



PIMA COUNTY

HEALTH DEPARTMENT

**Drug Overdose Deaths
Annual Report 2019**

Community Mental Health and Addiction

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INTRODUCTION

The purpose of this report is to describe trends in the number of drug overdose deaths occurring in Pima County in 2019 and compare 2019 trends to historical data. Trends are examined by demographics (i.e. age at time of death, sex, race/ethnicity, place of residence, etc.), manner of death, substances related to death, and place of occurrence of fatal overdose.

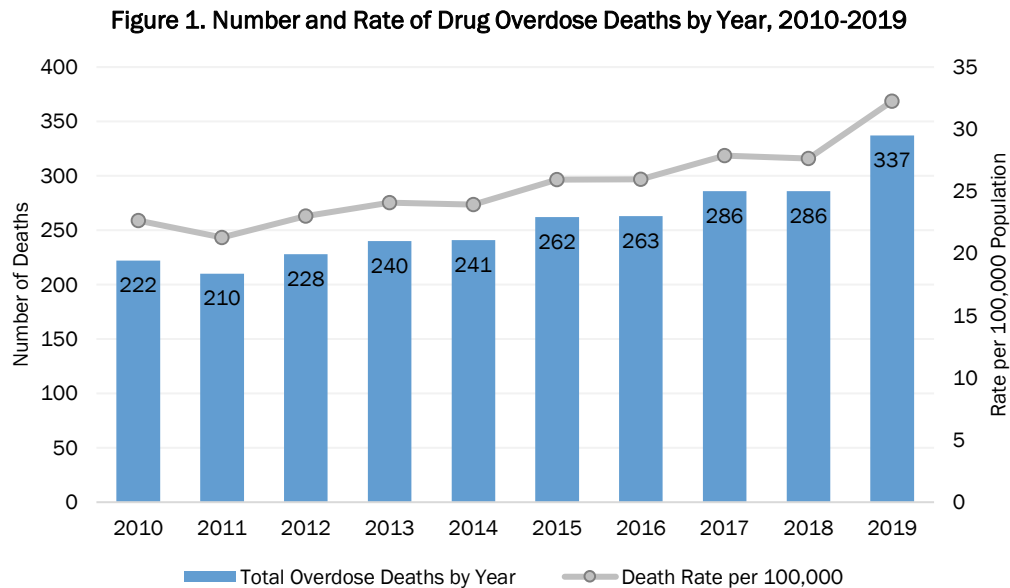
SOURCES OF DATA

Data sources in this report include information from the Pima County Office of the Medical Examiner, death certificate data, hospital discharge data (HDD), Pima County Adult Detention Center records, Arizona Department of Corrections, Rehabilitation, and Reentry records, and Arizona Department of Health Services Population Health and Vital Statistics.

OVERVIEW

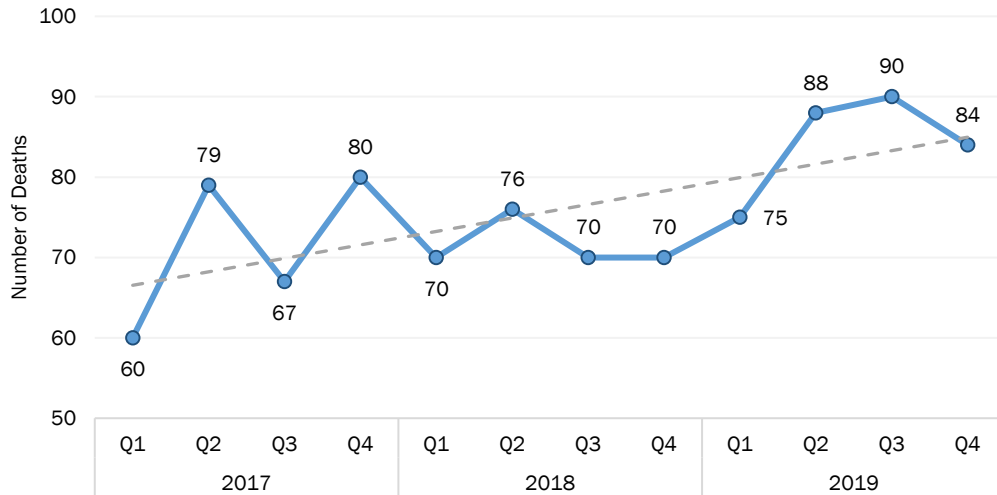
Pima County Overdose Deaths in 2019

Since 2011, drug overdose deaths in Pima County have continued to rise annually. In 2019, the number of drug overdose deaths reached an all-time high of 337 deaths (*figure 1*). This represents a 17.8% increase over the number of deaths in 2018 (286) and a 16.7% increase in the rate of drug overdose deaths from 2018 to 2019 (27.7 to 32.3 per 100,000).



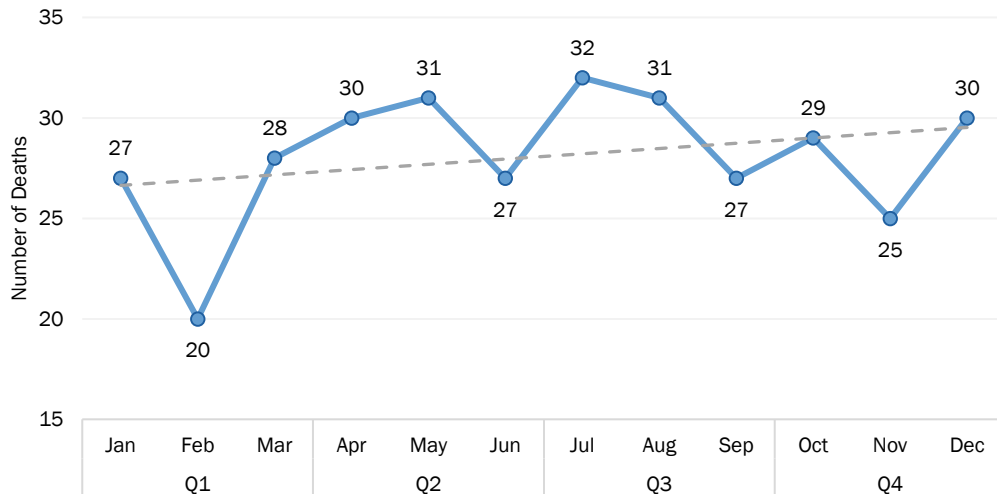
For the first three quarters of 2019, there was an increasing trend in overdose deaths (*figure 2*). The fourth quarter showed a slight decrease in deaths compared to the previous two quarters, but remained higher than any quarter in previous years.

