

# **MENTAL ILLNESS AND STIGMA STATUS IN KANSAS**

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**2007 Behavioral Risk Factor Surveillance System**



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## **2007 Behavioral Risk Factor Surveillance System**

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The Mental Illness and Stigma 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.

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## **Executive Summary**

Mental illnesses include major depression, schizophrenia, bipolar disorder, obsessive compulsive disorder, autism spectrum disorders etc. Consequences of mental illness for the individual and society could lead to increased disability, unemployment, substance abuse, homelessness and even suicide. Major mental disorders cost the nation at least \$193.2 billion annually in lost earnings alone. It is estimated that in 2003, \$100 billion was spent on the treatment of mental disorders in the U.S. Healthy People 2010 and its consequent Healthy Kansans 2010 distinguished mental health as one of the ten leading health indicators to monitor the health status of Kansans.

The Kansas Department of Health and Environment (KDHE) recognize the need to assess status of mental health of Kansans. Following this interest, KDHE included Mental Illness and Stigma module in 2007 Kansas Behavioral Risk Factor Surveillance System (BRFSS) survey to collect the data. Kansas BRFSS is an annual population-based random digit dial telephone survey, tracking health conditions and risk behaviors of non-institutionalized adults ages 18 years and older, residing in a private residence with a landline telephone. This report provides the comprehensive review of mental illness status in Kansas that will help KDHE in directing effective services and program efforts for better mental health of Kansans.

The main burden of mental illness is measured as Serious Psychological Distress (SPD). SPD is a nonspecific measure of psychological distress that has been psychometrically validated and shown to be able to distinguish community mental disorder cases from non-cases. SPD is determined using Kessler 6 (K6) scale, a tool often used in epidemiological studies and surveys. 2007 Kansas BRFSS included K6 scale in the Mental Illness and Stigma module in addition to 4 other questions. Another measure of mental illness examined was Frequent Mental Distress (FMD). FMD is calculated by number of days reported as mental health not good in past 30 days by respondents. In addition to SPD and FMD, severity of mental illness was also examined.

2007 Kansas BRFSS estimated that 52,000 (2.5%) Kansans aged 18 years and older had SPD and 153,914 (7.4%) had FMD. The severity of mental illness was measured in 3 categories. The survey results showed that 2.5% of the adults were probable cases of serious mental illness (SPD), 7.3% were cases of probable mild-moderate illness and 90.2% were non-cases.

About 1 in 17 (5.8%) individuals with less than high school education reported SPD as compared to 1 in 67 (1.5%) college graduates. Prevalence of SPD was significantly higher (5.8%) among individuals with annual household income less than \$25,000 as compared to individuals with annual household income equal to or more than \$35,000 (1.3%). Prevalence of SPD was examined in different categories of employment status. Results showed that prevalence of SPD was almost two times higher in individuals who were unable to work (15.7%) as compared to individuals who were out of work (8.3%). Prevalence of SPD among adults who were self employed or employed for wages was 1.4%.

Higher prevalence of SPD was observed in current smokers (5.8%) as compared to former smokers (2.1%) and never smokers (1.7%). Almost 1 in 20 individuals who did not participate in any physical activity or exercise other than their regular job had SPD (5.2%) as compared to 1 in 60 individuals who did participate (1.7%). Results showed significantly higher prevalence of SPD in people with chronic disease; diabetes (6.6%), arthritis (5.1%), coronary heart disease (7.4%) and stroke (8.7%) as compared to their counterparts without the disease.

Prevalence of SPD was higher among adults without health insurance or coverage (5.2%) as compared to those who had insurance (2.2%). Prevalence of SPD was almost 10 times higher among individuals who could not see a doctor because of cost (10.4%) as compared to their counterparts (1.6%). Prevalence of SPD was almost 8 times higher among people living with a disability (8.6%) as compared to people living without a disability (1.0%).

Similar to SPD results, prevalence of mild-moderate mental illness was also higher among individuals with annual household income less than \$25,000, current smokers, adults who did not exercise, adults with chronic diseases, individuals who could not see a doctor because of cost and adults living with a disability as compared to their counterparts.

The good news about mental illness is that recovery is possible. But stigma associated with mental illness erodes confidence that mental disorders are treatable health conditions. It discourages individuals and their families from getting help they need due to the fear of being discriminated against. Less than half of the persons with SPD received medicine or treatment (44.6%). Only 4 in 10 adults with FMD received medicine or treatment (40.4%).

2007 Kansas BRFSS module on Mental Illness and Stigma asked 2 questions about peoples' attitudes toward mental illness and its treatment. A higher percent of people who were college graduate (97.3%) agreed with the statement that 'Treatment can help people with mental illness lead normal lives' as compared to people who had less than high school education (88.0%). A slightly higher percent of people with health insurance (95.1%) agreed with the statement above as compared to people without health insurance (89.7%). Also, a very high percentage of adults with or without SPD, with or without FMD and those who received or did not receive medicine or treatment agreed with above statement. It is important to note that even though a higher percentage of adults with SPD and FMD agreed with the above statement, in practice, less than half of individuals with SPD and FMD received treatment.

A higher percentage of males agreed with the statement 'People are generally caring toward people with mental illness' (62.2%) as compared to females (48.5%). A higher percentage of people without FMD agreed with the above statement (56.3%) as compared to people with FMD (43.8%). A higher percentage of people who did not receive medicine or treatment agreed with the above statement (56.3%) as compared to people receiving medicine or treatment (47.1%).

## Introduction

Mental illnesses are medical conditions that disrupt a person's thinking, feeling, mood, ability to relate to others, and daily functioning.<sup>1</sup> Serious mental illnesses include major depression, schizophrenia, bipolar disorder, obsessive compulsive disorder, panic disorder, post traumatic stress disorder, mood disorder, autism spectrum disorders and borderline personality disorder.<sup>1, 4</sup> Mental health is integral to personal well-being, family and interpersonal relationships, and one's contribution to society.<sup>2</sup> Mental health is not simply the absence of a mental illness. Healthy People 2010 (HP 2010) defined 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.<sup>2</sup> HP 2010 listed mental health as one of the ten leading health indicators that reflect the major public health concerns in the United States.<sup>2</sup> Healthy Kansans 2010 (HK 2010) is a set of recommendations and strategies to address leading health issues in Kansas.<sup>3</sup> HK 2010 also adopted mental health as one of the ten leading health indicators to monitor the health status of Kansans.<sup>3</sup>

Mental illnesses can affect persons of any age, gender, race, ethnicity, or income although disparities are present among different population subgroups.<sup>5</sup> Mental disorders are common in the United States.<sup>4</sup> It is estimated that about one in four adult (26.2%) Americans ages 18 and older suffer from a diagnosable mental disorder in a given year.<sup>4, 6</sup> Applying this percentage to the 2004 U.S. Census residential population estimate for ages 18 and older, it translates to 57.7 million people.<sup>4</sup> Even though mental disorders are widespread in the population, the main burden of illness is concentrated in a much smaller proportion; about 6 percent suffer from a serious mental illness.<sup>4</sup> Mental disorders are the leading cause of disability in the U.S. for ages 15-44.<sup>4</sup> It is also estimated that about half of Americans (46.4%) will meet the criteria for a DSM-IV disorder (Diagnostic and Statistical Manual of Mental Disorders-IV)<sup>7</sup> sometime in their life.<sup>8</sup>

Major mental disorders cost the nation at least \$193.2 billion annually in lost earnings alone.<sup>15, 16</sup> Unlike other medical disorders, the costs of mental disorders are more "indirect" than "direct."<sup>16</sup> Direct costs associated with mental disorders like medication, clinic visits, and hospitalization are relatively easy to quantify, but they reveal only a small portion of the economic burden these illnesses place on society. Indirect costs like lost earnings likely account for enormous expenses, but they are very difficult to define and estimate.<sup>15</sup> A nationally representative study showed that respondents with serious mental illness had 12-month earnings averaging \$16,306 less than other respondents without serious mental illness. Substance Abuse and Mental Health Services Administration (SAMHSA) estimated that in 2003, \$100 billion was spent on the treatment of mental disorders in the United States.<sup>18</sup> Thus, mental disorders are associated with substantial impairments that should be considered seriously.<sup>16</sup>

Serious Psychological Distress (SPD) is a nonspecific measure of psychological distress that has been psychometrically validated and shown to be able to distinguish community DSM-IV cases from noncases.<sup>9, 10, 11, 12</sup> SPD is determined using Kessler 6 (K6) scale. The K6 scale was developed by Dr. Ronald C. Kessler, Professor in Department of Health Care Policy at Harvard Medical School. The tool in its entirety has 10 questions and

the subset of 6 questions, known as the K6 scale, is often used in epidemiological studies and surveys. These questions focus on criteria listed in DSM-IV (Diagnostic and Statistical Manual of Mental Disorder-IV)<sup>7</sup> to identify cases from non-cases. More information on the tool is available on

<http://www.hcp.med.harvard.edu/ncs/ftpd/ir/k6/K6+self%20admin-3-05-%20FINAL.pdf>

The K6 scale is comprised of 6 questions asking how often during the past 30 days a person felt 'depressed,' 'nervous,' 'restless,' 'hopeless,' 'worthless,' or that 'everything was an effort.' Respondents were asked to select a response from 'all of the time', 'most of the time', 'some of the time', 'a little of the time' or 'none of the time'. Each response was scored in terms of points, 0 for 'none of the time', 1 for 'a little of the time', 2 for 'some of the time', 3 for 'most of the time' and 4 for 'all of the time'. Then the total score for each respondent was calculated by adding all 6 answers' points. Thus the total score ranged from 0 to 24. A total score of 13 points or above was defined as SPD.<sup>9, 10, 11, 12</sup>

### Method to score individual response

Response	Points
None of the time	0
A little of the time	1
Some of the time	2
Most of the time	3
All of the time	4

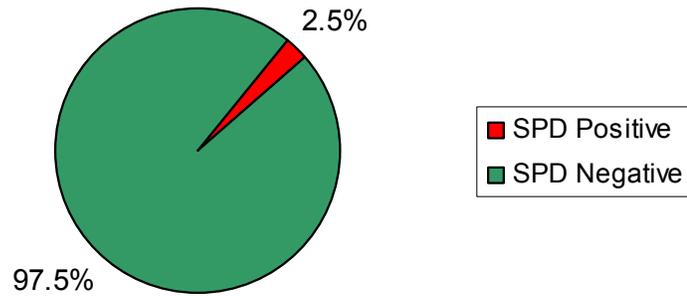
In 2004, CDC estimated the prevalence of SPD in adults 18 years and over in the U.S. as 3.1% using the K6 scale.<sup>13</sup>

Another measure of mental illness is Frequent Mental Distress (FMD). FMD is calculated by number of days reported as mental health not good in past 30 days by respondents and categorized as positive for 14 or more days. In 2007, nationwide prevalence of FMD was estimated as 10.1%.<sup>25</sup>

This report used the K6 measure for Kansas estimates as it is a validated and widely accepted scale. Kansas Behavioral Risk Factor Surveillance System (BRFSS)<sup>14</sup> is an annual population-based random digit dial telephone survey, tracking health conditions and risk behaviors of non-institutionalized adults ages 18 years and older, residing in a private residence with a landline telephone. 2007 Kansas BRFSS module on Mental Illness and Stigma included six questions of K6 scale in addition to 4 other questions to provide state level estimates of Serious Psychological Distress (SPD). Inclusion of Mental Illness and Stigma Module made BRFSS the only population-based data source for mental illness estimates in Kansas. In addition to SPD, estimates for Frequent Mental Distress (FMD) were also estimated using 2007 Kansas BRFSS data.

