

## Prevalence of Being Up-to-Date with Colorectal Cancer Screening Guidelines among Kansas adults, Kansas BRFSS 2014

### Background

Cancer screening is the process of undergoing tests or examinations to detect disease in the absence of symptoms. Regular colorectal cancer screening can prevent many cases of colorectal cancer altogether by finding and removing certain types of polyps before they have the chance to turn into cancer [1]. Additionally, if detected at an early stage, colorectal cancer can be treated more effectively [2].

Colorectal cancer (CRC) is the third most common type of cancer and the second leading cause of cancer death in the United States [3]. During the time period 2008-2012, the age-adjusted incidence rate for colorectal cancer among Kansans was 43.6 cases per 100,000 persons (95% CI: 42.5-44.7) [4]. In the same time period, the age-adjusted colorectal cancer mortality rate among Kansans was 15.5 deaths per 100,000 persons (95% CI: 14.9-16.2) [5]. Current levels of CRC screening in the U.S. lag behind those of other effective cancer screening tests; it has been estimated that attaining population colorectal cancer screening goals could save 18,800 lives per year nationwide [3].

According to the American Cancer Society, only a little more than half of people who should get tested for colorectal cancer are actually screened. This may be due to barriers such as a lack of public and health care provider awareness of screening options, costs of screening, and lack of health insurance coverage [1].

The U.S. Preventive Services Task Force (USPSTF) recommends that men and women ages 50-75 years old should have one of the following colorectal cancer screening tests [3]:

- Annual high-sensitivity fecal occult blood testing (FOBT),
- Sigmoidoscopy every five years combined with high-sensitivity FOBT every three years, or
- Colonoscopy every 10 years.

### Objective

In this report, we provide an update on the prevalence of meeting USPSTF screening guidelines for colorectal cancer overall and among subpopulation groups of Kansas adults. In addition, we compare the

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demographic profile of Kansas adults who receive annual FOBT with those who receive colonoscopy every 10 years.

## Methods

The 2014 Kansas Behavioral Risk Factor Surveillance System (BRFSS) data were used for this report. Kansas BRFSS is an ongoing, annual, population-based, random digit-dial survey of non-institutionalized adults aged 18 years and older living in private residences or college housing with landline or cell phone service in Kansas.

Weighted survey data analysis procedures were conducted to calculate overall and subpopulation prevalence estimates and 95 percent confidence intervals for the following colorectal cancer screening indicators:

1. The percentage of Kansas adults aged 50-75 years who have had an annual FOBT;
2. The percentage of Kansas adults aged 50-75 years who have had a FOBT within the past three years and a sigmoidoscopy within the past five years;
3. The percentage of Kansas adults aged 50-75 years who have had a colonoscopy within the past ten years; and
4. The percentage of Kansas adults aged 50-75 years who have met the USPSTF screening guideline (i.e. FOBT in the past year, or FOBT in the past 3 years and sigmoidoscopy in the past 5 years, or colonoscopy in the past 10 years).

In addition, we compared the demographic profile of Kansas adults who received an annual FOBT with those who had a colonoscopy within the past 10 years. Demographic variables of interest include: gender, age group, race/ethnicity, education level, annual household income, insurance status, county population density, and disability status.

Statistically significant differences in prevalence estimates were approximated by non-overlapping 95% confidence intervals. All analyses were performed by using SAS software 9.3.

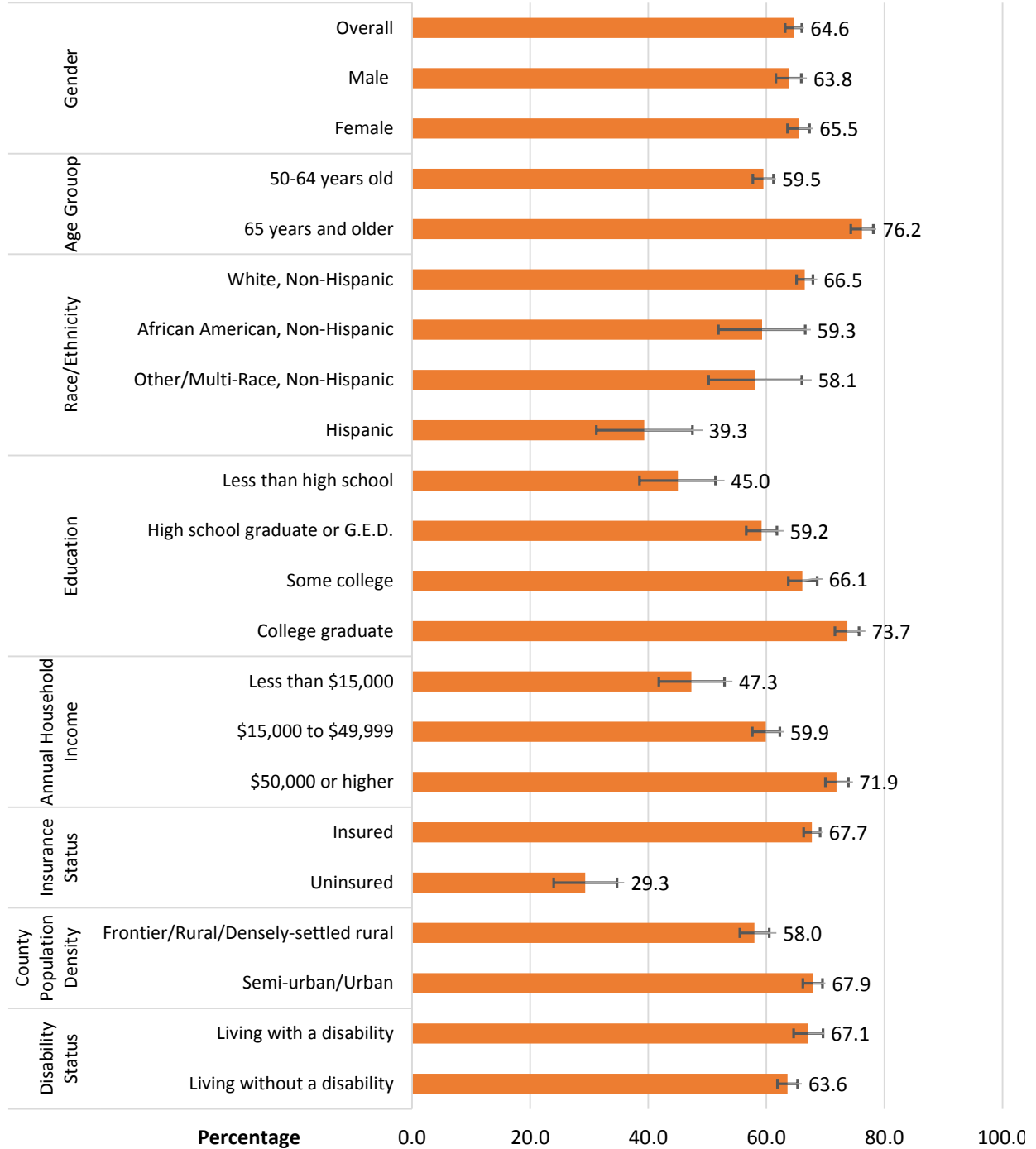
## Results

In 2014, approximately 7.3 percent (95% CI: 6.6-8.0) of Kansas adults aged 50-75 years had an annual FOBT while 61.0 percent (95% CI: 59.6-62.4%) had a colonoscopy within the past ten years. Only 0.2 percent of Kansas adults aged 50-75 years old have had a FOBT within the past three years and a sigmoidoscopy within the past five years. In total, an estimated 64.6 percent of Kansas adults aged 50-75 years old met the USPSTF recommendation for colorectal cancer screening in 2014 (Figure 1).

