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Oklahoma BRFSS Report
BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

Oklahoma Annual Report 2007

Behavioral Risk Factor Surveillance System

Oklahoma State Department of Health

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Executive Summary

The Behavioral Risk Factor Surveillance System (BRFSS) is a national, random-digit dialed telephone survey that monitors risk factors, prevalence of disease, access to health care, and quality of life among America's adult population. State health departments gather data from non-institutionalized adults aged 18 years and older and send the data to the Centers for Disease Control and Prevention (CDC) for editing and processing. Processed data are then returned to the health departments where it can be used to assess the population's status in meeting health objectives. This report provides a description of the health status of Oklahoma's adults using data from the core module of the 2007 BRFSS survey. The following illustrates some of the highlights of this report.

Health-related Quality of Life

- Nineteen percent of Oklahoma adults considered their health to be fair or poor.
    - Fair or poor self-health ratings were more common among women, older individuals, and those with lower education and income levels.
- Oklahoma adults experienced 4.2 physically unhealthy days during the past month.
    - Thirty-seven percent of Oklahoma adults experienced at least 1 day and 10% experienced more than 15 days of poor physical health.
    - Women, older adults, American Indians, and those with lower levels of education and income endured the most physically unhealthy days.
- Oklahoma adults experienced 3.9 mentally unhealthy days during the past month.
    - Thirty-three percent of Oklahoma adults experienced at least 1 day and 9.1% experienced more than 15 days of poor mental health.
    - Women, younger individuals, Blacks and American Indians, those with lower levels of income, and those without a post-secondary degree endured the most mentally unhealthy days.
- Oklahoma adults endured 5.2 days during the past month whereby their activity was limited due to poor physical or mental health.
    - Forty-one percent of Oklahomans perceived that poor health limited their ability to perform their usual activities on at least 1 day and 12.4% experienced restricted activity on more than 15 days.
    - Older adults, those without a high school diploma, and those of lower income levels endured more limited activity days.

Disability

- More than 23% of Oklahoma adults had some type of disability that limited their activity, and 8.8% utilized special equipment to assist them in performing their daily activities.
    - Women, older adults, and those in low education and income categories were more likely to have a disability. Hispanics had the lowest rates of disability and special equipment use.
- The prevalence of disability has increased by 16% and the use of special equipment has increased by 33% in Oklahoma since 2001.

Access to Healthcare

- Twenty percent of Oklahoma adults were without health care coverage.
    - Younger adults and those of lower education and income levels were less likely to have insurance.
    - Fifty-one percent of Hispanic residents did not have health insurance.
- Twenty-one percent of Oklahoma adults did not have a personal health care provider.
    - Younger adults, Hispanics, and residents with less education and income were more likely to be without a personal health care provider.
- More than 17% of Oklahoma adults did not visit a health care professional for needed services because they could not afford the cost.
    - Younger adults, Hispanics, and residents with less education and income were more likely to have gone without needed services.
- Fifty-seven percent of Oklahoma adults had a routine check-up within the past year.
    - Women, adults aged 55 years and older, those with a higher education, and those in the highest income bracket were more likely to have had a recent routine exam.

Burden of Disease

- Almost 6% of Oklahomans had a history of heart attack, 5.5% had a history of angina/coronary heart disease (CHD), and 3.4% had a history of stroke.
    - Heart attack and angina/CHD were more common among men, those with less formal education and those with lower incomes.
    - Stroke was also more common among those in the lower socioeconomic groups.
- More than 10% of Oklahoma adults had a history of diabetes.
    - Prevalence of diabetes was greatest among American Indians, individuals aged 45 years and older, and those with the least education and income.
- More than 36% of Oklahoma adults were overweight and 28.8% were obese.
    - Obesity was most prominent among American Indians and among those with less education and income.
- More than 31% of Oklahoma adults had a history of hypertension.
    - Blacks, older individuals, and those with less education and income had higher rates of hypertension.
- Forty-one percent of Oklahoma adults had a history of high cholesterol.
    - Older individuals and those with less education and income had higher rates of high cholesterol.
- Thirty percent of Oklahoma adults were living with arthritis.
    - Almost 38% of adults living with arthritis endured limitations to their usual activities because of their condition.
    - Women, older individuals, and those with less education and income had higher rates of arthritis.
    - Hispanics were the racial/ethnic group least affected by arthritis.
- More than 8% of Oklahoma adults were living with asthma.
    - Women and individuals in the lowest income bracket were most likely to have asthma.
- Approximately 17% of Oklahoma adults had diarrhea that began within the past 30 days.
    - Women and individuals in the lowest income bracket were most likely to have had a bout of diarrhea.
    - Blacks and Hispanics were least likely to suffer a bout of diarrhea.

Health Behaviors/Modifiable Risk Factors

- Almost 26% of Oklahoma adults were smokers.
    - Current smoking status was most common among males, American Indians, those who did not complete high school, and those who earned less than $15,000 annually.
    - Hispanics were the least likely of the racial/ethnic groups to smoke.
    - More than 57% of smokers had attempted to quit within the past year.
- Just over 16% of Oklahoma adults consumed 5 or more servings of fruits and vegetables daily.
    - Women and college graduates were the most likely to have been meeting the dietary recommendation.
    - By age group, the youngest and oldest adults were most likely to have been meeting the dietary recommendation.
- Forty-five percent of Oklahoma adults were meeting the physical activity recommendation, and 70.4% had engaged in some type of leisure-time physical activity in the past month.
    - The proportion meeting the physical activity recommendation declined with age and with lower educational attainment and income level.
- More than 12% of Oklahoma adults had engaged in binge drinking, and 3.5% of adults were heavy drinkers.
    - Binge drinking and heavy drinking were most common among males.
    - Heavy drinking was most common for individuals aged 18 to 24 years.
    - Blacks and those aged 65 years and older had the lowest rates of binge drinking.
- Seventy-one percent of Oklahoma adults had obtained a cholesterol screening within the past 5 years, while 24.5% had never had their cholesterol checked.
    - Older individuals and those with higher levels of educational attainment and income were more likely to have been screened.
    - Almost half of the Hispanic population had never had their cholesterol checked.
- Seventy-six percent of adults aged 65 years and older had received the flu vaccine within the past year and almost 72% of seniors had received the pneumonia vaccine at some point in their lives.
    - Hispanics comprised the largest proportion of seniors who had been vaccinated against the flu.
- Almost 37% of Oklahoma adults had received the Hepatitis B vaccine, and only 46% of those who engaged in high-risk behaviors had been vaccinated against Hepatitis B.
    - Younger individuals and those with higher levels of educational attainment and income were more likely to have received the Hepatitis B vaccine.
- Only 34% of Oklahoma adults aged 18 to 64 years had ever been tested for HIV.
    - Women, Blacks, and individuals in the lowest income bracket were more likely to have been tested for HIV.

Emotional Support and Life Satisfaction

- Almost 80% of Oklahoma adults were receiving the emotional and social support that they needed.
    - Whites and those with greater educational attainment and income were more likely to have received support.
- More than 94% of Oklahomans were generally satisfied with their lives.
    - Individuals with higher education and income levels were more likely to be satisfied with life.

Table of Contents

List of Tables

List of Figures

Introduction

The Behavioral Risk Factor Surveillance System (BRFSS) is the largest ongoing telephone survey of our nation's health. It was established by the Centers for Disease Control and Prevention (CDC) in 1984, and is implemented via state health departments every year. Only 15 states participated in the initial collection of data in 1984. Today, BRFSS data are collected in every state, the District of Columbia, and some U.S. territories. Oklahoma began implementing BRFSS in 1988.

BRFSS is administered using computer-assisted telephone interviewing software (CATI) to a stratified random sample of non-institutionalized Oklahoma residents aged 18 years and older. The survey consists of questions regarding health status, access to healthcare, chronic disease prevalence, and health behaviors. The core component is administered each year by every state, so that comparisons of the most critical health information can be made. Some items in the core rotate and are asked every other year rather than every year. There are standardized optional modules that states may choose to administer less frequently, and state-added items that are of specific interest to the individual state. Trained interviewers with the Oklahoma State Department of Health's in-house call center administer the survey monthly, following CDC protocol (available in the BRFSS Operational and User's Guide at http://www.cdc.gov/brfss).

Data for each calendar year are made available to health professionals and the public, and can be used for a variety of functions. BRFSS information is used to determine the health status of Oklahomans and the state's success in meeting health-related objectives, such as those established by the U.S. government in Healthy People 2010 to enhance the health of the nation's population.[1] BRFSS information is also used to plan health promotion programs and create health-related policies.

Methodology

Sampling

BRFSS uses a multistage sampling design based on random digit dialing (RDD) procedures to select a representative sample of the non-institutionalized population age 18 years or older in Oklahoma. Individuals living in institutions (e.g., prisons) or group homes (e.g., dormitories) are not sampled, nor are cell phone only households. By using the RDD techniques, BRFSS produces a list of phone numbers, selected at random, from a pool of all existing phone numbers. The BRFSS employs a sampling method called disproportionate stratified sampling (DSS) in which phone numbers are grouped into two sampling strata. One stratum consists of unlisted residential phone numbers. The second is made up of listed residential phone numbers. The sampling design also stratifies the sample into six geographic regions. These strata are sampled at different rates, with the listed residential numbers sampled at a higher frequency. Participation in the survey is anonymous and voluntary. Every effort is made to respect the confidentiality of respondents.

Questionnaire

The 2007 questionnaire consisted of the core component, 8 optional modules, and 15 state-added items. The optional modules included questions about children in the household, childhood asthma prevalence, cardiovascular health, actions to control high blood pressure, signs and symptoms of heart attack and stroke, colorectal cancer screening, adult asthma history, and mental illness. The state-added items

pertained to the smoking Quitline, weight control, environmental supports for physical activity, and aspirin use to prevent heart attack or stroke. This report describes data from the core module.

Procedures

Interviewers called phone numbers randomly generated by CATI. Up to 15 attempts were made to contact an individual for each telephone number dialed. Once the phone was answered, the interviewer determined if the telephone number was for a residential landline, and then CATI randomly selected an adult within the household to be interviewed. If the randomly selected individual agreed to participate, then the interview ensued. The respondent could terminate the interview at any time. The interview took 20-30 minutes to complete.

Data weighting

Each year the CDC assembles state-collected BRFSS data, generates a weighted analysis data set, and returns the weighted data to the respective state. The BRFSS sample data are weighted to adjust for unequal selection probability due to the disproportionate stratified sampling and to people living in households with varying numbers of telephones and adults. Data are also weighted to adjust for nonresponse among demographic groups (i.e., age, sex, and race). The weighting procedures yield BRFSS data more representative of the total population of adults in Oklahoma.

Statistical analyses

Due to the complex sampling scheme used by BRFSS, SAS® survey sampling procedures were used to produce prevalence estimates, standard errors, and 95% confidence intervals. These procedures accommodate the sample design and analysis weights when calculating the variance estimates. Unless otherwise stated, all prevalence estimates shown in this report were computed using weighted data. Respondents who answered that they did not know or who refused to answer were not included in the calculation of prevalence estimates. As a result, sample sizes vary by characteristics. Statistics were not reported if the unweighted sample size for the denominator was less than 50 or if the unweighted cell size for the numerator was less than 5.

Characteristics of Survey Respondents

Surveys were administered to 7,463 Oklahoma residents in 2007. Characteristics of the respondents, without weighting, are shown in Table 1. Survey respondents were primarily older, female, Caucasian, and married. Most respondents were categorized into the higher annual household income groups. The respondents' data were weighted to produce estimates that represent the demographic profile of Oklahoma's population in 2007 (Table 1). BRFSS data demonstrated that 51.2% of the Oklahoma adult population were female, compared to an estimate of 50.6% from the U.S. Census.[2] BRFSS data also showed that 71.3% of Oklahoma adults were White (non-Hispanic) and 6.9% of adults were Hispanic, compared to Census estimates of 71.8% and 7.2%, respectively, of Oklahoma residents of all ages.[2] In addition, BRFSS estimates showed that Oklahoma adults aged 25 years and older had received more formal education than Census estimates of Oklahomans, with 87.9% versus 80.6%, respectively, having graduated from high school or received a GED, and 27.8% versus 20.3%, respectively, having received a bachelor's degree.[2]

Table 1. Characteristics of the Respondents and Estimates of the Non-institutionalized Oklahoma Population Aged 18 Years and Older (n = 7,463).

Characteristics	Frequency	Un-weighted %	Weighted %
Sex			
Male	2644	35.4	48.8
Female	4819	64.6	51.2
Age (years)			
18 - 24	307	4.1	11.2
25 – 34	856	11.5	20.2
35 – 44	1102	14.8	17.0
45 – 54	1405	18.8	19.2
55 – 64	1434	19.2	14.3
65 and older	2359	31.6	18.1
Race/Ethnicity[a]			
White	5694	76.6	71.3
Black	440	5.9	6.6
American Indian	480	6.5	8.3
Hispanic	331	4.4	6.9
Other	489	6.6	7.0
Marital Status[b]			
Married	4168	56.0	63.3
Divorced	1166	15.7	10.5
Widowed	1163	15.6	6.8
Separated	158	2.1	2.0
Never married	671	9.0	14.6
Member of unmarried couple	120	1.6	2.8
Education[c]			
Less than high school	962	12.9	12.8
High school graduate	2445	32.8	32.8
Some college or technical school	2094	28.1	28.9
College graduate	1944	26.1	25.6
Employment[d]			
Employed or self-employed	3605	48.4	57.0
Out of work	255	3.4	4.6
A homemaker	732	9.8	9.2
A student	162	2.2	4.7
Retired	2014	27.0	16.6
Unable to work	686	9.2	7.8
Household Income[e]			
< $15,000	953	14.7	11.8
$15,000 to < $25,000	1362	21.0	19.5
$25,000 to < $35,000	848	13.1	12.9
$35,000 to < $50,000	1077	16.6	17.8
$50,000+	2234	34.5	38.0

[a]Missing data for n=29; [b]Missing data for n=17; [c]Missing data for n=18; [d]Missing data for n=9; [e]Missing data for n=989.

There were several gender differences in the estimates of Oklahoma residents' demographic characteristics. For example, estimates demonstrated that a greater proportion of the female versus male population was White while a larger proportion of the male versus female population was Hispanic (Figure 1). The mean age of the female population (47.5 years; 95% CI: 46.9, 48.2) was higher than the mean age of the male population (45.4 years; 95% CI: 44.5, 46.2; Figure 2). Proportions of Oklahomans who were divorced or widowed, those who were homemakers, and lower-income individuals were greater among the female than the male resident population (Table 2).

Figure 1. Estimated Racial/Ethnic Distribution of Oklahoma's Non-institutionalized Residents Aged 18 Years and Older.

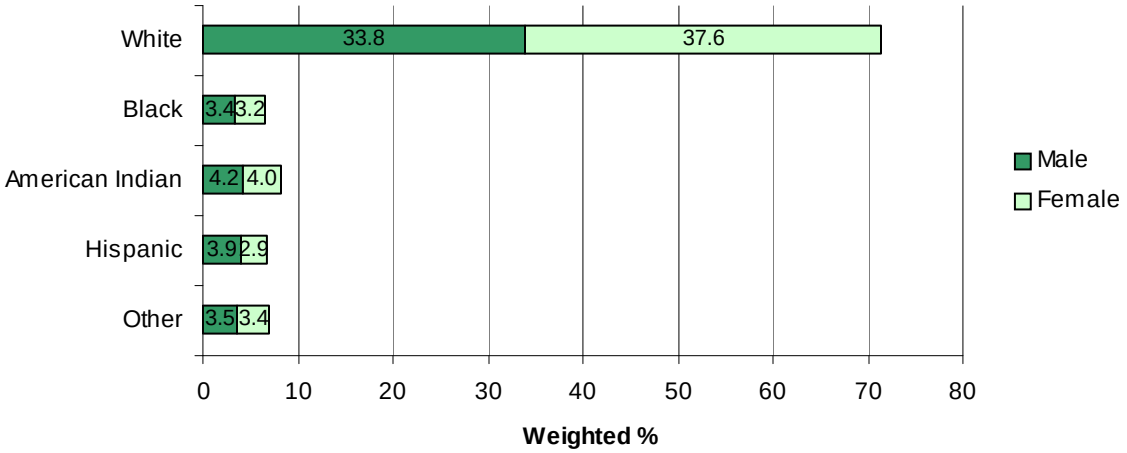


Figure 2. Estimated Age of Oklahoma Residents by Sex.

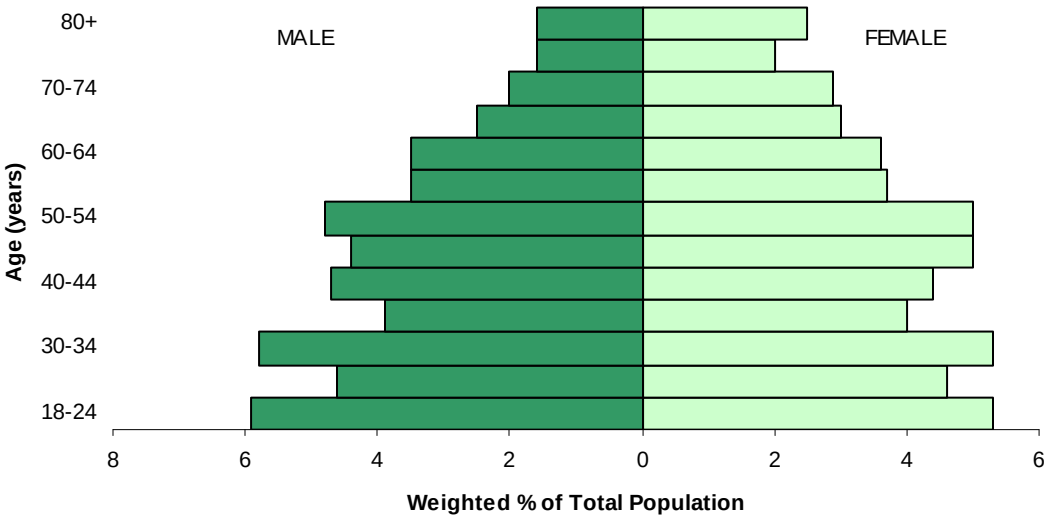


Table 2. Estimated (Weighted) Socio-demographic Characteristics of Oklahoma Residents by Sex.