Figure 2. Number of Drug Overdose Deaths by Quarter, 2017-2019



The average number of drug overdose deaths per month in 2019 was 28, or nearly one per day (*figure 3*).

Figure 3. Number of Drug Overdose Deaths by Month, 2019

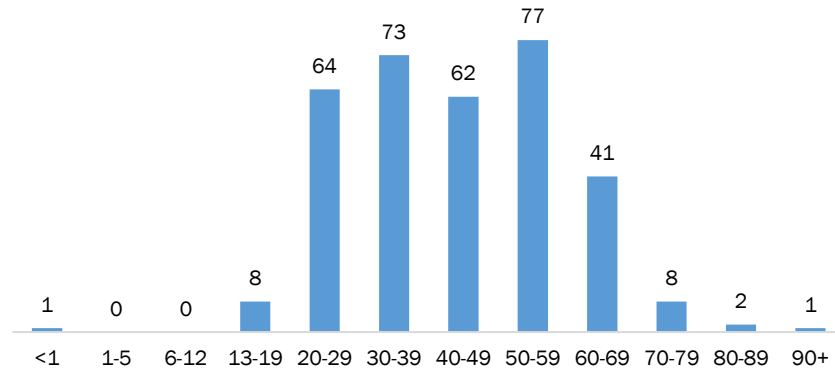


DECEDENT DEMOGRAPHICS, HOSPITAL UTILIZATION, AND INCARCERATION HISTORY

Age

The age range of decedents is from <1 to 90; the average age was 43. The majority (82%) of decedents ranged in age from 20-59 years.

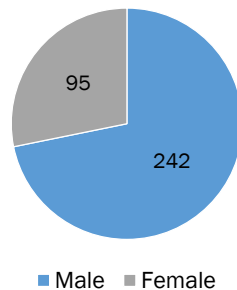
Figure 4. Decedents by Age Group



Sex

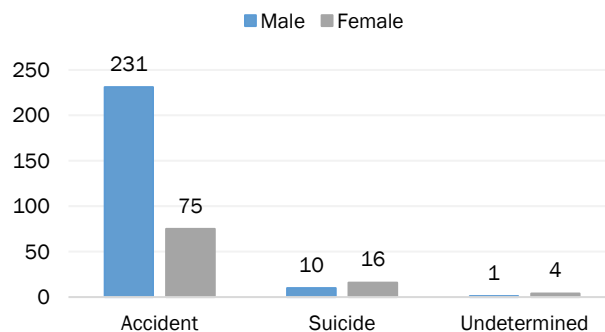
Drug overdoses differed by sex, with more males dying from a drug overdose than females (figure 5). Males made up 72% of all overdose deaths in 2019 compared to females (28%).

Figure 5. Drug Overdose Deaths by Sex



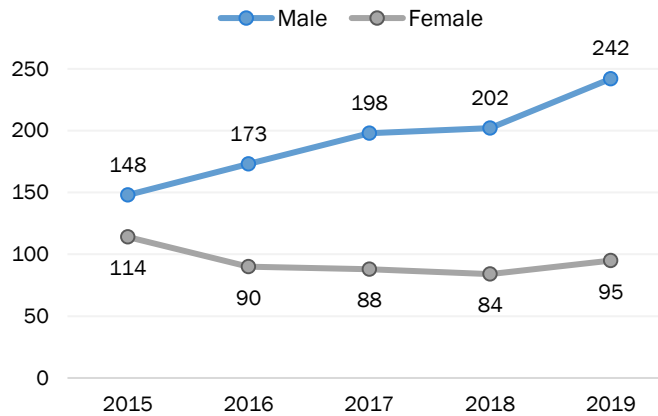
This pattern differed by manner of death (figure 6). Accidental overdose deaths were predominantly male (75%) whereas suicide overdose deaths were predominantly female (62%).

Figure 6. Overdose Deaths by Manner and Sex



Since 2015, the number of males dying from a drug overdose has continued to increase each year (figure 7). Between 2018 and 2019, there was a 20% increase in males dying from a drug overdose, the highest percent change in four years. Oppositely, females dying from a drug overdose had decreased annually from 2015 to 2018, and only showed a positive percent change between 2018 and 2019 (13%).

**Figure 7. Drug Overdose Deaths by Sex
2015 - 2019**



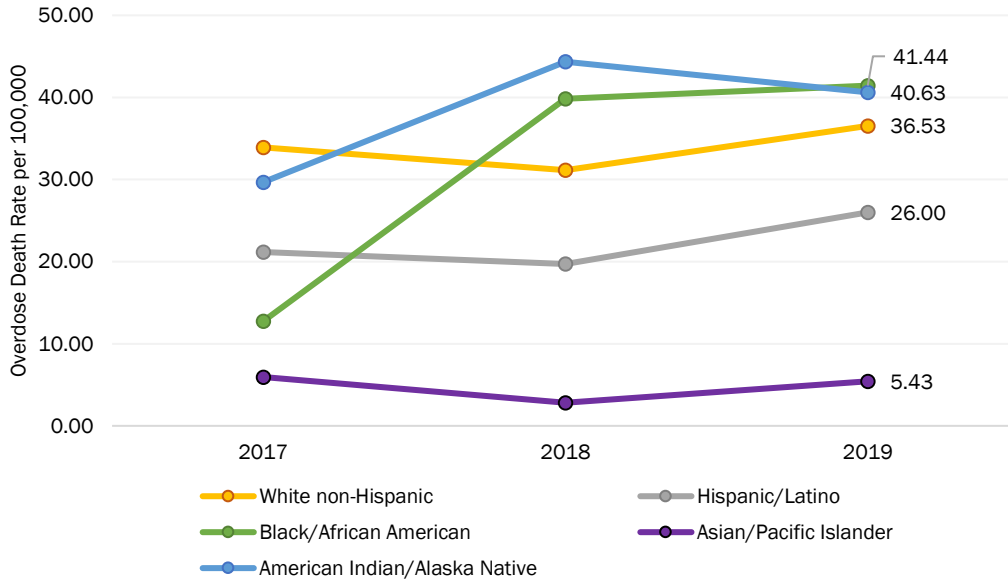
Race/Ethnicity

Racial disparities amongst overdose deaths in Pima County are difficult to illustrate given the extreme difference in population denominators. For example, Whites and Hispanics collectively make up 90% of the total population in Pima County compared to Black/African Americans, Asian/Pacific Islanders, and American Indian/Alaska Natives combining to represent 10% (Table 1 below). For this reason, the data can become misleading from a quantitative perspective. This review aims at contextualizing the data using a population-based rate to highlight disparities. Population statistics retrieved from ADHS Population Health and Vital Statistics (2020).