The percentage of Kansas adults who met the USPSTF CRC screening guideline was significantly higher among:

- Kansans aged 65 years and older (76.2%; 95% CI: 74.3-78.1%) compared with Kansans aged 50-64 years old (59.5%; 95% CI: 57.7-61.2%);
- Non-Hispanic whites (66.5%; 95% CI 65.1-67.9%) compared with Hispanics (39.3%; 95% CI 31.2-47.5%);
- Kansans who attained high school or higher education levels compared with Kansans who attained less than high school education (45.0%; 95% CI 38.5-51.4%);

Figure 1. Percentage of Kansas adults aged 50-75 years who have met the USPSTF colorectal cancer screening guideline\* by selected characteristics, Kansas BRFSS 2014



Source: 2014 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE

\* Respondents aged 50-75 years who received one or more of the colorectal cancer tests: blood stool test in the past year OR blood stool test within the past 3 years and sigmoidoscopy within past 5 years OR colonoscopy within past 10 years.

- Kansans with annual household income \$50,000 or higher (71.9%; 95% CI 70.0-73.9%) compared with those whose annual household income was less than \$50,000;
- Those with health insurance (67.7%; 95% CI 66.3-69.1%) compared with adults without insurance (29.3%; 95% CI 24.0-34.7%); and
- Those who reside in semi-urban/urban counties (67.9%; 95%CI 66.2-69.5%) compared with those who reside in frontier/rural/densely-settled rural counties (58.0%; 95% CI 55.5-60.5%).

**Table 1. Demographic profile of Kansas adults aged 50-75 years who have received an annual FOBT and those who had a colonoscopy within the past 10 years, Kansas BRFSS 2014**

Characteristics	Annual FOBT			Colonoscopy within 10 years		
	Weighted %	95% CI		Weighted %	95% CI	
<b>Gender</b>						
Male	53.0%	48.1%	57.8%	47.9%	46.1%	49.6%
Female	47.0%	42.2%	51.9%	52.1%	50.4%	53.9%
<b>Age Group</b>						
50-64 years old	56.4%	51.6%	61.1%	63.5%	62.0%	65.1%
65 years and older	43.6%	38.9%	48.4%	36.5%	34.9%	38.0%
<b>Race/Ethnicity</b>						
White, Non-Hispanic	87.2%	83.6%	90.8%	88.4%	87.1%	89.6%
African American, Non-Hispanic	6.5%	3.6%	9.3%	5.2%	4.3%	6.2%
Other/Multi-Race, Non-Hispanic	4.7%	2.5%	6.9%	2.9%	2.3%	3.6%
Hispanic	1.2%	0.2%	2.2%	2.6%	1.9%	3.2%
<b>Education</b>						
Less than high school	8.1%	4.5%	11.6%	5.5%	4.4%	6.5%
High school graduate or G.E.D.	26.6%	22.3%	30.9%	26.0%	24.5%	27.5%
Some college	35.8%	31.0%	40.5%	34.9%	33.2%	36.6%
College graduate	29.5%	25.6%	33.5%	33.7%	32.2%	35.2%
<b>Annual Household Income</b>						
Less than \$15,000	10.5%	7.4%	13.7%	4.6%	3.9%	5.4%
\$15,000 to \$49,999	40.0%	35.3%	44.8%	32.5%	30.9%	34.2%
\$50,000 or higher	38.7%	33.9%	43.5%	50.1%	48.4%	51.8%
<b>Insurance Status</b>						
Insured	96.5%	94.7%	98.3%	96.6%	95.9%	97.4%
Uninsured	3.5%	1.7%	5.3%	3.4%	2.6%	4.1%
<b>County Population Density</b>						
Frontier/Rural/Densely-settled rural	33.0%	29.5%	36.4%	26.8%	25.7%	28.0%
Semi-urban/Urban	67.0%	63.6%	70.5%	73.2%	72.0%	74.3%
<b>Disability Status</b>						
Living with a disability	36.0%	31.4%	40.6%	31.6%	29.9%	33.2%
Living without a disability	64.0%	59.4%	68.6%	68.4%	66.8%	70.1%

Source: 2014 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE

Results also showed that Kansas adults who have had a colonoscopy in the past 10 years are more often female than male and tend to be younger, have higher annual household income and live in semi-urban/urban counties (Table 1). In contrast, those who have annual FOBT tend to be older, have a lower annual household income and reside in

rural counties. The distribution of educational attainment and insurance status presented a similar pattern for adults who met either screening recommendation (annual FOBT or colonoscopy in the past 10 years).

## Conclusion

Achieving high prevalence rates of colorectal cancer screening is needed to improve health outcomes among Kansas adults. Subpopulation prevalence estimates also highlight disparities in receiving recommended CRC screening, particularly among adults who are younger, Hispanics, those who attained lower education, those with lower annual household income, and those who reside in rural counties. Public health professionals should continue to identify and implement strategies that reduce barriers to colorectal cancer screening, including financial barriers and limited access.

In addition, health care providers may consider tailoring their health education and outreach for colorectal cancer screening as some demographic subgroups may prefer one screening modality over another. Our results indicated that adults who receive annual FOBT are more often younger, lower income and reside in rural counties compared with those who receive colonoscopy in the past 10 years. National studies have shown similar findings; people who are younger [6], Hispanics and those with lower income are less likely to prefer colonoscopy as their screening choice [7]. Improving colorectal cancer screening rates ultimately requires a multifactorial approach, including increasing public and health care provider awareness of screening guidelines and promoting increased patient-provider communication about colorectal cancer screening.

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## **Risk Factors Associated with Fall-Related Injuries among Kansas Seniors, 2012 and 2014 Kansas Behavioral Risk Factor Surveillance System**

### **Background**

Falls are the leading cause of injury morbidity and mortality in Kansas. During 2008-2012, fall-related injury rates were highest among Kansans 65 years and older [1]. Among all Kansans, this population accounted for 25 percent of emergency department visits and 73 percent of hospitalizations due to a fall-related injury during this time period [1]. Additionally, Kansans 65 years and older also accounted for 88 percent of deaths due to a fall-related injury from 2009 to 2013 [1]. In order to reduce the burden of fall-related morbidity and mortality in Kansas, the Office of Injury and Disability Prevention Programs at the Kansas Department of Health and Environment (KDHE) conducts ongoing surveillance of the prevalence of falls and fall-related injuries in order to identify populations who may benefit from targeted health interventions. One important health intervention supported by KDHE is the Centers for Disease Control and Prevention's (CDC) *Stepping On* program, an evidence-based falls prevention program. The objective of this analysis is to examine risk factors associated with fall-related injuries among Kansans 65 years and older who experienced one or more falls in the past year.

### **Methods**

Kansas BRFSS is an ongoing, annual, population-based, random digit dial landline and cellular telephone survey of non-institutionalized adults aged 18 years and older in Kansas. In 2012 and 2014, the following question was asked among respondents 45 years and older, "In the past 12 months, how many times have you fallen?" If the respondent responded one or more times to this question, one of two follow-up questions was asked depending on the number of falls reported: "Did this fall cause an injury?" (if respondent reported one fall) or, "How many of these falls caused an injury?" (if respondent reported more than one fall). Respondents who reported at least one fall in the past year were then classified into two categories based on their response: 1) any falls injuries in the past 12 months and 2) no falls injuries in the past 12 months. The current study limited analyses to Kansas adults 65 years and older.

