



# Kansas Health Statistics Report

Kansas Department of Health and Environment – Division of Health  
Bureau of Public Health Informatics – No 43 – November 2009

## 2008 Annual Summary Released

The 2008 Annual Summary of Kansas Vital Statistics is the latest edition of the report released by the Kansas Department of Health and Environment. The report serves as the baseline document used to assess the health of Kansans. It is used by the department's program managers, policy makers, local health department professionals, epidemiologists, academic researchers, the public, and by federal, state, and local governments.

The tables and charts contained in this report represent a portion of the insight that can be gained from the data reported on live births, deaths, stillbirths, marriages, marriage dissolutions (divorce and annulment), and abortions recorded annually.

The report highlights a number of items of interest for 2008:

- In 2008, a total of 41,815 births were registered to Kansas residents, 136 less than in 2007.
- Over nine percent (9.3) of live births in 2008 were preterm (less than 37 completed weeks of gestation).
- The percent of Kansas mothers receiving inadequate prenatal care (15.8) decreased slightly (3.1 percent) between 2007 and 2008.
- Out-of-wedlock births followed national trends, increasing to a record high (15,754 or 37.7 percent).
- The teen pregnancy rate for Hispanic teens (10-19) increased over 12 percent (12.2 per 1,000 female age-group population) between 2004 (50.2) and 2008 (56.3). Hispanic teens have had the highest pregnancy rates in the state.
- In 2008, a total of 303 infant deaths occurred (7.2 infant deaths per 1,000 live births), 30 less than in 2007.
- The disparity in the infant, neonatal and post neonatal death rates between White non-Hispanics and Black non-Hispanics continues to be a public health concern. The Black non-Hispanic infant death rate (13.3) was 2.1 times higher than the rate for White non-Hispanics (6.2).
- Almost half of the abortions performed in Kansas occurred to non-Kansans. The abortion ratio, since reaching a peak of 186.3 per 1,000 live births in 1996, has generally declined by 29.3 percent to 131.8 in 2008.
- Heart disease, the leading cause of death for Kansans, has gradually declined from 305.4 deaths per 100,000 population in 1989 to 202.7 deaths in 2008.
- In 2008, the age-adjusted suicide rate (12.5) decreased 8.1 percent from 2007 (13.6).
- In 2008, unintentional injuries were the leading cause of death for Kansas residents 1-44 years of age.

The Annual Summary of Vital Statistics summarizes the wealth of information available about Kansas vital events. This report can be found at <http://www.kdheks.gov/bphi/> and a tool to create specific analyses, Kansas Information for Communities, can be found at <http://kic.kdhe.state.ks.us/kic/>.

## Blue Ribbon Panel on Infant Mortality

Three decades ago, Kansas' infant mortality rate compared favorably with that of other states and the U.S. Data for the last several years, however, shows the state has lost ground. Kansas' infant mortality rate in 2007 was 20% higher than the U.S. rate. In 2008, Kansas' rate of 7.25 infant deaths per 1,000 live births continued to be higher (7%) than the most recent year for

U.S. data, 6.77 per 1,000 live births (preliminary). For Kansas Black (African-American) infants, the situation is worse. The Black infant mortality rate continues to be twice that of white infants, with the 2008 rate at 13.38 per 1,000 live births. While many states have made progress in closing the Black-White infant mortality gap, Kansas has not.

Clearly, infant mortality is a complex issue with many contributing factors. It warrants in-depth consideration to identify steps to reduce Kansas' rate. In order to address this, Secretary Rod Bremby appointed a multidisciplinary group of individuals to serve on a Blue Ribbon Panel on Infant Mortality.

Chaired by Dr. Dennis Cooley, a pediatrician, the group began its year-long work in July. It will listen to experts, review Kansas and national data, explore successful solutions implemented in Kansas and other states, and, finally, develop and make recommendations through the Governor's Child Health Advisory Committee.

Questions about this effort may be addressed to Dr. Jason Eberhart-Phillips 785-296-1086. For more information, go to [http://www.datacounts.net/infant\\_mortality](http://www.datacounts.net/infant_mortality).

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## Adequacy of Prenatal Care Reported

Prenatal care is defined as pregnancy-related health care services provided to a woman between conception and delivery. It is important to track because there is a strong association between prenatal care and pregnancy outcome. Pregnant women who receive inadequate care are at increased risk of bearing infants who have low birth weight, are stillborn, or die within the first year of life [1, 2]. Prenatal care data can be analyzed to suggest population groups and geographic areas in need of intervention, therefore protecting the health of future Kansans. The report *Adequacy of Prenatal Care Utilization Index, Kansas, 2008*, issued by the Office of Health Assessment, reviews the most recent available data to assess prenatal care.

Among the 41,815 live births for 2008, 39,508 births or 94.5 percent could be used for the adequacy of prenatal care utilization (APNCU) index. The APNCU index can be calculated where the number of prenatal visits, date of first prenatal visit and date of late menses are reported on the birth certificate. Among

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these live births with prenatal care data, 77.6 percent of the mothers received adequate or better prenatal care, including 30.4 percent with adequate-plus care; 22.5 percent received less than adequate prenatal care, including 15.8 percent with inadequate care.

### Other findings

- Among mothers whose prenatal care utilization was classified as inadequate (6,238), the vast majority (5,946) were due to late initiation of care. In other words, only a minority of women (292) who initiated their care within the first four months of care received inadequate care.
- Among mothers of low birth weight infants, 80.1 percent received adequate or better care, while 16.9 percent experienced inadequate care.
- The proportion of mothers who received adequate or better prenatal care was highest among White Non-Hispanic (82.8 %), followed by Asian/Pacific Islander Non-Hispanic (80.9 %) and Native American non-Hispanic (68.8 %). The population group with the lowest adequacy of care percent was Hispanic (59.9%).
- The proportion of mothers with inadequate care among Black Non-Hispanic (25.1 %), Native American Non-Hispanic (27.1 %) and Hispanic (28.7 %) were more than twice that of White Non-Hispanic (11.8 %) mothers.
- Private insurance was the delivery payer with the highest proportion of mothers who received adequate or adequate plus prenatal care (88.6%) followed by Champus/Tricare (79.5%). Self pay(aka, uninsured) was the payer group with the highest proportion of mothers with inadequate prenatal care (36.6%).
- Birth order is also an important factor in the proportion of mothers with adequate prenatal care. Among first births, the percent of mothers with adequate or adequate plus was 80.0 percent which compares to 75.9 percent for second or higher births order.
- In all age groups the proportion of mothers with inadequate prenatal was significantly greater among second or higher births compared to first births.

