

**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**JUNE 2013  
MARICOPA COUNTY REPORT  
ASTR 2011**

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**Data and Quality Assurance**

**Purpose:**

The purpose of this report is to describe the incidence of trauma in Maricopa County using the Arizona State Trauma Registry (ASTR). This information can be used to assist in the development and strengthening of injury prevention programs at the county level.

**Methods:**

In 2011, the Arizona State Trauma Registry (ASTR) received data from 23 state-designated trauma centers. Four additional healthcare institutions participated in the registry but were not designated. The Arizona EMS and Trauma System has eight Level I trauma centers - six located in the central county of Maricopa with 60 percent of the state's population; the remaining two Level I trauma centers are respectively located in the northern-most county of Coconino and the southern county of Pima. For the 2011 reporting year, there were 15 designated Level IV trauma centers dispersed primarily in the rural areas of the state. There are a total of 29,877 records in the ASTR for 2011.

**Limitations:**

Data is limited to participating agencies in the state. Information on patients that are transported out of Arizona will be missed as well as those seen at hospitals that are not participating. Injuries included in this registry are those which fit the [ASTR inclusion criteria](#). As such, injuries reported are more severe injuries, and therefore not a complete picture of injury in Maricopa County.

**Geo-Population:**

Arizona is 400 miles long and 310 miles wide for a total area of 114,006 square miles. The topography of the state is 364 square miles of water and a blend of deserts, mountains, and plateaus. Arizona shares contiguous borders with the states of California, Colorado, Nevada, New Mexico, and Utah. Internationally, the Mexican states of Sonora, Chihuahua, and Baja California Norte share a border with Arizona.

The total reported population in 2011 was 6,438,178; this was up from the 2010 reported number of 6,392,017 residents <sup>1</sup>. In 2011, 84.1 percent of the population lived in urban counties (Maricopa, Pima, Pinal, and Yuma). The remaining counties (Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz, and Yavapai) were home to 15.9 percent of the population.

Additionally, Arizona has within its borders twenty-two (22) federally recognized American Indian tribes, comprising a 2011 collective population of 296,529, of which 162,119 (55 percent) reside on reservations and tribal lands.

<sup>1</sup> <http://www.azdhs.gov/plan/menu/info/pop/pop11/pd11.htm>

## Arizona State Designated Trauma Centers

| Health Care Institution   | Address   | Effective Date | Expiration Date |
|---|---|----------------|-----------------|
| <b>Level I Trauma Centers</b>   |   |                |                 |
| Banner Good Samaritan Medical Center  | 925 E. McDowell Rd., Phoenix, AZ 85006            | 11/19/11       | 11/19/14        |
| Flagstaff Medical Center  | 1200 N. Beaver St., Flagstaff, AZ 86001           | 05/27/11       | 05/27/14        |
| John C. Lincoln - North Mountain  | 250 E. Dunlap Ave., Phoenix, AZ 85020             | 04/23/11       | 04/23/14        |
| Maricopa Medical Center   | 2601 E. Roosevelt, Phoenix, AZ 85008              | 12/20/11       | 12/20/14        |
| Phoenix Children's Hospital   | 1919 E. Thomas Rd., Phoenix, AZ 85016             | 08/31/12       | 08/31/15        |
| St. Joseph's Hospital & Medical Center  | 350 W. Thomas Rd., Phoenix, AZ 85013              | 11/20/10       | 11/20/13        |
| Scottsdale Healthcare – Osborn  | 7400 E. Osborn, Scottsdale, AZ 85251              | 10/25/11       | 10/25/14        |
| The University of Arizona Medical Center – University Campus                              | 1501 N. Campbell Ave., Tucson, AZ 85724           | 11/12/11       | 11/12/14        |
| <b>Level III Trauma Centers</b>   |   |                |                 |
| Banner Baywood Medical Center<br><i>(Provisional Designation)</i>                         | 6644 E. Baywood Ave., Mesa, AZ 85206              | 07/30/12       | 01/30/14        |
| John C. Lincoln Deer Valley Hospital<br><i>(Provisional Designation)</i>                  | 19829 N. 27 <sup>th</sup> Ave., Phoenix, AZ 85027 | 02/04/13       | 10/04/14        |
| Mountain Vista Medical Center<br><i>(Provisional Designation)</i>                         | 1301 S. Crismon Rd., Mesa, AZ 85209               | 02/24/12       | 08/24/13        |
| The University of Arizona Medical Center South Campus<br><i>(Provisional Designation)</i> | 2800 E. Ajo Way, Tucson, AZ 85713                 | 02/13/12       | 08/13/13        |
| <b>Level IV Trauma Centers</b>  |   |                |                 |
| Banner Boswell Medical Center   | 10401 W. Thunderbird Blvd., Sun City, AZ 85351    | 12/17/12       | 12/17/15        |
| Banner Estrella Medical Center  | 9201 W. Thomas Road, Phoenix, AZ 85037            | 08/30/12       | 08/30/15        |
| Banner Gateway Medical Center   | 1900 N. Higley Road, Gilbert, AZ 85234            | 01/02/13       | 01/02/16        |
| Banner Ironwood Medical Center  | 37000 N. Gantzel Rd., San Tan Valley, AZ 85140    | 10/11/12       | 10/11/15        |
| Banner Page Hospital  | 501 N. Navajo, Page, AZ 86040                     | 11/05/11       | 11/05/14        |
| Benson Hospital   | 450 S. Ocotillo Ave., Benson, AZ 85602            | 03/03/11       | 03/03/14        |
| Chinle Comprehensive Health Care Facility   | P.O. Drawer PH, Chinle, AZ 86503                  | 09/09/10       | 09/09/13        |
| Cobre Valley Regional Medical Center  | 5880 S. Hospital Dr., Globe, AZ 85501             | 11/26/12       | 11/26/15        |
| Copper Queen Community Hospital   | 101 Cole Ave., Bisbee, AZ 85603                   | 12/01/12       | 12/01/15        |
| Havasu Regional Medical Center  | 101 Civic Center Ln., Lake Havasu City, AZ 86403  | 01/20/11       | 01/20/14        |
| Kingman Regional Medical Center   | 3269 Stockton Hill Rd., Kingman, AZ 86409         | 10/15/12       | 10/15/15        |
| La Paz Regional Hospital  | 1200 W. Mohave Rd., Parker, AZ 85344              | 06/02/12       | 06/02/15        |

