Poisonings among Arizona Residents 2014

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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 2014 accounting for a total of 1,260 deaths. The age-adjusted poisoning mortality rate remained stable from 2013 to 2014 at 19.1 deaths per 100,000 residents. Males aged 45 through 54 years had the highest rate of poisoning-related deaths with 42.2 deaths per 100,000 residents. Poisoning mortality rates were highest among American Indians (25.8 deaths per 100,000 residents) and White, non-Hispanics (23.5 deaths per 100,000 residents). Seventy-seven percent of the poisoning-related deaths in 2014 were due to unintentional injuries (n=977); 14 percent were due to suicide (n=172); and nine percent were of an undetermined manner of death (n=110). The poisons most commonly specified on death certificates in 2014 were pharmaceutical opioids (n=372), methamphetamines and other stimulants (n=249), and alcohol (n=248). Heroin poisoning mortality rates have increased 93 percent since 2010 from 1.4 deaths to 2.7 deaths per 100,000 residents. The mortality rate due to pharmaceutical opioid poisoning among adults 55 to 64 years of age surpassed those 45 to 54 years of age for the first time in 2014. The rate increased for that same age group over 232 percent since 2004. The mortality rate due to pharmaceutical opiates has decreased 20 percent since 2010. Among counties with at least 20 poisoning-related deaths in 2014, Gila County had the highest fatality rate (48.8 deaths per 100,000 residents).

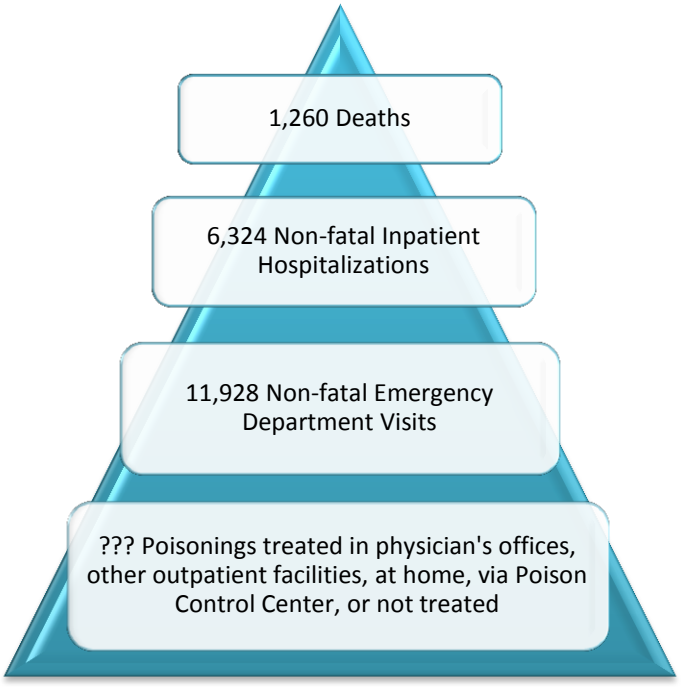
There were 6,324 non-fatal inpatient hospitalizations due to poisonings, an almost four percent decrease since 2013. Overall, inpatient hospitalization rates due to poisoning have decreased 14 percent since 2010. Adult females continue to have the highest rates of poisoning-related inpatient hospitalizations. As in 2013, females 45 through 54 years of age had the highest rate with 154.4 cases per 100,000 residents, and females 55 through 64 years of age had the second highest rate of 137.9 cases per 100,000 residents. White, non-Hispanic residents had the highest age-adjusted poisoning-related rate of inpatient hospitalizations with 113.7 per 100,000 followed by African-American residents with 92.3 cases per 100,000 residents. Unintentional poisoning accounted for 44 percent of poisoning-related inpatient hospitalizations (n=2,779), and intentional poisonings comprised an additional 46 percent (n=2,884). Hospital charges for non-fatal poisoning-related inpatient hospitalizations totaled more than $213 million in 2014, with charges to AHCCCS totaling over $87 million (41 percent). Arizona residents spent a total of 22,615 days hospitalized for poisoning injuries. Gila County had the highest age-adjusted rate of inpatient hospitalizations due to poisonings (139.9 hospitalizations per 100,000 residents). Hospitalizations due to heroin poisoning have increased 41 percent since 2010.

There were 11,928 non-fatal poisoning-related emergency department visits among Arizona residents. The highest age-specific rates of poisoning-related emergency department visits for both males and females were among children one to four years of age (415.7 visits per 100,000 residents and 376.5 per 100,000 residents, respectively). Fifty-three percent of the non-fatal poisoning-related emergency department visits were the result of unintentional poisonings (n=6,339), and 35 percent of the visits resulted from intentional injuries (n=4,162). Among counties with at least 20 poisoning-related deaths in 2014, Graham County had the highest rate with 352.6 visits per 100,000 residents.

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 presents an 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.**

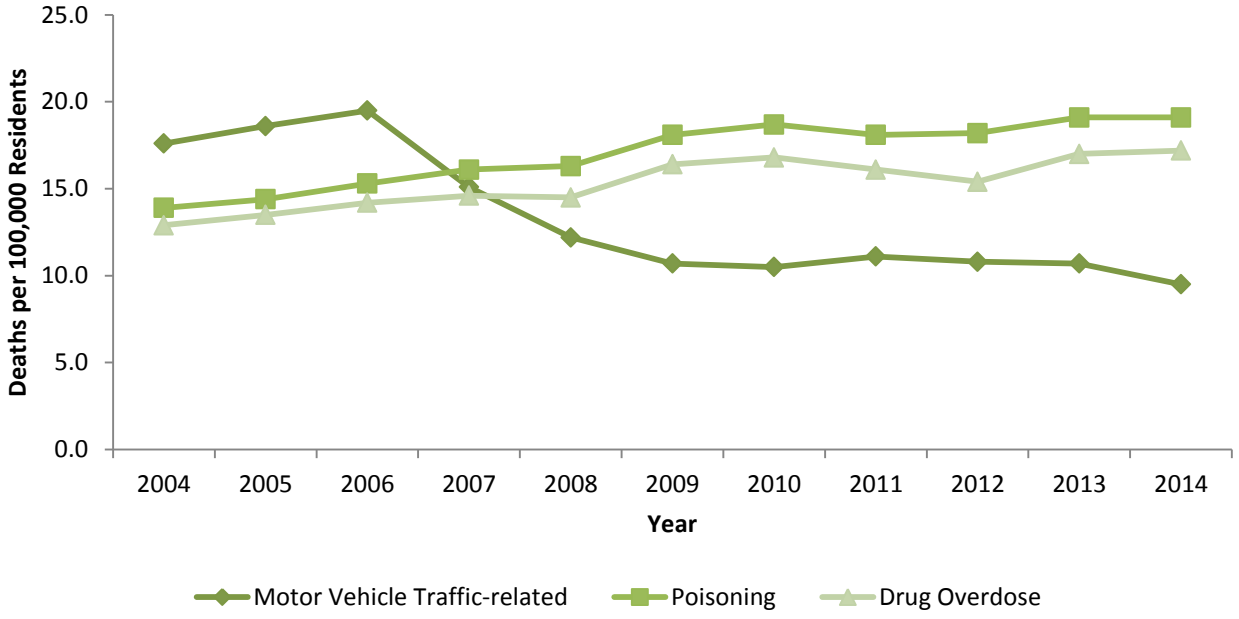
Figure 1. Poisoning Outcomes Pyramid, Arizona 2014



This report presents a comprehensive picture of poisoning-related injuries among Arizona residents in 2014, as well as poisoning trends during the five years since 2010. 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, 2004 through 2014. 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 2004 poisoning deaths have increased over 37 percent, while motor vehicle crash deaths have decreased over 46 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 Rates Compared to Motor Vehicle-Related Mortality Rates, Arizona Residents, 2004-2014



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 2014, the APDIC documented 20,418 calls for human exposures to toxins and poisons, out of 36,867 total calls (55 percent). Twenty-six of these cases resulted in death and 38 percent (n=7,295) of the calls were managed in a healthcare facility.

In 2014, the BGSPDIC documented 43,386 calls for human exposures to toxins and poisons, out of more than 70,000 total calls (62 percent). Forty-three percent of all human exposures involved children 12 years or younger (n=18,656) and 36 percent of involved children five years and younger (n=15,619). Eighty-seven percent of children's poison or drug exposures were managed without the need for a costly emergency department visit. Seventy-four 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 2014 if they had not been able to consult with the poison control center and care for themselves at home. This means the community saved more than $58 million in emergency treatment costs.

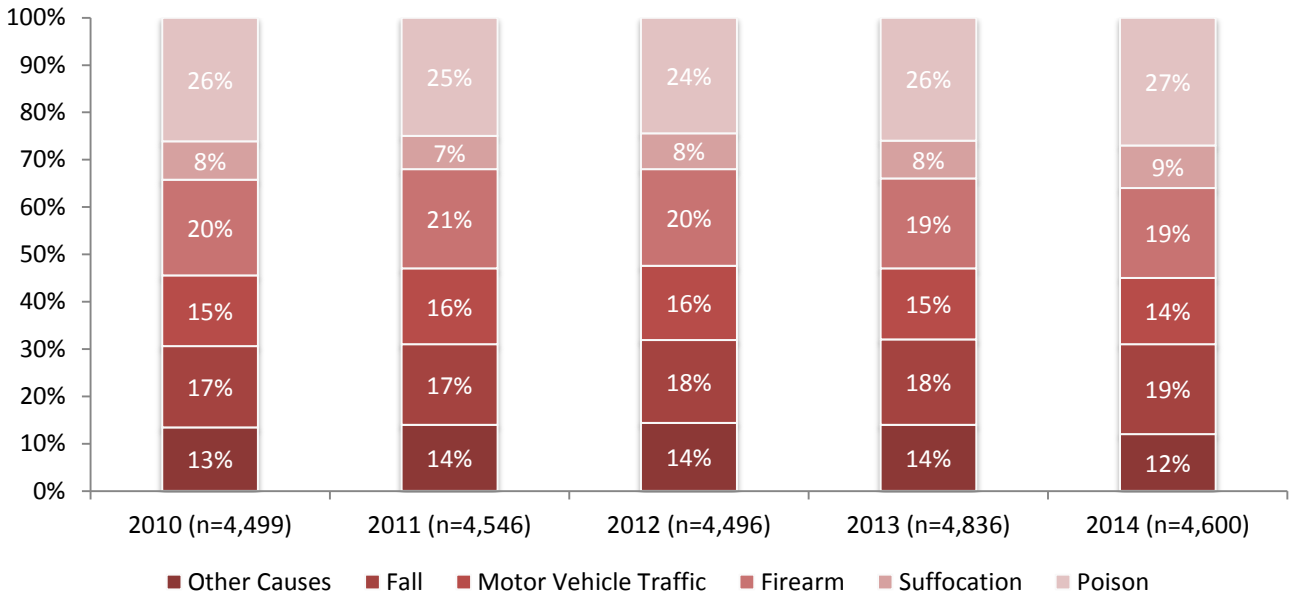
[2,3] The Lewin Group. (2012) Final Report on the value of the Poison Center System. [White Paper]. Retrieved from https://aapcc.s3.amazonaws.com/files/library/Value_of_the_Poison_Center_System_FINAL_9_26_2012_--_FINAL_FINAL_FINAL.pdf

Five-Year Trends in Poisonings among Arizona Residents, 2010-2014

Mortality

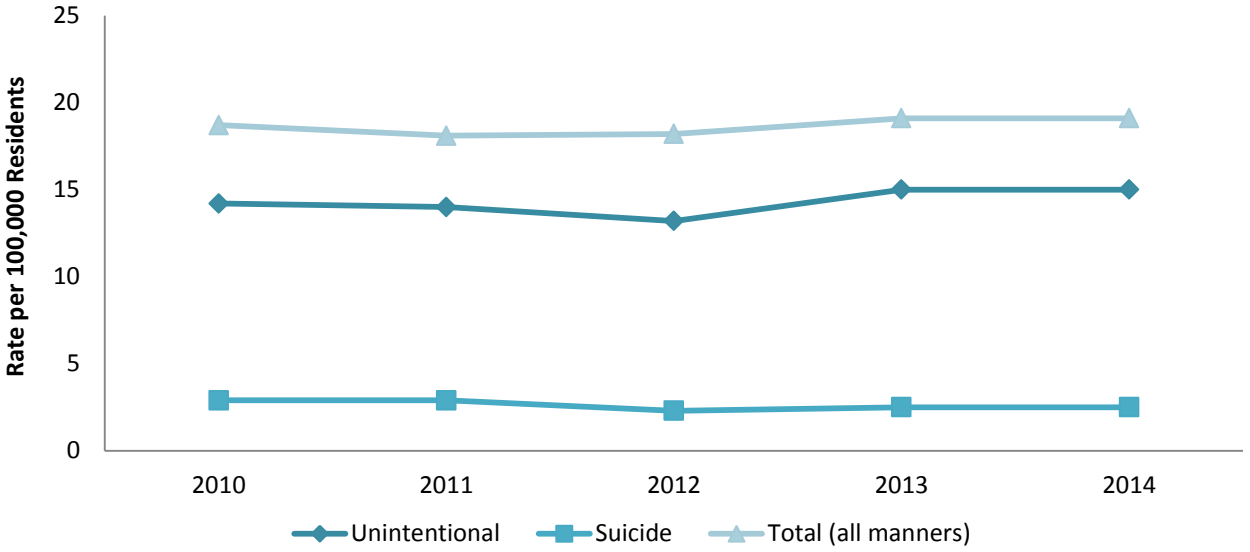
Injuries account for approximately ten percent of deaths among Arizona residents each year and the proportion of injuries have remained relatively stable over time. Since 2010, the percentage of poisoning-related deaths have remained the same, from 26 percent of all injury-related deaths in 2010 (n=1,176) to 27 percent of injury-related deaths in 2014 (n=1,260). Over this five-year period, the number of injury-related deaths has increased slightly, from 4,499 deaths in 2010 to 4,636 deaths in 2014. Figure 3 shows the distribution of injury-related deaths by mechanism of injury over the five year period from 2010 through 2014.

Figure 3. Proportion of Injury-Related Fatalities by Mechanism of Injury, Arizona 2010-2014



Between 2010 and 2014, the age-adjusted poisoning-related mortality rate increased just over two percent for Arizona residents. This overall increase is attributable to the rate of unintentional poisoning deaths, which has increased by nine percent since 2010 but remained stable since 2013. Suicide-related poisonings have decreased 14 percent overall since 2010, but also remained stable since 2013. The most significant decrease in suicide-related poisonings occurred from 2011 to 2012, with a 21 percent decline in mortality rate. Figure 4 displays the age-adjusted poisoning-related mortality rates by manner of death for Arizona residents from 2010 to 2014.

