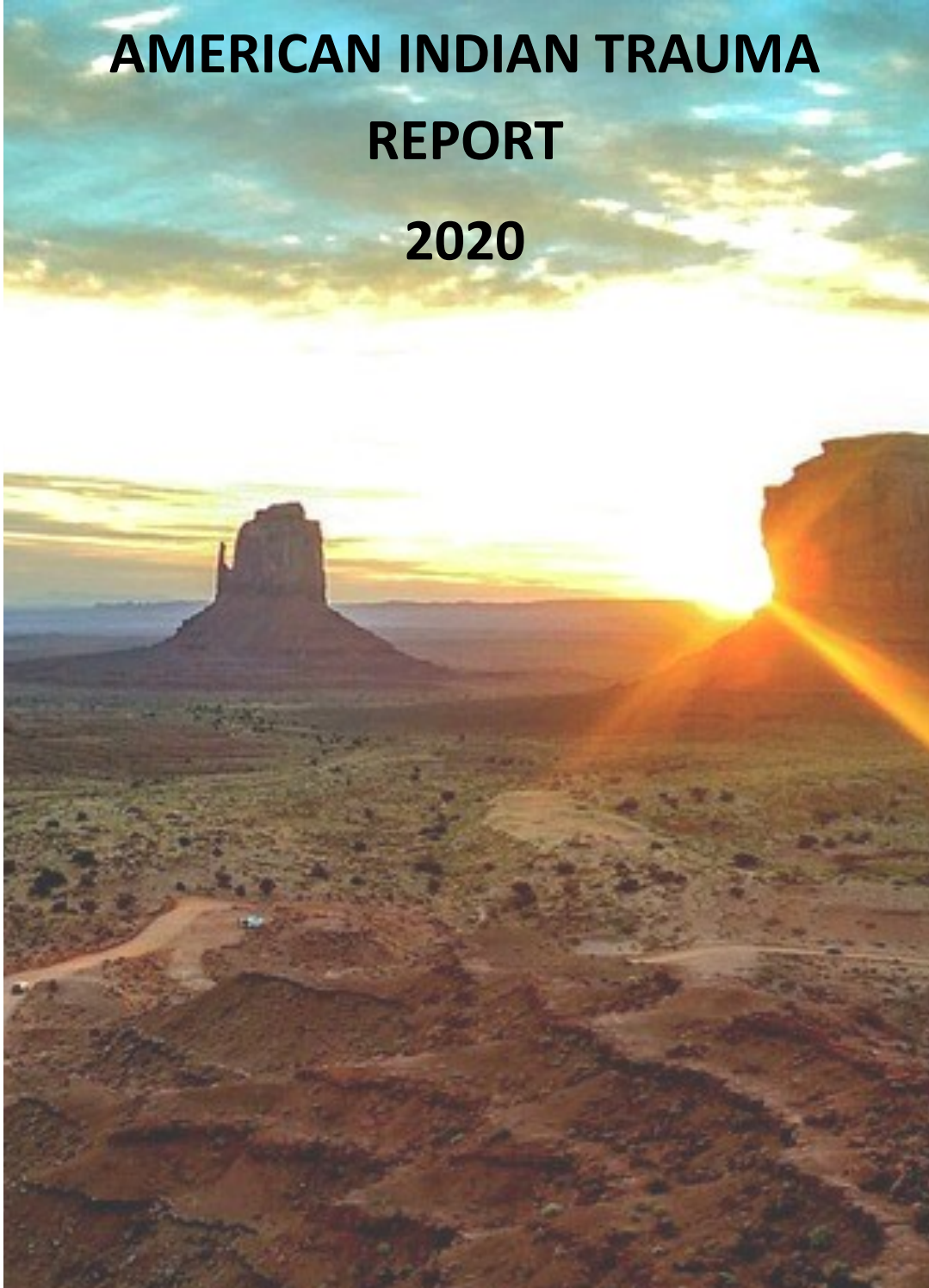




ARIZONA DEPARTMENT
OF HEALTH SERVICES

BUREAU OF EMERGENCY
MEDICAL SERVICES AND
TRAUMA SYSTEM

AMERICAN INDIAN TRAUMA REPORT 2020



August 1, 2020

The mission of the Arizona Department of Health Services (ADHS) is “to promote, protect and improve the health and wellness of individuals and communities in Arizona.” The ADHS Bureau of EMS and Trauma System prepared this document to highlight the disproportionate impact of injury on Arizona’s American Indian communities. Because many reservations in Arizona are rural, Arizona American Indians are doubly impacted by higher rates of traumatic injury and by delayed access to trauma care.

This presents both a great challenge and great opportunity to make a positive difference. As Arizona’s trauma system has matured, more hospitals that serve the rural parts of our state have become designated as trauma centers. Efforts by the tribal communities to increase ambulance service Medical reimbursement rates have been moving forward with one tribal EMS agency receiving approval for a State Ambulance Certificate of Necessity.

Reducing the traumatic injury rate will take time, but we welcome the opportunity to partner with Arizona’s American Indian community to address this important public health problem.

Sincerely,

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In 2018, Arizona's trauma centers treated 54,273 people, with an all-trauma injury rate of 767 per 100,000. There were 4,357 traumatic injuries among American Indians in Arizona. Of those, 59 were fatal. As a result, American Indians had the highest trauma mortality rate in the state (26 deaths per 100,000) when compared to other racial/ethnic groups. Because some tribal lands border or overlap other states, an unknown number of members who suffer from trauma are treated outside of Arizona and are not included in this report. The Arizona State Trauma Registry (ASTR) is limited to injury and deaths that occurred within [healthcare facilities that submit data](#) to the ASTR; therefore, these rates only show a portion of the true trauma morbidity and mortality in Arizona.

