Motor Vehicle Crash Injuries in Kansas

Injury Prevention and Disability Program

Kansas
Department of Health
and Environment
Health Promotion

Motor Vehicle Crash Injuries in Kansas

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"I know a seat belt saved my life"

I had just gotten out of football practice and was on my way home. It was getting dark and I had a lot of homework to do, so I was driving too fast. I decided to take this shortcut road, which is a low maintenance gravel road. On this road, is a steep hill I had to go down in order to get home. I figured when I came over the hill it would be just like every other time I took that road.

But, this time there was another car coming up it. I was driving in the middle of the road and way too fast, so basically I was screwed. I swerved so I wouldn't hit the other car and fishtailed right behind it. Then, I hit the ditch on the other side of the road. I remember thinking, "Dang it! Dad is going to be ticked!" Next thing I knew, I was hanging upside down in my seatbelt.

At first, I didn't realize what happened, but then it hit me; my car had rolled over onto its top. I barely even remember getting out of the car because it happened so fast, my movements were just instinct. I couldn't get my door open because the car was partially on its side. So, I had to kick the passenger door open and squeeze out.

Looking back, I can't figure out how I didn't get hurt at all. It's amazing that even when I undid my seat belt and dropped onto the broken windshield, I didn't get a scratch from all the broken glass. I know my seat belt saved my life (the cops and the tow truck driver said so). And now, I wear my seatbelt all the time, no matter what.

Sam Browning, Topeka, KS

Motor Vehicle Crashes Report

Sam's story is not unique. Drivers in Kansas take risks everyday they know are dangerous, such as driving too fast, driving tired, and texting and talking on cell phones while driving. These behaviors lead to crashes and deaths. Luckily for Sam he decided to wear his seatbelt, an act so simple ,but one that saved his life.

The goal of this report is to show how motor vehicle crashes affect Kansans and strategies we are implementing and can implement to make Kansans safer. For information on Kansas sucesses and prevention strategies around motor vehicle crashes see page 5 of this report.

Overview:

Sealt Belt Use and Drunk Driving: The percentage of adult Kansans (18 years and older) who always wear a seatbelt when driving or riding has increased since 1999, to 76.0 percent in 2010. However, there are certain groups with low usage such as: younger groups (18-24 years old), males, those with less than high school education, and those living in frontier areas, (2010 Kansas BRFSS).

In 2010, 2.2 percent of all adult Kansans reported having too much to drink and driving in the past month on one or more occasions, (2010 Kansas BRFSS).

Motor Vehicle Crashes among Gender groups: Females had a higher age-adjusted motor vehicle crash (MVC) emergency department visit (EDV) rate than males, the least severe injuries analyzed in this report. The age-adjusted rates of both MVC hospital discharge (HD) and death were much higher in males who had an age-adjusted death rate two times higher than females (21.0 vs 9.0, MVC deaths per 100,000 population) and 59% higher for hospital discharges (89.9 vs 56.5, MVC HD per 100,000 population).

Motor Vehicle Crashes among Age groups: Those who were younger were more likely to go to the hospital for a MVC, specifically the 15-19 years old age group for EDV, and 15-24 years old age groups for HD.

Motor Vehicle Crashes among Race and Ethnicity groups: Asian / NHOPI (Non-Haiwaiian and other Pacific Islanders) had the highest age-adjusted rates of MVC EDV, while African Americans had the the highest age-adjusted rates of MVC HD. Whites had a slightly higher age-adjusted MVC death rate than African Americans.

Non-Hispanics had a higher age-adjusted rate of MVC HD compared to Hispanics. Hispanics and Non-Hispanics rates did not differ for MVC deaths.

Persons Injured: Most people injured in a MVC were occupants of the motor vehicle (physically inside the motor vehicle) across all three databases. Males were more likely to be motorcyclist than women in MVC EDV, HD, and deaths.

Trends: The age-adjusted motorcycle MVC HD rate has doubled from 2000 to 2009. Age-adjusted occupant MVC HD rate decreased by 16 percent over the same time period. The age-adjusted death rate for both occupant MVC and motorcycle MVC did not significantly change from 2000 to 2009.

Motor vehicle crash data are captured in emergency department visits (stays in the hospital lasting less than 24 hours), hospital discharges (stays in the hospital of more than 24 hours), and mortality databases. Multiple years were used to produce numbers large enough to report. Summary data on this page refer to year ranges below, unless otherwise noted.

Emergency Department Visits (EDV): 2007-2009; Hospital Discharges (HD): 2005-2009; Deaths: 2000-2009

Motor vehicle crash injuries and deaths and the associated costs are preventable. The Centers for Disease Control and Prevention (CDC) Injury Center supports proven, effective strategies for prevention such as:

Implementation in Kansas:

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Graduated driver licensing (GDL) policies	Effective January 1, 2010, Kansas enacted its GDL law. Information about the law may be found at www.kansasgdl.org.
Child passenger safety laws, safety seat distribution and education programs	Safe Kids local coalitions and Child Passenger Safety Fitting Stations across Kansas are staffed with Certified Child Passenger Safety Technicians to provide car seats to those in need and educate caregivers on proper fit and installation. For more information about the law visit www.kansasboosterseat.org.
Primary seat belt laws	Effective July 1, 2010, Kansas primary seat belt law went into effect. Current fine for an adult not wearing their seat belt is $10, one of lowest fines in the nation. Additional information on the law is available at http://www.ksdot.org/burTrafficSaf/safblt/adultlaw.asp.
Enhanced seat belt enforcement programs	Click It or Ticket is an annual public education and seat belt enforcement campaign sponsored by the Kansas Department of Transportation and funded by National Highway Traffic Safety Administration.
Motorcycle and bicycle helmet laws	Kansas has a limited helmet law requiring those 17 years of age and younger to wear a helmet when riding motorcycles and some low-power cycles when on the road. There are no laws governing bicycle helmet use in Kansas with the exception of a city ordinance in Lawrence.
Sobriety checkpoints	Sobriety checkpoints including DUI inspection lanes and saturation patrols have been instituted in Kansas in an effort to reduce the number of deaths and injuries attributed to alcohol-related crashes.
Interlock ignition laws	Kansas has enacted stringent DUI Laws and a set of punitive measures for those drivers convicted of driving under the influence.
Texting while driving law	Effective January 1, 2011, no person in Kansas shall operate a motor vehicle on a public road or highway while using a wireless communications device to write, send or read a written communication.

In the 2000's Kansas lawmakers and safety advocates focused on passing safety legislation targeting child passengers and young drivers. The two major laws passed were the Child Passenger Safety Act, which went into effect in July 2006, and Graduated Drivers Licensing, which went into effect in January 2010. These legislative efforts, improvements to vehicle safety by manufacturers, and improvements to roadway safety by Kansas Department of Transportation (KDOT) may have contributed to noticeable changes in health measures over the past decade.

The motor vehicle crash (MVC) hospital discharge (HD) rate among motor vehicle occupants 0-14 years old decreased by more than 50 percent from 2000 (20.7 MVC HD per 100,000 population, 95% CI 17.2-24.8) to 2010 (8.4 MVC HD per 100,000 population, 95% CI: 6.3-11.1). The MVC HD rate among motor vehicle occupants 15-24 years old decreased by 26.2 percent from 2000 (113.5 MVC HD per 100,000 population, 95% CI: 103.3-124.3) to 2010 (83.8 MVC HD per 100,000 population, 95% CI :75.1-93.1). See Appendix Table HD3 for rates and 95 percent confidence intervals.

Age-Specific Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rate among Motor Vehicle Occupants Kansas 2000-2010
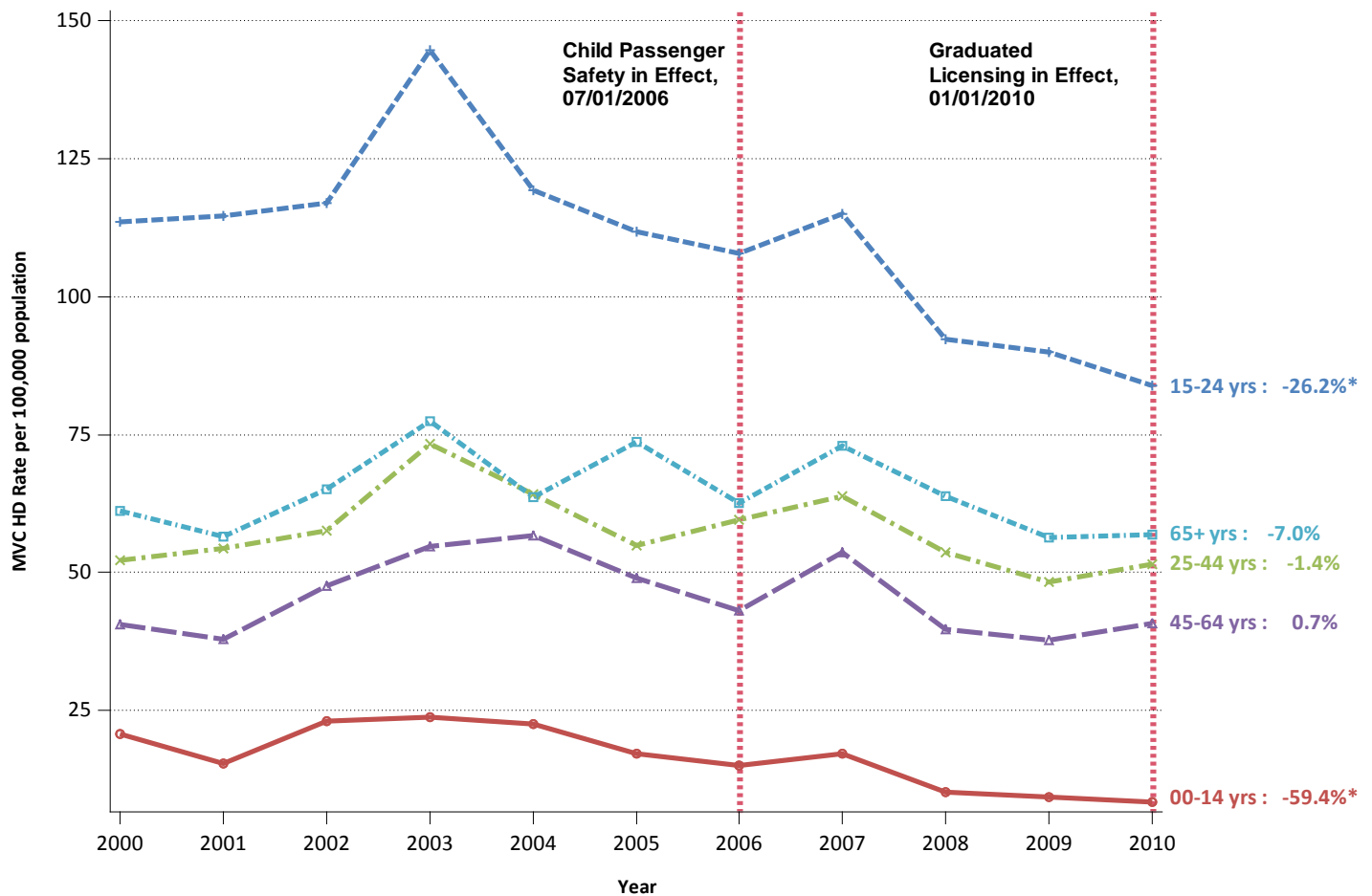
*Significant Decrease. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

In 2012, CDC changed the analysis methodology for analyzing State Injury Indicators. Also in 2012 the Kansas Department of Health and Environment modified the hospital discharge database to remove duplicate records. These changes in methodology and updated databases are only used in this Special Addition Section and were applied to all years (2000-2010) and are not used throughout the rest of the report. This may cause different rates and counts when comparing the Special Addition Section to the rest of this report. The CDC's new methodology includes two major changes. First, the inclusion of previously un-coded activity codes (E000-E030, beginning October 2009) and second, the inclusion of records with non-valid e-codes listed as the only e-codes.