Accurate measurement of prenatal care depends on the accuracy of the index used. Beginning with 1998 data, KDHE transitioned from a modified Kessner Index to the Adequacy of Prenatal Care Utilization. (APNCU) Index, (often referred to as the Kotelchuck Index). [3] This index attempts to characterize prenatal care (PNC) utilization on two independent and distinctive dimensions: adequacy of initiation of PNC and adequacy of received services (once PNC has begun). Because of changes in the method of calculating the month prenatal care began – a key component in creating a PNC value – the new data is not comparable with that prior to 2005.

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## Screening and Lifestyle Improvements To Reduce Colorectal Cancer Rates

Colorectal cancer (CRC) – cancer of the large intestine and rectum – is the 3<sup>rd</sup> leading cause of cancer death in the United

States [1]. In 2007 it was the 3<sup>rd</sup> leading cause of cancer death for Kansas men and women, accounting for an estimated 10 percent of cancer deaths [2]. According to the American Cancer Society (ACS), nearly 50,000 US residents are expected to die from CRC in 2009 [1], while in Kansas more than 500 die annually from the disease [2]. The ACS estimated that in 2008 more than 145,000 people would be diagnosed with colorectal cancer [3], while on average, 1,454 cases of invasive CRC are diagnosed in Kansas annually [4]. However, many morbidities and mortalities can be avoided through prevention and early detection screening [3].

Screening rates are reported to be relatively low across the nation. In 2006, the recent fecal occult blood testing (FOBT) percentage for adults aged 50 and older was 16.6 percent in Kansas [1], while the Kansas Behavioral Risk Factor Surveillance System (BRFSS) indicated that an estimated 74.8 percent of adults age 50 years and older had not received an FOBT during the preceding two years [5]. Colorectal cancer screening with endoscopy tests (either a sigmoidoscopy or colonoscopy within the past 10 years) were administered to 51 percent of Kansans 50 years and older, although in 2006, 43.5 percent of adults 50 years and older had never received a sigmoidoscopy or colonoscopy [5]. It is estimated that early detection could save more than half of those expected to die of CRC [1]. Were screening rates markedly improved, CRC hospitalizations might also be reduced and significant health care dollars could be saved. The purpose of this article is to review CRC Kansas direct hospital cost trends and to estimate expected cost savings from improving CRC preventive screenings rates.

### Methodology

Kansas community hospital discharge data from the Kansas Hospital Association (KHA) for 2003-2006 [6] was used to obtain CRC Diagnosis Related Groups (DRGs) frequencies for records containing DRGs 146 – 150, 152-158, 164-165, 170-173, 468, 476-477, 185, 541, and 567-570 and a primary diagnosis of International Classification of Disease 9<sup>th</sup> Edition (ICD-9) codes of 152-154. Mean DRG charges and payments for records containing primary diagnoses codes 152-154 were obtained from Kansas Medicaid Data 2005-2006, provided by the Centers for Medicare and Medicaid Services via Kansas Health Policy Authority (KHPA) [7], and Kansas Health Insurance Information System (KHIS) data 2003-2005 provided by the Kansas Insurance Department [8]. Mean Medicare payment estimates for CRC DRGs for 2003-2006 were furnished by Ingenix [9]. Missing charges and payments were estimated by using the Consumer Price Index (CPI) for Medical Care 2003-2006 [10]. Yearly major payer total charges were calculated by multiplying KHA CRC yearly frequencies by Medicare, KHIS and Medicaid means. Means were adjusted to 2003 levels using the Consumer Price Index for Medical Care to determine whether direct costs were changing from the 2003 dollar value. The percent of change was calculated by subtracting 2003 means from 2006 means and dividing by 2003 means. SAS 9.1 software was used in preparing this analysis.

### CRC Risk Factors and Preventive Screening

Although not all risk factors for CRC are modifiable, an estimated half of all colon cancers may be preventable through lifestyle changes and widespread screening [11]. Non-modifiable, modifiable, preventive screenings and follow-up may impact the incidence of CRC. CRC non-modifiable risk factors include family history, a history of bowel disease, a history of adenomatous polyps, genetic traits, a diagnosis of diabetes, and/or an age of over 50 [11, 12]. CRC modifiable risk factors include moderate alcohol consumption i.e., 30 grams, or about two drinks per day, red or processed meat consumption, physical inactivity, overweight and obesity, and smoking [13,14,15,16 and 17].

Diagnosed in early stages, CRC is more likely curable. Performed regularly, it is thought that screening tests and following up on associated recommendations could reduce the present CRC mortality rate by half, by decreasing CRC incidence and by detecting cancers at earlier, more treatable stages [3]. Some of the available screening tools include the FOBT, flexible sigmoidoscopy, and colonoscopy screening, among others. The Centers for Disease Control and Prevention (CDC) recommends that patients over 50 have a FOBT test annually or bi-annually and a sigmoidoscopy every five years. A colonoscopy should be performed every 10 years [19]. The most reliable way to prevent CRC is regular screenings, removal of adenomatous polyps if discovered, and minimizing modifiable risk factors [20].

Table 1. Kansas Hospital Discharge Estimated Frequencies, Charges, and Medical Care CPI Adjustments, 2003-2006\*

Year	Number of Discharges	Mean Charges	Total Charges	CPI Adjustment	CPI Adjusted Mean
2003**	1,254	\$17,442	\$21,872,268	1	\$17,442
2004**	1,275	\$19,065	\$24,308,079	.0958078	\$18,266
2005**	1,198	\$20,557	\$24,626,759	0.919245	\$18,897
2006**	1,036	\$20,658	\$21,402,175	0.8837	\$18,256
Total**	4,763		\$92,209,281		

\* Based on Kansas Hospital Discharge, KHIIS, and Medicaid Data, and Medicare average payments. Data for 2006 are adjusted from previous years costs based on the CPI for Medical Care.