	Males		Females	
	%	95% CI	%	95% CI
Marital Status				
Married	66.0	63.6, 68.5	60.7	59.0, 62.4
Divorced	8.7	7.6, 9.9	12.1	11.2, 13.1
Widowed	3.0	2.5, 3.5	10.5	9.7, 11.2
Separated	1.7	1.1, 2.4	2.2	1.7, 2.8
Never married	18.3	15.9, 20.7	11.1	9.7, 12.4
Member of an unmarried couple	2.2	1.3, 3.0	3.4	2.6, 4.3
Education				
Less than high school	12.7	11.0, 14.4	12.9	11.7, 14.1
High school graduate	32.9	30.6, 35.3	32.6	31.0, 34.2
Some college or technical school	27.7	25.6, 29.9	30.0	28.3, 31.6
College graduate	26.7	24.7, 28.6	24.5	23.0, 26.0
Employment				
Employed or self-employed	66.3	64.0, 68.6	48.2	46.5, 50.0
Out of work	5.0	3.7, 6.3	4.2	3.4, 4.9
A homemaker	0.3	0.0, 0.7	17.7	16.3, 19.0
A student	4.9	3.4, 6.4	4.5	3.6, 5.5
Retired	16.3	15.0, 17.7	16.9	15.9, 18.0
Unable to work	7.1	6.0, 8.3	8.5	7.6, 9.4
Household Income				
< $15,000	9.7	8.2, 11.2	13.9	12.6, 15.2
$15,000 to < $25,000	17.3	15.3, 19.4	21.6	20.1, 23.2
$25,000 to < $35,000	13.4	11.7, 15.1	12.3	11.1, 13.6
$35,000 to < $50,000	18.2	16.3, 20.2	17.4	15.9, 18.9
$50,000+	41.3	38.9, 43.8	34.7	32.9, 36.5

Health-Related Quality of Life

Health-related quality of life (HRQoL) refers to an individual's perception of his or her physical and mental health and ability to adapt to a changing environment.[1] While traditional measures of health focus on rates of disease and mortality, other means of determining an individual's health status and overall sense of well-being, such as HQRoL, encompass the broad definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[3] BRFSS has incorporated four items measuring HRQoL as part of its core component since 1993.[4] The first item is a general self-health rating. Self-health ratings are often comprised of a global question asking how an individual perceives his or her health. Such self-health ratings provide a general indication of one's quality of life and are used to assess changes and disparities in health status among populations. The other three items, termed the "healthy days" items, ask respondents to report the number of days during the past 30 days that their physical health was not good, their mental health was not good, and that poor physical or mental health kept them from doing their usual activities. Together, these items provide insight regarding how specific conditions, whether they be physical ailments, mental maladies, or social factors, may impact an individual's ability to perform usual activities.[4]

Self-rated health status. BRFSS interviewers asked respondents the following question: "Would you say that in general your health is excellent, very good, good, fair, or poor?" Almost 81% of Oklahoma adults considered their health to be good or better. Conversely, 19.2% of Oklahomans deemed their health to be fair or poor, and perceptions of health differed by demographics. For example, more women than men deemed their health to be fair or poor (20.5% vs. 17.8%, respectively). Larger proportions of American Indians (25.1%) and Hispanics (24.7%) believed their health to be fair or poor compared to Whites (17.7%). The proportion of those who rated their health negatively increased with age, such that almost 4 times as many adults aged 65 years and older perceived their health negatively compared to adults aged 18-24 years (Figure 3). Fair and poor health ratings were also more common among those with less formal education and those with lower household incomes (Figure 4).

Figure 3. Percentage of Oklahoma Residents by Age Group Who Perceived Their Health to Be Fair or Poor.

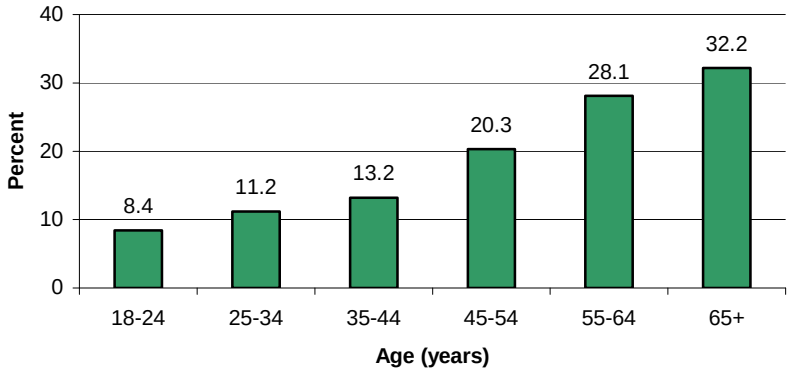
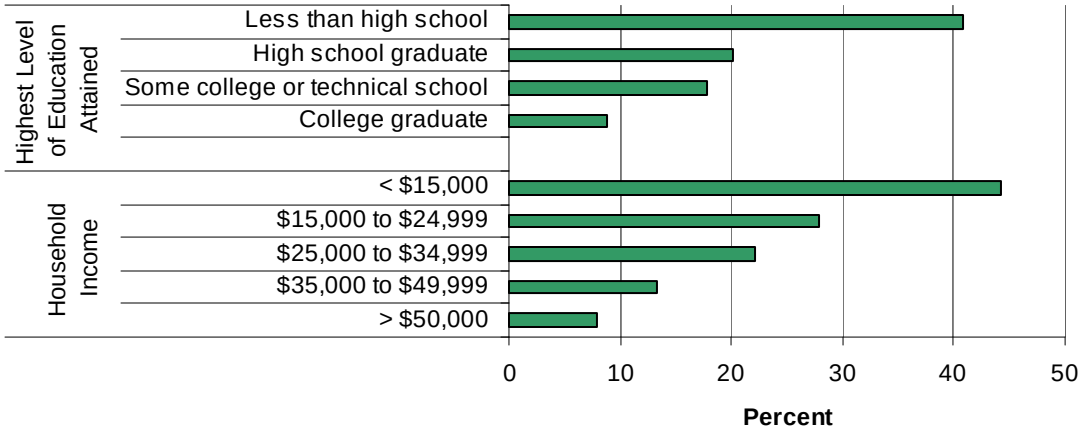
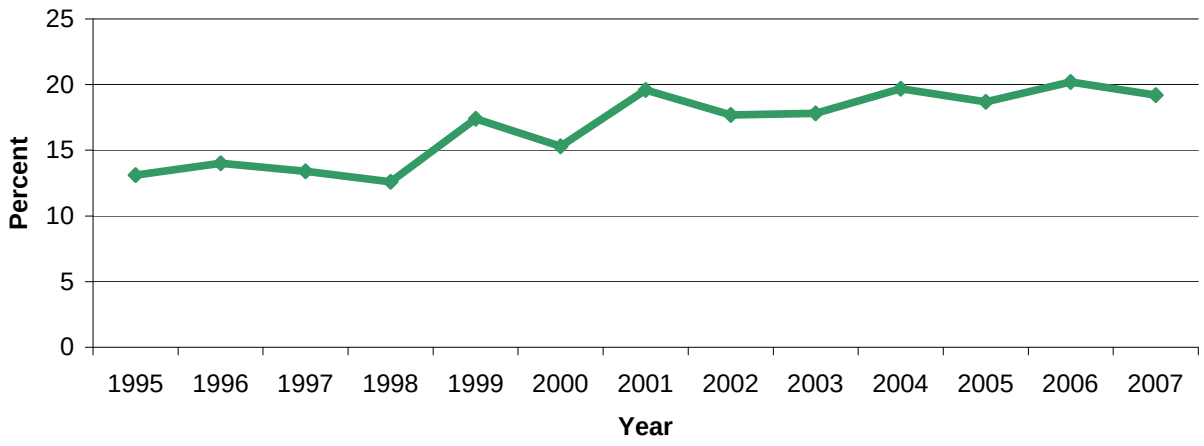


Figure 4. Percentage of Oklahoma Adults Who Perceived Their Health to Be Fair or Poor, by Education and Income.



The trend in Oklahoma has been an increase in the proportion of individuals who self-rate their health as fair or poor, from 13.1% in 1995 to a high of 20.2% in 2006 (Figure 5). In 2007, the proportion of Oklahoma adults who perceived their health negatively was higher than the national average of 14.9%. Oklahoma ranked 44th out of the 50 states plus the District of Columbia with respect to having a positive self-health rating.[5] Poorer self-health ratings among some racial/ethnic groups, older individuals, and those with less education and income in Oklahoma were not unexpected, as similar patterns were observed nationally.[5]

Figure 5. Percentage of Oklahoma Adults Who Perceived Their Health to Be Fair or Poor, 1995-2007.



Poor Health Days. Poor physical and/or mental health may interfere with an individual's ability to perform usual activities, resulting in a decline in HRQoL. BRFSS interviewers asked respondents to state how many of the past 30 days their physical health and mental health were not good, and the number of days that poor health kept them from doing their usual activities.

While 37% of Oklahoma adults experienced at least 1 day of the previous month during which their physical health was not good, 10% of residents endured more than 15 physically unhealthy days during the past month. On average, Oklahoma adults experienced 4.2 physically unhealthy days during the past month (Table 3). The average number of physically unhealthy days was highest for women, individuals aged 55 years and older, American Indians, those with an annual household income of less than $25,000, and those with less than a high school education. Residents under the age of 35 years, Hispanics, and those with a minimum household income of $50,000 per year experienced fewer than 3 physically unhealthy days in the past month.

Approximately 1 in 3 Oklahoma adults experienced at least 1 day of the previous month during which their mental health was not good. Nine percent of Oklahoma adults endured more than 15 mentally unhealthy days during the past month. On average, Oklahomans experienced 3.9 mentally unhealthy days during the past month (Table 3). The average number of mentally unhealthy days was highest for women, Blacks and American Indians, those with an annual household income of less than $25,000, and those who were not college graduates. Younger individuals typically experience more mentally unhealthy days than older individuals,[4] and Oklahomans aged 18-24 years experienced almost 2 times the number of mentally unhealthy days that those aged 65 years and older endured. Hispanics had the lowest number of mentally unhealthy days compared to other racial/ethnic groups. Residents over the age of 65 years and college graduates experienced fewer than 3 mentally unhealthy days in the past month.

Forty-one percent of Oklahomans perceived that poor health limited their ability to perform their usual activities on at least 1 of the previous 30 days, and 12.4% experienced restricted activity on more than 15 days during the previous month. While only 1.4% of individuals aged 18 – 24 years experienced limitations on more than 15 days of the month, 21% of those aged 55 – 64 years and 17.2% of those aged 65 and older experienced such frequent limitations of their activities (data not shown). Overall, Oklahoma adults endured 5.2 days during the previous month whereby poor physical or mental health limited their ability to engage in their usual activities (Table 3). The mean number of days during which activity was limited for any reason was higher for older versus younger individuals, those without a high school diploma, and those of low income. Residents aged 55 years and older had 3 times the number of limited activity days as those aged 18-24 years. Oklahomans with an annual household income of less than $15,000 had 4 times the number of limited activity days compared to those in the highest income group. Those without a high school education experienced more than twice the number of limited activity days as college graduates.

Table 3. Mean Number of Poor Health Days Experienced by Oklahoma Adults.

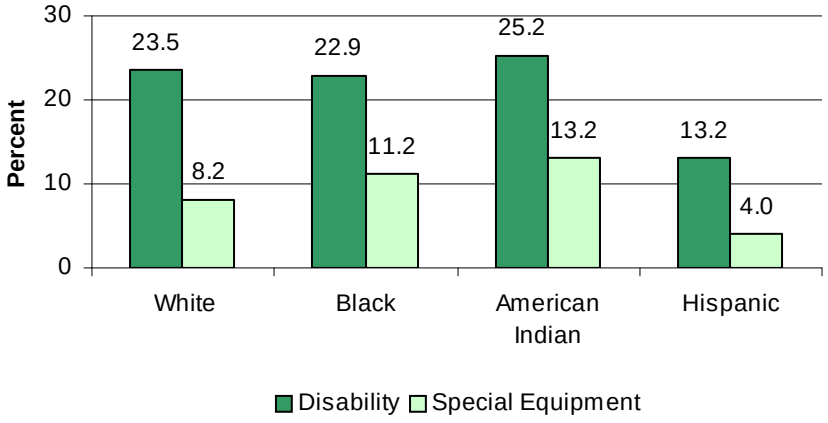
	Number of days during the past 30 days that:		
	physical health was not good (mean ± se)	mental health was not good (mean ± se)	poor health limited usual activities (mean ± se)
Total	4.2 ± 0.1	3.9 ± 0.1	5.2 ± 0.2
Sex			
Males	3.8 ± 0.2	3.2 ± 0.2	5.4 ± 0.3
Females	4.6 ± 0.2	4.6 ± 0.2	5.0 ± 0.2
Age (years)			
18 – 24	2.6 ± 0.4	4.8 ± 0.6	2.1 ± 0.3
25 – 34	2.8 ± 0.3	4.0 ± 0.3	3.9 ± 0.5
35 – 44	3.2 ± 0.2	3.8 ± 0.3	4.6 ± 0.4
45 – 54	4.6 ± 0.3	4.8 ± 0.3	6.2 ± 0.4
55 – 64	6.3 ± 0.3	3.8 ± 0.2	7.5 ± 0.5
65 and older	5.7 ± 0.2	2.5 ± 0.2	6.9 ± 0.4
Race/Ethnicity			
White	4.1 ± 0.1	3.6 ± 0.1	5.0 ± 0.2
Black	4.2 ± 0.5	4.6 ± 0.5	4.9 ± 0.6
American Indian	5.0 ± 0.5	5.3 ± 0.6	5.7 ± 0.7
Hispanic	2.8 ± 0.5	3.3 ± 0.7	5.1 ± 1.0
Other	5.4 ± 0.5	4.9 ± 0.5	6.8 ± 0.8
Education			
Less than high school	6.1 ± 0.4	6.1 ± 0.5	7.3 ± 0.6
High school graduate	4.5 ± 0.2	4.1 ± 0.2	5.7 ± 0.3
Some college or technical school	4.5 ± 0.2	4.1 ± 0.3	5.0 ± 0.3
College graduate	2.6 ± 0.2	2.4 ± 0.2	3.3 ± 0.3
Household Income			
< $15,000	9.2 ± 0.5	8.1 ± 0.5	10.7 ± 0.6
$15,000 to < $25,000	9.2 ± 0.5	5.5 ± 0.4	6.8 ± 0.5
$25,000 to < $35,000	4.1 ± 0.4	3.6 ± 0.4	5.2 ± 0.6
$35,000 to < $50,000	3.5 ± 0.3	3.2 ± 0.3	2.8 ± 0.3
$50,000+	2.3 ± 0.1	3.2 ± 0.3	3.1 ± 0.2

Disability

Approximately 20% of Americans are afflicted with some type of disability, and estimates indicate that the majority of Americans will experience disability at some point in their life.[6] A disability can result from a congenital condition, an illness, or an injury, and can impact an individual's ability to perform activities of daily living. Additionally, those living with a disability may have poorer health outcomes and be more likely to engage in unhealthy behaviors than people who do not have a disability. For example, disabled individuals are more likely to experience pain and depression, and have higher rates of smoking, obesity, and physical inactivity.[7,8]

BRFSS interviewers asked respondents the following questions: “Are you limited in any way in any activities because of physical, mental, or emotional problems?” and “Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?” More than 23% of Oklahoma adults had some type of disability that limited their activity, and 8.8% utilized special equipment to assist them in performing their daily activities. Socio-demographic disparities were apparent for responses to each question. A higher proportion of females than males had a disability (25.1 versus 21.8%, respectively), though use of special equipment was similar between the groups. The Hispanic population had a rate of disability that was substantially lower than Whites, Blacks, and American Indians, and the lowest rate of equipment use (Figure 6). American Indians (13.2%) utilized special equipment more commonly than Whites (8.2%).

Figure 6. Prevalence of Disability and Use of Special Equipment Among Oklahoma's Racial/Ethnic Groups.

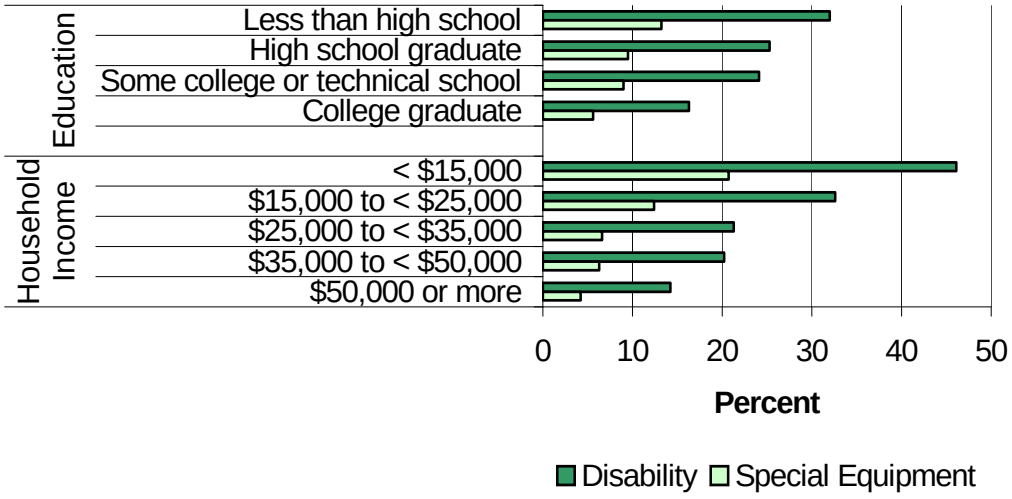


Rates of disability and equipment use followed the same patterns by age, with rates increasing with each successive 10-year age group after the age of 35 years (Table 4). The rate of disability among those aged 55 years and older was twice the rate of those aged 35-44 years, and the rate of equipment use among the elderly (aged 65 years and older) was 4.5 times higher than the rate of 35-44 year-olds. Rate patterns were also similar between the two questions with respect to education and income level, such that rates of disability and equipment use declined with higher levels of education and income (Figure 7).

