

# Injury among Residents of Maricopa County, Arizona 2013



Resources for the development of this report were provided through funding to the Arizona Department of Health Services from the Centers for Disease Control and Prevention, Cooperative Agreement 5U17CE002023 Core Violence and Injury Prevention Program.

Permission to quote from or reproduce materials from this publication is granted when acknowledgment is made.



Prepared by: Jennifer Dudek, MPH  
150 North 18<sup>th</sup> Avenue, Suite 320  
Phoenix, AZ 85007  
Office of Injury Prevention  
Bureau of Women's and Children's Health  
Arizona Department of Health Services  
February 2015

**Injury is a public health problem that impacts the lives of thousands of Arizona residents each year.** Chronic pain, disability, large medical bills, changes in quality of life, and premature death are just some of the possible effects of injuries. These effects can extend beyond injured individuals to their families and communities. With non-fatal injuries, family members are often required to provide care, which can result in time away from work, loss of income, and increases in stress within the family. At the community level, the financial burden of injuries can include medical expenses, rehabilitation, lost wages, and lost productivity. Most injuries are preventable. Understanding the causes of injury is an important step toward reducing injury-related morbidity and mortality.

The following report identifies the leading causes of injury among residents of Maricopa County in 2013. This report is intended to be used as a guide for strategy development, program implementation, and evaluation. The Arizona Department of Health Services Office of Injury Prevention operates under the vision of reducing injuries in Arizona using integrated surveillance and evidence-based interventions. This report was generated to increase awareness of county-specific injury issues and to facilitate opportunities for effective injury prevention activities.

**Figure 1. Injury Pyramid for Maricopa County Residents, Arizona 2013**

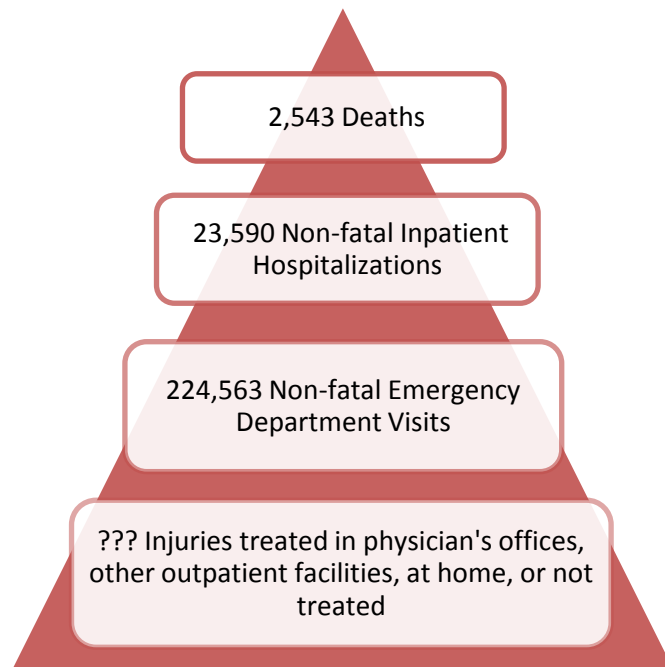


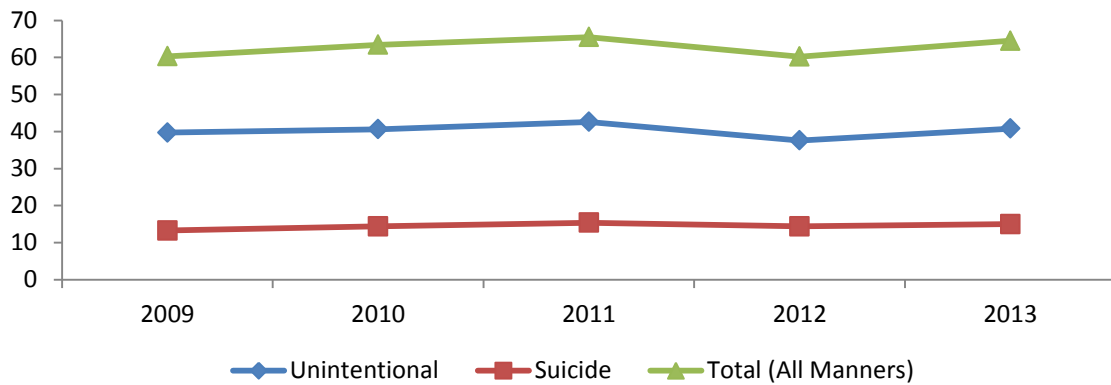
Figure 1 shows an injury pyramid for residents of Maricopa County during 2013. This pyramid shows that deaths represent the smallest proportion of injuries. The proportions increase towards the foundation of the pyramid, which is comprised of hospital discharges, emergency department visits, and self-care. Although injuries that do not require medical treatment may be the most numerous, no existing datasets capture these types of injuries.

