



State Trauma Advisory Board 2008 Annual Report

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January Contreras, Acting Director**

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Table of Contents

List of Current Members of the Arizona State Trauma Advisory Board (STAB)	Page 3
List of Current Members of the Arizona Trauma System Quality Assurance And System Improvement Committee (AZTQ)	Page 4
Introduction	Page 5
Increasing the Number of Trauma Centers	Page 5
Road Show	Page 5
Collaboration with the University of Arizona's Rural Health Office	Page 6
Trauma Center Designation	Page 6
Arizona State Trauma Registry	Page 7
EMS Data Registry	Page 7
Public Health Data Reporting	Page 8
Arizona Trauma System Quality Assurance and System Improvement Committee	Page 8
Challenges	Page 9
Conclusion	Page 9
List of State Designated Trauma Centers	Page 10
List of Hospitals Currently Reporting to the Arizona State Trauma Registry	Page 11
Arizona Trauma System Data Analysis	Page 12

CURRENT MEMBERS OF THE STATE TRAUMA ADVISORY BOARD (STAB)

The following is a list of the talented professionals and citizens who serve the State of Arizona on trauma-related advisory board activities, giving of their time and expertise and providing invaluable guidance for the Arizona trauma system. We thank them for their many contributions to the Arizona Department of Health Services, and their efforts on behalf of the citizens of Arizona.

<p>Bentley J. Bobrow, M.D., Chairman Medical Director Bureau of Emergency Medical Services and Trauma System Phoenix, AZ</p>	<p>Philip Johnson, M.D. Rural Base Hospital not a Trauma Center – Representative Summit Healthcare Reg Med Ctr Show Low, AZ</p>	<p>Anthony Rhorer, M.D. National Association of Orthopaedic Trauma Representative Sonoran Orthopaedic Trauma Surgeons Scottsdale, AZ</p>
<p>Charles F. Allen, M.D., FACS Trauma Center Representative Banner Good Samaritan Regional Medical Center Phoenix, AZ</p>	<p>Debbie Johnston Statewide Hospital Association Representative Arizona Hospital and Healthcare Association Phoenix, AZ</p>	<p>Roy Ryals Regional EMS Council – Central Region Representative Southwest Ambulance Mesa, AZ</p>
<p>Bill Ashland Regional EMS Council - Northern Region Representative Flagstaff Medical Center Flagstaff, AZ</p>	<p>Leonard Kirschner, M.D., M.P.H. National Association of Retired Persons Representative Litchfield Park, AZ</p>	<p>Kelly Silberschlag, CEO Statewide Rehabilitation Facility Representative Mountain Valley Regional Rehab Hospital Prescott, AZ</p>
<p>Nathan Avery, M.D. Statewide Neurosurgical Society Representative Neurosurgical Specialists Flagstaff, AZ</p>	<p>David Notrica, M.D., FACS., FAAP Statewide Pediatric Organization Representative Phoenix Children’s Hospital Phoenix, AZ</p>	<p>Mark Venuti, CEP Statewide Ambulance Association – Representative Guardian Medical Transport Flagstaff, AZ</p>
<p>Georgia Butler Federal Indian Health Services Organization Representative Department of Health and Human Resources Phoenix, AZ</p>	<p>Scott Petersen, M.D., (Vice Chair) American College of Surgeons Representative St. Joseph’s Hospital and Medical Center Phoenix, AZ</p>	<p>Terry Welker Tribal Health Organization Representative Ak-Chin Indian Community Maricopa, AZ</p>
<p>Jeff Farkas, NREMT-P Statewide Fire District Association Representative Pinetop Fire Dept. Pinetop, AZ</p>	<p>Michael Pflieger, M.D. National Organization of Emergency Physicians Representative Scottsdale Healthcare/Osborn Scottsdale, AZ</p>	<p>Laurie Wood, R.N. Urban Advanced Life Support Base Hospital not a Trauma Center – Representative Banner Thunderbird Medical Center Glendale, AZ</p>
<p>Sgt. Mark Fink Department of Public Safety Representative Phoenix, AZ</p>	<p>Dave Ridings Fire Department - County with a Population of Five Hundred Thou- sand Persons or More - Rep. City of Tucson Fire Department Tucson, AZ</p>	<p>Linda Worthy, R.N. Society of Trauma Nurses Representative John C. Lincoln North Mountain Hospital Phoenix, AZ</p>
<p>Stewart Hamilton, M.D. Regional EMS Council - Western Region Representative Yuma Regional Medical Center Yuma, AZ</p>	<p>Peter Rhee, M.D., MPH Trauma Center Representative University of Arizona Tucson, AZ</p>	<p>Michelle Ziemba, R.N. Regional EMS Council – Southeastern Region Representative University Medical Center Tucson, AZ</p>

**CURRENT MEMBERS OF THE ARIZONA TRAUMA SYSTEM QUALITY ASSURANCE AND
SYSTEM IMPROVEMENT COMMITTEE (AZTQ)**

The following is a list of the talented professionals and citizens who serve the State of Arizona on trauma-related advisory board activities, giving of their time and expertise and providing invaluable guidance for the Arizona trauma system. We thank them for their many contributions to the Arizona Department of Health Services, and their efforts on behalf of the citizens of Arizona.

<p>Charles F. Allen, M.D., FACS, Chairman Banner Good Samaritan Regional Medical Center Phoenix, AZ</p>	<p>Pam Goslar, Ph.D. Expertise in Health Data Analysis Representative St. Joseph’s Hospital and Medical Center Phoenix, AZ</p>	<p>Richard Porter, Epidemiologist ADHS Bureau of Public Health Statistics Phoenix, AZ</p>
<p>Bill Ashland, R.N. Rural Representative Flagstaff Medical Center Flagstaff, AZ</p>	<p>Michelle Guadnola, R.N. St. Joseph’s Hospital and Medical Center Trauma Services Representative Phoenix, AZ</p>	<p>Kelly Silberschlag, CEO Accredited Rehab Facility Representative Mountain Valley Regional Rehabilitation Hospital Prescott, AZ</p>
<p>Marcia Barry, R.N. (Vice Chair) Banner Good Samaritan Regional Medical Center’s Trauma Services Representative Phoenix, AZ</p>	<p>Philip Johnson, M.D. Rural Emergency Department Physician Summit Healthcare Regional Medical Center Show Low, AZ</p>	<p>Charlann Staab, R.N., MSN, CFRN Arizona Ambulance Association Representative Air Evac Services, Inc. Phoenix, AZ</p>
<p>Jane Burney, R.N. Scottsdale Healthcare/Osborn’s Trauma Services Representative Scottsdale, AZ</p>	<p>Debbie Johnston Arizona Hospital and Healthcare Association Representative Phoenix, AZ</p>	<p>Brenda Sutton, R.N. Prehospital Provider Phoenix Fire Dept. Phoenix, AZ</p>
<p>Jeff Farkas, NREMT-P Fire District Representative Pinetop Fire Department Pinetop, AZ</p>	<p>Marc Matthews, M.D. Maricopa Medical Center’s Trauma Services Representative Phoenix, AZ</p>	<p>Linda Worthy, R.N. John C. Lincoln North Mountain’s Trauma Services Representative Phoenix, AZ</p>
<p>Victor Garcia, R.N., BSN, MBA Urban Non-Trauma Acute Care Facility Representative Mercy Gilbert Medical Center Gilbert, AZ 85296</p>	<p>Scott Petersen, M.D. Urban Trauma Center Surgeon St. Joseph’s Hospital and Medical Center Phoenix, AZ</p>	<p>Michelle Ziemba, R.N., MSN University Medical Center’s Trauma Services Representative Tucson, AZ</p>

INTRODUCTION

This State Trauma Advisory Board 2008 Annual Report highlights the Board's accomplishments, recommendations, and challenges over the last year.

The State Trauma Advisory Board (STAB), was established by the Arizona Legislature through passage of House Bill (HB) 2077, adding § 36-2222 to the Arizona Revised Statutes (A.R.S.). HB 2077 was chaptered into Arizona Laws and signed by the Governor on April 21, 1994. STAB held its inaugural meeting on September 23, 1994, and has since expertly served as an advisory body to the Director of the Arizona Department of Health Services (ADHS). STAB is comprised of health care professionals from hospitals and prehospital care agencies, and individuals representing the public appointed by the Director of ADHS. STAB is mandated by statute to: (1) make recommendations on the initial and long-term processes for the verification and designation of trauma center levels, including the evaluation of trauma center criteria; (2) make recommendations on the development and implementation of comprehensive regional emergency medical services and trauma system plans; (3) make recommendations on the state emergency medical services and trauma system quality improvement processes, including the state trauma registry; and (4) submit an annual report to the Director of ADHS on or before October 1 regarding the STAB's accomplishments and recommendations.

New laws in 2008 expanded STAB's membership to include four additional positions: 1) a representative from a statewide neurosurgical society; 2) a representative from a statewide pediatric organization; 3) a representative from a society of trauma nurses; and 4) a representative from a national association of orthopedic trauma. These new laws also authorize the release of State Trauma Registry data to other persons and organizations to study the sources and causes of trauma in Arizona, to evaluate trauma care and related programs, and to protect the confidentiality of trauma patient identifying information.

