

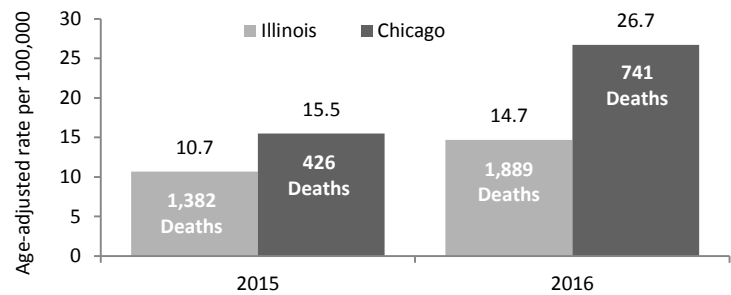
## Epidemiology report:

### Increase in overdose deaths involving opioids – Chicago, 2015-2016

October 2017

The Chicago Department of Public Health reviewed and analyzed opioid-related overdose death data from the Cook County Medical Examiner's Office.<sup>1</sup> This report updates previously published data from 2015.<sup>2</sup> **Overdose deaths involving opioids in Chicago rose from 426 deaths in 2015 to 741 deaths in 2016, an increase of 74%.** While there were increases in opioid-related overdose deaths across demographic categories and opioid types, this was primarily driven by a dramatic increase in overdose deaths involving fentanyl, which increased from 71\* deaths in 2015 to 420 deaths in 2016 (Table 1).

Figure 1. Overdose deaths involving opioids – Chicago, 2015-2016



Data Source: Illinois Department of Public Health, Cook County Medical Examiner's Office, US Census Bureau

Table 1. Overdose deaths involving opioids – Chicago, 2015-2016

	2015			2016		
	#	%	rate <sup>ii</sup>	#	%	rate <sup>ii</sup>
<b>Chicago Deaths</b>	426	100.0%	15.5	741	100.0%	26.7
<b>Opioid Type<sup>i</sup></b>						
Heroin-involved	345	81.0%	12.4	487	65.7%	17.7
Fentanyl-involved	71*	16.7%	2.7	420	56.7%	15.1
Opioid pain reliever(OPR)-involved <sup>iii</sup>	32	7.5%	1.1	40	5.4%	1.4
Methadone-involved	28	6.6%	1.0	48	6.5%	1.8
<b>Gender</b>						
Male	322	75.6%	23.8	556	75.0%	40.8
Female	104	24.4%	7.5	185	25.0%	13.3
<b>Race-Ethnicity<sup>iv</sup></b>						
Non-Hispanic African American	--	--	--	357	48.4%	39.3
Non-Hispanic White	--	--	--	251	34.1%	25.1
Hispanic or Latino	--	--	--	123	16.7%	16.5
Non-Hispanic Asian or Pacific Islander	--	--	--	6	0.8%	3.2 <sup>^</sup>
<b>Age (years)</b>						
15-24	27	6.4%	6.7	43	5.8%	10.6
25-34	78	18.4%	15.1	151	20.4%	29.3
35-44	89	20.9%	23.5	150	20.3%	39.7
45-54	121	28.5%	35.7	229	31.0%	67.6
55-64	96	22.6%	36.5	147	19.9%	55.9
65-74	14	3.3%	9.3 <sup>^</sup>	18	2.4%	11.9 <sup>^</sup>
Average age (years)	44.6			44.1		

Data Source: Cook County Medical Examiner's Office, US Census Bureau

Note: Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent's address of residence.

<sup>i</sup> Categories are not mutually exclusive as some deaths involved more than one type of opioid.

<sup>ii</sup> Rates are expressed as number of overdoses per 100,000 people in the population and account for the population age distribution. Denominators are based on the 2010 census population. Rates are age-adjusted to the 2000 US standard population. The age-adjusted opioid-involved death rate in the US was 10.4 per 100,000 in 2015.<sup>2</sup>

<sup>iii</sup> Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

<sup>iv</sup> Race-ethnicity data is reported by the Cook County Medical Examiner, and was not available for 2015.

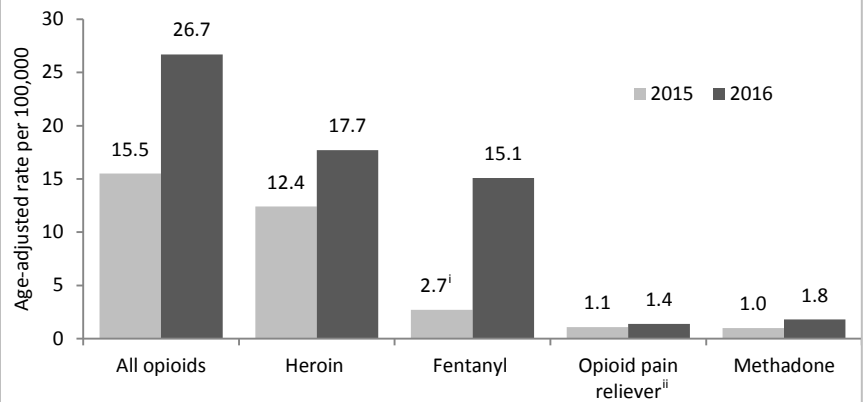
\* The Cook County Medical Examiner's office began routinely testing for fentanyl involvement in June 2015. For this reason, the actual number of fentanyl-involved overdose deaths in 2015 may be greater than reported.

<sup>^</sup> For counts less than 20, rates may be unstable and should be interpreted with caution.

## Opioid Type

- The overall rate of overdose deaths involving opioids increased from 15.5 deaths per 100,000 individuals in 2015 to 26.7 deaths per 100,000 individuals in 2016 (Figure 2).
- Increases in overdose death rates occurred for each type of opioid; however, the largest increase was among overdose deaths involving fentanyl. The rate in 2016 was more than five times the rate in 2015. (Figure 2).
- Heroin remained the opioid that was involved in the largest percentage of overdose deaths. However, the percentage decreased from 2015 (80.9% of the opioid-related overdose deaths) to 2016 (65.7% of the opioid-related overdose deaths) (Table 2).
- Deaths involving opioid pain relievers and methadone increased by 25% and 80% respectively from 2015 to 2016 (Figure 2).

**Figure 2. Opioid-related overdose death rates by type of opioid – Chicago, 2015-2016**



**Data Source:** Cook County Medical Examiner's Office, US Census Bureau

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent's address of residence.

<sup>i</sup> The Cook County Medical Examiner's office began routinely testing for fentanyl involvement in June 2015. For this reason, the number of fentanyl-involved overdose deaths in 2015 may be higher than reported.

<sup>ii</sup> Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

## Demographics

- Overdose deaths involving opioids increased from 2015 to 2016 by both gender and age. Men continued to have higher death rates than women, and persons aged 45-54 years had higher death rates than other age categories (Table 1).
- Beginning in 2016, CDPH was able to obtain race and ethnicity information for each opioid-related overdose death.<sup>3</sup> In 2016, 48% of all opioid-related overdose deaths were among Non-Hispanic (NH) African American individuals, 34% were among NH white individuals, 17% were among Hispanic or Latino individuals, and less than 1% were among NH Asian or Pacific Islander individuals (Table 1).
- The rates of overdose deaths involving heroin, fentanyl and methadone were highest among NH African American individuals. The rate of overdose death involving opioid pain relievers, was highest among NH Whites (Figure 3).

