Arizona State Trauma Registry

Arizona American Indian Trauma Report

August 2013

Arizona Department of Health Services

Prepared By:

Bureau of EMS & Trauma System

Arizona Department of Health Services

Letter from the ADHS

April 15, 2016

The mission of the Arizona Department of Health Services is "to promote, protect and improve the health and wellness of individuals and communities in Arizona". In 2013, injury was a leading cause of death for all Arizona residents. However, American Indians, living on or off tribal lands, were the most impacted community.

This situation presents us with a great challenge and opportunity to make a positive difference. Fortunately through evidence and practice based initiatives and data collection efforts, we can study, measure, and most importantly, work together to reduce the prevalence of traumatic injuries in Arizona's American Indian communities.

This collaborative reporting effort, between representatives of the Arizona tribal health care community and the Arizona Department of Health Services is presented with the goal of assisting in the reduction of trauma within the Arizona American Indian community. The steps ahead will require coordinated efforts and support. We look forward to our work together.

Sincerely,

Michael Allison
Native American Liaison
Division of Policy &
Intergovernmental Affairs

Terry Mullins
Bureau Chief
EMS and Trauma System

Table of Contents

Executive Summary **1**

Recommendations **2**

Impact of Traumatic Injury **3**

Mortality 3

Years of Potential Life Lost 4

Trauma Charges 5

Demographics **6**

Race-specific Trauma Rates 6

Gender-specific Trauma Rates 7

Age-specific Trauma Rates 8

Injury Characteristics **9**

Intent of Injury 9

Mechanism of Injury 10

Preventable Risk Factors **11**

Substance Use 11

Substance Use by Mechanism 12

Restraint Use 13

Access to Care **14**

Location 14

Trauma Center Level 15

Acknowledgements **16**

Glossary **18**

Appendix A (Data & Methods) **20**

Appendix B (Trauma Centers & Tribal Lands) **21**

Appendix C (ASTR Inclusion Criteria) **22**

Executive Summary

In 2013, American Indians sustained many of Arizona's preventable traumatic injuries. Despite making up only 5 percent of Arizona's population, the American Indian community accounted for over 11 percent of traumatic injury cases.

The purpose of this report is to provide data that can be used to develop evidence/practice based, targeted interventions that focus on preventing traumatic injuries among Arizona American Indian tribes.

Recommendations

- **Incentivize and expand data collection efforts** in tribal communities.
- **Re-distribute trauma funding** to programs that focus on cost effective primary and secondary prevention among American Indians. Properly executed public health interventions save $3-7 for every dollar invested.
- **Mobilize partnerships** among stakeholders.

Report Snapshot

Compared to all other racial/ethnic groups, Arizona American Indians living on or off of tribal lands have:

- Two times higher rates of traumatic injury
- Nine times higher rates of homicide
- Three times higher rates of suicide
- 35% more traumas involving alcohol use
- 22% less safety restraint use in motor vehicle crashes

Note: This report uses data from the Arizona State Trauma Registry (ASTR). Due to incomplete reporting, these data likely under-estimate the true burden of traumatic injury among Arizona American Indians.

Recommendations

Based on the data described in this report, and input from the Arizona American Indian Trauma Report Workgroup, the following recommendations to reduce trauma among American Indians in Arizona have been made:

Incentivize and Expand Data Collection Efforts

Many tribal organizations and agencies collaborate on programs designed to improve the health and wellness of Arizona American Indians. However, tribal resources are limited. Supporting tribal data collection by providing incentives and focused interventions may reduce American Indian trauma.

Re-distribute Trauma Funding

Instead of a solely focusing on a Fee For Service treatment model, funding and resources should focus on proven primary prevention activities that will allow tribal communities to create targeted outreach programs that reduce risky behaviors and providing healthy alternatives.

Mobilize Partnerships

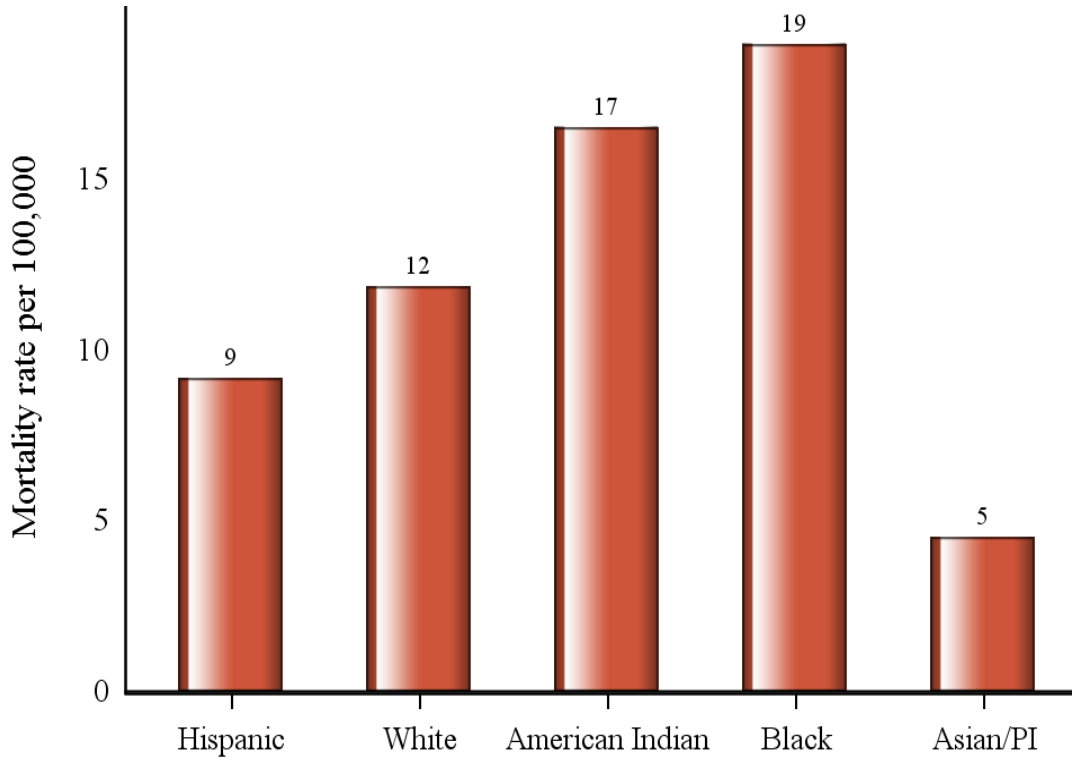
In order to reduce preventable injuries, support from tribal, state, and federal, and local public health professionals will be needed. A coalition of tribal, state and federal stakeholders may help to organize intervention efforts and progress the development of American Indian trauma programs. In that effort they may help to identify specific promising practices, such as, policies, services, and focused interventions that have positive results that could be applied to tribal communities.