\*\* Hospital discharge frequencies are from KHA data.

Table 2. Kansas Hospital Discharge Estimated Frequencies, Payments, and Medical Care CPI Adjustments, 2003-2006\*

Year	Number of Discharges	Mean Payments	Total Payments	CPI Adjustment	CPI Adjusted Mean
2003**	1,254	\$11,702	\$14,674,208	1	\$11,702
2004**	1,275	\$12,414	\$15,828,462	.0958078	\$11,894
2005**	1,198	\$13,915	\$16,670,098	0.919245	\$12,791
2006**	1,036	\$14,801	\$15,333,525	0.8837	\$13,079
Total**	4,763		\$62,506,293		

\* Based on Kansas Hospital Discharge, KHIIS, and Medicaid Data, and Medicare average payments. Data for 2006 are adjusted from previous years costs based on the CPI for Medical Care.

\*\* Hospital discharge frequencies are from KHA data.

## Health and Financial Benefits with Improved Screening Levels

Review of Kansas data shows some decline in the number of major payer hospital discharges 2003-2006, which may indicate a declining trend in hospital discharges (17.4% decline). It appears that mean charges and payments have risen in both actual and adjusted dollars between 2003 and 2006 (Tables 1 and 2). Kansas CRC actual and adjusted mean charges show 18.4 percent and 4.7 percent increases, respectively; while Kansas CRC actual and adjusted mean payments show 26.5 percent and 11.8 percent increases, respectively. Improving screening rates for CRC holds promise for substantial return on investment. Were screening rates improved to recommended rates, possible cost savings could occur and lives could be saved. The 2003-2006 estimated Kansas \$92 million in CRC hospitalization charges might have fallen to \$46 million in CRC hospitalization charges were preventive screening rates improved as recommended. The 2003-2006 estimated \$62.5 million Kansas CRC hospitalization payments might have declined by half to \$31 million. As earlier stated, 500 Kansans are expected to die due to CRC annually. A combination of lifestyle changes and improved screening rates to recommended levels could save 250 Kansas lives annually and reduce hospitalization substantially.

## Data Limitations

The present article contains Kansas hospitalization direct cost estimates derived from a number of sources. Cost comparisons are based on KHA counts, and the major payers of health care - Medicaid, KHIIS and Medicare. Data limitations for these data sets are elsewhere documented and are important in assessing the reliability of the present analysis. For example, 1) For KHA data, it is not possible to distinguish between patients admitted multiple times in a single year, which may cause duplicative record counts; 2) For KHA data, the lack of patient identifiers limits data matching capacity which can affect output reliability; 3) Medicare calculations are based on average national payments applied to Kansas counts. Use of actual Medicare would strengthen the analysis; 4) KHIIS data consists of the experience of the top 20 Kansas private health insurers only; thus not all private insurance experience is represented in the data. A significant number of colorectal cancer hospitalizations do not appear in the KHIIS data. Census insurance data estimates the number of privately insured Kansans to be approximately two million insured's, while the KHIIS database contains fewer than one million covered lives at the end of 2007. In addition, it is uncertain what impact the Employee Retirement Income Security Act (ERISA) might have on private insured numbers since they are not included in the KHIIS data collection; and 5) CRC charges and payments for self-pay and other hospital users and information contained in specialty hospital, Indian Health Service and Veteran's Administration data are not available for inclusion in the analysis. Further analysis is needed for a more comprehensive review of cost trend estimates in the area of CRC. Reliable estimates for these costs are difficult to obtain. The present article refers only to direct hospitalization costs related to CRC, and does not address indirect and other costs associated with hospitalization i.e., pharmaceuticals, health care professional charges, etc. Also omitted are periodic screening costs, and outpatient, physician office and prescription costs.

## Conclusion

An aging population, changing demographics, and an increasing number of CRC survivors underscore the need for prevention and early detection of CRC to reduce mortality and improve quality of life [20]. Screening as recommended by CDC improves the chance that CRC can be detected at an earlier stage, when treatment is less invasive, less expensive and recovery is quicker. It is critical that the public continue to be informed of the importance of physical activity, proper diet, maintaining a healthy body weight, early detection through screening, and prompt treatment of CRC. "The American Cancer Society has identified CRC as a major priority because the application of existing knowledge has such great potential to prevent cancer, save lives and diminish suffering [3]." Personal health and medical prevention strategies show promise for CRC risk reduction, treatment effectiveness and great potential cost savings.

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According to CPSC estimates, nationwide ATV-related emergency-room (ER) treated injuries increased by more than ten percent from 2005 to 2007 (from 136,700 to 150,900), while ER treated pediatric (under 16 years of age) ATV-related injuries remained steady at about 40,000 per year over the same period. CPSC estimates that ATV-related mortality for 2002 through 2004 (the most recent complete estimates available) increased by about forty-three percent [4]. In contrast, Kansas Hospital Discharge data show that Kansas hospitalizations due to ATV crashes for all ages changed little from 2005 to 2007, while ATV crash hospitalizations for youth under 16 declined over ten percent in this period. Kansas mortality due to ATV crashes from 2005 to 2008 fluctuated from year to year, but showed no clear trend.

### Method

For this report, information about Kansas ATV accidents resulting in death or injury has been extracted from two sources: 1) the mortality records maintained by KDHE’s Office of Vital Statistics; and 2) the Hospital Discharge data provided by the Kansas Hospital Association.

The Vital Records data set uses the ICD-10 code V86 to indicate ATV and snowmobile fatalities. This code does not distinguish between traffic and non-traffic accidents, though that information can be obtained from another field in the Vital Records dataset. The Hospital Discharge dataset uses the ICD-9CM codes E820 and E821 to indicate hospitalizations following non-traffic ATV and snowmobile crashes. Only Kansas residents are included in these analyses. The Vital Records dataset includes all deaths regardless of place of death, but the Hospital Discharge dataset includes only those injuries which involved an inpatient treatment at a hospital with a length of stay of at least twenty-four hours. Thus, limited comparisons can be made between the two datasets, and they are discussed separately below. For each dataset, a brief discussion of trends will be followed by basic demographic characteristics for the combined multi-year period.