**Table 2. Percentage of all opioid-related overdose deaths involving specific opioids – Chicago, 2015-2016**

Opioid Type <sup>i</sup>	2015 (n=426)	2016 (n=741)
Heroin-involved	80.9%	65.7%
Fentanyl-involved	16.7%	56.6%
Opioid pain reliever-involved <sup>ii</sup>	7.5%	5.4%
Methadone-involved	6.6%	6.5%

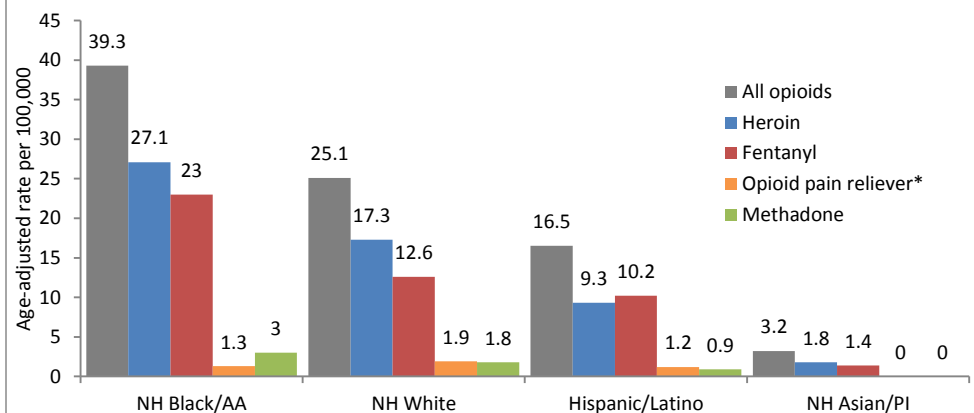
**Data Source:** Cook County Medical Examiner's Office

<sup>i</sup> Categories are not mutually exclusive as some deaths involved more than one opioid. Percentages will not add to 100%.

<sup>ii</sup> Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent's address of residence.

**Figure 3. Opioid-related overdose death rates by race-ethnicity and opioid type – Chicago, 2016**



**Data Source:** Cook County Medical Examiner

NH = non-Hispanic, PI = Pacific Islander, AA = African American

\* Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent's address of residence.

## Geography – Cook County, IL

In addition to the 741 opioid-related overdose deaths that occurred in Chicago, another 340 occurred in suburban Cook County. While the rate of opioid-related overdose deaths in Chicago (26.8 per 100,000 individuals) was substantially higher than the rate in Illinois (14.7 per 100,000 individuals), the rate in suburban Cook County (13.7 per 100,000) was slightly lower than the state rate (Table 3).

- In both Chicago and suburban Cook County, the rate of overdose deaths involving heroin was higher than the rate of deaths involving other types of opioids in 2016 (Table 3).
- The rate of overdose deaths among men was higher than the rate of overdose deaths among women in both Chicago and suburban Cook County (Table 3).
- In Chicago, the rate of opioid-related overdose death was highest among non-Hispanic African American or Black individuals compared to other racial/ethnic groups. The rate was highest in the 45-54 year old age group compared to other age groups (Table 3).
- In suburban Cook County, the rate of opioid-related overdose death was highest among non-Hispanic white individuals compared to other racial/ethnic groups. The rate was highest in the 25-34 year old age group compared to other age groups (Table 3).

As in 2015, in 2016, heroin was the drug involved in the majority of overdose deaths in both Chicago and suburban Cook County (65.7% and 60.6% respectively). However, in both jurisdictions, the percentage of fentanyl-involved overdose deaths increased substantially from 2015 to 2016. The percentage of overdose deaths involving opioid pain relievers in suburban Cook County (18.8%) was more than three times the percentage in Chicago (5.4%) (Table 4).

**Table 3. Opioid-related overdose deaths – Cook County, IL (2015 – 2016)**

	Chicago				Suburban Cook											
	Population: 2,695,598								Population: 2,499,077							
	2015		2016		2015		2016									
Drug Type <sup>i</sup>	#	Rate <sup>ii</sup>	#	Rate <sup>ii</sup>	#	Rate <sup>ii</sup>	#	Rate <sup>ii</sup>								
All opioids	426	15.5	741	26.8	221	8.8	340	13.7								
Heroin-involved	345	12.4	487	17.7	152	6.2	206	8.5								
Fentanyl-involved	71*	2.7	420	15.1	32*	1.3	140	5.7								
Opioid pain reliever-involved <sup>iii</sup>	32	1.1	40	1.4	45	1.7	64	2.4								
Methadone-involved	28	1.0	48	1.8	19	0.8 <sup>+</sup>	13	0.6 <sup>+</sup>								
<b>Gender</b>																
Male	322	23.8	557	40.8	149	12.0	245	20.5								
Female	104	7.5	185	13.3	72	5.6	95	7.2								
<b>Race-Ethnicity<sup>iv</sup></b>																
NH AA/Black	--	--	358	39.3	--	--	41	10.0								
NH White	--	--	253	25.2	--	--	261	19.9								
Hispanic or Latino	--	--	123	16.5	--	--	34	7.5								
NH Asian or PI	--	--	6	3.2 <sup>+</sup>	--	--	<5	<sup>++</sup>								
<b>Age</b>																
15-24	27	6.7	43	10.6	20	6.1	39	11.9								
25-34	78	15.1	151	29.3	62	19.6	97	30.7								
35-44	89	23.5	151	39.9	42	12.7	75	22.6								
45-54	121	35.7	229	67.6	52	13.7	70	18.5								
55-64	96	36.5	147	55.9	39	12.7	52	17.0								
65-74	14	9.3 <sup>+</sup>	18	11.9 <sup>+</sup>	<5	<sup>++</sup>	7	4.0 <sup>+</sup>								

**Data Source:** Cook County Medical Examiner's Office, US Census Bureau

**Note:** Geographic designations are based on address of incident, regardless of decedent's address of residence.

<sup>i</sup> Categories are not mutually exclusive as some deaths involved more than one type of opioid.

<sup>ii</sup> Rates express then number of overdoses per 100,000 people in the population. Denominators are based on the 2010 census population. Rates are age-adjusted to the 2000 US standard population.

<sup>iii</sup> Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

<sup>iv</sup> Race-ethnicity data not available for 2015. Race-ethnicity data provided by the Cook County Medical Examiner. NH = non-Hispanic, AA = African American, PI = Pacific Islander.

\* The Cook County Medical Examiner's office began routinely testing for fentanyl involvement in June 2015. For this reason, the actual number of fentanyl-involved overdose deaths in 2015 may be greater than reported.

<sup>+</sup> For counts less than 20, rates may be unstable and should be interpreted with caution.

<sup>++</sup> For counts less than 5, rates are not reported.

**Table 4. Percentage of all opioid-related overdose deaths involving specific opioids – Cook County, IL (2016)**

Drug Type <sup>i</sup>	Chicago (n=741)	Suburban Cook (n=340)
Heroin-involved	65.7%	60.6%
Fentanyl-involved	56.7%	41.2%
Opioid pain reliever-involved <sup>ii</sup>	5.4%	18.8%
Methadone-involved	6.5%	3.8%