Table 4. Prevalence of Disability and Use of Special Equipment Among Oklahoma Adults by Age Group.

	Disability		Use of Special Equipment	
	Weighted %	95% CI	Weighted %	95% CI
Age (years)				
18 – 24	11.8	7.6, 16.0	-	-
25 – 34	13.9	11.1, 16.7	4.0	2.2, 5.8
35 – 44	17.2	14.7, 19.6	4.5	3.1, 5.9
45 – 54	26.7	24.0, 29.4	8.2	6.5, 9.9
55 – 64	35.0	32.1, 37.8	13.3	11.2, 15.4
65 and older	34.9	32.7, 37.1	20.6	18.7, 22.5

Figure 7. Prevalence of Disability and Use of Special Equipment Among Socio-Economic Groups in Oklahoma.



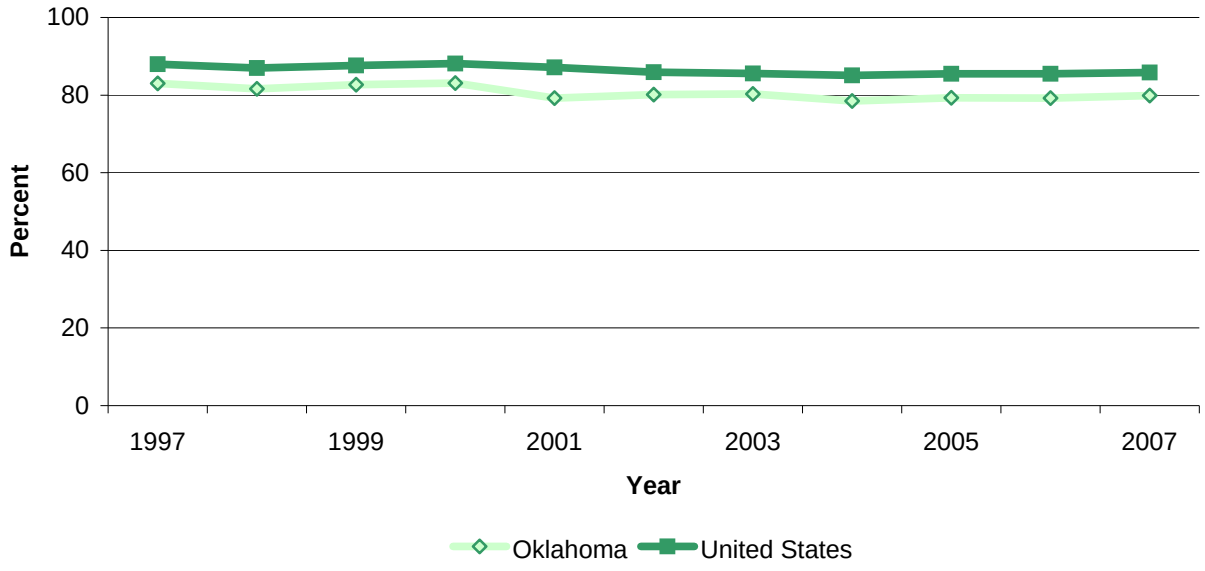
Since BRFSS began assessing disability status in 2001, the prevalence of disability has increased by almost 16% and the use of special equipment has increased by 33% in Oklahoma.[9] A larger proportion of Oklahomans were living with a disability in 2007 compared to the national average of 18.9%.[4] Only one other state had a larger proportion of disabled residents (West Virginia); Oklahoma's rate tied with that of Kentucky. Three states (Alabama, West Virginia, and Kentucky) had larger proportions of their population using special equipment.[5]

Access to Health Care

Access to health care is a leading indicator of a population's health status.[1] BRFSS incorporates several items to assess access to health care, including the prevalence of health care coverage, use of a primary source for medical care, inability to seek medical attention due to cost, and time since last routine check-up.

Having health care coverage increases one's access to health services, including preventive services that may improve the likelihood of early identification and treatment of chronic illnesses. In general, individuals without health insurance have poorer health outcomes.[10] The proportion of adults with health care coverage has remained consistent across the past decade for both Oklahoma and the nation as a whole (Figure 8). However, fewer Oklahomans have health insurance compared to those across the nation, and neither Oklahoma nor the United States populations have achieved the Healthy People 2010 objective of health insurance for all.[1,5]

Figure 8. Percentage of Non-Institutionalized Adults Who Have Health Care Coverage, 1997-2007.



Twenty percent of Oklahoma adults were without health care coverage in 2007, and large disparities were evident among some demographic groups. For example, 51% of Hispanic residents and 32% of Blacks were without health care coverage compared to 16% of Whites and 18% of American Indians. Younger individuals were less likely to have coverage than older individuals (Figure 9), and those with lower educational attainment and income were also less likely to have health care coverage (Table 5).

Figure 9. Health Care Access by Age Group Among Oklahomans.

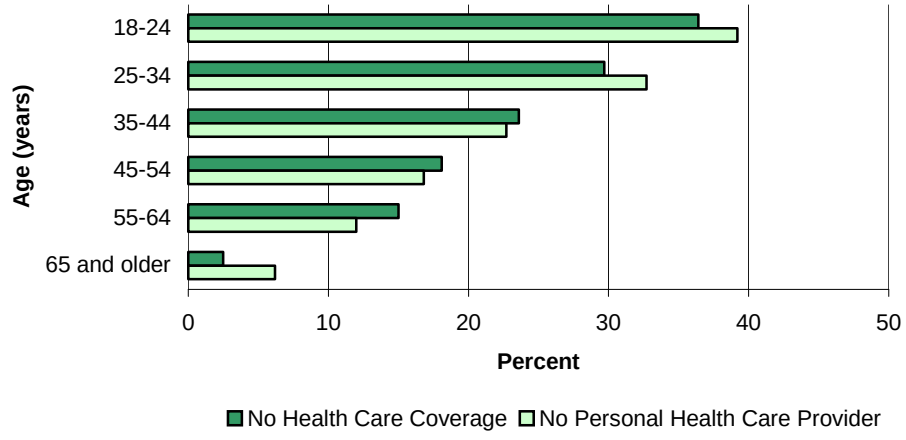


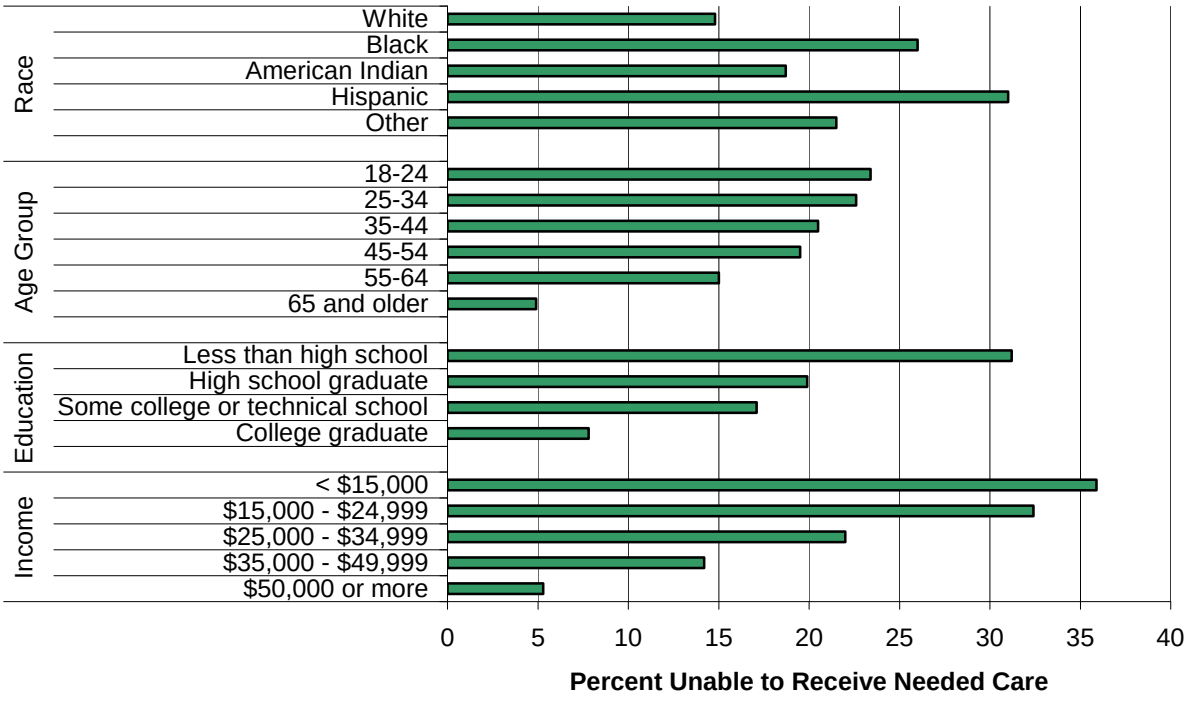
Table 5. Health Care Access Among Socio-economic Groups in Oklahoma.

	No Health Care Coverage		No Personal Health Care Provider	
	Weighted %	95% CI	Weighted %	95% CI
Education				
Less than high school	37.7	33.2, 42.1	36.1	31.7, 40.5
High school graduate	25.8	23.2, 28.4	24.9	22.3, 27.5
Some postsecondary school	17.2	14.9, 19.4	17.0	14.8, 19.3
College graduate	7.2	5.8, 8.6	12.2	10.3, 14.1
Household Income				
< $15,000	38.7	34.4, 43.1	30.4	26.2, 34.5
$15,000 to < $25,000	38.0	34.2, 41.8	31.9	28.1, 35.6
$25,000 to < $35,000	23.0	18.8, 27.3	21.9	17.8, 26.0
$35,000 to < $50,000	14.2	11.1, 17.2	18.0	14.7, 21.3
$50,000+	5.6	4.4, 6.9	12.3	10.4, 14.2

Fifty-six percent of Oklahomans without health care coverage also did not have a personal health care provider. This proportion declined to only 12% of individuals who had some type of health care coverage. Having a personal health care provider is important because individuals who do not have a usual source of care may find it more difficult to obtain necessary services;[10] thus, an objective of Healthy People 2010 is to increase the proportion of individuals who have a usual primary care provider to 85%.[1] Overall, only 79% of Oklahoma adults had a person (or persons) that they thought of as their personal health care provider. Similar disparities existed with respect to having a personal health care provider as were demonstrated with having health care coverage. Not having a personal care provider was more common among Hispanics and Blacks (data not shown), younger individuals (Figure 9), and those with less formal education and lower income (Table 5).

In some instances, individuals forgo needed care and preventive services because they are unable to afford the cost of such services. Health conditions left untreated can worsen, eventually requiring immediate and expensive care.[1] More than 17% of Oklahoma adults were unable to visit a doctor for a needed service at some time during the past year because they could not afford the cost. As with the other indicators of health care access, demographic differences were evident in characterizing those who were unable to receive needed care (Figure 10).

Figure 10. Disparities in Ability to Receive Medical Care Due to Cost.



Attending routine medical check-ups may play a role in lowering risk of developing a chronic disease, detecting a disease in its early stages, and receiving timely and appropriate care.[11] For instance, recent estimates suggest that 22% of adults with high blood pressure are unaware they have the condition.[12] Because a person with undiagnosed high blood pressure will not be taking appropriate medication and may not be engaging in health-promoting activities, the person may develop extensive damage to his/her arteries, causing deterioration of the heart, kidneys, and other organs of the body. While 57% of Oklahoma adults had visited a health care professional for a routine examination within the past year, women, adults aged 55 years and older, those with a higher education, and those in the highest income bracket were more likely than others in their respective demographic categories to have received a recent check-up (Table 6). Alternatively, more than 28% of adults either had their last exam more than 2 years ago or had never had a routine exam. Adults aged 55 years and older were less likely to have never had a routine exam, while Hispanics and those with the least education were more likely to have never had an exam (Table 6).

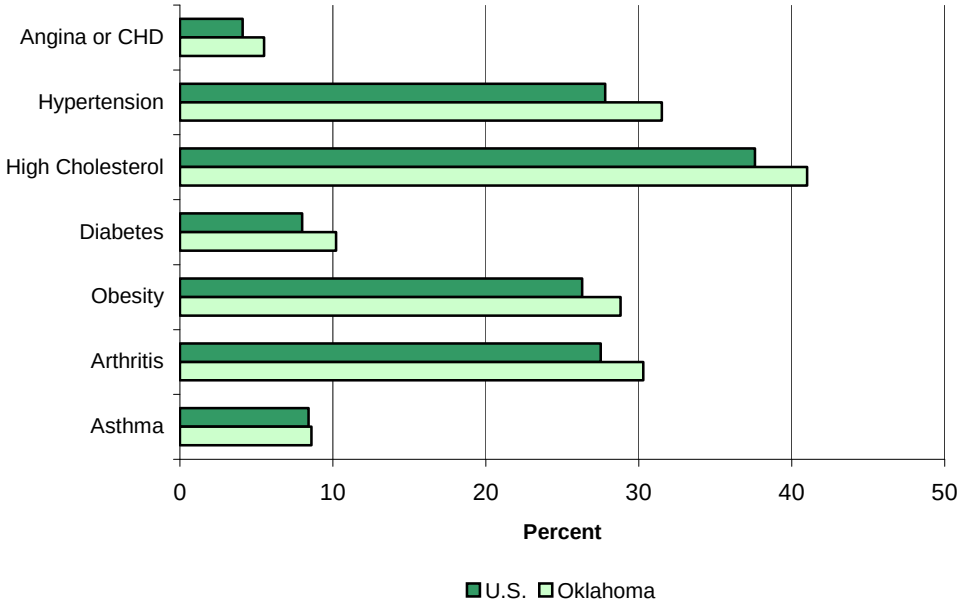
Table 6. Characteristics of Oklahoma Residents and Time Since Last Routine Medical Exam.

	Time Since Last Routine Checkup:			
	< 1 year (% ± se)	1 to < 2 years (% ± se)	≥ 2 years (% ± se)	Never (% ± se)
Total	57.1 ± 0.8	14.4 ± 0.5	24.4 ± 0.7	4.1 ± 0.3
Sex				
Males	52.9 ± 1.3	14.3 ± 0.9	28.2 ± 1.2	4.5 ± 0.6
Females	61.1 ± 0.9	14.5 ± 0.7	20.7 ± 0.8	3.7 ± 0.4
Age (years)				
18 – 24	47.6 ± 3.5	14.4 ± 2.4	31.0 ± 3.3	6.9 ± 1.8
25 – 34	48.0 ± 2.0	16.1 ± 1.4	30.3 ± 1.9	5.5 ± 0.9
35 – 44	47.9 ± 1.7	17.5 ± 1.3	30.4 ± 1.6	4.3 ± 0.7
45 – 54	54.7 ± 1.6	14.9 ± 1.1	26.6 ± 1.4	3.9 ± 0.6
55 – 64	65.3 ± 1.5	14.2 ± 1.1	18.0 ± 1.1	2.4 ± 0.5
65 and older	78.1 ± 1.0	9.3 ± 0.7	10.5 ± 0.8	2.0 ± 0.3
Race/Ethnicity				
White	56.9 ± 0.9	14.5 ± 0.6	25.0 ± 0.8	3.6 ± 0.4
Black	59.2 ± 3.0	17.0 ± 2.3	21.4 ± 2.6	2.4 ± 0.9
American Indian	60.4 ± 3.0	14.3 ± 2.1	23.5 ± 2.7	1.7 ± 0.6
Hispanic	53.4 ± 3.5	13.8 ± 2.3	21.7 ± 2.9	11.1 ± 2.3
Other	57.1 ± 3.2	12.1 ± 2.0	24.6 ± 2.7	6.2 ± 2.0
Education				
Less than high school	48.5 ± 2.2	14.9 ± 1.7	29.3 ± 2.2	7.3 ± 1.2
High school graduate	54.9 ± 1.4	14.5 ± 1.0	27.0 ± 1.3	3.6 ± 0.5
Some college or technical school	59.4 ± 1.4	13.4 ± 0.9	22.7 ± 1.3	4.4 ± 0.7
College graduate	61.4 ± 1.4	15.3 ± 1.0	20.7 ± 1.2	2.6 ± 0.5
Household Income				
< $15,000	51.2 ± 2.3	14.3 ± 1.6	30.5 ± 2.2	4.0 ± 0.8
$15,000 to < $25,000	52.7 ± 1.9	14.2 ± 1.3	27.3 ± 1.8	5.7 ± 1.0
$25,000 to < $35,000	50.1 ± 2.3	14.3 ± 1.6	32.1 ± 2.3	3.5 ± 0.7
$35,000 to < $50,000	57.2 ± 2.0	14.9 ± 1.3	23.5 ± 1.8	4.3 ± 1.0
$50,000+	62.8 ± 1.3	14.6 ± 0.9	19.8 ± 1.1	2.9 ± 0.5

Burden of Disease

The BRFSS survey inquires about the prevalence of specific chronic diseases, including cardiovascular disease, diabetes, obesity, hypertension, high cholesterol, arthritis, and asthma. The survey also asks a series of questions about gastrointestinal disease, which can be caused by numerous infectious agents. The proportion of individuals who have a history of the chronic conditions is presented in Figure 11 for Oklahoma and the United States.[5] The prevalence in Oklahoma is slightly higher than the national average for all conditions, and is more than 20% higher for coronary heart disease (CHD) and diabetes.

