Poisoning In Kansas

Injury Prevention and Disability Program

Kansas Department of Health and Environment
Health Promotion

Poisoning in Kansas

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Report Summary

Section 1: Overall Poisoning Summary

Intent: A majority of poisoning emergency department visits (63%) were unintentional. More than half of poisoning hospital discharges were of suicide intent (57%). Most poisoning deaths were unintentional (69%).

Sex: Females had higher age-adjusted rates of poisoning emergency department visits and hospital discharges. Males had higher age-adjusted rates of poisoning deaths.

Age: Unintentional poisoning emergency department visits were extremely high for children 4 years and younger. Overall poisonings affected age groups between 15 and 54 for both hospital discharges and emergency department visits. The poisoning death rate was highest in those between 45 and 54 years old.

Race and Ethnicity: Native Americans had a slightly higher poisoning death rate than whites, as did non-Hispanics compared to Hispanics. Asian / NHOPI (Non-Hawaiian and other Pacific Islander) had the highest rate of poisoning emergency department visits. African Americans had the highest rates of poisoning hospital discharges, as did non-Hispanics compared to Hispanics.

Trends: The age-adjusted unintentional poisonings hospital discharge rate increased by 125 percent from 2000 to 2009, the age-adjusted unintentional poisoning death rate increased by 139 percent from 2000 to 2009

Section 2: Drugs Section Summary

Drugs: Drug use is the defining message of this report, specifically the abuse/use of prescription drugs. Most poisonings were drug related across all three databases. Seventy-one percent of all poisoning emergency department visits (EDV), 93 percent of all poisoning hospital discharges, and 86 percent of poisoning deaths.

Trends: Drug use has been increasing in poisoning deaths and hospital discharges. The age-adjusted drug poisoning death rate increased by 120 percent from 2010 to 2000. The age-adjusted drug poisoning hospital discharge rate increased by 75 percent from 2000 to 2009.

Data Sources

Poisoning data are obtained from 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 calculate poisoning EDV, hospital discharges and death rates. Summary data on this page refer to year ranges mentioned below, unless otherwise noted.

Emergency Department Visits (EDV): 2007-2009; Hospital Discharges (HD): 2005-2009; Deaths: 2000-2010

Poisoning 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 of Strategies for Prevention of Poisoning Injuries in Kansas:

Prescription drug monitoring program	**K-TRACS-Kansas Tracking and Reporting of Controlled Substances** K-TRACS is a web-based application that allows prescribers and pharmacists to access their patients' prescription information. Additional information on K-TRACS is available at http://www.kansas.gov/pharmacy/KSPMP.htm.
Medication disposal program	The Kansas Medication Disposal Program offers Kansans a convenient, safe and environmentally responsible option for disposing of unwanted medications. Proper disposal reduces accumulation in the home and the subsequent risk of unintentional poisoning, drug abuse and diversion. http://www.kdheks.gov/waste/about_medwaste.html.
Prescription drug take back program	Beginning in 2010, the Drug Enforcement Administration has coordinated semi-annual National Take Back Days in partnership with state and local law enforcement agencies. The DEA arranges for local drop-off sites on that day where people can deliver unwanted, expired or unused prescription drugs for safe disposal and without any questions asked. The service is free and anonymous.
Poison Control Center	The University of Kansas Hospital's Poison Control Center is a 24 hour toll-free hotline available throughout the state, 1-800-222-1222. The hotline is staffed by critical care nurses, pharmacists and medical doctors nationally certified in poison management

Introduction

Poisonings is a very large group of injuries and is the most complex cause of injury. Poisonings can be due to unintentional means such as swallowing the wrong medication, or by intentional means, such as suicide by carbon monoxide. Poisonings can also cover many different types of substances such as gases, drugs, chemicals, animal bites, and alcohol. Poisoning injuries occur due to a myriad of substances that include: (1) drugs such as prescription drugs and illicit drugs; (2) non-drugs such as gases and alcohol; and (3) unspecified types of substances.

This report is divided into two sections: (1) overall poisonings; (2) drug poisonings. The overall section will look at the effect of all poisonings on Kansans. A section on drug poisonings will look at this particular subcategory.

We included a drug poisoning section because drug poisonings are the predominant group of poisonings in Kansas. Drug poisonings in recent years have become a national issue in which certain types of drugs are causing increases in hospital visits and deaths. The following is a story of how one Kansas woman struggles with an addiction that is becoming far too common in Kansas and the country.

The Underground Epidemic

Reprinted with permission from Lawrence Journal World article "Underground prescription drugs an 'epidemic'", by Shaun Hittle

On a daily basis, people in Lawrence engage in an underground economy of selling and buying prescription pain medications, said a Douglas County mother of two.

"Dispersed all over town," said the woman, who began abusing prescription pain medications like Oxycontin over the past couple of years. "It's a huge epidemic."

She did it all while raising two children and living a "regular life."

"You would have no idea," said the woman, who asked to remain anonymous. She said she nearly died after an overdose of pain medications in September. Sometimes to avoid the withdrawal effects, the woman would pay up to $100 for one pill.

The abuse of such prescription pain medications - opioids derived from the same source as heroin - is increasing across the state, according to data obtained from the Kansas State Board of Pharmacy.

Four of the top 10 medications prescribed since 2010 in Kansas were pain medications, such as Vicodin and Percocet. Physicians prescribed more than 44 million pills of hydrocodone, the generic name for Vicodin, last year alone. All four of those medications have seen increases since 2010.

Deaths from opioid overdoses have increased fourfold since 1999, with 97 such deaths recorded in Kansas by hospitals in 2011.

The over-prescribing of such medications is creating addiction problems for patients across the country, said Richard Chapman, director of

the University of Utah's Pain Medication Research Center.

"People are prescribing opioids like crazy," Chapman said. "It's all over the country."

Chapman said the rise in the past decade of prescriptions for pain medications started as a well-intentioned effort by doctors who saw the pain-relief benefits of such drugs on terminally ill cancer patients.

Doctors then began prescribing opioids for everything from arthritis to back pain.

A main issue with the increase in prescribing opioids for pain is a lack of controlled studies on their effects in non-cancer patients, Chapman said.

The increased use has caused a "host of complications we'd never imagine," including decreased energy, and ironically an increased sensitivity to pain, Chapman said.

Jeff Sigler, a Lawrence pharmacist, said that in addition to a willingness by physicians to prescribe opioid medications for pain, societal shifts in how Americans tolerate pain has played a role in an increased use of opioids. Instead of toughing it out, people go to the doctor.

"Our society is less tolerant to pain than we used to be," Sigler said.

And people are more sedentary, which can exacerbate back pain problems, one of the major ailments reported by those prescribed pain medications, Sigler said.

'It's a game'

Jan Campbell, an addictions psychiatrist at the Kansas University Medical Center, said common sense measures and guidelines for physicians can reduce opioid abuse. For instance, doctors who prescribe such medications need to thoroughly evaluate patients, requiring documentation of pain-related ailments and history. And doctors need to inform patients about the abuse potential of opioids and how to get help if they notice signs of addiction.

"It really took over" … She lost her job, her home and her car.

Several states, such as Florida, have enacted measures to prevent overprescribing, including requiring a blood test of patients so doctors can see whether a patient already has opioids in his or her system.

While those measures could cut down the number of people who "doctor shop" for opioids, it wouldn't prevent all forms of abuse.

The Douglas County woman who struggled with opioid addiction bought her opioids from a man whose mother was legitimately prescribed Oxycontin for terminal cancer. The man's mother would keep enough for her own supply and make thousands of dollars every month selling off hundreds of other pills.

When the woman's supplier was out of the medications, getting them from another source was no problem.

"It's a game," she said, detailing the network of local people actively engaged daily in selling and using prescription opioids.

Her abuse and addiction just kept ratcheting up, and she needed more and more of the drugs to hold back withdrawal effects.

"It really took over," she said.

She lost her job, her home and her car. As she approached rock bottom, she began scraping off — then shooting intravenously — the residue from a pain medication patch, which when worn slowly releases the drug into the body. When injected, the effects are quicker and more potent.

In September, she was rushed to a hospital after she stopped breathing while using opioids.

"I was dead," said the woman, who required resuscitation. She remembers little of her weeks-long hospital stay or the overdose. "My body was done."

Fear of losing custody of her two children provided enough incentive to get clean, said the woman, who hasn't used opioids in eight months.

She's slowly rebuilding the regular life she once had, hoping to put her time as an opioid addict behind here.

"It's not easy," she said.

-Shaun Hittle

Prevention

This article is a providing a glimpse of this complex issue. A coordinated public health effort is needed to address injuries related to prescription drug use and other poisonings. See page 5 of this report for state and national strategies used to address poisoning

Section 1: Overall Poisoning

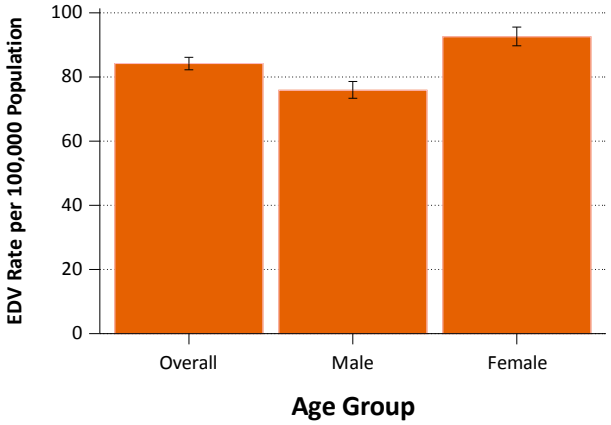
This first section of the report will focus on overall poisoning. The definition of poisoning used in this report is as follows:

> *A "poisoning" is an exposure to any extrinsic substance (solids, liquids, or gases and natural or synthetic chemicals) by ingestion, inhalation, injection, or absorption through the skin or mucous membranes that results in at least one related adverse clinical effect (sign, symptom, or laboratory abnormality).*

Because this definition is so broad the poisonings in this section will reflect the overall effect of poisonings on the entire population. This section will describe sociodemographic differences, intents and trends among the three types of records (Emergency Department Visits, Hospital Discharges, and Deaths).

Emergency Department Visits

Age-Adjusted Poisoning Emergency Department Visit (EDV) Rate by Gender, Kansas 2007-2009



Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population

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

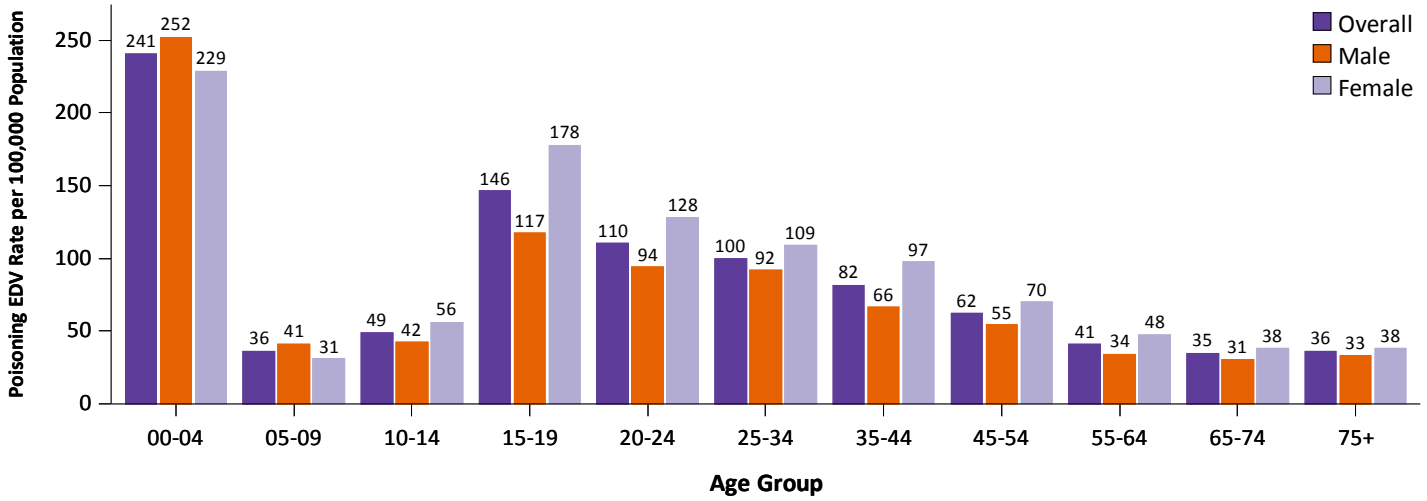
Age

From 2007 to 2009, EDV rates for poisonings were significantly higher among those four years old and younger as compared to older age groups. Among those 5 years and older persons between the ages of 15 and 19 years have the highest rates of poisoning EDV (146.4 poisoning EDV per 100,000 population).

Among all poisoning EDV, 45.7% (N=3,215) were males and 54.3%, (N=3,821) were females. Overall, females had a significantly higher age-adjusted poisoning EDV rate (92.5 EDV per 100,000 population, 95% CI: 89.6-95.6) as compared to males (75.8 EDV per 100,000 population, 95% CI: 73.2-78.5). Both males and females had peaks of poisoning EDV rates among those between 15 and 19 years old compared to all other age groups.

- Males 15-19: 117.2 EDV per 100,000 population, 95% CI: 105.5-129.8
- Females 15-19: 177.8 EDV per 100,000 population, 95% CI: 162.8-193.8

Age-Specific Poisoning Emergency Department Visit (EDV) Rate by Gender Kansas 2007-2009

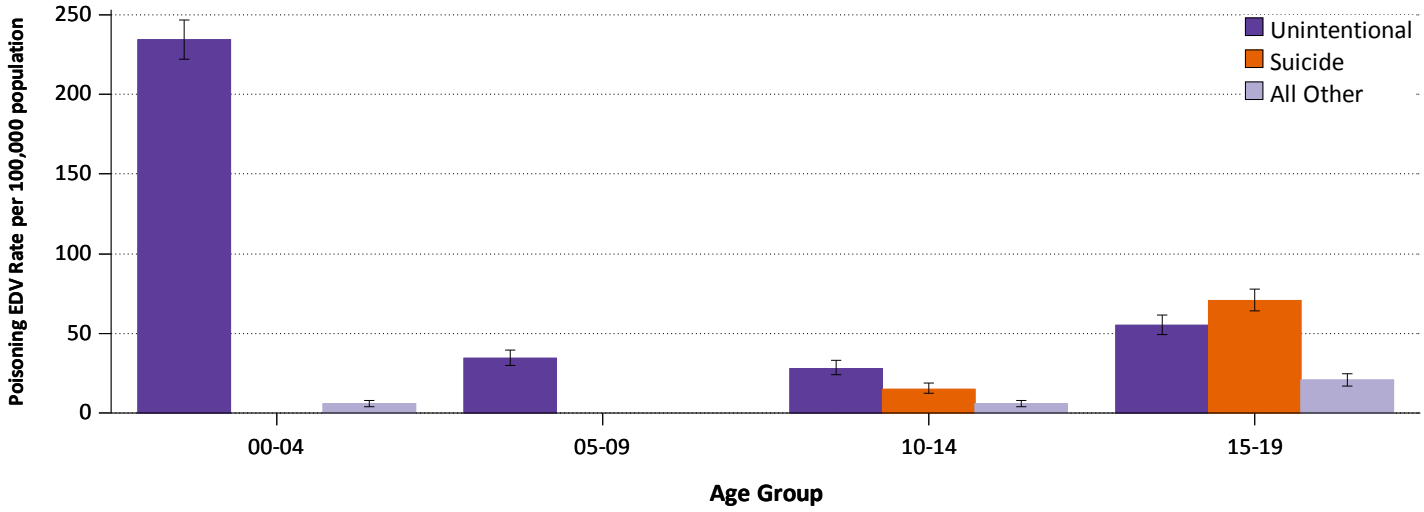


Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Intent

Age-specific poisoning EDV rates by intent show how dramatic the problem of unintentional poisoning is in children. The unintentional poisoning rate among those 4 years and younger is considerably higher than among other age groups. This phenomenon is looked at later in detail on page 10.