American Indians made up approximately 4.7% of Arizona's population, but accounted for over 8% of traumatic injury cases. The rate of traumatic injury among American Indians was 1,459 per 100,000 Arizona residents, compared to 905 per 100,000 among Whites.

The trauma related Years of Potential Life Lost (YPLL) rate for Arizona American Indians was 811 per 100,000) as compared to 363 per 100,000 among Whites. Major factors that may be contributing to higher YPLL rates among the Arizona American Indian populations are the mechanism, severity, and age of injury.

Trauma related hospital trauma charges for Arizona American Indians totaled \$138,686,034. The majority of charges were billed to AHCCCS/Medicaid (65%).

American Indians had higher rates of traumatic injury across all gender and age categories. The highest rate was observed among the elderly American Indian population (5,222 per 100,000).

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 Cut/Pierce and Struck by/Against traumas. The rate of homicide among American Indians was eight times higher, and the rate of suicide was three times higher, than other racial/ethnic groups.

Alcohol use was suspected in 43% of traumatic injuries involving American Indians, compared to 11% of injuries involving other racial/ethnic groups. Among American Indians, the proportion of alcohol related trauma was highest for Cut/Pierce and Struck by/ Against.

Safety restraint use for motor vehicle occupants involved in a trauma was less common among American Indians (53%) than among other racial/ethnic groups (68%).

The rate of traumatic injury among American Indians was higher in rural areas of the state (1,790 per 100,000) than in urban areas (942 per 100,000).

The proportion of American Indians transported to Level I trauma centers was slightly lower compared to other racial/ethnic groups.

BACKGROUND

The purpose of this report is to describe traumatic injury among the Arizona American Indian population using the Arizona State Trauma Registry (ASTR). The intent is to identify specific areas of need in order to develop and strengthen local injury prevention programs and target interventions that focus on preventing traumatic injuries among Arizona American Indian tribes.