Figure 11. Prevalence of Chronic Conditions in the U.S. and Oklahoma.



There were some common themes that were evident with respect to chronic conditions. Most chronic conditions were positively related to age and inversely related to education and income levels. Asthma was the exception, with no clear relationship emerging with respect to age or educational attainment. Heart attack and angina/CHD were more prominent among men while arthritis and asthma were more common among women. The other chronic conditions did not disproportionately affect the sexes. Obesity and diabetes were more common among American Indians; hypertension and heart attack were more common among Blacks; and heart attack, diabetes, hypertension, and arthritis were less common among Hispanics than the other racial/ethnic groups.

Cardiovascular Disease

Heart disease and stroke are two of the leading causes of death in the United States, and both are significant contributors to disability and the economic healthcare burden. In 2007, heart disease and stroke accounted for approximately 37.4% of resident deaths in Oklahoma.[13] To assess the burden of cardiovascular disease in Oklahoma, the BRFSS survey asked respondents if a doctor, nurse, or other health care professional had ever told them that they have had a heart attack, angina or CHD, or a stroke. Almost 6% of Oklahomans had a history of heart attack, 5.5% had a history of angina/CHD, and 3.4% had a history of stroke (Table 7). Half of residents who had a history of angina/CHD have had a heart attack, while fewer than 3% of those without a history of CHD have had a heart attack.

Some demographic characteristics in relation to cardiovascular disease are presented in Table 7. Significantly more men than women had suffered a heart attack and been diagnosed with angina/CHD. Racial/ethnic differences were evident with respect to heart attack; 9.2% of Blacks have had heart attacks compared with only 4.0% of Hispanics. Heart attack, angina/CHD, and stroke were more common among those with less formal education and those with lower incomes.

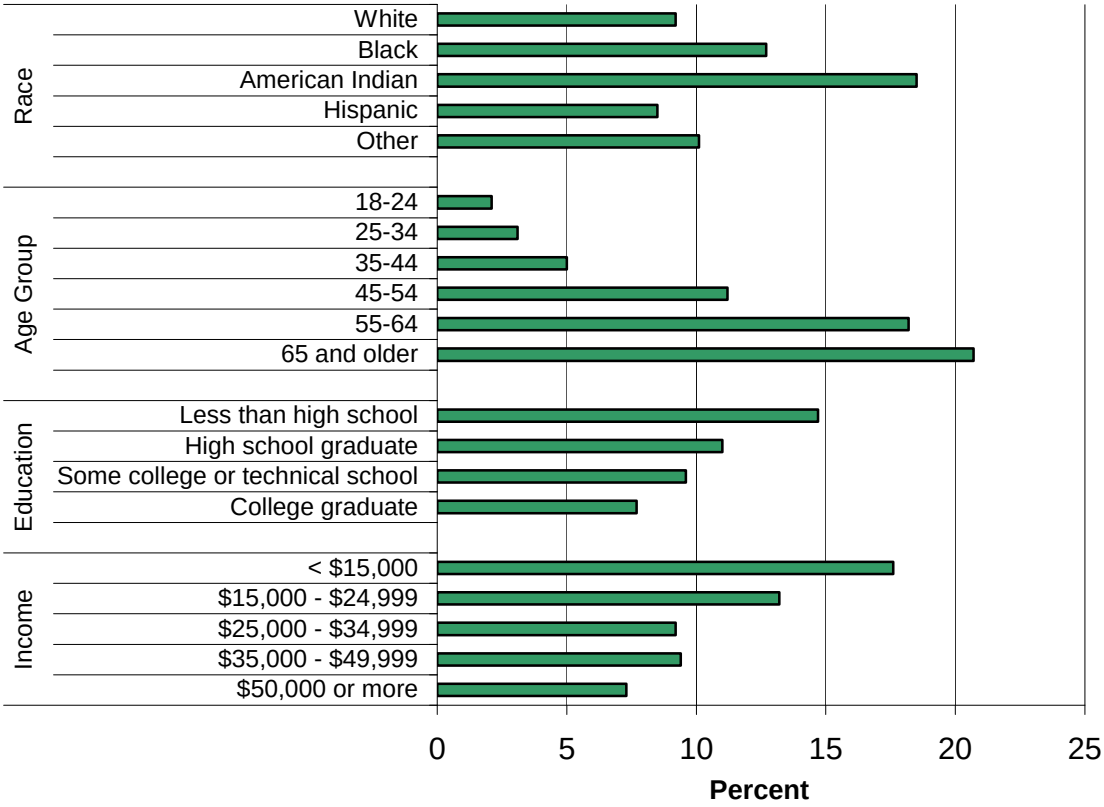
Table 7. Characteristics of Oklahomans Who Had a History of Heart Attack, Angina/CHD, and/or Stroke.

	Heart Attack		Angina or CHD		Stroke	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Total	5.8	5.2, 6.3	5.5	4.9, 6.1	3.4	2.9, 3.8
Sex						
Males	7.3	6.4, 8.3	6.5	5.5, 7.5	3.3	2.6, 3.9
Females	4.3	3.7, 4.9	4.6	3.9, 5.2	3.5	2.9, 4.0
Race/Ethnicity						
White	5.5	4.9, 6.1	5.4	4.8, 6.0	3.2	2.7, 3.7
Black	9.2	5.8, 12.7	6.5	3.6, 9.5	5.6	3.1, 8.2
American Indian	6.4	4.0, 8.9	7.0	3.9, 10.1	3.0	1.2, 4.7
Hispanic	4.0	2.0, 6.0	3.2	1.0, 5.4	2.4	0.6, 4.3
Other	6.7	4.5, 9.0	6.5	4.4, 8.7	4.4	2.5, 6.3
Education						
Less than high school	9.9	7.8, 11.9	8.2	5.9, 10.4	6.1	4.3, 7.9
High school graduate	6.6	5.6, 7.7	5.9	4.9, 6.9	3.6	2.8, 4.3
Some college or technical school	4.7	3.8, 5.7	5.3	4.3, 6.4	3.0	2.3, 3.7
College graduate	3.8	2.9, 4.7	3.9	3.0, 4.8	2.1	1.4, 2.8
Household Income						
< $15,000	10.7	8.4, 13.0	10.1	7.4, 12.8	7.8	5.6, 10.1
$15,000 to < $25,000	9.3	7.6, 11.0	7.2	5.7, 8.6	4.6	3.5, 5.7
$25,000 to < $35,000	5.5	4.0, 7.1	5.9	4.1, 7.6	2.4	1.4, 3.4
$35,000 to < $50,000	5.0	3.6, 6.3	5.2	3.7, 6.7	2.6	1.6, 3.6
$50,000+	2.9	2.2, 3.6	3.2	2.4, 3.9	1.5	1.0, 2.1

Diabetes

Diabetes is a chronic disease whereby the body's inability to produce sufficient amounts of insulin or its inability to recognize the action of insulin leads to high levels of glucose (sugar) in the blood. High blood glucose levels damage the arteries, causing kidney malfunction, retinopathies, neuropathies, and other debilitating conditions. Diabetes is a risk factor for cardiovascular disease and is associated with hypertension and other chronic illnesses. Diabetes is also a leading cause of death in the United States. BRFSS interviewers asked respondents if a doctor had ever told them that they had diabetes. National data from the 2007 BRFSS estimated the burden of diabetes to be 8.0% among the U.S. adult population.[5] In Oklahoma, 10.2% of adults had a history of diabetes. Diabetes was more common among the American Indian population, with 18.5% having been told that they had diabetes compared with 12.7% of Blacks and fewer than 10% of Whites and Hispanics (Figure 12). The prevalence of diabetes more than doubled for individuals aged 45 years and older compared to those aged 18 to 44 years (Figure 12). Diabetes was also more common among those with the least formal education and lowest income compared with college graduates and those with the highest level of income (Figure 12).

Figure 12. Prevalence of Diabetes Among Oklahoma Adults.



Obesity

Body mass index (BMI) is an indirect health risk indicator that is used to classify an individual's weight status. BMI is computed using a person's weight and height and is presented as kg/m^2 [weight (kg) / height*height (m^2)]. BRFSS interviewers asked respondents to report their weight and height, and BMI was calculated from these data. Estimates demonstrated that more than 36% of Oklahomans were overweight ($25.0 \leq BMI < 30.0$) and almost 29% were obese ($BMI \geq 30.0$) in 2007. While the proportion of obese males and females was similar (more than 28% for both groups), a larger percentage of males than females were overweight (42.4% vs. 30.3%, respectively; Figure 13). Seventy-five percent of Hispanics were overweight or obese compared to 64% of Whites and 62% of Blacks (data not shown). However, a greater proportion of American Indians were obese compared to the other racial/ethnic groups (Figure 14). The proportion of obese individuals increased with age through the 55-64 year age category, and then declined for those aged 65 years and older (Figure 15). Obesity was more prevalent among those with less formal education and lower income (Figure 16).

Figure 13. Weight Status of Men and Women in Oklahoma.

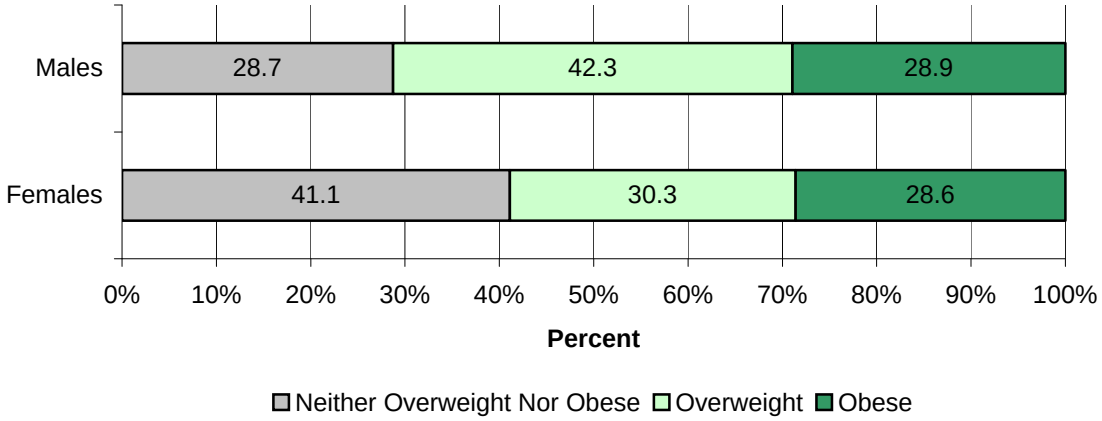


Figure 14. Prevalence of Obesity by Race/Ethnicity Among Oklahoma Adults.

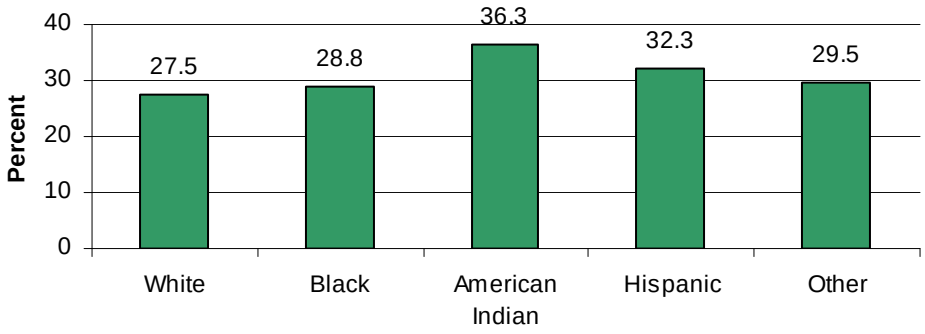


Figure 15. Obesity by Age Group Among Oklahoma Adults.

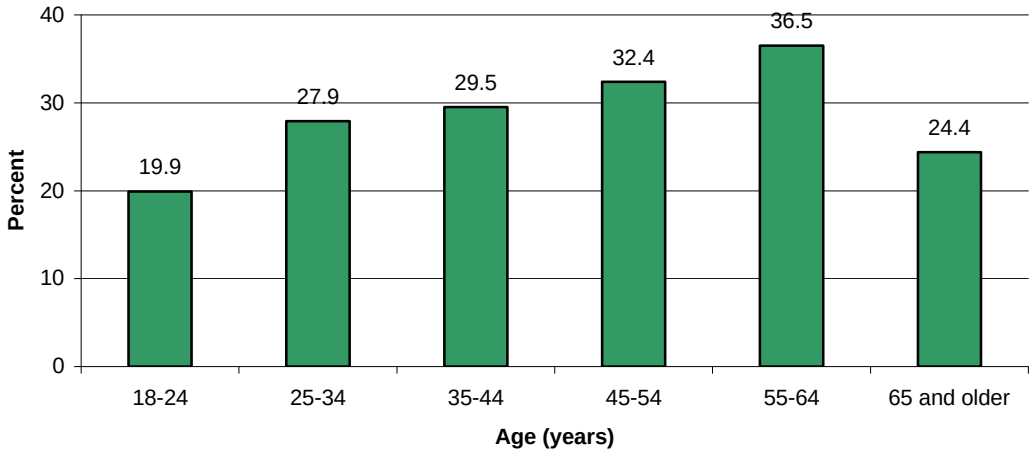
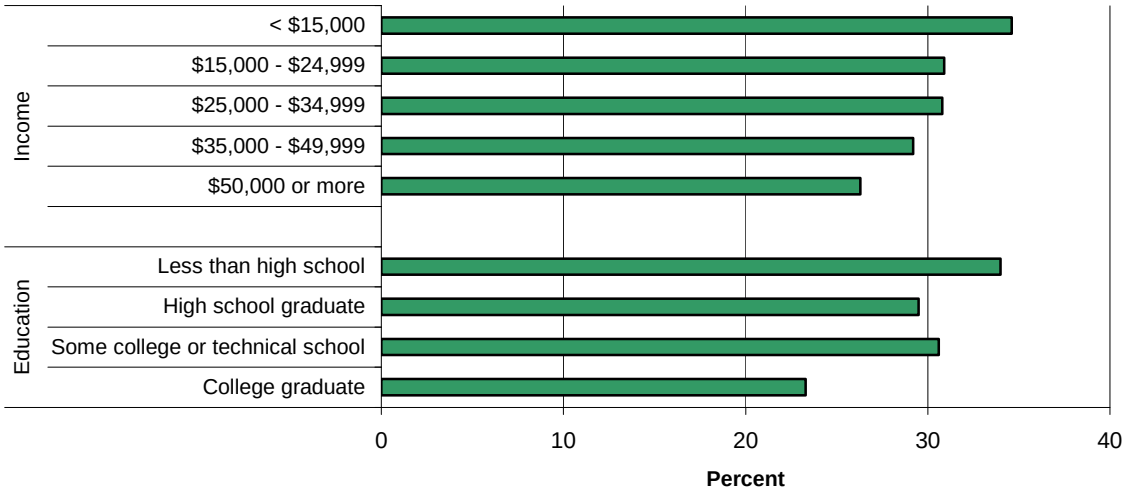


Figure 16. Prevalence of Obesity by Income and Education Levels Among Oklahoma Adults.



Hypertension

Blood pressure refers to the force that is placed on the walls of the arteries during the heart's contraction phase (systole) and relaxation phase (diastole). Hypertension, or high blood pressure, is diagnosed when blood pressure readings are 140/90 mmHg or higher. Hypertension is a risk factor for cardiovascular disease and is also associated with diabetes and other chronic illnesses. The CDC estimates that about one-third of American adults have high blood pressure, though the prevalence is much higher among Blacks.[14] BRFSS interviewers asked respondents if a doctor, nurse, or other health professional had ever told them that they had high blood pressure. Data demonstrated that 31.5% of Oklahoma adults had a history of hypertension in 2007. Racial disparities existed, with almost 40% of Blacks having a history of hypertension compared to 19.8% of Hispanics (Figure 17). History of hypertension increased with age, as shown in Figure 18, and decreased with greater educational attainment and household income (Figure 19).

Figure 17. Racial/Ethnic Differences in Hypertension Among Oklahoma Adults.

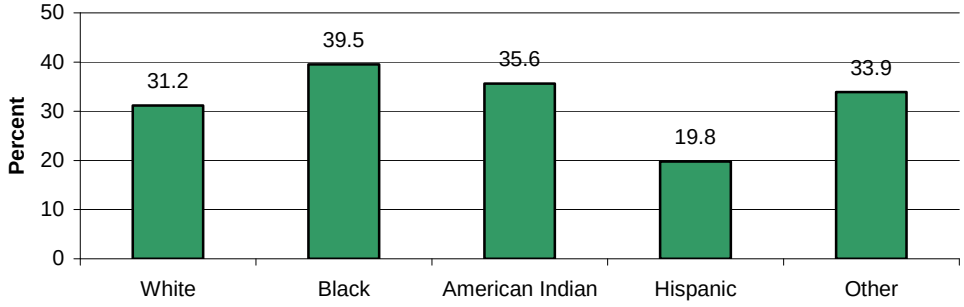


Figure 18. Prevalence of Hypertension Among Oklahoma Adults by Age Group.

