



2018 Drug Overdose Hospital Discharges in Tennessee

**Tennessee Department of Health
Office of Informatics and Analytics**

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Executive Summary

This report describes hospital discharges related to drug overdoses in Tennessee (TN) in 2018 using data from the TN Hospital Discharge Data System. Inpatient and outpatient hospital discharges due to drug overdoses are described overall and by sex, race, and age. Tennessee is still in the midst of increasing rates of drug overdose mortality and morbidity. The rate of all drug and opioid overdose deaths continue to increase in TN. The age-adjusted rate for all drug overdose deaths was 26.6 per 100,000 residents in 2017 and 27.4 per 100,000 residents in 2018. The age-adjusted rate for all opioid overdose deaths was 19.3 per 100,000 residents in 2017 and 19.9 per 100,000 residents in 2018. It is important to note, however, that the number and rate of non-fatal drug overdoses is much higher than for overdose deaths. Briefly summarized below are key epidemiologic data trends for non-fatal drug overdoses in Tennessee:

Non-fatal overdoses due to any drug continue to increase for outpatient visits, but not inpatient stays

- In 2018, there were 23,565 all drug overdose hospital discharges among TN residents. Of these, 7,202 (30.6%) were inpatient stays and 16,363 (69.4%) were outpatient visits.
- The rate of drug overdose outpatient visits due to any drug increased in 2018 compared to 2017, while drug overdose inpatient stays decreased.
 - The rate of overdose outpatient visits increased from 246.3¹ in 2017 to 252.7 in 2018 (a 2.6% increase). The rate of overdose inpatient stays decreased from 110.8 in 2017 to 103.2 in 2018 (a 6.9% decrease).
- Females had higher rates of all drug outpatient visits and inpatient stays compared to males. Rates of all drug overdose discharges were higher for Whites compared to Blacks. For outpatient visits, all drug overdose rates were highest among 25-34 year-olds. For inpatient stays, all drug overdose rates were highest among those aged 55-64 years.

Non-fatal opioid overdoses (excluding heroin) are increasingly likely to be treated in an outpatient setting

- In 2018, there were 4,039 hospital discharges for opioid overdoses (excluding heroin). Of these opioid overdose discharges, 59.4% were outpatient visits and 40.6% were inpatient stays.
- The rate of opioid overdose outpatient visits (2017: 36.6, 2018: 35.7) and inpatient stays (2017: 26.8, 2018: 21.8) decreased from 2017 to 2018.
- Compared to males, females had higher rates for opioid overdose inpatient stays (24.0 vs. 19.2) but lower rates for outpatient visits (31.8 vs. 39.6). Opioid overdose rates were higher among Whites (compared to Blacks) for both outpatient visits and inpatient stays. Opioid overdose rates were highest among 25-34 year-olds for outpatient visits and among 55-64 year-olds for inpatient stays.

¹All rates in this report are age-adjusted and per 100,000 residents unless otherwise specified.

Non-fatal heroin overdoses are increasing, particularly for outpatient visits

- The rate of heroin overdose outpatient visits increased from 37.9 to 48.3 from 2017 to 2018 (a 27.4% increase). The rate of heroin overdose inpatient stays decreased from 6.2 to 5.8 from 2017 to 2018 (a 6.5% decrease). Rates were higher for Whites (compared to Blacks) and males (compared to females) for both outpatient visits and inpatient stays.

Non-fatal cocaine and amphetamine overdoses are increasing

- Rates of cocaine and amphetamine (includes methamphetamine) overdose outpatient visits and inpatient stays were higher among males (compared to females). Cocaine overdose rates were higher among Blacks (compared to Whites) while amphetamine overdose rates were higher among Whites (compared to Blacks).

Introduction

The purpose of this report is to describe drug overdose hospital discharges in the State of Tennessee (TN) in 2018. This report meets the legislative requirement to summarize aggregate claims data on all inpatient and outpatient discharges that include a drug poisoning diagnosis as reported for the calendar year two years prior to the current year by licensed hospitals (TCA Â§68-1-108(f)).² Data presented here are from the TN Statewide Hospital Discharge Data System (HDDS) from 2017 to 2018. The HDDS contains billing codes from discharges at hospitals statewide for inpatient hospitalizations and outpatient visits, including emergency department visits. These billing codes (since October 1st 2015) are based on the International Classification of Diseases, Tenth Revisions, Clinical Modification (ICD-10-CM) and provide a standardized method for identification of drug overdoses using administrative data.

The current report includes discharges for TN residents at non-federal, acute care hospitals for eight drug overdose morbidity statistics:

- (1) **All drug overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of drugs, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (2) **Opioid overdose (excluding heroin)** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of all opioid drugs regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (3) **Heroin overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of heroin, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (4) **Methadone overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of methadone, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (5) **Other synthetic opioid overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of other synthetic opioids (not including methadone), regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (6) **Benzodiazepine overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of benzodiazepines, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (7) **Cocaine overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of cocaine, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).
- (8) **Amphetamine (includes methamphetamine) overdose** outpatient visits or inpatient stays - caused by non-fatal acute poisonings due to the effects of amphetamines, regardless of intent (e.g., suicide, unintentional, assault, or undetermined).

²https://www.tn.gov/content/dam/tn/health/documents/HDDS_User_Manual_Final_2018.pdf

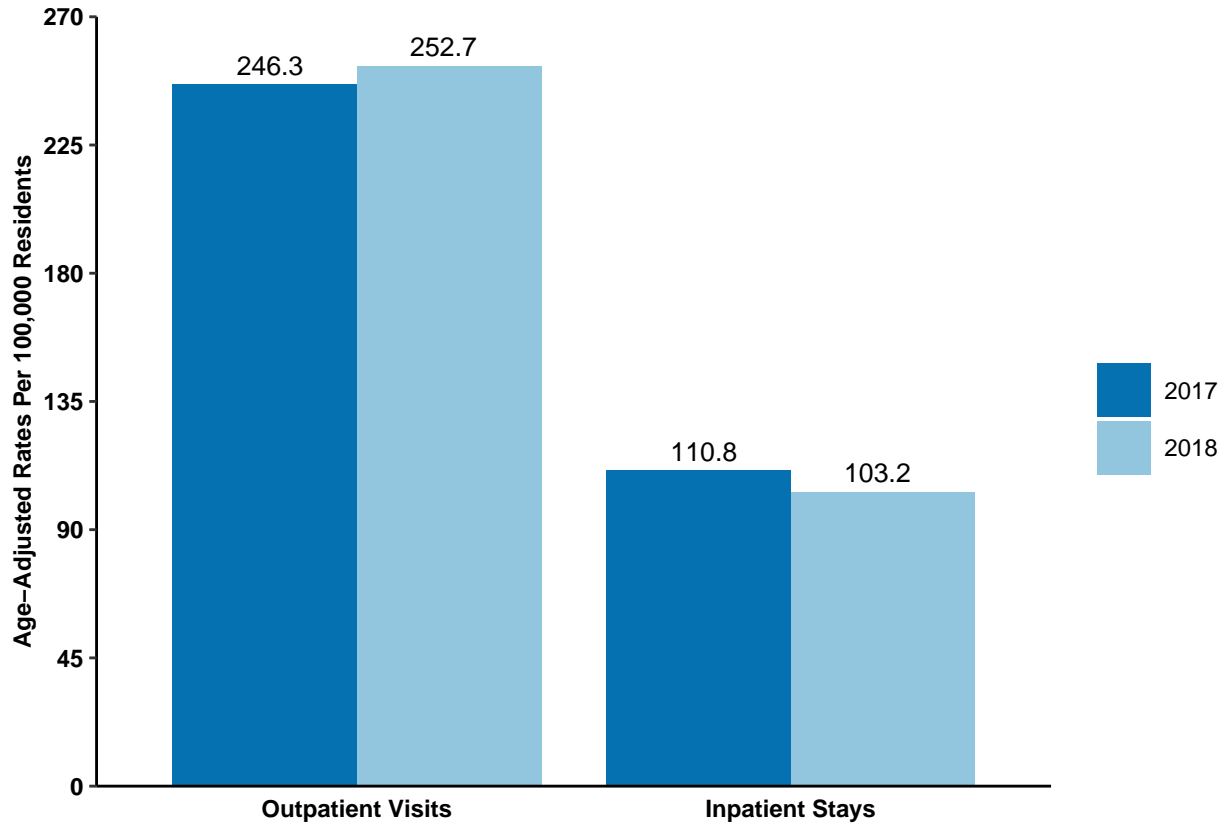
Events related to late effects, adverse effects, under-dosing, dependence, abuse or withdrawal and chronic poisonings due to the effects of drugs (e.g., damage to organs from long-term drug use), are excluded. Unless otherwise indicated, data exclude records with discharge status of deceased. As <0.2% of discharge records in Tennessee are coded as a subsequent encounter or sequela, morbidity statistics presented in this report are limited to only initial and missing encounters following Prevention for the States/Data-Driven Prevention Initiative Programs definitions.³

³Centers for Disease Control and Prevention (2018). CDC's Opioid Overdose Indicator Support Toolkit: Guidance for building and reporting on opioid-related mortality, morbidity, and PDMP indicators (Version 3.0). Atlanta, GA.

Drug Overdose Hospital Discharges

All Drug Overdose Outpatient Visits and Inpatient Stays

Age-Adjusted Rates for All Drug Overdose Outpatient Visits and Inpatient Stays in TN, 2017-2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, there were 23,565 non-fatal⁴ drug overdose hospital discharges among TN residents. This total comprises 7,202 inpatient stays (30.6%) and 16,363 outpatient visits (69.4%). The above figure shows age-adjusted rates for all drug overdose⁵ outpatient visits and inpatient stays in TN during 2017 to 2018. For outpatient visits,⁶ the age-adjusted rates increased from 246.3 per 100,000 in 2017 to 252.7 per 100,000 in 2018. For inpatient stays, the age-adjusted rates decreased from 110.8 per 100,000 in 2017 to 103.2 per 100,000 in 2018.

