Injuries in Oklahoma, 2010-2011

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Injury Indicators

Injury surveillance, that is, the practice of collecting, analyzing, and disseminating data on injury, is a fundamental and critical element of controlling and preventing injuries. This information guides resource allocation and is a basis for developing programs and establishing prevention priorities. Surveillance data also illustrate the magnitude of injury morbidity and mortality, the leading mechanisms of injury, and the populations at highest risk.

The Centers for Disease Control and Prevention (CDC) has defined an injury indicator as a measure that "describes a health outcome of an injury, such as hospitalization or death, or a factor known to be associated with an injury, such as a risk or protective factor among a specified population."[1] The indicators are calculated using standardized methodology created by the CDC and cover the following mechanisms and types of injury: drownings, falls, fires, firearms, assaults, motor vehicle crashes, poisonings, acute drug overdoses, suicides/suicide attempts, hip fractures, and traumatic brain injuries.[1] Oklahoma's indicator data are used in this state profile, *Injuries in Oklahoma*. This report includes data on injury deaths and hospitalizations that occurred in 2010 and 2011.

Magnitude of the Problem

Approximately 3,000 Oklahomans die every year from an injury, including more than 2,200 unintentional (accidental) deaths, over 600 suicides, and more than 200 homicides.[2] In 2010, injuries accounted for 1 of every 15 deaths in Oklahoma[2]; in 2011, nonfatal injuries accounted for 1 of every 19 hospital days and 1 of every 19 hospital discharges. Also, for every $13.50 of inpatient healthcare charges, $1 was for injuries.[3]

Injuries are the leading cause of death and lifelong disability among persons 1-44 years of age in Oklahoma. Unintentional injuries, suicides, and homicides are the three leading causes of death for Oklahomans age 15-34. Injuries account for more premature deaths before 65 years of age than cancer, heart disease, stroke, and diabetes combined. In 2010, Oklahoma's death rates due to motor vehicle crashes, drownings, fire/burns, unintentional falls, poisoning, suicide and homicide were higher than the national average (2011 national data are not currently available).[2]

According to vital statistics data, in 2011, the leading causes of injury death in Oklahoma were poisonings, motor vehicle crashes, firearms, and falls. Males were 2.7 times more likely to die from injuries than females. Of the fatal motor vehicle traffic crashes in Oklahoma, 36% were alcohol/drug-related. Overall, 56% of fatal crash victims were not using safety belts or child restraint devices.[4]

According to 2011 United States (U.S.) Census population estimates, the population of Oklahoma constituted 1.2% of the entire U.S. population. Oklahoma has the third highest Native American population in the nation and a lower proportion of African Americans than the national average (Table 1).[5]

Table 1. Selected Census Population, Oklahoma and United States, 2011

		Oklahoma		United States	
		Number	Percent	Number	Percent
Total Population		3,791,508		311,591,917	
Males		1,877,749	50%	153,290,819	49%
Females		1,913,759	50%	158,301,098	51%
Race	White	2,873,019	76%	243,470,497	78%
	African American	290,106	8%	40,750,746	13%
	Native American	338,069	9%	3,814,772	1%
Hispanic ethnicity		347,620	9%	52,045,277	17%
Under 5 years		266,415	7%	20,162,058	6%
Under 18 years		936,159	25%	73,934,272	24%
Over 65 years		484,437	13%	38,721,232	12%

Indicator 1: Injury Fatalities

Injuries are a leading cause of death in Oklahoma. Injury-related deaths result in the most years of potential life lost because they disproportionately affect the young. In 2011, 3,108 Oklahoma residents died as a result of an injury compared to 2,378 deaths in 2010. From 2010-2011, males accounted for 66% of all fatal injuries and had a higher mortality rate than females in all age groups except infants less than one year of age. The largest differences between males and females were among those aged 15-34 years, where mortality rates for males were three times those of females. Overall, the highest injury-related mortality rates were for adults aged 75 and older. Adults aged 85 and older had mortality rates 2-3 times those of adults aged 75 and older. Among adults younger than 75, the highest mortality rates were seen in the 45-54 year age group.

Figure 1. Injury Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

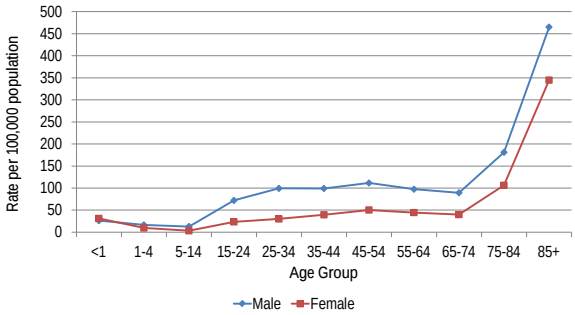


Figure 2. Age-Adjusted Injury Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

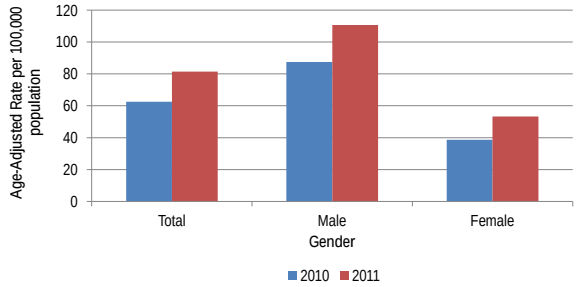


Table 2. Injury Fatality Rates by Indicator and Gender, Oklahoma, 2010-2011

	Total	Male	Female
All injuries	72.6	96.8	49.0
Unintentional drowning	1.4	2.2	0.7
Unintentional fire	1.6	1.8	1.3
Firearm	13.6	22.7	4.6
Homicide	5.3	8.2	2.4
Suicide	15.2	24.4	6.1
Motor vehicle crash	15.4	21.1	9.8
Poisoning	16.8	20.1	13.5
Traumatic brain injury	18.7	27.1	10.5
Falls	10.3	10.0	10.6

Table 3. Injury Fatality Rates by Year of Death, Age Group, and Gender, Oklahoma, 2010-2011

	Total		Male		Female	
	2010	2011	2010	2011	2010	2011
<1 year	28.8	30.0	26.3	29.3	31.3	30.7
1-4 years	13.2	23.5	16.6	27.7	9.6	19.1
5-14 years	8.2	9.6	12.9	10.9	3.2	8.3
15-24 years	48.3	68.2	72.0	103.4	23.5	30.9
25-34 years	65.5	88.0	99.4	127.0	30.1	47.5
35-44 years	69.6	95.1	99.1	126.2	39.5	63.5
45-54 years	80.6	116.9	111.6	157.7	50.4	77.0
55-64 years	70.2	81.3	97.4	115.9	44.6	48.8
65-74 years	63.1	81.8	89.4	112.2	39.9	55.0
75-84 years	138.1	143.4	181.1	181.1	106.5	115.4
85+ years	384.7	441.0	465.1	530.7	344.9	395.5

Indicator 2: Injury Hospitalizations

For every one injury death in Oklahoma in 2010-2011, there were nearly nine injury hospitalizations. Oklahomans had a total of 23,938 injury-related hospitalizations in 2011, an increase from the 23,788 hospitalizations in 2010. Unlike injury-related deaths, females accounted for more than half (52%) of all injury hospitalizations. Males had higher rates of injury-related hospitalization than females for all groups less than 55 years of age. Females had higher rates of hospitalization than males for all groups aged 55 and older. Similar to injury-related deaths, the highest overall rates for both males and females were for adults aged 65 and older. Adults aged 85 and older had the highest injury-related hospitalization rates, 2.4 times higher than those of the next youngest age group. Injury-related hospitalization rates nearly tripled for both males and females between the 5-14 and 15-24 year age groups. This is likely due to the large number of motor vehicle crash injuries for teen drivers and teen vehicle occupants.