| Health Care Institution                   | Address  | Effective Date | Expiration Date |
|---|--|----------------|-----------------|
| Northern Cochise Community Hospital       | 901 W. Rex Allen Dr., Willcox, AZ 85643        | 12/04/11       | 12/04/14        |
| Oro Valley Hospital                       | 1551 East Tangerine Road, Oro Valley, AZ 85755 | 4/18/13        | 4/18/16         |
| Southeast Arizona Medical Center          | 2174 W. Oak Ave., Douglas, AZ 85607            | 08/18/11       | 08/18/14        |
| Summit Healthcare Regional Medical Center | 2200 Show Low Lake Rd., Show Low, AZ 85901     | 08/12/11       | 08/12/14        |
| Tuba City Regional Health Care Corp.      | P.O. Box 600, Tuba City, AZ 86045              | 05/06/12       | 05/06/15        |
| Verde Valley Medical Center               | 269 S. Candy Ln., Cottonwood, AZ 86326         | 08/18/11       | 08/18/14        |
| White Mountain Regional Medical Center    | 118 S. Mountain Ave., Springerville, AZ 85938  | 06/18/12       | 06/18/15        |
| Wickenburg Community Hospital             | 520 Rose Ln., Wickenburg, AZ 85390             | 08/08/11       | 08/08/14        |

Updated as of May 1, 2013

# EMS REGIONS AND TRAUMA CENTERS

May 1, 2013



Level I Trauma Center

Level III Trauma Center (Provisional)

Level IV Trauma Center

**FIGURE 1: Maricopa County population by age, gender, and race/ethnicity, AZ Health & Vital Statistics**

| <b>Group</b>          |                                  | <b>Count</b>     | <b>Percent</b> |
|-----------------------|----------------------------------|------------------|----------------|
| <b>Age</b>            | <1                               | 54,674           | 1.4%           |
|                       | 1-4                              | 230,040          | 6.0%           |
|                       | 5-9                              | 284,655          | 7.4%           |
|                       | 10-14                            | 279,135          | 7.3%           |
|                       | 15-19                            | 278,798          | 7.3%           |
|                       | 20-24                            | 268,705          | 7.0%           |
|                       | 25-29                            | 278,610          | 7.2%           |
|                       | 30-34                            | 266,243          | 6.9%           |
|                       | 35-39                            | 267,799          | 7.0%           |
|                       | 40-44                            | 260,433          | 6.8%           |
|                       | 45-49                            | 263,309          | 6.9%           |
|                       | 50-54                            | 244,122          | 6.4%           |
|                       | 55-59                            | 209,890          | 5.5%           |
|                       | 60-64                            | 191,150          | 5.0%           |
|                       | 65-69                            | 147,177          | 3.8%           |
|                       | 70-74                            | 109,960          | 2.9%           |
| 75-79                 | 84,781                           | 2.2%             |                |
| 80-84                 | 64,429                           | 1.7%             |                |
| 85+                   | 59,460                           | 1.5%             |                |
| <b>Gender</b>         | Female                           | 1,941,932        | 50.5%          |
|                       | Male                             | 1,901,438        | 49.5%          |
| <b>Race/Ethnicity</b> | Hispanic                         | 1,094,425        | 28.5%          |
|                       | White                            | 2,291,738        | 59.6%          |
|                       | American Indian or Alaska Native | 111,196          | 2.9%           |
|                       | Black or African American        | 198,564          | 5.2%           |
|                       | Asian Pacific Islander           | 147,447          | 3.8%           |
| <b>Total</b>          |                                  | <b>3,843,370</b> | <b>100%</b>    |

