ARIZONA DEPARTMENT OF HEALTH SERVICES

Cara M. Christ, MD, Director

BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM

STATE TRAUMA ADVISORY BOARD

2017 ANNUAL REPORT

This Report is Provided as Required by A.R.S. § 36-2222(E)(4)

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Listed below are the dedicated professionals and citizens who serve the State of Arizona as members of the State Trauma Advisory Board and the Trauma and EMS Performance Improvement Standing Committee by giving their time, expertise, and invaluable guidance to the Arizona trauma system. On behalf of the Arizona Department of Health Services and the citizens of Arizona, we thank them for their many contributions.

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Urban Advanced Life Support Base Hospital that is not a Trauma Center Representative
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Vacancy
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Injury Researcher (AEMRC)
Tucson, AZ

Director Christ:

On behalf of the Bureau of EMS and Trauma System and the members of the State Trauma Advisory Board, please accept this annual report as required by A.R.S. §36-2222 (E),(4).

As has been presented in previous reports, the formal trauma system in Arizona continues to grow, and now includes 42 hospitals across the State of Arizona. Last year, Governor Ducey approved the ADHS request to update the Trauma Rules and update specific regulatory needs necessary to accommodate our expanding trauma system.

Using members of the trauma stakeholder community – predominately members of the State Trauma Advisory Board and the facilities that they represent, the Department conducted a number of consensus-based meetings to create new and updated regulatory language. Among the many changes incorporated into the revised rules are:

The addition of a third pathway to designation for Levels I, II, and III Trauma Centers. The Trauma statutes call for three pathways to designation; (1) verification by a national verification organization, (2) assessment by a national verification association that a facility has met state designation standards, or (3) an assessment of the facility by the State Department of Health Services to determine whether the facility meets state designation criteria. Until this rule change, only Level IV Trauma Centers could be designated by this third pathway. Now all levels of trauma centers have this option. This change provides the regulated community with additional opportunity for obtaining state designation and a potentially less costly pathway.

The creation of a Level I and Level II Pediatric Trauma Center designation to assist those facilities that are seeking trauma center designation, utilizing their specialized staff and equipment to focus on the injured child. Until this Rule change, a hospital seeking to care for only pediatric patients was required to meet the same standards as any other trauma center, including being able to assess and care for injured adults. This change will reduce costs associated with trauma center designation for hospitals specializing in the care of the injured child. It will also reduce confusion in the public by providing greater clarity on which hospital has specialized in pediatric trauma care.

Previous rules allowed a facility to obtain a limited provisional designation as a trauma center without a site inspection. The new Rules require a facility to attain designation as a Level I, II, III or IV Trauma Center only after that facility has provided the materials identified in the application and has had a successful inspection by the Department of Health Services or a national verification organization assessment. These changes to the Rule provide an additional level of assurance to the public and guarantee that the Department verifies that each facility has met the required standards by way of a completed application and site inspection.

Now that the trauma rules have been posted on the Secretary of State's website, the Bureau of EMS and Trauma System must revise and formalize processes necessary to begin using the new application and site inspection standards beginning January 1, 2018.

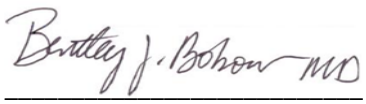
In a workgroup meeting with trauma stakeholders the following tasks were identified;

- Creation of an electronic, fillable application form that will accept electronic document attachments;
- Creation of a site inspection manual, documenting the policies and procedures required for all site inspectors;
- Creation of a site inspection training curricula;
- Scheduling site inspection training sessions to ensure that all inspection personnel understand the roles and responsibilities for the application review and site inspection process including report development.

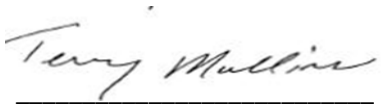
The Bureau anticipates completing these tasks by early to mid-October, 2017.

2017 has been a noteworthy year for Arizona's trauma stakeholders. We are grateful to the dedicated members of the State Trauma Advisory Board, trauma stakeholders, and the Bureau Staff who have worked collaboratively, with vision and purpose to continue to enhance Arizona's trauma system.

Sincerely,



Bentley Bobrow, MD, Medical Director
Bureau of EMS and Trauma System
State Trauma Advisory Board Chair



Terry Mullins, Chief
Bureau of EMS and Trauma System

Traumatic injury is a tremendous health concern in the United States. In the last decade, trauma deaths increased by 22.8%,[1] making it the leading cause of years of potential life lost.[1,2] For those who survive, trauma can lead to lifelong physical suffering and places a substantial economic burden on the health system. In Arizona, the rate of traumatic injury continues to increase (Figure 1.). In 2016, Arizona's trauma centers treated 46,842 people, of whom 1,111 (2.4%) died. Arizona's age-adjusted injury mortality rate is 75 per 100,000, while the national rate is 64 per 100,000, putting Arizona at 34th place compared to other states.[2]

Traumatic injury exacts a significant financial burden on the state. In 2016, trauma center charges totaled $1.9 billion, with a median charge per patient of $22,418. Hospital reimbursement has remained consistently low, around 16%. In Arizona, 44% of the population has private insurance , 21% of the population has Medicaid, and 15% of the population has Medicare. [3] The majority of trauma patients in Arizona were billed through Medicaid (31%), followed by private insurance (29%), and Medicare (25%) (Figure 16). Whereas, nationally, the majority of trauma patients were billed through private insurance (35%), followed by Medicare (27%), while Medicaid was 16.3%.[4]

Unintentional injuries account for the majority of all traumas in Arizona and nationally.[3] The top three mechanisms were Falls (38.5%), Motor Vehicle Traffic (29.9%), and Struck by/Against (7.6%), which made up almost 80% of all traumas in Arizona as well as nationally.

Although trauma affects all people, males and individuals over the age of 65 years are disproportionately affected, as are American Indian/Alaskan Natives (AI/AN). Males are involved in three times as many assault-related traumas as females, and have a two times higher mortality rate. Adults 65 years and older had the highest trauma rate as compared to any other age group. AI/AN continue to have the highest rate of trauma and trauma-related deaths when compared to other racial/ethnic groups.

Alcohol and drug use are well known risk factors for trauma. In Arizona, one in four patients were suspected of being under the influence of drugs or alcohol when involved in a trauma. Drug and alcohol use were more prevalent among intentional trauma including assaults and self-inflicted injuries. Alcohol and drug involvement varies by age and race. Among the younger population, especially 15-17 year olds, there were more traumas involving drugs than alcohol.

Overall, 70% of motor vehicle occupants were using some form of passenger restraint when involved in a trauma. Although seatbelt use has been shown to save lives, it was least practiced among those between 9 and 24 years of age (61%). In the trauma patient population, about half of motorcyclists, a third of pedal-cyclists, and a third of off-road vehicle occupants were wearing a helmet when involved in a trauma.

Greater than 30% of trauma patients suffered from Traumatic Brain Injury (TBI). The incidence of TBI was highest among infants < 1 year of age (60%). TBIs were prevalent among trauma patients using motorcycles, bicycles, and other off-road vehicles, emphasizing the importance of helmet use. 1 in 10 patients with a major head injury died.

Geographically, incident location influences trauma rate and patients' access to care. Arizona's Northern region had the highest rate of traumatic injury, almost double that of the Central region. Importantly, the median injury-to-ED arrival time for patients with serious injury (ISS > 15) was 43 minutes for urban locations vs. 86 minutes for rural locations.

1. Rhee P, Joseph B, Pandit V, et al. Increasing Trauma Deaths in the United States. *Ann Surg*. 2014;00(00):1-9. doi:10.1097/SLA.0000000000000600.
2. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. (2005) [cited 2017 Sep.]. Available from URL: www.cdc.gov/injury/wisqars
3. State Health Facts: Kaiser Family foundation. Available from URL: http://www.kff.org/other/state-indicator/total-population
4. National Trauma Data Bank Annual Report 2016. https://www.facs.org/~/media/files/quality programs/trauma/ntdb/ntdb annual report 2016.ashx

BACKGROUND

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 2016, there were 43 hospitals submitting data to the Arizona State Trauma Registry (ASTR) including ten (10) Level I trauma centers, seven (7) Level III trauma centers, twenty-four (24) Level IV trauma centers, and two (2) non-designated hospitals (Appendix A.).[4]

All trauma centers are required to report any injuries meeting the ASTR inclusion criteria (Appendix B). Level I , II and III trauma centers are required to submit the full ASTR data set while Level IV trauma centers and non-designated facilities have the option to submit either the full or reduced data set. The data in the ASTR is validated to meet more than 800 state and national rules. Validation is run at both the hospital and state levels. Any inconsistencies are flagged and returned to the hospitals for review or correction before the data is accepted.

All the Level I trauma centers in Arizona are located in urban areas of the state, including eight in Maricopa County, one in Coconino County and one in Pima County (Map, page 9). Due to Arizona's unique geography, the BEMSTS has divided the system into four distinct regions based on Arizona's 15 counties: Western (Mohave, La Paz and Yuma Counties), Northern (Yavapai, Coconino, Navajo and Apache Counties), Southeastern (Pima, Santa Cruz, Graham, Cochise and Greenlee Counties) and Central (Maricopa, Gila and Pinal Counties). Each region has its own community-based, non-profit organization dedicated to improving EMS and trauma care in the state.

Regional EMS Coordinating Systems

- Arizona Emergency Medical Services, Inc. (AEMS) - https://www.aems.org/
- Northern Arizona Emergency Medical Services (NAEMS) - http://www.naems.org/
- Southeastern Arizona EMS Council (SAEMS) - http://saemscouncil.com/
- Western Arizona Council of EMS (WACEMS) - http://wacems.org/prod/