Figure 3. Injury Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

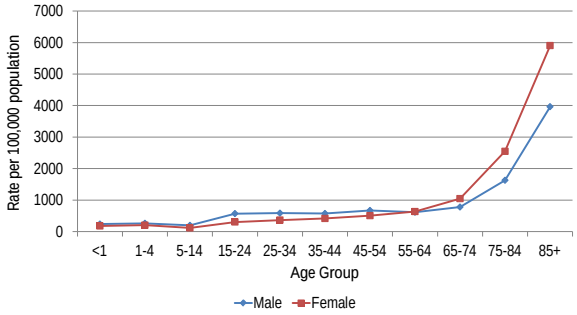


Figure 4. Age-Adjusted Injury Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011

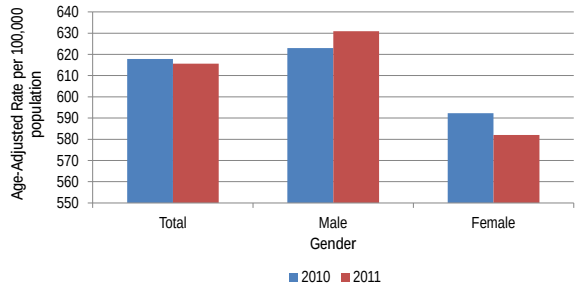


Table 4. Injury Hospitalization Rates by Indicator and Gender, Oklahoma, 2010-2011

	Total	Male	Female
All injuries	631.9	608.0	655.3
Unintentional drowning	1.0	1.3	0.7
Unintentional fire	5.4	8.0	2.9
Firearm	9.5	16.3	2.9
Assault	25.8	43.1	8.9
Suicide Attempt	61.8	50.2	73.2
MVC	71.2	89.0	53.7
Poisoning	124.0	104.4	143.2
TBI	98.7	120.7	77.0
Falls	257.3	181.4	331.8
Hip fractures (older adults)	690.3	446.0	880.1

Table 5. Injury Hospitalization Rates by Year of Discharge, Age Group, and Gender, Oklahoma, 2010-2011

	Total		Male		Female	
	2010	2011	2010	2011	2010	2011
<1 year	153.5	260.3	173.1	300.1	173.1	218.7
1-4 years	232.8	232.8	263.3	259.9	263.3	204.7
5-14 years	145.9	166.0	184.0	207.3	184.0	122.7
15-24 years	420.4	459.3	534.3	604.3	534.3	305.6
25-34 years	470.6	482.3	571.7	596.4	571.7	363.5
35-44 years	493.8	493.8	577.2	568.2	577.2	418.5
45-54 years	582.7	588.1	664.7	673.0	664.7	505.1
55-64 years	619.8	627.0	603.2	621.2	603.2	632.5
65-74 years	930.3	909.5	784.0	770.8	784.0	1031.6
75-84 years	2155.8	2157.2	1638.7	1615.9	1638.7	2558.7
85+ years	5702.8	4824.8	4273.0	3668.5	4273.0	5411.2

Indicator 3: Unintentional Drowning Fatalities

Indicator 4: Drowning-Related Hospitalizations

Unintentional drowning is the third leading cause of injury death for children aged 1-18 in Oklahoma, and the leading cause of death for children aged 1-4.[2] From 2010-2011, 108 Oklahomans unintentionally drowned. Males accounted for more than three-fourths of all drowning deaths and were more than three times more likely to drown compared to females. Overall, the highest rates of drowning deaths were for female infants and males aged 0-4.

From 2010-2011, there were more drowning deaths than drowning-related hospitalizations (108 and 72, respectively). Males accounted for nearly two-thirds (65%) of drowning-related hospitalizations. Fifty-one percent of drowning-related hospitalizations were among children aged 1-4, and two-thirds occurred among children aged 1-14.

Figure 5. Unintentional Drowning Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

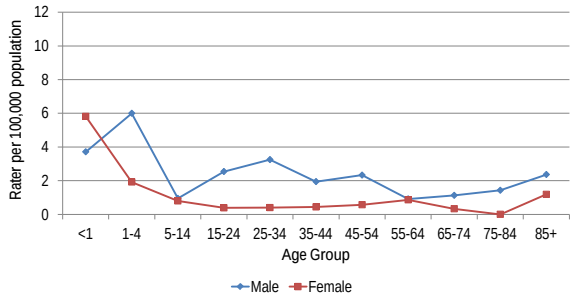


Figure 6. Drowning-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

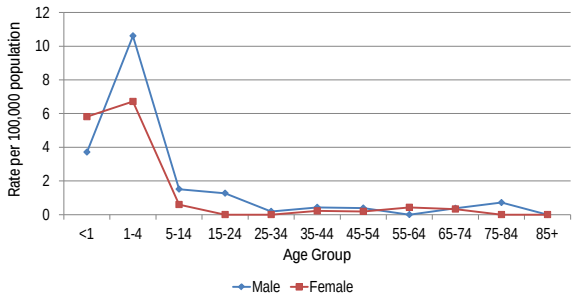


Figure 7. Age-Adjusted Unintentional Drowning Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

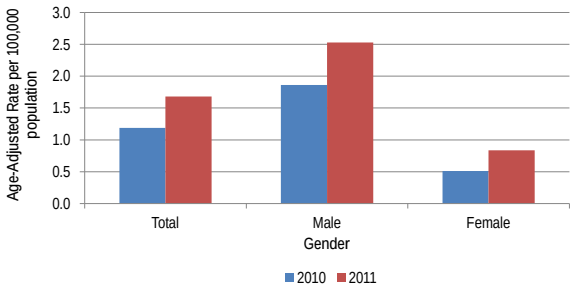


Figure 8. Age-Adjusted Drowning-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011

Drowning Prevention Strategies

- Have a responsible, undistracted adult provide constant supervision to children bathing, swimming, or playing in and around water.
- Learn to swim well and learn cardiopulmonary resuscitation (CPR).
- Avoid alcohol use before and during water-related activities (e.g., boating, swimming, water skiing) and while supervising children.
- Install four-sided fencing around swimming pools that is at least four feet high and has a self-closing and self-latching gate.
- Everyone should wear U.S. Coast Guard approved life jackets when boating (regardless of swimming ability or age) and be aware of weather forecasts, dangerous waves, and rip currents.

Indicator 5: Unintentional Fire-Related Fatalities

Indicator 6: Unintentional Fire-Related Hospitalizations

Unintentional fire-related injuries are the fourth leading cause of injury death in Oklahoma among ages 1-9 years.[2] In 2010, there were 60 fire-related deaths in Oklahoma, compared to 57 deaths in 2011. The rate of fire-related death decreased slightly from 2010-2011. Slightly more than half of all fire-related deaths occurred among males. Adults aged 45-64 accounted for 42% of all fire-related deaths from 2010-2011. There was one death among infants less than one year of age.

