

Heroin Cocktail: An Analysis of Pennsylvania Laboratory Drug Seizure Data, 2006-16



DEA
BULLETIN



This DEA Bulletin is based on preliminary reporting and may be subject to updating as additional information becomes available.

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Event

The Drug Enforcement Administration (DEA) Philadelphia Field Division (PFD) Intelligence Program maintains situational awareness of drug availability, abuse, trafficking patterns, adulterants, concealment methods, etc., through analysis of law enforcement and public health information and data, as well as law enforcement source information.

Significance

The greatest drug threat to the Commonwealth of Pennsylvania is heroin sourced from Mexican transnational criminal organizations (TCOs). Heroin has infiltrated all segments of society. There are no socioeconomic, racial, or geographic boundaries to heroin abuse. According to the Centers for Disease Control and Prevention, Pennsylvania had the fourth highest age-adjusted overdose death rate in the country in 2016. The highest purity heroin in the country is sold in Pennsylvania, as measured through undercover purchases in both Pittsburgh and Philadelphia. As such, overdose death data analysis for 2016 showed more than 45 percent of drug-related deaths in Pennsylvania involved heroin, and more than 95 percent of Pennsylvania counties reported a heroin-related death.

Details

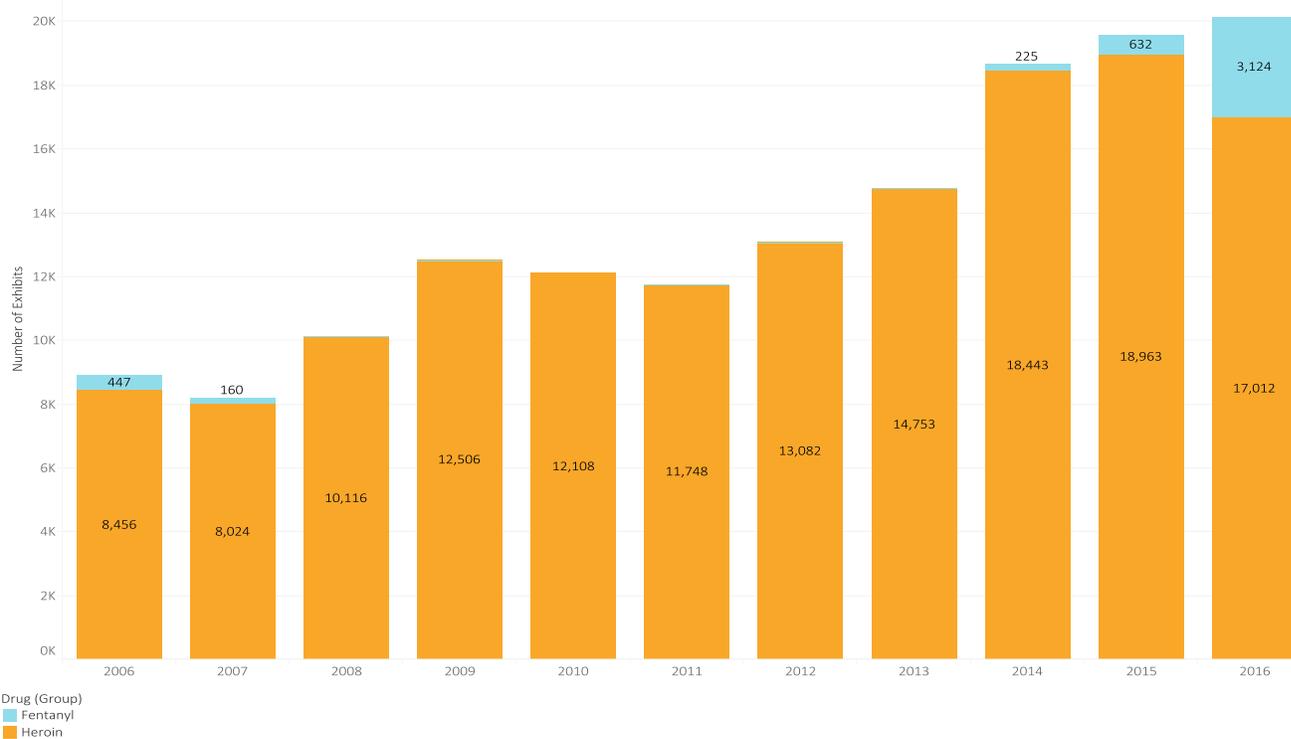
The PFD conducted a review of laboratory-analyzed heroin seizure data for Pennsylvania for 2006-16. Laboratory-analyzed drug seizure data is compiled by the National Forensic Laboratory Information System (NFLIS)¹. Analysis of laboratory-analyzed drug seizure data is beneficial in identifying emerging trends in drug availability. In addition to the primary drug found in seized drug