Injury continues to be the third leading cause of death in Arizona. A systematic and integrated approach to trauma care, including injury prevention, provides the best means to protect the public from premature death and prolonged disability resulting from traumatic injuries. An integrated state EMS and trauma system will assure that the necessary emergency medical services and facilities with the appropriate resources and capabilities are available to care for injured patients. An integrated EMS and trauma system assures that the necessary infrastructure is in place to deliver the "right" patient to the "right" facility in the "right" amount of time, and that the facility coordinates the resources necessary to return the patient to the highest level of function possible.

Increasing the Number of Trauma Centers

Road Show

The American College of Surgeons Committee on Trauma conducted a statewide assessment of Arizona's trauma system in June 2007, and included various recommendations. One of the key recommendations from the statewide assessment included that, "All hospitals should be designated as trauma centers or as participating hospitals of the statewide inclusive trauma care system."

As identified in the 2007 STAB Annual Report, a top priority for 2008 was to identify solutions to encourage more health care institutions to formally participate in the state trauma system. Because trauma center designation is voluntary in Arizona, the Bureau of EMS and Trauma System staff developed a "Road Show" presentation with the objective of educating hospital administrators about the social and financial benefits of

formal state designation as a trauma center. Each Road Show presentation is tailored to the hospital receiving the presentation and contains a cost/benefit analysis of two patient cohorts identified through the Arizona Hospital Discharge and Emergency Department databases and the Arizona State Trauma Registry.

The first cohort allows ADHS to estimate potential revenue available only to designated trauma centers associated with trauma team activation for injury patients seen in the target hospital's emergency department or admitted to the hospital.

The second cohort allows ADHS to estimate potential revenue associated with minor and moderately injured patients that could be treated at the target hospital were they to become a designated trauma center. In many cases, the target hospital is bypassed and injured patients are transported and treated in a level I trauma center located in Tucson, Flagstaff or Phoenix.

Then ADHS calculated costs associated with trauma center designation (salary, benefits package, education, travel) and deductions from revenue (write downs, write offs, contract rates). These costs were then deducted from gross revenue allowing ADHS to estimate net revenue.

Three of the original ten hospitals contacted have requested an ADHS Road Show presentation. An additional ten hospitals have been notified about the program.

Collaboration with the University of Arizona's Rural Health Office

Building capacity to meet the needs of trauma patients in all areas of Arizona is essential. Rural areas of Arizona account for only 20% of the population but nearly 60% of trauma deaths occur in rural areas. An injured patient's chances of survival are greatest if he or she receives definitive care within the first hour following injury, known as the "Golden Hour."

The University of Arizona's Rural Health Office made available to Critical Access Hospitals (CAHs) small grants for those CAHs interested in state designation as Level IV trauma centers. Three CAHs applied for the grant and intend to apply for designation. We have been diligently working with the staff from these three hospitals to assist them in putting into place all of the requirements for preparing and submitting an application.

We have also been working with several other hospitals throughout the state by providing direction and answering questions as those hospitals consider designation. We are hopeful that some of these hospitals will pursue designation for the good of the patients and communities they serve.

Trauma Center Designation

Funding constraints continue to limit efforts to develop an inclusive statewide trauma system. Trauma center designation is available at Levels I, II, III, and IV. Designation as a Level I trauma center requires that facilities make available the highest level of resources and capabilities, while designation as a Level IV trauma center requires limited resources and capabilities. There are currently seven designated Level I trauma centers, one provisionally designated Level I trauma center, and one designated Level IV trauma center in Arizona. No health care institution has applied for Level II or Level III trauma center designation. More designated Level III and IV trauma centers are needed in the rural areas of the state. Since trauma center designation is voluntary, a number of hospitals reportedly will not pursue designation because of the costs associated with increasing the resources and capabilities to be a trauma center and a

lack of financial support for readiness costs. Only hospitals designated as Level I trauma centers receive funding as a result of the 2002 public initiative (Proposition 202) from the Trauma and Emergency Services Fund established pursuant to A.R.S. §36-2903.07. Ninety percent (90%) of this fund is distributed to Level I trauma centers for unrecovered trauma readiness costs, and ten percent (10%) of the fund is distributed to hospitals for unrecovered costs attributable to providing emergency services. The fund is administered by the Arizona Health Care Cost Containment System (AHCCCS).

The original seven self-designated Level I trauma centers in Arizona were grandfathered into designated Level I status under the trauma center designation rules promulgated in 2005. The grandfather clause provided a 36-month timeframe for these seven health care institutions to receive an on-site review by the American College of Surgeons Committee on Trauma (ACS-COT). The ACS-COT reviews each hospital's resources and capabilities for ACS trauma center verification or state trauma center designation. The hospitals receiving state Level I designation will continue to be reimbursed for unrecovered trauma readiness costs. Two hospitals have already successfully undergone the ACS review while the other five are scheduled this fall.

We are pleased to include two new hospitals now formally participating in the trauma system as designated trauma centers. Phoenix Children's Hospital has been provisionally designated as a Level I trauma center effective July 1, 2008. Phoenix Children's Hospital is the state's only free-standing children's hospital. Summit Healthcare Regional Medical Center in Show Low has been designated as a Level IV trauma center effective August 13, 2008.

Attached is the list of designated trauma centers with their respective effective dates and expiration dates.

Arizona State Trauma Registry

The Arizona State Trauma Registry (ASTR) is a critical component in Arizona's formal trauma system, and is housed under the Office of Health Registries within the Bureau of Public Health Statistics.

New rules effective January 12, 2008, aligned the ASTR with the National Trauma Data Standards. The rules include trauma patient inclusion criteria, minimum data element requirements, deadlines for data submission, requirements for ADHS reports on trauma registry data, provisions for trauma registry data quality assurance, and confidentiality requirements for trauma registry data and trauma system quality assurance.

There are currently 11 hospitals reporting trauma patient data to the ASTR. Designated Levels I, II, and III trauma centers are required to submit data to the ASTR using Trauma One[®] software. Level IV trauma centers and non-designated health care institutions voluntarily submitting data may use either Trauma One[®] software or an Excel spreadsheet with a STAB-approved abbreviated list of data elements. The abbreviated list of data elements was established to decrease the burden of data collection and submission on the smaller and more rural facilities. A list of the 11 hospitals currently reporting is attached.

EMS Data Registry

The Bureau of EMS and Trauma System is also developing an EMS database to capture prehospital care data in a format that is consistent with national standards and that will allow for analysis of specific diseases including cardiac arrest, heart attack, trauma and stroke. The format of the registry will allow the Bureau to provide blinded benchmarking reports to each of the contributing agencies and for the Bureau to

link data from the EMS, hospital and trauma registries resulting in a better understanding of the prehospital care impact on patient outcomes.

With the development of an EMS database, a quality assurance process that evaluates prehospital care as well as trauma care, will guide overall improvement processes for the entire system. Improvement processes will assure that optimal medical and trauma care is provided to Arizona citizens and visitors, while providing an educational and communication forum for the multidisciplinary providers through the sharing of ideas, knowledge, and skills that ultimately lead to best practices implementation.

Public Health Data Reporting

Having a robust and standardized database for statewide trauma enables ADHS to evaluate the incidence, cause, severity, outcome, and overall system effectiveness of the Arizona trauma system for trauma victims. High quality trauma registry data allows ADHS to paint a clearer picture of traumatic injuries in Arizona and the overall EMS and trauma system's effectiveness. In addition to the Standard Public Reports produced for STAB, we are beginning to analyze data and produce reports on a variety of issues for several sources including the media. These reports are available on the Bureau of EMS and Trauma System webpage at www.azdhs.gov/bems/trauma and include *Helmet Your Child*, *Trauma Fast Facts - Injuries, Charges, Payor Mix and Cause of Injury by Legislative District and County*, *MVA Injury Fact Sheet*, and *Golden Hour Report*. Analyzing data and reviewing care provided in the field and in the hospital will help to determine the best treatment modalities to improve overall patient outcomes.

Helmet Your Child is a one page fact sheet that discusses the number of bicycle-related injuries to children under the age of 15, and specifically, the number of head injuries. The fact sheet discusses the effectiveness of helmet use and the estimated associated health care costs for these injuries.

Trauma Fast Facts - Injuries, Charges, Payor Mix and Cause of Injury by Legislative District and County - This report reflects, by district, the number of residents seen in a hospital for injury, incidence of injury ranking, payor mix, and the total hospital and emergency department charges for injured residents within that district.

MVA Injury Fact Sheet describes the number of pediatric and teenage trauma patients admitted to reporting hospitals in the state due to motor vehicle crashes, usage of restraint devices such as seat belts and car seats, and outcomes associated with these crashes.

The *Golden Hour Report* is an analysis conducted on all 2007 trauma patients stratifying patient numbers by county of injury, transportation mode to a trauma center, and identification of trauma center arrival within the "Golden Hour" and those arriving to a trauma center after one hour. The analysis revealed that patients transported to a trauma center from the scene of an injury outside a large urban area did not arrive at a trauma center within the "Golden Hour." Patients transferred to a trauma center from another hospital were excluded from the analysis. Future analysis is needed to evaluate the numerous causes or reasons for delays in arrival times, some of which are not always preventable, such as a prolonged and difficult extrication from a motor vehicle crash, remote injury location, weather, terrain, etc.

Arizona Trauma System Quality Assurance and System Improvement Committee

The Arizona Trauma System Quality Assurance and System Improvement Committee (AZTQ), a subcommittee of STAB, is comprised of individuals representing EMS and trauma throughout the state.

