Poisonings among Arizona Residents 2015

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ARIZONA DEPARTMENT OF HEALTH SERVICES
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Executive Summary

The data presented in this report show that poisoning is a public health problem that impacts the lives of thousands of Arizona residents each year. These injuries can occur throughout the life span, and like so many injuries, poisonings are preventable. Understanding the circumstances of poisonings is an important step towards educating and empowering communities and implementing prevention strategies.

Poisoning was the leading cause of injury-related mortality among Arizona residents in 2015 accounting for a total of 1,335 deaths. The age-adjusted poisoning mortality rate in 2015 was 20.1 deaths per 100,000 residents and represents a 5.2% increase from 2014 (19.1 deaths per 100,000 residents). Males aged 45 to 54 years had the highest rate of poisoning-related deaths with 45.9 deaths per 100,000 residents. Age-adjusted poisoning mortality rates per 100,000 residents were highest among American Indians or Alaska Natives (36.5) and White non-Hispanics (24.8). The manner of death for majority of poisoning related deaths was unintentional (78%, n=1,046), followed by suicides (14%, n=192), and then undetermined (7%, n=96). The poisons most commonly specified on death certificates in 2015 were pharmaceutical opioids (n=401), methamphetamines and other stimulants (n=365), and alcohol (n=291). Seventy-seven percent of pharmaceutical opioids were among White non-Hispanic residents. Among pharmaceutical opioids deaths, females aged 45 to 54 years had the highest rate (15.1 deaths per 100,000), while for males the 35 to 44 years age group had the highest rate (10.7) Fifty-two percent of pharmaceutical opioids related deaths occurred in Maricopa County and twenty-three percent in Pima County. The age-adjusted Heroin poisoning mortality rate for 2015 was 3.7 deaths per 100,000 residents and represents a 37% increased from 2014 (2.7 deaths per 100,000 residents). In 2015, the 25-34 years age group had the highest rate for fatal heroin poisoning. Across all age groups, the fatal heroin poisoning rate for males was two times more than the females.

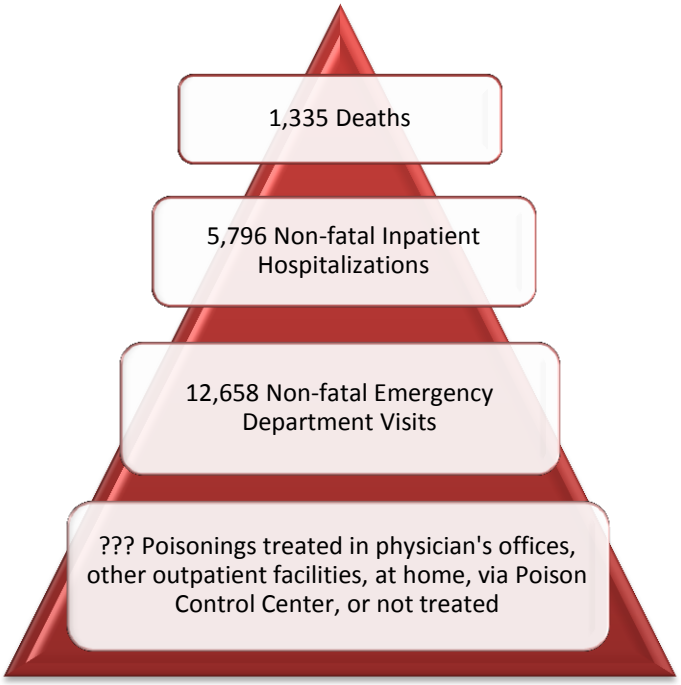
There were 5,796 non-fatal inpatient hospitalizations due to poisonings, and represents an 8.3% decrease since 2014. Overall, inpatient hospitalization (IP) rates due to poisoning have decreased by 21% since 2011. Adult females continue to have the highest rates of poisoning-related inpatient hospitalizations. Females aged 45-54 years old had the highest rate with 131.0 hospitalizations per 100,000 residents, followed by females aged 15-24 years old (122.4 hospitalizations per 100,000 residents), and then females aged 35-44 years old (120.6 hospitalizations per 100,000 residents). American Indian or Alaska Native had the highest age-adjusted poisoning-related rate of IP with 125.8 hospitalizations per 100,000 residents, followed by Black or African-Americans (114.7 hospitalizations per 100,000 residents), and then White non-Hispanic residents (103.2 hospitalizations per 100,000). Unintentional poisoning accounted for 45% of poisoning-related IP (n=2,636), intentional poisonings comprised an additional 45% (n=2,583), and undetermined intent accounted for 10% of poisonings. Hospital charges for non-fatal poisoning-related inpatient hospitalizations totaled more than $208 million in 2015, with charges to AHCCCS totaling over $91 million (n=2,659, 45%). Arizona residents spent a total of 21,110 days hospitalized for poisoning injuries. Gila County had the highest age-adjusted rate of IP due to poisonings (113.9 hospitalizations per 100,000 residents), followed by Pima County (112.2 hospitalizations per 100,000 residents).

There were 12,658 non-fatal poisoning-related emergency department visits among Arizona residents. Overall, Emergency Department Visits (EDV) rates due to poisoning have decreased by 2.7% since 2011. The highest age-specific rates of poisoning-related emergency department visits were among children aged 1-4 years old with 421.4 EDV per 100,000 residents. For this age group, the rate for males and females were 431.5 and 410.9 per 100,000 residents, respectively. Fifty-four percent of the non-fatal poisoning-related EDV were the result of unintentional poisonings (n=6,764), and thirty-five percent of the visits resulted from intentional injuries (n=4,385). Graham County and Gila County had the highest rate with 326.4 and 293.2 visits per 100,000 residents, respectively.

Overview of Poisonings among Arizona Residents

Poisoning, particularly drug poisoning, has emerged as a significant public health concern in the United States and Arizona. Beginning in 2007, poisoning-related deaths surpassed motor-vehicle crashes as the leading injury-related cause of death among Arizonans.[1] As this report shows, the burden of poisoning-related injuries has been increasing steadily over the past decade, accounting for a greater percentage of injury-related morbidity and mortality. Figure 1 shows the overview of the number of poisoning-related events by outcome and illustrates the **limitations of currently available data sources and the inability to enumerate the true number of poisonings.**

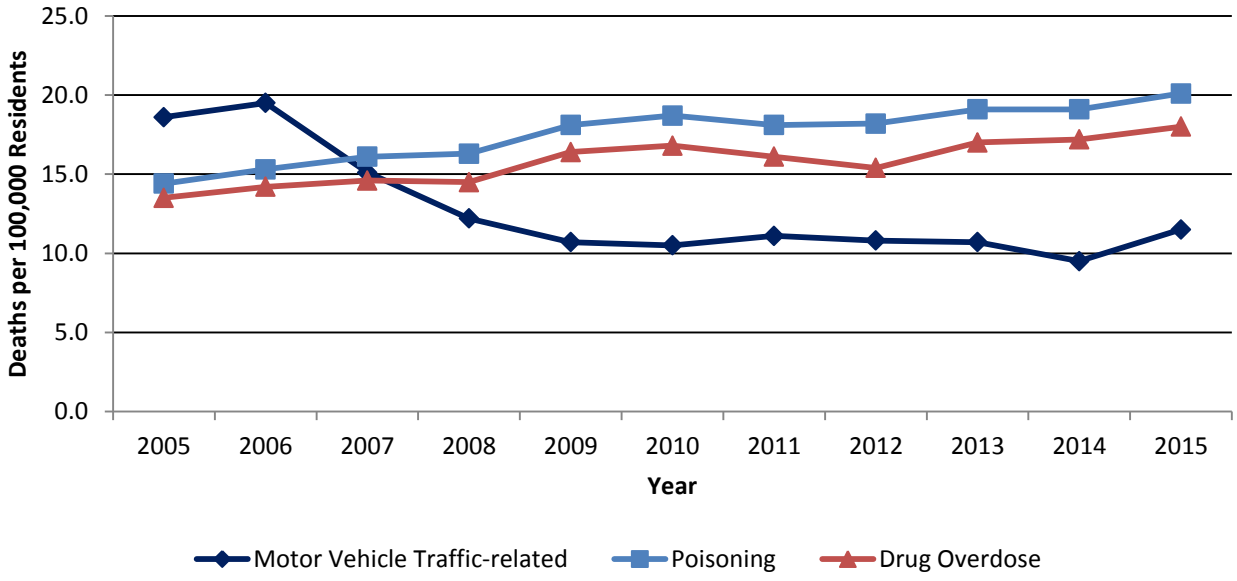
Figure 1. Poisoning Outcomes Pyramid, Arizona 2015



This report presents a comprehensive picture of poisoning-related injuries among Arizona residents in 2015, as well as poisoning trends during the five years since 2011. To help better understand the data, information about poison control centers is also presented. For additional information about data sources and methods used, please refer to the Methodology section of this report. ***In order to learn about preventing poisonings, please refer to the Prevention Tips and Resources section of this report.*** Figure 2 illustrates when poisoning surpassed motor vehicle traffic crashes and shows trends in Arizona for the last ten years, 2005 through 2015. Also included in figure 2 are drug overdose fatalities, a sub-category of poisoning deaths that include overdoses from prescription drugs, illicit drugs and/or over-the-counter drugs, as the underlying cause of poisoning death. Since 2005 poisoning deaths have increased over 36 percent, while motor vehicle crash deaths have decreased over 38 percent during the same time period.

[1] Please refer to the Methodology Section for a description of the types of poisonings included in this report; these numbers may not match other publications.

Figure 2. Poisoning and Drug Overdose Mortality Age-adjusted Rates compared to Motor Vehicle-Related Mortality Rates, Arizona Residents, 2005-2015



Poison Control Centers Serving Arizona

Poison Control Centers (PCCs) are widely considered to be a cost-effective tool for reducing healthcare costs resulting from poisoning events. A recent study on the cost-savings analysis and return on investment regarding poison control centers found that every dollar invested in America's poisoning centers saves $13.39 in health care costs and lost productivity. [2] In total, the poison center system saves approximately $1.8 billion per year in medical costs and productivity.[3] Because of the clear benefit to citizens, the state of Arizona has mandated the existence of a PCC since 1980. Per Arizona Revised Statutes (ARS) 36-1161 through 36-1163, the Arizona Department of Health Services is responsible for establishing a poison and drug information system consisting of two poison control centers. While the poison control centers are charged with serving as a resource for poison identification and treatment, they are also tasked with educating the public about poisoning prevention.

Two of the nation's 57 nationally recognized PCCs are located in Arizona. The Arizona Poison and Drug Information Center (APDIC) is affiliated with the University of Arizona College of Pharmacy located in Tucson. The Banner Good Samaritan Poison & Drug Information Center (BGSPDIC) is located in Phoenix. The BGSPDIC serves Maricopa County, including the metropolitan Phoenix area. The APDIC serves the remainder of the state. While the BGSPDIC serves a smaller geographic area, it covers about 60 percent of the state's residents.

Similar to other nationally recognized PCCs, both Arizona centers are accessed by calling the National Poison Control Center toll-free telephone number: 1-800-222-1222. Calls to this number are routed to the appropriate PCC based on geography. Because calls are routed based on the telephone number from which the call is placed, individuals with an Arizona telephone area code will speak to either BGSPDIC or APDIC, even if they are calling from outside Arizona. Individuals are encouraged to call PCCs with any concerns, whether or not an incident has occurred. While providing information and medical advice about poisonings, both of Arizona's centers provide additional services to residents including drug information and identification, medical consultation with clinicians, and poisoning prevention education and outreach.

In 2015, the APDIC documented 20,283 calls for human exposures to toxins and poisons, out of 34,199 total calls (59 percent). Twenty of these cases resulted in death while 35 percent (n=7,163) of the calls were managed in a healthcare facility.

In 2015, the BGSPDIC documented 42,859 calls for human exposures to toxins and poisons, out of more than 62,173 total calls (70 percent). Forty-three percent of all human exposures involved children 12 years or younger (n=18,544) and 36 percent of involved children five years and younger (n=15,336). Eighty-seven percent of children's poison or drug exposures were managed without the need for a costly emergency department visit. Seventy-three percent of all human exposures to toxins and poisons were managed at home.

The availability of a 24-hour poison control center allows many people who may have sought emergency care to be treated in their own homes, resulting in financial savings for themselves and the healthcare facilities they may have otherwise visited. Combining both APDIC and BGSPDIC numbers, it is estimated that more than 50,000 callers may have sought medical treatment at an emergency department in 2015 if they had not been able to consult with the poison control center and care for themselves at home. PCC centers means the community prevented more than $58 million in emergency treatment costs.

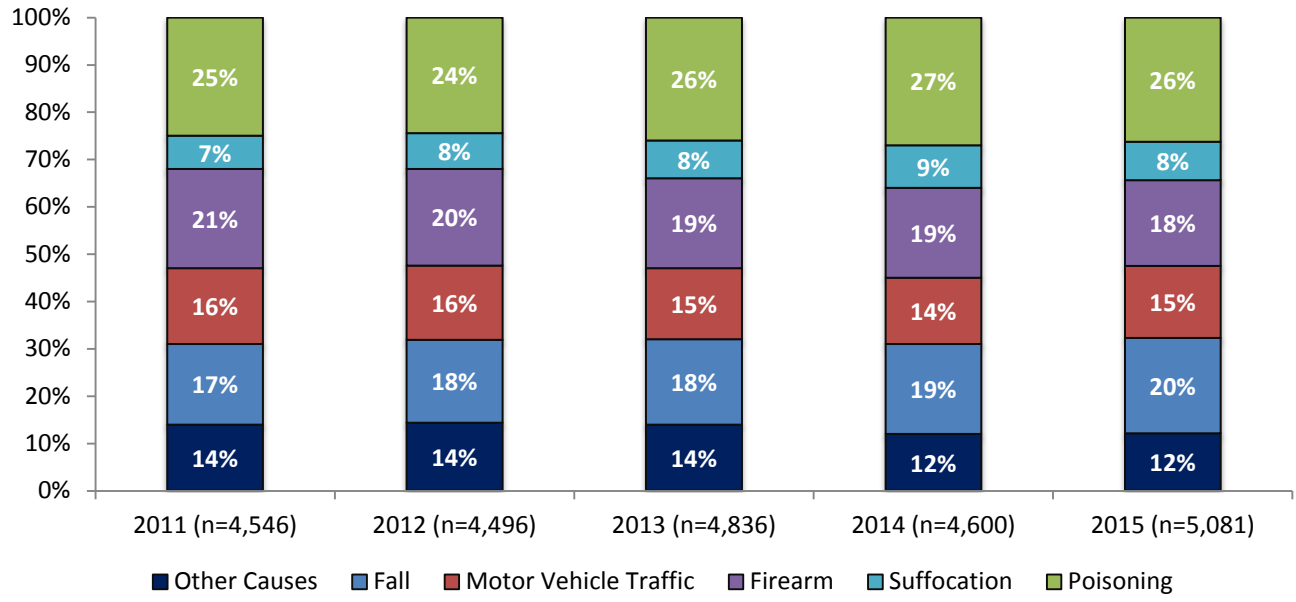
[2,3] The Lewin Group. (2012) Final Report on the value of the Poison Center System. [White Paper]. Retrieved from https://aapcc.s3.amazonaws.com/files/library/Value_of_the_Poison_Center_System_FINAL_9_26_2012_--_FINAL_FINAL_FINAL.pdf

Five-Year Trends in Poisonings among Arizona Residents, 2011-2015

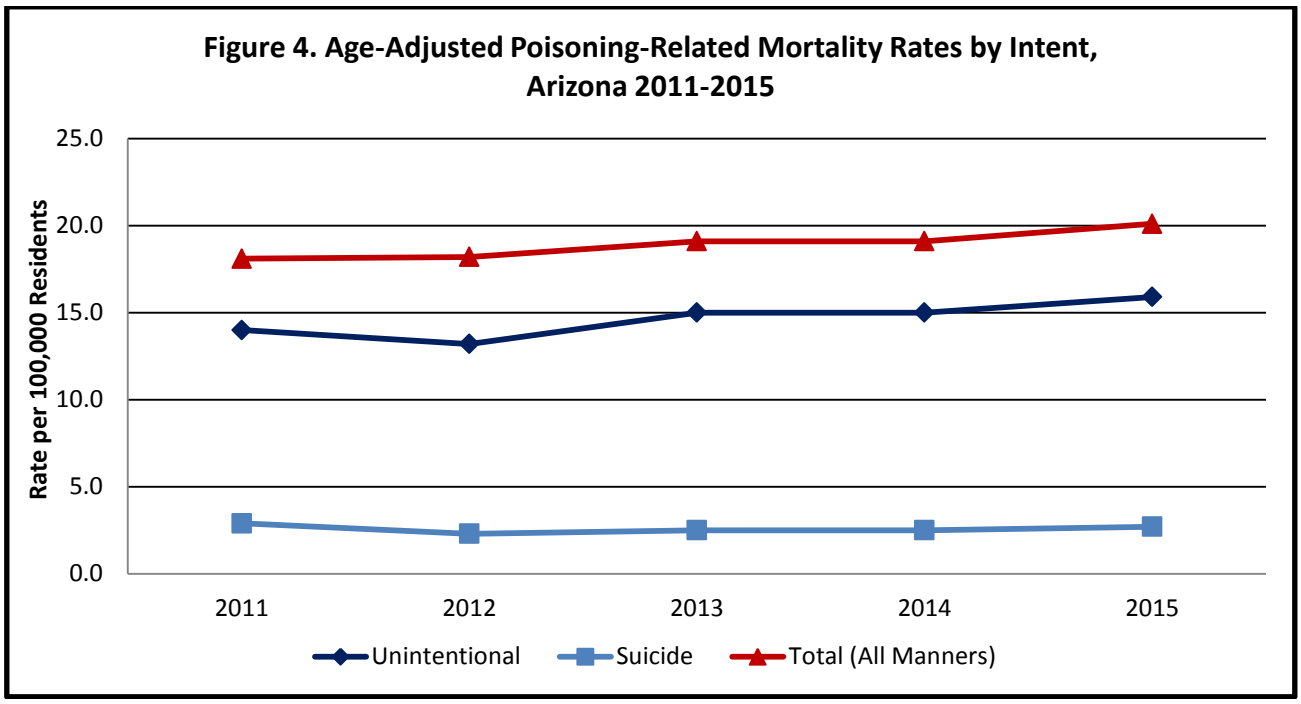
Mortality

Injuries account for approximately ten percent of deaths among Arizona residents each year and the proportion of injuries have remained relatively stable over time. Since 2011, the percentage of poisoning-related deaths have remained relatively the same, from 25 percent of all injury-related deaths in 2011 (n=1,144) to 26 percent of injury-related deaths in 2014 (n=1,335). Over this five-year period, the number of injury-related deaths has increased slightly, from 4,546 deaths in 2011 to 5,081 deaths in 2015. Figure 3 shows the distribution of injury-related deaths by mechanism of injury over the five year period from 2011 through 2015.