The Behavioral Risk Factor Surveillance Survey

Kansas has been tracking seat belt use and drunk driving with the Behavioral Risk Factor Surveillance Survey (BRFSS). Survey questions were usually asked every other year during the 2000s.

Prevelance of Drunk Driving in the Past 30 Days and Always Using Seat Belt when Driving or Riding Among Kansans 18 years and older, Kansas 1999-2010
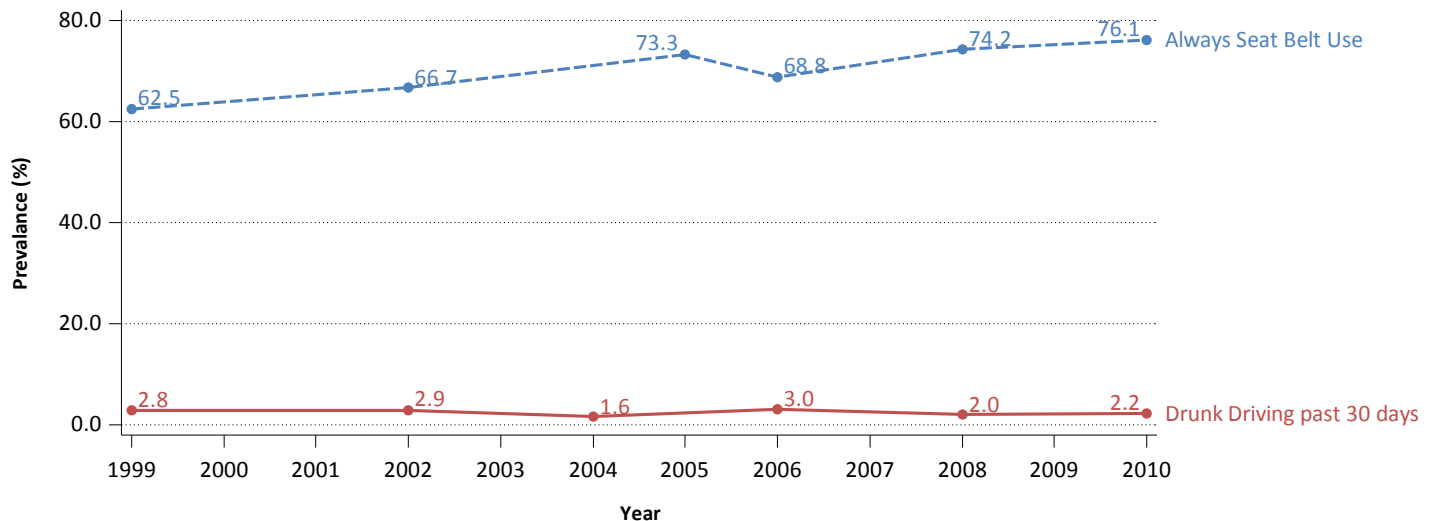
Source: 2010 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment.

Seat Belt Use

Seat belt use is an effective and simple way to save lives while driving or riding in a car. The prevelance of adults 18 years and older who always wear a seatbelt increased 13.6 percentage points in the 2000's from 62.5 percent (95% CI: 60.7%-64.4%) in 1999 to 76.1 percent (95% CI: 74.7%-77.4%) in 2010.

- In 2010, the prevelance of always using a seatbelt when driving or riding in a car was:
  - Common, 76.1 percent of all Kansas adults said they always wore a seatbelt.
  - Higher among females as compared to males (83.7% (95% CI: 82.2%-85.1%), vs 68.2% (95% CI: 65.6%-70.5%), respectively.
  - Lower among those between 18 and 24 years old as compared to those between 35 and 44 years old (65.6% (95% CI: 58.4%-72.8%) vs 77.4% (95% CI : 74.4%-80.5%), respectively).

o Higher among college graduates (81.4%, 95% CI: 79.5%-83.2%) as compared to other educational groups: less than high school (69.5%, 95% CI: 63.5%-75.6%), high school graduate or G.E.D. (72.2%, 95% CI: 69.5%-75.0%), some college(74.1%, 95% CI: 71.4%-76.9%) .

o Much lower in frontier communities compared to those living in urban communities, (56.9% (95% CI: 49.6%-64.2%) vs 83.2% (95% CI: 81.5%-84.9%), respectively).

o See appendix for more detailed subgroups and 95 percent confidence intervals

Drunk Driving

In 2010, only 2.2% of all Kansans 18 years and older said they had driven drunk is the past 30 days.

- In 2010, the prevelance of drinking and driving in the past 30 days was:
    o Four times higher in men as compared to women (3.7% (95% CI: 2.6%-4.8%) vs 0.8% (95% CI: 0.3%-1.2%), respectively).

    o More than four times higher in those 18 to 24 years old as compared to those 55-64 years old (6.1% (95% CI: 2.1%-10.1%) vs 1.3% (95% CI: 0.7%-1.9%), respectively).

    o More than two times higher in those living in urban population density areas as compared to semi urban areas (3.0% (95% CI: 2.1%-3.9%) vs 1.2% (95% CI: 0.4%-2.0%), respectively).

    o See appendix for more detailed subgroups and 95 percent confidence intervals

Emergency Department Visits

Emergency department visits (EDV) represented the least serious injuries analyzed related to MVC. Emergency department visits are stays in the hospital that are less than 24 hours. From 2007 to 2009, 22,267 MVC EDV occurred in Kansas. This section will describe gender, age, race, ethnicity and occupant status of MVC EDV. There is an overview table at the end of this section containing counts and confidence intervals for rates discussed hereafter.

Gender and Age:

From 2007 to 2009, the overall emergency department visits (EDV) for motor vehicle crashes (MVC) peaked among age groups 15-19 years old (664.3 MVC EDV per 100,000 population, 95% CI: 643.9-685.2) and the rate steadily decreases with increasing age. The highest rate for males and females was seen among age groups 15-19 years old compared to all other age groups

> Males 15-19 years old: 555.4 MVC EDV per 100,000 males, 95% CI: 529.5-582.2
> Females 15-19 years old: 781.1 MVC EDV per 100,000 females, 95% CI: 749.3-813.8

Age-Specific Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) Rate among Gender Groups, Kansas 2007-2009
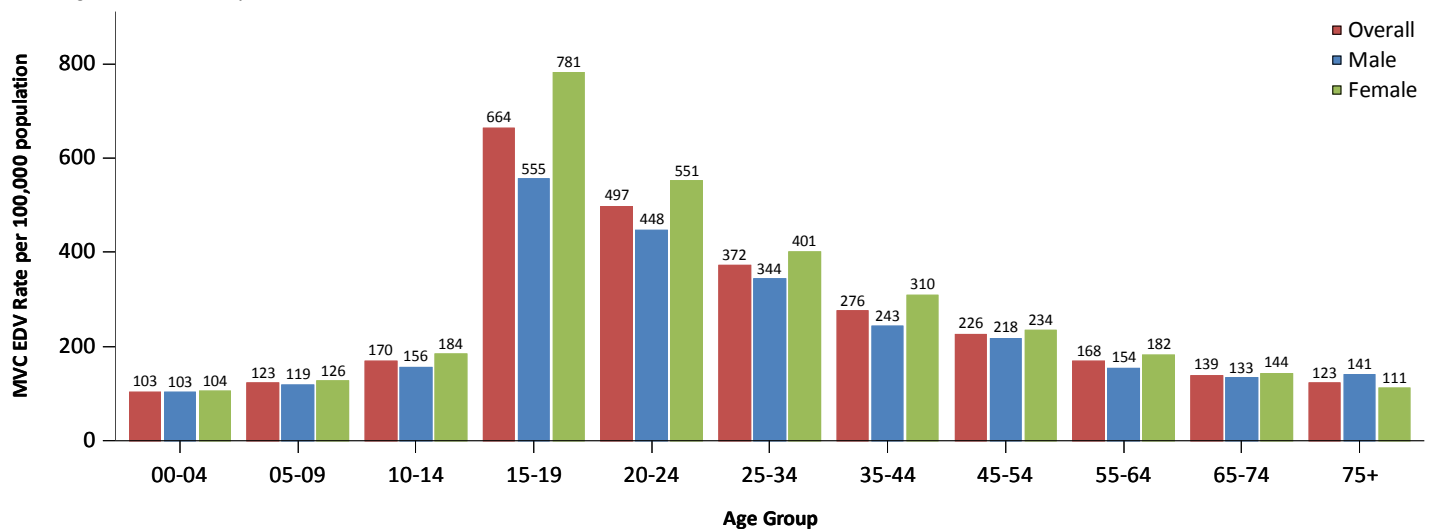
Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Race

Motor vehicle crash EDV varied by race. From 2007 to 2009, Asian / Non-Hawaiian and other Pacific Islanders (NHOPI) had the highest age-adjusted rates (596.8 (95% CI: 561.1-635.1), MVC EDV per 100,000 population) of the race groups that could be measured. This rate was significantly higher than Whites: 221.7 (95% CI: 218.3-225.2), African-Americans: 389.6 (95% CI: 373.2-406.8), and Native Americans: 85.1 (95% CI: 67.8-107.4), MVC EDV per 100,000 population. Counts and 95 percent CI for race and ethnic groups can be found in Table ED3, end of section.

Age-Adjusted Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) Rate among Race Groups
Kansas 2007-2009
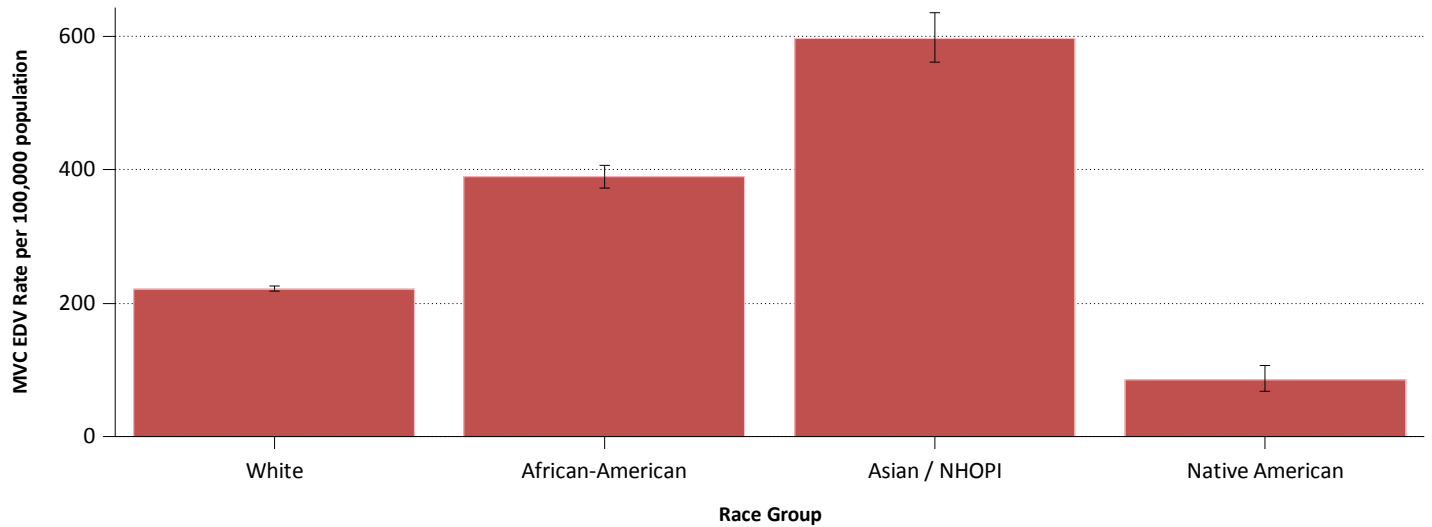
NH0PI: Non-Hawaiian and other Pacific Islander. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Persons Injured

From 2007 to 2009, motor vehicle occupants were the most likely to be injured in MVC EDV. Among males who were in a MVC EDV nine percent were motorcycle occupants, which were four times higher than among females, two percent.