Figure 4. Age-Adjusted Poisoning-Related Mortality Rates by Intent, Arizona 2010-2014



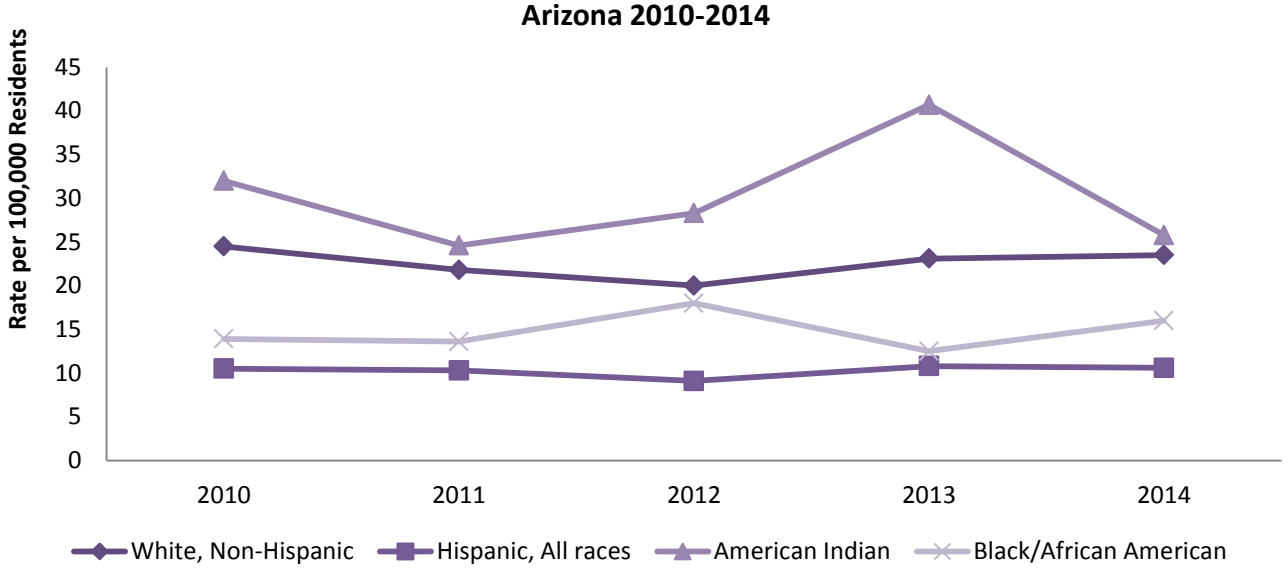
Overall, male mortality rates due to poisoning were consistently higher than females between 2010 and 2014. Male mortality rates increased by almost six percent, while female mortality rates decreased by four percent from 2010 to 2014. Figure 5 shows the age-adjusted poisoning-related mortality rates by gender during the five year period.

Figure 5. Age-Adjusted Poisoning-Related Mortality Rates by Sex, Arizona 2010-2014

American Indians continued to have the highest poisoning-related mortality rate with 25.8 deaths per 100,000 residents, but the rate decreased by 19 percent overall from 2010 to 2014. Mortality rates increased among African American residents by 20 percent during the same 5-year period. Figure 6 shows the age-adjusted

poisoning-related mortality rates by race/ethnicity for Arizona residents from 2010 to 2014. Due to small numbers, age-adjusted poisoning-related mortality rates have not been presented for Asian residents.

Figure 6. Age-Adjusted Poison-Related Mortality Rates by Race/Ethnicity, Arizona 2010-2014



While the trend is not supported in all counties, the rate of poisoning-related fatalities in Arizona increased two percent between 2010 and 2014. Table 1 shows the age-adjusted mortality rate per 100,000 residents for poisoning-related deaths by county of residence from 2010 to 2014.

Table 1. Age-Adjusted Mortality Rates per 100,000 Residents for Poisoning-Related Deaths by County of Residence, Arizona 2010-2014

	2010	2011	2012	2013	2014
Apache*	28.8	23.3	22.1	9.5	30.0
Cochise*	16.6	9.4	19.4	9.8	15.7
Coconino*	18.6	21.0	17.7	36.1	24.2
Gila*	21.2	25.4	33.6	28.1	48.8
Graham*	17.5	19.9	18.2	20.4	17.4
Greenlee*	11.4	16.2	**	**	20.9
La Paz*	58.4	14.0	**	28.8	36.9
Maricopa	16.6	16.7	14.9	16.7	17.0
Mohave	32.0	28.3	27.6	30.7	24.8
Navajo*	25.8	35.1	37.6	58.8	39.1
Pima	22.6	20.7	20.8	23.0	22.6
Pinal	16.3	13.0	12.3	13.3	9.5
Santa Cruz*	7.7	5.5	5.7	7.3	9.0
Yavapai	27.8	31.0	35.2	34.1	12.2
Yuma*	14.0	12.2	15.5	11.1	20.7
Statewide Total	**18.7**	**18.1**	**18.2**	**19.1**	**19.1**

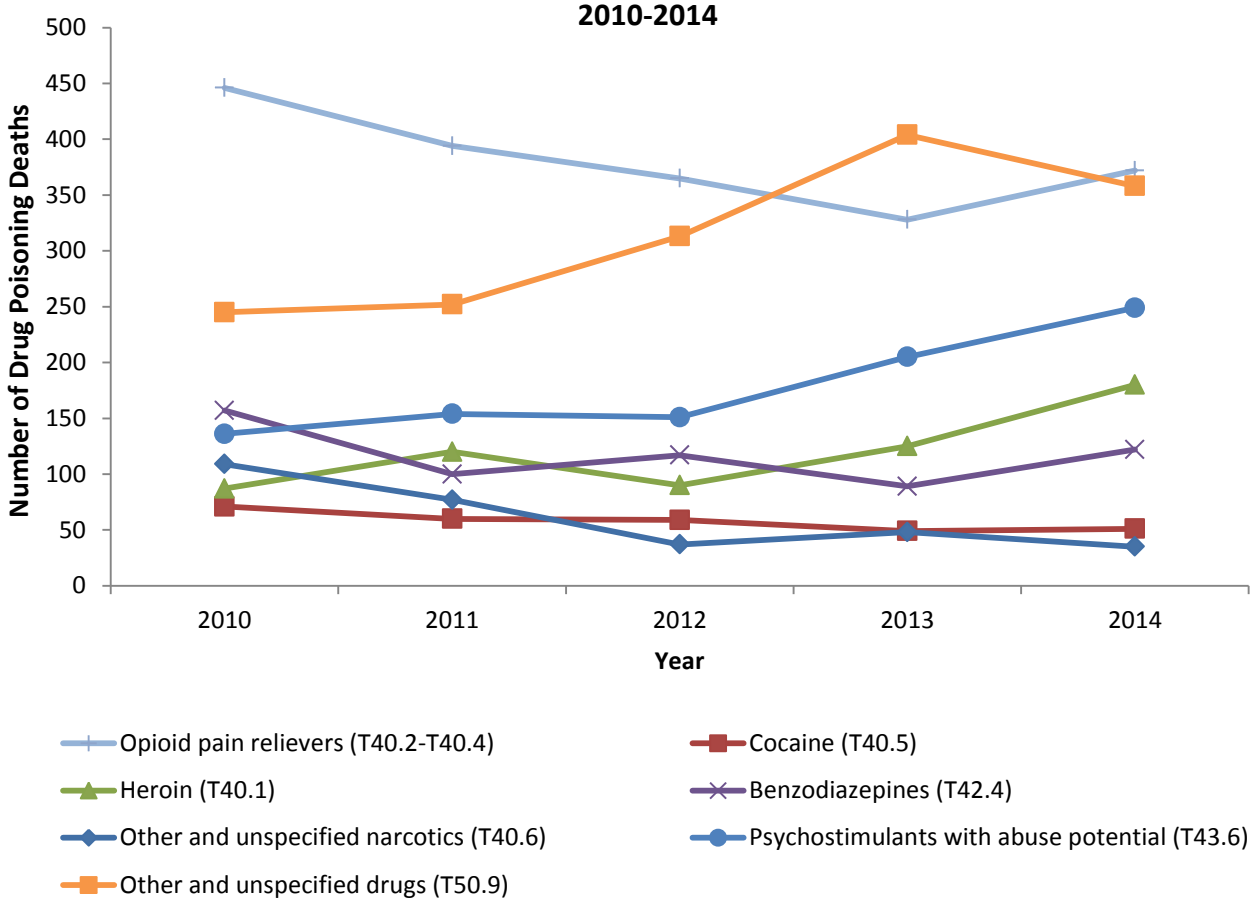
*Rates are unstable for counties indicated, as they had fewer than 20 deaths in at least one year.
** No poisoning-related deaths were recorded for these counties.

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 2010 to 2013 but increased between 2013 and 2014. The number of deaths involving heroin continues to rise and have more than doubled since 2010 from 87 deaths to 180 deaths. Deaths involving stimulants (including methamphetamine) also continues to rise, increasing from 136 deaths in 2010 to 249 deaths in 2014.

The number of deaths listed as other and unspecified drugs remained high in 2014 and generally indicated a multi or poly-drug combination overdose. Further analysis of death records shows while opiate drugs were not specifically coded as the main cause of death, they still largely contributed to the increasing number of overdoses in combination with other prescription and non-prescription medications or drugs. An example of a poly drug overdose death listed with a code of other and unspecified drugs could include an opiate and benzodiazepine in conjunction with alcohol. In such a case the agent solely responsible for the death was unknown, so it could 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 Overdose Deaths Involving Selected Drugs, Arizona 2010-2014



Approximately one Arizona resident dies per day due to a prescription opiate poisoning. Figure 8 illustrates the trends in prescription opiate poisonings along with heroin overdose rates from 2010 to 2014. Prescription opiate mortality rates have decreased 20 percent since 2010 but have increased 12 percent since 2013. Heroin overdose deaths continue to rise almost doubling during the last five years.

Figure 8. Drug Poisoning Mortality Rates Due to Pharmaceutical Opiates and Heroin, Arizona 2010-2014

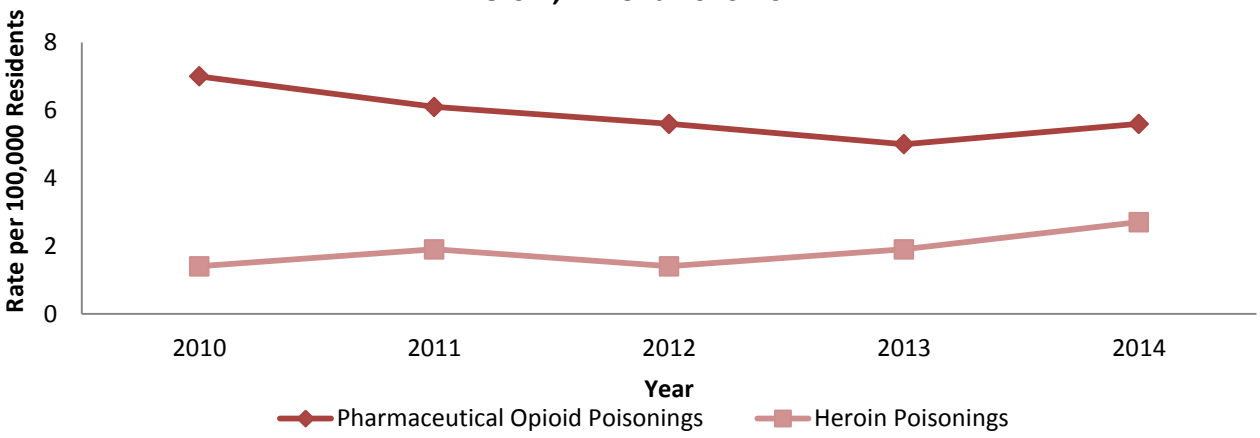
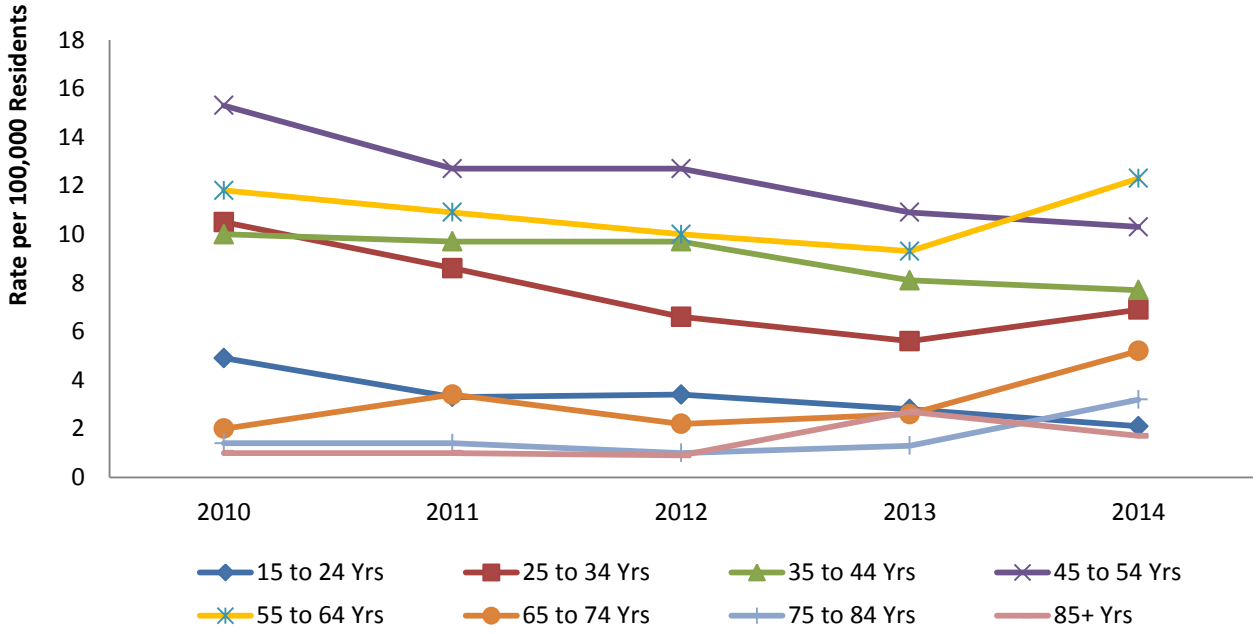


Figure 9 shows the mortality rates for pharmaceutical opiate poisonings by age group. Adults between the ages of 55 and 64 have the highest mortality rate due to pharmaceutical opiates, followed by those 45 to 54 years of age. Mortality rates for teens and young adults 15 to 24 years of age have declined since 2010 by 57 percent, from 4.9 deaths per 100,000 residents in 2010 to 2.1 deaths in 2014.

