

DEA Intelligence Report

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(U) Analysis of Drug-Related Overdose Deaths in Philadelphia, Pennsylvania, 2013-2014

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(U) Overview

(U) The Drug Enforcement Administration (DEA) Philadelphia Field Division (PFD) Intelligence Program conducted an analysis of drug-related overdose deaths for the city of Philadelphia, Pennsylvania, for 2013 and 2014. Philadelphia is home to over 1.5 million residents and comprises part of the sixth largest Metropolitan Statistical Area (MSA) in the United States.¹

(U) The abuse of illicit drugs, specifically heroin and cocaine, as well as the opioids fentanyl and oxycodone, has contributed to an increase in drug-related deaths in Philadelphia over the last decade. Specifically, drug-related overdose deaths in Philadelphia have risen 43 percent since 2009,² with a corresponding 45 percent increase in heroin-positive toxicology test results.

(U) Background

(U//FOUO) The PFD Intelligence Program periodically conducts assessments of the drug threats in Pennsylvania based on a variety of factors, to include: availability, threat to public health, community impact, attendant crime, enforcement activity, seizures, drug abuse and treatment statistics, drug-related death statistics, and propensity for abuse. Analysis of each of these areas, combined with investigative reporting, liaison, and open source data allows for a comprehensive overview of each drug area. For each of the previous five years, the primary drug threats in Philadelphia have been identified as heroin, pharmaceuticals (specifically opioids and benzodiazepines), and cocaine.³

(U) Drug-Related Overdose Death Data

(U) The PFD Intelligence Program maintains a relationship with the Philadelphia Medical Examiner's Office (PMEO) through which historical and current information related to drug-related overdose deaths is shared, upon request. These requests are made in support of strategic intelligence collection to identify current and emerging trends in drug availability and abuse.

(U) The PFD requested drug-related overdose death data for 2013 and 2014 from the PMEO, to include data on decedents for which the primary or secondary cause of death was drug intoxication (overdose).^a Upon receipt of the data, analysis was conducted on gender, age, race, and drugs present in toxicology test results.

(U) Demographics

(U) The PMEO provided information on 493 and 655 decedents for 2013 and 2014, respectively; <u>this data</u> revealed a 33 percent increase in drug-related overdose deaths in Philadelphia from 2013 to 2014.

(U) Males comprised 66 percent and 67 percent of total decedents in 2013 and 2014, respectively. The average age of decedents was 42 for both reviewed years, with the largest percentage in the 46-60 age group (35 percent in 2013 and 37 percent in 2014).

(U) White (non-Hispanic) decedents were the largest percentage in both reviewed years (60 percent in 2013 and 56 percent in 2014), with African Americans reflecting 27 percent and 31 percent in 2013 and 2014, respectively, and Hispanics comprising 10 percent (2013) and 12 percent (2014).

(U) Analysis revealed that 12 percent of the decedents in the 2013 data set resided outside of the city of Philadelphia at the time of their death; in 2014, this rate was 11 percent.

(U) The complete gender, race, and age analyses for 2013 and 2014 are illustrated in Figures 1-3.

^a (U) Data provided, if any, for deaths attributed to "Acute alcohol intoxication" with no additional drugs present in the toxicology test results were not included in this analysis.



Source: Philadelphia Medical Examiner's Office





Source: Philadelphia Medical Examiner's Office

(U) Toxicology Test Results

(U) For analytical purposes, the toxicology test results for the reported decedents were grouped into three categories: illicit drugs, opioids, and benzodiazepines^b. Analysis of the toxicology test results revealed that 72 percent of the decedents in each of the reviewed years showed the presence of two or more of the drugs (multi-drug toxicity) included in this analysis. In the results with only one reported drug, 85 percent (2013) and 83 percent (2014) involved an illicit drug.

(U) Analysis of the reported toxicology test results identified increases from 2013 to 2014 in all drugs analyzed in this report, as illustrated in Figure 4.

(U) Figure 5 illustrates the percentage of each drug category for the corresponding year based on analysis of the reported toxicology test results.

(U) Overall, the most common drugs present in the toxicology test results for the reported decedents were heroin^c, cocaine, alprazolam, fentanyl, and oxycodone. Heroin and cocaine represented the most frequently reported drugs overall; analysis revealed a 36 percent and 35 percent increase in heroin and cocaine positive toxicology test results, respectively, from 2013 to 2014. In 2013 and 2014, 69 percent of the decedents showed the presence of heroin and/or cocaine; 17 percent (2013) and 19 percent (2014) indicated the presence of both.