METHODS

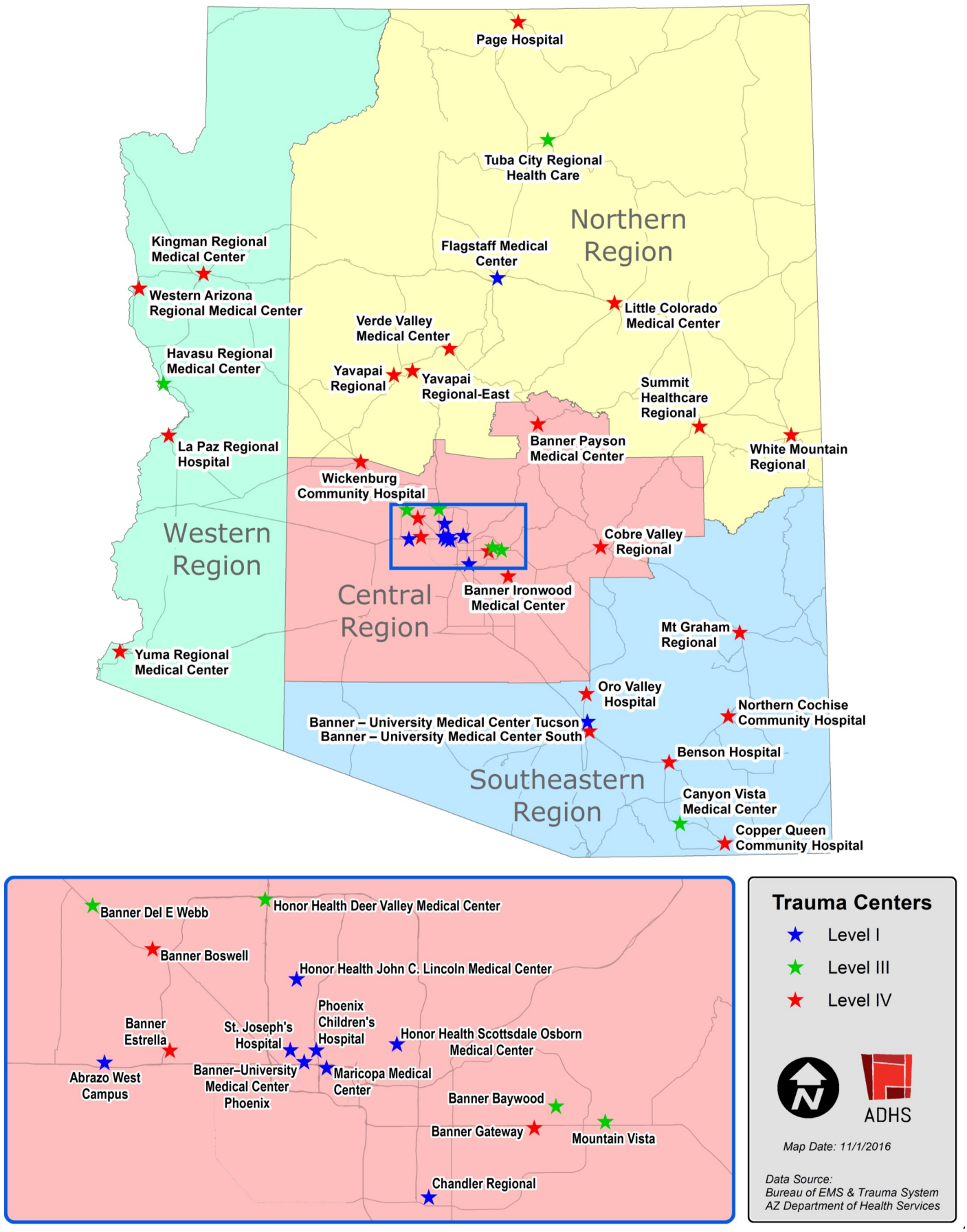
This report analyzed incidents of traumatic injury reported to the ASTR with an Emergency Department/ Hospital Arrival Date between January 1, 2016 and December 31, 2016. The report gives an overview of trauma in the state by describing patient demographics, injury characteristics, trauma risk factors, regional differences and comparisons with national trauma data.

Descriptive statistics were used to depict 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 2016 population denominators from the Arizona Health Status and Vital Statistics database.[5] If the CIs of two rates do not overlap, the difference between the rates is considered statistically significant (alpha 0.05). The 2016 data was compared with the 2014 and 2015 two-year median. When relating to national trauma data, the ASTR was restricted only to cases reported to the National Trauma Data Bank (NTDB). The Vital Statistics Information Management System's Electronic Death Registry System (EDR) was used in order to show the complete picture of trauma mortality, including deaths that occurred outside of designated trauma centers.

4. Arizona Department of Health Services, Emergency Medical Services & Trauma System. Data & Quality Assurance—Arizona State Trauma Registry. http://azdhs.gov/preparedness/emergency-medical-services-trauma-system/index.php#data-quality-assurance-astr

5. Arizona Department of Health Services, Population Health and Vital Statistics. Population Denominators: 2016. http://pub.azdhs.gov/health-stats/menu/info/pop/index.php

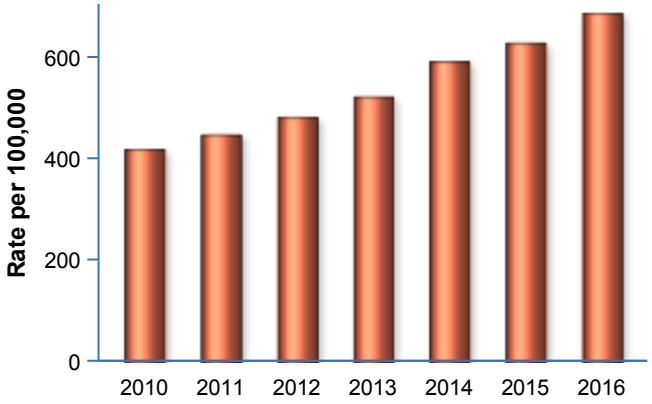
TRAUMA CENTERS SUBMITTING DATA TO ASTR IN 2016 BY REGION



TRAUMA DEMOGRAPHICS (N = 46,842)

INCIDENCE & RATE

Figure 1: Trauma rate per 100,000 by year



Data source: Arizona State Trauma Registry 2010-2016

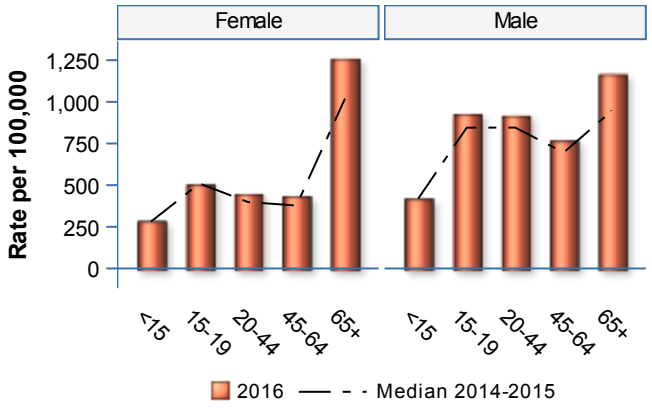
Table 1: Trauma incidence and rate per 100,000 by year

Year	Total Trauma cases	Rate per 100,000 (95%CI)
2010	26,688	418 [413, 423]
2011	28,721	446 [441, 451]
2012	31,246	481 [475, 486]
2013	34,275	521 [515, 526]
2014	39,373	591 [585, 596]
2015	42,351	627 [621, 633]
2016	46,842	685 [679, 691]

CI = Confidence interval

AGE & GENDER

Figure 2: Age and gender-specific trauma rate per 100,000



Data source: Arizona State Trauma Registry 2014-2016

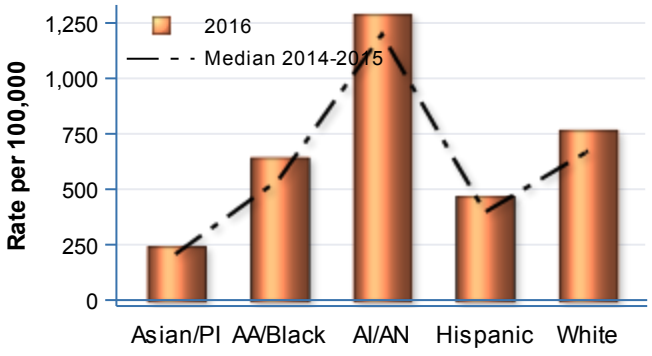
Table 2: Age and gender-specific trauma rate per 100,000

Gender	Age	Total Trauma Cases	Rate per 100,000 (95%CI)
Female	Total	19,148	557 [549, 565]
	<15	1,868	283 [270, 296]
	15-19	1,129	502 [472, 531]
	20-44	4,861	444 [431, 456]
	45-64	3,678	431 [417, 445]
	65+	7,612	1,257 [1,229, 1,286]
Male	Total	27,687	815 [806, 825]
	<15	2,865	416 [401, 432]
	15-19	2,179	921 [883, 960]
	20-44	10,466	911 [894, 929]
	45-64	6,149	763 [744, 782]
	65+	6,028	1,166 [1,136, 1,195]

CI = Confidence interval

RACE & ETHNICITY

Figure 3: Race-specific trauma rate per 100,000



Data source: Arizona State Trauma Registry 2014-2016, PI=Pacific Islander, AI/AN=American Indian/Alaska Native, AA=African American

Table 3: Race-specific trauma rate per 100,000

Race/ethnicity	Total Trauma Cases	Rate per 100,000 (95%CI)
Asian/PI	594	244 [224, 263]
AA/Black	2,050	642 [615, 670]
AI/AN	3,732	1,287 [1,245, 1,328]
Hispanic	9,877	469 [460, 478]
White	29,695	766 [757, 775]

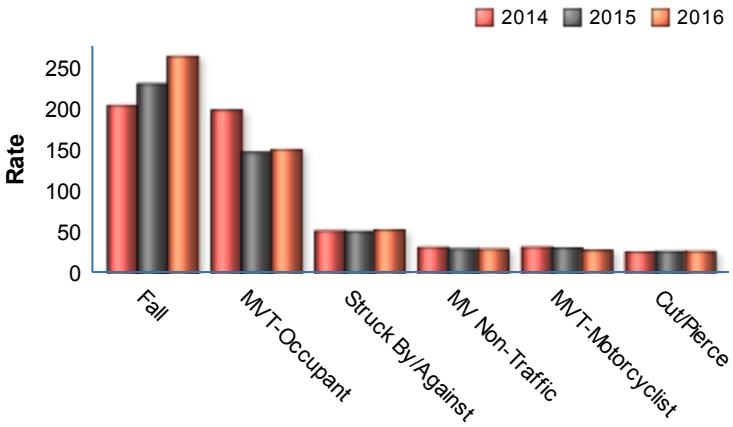
CI= Confidence interval

Table 4: Trauma incidence and mortality proportion by mechanism of injury

Mechanism	Count	Percent	Deaths	Mortality Proportion
Overall	46,842	100.00%	1,111	2.37%
Fall	18,042	38.51%	298	1.65%
MVT-Occupant	10,213	21.80%	187	1.83%
Struck By/Against	3,547	7.57%	23	0.64%
MV Non-Traffic	1,961	4.18%	18	0.91%
MVT-Motorcyclist	1,863	3.97%	80	4.29%
Cut/Pierce	1,766	3.77%	23	1.30%
Other Land Transport	1,565	3.34%	8	0.51%
Firearm	1,321	2.82%	216	16.35%
MVT-Pedestrian	1,044	2.22%	112	10.72%
Pedalcyclist, Other	955	2.03%	5	0.52%
Other Specified, Classifiable	677	1.44%	9	1.32%
MVT-Pedalcyclist	542	1.15%	17	3.13%
Other Specified, Not Elsewhere Classifiable	521	1.11%	26	4.99%
Pedestrian, Other	396	0.84%	22	5.55%
Unspecified	336	0.71%	6	1.78%
Bite And Stings-Nonvenomous	317	0.67%	0	0.00%
MVT-Unspecified	298	0.63%	7	2.34%
Not Documented	259	0.55%	12	4.65%
Other Transport	220	0.46%	6	2.72%
Natural/Environmental, Other	207	0.44%	2	0.96%
Machinery	206	0.43%	0	0.00%
Hot Object/Substance	156	0.33%	1	0.64%
Fire/Flame	105	0.22%	3	2.85%
Other Specified, Child/Adult Abuse	97	0.20%	3	3.09%
Overexertion	60	0.12%	0	0.00%
MVT-Other	38	0.08%	5	13.15%
Drowning/Submersion	35	0.07%	8	22.85%
Poisoning: Drug	30	0.06%	0	0.00%
Suffocation	28	0.05%	13	46.42%
Bite And Stings-Venomous	20	0.04%	1	5.00%
Other Specified, Foreign Body	10	0.02%	0	0.00%
Poisoning: Non-Drug	7	0.01%	0	0.00%

