Arkansas Department of Health

Courtesy of Arkansas Children's Hospital

A System SAVING LIVES

Arkansas Statewide Trauma System

Executive Summary

Each year, several thousand Arkansans are either incapacitated or killed from traumatic injuries, at rates nearly double that of the nation as a whole. Costs to Arkansas are high in terms of years of potential life lost and treatment costs. The good news is that, in contrast to most public health issues, injuries and subsequent deaths are largely preventable. Preventative measures play a key role in decreasing injuries, but possibly more important is limiting injury-related death through the response and treatment of traumatic injuries.

Trauma care requires a timely response and adequate hospital resources, including both personnel and equipment, for a continuum of care from pre-hospital through rehabilitation. A timely response represents a key factor in trauma survival, with the "Golden Hour" representing the first 60 minutes following a severe injury when treatment is most effective. This presents a special challenge for Arkansas response with so many rural road systems. Added to this challenge is a limit of special resources needed to treat trauma patients, such as specialized surgeons, anesthesiologists and equipment.

Though most Arkansans feel reassured by the presence of a hospital with an emergency department, Arkansas is not equipped with the resources needed to respond to trauma. Arkansas has no statewide trauma system and is the only state without a designated/verified trauma center. The difference in a functioning trauma system and the current method of care is resources. A trauma system will help to ensure a coordinated response for accident victims and will result in more timely responses, cost-effective treatments and improved health outcomes. With a functioning trauma system, other states have shown improvements in limiting injury-related hospitalizations, deaths and associated costs. If Arkansas instituted a functioning trauma system, designated trauma centers within the system would have the expertise, equipment and additional resources needed to treat patients who present with traumatic injuries so that patients can achieve optimal health outcomes.

Trauma has been called the "silent epidemic." Arkansans die due to trauma at a rate that is twice the national average. Many Arkansans believe that there is a well thought out system ready and waiting to care for them if they were seriously injured; but in fact, there is no such system in our state today.

James Graham, MD
Arkansas Children's Hospital
Professor of Pediatrics
Section of Emergency Medicine
Section Chief

Improving health outcomes for injuries is a complex process that extends beyond having a functioning trauma system in place for injured victims. To be most effective, injury treatment must be paired with injury prevention. Statewide efforts must address laws for primary seatbelt use and graduated drivers' licenses for teenagers. However, to be most effective, prevention resources must be targeted and customized to specific populations. Efforts must focus on unintentional injuries, including motor vehicle accidents, fires and falls.

In order to implement strong injury prevention and control interventions and a statewide trauma system in Arkansas, a substantial investment would be needed. However, the projected tangible cost savings from enhancements in treatment and prevention efforts is expected to greatly outweigh this cost, with an **estimated $237 million in savings per year for motor vehicle accidents alone.** Added to these savings, **206 Arkansans could be saved each year.** The time to act is now – for our citizens, our communities and our state!

Background

Our state's system of emergency care is the worst in the nation receiving a D- in *The National Report Card of the State of Emergency Medicine.* The report card was released by the American College of Emergency Physicians on December 9, 2008. The low score is directly linked to the lack of a statewide trauma system to coordinate care among emergency responders and hospitals. Such a system would ensure that people with traumatic injuries are able to receive appropriate medical care as quickly as possible no matter where they are injured. According to the report, Arkansas has no statewide trauma system and is the only state without a designated/verified trauma center. Getting a trauma system in Arkansas will be a priority during the 2009 legislative session.

The following is an excerpt from the American College of Surgeons Trauma Systems Evaluation and Planning Committee Report dated November 18, 2008:

"Arkansas is at a critical crossroads in its development of a trauma care system. Injuries represent one of the state's leading causes of death and disability. Moreover, the overall injury fatality rate in Arkansas is nearly 50% higher than the national average, and the injury fatality rate for motor vehicle crashes (the second most common injury mechanism in the state) is 60% higher than the national average. Pre-hospital times are long, and the preventable mortality rate is, in all likelihood, quite high. In 2005, Arkansas ranked 50th in the United States for timely trauma center accessibility for its citizens as cited in the Journal of the American Medical Association, 293:2626-2633, 2005.

Trauma system development has been sporadic since the enactment of enabling legislation of Act 559 in 1993, a law that established the Trauma Advisory Council. The Arkansas Department of Health, Section of EMS and Trauma Systems was specifically charged with the development of a statewide trauma system plan, including the establishment of regional advisory councils. In response to these charges, subcommittees were formed to develop rules and regulations. The subcommittees focused on three major areas of development:

1. Triage, transport and transfer guidelines
2. Standards for trauma center verification
3. Development of a statewide trauma registry

From this, the initial Arkansas State Trauma Care System Plan emerged. The plan espoused the advantages of an inclusive system and stated specific aims of system development which included:

- Reduced numbers of preventable deaths
- Improved outcomes from traumatic injury
- Reduced medical costs through appropriate use of resources

Recommendations from this plan were incorporated into the rules and regulations adopted in 2000 and amended in 2002. **However, it appears that funding cuts and lack of clear focus have led to limited development. Despite the fact that abundant data demonstrate the efficacy of trauma systems and trauma centers, Arkansas still has no clearly defined trauma system, and it is the only state without a designated/verified trauma center."**

Michael R. Rotondo, MD, FACS
Chair-Trauma Systems Evaluation and Planning Committee
American College of Surgeons

"The Arkansas State Trauma System is NOT simply a matter of politics or economics; it is a matter of life and death. Strong leadership and aggressive trauma system development, coupled with substantial legislation and funding, will result in lives saved and a better quality of life for your people."

Michael R. Rotondo, MD, FACS
Chair-Trauma Systems Evaluation and Planning Committee
American College of Surgeons

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A System Saving Lives

On September 5, 2006, a group of retired and current Newport school teachers, including Beverly Tapp and best friend Carol Brand, were finishing up their weekly dinner at the local Hardee's in Newport. Out of nowhere, a man driving a truck veered off the highway and drove into the restaurant.

When the dust settled, five women laid scattered on the floor with different degrees of injuries. It was a scene out of a movie with blood and debris everywhere. Ambulance personnel transported all of the victims to the local hospital for emergency care and treatment. It was evident that three of the ladies were severely injured and would require extensive medical care that could not be provided locally. By the following day, two of the friends had died, one remained in a local hospital and two had been transferred to the trauma center in Memphis.

Beverly Tapp, Trauma Victim
By son, Doug Tapp

My world came to a crashing halt when I learned of the tragic accident that involved my sweet mother, Beverly Tapp. She had been sitting right by the window the truck crashed into and received the first and most forceful blow. The truck pushed her into a table, which impaled her friend Jane Wright and caused severe injuries and lacerations in my mom's abdomen. The force was so powerful that it threw Mom across the restaurant where she landed near the check out counter.

The first responders to that scene are heroes. The paramedics and firemen had to face a scene that would forever change their lives… and ours. After first being taken to the local hospital, my mom was then transferred by ambulance to a hospital in Jonesboro where she died later that same evening. Every second counts when it comes to saving lives. I wonder if the outcome would've been different if there had been a trauma center here in Arkansas where my mom could have gone. Would she be alive today? That's a question I will never know the answer to.

