# Overdose Data to Action (OD2A)
# Overdose Surveillance Annual Report
# Palm Beach County, FL, 2022

Florida HEALTH

Palm Beach County

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Centers for Disease Control and Prevention
Grant No. CDC-RFA-CE19-1904

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**Suggested Citation:**
Van Arsdale W, Barajas S, Salmo V, Joseph A, Bring S. (2023). Overdose Data to Action Overdose Surveillance Annual Report – Palm Beach County, FL, 2022. Florida Department of Health Palm Beach County, 2023 Aug 31.

## About OD2A

Overdose Data to Action (OD2A) is a multi-year cooperative agreement with the Centers for Disease Control and Prevention (CDC) that began in 2019 to fund overdose surveillance and prevention programs across the U.S. and its territories, Puerto Rico and the Commonwealth of the Northern Mariana Islands. The Florida Department of Health in Palm Beach County (DOH-PBC) is one of 66 projects at state, territorial, county, and city health departments. The grant supports our department in collecting overdose surveillance data and using these data to guide community prevention, response, and recovery.

Overdose surveillance is conducted by (DOH-PBC). Local overdose surveillance data are used by our community partners to guide community prevention, response, and recovery. Community partners include Health Care District of Palm Beach County, Health Council of Southeast Florida, Lake Okeechobee Rural Health Network, Inc., Living Skills in Schools, Palm Beach County Behavioral Health Coalition, Palm Beach County Fire Rescue, Palm Beach County Medical Society, Palm Health Foundation, Rebel Recovery, T. Leroy Jefferson Medical Society, and Trinity Counseling Center. Partners cover the entire county and conduct outreach to people affected by overdoses and substance use disorder (SUD), deliver harm reduction services, guide people to treatment and recovery resources, and offer prevention education.

Our goal for the innovative overdose surveillance program is to collect data on fatal and non-fatal drug overdoses occurring in the county to increase the foundational knowledge of the overdose and substance use epidemic in Palm Beach County. This in turn will inform and impact our community partners by providing locally relevant data to support prevention activities. This collective action of the community, along with the local data to guide decision making, can put overdose data to action and drive real, sustainable change in the overdose epidemic.

The current funding for the OD2A program is set to end on August 31, 2023. In early 2023, the CDC announced two new 5-year cooperative agreement funding opportunities – one specifically designed for states and the other specifically for localities and territories. Future iterations of OD2A aim to reinforce the use of overdose surveillance data to drive efforts and guide policy, with specific emphasis on reducing health disparities and promoting health equity.

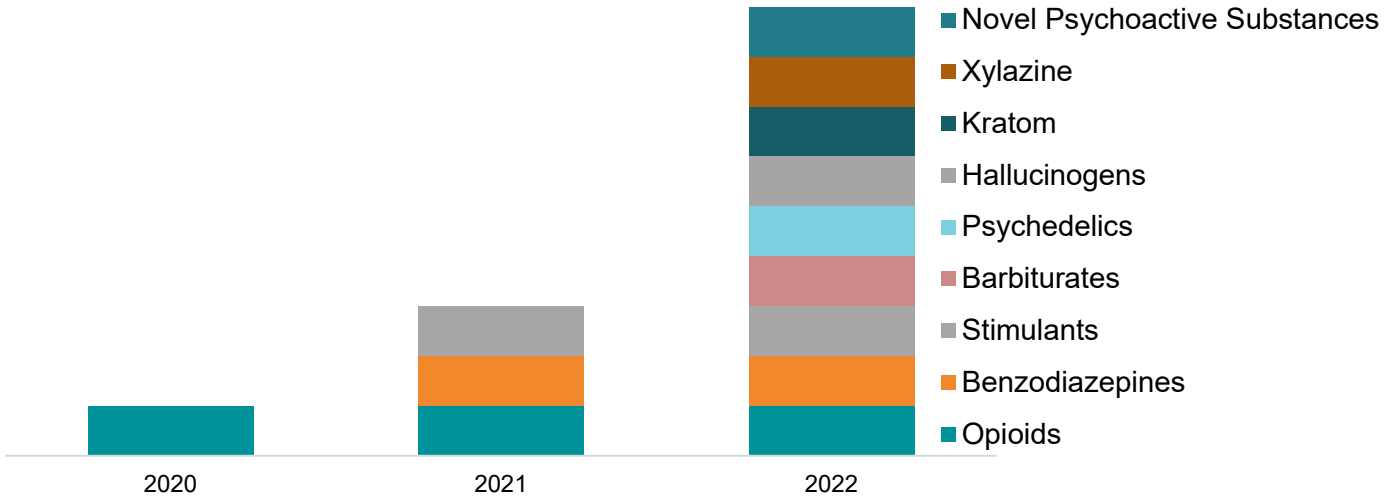
To learn more about OD2A, visit
OvercomeOverdosePBC.Com
Or scan the QR code.

# Updates to Overdose Surveillance Data Collection in 2022

The first wave of the overdose epidemic was due to prescribed medications, the second wave due to heroin, and the third wave due to synthetic opioids like fentanyl. The emerging fourth wave involves novel psychoactive substances like nitazenes, xylazine, and kratom, as well as polysubstance. Overdose surveillance serves as a proxy for tracking substance use disorders (SUD), which comprise a larger public health concern. People who experience these disorders may also use other substances that are rarely or ever documented as primary causes of death (COD) or as factors contributing to nonfatal overdoses. Such substances include nicotine and cannabinoids. Alcohol use, although known to cause or contribute to fatal and non-fatal overdoses, falls outside scope of our current tracking.

Inclusion criteria, as in previous years, expanded in 2022 to include additional substances. In 2020, our surveillance data only tracked overdoses that involved opioids. In 2021, surveillance data tracked expanded to also include overdoses involving benzodiazepines or stimulants. In 2022, surveillance data was again expanded to also track overdoses involving barbiturates, hallucinogens, kratom, psychedelics, xylazine, or novel psychoactive substances.

**Figure 1. Drugs Included in Overdose Surveillance Annual Report, 2020-2022**




## Future Overdose Surveillance Reporting

The next iterations of DOH-PBC overdose surveillance reports will again expand to include drugs such as muscle relaxers, anticonvulsants, and some over-the-counter drugs to align with emerging trends. Additionally, the new OD2A:Local funding awarded to DOH-PBC will provide infrastructure support to allow for the launch of a public-facing dashboard that may offer professionals and community members timely overdose surveillance data to guide prevention, outreach, and intervention. As a result, local leaders will have access to timely data to support informed decision-making and respond faster to early detection of emerging trends.

## Notes About Overdose Data

Syndromic surveillance is a public health system for detecting and monitoring a variety of different health events in real-time or near real-time. Surveillance system data is limited but can include information about the medical emergency as well as basic demographics like age, sex, or race. Two syndromic surveillance systems are used at DOH-PBC to monitor suspected overdose events in Palm Beach County, Biospatial and Early Notification of Community-Based Epidemics (ESSENCE-FL). Biospatial is a syndromic surveillance system that uses pre-hospital EMS data. This provides data such as incident location, scene details, or patient care narratives. ESSENCE-FL is a syndromic surveillance system that uses hospital emergency department (ED) data. This includes discharge diagnosis billing codes and patient outcome.

While syndromic surveillance allows for near-real-time reporting of suspected overdose events, it is limited in scope of information necessary for in-depth analyses. At DOH-PBC, our innovative approach to overdose surveillance is based on the whole-person perspective and social determinants of health. To accomplish this, DOH-PBC collects medical records for suspected overdoses from one of our partnering hospitals and integrated with multiple different data sources to provide deeper context to the overdose event and the people behind the statistics. This allows us to examine factors that impact a health and health outcomes such as medical history, socioecological factors, and the built environment.

The method of receiving overdose records varied by hospital. Hospital data is received either passively, where they send data to DOH-PBC at their discretion, or active, where specific records are requested by DOH-PBC. DOH-PBC may receive all suspected overdose records, some records, or none. This results in what is called a convenience sample, which means that the sample was obtained from the hospital data made available to DOH-PBC. Importantly, convenience samples introduce sampling bias; for example, people who live near hospitals that send us medical records are more likely to be included in our sample compared to those that live near hospitals that do not send records. It is not possible given this sampling method to determine how closely the sample reflects the larger population and are not generalizable. Still, elements of this report can provide valuable insight that may be helpful in overdose prevention and response plans.

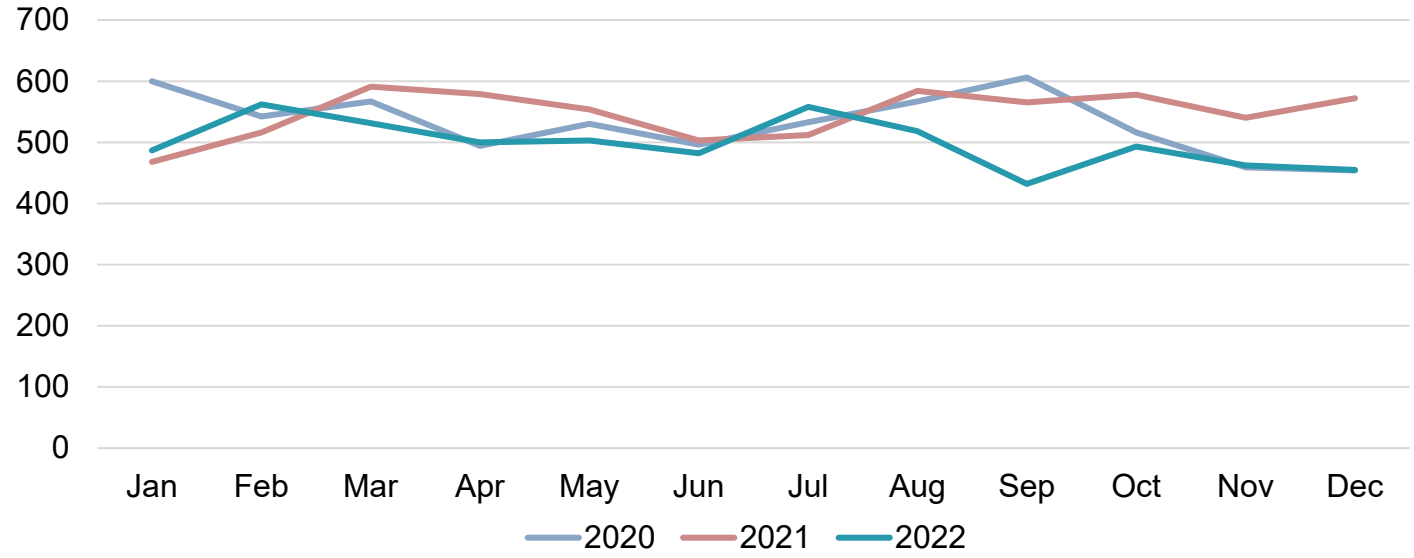
Use caution when interpreting results.

# 2022 Syndromic Surveillance for Suspected Overdoses

## Pre-Hospital EMS Events

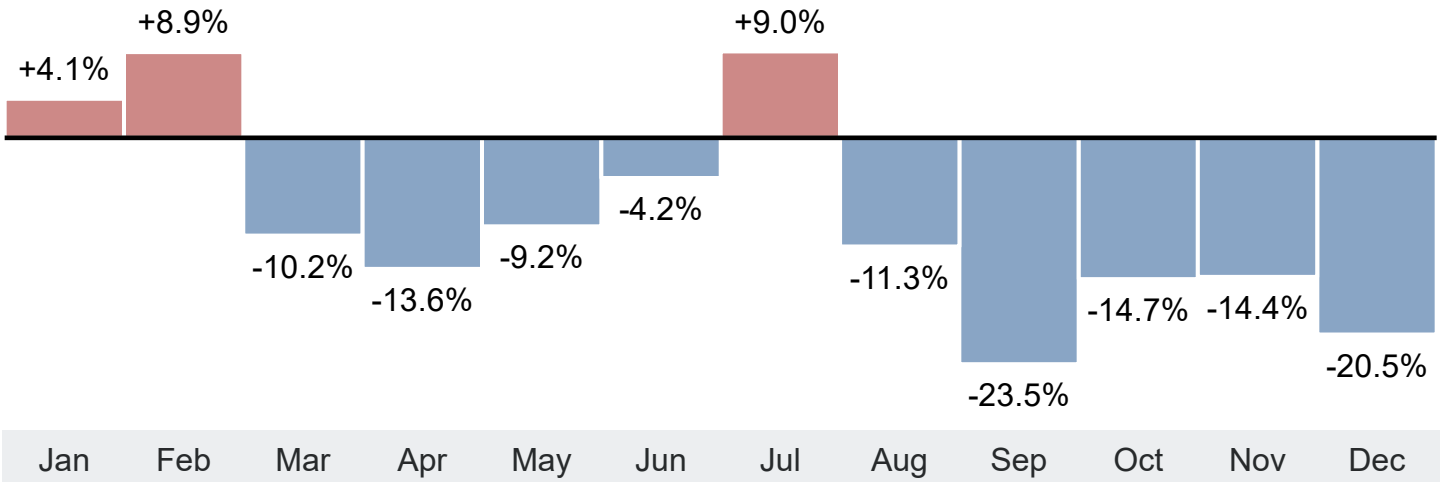
In 2022, EMS teams in Palm Beach County responded to an estimated 5,983 suspected overdose calls, an 8.8% decrease from 2021. EMS responded to an average of 498.6 overdoses per month or 16.4 per day. Calls to EMS peaked at 562 in February and were the lowest at 432 in September.

**Figure 2. EMS Calls for Suspected Drug Overdoses by Month, 2020-2022**



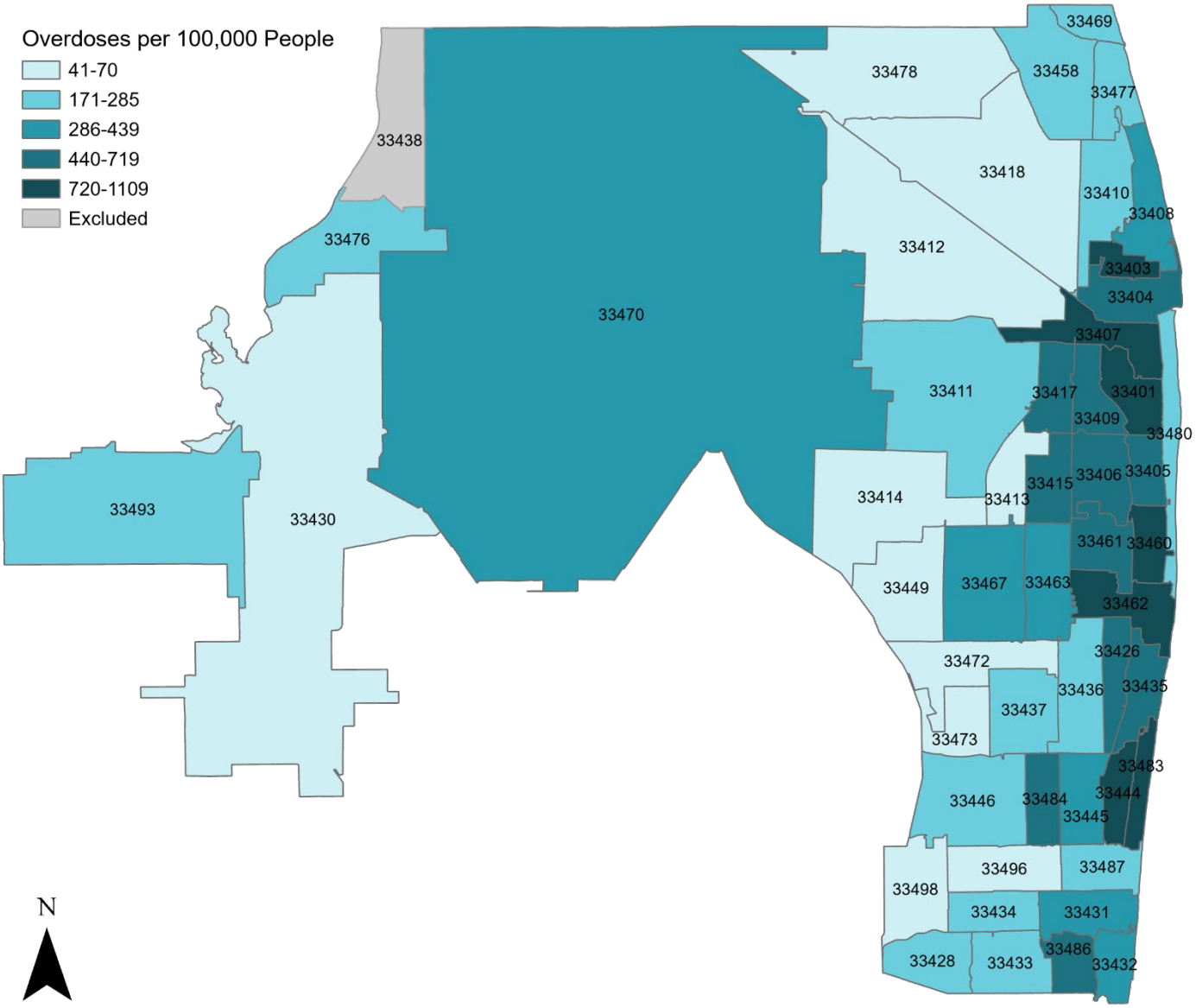

In 2022, January, February, and July recorded more EMS calls for suspected overdoses compared to the same time in 2021. September had the largest decrease in EMS calls, dropping 23.5% in 2022 compared to September 2021.