RATE BY YEAR

Figure 4: Trauma rate per 100,000 by top 6 mechanism of injury



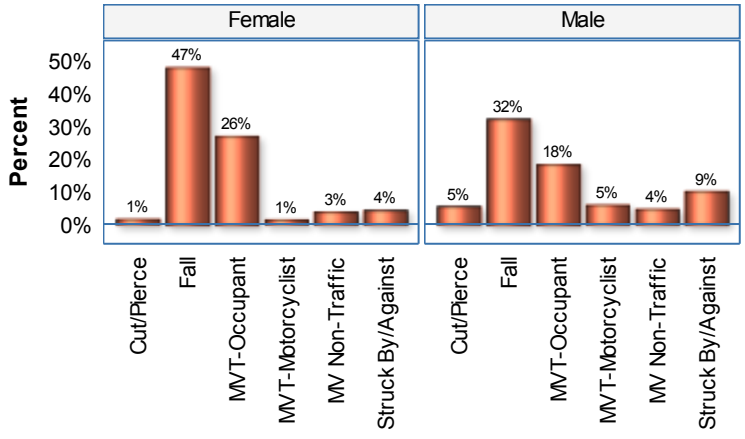
Data source: Arizona State Trauma Registry 2014-2016

Table 5: Trauma rate per 100,000 by top 6 mechanisms and year

Year	Mechanism of injury	Total Trauma Cases	Rate per 100,000 (95%CI)
2014	Fall	13,541	203 [200, 207]
	MVT-Occupant	13,169	198 [194, 201]
	Struck By/Against	3,385	51 [49, 52]
	MV Non-Traffic	2,045	31 [29, 32]
	MVT-Motorcyclist	2,068	31 [30, 32]
	Cut/Pierce	1,678	25 [24, 26]
2015	Fall	15,580	231 [227, 234]
	MVT-Occupant	9,868	146 [143, 149]
	Struck By/Against	3,377	50 [48, 52]
	MV Non-Traffic	1,952	29 [28, 30]
	MVT-Motorcyclist	2,026	30 [29, 31]
	Cut/Pierce	1,733	26 [24, 27]
2016	Fall	18,042	264 [260, 268]
	MVT-Occupant	10,213	149 [147, 152]
	Struck By/Against	3,547	52 [50, 54]
	MV Non-Traffic	1,961	29 [27, 30]
	MVT-Motorcyclist	1,863	27 [26, 28]
	Cut/Pierce	1,766	26 [25, 27]

GENDER

Figure 5: Gender-specific trauma proportion by top 6 mechanisms



Data source: Arizona State Trauma Registry 2016

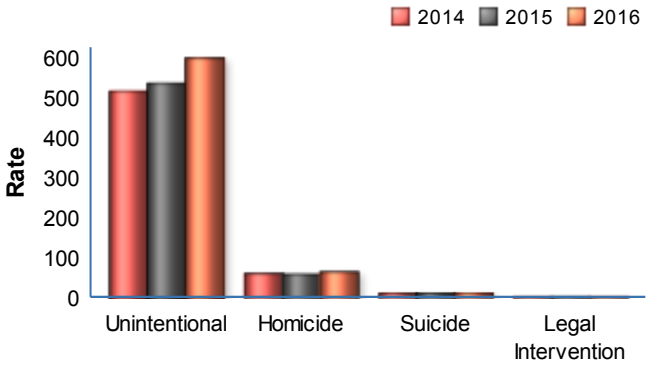
INCIDENCE & MORTALITY

Table 6: Trauma incidence and mortality proportion by intent of injury

Intent	Count	Percent	Deaths	Mortality Proportion
Overall	46,842	100.00%	1,111	2.37%
Unintentional	40,900	87.31%	798	1.95%
Assault	4,341	9.26%	127	2.92%
Self-harm	744	1.58%	135	18.14%
Undetermined	486	1.03%	22	4.52%
Not documented	257	0.54%	12	4.66%
Legal/war	114	0.24%	17	14.91%

RATE BY YEAR

Figure 6: Trauma rate per 100,000 by intent of injury and year



Data source: Arizona State Trauma Registry 2014-2016

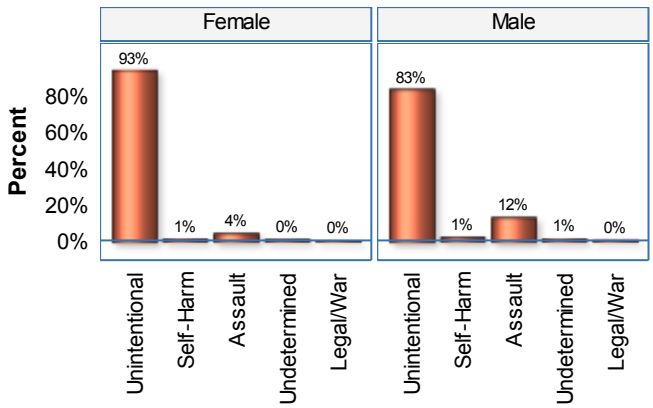
Table 7: Trauma rate per 100,000 by intent and year

Year	Intent of injury	Total Trauma Cases	Rate per 100,000 (95%CI)
2014	Unintentional	34,384	516 [510, 521]
	Homicide	3,952	59 [57, 61]
	Suicide	677	10 [9, 11]
	Legal Intervention	107	2 [1, 2]
2015	Unintentional	36,179	535 [530, 541]
	Homicide	3,897	58 [56, 59]
	Suicide	700	10 [10, 11]
	Legal Intervention	117	2 [1, 2]
2016	Unintentional	40,900	598 [593, 604]
	Homicide	4,341	64 [62, 65]
	Suicide	744	11 [10, 12]
	Legal Intervention	114	2 [1, 2]

CI= Confidence Interval

RATE BY YEAR

Figure 7: Gender-specific trauma proportion by intent

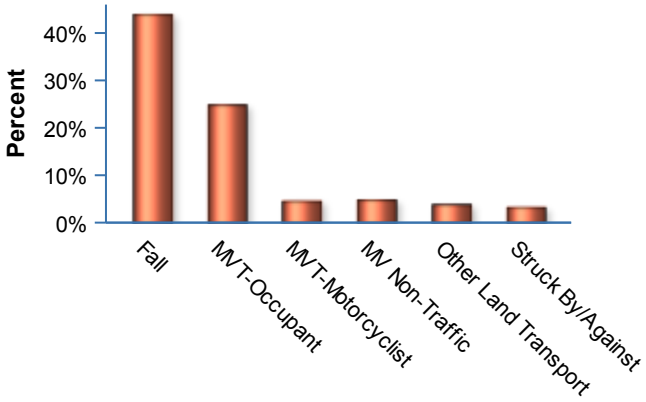


Data source: Arizona State Trauma Registry 2016

INTENT OF INJURY

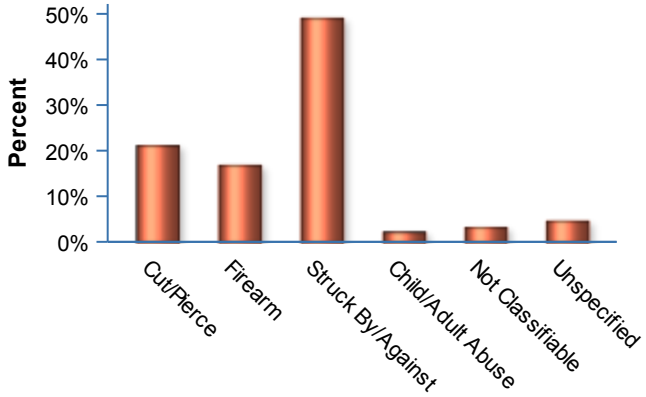
INTENT BY MECHANISM

Figure 8: Top six mechanisms of Unintentional trauma



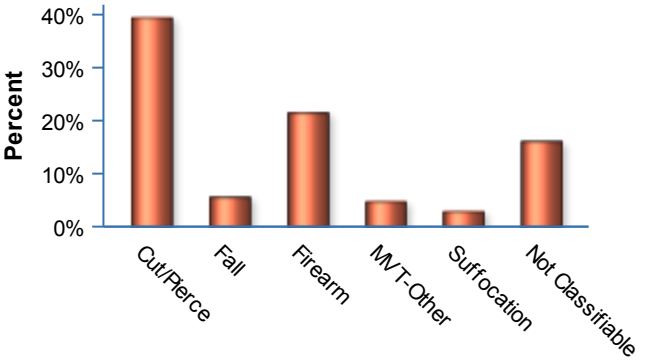
Data source: Arizona State Trauma Registry 2016

Figure 9: Top six mechanisms of Homicide/Assault trauma



Data source: Arizona State Trauma Registry 2016

Figure 10: Top six mechanisms of Suicide/Self-inflicted trauma



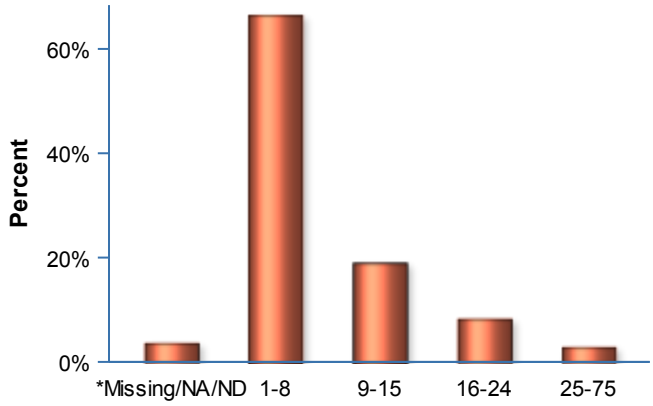
Data source: Arizona State Trauma Registry 2016

MVT-Other includes motor vehicle traffic accidents involving railway trains, streetcars, and animal drawn vehicles or animal riders.

INJURY SEVERITY SCORE

INCIDENCE & MORTALITY

Figure 11: Trauma proportion by injury severity score



Data source: Arizona State Trauma Registry 2016

Table 8: Trauma incidence and mortality proportion by injury severity score

Injury Severity Score	Count	Percent	Deaths	Mortality Proportion
*Missing/NA/ND	1,664	3.55%	42	2.52%
1-8	31,151	66.50%	181	0.58%
9-15	8,896	18.99%	173	1.94%
16-24	3,827	8.17%	151	3.94%
25-75	1,304	2.78%	564	43.25%

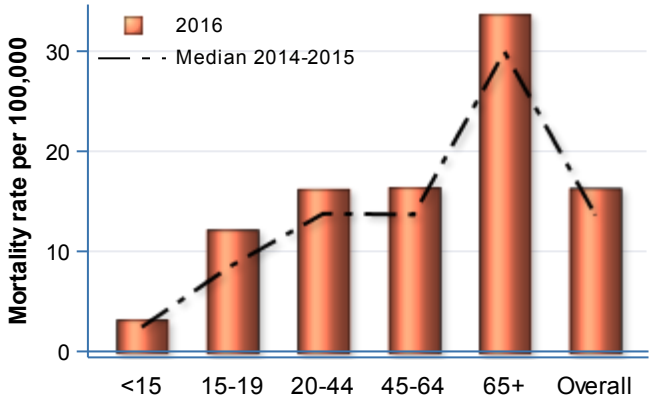
AGE-SPECIFIC MORTALITY

Table 9: Age-specific trauma incidence and mortality proportion

Age	Count	Percent	Deaths	Mortality Proportion
Total	46,842	100.00%	1,111	2.37%
<1	454	0.96%	5	1.10%
1-4	1,343	2.86%	21	1.56%
5-9	1,338	2.85%	5	0.37%
10-14	1,598	3.41%	12	0.75%
15-19	3,309	7.06%	56	1.69%
20-24	4,019	8.57%	89	2.21%
25-34	6,530	13.94%	157	2.40%
35-44	4,783	10.21%	117	2.44%
45-54	4,904	10.46%	138	2.81%
55-64	4,924	10.51%	133	2.70%
65-74	4,919	10.50%	111	2.25%
75-84	4,870	10.39%	133	2.73%
85+	3,851	8.22%	134	3.47%