## Five Year Trends

### Mortality, 2009-2013

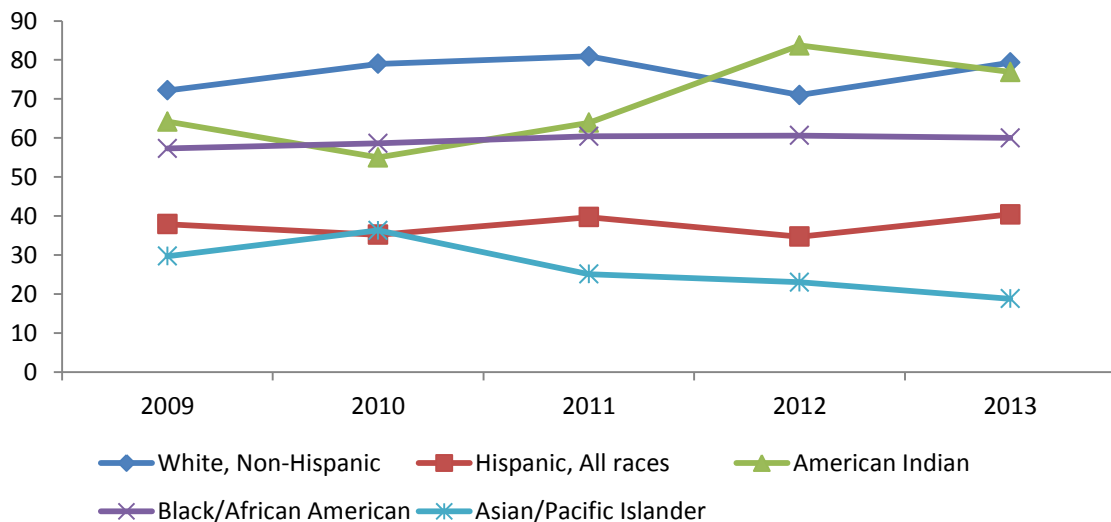
Between 2009 and 2013, the age-adjusted injury-related mortality rate increased by seven percent from 60.3 deaths per 100,000 Maricopa County residents in 2009 to 64.5 deaths per 100,000 residents in 2013. While both unintentional and suicide deaths increased during the five year period, suicide deaths had the greatest increase (13 percent from 2009 to 2013). The mortality rates are illustrated in Figure 2.

**Figure 2. Mortality Rates for Maricopa County Residents by Intent, 2009-2013**



Overall, the mortality rates increased for all race/ethnicity groups with the exception of Asian/Pacific Islanders who decreased by 37 percent from 2009 to 2013. White, non-Hispanic residents of Maricopa County had the highest injury-related mortality rates from 2009 through 2013. American Indian residents had the greatest increase in injury-related mortality rates during the five year period, increasing by 20 percent from 2009 to 2013. Figure 3 shows the injury-related mortality rates for Maricopa County by Race/Ethnicity from 2009 to 2013.

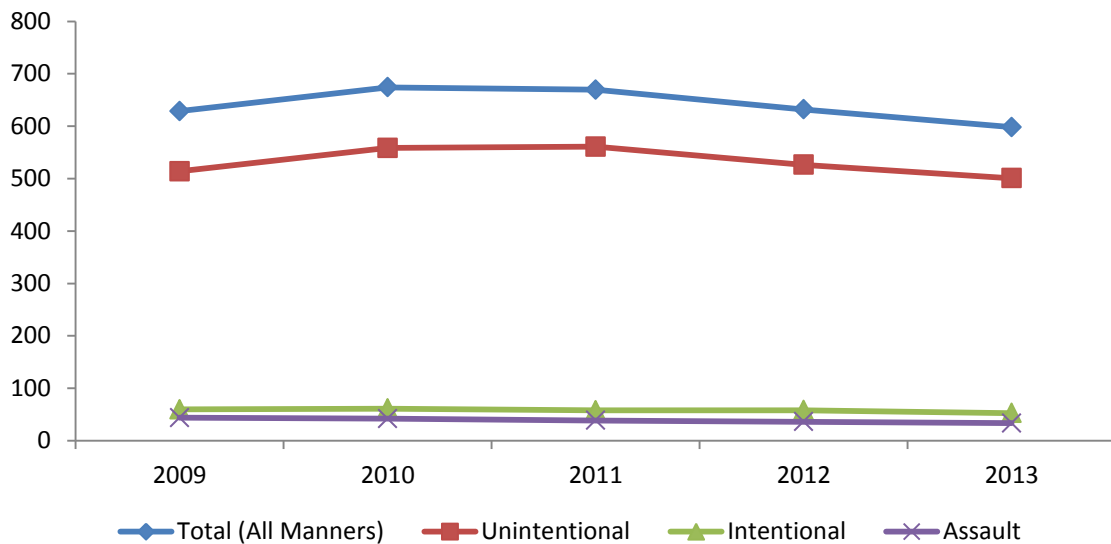
**Figure 3. Mortality Rates for Maricopa County by Race/Ethnicity, 2009-2013**



## Inpatient Hospitalizations, 2009-2013

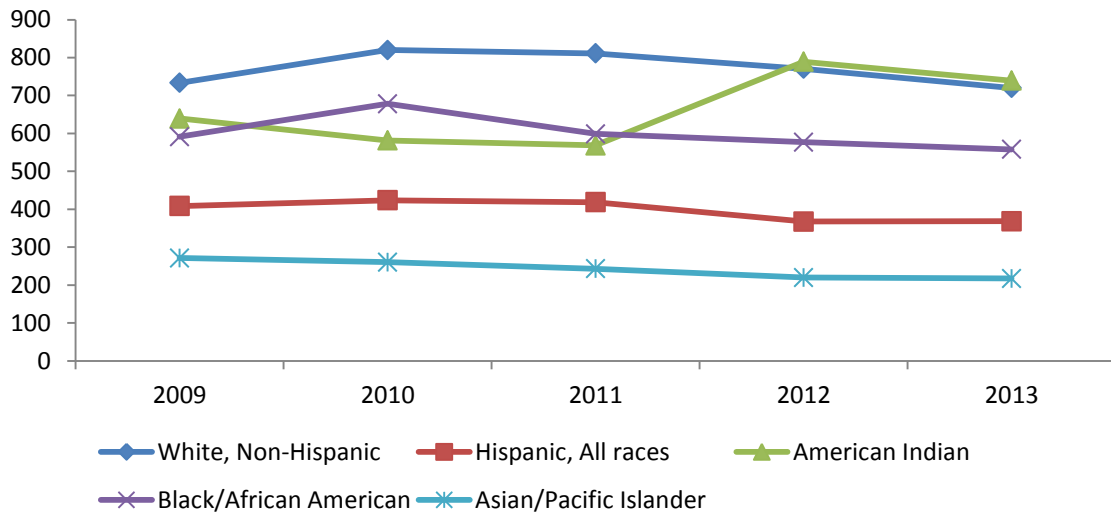
Between 2009 and 2013 all manners of injury-related hospitalization rates decreased. Overall, the age-adjusted injury-related inpatient hospitalization rates decreased by five percent from 628.6 hospitalizations per 100,000 Maricopa County residents in 2009 to 598 hospitalizations per 100,000 residents in 2013. As shown in Figure 4, unintentional injuries compose the majority of all injury-related inpatient hospitalizations.