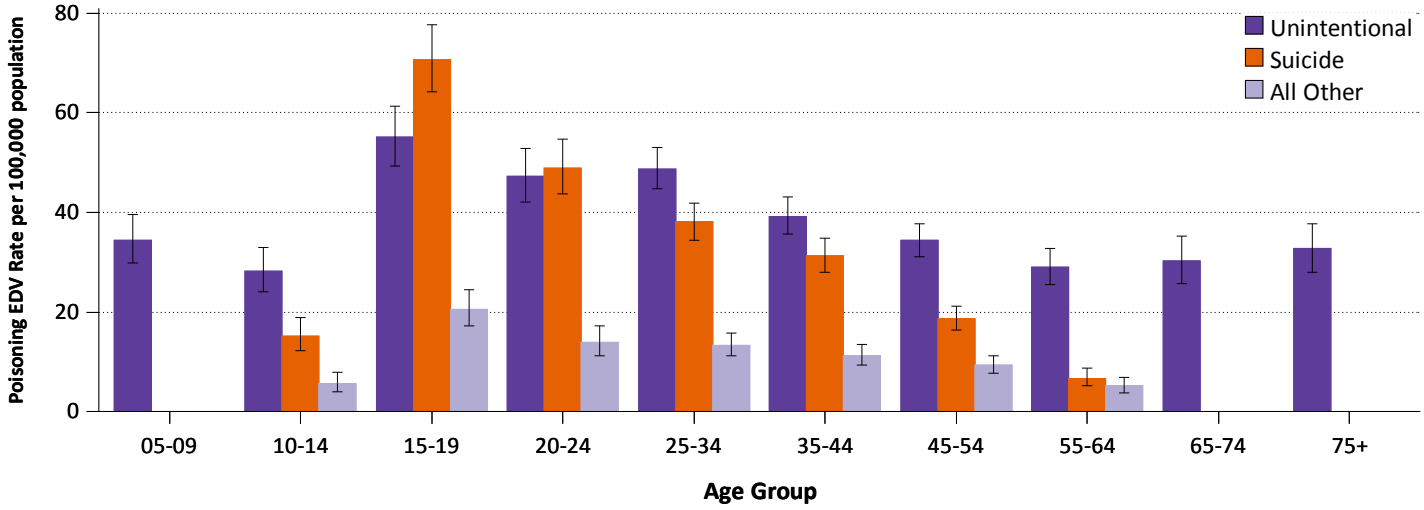
Age-Specific Poisoning Emergency Department Visit (EDV) Rate by Intent
Kansas 2007-2009



All Other Includes: Homicide, Other and Undetermined. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Among Kansans ages 5 years and older, the unintentional poisoning EDV rate peaks and is significantly higher among 15 to 19 year age group and decreases with increasing age. The suicide poisoning EDV rate peaks among the 15 to 19 year age group. “All Other” intent poisoning EDV rate also peaks among the 15 to 19 year age group. Counts and 95% confidence intervals for cause and age-specific poisoning EDV rates can be found in Appendix Table ED2.

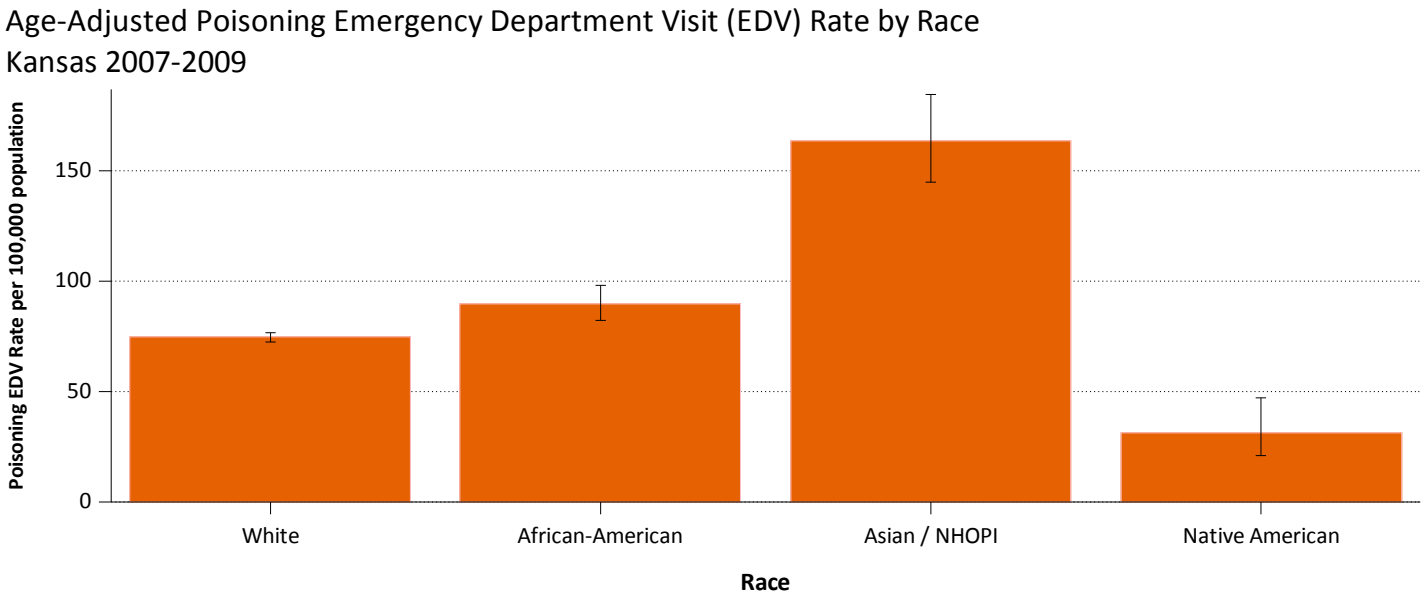
Age-Specific Poisoning Emergency Department Visit (EDV) Rate by Intent
Kansas 2007-2009



All Other Includes: Homicide, Other and Undetermined. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Race

From 2007 to 2009, Asian / Non-Hawaiian and other Pacific Islander (NHOPI) had the highest age adjusted rate of poisoning EDV per 100,000 population (163.7, 95% CI: 145.1-184.9) compared to White (74.7, 95% CI: 72.7-76.7), African-American (89.8, 95% CI: 82.2-98.1), and Native American (31.5, 95% CI: 21.1-47.3). African-Americans had a higher age-adjusted rate of poisoning EDV as compared to Whites. Counts and 95% confidence intervals can be Table ED1, end of section.



NHOPI: 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.

Special Focus

What is happening in those under 5?

From 2007 to 2009, 21 percent of all poisoning EDV, occurred among those four years and younger (N= 1,453 of 7,036). Younger children are at higher risk for all injuries due to their limited strength, small size, and lack of understanding of risk[i]. Nearly all of these poisonings were unintentional (97%, N=1,416). Nearly equal amounts of poisoning EDV occurred in males (53%, n=776) and females (47%, n=677), ages four years and younger. Among those four years and younger, the poisoning EDV rate was highest among one year olds (379.2, 95% CI: 345.6-415.2) and two year olds (425.1, 95% CI: 389.1-463.5) compared to children younger than one (111.0, 95% CI: 93.2-131.1), three year olds (189.5, 95% CI: 165.5-216.0), and four year olds (94.4, 95% CI: 77.6-113.6), poisoning EDV per 100,000 population. Counts, 95 percent confidence intervals, and percentages can be found in the Appendix Table ED1.

Most of these poisonings are occurring due to children unintentionally consuming drugs. From 2007 to 2009, 69 percent of poisonings among those four years and younger were drug related. Safe Kids recommends these prevention strategies:

- **Use child-resistant packages.** While a child-resistant package does not guarantee that a child cannot open the container, it may be a deterrent or it may slow the child down long enough for an adult to intervene.
- **Lock up poisons out of children's sight and reach.** A child's new ability to open drawers and cabinets and turn doorknobs gives him/her access to dangerous household items.
- **Keep products in their original containers.** Avoid confusing curious children.
- **Never refer to medicine or vitamins as "candy".** Referring to medicine as candy could cause a young child to think that it is harmless or pleasant to eat. Since children tend to imitate adults, avoid taking medications in front of them.
- **Install carbon monoxide alarms.** Carbon monoxide is an odorless and invisible gas that can kill or make children seriously ill in small doses that might not noticeably affect adults.

For more prevention strategies see:

http://www.safekids.org/safety-basics/safety-guide/medication-safety-guide/

Table ED1. Emergency Department Visits Section Review Table

Poisoning Emergency Department Visits (EDV) Rate by Selected Demographic groups, Intents, and Drug Types, Kansas 2007-2009

Demographic Groups	#EDV	EDV Rate*	95% CI**	% of Total Poisoning EDV
Overall	7,035	84.1	82.1- 86.1	100%
Gender				
Female	3,821	92.5	89.6- 95.6	54.3%
Male	3,214	75.8	73.2- 78.5	45.7%
Age Groups (Age Specific)				
00-04	1,453	240.5	228.3-253.2	20.7%
05-09	210	36.3	31.6- 41.6	3.0%
10-14	277	49.1	43.5- 55.2	3.9%
15-19	882	146.4	136.9-156.4	12.5%
20-24	709	110.2	102.3-118.7	10.1%
25-34	1,100	100.2	94.3-106.3	15.6%
35-44	880	81.8	76.5- 87.4	12.5%
45-54	759	62.3	58.0- 66.9	10.8%
55-64	376	41.0	36.9- 45.3	5.3%
65-74	187	34.8	30.0- 40.2	2.7%
75+	202	36.2	31.4- 41.6	2.9%
Race				
White	5,529	74.7	72.7- 76.7	78.6%
African-American	553	89.8	82.2- 98.1	7.9%
Asian / NHOPI	330	163.7	145.1-184.9	4.7%
Native American	32	31.5	21.1- 47.3	0.5%
Intent				
Suicide	1,894	23.1	22.1- 24.2	26.9%
Unintentional	4,395	52.0	50.4- 53.6	62.5%
All Other	746	9.0	8.4- 9.7	10.6%
Drug Type				
Drug	5,011	59.8	58.2- 61.5	71.2%

NHOPI: Non-Hawaiian and other Pacific Islander. All Other Includes: Homicide, Other, Undetermined *Poisoning EDV Rate is per 100,000 population. **95% CI are calculated around rate. All rates are age-adjusted unless noted otherwise. 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.

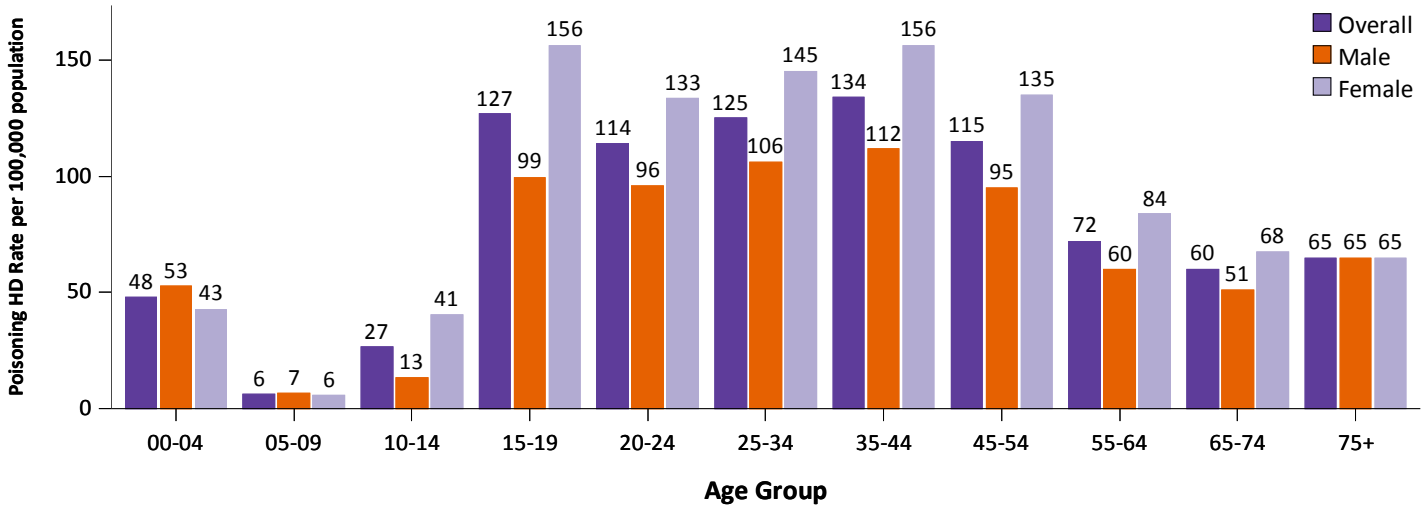
Hospital Discharge

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

Sex and Age

From 2005 to 2009, when looking at all poisonings the age groups between 15 and 54 years old have significantly a higher poisoning HD rate than other groups. In most groups males have a higher poisoning HD rate than females but the rates even out with older age groups.

Age-Specific Poisoning Hospital Discharge (HD) Rate by Gender
Kansas 2005-2009

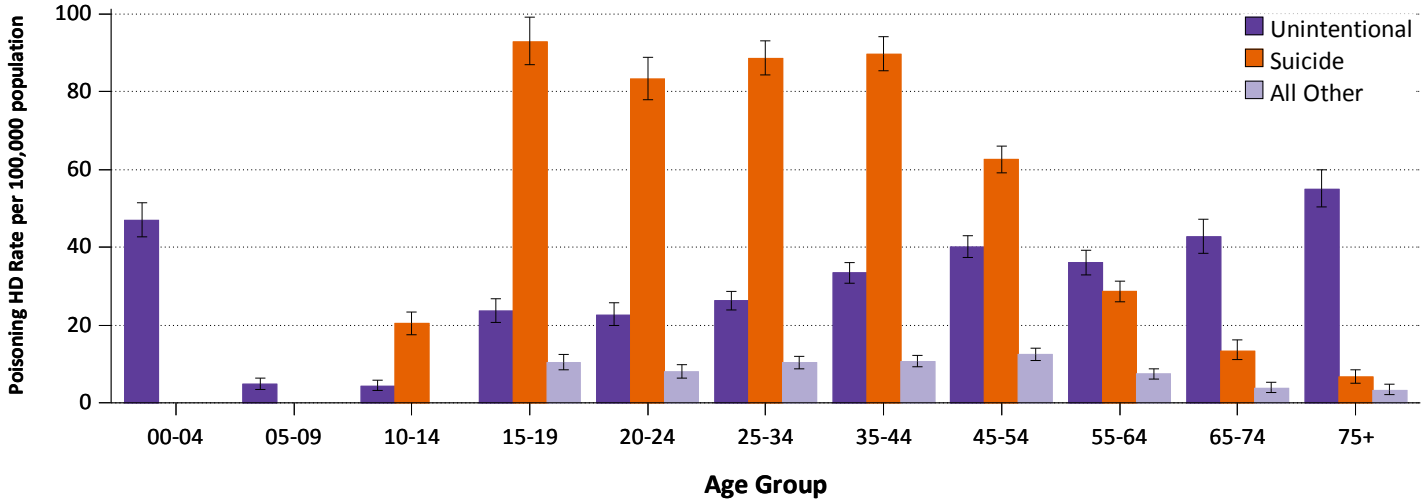


All Other: Homicide, Other, and Undetermined. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Intent and Age

Unintentional poisoning HD rates are higher among the very old (75 years and older) and very young (0-4 years old) Kansans. Age groups between 15 and 44 years have suicide poisoning HD rates that are statistically higher compared to younger and older age groups.