Occupant Status of Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) among Gender Groups
Kansas 2007-2009
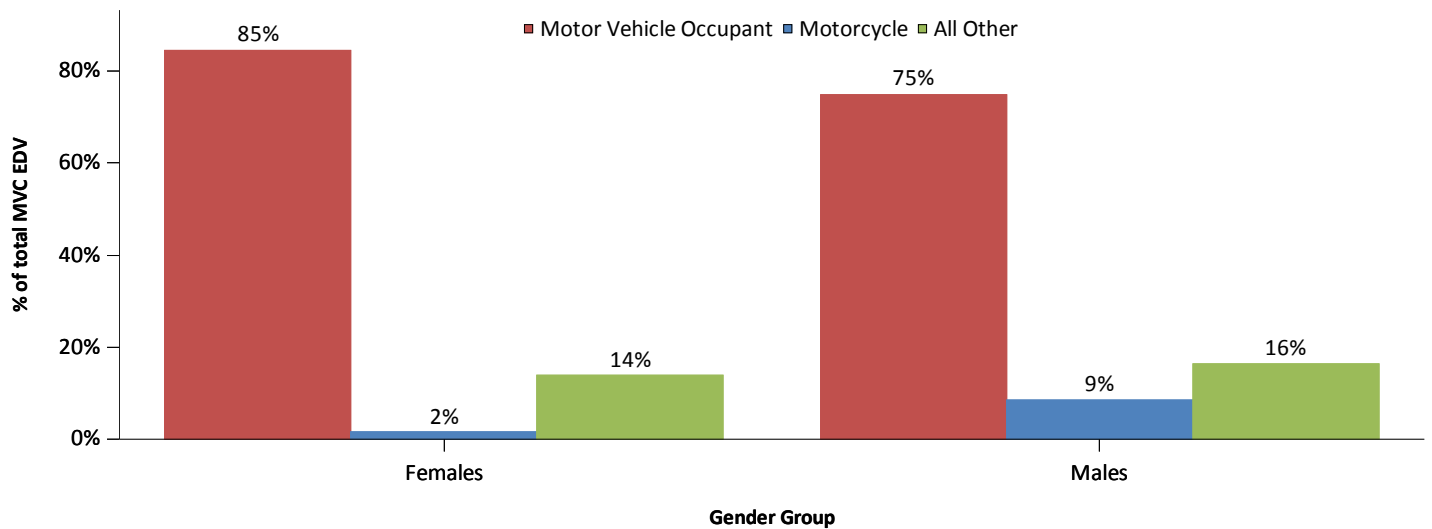
All Other Includes: Pedal cyclist, pedestrian, unknown, and other. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Age specific rates vary greatly for different persons injured. From 2007 to 2009, the rate for occupant MVC EDV was significantly higher among the 15-19 years old age group as compared to all other age groups. The rate for motorcycle MVC EDV was significantly higher among age groups (15-54 years old) as compared to all other age groups. "All Other" persons injured rate was significantly higher among age groups (15-24 years old) as compared to all other age groups. Counts and 95 percent confidence intervals for age-specific MVC EDV rates can be found in Table ED1, Appendix.

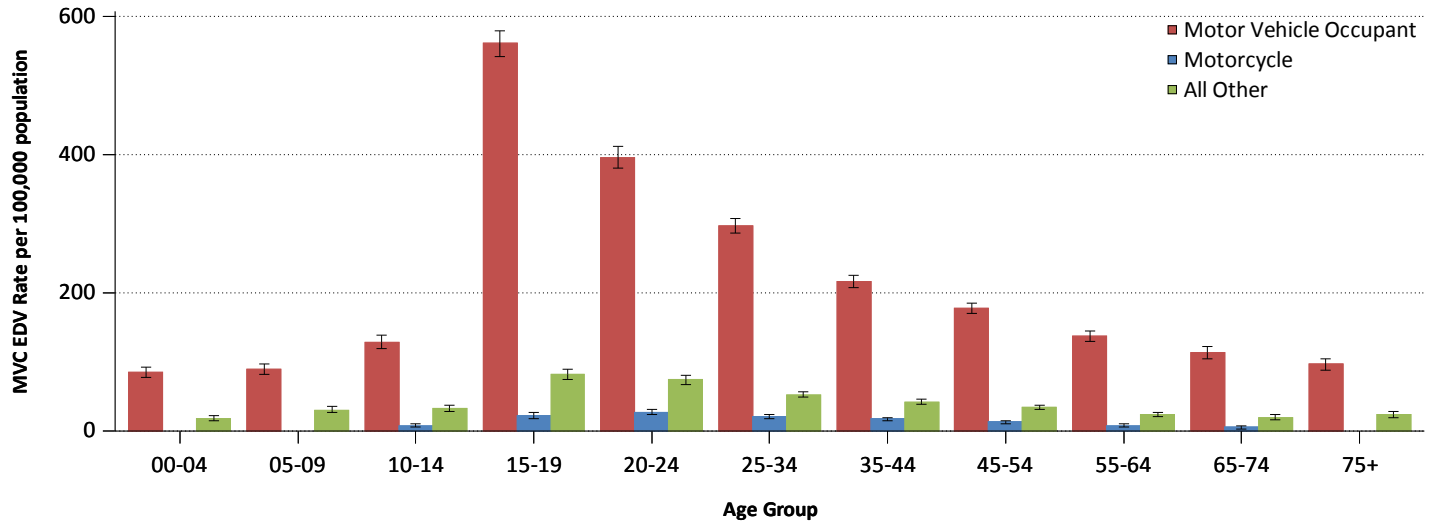Age-Specific Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) Rate among Persons Injured, Kansas 2007-2009

All Other Includes: Pedal cyclist, pedestrian, unknown, and other. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Table ED3. Emergency Department Section Review Table

Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) Rate by Selected Demographic groups, Occupant Statuses, Outcomes, and Risk Factors, Kansas 2007-2009

Demographic	EDV	EDV Rate*	95% CI**	% of Total
Overall	22,267	266.4	262.9-270.0	100.0%
Gender				
Female	12,006	291.3	286.1-296.6	53.9%
Male	10,261	243.1	238.4-247.9	46.1%
Age Group (Age Specific)				
00-04	625	103.5	95.5-111.9	2.8%
05-09	709	122.6	113.8-132.0	3.2%
10-14	958	169.8	159.2-180.9	4.3%
15-19	4,001	664.3	643.9-685.2	18.0%
20-24	3,198	497.2	480.1-514.8	14.4%
25-34	4,082	371.7	360.4-383.3	18.3%
35-44	2,969	275.9	266.0-286.0	13.3%
45-54	2,751	225.9	217.5-234.5	12.4%
55-64	1,545	168.3	160.0-176.9	6.9%
65-74	746	138.9	129.1-149.2	3.4%
75+	683	122.5	113.5-132.1	3.1%
Race				
White	16,546	221.7	218.3-225.2	74.3%
African-American	2,236	389.6	373.2-406.8	10.0%
Asian / NHOPI	1,180	596.8	561.1-635.1	5.3%
Native American	90	85.1	67.8-107.4	0.4%
Occupancy Status				
Motor Vehicle Occupant	17,845	213.3	210.1-216.5	80.1%
Motorcycle	1,066	12.9	12.1- 13.7	4.8%
All Other	3,356	40.2	38.9- 41.6	15.1%
Outcome				
TBI	2,618	31.3	30.1- 32.5	11.8%

NH0PI: Non-Hawaiian and other Pacific Islander. All Other includes: Pedal cyclist, Pedestrian, Unknown, And Other. *MVC EDV Rate is per 100,000 population. All rates are age-adjusted unless otherwise noted. **95% CI are calculated around rate. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Hospital discharges (HD) occur when a person stays in the hospital for at least 24 hours. From 2005 to 2009, 10,283 MVC HD occurred in Kansas. This section describes gender, age, race and ethnicity, occupant status and trends of MVC HD. There is an overview table at the end of this section containing counts and confidence intervals for rates discussed hereafter.

Gender and Age

From 2005 to 2009, the overall age-specific motor vehicle crash (MVC) hospital discharge (HD) rate was highest among 15-19 years old age group (142.7 MVC HD per 100,000 population) as compared to all other age groups. Males made up 61% of all MVC HD (n=6,266) and females 39% (n=4,017).

The MVC HD rate was highest in males 15-19 and 20-24 years old compared to all other age groups:
Males 15-19 years old: 159.9 MVC HD per 100,000 males, 95% CI: 149.3-171.2
Males 20-24 years old: 158.4 MVC HD per 100,000 males, 95% CI: 148.1-169.2

The highest rate in females was seen among 15-19 years old as compared to all other age groups.
Females 15-19 years old: 124.4 MVC HD per 100,000 females, 95% CI: 114.6-134.7

Age-Specific Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rate among Gender Groups, Kansas 2005-2009
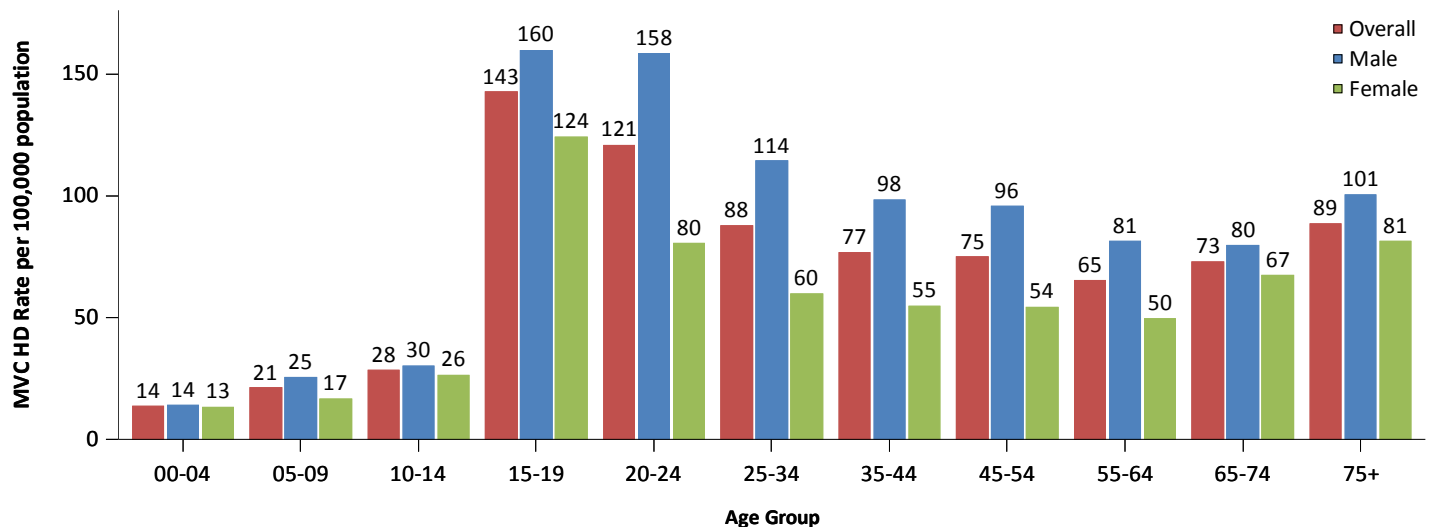
Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Race and Ethnicity

MVC hospital discharges differed significantly among race and ethnicity groups. From 2005 to 2009, the age-adjusted MVC HD rate was significantly higher among African-Americans (77.0 (95% CI: 71.2-83.3) MVC HD per 100,000 population) compared to all other race groups that were analyzed; White: 64.1 (95% CI: 62.7-65.6), Asian: 33.8 (95% CI: 27.2-42.3), Native American: 16.1 (95% CI: 10.0-25.8), MVC HD per 100,000 population.