AGE-SPECIFIC MORTALITY RATE

Figure 12: Age-specific trauma mortality rate per 100,000



Data source: Arizona State Trauma Registry 2014-2016

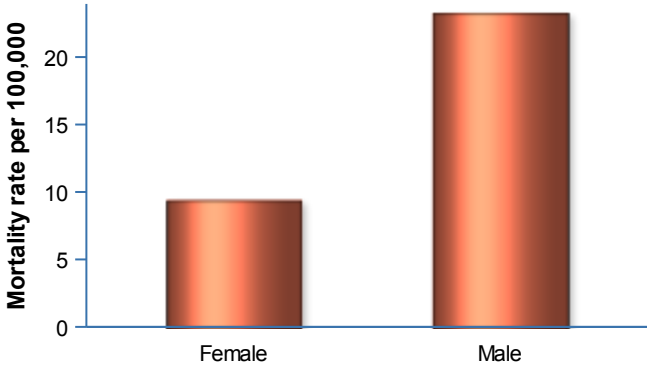
Table 10: Age-specific trauma mortality rate

Age	Total Trauma Deaths	Rate per 100,000 (95%CI)
<15	43	3 [2, 4]
15-19	56	12 [9, 15]
20-44	363	16 [15, 18]
45-64	271	16 [14, 18]
65+	378	34 [30, 37]
Overall	1,111	16 [15, 17]

CI= Confidence interval

GENDER-SPECIFIC MORTALITY RATE

Figure 13: Gender-specific trauma mortality rate per 100,000



Data source: Arizona State Trauma Registry 2016

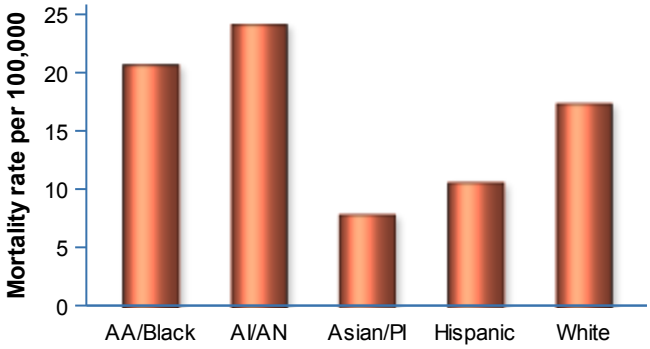
Table 11: Gender-specific trauma mortality rate per 100,000

Gender	Total Trauma Deaths	Rate per 100,000 (95%CI)
Female	323	9 [8, 10]
Male	788	23 [22, 25]

CI= Confidence interval

RACE-SPECIFIC MORTALITY RATE

Figure 14: Race-specific trauma mortality rate per 100,000



Data source: Arizona State Trauma Registry 2014-2016, PI=Pacific Islander, AI/AN=American Indian/Alaska Native, AA=African American

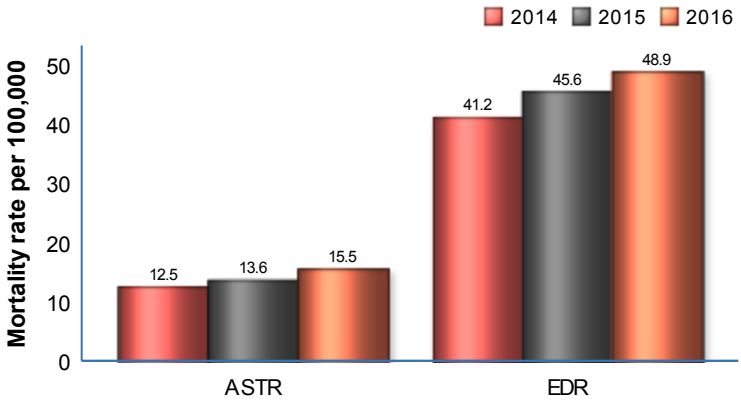
Table 12: Race-specific trauma mortality rate per 100,000

Race/ethnicity	Total Trauma Deaths	Rate per 100,000 (95%CI)
AI/AN	70	24 [18, 30]
Asian/PI	19	8 [4, 11]
AA/Black	66	21 [16, 26]
Hispanic	222	11 [9, 12]
White	673	17 [16, 19]

CI= Confidence interval

ASTR VS. STATEWIDE

Figure 15: Age-adjusted trauma mortality rate per 100,000: Trauma center deaths vs. Statewide trauma deaths



Data sources: Arizona State Trauma Registry 2014-2016, Arizona Electronic Death Registry, 2014-2016

Table 13: Age-adjusted trauma mortality rate per 100,000 by year: Trauma Center vs. Statewide*

Data source	Year	Total Trauma Deaths	Rate per 100,000 (95%CI)
ASTR	2014	871	12.5 [11.7, 13.3]
	2015	965	13.6 [12.8, 14.5]
	2016	1,111	15.5 [14.6, 16.4]
EDR	2014	2,905	41.2 [39.7, 42.7]
	2015	3,268	45.6 [44.0, 47.1]
	2016	3,602	48.9 [47.3, 50.5]

CI= Confidence interval

***Statewide data obtained from the Electronic Death Registry (EDR). Includes all trauma deaths including those that occurred outside of trauma centers.**

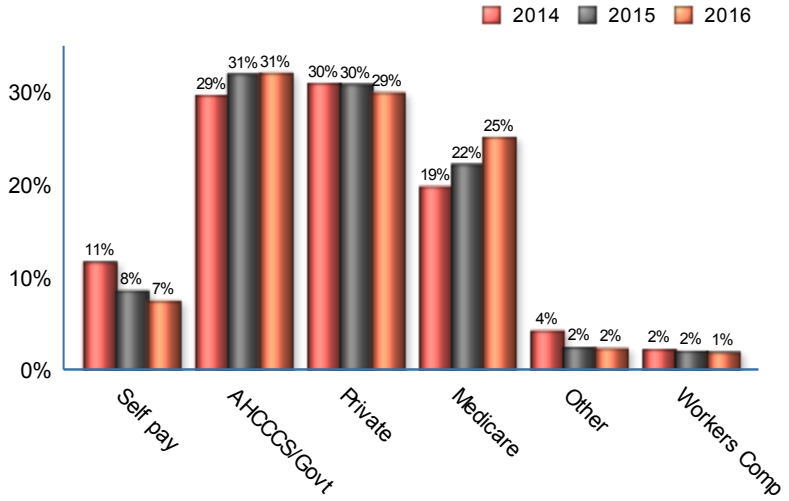
CHARGES & REIMBURSEMENT

Table 14: Total trauma charges and reimbursement by year

Year	Total Charges	Median Charges	Total Reimbursement	Reimbursement Percent
2014	$1,602,920,471	$23,497	$261,156,506	16.2%
2015	$1,667,301,074	$22,026	$274,959,253	16.4%
2016	$1,923,007,348	$22,418	$302,128,477	15.7%

PRIMARY PAYER BY YEAR

Figure 16: Primary payment source of traumatic injuries by year



Data source: Arizona State Trauma Registry 2014-2015, Other includes: No fault auto, Not billed, and Other insurance

CHARGES & REIMBURSEMENT BY PAYER

Table 15: Total trauma charges and reimbursement by primary payer

Primary payer	Total Charges	Median Charges	Total Reimbursement	Reimbursement Percent
AHCCCS/Govt	$677,309,672	$22,626	$66,737,978	9.8%
Medicare	$484,421,266	$23,927	$71,159,959	14.6%
Not documented	$1,481,292	$22,020	$128,152	8.6%
Other	$34,902,667	$15,897	$2,822,873	8.0%
Private	$590,727,775	$22,790	$142,174,344	24.0%
Self pay	$94,471,152	$18,557	$5,139,525	5.4%
Workers Comp	$39,693,524	$23,458	$13,965,647	35.1%
Total	*$1,923,007,348*	*$22,418*	*$302,128,477*	*15.7%*

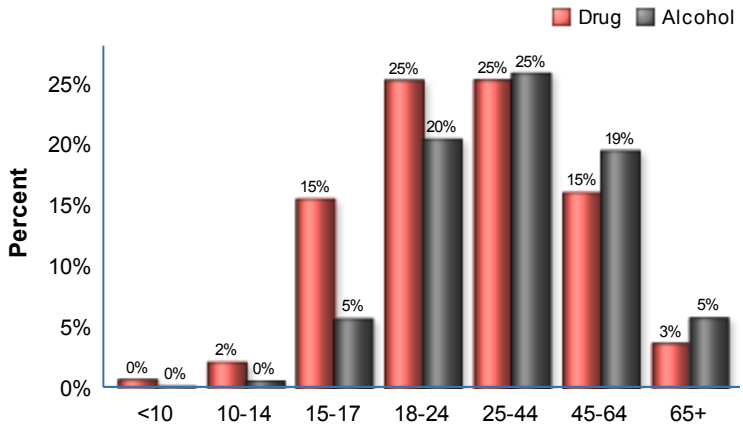
CHARGES & REIMBURSEMENT BY MECHANISM

Table 16: Total trauma charges and reimbursement by mechanism of injury

Mechanism	Total Charges	Median Charges	Total Reimbursement	Reimbursement Percent
Bite And Stings-Nonvenomous	$7,511,756	$21,372	$1,432,529	19.0%
Bite And Stings-Venomous	$707,320	$28,815	$119,076	16.8%
Cut/Pierce	$59,526,953	$22,647	$8,254,258	13.8%
Drowning/Submersion	$2,329,684	$14,409	$254,259	10.9%
Fall	$663,140,701	$22,249	$108,368,142	16.3%
Fire/Flame	$1,760,039	$8,997	$335,476	19.0%
Firearm	$92,068,209	$27,179	$12,929,000	14.0%
Hot Object/Substance	$4,867,871	$6,191	$444,587	9.1%
MV Non-Traffic	$74,532,455	$17,087	$12,562,773	16.8%
MVT-Motorcyclist	$135,089,159	$32,059	$24,137,825	17.8%
MVT-Occupant	$435,492,859	$23,648	$64,904,975	14.9%
MVT-Other	$3,660,105	$38,645	$242,415	6.6%
MVT-Pedalcyclist	$25,798,342	$27,827	$3,861,986	14.9%
MVT-Pedestrian	$94,062,104	$38,467	$12,529,296	13.3%
MVT-Unspecified	$6,750,292	$15,927	$1,302,041	19.2%
Machinery	$4,985,004	$21,875	$1,230,882	24.6%
Natural/Environmental, Other	$8,259,021	$19,088	$897,326	10.8%
Not Documented	$1,823,289	$8,377	$462,285	25.3%
Other Land Transport	$55,691,477	$22,060	$11,007,465	19.7%
Other Specified, Child/Adult Abuse	$6,102,796	$23,366	$945,265	15.4%
Other Specified, Classifiable	$32,356,276	$20,728	$5,859,340	18.1%
Other Specified, Foreign Body	$297,232	$20,256	$28,256	9.5%
Other Specified, Not Elsewhere Classifiable	$17,225,731	$15,922	$2,274,939	13.2%
Other Transport	$14,544,494	$25,915	$3,289,144	22.6%
Overexertion	$1,979,461	$29,376	$330,299	16.6%
Pedalcyclist, Other	$32,159,109	$18,402	$4,889,320	15.2%
Pedestrian, Other	$23,106,104	$27,864	$2,980,202	12.8%
Poisoning: Drug	$168,934	$5,942	$48,160	28.5%
Poisoning: Non-Drug	$62,041	$11,477	$5,777	9.3%
Struck By/Against	$105,022,829	$18,992	$14,803,214	14.0%
Suffocation	$1,092,004	$13,360	$120,366	11.0%
Unspecified	$10,833,696	$19,342	$1,277,598	11.7%
	$1,923,007,348	*$22,418*	*$302,128,477*	*15.7%*

