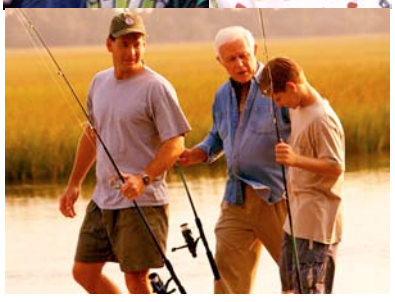
Injuries in Oklahoma, 2004-2008



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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) have 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] Every year, the Injury Prevention Service submits Oklahoma injury indicator data to the CDC to be included with other states in a national compilation of injury indicator data.[1-4] 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, suicides/attempts, hip fractures, and traumatic brain injuries.[5] Oklahoma's indicator data are also used in this separate state profile, *Injuries in Oklahoma*. This year's report utilizes data on injury deaths and hospitalizations that occurred in 2004 through 2008.

Magnitude of the Problem

Approximately 2,800 Oklahomans die every year from an injury, including nearly 2,000 unintentional (accidental) deaths, over 500 suicides, and more than 200 homicides.[6] In 2008, injuries accounted for 1 of every 12 deaths in Oklahoma; nonfatal injuries accounted for 1 of every 12 hospital days and 1 of every 13 hospital discharges. Also, for every $9 of inpatient healthcare charges, $1 was for injuries.[7]

Injuries are the leading cause of death and lifelong disability among persons 1-44 years of age in Oklahoma. Injuries account for more premature deaths before 65 years of age than cancer, heart disease, stroke, and diabetes combined. Oklahoma's death rates due to motor vehicle crashes, drownings, fire/burns, suicide and homicide are higher than the national average.[6]

According to vital statistics data, in 2008, the leading causes of injury death in Oklahoma were poisonings, motor vehicle crashes, firearms, and falls. Males were two times more likely to die from injuries than females. Of the fatal motor vehicle traffic crashes in Oklahoma, 31% were alcohol/drug-related. Overall, 58% of fatal crash victims were not using safety belts or child restraint devices.[8]

According to the 2008 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).[9]

Table 1. Selected Census Population Estimates, Oklahoma and United States, 2008

		Oklahoma		United States	
		Number	Percent	Number	Percent
Total Population		3,644,025		304,374,846	
Males		1,799,361	49%	150,074,226	49%
Females		1,844,664	51%	154,300,620	51%
Race	White	2,930,039	80%	245,240,252	81%
	African American	311,804	9%	40,366,208	13%
	Native American	328,154	9%	3,421,898	1%
Under 5 years		265,778	7%	21,152,563	7%
Under 18 years		907,488	25%	74,429,709	25%
Over 65 years		456,323	13%	36,105,591	12%

Indicator 1: Injury Fatalities

Indicator 1 includes Oklahoma residents who died with an injury as the underlying cause of death (i.e., ICD-10 codes V01-Y36, Y85-Y87, Y89, or U01-U03). The source data are from Oklahoma vital statistics and rates were calculated using U.S. Census population estimates for the appropriate year. All rates are presented per 100,000 population.

Injuries are a well-documented public health problem; injury-related death is the least frequent, but most severe outcome of this problem. Injury-related deaths place a tremendous burden on the population, particularly when considering that they disproportionately affect the young (i.e., the leading cause of death) and cause the most years of potential life lost. The number of injury deaths among Oklahomans slowly increased (9%) from 2004-2008. In 2004, a total of 2,717 Oklahomans died from an injury; in 2005, the number jumped to 2,833; in 2006, it rose slightly to 2,851; in 2007, it jumped again to 2,958; and in 2008, it decreased slightly to 2,948. From 2004-2008, males accounted for 67% of all injury deaths and had a higher injury mortality rate than females across all age groups. The largest differences between males and females were among ages 15-24 years and 25-34 years, where rates were three times higher among males. From 2004-2007, the mortality rate among males aged 1-4 years decreased by nearly a third (32%); from 2007-2008 the same mortality rate nearly doubled (88% increase). Death rates for both males and females in all five years were significantly higher in the 85 years and older age group than in all other age groups. Overall, the 85 years and older age group, known as the oldest old, had an injury mortality rate 2.3 times higher than the second highest age group, 75-84 year-olds.

Figure 1. Injury Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

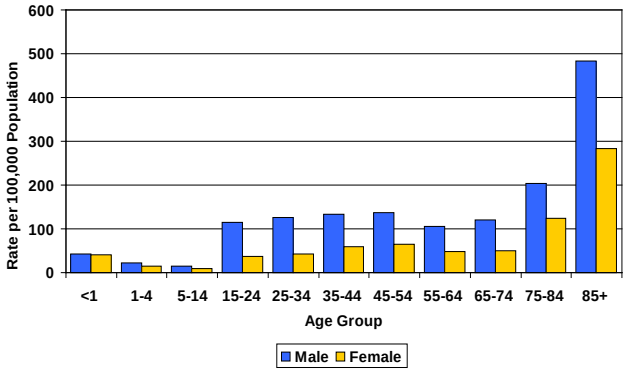


Figure 2. Age-Adjusted Injury Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008

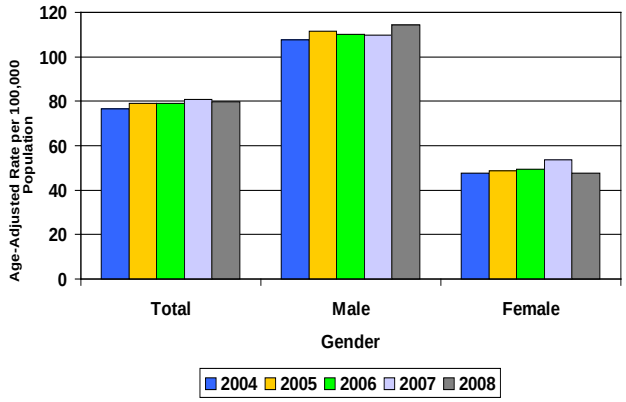
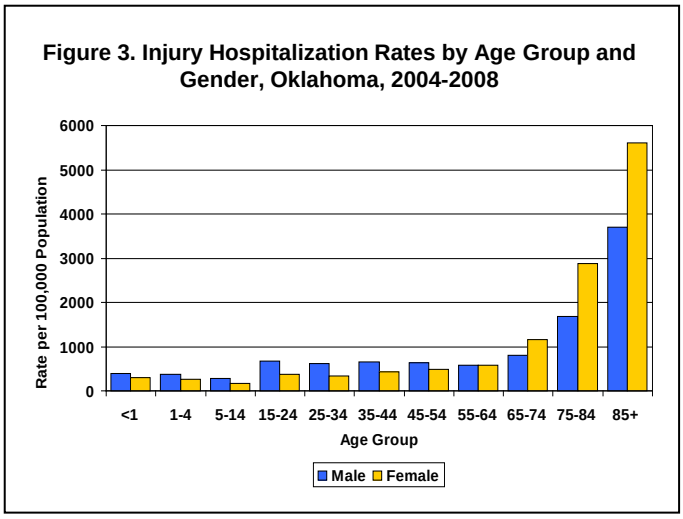


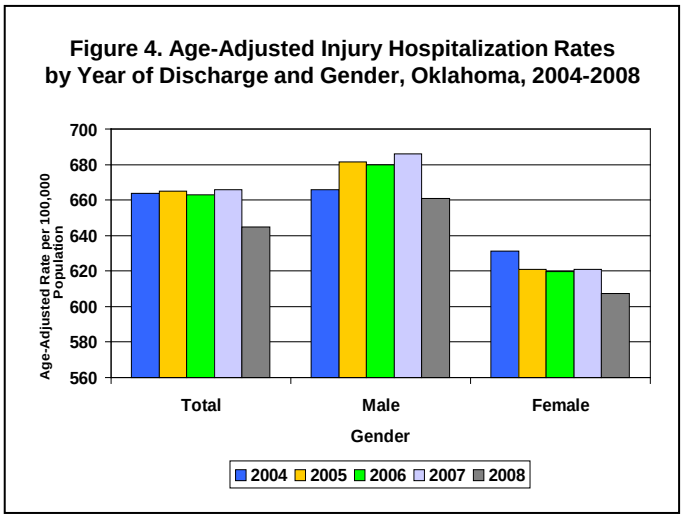
Table 2. Injury Fatality Rates by Year of Death, Age Group, and Gender, Oklahoma, 2004-2008

