



***Metro* Public Health *Dept***  
Nashville / Davidson County  

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**Protecting, Improving, and Sustaining Health**

# **Drug Overdose Epidemiological Profile – 2021 Davidson County, Tennessee**

Overdose Response Program | April 2021

Bureau of Population Health – Behavioral Health and Wellness Division

Metro Public Health Department of Nashville/Davidson County, Tennessee

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## Executive Summary

In 2020, the local drug overdose epidemic continued to deteriorate further as indicated by numerous metrics monitored by the Overdose Response Program (ORP). While previous projections predicted a continued, upward trajectory across all data systems for 2020, the situation was further exacerbated by the impact of the COVID-19 pandemic and the increasing presence of fentanyl, a deadly synthetic opioid, in the community.

The following report presents public health and public safety surveillance data for drug overdoses occurring in Davidson County. The purpose of this report is to submit data on the local drug overdose epidemic in order to assist with education, outcome monitoring, and program planning and evaluation.

Data are reported in the following forms: total counts, percentages of total counts, rates per 100,000 persons, and percent change over time. Additionally, data are stratified by categories such as age group, sex, race, ethnicity, and substance category, among others. Trends and conclusions are not presented for any annual or subpopulation counts that are less than 20 due to instability of low counts.

## Key Findings

- The current drug overdose epidemic in Davidson County predominantly involves synthetic opioids and stimulants, signifying a shift away from prescription opioids and heroin which previously characterized the epidemic.
- In 2020, Davidson County reported record-breaking increases across numerous metrics including annual counts for suspected overdoses requiring Emergency Medical Services (EMS) response, nonfatal overdose-related emergency department (ED) visits, nonfatal drug overdoses reported by hospitals, and suspected overdose deaths reported by the local medical examiner.
- In 2020, there were more than 600 suspected drug overdose deaths that occurred in Davidson County, representing a 31.8% increase compared to 2019 and the largest annual number of deaths reported over the last five years.
- Fentanyl, a synthetic opioid pain reliever, was detected in 77.3% of toxicology reports among suspected overdose deaths in 2020.
- Nonfatal drug overdoses reported by local hospitals increased by 40.4% in 2020 compared to the previous year.
- Syndromic surveillance detected a 29.6% increase in overdose-related ED visits in 2020 compared to the previous year.
- Suspected drug overdoses requiring response by Nashville Fire Department EMS increased by 31.4% in 2020 compared to the previous year.

## Background

Nashville is the capital and most populous city in the state of Tennessee, representing approximately 10% of the total state population.<sup>1</sup> It is also the county seat of Davidson County and is located in the central region of the state along the Cumberland River.

**Population:** According to the US Census Bureau, there were 694,144 people residing in Davidson County in 2019, signifying a 4% increase over the last five years.<sup>1</sup>

**Age:** The median age in Davidson County was 34.5 years compared to the state of Tennessee (39.0 years).

**Sex:** In 2019, females comprised a slight majority (52%) of the Davidson County population compared to males. This trend is consistent with the rest of the state.

**Race:** In 2019, approximately 63% of the population was white followed by black/African American (AA) (27%) and other races (10%).

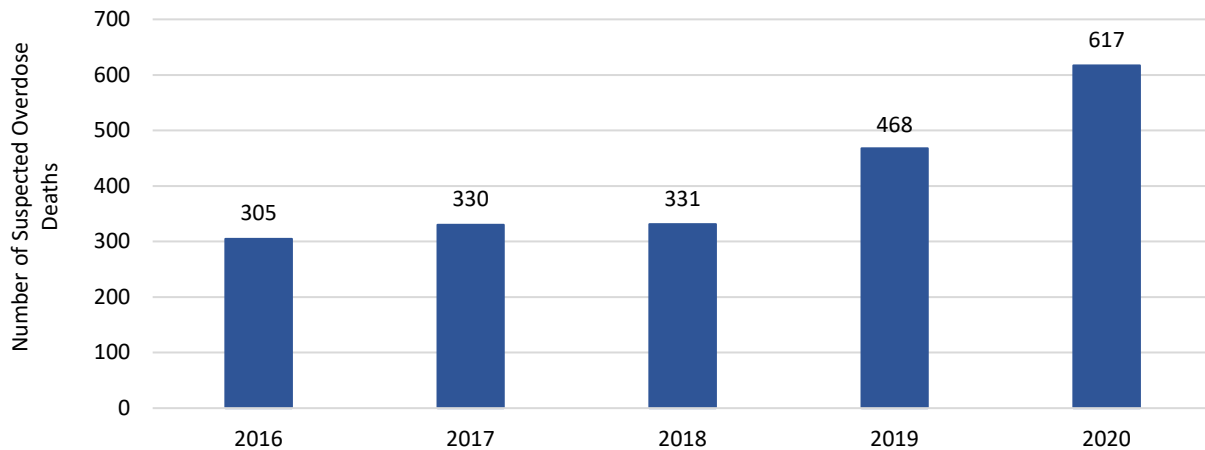
**Ethnicity:** In Davidson County, roughly 90% of the population was non-Hispanic. In Tennessee, 94% of the population was non-Hispanic in 2019.

**Income and Poverty:** The median household income was \$60,388 in 2019 compared to the state (\$53,320) and U.S. (\$62,843). Among county residents, 12.4% were living below the federal poverty level in the past 12 months. This was slightly higher than the national average (12.3%) and lower than the rest of the state (13.9%).

## Suspected Fatal Drug Overdoses

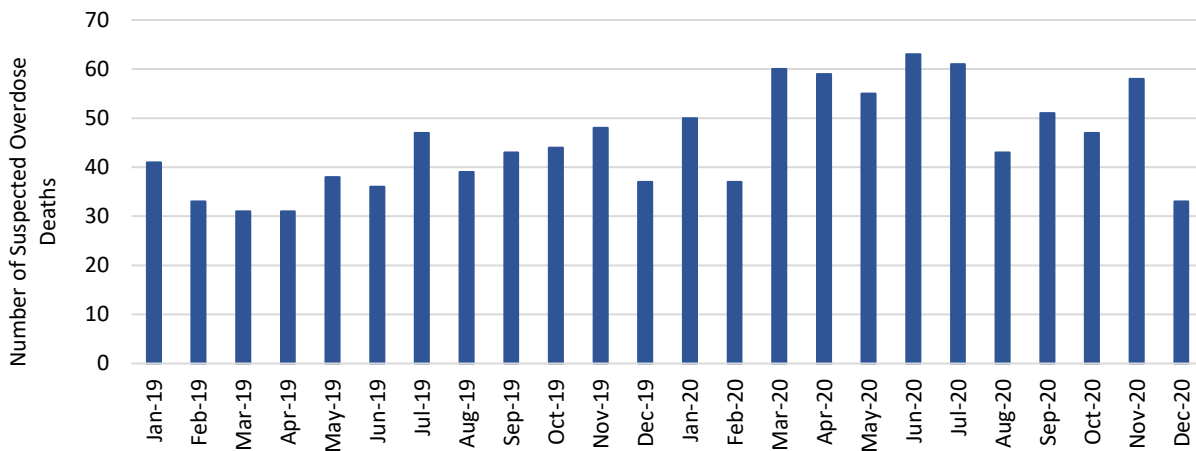
In 2020, drug overdose surveillance captured the highest number of suspected overdose deaths (617) reported in a single year by the local medical examiner; compared to 2019, suspected overdose deaths increased by 31.8% (Figure 1).

**FIGURE 1. Number of suspected fatal drug overdoses occurring in Davidson County, TN – 2016-2020<sup>2</sup>**



In 2020, the highest levels of fatal overdose activity were detected from March to July (Figure 2). Prior to 2020, there were no instances where total monthly fatal overdose activity exceeded more than 50 deaths. However, in 2020, surveillance captured eight months where 50 or more overdose deaths occurred.

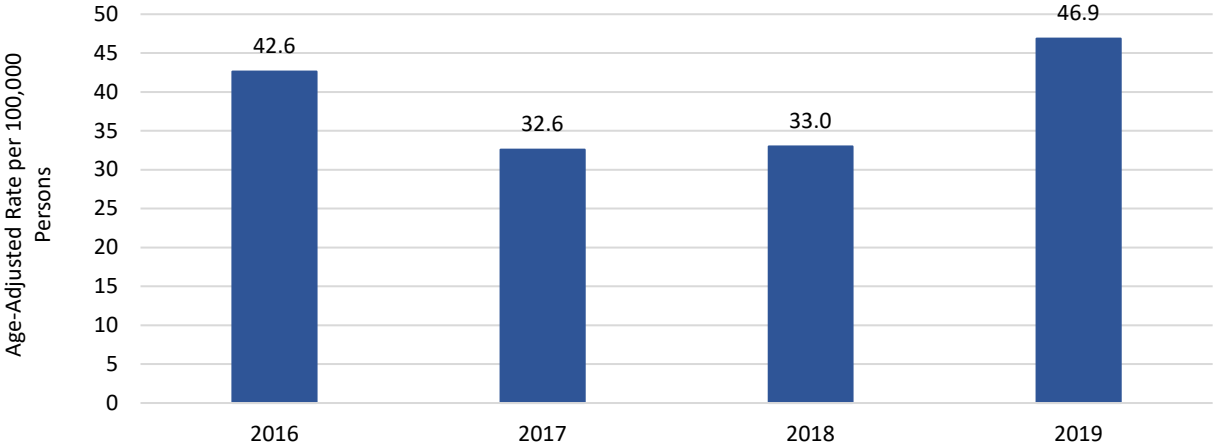
**FIGURE 2. Number of monthly suspected fatal drug overdoses occurring in Davidson County, TN – 2019-2020<sup>2</sup>**





In 2019, the age-adjusted rate of suspected overdose deaths increased by 42.1% from 2018, demonstrating an increase compared to previous years (Figure 3).

**FIGURE 3. Age-adjusted rate of suspected drug overdose deaths occurring in Davidson County, TN – 2016-2019<sup>1,2</sup>**



## Population Characteristics

### **Sex**

In 2020, the majority of suspected drug overdose deaths involved males; this trend remained consistent when compared to 2019 (Table 1).