^b (U) For the purposes of this report, the categories include: illicit drugs - cocaine, heroin, methamphetamine, phencyclidine (PCP); opioids - fentanyl, hydrocodone, methadone, oxycodone, oxymorphone, tramadol; benzodiazepines - alprazolam, clonazepam, diazepam, oxazepam, temazepam.

^c (U) For the purposes of this report, "heroin" includes the presence of morphine (with and without 6-monoacetylmorphine) in the toxicology test results. For more information on this definition and impact on the data analysis, please see the Data Challenges section of this report.

(U) FIGURE 4: RANKING OF THE FREQUENCY OF DRUGS PRESENT IN TOXICOLOGY TEST RESULTS FOR DRUG-RELATED OVERDOSE DECEDENTS, PHILADELPHIA, 2013-2014

Rank	Drug	2013	% reported among decedents	Drug	2014	% reported among decedents	Change in rank from 2013	% Change from 2013
1	Heroin	257	52%	Heroin	349	53%	0	36%
2	Cocaine	170	34%	Cocaine	230	35%	0	35%
3	Alprazolam	156	32%	Alprazolam	172	26%	0	10%
4	Oxycodone	90	18%	Fentanyl ^d	99	15%	+6	313%
5	Oxazepam	65	13%	Oxycodone	93	14%	-1	3%
6	Diazepam	58	12%	Diazepam	83	13%	0	43%
7	Methadone	53	11%	Oxazepam	79	12%	-2	22%
8	Oxymorphone	45	9%	Oxymorphone	64	10%	0	42%
9	РСР	29	6%	Methadone	62	9%	-2	17%
10	Fentanyl ^d	24	5%	РСР	47	7%	-1	62%
11	Temazepam	24	5%	Clonazepam	40	6%	+2	111%
12	Tramadol	22	4%	Tramadol	30	5%	0	36%
13	Clonazepam	19	4%	Temazepam	29	4%	-2	21%
14	Hydrocodone	15	3%	Hydrocodone	17	3%	0	13%
15	Methamphetamine	8	2%	Methamphetamine	16	2%	0	100%

^d (U) Laboratory analysis conducted during toxicology testing identifies the presence of fentanyl in microgram quantities in the blood. However, standard laboratory testing available to, and used most often by law enforcement personnel and medical examiners, does not identify the type of fentanyl present (illicit versus pharmaceutical); this occurs only in an advanced forensic or research laboratory based upon a special request by law enforcement officials. Therefore, it is not possible to definitively conclude the type of fentanyl (illicit versus pharmaceutical) present in these decedents.



(U) The illicit drugs identified in the toxicology test results included methamphetamine, cocaine, heroin, and phencyclidine (PCP). Figure 6 illustrates the total number of instances that each illicit drug was noted in individual decedents' toxicology reports.



(U//FOUO) The opioids identified in the toxicology test results included fentanyl, hydrocodone, methadone, oxycodone, oxymorphone (Opana[®]), and tramadol. Oxycodone-positive toxicology test results remained stable from 2013 to 2014; the largest increase in the opioid category was fentanyl, with a 312 percent increase from 2013 to 2014.⁴ Figure 7 illustrates the number of instances that each opioid was noted in individual decedents' toxicology reports.



Source: Philadelphia Medical Examiner's Office

(U) The benzodiazepines identified in the toxicology test results, and included in this analysis, were alprazolam (Xanax[®]), clonazepam (Klonopin[®]), diazepam (Valium[®]), oxazepam (Serax[®]), and temazepam (Restoril[®]).

(U) The presence of benzodiazepines in the toxicology test results for the reported decedents remained stable from 2013 to 2014; the largest increase (110 percent) was the presence of clonazepam (Klonopin[®]). Figure 8 illustrates the number of instances that each benzodiazepine was noted in individual decedents' toxicology reports. However, more than 20 different types of benzodiazepines were identified in the toxicology reports; therefore, for analytical purposes, the five most frequently reported were included in this report. As a result, Figure 8 is not a complete representation of the presence of benzodiazepines in this data set.



Source: Philadelphia Medical Examiner's Office

(U) Drug-Specific Analysis

(U) The most frequently reported illicit drugs and opioids in the toxicology test results for the reported decedents were heroin, cocaine, fentanyl, and oxycodone. As such, additional analysis was conducted, as represented in the following drug specific sections.

(U) COCAINE

(U) Analysis identified 170 and 230 decedents for 2013 and 2014, respectively, with the presence of cocaine in their toxicology test results; this represented 34 percent and 35 percent of the total data set for 2013 and 2014, respectively.