**Data Source:** Cook County Medical Examiner's Office.

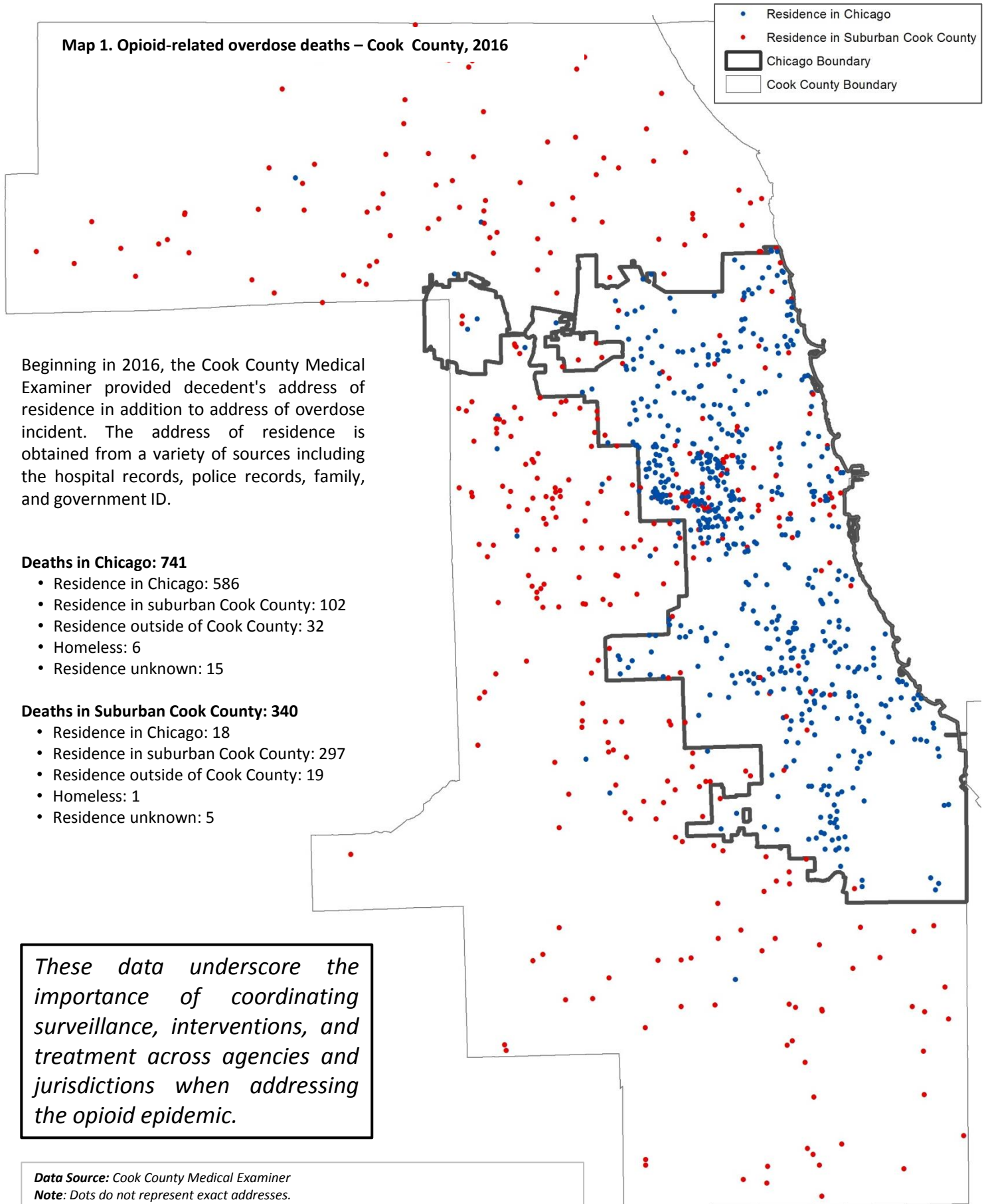
**Note:** Geographic designations are based on address of incident, regardless of decedent's address of residence.

<sup>i</sup> Categories are not mutually exclusive as some deaths involved more than one type of opioid. Percentages will not add to 100%

<sup>ii</sup> Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

## Geography – Cook County, IL

**Map 1. Opioid-related overdose deaths – Cook County, 2016**



Beginning in 2016, the Cook County Medical Examiner provided decedent's address of residence in addition to address of overdose incident. The address of residence is obtained from a variety of sources including the hospital records, police records, family, and government ID.

**Deaths in Chicago: 741**

- Residence in Chicago: 586
- Residence in suburban Cook County: 102
- Residence outside of Cook County: 32
- Homeless: 6
- Residence unknown: 15

**Deaths in Suburban Cook County: 340**

- Residence in Chicago: 18
- Residence in suburban Cook County: 297
- Residence outside of Cook County: 19
- Homeless: 1
- Residence unknown: 5

*These data underscore the importance of coordinating surveillance, interventions, and treatment across agencies and jurisdictions when addressing the opioid epidemic.*

**Data Source:** Cook County Medical Examiner  
**Note:** Dots do not represent exact addresses.

## Geography - Chicago

Opioid-related overdose deaths occurred across Chicago – with decedents having resided in 73 of the 77 (95%) community areas.

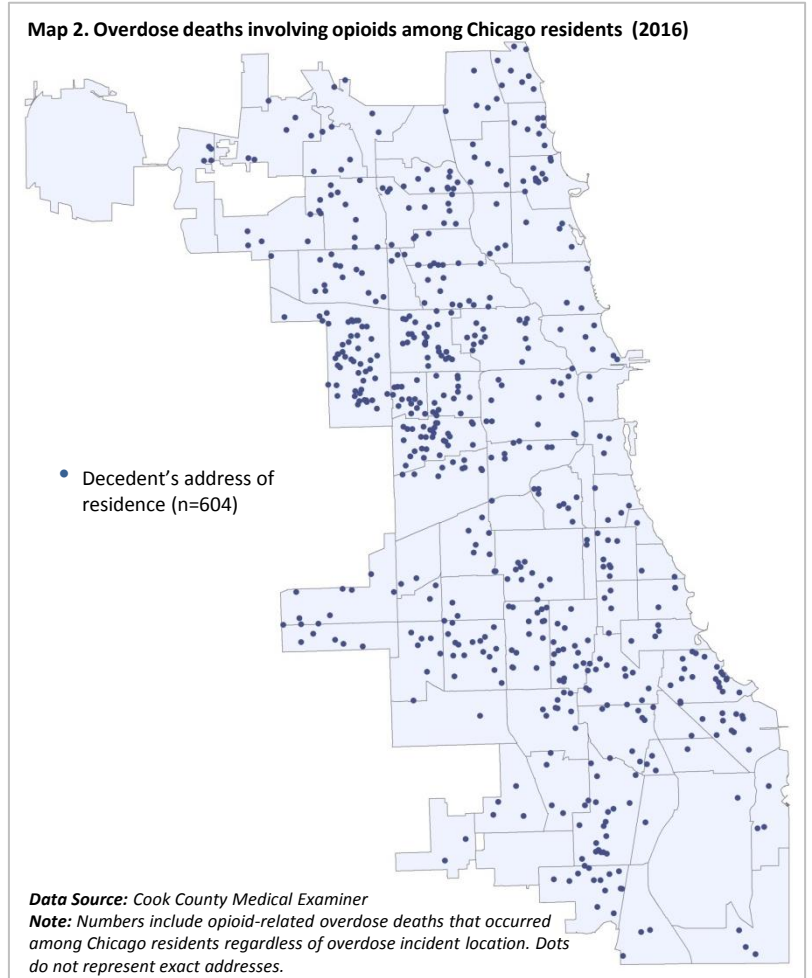
### Top five community areas (number of deaths)

- 1) Austin (50)
- 2) North Lawndale (29)
- 3) Humboldt Park (28)
- 4) West Town (19) and South Shore (19)
- 5) Roseland (18)

### Community areas with zero deaths

- 1) Edison Park
- 2) North Park
- 3) Armor Square
- 4) Morgan Park

**Opioid-related overdose deaths occurred in 95% of Chicago community areas in 2016.**



- Of the 741 opioid-related overdose deaths that occurred in Chicago in 2016, 586 decedents had a residence address in Chicago, while 102 decedents had a residence address in suburban Cook County (Table 5).
- Chicago residents who died of an opioid-related overdose were more likely to be NH African American (52.3%) and older (average age of 50 years). However, non-residents who died of an overdose were more likely to be NH White (59%) and younger (average age of 42 years) (Table 5).
- 275 (37%) of the opioid-related overdose deaths that occurred in Chicago occurred at the decedent's home address.