The Bureau of Emergency Medical Services (EMS) and Trauma System is responsible for collecting, analyzing and reporting on data obtained from designated trauma centers and participating EMS agencies to enhance the EMS and Trauma System in Arizona. In 2018, there were 49 hospitals submitting data to the ASTR including thirteen (13) Level I trauma centers, seven (7) Level III trauma centers, twenty-six (26) Level IV trauma centers, and three (3) non-designated hospitals.¹

All trauma centers are required to report any injuries meeting the ASTR inclusion criteria (Appendix A). All the Level I trauma centers in Arizona are located in urban areas of the state, including eleven in Maricopa County, one in Coconino County and one in Pima County.

METHODS

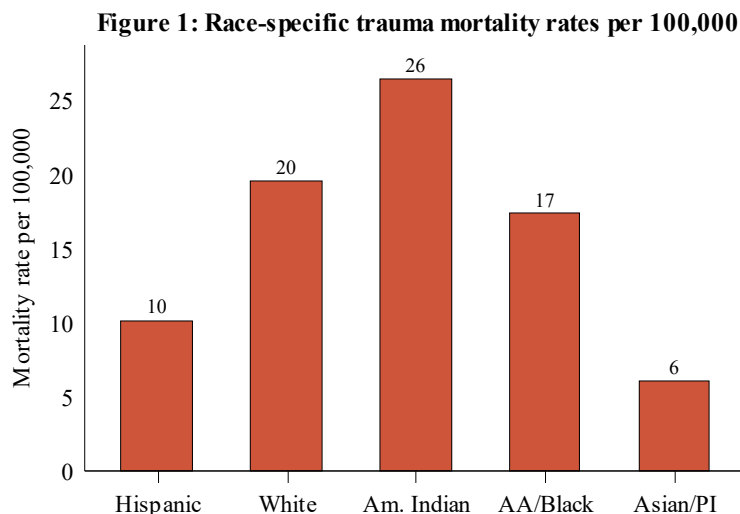
This report analyzed incidents of traumatic injury reported to the ASTR with an Emergency Department/Hospital Arrival Date between January 1, 2018 and December 31, 2018. The report gives an overview of trauma among American Indians describing patient demographics, injury characteristics, and trauma risk factors.

Race/ethnicity was divided into two groups for comparison purpose, 1) American Indian/Alaska Native, and 2) Other race/ethnicity (White, African American/Black, Asian/Pacific Islander, and Hispanic). Descriptive statistics were used to show the distribution of traumatic injury in Arizona as well as differences over time. When appropriate, rates and 95% confidence intervals (CIs) were calculated per 100,000 Arizona residents using 2018 population denominators from the Arizona Health Status and Vital Statistics database.² If the CIs of two rates do not overlap, the difference between the rates is considered statistically significant (alpha 0.05).

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.

1. <https://www.azdhs.gov/preparedness/emergency-medical-services-trauma-system/index.php#data-quality-assurance-asttr>
2. Arizona Department of Health Services, Population Health and Vital Statistics. Population Denominators: 2018. <http://pub.azdhs.gov/health-stats/menu/info/pop/index.php>