**Figure 4. Inpatient Hospitalization Rates for Maricopa County Residents by Manner, 2009-2013**



White, non-Hispanic residents of Maricopa County had the highest injury-related hospitalization rates from 2009 through 2011. In 2012 the injury-related hospitalization rate for American Indians surpassed White, non-Hispanic residents increasing from 568.4 hospitalizations per 100,000 residents to 789.4 hospitalizations per 100,000 residents, a 39 percent increase from 2012 to 2013. American Indian residents also had the greatest increase in injury-related hospitalization rates during the five year period, increasing by 16 percent from 2009 to 2013. Figure 5 shows the injury-related hospitalization rates for Maricopa County by Race/Ethnicity from 2009 to 2013.

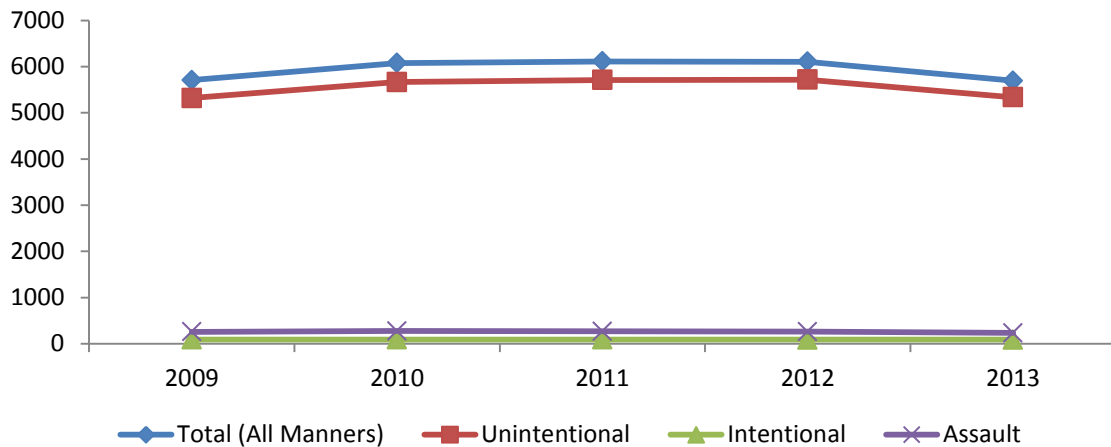
**Figure 5. Injury-related Inpatient Hospitalization Rates for Maricopa County by Race/Ethnicity, 2009-2013**



## Emergency Department Visits, 2009-2013

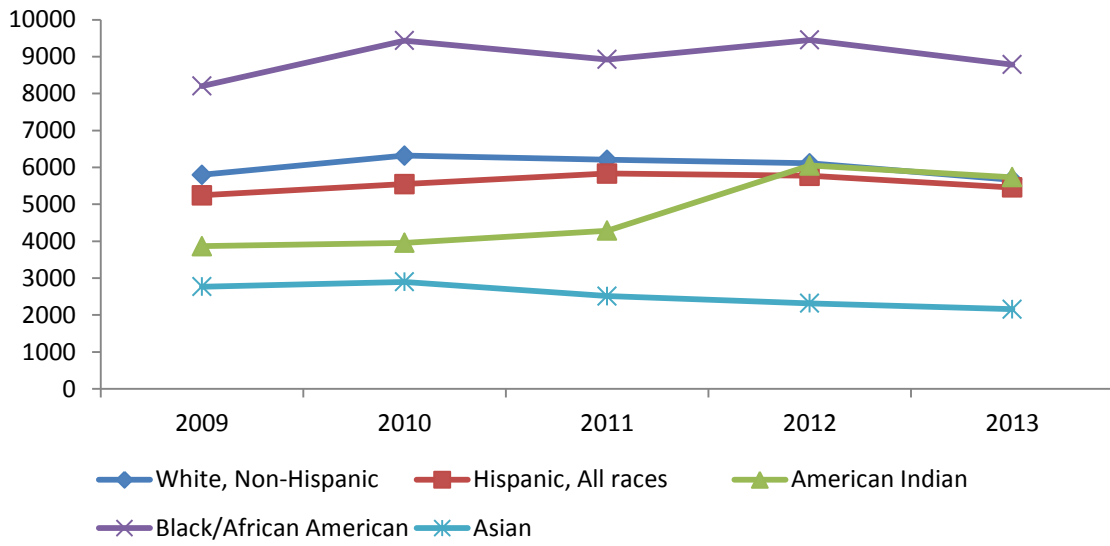
Overall, the injury-related emergency department visit rates for Maricopa County remained stable from 2009 to 2013 with only a 2/10 of a percent decrease. The unintentional injury-related emergency department visit rates remained stable as well during the five year time period. Both intentional and assault-related emergency department visits decreased from 2009 to 2013 but did not impact the overall rate since the the majority of injuries presented in the emergency department are unintentional in manner (shown in Figure 6).