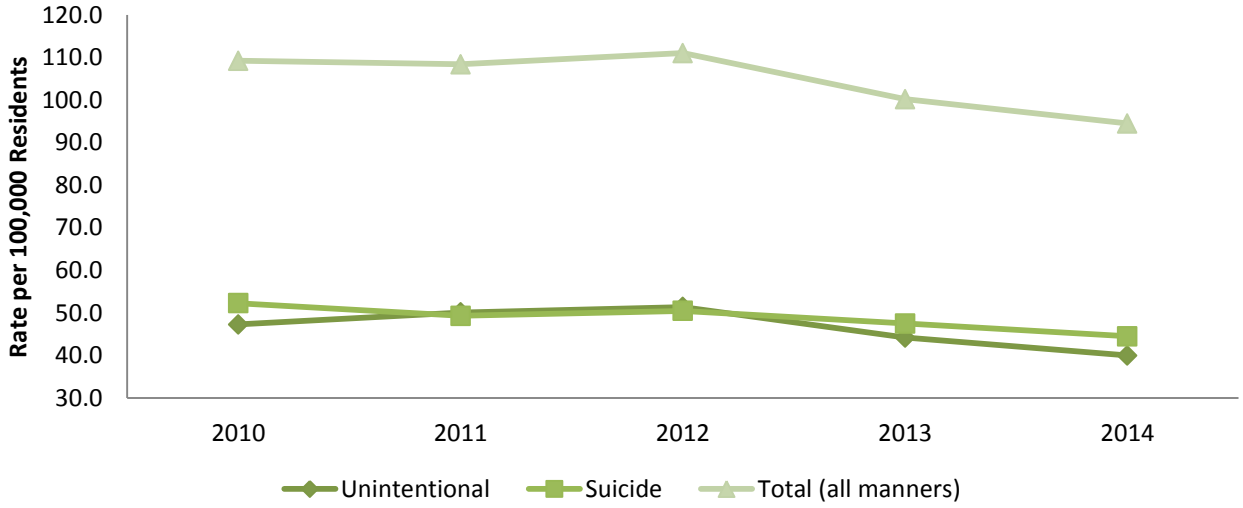
Figure 9. Drug Overdose Mortality Rates Involving Pharmaceutical Opiates by Age Group, Arizona 2010-2014



Non-Fatal Inpatient Hospitalizations

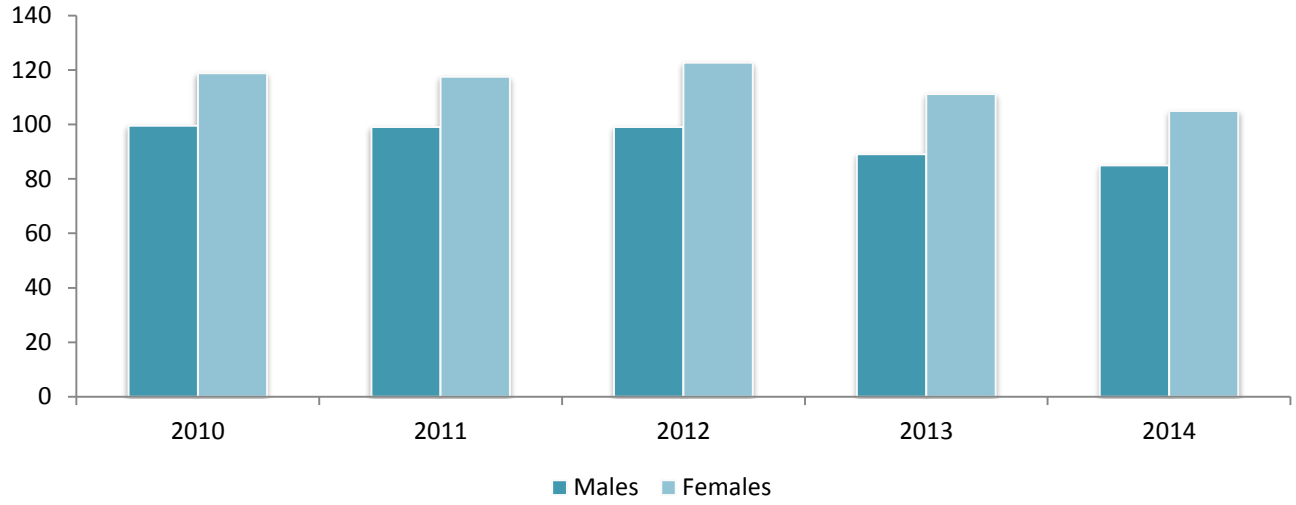
Overall, between 2010 and 2014, the age-adjusted rate of non-fatal poisoning-related inpatient hospitalizations among Arizona residents decreased by almost 14 percent, from 109.2 cases per 100,000 residents in 2010 to 94.5 cases in 2014. The rates over the five-year period remained relatively stable through 2012 decreasing in 2013 and in 2014. Unlike deaths, the rate of suicide-related inpatient hospitalizations was higher than unintentional poisonings, though they decreased by 15 percent since 2010. Unintentional poisonings also decreased by 15 percent during the same time five year period. Figure 10 shows the age-adjusted poisoning-related rates for non-fatal inpatient hospitalizations by injury intent for Arizona residents from 2010 to 2014.

Figure 10. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by Manner, Arizona 2010-2014



Also unlike poisoning-related deaths, the rates for poisoning-related inpatient hospitalizations were higher for females than for males. Rates increased from 2010 through 2012 but decreased again in 2013 and 2014 among both males and females. Figure 11 shows the age-adjusted rates by sex for non-fatal poisoning-related inpatient hospitalizations from 2010 through 2014.

Figure 11. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by Sex, Arizona 2010-2014



The rates of the counties with at least 20 hospitalizations in one year varied between 2010 and 2014. Table 2 shows the age-adjusted inpatient hospitalization poisoning rate by county of residence from 2010 through 2014. 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 2010-2014

	2010	2011	2012	2013	2014
Apache*	58.4	43.0	61.6	54.7	55.6
Cochise	66.7	73.7	63.5	56.7	66.3
Coconino	73.8	85.2	81.8	101.5	92.6
Gila	129.6	156.0	149.2	136.0	139.9
Graham	157.4	88.4	63.6	58.9	46.3
Greenlee*	37.0	127.2	125.6	80.3	64.7
La Paz*	52.8	68.1	40.4	57.8	78.2
Maricopa	114.5	117.3	115.5	102.0	93.4
Mohave	112.8	123.2	142.5	160.5	137.9
Navajo	95.2	103.9	110.6	112.5	132.6
Pima	116.8	109.6	123.6	113.0	112.5
Pinal	109.3	92.3	113.7	83.1	81.8
Santa Cruz*	48.9	59.3	40.5	42.6	18.3
Yavapai	105.3	85.4	97.7	94.0	96.0
Yuma	67.9	38.9	43.0	42.3	38.8
Statewide Total	**109.2**	**108.4**	**111.0**	**100.2**	**94.5**

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

New to the 2014 poisoning report are graphs containing the numbers and rates of inpatient hospitalizations and emergency department visits due to opioids, heroin and benzodiazepines. Prescription opiate inpatient hospitalization rates have decreased by one percent since 2010 but increased six percent from 2013 to 2014. The heroin poisoning rate has steadily increased from 2010 to 2014, increasing 41 percent during that time period. Poisoning hospitalizations due to benzodiazepines decreased by 33 percent since 2010. Figures 12 and 13 illustrate the trends in prescription opiate poisonings along with heroin and benzodiazepine poisoning from 2010 to 2014.

Figure 12. Number of Poisoning Inpatient Hospitalizations by Drug Type, Arizona 2010-2014

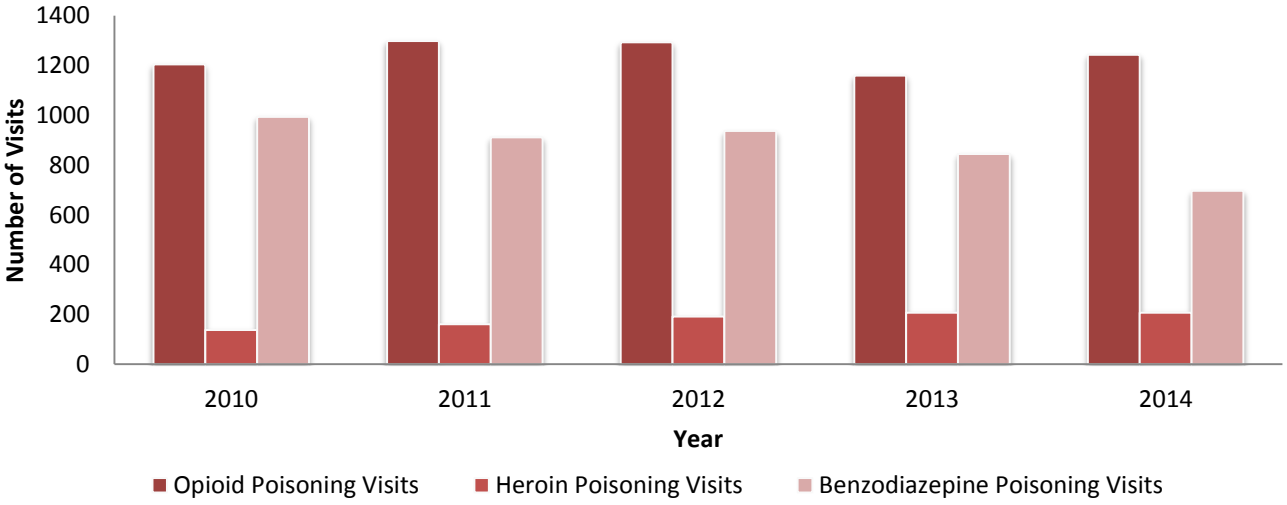
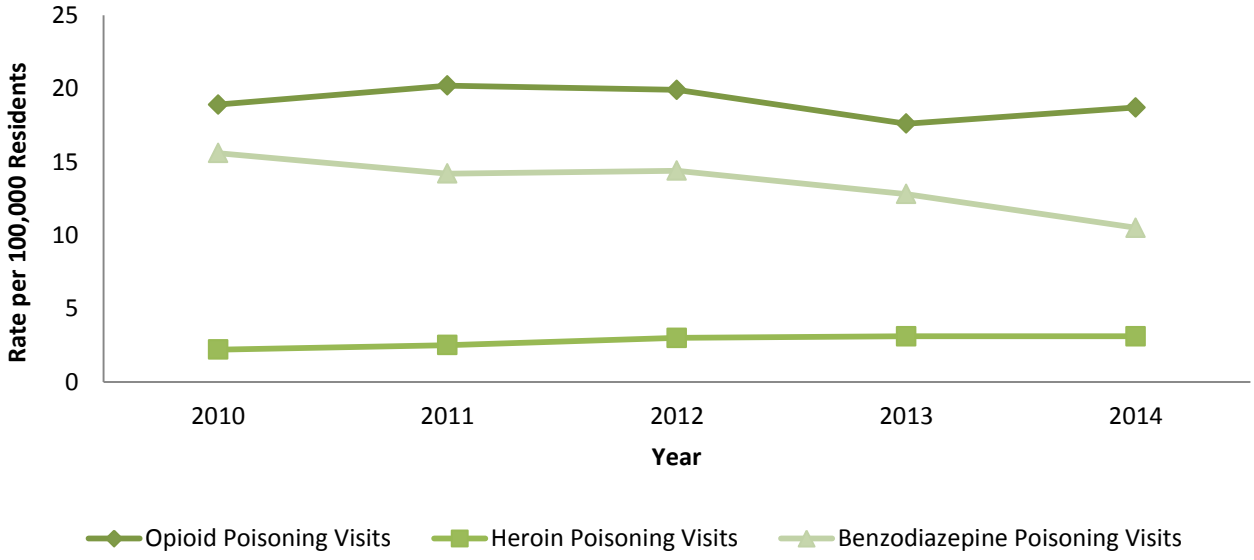


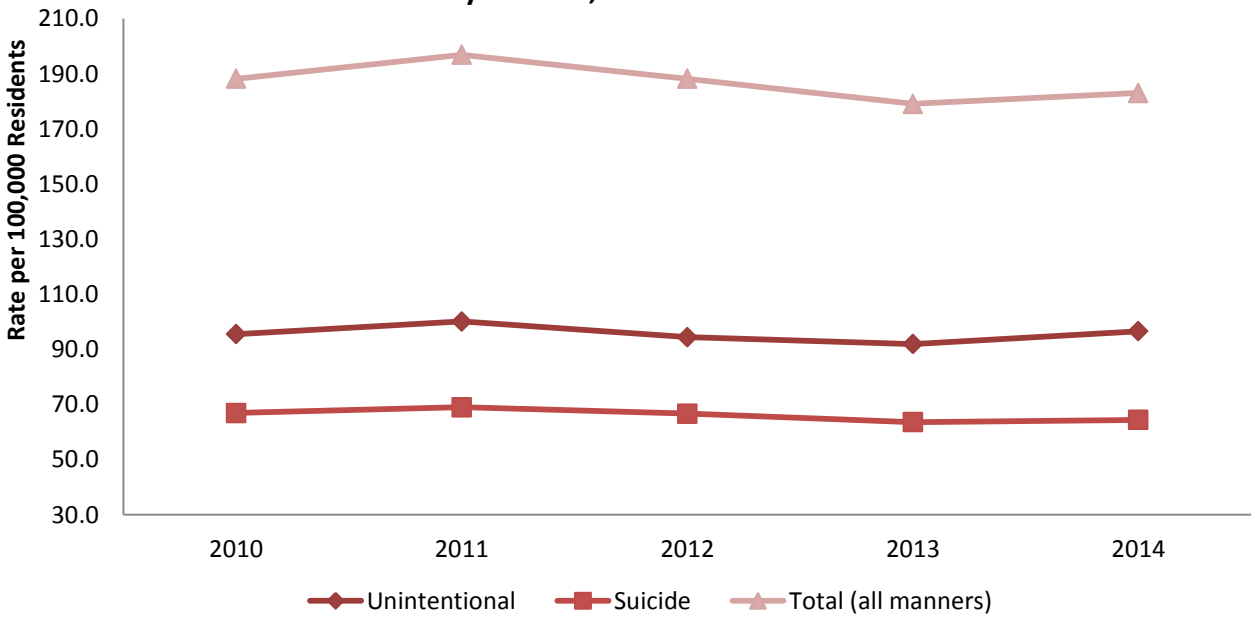
Figure 13. Age-adjusted Rate of Poisoning Inpatient Hospitalizations by Drug Type, Arizona 2010-2014