Carol Brand, Trauma Victim

I have no memories of the events that happened that night. After initially being taken to the local hospital, I was transported to the trauma center in Memphis. I had extensive internal injuries and many broken bones. There was internal bleeding that could not be found and the doctors at the trauma center were trying to let some of the injuries to my organs improve before doing any surgeries to find the bleeding. Because of the constant monitoring by the staff at the trauma center it was discovered that a torn aorta was the source of the bleeding and emergency surgery was necessary. During the next month I had some other problems that were addressed expertly and immediately. Today, I am close to being in the physical shape I was in at the time of the accident. I have no idea what would have happened if I had been sent to another hospital, but I do believe that being sent to a trauma center with the most advanced equipment at hand and trained trauma surgeons is what saved my life.

A System Saving Lives

Arkansas Injury Rates Compared to the United States

Each year, several thousand Arkansans are either incapacitated or killed from traumatic injuries. Costs to Arkansas are high in terms of years of potential life lost, inpatient and outpatient treatment costs and short- and long-term treatment expenses. Injury has been and remains the number one killer of Arkansans from ages one through 44. A stark contrast between this public health issue and numerous others is that many injuries and subsequent deaths are preventable. Trauma systems and designated trauma centers have proven to be vital elements to reduce injury-related hospitalizations, deaths and associated costs. Arkansas has no statewide trauma system and is the only state without a designated/ verified trauma center.

A primary trauma care issue in rural areas is rapid access to definitive care at designated trauma centers. The necessity to transport victims as fast as possible to specialists at a designated trauma center is complicated in rural areas where rapid access may not be possible within an hour. It is the goal of a networked system of multi-level trauma centers to locate sufficient resources to overcome that issue.

A 2002 Health Resources and Services Administration (HRSA) report identified public support as a key element in the success of trauma system development in states and communities throughout the nation. In response to the report, a Harris Interactive poll was conducted in 2004 to determine the public's attitudes, awareness and knowledge concerning the nature and availability of trauma care and systems of trauma care. Results of the poll indicated that 61 percent of the American public does not know that injury is the leading cause of death for those vital age groups, and most mistakenly believe that a trauma system is already in place in every state. Sadly, almost two-thirds of the American public is confident of receiving the best medical care in the event of serious injury and would be extremely concerned if no trauma center were nearby. This poll reveals the mismatch between public perceptions and reality. Trauma systems must be adequately developed and supported to fulfill the public's expectation to receive the best possible care if seriously injured and to ensure readiness for mass casualty and terrorist incidents.

The Arkansas death rate for all injuries (intentional and unintentional) for 2001 through 2005 has consistently been higher than the U.S. rate. For this five-year period, there were 10,110 deaths due to injury in Arkansas, and the corresponding rate (73.2) was 31 percent higher than the corresponding U.S. rate (56.0). To put this into perspective, if the Arkansas injury death rate was the same as the U.S. during these five years, there would have been 2,414 fewer injury deaths in our state. This would mean 485 fewer deaths of Arkansans each year.

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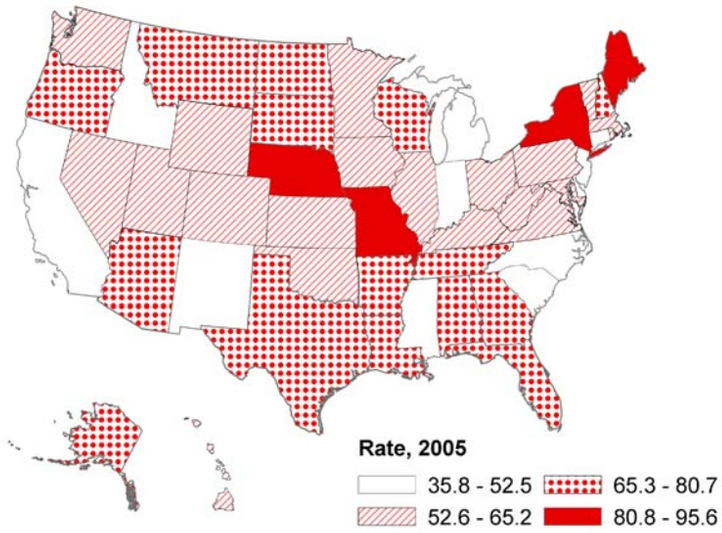
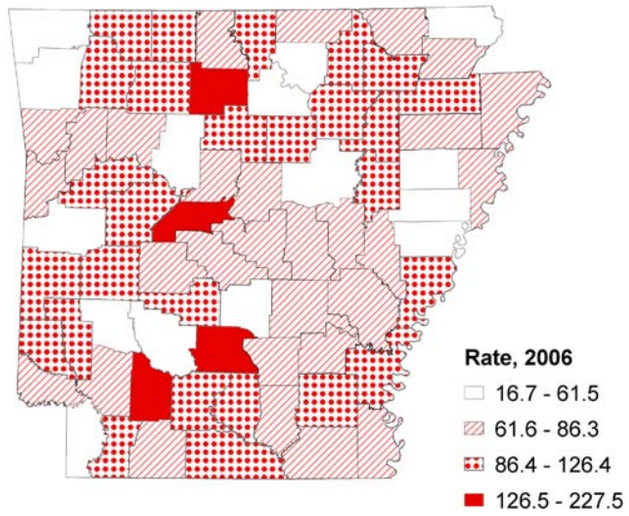


United States - Injury-Related Deaths, 2005

(2006 U.S. rates not yet available)



Arkansas by County
Injury-Related Deaths, 2006

Impact of Rural, Two-Lane Highway System

A primary trauma care issue in rural areas is rapid access to definitive care at designated trauma centers. Not only proximity to care, but highway and driving conditions are a factor in Arkansas. According to the Arkansas State Highway and Transportation Department, the state highway system in Arkansas is composed of several elements, which together form a network that is extraordinarily large. It is the 12th largest state highway system in the nation (comparable in mileage to California, New York, Louisiana, Georgia and Illinois). Arkansas has more than 16,000 miles of roads with varied design and speed limits. Of this total, only about 750 miles are interstate highways, and the bulk is comprised of rural multi-lane divided and undivided highways.

The 2007 Arkansas State Police crash summary on all public roads report there were:

- 66,393 total crashes
- 584 fatal crashes
- 650 fatalities
- 276 alcohol/drug related fatalities
- 32.4 billion vehicle miles traveled

The State Police report that the fatality rate in Arkansas during 2007 was significantly higher than the national average fatality rate per 100 million vehicle miles traveled (2.0 compared to 1.4). While less than 21 percent of the crashes occurred in rural areas, these crashes accounted for 62 percent of the state's fatalities. This disproportionate number of rural fatalities demonstrates the great need for a trauma system in outlying rural areas. Specific crash data by location and road system follows:

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Arkansas Crashes by Rural/Urban Location

Location	Fatal Crashes	Total Crashes
Rural	364 (62%)	13,950 (21%)
Urban	220 (38%)	52,443 (79%)
Total*	**584**	**66,393**

Arkansas Crashes by Road System

Road System	Fatal Crashes	Nonfatal Injury	Total Crashes
State Highway	455	17,673	41,359
County Road	75	1,890	4,117
City Street	54	7,141	20,917
Totals*	**584**	**26,704**	**66,393**

* Totals for 2007

Data trends on fatal crashes have remained consistent during the past 10 years, rising to a high of 721 fatalities in 2004 and a low of 584 in 2007. During the five-year period 2003-2007, State Police data show that the greatest number of fatalities by age group is in ages 16-20 (453 fatalities) and ages 21-25 (429 fatalities).