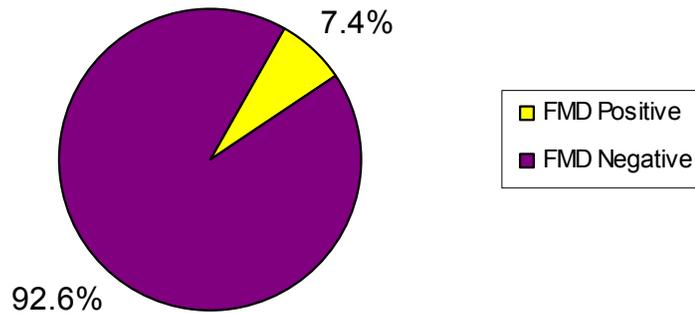
In 2007, among adults aged 18 years and older in Kansas, prevalence of SPD was 2.5% and prevalence of FMD was 7.4%.

**Prevalence of Serious Psychological Distress (SPD) Among Adults Aged 18 Years and Older, Kansas 2007**



Source: 2007 Kansas Behavioral Risk Factor Surveillance System

**Prevalence of Frequent Mental Distress (FMD) Among Adults Aged 18 Years and Older, Kansas 2007**



Source: 2007 Kansas Behavioral Risk Factor Surveillance System

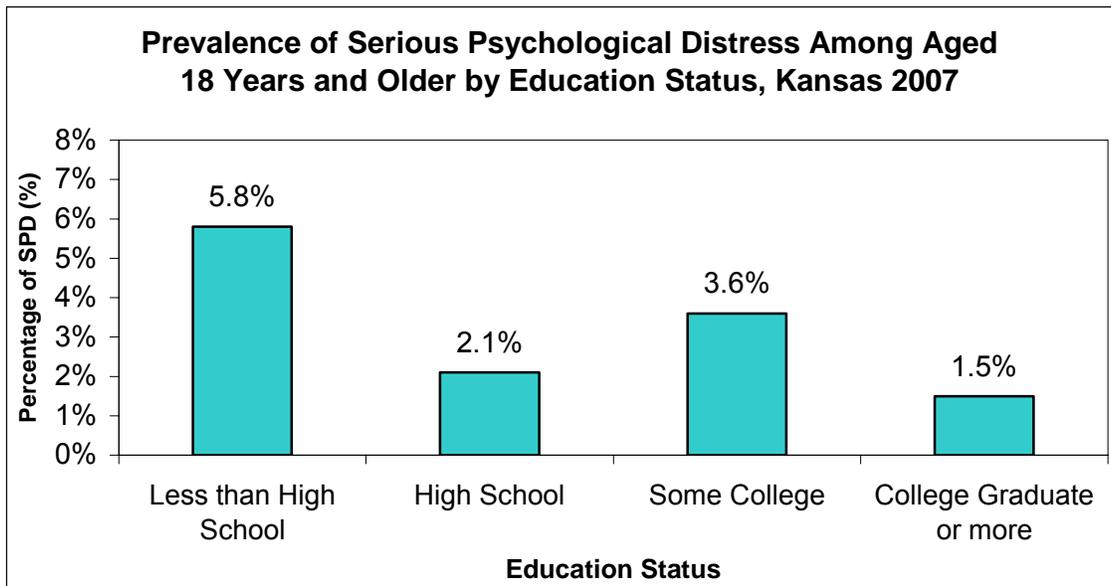
## Status of Serious Psychological Distress (SPD) Among Adults 18 Years and Older in Kansas, 2007

2007 Kansas BRFSS module on Mental Illness and Stigma included a total of 10 questions. The first 6 questions (K6 scale) asked how often during the past 30 days the respondent felt 'nervous,' 'restless,' 'hopeless,' 'worthless,' 'depressed', or that 'everything was an effort.' Responses were scored from 0 (none of time) to 4 (all the time) for each question and summed to produce a total score (0 to 24). A score of 13 or above was defined as SPD positive.

Based on SPD definition mentioned above, the 2007 Kansas BRFSS data showed that an estimated 52,000 (2.5%) Kansans aged 18 years and older had SPD.<sup>14, 19</sup>

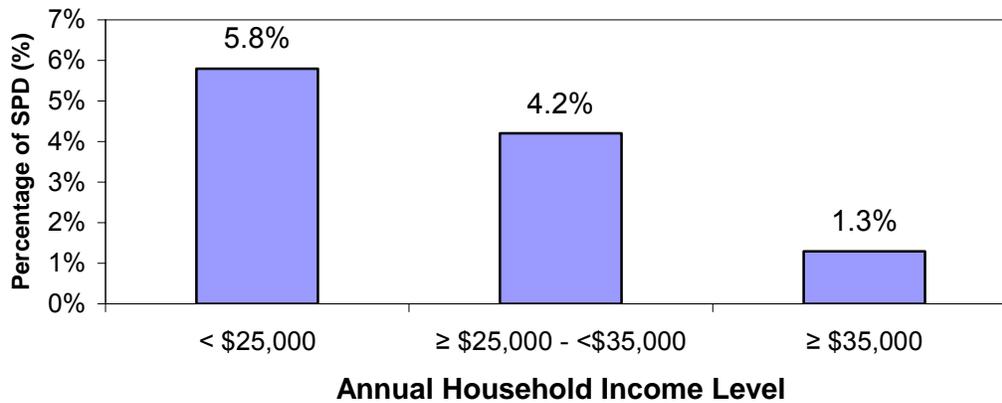
### Sociodemographic Profile of Serious Psychological Distress

Prevalence of serious psychological distress was higher among adults who had less than high school education as compared to those who were college graduates. About 1 in 17 (5.8%, 95% CI: 3.0%, 8.6%) individuals with less than high school education reported SPD as compared to 1 in 67 (1.5%, 95% CI: 0.8%, 2.2%) college graduates.



The prevalence of SPD was significantly higher (5.8%, 95% CI: 4.0%, 7.7%) among individuals with annual household income less than \$25,000 as compared to individuals with annual household income equal to or more than \$35,000 (1.3%, 95% CI: 0.7%, 2.0%).

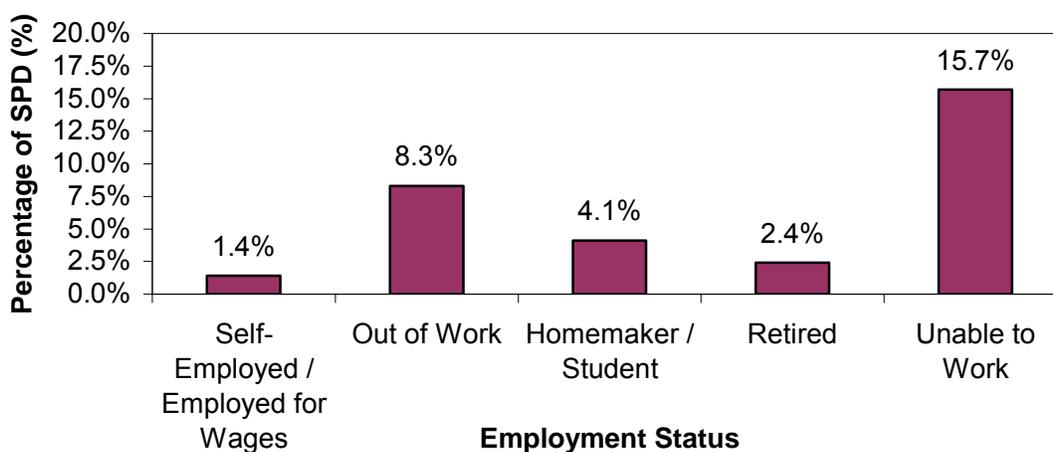
**Prevalence of Serious Psychological Distress Among Adults Aged 18 Years and Older by Annual Household Income, Kansas 2007**



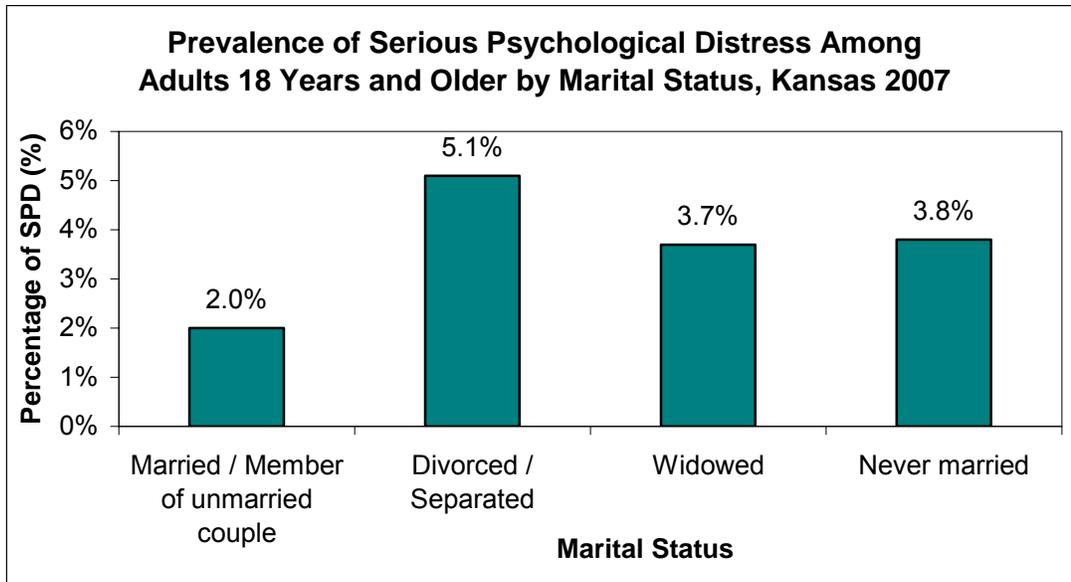
Prevalence of SPD was examined in different categories of employment status. Individuals who were unable to work had the highest prevalence (15.7%, 95% CI: 9.6%, 21.7%). It was statistically significant when compared to adults who were self employed or employed for wages (1.4%, 95% CI: 0.8%, 2.0%); retired (2.4%, 95% CI: 1.4%, 3.5%); and homemaker or student (4.1%, 95% CI: 0.6%, 7.7%).

Individuals who were out of work also had higher prevalence of SPD (8.3%, 95% CI: 2.6%, 14%) as compared to adults who were self employed or employed for wages (1.4%, 95% CI: 0.8%, 2.0%). These estimates also showed that prevalence of SPD was almost two times higher in individuals who were unable to work as compared to individuals who were out of work.