**Figure 6. Injury-related Emergency Department Visit Rates for Maricopa County Residents by Manner, 2009-2013**



Unlike mortality and inpatient hospitalization rates where White, non-Hispanic and American Indian residents had the higher rates, Black/African American residents of Maricopa County had the highest rates for emergency department visits due to injuries from 2009 to 2013. American Indian residents had the greatest increase in injury-related emergency department visit rates increasing by 48 percent from 2009 to 2013. Figure 7 shows the injury-related emergency department visit rates for Maricopa County by Race/Ethnicity from 2009 to 2013.

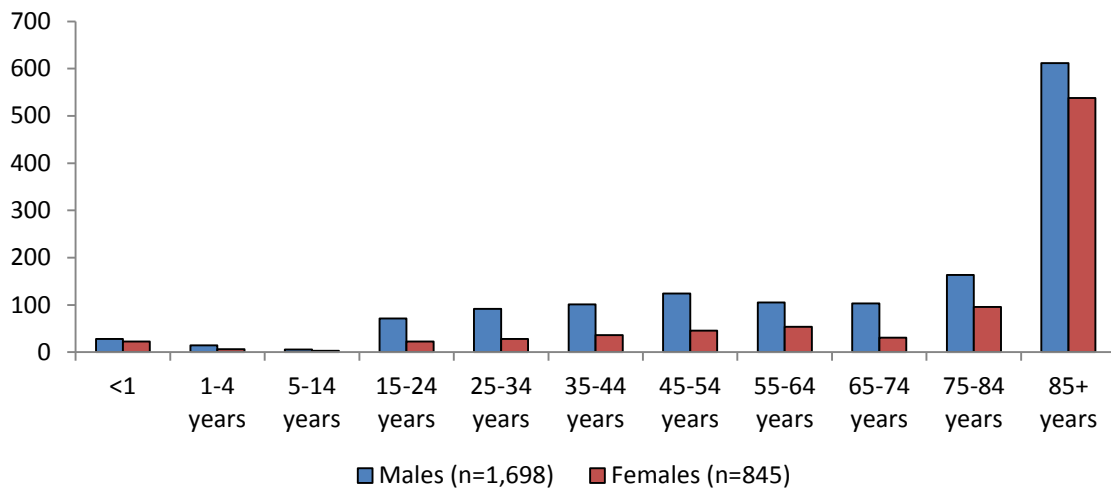
**Figure 7. Injury-related Emergency Department Visit Rates for Maricopa County by Race/Ethnicity, 2009-2013**



## Deaths 2013

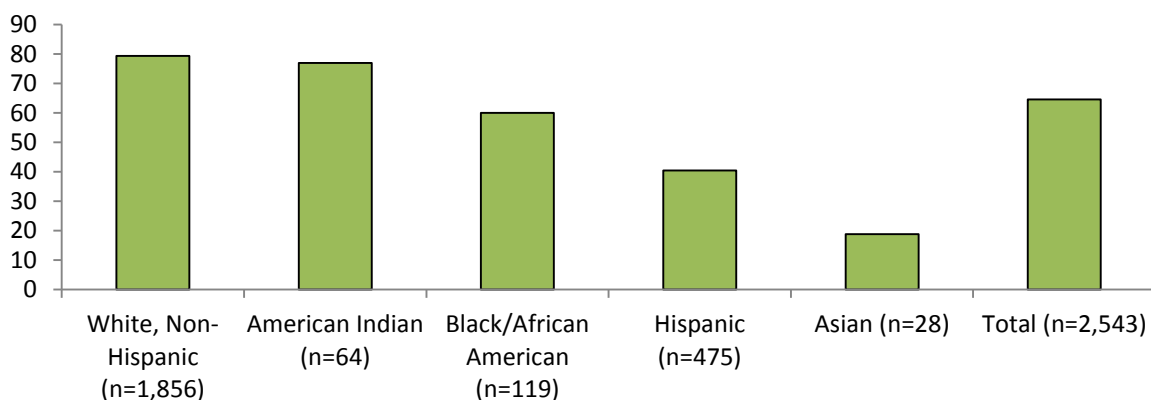
In 2013, there were 2,543 injury-related deaths in Maricopa County. The majority of the deaths were among males (67 percent, n=1,698); females accounted for the remaining 33 percent (n=845). The injury mortality rate was higher for males in every age group. Both male and female residents 85 years and older had the highest mortality rate due to injuries in Maricopa County. Figure 8 illustrates the injury-related mortality rates for Maricopa County by age group and sex for 2013.

**Figure 8. Injury-related Mortality Rates for Maricopa County by Age Group and Sex, 2013**



White, non-Hispanic residents of Maricopa had the highest rate of injury-related deaths during 2013 (79.3 deaths per 100,000 residents). American Indians had the second highest injury-related mortality rate of 76.9 deaths per 100,000 Maricopa County residents. Figure 9 shows the age-adjusted injury-related death rates per 100,000 residents by race/ethnicity.