**Figure 3. Percent Change in Monthly EMS Calls for Suspected Drug Overdose Events, 2021-2022**



The map below shows the population-adjusted rate of EMS calls for suspected overdose per 100,000 people by ZIP Code in Palm Beach County. Map data are aggregated by ZIP Code using incident location addresses, not by patients' home addresses. People who use drugs may or may not engage in substance use in the areas where they reside. Eastern areas of Palm Beach County including West Palm Beach, Lake Worth, and Delray Beach had the highest rate of overdoses per 100,000 people.

**Figure 4. Population-Adjusted Rate of EMS Calls for Suspected Overdoses in Palm Beach County by Incident ZIP Code**

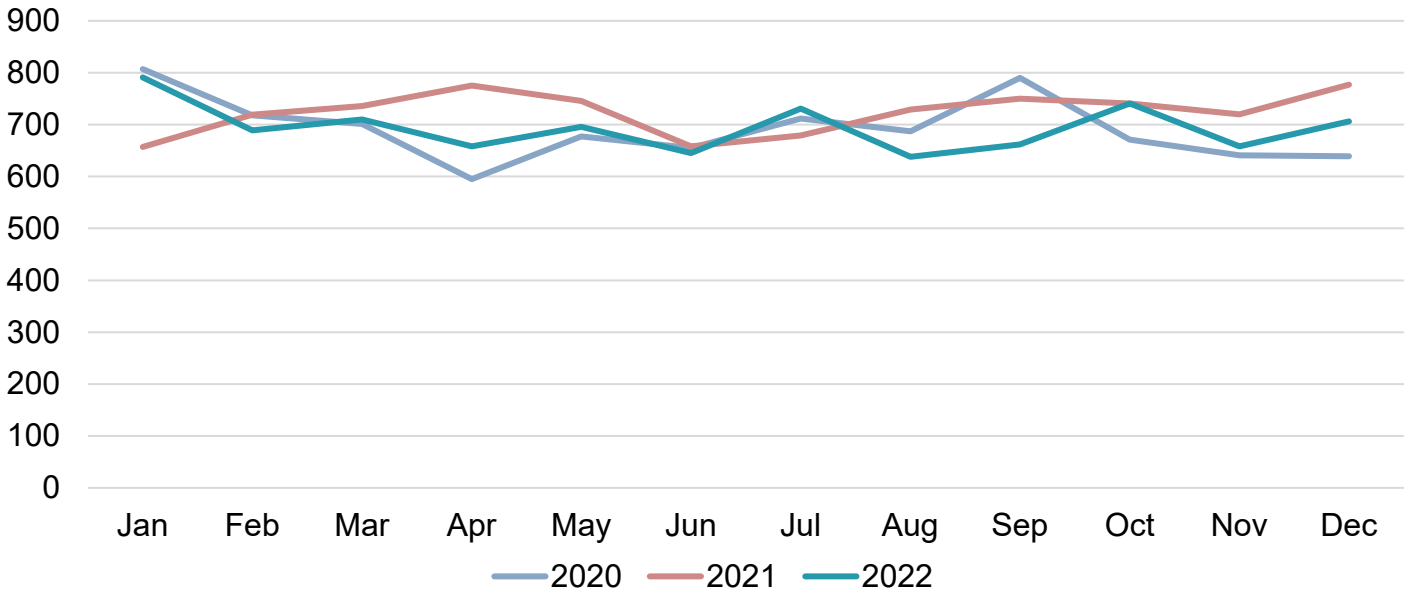



Notes: ZIP Codes with fewer than 5 events were excluded. Rates based on low counts are considered unstable. Rates were adjusted according to the 2020 U.S. Census population estimates.

## Hospital Emergency Department Visits

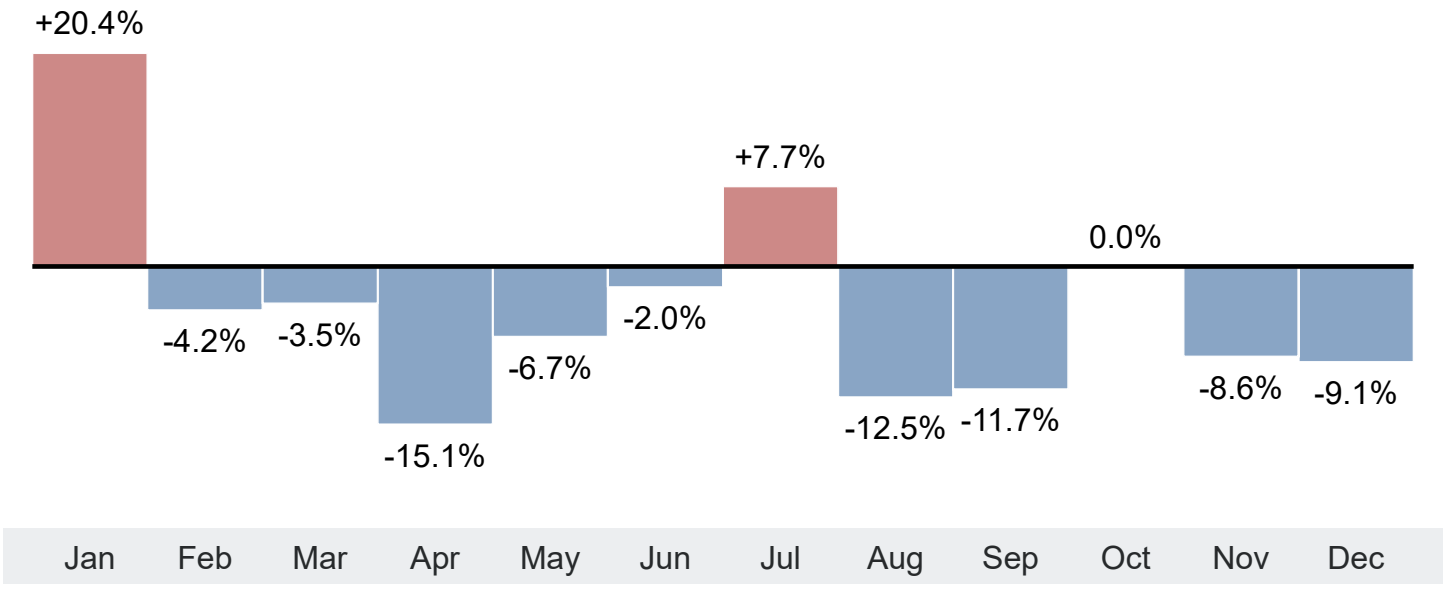
In 2022, suspected overdoses accounted for an estimated 8,325 ED visits in Palm Beach County, a 4.2% decrease from 2021. EDs treated an average of 693.8 overdoses per month or 22.8 per day. ED visits peaked at 791 in January and were the lowest at 638 in August.

**Figure 5. ED Visits for Suspected Drug Overdoses by Month, 2020–2022**



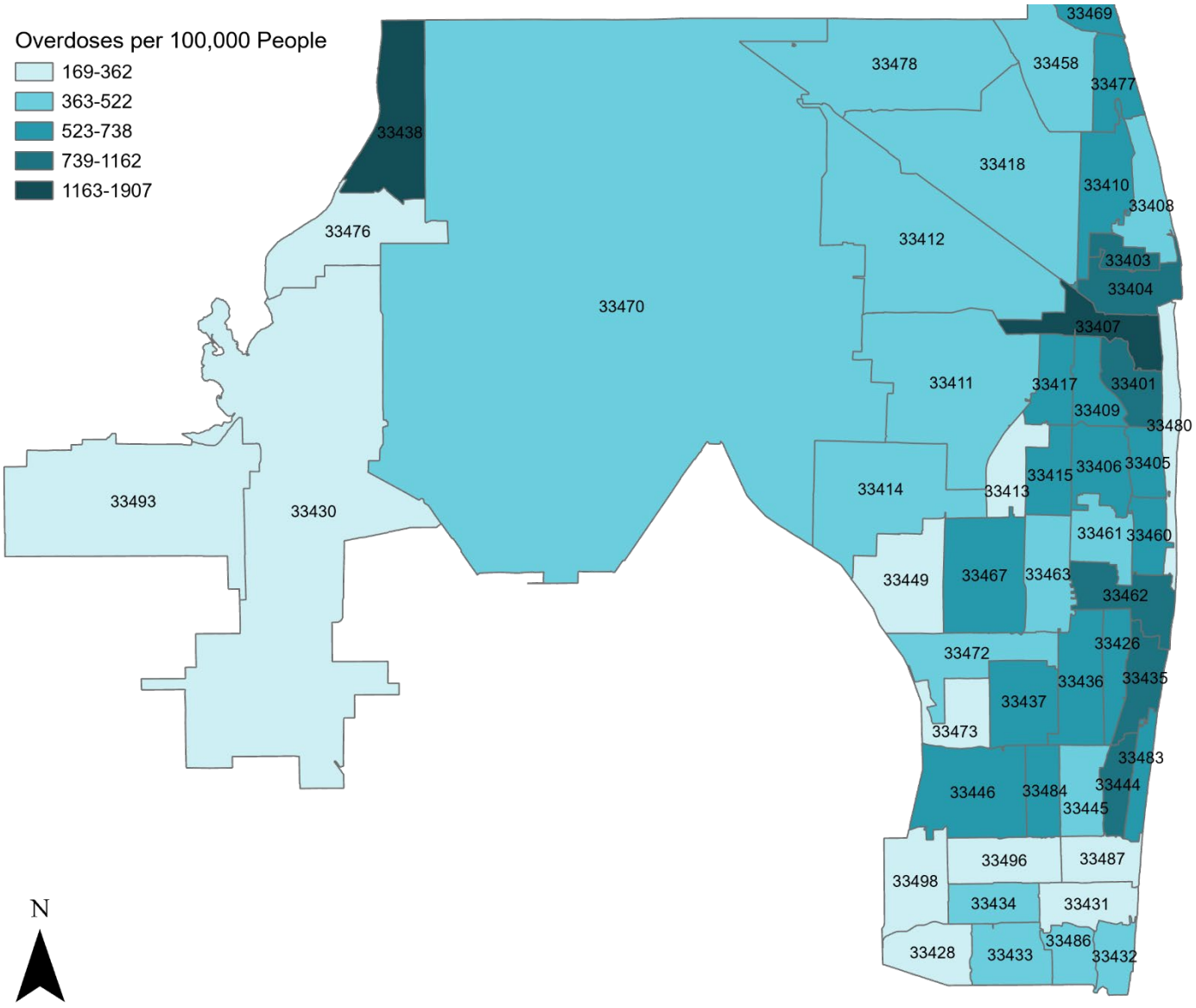

In 2022, January and July received more ED visits for suspected overdoses compared to the same time in 2021 with January recording a 20.4% increase in visits. April experienced the largest percent decrease with visits dropping 15.1% compared to April 2021.

**Figure 6. Percent Change in Monthly ED Visits for Suspected Drug Overdose Events, 2021-2022**



The map below shows the population-adjusted rate of ED visits for suspected overdose per 100,000 people by ZIP Code in Palm Beach County. Map data are aggregated by ZIP Code using patients' home addresses, not by incident location addresses. People who use drugs may or may not engage in substance use in the areas where they reside. Overdoses from patients whose home ZIP Code is outside of PBC are not included. Some county residents may have visited hospitals in adjacent counties, which affects the completeness of these data. Because individuals without a fixed home address may be assigned a ZIP Code of residence, incident rates in some areas may be underestimated. (Note: Because ZIP Code 33438 (Canal Point), has a population of just 367, overdoses there seem high.)

**Figure 7. Population-adjusted rate of emergency department (ED) visits for suspected drug overdose by patient home Zip code.**

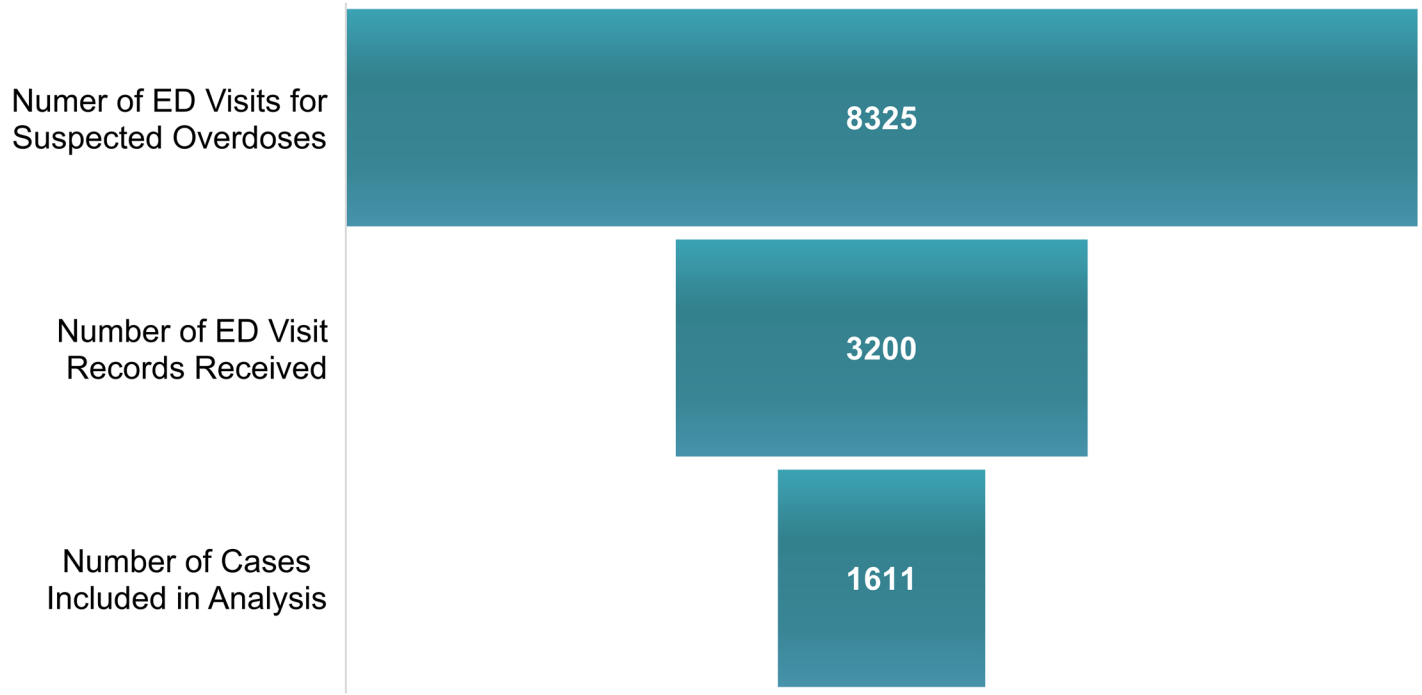



Note: Rates were adjusted according to the 2020 U.S. Census population estimates.

## 2022 Innovative Overdose Surveillance Results

In 2022, DOH-PBC reviewed approximately 3,200 hospital medical records for suspected drug overdoses. Not every hospital participated, and not every suspected overdose was included in this sample. Each case was thoroughly reviewed for signs and symptoms, discharge diagnoses, toxicology results, and the type of drug(s) involved. Some cases did not meet inclusion criteria, such as if the suspected drug was beyond OD2A 2022 surveillance (e.g., ibuprofen, antidepressants, alcohol). Suspected overdoses on these types of substances were included only if combined with at least one of the substances tracked by OD2A 2022 surveillance. Drugs included in 2022 surveillance are listed in **Figure 1**. Of those records reviewed, about half (number[n]=1611) met the criteria to be included in the sample of suspected non-fatal overdose.

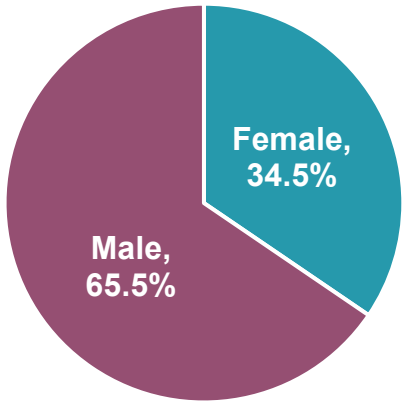
**Figure 8. Number of ED Visits Compared to Cases Meeting Inclusion Criteria for Analysis**



## Sample Characteristics

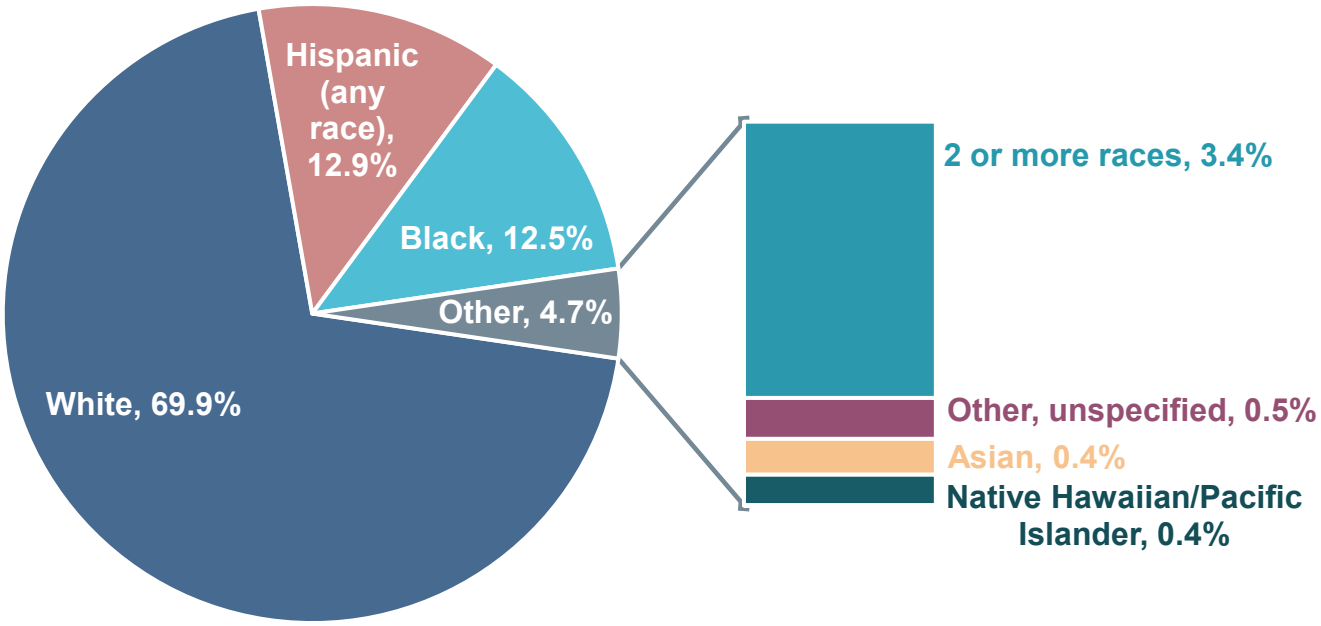
**Sex.** Of the 1,611 non-fatal overdoses cases included in the 2022 surveillance sample, 1,055 (65.5%) were among males and 556 (34.5%) were among females. This distribution is similar to that of prior years. Among females, 6 (1.1%) were pregnant at the time of overdose.