	Total					Male					Female				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<1 year	63.5	39.1	46.8	50.4	12.9	57.8	38.2	43.9	59.8	18.0	69.5	40.1	49.8	40.6	7.5
1-4 years	22.4	17.0	20.9	13.6	20.8	22.3	21.5	26.2	15.2	28.7	22.5	12.3	15.4	12.0	12.6
5-14 years	11.7	14.1	15.2	11.4	9.4	16.2	16.5	15.0	15.7	9.9	7.0	11.5	15.4	6.8	8.8
15-24 years	81.2	76.6	77.0	79.7	73.9	119.4	112.0	114.7	113.7	115.4	40.4	38.5	35.7	42.6	29.1
25-34 years	76.0	81.7	87.1	89.7	87.9	112.1	117.4	133.6	126.6	137.8	38.0	44.8	39.0	51.1	35.5
35-44 years	95.4	97.8	96.6	97.3	92.2	138.3	140.7	129.0	130.3	126.8	52.5	54.7	64.2	64.0	57.5
45-54 years	91.5	98.0	100.5	102.7	108.1	124.8	131.8	142.3	137.0	146.4	59.1	65.2	60.2	69.6	71.1
55-64 years	64.3	82.3	70.6	80.2	76.5	90.0	119.1	99.1	104.7	109.9	40.4	48.4	44.3	57.5	45.6
65-74 years	81.6	87.2	77.7	75.4	89.6	116.9	135.7	112.5	101.5	136.0	51.9	46.2	48.2	53.2	49.7
75-84 years	146.8	145.8	163.3	173.5	152.7	186.4	199.7	214.4	226.1	188.3	119.5	108.6	127.8	136.8	127.5
85+ years	381.2	341.8	300.3	323.8	385.5	524.9	452.5	399.0	467.6	574.5	317.0	294.1	256.4	258.2	301.8

Indicator 2: Injury Hospitalizations

Indicator 2 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85). The source data are from Oklahoma's inpatient hospital discharge database, 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.





For every injury death in Oklahoma, there were nearly nine hospitalizations (8.5). Just as the number of deaths rose slowly over the five years studied, so did the number of hospitalizations (3% increase). The number of injury hospitalizations decreased 3% from 2007-2008, as did the age-adjusted rates. In 2004, Oklahomans had a total of 23,616 injury-related hospitalizations; this number climbed to 24,140 in 2005; 24,363 in 2006; 24,839 in 2007; and 24,216 in 2008. Unlike deaths, females comprised over one-half of the total hospitalizations. Hospitalization rates for females 65 years and older were about 1.5 times higher than those for males; however, in all other age groups, males had higher hospitalization rates. The largest differences between males and females were in the 15-24 and 25-34 year age groups where males had rates nearly two times higher than females. Once again, the oldest old had significantly higher overall rates of injury hospitalizations for both males and females. Their rate was 2.1 times higher than the next closest age group, 75-84 years. Hospitalization rates were lowest in the 5-14 year age group; furthermore, this age group demonstrated a 34% overall decline during the five-year period. During 2004-2007, hospitalization rates tended to be fairly stable for all age groups. From 2007-2008, hospitalization rates decreased or remained stable in all age groups. The largest decreases in hospitalization rates from

2007-2008 were in the <1 year olds (18%), 1-4 year olds (18%), and 5-4 year olds (17%).

Table 3. Injury Hospitalization Rates by Year of Hospitalization, Age Group, and Gender, Oklahoma, 2004-2008

	Total					Male					Female				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<1 year	392.9	332.7	342.3	365.6	299.4	439.6	378.4	361.9	453.9	352.6	343.4	284.8	321.7	273.0	243.9
1-4 years	346.6	334.5	333.4	320.5	263.1	430.7	389.5	370.9	366.8	298.0	257.6	276.6	294.0	271.7	226.6
5-14 years	271.2	226.1	213.5	215.9	180.2	330.7	277.8	272.1	267.6	225.9	208.6	171.6	151.6	161.3	131.8
15-24 years	551.7	533.4	548.9	516.6	506.5	707.4	670.0	708.0	676.5	640.9	384.8	385.8	374.6	341.6	361.1
25-34 years	465.7	517.3	483.2	460.7	474.1	592.4	670.9	622.8	577.2	600.5	331.7	356.5	338.3	338.8	341.2
35-44 years	548.3	564.8	559.1	529.5	543.7	651.2	682.3	660.1	656.9	651.7	444.4	446.9	457.2	401.4	435.3
45-54 years	508.8	540.2	584.7	584.2	589.4	576.3	618.9	679.6	653.6	666.0	443.0	463.1	493.2	517.1	515.2
55-64 years	538.8	584.1	567.6	607.2	622.2	536.8	594.7	575.0	613.3	616.7	540.7	573.8	560.8	601.6	627.3
65-74 years	936.8	977.0	973.3	1103.3	989.0	703.0	815.9	787.6	953.7	788.2	1133.9	1112.8	1131.1	1230.8	1161.3
75-84 years	2310.9	2418.6	2397.5	2498.1	2296.5	1506.1	1715.3	1686.8	1833.3	1686.9	2867.7	2904.0	2890.7	2961.0	2726.2
85+ years	5800.6	4916.0	4897.0	4818.7	4826.4	4199.5	3448.3	3576.4	3534.7	3802.5	6515.5	5549.4	5484.3	5404.7	5279.7

Indicator 3: Unintentional Drowning Fatalities
Indicator 4: Drowning-Related Hospitalizations

Indicator 3 includes Oklahoma residents who died with an unintentional drowning/submersion as the underlying cause of death (i.e., ICD-10 codes W65-W74, V90, or V92). The source data are from Oklahoma vital statistics. Indicator 4 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a submersion was the mechanism of injury (i.e., 994.1 and/or E830, E832, E910, E954, E964, or E984). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Drowning is the seventh leading cause of unintentional injury death in Oklahoma and the leading cause of all injury deaths among 1-4 year-olds.[6] In 2008, 72 Oklahomans unintentionally drowned. This number was higher than the previous four years (60 in 2007, 61 in 2006, 64 in 2005, and 65 in 2004). Overall, males were at higher risk of drowning than females (3.5:1) and accounted for 78% of all drowning deaths. The very youngest and very oldest age groups had the highest fatality rates overall—4.7 per 100,000 among 1-4 year-olds, 2.6 among those less than one year, and 2.2 among those 75-84 years old.