AGE-SPECIFIC

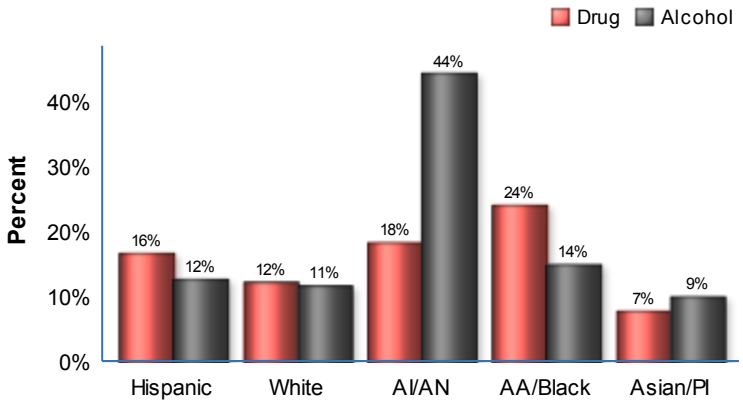
Figure 17: Age specific trauma proportion by alcohol and drug use



Data source: Arizona State Trauma Registry 2016

RACE-SPECIFIC

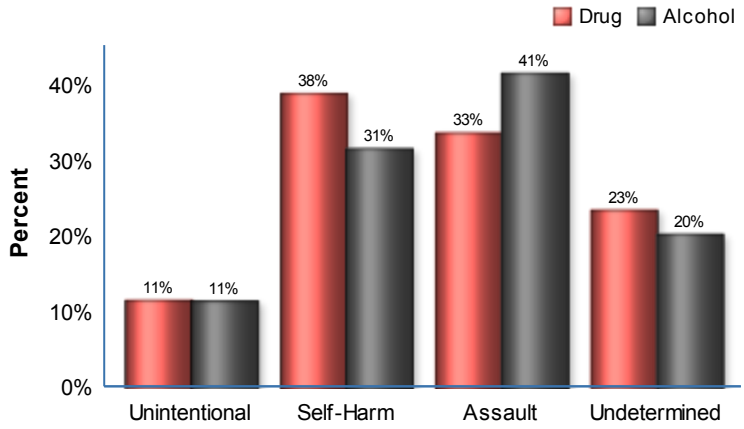
Figure 18: Race-specific trauma proportion by alcohol and drug use



Data source: Arizona State Trauma Registry 2014-2016, PI=Pacific Islander, AI/AN=American Indian/Alaska Native, AA=African American

INTENT-SPECIFIC

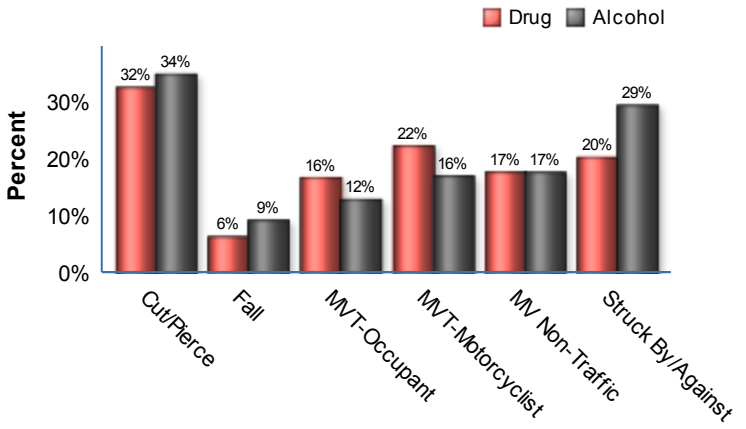
Figure 19: Intent-specific trauma proportion by alcohol and drug use



Data source: Arizona State Trauma Registry 2016

MECHANISM-SPECIFIC

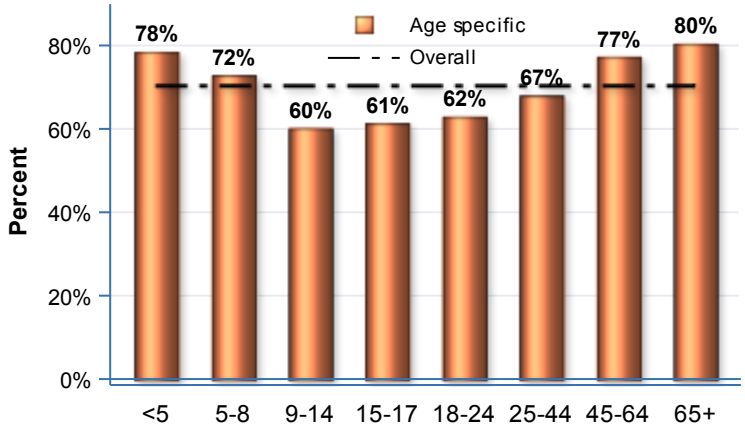
Figure 20: Mechanism-specific trauma proportion by alcohol and drug use



Data source: Arizona State Trauma Registry 2016

MVT-OCCUPANT (N = 10,213)

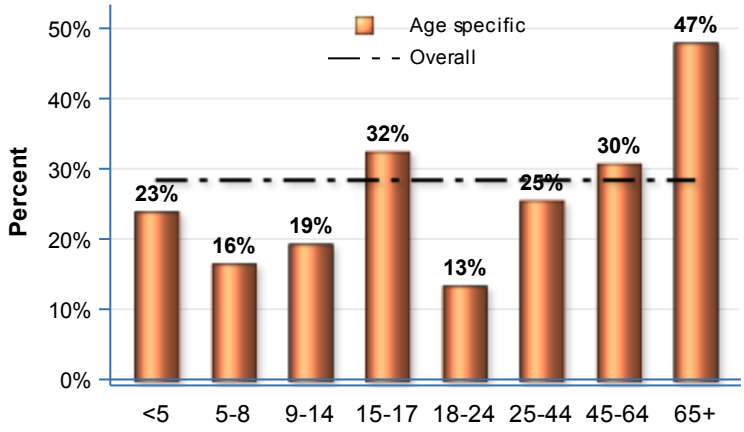
Figure 21: Age-specific proportion of restraint use among Motor Vehicle Traffic occupants



Data source: Arizona State Trauma Registry 2016

PEDAL CYCLIST (N = 1,497)

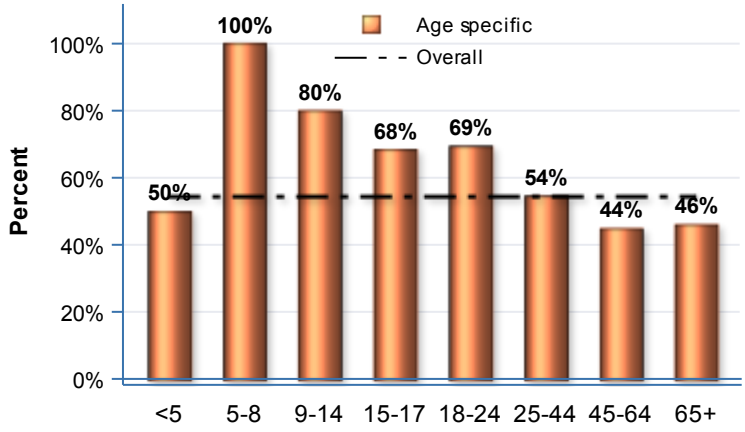
Figure 22: Age-specific proportion of helmet use among pedal-cyclists



Data source: Arizona State Trauma Registry 2016

MOTORCYCLIST (N = 1,863)

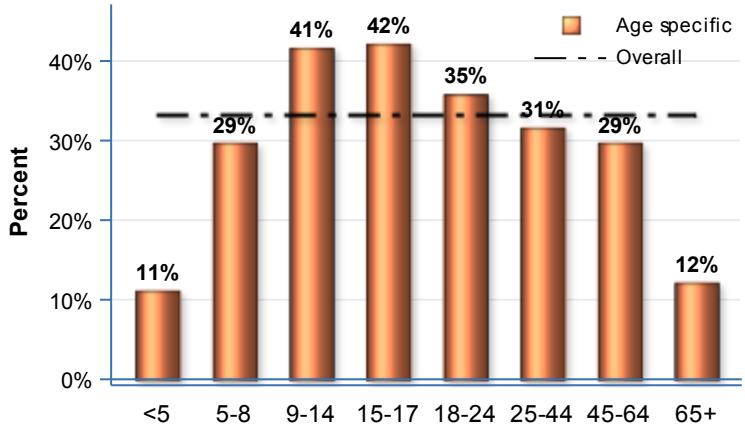
Figure 23: Age-specific proportion of helmet use among Motorcyclists



Data source: Arizona State Trauma Registry 2016

OFF-ROAD VEHICLE OCCUPANT (N = 1,455)

Figure 24: Age-specific proportion of helmet use among off-road vehicle occupants



Data source: Arizona State Trauma Registry 2016

INJURY TO ED ARRIVAL TIME

Table 17: Injury to ED arrival time for patient with an injury severity score > 15 by injury location

Injury location	ISS>15: Injury to ED Arrival Time (Minutes)				
	N	Median time	25th percentile*	75th percentile**	Injury time missing (n)
Rural	531	86	48	127	112 (21%)
Urban	1,939	43	32	63	1,006 (52%)
Statewide	2,470	47	34	78	1,118 (45%)

*25% of the cohort had a median transport time at or below this value
** 75% of the cohort had a median transport time at or below this values

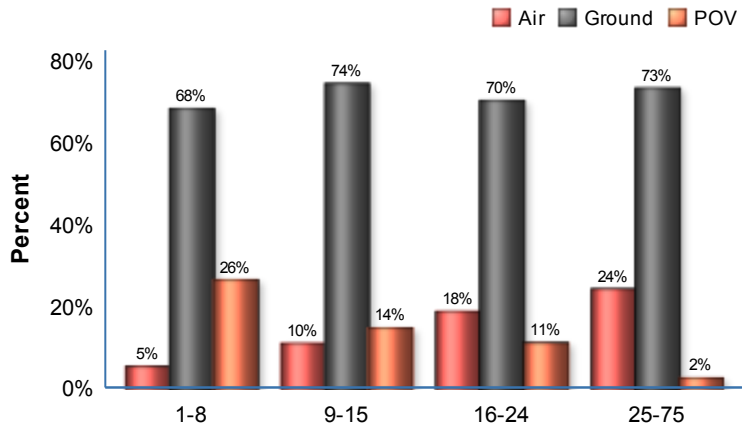
Table 18: Injury to ED arrival time for transferred patients with an injury severity score > 15 by injury location

Injury location	ISS>15 and transferred to Level 1: Injury to ED Arrival Time (Minutes)				
	N	Median time	25th percentile*	75th percentile**	Injury time missing (n)
Rural	285	363	235	551	83 (29%)
Urban	563	308	234	465	349 (62%)
Statewide	848	325	235	505	432 (51%)

*25% of the cohort had a median transport time at or below this value
** 75% of the cohort had a median transport time at or below this values