**Figure 9. Overdoses by Sex**




**Race/Ethnicity.** 1,126 (69.9%) of suspected non-fatal overdoses occurred among White non-Hispanic individuals. Overdoses among Hispanic individuals of any race accounted for 12.9% (n=208) of suspected non-fatal overdoses. Overdoses among Black non-Hispanic individuals accounted for 12.5% (n=202). Hispanic describes people who are of Hispanic or Latino origin, and of any race or combination of races. Race/ethnicity is recorded based on individual's self-identification. When a patient is unable to provide their own demographic information because of their medical condition, demographic information may be completed in the medical record on the patient's behalf by the health care professional. This can affect data accuracy. In addition, EMS and every hospital collect and report data differently, also affecting accuracy.

**Figure 10. Overdoses by Race and Ethnicity**

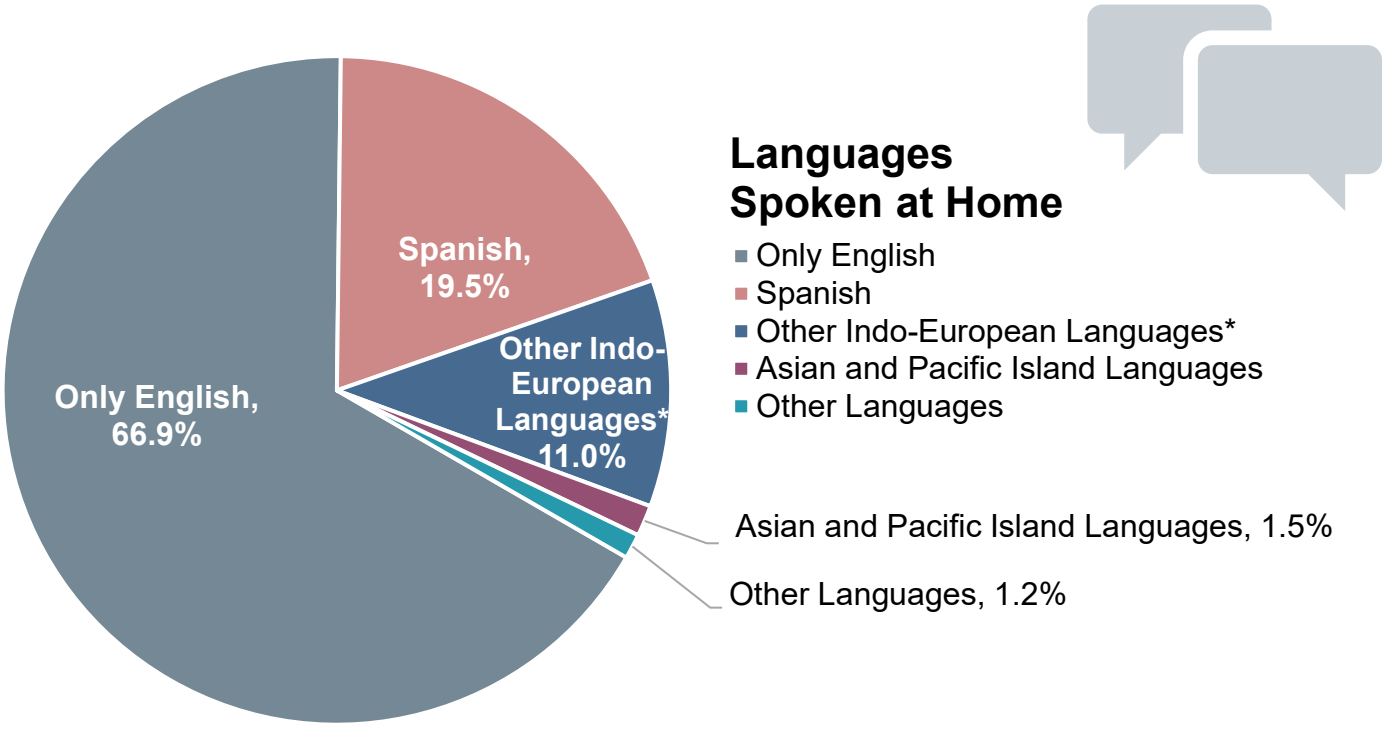


**Preferred Language.** In 2022, OD2A-PBC began collecting data on preferred language. 97% of patients listed English as their preferred language. Although 11.4% of patients identified as Hispanic (any race), and the U.S. Census Bureau estimates that 24.2% of the population in Palm Beach County is Hispanic or Latino[1], just 2.9% of patients listed Spanish as their preferred language.

While it is likely that some Hispanic individuals may only speak English or prefer it in all situations, other reasons may also account for the discrepancy. It is possible that an underreporting of preferred language is due to patients misunderstanding the question about preferred language as a question about English competency. It is also possible that some who are bilingual may prefer to converse with hospital staff in English, but prefer Spanish in other settings, such as home.

Practicing language-concordant care, including the use of trained interpreters when needed, can enhance patient experience and understanding, help reduce stigma, build trust between patients and providers, address social determinants of health, and improve health outcomes for people whose preferred language is other than English[2].

**Figure 11. American Community Survey (ACS) Languages Spoke at Home in Palm Beach County, Florida, 2021[1]**




Note: * Other Indo-European languages includes Haitian Creole

[1] U.S. Census Bureau. (2023, May 18). *QuickFacts: Palm Beach County*. Accessed on 2023 Aug 1 from https://www.census.gov/quickfacts/fact/table/palmbeachcountyflorida/PST045222

[2] Molina RL, Kasper J. (2019). The power of language-concordant care: a call to action for medical schools. *BMC Med Educ*.19(1):378. doi: 10.1186/s12909-019-1807-4.

**Age.** Ages ranged from 0 years to 97 years. The median age was 38 years, and the middle 50% of people were between 31 and 51 years. The average age was 42 years with a standard deviation of 16 years. Figures 12 and 13 show that the median age and average age of individuals experiencing non-fatal overdoses have increased from 2020 to 2022. Figure 14 compares proportion of overdoses to the proportion of the total population by age group. Most overdoses occurred among adults aged 25 to 44 years and are overrepresented in the sample comprised to their overall proportion in Palm Beach County.

**Figure 12. Boxplot of age values, 2020 - 2022**

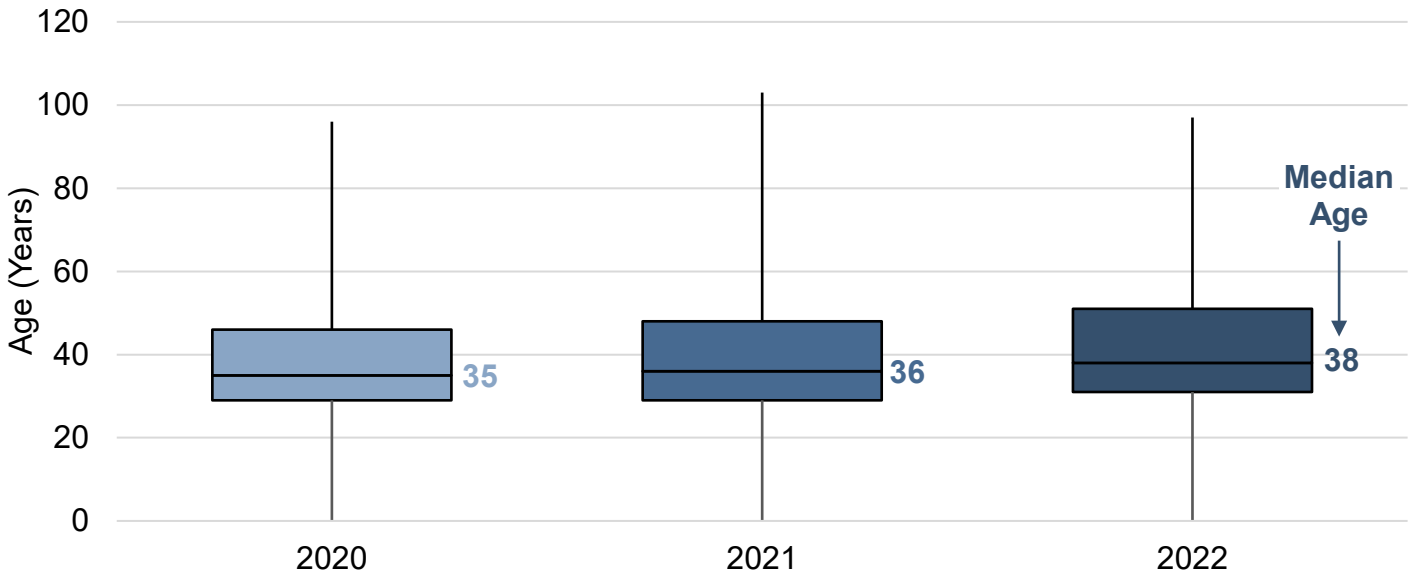



**Figure 13. Mean and standard deviations for age, 2020 - 2022**

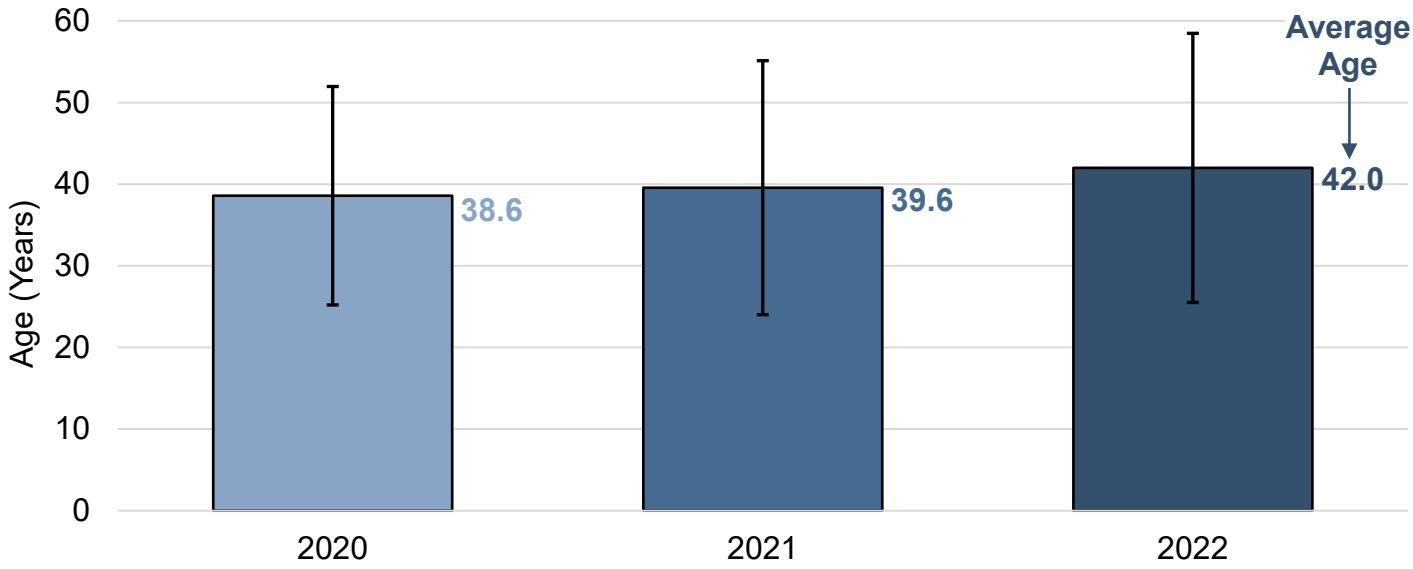
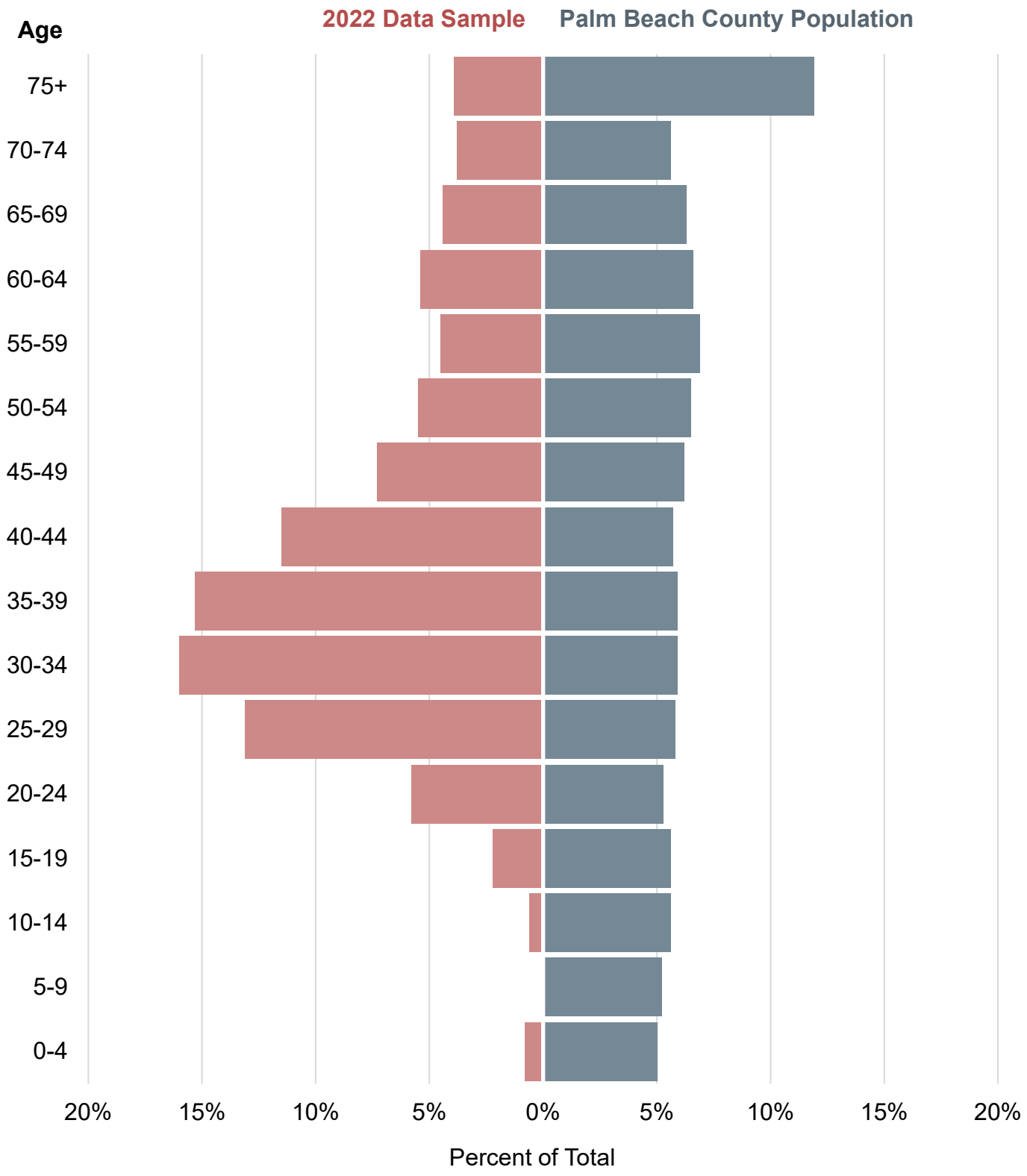


**Figure 14. Proportion of Age Groups in the 2022 Non-Fatal Overdose Sample Compared to the Total Population in Palm Beach County**