### **Age**

In 2020, the mean age at death among decedents was 44.0 years, representing a slight increase from 2019 (42.4 years). By age group, the highest number of suspected overdose deaths occurred among persons aged 35-44 years (25.2%) followed by 25-34 years (24.0%) and 45-54 years (21.9%). Between 2019 and 2020, the largest increases were observed among persons aged 35-44 years, 18-24 years, and 55-64 years.

### **Race**

Seventy-two percent of all suspected overdose deaths in 2020 occurred among the white population followed by the black/AA population (26.7%) and persons from other races (1.5%). Compared to 2019, the largest increase was observed among the black/AA population.

**TABLE 1. Demographic characteristics of suspected drug overdose deaths occurring in Davidson County, TN – 2019-2020<sup>2</sup>**

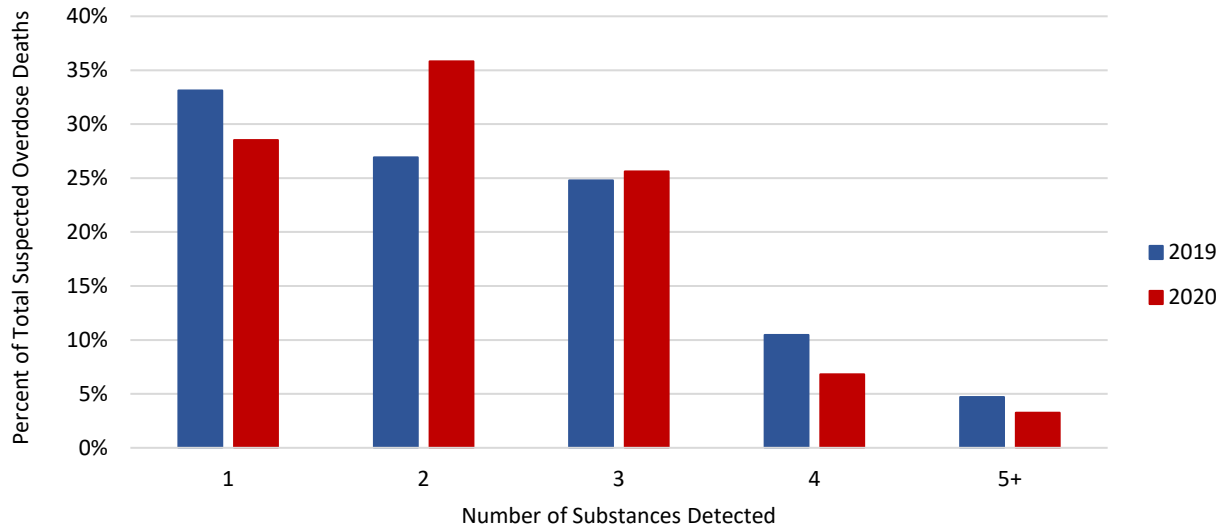
Characteristic	2019		2020		2019-2020 Percent change
	Number	Percent	Number	Percent	
<b>Total</b>	468	-	617	-	31.8
<b>Sex</b>					
Female	148	31.6	216	35.0	45.9
Male	320	68.4	401	65.0	25.3
<b>Age Group (years)</b>					
<18	4	0.9	4	0.6	-
18-24	34	7.3	51	8.3	50.0
25-34	112	23.9	148	24.0	32.1
35-44	101	21.6	155	25.2	53.5
45-54	123	26.3	135	21.9	9.8
55-64	69	14.7	101	16.4	46.4
≥65	425	90.8	22	3.6	-12.0
<b>Race</b>					
Black	99	21.2	165	26.7	66.7
Other	9	1.9	9	1.5	-
White	360	76.9	443	71.8	23.1

Notes: Percent change where annual total is less than 20 has been suppressed due to instability of calculations.

**Substances Detected in Toxicology Report**

In 2020, there were an average of 2.23 substances detected per decedent from toxicology reports among suspected drug overdose deaths, representing a slight decrease from the previous year (2.33 substances per decedent). Stated otherwise, approximately 71.5% of suspected overdose deaths in 2020 detected at least two substances on the toxicology report compared to 66.9% in 2019 (Figure 4).

**FIGURE 4. Number of substances detected per decedent among suspected drug overdose deaths occurring in Davidson County, TN – 2019-2020<sup>2</sup>**



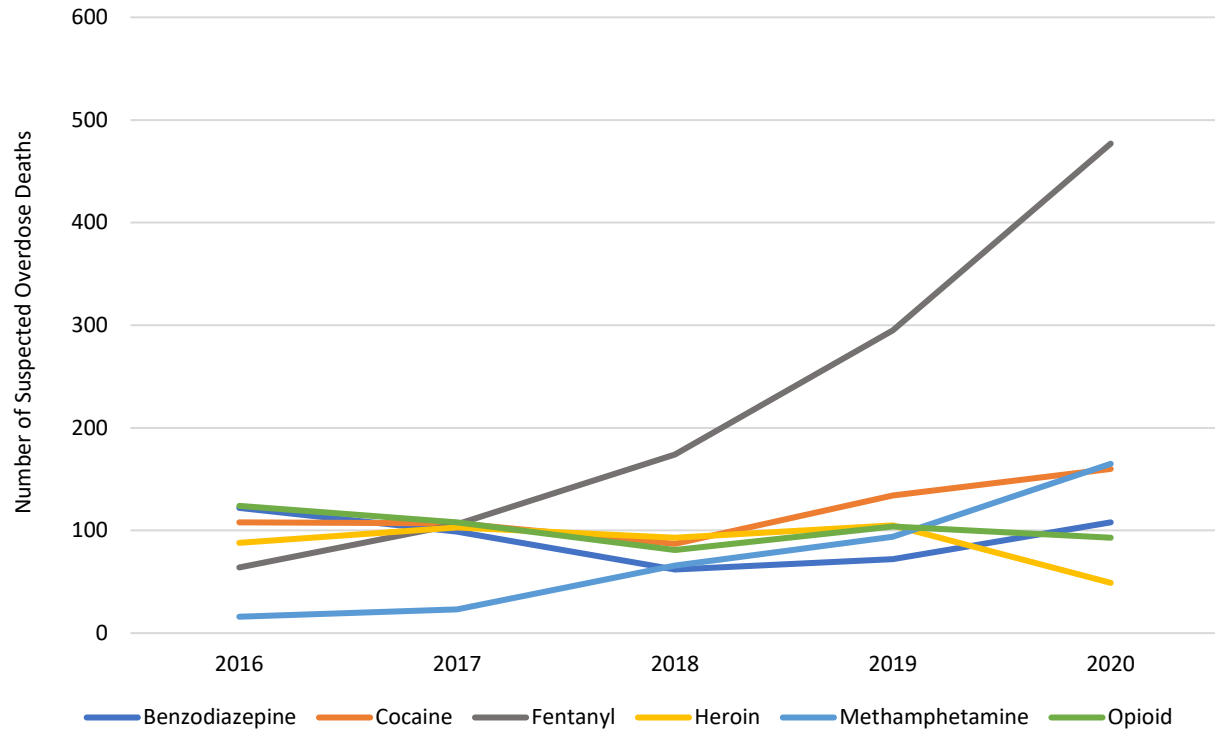
In 2020, fentanyl, a synthetic opioid pain reliever, was the most commonly detected substance among all suspected overdose deaths followed by methamphetamine and cocaine (Table 2). The largest increases among detected substances between 2019 and 2020 were methamphetamine, fentanyl, and benzodiazepines.

**TABLE 2. Number of suspected drug overdose deaths by detected substance occurring in Davidson County, TN – 2019-2020<sup>2</sup>**

Substance Detected	2019		2020		2019-2020
	Number	Percent	Number	Percent	Percent change
Benzodiazepine	72	15.4	108	17.5	50.0
Cocaine	134	28.6	160	25.9	19.4
Fentanyl	295	63.0	477	77.3	61.7
Heroin	105	22.4	49	7.9	-53.3
Methamphetamine	94	20.1	165	26.7	75.5
Non-Heroin Opioid	104	22.2	93	15.1	-10.6

Over the last five years, fentanyl and methamphetamine have demonstrated the largest increase among detected substances in Davidson County overdose deaths (Figure 5). The largest decreases were observed among heroin and non-heroin opioids. It is important to note that between 2016 and 2020 the percentage of suspected overdose deaths where fentanyl was detected increased from 21.0% to 77.3%.

**FIGURE 5. Number of suspected fatal drug overdoses by detected substance occurring in Davidson County, TN – 2016-2020<sup>2</sup>**

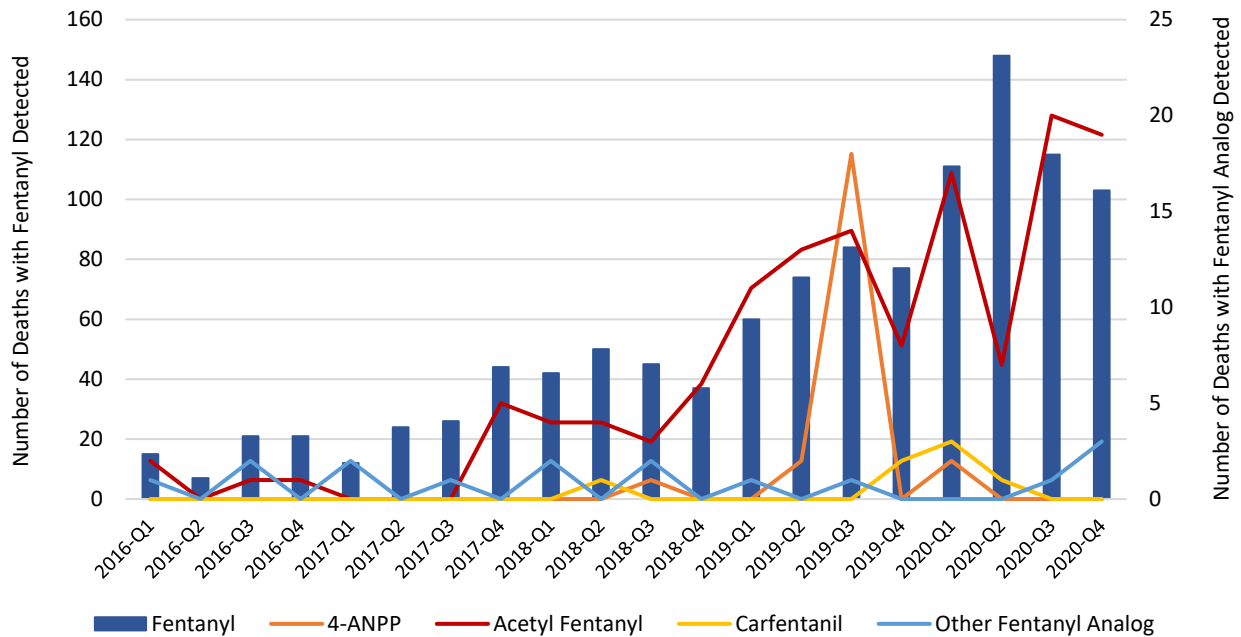


### Fentanyl Analogs

Fentanyl analogs are chemically related to fentanyl, mimic the effects of the drug, and vary greatly in potency. For example, carfentanil is reported to be 50-100 times more potent than fentanyl (which itself is 50-100 times more potent than morphine).