	Overdose Deaths	Population Size	Overdose Death Rate per 100,000 persons
White non-Hispanic	200	547,474	36.53
Hispanic/Latino	102	392,287	26.00
Black/African American	17	41,025	41.44
Asian/Pacific Islander	2	36,815	5.43
American Indian/Alaska Native	11	27,074	40.63
Unknown	5	0	
Total	337	1,044,675	32.26

From 2017 through 2019, race-specific overdose death rates have displayed the most dramatic changes for Black/African American and American Indian/Alaska Natives (44.35, *figure 8*). In 2019, Black/African Americans had the highest death rate (41.44), while making up 5.0% of overdose deaths and 3.9% of the population. American Indian/Alaska Natives had the second highest death rate (40.63) while representing 3.3% of overdose deaths and 2.6% of the population. Both groups have represented the highest race-specific overdose death rate in Pima County for the last two years, and Black/African Americans experienced a 225% increase from 2017 to 2019 (the largest of any group). Notably, smaller increases were also seen in Hispanic, Asian, and White overdose death rates from 2018 to 2019.

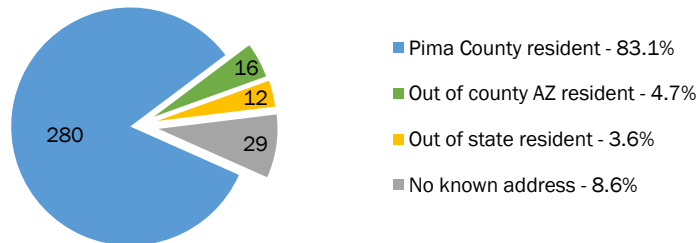
Figure 8. Race-specific Overdose Death Rates, 2017-2019



Place of Residence

Most decedents had a residential address in Pima County (83.1%); a small percent did not have a known residential address (8.6%) or were not residents of Pima County (8.3%).

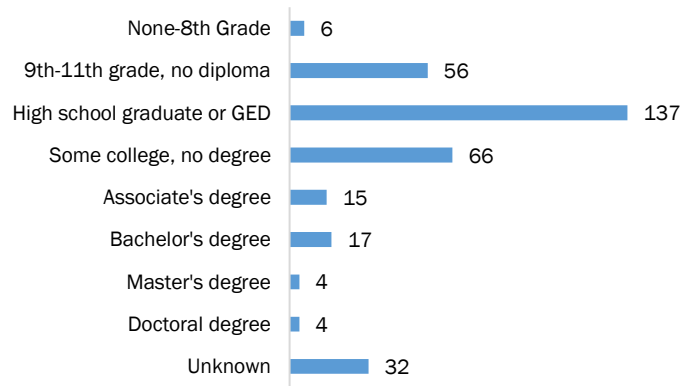
Figure 9. Decedent Residency



Education Level

Of those who died of a drug overdose in 2019, the majority were individuals without college education. 59% had a high school diploma or less, 20% had some college, 12% had an Associate's degree or higher, and 9% of decedents' education level was unknown.

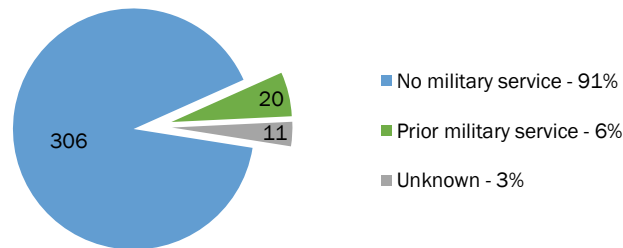
Figure 10. Decedents' Educational Attainment



Veteran Status

Of the 337 drug overdose deaths in 2019, few decedents had prior military service (6%); the majority of decedents (91%) did not have any prior military service.

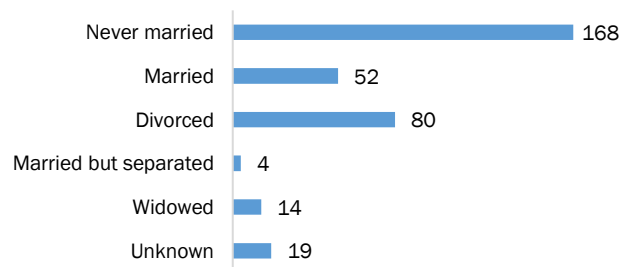
Figure 11. Decedents' Veteran Status



Marital Status

Half of decedents were never married, 24% were divorced, 15% were married, and the remaining 11% had an unknown marital status, were widowed, or were married but separated.

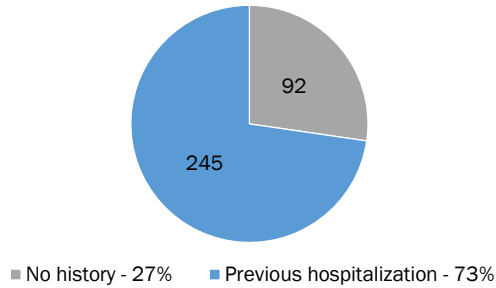
Figure 12. Decedents' Marital Status



Hospital Utilization

The following data represents hospital and emergency department utilization in Pima County facilities licensed by the Arizona Department of Health Services. Data excludes inpatient subacute facilities (non-hospital), hospital, and ED encounters that occurred in another county (e.g. Pima County resident admit to a Maricopa facility). Hospitalizations include any one or more visit from January 2018 to a decedent’s date of death. Hospital/ED visits are from any cause and are not specifically drug-related. The majority of decedents had a history of at least one previous hospitalization (73%).