Age-Specific Poisoning Hospital Discharge (HD) Rate by Intent
Kansas 2005-2009

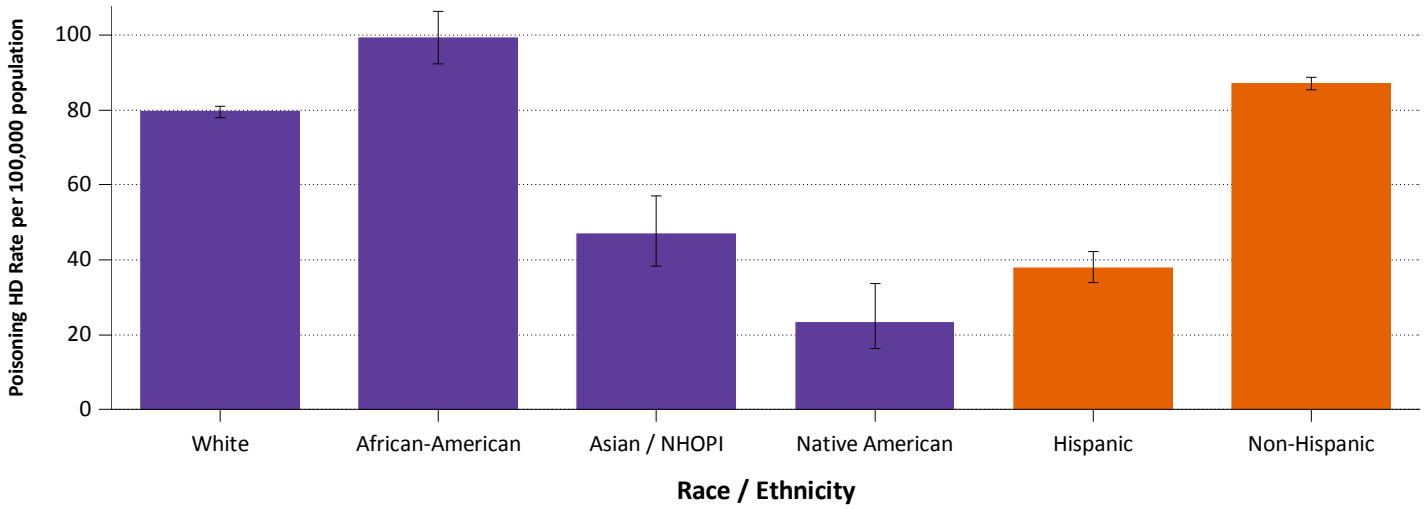


All Other: Homicide, Other, and Undetermined. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Race

From 2005 to 2009, the highest age-adjusted poisoning HD rates per 100,000 population were seen among African-Americans (99.1, 95% 92.4-106.4), as compared to Whites (79.5, 95% CI: 78.0-81.1), Asian / NHOPI (46.9, 95% CI: 38.4-57.2), and Native American (23.2, 95% CI: 16.2-33.7). Non-Hispanics had a poisoning HD rate per 100,000 population (87.1, 95% CI: 85.5-88.8) that was significantly higher as compared to Hispanics (37.9, 95% CI: 34.0-42.3).

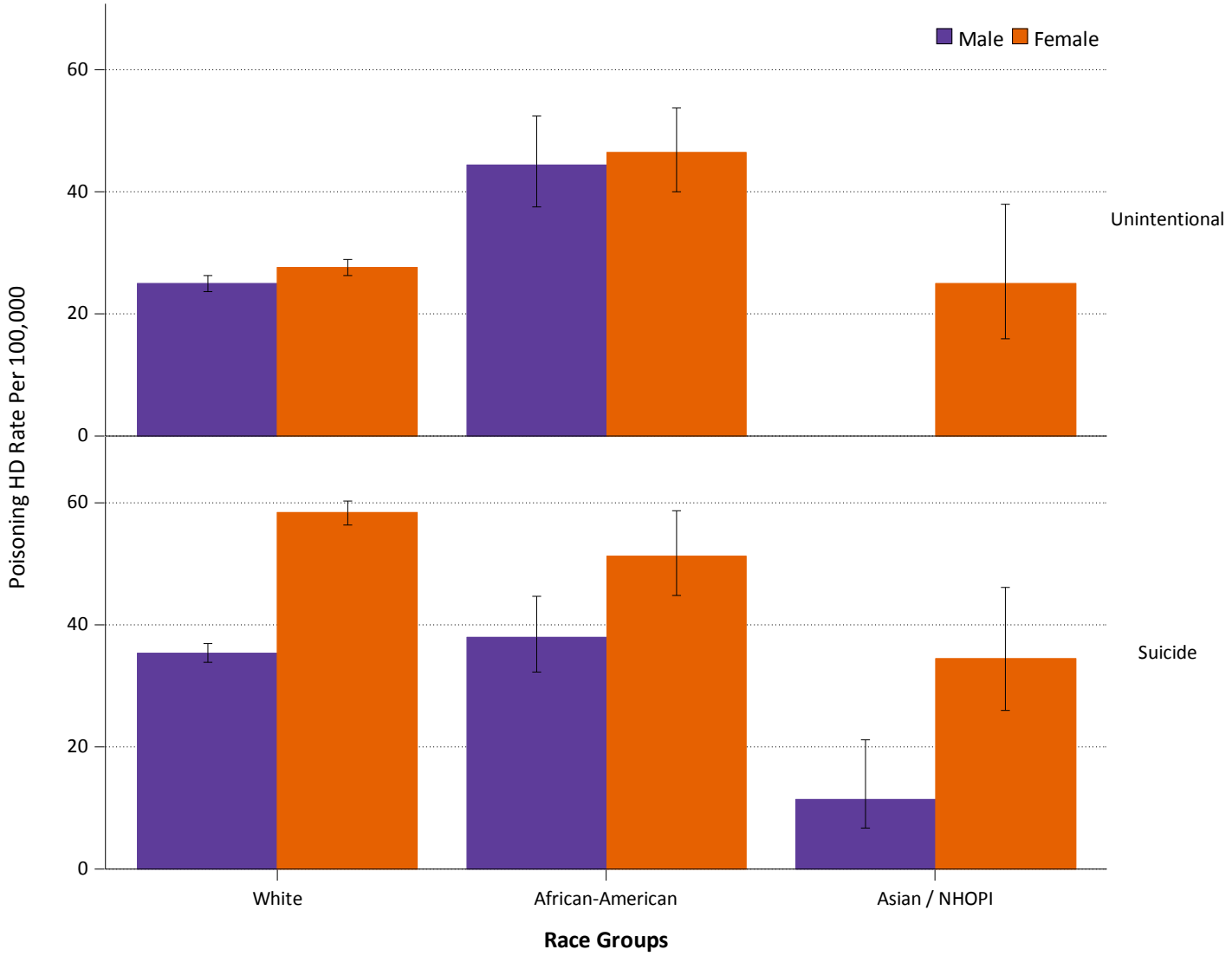
Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Race and Ethnicity
Kansas 2005-2009



NHOPI: 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.

African-American men and women have a lower suicide poisoning HD rates compared to whites but African-Americans have higher unintentional poisoning HD rates. The suicide poisoning HD rate among white women was the highest rate measured of all race-sex groups. Suicide poisoning HD rates was generally higher among females than males across all race groups. Asian / NHOPI men and women both have very low poisoning HD rates, both suicide and unintentional. Hospital Discharge rates and 95% CI can be found in Appendix Table HD6.

Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Gender and Intent
Kansas 2005-2009

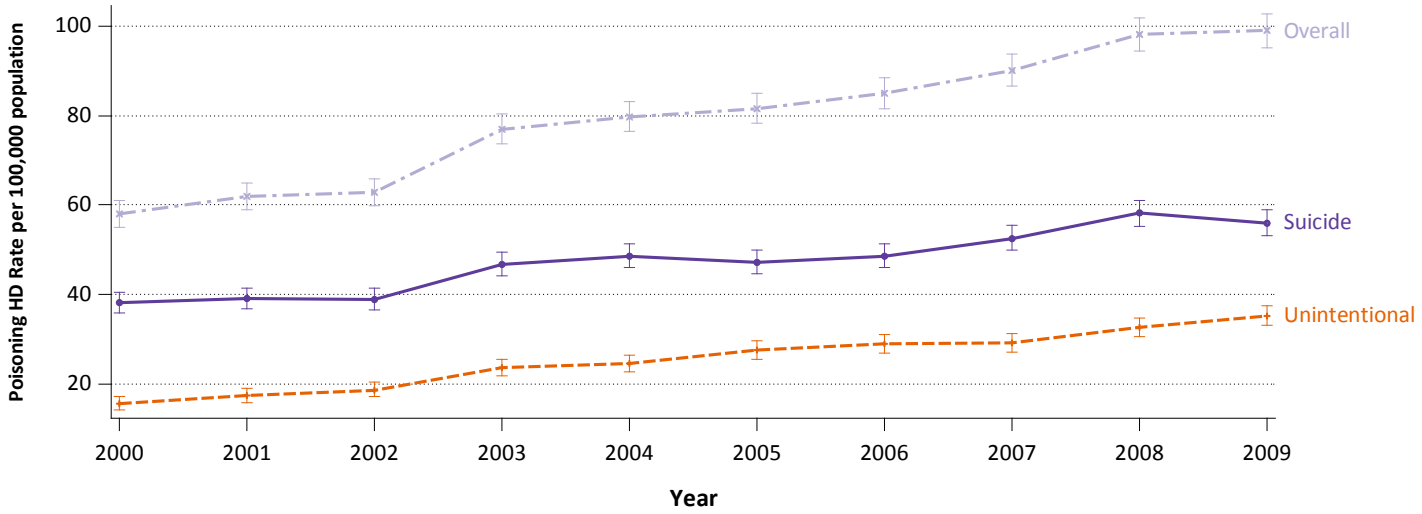


NHOPI: Non-Hawaiian and other Pacific Islander. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Intent Trends

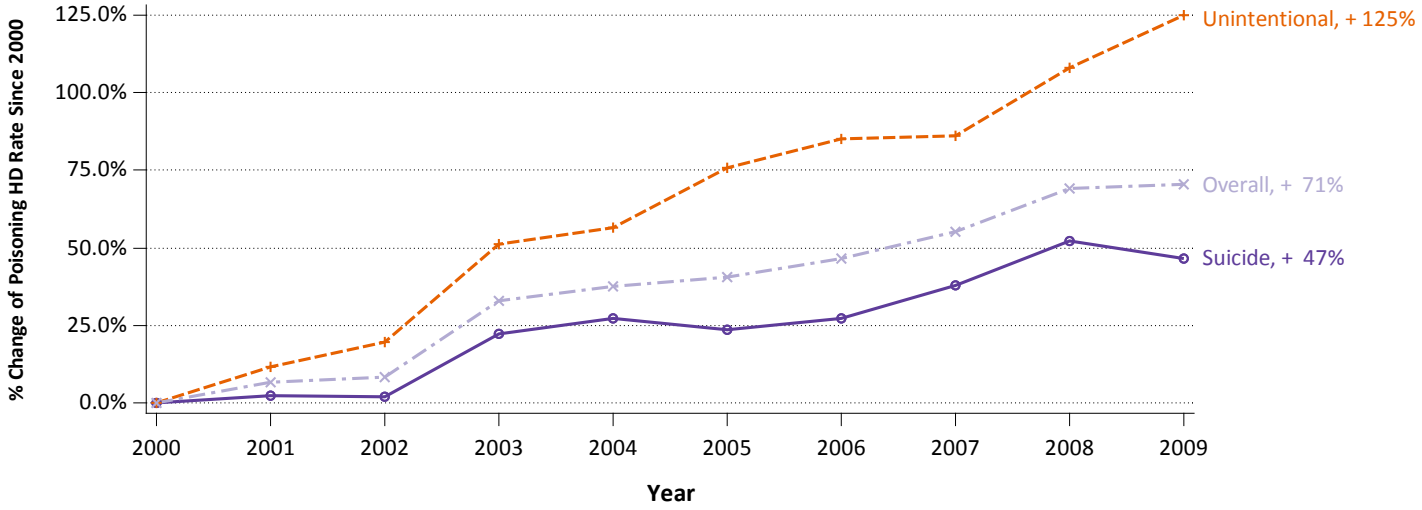
Unintentional poisonings have driven the poisoning HD rate upwards in the past decade. From 2000 to 2009 the age-adjusted unintentional drug poisonings HD rate per 100,000 population increased by 125 percent from 15.7 (95% CI: 14.2-17.3) in 2000 to 35.3 (95% CI: 33.2-37.6) in 2009. The age-adjusted suicide poisoning HD rate per 100,000 population also increased from 2000 to 2009 by 47 percent, from 38.2 (95% CI: 35.9-40.6) in 2000 to 56.0 (95% CI: 53.2-58.9) in 2009. Counts, rates, and 95 percent confidence intervals can be found in Appendix Table HD2.

Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Intent
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.

Percent Change of Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Intent
Kansas 2000-2009

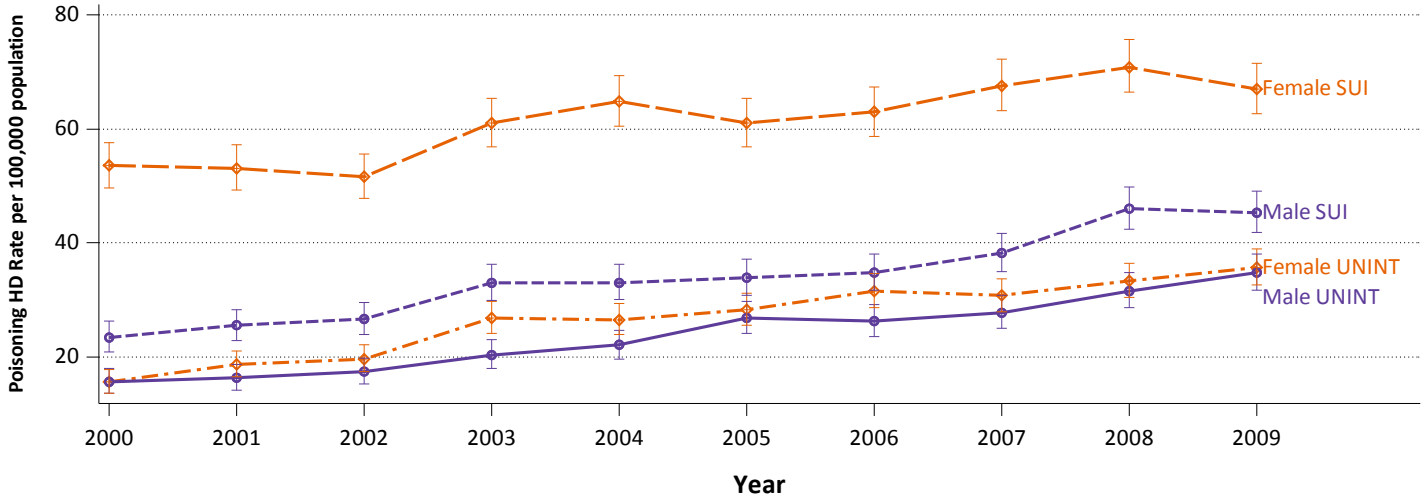


Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Intent and Gender Trends

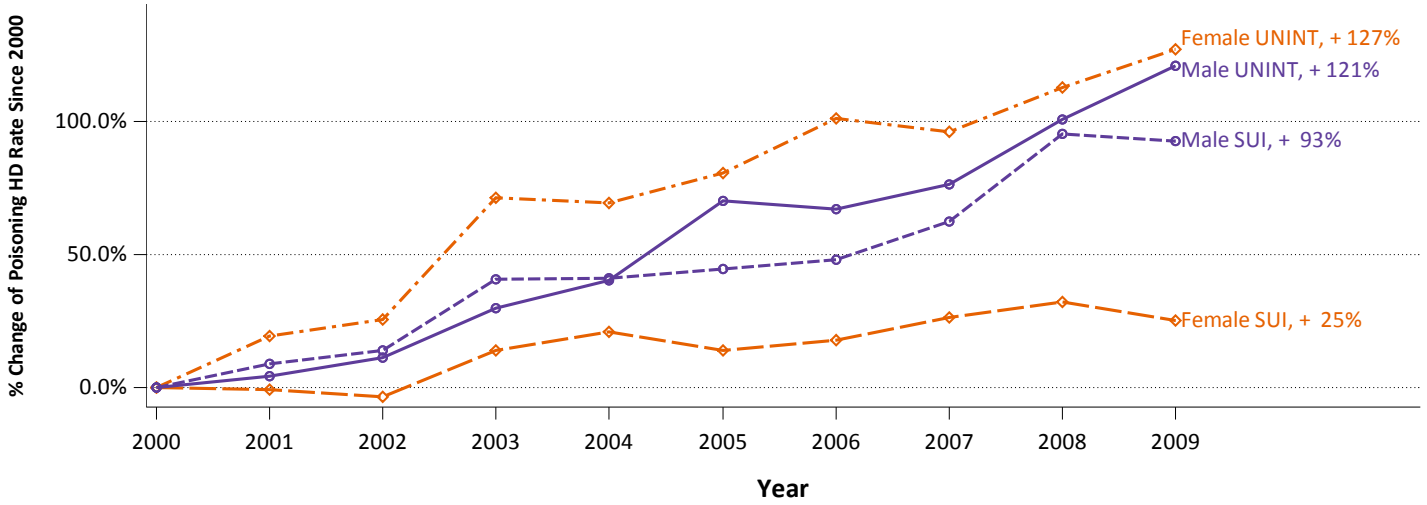
Changes in poisonings HD rates differed across genders. The male age-adjusted suicide poisoning HD rate increased much more than the female age-adjusted suicide poisoning HD rate from 2000 to 2009. Males had a 93 percent increase in age-adjusted suicide poisoning HD per 100,000 population from 23.5 (95% 21.0-26.2) in 2000 to 45.3 (95% 41.8-49.1) in 2009. During this same period females only had a 25 percent increase in age-adjusted suicide poisoning HD rate per 100,000 population from 53.5 (95% 49.7-57.6) in 2000 to 66.9 (95% 62.6-71.5) in 2009. During this same period the female and male age-adjusted unintentional poisoning HD rates changed at similar pattern, 127 percent vs. 121 percent, respectively. Counts and 95 percent confidence intervals can be found in Appendix Table HD3.

Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Gender and Intent
Kansas 2000-2009



UNINT: Unintentional SUI: Suicide. Poisoning HD Rate is per 100,000 population. 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.

Percent Change of Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Gender and Intent
Kansas 2000-2009

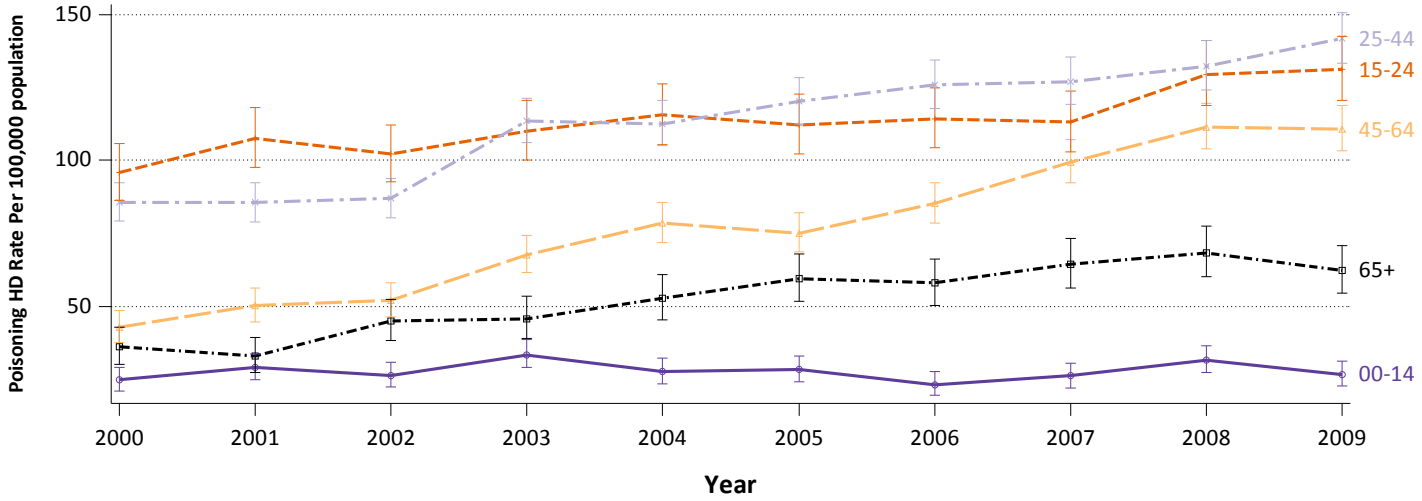


UNINT: Unintentional SUI: Suicide. Poisoning HD Rate is per 100,000 population. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Age Trends

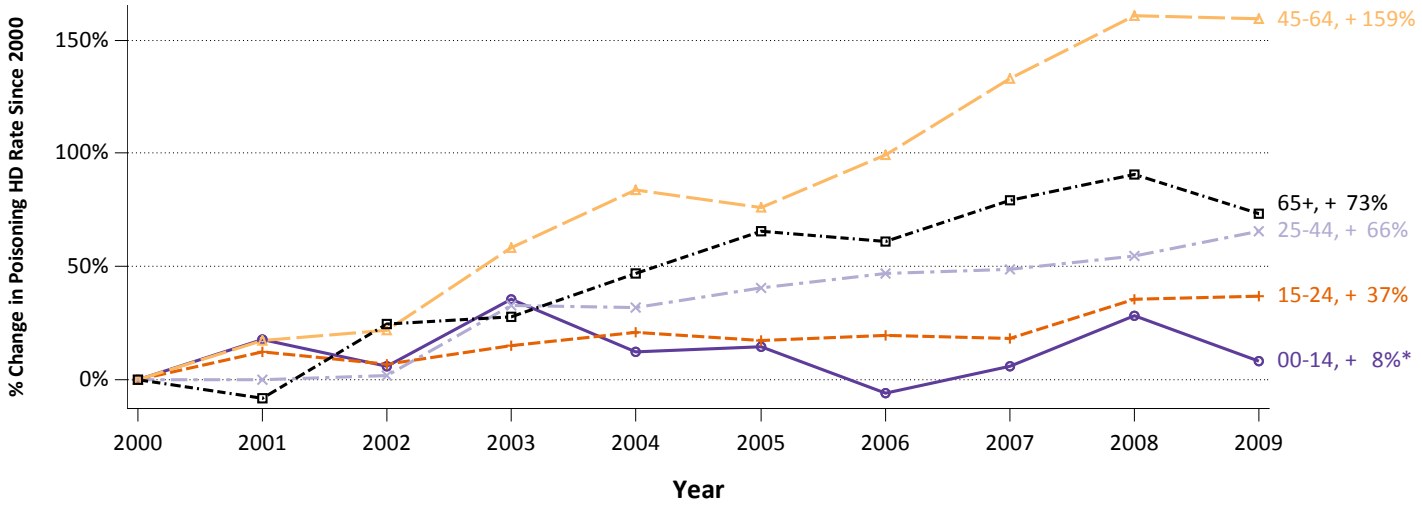
Trends for poisoning HD rates among age groups varied over time. The increase in the poisoning HD rate among those 45-64 years old was much higher from 2000 to 2009 compared to other age groups. Poisoning HD per 100,000 population increased by 159 percent for those 45-64 years old from 2000 (42.8, 95% CI: 37.6-48.4) to 2009 (110.9, 95% CI: 103.4-118.9). Other age groups showed moderate changes but nothing to this magnitude. Rates and 95 percent confidence intervals can be found in Appendix Table HD4.

Age-Specific Poisoning Hospital Discharge (HD) Rate
Kansas 2000-2009



Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Percent Change of Age-Specific Poisoning Hospital Discharge (HD) Rate
Kansas 2000-2009



*Non-Significant Increase. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Table HD1.Hospital Discharge Section Review Table

Poisoning Hospital Discharge (HD) Rate by Selected Demographic groups, Intent, and Drug Type
Kansas 2005-2009

Demographic Groups	#HD	HD Rate*	95% CI**	% of Total Poisoning HD
Overall	12,517	90.8	89.2- 92.4	100%
Sex				
Female	7,250	105.4	103.0-107.9	57.9%
Male	5,267	76.5	74.5- 78.7	42.1%
Age				
00-04	472	47.9	43.6- 52.4	3.8%
05-09	58	6.1	4.7- 7.9	0.5%
10-14	251	26.6	23.4- 30.1	2.0%
15-19	1,277	126.9	120.0-134.0	10.2%
20-24	1,218	113.9	107.6-120.5	9.7%
25-34	2,273	125.1	120.0-130.3	18.2%
35-44	2,453	133.8	128.6-139.2	19.6%
45-54	2,324	115.0	110.4-119.8	18.6%
55-64	1,060	71.9	67.7- 76.4	8.5%
65-74	527	60.0	55.0- 65.3	4.2%
75+	604	64.9	59.8- 70.3	4.8%
Race				
White	9,841	79.5	78.0- 81.1	78.6%
African-American	841	99.1	92.4-106.4	6.7%
Asian / NHOPI	138	46.9	38.4- 57.2	1.1%
Native American	38	23.2	16.2- 33.7	0.3%
Ethnicity				
Non-Hispanic	10,953	87.1	85.5- 88.8	87.5%
Hispanic	457	37.9	34.0- 42.3	3.7%
Intent				
Suicide	7,138	52.5	51.3- 53.8	57.0%
Unintentional	4,347	30.8	29.9- 31.7	34.7%
All Other	1,032	7.4	7.0- 7.9	8.2%
Drug Type				
Drug	11,587	84.0	82.5- 85.6	92.6%

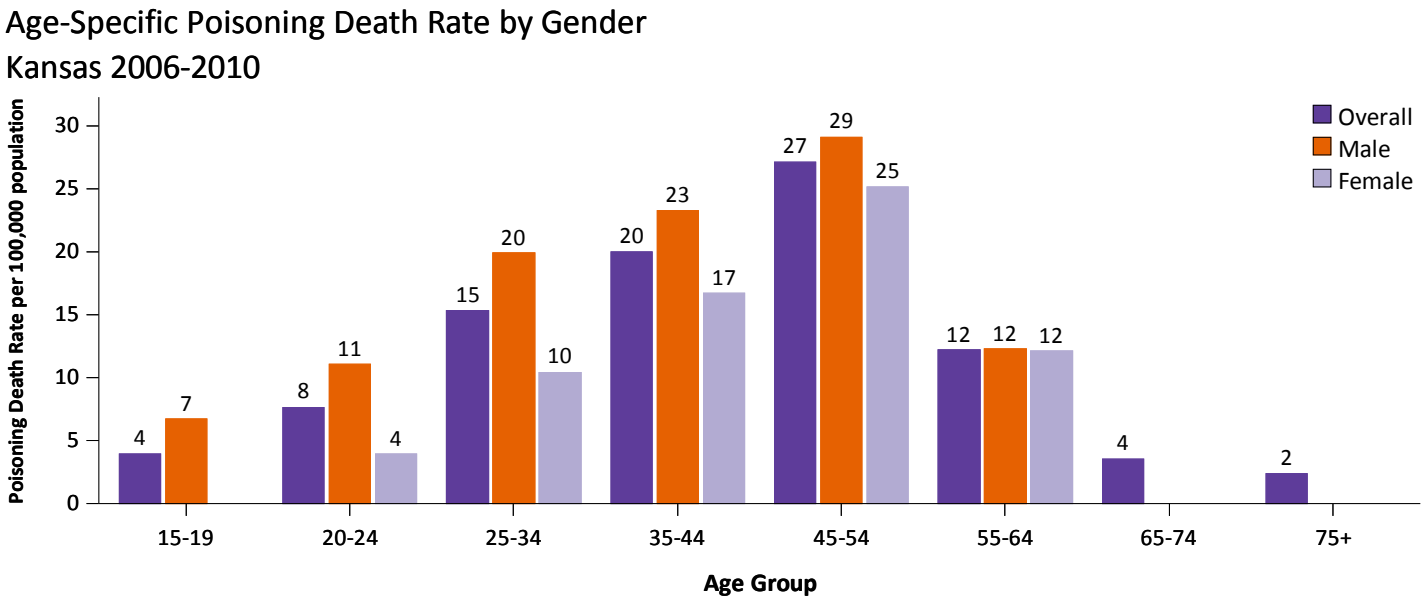
NHOPI: Non-Hawaiian and other Pacific Islander. All Other Includes: Homicide, Other, Undetermined *Poisoning HD Rate is per 100,000 population. **95% CI are calculated around rate. All rates are age-adjusted unless noted otherwise. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital 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

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

Age and Sex

The poisoning death rates start increasing with the 15-19 year old age group and sharply decline after the 45-54 year old age group. This same pattern is seen across males and females. The 45-54 year age group showed significantly higher rates of poisoning deaths compared to other age groups among the overall and female groups.

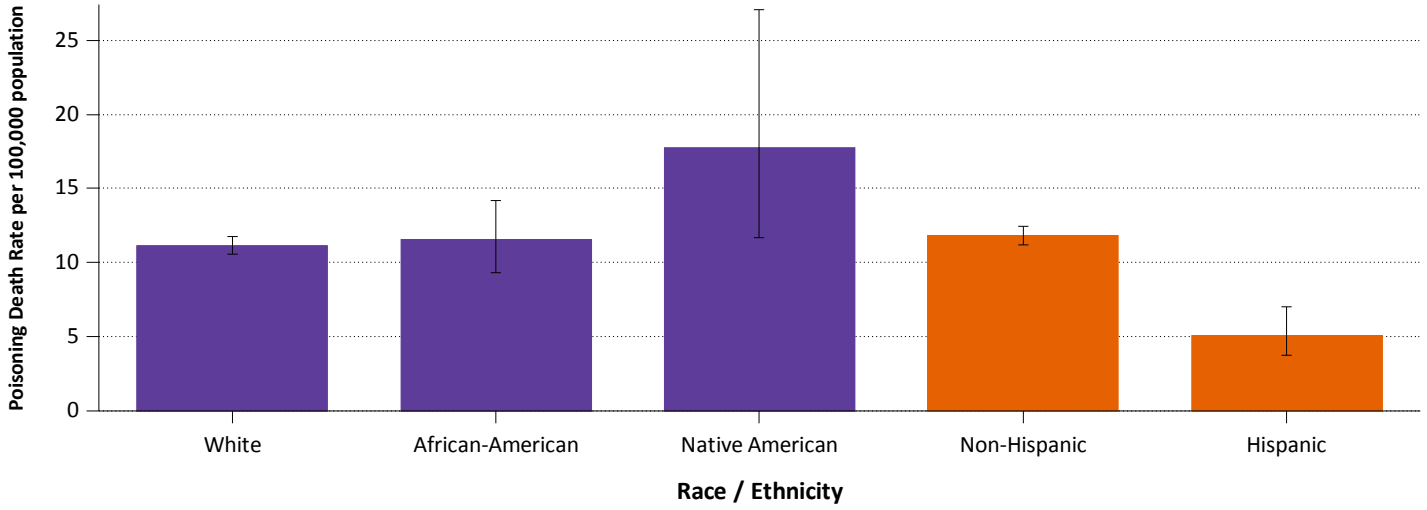


Note: Due to low count s not all rates for every age group was shown. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Race

The poisoning death rate per 100,000 population among Non-Hispanics (11.8 95% CI: 11.2-12.4) was 2.3 times higher than Hispanics (5.1, 95% CI: 3.7-7.0). There were no significant differences among race groups for poisoning death rates per 100,000 population: white (11.2, 95% CI: 10.6-11.8), African-American (11.5, 95% CI: 9.3-14.2), and Native American (17.7, 95% CI: 11.7-27.1).