**Table 5. Opioid-related overdose deaths that occurred in Chicago by decedent's address of residence – Chicago, 2016**

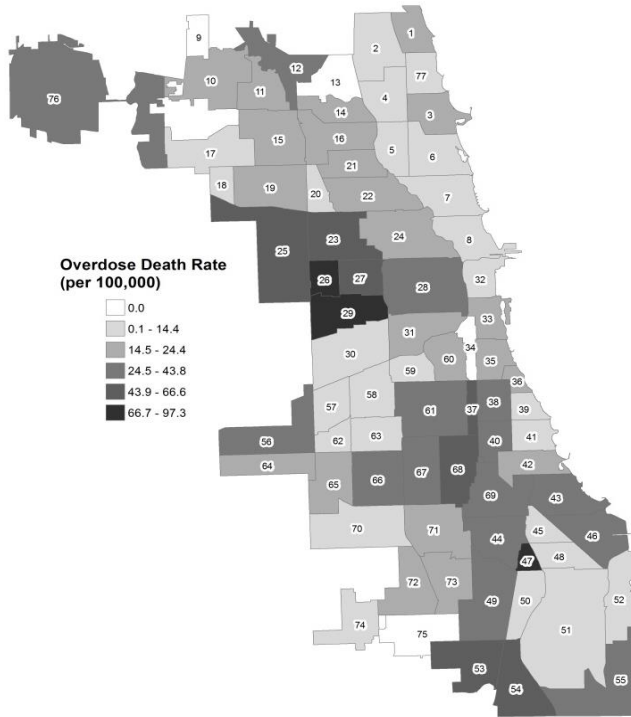
	Address of residence in Chicago (n=586)		Address of residence in suburban Cook (n = 102)	
	#	%	#	%
<b>Race-ethnicity</b>				
NH African American	312	53.2%	26	25.5%
NH White	169	28.8%	60	58.8%
Hispanic or Latino	99	16.9%	16	15.7%
NH Asian or Pacific Islander	5	0.9%	0	0
<b>Age (years)</b>				
15-24	29	4.9%	9	8.8%
25-34	106	18.1%	29	28.4%
35-44	123	21.0%	16	15.7%
45-54	187	31.9%	28	27.5%
55-64	126	21.5%	16	15.7%
65-74	13	2.2%	4	3.9%
Average age (years)	44.9		41.5	

*Data Source: Cook County Medical Examiner's Office.*

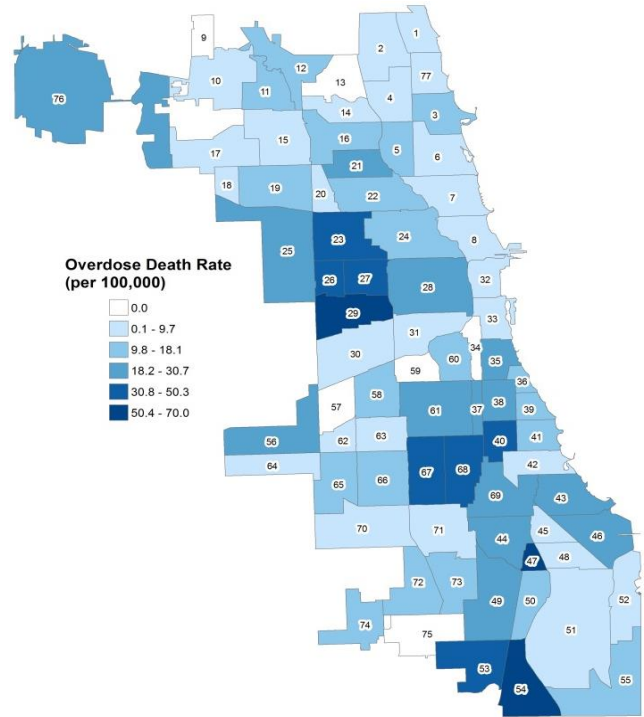


# Opioid-related overdose death rate by opioid type and community area of residence – Chicago, 2016

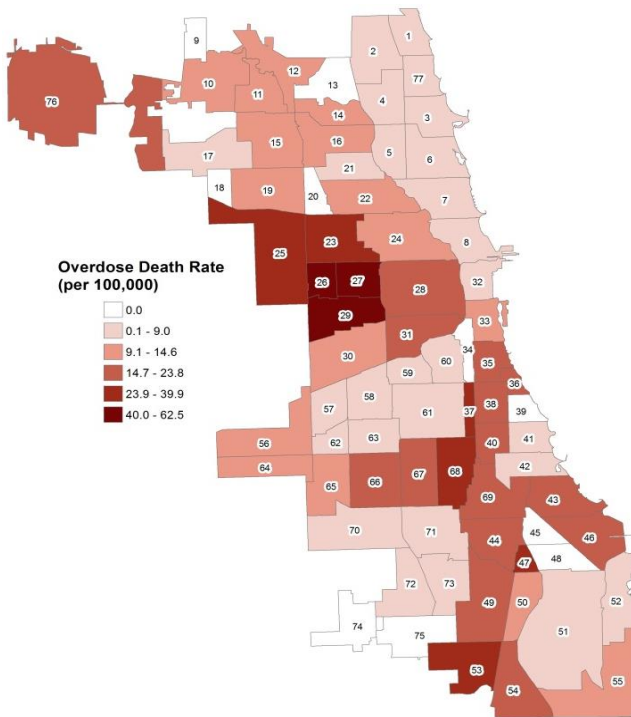
**Map 3. All Opioids (n=604)**



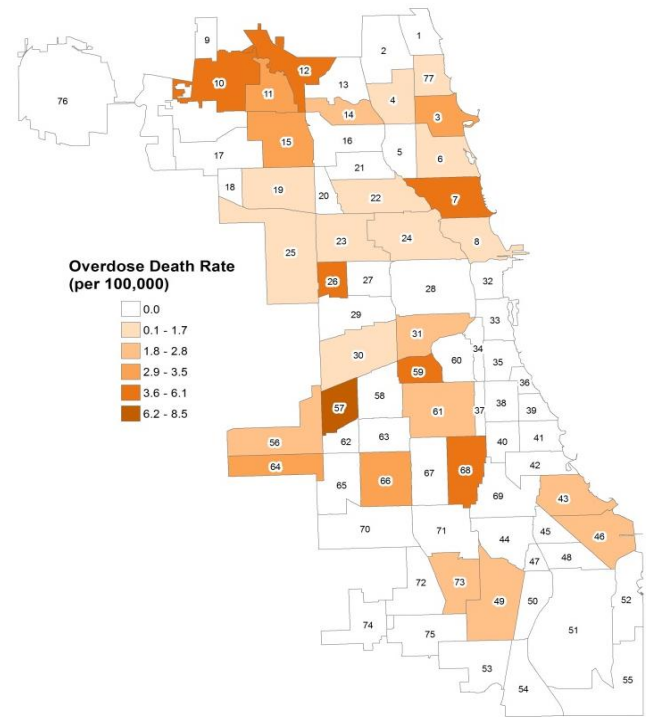
**Map 4. Heroin (n=389)**



**Map 5. Fentanyl (n=336)**



**Map 6. Opioid Pain Relievers (n=34)**



1 Rogers Park	9 Edison park	17 Dunning	25 Austin	33 Near South Side	41 Hyde Park	49 Roseland	57 Archer Heights	65 West Lawn	73 Washington Heights
2 West Ridge	10 Norwood Park	18 Montclare	26 West Garfield Park	34 Armour Square	42 Woodlawn	50 Pullman	58 Brighton Park	66 Chicago Lawn	74 Mount Greenwood
3 Uptown	11 Jefferson Park	19 Belmont Cragin	27 East Garfield Park	35 Douglas	43 South Shore	51 South Deering	59 McKinley Park	67 West Englewood	75 Morgan Park
4 Lincoln Square	12 Forest Glen	20 Hermosa	28 Near West Side	36 Oakland	44 Chatham	52 East Side	60 Bridgeport	68 Englewood	76 O'Hare
5 North Center	13 North Park	21 Avondale	29 North Lawndale	37 Fuller Park	45 Avalon Park	53 West Pullman	61 New City	69 Greater Grand Crossing	77 Edgewater
6 Lakeview	14 Albany Park	22 Logan Square	30 South Lawndale	38 Grand Blvd	46 South Chicago	54 Riverdale	62 West Elston	70 Ashburn	
7 Lincoln Park	15 Portage Park	23 Humboldt Park	31 Lower West Side	39 Kenwood	47 Burnside	55 Hegewisch	63 Gage park	71 Auburn Gresham	
8 Near North Side	16 Irving Park	24 West Town	32 Loop	40 Washington Park	48 Calumet Heights	56 Garfield Ridge	64 Clearing	72 Beverly	

**Data Source:** Cook County Medical Examiner, US Census Bureau

**Note:** Deaths are geocoded to location of decedent's address of residence regardless of location of overdose incident, which is obtained from a variety of sources including hospital records, police records, family, and government ID by the Cook County Medical Examiner's Office.