TABLE 1: MORTALITY RATE

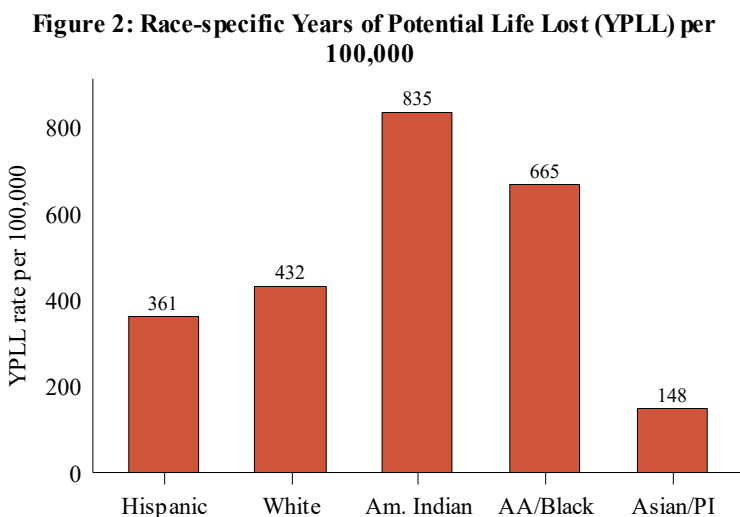


Data source: Arizona State Trauma Registry 2018

Race/Ethnicity	Total Trauma Deaths	Mortality Rate per 100,000 (95%CI)
Hispanic	227	10 [9, 12]
White	773	20 [18, 21]
Am. Indian	79	26 [21, 32]
AA/Black	59	17 [13, 22]
Asian/PI	16	6 [3, 9]

AA/Black: African American/Black
Am. Indian: American Indian/Alaska Native
Asian/PI: Asian/Pacific Islander

TABLE 2: YEARS OF POTENTIAL LIFE LOST



Data source: Arizona State Trauma Registry 2018

Race/Ethnicity	Total YPLL	YPLL Rate per 100,000 (95%CI)
Hispanic	7,835	361 [353, 369]
White	15,232	432 [425, 438]
Am. Indian	2,403	835 [801, 868]
AA/Black	2,196	665 [638, 693]
Asian/PI	373	148 [133, 163]

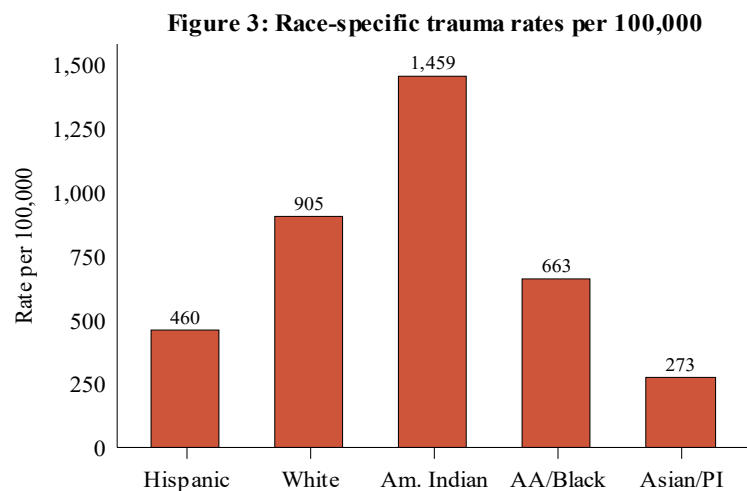
AA/Black: African American/Black
Am. Indian: American Indian/Alaska Native
Asian/PI: Asian/Pacific Islander

The proportion of trauma and trauma related mortality were higher in younger population among all other race and ethnicities as compared to Whites giving rise to higher YPLL among other race and ethnicities.

TABLE 3: TRAUMA CHARGES

Primary payment source	Total hospital charges	Percent of the charges
Self pay	\$4,345,365	4%
AHCCCS/Government	\$92,246,990	65%
Private	\$15,900,558	10%
Medicare	\$21,671,823	14%
Other	\$4,521,298	4%
	\$138,686,034	

TABLE 4: RACE-SPECIFIC TRAUMA RATES



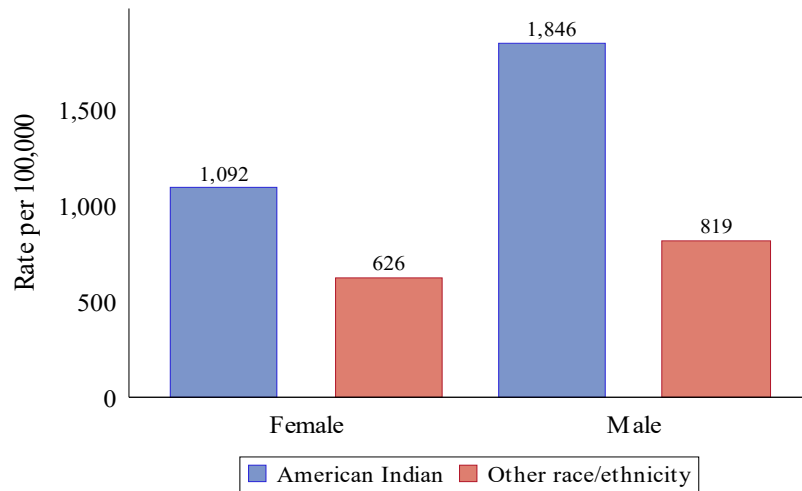
Data source: Arizona State Trauma Registry 2018

