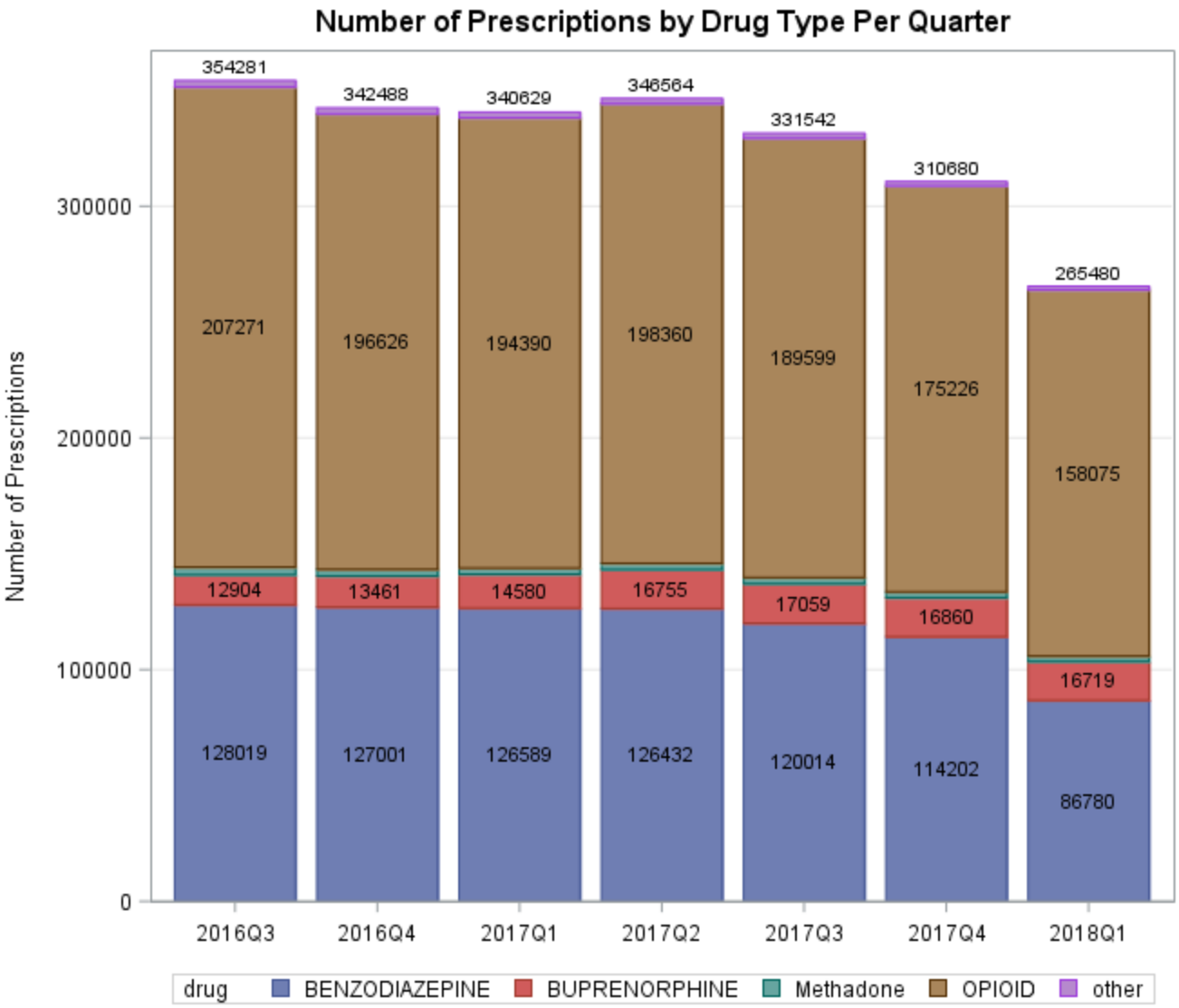
Opioid prescriptions were consistently the highest among the older age groups, 45-54, 55-64, and 65 and older. The number of prescriptions remained stabled in all age groups during July 2016 to June 2017. The number of prescriptions began to decrease beginning in 2017Q3.



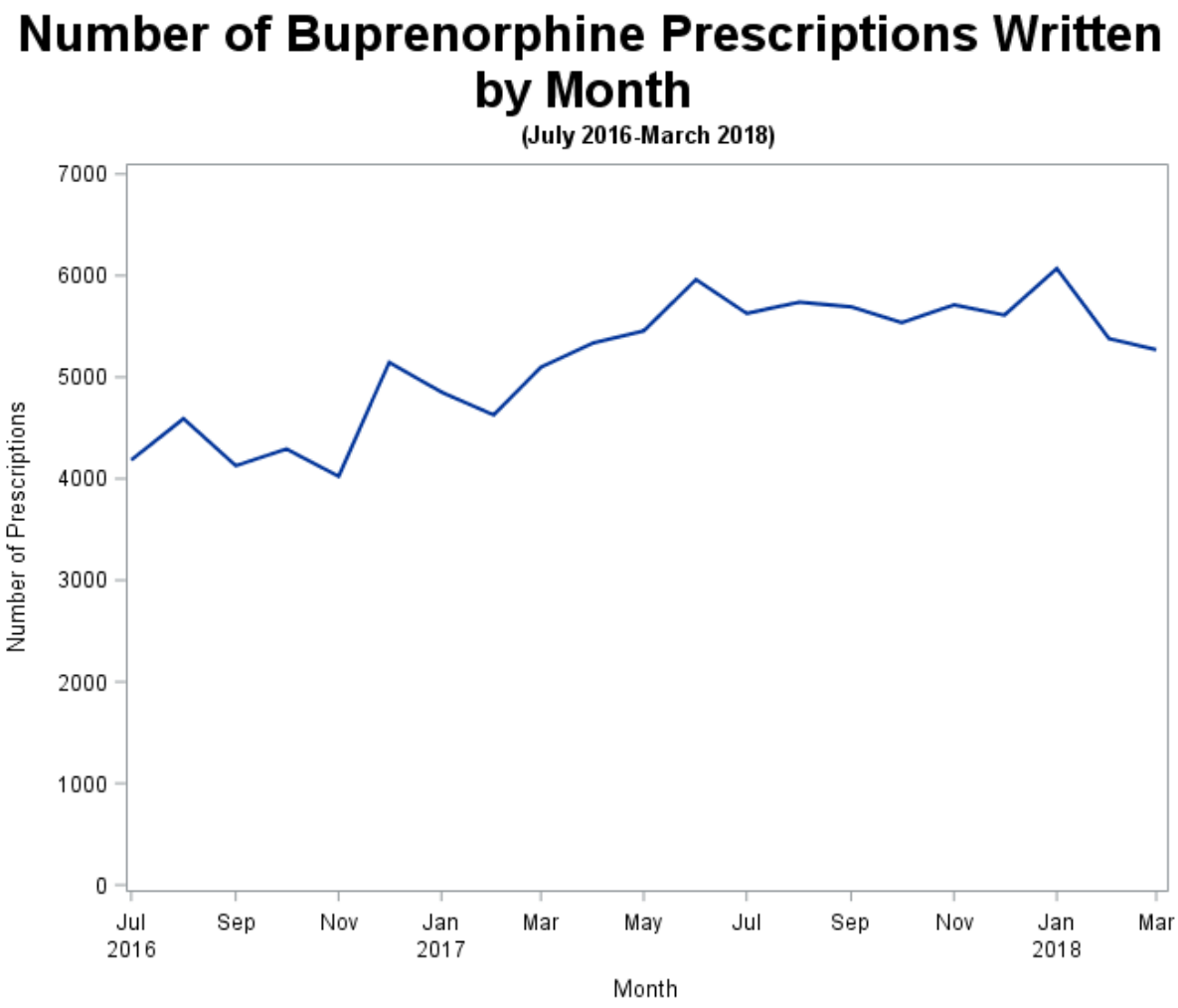
Females were prescribed more opioids than males. The number of opioid prescriptions remained stable for both genders during July 2016 to June 2017. The number of prescriptions began to decrease beginning in 2017Q3.



The payment type for the majority of opioid prescriptions was private insurance, followed by Medicare and Medicaid. The number of opioid prescriptions remained stabled for all payment types during July 2016 to June 2017. The number of prescriptions began to decrease beginning in 2017Q3.



The number of prescriptions remained stable for all drug classes during July 2016 to June 2017 before decreasing. Opioid prescriptions remained the highest number of prescriptions throughout the one year period.

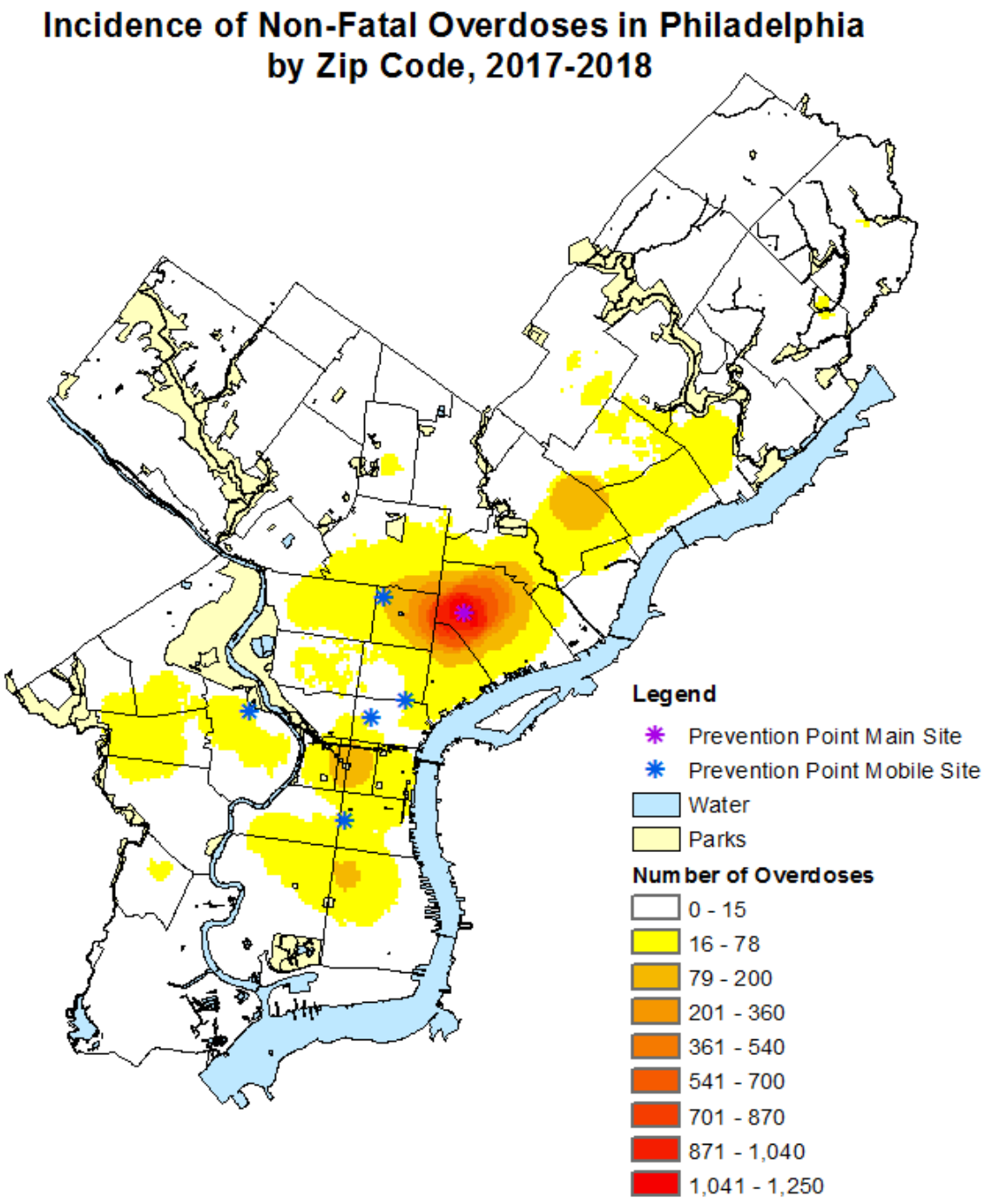


The number of buprenorphine prescriptions has increased beginning in September 2016. Buprenorphine totals include both buprenorphine and buprenorphine and naloxone combined.

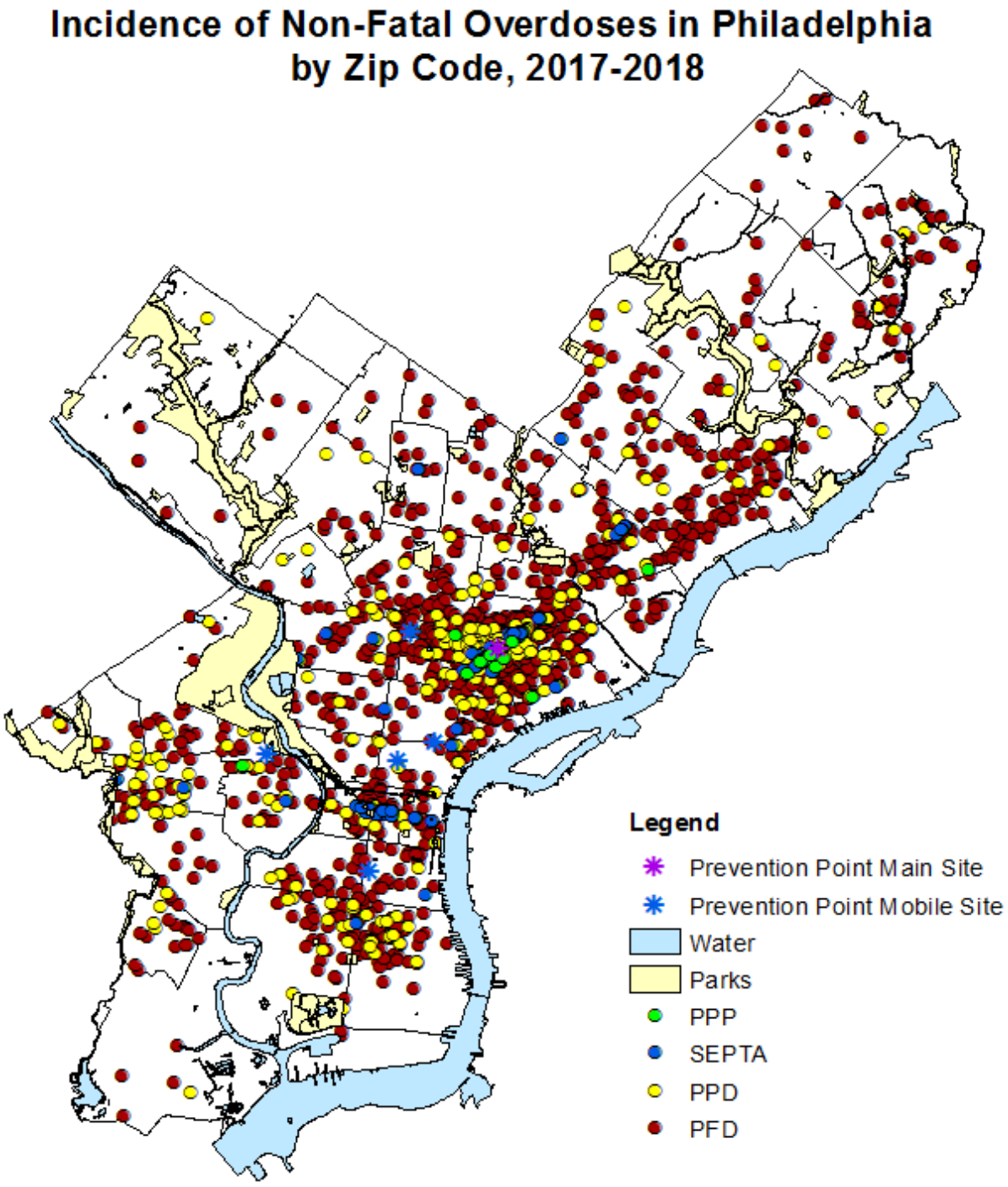
II. Outcomes

A. Non-Fatal Overdose

The following section includes maps that show naloxone administrations reported to the Philadelphia Police Department's Real Time Crime Center by Philadelphia Police Department, Philadelphia Fire Department/EMS, SEPTA Police Department, and Prevention Point Philadelphia personnel. This data represents unintentional non-fatal overdoses for which naloxone was administered from July – July 2018.



There are several areas of the city where the number of nonfatal overdoses tend to be higher. These incidences reflect the overdoses where naloxone was administered. The nonfatal overdoses are reported by the Philadelphia Police Department, Philadelphia Fire Department, Prevention Point, and SEPTA police.



Most of the non-fatal overdoses reported to DVIC were by the Philadelphia Fire Department, followed by Philadelphia Police Department. Most of the overdoses reported by SEPTA police and all the Prevention Point reports were in the vicinity of Prevention Point's main location.

1. Naloxone Distributions

The following section shows the doses of naloxone distributed by the Departments of Public and Behavioral Health to law enforcement agencies and other organizations during July 1, 2017 – October 31, 2018. It is important to note that the Departments of Public and Behavioral Health *do not* distribute naloxone to the Philadelphia Fire Department/EMS nor provide all naloxone doses used by the Philadelphia Police Department.

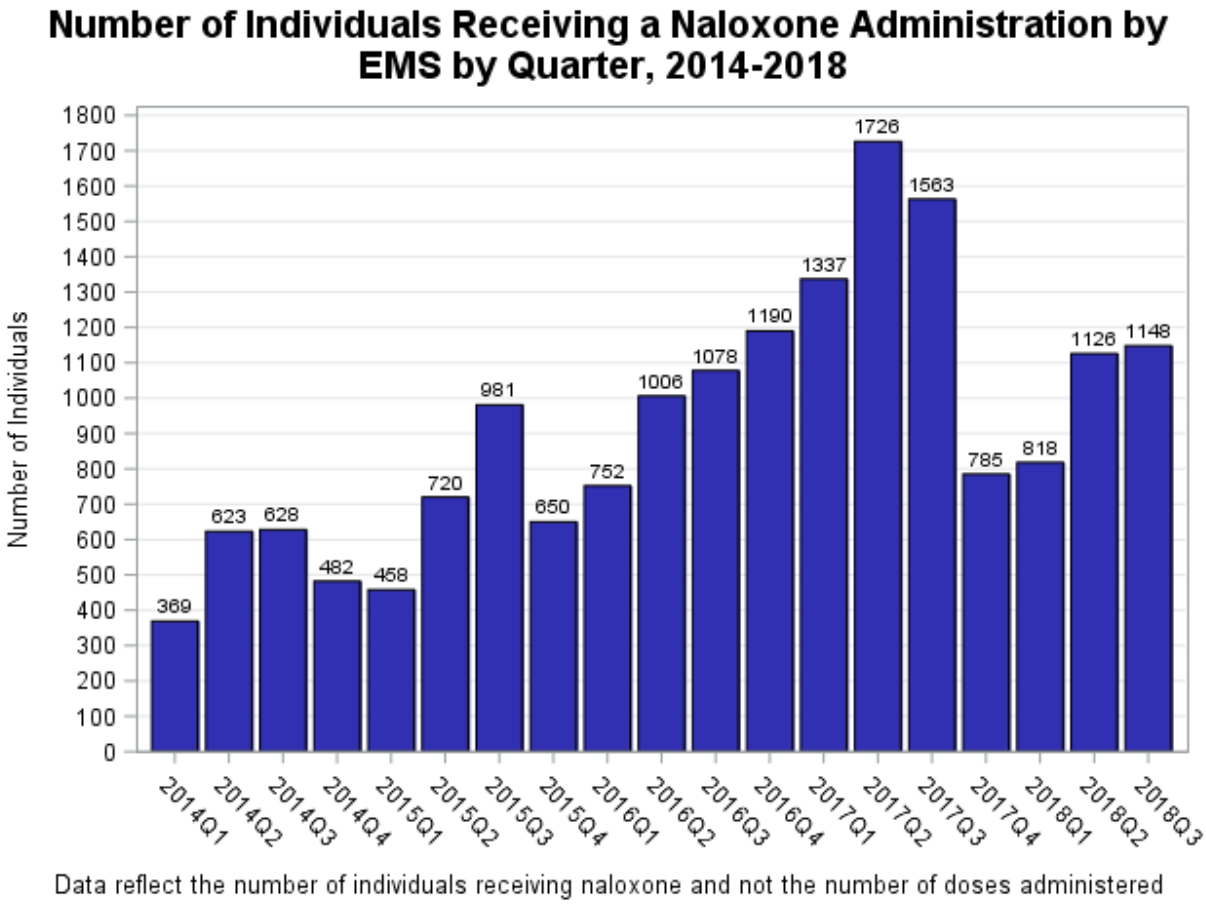
Organization	Number of Doses (2 per kit)
Providers and Community Organization	44,194
Criminal Justice Organizations	9,722
Law Enforcement/First Responders	3,800
Total	57,716

Since July 1, 2017, the City has distributed **51,716 doses of naloxone** to law enforcement agencies and other organizations.

2. Naloxone Administrations (EMS)

The following section includes data on naloxone administration by Philadelphia Regional Emergency Medical Services (EMS). Data shown is complete through September 30, 2018.