AZTQ is responsible for: 1) recommending standards for a uniform data collection system for the registry; 2) recommending safeguards for maintaining confidentiality of registry data; 3) developing and recommending guidelines for the use and release of trauma data; and 5) developing methods for continuous quality improvement of registry data and recommending statewide trauma system quality assurance processes.

ADHS must ensure that trauma data are collected and submitted to the ADHS by participating health care institutions, and that ADHS disseminates aggregate trauma data to the participating trauma centers and hospitals, general public, other health care providers, policy and program planners, and other interested entities pursuant to and in compliance with federal and state confidentiality laws.

Together, STAB and AZTQ have developed specific performance measures used to evaluate trauma services on a statewide level. Reports are generated from the ASTR to provide data for review by the committees.

Challenges

The participation of many talented and dedicated professionals and healthcare institutions in Arizona has resulted in a strong, primarily voluntary, trauma system concentrated in the urban areas of the state. A truly inclusive statewide trauma system relies on the collection of requisite data and the participation of all hospitals, which together, provide for the systematic care of trauma patients. Continuing to encourage health care institutions to formally participate in this system remains a top priority.

Equally important is to ensure that data collected from participating hospitals are of high quality. These data are critical because they are used for assessing the trauma system. The development of a comprehensive quality assurance process is important. The data collected must be assessed by conducting reliability studies that will measure quality of information, identify ambiguity or inadequate data definitions and rules, and areas of further training that may be needed. Registry computer software systems must not only provide a repository for data, they must also have quality control processes. Routine quality control functions should be built into registry computer systems and should include audit filters. These audit filters should be applied to all records to check for item validity and consistency. Continuing to work with the software vendor to develop an audit filter that will be used at hospitals and the ASTR is a top priority.

A goal of BEMSTS is to use the data to develop, implement, and conduct trauma care system evaluation, quality assessment, and make recommendations for system improvement. The process would include developing quality indicators using trauma data. These quality indicators will target the trauma system's performance in the management of trauma patients. BEMSTS will continue to work with STAB and AZTQ to further develop and put into action system evaluation processes that will provide important quality assurance benchmarks.

Conclusion

The STAB and the ADHS Bureau of EMS and Trauma System continue to make progress in building the infrastructure for a comprehensive and inclusive statewide trauma system. Continued support and collaboration with ADHS and its committees, the legislature, and health care stakeholders are essential to achieving the overall goal of reducing morbidity and mortality for all injured Arizonans.

ARIZONA STATE DESIGNATED TRAUMA CENTERS

HEALTH CARE INSTITUTION	DESIGNATION LEVEL	EFFECTIVE DATE	EXPIRATION DATE
John C. Lincoln Hospital - North Mountain 250 East Dunlap Avenue Phoenix, AZ 85020	I	04-23-08	04-23-11
St. Joseph's Hospital & Medical Center 350 West Thomas Road Phoenix, AZ 85013	I	11-20-07	11-20-10
Scottsdale Healthcare – Osborn 7400 E. Osborn Scottsdale, AZ 85251	I	11-16-05	11-16-08
Maricopa Medical Center 2601 E. Roosevelt Phoenix, AZ 85008	I	12-28-05	12-28-08
Flagstaff Medical Center 1200 N. Beaver Street Flagstaff, AZ 86001	I	12-28-05	12-28-08
Banner Good Samaritan Medical Center 925 East McDowell Road Phoenix, AZ 85006	I	01-04-06	01-04-09
University Medical Center 1501 N. Campbell Avenue Tucson, AZ 85724	I	12-28-05	12-28-08
Phoenix Children's Hospital 1919 E. Thomas Phoenix, AZ 85016 (Provisional Designation)	I	07-01-08	12-31-09
Summit Healthcare Regional Medical Center 2200 Show Low Lake Road Show Low, AZ 85901	IV	08-13-08	08-12-11

**HOSPITALS CURRENTLY REPORTING
TO THE ARIZONA STATE TRAUMA REGISTRY**

John C. Lincoln - North Mountain
Phoenix, AZ 85020

Banner Good Samaritan Medical Center
Phoenix, AZ 85006

St. Joseph's Hospital and Medical Center
Phoenix, AZ 85013

Scottsdale Healthcare - Osborn
Scottsdale, AZ 85251

Flagstaff Medical Center
Flagstaff, AZ 86001

Maricopa Medical Center
Phoenix, AZ 85008

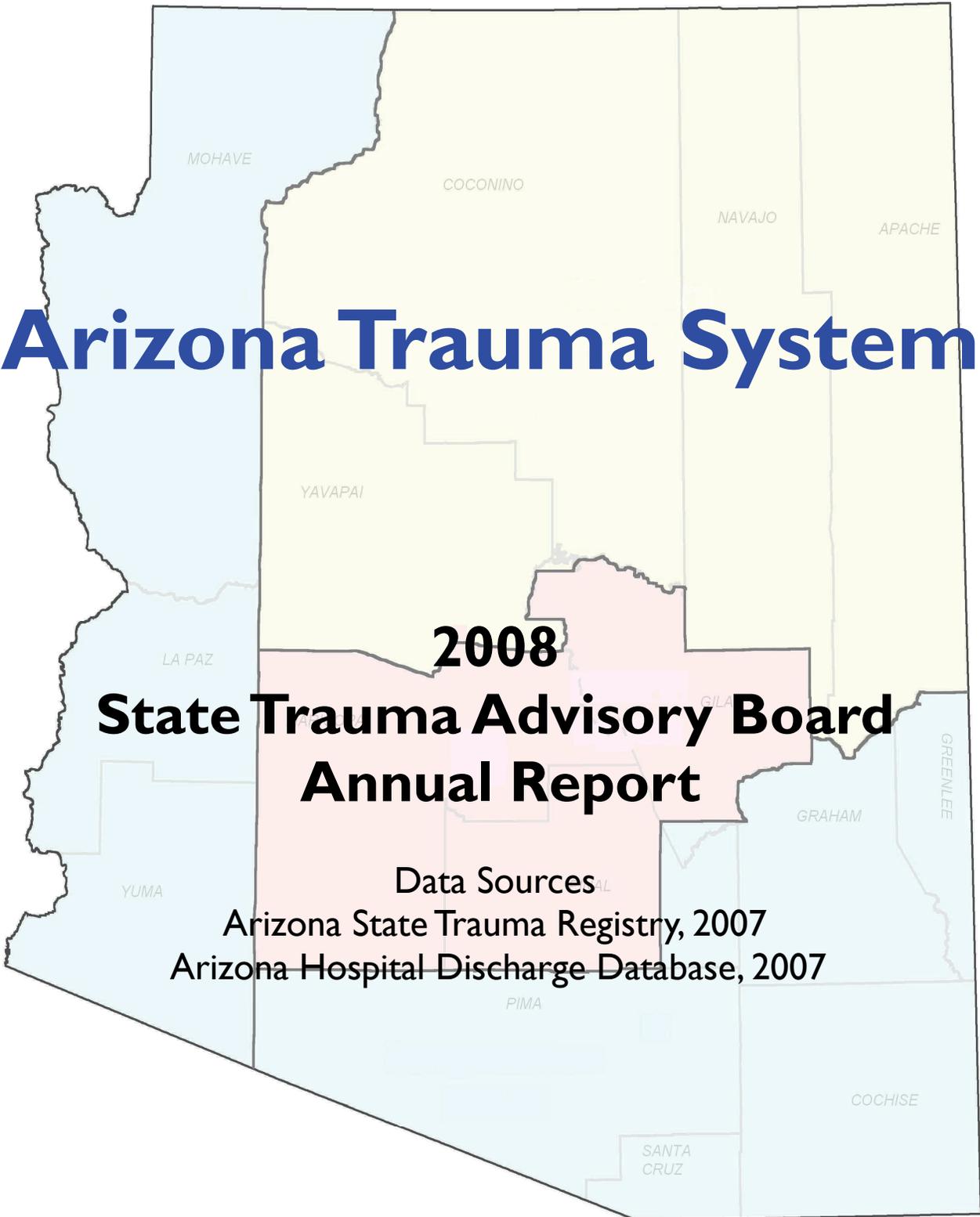
University Medical Center
Tucson, AZ 85724

Yavapai Regional Medical Center
Prescott, AZ

Yuma Regional Medical Center
Yuma, AZ

Sierra Vista Regional Medical Center
Sierra Vista, AZ

Tuba City Regional Health Care
Tuba City, AZ



Arizona Trauma System

2008 State Trauma Advisory Board Annual Report

Data Sources
Arizona State Trauma Registry, 2007
Arizona Hospital Discharge Database, 2007

Arizona Department of Health Services Bureau of Emergency Medical Services and Trauma System