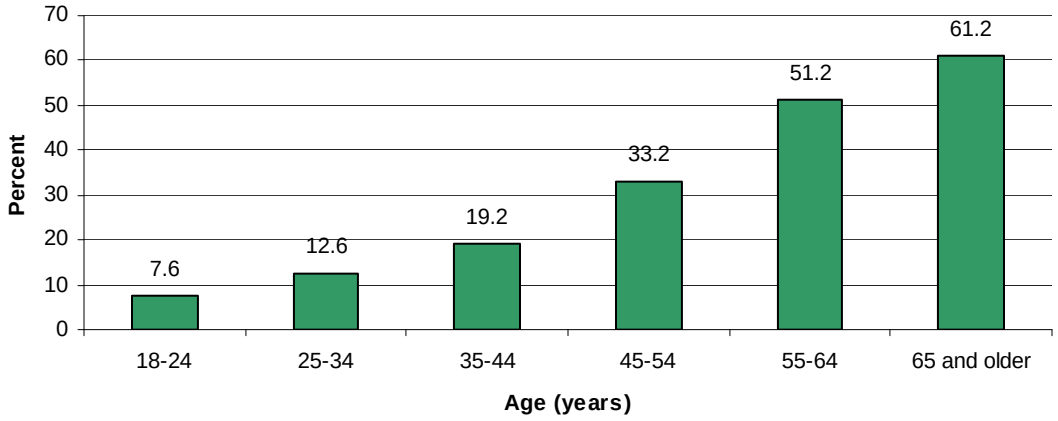
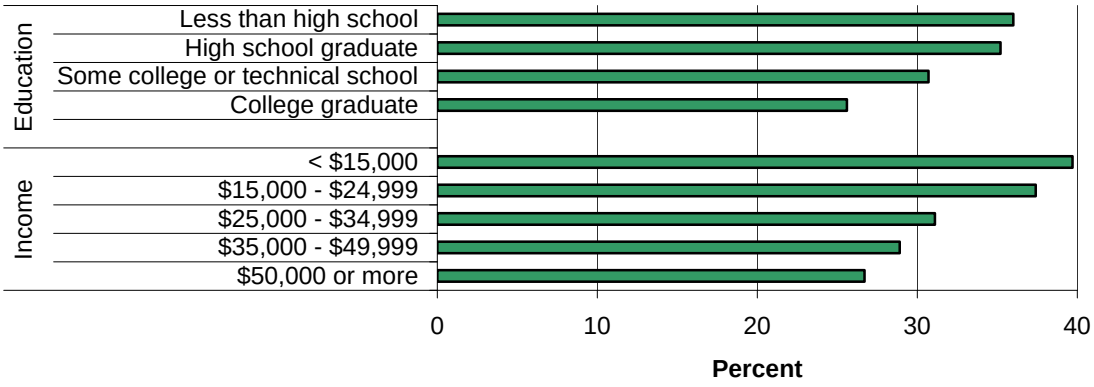


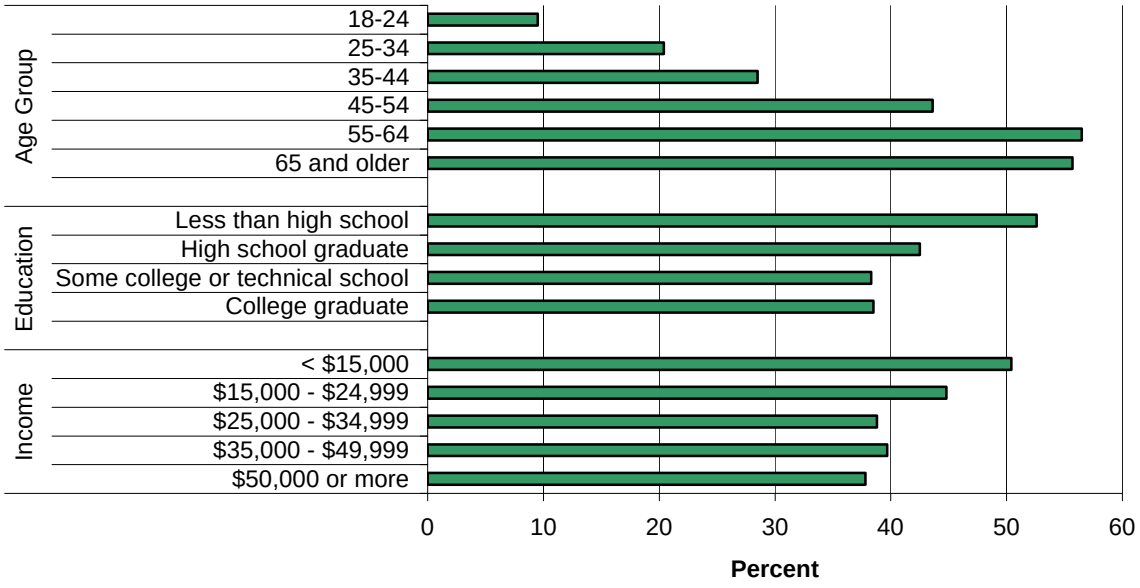
Figure 19. Prevalence of Hypertension Among Oklahoma Adults by Education and Income.



High Cholesterol

High levels of total cholesterol are a risk factor for heart disease and are associated with other chronic conditions, such as obesity. BRFSS interviewers asked respondents if they had ever had their cholesterol checked and if a doctor, nurse, or other health professional had ever told them that their blood cholesterol was high. National BRFSS data in 2007 demonstrated that 37.6% of U.S. adults had a history of high cholesterol.[5] History of high cholesterol was common among 41% of Oklahoma adults, and affected all racial/ethnic groups similarly (data not shown). High cholesterol disproportionately impacted individuals according to age, education, and income level (Figure 20).

Figure 20. Characteristics of Oklahoma Adults with a History of High Cholesterol.

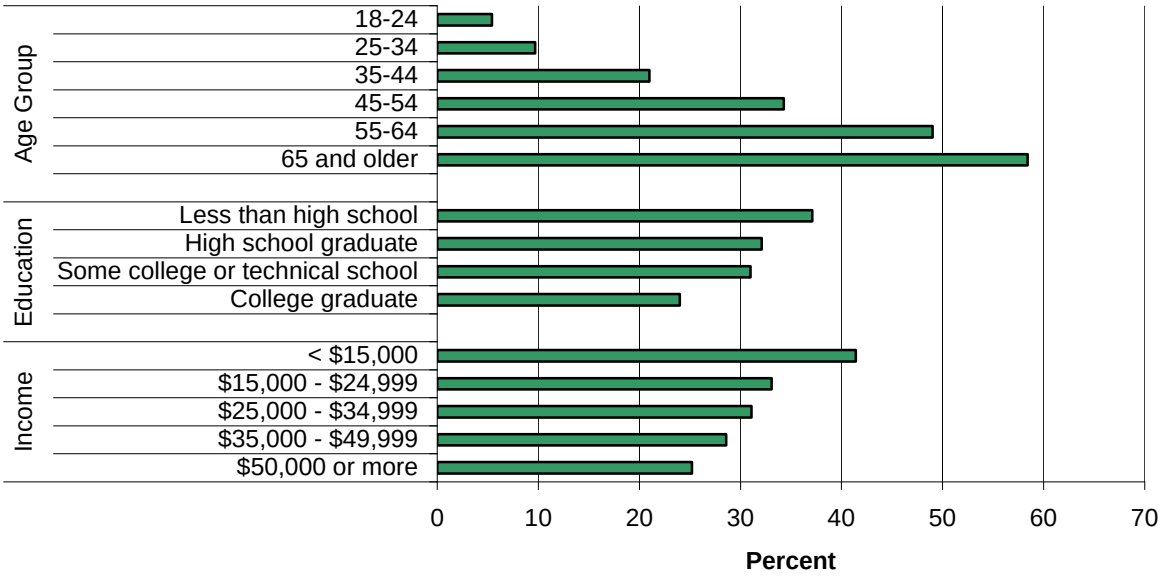


Arthritis

Arthritis impacts 1 in 4 American adults (2007 BRFSS), and is one of the leading causes of disability in the United States.[15] The BRFSS survey includes several questions regarding arthritis burden. One question asks if a doctor or other health professional had ever told the respondent that he or she had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia. Other questions ask about experiencing pain, aching, or stiffness in or around a joint, duration of symptoms, and if the respondent had visited a doctor for the symptoms. The last question in this series asks if the respondent is now limited in doing usual activities due to arthritis or joint symptoms.

In 2007, 45% of Oklahoma adults experienced symptoms of pain, aching, or stiffness in or around a joint (excluding the back and neck) in the past 30 days and 30.3% were living with diagnosed arthritis. Approximately 80% of individuals with arthritis experienced joint pain, and 30% of individuals without diagnosed arthritis experienced pain. Of those living with arthritis and joint symptoms, almost 38% endured limitations to their usual activities because of their condition. BRFSS results demonstrated that arthritis was more common among women (34.3%) than men (26.1%). Arthritis was proportionately spread among all racial/ethnic groups (29-32%) with the exception of Hispanics (13.5%). Prevalence of the disease increased with age and was lowest for those at the highest levels of education and income (Figure 21).

Figure 21. Characteristics of Oklahomans with Arthritis.

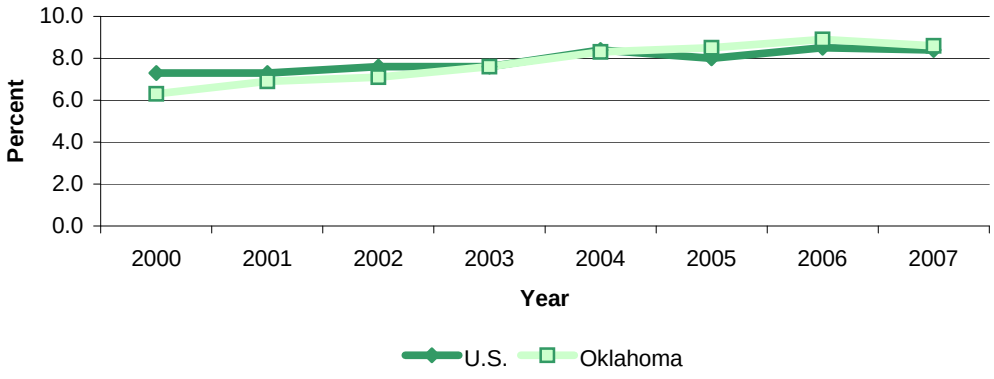


Asthma

Asthma is a lung disease that is caused by inflammation of the airways, which restricts the size of the airways and makes breathing difficult. BRFSS interviewers asked respondents if a doctor, nurse, or other health professional had ever told them that they had asthma and if so, did they still have asthma. From these data, individuals who answered yes to both questions were classified as having asthma.

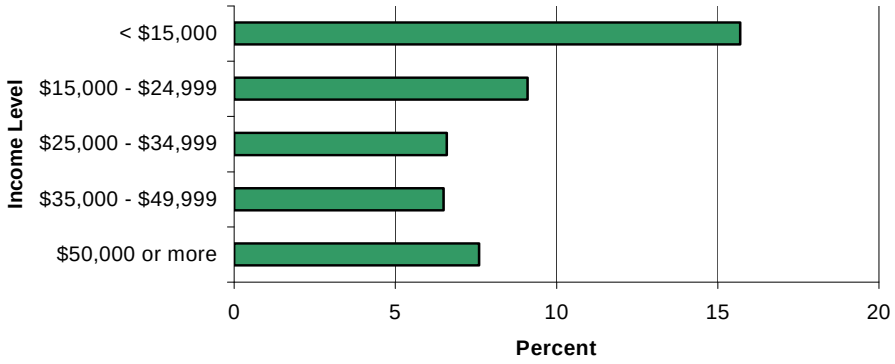
While the prevalence of asthma among the adult population has increased by 15% in the U.S. since 2000, the adult asthma prevalence has increased by more than 36% in Oklahoma during the same time (Figure 22).[16] The 2007 rate of current asthma among Oklahoma adults was similar to the national rate (8.6% versus 8.4%, respectively).[5]

Figure 22. Trends in Adult Asthma Prevalence, U.S. and Oklahoma, 2000-2007.



While many chronic conditions affect Oklahoma's demographic groups disproportionately, there were few disparities evident in the proportion of Oklahoma adults diagnosed with asthma. Asthma was more common among women (11.4%) than men (5.7%), and among those in the lowest income bracket (Figure 23).

Figure 23. Adult Asthma Prevalence by Income Level.



Gastrointestinal Disease

Though there are a variety of gastrointestinal disorders, the BRFSS survey asked questions specific to experiencing diarrheal illness. Individuals have their own opinions regarding what they consider to be diarrhea, so the BRFSS survey defined diarrhea as having 3 or more loose stools or bowel movements in a 24-hour period. Diarrhea can be caused by many types of infectious pathogens and by non-infectious triggers such as medication, food intolerance, and other agents and conditions.[17] Approximately 17% of Oklahoma adults had diarrhea that began within the past 30 days, and of those, 14.1% visited a health professional for treatment. Just over one-third of those who sought treatment provided a stool sample for testing.

While diarrhea appears to be an equal-opportunity illness,[17] certain demographic groups in Oklahoma experienced diarrhea and sought treatment more often than others (Table 8). More women than men suffered diarrhea in the past month (19.4% versus 15.0%, respectively), and women were more likely to seek care. Diarrhea occurred more often among individuals aged 45-64 years than those aged 18-24 years, and seniors over the age of 65 years were more likely to visit a healthcare professional for the condition. Hispanics and Blacks were less likely to have had a bout of diarrhea in the past month; there were no racial/ethnic differences with respect to seeking professional treatment. While those in the lowest income bracket were more likely to have had diarrhea than those in the highest bracket (22.8% versus 15.9%, respectively), income was not associated with having visited a health care professional for treatment. Educational attainment was not associated with diarrhea prevalence or care, and there were no discrepancies with respect to providing a stool sample for testing for any demographic category.

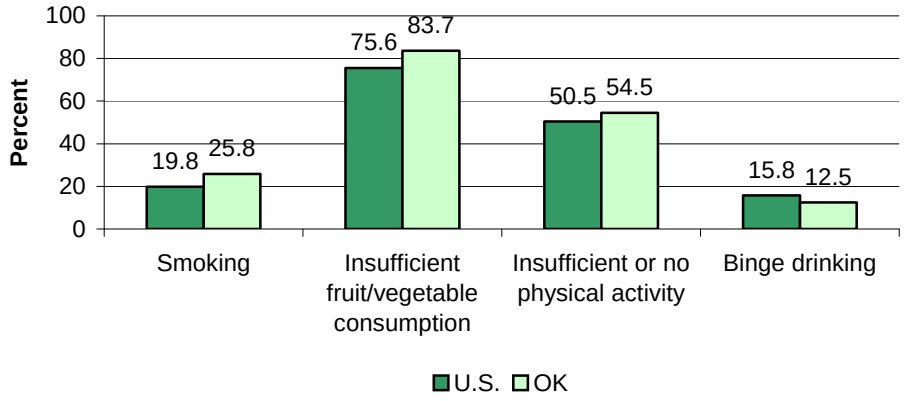
Table 8. Characteristics of Oklahomans Who Had a Bout of Diarrhea in the Past Month and Who Then Sought Treatment from a Health Care Professional.

	Diarrhea in Past 30 days n = 7112		Those with Diarrhea Who Sought Treatment n = 1291	
	Weighted %	95% CI	Weighted %	95% CI
Sex				
Males	15.0	13.3, 16.7	11.0	7.3, 14.8
Females	19.4	18.1, 20.8	16.3	13.6, 18.9
Age (years)				
18 – 24	11.8	7.7, 16.0	-	-
25 – 34	18.3	15.2, 21.4	8.6	4.0, 13.1
35 – 44	17.5	15.0, 20.1	12.2	7.1, 17.3
45 – 54	19.0	16.7, 21.4	11.8	7.7, 15.8
55 – 64	19.1	16.8, 21.4	15.3	10.8, 19.7
65 and older	16.0	14.2, 17.7	23.9	19.1, 28.6
Race/Ethnicity				
White	18.0	16.7, 19.3	15.0	12.3, 17.8
Black	12.9	9.4, 16.3	11.3	4.2, 18.3
American Indian	20.4	15.5, 25.4	7.8	2.5, 13.1
Hispanic	8.1	4.9, 11.2	-	-
Other	19.8	15.3, 24.3	15.7	9.0, 22.4

Health Behaviors/Modifiable Risk Factors

Behavior directly impacts health status. Oklahomans typically engage in unhealthy behaviors at higher rates than the nation as a whole (Figure 24). Many of the chronic conditions that worsen an individual's quality of life and increase risk of premature death can be reduced and/or managed by making lifestyle changes. Tobacco use is the largest contributor to mortality in the United States, with poor diet and physical inactivity running a close second and excessive alcohol consumption third.[18] With influenza and pneumonia combined being a top ten leading cause of death, vaccinations against these illnesses are extremely important. BRFSS asked respondents about their status with respect to several behaviors that impact morbidity and premature mortality.