What is Trauma?

In the medical field, injury is called trauma. A trauma is a severe and body altering physical injury, such as a removal of a limb or other life-threatening injury. Blunt force trauma is a type of physical trauma caused by impact or other force applied from or with a blunt object. Penetrating trauma is a type of physical trauma in which the skin or tissues are pierced by an object. Most often, trauma is the consequence of a motor vehicle crash, a fall, drowning, a gunshot wound, fires and burns, a stabbing or assault with a blunt instrument. Trauma kills more people from ages one through 44 than any disease or illness. A trauma patient is an injured person who requires a timely diagnosis and treatment by a multidisciplinary team of health professionals with appropriate equipment and resources to reduce or eliminate the risks of death or permanent disability. After a traumatic injury, it is critical that the victim receive state-of-the-art care within the "**golden hour**," which is the first 60 minutes following the occurrence.

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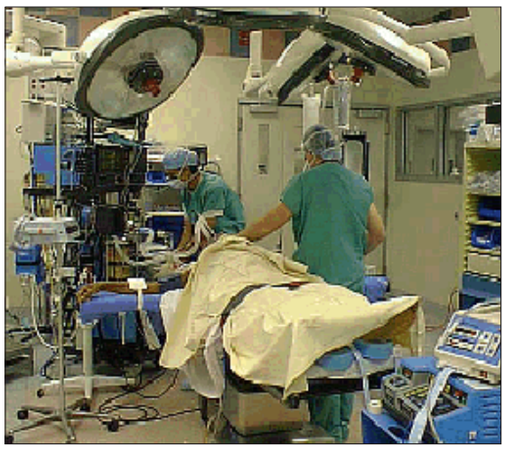
What is the Golden Hour?



In a trauma situation, the “golden hour” is the first 60 minutes following the severe injury where the victim’s chances of survival are greatest if they receive state-of-the-art emergency medical care. This care focuses on the swift diagnosis and treatment of life-threatening and severe injuries and illnesses that require immediate medical attention. Emergency medical physicians diagnose a wide variety of conditions and perform rapid critical interventions to stabilize the patient. The key is having the right specialized physicians ready in the right places. The core principle of rapid intervention in trauma cases is universally accepted.

Trauma Scenarios

The necessity to transport victims as fast as possible to specialists at a designated trauma center is complicated in rural areas where rapid access may not be possible within an hour. It is the goal of a networked system of multi-level trauma centers to locate sufficient resources to overcome that issue. The following scenarios illustrate outcomes based on varying levels of access to trauma care.

Scenario 1

A teenage driver looses control in a curve on Highway X in Rural County, Ark., near X town at 1:15 a.m. on Sunday. The vehicle flips over and strikes a tree. Another motorist who witnesses the crash calls 911 for emergency services. The first Emergency Medical Services (EMS) team arrives on the scene at 1:29 a.m. and determines the injured passenger has severe head trauma and possible internal injuries. They provide initial medical treatment and rush him to the nearest hospital, eight miles away. They arrive at 1:49 a.m. Emergency room personnel realize the injuries are beyond their expertise to manage. They call for medical helicopter transport to a medical facility that can provide specialized medical treatment. The helicopter crew takes off immediately. The flight time to and from the hospital is 45 minutes. At 4:22 a.m., the victim is rolled into the operating room. Over three hours time has elapsed. **Outcome: Patient never regains consciousness.**

Scenario 2

The same accident and circumstances occur as in scenario 1. However, after the first EMS team arrives on the scene at 1:29 a.m. and determines that the injured passenger has severe head trauma and possible internal injuries, they radio Y Hospital, a Level II trauma center 20 miles away to report their estimated time of arrival in 25 minutes. In the meantime, the Level II trauma center team has summoned a neurosurgeon and an internal medicine specialist to report to the hospital. When the ambulance arrives at the hospital, the trauma center team of specialized physicians has reviewed the injury data that was radioed ahead by the EMS crew members. The specialized physicians complete a trauma assessment and then roll the victim into the operating room at 2:10 a.m. A total of 55 minutes has elapsed. **Outcome: Patient is expected to make a full recovery.**

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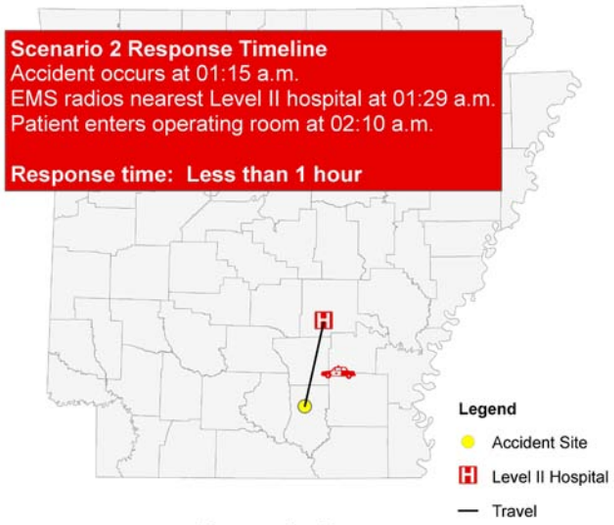
Scenario 1



Scenario 2

What is a Trauma System and What is its Value?

A trauma system is an organized and coordinated plan within a state that is integrated with the local public health system and delivers the full range of care to patients with severe or life-threatening injuries. The care of injured patients requires a system approach to ensure optimal care. A systematic approach is necessary within a facility; however, no one trauma center can do everything alone.

Major Components of a Trauma System

- Emergency Medical Services (Pre-hospital)
- Designated Trauma Centers
- Trauma Registry
- Rehabilitation Facilities
- Trained and Available Physician Trauma Specialists and Nurses
- Injury Prevention and Control Programs

The value of a trauma system is achieved through a seamless transition of each phase of care – pre-hospital, hospital, rehabilitation services and injury prevention and control. Resources are efficiently integrated so that patients can achieve optimal health outcomes. Trauma systems focus on injury prevention and preparedness within communities. Nationwide development of trauma systems will strengthen community health through an organized system of injury prevention, acute care and rehabilitation that is integrated with the local public health system. Through a nationwide system, states are able to expand to meet the medical needs of communities in the event of a man-made or natural disaster.

