

# **DEPRESSION AND ANXIETY STATUS IN KANSAS**

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*2008 Behavioral Risk Factor Surveillance System*

This report was prepared by the  
Bureau of Health Promotion, Kansas Department of Health and  
Environment

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## **Report Preparation:**

Ghazala Perveen, MBBS, PhD, MPH,  
Director of Science and Surveillance/Health Officer II  
Bureau of Health Promotion (BHP),  
Kansas Department of Health and Environment

Pratik Pandya, MPH  
Epidemiologist  
Bureau of Health Promotion (BHP),  
Kansas Department of Health and Environment

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The Depression and Anxiety Status in Kansas is available in its entirety at <http://www.kdheks.gov/brfss/publications.html>. Visit the site to request or download additional copies of the report.

## **Kansas Department of Health and Environment (KDHE)**

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To protect the health and environment of all Kansans by promoting responsible choices.

Through education, direct services and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent illness, injuries and foster a safe and sustainable environment for the people of Kansas.

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## **Executive Summary**

Depression and anxiety are considered leading causes of mental health disorders. They are associated with increase risk of morbidity, mortality and poor quality of life. Healthy People 2010 and its corollary Healthy Kansans 2010 plans provide comprehensive objectives and indicators- related to disease prevention and health promotion. Both plans recognize mental health as one of the major public health concerns and include it as one of the ten leading health indicators to monitor the population health.

KDHE collected and analyzed data on depression and anxiety utilizing the 2008 Kansas Behavioral Risk Factor Surveillance System (BRFSS). This report provides comprehensive review of the status of depression and anxiety among Kansas's residents. The Kansas Behavioral Risk Factor Surveillance System Survey is an ongoing population-based telephone survey of non-institutionalized adults aged 18 years and older. Better understanding of the burden of depression and anxiety will assist KDHE, KSMHA and key stakeholders in identifying gaps and developing effective and targeted preventive services for mental illnesses.

Survey results indicate that, in Kansas, an estimated 283,723 (13.5%) adults have ever been diagnosed with depression and nearly 157,624 (7.5%) are currently depressed. Similarly, an estimated 218,572 (10.4%) adult Kansans have ever been diagnosed with anxiety.

One of the objectives addressing mental health issues recommended by Healthy People 2010 is to increase the proportion of adults with recognized depression who receive treatment. Before 2008, data on treatment among Kansans with depression were not available. This information was collected for the first time in Kansas through the 2008 Kansas BRFSS survey. In 2008, survey results showed that about 4 out of 10 (41.8%) adults aged 18 years and older reported having symptoms of depression over a period of two weeks or longer in the past 12 months, who received any treatment. This result would serve as the baseline for Kansas data and allow us to track the progress towards the Healthy Kansans 2010 indicator for mental health.

Data are now available for two years (2006 and 2008), providing adequate sample size to generate scientifically stable estimates of depression and anxiety prevalence in population subgroups like age, race, ethnicity, binge drinking, heavy drinking, coronary heart disease, and stroke. Because sample size for 2006 and 2008 year datasets is too small to analyze separately, the two datasets were combined for analysis and results are presented in this report.

About one in five females had ever been diagnosed with depression as compared to one in ten males. Higher prevalence of ever being diagnosed with depression was seen among age group of 18-24 years, non Hispanics, lower education status, lower income, divorced or separated, unemployed and unable to work. Being diagnosed with depression was also high among obese adults, diabetics, current cigarette smokers, among adults with current asthma, adults with coronary heart disease, and adults who do not participate in leisure time physical activity. One in four adults who rated their health as fair or poor had ever been diagnosed with depression as compared to one in ten who rated their health as excellent, very good or good. About one in three adults who needed to see a doctor in the past twelve months but did not because of the cost had depression. Diagnosis of depression was also higher among adults living with disability as compared to adults living without disability.

About one in ten females were currently depressed as compared to one in twenty males. The prevalence of current depression was also high among adults who were divorced or separated as compared to adults who were married. The prevalence of current depression was higher among adults who had less than high school education as compared to adults who were college graduate. Higher prevalence of current depression was also seen among adults aged 18-24 years, lower income and adults that were unable to work

Current depression was also high among current cigarette smokers, among adults with current asthma and obese adults, those who did not participate in physical activity and those with stroke and diabetes. A higher prevalence of current depression was seen among adults without health care coverage as compared to adults who had health care coverage. One in four adults who rated their health as fair or poor had current depression as compared to one in twenty who rated their health as excellent, very good or good. One in three adults who needed to see a doctor in the past twelve months but could not because of the cost had current depression. Current depression was also higher among adults living with disability as compared to adults living without disability.

About 4 in 10 (41.8%) adults aged 18 years and older who reported having symptoms of depression over a period of two weeks and longer in the past 12 months received any treatment

About one in seven females had ever been diagnosed with anxiety as compared to one in thirteen males. The prevalence of ever receiving diagnosis of anxiety was higher among adults who had lower annual household income (< \$15,000) and in adults who were homemaker or student and unable to work as compared to adults with higher annual household income ( $\geq$  \$50,000) and were employed. The prevalence of ever receiving diagnosis of anxiety was also high among adults who were divorced or separated and were never married as compared to adults who were married. Higher prevalence of ever being diagnosed by anxiety was also seen among adults aged 18-24 years, non Hispanic multiracial, unable to work, current smoker, and those with current asthma, coronary heart disease, and stroke. The higher prevalence of ever being diagnosed with anxiety was seen among adults that reside in the urban region of the state and semi-urban region as compared to adults who reside in the frontier region. Also when the state was classified into two region, the prevalence of ever being diagnosed with anxiety was higher among adults that reside in urban region as compared to adults that reside in rural region.

One in six adults who rated their health as fair or poor had ever been diagnosed with anxiety as compared to one in eleven who rated their health as excellent, very good or good. One in four adults who needed to see a doctor in the past twelve months but did not because of the cost reported having anxiety. Diagnosis of anxiety was also higher among adults living with disability as compared to adults living without disability.

Thus, anxiety and depression, the two leading mental health issues, are prevalent conditions in Kansas. In addition, disparities are seen with respect to various socio-demographic sub groups and among those with other chronic diseases and disability. More than half of the adults with depression do not receive any treatment. These population based survey results indicated the need of public health strategies to address these two important mental health conditions among Kansas adults.

## **Introduction**

Attaining mental health is essential to live a more productive, and quality life. Healthy People 2010 (HP 2010) defines mental health as “a state of successful mental functioning, resulting in productive activities, fulfilling relationships and the ability to adapt to change and cope with adversity.” HP 2010 has a focus area on mental health and mental disorders that addresses mental health status improvement and treatment expansion. Mental health plays a vital role in a person’s well being, family and interpersonal relationships, and a person’s involvement in society.<sup>1</sup> Mental health is also chosen as an area of public health concern and one of the ten leading health indicators in the Healthy Kansans 2010 (HK 2010) plan. HK 2010 plan is a set of recommendations and strategies to address against leading health issues in Kansas. The plan that was developed through partnerships with health providers, organizations, communities, and the state encourages systematic change to reduce health risks and behaviors. Changing behavior, improving the built environment, and strengthening the infrastructure that supports positive health outcomes related to leading health issues like mental illness are the key components of the recommendations made through Healthy Kansans 2010.

Depression is one of the leading mental health disorders.<sup>2</sup> It affects about 20.9 million or 9.6% of the United States population aged 18 years or older in a given year.<sup>3</sup> It is associated with increased risk of morbidity, mortality and impaired quality of life.<sup>4</sup> Depressive and related depressive disorders are the cause of more than two-thirds of suicides each year.<sup>1</sup> Depression is a risk factor for noncompliance of medical treatment and may increase severity of a disease.<sup>4</sup> It is also a costly disease; in 2002, an estimated \$83 billion were spent on direct and indirect cost in the United States.<sup>5</sup> The Healthy People 2010 plan has included Mental Health as one of the ten leading indicators for monitoring health status of the nation and has recommended to increase the proportion of adults with recognized depression who receive treatment.

The types of depression include major depression disorder (MDD), minor depression, dysthymia, and bipolar disorder. Symptoms of depression include persistent sad, anxious, or “empty” mood; feelings of hopelessness, pessimism; feelings of guilt, worthlessness, helplessness; loss of interest or pleasure in hobbies and activities that were once enjoyed, including sex; decreased energy, fatigue, being “slowed down”; difficulty concentrating, remembering, making decisions; insomnia, early-morning awakening, or oversleeping; appetite and/or weight loss or overeating and weight gain; thoughts of death or suicide, suicide attempts; restlessness, irritability; persistent physical symptoms that do not respond to treatment, such as headaches, digestive disorders, and chronic pain.<sup>6</sup>

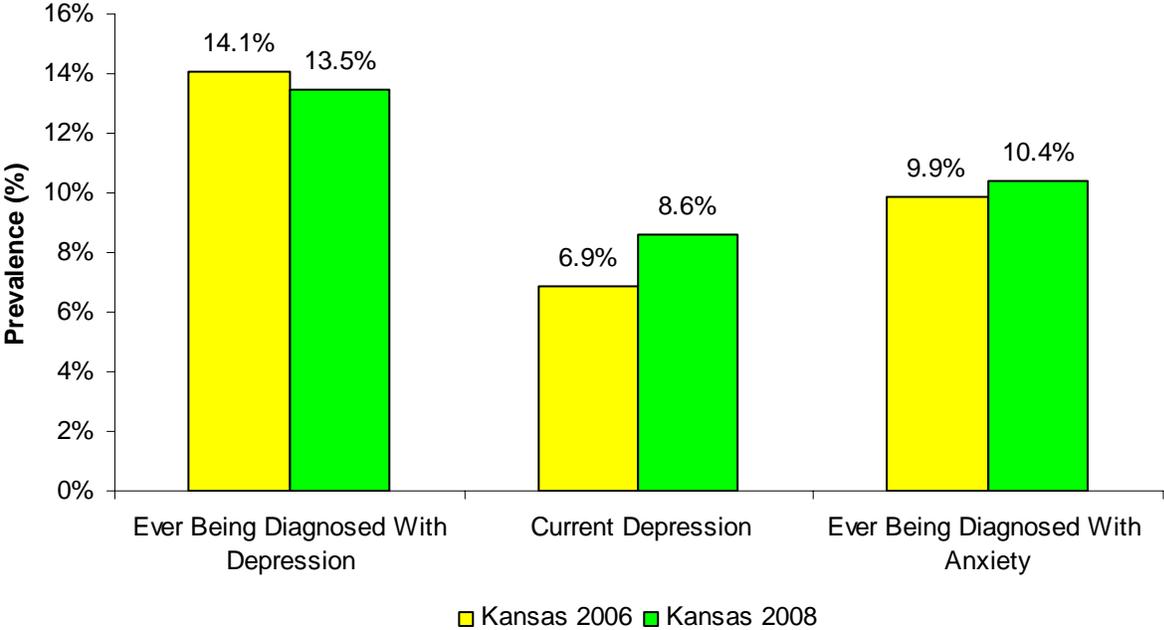
Anxiety disorders are considered the most prevalent mental disorder among adults in the United States.<sup>3, 7</sup> In a given year, an estimated 40 million or 18.1% of adults are affected with an anxiety disorder.<sup>3, 7</sup> An estimated 50% of American adults diagnosed with major depression are also diagnosed with a type of anxiety disorder.<sup>8</sup> Individuals with an anxiety disorder tend to make more frequent trips to the doctors, and are six times more likely to be hospitalized for psychiatric disorders.<sup>7</sup> Despite being in the presence of health care professionals, the symptoms of an anxiety disorder can easily be masked with physical illnesses therefore proper treatment of the disorder is difficult.<sup>7</sup> Scientific literatures showed that people suffering from both a major depression and general anxiety disorder have significantly greater disability as opposed to suffering from just one of the disorders.<sup>9</sup> The type of anxiety disorders include acute stress disorder (ASD), generalized anxiety disorders (GAD), obsessive-compulsive disorder (OCD), panic disorder (PD), posttraumatic stress disorder

(PTSD), social anxiety disorder (also known as social phobia), and specific phobias such as fear of heights and spiders.<sup>10</sup>

In 2008, it is estimated that 13.5% adult Kansans aged 18 years and older had ever been diagnosed with depression, 7.5% had current depression and 10.4% had ever been diagnosed with anxiety as shown in figure 1.

Figure 1

**Prevalence of Ever Being Diagnosed With Depression, Current Depression and Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older, Kansas 2006 and 2008**



Source: 2006 Kansas Behavioral Risk Factor Surveillance System, 2008 Kansas Behavioral Risk Factor Surveillance System

## **The Status of Ever Being Diagnosed with Depression in Kansas**

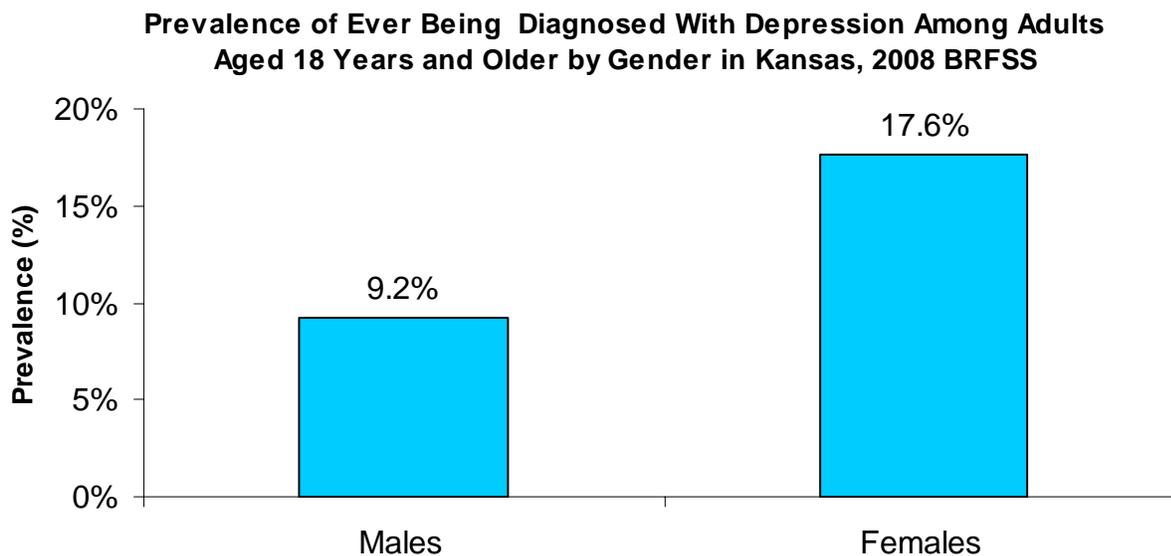
The 2008 Behavioral Risk Factor Surveillance System module on anxiety and depression included a question that asked the respondents if a healthcare provider ever told them that they have a depressive disorder (including depression, major depression, dysthymia, or minor depression). Data from this question was used to analyze and report results for lifetime or ever being diagnosed with depression.

In Kansas, according to the 2008 Behavioral Risk Factor Surveillance System, an estimated **283,723 (13.5%)** adults aged 18 years and older had ever been diagnosed with depression.

### **Sociodemographic Profile of Adults with Depression**

The prevalence of ever being diagnosed with depression was nearly two times higher among females as compared to males. One in five (17.6% [95% CI: 15.8%-19.5%]) adult females reported ever being diagnosed with depression as compared to one in ten (9.2% [95% CI: 7.4%-11.0%]) adult males (Figure 2).

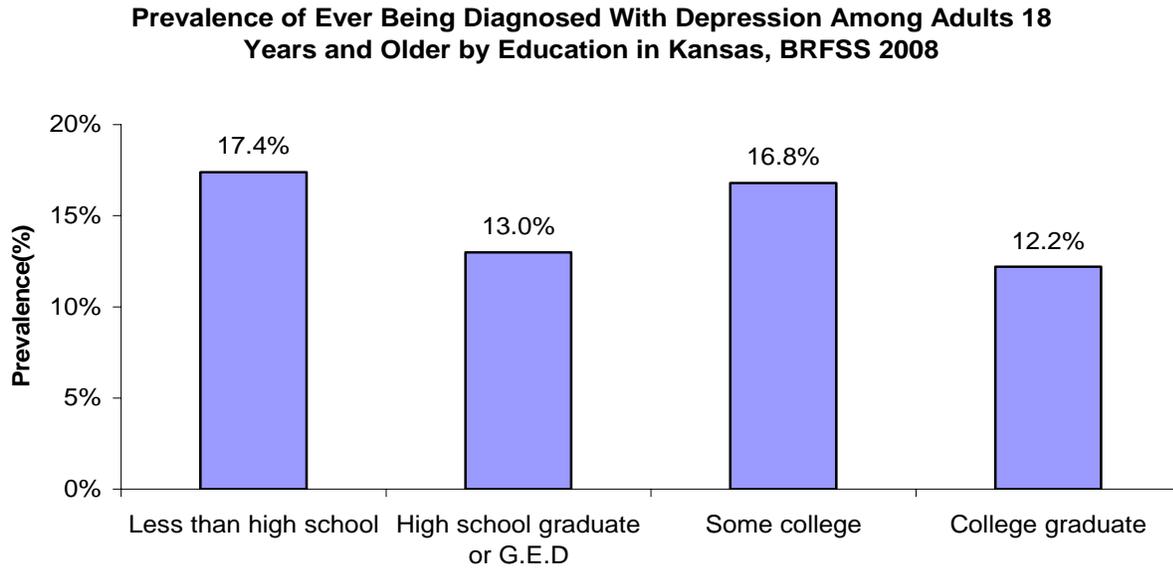
Figure 2



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

In 2008, higher prevalence of ever being diagnosed with depression was seen among adults that completed some college or technical school (16.8% [95% CI: 14.0%-19.6%]) as compared to college graduates (11.5% [95% CI: 9.7%-13.4%]) as shown in figure 3.

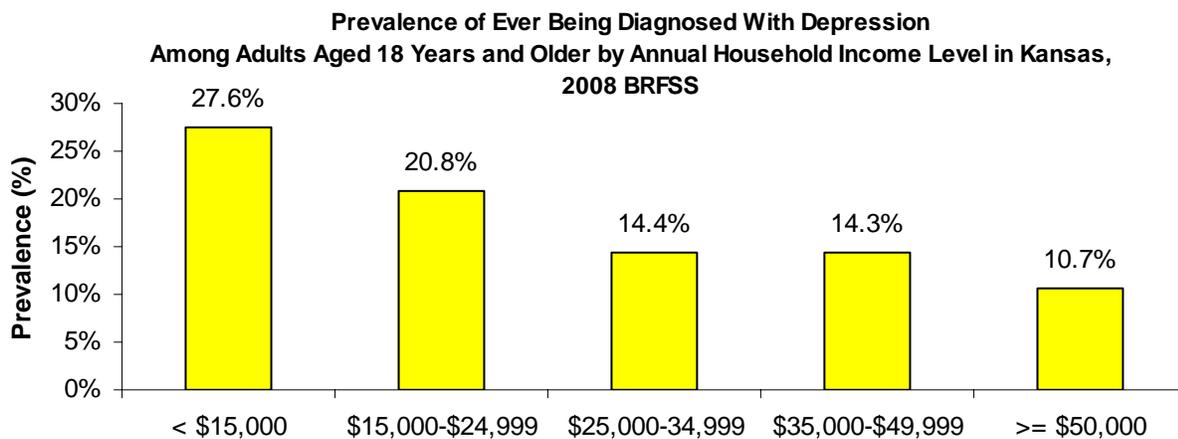
Figure 3



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of ever being diagnosed with depression appeared to be associated with lower socioeconomic status. Higher prevalence of ever being diagnosed with depression was seen among adults with lower annual household income and among individuals that were unemployed or unable to work. The prevalence of ever being diagnosed with depression was 27.6% (95% CI: 20.5%-34.8%) among adults with an annual household income of less than \$15,000 as compared to 10.4% (95% CI: 8.7%-12.0%) among adults with an annual household income greater than \$50,000 (Figure 4). Among adults who were unemployed or unable to work, the prevalence of ever being diagnosed with depression was 27.3% (95% CI: 15.5%-39.0%) and 47.9% (95% CI: 39.3%-56.5%) respectively as compared to 12.1% (95% CI: 10.4%-13.7%) among adults who were employed (Figure 5).