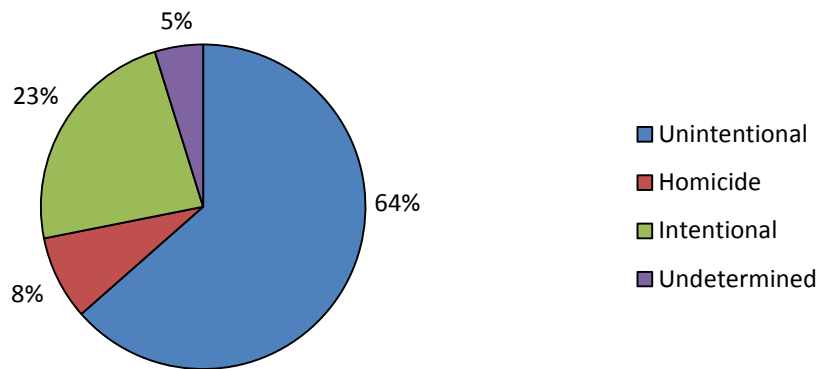
**Figure 9. Injury-related Mortality Rates per 100,000 Residents by Race/Ethnicity, Maricopa County 2013**





**Unintentional injury is the leading cause of death among individual’s ages 1 to 44 years in Maricopa County and in the state of Arizona as a whole.**<sup>1</sup> Sixty-four percent of injury-related deaths in Maricopa County were due to unintentional injuries (n=1,610); 23 percent were suicides (n=591); 8 percent were homicides (n=212); and 5 percent were of undetermined intent (n=122). There were eight injury-related deaths due to legal intervention. Figure 10 shows injury-related deaths by intent.

**Figure 10. Percentage of Injury-related Deaths for Maricopa County by Manner, 2013 (n=2,543)**



*Unintentional Injury*

The most common causes of unintentional injury-related deaths in Maricopa County were falls (32 percent, n=514), poisoning (31 percent, n=494) and motor vehicle traffic crashes (22 percent, n=349). The causes of unintentional injury-related deaths during 2013 in Maricopa County are shown in Table 1.

Cause	Number	Percent
Fall	514	32%
Poisoning	494	31%
Motor vehicle traffic	349	22%
Suffocation	54	3%
Drowning	41	3%
Nature/Environment	40	3%
Other land transport	17	1%
Other/unspecified	101	5%
<b>Total</b>	<b>1,610</b>	<b>100%</b>

1. Arizona Health Status and Vital Statistics 2013.

## Falls

In 2013, there were 514 unintentional fall related deaths in Maricopa County. Males accounted for 47 percent of the deaths (n=241) and females comprised the additional 53 percent (n=273). The age group most affected were those 65 years and older, composing 87 percent of the total fall related deaths (n=448) in 2013. The place of the injury can be important information used to help target prevention efforts. Fifty-three percent of the falls occurred at home (n=273), and an additional 24 percent occurred at a residential institution such as a nursing home or skilled living facility (n=124). The cities of Phoenix, Mesa and Scottsdale had the highest numbers of fall death (n=125, n=83 and n=49 respectively). Sun City, Glendale and Sun City West also had a significant number of deaths (n=39, n=39 and n=29).

## Poisoning

The second leading cause of injury-related deaths in Maricopa County were unintentional poisonings (n=494). Males represented 66 percent of those deaths (n=327) and females comprised the remaining 34 percent (n=167). The majority of the deaths (83 percent, n=411) were in the 25 to 64 year old age group, with 227 of those deaths in the 35 to 54 year old groups. The place of injury for 64 percent of the deaths was the decedent's residence. Pharmaceutical opioids were involved in 133 of the poisoning deaths in Maricopa County, heroin in 65 deaths, benzodiazepines in 35 deaths and alcohol in 80 deaths. The city of Phoenix was the city of residence for 215 poisoning deaths (43 percent).

## Motor vehicle traffic crashes

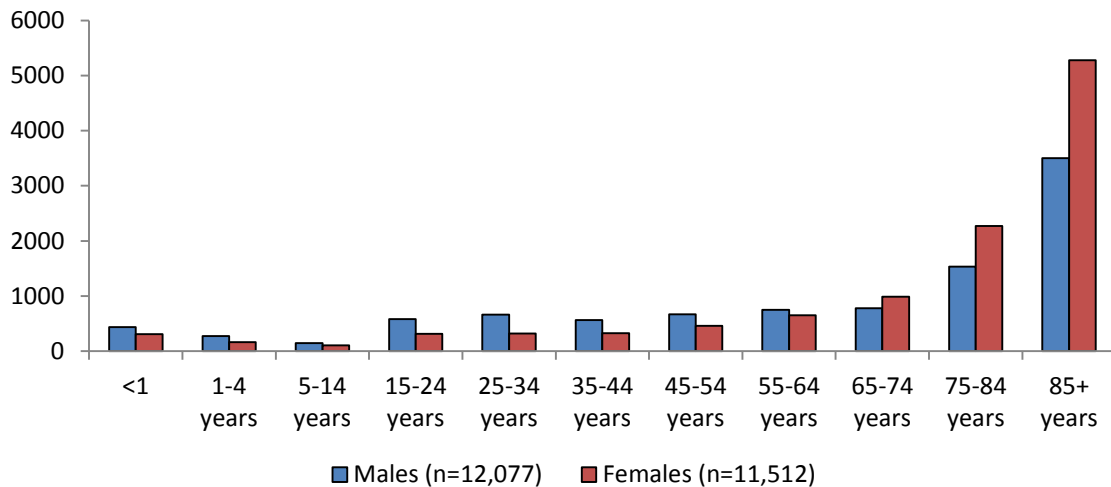
The third leading cause of injury-related deaths in Maricopa County were unintentional motor vehicle traffic crashes (n=349). Males accounted for 73 percent of unintentional motor vehicle traffic-related deaths (n=256) and females accounted for 27 percent (n=93). Five percent of these deaths were among children 14 years and younger (n=16); 15 percent were among individuals ages 15 to 24 years (n=54); 61 percent were among individuals ages 25 to 64 years (n=213); and 19 percent were among individuals 65 years and older (n=58).