Figure 5. Unintentional Drowning Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

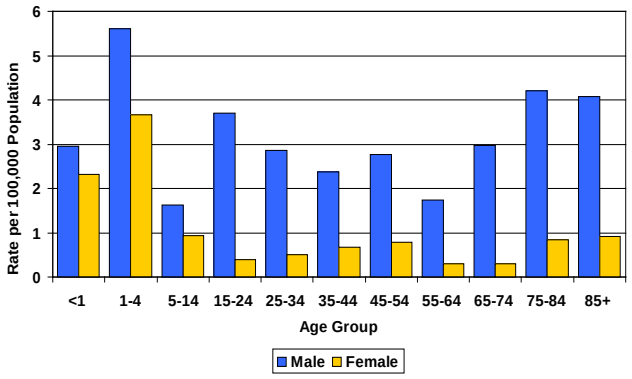
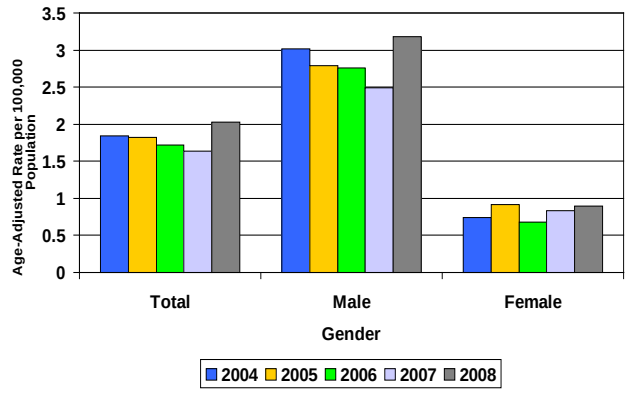


Figure 6. Age-Adjusted Unintentional Drowning Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



During 2004-2008, there were more unintentional drowning fatalities than all drowning-related hospitalizations (324 and 183, respectively). Males accounted for 65% of all hospitalizations; however, their age-adjusted rate of hospitalization declined 49% between 2004 and 2008. Forty-four percent of all drowning-related hospitalizations occurred among children 1-4 years of age. The hospitalization rate for children 0-4 years was nearly twice as high as their fatality rate. There were no drowning-related hospitalizations among females aged 55-74 years or over 84 years.

Figure 7. Drowning-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

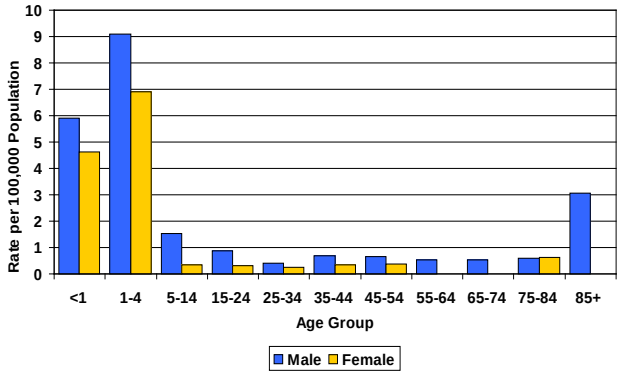
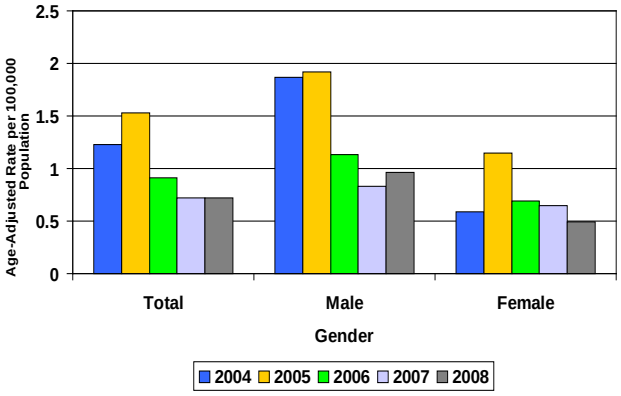


Figure 8. Drowning-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



Drowning Prevention Strategies

- Have a responsible, undistracted adult provide constant supervision to children bathing, swimming, or playing in and around water.
- Learn to swim 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.
- Use U.S. Coast Guard approved life jackets when boating (regardless of swimming ability) and be aware of weather forecasts, dangerous waves, and rip currents.

Indicator 5: Unintentional Fire-Related Fatalities
Indicator 6: Unintentional Fire-Related Hospitalizations

Indicator 5 includes Oklahoma residents who died with an unintentional fire-related injury as the underlying cause of death (i.e., ICD-10 codes X00-X09). The source data are from Oklahoma vital statistics. Indicator 6 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and an unintentional fire was the mechanism of injury (i.e., E890-E899). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Unintentional fire-related injuries are the third leading cause of injury death in Oklahoma among ages 1-9 years and the tenth leading cause among all ages combined.[6] The number of fire-related deaths peaked in 2005 and 2008 with 88 fatalities; there were 69 and 62 deaths in 2004 and 2006, respectively, and 79 deaths in 2007. Two-thirds of all fire-related fatalities were among males. Males had the highest mortality rates among all age groups. From 2004-2006 and 2008, age-adjusted rates for males were over two times higher than those of females; in 2007, the age-adjusted mortality rate was 1.8 times that of females. Between 35 and 84 years of age, the risk of fire-related death increased with age. There were no deaths among infants less than one year of age.

Figure 9. Unintentional Fire-Related Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

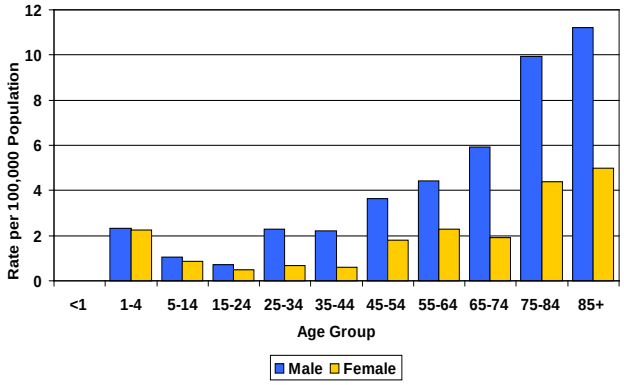
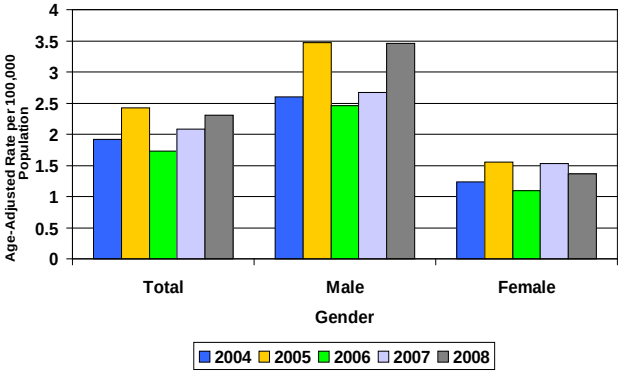


Figure 10. Age-Adjusted Unintentional Fire-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



For every unintentional fire-related death, there were nearly 2.5 hospitalizations for a fire-related injury. Males also dominated the number and rate of unintentional fire-related hospitalizations. Nearly three-quarters of hospitalizations were among males (670 out of 923). Females less than one year of age had a slightly higher hospitalization rate as compared to males (2.3 and 2.2 per 100,000, respectively). Rates were particularly discrepant among males and females aged 5-24 years, with rates for males being nearly 4-6 times higher. Overall, unintentional fire-related hospitalizations increased from 2004-2008, from 3.3 to 5.9 hospitalizations per 100,000. The overall age-adjusted rate in 2008 was 77% higher than the 2004 rate; males alone jumped 81%. The highest age-specific hospitalization rates were among individuals aged 65 years and older.

