

THE 2020 CUYAHOGA COUNTY DRUG OVERDOSE INTEGRATED EPIDEMIOLOGIC PROFILE

MARCH 2021

OVERDOSE DATA TO ACTION (OD2A)

TABLE OF CONTENTS

Contributors	3
Suggested Citation	3
Disclaimer	3
Overview: Drug Overdose Integrated Epidemiologic Profile (DOIEP)	4
Data Sources	4
Drug Overdose Mortality – Total Deaths	6
Drug Overdose Mortality – Demographics	8
Drug Overdose Mortality – Drug Types	10
Drug Overdose Mortality – Summary	12
Drug Overdose Morbidity – Total Emergency Department Visits	13
Drug Overdose Morbidity – Demographic and Geographical Analyses	14
Drug Overdose Morbidity – Emergency Medical Services Naloxone Administration	21
Drug Overdose Morbidity – Summary	23
Take Home Messages	24
References	25

CONTRIBUTORS

The following individuals and organizations contributed to the development and publication of the Drug Overdose Integrated Epidemiologic Profile, 2020:

Cuyahoga County Board of Health

Epidemiology, Surveillance, and Informatics: Lauren Bottoms, MPH, Data Analyst

Epidemiology, Surveillance, and Informatics: Kyle Idahosa, MPH, Data Analyst

Epidemiology, Surveillance, and Informatics: Samantha Smith, MA, MS, Data Analysis and Informatics Supervisor

Environmental Public Health: Becky Karns, MPH, Program Manager – Overdose Data to Action

Environmental Public Health: April Vince, MSSA, LSW, Program Manager – Overdose Data to Action

Environmental Public Health: Vince Caraffi, MPH, RS, Supervisor

Case Western Reserve University

The Begun Center for Violence Prevention and Research: Ryan McMaster, Research Data Manager

The Begun Center for Violence Prevention and Research: Angela Kavadas, MPH, Geospatial Analyst, Research Associate

SUGGESTED CITATION

Cuyahoga County Board of Health. (2021). The 2020 Drug Overdose Integrated Epidemiologic Profile (DOIEP). Cuyahoga County, Ohio. <https://www.ccbh.net/overdose-data-dashboard/>

DISCLAIMER

This report was supported by the NU17CE925005 Centers for Disease Control and Prevention cooperative agreement. Its contents are solely the responsibility of the content creators and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Human Services. Supported by the Cuyahoga County Board of Health.

CUYAHOGA COUNTY
BOARD OF HEALTH

YOUR TRUSTED SOURCE FOR PUBLIC HEALTH INFORMATION



JACK, JOSEPH AND MORTON MANDEL
SCHOOL OF APPLIED SOCIAL SCIENCES

CASE WESTERN RESERVE
UNIVERSITY

Begun Center for Violence Prevention
Research and Education

OVERVIEW: DRUG OVERDOSE INTEGRATED EPIDEMIOLOGIC PROFILE (DOIEP)

The Drug Overdose Integrated Epidemiologic Profile (DOIEP) was made possible through the Overdose Data to Action (OD2A) grant from the Centers for Disease Control and Prevention (CDC). The purpose of the grant was to focus on the complex nature of the drug overdose epidemic using an interdisciplinary, comprehensive and cohesive public health approach. There were several strategies in the OD2A grant focusing on both surveillance and prevention. The DOIEP was housed under the surveillance strategy 3 which focused on implementing innovative surveillance. The DOIEP was adopted from a CDC and Health Resources and Services Administration (HRSA) document called the Integrated Epidemiologic Profile (IEP).¹ This document described the burden of HIV/AIDS using multiple data sources to inform prevention and program planning, implementation and evaluation. The OD2A grant used the IEP model as a foundation for the DOIEP.

The Cuyahoga County DOIEP describes the burden of the drug crisis on the population of Cuyahoga County in terms of socio-demographic and geographic characteristics of persons experiencing substance use disorder. The profile represents a data-driven resource for local level partners and community members to understand current drug overdose trends, patterns and risk factors in Cuyahoga County and make recommendations for allocating drug overdose prevention and care resources, planning programs and evaluating programs and policies.

Goals of this DOIEP report:

- Provide a thorough description of drug overdoses among various populations (age, race, education, etc.) in Cuyahoga County
- Describe the current landscape and trends of persons who overdosed from drugs in Cuyahoga County
- Identify characteristics of populations who are at high risk for drug overdoses in Cuyahoga County
- Provide insights for prevention strategies

DATA SOURCES

Data from various data sources were analyzed for this DOIEP including Vital Statistics death certificate data, EpiCenter emergency department visit data and Ohio EMS naloxone administration data. Future editions may include additional data.

This DOIEP uses death certificate data from the Ohio Department of Health (ODH) Vital Statistics System. ODH uses the *International Classification of Disease, Tenth Revision* (ICD-10) to code deaths. ODH categorizes causes of deaths into six “External Injury Intent” types: Homicide, Legal Intervention of War, Natural, Suicide, Undetermined and Unintentional. Accidental drug poisoning deaths, or unintended drug overdoses, fall into the “Unintentional” category. Among deaths with unintentional drug overdose as the underlying cause, the type of drug is indicated by the following ICD-10 multiple cause-of-death codes: illicit and prescription opioids (T40.0, T40.1, T40.2, T40.3, T40.4, or T40.6); benzodiazepines (T42.4); cocaine (T40.5); and methamphetamines (T43.6). Vitals Statistics data were used in this DOIEP to provide insights on fatal unintentional drug overdose deaths of those who reside in

Cuyahoga County between 2015 and 2020 (2020 data are preliminary and incomplete). This DOIEP focuses on 2015-2020 trend data and in-depth analyses of 2019 data.

EpiCenter is a syndromic surveillance system managed by ODH that monitors suspected drug overdoses and many other health events in emergency departments (ED). In 2016, ODH developed three opioid-related classifiers based on chief complaint data: suspected drug overdose, suspected drug overdose due to opioid and suspected drug overdose due to heroin. The classifiers build upon one another; therefore, the opioid and heroin classifiers are grouped together for analysis. These classifiers support non-fatal overdose surveillance and anomaly (spike alert) detection; also known as an Epi-Alert. EpiCenter data were used in this DOIEP to provide insights on non-fatal drug overdose activity in Cuyahoga County between July 1, 2016 through 2020 (2020 data are preliminary).

Ohio Department of Public Safety's Emergency Medical Services (EMS) Incidence Reporting System (EMSIRS) records naloxone doses administrations provided by local EMS agencies participating in EMSIRS. Naloxone is a medication used for the treatment to reverse an opioid overdose.² The Ohio State Board of Emergency Medical, Fire and Transportation Services has statutory authority over EMSIRS and supervises its operations. For this report, 2016 -2020 quarterly data were used.

The DOIEP Strengths and Limitations

The 2020 DOIEP provides important information that local partners can use as a resource for prevention strategies. Strengths of this profile include robust datasets that are used across Ohio. Vital Statistics data captures data on all deaths of Cuyahoga County residents and has hundreds of variables for analysis. These data can be compared with other counties across the state. EpiCenter data is used by Cuyahoga County local hospital systems and urgent cares and has become an important resource for tracking ED visits for drug overdoses. EpiCenter data also administers Epi-Alerts when hospitals are seeing a spike in overdose ED visits. Lastly, EMS data records most naloxone dose administrations in Cuyahoga County into their EMSIRS which can be used to better understand the burden of overdoses on EMS providers and communities.

While there are many strengths in the data sources that are included in this profile, there are some limitations. These include a time lag of reporting for Vital Statistics and finalization of the data; ODH can take up to 10 months before finalizing datasets. EpiCenter is de-identified to some degree, classifiers do not capture all overdoses and non-standard reporting across hospital systems can make the data hard to interpret. EMS data were listed as total dose administrations and not per person administrations; therefore, it is not known how many doses of naloxone an individual may receive. Also, not all EMS agencies report to EMSIRS.

To address these limitations, a DOIEP will be released annually to account for the lag of reporting for Vital Statistics data. It will also include preliminary data of the current year of publication. Hospital systems have consistently improved how they report ED visit data using the EpiCenter suspected overdose classifiers. This improvement has led to more complete and accurate data to be used in analyses of ED visits due to drug overdose. The DOIEP will continue to report on EMS naloxone administrations by zip code to inform prevention efforts in high burden areas.

DRUG OVERDOSE MORTALITY – TOTAL DEATHS

Figure 1 shows the total number of Cuyahoga County resident deaths from 2019 (n=13,834) categorized by six cause of death types. While 90.5% of residents experienced a natural cause of death, the second highest cause of death category was unintentional at 6.9%, or 958 deaths. Figure 2 details eight injury types that fall within the unintentional death classification; drug poisoning accounted for approximately half of all unintentional deaths.