Arizona Trauma System

Annual Report

2008

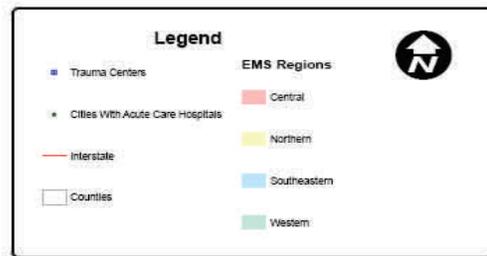
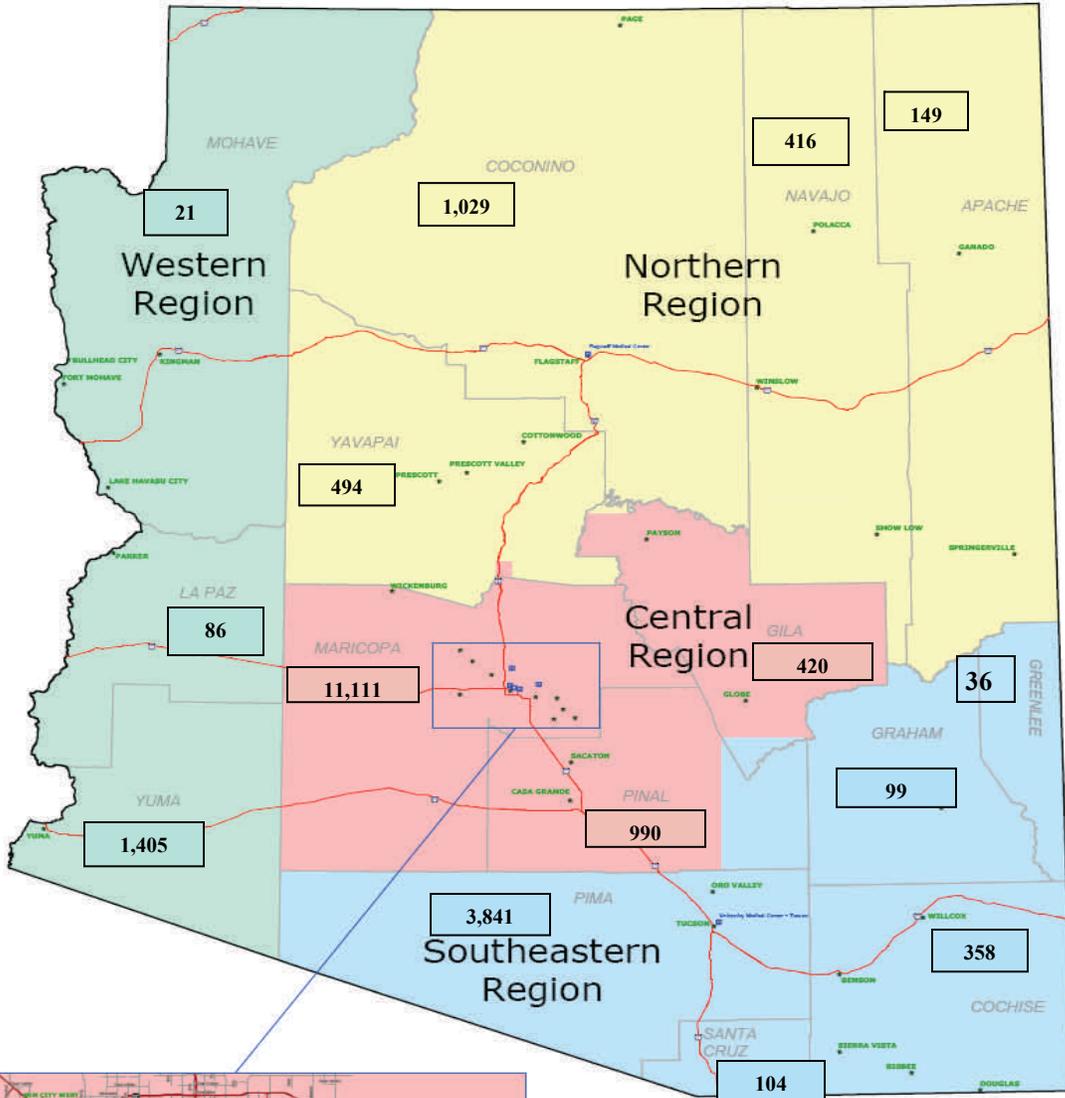


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Trauma System Patients by County of Injury 2007

EMS Regions and Trauma Centers



TRAUMA CASE COUNT LEGEND	
Other (Out-of-State)	492
Missing County	2,934
Total Cases	24,022

2007

Executive Summary

- In 2007, total charges in Arizona due to trauma related cases were more than \$1 billion, \$87 million higher from 2006.
- The highest charges were due to motor vehicle crashes (> \$267 million) followed by falls (> \$217 million).
- Twenty-two percent of the trauma patients had AHCCCS/Medicaid as the primary payer, accounting for more than \$290 million total charges, \$3 million higher from 2005.
- In 2007, a total of 24,022 trauma patients were admitted to trauma centers in the state of Arizona.
- Pediatric patients (aged 0-17 years) accounted for 17.0.0% of cases, while geriatric patients (aged 65 years and older) accounted for 8.4% of cases.
- Males accounted for the majority of trauma patients (67.0%).
- Overall, motor vehicle crashes were the single greatest mechanism of injury (63%) with falls second (12.2%). However, for ages 15-17, firearms along with Falls were the second leading causes of injury.
- In 2007, of the 24,022 trauma cases, the number of patients who died due to traumatic injury was 803 (3.3%). the highest fatality rate was among patients aged 85 years and older (12.7%).
- Firearm injuries were the most lethal mechanism of injury with a fatality rate of 13.6% followed by motor vehicle related pedestrian injury (7.3%).
- Restraint use in teens 15-17 years of age: Among patients treated in a trauma center, teens 15 to 17 years of age have the lowest percentage use of restraints. This abysmal statistic further deteriorates when alcohol or drugs are added to the equation. 70% of teens from this age group that tested positive for drugs or alcohol on admission to a trauma center did not use restraints.
- System performance: The final pages of this year's report we inaugurate some system performance analyses looking at access to timely care and mode of transportation to trauma centers. These reports present a 60,000 foot analysis of the system and raise more questions than they answer. In future reports the Bureau will further analyze these indicators.
- Access to Care: Numerous peer reviewed articles point to the importance and improved outcomes for severely injured trauma patients that are treated in a trauma center within the first 60 minutes following injury. While our analysis is confounded by poor reporting, at a minimum, 21% of patients in the Central Region, 89% of patients in the Western Region, 49% of patients in the Northern Region and 45% of patients in the Southeastern Region either do not arrive at a trauma center within 60 minutes or are not seen in a trauma center.
- Mode of transportation to a trauma center: This analysis indicates that the statewide air transport is used for the trauma patient 23% of the time. Patients injured in Yuma County are transported to an Arizona trauma center utilizing air transport least frequently (5.3%) and most frequently in Greenlee County (94.4%). The average length of stay in a trauma center is 4.4 days for patients transported by air, and 2.8 days for patients transported by ground. The average injury severity score for those patients transported by air is 10.7 and 8.0 for those transported by ground.

Data source: Arizona State Trauma Registry, 2007
Arizona Hospital Discharge Database, 2007

Arizona Trauma System Profile

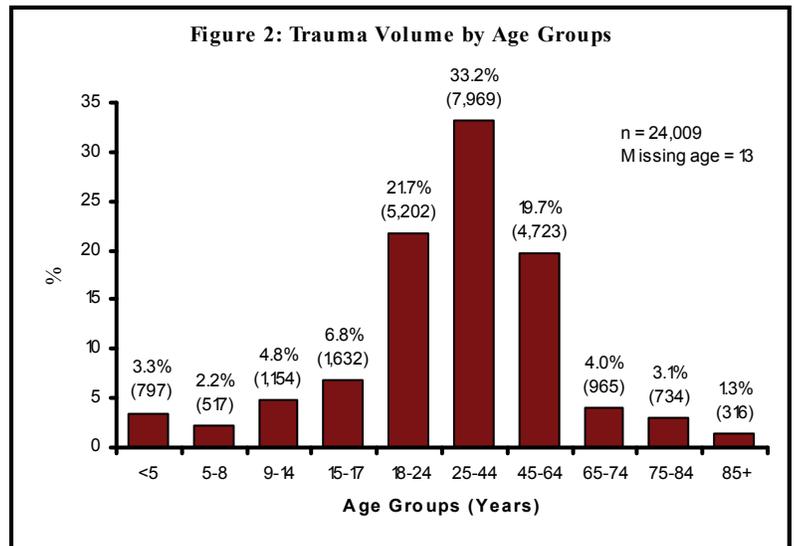
2007

At the time of this report, there were seven trauma centers in the State of Arizona, one level I center in Flagstaff, five level I centers in the Phoenix metropolitan area, and one level I trauma center in Tucson. These seven trauma centers contributed data to the trauma registry. Four other hospitals, none of which were trauma centers, voluntarily contributed trauma data as well. The records in this report are not representative of all Arizona trauma cases statewide as they do not include deaths at the scene or patients treated only at a non-reporting hospital. The 2007 ASTR data underwent several quality control checks. The quality check results were sent to reporting hospitals. Data entry and system errors were corrected by reporting facilities and the data was resubmitted to ASTR. Other data entry and system errors may be present in the 2007 data. Multiple hospital visits for the same injury and transfer of a trauma patient between facilities are difficult to account for and have not been removed.

This report summarizes data compiled from the ASTR for the 2007 year. It is important to note that data and rates in this report are subject to change as data are quality controlled. This report reflects trauma data as it existed in the ASTR database on 8/12/08.