Figure 11. Unintentional Fire-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

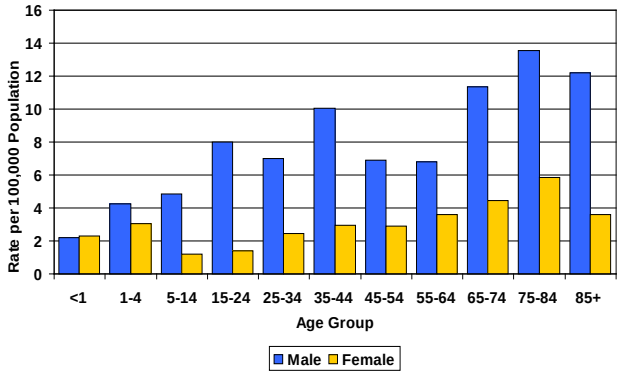
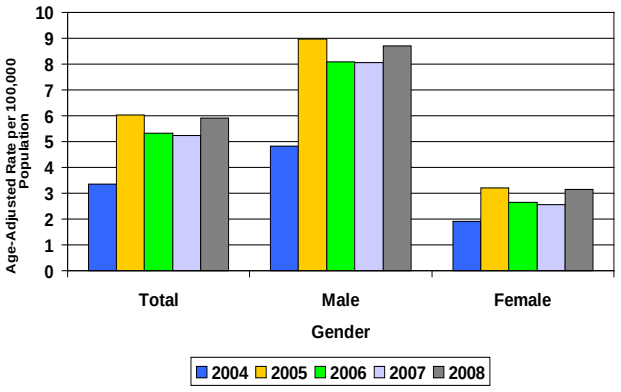


Figure 12. Unintentional Fire-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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

Indicator 7 includes Oklahoma residents who died with a firearm-related injury as the underlying cause of death (i.e., ICD-10 codes W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0, or U01.4). The source data are from Oklahoma vital statistics. Indicator 8 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a firearm was the mechanism of injury (i.e., E922.0-E922.3, E922.8, E922.9, E955.0-E955.4, E965.0-E965.4, E985.0-E985.4, E970, or E979.4). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

The numbers and rates of firearm-related fatalities remained stable during 2004-2008, averaging 477 deaths each year. These deaths included all manners—unintentional, suicide, homicide, and undetermined. Males comprised the vast majority of deaths (84%) and had an age-adjusted rate five times higher than that of females. For individuals 75 years of age and older, males had a mortality rate 16 times higher than the female rate (43.4 and 2.7 per 100,000 population, respectively). Ten children under the age of five years died as the result of a firearm-related incident. The highest firearm-related fatality rate for females was in the 45-54 year age group, while for males, it was among ages 75 years and older.

Figure 13. Firearm-Related Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

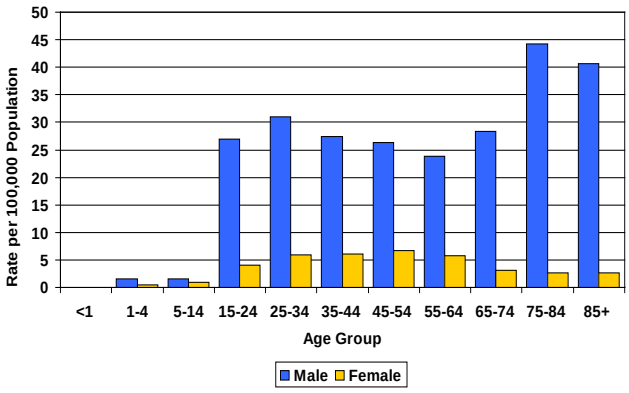
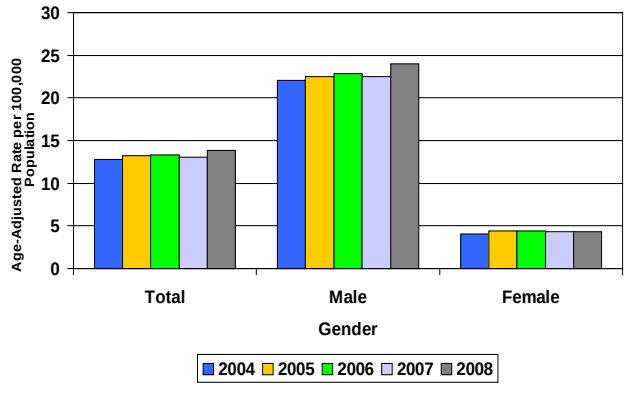


Figure 14. Age-Adjusted Firearm-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



Firearm-related hospitalizations demonstrated a very modest increase from 2004-2008. There were fewer total hospitalizations than deaths (1,800 versus 2,386, respectively). Males once again encompassed the majority of hospitalizations (86%). For both males and females, the highest hospitalization rates were among ages 15-34 years; however, males had rates 8-9 times higher than females. These ages also had the highest numbers of hospitalizations, making up 66% of all firearm-related hospitalizations. Two females aged 75 years and older were hospitalized for a firearm-related injury in 2004-2008.

Figure 15. Firearm-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

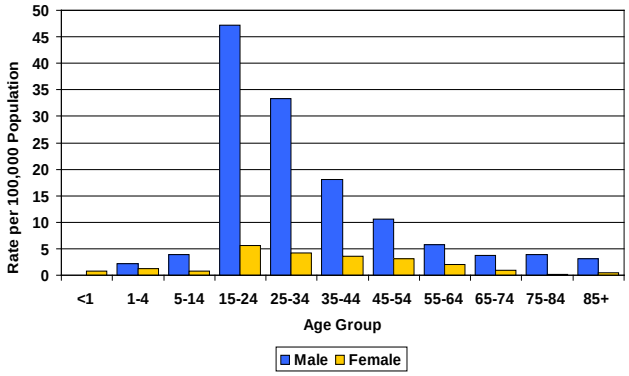
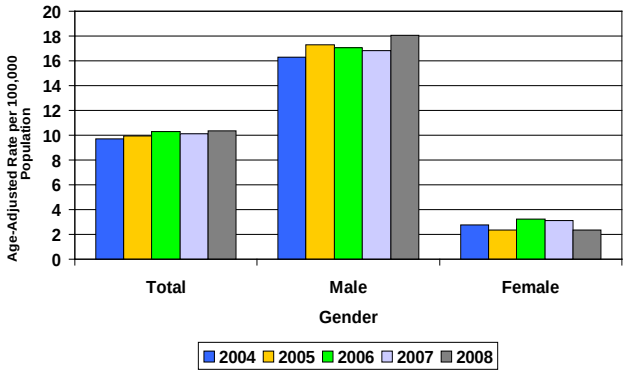


Figure 16. Age-Adjusted Firearm-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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

Indicator 9 includes Oklahoma residents who died with an assault as the underlying cause of death (i.e., ICD-10 codes X85-Y09, Y87.1, U01, or U02). The source data are from Oklahoma vital statistics. Indicator 10 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and an assault was the mechanism of injury (i.e., E960-E969, E979, or E999.1). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Homicide is the fifth leading cause of death in Oklahoma for ages 1-44 years; for ages 1-4 years, it ranks as high as third.[6] The number of homicides during 2004-2008 remained stable with approximately 226 deaths annually. Homicide rates were highest among males in all age groups, except females under age one year, 5-14 years, and over 84 years. Three-fourths of homicide victims were male. Males aged 15-34 years consistently had the highest numbers and rates of homicide, and these figures increased over the five years. Among females, infants had the highest rate of homicide (8.5 per 100,000 population), with 35-44 year-olds in a distant second (4.8 per 100,000 population).