**Prevalence of Serious Psychological Distress Among Adults Aged 18 Years and Older by Employment Status, Kansas 2007**



Prevalence of SPD was examined in different categories of marital status. Divorced or separated individuals had higher prevalence (5.1%, 95% CI: 3.0%, 7.2%) as compared to married or members of unmarried couple (2.0%, 95% CI: 1.3%, 2.6%).



There was no statistical difference in the prevalence of SPD among adults in various age groups and gender as shown in the following table. There was no statistical difference in the prevalence of SPD in five geographical areas of the state classified on the basis of population density (Frontier, Rural, Densely Settled Rural, Semi-urban and Urban regions). A comparison in percentage of SPD among race/ethnicity groups could not be made due to an inadequate number of respondents in categories other than Non-Hispanic White.

**Table 1. Prevalence of serious psychological distress among adults aged 18 years and older by sociodemographic characteristics, Kansas 2007**

Sociodemographic Characteristics	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Age Group</b>						
18-34 years	11	2.1	0.5, 3.6	557	98.0	96.4, 99.5
35-44 years	22	3.1	1.7, 4.5	572	97.0	95.5, 98.3
45-54 years	32	3.4	2.2, 4.7	868	96.6	95.3, 97.8
55-64 years	21	2.7	1.4, 4.0	781	97.3	96.1, 98.6
65 years and above	23	1.8	1.0, 2.5	1132	98.2	97.5, 99.0
<b>Gender Group</b>						
Male	44	2.7	1.6, 3.7	1462	97.3	96.3, 98.4
Female	65	2.4	1.8, 3.1	2463	97.6	96.9, 98.2

<b>Race / Ethnicity Group</b>						
Non-Hispanic White	92	2.2	1.7, 2.7	3533	97.8	97.3, 98.3
Non-Hispanic African American <sup>†</sup>	-	-	-	-	-	-
Other races*, <sup>†</sup>	-	-	-	-	-	-
More than one race <sup>†</sup>	-	-	-	-	-	-
Hispanic <sup>†</sup>	-	-	-	-	-	-
<b>Education Status</b>						
Less than high school	19	5.8	3.0, 8.6	254	94.2	91.4, 97.0
High school graduate/ GED	25	2.1	0.8, 3.4	1121	98.0	96.6, 99.2
Some college	39	3.6	2.1, 5.1	1126	96.4	95.0, 98.0
College graduate	26	1.5	0.8, 2.2	1418	98.5	98.0, 99.2
<b>Annual Household Income Level</b>						
< \$25,000	51	5.8	4.0, 7.7	765	94.2	92.3, 96.0
≥ \$25,000 - < \$35,000	14	4.2	1.1, 7.3	465	95.8	92.7, 99.0
≥ \$35,000	29	1.3	0.7, 2.0	2253	98.7	98.1, 99.3
<b>Employment Status</b>						
Self-employed / Employed for wages	35	1.4	0.8, 2.0	2325	98.6	98.0, 99.2
Out of work	10	8.3	2.6, 14	81	91.7	86.1, 97.4
Homemaker / Student	10	4.1	0.6, 7.7	320	95.8	92.3, 99.4
Retired	25	2.4	1.4, 3.5	1043	97.6	96.5, 98.6
Unable to work	29	15.7	9.6, 21.7	154	84.3	78.3, 90.1
<b>Marital Status</b>						
Married / Member of Unmarried Couple	50	2.0	1.3, 2.6	2509	98.1	97.4, 98.7
Divorced / Separated	29	5.1	3.0, 7.2	571	94.8	92.8, 97.0
Widowed	16	3.7	1.6, 5.8	543	96.3	94.2, 98.4
Never married	14	3.8	0.7, 7.0	296	96.2	93.2, 99.3
<b>Population Density</b>						
Frontier / Rural	22	2.6	1.4, 3.8	704	97.4	96.2, 98.6
Densely Settled Rural	19	2.6	1.3, 3.8	638	97.4	96.2, 98.7
Semi-urban	23	3.0	1.6, 4.2	740	97.1	95.8, 98.4
Urban	45	2.4	1.3, 3.5	1843	97.6	96.5, 98.7

All analyses exclude unknowns and refused responses among all 4,287 adult respondents.

<sup>†</sup> Very small number of respondents in race/ethnicity group to generate scientifically stable estimates.

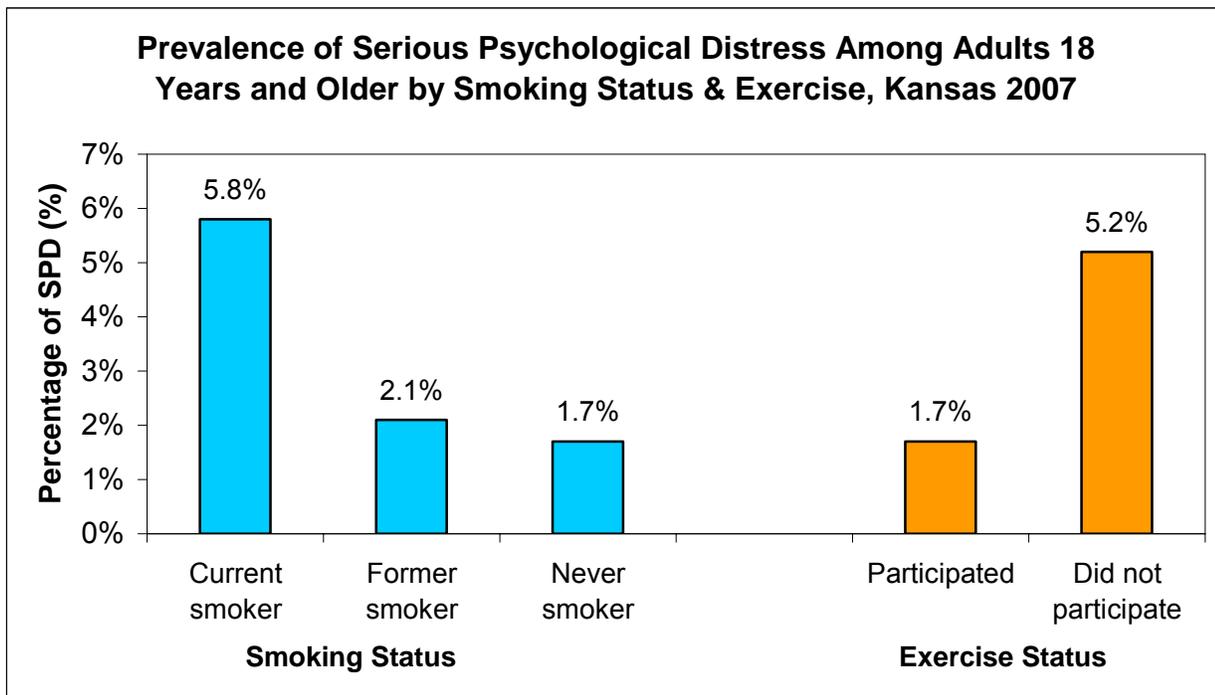
\*Other race includes Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native or member of any race other than Whites and African Americans.

## Health Behaviors and Serious Psychological Distress

A few risk factors related to health behavior like Body Mass Index (BMI) status, smoking, binge drinking, heavy drinking and exercise were studied in relation to SPD prevalence.

Higher prevalence of SPD was observed in current smokers (5.8%, 95% CI: 3.6%, 8.1%) as compared to former smokers (2.1%, 95% CI: 1.1%, 3.1%) and never smokers (1.7%, 95% CI: 1.0%, 2.4%).

Prevalence of SPD was higher among individuals who did not participate in any physical activity or exercise other than their regular job (5.2%, 95% CI: 3.4%, 7.0%) as compared to those who did participate (1.7%, 95% CI: 1.1%, 2.3%).



**Table 2. Prevalence of serious psychological distress among adults aged 18 years and older by health behaviors, Kansas 2007**

Health Behaviors	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>BMI Status</b>						
Normal / Underweight (BMI<25)	29	2.2	1.1, 3.3	1391	97.8	96.7, 99.0

Overweight (≥ 25 BMI <30)	30	2.0	1.2, 2.7	1363	98.0	97.3, 98.8
Obese (BMI ≥ 30)	46	3.7	2.2, 5.2	1031	96.3	94.8, 97.8
<b>Smoking Status</b>						
Current smoker	42	5.8	3.6, 8.1	656	94.2	92.0, 96.4
Former smoker	26	2.1	1.1, 3.1	1072	98.0	97.0, 99.0
Never smoker	41	1.7	1.0, 2.4	2192	98.3	97.6, 99.0
<b>Binge Drinking Status*</b>						
Absent	93	2.3	1.7, 3.0	3505	97.7	97.1, 98.3
Present	15	3.9	1.3, 6.5	377	96.1	93.5, 98.7
<b>Exercise Status</b>						
Did not participate	59	5.2	3.4, 7.0	992	94.8	93.0, 96.6
Participated	50	1.7	1.1, 2.3	2931	98.3	97.7, 98.9

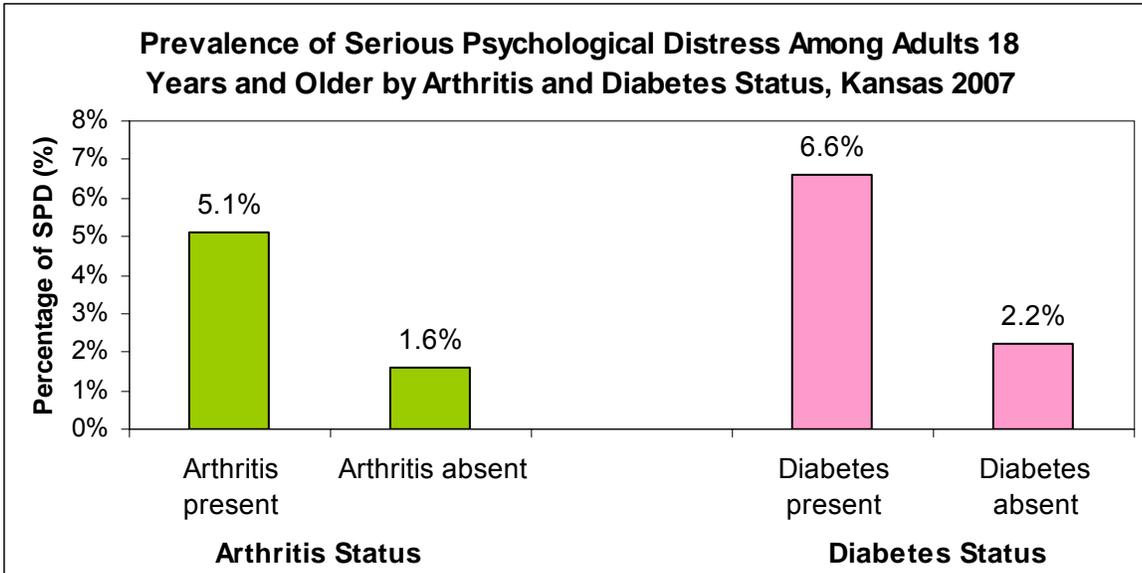
\*Binge drinking, males having five or more drinks on one occasion, females having four or more drinks on one occasion.