For most of the motor vehicle traffic-related deaths, the location of the injured person was not specified on the death certificate (54 percent, n=190). Sixty-nine deaths were among pedestrians (20 percent); 62 deaths were among motorcyclists (18 percent); 15 deaths were among motor vehicle occupants (4 percent); and 13 deaths were among pedal cyclists (4 percent).

## Inpatient Hospitalizations, 2013

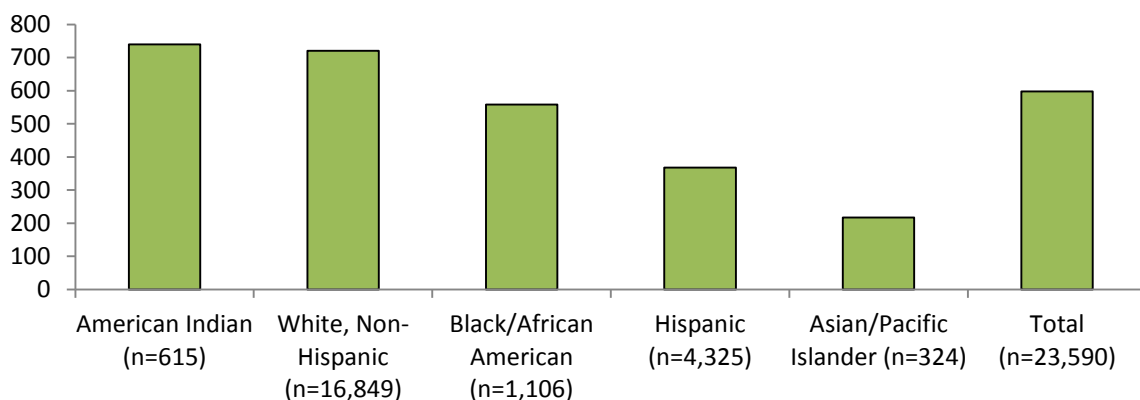
In 2013, there were 23,590 injury-related inpatient hospitalizations in Maricopa County. Just over half of these hospitalizations were among males (51 percent, n=12,077), females comprised 49 percent (n=11,512). Males had higher age-adjusted hospitalization rates in all age groups except for those 65 years and older. Both females and males 85 years and older had the highest hospitalization rates, followed by those in the 75 to 84 year age group as shown in Figure 11 below.

**Figure 11. Injury-related Inpatient Hospitalization Rates for Maricopa County by Age Group and Sex, 2013**



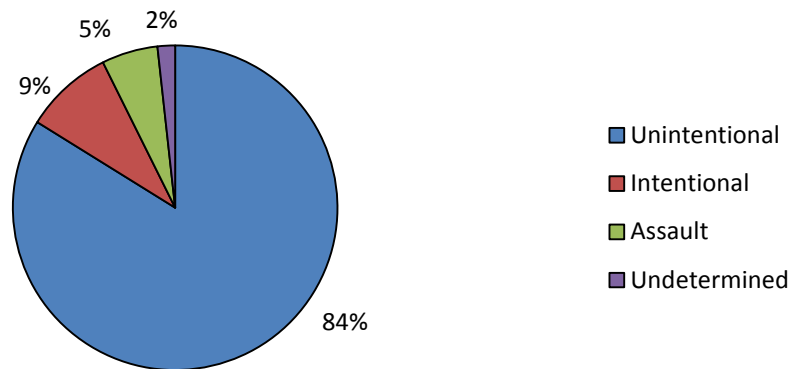
Unlike mortality rates, American Indians had the highest inpatient hospitalization rate for Maricopa County in 2013. Figure 12 shows the injury-related inpatient hospitalization rates per 100,000 residents by race/ethnicity.

**Figure 12. Injury-related Inpatient Hospitalization Rate per 100,000 Residents by Race/Ethnicity, Maricopa County 2013**



Eighty-four percent of injury-related deaths in Maricopa County were due to unintentional injuries (n=19,747); nine percent were intentional (n=2,078); five percent were assaults (n=1,317); and 2 percent were of undetermined intent (n=411). Figure 13 shows the percentage of injury-related inpatient hospitalizations for Maricopa County by manner.

**Figure 13. Percentage of Injury-related Inpatient Hospitalizations for Maricopa County by Manner, 2013 (n=23,590)**



### *Unintentional Injury*

**The most common causes of unintentional injury-related inpatient hospitalizations in Maricopa County were falls (53 percent, n=10,403), motor vehicle traffic crashes (17 percent, n=3,332) and poisoning (nine percent, n=1,858).**

### Falls

One hundred percent of the 10,403 fall related inpatient hospitalizations in Maricopa County were unintentional. Females accounted for 62 percent of the hospitalizations (n=6,418) and males comprised the additional 38 percent (n=3,984). The age group most affected were those 65 years and older, composing 67 percent of the total fall related inpatient hospitalizations (n=6,942) in 2013. Where the fall takes place can help determine what types of prevention activities should be targeted. Unlike the morality data, the location of the fall such as home or nursing facility cannot be determined, but the type of can be. Forty-four percent of the falls were from slipping or tripping over something (n=4,617). Some additional fall types included falling from a bed (n=387), falling from a ladder (n=362) and falling from stairs or steps (n=340).