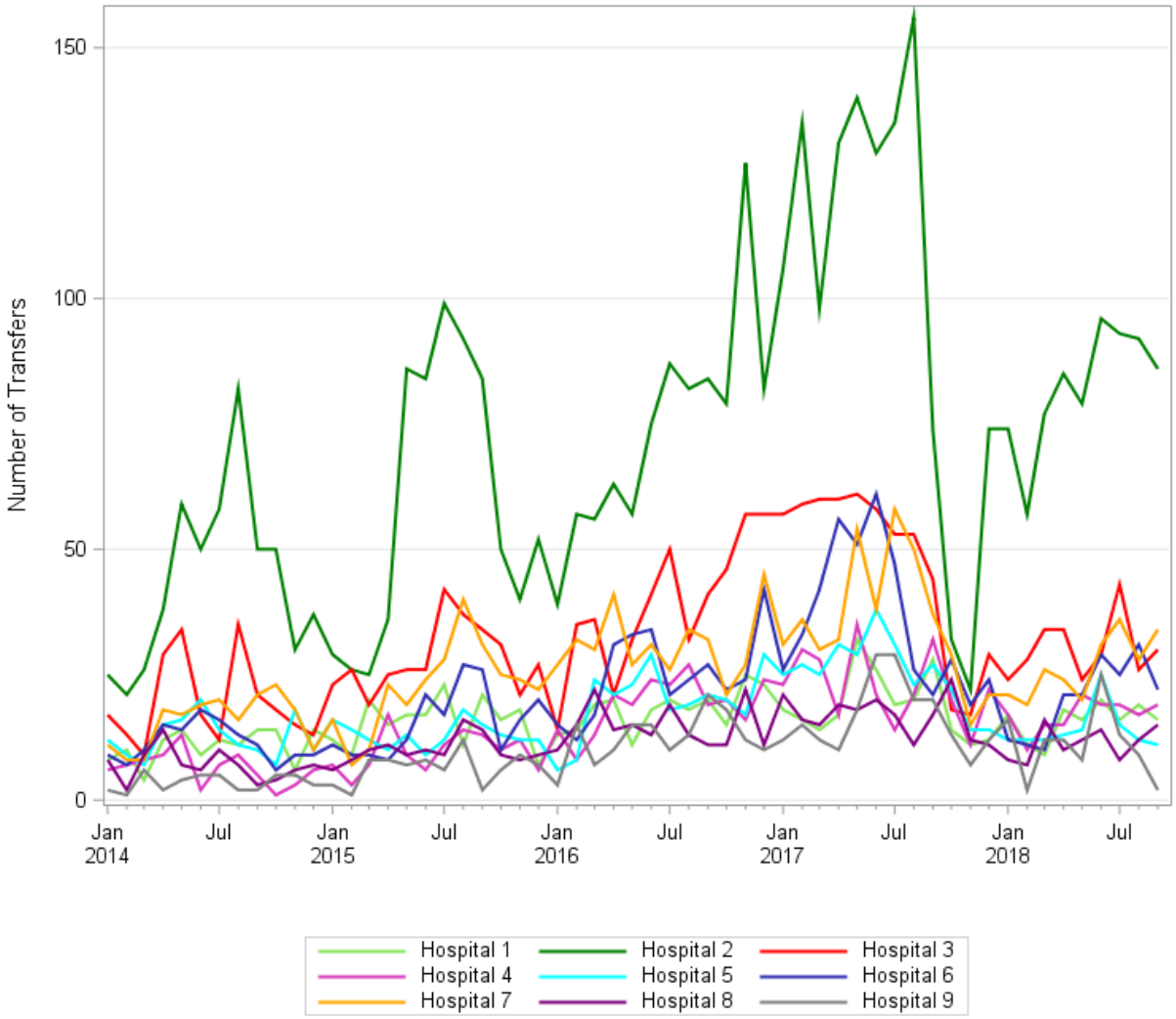
There are limitations to this dataset. First, data represent unique events during which naloxone was administered and do not reflect number of doses of administered. Second, naloxone administration is not a perfect proxy for an opioid-involved overdose. There are instances in which naloxone is administered and is unsuccessful at reviving someone, and similarly, there are occasions in which EMS is called to respond to an overdose that does not require naloxone administration.



The number of individuals receiving naloxone by EMS has increased each quarter since 2015 Q4 but declined starting 2017 Q3. There has been in increase beginning in 2018. In 2018 Q3, 1,148 individuals were administered naloxone by EMS.

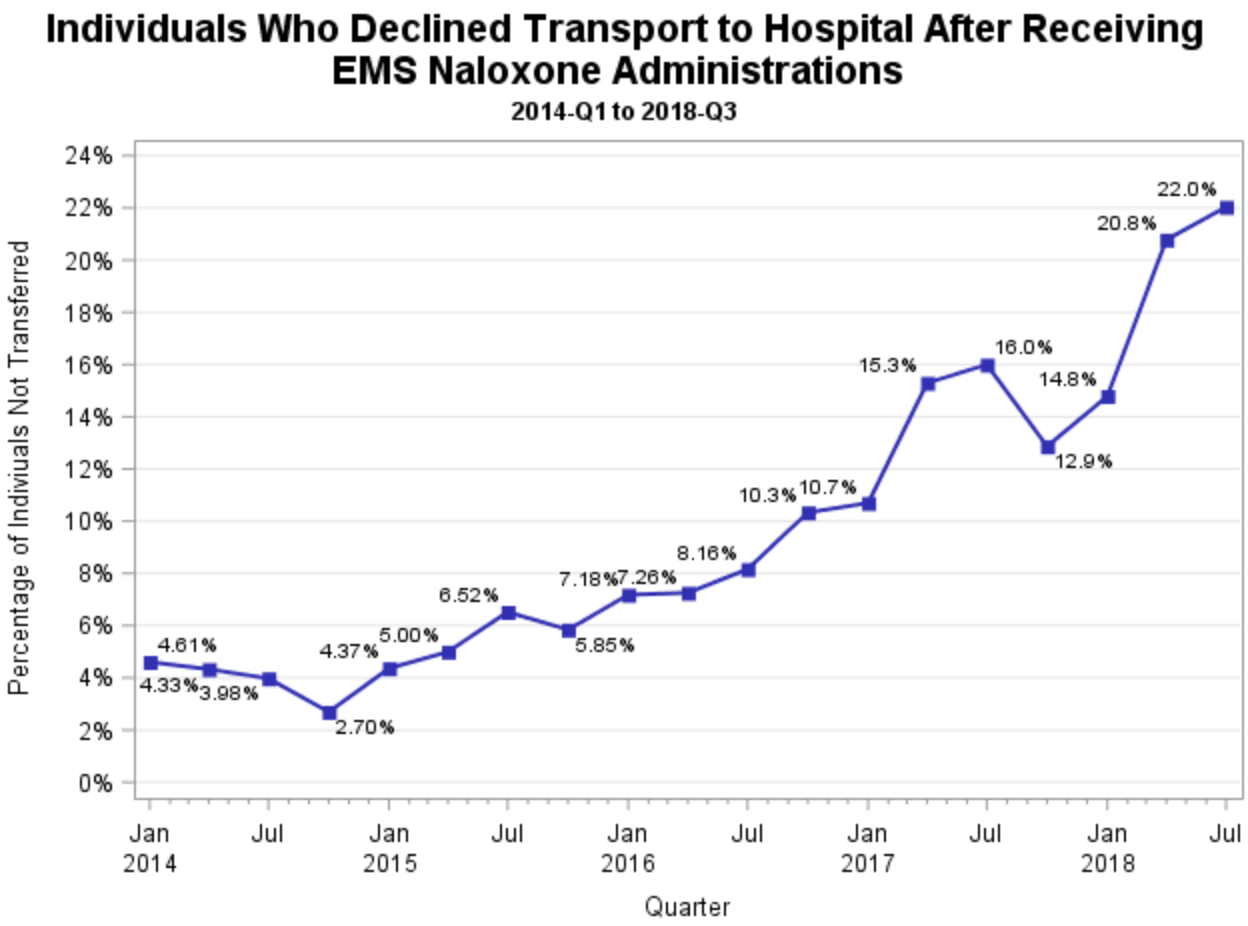
Number of ED Transfers after EMS Naloxone Administration by Hospital, 2014-2017

January 1, 2014-September 30, 2018



* The nine hospitals with the highest number of transfers are displayed

Specific hospitals receive the most ED transfers after EMS naloxone administrations. Between 2014 and 2016 over 90% of individuals receiving a naloxone administration by EMS were transferred to an emergency room.



Starting in Oct 2015, there has been a steady increase in the percentage of individuals who are not being transferred to the hospital after receiving naloxone. It is important to note that the graph displaying the percentage of individuals not being transported to the hospital after EMS administered naloxone is reflective of the number of patients who are refusing to be transported and not on EMS's end. There was a slight decrease in 2017 Q4 before a continual increase in 2018.

EMS Naloxone Administrations by Age

	2014	2015	2016	2017	2018
	(N=1946)	(N=2604)	(N=3715)	(N=4962)	(N=2867)
0-14	0.19%	0.28%	0.10%	0.13%	0.13%
15-18	0.38%	0.25%	0.22%	0.09%	0.16%
19-24	12%	10%	10%	7%	5%
25-34	30%	31%	31%	31%	31%
35-44	18%	21%	20%	21%	25%
45-54	18%	18%	17%	19%	18%
55-64	13%	12%	14%	13%	13%
65+	7%	7%	8%	8%	7%

**** Individuals with missing age information were excluded***
*****2018 data is incomplete and subject to change***

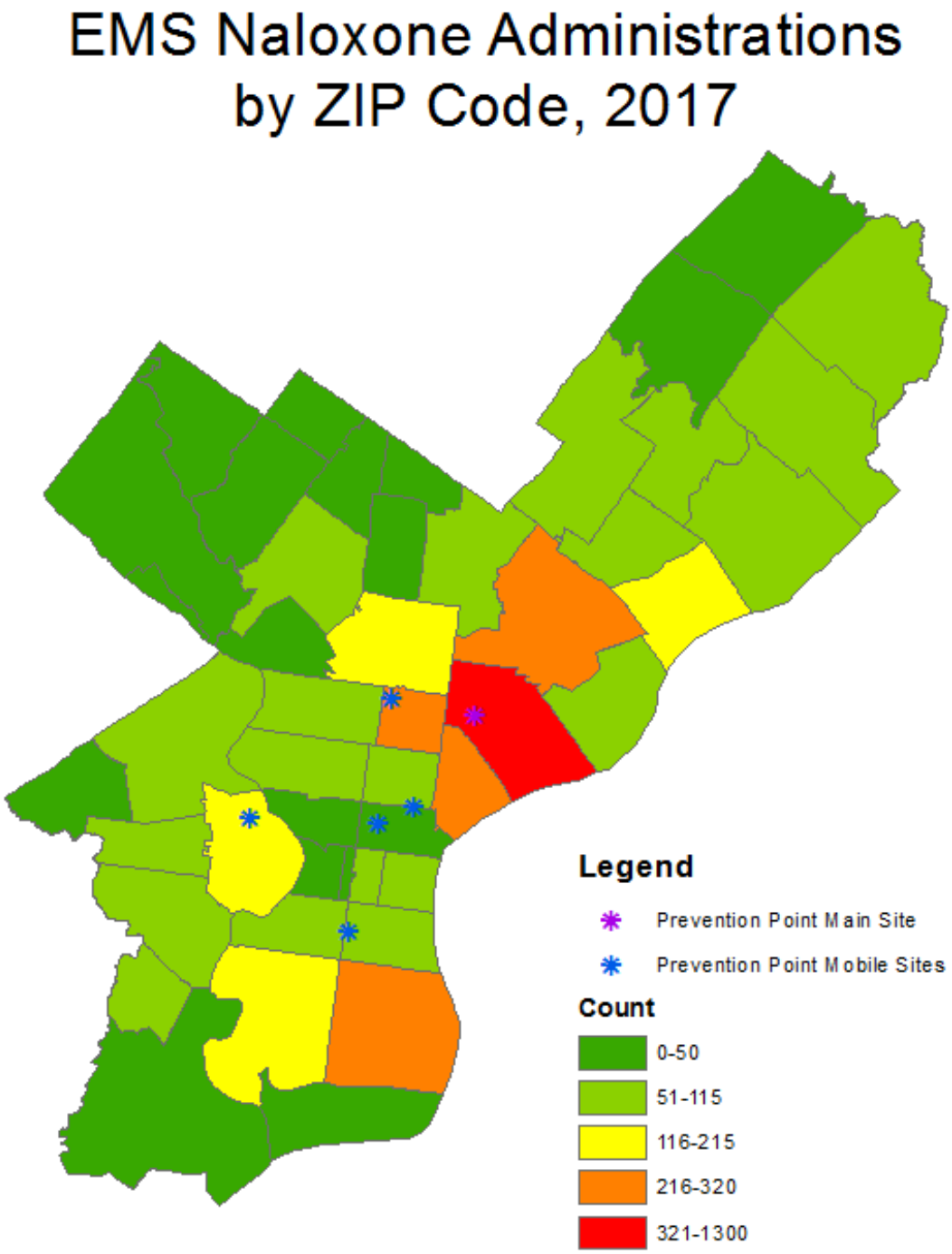
Individuals between the ages of 25-34 represent the largest age group receiving naloxone by EMS.

EMS Naloxone Administrations by Sex

	2014	2015	2016	2017	2018
	(N=2093)	(N=2783)	(N=3969)	(N=5283)	(N=3039)
Female	31%	31%	30%	29%	29%
Male	69%	69%	70%	71%	71%

**** Individuals with missing sex information were excluded***
***** 2018 data is incomplete and subject to change***

The percentage of males receiving naloxone from EMS has been consistently higher than the percentage of females receiving naloxone.

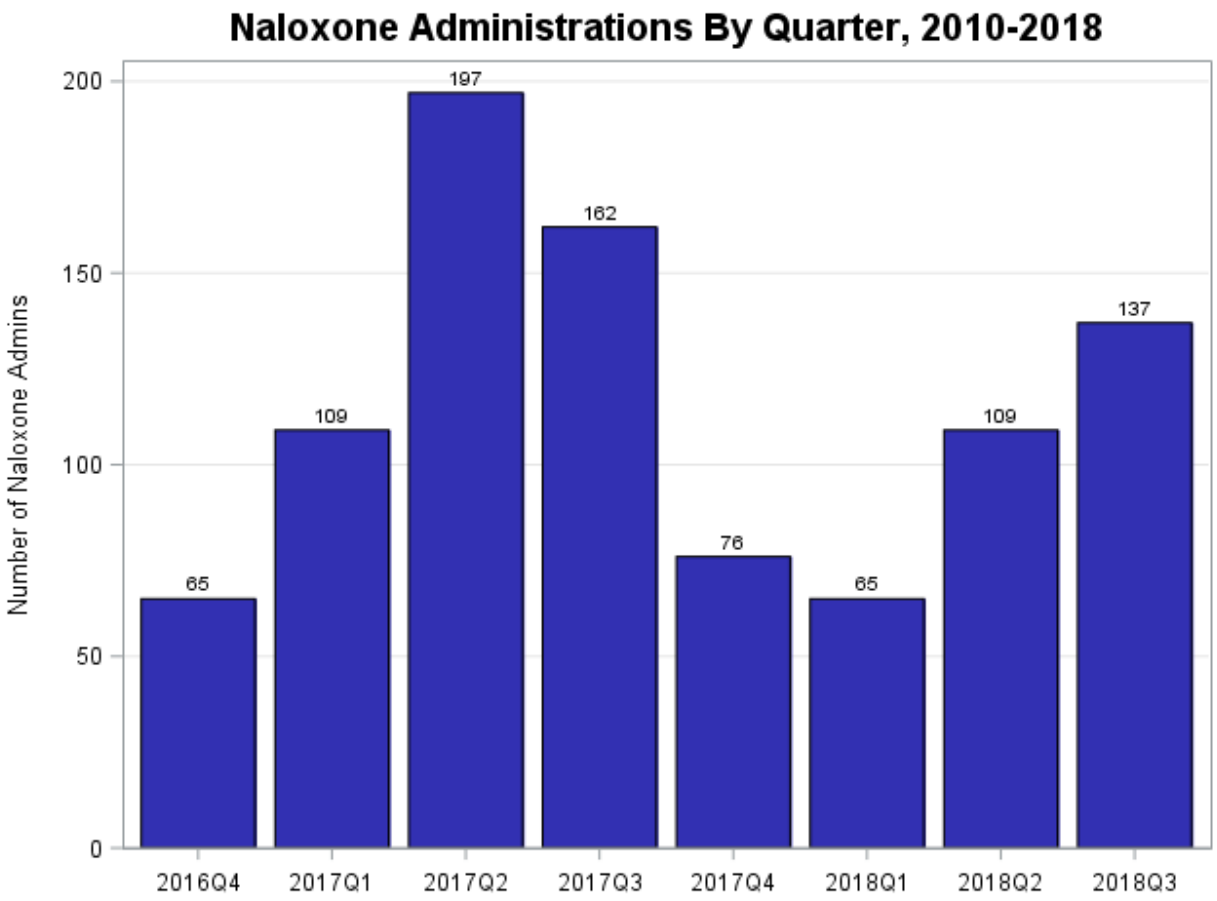


Based on the map, the highest number of EMS Naloxone Administrations was in the zip code where Prevention Point's main location is located.

2. Naloxone Administrations (Police)

The following section includes data on naloxone administration by Philadelphia Police Department. Data shown are complete through September 30, 2018.

There are limitations to this dataset. First, data represent unique events during which naloxone was administered and do not reflect number of doses administered. Second, naloxone administration is not a perfect proxy for an opioid-involved overdose. There are instances in which naloxone is administered and is unsuccessful at reviving someone, and similarly there are occasions in which the Philadelphia Police Department is called to respond to an overdose that does not require naloxone administration.

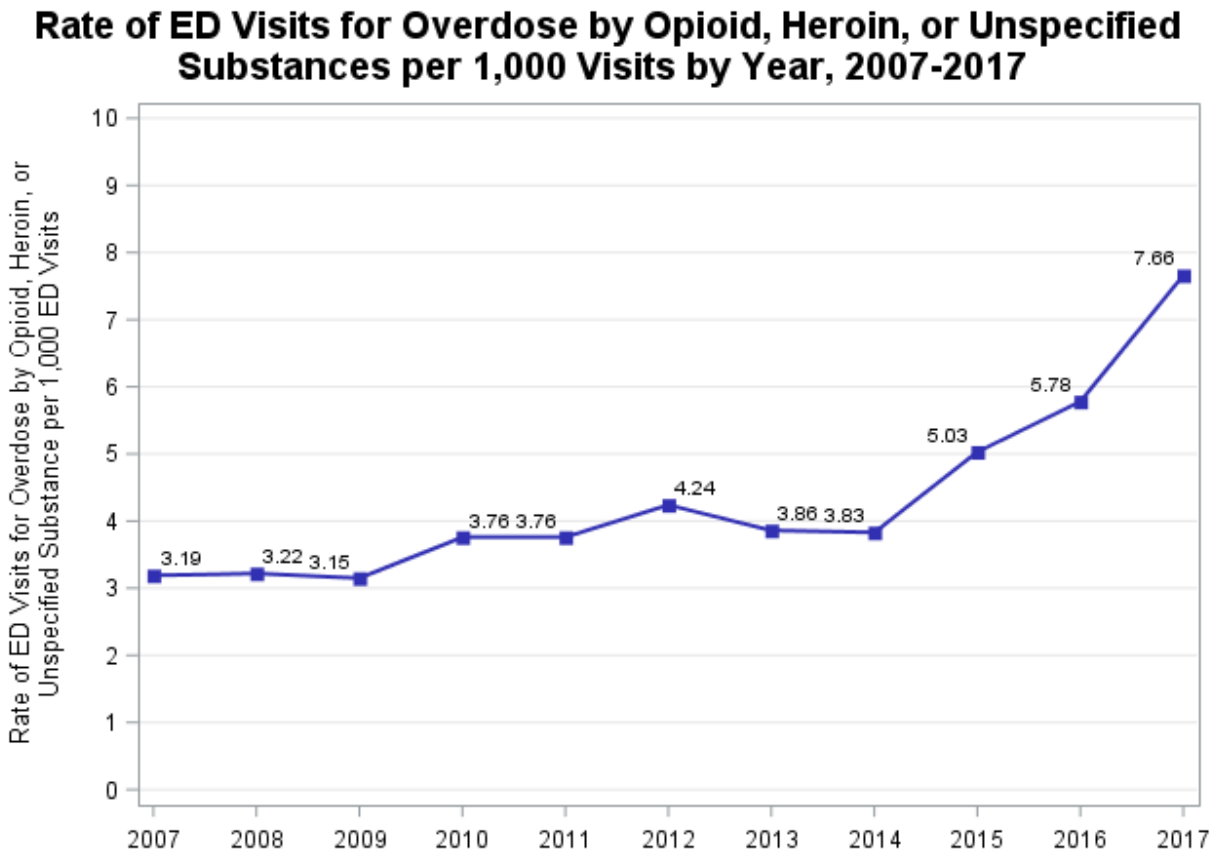


The graph displays data between 2016Q4 and 2017Q4. There was a large increase between 2017Q1 and 2017Q2. Another increase occurred between 2018Q1 and 2018Q2. In 2018Q3, there were 137 naloxone administrations by police.