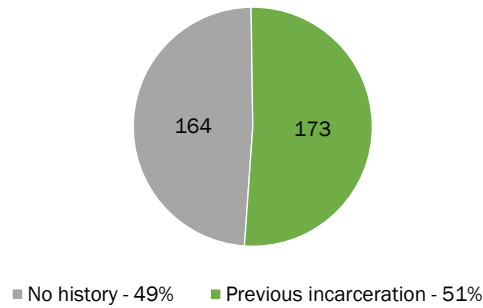
Figure 13. History of Previous Hospitalizations



Incarceration History

Half of decedents (51%) had been detained in either the Pima County Adult Detention Center (PCADC) or Arizona Department of Corrections (ADC) at least once (*figure 14*). Nearly a quarter of decedents served at least one prison term in ADC and 47% of those prison incarcerations were for a drug-related offense (*table 2*). These percentages are likely understated as the data does not include any federal facilities or out-of-county jails.

Figure 14. History of Previous Incarceration PCADC and ADC



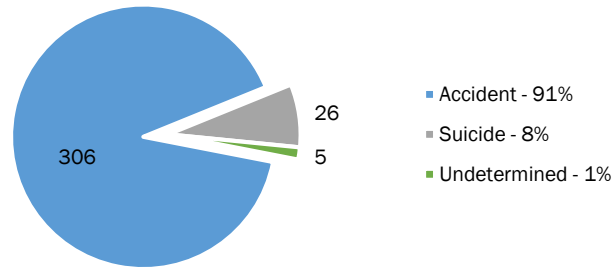
	Total	Percent
Previous prison incarceration (ADC)	81	24%
No history of prison incarceration	256	76%
Drug-related prison offense	38	47%
Non-drug related prison offense	43	53%

FATAL OVERDOSE DATA

Manner of Death

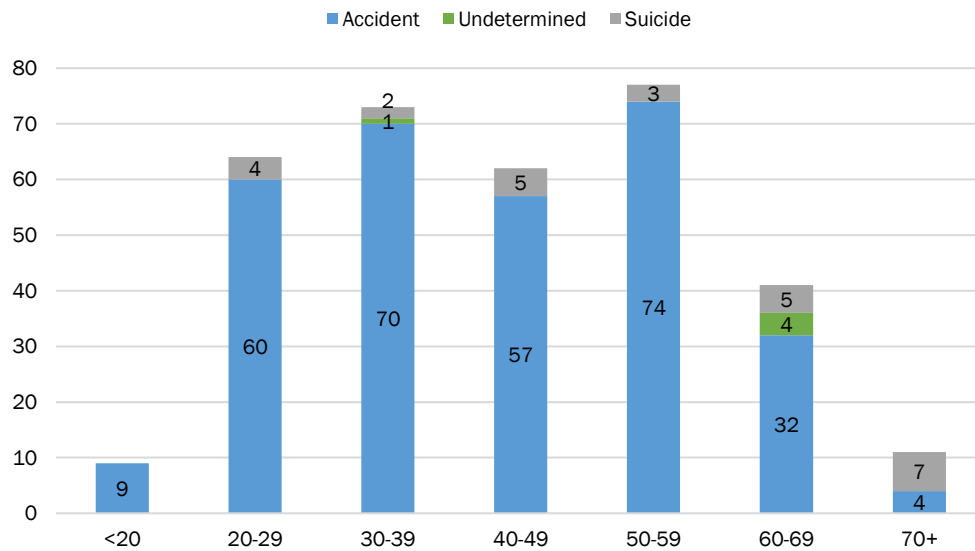
Most of overdose deaths were accidental (91%) (*figure 15*), but this differed by age group as seen in *figure 16*.

Figure 15. Overdose Deaths by Manner



In decedents aged 70 and older, suicides accounted for 64% of overdose deaths (*figure 16*). For each age group within 20 to 69 year olds, suicides accounted for 12% or less of overdose deaths. All overdoses in decedents under the age of 20 were accidental.

Figure 16. Overdose Deaths by Manner and Age Group



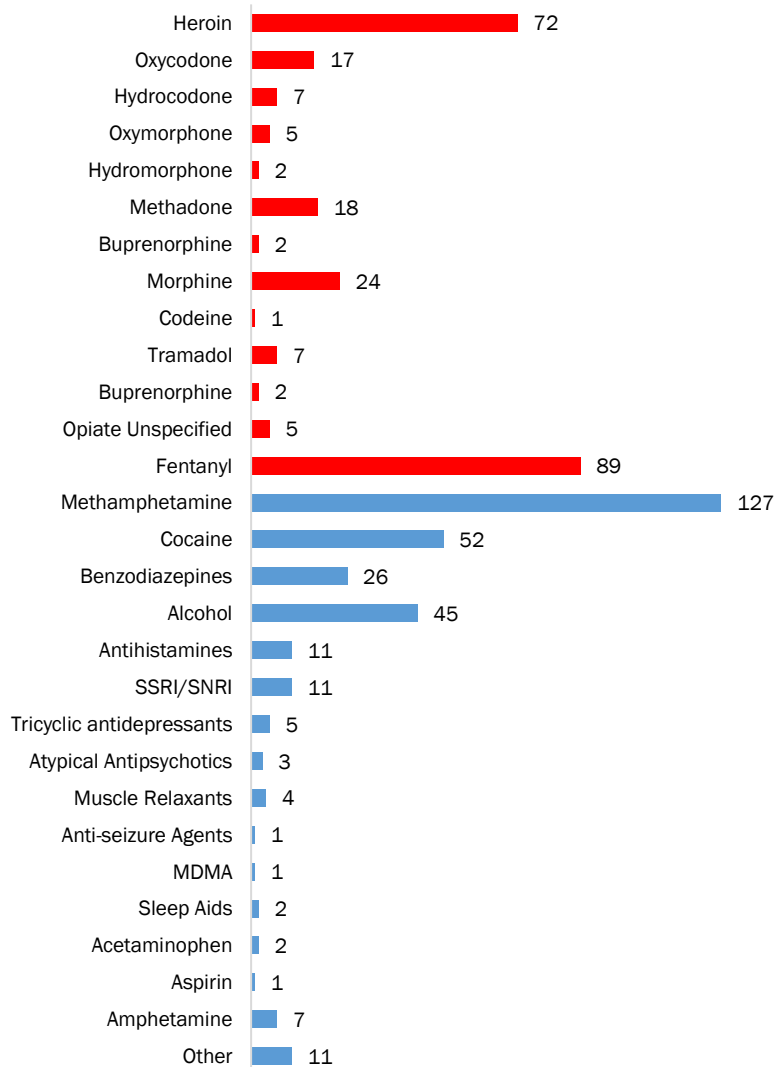
Drug Type

Methamphetamine continues to be the most frequently found substance in overdose deaths, contributing to 37.7% of all 2019 overdoses, followed by fentanyl (26.4%), heroin (21.4%), cocaine (15.4%), and alcohol (13.4%) (figure 17). Of note, patterns of drug type contributing to death differed by manner of death and age group; this is detailed further in the following sections.