### Motor vehicle traffic crashes

The second leading cause of injury-related inpatient hospitalizations in Maricopa County were unintentional motor vehicle traffic crashes (n=3,332). Males accounted for 64 percent of unintentional motor vehicle traffic-related hospitalizations (n=2,129) and females accounted for 36 percent (n=1,203). Less than five percent of the motor vehicle hospitalizations were among children 14 years and younger (n=149); 22 percent were among individuals ages 15 to 24 years (n=726); 59 percent were among individuals ages 25 to 64 years (n=1,953); and 15 percent were among individuals 65 years and older (n=504).

For most of the motor vehicle traffic-related inpatient hospitalizations, the location of the injured person was specified in the hospital record. Sixty percent were vehicle occupants (n=2,007); 21 percent were motorcyclists (n=695); 11 percent were pedestrians (n=376); and five percent were pedal cyclists (n=165).

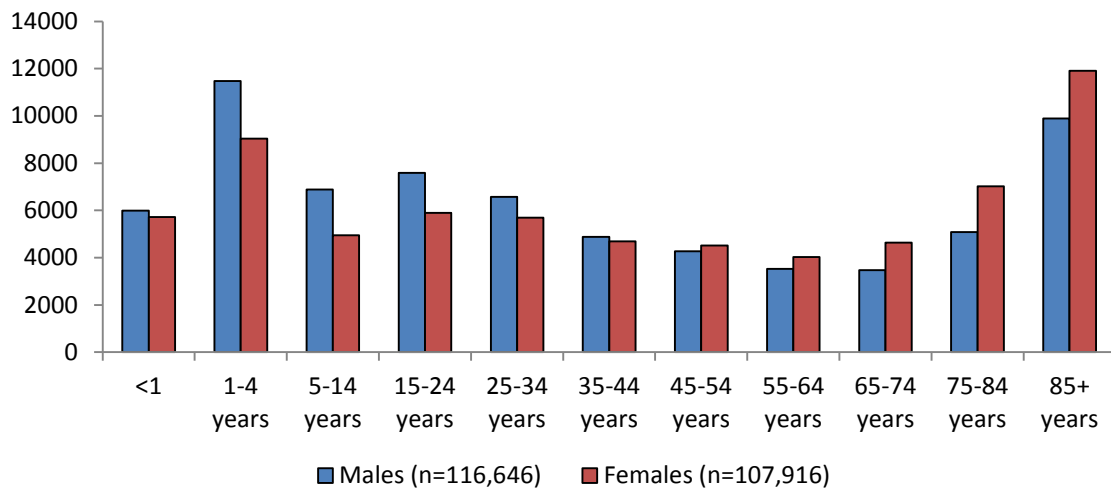
### Poisoning

The third leading cause of injury-related inpatient hospitalizations in Maricopa County were unintentional poisonings (n=1,858). Males represented 51 percent of those hospitalizations (n=940) and females comprised the remaining 49 percent (n=918). The majority of the deaths (68 percent, n=1,258) were in the 25 to 64 year old age group. Opiates were involved in 393 of the poisoning hospitalizations, psychostimulants such as amphetamines in 210 records and heroin in 87 cases.

## Emergency Department Visits, 2013

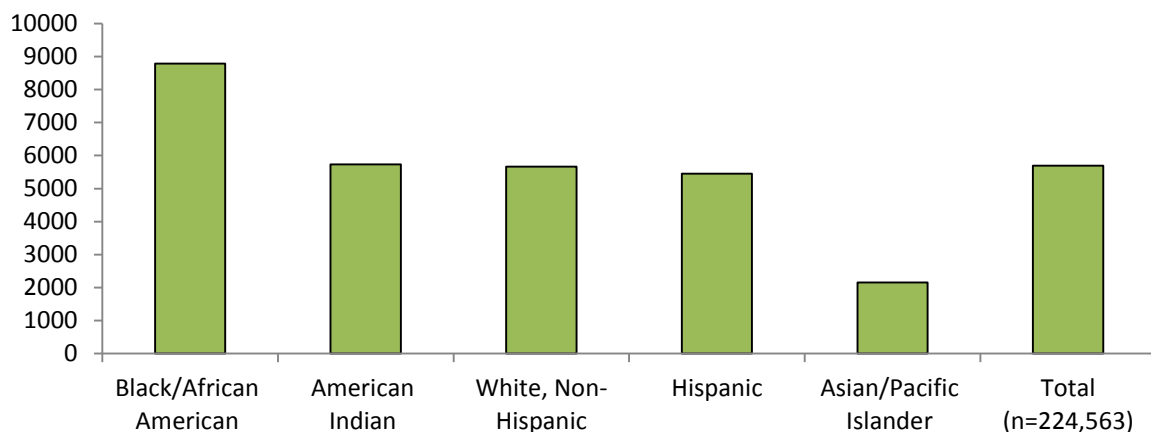
In 2013, there were 224,563 injury-related emergency department visits in Maricopa County. Fifty-two percent were among males (n=116,646), and females accounted for 48 percent (n=107,916). Figure 14 shows injury-related emergency department visits for Maricopa County by age group and sex.