Figure 1. Causes of Death of Those Residing in Cuyahoga County, 2019

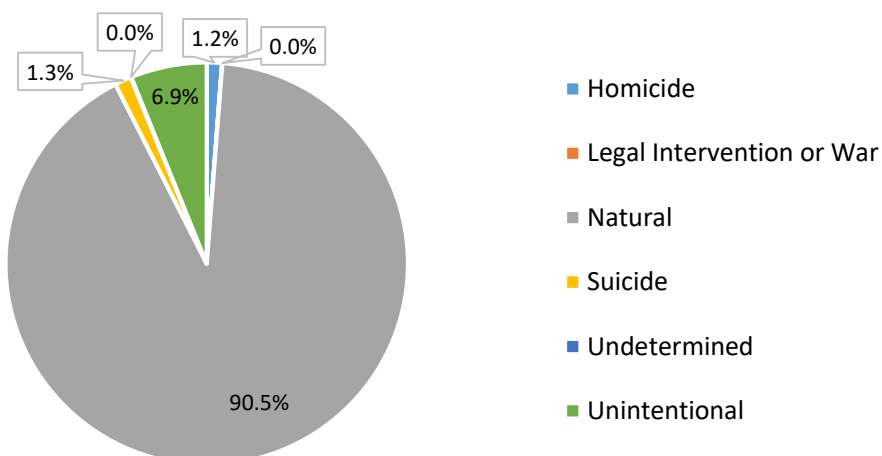
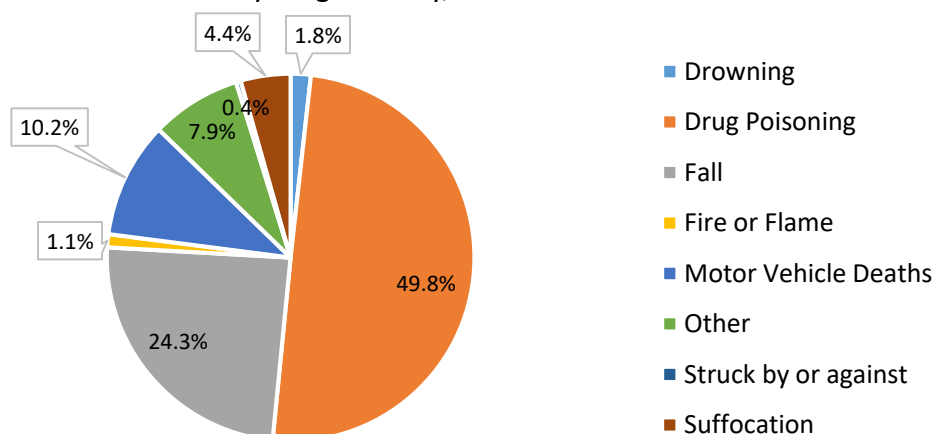
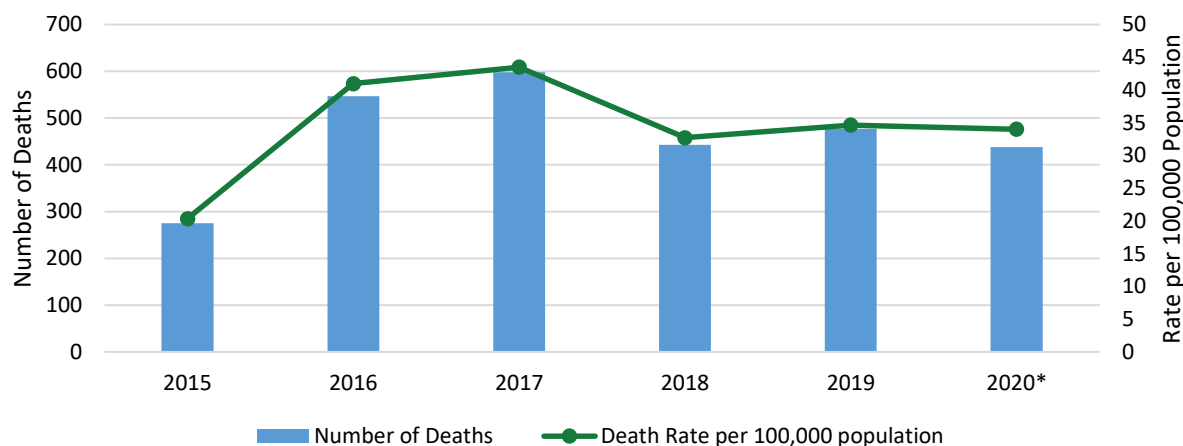


Figure 2. Causes of Unintentional Death of Those Residing in Cuyahoga County, 2019



There was a 98.9% increase in unintentional drug overdose deaths (UDODs) between 2015 and 2016. This was the largest increase over a five-year period in the history of Cuyahoga County. The number of UDODs spiked in 2017 with an 9.3% increase from 2016. Although there was a decrease in the number and rate of UDODs in 2018, there was a slight increase in deaths in 2019 (see Figure 3). There was no specific pattern when data were shown by quarter except that peaks occurred in the second half of the year in both 2018 and 2019 (see Figure 4).

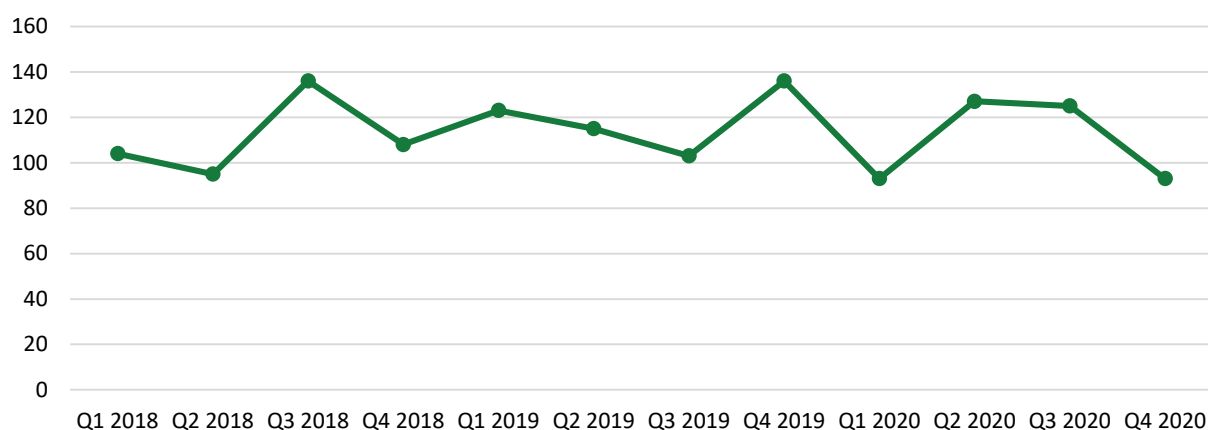
Figure 3. Number and Age-Adjusted Rate of Unintentional Drug Overdose Deaths in Cuyahoga County, 2015-2020



***2020 DATA ARE PRELIMINARY AND INCOMPLETE**

Note: The death rates presented are age-adjusted to the 2000 U.S. standard population to allow comparisons between different populations.

Figure 4. Number of Unintentional Drug Overdose Deaths by Quarter, Cuyahoga County 2018-2020*



***2020 DATA ARE PRELIMINARY AND INCOMPLETE**

DRUG OVERDOSE MORTALITY – DEMOGRAPHICS

The demographic breakdown of Cuyahoga County-resident UDODs occurring in 2018-2020* are shown below in Table 1. In 2019, 55-64 year olds had the highest UDOD rate compared to 25-34 year olds in 2018. In 2019, more males died of UDODs than females (343 deaths vs 134 deaths); this pattern also occurred in 2018. In 2019, non-Hispanic Blacks had a higher rate of UDODs than non-Hispanic Whites. Although the overall counts of UDODs in the Hispanic population were lower than other race/ethnic groups in 2018 and 2019, this group experienced the highest rate of UDODs in both years.