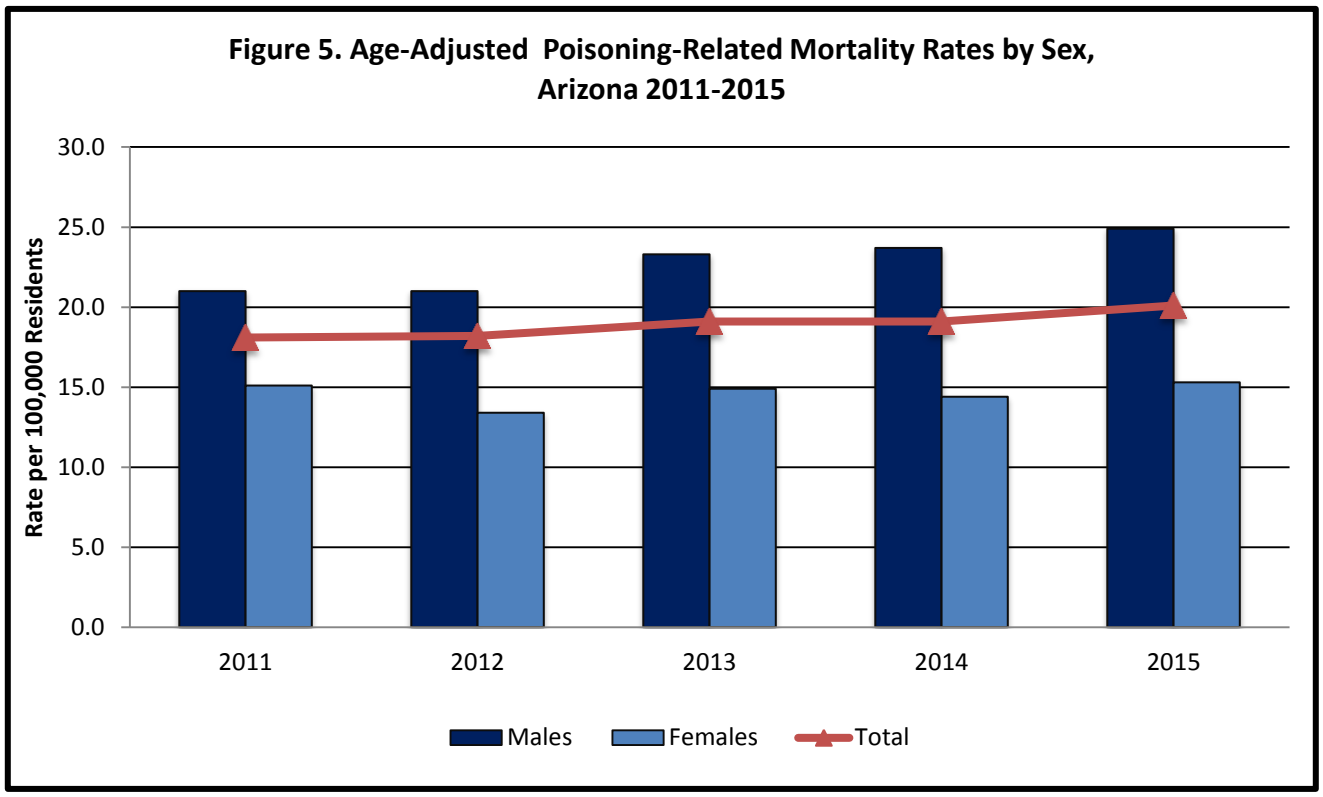
Figure 3. Proportion of Injury-Related Fatalities by Mechanism of Injury, Arizona 2011-2015



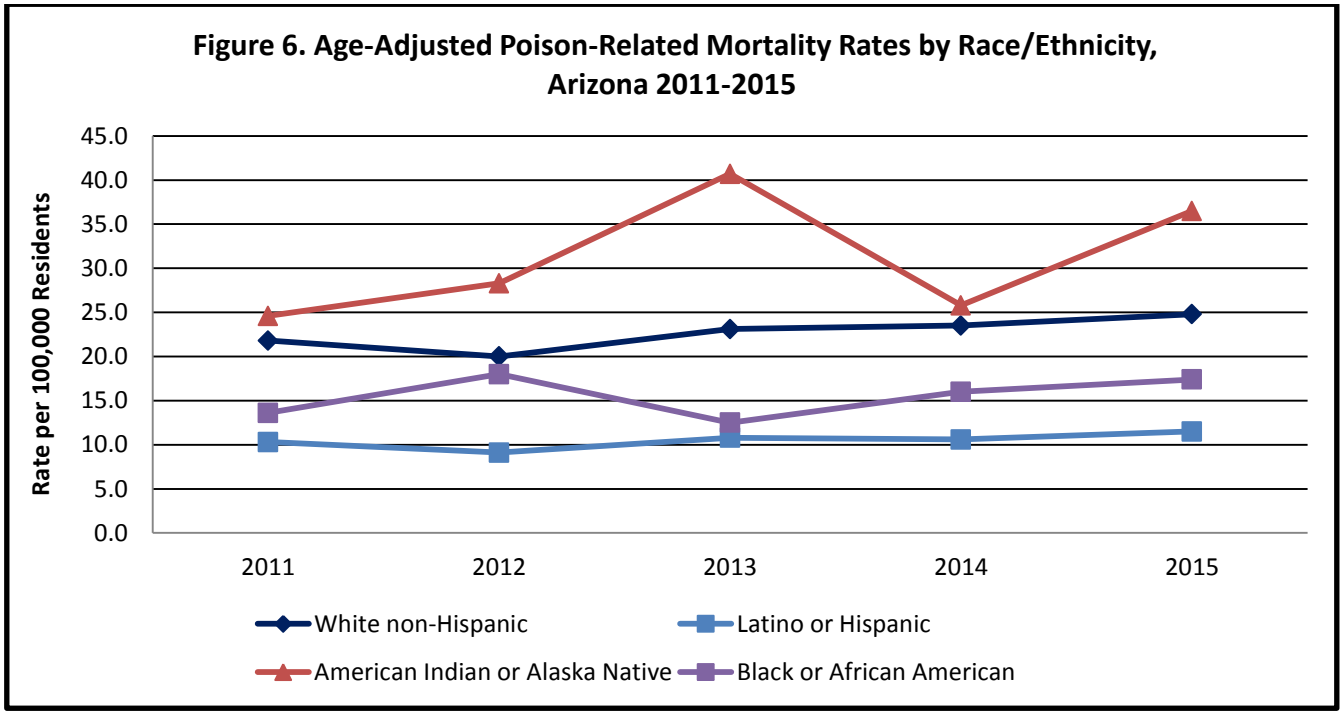
Between 2011 and 2015, the age-adjusted poisoning-related mortality rate increased by 11% for Arizona residents. This overall increase is attributable to the rate of unintentional poisoning deaths, which has increased by 13% in 2015 (15.9 deaths per 100,000 residents) from since 2011 (14.0 deaths per 100,000 residents). Overall from 2011-2015, suicide-related poisonings have decreased by 7% since 2011. However there was an 8% increase in suicide-related poisonings from 2014. Figure 4 displays the age-adjusted poisoning-related mortality rates by manner of death for Arizona residents from 2011 to 2015.



Overall, male mortality rates due to poisoning were consistently higher than females between 2011 and 2015. The age-adjusted poison mortality rate increased by 18.5% for males (24.9 deaths per 100,000 residents) and 1.3% for females (15.3 deaths per 100,000 residents) in 2015 compared to 2011 (21.0 deaths per 100,000 for males and 15.1 deaths per 100, 000 residents for females). Figure 5 shows the age-adjusted poisoning-related mortality rates by gender during the five year period.



Overall the age-adjusted poison-related mortality increased across all race and ethnicity groups from 2011-2015. American Indians or Alaska Native residents continued to have the highest poisoning-related mortality rate at 36.5 deaths per 100,000 residents, and represents a 41% increase from 2014 (25.8 deaths per 100,000 residents). Mortality rates increased 9% for Black or African American and 6% for White non-Hispanic residents in 2014 Figure 6 shows the age-adjusted poisoning-related mortality rates by race/ethnicity for Arizona residents from 2011 to 2015. Due to small numbers, age-adjusted poisoning-related mortality rates have not been presented for Asian residents.



While the trend is not supported in all counties, the rate of poisoning-related fatalities in Arizona increased 11% between 2011 and 2015. Age-adjusted mortality rates increased from last year for the following counties Apache, Cochise, Coconino, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, Santa Cruz, Yavapai, and Yuma. Table 1 shows the age-adjusted mortality rate per 100,000 residents for poisoning-related deaths by county of residence from 2011 to 2015.

Table 1. Age-Adjusted Mortality Rates per 100,000 Residents for Poisoning-Related Deaths by County Arizona 2011-2015

	2011	2012	2013	2014	2015
Apache*	23.3	22.1	9.5	30.0	42.7
Cochise*	9.4	19.4	9.8	15.7	31.5
Coconino*	21.0	17.7	36.1	24.2	26.9
Gila*	25.4	33.6	28.1	48.8	38.1
Graham*	19.9	18.2	20.4	17.4	23.6
Greenlee*	16.2	**	**	20.9	43.6
La Paz*	14.0	**	28.8	36.9	48.8
Maricopa	16.7	14.9	16.7	17.0	17.6
Mohave	28.3	27.6	30.7	24.8	32.3
Navajo*	35.1	37.6	58.8	39.1	33.9
Pima	20.7	20.8	23.0	22.6	24.9
Pinal	13.0	12.3	13.3	9.5	14.1
Santa Cruz*	5.5	5.7	7.3	9.0	11.8
Yavapai	31.0	35.2	34.1	27.4	26.2
Yuma*	12.2	15.5	11.1	20.7	13.8
Statewide Total	**18.1**	**18.2**	**19.1**	**19.1**	**20.1**

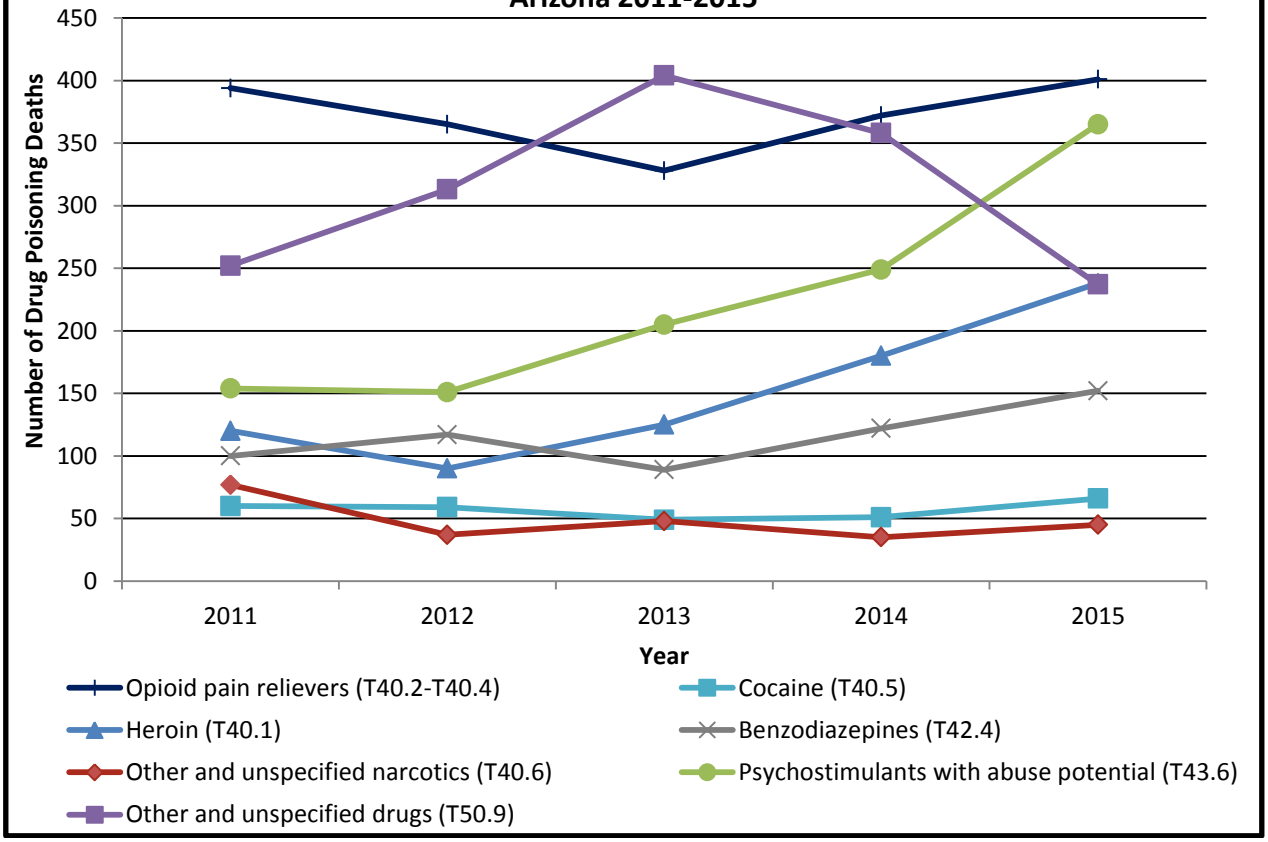
***Rates are unstable for counties indicated, as they had fewer than 20 deaths in at least one year.**
**** No poisoning-related deaths were recorded for these counties.**

Drug Overdose Deaths

Every poisoning-related death has its own circumstances, including the type of poison used. Multiple drugs may be listed as contributing to a single death. Prescription drug overdoses, specifically from opiate pain relievers such as hydrocodone, oxycodone and methadone, have become an epidemic in the United States. The graph shows that overdoses due to prescription opiate pain relievers were declining in Arizona from 2011 to 2013 but increased from 2013 to 2015. The number of deaths involving heroin continues to rise and have doubled since 2011 from 120 deaths to 235 deaths. Deaths involving stimulants (including methamphetamine) also continues to rise, increasing from 154 deaths in 2010 to 365 deaths in 2015.

An emerging public health concern with drug overdoses is the appearance of new or altered drugs. These synthetic drugs, composed of several drug classes or unknown substances, are difficult to identify by laboratory testing. This also creates challenges with monitoring drug overdose trends by specific drug. Other and unspecified drugs and unspecified narcotics are examples of synthetic groups that may also contain multi or poly-drug combination overdose. The decrease in Other and unspecified drugs group, may be due to the ability of the State Laboratory and Medical Examiners to identify specific drug classes within these synthetic drugs. Further analysis of death records shows while opiate drugs were not specifically coded as the main cause of death, they still contributed to the increasing number of overdoses in combination with other prescription illicit drugs. An example of a poly drug overdose death listed with a code of other and unspecified drugs/narcotic could include an opiate derivative mix with a stimulant, benzodiazepine, and alcohol use. In such a case the agent solely responsible for the death is unknown, and not be classified into a definitive drug category. Figure 7 illustrates the specific drugs that were listed on the death certificates contributing to the overdose fatality.

Figure 7. Number of Drug Overdoses Deaths Involving Selected Drugs, Arizona 2011-2015



Approximately one Arizona resident dies per day due to a prescription opioid poisoning. Figure 8 illustrates the trends in prescription opioid poisonings along with heroin overdose rates from 2011 to 2015. The Prescription opiate poisoning mortality rate decreased by 18% from 2011 to 2013. However, from 2013 to 2015, the prescription opioid poisoning mortality rate increased by 18% and bringing the rate back to where it was for 2011 (6.1 deaths per 100,000 residents). Heroin overdose deaths continue to rise almost doubling during the last five years. From 2011 to 2015, the Heroin poisoning mortality rate increased by 94.7%.

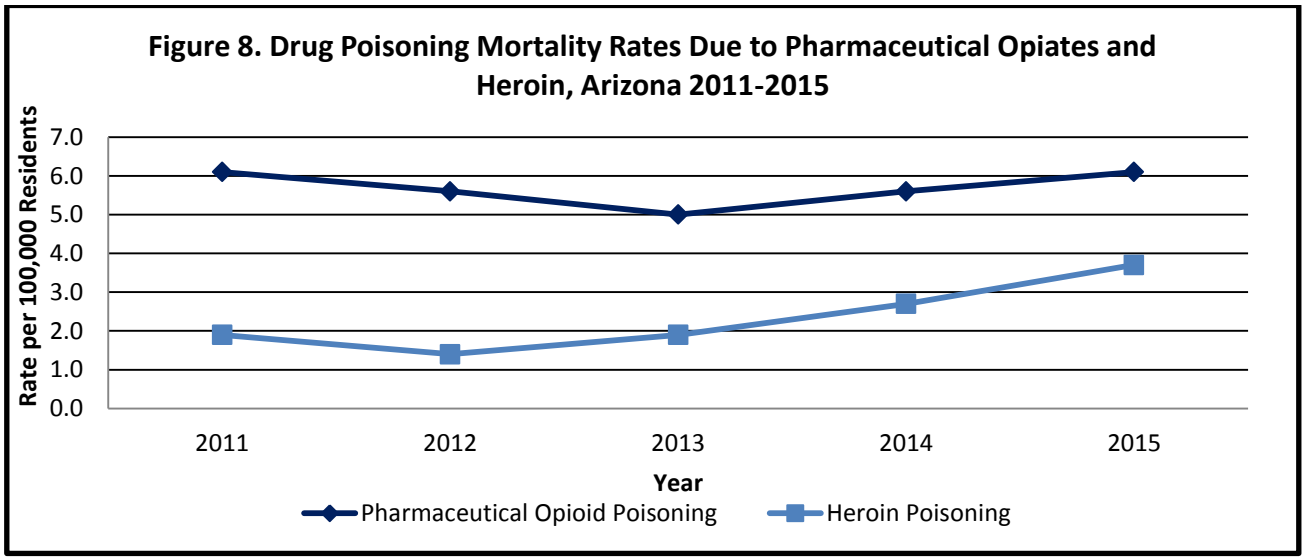
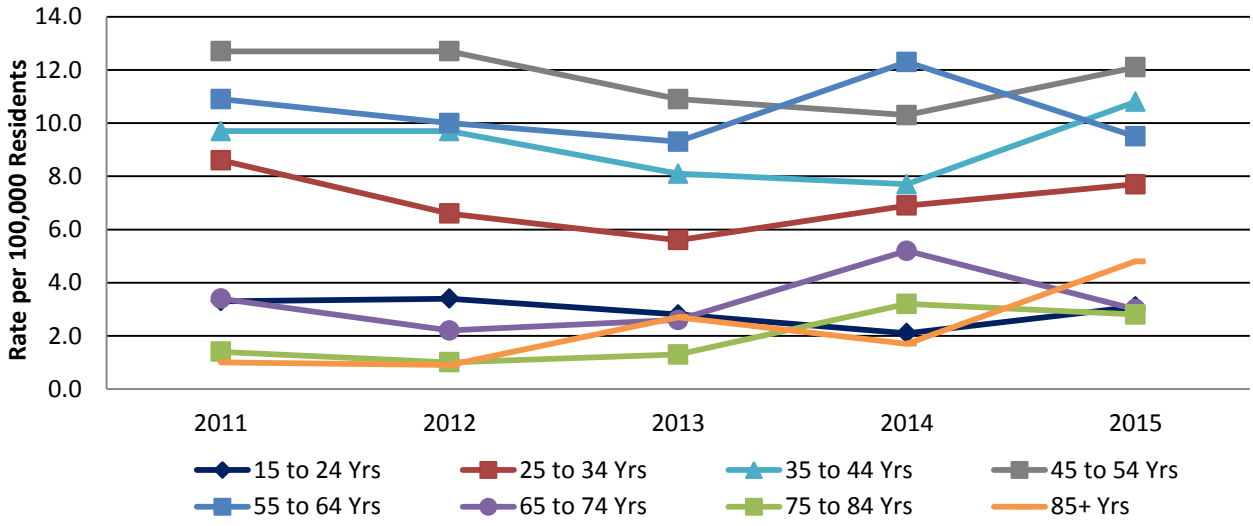


Figure 9 shows the mortality rates for pharmaceutical opiate poisonings by age group. The highest pharmaceutical opiate poison mortality rate per 100,000 deaths among age groups were adults 45-54 years old (12.1), followed by 35-44 years old (10.8), and then 55-64 years old (9.5) age group. Mortality rates for teens and young adults 15 to 24 years old declined from 2011 to 2014 by 36 percent. However, the mortality rate for teen and young adults have increased by 48% from 2014 (2.1 deaths per 100,000 residents) to 2015 (3.1 deaths per 100,000 residents).