Several fall-related injury risk factor indicators were computed, including fall frequency, multiple chronic conditions, inadequate sleep and no leisure time physical activity. Fall frequency was dichotomized as either one fall, or two or more falls. Chronic conditions were defined as having been told by a doctor, nurse, or healthcare professional that they had one or more of the following conditions: disability, arthritis, asthma, chronic

obstructive pulmonary disease, coronary heart disease, diabetes, heart attack, depression, kidney disease, skin cancer, other cancers (excluding skin), or stroke. Inadequate sleep was defined as having on average less than or equal to 6 hours of sleep in a 24 hour period. No leisure time physical activity was defined as not having any physical activity or exercise, such as running, calisthenics, golf, gardening, or walking, in the past 30 days that did not include their regular job.

Complex survey procedures were used in SAS 9.4 to estimate overall and subpopulation prevalence of falls and fall-related injuries among Kansas adults 65 years and older. Logistic regression models were fit with fall-related injury status as the dependent variable (any vs. no fall-related injuries in the past 12 months) and each risk factor as the independent variable. Adjusted logistic regression models controlled for potential confounders, including age, sex, race/ethnicity, education, annual household income, general health status, body mass index, and marital status. Prevalence odds ratio estimates whose 95 percent confidence interval did not contain one were considered statistically significant.

## Results

In 2012 and 2014, nearly 1 in 3 (31.4%) Kansas adults 65 years and older who reported falling in the past 12 months also reported experiencing a fall-related injury (Table 1). Among Kansas adults 65 years and older who reported falling at least once in the past 12 months, prevalence of having any fall-related injuries was significantly higher among women compared with men; those who reported two or more falls compared with those who reported only one fall; those with three or more chronic health conditions compared with those with no or one condition; those with fair or poor health compared with those with excellent, very good or good general health; and those living with a disability compared with those living without a disability. There was no significant difference in prevalence of fall-related injury by race/ethnicity, education, annual household income, marital status, body mass index (BMI), inadequate sleep or leisure time physical activity.

Table 2 shows the unadjusted and adjusted prevalence odds ratios (POR) for fall-related injuries by fall frequency, disability status, and multiple chronic conditions. In the unadjusted analysis, the prevalence odds of a fall-related injury were significantly higher among Kansas adults aged 65 years and older who had fallen more than one time in the past 12 months (POR: 1.3, 95% CI: 1.1-1.6), those who were living with a disability (POR: 1.8, 95% CI: 1.5-2.2), had two chronic conditions (POR: 1.6, 95% CI: 1.2-2.3) and had three or more chronic conditions (POR: 2.0, 95% CI: 1.5-2.7), compared with the respective referent group. After adjusting for potential confounders, the prevalence odds of a fall-related injury remained significantly higher among Kansas adults aged 65 years and older who reported more than one fall in the past year (POR: 1.4, 95% CI: 1.1-1.8), those living with a disability (POR: 1.7, 95% CI: 1.2-2.2), and those with three or more chronic conditions (POR: 2.0, 95% CI: 1.3-3.0).

**Table 1. Prevalence of any fall-related injuries among Kansas adults 65 years and older who reported falling in the past 12 months, by selected demographic characteristics and risk factors, Kansas BRFSS, 2012 and 2014**

Demographic Characteristics and Risk Factors		Any fall-related injuries in the past 12 months	
		Unweighted Frequency	Weighted % (95% CI)
<b>Overall</b>			
Any injury-related falls		814	31.4 (29.4 - 33.4)
<b>Fall Frequency</b>			
1 fall in past 12 months		409	28.4 (25.8 - 31.1)
≥1 fall in past 12 months		405	34.9 (31.7 - 38.1)
<b>Age Group</b>			
65-74 years		388	29.9 (27.0 - 32.9)
75-84 years		291	32.1 (28.7 - 35.5)
85+ years		135	35.0 (29.6 - 40.4)
<b>Sex</b>			
Men		208	24.1 (20.8 - 27.3)
Women		606	36.8 (34.2 - 39.4)
<b>Race/Ethnicity</b>			
White, non-Hispanic		751	31.1 (29.0 - 33.3)
Other		57	36.2 (27.2 - 45.1)
<b>Education</b>			
Less than high school		68	34.7 (27.1 - 42.3)
High school graduate or G.E.D		301	34.9 (31.2 - 38.5)
Some College or technical school		209	27.8 (24.1 - 31.4)
College Graduate		236	29.8 (26.2 - 33.4)
<b>Annual Household Income</b>			
Less than \$15,000		87	35.9 (28.8 - 43.1)
\$15,000 to less than \$25,000		184	33.0 (28.4 - 37.5)
\$25,000 to less than \$35,000		117	32.4 (26.8 - 37.9)
\$35,000 to less than \$50,000		133	34.3 (28.7 - 39.9)
\$50,000 or more		138	26.1 (21.9 - 30.3)
<b>Marital Status</b>			
Married/Member of unmarried couple		332	27.9 (25.1 - 30.7)
Not currently married		481	35.8 (32.8 - 38.8)
<b>General Health</b>			
Excellent, Very Good or Good		504	28.0 (25.6 - 30.4)
Fair or Poor		304	38.4 (34.4 - 42.3)
<b>Inadequate Sleep</b>			
≤ 6 hours		445	30.3 (27.6 - 33.1)
> 6 hours		175	36.8 (31.8 - 41.8)
<b>Disability Status</b>			
Not living with a disability		297	24.6 (21.8 - 27.3)
Living with a disability		513	37.0 (34.0 - 40.0)
<b>Multiple Chronic Conditions</b>			
0 chronic conditions		102	22.8 (18.4 - 27.2)
1 chronic condition		223	27.5 (24.0 - 30.9)
2 chronic conditions		189	33.3 (28.9 - 37.6)
3+ chronic conditions		300	37.9 (33.9 - 41.9)
<b>Body Mass Index (BMI)</b>			
Underweight (<18.5 kg/m <sup>2</sup> )		41	28.4 (19.7 - 37.1)
Normal Weight (18.5-24.9 kg/m <sup>2</sup> )		273	34.8 (31.1 - 38.6)
Overweight (25.0-29.9 kg/m <sup>2</sup> )		250	27.0 (23.7 - 30.3)
Obese (≥30.0 kg/m <sup>2</sup> )		250	34.0 (30.0 - 38.0)
<b>Leisure Time Physical Activity in Past 30 Days</b>			
Yes		491	29.6 (27.1 - 32.2)
No		322	34.3 (30.8 - 37.8)



**Table 2. Unadjusted and adjusted prevalence odds ratios of fall-related injuries among Kansas adults 65 years and older who reported falling in the past 12 months, by selected risk factors, Kansas BRFSS, 2012 and 2014**

Risk Factors	Any fall injuries in the past 12 months	
	Unadjusted Prevalence Odds Ratio	Adjusted* Prevalence Odds Ratio
	POR (95% CI)	POR (95% CI)
<b>Fall Frequency</b>		
1 fall in past 12 months	1.00 (REF)	1.00 (REF)
≥1 fall in past 12 months	1.3 (1.1 – 1.6)	1.4 (1.1- 1.8)
<b>Disability Status</b>		
Not living with a disability	1.00 (REF)	1.00 (REF)
Living with a disability	1.8 (1.5 – 2.2)	1.7 (1.2 - 2.2)
<b>Multiple Chronic Conditions</b>		
No chronic conditions	1.00 (REF)	1.00 (REF)
One chronic condition	1.2 (0.9 – 1.7)	1.2 (0.8 - 2.0)
Two chronic conditions	1.6 (1.2 – 2.3)	1.4 (0.9– 2.1)
Three or more chronic conditions	2.0 (1.5 – 2.7)	2.0 (1.3 - 3.0)
*Note: All models included age, sex, race, education, annual household income, marital status, general health status, and body mass index as confounders. Multiple chronic conditions was defined as having zero, one, two, or three or more of the following chronic conditions: diabetes, arthritis, coronary heart disease, heart attack, cancer (excluding skin), skin cancer, chronic obstructive pulmonary disorder, kidney disease, depression, and current asthma.		