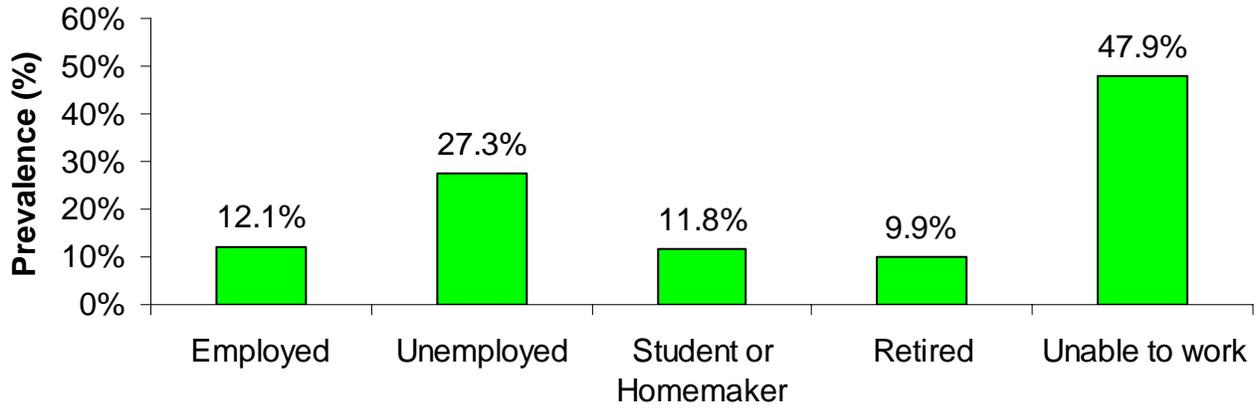
Figure 4



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 5

**Prevalence of Ever Being Diagnosed With Depression Among Adults 18 Years and Older by Employment Status in Kansas, 2008 BRFSS**

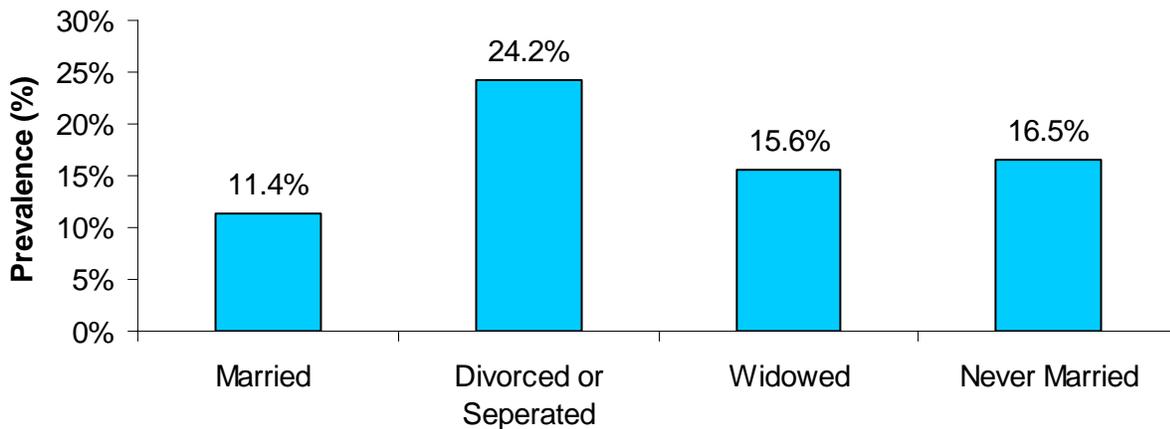


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of ever being diagnosed with depression was higher among adults who were divorced or separated (24.2% [95% CI: 19.7%-28.6%]) as compared to adults who were married (11.4% [95% CI 10.0%-12.8%]) and adults who were widowed (15.6% [95% CI: 11.9%-19.4%]) as shown in figure 6.

Figure 6

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older by Marital Status in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of ever being diagnosed with depression in five geographical areas of the state classified on the basis of population density and also no statistical difference was seen when categorized into two geographic areas as rural and urban, (table 1).

**Table 1. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by sociodemographic characteristics in Kansas, 2006 and 2008 BRFSS**

Sociodemographic Characteristics	Ever Being Diagnosed with Depression, Kansas BRFSS 2008			Ever Being Diagnosed with Depression, Kansas BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Gender</b>						
Males	158	9.2	7.4-11.0	147	9.4	7.5-11.4
Females	445	17.6	15.8-19.5	482	18.6	16.6-20.6
<b>Education</b>						
Less than high school	36	12.9	8.1-17.7	62	17.4	10.7-24.0
High school graduate or G.E.D	150	12.8	10.3-15.3	163	13.0	10.5-15.5
Some college	208	16.8	14.0-19.6	195	16.8	13.8-19.8
College graduate	209	11.5	9.7-13.4	209	12.2	10.4-14.1
<b>Annual household income</b>						
< \$ 15,000	90	27.6	20.5-34.8	85	26.7	20.4-33.0
\$15,000 - \$24,999	116	20.8	16.4-25.1	116	17.6	13.7-21.6
\$25,000 - \$34,999	61	14.4	10.0-18.8	77	14.7	10.4-19.0
\$35,000 - \$49,999	87	14.3	10.8-17.8	103	14.8	11.3-18.4
>= \$50,000	200	10.4	8.7-12.0	190	10.9	9.2-12.6
<b>Employment status</b>						
Employed for wages / Self-employed	316	12.1	10.4-13.7	356	12.1	10.5-13.7
Out of work (unemployed)	27	27.3	15.5-39.0	24	29.9	16.5-43.2
Homemaker / Student	45	11.8	8.0-15.7	49	16.6	10.9-22.4
Retired	123	9.9	8.0-11.7	110	9.6	7.8-11.5
Unable to work	92	47.9	39.3-56.5	88	47.7	38.7-56.7
<b>Marital status</b>						
Married / Member of Unmarried Couple	311	11.4	10.0-12.8	314	11.6	10.3-13.0
Divorced / Separated	148	24.2	19.7-28.6	165	24.5	20.6-28.3
Widowed	79	15.6	11.9-19.4	82	15.1	11.9-18.4
Never married	65	16.5	10.9-22.0	67	18.2	12.5-24.0
<b>Population Density (5 Level)</b>						
Frontier	25	11.1	6.1-16.0	30	12.2	7.7-16.7
Rural	67	11.1	8.1-14.1	66	10.8	7.8-13.8
Densely-settled rural	94	12.5	9.5-15.6	112	18.6	14.3-22.9

Semi-urban	115	13.1	10.2-16.1	105	12.9	9.3-16.4
Urban	302	14.8	12.8-16.8	314	14.2	12.2-16.1
<b>Population Density (2 Level)</b>						
Rural	186	11.8	9.8-13.8	208	14.8	12.3-17.3
Urban	417	14.3	12.7-16.0	419	13.8	12.1-15.5

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

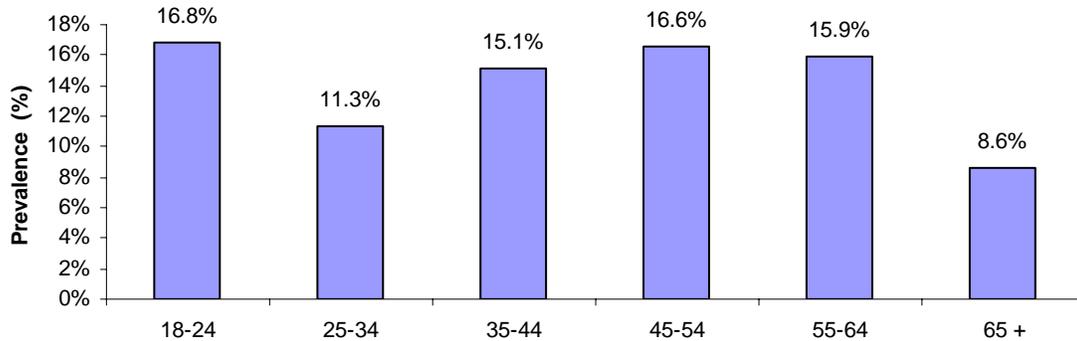
Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size for the age, race and ethnicity categories, 2006 and 2008 dataset were combined.

The results of data analysis of the combined dataset showed the prevalence of ever being diagnosed with depression was twice in adults aged 18-24 years (18.4% [95% CI: 11.7%-25.2%]) as compared to adults aged 65 years and older (8.4% [95% CI: 6.7%-10.1%]) as shown in Figure 7 and Table 2.

Figure 7

**Prevalence of Ever Being Diagnosed With Depression Among Adults 18 Years and Older by Age groups in Kansas, 2006 and 2008 BRFSS**



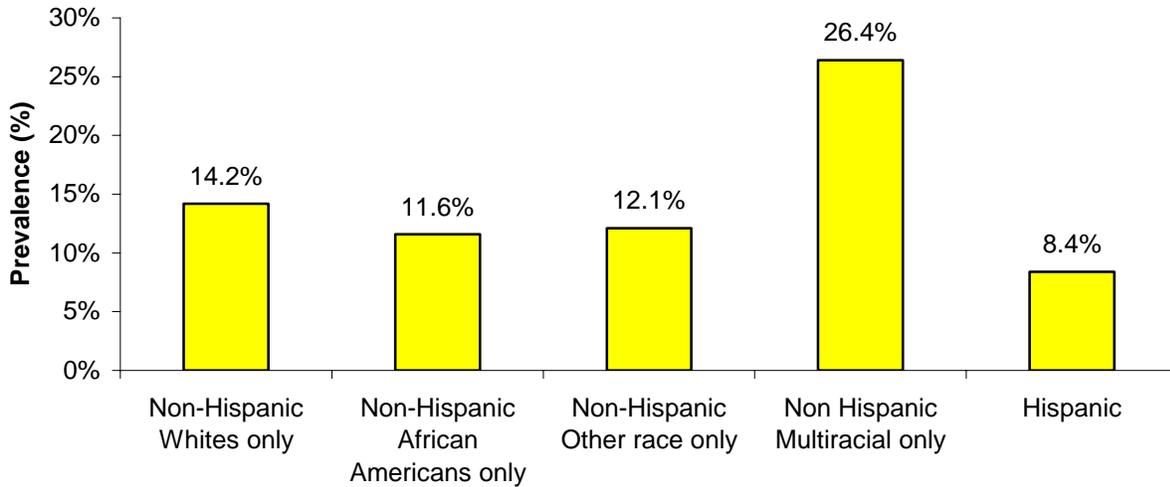
Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

The combined dataset showed that the prevalence of ever being diagnosed with depression was higher in adults that are Non Hispanic Whites (14.2% [95% CI: 13.1%-15.2%]) as compared to adults that are Hispanics (8.4% [95% CI: 5.3%-11.6%]) as shown in Figure 8 and Table 2.

The prevalence of ever being diagnosed with depression was three times in adults that are Non Hispanic Multiracial (26.4% [95% CI: 14.5%-38.3%]) as compared to adults that are Hispanics (8.4% [95% CI: 5.3%-11.6%]) as shown in Figure 8 and Table 2.

Figure 8

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older by Race/Ethnicity in Kansas, 2006 and 2008 BRFSS**

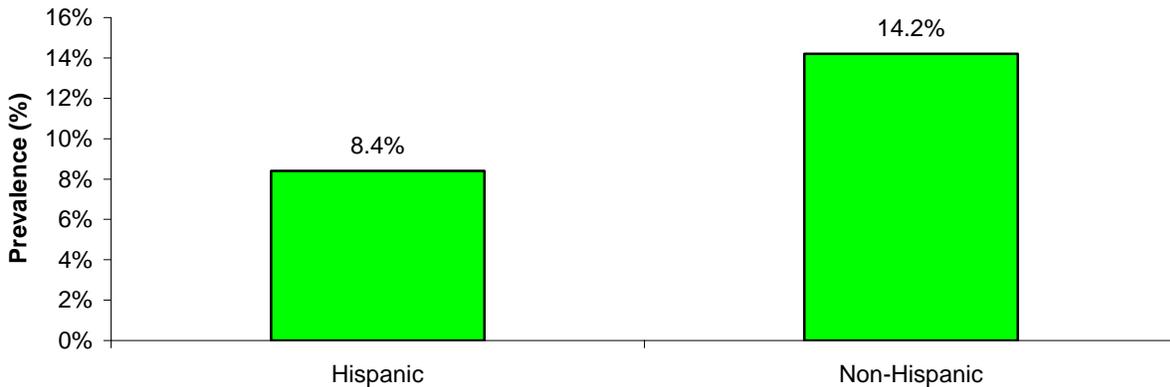


Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

Higher prevalence of ever being diagnosed with depression was seen among Non Hispanic adults (14.2% [95% CI: 13.2%-15.2%]) as compared to Hispanic adults (8.4% [95% CI: 5.3%-11.6%]) as shown in Figure 9 and Table 2.

Figure 9

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older by Ethnicity in Kansas, 2006 and 2008 BRFSS**



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 2. Prevalence of ever being diagnosed with depression among adults by age, race and ethnicity in Kansas, 2006 and 2008 BRFSS**

Age groups	Ever Being Diagnosed with Depression			No Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
18-24 years	45	16.8	11.7-21.9	220	83.2	78.1-88.3
25-34 years	114	11.3	9.1-13.5	739	88.7	90.6-13.5
35-44 years	216	15.1	13.0-17.2	1082	84.9	82.8-87.0
45-54 years	321	16.6	14.7-18.5	1430	83.4	81.6-85.3
55-64 years	308	15.9	14.1-17.7	1391	84.1	82.3-85.9
65 years and above	228	8.59	7.42-9.76	2140	91.4	90.2-92.6
<b>Race and Ethnicity</b>						
Non-Hispanic Whites only	1106	14.2	13.1-15.2	6189	85.8	84.9-86.9
Non-Hispanic African Americans only	37	11.6	6.9-16.3	231	88.4	83.7-93.1
Non-Hispanic Other race* only	22	12.1	6.4-17.8	158	87.9	82.2-93.6
Non Hispanic Multiracial only	25	26.4	14.5-38.3	59	73.6	61.7-85.5
Hispanic	39	8.4	5.3-11.6	349	91.6	88.5-94.7
<b>Ethnicity</b>						
Hispanic	39	8.4	5.3-11.6	349	91.6	88.5-94.7
Non-Hispanic	1193	14.2	13.2-15.2	6667	85.8	84.8-86.8

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

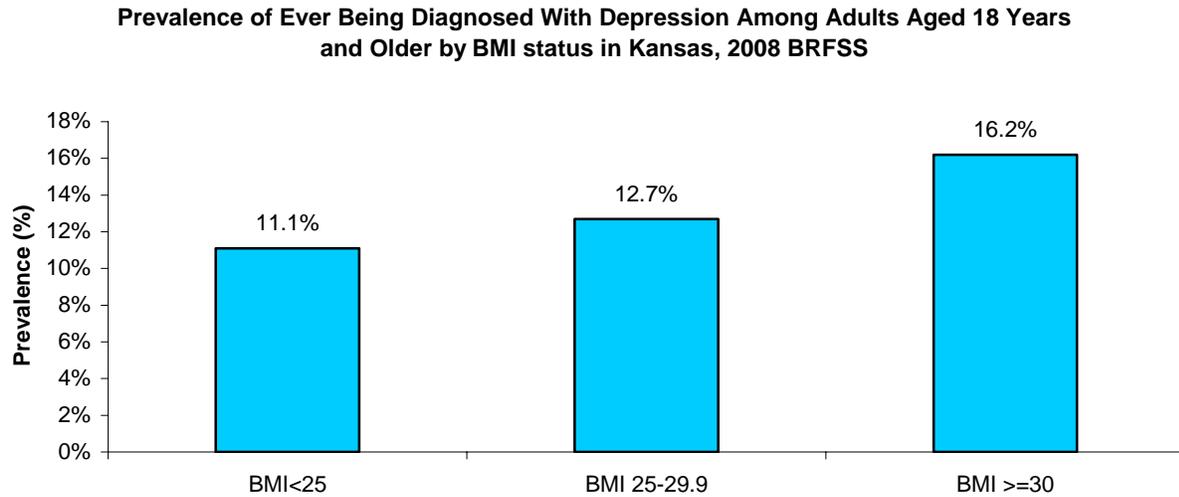
\*Other race include Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans

Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Adverse Health Behaviors and Depression

The prevalence of ever being diagnosed with depression was higher among adults who were obese (16.3% [95% CI: 13.8%-18.7%]) as compared to normal or underweight (11.1% [95% CI 9.0%-13.2%]) as shown in figure 10.

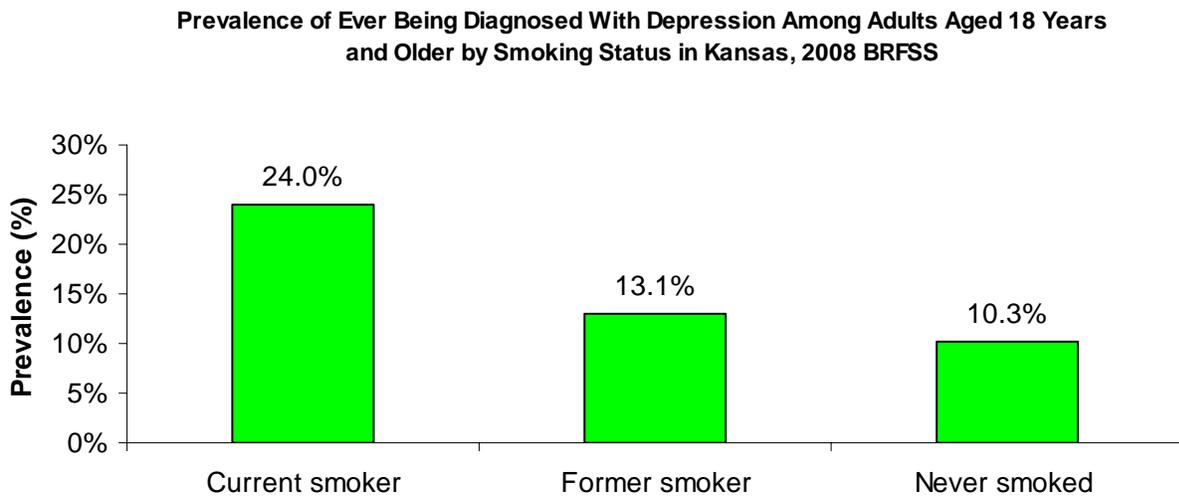
Figure 10



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Higher prevalence of ever being diagnosed with depression was seen among current cigarette smokers (24.0% [95% CI: 19.8%-28.2%]) as compared to never smoker (10.3% [95% CI: 8.8%-11.9%]) and former smoker (13.1 [95% CI: 10.9%-15.4%]) as shown in figure 11.

Figure 11

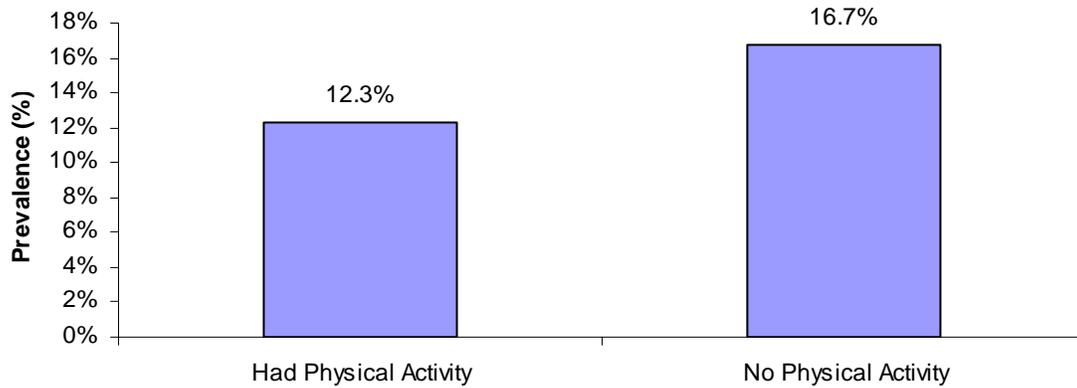


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of ever being diagnosed with depression was higher among adults who did not participate in any physical activity or exercise other than their regular job (16.7% [95% CI: 14.1%-19.3%]) compared to adults who participate in any physical activity or exercise (12.3% [95% CI: 10.8%-13.8%]) as shown in figure 12.

Figure 12

**Prevalence of Ever Being Diagnosed With Depression Among Adults 18 Years and Older by Leisure Time Physical Activity in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 3. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by adverse health behavior characteristics in Kansas, 2008 BRFSS**

Adverse Health Behavior Characteristics	Ever Being Diagnosed with Depression, Kansas BRFSS 2008			Ever Being Diagnosed with Depression, Kansas BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Weight Status</b>						
Normal or underweight (body mass index < 25.0 kg/m <sup>2</sup> )	159	11.1	9.0-13.2	203	13.9	11.4-16.4
Overweight (body mass index 25.0-29.9 kg/m <sup>2</sup> )	194	12.7	10.4-14.9	180	12.6	10.2-15.0
Obese (body mass index ≥ 30.0 kg/m <sup>2</sup> )	218	16.2	13.8-18.7	217	16.4	13.9-18.9
<b>Smoking status</b>						
Current smoker	165	24.0	19.8-28.2	214	26.2	21.9-30.4
Former smoker	164	13.1	10.9-15.4	159	13.5	11.1-15.9
Never smoker	273	10.3	8.8-11.9	255	10.1	8.5-11.7
<b>Exercise</b>						
Yes	394	12.3	10.8-13.8	436	13.5	11.8-15.1
No	209	16.7	14.1-19.3	193	16.4	13.8-19.1

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size for the binge and heavy alcohol drinking categories, 2006 and 2008 dataset were combined.

There was no statistical difference in the prevalence of ever being diagnosed with depression among adults that binge drink (defined as males having five or more drinks or females having four or more drinks on one occasion) and non-binge drinkers of alcohol and among heavy drinkers (defined as adult men having more than two drinks per day and adult women having more than one drink per day) and non heavy drinkers of alcohol, (table 4).

**Table 4. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by binge and heavy drinking categories in Kansas, 2006 and 2008 BRFSS**

	Ever Being Diagnosed with Depression			No Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Binge drinking</b>						
Yes	120	13.2	10.3-16.2	694	86.8	83.8-89.7
No	1100	14.0	13.0-15.0	6216	86.0	85.0-87.0
<b>Heavy drinking</b>						
Yes	52	18.7	12.2-25.2	219	81.3	74.8-87.8
No	1168	13.7	12.8-14.7	6681	86.3	85.3-87.3

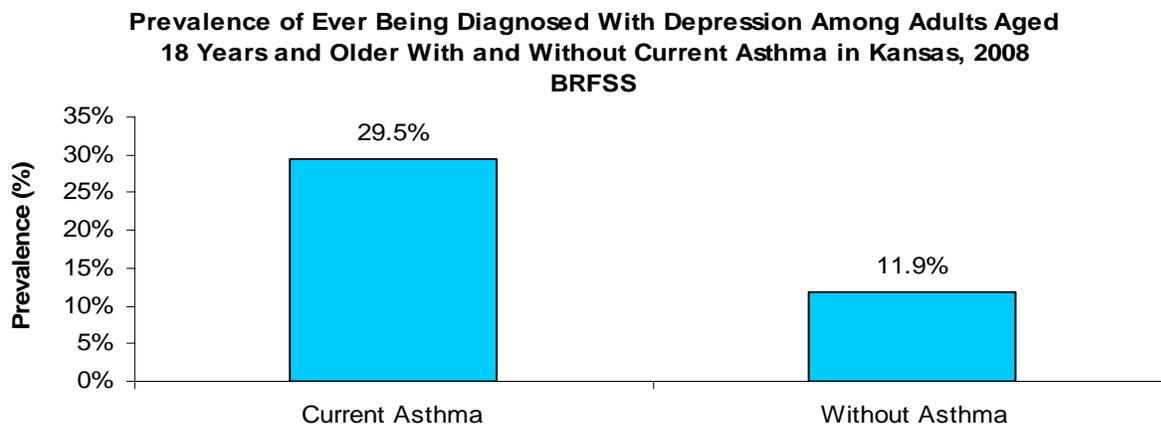
Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Chronic Diseases and Depression

The prevalence of ever being diagnosed with depression was higher among adults with current asthma (24.8% [95% CI: 19.2%-30.3%]) as compared to adults without current asthma (13.1% [95% CI: 11.7%-14.5%]) as shown in figure 13.