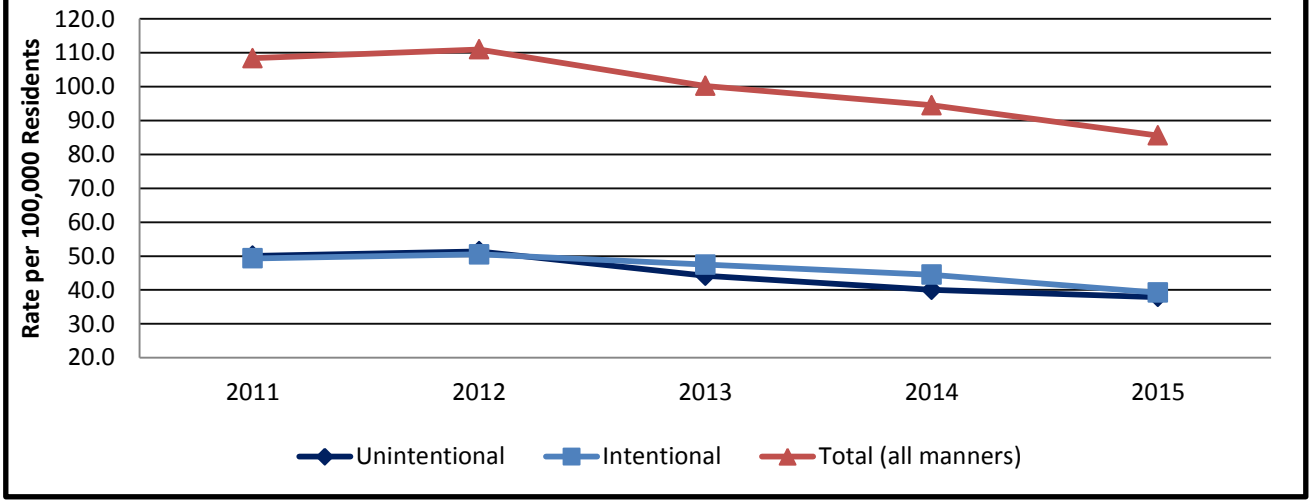
Figure 9. Drug Overdose Mortality Rates Involving Pharmaceutical Opiates by Age Group, Arizona 2011-2015



Non-Fatal Inpatient Hospitalizations

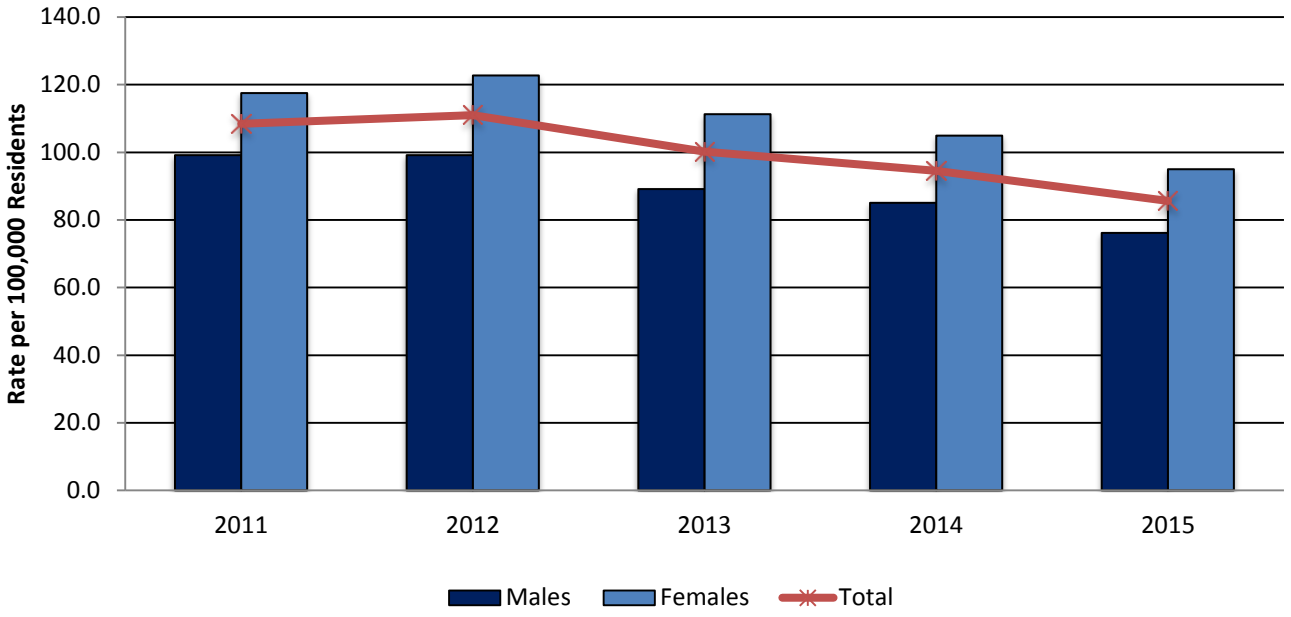
Overall, between 2011 and 2015, the age-adjusted rate of non-fatal poisoning-related Inpatient Hospitalizations (IP) among Arizona residents decreased by 21%, from 108.4 hospitalizations per 100,000 residents in 2011 to 85.6 hospitalizations in 2015. In 2015, the rate of unintentional poisonings-related IP was 37.9 hospitalizations per 100,000 residents (n=2,636). This rate represents a 5.3% decrease in unintentional poisoning from 2014, where the rate was 40.0 hospitalizations per 100,000 residents. Since 2013, the age-adjusted rate for intentional poisoning-related IP has remained higher than the age-adjusted rate for unintentional poisoning-related IP. The age-adjusted rate for intentional poisoning-related IP decreased by20.5% over five year period. Figure 10 shows the age-adjusted poisoning-related rates for non-fatal Inpatient Hospitalizations (IP) by injury intent for Arizona residents from 2011 to 2015.

Figure 10. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by Manner, Arizona 2011-2015



The age-adjusted rates for poisoning-related inpatient hospitalizations were higher for females than for males. Rates increased from 2011 to 2012, but decreased 2013 to 2015 among both males and females. Figure 11 shows the age-adjusted rates by sex for non-fatal poisoning-related inpatient hospitalizations from 2011 through 2015.

Figure 11. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by Sex, Arizona 2011-2015



The rates of the counties with at least 20 hospitalizations in one year varied between 2011 and 2015. Table 2 shows the age-adjusted inpatient hospitalization poisoning rate by county of residence from 2011 through 2015. Four of the state's 15 counties had at least one year in which there were fewer than 20 events, making the rates for those counties unstable over time.

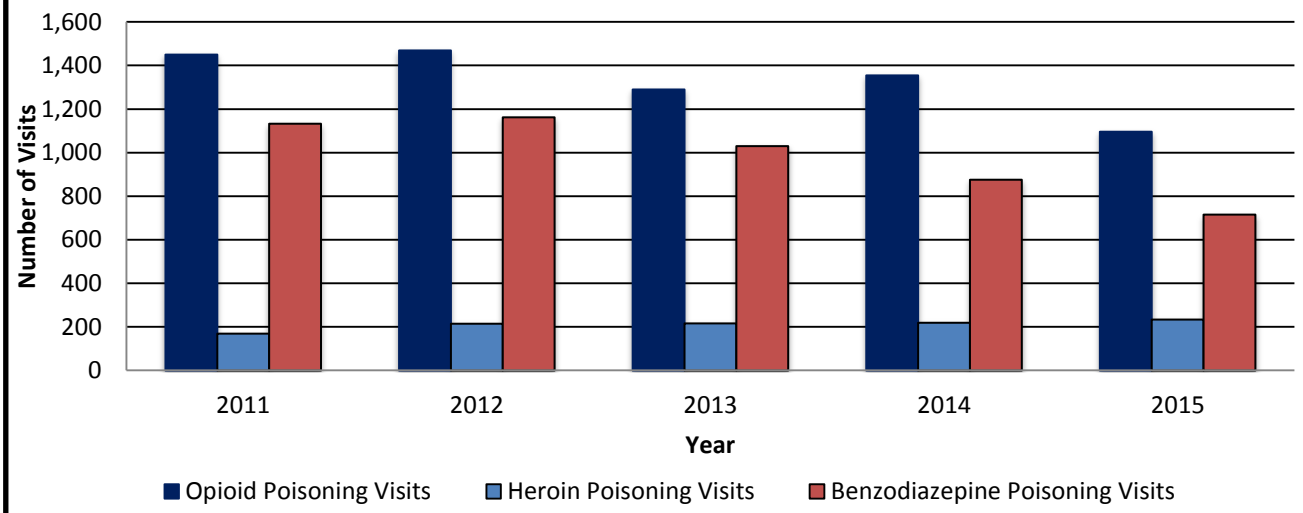
Table 2. Age-Adjusted Rate per 100,000 Residents for Non-Fatal Poisoning-Related Inpatient Hospitalizations by County of Residence, Arizona 2011-2015

	2011	2012	2013	2014	2015
Apache*	43.0	61.6	54.7	55.6	69.9
Cochise	73.7	63.5	56.7	66.3	69.6
Coconino	85.2	81.8	101.5	92.6	108.1
Gila	156.0	149.2	136.0	139.9	113.9
Graham	88.4	63.6	58.9	46.3	40.8
Greenlee*	127.2	125.6	80.3	64.7	28.3
La Paz*	68.1	40.4	57.8	78.2	64.2
Maricopa	117.3	115.5	102.0	93.4	82.6
Mohave	123.2	142.5	160.5	137.9	109.5
Navajo	103.9	110.6	112.5	132.6	109.9
Pima	109.6	123.6	113.0	112.5	110.9
Pinal	92.3	113.7	83.1	81.8	74.6
Santa Cruz*	59.3	40.5	42.6	18.3	36.8
Yavapai	85.4	97.7	94.0	96.0	68.2
Yuma	38.9	43.0	42.3	38.8	48.3
Statewide Total	**108.4**	**111.0**	**100.2**	**94.5**	**85.6**

*Rates are unstable for counties indicated, as they had fewer than 20 cases in at least one year.

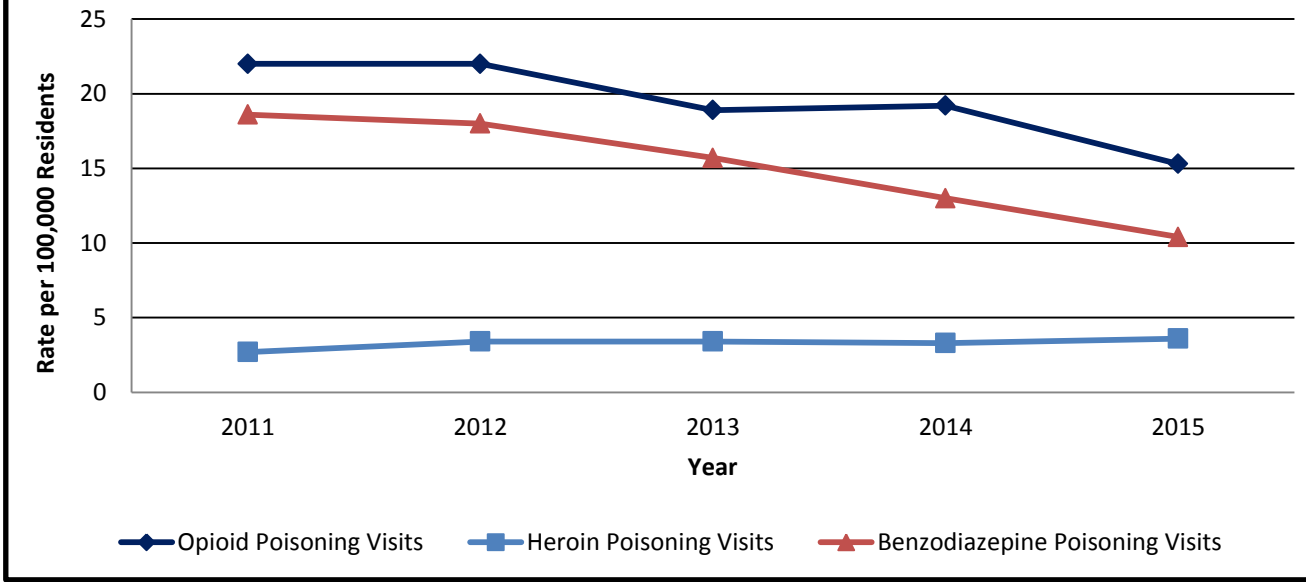
From 2011 to 2015, the number of Opioid Inpatient Hospitalization (IP) decreased by 24.3%, and there was a 20.3% decrease in the rate for Opioid IP from last year. Over the last five years, the number of Heroin IP visits increased by 37.6%, and there was a 9.1% increase in the rate for Heroin IP from last year. Over the last five years, the number of Benzodiazepines IP decreased by 36.8%, and there was a 20% decrease in the rate for Benzodiazepines IP from last year. Figures 12 and 13 illustrate the trends in prescription opiate poisonings along with heroin and benzodiazepine poisoning from 2011 to 2015.

Figure 12. Number of Poisoning Inpatient Hospitalizations by Drug Type*, Arizona 2011-2015



*Primary Diagnosis Code and E-Codes only

Figure 13. Age-adjusted Rate of Poisoning Inpatient Hospitalizations by Drug Type*, Arizona 2011-2015