Age-Adjusted Poisoning Death Rate by Race and Ethnicity
Kansas 2006-2010

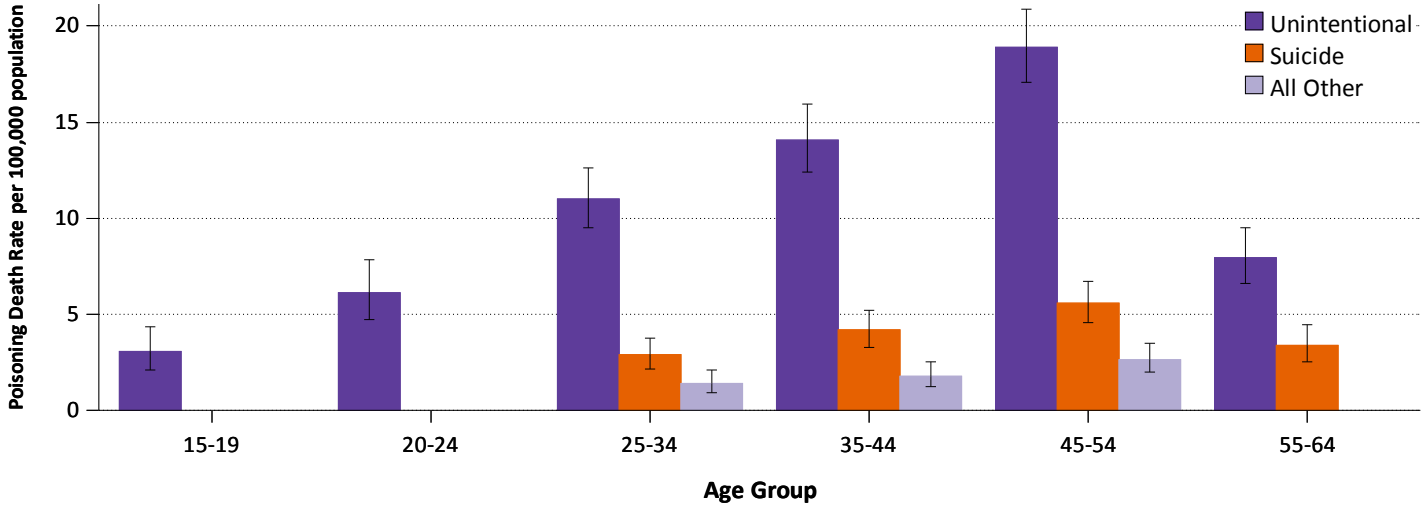


Note: Due to low counts Asians / NHOPI rate was not shown. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Intent

From 2006 to 2010, unintentional poisoning death rates increases with age until 54 years, then drops with increasing age. The suicide rate was highest in the 45-54 year old age group compared to other age groups.

Age-Specific Poisoning Death Rate by Intent
Kansas 2006-2010

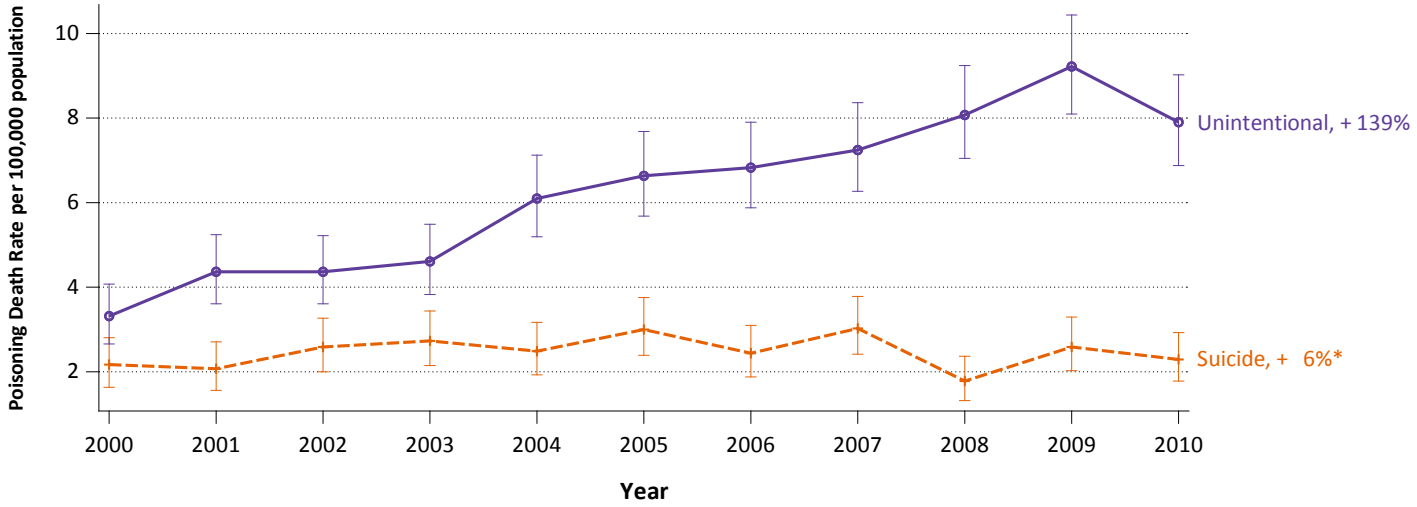


All Other: Homicide, Missing, Legal/War, and Undetermined. Source: Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Trends

From 2000 to 2010, the age-adjusted unintentional poisoning death rate per 100,000 population more than doubled from 2000 to 2010 from 3.3 (95% CI: 2.6-4.1) in 2000 to 7.9 (95% CI: 6.9-9.0) in 2010. The age-adjusted suicide poisoning death rate did not significantly increase or decrease from 2000 to 2010. Counts, rates, and 95 percent confidence intervals can be found in Appendix Table MD3.

Age-Adjusted Poisoning Death Rate by Intent
Kansas 2000-2010



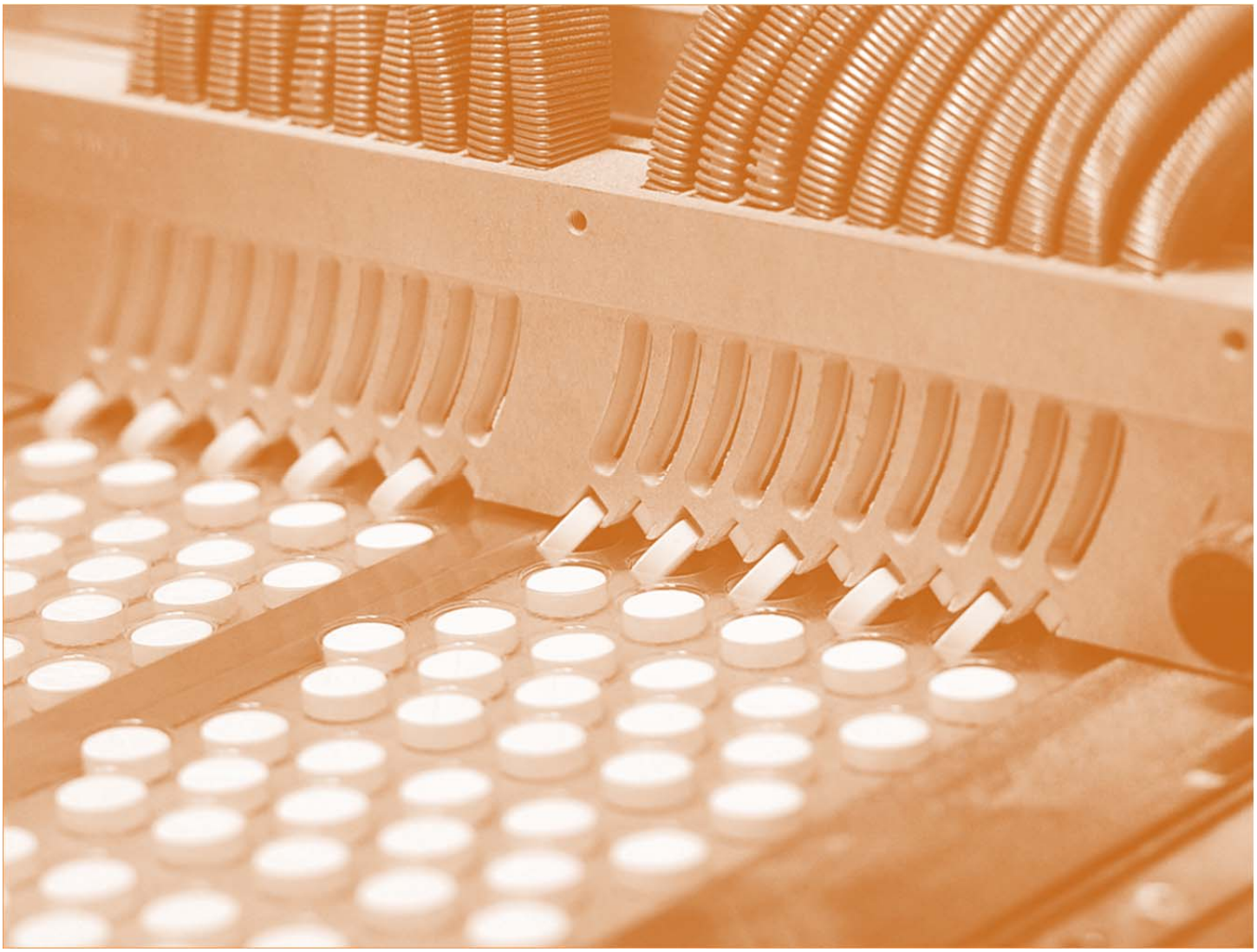
*Non-Significant Increase. Source: 2000-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 Standard population using the direct method. See Technical Appendix for details on how rates were calculated.

Table MD1. Deaths Section Review Table

Suicide Death Rate by Selected Demographics groups, Causes of Suicide, and Risk Factors
Kansas 2006-2010

Demographic	# Deaths	Rate	95% CI	Percent of Total
Overall	1,566	11.3	10.8- 11.9	100%
Gender				
Female	652	9.4	8.7- 10.1	41.6%
Male	914	13.2	12.4- 14.1	58.4%
Age Group				
00-04	8	.		0.5%
05-09	.	.		.
10-14	.	.		.
15-19	40	4.0	2.8- 5.4	2.6%
20-24	81	7.6	6.1- 9.5	5.2%
25-34	280	15.3	13.6- 17.2	17.9%
35-44	360	20.0	18.0- 22.2	23.0%
45-54	550	27.1	24.9- 29.5	35.1%
55-64	187	12.2	10.5- 14.1	11.9%
65-74	32	3.6	2.4- 5.0	2.0%
75+	22	2.4	1.5- 3.6	1.4%
Race				
White	1,387	11.2	10.6- 11.8	88.6%
African-American	98	11.5	9.3- 14.2	6.3%
Asian NHOPI	.	.		.
Native American	28	17.7	11.7- 27.1	1.8%
Ethnicity				
Non-Hispanic	1,496	11.8	11.2- 12.4	95.5%
Hispanic	57	5.1	3.7- 7.0	3.6%
Intent				
Unintentional	1,086	7.9	7.4- 8.4	69.3%
Suicide	337	2.4	2.2- 2.7	21.5%
All Other	143	1.0	0.9- 1.2	9.1%
Drug Type				
Drugs	1,342	9.7	9.2- 10.3	85.7%

NHOPI: Non-Hawaiian and other Pacific Islander. All Other: Homicide, Missing, Legal/War, and Undetermined. *Poisoning Death Rate is per 100,000 population. All rates are age-adjusted unless noted otherwise. **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.



Section 2: Drugs Poisonings

With the recent release of the Safe States Injury Surveillance Workgroup 7 Report (ISW7) we are able to describe poisonings across the country in a systematic way. The ISW7 describes a drug as...

> *A "drug" is any chemical compound that is chiefly used by or administered to humans or animals as an aid in the diagnosis, treatment, or prevention of disease or injury, for the relief of pain or suffering, to control or improve any physiologic or pathologic condition, or for the feeling it causes.*

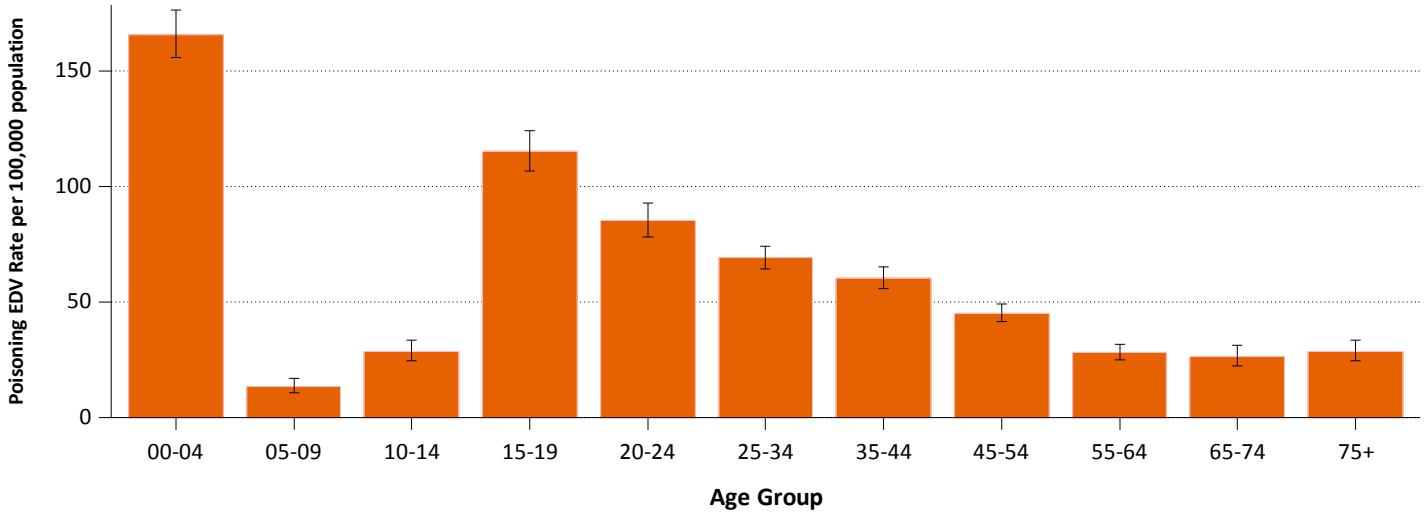
By using the matrix provided by the ISW7 we are finally able to describe poisoning by drug type. Trends, intent, and drug classifications are explored and analyzed on the following pages. For more information on how drugs are used and common types please see the drug table, Appendix page 47.

Emergency Room Visits

Drugs and Age

Most poisonings were drug related, 71.2 percent. The drug poisoning EDV rate was highest among those four years old and younger (166.1 per 100,000 population, 95% CI: 155.9 -176.7) the second highest rate was among those 15-19 years old (115.2 per 100,000 population, 95% CI: 106.8-124.1). The rates steadily declined as age increased after the 15-19 year old age group.

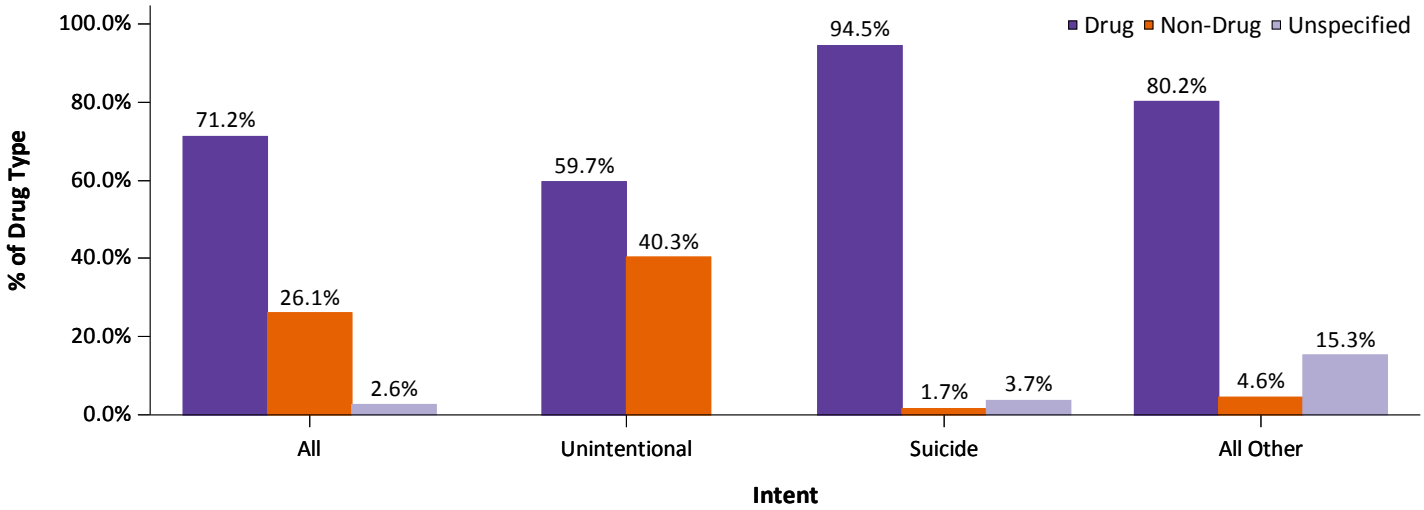
Age-Specific Drug Poisoning Emergency Department Visit (EDV) Rate
Kansas 2007-2009



Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Suicide poisoning EDV were more commonly drug-related as compared to unintentional and "All Other" intent. Overall, 71.2 percent of all poisoning EDV were drug related.