There was no statistical difference in the prevalence of SPD among BMI subgroups. Though a higher percentage of SPD was observed among binge drinkers as compared to their counterparts, it was not statistically significant. The prevalence of SPD among categories of heavy drinking was not examined due to an inadequate number of respondents.

## Chronic Diseases and Serious Psychological Distress

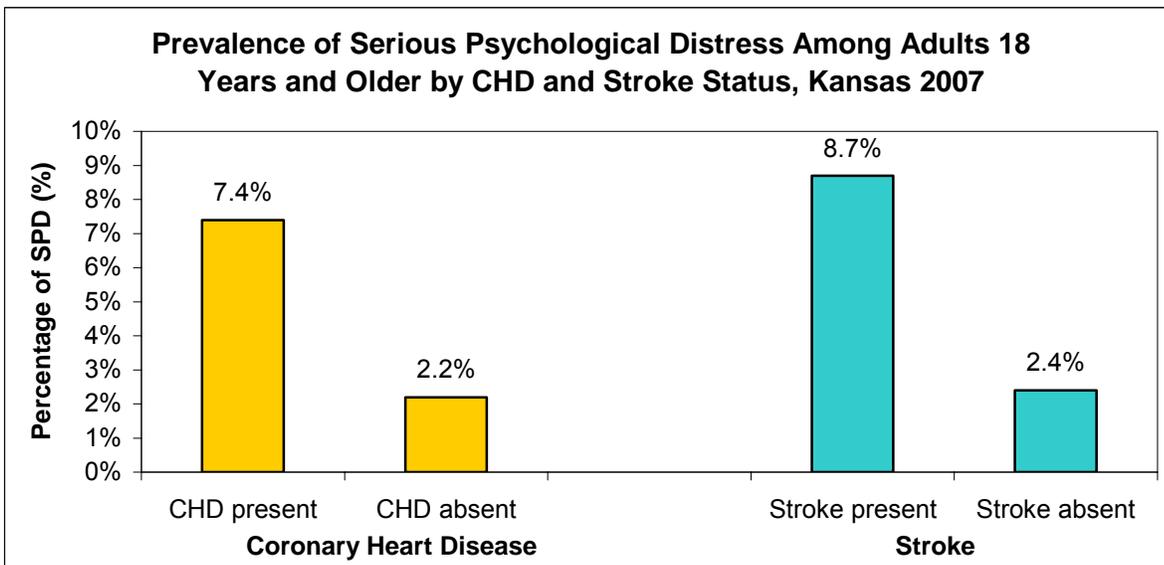
Strong association was seen between prevalence of SPD and chronic diseases. 4 out of 5 chronic diseases assessed showed significantly higher prevalence of SPD in people with chronic disease as compared to their counterparts.

Higher prevalence of SPD was seen among individuals with arthritis (5.1%, 95% CI: 3.7%, 6.4%) as compared to adults without arthritis (1.6%, 95% CI: 0.9%, 2.3%). Adults with diabetes had higher prevalence of SPD (6.6%, 95% CI: 3.7%, 9.5%) as compared to adults without diabetes (2.2%, 95% CI: 1.6%, 2.9%).



About 1 in 13 (7.4%, 95% CI: 4.2%, 10.7%) individuals with coronary heart disease (CHD) had SPD as compared to 1 in 45 (2.2%, 95% CI: 1.6%, 2.8%) of those who did not have coronary heart disease.

Prevalence of SPD was higher among individuals who had stroke (8.7%, 95% CI: 3.3%, 14.2%) as compared to those who did not have stroke (2.4%, 95% CI: 1.8%, 3.0%).



There was no statistically significant difference in prevalence of SPD among people with asthma and without asthma.

**Table 3. Prevalence of serious psychological distress among adults aged 18 years and older by chronic diseases, Kansas 2007**

Chronic Diseases	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Arthritis</b>						
Present	69	5.1	3.7, 6.4	1370	95.0	93.6, 96.3
Absent	40	1.6	0.9, 2.3	2546	98.4	97.7, 99.1
<b>Diabetes</b>						
Present	25	6.6	3.7, 9.5	354	93.4	90.5, 96.3
Absent	84	2.2	1.6, 2.9	3571	97.8	97.1, 98.4
<b>Asthma</b>						
Present	23	5.5	2.3, 8.7	402	94.5	91.3, 97.7
Absent	86	2.2	1.6, 2.8	3516	97.8	97.2, 98.4
<b>Coronary Heart Disease</b>						
Present	23	7.4	4.2, 10.7	350	92.6	89.3, 95.8
Absent	86	2.2	1.6, 2.8	3549	97.8	97.1, 98.4
<b>Stroke</b>						
Present	11	8.7	3.3, 14.2	127	91.3	85.8, 96.7
Absent	97	2.4	1.8, 3.0	3790	97.6	97.0, 98.2

Note: Results based on small cell count should be interpreted with caution.

### Health Care Access and Serious Psychological Distress

Three components were assessed about health care access; having health insurance or coverage, having a personal doctor or health care provider; and medical cost.

**Table 4. Prevalence of serious psychological distress among adults aged 18 years and older by health care access, Kansas 2007**

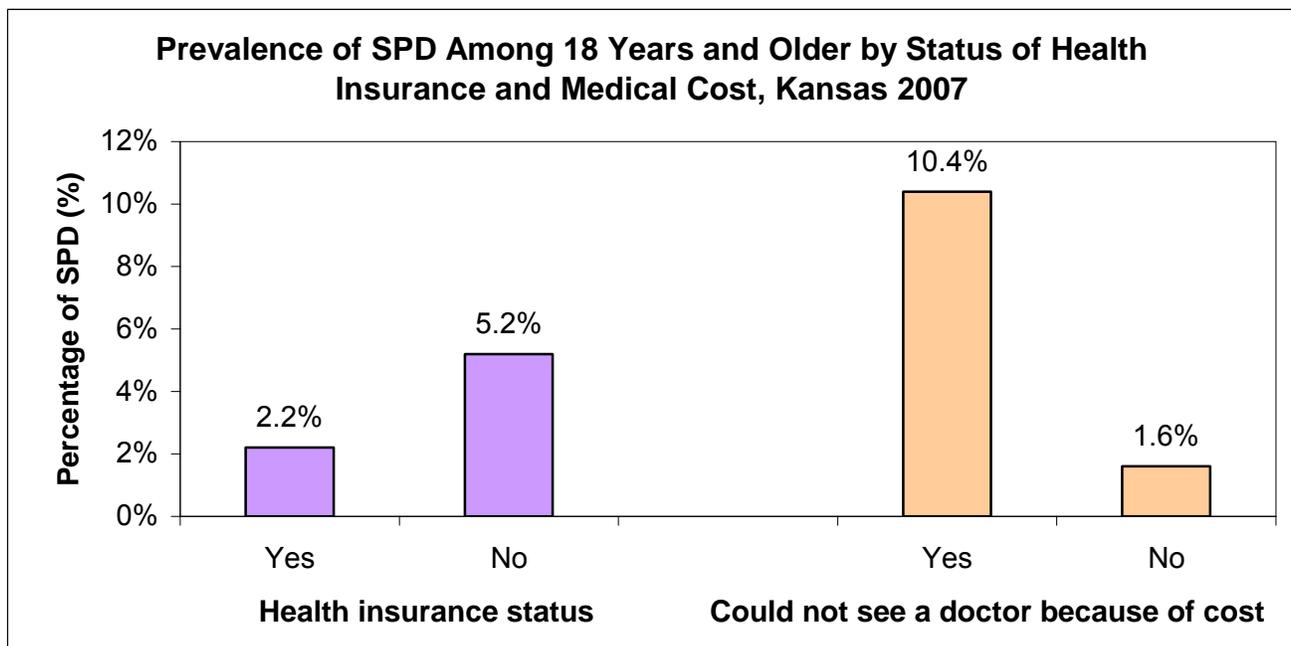
Health Care Access	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Health Insurance Status</b>						
Have health insurance / coverage	81	2.2	1.5, 2.8	3581	97.8	97.2, 98.5
Did not have health insurance / coverage	28	5.2	3.1, 7.3	340	94.8	92.7, 96.9

<b>Personal Doctor (one or more)</b>						
Have personal doctor	88	2.5	1.8, 3.2	3524	97.5	96.8, 98.2
Did not have personal doctor	21	3.1	1.5, 4.6	397	97.0	95.4, 98.5
<b>Could not see doctor because of cost</b>						
Yes	49	10.4	7.2, 13.6	346	89.6	86.4, 92.8
No	60	1.6	1.0, 2.1	3578	98.4	97.8, 99.0

Higher prevalence of SPD was observed among adults without health insurance or coverage (5.2%, 95% CI: 3.1%, 7.3%) as compared to those who had insurance (2.2%, 95% CI: 1.5%, 2.8%).

Prevalence of SPD was almost 10 times higher among individuals who could not see a doctor because of cost (10.4%, 95% CI: 7.2%, 13.6%) as compared to their counterparts (1.6%, 95% CI: 1.0%, 2.1%).

There was no statistically significant difference between adults who had one or more personal doctors or health care providers as compared to adults who did not have a personal doctor.



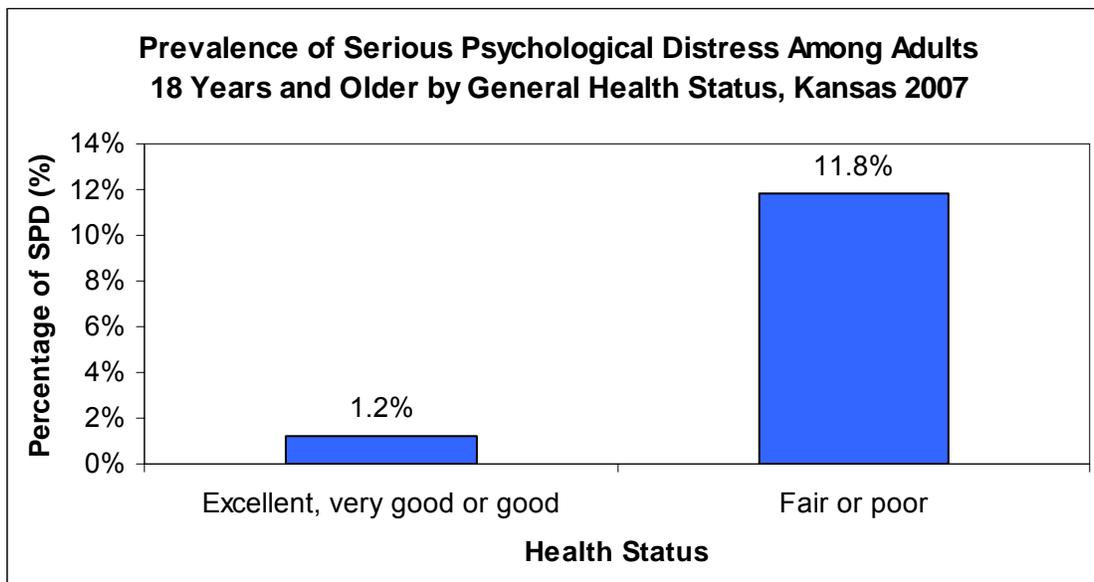
## Self-rated General Health and Serious Psychological Distress

In 2007 Kansas BRFSS, the respondents were asked to rate their general health status from excellent to poor.