<http://www.azdhs.gov/plan/menu/info/pop/pop11/pd11.htm>

**FIGURE 2: Trauma frequency and rate per 100,000 by county**

| County of Injury | Total Population | Percent of Population | Trauma Count | Percent of All Traumas | Trauma Rate per 100,000 |
|------------------|------------------|-----------------------|--------------|------------------------|-------------------------|
| Apache           | 71,991           | 1.1%                  | 507          | 1.7%                   | 704                     |
| Cochise          | 130,537          | 2.0%                  | 1,009        | 3.4%                   | 773                     |
| Coconino         | 134,162          | 2.1%                  | 1,383        | 4.7%                   | 1,031                   |
| Gila             | 53,577           | 0.8%                  | 506          | 1.7%                   | 944                     |
| Graham           | 37,710           | 0.6%                  | 109          | 0.4%                   | 289                     |
| Greenlee         | 8,380            | 0.1%                  | 35           | 0.1%                   | 418                     |
| La Paz           | 20,730           | 0.3%                  | 203          | 0.7%                   | 979                     |
| Maricopa         | 3,843,370        | 59.7%                 | 13,846       | 47.2%                  | 360                     |
| Mohave           | 200,417          | 3.1%                  | 1,124        | 3.8%                   | 561                     |
| Navajo           | 107,226          | 1.7%                  | 910          | 3.1%                   | 849                     |
| Pima             | 986,081          | 15.3%                 | 4,164        | 14.2%                  | 422                     |
| Pinal            | 384,231          | 6.0%                  | 1,387        | 4.7%                   | 361                     |
| Santa Cruz       | 48,088           | 0.7%                  | 159          | 0.5%                   | 331                     |
| Yavapai          | 211,247          | 3.3%                  | 1,029        | 3.5%                   | 487                     |
| Yuma             | 200,431          | 3.1%                  | 2,350        | 8.0%                   | 1,172                   |
| Other            | .                | .                     | 627          | 2.1%                   | .                       |
| Total            | 6,438,178        | 100.0%                | 29,348       | 98.2%                  | 456                     |

*Missing = 529*

Statewide, there were 29,877 traumatic injuries seen at state designated trauma centers– a rate of 456 per 100,000 Arizona residents.

Maricopa County makes up about sixty percent of the total population of Arizona. Injuries occurring in the county make up 47.2 percent of the trauma cases from state designated trauma centers. The county-specific trauma rate, 360 per 100,000 county residents, is lower than the state average (Figure 3).