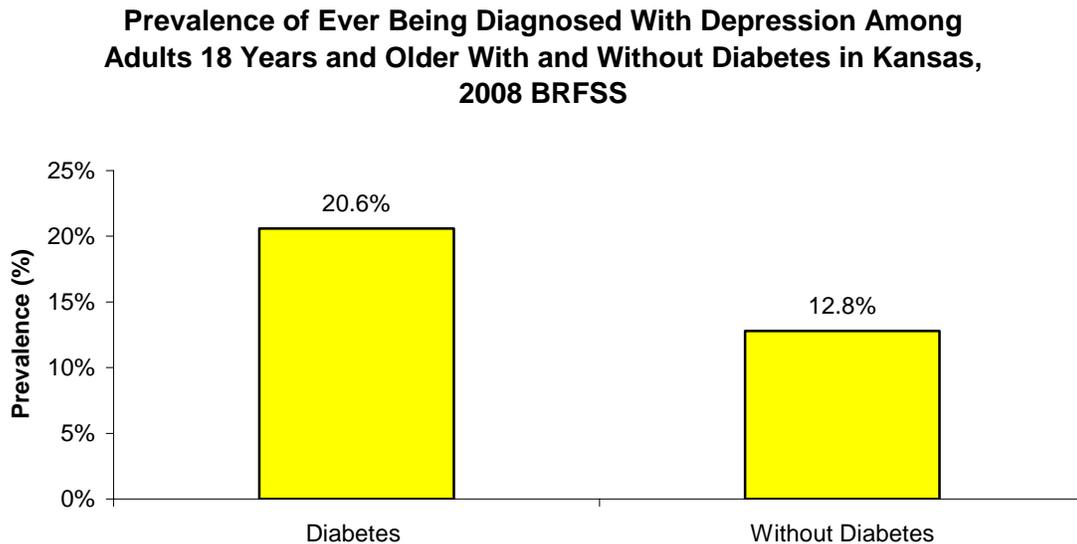
Figure 13



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Higher prevalence of ever being diagnosed with depression was seen among adults with diabetes (20.6% [95% CI: 16.4%-24.8%]) as compared to adults without diabetes (12.8% [95% CI: 11.4%-14.2%]) as shown in figure 14.

Figure 14



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 5. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by chronic disease status, Kansas 2008**

Chronic Disease Status	Ever Being Diagnosed with Depression, Kansas BRFSS 2008			Ever Being Diagnosed with Depression, Kansas BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Current Asthma</b>						
Yes	104	29.5	23.4-35.6	100	24.8	17.9-26.9
No	495	11.9	10.6-13.2	528	13.1	11.7-14.5
<b>Diabetes</b>						
Yes	105	20.6	16.4-24.8	60	14.5	10.5-18.5
No	498	12.8	11.4-14.2	569	14.1	12.6-15.6

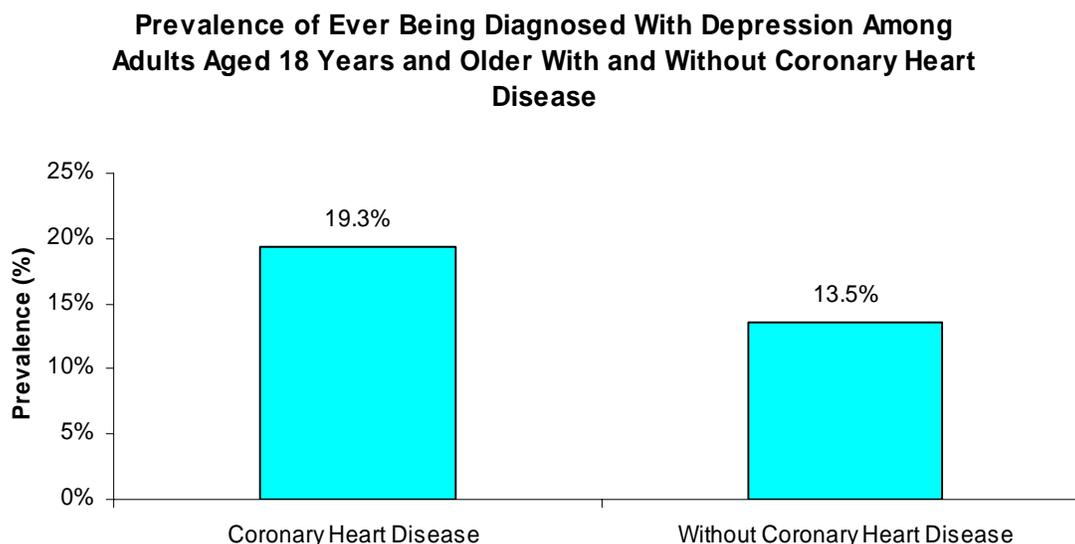
Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size for the coronary heart disease and stroke categories in 2006 and 2008 dataset, the estimates were calculated by combining the 2006 and 2008 Kansas BRFSS datasets.

Among adults who were diagnosed as having coronary heart disease, the prevalence of ever being diagnosed with depression was higher (19.3% [95% CI: 15.4%-23.3%]) as compared to adults who were not diagnosed with coronary heart disease (13.5% [95% CI: 12.5%-14.5%]) as shown in figure 15.

Figure 15.



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of ever being diagnosed with depression among adults with and without diagnosed stroke (table 6).

Table 6. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by coronary heart disease and stroke in Kansas, BRFSS 2006 and BRFSS 2008

	Ever Being Diagnosed with Depression			No Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Coronary Heart Disease</b>						
Yes	104	19.3	15.4-23.3	1111	13.5	12.5-14.5
No	380	80.7	76.7-84.6	6561	86.5	85.5-87.5
<b>Stroke</b>						
Yes	53	15.8	11.3-20.3	250	84.2	79.7-88.7
No	1174	13.8	12.8-14.7	6741	86.3	85.3-87.2

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

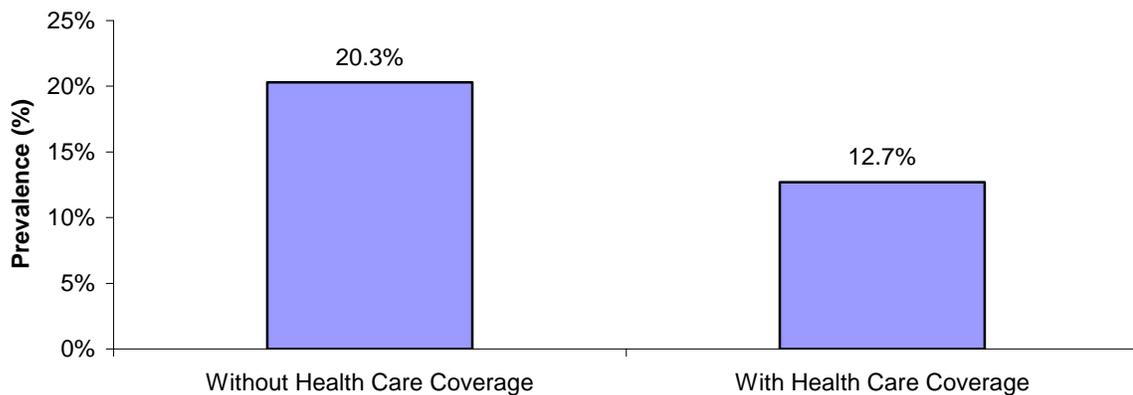
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

## Health Care Access and Depression

The prevalence of ever being diagnosed with depression was higher among adults without any health care coverage (20.3% [95% CI: 15.0%-25.5%]) as compared to adults with some kind of health care coverage (12.7% [95% CI: 11.4%-14.0%]) as shown in figure 16. The higher prevalence was also seen among adults with personal health care provider (14.3% [95% CI: 12.9%-15.7%]) as compared to adults without personal health care provider (8.3% [95% CI: 4.9%-11.8%]) indicating that the condition can go undiagnosed among the individuals who do not have personal health care providers (figure17).

Figure 16.

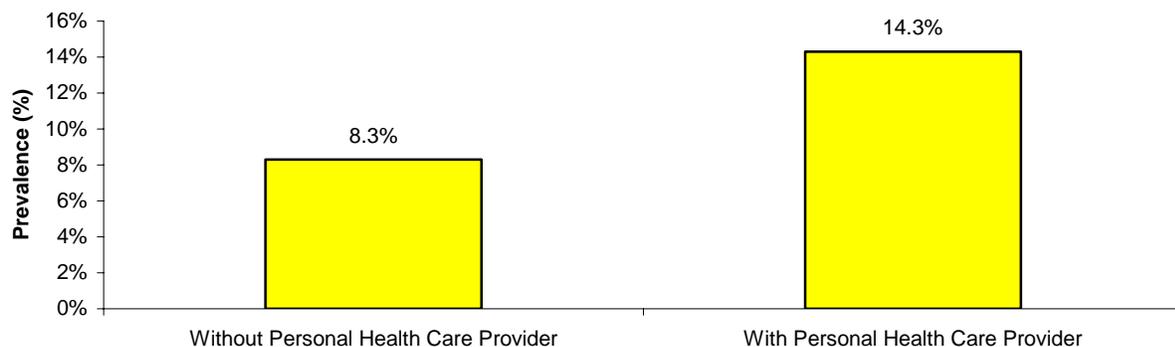
**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older With and Without Health Care Coverage in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 17.

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older With and Without Personal Health Care Provider in Kansas, 2008 BRFSS**



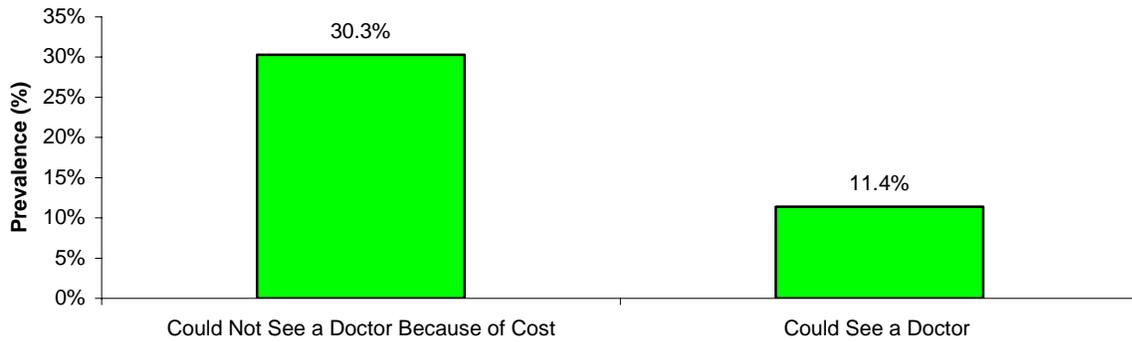
Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Medical Cost and Depression

The prevalence of ever receiving a diagnosis of depression was higher among adults who needed to see a doctor in the past twelve months but could not because of the cost (30.3% [95% CI: 24.4%-36.2%]) as compared to adults who could see a doctor with cost not as a barrier for seeking health care (11.4% [95% CI: 10.2%-12.7%]), (figure 18).

Figure 18.

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older Able and Unable to see doctor because of cost in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 7. Prevalence of ever being diagnosed with depression among adults aged 18 years and older by health care access status, Kansas 2008**

Health Care Access Status	Ever Being Diagnosed with Depression			Ever Being Diagnosed with Depression, Kansas BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Health care coverage</b>						
Yes	525	12.7	11.4-14.0	557	14.0	12.6-15.4
No	78	20.3	15.0-25.5	72	15.8	10.4-21.2
<b>Personal health care provider</b>						
Yes	564	14.3	12.9-15.7	563	14.4	12.9-15.9
No	39	8.3	4.9-11.8	65	12.8	8.8-16.7
<b>Could not see doctor because of cost</b>						
Yes	123	30.3	24.4-36.2	119	27.6	21.5-33.7
No	479	11.4	10.2-12.7	507	12.5	11.1-13.8

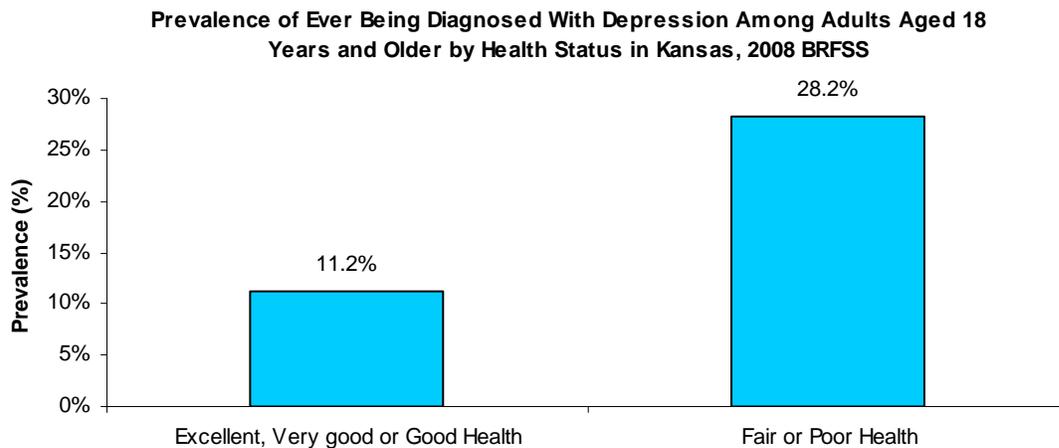
Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

### Self-rated Health and Depression

The prevalence of ever being diagnosed with depression was higher among adults (28.2% [95% CI: 23.9%-32.6%]) who rated their health as fair or poor as compared to adults (11.2% [95% CI: 9.9%-12.5%]) who rated their health as excellent, very good or good as shown in figure 19.

Figure 19.

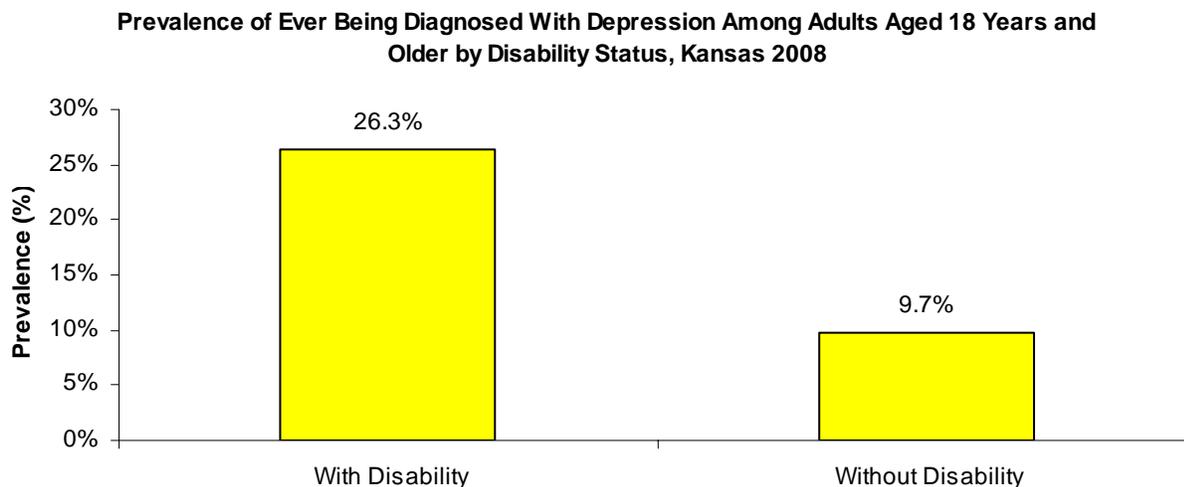


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

### Disability and Depression

Disability is defined as adults who reported they were limited in any activities because of physical, mental, or emotional problems or who reported having a health problem that requires them to use special equipment such as a cane, wheelchair, a special bed, or a special telephone. The prevalence of ever being diagnosed with depression appeared to be associated with disability. The prevalence of ever being diagnosed with depression was three times higher among adults living with disability (26.3% [95% CI: 23.1%-29.5%]) as compared to adults living without disability (9.7% [95% CI: 8.3%-11.0%]) as shown in figure 20.

Figure 20



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

## **Depression Severity Status in Kansas**

The Behavioral Risk Factor Surveillance Survey module on anxiety and depression included eight questions that asked respondents about their mood status and depressive symptoms. These questions were adapted and modified from the Patient Health Questionnaire (PHQ) Version 9<sup>2, 11</sup> and include eight of the nine criteria's for the diagnosis of depression by levels of severity (referred as PHQ-8). PHQ-9 is a tool derived from Primary Care Evaluation of Mental Disorders (PRIME-MD) to provide assistance to general practitioners in the diagnosis and evaluation of psychiatric disorders. In the mid-1990s, Drs. Robert Spitzer and Kurt Kroenke and colleagues at Columbia University in collaboration with researchers at the Regenstrief Institute at Indiana University developed PRIMEMD. The questionnaire includes items corresponding to each of the nine depression criteria listed in the Diagnostic and Statistical Manual disorders, Fourth Edition Text Revision (DSM-IV-TR), and scores range from 0 to 27. Cut-points of 5, 10, 15 and 20 represent the threshold for mild, moderate, moderately severe, and severe depression.<sup>12</sup> The PHQ-9 is posted online at [www.pfizer.com/phq-9/](http://www.pfizer.com/phq-9/). The Kansas BRFSS data for the 8 questions of PHQ-8 were analyzed using the severity score methodology described by the authors of PHQ-9 (Available at:

[http://www.depression-primarycare.org/clinicians/toolkits/materials/forms/phq9/severity\\_scoring/](http://www.depression-primarycare.org/clinicians/toolkits/materials/forms/phq9/severity_scoring/)).

In 2008, these eight questions were asked to 4,294 Kansas BRFSS respondents about their interest or pleasure in doing things, felt depressed or hopeless, trouble falling asleep or staying asleep or sleeping too much, felt tired or had little energy, had poor appetite or ate too much, felt bad about themselves or were a failure or let down for themselves or let the family down, trouble concentrating on things and moved so slowly that other people have noted or being so fidgety or restless and moving around a lot more than usual.

The respondents were asked for each of the eight questions whether, during the previous two weeks how many days they had the symptom. A depression severity scale was created by converting the number of days in response to each of the eight questions into points as shown in the following table:

Number of days had symptom	Points
0-1	0
2-6	1
7-11	2
12-14	3

The number of points was totaled across the eight questions in order to determine the depressive symptoms severity score. No depression was determined if the total points were 0-4, mild depression was determined if the total points across the eight questions was 5-9, moderate depression was determined if the total score was 10-14 points, moderately severe depression was determined if the total score was 15-19 points and severe depression was determined if the total score across eight questions was 20 or more points. If any of the eight questions was missing, a score was not calculated and data for that respondent were not included in the analysis.

The depression severity score was calculated for 3,614 respondents who responded to all eight questions.

Depression status by depressive symptoms severity score

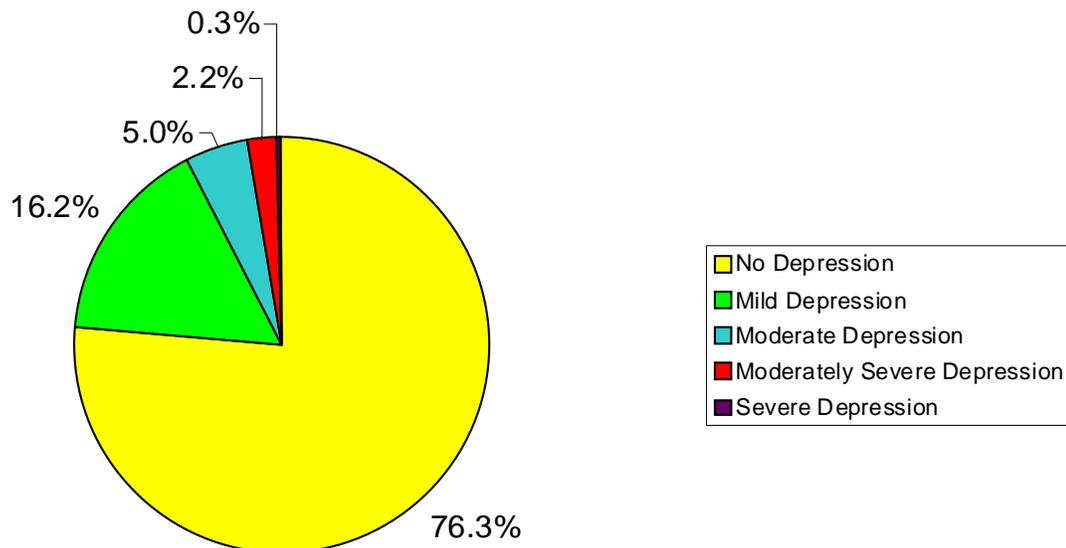
Points	Depression status
0-4	No depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20 +	Severe depression

Analysis conducted by using the above-mentioned method showed that 24% of adults had mild to severe depression (figure 21).

In 2008, BRFSS 13.5% adults aged 18 years and older responded yes to the question, “Has a doctor or other healthcare provider EVER told you that you have a depressive disorder (including depression, major depression, dysthymia, or minor depression). When the respondents to the BRFSS were asked about their mood status and depressive status by using the Patient Health Questionnaire (PHQ-8) mentioned above we found 24% of adults had mild to severe depression. Thus about half of the adults with mild to severe depression identified through PHQ-8 criteria are never diagnosed with the condition.