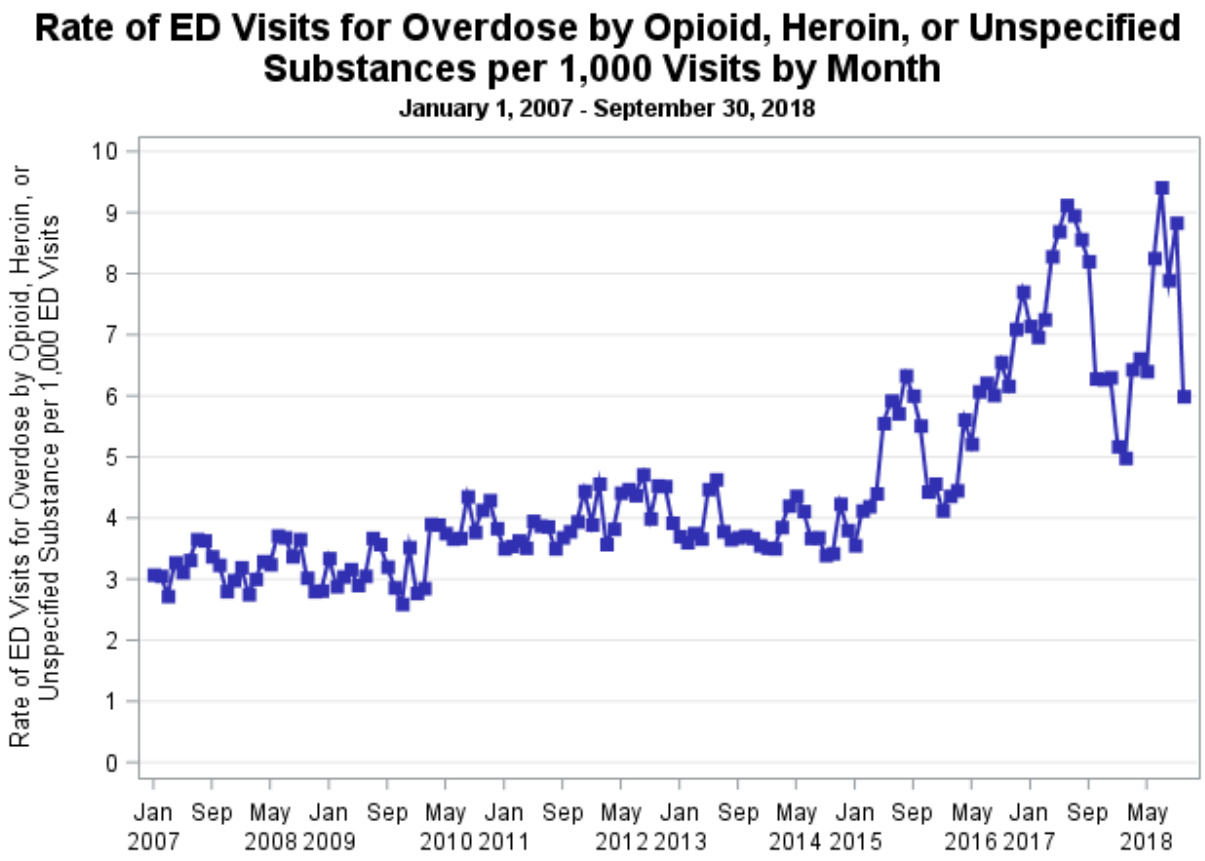
3. Emergency Room Visits

The data shown here are from the Philadelphia Department of Public Health's syndromic surveillance system. Chief complaint and diagnosis code information for all individuals seen in Philadelphia area emergency departments (ED) is reported to this system. The number and rate of drug-related ED visits is assessed on a daily basis. Data shown in this report is complete through September 30, 2018.

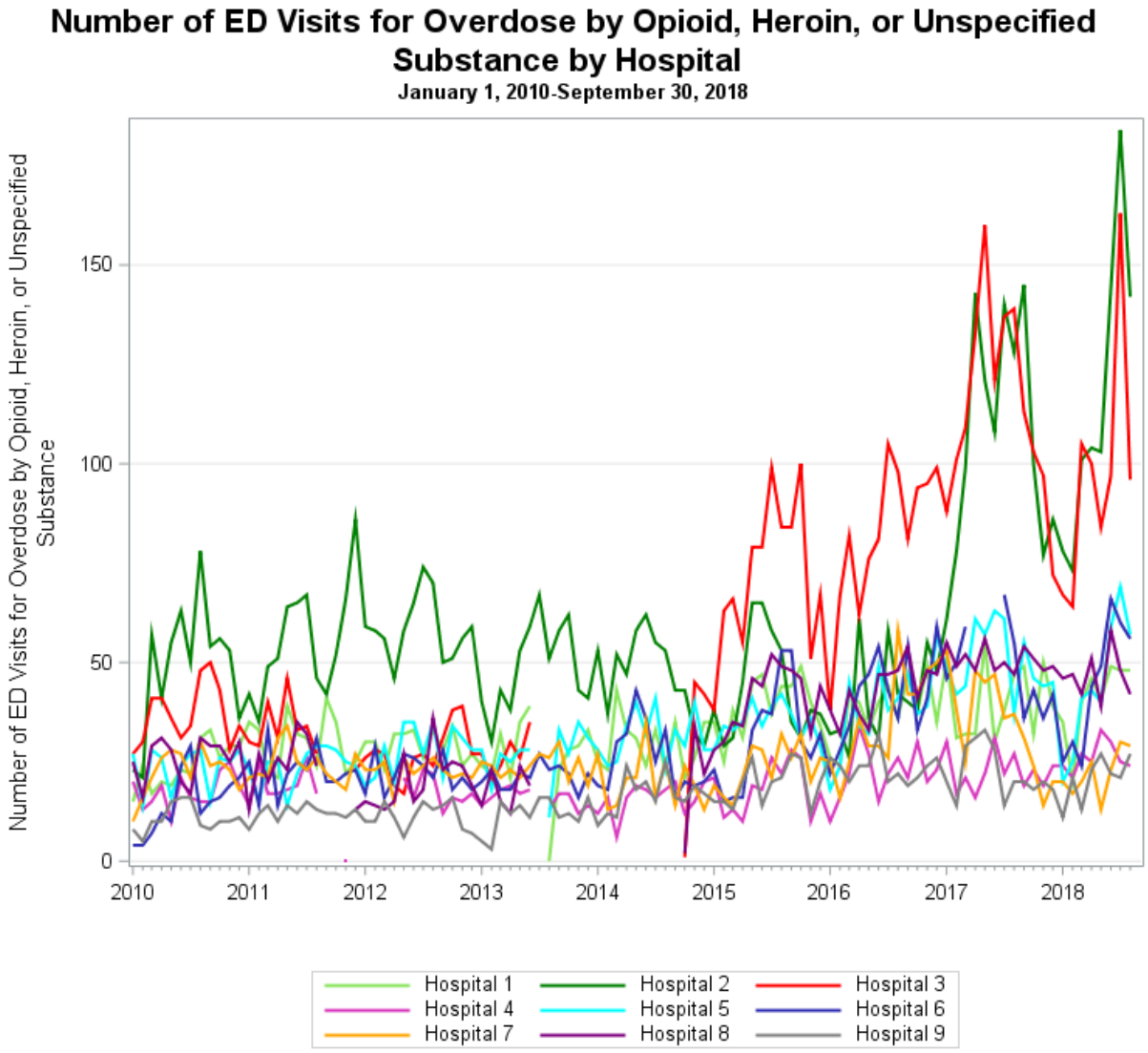
There are some limitations to this data. First, due to changes in hospital reporting mechanisms, there are fluctuations in total counts of drug related ED visits over time. As a result, it is more reliable to assess proportions of drug related ED visits rather than total number of visits. Second, because it is often impossible to discern the drug involved in the incident, the data represent both opioid and unspecified drug related visits.



From 2009 to 2015, the rate of ED visits for drug related incidents has continuously increased with the exception of 2014. In 2017, 7.66 visits per 1,000 ED visits were drug related.



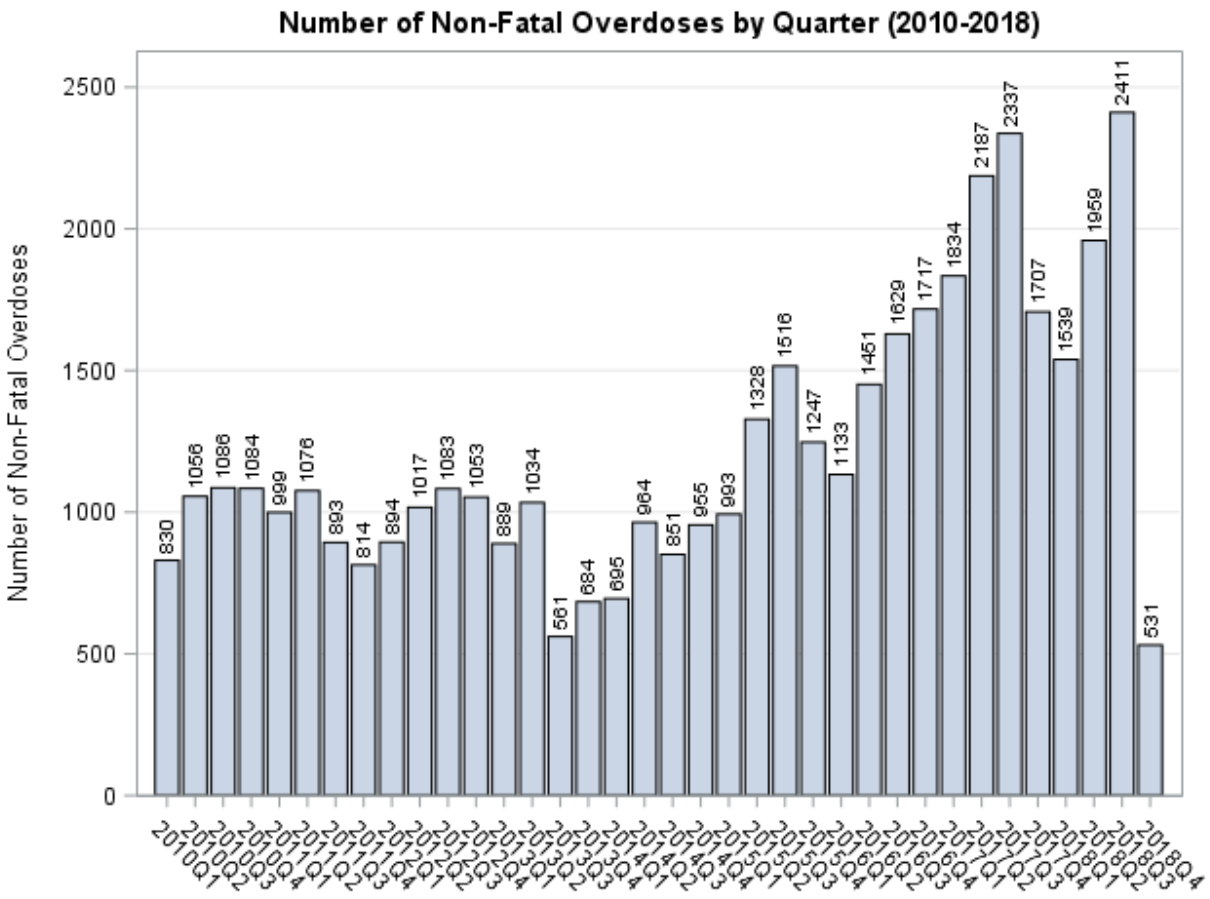
The rate of total emergency department visits due to drug related incidents has tended to trend upward since January 2010. There is a notable peak that occurred between May and October 2015. Additionally, peaks occurred in between April and August 2015, and May and August 2017.



* Breaks in graph are due to missing data for month

** The nine hospitals with the highest number of ED visits for overdoses by opioid, heroin, or unspecified substance are displayed

Specific hospitals consistently have the highest number of drug related emergency department visits. There is a notable peak in visits to three hospitals from June to October, 2015. There was also a notable peak in two hospitals from April to October, 2017.



Data for 2018Q4 is incomplete and subject to change.

From 2010 to 2015, number of non-fatal overdoses based on syndromic surveillance remained stable. That number increased beginning in 2016 through 2017. In 2018Q3, 2,411 non-fatal overdoses occurred and were seen in the emergency department.

ED Visits for Overdose by Opioid, Heroin, or Unspecified Substances by Age

	2010	2011	2012	2013	2014	2015	2016	2017	2018
	(N=4056)	(N=3782)	(N=4047)	(N=3168)	(N=3465)	(N=5084)	(N=5930)	(N=8065)	(N=5909)
0-14	3%	2%	2%	2%	2%	2%	1%	1%	0.74%
15-18	8%	6%	6%	6%	5%	5%	4%	3%	3%
20-24	16%	15%	14%	14%	14%	13%	12%	10%	7%
25-34	27%	30%	31%	30%	30%	31%	32%	33%	31%
35-44	19%	18%	18%	19%	17%	20%	20%	21%	22%
45-54	17%	18%	17%	16%	17%	15%	15%	15%	16%
55+	10%	10%	11%	13%	14%	13%	13%	13%	13%
Unknown	0.20%	0.71%	0.47%	0.51%	1%	3%	3%	4%	7%

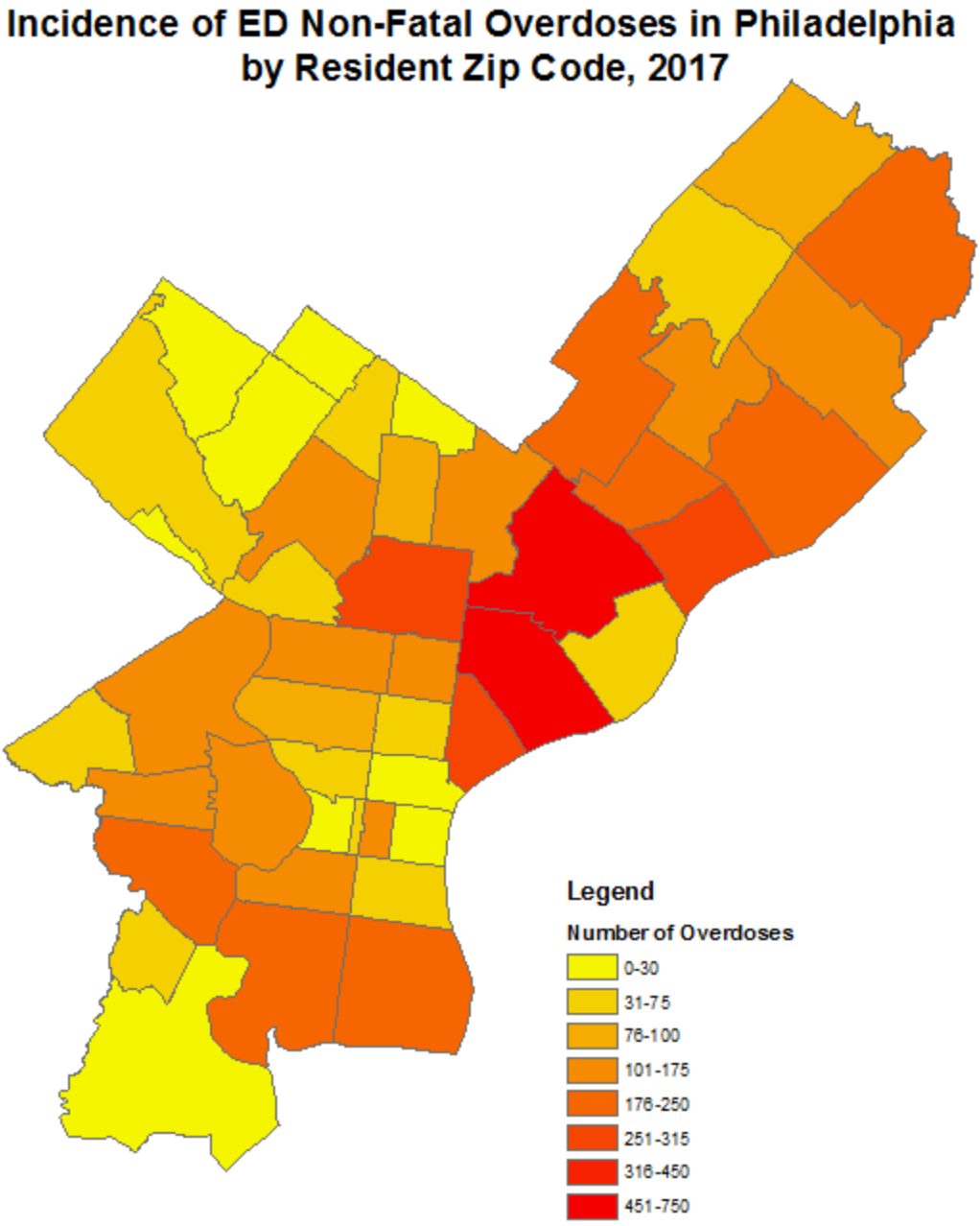
Individuals between the ages of 25-34 years consistently represent the age group that has the most drug related ED visits followed by those between the ages of 35-44 years. Numbers for those ages 55 years and older may be inflated as some hospitals input the age as 99 years or greater to indicate those dead upon arrival.

ED Visits for Overdose by Opioid, Heroin, or Unspecified Substances by Sex

	2010	2011	2012	2013	2014	2015	2016	2017	2018
	(N=4056)	(N=3782)	(N=4047)	(N=3168)	(N=3465)	(N=5083)	(N=5929)	(N=8065)	(N=5909)
Female	51%	49%	50%	49%	47%	45%	42%	38%	37%
Male	49%	51%	50%	51%	53%	55%	58%	62%	63%

Data for 2018 is incomplete and subject to change.
***** Individuals with unknown gender were excluded from total visits***
******Code is consistently being refined to accurately pick up overdoses so numbers will fluctuate.***

Since 2010, the percentage of males seen in the emergency department for drug related visits has increased relative to females.



This map reflects the incidence of overdose where individuals were seen at emergency departments. Incidence of overdose was mapped based on the resident zip code of the patients.

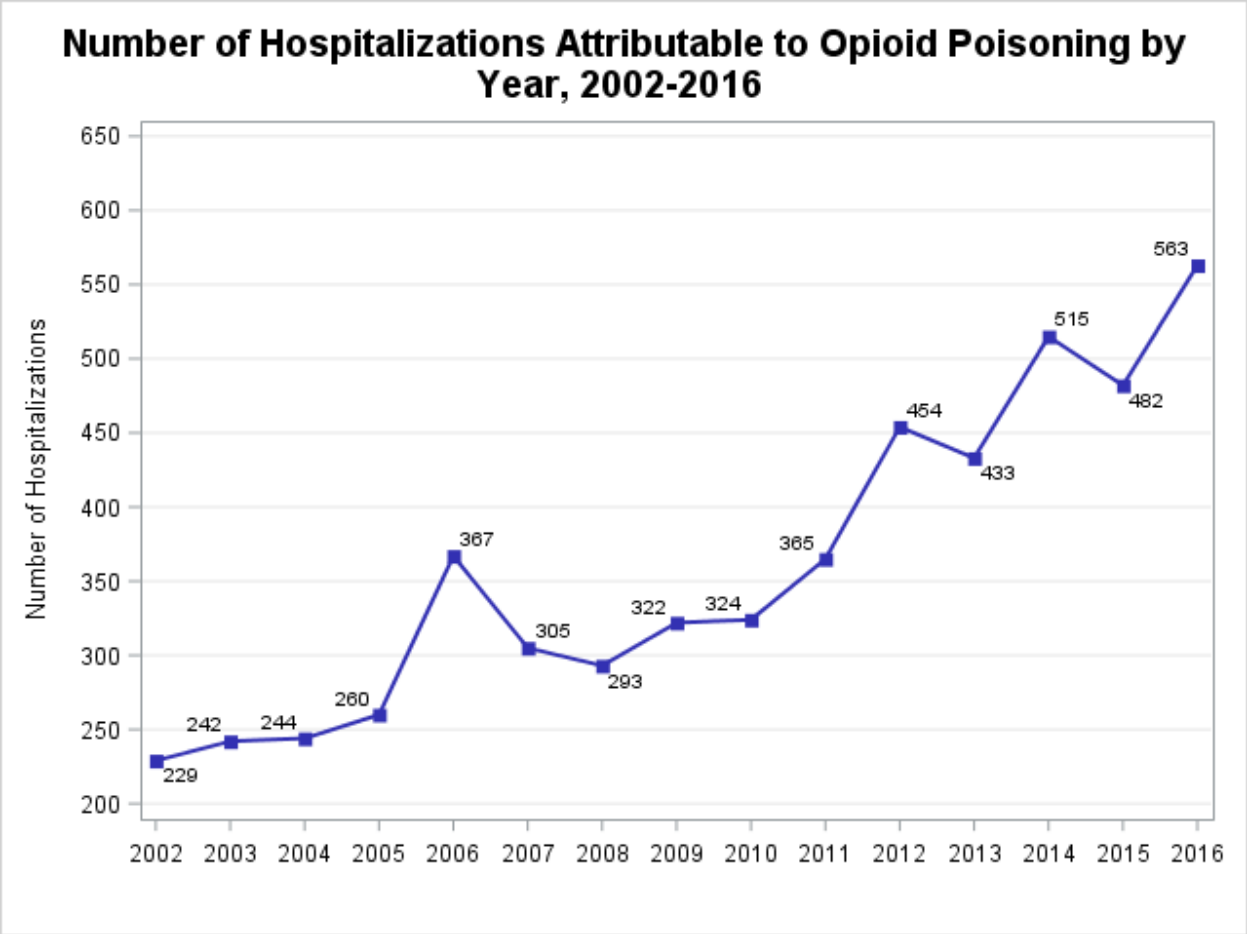
4. Hospitalizations

The following section includes data from the Pennsylvania Health Care Cost Containment Council (PHC4), an independent state agency that collects information on all inpatient hospitalizations and ambulatory procedures at freestanding clinics in Pennsylvania to monitor health care cost. Data are de-identified and include detailed patient demographic and utilization information. Each record has one principal diagnosis, up to 17 secondary diagnoses, and up to three external causes of injury codes. Data is coded using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) for data from January 1, 2002 to September 31, 2015 and the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) from October 1, 2015 to December 31, 2016.