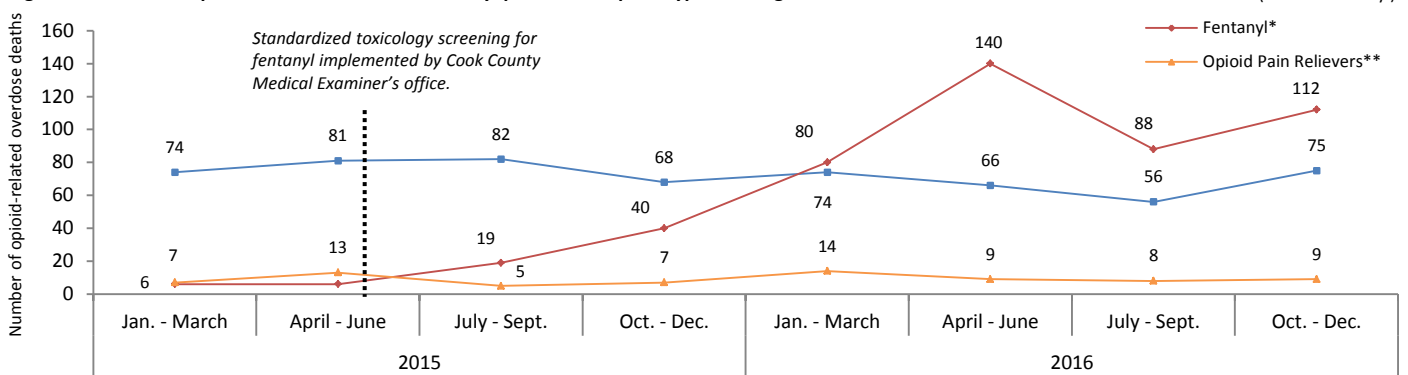
## What is driving the increase in opioid-related overdose deaths?

While overdose deaths increased across all opioid types, the opioid contributing the largest increase was fentanyl. **The number of opioid-related overdose deaths involving fentanyl increased from 71 deaths in 2015 to 420 deaths in 2016.** To better understand this increase, it is important to note that standards for routine fentanyl monitoring were modified in 2015. Toxicology screening for fentanyl was implemented universally for overdose deaths at the Cook County Medical Examiner in June 2015. The Drug Enforcement Administration (DEA) Chicago Field Division reported dramatic increases in fentanyl seizures in Illinois from 392 fentanyl submissions in 2015 to 1,332 submissions in 2016.<sup>4</sup> Similarly, the Illinois State Police Lab also began routinely testing samples for fentanyl in 2015. Considering these systemic changes, it is possible that the increase in the presence and impact of fentanyl may have been underreported prior to 2016.

### Fentanyl

Fentanyl is a synthetic opioid that is approximately 50 to 100 times more potent than morphine. It can be manufactured legally and is approved to treat severe pain. Typically, pharmaceutical fentanyl is sold in a patch or lozenge form. In recent years, fentanyl has been increasingly manufactured and sold illicitly. Fentanyl is a common adulterant in heroin – with or without the user’s knowledge.<sup>5</sup>

**Figure 4. Number of opioid-related overdose deaths by quarter and opioid type – Chicago, 2015-2016**



**Data Source:** Cook County Medical Examiner’s Office

\* Includes overdose deaths that involved fentanyl alone or fentanyl in combination with heroin or other opioids.

\*\* Opioid pain reliever: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, oxymorphone, or tramadol.

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent’s address of residence.

## Who is dying from fentanyl?

- In Chicago, 57% of all opioid-related overdose deaths in 2016 involved fentanyl. This impact was seen across age, race-ethnicity, gender, and geography (Table 6).
- The proportion of opioid-related overdose deaths involving fentanyl was significantly higher among NH African Americans (59%) and Hispanics (62%) when compared to NH Whites (51%) (Table 6).
- The proportion of opioid-related overdose deaths involving fentanyl was significantly lower among those under 25 (44%) compared to older age groups (57%) (Table 6).
- Among men, 60% of all opioid-related overdose deaths involved fentanyl, which was significantly higher than the proportion among women (48%) (Table 6).
- The community areas with the highest rates of fentanyl-involved overdose deaths were North Lawndale, West Garfield Park, East Garfield Park, Humboldt Park, and Fuller Park (Map 5).

**Table 6. Percentage of opioid-related overdose deaths that involved fentanyl – Chicago, 2016**

	2016	
	# Fentanyl-involved deaths / # Opioid-involved deaths	% involving fentanyl
<b>Chicago Deaths</b>	420 / 741	56.7%
<b>Race-Ethnicity</b>		
NH African American	210 / 358	58.7%
NH White	128 / 253	50.6%
Hispanic or Latino	76 / 123	61.8%
NH Asian or Pacific Islander	3 / 6	50.0%
<b>Age (years)</b>		
15-24	19 / 43	44.2%
25-34	91 / 151	60.3%
35-44	86 / 151	57.0%
45-54	134 / 229	58.5%
55-64	79 / 147	53.7%
65-74	10 / 18	55.6%
<b>Gender</b>		
Female	88 / 185	47.6%
Male	331 / 557	59.4%

**Data Source:** Cook County Medical Examiner’s Office

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent’s address of residence. NH = non-Hispanic

## Who is dying from overdoses involving opioid pain relievers?

### In the United States

In 2015, approximately 15,000 people across the United States died from an overdose that involved an opioid pain reliever (OPR), representing almost half of all opioid-related overdose deaths. The highest rates were among people aged 25-54 years, among NH whites and American Indian or Alaskan Natives, and among men.<sup>6</sup>

### In Chicago

While almost 50% of the opioid-related overdose deaths nationally involved OPRs, only 5.4% of all opioid-related overdose deaths in Chicago involved OPRs. However, the demographics of those impacted by OPR-involved deaths are quite distinct compared to those impacted by heroin and fentanyl-involved deaths (Table 7).

- The impact of OPRs on opioid-related overdose fatalities is greater among NH whites and Latinos than among NH African Americans. The proportion of opioid-related overdose deaths attributable to OPR was 7.5% among Whites and 7.3% among Latinos, which is more than double the percentage among African Americans (3.4%) (Table 4).
- Economic hardship is a community level measure of social vulnerability and economic instability. For example, high hardship communities have higher rates of unemployment and crowded housing.<sup>7</sup>
- 10% of opioid-related overdose deaths among communities with low economic hardship were attributable to OPR, which is more than double than in communities with higher economic hardship (Table 7).

### **Opioid pain relievers**

Often called prescription pain relievers or opioid analgesics, this class of drugs is prescribed to treat pain. Includes: buprenorphine, codeine, fentanyl, hydrocodone (e.g. Lorcet, Lortab, Norco, Vicodin), meperidine, methadone, morphine, oxycodone (e.g. OxyContin, Percocet) and tramadol. Buprenorphine and methadone are FDA-approved to treat pain and to treat opioid addiction. While fentanyl is approved to treat pain, it is not a commonly prescribed medication.