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Major components of a trauma system include:

Emergency Medical Services (Pre-hospital)

An ambulance is not merely a ride to the local hospital. It serves as the first line of emergency assistance for the injured. As the initial contact with emergency care, it brings life-saving equipment and personnel to the scene of the wounded person in need of immediate medical attention. Today's emergency medical pre-hospital professionals are trained to assess, treat, stabilize and transport any type of traumatically injured patient.

Emergency Medical Services is a necessary component of a statewide trauma system in order to ensure that a patient receives a quality continuum of care from the site of the incident to definitive treatment at the appropriate medical facility. Eighty percent of the permitted ambulance vehicles (ground and air) in Arkansas are at the advanced life support level. This level of care ensures that the citizens of Arkansas receive the highest possible level of pre-hospital care. Ground ambulance services are currently available statewide to all citizens of the state. Arkansas has advanced life support aircraft to assist with transportation of the emergent patient in certain areas of the state. Once trauma system funding is secured and planning begins for a statewide system, the need for air services in all areas of the state must be evaluated.

Arkansas has 203 licensed ambulance services, 637 registered ambulances and 5,990 Emergency Medical Technicians, Intermediates and Paramedics. These skilled medical professionals are trained to appropriately care for and transport injured patients to a medical facility that meets the patient's needs. However, data continues to indicate that there are insufficient numbers of certified individuals working in the pre-hospital arena to meet the needs of Arkansans. A portion of trauma funding will be needed for recruitment, education and retention of individuals within the career field of Emergency Medical Services.

Designated Trauma Centers (Levels I-IV)

The American College of Surgeons (ACS) is a scientific and educational association of surgeons that was founded in 1913 to improve the quality of care for the surgical patient by setting high standards for surgical education and practice. Through their years of experience and expertise, the ACS developed resources and process standards for trauma centers including optimal trauma care, such as prevention, access, acute hospital care, rehabilitation and research activities. Trauma centers are ranked by the ACS, from level I to level III. Level I and level II assignments are also given adult or pediatric designations. Some states (including Arkansas) have their own trauma center rankings separate from the ACS with levels ranging from I to IV. The different levels refer to the kinds of resources available in a trauma center and the number of patients admitted yearly. The categories define national standards for evidence-based trauma care in hospitals.

Level I

A level I trauma center provides the highest level of surgical care to trauma patients. A level I trauma center is required to have a certain number of general and specialized surgeons and anesthesiologists on duty 24 hours a day at the hospital to adequately respond to and care for various forms of patient trauma. Level I centers meet certain standards and include education, preventive and outreach programs. They have a program of research, are leaders in trauma education and injury prevention and are referral resources for communities in nearby regions.

Level II

A level II trauma center provides comprehensive trauma care and supplements the clinical expertise of a level I institution. It provides 24-hour availability of all essential specialties, personnel and equipment. Minimum volume requirements may depend on local conditions. These institutions are not required to have an ongoing program of research or a surgical residency program.

Level III

A level III trauma center does not have the full availability of specialists, but does have resources for emergency resuscitation, surgery and intensive care of most trauma patients. A level III center has transfer agreements with level I or level II trauma centers that provide back-up resources for the care of exceptionally severe injuries.

Level IV

A level IV trauma facility provides advanced trauma life support before patient transfers in remote areas where no higher level trauma center is available. This level facility exists when resources are not available for a level III trauma center. A level IV center provides initial evaluation, stabilization, diagnostic capabilities and transfer to a higher level of care. It may also provide surgery and critical care services as defined in the scope of services of trauma care. A trauma trained nurse is immediately available, and physicians are available upon the patient's arrival to the Emergency Department.

Trauma Registry

A trauma registry is a valuable component of an effective and efficient statewide trauma system. A trauma registry is a data collection system composed of uniform data elements that describe the injury event, demographics, pre-hospital information, diagnosis, care and outcomes of injured patients. The trauma registry is a tool to drive performance improvement processes for individual hospitals, EMS and the statewide trauma system. The trauma registry is a rich source of data and should be utilized to conduct research, needs assessments and epidemiological and injury prevention activities. Every state that activates a trauma system should have a trauma registry to collect information to allow program review by each entity involved.

Rehabilitation Facilities

Rehabilitation is a vital part of any trauma system. The rehabilitation of an injured patient should be considered immediately following arrival at a hospital. Restoration of the patient to normal function is one of the goals of a trauma system. Each traumatically injured patient should be evaluated by a rehabilitation team as soon as possible during hospitalization. This evaluation will help determine the potential for rehabilitation and possible physical benefit. A coordinated multidisciplinary trauma team including a rehabilitation element has the best chance of assisting the injured patient to survive and re-enter the community without disability. Rehabilitation facilities are a vital portion of the trauma system which may provide for the best possible patient care and outcome.

A System Saving Lives

Trained and Available Physician Trauma Specialists and Nurses

Depending on the level of designation, trauma centers must have physicians in-house and immediately available or on-call and promptly available. In addition, depending on the designation level, the trauma center must ensure there is a trauma team that is organized and directed by a general surgeon expert and committed to the care of the injured. Also, even though principles of trauma care are introduced in medical school and nursing school, specialized training in the area of trauma is required for such individuals providing care in designated trauma centers. Board certification for surgeons is required or recommended depending on the level of certification, as is an Advanced Trauma Life Support course. Nurses must have a course in Advanced Cardiac Life Support, and both physicians and nurses are required to have continuing education that is focused on trauma.

Injury Prevention and Control Programs

Injury generates not only tremendous emotional costs, but enormous direct and indirect monetary costs. Effective prevention strategies have the potential to reduce these costs. An injury prevention and control program would be focused on collecting data to identify injury problems such as burns, spinal cord injuries, traumatic brain injuries, violent death and work-related deaths. Data could then be shared with communities and stakeholders to develop ways to decrease the occurrence through primary, secondary and tertiary interventions.

The Trauma "Dashboard"

One step in the initial phase of the trauma system has been implemented. With $200,000 released by Governor Beebe in July, a trauma Dashboard was implemented. The Dashboard is for hospital-to-hospital transfer of patients and assists smaller hospitals in transferring patients who need a higher level of care to a facility that can meet their needs. The Dashboard is an online system all hospitals can access to determine services currently available in larger facilities. Although transferring hospitals must still communicate with the larger facility to obtain approval for the transfer, the time to locate a receiving facility is minimized. This time saved could be the difference between life and death of a trauma patient. Participation in the Dashboard is voluntary, but all higher level facilities are participating. Also, two out-of-state trauma centers are participating.

The next step for a funded trauma system would be a **Call Center** in lieu of the Dashboard. Currently, patients must be transferred to the nearest appropriate facility within the service area of the pre-hospital provider. A call center would have access to current information and would immediately direct the patient to the facility that could best meet the patient's needs. Consideration would be given to the patient's condition and the distance from a trauma center, but acceptance of the patient for transfer by the receiving hospital would not be required. One state with a call center has reported a minimum average of four hours saved in getting the patient to definitive care.