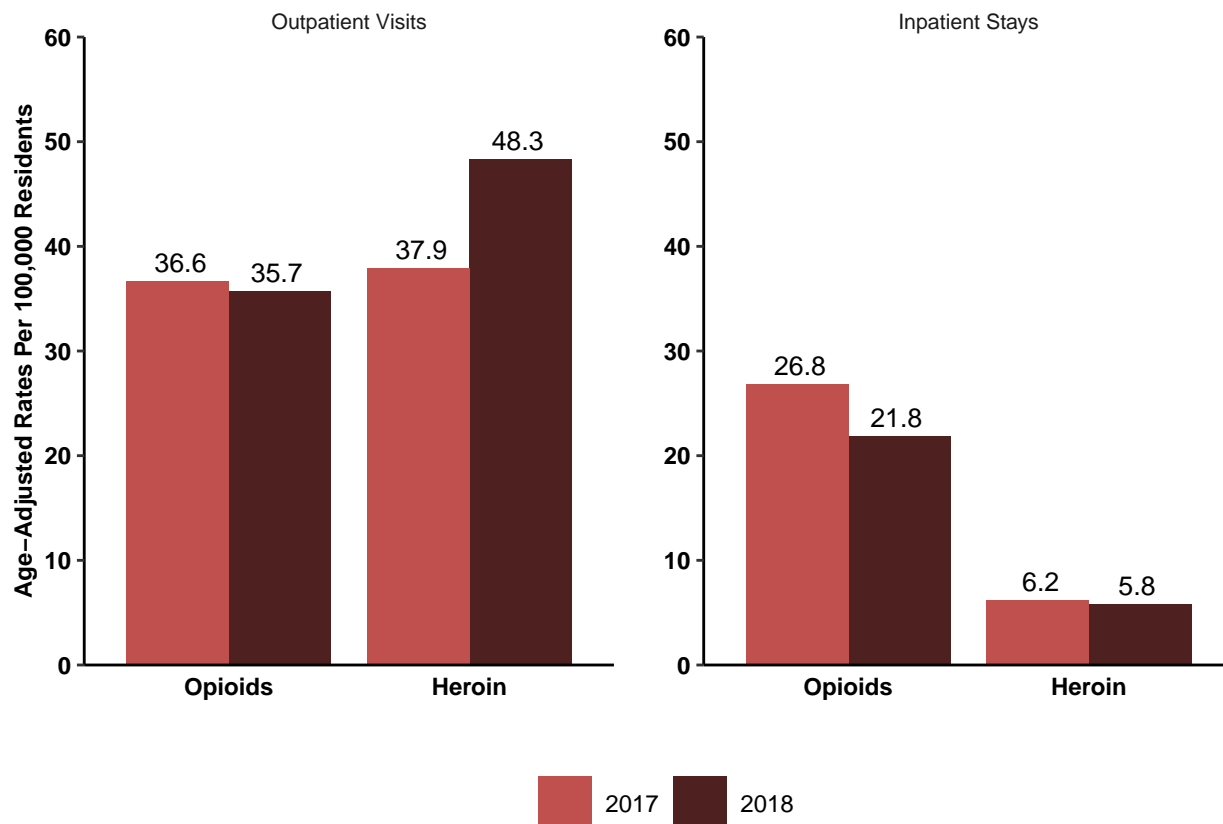
⁴This number does not include 255 TN residents (201 inpatients, 54 outpatients) who died of a drug overdose in the hospital.

⁵All drug overdose outpatient visits and inpatient stays are defined as drug overdoses caused by non-fatal acute poisonings due to the effects of drugs, regardless of intent (e.g., suicide, assault, unintentional, or undetermined). Identified using ICD-10-CM diagnosis codes (see Technical Notes for specific codes).

⁶Outpatient visits include primarily emergency department visits, but also include any observation period of 23 hours or less, ambulatory surgeries or certain diagnostic services (such as MRIs or CT scans).

Opioid Overdose Outpatient Visits and Inpatient Stays

Age-Adjusted Rates for Opioid (Excluding Heroin) and Heroin Overdose Outpatient Visits and Inpatient Stays in TN, 2017-2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

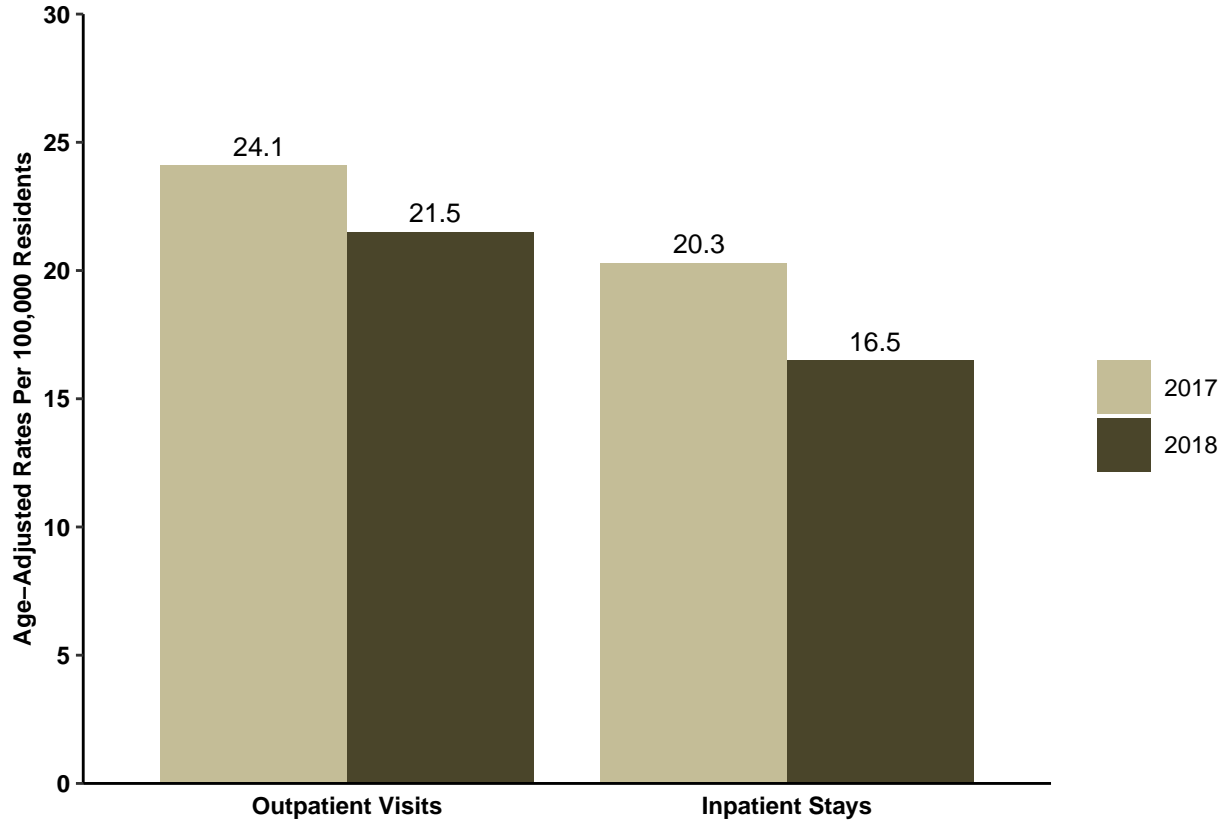
In 2018, there were 4,039 hospital discharges for opioid⁷ overdose (excluding heroin). Of these opioid overdose discharges, 2,400 were outpatient visits and 1,639 were inpatient stays. Heroin⁸ overdose discharges accounted for 3,429 of all overdoses, including 3,057 outpatient visits and 372 inpatient stays. The above graph shows age-adjusted rates for outpatient visits and inpatient stays for both opioid and heroin overdoses during 2017 and 2018. Both outpatient visits and inpatient stays for opioid overdoses decreased from 2017 to 2018. Inpatient stays for heroin overdoses remained low, with a small decrease observed from 2017 to 2018. In contrast, a large increase was observed for outpatient visits for heroin (37.9 per 100,000 in 2017 to 48.3 per 100,000 in 2018).

⁷Opioid overdose (excluding heroin) inpatient stays or outpatient visits caused by non-fatal acute poisonings due to the effects of all opioids, regardless of intent (e.g., suicide, assault, unintentional, or undetermined). Unless otherwise stated, opioid overdose does not include heroin. Identified using ICD-10-CM diagnosis codes (see Technical Notes for specific codes).

⁸Heroin overdose inpatient stays or outpatient visits caused by non-fatal acute poisonings due to the effects of heroin, regardless of intent (e.g., suicide, assault, unintentional, or undetermined). Identified using ICD-10-CM diagnosis codes (see Technical Notes for specific codes).

Benzodiazepine, Stimulant, and Synthetic Opioid Overdoses

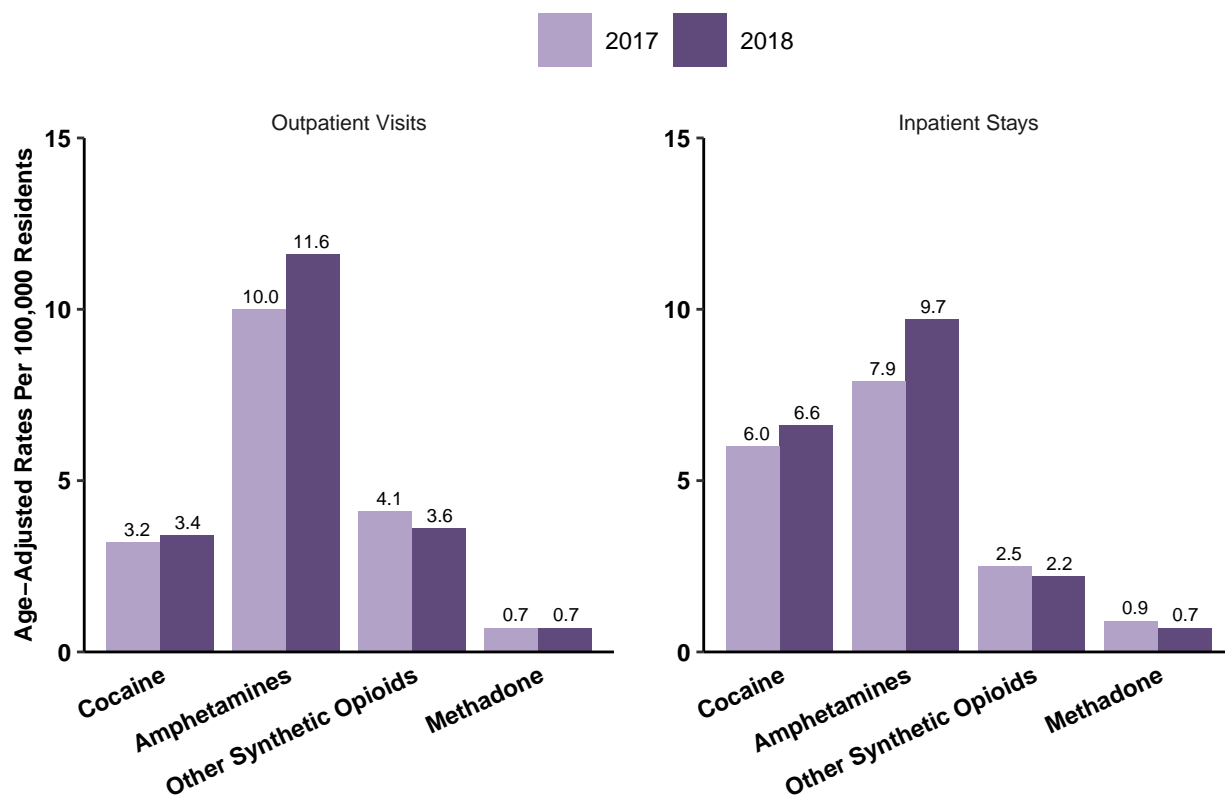
Age-Adjusted Rates for Benzodiazepine Overdose Outpatient Visits and Inpatient Stays in TN, 2017-2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, there were 2,602 hospital discharges for benzodiazepine overdose. Of these benzodiazepine overdose discharges, 1,433 were outpatient visits and 1,169 were inpatient stays. The age-adjusted rates (per 100,000 TN residents) for outpatient visits and inpatient stays for benzodiazepine overdoses in 2017 and 2018 are shown above. A slight reduction in benzodiazepine overdose rates from 2017 to 2018 was observed for both outpatient visits (24.1 in 2017 to 21.5 in 2018) and inpatient stays (20.3 in 2017 to 16.5 in 2018).