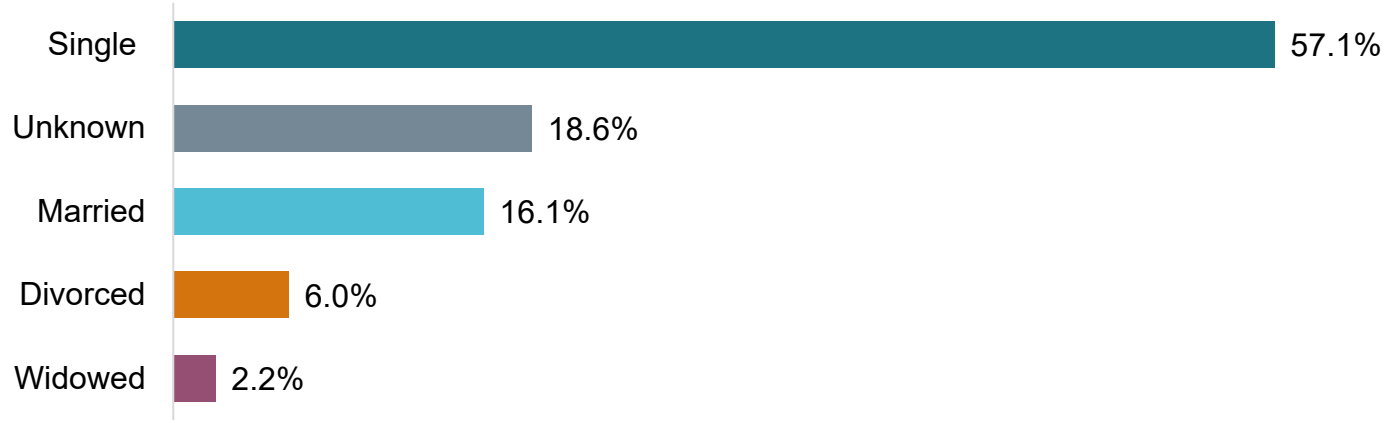


# Social Determinants of Health

## Social and Community Context

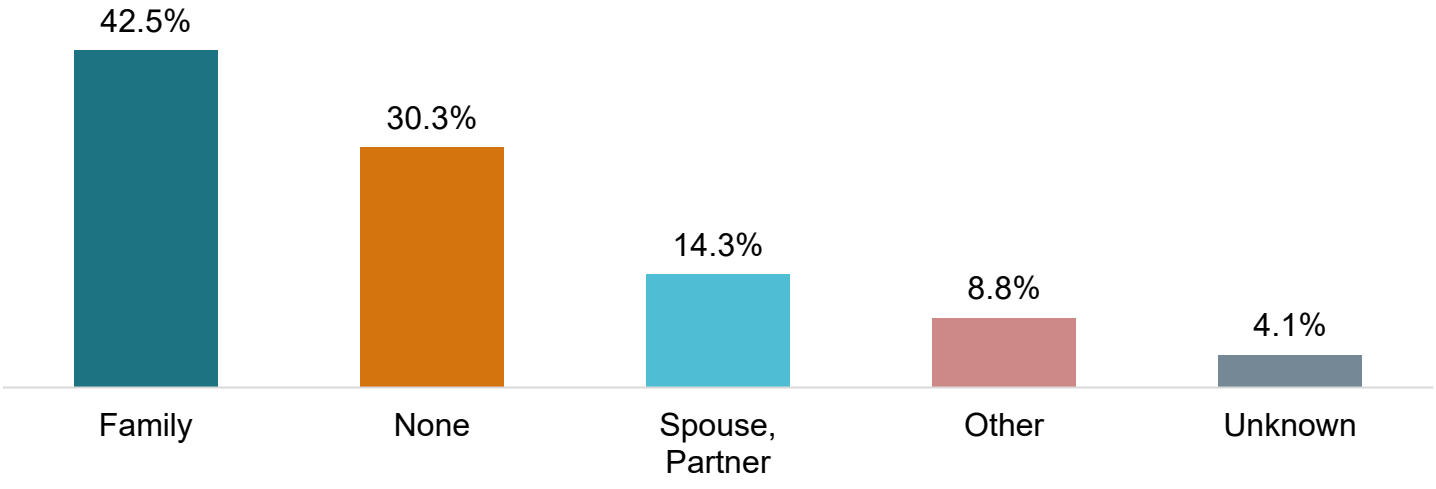
**Marital Status.** People from all walks of life may be affected by SUD but protective factors like social support helps maintain healthful behaviors. Experiencing and maintaining supportive and healthy relationships among family, friends, and romantic partners affect a person's emotional and mental health[3]. Most individuals (n=900, 57.1%) marital status was listed as single, 16.1% were married, and 6.0% divorced, and 2.2% widowed. Marital status was unknown for 293 (18.6%) individuals.

**Figure 15. Overdoses by Marital Status for Adults 18 Years and Older**




**Emergency Contact.** The presence or absence of an emergency contact for people who have experienced an overdose can also indicate social connection and support. Individuals most often listed a family member, such as a parent or child, as an emergency contact (n=685,42.5%). For 488 (30.3%) patients, no emergency contact was identified, however, it cannot be determined if this is a sign of social isolation or a lack of documentation by the healthcare provider.

**Figure 16. Overdoses by Emergency Contact**



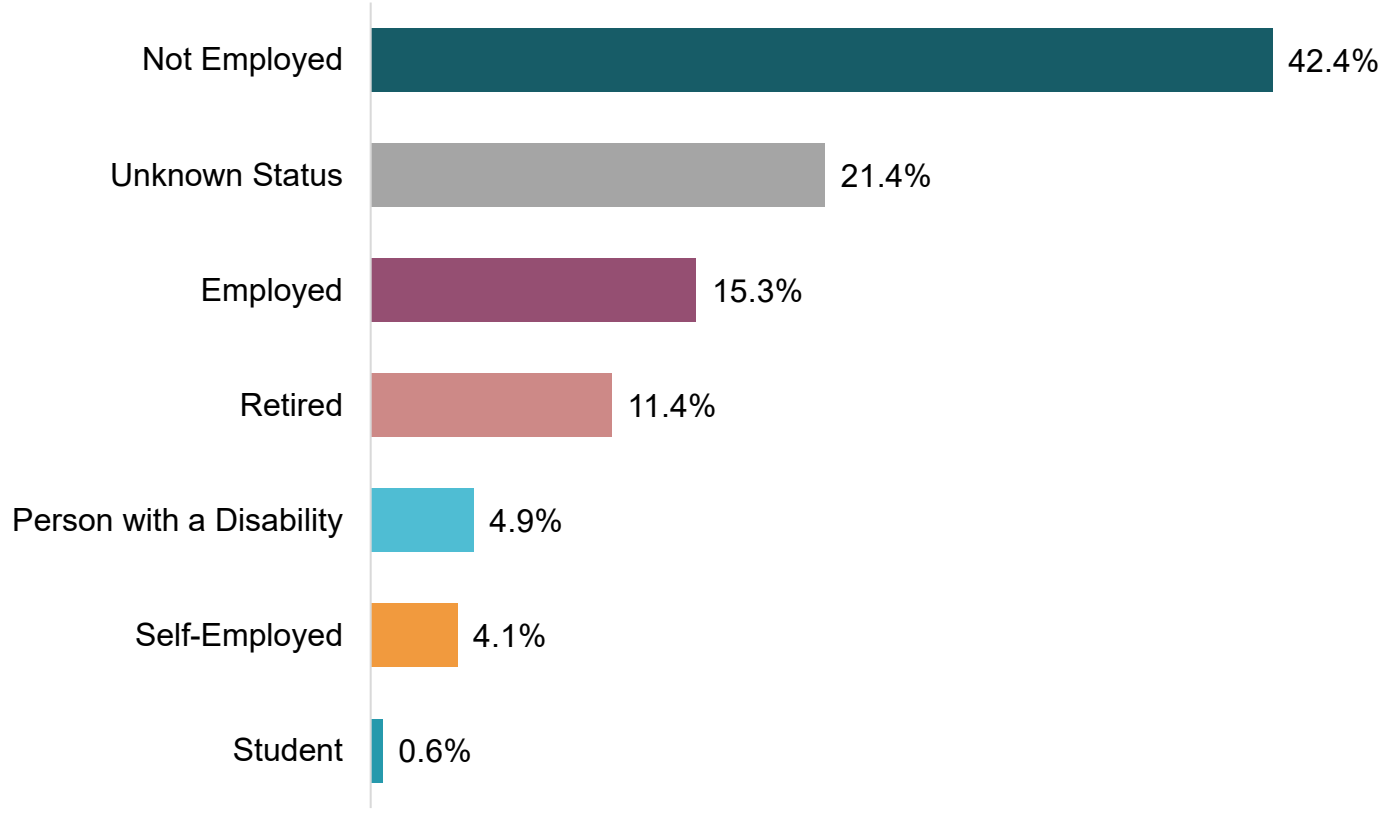

[3] Bilodeau, K. (2021, Jul 1). *Fostering Health Relationships*. Harvard Health. Accessed on 2023 Aug 3 from https://www.health.harvard.edu/mind-and-mood/fostering-healthy-relationships

## Employment, Health Insurance, and Housing

**Employment.** Employment status was collected for adults aged 19 years or older. 335 (42.4%) individuals were people who were unemployed, 240 (15.3%) were employed, 11.4% among retired people, and 4.9% among people with disabilities. Employment status was unknown for 21.4% of people experiencing overdoses. Fewer than 10 (0.57%) overdoses occurred among students. The percentage of individuals unemployed in 2022 was 43.8% higher than the percentage unemployed in the 2021 data sample.

In a study of a large national cohort followed prospectively for up to 6 years, people who lived with a disability, were unemployed, and/or were retired had a higher risk of overdose death compared to those who were employed[4]. Such research shows unemployment or retiring may lead to changes in routines, social connections, social support, and socioeconomic status—all social determinants of health. People who use drugs often experience barriers to employment, including living in areas with few job opportunities, low educational attainment and lack of skills, poor access to transportation, and criminal history[5]. Tailoring overdose prevention to these high-risk groups may improve their health outcomes.

**Figure 17. Employment Status for Adults Aged 19 Years or Older**



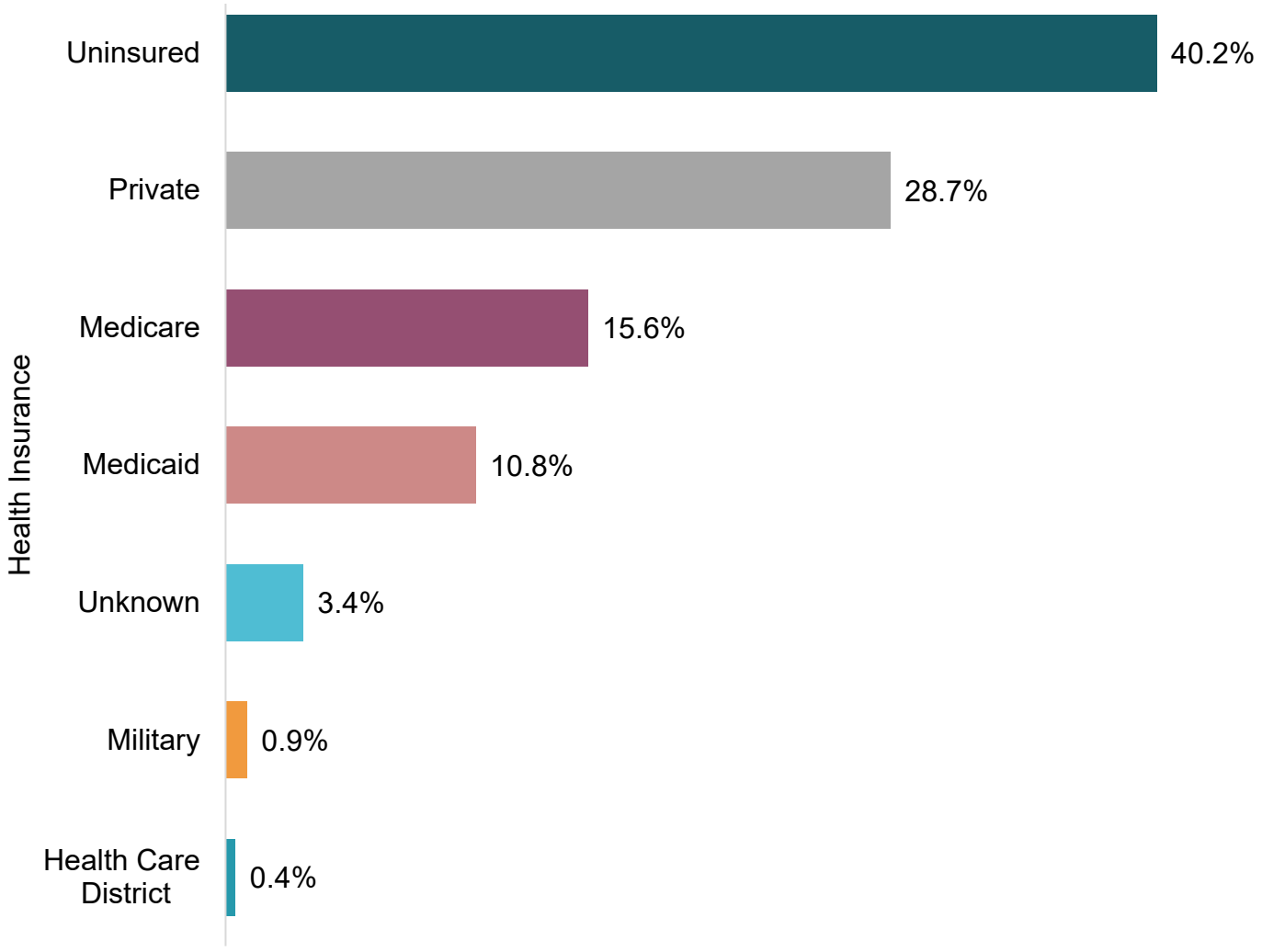

[4] Aram J, Johnson NJ, Lee MT, Slopen N. (2020). Drug overdose mortality is associated with employment status and occupation in the National Longitudinal Mortality Study. *Am J Drug Alcohol Abuse*. 46(6):769-776. doi:10.1080/00952990.2020.

[5] Sigurdsson SO, Ring BM, O'Reilly K, Silverman K. (2012) Barriers to employment among unemployed drug users: age predicts severity. *Am J Drug Alcohol Abuse*. 38(6):580-7. doi: 10.3109/00952990.2011.643976.

**Health Insurance.** Health insurance data were collected to understand access to affordable substance use care and evidence-based treatment. Having health insurance is a strong indicator of a person's ability and willingness to access and stay in care. People who are uninsured, especially non-elderly adults and children, are less likely to have had a usual source of health care or a recent health care visit than people who are insured[6]. Substance use disorder can be effectively managed as a chronic illness, similar to diabetes, when people have access not only to inpatient and outpatient treatment, but also to lifesaving medication assisted treatments like buprenorphine, naltrexone, and methadone. Without insurance, these medications may not be affordable for most people. Our 2022 overdose data show that 40.2% of the sample is uninsured, 28.7% are privately insured, 15.6% receive Medicare, and 10.8% receive Medicaid.

Since 2021, the number of uninsured people in our annual non-fatal overdose data sample has decreased by 15.2%, and the number with private insurance has increased by 33.3%.

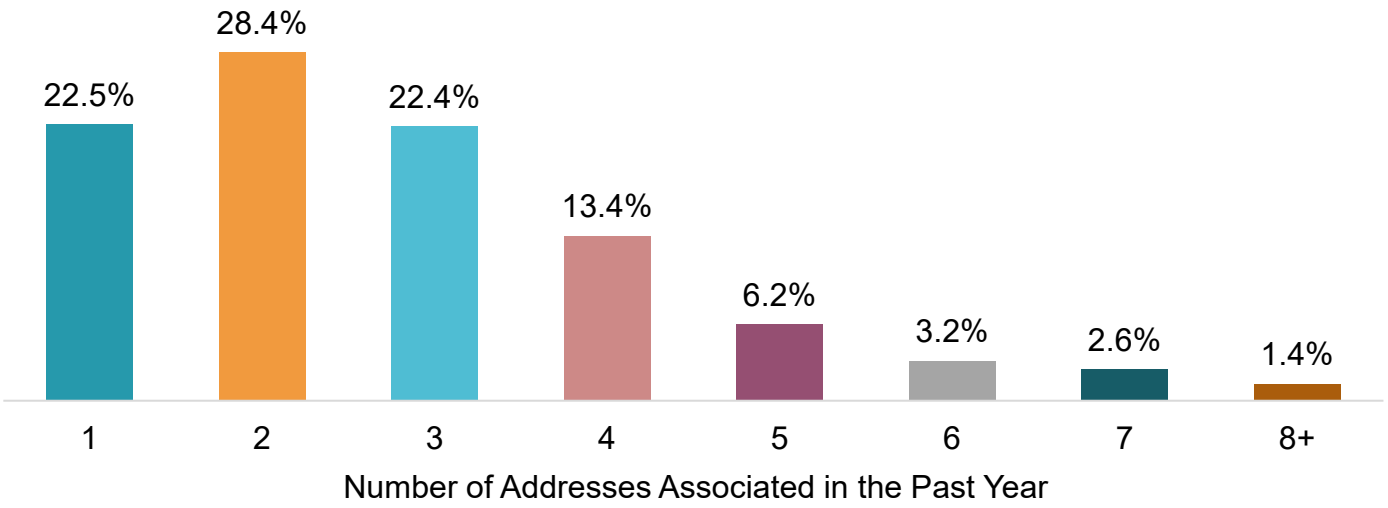
**Figure 18. Type of Primary Health Insurance**




[6] National Center for Statistics. (2017). *Health Insurance and Access to Care*. Accessed on 2023 Aug 8 from https://www.cdc.gov/nchs/data/factsheets/factsheet_hiac.pdf

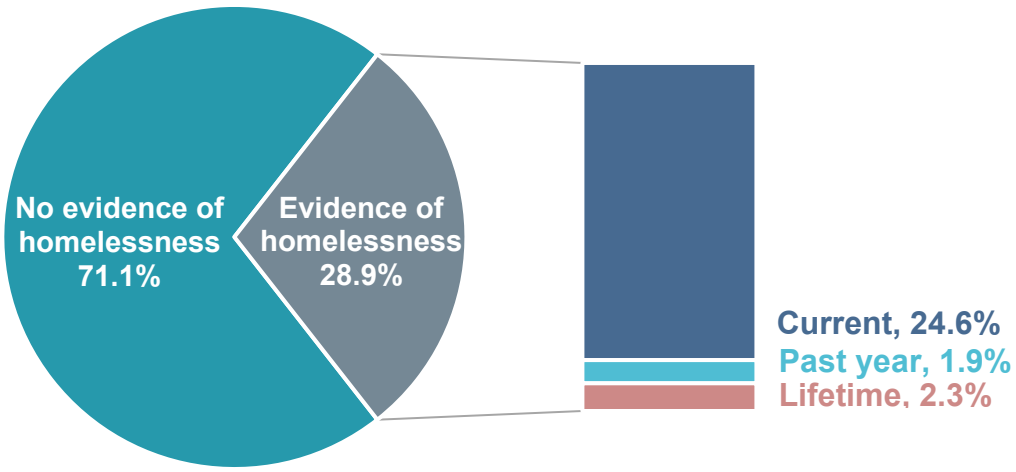
**Housing.** Studies show that experiencing housing instability or residential relocation can be linked to increased odds of experiencing violence, life-threatening health outcomes, high-risk health behaviors, decreased access to services, and criminal-legal system involvement[7]. Furthermore, involvement in the criminal-legal system can restrict access to housing[8]. We found that 22.5% of people who experienced an overdose had one associated address within the past year, but 77.5% had 2 or more associated addresses within the last year. Reasons for residential relocation are unknown, but housing instability can impact health outcomes.