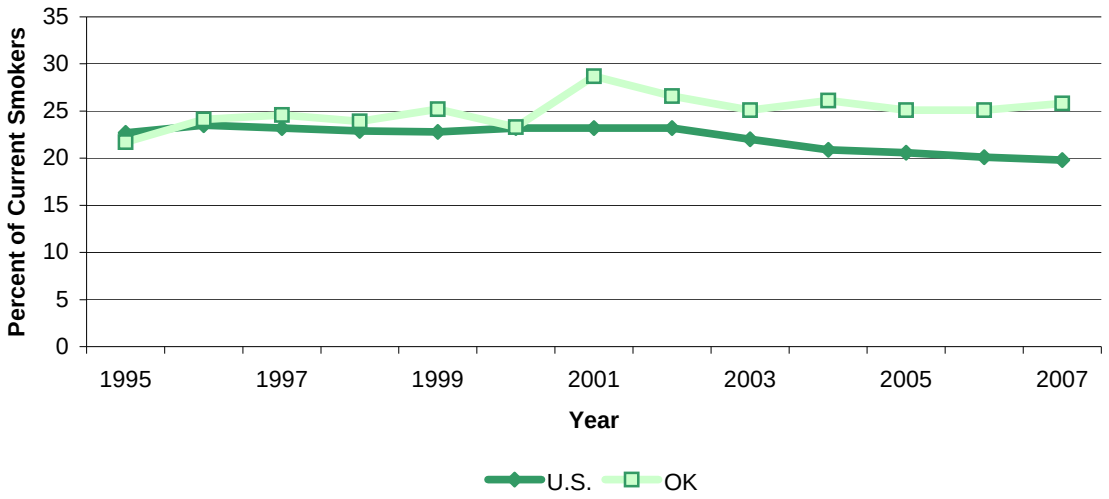
Figure 24. Percentage of U.S. and Oklahoma Adults Who Engaged in Select Unhealthy Behaviors.



Tobacco Use

Smoking is the leading cause of preventable death in the United States, impacting 1 in 5 deaths each year.[18] Three questions are included in the BRFSS survey regarding tobacco use. Respondents were asked if they had smoked at least 100 cigarettes in their entire life, and if they now smoke every day, some days, or not at all. From these data, current smoking status was determined. Respondents who smoked some or every day were also asked if they had stopped smoking for one day or longer during the past 12 months because they were trying to quit smoking. In 2007, Oklahoma had a higher proportion of smokers than the national population, 25.8% compared with 19.8%, respectively (Figure 24). The smoking rate has been higher than the national average and has remained essentially unchanged since 2001 (Figure 25). In 2007, 51% of Oklahoma adults had never smoked, and another 23% were former smokers.

Figure 25. Smoking Trends for the U.S. and Oklahoma, 1995-2007



Current smoking status was most common among males, American Indians, those who did not complete high school, and those who earned less than $15,000 annually (Figures 26 and 27). Hispanics had the lowest prevalence of current smoking among the racial/ethnic groups (Figure 26). Prevalence of current smoking was 70% less for college graduates compared with those who did not complete high school, and 60% less for those earning $50,000 or more compared with those in the lowest income category (Figure 27).

Figure 26. Percentage of Smokers by Sex and Race/Ethnicity.

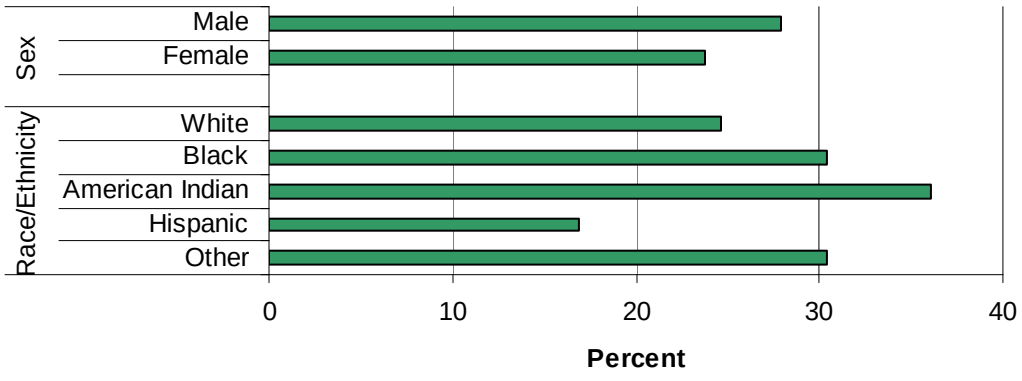
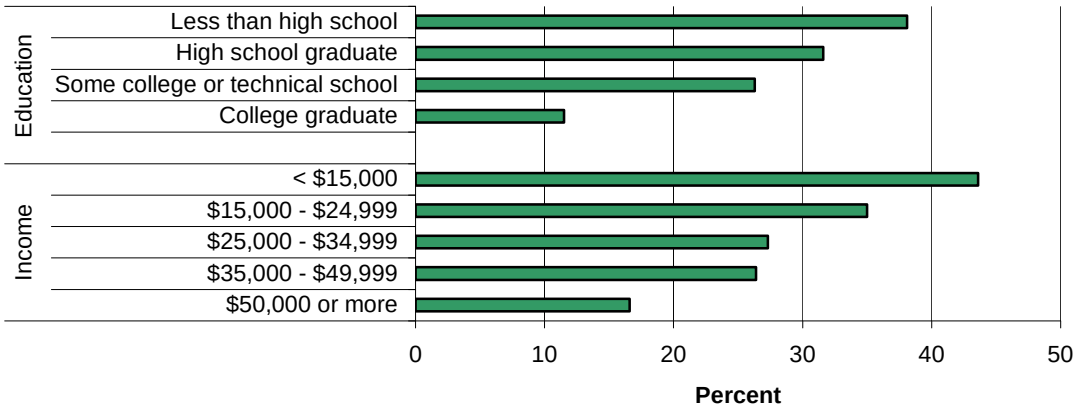


Figure 27. Percentage of Smokers by Education and Income Levels.



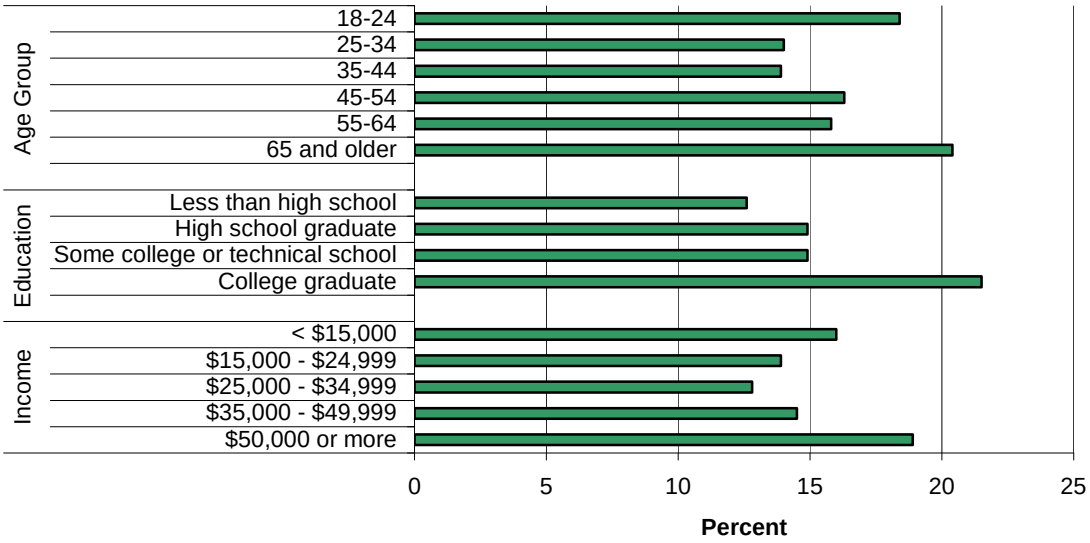
Of Oklahoma adults who were classified as current smokers, 57.4% had stopped smoking for 1 or more days in the previous 12 months as an attempt to quit smoking. A greater percentage of women (61.1%) than men (54.1%) made attempts to quit smoking, and almost 70% of individuals aged 18 – 24 years stopped smoking for at least 1 day compared to 46.8% of those over the age of 65 years.

Fruit and Vegetable Consumption

The Dietary Guidelines for Americans recommend that all adults consume 5 or more servings of fruits and vegetables each day to maximize health benefits.[19] BRFSS asked respondents a series of questions regarding consumption of fruit, fruit juices, and specific types of vegetables. From these data a composite was calculated to determine how many Oklahomans consumed the recommended amount of fruits and vegetables.

Only 16.3% of Oklahoma adults consumed 5 or more servings of fruits and vegetables on a daily basis in 2007. Oklahoma ranked 50 out of the 50 states for fruit and vegetable consumption, well below the national average of 24.4% of the population who met the recommended dietary guideline. More women than men consumed the recommended servings of fruits and vegetables (19.7% and 12.7%, respectively). The 18-24 year and 65 years and older categories had larger proportions of meeting the recommendation, as did college graduates compared to other categories of educational attainment (Figure 28).

Figure 28. Percentage of Oklahoma Adults Who Consumed 5 or More Servings of Fruits and Vegetables Daily.

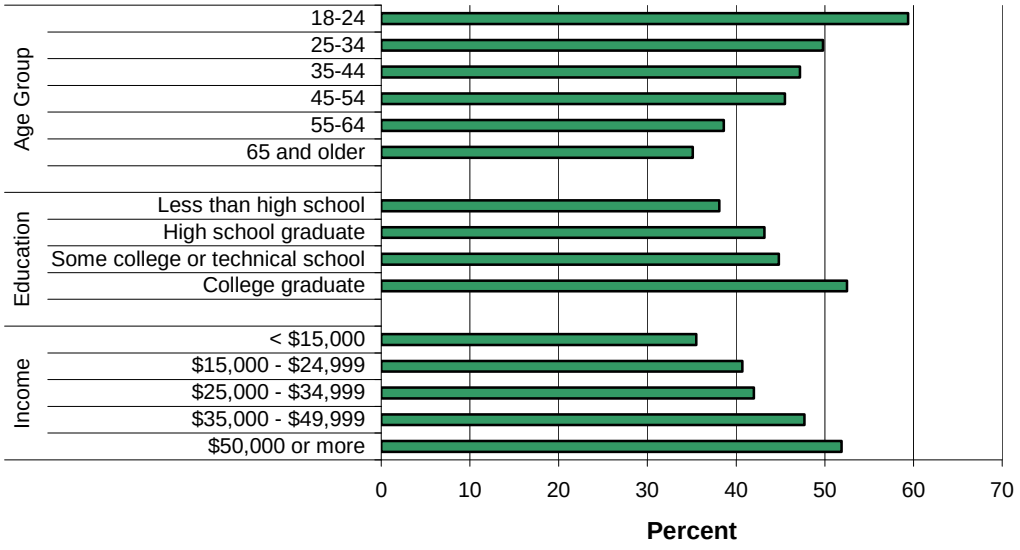


Physical Activity

Regular participation in physical activity lowers risk of morbidity and premature mortality.[20] BRFSS interviewers asked respondents to report the weekly frequency and duration of both moderate-intensity and vigorous-intensity physical activity that is done in bouts of at least 10 minutes. Respondents were then classified as obtaining sufficient levels of health-promoting physical activity if they had accumulated at least 30 minutes of moderate intensity activity on 5 or more days or 20 minutes of vigorous intensity activity on 3 or more days of the week. Nationally, 49.5% of adults were obtaining sufficient levels of physical activity, and 77.4% had engaged in some type of leisure-time physical activity in the past 30 days.[5] Oklahoma adults were less active than the national population. Fewer than half of Oklahomans were meeting the recommendation and only 70% had engaged in physical activity during their leisure time in the past month.

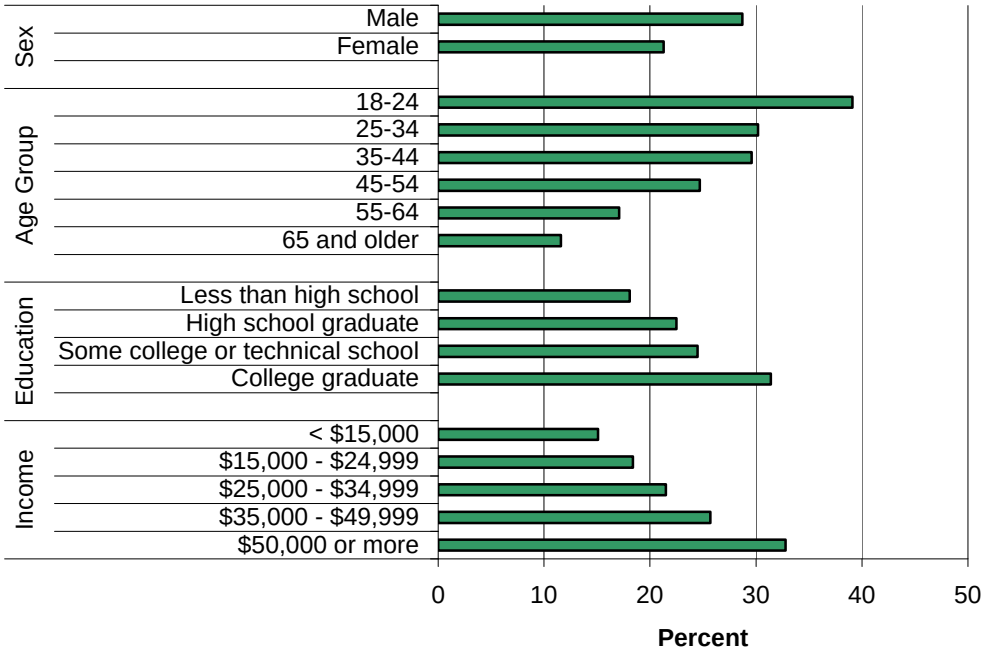
There were no differences in the proportions that were obtaining sufficient levels of physical activity according to sex and race/ethnicity. However, differences were evident with respect to age, education, and income level (Figure 29). The proportions of sufficiently active individuals declined with age; 59.4% of 18-24 year olds were engaging in sufficient levels of physical activity to achieve health benefits, while only 35.1% of those aged 65 years and older were doing so. Conversely, the proportions of sufficiently active individuals increased with higher education and income levels.

Figure 29. Characteristics of Oklahoma Adults Who Obtained Sufficient Levels of Health-promoting Physical Activity.



While moderate physical activity is adequate to provide health benefits, vigorous physical activity can also enhance cardiovascular fitness. Almost 25% of Oklahomans were engaging in 20 minutes or more of vigorous intensity physical activity on at least 3 days of the week. This proportion is 12% lower than the proportion of the U.S. population who are regularly vigorously active. The differences in vigorous activity patterns among Oklahoma's subpopulations were similar to the differences described for meeting the physical activity recommendation (Figure 30). In addition, more males than females were engaging in regular vigorous activity (Figure 30).

Figure 30. Characteristics of Oklahoma Adults Who Engaged in Regular Vigorous Activity.



Being physically inactive increases one's risk of developing cardiovascular disease and other chronic illnesses.[21] Respondents were also asked if they had participated in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise during the past month, other than their regular job. Nationally, 22.6% of adults did not engage in any leisure-time physical activity in the past 30 days.[5] In Oklahoma, 29.6% of adults did not engage in any physical activity during their leisure time in the past month. Females, Hispanics and Blacks, and older individuals were more likely to perform no physical activity (Figure 31). Proportions of inactive individuals decreased as education and income levels increased (Figure 32).

Figure 31. Characteristics of Oklahoma Adults Who Engaged in No Leisure-time Physical Activity.

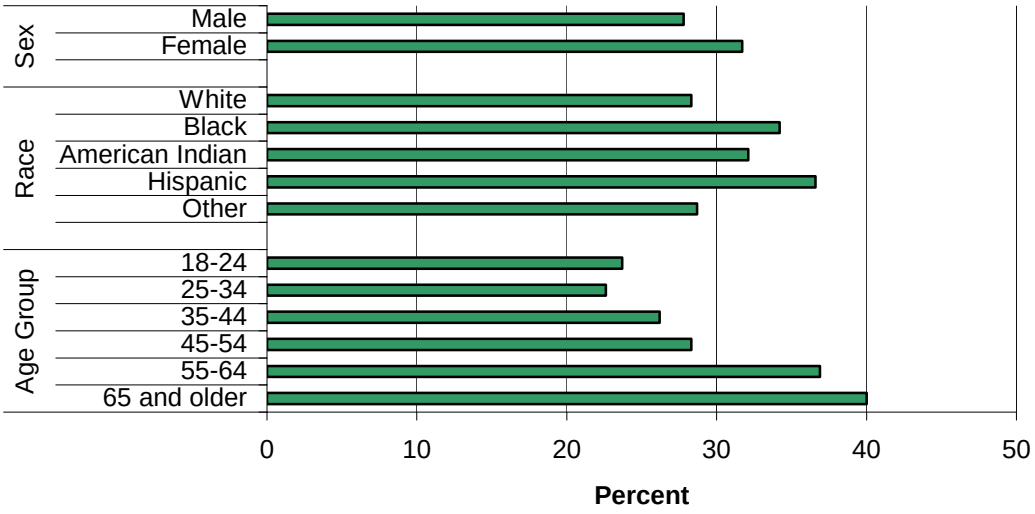
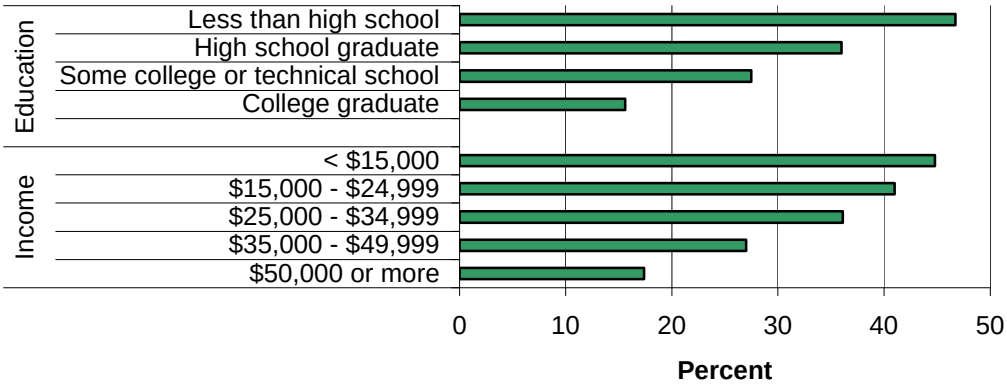


Figure 32. Education and Income Levels of Oklahoma Adults Who Engaged in No Leisure-time Physical Activity.