Age-Adjusted Rates for Stimulant and Synthetic Opioid Overdose Outpatient Visits and Inpatient Stays in TN, 2017-2018



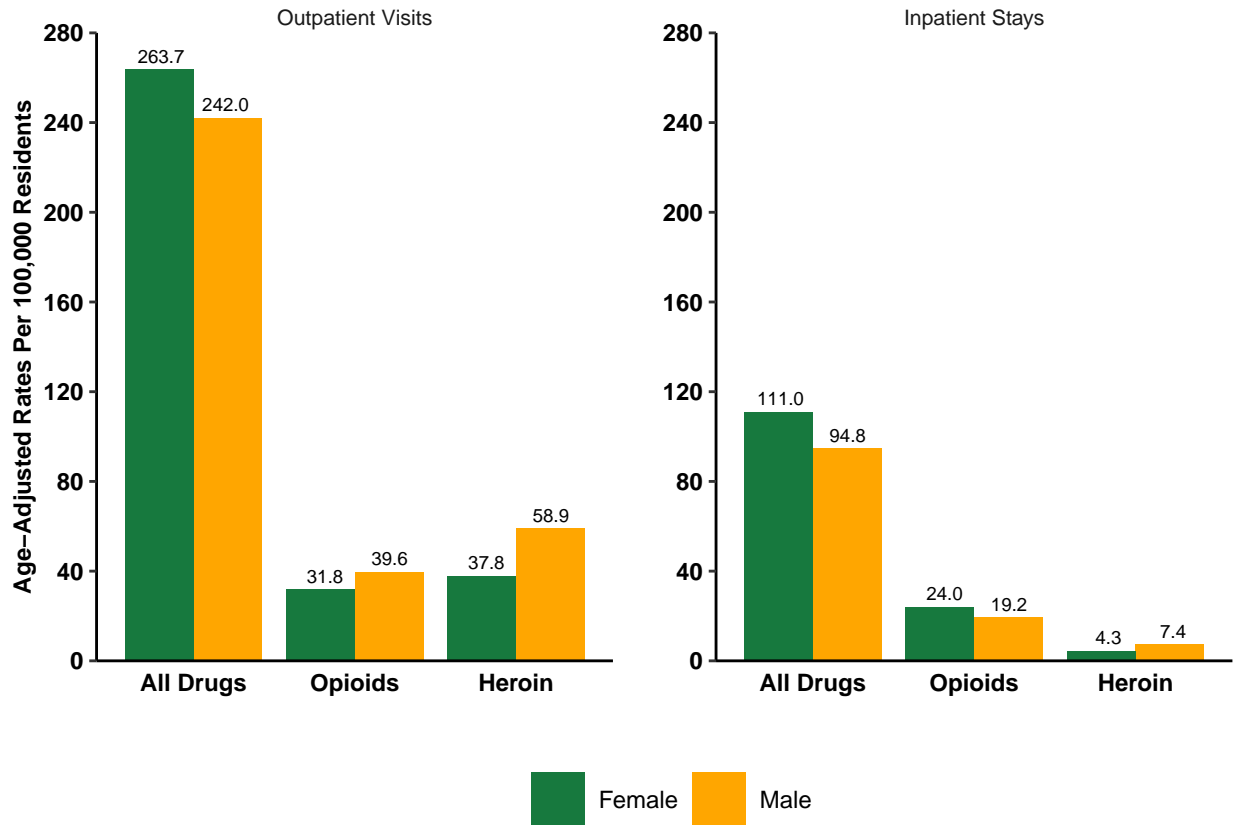
Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, the total number of other drug related overdose discharges were as follows: 671 (cocaine), 1334 (amphetamine)⁹, 390 (other synthetic opioids) and 96 (methadone). Cocaine overdoses were more frequently inpatient stays (n=458) as compared to outpatient visits (n=213). The number of outpatient visits for amphetamine and other synthetic opioid (not including methadone) overdoses were higher as compared to inpatient stays. The age-adjusted rates (per 100,000 TN residents) for cocaine and amphetamine overdose outpatient visits increased slightly from 2017 to 2018, while rates of outpatient visits for other synthetic opioids decreased during the same time period. Inpatient stays for cocaine overdose increased, synthetic opioids (including methadone) decreased slightly, while inpatient stays for amphetamine overdose increased from 7.9 in 2017 to 9.7 in 2018.

⁹Amphetamine overdoses include methamphetamine.

Drug Overdose Hospital Discharges by Sex

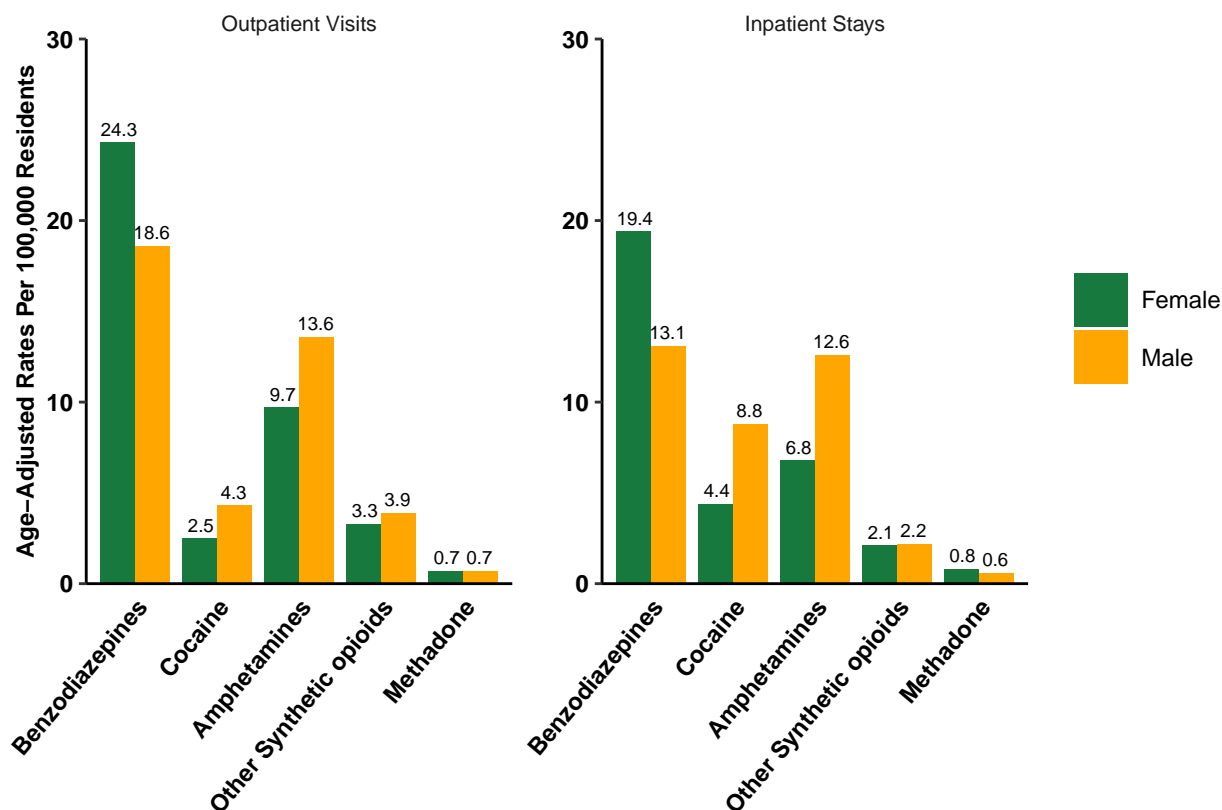
Age-Adjusted Rates for Drug Overdose Outpatient Visits and Inpatient Stays by Sex in TN, 2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, females accounted for 53.9% (12,689) of all drug overdose hospital discharges compared to 46.1% (10,874) for males. Outpatient visits were the most common type of discharge for both females (8,657) and males (7,705). The figure above displays the 2018 age-adjusted rates in TN for all drug, opioid (excluding heroin), and heroin overdoses in males and females. The rates (per 100,000 TN residents) of all drug overdose outpatient visits (263.7 vs. 242.0) and inpatient stays (111.0 vs. 94.8) were higher in females than in males, while males had higher heroin overdose outpatient visits (58.9 vs. 37.8) and inpatient stays (7.4 vs. 4.3) than females. Compared to males, females had higher rates of opioid overdose inpatient stays (24.0 vs. 19.2) but lower rates of opioid overdose outpatient visits (31.8 vs. 39.6).