## Discussion

This study reports the prevalence and prevalence odds of fall-related injuries among Kansans 65 years and older with at least one fall in the past 12 months in 2012 and 2014 by selected demographic characteristics and risk factors. Findings revealed that adults who had more than one fall in the past year, those living with a disability and those with at least three chronic conditions had significantly higher prevalence odds of a fall-related injury in the past 12 months after adjusting for confounders. Inadequate sleep and no leisure time physical activity in the past 30 days were not associated with a fall-related injury after adjusting for confounding variables. In every statistical analysis, the prevalence odds of a fall-related injury were significantly higher for women compared with men and individuals with fair or poor health compared with those with excellent, very good or good general health status (data not shown).

Several studies have reported risk factors for falls and fall-related injuries that are generally consistent with this report. A longitudinal study of Medicare patients found that older adults, women, non-whites, those with fair or poor health, and those with an increased number of limitations and comorbidities were more likely to have experienced more than one fall in the past year after adjusting for BMI, smoking status, overall health status, living status (i.e. living alone versus living with others), income, education, marital status, race and sex [2]. Other risk factors for fall-related injury identified in the scientific literature include females with gait and balance disorders [3], having at least one limitation associated with an activity of daily living, such as problems with walking, bathing, dressing, eating, and getting out of bed [4] and a home environment that lacks accessibility features [5]. Another important risk factor for falls injuries is use of sedatives, antidepressants,

hypnotics, and benzodiazepine [6]. These drugs can impair the user's balance and mobility making him or her drowsy thereby increasing the risk of a fall. According to prescription drug monitoring program data in at least seven states in 2013, the groups with the highest rates of benzodiazepine prescriptions were women and individuals aged 65 years and older [7].

Based on the findings from the current study, public health interventions should focus on overcoming individuals' activity limitations associated with multiple chronic health conditions and living with a disability, particularly among women. Additional research suggests that fall-related injury prevention efforts should implement a multifactorial approach through a combination of home modification [6], medication management, gait and balance training, vision management, assistive technology (e.g. canes, walkers), and exercise [7]. Sharing this knowledge with health education specialists involved in preventing older adult falls could help to reduce the burden of fall-related injury among older adults in Kansas.

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## Syndromic Surveillance - Alcohol-Related Emergency Department Visits Associated with a Community Event

In Kansas, the Kansas Department of Health and Environment (KDHE) Syndromic Surveillance Program, funded under a CDC grant, has access to high quality data from 44 of the state’s 128 emergency departments and test data from 66 of the others. In total, KDHE receives information from 45.5 percent of all Kansas ED visits at a high quality and an additional 49.4 percent at a lesser quality.

Fake Patty’s Day (FPD) is an annual event centered on the Aggieville district of Manhattan, KS. This event is not endorsed by the city or the county and, while scheduling and planning is extensive in preparation for it, participants are consistently reminded that this is not a city or State sponsored event [1]. FPD is held in early March on a Saturday prior to the St. Patrick’s Day holiday and was held on Saturday, March 5<sup>th</sup> of this year. The event involves excessive daytime drinking and celebrating and attracts college students and alumni from across the nation.

As FPD has grown, it has necessitated a large preparedness effort from the Riley County Police Department (RCPD) and the Aggieville Business Association. The business association utilizes the holiday as a day of extreme traffic and tourism and the RCPD has had to bring in partners from other counties to help police the event. Estimated total cost to the RCPD is approximately \$60,000 for the day in addition to normal operating expenses [2]. As Fake Patty’s Day has grown, the need to be prepared for this annual event prompted KDHE to utilize the Syndromic Surveillance Program to better grasp the impact of this event on regional emergency departments.

### Methods

To develop Fake Patty’s Day-related syndrome definitions, the Syndromic Surveillance Program utilized knowledge of ED visit text related to alcohol, explicit substances, car accidents, falls and other injuries (Figure 1). These syndrome definitions were based on the “Chief Complaint,” “Triage Notes,” and “Diagnosis Text” of the emergency department visits. The below table displays the three rough syndrome outlines and the qualifying terms.

Figure 1. Term Segments Comprising Syndrome Definitions

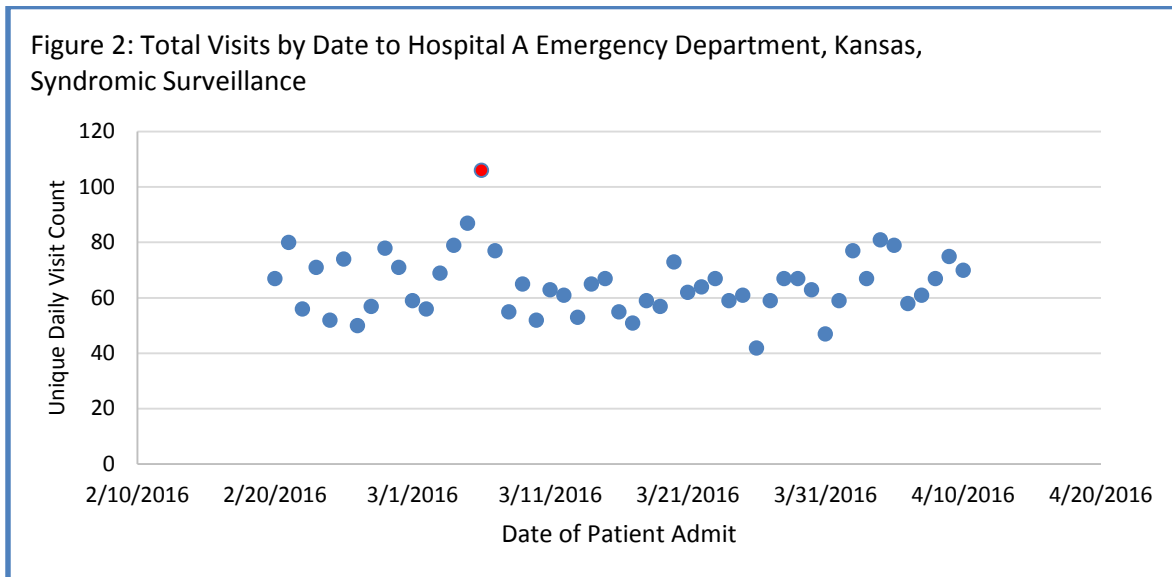
Syndrome	Qualifying Terms
Alcohol-Related	ETOH, DRUNK, TOX, DRINK, ALC
Injuries	FELL, FALL, HURT, INJURY, CONTUS, CONCUS
Motor Vehicle Accidents (MVA)	MVA, CRASH, COLLISION, COLLIDE, CAR, TRUCK, VEHICLE, TRAFFIC

Syndrome definitions were searched for in a data set of all ED visits to Hospital A, a general community hospital, between the dates of February 20<sup>th</sup> and April 10<sup>th</sup> of 2016. Data sorting and manipulation was performed in SAS and Excel. Z-scores were calculated in SAS.