¹ The DEA NFLIS collects results from drug chemistry analyses conducted by state, local, and federal forensic laboratories across the country. NFLIS provides analytical results of drugs seized by law enforcement and is a source of information for monitoring and drug trafficking in the United States.

exhibits, NFLIS data also includes other substances (controlled and non-controlled) found in combination with heroin (when the laboratory provides such data). Although law enforcement strategies can impact seizures of specific drugs, multi-year analysis can mitigate the impact of short-term initiatives on the data and subsequent interpretation.

Data analyzed in this report was generated by 11 federal/state/local laboratories. Heroin exhibits analyzed and reported to NFLIS in Pennsylvania totaled 145,159 from 2006 through 2016, with annual increases between 2011 and 2015 followed by a slight decline in 2016. The slight decline in heroin presence coincided with a sharp increase in fentanyl identifications (see Figure 1). The inclusion of fentanyl in the illicit drug market generates questions regarding fentanyl marketing and sales techniques; user knowledge and/or pursuit of fentanyl versus heroin; and the potential for fentanyl to replace heroin in the user market.

(U) Figure 1: Number of Heroin and Fentanyl Exhibits Analyzed and Reported to NFLIS, Pennsylvania, 2006-2016.



Source: National Forensic Laboratory Information System

In seizures for which additional controlled substances were reported in conjunction with heroin, the controlled substances identified have evolved over the queried time period (2006-16).²

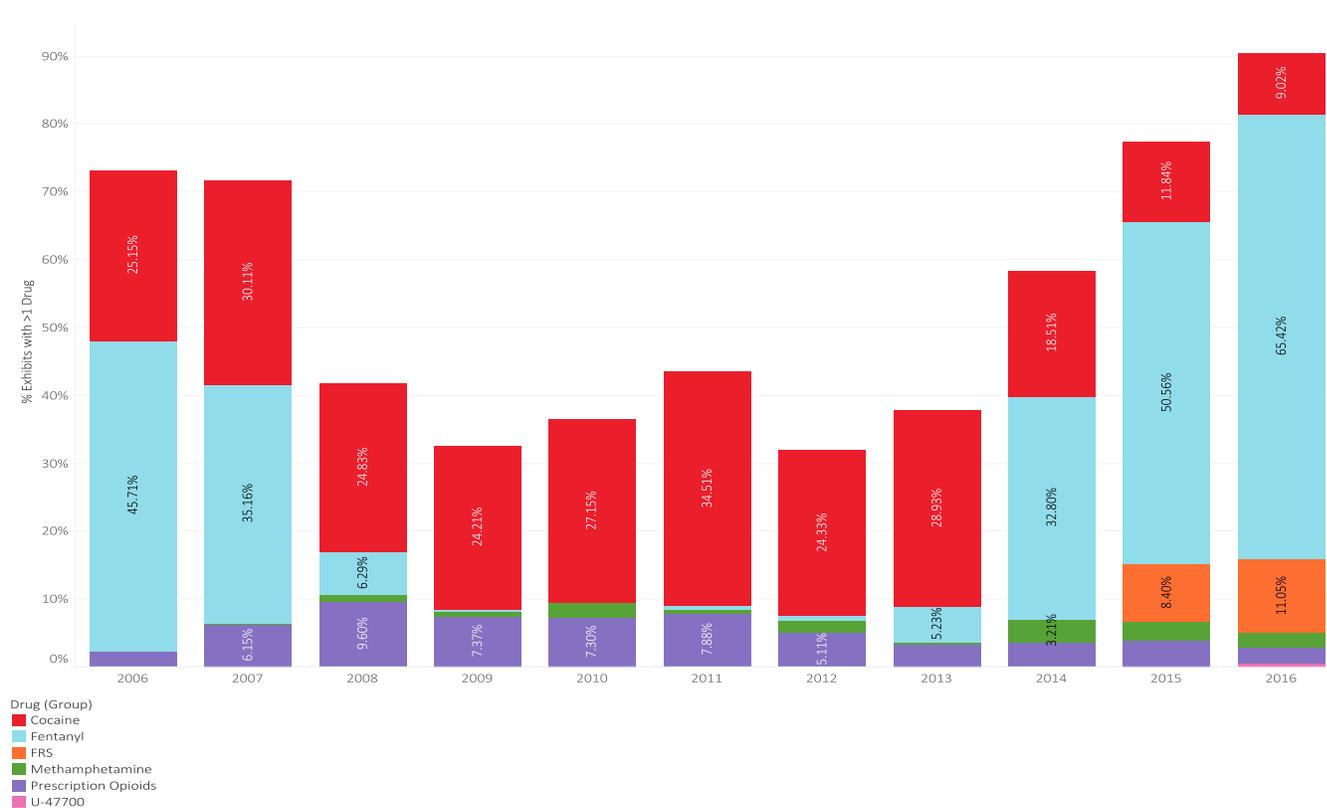
In 2006 and 2007, as a result of an influx of fentanyl produced by a clandestine laboratory in Mexico, fentanyl was found in 45 percent (in 2006) and 35 percent (in 2007) of heroin