### Results

Fifty Kansas residents died in ATV crashes from 2005 to 2008 (Table 3). The small number of deaths in each year makes any attempt to discover a trend in a breakdown by age group unreliable. No real trend is apparent even at the level of yearly totals, just fluctuation.

Table 3. Resident ATV Unintentional Injury Deaths, by Age-Group and year, Kansas, 2005-2008

Age Group	2005	2006	2007	2008	Total
Under 16	4	2	0	6	12
16-24	7	4	0	2	13
25-64	7	5	4	4	20
65 & Over	2	1	0	2	5
Total	20	12	4	14	50

A demographic analysis shows that Kansas residents who died in ATV accidents between 2005 and 2008 were typically White non-Hispanic (94.0%), male (78.0%), resident in a rural county (52.0%: including counties in the Frontier, Rural, and Densely Settled Rural peer groups), and young (50.0%) 24.0% under sixteen and 26.0% between sixteen and twenty-four years of age (Table 4). Most died due to an injury to the head or neck (56.0%), and most died either in or en-route to a hospital (70.0%).

## Kansas Mortality and Morbidity Resulting from All-Terrain Vehicle (ATV) Accidents, 2005-2008

The increasing popularity of All-Terrain Vehicles (ATVs) has led to increasing concern over injury and death rates associated with ATV accidents, especially among younger users. The Consumer Product Safety Commission (CPSC) has a website to present ATV accident statistics and ATV safety recommendations to the public [1]. Similar information is presented at the website of the consumer advocacy group Concerned Families for ATV safety (CFAS) [2]. The ATV manufacturers’ association has created the ATV Safety Institute (ASI) to provide safety training materials and to present the industry’s perspective on its product [3].

Table 4. Resident ATV Unintentional Injury Deaths, by Selected Characteristics, Kansas, 2005-2008

Sex	N	%
Male	39	78.0
Female	11	22.0
Population Group		
White non-Hispanic	47	94.0
Other non-Hispanic	2	4.0
Hispanic	1	2.0
Age Group		
< 16	12	24.0
16-24	13	26.0
25-64	20	40.0
> 65	5	10.0
Residence County Peer Group		
Frontier	4	8.0
Rural	12	24.0
Densely-settled Rural	10	20.0
Semi-urban	12	24.0
Urban	12	24.0
Place of Death		
Hospital Inpatient	16	32.0
Hospital ER/Outpatient	16	32.0
DOA	3	6.0
Decedent Residence	1	2.0
Nursing Home	1	2.0
Other	13	26.0
Unknown	1	2.0
Locus of Injury		
Head and neck	28	56.0
Spine and back	6	12.0
Torso	13	26.0
Upper Limbs	1	2.0
Lower Limbs	1	2.0
Multiple or Unspecified	16	32.0

Six hundred thirty-one Kansas residents were hospitalized for unintentional injuries involving ATVs from 2005 through 2007 (Table 5). At the level of yearly totals, there was no trend: the number of ATV hospitalizations just fluctuated. However, the number of ATV accidents declined for the Under 16 and 65 and Over age-groups, and increased for the 25-64 age-group.

Table 5. Resident ATV Unintentional Injury Hospitalizations, by Age-group and Year, Kansas, 2005-2007

Age Group	2005	2006	2007	Total
Under 16	47	42	41	130
16-24	51	48	50	149
25-64	97	95	104	296
65 & Over	23	17	15	56
Total	218	202	211	631

The demographic characteristics of Kansas residents hospitalized following an ATV crash were similar to those noted for ATV crash mortality. Those hospitalized tended to be White non-Hispanic (85.9%) and male (81.8%). Most were residents of Urban or Semi-Urban counties (56.2%), although the total for rural (Frontier, Rural, and Densely-settled Rural peer groups) counties (43.8%) was an over-representation of those counties compared to their over-all share of the state's population. Most were treated for injuries to the lower limbs (58.3%), and the second largest group (42.3%) was treated for injuries to the head and neck (Table 6). (Due to the way this data was collected, these two groups may overlap—the same individual might be treated for injuries to the head or neck and for injuries to the lower limbs.) Most returned home after discharge (89.2%), but smaller groups were transferred to other medical facilities (9.7%) or died at the hospital (1.1%).

Table 6. Resident ATV Unintentional Injury Hospitalizations, by Selected Characteristics, Kansas, 2005-2007

Sex	N	%
Male	516	81.8
Female	115	18.2
Population Group		
White non-Hispanic	542	85.9
Black non-Hispanic	14	2.2
Other non-Hispanic	44	7.0
Hispanic	16	2.5
Not Stated	15	2.4
Age Group		
< 16	130	27.4
16-24	149	16.8
25-64	296	46.9
> 65	56	8.9
Residence County Peer Group		
Frontier	46	7.3
Rural	107	17.0
Densely-settled Rural	123	19.5
Semi-urban	141	22.3
Urban	214	33.9
Discharge Status		
Home	562	89.2
Other Medical Facility	61	9.7
Deceased	7	1.1
Locus of Injury		
Head and neck	267	42.3
Spine and back	111	17.6
Torso	243	38.5
Upper Limbs	255	40.4
Lower Limbs	368	58.3
Multiple or Unspecified	90	14.3

## Conclusions

Since 2005, Kansas residents have not participated in the national trend towards annually increasing numbers of deaths and injuries due to ATV crashes. ATV-accident related injuries to the very young (under 16) and the elderly (65 and over) have declined slightly during this period, though the number of accidental ATV injuries involving supposedly responsible adults (25-64) has increased slightly. Demographic analysis indicates that safety training and accident prevention efforts should strongly target young, white, non-Hispanic males living in the rural counties of Kansas.

Hospital Discharge data for 2008 were not included in this report, since fourth quarter data for 2008 will not be provided to KDHE until later this year.

Table 7. Non-Traffic ATV Unintentional Injury Hospital Inpatient Deaths, by Dataset, Kansas, 2005-2008

Dataset	2005	2006	2007	2008
Vital Records	3	5	0	2
Hospital Discharge	3	4	0	*

\* The Hospital Discharge dataset for 2008 is not yet complete.