Data shown in this section are complete through 2016 and are for Philadelphia residents hospitalized at both Philadelphia hospitals and hospitals in the surrounding region.

Inpatient discharges with an ICD-9-CM principal diagnosis of 965.00, 965.01, 965.02, or 965.03 or external cause of injury code of E85.00, E85.01, or E85.02, or ICD-10-CM principal diagnosis of T40.0-T40.3 were identified as hospitalizations attributable to an opioid poisoning (includes both heroin and pharmaceutical opioids). Individuals with an opioid poisoning related to therapeutic use were identified and excluded.

There are limitations to this dataset. First, the data is delayed up to two years. Second, all data is de-identified, and thus cannot be matched across city systems. Finally, the data only includes individuals who were admitted to the hospital. Anyone seen in the emergency room but not admitted is not included in this dataset.



The number of hospitalizations attributable to opioid poisoning including both heroin and pharmaceutical opioids has been steadily increasing since 2002. In 2016, there were 633 hospitalizations attributable to opioid poisoning, which is more than double the number that occurred in 2002. The peak in hospitalizations that occurred in 2006 is consistent with the fentanyl outbreak that occurred at that time.

Hospitalizations Attributable to Opioid Poisoning by Age

	2010	2011	2012	2013	2014	2015	2016
	(N=324)	(N=365)	(N=454)	(N=433)	(N=515)	(N=482)	(N=563)
0-14	1%	1%	0%	0%	1%	1%	0%
15-18	1%	1%	1%	1%	1%	1%	0.18%
19-24	7%	8%	7%	6%	8%	7%	8%
25-34	15%	18%	25%	24%	20%	19%	21%
35-44	14%	14%	17%	14%	12%	17%	17%
45-54	26%	25%	22%	23%	24%	21%	18%
55-64	25%	22%	20%	20%	23%	22%	21%
65+	11%	11%	8%	12%	11%	11%	15%

In 2016, those between the ages of 25-34 years were the predominant age group being hospitalized for opioid poisonings whereas in 2010, the predominant age group being hospitalized for opioid poisoning was those between the ages of 45-54 years.

Hospitalizations Attributable to Opioid Poisoning by Sex

	2010	2011	2012	2013	2014	2015	2016
	(N=324)	(N=365)	(N=454)	(N=433)	(N=515)	(N=482)	(N=563)
Female	41%	44%	40%	43%	39%	40%	45%
Male	59%	56%	60%	57%	61%	60%	55%

Males consistently represent a larger percentage of those being hospitalized for opioid poisoning.

Hospitalizations Attributable to Opioid Poisoning by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016
	(N=324)	(N=365)	(N=454)	(N=433)	(N=515)	(N=482)	(N=563)
White, Non-Hispanic	57%	62%	60%	57%	56%	56%	60%
Black, Non-Hispanic	31%	28%	27%	33%	32%	30%	27%
Hispanic	7%	7%	3%	2%	9%	10%	8%
Other, Non-Hispanic	1%	2%	8%	6%	3%	3%	5%

**** Individuals with missing race/ethnicity information were excluded***

White, non-Hispanic individuals are the predominant race/ethnicity group being hospitalized for opioid poisoning.

Hospitalizations Attributable to Opioid Poisoning by Insurance Payer

	2010	2011	2012	2013	2014	2015	2016
	(N=324)	(N=365)	(N=454)	(N=433)	(N=515)	(N=482)	(N=563)
Public	81%	81%	82%	83%	83%	86%	88%
Private	14%	13%	13%	10%	10%	10%	8%
Self-Pay/Charity	4%	7%	5%	6%	6%	2%	3%
Unknown	0.93%	0.27%	0.63%	0.46%	1%	2%	1%

Most individuals with a hospitalization attributable to opioid poisoning are on public insurance.

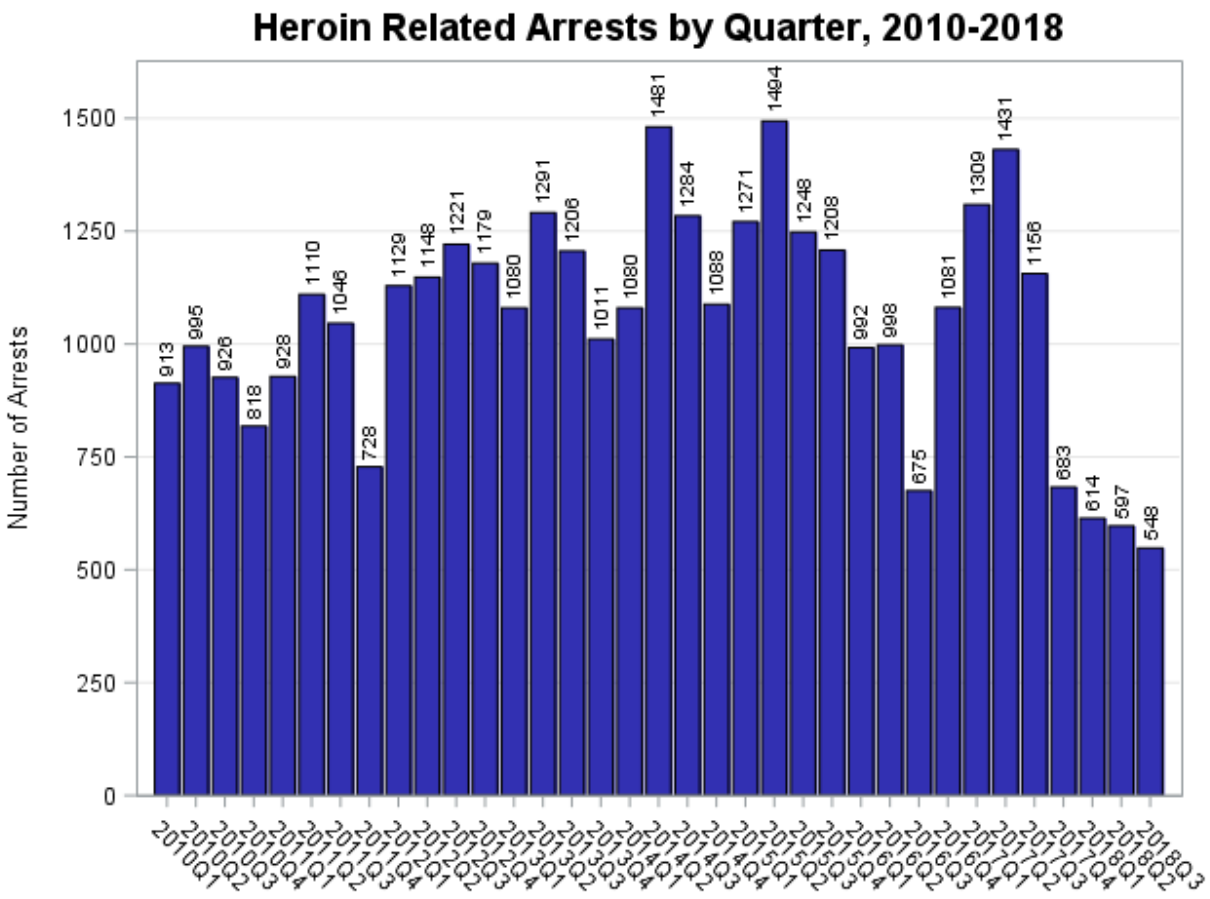
B. Law Enforcement

The following section includes data reported by the Philadelphia Police Department and Drug Enforcement Agency (DEA). This data includes all heroin related arrests and drug analyses of seizures made by the Philadelphia Police Department.

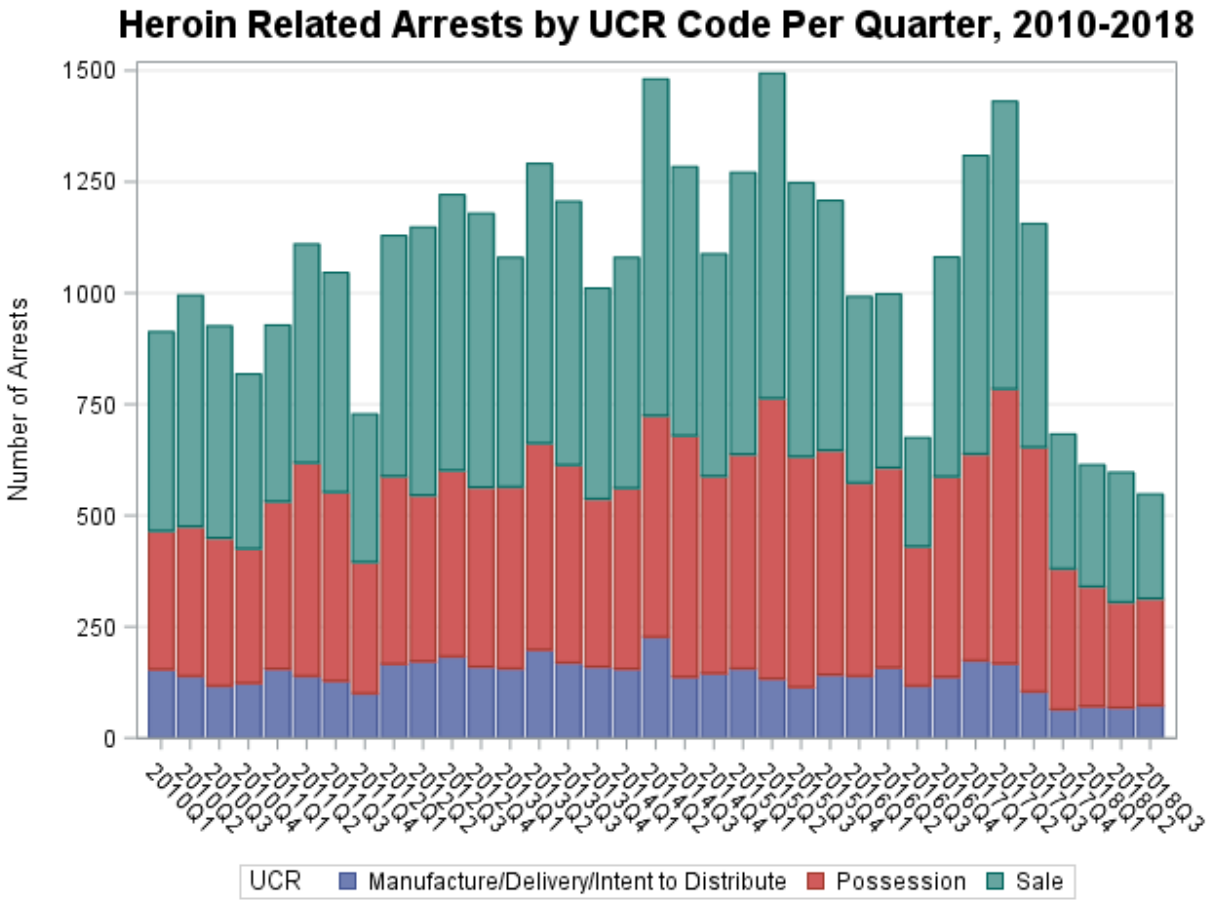
1. Arrests

The following section includes data on heroin-related arrests by the Philadelphia Police Department. Data was provided de-identified and includes information on arrest location, crime identification, and district codes. Arrests were pulled and classified based on the following Uniform Crime Reporting (UCR) arrest codes: 1805 (seller of heroin), 1815 (manufacture, delivery, or possession with intent to deliver), and 1825 (possession of heroin). Data shown is complete through September 30, 2018.

There are a few limitations to the dataset for arrests. First, true UCR arrests are enforcement driven and do not reflect the actual heroin market conditions. Second, because people may have been arrested multiple times during the specified time period, it is unlikely that the total number of arrests is higher than the data reflects.



The number of arrests increased in 2012 with spikes in 2014. Arrests have been decreasing since 2017Q2. In 2018Q3, 548 arrests were made.

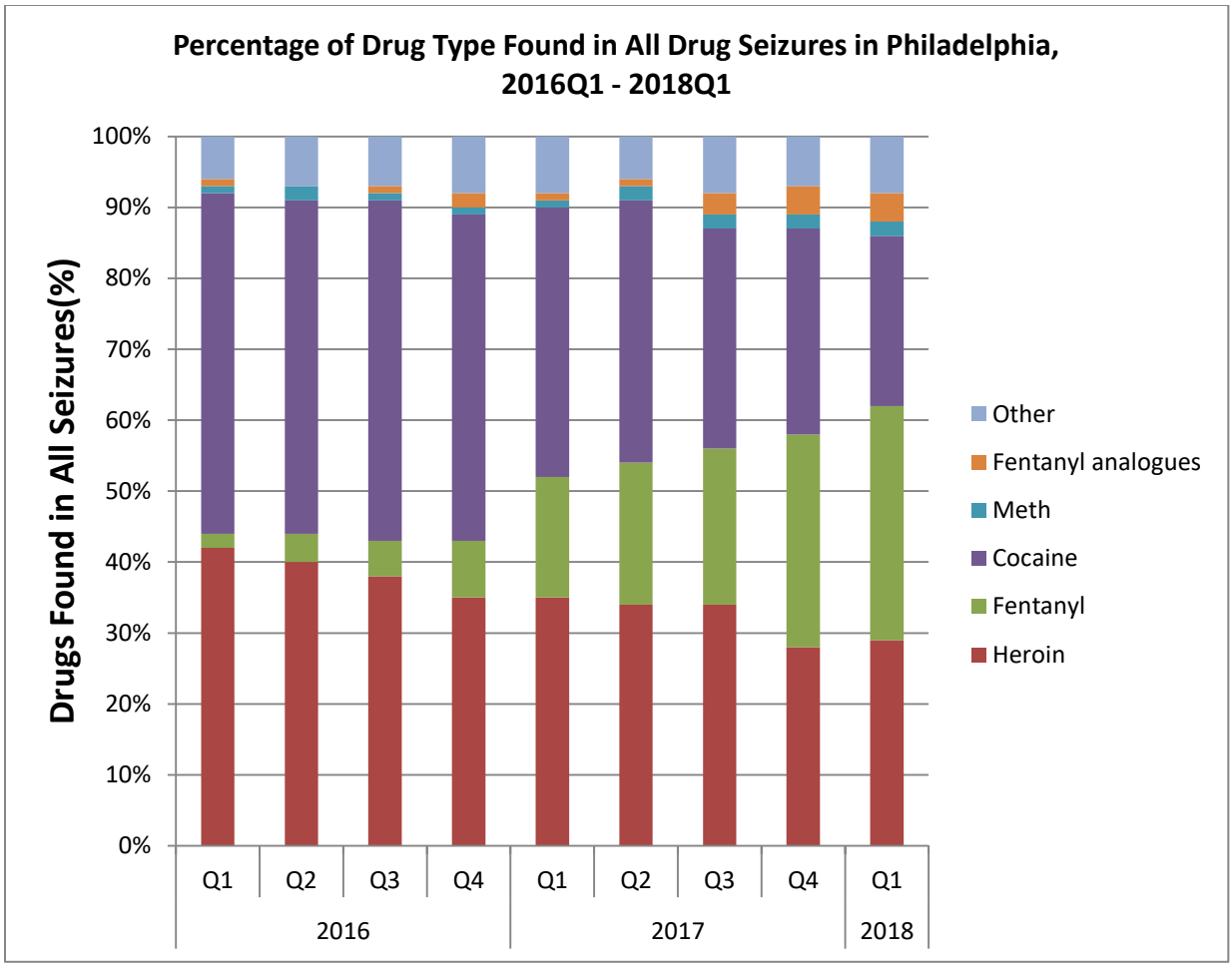


Data for 2018Q2 is pending and subject to change.

UCR classification 1805 (seller of heroin) made up the majority of arrests across the years followed closely by 1825 (possession of heroin). In 2018Q3, 240 arrests were made for the possession of heroin, 234 arrests were made for selling heroin, and 74 arrests were made for manufacturing, delivering, or having intention to distribute heroin.

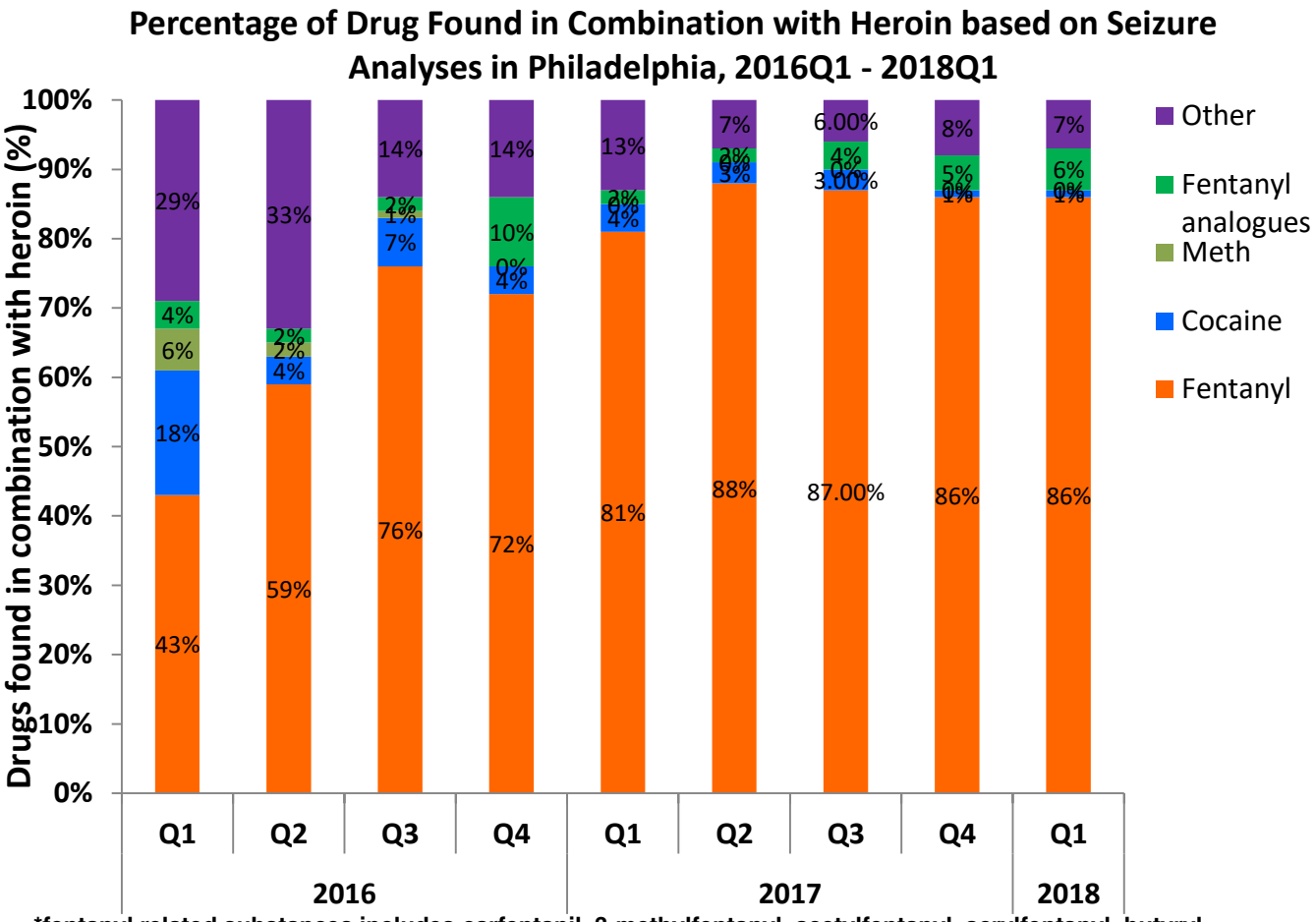
2. Seizures

This section also includes data from drug seizures that occurred in Philadelphia County and were analyzed and reported to the National Forensic Laboratory Information System (NFLIS). NFLIS is a system used by the Drug Enforcement Agency (DEA) that systematically collects results from laboratory drug analyses by federal, state, and local forensic laboratories across the country. The dataset displays additional drugs found in combination with heroin in the seizure analysis and drug types found in all drug seizures and are visualized as percentages of presence in the overall dataset.



***fentanyl related substances includes carfentanil, 3-methylfentanyl, acetylfentanyl, acrylfentanyl, butyryl fentanyl, furanyl fentanyl, and U-47700**
****other includes oxycodone, quinine, diphenhydramine, dipyrone, benzocaine, cannabinoids, dimethylsulfone, lactose, tramadol**

Cocaine and heroin were the dominant drugs found in drug seizures. Percentage of fentanyl found in drug seizures began to increase in 2016Q4. Fentanyl surpassed both heroin and cocaine in becoming the dominant drug found in all seizures with 30% in 2017Q4 and continued to increase to 33% in 2018Q1.