Race/Ethnicity	Total Trauma Cases	Rate per 100,000 (95%CI)
Hispanic	10,250	460 [451, 469]
White	35,706	905 [895, 914]
Am. Indian	4,357	1,459 [1,416, 1,502]
AA/Black	2,256	663 [636, 691]
Asian/PI	717	273 [253, 293]

AA/Black: African American/Black
 Am. Indian: American Indian/Alaska Native
 Asian/PI: Asian/Pacific Islander

GENDER SPECIFIC TRAUMA RATE

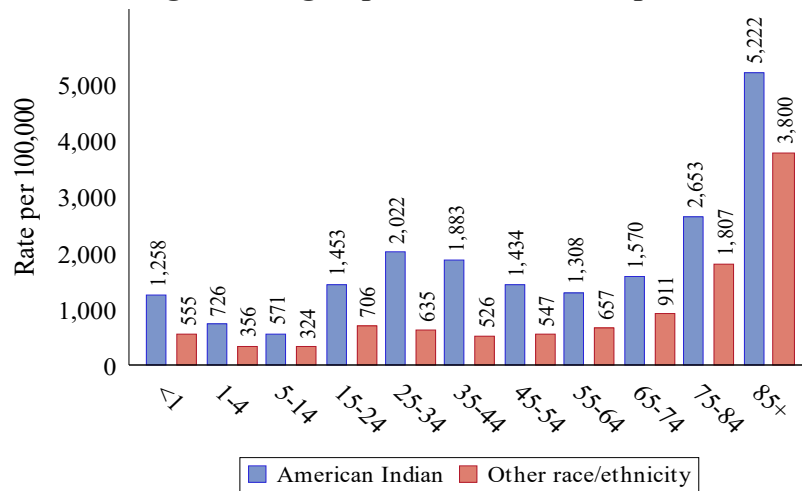
Figure 4: Gender-specific trauma rate per 100,000



Data source: Arizona State Trauma Registry 2018

AGE-SPECIFIC TRAUMA RATE

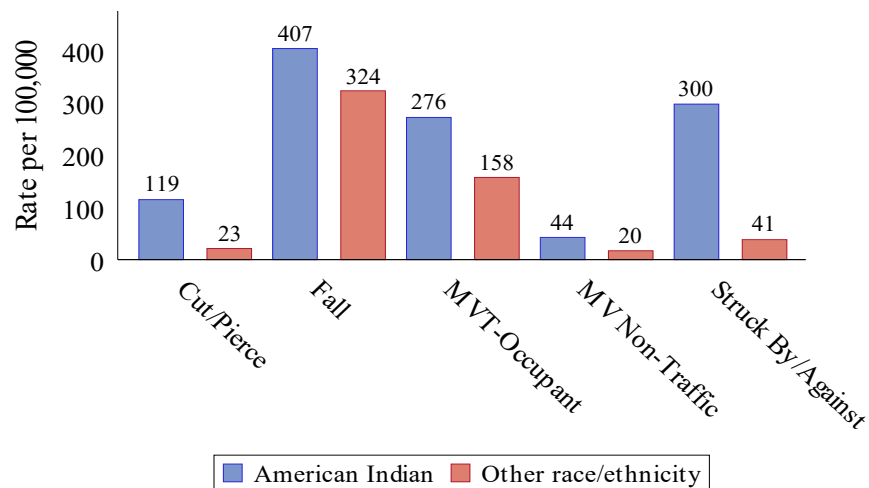
Figure 5: Age-specific trauma rate per 100,000