MODE OF TRANSPORT

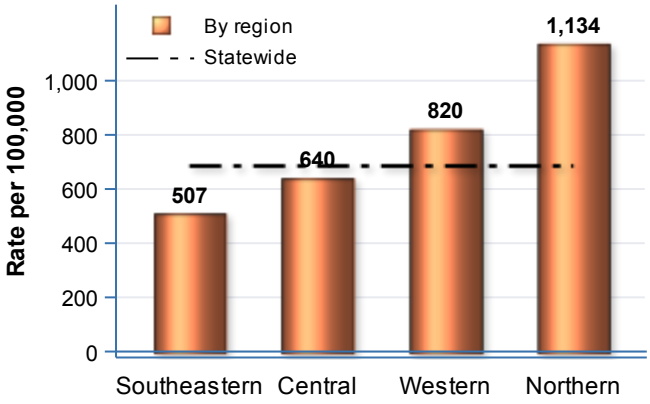
Figure 25: Mode of transport to trauma center by Injury Severity Score



Data source: Arizona State Trauma Registry 2016

TRAUMA RATE

Figure 26: Region-specific trauma rate per 100,000



Data source: Arizona State Trauma Registry 2014-2016

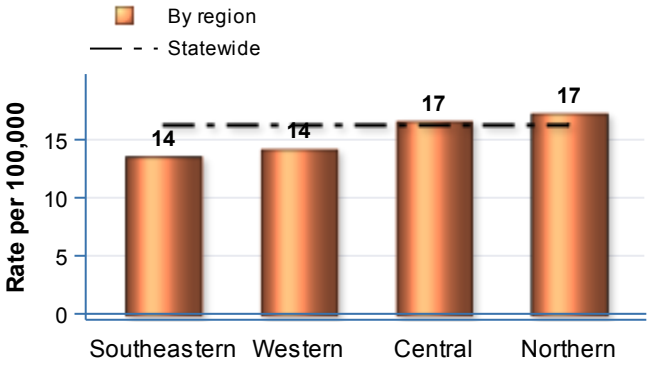
Table 19: Region-specific trauma rate per 100,000

Injury Region	Total Trauma Cases	Rate per 100,000 (95%CI)
Western	3,648	820 [794, 847]
Northern	6,186	1,134 [1,106, 1,163]
Southeastern	6,290	507 [494, 519]
Central	29,462	640 [633, 647]

CI= Confidence interval

MORTALITY RATE

Figure 27: Region-specific trauma mortality rate per 100,000



Data source: Arizona State Trauma Registry 2016

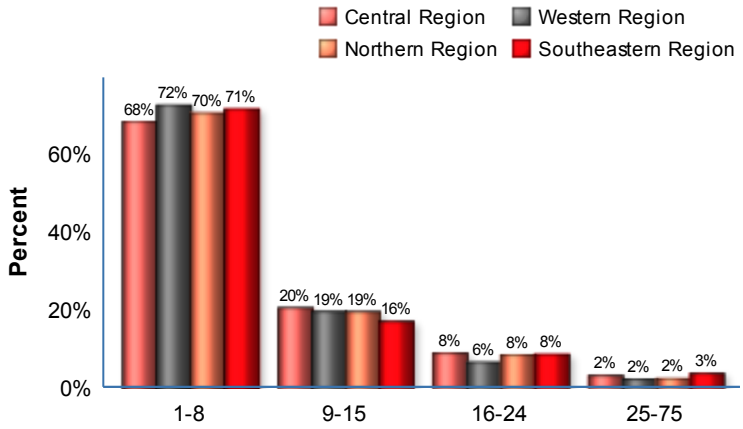
Table 20: Region-specific trauma mortality rate per 100,000

Injury Region	Total Trauma deaths	Rate per 100,000 (95%CI)
Western	63	14 [11, 18]
Northern	94	17 [14, 21]
Southeastern	168	14 [11, 16]
Central	763	17 [15, 18]

CI= Confidence interval

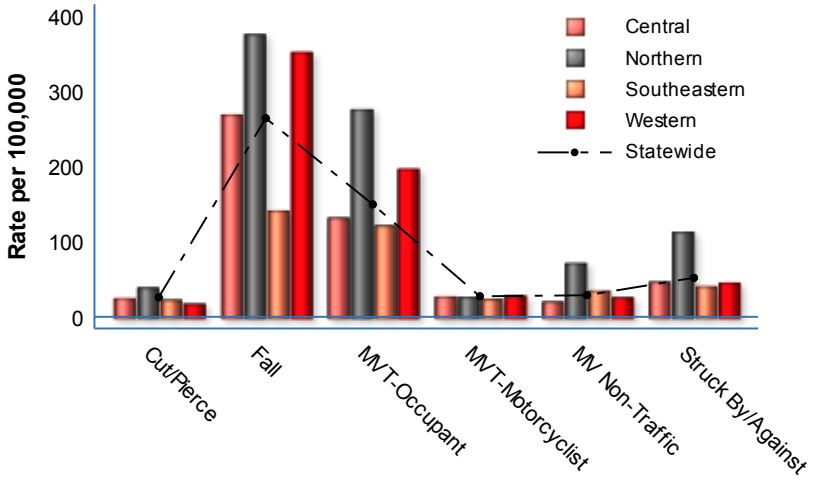
MORTALITY BY ISS

Figure 28: Region-specific trauma proportion by Injury Severity Score



Data source: Arizona State Trauma Registry 2016

Figure 29: Region-specific trauma rate per 100,000 by top 6 mechanisms



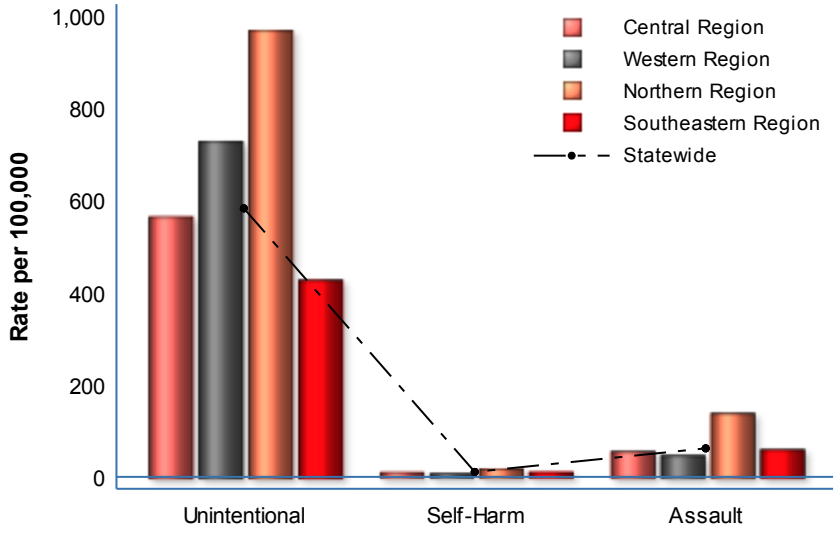
Data source: Arizona State Trauma Registry 2016

Table 21: Region-specific trauma rate per 100,000 by the top 6 mechanism of injury

Region	Mechanisms	Total Trauma Cases	Rate per 100,000 (95%CI)
Central	Cut/Pierce	1,149	25 [24, 26]
	Fall	12,342	268 [263, 273]
	MVT-Occupant	6,069	132 [128, 135]
	MVT-Motorcyclist	1,251	27 [26, 29]
	MV Non-Traffic	948	21 [19, 22]
	Struck By/Against	2,138	46 [44, 48]
Northern	Cut/Pierce	212	39 [34, 44]
	Fall	2,049	376 [359, 392]
	MVT-Occupant	1,505	276 [262, 290]
	MVT-Motorcyclist	145	27 [22, 31]
	MV Non-Traffic	392	72 [65, 79]
	Struck By/Against	612	112 [103, 121]
Southeastern	Cut/Pierce	285	23 [20, 26]
	Fall	1,750	141 [134, 148]
	MVT-Occupant	1,510	122 [116, 128]
	MVT-Motorcyclist	296	24 [21, 27]
	MV Non-Traffic	434	35 [32, 38]
	Struck By/Against	504	41 [37, 44]
Statewide	Cut/Pierce	1,766	26 [25, 27]
	Fall	18,042	264 [260, 268]
	MVT-Occupant	10,213	149 [147, 152]
	MVT-Motorcyclist	1,863	27 [26, 28]
	MV Non-Traffic	1,961	29 [27, 30]
	Struck By/Against	3,547	52 [50, 54]
Western	Cut/Pierce	79	18 [14, 22]
	Fall	1,564	352 [334, 369]
	MVT-Occupant	874	197 [183, 210]
	MVT-Motorcyclist	126	28 [23, 33]
	MV Non-Traffic	116	26 [21, 31]
	Struck By/Against	201	45 [39, 51]

CI = Confidence interval

Figure 30: Region-specific trauma rate per 100,000 by intent



Data source: Arizona State Trauma Registry 2016

Table 22: Region-specific trauma rate per 100,000 by intent of injury

Region	Intent	Total Trauma Cases	Rate per 100,000 (95%CI)
Central Region	Unintentional	25,999	565 [558, 571]
	Self-Harm	477	10 [9, 11]
	Assault	2,537	55 [53, 57]
Northern Region	Unintentional	5,287	970 [943, 996]
	Self-Harm	96	18 [14, 21]
	Assault	750	138 [128, 147]
Southeastern Region	Unintentional	5,305	428 [416, 439]
	Self-Harm	136	11 [9, 13]
	Assault	735	59 [55, 64]
Statewide	Unintentional	39,826	583 [577, 588]
	Self-Harm	742	11 [10, 12]
	Assault	4,229	62 [60, 64]
Western Region	Unintentional	3,235	727 [702, 752]
	Self-Harm	33	7 [5, 10]
	Assault	207	47 [40, 53]

CI= Confidence interval

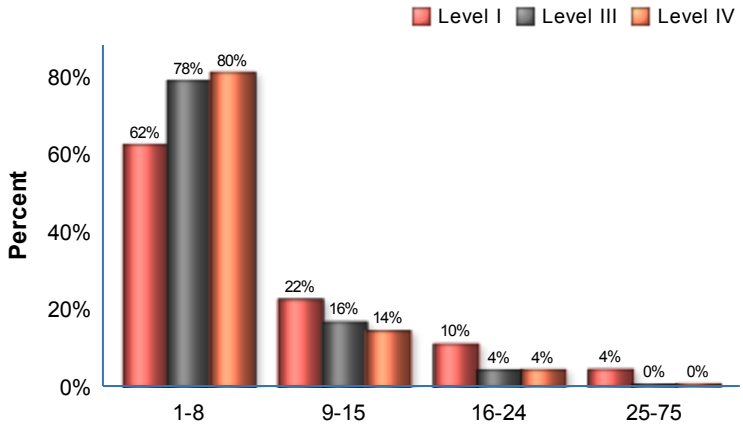
INCIDENCE & MORTALITY

Table 23: Trauma incidence and mortality proportion by trauma center designation

Trauma Center Designation	Count	Percent	Deaths	Mortality Proportion
Level I	28,762	62.90%	954	3.31%
Level III	7,579	16.57%	62	0.81%
Level IV	9,384	20.52%	78	0.83%

