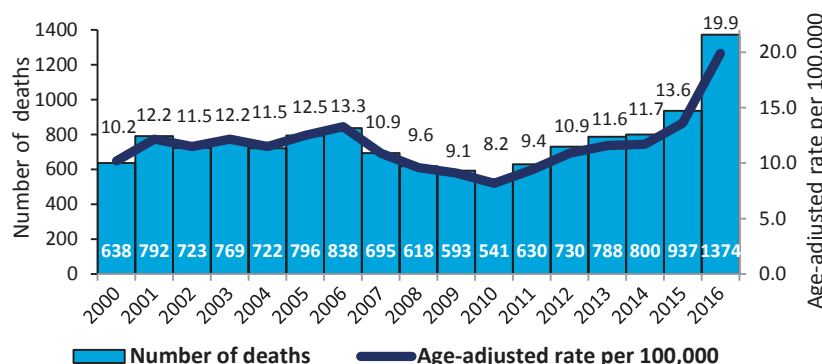


Unintentional Drug Poisoning (Overdose) Deaths in New York City, 2000 to 2016

- In 2016, there were 1,374 unintentional drug overdose deaths in New York City (NYC) compared with 937 unintentional drug overdose deaths in 2015, an increase of 437.
- On average, there were nearly four drug overdose deaths each day in New York City in 2016.
- The rate of unintentional drug overdose death increased for the sixth consecutive year, from 8.2 per 100,000 residents in 2010 to 19.9 per 100,000 residents in 2016, a 143% increase.

Unintentional overdose deaths, New York City, 2000–2016



*Data for 2015 and 2016 are provisional and are subject to change.

Sources: NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics, 2000–2016

- In 2016, the rate of overdose deaths involving any substance was highest among Staten Island residents, increasing 66% from 2015 (31.8 per 100,000 in 2016, 19.2 per 100,000 residents in 2015).
- The Bronx had the second highest rate (28.1 per 100,000, up from 22.6 per 100,000 in 2015, a 24% increase) but had the largest number (308) of overdose deaths.
- Black New Yorkers had the largest increase (80%) compared with all other races/ethnicities. The rate increased from 10.9 per 100,000 residents in 2015 to 19.6 per 100,000 residents in 2016.
- In 2016, nearly all (97%) overdose deaths involved more than one substance. More than eight in ten (82%) overdose deaths involved an opioid.
- Heroin was involved in 751 (55%) of all overdose deaths in NYC in 2016, making it the most common substance involved in overdose deaths. Opioid analgesics, excluding fentanyl, were involved in 241 (18%) of overdose deaths in 2016.

Data Source:

NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics:

Mortality data for 2000–2016 were collected through an in-depth review of data and charts from DOHMH Bureau of Vital Statistics and NYC Office of the Chief Medical Examiner. Data for 2015 and 2016 are provisional and subject to change.

Rate calculation: DOHMH population estimates, modified from US Census Bureau intercensal population estimates 2000–2014, updated October, 2015. Rates from 2015 and 2016 use estimates from 2014. These rates will differ from previously reported rates based on Census counts or previous versions of population estimates. Rates are age-adjusted to Census 2000 US standard population, except those for specific age groups.

Definitions:

Unintentional drug poisoning deaths

(overdose): exclude poisonings where the manner of death was intentional (suicide), undetermined, or homicide.

Opioids cover the entire family of opiates and opioids. Opiates are derived from “natural” opium, such as morphine or heroin. **Opioids** are synthetic drugs, such as methadone or fentanyl. **Opioid analgesics** are commonly known as prescription pain relievers, such as oxycodone (Percocet®) and hydrocodone (Vicodin®).

†For this analysis, opioid analgesics exclude fentanyl.