Data source: Arizona State Trauma Registry 2018

TOP FIVE MECHANISMS OF INJURY

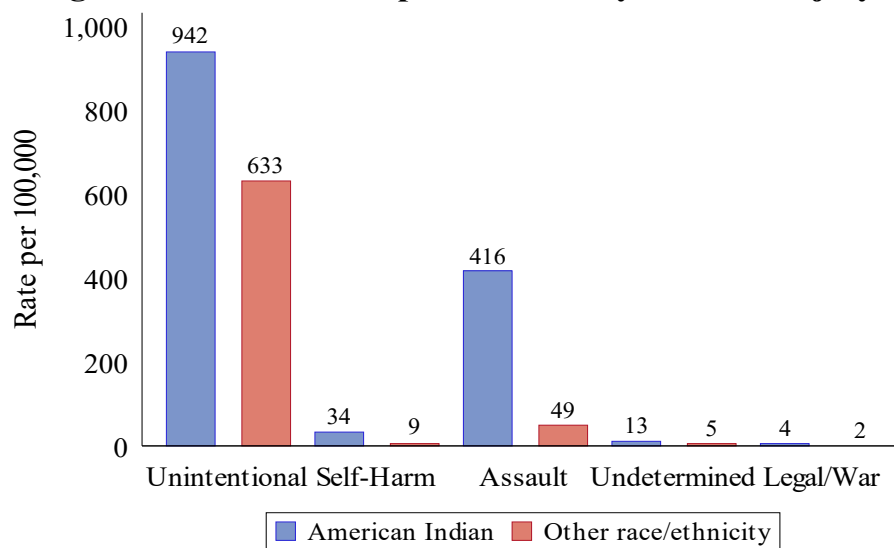
Figure 6: Trauma rate per 100,000 by Top 5 mechanisms



Data source: Arizona State Trauma Registry 2018

INTENT OF INJURY

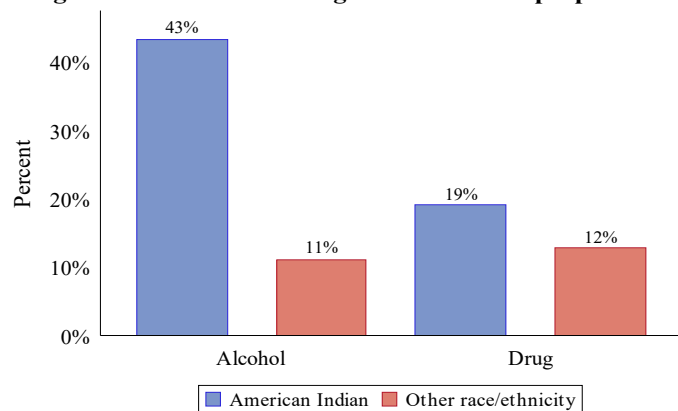
Figure 7: Trauma rate per 100,000 by intent of injury