² Analysis of NFLIS data revealed that the Allegheny County Office of the Medical Examiner (ACOME) Drug Chemistry Laboratory did not provide multi-drug data for the period of 2006 through June of 2014. Therefore, drugs found in conjunction with heroin may be underrepresented for that time period.

samples that were reported with multiple substances. Subsequent to the dismantlement of the Mexican laboratory, fentanyl presence decreased until 2014 when it re-infiltrated the illicit drug supply in Pennsylvania. Since 2015, fentanyl has been found in multi-substance heroin samples in more than 50 percent of analyzed exhibits (see Figure 2).

In multi-substance samples, cocaine identified with heroin remained relatively stable from 2006 through 2013 (ranging from 24 to 35 percent), and has declined since 2014. This decline is attributed to the re-introduction of fentanyl into the illicit drug supply, and can be seen through the corresponding increase in heroin and fentanyl combined seizures since 2014 (see Figure 2)

(U) Figure 2: Percentages of Excerpted Drugs Identified in Conjunction with Heroin in Laboratory Analysis of Seized Drug Exhibits, Pennsylvania, 2006-2016.



Source: National Forensic Laboratory Information System

The introduction of fentanyl-related substances (FRSs) in conjunction with heroin in analyzed multi-substance samples also corresponds with the increase in fentanyl presence mentioned above. FRSs emerged in the illicit market in 2015 and were found in conjunction with heroin in 11 percent of multi-substance samples reported in 2016. The most commonly identified FRSs in 2016 were furanyl fentanyl, acetyl fentanyl, p-fluoroisobutyryl fentanyl, and 3-methylfentanyl. The substantial difference in percentage of samples found to contain heroin with fentanyl versus heroin and FRSs is theorized as the difference in sources. FRSs are more often ordered from China in small quantities via internet purchases and likely to be used alone. Fentanyl is often sourced from Mexican cartels and shipped in wholesale quantities in

conjunction with heroin. More than 100 distinct substances were identified in conjunction with heroin in analyzed samples between 2006 and 2016. Additional controlled substances found in combination with heroin included benzodiazepines (range of .3 to 10 percent of cases); methamphetamine (range of .22 to 3.2 percent of cases); prescription opioids (range of 2.2 to 9.6 percent of cases); and ketamine (range of .1 to 3.7 percent of cases).

(U) Figure 3: Percentage of Drugs (by Category) Identified in Conjunction with Heroin in Laboratory Analysis of Seized Drug Exhibits, Pennsylvania, 2006-2016.