**Figure 19. Number of Addresses Associated Within the Past Year or Overdose**




**Homelessness.** Evidence of homelessness was present in 28.9% of cases. One in four suspected overdoses occurred among individuals that were currently experiencing homelessness.

**Figure 20. Evidence of current, past year, and lifetime homelessness.**

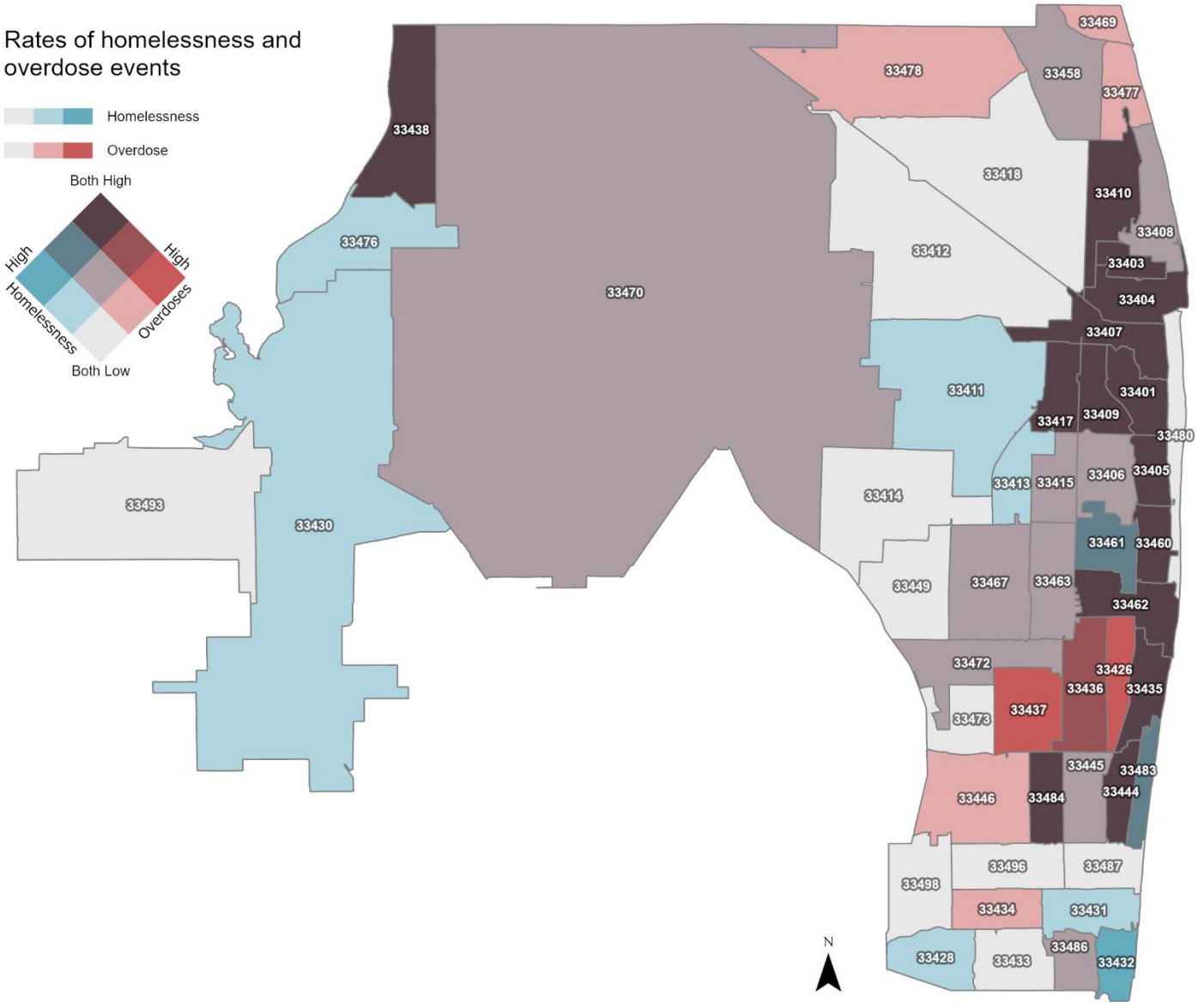



[7] Chiang JC, Bluthenthal RN, Wenger LD, Auerswald CL, Henwood BF, Kral AH. (2022). Health risk associated with residential relocation among people who inject drugs in Los Angeles and San Francisco, CA: a cross sectional study. *BMC Public Health*.22(1):823. doi: 10.1186/s12889-022-13227-4.

[8] Park JN, Rouhani S, Beletsky L, Vincent L, Saloner B, Sherman SG. (2020). Situating the Continuum of Overdose Risk in the Social Determinants of Health: A New Conceptual Framework. *Milbank Q*.98(3):700-746. doi: 10.1111/1468-0009.12470.

The bivariate map below uses syndromic surveillance data for ED visits relating to overdose and homelessness (for any medical reason) to determine areas of overlap. Rates of overdose and homelessness are aggregated by home address ZIP Code and adjusted to the population. Many areas in Palm Beach County that have high rates of overdose also have high rates of drug homelessness. These areas are generally found in the eastern parts of Delray Beach, Boynton Beach, and West Palm Beach. (Note: Because ZIP Code 33438 (Canal Point), has a population of just 367, overdoses and homelessness there seem high.)

**Figure 21. Rate of homelessness and rate of suspected overdose by ZIP Code**

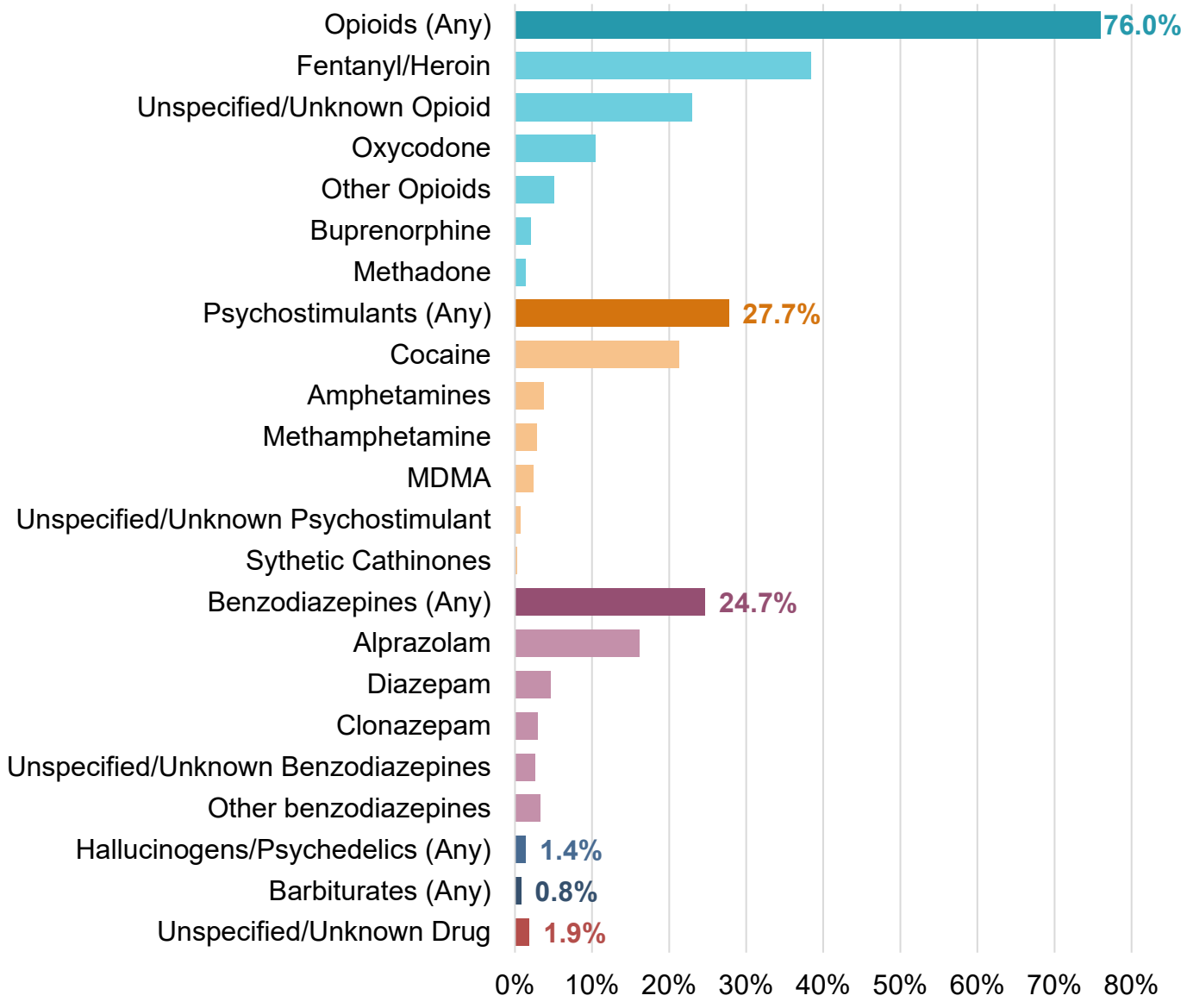



Note: Rates were adjusted according to the 2020 U.S. Census population estimates.

## Drugs Involved in Overdose Event

The figure below displays the substances involved in overdoses. Substance listed are not mutually exclusive and include both polysubstance and single substance events. Additionally, our surveillance team collected data on other substances like alcohol, marijuana, muscle relaxers, non-benzodiazepine sedatives, anticonvulsants, gabapentin, DXM, kava, synthetic cannabinoids, and tianeptine. However, the overdoses involving these substances were only included in our analysis if the substance was co-ingested with an OD2A inclusion drug. Alcohol and marijuana were the most common OD2A exclusion category substance co-ingested with an inclusion drug. Opioids were involved in overdoses more than any other drug class, followed by psychostimulants (second most common) and benzodiazepines (third most common).

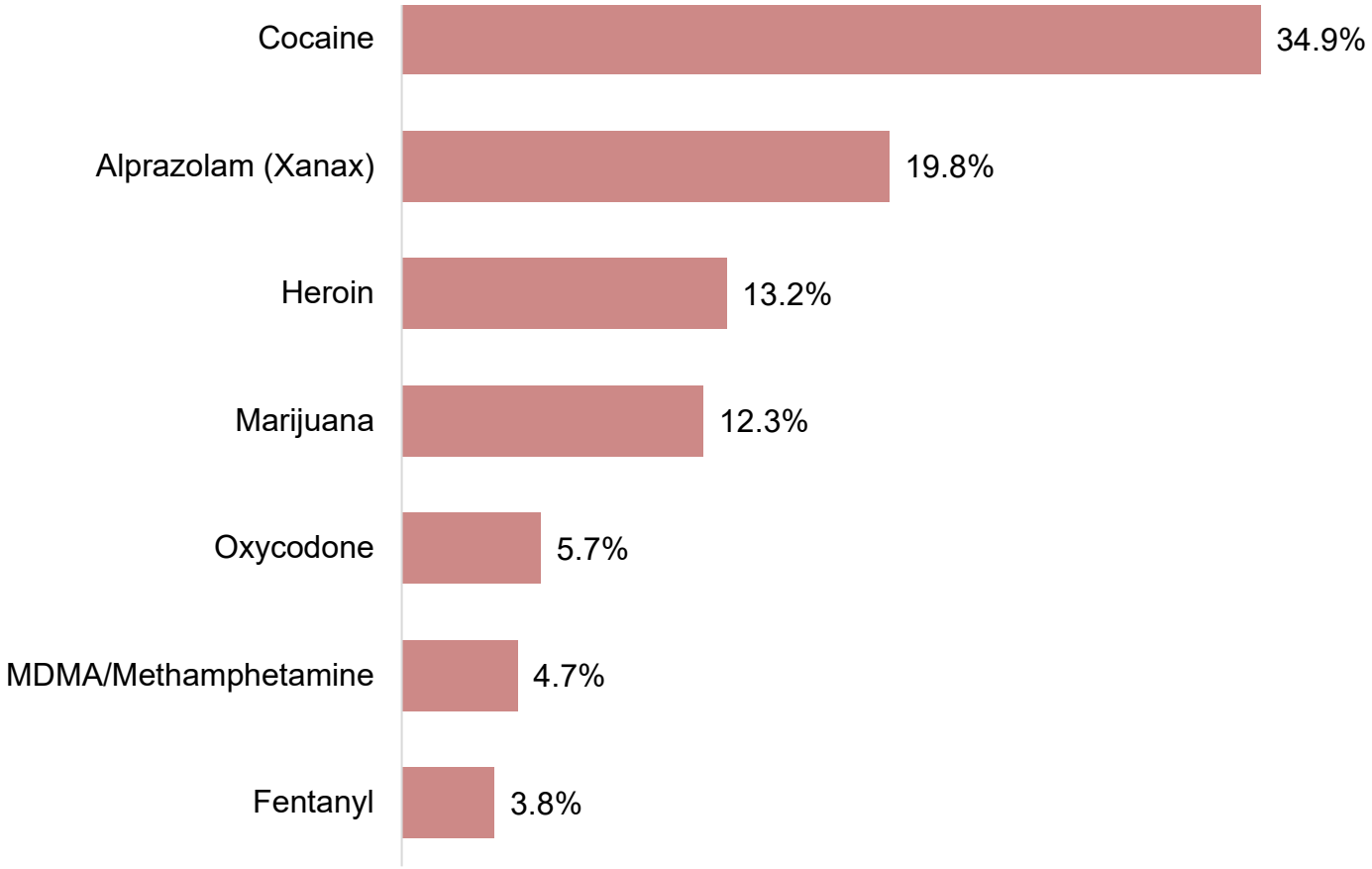
**Figure 22. Suspected Drugs Involved in Overdose Event.**



## Suspected adulterants in drug supply

Often there are discrepancies between the substance that a patient thinks they used or purchased and the actual substance found by toxicology testing or certain clinical indications. This is due in part to contamination of the drug supply with opioids and/or non-opioids. In our sample, 7% (n=106) of patients believed that their substance was laced or contaminated. Of these, 77% believed that they ingested a non-opioid contaminated with an opioid, for example, cocaine laced with fentanyl. 11% believed that they ingested an opioid (e.g., heroin) laced with another opioid (e.g., fentanyl).

**Figure 23. Drug Ingestion with Self-Reported Exposure to Adulterant (Laced Substance)**



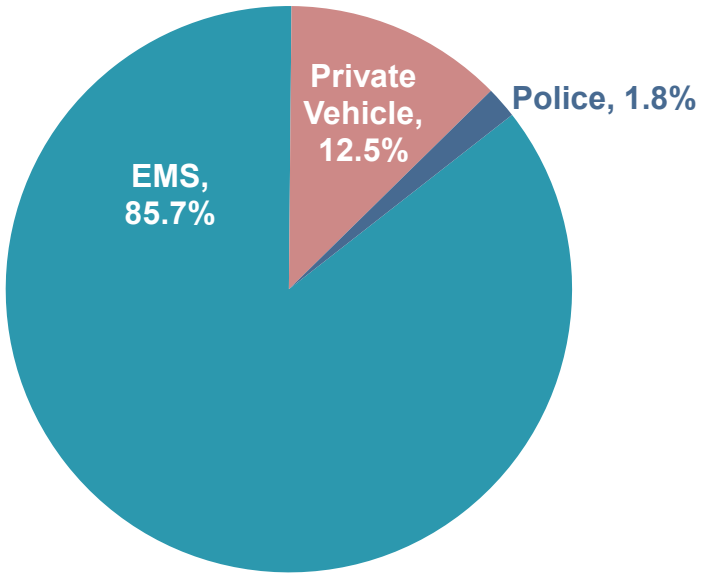

**Data to Action: Reducing Risk of Accidental Opioid Overdose**

In June 2023, Governor Ron DeSantis signed into law HB 164, eliminating fentanyl test strips from the list of prohibited drug paraphernalia in Florida. The National Institute on Drug Abuse says that fentanyl test trips can reduce opioid-related overdose fatalities. Published studies indicate that individuals who utilize these test strips are more inclined to adjust or even stop their drug use upon detecting fentanyl. The emergence of fentanyl in local communities has been a topic of concern at the state level, prompting Attorney General Ashley Moody to addressing this crisis.