Since 2016, toxicology reports have detected ten unique fentanyl analogs among local overdose deaths. Acetyl fentanyl has been the most commonly detected analog over the last five years, comprising 74.6% of suspected overdose deaths involving fentanyl analogs. Notably, there was a sharp increase locally among overdose deaths involving 4-ANPP during the 3<sup>rd</sup> quarter of 2019 (Figure 6).

**FIGURE 6. Number of suspected fatal drug overdoses with fentanyl or common analogs detected – Davidson County, TN, 2016-2020<sup>2</sup>**



Note: Other fentanyl analog category includes acryl fentanyl, butyryl fentanyl, cyclopropylfentanyl, fluorofentanyl, furanyl fentanyl, U-4770, and valeryl fentanyl.

In 2020, three novel analogs (fluorofentanyl, bromofentanyl, and chlorofentanyl) were detected in the United States and linked to multiple overdose deaths. Among these emerging analogs, fluorofentanyl was detected in Davidson County in September 2020 and has been found in a total of five overdose deaths to date.

**Geospatial Characteristics**

The highest number of suspected overdose deaths in 2020 occurred in ZIP Codes 37207, 37115, and 37211 (Table 3, Figure 7). Compared to the previous year, the largest increases were among ZIP Codes 37209, 37217, and 37203.

**TABLE 3. Number of suspected drug overdose deaths by ZIP Code, Davidson County, TN – 2019-2020<sup>2</sup>**

ZIP Code	2019		2020		Percent change 2019-2020
	Number	Percent	Number	Percent	
37207	32	6.8	43	7.0	34.4
37115	26	5.6	41	6.6	57.7
37211	32	6.8	37	6.0	15.6
37013	29	6.2	32	5.2	10.3
37209	15	3.2	30	4.9	100.0
37206	14	3.0	23	3.7	64.3
37210	-	-	22	3.6	-
37217	12	2.6	22	3.6	83.3
37214	15	3.2	21	3.4	40.0
37203	12	2.6	20	3.2	66.7
37076	16	3.4	16	2.6	-
37072	15	3.2	15	2.4	-
37208	19	4.1	15	2.4	-
37138	11	2.4	13	2.1	-
37216	11	2.4	12	1.9	-
37218	10	2.1	11	1.8	-

Notes: Counts less than 10 have been suppressed. Percent change where annual total is less than 20 has been suppressed due to instability of calculations. ZIP Code indicates injury location and not patient address.

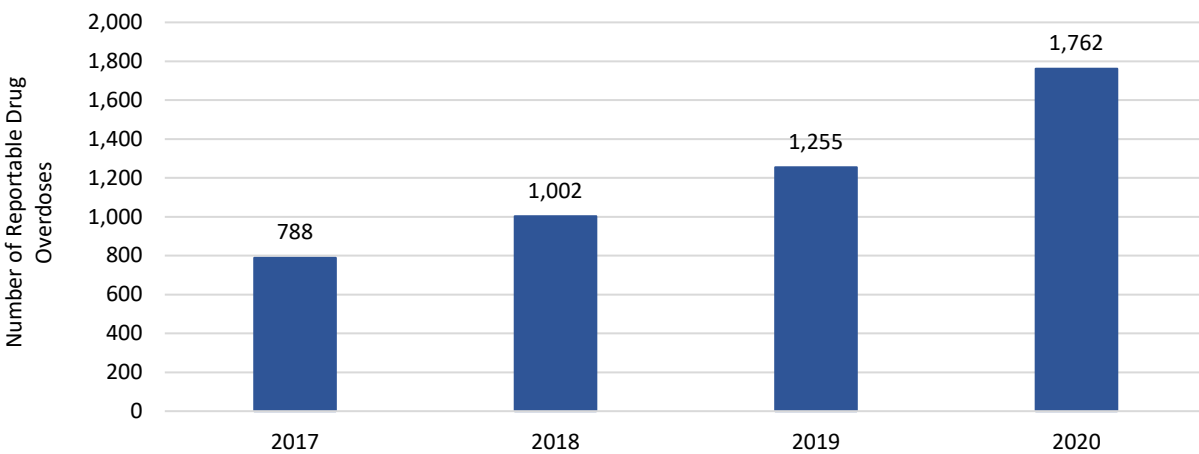


## Nonfatal Drug Overdoses Reported by Hospitals

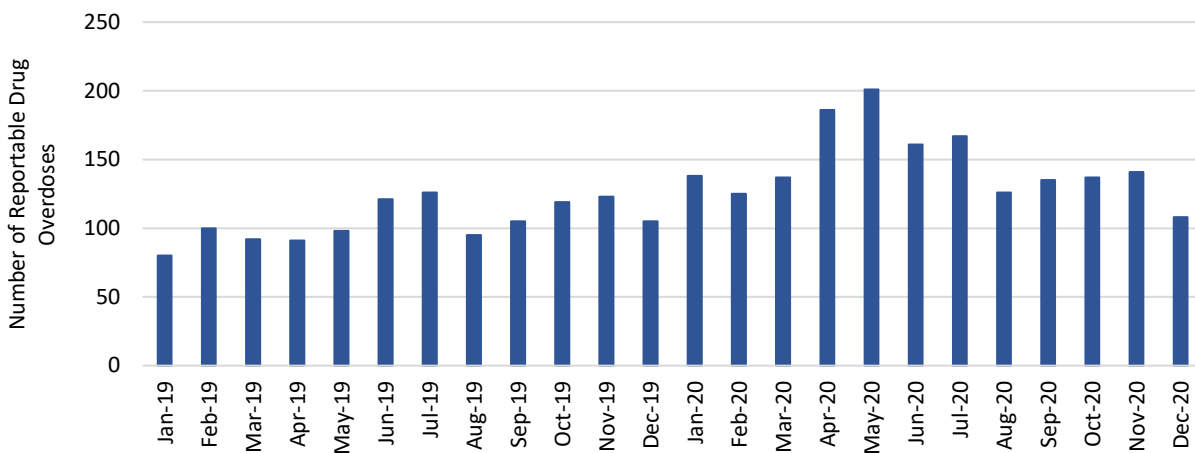
As of 2016, all hospitals licensed under Tennessee Code Annotated, Title 68, Chapter 11, Part 3 are required by Tennessee Law to report drug overdose information at the patient level to the Tennessee Department of Health (TDH).<sup>3</sup> The TDH Drug Overdose Reporting (DOR) Project captures personal identifiable information, such as name, address, age, and race and ethnicity as well as personal health information pertinent to the overdose event, such as hospital admission date and type of drug. Using the TDH DOR Project data, it is possible to assess if an individual has had one or more overdoses reported by a healthcare provider in Davidson County since 2016. It is important to note 2016 has been omitted from this report due to only having available data from October-December. Per TDH, this section does not include counts or trends regarding race or ethnicity due to inconsistencies in reporting to the DOR data system as results from these data are considered unreliable at the time of this report.

In 2020, there were a total of 1,762 nonfatal drug overdoses reported by local hospitals, representing a 40.4% increase compared to the previous year (Figure 8). Further, the months of April, May, and June reported the highest levels of activity in 2020 (Figure 9).

**FIGURE 8. Number of nonfatal drug overdoses reported by hospitals, Davidson County, TN – 2017-2020<sup>4</sup>**



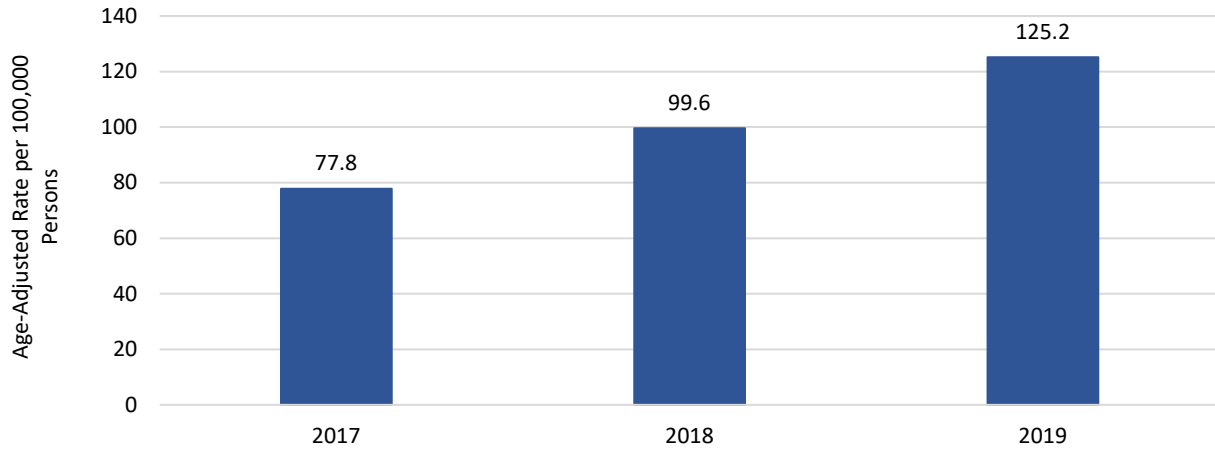
**FIGURE 9. Number of monthly nonfatal drug overdoses reported by hospitals, Davidson County, TN – 2019-2020<sup>4</sup>**





Compared to 2018, the age-adjusted rate of reportable drug overdoses in 2019 was 125.2 per 100,000, representing an increase of 25.7% (Figure 10).