The age-adjusted MVC HD rate was higher among Non-Hispanics compared to Hispanics (72.7 (95% CI: 71.2-74.2) vs. 53.9 (95% CI: 49.4-58.9), MVC HD per 100,000 populations, respectively). Counts and 95 percent confidence intervals among race and ethnic groups can be found in Table HD3, at end of section.

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Age-Adjusted Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rate among Race and Ethnicity Groups, Kansas 2005-2009
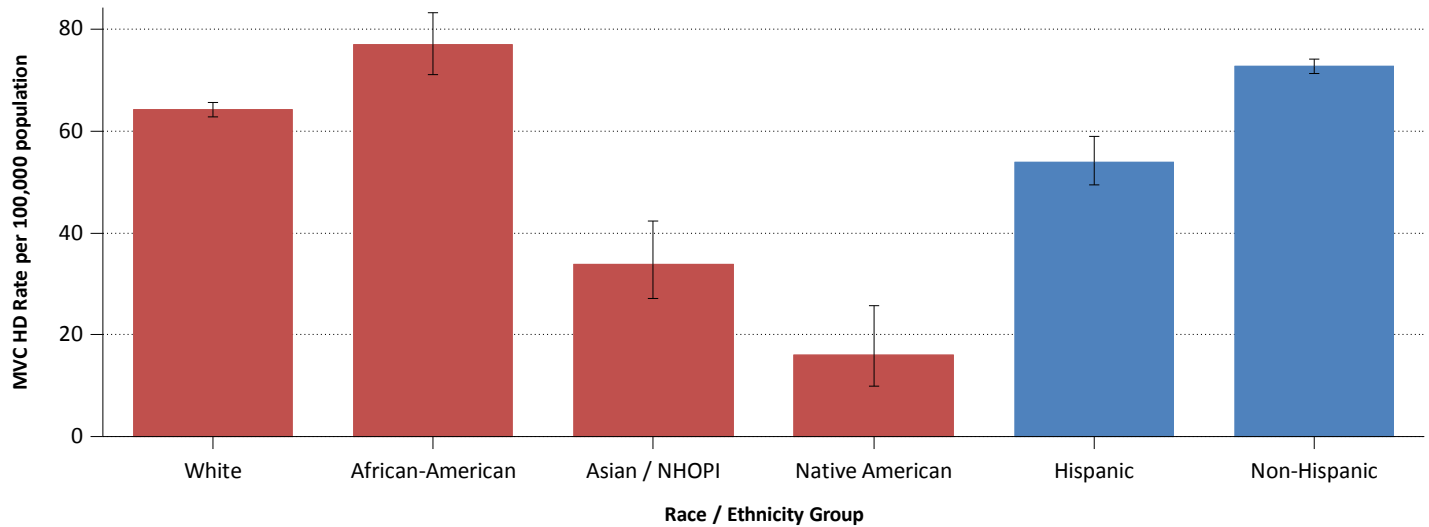
NH0PI: Non-Hawaiian and other Pacific Islander. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Persons Injured

From 2005 to 2009, motor vehicle occupants were the most likely to be injured in MVC HD. Of males who were in a MVC HD, 64 percent were motor vehicle occupants. Of females who were in a MVC HD, 82 percent were motor vehicle occupants.

Occupant Status of Motor Vehicle Crash (MVC) Hospital Discharges (HD) among Gender Groups, Kansas 2005-2009
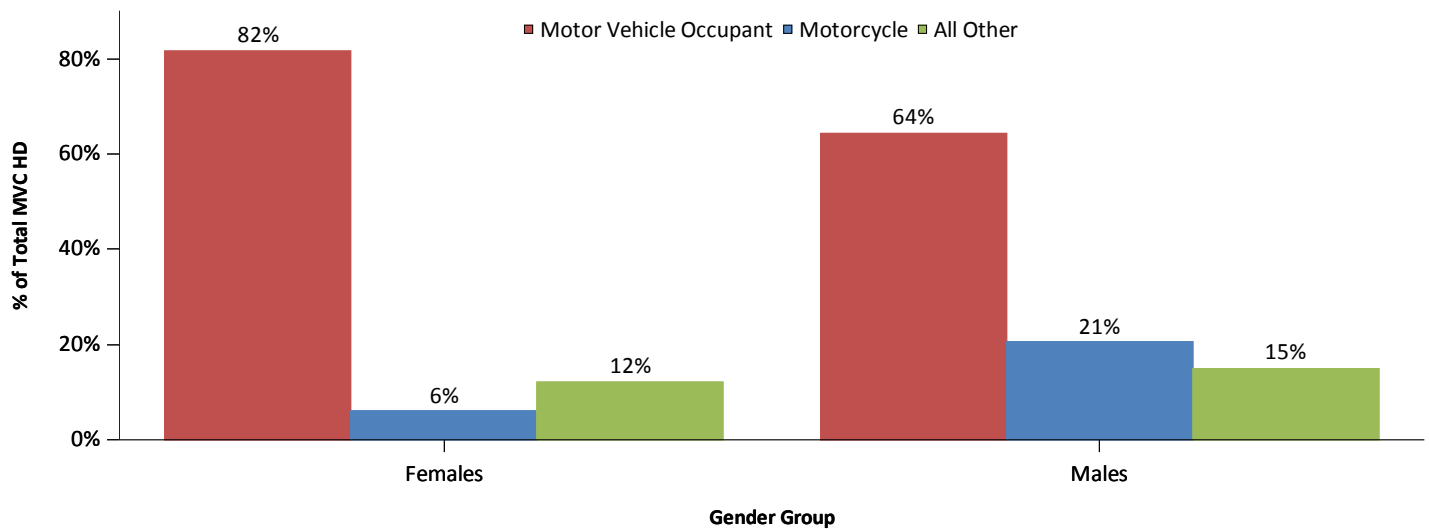
All other includes: Pedal cyclist, pedestrian, unknown, and other. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Age specific rates for persons injured differed among persons injured. From 2005 to 2009, the highest motor vehicle occupant MVC HD rate was seen among the 15-19 years old age group as compared to all other age groups. The highest motorcycle MVC HD rate was seen among 20-64 years old age group as compared to all other age groups outside this range. The "All Other" persons injured did not differ significantly by age. Counts and 95 percent confidence intervals for age-specific MVC HD rates are available in Table HD1, appendix.

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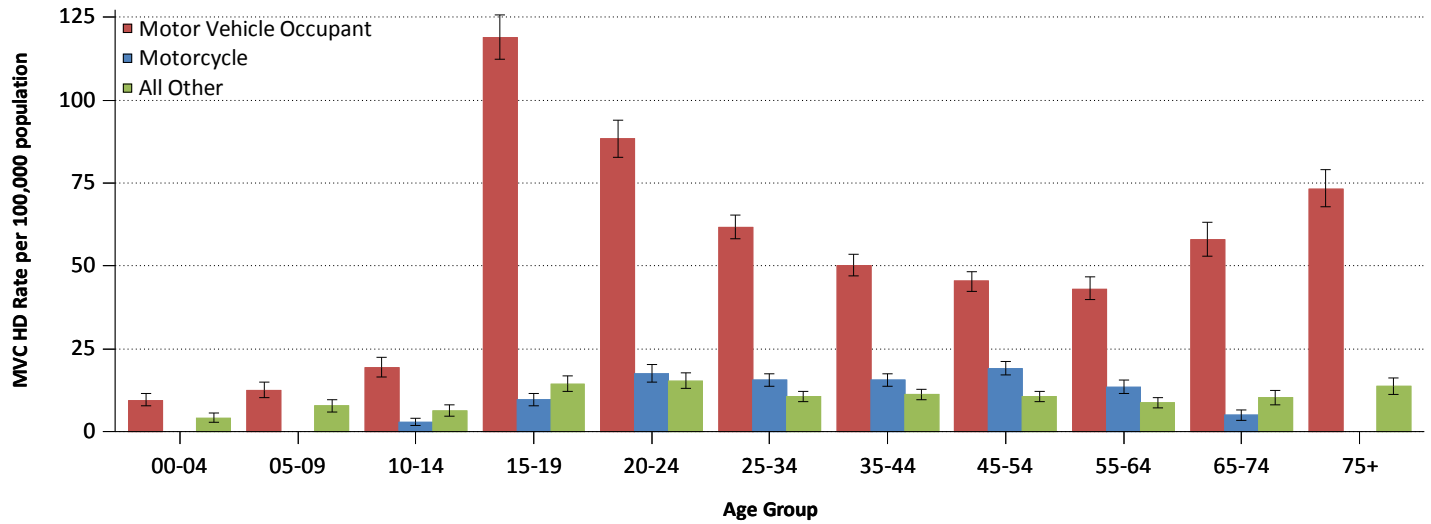## Age-Specific Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rate among Persons Injured, Kansas 2005-2009

All other includes: Pedal cyclist, pedestrian, unknown, other. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Trends

Motor vehicle crash trends have significantly changed during the 2000s. From 2000 to 2009, the age-adjusted occupant MVC HD rate decreased 16% from 52.4 (95% CI: 49.7-55.2) in 2000 to 43.9 (95% CI: 41.5-46.4) in 2009, MVC HD per 100,000 population. The age-adjusted motorcycle MVC HD rate more than doubled from 4.5 (95% CI: 3.7-5.4) in 2000 to 9.2 (95% CI: 8.2-10.5) in 2009, MVC HD per 100,000 population. Annual rates and 95 percent confidence intervals can be found in Table HD2, Appendix.