A System Saving Lives

THE ARKANSAS DEPARTMENT OF HEALTH'S INJURY PREVENTION AND CONTROL INITIATIVE WILL FOCUS ON FOUR BASIC COMPONENTS:

- ***Reduce Injury Deaths and Disability***
  Integrated Trauma System
- ***Prevent Motor Vehicle Deaths and Injuries***
  Graduated Driver's License
  Primary Seatbelt Law
- ***Prevent Falls Among the Elderly***
- ***Prevent Fire-Related Deaths and Injuries***

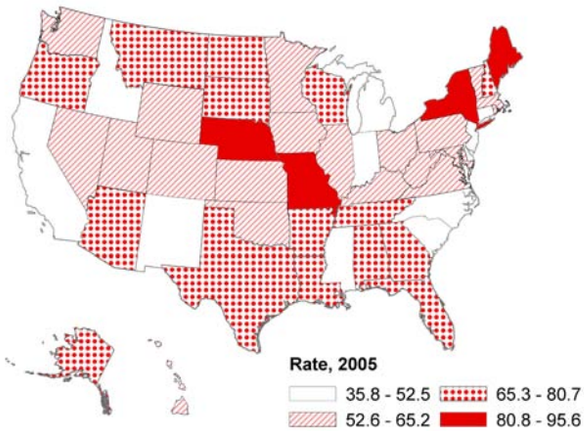
Injury Deaths and Hospitalizations

Injury deaths and hospitalizations statistics for Arkansas residents are alarming.

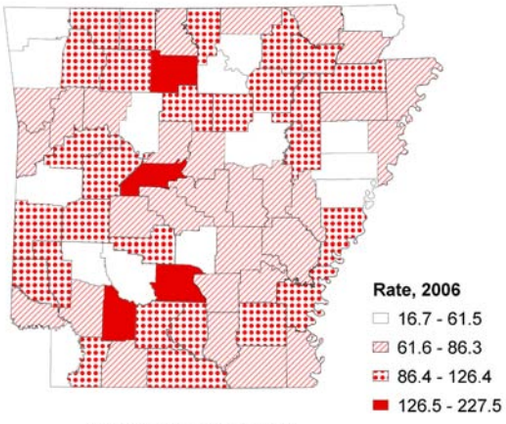
In 2006, there were:

- more than 17,900 persons hospitalized for injuries, with a total cost of $412 million in hospital charges
- 2,561 people hospitalized for motor vehicle crashed producing hospital charges of $100 million
- 2,169 injury-related deaths, including:
- 1,410 unintentional injury deaths caused by motor vehicle crashes, falls or fires
- 726 killed in an event involving a motor vehicle on a public roadway
- 610 intentional injury deaths, consisting of primarily suicides and homicides
- 147 undetermined injury deaths

States and communities can have a significant impact on the cultural and regulatory climate surrounding the operation of motor vehicles through more stringent licensing requirements for new drivers and for ones with a history of traffic offenses, more effective enforcement of seatbelt/child restraint laws, requirements for use of motorcycle helmets and enhanced enforcement laws prohibiting driving while intoxicated. States and communities can have impact on improvement of road ways and traffic flows to reduce the risk of crashes. Using data from state crash databases, geographic locations with elevated numbers of crashes can be identified through mapping vehicle crashes and then steps can be taken with community support to improve poor road surfaces, correct difficult traffic patterns, shield or remove fixed objects near the roadway and enhance traffic signals and warning signage.



United States - Injury-Related Deaths, 2005
(2006 U.S. rates not yet available)



Arkansas by County
Injury-Related Deaths, 2006

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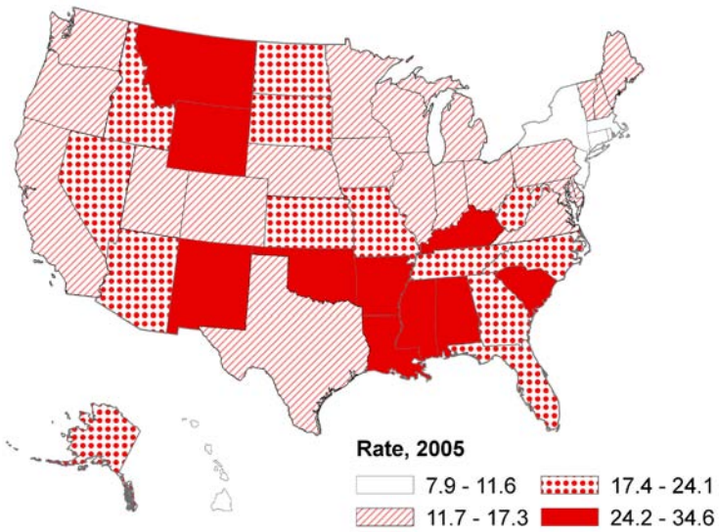
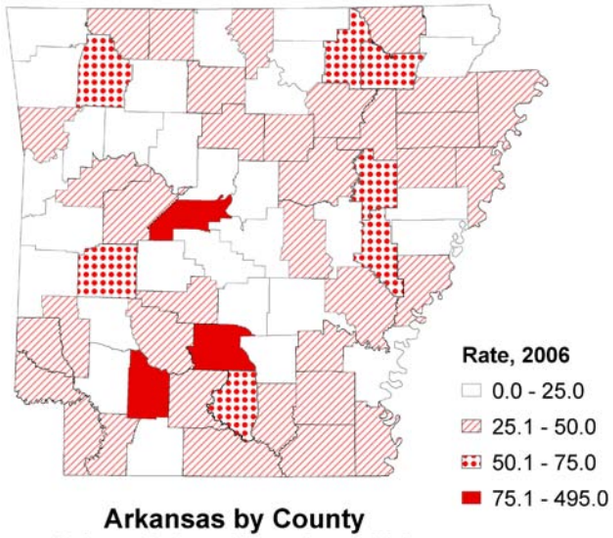
Costs of Fatalities and Injuries from Motor Vehicle Crashes

In 2005, tangible costs of fatalities and injuries from motor vehicle crashes such as loss of work hours and wages, medical costs, administrative costs, vehicle damage and uninsured costs is estimated to be $1.5 billion.



United States - Injury-Related Deaths, 2005
Motor Vehicle Accidents
(2006 U.S. rates not yet available)



Arkansas by County
Injury-Related Deaths, 2006
Motor Vehicle Accidents

Projected Savings in Motor Vehicle Crash Deaths from a Statewide Trauma System

With the implementation of a statewide trauma system, deaths from trauma should be reduced by 25 percent. Using 2005 data, 168 lives would be saved by the trauma system, and gross savings of $193 million through reduced costs would result, along with an additional $44 million in gross savings if a graduated driver's license and primary seatbelt laws were enacted.

Primary Seatbelt Law

In 2007, regular seatbelt usage in Arkansas was 70 percent compared to 82 percent for the United States. Seatbelt laws are divided into two categories: primary and secondary. Primary seatbelt laws allow law enforcement officers to stop and ticket a driver for not wearing a seatbelt, without any other traffic offense taking place. Secondary seatbelt laws allow law enforcement officers to issue a ticket to a driver for not wearing a seatbelt only when there is another citable traffic infraction.