**Table 7. Opioid-related overdose deaths involving opioid pain relievers – Chicago, 2016**

	OPR-related deaths		# OPR-involved deaths / # Opioid-involved deaths	
	#	Rate <sup>1</sup>	#	%
<b>Chicago Deaths</b>	40	1.4	40 / 741	5.4%
<b>Race-Ethnicity</b>				
NH African American	12	1.3	12 / 358	3.4%
NH White	19	1.9	19 / 253	7.5%
Hispanic or Latino	9	1.2	9 / 123	7.3%
NH Asian or Pacific Islander	0	0.0	0 / 6	0.0%
<b>Age (years)</b>				
15-24	4	1	4 / 43	9.3%
25-34	7	1.4	7 / 151	4.6%
35-44	6	1.6	6 / 151	4.0%
45-54	10	3	10 / 229	4.4%
55-64	11	4.2	11 / 147	7.5%
65-74	1	0.7	1 / 18	5.6%
<b>Gender</b>				
Female	18	1.3	18 / 185	9.7%
Male	22	1.7	22 / 557	3.9%
<b>Manner of Death</b>				
Accidental	32	N/A	32 / 725	4.4%
Suicide	6	N/A	6 / 9	66.7%
Undetermined	2	N/A	2 / 7	28.6%
<b>Community-Level Economic Hardship</b>				
Low	19	1.8	19 / 191	9.9%
Medium	6	0.8	6 / 164	3.7%
High	15	1.7	15 / 372	4.1%

**Data Source:** Cook County Medical Examiner's Office. NH = non-Hispanic

<sup>1</sup> Rates expressed as number of overdoses per 100,000 people in the population. Denominators are based on the 2010 census population. Rates are age-adjusted to the 2000 US standard population.

**Note:** Numbers include all opioid-related overdose deaths that occurred in Chicago, regardless of decedent's address of residence.

- The impact was greater among the youngest age group (9.3% attributable to OPR) (Table 7).
- Almost 10% of all opioid-related overdoses among women were attributable to OPR. This was more than double the proportion among men, which is distinct from heroin and fentanyl (Table 7).
- Of the nine opioid-related overdoses categorized as suicide six (67%) involved OPR (Table 7).
- The top five community areas with the highest rates of OPR-involved overdose deaths were Archer Heights, Forest Glen and Norwood Park, McKinley Park, West Garfield Park (Map 6).



## Opioid pain reliever use in Chicago

### Among adults

- According to the 2016 Healthy Chicago Survey,<sup>8</sup> an annual telephone survey conducted by CDPH, an estimated 250,000 (12.3%) adults in Chicago used an opioid pain reliever in the past year and 43,000 (2.1%) reported misuse (Table 8).
- The percentage of Chicago adults who reported using an opioid pain reliever, and the percentage who reported misuse in 2016 did not significantly differ from 2015 data (Table 8).

**Table 8. Opioid pain reliever use among adults – Chicago, 2015-2016**

	2015	2016
	Percentage (95% CI)	Percentage (95% CI)
<b>Used opioid pain relievers</b> <i>(of the total population)</i>	12.8% (11.1%, 14.6%)	12.3% (10.5%, 14.1%)
<b>Used as directed by physician</b> <i>(of those who used opioid pain relievers)</i>	76% (69.7%, 83.0%)	83.0% (77.1%, 89.0%)
<b>Misused</b> <i>(of those who used opioid pain relievers)</i>	24% (17.0%, 30.3%)	17.0% (11.0%, 22.9%)
<b>Used more than was prescribed</b> <i>(of those who misused)<sup>i</sup></i>	29% (16.1%, 42.3%)	39.2% (20.4%, 58.1%)
<b>Used without a prescription</b> <i>(of those who misused)<sup>i</sup></i>	79% (68.6%, 90.4%)	73.9% (56.5%, 91.3%)

*Data Source: CDPH Healthy Chicago Survey*  
*<sup>i</sup>Some individuals were categorized into both misuse categories*

- There were no significant changes between 2015 and 2016 in the age, gender, or race-ethnicity of Chicago residents who misused opioids.

### Among youth

The Illinois Youth Survey<sup>9</sup> is a biennial survey conducted in 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> grade classes in schools across the state.

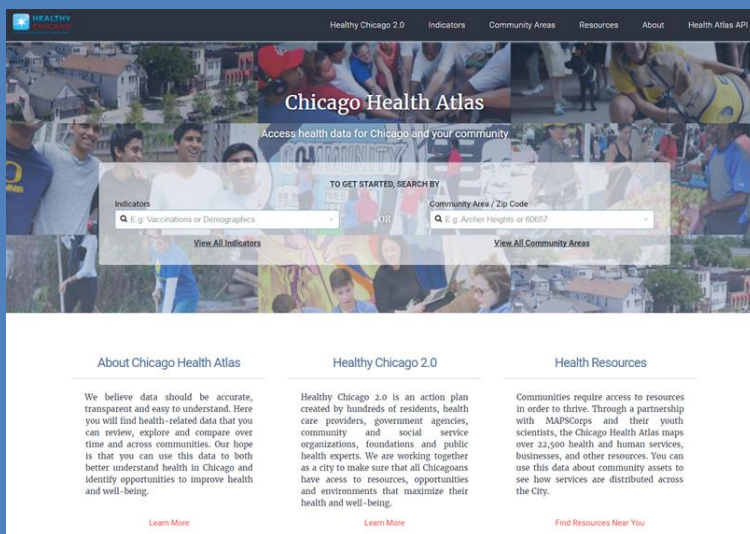
**Table 9. Opioid pain reliever use among youth– Chicago, 2016**

	8th		10th		12th	
	Chicago	IL	Chicago	IL	Chicago	IL
<b>Used opioid pain relievers to get high in the past year</b>	2%	1%	3%	3%	3%	5%
<b>Used heroin in the past year</b>	0%	0%	1%	1%	2%	1%

The survey contains questions about drug use and factors contributing to drug use among students.

- The percentage of 8<sup>th</sup> and 10<sup>th</sup> grade students using heroin and opioid pain relievers in the past year was not significantly different in Chicago compared to Illinois.
- 12<sup>th</sup> graders in Chicago were less likely to report using opioid pain relievers to get high and more likely to report heroin use than 12<sup>th</sup> graders in Illinois.

## chicagohealthatlas.org



- The Chicago Health Atlas ([www.chicagohealthatlas.org](http://www.chicagohealthatlas.org)) is a website developed by the Chicago Department of Public Health and the Smart Chicago Collaborative to allow users to easily explore, analyze and download health-related data for the city of Chicago.
- Users are able to view data on their desktop or mobile device for more than 160 data indicators to explore the demographics, health outcomes and behaviors, and social characteristics of Chicago residents and their neighborhoods.

## EMS responses for fatal and non-fatal opioid-related overdoses

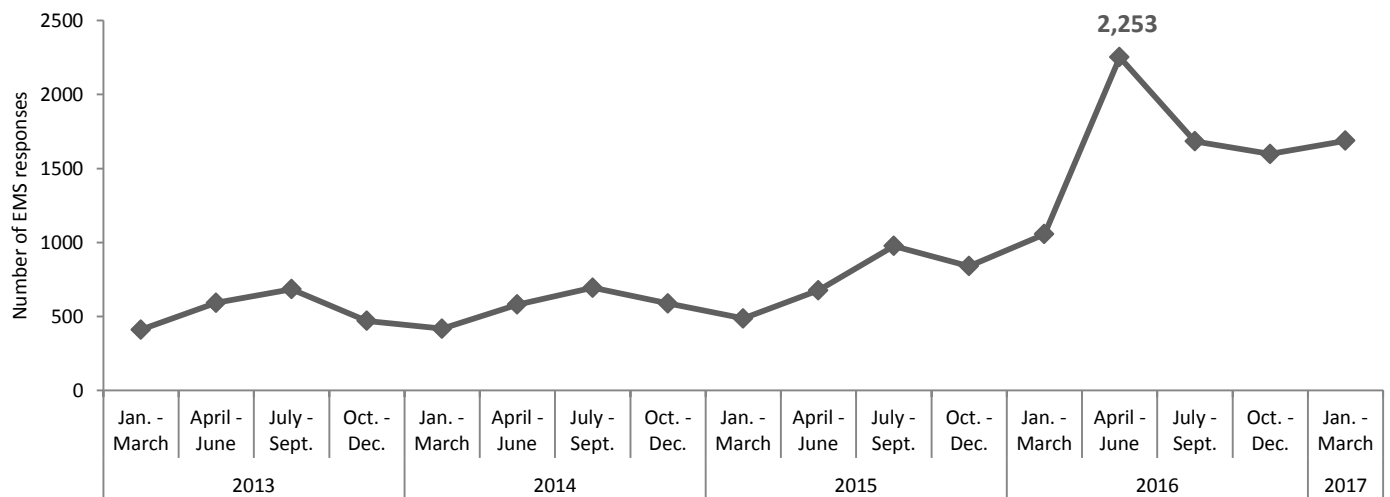
Not all opioid-related overdoses result in death. To understand the magnitude and burden of both fatal and non-fatal opioid-related overdoses, CDPH reviewed emergency medical services (EMS) response data from the Chicago Fire Department (CFD).<sup>10</sup> According to CFD, there were 6,590 EMS responses for opioid-related overdose in Chicago in 2016. This number represents fatal and non-fatal overdoses due to any type of opioid.