Non-Fatal Emergency Department Visits

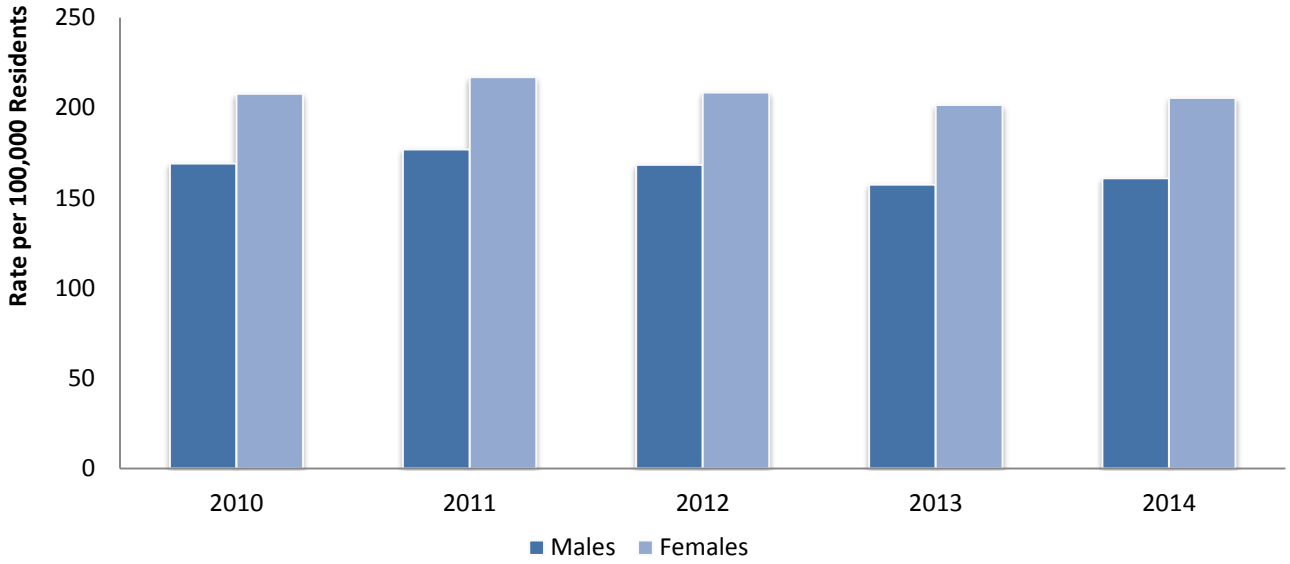
Overall, between 2010 and 2014, the age-adjusted rate of non-fatal poisoning-related emergency department visits among Arizona residents decreased by three percent, from 188.2 visits per 100,000 residents in 2010 to 183.0 visits in 2014. The rates during the five year period remained relatively stable. Unintentional poisoning emergency department visits increased just over one percent since 2010, while suicide-related visits decreased almost four percent. Figure 14 shows the age-adjusted poisoning-related rates for non-fatal emergency department visits by injury intent from 2010 to 2014.

Figure 14. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Manner, Arizona 2010-2014



Similar to inpatient hospitalization rates, the rates for non-fatal poisoning-related emergency department visits were higher for females then for males. While the rates decreased among males and females since 2010, they both increased by two percent respectively since 2013. Figure 15 shows the age-adjusted rates by sex for non-fatal poisoning-related emergency department visits from 2010 through 2014.

Figure 15. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Sex, Arizona 2010-2014



The rates of the counties with at least 20 visits per year varied between 2010 and 2014 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 2010 to 2014. 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 2010-2014

	2010	2011	2012	2013	2014
Apache	116.2	137.5	138.4	150.4	110.2
Cochise	257.8	256.0	231.3	249.5	205.3
Coconino	206.5	203.9	184.5	186.3	174.3
Gila	324.8	250.9	188.2	281.2	326.0
Graham	293.3	307.7	284.4	309.6	352.6
Greenlee*	136.4	246.9	205.7	187.2	182.5
La Paz*	250.2	278.0	245.2	220.4	168.5
Maricopa	174.7	184.0	174.2	165.6	172.7
Mohave	341.9	329.1	301.5	29.0	288.6
Navajo	232.7	249.0	368.6	261.8	219.2
Pima	191.2	197.3	197.7	195.9	198.0
Pinal	177.0	176.6	172.8	158.9	180.1
Santa Cruz*	186.3	172.9	141.5	136.8	74.6
Yavapai	283.2	327.5	28.9	232.7	258.5
Yuma	150.7	186.4	172.3	164.8	144.4
Statewide Total	**188.2**	**196.9**	**188.2**	**179.1**	**183.0**

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

Prescription opiate poisoning emergency department visit rates have decreased by four percent since 2010 but increased two percent from 2013 to 2014. The heroin poisoning rate has steadily increased from 2010 to 2014, increasing 82 percent overall. Emergency department visits due to benzodiazepine poisonings have decreased by 24 percent during that same five year time period. Figures 16 and 17 illustrate the trends in prescription opiate poisonings along with heroin and benzodiazepine poisonings from 2010 to 2014.

Figure 16. Number of Poisoning Emergency Department Visits by Drug Type, Arizona 2010-2014

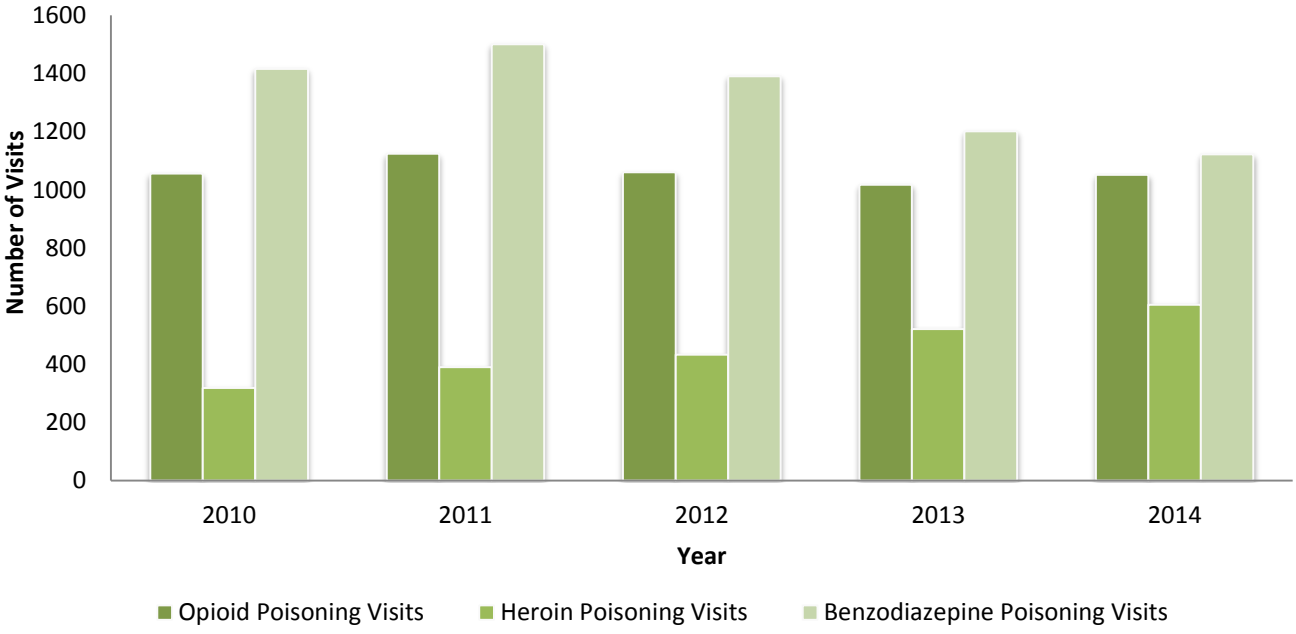
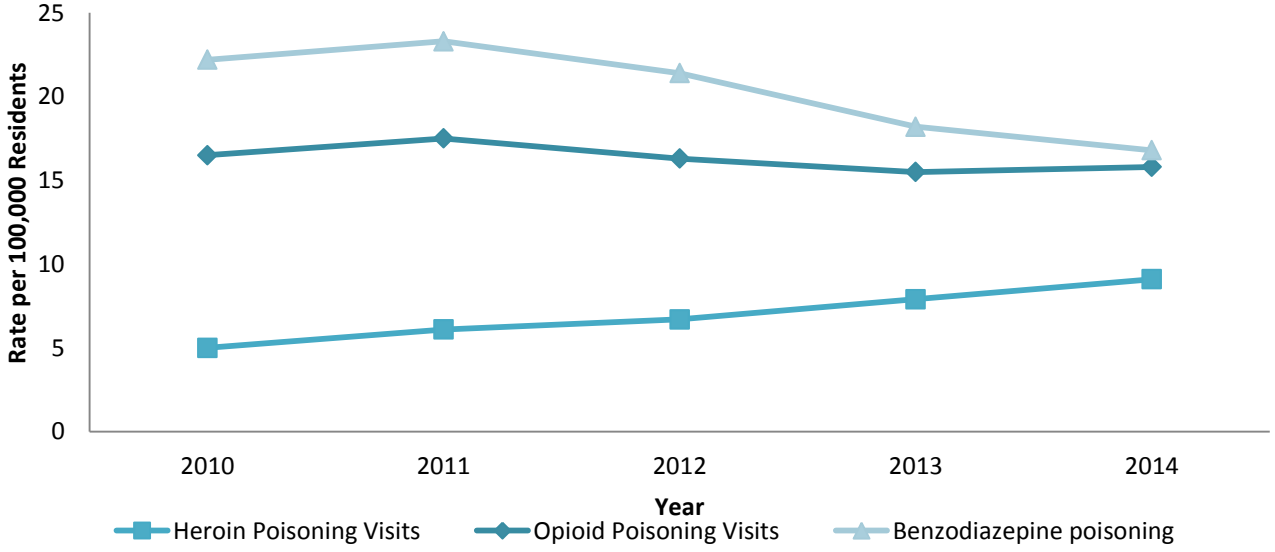


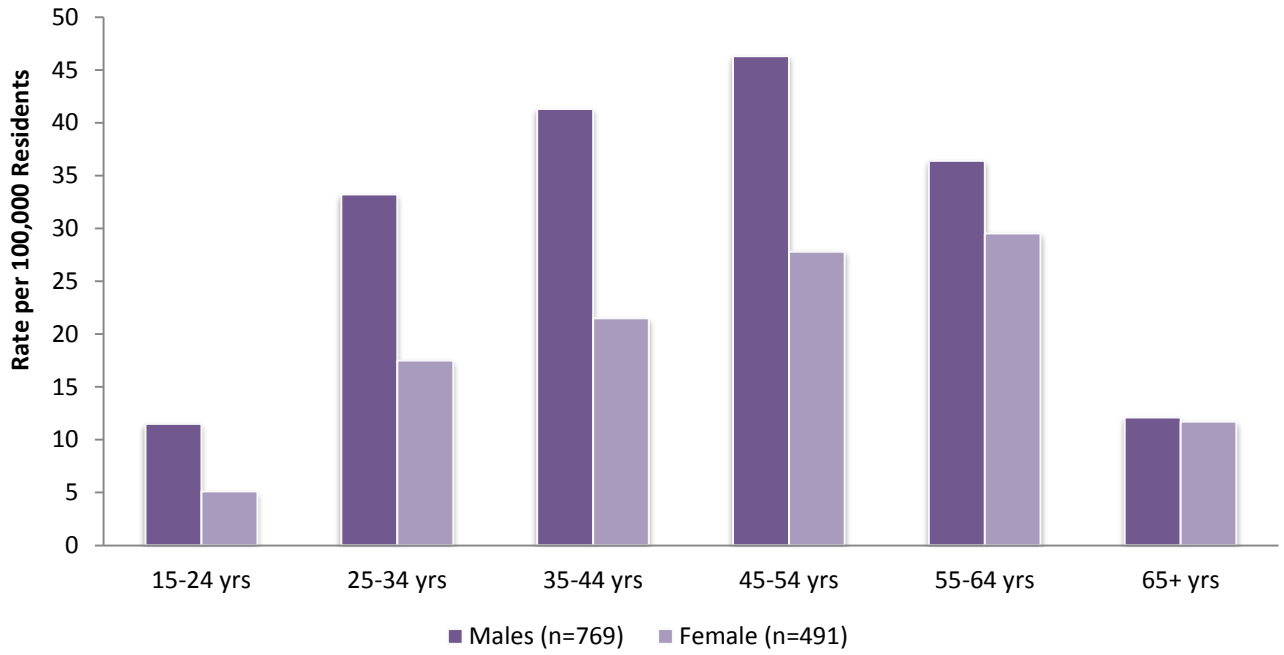
Figure 17. Age-Adjusted Poisoning Emergency Department Visit Rates by Drug Type, Arizona 2010-2014



Poisoning-Related Mortality, 2014

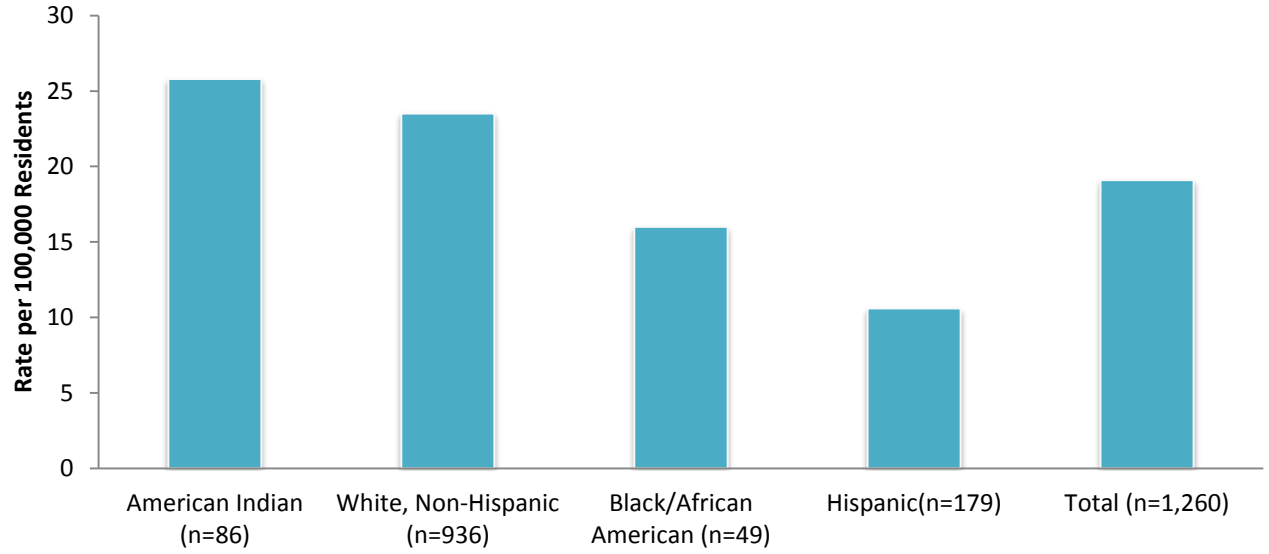
There were 1,260 deaths among Arizona residents attributed to poisoning in 2014. Sixty-one percent of deaths were among males (n=769), and 39 percent were among females (n=491). In 2014, the age-adjusted poisoning mortality rate among females was 14.4 deaths per 100,000 residents; the rate among males was 60 percent higher (23.7 deaths per 100,000 residents). When looking at poisoning deaths by age group, males had higher mortality rates than females in each age group, though the ratio of deaths among males and females varied. In 2014, the age groups with the highest rates and ratios changed. Consistent with previous years, adults 45 through 54 years of age had the highest rate of fatalities among males. Different is that adults 55 to 64 years of age had the highest rate among females. Teens and young adults 15 to 24 had the highest ratio of deaths among males versus females whereas previous it was those 25 to 34 years old. Deaths among young adult males 15 through 24 years outnumbered those among females in that age group by a factor of 2. The largest rate increase was among those males 35 to 44, increasing over 18 percent from 34.9 deaths in 2013 to 41.3 deaths per 100,000 in 2014. 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 2014