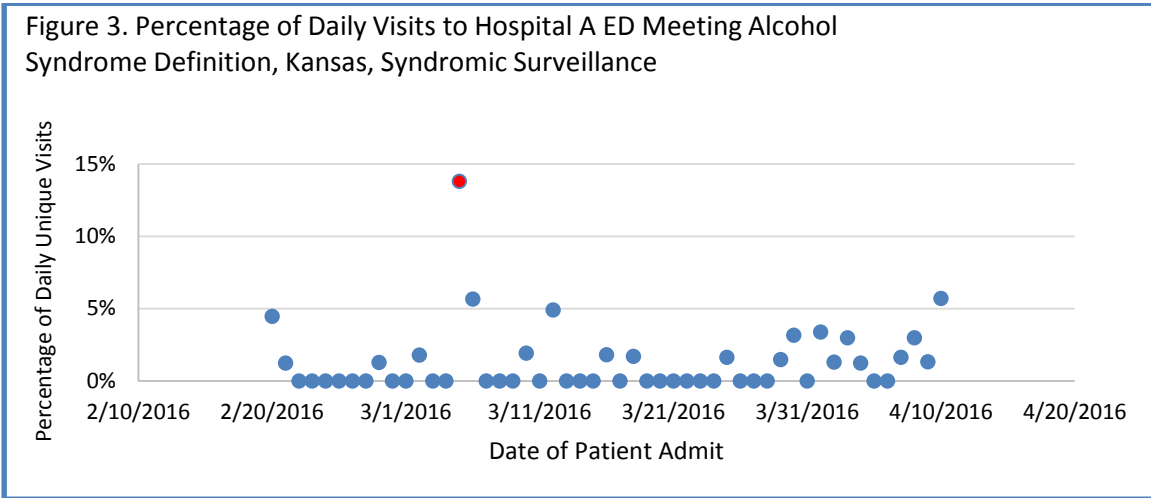
## Results

Between the dates of February 20<sup>th</sup> and April 10<sup>th</sup> of 2016, Hospital A received 3,317 Emergency Department (ED) visitors. Of these visits, 48 met the syndrome definition related to alcohol consumption, 35 met the syndrome definition related to injuries and falls, and 29 met the syndrome definition related to motor vehicle accidents.

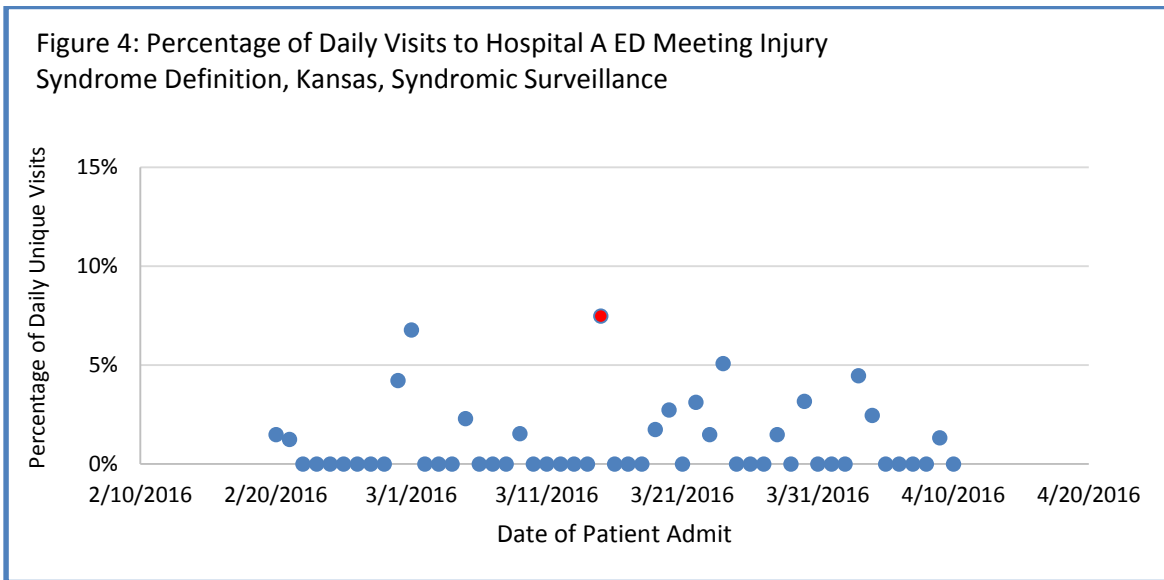
Total ED visits showed a mean daily visit count of 65.04 with standard deviation 11.33. Grubbs' test for outliers was performed and Sunday, March 6<sup>th</sup> was found to be an outlier with 106 visits occurring on that date (Figure 2). Due to this, further analysis was performed as a function of the percent total of the visits occurring on the same day.



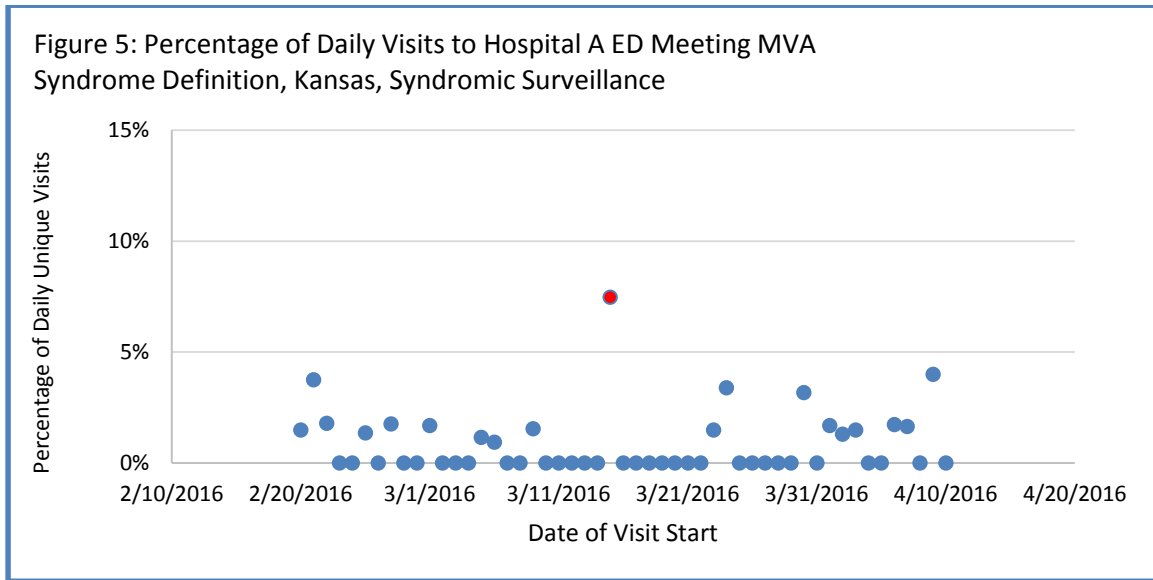
Mean percentage of daily visits meeting the alcohol syndrome definition was 1.3 percent with a standard deviation of 2.4 percent. Grubbs' test for outliers was performed and the only date greater than 3 standard deviations from the mean was Saturday, March 05, 2016 with a z-score of 5.25 and 13.8 percent of that day's visits meeting the alcohol-related syndrome definition (Figure 3).



Mean percentage of daily visits meeting the injury syndrome definition was 1.0 percent with a standard deviation of 1.8 percent. Grubbs’ test for outliers was performed and the only date greater than 3 standard deviations from the mean was Tuesday, March 15, 2016 with a z-score of 3.53 and 7.46 percent of that day’s visits meeting the injury-related syndrome definition (Figure 4).