Drug Type of Poisoning Emergency Department Visit (EDV) by Intent
Kansas 2007-2009



All Other: Homicide, Other, and Undetermined. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Drug Type

Of the 71 percent of poisoning EDV that were drug poisonings most (87.5%) belong to two categories of drug types:

1) Antidepressants, barbiturates and other antiepileptics, sedative-hypnotics, and psychotropic drugs not elsewhere classified
2) Other specified and unspecified drugs

Roughly a quarter (26.1%) of all poisoning EDV were non-drug poisonings (26.1%). For a list and description of these drugs described in the table below please refer to the drug definitions on Appendix page 47.

Table ED4. Drug Type of Poisoning Emergency Department Visits (EDV), Kansas 2007-2009

Drug Type	#EDV	% of Total Poisoning EDV
Drug	**5,011**	**71.2**
Non-opioid analgesics, antipyretics, and antirheumatics	371	5.3
Opiates/Opioids	221	3.1
Cocaine	35	0.5
Antidepressants, barbiturates and other antiepileptics, sedative-hypnotics, and psychotropic drugs not elsewhere classified	1,822	25.9
Other specified and unspecified drugs	2,562	36.4
Non-Drug	**1,839**	**26.1**
Alcohol	83	1.2
Carbon monoxide	224	3.2
Petroleum products and other solvents and their vapors	63	0.9
Other specified and unspecified non-drugs	1,469	20.9
Unspecified Type of Poison	**185**	**2.6**

Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

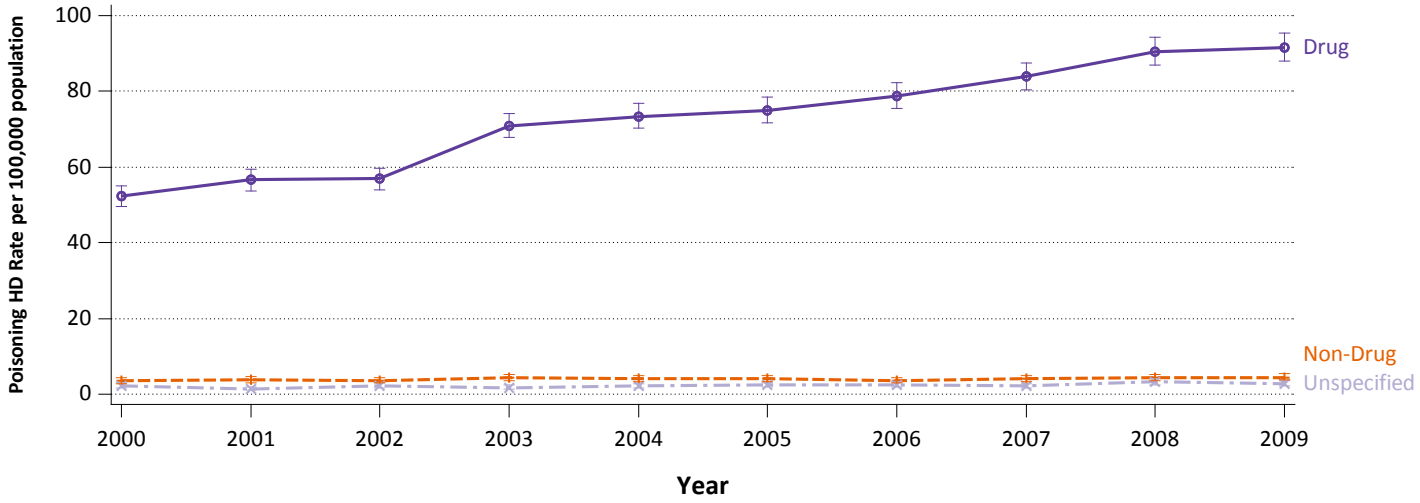
Hospital Discharges

Nearly all (93%) of all poisoning HD were for drug poisonings so this analysis focuses on trends and drug type.

Drug Trends

From 2000 to 2009, the drug poisoning HD has increased by 75% from 52.2 per 100,000 population in 2000 to 91.6 per 100,000 population in 2009. Non-Drug poisoning HD and Unspecified/Missing poisoning HD did not significantly decrease or increase. Rates and 95% confidence intervals can be found in Appendix Table HD5.

Age-Adjusted Poisoning Hospital Discharge (HD) Rate by Drug Type
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.

Drug Type

From 2005 to 2009, 93 percent of all poisonings HD were drug poisonings. The majority (81.5%) of drug poisonings were made up of drugs belonging to two groups:

1) Antidepressants, barbiturates and other antiepileptics, sedative-hypnotics, and psychotropic drugs not elsewhere classified
2) Other specified and unspecified drugs

Non-drug Poisonings only made up 5 percent of all poisoning HD. For a list and description of these drugs described in the table below please refer to the drug definitions on Appendix page 47.

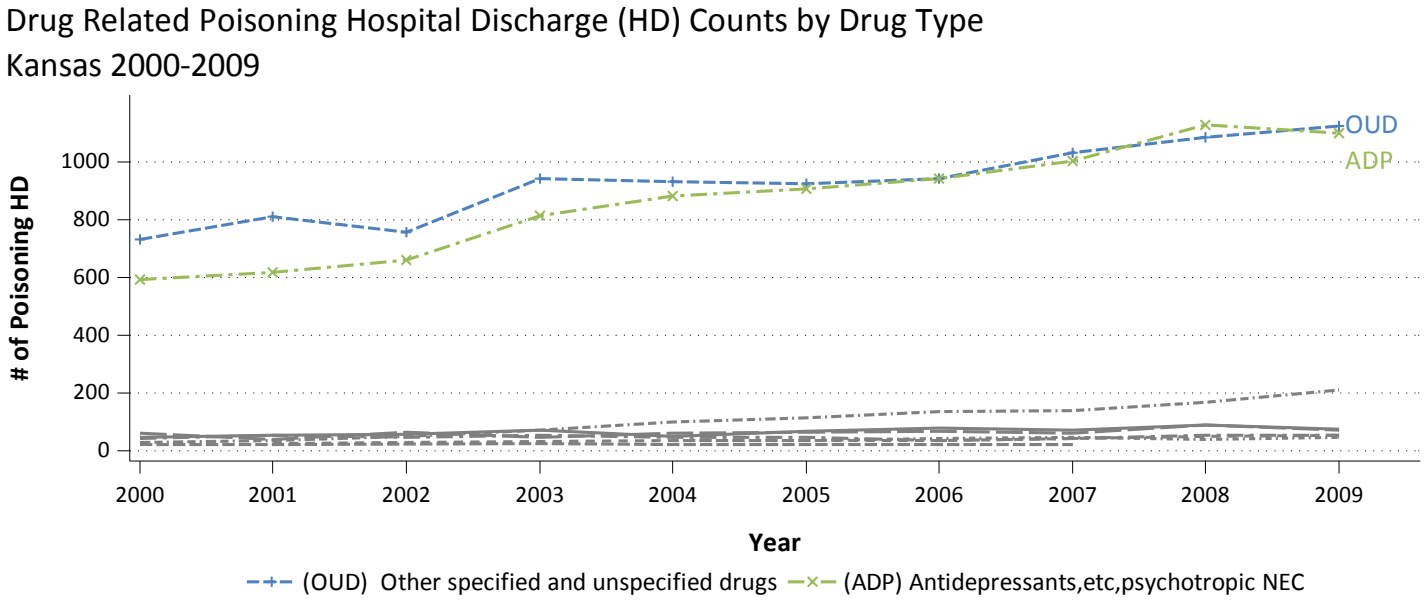
Table HD3: Drug Type of Poisoning Hospital Discharges (HD), Kansas 2005-2009

Drug Type	#HD	% of total Poisoning HD
Drug	**11,587**	**92.6%**
Non-opioid analgesics, Antipyretics, and Antirheumatics	397	3.2%
Opiates/opioids	768	6.1%
Cocaine	218	1.7%
Antidepressants, barbiturates and other antiepileptics, sedative-hypnotics, and psychotropic drugs not elsewhere classified	5,085	40.6%
Other specified and unspecified drugs	5,119	40.9%
Non-Drug	**573**	**4.6%**
Alcohol	216	1.7%
Carbon monoxide	95	0.8%
Petroleum products and other solvents and their vapors	28	0.2%
Other specified and unspecified non-drugs	234	1.9%
Unspecified Type of Poison	**357**	**2.9%**

Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Drug Type Trends

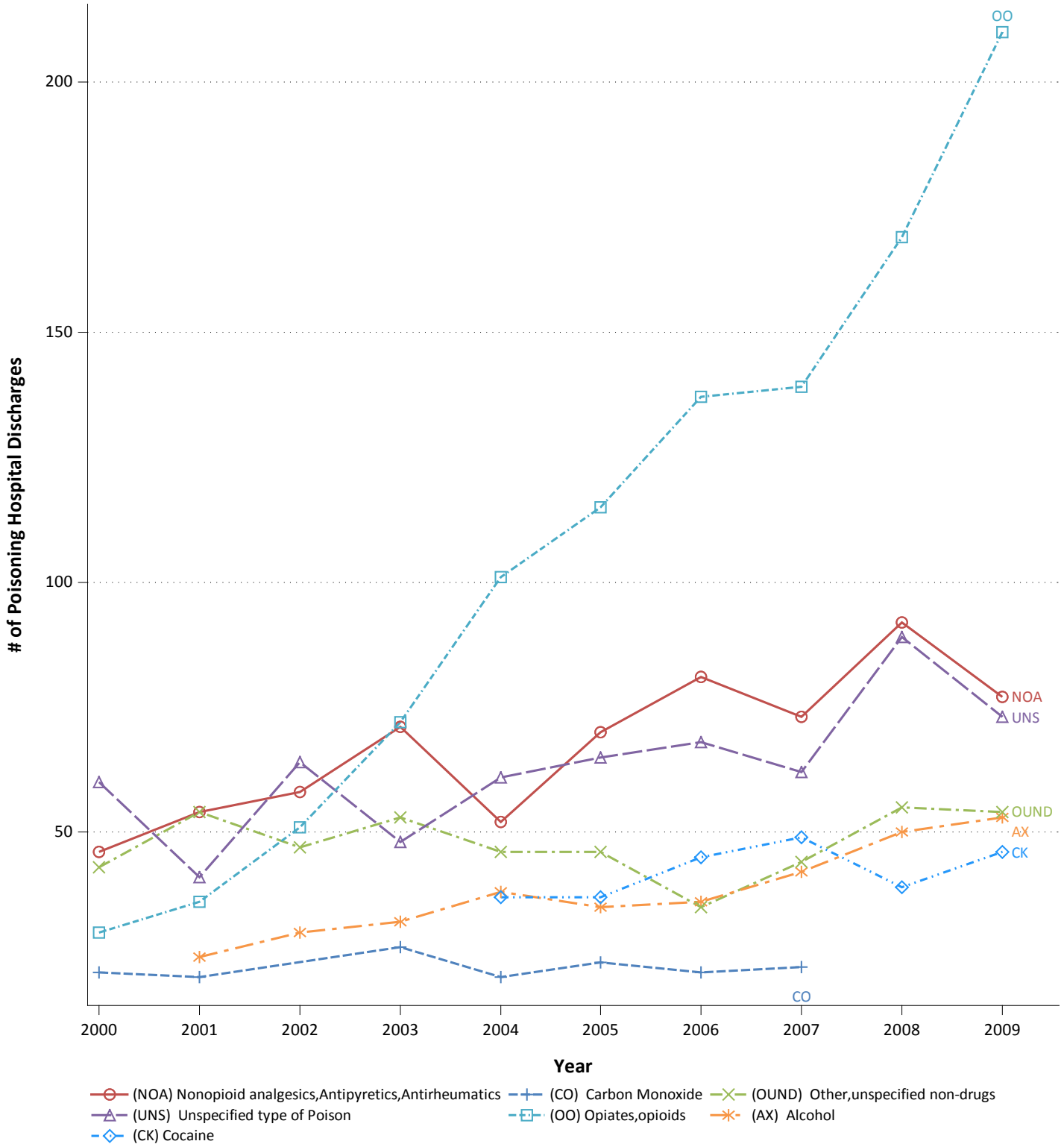
From 2000 to 2009, there was a rapid rise of poisoning related hospital discharges. Drugs in the categories of "other specified and unspecified drugs" (OUD) increased by 85 percent and "Antidepressants, barbiturates and other antiepileptics, sedative-hypnotics, and psychotropic drugs not elsewhere classified" (ADP) increased by 54%.



Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

In the figure above the grey lines at the bottom of the chart are the rest of the drug trends. When we focus closer on these trends, chart next page, we see that opiates/opioids also rose dramatically during this same time period. While most drugs showed moderate increases the number of opiates/opioids poisoning HD rose by 600 percent since 2000. This should make opiates/opioids a major focus of any poisoning prevention program. Counts are available in Appendix Table HD7.

Drug Related Poisoning Hospital Discharge (HD) Counts by Drug Type
Kansas 2000-2009