Figure 21

**Severity Status of Depression Among Adults Aged 18 Years and Older, Kansas  
2008**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of mild, moderate, moderately severe and severe depression among males and females (table 8).

There was no statistical difference in the prevalence of mild, moderate, moderately severe and severe depression among adults with and without health care coverage and with or without a personal health care provider (table 8).

**Table 8. Severity of depression severity among adults aged 18 years and older by selected characteristics, Kansas 2008**

Characteristic	No depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression
	Frequency (n) Weighted percentage (%) 95% CI				
<b>Gender</b>					
Males	1161 80.0 77.2-82.7	187 14.4 12.0-16.9	56 4.5 3.0-6.1	14 1.0 0.3-1.6	3 0.1 0.00-0.03
Females	1632 72.8 70.3-75.2	378 17.9 15.8-20.1	104 5.4 4.2-6.7	65 3.4 2.4-4.4	14 0.5 0.2-0.8
<b>Health care coverage</b>					
Yes	2634 78.4 76.6-80.3	509 15.3 13.7-16.9	124 4.3 3.3-5.3	57 1.8 1.2-2.3	12 0.2 0.1-0.4
No	158 57.8 50.1-65.6	56 24.1 16.8-31.5	36 11.0 6.7-15.4	22 5.9 2.8-9.0	5 1.1 0.0-2.1
<b>Personal health care provider</b>					
Yes	2559 77.4 75.5-79.2	506 15.5 13.9-17.1	138 4.8 3.7-5.8	66 2.1 1.4-2.7	15 0.3 0.1-0.5
No	230 69.0 62.3-75.8	59 21.1 14.9-27.3	22 6.5 2.8-10.3	13 3.1 1.1-5.0	2 0.3 0.0-0.6

Among 3,614 adult respondents

## **Status of Current Depression in Kansas**

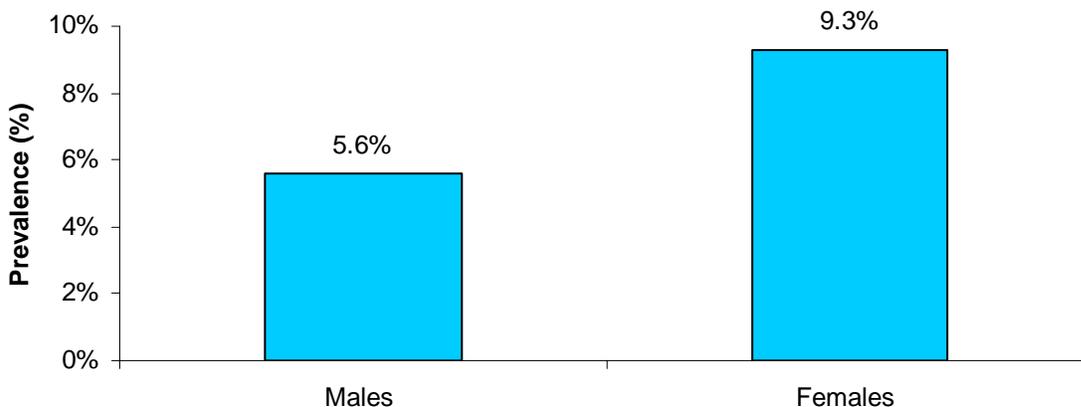
The depression severity scale that was created to determine the severity of depression was dichotomized into total score of  $< 10$  or  $\geq 10$  points. Current depression was defined as a score of  $\geq 10$  points on the depressive symptoms severity score.

In 2008, about one in fourteen (7.5% [95% CI: 6.3%-8.7%]) adults aged 18 years and older had current depression. This accounts for an estimated 157,624 adult Kansans who had current depression.

### **Sociodemographic Profile of Adults With Current Depression**

The prevalence of current depression was higher among adult females (9.3% [95% 7.7%-10.9%]) as compared to adult males (5.6% [95% CI: 3.9%-7.3%]) as shown in figure 22.

Figure 22 **Prevalence of Current Depression among Adults Aged 18 Years and Older by Gender in Kansas, 2008 BRFSS**

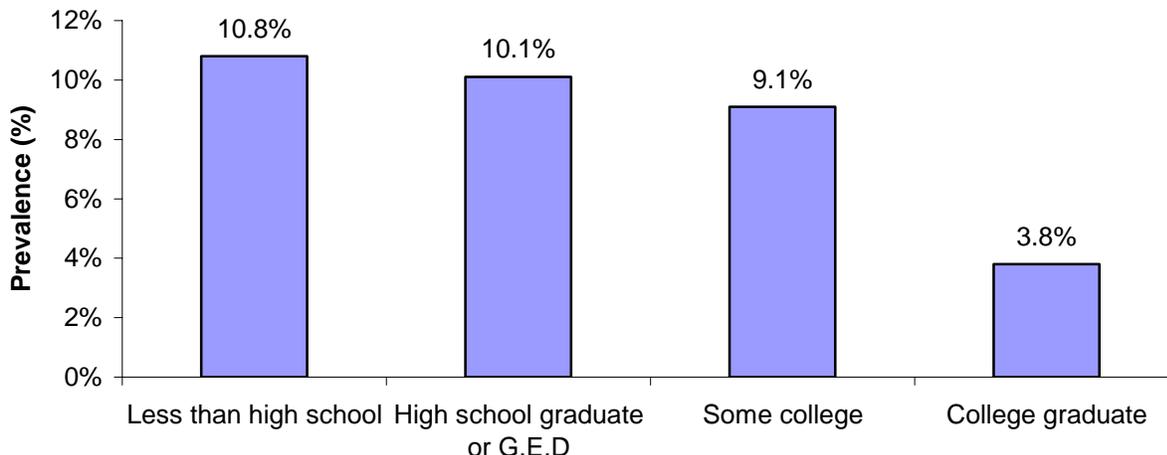


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Higher prevalence of current depression was seen among adults with less than high school 10.8% (95% CI: 5.8%-15.7%) as compared to adults that were college graduate 3.8% (95% CI: 2.6%-5.1%) as shown in figure 23.

Figure 23

### Prevalence of Current Depression Among Adults 18 Years and Older by Education in Kansas, BRFSS 2008

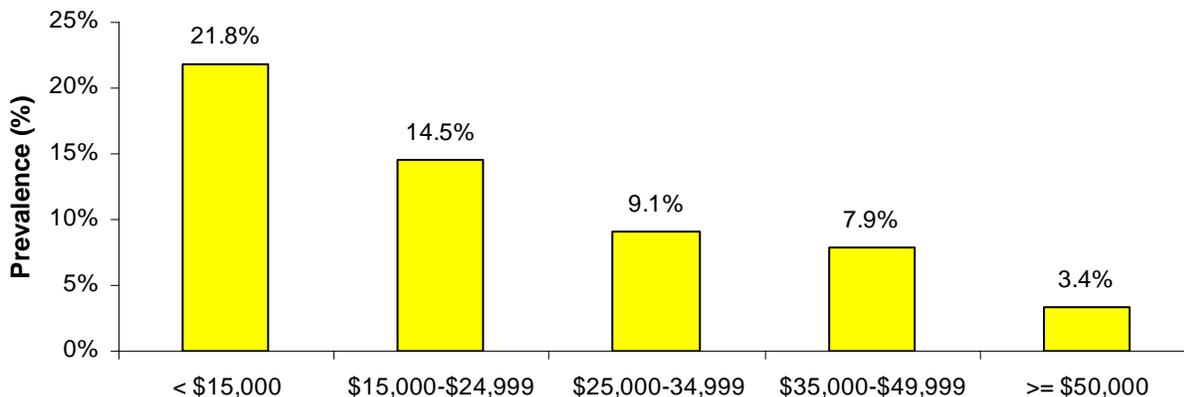


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of current depression appeared to be associated with lower socioeconomic status. The prevalence of current depression was higher among adults with low levels of annual household income and among individuals that were unable to work. The prevalence of current depression was 21.8% (95% CI: 15.3%-28.2%) among adults with an annual household income of less than \$15,000 as compared to among adults with an annual household income more than \$15,000 (figure 24). Among adults who were unable to work, the prevalence of current depression was 45.2% (95% CI: 35.8%-54.5%) as compared to 6.3% (95% CI: 4.8%-7.7%) among adults who were employed (figure 25).

Figure 24

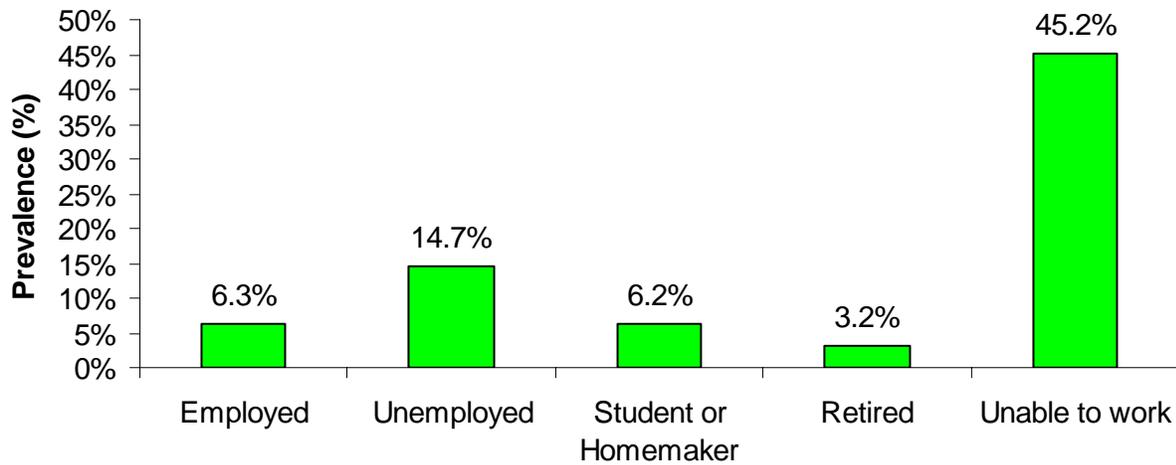
### Prevalence of Current Depression Among Adults Aged 18 Years and Older by Annual Household Income Level in Kansas, 2008 BRFSS



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 25

**Prevalence of Current Depression Among Adults Aged 18 Years and Older by Employment Status in Kansas, 2008 BRFSS**

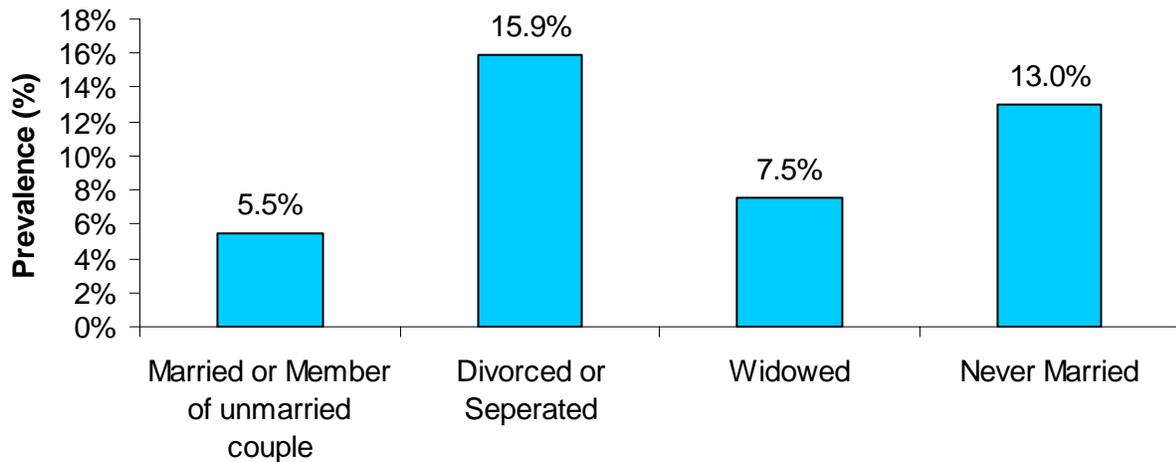


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of current depression was higher among adults who were divorced or separated (15.9% [95% CI: 11.6%-20.2%]) as compared to adults who were married (5.5% [95% CI 4.5%-6.6%]) as shown in figure 26.

Figure 26

**Prevalence of Current Depression Among Adults Aged 18 Years and Older by Marital Status in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of current depression in five geographical areas of the state classified on the basis of population density and also no statistical difference when divided into two geographic areas as rural and urban (table 9).

**Table 9. Prevalence of current depression among adults aged 18 years and older by sociodemographic characteristics, Kansas 2008**

Sociodemographic Characteristics	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Gender</b>			
Males	73	5.6	3.9-7.3
Females	183	9.3	7.7-10.9
<b>Education</b>			
Less than high school	23	10.8	5.8-15.7
High school graduate or G.E.D	96	10.1	7.4-12.7
Some college	85	9.1	6.7-11.6
College graduate	52	3.8	2.6-5.1
<b>Annual household income</b>			
< \$ 15,000	56	21.8	15.3-28.2
\$15,000 - \$24,999	56	14.5	10.2-18.9
\$25,000 - \$34,999	34	9.1	5.3-12.8
\$35,000 - \$49,999	40	7.9	5.0-10.9
>= \$50,000	47	3.4	2.2-4.5
<b>Employment status</b>			
Employed for wages / Self-employed	122	6.3	4.8-7.7
Out of work (unemployed)	16	14.7	6.2-23.2
Homemaker / Student	18	6.2	2.9-9.4
Retired	32	3.2	2.0-4.3
Unable to work	68	45.2	35.8-54.5
<b>Marital status</b>			
Married / Member of Unmarried Couple	127	5.5	4.5-6.6
Divorced / Separated	72	15.9	9.9-16.6
Widowed	26	7.5	4.3-10.8
Never married	31	13.0	7.0-19.0
<b>Population Density (5 Level)</b>			
Frontier	10	4.9	1.3-8.4

Rural	31	8.6	5.0-12.1
Densely-settled rural	45	6.9	4.5-9.3
Semi-urban	46	5.6	3.8-7.5
Urban	124	8.4	6.5-10.4
<b>Population Density (2 Level)</b>			
Rural	86	7.2	5.4-9.1
Urban	170	7.6	6.1-9.1

Among 3,614 adult respondents

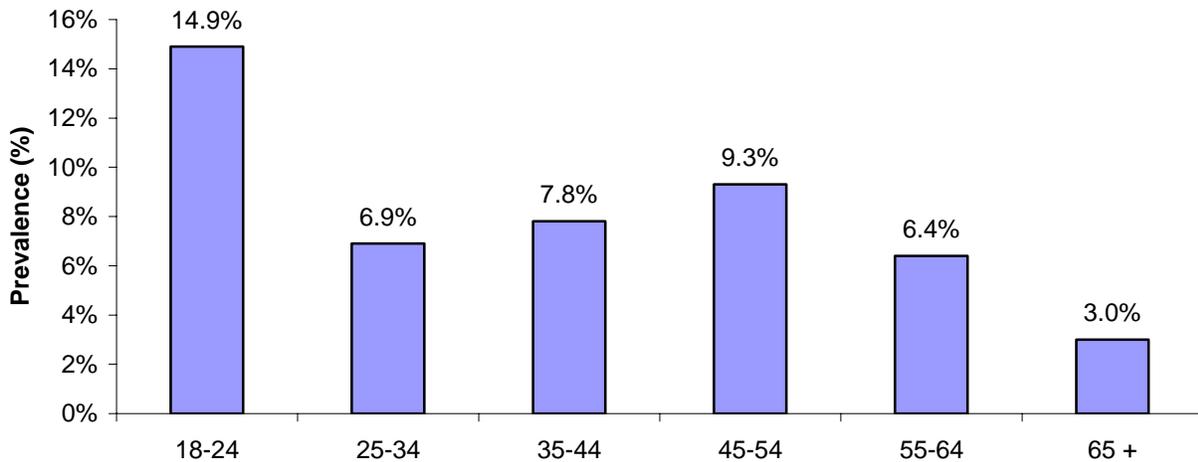
\*Other race include Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans

Due to small sample size for the age, race and ethnicity categories, 2006 and 2008 dataset were combined.

The prevalence of current depression was higher in adults aged 18-24 years (14.9% [95% CI: 6.5%-23.4%]) as compared to adults aged 65 years and older (3.0% [95% CI: 1.9%-4.1%]) as shown in Figure 27 and Table 9.

Figure 27

**Prevalence of Current Depression Among Adults by Age groups in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of current depression by race and ethnicity groups (table 10).

**Table 10. Prevalence of current depression among adults aged 18 years and older by age,race and ethnicity, Kansas 2006 and 2008 combined**

Sociodemographic Characteristics	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Age groups</b>			
18-24 years	27	11.7	7.0-16.4
25-34 years	66	7.1	5.2-8.9
35-44 years	97	7.6	6.0-9.2
45-54 years	141	7.9	6.5-9.2
55-64 years	114	6.4	5.2-7.7
65 years and above	73	3.5	2.7-4.4
<b>Race and Ethnicity</b>			
Non-Hispanic Whites only	425	6.8	5.9-7.6
Non-Hispanic African Americans only	30	11.2	6.6-15.8
Non-Hispanic Other race* only	19	11.0	5.4-16.6
Non-Hispanic Multiracial	12	13.9	4.9-23.0
Hispanic	29	7.4	4.2-10.6
<b>Ethnicity</b>			
Hispanic	29	7.4	4.2-10.6
Non-Hispanic	489	7.2	6.3-8.0

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

\*Other race include Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans

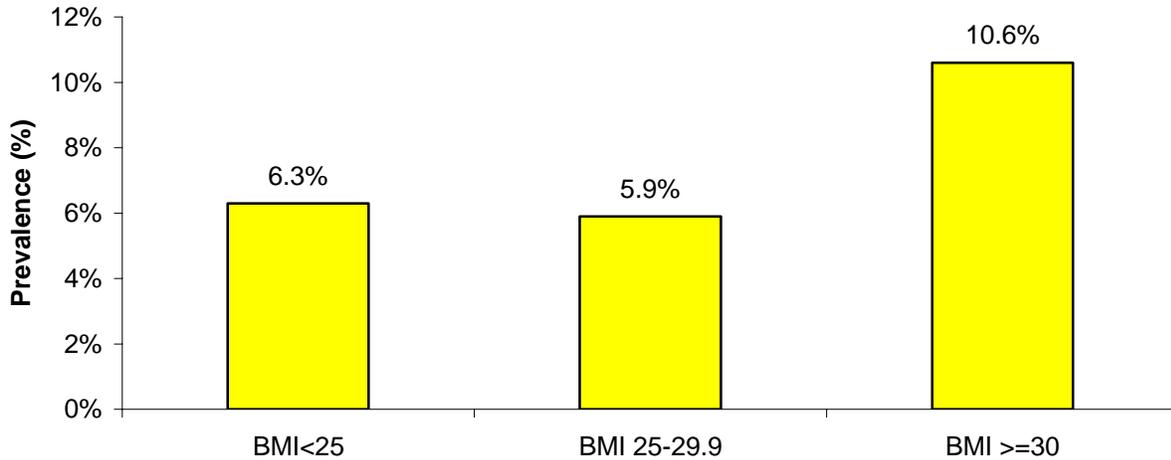
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Adverse Health Behaviors and Current Depression

The prevalence of current depression was higher among adults who were obese (11.4% [95% CI: 8.7%-14.2%]) as compared to adults that were overweight (11.4% [95% CI: 8.7%-14.2%]) as shown in figure 28

Figure 28

**Prevalence of Current Depression Among Adults Aged 18 Years and Older by BMI Status in Kansas, 2008 BRFSS**

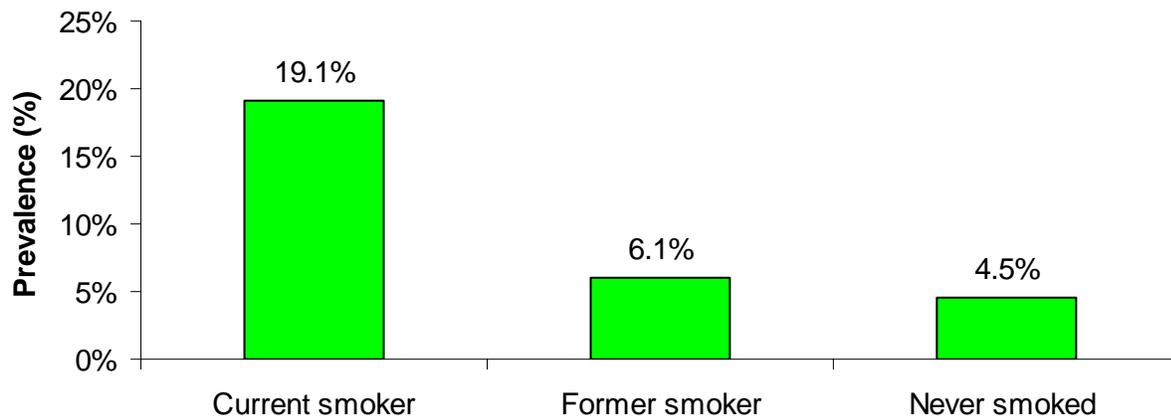


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Higher prevalence of current depression was seen among current cigarette smokers (19.1% [95% CI: 14.7%-23.4%]) as compared to non-smokers (4.5% [95% CI: 3.3%-5.7%]) and former smokers (6.1% [95% CI: 4.3%-7.9%]) as shown in figure 29.