Impact of Traumatic Injury

Mortality

In 2013, there were 3,702 traumatic injuries among American Indians in Arizona. Of those, 51 were fatal. As a result, American Indians had the second highest trauma mortality rate in the state (17 deaths per 100,000) when compared to other racial/ethnic groups. Blacks, had the highest trauma mortality rate with 19 deaths per 100,000 Arizona Residents.

FIGURE 1 Race-specific trauma mortality rates per 100,000 Arizona residents: Arizona State Trauma Registry, 2013

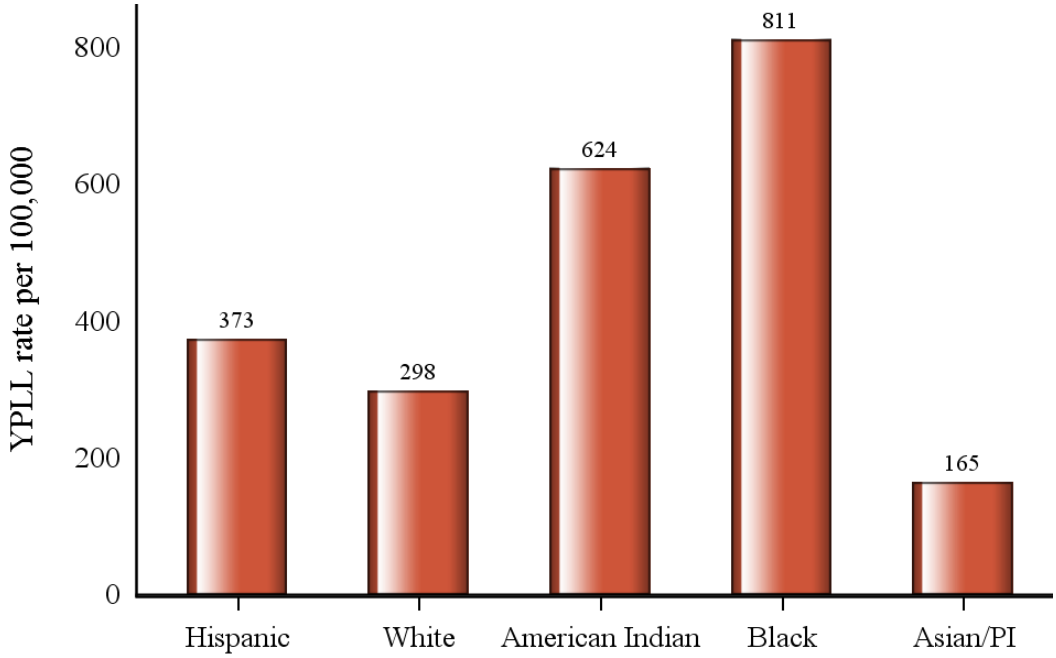


Note: Rates standardize populations to allow for direct comparisons between groups (Appendix A). PI = Pacific Islander

Impact of Traumatic Injury
Years of Potential Life Lost (YPLL)

In 2013, the YPLL rate for Arizona American Indians (624 per 100,000) was second only to blacks (811 per 100,000). Major factors that may be contributing to higher YPLL rates among these populations are the mechanism, severity, and age of injury.

FIGURE 2 Race-specific YPLL rates per 100,000 Arizona residents: Arizona State Trauma Registry, 2013



Note: YPLL measures the societal impact of premature death (Appendix A).

Impact of Traumatic Injury

Trauma Charges

Hospital trauma charges for Arizona American Indians totaled $125,174,466 in 2013. The majority of charges were billed to AHCCCS/Medicaid (65.9%).

TABLE 1 American Indian hospital trauma charges, total and by payment method: Arizona State Trauma Registry, 2013

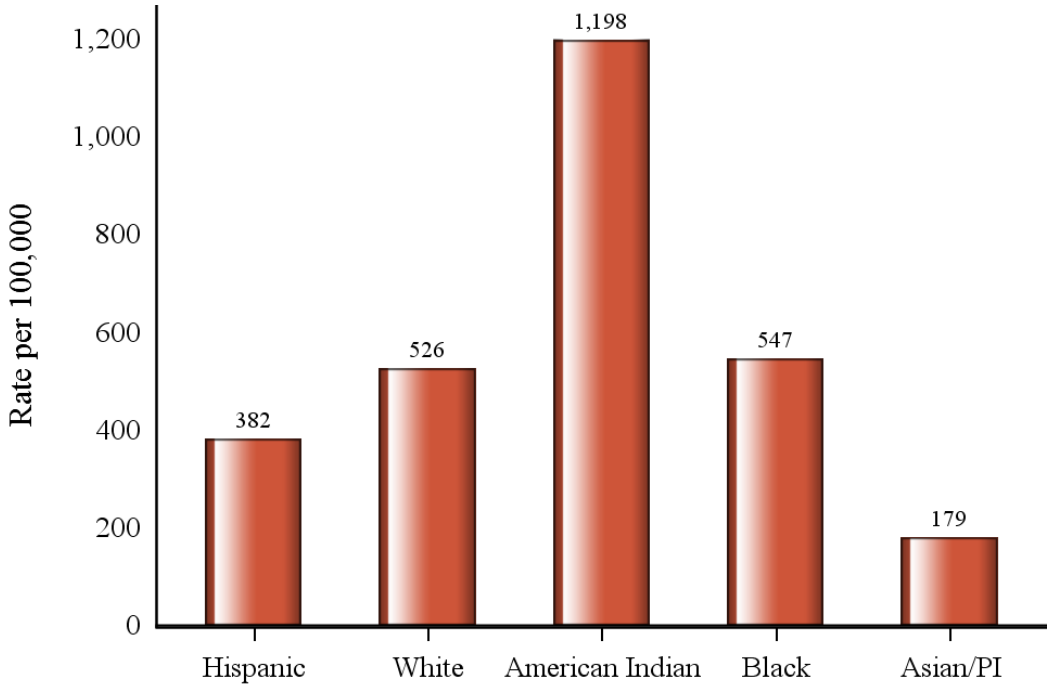
Primary payment source	Total hospital charges	Percent of the charges
Self pay	$13,828,571	9.2%
AHCCCS/Medicaid	$80,891,989	65.9%
Private	$13,102,346	9.3%
Medicare	$13,574,967	9.3%
Other	$3,776,573	6.0%
Total	**$125,174,446**	**—**

Note: AHCCCS = Arizona Healthcare Cost Containment System

Demographics
Race-Specific Trauma Rates

In 2013, American Indians made up approximately 4.7% of Arizona's population, but accounted for over 11% of traumatic injury cases. The rate of traumatic injury among American Indians in 2013 was 1,198 per 100,000 Arizona residents, over twice that of any other racial/ethnic group.