**FIGURE 10. Age-adjusted rate of nonfatal drug overdoses reported by hospitals, Davidson County, TN – 2017-2019<sup>1,4</sup>**



## Population Characteristics

### Sex

In 2020, 64.5% of nonfatal drug overdoses reported by hospitals involved males compared to 61.9% in 2019 (Table 4).

### Age

In 2020, the mean age for persons with a reportable drug overdose was 39.2 years, representing an increase from 2019 (37.3 years). By age group, persons aged 25-34 years (32.9%) comprised the largest proportion of reportable drug overdoses followed by 35-44 years (22.3%) and 45-54 years (13.5%).

### Drug Category

In 2020, the slight majority of all reportable drug overdoses involved opioids excluding heroin (45.6%) followed by heroin (43.2%), stimulants (6.2%), and benzodiazepines/muscle relaxants (5.0%). Compared to 2019, this represents a trend shift reported drug categories from heroin towards non-heroin opioids (including synthetics) in Davidson County. Benzodiazepine, muscle relaxant, and stimulant data for 2019 have been omitted due to partial data.

**TABLE 4. Demographic characteristics of nonfatal drug overdoses reported by hospitals, Davidson County, TN – 2019-2020<sup>4</sup>**

Characteristic	2019		2020		2019-2020
	Number	Percent	Number	Percent	Percent Change
<b>Total</b>	1,255	-	1,762	-	40.4
<b>Sex</b>					
Female	478	38.1	626	35.5	31.0
Male	777	61.9	1,135	64.5	46.1
<b>Age Group (years)</b>					
<18	18	1.4	30	1.7	66.7
18-24	174	13.9	204	11.6	17.2
25-34	443	35.3	579	32.9	30.7
35-44	275	21.9	393	22.3	42.9
45-54	173	13.8	238	13.5	37.6
55-64	130	10.4	200	11.4	53.8
≥65	42	3.3	118	6.7	181.0
<b>Drug Category</b>					
Benzodiazepine/Muscle Relaxant	-	-	88	5.0	-
Heroin	755	60.2	761	43.2	0.8
Opioid excluding Heroin	491	39.1	803	45.6	63.5
Stimulant	-	-	110	6.2	-

Notes: Percent change where annual total is less than 20 has been suppressed due to instability of calculations.

**Geospatial Characteristics**

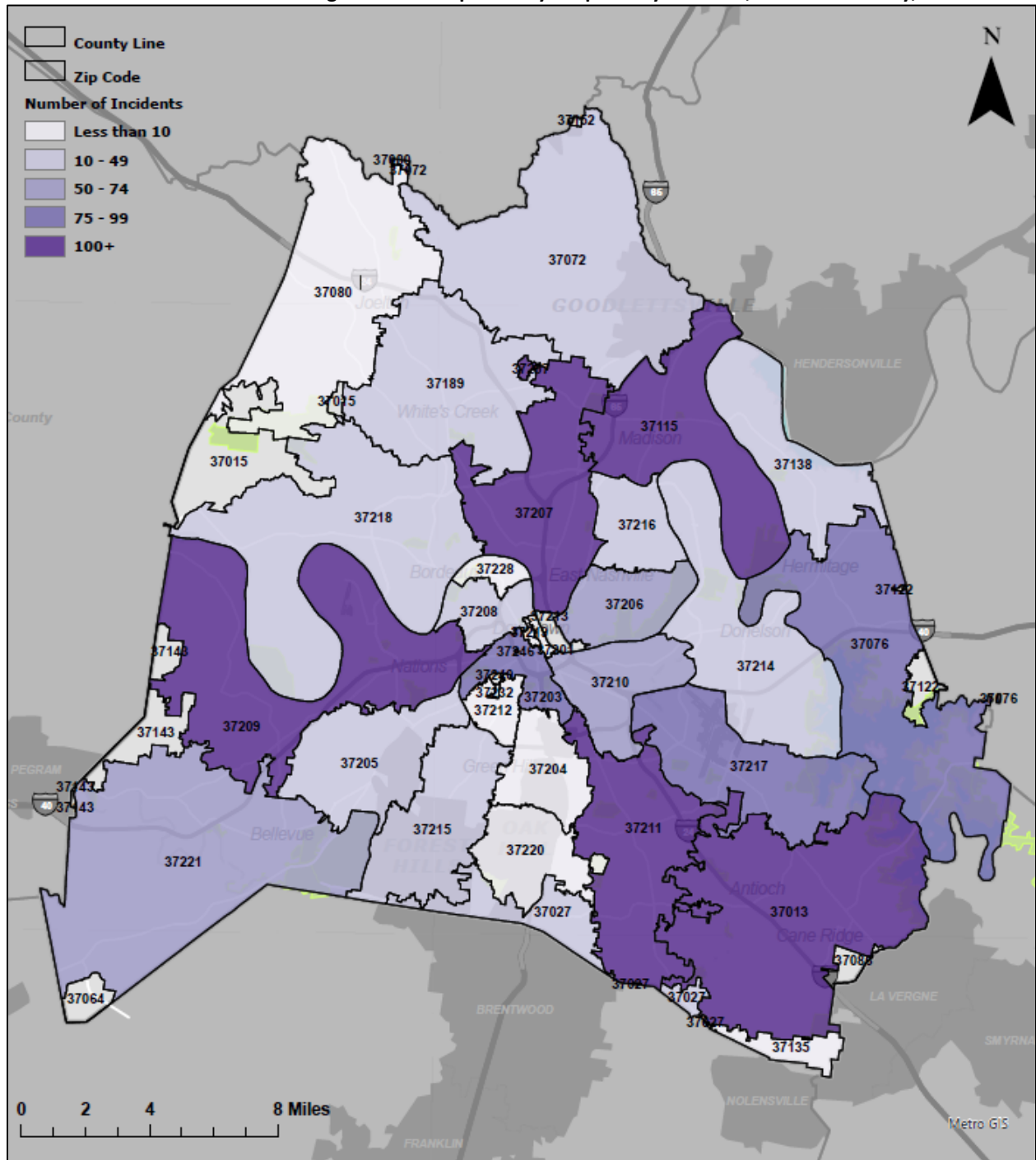
In 2020, the highest number of nonfatal drug overdoses reported by local hospitals were among residents from ZIP Codes 37211, 37207, and 37115 (Table 5, Figure 11). Compared to the previous year, the largest percent increases were found in ZIP Codes 37205, 37207, 37221, and 37217.

**TABLE 5. Number of nonfatal drug overdoses reported by hospitals by ZIP Code, Davidson County, TN – 2019-2020<sup>4</sup>**

ZIP Code	2019		2020		2019-2020
	Number	Percent	Number	Percent	Percent Change
Total	1,255	-	1,762	-	40.4
37211	152	12.1	203	11.5	33.6
37207	95	7.6	195	11.1	105.3
37115	137	10.9	161	9.1	17.5
37013	105	8.4	146	8.3	39.0
37076	87	6.9	123	7.0	41.4
37209	82	6.5	120	6.8	46.3
37203	63	5.0	108	6.1	71.4
37217	50	4.0	90	5.1	80.0
37210	50	4.0	74	4.2	48.0
37221	33	2.6	64	3.6	93.9
37206	50	4.0	60	3.4	20.0
37214	66	5.3	54	3.1	-18.2
37138	47	3.7	51	2.9	8.5
37208	33	2.6	51	2.9	54.5
37072	45	3.6	49	2.8	8.9
37216	35	2.8	39	2.2	11.4
37218	25	2.0	34	1.9	36.0
37205	10	0.8	23	1.3	130.0
37215	15	1.2	19	1.1	-
37236	17	1.4	19	1.1	-
37027	10	0.8	13	0.7	-
37189	11	0.9	13	0.7	-
37212	-	-	13	0.7	-
37204	-	-	12	0.7	-
37080	11	0.9	-	-	-

Notes: Counts less than 10 have been suppressed. Percent change where annual total is less than 20 has been suppressed due to instability of calculations. ZIP Code indicates patient address and not injury location.

FIGURE 11. Number of nonfatal drug overdoses reported by hospitals by ZIP Code, Davidson County, TN – 2020<sup>4</sup>

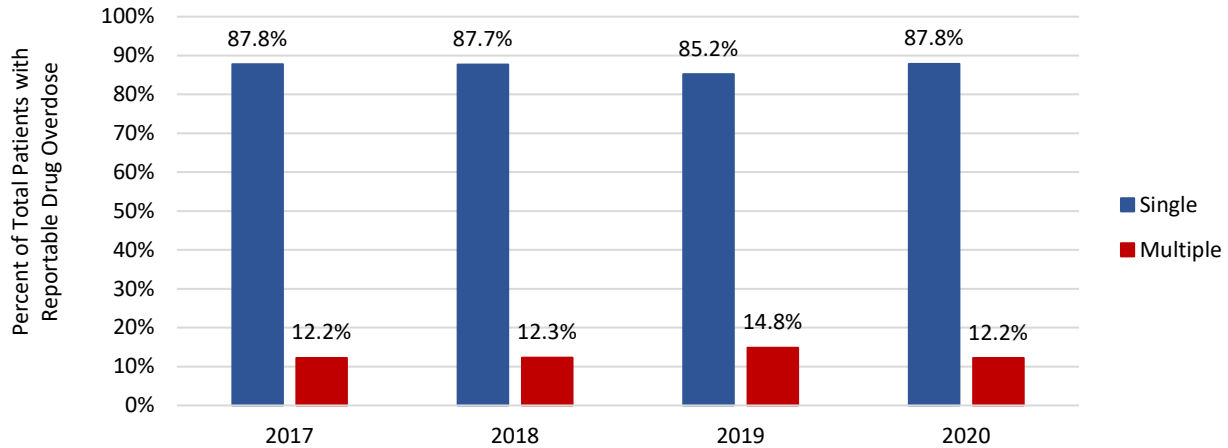


Note: ZIP Code indicates patient address and not injury location.