Table 1: Demographics for Unintentional Drug Overdose Deaths in Cuyahoga County, 2018-2020									
	2018			2019			2020*		
Age	N	%	Rate ¹	N	%	Rate ¹	N	%	Rate ¹
<15	-	-	-	-	-	-	2	0.4	<10
15-24	15	3.4	8.9	19	4.0	11.3	23	5.2	13.7
25-34	106	23.9	67.1	92	19.3	58.2	98	22.4	62.0
35-44	102	23.0	64.2	104	21.8	65.5	101	23.1	63.6
45-54	90	20.3	45.6	91	19.1	46.2	92	21.0	46.7
55-64	103	23.3	62.8	120	25.1	73.1	94	21.5	57.3
65+	27	6.1	13.6	51	10.7	25.7	28	6.4	14.1
Sex									
Female	140	31.6	20.1	134	28.1	19.9	109	24.9	16.2
Male	303	68.4	49.9	343	71.9	56.5	329	75.1	54.2
Race/Ethnicity ²									
Non-Hispanic Black	108	24.4	28.4	154	32.3	40.5	132	30.1	34.7
Non-Hispanic White	308	69.5	37.8	292	61.2	35.9	266	60.7	32.7
Hispanic	24	5.4	39.2	31	6.5	50.6	37	8.5	60.4
Race/Ethnicity and Sex ²									
Non-Hispanic Black Females	28	6.3	13.5	37	7.8	17.8	37	8.5	17.8
Non-Hispanic Black Males	80	18.1	46.4	117	24.5	67.8	95	21.7	55.1
Non-Hispanic White Females	108	24.4	25.7	90	18.9	21.4	65	14.8	15.4
Non-Hispanic White Males	200	45.1	50.9	202	42.3	51.4	201	45.9	51.1
Hispanic Females	4	0.9	<10	7	1.5	<10	7	1.6	<10
Hispanic Males	20	4.5	32.6	24	5	39.2	30	6.9	49.0
Total³	443		34.2	477		36.2	438		34.0
Mean Age		44.9			47			44.3	

*2020 DATA ARE PRELIMINARY AND INCOMPLETE

¹Death rates for age are age-specific. Death rates for sex and race/ethnicity are age-adjusted to the 2000 U.S. standard population to allow comparisons between different populations.

²Other race groups are not shown due to small numbers

³Total includes all unintentional drug overdose deaths in Cuyahoga County

Table 1 also breaks down these data into demographic groups. This breakdown shows a stark difference in the rate of UDOD among groups. Despite non-Hispanic White males having the highest percentage of UDODs, non-Hispanic Black males had the highest rate of UDODs than any other group in 2019 compared to 2018. In 2018, non-Hispanic White males had the highest prevalence and rate of UDODs. Furthermore, non-Hispanic White females had higher rates of UDODs in both 2018 and 2019 compared to non-Hispanic Black females.

Table 2 provides additional demographic information for persons who died from an UDOD based on marital status and education. Individuals who were never married represent the highest percentage of UDODs than other marital status groups. The most common level of education attained for individuals that died of UDODs in 2019 was a high school diploma or GED; this trend also occurred in 2018.

Table 2: Unintentional Drug Overdose Deaths by Marital Status and Education in Cuyahoga County, 2018-2020						
	2018		2019		2020*	
Marital Status	N	%	N	%	N	%
Married	61	13.8	53	11.1	53	12.1
Divorced	123	27.8	115	24.1	105	24.0
Never Married	241	54.4	267	56.0	261	59.6
Other/Unknown	18	4.1	42	8.8	19	4.3
Education						
Less than High School	103	23.3	83	17.4	86	19.6
High School Diploma/ GED	234	52.8	250	52.4	239	54.6
Some College	59	13.3	54	11.3	61	13.9
College Degree	36	8.1	49	10.3	33	7.5
Unknown	11	2.5	41	8.6	19	4.3
Total¹	443		477		438	

***2020 DATA ARE PRELIMINARY**

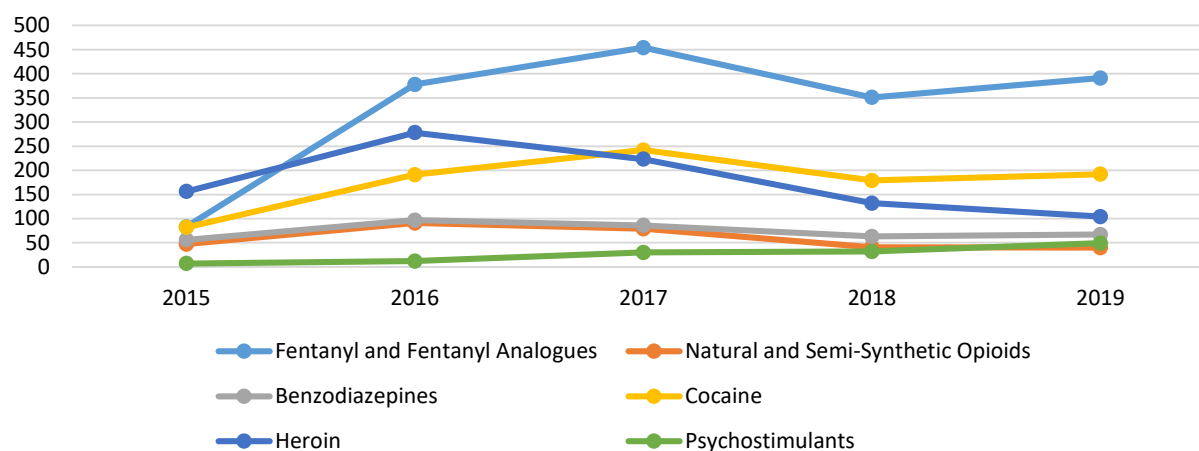
¹Total includes all unintentional drug overdose deaths in Cuyahoga County

Preliminary UDOD data for 2020 appear to follow the 2019 trends. The leading groups experiencing UDODs across demographic, marital status and education categories in both 2019 and 2020 included males, non-Hispanic White males, never married and those with a high school diploma/GED. However, the age group representing the highest percentage of UDODs was the 35-44 age group compared to the 55-64 age group in 2019.

DRUG OVERDOSE MORTALITY – DRUG TYPES

The number of fentanyl related UDODs in Cuyahoga County increased 355% from 2015 to 2016; fentanyl and fentanyl analogues remained the highest contributor to UDODs through 2019. Heroin related UDODs steadily decreased after peaking in 2016. Cocaine related UDODs steadily increased from 2015 to 2017 and surpassed heroin related deaths in 2017. Although psychostimulant related UDODs (other than cocaine) contributed to the least number of deaths, this drug category steadily increased each year and surpassed natural and semi-synthetic opioids in 2019 (see Figure 5).

Figure 5. Number of Unintentional Drug Overdose Deaths Involving Select Drugs in Cuyahoga County, 2015-2019



*Combination of drugs are usually involved in overdose deaths. Individual deaths may be reported in more than one category.

UDODs regularly included a combination of drugs that contributed to one's death. From 2015 to 2017, there were substantial increases in deaths related to cocaine and psychostimulants, with many of these deaths also involving an opioid such as fentanyl (see Figure 6).

Figure 6. Number of Unintentional Drug Overdose Deaths Involving Select Drug Combinations in Cuyahoga County, 2015-2019

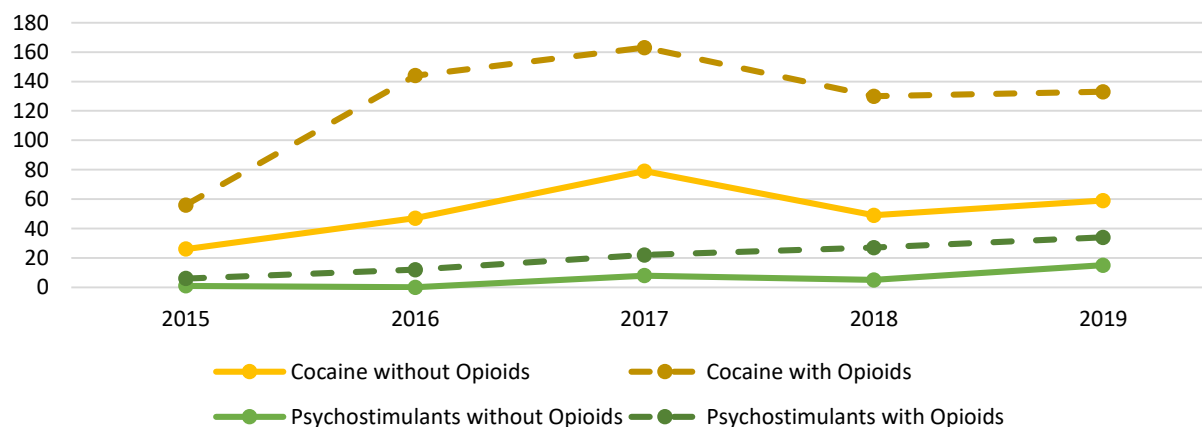
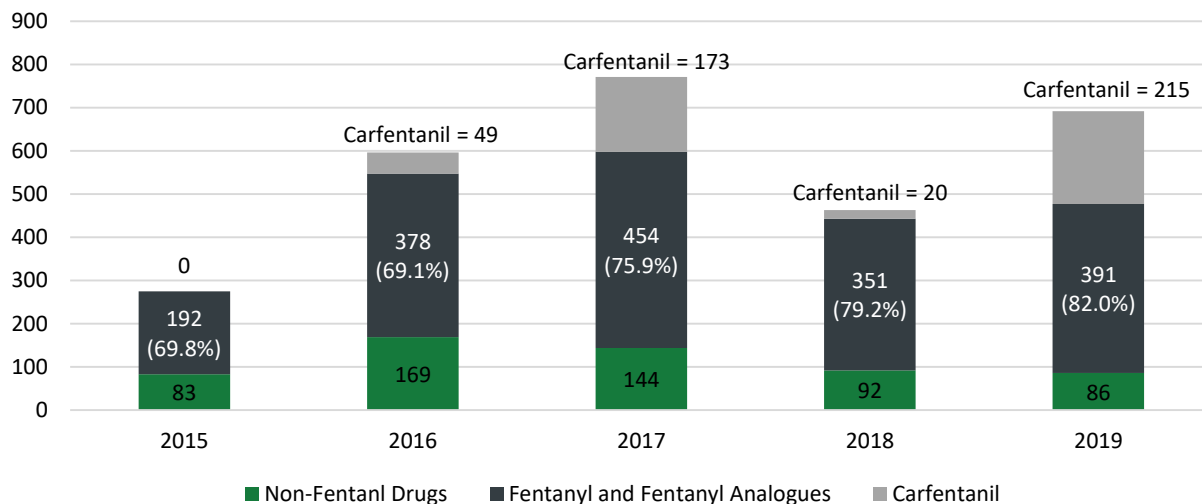


Figure 7 shows a steady increase in the percentage of UDODs due to fentanyl and fentanyl analogues since 2016. Fentanyl and carfentanil continued to drive UDODs in 2019. Fentanyl and fentanyl analogues contributed to 82% of UDODs, the highest percentage in a 5-year period, while the number of UDODs related to carfentanil peaked in 2019 at 215 deaths.