(U) The cocaine-positive decedents were predominantly male at 68 percent in 2013 and 67 percent in 2014. In 2013, cocaine-positive White (non-Hispanic) decedents and African American decedents were equally represented at 43 percent; in 2014, cocaine-positive African American decedents decreased to 40 percent (see Figure 9). The average age of decedents for both years was 42 years, with the largest group of decedents (45 percent in 2013 and 38 percent in 2014) in the 46-60 age category. The largest increase from 2013 to 2014 was in the 31-45 age group, with an 8 percent increase.

(U) The gender, race, and age demographics are shown in Figure 9. In addition, the drugs present in the toxicology test results in combination with cocaine are shown in Figures 10-11.

(U) The most frequently reported drug in combination with cocaine in the drug-related death data was heroin for both reviewed years. The presence of fentanyl in conjunction with cocaine increased from 2 percent in 2013 to over 12 percent in 2014.





Source: Philadelphia Medical Examiner's Office



Source: Philadelphia Medical Examiner's Office

(U) HEROIN

(U) Analysis identified 257 and 349 decedents for 2013 and 2014, respectively, with the presence of heroin in their toxicology test results; this represented 52 percent (2013) and 53 (2014) percent of the total data set.

(U) The heroin-positive decedents were predominantly male at 73 percent in 2013 and 70 percent in 2014 (see Figure 13). The most common race category among heroin-positive decedents was White (non-Hispanic) for both reviewed years, with 67 percent in 2013 and 66 percent in 2014. The average age of heroin-positive decedents in 2013 and 2014 was 42 years, with the largest percentage (36) in the 31-45 age category in both reviewed years.

(U) The gender, race, and age demographics are shown in Figure 12. In addition, the drugs present in the toxicology test results in combination with heroin are shown in Figures 13-14.

(U) The most frequently reported drug in combination with heroin in the drug-related death data was cocaine for both reviewed years. The presence of fentanyl in conjunction with heroin increased from 2 percent in 2013 to almost 15 percent in 2014.



Source: Philadelphia Medical Examiner's Office 11





(U) FENTANYL

(U) Analysis identified 24 and 99 decedents for 2013 and 2014, respectively, with the presence of fentanyl in their toxicology test results; this represented 4 (2013) and 15 (2014) percent of the total data set.

(U) The fentanyl-positive decedents were 66 and 67 percent male in 2013 and 2014, respectively. The most common race category for fentanyl-positive decedents was White (non-Hispanic) with 71 percent (2013) and 66 percent (2014) (see Figure 15). The average age of decedents was 42 years in 2013 and 41 years in 2014. The largest percentage was the 31-45 age category in both reviewed years; however, the 18-30 age group experienced an 8 percent increase from 2013 to 2014.

(U) The gender, race, and age demographics are shown in Figure 15. In addition, the drugs present in the toxicology test results in combination with heroin are shown in Figures 16-17.





Source: Philadelphia Medical Examiner's Office



(U) The most frequently reported drug in combination with fentanyl in the drug-related death data was heroin in both reviewed years. Of note, the percentage of heroin and fentanyl in combination increased from 29 percent in 2013 to 52 percent in 2014. Alprazolam was reported in combination with fentanyl in 25 and 33 percent of cases in 2013 and 2014, respectively, while cocaine and fentanyl in combination increased from 16 percent in 2013 to 28 percent in 2014.

(U) OXYCODONE

(U) Analysis identified 90 and 93 decedents for 2013 and 2014, respectively, with the presence of oxycodone in their toxicology test results; this represented 18 percent (2013) and 14 percent (2014) of the total data set.

(U) The oxycodone-positive decedents were 59 percent and 55 percent male in 2013 and 2014, respectively (see Figure 18). The most common race category for oxycodone-positive decedents was White (non-Hispanic) with 65 percent (2013) and 50 percent (2014); however, oxycodone-positive African American decedents increased by 11 percent between 2013 and 2014. The average age of decedents was 42 years for both reviewed years. The largest percentage (40) was the 31-45 age category in 2013; in 2014, the largest percentage (40) was the 46-60 age category.

(U) The gender, race, and age demographics are shown in Figure 18. In addition, the drugs present in the toxicology test results in combination with oxycodone are shown in Figures 19-20.

(U) The most frequently reported drug in combination with oxycodone in the drug-related death data was alprazolam in 2013 and oxymorphone (Opana[®]) in 2014. The percentage of oxymorphone (Opana[®]) in combination with oxycodone increased from 47 percent to 64 percent from 2013 to 2014.



Source: Philadelphia Medical Examiner's Office



Source: Philadelphia Medical Examiner's Office



(U) Data Challenges

(U) Distinguishing heroin use from other opiates via blood or urine samples is problematic due to the short half-life of heroin and its primary metabolite, 6-monoaceytlmorphine (6-MAM) in the body fluids. Heroin and 6-MAM are detectable in urine for only a few hours. Morphine is a secondary metabolite of heroin and is more persistent in biological fluids than heroin or 6-MAM.⁵ Information regarding the circumstances of each death was not analyzed in preparing this report; therefore, it may not be possible to definitely conclude the origins of morphine as a metabolite versus that which was therapeutically administered.