Figure 29

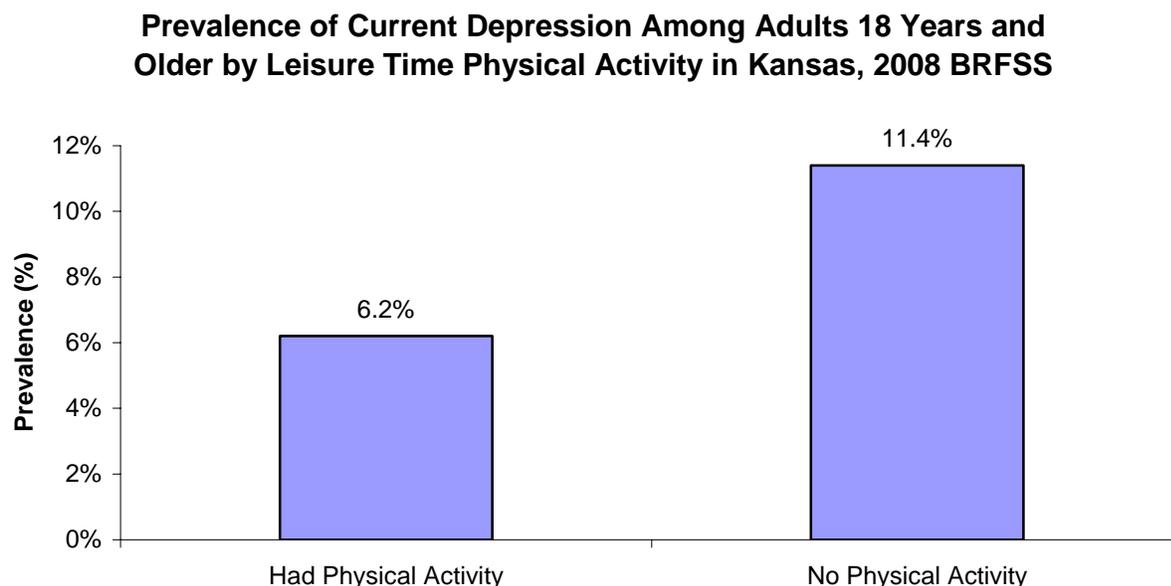
**Prevalence of Current Depression Among Adults Aged 18 Years and Older by Smoking Status in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of current depression was higher among adults who did not participate in any leisure time physical activity or exercise other than their regular job (11.4% [95% CI: 8.7%-14.2%]) as compared to adults who participated in any leisure time physical activity or exercise (6.2% [95% CI: 4.9%-7.4%]) as shown in figure 30.

Figure 30



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 11. Prevalence of current depression among adults aged 18 years and older by adverse health behavior characteristics, Kansas 2008**

Adverse Health Behavior Characteristics	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Weight Status</b>			
Normal or underweight (body mass index < 25.0 kg/m <sup>2</sup> )	72	6.3	4.3-8.2
Overweight (body mass index 25.0-29.9 kg/m <sup>2</sup> )	70	5.9	4.0-7.7
Obese (body mass index ≥ 30.0 kg/m <sup>2</sup> )	104	10.6	8.2-13.0

<b>Smoking status</b>			
Current smoker	101	19.1	14.7-23.4
Former smoker	60	6.1	4.3-7.9
Never smoker	94	4.5	3.3-5.7
<b>Exercise</b>			
Yes	144	6.2	4.9-7.4
No	112	11.4	8.7-14.2

Among 3,614 adult respondents

Due to small sample size for the binge and heavy drinking categories in 2006 and 2008 dataset, the estimates were calculated by combining the 2006 and 2008 Kansas BRFSS datasets.

There was no statistical difference in the prevalence of current depression among binge drinkers (defined as males having five or more drinks or females having four or more drinks on one occasion) and non-binge drinkers of alcohol and among heavy drinkers (defined as adult men having more than two drinks per day and adult women having more than one drink per day) and non heavy drinkers of alcohol (Table 12). However, these results should be interpreted with caution due to small numbers.

**Table 12. Prevalence of current depression among adults aged 18 years and older by binge and heavy drinking categories in Kansas, 2006 and 2008 BRFSS**

<b>Adverse Health Behavior Characteristics</b>	<b>Current Depression</b>		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Binge drinking</b>			
Yes	51	6.3	4.0-8.5
No	459	7.2	6.4-8.1
<b>Heavy drinking</b>			
Yes	19	5.3	1.8-8.8
No	491	7.2	6.4-8.0

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

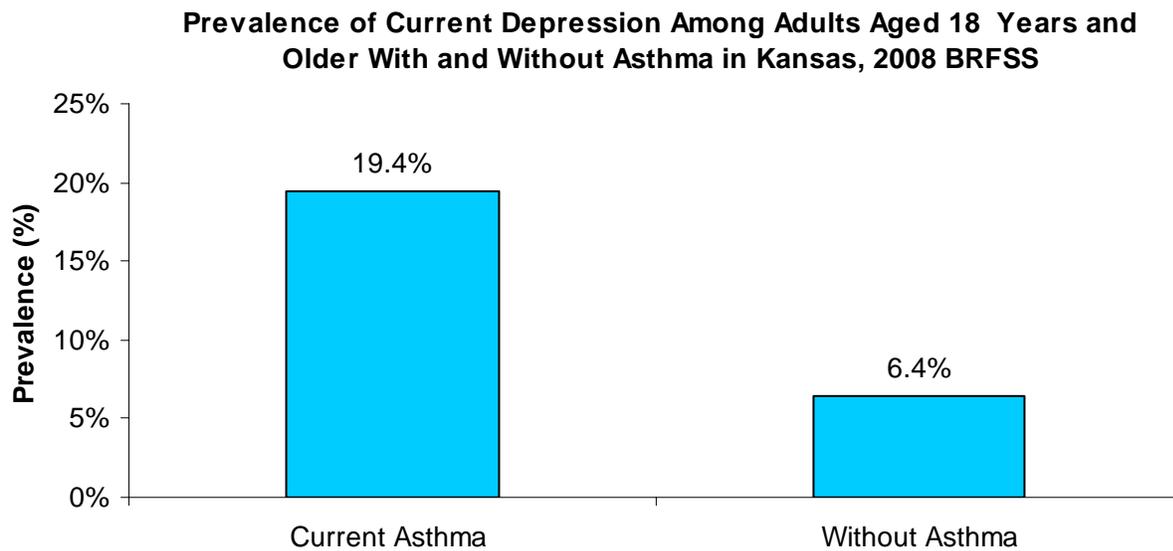
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Chronic Diseases and Current Depression

The prevalence of current depression was higher among adults with current asthma (19.4% [95% CI: 13.3%-25.5%]) as compared to adults without current asthma (6.2% [95% CI: 4.9%-7.4%]) as shown in figure 31.

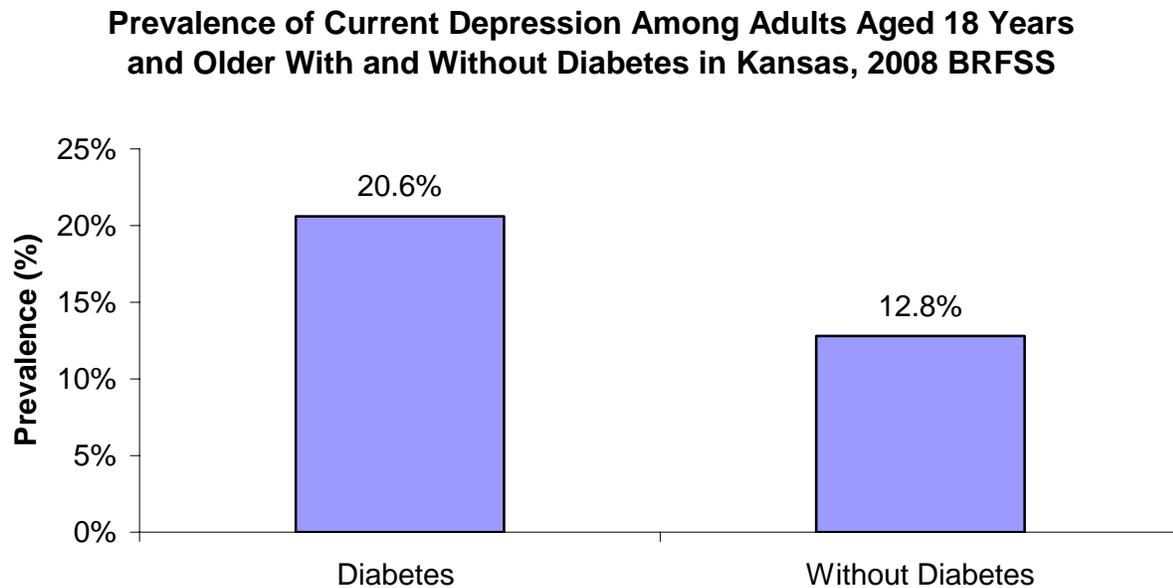
Higher prevalence of current depression was seen among adults with diabetes (11.9% [95% CI: 8.4%-15.5%]) as compared to adults without diabetes (7.1% [95% CI: 5.8%-8.3%]) as shown in figure 32.

Figure 31



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 32



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 13. Prevalence of current depression among adults aged 18 years and older by chronic disease status, Kansas 2008**

Chronic Disease	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Current Asthma</b>			
Yes	54	19.4	13.3-25.5
No	201	6.4	5.3-7.6
<b>Diabetes</b>			
Yes	52	11.9	8.4-15.5
No	204	7.1	5.8-8.3

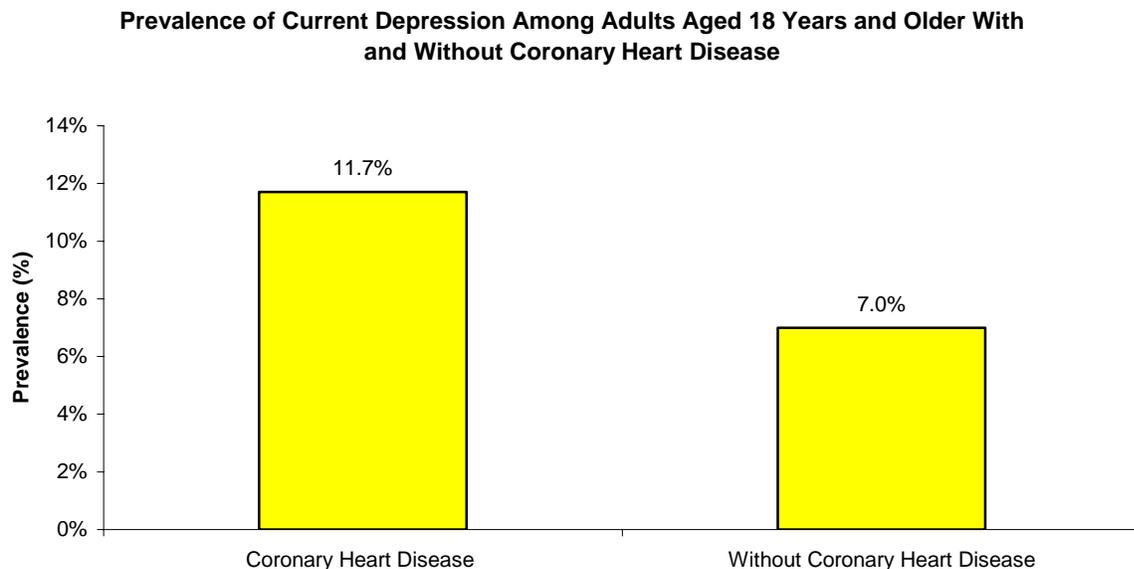
Among 3,614 adult respondents

Due to small sample size for the coronary heart disease and stroke categories in 2006 and 2008 dataset, the estimates were calculated by combining the 2006 and 2008 Kansas BRFSS datasets.

Among adults who were diagnosed as having coronary heart disease, the prevalence of ever being diagnosed with current depression was higher (16.0% [95% CI: 12.3%-19.7%]) as compared to adults who were not diagnosed with coronary heart disease (9.9% [95% CI: 9.0%-10.8%]) as shown in figure 33

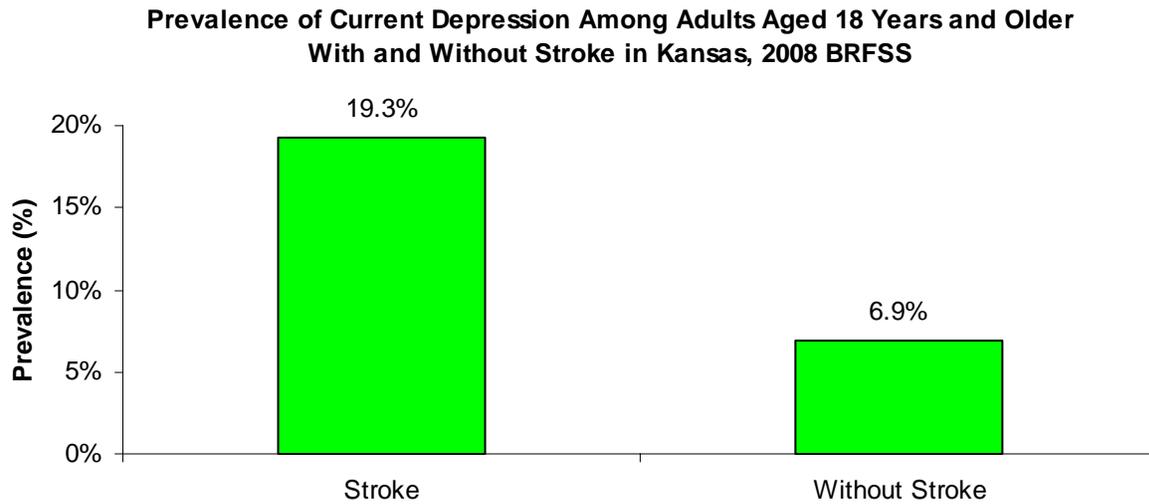
The prevalence of current depression appeared to be higher among adults who had a stroke (19.7% [95% CI: 10.5%-29.0%]) as compared to adults without stroke (7.2% [95% CI: 6.0%-8.4%]) as shown in figure 34.

Figure 33



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 34



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 14. Prevalence of current depression among adults aged 18 years and older by coronary heart disease and stroke in Kansas, BRFSS 2006 and BRFSS 2008**

Chronic Disease	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Coronary Heart Disease</b>			
Yes	55	11.7	8.4-14.9
No	458	7.0	6.2-7.8
<b>Stroke</b>			
Yes	43	19.3	13.3-25.3
No	475	6.9	6.1-7.7

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

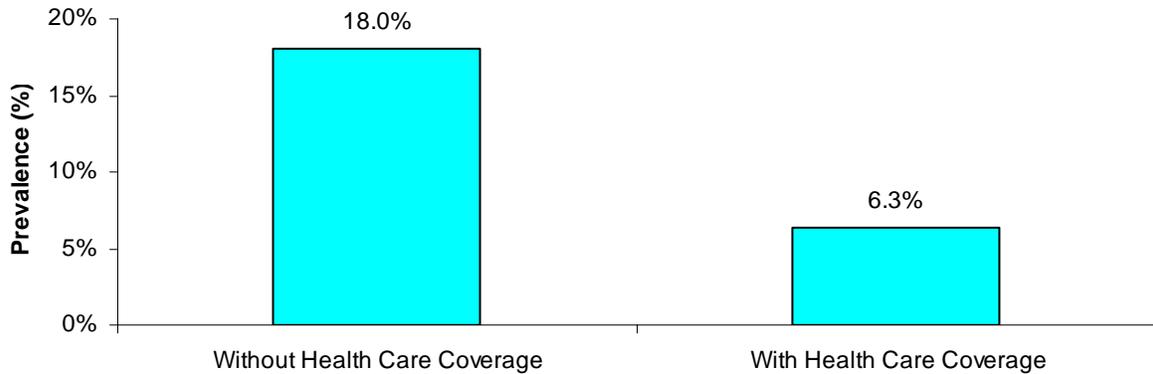
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Health Care Access and Current Depression

Higher prevalence of current depression was seen among adults without health care coverage (18.0% [95% CI: 12.7%-23.3%]) as compared to adults with health care coverage (6.3% [95% CI: 5.1%-7.4%]) as shown in figure 35.

Figure 35

**Prevalence of Current Depression Among Adults Aged 18 Years and Older by Health Care Coverage in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

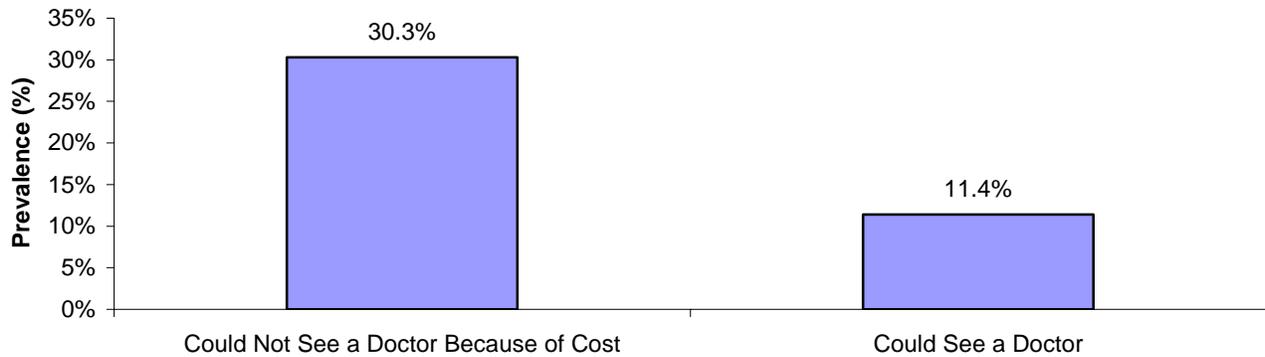
There was no statistical difference in the prevalence of current depression among adult Kansans with and without personal health care provider as shown in table 15.

Medical Cost and Current Depression

The prevalence of current depression was higher among adults (25.0% [95%CI: 19.4%-30.7%]) who needed to see a doctor in the past twelve months but could not because of the cost as compared with adults who were able to see a doctor without cost as a barrier to seek health care (5.2% [95%CI: 4.1%-6.2%]) as shown in figure 36.

Figure 36

**Prevalence of Ever Being Diagnosed With Depression Among Adults Aged 18 Years and Older Able or Unable to see doctor because of cost in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 15. Prevalence of current depression among adults aged 18 years and older by health care access status, Kansas 2008**

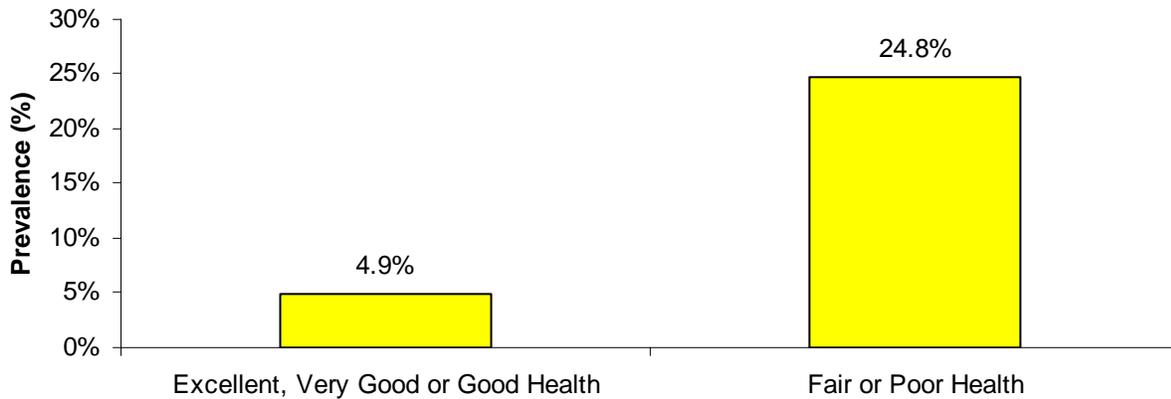
Health Care Access Status	Current Depression		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Health care coverage</b>			
Yes	193	6.3	5.1-7.4
No	63	18.0	12.7-23.3
<b>Personal health care provider</b>			
Yes	219	7.2	6.0-8.3
No	37	9.9	5.7-14.0
<b>Could not see doctor because of cost</b>			
Yes	100	25.0	19.3-30.7
No	155	5.2	4.1-6.2

Among 3,614 adult respondents

Self-rated Health and Current Depression

The prevalence of current depression was higher among adults (24.8% [95% CI: 20.0%-29.5%]) who rated their health as fair or poor as compared to adults (4.9% [95% CI: 3.8%-6.0%]) who rated their health as excellent, very good or good as shown in figure 37.

Figure 37 **Prevalence of Current Depression Among Adults Aged 18 Years and Older by Health Status in Kansas, 2008 BRFSS**

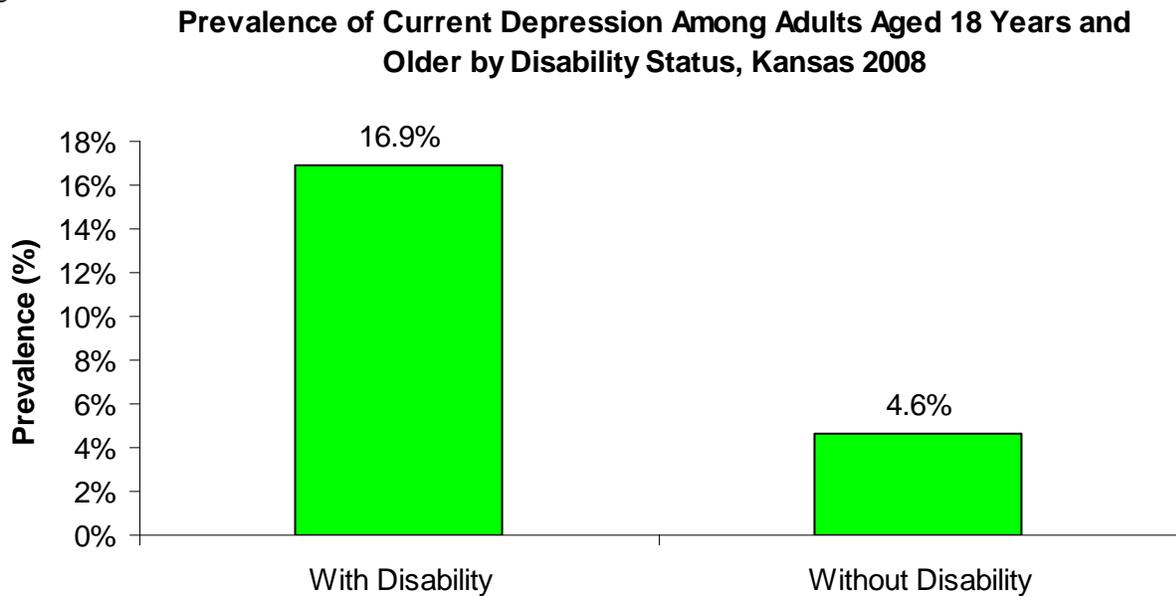


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

## Disability and Current Depression

As mentioned previously, disability is defined as adults who reported they were limited in any activities because of physical, mental, or emotional problems or who reported having a health problem that requires them to use special equipment such as a cane, wheelchair, a special bed, or a special telephone. The higher prevalence of current depression appeared to be associated with disability. The prevalence of current depression was about four times higher among adults living with disability (16.9% [95% CI: 13.9%-20.0%]) as compared to adults living without disability (4.6% [95% CI: 3.4%-5.8%]) as shown in figure 38.