Figure 7. Number and Percentage of Fentanyl-Related Unintentional Drug Overdose Deaths in Cuyahoga County, 2015-2019*



*Combination of drugs are usually involved in overdose deaths. Individual deaths may be reported in more than one category.

Compared to 2019, preliminary 2020 data shows similar trends in the prevalent drug groups contributing to the number of UDODs. Fentanyl and fentanyl analogues were the leading contributor in UDODs in 2020 followed by cocaine. Conversely, carfentanil related UDODs decreased from 2019 to 2020 based on preliminary 2020 data.

DRUG OVERDOSE MORTALITY – SUMMARY

Based on these data presented above, there are specific sub-populations that need attention:

- ❖ From 2018 to 2019 there was a:
 - 7.7% increase in the number of all UDODs
 - 26.7% increase in the number of UDODs in the 15-24 age group
 - 16.5% increase in the number of UDODs in the 55-64 age group
 - 88.9% increase in the number of UDODs for the 65 and over age group
 - 13.2% increase in the number of UDODs for males
 - 42.6% increase in the number of UDODs for non-Hispanic Blacks
 - 29.2% increase in the number of UDODs for Hispanics
 - 32.1% increase in the number of UDODs for non-Hispanic Black females
 - 46.3% increase in the number of UDODs for non-Hispanic Black males
 - 75% increase in the number of UDODs for Hispanic females
 - 20% increase in the number of UDODs for Hispanic males
 - 10.8% increase in the number of UDODs for individuals who were never married
 - 6.8% increase in the number of UDODs for individuals with an educational attainment of high school diploma/GED
 - 36.1% increase in the number UDODs for individuals with an educational attainment of a college degree
- ❖ In 2019:
 - The 55-64 age group had the highest rate of UDODs
 - Non-Hispanic Black males had the highest rate of UDODs
 - UDODs involving fentanyl and fentanyl analogues increased by 11.4%
 - UDODs involving cocaine increased by 7.3%
 - UDODs involving psychostimulants increased by 53.1%
 - UDODs involving heroin decreased by 21.2%
 - Fentanyl and fentanyl analogues were involved in 82% of UDODs
 - Carfentanil was involved in approximately 45% of UDODs
 - UDODs involving psychostimulants surpassed the number of UDODs involving natural and semi-synthetic opioids
- ❖ Combined drug involvement of cocaine and opioids showed that UDODs increased when an opioid was involved.
- ❖ Combined drug involvement of psychostimulants and opioids showed that UDODs increased when an opioid was involved

DRUG OVERDOSE MORBIDITY – TOTAL EMERGENCY DEPARTMENT (ED) VISITS

From 2016 to 2019, there were 19,297 emergency department (ED) visits for suspected drug overdoses in Cuyahoga County. Opioids/heroin were specifically mentioned as the drug type causing overdose in 7,390 (38%) of the visits. The highest total number of ED visits occurred in 2017 with 6,761 suspected drug overdose ED visits; 3,010 of the 6,761 visits were reported as suspected opioid/heroin overdoses. From 2017 to 2018 there was a 30.1% decrease in the number of ED visits for all suspected drug overdoses and 2019 visits were slightly lower than 2018. The months of May through October had the highest volume of ED visits from 2016-2019. The number of ED visits from 2016-2019 were shown by year in Figure 8 and by month in Figure 9.

Figure 8: Number of Emergency Department Visits for Suspected Drug and Opioid/Heroin Overdoses, 2016-2019

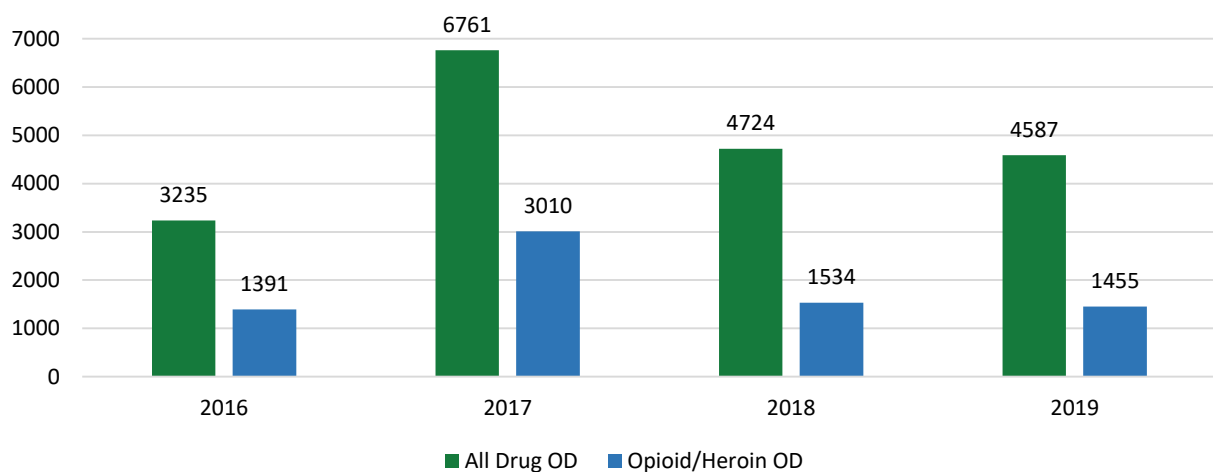
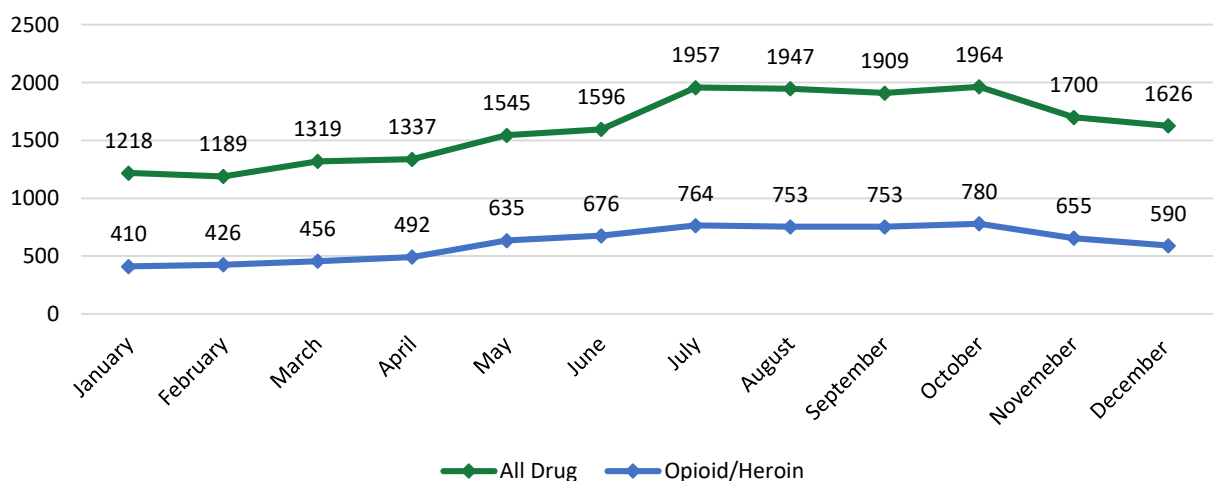


Figure 9: Number of ED Visits for Suspected Drug and Opioid/Heroin Overdoses in Cuyahoga County by Month, 2016-2019



DRUG OVERDOSE MORBIDITY – DEMOGRAPHIC AND GEOGRAPHICAL ANALYSES

The demographic characteristics of individuals visiting an ED for suspected drug overdoses were shown in Table 3. The greatest percentage of drug-related ED visits from 2016-2019 occurred in the 35-49 year olds category which accounted for 28% of visits, followed closely by 25-34 year olds, accounting for 26% of visits. Males were more likely to visit the ED for a suspected drug overdose compared to females (59.1% vs 40.9%, respectively). The same trend applied to ED visits for a suspected drug overdose involving opioid/heroin for males and females (69.4% vs 30.6%, respectively). Whites were more likely to visit the ED for suspected drug overdose compared to Blacks (52.4% vs 26.5%, respectively). The same trend applied to ED visits for a suspected drug overdose involving opioid/heroin for Whites and Blacks (59.3% vs 16.4%, respectively). The average age of a person visiting an ED for a suspected overdose was 37.7 years while the average age of a person visiting the ED for a suspected overdose with opioid/heroin specified was 39.6 years.