FIGURE 3 Race-Specific trauma rate per 100,000 Arizona residents: Arizona State Trauma Registry, 2013

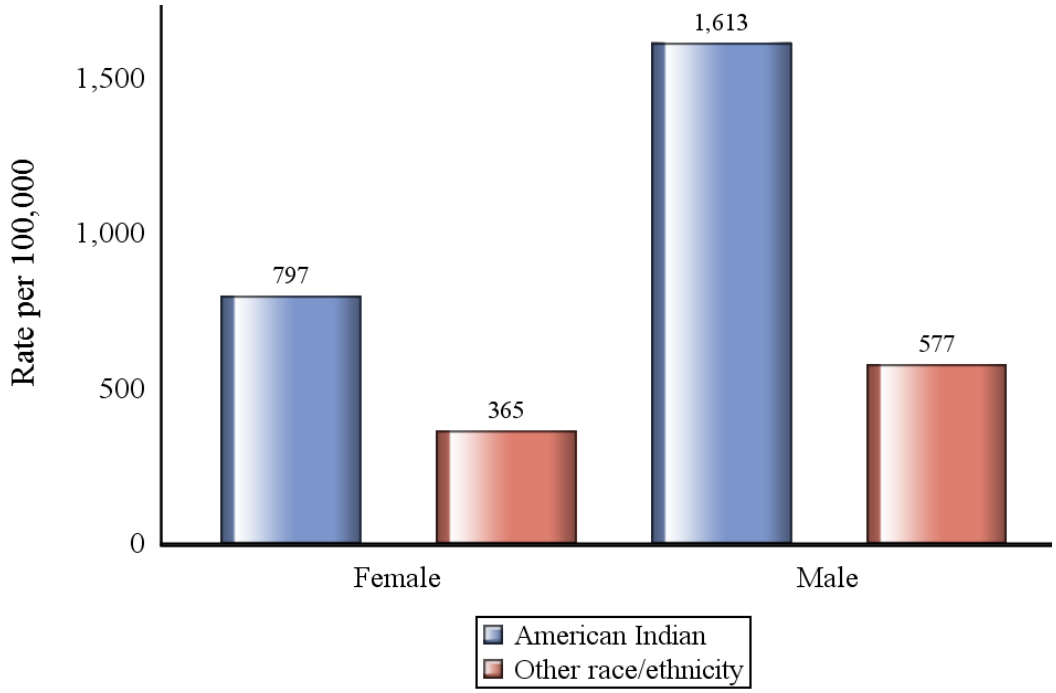


Note: PI = Pacific Islander

Demographics
Gender-Specific Trauma Rates

The rate of traumatic injury among American Indian males was nearly three times that of other racial/ethnic groups. The rate of traumatic injury among American Indian females was two times higher than that of other racial/ethnic groups.

FIGURE 4 Gender-Specific trauma rate per 100,000 Arizona residents, AI vs. Other: Arizona State Trauma Registry, 2013

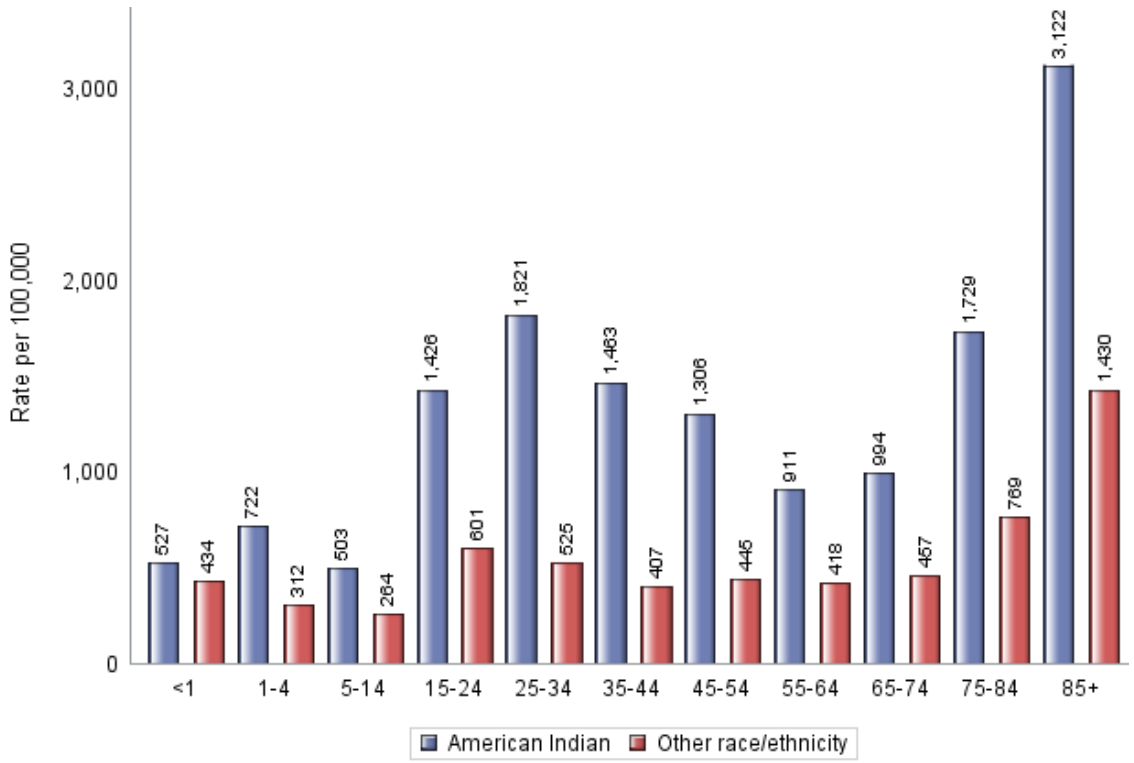


Note: AI = American Indian

Demographics
Age-Specific Trauma Rates

American Indians had higher rates of traumatic injury across all age categories. The highest rate was observed among the elderly American Indian Population (3,122 per 100,000).