For every fire-related death, there were more than three (3.5) fire-related hospitalizations. Males accounted for nearly three-fourths (73%) of all fire-related hospitalizations, and the rate of hospitalization for males was 2.8 times that of females. Males had higher hospitalization rates than females in all age groups. Males aged 25-54 accounted for 42% of fire-related hospitalizations, but only 20% of the Oklahoma population. Males aged 85 and older had the highest rate overall (14.2 per 100,000 population). Females aged 45-54 had a hospitalization rate less than one-fourth that of males in the same age group (2.7 and 11.8 per 100,000 population, respectively), and approximately 30% lower than that of females of the next youngest and next oldest age groups.

Figure 9. Unintentional Fire-Related Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

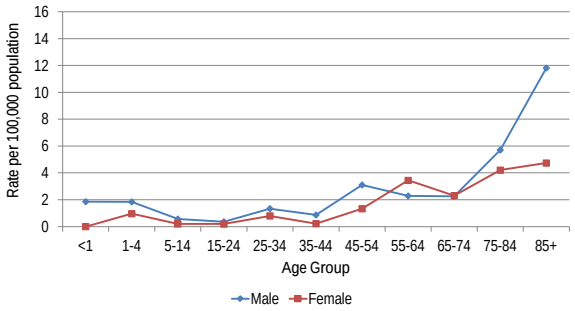


Figure 10. Unintentional Fire-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

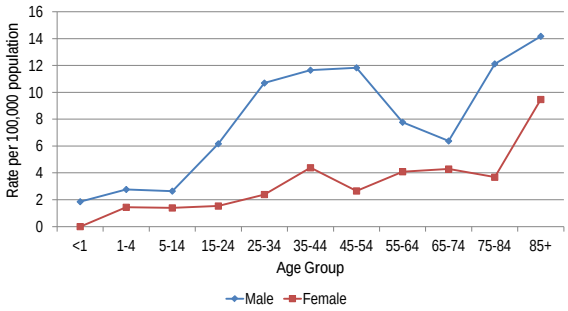


Figure 11. Age-Adjusted Unintentional Fire-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

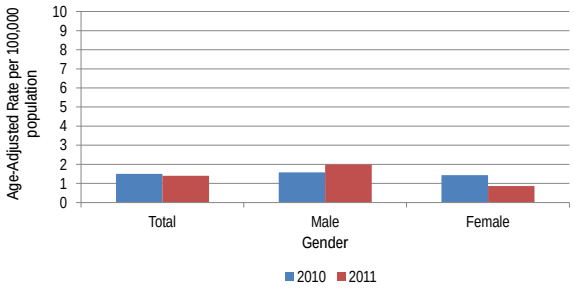
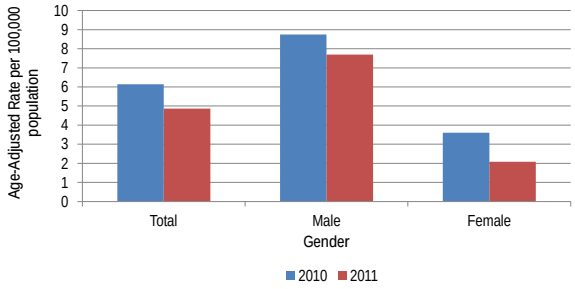


Figure 12. Age-Adjusted Unintentional Fire-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Fire-Related Injury Prevention Strategies

- Install smoke alarms on every floor of the home, particularly near areas/rooms where people sleep. Test alarms every month.
- Create and practice a fire escape plan that includes at least two ways to get out of every room and designates a safe meeting area once outside.
- Quit smoking, or if unable to quit, practice safe smoking behaviors, such as not smoking in bed or while drowsy and completely extinguishing cigarettes and smoldering ashes.
- Never leave food unattended while cooking and keep cooking areas free of flammable objects.
- Keep matches and lighters out of children's reach.

Indicator 7: Firearm-Related Fatalities

Indicator 8: Firearm-Related Hospitalizations

Firearm-related deaths include all manner deaths: homicide, suicide, unintentional, and undetermined. Males accounted for 83% of firearm-related deaths and had a mortality rate 4.9 times higher than females (22.7 and 4.6 per 100,000, respectively). Males had much higher rates of firearm-related death in all age groups. There were no firearm-related deaths to infants under one year of age or females under 15 years.

During 2010-2011, there were fewer firearm-related hospitalizations in Oklahoma than deaths (720 and 1,025, respectively), and a similar proportion of hospitalizations were among males (84%). Males aged 15-34 accounted for more than half (54%) of firearm-related hospitalizations, but only 14% of the Oklahoma population. Males had much higher rates of firearm-related hospitalization than females in almost all age groups. Males aged 15-24 had higher rates of firearm-related hospitalization than firearm-related death (42.5 and 26.9 per 100,000, respectively). For adults aged 25 and older, firearm-related fatality rates were higher in every age group than firearm-related hospitalizations. There were no firearm-related hospitalizations to infants under one year of age or females under 5 years.

Figure 13. Firearm-Related Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

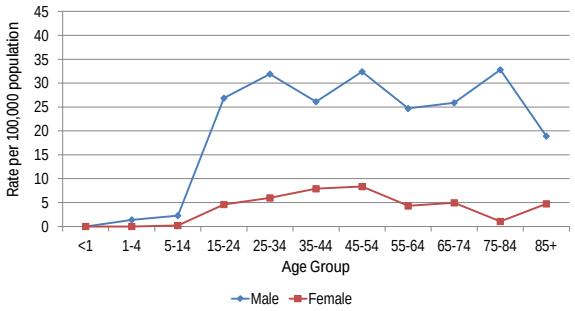


Figure 14. Firearm-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

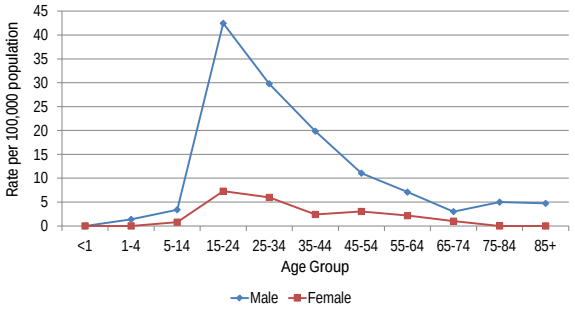
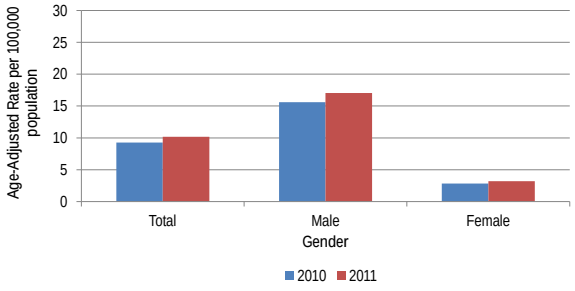


Figure 15. Age-Adjusted Firearm-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

Figure 16. Age-Adjusted Firearm-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Firearm-Related Injury Prevention Strategies

- Do not keep firearms in the home, or if choosing to do so, store firearms unloaded and in a locked place.
- Use gun/trigger locks, load indicators, and other safety devices on all firearms.
- Do not handle or purchase a firearm without the appropriate knowledge for safely using it.
- Keep firearms out of reach of children; do not overestimate a child's ability to differentiate between toy and real guns.
- Support school-, home-, and community-based programs designed to reduce violence and educate and train at-risk individuals.