**FIGURE 3: County-specific trauma rates per 100,000 residents**

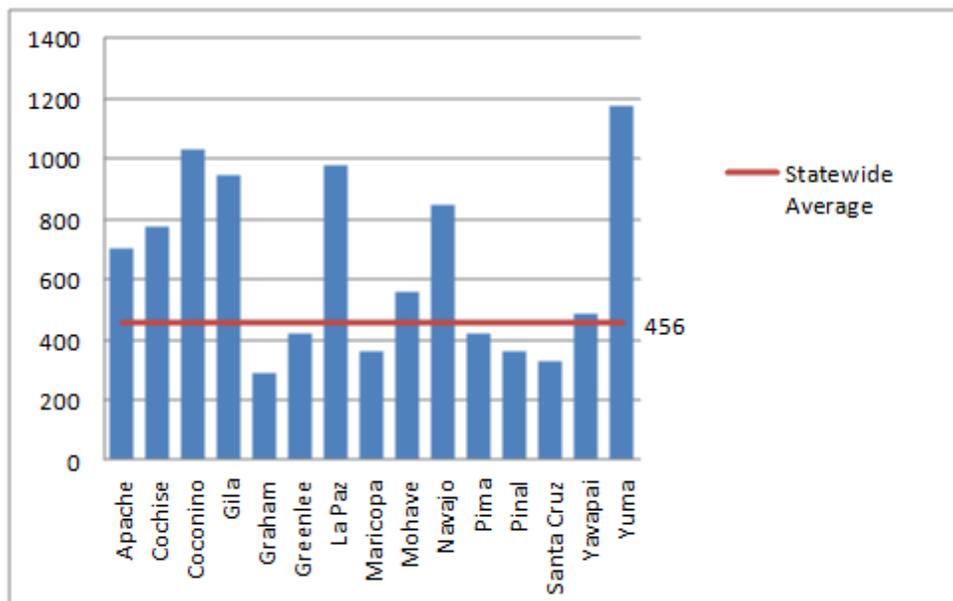
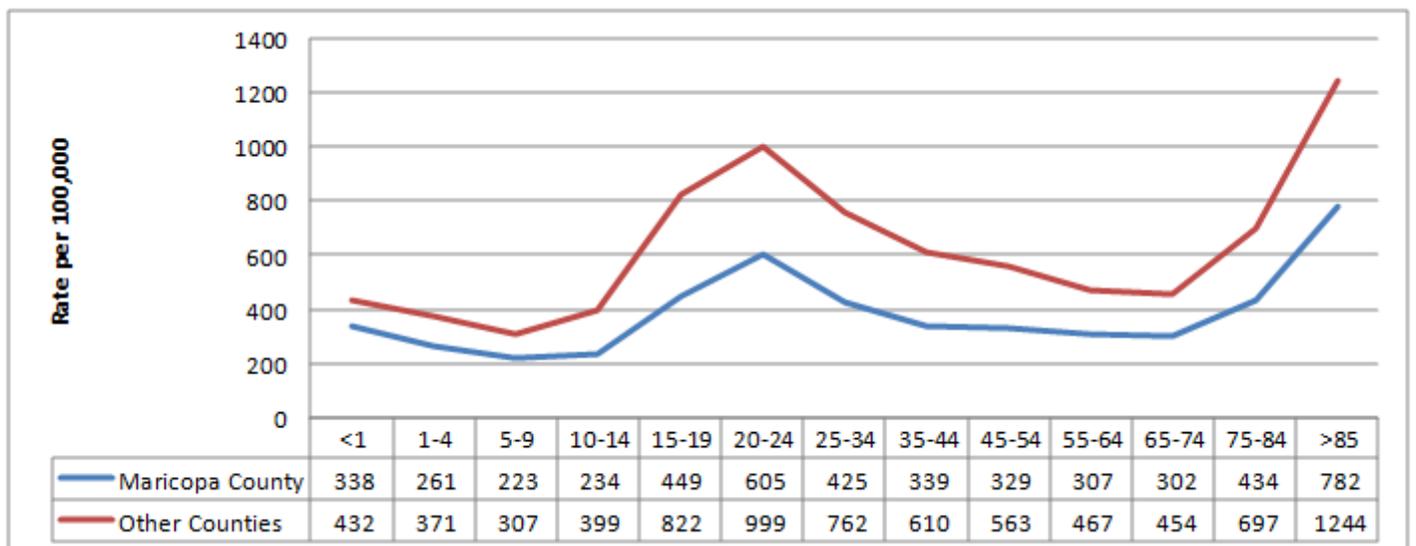


FIGURE 4: Frequency and rate of trauma by age, race/ethnicity, and gender in Maricopa County

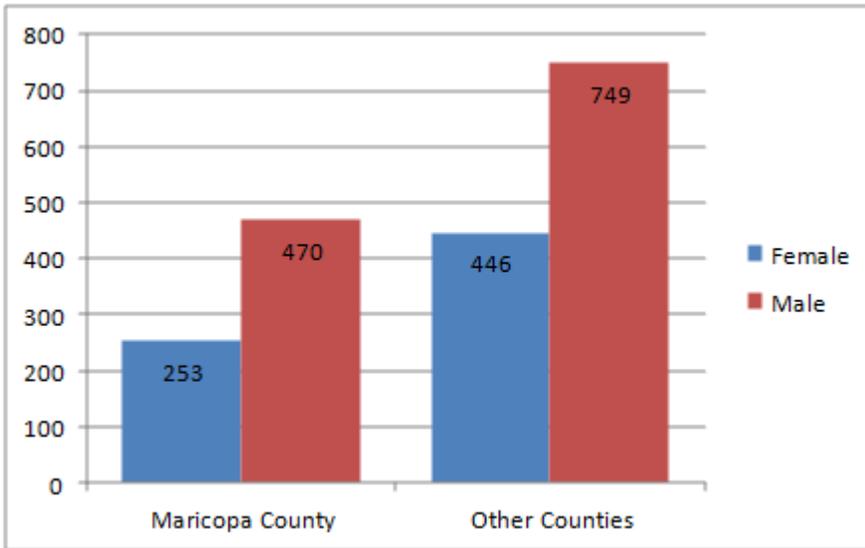
| Group          |                                  | Count         | Percent     | Rate per 100,000 |
|----------------|----------------------------------|---------------|-------------|------------------|
| Age            | Missing                          | 1             | 0.0%        | .                |
|                | <1                               | 185           | 1.3%        | 338              |
|                | 1-4                              | 601           | 4.3%        | 261              |
|                | 5-9                              | 634           | 4.6%        | 223              |
|                | 10-14                            | 652           | 4.7%        | 234              |
|                | 15-19                            | 1,251         | 9.0%        | 449              |
|                | 20-24                            | 1,626         | 11.7%       | 605              |
|                | 25-34                            | 2,315         | 16.7%       | 425              |
|                | 35-44                            | 1,792         | 12.9%       | 339              |
|                | 45-54                            | 1,669         | 12.1%       | 329              |
|                | 55-64                            | 1,231         | 8.9%        | 307              |
|                | 65-74                            | 777           | 5.6%        | 302              |
|                | 75-84                            | 647           | 4.7%        | 434              |
|                | >85                              | 465           | 3.4%        | 782              |
| Gender         | Missing                          | 1             | 0.0%        | .                |
|                | Female                           | 4,913         | 35.5%       | 446              |
|                | Male                             | 8,932         | 64.5%       | 749              |
| Race/Ethnicity | Missing                          | 27            | 0.2%        | .                |
|                | Hispanic                         | 3,822         | 27.6%       | 349              |
|                | White                            | 7,969         | 57.6%       | 348              |
|                | American Indian or Alaska Native | 570           | 4.1%        | 513              |
|                | Black or African American        | 918           | 6.6%        | 462              |
|                | Asian Pacific Islander           | 125           | 0.9%        | 85               |
|                | Other                            | 415           | 3.0%        | .                |
|                | <b>Total</b>                     | <b>13,846</b> | <b>100%</b> | <b>360</b>       |