INJURY SEVERITY

Figure 31: Injury Severity Score by trauma center designation



Data source: Arizona State Trauma Registry 2016

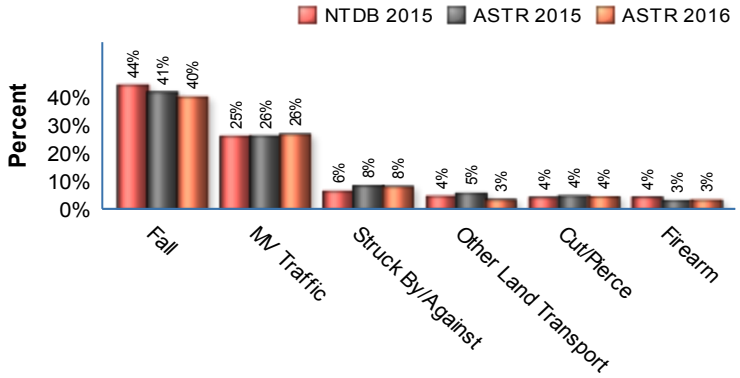
CHARGES & REIMBURSEMENT

Table 24: Trauma charges and reimbursement by trauma center designation

Trauma Center Designation	Total Charges	Median Charges	Total Reimbursement	Reimbursement Percent
Level I	$1,486,080,726	$29,302	$245,110,322	16.4%
Level III	$251,906,842	$19,897	$31,921,361	12.6%
Level IV	$156,269,817	$12,824	$19,420,208	12.4%
Total	*$1,894,257,386*	*$22,557*	*$296,451,892*	*15.6%*

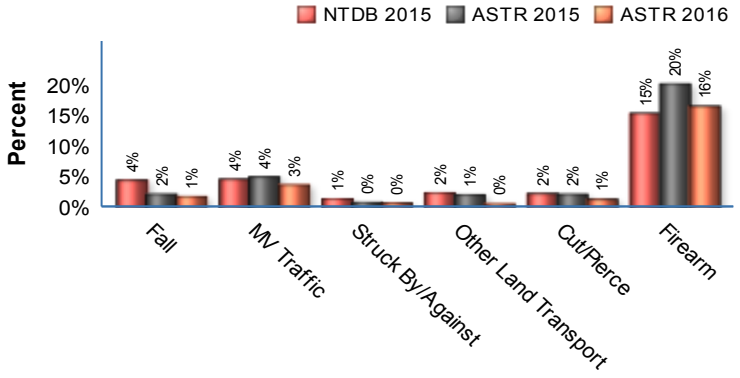
TOP 6 MECHANISM OF INJURY

Figure 32: Trauma proportion by top six national mechanisms of injury: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

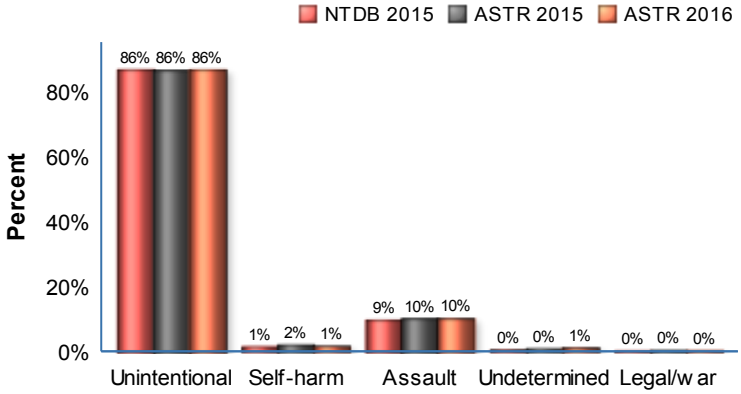
Figure 33: Trauma mortality proportion by top six national mechanisms of injury: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

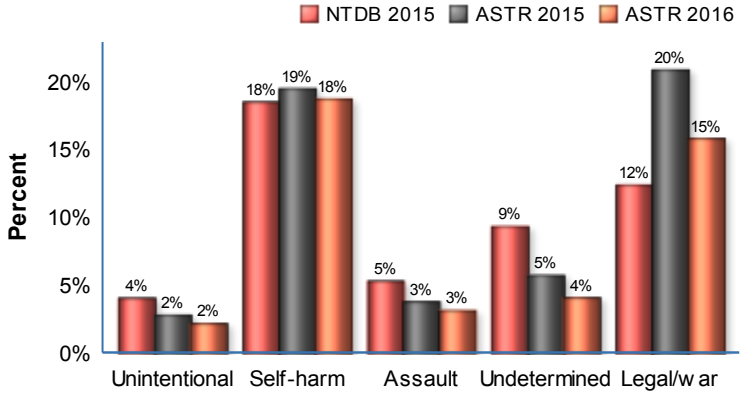
INTENT OF INJURY

Figure 34: Trauma proportion by intent of injury: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

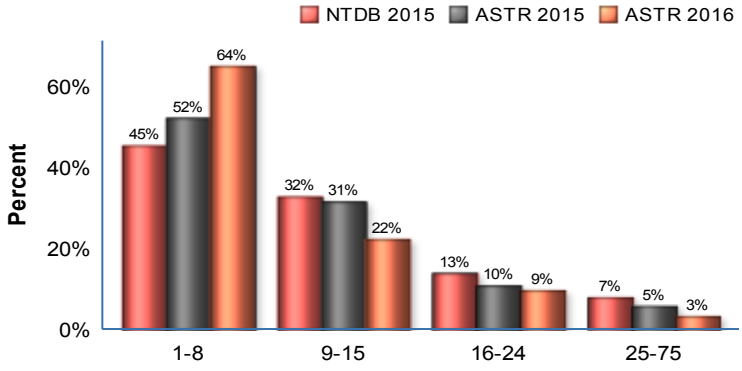
Figure 35: Trauma mortality proportion by intent of injury: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

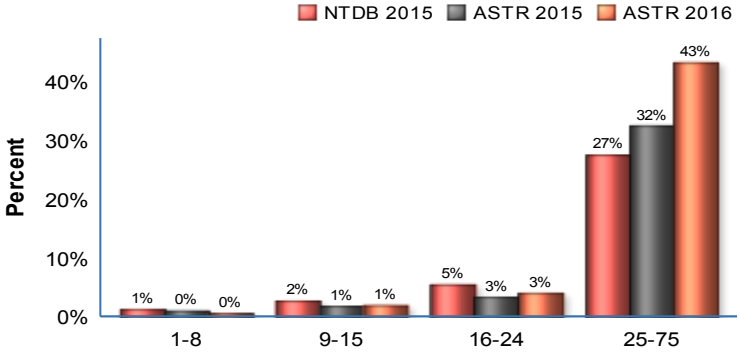
INJURY SEVERITY SCORE

Figure 36: Trauma proportion by Injury Severity Score: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

Figure 37: Trauma mortality proportion by Injury Severity Score: Arizona vs. National



Data source: Arizona State Trauma Registry 2015-2016, National Trauma Data Bank 2015

*ASTR restricted to cases reported to the National Trauma Data Bank

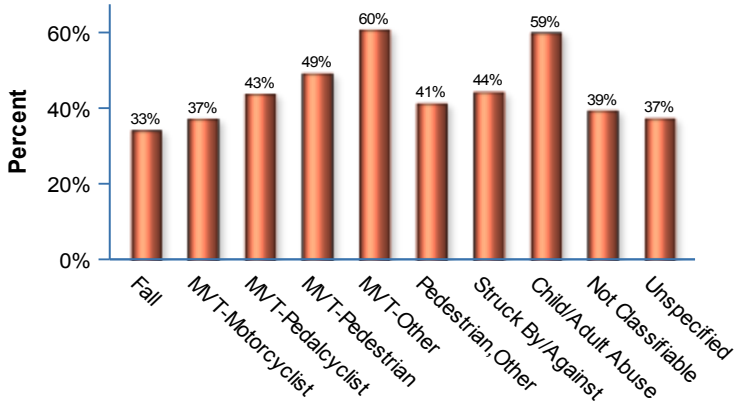
INCIDENCE & MORTALITY

Table 25: Traumatic brain injury incidence and mortality proportion by age and injury severity

		Major TBI				Minor TBI			
Age	Overall	N	Percent	Mortality	Mortality Percent	N	Percent	Mortality	Mortality Percent
Total	46,842	5,519	11.78%	614	11.12%	9,566	20.42%	100	1.04%
<1	454	171	37.66%	4	2.33%	101	22.24%	.	.
1-4	1,343	141	10.49%	9	6.38%	268	19.95%	3	1.11%
5-9	1,338	97	7.24%	2	2.06%	213	15.91%	1	0.46%
10-14	1,598	107	6.69%	5	4.67%	366	22.90%	2	0.54%
15-19	3,309	252	7.61%	36	14.28%	855	25.83%	2	0.23%
20-24	4,019	321	7.98%	54	16.82%	947	23.56%	6	0.63%
25-34	6,530	515	7.88%	80	15.53%	1,404	21.50%	8	0.56%
35-44	4,783	471	9.84%	66	14.01%	1,041	21.76%	5	0.48%
45-54	4,904	577	11.76%	91	15.77%	1,008	20.55%	11	1.09%
55-64	4,924	658	13.36%	70	10.63%	913	18.54%	14	1.53%
65-74	4,919	768	15.61%	66	8.59%	841	17.09%	14	1.66%
75-84	4,870	844	17.33%	73	8.64%	910	18.68%	16	1.75%
85+	3,851	597	15.50%	58	9.71%	699	18.15%	18	2.57%

MECHANISM OF INJURY

Figure 38: Proportion of Traumatic Brain Injury by mechanism



Data source: Arizona State Trauma Registry 2016

Table 26: Traumatic brain injury incidence and mortality proportion by age and GCS

		TBI- GCS<9				TBI- GCS 9-12				TBI- GCS 12-15			
Age	Overall	N	Percent	Mortality	Mortality Percent	N	Percent	Mortality	Mortality Percent	N	Percent	Mortality	Mortality Percent
Total	46,842	1,301	2.77%	570	43.81%	475	1.01%	41	8.63%	12,939	27.62%	95	0.73%
<1	454	12	2.64%	4	33.33%	6	1.32%	.	.	243	53.52%	.	.
1-4	1,343	30	2.23%	12	40.00%	11	0.81%	.	.	358	26.65%	.	.
5-9	1,338	15	1.12%	3	20.00%	12	0.89%	.	.	275	20.55%	.	.
10-14	1,598	26	1.62%	7	26.92%	9	0.56%	.	.	432	27.03%	.	.
15-19	3,309	110	3.32%	38	34.54%	21	0.63%	.	.	959	28.98%	.	.
20-24	4,019	162	4.03%	57	35.18%	36	0.89%	2	5.55%	1,057	26.30%	.	.
25-34	6,530	197	3.01%	85	43.14%	76	1.16%	2	2.63%	1,607	24.60%	1	0.06%
35-44	4,783	161	3.36%	66	40.99%	56	1.17%	3	5.35%	1,269	26.53%	1	0.07%
45-54	4,904	174	3.54%	90	51.72%	52	1.06%	3	5.76%	1,321	26.93%	8	0.60%
55-64	4,924	163	3.31%	72	44.17%	60	1.21%	4	6.66%	1,317	26.74%	8	0.60%
65-74	4,919	114	2.31%	56	49.12%	37	0.75%	5	13.51%	1,403	28.52%	19	1.35%
75-84	4,870	85	1.74%	47	55.29%	60	1.23%	14	23.33%	1,548	31.78%	27	1.74%
85+	3,851	52	1.35%	33	63.46%	39	1.01%	8	20.51%	1,150	29.86%	31	2.69%

DISCHARGED TO REHAB BY PAYER

Table 27: Discharged to rehab by primary payer and Injury Severity Score

	Total Patient admitted		Discharged to Rehab		ISS <=15 and Discharged to Rehab		ISS >15 and Discharged to Rehab	
Primary Payer	N	%	N	%	N	%	N	%
AHCCCS	8,809	32.11%	446	5.06%	218	3.08%	227	15.64%
Medicare	7,590	27.66%	890	11.72%	702	11.14%	178	15.55%
Not Documented	293	1.06%	11	3.75%	9	3.32%	2	11.76%
Other	325	1.18%	17	5.23%	11	4.23%	6	10.90%
Private	8,923	32.52%	704	7.88%	441	5.93%	258	19.61%
Self pay	1,493	5.44%	30	2.00%	16	1.29%	14	6.39%
Total	27,433	100.00%	2,098	7.64%	1,397	6.19%	685	16.30%