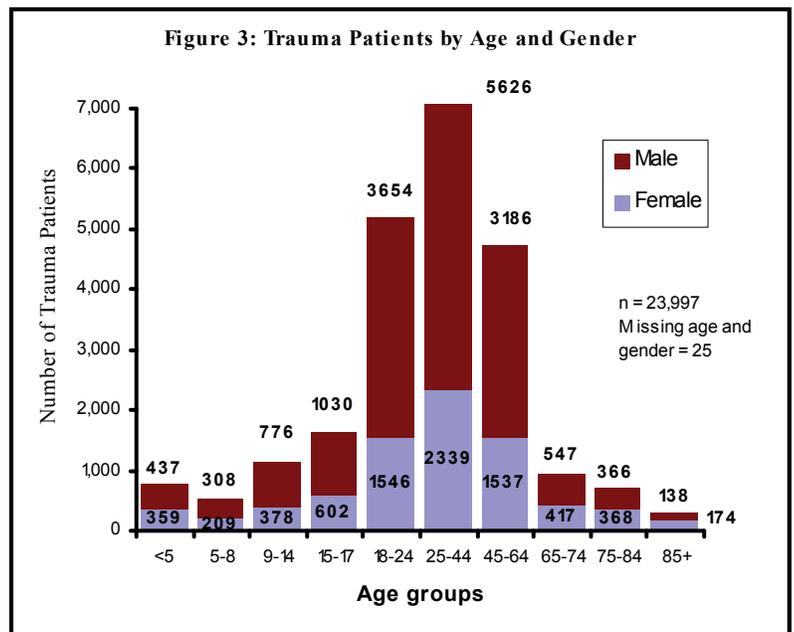
Trauma Volume

Figure 2 demonstrates the volume of trauma patients by age groups in the state of Arizona. Pediatric patients (0-17 years) accounted for 4,100 (17%) of all trauma cases. Among the pediatric patients, 2,468 (10.3%) cases were younger than 15 years and 1,632 (6.8%) cases were 15-17 years old. Geriatric patients (65 years and older) accounted for 2,015 (8.4%) of all trauma cases.



Gender

Males represent a greater share of the trauma volume than do females (Figure 3). Sixty-seven percent of all trauma patients were male and 33% were female. The proportion of males is higher than females in all age groups from birth to 74 years of age. However, in ages 85 and older, the proportion of females is higher than males.



Mechanism of Injury

Mechanism of Injury (MOI)

Motor vehicle crashes are the predominant mechanism of injury and represent 63% (15,092) of all traumatic injuries reported (Figure 4). Of all the motor vehicle crashes, 4.7% of trauma patients were pedestrians and 1.7% were pedal-cyclists who incurred their injuries due to motor vehicle crashes. Falls are the second highest cause of injury representing 12.2% of cases.

Injuries resulting from being struck by or striking against objects or persons accounted for 6.8% of cases and represents the third highest cause of injury.

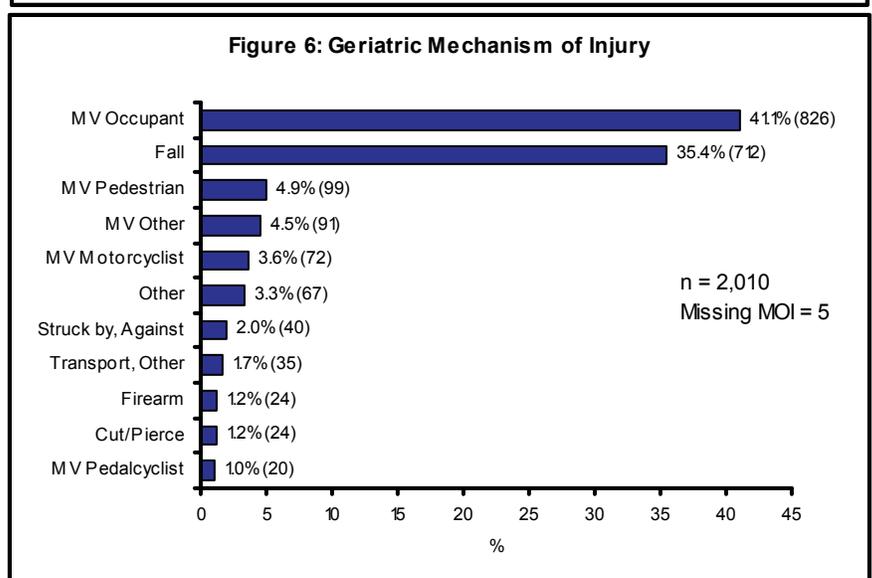
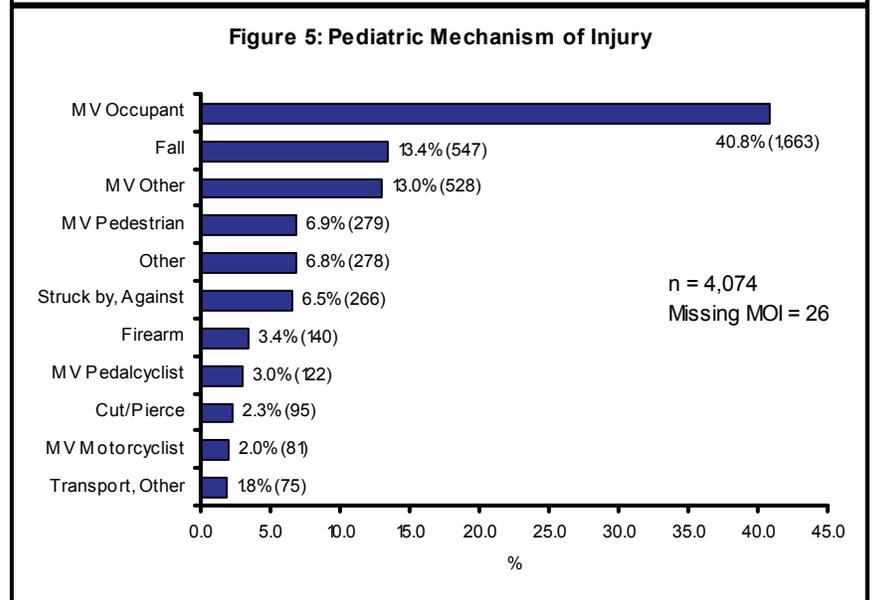
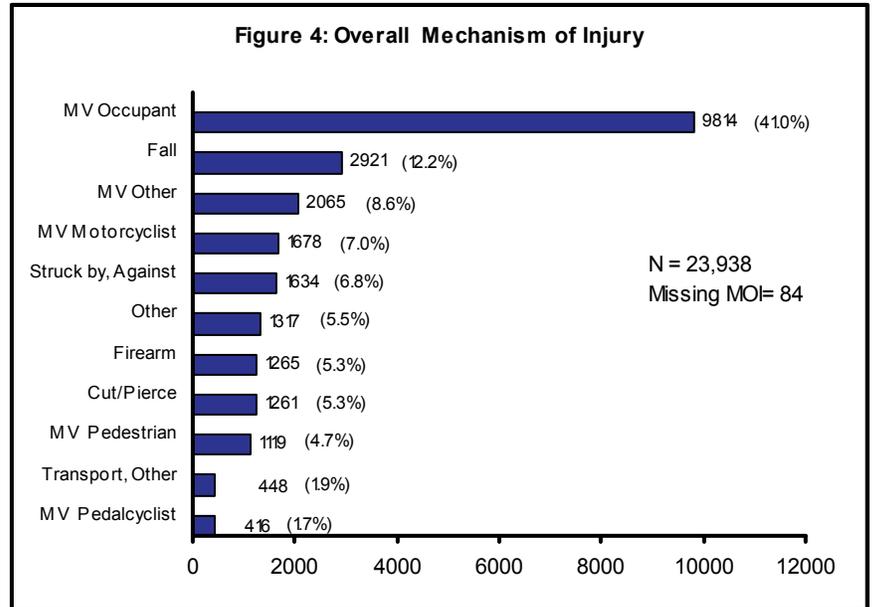
(Transport, Other includes railroad, water transport, animal-drawn transport, off-road vehicles, etc.)

Pediatric Trauma Patient: Mechanism of Injury

Among the pediatric population (0-17 years), motor vehicle crashes were the predominant mechanism of injury (65.6%, n=2,673) followed by falls (13.4%) (Figure 5). However, for ages 15-17, firearms and falls were the second leading causes of injury.

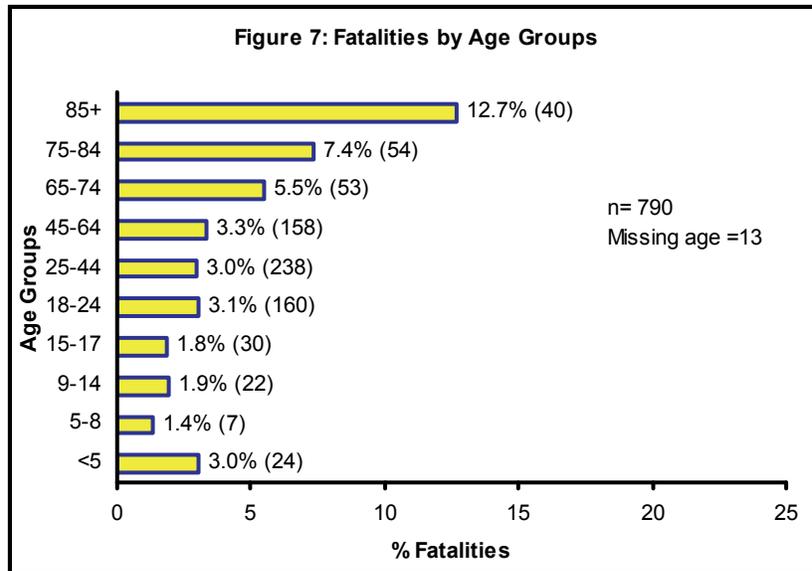
Geriatric Trauma Patient: Mechanism of Injury

Once again motor vehicle crashes were the predominant mechanism of injury among geriatric trauma patients (55.1%, n=1,108) (Figure 6). Falls was the second highest mechanism of injury among geriatric trauma patients (35.4%).