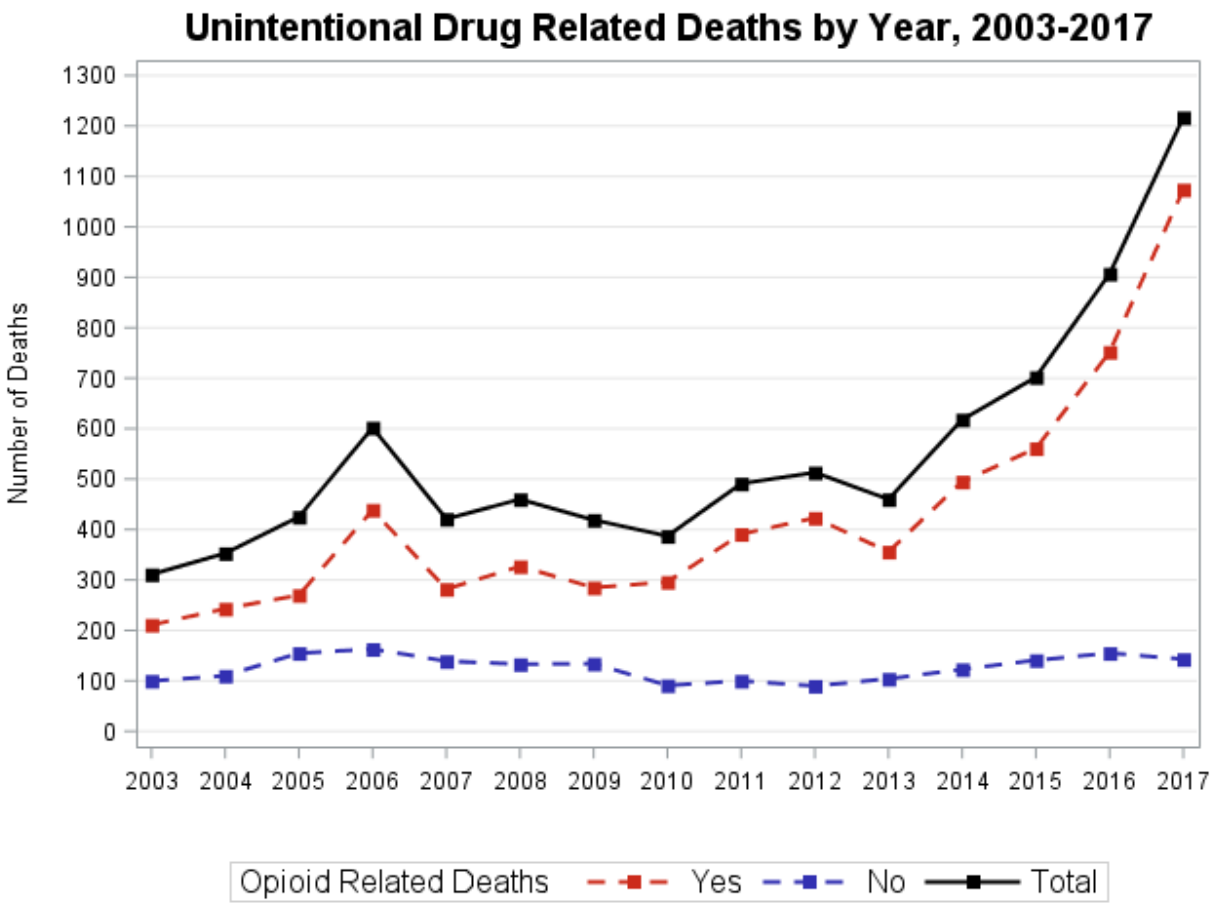
***fentanyl related substances includes carfentanil, 3-methylfentanyl, acetylfentanyl, acrylfentanyl, butyryl fentanyl, furanyl fentanyl, and U-47700**
****other includes oxycodone, quinine, diphenhydramine, dipyrone, benzocaine, cannabinoids, dimethylsulfone, lactose, tramadol**

Fentanyl is the dominant drug found in combination with heroin and has increased from 45% in 2016 Q1 to 86% in 2018 Q1. Fentanyl-related substances are also being found in drug seizures, but are much less predominant than pure fentanyl.

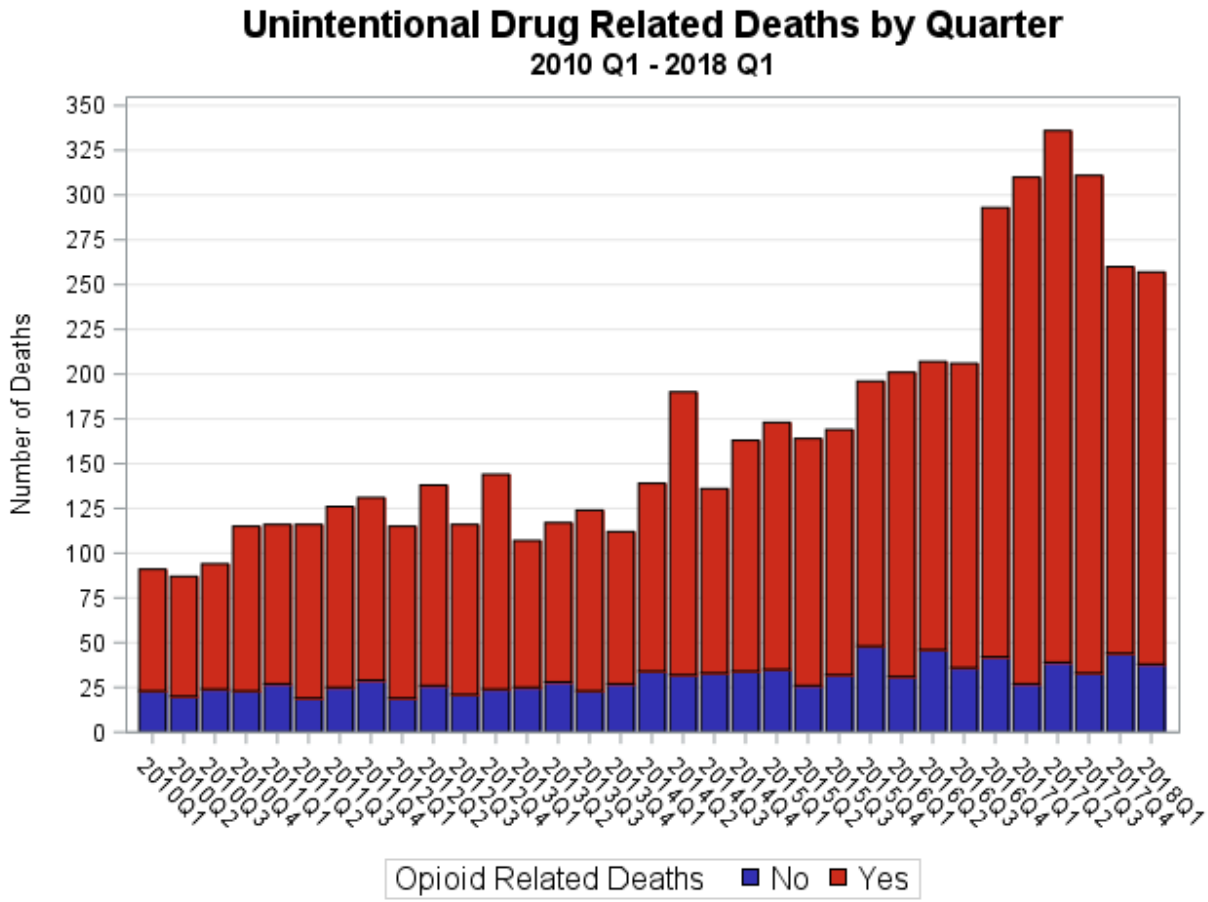
C. Fatal Overdose

The following section shows data from the Philadelphia Medical Examiner's Office (MEO). This includes any accidental death in which drug intoxication was certified as either the underlying or contributory cause of death on the death certificate regardless of residence or incidence location. Deaths due to carbon monoxide poisoning or alcohol intoxication only were excluded. Non-opioid deaths from 2003-2015 include cases that were negative or were not tested at MEO. Data shown is complete through June 30, 2018.

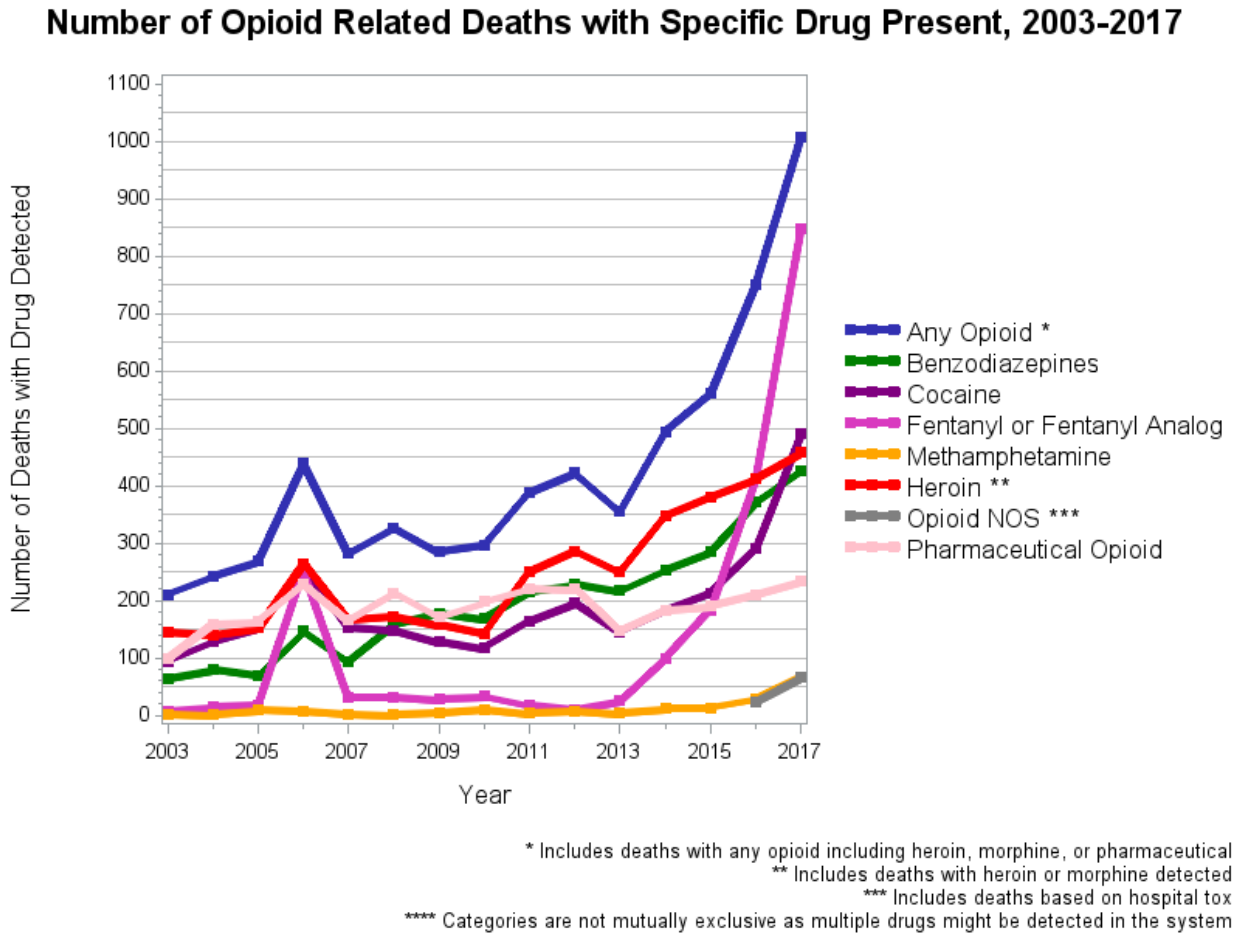
The major limitation to this dataset is it can take up to 90 days for toxicology reports to be complete, thus delaying data reporting for up to three months.



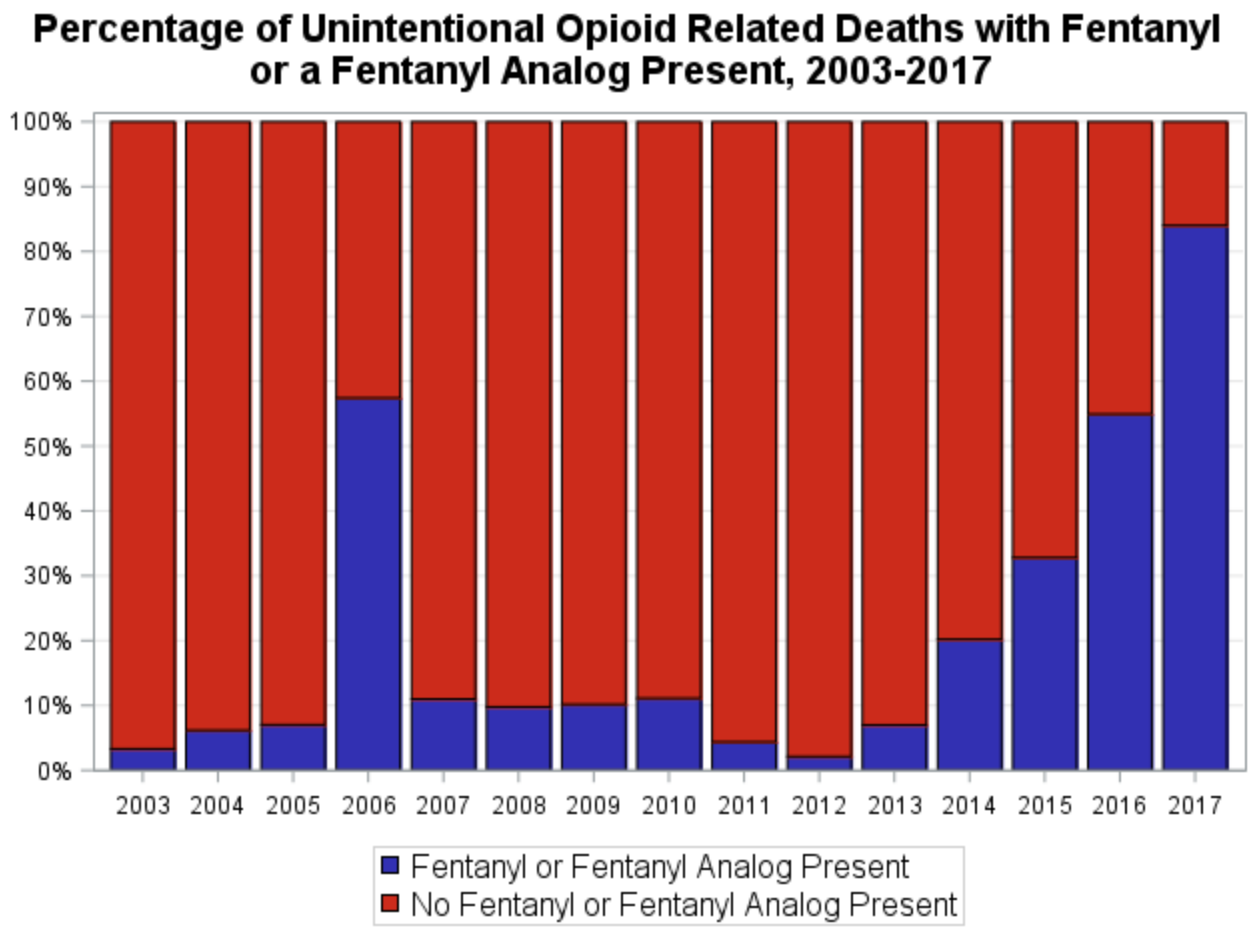
Since 2010, the total number of drug related deaths has increased each year with the exception of 2013. Deaths involving opioids including both heroin and pharmaceuticals represent the majority of drug related deaths each year.



The number of drug related deaths has trended upward since January 2010 with the exception of the last two quarters in 2017. Opioids including both heroin and pharmaceutical opioids are involved in the majority of drug related deaths. In 2018Q1, 219 of 257 deaths were opioid related.



Deaths involving any opioid have increased since 2009 with the exception of a decrease seen in 2013. In recent years, the majority of opioid related deaths have included heroin. The number of deaths involving a benzodiazepine and an opioid has slowly increased since 2003. Deaths involving fentanyl or a fentanyl analog remained low until 2014 with the exception of 2006 where deaths involving fentanyl or a fentanyl analog spiked. Fentanyl and fentanyl analog involved deaths began to rise in 2014 and continued to rise through 2017.



The number of unintentional opioid related deaths involving fentanyl or a fentanyl analog remained under 12% through 2013 with the exception of 2006 when a fentanyl outbreak occurred. In 2014, the number spiked and continued to increase in 2015 and 2016. In 2015, 32.8% of opioid related deaths involved fentanyl or a fentanyl analog, and in 2016, 56.6% of opioid related deaths involved fentanyl or a fentanyl analog. As of 2017, 84% of opioid related deaths involved fentanyl or a fentanyl analog.

Unintentional Opioid Related Deaths by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=296)	(N=389)	(N=423)	(N=356)	(N=495)	(N=561)	(N=752)	(N=1074)
10-14	0%	0%	0%	0%	0%	0%	0.13%	0 %
15-18	0%	0%	0%	0%	1%	1%	1%	0.19%
19-24	6%	9%	11%	6%	9%	7%	8%	6%
25-34	25%	26%	25%	31%	28%	28%	27%	27%
35-44	22%	23%	25%	24%	22%	23%	23%	28%
45-54	29%	27%	25%	24%	24%	23%	25%	23%
55+	18%	14%	13%	15%	17%	19%	16%	16%

Those between the ages of 25-34 years generally represent the largest age group dying from unintentional drug related deaths involving an opioid. This is followed by those in the 35-44 and 45-54 year age groups. 2016 is the first year where there was a death in the age group below 15.

Unintentional Opioid Related Deaths by Sex

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=296)	(N=389)	(N=423)	(N=356)	(N=495)	(N=561)	(N=752)	(N=1074)
Female	30%	25%	32%	31%	33%	26%	31%	25%
Male	70%	75%	68%	69%	67%	74%	69%	75%

Males consistently represent the largest group of those dying from unintentional drug related deaths involving opioids.

Unintentional Opioid Related Deaths by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=296)	(N=389)	(N=423)	(N=356)	(N=495)	(N=561)	(N=752)	(N=1074)
White, Non-Hispanic	67%	63%	66%	67%	63%	61%	62%	63%
Black, Non-Hispanic	26%	21%	23%	19%	23%	26%	23%	21%
Hispanic	8%	14%	10%	13%	14%	13%	13%	14%
Other, Non-Hispanic	0%	1%	1%	1%	1%	0%	2%	2%

White, non-Hispanic individuals consistently represent the largest race/ethnicity group dying from unintentional drug related deaths involving opioids. Black, non-Hispanic individuals represent the second largest race/ethnicity group dying from unintentional drug related deaths involving opioids.

Unintentional Opioid Related Deaths by Age & Sex

	2010	2011	2012	2013	2014	2015	2016	2017
Female	**(N=88)**	**(N=99)**	**(N=135)**	**(N=112)**	**(N=162)**	**(N=147)**	**(N=234)**	**(N=273)**
10-14	0%	0%	0%	0%	0%	0%	0.47%	0%
15-18	0%	0%	0%	0%	1%	1%	1%	0.4%
19-24	2%	7%	10%	5%	7%	10%	10%	6%
25-34	25%	26%	22%	31%	27%	24%	23%	27%
35-44	18%	26%	30%	25%	22%	23%	21%	26%
45-54	34%	27%	25%	27%	25%	25%	28%	25%
55+	20%	13%	12%	12%	19%	16%	17%	15%
Male	**(N=208)**	**(N=290)**	**(N=288)**	**(N=244)**	**(N=333)**	**(N=414)**	**(N=518)**	**(N=801)**
10-14	0%	0%	0%	0%	0%	0%	0%	0%
15-18	0%	0.34%	0%	0%	1%	0.48%	1%	0.13%
19-24	8%	10%	11%	6%	10%	6%	7%	6%
25-34	25%	27%	27%	31%	28%	29%	29%	27%
35-44	24%	22%	23%	24%	22%	22%	24%	29%
45-54	27%	27%	25%	23%	23%	22%	23%	22%
55+	16%	14%	14%	16%	17%	20%	16%	16%

For both males and females, those in the 25-34, 35-44, and 45-54 year old age groups make up the largest percentage of unintentional drug related deaths involving an opioid since 2010. For males, those between the ages of 25-34 years represent the largest percentage of unintentional drug related deaths involving an opioid since 2012 until 2017 when those ages of 35-44 became the largest percentage. In 2010, those between the ages of 45-54 years made up the largest percentage of females dying from unintentional drug related deaths involving an opioid, but the percentage has declined since.