Age-Adjusted Rates for Benzodiazepine, Stimulant, and Synthetic Opioid Overdose Outpatient Visits and Inpatient Stays by Sex in TN, 2018



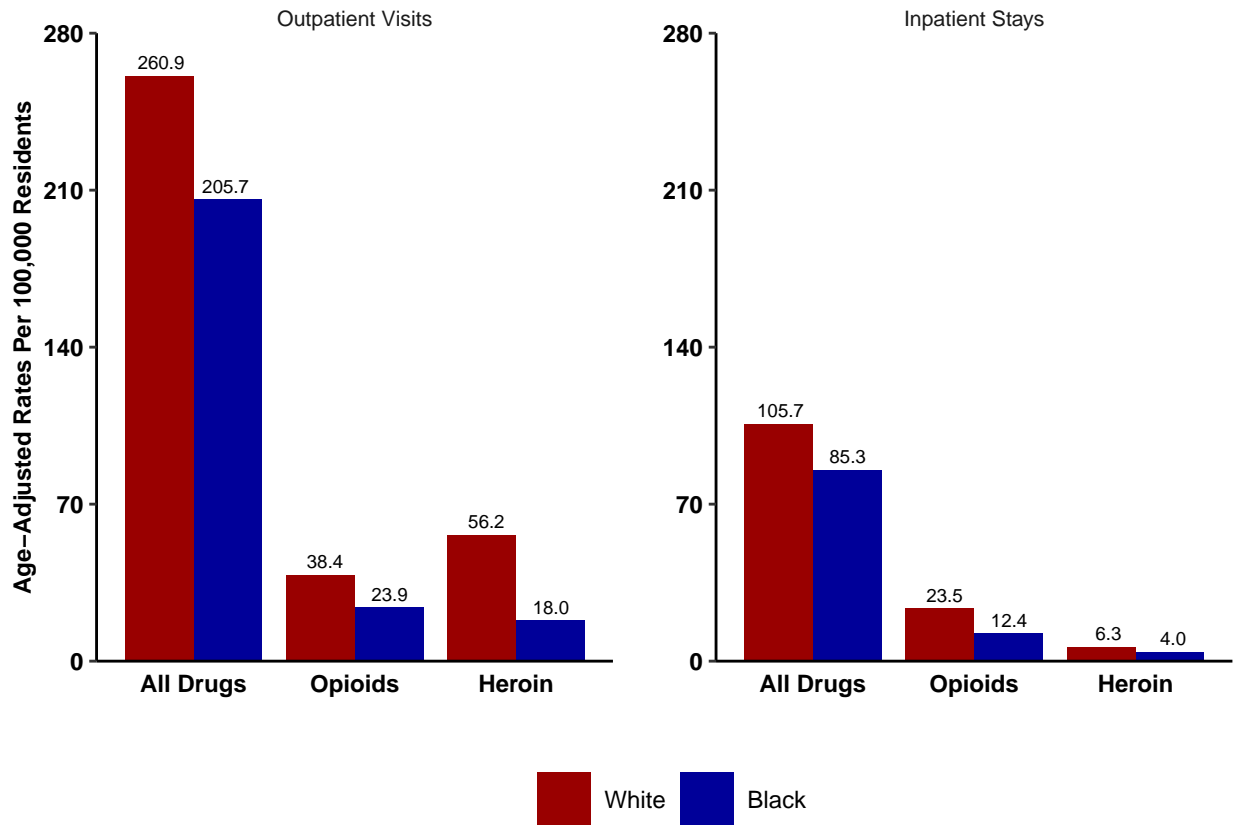
Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

The figure above shows age-adjusted rates for females and males in 2018 for select overdose discharges. Males had higher outpatient visits for cocaine (4.3 vs. 2.5) and amphetamine¹⁰ (13.6 vs. 9.7) overdoses, compared to females. Rates of benzodiazepine overdose outpatient visits were higher for females compared to males (24.3 vs. 18.6). Similar patterns were observed for inpatient stays, with males having higher rates of cocaine and amphetamine overdoses, and females having higher rates of benzodiazepine overdoses. Both outpatient visits and inpatient stays for other synthetic opioid overdoses were higher in males compared to females. Rates of methadone overdose outpatient visits were similar for both males and females, while inpatient stays for methadone overdose were slightly higher in females than in males.

¹⁰Amphetamine overdoses include methamphetamine.

Drug Overdose Hospital Discharges by Race

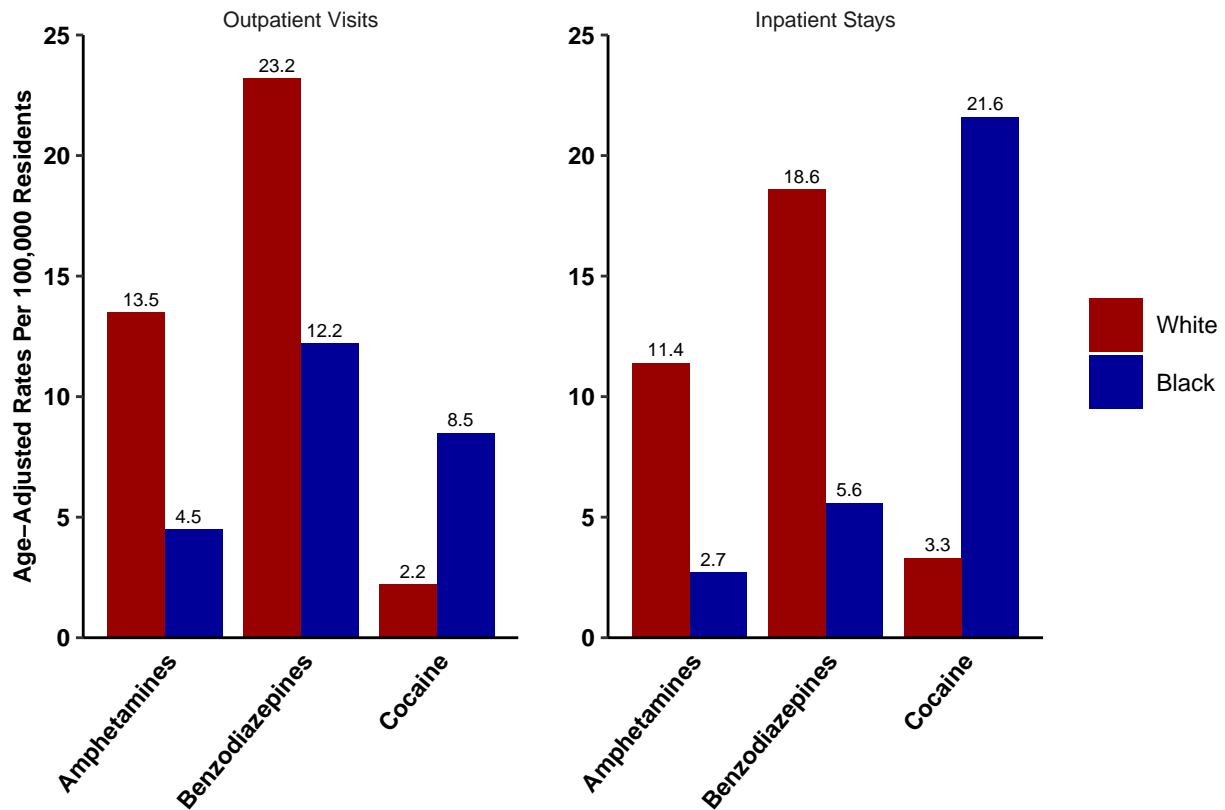
Age-Adjusted Rates for Drug Overdose Outpatient Visits and Inpatient Stays by Race in TN, 2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, Whites accounted for 19,130 (82.3%) of all drug overdose hospital discharges, Blacks made up 3,524 (15.2%), and other or unknown races accounted for the remaining 911 (2.5%) discharges. Outpatient visits were the most common type of discharge for both Whites (13,218) and Blacks (2,506). The above figure shows the age-adjusted rates (per 100,000 TN residents) for all drug, opioid (excluding heroin) and heroin overdoses by race. Whites compared to Blacks had higher age-adjusted rates for all drug, opioid, and heroin overdoses in both outpatient and inpatient settings.

Age-Adjusted Rates for Benzodiazepine and Stimulant Overdose Outpatient Visits and Inpatient Stays by Race in TN, 2018



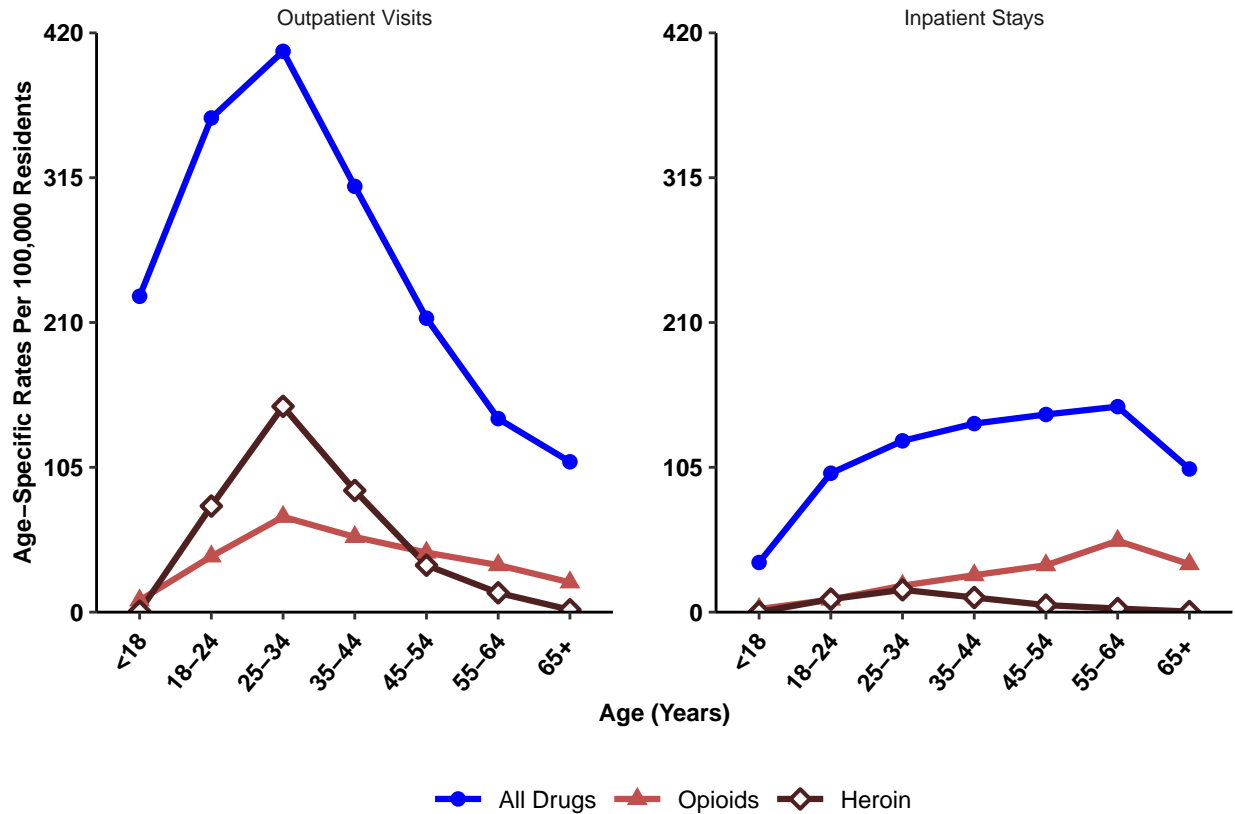
Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

The above figure shows the age-adjusted rates (per 100,000 TN residents) for benzodiazepine, cocaine and amphetamine overdose outpatient visits and inpatient stays by race. In 2018, compared to Blacks, Whites had higher age-adjusted rates for benzodiazepine and amphetamine¹¹ overdose outpatient visits and inpatient stays, while Blacks had higher rates for cocaine overdoses (outpatient visits: 8.5 vs. 2.2 and inpatient stays: 21.6 vs. 3.3) than Whites.

¹¹Amphetamine overdoses include methamphetamine.