With regard to heroin deaths, it's important to note that the Pima County Office of the Medical Examiner (2020) states, "the number of heroin deaths is likely underreported as heroin is rapidly metabolized to morphine by the body and if the metabolite indicative for heroin (6-monoacetylmorphine) is not present on the toxicology report these deaths may be classified as either morphine intoxication (morphine) or opiate intoxication (opiate unspecified)" (pg.57).

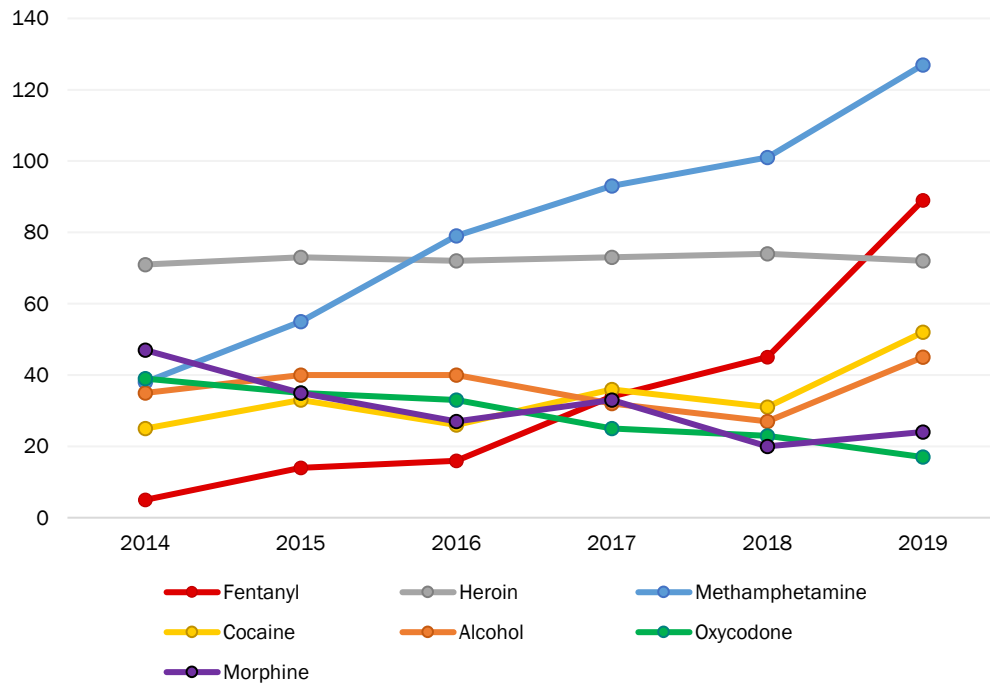
An overdose death may involve more than one substance, therefore counts of deaths related to specific substances do not sum to the total number of deaths for the year.

Figure 17. Pima County Drug Overdose Deaths by Drug Prevalence, 2019
Opiate compounds are red



Over the past several years, prescription drug deaths have largely been replaced by deaths attributed to illicit narcotics and stimulants (*figure 18*). From 2014 to 2019, methamphetamine and fentanyl-related overdose deaths have increased annually and showed the greatest percent increase over this five year span (234% and 1680%, respectively). In the past year alone, there has been a 26% increase in methamphetamine deaths and 98% increase in fentanyl deaths.

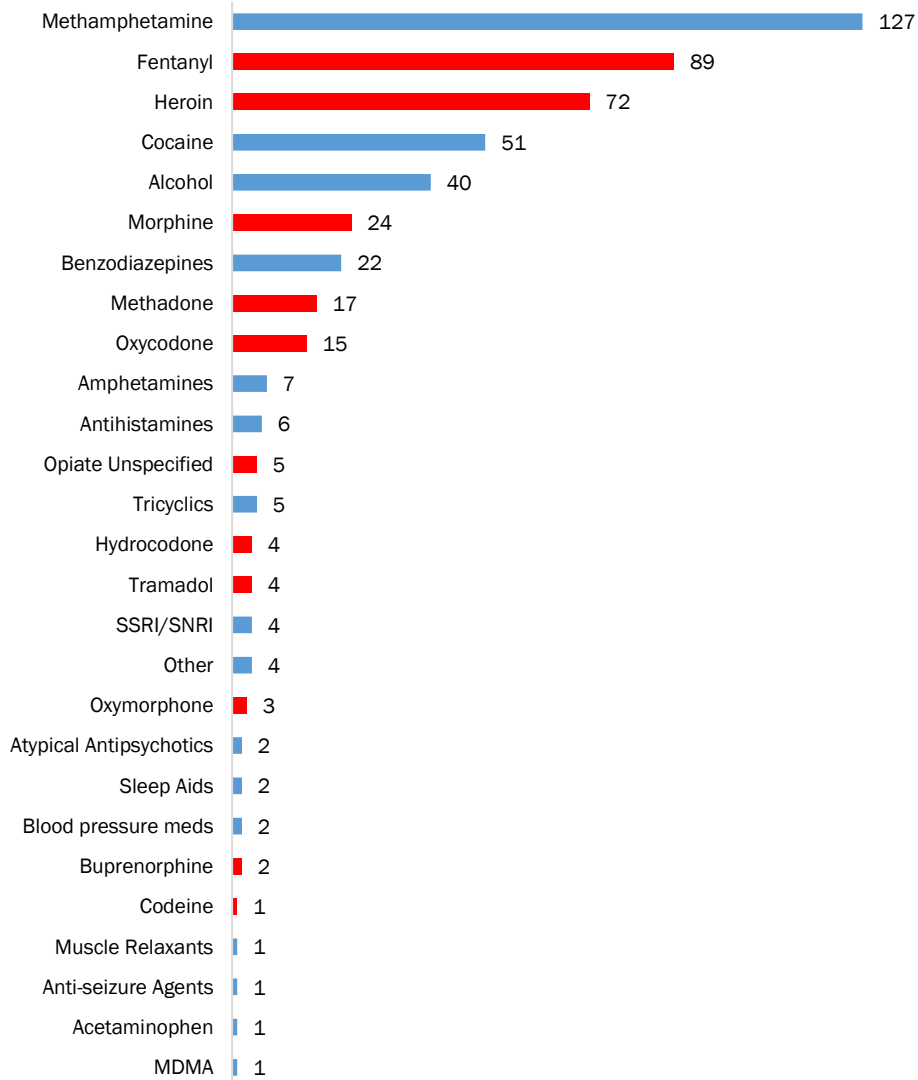
Figure 18. Overdose Deaths by Most Prevalent Drugs, 2014 - 2019