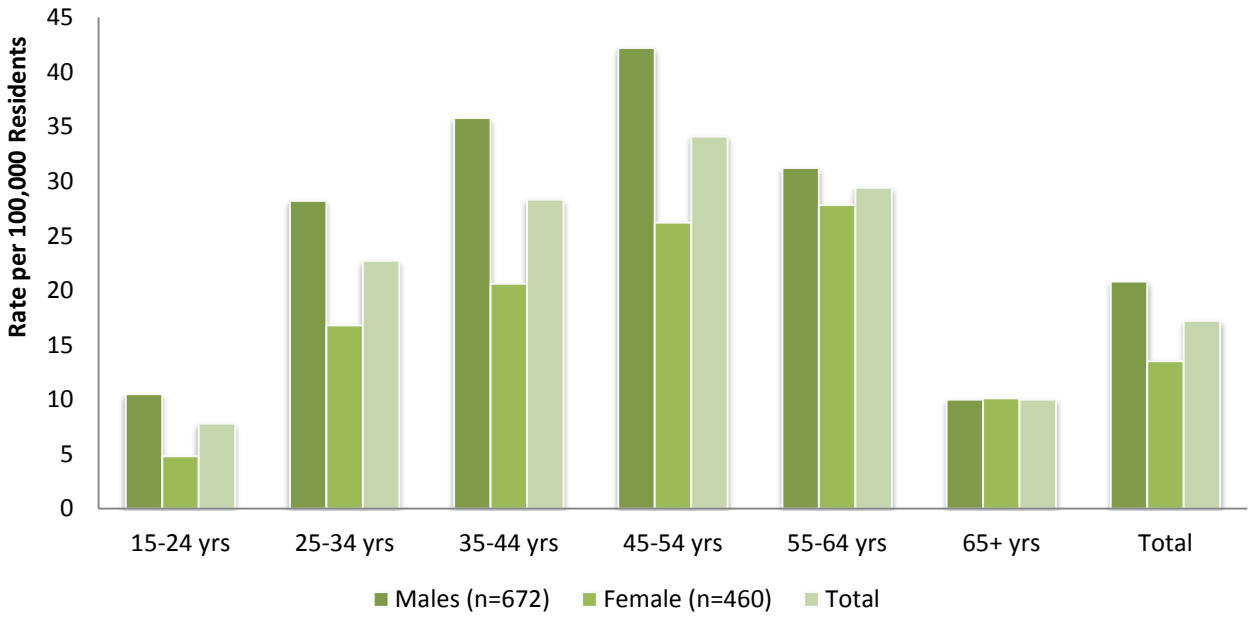
American Indian residents had the highest age-adjusted poisoning-related mortality rate in 2014 (25.8 deaths per 100,000 residents), followed by White, non-Hispanic residents (23.5 deaths per 100,000 residents). Hispanics had the lowest stable poisoning-related mortality rate in 2014 with 10.6 deaths per 100,000 residents. Though Asian 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 2014.

Figure 19. Age-Adjusted Poisoning-Related Mortality Rate by Race/Ethnicity, Arizona 2014



In 2014, drugs and medications (prescription drugs, illicit drugs, and over-the-counter medications) were the underlying cause of death for 90 percent of all poisoning deaths (n=1,132). This means that 9 out of every 10 poisoning deaths were due to drugs. Of the drug overdose deaths, 78 percent were unintentional (n=884), 13 percent were suicide or intentional self-harm (n=142), and nine percent had an undetermined intent (n=105). Males had rates 1.5 times higher than females and persons aged 45-54 had the highest rate of all age categories. Figure 20 shows the drug overdose mortality rates by age group and sex.

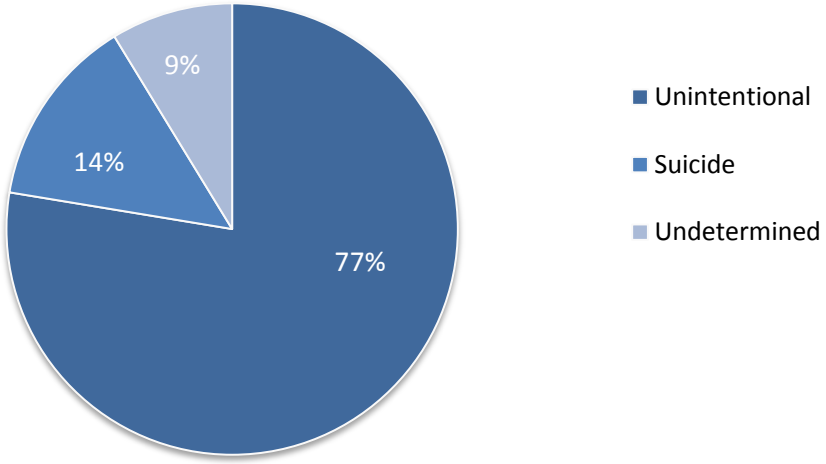
Figure 20. Age-Adjusted Acute Drug Overdose Mortality Rates by Age Group and Sex, Arizona 2014



Poisoning Fatalities by Manner

As in previous years, the majority of poisoning-related deaths were determined to be unintentional. In 2014, 77 percent of poisoning-related deaths among Arizona residents were unintentional (n=977). Of the 77 percent of unintentional deaths, 65 percent were among males (n=632), and 35 percent were among females (n=345). In 2014, there were 172 poisoning-related suicides (14 percent), 53 percent of which were among females (n=92). In prior years males composed the higher percentage of suicide-related poisoning deaths. 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 2014.

Figure 21. Percentage of Poisoning-Related Fatalities by Intent, Arizona 2014



In 2014, males aged 45 through 54 years had the highest mortality rate for unintentional poisoning-related deaths (37.2 deaths per 100,000 residents), and males had higher mortality rates in all age groups. In 2014, females had the higher suicide mortality rates in all age groups except those males 35 to 54 years of age. The highest suicide rates overall were among females 55 through 64 and 65 years and older (6.1 and 4.5 suicides per 100,000 residents, respectively). Figures 22 and 23 show the mortality rates for poisonings by age group, manner, and sex in 2014.

Figure 22. Unintentional Poisoning-Related Mortality Rates by Age Group and Sex, Arizona 2014

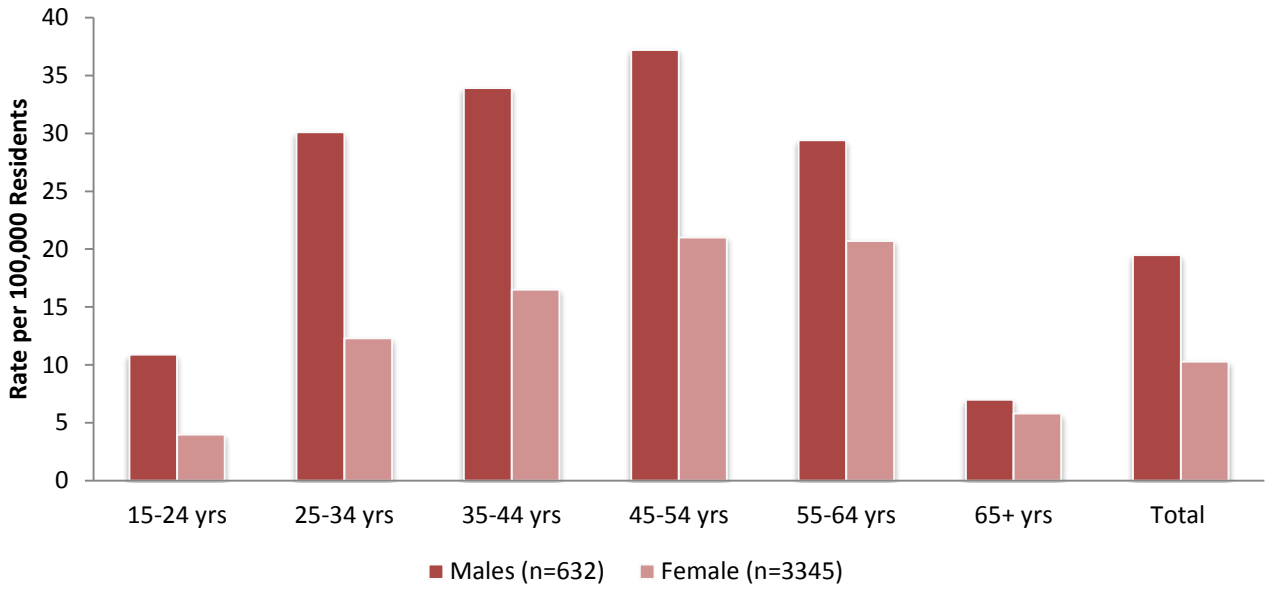
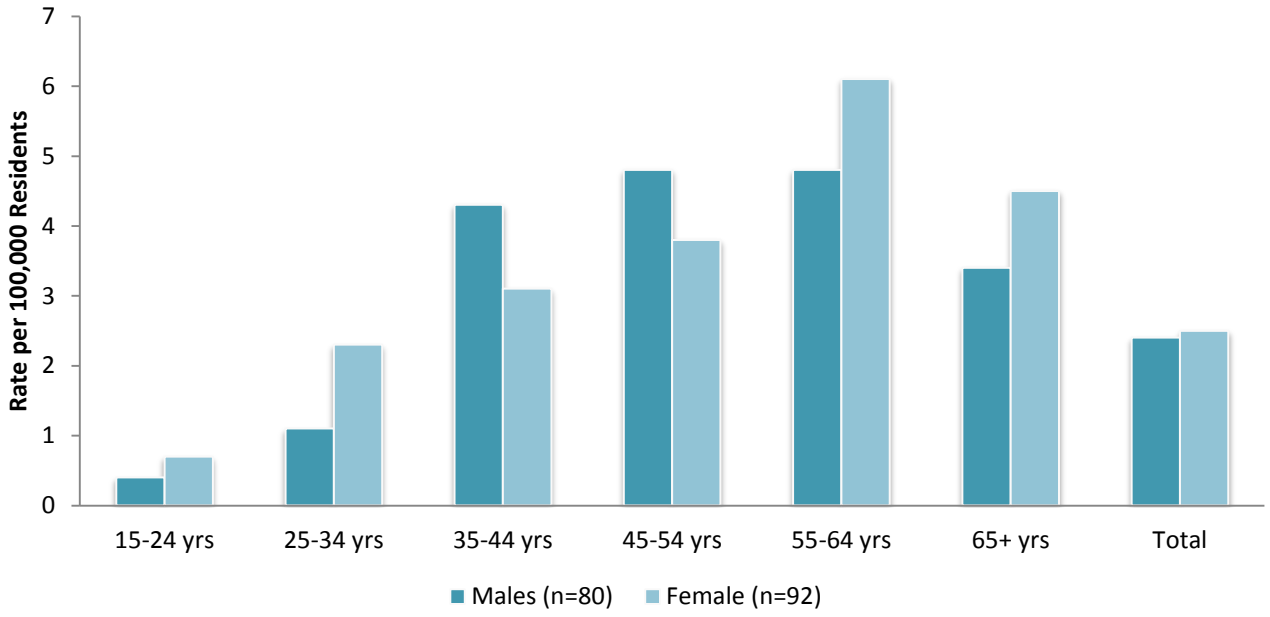


Figure 23. Poisoning-Related Suicide Mortality Rates by Age Group and Sex, Arizona 2014

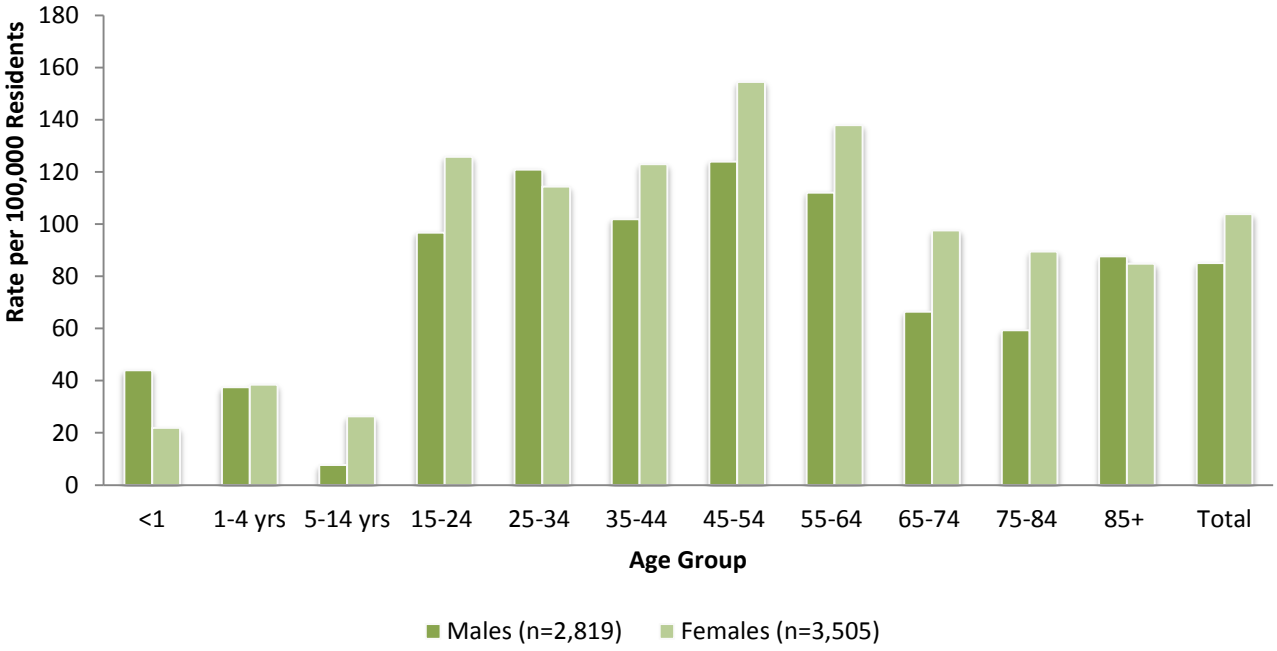


Non-Fatal Poisoning-Related Inpatient Hospitalizations, 2014

There were 6,324 non-fatal inpatient hospitalizations among Arizona residents attributed to poisoning in 2014; overall, an age-adjusted rate of 94.5 hospitalizations per 100,000 residents. Forty-five percent of the visits were among males (n=2,819) and 55 percent were among females (n=3,505). Forty-four percent of the poisoning-related inpatient hospitalizations were attributed to unintentional poisonings (n=2,779), 46 percent resulted from intentional poisonings (n=2,884), and poisonings of an undetermined intent accounted for 10 percent of the hospitalizations (n=661).