Data taken from the Vital Records dataset and the Hospital Discharge dataset are only loosely comparable, and should not be combined to compute fatality rates for ATV accidents, or even to compute a fatality to injury ratio. The Hospital Discharge data has no information about deaths that occurred elsewhere than a hospital, and also exclude deaths or injury treatments in ER where there was no admission to the hospital. When additional fields present in the mortality database are used to restrict the Vital Records dataset to deaths occurring to a hospital inpatient following a non-traffic accident, it can be demonstrated that the number of deaths reported in the Hospital Discharge data is not incompatible with the number reported in the Vital Records data-

set (Table 7). No further comparison between Vital Records and Hospital Discharge datasets is possible.

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Office of Health Assessment*

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## Visual Impairment and Access to Eye Care in Kansas

Visual impairment is a condition in which a person's eyesight cannot be corrected to a "normal level" [1]. Blindness and visual impairment are among the 10 leading causes of disability in the United States [2]. Visual impairment is associated with reduced capacity for activities of daily living [3] and reduced quality of life [4]. The most common causes of visual impairment among adults are cataract, glaucoma, age-related macular degeneration (AMD) and diabetic retinopathy [1]. Cataracts are a clouding of the lens of the eye. Glaucoma is a disease in which fluid pressure within the eye increases leading to vision loss. AMD is characterized by gradual degeneration of the macula, the part of the eye necessary for sharp central vision. Diabetic retinopathy is a common complication of diabetes characterized by leakage or blockage of the small blood vessels in the retina leading to visual impairment [1].

Visual impairment can be prevented or corrected in many cases with timely diagnosis and treatment. Nevertheless, preventive eye care is underutilized [5]. This is a particularly important issue for patients with systemic diseases such as diabetes and cardiovascular disease who are at higher risk for eye disease and visual impairment [6].

Visual impairment and access to eye care have not been previously assessed in Kansas on a state-wide basis. The purpose of this report is to describe the prevalence of visual impairment, common eye diseases and access to eye care in Kansas. Rates of visual impairment, lack of eye care insurance and not having had a visual exam in the previous 12 months are also presented for chronic diseases and risk factors for diseases associated with eye health.

## Methods

The Kansas BRFSS is an ongoing population-based telephone survey of non-institutionalized adults ages 18 years and older in Kansas. In 2008, the Kansas BRFSS survey included a series of nine questions related to visual impairment, eye diseases and access to eye care. Questions in this module were only asked of non-blind respondents. To assess visual impairment, survey respondents 40 years and older were asked "How much difficulty, if any, do you have in recognizing a friend across the street?" and "How much difficulty, if any, do you have reading print in newspapers, magazines, recipes, menus, or numbers on the telephone?". Respondents were considered to have visual impairment if they answered "a little difficulty", "moderate difficulty", "extreme difficulty" or "unable to do because of eyesight" to either question. Respondents with corrective lenses were asked to answer visual impairment questions as if wearing the corrective lenses. Visual impairment was estimated statewide and with respect to age, sex, and race/ethnicity.

Prevalence for common eye diseases was assessed by asking respondents whether they have been told by an eye doctor or

other health care professional that they have the condition. The question for diabetic retinopathy was included among other questions related to diabetes. Therefore, diabetic retinopathy prevalence estimates are available for all respondents 18 years and older who indicated that they have diabetes.

Prevalence of visual impairment, lacking eye care insurance and not having received an eye exam in the previous 12 months were also estimated for current smokers, respondents with hypertension, diabetes, coronary heart disease or history of myocardial infarction and history of stroke. All prevalence estimates and 95% confidence intervals (C.I.) are presented as weighted estimates, calculated using SAS version 9.1.3 to account for the BRFSS survey design.

## Results

A total of 4,294 survey respondents answered the two questions required to ascertain visual impairment status. About 1 in 3 (34%) Kansans 40 years and older reported having visual impairment. Prevalence estimates for population demographic subgroups are presented in Table 8. The prevalence of visual impairment in women was 37 percent, significantly higher than in men (31%). There were no statistically significant differences in visual impairment prevalence observed between age groups or between race/ethnicity groups.

Table 8. Prevalence of self-reported visual impairment among Kansans 40 years and older by selected demographic characteristics, 2008 Kansas BRFSS.

Characteristic	Prevalence	95% Confidence Interval
Age		
40-49	35.8%	32.0% - 39.5%
50-69	33.1%	30.6% - 35.6%
70 and older	32.9%	29.6% - 36.2%
Sex		
Male	30.9%	28.1% - 33.7%
Female	36.6%	34.3% - 38.9%
Race/Ethnicity		
White, non-Hispanic	33.4%	31.6% - 35.2%
Black, non-Hispanic	40.7%	29.3% - 52.1%
Other, Non-Hispanic	41.7%	31.0% - 52.4%
Hispanic, any race	35.1%	24.1% - 46.2%

Table 9. Prevalence of common eye diseases among adult Kansans, 2008 Kansas BRFSS.

Eye Disease	Prevalence	95% Confidence Interval
Cataract*	24.7%	23.1% - 26.2%
Glaucoma <sup>†</sup>	4.1%	3.4% - 4.9%
AMD <sup>†</sup>	4.5%	3.8% - 5.2%
Diabetic Retinopathy Among Persons with Diabetes <sup>†</sup>	20.0%	15.2% - 24.8%

<sup>†</sup>Estimates for cataracts, glaucoma and AMD are for adults aged 40 years and older. Estimates for Diabetic Retinopathy are for adults aged 18 years and older with diabetes.

\* Includes respondents who answered "yes" or "yes, but had them removed" to the question "Have you ever been told by an eye doctor or other health-care professional that you now have cataracts?"