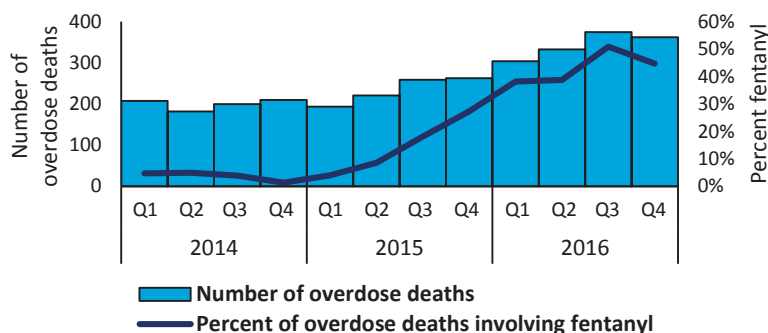
Race/ethnicity: For the purpose of this publication, Latino includes persons of Hispanic origin based on ancestry reported on the death certificate, regardless of reported race; Latino excludes reported ancestry from non-Spanish speaking Central/South American countries, and non-Spanish speaking Caribbean islands. Black and White race categories do not include persons of Latino origin.

Neighborhood poverty: Based on ZIP code and defined as the percentage of residents with incomes below 100% of the federal poverty level (FPL), per American Community Survey 2007–2011, in four groups: low (<10% FPL), medium (10 %–< 20% FPL), high (20 %–< 30% FPL), and very high (≥30% FPL).

Unintentional overdose deaths involving any fentanyl

- Fentanyl, a potent opioid that is 50 to 100 times stronger than morphine, drove the increase in overdose deaths from 2015 to 2016.
- In 2016, fentanyl was involved in 44% of all overdose deaths.
- Since 2015, the percent of overdose deaths involving fentanyl has increased nearly every quarter.
- Between 2015 and 2016, the total number of overdoses increased in proportion to the increase in the percentage of overdose deaths involving fentanyl.

Number of drug overdose deaths and percent of overdose deaths involving fentanyl, New York City, by quarter, 2014-2016



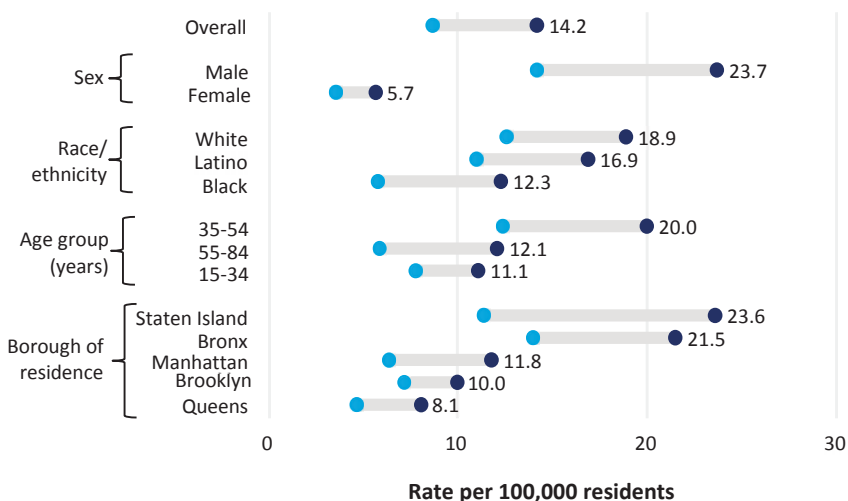
*Data for 2015 and 2016 are provisional and subject to change.

Source: NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics, 2000-2016

Unintentional overdose deaths involving heroin and/or fentanyl

- Nearly three quarters (72%) of all overdose deaths involved heroin and/or fentanyl (14.2 per 100,000 residents) in 2016.
- In 2016, fentanyl was involved in half of overdoses involving heroin (49%).
- From 2015 to 2016, rates of overdoses involving heroin and/or fentanyl increased among all demographic groups.
- Groups that had the highest rates of death involving heroin and/or fentanyl in 2015 experienced the greatest increase in 2016 (e.g., males, New Yorkers aged 35 to 54, residents of the Bronx and Staten Island).
- In 2016, the rate was highest among White New Yorkers compared with Latino and Black New Yorkers (18.9 vs. 16.9 and 12.3 per 100,000 respectively).