# Emergency Medical Services for Suspected Overdoses

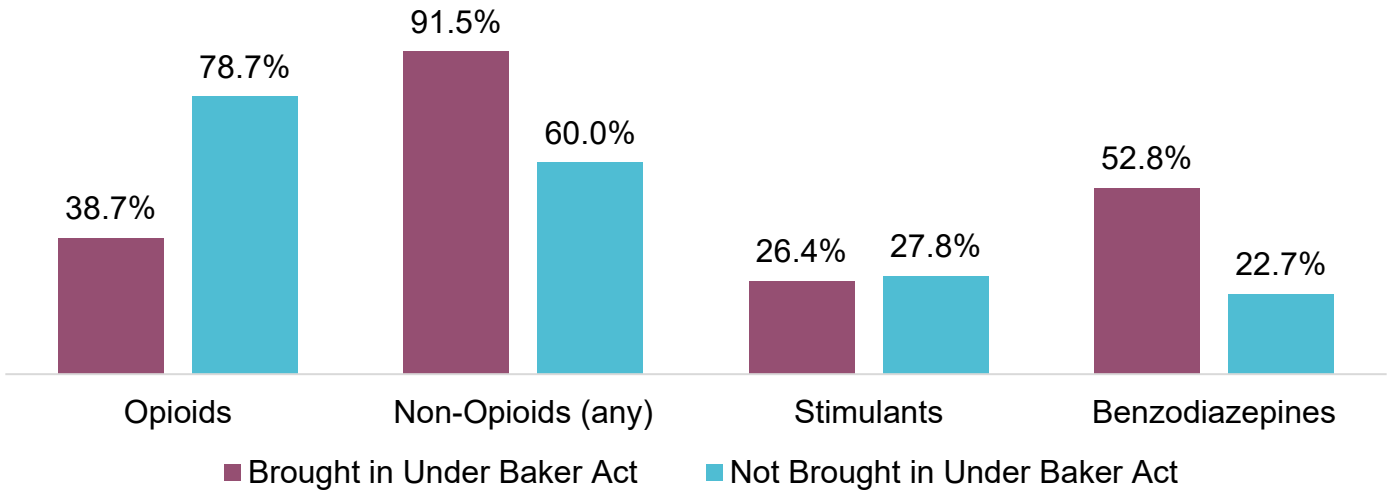
**Mode of Arrival.** The mode of arrival for most patients with a suspected overdose was via EMS (85.7%). Some patients arrived at the hospital via private vehicle (12.5%). Police transported 1.8% of patients, often in cases needing medical clearance for arrest or psychiatric evaluation.

**Figure 24. Hospital Mode of Arrival for Suspected Overdoses**




**Baker Acts.** 106 patients were brought to the ED for psychiatric evaluation under the Florida Mental Health Act of 1971 (also known as "Baker Act"). Overdoses on non-opioid substances occurred more frequently in patients brought into the ED under Baker Act, 91.5% compared to the 60.0% who did not arrive under Baker Act.

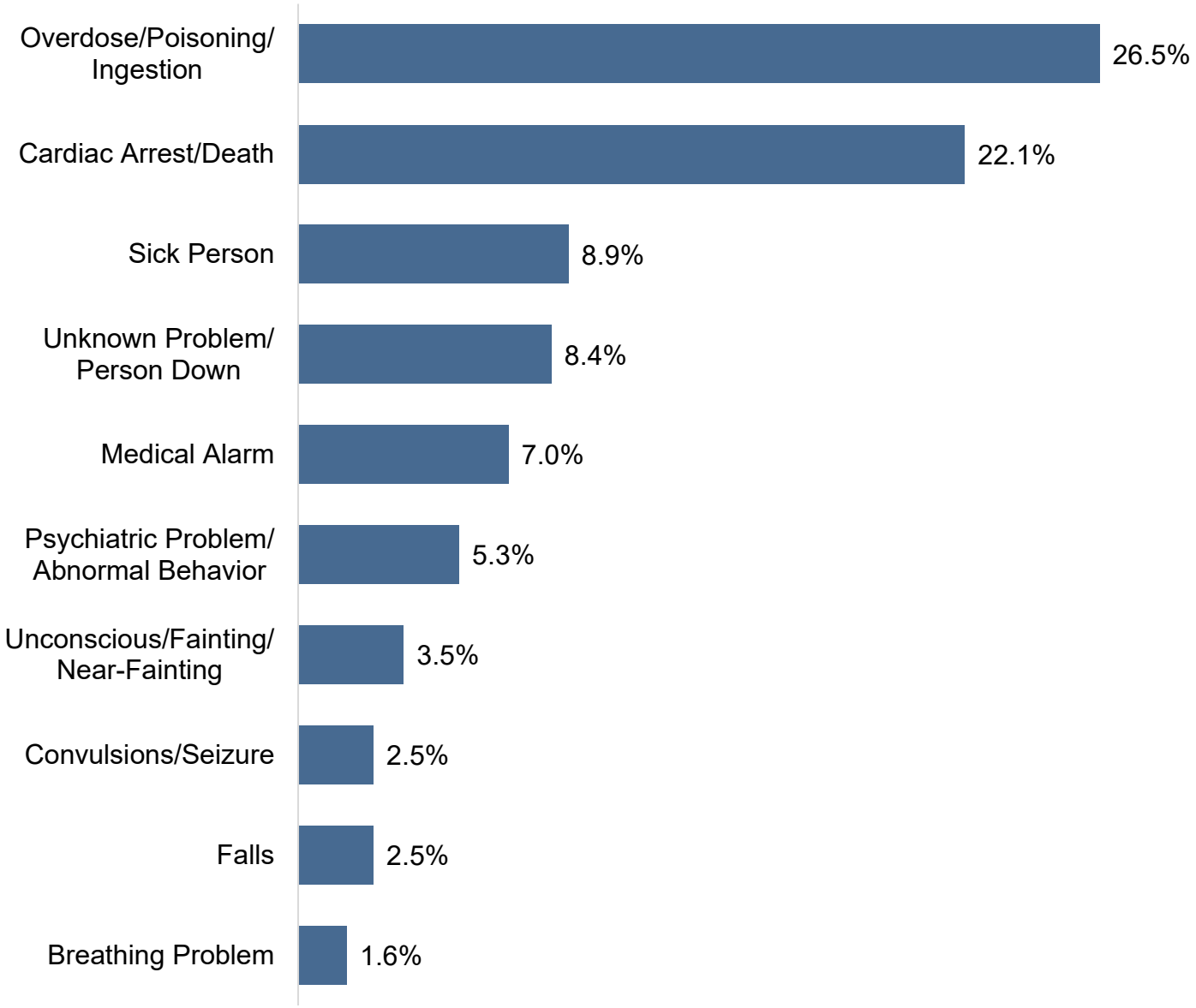
**Figure 25. Substances Involved in Overdoses with Patients Under Baker Act**



## Complaint reported by dispatch

Emergency dispatch operators report chief complaint to EMS teams prior to arriving on the scene of the suspected overdose. The most common complaint reported by dispatch was overdose/poisoning/ingestion (26.5%). Other complaints frequently reported to EMS by dispatch included cardiac arrest/death (22.1%), sick person (8.9%), and unknown problem/person down (8.4%). Psychiatric problem/abnormal behavior was reported in 5.3% of cases. People who overdose on substances like psychostimulants or hallucinogens often have different symptoms than overdoses on opioids or sedatives. These overdoses can present as psychiatric problems or abnormal behavior.

**Figure 26. Complaint Reported to EMS by Emergency Dispatch for Suspected overdoses**



## Location of Overdose Events

Understanding where overdoses occur can inform prevention strategies and harm reduction messaging and dispel myths about where substance use occurs and whom it affects. We found that 2022 incident location data are similar to 2021 data, but incidents occurring in grocery stores, jails/prisons, and medical facilities have increased, while incidents in public use areas and homeless shelters have decreased. Half (50.8%) of overdoses occurred inside and at private residences. Our data show that most people are engaging in substance use in the comfort of their own home, rather than in the street or in other stereotypical settings. Overdoses occurring in motor vehicles can pose additional safety concerns. 5.6% of overdoses occurred in a motor vehicle that was not involved in an accident, such as a parked car, while 1.4% of overdoses resulted in a motor vehicle collision.

**Figure 28. Location Setting of Overdose Events**

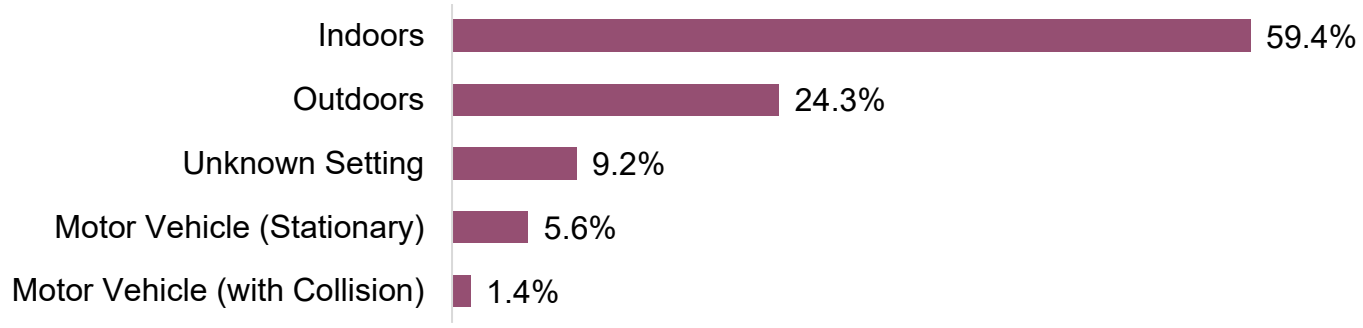
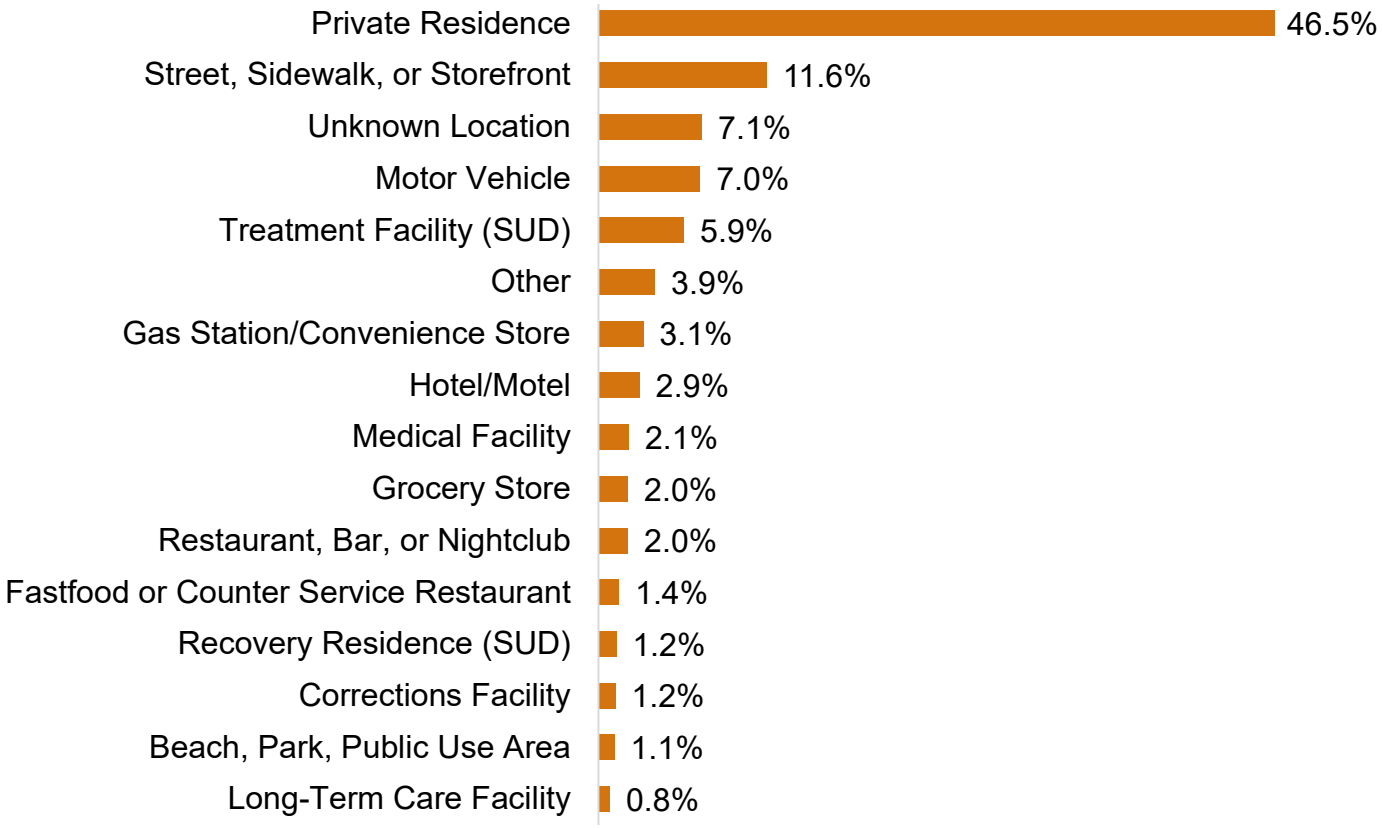



**Figure 27. Location Types of Overdose Events**



**Naloxone Administration.** Naloxone was administered in 55.7% of non-fatal overdoses. While EMS (57.3%) and hospital staff (43.2%) are responsible for most administration, bystanders administered naloxone during 13.6% of overdose events and police provided naloxone 4.5%. During an opioid overdose a person may stop breathing and bystanders play an especially important role because naloxone can restore normal breathing within 2 to 3 minutes in a person whose breath has slowed or stopped, as a result of opioid overdose[9]. More than one dose of naloxone may be required when stronger opioids like fentanyl are involved. The purpose of naloxone is to restore breathing for someone experiencing an opioid overdose and it is not to wake them from an unconscious state. Naloxone does not cause harm to someone if they are overdosing on non-opioid substances. The effects of naloxone for opioid overdose may cause withdrawal symptoms such as fever, pain, irritability, vomiting, etc. These side effects are not usually life-threating[9,10]. Standard overdose protocols often include naloxone administration for *any* suspected drug overdose. Even if no opioids are suspected to be involved, adulteration and contamination with opioids is becoming increasingly common.

**Figure 30. People That Administered Naloxone During Suspected Overdose Events**

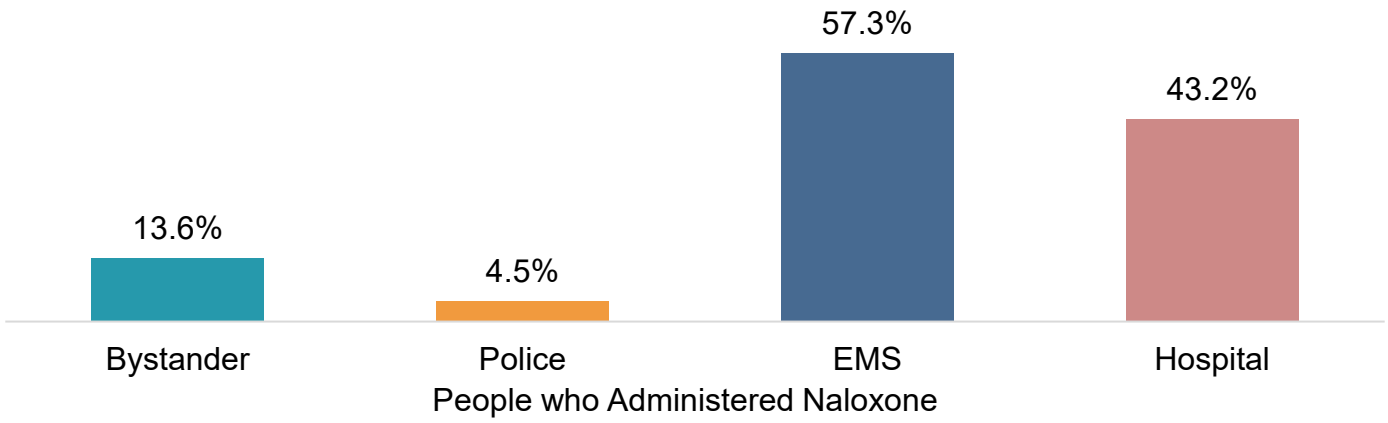
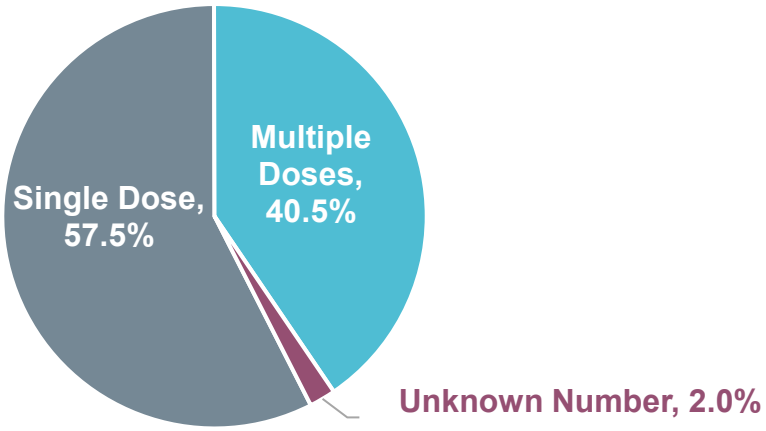