**Figure 14. Injury-related Emergency Department Visit Rates for Maricopa County by Age Group and Sex, 2013**



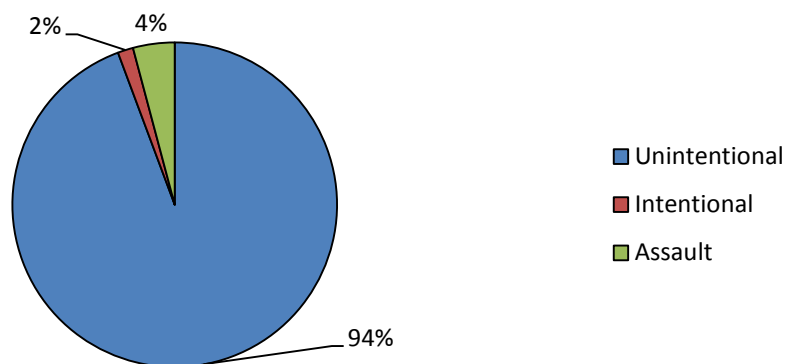
African American residents of Maricopa had the highest rate of injury-related emergency department visits during 2013 with 8,785.8 visits per 100,000 residents. American Indians had the next highest injury-related emergency department rate with 5,731.4 visits per 100,000 Maricopa County residents. Figure 15 shows the age-adjusted injury-related emergency department visit rates per 100,000 residents by race/ethnicity.

**Figure 15. Injury-related Emergency Department Visit Rate per 100,000 Residents by Race/Ethnicity, Maricopa County 2013**



Ninety-four percent of injury-related emergency department visits in Maricopa County were due to unintentional injuries (n=210,552); two percent were intentional in manner (n=3,438); and four percent were assaults (n=9,247). There were eight injury-related deaths due to legal intervention. Figure 16 shows injury-related emergency department visits for Maricopa County by manner.

**Figure 16. Percentage of Injury-related Emergency Department Visits for Maricopa County by Manner, 2013 (n=224,563)**



### *Unintentional Injury*

**The most common causes of unintentional injury-related emergency department visits in Maricopa County were falls (34 percent, n=71,124), struck by or against injuries (14 percent, n=29,750) and motor vehicle traffic crashes (12 percent, n=24,528).**

### Falls

Males accounted for 46 percent of the unintentional fall related emergency department visits (n=32,630) and females accounted for 54 percent (n=38,494). The age groups most affected were those less than five years old and 65 years and older. Where the fall takes place can help determine what types of prevention activities should be targeted. Unlike the morality data, the location of the fall such as home or nursing facility cannot be determined, but the type of falls can be identified. Forty-one percent of the falls were from slipping or tripping over something (n=29,168). Some additional fall types were falling from a bed (n=3,703), falling from stairs or steps (n=3,153), falling from playground equipment (n=1,852) and falling from furniture (n=1,333).

### Struck by/Against

Males accounted for 61 percent of unintentional struck by/against emergency department visits (n=18,084) and females accounted for 39 percent (n=11,666). Fifty-two percent of these visits were among those between the ages of 15 and 54 (n=15,378).

### Motor vehicle traffic crashes

Males accounted for 46 percent of unintentional motor vehicle traffic-related emergency department visits (n=11,374) and females accounted for 54 percent (n=13,153). Eight percent of these visits were among children 14 years and younger (n=1,964); 26 percent were among individuals ages 15 to 24 years (n=6,472); 58 percent were among individuals ages 25 to 64 years (n=14,304); and eight percent were among individuals 65 years and older (n=1,785).

Eighty-two percent of the emergency department visits due to motor vehicle traffic related injuries were among motor vehicle occupants (n=20,154); six percent were among motorcyclists (n=1,517); four percent among pedestrians (n=970); and four percent among pedal cyclists (n=926).



## Data Notes

All rates were calculated using the 2009-2013 Arizona Vital Statistics population estimates for Maricopa County, available on the internet from the AZ Vital Statistics website. Age-adjusted rates were standardized to the 2000 U.S. standard population using the direct standardization method. Age-adjusted rates have been presented when possible, as age-adjusting controls for the effects of age differences in populations (e.g., a large proportion of older adults or young children) and allows for more accurate rate comparisons.

Mortality data were tabulated from death certificates for Maricopa County residents who died in 2013. Inpatient hospitalization and emergency department visit data were compiled from the 2013 Arizona Hospital Discharge Database.

The discharge databases contain 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. Additionally, 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.

Codes from the International Classification of Diseases, Version 9, clinical modification (ICD-9-CM) were used for determining injuries among hospital and emergency department data. ICD-10 codes were used for mortality data.

## Appendix A. Definitions of Mechanisms of Injury

Cause of Injury	Definition
Fall	Includes falls from furniture, stairs, playground equipment, and those that occur while playing sports.
Poisoning	Includes poisoning from drugs and medicines, household chemicals, gases, pesticides as well as other biological substances with damaging effects.
Motor vehicle traffic	Includes collisions that occur on public highways and streets. These collisions may include pedestrians, pedal cyclists, motorcyclists, and occupants of motor vehicles.
Other land transport	Includes collisions involving railway transport or all-terrain vehicles operating off-road. This cause only applies to deaths and is not used in hospitalization or emergency department databases.
Other pedal cycle	Includes injured pedal cyclists struck by pedestrians, pedal cycles, or non-motorized vehicles.
Other pedestrian	Includes injured pedestrians struck by pedal cycles, non-motorized vehicles, or other pedestrians.
Other/unspecified	Unspecified events or other rare events.
Struck by/against	Includes being struck by furniture, struck by other people while playing sports, or hit by objects while playing sports.
Transport	Other non-motorized, off-road vehicle, or rail transport. This cause only applies to hospitalization and emergency