Prevalence estimates for diseases of the eye are presented in Table 9. About 1 in 4 (25%) Kansans 40 years and older reported either having cataracts, or having had cataracts removed. About 1 in 24 (4%) Kansans 40 years and older reported having glaucoma. About 1 in 22 (5%) Kansans 40 years and older reported having AMD. The prevalence of diabetic retinopathy was assessed among all respondents 18 years and older with diabetes. About 1 in 5 (20%) adults 18 years and older with diabetes had diabetes-related retinopathy. The prevalence of glaucoma, cata-

facts and age-related macular degeneration increased significantly with age. The prevalence of cataracts in women (29%; 95% C.I.: 27% - 31%) was significantly higher than in men (20.0%; 95% C.I.: 18% - 22%).

More than 1 in 3 (38%) Kansans 40 years and older reported not having eye insurance. Prevalence estimates for not having eye insurance and for not having an eye exam in the last 12 months are shown in Table 10. The self-reported prevalence of not having eye insurance was highest among adults aged 60-69 (45%) and lowest among respondents ages 40-49 years (34%). The prevalence of not having eye insurance was significantly lower for Non-Hispanic African-American respondents (26%) compared to Non-Hispanic White respondents (38%). However, this result should be interpreted with caution because of the small number of Non-Hispanic African-American respondents in the sample.

Table 10. Prevalence of no eye care insurance and no eye exam in the last 12 months among Kansans 40 years and older by selected demographic characteristics, 2008 Kansas BRFSS.

Characteristic	No Eye Care Insurance		No Eye Exam in Previous 12 Months	
	Prevalence	95% Confidence Interval	Prevalence	95% Confidence Interval
<b>Age</b>				
40-49 yrs	33.8%	30.0% - 37.5%	37.5%	33.6% - 41.4%
50-59 yrs	36.0%	32.7% - 39.4%	39.4%	36.0% - 42.9%
60-69 yrs	45.2%	41.2% - 49.2%	31.9%	28.2% - 35.6%
70-79 yrs	41.0%	36.4% - 45.5%	20.9%	17.1% - 24.6%
80 and older	43.2%	37.6% - 48.8%	15.0%	11.1% - 19.0%
<b>Sex</b>				
Male	37.4%	34.4% - 40.3%	37.6%	34.6% - 40.6%
Female	39.1%	36.8% - 41.4%	29.0%	26.8% - 31.2%
<b>Race/Ethnicity</b>				
White, non-Hispanic	38.1%	36.2% - 40.0%	32.6%	30.7% - 34.5%
Black, non-Hispanic	26.3%	16.5% - 36.0%	29.4%	18.9% - 39.9%
Other, Non-Hispanic	46.4%	35.6% - 57.1%	34.5%	24.2% - 44.7%
Hispanic, any race	42.8%	30.4% - 55.3%	45.6%	33.0% - 58.2%

About 1 in 3 (33%) Kansans 40 years and older reported not having had an eye exam in the last 12 months. The prevalence of not having an eye exam in the previous 12 months was significantly lower in older age groups. The prevalence of not having an eye exam in the previous 12 months was higher for men (38%) than women (29%). No statistically significant differences were seen in the prevalence of not having an eye exam in the previous 12 months among race/ethnicity groups.

Prevalence estimates for visual impairment, no eye care insurance and no eye exam in the previous 12 months among respondents with health conditions and risk factors associated with

Table 11. Prevalence of self-reported visual impairment, no eye-care insurance, no eye exam in the previous 12 months among Kansans 40 years and older with selected chronic diseases and risk factors, 2008 Kansas BRFSS.

Subgroup	Visual Impairment		No Eye Care Insurance		No Eye Exam in Previous 12 Months	
	Prevalence	95% Confidence Interval	Prevalence	95% Confidence Interval	Prevalence	95% Confidence Interval
All Respondents	33.9%	32.1% - 35.7%	38.3%	36.4% - 40.2%	33.1%	31.2% - 34.9%
Current Smoker	37.9%	33.2% - 42.7%	44.8%	39.9% - 49.8%	44.5%	39.6% - 49.5%
Hypertension	34.8%	32.1% - 37.5%	39.3%	36.5% - 42.1%	31.2%	28.4% - 33.9%
Diabetes	40.5%	35.1% - 45.8%	36.2%	30.8% - 41.5%	21.4%	16.9% - 25.8%
CHD or Previous M.I.	38.1%	32.1% - 44.2%	40.2%	34.0% - 46.5%	23.3%	17.8% - 28.9%
Stroke	50.9%	41.5% - 60.3%	48.3%	38.7% - 57.8%	27.7%	19.0% - 36.3%

eye and vision health are displayed in Table 11. A high prevalence of visual impairment was observed in Kansans 40 years and older who have had a stroke (51%). Nearly half (48%) of adults 40 years and older who have had a stroke reported not having eye care insurance. About 2 in 5 (41%) adults 40 years and older with diabetes reported having visual impairment and about 1 in 5 (21%) adults 40 years and older with diabetes did not have an eye exam in the previous 12 months. A high prevalence of no eye exam in the previous 12 months (45%) was observed among current smokers 40 years and older.

## Discussion

The 2008 Kansas BRFSS provided the first opportunity to collect data for assessing the prevalence of visual impairment, cataracts, glaucoma and AMD on a state-wide basis in Kansas. Examination of this population-based data showed that visual impairment is a common condition in Kansas with about 1 in 3 adults 40 years and older reporting at least "a little difficulty" in either near vision ("reading print in newspapers, magazines, recipes, menus, or numbers on the telephone") or far vision ("recognizing a friend across the street").

The Visual Impairment and Access to Eye Care module for the BRFSS was first deployed in 5 states (Ohio, Iowa, Louisiana, Tennessee and Texas) in 2005. Visual impairment prevalence estimates from those five states (ranging from 14% to 21%), reported by Bailey and colleagues, were lower than the Kansas estimate reported here [5]. However, Bailey and Colleagues used a different question for assessing impairment in near vision: "How much difficulty, if any, do you have watching television?" The discrepancy between the Kansas estimate for visual impairment and those reported previously for 5 states possibly suggests that the prevalence of difficulty reading print is higher than that for watching television. The current version of this module does not include a question pertaining to difficulty watching television. Therefore, the estimates for visual impairment presented here are not directly comparable to those initial estimates from other states. More recently, however, other states have implemented the same version of the Visual Impairment and Access to Eye Care module used for this report. One recent publication from North Carolina reported a statewide prevalence of visual impairment of 31.6%, similar to the Kansas estimate [7].