Age-Adjusted Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rate among Persons Injured, Kansas 2000-2009

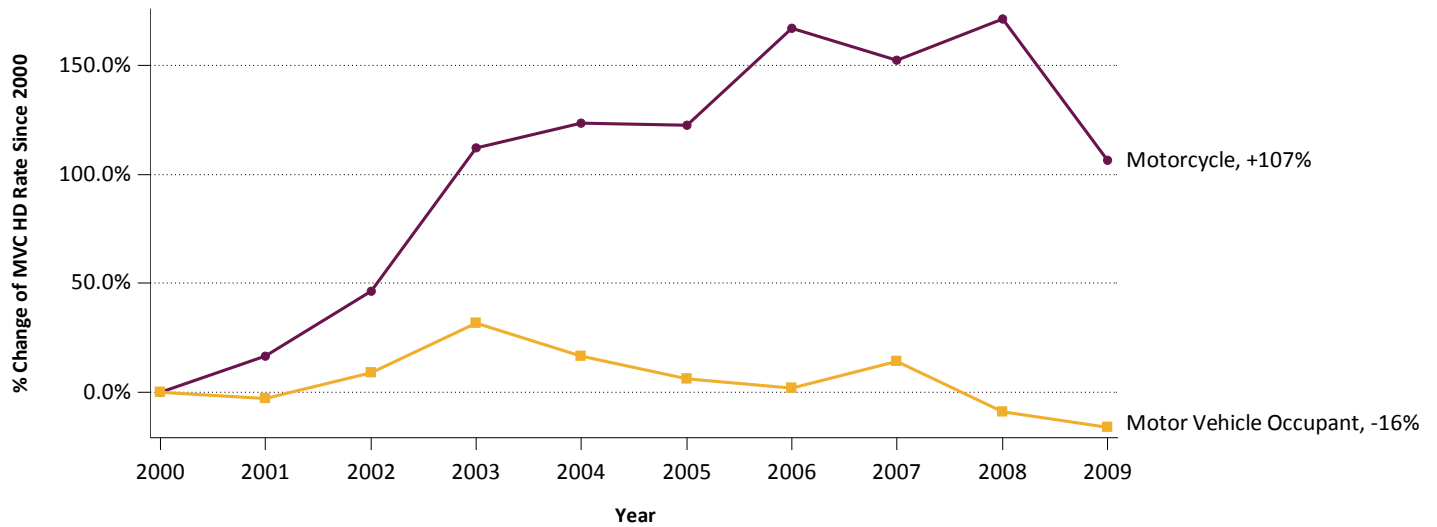Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Table HD3. Hospital Discharge Section Review Table

Motor Vehicle Crash (MVC) Hospital Discharges (HD) Rate by Selected Demographic groups, Occupancy Statuses, Outcomes, and Risk Factors, Kansas 2005-2009

Demographic	#HD	HD Rate	95% CI**	% of Total
Overall	10,283	73.3	71.9- 74.7	100.0
Gender				
Female	4,017	56.5	54.7- 58.2	39.1%
Male	6,266	89.9	87.7- 92.2	60.9%
Age Group (Age Specific)				
00-04	134	13.6	11.4- 16.1	1.3%
05-09	200	21.1	18.3- 24.3	1.9%
10-14	268	28.4	25.1- 32.0	2.6%
15-19	1,437	142.7	135.5-150.3	14.0%
20-24	1,295	121.1	114.6-127.9	12.6%
25-34	1,598	87.9	83.7- 92.4	15.5%
35-44	1,409	76.9	72.9- 81.0	13.7%
45-54	1,514	74.9	71.2- 78.8	14.7%
55-64	961	65.2	61.1- 69.5	9.3%
65-74	642	73.1	67.5- 78.9	6.2%
75+	825	88.7	82.7- 94.9	8.0%
Race				
White	8,133	64.1	62.7- 65.6	79.1%
African-American	687	77.0	71.2- 83.3	6.7%
Asian / NHOPI	104	33.8	27.2- 42.3	1.0%
Native American	24	16.1	10.0- 25.8	0.2%
Ethnicity				
Non-Hispanic	9,348	72.7	71.2- 74.2	90.9%
Hispanic	656	53.9	49.4- 58.9	6.4%
Occupant Status				
Motor Vehicle Occupant	7,318	52.1	50.9- 53.3	71.2%
Motorcycle	1,530	10.9	10.4- 11.5	14.9%
Other	1,435	10.3	9.7- 10.8	14.0%
Outcomes / Risk Factors				
TBI	4,248	30.3	29.4- 31.3	41.3%

NH0PI: Non-Hawaiian and other Pacific Islander. All Other includes: Pedal cyclist, pedestrian, unknown, other. *MVC HD Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Deaths are the most severe injury that are described in this report. From 2006 to 2010 there were 2,131 MVC deaths in Kansas. This section will describe gender, age, race and ethnicity, occupant status and trends of MVC deaths. There is an overview table at the end of this section containing counts and confidence intervals for rates discussed hereafter.

Age and Gender

Due to low counts, it was more difficult to describe significant differences of MVC death rates between age groups. From 2006 to 2010, the overall age-specific MVC death rate were higher among young drivers (15-24 years old) and older drivers (65-74 years old). This same trend was seen in both males and females. Males made up 69 percent of all MVC deaths (n=1,466) and females made up 31 percent (n=665), and the age-adjusted MVC death rate of males was twice as high as compared to females (21.0 (95% CI: 20.0-22.1) vs. 9.1 (95% CI: 8.4-9.9), MVC HD per 100,000 population, respectively). Counts and 95 percent confidence intervals can be found in Table MD3, end of section.

Age-Specific Motor Vehicle Crash (MVC) Death Rate by Sex
by Gender, Kansas 2006-2010
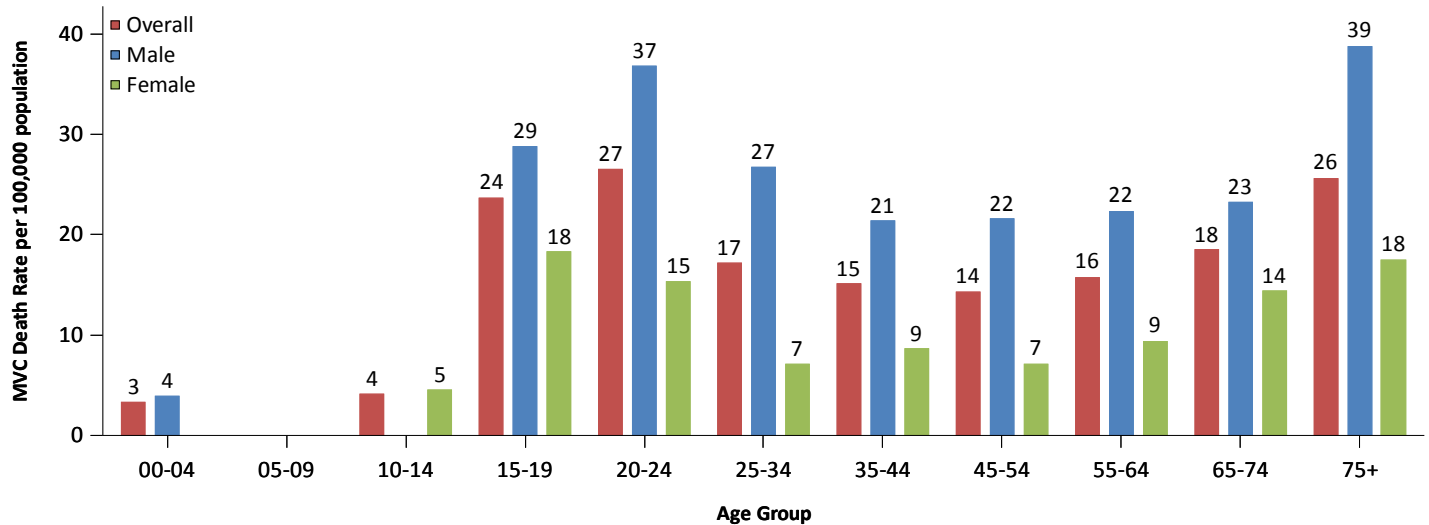
Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

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Race and Ethnicity

From 2006 to 2010, whites had a higher age-adjusted MVC death rate compared to Asians /NHOPI, 14.3 (95% CI: 13.6-15.0) vs. 6.8 (95% CI: 3.8-12.0) MVC deaths per 100,000 population, respectively. Rates were not significantly different among African-Americans (11.1, 95% CI: 9.0-13.7) and Native Americans (14.7, 95% CI: 9.1-23.9), MVC deaths per 100,000 population. Ethnic rates between Hispanics (16.4, 95% CI: 13.8-19.5) and Non-Hispanics (14.7, 95% CI: 14.0-15.3) also did not significantly differ, MVC deaths per 100,000 population. Counts and 95 percent confidence intervals can be found in Table MD3, at end of section.

Age-Adjusted Motor Vehicle Crash (MVC) Death Rate
by Race and Ethnicity, Kansas 2006-2010

NH0PI: Non-Hawaiian and other Pacific Islander. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Occupant Status

From 2006 to 2010, most individuals killed in a MVC were motor vehicle occupants (they were inside a motor vehicle). Of males who died of a MVC, 70 percent were occupants. Of females who died of a MVC, 83 percent were occupants.

Persons Injured in Motor Vehicle Crash (MVC) Deaths by Gender
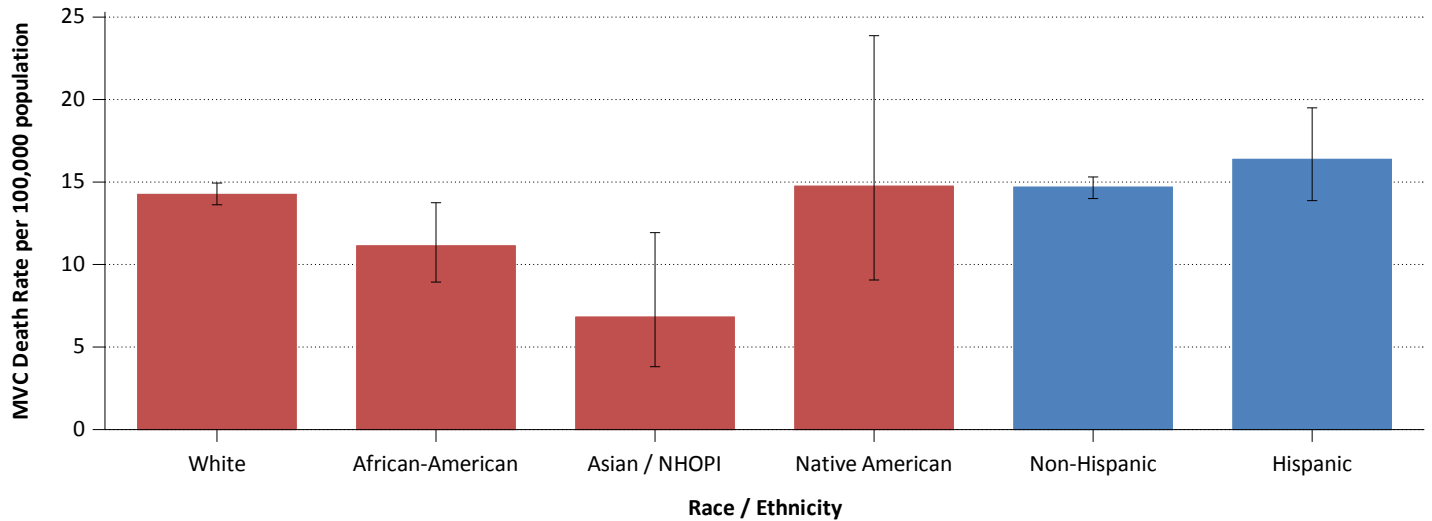**Kansas 2006-2010**

All Other Includes: Pedal Cyclist, Pedestrian, and other. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE

From 2006 to 2010, higher age-specific motor vehicle occupant MVC death rates were seen among age groups 15-19, 20-24, and 75 years and older. There was limited data on motorcycle MVC deaths, no groups were significantly higher or lower than each other and only rates among age groups between 20 to 64 years old were available. The MVC death rate in with "All Other" persons injured was higher among age group 75 years and older compared to those between age groups between 25 to 54 years. Counts and 95 percent confidence intervals for age-specific MVC death rates can be found in Table MD1, appendix.