Unintentional Opioid Related Deaths by Race/Ethnicity & Age

	2010	2011	2012	2013	2014	2015	2016	2017
White, Non-Hispanic	**(N=197)**	**(N=246)**	**(N=280)**	**(N=238)**	**(N=312)**	**(N=343)**	**(N=468)**	**(N=679)**
10-14	0%	0%	0%	0%	0%	0%	0.21%	0%
15-18	0%	0.41%	0%	0%	1%	1%	1%	0.15%
19-24	7%	11%	12%	7%	9%	8%	9%	6%
25-34	28%	28%	28%	34%	29%	35%	31%	30%
35-44	23%	22%	23%	22%	22%	22%	20%	27%
45-54	28%	27%	28%	24%	23%	20%	24%	21%
55+	14%	12%	9%	14%	15%	15%	15%	16%
Black, Non-Hispanic	**(N=76)**	**(N=83)**	**(N=99)**	**(N=67)**	**(N=112)**	**(N=145)**	**(N=171)**	**(N=228)**
10-14	0%	0%	0%	0%	0%	0%	0%	0%
15-18	0%	0%	0%	0%	0%	0%	1%	0.43%
19-24	3%	1%	9%	4%	8%	3%	6%	5%
25-34	14%	18%	15%	15%	18%	12%	13%	18%
35-44	18%	30%	27%	31%	16%	22%	24%	23%
45-54	33%	25%	20%	28%	29%	31%	30%	29%
55+	32%	25%	28%	21%	29%	31%	26%	24%
Hispanic	**(N=23)**	**(N=56)**	**(N=41)**	**(N=47)**	**(N=67)**	**(N=71)**	**(N=99)**	**(N=152)**
10-14	0%	0%	0%	0%	0%	0%	0%	0%
15-18	0%	0%	0%	0%	1%	0%	0%	0%
19-24	9%	11%	10%	4%	7%	6%	6%	4%
25-34	30%	30%	29%	36%	36%	25%	28%	25%
35-44	30%	20%	34%	26%	28%	30%	34%	39%
45-54	26%	34%	17%	23%	19%	25%	24%	24%
55+	4%	5%	10%	11%	7%	14%	8%	8%
Other, Non-Hispanic	**(N=0)**	**(N=4)**	**(N=3)**	**(N=4)**	**(N=4)**	**(N=2)**	**(N=14)**	**(N=15)**
10-14	0%	0%	0%	0%	0%	0%	0%	0%
15-18	0%	0%	0%	0%	0%	0%	0%	0%
19-24	0%	25%	33%	0%	25%	50%	8%	13%
25-34	0%	25%	33%	75%	25%	50%	69%	47%
35-44	0%	50%	33%	25%	25%	0%	23%	20%
45-54	0%	0%	0%	0%	0%	0%	0%	20%
55+	0%	0%	0%	0%	25%	0%	0%	0%

For white, non-Hispanic individuals, those between the ages of 25-34 years represent the largest percentage of individuals dying from unintentional drug related deaths involving an opioid. For black, non-Hispanic individuals, older age groups (≥35 years old) compose the largest percentage of individuals dying from unintentional drug related deaths involving an opioid. For Hispanic individuals, those in the 25-34, 35-44, and 45-54 year old age groups represent the largest percentage of individuals dying from unintentional drug related deaths involving an opioid.

Unintentional Opioid Related Deaths by Race/Ethnicity & Sex

	2010	2011	2012	2013	2014	2015	2016	2017
Female	**(N=88)**	**(N=99)**	**(N=135)**	**(N=112)**	**(N=162)**	**(N=147)**	**(N=234)**	**(N=273)**
White, Non-Hispanic	59%	59%	67%	69%	64%	65%	63%	68%
Black, Non-Hispanic	31%	28%	27%	22%	27%	29%	28%	21%
Hispanic	10%	12%	4%	8%	9%	5%	8%	10%
Other, Non-Hispanic	0%	1%	1%	1%	1%	0%	1%	1%
Male	**(N=208)**	**(N=290)**	**(N=288)**	**(N=244)**	**(N=333)**	**(N=414)**	**(N=518)**	**(N=801)**
White, Non-Hispanic	70%	65%	66%	66%	63%	60%	62%	61%
Black, Non-Hispanic	24%	19%	22%	17%	21%	25%	20%	21%
Hispanic	7%	15%	12%	16%	16%	15%	16%	16%
Other, Non-Hispanic	0%	1%	0.35%	1%	1%	0.48%	2%	2%

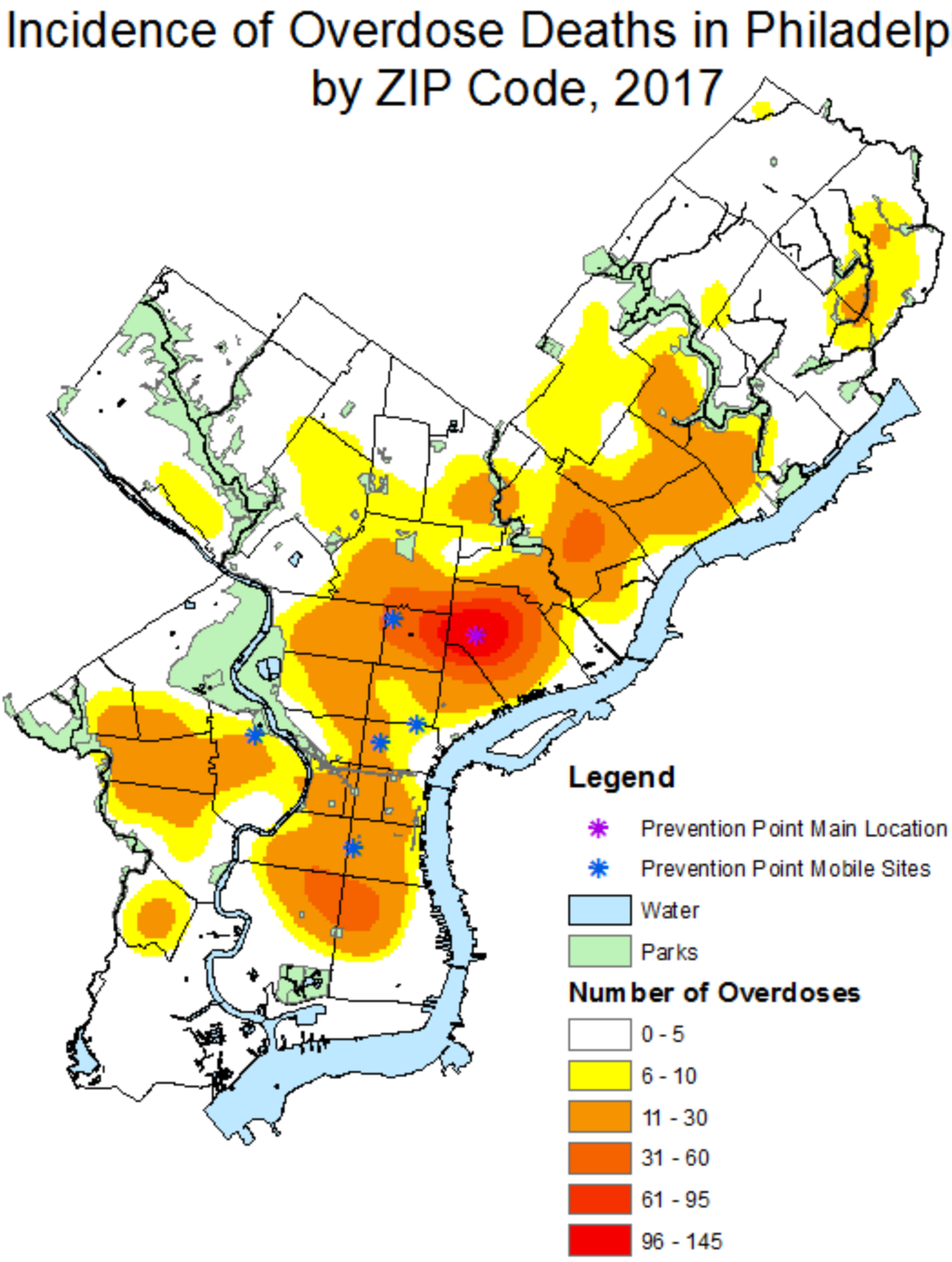
For both males and females, white, non-Hispanic individuals represent the largest percentage of individuals dying from unintentional drug related deaths involving an opioid.

Demographics of Unintentional Opioid Related Deaths
Age-Adjusted Rates* per 100,000 Residents
January 1, 2017- December 31, 2017

	Age-Adjusted Rate per 100,000 residents
Total	58.9
Sex	
Female	28.9
Male	92.4
Race/Ethnicity**	
White, non-Hispanic	95.5
Black, non-Hispanic	34.4
Hispanic	66.6
Age***	
15-24	22.1
25-34	78.8
35-44	129.2
45-54	119.9
≥55	42.0

** Rates are calculated using Philadelphia county population denominators from the 2016 American Community Survey 1-year estimates. Rates are adjusted to the 2000 U.S. Standard Population age distribution*
*** Deaths among persons who had race/ethnicity listed as other were too few to calculate rates*
**** Age-specific death rates are listed*

The age-adjusted death rate for unintentional drug related deaths involving an opioid was 58.9/100,000 residents in 2017. The age-adjusted rate of unintentional drug related deaths involving an opioid among men was 3.2 times the rate among women. White, non-Hispanic individuals had the highest rate of unintentional drug related deaths involving an opioid followed by Hispanic individuals. Those between the ages of 35-44 years had the highest rate of unintentional drug related deaths involving an opioid followed by those in the 45-54 and 25-34 year old age groups.



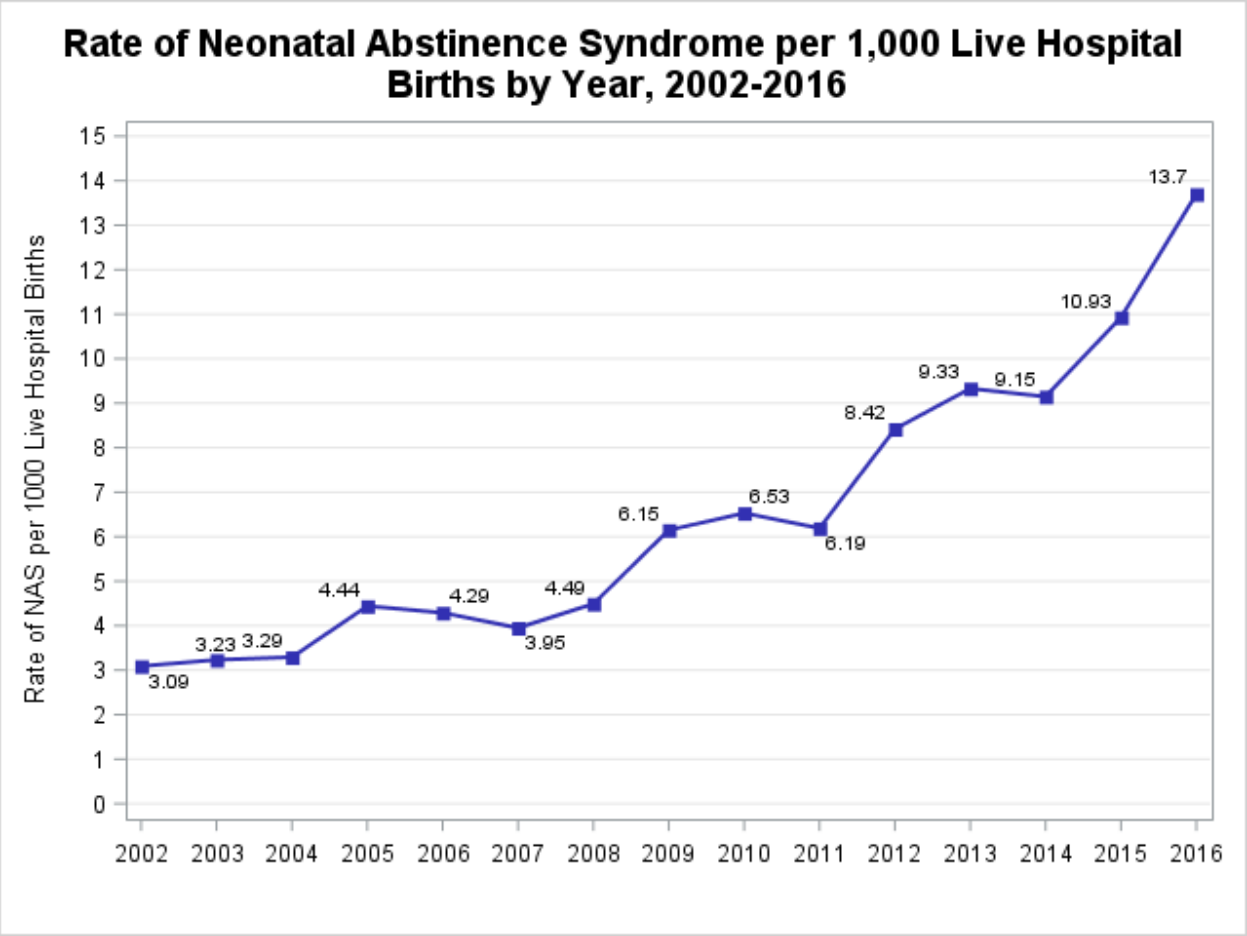
This map illustrates all overdose deaths that occurred in 2017 in Philadelphia. There are several areas of the city where the number of overdose deaths tend to be higher. Generally, these locations align with Prevention Point Philadelphia's needle and syringe exchange sites.

D. Neonatal Abstinence Syndrome and Maternal Opioid Use or Dependence

The following section includes data from the Pennsylvania Health Care Cost Containment Council (PHC4), an independent state agency that collects information on all inpatient hospitalizations and ambulatory procedures at freestanding clinics in Pennsylvania to monitor health care cost. PHC4 also collects data on neonatal abstinence syndrome (NAS), which is the main consequence of mothers who use opioids while pregnant. NAS is defined as a group of withdrawal symptoms, including diarrhea, fever, irritability, seizures, sweating, and tremors experienced by babies exposed to opioids in utero. Data are de-identified and include detailed patient demographic and utilization information. Each record has one principal diagnosis and up to 17 secondary diagnoses using codes from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) for data from January 1, 2002 to September 31, 2015 and the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) from October 1, 2015 to December 31, 2016. Data shown in this section are complete through 2016 and are for Philadelphia residents that received care at a hospital in Philadelphia, Bucks, Chester, Delaware, or Montgomery County.

Inpatient discharges with a principal ICD-9-CM diagnosis code of V30-V39 or ICD-10-CM diagnosis code of Z38.0-Z38.8 were identified as live births. Neonatal Abstinence Syndrome (NAS) was identified using ICD-9-CM code 779.5 and ICD-10-CM code P96.1. Possible cases of iatrogenic NAS were identified and excluded from the analysis. Women hospitalized for a live-born delivery were identified using ICD-9-CM diagnosis codes V27.0, V27.2, V27.3, V27.5, and V27.6 and ICD-10-CM diagnosis codes Z37.0, Z37.2, Z37.3, Z37.5, and Z37.6. Of these women, those dependent on opioids, using opioids, and taking long-term methadone or other opiate analgesic (ICD-9-CM: 304.00-304.03, 304.70-304.73, 305.50-305.53, V58.69; ICD-10-CM: F11.00-F11.99, Z79.891) were identified as a maternal hospitalization related to opioid abuse.

There are limitations to this dataset. First, the data is delayed up to two years. Second, all data is de-identified, and thus cannot be matched across city systems. Finally, although NAS is most often associated with opioid withdrawal, it can be used to describe withdrawal from other substances as well.



The rate of NAS has been steadily increasing since 2002 where the rate was 3.09 cases of NAS for every 1,000 live hospital births. By 2016, this rate had more than tripled with 13.7 cases of NAS for every 1,000 live hospital births.

Cases of NAS vs. All Other Live Hospital Births by Race/Ethnicity

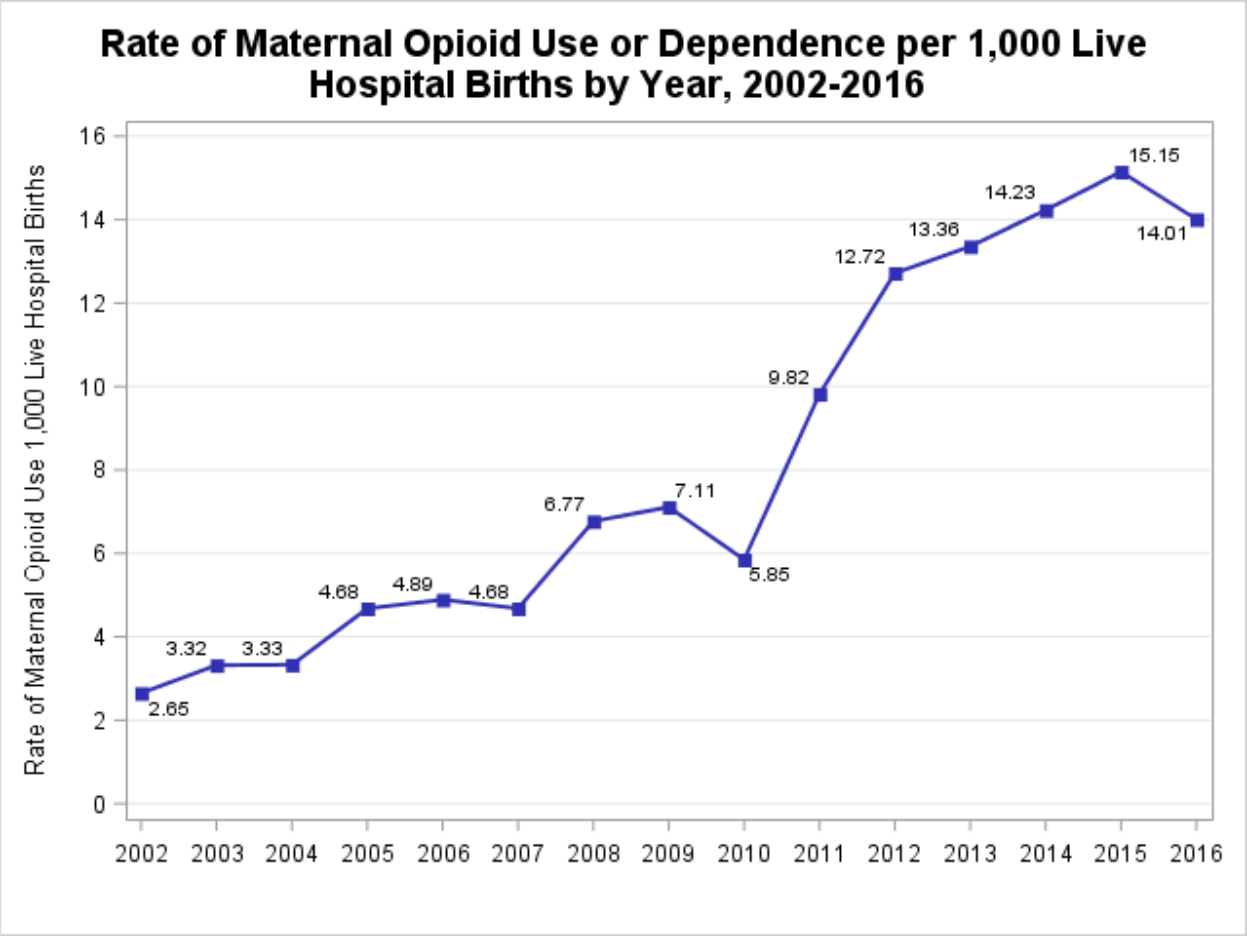
	2010	2011	2012	2013	2014	2015	2016
Neonatal Abstinence Syndrome	**(N=147)**	**(N=137)**	**(N=186)**	**(N=199)**	**(N=201)**	**(N=237)**	**(N=289)**
White, Non-Hispanic	70%	76%	77%	67%	64%	65%	63%
Black, Non-Hispanic	14%	12%	13%	16%	17%	18%	23%
Hispanic	3%	2%	1%	6%	5%	5%	6%
Other	0%	2%	2%	1%	3%	3%	1%
Unknown	13%	8%	7%	10%	11%	9%	7%
All Other Hospital Births	**(N=22,517)**	**(N=22,152)**	**(N=22,087)**	**(N=21,331)**	**(N=21,969)**	**(N=21,679)**	**(N=20,812)**
White, Non-Hispanic	23%	23%	23%	25%	27%	28%	29%
Black, Non-Hispanic	48%	48%	48%	46%	44%	45%	43%
Hispanic	10%	10%	10%	10%	10%	11%	11%
Other	10%	11%	11%	11%	10%	10%	11%
Unknown	8%	8%	7%	9%	8%	6%	6%

White, non-Hispanic infants are the predominant race/ethnicity group being born with NAS whereas black, non-Hispanic infants represent the predominant race/ethnicity group for all other hospital births.

Cases of NAS vs. All Other Live Hospital Births by Insurance Payer

	2010	2011	2012	2013	2014	2015	2016
Neonatal Abstinence Syndrome	**(N=147)**	**(N=137)**	**(N=186)**	**(N=199)**	**(N=201)**	**(N=237)**	**(N=289)**
Public	93%	91%	89%	89%	81%	89%	90%
Private	7%	8%	6%	6%	8%	8%	7%
Self-Pay/Charity	0%	1%	5%	6%	10%	3%	3%
Unknown	0%	1%	0%	0%	0%	0%	0%
All Other Hospital Births	**(N=22,517)**	**(N=22,152)**	**(N=22,087)**	**(N=21,331)**	**(N=21,969)**	**(N=21,679)**	**(N=20,812)**
Public	68%	69%	69%	67%	66%	66%	66%
Private	30%	30%	30%	31%	33%	33%	33%
Self-Pay/Charity	1%	1%	1%	1%	1%	1%	1%
Unknown	0.33%	1%	0.02%	0.02%	0.18%	0.17%	0.49%

The largest percentage of hospital births with NAS is on public insurance than for all other hospital births.



The rate of maternal opioid use or dependence has been increasing since 2002 where 2.65 mothers used opioids per 1,000 live births. Between 2002 and 2015, the rate of maternal opioid use increased more than five-fold with the rate of maternal opioid abuse being 15.15 per 1,000 live births in 2015. In 2016, the rate decreased to 14.01 per 1,000 live births.