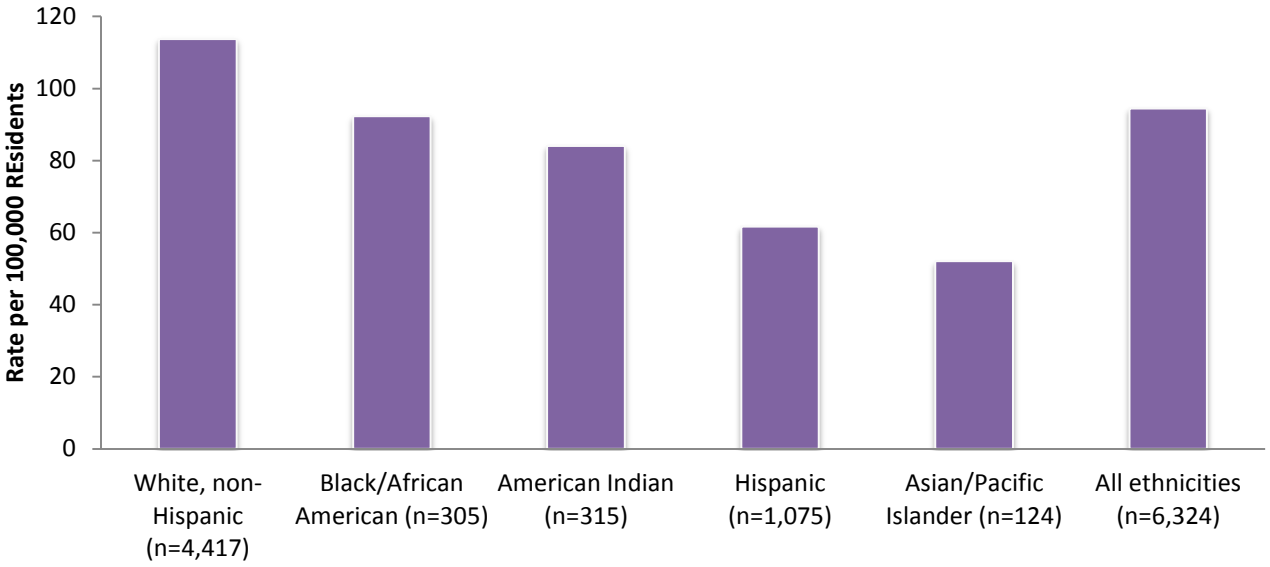
Except for children less than one year, females had higher rates of non-fatal inpatient hospitalizations than males across the lifespan. The 45 through 54 year age group had the highest rate among both males and females. Figure 24 shows the poisoning-related inpatient hospitalization rates per 100,000 Arizona residents by age group and sex.

Figure 24. Poisoning-Related Inpatient Hospitalization Rates, by Age Group and Sex, Arizona 2014



White, non-Hispanic residents had the highest age-adjusted poisoning-related inpatient hospitalization rate in 2014 (113.7 cases per 100,000 residents) followed by African-American residents with 92.3 hospitalizations. Asian residents had the lowest poisoning-related rate with 52.1 cases per 100,000 residents but the rate doubled since 2013. Figure 25 shows the age-adjusted poisoning-related inpatient hospitalization rates by race/ethnicity for Arizona residents in 2014.

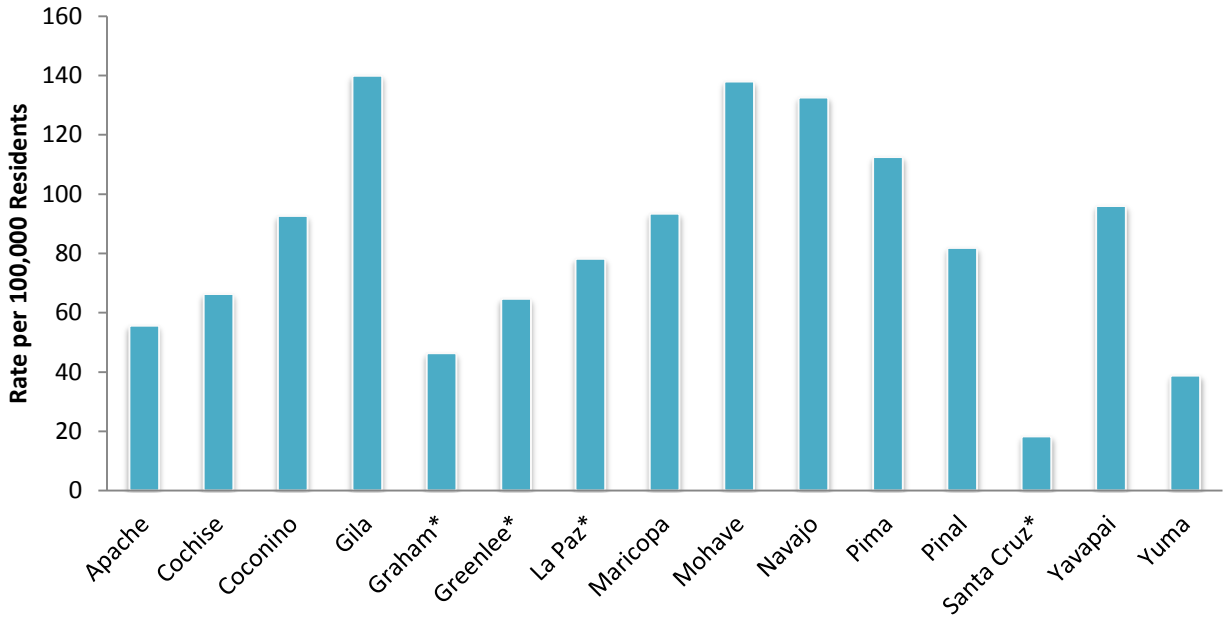
Figure 25. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rate by Race/Ethnicity, Arizona 2014*



*There were 88 hospitalizations among individuals of other or unknown race/ethnicity.

Gila County had the highest rate of inpatient hospitalizations for non-fatal poisonings in 2014, with 139.9 cases per 100,000 county residents. Mohave had the second highest rate with 137.9 hospitalizations per 100,000 residents followed closely by Navajo county (132.6 per 100,000 residents). The rate of non-fatal poisoning-related inpatient hospitalizations were distributed among residents of Arizona's counties as shown in Figure 26.

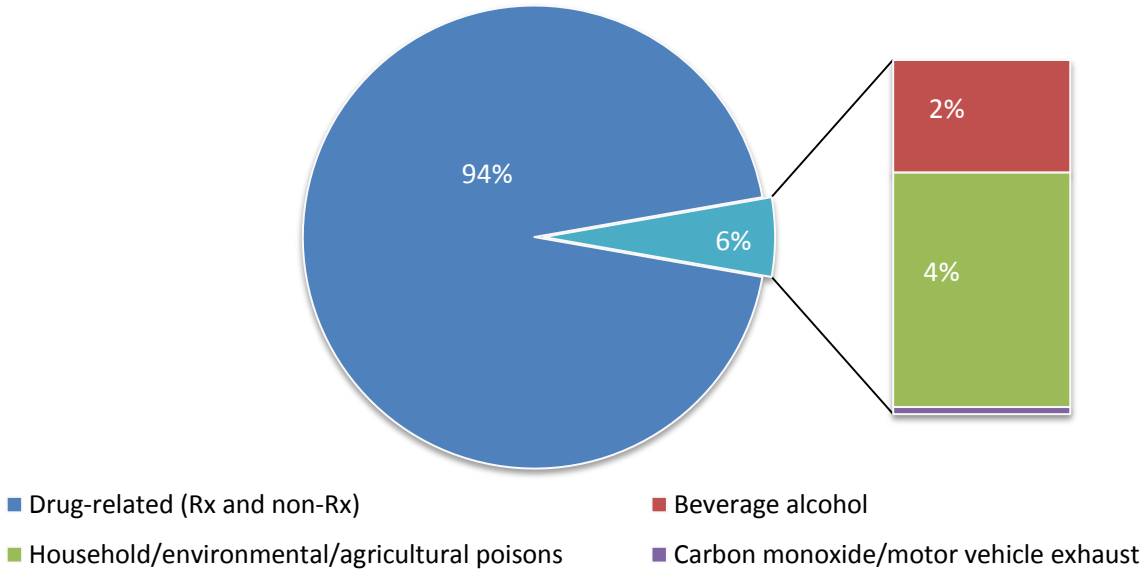
Figure 26. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by County, Arizona 2014



* Counties with counts <20 are unstable.

Among all manners of non-fatal poisoning-related inpatient hospitalizations, 94 percent were due to overdoses of a drug or medication. This percentage includes both prescription (Rx) and non-prescription drugs. The number of opiate-related poisoning visits, where an opiate was the principle cause for admission, was 1,244 hospitalizations. Benzodiazepine-based tranquilizer poisonings totaled 697 hospitalizations in 2014 and heroin accounted for an additional 208 hospitalizations. The distribution of emergency visits by poison type is shown in Figure 27.

Figure 27. Poisoning-Related Inpatient Hospitalizations by Poison Type, Arizona 2014

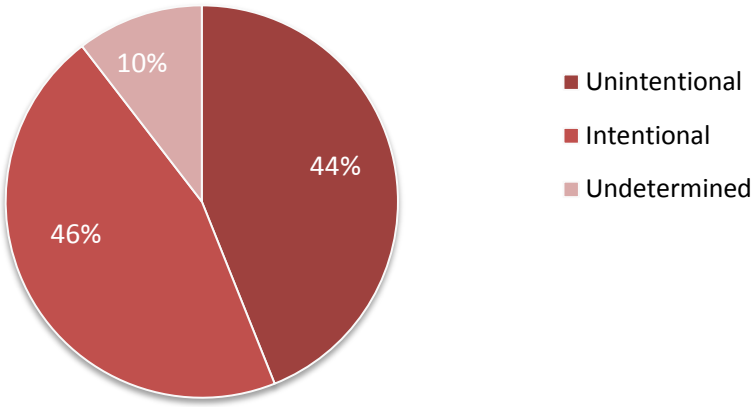


In 2014, the average poisoning-related inpatient hospitalization was over $33,000 in hospital charges and averaged 3 1/2 days (median = $23,709, three days). Arizona residents spent a total of 22,615 days in the hospital for non-fatal poisoning-related events and the longest hospital stay for a non-fatal case was 125 days. Hospital charges for inpatient hospitalizations due to poisonings totaled over $213 million for Arizona residents in 2014. Forty-one percent of the poisoning-related inpatient hospitalizations were charged to the Arizona Health Care Cost Containment System (AHCCCS) (n=2,536 cases; more than $97.6 million), an increase from previous years that were approximately 27 percent. 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

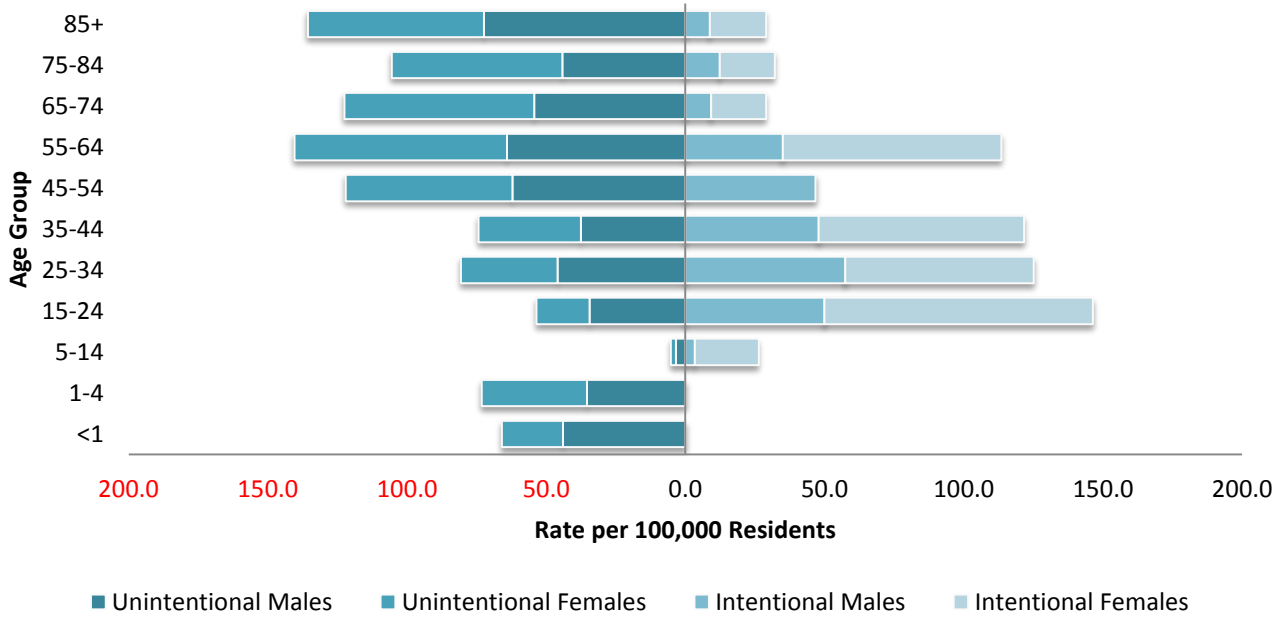
There were 2,779 non-fatal inpatient hospitalizations among Arizona residents attributed to unintentional poisoning in 2014 (44 percent) and 2,884 hospitalizations attributed to intentional poisoning (46 percent). Because the vast majority of hospitalizations fall into one of these two categories, the following section will focus on unintentional and intentional non-fatal poisoning-related hospitalizations. 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 2014