Age-Specific Motor Vehicle Crash (MVC) Death Rate
by Occupant Status, Kansas 2006-2010

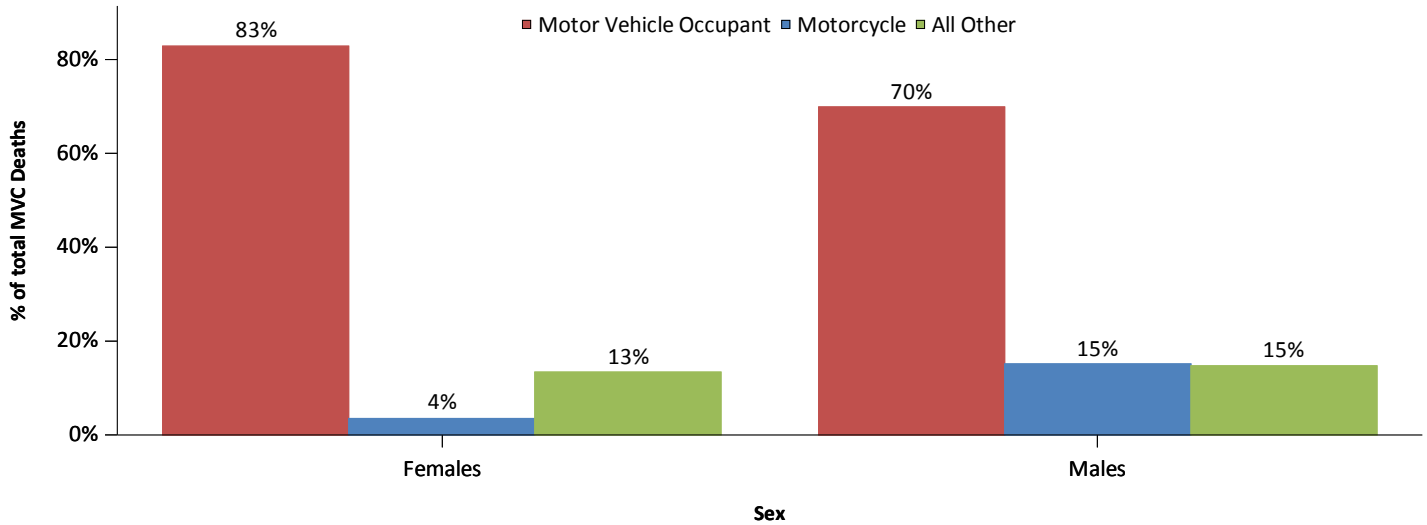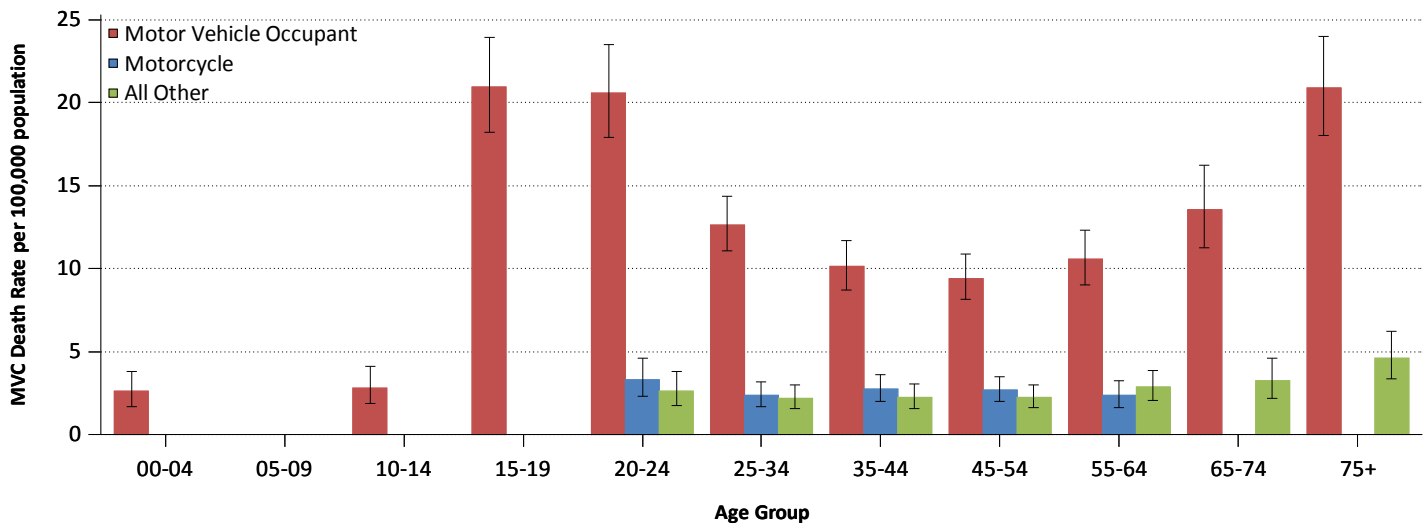All other includes: Pedal cyclist, Pedestrian, Other and Unspecified. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

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From 2000 to 2010, the age-adjusted motorcycle MVC death rate nearly doubled from 0.8 (95% CI: 0.5-1.2) in 2000 to 1.5 (95% CI: 1.1-2.0) in 2010, motorcycle MVC deaths per 100,000 population. This rate peaks in 2006 when the rate is nearly three times higher than in 2000, 2.1 (95% CI: 1.6-2.7) motorcycle MVC deaths per 100,000 population. The age-adjusted occupant MVC death rate dropped 14 percent in 11 years from 13.9 (95% CI: 12.5-15.4) in 2000 to 12.0 (95% CI: 10.8-13.4) in 2010, occupant MVC deaths per 100,000 population. This change in occupant MVC death rate was not significant though. Counts and 95 percent confidence intervals can be found in Table MD2, appendix.

Age-Adjusted Motor Vehicle Crash (MVC) Death Rate by Occupance Status
Kansas 2000-2010
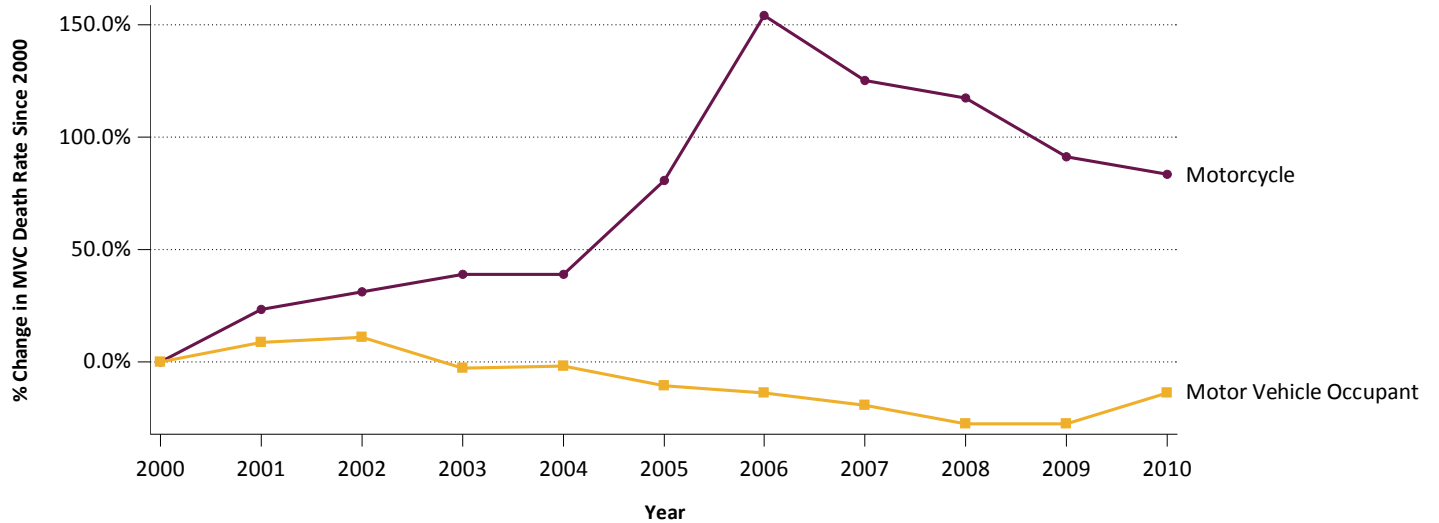
Source: 2000-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Table MD3. Mortality Section Review Table
Motor Vehicle Crash (MVC) Death Rate by Selected Demographic groups, Occupant Statuses, Outcomes, and Risk Factors, Kansas 2006-2010

Demographic	Deaths	Death Rate*	95% CI**	Percent of Total
Overall	2,131	15.0	14.3- 15.6	100%
Gender				
Female	665	9.1	8.4- 9.9	31.2%
Male	1,466	21.0	20.0- 22.1	68.8%
Age Group (Age Specific)				
00-04	33	3.3	2.3- 4.6	1.5%
05-09	18	.		0.8%
10-14	39	4.1	2.9- 5.6	1.8%
15-19	239	23.7	20.8- 26.9	11.2%
20-24	281	26.5	23.5- 29.8	13.2%
25-34	314	17.2	15.3- 19.2	14.7%
35-44	271	15.1	13.3- 17.0	12.7%
45-54	290	14.3	12.7- 16.0	13.6%
55-64	242	15.8	13.9- 17.9	11.4%
65-74	166	18.5	15.8- 21.5	7.8%
75+	238	25.6	22.5- 29.1	11.2%
Race				
White	1,837	14.3	13.6- 15.0	86.2%
African-American	100	11.1	9.0- 13.7	4.7%
Asian / NHOPI	20	6.8	3.8-12.0	0.9%
Native American	24	14.7	9.1- 23.9	1.1%
Ethnicity				
Non-Hispanic	1,916	14.7	14.0- 15.3	89.9%
Hispanic	193	16.4	13.8- 19.5	9.1%
Occupant Status				
Motor Vehicle Occupant	1,578	11.1	10.5- 11.6	74.0%
Motorcycle	246	1.8	1.5- 2.0	11.5%
Other	307	2.2	1.9- 2.4	14.4%
Outcomes / Risk Factors				
TBI	307	2.2	1.9- 2.4	14.4%

NH0PI: Non-Hawaiian and other Pacific Islander. All other includes: Pedal cyclist, pedestrian, other and unspecified. **95% CI are calculated around rate.. *MVC Death Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Cause Coding:

Causes are determined by using an injury matrix that is recommended by Safe States Alliance. This is a system that uses the diagnosis code (ED data and HD data) and underlying cause (Mortality Database) to give a cause and intent to an injury.

Data are selected and coded for hospital discharges according to the *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance* from the Safe States Alliance. This method codes injuries based on e-codes using the injury matrix provided by the CDC[1] . Data for emergency departments is similar to hospital discharge but closely follows the selection method from *State Injury Indicators: Instructions for Preparing 2005 Data* from the Centers for Disease Control and Prevention. Mortality Data are coded using the ICD-10 injury matrix provided by the CDC[2]. This is similar to the method described in *Instructions for Preparing 2005 Data* but uses a different coding scheme.