Drug Type by Manner of Death – Accidental/Undetermined Drug Overdose Deaths

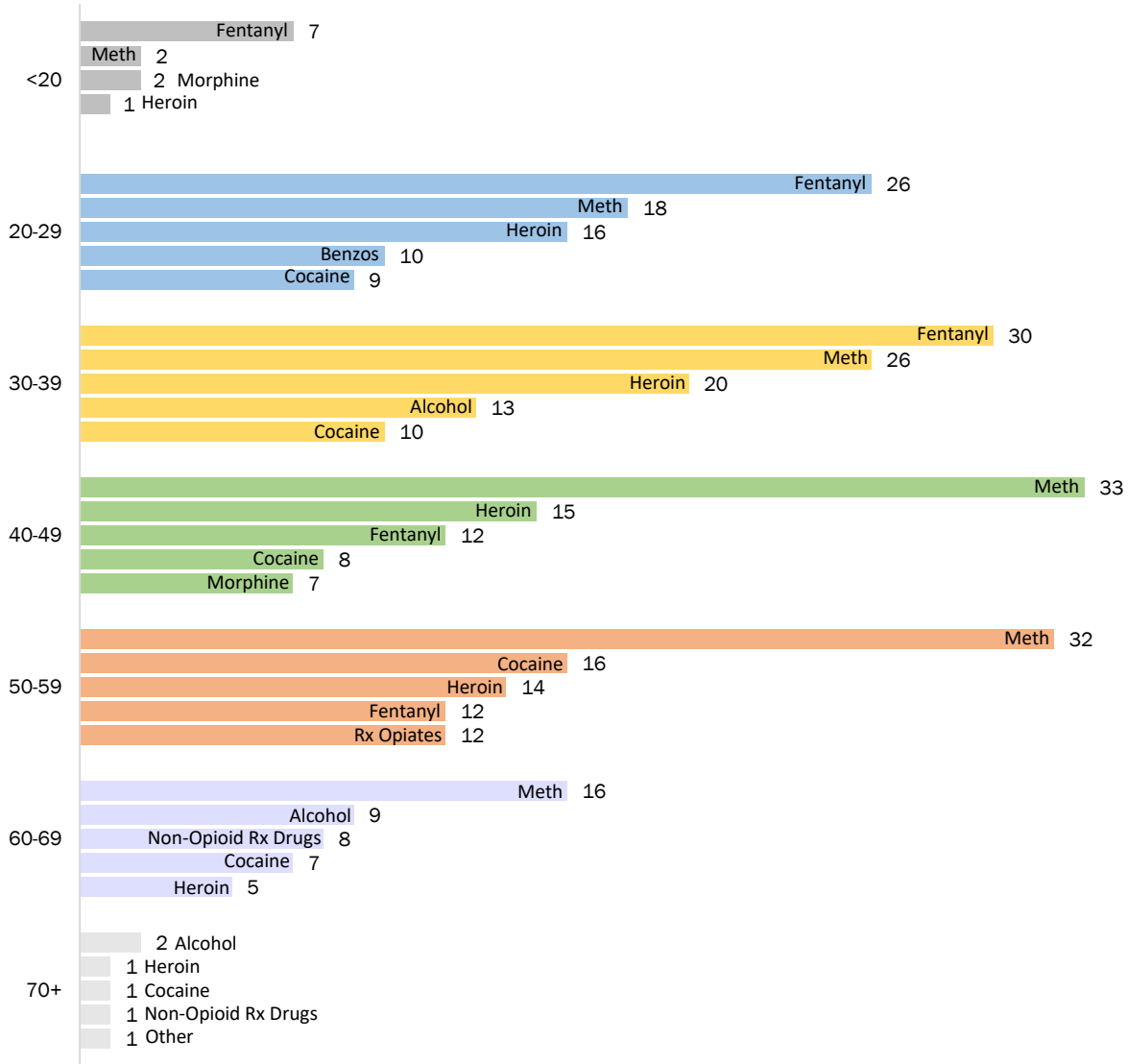
Out of 311 accidental/undetermined overdose deaths in 2019, methamphetamine was the most frequently found substance, followed by fentanyl, heroin, cocaine, and alcohol, but this pattern differed by age.

Figure 19. Accidental and Undetermined Drug Overdose Deaths by Drug Prevalence
Opiate compounds are red



The drugs most frequently contributing to death differed by age group. The graph below (figure 20) illustrates the top five drugs contributing to accidental/undetermined overdose deaths per age group. Only four substances contributed to overdose deaths in decedents under 20. In decedents under 40, fentanyl was the most common, followed by methamphetamine, while methamphetamine was most prevalent in decedents aged 40-69.

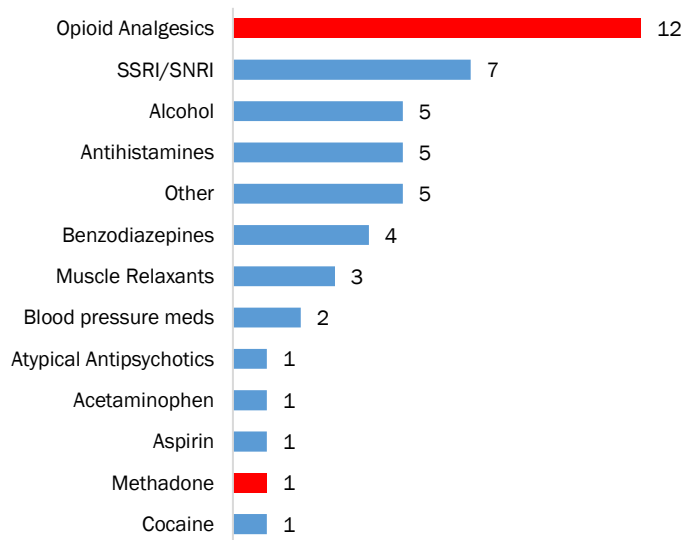
Figure 20. Top 5 Drugs Contributing to Accidental and Undetermined Overdose Deaths Sorted by Age



Drug Type by Manner of Death: Suicide Drug Overdose Deaths

Of the 26 intentional drug overdoses in 2019, the most frequent drugs listed as a cause of death included opioid analgesics (i.e. oxycodone, hydrocodone, oxymorphone, hydromorphone, and/or tramadol), followed by SSRI/SNRIs, alcohol, and antihistamines. Notably, of all the suicides that involved opioid analgesics, 78% of the decedents were over the age of 60.