Drug Overdose Hospital Discharges by Age

Age-Specific Rates for Drug Overdose Outpatient Visits and Inpatient Stays by Age groups in TN, 2018

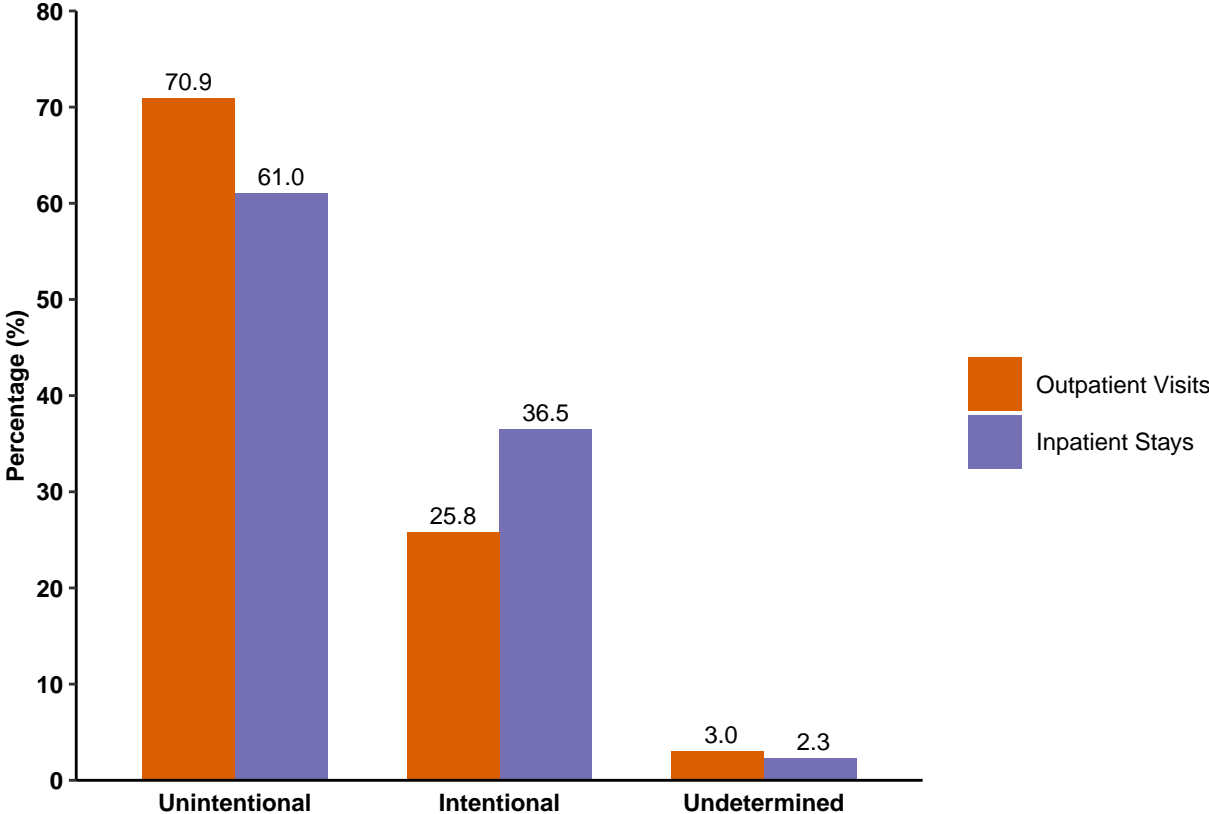


Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

The figure above displays 2018 age-specific rates (per 100,000 residents) for all drug, opioid (excluding heroin) and heroin overdoses in TN. Patients aged 25-34 years had the highest rates of all drug (406.6), opioid (69.1) and heroin overdose (149.2) outpatient visits. Rates for heroin overdose outpatient visits were lower than the rates for opioid overdose outpatient visits among those aged ≥ 45 years. For inpatient stays, all drug (149.0) and opioid (51.7) overdose rates were highest in those aged 55-64 years, while heroin overdose rates were highest among those aged 25-34 years (16.2).

Drug Overdose Hospital Discharges by Intentionality

All Drug Overdose Hospital Discharges by Intentionality in TN, 2018

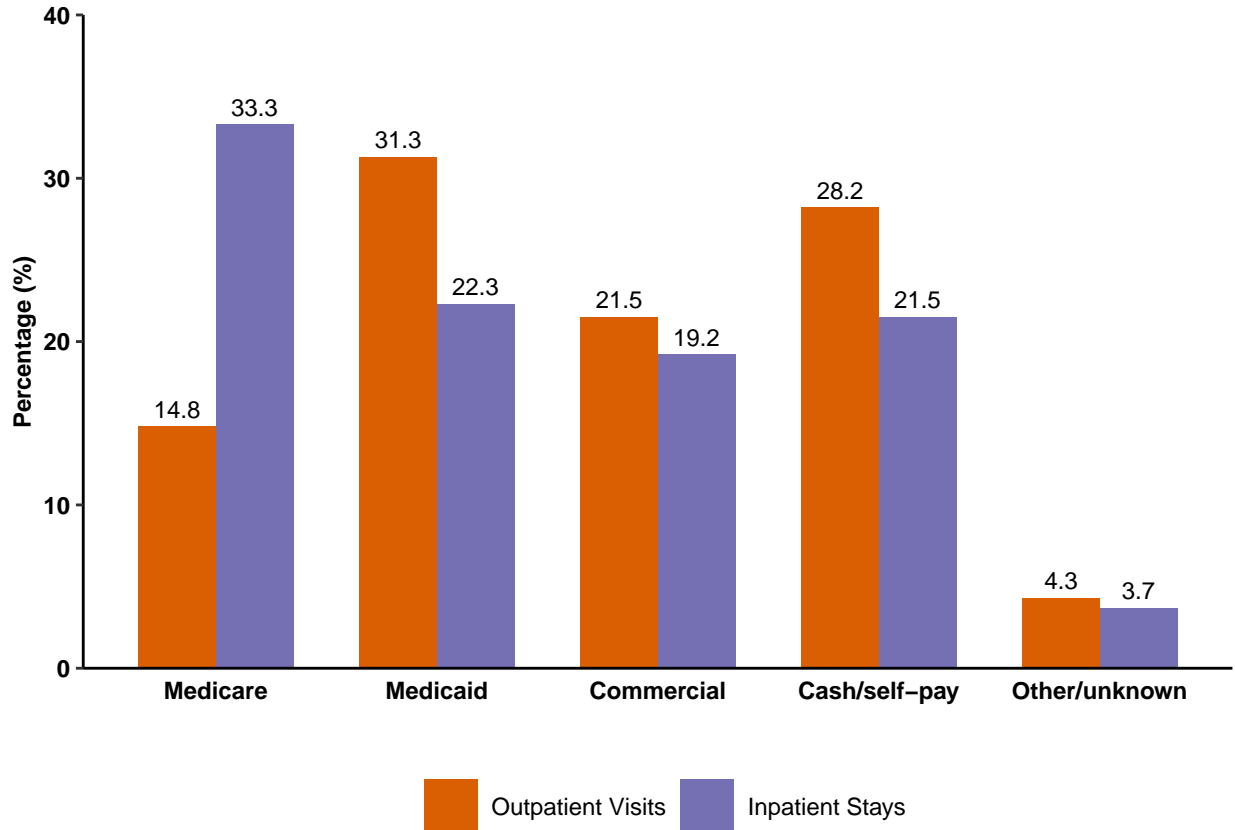


Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

In 2018, about 71% of all drug overdose outpatient visits (n=16,363) and 61% of inpatient stays (n=7,202) in Tennessee were due to unintentional poisoning while slightly over one quarter of outpatient visits and 36.5% of inpatient stays were intentional. About 2-3% of all drug overdose discharges were undetermined, while overdoses due to assault were $\leq 0.2\%$.

Drug Overdose Hospital Discharges by Primary Payer

All Drug Overdose Hospital Discharges by Primary Payer¹² type in TN, 2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

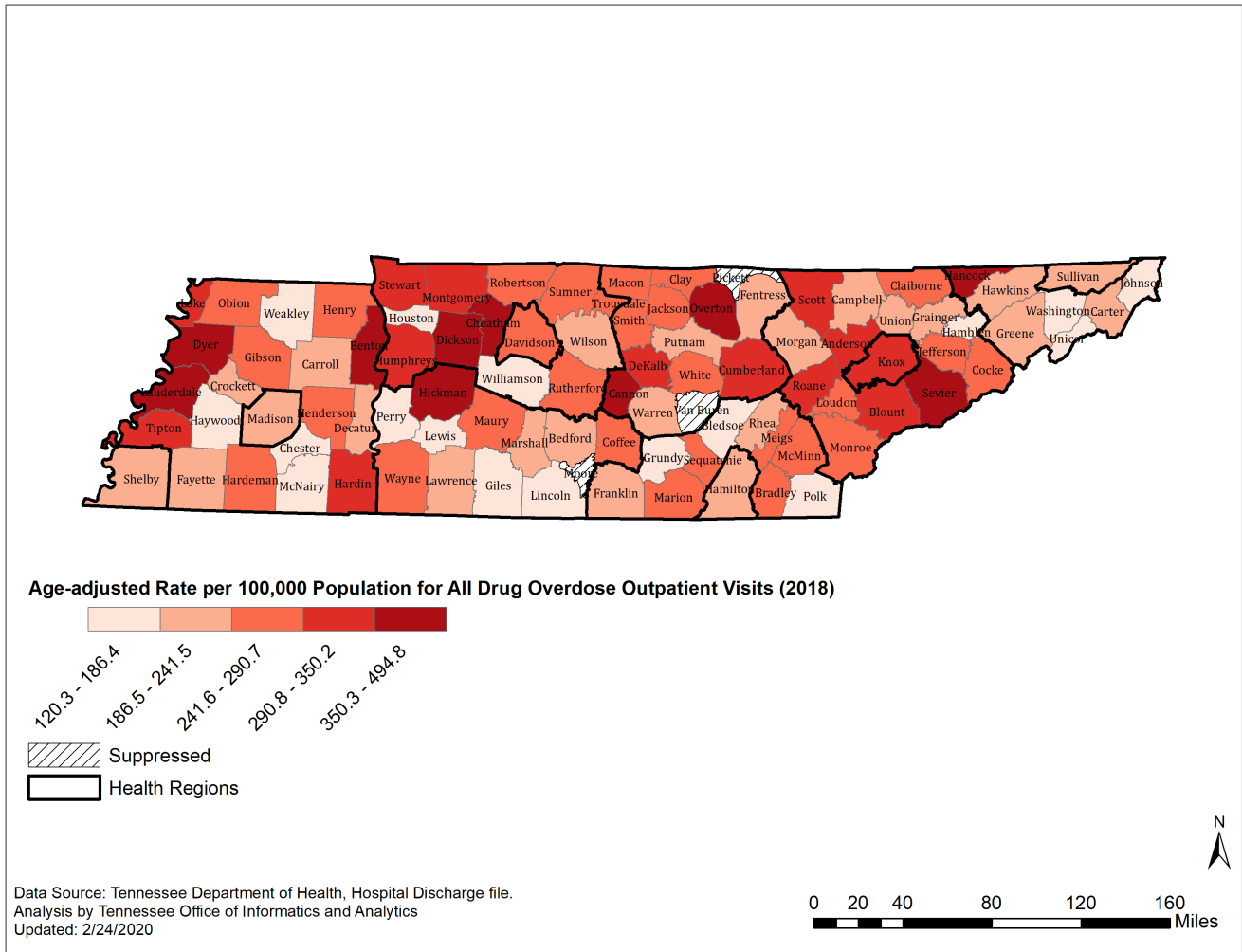
In 2018, among all drug overdose outpatient visits, Medicaid including TennCare was the most common primary payer billed for all drug overdose visits (31.3%), followed by self-pay (28.2%) and commercial insurance (21.5%). For inpatient stays related to all drug overdoses, the most common primary payer was Medicare (33.3%) followed by Medicaid (22.3%) and self-pay (21.5%).