Indicator 9: Homicides

Indicator 10: Assault-Related Hospitalizations

Homicide is the third leading cause of death in Oklahoma for ages 1-4 and 15-34 years.[2] Among all age groups, homicide by firearm is the fifth leading cause of injury death. Males accounted for 77% of homicides in Oklahoma from 2010-2011. Males had higher rates of homicide in almost all age groups compared to females. The highest rate of homicide for females was in the <1 year age group (11.6 per 100,000 compared to 9.3 for males), which was three times higher than the next highest rate for females (3.6 per 100,000 for the 85 years and older age group).

For every homicide, there were nearly five (4.9) assault-related hospitalizations in Oklahoma from 2010-2011. Like homicides, males were at much higher risk of assault-related hospitalizations compared to females (4.8:1). The highest rates of hospitalization for both males and females were in the <1 year age group (98.3 and 60.1 per 100,000, respectively). Infants <1 year had rates more than five times that of children age 1-4. For females, the highest risk age groups were <1 year of age and teens and adults aged 15-44. For males, the highest risk age groups were infants <1 year of age and teen and adults aged 15-54.

Figure 17. Homicide Rates by Age Group and Gender, Oklahoma, 2010-2011

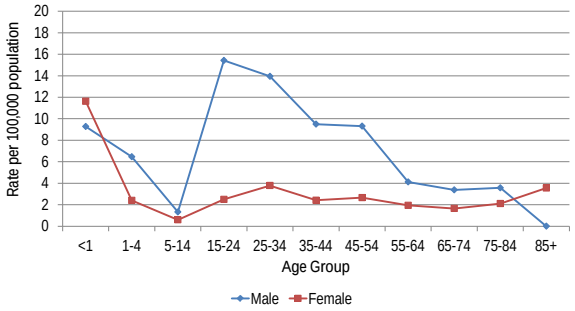


Figure 18. Assault-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

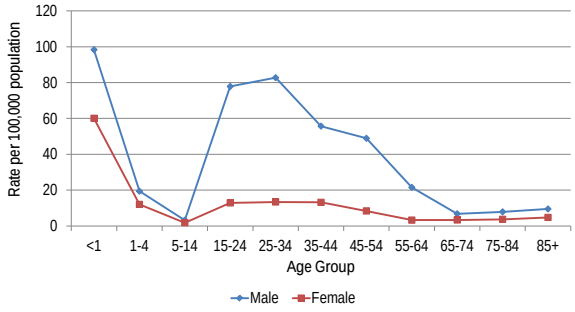


Figure 19. Age-Adjusted Homicide Rates by Year of Death and Gender, Oklahoma, 2010-2011

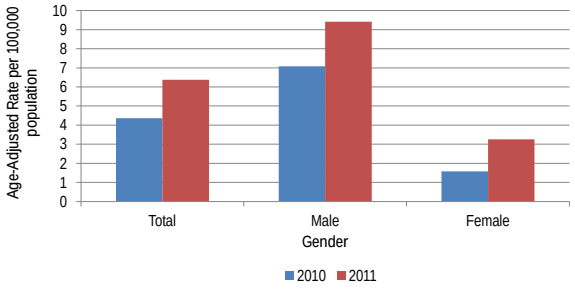
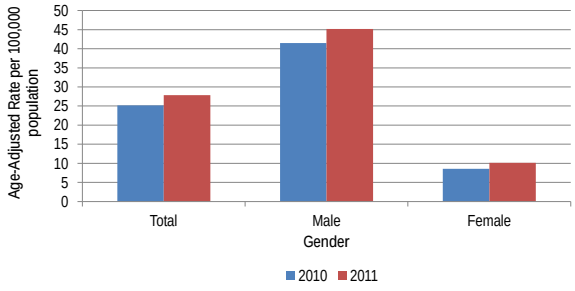


Figure 20. Age-Adjusted Assault-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Homicide/Assault Prevention Strategies

- Reduce the availability of firearms (e.g., purchasing procedures, legislation, locking/safety mechanisms) and practice safe use and storage procedures.
- Support violence prevention programs that focus on topics such as mentoring/tutoring/language development, empowerment/community development, reducing risk taking/substance abuse, anger management skills, and social relations/positive interactions.
- Consider appropriate environmental modifications, such as improved street lighting, safe walking routes, neighborhood watch groups, and changes to building designs and landscaping.
- Do not tolerate violence and criminal activity in the community; opposing the acceptability of such behaviors will work to change the social climate and cultural norms.
- Provide youth with educational and recreational opportunities that promote emotional and social competencies to help them make good life choices.

Indicator 11: Suicides

Indicator 12: Suicide Attempt Hospitalizations

Suicide is the second leading cause of death, behind unintentional injuries, for ages 15-34 years in Oklahoma. Suicide by firearm is the fourth leading cause of injury death, and three of the top 10 causes of injury death are suicide.[2] Similar to homicides, males account for the majority of suicides (80%) and have a much higher risk than females (4:1). Males in almost all age groups had higher rates than females. Males and females aged 35-54 had the highest rates of suicide among their respective age groups. Males aged 75 and older had a much higher rate of suicide compared to females of the same age (31.2 and 2.9 per 100,000, respectively).

The demographics of suicide attempt hospitalizations are much different than completed suicides. Males accounted for 80% of completed suicides, but females accounted for 60% of suicide attempt hospitalizations. Females had a higher rate of suicide attempt hospitalizations for all age groups, except ages 75 and older.

Figure 21. Suicide Rates by Age Group and Gender, Oklahoma, 2010-2011

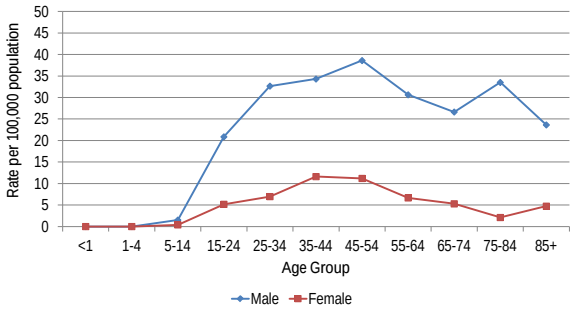


Figure 22. Suicide Attempt Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

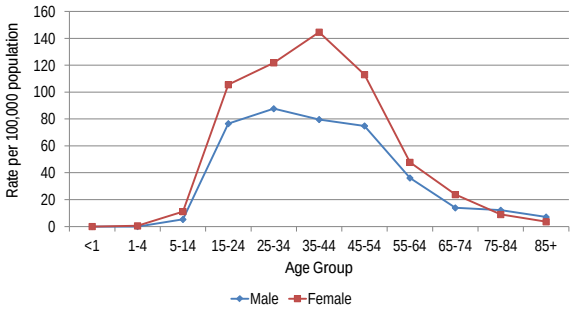


Figure 23. Age-Adjusted Suicide Rates by Year of Death and Gender, Oklahoma, 2010-2011