Unintentional Motor Vehicle Crash ICD Codes were defined as follows:
ICD-9CM: E810-E19[.0-.9]
ICD-10:   V02–V04[.1,.9], V09.2, V12–V14[.3–.9], V19[.4–.6], V20–V28[.3–.9], V29–V79[.4–.9], V80[.3–.5], V81.1, V82.1, V83–V86[.0–.3], V87[.0–.8], V89.2

Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is an ongoing, population-based, random-digit-dialed telephone survey of non-institutionalized civilian adults 18 years and older. The survey is coordinated by the Centers for Disease Control and Prevention (CDC) and is conducted annually by all 50 states, the District of Colombia and several U.S. Territories. This report includes data collected by the Kansas Department of Health and Environment during 2001-2010.

The Kansas BRFSS employs a disproportionate stratified sampling method. During data analysis, sampling weights are applied to account for unequal selection probability and response bias. The complex survey methodology and analytical procedures for BRFSS are designed to produce valid statewide estimates of prevalence. County- and region-level estimates were adjusted to reflect the age and gender distribution within the county using a sample weight post-stratification methodology. A more detailed explanation of the weighting methodology used for the Kansas BRFSS is available from the following website: http://www.kdheks.gov/brfss/technotes.html (accessed June, 2012).

Several considerations should be taken into account when interpreting BRFSS estimates:
- BRFSS estimates do not apply to individuals without telephone service, those on military bases or living within institutions and do not include answers from individuals who are unable to complete a telephone survey.
- For the years of data included in the current report, the BRFSS only sampled individuals with a landline phone. Future surveys will include a cell-phone sample as well.
- BRFSS prevalence estimates are self-reported. Some prevalence estimates may be higher or lower than the true prevalence due to inaccuracies in self-reported data (for example, inability to remember, exaggeration, refusal to respond to a particular question, etc…).
- For some indicators it is difficult to obtain subpopulation estimates because of an insufficient number of respondents. In order to report a prevalence estimate, the sample for the population subgroup must have at least 50 denominator respondents and 6 numerator respondents.

Counts:

Counts are the actual number of events that occurred. Counts below five are not displayed in this report.

Rates:

Age-Specific rates are calculated by dividing the number of events by the population in that specific age group. By using rates, two differently sized communities/regions can be compared to each other. Note that rates in which the number of events is below 20 are not calculated as rates calculated for numbers less than 20 are scientifically unreliable.

Age-specific rates are calculated by dividing the number of events by the population of Kansas or by Kansas subpopulation of interest. Population denominators are taken from estimates produced by the U.S. Census Bureau. To be consistent with other KHDE publications, 2000-2009 midyear population estimates produced for each year are used, rather than using the most recent estimate. For example, a 2005 rate will be based on the Kansas population estimate published in 2005 (2005 vintage), rather than using the most recent 2005 population estimate (2009 vintage). For 2001, the 2002 vintage estimates were used. For 2000, the census 2000 populations were used. For 2010, the census 2010 populations were used.

Age adjusted rates:

Age adjustment is a statistical method for standardizing rates for groups that have different underlying age distributions to be more comparable. Age-adjusted rates should be used to compare Kansas with the United States as a whole, or for comparing two groups, or the same group over time, if the underlying population distribution is different or changes (for example, comparing rates for Hispanics and Non-Hispanics). Age-adjusted rates should be understood as relative indices, not as actual measures of burden, and should not be compared to unadjusted rates.

All age-adjusted rates in this report are computed using the direct method. Briefly, rates are first computed within each age group stratum. The products of each age-specific rate multiplied by the proportion of the 2000 U.S. Standard Population in that age category are summed across the age group strata. Age-specific rates are based on 10 age groups: 0 to 4, 5 to 9, 10 to 14, 15 to 19, 20 to 24 ,25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 74, 75 years and older.

Confidence intervals:

All rates, proportions and prevalence estimates presented in this report can be thought of as estimates of a theoretical true value, or population parameter. These estimates are subject to random variation. To characterize this variability, some of the statistics presented in this report include 95 percent confidence intervals. This can be thought of as a range of values that will contain the population parameter (theoretical true value) 95 percent of the time. To compute confidence intervals presented in this report, events were assumed to follow a Poisson distribution. If the number of events was 100 or higher, confidence limits were produced using the normal approximation. If the number of deaths or discharges was fewer than 100, limits are taken directly from the Poisson distribution. Age-adjusted confidence intervals were calculated using the gamma method[3].

Databases:

The three databases used for the purposes of this document are the hospital discharge database, the emergency department database, and the mortality database. See table below for detailed information on all three databases.

Database	Who's Counted?	Coding System Used	Years Provided In this Report
Emergency Department Database* Kansas Hospital Association**	A person who is admitted for less than 24 hours to a non-federal, short stay community or general hospital who is reporting emergency department visits to Kansas Hospital Association.	ICD-9	2007-2008
Hospital Discharge Database* Kansas Hospital Association**	A person who is admitted for at least 24 hours to a non-federal, short stay community or general hospital who is reporting hospital discharge data to Kansas Hospital Association.	ICD-9	2005-2009
Mortality Database Kansas Department of Health and Environment	Any persons who dies in the state of Kansas, and also Kansans who die outside of the state.	ICD-10	2000-2010

*Special Focus, Unlinked Data: The records in the Kansas emergency department and hospital discharge database are not unique. Records are not unique when they are unlinked. For example, someone breaks their arm and goes to the emergency department but is then transferred to another emergency department due to a complication. In a linked system this one event can be tied together and counted as one event but with an unlinked system these are counted as two separate events. Serious injuries can inflate the counts if the person is transferred more than once. This is why we refer to events as hospital discharges (not unique).
** Federal and specialty hospitals in Kansas do not report their discharges and emergency department visits to these databases. All non federal, short stay community or general hospitals in Kansas do not report their emergency department visits or hospital discharge data to Kansas Hospital Association, therefore their databases do not include 100 percent of emergency department visits and hospital discharges.

*** **Special Addition Section**
In 2012, CDC changed the analysis methodology for analyzing State Injury Indicators. Also in 2012 the Kansas Department of Health and Environment modified the hospital discharge database to remove duplicate records. These changes in methodology and updated databases are only used in this Special Addition Section and were applied to all years (2000-2010) and are not used throughout the rest of the report. This may cause different rates and counts when comparing the Special Addition Section to the rest of this report. The CDC's new methodology includes two major changes. First, the inclusion of previously un-coded activity codes (E000-E030, beginning October 2009) and second, the inclusion of records with non-valid e-codes listed as the only e-codes.

Population Density
Population density is discussed in the BRFSS data portion of this report. Population density is determined by dividing the population of a county by physical area of the county. In this report we use the population density from the 2010 census. A map of the population density groups of each county and the population density ranges can be found on the map on the next page. These are the definitions of the population density groups

used: Urban= 150+ persons per square mile (PPSM), Semi-Urban= 40-149.9 PPSM, Densely-Settled Rural= 20-39.9 PPSM, Rural= 6-19.9 PPSM, Frontier= 0-5.9 PPSM.

Kansas Population Density 2010
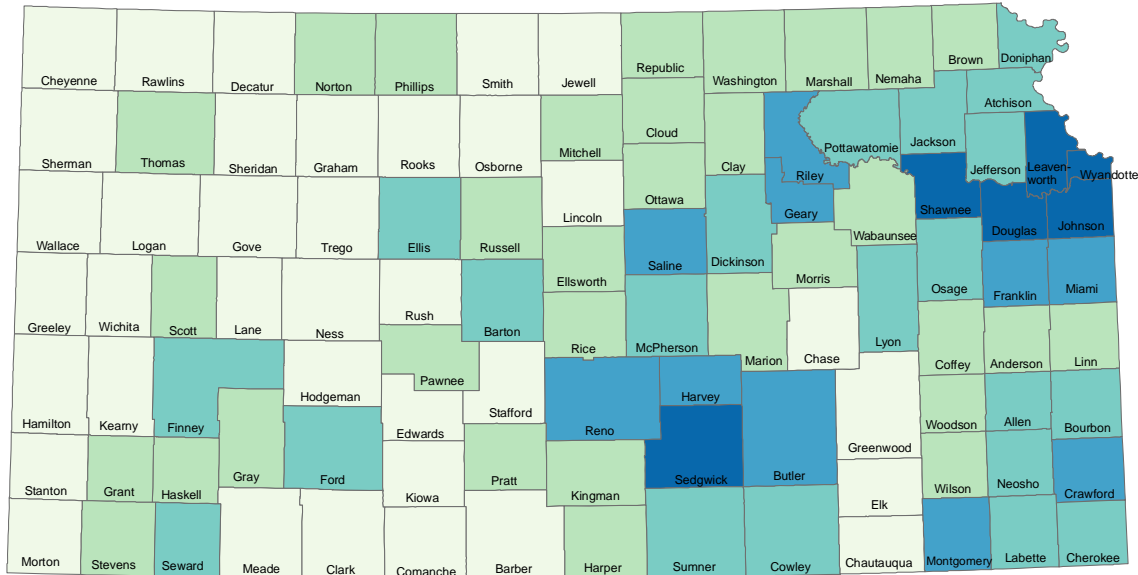
Legend

Population Density

- Frontier 0-5.9 PPSM
- Rural 6-19.9 PPSM
- Densely-Settled Rural 20-39.9 PPSM
- Semi-Urban 40-149.9 PPSM
- Urban 150+ PPSM

PPSM: Persons Per Square Mile

Created August 2012

Source: Kansas Department of Health and Environment, Bureau of Health Promotion Injury and Prevention & Disability

Disclaimer:

The purpose of this map is to show the population density of Kansas counties. This map is provided without representation or implied or expressed warranty of accuracy for any uses beyond those expressed. The originating agencies are not responsible for publication use of this product for purposes other than those expressed. This product may be corrected or updated as necessary without prior notification.

Table BR-1: Percentage of adults 18 years and older gender who reported they always wore a seat belt when they drive or ride in a car by age, gender, education status and population density, Kansas 2010

Selected Factor	Always Wore Seatbelt (%)	95% Confidence Interval
Overall	76.1	74.7-77.4
Sex		
Male	68.2	65.6-70.5
Female	83.7	82.2-85.1
Age Groups		
18-24	65.6	58.4-72.8
25-34	73.3	69.6-77.1
35-44	77.4	74.4-80.5
45-54	77.8	75.5-80.0
55-64	77.8	75.7-79.8
65+	80.7	79.2-82.2
Education		
Less than high school	69.5	63.5-75.6
High school graduate or G.E.D	72.2	69.5-75.0
Some College	74.1	71.4-76.9
College Graduate	81.4	79.5-83.2
Population Density		
Frontier	56.9	49.6-64.2
Rural	58.0	54.0-62.0
Densely-Settled Rural	67.8	63.6-71.9
Semi-Urban	79.5	76.5-82.5
Urban	83.2	81.5-84.9
Year		
1999	62.5	60.7-64.4
2002	66.7	65.1-68.3
2005	73.3	71.7-75.0
2006	68.8	67.4-70.2
2008	74.2	72.8-75.5
2010	76.1	74.7-77.4

Source: 2010 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment.

Table BR-2: Percentage of adults 18 years and older gender who reported drinking and driving in the past 30 days by age, gender and population density, Kansas 2010

Demographic	Drinking and Driving in Past 30 days (%)	95% Confidence Interval
Overall	2.2	1.6-2.8
Sex		
Male	3.7	2.6-4.8
Female	0.8	0.3-1.2
Age Groups		
18-24	6.1	2.1-10.1
25-34	2.1	0.9-3.2
35-44	3.2	2.0-4.5
45-54	1.8	0.9-2.7
55-64	1.3	0.7-1.9
65+	0.1	0.0-0.3
Population Density		
Frontier	.	.
Rural	1.9	0.1-3.7
Densely-Settled Rural	1.5	0.2-2.8
Semi-Urban	1.2	0.4-2.0
Urban	3.0	2.1-3.9
Year		
1999	6.1	4.7-7.5
2002	2.9	2.3-3.6
2004	1.6	1.2-2.0
2006	6.2	5.0-7.4
2008	4.0	3.2-4.9
2010	2.2	1.6-2.8

Source: 2010 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment.