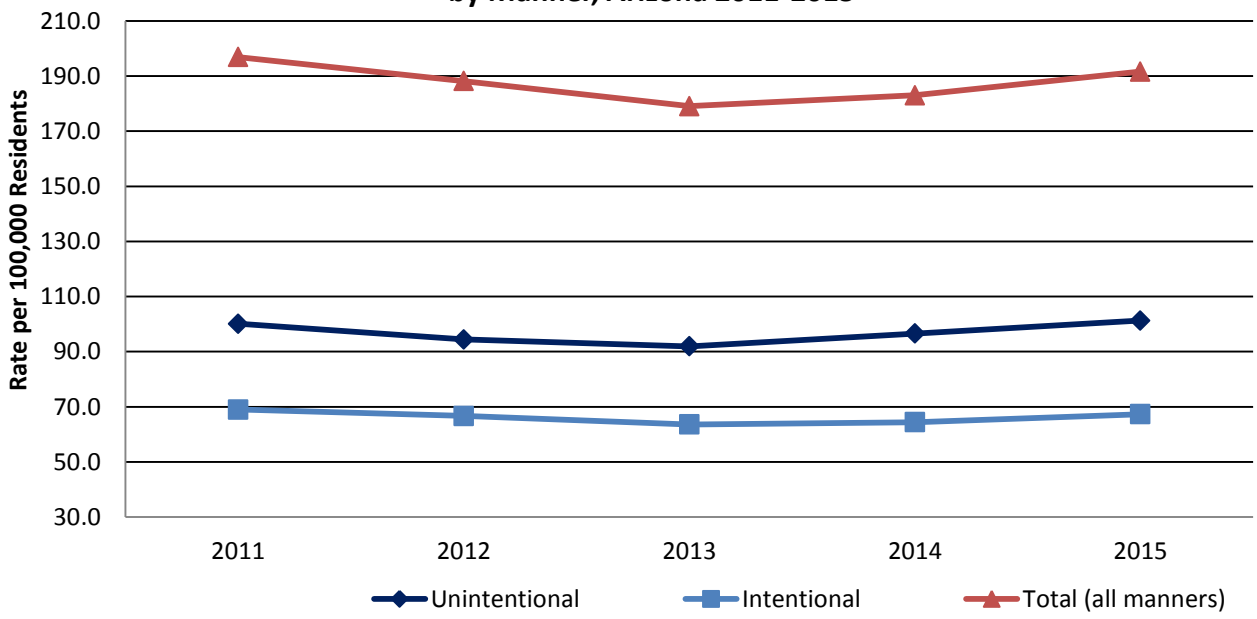


*Primary Diagnosis Code and E-Codes only

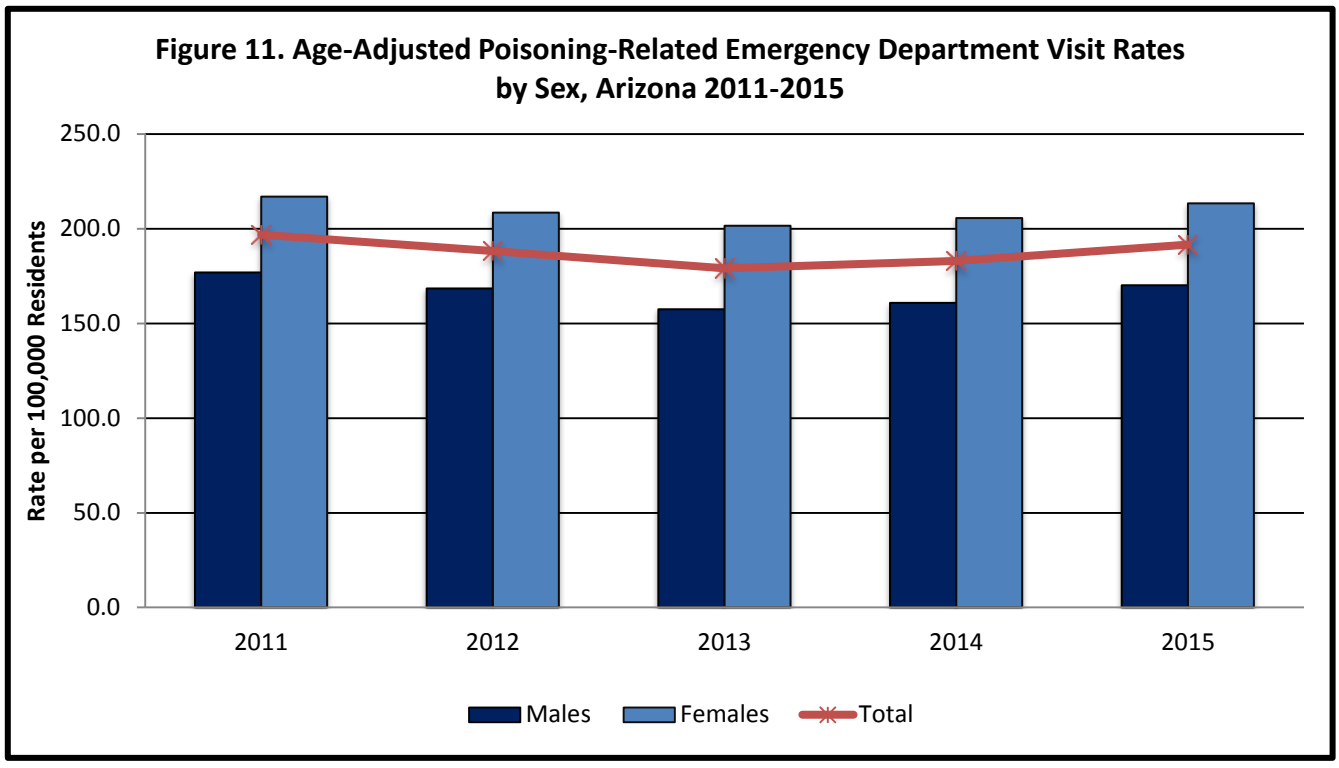
Non-Fatal Emergency Department Visits

Overall, between 2011 and 2015, the age-adjusted rate of non-fatal poisoning-related Emergency Department Visits (EDV) among Arizona residents decreased by 2.7%, from 196.9 EDV per 100,000 residents in 2011 to 191.6 EDV per 100,000 residents in 2015. However the overall age-adjusted rate of poisoning EDV increased by 4.7% from last year. In 2015, the rate of unintentional poisonings-related EDV was 101.3 EDV per 100,000 residents (n=6,764), and represents a 4.9% from 2014 (96.6 EDV per 100,000 residents). In 2015, the age-adjusted rate for intentional related EDV was 67.3 EDV per 100,000 residents (n=4,385) and represents a 4.5% increase from 2014 (64.4 EDV per 100,000 residents). Figure 14 shows the age-adjusted poisoning-related rates for non-fatal emergency department visits by injury intent from 2011 to 2015.

Figure 14. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Manner, Arizona 2011-2015



The age-adjusted rates for non-fatal poisoning-related emergency department visits were higher for females then for males. The rates decreased among males and females from 2011 to 2013 and increased in 2014. In 2015, the poisoning-related emergency department visit rate increased by 5.7% for males and increased 3.8% for females from the previous year. Figure 15 shows the age-adjusted rates by sex for non-fatal poisoning-related emergency department visits from 2011 through 2015.



The rates of the counties with at least 20 visits per year varied between 2011 and 2015 and are listed below. Table 3 shows the age-adjusted poisoning-related emergency department visit rates per 100,000 residents by county of residence from 2011 to 2015. Three of the state's 15 counties had at least one year in which there were fewer than 20 events, making the rates for those counties unstable over time.

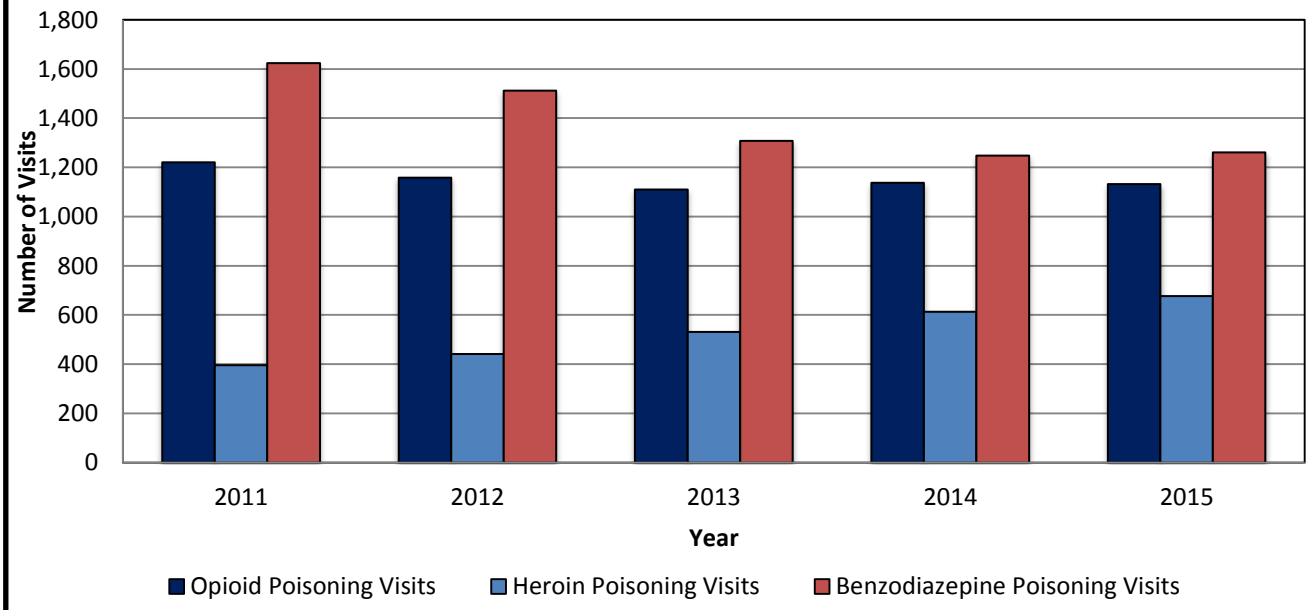
Table 3. Age-Adjusted Rate per 100,000 Residents for Non-Fatal Poisoning-Related Emergency Department Visits by County of Residence, Arizona 2011-2015

	2011	2012	2013	2014	2015
Apache	137.5	138.4	150.4	110.2	114.6
Cochise	256.0	231.3	249.5	205.3	192.5
Coconino	203.9	184.5	186.3	174.3	186.8
Gila	250.9	188.2	281.2	326.0	293.2
Graham	307.7	284.4	309.6	352.6	326.4
Greenlee*	246.9	205.7	187.2	182.5	155.7
La Paz*	278.0	245.2	220.4	168.5	192.1
Maricopa	184.0	174.2	165.6	172.7	176.7
Mohave	329.1	301.5	29.0	288.6	285.1
Navajo	249.0	368.6	261.8	219.2	208.1
Pima	197.3	197.7	195.9	198.0	232.6
Pinal	176.6	172.8	158.9	180.1	191.8
Santa Cruz*	172.9	141.5	136.8	74.6	136.2
Yavapai	327.5	28.9	232.7	258.5	267.2
Yuma	186.4	172.3	164.8	144.4	148.3
Statewide Total	**196.9**	**188.2**	**179.1**	**183.0**	**191.6**

***Rates are unstable for counties indicated, as they had fewer than 20 cases in at least one year.**

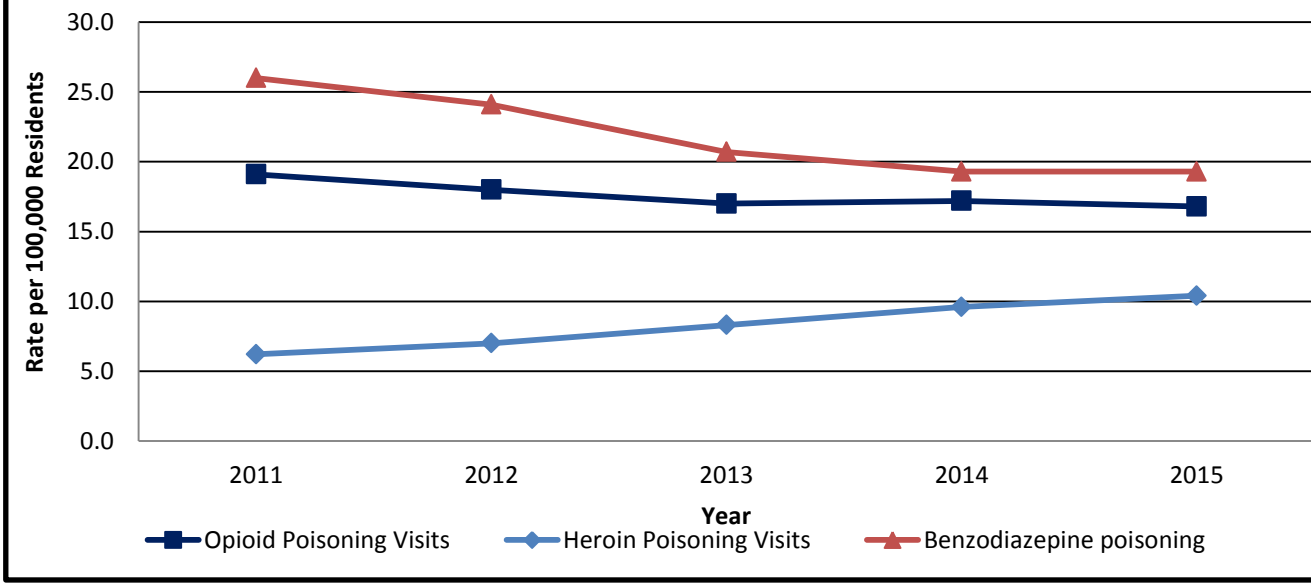
From 2011 to 2015, the number of Opioid Emergency Department Visits (EDV) decreased by 7.3%, and there was a 2.3% decrease in the rate for Opioid EDV from last year. Over the last five years, the number of Heroin EDV increased by 70.8%, and there was a 8.3% increase in the rate for Heroin EDV from last year. Over the last five years, the number of Benzodiazepines EDV decreased by 22.48%, and the rate remained the same from last year. Figures 16 and 17 illustrate the trends in prescription opiate poisonings along with heroin and benzodiazepine poisonings from 2011 to 2015.

Figure 16. Number of Poisoning Emergency Department Visits by Drug Type*, Arizona 2011-2015



*Primary Diagnosis Code and E-Codes only

Figure 17. Age-Adjusted Poisoning Emergency Department Visit Rates by Drug Type*, Arizona 2011-2015

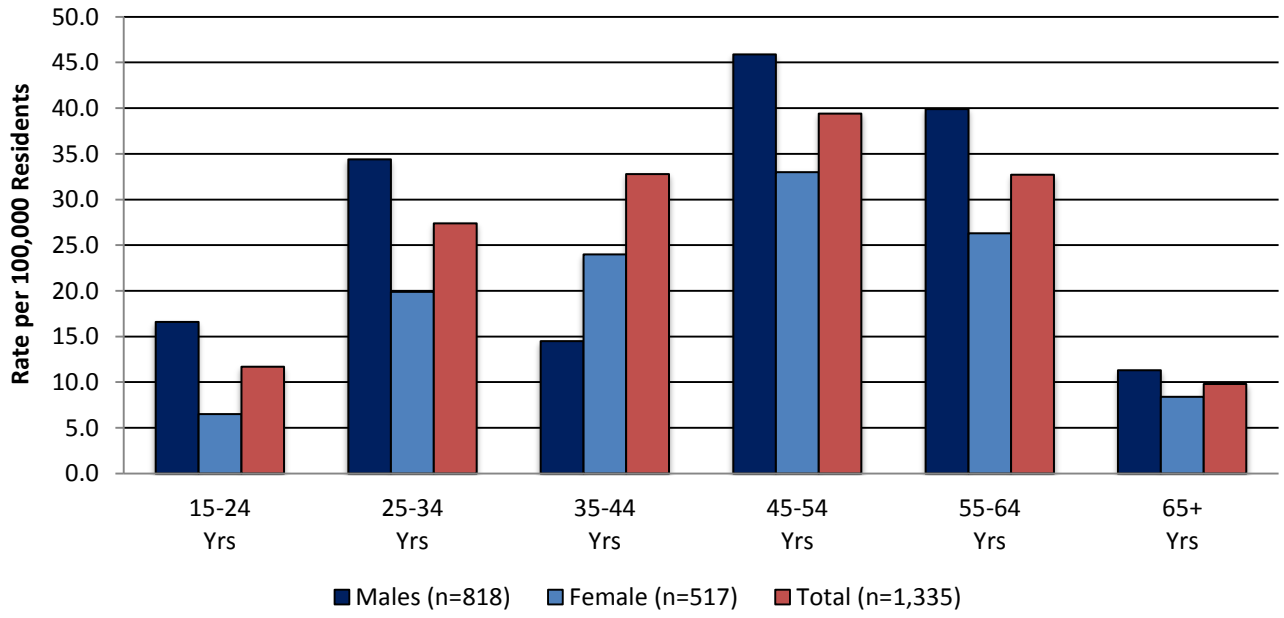


*Primary Diagnosis Code and E-Codes only

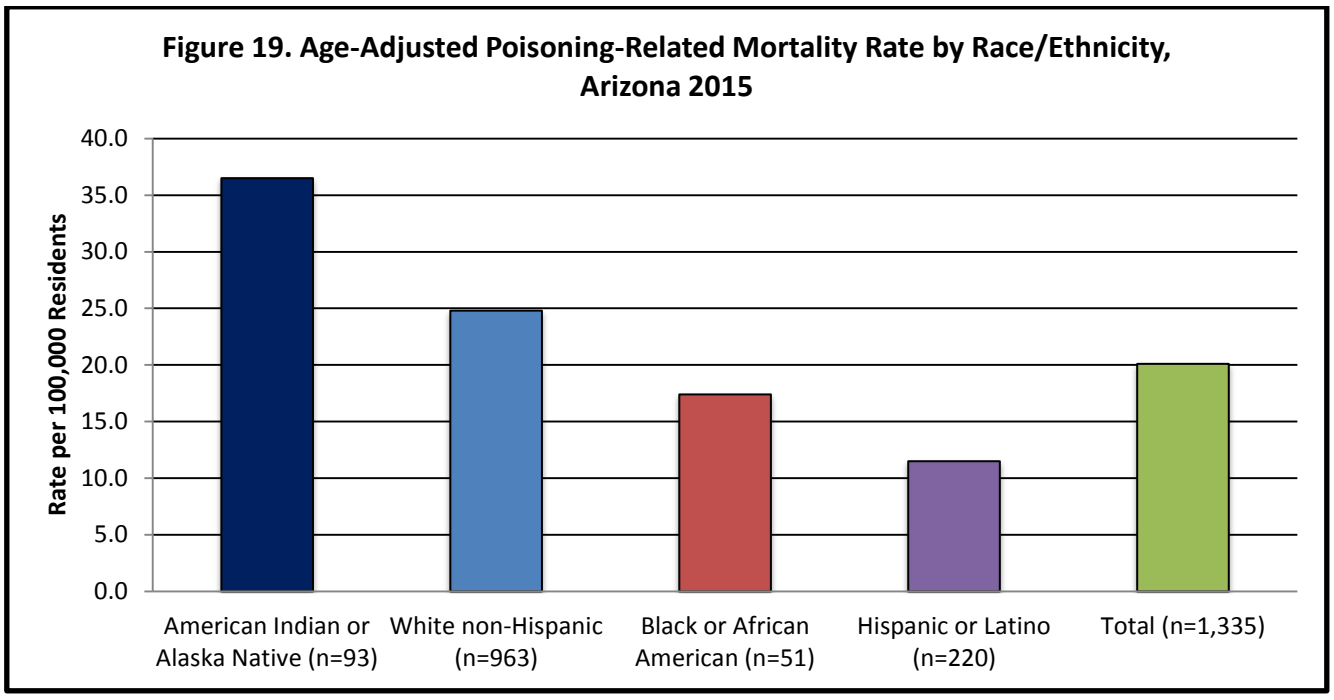
Poisoning-Related Mortality, 2015

There were 1,335 deaths among Arizona residents attributed to poisoning in 2015. Sixty-one percent of deaths were among males (n=818), and 39 percent were among females (n=517). In 2015, the age-adjusted poisoning mortality rate among females was 15.3 deaths per 100,000 residents, while the rate among males was 24.9 deaths per 100,000 residents. Males had higher mortality rates than females in each age group. In 2015, adults 45 through 54 years of age had the highest rate of fatalities among males (45.9 deaths per 100,000 residents and females (33.0 deaths per 100,000 residents). Adults 35-44 years old had the highest ratio of deaths among males versus females. The poison-related mortality rate for males 15-24 increased by 44.3% from 2014 (11.5 deaths per 100,000 residents) to 2015 (16.6 deaths per 100,000 residents). Figure 18 shows the poisoning-related mortality rates per 100,000 residents by age group and sex.