Mean percentage of daily visits meeting the MVA syndrome definition was 0.8 percent with a standard deviation of 1.4 percent. Grubbs’ test for outliers was performed and the only date greater than 3 standard deviations from the mean was Tuesday, March 15, 2016 with a z-score of 4.6 and 7.46 percent of that day’s visits meeting the MVA-related syndrome definition (Figure 5).



## Discussion

At Hospital A, whose patient population includes the Aggieville District, there was a significant increase in the number of visits related to alcohol consumption on the day of Fake Patty’s Day. There was a net increase in the number of ED visits due to falls and injuries compared to previous weeks, but this was not statistically significant when compared to prior weekends. Furthermore, FPD coincides with the day with the highest number of ED visits this year to date.

KDHE plans to utilize this data to inform stakeholders involved with Fake Patty’s Day in coming years to better guide preparedness. Further research is being done to look into the demographics of the individuals visiting the ED such as their age, race, and county of residence and deliver this datato stakeholders with the most complete information available. The Syndromic Surveillance Program at KDHE will continue to explore the utilization of ED visits related to mass gatherings in Kansas.

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## Acknowledgement

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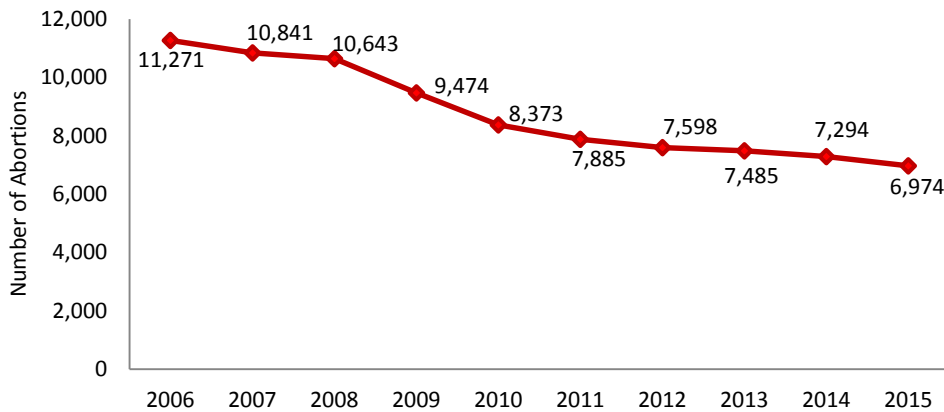
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2. Sweeney, C. Aggieville businesses, RCPD prepare for Fake Patty’s Day. Available at: <http://ksnt.com/2016/03/04/aggieville-businesses-rcpd-prepare-for-fake-pattys-day/>. Accessed on May 2016.

## Preliminary 2015 Abortion Report Issued

There were 6,974 abortions reported in Kansas during 2015, a decrease of 4.4 percent from the final 2014 report (320 fewer). The preliminary total represents a 38.1 percent decrease in abortions reported in Kansas since 2006 (Figure 1).

Figure 1. Number of Abortions by Year, Kansas, 2006-2015



\* 2015 is a Preliminary total

Of the abortions reported in Kansas during 2015, a total of 3,579 (51.3%) occurred to Kansas residents. The number of Kansas residents obtaining abortions decreased by 3.7 percent compared to 2014. Of the 3,395 out-of-state residents who obtained abortions in Kansas, 3,060 (90.1%) were Missouri residents.

Women 20-24 years of age comprised the largest age-group seeking abortions (31.6%) followed by those aged 25-29 years (26.4%). There were 13 abortions to women under age 15 reported in 2015, 18.8 percent less than in 2014.

In 2015, White non-Hispanic women accounted for over half (56.1%) of reported abortions. Black non-Hispanic women accounted for about one out of five (21.2%) reported abortions and Hispanic women of any race accounted for about one out of 10 (13.0%) reported abortions. The percentage of abortions reported among Black non-Hispanic women was unchanged in 2015 (21.2%) compared to the percentage in 2014 (21.3%).

Other findings from the 2015 preliminary report:

- Over four out of five Kansas-reported abortions occurred to unmarried women (84.0%), 0.5 percent fewer than in 2014 (84.5%).
- In 2015, about three out of five (4,522 or 64.8%) women who reported never having a previous abortion was unchanged since 2014 (64.9%).
- About one in four women reported having one previous abortion (1,618 or 23.2%). A total of 121 women (1.7%) indicated they had previously had four or more abortions.
- More than three out of five (62.6%) of all reported abortions occurred prior to nine completed weeks of gestation. The change was a decrease from 2014 (66.4%).

The 2015 Preliminary abortion Report is available at <http://www.kdheks.gov/hci/absumm.html>.

The final tally of Kansas abortions will be available in the 2015 Annual Summary of Vital Statistics.

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## Announcements

### New KHM Updates

Kansas Health Matters (KHM) maintains over 150 indicators at county and regional levels in Kansas. Indicators administered by the KHM partners are updated annually. Updates occur each quarter of the calendar year. For the first quarter of CY 2016, the following indicators were updated:

- Percentage of Screened 3-12 Grade Students with Not Dental Sealants
- Percentage of Screened K-12 Grade Students with Obvious Dental Decay
- Rate of Violent Crime per 1000 Population
- Ratio of Children to Adults
- Ratio of Elderly Persons and Children to Adults
- Ratio of Elderly Person to Adults
- Sexually Transmitted Disease Rate
- Staffed Hospital Bed Ratio

### Vital Records Reporting to Improve

The Kansas Funeral Directors Association introduced House Bill 2518 which requires all death records to be filed using our electronic death registration system (EDRS). Governor Brownback signed this bill on March 28 making mandatory EDRS usage effective January 1, 2017.

Electronic filing allows for timely reporting of death records which is critical for detecting illnesses which impact public health. In addition, many families rely upon the timely settlement of the decedent's estate; this cannot be completed without a state certified death record. The end of life process is the last customer service act offered by the funeral homes and physicians.

Over the past several years the Office of Vital Statistics (OVS) has been providing personalized training for the voluntary users of EDRS. With the passing of this bill, the remaining funeral home directors, coroners and physicians who are not using EDRS must be trained by the end of the year. The OVS team has begun reaching out to this population to inform them of the law change and upcoming training opportunities.

Although HB2518 assists us in achieving our goals, we also understand that this is merely one step towards these goals. It's a big step but certainly in and of itself, it does not ensure success. Once everyone is using EDRS, we still need to ensure that death data is reported in a timely manner and that the data being reported is complete and accurate.