- In 2016, CFD EMS responded to an average of 18 opioid-related overdoses per day, with a range of 1 to 53. This was triple the average daily responses in 2013 (6 with a range of 1 to 18).
- The number of EMS responses for an opioid-related overdose among NH African American individuals was three times the number of EMS responses among NH white individuals.
- High economic hardship communities had the highest numbers of EMS responses for opioid-related overdoses.
- EMS responses for opioid-related overdose increased from 2015 to 2016, with a substantial spike in spring 2016, similar to the pattern seen for opioid-related overdose deaths (Figure 5).

	#	%
<b>Chicago EMS overdose responses</b>	6,590	100%
<b>Race-Ethnicity</b>		
Non-Hispanic African American	4,107	63.9%
Non-Hispanic White	1,393	21.7%
Hispanic or Latino	902	14.0%
Non-Hispanic Asian or Pacific Islander	28	0.4%
<b>Age (years)</b>		
15-24	346	5.3%
25-34	1,023	15.7%
35-44	1,204	18.5%
45-54	2,052	31.5%
55-64	1,592	24.4%
65-74	306	4.7%
<b>Gender</b>		
Female	1,496	22.7%
Male	5,081	77.3%
<b>Community economic hardship</b>		
Low	689	10.7%
Medium	992	15.4%
High	4,772	74.0%

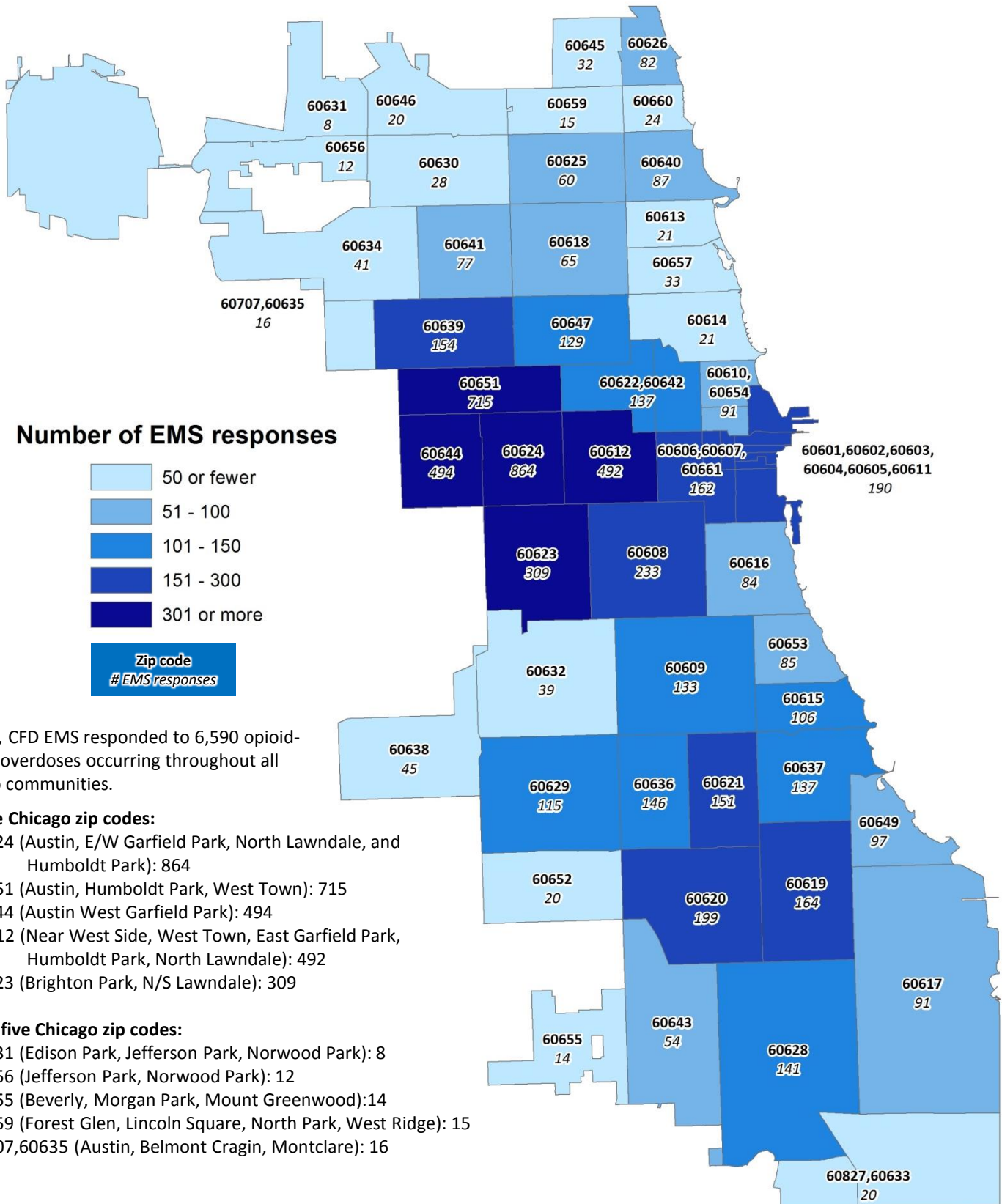
*Data Source: Chicago Fire Department*

**Figure 5. EMS responses for opioid-related overdose by quarter – Chicago, 2013-2017**

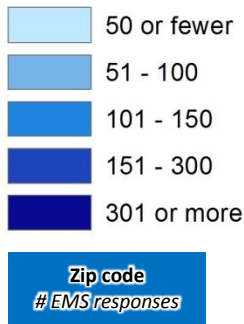


*Data Source: Chicago Fire Department*

**Map 7. EMS responses for fatal and non-fatal opioid-related overdose by zip code of incident – Chicago, 2016**



**Number of EMS responses**



In 2016, CFD EMS responded to 6,590 opioid-related overdoses occurring throughout all Chicago communities.

**Top five Chicago zip codes:**

- 60624 (Austin, E/W Garfield Park, North Lawndale, and Humboldt Park): 864
- 60651 (Austin, Humboldt Park, West Town): 715
- 60644 (Austin West Garfield Park): 494
- 60612 (Near West Side, West Town, East Garfield Park, Humboldt Park, North Lawndale): 492
- 60623 (Brighton Park, N/S Lawndale): 309

**Lowest five Chicago zip codes:**

- 60631 (Edison Park, Jefferson Park, Norwood Park): 8
- 60656 (Jefferson Park, Norwood Park): 12
- 60655 (Beverly, Morgan Park, Mount Greenwood): 14
- 60659 (Forest Glen, Lincoln Square, North Park, West Ridge): 15
- 60707,60635 (Austin, Belmont Cragin, Montclare): 16

**Data Source:** Chicago Fire Department and US Census Bureau

**Note:** Addresses and zip codes are geocoded to location of incident regardless of address of residence. Some zip codes are aggregated to account for changes in boundaries and low population size.

## Reported by

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<sup>1</sup> Chicago Department of Public Health, <sup>2</sup> Cook County Medical Examiner's Office, <sup>3</sup> Chicago Fire Department, <sup>4</sup> Cook County Health and Hospital System

## References

<sup>1</sup> Cook County Medical Examiner's Office.