The trauma rate is lower in Maricopa County for all age groups (Figure 4), as compared to the rest of the state. The highest trauma rate is among the 85+ age group (782 traumatic injuries per 100,000 county residents).

FIGURE 5: Trauma rate per 100,000 residents by age



**FIGURE 6: Trauma rate per 100,000 residents by gender**



Both males and females in Maricopa County have lower trauma rates than their counterparts in other counties (Figure 6).

The trauma rate for Black/African American race/ethnicities is higher in Maricopa County than in other counties (Figure 7).

**FIGURE 7: Trauma rate per 100,000 residents by race/ethnicity**

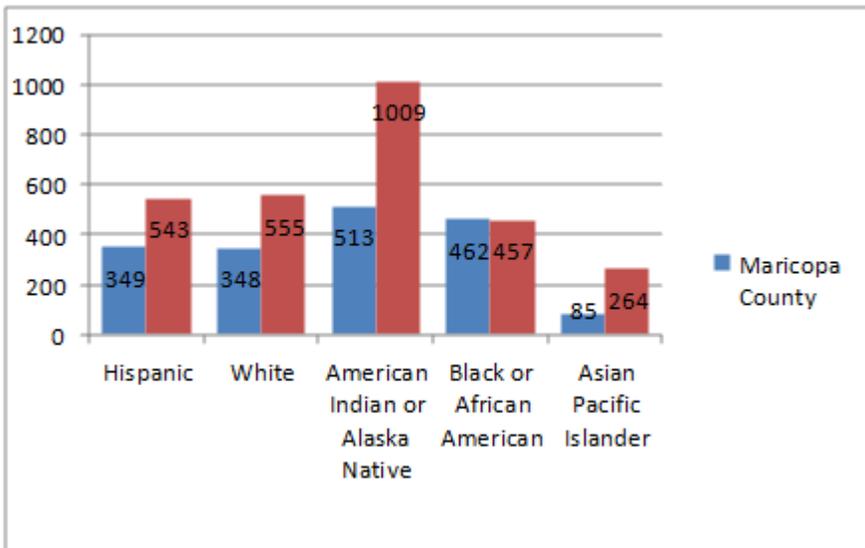
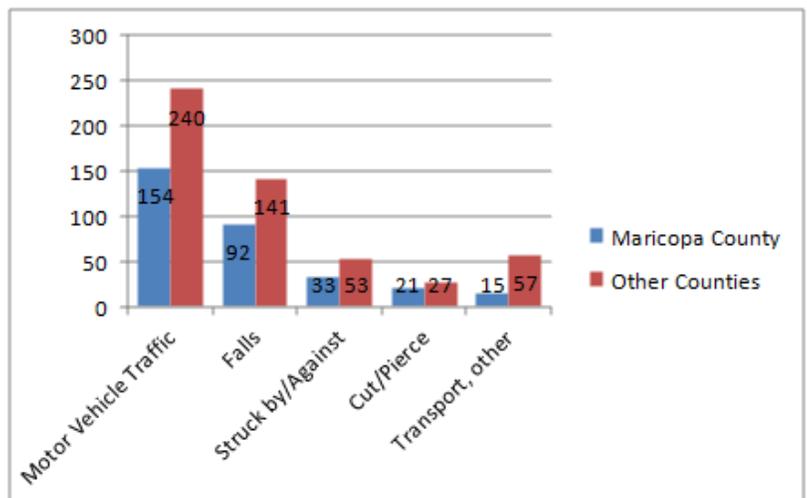


Figure 9 shows the top causes of traumatic injury in Maricopa County, as compared with other counties (rates per 100,000).