FIGURE 5 Age-Specific trauma rate per 100,000 Arizona residents, AI vs. Other: Arizona State Trauma Registry, 2013

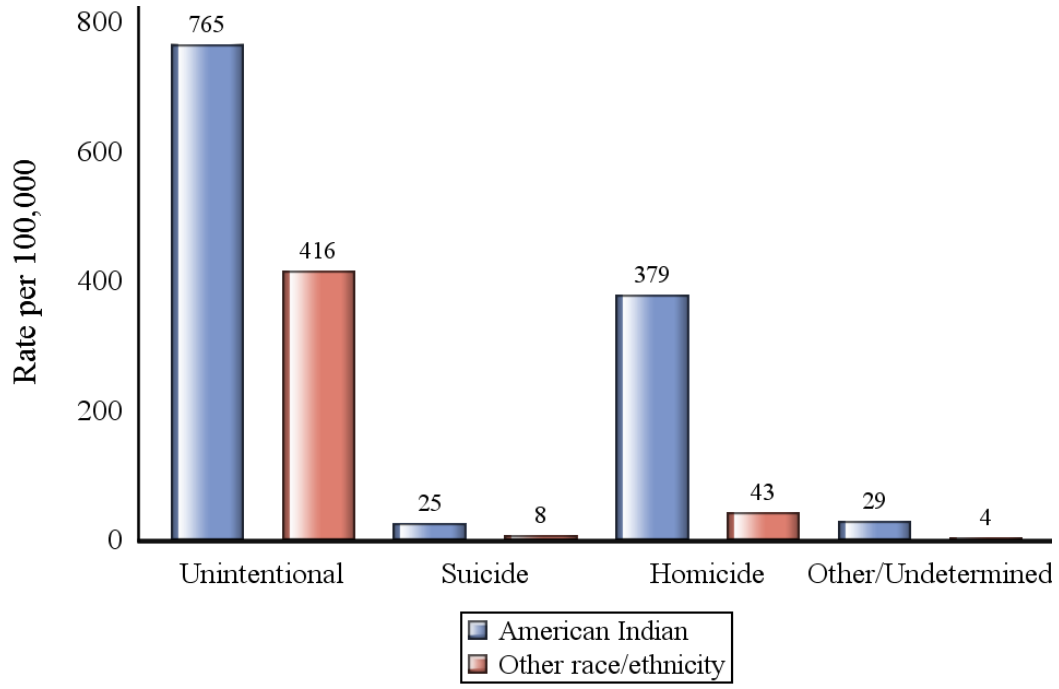


Injury Characteristics
Intent of Injury

Most notably, the rate of homicide among American Indians was nine times higher than other racial/ethnic groups. Additionally, the rate of suicide was three times higher among American Indians than other racial/ethnic groups.

American Indians had higher rates of traumatic injury as compared to other racial/ethnic groups, regardless of injury intent.

FIGURE 6 Trauma rate per 100,000 Arizona residents by injury intent: Arizona State Trauma Registry, 2013

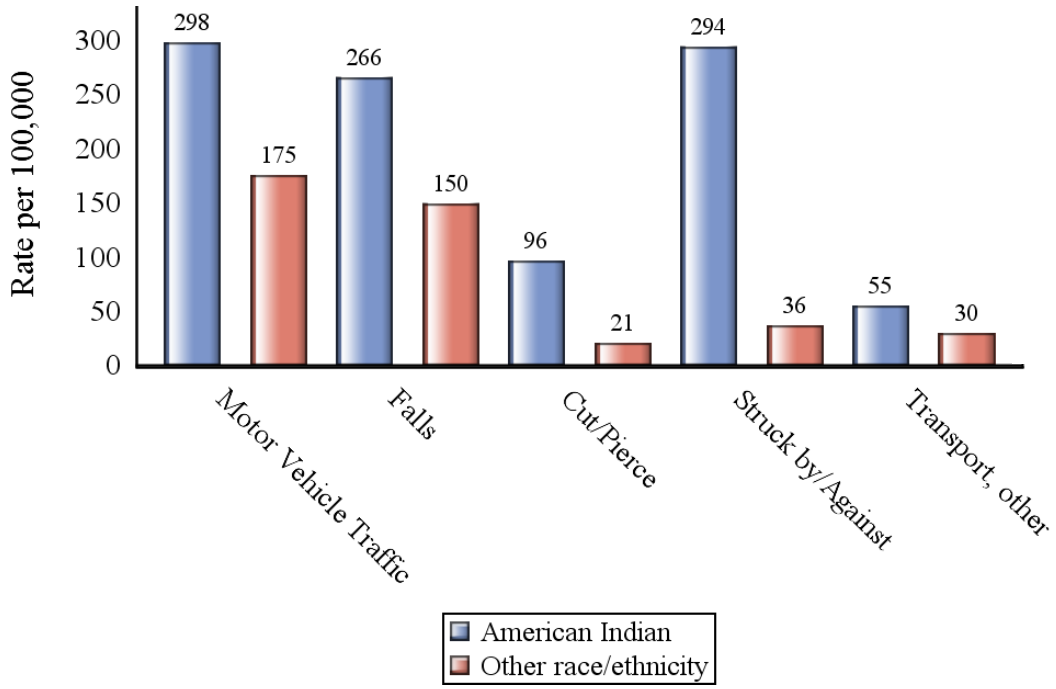


Note: Intent of injury describes whether the injury was caused by an act carried out on purpose by oneself or by another person, with the goal of injuring or killing (Glossary).

Injury Characteristics
Mechanism of Injury

The top five mechanisms of traumatic injury for American Indians in 2013 were: Motor Vehicle Accidents, Struck by/Against, Falls, Cut/Pierce, and Other Transportation. American Indians had higher rates of trauma across all five mechanisms when compared to other racial/ethnic groups. The greatest disparity in rate was observed among Struck by/Against traumas.

FIGURE 7 Trauma rate per 100,000 Arizona residents by mechanism of injury: Arizona State Trauma Registry, 2013

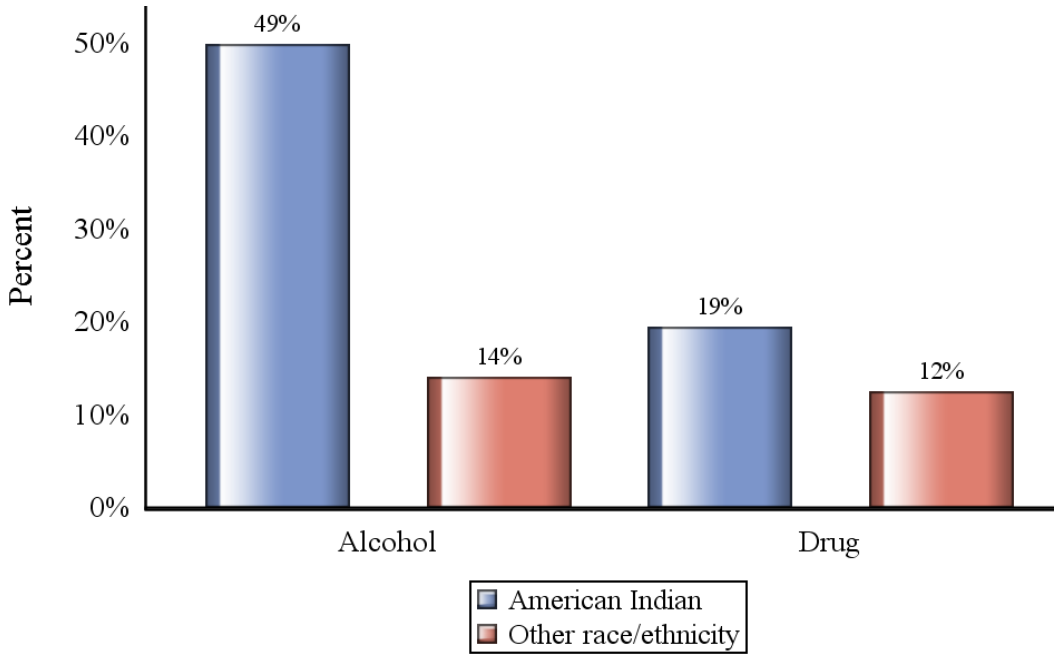


Note: The cause, or mechanism, of injury is the way in which the person sustained the injury; how the person was injured; or the process by which the injury occurred (Glossary).