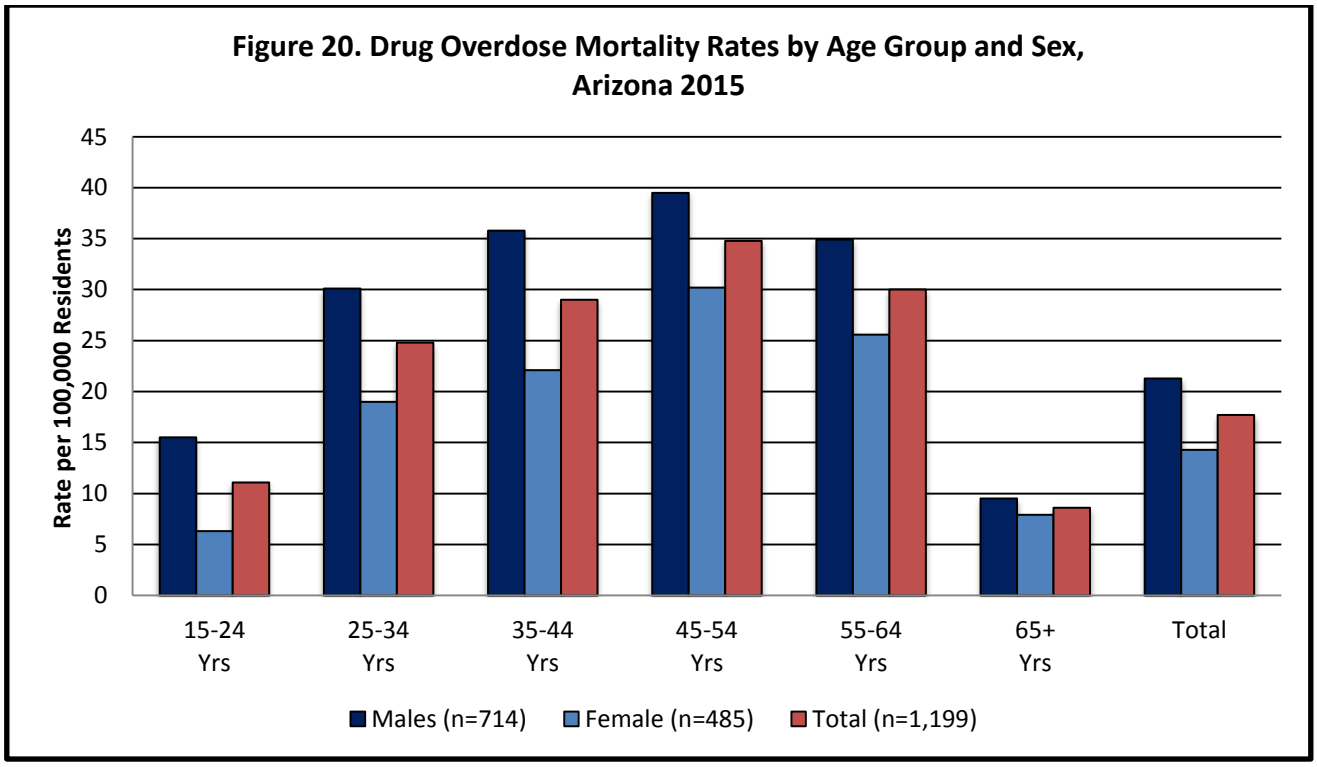
Figure 18. Poisoning Mortality Rates by Age Group and Sex, Arizona 2015



American Indian or Alaska Native residents had the highest age-adjusted poisoning-related mortality rate in 2014 (36.5 deaths per 100,000 residents), followed by White non-Hispanic residents (24.8 deaths per 100,000 residents) then Black or African American residents (17.4 deaths per 100,000 residents). Though Asian or Pacific Islander residents had a very low mortality rate, the rate is not stable due to the low number of deaths. Figure 19 shows the age-adjusted poisoning-related mortality rates by race/ethnicity for Arizona residents in 2015.



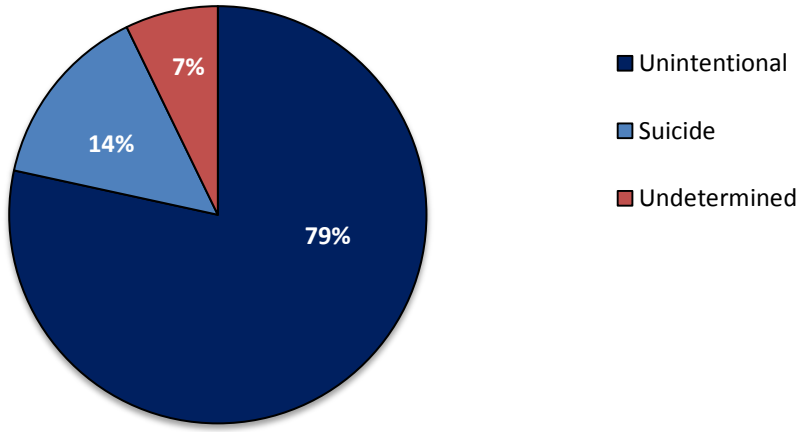
In 2015, drugs (over-the-counter medication, prescription and illicit drugs) were the underlying cause of death for 90 percent of all poisoning deaths (n=1,199). This means that 9 out of every 10 poisoning deaths were due to drugs. Of the drug overdose deaths, 78.8% were unintentional (n=945), 13.6% were suicide or intentional self-harm (n=163), and 7.6% had an undetermined intent (n=91). For each age group, males had higher rates than females. Figure 20 shows the drug overdose mortality rates by age group and sex.



Poisoning Fatalities by Manner

As in previous years, the majority of poisoning-related deaths were determined to be unintentional. In 2015, 79 percent of poisoning-related deaths among Arizona residents were unintentional (n=1,046). Of the 77 percent of unintentional deaths, 65 percent were among males (n=678), and 35 percent were among females (n=368). In 2015, there were 192 poisoning-related suicides (14 percent) and was roughly equal across males and females. There were no poisoning-related suicides in children below the age of 15 years among either sex. Figure 21 shows the percentage of poisoning-related deaths for 2015.

Figure 21. Percentage of Poisoning-Related Fatalities by Intent, Arizona 2015



In 2015, males aged 45-54 years old had the highest mortality rate for unintentional poisoning-related deaths (36.8 deaths per 100,000 residents) followed by males aged 35-44 years old (36.2 deaths per 100,000). Males had higher unintentional poisoning-related mortality rates than females in all age groups. In 2015, females had higher suicide mortality rates than males in the following age groups: 25-34 years, 35-44 years, and 55-64 years. The highest suicide rates overall were among females aged 55-64 years old (6.2 suicides per 100,000 residents), followed by females aged 45-54 years old (5.2 suicides per 100,000 residents). Figures 22 and 23 show the mortality rates for poisonings by age group, manner, and sex in 2015.

Figure 22. Unintentional Poisoning-Related Mortality Rates by Age Group and Sex, Arizona 2015

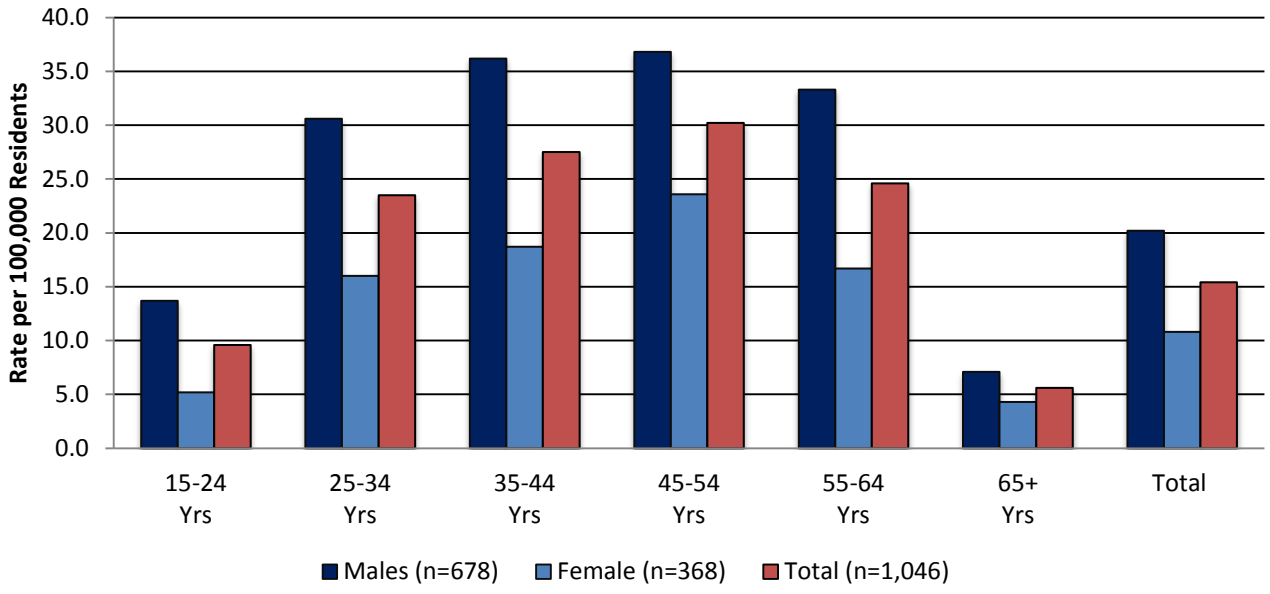
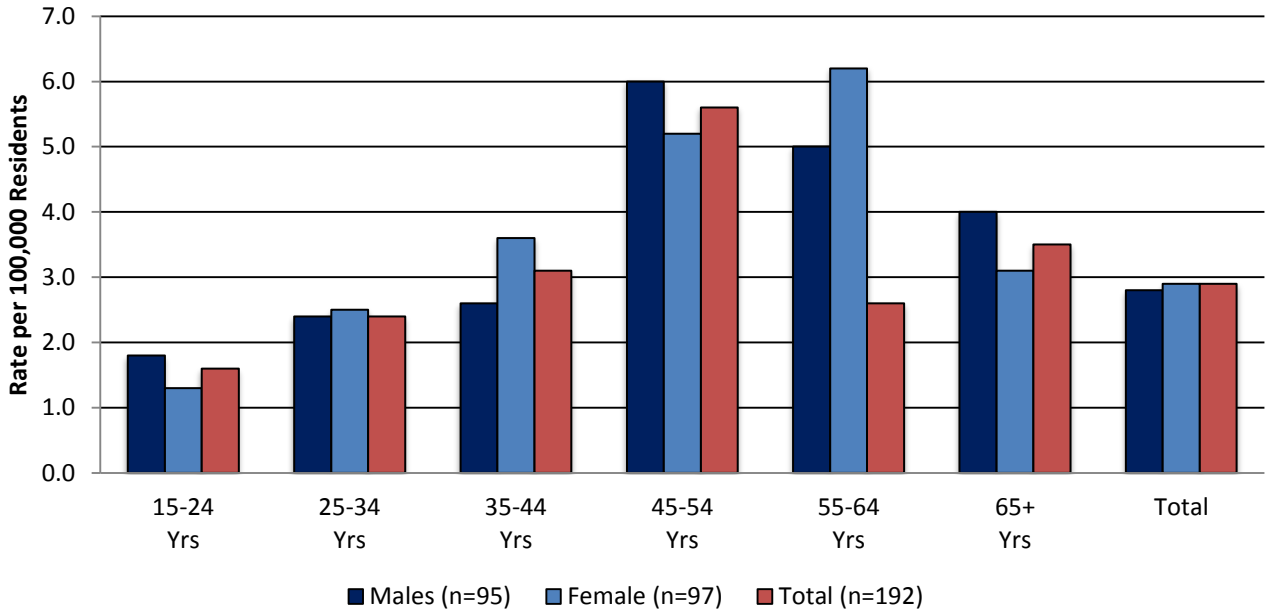


Figure 23. Suicide Poisoning-Related Mortality Rates by Age Group and Sex, Arizona 2015

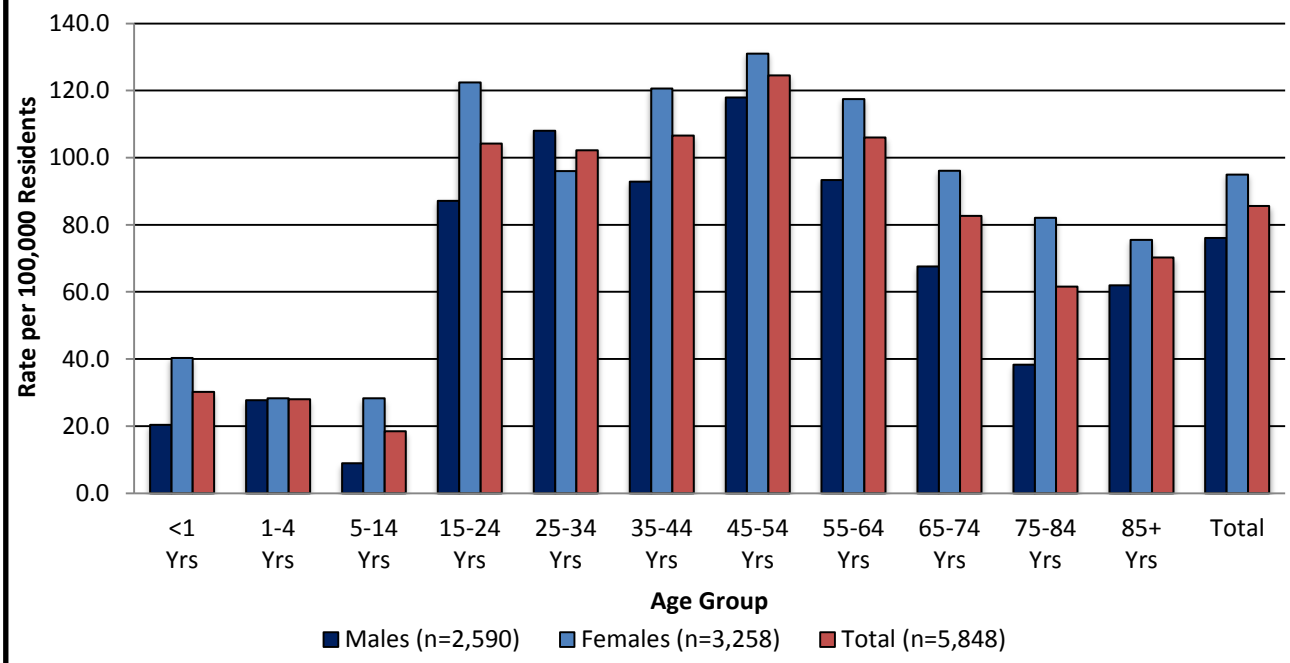


Non-Fatal Poisoning-Related Inpatient Hospitalizations, 2015

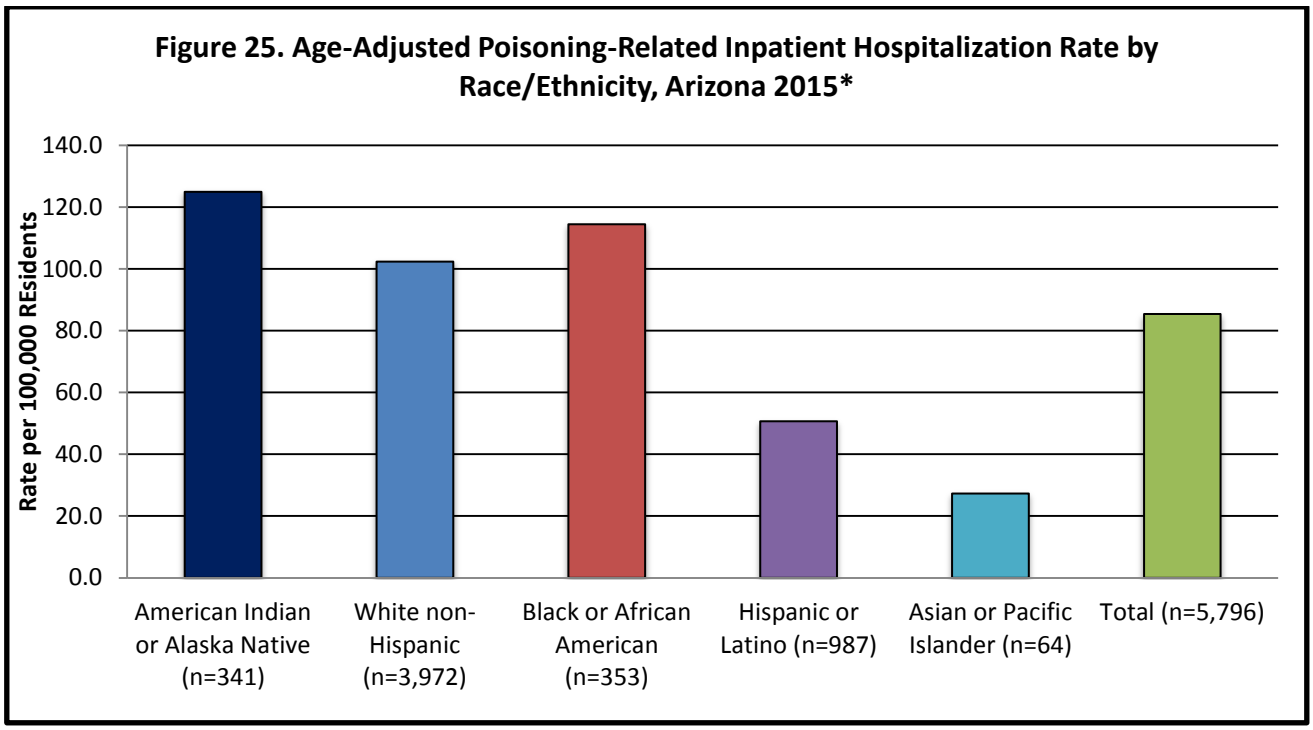
There were 5,796 non-fatal inpatient hospitalizations among Arizona residents attributed to poisoning in 2015; overall, an age-adjusted rate of 85.6 hospitalizations per 100,000 residents. Forty-four percent of the visits were among males (n=2,553) and fifty-five percent were among females (n=3,243). Forty-five percent of the poisoning-related inpatient hospitalizations were attributed to unintentional poisonings (n=2,636), forty-five percent resulted from intentional poisonings (n=2,583), and ten percent of poisonings were undetermined in nature (n=565).

Across all age groups, females had higher rates of non-fatal poisoning-related inpatient hospitalizations than males. The 45 to 54 year age group had the highest rate among both males and females. Figure 24 shows the poisoning-related inpatient hospitalization rates per 100,000 Arizona residents by age group and sex.