**Table 5. Prevalence of serious psychological distress among adults aged 18 years and older by general health status, Kansas 2007**

General Health Status	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
Excellent, very good or good	44	1.2	0.8, 1.7	3362	98.8	98.3, 99.2
Fair or poor	65	11.8	8.2, 15.3	555	88.2	84.7, 91.8

The prevalence of SPD was almost 10 times higher among people who rated their general health as fair or poor (11.8%, 95% CI: 8.2%, 15.3%) as compared to those who rated their general health as excellent, very good or good (1.2%, 95% CI: 0.8%, 1.7%).



## Disability Status and Serious Psychological Distress

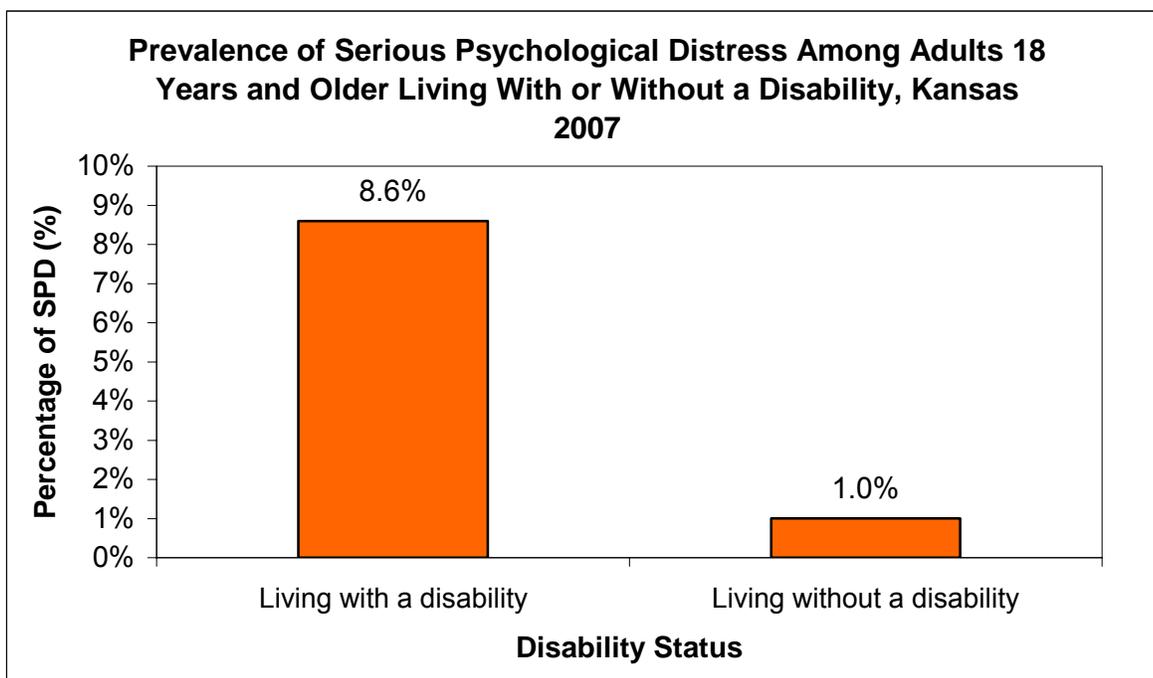
In the 2007 Kansas BRFSS, adults living with a disability were identified based on response to two questions: 1) whether they are limited in any way in any activities because of physical, mental, or emotional problems; and 2) whether they have any health problem that requires use of special equipment, such as a cane, a wheelchair, a special bed, or a special telephone.

Prevalence of SPD was examined among adults living with a disability as compared to those living without a disability.

**Table 6. Prevalence of serious psychological distress among adults aged 18 years and older living with or without a disability, Kansas 2007**

Disability Status	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
Living with a disability	76	8.6	6.0, 11.1	974	91.4	88.9, 94.0
Living without a disability	33	1.0	0.6, 1.4	2944	99.0	98.6, 99.4

Higher prevalence of SPD was observed among people living with a disability (8.6%, 95% CI: 6.0%, 11.1%) as compared to people living without a disability (1.0%, 95% CI: 0.6%, 1.4%).



## Severity of Mental Illness in Kansas, 2007

Besides examining SPD, which was defined as a K6 scale total score of 13 or above, **severity of mental illness** was measured by classifying respondents in 3 categories based on their total K6 scale score. As described earlier, each response was scored in terms of points, 0 for 'none of the time', 1 for 'a little of the time', 2 for 'some of the time', 3 for 'most of the time' and 4 for 'all of the time'. Then the total score for each respondent was calculated by adding all 6 answers' points. Thus the total score ranged from 0 to 24.

### Method to score individual response

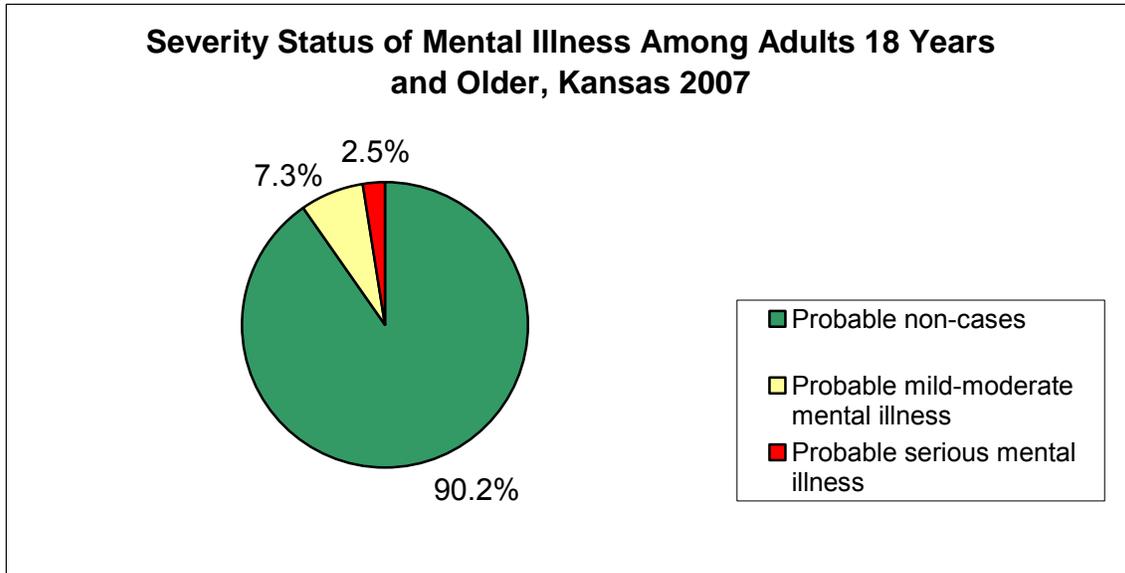
Response	Points
None of the time	0
A little of the time	1
Some of the time	2
Most of the time	3
All of the time	4

Total scores of 0-7 were classified as probable non-cases, 8-12 as probable cases of mild-moderate mental illness and 13-24 as probable cases of serious mental illness.<sup>20, 21, 22</sup>

### Method to determine severity status of mental illness

Total Points	Severity Status
0-7	Probable non-cases
8-12	Probable mild-moderate mental illness cases
13-24	Probable serious mental illness cases (also defined as SPD)

Statistical analyses done on severity of mental illness showed that 2.5% (95% CI: 2.0%, 3.2%) of the adults were probable cases of serious mental illness (SPD), 7.3% (95% CI: 6.3%, 8.3%) were cases of probable mild-moderate illness and 90.2% (95% CI: 89.0%, 91.4%) were non-cases.



**Table 7. Severity of mental illness among adults aged 18 years and older by selected characteristics, Kansas 2007**

<b>Characteristic</b>	<b>Probable non-cases</b>	<b>Probable mild-moderate illness</b>	<b>Probable cases of serious mental illness</b>
	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]
<b>Total</b>	3637 90.2% [89.0, 91.4]	288 7.3% [6.3, 8.3]	109 2.5% [2.0, 3.2]
<b>Annual Household Income</b>			
< \$ 25,000	656 79.6% [76.0, 83.2]	109 14.6% [11.4, 17.8]	51 5.8% [4.0, 7.7]
≥ \$25,000 - < \$35,000	424 86.2% [81.5, 91.0]	41 9.6% [5.7, 13.4]	14 4.2% [1.1, 7.3]
≥ \$35,000	2142 93.6% [92.3, 94.8]	111 5.2% [4.0, 6.3]	29 1.3% [0.7, 2.0]
<b>Smoking Status</b>			
Current smoker	566 80.3% [76.4, 84.1]	90 13.9% [10.5, 17.3]	42 5.8% [3.6, 8.1]
Former smoker	992	80	26

	90.2% [88.0, 92.5]	7.7% [5.6, 9.7]	2.1% [1.1, 3.1]
Never smoker	2075 93.2% [92.0, 94.5]	117 5.1% [4.0, 6.2]	41 1.7% [1.0, 2.4]
<b>Exercise Status</b>			
Participated	2760 92.4% [91.2, 93.6]	171 5.8% [4.8, 7.0]	50 1.7% [1.1, 2.3]
Did not participate	875 82.8% [80.0, 85.8]	117 12.0% [9.4, 14.5]	59 5.2% [3.4, 7.0]
<b>Diabetes</b>			
Present	322 84.5% [80.2, 88.9]	32 8.9% [5.3, 12.4]	25 6.6% [3.7, 9.5]
Absent	3315 90.6% [89.4, 91.8]	256 7.1% [6.1, 8.2]	84 2.2% [1.6, 2.9]
<b>Coronary Heart Disease</b>			
Present	313 81.1% [76.1, 86.0]	37 11.5% [7.3, 15.6]	23 7.4% [4.2, 10.7]
Absent	3301 90.8% [89.6, 92.0]	248 7.0% [5.9, 8.0]	86 2.2% [1.6, 2.8]
<b>Arthritis</b>			
Present	1232 84.0% [81.5, 86.4]	138 11.0% [8.8, 13.2]	69 5.1% [3.7, 6.4]
Absent	2397 92.5% [91.2, 93.8]	149 5.9% [4.8, 7.0]	40 1.6% [0.9, 2.3]
<b>Could not see doctor because of cost</b>			
Yes	270 68.1% [62.4, 73.8]	76 21.5% [16.2, 26.7]	49 10.4% [7.2, 13.6]
No	3366 92.8% [91.8, 94.0]	212 5.5% [4.6, 6.5]	60 1.6% [1.0, 2.1]
<b>Disability Status</b>			
Living with a disability	833 76.7% [73.3, 80.2]	141 14.7% [12.0, 17.5]	76 8.6% [6.0, 11.1]
Living without a disability	2797 93.7% [92.6, 94.8]	147 5.3% [4.3, 6.4]	33 1.0% [0.6, 1.4]

The analyses for probable serious mental illness category are described as serious psychological distress (SPD) analyses previously.