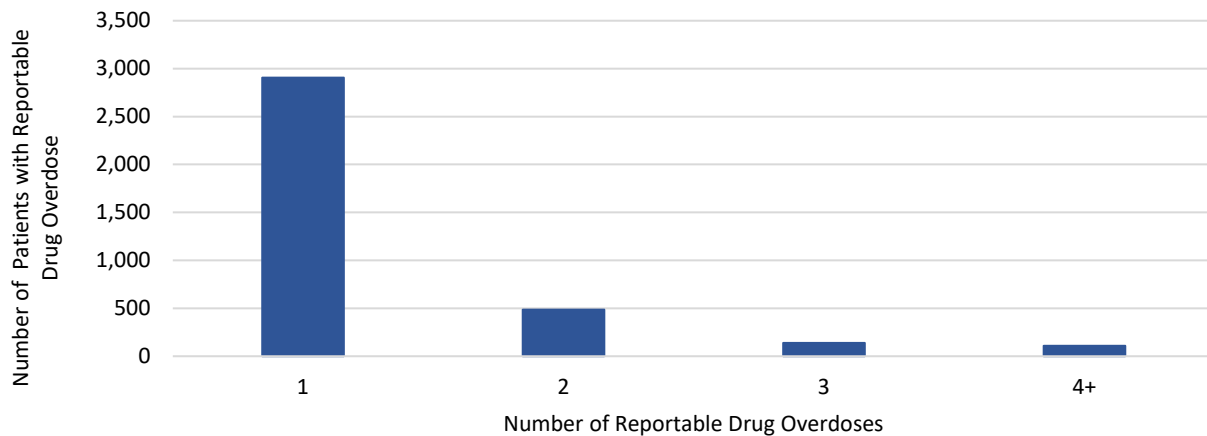
### Single versus Multiple Admissions

Since 2017, the percentage of persons with multiple admissions has ranged between 12.2% and 14.8%. In 2020, 12.2% of persons with a reportable drug overdose were admitted more than once, representing a decrease when compared to 2019 (Figure 12). When examining the total number of patients with a reportable drug overdose from 2017 to 2020, the number of admissions per patient ranged between one and seven with the majority of patients being admitted reported once (Figure 13).

**Figure 12. Percent of total drug overdoses reported by healthcare providers by admission category, Davidson County, TN, 2017-2020<sup>4</sup>**



**Figure 13. Number of patients by number of drug overdoses reported by healthcare providers, Davidson County, TN, 2017-2020<sup>4</sup>**

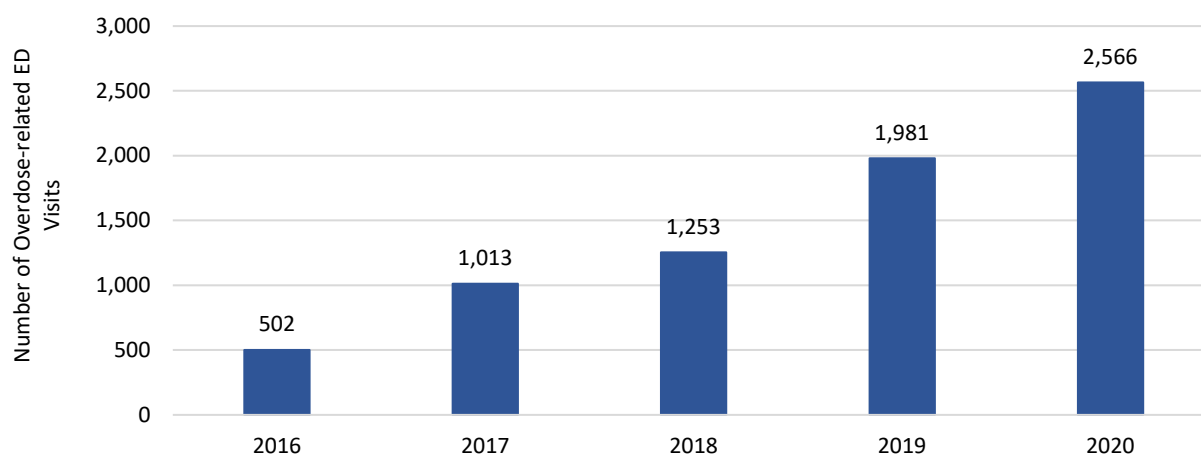


## Nonfatal Drug Overdose Emergency Department Visits

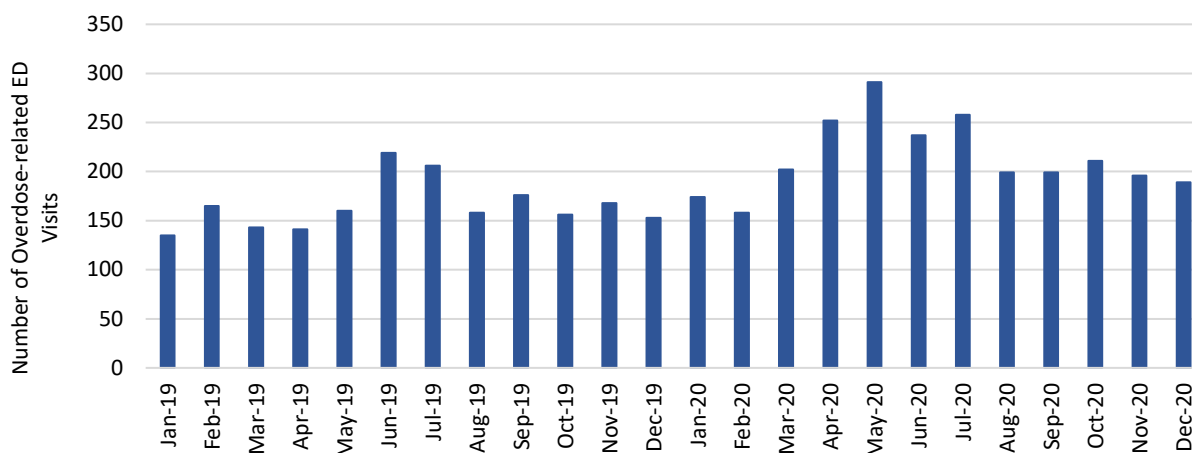
In order to capture suspected nonfatal drug overdoses occurring at local EDs, our program utilizes the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). ESSENCE is characterized as a syndromic surveillance system that was created by the Centers for Disease Control and Prevention (CDC) and monitors activity by querying chief complaints and discharge diagnoses reported by local hospitals.

In 2020, syndromic surveillance captured 2,566 overdose-related ED visits in Davidson County, representing a 29.6% increase from the previous year (Figure 14). Overall, the average was 214 visits per month in 2020 compared 165 visits per month in 2019. The months with the highest activity last year were from April-July (Figure 15).

**FIGURE 14. Number of drug overdose-related ED visits captured by syndromic surveillance, Davidson County, TN – 2016-2020<sup>5</sup>**

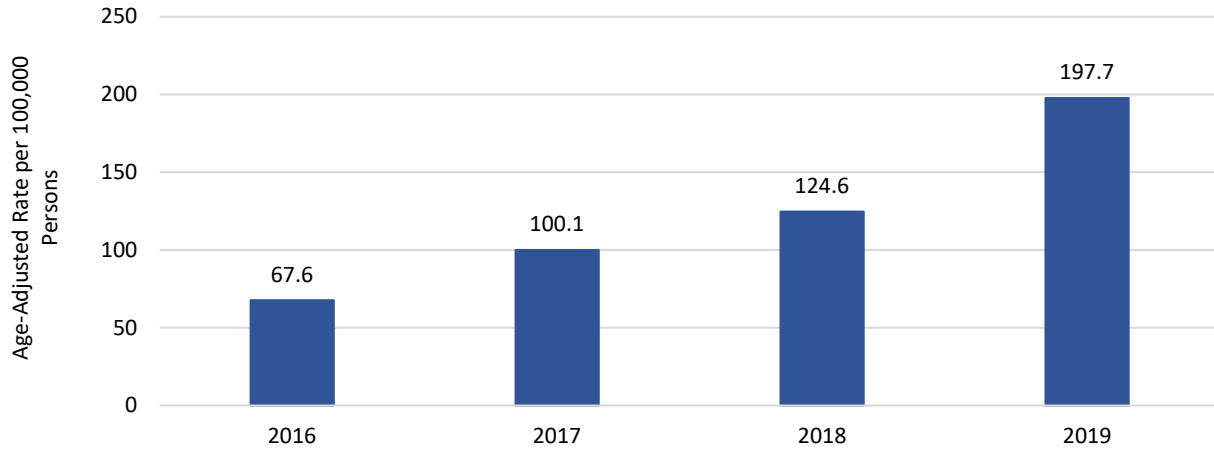


**FIGURE 15. Number of monthly drug overdose-related ED visits captured by syndromic surveillance, Davidson County, TN – 2019-2020<sup>5</sup>**



In 2019, the age-adjusted rate of overdose-related ED visits was 197.7 per 100,000. When compared to the previous year, the 2019 rate represents a 58.7% increase in overdose-related ED visits in Davidson County (Figure 16).

**FIGURE 16. Age-adjusted rate of drug overdose-related ED visits captured by syndromic surveillance, Davidson County, TN – 2016-2019<sup>1,5</sup>**



## **Population Characteristics**

### **Sex**

In 2020, 66.0% of drug overdose-related ED visits involved males compared to 2019 (62.8%, Table 6, next page).

### **Age**

In 2020, the mean age for persons presenting at local EDs for a drug overdose was 37.8 years, representing a slight increase from the previous year (37.0 years). By age group, persons aged 25-34 years comprised the largest proportion of overdose-related ED visits (36.8%) followed by 35-44 years (23.9%) and 45-54 years (13.8%).

### **Race**

Seventy-two percent of all overdose-related ED visits occurred among the white population followed by black/AA (18.8%) and other races (9.7%). Compared to 2019, there was an increase in the proportion of visits that occurred among the black/AA and other race populations.

### **Ethnicity**

By ethnicity, the majority of overdose visits occurred among the non-Hispanic population (96.7%).

### **Drug Category**

In 2020, 49.9% of all overdose-related ED visits involved opioids excluding heroin followed by heroin (44.8%) and stimulants (5.3%). This represents a trend shift from the previous year where the majority overdose-related ED visits involved heroin (57.4%).