Figure 38



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

## **Depression Treatment**

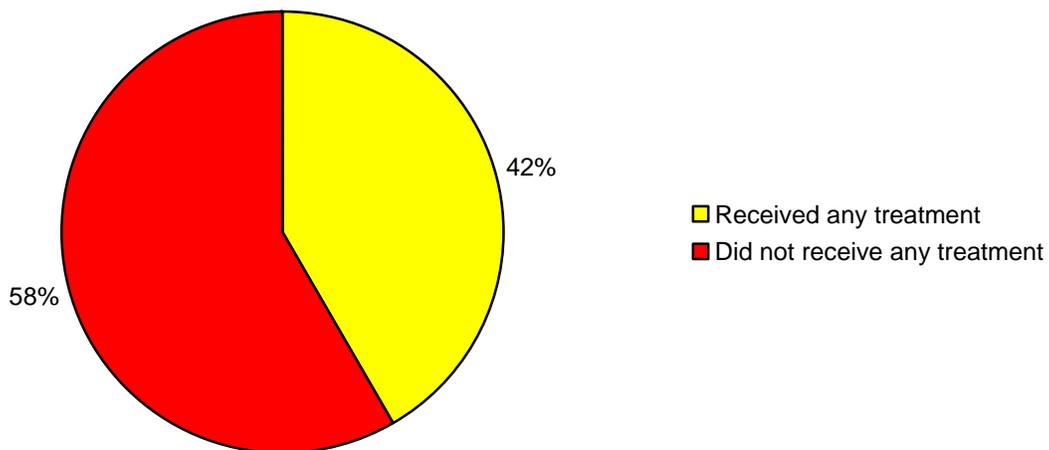
One of the objectives addressing mental health issues recommended by the Healthy People 2010 plan is to increase the proportion of adults with recognized depression who receive treatment.

Depression is a treatable condition. Available medications and psychological treatments, alone or in combination, can help 80 percent of those with depression. With adequate treatment, future episodes of depression can be prevented or reduced in severity. Treatment for depression can enable people to return to satisfactory, functioning lives. Healthy people 2010 target for the adults aged 18 years and older with recognized depression to receive treatment is 64 %.

Before 2008, data on treatment among Kansans with depression were not available. In 2008, a set of seven questions to assess the treatment status among adults with depression was asked in Kansas BRFSS survey. Treatment was defined as any treatment and hospitalization for sadness, discouragement or lack of interest at any time in the past 12 months. In 2008 survey about 4 in 10 (41.8%) adults aged 18 years and older who responded having symptoms of depression over a period of two weeks and longer in the past 12 months received any treatment (figure 39)

Figure 39

### **Depression Treatment Among Adults Aged 18 Years and Older, Kansas 2008**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Sociodemographic Profile of Adults with Symptoms of Depression with and without treatment

There was no statistical difference in the prevalence of receiving a treatment among adult Kansans with depressive symptoms by age, gender, race, ethnicity, education, annual household income and marital status as shown in table 16.

**Table 16. Prevalence of ever received treatment among adults aged 18 years and older who had depression symptoms by sociodemographic characteristics, Kansas 2008**

	Received Treatment for Depression Symptoms			Did not Receive Treatment for Depressive Symptoms		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Age groups</b>						
18-34 years	36	42.0	30.0-54.1	44	58.0	45.9-70.0
35-44 years	39	40.1	29.3-50.9	53	59.9	49.1-70.7
45-54 years	76	48.3	39.2-57.4	72	51.7	42.6-60.9
55-64 years	56	38.7	30.0-47.5	82	61.3	52.5-70.0
65 years and above	40	33.0	23.8-42.2	73	67.0	57.9-76.2
<b>Gender</b>						
Males	51	32.5	23.0-41.9	121	67.5	58.1-77.0
Females	196	47.7	41.5-53.8	203	52.3	46.2-58.5
<b>Race and Ethnicity</b>						
Non-Hispanic Whites only	226	43.3	37.7-48.9	286	56.7	51.1-62.3
Non-Hispanic African Americans only	6	34.8	4.8-64.8	11	65.2	35.2-95.2
Hispanic	6	23.1	25.8-43.7	15	76.9	56.3-97.4
<b>Ethnicity</b>						
Hispanic	6	23.1	25.8-43.7	15	76.9	56.3-97.4
Non-Hispanic	241	43.0	37.7-48.4	308	57.0	51.6-62.4
<b>Education</b>						
Less than high school	12	26.6	10.9-42.3	25	73.4	57.7-89.1
High school graduate or G.E.D	72	33.2	24.9-41.6	118	66.8	58.4-75.1
Some college	85	50.7	40.8-60.7	93	49.3	39.3-59.2
College graduate	78	45.1	35.8-54.3	88	54.9	45.7-64.2
<b>Annual household income</b>						
< \$ 15,000	42	46.0	31.2-60.8	41	54.0	39.2-68.9
\$15,000 - \$24,999	46	38.3	26.4-50.2	51	61.7	49.8-73.6
\$25,000 - \$34,999	27	38.5	24.2-52.7	42	61.5	47.3-75.8
\$35,000 - \$49,999	38	42.7	29.5-55.9	55	57.3	44.1-70.5
>= \$50,000	76	45.3	36.4-54.2	104	54.7	45.9-63.6

<b>Marital status</b>						
Married / Member of Unmarried Couple	129	44.8	38.2-51.4	161	55.2	48.6-61.9
Divorced / Separated	58	42.3	31.7-52.9	73	57.7	47.1-68.3
Widowed	37	42.8	30.8-54.7	52	57.2	45.3-69.2
Never married	23	31.3	15.3-47.3	38	68.7	52.7-84.7

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Non-Hispanic Other Race\* and Non Hispanic Multiracial only categories are not reported because of small cell size.

\*Other race include Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans

The respondents who had depression symptoms but did not receive the treatment were asked the main reason for not receiving the treatment. The top three reasons include: they did not feel the need or felt that their symptoms were not severe enough (38.1%), could not afford the treatment (20.5%) and they were fearful/ apprehensive/ nervous/disliked going for treatment (9%) as shown in table 17.

**Table 17. Percentage of adults aged 18 years and above with depressive symptoms main reason for not receiving treatment in the past 12 months.**

<b>Reasons for not receiving treatment</b>	<b>Frequency (n)</b>	<b>Weighted Percentage (%)</b>
Fear/apprehension/nervousness/ dislike going	24	9.0
Could not afford/cost/too expensive	56	20.5
Do not have/know a health provider	7	1.7
Lack transportation/too far away	1	0.5
Hours aren't convenient	7	3.5
Other (Specify) _____	7	1.5
Illness or Death of family member or friend	32	7.6
Did not feel need/not severe enough for treatment	111	38.1
Denial of need for treatment	3	2.1
Work related situation or stress	7	3.8
Just did not seek treatment	19	6.1
Other physical ailments	11	3.5
Don't want to take prescribed medications	6	2.1

Among 3,614 adult respondents

## **The Status of Ever Being Diagnosed with Anxiety in Kansas**

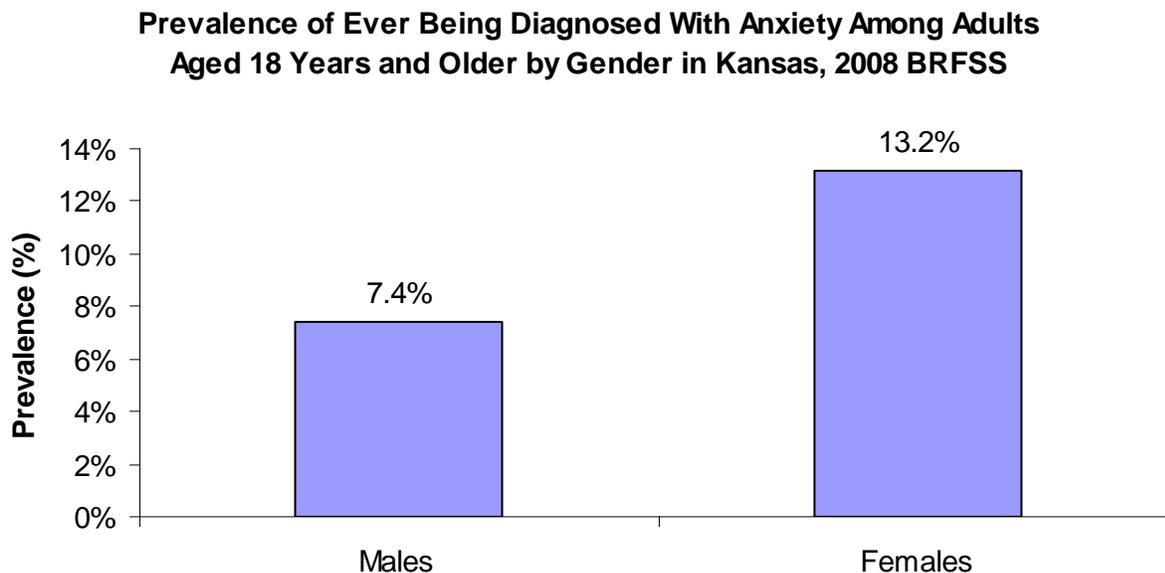
The 2008 Behavioral Risk Factor Surveillance System module on anxiety and depression included a question that asked the respondents if healthcare provider ever told them that they had an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder). The data from this question was used to analyze and report the results for lifetime or ever being diagnosed with anxiety.

In Kansas, according to the 2008 Behavioral Risk Factor Surveillance System Survey, an estimated **218,572 (10.4%)** adults aged 18 years and older had ever been diagnosed with anxiety.

### **Sociodemographic Profile of Adults With Anxiety**

In 2008, the prevalence of ever being diagnosed with anxiety was higher among females as one in eight (13.2% [95% CI: 11.5%-14.9%]) adult women reported ever being diagnosed with anxiety as compared to one in fourteen (7.4% [95% CI: 5.7%-9.2%]) males (figure 40).

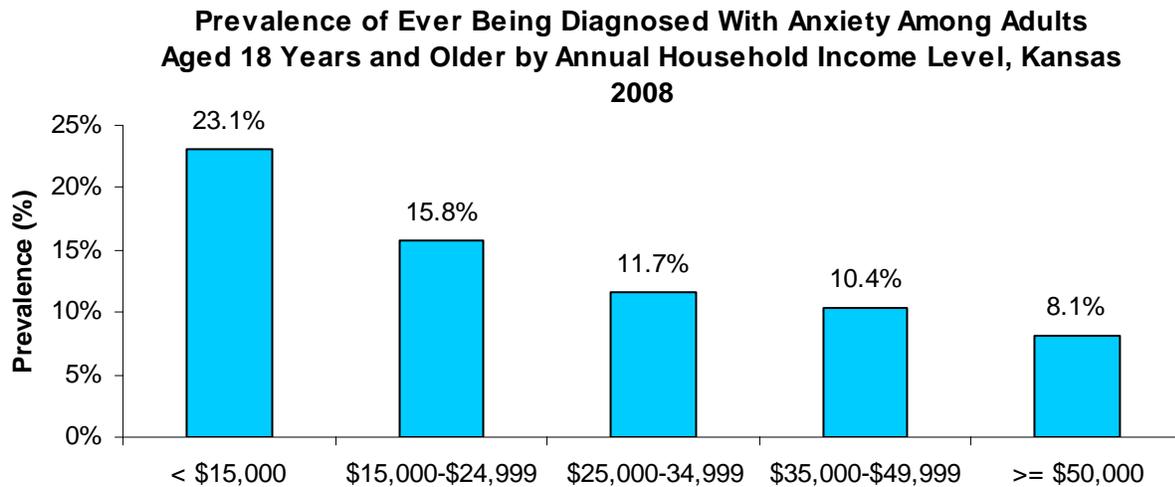
Figure 40



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

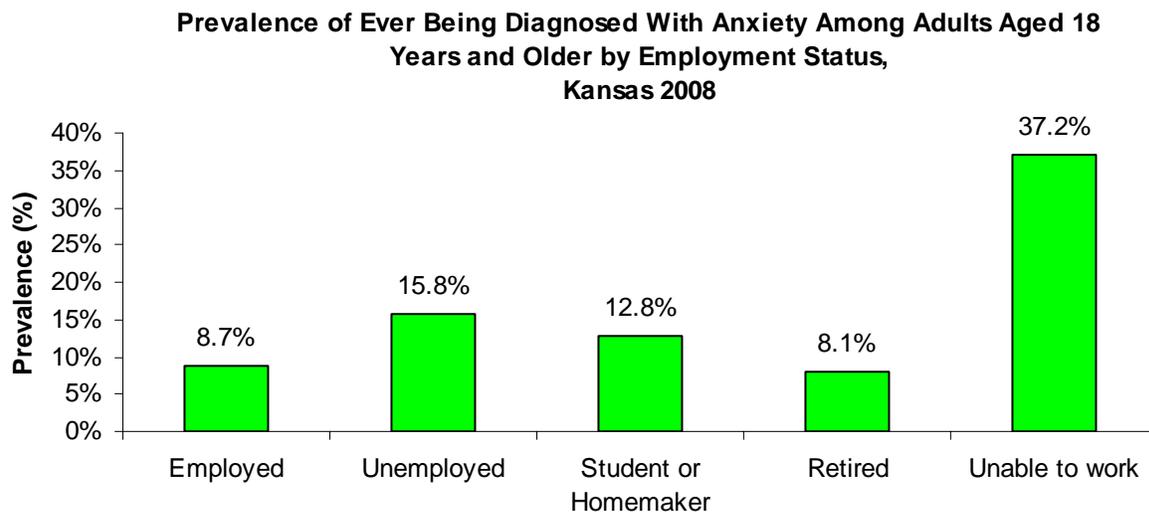
The prevalence of ever being diagnosed with anxiety appeared to be associated with lower socioeconomic status. Higher prevalence of ever being diagnosed with anxiety was seen among adults with lower annual household income and among individuals that were unable to work. The prevalence of ever being diagnosed with anxiety was 23.1% (95% CI: 16.2%-30.1%) among adults with an annual household income of less than \$15,000 as compared to 8.1% (95% CI: 6.5%-9.7%) among adults with an annual household income greater than \$50,000 (figure 41). Among adults who were unable to work, the prevalence of ever being diagnosed with anxiety was 37.2% (95% CI: 28.6%-45.8%) as compared to 8.7% (95% CI: 7.3%-10.2%) in adults who were employed (figure 42).

Figure 41



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

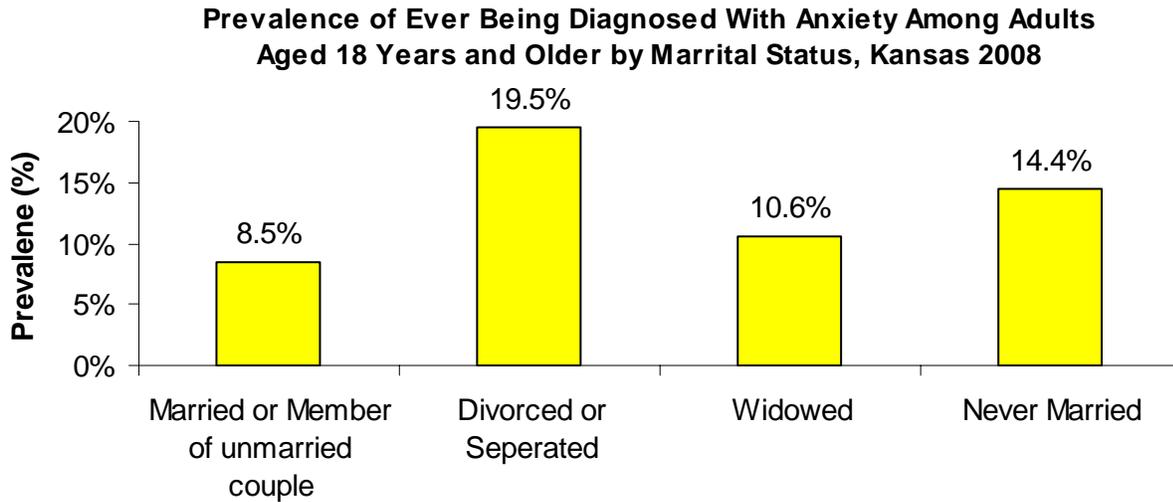
Figure 42



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The prevalence of ever being diagnosed with anxiety was higher among adults who were divorced or separated (19.5% [95% CI: 15.1%-23.9%]) as compared to adults who were married (8.5% [95% CI 7.2%-9.7%]) as shown in figure 43. There was no statistical difference in the prevalence of ever being diagnosed with anxiety among adults with different educational levels (table 18).

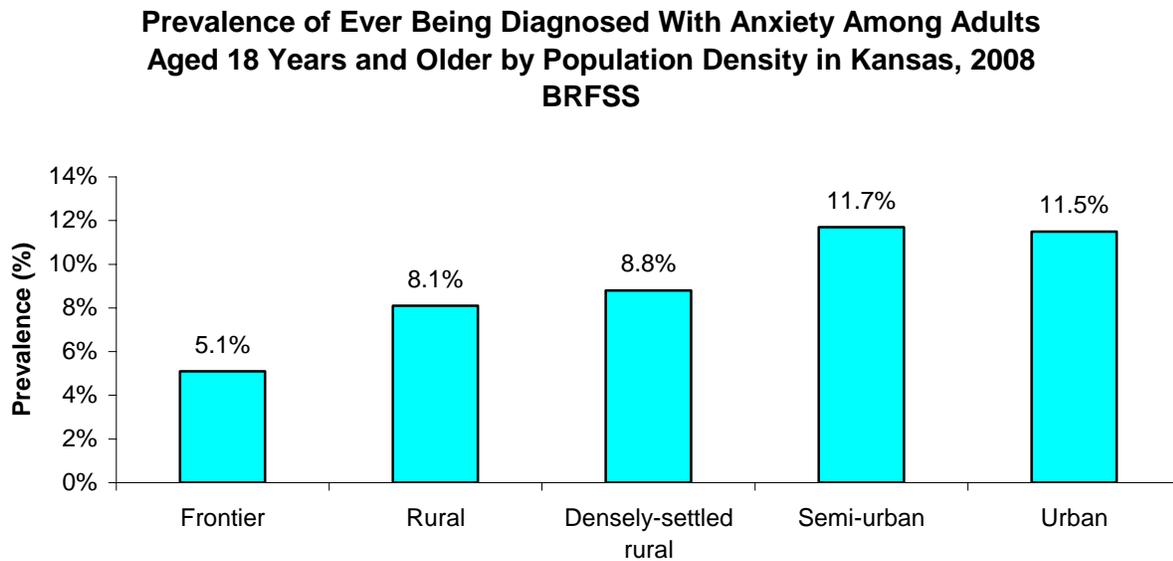
Figure 43



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

The higher prevalence of ever being diagnosed with anxiety was seen among adults that reside in the urban region of the state 11.5% (95% CI: 9.6%-13.4%) and semi-urban region 11.7% (95% CI: 8.5%-14.9%) as compared to adults who reside in the frontier region [5.1% (95% CI: 2.0%-8.3%)] as shown in figure 44. Also when the state was classified into two region, the prevalence of ever being diagnosed with anxiety was higher among adults that reside in urban region [11.5% (95% CI: 9.9%-13.2%)] as compared to adults that reside in rural region 8.0% [(95% CI: 8.0% CI: 6.3%-9.7%)] as shown in figure 45.