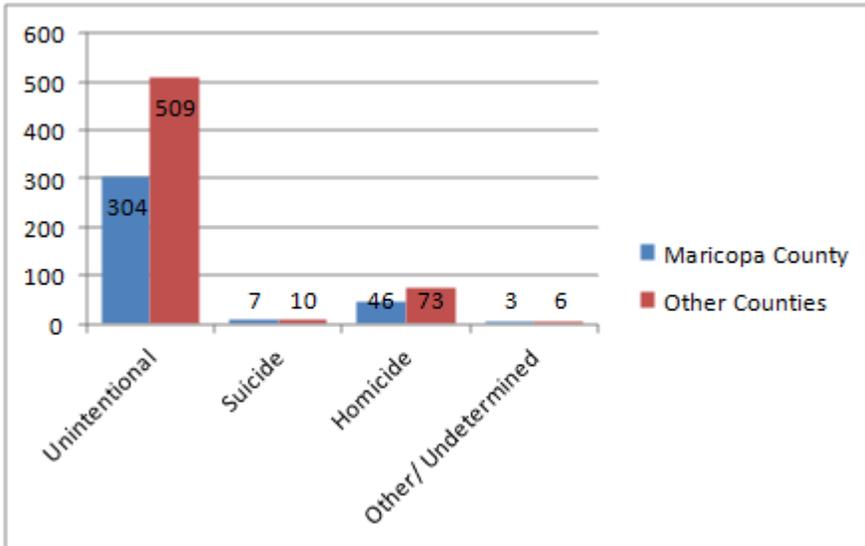
**FIGURE 8: Frequency of top causes of trauma in Maricopa County**

| Cause                 | Count      | Percent     |
|-----------------------|------------|-------------|
| Motor Vehicle Traffic | 74         | 36.50%      |
| Falls                 | 48         | 23.60%      |
| Transport, other      | 42         | 20.70%      |
| Struck by/Against     | 10         | 4.90%       |
| Cut/Pierce            | 6          | 3.00%       |
| Other Trauma          | 23         | 11.30%      |
| <b>Total</b>          | <b>203</b> | <b>100%</b> |

**FIGURE 9: Top causes of trauma, rates per 100,000 residents**



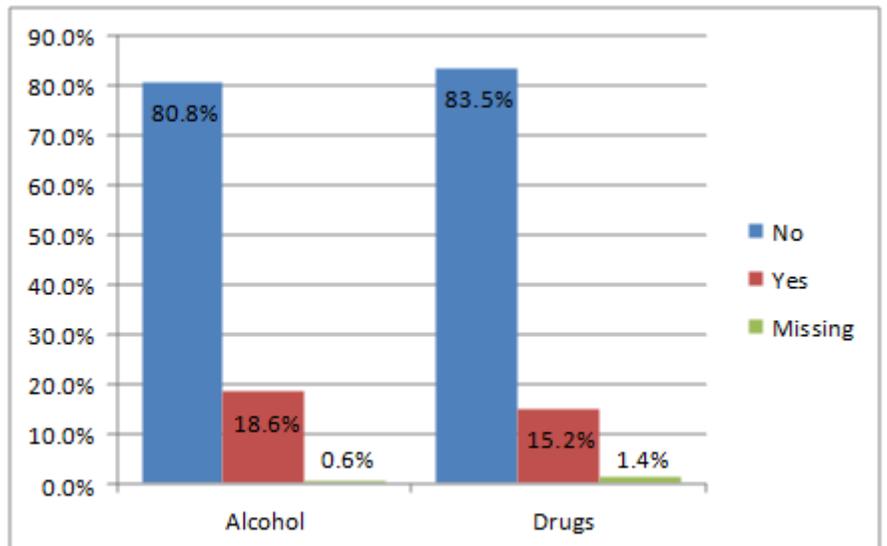
**FIGURE 10: Intention of trauma, rate per 100,000 residents**



The rates of all types of trauma intent are lower in Maricopa County than in other Arizona counties (Figure 10).