¹²Primary Payer is determined according to the name or type of payer organization from which the hospital first receives payment for the bill.

Drug Overdose Hospital Discharges by County of Residence

All Drug Overdoses

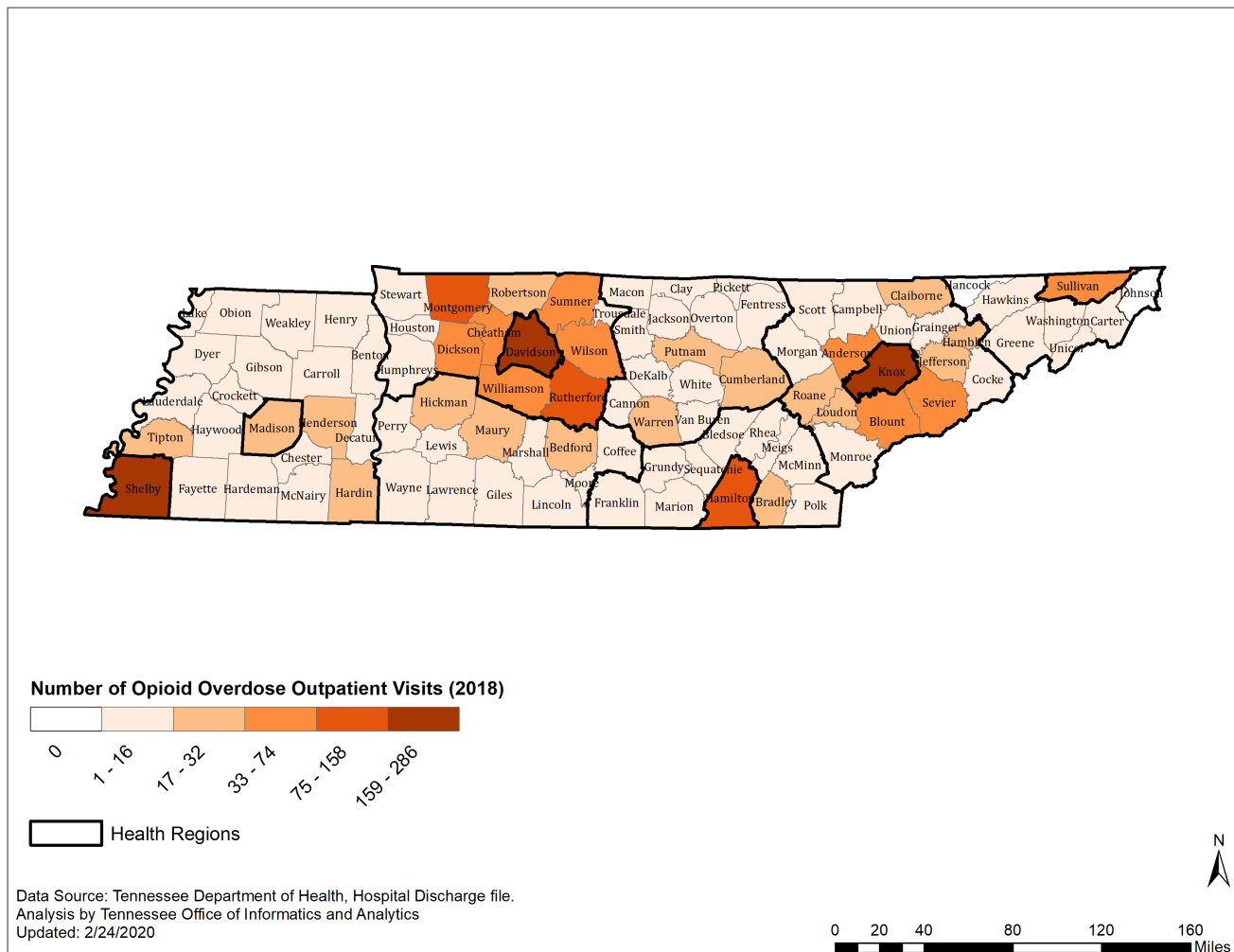
Age-Adjusted Rates for All Drug Overdose Outpatient Visits in TN, 2018



The above map shows age-adjusted rates for all drug overdose outpatient visits in 2018 by TN County of residence. The rates ranged from 120.3 per 100,000 in Weakley County to 494.8 per 100,000 in Cheatham County for all drug overdose outpatient visits. The ten counties with the highest rates (≥ 350.3 per 100,000) for all drug overdose outpatient visits were Benton, Cannon, Cheatham, Dickson, Dyer, Hancock, Hickman, Lauderdale, Overton and Sevier.

Opioid (Excluding Heroin) Overdoses

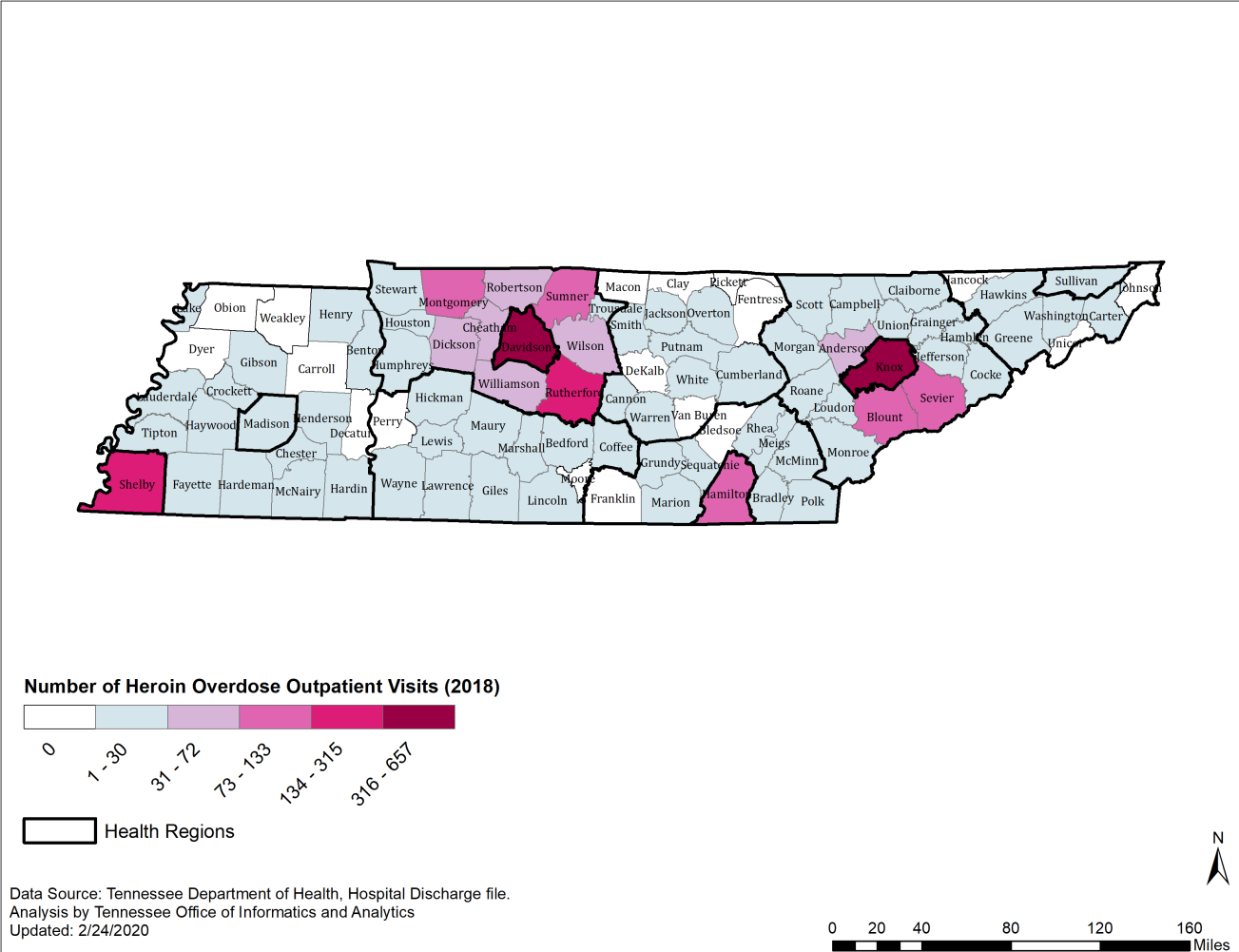
Number of Opioid (Excluding Heroin) Overdose Outpatient Visits in TN, 2018



The above map shows the number of opioid (excluding heroin) overdose outpatient visits in 2018 by TN County of residence. Two counties (Hancock and Johnson) had no opioid overdose outpatient visits. Davidson, Hamilton, Knox, Montgomery, Rutherford and Shelby counties had 75 or more opioid overdose outpatient visits in 2018.