Preventable Risk Factors
Substance Related Trauma

Alcohol use was suspected in 49% of traumatic injuries involving American Indians, compared to 14% of injuries involving other racial/ethnic groups. American Indians also had a higher percentage of trauma cases related to drug use.

FIGURE 8 Proportion of alcohol and drug related traumas, AI vs. Other: Arizona State Trauma Registry, 2013

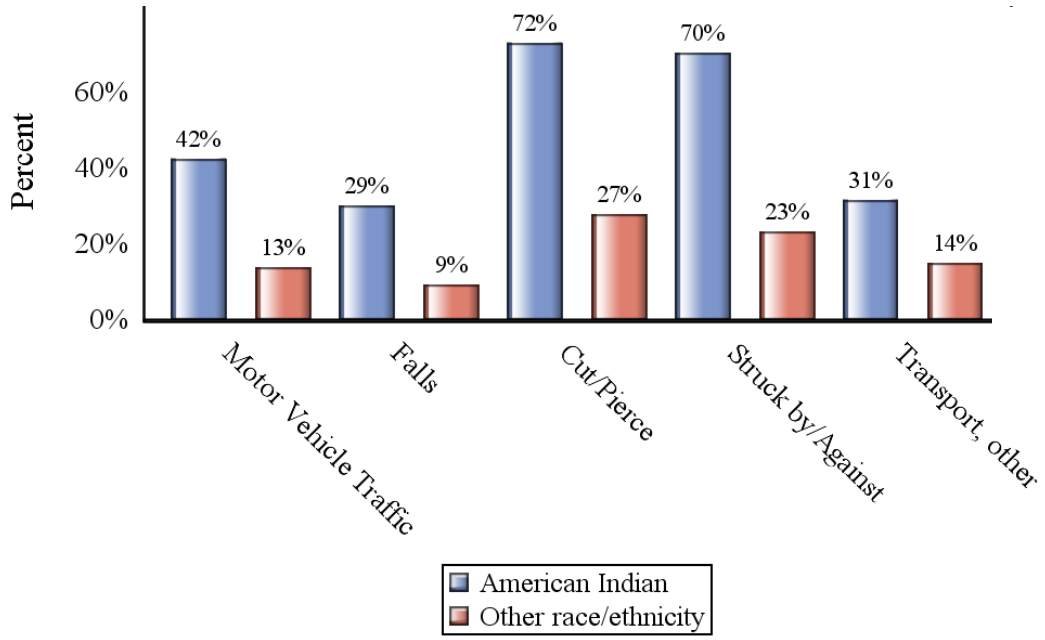


Note: Alcohol and Drug related trauma include both suspected and confirmed cases (Glossary).

Preventable Risk Factors
Substance Related Trauma by Mechanism

The percent of suspected alcohol use among American Indians was higher compared to other racial/ethnic groups regardless of injury mechanism. Among American Indians, the proportion of alcohol related trauma was highest for Cut/Pierce and Struck by/ Against.

FIGURE 9 Proportion of alcohol and drug related traumas by injury mechanism , AI vs. Other: Arizona State Trauma Registry, 2013



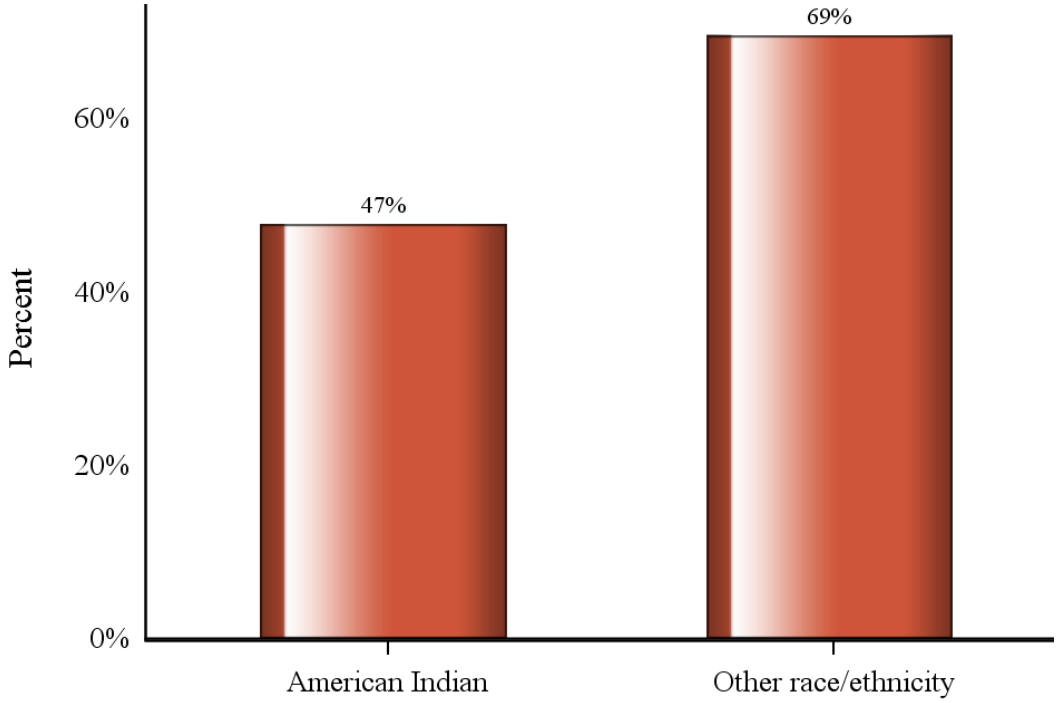
Note: Alcohol and Drug related trauma include both suspected and confirmed cases (Glossary).

Preventable Risk Factors

Restraint Use

Safety restraint use in motor vehicle crashes, was less common among American Indians than among other racial/ethnic groups. When alcohol was involved, restraint use was decreased by 23% among American Indians. The use of safety restraints reduces the risk of serious injury and death by about half*.