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Kansas Health Statistics Report

Population Estimates and Change by County, Kansas 2014 and 2015									
Geography	Population Estimate (as of July 1)		Change 2014 to 2015		Geography	Population Estimate (as of July 1)		Change 2014 to 2015	
	2014	2015	N	%		N	% [1]	N	%
Kansas	2,904,021	2,911,641	7,620	0.3	Lincoln	3,167	3,105	-62	-2.0
Allen	12,909	12,717	-192	-1.5	Linn	9,502	9,536	34	0.4
Anderson	7,883	7,808	-75	-1.0	Logan	2,794	2,825	31	1.1
Atchison	16,513	16,398	-115	-0.7	Lyon	33,212	33,339	127	0.4
Barber	4,897	4,823	-74	-1.5	McPherson	29,241	28,941	-300	-1.0
Barton	27,385	27,103	-282	-1.0	Marion	12,208	12,103	-105	-0.9
Bourbon	14,772	14,712	-60	-0.4	Marshall	10,006	9,936	-70	-0.7
Brown	9,815	9,776	-39	-0.4	Meade	4,357	4,330	-27	-0.6
Butler	66,227	66,741	514	0.8	Miami	32,822	32,553	-269	-0.8
Chase	2,692	2,679	-13	-0.5	Mitchell	6,284	6,282	-2	0.0
Chautauqua	3,481	3,402	-79	-2.3	Montgomery	34,065	33,314	-751	-2.2
Cherokee	20,787	20,533	-254	-1.2	Morris	5,698	5,645	-53	-0.9
Cheyenne	2,693	2,679	-14	-0.5	Morton	3,110	3,007	-103	-3.3
Clark	2,144	2,096	-48	-2.2	Nemaha	10,148	10,227	79	0.8
Clay	8,317	8,347	30	0.4	Neosho	16,416	16,346	-70	-0.4
Cloud	9,385	9,219	-166	-1.8	Ness	3,105	3,005	-100	-3.2
Coffee	8,433	8,384	-49	-0.6	Norton	5,560	5,550	-10	-0.2
Comanche	1,954	1,843	-111	-5.7	Osage	15,936	15,847	-89	-0.6
Cowley	35,963	35,788	-175	-0.5	Osborne	3,756	3,683	-73	-1.9
Crawford	39,290	39,217	-73	-0.2	Ottawa	6,065	5,975	-90	-1.5
Decatur	2,908	2,932	24	0.8	Pawnee	6,916	6,838	-78	-1.1
Dickinson	19,394	19,303	-91	-0.5	Phillips	5,533	5,428	-105	-1.9
Doniphan	7,874	7,797	-77	-1.0	Pottawatomie	22,897	23,298	401	1.8
Douglas	116,585	118,053	1,468	1.3	Pratt	9,850	9,691	-159	-1.6
Edwards	3,030	2,968	-62	-2.0	Rawlins	2,584	2,506	-78	-3.0
Elk	2,694	2,605	-89	-3.3	Reno	63,794	63,718	-76	-0.1
Ellis	29,013	29,029	16	0.1	Republic	4,803	4,725	-78	-1.6
Ellsworth	6,392	6,343	-49	-0.8	Rice	10,015	9,977	-38	-0.4
Finney	37,184	37,118	-66	-0.2	Riley	75,194	75,247	53	0.1
Ford	34,795	34,536	-259	-0.7	Rooks	5,155	5,174	19	0.4
Franklin	25,611	25,609	-2	0.0	Rush	3,197	3,130	-67	-2.1
Geary	36,713	37,030	317	0.9	Russell	6,956	7,039	83	1.2
Gove	2,727	2,640	-87	-3.2	Saline	55,755	55,691	-64	-0.1
Graham	2,566	2,591	25	1.0	Scott	5,080	4,964	-116	-2.3
Grant	7,816	7,733	-83	-1.1	Sedgwick	508,803	511,574	2,771	0.5
Gray	6,082	6,133	51	0.8	Seward	23,465	23,152	-313	-1.3
Greeley	1,301	1,330	29	2.2	Shawnee	178,406	178,725	319	0.2
Greenwood	6,328	6,244	-84	-1.3	Sheridan	2,539	2,512	-27	-1.1
Hamilton	2,603	2,474	-129	-5.0	Sherman	6,110	5,983	-127	-2.1
Harper	5,818	5,817	-1	0.0	Smith	3,769	3,704	-65	-1.7
Harvey	34,820	35,073	253	0.7	Stafford	4,297	4,236	-61	-1.4
Haskell	4,106	4,064	-42	-1.0	Stanton	2,111	2,072	-39	-1.8
Hodgeman	1,916	1,893	-23	-1.2	Stevens	5,801	5,806	5	0.1
Jackson	13,539	13,338	-201	-1.5	Sumner	23,528	23,535	7	0.0
Jefferson	18,855	18,930	75	0.4	Thomas	7,891	7,904	13	0.2
Jewell	3,043	2,970	-73	-2.4	Trego	2,902	2,927	25	0.9
Johnson	574,272	580,159	5,887	1.0	Wabaunsee	7,022	6,951	-71	-1.0
Kearny	3,915	3,956	41	1.0	Wallace	1,506	1,518	12	0.8
Kingman	7,698	7,687	-11	-0.1	Washington	5,598	5,598	0	0.0
Kiowa	2,513	2,564	51	2.0	Wichita	2,176	2,157	-19	-0.9
Labette	20,960	20,803	-157	-0.7	Wilson	9,028	8,856	-172	-1.9
Lane	1,687	1,670	-17	-1.0	Woodson	3,157	3,115	-42	-1.3
Leavenworth	78,797	79,315	518	0.7	Wyandotte	161,636	163,369	1,733	1.1

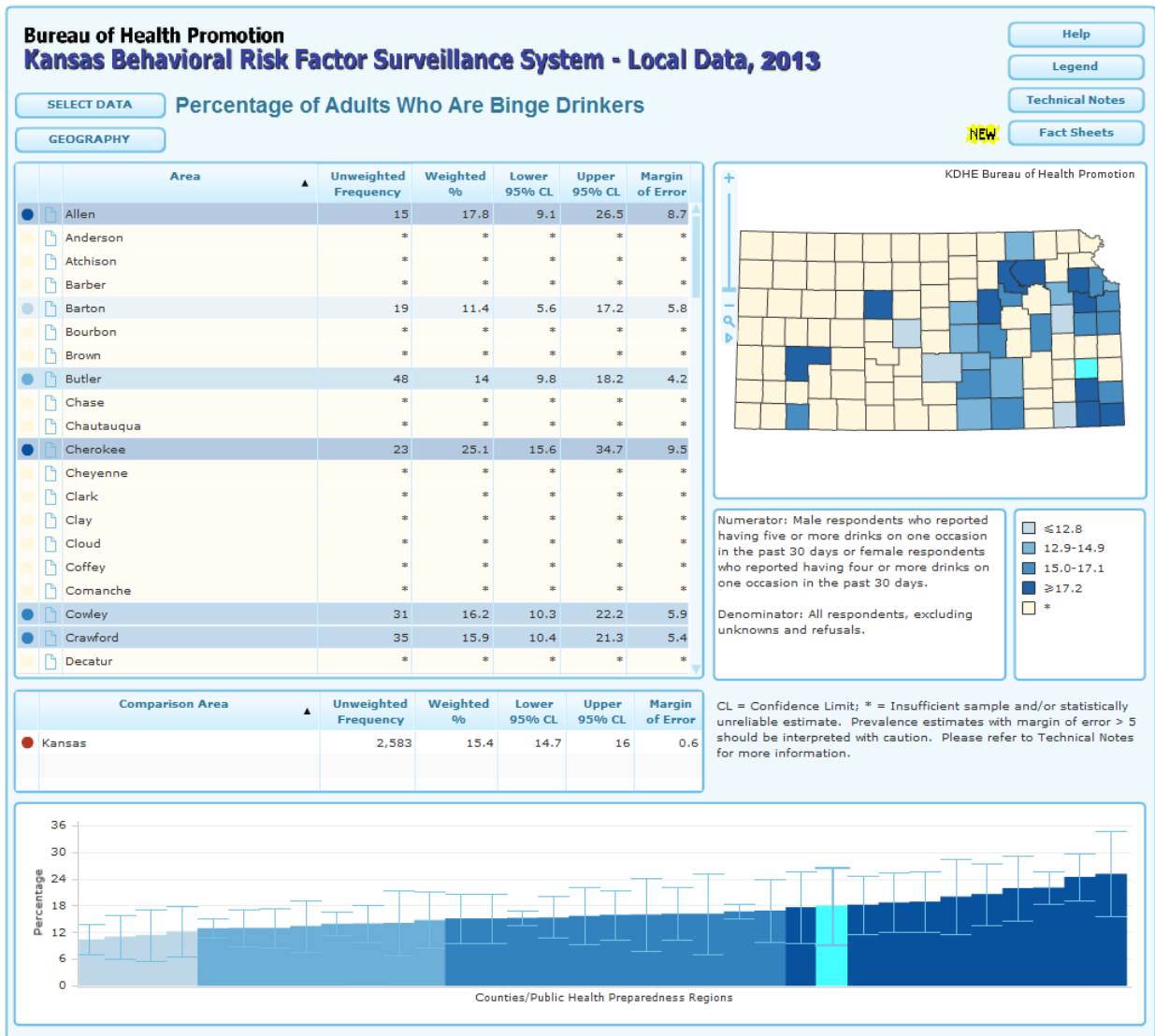
1] Some values are zero due to rounding.