(U) Analysis of the toxicology test results for morphine-positive decedents without the presence of 6-MAM identified 45 decedents (17 percent) and 67 decedents (19 percent) for 2013 and 2014, respectively. Within this group (morphine-positive/6-MAM negative), 22 (2013) and 27 (2014) percent revealed the presence of cocaine, 9 (2013) and 23 (2014) percent revealed the presence of fentanyl, 9 (2013) and 10 (2014) percent revealed the presence of soxycodone. Analysis conducted upon removal of the morphine-positive/6-MAM negative decedents from the data set did not significantly impact the overall conclusions of the report.

(U) Standard laboratory toxicology testing by the PMEO does not include screening for cannabis, synthetic cannabinoids ("K2" or "Spice), synthetic cathinones ("Bath Salts"), or buprenorphine (Suboxone®); therefore, it is not possible to define or analyze the abuse of these drugs in this data set.

(U) Significance

(U) The abuse of illicit drugs, specifically heroin, cocaine, and fentanyl, contributed to a 33 percent increase in drug-related fatalities in Philadelphia from 2013 to 2014.

(U) More than 52 percent of drug-related overdose decedents indicated the presence of heroin in their toxicology test results in Philadelphia in 2014; the abuse of cocaine persists as a drug threat in Philadelphia, as 35 percent of drug-related overdose decedents indicated the presence of cocaine in 2014.

(U) The widely reported trend of prescription opioids abusers switching to heroin, with deadly results, is supported by the stability in toxicology test results for the opioids oxycodone and hydrocodone, while heroin-positive results increased substantially during the reviewed years.

(U) The presence of PCP increased 62 percent from 2013 to 2014 in the toxicology test results for drugrelated overdose decedents in Philadelphia; PCP was used most often in conjunction with heroin and cocaine.

(U//FOUO) The presence of oxymorphone (Opana®) in drug-related overdose decedents' toxicology test results increased 42 percent from 2013 to 2014; this supports law enforcement reporting indicating that Opana® is increasingly popular and sought after by prescription drug abusers in Philadelphia.⁶

(U//FOUO) The introduction of fentanyl into the illicit drug supply greatly increases the potential for overdose and death; as previously reported, overdose deaths with the presence of fentanyl increased 312 percent from 2013 and 2014 in Philadelphia.⁷

(U) Outlook

(U) Analysis of drug-related overdose death data paints a clear and chilling picture of the impact of drug abuse in Philadelphia, especially related to heroin and fentanyl. The recent passage of legislation in Pennsylvania allowing for law enforcement officers to administer naloxone is expected to impact the number of drug-related overdose deaths. However, although the number of fatal overdoses will fall, the rate of abuse will not be impacted without continued joint law enforcement and public health efforts to address supply and abuse.

- ¹ (U) United States Census Bureau, 2013, <u>www.census.gov</u>; extracted information is (U); overall document classification is (U).
- ² (U) Assessment of Drug-Positive Toxicology Tests and Drug Treatment Admissions in the Philadelphia Metropolitan Area, 2009, Philadelphia/Camden HIDTA, published October 2011; extracted information is (U); overall document classification is (U).
- ³ (U) DEA Philadelphia Field Reporting, 2009-2015; extracted information is: (U); overall document classification is (U//FOUO).
- ⁴ (U//FOUO) More information can be found in the DEA Philadelphia Field Division Intelligence Report: Analysis of Fentanyl-Related Overdose Deaths in Philadelphia and Pittsburgh, Pennsylvania, 2014, published in April 2015; extracted information is (U//FOUO); overall document classification is (U//FOUO).
- ⁵ (U) U.S. Department of Health and Human Services, National Institute of Health, NIDTA Research Monograph 167, 1997; extracted information is (U); overall document classification is (U).
- ⁶ (U) DEA Philadelphia Field Division Reporting, January 2015; extracted information is (U); overall document classification is (U//FOUO).
- ⁷ (U//FOUO) DEA Philadelphia Field Division Intelligence Report: Analysis of Fentanyl-Related Overdose Deaths in Philadelphia and Pittsburgh, Pennsylvania, 2014, published in April 2015; extracted information is (U//FOUO); overall document classification is (U//FOUO).

(U) This product was prepared by the DEA Philadelphia Field Division. Comments and questions may be addressed to Field Intelligence Manager Laura A. Hendrick at laura.a.hendrick@usdoj.gov or 215-861-3258.