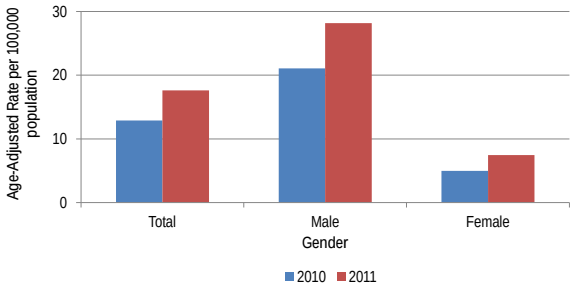


Figure 24. Age-Adjusted Suicide Attempt Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011

Suicide Prevention Strategies

- Learn and watch for the warning signs of suicide, which include changes in mood, behavior, diet, sleeping, and habits, increased substance use, and ideation.
- Reach out to a mental health professional, intervention center, or telephone hotline if in crisis or know of someone who is in crisis.
- Provide avenues for easily accessing mental health care, substance abuse treatment, and opportunities to strengthen problem solving and conflict resolution skills.
- Restrict/reduce access to lethal means and methods of self-harm (e.g., firearms, excessive amounts of medications, illicit substances).
- Encourage physicians, teachers, faith leaders, and other health professionals to recognize at-risk behavior and screen individuals when appropriate.

Indicator 13: Motor Vehicle Traffic Fatalities

Indicator 14: Motor Vehicle Traffic Hospitalizations

From 2008-2010, motor vehicle traffic crashes were a leading cause of injury death, averaging 700 deaths annually.[2] Overall, males had a higher rate of motor vehicle crash death than females (21.1 and 9.8 per 100,000, respectively). Males had a higher rate of motor vehicle crash death than females for every age group except females aged 1-4. Motor vehicle crash death rates increased dramatically between the 5-14 and 15-24 year age groups (3.3 and 21.3 per 100,000, respectively). This is likely due to a high rate of crashes for teen drivers. Death rates were fairly stable from ages 15-54. Rates decreased slightly from ages 55-74, and then nearly doubled for adults aged 85 and older.

More than 10% of all injury hospitalizations involved a motor vehicle traffic crash. Males accounted for more than half (62%) of all motor vehicle traffic crash-related hospitalizations and had a hospitalization rate 66% higher than females. Males had higher hospitalization rates than females in all age groups except the 0-4 year age group (9.2 and 9.6 per 100,000, respectively). The highest overall hospitalization rates for motor vehicle traffic crash-related injuries were in the 15-34 year age group and the 85 years and older age group.

Figure 25. Motor Vehicle Traffic Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

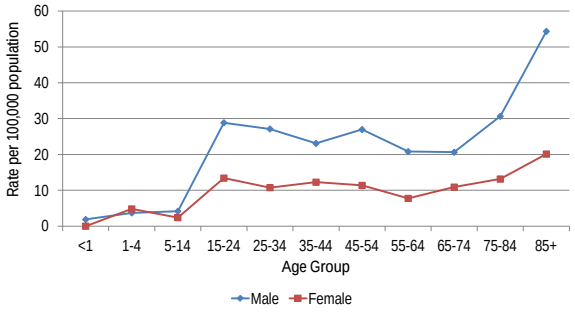


Figure 26. Motor Vehicle Traffic Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

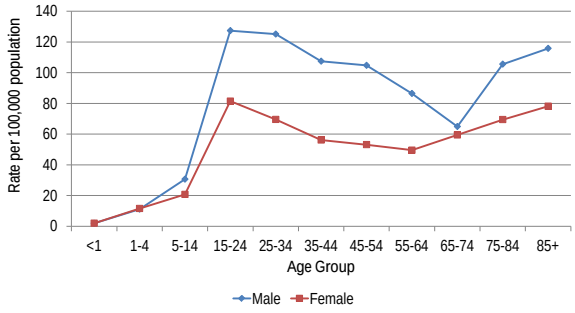


Figure 27. Age-Adjusted Motor Vehicle Traffic Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

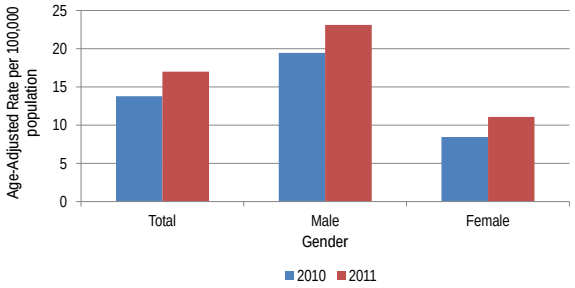
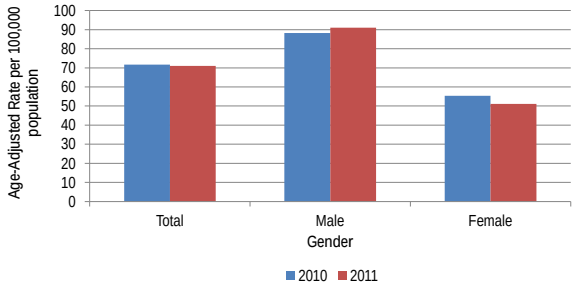


Figure 28. Age-Adjusted Motor Vehicle Traffic Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Motor Vehicle Traffic Injury Prevention Strategies

- Always wear a seat belt and properly restrain infants and young children in age- and size-appropriate child safety seats (have car/booster seats installed and checked by a certified child passenger safety technician).
- Always wear a helmet when riding bicycles, motorcycles, scooters, and all-terrain vehicles.
- Do not drive or allow others to drive while drowsy or under the influence of alcohol, illicit drugs, or medications.
- Do not become distracted by outside influences (e.g., cell phone/texting, radio, food, makeup, other passengers) while driving.
- Become educated on graduated driver licensing laws and ensure young drivers follow them.

Indicator 15: Poisoning Fatalities

Indicator 16: Poisoning Hospitalizations

Indicator 22: Acute Drug Overdose Fatalities

In 2009, poisonings surpassed motor vehicle crashes as the leading cause of injury death in Oklahoma.[2] In 2010, approximately the same number of Oklahomans died due to poisoning as motor vehicle crashes (522 and 519, respectively). More than half (59%) of poisoning decedents were male. Overall, the age groups most at risk for poisoning-related death were adults aged 35-54. This age group accounted for 51% of poisoning deaths, but only 26% of the population. The death rate for this age group was 45% higher than the death rate of the next highest age group, adults aged 55-64 (33.2 and 23.0 per 100,000, respectively). Unlike poisoning-related deaths, females accounted for more than half (58%) of poisoning-related hospitalizations and had a hospitalization rate 37% higher than males. Females had a higher hospitalization rate than males in all age groups except children aged 1-4 and adults 85 years and older.