Figure 17. Homicide Rates by Age Group and Gender, Oklahoma, 2004-2008

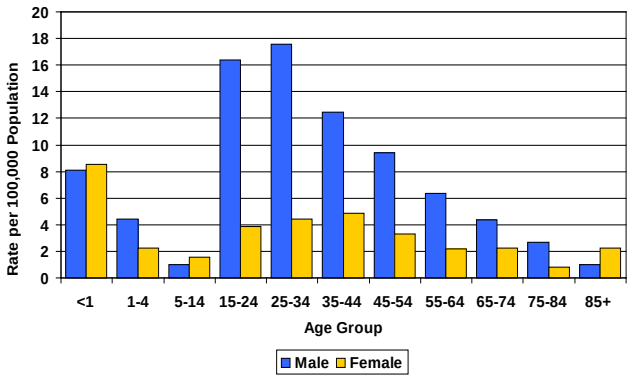
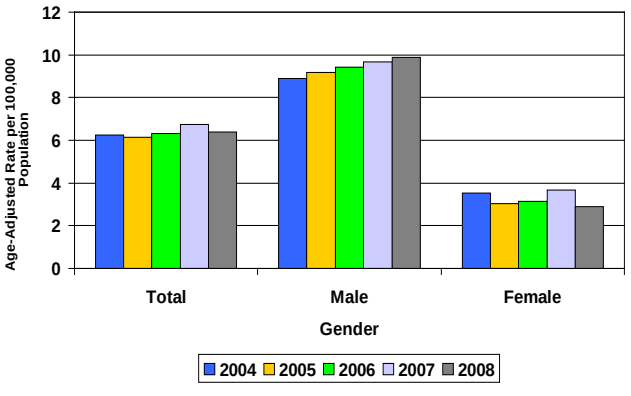


Figure 18. Age-Adjusted Homicide Rates by Year of Death and Gender, Oklahoma, 2004-2008



For every homicide, four assault-related hospitalizations occurred. Of the total 4,915 assault-related hospitalizations discharged during 2004-2008, 84% were male. During the five-year period, the overall hospitalization rate increased slightly, driven by an 8% increase in the rate among males. The female rate in 2008 was 9% lower than the 2004 rate. Males had hospitalization rates 2-6 times higher than females in all age groups, except for a slightly higher female rate in the 85 years and older age group and similar rates for both genders in children aged 1-4 years.

Figure 19. Assault-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

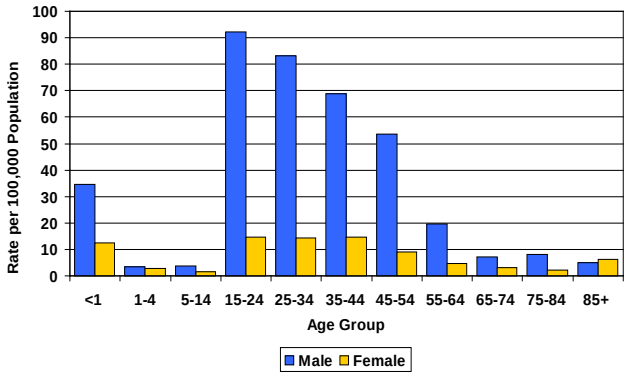
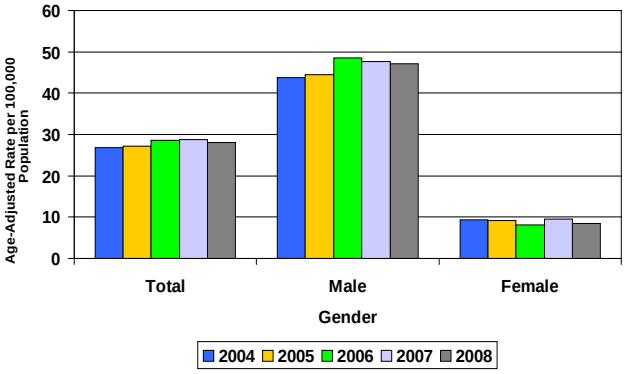


Figure 20. Age-Adjusted Assault-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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

Indicator 11 includes Oklahoma residents who died with a suicide as the underlying cause of death (i.e., ICD-10 codes X60-X84, Y87.0, or U03). The source data are from Oklahoma vital statistics. Indicator 12 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a suicide attempt was the mechanism of injury (i.e., E950-E959). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Suicide is the second leading manner of death, behind unintentional injuries, for ages 10-34 years in Oklahoma.[6] Among all ages, firearm-related suicide is the third leading cause of all injury deaths.[6] The total number of suicides in 2008 increased slightly from 2007 to 565, 12% higher than the total of 503 in 2004. Males committed suicide 3.6 times more often than females. Males 75 years and older had the highest rate of suicide, while for females, 35-54 year-olds had the highest rate. Among the oldest old, males had a rate of suicide over 26 times higher than females. Among females, rates of suicide remained fairly stable over the five years; however the male rate of suicide increased 13%.

Figure 21. Suicide Rates by Age Group and Gender, Oklahoma, 2004-2008

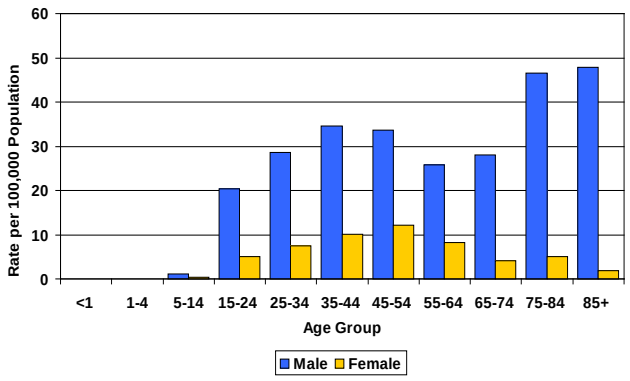
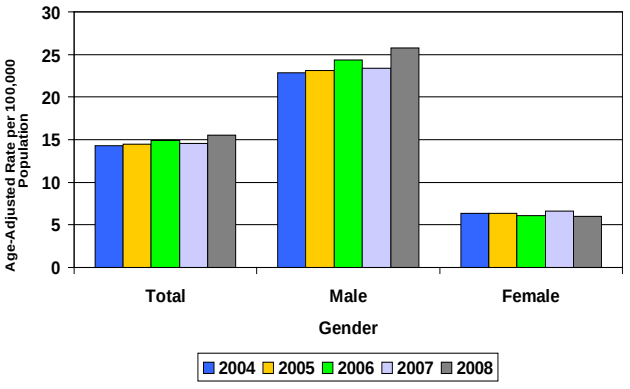


Figure 22. Age-Adjusted Suicide Rates by Year of Death and Gender, Oklahoma, 2004-2008



Suicide attempts are a much different picture, however. Females attempt, but do not complete, suicide more often than males. In fact, from 2004-2008, females comprised 60% of all suicide attempt hospitalizations. The discrepancies between hospitalization rates for males and females across all age groups were not as pronounced as they were for the suicide rates. The largest difference was in females 5-14 years who were hospitalized for suicide attempts almost four times more often than males in that age group. The highest hospitalization rate was among individuals 15-44 years of age.

Figure 23. Suicide Attempt Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

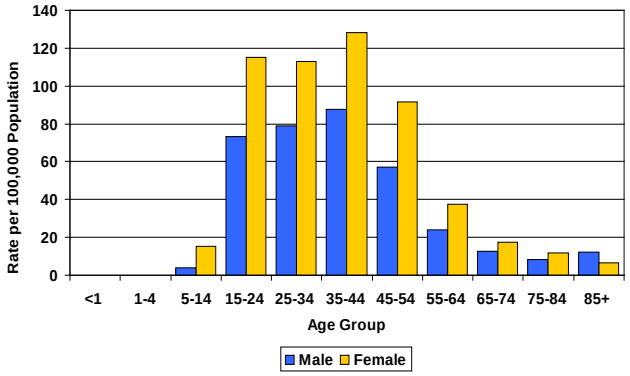
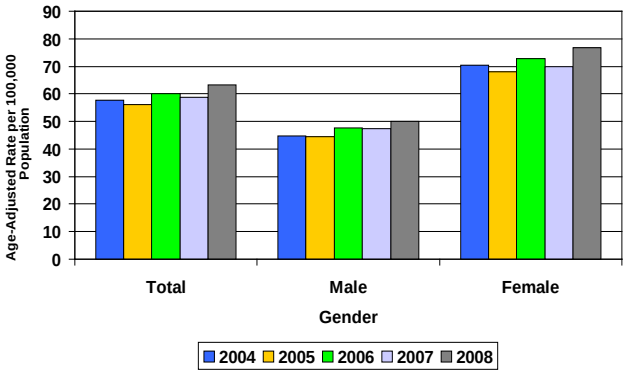


Figure 24. Age-Adjusted Suicide Attempt Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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.
- 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

Indicator 13 includes Oklahoma residents who died with a motor vehicle traffic-related injury as the underlying cause of death (i.e., ICD-10 codes 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], or V89.2). The source data are from Oklahoma vital statistics. Indicator 14 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a motor vehicle traffic crash was the mechanism of injury (i.e., E810-E819). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Motor vehicle crashes are the leading cause of injury death, averaging 740 deaths annually.[6] The age-adjusted rate of motor vehicle traffic fatalities from 2004-2008 was 20.8 deaths per 100,000 population. Sixty-eight percent of all deaths occurred among males. Mortality rates were comparable between genders from ages 0-14 years, although females less than one year of age had a higher mortality rate than males (6.2 compared to 4.4 per 100,000, respectively). However, from age 15 onward, males were more than twice as likely to die in a motor vehicle crash as females. Overall fatality rates were highest among the beginning driver age group (34.2 deaths per 100,000 for 15-24 year-olds) and the oldest (29.8 deaths per 100,000 individuals 85 years and older).