Prevalence of mild-moderate mental illness was higher among individuals with annual household income less than \$25,000 (14.6%, 95% CI: 11.4%, 17.8%) as compared to those with annual household income equal to or more than \$35,000 (5.2%, 95% CI: 4.0%, 6.3%). A similar result was seen for percentage of SPD in these two groups of income levels.

Prevalence of mild-moderate mental illness was higher among current smokers (13.9%, 95% CI: 10.5%, 17.3%) as compared to former smokers (7.7%, 95% CI: 5.6%, 9.7%) and never smokers (5.1%, 95% CI: 4.0%, 6.2%). As mentioned earlier, a similar result was seen for prevalence of SPD.

Exercise status showed a relationship to prevalence of mental illness. Higher prevalence of mild-moderate mental illness was observed among adults who did not exercise (12.0%, 95% CI: 9.4%, 14.5%) as compared to those who did exercise (5.8%, 95% CI: 4.8%, 7.0%). A similar result was seen for percentage of SPD.

Higher prevalence of mental illness was seen among adults with chronic diseases. Higher prevalence of mild-moderate mental illness was observed among adults with arthritis (11.0%, 95% CI: 8.8%, 13.2%) as compared to those who did not have arthritis (5.9%, 95% CI: 4.8%, 7.0%). Similar results were seen for prevalence of SPD. The percentages of mild-moderate mental illness among adults with diabetes or coronary heart disease were not statistically different from those seen among adults without diabetes or without coronary heart disease.

Prevalence of both mild-moderate and serious mental illness were higher among individuals who could not see a doctor because of cost as compared to those for whom cost was not a barrier.

Prevalence of mild-moderate mental illness was higher among individuals living with a disability (14.7%, 95% CI: 12.0%, 17.5%) as compared to those living without a disability (5.3%, 95% CI: 4.3%, 6.4%). A similar result was seen for prevalence of SPD.

## Serious Psychological Distress and Number of Missed Workdays / Activity

2007 Kansas BRFSS module on Mental Illness and Stigma questioned whether any type of mental health condition or emotional problem kept the respondent from doing work or other usual activities in past 30 days. The numbers of days reported by respondents were then categorized in 2 groups; 0-13 days and 14-30 days. Prevalence of SPD was then observed among these 2 groups.

**Table 8. Prevalence of serious psychological distress among adults aged 18 years and older by number of missed work days, Kansas 2007**

Number of Missed Work Days	Serious Psychological Distress Present			Serious Psychological Distress Absent		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
0-13 days	66	1.7	1.1, 2.3	3853	98.3	97.7, 98.9
14-30 days	38	42.4	30.0, 54.5	49	57.6	45.2, 70.0

Higher prevalence of SPD was observed among people who missed 14-30 days of work (42.4%, 95% CI: 30.0%, 54.5%) as compared to people who missed 0-13 days of work (1.7%, 95% CI: 1.1%, 2.3%).

## Serious Psychological Distress, Frequent Mental Distress and Medical Treatment

The good news about mental illness is that recovery is possible.<sup>1</sup> The evidence for treatment being more effective than placebo is overwhelming.<sup>23</sup> Without treatment, consequences of mental illness for the individual and society could lead to increased disability, unemployment, substance abuse, homelessness and even suicide.<sup>1</sup>

2007 Kansas BRFSS module on Mental Illness and Stigma included a question regarding whether the respondent was taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem.

**Table 9. Percentage of adults aged 18 years and older receiving medicine or treatment by mental health related variables, Kansas 2007**

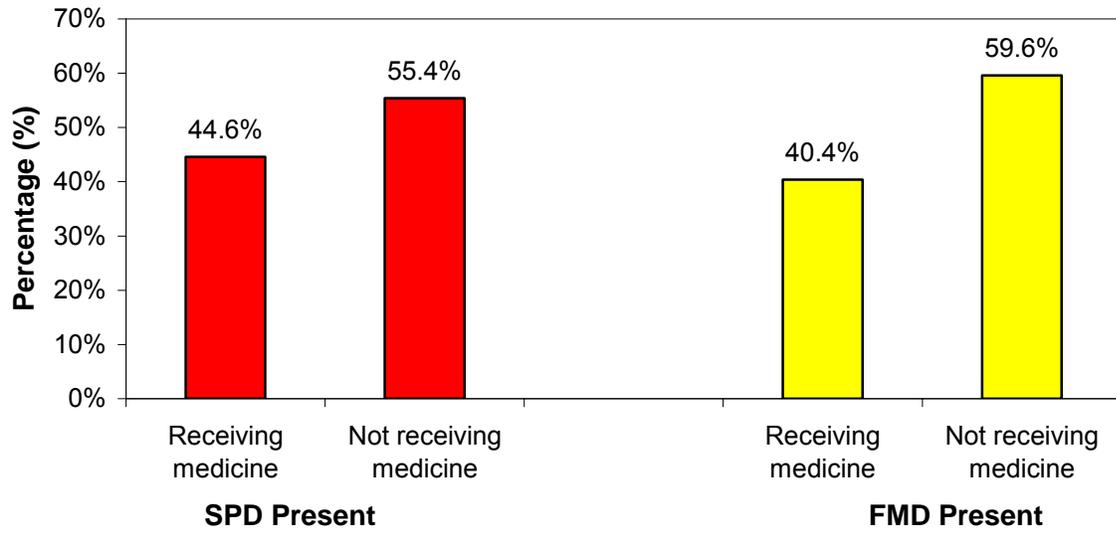
Characteristic	Received treatment			Did not receive treatment		
	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval	Frequency (n)	Weighted Percentage (%)	95% Confidence Interval
<b>Serious Psychological Distress</b>						
Present	55	44.6%	32.6, 56.6	54	55.4%	43.4, 67.4
Absent	404	9.2%	8.2, 10.3	3511	90.8%	89.7, 91.8
<b>Frequent Mental Distress</b>						
Present	131	40.4%	33.8, 47.1	184	59.6%	53.0, 66.2
Absent	328	7.6%	6.6, 8.6	3422	92.4%	91.4, 93.4

Percentage of people receiving medicine or treatment was analyzed by mental health related variables; SPD and FMD.

Less than half of the persons with SPD received medicine or treatment (44.6%, 95% CI: 32.6%, 56.6%).

Only 4 in 10 adults with FMD received medicine or treatment (40.4%, 95% CI: 33.8%, 47.1%).

**Percentage of Adults 18 Years and Older Receiving Medicine or Treatment by Mental Health Related Variables, Kansas 2007**



## Peoples' Attitudes toward Mental Illness and Stigma

### -- By Population Subgroups

Mental illnesses are highly associated with stigma. Stigma is a barrier and discourages individuals and their families from getting the help they need due to the fear of being discriminated against.<sup>24</sup>

2007 Kansas BRFSS module on Mental Illness and Stigma asked 2 questions about peoples' attitudes toward mental illness and its treatment. The respondents were asked to give their opinion as 'Agree strongly', 'Agree slightly', 'Neither agree nor disagree', 'Disagree slightly', 'Disagree strongly' on the statements 'Treatment can help people with mental illness lead normal lives', and 'People are generally caring and sympathetic to people with mental illness'. The responses were then merged for 'Agree strongly' and 'Agree slightly' as 'Agree'; 'Disagree slightly' and 'Disagree strongly' as 'Disagree'. Both the questions were then analyzed across various population subgroups.

Results for the analyses for question 'Treatment can help people with mental illness lead normal lives' across respondents' education level, annual household income and having any health insurance or coverage are shown in Table 10.

**Table 10. Percent agreement with 'Treatment can help people with mental illness lead normal lives' among adults aged 18 years and older by selected characteristics, Kansas 2007**

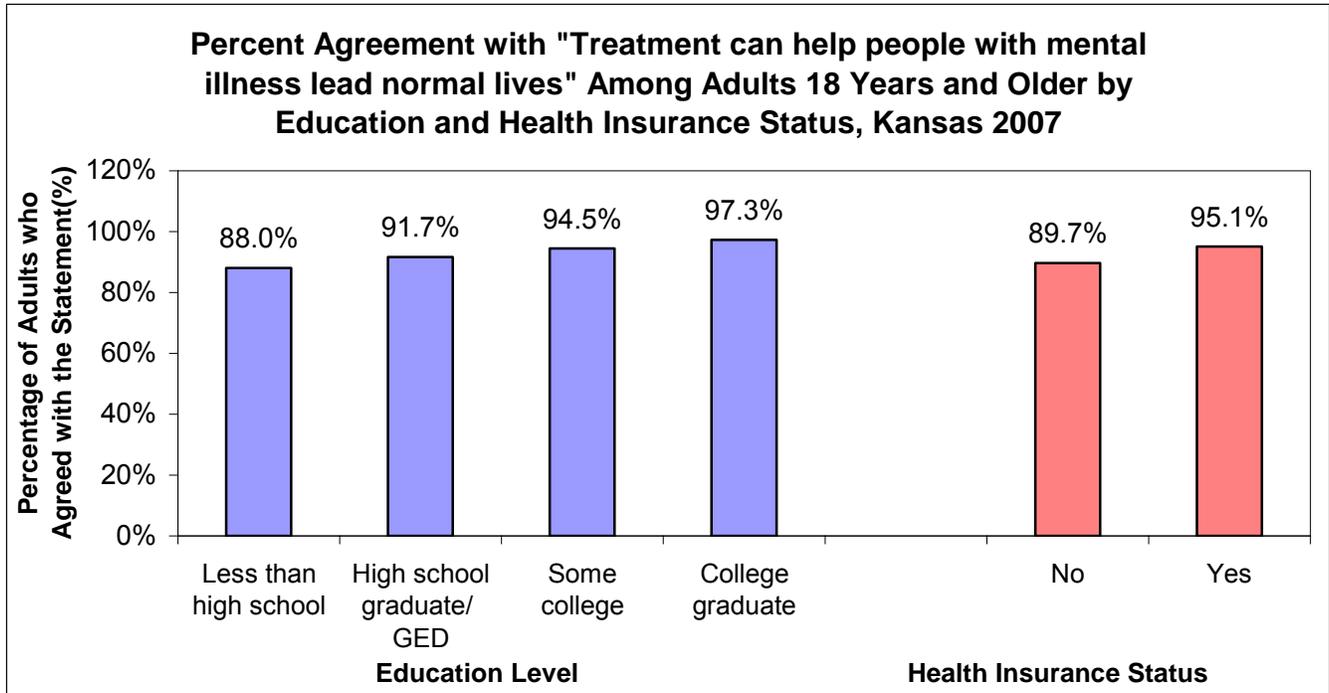
Characteristic	Agree	Neither agree nor disagree	Disagree
	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]
<b>Total</b>	3800 94.3% [93.4, 95.3]	89 2.3% [1.7, 3.0]	127 3.3% [2.6, 4.0]
<b>Education Status</b>			
Less than high school	239 88.0% [82.2, 93.7]	11 5.0% [0.8, 9.2]	17 7.0% [2.8, 11.3]
High school graduate/ GED	1046 91.7% [89.5, 93.9]	33 2.9% [1.6, 4.2]	52 5.5% [3.6, 7.3]
Some college	1102 94.5% [92.8, 96.1]	28 2.5% [1.4, 3.6]	34 3.0% [1.7, 4.3]
College graduate	1409 97.3% [96.2, 98.3]	16 1.3% [0.5, 2.2]	24 1.4% [0.7, 2.1]