Figure 24. Poisoning-Related Inpatient Hospitalization Rates, by Age Group and Sex, Arizona 2015

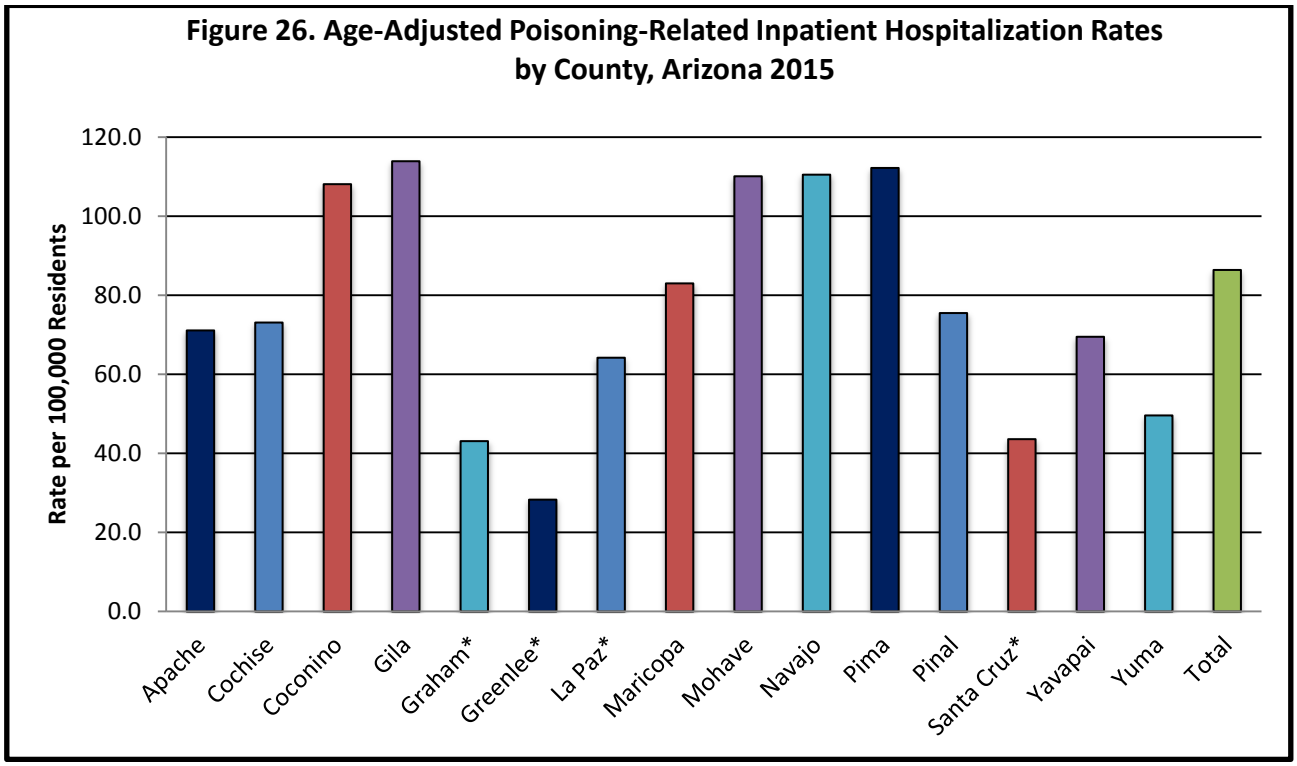


American Indian or Alaska Natives residents had the highest age-adjusted poisoning-related inpatient hospitalization rate in 2015 (125.0 hospitalizations per 100,000 residents) followed by Black or African American residents (114.5 hospitalizations per 100,000 residents), and then White non-Hispanic (102.4 hospitalizations per 100,000 residents) residents. Asian or Pacific Islander residents had the lowest poisoning-related rate with 27.3 hospitalizations per 100,000 residents. Figure 25 shows the age-adjusted poisoning-related inpatient hospitalization rates by race/ethnicity for Arizona residents in 2015.



*There were 79 hospitalizations among individuals of other or unknown race/ethnicity.

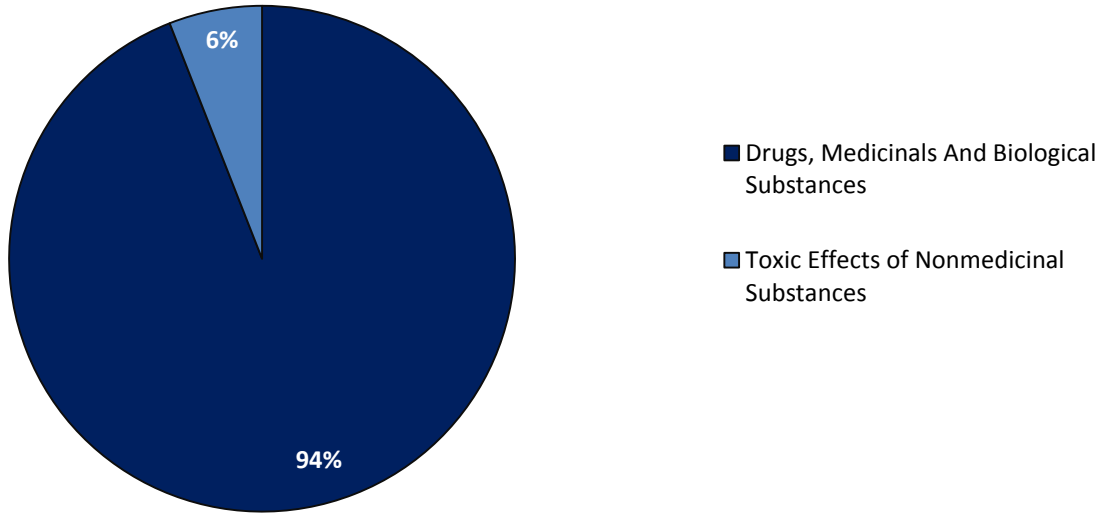
In 2015, Gila County had the highest rate of inpatient hospitalizations for non-fatal poisonings (113.9 hospitalizations per 100,000 residents) followed by Pima County (110.9 hospitalizations per 100,000 residents) and then Navajo County (109.9 hospitalization per 100,000 residents. Figure 26 displays the rate of non-fatal poisoning-related inpatient hospitalizations among residents of Arizona by counties as shown in Figure 26.



* Counties with counts <20 are unstable.

Among all manners of non-fatal poisoning-related inpatient hospitalizations, 94% were due to drug use (n=5,451). This percentage includes prescription, non-prescription, and illicit drugs. Figure 27 shows percentage of poison hospitalizations by poison type.

Figure 27. Poisoning-Related Inpatient Hospitalizations by Poison Type, Arizona 2015

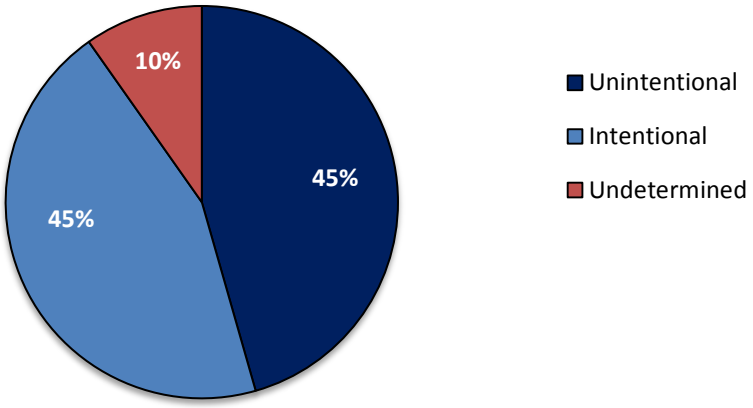


In 2015, the average poisoning-related inpatient hospitalization was over $35,000 in hospital charges and averaged 3.6 days (the median cost was $25,320 and the length of stay was 3 days). Arizona residents spent a total of 21,110 days in the hospital for non-fatal poisoning-related events and the longest hospital stay for a non-fatal case was 51 days. Hospital charges for inpatient hospitalizations due to poisonings totaled over $208 million for Arizona residents in 2015. Forty-six percent of the poisoning-related inpatient hospitalizations were charged to the Arizona Health Care Cost Containment System (AHCCCS) (n=2,644 and more than $91 million in cost). Hospital charges do not reflect hospital reimbursement rates, nor do they include charges or costs related to emergency medical services, outpatient care, rehabilitation, legal fees, or lost work/ school time.

Non-Fatal Poisoning-Related Inpatient Hospitalizations by Manner

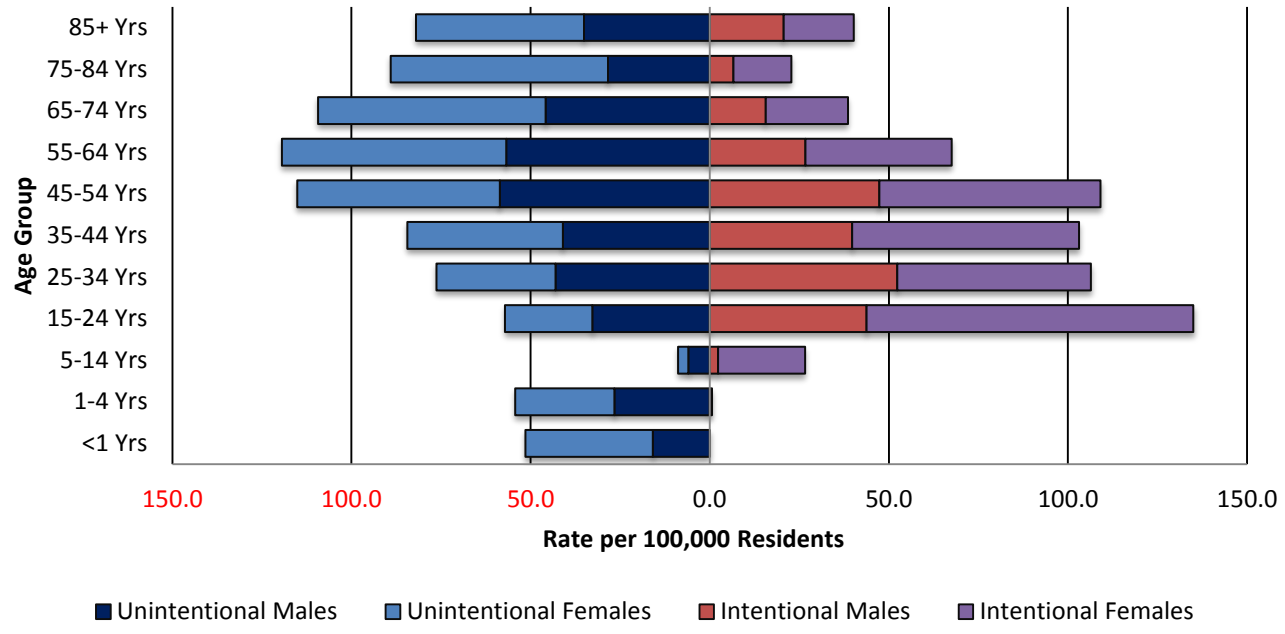
There were 2,636 non-fatal inpatient hospitalizations among Arizona residents attributed to unintentional poisoning in 2015 (45%) and 2,583 hospitalizations attributed to intentional poisoning (45%). Figure 28 shows the distribution of non-fatal poisoning-related inpatient hospitalizations by manner.

Figure 28. Percentage of Poisoning-Related Inpatient Hospitalizations by Manner, Arizona 2015



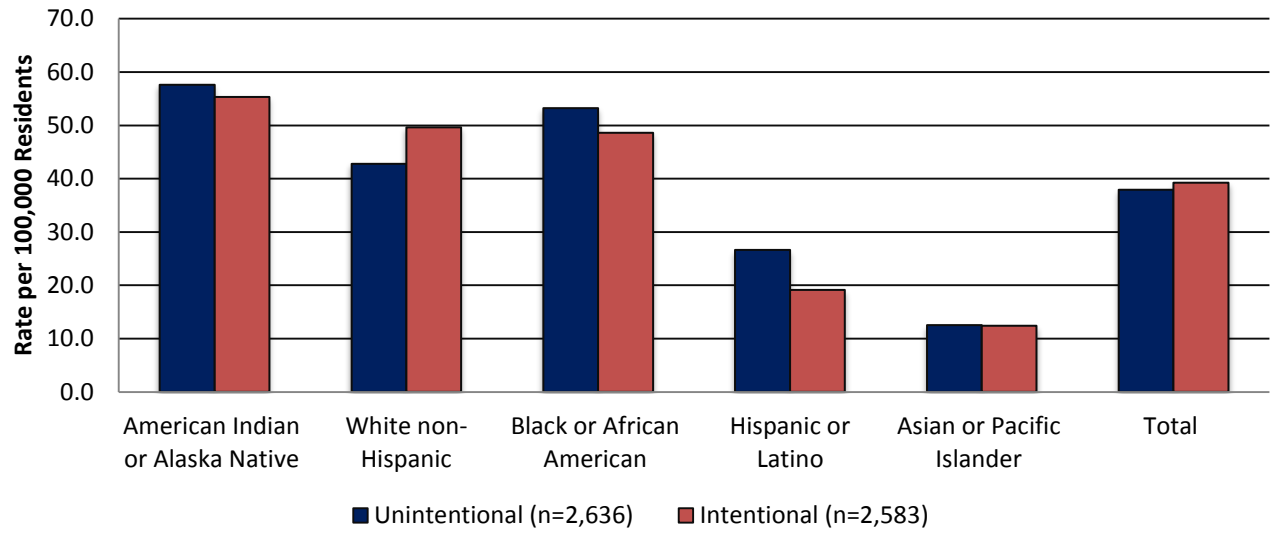
In 2015, fifty-two percent of unintentional poisoning-related inpatient hospitalizations (IP) and sixty-one percent of intentional poisoning-related IP were among females (n=1,366 and n=1,582, respectively). Female residents aged 15-24 years old had the highest rate of intentional non-fatal poisoning-related IP (91.3 hospitalizations per 100,000), while males within the same age group were lower (43.8 hospitalizations per 100,000 residents). Female residents aged 65-74 years old had the highest rate of unintentional poisoning-related IP (63.5 hospitalizations per 100,000 residents), while males within the same age group were lower (45.8 hospitalizations per 100,000 residents). In general, the highest rates of intentional poisoning-related hospitalizations were among adults and teenagers aged 15-54 years old, whereas unintentional poisonings were highest among those aged 45 years and older. Figure 29 shows the non-fatal poisoning-related inpatient hospitalization rates per 100,000 residents by age group and sex, separated by manner.

Figure 29. Age-Specific Poisoning-Related Inpatient Hospitalization Rates by Age, Sex and Manner, Arizona 2015



American Indian or Alaska Natives had the highest unintentional poisoning hospitalization rate in 2015 with 57.6 visits per 100,000 residents, followed by Black or African Americans (53.2 hospitalizations per 100,000 residents,) and then White non-Hispanics residents (42.8 hospitalizations per 100,000 residents). American Indian or Native Americans also had the highest intentional poisoning hospitalization rate with 55.3 per 100,000 residents, followed by White non-Hispanic residents (49.6 hospitalizations per 100,000 residents). Figure 30 shows the age-adjusted poisoning-related hospitalization rates by race/ethnicity and manner for Arizona residents in 2015.

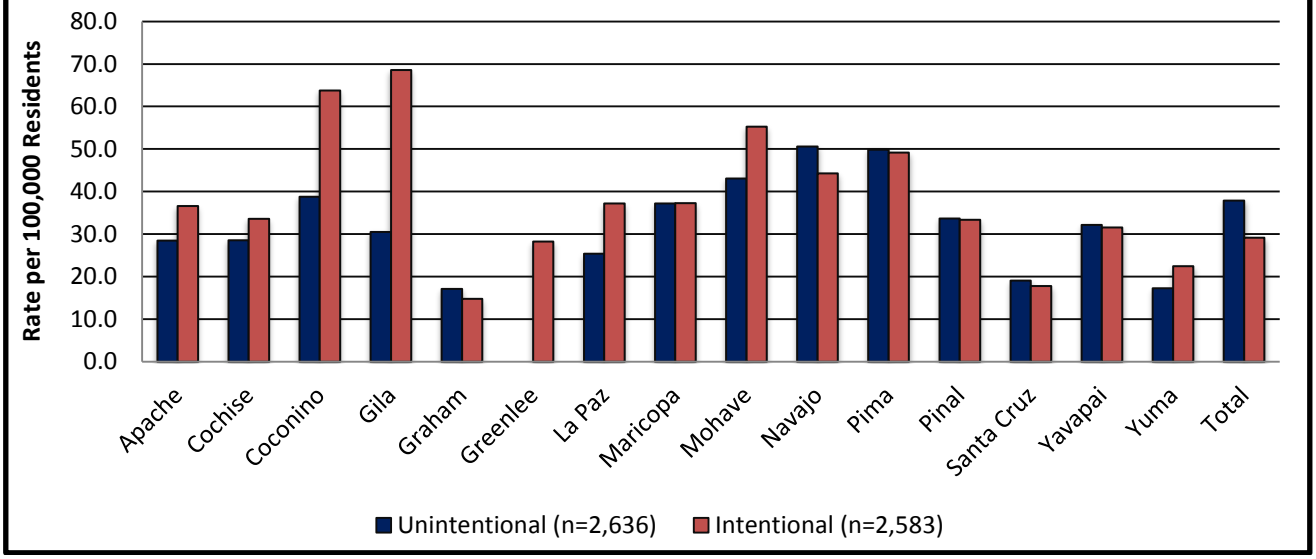
Figure 30. Age-Adjusted Poisoning-Related Inpatient Hospitalizations Rates by Race/Ethnicity and Manner, Arizona 2015*



*There were 65 hospitalizations among individuals of other or unknown race/ethnicity.

Navajo County had the highest non-fatal inpatient hospitalization rate for unintentional poisonings (50.6 hospitalizations per 100,000 residents) followed by Pima County (49.9 hospitalizations per 100,000 residents). Gila County had the highest rate of intentional poisonings in 2015. Poisoning-related hospitalizations were distributed among residents of Arizona's counties as shown in Figure 31.