**FIGURE 11: Substance use in traumatic injuries in Maricopa County**

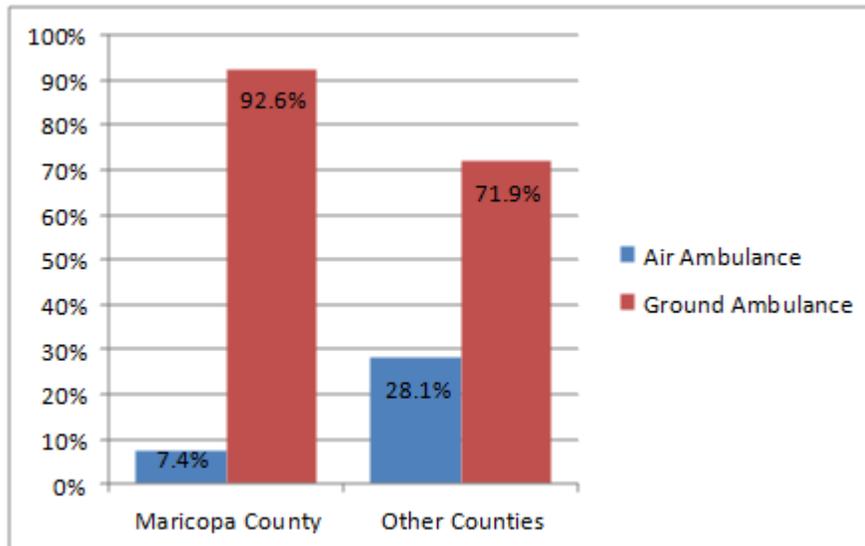
Documented alcohol and drug use was present in 18.6% and 15.2% of traumatic injuries in Maricopa County, respectively (Figure 11).



**FIGURE 12: Frequency of substance use in traumatic injuries in Maricopa County**

| Substance Use |         | Frequency | Percent |
|---------------|---------|-----------|---------|
| Alcohol       | No      | 11,190    | 80.8%   |
|               | Yes     | 2,575     | 18.6%   |
|               | Missing | 81        | 0.6%    |
|               | Total   | 13,846    | 100%    |
| Drugs         | No      | 11,556    | 83.5%   |
|               | Yes     | 2,101     | 15.2%   |
|               | Missing | 189       | 1.4%    |
|               | Total   | 13,846    | 100%    |

**FIGURE 13: Proportion of ground and air ambulance transports in Maricopa County**



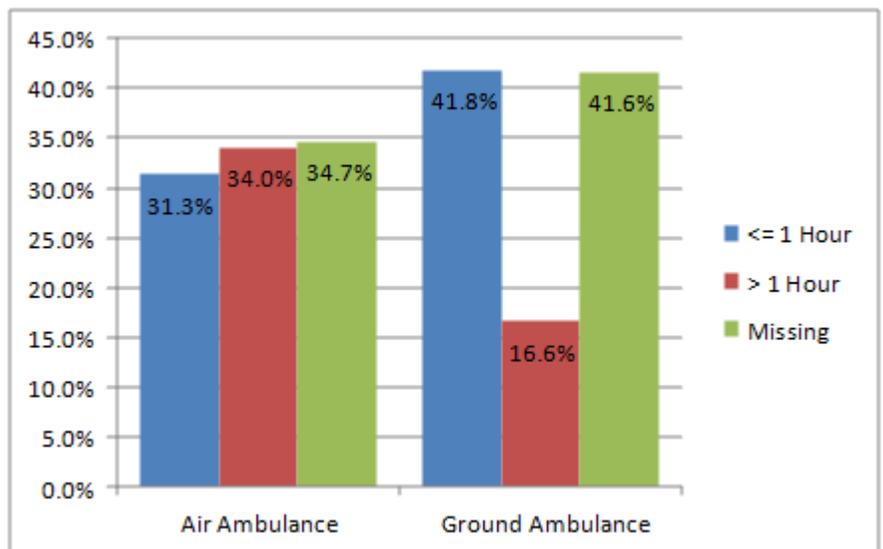
**FIGURE 14: Count of ground and air ambulance transports**

|                 | Air   | Ground | Other | Missing |
|-----------------|-------|--------|-------|---------|
| Maricopa County | 923   | 11,495 | 1,349 | 79      |
| Other Counties  | 3,650 | 9,348  | 2,468 | 36      |

**FIGURE 15: Golden hour by transport type**

The term “golden hour” refers to the hour immediately following traumatic injury. Theoretically, the chance of survival is highest when medical treatment to prevent irreversible internal damage is obtained within this time period.