Data source: Arizona State Trauma Registry 2018

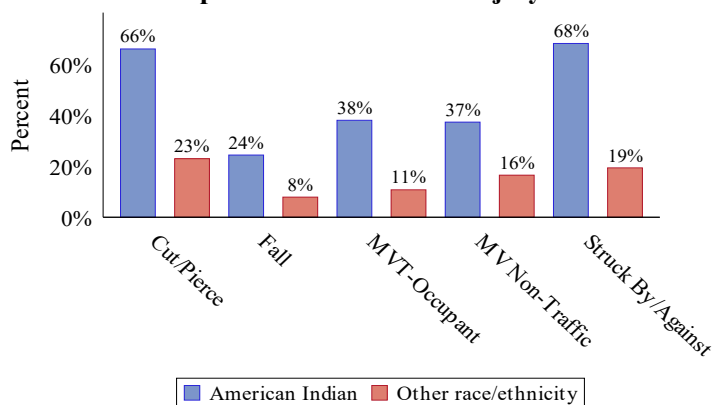
ALCOHOL AND DRUG USE

Figure 8: Alcohol and drug related trauma proportion



Data source: Arizona State Trauma Registry 2018

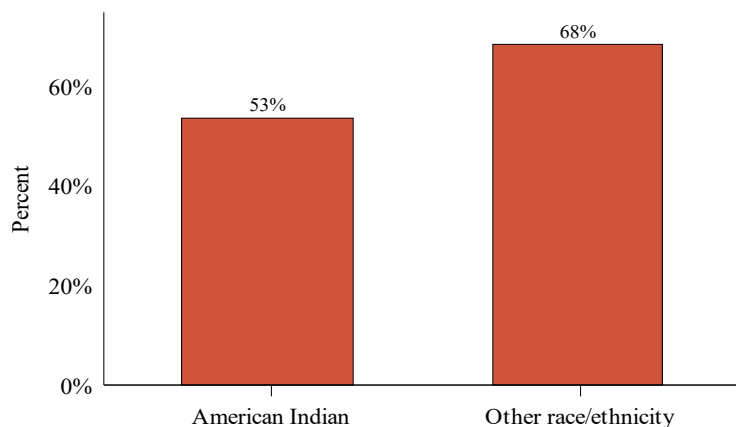
Figure 9: Proportion of suspected alcohol use among top five mechanisms of injury



Data source: Arizona State Trauma Registry 2018

SEAT-BELT USE AMONG MOTOR VEHICLE TRAFFIC OCCUPANTS

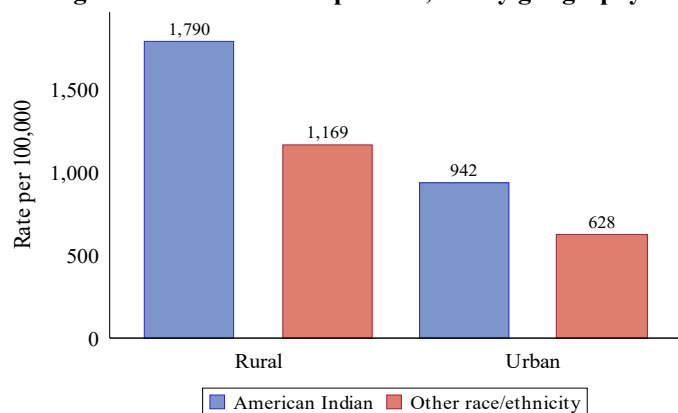
Figure 10: Seat belt use among occupants of motor vehicle trauma crashes