**TABLE 6. Demographic characteristics of drug overdose-related ED visits, Davidson County, TN – 2019-2020<sup>5</sup>**

Characteristic	2019		2020		2019-2020 Percent Change
	Number	Percent	Number	Percent	
<b>Total</b>	<b>1,981</b>	<b>-</b>	<b>2,567</b>	<b>-</b>	<b>29.6</b>
<b>Sex</b>					
Female	737	37.2	872	34.0	18.3
Male	1,244	62.8	1,693	66.0	36.1
<b>Age Group (years)</b>					
<18	8	0.4	15	0.6	-
18-24	283	14.3	298	11.6	5.3
25-34	747	37.7	943	36.8	26.2
35-44	424	21.4	613	23.9	44.6
45-54	277	14.0	353	13.8	27.4
55-64	182	9.2	245	9.6	34.6
≥65	60	3.0	98	3.8	63.3
<b>Race</b>					
Black	267	13.5	483	18.8	80.9
Other	149	7.5	248	9.7	66.4
White	1,565	79.0	1,836	71.5	17.3
<b>Ethnicity</b>					
Hispanic	53	2.7	85	3.3	60.4
Non-Hispanic	1,928	97.3	2,459	96.7	27.5
<b>Drug Category</b>					
Heroin	1,136	57.4	1,149	44.8	1.1
Opioid excluding Heroin	844	42.6	1,281	49.9	51.8
Stimulant	0	0.0	136	5.3	-

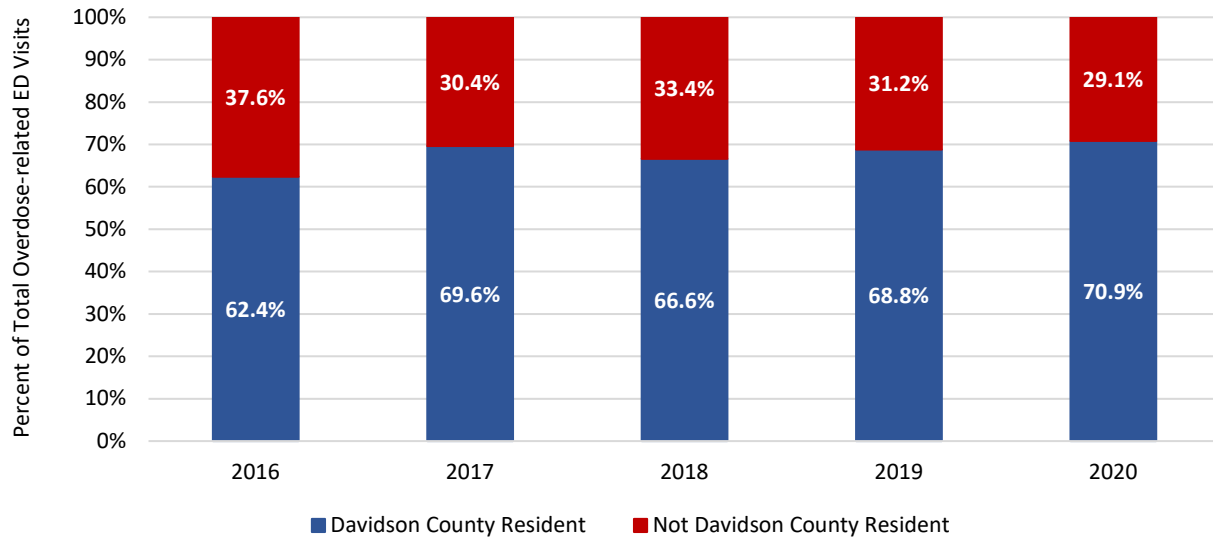
Notes: Percent change where annual total is less than 20 has been suppressed due to instability of calculations.

## Geospatial Characteristics

### ***Davidson County versus Non-Davidson County Residents***

Among Davidson County hospitals in 2020, 70.9% of overdose-related ED visits involved Davidson County residents compared to non-Davidson County residents (Figure 17). Compared to 2019, overdose-related ED visits among Davidson County residents increased by 33.5% while visits among non-residents increased by 21.0%.

**FIGURE 17. Percentage of drug overdose-related ED visits among Davidson County hospitals by residency status, 2016-2020<sup>5</sup>**



**Patient ZIP Code among Davidson County Residents**

The table below provides a breakdown of overdose-related ED visits by ZIP Code among Davidson County residents (Table 7). In 2020, the majority of patients resided in ZIP Codes 37211 (12.1%), 37207 (11.1%), 37115 (9.5%), 37076 (7.8%), and 37013 (7.3%). Compared to 2019, the largest increases in overdose-related ED visits were found in ZIP Codes 37208 (+88.6%), 37217 (+82.7%), 37207 (+70.3%), and 37203 (+65.5%).

**TABLE 7. Number of drug overdose-related ED visits among Davidson County residents by ZIP Code, Davidson County, TN – 2019-2020<sup>5</sup>**

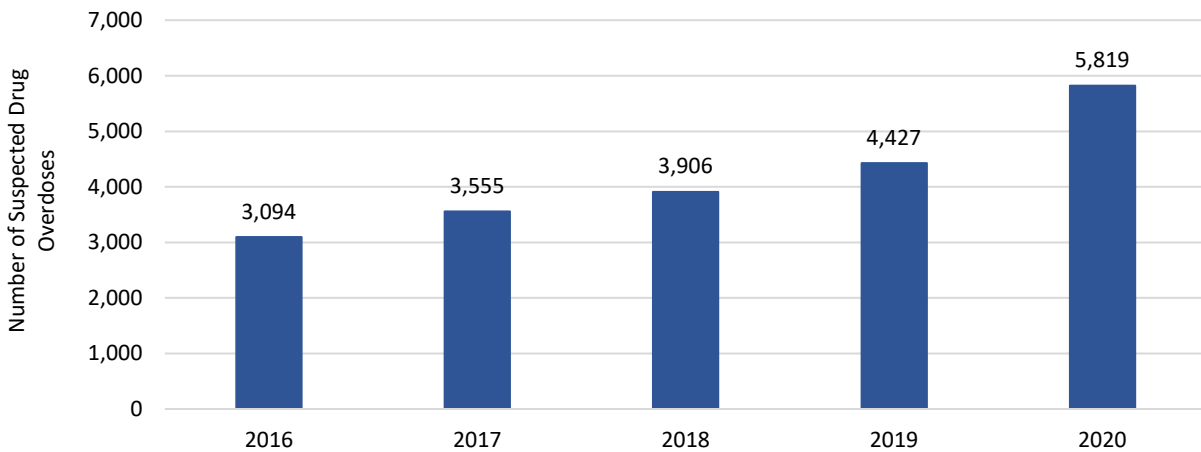
ZIP Code	2019		2020		Percent change 2019-2020
	Number	Percent	Number	Percent	
<b>Total</b>	<b>1,363</b>	-	<b>1,819</b>	-	<b>33.5</b>
37211	180	13.2	220	12.1	22.2
37207	118	8.7	201	11.1	70.3
37115	151	11.1	173	9.5	14.6
37076	93	6.8	142	7.8	52.7
37013	107	7.9	132	7.3	23.4
37209	88	6.5	114	6.3	29.5
37203	58	4.3	96	5.3	65.5
37217	52	3.8	95	5.2	82.7
37214	74	5.4	75	4.1	1.4
37206	59	4.3	68	3.7	15.3
37138	60	4.4	67	3.7	11.7
37072	64	4.7	66	3.6	3.1
37208	35	2.6	66	3.6	88.6
37210	41	3.0	61	3.4	48.8
37221	32	2.3	38	2.1	18.8
37216	29	2.1	37	2.0	27.6
37218	30	2.2	30	1.6	0.0
37236	20	1.5	29	1.6	45.0
37201	-	-	23	1.3	-
37205	-	-	14	0.8	-
37080	21	1.5	12	0.7	-
37215	13	1.0	11	0.6	-
37189	-	-	11	0.6	-

Notes: Counts less than 10 have been suppressed. Percent change where annual total is less than 20 has been suppressed due to instability of calculations. ZIP Code indicates patient address and not injury location.

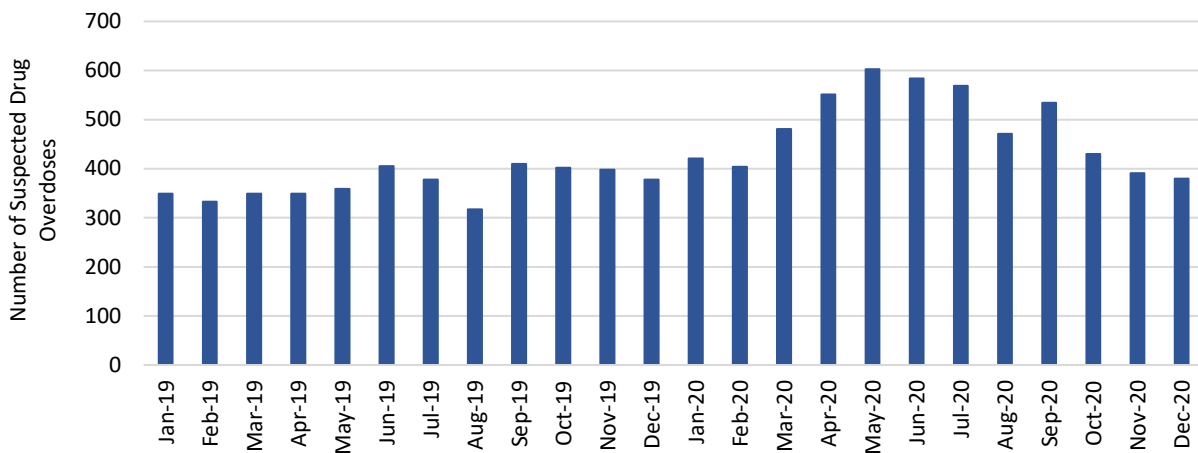
## Suspected Drug Overdoses Requiring Response by Emergency Medical Services

In 2020, overdose surveillance captured the highest number of suspected drug overdoses requiring EMS response reported in a single year (Figure 18). Compared to the previous year, suspected drug overdoses reported by EMS increased by 31.4% in the county while the most active were between March and July (Figure 19).