FIGURE 10 Proportion of restrain use in motor vehicle crashes, AI vs. Other: Arizona State Trauma Registry, 2013

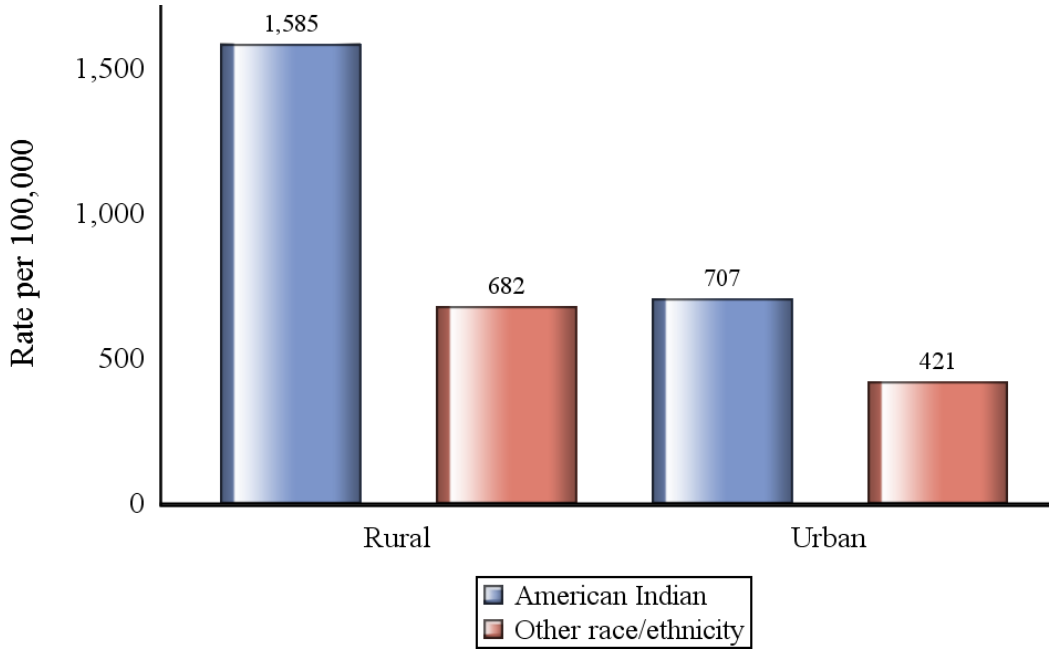


Note: "Seat Belts: Get the Facts." *Centers for Disease Control and Prevention.* Retrieved 7 Oct. 2014. Web. 30 July 2015. <http://www.cdc.gov/Motorvehiclesafety/seatbelts/facts.html>.

Access to Care
Rural/Urban Location

Fifty-four percent of Arizona's American Indian population lived in rural counties in 2013, as compared to 14% of residents from other racial/ethnic groups. The rate of traumatic injury among rural-dwelling American Indians was over two times higher than that of urban dwelling American Indians and 72% of traumas involving American Indians occurred in rural areas.

FIGURE 11 Trauma rate per 100,000 Arizona residents by rural/urban injury location, AI vs. Other: Arizona State Trauma Registry, 2013



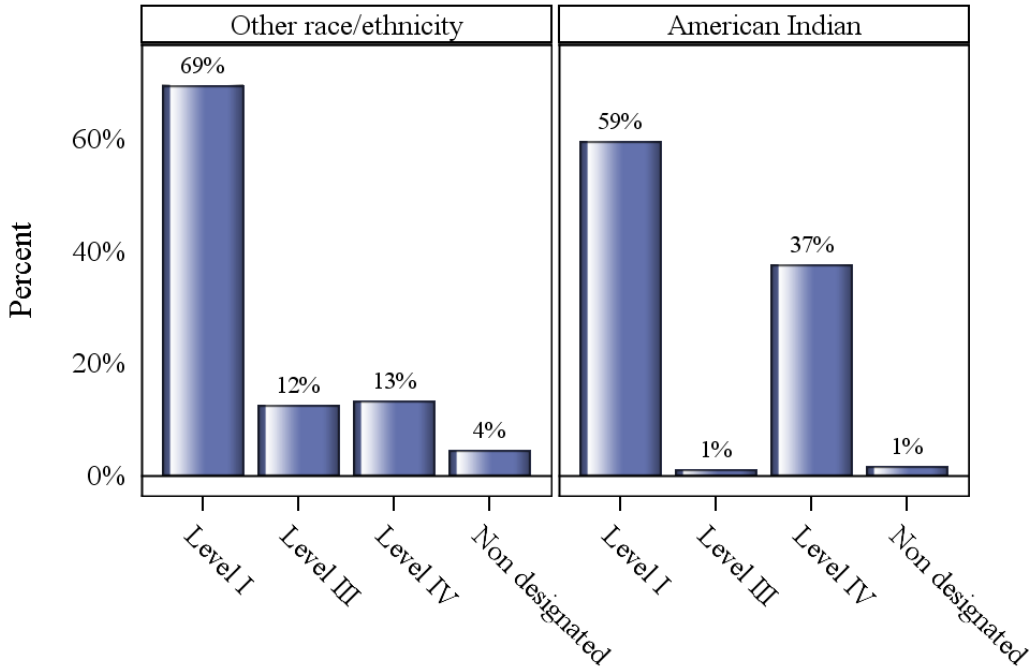
Note: Definition of urban/rural based on Arizona Health and Vital Statistics data (Glossary).

Access to Care

Trauma Center Level

In Arizona, most Level IV trauma centers are located in rural counties while all Level I trauma centers are located in urban counties. Because of this, a larger proportion of American Indians were transported to a Level IV trauma center while a larger proportion of other racial/ethnic groups were transported to Level I trauma centers. For more information on Trauma Center Levels see Glossary (page 22).

FIGURE 12 Proportion of trauma patients transported by trauma center level, AI vs. Other: AI vs. Other: Arizona State Trauma Registry, 2013



Note: Definition of urban/rural based on Arizona Health and Vital Statistics data (Glossary).

Acknowledgments

We would like to acknowledge the twenty-two American Indian tribes in Arizona and the following individuals for participating in the creation of this report.

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Arizona Department of Health Services	Michael Allison Robyn Blust, MPH Vatsal Chikani, MPH Terry Mullins, MPH, MBA Rogelio Martinez, MPH Jennifer Dudek, MPH Tomi St. Mars, MSN, RN, CEN, FAEN
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Hualapai Tribe	Sandra Irwin
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Navajo Division of Public Health	Del Yazzie, MPH
San Carlos Apache Tribe	Anita Brock
White Mountain Apache Tribe	Debra Sanchez

Glossary

Trauma Charges: the final amount (in whole dollars) billed for this hospital visit.

Intent: describes whether an injury was caused by an act carried out on purpose by oneself or by another person(s), with the goal of injuring or killing.

Unintentional: injury that is not inflicted by deliberate means.

Suicide: injury resulting from a deliberate act inflicted by oneself with the intent of taking one's own life or with the intent to harm oneself.