Figure 29. Poisoning Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

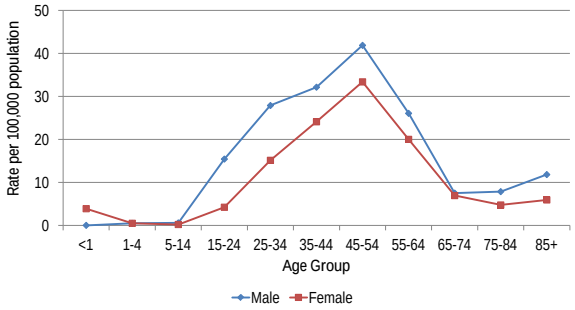


Figure 30. Poisoning Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

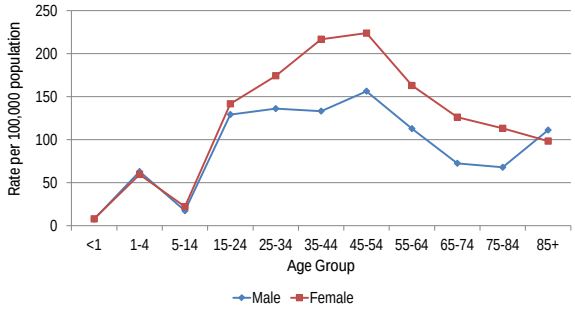


Figure 31. Age-Adjusted Poisoning Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

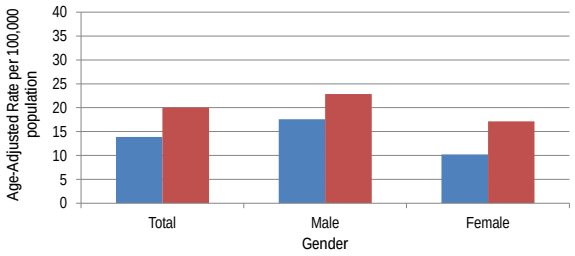
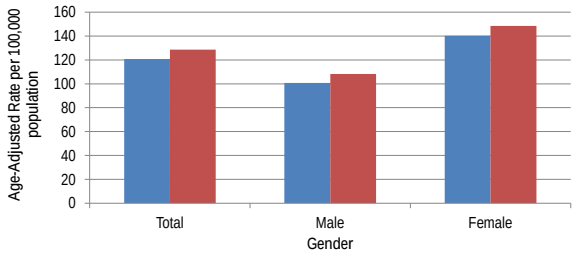


Figure 32. Age-Adjusted Poisoning Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Poisoning Prevention Strategies

- Post the number for the poison center helpline (1-800-222-1222) on or near telephones and call right away in the event of an exposure.
- Read and follow all directions and warnings on the labels of all medications used; discuss prescription and over-the-counter medications taken and their potential interactions with health care providers.
- Store all medications, household products, and other chemicals in their original containers and out of sight and reach of children.
- Read and follow all directions and warnings on the labels of household products and other chemicals before use. Do not mix products and only use them with adequate ventilation and appropriate protective clothing.
- Have all fuel-burning equipment and appliances (e.g., furnaces, stoves, fireplaces) inspected before each heating season to ensure proper functioning and to prevent carbon monoxide exposure. Do not use generators inside; do not use an oven as a home heater; and do not leave a car's engine running in an enclosed space (not even with the garage door open).

Indicator 17: Traumatic Brain Injury Fatalities

Indicator 18: Traumatic Brain Injury Hospitalizations

According to the CDC, traumatic brain injury (TBI) is a contributing factor in 30% of injury-related deaths in the United States each year. Leading causes of TBI include falls, motor vehicle crashes, being struck by/against an object, and assaults.[6] Forty-three percent of all fatal TBIs were suicide related. From 2010-2011, more than 1,400 Oklahomans sustained a fatal TBI. Oklahoma males were 2.6 times more likely than females to sustain a fatal TBI. Risk of death increased with age; although, infants less than one year of age had a much higher rate of fatal TBI compared to children aged 1-4 years (10.4 and 5.9 per 100,000, respectively).

For every TBI death, there were five hospitalizations related to a TBI diagnosis. Males were 57% more likely than females to be hospitalized with a TBI (120.7 and 77.0 per 100,000, respectively). Rates were higher for males in all age groups. Rates generally increased with age and more than doubled between the 65-74 and 75-84 year age groups, and again between the 75-84 and 85 years and older age groups. Nearly three-fourths (73%) of TBI-related hospitalizations for adults aged 65 and older were fall related.

Figure 33. Traumatic Brain Injury Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

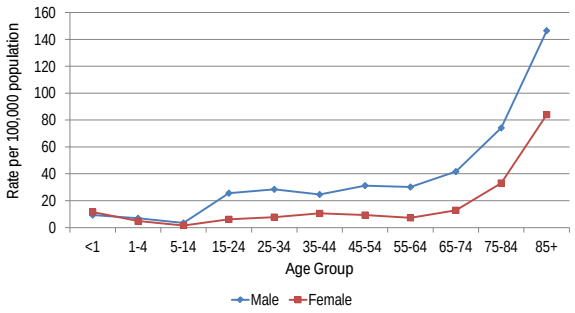


Figure 34. Traumatic Brain Injury Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

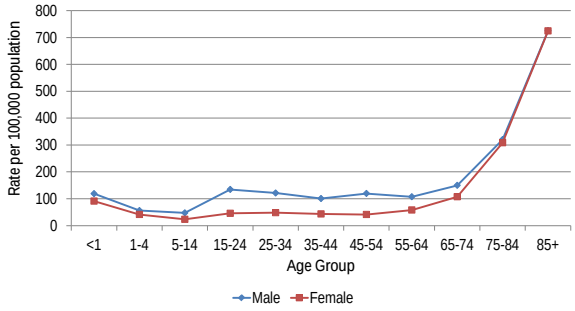


Figure 35. Age-Adjusted Traumatic Brain Injury Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

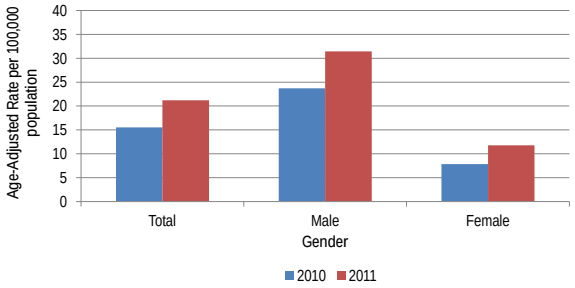
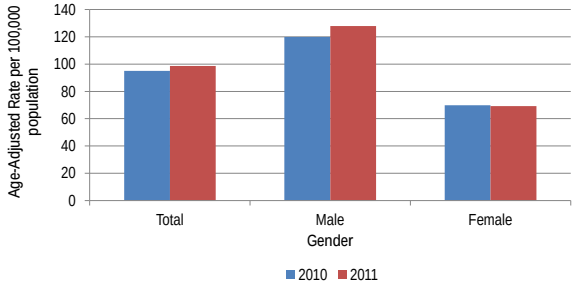


Figure 36. Age-Adjusted Traumatic Brain Injury Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011



Traumatic Brain Injury Prevention Strategies

- Always follow safe driving practices, including wearing seat belts, restraining young children in appropriate child safety seats, and not operating motor vehicles while impaired or distracted.
- Create safe living environments—remove or secure tripping hazards, improve lighting, install handrails in stairways, and utilize safety gates and window guards where children are present.
- Create safe recreational areas for children by ensuring playground surfaces are made of shock-absorbing materials.
- Always wear a helmet when riding a motorcycle, bicycle, scooter, or all-terrain vehicle; playing a contact sport (e.g., football, hockey, boxing); and participating in recreational activities such as bull riding, horse riding, skateboarding, in-line skating, and snowboarding.