Table ED1: Age Specific Motor Vehicle Crash (MVC) Emergency Department Visit (EDV) Rates by Persons Injured, Kansas 2007-2009

Age Group	Motor Vehicle Occupant			Motorcycle			All Other		
	# EDV	EDV Rate*	95% CI**	# EDV	EDV Rate*	95% CI**	#EDV	EDV Rate*	95% CI**
00-04	513	84.9	77.7- 92.6	.	.	.	111	18.4	15.1- 22.1
05-09	519	89.8	82.2- 97.8	12	.	.	178	30.8	26.4- 35.7
10-14	728	129.0	119.8-138.7	43	7.6	5.5- 10.3	187	33.1	28.6- 38.2
15-19	3,375	560.4	541.6-579.6	135	22.4	18.8- 26.5	491	81.5	74.5- 89.1
20-24	2,544	395.5	380.3-411.2	176	27.4	23.5- 31.7	478	74.3	67.8- 81.3
25-34	3,263	297.1	287.0-307.5	236	21.5	18.8- 24.4	583	53.1	48.9- 57.6
35-44	2,327	216.2	207.5-225.2	189	17.6	15.1- 20.3	453	42.1	38.3- 46.2
45-54	2,171	178.2	170.8-185.9	160	13.1	11.2- 15.3	420	34.5	31.3- 37.9
55-64	1,257	136.9	129.4-144.7	73	8.0	6.2- 10.0	215	23.4	20.4- 26.8
65-74	609	113.4	104.6-122.8	30	5.6	3.8- 8.0	107	19.9	16.3- 24.1
75+	539	96.7	88.7-105.2	11	.	.	133	23.9	20.0- 28.3

All other includes: Pedal cyclist, Pedestrian, Unknown, And Other. *MVC EDV Rate is per 100,000 population. **95% CI are calculated around rate.
Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Table HD1: Age Specific Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rates by Persons Injured
Kansas 2005-2009

	Motor Vehicle Occupant			Motorcycle			All Other		
Demographic	#HD	HD Rate*	95% CI**	#HD	HD Rate*	95% CI**	#HD	HD RATE*	95% CI**
00-04	94	9.5	7.7- 11.7	.	.	.	40	4.1	2.9- 5.5
05-09	119	12.6	10.4- 15.1	8	.	.	73	7.7	6.0- 9.7
10-14	182	19.3	16.6- 22.3	27	2.9	1.9- 4.2	59	6.3	4.8- 8.1
15-19	1,196	118.8	112.2-125.7	96	9.5	7.7- 11.6	145	14.4	12.2- 16.9
20-24	944	88.3	82.7- 94.1	187	17.5	15.1- 20.2	164	15.3	13.1- 17.9
25-34	1,122	61.7	58.2- 65.5	283	15.6	13.8- 17.5	193	10.6	9.2- 12.2
35-44	920	50.2	47.0- 53.5	285	15.5	13.8- 17.5	204	11.1	9.7- 12.8
45-54	916	45.3	42.5- 48.4	385	19.1	17.2- 21.1	213	10.5	9.2- 12.1
55-64	635	43.1	39.8- 46.6	199	13.5	11.7- 15.5	127	8.6	7.2- 10.3
65-74	509	57.9	53.0- 63.2	43	4.9	3.5- 6.6	90	10.2	8.2- 12.6
75+	681	73.2	67.8- 78.9	17	.	.	127	13.7	11.4- 16.2

All other includes: Pedal cyclist, pedestrian, unknown, other. *MVC HD Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Table MD1: Age Specific Motor Vehicle Crash (MVC) Death Rates by Persons Injured
Kansas 2006-2010

	Motor Vehicle Occupant			Motorcycle			All Other		
Demographic	#Deaths	Death Rate	95% CI**	#Deaths	Death Rate	95% CI**	#Deaths	Death Rate	95% CI**
00-04	26	2.6	1.7- 3.8	.	.		7	.	
05-09	14	.		.	.		.	.	
10-14	27	2.8	1.9- 4.1	.	.		11	.	
15-19	211	20.9	18.2- 23.9	12	.		16	.	
20-24	218	20.6	17.9- 23.5	35	3.3	2.3- 4.6	28	2.6	1.8- 3.8
25-34	231	12.6	11.0- 14.4	43	2.3	1.7- 3.2	40	2.2	1.6- 3.0
35-44	182	10.1	8.7- 11.7	49	2.7	2.0- 3.6	40	2.2	1.6- 3.0
45-54	191	9.4	8.1- 10.9	54	2.7	2.0- 3.5	45	2.2	1.6- 3.0
55-64	162	10.6	9.0- 12.3	36	2.3	1.6- 3.2	44	2.9	2.1- 3.9
65-74	122	13.6	11.3- 16.2	15	.		29	3.2	2.2- 4.6
75+	194	20.9	18.0- 24.0	.	.		43	4.6	3.3- 6.2

All other includes: Pedal cyclist, pedestrian, other and unspecified. *MVC Death Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Table HD2. Age-Adjusted Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rates by Year and Occupant Status, Kansas 2000-2009

Year	Occupant Status	HD	HD Rate	95% CI**
2000	Motorcycle	120	4.5	3.7- 5.4
	Motor Vehicle Occupant	1,434	52.4	49.7- 55.2
2001	Motorcycle	142	5.2	4.4- 6.2
	Motor Vehicle Occupant	1,399	50.9	48.3- 53.7
2002	Motorcycle	178	6.6	5.6- 7.6
	Motor Vehicle Occupant	1,575	57.2	54.4- 60.1
2003	Motorcycle	259	9.5	8.4- 10.8
	Motor Vehicle Occupant	1,907	69.0	65.9- 72.2
2004	Motorcycle	274	10.0	8.9- 11.3
	Motor Vehicle Occupant	1,701	61.1	58.2- 64.1
2005	Motorcycle	278	10.0	8.8- 11.2
	Motor Vehicle Occupant	1,561	55.7	53.0- 58.6
2006	Motorcycle	334	12.0	10.7- 13.3
	Motor Vehicle Occupant	1,488	53.4	50.7- 56.2
2007	Motorcycle	314	11.3	10.1- 12.7
	Motor Vehicle Occupant	1,675	59.9	57.0- 62.8
2008	Motorcycle	340	12.2	10.9- 13.6
	Motor Vehicle Occupant	1,347	47.7	45.2- 50.3
2009	Motorcycle	264	9.2	8.2- 10.5
	Motor Vehicle Occupant	1,247	43.9	41.5- 46.4

*MVC HD Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Table MD2. Age-Adjusted Motor Vehicle Crash (MVC) Death Rates by Year and Occupant Status
Kansas 2000-2010

Year	Occupant Status	#Deaths	Death Rate*	95% CI**
2000	Motorcycle	22	0.8	0.5- 1.2
	Motor Vehicle Occupant	380	13.9	12.5- 15.4
2001	Motorcycle	27	1.0	0.7- 1.5
	Motor Vehicle Occupant	416	15.1	13.7- 16.6
2002	Motorcycle	29	1.1	0.7- 1.5
	Motor Vehicle Occupant	430	15.4	14.0- 17.0
2003	Motorcycle	31	1.1	0.8- 1.6
	Motor Vehicle Occupant	377	13.5	12.2- 15.0
2004	Motorcycle	32	1.1	0.8- 1.6
	Motor Vehicle Occupant	382	13.7	12.3- 15.1
2005	Motorcycle	42	1.5	1.1- 2.0
	Motor Vehicle Occupant	345	12.4	11.1- 13.8
2006	Motorcycle	58	2.1	1.6- 2.7
	Motor Vehicle Occupant	341	12.0	10.8- 13.4
2007	Motorcycle	51	1.8	1.4- 2.4
	Motor Vehicle Occupant	317	11.3	10.0- 12.6
2008	Motorcycle	49	1.8	1.3- 2.4
	Motor Vehicle Occupant	286	10.1	8.9- 11.4
2009	Motorcycle	45	1.6	1.1- 2.1
	Motor Vehicle Occupant	285	10.0	8.9- 11.3
2010	Motorcycle	43	1.5	1.1- 2.0
	Motor Vehicle Occupant	349	12.0	10.8- 13.4

*MVC Death Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2000-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Table HD3. Age-Specific Motor Vehicle Crash (MVC) Hospital Discharge (HD) Rates among Motor Vehicle Occupants
Kansas 2000-2010

	Age Group (Years)									
	00-14		15-24		25-44		45-64		65+	
Year	HD Rate*	95% CI**	HD Rate*	95% CI**	HD Rate*	95% CI**	HD Rate*	95% CI**	HD Rate*	95% CI**
2000	20.7	17.2- 24.8	113.5	103.3-124.3	52.2	47.3- 57.6	40.5	35.5- 46.0	61.2	53.3- 69.9
2001	15.4	12.4- 18.9	114.6	104.5-125.5	54.4	49.3- 59.9	37.9	33.2- 43.2	56.5	48.9- 64.9
2002	23.0	19.2- 27.3	116.9	106.7-127.7	57.5	52.2- 63.2	47.5	42.2- 53.3	65.1	56.9- 74.0
2003	23.9	20.0- 28.2	144.7	133.4-156.7	73.2	67.2- 79.6	54.8	49.2- 60.9	77.5	68.6- 87.2
2004	22.5	18.8- 26.8	119.2	109.0-130.2	64.2	58.6- 70.2	56.8	51.1- 62.8	63.7	55.7- 72.6
2005	17.1	13.8- 20.9	111.7	101.8-122.3	54.9	49.7- 60.4	49.1	43.9- 54.7	73.7	65.0- 83.1
2006	15.0	12.0- 18.5	107.8	98.1-118.3	59.6	54.1- 65.4	43.1	38.3- 48.3	62.6	54.7- 71.4
2007	17.2	14.0- 20.9	114.9	104.8-125.8	63.8	58.1- 69.9	53.6	48.3- 59.3	73.0	64.5- 82.4
2008	10.3	7.9- 13.3	92.2	83.2-102.0	53.7	48.5- 59.3	39.7	35.2- 44.6	63.8	55.9- 72.5
2009	9.3	7.0- 12.2	89.9	81.1- 99.4	48.4	43.4- 53.7	37.7	33.4- 42.5	56.3	48.9- 64.5
2010	8.4	6.3- 11.1	83.8	75.1- 93.1	51.5	46.4- 57.0	40.8	36.3- 45.7	56.9	49.5- 65.1

*MVC HD Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2000-2010 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method.

*** Special Addition Section
In 2012, CDC changed the analysis methodology for analyzing State Injury Indicators. Also in 2012 the Kansas Department of Health and Environment modified the hospital discharge database to remove duplicate records. These changes in methodology and updated databases are only used in this Special Addition Section and were applied to all years (2000-2010) and are not used throughout the rest of the report. This may cause different rates and counts when comparing the Special Addition Section to the rest of this report. The CDC's new methodology includes two major changes. First, the inclusion of previously un-coded activity codes (E000-E030, beginning October 2009) and second, the inclusion of records with non-valid e-codes listed as the only e-codes.

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