Homicide: injury from an act of violence where physical force by one or more persons is used with the intent of causing harm, injury, or death to another person.

Other/Undetermined: injuries with unknown intent.

Mechanism: is the way in which a person sustained the injury; how the person was injured; or the process by which the injury occurred.

Motor Vehicle Traffic: injury to a driver or passenger of a motor vehicle caused by a collision, rollover, crash or some other event involving another vehicle, an object, or a pedestrian.

Falls: injury received when a person descends abruptly due to the force or gravity and strikes a surface at the same or lower level.

Cut/Pierce: injury resulting from an incision, slash, perforation, or puncture or sharp instrument, weapon, or object.

Struck by/Against: injury resulting from being struck by (hit) or crushed by a human, animal, or inanimate object or force other than a vehicle or machinery.

Transport, Other: injury to a person boarding, alighting, or riding in or on all other transport vehicles.

Alcohol Use: any indication of use through self-report or through blood alcohol testing preformed at a hospital, regardless of level of impairment.

Glossary

Drug Use: any indication of use through self-report or through urine analysis performed at a hospital, regardless of level of impairment.

Safety Restraint Use: protective devices in use or worn by a patient at the time of the injury event. Use may be reported or observed.

Rural/Urban: Categorization of urban/rural based on Arizona Health and Vital Statistics data:

> **Rural:** Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Santa Cruz, and Yavapai counties
>
> **Urban:** Maricopa, Pinal, Pima and Yuma counties.

Trauma Centers: hospitals equipped to handle major trauma, classified by the resources they have available. Designation is assigned by the state.

> **Level I:** The highest level of trauma care; equipped to provide total care for every aspect of an injury from prevention to rehabilitation.
>
> **Level III:** provide prompt assessment, resuscitation, emergency operations, and stabilization and also arrange for possible transfer to a facility that can provide definitive trauma care.
>
> **Level IV:** provide advanced trauma life support prior to transfer of patients to higher level trauma centers. Provides evaluation, stabilization, and diagnostic capabilities to injured patients.
>
> **Non-designated:** hospitals that are not designated trauma centers but that submit data to the Arizona State Trauma Registry.

Appendix A

Data Source

In order obtain information on trauma related injuries, the Bureau of Emergency Medical Services & Trauma System (BEMSTS) queried 2013 data from the Arizona State Trauma Registry (ASTR). The ASTR inclusion criteria can be found in Appendix C. These data are collected from all designated trauma centers, and from participating non-designated hospitals in Arizona. In 2013, there were a total of 38 facilities reporting to ASTR, including 8 Level I Trauma Centers, 3 Level III Trauma Centers, 25 Level IV Trauma Centers, and 2 non-designated hospitals. Because these data are restricted to participating agencies, patients transported out of the state and those transported to non-participating hospitals are missed. Injuries reported to ASTR must meet specific inclusion criteria which limit the data to more severe injury cases. As a result, these data may under-estimate the actual figures and only tell part of the story.

Definition of Race/Ethnicity

For this report, race and ethnicity were bridged and collapsed into five categories; White, Black, Hispanic, Asian/Pacific Islander (PI) and American Indian (AI). When an individual identified as both Hispanic and any other race, that person was included in the Hispanic race/ethnic category only. Therefore, patients who identified as both Hispanic and AI were coded as Hispanic only. Race/ethnicity categories were further collapsed in order to compare AI to an aggregate of all other racial/ethnic groups. Because of the way race and ethnicity are combined, this report likely underestimates the true number of traumatic injury cases among American Indians in Arizona.

Rates

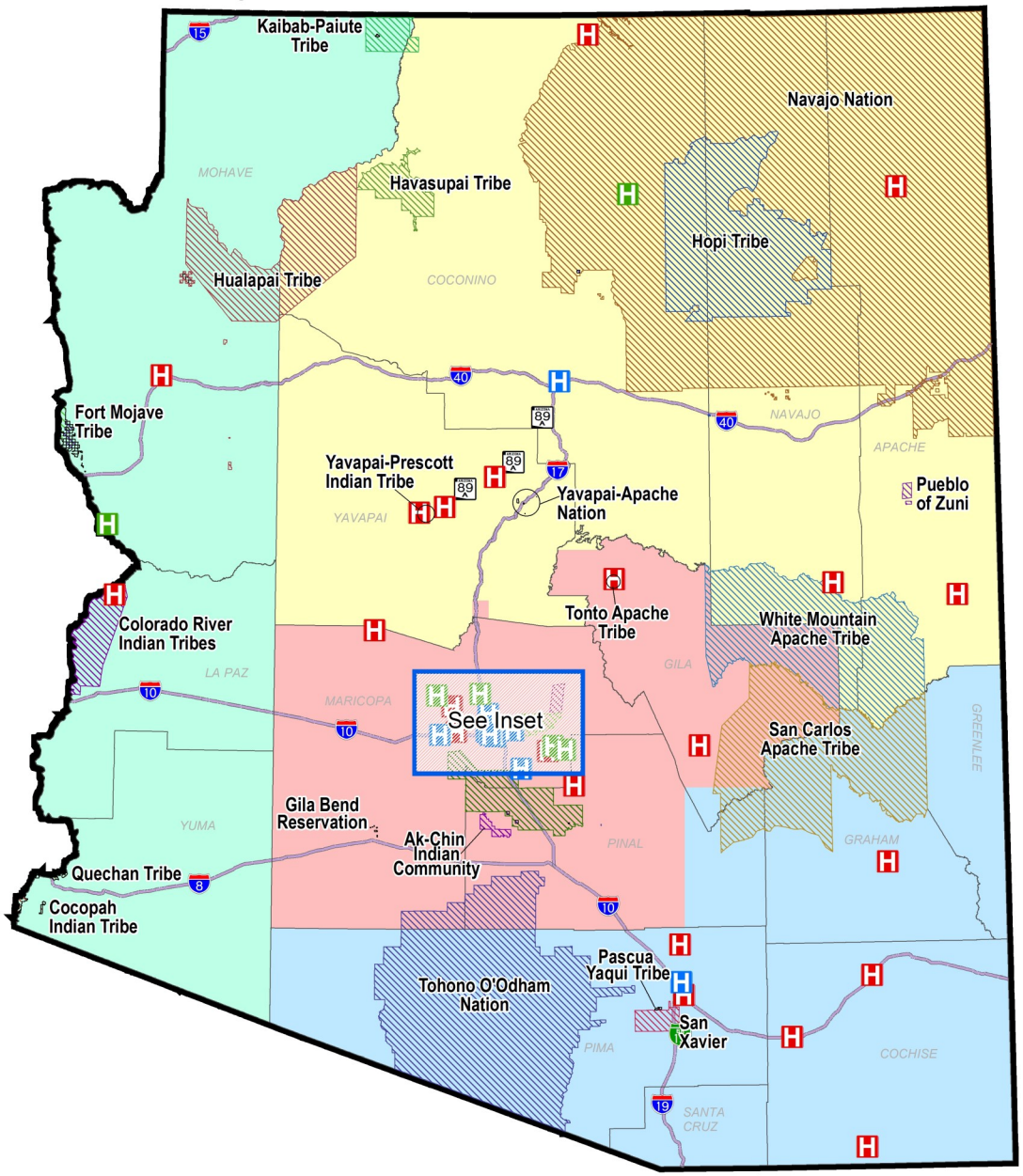
Rates measure the frequency with which an event occurs in a defined population in a defined time. All trauma rates were calculated per 100,000 Arizona residents using 2013 population denominators from the Arizona Health Status and Vital Statistics database.