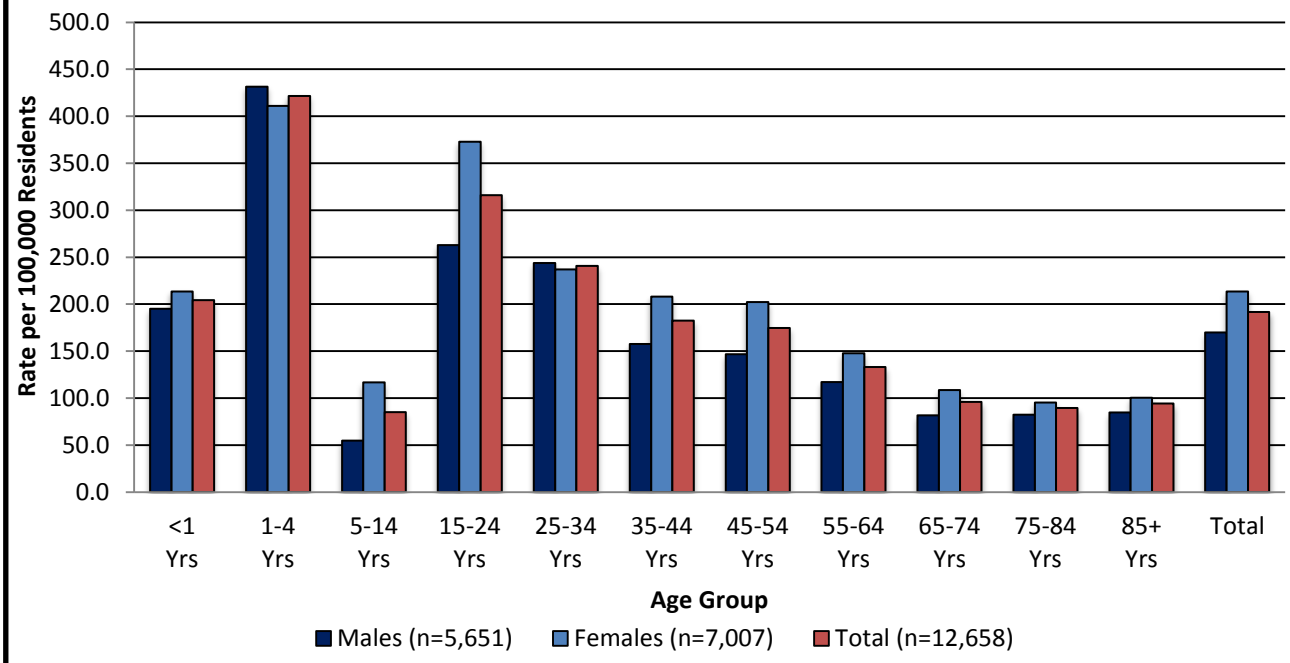
Figure 31. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by County and Manner, Arizona 2015



Non-Fatal Poisoning-Related Emergency Department Visits, 2015

There were 12,658 non-fatal emergency department visits among Arizona residents attributed to poisoning in 2015. Forty-five percent of the visits were among males (n=5,651), and fifty-five percent were among females (n=7,007). Except for children aged one through four, females consistently had higher rates of poisoning-related emergency department visits (EDV) than males. This trend is consistent with previous years of data as well. Children aged 1-4 years old had the highest rate of EDV (421.4 EDV per 100,000 residents), followed by young adults aged 15-24 years old (316.0 EDV per 100,000 residents). One study has shown that a substantial proportion of young children brought to an urban tertiary-care emergency department with apparent life-threatening events had positive toxicology screenings, even when parents denied medicating the child.[4] Though the rate of non-fatal poisoning events among Arizona's young children is very high, the results of that study suggest that the rate may be higher still if all young children presenting in the emergency department with an apparent life-threat were screened for potential poisons. Figure 32 shows the non-fatal poisoning-related emergency department visits rates per 100,000 residents by age group and sex.

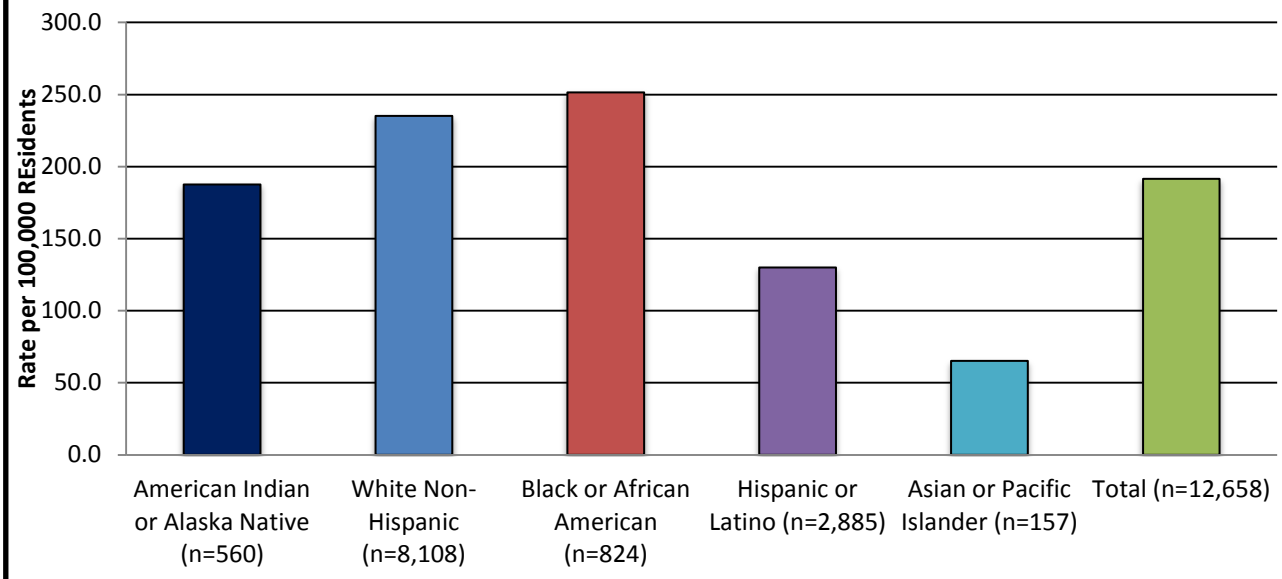
Figure 32. Poisoning-Related Emergency Department Visits Rates, by Age Group and Sex, Arizona 2015



Black or African American had the highest poisoning-related emergency department visit rate (251.5 EDV per 100,000 residents, followed by White non-Hispanic residents (235.2 EDV per 100,000 residents). The lowest rate was among Asians or Pacific Islander with 65.2 EDV per 100,000 residents. Figure 33 shows the rate distribution of emergency department visits by race/ethnicity in 2015.

[4] Pitetti RD, Whitman E, Zaylor A. Accidental and Nonaccidental Poisonings as a Cause of Apparent Life-Threatening Events in Infants. *Pediatrics* 2008; 122:e539-e362.

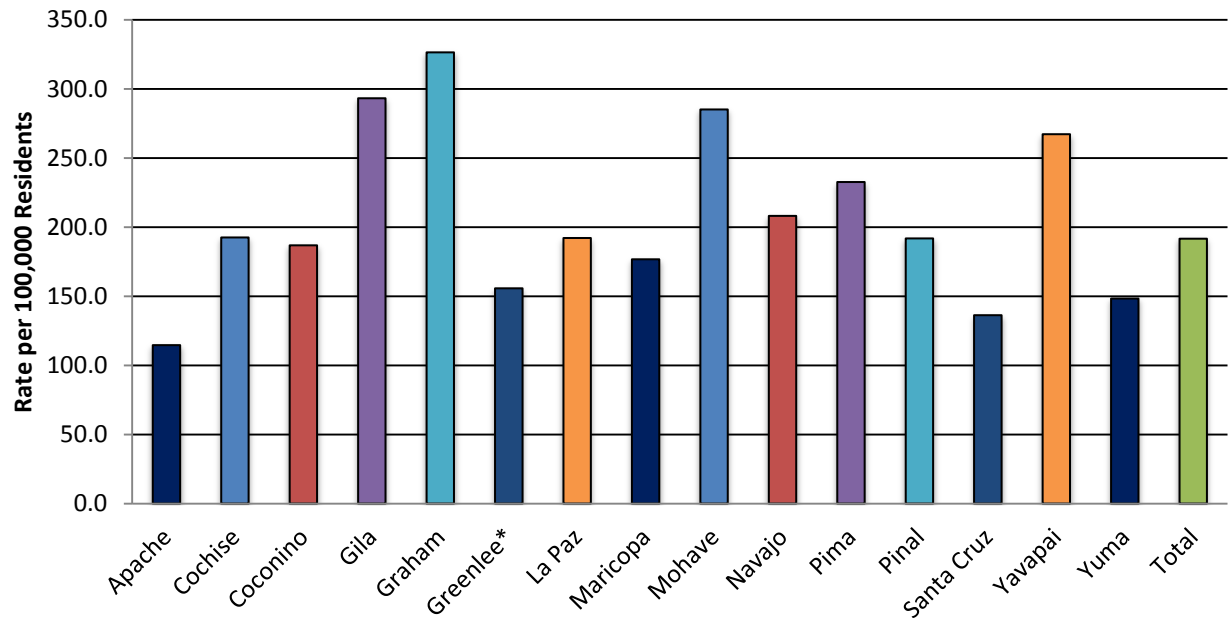
Figure 33. Age-Adjusted Poisoning-Related Emergency Department Visit Rate by Race/Ethnicity, Arizona 2015*



*Does not include 143 records with unknown or refused race/ethnicity.

Graham County had the highest rate of poisoning-related emergency department visits in 2015 with 326.4 EDV per 100,000 residents, followed by Gila County with 293.2 EDV visits per 100,000 residents, and then Mohave County with 285.1 EDV per 100,000 residents. Non-fatal poisoning-related emergency department visits were distributed among residents of Arizona's counties as shown in Figure 34.

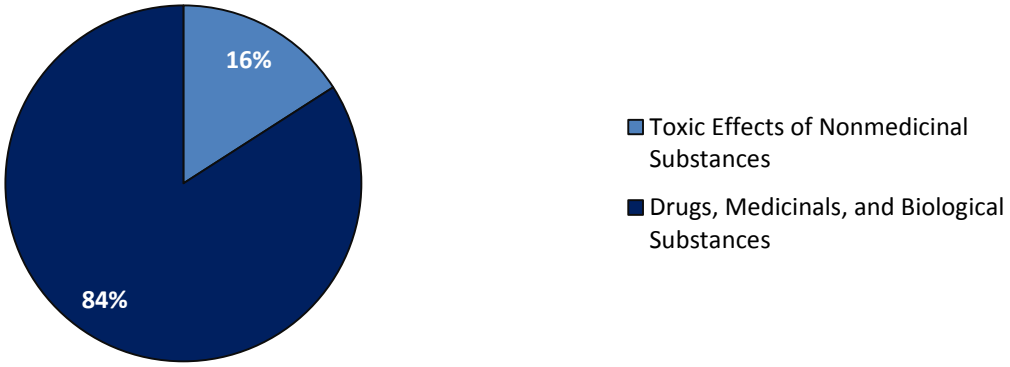
Figure 34. Age-Adjusted Poisoning-Related Inpatient Emergency Department Visits Rates by County, Arizona 2015



* Counties with counts <20 are unstable.

The vast majority of non-fatal poisoning-related emergency department visits were due to drug use (84%, n=10,643). This percentage includes prescription, non-prescription, and illicit drugs. Figure 35 shows percentage of poison hospitalizations by poison type.

Figure 35. Poisoning-Related Emergency Department Visits by Poison Type, Arizona 2015

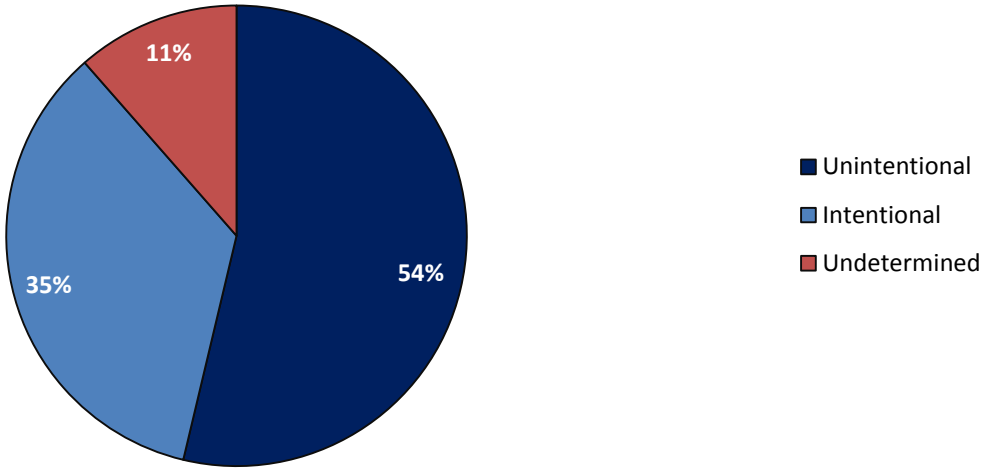


In 2015, the average non-fatal poisoning-related emergency department visit resulted in $6,035 in hospital charges (median=$5,049). Hospital charges for emergency department visits due to poisonings totaled more than $76 million for Arizona residents in 2015. Forty-seven percent of those hospital charges were charged to the Arizona Health Care Cost Containment System (AHCCCS) totaling more than $34 million. Hospital charges do not reflect hospital reimbursement rates, nor do they include charges or costs related to emergency medical services, rehabilitation, legal fees, or lost work/school time.

Non-Fatal Poisoning-Related Emergency Department Visits by Manner

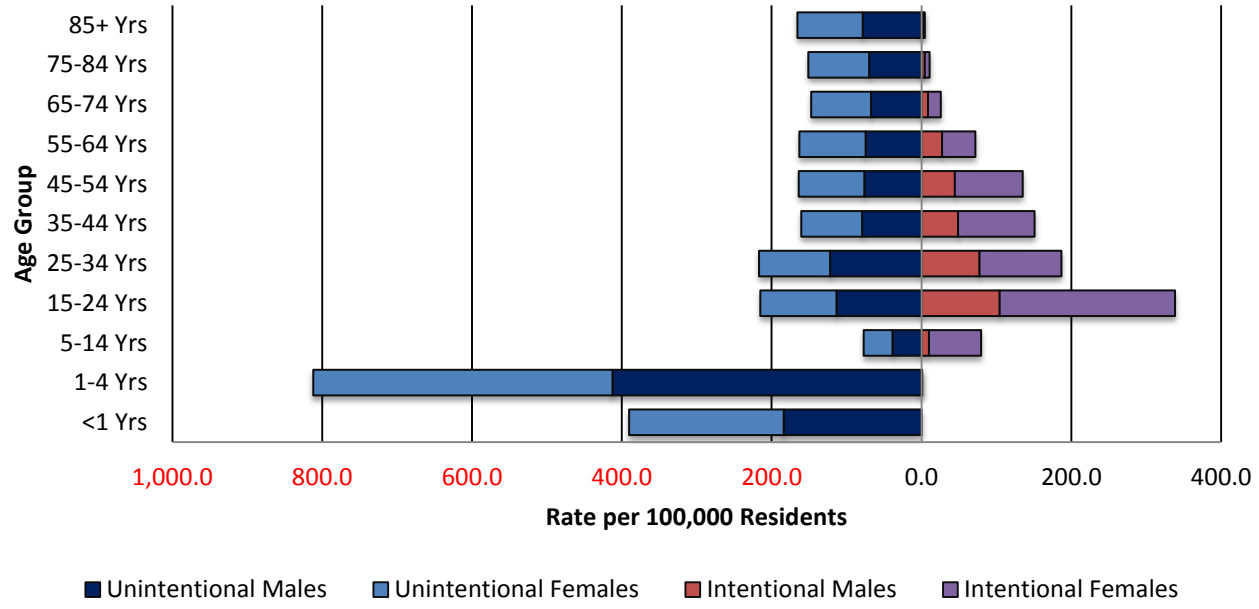
Majority of non-fatal poisoning-related emergency department visits were identified as being unintentional injuries (54%, n=6,764). Thirty-five percent of emergency department visits were attributed to intentional poisonings (n=4,385), and poisonings of undetermined intent accounted for eleven percent of visits (n=1,404). Figure 36 shows the distribution of non-fatal emergency department visits by manner.

Figure 36. Poisoning-Related Emergency Department Visits by Manner, Arizona 2015



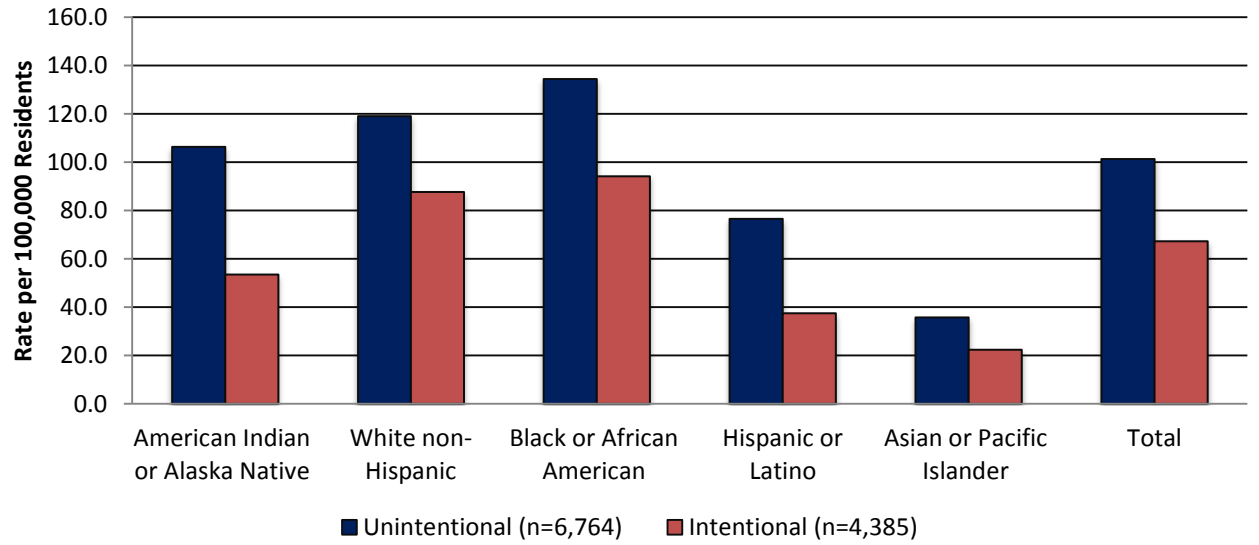
Children one through four years of age had the highest rates of unintentional poisoning-related emergency department visits among both males and females. Teens and young adults aged 15-24 years old had the highest intentional poisoning-related emergency department rates. Females in all age groups had higher rates of intentional poisoning-related visits. Figure 37 shows the poisoning-related emergency department visit rates per 100,000 residents by age group and sex, separated by manner.

Figure 37. Poisoning-Related Emergency Department Visit Rates by Age Group, Manner and Sex, Arizona 2015



The highest rates of emergency department visits were among Black or African American residents for both unintentional and intentional poisonings, followed by White non-Hispanic residents. It is important to note that American Indian or Alaska Native residents are known to be under-represented in emergency department data since the hospital discharge database does not include records from Indian Health Services facilities, and therefore the rates presented here are most likely an underrepresentation of poisoning-related visits for that race group. Figure 38 shows the distribution of emergency department visits by race/ethnicity and manner.