Indicator 19: Unintentional Fall-Related Fatalities

Indicator 20: Unintentional Fall-Related Hospitalizations

Indicator 21: Hip Fracture Hospitalizations in Persons Aged 65 Years and Older

In 2010, falls were the leading cause of injury death for adults aged 65 and older, and more than twice as many older adults died as a result of a fall compared to motor vehicle crashes.[2] From 2010-2011, nearly 800 Oklahomans died as a result of a fall. A slightly larger number of females died as a result of a fall compared to males. More than half of all fall-related deaths to females were in the 85 years and older age group. There were 56 fall-related deaths to Oklahomans less than 55 years of age, compared to 333 for adults 85 years and older. Adults 85 years and older had a death rate more than four times higher than adults aged 75-84 (262.7 and 63.3 per 100,000, respectively).

For every fall-related fatality in Oklahoma, there were 25 fall-related hospitalizations. Similar to fall-related deaths, fall-related hospitalizations were much more common among older adults. Adults aged 65 years and older accounted for nearly three-fourths (71%) of all fall-related hospitalizations and only 14% of the state's population. Adults aged 85 years and older had hospitalization rates nearly three times higher than adults aged 75-84 (4386.9 and 1604.4 per 100,000, respectively). Males had a higher rate of fall-related hospitalizations than females for all age groups less than 55 years of age. Unlike most injuries, females had an 83% higher overall rate of hospitalization for falls compared to males.

Falls are a leading cause of traumatic brain injuries and hip fractures, especially among older adults.[6] More than 7,000 older adults were hospitalized for a hip fracture in Oklahoma from 2010-2011. Eighty-two percent of older adults hospitalized were 75 years of age or older. Adults 85 years and older had hospitalization rates nearly three times higher than adults aged 75-84 (2438.7 and 836.1 per 100,000, respectively) and more than 10 times higher than adults aged 65-74 (220.2 per 100,000). Overall, females had a hip fracture-related hospitalization rate nearly twice that of males (882.2 and 448.0 per 100,000, respectively). Seventy-two percent of older adults hospitalized for a hip fracture were female.

Figure 37. Unintentional Fall-Related Fatality Rates by Age Group and Gender, Oklahoma, 2010-2011

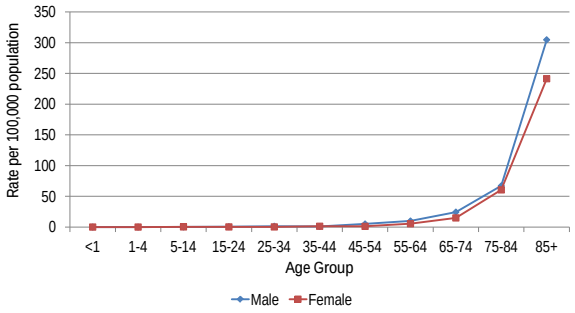


Figure 38. Unintentional Fall-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2010-2011

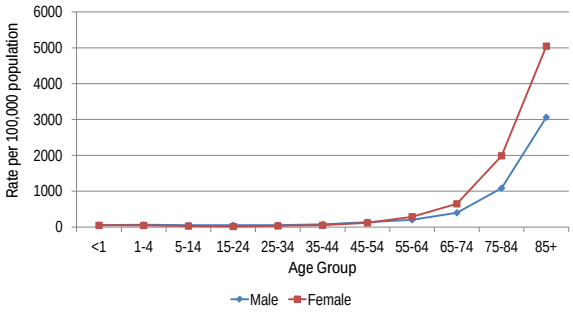


Figure 39. Age-Adjusted Unintentional Fall-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2010-2011

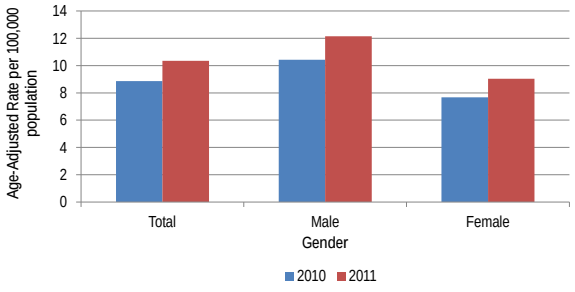


Figure 40. Age-Adjusted Unintentional Fall-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2010-2011

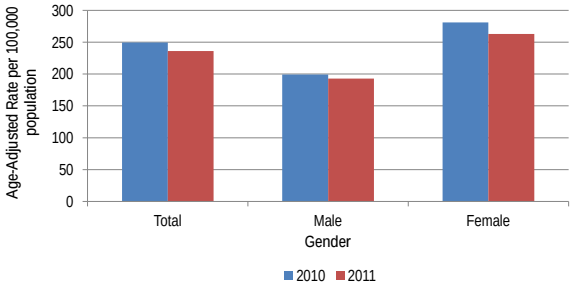


Figure 41. Hip Fracture Hospitalization Rates in Persons Aged 65 and Older by Age Group and Gender, Oklahoma, 2010-2011

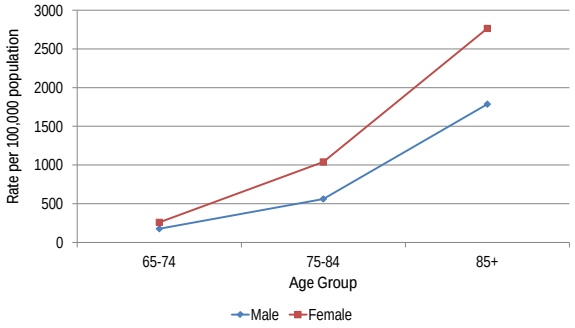
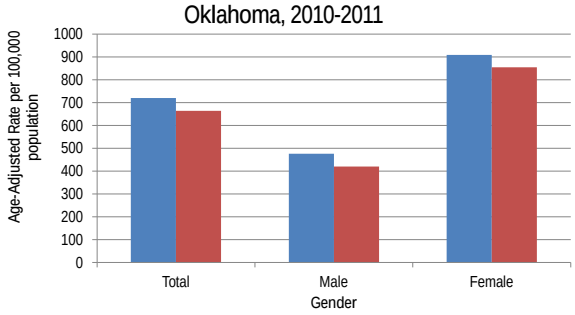


Figure 42. Hip Fracture Hospitalization Rates in Persons Aged 65 Years and Older by Year of Discharge and Gender, Oklahoma, 2010-2011



Fall Prevention Strategies

- Exercise regularly; perform activities approved by a health care provider that improve balance, strength, and flexibility.
- Have a doctor or pharmacist periodically review all medications taken to identify and reduce potential interactions and side effects.
- Create safe living environments by removing or repairing fall hazards, such as loose rugs and cords, poor lighting, uneven walkways, and clutter.
- Supervise children while playing on playgrounds and do not allow them to play on or near balconies, stairs, railings, windows, or fire escapes.
- Never leave infants alone on an elevated place like a bed, sofa, or changing table; walk carefully while carrying infants and children.