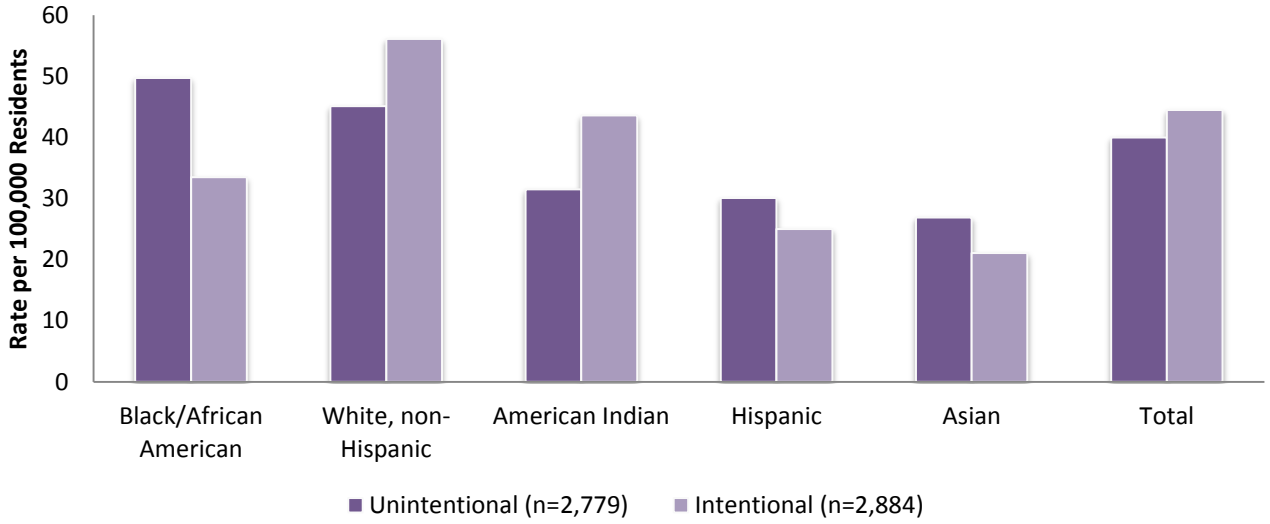
Unintentional poisoning-related hospitalizations were evenly distributed between males and females (50 percent respectively), whereas females represented a greater percentage of intentional poisoning-related hospitalizations (62 percent, n=1,787). Female residents aged 15 through 24 years had the highest rate of intentional non-fatal poisoning-related inpatient hospitalizations of any age group (96.4 hospitalizations per 100,000) in 2014. Female residents aged 55 through 64 had the highest rate of unintentional poisoning-related hospitalizations (76.3 per 100,000). In general, the highest rates of intentional poisoning-related hospitalizations were among adults and teenagers aged 15-54, whereas unintentional poisonings were highest among those aged 45 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 2014



African American residents had the highest unintentional poisoning hospitalization rate in 2014 with 49.7 visits per 100,000 residents, followed by White, non-Hispanic and American Indian residents (45.1 and 31.5 visits per 100,000 residents respectively). Conversely, White, non-Hispanic residents had the highest intentional poisoning hospitalization rate with 56.1 per 100,000 residents, followed by American Indians (43.6 per 100,000 residents). Asian residents had the lowest hospitalization rates for both manners of poisoning though it is important to note that their unintentional rate has more than doubled since 2013. Figure 30 shows the age-adjusted poisoning-related hospitalization rates by race/ethnicity and manner for Arizona residents in 2014.

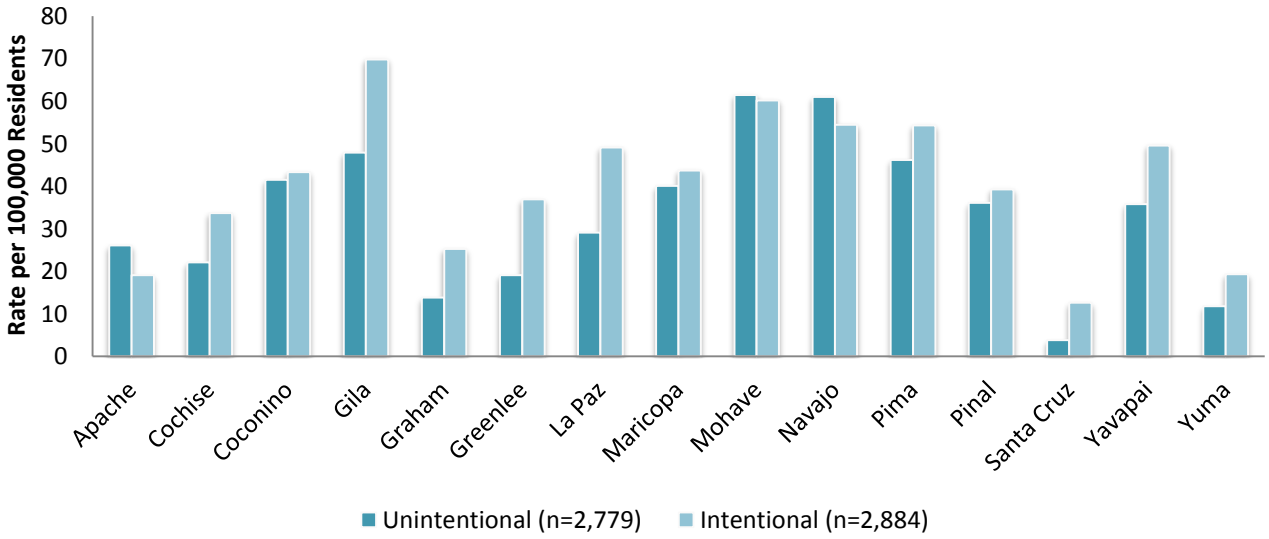
Figure 30. Age-Adjusted Poisoning-Related Inpatient Hospitalizations Rates by Race/Ethnicity and Manner, Arizona 2014*



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

Mohave County had the highest non-fatal inpatient hospitalization rate for unintentional poisonings followed by Navajo county. Gila County had the highest rate of intentional poisonings in 2014. Poisoning-related hospitalizations were distributed among residents of Arizona's counties as shown in Figure 31.

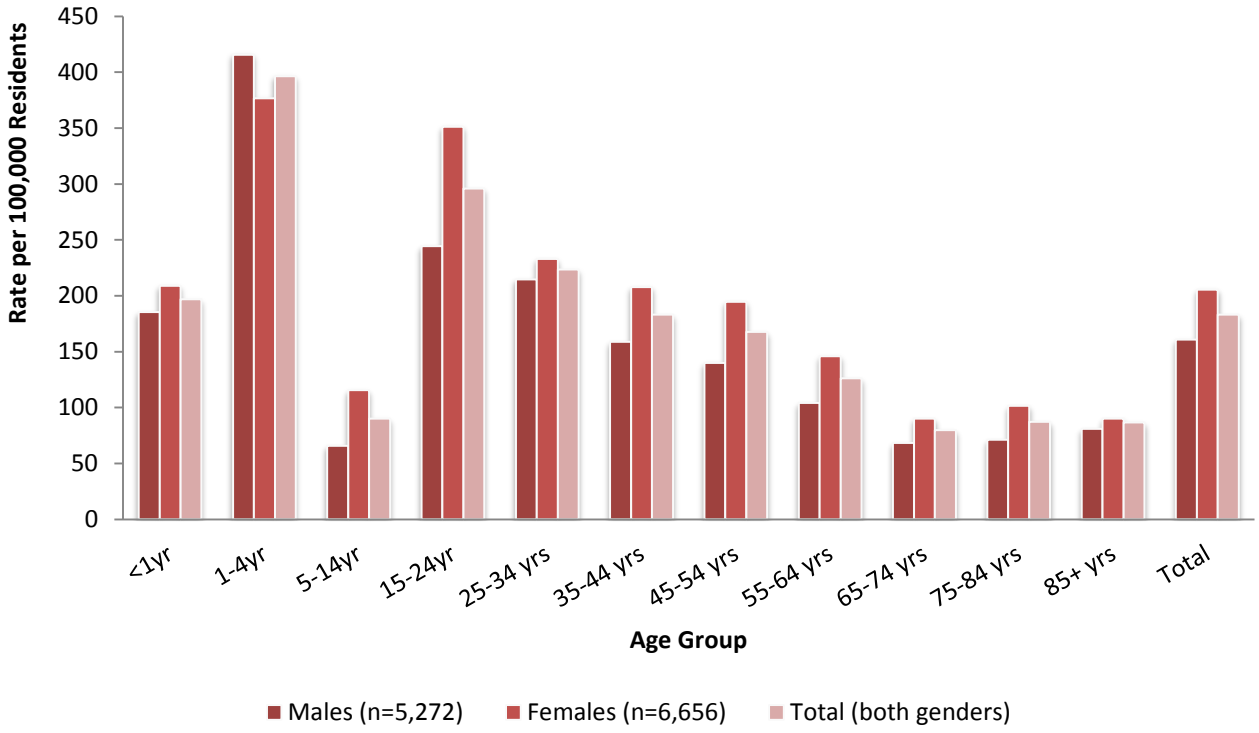
Figure 31. Age-Adjusted Poisoning-Related Inpatient Hospitalization Rates by County and Manner, Arizona 2014



Non-Fatal Poisoning-Related Emergency Department Visits, 2014

There were 11,928 non-fatal emergency department visits among Arizona residents attributed to poisoning in 2014. Forty-four percent of the visits were among males (n=5,272), and 56 percent were among females (n=6,415). Except for children aged one through four, females consistently had higher rates of poisoning-related emergency department visits than males. This trend is consistent with previous years of data as well. Children one through four years of age had the highest rate of emergency department visits among both sexes and the 15 to 24 year age group had the next highest rates. 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.

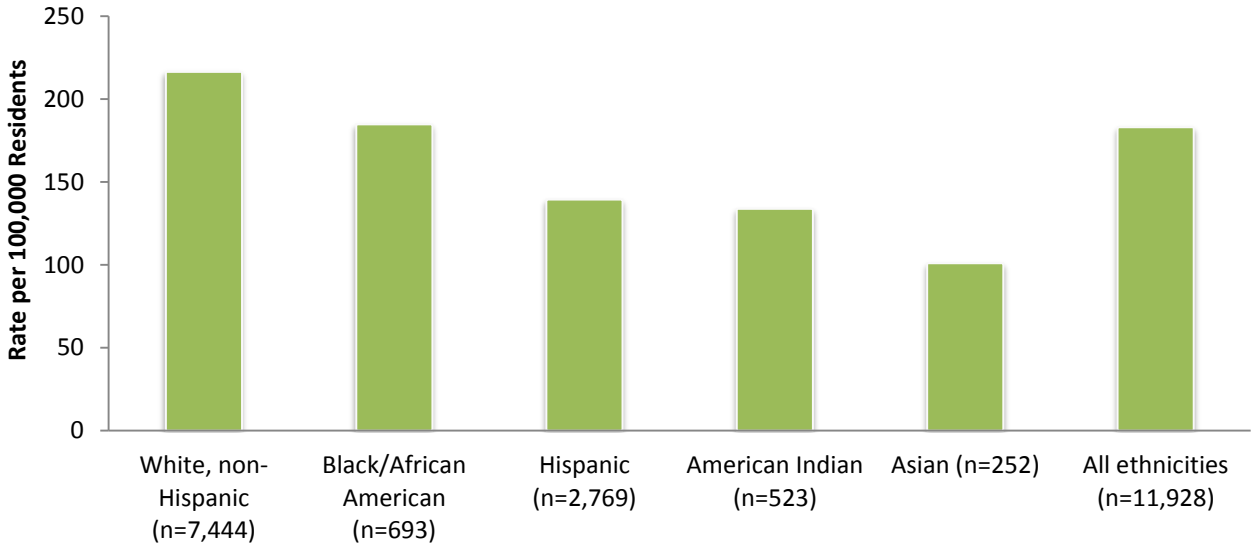
Figure 32. Age-Specific Rates of Poisoning-Related Emergency Department Visits by Age and Sex, Arizona 2014



White, non-Hispanics had the highest poisoning-related emergency department visit rate, followed by African American residents. The lowest rate was among Asians with 100.0 visits per 100,000 residents but as with hospitalizations this number has increased significantly since 2013 (178 percent increase). Figure 33 shows the rate distribution of emergency department visits by race/ethnicity in 2014.

[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.

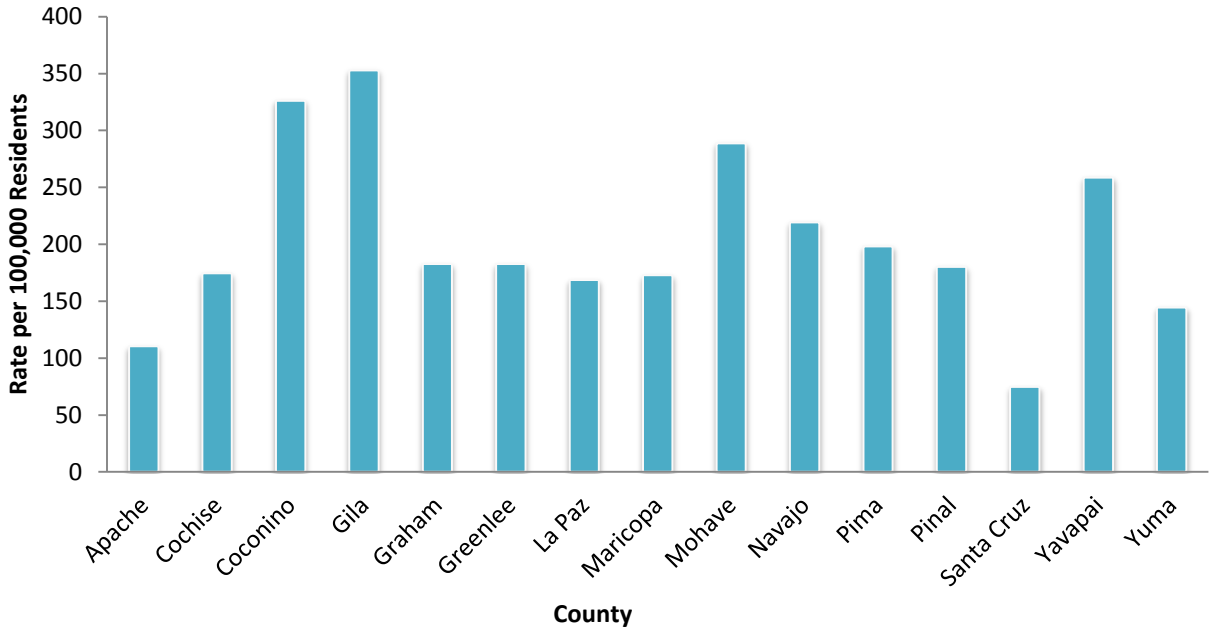
Figure 33. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Race/Ethnicity, Arizona 2014*



*Does not include 247 records with unknown or refused race/ethnicity.