Heroin Overdoses

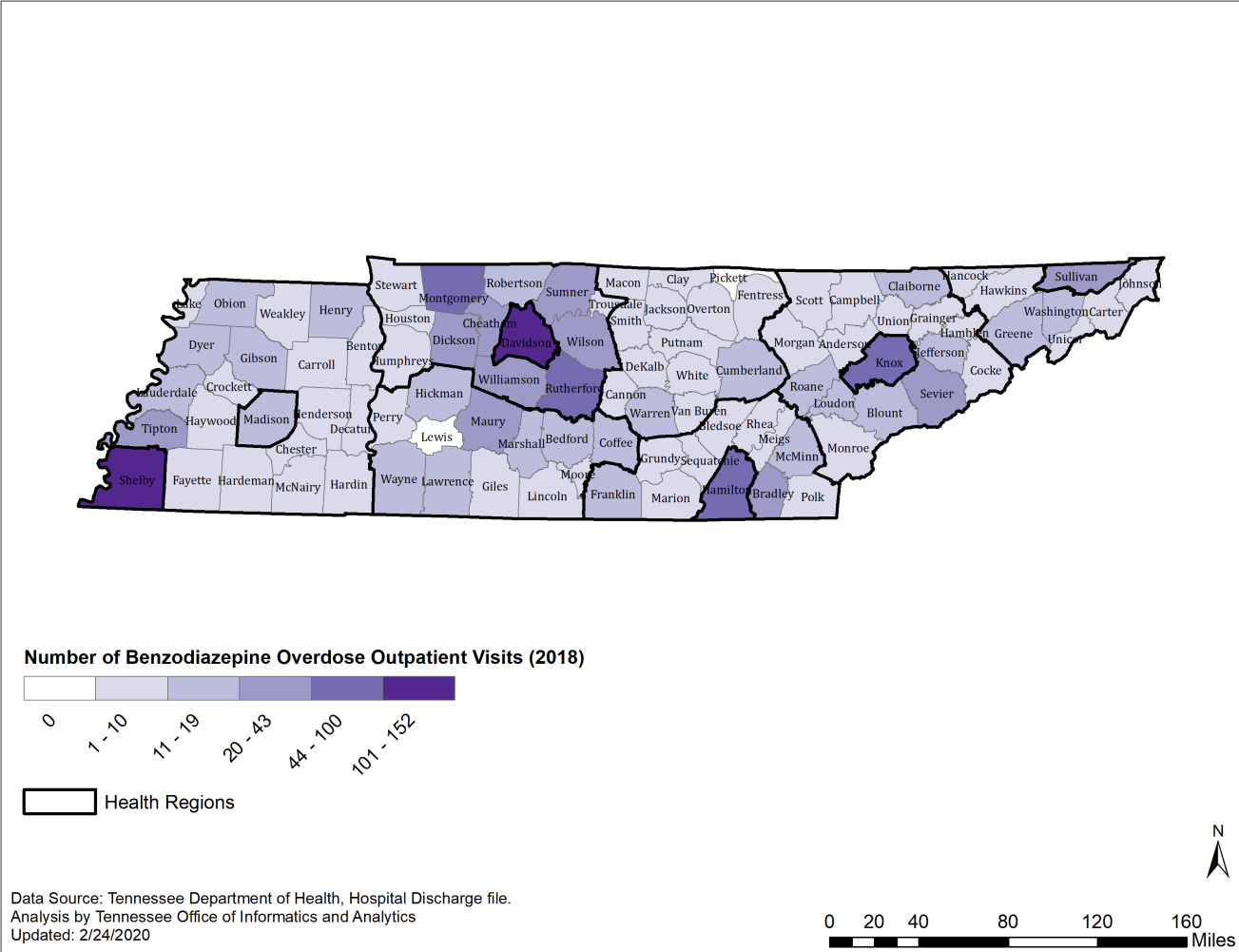
Number of Heroin Overdose Outpatient Visits in TN, 2018



The above map shows the number of heroin overdose outpatient visits in 2018 by TN County of residence. Seventeen counties (Bledsoe, Carroll, Clay, Decatur, DeKalb, Dyer, Fentress, Franklin, Hancock, Johnson, Macon, Moore, Obion, Perry, Pickett, Unicoi and Van Buren) had no heroin overdose outpatient visits. Eight counties (Blount, Davidson, Knox, Montgomery, Rutherford, Sevier, Shelby and Sumner) had ≥ 100 heroin overdose outpatient visits in 2018.

Benzodiazepine Overdoses

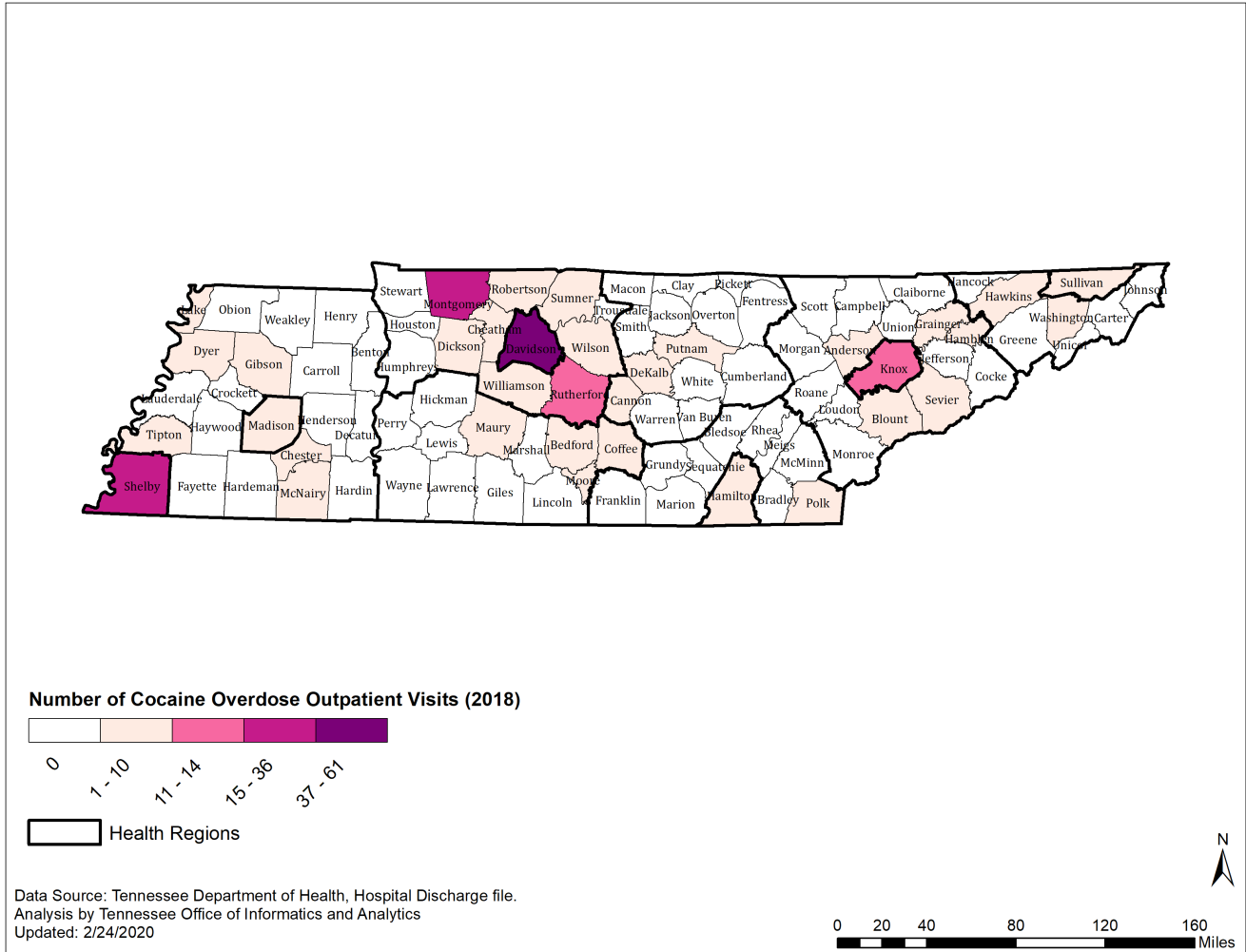
Number of Benzodiazepine Overdose Outpatient Visits in TN, 2018



The above map shows the number of Benzodiazepine overdose outpatient visits in 2018 by TN County of residence. Two counties (Lewis and Pickett) had no benzodiazepine overdose outpatient visits. Four counties (Hamilton, Knox, Montgomery and Rutherford) had 50 to 100 benzodiazepine overdose visits, while Davidson (144 visits) and Shelby (152 visits) counties had the highest number of benzodiazepine overdose outpatient visits in 2018.

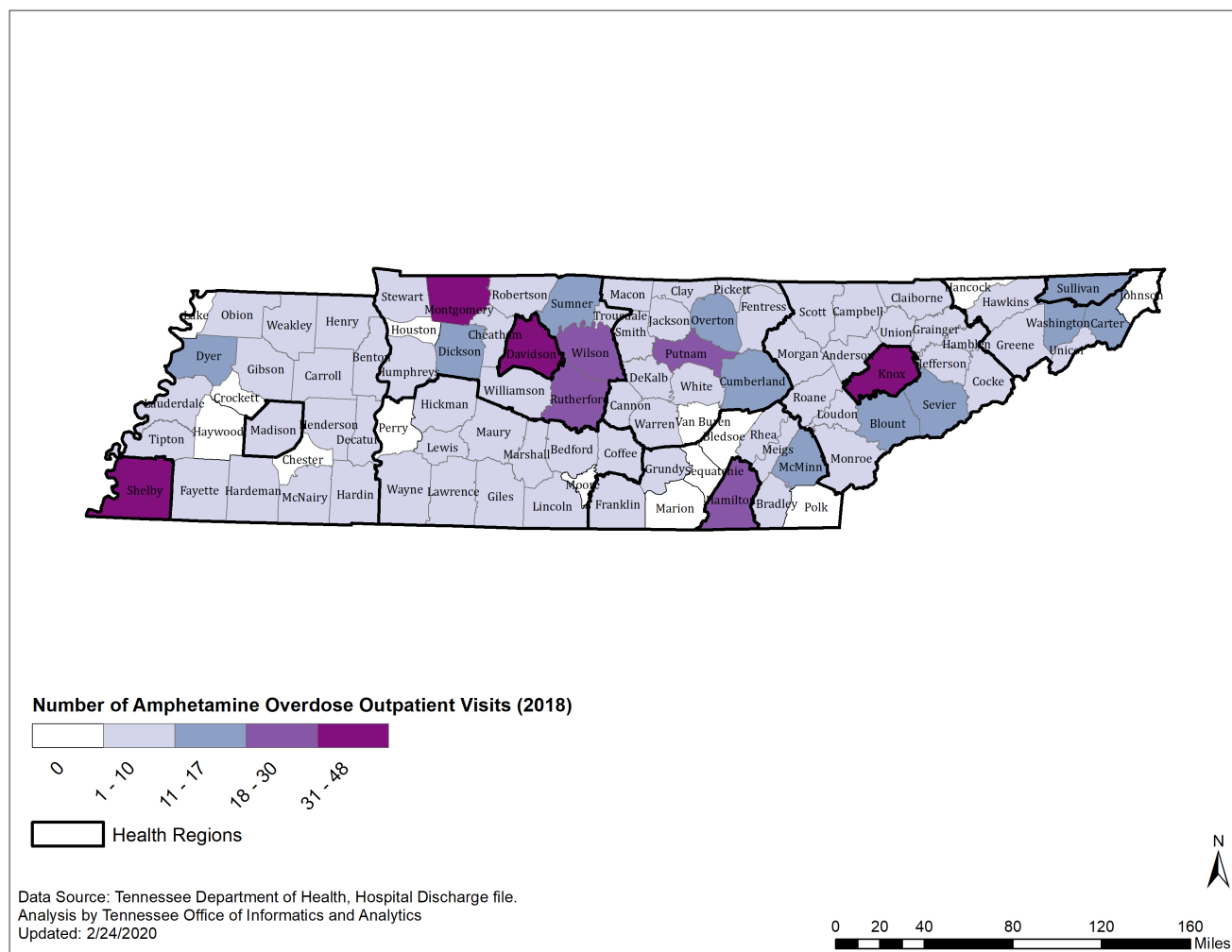
Stimulant Overdoses

Number of Cocaine Overdose Outpatient visits in TN, 2018



The above map shows the number of cocaine related overdose outpatient visits in 2018 by TN County of residence. Montgomery (22 visits), Shelby (36 visits) and Davidson counties (61 visits) had the highest number of cocaine overdose outpatient visits in 2018.