Mothers with Diagnosis of Opioid Use or Dependence vs. All Other Mothers with Live Born Hospital Deliveries by Age

	2010	2011	2012	2013	2014	2015	2016
Mothers with Opioid Use Diagnosis	**(N=123)**	**(N=219)**	**(N=283)**	**(N=284)**	**(N=304)**	**(N=319)**	**(N=285)**
11-18	1%	0%	2%	2%	1%	1%	0%
19-24	25%	22%	25%	19%	20%	17%	12%
25-34	70%	66%	64%	66%	65%	66%	73%
35-44	4%	12%	9%	13%	14%	16%	15%
45+	0%	0%	0%	0%	0%	0%	0%
All Other Mothers	**(N=20,911)**	**(N=22,083)**	**(N=21,966)**	**(N=20,967)**	**(N=21,054)**	**(N=20,739)**	**(N=20,057)**
11-18	9%	8%	7%	6%	5%	5%	4%
19-24	33%	32%	31%	30%	28%	27%	25%
25-34	47%	48%	49%	51%	53%	54%	56%
35-44	11%	12%	12%	13%	14%	15%	15%
45+	0.11%	0.14%	0.13%	0.20%	0.15%	0.15%	0.15%

There is a larger percentage of mothers with an opioid use or dependence diagnosis between the ages of 25-34 years than there is for all other mothers.

Mothers with Diagnosis of Opioid Use or Dependence vs. All Other Mothers with Live Born Hospital Deliveries by Race

	2010	2011	2012	2013	2014	2015	2016
Mothers with Opioid Use Diagnosis	**(N=123)**	**(N=219)**	**(N=283)**	**(N=284)**	**(N=304)**	**(N=319)**	**(N=285)**
White, Non-Hispanic	67%	55%	60%	52%	48%	53%	59%
Black, Non-Hispanic	14%	30%	27%	34%	32%	30%	28%
Hispanic	2%	3%	1%	3%	4%	5%	7%
Other	2%	4%	5%	3%	4%	4%	2%
Unknown	15%	8%	7%	9%	12%	8%	4%
All Other Mothers	**(N=20,911)**	**(N=22,083)**	**(N=21,966)**	**(N=20,967)**	**(N=21,054)**	**(N=20,739)**	**(N=20,057)**
White, Non-Hispanic	25%	25%	25%	25%	27%	28%	29%
Black, Non-Hispanic	46%	47%	47%	45%	44%	45%	43%
Hispanic	10%	9%	7%	8%	10%	10%	11%
Other	11%	12%	14%	12%	11%	11%	11%
Unknown	8%	7%	8%	8%	8%	6%	6%

White, non-Hispanic mothers make up the predominant race ethnicity group using or dependent on opioids whereas black, non-Hispanic mothers make up the predominant race/ethnicity group for all other mothers with live born hospital deliveries.

Mothers with Diagnosis of Opioid Use vs. All Other Mothers with Live Born Hospital Deliveries by Insurance Payer

	2010	2011	2012	2013	2014	2015	2016
Mothers with Opioid Use Diagnosis	**(N=123)**	**(N=219)**	**(N=283)**	**(N=284)**	**(N=304)**	**(N=319)**	**(N=285)**
Public	95%	82%	84%	83%	84%	86%	94%
Private	4%	16%	14%	16%	15%	12%	6%
Self-Pay/Charity	1%	0.46%	1%	1%	1%	2%	0%
Unknown	0%	1%	0%	0.35%	0%	0%	0%
All Other Mothers	**(N=20,911)**	**(N=22,083)**	**(N=21,966)**	**(N=20,967)**	**(N=21,054)**	**(N=20,739)**	**(N=20,057)**
Public	66%	66%	66%	65%	64%	65%	64%
Private	33%	33%	33%	34%	35%	34%	35%
Self-Pay/Charity	1%	1%	1%	1%	1%	1%	1%
Unknown	0.32%	1%	0.02%	0.02%	0.17%	0.18%	0.40%

The largest percentage of mothers with a diagnosis of opioid use is on public insurance than for all other mothers with live born hospital deliveries.

E. Cases of Acute Hepatitis C

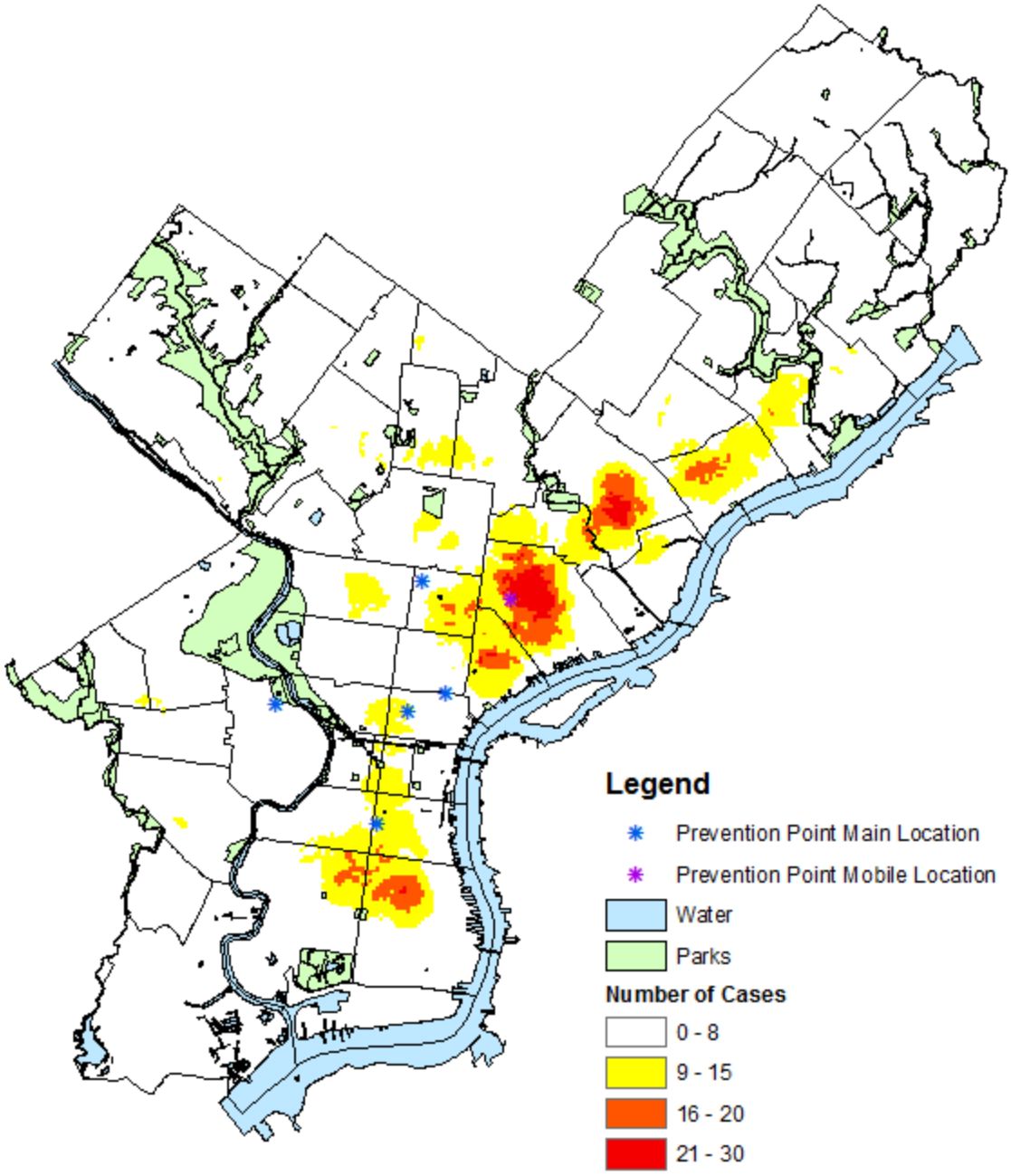
The following section includes data from the Viral Hepatitis Program (HEP) at the Philadelphia Department of Public Health (PDPH). Hepatitis C virus (HCV) infection occurs at very high rates among people who use injection drugs, especially among those who share injecting equipment and other drug paraphernalia. Indeed, 60% of acute HCV patients in Philadelphia reported ever having injected drugs.

A patient is considered to have acute HCV infection if 1) he/she meets clinical criteria (illness with discrete onset of any sign or symptom consistent with acute viral hepatitis AND jaundice OR a peak elevated serum alanine aminotransferase level) AND has a positive HCV detection test (HCV nucleic acid test or HCV antigen test) OR 2) a documented negative HCV test (antibody, antigen, or nucleic acid test) result followed by a positive test result within 12 months. The information in this section includes all acute HCV cases reported to the PDPH between 2012 and 2017.

There are some limitations to this data. First, due to the lack of a specific laboratory test and the general asymptomatic presentation of acute HCV, disease incidence is often underestimated. Second, the demographic and risk factor profile of the individuals tested for HCV may not be representative of the population infected. Finally, although HEP attempts to investigate all cases of acute HCV infection to assess risk factors, some individuals are lost-to-follow-up and risk factor information is not always obtained.

Since injection drug use is a primary risk factor for acute HCV, it is important to emphasize safe injection strategies that can reduce the transmission of HCV and other blood born infectious diseases, such as HIV and viral hepatitis B (HBV).

Cases of Acute Hepatitis C Infection by ZIP Code, 2012-2017



There are several areas of the city where number of new acute HCV infection tend to be higher. Although some of these locations align with Prevention Point Philadelphia's needle and syringe exchange sites, numbers suggest there are areas in the city that could be serviced by new mobile needle and syringe exchange site locations.

Acute HCV Cases by Age

	(N=451)
15-18	1%
19-24	13%
25-34	42%
35-44	18%
45-54	13%
55-64	8%
65+	5%

** Individuals with missing age information were excluded*

Individuals between the ages of 25-34 years are the predominant age group being diagnosed with acute HCV.

Acute HCV Cases by Sex

	(N=451)
Female	47%
Male	53%

The percentage of male cases of acute HCV is slightly higher than the percentage of females.

Acute HCV Cases by Race/Ethnicity

	(N=451)
White, Non-Hispanic	55%
Black, Non-Hispanic	26%
Hispanic	17%
Other, Non-Hispanic	2%

** Individuals with missing race/ethnicity information were excluded*

More than 50% of cases that had race/ethnicity information were white, non-Hispanic individuals.

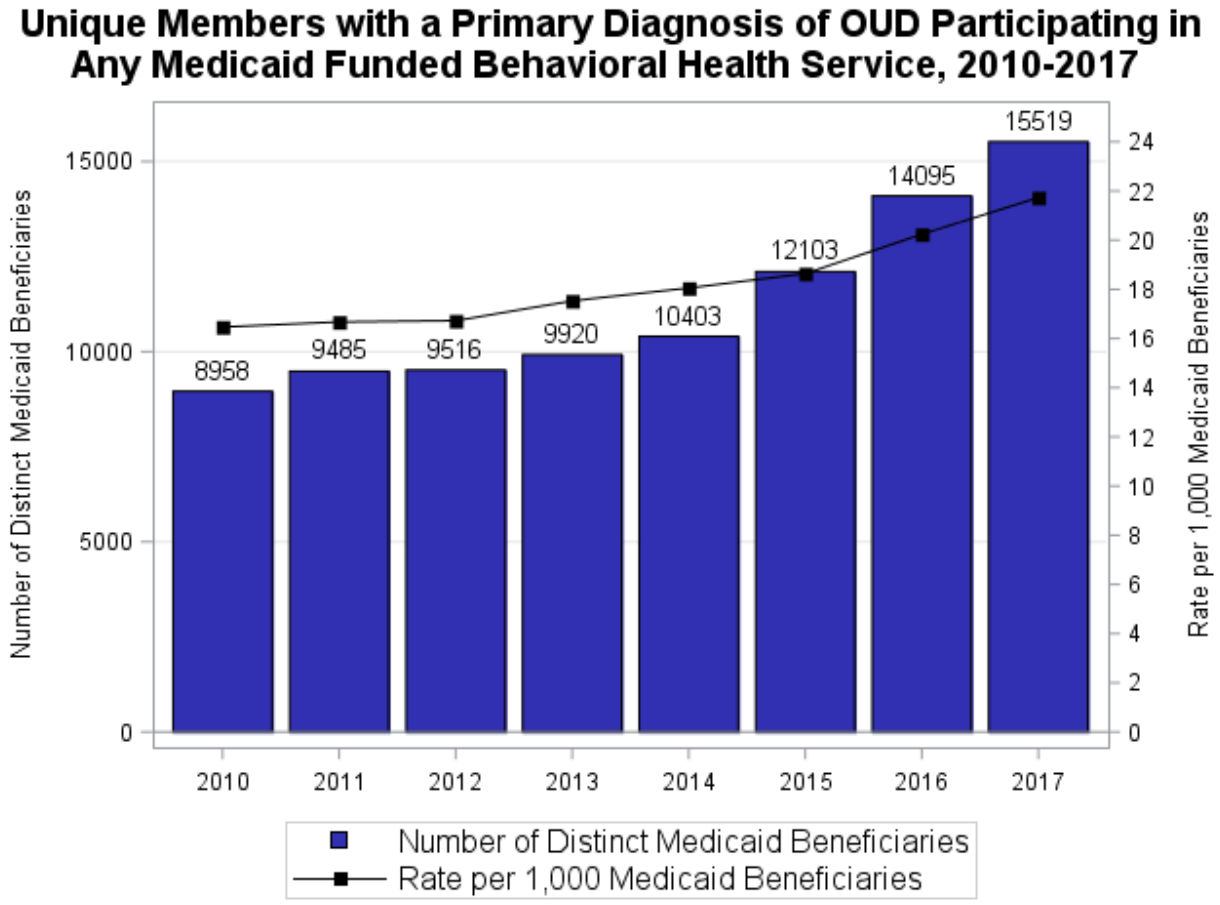
F. Addiction Treatment Services

The following section includes addiction treatment statistics on Medicaid patients with a primary diagnosis of Opioid Use Disorders (OUD) in Philadelphia. The treatment statistics are provided by Community Behavioral Health, a component of Philadelphia Department of Behavioral Health and disAbility Services. Under the HealthChoices program, CBH provides mental health and addiction treatment services for Medicaid eligible individuals in Philadelphia. CBH'S paid claims from January 1, 2010 to December 31, 2017 for addiction treatment services are presented.

Prior to the increase in overdose deaths that started in 2014, Governor Corbett initiated major changes to Medicaid eligibility in the Commonwealth of Pennsylvania. Beginning in 2013, Pennsylvania's administration introduced Healthy PA, which included a private insurance option for Medicaid enrollees. This resulted in a loss of eligible individuals in CBH and subsequent reduction in members using addiction treatment services. Decreases in addiction treatment services in 2013 and 2014 reflect, in part, decreases in the Medicaid eligible population. In 2015, Governor Wolf terminated the Healthy PA initiative and Pennsylvania expanded Medicaid under the Affordable Care Act.

Given the transition between Healthy PA and Medicaid expansion in 2015, we recommend caution in interpreting these treatment statistics for that time period. Additionally, without data from private insurance, the statistics on Medicaid funded addiction treatment provides a partial picture on Philadelphians in need of treatment for opioid use disorder.

Any Medicaid Funded Addiction Service



Between 2010 and 2017, the number of unique CBH members with a primary diagnosis of OUD receiving any Medicaid funded addiction treatment service has increased each year. In 2017, there were 15,519 unique members with primary diagnosis of oioid use disorder receiving behavioral health services with a rate of 21.7 distinct individuals per 1,000 Medicaid beneficiaries. Services include medication assisted treatment, outpatient, intensive outpatient, partial hospitalization, case management, halfway house, residential rehabilitation, and detoxification.

Unique Members with a Primary Diagnosis of OUD Participating in Any MA Funded Addictions Treatment Services by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=8958)	(N=9485)	(N=9516)	(N=9920)	(N=10403)	(N=12103)	(N=14095)	(N=15519)
18-24	8%	6%	5%	5%	5%	5%	5%	4%
25-34	30%	31%	32%	31%	31%	31%	31%	31%
35-44	26%	26%	26%	25%	26%	27%	28%	30%
45-54	23%	23%	23%	23%	23%	23%	22%	21%
55-64	13%	13%	13%	13%	13%	13%	12%	12%
65+	1%	1%	2%	2%	2%	2%	2%	2%

Members in the 25-34 year old and 35-44 year old age groups are the predominant groups participating in any MA funded addiction treatment services among those with a primary diagnosis of OUD.

Unique Members with a Primary Diagnosis of OUD Participating in Any MA Funded Addictions Treatment Services by Sex

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=8958)	(N=9485)	(N=9516)	(N=9920)	(N=10403)	(N=12103)	(N=14095)	(N=15519)
Female	38%	38%	39%	40%	40%	38%	36%	36%
Male	62%	62%	61%	60%	60%	62%	63%	64%

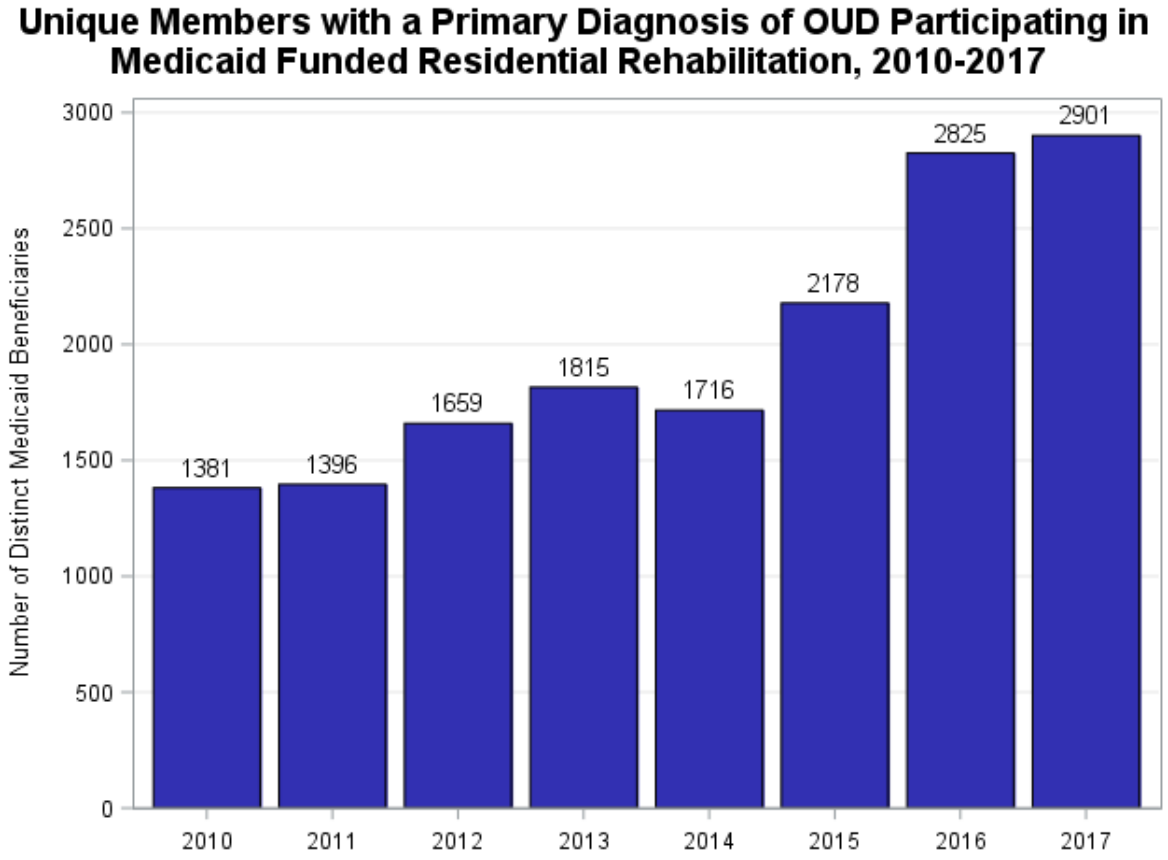
A higher proportion of males with a primary diagnosis of OUD are participating in MA funded addiction treatment services than females.

Unique Members with a Primary Diagnosis of OUD Participating in Any MA Funded Addictions Treatment Services by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=8958)	(N=9485)	(N=9516)	(N=9920)	(N=10403)	(N=12103)	(N=14095)	(N=15519)
White, Non-Hispanic	47%	48%	50%	49%	50%	48%	48%	46%
Black, Non-Hispanic	35%	33%	32%	33%	33%	34%	34%	34%
Hispanic	16%	16%	16%	16%	16%	15%	16%	17%
Other	2%	2%	2%	2%	2%	2%	3%	3%

White, non-Hispanic individuals are the predominant race/ethnicity group with a primary diagnosis of OUD receiving MA funded addiction treatment services.