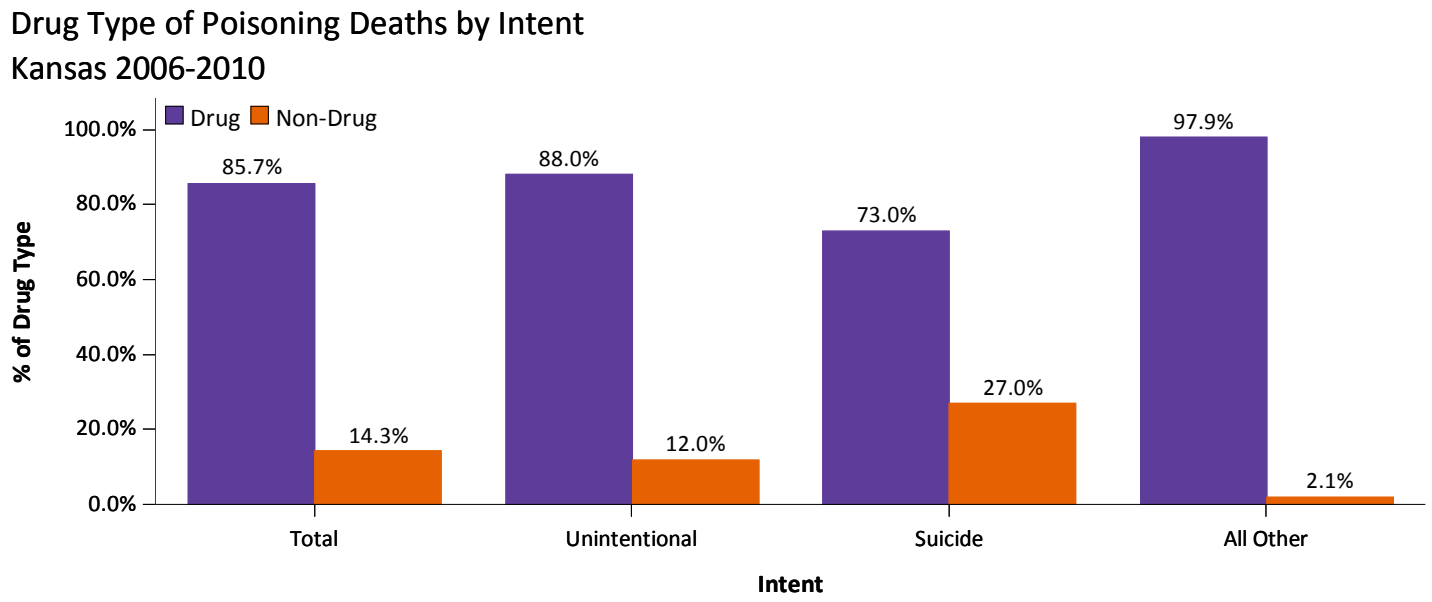


Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Deaths

Drugs by Intent

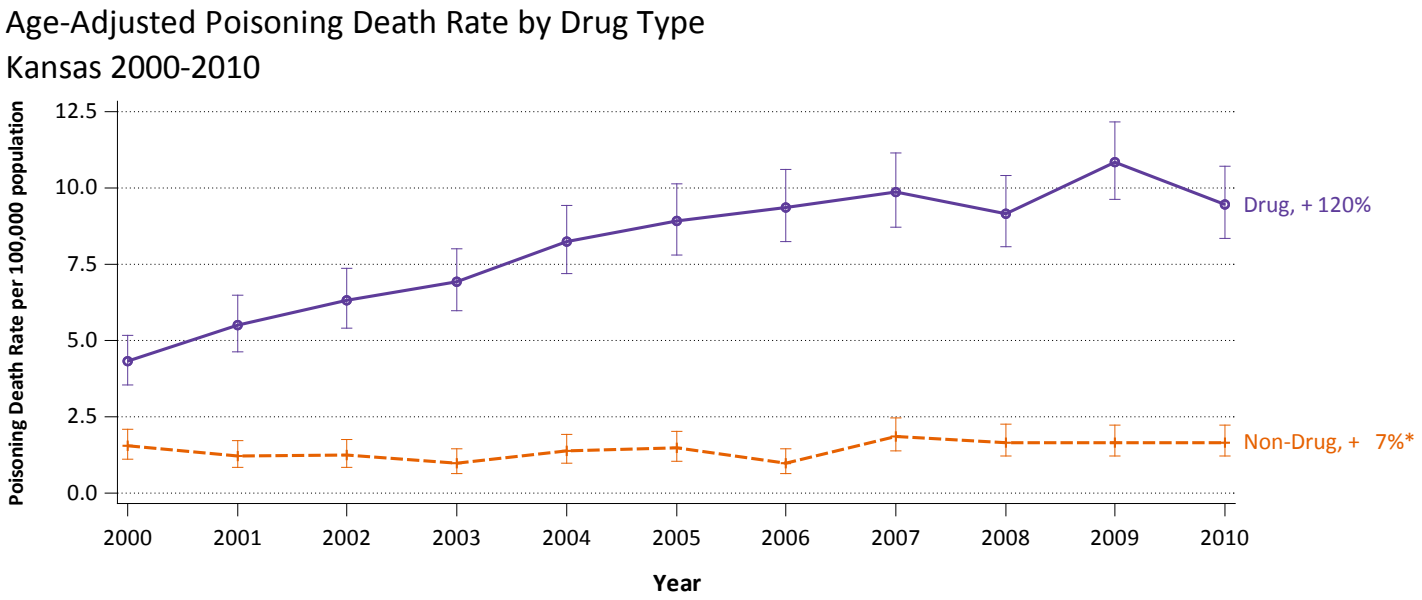
From 2006 to 2010, 86% of all poisoning deaths were drug poisoning deaths. Drugs were most common among “All Other” intent deaths (97.9%), “All Other” includes: homicide, missing, legal/war, and undetermined deaths. Drugs were least common among suicide deaths (73.0%).



All Other: Homicide, Missing, Legal/War, and Undetermined. Source: 2006-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Drug Trends

The age-adjusted drug poisoning death rate per 100,000 population more than doubled from 4.3 (95% CI: 3.6-5.2) in 2000 to 9.5 (95% CI: 8.3-10.7) in 2010. Non-drug poisoning death rates did not significantly change over that time period. Counts, rates and 95 percent confidence intervals can be found in Appendix Table MD2.



*Non-Significant Increase. 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.

Drug Type

From 2006-2010, nearly 80% of all drug poisonings deaths were due to two drug groups

1) Narcotics and psychodysleptics not elsewhere classified
2) Drugs not elsewhere classified

Only 14% of all poisoning deaths were due to non-drugs. For a list and description of these drugs described in the table below please refer to the drug definitions on Appendix page 47.

Table MD2. Drug Type of Poisoning Deaths, Kansas 2006-2010

Drug Type	#Deaths	% of total Poisoning Deaths
Drug	**1,342**	**85.7%**
Non-opioid analgesics	17	1.1%
Antiepileptic, sedative-hypnotic, ant-Parkinsonism, antidepressant, and other psychotropic drugs, not elsewhere classified	111	7.1%
Narcotics and pschodysleptics not elsewhere classified*	482	30.8%
Drugs not elsewhere classified or unspecified	732	46.7%
Non-Drug	**224**	**14.3%**
Alcohol	94	6.0%
Organic solvents, and halogen derivatives of aliphatic and aromatic hydrocarbons	12	0.8%
Other gases and vapors (including carbon monoxide)	107	6.8%
Other non-drugs not elsewhere classified or unspecified	11	0.7%

*Opiates/Opiods are a part of this group.
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.

Technical Appendix

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[ii] . 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 is coded using the ICD-10 injury matrix provided by the CDC[iii]. This is similar to the method described in *Instructions for Preparing 2005 Data* but uses a different coding scheme.

Poisoning 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

Poisoning Drug Type Methodology

Poisoning drug type was defined using the Injury Surveillance Workgroup Recommendations for National and State Poisoning Surveillance (ISW7)[iv]. At the time of this report there is no uniform procedure for how to select for poisonings. This report defines poisoning by the Safe States Injury Indicators definition of poisoning.

For HD and EDV it uses the first valid e-code as the criteria. This first valid e-code is then scanned using the ISW7 matrix for ICD9-CM codes. Underlying cause of death is scanned with the ISW7 matrix for ICD-10 codes. Secondary fields are not included for any analysis. By only using primary e-code, in EDV and HD, limits the ISW7 matrix to only poisonings with e-codes and excludes adverse drug effects.

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[v].

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.

Appendix

Appendix Table ED1: Age-Specific Rates of Poisoning Emergency Department Visits for Children 4 years and younger, Kansas 2007-2009

Age	# EDV	EDV Rate*	95% CI**	% of Total Poisoning EDV 0-4
<1	138	111.0	93.2-131.1	9.5%
1	467	379.2	345.6-415.2	32.1%
2	513	425.1	389.1-463.5	35.3%
3	224	189.5	165.5-216.0	15.4%
4	111	94.4	77.6-113.6	7.6%
0-4	**1,453**	**240.5**	**228.3-253.2**	**100%**

*Poisoning EDV Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Appendix Table ED2: Age and Intent Specific Poisoning Emergency Department Visit (EDV) Rate Kansas 2007-2009

	Suicide			Unintentional			All Other		
Age Group	#EDV	Rate*	95% CI**	#EDV	Rate*	95% CI**	#EDV	Rate*	95% CI**
00-04	.	.		1,416	234.4	222.4-247.0	35	5.8	4.0-8.1
05-09	.	.		199	34.4	29.8-39.6	10	.	
10-14	86	15.2	12.2-18.8	159	28.2	24.0-32.9	32	5.7	3.9-8.0
15-19	426	70.7	64.2-77.8	332	55.1	49.4-61.4	124	20.6	17.1-24.5
20-24	315	49.0	43.7-54.7	304	47.3	42.1-52.9	90	14.0	11.3-17.2
25-34	418	38.1	34.5-41.9	535	48.7	44.7-53.0	147	13.4	11.3-15.7
35-44	337	31.3	28.1-34.8	422	39.2	35.6-43.1	121	11.2	9.3-13.4
45-54	227	18.6	16.3-21.2	418	34.3	31.1-37.8	115	9.4	7.8-11.3
55-64	62	6.8	5.2-8.7	266	29.0	25.6-32.7	48	5.2	3.9-6.9
65-74	11	.		162	30.2	25.7-35.2	14	.	
75+	9	.		182	32.6	28.1-37.8	11	.	

*Poisoning EDV Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2007-2009 Kansas Emergency Department Database, Kansas Hospital Association.

Appendix Table HD1. Age and Intent Specific Poisoning Hospital Discharge (HD) Rate
Kansas 2005-2009

	Suicide			Unintentional			All Other		
Age Group	#HD	Rate*	95% CI**	#HD	Rate*	95% CI**	#HD	Rate*	95% CI**
00-04	.	.		463	47.0	42.8-51.4	9	.	
05-09	5	.		46	4.9	3.6-6.5	7	.	
10-14	192	20.3	17.6-23.4	41	4.3	3.1-5.9	18	.	
15-19	935	92.9	87.0-99.0	238	23.6	20.7-26.8	104	10.3	8.4-12.5
20-24	890	83.2	77.8-88.9	242	22.6	19.9-25.7	86	8.0	6.4-9.9
25-34	1,609	88.5	84.3-93.0	477	26.3	23.9-28.7	187	10.3	8.9-11.9
35-44	1,643	89.6	85.3-94.1	613	33.4	30.8-36.2	197	10.7	9.3-12.4
45-54	1,264	62.6	59.2-66.1	809	40.0	37.3-42.9	251	12.4	10.9-14.1
55-64	421	28.6	25.9-31.4	530	36.0	33.0-39.2	109	7.4	6.1-8.9
65-74	118	13.4	11.1-16.1	376	42.8	38.6-47.3	33	3.8	2.6-5.3
75+	61	6.6	5.0-8.4	512	55.0	50.4-60.0	31	3.3	2.3-4.7

All Other: Homicide, Other, and Undetermined. *Poisoning HD Rate is per 100,000 population. **95% CI are calculated around rate. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table MD1. Age and Intent Specific Poisoning Death Rate
Kansas 2006-2010

	Suicide			Unintentional			All Other		
Age Group	#Deaths	Rate*	95% CI**	#Deaths	Rate*	95% CI**	#Deaths	Rate*	95% CI**
00-04	.	.	.	6	.	.	.	.	.
05-09	.	.	.	.	.	.	.	.	.
10-14	.	.	.	.	.	.	.	.	.
15-19	.	.	.	31	3.1	2.1- 4.4	6	.	.
20-24	11	.	.	65	6.1	4.7- 7.8	5	.	.
25-34	53	2.9	2.2- 3.8	201	11.0	9.5- 12.6	26	1.4	0.9- 2.1
35-44	75	4.2	3.3- 5.2	253	14.1	12.4- 15.9	32	1.8	1.2- 2.5
45-54	113	5.6	4.6- 6.7	383	18.9	17.0- 20.9	54	2.7	2.0- 3.5
55-64	52	3.4	2.5- 4.4	122	8.0	6.6- 9.5	13	.	.
65-74	16	.	.	14	.	.	.	.	.
75+	13	.	.	7	.	.	.	.	.

All Other: Homicide, Missing, Legal/War, and Undetermined. *Poisoning 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.

Appendix Table HD2: Poisoning Hospital Discharge (HD) by Intent and Year
Kansas 2000-2009

	Overall			Suicide			Unintentional		
Year	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)
2000	1,567	58.0, (55.1- 60.9)	0.0%	1,030	38.2, (35.9- 40.6)	0.0%	427	15.7, (14.2- 17.3)	0.0%
2001	1,675	61.9, (59.0- 64.9)	6.7%	1,058	39.1, (36.8- 41.5)	2.4%	476	17.5, (16.0- 19.2)	11.8%
2002	1,711	62.8, (59.9- 65.9)	8.4%	1,058	38.9, (36.6- 41.4)	2.0%	515	18.8, (17.2- 20.5)	19.5%
2003	2,089	77.0, (73.8- 80.4)	**32.9%**	1,262	46.8, (44.2- 49.4)	**22.5%**	651	23.7, (21.9- 25.6)	**51.2%**
2004	2,180	79.7, (76.4- 83.2)	**37.5%**	1,325	48.6, (46.0- 51.3)	**27.3%**	676	24.6, (22.7- 26.5)	**56.6%**
2005	2,236	81.6, (78.2- 85.1)	**40.7%**	1,284	47.2, (44.6- 49.9)	**23.6%**	766	27.6, (25.7- 29.6)	**75.9%**
2006	2,320	84.9, (81.5- 88.5)	**46.5%**	1,314	48.6, (46.0- 51.4)	**27.4%**	806	29.0, (27.0- 31.1)	**85.0%**
2007	2,472	90.1, (86.5- 93.7)	**55.4%**	1,421	52.6, (49.9- 55.5)	**37.8%**	822	29.2, (27.2- 31.3)	**86.0%**
2008	2,729	98.1, (94.4-101.8)	**69.1%**	1,588	58.2, (55.3- 61.1)	**52.3%**	938	32.6, (30.6- 34.8)	**107.9%**
2009	2,760	98.9, (95.2-102.7)	**70.6%**	1,531	56.0, (53.2- 58.9)	**46.5%**	1,015	35.3, (33.2- 37.6)	**125.0%**

Bold Percentages: Represent % changes that are significantly different than year 2000. *Poisoning HD Rate is per 100,000 population. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table HD3: Poisoning Hospital Discharge (HD) by Intent , Sex and Year
Kansas 2000-2009

	Suicide				Unintentional			
	Female		Male		Female		Male	
Year	Rate*, (95% CI)	% Change Since 2000 +/(-)	Rate*, (95% CI)	% Change Since 2000 +/(-)	Rate*, (95% CI)	% Change Since 2000 +/(-)	Rate*, (95% CI)	% Change Since 2000 +/(-)
2000	53.5, (49.7- 57.6)	0.0%	23.5, (21.0- 26.2)	0.0%	15.7, (13.7- 17.9)	0.0%	15.7, (13.7- 18.1)	0.0%
2001	53.1, (49.2- 57.1)	(0.9%)	25.5, (22.9- 28.4)	8.7%	18.7, (16.5- 21.2)	19.3%	16.4, (14.2- 18.7)	3.9%
2002	51.5, (47.8- 55.5)	(3.7%)	26.7, (24.0- 29.6)	13.8%	19.7, (17.4- 22.1)	25.5%	17.5, (15.3- 19.9)	11.0%
2003	60.9, (56.8- 65.3)	13.8%	33.0, (30.0- 36.2)	**40.5%**	26.9, (24.2- 29.8)	**71.5%**	20.4, (18.1- 23.0)	**29.8%**
2004	64.8, (60.5- 69.3)	**21.0%**	33.1, (30.1- 36.3)	**40.9%**	26.6, (24.0- 29.5)	**69.6%**	22.1, (19.7- 24.8)	**40.5%**
2005	61.0, (56.9- 65.3)	**13.9%**	34.0, (30.9- 37.2)	**44.6%**	28.3, (25.6- 31.3)	**80.8%**	26.8, (24.1- 29.7)	**70.3%**
2006	63.0, (58.7- 67.4)	**17.6%**	34.8, (31.7- 38.1)	**48.2%**	31.6, (28.7- 34.7)	**101.4%**	26.3, (23.6- 29.2)	**66.9%**
2007	67.6, (63.2- 72.2)	**26.2%**	38.2, (34.9- 41.6)	**62.5%**	30.8, (27.9- 33.8)	**96.2%**	27.8, (25.0- 30.8)	**76.4%**
2008	70.8, (66.4- 75.6)	**32.3%**	46.0, (42.4- 49.7)	**95.7%**	33.4, (30.5- 36.5)	**112.9%**	31.6, (28.7- 34.8)	**100.8%**
2009	66.9, (62.6- 71.5)	**25.0%**	45.3, (41.8- 49.1)	**92.9%**	35.7, (32.6- 38.9)	**127.5%**	34.8, (31.8- 38.1)	**121.2%**

Bold Percentages: Represent % changes that are significantly different than year 2000. *Poisoning HD Rate is per 100,000 population. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table HD4: Poisoning Hospital Discharge (HD) by Age Group and Year
Kansas 2000-2009