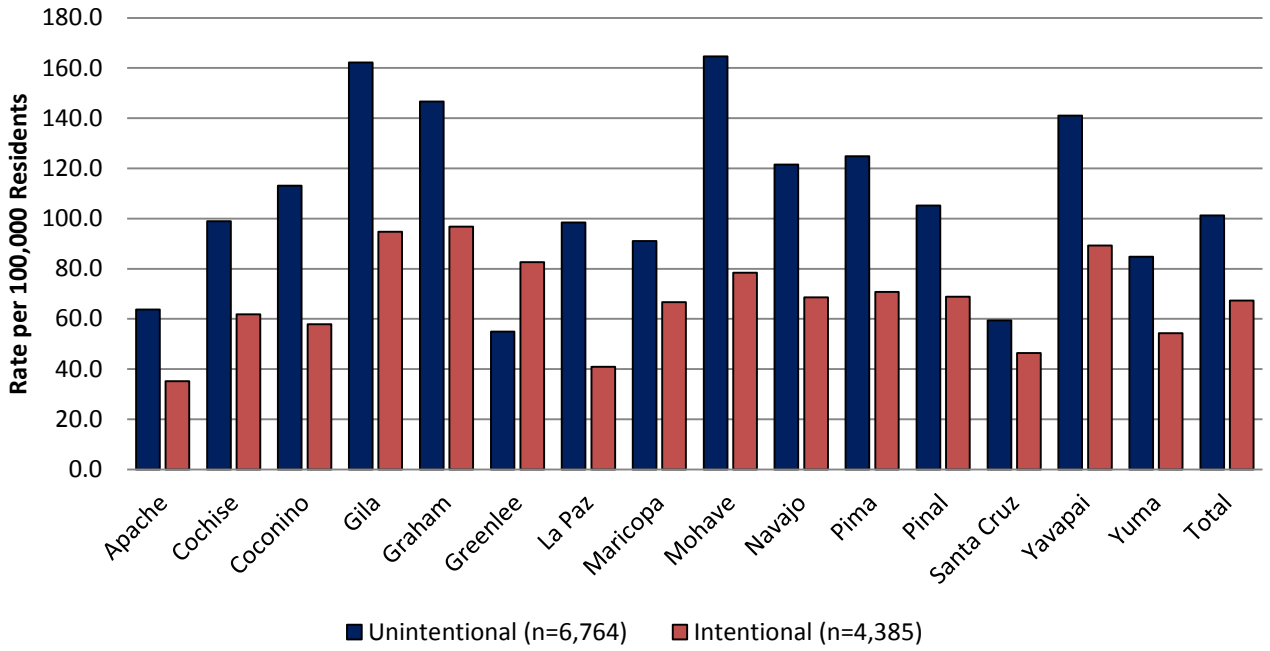
Figure 38. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Race/Ethnicity and Manner, Arizona 2015*



*Does not include 115 records with unknown or refused race/ethnicity.

Mohave County had the highest emergency department visit rates for unintentional poisonings and Graham County had the highest emergency department visit rate for intentional poisonings. Poisoning-related emergency department visits were distributed among residents of Arizona's counties as shown in Figure 39.

Figure 39. Age-Adjusted Poisoning-Related Emergency Department Visits by County and Manner, Arizona 2015



Poisoning and Prescription Drug Overdoses as an Arizona Public Health Concern

Deaths

- In 2015, poisoning was the leading cause of injury-related deaths (26%) accounting for more deaths among Arizonans than car crashes, falls, or firearm injuries.
- Between 2011 and 2015, the age-adjusted poisoning-related mortality rate increased 11% for Arizona residents.
- Drugs (prescription, non-prescription and illicit) were responsible for 90 percent of poisoning-related deaths. The poisons most commonly specified on death certificates in 2015 were pharmaceutical opioids (n=401), methamphetamine or other stimulants (n=365), and alcohol (n=291). The number of Heroin poisoning deaths increased by 32% in 2015 (n=238 or 3.7 deaths per 100,000 residents) from 2014 (n=180 or 2.7 deaths per 100,000 residents).
- In 2015, as in previous years, poisoning-related fatality rates were highest among American Indian or Alaska Natives (36.5 per 100,000 residents) and White non-Hispanic Arizonans (24.8 per 100,000 residents).

Non-Fatal Hospitalizations and Emergency Department Visits

- Between 2011 and 2015, the age-adjusted rate of non-fatal poisoning-related Inpatient Hospitalizations among Arizona residents decreased by 21%, from 108.4 hospitalizations per 100,000 residents in 2011 to 85.6 hospitalizations in 2015.
- In 2015, females aged 45-54 years old had the highest rate of non-fatal poisoning-related inpatient hospitalizations (131.0 hospitalizations per 100,000 residents). Females aged 65-74 years old had the highest unintentional non-fatal poisoning-related inpatient Hospitalization rate (63.5 hospitalization per 100,000 residents) and females aged 15-24 years old had the highest intentional non-fatal poisoning-related Inpatient Hospitalization rate (91.3 hospitalization per 100,000 residents).
- Between 2011 and 2015, the age-adjusted rate of non-fatal poisoning-related Emergency Department Visits (EDV) among Arizona residents decreased by 2.7%, from 196.9 EDV per 100,000 residents in 2011 to 191.6 EDV per 100,000 residents in 2015.The highest rates of emergency department visits were among male and female children one through four years of age (431.5 per 100,000 for males, 410.9 per 100,000 for females).
- Hospital charges for non-fatal poisoning-related inpatient hospitalizations totaled more than $208 million in 2015, and Arizona residents spent a total of 21,110 days hospitalized for non-fatal poisonings. Hospital charges for poisoning-related emergency department visits totaled over $76 million in 2015.

Arizona's Response

- Arizona's Prescription Drug Misuse and Abuse Initiative (http://www.azcjc.gov/acjc.web/rx/default.aspx), which began in 2012, has multi-faceted strategies at both the state and community level to address prescription drug abuse:
    - Patient and provider education: The *Arizona Opioid Prescribing Guidelines* for the treatment of acute pain and chronic non-terminal pain were published in November of 2014. http://azdhs.gov/clinicians/clinical-guidelines-recommendations/index.php?pg=prescribing. The *Arizona Guidelines for Emergency Department Controlled Substance Prescribing* were developed in 2012. Arizona has two nationally affiliated poison control centers providing education and drug exposure response throughout the state.
    - Prescription monitoring: Arizona's Controlled Substances Prescription Monitoring Program is managed by the Arizona State Board of Pharmacy. Dispensing pharmacies and practitioners are required under Arizona law to report information on Schedule II, III, and IV prescriptions to the database. http://www.azpharmacy.gov/CS-Rx_Monitoring/aboutpmp.asp
    - Drug disposal: Since 2008, sites throughout Arizona have offered drug drop-off services as both individual and ongoing events. These efforts have been expanded in 2014 under the Prescription Drug Reduction Initiative. www.dumpthedrugsaz.org

Poisoning Prevention Tips and Resources

Call **1-800-222-1222** to be connected to a local Poison Control Center.

You can prevent poisonings!

- **Store household cleaners in their original containers, away from children**
  - Pills, vitamins, antifreeze, nail polish remover, or insecticide may look similar to children's candy or beverages. Teach children not to eat or drink something without first asking an adult.
  - Teach children to identify medication, and don't refer to pills as 'candy'.
- **Identify poisonous plants around your home and remove from children's reach**
  - Visit the Cornell University Department of Animal Science website on poisonous plants at http://www.ansci.cornell.edu/plants or contact your local PCC to learn about poisonous plants.
- **Read the label and follow directions for using household products or medications**
- **Check with your doctor or pharmacist to prevent dangerous medication interactions**
- **Properly discard unused, unneeded, or expired medication**
  - Look for drug disposal events in your community. These provide a safe, easy way to responsibly get rid of unneeded medication. Such events may be sponsored by local hospitals, pharmacies, police or fire departments.
    - Go to www.dumpthedrugsaz.org for a map of prescription drug drop-off sites.
  - Only flush drugs down the toilet if the label specifically says to do so
    - Ask your pharmacist if you're unsure about proper disposal
  - To dispose of all other medications:
    - Remove the medication from the original packaging
    - Crush the pills and mix them with kitty litter, coffee grounds, or sand
    - Seal the mixture in a plastic bag and dispose of it with your household trash
- **Properly discard unused or unneeded household poisons and their containers**
  - Check with your city or county for hazardous waste collection events and locations.
  - Household poisons can include paints and solvents, auto fluids, household cleaners, pesticide, and pool chemicals
- **Participate in National Poison Prevention Week, held annually during the 3rd week of March**
  - The federal Health Resources and Services Administration (HRSA) provides an Event Planner Kit to help your agency or business get involved. Visit www.poisonprevention.org for more information.

Visit Arizona's Poison Control Centers on the internet at:

Arizona Poison and Drug Information Center, Tucson, Arizona
http://www.pharmacy.arizona.edu/outreach/poison/index.php

Banner Good Samaritan Poison and Drug Information Center, Phoenix, Arizona
http://www.bannerhealth.com/Locations/Arizona/Banner+Poison+Control+Center/_Banner+Poison+Control+Center.htm

Methodology

Mortality data for 2011 through 2015 were compiled from the death certificates registered with the Arizona Department of Health Services Office of Vital Records. Poisoning Deaths presented in this report were analyzed and compiled at a date that was before final year close out. Lag times for examining, confirming toxicology, and reporting unusual deaths from Medical Examiners to Office of Vital Records may vary from 4-6 months. ADHS anticipates the numbers of drug poisoning deaths will be higher than what is reported in this report. ADHS is currently analyzing close out and an enhanced drug poison report will be released after analysis is complete. Deaths in Any death record for an Arizona resident assigned an International Classification of Diseases, 10th Revision (ICD-10) code for poisoning as the underlying cause of death was included in the count. Poisonings due to envenomation by animals, plants, or insects (X20 – X29) were excluded from this report. Table 4 shows the ICD-10 codes included in this report.

Table 4. International Classification of Diseases, 10th Revision (ICD-10) Codes Used in This Report

ICD-10 Code	ICD-10 Code Description
X40	Unintentional poisoning by non-opioid analgesics, including aspirin and ibuprofen
X41	Unintentional poisoning by sedative or hypnotic drugs, including antidepressants and barbiturates
X42	Unintentional poisoning by narcotic or hallucinogenic drugs, including marijuana, heroin, and methadone
X43	Unintentional poisoning by drugs acting on the autonomic nervous system
X44	Unintentional poisoning by other and unspecified drugs
X45	Unintentional poisoning by alcohol meant for ingestion
X46	Unintentional poisoning by organic solvents
X47	Unintentional poisoning by other gases, including carbon monoxide and motor vehicle exhaust
X48	Unintentional poisoning by pesticides or herbicides
X49	Unintentional poisoning by other and unspecified chemicals
X60	Suicide by poisoning using non-opioid analgesics, including aspirin and ibuprofen
X61	Suicide by poisoning using sedative or hypnotic drugs, including antidepressants and barbiturates
X62	Suicide by poisoning using narcotic or hallucinogenic drugs, including marijuana, heroin, and methadone
X63	Suicide by poisoning using drugs acting on the autonomic nervous system
X64	Suicide by poisoning using other and unspecified drugs
X65	Suicide by poisoning using alcohol meant for ingestion
X66	Suicide by poisoning using organic solvents
X67	Suicide by poisoning using other gases, including carbon monoxide and motor vehicle exhaust
X68	Suicide by poisoning using pesticides or herbicides
X69	Suicide by poisoning using other and unspecified chemicals
X85	Homicide by poisoning using drugs or a biological substance
X86	Homicide by poisoning using corrosive gas
X87	Homicide by poisoning using pesticide
X88	Homicide by poisoning using gas or vapors
X89	Homicide by poisoning using other specified chemicals
X90	Homicide by poisoning using unspecified chemicals
Y10	Poisoning by non-opioid analgesics, including aspirin and ibuprofen, undetermined intent
Y11	Poisoning by sedative or hypnotic drugs, including antidepressants and barbiturates, undetermined intent
Y12	Poisoning by narcotic or hallucinogenic drugs, including marijuana, heroin, and methadone, undetermined intent
Y13	Poisoning by drugs acting on the autonomic nervous system, undetermined intent
Y14	Poisoning by other and unspecified drugs, undetermined intent
Y15	Poisoning by alcohol meant for ingestion, undetermined intent
Y16	Poisoning by organic solvents, undetermined intent
Y17	Poisoning by other gases, including carbon monoxide or motor vehicle exhaust, undetermined intent
Y18	Poisoning by pesticides or herbicides, undetermined intent
Y19	Poisoning by other and unspecified chemicals, undetermined intent

Inpatient hospitalization discharge data and emergency department discharge data from 2011 through 2015 were compiled from the Arizona Hospital Discharge Database at the Arizona Department of Health Services. The discharge database contains information from private, acute-care facilities in the state of Arizona, and do not include visits to federal facilities, such as Veterans' Affairs Hospitals or Indian Health Services facilities. The discharge databases do not contain data from urgent care facilities, private physician practices, or medical clinics. Hospital discharge data include hospital transfers and readmissions. Therefore, a single injured individual may be counted more than once. These data should be interpreted as episodes of medical treatment, not individual injuries.

Additionally, the data do not allow for analysis of the combined effect of two or more poisonous agents.
Records for Arizona residents assigned an International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) External Cause of Injury Code (E-Code) for poisoning as the primary cause of injury were included in this report. The following E-Code ranges were included: E850 – E858, E860 – E869, E950 – E952, E962, E972, E980 – E982. Table 15 lists the general categories of poisonings included in these ICD-9-CM E-Codes. Poisonings due to envenomation by animals, plants, or insects (E905.0 – E905.9) were excluded from this report, as were cases in which medications caused an adverse reaction after therapeutic use (E930 – E949). Medications were counted as poisoning events only if they were administered incorrectly or with the intent to harm. This could include the administration of the wrong drug, or an incorrect dose of a prescribed medication. This methodology was used for the first three quarters of 2015 (January-September).

Table 5. International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) Codes Used in This Report up to the first three quarter of 2015

ICD-9-CM Codes	ICD-9-CM Category Description
E850 – E858	Unintentional poisoning by drugs, medicinal substances, and biologicals
E860 – E869	Unintentional poisoning by other solid and liquid substances, gases, and vapors
E950 – E952	Suicide and self-inflicted poisoning by solid or liquid substances, gases in domestic use, and other gases or vapors
E962	Assault by poisoning
E972	Injury due to legal intervention by gas, including poisoning by gas
E980 – E982	Poisoning by solid or liquid substances, gases in domestic use, and other gases, undetermined whether unintentionally or purposely inflicted

ICD-9-CM transition to ICD-10-CM
In October 2015, the federal government's new mandate for ICD, the conversion of ICD-9-CM diagnostic and procedural codes to the implementation and use of ICD-10-CM codes, went into effect. This new mandate provides health providers a wider and more detail range for diagnosing diseases for the last quarter year of 2015 (October. December). The last quarter uses ICD-10-CM codes that are comparable or approximately similar to ICD-9-CM codes to identify poisons. Poisons were identified by analyzing principal diagnosis code for ICD-10 codes relating to Poisoning by, adverse effect of and underdosing of drugs, medicaments and biological substances (T36-T50) and Toxic effects of substances chiefly nonmedicinal as to source (T51-T65). Once cases were identified poisoning due to adverse reaction after therapeutic use were removed.

Table 6. International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) Codes Used in This Report up to the last quarter of 2015	
ICD-10-CM Codes	**ICD-10-CM Category Description**
T36	Poisoning by, adverse effect of and underdosing of systemic antibiotics
T37	Poisoning by, adverse effect of and underdosing of other systemic anti- infectives and antiparasitics
T38	Poisoning by, adverse effect of and underdosing of hormones and their synthetic substitutes and antagonists, not elsewhere classified
T39	Poisoning by, adverse effect of and underdosing of nonopioid analgesics, antipyretics and antirheumatics
T40	Poisoning by, adverse effect of and underdosing of narcotics and psychodysleptics [hallucinogens]
T41	Poisoning by, adverse effect of and underdosing of anesthetics and therapeutic gases
T42	Poisoning by, adverse effect of and underdosing of antiepileptic, sedative- hypnotic and antiparkinsonism drugs
T43	Poisoning by, adverse effect of and underdosing of psychotropic drugs, not elsewhere classified
T44	Poisoning by, adverse effect of and underdosing of drugs primarily affecting the autonomic nervous system
T45	Poisoning by, adverse effect of and underdosing of primarily systemic and hematological agents, not elsewhere classified
T46	Poisoning by, adverse effect of and underdosing of agents primarily affecting the cardiovascular system
T47	Poisoning by, adverse effect of and underdosing of agents primarily affecting the gastrointestinal system
T48	Poisoning by, adverse effect of and underdosing of agents primarily acting on smooth and skeletal muscles and the respiratory system
T49	Poisoning by, adverse effect of and underdosing of topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinorlaryngological and dental drugs
T50	Poisoning by, adverse effect of and underdosing of diuretics and other and unspecified drugs, medicaments and biological substances
T51	Toxic effect of alcohol
T52	Toxic effect of organic solvents
T53	Toxic effect of halogen derivatives of aliphatic and aromatic hydrocarbons
T54	Toxic effect of corrosive substances
T55	Toxic effect of soaps and detergents
T56	Toxic effect of metals
T57	Toxic effect of other inorganic substances
T58	Toxic effect of carbon monoxide
T59	Toxic effect of other gases, fumes and vapors
T60	Toxic effect of pesticides
T61	Toxic effect of noxious substances eaten as seafood
T62	Toxic effect of other noxious substances eaten as food
T63	Toxic effect of contact with venomous animals and plants
T64	Toxic effect of aflatoxin and other mycotoxin food contaminants
T65	Toxic effect of other and unspecified substances

Rates for 2011-2015 were calculated using Arizona population data compiled by the Arizona Department of Health Services' Bureau of Public Health Statistics, available on the internet at: http://www.azdhs.gov/plan/menu/info/pop/index.php.

To help compare groups over time, rates have been age-adjusted. Age-adjusting is a statistical procedure used to remove the effect of age differences between populations. All age-adjusted rates in this report were computed using the 'direct' method in which the age-specific rates for a given year are weighted by the age distribution of the 2000 standard population. For information on how to calculate an age-adjusted rate, or to see the 2000 standard age distribution, visit the National Cancer Institute Surveillance Epidemiology and End Results (SEER) program at http://seer.cancer.gov/seerstat/tutorials/aarates/definition.html.