Medicaid Funded Residential Rehabilitation



Since 2010, the number of individuals with a primary diagnosis of OUD who have participated in MA funded residential rehabilitation programs has increased each year with the exception of 2014, which may be in part due to the Healthy PA program. Services include hospital and non-hospital based, short and long term residential rehabilitation, and specialty programs such as Journey of Hope and Women with Children.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Residential Rehabilitation by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=1381)	(N=1395)	(N=1655)	(N=1814)	(N=1714)	(N=2178)	(N=2819)	(N=2901)
18-24	12%	8%	8%	8%	8%	7%	6%	4%
25-34	35%	39%	38%	38%	38%	38%	41%	41%
35-44	25%	28%	29%	26%	28%	28%	28%	31%
45-54	20%	18%	19%	19%	19%	18%	18%	17%
55-64	7%	7%	6%	8%	6%	7%	6%	7%
65+	1%	0.29%	0.18%	1%	1%	1%	0%	1%

Members in the 25-34 and 35-44 year old age groups are the predominant groups among those with a primary diagnosis of OUD who are participating in any MA funded residential rehabilitation.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Residential Rehabilitation by Sex

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=1381)	(N=1396)	(N=1659)	(N=1814)	(N=1716)	(N=2178)	(N=2825)	(N=2901)
Female	34%	33%	35%	38%	37%	36%	36%	35%
Male	66%	67%	65%	62%	63%	64%	64%	65%

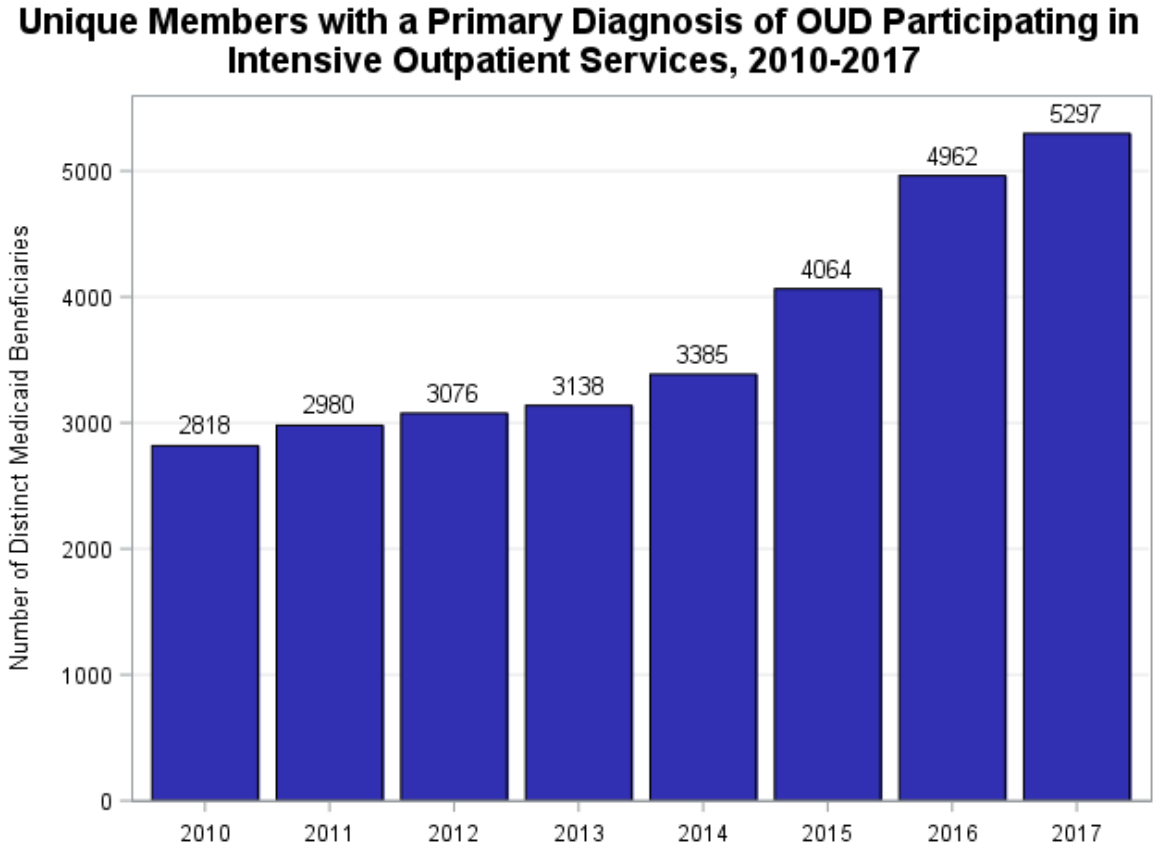
Males consistently represent a larger proportion of those with an OUD participating in MA funded residential rehabilitation programs.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Residential Rehabilitation by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=1381)	(N=1396)	(N=1659)	(N=1814)	(N=1716)	(N=2178)	(N=2825)	(N=2901)
White, Non-Hispanic	49%	53%	55%	56%	58%	56%	55%	57%
Black, Non-Hispanic	33%	27%	27%	27%	25%	28%	27%	25%
Hispanic	16%	17%	16%	16%	14%	14%	15%	15%
Other	3%	2%	2%	2%	2%	3%	3%	3%

White, non-Hispanic individuals are the predominant race/ethnicity group among those with a primary diagnosis of opioid use disorder who are participating in residential rehabilitation programs.

Medicaid Funded Intensive Outpatient Services



Between 2010 and 2017, the number of unique members with a primary diagnosis of OUD participating in intensive outpatient services has increased. In 2017, 5,297 unique individuals participated in intensive outpatient services. These services are utilized at an intensive basis, up to 9.75 hours per week.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Intensive Outpatient Services by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=2818)	(N=2980)	(N=3076)	(N=3138)	(N=3385)	(N=4064)	(N=4962)	(N=5297)
18-24	7%	5%	5%	5%	5%	5%	5%	4%
25-34	35%	36%	38%	38%	36%	35%	35%	34%
35-44	27%	27%	27%	28%	29%	30%	30%	31%
45-54	21%	22%	21%	19%	20%	20%	20%	20%
55-64	9%	9%	9%	9%	9%	9%	9%	10%
65+	1%	1%	1%	1%	1%	1%	1%	1%

Members in the 25-34 and 35-44 year old age groups are the predominant groups among those with a primary diagnosis of opioid use disorder who are participating in intensive outpatient services.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Intensive Outpatient Services by Sex

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=2818)	(N=2980)	(N=3076)	(N=3138)	(N=3385)	(N=4064)	(N=4962)	(N=5297)
Female	36%	38%	38%	39%	39%	37%	35%	36%
Male	64%	62%	62%	61%	61%	63%	65%	64%

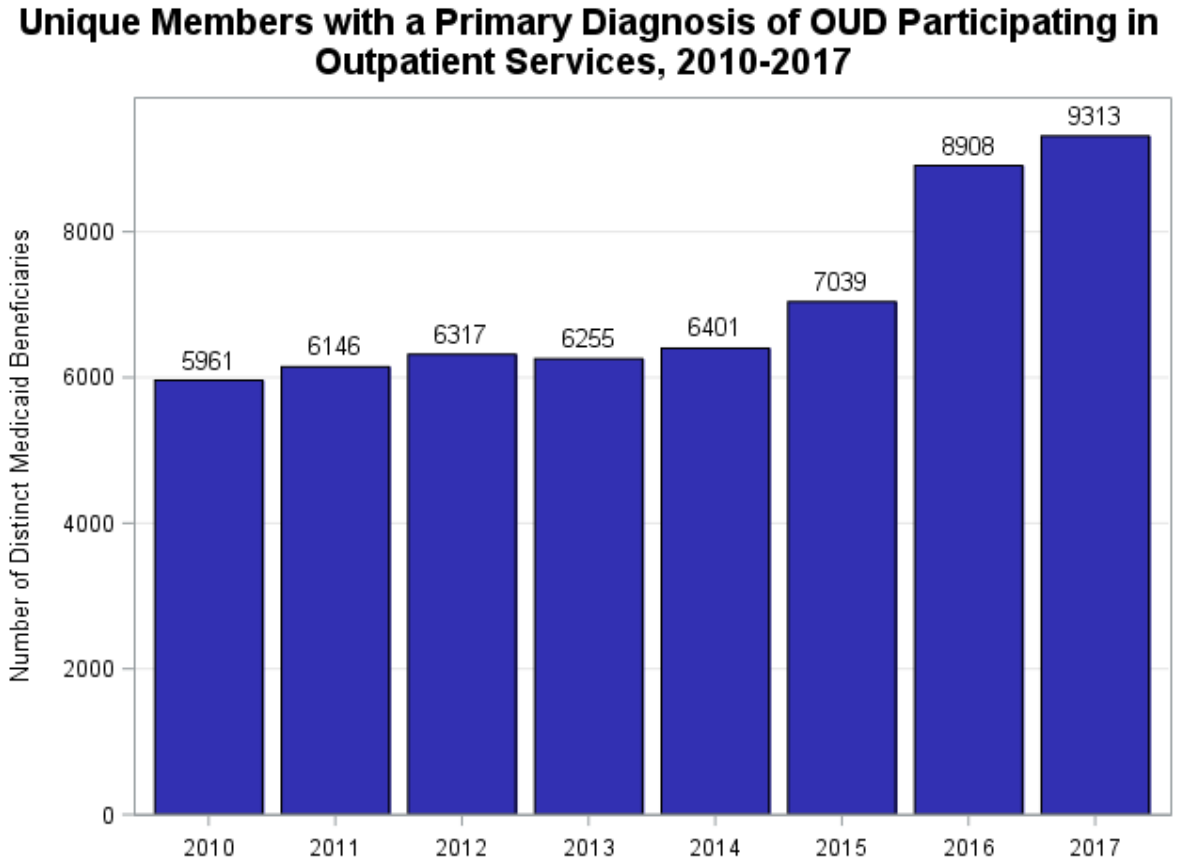
A higher proportion of males with a primary diagnosis of an opioid use disorder participate in intensive outpatient services than females.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Intensive Outpatient Services by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=2818)	(N=2980)	(N=3076)	(N=3138)	(N=3385)	(N=4064)	(N=4962)	(N=5297)
White, Non-Hispanic	54%	56%	57%	58%	58%	54%	51%	49%
Black, Non-Hispanic	25%	25%	25%	25%	24%	27%	28%	29%
Hispanic	18%	16%	17%	15%	16%	17%	18%	19%
Other	2%	3%	2%	2%	2%	2%	3%	3%

White, non-Hispanic individuals with a primary diagnosis of an opioid use disorder are the predominant race/ethnicity group participating in intensive outpatient services.

Medicaid Funded Outpatient Services



Between 2010 and 2017, the number of unique members with a primary opioid use disorder diagnosis who participated in outpatient services continually increased, with the largest increase occurring between 2015 and 2016. Services include assessments or evaluations using American Society of Addiction Medicine (ASAM) or Pennsylvania Client Placement Criteria (PCPC), testing by psychologist, therapy with counselor, psychologist or psychiatrist, individual, group, couple or family therapy, medication administration, evaluation, or management, and collateral services.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Outpatient Services by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=5961)	(N=6146)	(N=6317)	(N=6255)	(N=6401)	(N=7039)	(N=8908)	(N=9313)
18-24	5%	4%	4%	3%	3%	3%	4%	3%
25-34	30%	32%	33%	32%	32%	30%	31%	31%
35-44	26%	25%	26%	26%	27%	29%	30%	31%
45-54	22%	22%	21%	21%	21%	21%	21%	20%
55-64	15%	15%	14%	14%	14%	14%	12%	12%
65+	1%	2%	2%	2%	3%	3%	2%	3%

Members in the 25-34 and 35-44 year old age groups are the predominant groups among those with a primary diagnosis of opioid use disorder who are participating in outpatient services.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Outpatient Services by Sex

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=5961)	(N=6146)	(N=6317)	(N=6255)	(N=6401)	(N=7039)	(N=8908)	(N=9313)
Female	39%	40%	40%	41%	41%	40%	38%	37%
Male	61%	60%	60%	59%	59%	60%	62%	63%

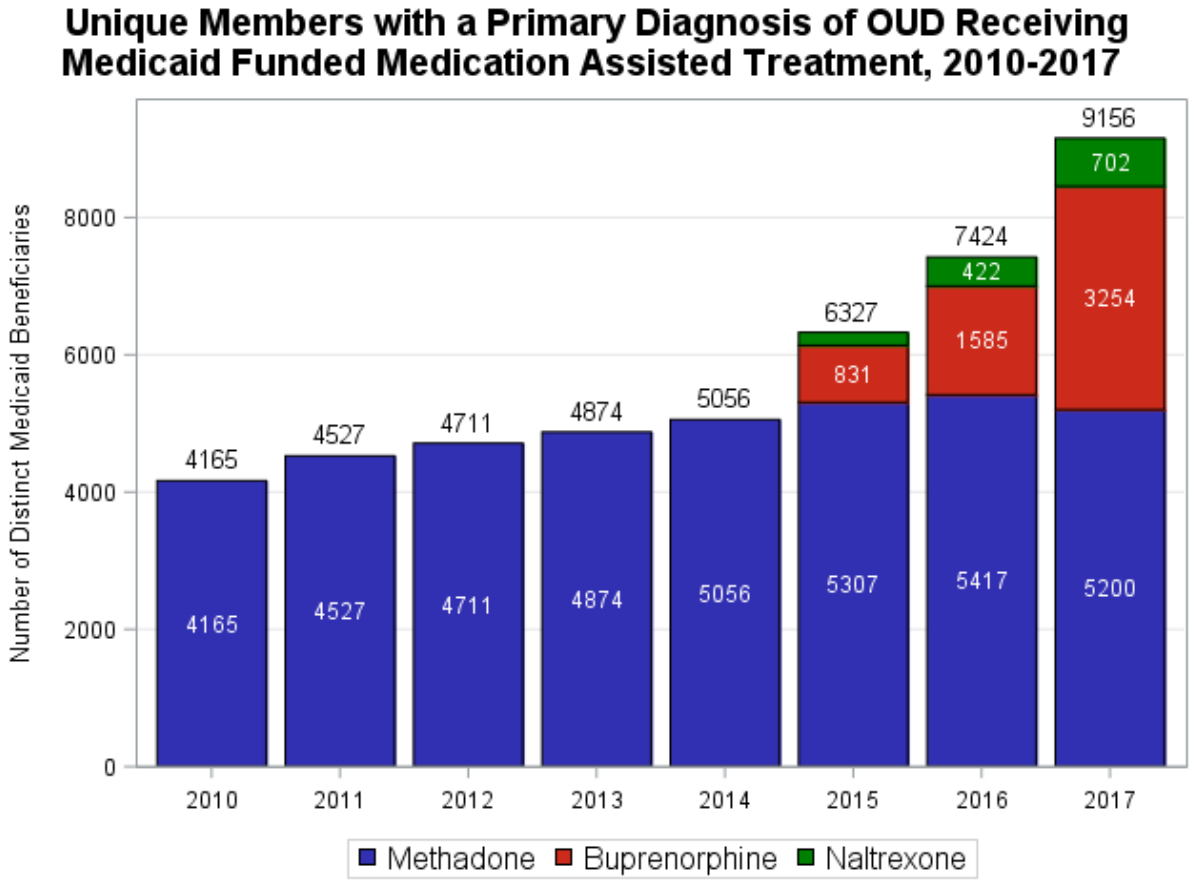
A higher proportion of males with a primary opioid use diagnosis are receiving outpatient services than females.

Unique Members with a Primary Diagnosis of OUD Participating in MA Funded Outpatient Services by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=5961)	(N=6146)	(N=6317)	(N=6255)	(N=6401)	(N=7039)	(N=8908)	(N=9313)
White, Non-Hispanic	55%	56%	58%	59%	59%	27%	54%	52%
Black, Non-Hispanic	27%	26%	25%	25%	24%	26%	27%	28%
Hispanic	16%	16%	16%	14%	14%	15%	17%	17%
Other	2%	2%	2%	2%	2%	2%	2%	3%

White, non-Hispanic individuals are the predominant race/ethnicity group among those with a primary opioid use diagnosis who are receiving outpatient services.

Medicaid Funded Medication Assisted Treatment



The number of individuals with a primary diagnosis of opioid use disorder who participated in some form of medication assisted treatment has increased since 2010. In 2017, there were 9,156 individuals with a primary diagnosis of OUD receiving some form of medication assisted treatment. Of those individuals, 5,200 received methadone, 3,254 received buprenorphine, and 702 received naltrexone at their most recent medication type. Services can include methadone maintenance (daily administration or take-home dosage), and addiction treatment services with buprenorphine or naltrexone prescriptions within the same calendar quarter. Note that prescriptions claims are provided by Physical Health Managed Care Organizations (PHMCO), not Community Behavioral Health. Prescription data are presented beginning in 2015 and historical data prior to this time period are unavailable.

Unique Members with a Primary Diagnosis of OUD Receiving MA Funded Medication Assisted Treatment by Age

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=4165)	(N=4527)	(N=4711)	(N=4874)	(N=5056)	(N=6313)	(N=7399)	(N=9156)
18-24	4%	3%	3%	2%	2%	3%	3%	3%
25-34	31%	34%	35%	34%	33%	31%	31%	32%
35-44	25%	25%	26%	27%	28%	30%	31%	31%
45-54	21%	20%	20%	20%	20%	21%	21%	21%
55-64	16%	15%	14%	15%	14%	13%	12%	11%
65+	2%	2%	2%	3%	3%	3%	3%	2%

Members in the 25-34 and 35-44 year old age groups are the predominant groups among those with a primary diagnosis of opioid use disorder who are participating in medication assisted treatment.

Unique Members with a Primary Diagnosis of OUD Receiving MA Funded Medication Assisted Treatment by Sex

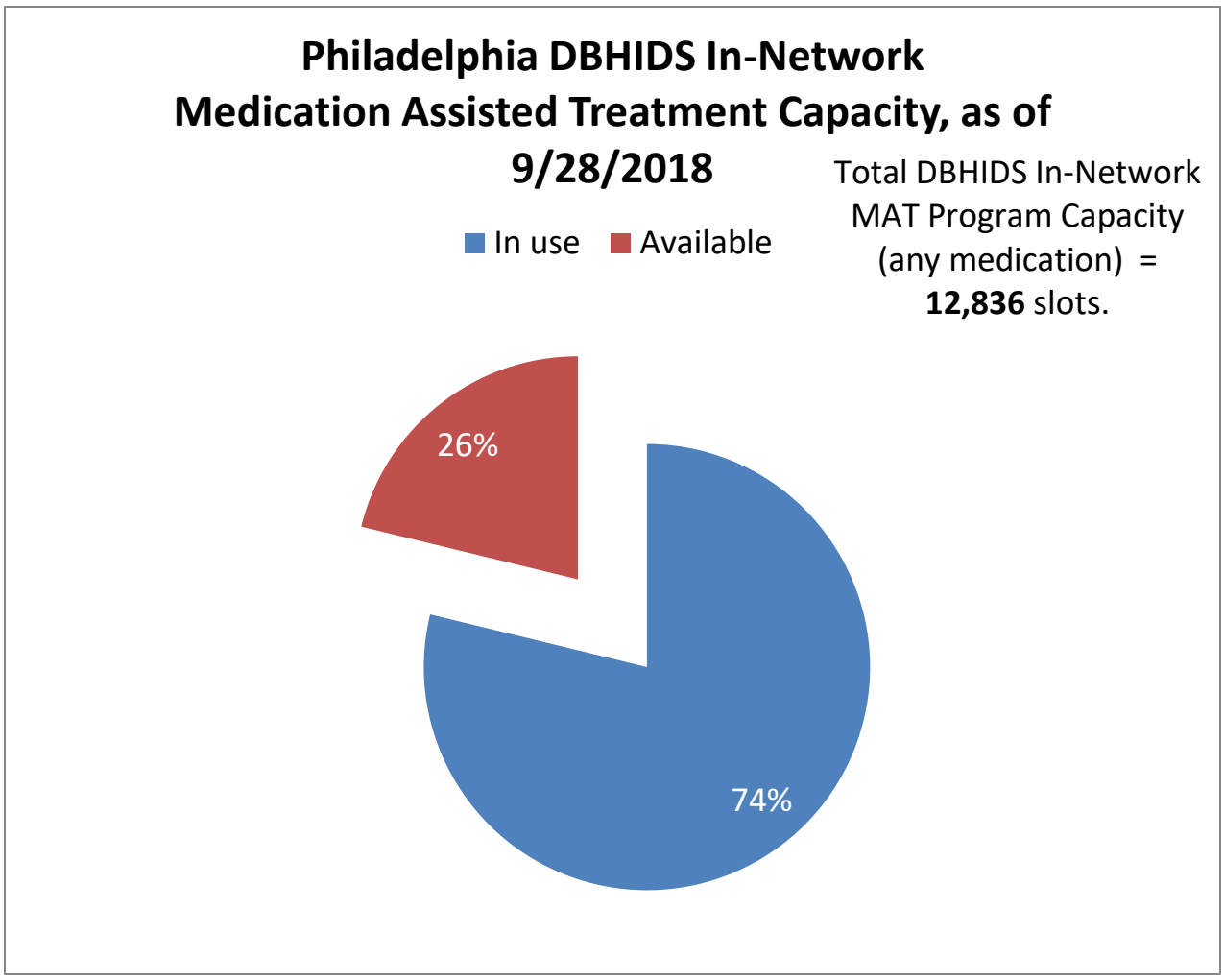
	2010	2011	2012	2013	2014	2015	2016	2017
	(N=4165)	(N=4527)	(N=4711)	(N=4874)	(N=5056)	(N=6313)	(N=7399)	(N=9156)
Female	42%	42%	42%	43%	42%	42%	42%	40%
Male	58%	58%	58%	57%	57%	58%	59%	60%

A higher proportion of males with a primary opioid use diagnosis are receiving medication assisted treatment than females.

Unique Members with a Primary Diagnosis of OUD Receiving MA Funded Medication Assisted Treatment by Race/Ethnicity

	2010	2011	2012	2013	2014	2015	2016	2017
	(N=4165)	(N=4527)	(N=4711)	(N=4874)	(N=5056)	(N=6313)	(N=7399)	(N=9156)
White, Non-Hispanic	60%	60%	61%	62%	63%	63%	62%	55%
Black, Non-Hispanic	25%	25%	23%	22%	21%	21%	22%	25%
Hispanic	13%	13%	13%	13%	13%	14%	14%	17%
Other	2%	2%	2%	2%	2%	2%	2%	3%

White, non-Hispanic individuals are the predominant race/ethnicity group among those with a primary opioid use diagnosis who are receiving medication assisted treatment.



The total DBHIDS Community MAT Program Capacity (any medication) is 12,836 slots. As of June 1, 2018, 3,231 MAT slots are available.