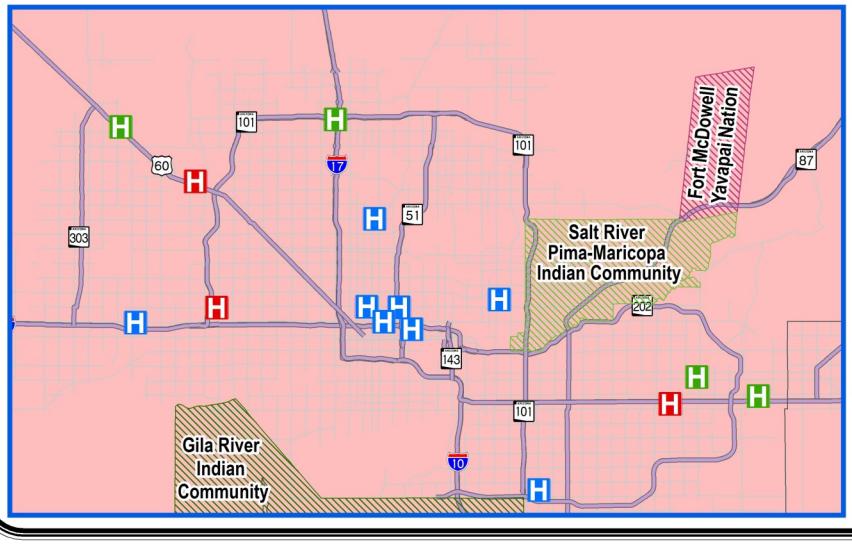
Years of Potential Life Lost

Years of Potential Life Lost (YPLL) measures the societal impact of premature death by estimating the average number of years a person would have lived if he or she had not died prematurely. Here YPLL was calculated by subtracting the age at death from the predetermined endpoint of 75 years.

Appendix B

TRAUMA CENTERS, EMS REGIONS AND AMERICAN INDIAN TRIBES





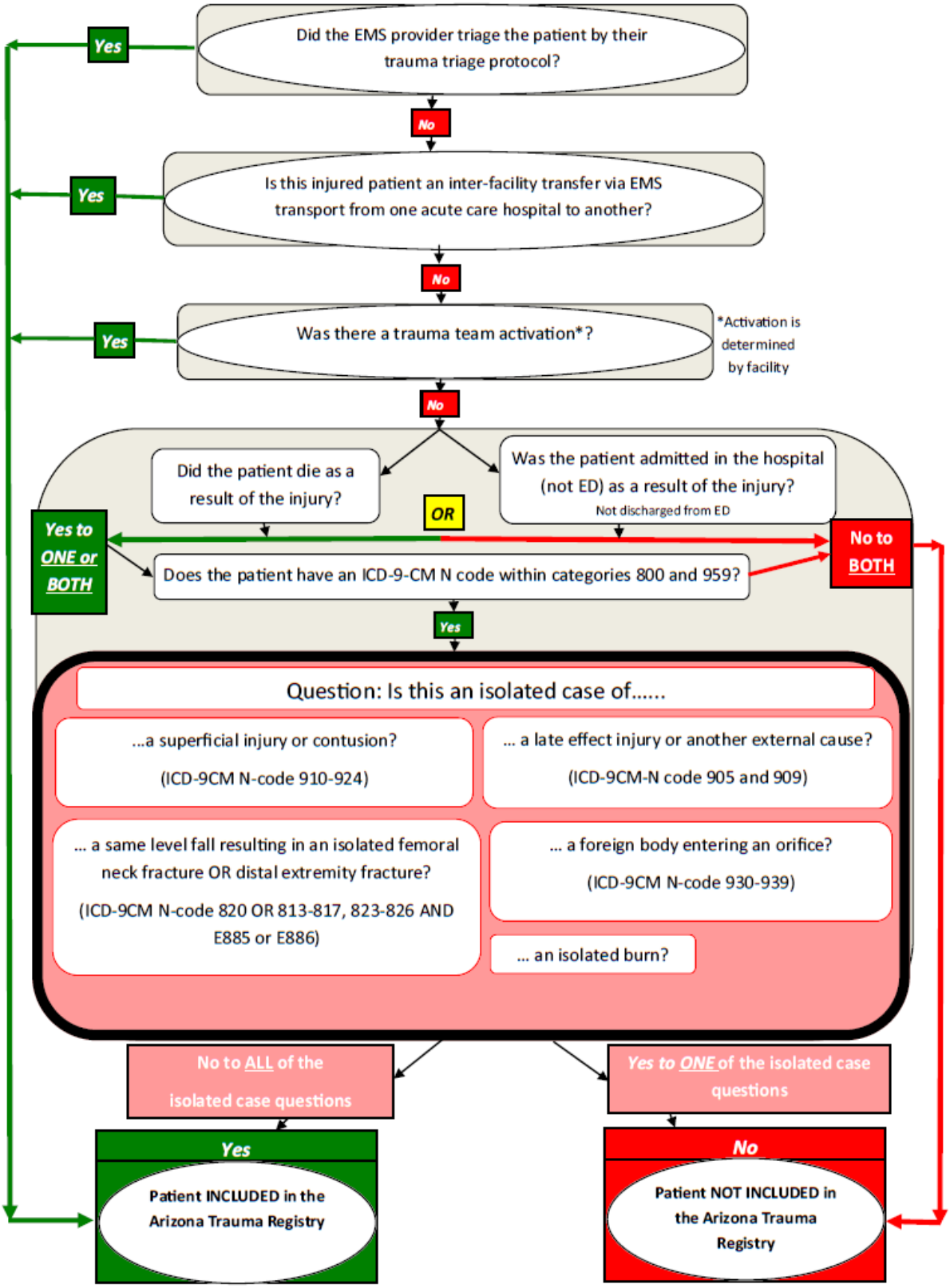
Trauma Center

- Level I
- Level III
- Level IV

EMS Regions

- Central
- Northern
- Southeastern
- Western

Bureau of EMS & Trauma System
Arizona Department of Health Services

Appendix C

2013 Arizona Trauma Registry Inclusion Criteria