- 26 states, the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico and the Virgin Islands have primary seat belt laws.
- 23 states (including Arkansas) have secondary seatbelt laws.
- Currently, Arkansas rewards seatbelt use by reducing the primary violation fine by $10.

A System Saving Lives

It is generally understood that seatbelts save lives. Studies have shown that seatbelt use increased when states upgraded from secondary to primary enforcement laws. The projected tangible cost savings in motor vehicle crash deaths through implementation of a primary seatbelt law would be $37 million annually. Upgrading from a secondary to a primary seatbelt law would reduce deaths by 4.7 percent or 32 deaths per year.

Representative George Overbey

Representative George Overbey

"I might not be here today if not for my seatbelt."

Representative George Overbey was in Eureka Springs for an Arkansas Rural Services meeting. Upon adjournment of the meeting, he left for his home in Lamar, Arkansas. As he was traveling down Highway 21 on his way through Berryville, he started having great difficulty driving through thick, heavy fog. As he came around a curve, his truck went into a tailspin. His truck swerved, hit an embankment and rolled over. Thankfully, he routinely exercised his safe habit of wearing a seatbelt and had it buckled at the time of the crash.

The roll-over caused Representative Overbey to hang upside down in his truck. He reached over and released the belt and could hear what he thought was leaking gasoline. He tried to get out of the truck and was able to crawl through a hole in the windshield about the size of a small doggy door. He received cuts to his right arm and the corner of his right eye. Fortunately, a truck driver and volunteer fireman were near the scene, and they called the Newton County Sheriff's Office. Help arrived, and Representative Overbey and his truck went for "repairs."

Because his injuries were minor, Overbey presented the commencement address at Lamar High School that night. His speech began, "If I appear nervous before you, it's not because I have to speak, but because of a wreck I had today. If it hadn't been for seatbelts and the Good Lord, I wouldn't be here."

Representative Overbey is a strong and vocal proponent of seatbelt safety.

A System Saving Lives

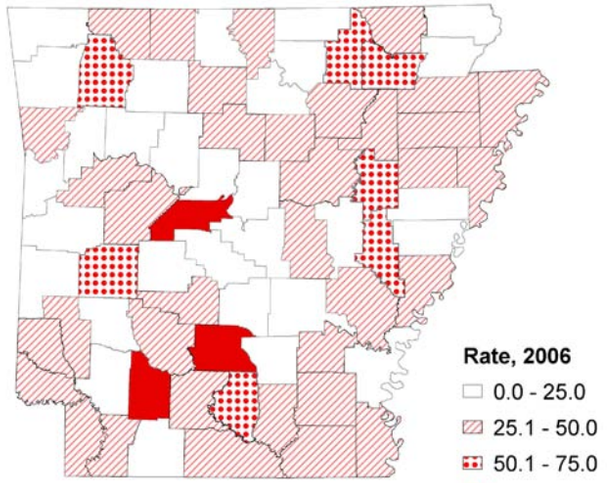
Graduated Driver's License

Arkansas does not have as many requirements for the intermediate level as compared to other states. Arkansas only requires a learner's permit, seatbelt use and the completion of a driving knowledge exam and driving test. There are stricter requirements for teenage drivers with learner's permits in other states such as completion of 40 hours of certified driver training (classroom and road time), completion of documented road time with an adult, completion of a driving knowledge exam and driving test, with no driving between midnight and 4 a.m. (except for emergency and work-related travel). Some other states also stipulate no more than one other teenager in the car, no cell phone use and use of a seatbelt.

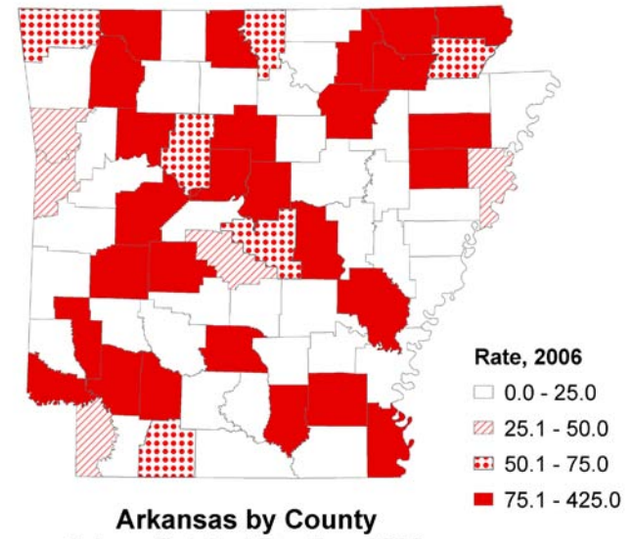
From 2001 to 2006 in Arkansas, there were 116 motor vehicle deaths among 16- and 17-year-old drivers with an annual average of 19 deaths. For that same time period, there were 755 serious, incapacitating injuries with an annual average of 126 injuries.

The projected tangible cost savings in motor vehicle crash deaths by an enhanced graduated driver's license program would be $7 million each year. A "good" graduated driver's license program should reduce teen driver fatalities by 30.5 percent each year.

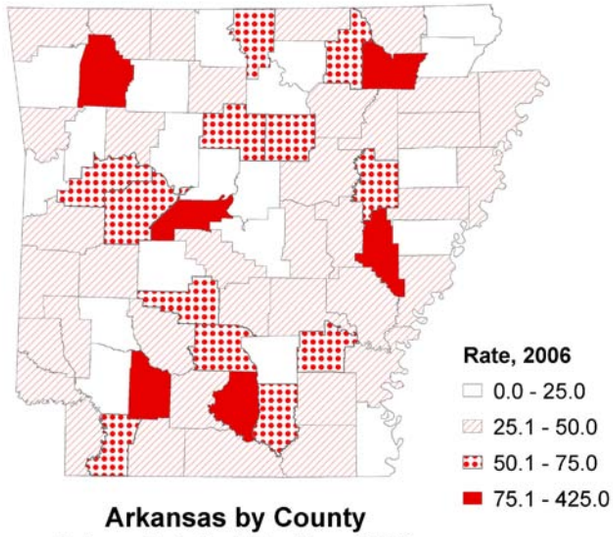
A System Saving Lives



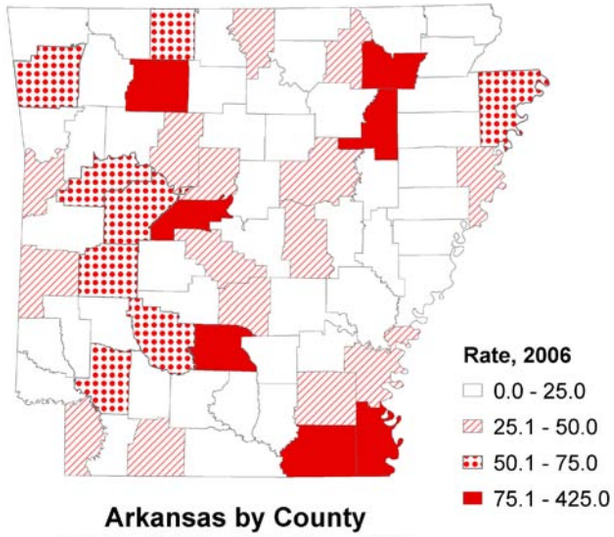
Arkansas by County
Injury-Related Deaths, 2006
Motor Vehicle Accidents