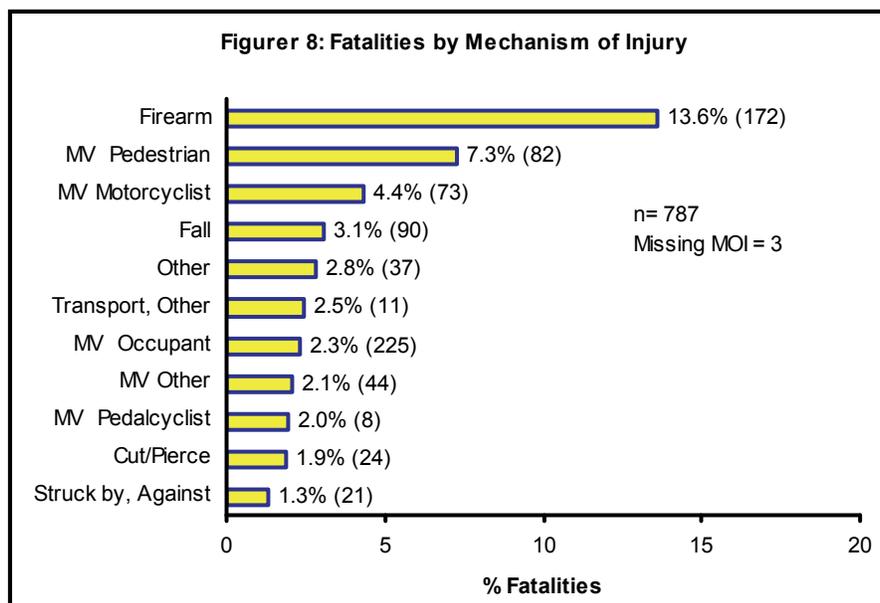
Fatalities by Age

In 2007, of the 24,022 trauma cases reported to the ASTR, the number of patients who died due to traumatic injury was 803 (3.3%). The highest number of fatalities occur in the 25-44 age group; however, the highest fatality rate was among patients aged 85 years and older (12.7%) (Figure 7).



Fatalities by Mechanism of Injury

Firearm injuries were the most lethal mechanism of injury with a fatality rate of 13.6% followed by motor vehicle related pedestrian injury (7.3%). Motor vehicle crashes accounted for the highest number of fatalities (432) with a fatality rate of 3%.



Motor Vehicle Occupant Crashes (N= 9,814)

Data Analysis

Analyses of differences in dichotomous outcomes between groups were made using the Chi-square test. Nonparametric Wilcoxon tests were used to assess group differences for continuous variables.

Demographics

The total number of patients included in the ASTR during the period of 2007 was 24,022, of which 15,092 (63%) were injured in motor vehicle crashes. Of those, 9,814 (65%) were motor vehicle drivers or passengers (Table 1). Of these patients, 5,885 (60%) were using restraint devices (seat belt, shoulder belt, or car seat), 3,494 (36%) patients did not use any kind of restraint and the restraint use data were missing for the remaining 435 patients (4.4%). Females are more likely to use restraints than males. Restraint use in the 15-17 year old population is lowest among all age groups.

Outcomes by Restraint Use

Those who did not utilize a restraint device had significantly longer ICU days and hospital stays than those who utilized restraints ($p < 0.0001$), reflecting an increase in resource utilization to care for these patients (Table 2). Mortality for the non-restraint group was significantly elevated when compared with the restraint group (3.8% versus 0.9%, $p < 0.0001$). The non-restraint group had significantly more severe injuries and poorer physiologic status when compared with the restraint group as demonstrated by ISS and GCS scores ($p < 0.0001$). Hospital charges were also significantly greater for the non-restraint group. Discharge to a rehabilitation hospital was significantly higher in the non-restraint group when compared to the restraint group.

Table 1: Demographics

Motor Vehicle Crashes	Number of Patients (%)	Restraint Use (%)
Total Motor Vehicle Crashes	9,814	5,885 (60.0%)
Gender		
Female	4,678 (47.7%)	3,149 (67.3%)
Male	5,132 (52.3%)	2,734 (53.3%)
Age Groups		
<5	330 (3.4%)	223 (68.1%)
5-8	210 (2.1%)	120 (57.1%)
9-14	356 (3.6%)	180 (51.0%)
15-17	767 (7.8%)	350 (46.0%)
>17	8,149 (83.1%)	5,011 (61.5%)
Discharge - Death	221 (2.3%)	50 (22.6%)

Total number may not add to 9,814 due to missing data

Table 2: Outcomes by Restraint Use

Motor Vehicle Crashes	Restraint Use (n=5,885) n (%)	No Restraint Use (n=3,494) n (%)	p-value
Discharge disposition			
Transfer for additional care	239 (4.1%)	203 (5.8%)	<0.0001
Home	5,255 (91.1%)	2,930 (84.0%)	<0.0001
Death	50 (0.9%)	133 (3.8%)	<0.0001
Rehabilitation	189 (3.2%)	192 (5.5%)	<0.0001
Other	52 (0.9%)	36 (1.0%)	NS
ISS (mean)	5.9	9.6	<0.0001
GCS (mean)	14.7	13.7	<0.0001
Charges (mean)	\$23,856	\$39,476	<0.0001
ICU (mean)	0.7	1.4	<0.0001
LOS (Mean)	1.9	3.3	<0.0001

Key:

P < 0.05 considered to be significantly different between groups.
 ICU: Intensive care unit
 LOS: Length of stay
 ISS: Injury severity score

Motor Vehicle Crashes: Driving Under Influence

Of the 9,814 motor vehicle crashes, alcohol and drug data analysis was carried out for age ≥ 15 years (8,918).

Alcohol Test

Among the trauma patients aged ≥ 15 years, 29.5% (2,628) were not tested for alcohol, 5.4% (483) had missing alcohol data, and 19.3% (1,720) tested positive for alcohol. Underage (15-21 years) drinking was found in 348 (17%) patients. Among the high risk teenage population (15-17 years), 11.7% (90) were found to be positive for alcohol (Figure 9).

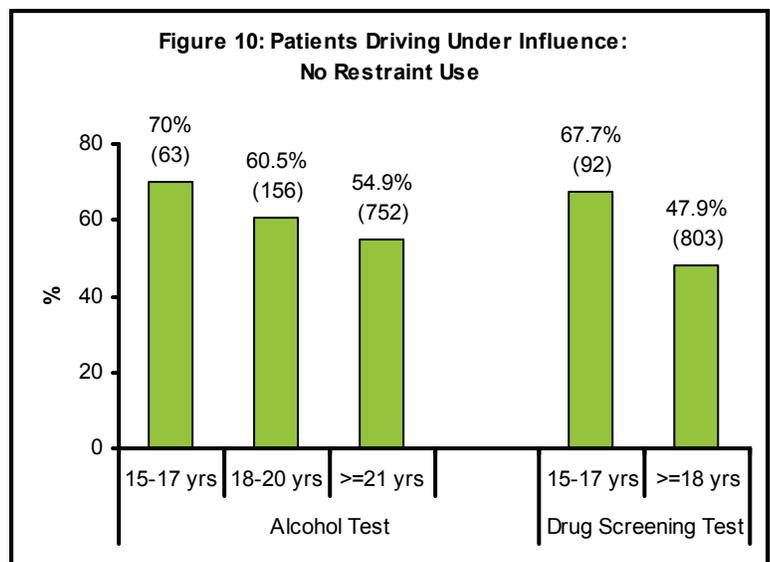
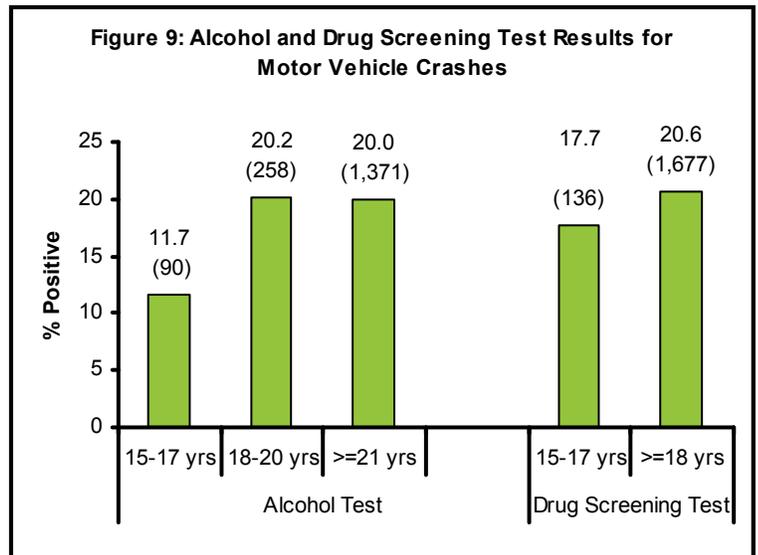
Drug Screening Test

Among the trauma patients aged ≥ 15 years, 52% (4,597) were not tested for drugs, 1% (90) had missing drug test data, and 20.3% (1,813) tested positive for drugs. A higher percentage of 15-17 years old were found to be positive for drugs (17.7%) when compared to positive alcohol tests for the same age group (11.7%) (Figure 9).