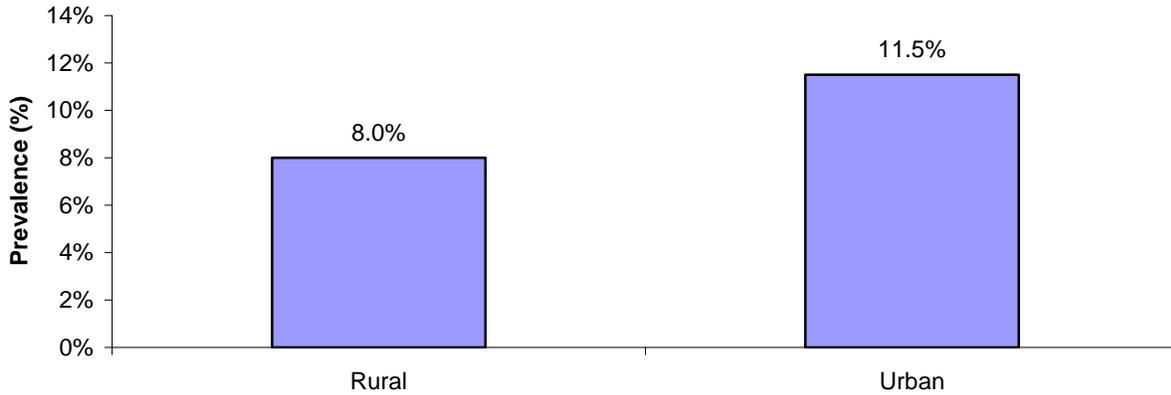
Figure 44



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 45

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older by two level Population Density in Kansas, 2008  
BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 18. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by sociodemographic characteristics, Kansas 2008**

Sociodemographic Characteristics	Ever Being Diagnosed with Anxiety, BRFSS 2008			Ever Being Diagnosed with Anxiety, BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Gender</b>						
Males	114	7.4	5.7-9.2	113	7.1	5.5-8.7
Females	312	13.2	11.5-14.9	310	12.6	10.9-14.4
<b>Education</b>						
Less than high school	26	9.8	5.5-14.2	50	11.5	7.2-15.7
High school graduate or G.E.D	122	10.3	8.0-12.6	120	10.6	8.3-13.0
Some college	138	12.6	9.9-15.3	127	11.5	8.9-14.1
College graduate	140	8.8	7.1-10.5	125	7.7	6.1-9.2
<b>Annual household income</b>						
< \$ 15,000	73	23.1	16.2-30.1	62	22.2	15.8-28.6
\$15,000 - \$24,999	78	15.8	11.7-20.0	85	15.1	11.1-19.1
\$25,000 - \$34,999	54	11.7	8.0-15.4	54	8.3	5.9-10.8

\$35,000 - \$49,999	53	10.4	7.0-13.8	59	10.7	7.2-14.2
>= \$50,000	135	8.1	6.5-9.7	110	6.7	5.3-8.2
<b>Employment status</b>						
Employed for wages / Self-employed	212	8.7	7.3-10.2	212	7.8	6.5-9.0
Out of work (unemployed)	16	15.8	5.4-26.1	19	18.1	7.8-28.5
Homemaker / Student	40	12.8	8.3-17.4	41	16.2	10.9-22.4
Retired	93	8.1	6.4-9.9	88	7.4	5.8-9.0
Unable to work	65	37.2	28.6-45.8	62	33.6	25.2-42.0
<b>Marital status</b>						
Married / Member of Unmarried Couple	210	8.5	7.2-9.7	207	8.0	6.8-9.2
Divorced / Separated	107	19.5	15.1-23.9	102	16.3	12.8-19.7
Widowed	55	10.6	7.6-13.7	57	9.6	7.1-12.0
Never married	53	14.4	9.1-19.8	57	14.5	9.8-19.2
<b>Population Density (5 Level)</b>						
Frontier	13	5.1	2.0-8.3	14	5.7	2.6-8.8
Rural	47	8.1	5.3-10.8	46	8.5	5.5-11.3
Densely-settled rural	66	8.8	6.2-11.5	70	11.0	7.9-14.0
Semi-urban	86	11.7	8.5-14.9	72	9.6	6.8-12.4
Urban	214	11.5	9.6-13.4	220	10.5	8.7-12.3
<b>Population Density (2 Level)</b>						
Rural	126	8.0	6.3-9.7	130	9.3	7.4-11.1
Urban	300	11.5	9.9-13.2	292	10.2	8.7-11.8

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

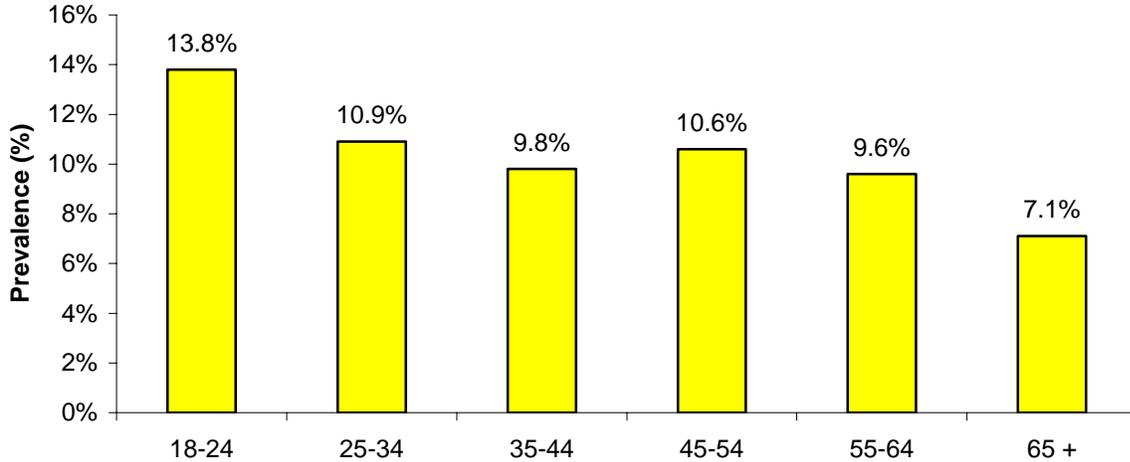
Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size in the age, race and ethnicity categories, 2006 and 2008 dataset were combined.

The results of analysis of combined dataset showed that the prevalence of ever being diagnosed with anxiety was twice in adults aged 18-24 years (13.8% [95% CI: 9.4%-18.2%]) as compared to adults aged 65 years and older (7.1% [95% CI: 6.0%-8.2%]) as shown in Figure 46 and Table 19.

Figure 46

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults by Age groups in Kansas, 2006 and 2008 BRFSS**

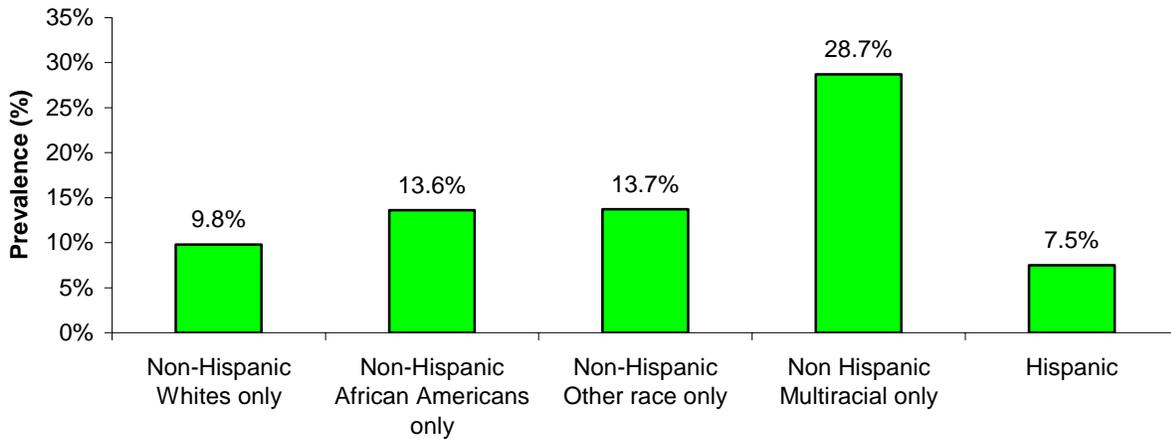


Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

Due to small sample size in the race and ethnicity categories, 2006 and 2008 dataset were combined. The prevalence of ever being diagnosed with depression was higher in adults that are Non Hispanic Multiracial (28.7% [95% CI: 15.9%-41.6%]) as compared to adults that are Hispanics (7.5% [95% CI: 4.4%-10.6%]) and adults that are non Hispanic Whites (9.8% [95% CI: 8.9%-10.7%]) as shown in Figure 47.

Figure 47

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older by Race/Ethnicity in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of ever being diagnosed with anxiety by ethnicity as shown in table 19.

**Table 19. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by age, race and ethnicity categories in Kansas, 2006 and 2008 BRFSS**

	Ever Being Diagnosed with Anxiety			No Anxiety		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Age groups</b>						
18-24 years	39	13.8	9.4-18.2	225	86.2	81.8-90.6
25-34 years	102	10.9	8.7-13.2	751	89.1	86.8-91.3
35-44 years	132	9.8	8.0-11.7	1169	90.2	88.3-92.0
45-54 years	207	10.6	9.0-12.1	1543	89.4	87.9-91.0
55-64 years	184	9.6	8.2-11.1	1516	90.4	88.9-91.8
65 years and above	185	7.1	6.0-8.2	2185	92.9	91.9-94.0
<b>Race and Ethnicity</b>						
Non-Hispanic Whites only	736	9.8	8.9-10.7	6562	90.2	89.3-91.1
Non-Hispanic African Americans only	36	13.6	8.0-19.2	234	86.4	80.9-92.0
Non-Hispanic Other race* only	21	13.7	7.3-20.0	159	86.3	80.0-92.7
Non Hispanic Multiracial only	22	28.7	15.9-41.6	62	71.3	58.4-84.1
Hispanic	32	7.5	4.4-10.6	355	92.5	89.4-95.6
<b>Ethnicity</b>						
Hispanic	32	7.5	4.4-10.6	355	92.5	89.4-95.6
Non-Hispanic	817	10.4	9.5-11.2	7028	89.7	88.8-90.6

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

\*Other race include Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans

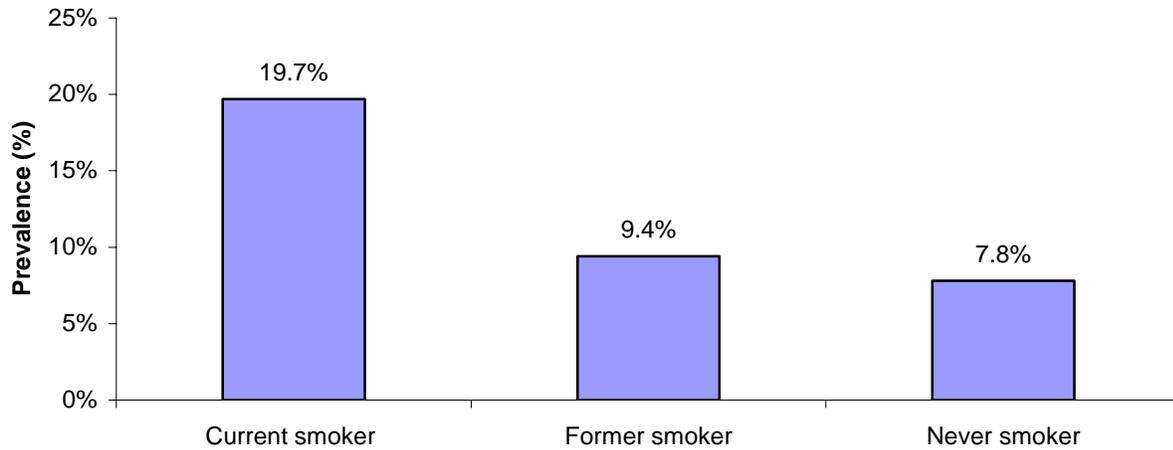
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Adverse Health Behaviors and Anxiety

Higher prevalence of ever being diagnosed with anxiety was seen among current cigarette smokers (19.7% [95% CI: 15.7%-23.8%]) as compared to non-smokers (7.8% [95% CI: 6.4%-9.2%]) and former cigarette smokers (9.4% [95% CI: 7.4%-11.5%]) as shown in figure 48.

Figure 48

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older by Smoking Status in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of ever being diagnosed with anxiety among adults by weight status. The prevalence of ever being diagnosed with anxiety was statistically similar in adults who participated in any leisure time physical activity or exercise other than their regular job compared to adults who did not participate in any leisure time physical activity or exercise other than their regular job (table 20).

**Table 20. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by adverse health behavior characteristics, Kansas 2008**

Adverse Health Behavior Characteristics	Ever Being Diagnosed with Anxiety, BRFSS 2008			Ever Being Diagnosed with Anxiety, BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Weight Status</b>						
Normal or underweight (body mass index < 25.0 kg/m <sup>2</sup> )	124	9.3	7.3-11.4	154	11.1	8.8-13.4
Overweight (body mass index 25.0-29.9 kg/m <sup>2</sup> )	145	10.3	8.1-12.5	127	8.1	6.3-9.8
Obese (body mass index ≥ 30.0 kg/m <sup>2</sup> )	138	11.6	9.3-13.9	131	11.4	9.1-13.7

<b>Smoking status</b>						
Current smoker	122	19.7	15.7-23.8	132	15.0	11.9-18.1
Former smoker	113	9.4	7.4-11.5	110	11.1	8.4-13.7
Never smoker	189	7.8	6.4-9.2	178	7.5	6.1-9.0
<b>Exercise</b>						
Yes	286	10.1	8.6-11.6	293	9.4	8.0-10.8
No	140	11.1	9.0-13.3	130	11.8	9.3-14.3

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size in the binge and heavy alcohol drinking categories, 2006 and 2008 dataset were combined.

There was no statistical difference in the prevalence of ever being diagnosed with anxiety among adults among binge drinkers (defined as males having five or more drinks or females having four or more drinks on one occasion) and non-binge drinkers of alcohol and among heavy drinkers (defined as adult men having more than two drinks per day and adult women having more than one drink per day) and non heavy drinkers of alcohol. (table 21)

**Table 21. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by binge and heavy drinking categories in Kansas, 2006 and 2008 BRFSS**

	<b>Ever Being Diagnosed with Anxiety</b>			<b>No Anxiety</b>		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Binge drinking</b>						
Yes	93	11.1	8.3-13.8	725	88.9	86.2-91.7
No	742	9.9	9.0-10.8	6574	90.1	89.2-91.0
<b>Heavy drinking</b>						
Yes	35	13.9	8.1-19.7	238	86.1	80.3-91.9
No	804	10.0	9.1-10.9	7047	90.0	89.1-90.9

Among all 8495 adult respondents excluding unknowns and refusals in Kansas.

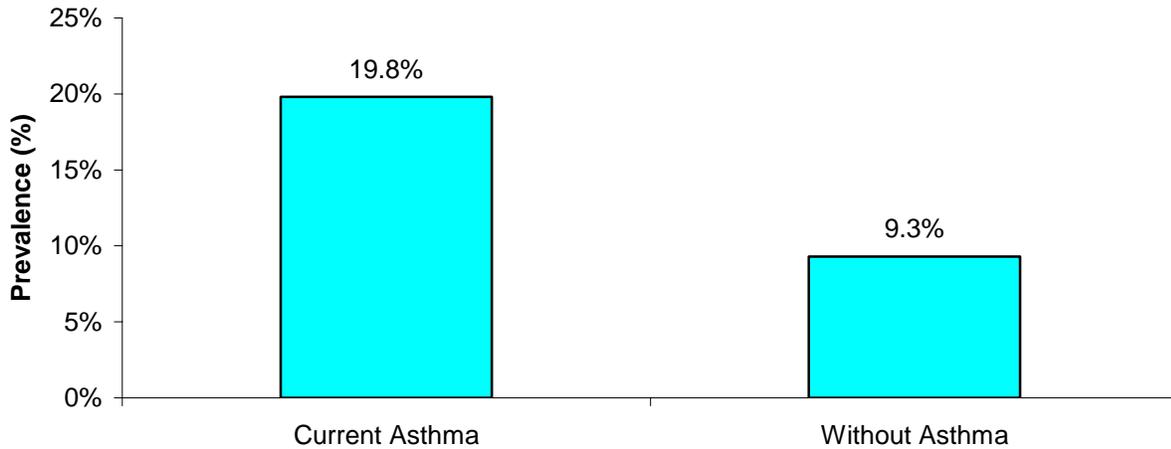
Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

### Chronic Diseases and Anxiety

The prevalence of ever being diagnosed with anxiety was higher among adults with current asthma (19.8% [95% CI: 14.5%-25.2%]) as compared to adults without current asthma (9.3% [95% CI: 8.1%-10.5%]) as shown in figure 49.

Figure 49

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older With and Without Current Asthma in Kansas, 2008 BRFSS**



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

There was no statistical difference in the prevalence of ever being diagnosed with anxiety among adults with and without diagnosed diabetes (table 22).

**Table 22. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by chronic diseases, Kansas 2008**

Chronic Disease	Ever Being Diagnosed with Anxiety, BRFSS 2008			Ever Being Diagnosed with Anxiety, BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Asthma</b>						
Yes	66	19.8	14.5-25.2	78	20.1	15.1-25.1
No	354	9.3	8.1-10.5	344	9.0	7.7-10.2
<b>Diabetes</b>						
Yes	62	12.8	9.1-16.5	43	10.4	7.0-13.8
No	364	10.2	8.9-11.4	380	9.9	8.6-11.2

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

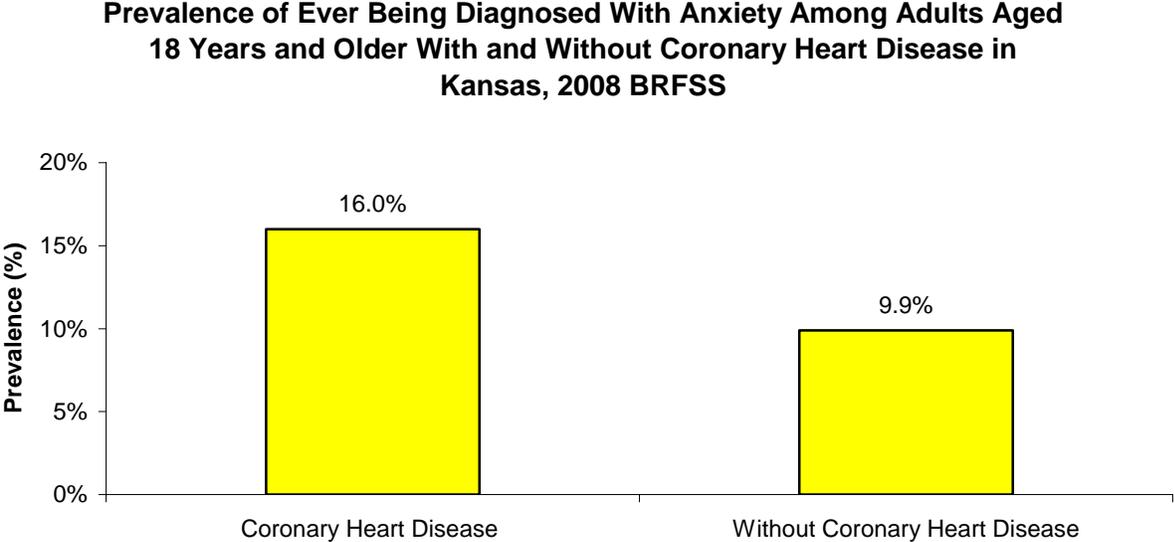
Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

Due to small sample size in the coronary heart disease and stroke categories, the estimates were calculated by combining the 2006 and 2008 Kansas BRFSS datasets.

Among adults who were diagnosed as having coronary heart disease, the prevalence of ever being diagnosed with anxiety was higher (16.0% [95% CI: 12.3%-19.7%]) as compared to adults who were not diagnosed with coronary heart disease (9.9% [95% CI: 9.0%-10.8%]) as shown in figure 50 and table 23.

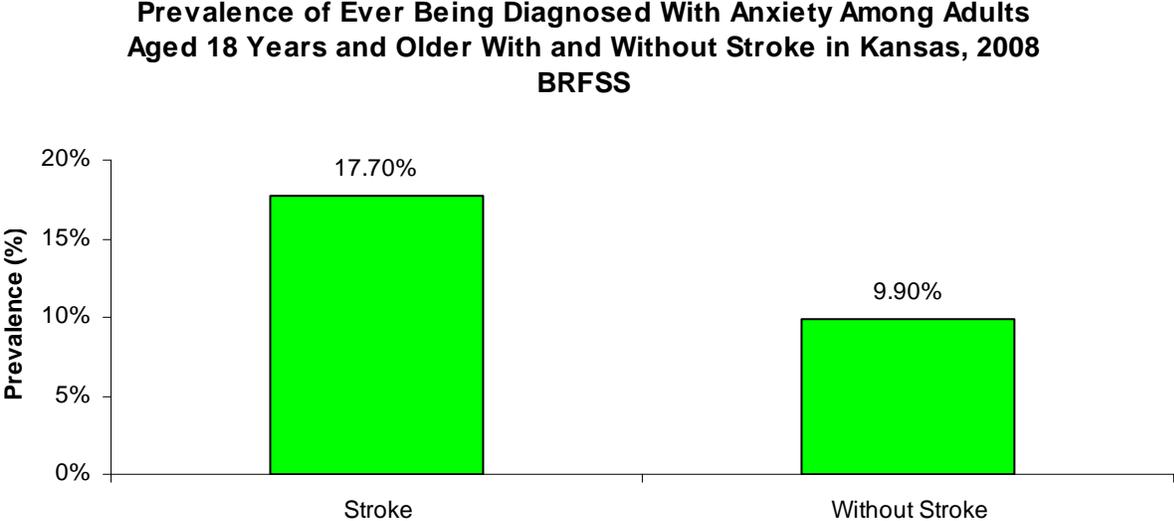
Higher prevalence of ever being diagnosed with anxiety was seen among adults who were diagnosed with stroke (17.7% [95% CI: 12.4%-22.9%]) as compared to adults who were not diagnosed with stroke (10.0% [95% CI: 9.1%-10.8%]) as shown in figure 51 and table 23.

Figure 50



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

Figure 51



Source: 2006 and 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 23. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by Coronary heart disease and Stroke in Kansas, BRFSS 2006 and BRFSS 2008**

	Ever Being Diagnosed with Anxiety			No Anxiety		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Coronary Heart Disease</b>						
Yes	83	16.0	12.3-19.7	402	84.0	80.3-87.7
No	759	9.9	9.0-10.8	6916	90.1	89.2-91.0
<b>Stroke</b>						
Yes	53	17.7	12.4-22.9	250	82.3	77.1-87.6
No	794	9.9	9.1-10.8	7125	90.1	89.2-90.9

Among all 8495 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008 and BRFSS 2006 combined.

Note: The estimates are calculated by combining data from 2006 and 2008 BRFSS surveys.