Table 3: Demographics for ED Visits Due to Drug Overdose and Opioid/Heroin Overdose, 2016-2019				
	2016-2019 ED Visits – All Drug Overdose		2016-2019 ED Visits - Opioid/Heroin Overdose	
Age Group	N	(%)	N	(%)
<12	831	4.3	58	0.8
12-17	825	4.3	21	0.3
18-24	2,439	12.6	684	9.3
25-34	5,071	26.3	2,400	32.5
35-49	5,389	27.9	2,414	32.7
50-64	3,467	18.0	1,471	19.9
65+	1,275	6.6	342	4.6
Total	19,297	100	7,390	100
Sex	N	(%)	N	(%)
Male	11,401	59.1	5,132	69.4
Female	7,896	40.9	2,258	30.6
Total	19,297	100	7,390	100
Race	N	(%)	N	(%)
White	10,108	52.4	4,384	59.3
Black	5,110	26.5	1,214	16.4
Other	1,089	5.6	426	5.8
Unknown	2,990	15.5	1,366	18.5
Total	19,297	100.0	7,390	100.0
Mean and Median Age of ED Visits - Drug Overdose				
Mean	37.7	Median	35.0	
Mean and Median Age of ED Visits - Opioid/Heroin Overdose				
Mean	39.6	Median	37.0	

2018-2019 Demographic Breakdown: The demographic breakdown of ED visits related to drug overdose and opioid/heroin overdose for 2018 and 2019 show a similar pattern as the aggregate 2016-2019 data (see Figures 10-12). Collectively, the greatest number of drug overdoses occurred in White males, ages 35-49.

2018-2019 Demographic Breakdown – All Drug Overdose: Noted trends for ED visits related to all drug overdose include: 25-34 and 65 and up age groups increased from 2018 to 2019 while the under 25 and 50-64 age groups decreased from 2018 to 2019; visits to ED by Whites persons decreased from 2018 to 2019 while visits by Black and Other/Unknown persons increased from 2018 to 2019; the number of visits for males increased while the number of visits for females decreased from 2018 to 2019.

2018-2019 Demographic Breakdown – Opioid/Heroin Overdose: Noted trends for ED visits related to opioid/heroin overdose include: the 25-34 and 50-64 age groups were nearly the same from 2018 to 2019 while the under 25 age group decreased during that time frame; the 65 and up age group increased from 2018 to 2019; Whites decreased (76.1% vs 71.6%) from 2018 to 2019 while Black (16.0% vs 18.8%) and Other/Unknown (7.9% vs 9.6%) increased during the same time frame; the number of visits for males increased (67.7% vs 70.1%) from 2018 to 2019.

Figure 10: ED Visits for Overdose
by Age, 2018-2019

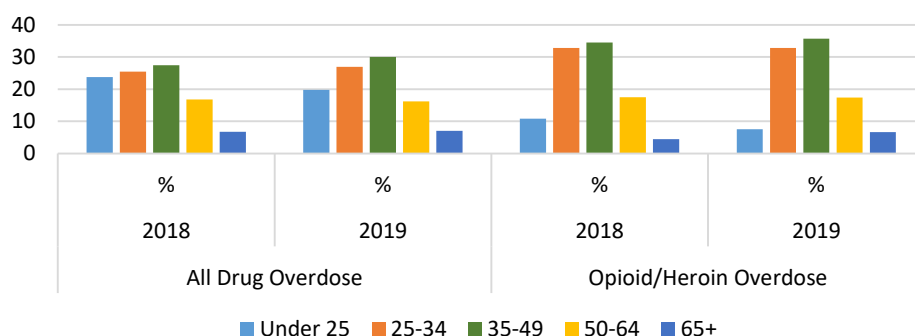


Figure 11: ED Visits for Overdose
by Race, 2018-2019

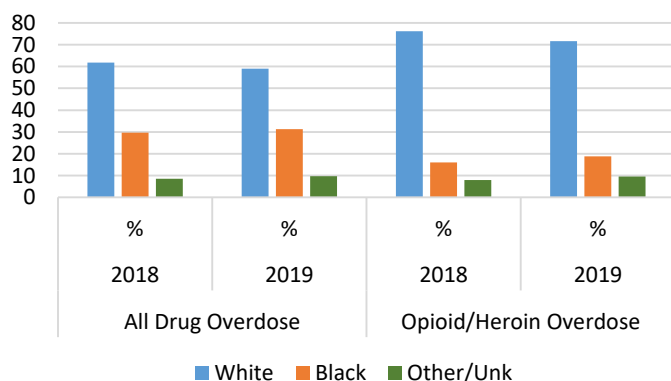
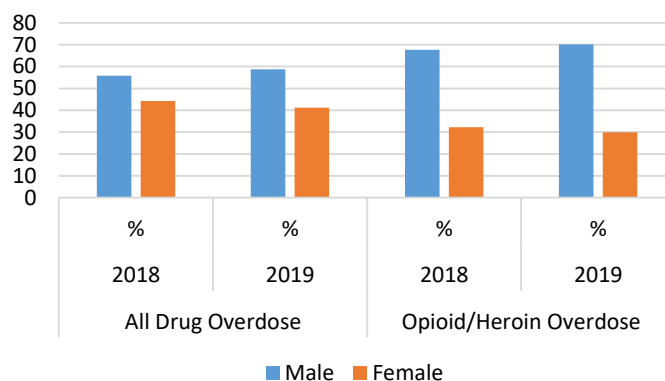


Figure 12: ED Visits for Overdose
by Sex, 2018-2019

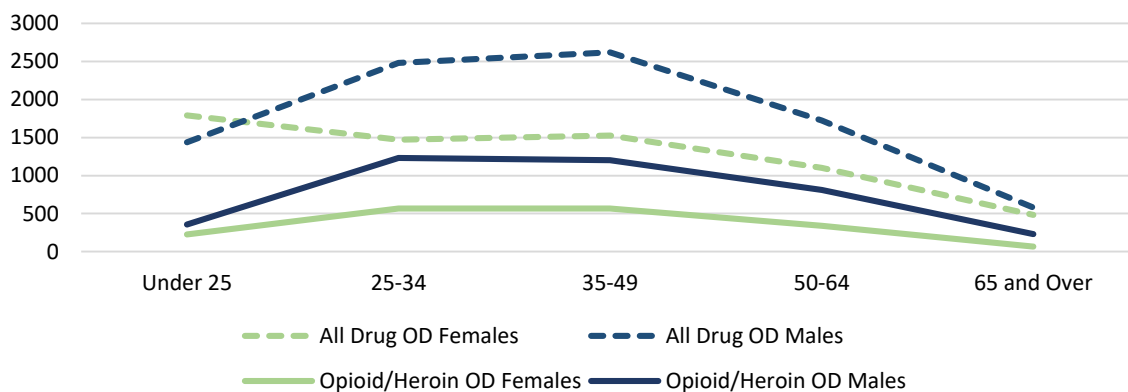


Additional analyses by age, sex and race for 2016-2019 visits to the ED for drug overdose and opioid/heroin overdose were shown in Figures 13-14.

Sex and Age Breakdown – All Drug Overdose: Males had a higher number of all drug overdose ED visits than females in all age categories except for the under 25 age group. The 35-49 male age group had the highest number of ED visits followed by the 25-34 male age group (see Figure 13).

Sex and Age Breakdown – Opioid/Heroin Overdose: For ED visits due to opioid/heroin overdose, males were higher in all age groups. The 25-34 male age group had the highest number of ED visits due to opioid/heroin overdose with 1,233 ED visits. The 25-34 and 35-49 female age groups both reported 567 ED visits, accounting for the highest number of ED visits for opioid/heroin overdose for females (see Figure 13).