	0-14 years		15-24 years		25-44 years		45-64 years		65+ years	
Year	**Rate*, (95% CI)**	**% Change Since 2000 +/(-)**	**Rate*, (95% CI)**	**% Change Since 2000 +/(-)**	**Rate*, (95% CI)**	**% Change Since 2000 +/(-)**	**Rate*, (95% CI)**	**% Change Since 2000 +/(-)**	**Rate*, (95% CI)**	**% Change Since 2000 +/(-)**
2000	24.7, (20.8- 29.1)	0.0%	95.8, (86.5-105.9)	0.0%	85.7, (79.3- 92.5)	0.0%	42.8, (37.6- 48.4)	0.0%	35.9, (30.0- 42.7)	0.0%
2001	29.0, (24.8- 33.8)	17.7%	107.5, (97.7-118.0)	12.2%	85.5, (79.1- 92.4)	(0.2%)	50.2, (44.6- 56.2)	17.3%	32.9, (27.2- 39.4)	(8.5%)
2002	26.1, (22.1- 30.7)	5.9%	102.1, (92.6-112.3)	6.6%	87.0, (80.5- 93.9)	1.5%	52.1, (46.5- 58.1)	21.8%	44.8, (38.1- 52.3)	24.6%
2003	33.4, (28.9- 38.5)	35.5%	110.1, (100.3-120.7)	14.9%	113.6, (106.1-121.5)	**32.6%**	67.7, (61.5- 74.5)	**58.4%**	45.8, (39.0- 53.4)	27.5%
2004	27.6, (23.5- 32.3)	12.0%	115.6, (105.6-126.4)	20.7%	112.7, (105.2-120.6)	**31.6%**	78.5, (71.9- 85.6)	**83.7%**	52.7, (45.5- 60.9)	**46.8%**
2005	28.3, (24.0- 33.1)	14.6%	112.2, (102.2-122.8)	17.1%	120.2, (112.4-128.3)	**40.3%**	75.2, (68.7- 82.0)	**75.8%**	59.4, (51.7- 67.9)	**65.3%**
2006	23.2, (19.4- 27.5)	(6.1%)	114.3, (104.3-125.1)	19.3%	126.0, (117.9-134.4)	**47.0%**	85.3, (78.5- 92.5)	**99.4%**	57.9, (50.3- 66.3)	**61.1%**
2007	26.1, (22.1- 30.6)	5.7%	113.2, (103.2-124.0)	18.2%	127.2, (119.2-135.7)	**48.5%**	99.6, (92.3-107.2)	**133%**	64.4, (56.4- 73.2)	**79.3%**
2008	31.6, (27.2- 36.5)	28.0%	129.7, (118.9-141.2)	**35.3%**	132.5, (124.3-141.2)	**54.7%**	111.5, (103.9-119.6)	**161%**	68.4, (60.2- 77.5)	**90.5%**
2009	26.7, (22.7- 31.2)	8.1%	131.2, (120.5-142.6)	**36.9%**	141.9, (133.3-150.8)	**65.6%**	110.9, (103.4-118.9)	**159%**	62.3, (54.5- 70.9)	**73.4%**

Bold Percentages: Represent % changes that are significantly different than year 2000. *Poisoning HD Rate is per 100,000 population. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table HD5: Poisoning Hospital Discharge (HD) by Intent and Year
Kansas 2000-2009

	Drugs			Non-Drugs			Unspecified		
Year	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)	#HD	Rate*, (95% CI)	% Change Since 2000 +/(-)
2000	1,413	52.2, (49.5- 55.0)	0.0%	94	3.5, (2.8- 4.3)	(0.0%)	60	2.3, (1.7- 2.9)	0.0%
2001	1,531	56.6, (53.8- 59.5)	8.3%	103	3.8, (3.1- 4.6)	9.0%	41	1.5, (1.1- 2.1)	(32.8%)
2002	1,548	56.8, (54.0- 59.8)	8.9%	98	3.6, (2.9- 4.4)	2.7%	64	2.4, (1.8- 3.0)	4.0%
2003	1,922	70.9, (67.7- 74.1)	**35.7%**	119	4.4, (3.6- 5.2)	25.1%	48	1.8, (1.3- 2.4)	(21.2%)
2004	2,007	73.4, (70.2- 76.7)	**40.6%**	112	4.1, (3.4- 4.9)	17.3%	61	2.2, (1.7- 2.9)	(1.7%)
2005	2,058	75.0, (71.8- 78.3)	**43.6%**	113	4.2, (3.4- 5.0)	18.8%	65	2.4, (1.9- 3.1)	7.1%
2006	2,151	78.8, (75.4- 82.2)	**50.8%**	101	3.7, (3.0- 4.5)	4.9%	68	2.5, (2.0- 3.2)	11.1%
2007	2,299	83.8, (80.4- 87.3)	**60.5%**	111	4.0, (3.3- 4.9)	15.2%	62	2.3, (1.7- 2.9)	(0.4%)
2008	2,519	90.5, (86.9- 94.1)	**73.2%**	121	4.3, (3.6- 5.2)	23.6%	89	3.3, (2.6- 4.0)	44.4%
2009	2,560	91.6, (88.0- 95.3)	**75.4%**	127	4.5, (3.8- 5.4)	29.4%	73	2.8, (2.2- 3.5)	23.6%

Bold Percentages: Represent % changes that are significantly different than year 2000*Poisoning HD Rate is per 100,000 population. Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table HD6: Poisoning Hospital Discharge (HD) Rate by Intent and Race Group
Kansas 2005-2009

		Male		Female	
Intent	**Race Group**	**#HD**	**Rate* (95% CI)**	**#HD**	**Rate* (95% CI)**
Suicide	White	2,166	35.3, (33.8- 36.9)	3,494	58.3, (56.4- 60.3)
	African-American	166	37.9, (32.2- 44.7)	228	51.3, (44.7- 58.6)
	Asian / NHOPI	21	11.3, (6.8- 21.2)	59	34.4, (25.9- 46.0)
Unintentional	White	1,540	24.9, (23.7- 26.2)	1,816	27.6, (26.3- 28.9)
	African-American	176	44.3, (37.5- 52.3)	191	46.4, (39.9- 53.7)
	Asian / NHOPI	.	.	28	24.9, (15.8- 37.9)

*Poisoning HD Rate is per 100,000 population. Source: 2005-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table HD7: Poisoning Hospital Discharge (HD) Drug Type by Year
Kansas 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Drugs										
Nonopioid analgesics, Antipyretics, Antirheumatics	46	54	58	71	52	70	81	73	92	77
Opiates, opioids	30	36	51	72	101	115	137	139	169	210
Cocaine	10	9	17	19	37	37	45	49	39	46
Antidepressants, etc, psychotropic NEC	595	619	662	816	884	910	944	1,004	1,131	1,100
Other specified and unspecified drugs	732	813	760	944	933	926	944	1,034	1,088	1,127
Non-Drugs										
Alcohol	16	25	30	32	38	35	36	42	50	53
Carbon Monoxide	22	21	17	27	21	24	22	23	10	16
Petroleum, other solvents, vapors	13	.	.	7	7	8	8	.	6	.
Other, unspecified non-drugs	43	54	47	53	46	46	35	44	55	54
Unspecified type of Poison	60	41	64	48	61	65	68	62	89	73

Source: 2000-2009 Kansas Hospital Discharge Database, Kansas Hospital Association.

Appendix Table MD2: Poisoning Deaths by Drug Type and Year
Kansas 2000-2010

	Drug			Non-Drug		
Year	#Deaths	Rate*, (95% CI)	% Change Since 2000 +/(-)	#Deaths	Rate*, (95% CI)	% Change Since 2000 +/(-)
2000	113	4.3, (3.6- 5.2)	0.0%	42	1.6, (1.1- 2.1)	0.0%
2001	145	5.5, (4.6- 6.5)	27.8%	33	1.2, (0.8- 1.7)	(21.0%)
2002	168	6.3, (5.4- 7.4)	**46.7%**	33	1.2, (0.9- 1.7)	(20.4%)
2003	186	6.9, (6.0- 8.0)	**60.8%**	27	1.0, (0.6- 1.4)	(36.7%)
2004	221	8.2, (7.2- 9.4)	**91.2%**	37	1.4, (1.0- 1.9)	(11.2%)
2005	240	8.9, (7.8- 10.1)	**106.6%**	40	1.5, (1.1- 2.0)	(4.3%)
2006	255	9.4, (8.2- 10.6)	**117.2%**	27	1.0, (0.7- 1.5)	(36.1%)
2007	268	9.9, (8.7- 11.1)	**128.8%**	53	1.9, (1.4- 2.5)	20.5%
2008	254	9.2, (8.1- 10.4)	**112.6%**	46	1.7, (1.2- 2.3)	7.5%
2009	297	10.8, (9.6- 12.2)	**151.3%**	48	1.7, (1.2- 2.2)	6.9%
2010	268	9.5, (8.3- 10.7)	**119.6%**	50	1.7, (1.2- 2.2)	6.9%

Bold Percentages: Represent % changes that are significantly different than year 2000. *Poisoning Death Rate is per 100,000 population. Source: 2000-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Appendix Table MD3: Poisoning Deaths by Intent and Year
Kansas 2000-2010

	Suicide			Unintentional		
Year	#Deaths	Rate*, (95% CI)	% Change Since 2000 +/(-)	#Deaths	Rate*, (95% CI)	% Change Since 2000 +/(-)
2000	57	2.2, (1.6- 2.8)	0.0%	87	3.3, (2.6- 4.1)	0.0%
2001	55	2.1, (1.6- 2.7)	(3.8%)	115	4.4, (3.6- 5.2)	32.0%
2002	68	2.6, (2.0- 3.3)	19.3%	116	4.4, (3.6- 5.2)	31.9%
2003	74	2.7, (2.1- 3.4)	26.8%	123	4.6, (3.8- 5.5)	39.1%
2004	67	2.5, (1.9- 3.2)	15.2%	163	6.1, (5.2- 7.1)	**84.4%**
2005	80	3.0, (2.4- 3.7)	39.4%	179	6.6, (5.7- 7.7)	**100.6%**
2006	67	2.4, (1.9- 3.1)	12.7%	186	6.8, (5.9- 7.9)	**106.9%**
2007	84	3.0, (2.4- 3.8)	40.4%	197	7.3, (6.3- 8.4)	**119.7%**
2008	48	1.8, (1.3- 2.4)	(17.8%)	224	8.1, (7.0- 9.2)	**144.8%**
2009	71	2.6, (2.0- 3.3)	19.8%	255	9.2, (8.1- 10.5)	**179.2%**
2010	67	2.3, (1.8- 2.9)	6.1%	224	7.9, (6.9- 9.0)	**139.2%**

Bold Percentages: Represent % changes that are significantly different than year 2000. *Poisoning Death Rate is per 100,000 population. Source: 2000-2010 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE.

Drug Definitions

Information on the following pages comes from www.drugs.com

Non-opiod Analgesics, Antipyretics, Antirheumatics

Non-opiod Analgesics

Central nervous system analgesics are drugs that alleviate pain without causing anesthesia, Loss of normal sensation or feeling. These analgesics are usually used to relieve acute and chronic pain.

Prescriptions:

COX-2 Inhibitors: Celebrex

Miscellaneous analgesics: Ultram

Antipyretics

An agent that reduces fever

Available Agents:

Acetaminophen (Tylenol), Aspirin, Ibuprofen

Antirheumatics

Antirheumatics include drugs, which are used to treat the symptoms of rheumatoid arthritis[1] and those that can modify the course of the disease. The drugs that help treat the symptoms such as pain and inflammation are aspirin, non-steroidal anti-inflammatory drugs (NSAIDs) and steroids. Drugs that can slow the progression of rheumatoid arthritis and help with pain, inflammation and stiffness are called disease modifying rheumatoid arthritis drugs (DMARDs).

Prescriptions:

Enbrel, Humira

Opiates/Opiods

Narcotic Analgesics

Narcotic analgesics are used to relieve acute and chronic, severe pain. Some narcotics are more potent than others. They have the tendency to cause tolerance and dependence. They work by binding to opioid receptors, which are present in the central and peripheral nervous system which leads to a reduction in pain.

Illicit:

Heroin, Opium

Prescriptions:

Methadone, Dilaudid, Oxycontin, Nucynta, Codeine, Fentanyl, Morphine, Oxycodone

Cocaine

A potent central nervous system stimulant, vasoconstrictor[2], and topical anesthetic, widely abused as a euphoriant and associated with the risk of severe adverse physical and mental effects.

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[1] Rheumatoid arthritis is a chronic (long-term) inflammatory disease that primarily affects the joints and surrounding tissues, but can also affect other organ systems.

[2] An agent that causes narrowing of the blood vessels.

Antidepressants, Barbituates and other antiepileptics, sedative-Hypnotics, and psychotropic drugs not elsewhere classified

Psychotherapeutic agents

Psychotherapeutic agents are used to treat psychosis, which refers to a group of mental disorders for example depression, schizophrenia, manic-depressive disorders and so on. They affect mood and behavior. The clinical benefits of these drugs may take weeks to appear.

Antidepressants

Antidepressants are drugs that treat depression and improve the symptoms. All types of antidepressant drugs may take more than two weeks to show any benefits, although their pharmacological effects are produced immediately.

Prescriptions

Monoamine Oxidase Inhibitors: Nardil

Phenylpiperazine antidepressants: Desyrel, Serzone

Selective serotonin reuptake inhibitors: Prozac, Lexapro, Zoloft, Celexa, Paxil

Serotonin-norepinephrine reuptake inhibitors: Cymbalta, Pristiq, Savella

Tetracyclic antidepressants: Remeron

Tricyclic antidepressants: Elavil, Silenor

Miscellaneous : Wellbutrin, Viibryd

Antipsychotics

These are drugs, which are used to treat psychosis, including schizophrenia and mania. Antipsychotics are classified as typical or atypical.

Prescriptions

Atypical: Abilify, Seroquel, Saphris

Phenothiazine antipsychotics: Thorazine

Thioxanthenes: Navane

Anxiolytics, sedatives, and hypnotics

Anxiolytics, sedatives and hypnotics are drugs that work on the central nervous system to treat anxiety and insomnia. The main classes of drugs are benzodiazepines and barbiturates.

Barbiturates

Barbiturates enhance the action of GABA by binding to the GABA-receptor/chloride channel. They suppress central nervous system activity and are effective anxiolytics, anticonvulsants [3], sedatives and hypnotics.

Prescriptions

Phenobarbital

Benzodiazepines

Benzodiazepines are a class of agents that work on the central nervous system, acting selectively on gamma-aminobutyric acid-A (GABA-A) receptors in the brain. Benzodiazepines are used as sedativess, hypnotics, anxiolytics, anticonvulsants and muscle relaxants.

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[3] Preventing or arresting seizures.

Prescriptions
Xanax, Klonopin, Valium

CNS stimulants
Central nervous system (CNS) stimulants are agents that increase physical activity, mental alertness and attention span. Central nervous system stimulants are used to treat attention-deficit hyperactivity disorder (ADHD) and narcolepsy.

Illegal:
MDMA (Ecstasy), Methanphetamine (Meth)
Prescription:
Adderall, Vyvanse, Provigil, Adipex, Nuvigil, Ritalin, Concerta

References

[i] Safe Kids. (2009). *Raising Safe Kids: One Stage at a Time* (p. 31). Retrieved from http://www.safekids.org/assets/docs/ourwork/research/research-report-safe-kids-week-2009.pdf

[ii] CDC. (2011, August 10). CDC - Proposed Matrix of E-code Groupings - WISQARS - Injury. *CDC-code Groupings - WISQARS - Injury*. Retrieved January 12, 2012, from http://www.cdc.gov/injury/wisqars/ecode_matrix.html

[iii] Arialdi M. Minino. (2006). Deaths: Injuries, 2002. *National Vital Statistics Report*, *54*(10), 125.

[iv] Safe States. (2012). *Consensus Recommendations for National and State Poisoning Surveillance* (No. ISW7) (p. 109). Atlanta GA: Safe States. Retrieved from http://www.cste.org/webpdfs/ISW7ConsensusRecommendationsforNationalandStatePoisoningSurveillance.pdf

[v] Washington State Department of Health - Assessment Guidelines: Confidence Intervals. (2010, July 1).*Washington State Department of Health: Confidence Intervals*. Retrieved January 12, 2012, from http://www.doh.wa.gov/data/guidelines/confintguide.htm