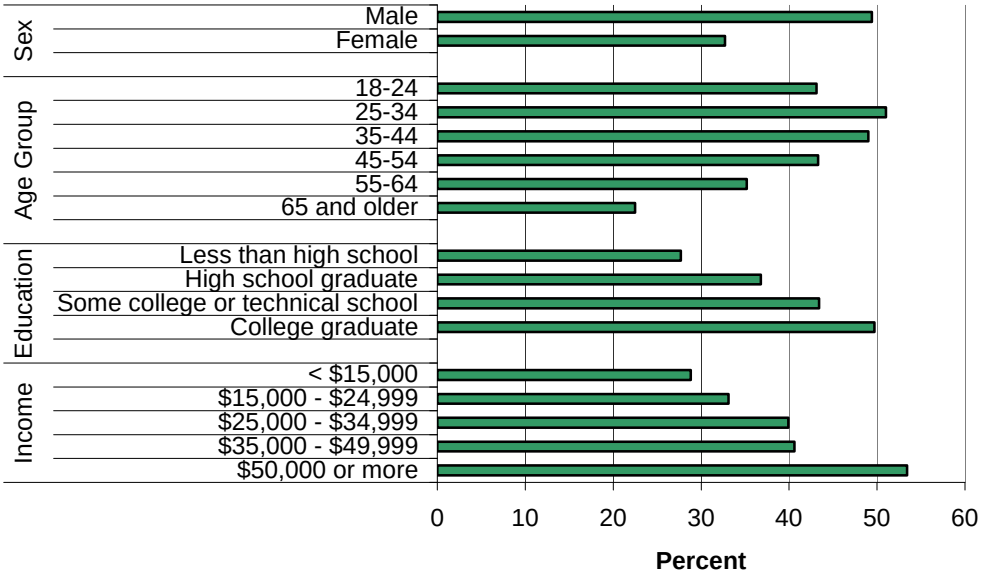


Alcohol Use

Excessive alcohol consumption is the third leading cause of preventable death in the United States.[18] Excessive alcohol consumption includes heavy drinking and binge drinking. Heavy drinking refers to a man having more than 2 drinks or a woman having more than 1 drink per day, and binge drinking refers to a man consuming 5 or more drinks or a woman consuming 4 or more drinks on a single occasion. The BRFSS survey includes a series of questions regarding frequency of alcohol consumption in the past 30 days, number of drinks per occasion of drinking, and the largest number of drinks on a single occasion in the past 30 days. The survey also includes a question about the frequency of drinking 5 or more drinks for men or 4 or more drinks for women on a single occasion.

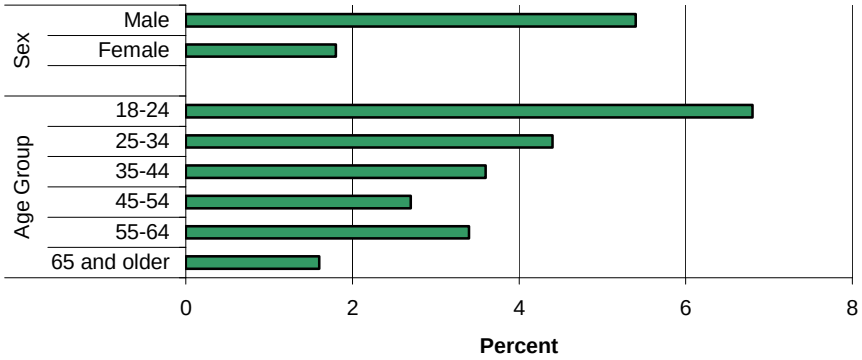
A smaller portion of Oklahoma adults drank any alcohol compared to the national population.[5] Almost 41% of Oklahoma adults had consumed at least 1 alcoholic drink in the past 30 days, compared to 54.8% of U.S. adults. Past-month alcohol consumers were primarily male, young, educated, and had a higher household income (Figure 33).

Figure 33. Characteristics of Oklahomans Who Consumed at Least One Alcoholic Beverage in the Past Month.



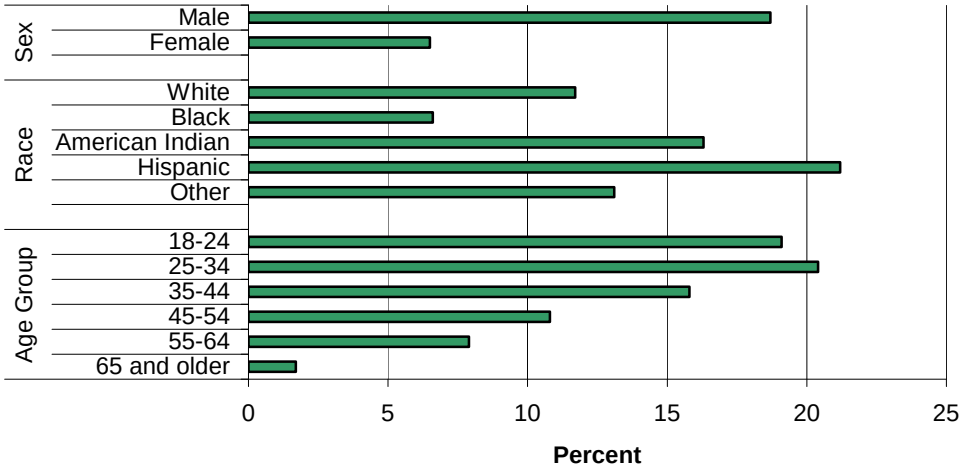
Fewer than 4% of Oklahomans were estimated to have been heavy drinkers. Heavy drinkers were primarily male and between the ages of 18 and 24 years (Figure 34). Of those who were classified as heavy drinkers, 90% were also binge drinkers. Alternatively, fewer than 10% of non-heavy drinkers were also binge drinkers.

Figure 34. Sex and Age of Heavy Drinkers in Oklahoma.



More than 12% of Oklahoma adults had engaged in binge drinking. Binge drinking was 3 times more common among males than females (Figure 35). The proportion of binge drinkers was smallest among Blacks and those aged 65 years and older (Figure 35).

Figure 35. Sex, Race/Ethnicity, and Age of Binge Drinkers in Oklahoma.



Cholesterol Screening

Cholesterol is naturally produced and used by the body, but becomes dangerous to one's health when it is present in the body in excessive amounts. Cholesterol then becomes deposited on the walls of the arteries, narrowing the space through which blood flows and thus leading to cardiovascular disease. The lack of symptoms associated with high cholesterol underscores the importance of obtaining regular screenings. The National Heart Lung and Blood Institute (NHLBI) recommends that healthy adults aged 20 years and older obtain regular cholesterol screenings every 5 years.[22] Those with risk factors for high cholesterol, such as family history or obesity, should consult with their physician and may have their cholesterol levels checked more frequently.

BRFSS interviewers asked respondents if they had every had their blood cholesterol checked. If respondents answered yes, then they were asked how long it had been since they last had their blood cholesterol checked and if a doctor, nurse, or other health professional had ever told them that their cholesterol was high. Seventy-one percent of Oklahomans had obtained a cholesterol screening within the past 5 years, while almost one-quarter of Oklahomans had never had their cholesterol checked (data not shown). Not having a cholesterol screening was more common among those aged 18 or 19 years (72.4%) compared to those aged 20 years and older (23%; data not shown). The proportion of individuals who had recently been screened increased with each successive age category (Figure 36). Slightly more women than men had obtained a screening within the past 5 years (72.7% versus 69.7%, respectively), and Hispanics were almost 30-50% less likely to have had a recent screening compared to all other racial/ethnic groups (Figure 37). In fact, more than 45% of Hispanics had never been screened (data not shown). Individuals with higher levels of educational attainment and income were more likely to have had a recent cholesterol screening (Table 9).

Figure 36. Percentage of Oklahomans by Age Group Who Had Obtained a Cholesterol Screening within the Past 5 Years.

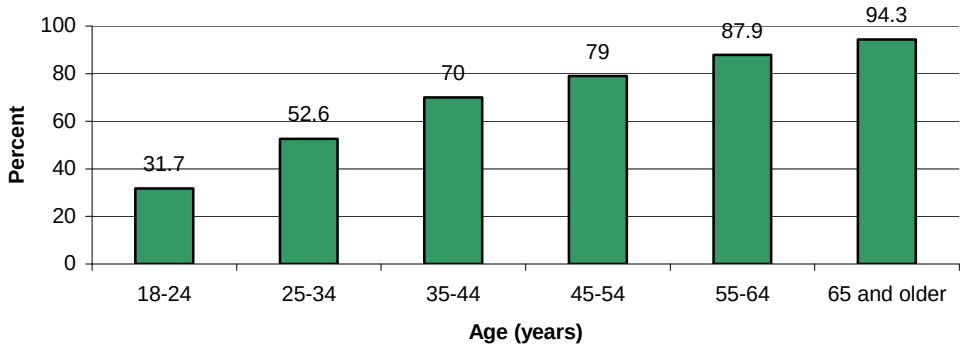


Figure 37. Percentage of Oklahomans by Race/Ethnicity Who Obtained a Cholesterol Screening Within the Past 5 Years.

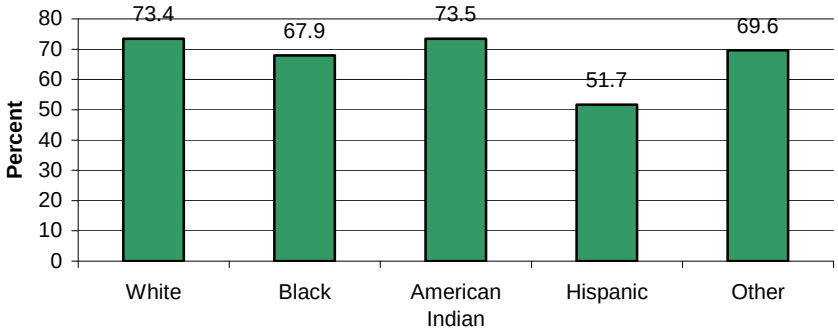


Table 9. Oklahomans' Cholesterol Screening Status by Education and Income.

	Screening Within 5 Years		Never Had Screening	
	Weighted %	95% CI	Weighted %	95% CI
Education				
Less than high school	53.8	49.2, 58.4	43.7	49.2, 58.4
High school graduate	67.1	64.2, 70.0	28.5	25.6, 31.4
Some college or technical school	73.6	70.9, 76.4	21.8	19.1, 24.5
College graduate	82.5	80.3, 84.7	12.9	11.0, 14.9
Household Income				
< $15,000	64.2	59.7, 68.7	31.6	27.1, 36.0
$15,000 to < $25,000	60.1	56.1, 64.1	35.2	31.1, 39.3
$25,000 to < $35,000	65.5	60.9, 70.2	30.8	26.2, 35.4
$35,000 to < $50,000	74.0	70.1, 77.8	21.6	17.8, 25.4
$50,000+	81.6	79.5, 83.8	14.1	12.1, 16.1

Immunizations

In the early 1900s, the top five leading causes of death included infectious diseases: influenza and pneumonia combined, tuberculosis, and diarrhea and enteritis combined.[23] In addition, infectious diseases such as measles and poliomyelitis resulted in co-morbidity, disability, or death for thousands of individuals.[24] The widespread use of vaccinations in the United States and around the world has resulted in few individuals suffering from these debilitating infectious diseases, though the diseases are still present in the world today.[24] The BRFSS survey inquires about vaccination status for three common infectious diseases: influenza, pneumonia, and hepatitis B. Influenza and pneumonia together comprise the 8th leading cause of death in the United States. These illnesses are easily preventable with appropriate vaccinations and good hygiene practices. The influenza (flu) vaccination is recommended yearly for certain high-risk populations, such as young children and adults aged 50 years and older.[25] A single dose of the pneumococcal vaccine is recommended for specific populations, such as young children and adults aged 65 years and older, American Indians, and people with certain chronic illnesses.[26] Hepatitis B is a viral disease of the liver that can lead to liver disease or liver cancer.[27] Hepatitis B can be prevented with a series of vaccinations and avoiding contact with contaminated bodily fluids. Hepatitis B vaccination (HBV) is recommended for all infants and for adults at risk for HBV infection.[27]

Influenza vaccination. BRFSS asked respondents if they had received the flu vaccine (either the shot or the nasal spray) within the past 12 months. More than 43% of all adults had been vaccinated against flu within the past year, with 99% having gotten the shot and less than 2% having gotten the nasal spray. There was a small but significant difference in the proportion of men and women who were immunized, with 41.4% of men and 45.3% of women having received the flu vaccine. Only 32.7% of Hispanics and 35.2% of Blacks had been vaccinated against flu compared to 44-45% of those from other racial/ethnic groups. Almost 50% of college graduates had been immunized compared to 40.4 - 41.9% of those with less education. The proportions of those receiving the flu vaccine were greater as age groups increased, with only 28% of the youngest adults and 76% of the oldest adults having been immunized within the past year (Figure 38). There were no differences by sex, education, or income in the proportions of adults aged 65 years and older who received the flu vaccine. However, contrary to Oklahoma's general adult population, Hispanics aged 65 years and older comprised the greatest proportion of the racial/ethnic groups who were immunized (Figure 39).

Figure 38. Oklahoma Adults Who Received the Flu Vaccine Within the Past Year by Age Group.

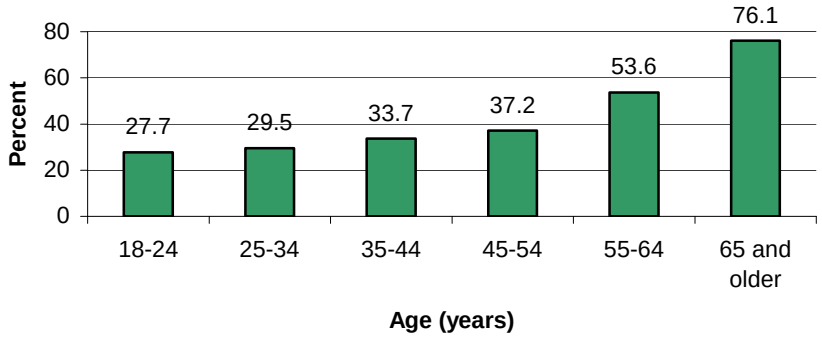
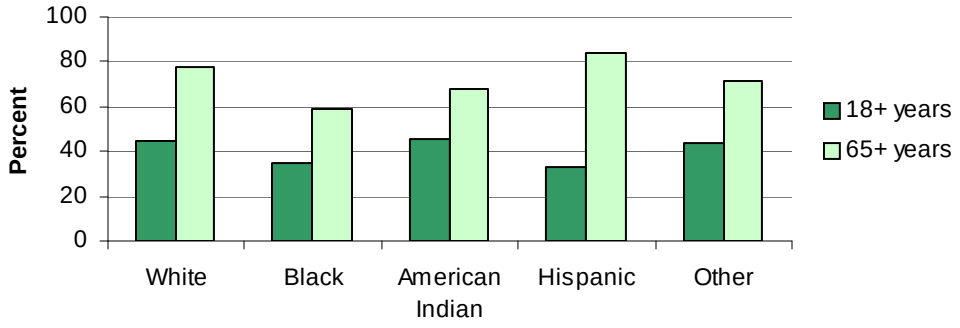
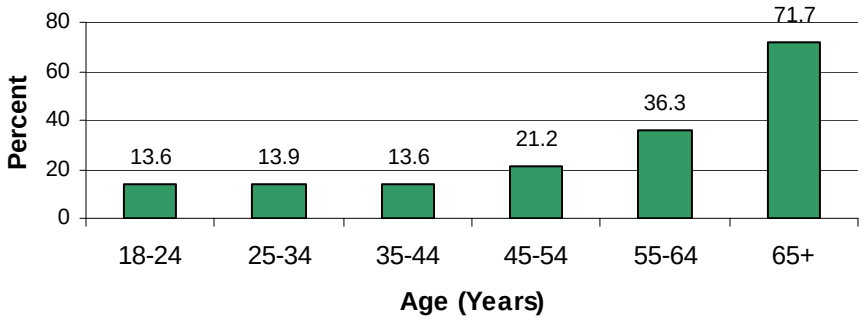


Figure 39. Race/Ethnicity and Age of Oklahoma Adults Who Received the Flu Vaccine.



Pneumonia vaccination. BRFSS interviewers asked respondents if they had ever received the pneumonia vaccine. Fewer than 30% of Oklahoma adults had ever received the pneumonia vaccine. However, almost 72% of adults aged 65 years and older had received the vaccine (Figure 40). With the exception of age, there were no demographic differences in the proportions of subpopulations that had been vaccinated.

Figure 40. Percentage of Oklahoman Adults Who Had Ever Been Vaccinated Against Pneumonia.



Hepatitis B vaccination. Respondents were asked if they had ever received HBV, which involves a series of three shots to provide sufficient immunity against Hepatitis B. Almost 37% of Oklahoma adults had received HBV. Having received HBV was less likely to have occurred as age increased (Figure 41), and was more common among those with higher education and income levels (Table 10). Racial differences were also evident in that a larger proportion of American Indians had been vaccinated against Hepatitis B than Whites (Table 10).

Figure 41. Proportion of Oklahomans by Age Group Who Had Been Vaccinated Against Hepatitis B.