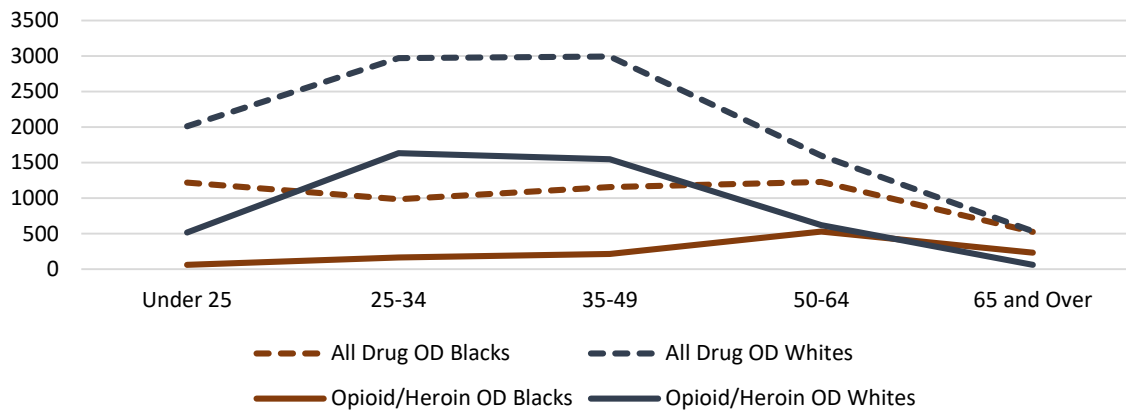
Figure 13: Number of All Drug and Opioid/Heroin Overdose ED Visits by Age and Sex, 2016-2019



Race and Age Breakdown – All Drug Overdose: Whites had a higher number of all drug overdose ED visits than Blacks in all age groups. However, in the age group 65 and over, both Black and White males were similar in the number of visits (527 vs 535 visits). Whites had the highest number of ED visits due to all drug overdose in the 35-49 age group with 2,991 and the 25-34 age group with 2,971 visits. Blacks had the highest number of ED visits in the 50-64 age group with 1,229 visits followed by the under 25 age group with 1,217 (see Figure 14).

Race and Age Breakdown – Opioid/Heroin Overdose: For Whites, the age groups experiencing the highest number of ED visits due to opioid/heroin overdose were 25-34 years with 1,634 visits and 35-49 years with 1,550 visits. For Blacks, ED visits for opioid/heroin overdose were highest among the 50-64 age group with 532 visits and 65 and over age group with 235 visits. The 65 and over age group was the only group in which the number of ED visits for opioid/heroin overdose was higher in Blacks, 235 visits, than in Whites, 61 visits (see Figure 14).

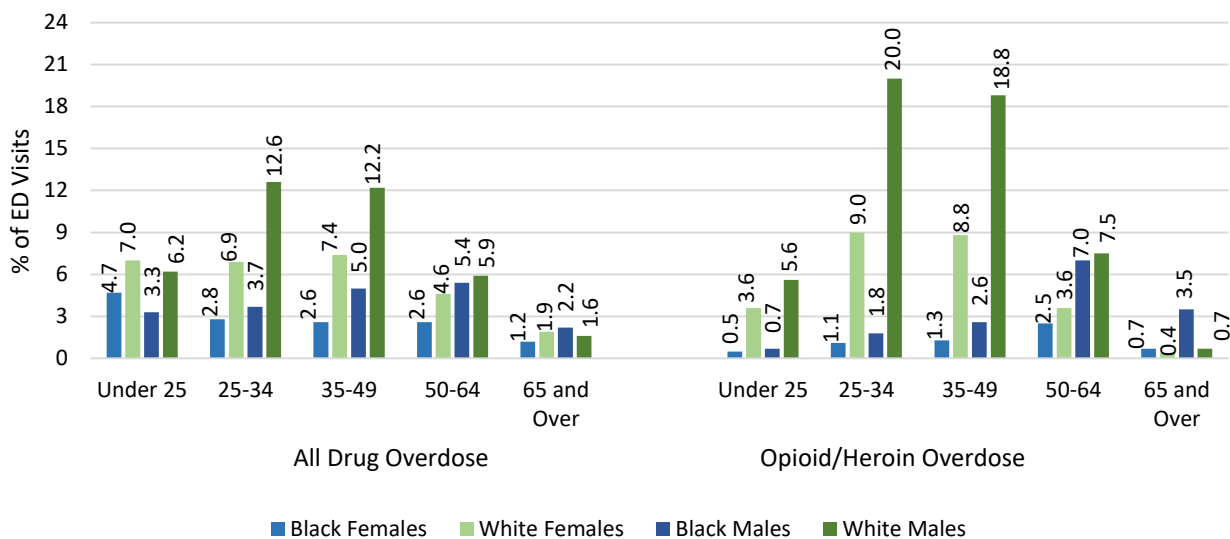
Figure 14: Number of All Drug and Opioid/Heroin Overdose ED Visits by Age and Race, 2016-2019



Sex, Age and Race Breakdown – All Drug Overdose: Figure 15 demonstrates the prevalence of ED visits due to all drug overdose and opioid/heroin overdose in different groups broken out by age, sex and race. White males led all age categories for ED visits due to drug overdose except persons under 25 and persons 65 and over. For persons under 25, White females had the highest prevalence of ED visits at 7.0%, and for persons 65 and over, Black males had the highest prevalence of ED visits at 2.2%. Black females had the lowest prevalence of ED visits for all drug overdose in all age categories other than persons under 25; Black males experienced lowest prevalence in this group.

Sex, Age and Race Breakdown – Opioid/Heroin Overdose: For ED visits due to opioid/heroin, White males had the highest prevalence of ED visits in all age groups except persons 65 and over, which was led by Black males. In the 50-64 age group, Black males (7.0%) and White males (7.5%) were similar in their prevalence of ED visits for overdose (see Figure 15).

Figure 15: Percent of ED Visits in Cuyahoga County by Age, Sex and Race, 2016-2019



Age-Specific Rates with Sex and Race Breakdown – All Drug Overdose: Age-specific rates were calculated for ED visits due to all drug and opioid/heroin overdose in 2016-2019 by age, sex and race. These age-specific rates tell a different story than the prevalence data above. Black females had higher age-specific rates than White females in the 50-64 (37.7 vs 27.9 per 100,000) and 65 and over (21.6 vs 10.5 per 100,000) age categories, differing from the prevalence data. White males had the highest rates in the under 25 and 25-34 age categories. Black males had the highest rate of ED visits among all groups in the 35-49, 50-64 and 65 and over age categories, differing from the prevalence data where White males were highest in the same age categories (see Table 4).

Age-Specific Rates with Sex and Race Breakdown – Opioid/Heroin Overdose: Age-specific rates for ED visits due to opioid/heroin overdose tell a similar story compared to the prevalence data. White females had higher rates than Black females in all age categories except for the 50-64 age group. White males had higher rates compared to Black males in all age groups except for the 50-64 and 65 and over age groups mirroring the prevalence data. One significant difference between rate and prevalence data is the magnitude of the problem among the population. For example, prevalence data showed a minor difference between Black and White males in the 50-64 age group, 7.0% vs 7.5%, respectively. The age-specific rate comparison for the same age group is 46.5 per 100,000 for Black males compared to 17.4 per 100,000 for White males (see Table 4).

Table 4: Age-Specific Rates for ED Visits for All Drug and Opioid/Heroin Overdose, 2016-2019								
	ED Visits for All Drug Overdose				ED Visits for Opioid/Heroin Overdose			
	Black Females	White Females	Black Males	White Males	Black Females	White Females	Black Males	White Males
Under 25	11.9	14.1	8.6	14.5	0.5	4.2	1.1	6.4
25-34	55.4	73.2	97.1	131.4	8.3	35.1	17.7	78.0
35-49	56.9	80.1	138.8	133.6	10.3	35.1	27.0	75.7
50-64	37.7	27.9	97.4	37.5	12.9	8.1	46.5	17.4
65 and Over	21.6	10.5	62.7	12.7	4.7	0.9	35.9	2.0

Rates per 100,000

Geographical Analysis: Figure 16 shows a geographical analysis of EpiCenter data presenting the number of ED visits due to drug overdose by zip code. The Cuyahoga County zip codes with the highest number of ED visits due to drug overdose are 44109 and 44102.