DISCHARGED TO REHAB BY REGION

Table 28: Discharged to rehab by region of injury

Region	Total Patient Admitted		Other		Discharged to Rehab	
	N	%	N	%	N	%
Missing Region	717	2.6%	655	91.3%	62	8.6%
Central Region	19,636	71.5%	18,259	92.9%	1,377	7.0%
Western Region	1,536	5.5%	1,401	91.2%	135	8.7%
Northern Region	2,732	9.9%	2,524	92.3%	208	7.6%
Southeastern Region	2,812	10.2%	2,496	88.7%	316	11.2%
Statewide	27,433	100.0%	25,335	92.3%	2,098	7.6%

LIST OF TRAUMA CENTERS BY LEVEL OF DESIGNATION

Health Care Institution	Address	Effective Date	Expiration Date
Level I Trauma Centers			
Abrazo West Campus	13677 W. McDowell Road, Goodyear, AZ 85395	10/1/15	06/30/18
Banner - University Medical Center Phoenix	925 E. McDowell Rd., Phoenix, AZ 85006	11/19/14	*11/18/17
Banner Desert Medical Center (Provisional Designation)	1400 South Dobson Rd., Meza, AZ 85202	04/25/17	10/25/18
Banner University Medical Center – Tucson Campus	1501 N. Campbell Ave., Tucson, AZ 85724	11/11/15	*11/11/17
Dignity Health, dba Chandler Regional Medical Center	1955 W. Frye Rd., Chandler, AZ 85224	10/1/15	07/1/18
Flagstaff Medical Center	1200 N. Beaver St., Flagstaff, AZ 86001	05/27/14	*05/27/17
HonorHealth John C. Lincoln Medical Center	250 E. Dunlap Ave., Phoenix, AZ 85020	04/24/17	04/24/20
HonorHealth Scottsdale Osborn Medical Center	7400 E. Osborn, Scottsdale, AZ 85251	10/25/14	*10/25/17
Maricopa Medical Center	2601 E. Roosevelt, Phoenix, AZ 85008	12/20/15	12/19/17
Phoenix Children's Hospital	1919 E. Thomas Rd., Phoenix, AZ 85016	08/31/16	08/31/18
St. Joseph's Hospital & Medical Center	350 W. Thomas Rd., Phoenix, AZ 85013	11/20/16	11/20/17
Level III Trauma Centers			
Abrazo Scottsdale Campus (Provisional Designation)	3929 E. Bell Rd., Phoenix, AZ 85032	04/10/17	10/10/18
Banner Baywood Medical Center	6644 E. Baywood Ave., Mesa, AZ 85206	08/21/17	*02/25/20
Banner Del E. Webb Medical Center (Provisional Designation)	14502 W. Meeker Blvd, Sun City West, AZ 85375	08/01/17	01/28/18
Canyon Vista Medical Center	5700 E. Highway 90, Sierra Vista, AZ 85635	04/03/17	04/03/20
Havasu Regional Medical Center	101 Civic Center Ln., Lake Havasu City, AZ 86403	02/28/17	02/28/20
HonorHealth Deer Valley Medical Center	19829 N. 27th Ave., Phoenix, AZ 85027	04/08/17	04/08/20
Mountain Vista Medical Center	1301 S. Crismon Rd., Mesa, AZ 85209	07/26/17	07/26/19
Tuba City Regional Health Care Corp.	P.O. Box 600, 167 Main St., Tuba City, AZ 86045	04/07/15	12/10/17

***Application Pending:** **In accordance with R9-25-1307D – If an owner submits for renewal of designation, the designation does not expire until the Department has made a final determination.**

LIST OF TRAUMA CENTERS BY LEVEL OF DESIGNATION

Health Care Institution	Address	Effective Date	Expiration Date
Level IV Trauma Centers			
Banner Boswell Medical Center	10401 W. Thunderbird Blvd., Sun City, AZ 85351	12/17/15	12/17/18
Banner Estrella Medical Center	9201 W. Thomas Road, Phoenix, AZ 85037	08/30/15	08/30/18
Banner Gateway Medical Center	1900 N. Higley Road, Gilbert, AZ 85234	01/02/16	01/02/19
Banner Ironwood Medical Center	37000 N. Gantzel Rd., San Tan Valley, AZ 85140	10/11/15	10/11/18
Banner Page Hospital	501 N. Navajo, Page, AZ 86040	11/05/14	*11/05/17
Banner Payson Medical Center	807 S. Ponderosa Street, Payson, AZ 85541	11/22/16	11/22/19
Banner University Medical Center – South Campus	2800 E. Ajo Way, Tucson, AZ 85713	08/13/16	08/13/19
Cobre Valley Regional Medical Center	5880 S. Hospital Dr., Globe, AZ 85501	11/26/15	11/26/18
Copper Queen Community Hospital	101 Cole Ave., Bisbee, AZ 85603	12/01/15	12/01/18
Kingman Regional Medical Center	3269 Stockton Hill Rd., Kingman, AZ 86409	10/15/15	10/15/18
La Paz Regional Hospital	1200 W. Mohave Rd., Parker, AZ 85344	06/02/15	06/02/18
Little Colorado Medical Center	1501 N. Williamson Blvd, Winslow, AZ 86047	06/22/15	06/22/18
Mt. Graham Regional Medical Center	1600 S. 20th Ave., Safford, AZ 85546	03/20/17	03/20/20
Northern Cochise Community Hospital	901 W. Rex Allen Dr., Willcox, AZ 85643	12/04/14	12/04/17
Oro Valley Hospital	1551 East Tangerine Road, Oro Valley, AZ 85755	04/18/16	04/18/19
Summit Healthcare Regional Medical Center	2200 Show Low Lake Rd., Show Low, AZ 85901	08/12/14	*08/12/17
Verde Valley Medical Center	269 S. Candy Ln., Cottonwood, AZ 86326	08/18/14	*08/18/17
Western Arizona Regional Medical Center	2735 Silver Creek Road, Bullhead City, AZ 86442	10/28/16	10/28/19
White Mountain Regional Medical Center	118 S. Mountain Ave., Springerville, AZ 85938	06/18/15	06/18/18
Wickenburg Community Hospital	520 Rose Ln., Wickenburg, AZ 85390	08/08/14	*08/08/17
Yavapai Regional Medical Center – West Campus	1003 Willow Creek Road, Prescott, AZ 86301	01/10/17	01/10/20
Yavapai Regional Medical Center – East Campus	7700 E. Florentine, Prescott Valley, AZ 86314	06/24/17	06/24/20
Yuma Regional Medical Center	2400 South Avenue A, Yuma, AZ 85364	10/28/16	10/28/19

*Application Pending: **In accordance with R9-25-1307D – If an owner submits for renewal of designation, the designation does not expire until the Department has made a final determination.**

PATIENT INCLUSION DEFINITION

ARIZONA STATE TRAUMA REGISTRY (ASTR)

Effective for records with ED/Hospital Arrival Dates October 1, 2015 – Current

❖ **1. EMS TRAUMA TRIAGE PROTOCOL**

A patient with injury or suspected injury who is triaged from a scene to a trauma center or ED based upon the responding EMS provider's trauma triage protocol;

OR

❖ **1B. INTER-FACILITY INJURY TRANSFERS BY EMS**

A patient with injury who is transported via EMS transport from one acute care hospital to another acute care hospital;

OR

❖ **2. HOSPITAL TRAUMA TEAM ACTIVATIONS**

A patient with injury or suspected injury for whom a trauma team activation occurs; **OR**

❖ **3. ADMITTED OR DIED BECAUSE OF INJURY & MEETS ASTR DIAGNOSIS CODES**

A patient with injury who:
Is admitted as a result of the injury **OR** who dies as a result of the injury

AND

Has an ICD-9-CM N-code (injury diagnosis code) within categories 800 through 959 or ICD-10-CM (injury diagnosis code) within categories S00 through S99 with 7th character modifiers of A, B, or C ONLY. (Injuries to specific body parts –initial encounter)
T07 (unspecified multiple injuries)
T14 (injury of unspecified body region)
T20 through T28 with 7th character modifier of A ONLY (burns by specific body parts – initial encounter)
T30 through T32 (burn by TBSA percentages)
T79.A1 through T79.A9 with 7th character modifier of A ONLY (Traumatic Compartment Syndrome –initial encounter):

(Except exclusions below):

EXCLUSIONS for admitted or died ICD-9-CM or ICD-10-CM patients:

- ❖ **Only has late effects of injury or another external cause:**

(ICD-9-CM N-code within categories 905 through 909)
(ICD-10-CM code within categories S00 through S99 (Injuries to specific body parts) with the 7th digit modifier code of D through S;
T20 through T28 (burns by specific body parts) with 7th character modifier of D through S;
T79.A1 through T79.A9 (Traumatic Compartment Syndrome) with 7th character ifier of D through S)

ARIZONA STATE TRAUMA REGISTRY INCLUSION CRITERIA

- **Only has a superficial injury or contusion:**
  (ICD-9-CM N-code within categories 910 through 924)
  (ICD-10-CM code within categories S00, S10, S20, S30, S40, S50, S60, S70, S80 or S90)

- **Only has effects of a foreign body entering through an orifice:**
  (ICD-9-CM N-code within categories 930 through 939)
  (ICD-10-CM code within T15 through T19)

- **Only has an isolated femoral neck fracture from a same-level fall:**
  (ICD-9-CM N-code within category 820 **AND** ICD-9-CM E-code within category E885 or E886)
  (ICD-10-CM code within S72.0XXX through S72.2XXX with **any one of** V00.111X, V00.112X, V00.118X, V00.121X, V00.122X, V00.128X, V00.131X, V00.132X, V00.138X, V00.141X, V00.142X, V00.148X, V00.151X, V00.152X, V00.158X, V00.181X, V00.182X, V00.188X, V00.211X, V00.212X, V00.218X, V00.221X, V00.222X, V00.228X, V00.281X, V00.282X, V00.288X, V00.311X, V00.312X, V00.318X, V00.321X, V00.322X, V00.328X, V00.381X, V00.382X V00.388X, W00.0XX, W00.9XX, W01.0XX, W03.XXX, W18.2XX, W18.40X, W18.41X, W18.42X, W18.43X, W18.49XX)

- **Only has an isolated distal extremity fracture from a same-level fall:**
  (ICD-9-CM N-code within categories 813 through 817 or 823 through 826 **AND** ICD-9-CM E-code within category E885 or E886)
  (ICD-10-CM code within S52.XXXX, S62.XXXX, S82.XXXX or S92.XXXX with **any one of** V00.111X, V00.112X, V00.118X, V00.121X, V00.122X, V00.128X, V00.131X, V00.132X, V00.138X, V00.141X, V00.142X, V00.148X, V00.151X, V00.152X, V00.158X, V00.181X, V00.182X, V00.188X, V00.211X, V00.212X, V00.218X, V00.221X, V00.222X, V00.228X, V00.281X, V00.282X, V00.288X, V00.311X, V00.312X, V00.318X, V00.321X, V00.322X, V00.328X, V00.381X, V00.382X V00.388X, W00.0XX, W00.9XX, W01.0XX, W03.XXX, W18.2XX, W18.40X, W18.41X, W18.42X, W18.43X, W18.49XX)

- **Only has an isolated burn:**
  (ICD-9-CM N-code within categories 940 through 949)
  (ICD-10-CM code within categories T20 through T32)