**Figure 29. Total Number of Naloxone Doses Required**




[9] CDC (2023 Apr 21). *Lifesaving Naloxone*. Accessed on 2023 Jul 25 from https://www.cdc.gov/stopoverdose/naloxone/index.html#:~:text=Naloxone%20quickly%20reverses%20an%20overdose,opioids%20like%20fentanyl%20are%20involved

[10] National Institute on Drug Abuse (NIDA) (2022 Jan 11). Naloxone DrugFacts. Accessed on 2023 Aug 1 from https://nida.nih.gov/publications/drugfacts/naloxone

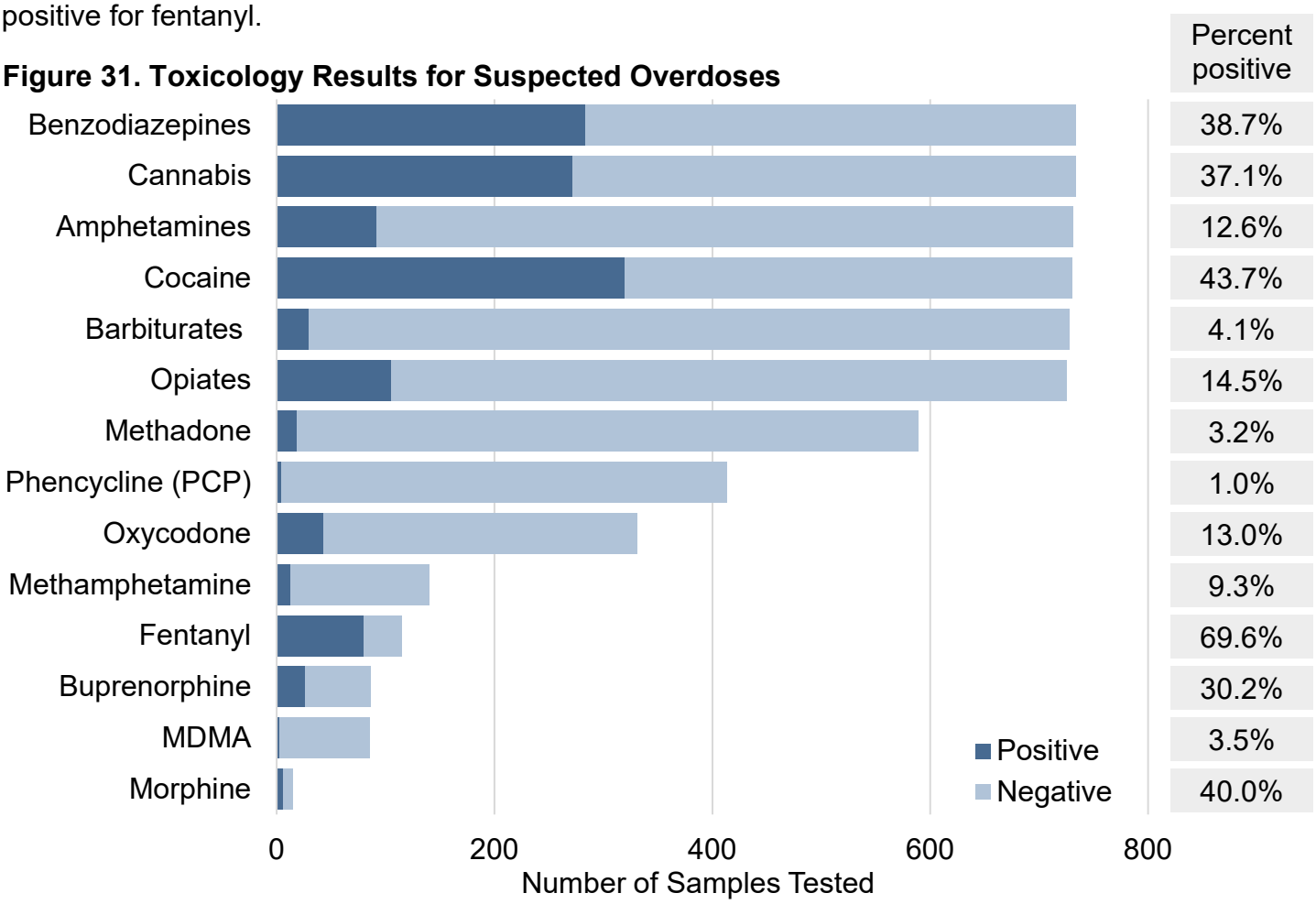
# Hospital Services for Suspected Overdose

## Toxicology

Toxicology testing can help identify substances involved in overdose events – or rule out substances – allowing health care providers to provide better care to patients. DOH-PBC also relies on toxicology data to identify emerging drug trends early. However, some substances are easier to detect than others with point-of-care (POC) testing. Substances metabolize at different rates in the body and may be detected for only a few hours or several days[11]. Positive results are not necessarily indicative of that drug being involved in the overdose event and might simply indicate recent use. Most POC toxicology testing is qualitative only (positive/negative). Results are considered unconfirmed until confirmatory testing is completed.

Less than half (46.2%) of hospitals reported any toxicology testing. The most frequently tested substances were benzodiazepines, cannabis, amphetamines, cocaine, barbiturates, and opiates. Of these, cocaine was the most frequently detected substance with 43.7% samples testing positive. Few hospitals conduct expanded toxicology testing for substances like fentanyl, oxycodone, and methamphetamines. Of these, fentanyl had the highest detection with 69.9% of samples testing positive for fentanyl.

**Figure 31. Toxicology Results for Suspected Overdoses**

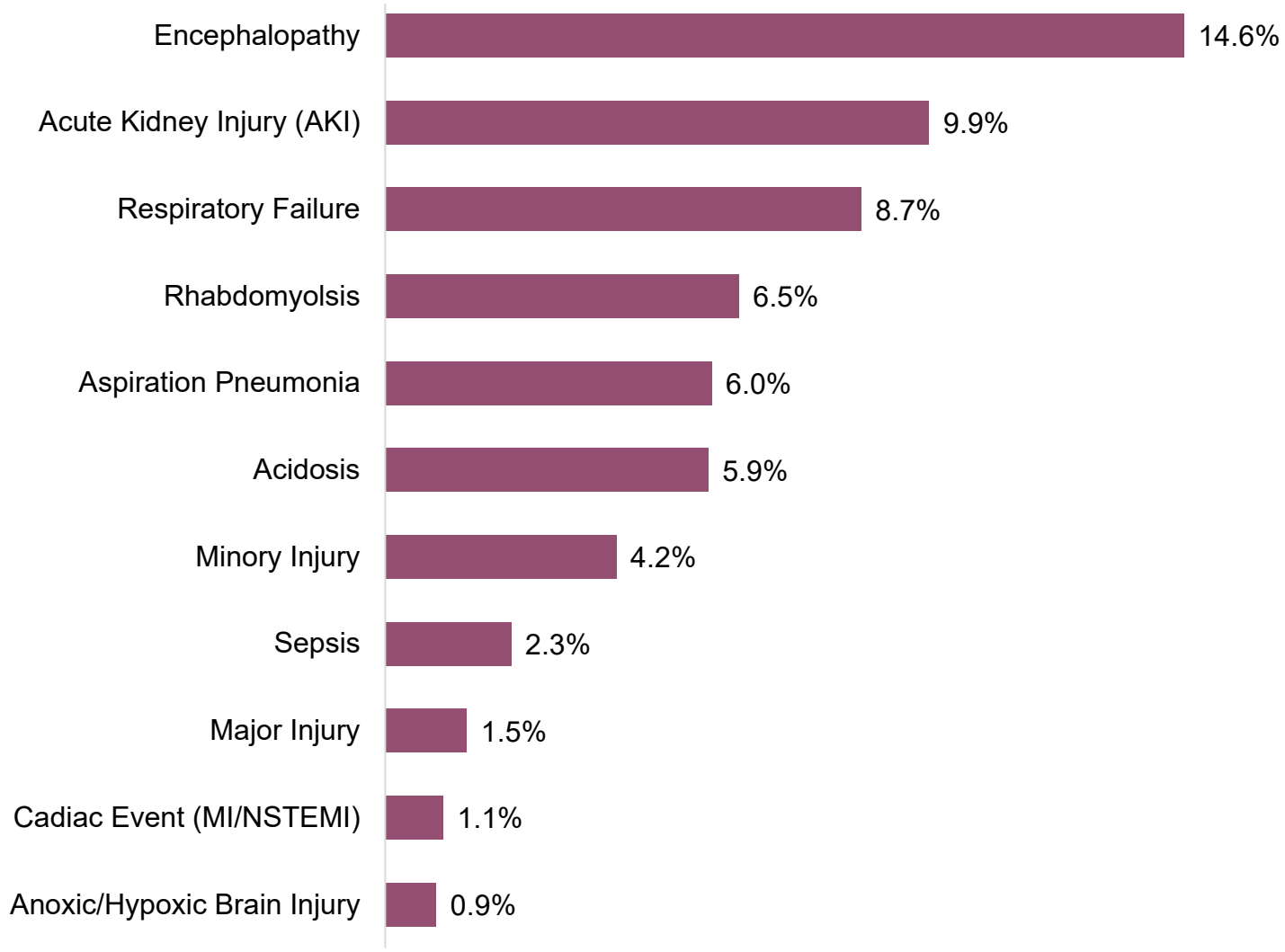



[11] Hadland SE, Levy S. (2016). Objective Testing: Urine and Other Drug Tests. *Child Adolesc Psychiatr Clin N Am.* 25(3):549-65. doi: 10.1016/j.chc.2016.02.005.

## Complications

One in three people (n=531, 33%) experienced at least one complication related to their medical emergency. The most common complication was encephalopathy (14.6%). Encephalopathy is caused by a lack of blood flow or oxygen to the brain and can affect a variety of organs, beyond the brain[12]. Drug-induced respiratory depression can lead to a reduction of oxygen in the body (hypoxia) and may develop into serious life-threatening complications and could lead to death[13]. 4.2% of overdoses caused major injuries such as head trauma, compartment syndrome, or fractures. 3.4% of patients required intubation (not shown).

**Figure 32. Complications of Patient Who Overdosed**

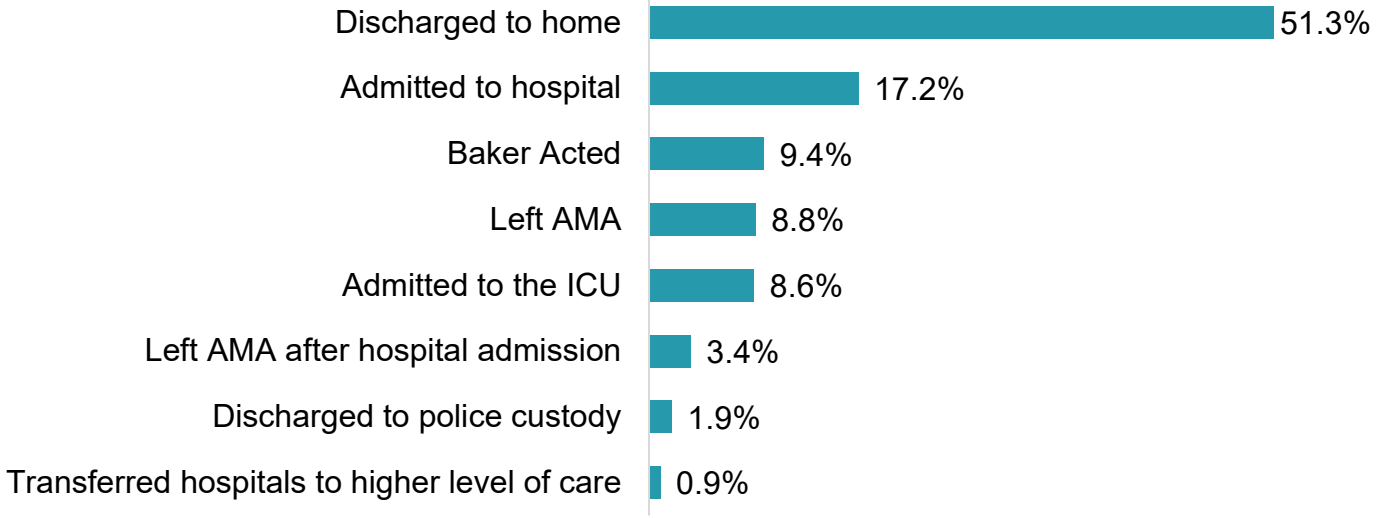



[12] National Institute of Neurological Disorders and Stroke (2023, Jun 5). *Hypoxic Ischemic Encephalopathy*. Accessed on 2023 Aug 2 from https://www.ninds.nih.gov/health-information/disorders/hypoxic-ischemic-encephalopathy
[13] Ballantyne, J. (2007). Chapter 17 - Complications Associated with Systemic Opioids and Patient-controlled Analgesia. *Complications in Regional Anesthesia & Pain Medicine.* 167-175. https://doi.org/10.1016/B978-1-4160-2392-0.50021-2

## Emergency Department Outcome

Patient dispositions of non-fatal overdoses show that most patients were discharged to home (51.3%) and a small portion (1.9%) discharged to police custody. In 9.4% of cases, patients were placed under a Baker Act, or involuntary psychiatric hold.

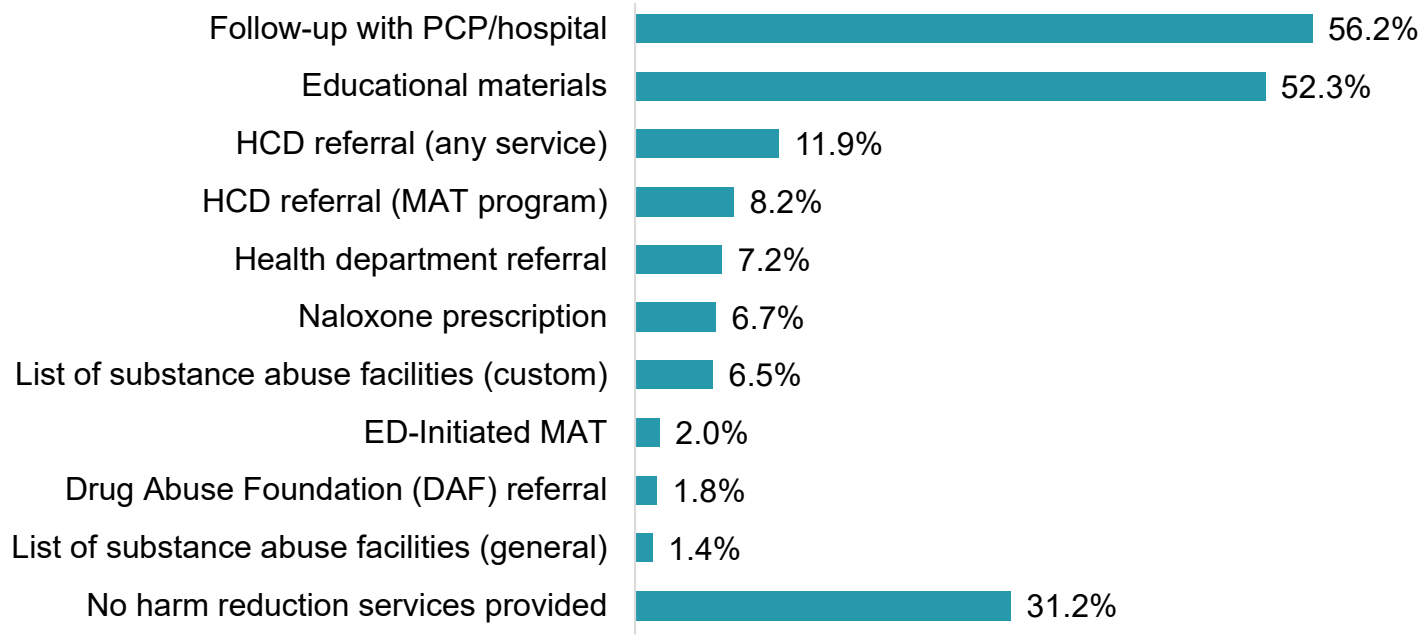
**Figure 33. Emergency Room Discharge Disposition for Non-Fatal Overdoses**




## Harm Reduction Provided at Discharge

Harm reduction is a vital aspect of overdose prevention. 42.6% of records reviewed showed that providing substance use related educational materials and/or primary care provider (PCP) follow-up referrals were the only harm reduction provided. No harm reduction services were documented in 31.2% of overdoses. This highlights a crucial gap in the continuity of care for people engaging in substance use, especially persons in a particularly vulnerable state after surviving an overdose. These missed opportunities are important indicators for overdose prevention efforts.