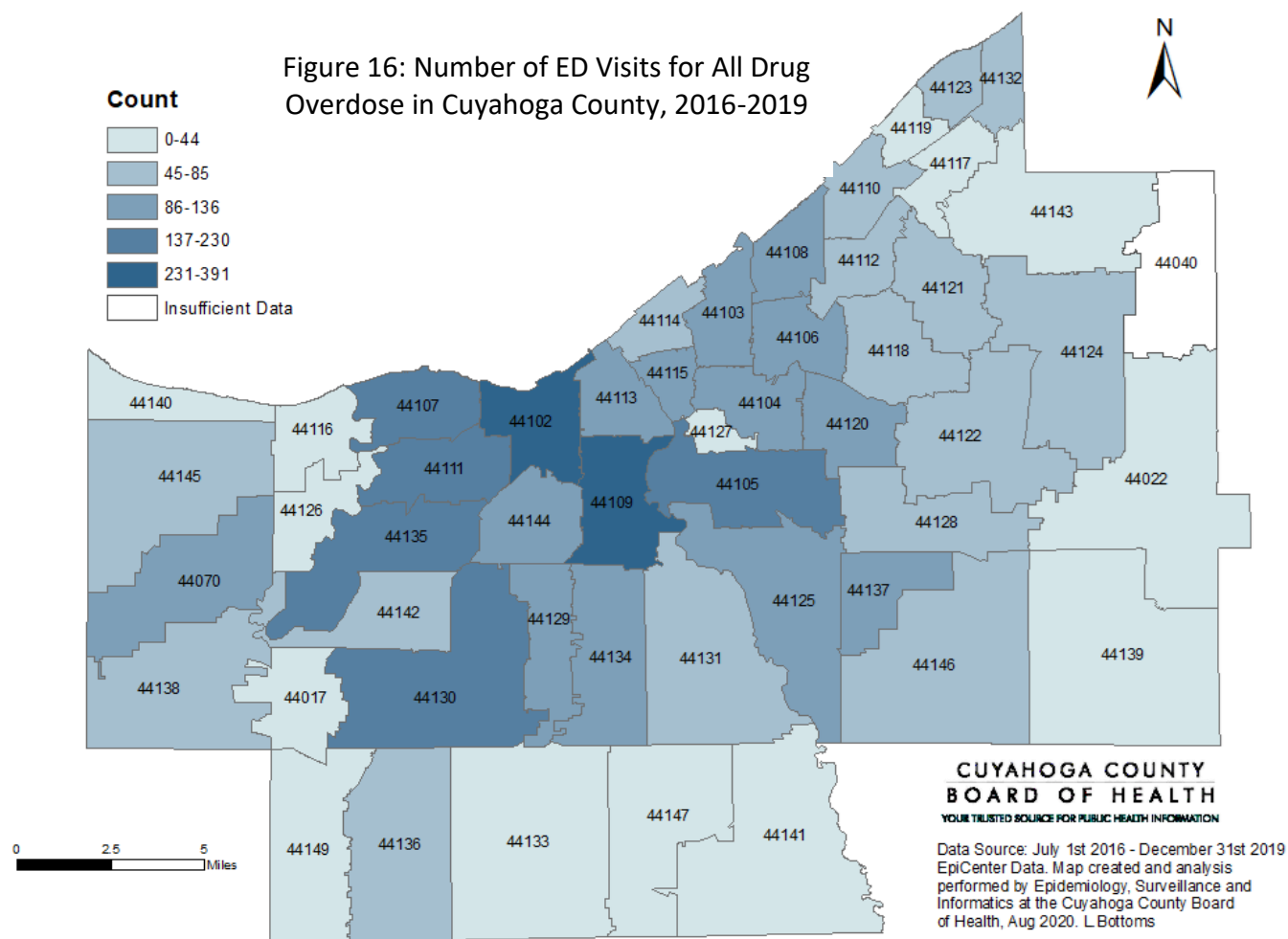


Table 5 shows the top 10 zip codes for ED visits related to all drug and opioid/heroin overdoses. Although the top five zip codes were the same across all drug and opioid/heroin overdoses, the last five zip codes differ in order and actual zip codes listed. For example, 44129 and 44103 zip codes were only included in the top 10 zip codes for all drug overdose. Zip codes 44113 and 44125 were only included in the top 10 zip codes for opioid/heroin drug overdose.

**Table 5:
Top 10 Zip Codes for ED Visits,
2016-2019**

All Drug	Opioid/ Heroin
44109	44109
44102	44102
44111	44111
44105	44105
44107	44107
44130	44134
44134	44135
44135	44130
44129	44113
44103	44125

2020 At-A-Glance and Epi-Alerts: ED visits related to drug overdose were lower in 2020 compared to 2019 in Cuyahoga County. In 2020 there were 4,330 ED visits for all drug overdose and of those visits, 1,338 (30.9%) were categorized as opioid/heroin overdose. Trends observed in 2019 age, sex and race categories appear similar in 2020 preliminary data. Collectively, White males, ages 35-49 reported the highest number of ED visits for all suspected drug overdose and drug overdose due to opioid/heroin.

Table 6: Number of ED Visits: 2019 and 2020				
	All Drug		Opioid/Heroin	
	2019	2020*	2019	2020*
January	311	357	98	103
February	348	367	108	115
March	374	347	111	103
April	358	326	116	111
May	383	398	115	143
June	427	412	153	135
July	461	357	144	112
August	408	443	142	145
September	382	389	123	103
October	434	343	143	98
November	334	325	103	85
December	357	266	99	85
Total	4,577	4,330	1,455	1,338

*2020 data are preliminary and subject to change

Lastly, the number of Epi-Alerts nearly doubled in 2020 compared to 2019 (see Table 7). From 2016 to 2019, there was an average of 3-4 Epi-alerts each year. Epi-Alerts are administered when there is a spike in the number of ED visits for suspected drug overdoses in a 24-hour period. A spike occurs when the number of ED visits greater than expected by four standard deviations in a 24-hour period.

Table 7: Epi-Alerts Administered due to Suspected Drug Overdose, 2019-2020						
2019						
2/13/2019	4/8/2019	7/11/2019	8/31/2019	--	--	--
2020						
1/15/2020	2/1/2020	4/1/2020	6/8/2020	7/25/2020	7/29/2020	12/19/2020

DATA OVERDOSE MORBIDITY – EMERGENCY MEDICAL SERVICES NALOXONE ADMINISTRATION

Between 2016 and 2020, there were 28,453 doses of naloxone administered by EMS providers in Cuyahoga County as reported by EMSIRS. The highest total naloxone doses administered occurred in 2017 with 7,817 doses (see Figure 17). From 2017 to 2018, there was a 44.3% decrease in the number of naloxone administrations, followed by a 39% increase in 2019. The number of naloxone administrations between 2016-2020 is shown by quarter in Figure 18.