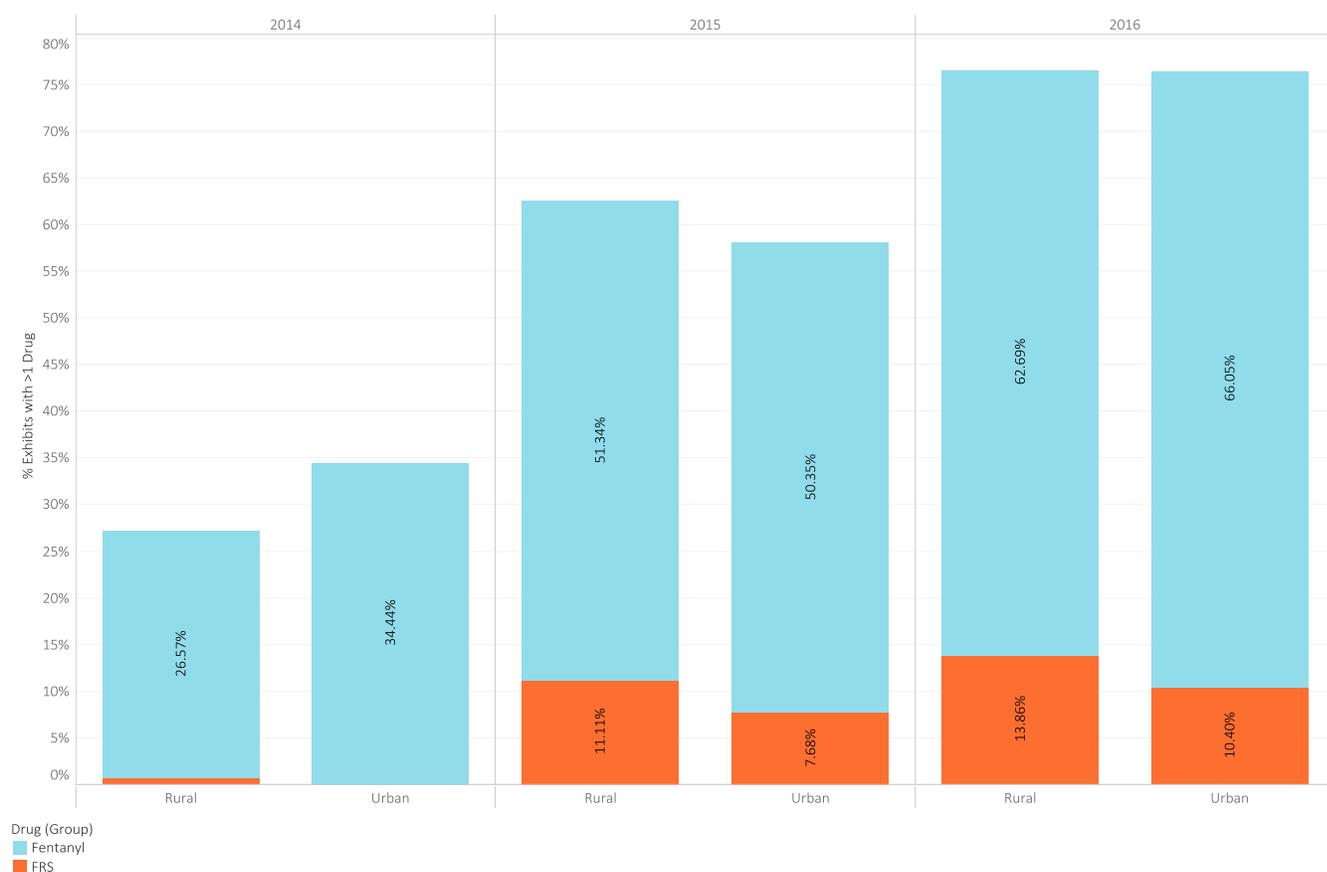
Drug (Group)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Benzodiazepines	0.31%	3.08%	6.62%	9.65%	8.61%	10.33%	6.33%	3.86%	3.79%	0.96%	0.39%
Cannabinoids	1.02%	0.44%		0.53%	0.19%		1.22%	0.55%	0.73%	0.40%	0.42%
Cathinones	0.31%	0.66%		0.70%	0.56%	1.63%	0.49%	0.55%	2.92%	4.08%	0.84%
Cocaine	25.15%	30.11%	24.83%	24.21%	27.15%	34.51%	24.33%	28.93%	18.51%	11.84%	9.02%
Fentanyl	45.71%	35.16%	6.29%	0.35%		0.54%	0.73%	5.23%	32.80%	50.56%	65.42%
FRS									0.15%	8.40%	11.05%
Ketamine	0.10%	3.74%	1.99%	2.81%	1.50%	1.63%	0.24%	0.55%		0.32%	0.41%
LSD											0.03%
MAT Drugs				0.53%	1.69%	0.27%	0.49%	1.10%	0.87%	0.24%	
MDMA/MDA		0.22%									
Methamphetamine		0.22%	0.99%	0.70%	2.06%	0.54%	1.70%	0.28%	3.21%	2.72%	2.08%
Other Non-Controlled	24.85%	20.00%	49.34%	52.46%	46.63%	41.30%	59.37%	54.55%	33.24%	16.48%	7.48%
PCP									0.15%		0.02%
Prescription Opioids	2.35%	6.15%	9.60%	7.37%	7.30%	7.88%	5.11%	3.31%	3.64%	3.92%	2.28%
Stimulants	0.20%	0.22%	0.33%	0.70%	4.31%	1.36%		1.10%		0.08%	0.03%
U-47700											0.53%