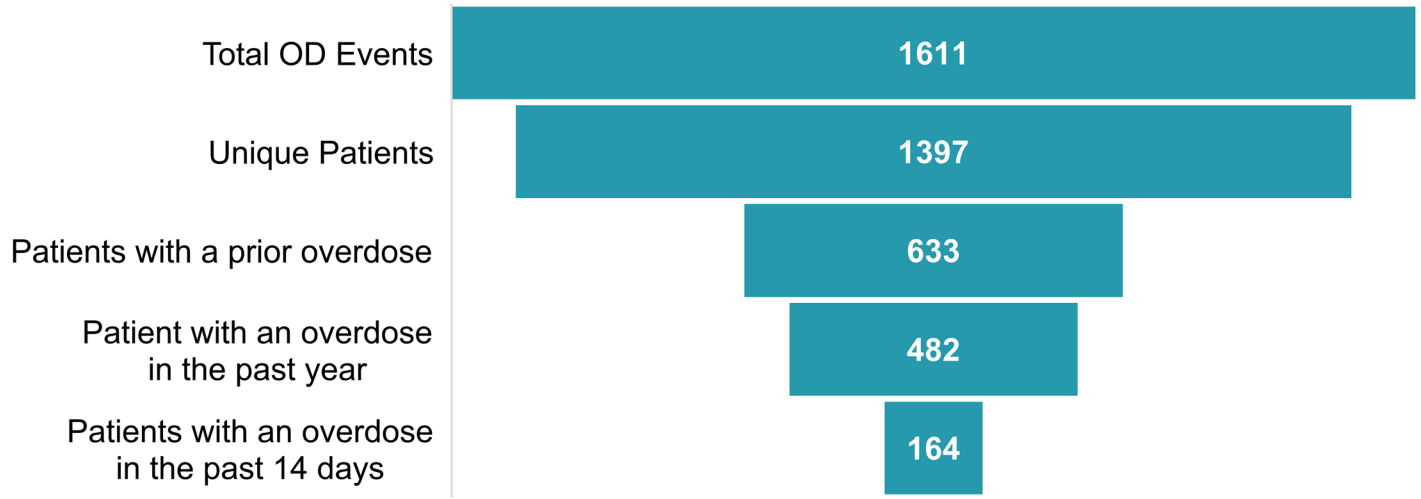
**Figure 34. Harm Reduction Services Provided at ED Discharge**



## Repeated Overdose Events

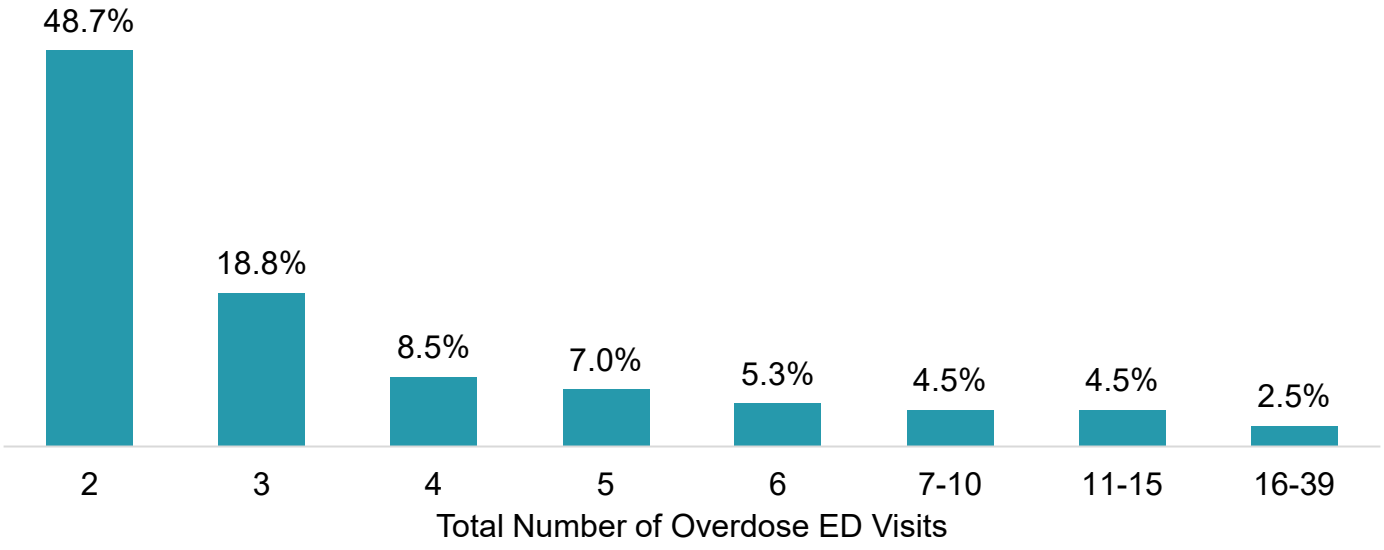
The 1611 records reviewed for suspected overdoses in 2022 belonged to 1397 unique individuals. Almost half of these individuals (n=633, 45.3%) have had had at least one known prior overdose in their lifetime, 482 individuals had a prior overdose within the past year, and 164 had a prior overdose within 14 days.

**Figure 35. Number of Events, Unique Patients, and Repeat Overdose Patients**



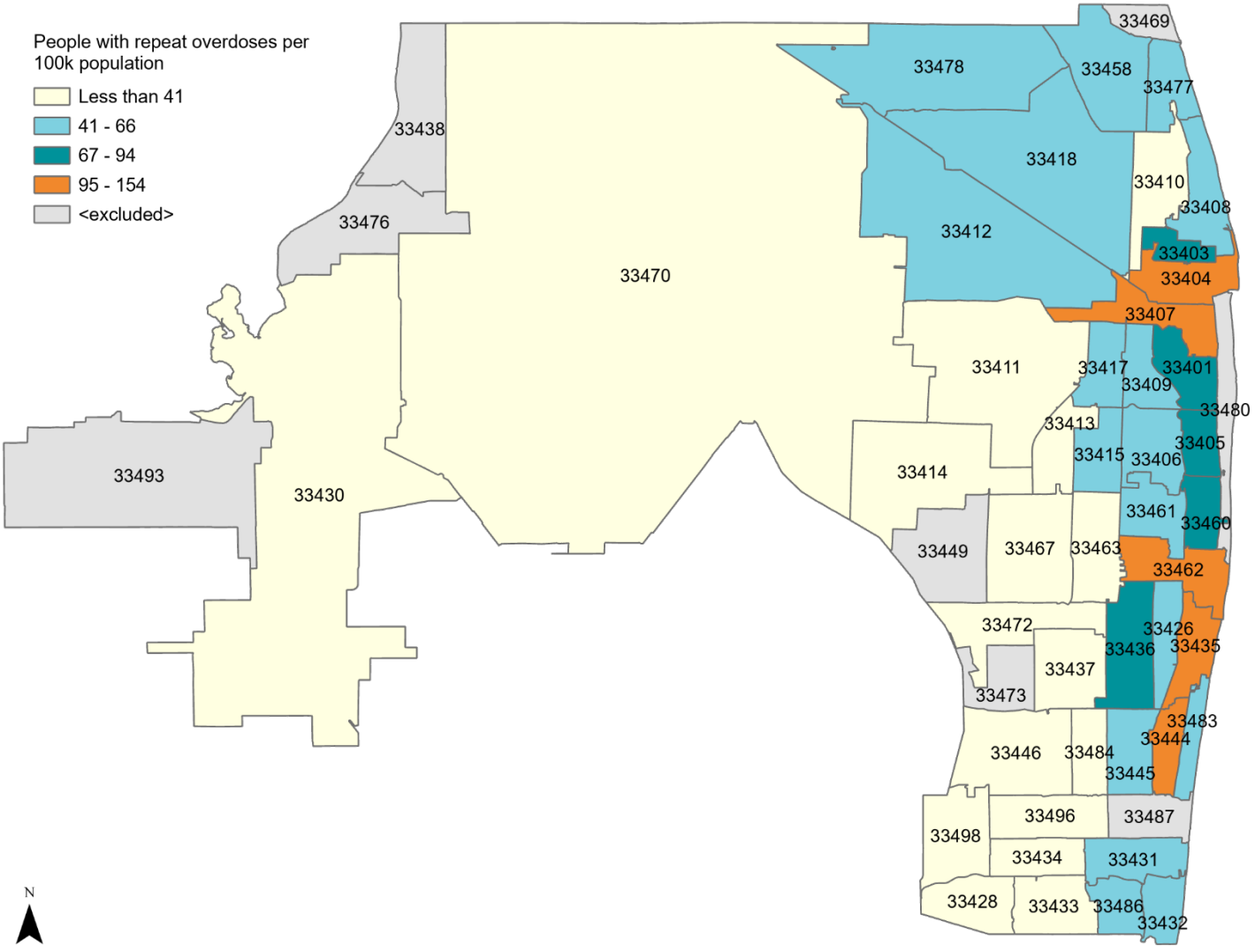

The figure below looks at people with a history of overdoses that were treated by the same hospital (n=398). It looks at the total number of times a patient is seen by the same hospital for an overdose. The number of repeat visits for overdose does not account for visits to other hospitals. For example, a patient might have had 3 overdoses treated by one hospital, but they also have 2 visits from a different hospital. Those overdoses would not be included in this figure. The number of overdoses treated by the hospital ranged from 2 to 39 with a median of 3 and an average of 4.1 (SD=4.2).

**Figure 36. Total Number of Repeat Overdoses Treated by the Same Hospital per Patient**



The map below shows the population-adjusted rate of people with repeat ED visits for suspected overdose per 100,000 people by ZIP Code in Palm Beach County. People with repeated overdoses were aggregated by home address ZIP Codes. ZIP Codes with less than 5 people with repeat overdoses are considered unstable and were excluded. Cities with the highest rates of people who had repeat overdoses included eastern regions of Riviera Beach, West Palm Beach, Lake Worth, Boynton Beach, and Delray Beach.

**Figure 37. Population-Adjusted Rate of People per ZIP Code with Repeat Overdose Events**




Note: Rates were adjusted according to the 2020 U.S. Census population estimates.

# Emerging Trends to Watch

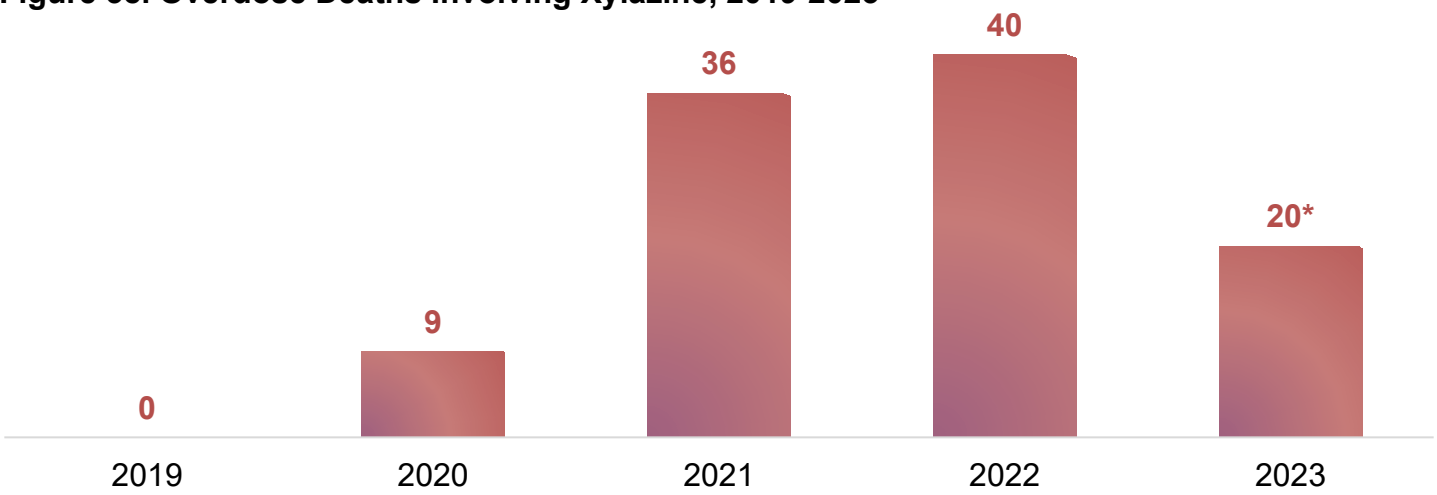
## Xylazine

- Also known as "**tranq**"
- Xylazine is a non-opioid veterinary tranquilizer intended for animal use only
- Causes heavy sedation and can slow heart rate and breathing which can lead to death
- Associated with skin ulcers and infections, especially with injection drug use
- Naloxone is not effective against xylazine overdoses, but naloxone can reverse the effects of fentanyl or other opioids mixed with xylazine and should still be administered

Xylazine is often added to illicit opioids like fentanyl as an adulterant[14]. The increasing presence of xylazine in fentanyl compounds the risk of overdose in people who use drugs. Routine point-of-care toxicology screenings in hospital emergency departments do not yet include xylazine, making it difficult to ascertain the true burden of xylazine-involved overdoses in Palm Beach County. In fact, most hospitals in Palm Beach County do not currently test for fentanyl either. And because xylazine is often added to fentanyl without the user's direct knowledge, many potential xylazine-involved overdoses go unreported.

The Palm Beach Medical Examiner's Office regularly screens for many novel substances, including xylazine, as part of their death investigations. This allows us to better understand how overdose deaths are being affected by xylazine. In 2022, there were 517 accidental overdose deaths. Of these, 40 (7.7%) overdose deaths involved xylazine (mostly seen in combination with fentanyl).

**Figure 38. Overdose Deaths Involving Xylazine, 2019-2023**




Note: *Data is preliminary and incomplete.

[14] NIDA. (n.d.). *Xylazine*. Accessed on 2023 Aug 1 from https://nida.nih.gov/research-topics/xylazine#:~:text=Also%20known%20as%20%E2%80%9Ctranq%2C%E2%80%9D,pressure%20to%20dangerously%20low%20levels.

# Emerging Trends to Watch

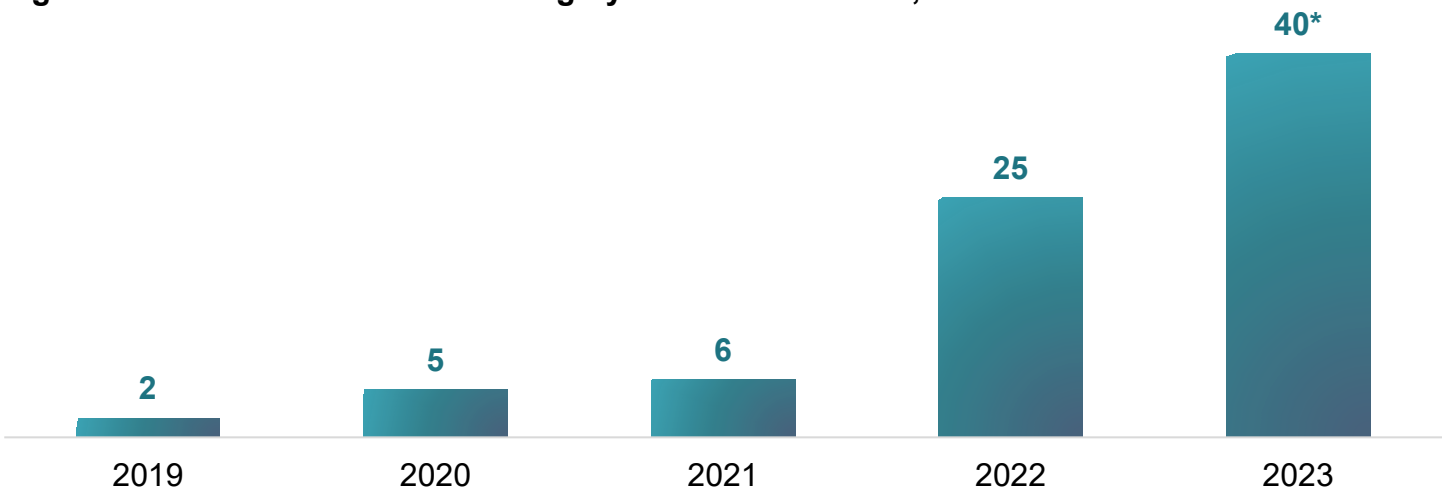
## Synthetic Cathinones

- Also known as "**bath salts**"
- A class of designer psychostimulant drugs that include eutylone, pentylone, N,N-Dimethylpentylone, α-PiHP, and α-PVP (also known as "flakka")
- Designed to mimic effects of cocaine, methamphetamine, and MDMA (ecstasy)
- Can be found as an adulterant in other drugs, specifically MDMA
- Can cause a wide range of symptoms including extreme agitation, violent behavior, hallucinations, paranoia, hyperthermia, seizure, stroke, tachycardia, and respiratory distress

Synthetic cathinones gained popularity in the late 2000s as a "legal high" or chemical that avoided regulation under the controlled substance act (CSA) by marketing as "plant food", "research chemicals", or "bath salts"[15]. Despite current federal regulations imposed on these drugs, overdoses have increased in the U.S., with Florida leads the nation in deaths involving synthetic cathinones[16].

In Palm Beach County, deaths have skyrocketed 400% from 5 deaths in 2020 to 25 in 2022. Furthermore, early (incomplete) data suggest that deaths in 2023 will eclipse previous years. At the time data was analyzed for this report (August 2023), there were an estimated 40 overdose deaths involving synthetic cathinones, more than the previous 4 years combined.

**Figure 39. Overdose Deaths Involving Synthetic Cathinones, 2019-2023**




Note: *Data is preliminary and incomplete.

[15] Slomski, A. (2021). A Trip on "Bath Salts" Is Cheaper Than Meth or Cocaine But Much More Dangerous. *JAMA.* 308(23):2445-2447. doi:10.1001/jama.2012.34423

[16] Gladden RM, Chavez-Gray V, O'Donnell J, Goldberger BA. (2020). Notes From the Field: Overdose Deaths Involving Eutylone (Psychoactive Bath Salts) — United States, 2020. *MMWR Morb Mortal Wkly Rep.* 71:1032–1034. DOI: http://dx.doi.org/10.15585/mmwr.mm7132a3

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