Kansas estimates for prevalence of visual impairment, cataracts, glaucoma, AMD and diabetic retinopathy are similar to or moderately higher than national figures. The National Eye Institute estimated that the prevalence of cataract among adults 40 years and older is 17% [8], lower than the Kansas estimate of 25%. The national estimate for open-angle glaucoma, the most common subtype of glaucoma, is 2% for adults 40 years and over [9]. For Kansas the self-reported prevalence of glaucoma is 4%, slightly higher than the national estimate. However, using self-reported survey data, the BRFSS is assessing the overall prevalence of glaucoma without distinguishing between its subtypes. Nationally, the prevalence of advanced AMD is estimated to be 2 percent and the prevalence of intermediate AMD is estimated to be 6 percent among adults 40 years and older [10]. Because

BRFSS data is self-reported and does not include clinical measurements, the Kansas estimate (5%) does not distinguish between intermediate and advanced AMD.

It should be noted that estimates of visual impairment derived from telephone-administered surveys do not reflect the prevalence of impaired visual acuity measured directly. Using data from the 1999-2002 National Health and Nutrition Examination Survey, the prevalence of visual impairment, defined as "presenting distance visual acuity of 20/50 or worse in the better-seeing eye", was estimated to be 6% in the United States [11]. Currently, there are no population-based estimates for impaired visual acuity in Kansas.

The prevalence of not having eye insurance and of not having received an eye exam in the previous 12 months is high (38%) among Kansans 40 years and older. Based on the present estimate, more than 483,000 Kansans 40 years and older do not have eye care insurance. Estimates for lacking eye insurance were higher in the 5-state study ranging from 46% to 55% as compared to Kansas. Clearly, increasing the number of people with eye care insurance is an important concern, especially for those at high risk for vision-loss, such as persons with diabetes or cardiovascular disease.

A related concern is the issue of vision testing. Some eye diseases, such as AMD are progressive and more amenable to treatment if discovered early [1]. However, based on the estimates presented here, about a third of adults 40 years and older did not have a vision-exam in the last 12 months. This suggests a need for public education on the importance of routine vision testing and efforts to improve eye care insurance status in Kansas.

## Conclusion

This report is the first attempt to examine the statewide prevalence estimates for visual impairment, eye diseases and eye care access. These estimates are important for understanding the burden of visual impairment and diseases of the eye in Kansas and for identifying opportunities for improving access to eye care and for developing programs to reduce the burden of visual impairment and eye diseases. A future report on the results from this survey module will focus on disparities related to the burden of visual impairment and eye disease and access to eye care.

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Ghazala Perveen, MBBS, PhD, MPH

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## Hospital Compare and AHRQ 2008 State Snapshot Measures Added to KIC

Links to Hospital Compare and AHRQ 2008 State Snapshot Measures have been added to KIC. The U.S. Department of Health and Human Services maintains an on-line query tool providing information on the quality of hospital patient care for selected medical conditions or surgical procedures. The information is obtained from a patient survey about the quality of care they received during a recent hospital stay. This information can be used to compare the quality of care provided by hospitals to their patients. Hospital Compare was created through a cooperative effort between the Centers for Medicare and Medicaid Services (CMS), the Department of Health and Human Services (HHS), and other members of the Hospital Quality Alliance: Improving Care through Information (HQA). The data are submitted by hospitals agreeing to submit quality information for Hospital Compare. Selection options are available for most Kansas hospitals for a variety of quality indicators for medical conditions and surgical procedures.

AHRQ 2008 State Snapshot Measures provide information about health care quality. These measures contain information about strengths, weaknesses, and opportunities for improvement. The snapshots are based on data collected for the National Healthcare Quality Report (NHQR). They have information about overall health care quality, types of care (preventive, acute, and chronic), setting of care (hospitals, ambulatory care, nursing home, and home health), and selected clinical conditions with special focus areas on diabetes, asthma, Healthy People 2010, clinical preventive services, and disparities. Information is available specifically for Kansas.

Rachel Lindbloom, MA, LSCSW  
Office of Health Assessment

## What You Should Know About the H1N1 Flu Vaccine: A column published on October 12, 2009

October marked the start of the largest vaccine deployment in history. As the first shipments of the H1N1 flu vaccine arrive in Kansas, it is worth noting that a new chapter in humanity's long struggle with influenza viruses has begun. For the first time ever, people have come together to stop a flu pandemic dead in its tracks by taking away the one thing the virus needs to survive: susceptible human hosts. As the vaccine induces ever-wider immunity in the population, it promises to bend down the curve of the current epidemic, leaving the H1N1 virus with no place to go.

With all the attention the vaccine is getting, many Kansans are asking good questions about it. Is the vaccine really necessary? Will it work to protect me or my children against illness? How do I know it is safe?

A majority of Kansans have indicated that they will likely obtain the vaccine. For now they need to be patient as we await larger supplies of the vaccine in coming weeks, and as we dis-



tribute available doses initially to target groups who are at especially high risk of complications from H1N1 flu infections.

Meanwhile, a vocal minority has already begun an active campaign against the vaccine. Many others remain undecided about it.

It is easy to get confused, so now is a good time to review what we know about the vaccine and what we can expect about its safety and effectiveness:

1. The vaccine is needed. While the H1N1 virus has not been as lethal as the virus that caused the dreaded 1918 pandemic, for a fraction of cases it causes a very serious disease, even death. As of the first week in October, we know of at least 146 reported hospitalizations related to H1N1 flu, and believe that the actual number is really much higher. We also know of six H1N1-related deaths in Kansas. It is extraordinary to see so much influenza as early as mid-October, and the impact of this flu virus on children and young adults is unprecedented in modern times. Without the protection of the vaccine, the potential for significant absenteeism in coming weeks is high, causing disruption to schools, businesses and normal community activities throughout the state.

2. The vaccine is effective. Clinical trials conducted on volunteers during the summer months yielded a pleasant surprise about the H1N1 vaccine: It produces a robust immune response that should prevent disease in most people after a single dose. Children under ten need two doses, given at least three weeks apart, but we can expect nearly everyone else to be protected against H1N1 flu within a couple weeks of receiving a single dose of the vaccine.