Number of Amphetamine Overdose Outpatient Visits in TN, 2018



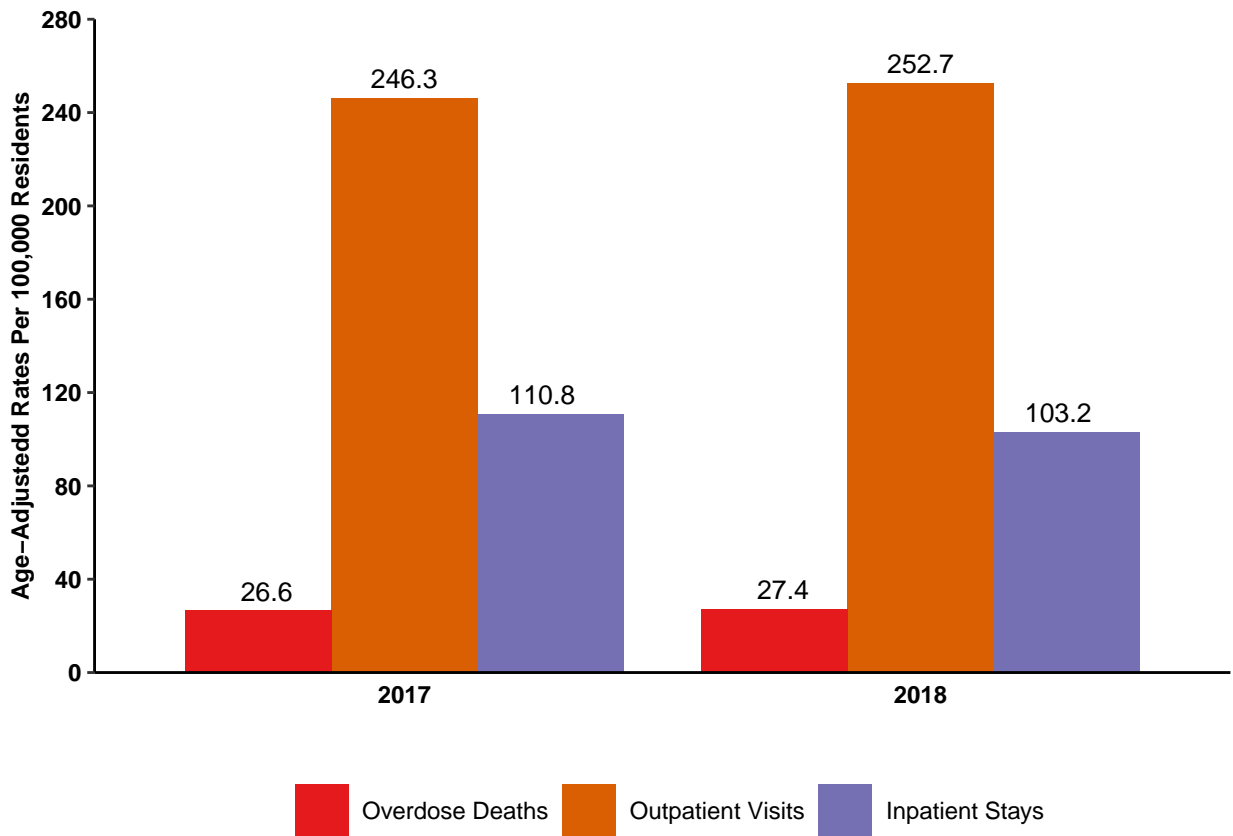
The above map shows the number of Amphetamine¹³ overdose outpatient visits in 2018 by TN County of residence. Fourteen counties (Bledsoe, Chester, Crockett, Hancock, Haywood, Houston, Johnson, Lake, Marion, Moore, Perry, Polk, Sequatchie and Van Buren) had no amphetamine overdose outpatient visits. Davidson, Knox, Montgomery and Shelby counties had the highest number (>30) of amphetamine overdose outpatient visits.

¹³Amphetamine overdoses include methamphetamine.

Fatal and Non-Fatal Drug Overdose Trends

The following figures show non-fatal overdose hospital discharge rates alongside fatal overdose rates from 2017 to 2018. The death rates are derived from the TN Vital Statistics Death Statistical File, and include overdose deaths that occur both in and out of hospitals. The vast majority of overdose deaths occur outside of hospitals. In 2018, 1,818 TN residents died of a drug overdose. Among hospital discharge patients, 201 inpatients and 54 outpatients were reported deceased. Similar to the non-fatal hospital discharge rates presented above, the below rates exclude records with the discharge status of deceased.

Age-Adjusted Rates for All Drug Overdose Hospital Discharges and Deaths in TN, 2017-2018



Analysis by the Office of Informatics and Analytics, TDH (last updated February 27, 2020). Limited to TN residents. Data Source: Hospital Discharge Data System.

Rates of death from all drug overdoses increased from 26.6 in 2017 to 27.4 in 2018. Concurrently, rates for outpatient visits also increased while inpatient stays declined slightly since 2017.

Technical Notes

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Definition of Measures

Inpatient stays are inpatient hospitalizations generally lasting longer than 24 hours while outpatient visits are those less than 24 hours. Outpatient visits include primarily emergency department visits, but also include any observation period of 23 hours or less, ambulatory surgeries or certain diagnostic services (such as MRIs or CT scans).

Overdose is determined by the International Classification of Disease (ICD), Clinical Modification, 10th revision codes. Tennessee's Hospital Discharge Data System (HDDS) includes up to 18 diagnosis fields and three fields for external causes of injury codes (abbreviated as e-codes). Prior to October 1, 2015, hospitals reported 9th revision codes (ICD-9-CM) and afterward reported 10th revision codes (ICD-10-CM). Relevant ICD-10-CM codes for each revision are listed for each drug indicator definition below.

Age-adjusted rates for all drug overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of drugs, regardless of intent
 - ICD-10-CM any mention of diagnosis codes:
 - T36-50 (poisoning by drugs, medicaments, and biological substances) with intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for opioid overdose excluding heroin outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of all opioids excluding heroin, regardless of intent
 - ICD-10-CM Any mention of diagnosis codes:
 - T40.0X (poisoning by opium),
 - T40.2X (poisoning by other opioids),
 - T40.3X (poisoning by methadone),
 - T40.4X (poisoning by synthetic narcotics),
 - T40.60 (poisoning by unspecified narcotics), or
 - T40.69 (poisoning by other narcotics) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
 - Exclusions: T401.1X (poisoning by heroin), any intent/any encounter type.
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for heroin overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of heroin, regardless of intent
- ICD-10-CM any mention of diagnosis codes:
- T40.1X (poisoning by heroin) with
- intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)

- Denominator - Yearly state population in 100,000s

Age-adjusted rates for Benzodiazepine overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of benzodiazepine, regardless of intent
- ICD-10-CM any mention of diagnosis codes:
 - T42.4X (poisoning by benzodiazepine) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for other synthetic opioids overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of other synthetic opioids (excludes methadone), regardless of intent
- ICD-10-CM any mention of diagnosis codes:
 - T40.4X (poisoning by synthetic opioids) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for methadone overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of methadone, regardless of intent
- ICD-10-CM any mention of diagnosis codes:
 - T40.3X (poisoning by methadone) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for cocaine overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of cocaine, regardless of intent
- ICD-10-CM any mention of diagnosis codes:
 - T40.5X (poisoning by cocaine) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)
- Denominator - Yearly state population in 100,000s

Age-adjusted rates for amphetamine (includes methamphetamine) overdose outpatient visits and inpatient stays

- Numerator - count of outpatient visits or inpatient stays caused by acute poisonings due to the effects of amphetamines, regardless of intent
- ICD-10-CM any mention of diagnosis codes:
 - T43.62 (poisoning by amphetamines) with
 - intent codes 1-4 (unintentional, intentional, assault, or undetermined) and encounter code A (initial encounter) or missing (not subsequent encounter or a sequela)

- Denominator - Yearly state population in 100,000s

Age/Race/Sex stratification

- Age is determined according to date of birth and at date of admission to hospital.
- Race and sex are reported by the hospital to the hospital discharge data system.
- Due to low numbers, patients of unknown race, Native American, Alaskan Native, Asian or Pacific Islander were not included in the analyses.

Age-adjustment is used for all non-fatal overdose rates except for those stratified by age. Age-adjusted rates were calculated using 2000 US standard population for age-adjustment. The rate for a specific age group in a given population was multiplied by the proportion of people in the same age group in the 2000 U.S. standard population; adding across age groups yields the final age-adjusted rate.

Primary Payer Type

Primary Payer is determined according to the name or type of payer organization from which the hospital first receives payment for the bill. The payer types for this report are categorized as

- Medicare
- Medicaid
- Commercial
- Cash/self-pay
- Other / unknown (including Cover TN, Cover Kids, workers compensation, division of health services, federal, military, medically indigent).

Time Period 2017 - 2018

Inclusion/Exclusion Criteria

- Only Tennessee residents were considered
- Only discharges from non-federal, acute care hospitals were included
- Excludes patients discharged as dead/deceased
- Late effects, adverse effects, under-dosing, and chronic poisonings due to the effects of drugs were excluded

Data Sources

- Tennessee Hospital Discharge Data System (HDDS) 2017-2018
- Population data was obtained from CDC Wonder bridged race population estimates. The vintage year of the populations corresponds to the year of the indicator. (See <http://wonder.cdc.gov/bridged-race-population.html> for more details).

General Limitations of the Measures

- Non-fatal overdoses are only captured as hospital discharges and do not include those non-fatal overdoses that do not end up at an acute-care facility.
- Limited to non-federal acute care-affiliated facilities. Excludes Veterans Affairs and other federal hospitals, rehabilitation centers, and psychiatric hospitals