Increase in rates of overdose deaths involving heroin and/or fentanyl from 2015 to 2016,* New York City



● 2015 rate ● 2016 rate

White and Black race categories exclude Latino ethnicity. Latino includes Hispanic or Latino of any race.

*Data for 2015 and 2016 are provisional and subject to change.

Source: NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics, 2015-2016

- Compared with other race and ethnic groups, the largest increase was among Black New Yorkers; the rate increased from 5.8 per 100,000 in 2015 to 12.3 per 100,000 in 2016, a 112% increase.
- In 2016, residents of very high poverty neighborhoods had a higher rate of overdose death involving heroin and/or fentanyl (19.2 per 100,000) than residents of low poverty (10.3 per 100,000) and medium poverty (9.6 per 100,000) neighborhoods.

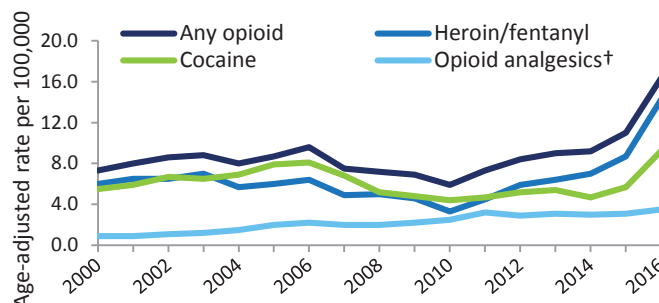
Authors: Denise Paone, Michelle L. Nolan, Ellenie Tuazon, Jaclyn Blachman-Forshay

Suggested citation: Paone D, Nolan ML, Tuazon E, Blachman-Forshay J. Unintentional Drug Poisoning (Overdose) Deaths in New York City, 2000–2016. New York City Department of Health and Mental Hygiene: Epi Data Brief (89); June 2017.

Unintentional overdose deaths involving fentanyl and cocaine

- In 2016, 630 (46%) overdose deaths involved cocaine (9.2 per 100,000 residents), a 61% increase from 2015 (5.7 per 100,000 residents).
- In 2015, 10% (n=16) of cocaine-involved overdose deaths that did not involve heroin involved fentanyl. Fentanyl was increasingly present in cocaine-involved overdose deaths that did not involve heroin, increasing to 37% (n=115) in 2016.

Unintentional overdose deaths by select substances involved, New York City, 2000–2016*



*Data for 2015 and 2016 are provisional and subject to change.

†For this analysis, opioid analgesics exclude fentanyl

Sources: NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics, 2000–2016

COMMENT

- Fentanyl, a synthetic and short-acting opioid analgesic, is 50 to 100 times more potent than morphine and approved for managing acute or chronic pain associated with advanced cancer.¹
- While fentanyl-involved overdoses can be reversed with naloxone, patients may require a higher dose or multiple doses due to fentanyl's high potency.¹
- While pharmaceutical fentanyl can be diverted for misuse, most cases of fentanyl-related morbidity and mortality have been linked to non-pharmaceutical fentanyl and fentanyl analogues.²
- Before 2015, 3% or less of overdose deaths in NYC tested positive for fentanyl on postmortem toxicology; since July 2016, the proportion of overdose deaths involving fentanyl increased to more than half. This increase in the presence of fentanyl has driven the increase in overdose deaths from 2014 to 2016.
- Drug users may not be aware they are using fentanyl:
 - Survey data collected from syringe exchange program participants in NYC found that most drug users buying heroin were not intentionally seeking fentanyl, thus were not aware if they had used it.^{3,4}
 - More recently, fentanyl has been found mixed in cocaine products, increasing risk for overdose for those who are not regular opioid users and might be recreational cocaine users.
 - Street-level sellers may not know their drug products contain fentanyl.³
 - Thus, drug users that are not aware that they are using fentanyl are at increased risk of overdose. This suggests the need to educate users on risk reduction practices, such as not using alone, taking turns when using, avoiding mixing drugs, and having naloxone on hand.