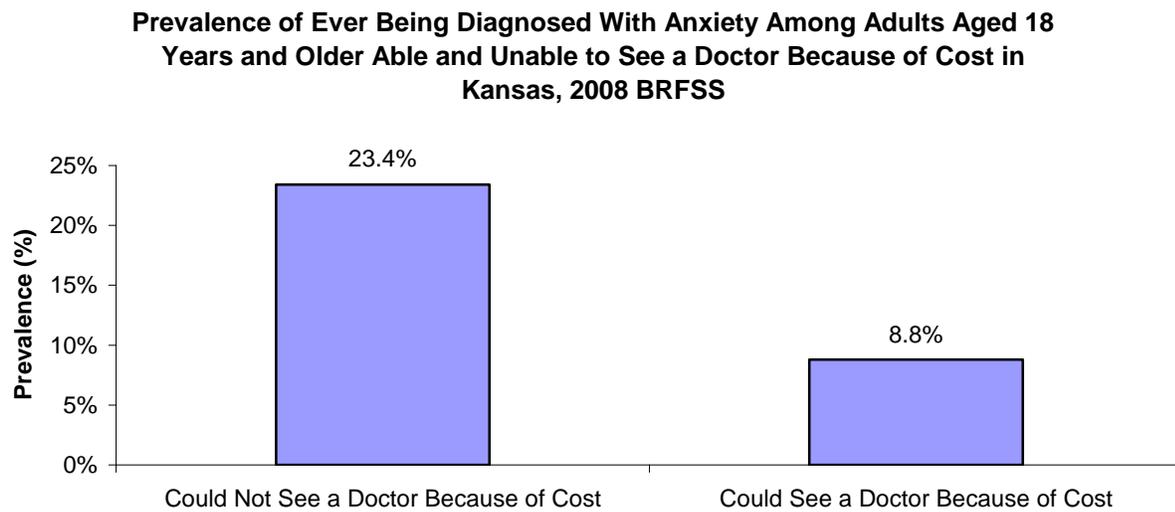
### Health Care Access and Anxiety

There was no statistical difference in the prevalence of ever receiving a diagnosis of anxiety among adult Kansans with and without having health care coverage and with and without a personal health care provider as shown in table 24.

### Medical Cost and Anxiety

The prevalence of ever receiving a diagnosis of anxiety was higher among adults (23.4% [95%CI: 17.8%-28.9%]) who needed to see a doctor in the past twelve months but could not because of the cost as compared to adults who were able to see the doctor (8.8% [95%CI: 7.6%-10.0%]) as shown in figure 52.

Figure 52



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

**Table 24. Prevalence of ever being diagnosed with anxiety among adults aged 18 years and older by health care access status, Kansas 2008**

Health Care Access Status	Ever Being Diagnosed with Anxiety, BRFSS 2008			Ever Being Diagnosed with Anxiety, BRFSS 2006		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage	95% Confidence Interval
<b>Health care coverage</b>						
Yes	378	9.9	8.7-11.2	370	9.7	8.5-11.0
No	48	14.3	9.6-19.0	53	11.6	7.9-15.3
<b>Personal health care provider</b>						
Yes	399	10.9	9.6-12.2	381	10.2	8.9-11.5
No	27	6.9	3.5-10.4	42	8.5	5.4-11.5
<b>Could not see doctor because of cost</b>						
Yes	85	23.4	17.8-28.9	87	21.7	16.6-26.8
No	339	8.8	7.6-10.0	335	8.5	7.3-9.7

Among all 4,294 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2008

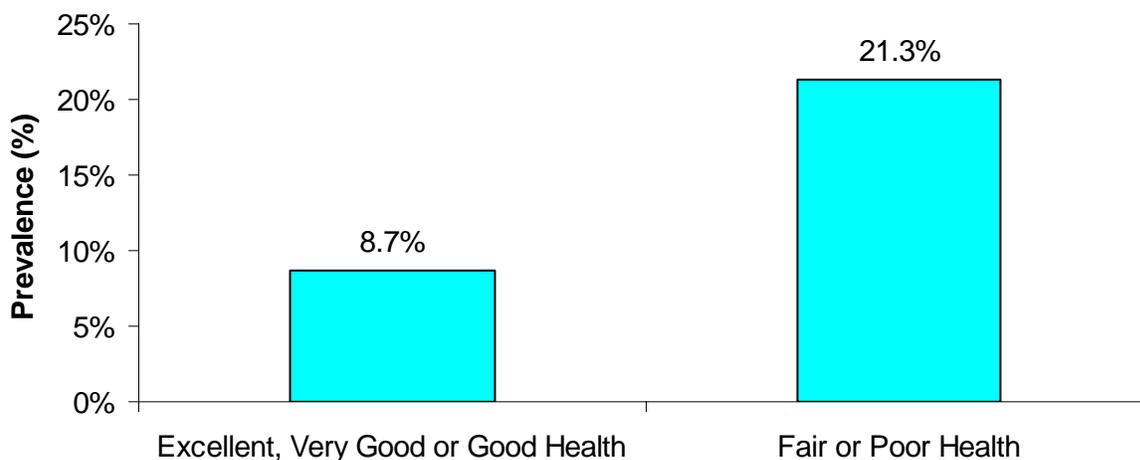
Among all 4,201 adult respondents excluding unknowns and refusals in Kansas, BRFSS 2006

### Self-rated Health and Anxiety

The prevalence of ever being diagnosed with anxiety was higher among adults (21.3% [95% CI: 17.2%-25.4%]) who rated their health as fair or poor as compared to adults (8.7% [95% CI: 7.4%-9.9%]) who rated their health as excellent, very good or good as shown in figure 53.

Figure 53

**Prevalence of Ever Being Diagnosed With Anxiety Among Adults Aged 18 Years and Older by Health Status, Kansas 2008**

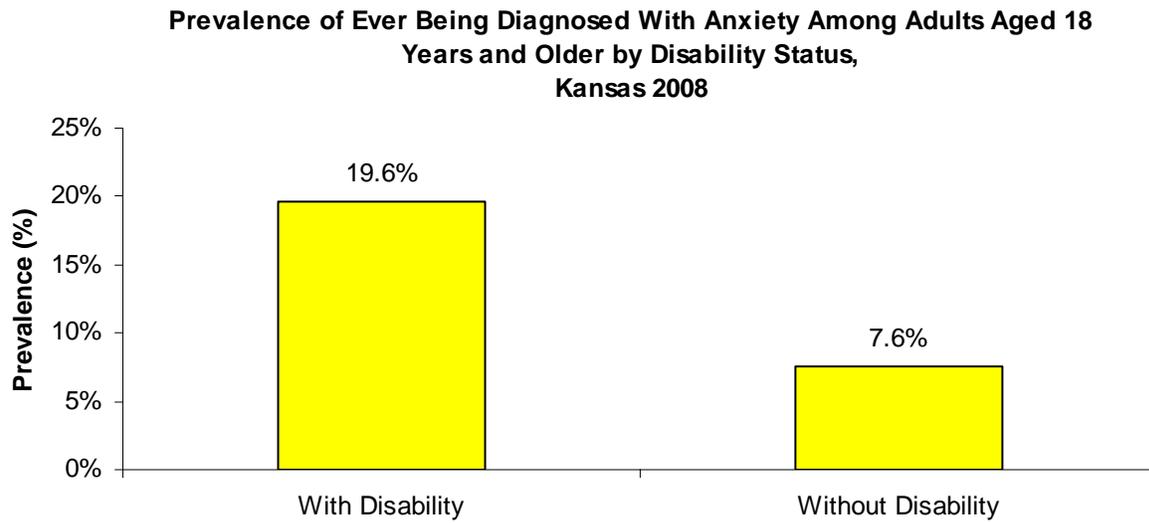


Source: 2008 Kansas Behavioral Risk Factor Surveillance System

## Disability and Anxiety

As mentioned previously, disability is defined as adults who reported they were limited in any activities because of physical, mental, or emotional problems or who reported having a health problem that requires them to use special equipment such as a cane, wheelchair, a special bed, or a special telephone. The prevalence of ever being diagnosed with anxiety appeared to be associated with disability. The prevalence of ever being diagnosed with anxiety was almost three times higher among adults living with disability (19.6% [95% CI: 16.7%-22.5%]) as compared to adults without disability (7.6% [95% CI: 6.2%-8.9%]) as shown in figure 54.

Figure 54



Source: 2008 Kansas Behavioral Risk Factor Surveillance System

## **Technical Notes**

### BRFSS Overview

The Behavioral Risk Factor Surveillance System (BRFSS) is a random digit dial telephone survey among non-institutionalized adults age 18 years and older. In addition, adult respondents provide limited data on a randomly selected child in the household via surrogate interview. The BRFSS is coordinated and partially funded by the Centers for Disease Control and Prevention and is the largest continuously conducted telephone survey in the world. It is conducted in every state, the District of Columbia, and several United States territories. The first BRFSS survey in Kansas was conducted as a point-in-time survey in 1990, and Kansas has conducted the BRFSS survey annually since 1992.

The 2008 survey consisted of 222 questions and took on average about 20 minutes to complete. The 2008 Kansas BRFSS included: health status, healthy days, health care access, sleep, exercise, diabetes, oral health, cardiovascular disease prevalence, asthma, disability, tobacco use, demographics, alcohol consumption, immunization, falls, seatbelt use, drinking and driving, women's health, prostate cancer screening, colorectal cancer screening, HIV/AIDS, emotional support and life satisfaction, average hours worked, random child selection module, childhood asthma prevalence, and questions pertaining to asthma call back survey, pre-diabetes, diabetes, diabetes assessment, hypertension awareness, cholesterol awareness, impairment and access to eye care, excess sun exposure, fruits and vegetables, physical activity, other tobacco products, secondhand smoke, COPD, underage-drinking, oral health, natural disasters and 2007 Greensburg tornado, disability, veterans health status, anxiety and depression, depression treatment, food security and insecurity.

The overall goal of the BRFSS is to develop and maintain the capacity for conducting population-based health risk surveys in Kansas. BRFSS data are used for the following:

- Monitor the leading contributors to morbidity and premature death
- Track health status and assess trends
- Measure knowledge, attitudes, and opinions
- Program planning
  - Needs assessment
  - Development of goals and objectives
  - Identification of target groups
- Policy development
- Evaluation

Data from BRFSS are weighted to account for the complex sample design and non-response bias such that the resulting estimates will be representative of the underlying population as a whole as well as for target subpopulations.

For more information about the Kansas BRFSS, including past questionnaires and data results, please visit: <http://www.kdheks.gov/brfss/index.html>

## Questionnaire Design

The survey consists of three sections:

- Core questions are asked by all states. The order the questions appear and the wording of the questions are fairly consistent across all states. Types of core questions include fixed, rotating, and emerging health issues.
  - Fixed core: contains questions that are asked every year. Fixed core topics include health status, health care access, healthy days, life satisfaction, emotional satisfaction, disability, tobacco use, alcohol use, exercise, immunization, HIV/AIDS, diabetes, asthma, and cardiovascular disease.
  - Rotating core: contains questions asked every other year.
    - Odd years (2005, 2007, 2009, etc): fruits and vegetables, hypertension awareness, cholesterol awareness, arthritis burden, and physical activity.
    - Even years (2006, 2008, 2010, etc): women’s health, prostate screening, colorectal cancer screening, oral health and injury.
  - Emerging Health Issues: contains late breaking health issue questions. At the end of the survey year, these questions are evaluated to determine if they should be a part of the fixed core.
- Optional Modules include questions on a specific health topic. The CDC provides a pool of questions from which states may select. States have the option of adding these questions to their survey. The CDC’s responsibilities regarding these questions include development of questions, cognitive testing, and financial support to states to include these questions on the questionnaire, data management, limited analysis and quality control.
- State added questions are based on public health needs of each state. State added questions include questions not available as supported optional modules in that year or emerging health issues that are specific to each state. Any modifications made to the CDC support modules available in that year make the module a state added module. The CDC has no responsibilities regarding these questions.

Each year, stakeholders are invited to attend an annual planning meeting and propose optional modules and state added questions to be added to the survey. Then, a survey selection committee consisting of the BRFSS Coordinator, Director of Science and Surveillance/Health Officer II, and Office of Health Promotion Director meet to determine the questionnaire content. The survey selection committee uses a specific set of criteria to determine the questionnaire’s content.

## Sampling

The 2008 BRFSS was conducted using a disproportionate stratified sampling method. This method of probability sampling involved assigning sets of one hundred telephone numbers with the same area code, prefix and first two digits of suffix and all possible combinations of the last two digits (“hundred blocks”) into two strata. Those hundred blocks that have at least one known listed household number are designated high density (also called “one-plus block”); hundred blocks with no known listed household numbers are designated low density (“zero blocks”). The high-density stratum is sampled at a higher rate than the low-density stratum resulting in greater efficiency. Approximately the same number of households is called each month throughout the calendar year to reduce bias caused by seasonal variation of health risk behaviors.

Potential working telephone numbers were dialed during three separate calling periods (daytime, evening, and weekends) for a total of 15 call attempts before being replaced. Upon reaching a valid household number, one household member ages 18 years and older was randomly selected. If the selected respondent was not available, an appointment was made to call at a later time or date. Because respondents were selected at random and no identifying information was solicited, all responses to this survey were anonymous. In 2008, **8,628** residents of Kansas were interviewed.

### Response Rate

The CASRO (Council of American Survey Research Organizations) response rate is used as a measure of quality of data. The 2008 Kansas BRFSS achieved a rate of survey 59.65% indicating highly reliable results. The CASRO formula is based on the number of interviews completed, the number of households reached, and the number of household with unknown eligibility status. The CASRO response rate is used because in addition to those persons who refused to answer questions, lack of response can also arise because household members were not available despite repeated call attempts, or household members refused to pick up the phone based on what they discern from caller ID.

### Limitations

As with any research method, the BRFSS has limitations.

- BRFSS is conducted among non-institutionalized adults residing in the private residences with land lines for telephones; therefore it excludes individuals without telephone service, those on military bases, and individuals in institutions.
- All information is self reported which may introduce bias such as recall bias, reporting bias, etc.
- Due to the sampling and population rate, it is often difficult to obtain subpopulation data such as county level data or data on minorities.
- BRFSS is not ideal for low prevalence conditions.

### Weighting Procedures

Weighting is a process by which the survey data are adjusted to account for unequal selection probability and response bias and to more accurately represent the population from which the sample was drawn (to generate population-based estimates for the states and counties). The response of each person interviewed were assigned a weight which accounted for the density stratum, the number of telephones in the household, the number of adults in the household, non-response, non-coverage of households without telephones and the demographic distribution of the sample.

### Estimates

To account for sampling error and for the accuracy of the estimate, a 95% confidence interval is calculated. A confidence interval gives an estimated range of values, which is likely to include an unknown population parameter, the estimated range being calculated from a given set of sample data.

If independent samples are taken repeatedly from the same population, and a confidence interval calculated for each sample, then certain percentage (confidence level) of the intervals will include the unknown population parameter.

Data results from the BRFSS survey are the estimate of actual population parameters. A 95% confidence interval is calculated for the estimate of an indicator obtained from the BRFSS sample, which is interpreted as we are 95% confident that the interval contains the true population value of the indicator. The smaller the range between the lower limit and upper limit of confidence interval, the more precise the estimated percentage is. In other words, the narrower the confidence interval, the better. The BRFSS data produces highly reliable estimates and the interpretation of data is based on the application of 95% confidence intervals.

### Split Questionnaire

To accommodate increasing data needs, the Kansas BRFSS used a split questionnaire in 2008. CDC optional modules and state added questions are organized by topics into two sections: questionnaire A and questionnaire B. All 8,628 respondents answered questions from the core section. Then each telephone number was randomly assigned to questionnaire A and questionnaire B prior to being called. Approximately half of the respondents received questionnaire A and the remaining receive questionnaire B, (i.e. approximately 4,000 respondents for each questionnaire). The **anxiety and depression module** was included as the optional module in the questionnaire B that was answered by approximately 4,000 respondents.

#### *Advantages of a split questionnaire:*

- Collect data on numerous topics within one data year
- Collect in-depth data on one specific topic
- Ability to keep questionnaire time and length to a minimum

#### *Disadvantages of a split questionnaire:*

- Complexity of data weighting; additional weighting factors are needed
- Variables on questionnaire A cannot be analyzed with variables on questionnaire B

#### *Analysis of split questionnaire:*

The sample size for each split of the questionnaire is approximately half of the total sample size. As mentioned above, each respondent is randomly assigned to questionnaire A or to questionnaire B. The questions regarding certain conditions are included in the core section (e.g., diabetes, disability, asthma, etc.). State added questions and optional modules for these conditions are included on questionnaire A or questionnaire B. Therefore, these additional questions on a specific health condition are asked from respondents who are assigned to that particular split questionnaire. This resulted in approximately half of the respondents who were identified with a particular condition from the core section responding to additional questions on the specific condition. Also, the number of adults with the specific health condition may vary on each question due to respondents terminating at various points in the survey.

## Population Density

Geographically Kansas is divided into five regions based on the number of people per square mile.

<b>Category</b>	<b>Definition</b>	<b>Kansas Counties</b>
Frontier	<6 persons/square mile	Barber, Chase, Cheyenne, Clark, Comanche, Decatur, Edwards, Elk, Gove, Graham, Greeley, Hamilton, Hodgeman, Jewell, Kearny, Kiowa, Lane, Lincoln, Logan, Meade, Morton, Ness, Osborne, Rawlins, Rush, Sheridan, Smith, Stanton, Trego, Wallace, Wichita
Rural	6 to <20 persons/square mile	Anderson, Brown, Chautauqua, Clay, Cloud, Coffey, Ellsworth, Grant, Gray, Greenwood, Harper, Haskell, Jackson, Kingman, Linn, Marion, Marshall, Morris, Nemaha, Norton, Ottawa, Pawnee, Phillips, Pratt, Republic, Rice, Rooks, Russell, Scott, Stafford, Stevens, Thomas, Wabaunsee, Wilson, Woodson
Densely Settled Rural	20 to <40 persons/square mile	Allen, Atchison, Barton, Bourbon, Cherokee, Cowley, Dickinson, Doniphan, Ellis, Finney, Ford, Jefferson, Labette, McPherson, Neosho, Osage, Pottawatomie, Seward, Sumner,
Semi-urban	40 to <150 persons/square mile	Butler, Crawford, Franklin, Geary, Harvey, Leavenworth, Lyon, Miami, Montgomery, Reno, Riley, Saline
Urban	150+ persons/square mile	Douglas, Johnson, Sedgwick, Shawnee, Wyandotte

Based on 2000 U.S. Census

## Description of Anxiety and Depression Module

### **CDC Module: Anxiety and Depression**

Now, I am going to ask you some questions about your mood. When answering these questions, please think about how many days each of the following has occurred in the past 2 weeks.

1 Over the last 2 weeks, how many days have you had little interest or pleasure in doing things?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

2 Over the last 2 weeks, how many days have you felt down, depressed or hopeless?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

3 Over the last 2 weeks, how many days have you had trouble falling asleep or staying asleep or sleeping too much?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

4 Over the last 2 weeks, how many days have you felt tired or had little energy?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

5 Over the last 2 weeks, how many days have you had a poor appetite or eaten too much?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

6 Over the last 2 weeks, how many days have you felt bad about yourself or that

you were a failure or had let yourself or your family down?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

7 Over the last 2 weeks, how many days have you had trouble concentrating on things, such as reading the newspaper or watching the TV?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

8 Over the last 2 weeks, how many days have you moved or spoken so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you were moving around a lot more than usual?

- 01-14 days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

9 Has a doctor or other healthcare provider EVER told you that you had an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder)?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

10 Has a doctor or other healthcare provider EVER told you that you have a depressive disorder (including depression, major depression, dysthymia, or minor depression)?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

## Description of Depression Treatment

### State-Added Module: Depression Treatment

1 About how long has it been since you were diagnosed with depression?

**Please read:**

- 1 During the past twelve months (one year or less)
- 2 During the past two years (more than 1 year to 2 years)
- 3 During the past five years (more than 2 years to 5 years)
- 4 More than five years

**Do not read:**

- 7 Don't know / Not sure
- 9 Refused

Now, I am going to ask few questions about your feelings of being sad, discouraged or uninterested in the past 12 months and the treatment received for these feelings.

2 During the past 12 months, have you had a period of two weeks or longer when you felt sad, discouraged or uninterested?

- 1 Yes
- 2 No [**Go to Closing**]
- 7 Don't know / Not sure [**Go to Closing**]
- 9 Refused [**Go to Closing**]

3 Did you receive any treatment for your sadness, discouragement or lack of interest at any time in the past 12 months by a medical doctor or other health professional? (By health professional we mean psychologists, counselors, spiritual advisors, herbalists, acupuncturists, and other healing professionals)

- 1 Yes
- 2 No [**Go to Q6**]
- 7 Don't know / Not sure
- 9 Refused

4 During the past 12 months, did you get a prescription medicine for your sadness, discouragement or lack of interest?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

5 During the past 12 months, did you receive counseling or therapy from a medical doctor or other health professional for your sadness, discouragement or lack of interest? (By health professional we mean psychologists, counselors spiritual advisors, herbalists, acupuncturists, and other healing professionals)

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

**If Q3=2 (No), then continue. Otherwise, go to Q7**

6 What was the main reason you did not receive treatment that you needed for your sadness, discouragement or lack of interest in the past 12 months?

**Read only if necessary:**

- 01 Fear/apprehension/nervousness/ dislike going
- 02 Could not afford/cost/too expensive
- 03 Provider will not accept my insurance, including Medicaid
- 04 Do not have/know a health provider
- 05 Lack transportation/too far away
- 06 Hours aren't convenient
- 07 Other (Specify)\_\_\_\_\_
- 08 Illness or Death of family member or friend
- 09 Did not feel need/not severe enough for treatment
- 10 Denial of need for treatment
- 11 Work related situation or stress
- 12 Just did not seek treatment
- 13 Other physical ailments
- 14 Don't want to take prescribed medications

**Do not read:**

- 77 Don't know/not sure
- 99 Refused

7 During the past 12 months, how many different times have you stayed overnight or longer in a hospital to receive treatment for your sadness, discouragement or lack of interest?

- \_\_\_ Number of Times
- 88 None
  - 77 Don't know/Not sure
  - 99 Refused

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