Figure 21. Suicide Overdose Deaths by Drug Prevalence
Opiate compounds are red



Single versus Combined Drug Deaths

Of the 337 overdose deaths in 2019, 174 of them involved a single drug (52%) and 163 included a combination of two or more drugs (48%). This pattern did not significantly differ by sex, race/ethnicity, or manner of death. Overdose deaths specifically involving the top four illicit drugs (methamphetamine, fentanyl, heroin, and cocaine) also frequently involved various drug combinations. Below is a look at drug deaths involving the most frequent drug combinations that resulted in death (figure 22 – 29).

Figure 22. Methamphetamine-related deaths

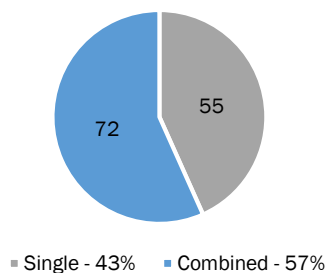


Figure 23. Frequent Methamphetamine Drug Combinations

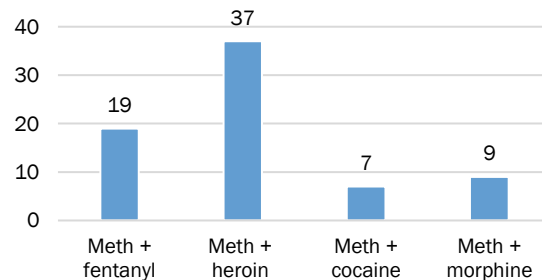


Figure 24. Fentanyl-related deaths

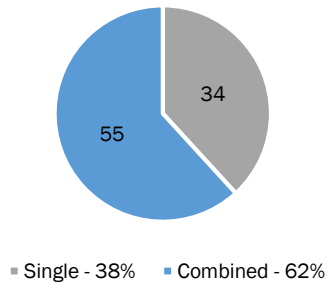


Figure 25. Frequent Fentanyl Drug Combinations

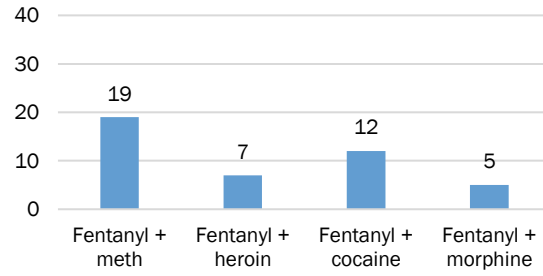


Figure 26. Heroin-related deaths

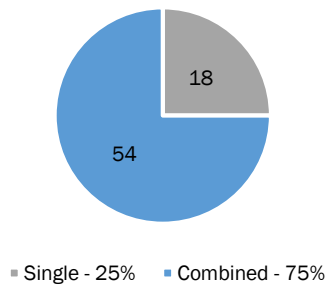


Figure 27. Frequent Heroin Drug Combinations

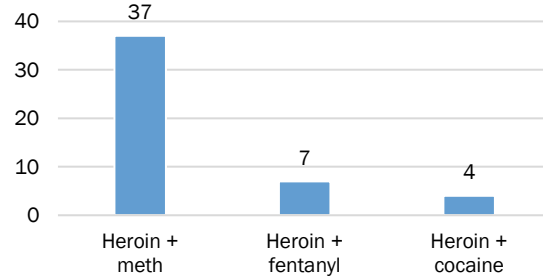


Figure 28. Cocaine-related deaths

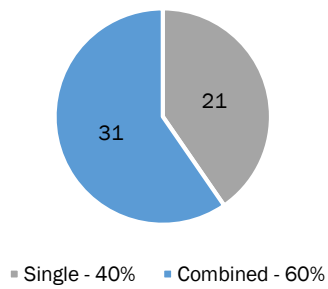
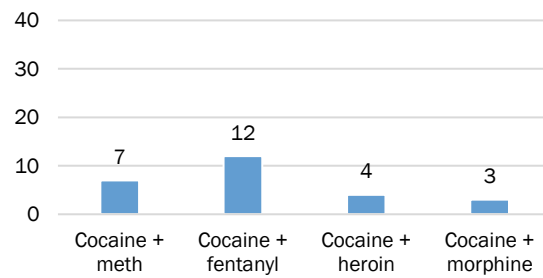


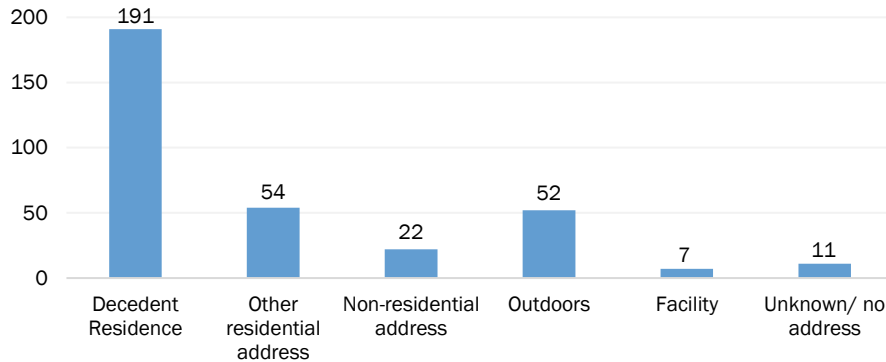
Figure 29. Frequent Cocaine Drug Combinations