**FIGURE 18. Number of suspected drug overdoses requiring EMS response, Davidson County, TN – 2016-2020<sup>6</sup>**

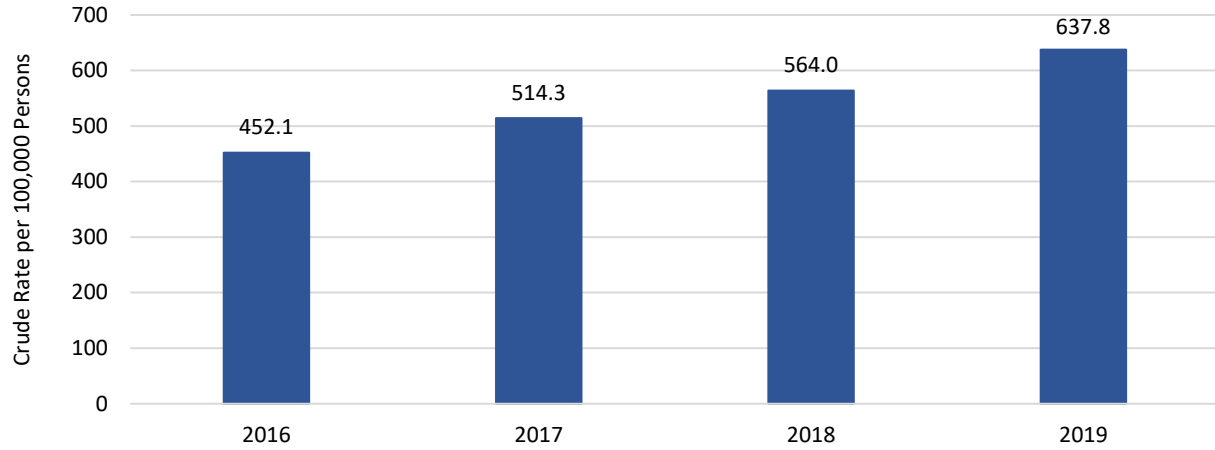


**FIGURE 19. Number of monthly suspected drug overdoses requiring EMS response, Davidson County, TN – 2019-2020<sup>6</sup>**



In 2019, the crude rate of suspected drug overdoses was 637.8 per 100,000 and increased by 13.1% from 2018 (Figure 20).

**FIGURE 20. Crude rate of suspected drug overdoses requiring EMS response, Davidson County, TN – 2016-2019<sup>1,6</sup>**



## Population Characteristics

### Sex

In 2020, 62.2% of all suspected drug overdoses requiring EMS response involved males compared to 2019 (59.2%, Table 8).

### Age

In 2020, the mean age for all suspected drug overdoses requiring EMS response was 39.2 years, representing a slight decrease from the previous year (39.7 years). By sex, the average age among females was 40.7 years compared to males (38.3 years).

Among patients with available age group, persons aged 25-34 years comprised the largest proportion of incidents (16.1%) followed by 35-44 years (10.1%) and 45-54 years (6.7%).

**TABLE 8. Demographic characteristics of suspected drug overdoses requiring EMS response, Davidson County, TN – 2019-2020<sup>6</sup>**

Characteristic	2019		2020		2019-2020 Percent Change
	Number	Percent	Number	Percent	
<b>Total</b>	<b>4,427</b>	-	<b>5,819</b>	-	<b>31.4</b>
<b>Sex</b>					
Female	1,646	37.2	2,043	35.1	24.1
Male	2,620	59.2	3,619	62.2	38.1
Unknown	161	3.6	157	2.7	-
<b>Age Group (years)</b>					
<18	112	2.5	75	1.3	-
18-24	392	8.9	323	5.6	-
25-34	1,010	22.8	937	16.1	-
35-44	699	15.8	586	10.1	-
45-54	481	10.9	389	6.7	-
55-64	367	8.3	295	5.1	-
≥65	272	6.1	210	3.6	-
Unknown	1,094	24.7	3,004	51.6	-

Note: Due to unavailable data for age group, percent change calculations are not provided.

Due to the fact that suspected overdoses are emergencies situations, it is not always possible to obtain elements including age from an individual. As such, it is recommended to interpret these results with caution.

**Geospatial Characteristics**

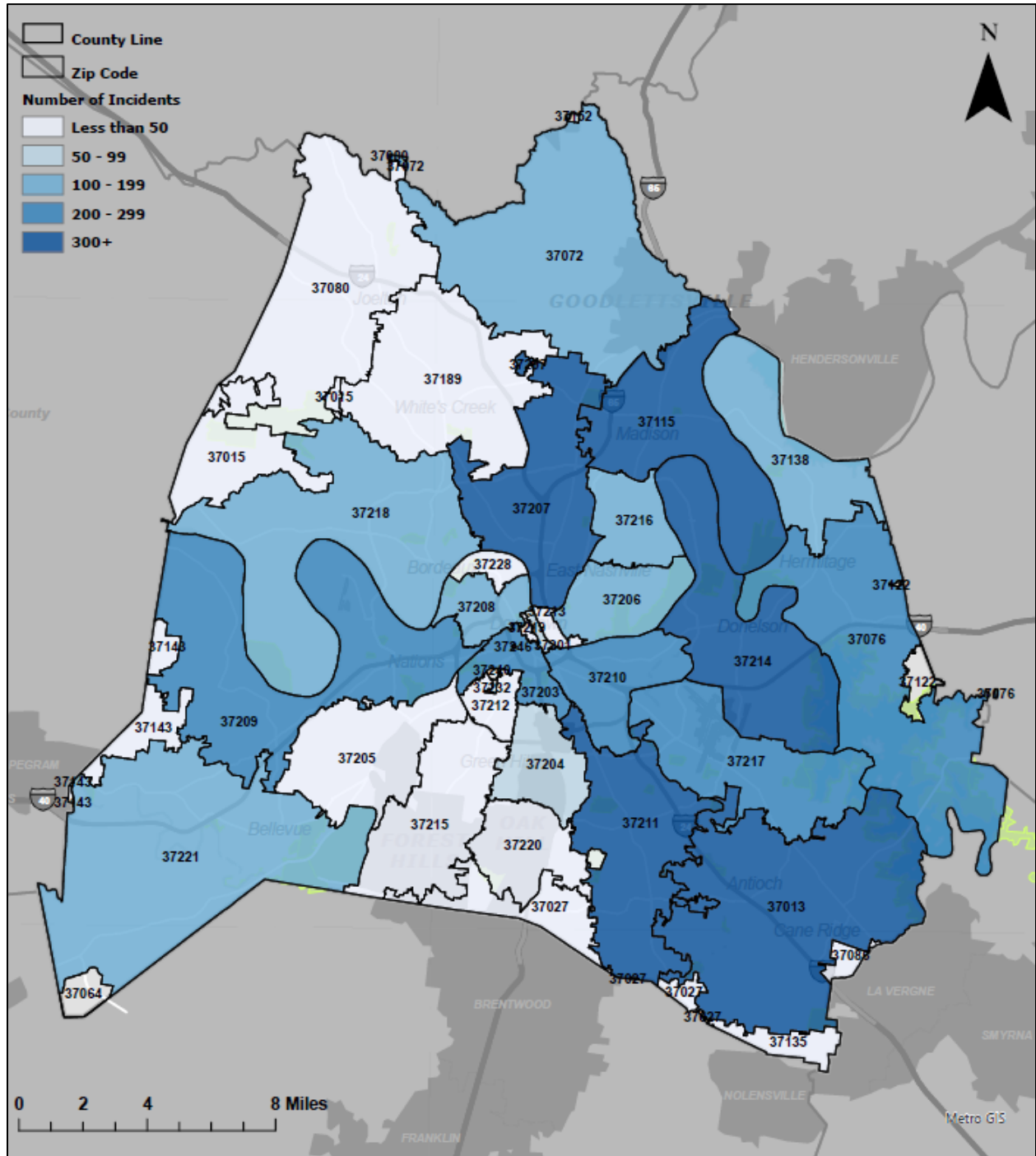
In 2020, ZIP Codes 37115, 37211, 37207, 37013, and 37214 reported the highest number of incidents in the county (Table 9, Figure 21). Compared to 2019, the largest increases in suspected overdose activity occurred in ZIP Codes 37214 (+85.0%), 37138 (+64.5%), 37076 (+57.0%), and 37210 (+56.6%).

**TABLE 9. Number of suspected drug overdoses requiring EMS response by ZIP Code, Davidson County, TN – 2019-2020<sup>6</sup>**

ZIP Code	2019		2020		2019-2020 Percent Change
	Number	Percent	Number	Percent	
<b>Total</b>	<b>4,427</b>	<b>-</b>	<b>5,819</b>	<b>-</b>	<b>31.4</b>
37115	466	10.5	659	11.3	41.4
37211	419	9.5	588	10.1	40.3
37207	393	8.9	534	9.2	35.9
37013	452	10.2	488	8.4	8.0
37214	233	5.3	431	7.4	85.0
37209	259	5.9	338	5.8	30.5
37076	207	4.7	325	5.6	57.0
37203	286	6.5	306	5.3	7.0
37210	189	4.3	296	5.1	56.6
37217	187	4.2	261	4.5	39.6
37208	162	3.7	193	3.3	19.1
37072	134	3.0	179	3.1	33.6
37218	125	2.8	159	2.7	27.2
37138	93	2.1	153	2.6	64.5
37206	128	2.9	148	2.5	15.6
37201	118	2.7	120	2.1	1.7
37216	80	1.8	116	2.0	45.0
37221	103	2.3	113	1.9	9.7
37204	46	1.0	69	1.2	50.0
37080	43	1.0	49	0.8	14.0
37212	50	1.1	48	0.8	-4.0
37228	27	0.6	42	0.7	55.6
37189	27	0.6	33	0.6	22.2
37215	39	0.9	33	0.6	-15.4
37205	35	0.8	32	0.5	-8.6
37027	27	0.6	31	0.5	14.8
37219	50	1.1	30	0.5	-40.0
37213	22	0.5	19	0.3	-
37220	16	0.4	12	0.2	-

Notes: Counts less than 10 have been suppressed. Percent change where annual total is less than 20 has been suppressed due to instability of calculations. ZIP Code indicates injury location and not patient address.

**FIGURE 21. Number of suspected drug overdoses requiring EMS response by ZIP Code, Davidson County, TN – 2020<sup>6</sup>**



Note: ZIP Code indicates injury location and not patient address.



## Technical Notes

**Data Suppression:** Counts less than 10 at the ZIP Code level are suppressed due to data security and confidentiality guidelines practiced by our program.

**Rates:** Age-adjusted rates were calculated using 2000 U.S. standard population for suspected overdose deaths, reportable drug overdoses, and drug overdose-related ED visits. Crude rates were calculated for suspected drug overdoses requiring EMS response due to the level of unavailable age data. Further, rates are calculated per 100,000 persons and include the most recent, available data produced by the U.S. Census Bureau at the time of this report. As such, rates for 2020 are not calculated due to Davidson County population estimates being unavailable.