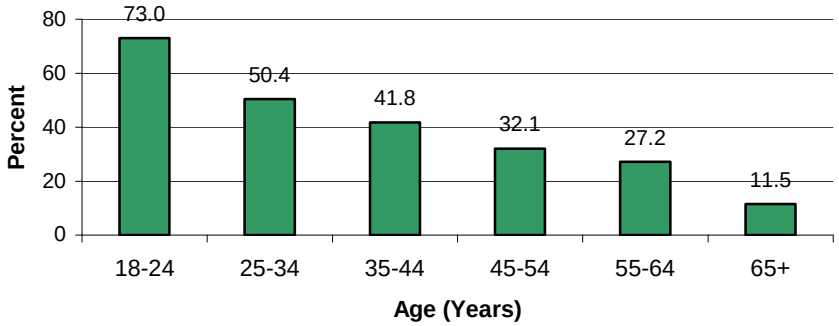


Table 10. Percentage of Oklahoma Adults Who Received Hepatitis B Vaccination.

	Weighted %	95% CI
Race/Ethnicity		
White non-Hispanic	35.3	33.5, 37.1
Black non-Hispanic	41.1	35.1, 47.1
American Indian	44.8	38.5, 51.1
Hispanic	33.9	27.2, 40.6
Other	42.2	35.1, 49.4
Education		
Less than high school	28.2	23.7, 32.7
High school graduate	30.2	27.3, 33.1
Some college or technical school	42.6	39.5, 45.6
College graduate	43.2	40.3, 46.1
Household Income		
< $15,000	33.4	28.6, 38.2
$15,000 to < $25,000	33.1	29.2, 37.0
$25,000 to < $35,000	35.7	30.9, 40.5
$35,000 to < $50,000	40.0	35.9, 44.1
$50,000+	40.9	38.2, 43.6

Respondents were also asked if they engaged in specific behaviors, such as taking street drugs with a needle or trading sex for money, that increase their risk for becoming infected with Hepatitis B. Only 5.3% of Oklahomans engaged in behaviors considered high risk for Hepatitis B transmission. Men and younger individuals more commonly engaged in risky behaviors, while college graduates and those in the highest income category less commonly engaged in risky behaviors (Table 11). Of those who engaged in high-risk behaviors, only 46.0% had received HBV. Because so few individuals had engaged in high-risk behaviors, further analyses of receipt of HBV among high-risk members of the various sub-groups produced unstable rates that are not presented.

Table 11. Percentage of Oklahomans Who Engaged in Behaviors That Are High-Risk for Hepatitis B Infection.

	Weighted %	95% CI
Sex		
Males	6.6	5.2, 8.1
Females	4.1	3.4, 4.8
Age (years)		
18 – 24	13.7	8.9, 18.4
25 – 34	7.2	5.0, 9.4
35 – 44	6.6	4.9, 8.2
45 – 54	3.9	2.8, 5.0
55 – 64	2.3	1.4, 3.2
65 and older	0.9	0.4, 1.4
Race/Ethnicity		
White	5.2	4.2, 6.1
Black	7.8	3.9, 11.6
American Indian	4.7	2.3, 7.1
Hispanic	4.4	1.2, 7.6
Other	6.3	2.6, 10.0
Education		
Less than high school	8.8	6.0, 11.6
High school graduate	5.8	4.2, 7.4
Some college or technical school	6.0	4.5, 7.5
College graduate	2.2	1.5, 2.9
Household Income		
< $15,000	11.5	8.5, 14.6
$15,000 to < $25,000	8.7	5.9, 11.4
$25,000 to < $35,000	5.9	3.5, 8.3
$35,000 to < $50,000	4.3	2.7, 6.0
$50,000+	2.5	1.5, 3.6

HIV Screening

More than one million people are living with HIV/AIDS in the U.S. today, and it is estimated that more than 55,000 new cases occur each year.[28] HIV/AIDS can lead to poor quality of life and, for more than ten thousand people each year, death.[28] Of those diagnosed with HIV/AIDS in 2006, more than 70% were males, more than half were Black, and almost 60% were aged 25-44 years.[28] Because approximately one-quarter of Americans living with HIV/AIDS are unaware that they have the condition,[28] diagnosing HIV/AIDS is important for treatment and preventing the transmission of the disease. The BRFSS survey asks individuals aged 18 to 64 years about ever having been tested for HIV, the location of the last test, and type of test.

In 2007, there were 4,521 individuals living with HIV or AIDS in Oklahoma (125 per 100,000 population).[29] Yet only 34.6% of Oklahoma adults aged 18 to 64 years had ever been tested for HIV in a manner separate from testing that occurs with a blood donation. Differences in having been tested were evident across all

demographic categories (Table 12). Though males represent a larger proportion of individuals with HIV/AIDS,[28] females were more likely than males to have been tested. Blacks were more likely than Whites and Hispanics to have been tested. Among the age categories, the largest proportion of individuals to have been tested was the 25-34 year age group, and the proportions gradually declined with each successive age group. Those with some post-secondary education were more likely to have been tested than both those less educated and those who graduated from college, and individuals of the lowest income group had a higher rate of testing than those in the highest income group.

Table 12. Oklahomans Aged 18-64 Years Who Had Ever Been Tested for HIV (n = 5,104).

	Weighted %	95% CI
Sex		
Males	32.2	29.6, 34.9
Females	37.0	34.8, 39.1
Age (years)		
18 – 24	35.4	29.1, 41.8
25 – 34	50.2	46.2, 54.2
35 – 44	41.1	37.7, 44.5
45 – 54	24.6	21.8, 27.3
55 – 64	17.4	15.1, 20.0
Race/Ethnicity		
White	32.6	30.6, 34.6
Black	48.5	42.0, 55.1
American Indian	38.3	31.9, 44.7
Hispanic	34.6	27.9, 41.3
Other	36.6	29.4, 43.9
Education		
Less than high school	32.7	27.3, 38.0
High school graduate	30.9	27.8, 34.0
Some college or technical school	40.7	37.4, 43.9
College graduate	33.3	30.5, 36.2
Household Income		
< $15,000	41.6	36.3, 47.0
$15,000 to < $25,000	38.2	33.5, 42.8
$25,000 to < $35,000	39.9	34.4, 45.4
$35,000 to < $50,000	34.1	30.0, 38.3
$50,000+	31.4	28.8, 34.0

While more than 34% of Oklahoma adults aged 18 to 64 years had ever been tested for HIV, few had been tested within the past 12 months. Of those who had been recently tested, only 15.2% had gotten a rapid HIV test whereby they received their results within a couple of hours. Individuals in the lowest income category were more likely to have received this type of test compared to those in the highest income category (25.6% versus 7.1%, respectively). There were no other demographic differences in the type of HIV test performed.

BRFSS interviewers asked respondents who indicated having ever been tested for HIV (n = 1,545) where their last test had been administered. A private doctor's or HMO office, hospital, and clinic were the most

commonly indicated locations for having an HIV test (Table 13). Females were more likely to have been tested at a private doctor's or HMO office compared to males (43.1% versus 26.1%, respectively), and males were more likely than females to have been tested at a hospital (26.6% versus 19.7%, respectively) or a correctional facility (3.6% versus 0.5%, respectively). Hispanics (35.7%) were more likely than Whites (20.5%) to have been tested in a clinic. Adults aged 55 to 64 years (33.3%) were more likely to have been tested in a hospital than those aged 18 to 24 years (17.4%) and those aged 25 to 34 years (20.7%). Adults with an annual household income of at least $50,000 (42.9%) were more likely to have been tested in a private doctor's or HMO office than those whose income was less than $15,000 (25.7%) and those whose income was $15,000 to $24,999 (28.5%).

Table 13. Location of Last HIV Test Administration of Oklahomans Who Had Ever Been Tested for HIV (n = 1,545).

	n	Weighted %	95% CI
Private doctor or HMO office	571	35.2	32.3, 38.1
Counseling and testing site	41	2.9	1.7, 4.0
Hospital	346	22.9	20.4, 25.5
Clinic	341	22.9	20.3, 25.6
Correctional facility	21	1.9	0.8, 3.1
Drug treatment facility	4	-	-
At home	38	2.2	1.4, 3.0
Somewhere else	164	11.5	9.4, 13.7
Missing	19	-	-

Emotional Support and Life Satisfaction

The BRFSS survey included two questions regarding emotional support and life satisfaction. Respondents were asked how often they got the emotional and social support that they needed, and how satisfied they were with their lives in general. Receiving support was categorized as 1) yes, which included the responses "usually" and "always," 2) sometimes, and 3) no, which included the responses "rarely" or "never." Life satisfaction was categorized as 1) satisfied, which included the responses "satisfied" and "very satisfied," and 2) dissatisfied, which included the responses "dissatisfied" and "very dissatisfied."

Almost 80% of Oklahoma adults were receiving the emotional and social support that they needed, while fewer than 9% were not receiving necessary support. Although there were no sex differences with respect to having received support, men (10.4%) were more likely than women (7.3%) to not have received sufficient support. Whites were more likely than all other racial/ethnic groups to have received support, and less likely than Hispanics and those classified as "Other" to have not received support (Figure 42). The percentage of people having received support increased with higher levels of educational attainment (Figure 43) and income (Table 14).

Figure 42. Receipt of Emotional Support by Race/Ethnicity Among Oklahoma Adults.

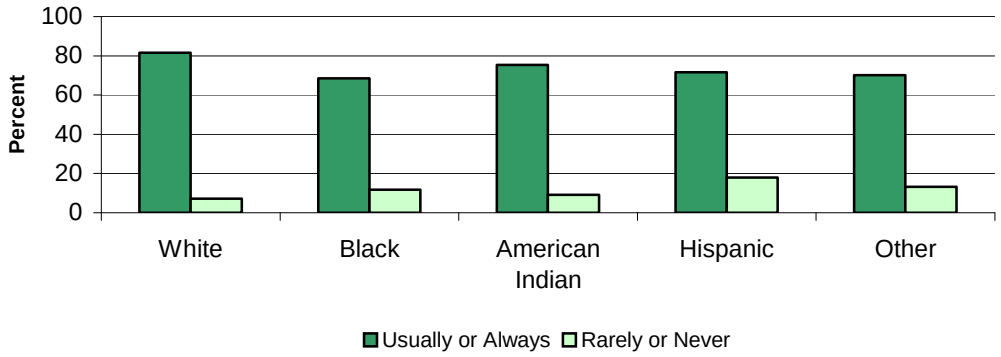


Figure 43. Receipt of Emotional Support by Educational Attainment Among Oklahoman Adults.

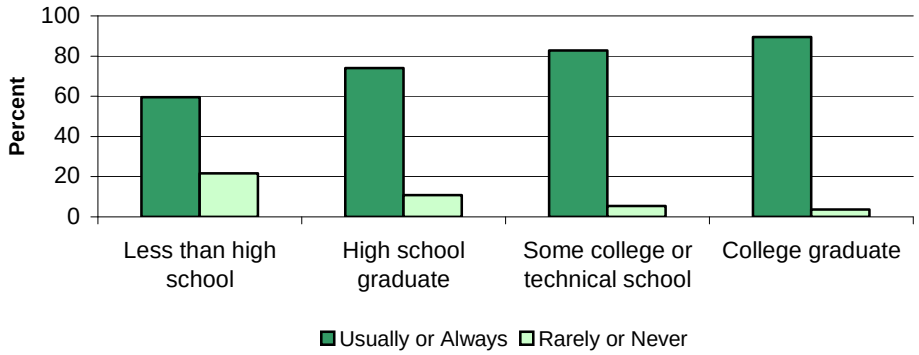


Table 14. Oklahomans' Receipt of Emotional Support by Income Level.

	Received Support		Did Not Receive Support	
	Weighted %	95% CI	Weighted %	95% CI
Household Income:				
< $15,000	62.4	58.1, 66.6	18.1	14.6, 21.6
$15,000 to < $25,000	66.1	62.2, 69.9	16.0	12.8, 19.2
$25,000 to < $35,000	77.2	73.3, 81.1	8.3	5.4, 11.3
$35,000 to < $50,000	83.4	80.8, 86.0	5.5	3.9, 7.2
$50,000+	89.2	87.7, 90.8	3.7	2.7, 4.7

More than 94% of Oklahomans were generally satisfied with their lives. There were some differences in life satisfaction according to certain demographic characteristics (Table 15). Those aged 65 years and older were more satisfied with their lives than those aged 35 to 64 years. Hispanics were more satisfied with their lives than Blacks and those in the "other" category, such as Asians and individuals with multicultural backgrounds. More individuals of higher education and income levels were satisfied with life compared to those in lower education and income categories.

Table 15. Percentage of Oklahomans by Demographic Group Who Were Satisfied with Life.

	Weighted %	95% CI
Age (years)		
18 – 24	96.4	94.1, 98.7
25 – 34	95.6	94.0, 97.2
35 – 44	93.9	92.3, 95.5
45 – 54	92.8	91.3, 94.4
55 – 64	92.2	90.6, 93.8
65 and older	96.5	95.7, 97.2
Race/Ethnicity		
White	94.9	94.1, 95.6
Black	91.3	88.4, 94.2
American Indian	94.9	92.7, 97.0
Hispanic	97.0	95.4, 98.6
Other	91.3	87.9, 94.7
Education		
Less than high school	91.3	89.1, 93.4
High school graduate	93.8	92.5, 95.0
Some college or technical school	94.9	93.7, 96.0
College graduate	97.1	96.3, 97.8
Household Income		
< $15,000	84.9	82.0, 87.8
$15,000 to < $25,000	91.8	90.0, 93.6
$25,000 to < $35,000	94.3	92.2, 96.4
$35,000 to < $50,000	97.1	96.0, 98.3
$50,000+	97.5	96.7, 98.

Limitations

There are a number of limitations to the BRFSS data included in this report. Households that do not possess a landline telephone service, so-called cell phone only households, are excluded from the BRFSS sampling process. These cell phone only households have been shown to be of lower socioeconomic status, a group with higher risks for adverse health conditions. Individuals living in these households may have behavior patterns and health outcomes that differ from individuals residing in landline phone households. This suggests that the behavioral risks and health statuses reported in this document likely underestimate the true risks and outcomes of the Oklahoma adult population. In addition, self-reported data, like that collected in BRFSS, tend to undervalue health risk behaviors because respondents are less likely to report conduct that is illegal or that is deemed socially unacceptable in the broader society. Causation cannot be determined from these data. BRFSS data are observational and are collected at a single point in time. Evident differences between any two groups do not imply that the observed differences are caused by the single characteristic that separates the two groups. It is possible and likely that any observed differences are caused by a multiplicity of factors. Prevalence of health conditions may vary from one group to the next due to risk variation by age, education, race and ethnicity, income, and other factors, as well as due to any interaction effects afforded by a combination of these factors.

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Appendix A. Number of Missing Values for Each Variable

Variable	Missing Observations	
	n	%
Demographic		
Sex	0	0.0
Age group	0	0.0
Race/ethnicity	29	0.4
Marital status	17	0.2
Education	18	0.2
Employment status	9	0.1
Annual household income	989	13.3
Health-related Quality of Life		
Self-rated health status	56	0.8
Poor physical health days	198	2.7
Poor mental health days	146	2.0
Days of limited activity due to poor physical and/or mental health	3601	48.3
Disability		
Limited in activities because of physical, mental, or emotional problems	98	1.3
Have health problem that requires use of special equipment	71	1.0
Access to Health Care		
Health care coverage	21	0.3
Personal health care provider	12	0.2
Unable to visit doctor because could not afford cost	16	0.2
Time since last routine medical exam	249	3.3
Burden of Disease		
Been told by health professional that have had heart attack	53	0.7
Been told by health professional that have angina/CHD	79	1.1
Been told by health professional that have had stroke	24	0.3
Been told by health professional that have diabetes	3	0.0
Obesity – BMI	322	4.3
Been told by health professional that have high blood pressure	22	0.3
Been told by health professional that have high cholesterol[a]	54	0.9
Been told by health professional that have arthritis	118	1.6
Experienced joint pain in past 30 days	95	1.3
Limitations to usual activities due to arthritis or joint pain[b]	30	0.8
Currently have asthma	59	0.8
Had diarrhea within past 30 days	351	4.7
Visited health professional for diarrhea[c]	1	0.08
Provided stool sample for testing[d]	1	0.4
Health Behaviors/Modifiable Risk Factors		
Smoking status	26	0.3
Tried to quit smoking[e]	3	0.2
Fruit and vegetable consumption	152	2.0
Sufficiently physically active	602	8.1

Engaged in vigorous physical activity	398	5.3
Engaged in leisure-time physical activity during past 30 days	12	0.2
Drank alcohol at least once in past 30 days	25	0.3
Heavy drinking status	150	2.0
Binge drinking status	152	2.0
Cholesterol checked within past 5 years	318	4.3
Flu vaccine within past year	19	0.3
Ever had pneumococcal vaccine	482	6.5
Ever had hepatitis B vaccine	968	13.0
Engaged in behaviors that are high-risk for hepatitis B	42	0.6
Ever been tested for HIV (aged 18-64 years only)	304	6.0
Location of last HIV test[f]	19	1.2
Was HIV test a rapid test	1545	4.5
Emotional Support and Life Satisfaction		
Emotional support	373	5.0
Satisfaction with life	342	4.6

[a]Number of missing observations out of the 6,113 respondents who had their cholesterol checked. [b]Number of missing observations out of the 3,987 respondents who had joint pain that began more than 3 months ago or had been diagnosed with some form of arthritis. [c]Number of missing observations out of the 1,292 respondents who had diarrhea in the past 30 days. [a]Number of missing observations out of the 226 respondents who visited the doctor regarding a bout of diarrhea. [e]Number of missing observations out of the 1,693 respondents who were current smokers. [f]Number of missing observations out of the 1,547 respondents who had an HIV test.