Injury Location

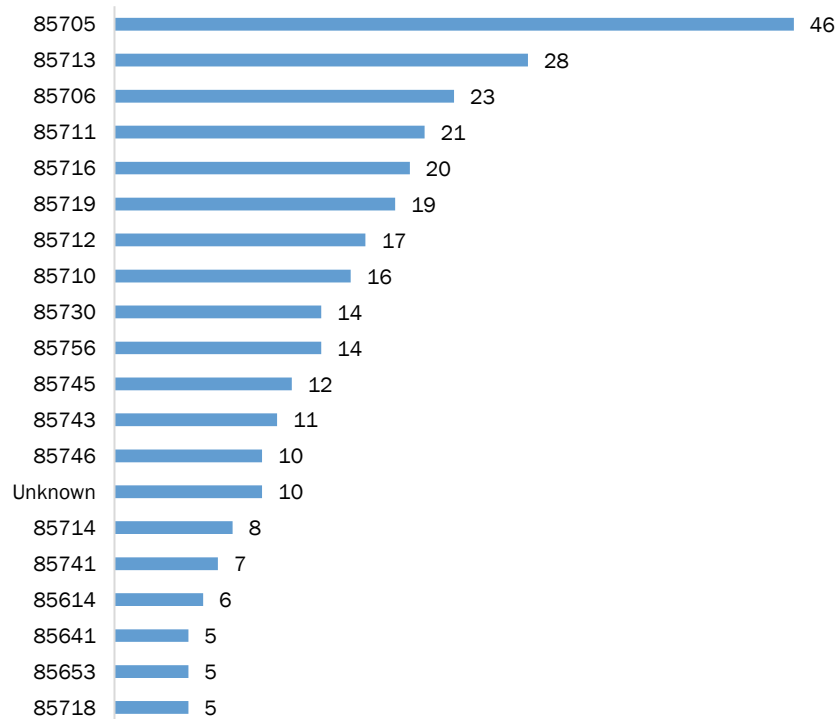
Injury location is the location where a fatal overdose occurred. The graph below illustrates the frequency of overdose deaths occurring in a residence versus other non-residence locations. Non-residential addresses include hotels/motels, office buildings, grocery stores, and commercial areas or businesses. Facilities include adult care facilities, hospitals, jails, and prisons. Similar to statewide trends, the majority of our local overdose deaths occurred at the decedent's residence (57%).

Figure 30. Total Overdose Deaths by Injury Location Description



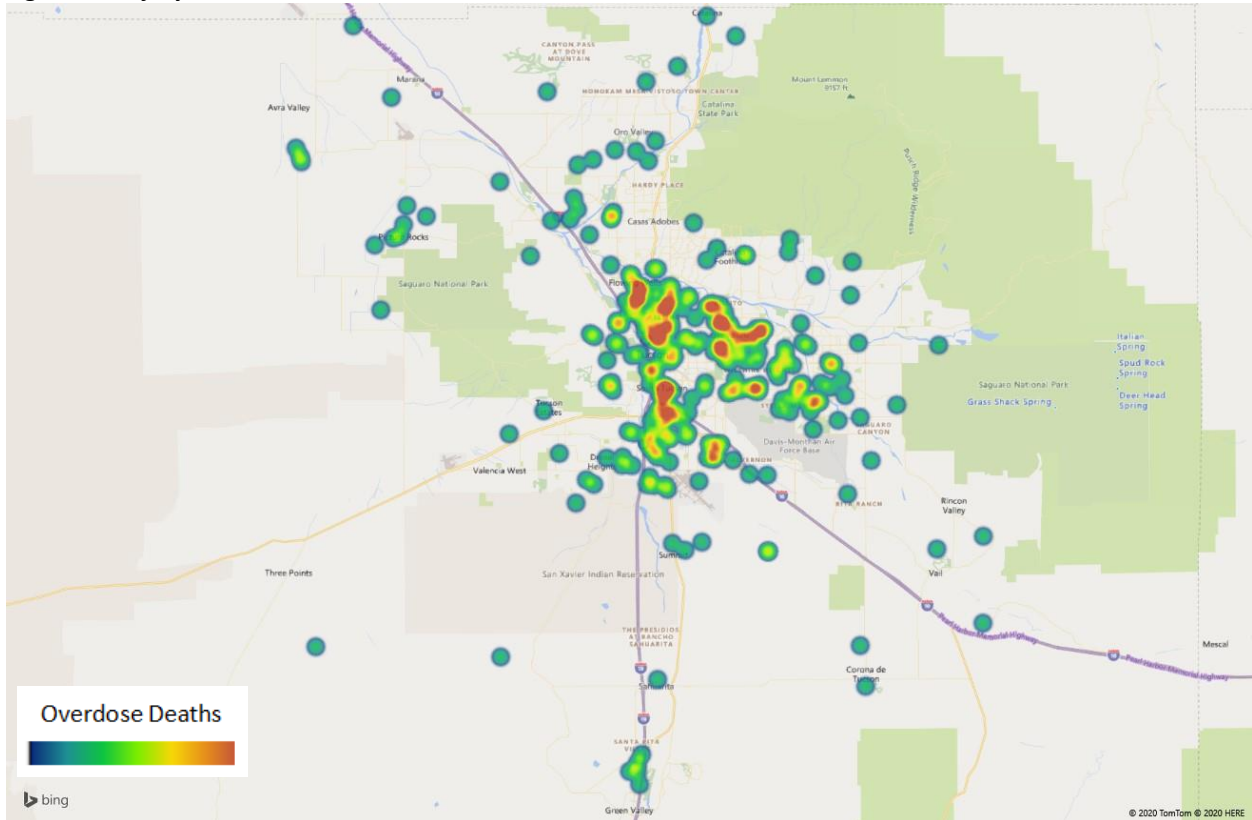
Overdose concentrations by zip code are in *figure 31* below. Data is not inclusive of all overdose fatalities and excludes zip codes with less than five overdose deaths in 2019. The 85705 zip code had the highest number of overdose fatalities (46), representing 14% of all overdose deaths in Pima County in 2019. Note: injury location zip codes are not representative of decedents' residential zip codes.

Figure 31. Total Overdose Deaths by Injury Location Zip Code



The heat map pictured below (figure 32) contains concentrations of 2019 overdose deaths in Pima County by injury location. The largest concentrations are in central and south Tucson, particularly in areas within a mile east or west of I-10 and I-19.

Figure 32. Injury Locations of 2019 Overdose Deaths



REFERENCE LIST

Arizona Department of Health Services (2020). *Population by Five-Year Age Groups, County, Gender, and Race/Ethnicity, Arizona, 2019*. <https://pub.azdhs.gov/health-stats/menu/info/pop/index.php>

Pima County Office of the Medical Examiner (2020). *Pima County Office of the Medical Examiner Annual Report 2019*. https://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Medical%20Examiner/Resources/Annual-Report-2019.pdf