Note: The estimates are based on the 2010 Census and reflect changes to the April 1, 2010 population due to the Count Question Resolution program and geographic program revisions. All geographic boundaries for the 2015 population estimates series except statistical area delineations are as of January 1, 2015.

Source: U.S. Census Bureau, Population Division. 2015 County Total Population Estimates and Components of Population Change. Released: March 2016.

## BRFSS Data Resources at KDHE

The Kansas Department of Health and Environment maintains a number of online data resources for use by policy makers, researchers, and the public. The Kansas Behavioral Risk Factor Surveillance System (BRFSS) is one such tool. In order to better assess the health of Kansans and to design and enhance public health programs to address problems, BRFSS surveys thousands of residents. This anonymized information is prepared in a summary fashion and made available at <http://www.kdheks.gov/brfss/BRFSS2013/index.html>. Information is available for many counties and for past years, enabling communities track their health risk factors and outcomes. For more information, email [gperveen@kdheks.gov](mailto:gperveen@kdheks.gov).

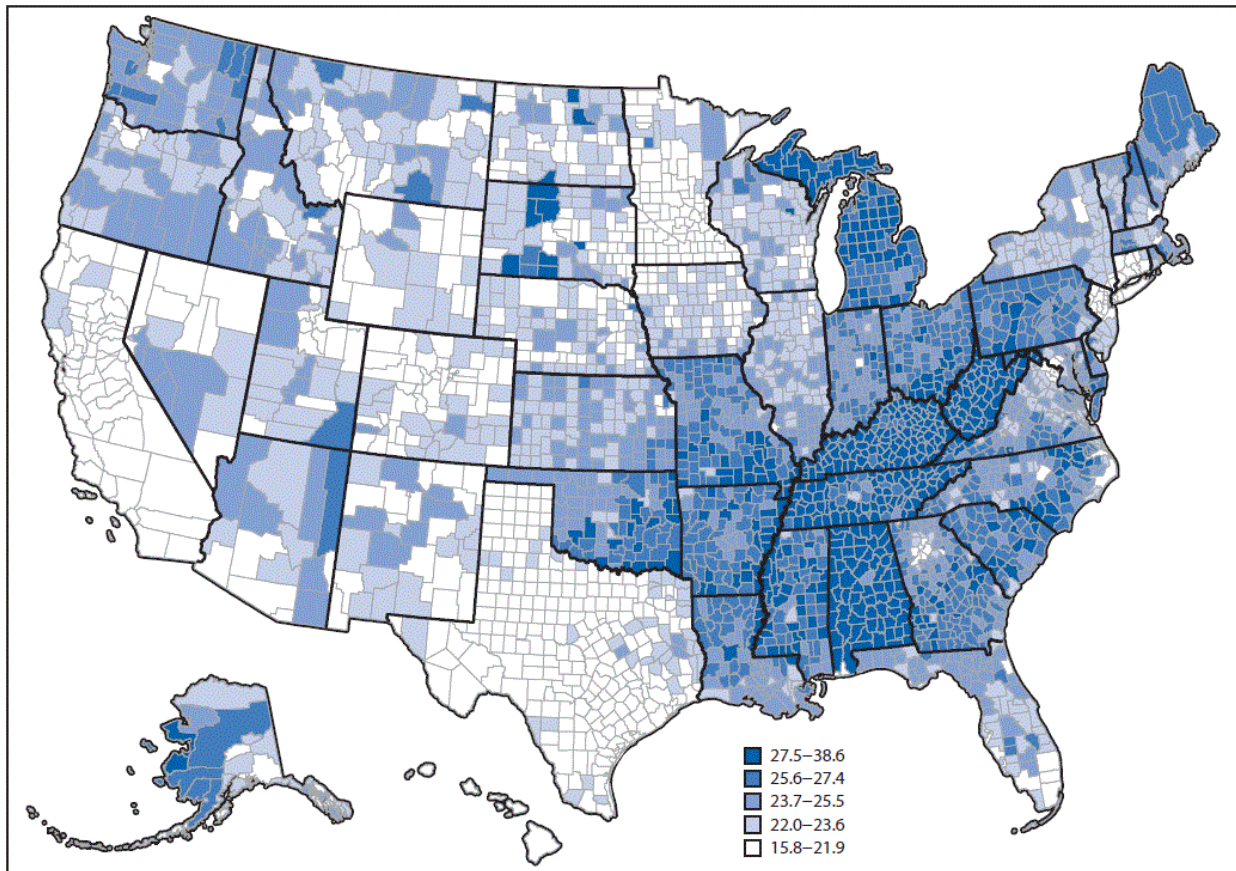


## Fast Stats

May is Arthritis Awareness Month. The 2016 theme for the observance is “See Arthritis”, <http://www.cdc.gov/features/arthritisawareness/index.html>. The theme is designed to raise awareness about the seriousness of arthritis by focusing on accounts from persons affected by the disease.

An estimated 52.5 million (22.7%) adults in the United States have self-reported doctor-diagnosed arthritis. Of those, 22.7 million (9.8% of U.S. adults) have arthritis-attributable activity limitation (AAAL) (1). Arthritis also commonly co-occurs with obesity, heart disease, and diabetes (1). The prevalence of arthritis is projected to increase 49% to 78.4 million (25.9% of U.S. adults) by 2040, and the number of adults with AAAL is projected to increase 52% to 34.6 million (11.4% of U.S. adults) (2). Arthritis and AAAL will remain large and growing problems for clinical and public health systems for many years to come. The map below details the ex

Figure. Age-standardized, model-predicted estimates of the percentage of adults with doctor-diagnosed arthritis, by county — United States, 2014



Behavioral Risk Factor Surveillance System  
CDC, Morbidity and Mortality Weekly Report

## Adverse Childhood Experiences Report Issued

The Kansas Department of Health and Environment Bureau of Health Promotion has issued the state's first *Adverse Childhood Experiences among Kansas Adults Report*. The report uses information obtained through the 2014 Kansas Behavioral Risk Factor Surveillance System (BRFSS).

Researchers have demonstrated a link between adverse childhood experiences (ACE) of abuse, neglect and family dysfunction and health status later in life. This may be explained in part by a toxic physiological stress response, such as elevated stress hormone levels, to multiple stressors, which may have damaging effects on a child's developing brain. The BRFSS introduced an optional module in 2008 to assess the relationship between ACE and health status at the population-level. The ACE optional module was included for the first time in the Kansas BRFSS in 2014. The report is available at: [http://www.kdheks.gov/brfss/PDF/ACE\\_Report\\_2014.pdf](http://www.kdheks.gov/brfss/PDF/ACE_Report_2014.pdf).

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