Core VIPP Priority Areas

The Injury Prevention Service (IPS) selected four priority areas of focus for the CDC's Core Violence and Injury Prevention Program funding. These priority areas were selected and approved with consultation from the Oklahoma Injury Prevention Advisory Committee (OIPAC).

Abusive Head Trauma

The IPS is collaborating with the *Preparing for a Lifetime: It's Everyone's Responsibility* Initiative to increase the percentage of Oklahoma birthing hospitals participating in the *Period of PURPLE Crying*® program, an evidence-based prevention strategy to reduce abusive head trauma among infants. The IPS is conducting a qualitative evaluation of the program in fully implemented hospitals to assess program fidelity and develop recommendations for expanding the program. An IPS staff member serves on the injury prevention and data analysis workgroups for the *Preparing for a Lifetime* Initiative.

Injury surveillance data involving traumatic brain injury (TBI) hospitalizations and deaths have been collected for many years in Oklahoma. Through Core VIPP funding, the IPS continues to collect data on all hospitalized TBIs to children and young adults under age 25, with a special focus on abusive head trauma and sports-related TBI.

Sports-Related Traumatic Brain Injuries

Locally and nationally, awareness of the effects of sports-related concussions and brain injuries has grown. The IPS has worked with middle school, junior high, and high school athletic programs as well as community sports groups over the last several years to distribute CDC *Heads Up* educational materials. The IPS has contacted youth-serving sports organizations to distribute educational materials on injury prevention and concussion policy development and to offer technical assistance for sports-related concussion and brain injury prevention programs. The IPS continues to offer educational trainings to coaches, educators, parents, athletes, and other interested groups. The IPS continues sports-related TBI hospitalizations as a special focus for surveillance.

Motor Vehicle Crashes

Motor vehicle crashes are a leading cause of death in Oklahoma. The IPS Traffic Data Linkage Project, funded by the Oklahoma Highway Safety Office from 2008 to 2012, linked death, hospitalization, emergency medical services, and law enforcement data for all motor vehicle crashes that occurred on public roadways. The IPS has expanded its child safety seat program to include additional training and educational efforts. The IPS strives to educate policy makers, stakeholders, and the public on evidence-based strategies for preventing motor vehicle-related injuries, with particular focus on distracted driving prevention, graduated driver licensing, and proper safety restraints and equipment.

Unintentional Poisonings

Along with motor vehicle crashes, unintentional poisoning is a leading cause of death in Oklahoma. The Commissioner of Health has also selected unintentional poisoning prevention as a priority area for the Oklahoma State Department of Health. An unintentional poisoning surveillance system was developed by the IPS to provide detailed information on these deaths using data abstracted from medical examiner reports. These data have been used for educational materials and for bringing awareness to this major public health problem, which has increased 470% over the past decade. The IPS collaborated with agencies and stakeholders across the state to develop a state plan to reduce prescription opioid misuse/abuse. The IPS is also collaborating with agencies and stakeholders to develop opioid prescribing guidelines for emergency departments and urgent care clinics and the office-based setting.

How Indicator Data Are Calculated

The data for fatal injuries includes Oklahoma residents who died with an injury as the underlying cause of death (COD). The source data are from Oklahoma vital statistics (VS) and rates were calculated using U.S. Census population estimates for the appropriate year. All rates are presented per 100,000 population.

Hospitalization data include all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission. The source data are from Oklahoma's inpatient hospital discharge database (HDD), which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. These selection criteria produced the subset from which all other indicators were calculated. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Table 6. Injury Indicator Selection Criteria

	Indicator	Source	Classification system	ICD Codes	Location
1	Injury fatalities	VS	ICD-10	V01-Y36, Y85-Y87, Y89	Underlying COD
2	Injury hospitalizations	HDD	ICD-9-CM	800-909.2, 909.4, 909.9-994.9, 995.5-995.59, 995.80-995.85	Principal diagnosis
3	Unintentional drowning fatalities	VS	ICD-10	W65-W74, V90, V92	Underlying COD
4	Drowning-related hospitalizations	HDD	ICD-9-CM	994.1, E830, E830, E910, E954, E964, E984	Any diagnosis field or valid E-code
5	Unintentional fire-related fatalities	VS	ICD-10	X00-X09	Underlying COD
6	Unintentional fire-related hospitalizations	HDD	ICD-9-CM	E890-E899	Valid E-code
7	Firearm-related fatalities	VS	ICD-10	W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0	Underlying COD
8	Firearm-related hospitalizations	HDD	ICD-9-CM	E922.0-E922.3, E922.8-E922.9, E955.0-E955.4, E965.0-E965.4, E985.0-E985.4, E970, E979.4	Valid E-code
9	Homicides	VS	ICD-10	X85-Y09, Y87.1	Underlying COD
10	Assault-related hospitalizations	HDD	ICD-9-CM	E960-E969, E979, E999.1	Valid E-code
11	Suicides	VS	ICD-10	X60-X84, Y87.0	Underlying COD
12	Suicide attempt hospitalizations	HDD	ICD-9-CM	E950-E959	Valid E-code
13	Motor vehicle traffic fatalities	VS	ICD-10	V02-V04 [.1-.9], V09.2, V12-V14 [.3-.9], V19 [.4-.6], V20-V28 [.3-.9], V29 [.4-.9], V30-V39 [.4-.9], V40-V49 [.4-.9], V50-V59 [.4-.9], V60-V69 [.4-.9], V70-V79 [.4-.9], V80 [.3-.5], V81.1, V82.1, V83-V86 [.0-.3], V87 [.0-.8], V89.2	Underlying COD
14	Motor vehicle traffic hospitalizations	HDD	ICD-9-CM	E810-E819	Valid E-code
15	Poisoning fatalities	VS	ICD-10	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2	Underlying COD
16	Poisoning hospitalizations	HDD	ICD-9-CM	E850-E858, E860-E869, E950-E952, E962, E972, E980-982, E979 [.6-.7]	Valid E-code
17	Traumatic brain injury fatalities	VS	ICD-10	S01.0-S01.9, S02.0, S02.1, S02.3, S02.7-S02.9, S04.0, S06.0-S06.9, S07.0, S07.1, S07.8, S07.9, S09.7-S09.9, T90.1, T90.2, T90.4, T90.5, T90.8, or T90.9	Contributing COD
18	Traumatic brain injury hospitalizations	HDD	ICD-9-CM	800.00-801.99, 803.00-804.99, 850.0-850.9, 851.00-854.19, 950.1-950.3, 959.01, or 995.55	Any diagnosis field
19	Unintentional fall-related fatalities	VS	ICD-10	W00-W19	Underlying COD
20	Unintentional fall-related hospitalizations	HDD	ICD-9-CM	E880-E886, E888	Valid E-code
21	Hip fracture hospitalizations in older adults	HDD	ICD-9-CM	820	Any diagnosis field
22	Acute drug overdose fatalities	VS	ICD-10	X40-X44, X60-X64, X85, Y10-Y14	Underlying COD

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