3. The vaccine is safe. The H1N1 vaccine really isn't a "new" vaccine at all. It has been manufactured using the same processes used for making seasonal flu vaccines for years. Hundreds of millions of people have received these vaccines with very few serious adverse effects. We expect the H1N1 vaccine to have a similar safety profile, with only mild, localized reactions, such as soreness or swelling at the injection site, as was seen in the clinical trials.

4. Vaccine safety will be monitored carefully. Information on adverse events following H1N1 vaccination throughout the United States will be analyzed thoroughly to ascertain if such events are coincidental or possibly related to the vaccine. With so many people being immunized, it is almost certain that a few vaccine recipients will suffer unfortunate outcomes that are probably not related to the vaccine. For example, every day in Kansas there is on average 27 heart attacks, 20 strokes, five first-time seizures, and 22 pregnancies that end in miscarriages. It is inevitable that some of these unwanted events will occur in someone recently immunized with the H1N1 vaccine. Judgments about whether a certain outcome is actually related to the vaccine will require a formal comparison between the observed rate in vaccinated people versus the expected rate in the general population.

I cannot say that the H1N1 vaccine will prevent the flu in everyone who gets it, nor can I say that getting the vaccine entails absolutely no risk. There are no risk-free options in life.

What I can say is that the odds of avoiding a potentially serious disease will be much better this flu season for those who are vaccinated against H1N1 influenza compared to those who are not. I can also say that the chances of serious adverse outcomes after getting infected with the flu itself are immensely greater than any theoretical risk of harm associated the vaccine.

For me and my family, the choice is clear. I'll take my chances with the H1N1 vaccine over my chances with this year's flu.

*Jason Eberhart-Phillips, MD, MPH  
Kansas State Health Officer, Director of Health, KDHE*

\*As of November 5, there are now 14 H1N1-related deaths in Kansas

## 2009 Summit Cultivating Healthy Kansans

In December 2009, 20 state and local partner organizations from across Kansas will host Cultivating Healthy Kansans— A Leadership Summit on Health Promotion and Chronic Disease Prevention.

The 2009 Summit will feature national, regional, state and local speakers focused on disease self-management, quality of care, environmental and social influences on health, the built environment, community planning and smart growth and effective collaborations to impact chronic disease and injury prevention. Plenary, round table, poster and concurrent sessions will highlight successful prevention efforts, best practices and successful projects. The summit will offer public health professionals, epidemiologists, city planners, medical providers, academicians, researchers, elected officials, community leaders and non-profit organization staff extensive networking and learning opportunities. The Summit will provide valuable information that will be applicable to all counties. Summit attendees will enjoy informative exhibits, poster sessions, networking at an evening reception and meals designed to showcase Kansas food products. Join us in Topeka for the 2009 Cultivating Healthy Kansans Summit!

### Summit Dates and Locations

December 1<sup>st</sup> 12:00 pm to 5:00 pm

December 2<sup>nd</sup> 7:30 am to 5:00 pm

December 3<sup>rd</sup> 7:30 am to Noon

Topeka Capitol Plaza Hotel and Maner Conference Center  
Topeka, Kansas

### Who Should Attend

- Public health and health education professionals at the local and state level.
- State and local elected leaders.
- State, city and county government officials.
- Academic and research staff and students from educational institutions.
- Physicians, nurses, dentists, nutritionists, dietitians, health care administrators, health educators, epidemiologists, statisticians, behavioral scientists, health communications specialists, evaluation specialists, and health economists.
- Directors, managers, and executives of voluntary health professional associations.
- Leaders from transportation, aging, agriculture, community planning, recreation, schools and other sectors impacting public health.

*Bureau of Health Promotion*

## New State Epidemiologist

D. Charles Hunt, MPH, is the new State Epidemiologist and Director of the KDHE Bureau of Surveillance and Epidemiology.

Mr. Hunt has worked for KDHE for more than 10 years and has served as the Interim State Epidemiologist since July 2008. While at KDHE he has also served as Deputy State Epidemiologist in the Bureau of Surveillance and Epidemiology and Senior Epidemiologist in the Bureau of Health Promotion.

Mr. Hunt has served as a Research Instructor with the Department of Preventive Medicine and Public Health at the University of Kansas Medical Center in Kansas City, where he continues to hold an adjunct faculty appointment. He has also worked in both communicable disease surveillance and control and health promotion as a local public health official in Johnson County.

## **KDHE Awarded CDC Environmental Public Health Tracking Grant**

In continuing efforts to protect the health of Kansas residents from environmental hazards, the Kansas Department of Health and Environment (KDHE) reports it has been selected by the Centers for Disease Control and Prevention (CDC) to receive grant funding to develop an Environmental Public Health Tracking Network for Kansas.

When completed, the tracking network will enable Kansas to join more than 16 other states in sharing valuable information concerning what we know about the environment's impact on health.

Development of the network is part of a national initiative led by the CDC and will include the development of a web-based system to track key environmental hazards and health problems across Kansas. It will improve understanding and lead to public health actions that can prevent chronic illnesses such as asthma and cancer.

"In the face of emerging issues such as concern about indoor air quality and rising rates of asthma in children, protecting our state's health from environmental hazards is a top priority," said Dr. Jason Eberhart-Phillips, State Health Officer and Director of KDHE's Division of Health.

Dr. Eberhart-Phillips added. "When completed, Kansans will be able to access critical environmental health information that will help them make informed decisions and take action to protect themselves and their families."

Until now, there has been a fundamental gap in our nation's knowledge of how the environment affects health. Chronic disease accounts for 70 percent of deaths in the United States. While links between certain chronic diseases and the environment have been reported, many of these connections remain unclear. With KDHE's participation, CDC's environmental public health tracking efforts will work to close this gap.

Timely, integrated environmental and health data at the federal, state and local levels via the national and state tracking networks will provide a basis for early notification of pending environmental events.

For more information please visit the KDHE Bureau of Environmental Health web site at <http://www.kdheks.gov/beh/index.html> or <http://www.cdc.gov/ephrtracking>.

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