Figure 17: EMS Naloxone Administrations in Cuyahoga County, 2016-2020*

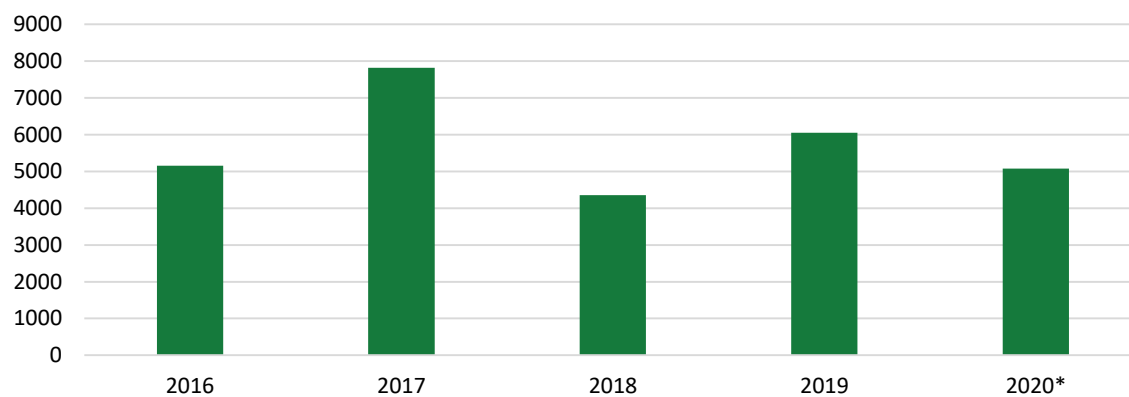
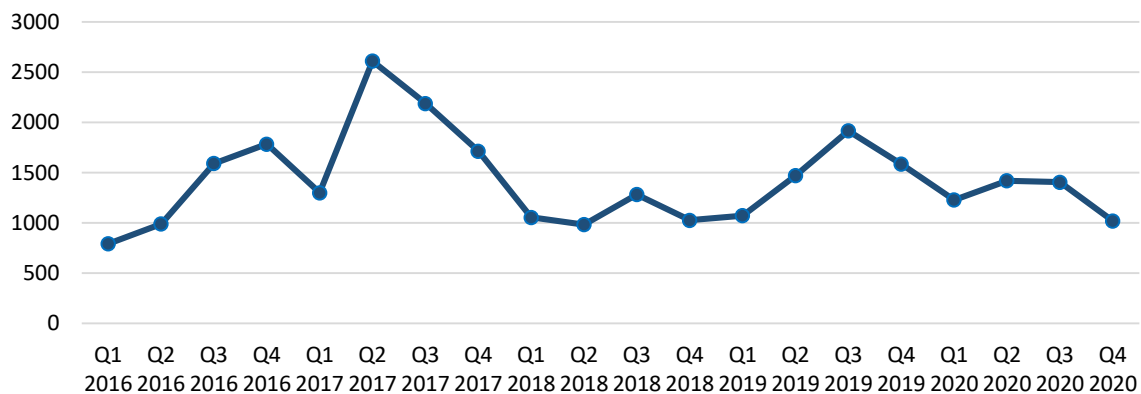
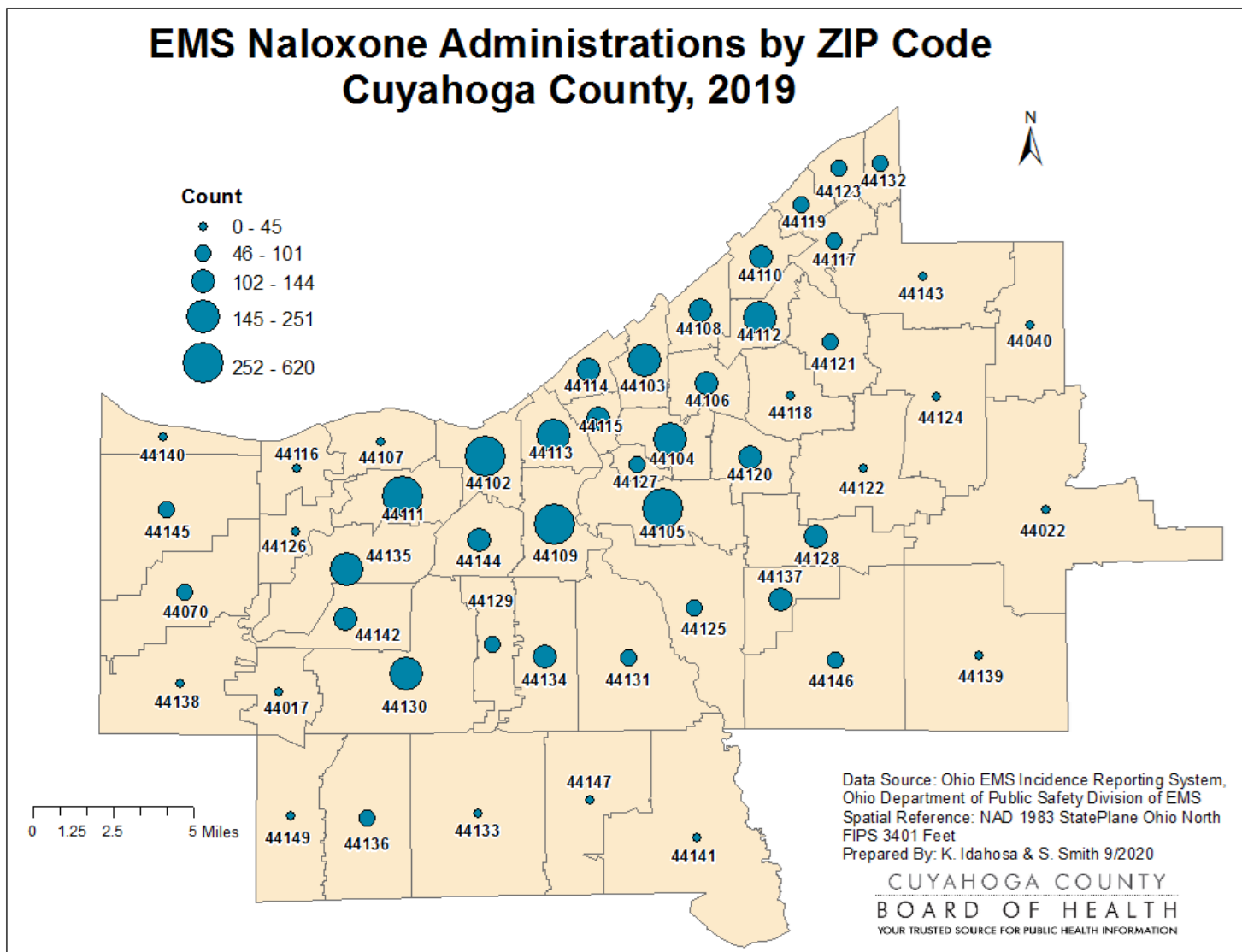


Figure 18: EMS Naloxone Administrations by Zip Code in Cuyahoga County, 2016-2020*



*2020 data are preliminary and subject to change

Figure 19: EMS Naloxone Administrations by Zip Code in Cuyahoga County, 2019*



*Not all EMS agencies report to EMSIRS. The accuracy of data reported to EMSIRS is limited by the number of individual EMS agencies submitting data and the accuracy of these submissions

Figure 19 represents a geographical analysis of EMS data showing the number of naloxone administrations by resident zip code in Cuyahoga County. In 2019, the areas with the highest number of naloxone administrations were in the following zip codes: 44109, 44102, 44105, 44111 and 44135. These zip codes had 250 or more naloxone administrations, with the highest being over 600 administrations in 2019 in zip code 44109.

DRUG OVERDOSE MORBIDITY – SUMMARY

Based on these data presented above, there are several specific areas of concern and sub-populations that need attention:

- ❖ White males, ages 35-49 were more likely to visit the ED for all drug and opioid/heroin overdose.
- ❖ From 2018 to 2019 there was a:
 - 5.9% increase in ED visits for all drug overdose in the 25-34 age group.
 - 9.5% increase in ED visits for all drug overdose in the 35-49 age group.
 - 4.5% increase in ED visits for all drug overdose in the 65 and over age group.
 - 5.4% increase in ED visits for all drug overdose in the Black population.
 - 5.4% increase in ED visits for all drug overdose in the male population.
 - 3.5% increase in ED visits for opioid/heroin overdose in the 35-49 age group.
 - 50% increase in ED visits for opioid/heroin overdose in the 65 and over age group.
 - 17.5% increase in ED visits for opioid/heroin overdose in the Black population.
 - 3.5% increase in ED visits for opioid/heroin overdose in the male population.
- ❖ From 2016 to 2019:
 - Females had the highest number of ED visits in the under 25 age group for all drug overdose.
 - The 35-49 age group had the highest number of ED visits among males for all drug overdose.
 - The 25-34 age group had the highest number of ED visits among males for opioid/heroin overdose.
 - The 35-49 age group had the highest number of ED visits among Whites for all drug overdose
 - Blacks had the highest number of ED visits in the 65 and over age group for opioid/heroin overdose.
 - The 25-34 age group had the highest number of ED visits among Whites for opioid/heroin overdose
 - The 50-64 age group had the highest number of ED visits among Blacks for opioid/heroin overdose
- ❖ Rate-specific data showed a clear difference between older and younger age groups for visits to the ED due to drug overdose:
 - Black females had higher age-specific rates in the 50 and over age groups while White females had higher age-specific rates in the under 50 age groups for ED visits due to all drug overdose.
 - White males had the highest age-specific rates in the under 35 age groups compared to Black males who had the highest age-specific rates in the over 35 age groups for ED visits due to all drug overdose.
- ❖ A similar pattern was seen in ED visits due to opioid/heroin overdose:
 - White females and males had higher age-specific rates in the under 50 age groups while Black females and males had higher age-specific rates in the over 50 age groups for ED visits.
 - Black males had the highest age-specific rate than any other group in the over 50 age groups while White males had the highest age-specific rate for age groups under 50.
- ❖ Analyses showed specific geographic areas of concern. The city of Cleveland has high numbers of ED visits due to drug overdose. Specific zip codes of concern are: 4419, 44102, 44111, 44107 and 44130.

- ❖ Targeted intervention may be best suited for a) older Black males and females 50 and older and b) middle age/younger White males and females under 50.
- ❖ EMS naloxone administration data parallels ED visit data in terms of annual and quarterly trends. The number of naloxone doses administered by EMS peaked in 2017, dropped in 2018 and increased again in 2019; ED visits followed this same pattern. The highest number of ED visits and naloxone doses administered both occurred in 44109 and 44102 zip codes.

FINAL THOUGHTS

Combining multiple data sources for the first DOIEP created a more comprehensive picture of the drug overdose burden in Cuyahoga County. All three datasets present 2017 as the year with the highest number of suspected overdose ED visits, naloxone dose administrations and UDODs. Males were consistently more likely to die from an UDOD than females and visit the ED for a suspected drug overdose. In 2019, Black males had higher ED visit rates for suspected drug overdose and UDODs than White males. White males between 25-34 consistently had high rates of ED visits for suspected drug overdose and UDODs. Zip codes 44109 and 44102 are the geographic areas that account for the highest number of ED visits and highest number of naloxone doses administered. This correlation shows that naloxone is likely being administered where it is most needed. We hope the findings in this report drive further discussion and direction to identify and assist populations at risk for drug overdoses.

REFERENCES

¹Centers for Disease Control and Prevention and Health Resources and Services Administration. (2014) *Integrated Guidance for Developing Epidemiologic Profiles: HIV Prevention and Ryan White HIV/AIDS Programs Planning*. Accessed August 5, 2020.

https://www.cdc.gov/hiv/pdf/guidelines_developing_epidemiologic_profiles.pdf

²Substance Abuse and Mental Health Services Administration (SAMHSA). *Naloxone*. Accessed 2/24/2021. <https://www.samhsa.gov/medication-assisted-treatment/medications-counseling-related-conditions/naloxone>