**Injury Location:** Geospatial trends for suspected overdoses requiring EMS response and suspected overdose deaths indicate injury location.

**Patient Residence:** Geospatial trends for drug overdose-related ED visits and reportable drug overdoses indicate the ZIP Code of the patient's residence.

**Suspected Drug Overdoses Requiring EMS Response:** Data presented are accessed from the Nashville Fire Department EMS database (restricted access) and represent any suspected overdose requiring response by EMS occurring in the county.

**Drug Overdose-related ED Visits:** The query utilized by ORP to monitor drug overdose-related ED visits is based on hospital location (Davidson County) and chief complaint/discharge diagnosis categories for opioids and stimulants. Incidents are considered suspected due to unavailability of clinical or laboratory confirmation. Further, suspected drug overdoses of unintentional intent are included. Drug categories are defined by the following ICD-10-CM discharge diagnosis codes:

All Opioid:	T40.0-T40.4, T40.6
Heroin:	T40.1
Opioid excluding Heroin:	T40.0, T40.2-T40.4, T40.6
Stimulant:	T40.5, T43.6

**Reportable Drug Overdoses:** Data presented are based on patient jurisdiction (Nashville/Davidson County) and not facility jurisdiction. Overdose counts are based on the number of records reported to the DOR Project and does not consider one distinct event to be at least 24 hours after the previous overdose event (in addition to experienced clinical improvement or recovery between events). While consecutive overdose events are considered rate, it is possible that multiple events occurring on a single date may be counted as a single event or a single event that occurs over two consecutive dates to be counted as two events. Reporting of stimulants, benzodiazepines, and muscle relaxants became required in 2020. Inconsistencies in reporting race to the DOR Project have been noted by TDH and therefore excluded from this report. Per TDH, not all hospitals in TN are reporting to the DOR Project currently and trends should be interpreted with caution. Specifically, approximately 20% of facilities have not begun reporting the expanded code list which captured stimulants, benzodiazepines, and muscle relaxants (ICD-10-CM codes described below). For this reason, 2019 data regarding these substances was excluded from the report.

Drug categories are defined by the following ICD-10-CM discharge diagnosis codes:

All Opioid: T40.0-T40.4, T40.6

Benzodiazepine: T42.4

Heroin: T40.1

Muscle Relaxant: T48.1

Opioid excluding Heroin: T40.0, T40.2-T40.4, T40.6

Stimulant: T40.5, T43.6

**Suspected Fatal Drug Overdoses:** Data presented are accessed from the Davidson County Medical Examiner database (restricted access) and represent any suspected overdose death occurring in the county where the local medical examiner has jurisdiction of the body. For more information, visit: <https://www.forensicmed.com/faq>.

## Acknowledgements

The Overdose Response Program would like to express gratitude to numerous partners and agencies for support and collaboration as our community works to mitigate the drug overdose crisis in Davidson County.

### Authors

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## Abbreviations

<b>CDC</b>	Centers for Disease Control and Prevention
<b>ED</b>	Emergency Department
<b>EMS</b>	Emergency Medical Services
<b>ESSENCE</b>	Electronic Surveillance System for the Early Notification of Community-based Epidemics
<b>MPHD</b>	Metro Public Health Department of Nashville/Davidson County
<b>TDH</b>	Tennessee Department of Health

## References

1. American Community Survey 1-Year Estimates, accessed March 17, 2021. U.S. Census Bureau.
2. Death Investigation and Decedent Information database, accessed March 17, 2021 [restricted access dataset].
3. Tennessee Code Annotated. § 68-11-314 (2016).
4. Tennessee Department of Health Drug Overdose Reporting (DOR) Project, accessed March 17, 2021 [restricted access dataset].
5. ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics), accessed March 17, 2021 [restricted access dataset].
6. Nashville Fire Department EMS, accessed March 17, 2021 [restricted access dataset].

## Appendix A – Suspected Fatal Drug Overdoses

**TABLE 10. OORRP surveillance metrics: Suspected fatal drug overdoses, Davidson County, TN – 2016-2020<sup>1,2</sup>**

Metric	2016	2017	2018	2019	2020	Trend (most recent, complete year)
Average daily number of suspected fatal drug overdoses occurring in the county	1.5	1.6	1.5	1.8	2.2	Increasing
Average monthly number of suspected fatal drug overdoses occurring in the county	25.4	27.5	27.6	39.0	53.8	Increasing
Average quarterly number of suspected fatal drug overdoses occurring in the county	76.3	82.5	82.8	117.0	161.5	Increasing
Average weekly number of suspected fatal drug overdoses occurring in the county	5.8	6.2	6.4	8.8	12.2	Increasing
Age-adjusted rate (per 100,000) of suspected fatal drug overdoses occurring in the county	42.6	32.6	33.0	46.9	-	Increasing
Rate (per 100,000) of years of potential life lost (YPLL) among suspected fatal drug overdoses	1,334.9	1,501.5	1,556.0	2,146.4	-	Increasing
Total number of suspected fatal drug overdoses occurring in the county	305	330	331	468	617	Increasing
Total years of potential life lost (YPLL) among suspected fatal drug overdoses	9,136	10,379	10,777	14,899	20,808	Increasing

Note: Percent changes less than one percent were considered neutral.

## Appendix B – Nonfatal Drug Overdoses Reported by Hospitals

**TABLE 11. OORRP surveillance metrics: Nonfatal drug overdoses reported by hospitals, Davidson County, TN – 2017-2020<sup>1,4</sup>**

Metric	2017	2018	2019	2020	Trend (most recent, complete year)
Average daily number of nonfatal drug overdoses reported by hospitals	2.6	3.0	3.6	4.9	Increasing
Average monthly number of nonfatal drug overdoses reported by hospitals	65.7	83.5	104.6	146.8	Increasing
Average quarterly number of nonfatal drug overdoses reported by hospitals	197.0	250.5	313.8	440.5	Increasing
Average weekly number of nonfatal drug overdoses reported by hospitals	14.9	18.9	23.7	33.2	Increasing
Percentage of nonfatal drug overdoses with multiple admissions within the last 365 days	12.3%	18.3%	23.5%	22.8%	Neutral
Age-adjusted rate (per 100,000) of nonfatal drug overdoses reported by hospitals	77.8	99.6	125.2	-	Increasing
Total number of nonfatal drug overdoses reported by hospitals	788	1,002	1,255	1,762	Increasing

Note: Percent changes less than one percent were considered neutral.

## Appendix C – Nonfatal Drug Overdose ED Visits

**TABLE 12. OORRP surveillance metrics: Overdose-related ED visits, Davidson County, TN – 2016-2020<sup>1,5</sup>**

<b>Metric</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Trend (most recent, complete year)</b>
Average daily number of nonfatal drug overdose-related ED visits	2.3	3.2	3.7	5.5	7.0	Increasing
Average monthly number of nonfatal drug overdose-related ED visits	50.2	84.4	104.4	165.0	213.8	Increasing
Average quarterly number of nonfatal drug overdose-related ED visits	125.5	253.3	313.3	495.0	641.5	Increasing
Average weekly number of nonfatal drug overdose-related ED visits	11.7	19.1	23.6	37.4	48.4	Increasing
Age-adjusted rate (per 100,000) of nonfatal drug overdose-related ED visits	67.6	100.1	124.6	197.7	-	Increasing
Total number of nonfatal drug overdose-related ED visits	502	1,013	1,253	1,980	2,566	Increasing

Note: Percent changes less than one percent were considered neutral.

**TABLE 13. Demographic characteristics of overdose-related ED visits by substance category, Davidson County, TN – 2020<sup>5</sup>**

Characteristic	All Drugs		Heroin		Opioid excluding Heroin		Stimulant	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>Total</b>	<b>2,567</b>	<b>-</b>	<b>1,149</b>	<b>-</b>	<b>1,281</b>	<b>-</b>	<b>136</b>	<b>-</b>
<b>Sex</b>								
Female	872	34.0	376	32.8	455	35.5	41	30.1
Male	1,693	66.0	772	67.2	825	64.5	95	69.9
<b>Age Group (years)</b>								
<18	15	0.6	0	0.0	10	0.8	5	3.7
18-24	298	11.6	140	12.2	143	11.2	15	11.0
25-34	943	36.8	491	42.7	402	31.4	50	36.8
35-44	613	23.9	287	25.0	301	23.5	25	18.4
45-54	353	13.8	139	12.1	193	15.1	20	14.7
55-64	245	9.6	75	6.5	149	11.6	21	15.4
≥65	98	3.8	17	1.5	81	6.3	0	0.0
<b>Race</b>								
Black	483	18.8	158	13.8	272	21.2	53	39.0
Other	248	9.7	80	7.0	153	11.9	15	11.0
White	1,836	71.5	911	79.3	856	66.8	68	50.0
<b>Ethnicity</b>								
Hispanic	85	3.3	26	2.3	53	4.2	6	4.5
Non-Hispanic	2,459	96.7	1,116	97.7	1,215	95.8	127	95.5

## Appendix D – Suspected Drug Overdoses Requiring EMS Response

**TABLE 14. OORRP surveillance metrics: Suspected drug overdoses requiring EMS response, Davidson County, TN – 2016-2020<sup>1,6</sup>**

Metric	2016	2017	2018	2019	2020	Trend (most recent, complete year)
Average daily number of suspected drug overdoses requiring EMS response	8.5	9.7	10.7	12.1	15.9	Increasing
Average monthly number of suspected drug overdoses requiring EMS response	257.8	296.3	325.5	368.9	484.9	Increasing
Average quarterly number of suspected drug overdoses requiring EMS response	773.5	888.8	976.5	1,106.8	1,454.8	Increasing
Average weekly number of suspected drug overdoses requiring EMS response	58.4	67.1	73.7	83.5	109.8	Increasing
Crude rate (per 100,000) of suspected drug overdoses requiring EMS response	452.1	514.3	564.0	637.8	-	Increasing
Total number of suspected drug overdoses requiring EMS response	3,094	3,555	3,906	4,427	5,819	Increasing

Note: Percent changes less than one percent were considered neutral.





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## Drug Overdose Epidemiological Profile – 2021 Davidson County, Tennessee

For more local drug overdose information:



<https://www.nashville.gov/departments/health/drug-overdose-information>