Figure 25. Motor Vehicle Traffic Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

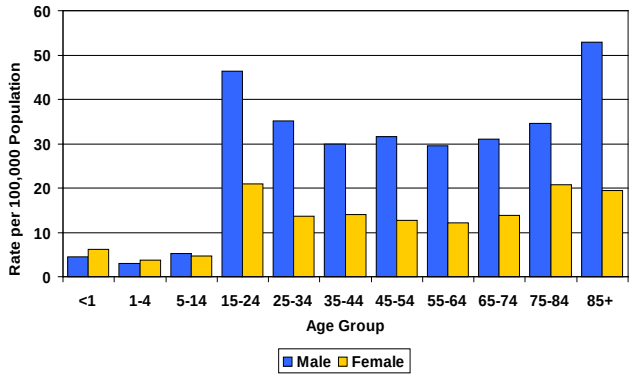
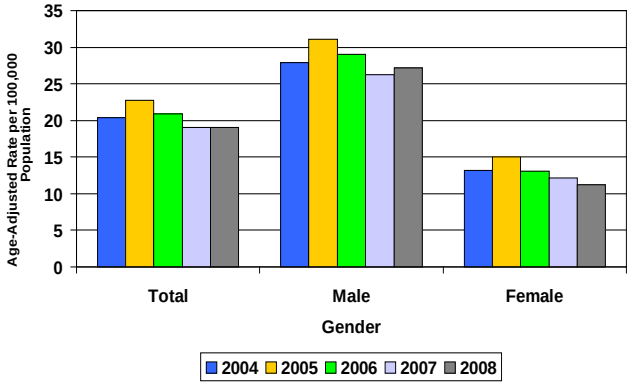


Figure 26. Age-Adjusted Motor Vehicle Traffic Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



For every death, there were four hospitalizations for a motor vehicle traffic-related injury. There was a minimal decline in the number of hospitalizations from 2004-2006, followed by a 9% decline from 2006-2008. From 2004-2008, the rate among females dropped 12% and the rate among males dropped 11%. Like deaths, rates of hospitalization were highest in the 15-24 year age group (178.7 per 100,000 for males and 109.7 per 100,000 for females). The second highest hospitalization rates were seen in males aged 25-34 and females 75-84 years (136.6 and 97.2 per 100,000, respectively). Males had higher rates than females in all age groups. Males were 1.6 times more likely to be hospitalized with a motor vehicle crash injury.

Figure 27. Motor Vehicle Traffic Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

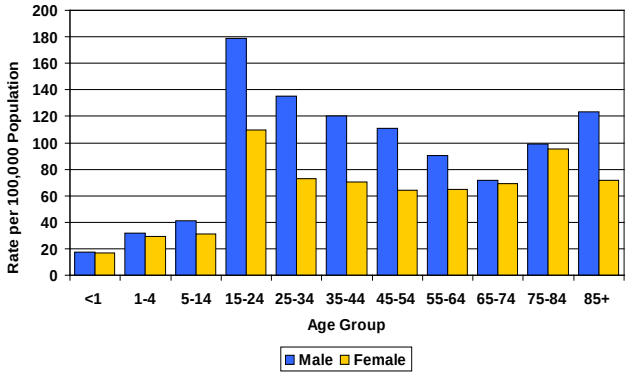
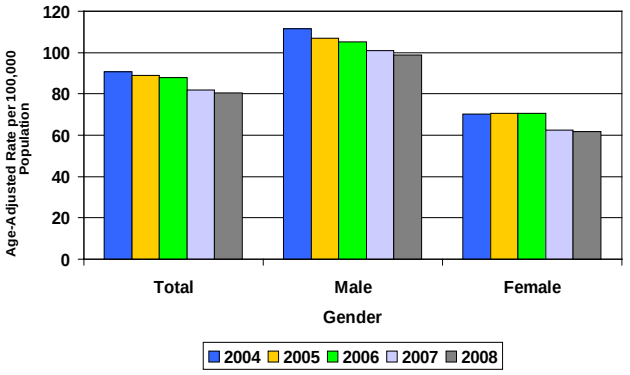


Figure 28. Age-Adjusted Motor Vehicle Traffic Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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 15 includes Oklahoma residents who died with a poisoning as the underlying cause of death (i.e., ICD-10 codes X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2, or U01 [.6-.7]). The source data are from Oklahoma vital statistics. Indicator 16 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a poisoning was diagnosed (i.e., E850-E858, E860-E869, E950-E952, E962, E972, E980-E982, or E979 [.6-.7]). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

The number of poisoning fatalities increased each year from 2004-2007 with 525 deaths in 2004, 526 in 2005, 609 in 2006, and 736 in 2007. However, from 2007-2008, the number of poisoning fatalities decreased to 628. The overall age-adjusted rate increased 16% from 2004-2008. Age-adjusted rates for females increased 59% from 2004-2007 and then decreased 23% from 2007-2008. However, the rates for males, which were nearly 1.5 times higher than females, increased 11%. These deaths included all manners—suicide, unintentional, homicide, and undetermined. The highest rates of poisoning deaths were among the 45-54 year age group (36.9 deaths per 100,000 population) and the 35-44 year age group (34.9 deaths per 100,000 population). Among 15-24 year-olds, males died at a rate 3.6 times higher than females (18.6 and 5.1 deaths per 100,000 population, respectively).

Figure 29. Poisoning Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

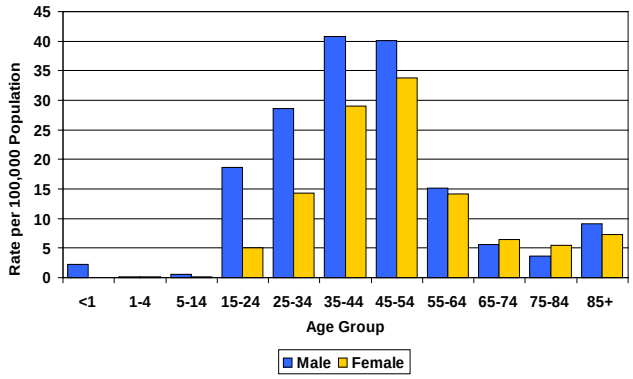
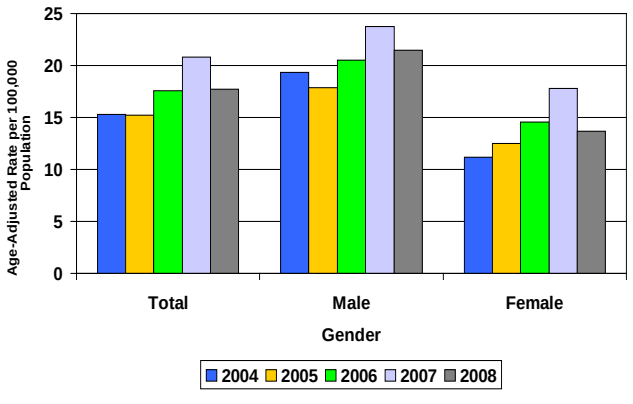


Figure 30. Age-Adjusted Poisoning Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



Hospitalizations related to all manners of poisoning also increased (17%) during the five-year period. There were 36% more hospitalizations among females than males, and females had higher hospitalization rates across all age groups, except 0-4 year-olds and those 85 and older. In 1-4 year-olds, males had a 26% higher rate (92.4 and 73.5 hospitalizations per 100,000 population, respectively). Like fatalities, the 35-44 year age group had the highest rate of poisoning hospitalizations, 170.0 hospitalizations per 100,000 population.