<b>Annual Household Income Level</b>			
< \$ 25,000	752 91.2% [88.5, 94.0]	29 4.0% [2.1, 6.0]	38 4.7% [2.7, 6.7]
≥ \$25,000 - < \$35,000	446 93.1% [90.1, 96.1]	14 2.1% [0.8, 3.3]	19 4.9% [2.1, 7.6]
≥ \$35,000	2205 96.1% [95.0, 97.1]	26 1.3% [0.7, 2.0]	50 2.6% [1.7, 3.5]
<b>Health Insurance Status</b>			
Have health insurance / coverage	3470 95.1% [94.2, 96.0]	72 2.0% [1.3, 2.5]	106 3.0% [2.3, 3.8]
Did not have health insurance / coverage	327 89.7% [85.7, 93.7]	16 4.9% [2.0, 7.8]	21 5.4% [2.5, 8.3]

Education level made a significant difference on person's attitude with regard to whether treatment can help people with mental illness to lead normal lives. A higher percent of people who were college graduate (97.3%, 95% CI: 96.2%, 98.3%) agreed with the statement that 'Treatment can help people with mental illness lead normal lives' as compared to people who had less than high school education (88.0%, 95% CI: 82.2%, 93.7%).

A slightly higher percent of people with annual household income equal to or more than \$35,000 agreed (96.1%, 95% CI: 95.0%, 97.1%) with above statement as compared to people with annual household income less than \$25,000 (91.2%, 95% CI: 88.5%, 94.0%).

Having health insurance also made a slight difference on person's perception. A slightly higher percent of people with health insurance (95.1%, 95% CI: 94.2%, 96.0%) agreed with the statement above as compared to people without health insurance (89.7%, 95% CI: 85.7%, 93.7%).



Results for the analyses for the second attitude question 'People are generally caring toward people with mental illness' across gender, education status, arthritis and disability status are shown in Table 11.

**Table 11. Percent agreement with 'People are generally caring toward people with mental illness' among adults aged 18 years and older by selected characteristics, Kansas 2007**

Characteristic	Agree	Neither agree nor disagree	Disagree
	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]
<b>Total</b>	2073 55.3% [53.4, 57.2]	199 4.6% [3.9, 5.4]	1715 40.1% [38.2, 42.0]
<b>Gender Group</b>			
Male	891 62.2% [59.3, 65.2]	69 4.2% [3.0, 5.4]	545 33.5% [30.1, 36.4]
Female	1182 48.6% [46.3, 51.0]	130 5.0% [4.1, 6.0]	1170 46.4% [44.0, 48.7]

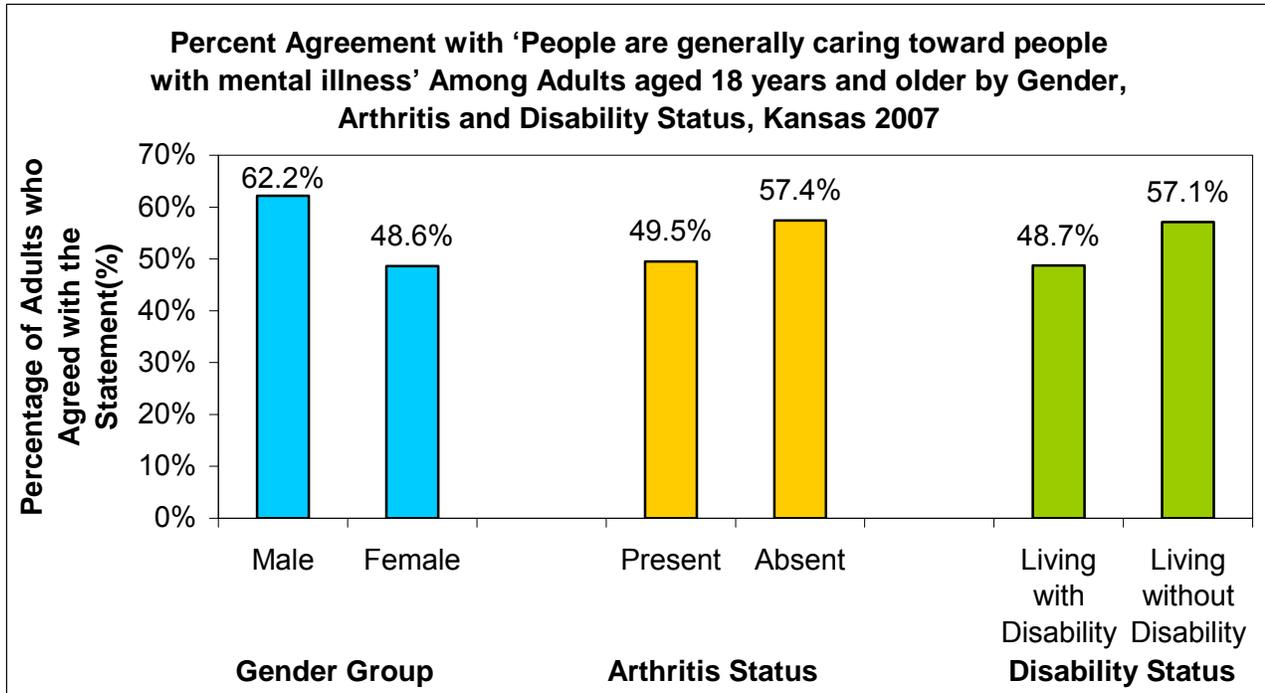
<b>Education Status</b>			
Less than high school	164 66.4% [58.8, 73.9]	17 5.7% [2.1, 9.3]	82 28.0% [20.9, 35.1]
High school graduate/ GED	603 57.6% [54.0, 61.3]	65 5.0% [3.6, 6.5]	454 37.3% [33.8, 40.1]
Some college	581 53.1% [49.5, 56.7]	60 5.3% [3.8, 6.8]	514 41.6% [38.1, 45.1]
College graduate	721 53.2% [50.2, 56.3]	57 3.7% [2.6, 4.9]	664 43.0% [40.0, 46.1]
<b>Arthritis Status</b>			
Present	689 49.5% [46.4, 52.6]	60 4.3% [3.0, 5.6]	671 46.2% [43.1, 49.3]
Absent	1378 57.4% [55.0, 59.7]	139 4.8% [3.8, 5.7]	1041 37.8% [35.6, 40.1]
<b>Disability Status</b>			
Living with a disability	499 48.7% [45.0, 52.4]	48 4.3% [2.9, 5.8]	504 47.0% [43.3, 50.7]
Living without a disability	1570 57.1% [54.9, 59.2]	151 4.7% [3.8, 5.6]	1208 38.2% [36.1, 40.4]

A higher percentage of males agreed with the statement 'People are generally caring toward people with mental illness' (62.2%, 95% CI: 59.3%, 65.2%) as compared to females (48.5%, 95% CI: 46.3%, 51.0%). Also, significantly more females disagreed with the statement.

Responses toward the attitude question vary with regard to education status. A higher percentage of individuals with less than high school education (66.4%, 95% CI: 58.8%, 73.9%) agreed with the statement 'People are generally caring toward people with mental illness' as compared to those with some college education (53.1%, 95% CI: 49.5%, 56.7%) or college graduates (53.2%, 95% CI: 50.2%, 56.3%).

Having a chronic condition, like arthritis affected people's perception. Percentage of agreement on above statement was higher among people without arthritis (57.4%, 95% CI: 55.0%, 59.7%) as compared to people with arthritis (49.5%, 95% CI: 46.4%, 52.6%).

Disability status also showed a statistically significant difference in people's attitude. A higher percentage of individuals living without a disability agreed with the statement (57.1%, 95% CI: 54.9%, 59.2%) as compared to those living with a disability (48.7%, 95% CI: 45.0%, 52.4%).



## Peoples' Attitudes toward Mental Illness and Stigma

### -- By Mental Health Related Variables

Analyses were also done to examine whether having serious psychological distress, frequent mental distress or status of receiving medication or treatment could affect peoples' attitude regarding the statement 'Treatment can help people with mental illness lead normal lives'. The results are shown in table 12.

**Table 12. Percent agreement with 'Treatment can help people with mental illness lead normal lives' among adults aged 18 years and older by mental health related variables, Kansas 2007**

Characteristic	Agree	Neither agree nor disagree	Disagree
	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]
<b>Serious Psychological Distress (SPD)</b>			
Present	94 89.2% [82.8, 95.5]	4 4.1% [0.0, 8.4]	10 6.8% [2.0, 11.5]

Absent	3632 94.5% [93.6, 95.5]	83 2.3% [1.7, 3.0]	112 3.2% [2.4, 4.0]
<b>Frequent Mental Distress (FMD)</b>			
Present	283 91.9% [88.2, 95.5]	8 3.2% [0.7, 5.7]	18 5.0% [2.2, 7.6]
Absent	3475 94.6% [93.6, 95.5]	81 2.3% [1.6, 3.0]	105 3.1% [2.4, 4.0]
<b>Received medicine or treatment</b>			
Yes	444 96.1% [94.2, 98.0]	5 1.0% [0.0, 2.0]	15 2.9% [1.3, 4.4]
No	3351 94.1% [93.1, 95.2]	84 2.5% [1.8, 3.2]	111 3.4% [2.6, 4.1]

Note: Results with small cell count should be interpreted with caution.

A very high percentage of adults with or without SPD, with or without FMD and those who received or did not receive medicine or treatment agreed that 'Treatment can help people with mental illness lead normal lives'.

Peoples' attitude regarding the statement 'People are generally caring toward people with mental illness' were analyzed by SPD, FMD and status of receiving medicine or treatment. Results are shown in the table 13.