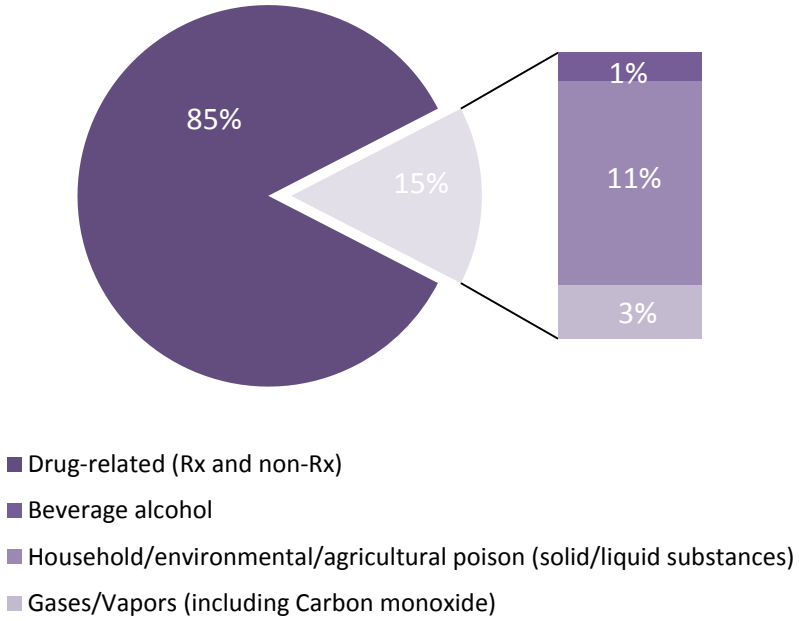
Similar to hospitalizations, Gila County had the highest rate of poisoning-related emergency department visits in 2014 with 352.6 visits per 100,000 residents, followed by Coconino County with 326 visits per 100,000 residents. It is notable that although several counties had unstable rates for deaths and hospitalizations, all Arizona counties had enough emergency department visits to generate rates that are stable and comparable to others. 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 Emergency Department Visits by County, Arizona 2014



As with hospitalizations, the vast majority of non-fatal poisoning-related emergency department visits were due to drugs (85 percent, n=10,125). This percentage includes both prescription and non-prescription drugs. The number of opiate-related poisoning visits, where an opiate was the principle cause for admission, were 1,052 visits. Benzodiazepine-based tranquilizer poisonings totaled 1,122 visits in 2014 and heroin accounted for an additional 505 emergency department visits. The distribution of emergency visits by poison type is shown in Figure 35.

Figure 35. Poisoning-Related Emergency Department Visits by Poison Type, Arizona 2014

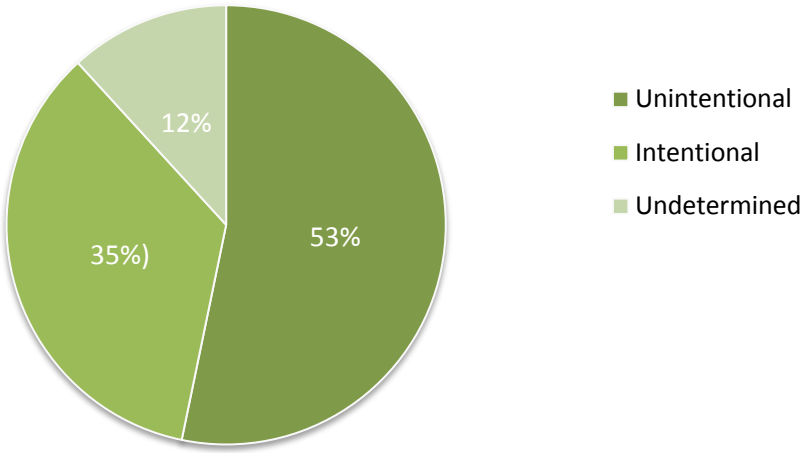


In 2014, the average non-fatal poisoning-related emergency department visit resulted in $5,785 in hospital charges (median=$4,918). Hospital charges for emergency department visits due to poisonings totaled more than $69 million for Arizona residents in 2014. Forty percent of those hospital charges were charged to the Arizona Health Care Cost Containment System (AHCCCS) totaling more than $17.6 million and a ten percent increase since 2013. 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

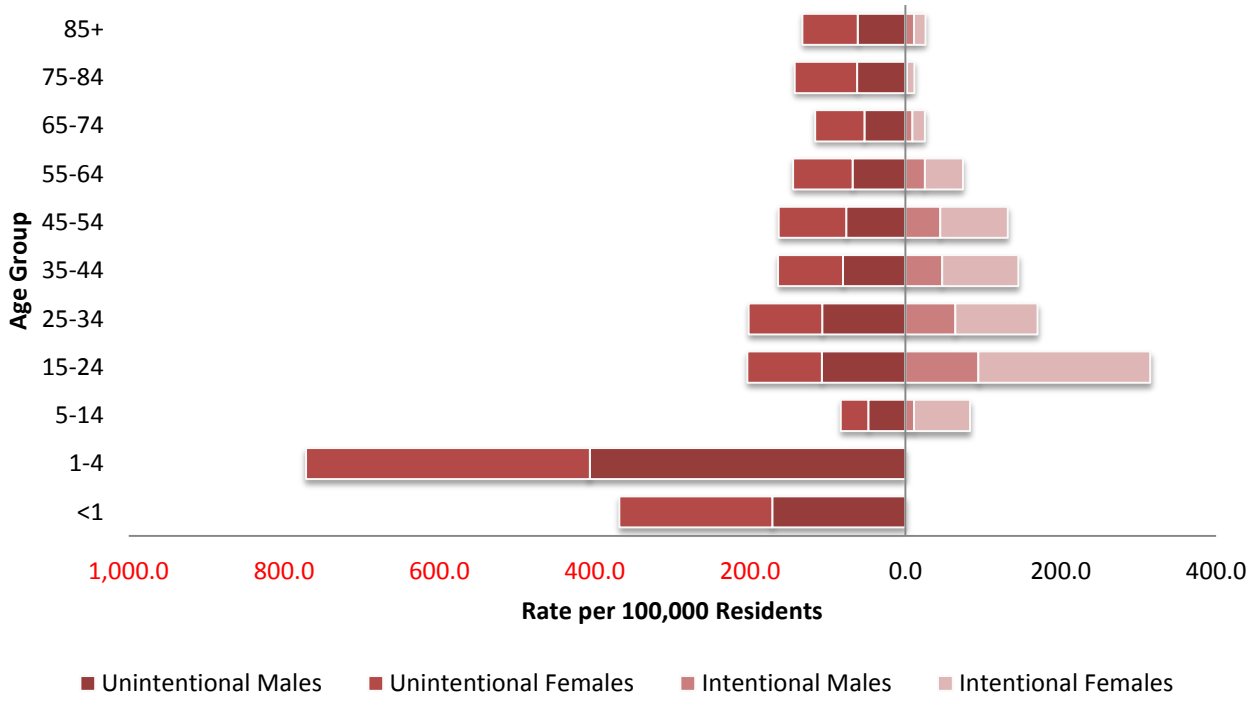
Unlike the distribution among inpatient hospitalizations, the majority of non-fatal poisoning-related emergency department visits were identified as being unintentional injuries (53 percent, n=6,339). Thirty-five percent of emergency department visits were attributed to intentional poisonings (n=4,162), and poisonings of undetermined intent accounted for 12 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 2014



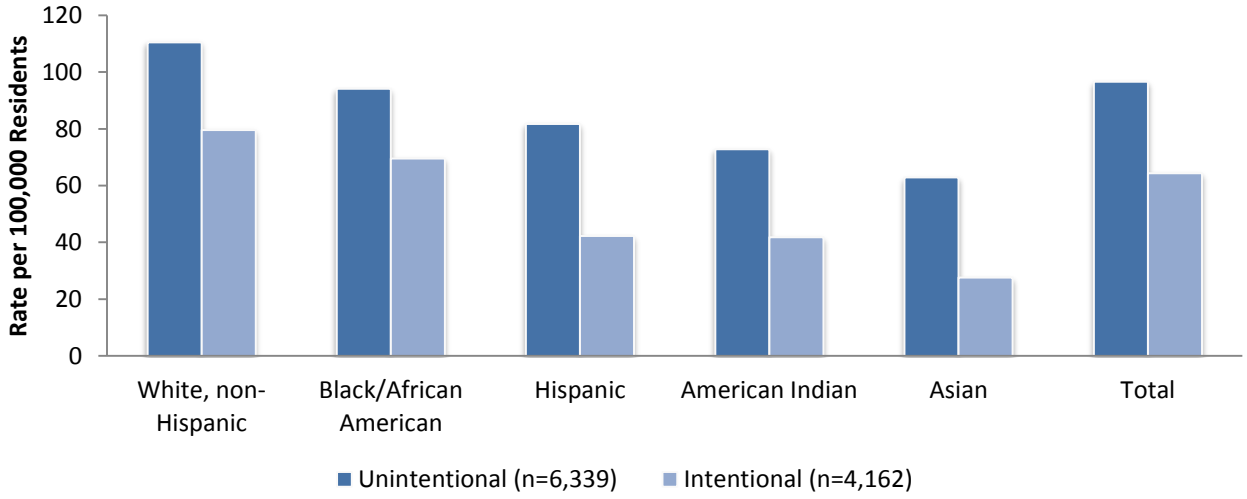
Children one through four years of age had the highest rates of unintentional poisoning-related emergency department visits among both males and females. Teens and young adults 15 to 24 years of age had the highest intentional poisoning-related emergency department rates. Females in all age groups had 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 2014



The highest rates of emergency department visits were among White, non-Hispanic residents for both unintentional and intentional poisonings, followed by African American residents. It is important to note that American Indians 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.

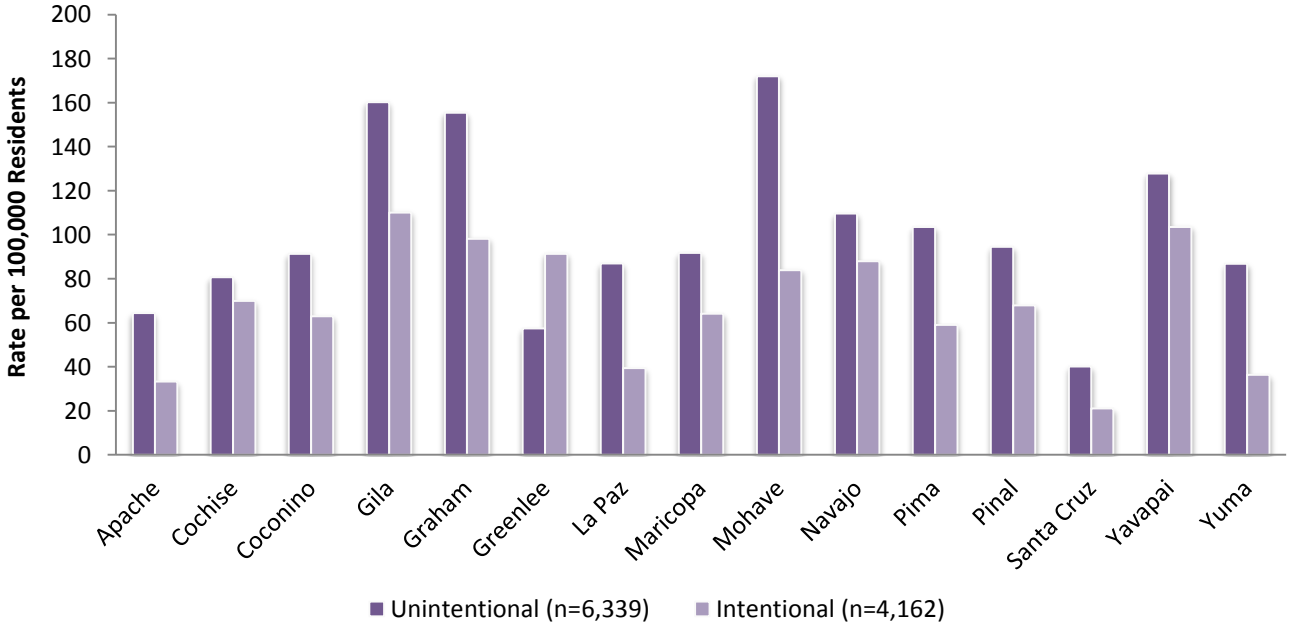
Figure 38. Age-Adjusted Poisoning-Related Emergency Department Visit Rates by Race/Ethnicity and Manner, Arizona 2014*



*Does not include 247 records with unknown or refused race/ethnicity.

Mohave County had the highest emergency department visit rates for unintentional poisonings and Gila 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 2014



Poisoning and Prescription Drug Overdoses as an Arizona Public Health Concern

Deaths

- In 2014, poisoning was the leading cause of injury-related deaths (26 percent) accounting for more deaths among Arizonans than car crashes, falls, or firearm injuries.
- Between 2010 and 2014, the age-adjusted poisoning-related mortality rate increased two percent 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 2014 were pharmaceutical opioids (n=372), methamphetamine or other stimulants (n=249), and alcohol (n=249). Heroin was listed in 14 percent of cases, an increase of four percent since 2013 (n=180).
- In 2014, as in previous years, poisoning-related fatality rates were highest among American Indian (25.8 per 100,000 residents) and White, non-Hispanic Arizonans (23.5 per 100,000 residents).

Non-Fatal Hospitalizations and Emergency Department Visits

- Between 2010 and 2014, the overall age-adjusted rate of poisoning-related inpatient hospitalizations among Arizona residents decreased 14 percent, from 100.2 cases per 100,000 residents in 2010 to 94.5 cases in 2014.
- Adult women had the highest rates of non-fatal poisoning-related inpatient hospitalizations. Females 45 through 54 years of age had a rate of 154.4 cases per 100,000 residents, and females 55 through 64 years of age had a rate of 137.9 cases per 100,000 residents.
- In 2014, there were 11,928 non-fatal poisoning-related emergency department visits among Arizona residents.
- The highest rates of emergency department visits were among male and female children one through four years of age (415.7 per 100,000 for males, 376.5 per 100,000 for females).
- Hospital charges for non-fatal poisoning-related inpatient hospitalizations totaled more than $213 million in 2014, and Arizona residents spent a total of 22,165 days hospitalized for non-fatal poisonings. Hospital charges for poisoning-related emergency department visits totaled over $69 million in 2014.

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 2010 through 2014 were compiled from the death certificates registered with the Arizona Department of Health Services Office of Vital Records. 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 2010 through 2014 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.

Table 5. International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) Codes Used in This Report

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

Rates for 2011-2014 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. Rates for 2010 were calculated using the 2010 United States Decennial Census figures for Arizona (Summary File 1), available on the internet from the U.S. Census Bureau's American FactFinder: http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

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.