Source: National Forensic Laboratory Information System

Comparative analysis of NFLIS data from urban and rural counties³ identified differences in the presence of fentanyl, FRSs, and cocaine found in conjunction with heroin. The percentage of exhibits submitted by rural counties averaged 14.8 percent of the total analyzed exhibits from 2006-16. A review of 2014 data for rural counties showed a significantly lower presence of fentanyl versus urban counties (26.5 versus 34.4 percent). However, by 2015 and through 2016, there was little distinction in fentanyl presence with heroin in multi-drug samples between urban and rural counties (see Figure 4). This trend can be attributed to traditional drug trafficking patterns where emerging drugs infiltrate the illicit supply in urban source locations prior to expanding to outlying areas.

³ Urban and rural counties are defined by the Center for Rural Pennsylvania (www.rural.palegislature.us).

(U) Figure 4: Presence of Fentanyl and Fentanyl-Related Substances in Multi-Drug Heroin Seizures Reported to NFLIS in Rural and Urban Pennsylvania Counties, 2014-2016.



Source: National Forensic Laboratory Information System

Analysis of FRSs in 2015 and 2016 identified a different trend in availability. Rural counties indicated a higher presence of FRSs in conjunction with heroin in multi-drug samples than their urban counterparts. As mentioned earlier, this is attributed to the ease of ordering FRSs via online purchases thereby reducing the burden of traveling to a source location or identified dealer (see Figure 4).

Analysis of the two most populated urban counties (Allegheny and Philadelphia) identified significant differences in the presence of fentanyl and FRSs in conjunction with heroin in multi-drug samples. Fentanyl presence in Allegheny County was noted in more than 31 percent of multi-substance samples in 2014, versus only 13 percent in Philadelphia. In 2015, this trend continued with Allegheny showing a 55 percent presence of fentanyl with heroin in multi-substance samples versus 39 percent in Philadelphia. However, by 2016, this gap closed, with both counties having more than 66 percent of their multi-substance heroin samples contain fentanyl. The presence of FRSs was also noted more often in multi-substance heroin samples in Allegheny County (11 percent in 2015 and 2016) versus Philadelphia County (0.6 and 4.5 percent in 2015 and 2016, respectively). However, it is

possible that this dichotomy is attributed to differences in laboratory testing for emerging drugs such as FRSs.

When reported, the non-controlled substances found in multi-substance heroin samples most commonly were caffeine, followed by procaine, quinine, thiamine, and lidocaine. Of note, the overall presence of non-controlled substances found in conjunction with heroin has decreased sharply since 2012.

Outlook

The overwhelming presence of, and demand for, heroin in Pennsylvania is of grave concern to law enforcement officials, public health entities, treatment providers, and the public. In addition, the availability of fentanyl and related substances from myriad sources represents a complex and evolving threat to public health and safety. Data analysis shows very clearly the dangerous nature of these substances, as a fentanyl substance was involved in more than 52 percent of overdose deaths in Pennsylvania in 2016. More than 61 counties had a fentanyl related death in 2016, and fentanyl presence in overdose deaths increased statewide by more than 130 percent over the previous year. Analysis of 2017 overdose data indicates this trend continues an upward trajectory, and will contribute to a significant increase in overdose deaths in many counties. Analysis of indicators such as laboratory analysis of drug seizure allows stakeholders to identify threats, direct resources, and implement strategies. The PFD will continue to gather, analyze, and disseminate relevant data to meet these goals.

This product was prepared by the DEA Philadelphia Field Division. Comments and questions may be addressed to the Chief, Analysis and Production Section at dea.onsi@usdoj.gov. For media/press inquiries call (202) 307-7977.