**Table 13. Percent agreement with 'People are generally caring toward people with mental illness' among adults aged 18 years and older by mental health related variables, Kansas 2007**

Characteristic	Agree	Neither agree nor disagree	Disagree
	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]	Frequency (n) Weighted Percentage (%) [95% CI]
<b>Serious Psychological Distress (SPD)</b>			
Present	43 45.4% [32.5, 58.2]	- - -	60 52.8% [40.0, 65.6]
Absent	1986 55.5% [53.6, 57.5]	192 4.7% [3.9, 5.5]	1624 39.8% [37.9, 41.7]

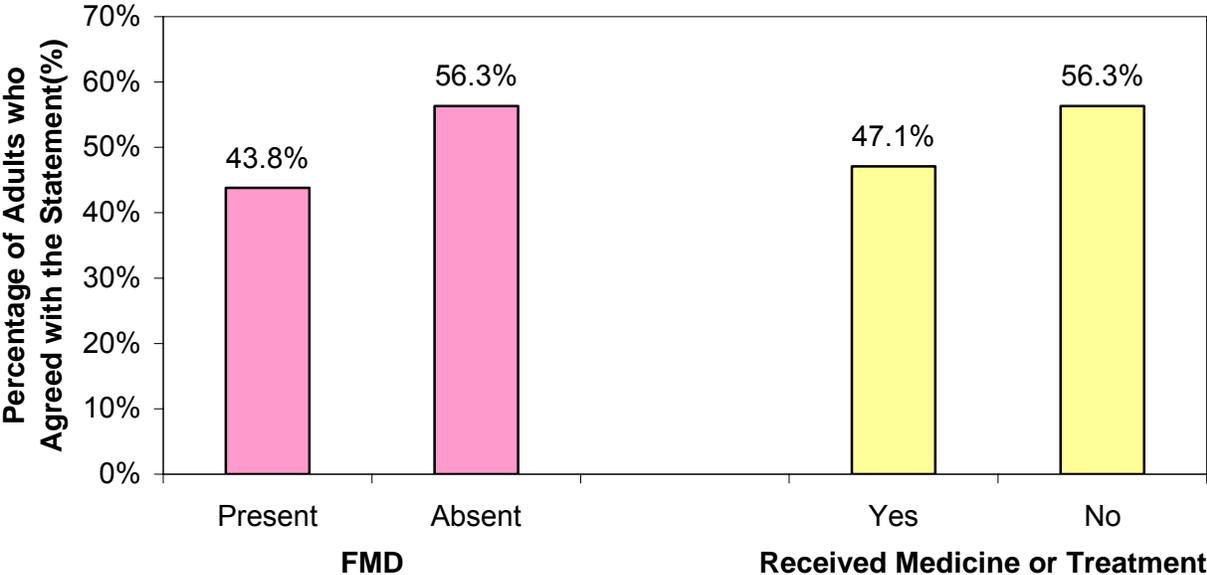
<b>Frequent Mental Distress (FMD)</b>			
Present	136 43.8% [37.0, 50.6]	16 4.8% [2.1, 7.5]	155 51.4% [44.5, 58.4]
Absent	1916 56.3% [54.3, 58.3]	181 4.6% [3.8, 5.4]	1535 39.1% [37.2, 41.1]
<b>Received medicine or treatment</b>			
Yes	208 47.1% [41.5, 52.7]	16 3.3% [1.5, 5.1]	236 49.6% [44.0, 55.2]
No	1863 56.3% [54.2, 58.3]	183 4.8% [4.0, 5.6]	1475 39.0% [37.0, 41.0]

Though no statistical difference was seen among adults with or without SPD with regard to agreement or disagreement to the statement 'People are generally caring toward people with mental illness', these results should be interpreted with caution due to small cell numbers.

Presence or absence of FMD was seen to affect people's opinion regarding 'people are generally caring toward people with mental illness'. A higher percentage of people without FMD agreed with the statement, 56.3% (95% CI: 54.3%, 58.3%) as compared to people with FMD, 43.8% (95% CI: 37.0%, 50.6%). Significant difference was seen in the disagreement of the statement by FMD status. Significantly lower percentage of disagreement was observed among people without FMD as compared to people with FMD.

A higher percentage of people who did not receive medicine or treatment agreed with the above statement (56.3%, 95% C: 54.2%, 58.3%) as compared to people receiving medicine or treatment (47.1%, 95% CI: 41.5%, 52.7%). Significantly lower percentage of disagreement was observed among people not receiving medicine or treatment as compared to people receiving medicine or treatment.

**Percent Agreement with 'People are generally caring toward people with mental illness' Among Adults aged 18 years and older by FMD and Status of Receiving Medicine or Treatment, Kansas 2007**



## Technical Notes

### 2007 Kansas 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 since 1992 Kansas has conducted the BRFSS survey annually.

The 2007 BRFSS questionnaire in its entirety included 194 questions. Respondents who were asked part A which included Mental Illness and Stigma Module answered up to 146 questions; 92 questions on core sections and 54 questions on part A. It took on an average about 17-19 minutes to complete one interview. The 2007 Kansas BRFSS core section included questions on health status, healthy days, health related quality of life, health care access, exercise, diabetes, hypertension awareness, cholesterol awareness, cardiovascular disease prevalence, asthma, immunization, tobacco use, demographics, alcohol consumption, disability, arthritis burden, fruit and vegetables, physical activity, HIV/AIDS, emotional support and life satisfaction, gastrointestinal disease, random child selection module, childhood asthma prevalence, asthma call back survey information. 2007 BRFSS also included two parts of optional/state, added modules; part A and part B. Part A included modules on diabetes, diabetes accessory, diabetes assessment, cardiovascular health, actions to control high blood pressure, heart attack and stroke, mental illness and stigma. Part B included modules on arthritis management, chronic pain, cancer survivorship, skin cancer, clinical trials, influenza, oral health, influenza, child, oral health, child, advance care planning, COPD and care giving.

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 to monitor the leading contributors to morbidity and premature death, track health status and assess trends, measure knowledge, attitudes, and opinions, policy development, evaluation. It is also used in program planning in terms of needs assessment, development of goals and objectives and identification of target groups.

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

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

## Questionnaire Design

The survey consists of three sections:

- Core Section: Questions in these sections are asked by all states. The order and wording of the questions are fairly consistent across all states. Types of core questions include fixed, rotating, and emerging health issues.
  - Fixed core: It 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: It contains questions that are asked every other year.
    - Odd years (2005, 2007, 2009, etc): Questions on fruits and vegetables, hypertension awareness, cholesterol awareness, arthritis burden, and physical activity are asked.
    - Even years (2006, 2008, 2010, etc): Questions on women's health, prostate screening, colorectal cancer screening, oral health and injury are asked.
  - Emerging Health Issues: It contains questions on breaking health issue in time. 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 specific health topics. CDC provides a pool of questions from which states may select. States have the option of adding these questions to their survey. CDC's responsibilities regarding these questions include development of questions, cognitive testing, 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 under CDC 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 2007 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. 8,495 residents of Kansas were interviewed in 2007.

## **Response Rate**

The CASRO (Council of American Survey Research Organizations) response rate is used as a measure of quality of data. The 2007 Kansas BRFSS achieved a rate of 63.61% indicating reliable results. The CASRO formula is based on the number of interviews completed, the number of households reached, and the number of households 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 detect from caller ID.

## **Limitations**

Like any other research method, BRFSS has its limitations.

- BRFSS is conducted only among non-institutionalized adults residing in private residences with landline telephones. Thus, it excludes individuals without landline telephone service, those on military bases, and individuals in institutions. However, because phone ownership is high in Kansas (greater than 95%), it is unlikely that failing to reach these persons will substantially alter results.
- BRFSS excludes households with cell phone service only.
- All information is self reported which may introduce bias such as recall bias, reporting bias, etc.
- Due to the sampling method 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 was 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 obtained from BRFSS survey are estimates of actual population parameters. A 95% confidence interval is calculated for the estimate of an indicator obtained from 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 2007. CDC optional modules and state added questions are organized by topics into two parts; part A and part B. All 8,495 respondents answered questions from the core section. Then each telephone number was randomly assigned to part A or part B prior to being called. Approximately half of the respondents received part A and the other half received part B, (i.e. approximately 4,000 respondents for each part). The mental illness and stigma module was included as the optional/state-added module in part A that was answered by 4,287 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's time and length to a minimum.

Disadvantages of a split questionnaire:

- Complexity of data weighting; additional weighting factors are needed.
- Variables on part A cannot be analyzed with variables on part 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 part A or 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 part A or part 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 living per square mile.

Category	Definition	Counties
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, Mitchell, Marshall, Morris, Nemaha, Norton, Ottawa, Pawnee, Phillips, Pratt, Republic, Rice, Rooks, Russell, Scott, Sherman, Stafford, Stevens, Thomas, Wabaunsee, Washington, 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

Source: Based on 2000 U.S. Census

## Mental Illness and Stigma Module as in 2007 Kansas BRFSS Questionnaire

### CDC Module 16: Mental Illness and Stigma

Now, I am going to ask you some questions about how you have been feeling during the past 30 days. ...

1. About how often during the past 30 days did you feel **nervous** — would you say **all** of the time, **most** of the time, **some** of the time, a **little** of the time, or **none** of the time?

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

2. During the past 30 days, about how often did you feel **hopeless** — **all** of the time, **most** of the time, **some** of the time, a **little** of the time, or **none** of the time?

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

3. During the past 30 days, about how often did you feel **restless or fidgety**?

**[IF NECESSARY: all, most, some, a little, or none of the time?]**

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

4. During the past 30 days, about how often did you feel **so depressed** that nothing could cheer you up?

**[IF NECESSARY: all, most, some, a little, or none of the time?]**

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

5. During the past 30 days, about how often did you feel that **everything was an effort**?

**[IF NECESSARY: all, most, some, a little, or none of the time?]**

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

6. During the past 30 days, about how often did you feel **worthless**?

**[IF NECESSARY: all, most, some, a little, or none of the time?]**

- 1 All
- 2 Most
- 3 Some
- 4 A little
- 5 None
- 7 Don't know / Not sure
- 9 Refused

The next question asks if any type of mental health condition or emotional problem has recently kept you from doing your work or other usual activities.

7. During the past 30 days, for about how many days did a mental health condition or emotional problem **keep you from doing** your work or other usual activities?

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

**INTERVIEWER NOTE:** If asked, "usual activities" includes housework, self-care, care giving, volunteer work, attending school, studies, or recreation.

8. Are you now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem?

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

These next questions ask about peoples' attitudes toward mental illness and its treatment. How much do you **agree** or **disagree** with these statements about people with mental illness...

9. Treatment can help people with mental illness lead normal lives. Do you **agree** slightly or strongly, or **disagree** slightly or strongly?

**Read only if necessary:**

- 1 Agree strongly
- 2 Agree slightly
- 3 Neither agree nor disagree
- 4 Disagree slightly
- 5 Disagree strongly

**[Do not read:]**

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

10. People are generally caring and sympathetic to people with mental illness. Do you **agree** slightly or strongly, or **disagree** slightly or strongly?

**Read only if necessary:**

- 1 Agree strongly
- 2 Agree slightly
- 3 Neither agree nor disagree
- 4 Disagree slightly
- 5 Disagree strongly

**[Do not read:]**

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

**INTERVIEWER NOTE:** If asked for the purpose of Q9 or Q10: Answers to these questions will be used by health planners to help understand public attitudes about mental illness and its treatment and to help guide health education programs.

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