Restraint Use and Driving Under Influence

Trauma patients with positive alcohol tests were significantly less likely to use any restraint device when compared to patients with negative alcohol tests (60% vs. 35%, $p < 0.0001$). Similar results were found for the drug screenings. Forty-seven percent used restraints among positive drug test group as compared to 62% in the negative drug test group ($p < 0.0001$).

As reflected in Figure 10, most of the 15-17 year olds with either a positive alcohol or drug test did not use any restraints.



Motorcycle Crashes (N= 1,678)

Demographics

Of the 24,022 trauma patients in the ASTR, 15,092 (63%) were injured in motor vehicle crashes. Of these motor vehicle crashes, motorcycle drivers or passengers accounted for 1,678 (7%) (Table 3). There were 792 (47.2%) helmeted motorcyclists and 843 (50.2%) non-helmeted motorcyclists. There were 43 (2.6%) cases missing helmet data. Interestingly, in the motor vehicle occupant section (page 9), males were less likely to use restraint devices when compared to females. However, when riding motorcycles, males were more likely to wear motorcycle helmets when compared to females. The 15-17 year old population showed very low usage of either restraint device or helmet use for both motor vehicle occupant crashes and motorcycle crashes.

Outcomes by Helmet Use

Non-helmeted motorcyclists had significantly longer ICU days when compared to helmeted motorcyclists ($p < 0.01$) reflecting an increase in resource utilization to care for these patients (Table 4). The non-helmeted group had significantly more severe injuries and poorer physiologic status when compared with the helmeted group as demonstrated by ISS ($p < 0.05$) and GCS scores ($p < 0.0001$). Hospital charges were also significantly greater for the non-helmeted group. No significant difference was found in discharge disposition between the two groups. There was a significantly higher incidence of head injury in the non-helmeted group when compared to the helmeted group.

Table 3: Motorcycle Crashes Demographics

Motorcycle Crashes	Number of Patients (%)	Helmet Use (%)
Total Motorcycle Crashes	1,678	792 (47.2%)
Gender		
Female	221 (13.2%)	86 (38.9%)
Male	1,457 (86.8%)	706 (48.5%)
Age Groups		
<5	2 (0.1%)	0
5-8	5 (0.3%)	1 (20.0%)
9-14	25 (1.5%)	19 (76.0%)
15-17	49 (2.9%)	27 (55.1%)
>17	1,596 (95.1%)	745 (46.7%)
Discharge - Death	72 (4.3%)	27 (37.5%)

Total number may not add to 1,678 due to missing data

Table 4: Motorcycle Crashes Outcomes by Helmet Use

Motorcycle Crashes	Helmet Use (n = 792) n (%)	No Helmet Use (n = 843) n (%)	p-value
Discharge disposition			
Transfer for additional care	58 (7.3%)	74 (8.9%)	NS
Home	630 (80.0%)	644 (76.4%)	NS
Death	27 (3.4%)	44 (5.2%)	NS
Rehabilitation	69 (8.7%)	72 (8.5%)	NS
Other	8 (1.0%)	9 (1.1%)	NS
ISS (mean)	11.0	12.3	0.02
GCS (mean)	14.2	13.5	<0.0001
Charges (mean)	\$48,707	\$49,901	<0.01
ICU (mean)	1.6	2.0	<0.01
LOS (Mean)	4.3	4.5	NS
Head Injury	232 (29.3%)	449 (53.3%)	<0.0001

Motorcycle Crash: Driving Under The Influence

Of the 1,678 motorcycle crashes, alcohol and drug data analysis was carried out for age ≥ 15 years (1,646).

Alcohol Test

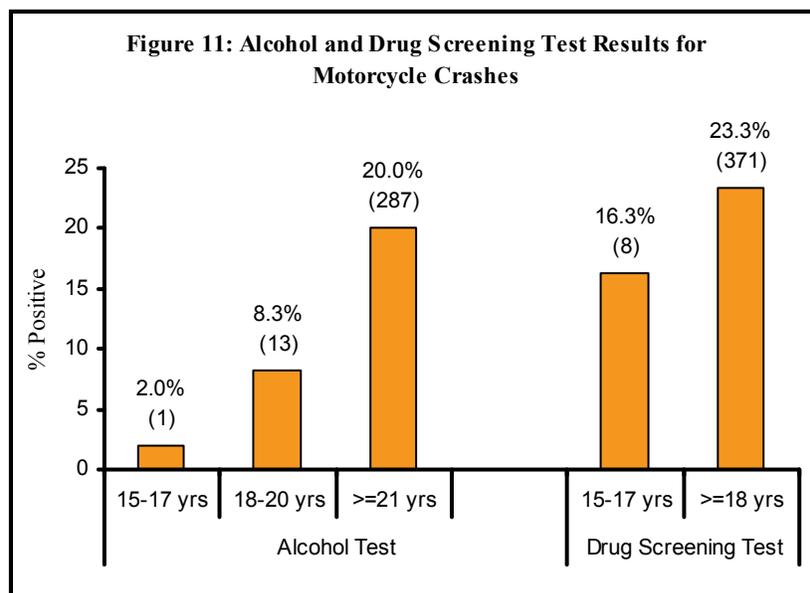
Among the patients aged ≥ 15 years, 24.5% (404) were not tested for alcohol, 7% (110) had missing alcohol data, and 18.1% (301) tested positive for alcohol. Among the patients aged 15-21 years involved in a motorcycle crash, 7% (14) tested positive for alcohol (Figure 11).

Drug Screening Test

Among the patients aged ≥ 15 years, 53% (867) were not screened for drugs, 0.7% (11) had missing data, and 23% (379) tested positive for drugs. A higher percent of 15-17 years old were found to be positive for drugs (16.3%) when compared to positive alcohol tests for the same group (2%).

Restraint Use and Driving Under Influence

As found in motor vehicle crashes, patients with positive alcohol tests were significantly less likely to use helmets when compared to patients with negative alcohol tests (23% vs. 53.8%, $p < 0.0001$). There was no difference in helmet use between those who were found to be positive for drugs (41.0%) and those found to be negative (46%).



Pedal-Cycle Crashes (N= 816) and All Terrain Vehicle (ATV) Crashes (N = 804)

Demographics

For this report, pedal-cycle crashes includes traffic and non-traffic related crashes. There were 816 pedal-cycle crashes in 2007 (Table 5). Only 21.9% used helmets. Males were more likely than females to be involved in a crash. The 15-17 year old population was the least likely to use helmets when compared to other age groups.

Outcomes by Helmet Use

Hospital length of stay and ICU days were significantly longer for those patients involved in a crash who did not use a helmet (Table 6). There was a significant difference in head injury between the helmeted and non-helmeted group.

Table 5: Pedal-Cycle Crashes Demographics

Pedal-Cycle Crashes	Number of Patients (%)	Helmet Use (%)
Total Pedal-Cycle Crashes	816	179 (21.9%)
Gender		
Female	156 (19.1%)	35 (22.4%)
Male	660 (81.0%)	144 (22.0%)
Age Groups		
<5	16 (2.0%)	2 (12.5%)
5-8	49 (6.0%)	6 (12.2%)
9-14	137 (17.0%)	14 (10.2%)
15-17	54 (6.6%)	5 (9.3%)
>17	560 (68.6%)	152 (27.1%)
Discharge - Death	11 (1.4%)	2 (1.1%)

Total number may not add to 816 due to missing data

Table 6: Pedal-Cycle Crashes Outcome by Helmet Use

Pedal-Cycle Crashes	Helmet use (n=179) n (%)	No Helmet Use (n=533) n (%)	p-value
Discharge disposition			
Transfer for additional care	6 (3.4%)	22 (4.1%)	NS
Home	163 (91.1%)	478 (89.7%)	NS
Death	2 (1.1%)	7 (1.3%)	NS
Rehabilitation	7 (3.9%)	18 (3.4%)	NS
Other	1 (0.6%)	8 (1.5%)	NS
ISS (mean)	8.2	8.0	NS
GCS (mean)	15.0	14.4	<0.05
Charges (mean)	\$25,931	\$27,551	<0.05
ICU (mean)	0.6	1.0	<0.01
LOS (mean)	1.8	2.5	<0.01
Head Injury	69 (39.0%)	259 (49.0%)	0.01

Table 7: All Terrain Vehicle Crash - Demographics

All Terrain Vehicle Crashes	Number of Patients (%)
Total ATV Crashes	804
Gender	
Female	226 (28.1%)
Male	578 (72.0%)
Age Groups	
<5	7 (0.8%)
5-8	25 (3.1%)
9-14	108 (13.4%)
15-17	98 (12.2%)
>17	566 (70.4%)
Discharge - Death	12 (1.5%)
Helmet Use	210 (26.1%)
Head Injury	336 (42.0%)

All Terrain Vehicle Crashes

Demographics

There was a total of 804 ATV-related trauma crashes reported in 2007 (Table 7). As observed in other types of crashes, males were more likely than females to be involved in an ATV crash. More than 17% of the ATV crashes involved children under the age of 15.

Only a quarter of the patients with ATV-related trauma used helmets (26%, n=210). A total of 336 patients (42.0%) incurred head injury. There was a significant difference in head injury between the helmet and non-helmeted group (31% vs. 48%, p<0.0001).

Golden Hour by Region

A severely injured patient's chances of survival are greatest if they receive definitive care within 60 minutes from the time of injury, the golden hour. While this is an imperfect benchmark, the golden hour is useful in describing access to trauma care.