Data source: Arizona State Trauma Registry 2018

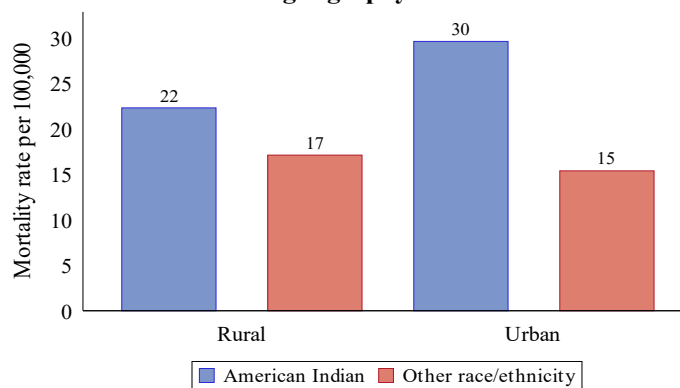
RURAL/URBAN LOCATION OF INJURY

Figure 11: Trauma rate per 100,000 by geography



Data source: Arizona State Trauma Registry 2018

Figure 12: Trauma mortality rate per 100,000 by geography

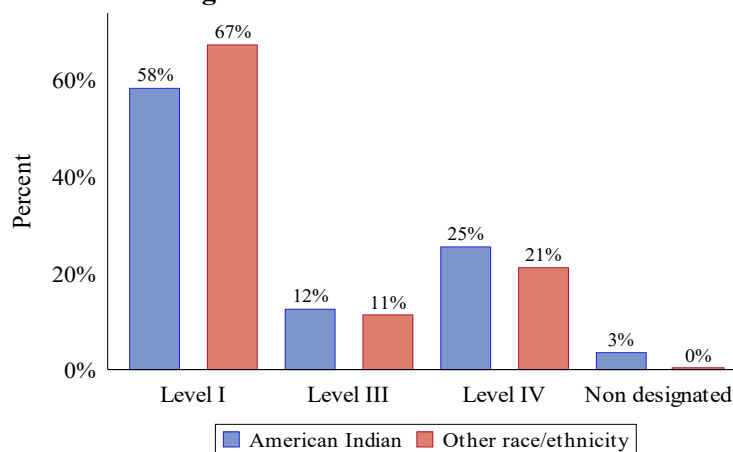


Data source: Arizona State Trauma Registry 2018

American Indians have higher rural trauma rate but trauma mortality is high in urban region. One of the reasons for this discrepancies could be that proportion of types of trauma with higher mortality (e.g. Falls, MVT Occupant and Firearms) is high in the urban region as compared to the rural region.

TRAUMA CENTER DESIGNATION LEVEL

Figure 13: Trauma center level of care



Data source: Arizona State Trauma Registry 2018

TRAUMA PATIENT INCLUSION DEFINITION**ARIZONA STATE TRAUMA REGISTRY (ASTR)****Effective for records with ED/Hospital Arrival Dates January 1, 2018** – Current**

The owner of a trauma center shall ensure that:

1. The trauma registry, established according to subsection (B)(1), includes the information required in R9- 25-1309 for each patient with whom the trauma center had contact who meets one or more of the following criteria:
 - a. A patient with injury or suspected injury who is:
 - i. Transported from a scene to a trauma center or an emergency department based on the responding emergency medical services provider's or ambulance service's triage protocol required in R9-25- 201(E)(2)(b), or
 - ii. Transferred from one health care institution to another health care institution by an emergency medical services provider or ambulance service;
 - b. A patient with injury or suspected injury for whom a trauma team activation occurs; or
 - c. A patient with injury, who is admitted as a result of the injury or who dies as a result of the injury, and whose medical record includes one or more of specific ICD-codes indicating that:
 - i. At the initial encounter with the patient, the patient had:
 - (1) An injury or injuries to specific body parts - S00-S99 with 7th character modifiers of A, B, or C ONLY. (Injuries to specific body parts –initial encounter)
 - (2) Unspecified multiple injuries - T07 (unspecified multiple injuries)
 - (3) Injury of an unspecified body region - T14 (injury of unspecified body region)
 - (4) A burn or burns to specific body parts – T20-T28 with 7th character modifier

ii. The patient's injuries or burns were not only:

- (1) An isolated distal extremity fracture from a same-level fall,
- (2) An isolated femoral neck fracture from a same-level fall,
- (3) Effects resulting from an injury or burn that developed after the initial encounter – (Late effect codes, which are represented using the same range of injury diagnosis codes but with the 7th digit modifier code of D through S),
- (4) A superficial injury or contusion –
 - S00 (Superficial injuries of the head)
 - S10 (Superficial injuries of the neck)
 - S20 (Superficial injuries of the thorax)
 - S30 (Superficial injuries of the abdomen, pelvis, lower back and external genitals)
 - S40 (Superficial injuries of shoulder and upper arm)
 - S50 (Superficial injuries of elbow and forearm)
 - S60 (Superficial injuries of wrist, hand and fingers)
 - S70 (Superficial injuries of hip and thigh)
 - S80 (Superficial injuries of knee and lower leg) S90 (Superficial injuries of ankle, foot and toes)), or
- (5) A foreign body entering through an orifice;
- (6) *The inclusion criteria are in the trauma rules. This document is a guide and does not supercede the rules.