1. Centers for Disease Control and Prevention. Increases in Fentanyl Drug Confiscations and Fentanyl-related Overdose Fatalities. HAN Health Advisory. October 26, 2015.

2. National Heroin Threat Assessment Summary. DEA Intelligence Report. April 2015.

3. An Open Letter to United States Public Health Agencies. Johns Hopkins University and Brown University. May 4, 2016.

4. NYC Department of Health and Mental Hygiene. Unpublished data. May 2016.

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New York City Department of Health and Mental Hygiene





Epi Data Tables

June 2017, No. 89

Unintentional Drug Poisoning (Overdose) Deaths in New York City, 2013 to 2016

Data Tables

Table 1.	Number and rate of unintentional drug poisoning (overdose) deaths, New York City, 2013-2016
Map 1.	Top five New York City neighborhoods: Rates of unintentional drug poisoning (overdose) deaths by neighborhood of residence, 2015 and 2016
Table 2.	Number and rate of unintentional drug poisoning (overdose) deaths involving heroin, New York City, 2013-2016
Table 3.	Number and rate of unintentional drug poisoning (overdose) deaths involving fentanyl, New York City, 2016
Map 2.	Top five New York City neighborhoods: Rates of unintentional drug poisoning (overdose) deaths involving heroin and/or fentanyl by neighborhood of residence, 2015 and 2016

Data Sources

NYC Office of the Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics: Mortality data were collected through an in-depth review of data and charts from the Health Department's Bureau of Vital Statistics and the Office of the Chief Medical Examiner for 2000-2016. Data for 2015 and 2016 are provisional and subject to change.

Rate Calculation: NYC DOHMH population estimates, modified from US Census Bureau intercensal population estimates 2000-2014, updated October 2015. These rates will differ from previously reported rates based on Census counts or previous versions of population estimates. Rates are age-adjusted to Census 2000, except those for specific age groups.

Neighborhood poverty is based on ZIP code and is defined as the percentage of residents with incomes below 100% of the Federal Poverty Level, per American Community Survey 2007-2011, in four groups: low (<10%), medium (10 %-< 20%), high (20 %-< 30%), and very high (>=30%).

Table 1. Number and rate of unintentional drug poisoning (overdose) deaths, New York City, 2013-2016*

Source: Bureau of Vital Statistics/Office of the Chief Medical Examiner, New York City; Rates calculated using NYC DOHMH population estimates, modified from US Census Bureau intercensal population estimates 2000-2014 updated October 2015. Analysis by Health Department's Bureau of Alcohol and Drug Use Prevention, Care and Treatment.

Rates per 100,000 New Yorkers are age adjusted, except those for specific age groups.