Figure 31. Poisoning Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

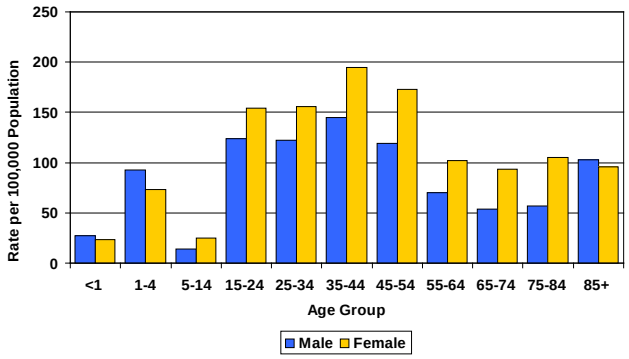
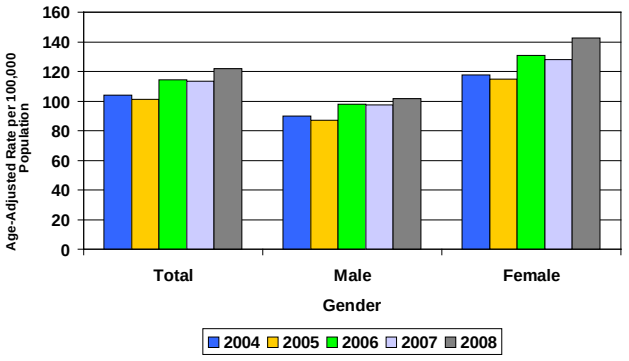


Figure 32. Age-Adjusted Poisoning Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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.
- 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 using them. Do not mix products and only use them with adequate ventilation and appropriate protective clothing.
- 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.
- 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

Indicator 17 includes Oklahoma residents who died with a traumatic brain injury as the underlying or a contributing cause of death (i.e., ICD-10 codes 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, T01.0, T02.0, T04.0, T06.0, T90.1, T90.2, T90.4, T90.5, T90.8, or T90.9). The source data are from Oklahoma vital statistics. Indicator 18 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a traumatic brain injury was diagnosed (i.e., 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). The source data are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Falls, motor vehicle crashes, and firearms are leading causes of traumatic brain injuries. Nearly 900 Oklahomans died with a traumatic brain injury each year from 2004-2008. The age-adjusted rate of traumatic brain injury fatalities remained fairly stable during the five years. Risk of death tended to increase with age. The highest fatality rate for both males and females was among the oldest old, 99 deaths per 100,000 population. In general, males died at a rate 2-3 times higher than females.

Figure 33. Traumatic Brain Injury Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008

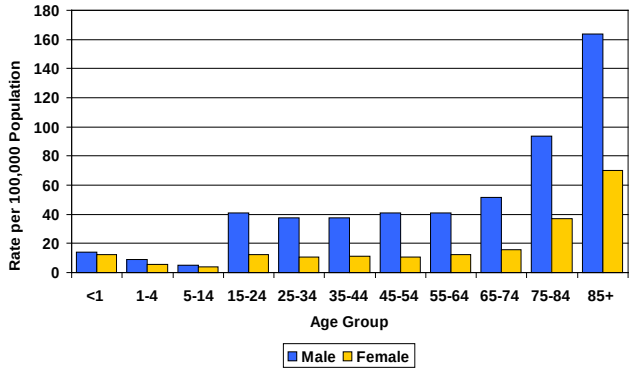
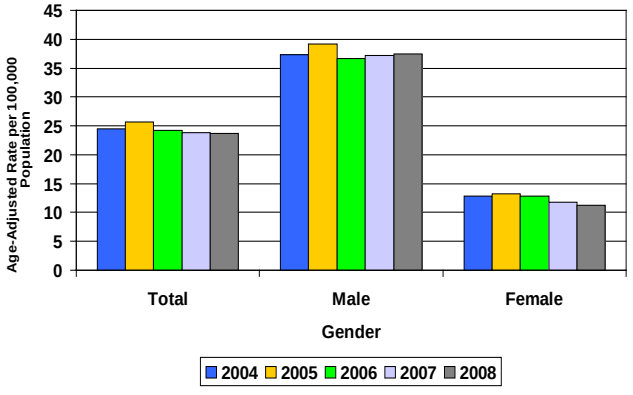


Figure 34. Age-Adjusted Traumatic Brain Injury Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008



For every traumatic brain injury death, there were approximately four hospitalizations related to a traumatic brain injury diagnosis. Rates were again higher for males in general; however, females in the 75-84 year age group had a similar rate of hospitalization. Females aged 85 years and older had hospitalization rates 8% higher than males of the same age. Infants (i.e., ages under one year) had the third highest rate of hospitalization for traumatic brain injury, 172 hospitalizations per 100,000 population. Individuals aged 75 years and older had the highest rates, particularly those over 84 years. The majority of these injuries resulted from falls.

Figure 35. Traumatic Brain Injury Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

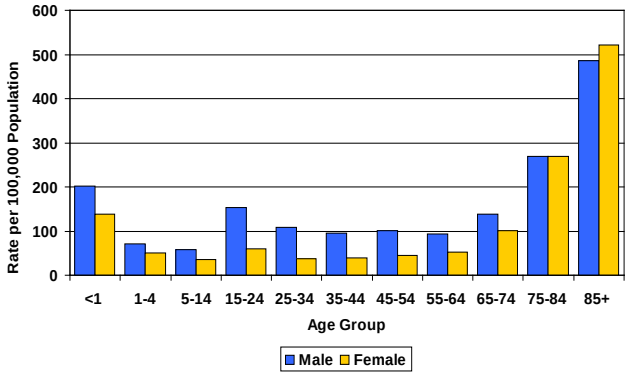
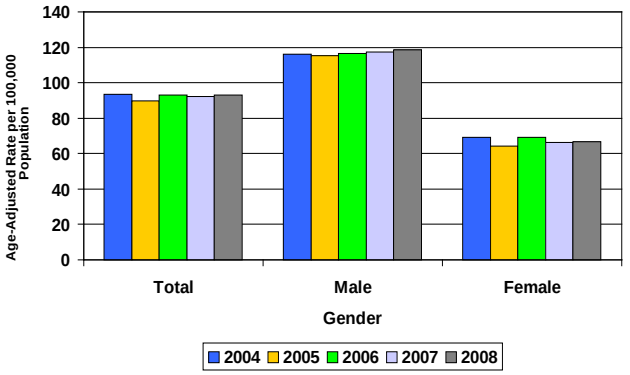


Figure 36. Age-Adjusted Traumatic Brain Injury Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



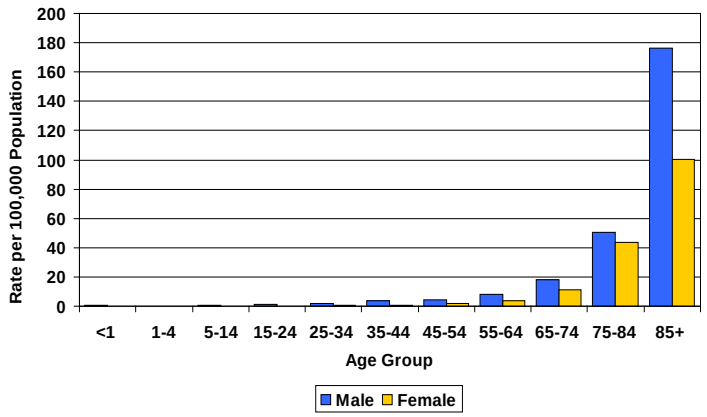
Traumatic Brain Injury Prevention Strategies

- 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.
- Do not handle firearms without appropriate safety training.