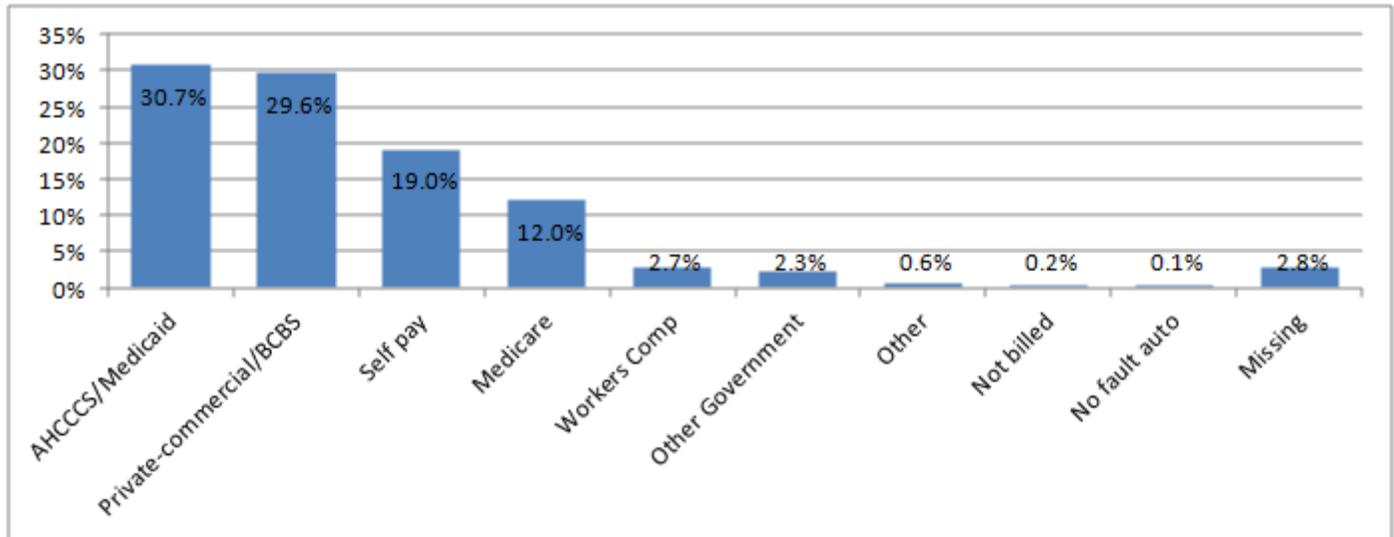
Due to the large amount of missing data on golden hour, results on the proportion of patients arriving at the hospital within one hour are not conclusive.



**FIGURE 16: Count of golden hour by transport type to trauma center**

| Golden Hour | Air Ambulance |         | Ground Ambulance |         | Total  |         |
|-------------|---------------|---------|------------------|---------|--------|---------|
|             | Count         | Percent | Count            | Percent | Count  | Percent |
| <= 1 Hour   | 289           | 31.3%   | 4,807            | 41.8%   | 5,096  | 41.0%   |
| > 1 Hour    | 314           | 34.0%   | 1,904            | 16.6%   | 2,218  | 17.9%   |
| Missing     | 320           | 34.7%   | 4,784            | 41.6%   | 5,104  | 41.1%   |
| Total       | 923           | 100%    | 11,495           | 100%    | 12,418 | 100%    |

**FIGURE 17: Primary payer in Maricopa County**



**FIGURE 18: Count of primary payer in Maricopa County**

| Primary Payer           | Frequency | Percent |
|-------------------------|-----------|---------|
| AHCCCS/Medicaid         | 4,252     | 30.7%   |
| Private-commercial/BCBS | 4,101     | 29.6%   |
| Self pay                | 2,635     | 19.0%   |
| Medicare                | 1,659     | 12.0%   |
| Workers Comp            | 378       | 2.7%    |
| Other Government        | 320       | 2.3%    |
| Other                   | 78        | 0.6%    |
| Not billed              | 22        | 0.2%    |
| No fault auto           | 12        | 0.1%    |
| Missing                 | 389       | 2.8%    |

AHCCCS/Medicaid is the primary payment source for trauma-related hospital visits in Maricopa County (Figures 17 & 18).

The median charge in Maricopa County in 2011 was \$26,545 (Figure 19).

**FIGURE 19: Charges & reimbursement by primary payer in Maricopa County**

| Primary Payer           | Total Charges        | Median Charges  | Total Reimbursement  |
|-------------------------|----------------------|-----------------|----------------------|
| Not documented          | \$702,248            | \$36,521        | \$90,211             |
| Self pay                | \$105,975,114        | \$25,337        | \$5,110,370          |
| AHCCCS/Medicaid         | \$209,132,406        | \$24,736        | \$31,579,865         |
| Private-commercial/BCBS | \$199,502,409        | \$25,593        | \$70,680,586         |
| Other Government        | \$18,290,405         | \$27,216        | \$3,035,396          |
| Medicare                | \$96,970,183         | \$37,175        | \$18,569,766         |
| Other                   | \$3,690,410          | \$34,649        | \$741,088            |
| Not billed              | \$720,817            | \$22,404        | \$14,266             |
| Workers Comp            | \$18,907,497         | \$30,244        | \$7,679,214          |
| No fault auto           | \$653,176            | \$37,631        | \$108,674            |
| <b>Total</b>            | <b>\$654,544,666</b> | <b>\$26,545</b> | <b>\$137,609,435</b> |