<sup>2</sup> Chicago Department of Public Health. *Epidemiology Brief: Characterizing Opioid Use, Misuse, and Overdose in Chicago, IL, 2015*. June 2017 ([https://www.cityofchicago.org/content/dam/city/depts/cdph/CDPH/Healthy%20Chicago/ChicagoOpioid Brief3\\_6162017.pdf](https://www.cityofchicago.org/content/dam/city/depts/cdph/CDPH/Healthy%20Chicago/ChicagoOpioid%20Brief3_6162017.pdf))

<sup>3</sup> The Cook County Medical Examiner's office assigns race and ethnicity classifications based on clarification and communication with the decedent's family (when possible).

<sup>4</sup> DEA Chicago Field Division. *The Opioid Threat in the Chicago Field Division*. DEA Intelligence Report; June 2017.

<sup>5</sup> Centers for Disease Control and Prevention. *What is fentanyl?* National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention; 2017 (<https://www.cdc.gov/drugoverdose/opioids/fentanyl.html>). (Accessed September 20, 2017)

<sup>6</sup> Centers for Disease Control and Prevention. *Prescription Opioid Overdose Data*. August 1, 2017. (<https://www.cdc.gov/drugoverdose/data/overdose.html>) (Accessed October 23, 2017).

<sup>7</sup> Lisa M. Montiel, Richard P. Nathan, and David J. Wright. *An Update on Urban Hardship*. The Nelson A Rockefeller Institute of Government. 2004 ([http://rockinst.org/pdf/cities\\_and\\_neighborhoods/2004-08-an\\_update\\_on\\_urban\\_hardship.pdf](http://rockinst.org/pdf/cities_and_neighborhoods/2004-08-an_update_on_urban_hardship.pdf))

<sup>8</sup> Healthy Chicago Survey (2016): HCS is a random digit dial telephone survey conducted annually by the Chicago Department of Public Health and Abt SRBI of all non-institutionalized adults over age 18 in Chicago, IL. Data are weighted to represent the household population of adults 18 years of age and older who reside in the City of Chicago.

<sup>9</sup> Center for Prevention Research and Development. (2017). *Illinois Youth Survey 2016 Frequency Report: City of Chicago*. Champaign, IL: CPRD, School of Social Work, University of Illinois (<https://iys.cprd.illinois.edu/results/state>).

<sup>10</sup> Chicago Fire Department Emergency Medical Services. Data provided reflect all EMS responses where naloxone was administered and where there was indication of opioid involvement. Race and ethnicity data are recorded by the EMS staff on the scene.

## Definitions

### Common terms

Opioid: Broad term that includes naturally occurring opiates, semi-synthetic and synthetic opioids.

Opiate: Naturally occurring substances that are derived from opium.

### Classes of opioids

Natural opiates: Drugs that are fully derived from opium; examples include morphine and codeine.

Semi-synthetic opioids: Drugs that are derived from a combination of natural and synthetic opioids; examples include heroin, oxycodone, hydrocodone, hydromorphone, and oxymorphone.

Synthetic opioids: Drugs that are created to work in a similar way as naturally occurring opiates but are completely man-made; examples include fentanyl, tramadol and methadone.

### Specific opioids

Heroin: A highly addictive and illegally produced drug derived from morphine.

Fentanyl: A highly potent synthetic opioid that is prescribed to treat severe pain. In the US, there has been an increase in the development and distribution of illegally produced fentanyl. Most of the fentanyl involved in overdose deaths is thought to be from an illicit source. Fentanyl is a common adulterant in heroin – often without the user's knowledge.

Methadone: A synthetic opioid that is FDA-approved to treat both pain and opioid use disorder.

Opioid pain relievers: Often called prescription pain relievers or opioid analgesics, this class of drugs is prescribed to treat pain.

Includes: buprenorphine, codeine, fentanyl, hydrocodone (e.g. Lorcet, Lortab, Norco, Vicodin), meperidine, methadone, morphine, oxycodone (e.g. OxyContin, Percocet) and tramadol. Buprenorphine and methadone are FDA-approved to treat pain, however are more commonly used for addiction treatment. While fentanyl is approved to treat pain, it is rarely prescribed.



## Additional information about overdose death data and categories of opioids

Data were received directly from the medical examiner's office. All cases labeled "morphine," "opiate," or "opioid" were re-reviewed with the medical examiner. The medical examiner re-reviewed the toxicology report, the police review, and the case history to determine the specific opioids involved in the death. Ultimately, 103 cases of the opioid-related overdose deaths that occurred in 2016 were re-reviewed and about 75% were re-categorized as heroin. The remaining 25% were categorized as unknown opioid, unknown prescription opioid, morphine, heroin, fentanyl, codeine, or deemed not an opioid-related overdose and removed.

**Heroin-involved deaths:** 487 deaths were categorized as heroin-related deaths. 250 overdose deaths involved heroin alone, 204 involved heroin and fentanyl combined, 17 involved heroin and methadone, 10 involved heroin, methadone and fentanyl, 3 involved heroin and an opioid pain reliever, 1 involved heroin, fentanyl and an opioid pain reliever, 1 involved heroin, methadone, and an opioid pain reliever, and 1 involved heroin, methadone, fentanyl, and an opioid pain reliever.

This category includes two types of deaths:

- Deaths labeled heroin on the death certificate
- Deaths originally labeled "opiate" or "morphine" (morphine is a breakdown product of heroin) but determined to be likely due to heroin after re-reviewing the toxicology reports, circumstances of death, and history with the Cook County Medical Examiner.

**Fentanyl-involved deaths:** 420 deaths were categorized as involving fentanyl or fentanyl analogs by the Cook County Medical Examiner. 196 overdose deaths involved only fentanyl, 204 involved fentanyl and heroin, 10 involved fentanyl, methadone and heroin, 6 involved fentanyl and an opioid pain reliever, 2 involved fentanyl and methadone, 1 involved fentanyl, heroin, and an opioid pain reliever, and 1 involved heroin, methadone, fentanyl, and an opioid pain reliever.

**Opioid pain reliever-involved deaths:** 40 deaths were categorized as involving an opioid pain reliever. The drugs found were: buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, morphine, oxycodone, tramadol, and unknown prescription opiates. The morphine-related deaths included in this category were determined by the medical examiner's office to be more likely related to an actual morphine overdose rather than a heroin metabolite. 27 overdose deaths involved only opioid pain relievers, 3 involved heroin and opioid pain relievers, 6 involved fentanyl and opioid pain relievers, 1 involved methadone and opioid pain relievers, 1 involved heroin, methadone, and opioid pain relievers, 1 involved heroin, fentanyl, and opioid pain relievers and 1 involved heroin, fentanyl, methadone, and opioid pain relievers.

**Methadone-involved deaths:** 48 deaths were categorized as methadone-related overdose. 16 overdose deaths involved methadone only, 17 involved methadone and heroin, 10 involved methadone, heroin and fentanyl, 2 involved methadone and fentanyl, 1 involved methadone and an opioid pain reliever, 1 involved methadone, an opioid pain reliever and heroin, 1 involved methadone, heroin, fentanyl, and an opioid pain reliever.

**Unknown opioid-involved deaths:** 3 deaths were identified as "opiate" deaths where no further information was available. Typically, these were cases where the individual died in a hospital setting where opiates had been confirmed by hospital testing, but it was no longer possible for the medical examiner's office to send out confirmatory toxicology testing to determine the type of opiate that had been involved (because of the length of time between drug use and eventual death).

### **General Resources for Opioid Addiction:**

- Substance Abuse and Mental Health Services Administration (SAMHSA) National Helpline: 800.662.HELP(4357)
- For SAMHSA's Behavioral Health Treatment Services Locator click [HERE](#)
- For questions about medications, call the Illinois Poison Center at 800.222.1222
- For information about safe disposal of medications click [HERE](#)
- IL Department of Human Services Consumer (DHS) Hotline: 866.213.0548