Indicator 19: Unintentional Fall-Related Fatalities
Indicator 20: Unintentional Fall-Related Hospitalizations
Indicator 21: Hip Fracture Hospitalizations in Persons Aged 65 Years and Older

Indicator 19 includes Oklahoma residents who died with a fall as the underlying cause of death (i.e., ICD-10 codes W00-W19). The source data are from Oklahoma vital statistics. Indicator 20 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a fall was the mechanism of injury (i.e., E880-E886, or E888). Indicator 21 includes all hospitalizations in Oklahoma among Oklahoma residents where an injury was the principal reason for admission (i.e., principal diagnosis [ICD-9-CM code] 800-909.2, 909.4, 909.9-994.9, 995.5-995.59, or 995.80-995.85) and a hip fracture was diagnosed (i.e., 820). The source data for indicators 20 and 21 are from Oklahoma's inpatient hospital discharge database, which includes discharges from all acute care, nonfederal hospitals in the state. Data include readmissions and transfers. Rates were calculated using U.S. Census population estimates for the appropriate year and are presented per 100,000 population.

Figure 37. Unintentional Fall-Related Fatality Rates by Age Group and Gender, Oklahoma, 2004-2008



Falls are the leading cause of injury death for individuals aged 65 years and older.[6] During 2004-2008, an average of 248 Oklahomans died each year as the result of an unintentional fall; 53% of the decedents were male. The overall age-adjusted fatality rate increased modestly (10%) from 2004-2007 and increased 27% from 2007-2008. Seventy-seven percent of unintentional fall-related fatalities occurred in the 65 years and older population. The highest fatality rate was among the 85 years and older age group (123.4 deaths per 100,000 population), which was 2.7 times higher than the second highest age group, 75-84 years (46.4 deaths per 100,000 population). While the increases in fall deaths examined occurred mainly from 2007-2008, the numbers are expected to continue rising as the population ages. Fall-related deaths in children and adolescents are rare, accounting for 2% of the total.

For every fall-related death in Oklahoma, there were 38 hospitalizations for an unintentional fall-related injury. The number of hospitalizations averaged about 9,300 each year and increased 16% from 2004-2007. The number of hospitalizations decreased slightly from 2007-2008. Again, the large majority (71%) of hospitalizations were among individuals 65 years of age and older. Unlike males who had higher fatality rates than females across all age groups, females 55 years and older had nearly two times higher rates of fall-related hospitalizations than males. The 85 years and older age group had an excessively high rate of hospitalization (3,953 hospitalizations per 100,000 population), particularly females in this age group (4,513 hospitalizations per 100,000 population).

Figure 38. Age-Adjusted Unintentional Fall-Related Fatality Rates by Year of Death and Gender, Oklahoma, 2004-2008

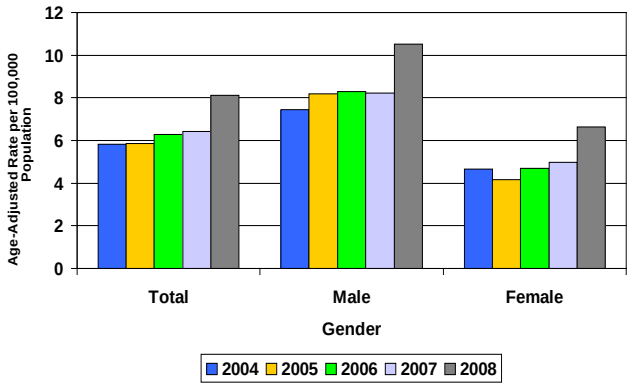


Figure 39. Unintentional Fall-Related Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

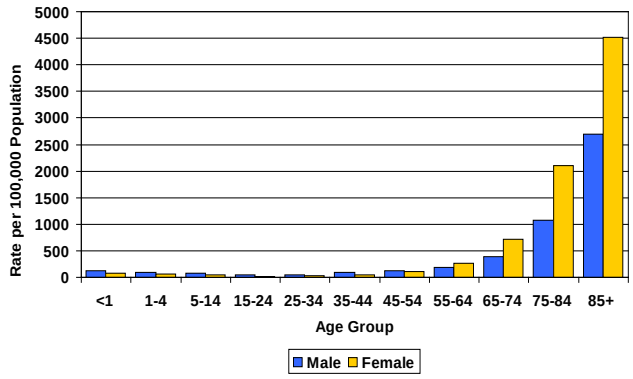
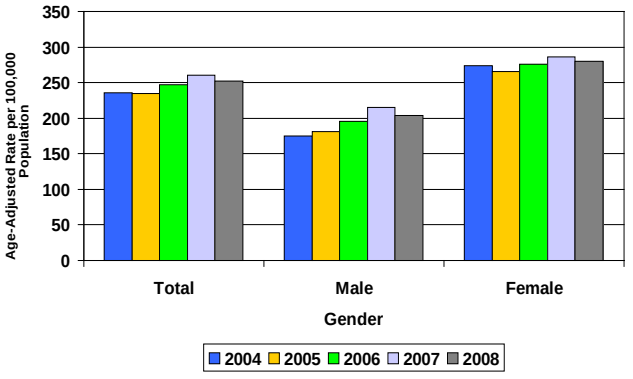


Figure 40. Age-Adjusted Unintentional Fall-Related Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



Injuries that often result from falling include traumatic brain injuries and hip fractures. There was an average of 3,721 hospitalizations involving diagnosis of a hip fracture among individuals 65 years of age and older. Females were hospitalized for a hip fracture nearly three times more often than males. The oldest old remained at greatest risk of fall- and hip fracture-related hospitalization.

Figure 41. Hip Fracture Hospitalization Rates by Age Group and Gender, Oklahoma, 2004-2008

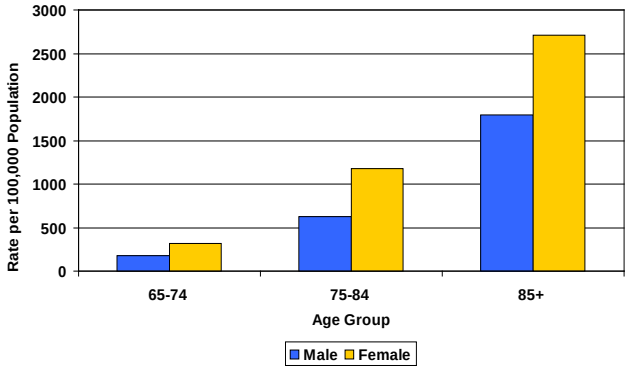
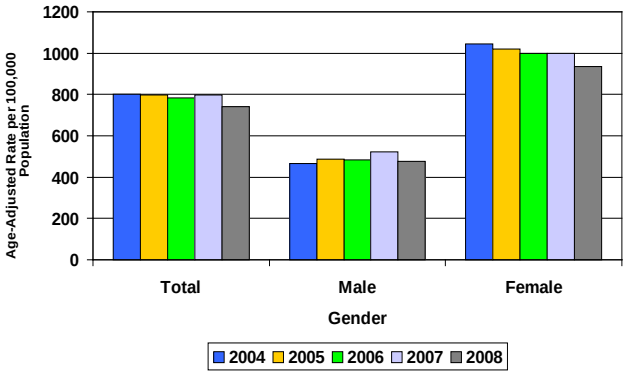


Figure 42. Age-Adjusted Hip Fracture Hospitalization Rates by Year of Discharge and Gender, Oklahoma, 2004-2008



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.

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