Arkansas by County
Injury-Related Deaths, 2006
Motor Vehicle Accidents, Ages 16 - 19



Arkansas by County
Injury-Related Deaths, 2006
Motor Vehicle Accidents, Ages 20 - 64



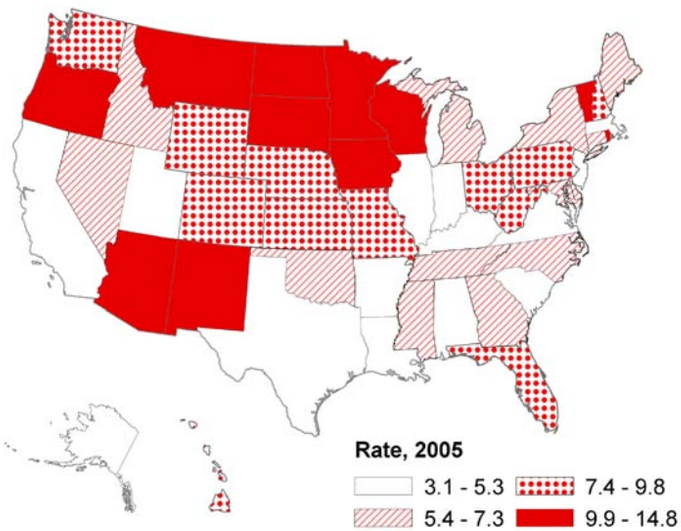
Arkansas by County
Injury-Related Deaths, 2006
Motor Vehicle Accidents, Ages >=65

A System Saving Lives

Falls among the Elderly

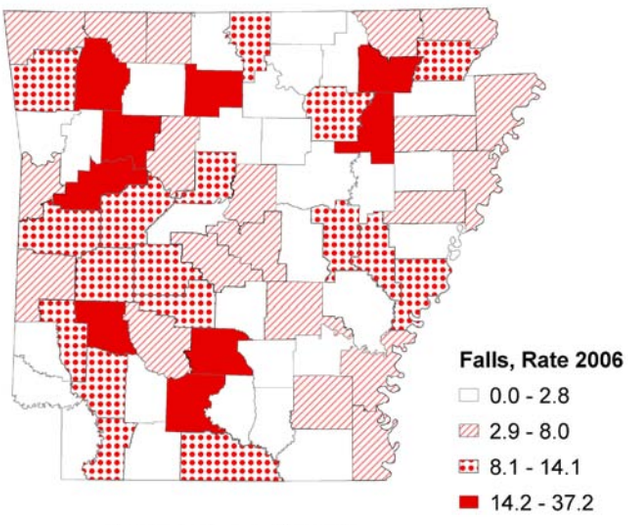
In 2005, there were 137 Arkansans killed as the result of a fall. In 2006, there were 7,694 Arkansans hospitalized for falls producing $160 million in hospital charges. While deaths occurred in all age groups, the highest rates occurred among those 65 years and older.

Preventing injuries and deaths from falls involves a combination of activities. These include improving the physical condition of older persons and reducing the environmental hazards in the home that may cause or contribute to a fall. A key factor that determines whether a fall becomes a life-threatening or life-changing event is whether it produces a fracture or a traumatic brain injury. It has been demonstrated that clinical measures to prevent osteoporosis reduces the risk of fractures. Exercise also prevents falls due to better muscle strength and coordination. Another important consideration is fall-proofing the home of an older person by removing trip hazards, removing furniture pieces with sharp edges or corners and improving lighting in dark areas of the home. These preventive measures could be accomplished through health promotion efforts that focus on the need for exercise, prevention of osteoporosis and fall-proofing the home. Recipients of these prevention messages would be older persons, their physicians and other health providers and community groups serving older persons.



United States - Fall-Related Deaths, 2005

(2006 U.S. rates not yet available)



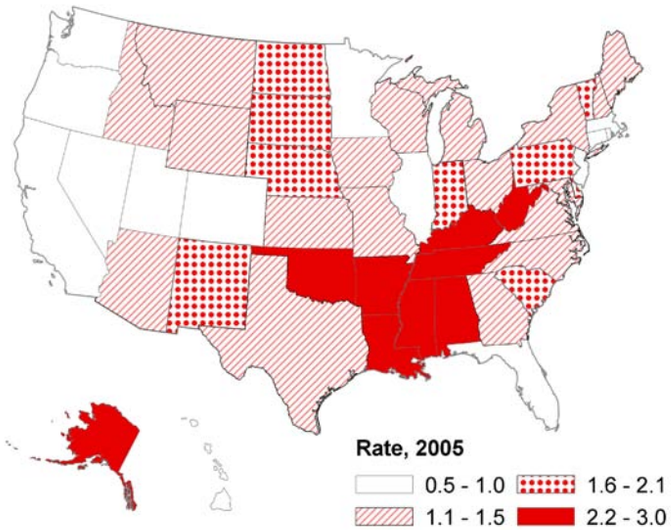
Arkansas by County
Fall-Related Deaths, 2006

A System Saving Lives

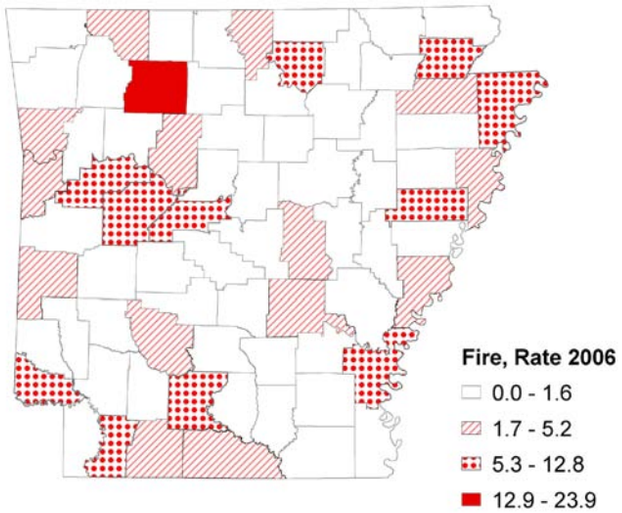
Fire-Related Deaths

In 2005, there were 77 Arkansans killed as the result of a fire-related event. In 2006, there were 363 Arkansans hospitalized for fire injuries producing $21 million in hospital charges. In 2005, the injury death rate due to fire in Arkansas was more than two times higher compared to the United States rate (2.7 compared to 1.1 deaths per 100,000). While deaths occurred in all age groups, the highest rates occurred among children ages one through four and among adults 65 years and older. Efforts to prevent fire deaths should focus on preventing residential fires. Homes should be equipped with smoke detectors to alert occupants to a fire threat and occupants should have a plan for how to evacuate their home safely.