While future analysis is needed to explain the numerous causes or reasons for delays in arrival times, some of which are not always preventable, such as a prolonged and difficult extrication from a motor vehicle crash, remote injury location, weather, terrain, etc, increasing the number of hospitals participating in the trauma system is clearly indicated for our State.

Further research looking at the time to arrival at a trauma center stratified by field GCS, and other triage criteria will be conducted.

Table 8: CENTRAL REGION

County of Injury	Golden Hour								Total Trauma Patients N
	Missing		Arrived to TC within 1 hour		Arrived to TC after 1 hour		Received care at NTC		
	N	%	N	%	N	%	N	%	
Gila	141	33.6	36	8.6	243	57.9	.	.	420
Maricopa	2,044	18.4	7,040	63.4	2,026	18.2	1	0.0	11,111
Pinal	230	23.2	291	29.4	469	47.4	.	.	990
Region Total	2,415	19.3	7,367	58.8	2,738	21.9	1	0.0	12,521

TC , Trauma center; NTC, Non-trauma center

In the Central Region, just less than 60% of trauma patients arrived at a trauma center within an hour of their injury (Table 8). The range provided in this analysis is from 8.6% to 63.4% in meeting the golden hour timeframe, but a high missing data element component could confound this range.

In the Western Region, access to a trauma center is constrained by distance with the nearest Arizona trauma center in Flagstaff or the Phoenix and Tucson metropolitan areas. Due to historic referral patterns it is expected that the majority of trauma patients from Yuma County receive care at a non-trauma center (Table 9).

Table 9: WESTERN REGION

County of Injury	Golden Hour								Total Trauma Patients N
	Missing		Arrived to TC within 1 hour		Arrived to TC after 1 hour		Received care at NTC		
	N	%	N	%	N	%	N	%	
La Paz	35	40.7	9	10.5	40	46.5	2	2.3	86
Mohave	14	66.7	5	23.8	1	4.8	1	4.8	21
Yuma	91	6.5	4	0.3	9	0.6	1,301	92.6	1,405
Region Total	140	9.3	18	1.2	50	3.3	1,304	86.2	1,512

Table 10: NORTHERN REGION

County of Injury	Golden Hour								Total Trauma Patients
	Missing		Arrived to TC within 1 hour		Arrived to TC after 1 hour		Received care at NTC		
	N	%	N	%	N	%	N	%	
Apache	112	75.2	1	0.7	35	23.5	1	0.7	149
Coconino	183	17.8	306	29.7	311	30.2	229	22.3	1,029
Navajo	233	56.0	7	1.7	162	38.9	14	3.4	416
Yavapai	113	22.8	100	20.2	181	36.6	101	20.4	495
Region Total	641	30.7	414	19.8	689	33.0	345	16.5	2,089

In the Northern and Southeastern regions, a high percentage of missing data from most of the counties reduces the interpretative value of this analysis, but a less than optimal number of patients are still not able to access a trauma center within the golden hour (Table 10 & 11).

In most counties in the state of Arizona, the rural and frontier nature as well as dispersed population make timely access to trauma centers problematic when trauma centers are concentrated in the Flagstaff, Phoenix and Tucson corridors. The addition of Levels II, III, and IV trauma centers outside of these cities will facilitate more timely access to trauma care.

Table 11: SOUTHEASTERN REGION

County of Injury	Golden Hour								Total Trauma Patients
	Missing		Arrived to TC within 1 hour		Arrived to TC after 1 hour		Received care at NTC		
	N	%	N	%	N	%	N	%	
Cochise	156	43.6	24	6.7	157	43.9	21	5.9	358
Graham	40	40.4	6	6.1	53	53.5	.	.	99
Greenlee	14	38.9	2	5.6	20	55.6	.	.	36
PIMA	600	15.6	1,549	40.3	1,692	44.1	.	.	3,841
Santa Cruz	45	32.1	15	10.7	80	57.1	.	.	140
Region Total	855	19.1	1,596	35.7	2,002	44.7	21	0.5	4,474

Limitations:

As this is the first time the trauma program has looked at this data, no benchmarking is available from previous years. Improved reporting of injury time and date, and trauma center arrival time and date will strengthen the usefulness of this analysis. It is not the Bureau's intent to suggest that patients who were not treated at a trauma center received less than adequate care.

Mode of Transportation

Mode of Transportation

In a state such as Arizona a variety of transport modes will be required to ensure patients arrive at trauma centers in a timely fashion. Air ambulance transport of seriously injured trauma patients is an important resource. Recent national initiatives drawing attention to the use of a limited resource like air ambulances for non-life threatening injuries require that the state of Arizona begin to evaluate its own use of these transportation modes. The following table is our first effort at describing transportation mode (air vs. ground) and stratifying the results by length of stay and injury severity score for each of the 15 counties. Additional research on transport times, field triage criteria and emergency department disposition will follow.

Table 12: Mode of Transportation by County of Injury

County of Injury	Any Air transport				Only Ground Transport				Un-known	Total Trauma Patients
	N	%	LOS mean	ISS Mean	N	%	LOS mean	ISS Mean		
Apache	81	54.4	5.6	11.3	24	16.1	4.3	9.2	44	149
Cochise	218	60.9	3.5	10.4	112	31.3	2.5	7.3	28	358
Coconino	129	12.5	6.0	12.4	726	70.6	2.5	8.7	174	1,029
Gila	360	85.7	3.0	8.2	51	12.1	3.9	10.4	9	420
Graham	85	85.9	3.6	11.2	11	11.1	1.2	6.9	3	99
Greenlee	34	94.4	2.1	9.1	1	2.8	4.0	4.0	1	36
La Paz	77	89.5	5.2	9.1	7	8.1	2.3	7.1	2	86
Maricopa	1,580	14.2	4.2	10.9	9,303	83.7	3.2	8.5	228	11,111
Mohave	10	47.6	3.5	8.6	5	23.8	4.2	18.8	6	21
Navajo	199	47.8	5.1	10.8	87	20.9	4.7	11.5	130	416
Pima	348	9.1	5.1	14.5	3,367	87.7	2.3	7.7	126	3,841
Pinal	743	75.1	3.9	8.8	240	24.2	2.5	5.6	7	990
Santa Cruz	88	62.9	3.5	8.4	50	35.7	1.9	6.5	2	140
Yavapai	269	54.3	4.6	11.9	203	41.0	2.3	10.0	23	495
Yuma	75	5.3	6.3	19.1	1,032	73.5	0.8	4.6	298	1,405
Other	82	16.7	5.5	14.6	184	37.4	2.0	8.0	226	492
Missing	1,178	40.1	4.8	10.4	1,062	36.2	2.9	7.8	694	2,934
Statewide	5,556	23.1	4.4	10.7	16,465	68.5	2.8	8.0	2,001	24,022

Total Charges Related to Trauma in the State of Arizona 2007

Arizona Hospital Discharge Database for the year 2007 was queried to identify all patients whose primary discharge diagnosis fell within the ICD-9 code ranges 800 through 959.9, amounting to 20,572 trauma cases. (Codes involving isolated femoral neck (hip) and distal extremity fracture from a same-level fall and non-acute injury related diagnoses were excluded from this analysis).

Total Charges by Mechanism of Injury

In 2007, total charges in Arizona due to trauma related cases were more than \$1 billion, \$82 million higher from 2006 (Table 13). The highest charges were due to motor vehicle crashes (more than \$267 million) followed by falls (more than \$217 million).

("Total Charges" means the whole dollar amount for services provided during an episode of care. This amount does not reflect the cost of providing the services, nor the specific payment that the hospital actually received for that episode of care.)

Table 13: Total Charges by Mechanism of Injury

Mechanism of Injury	Total Charges
MV traffic Occupant	\$267,892,223
Fall	\$217,228,213
Other	\$162,162,701
MV traffic Motorcyclist	\$83,538,380
MV traffic Other	\$60,302,231
Firearm	\$56,534,009
MV traffic Pedestrian	\$53,063,866
Struck by, Against	\$49,933,813
Cut/Pierce	\$35,033,843
Transport, Other	\$12,946,320
MV traffic Pedal-cyclist	\$11,567,620
Total Charges	\$1,010,203,219

Total Charges by Age Groups

Total charges due to trauma were highest for patients aged 25-44 years (more than \$302 million) followed by patients aged 45-64 years (more than \$250 million) (Table 14).

Table 14: Total Charges by Age

Age groups	Total Charges
<5	\$21,467,721
5-8	\$14,363,566
9-14	\$26,112,219
15-17	\$39,063,341
18-24	\$156,783,508
25-44	\$302,680,090
45-64	\$250,675,946
65-74	\$72,351,937
75-84	\$82,494,443
85+	\$43,901,746
Missing Age	\$308,702
Total Charges	\$1,010,203,219

Primary Payer Mix

Twenty-two percent of the trauma patients had AHCCCS/Medicaid as the primary payer, accounting for more than \$290 million total charges, \$3 million higher from 2006 (Table 15). ("Payer" means the expected source of payment for the majority of the charges billed for the episode of the care).

Table 15: Primary Payer Mix

Primary Payer	Total Charges
AHCCCS/Medicaid	\$290,647,488
Private Insurance	\$273,422,638
Medicare	\$203,926,943
Self pay	\$98,648,722
Other	\$91,158,117
Workers Compensation	\$52,399,311
Total Charges	\$1,010,203,219