	2013			2014			2015*			2016*		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Total Unintentional Drug Poisoning Deaths	788	100%	11.6	800	100%	11.7	937	100%	13.6	1374	100%	19.9
Gender												
Male	570	72%	17.7	589	74%	18.1	705	75%	21.5	1055	77%	32.1
Female	218	28%	6.1	211	26%	5.8	232	25%	6.5	319	23%	8.9
Race/ethnicity^{†^}												
Black (non-Latino)	172	23%	10.6	170	22%	10.4	178	20%	10.9	326	25%	19.6
Latino	222	30%	12.0	208	27%	11.2	310	34%	16.4	417	32%	22.1
White (non-Latino)	358	48%	16.4	387	51%	17.5	414	46%	19.1	571	43%	25.8
Age group (years)												
15-24	45	6%	4.0	51	6%	4.6	71	8%	6.5	99	7%	9
25-34	137	17%	9.2	166	21%	11.0	195	21%	12.9	268	20%	17.8
35-44	159	20%	13.5	165	21%	14.0	182	19%	15.4	272	20%	23
45-54	251	32%	22.5	232	29%	20.8	277	30%	24.8	380	28%	34
55-64	163	21%	17.1	151	19%	15.5	177	19%	18.2	290	21%	29.9
65-84	33	4%	3.6	35	4%	3.7	35	4%	3.7	63	5%	6.7
Age group (years)												
15-34	182	23%	7.0	217	27%	8.3	266	28%	10.2	367	27%	14.1
35-54	410	52%	17.9	397	50%	17.3	459	49%	20.0	652	48%	28.4
55-84	196	25%	10.4	186	23%	9.7	212	23%	11.1	353	26%	18.4
Borough of residence[†]												
Bronx	162	24%	14.9	170	24%	15.5	252	30%	22.6	308	26%	28.1
Brooklyn	165	25%	8.2	195	28%	9.6	223	27%	10.8	297	25%	14.1
Manhattan	136	20%	9.7	141	20%	10.4	145	17%	10.8	244	20%	17.9
Queens	145	22%	7.5	131	18%	6.8	144	17%	7.5	235	20%	12.2
Staten Island	64	10%	17.6	74	10%	20.6	69	8%	19.2	116	10%	31.8
Borough of death												
Bronx	184	23%	17.1	182	23%	16.6	273	29%	24.4	346	25%	31.7
Brooklyn	197	25%	9.8	220	28%	10.8	258	28%	12.5	350	25%	16.6
Manhattan	191	24%	13.8	184	23%	13.4	187	20%	13.9	332	24%	24.4
Queens	152	19%	7.9	141	18%	7.3	150	16%	7.8	236	17%	12.3
Staten Island	64	8%	17.5	73	9%	20.2	69	7%	19.2	110	8%	30.3
Neighborhood poverty^{†0}												
Low (wealthiest)	147	22%	10.6	143	20%	10.4	135	16%	9.8	210	18%	14.9
Medium	183	27%	7.1	208	29%	8.1	247	30%	9.4	366	31%	13.9
High	160	24%	10.0	169	24%	10.6	211	25%	13.4	322	27%	20
Very high	181	27%	15.8	189	27%	16.3	240	29%	20.1	300	25%	25.9
Drug type^{**}												
Alcohol	342	43%	5.0	359	45%	5.2	372	40%	5.4	531	39%	7.7
Benzodiazepines	298	38%	4.4	301	38%	4.4	370	39%	5.4	448	33%	6.5
Cocaine	364	46%	5.4	326	41%	4.7	394	42%	5.7	630	46%	9.2
Heroin	424	54%	6.2	460	57%	6.7	556	59%	8.0	751	55%	10.8
Methadone	169	21%	2.5	127	16%	1.8	152	16%	2.2	195	14%	2.8
Opioid Analgesics ^{††}	213	27%	3.1	200	25%	3.0	214	23%	3.1	241	18%	3.5
Top 5 NYC neighborhoods^{^^}	2015* rate						2016* rate					
	Hunts Point-Mott Haven			31.0			Highbridge-Morrisania			39.0		
	Crotona-Tremont			27.7			Hunts Point-Mott Haven			38.7		
	Highbridge-Morrisania			26.8			East Harlem			36.8		
	Willowbrook			25.1			South Beach-Tottenville			36.7		
	Fordham-Bronx Pk			23.1			Crotona-Tremont			34.7		

*Data for 2015 and 2016 are provisional and are subject to change.

†Percentage of deaths within subgroup are calculated among categories presented.

^For the purpose of this publication, Latino includes persons of Hispanic origin based on ancestry reported on the death certificate, regardless of reported race; Latino excludes reported ancestry from non-Spanish speaking Central/South American countries, and non-Spanish speaking Caribbean islands. Black and White race categories do not include persons of Latino origin.

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**Drug Type, not mutually exclusive.; percent will not equal 100%. ††For this analysis, opioid analgesics exclude fentanyl.

^^Top five of 42 NYC Neighborhoods