There are numerous preventive and educational measures to limit fires and fire-related deaths. One of the most significant factors for reducing the occurrence of residential fires is to eliminate smoking in the home. Young children have to learn fire prevention and what to do in case of a fire. Fire safety programs in elementary schools and day care centers would be a logical venue to reach young children. Smoke detector distribution programs is another important fire safety measure.



United States - Fire-Related Deaths, 2005
(2006 U.S. rates not yet available)



Arkansas by County
Fire-Related Deaths, 2006

A System Saving Lives

Why Do We Need to Act Now?

Arkansans have some of the worst health status in the country. According to America's Health Rankings - 2008 (United Health Foundation), we have the third worst status of early deaths, that is lives lost due to injury, illness or causes other than old age.

In order to address some of our most serious health concerns, the Arkansas Department of Health has identified four strategic priority areas of focus where the likelihood of seeing measurable improvement within a three-year period is high. One priority area is to strengthen injury prevention and control in our state through evidence-based interventions and implementation of a statewide trauma system. Through implementation of interventions including an integrated trauma system, laws for primary seatbelt use and graduated driver's licenses for teenagers, the rate of injuries and deaths and their economic impact can be greatly reduced in Arkansas within three years.

Improving the injury health status is a complex process that extends beyond having a good trauma system in place for injured victims. To be most effective, injury prevention resources must be targeted and customized to specific populations. To improve the injury health status of our communities and state, we need the full mobilization of health care and public health resources in coordination with the trauma system. Only then can injury prevention efforts be most effective. In order to implement strong injury prevention and control interventions and a statewide trauma system in Arkansas, a substantial investment would be needed. The projected tangible cost savings in motor vehicle crash deaths through enhancements in treatment and prevention efforts including the statewide trauma system, graduated driver's licenses and primary seatbelt law is expected to total $237 million per year.

- Statewide Trauma System — $193 million
  ► (168 Deaths)
- Graduated Driver's Licenses — $7 million
  ► (6 Deaths)
- Primary Seatbelt Law — $37 million
  ► (32 Deaths)

TOTAL GROSS SAVINGS **$237 MILLION**

Added to these savings, 206 Arkansans will be saved each year. The time to act is now – for our citizens, our communities and our state!

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http://www.acep.org/

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http://www.unitedhealthfoundation.org/ahr2008/

Arkansas Highway and Transportation Department
http://www.arkansashighways.com/

Arkansas State Police
http://www.asp.state.ar.us

CDC Prevention Fact Sheets: Motor Vehicle Crashes
Teen Drivers: **http://www.cdc.gov/ncipc/factsheets/teenmvh.htm**
Impaired Drivers: **http://www.cdc.gov/ncipc/factsheets/drving.htm**

CDC Prevention Fact Sheet: Preventing Falls in the Elderly
http://www.cdc.gov/ncipc/duip/preventadultfalls.htm

CDC Prevention Fact Sheet: Preventing Fire Deaths and Injuries
http://www.cdc.gov/ncipc/factsheets/fire.htm

National Inventory of Hospital Trauma Centers, JAMA, March 26, 2003-vol 289, No. 12
http://jama.ama-assn.org/cgi/content/abstract/289/12/1515

APPENDIX

TOTAL CRASHES, FATALITIES AND INJURIES BY COUNTY

Arkansas State Police 2007

County	Fatal Crashes	Fatalities	Injury Crashes	Injuries	Total Crashes
ARKANSAS	4	4	153	252	415
ASHLEY	3	3	132	196	424
BAXTER	10	13	262	428	750
BENTON	32	35	1,550	2,928	4,038
BOONE	3	3	588	1,405	761
BRADLEY	5	5	59	102	130
CALHOUN	3	3	53	89	110
CARROLL	5	7	266	598	395
CHICOT	4	4	55	101	127
CLARK	6	8	181	329	471
CLAY	4	4	73	130	183
CLEBURNE	11	14	244	381	492
CLEVELAND	3	3	40	71	69
COLUMBIA	2	2	132	232	308
CONWAY	6	8	156	240	472
CRAIGHEAD	19	20	891	1,426	3,050
CRAWFORD	7	7	541	927	1,375
CRITTENDEN	16	16	828	1,943	1,564
CROSS	8	9	198	385	345
DALLAS			61	105	126
DESHA	4	4	69	141	185
DREW	5	5	108	189	229
FAULKNER	12	13	860	1,487	2,378
FRANKLIN	1	1	137	277	211
FULTON	8	8	74	136	136
GARLAND	28	32	1,170	2,147	3,425
GRANT	4	5	104	187	203
GREENE	7	8	336	646	913
HEMPSTEAD	5	5	208	351	527
HOT SPRING	10	10	300	578	549
HOWARD			88	173	177
INDEPENDENCE	13	14	364	620	1,072
IZARD	1	1	36	60	69
JACKSON	8	8	93	164	220
JEFFERSON	16	22	862	1,709	2,199
JOHNSON	2	2	125	187	364
LAFAYETTE	1	1	33	57	58
LAWRENCE	6	6	92	189	169

APPENDIX

TOTAL CRASHES, FATALITIES AND INJURIES BY COUNTY (CONT.)

Arkansas State Police 2007

County	Fatal Crashes	Fatalities	Injury Crashes	Injuries	Total Crashes
LEE	3	3	50	94	84
LINCOLN	3	3	83	150	173
LITTLE RIVER	1	1	73	108	133
LOGAN	5	6	136	275	248
LONOKE	16	17	355	607	1,140
MADISON	6	6	68	129	131
MARION	3	3	63	110	137
MILLER	7	10	359	626	965
MISSISSIPPI	15	17	286	461	994
MONROE	5	5	87	176	182
MONTGOMERY			84	165	136
NEVADA	7	8	68	110	154
NEWTON	4	4	85	151	100
OUACHITA	6	7	110	157	212
PERRY	4	6	38	53	60
PHILLIPS	6	6	142	336	282
PIKE	3	3	78	149	133
POINSETT	10	11	148	237	392
POLK	3	3	121	208	270
POPE	13	13	353	560	1,323
PRAIRIE	4	7	71	144	145
PULASKI	58	64	5,123	9,337	13,112
RANDOLPH	4	5	89	188	211
SALINE	9	9	798	1,336	2,317
SCOTT	2	2	110	184	179
SEARCY	4	5	76	136	91
SEBASTIAN	17	18	1,299	2,045	4,250
SEVIER	5	5	172	412	259
SHARP	9	12	137	264	238
ST. FRANCIS	8	11	362	878	491
STONE	3	3	48	71	139
UNION	2	2	399	700	1,052
VAN BUREN	9	10	122	194	286
WASHINGTON	19	20	2,525	5,261	5,714
WHITE	21	23	932	2,118	1,668
WOODRUFF	2	2	6	10	11
YELL	6	7	126	199	292
TOTALS	584	650	26,704	49,905	66,393

Arkansas Department of Health
Keeping Your Hometown Healthy

customer-centered
HEALTH*marketing*
science-based