Chronic Disease in Oklahoma Data Book

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CHRONIC DISEASE IN OKLAHOMA DATA BOOK

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Introduction

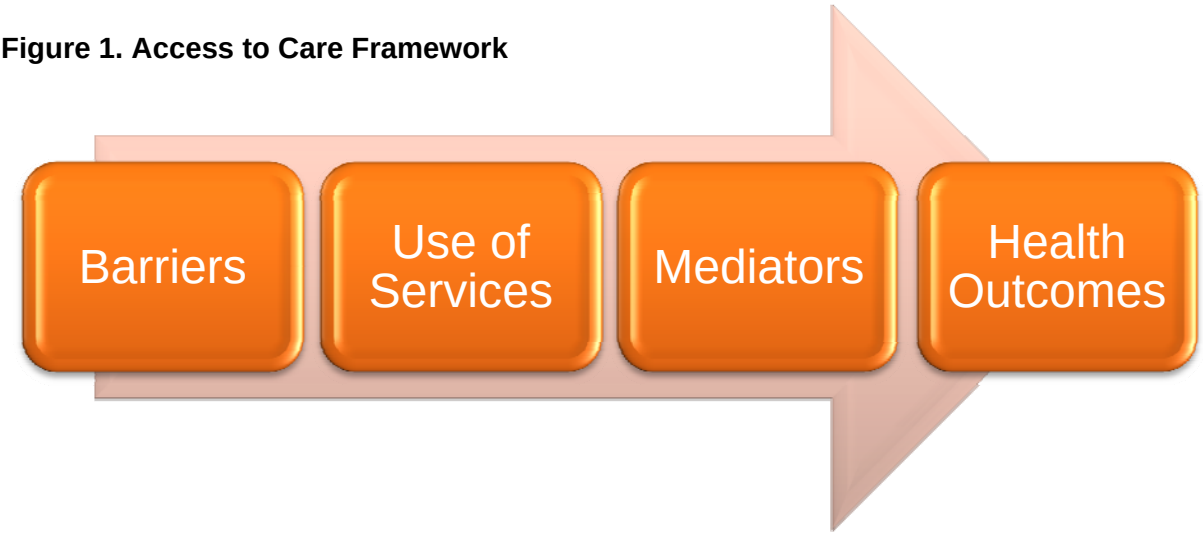
Chronic disease is the most common and costly of all health problems. A person's risk of developing a chronic disease such as asthma, diabetes, cancer, heart disease or stroke can be greatly reduced by avoiding tobacco use/exposure, being physically active and eating well. However, individual behavior is not enough. Access to quality affordable health care (including screening, guideline adherence and disease maintenance) saves lives, reduces disability, prevents hospitalizations and lowers medical costs.

This report provides information and data about chronic disease in the context of access to care as defined by the *Oklahoma Health Improvement Plan* (OHIP). The statewide coalition's vision for access to care to address deficiencies includes reducing personal and financial barriers to care, addressing structural issues, improving community and clinical linkages, healthful decisions, health systems interventions and the use of data.

ACCESS TO CARE FRAMEWORK

The following framework (Figure 1) was adapted from the Institute of Medicine's report, *Access to Health Care in* America. The framework sets forth indicators to systematically monitor conditions or indicators for obtaining care and improving health outcomes, particularly among vulnerable groups.

Figure 1. Access to Care Framework



For the purposes of this framework, access to care is defined as the timely use of health care, community services, and self-management to achieve the best possible health outcomes. Emphasis is placed on reducing the effect of chronic diseases, preventing or delaying complications, prolonging life and reducing deaths through timely and appropriate care and self-management. While adverse consequences can occur with or without regular medical care, they are more common when regular care is absent. Health care and self-management can

contribute to improved functioning and minimized discomfort for individuals with chronic disease. The Access to Care framework (Table 1) details indicators in several areas, which combined, can ensure people have the opportunity for good health outcomes. If opportunities are systematically denied to groups because of barriers to quality care, then there is an access problem that needs to be addressed. Emphasis is placed on reducing the effects of chronic diseases, preventing or delaying complications, prolonging life and reducing deaths through timely and appropriate care, self-management and supportive environments.

Table 1. Details for the Access to Care Framework

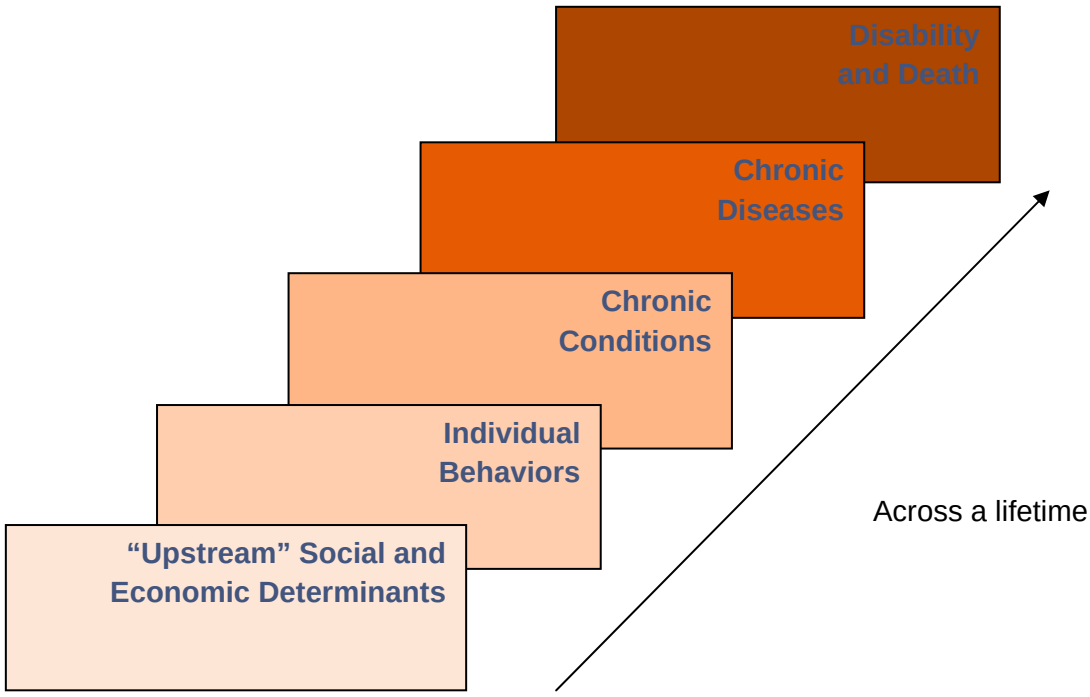
BARRIERS	USE OF SERVICES	MEDIATORS	HEALTH OUTCOMES
Structural • Availability • Transportation • Accessibility **Financial** • Insurance Coverage • Reimbursement • Out-of-Pocket **Personal** • Acceptability • Cultural • Language/Health Literacy • Attitudes • Education/Income	**Visits/Procedures** • Telehealth and Telemedicine • Community/Rural Health Clinics **Population Based** • Screenings • Preventive Services • Referrals	**Decision Supports** • Appropriateness • Cost Effectiveness • Efficacy of Treatment • Clinical Guidelines and Standards of Care • Team-Based Care **Quality of Care** • Electronic Health Record/Electronic Medical Record • Systems: Patient-Centered Medical Homes, Health Access Networks, Accountable Care & Coordinated Care Organizations **Patient Adherence** • Patient Education • Self-Management • Care/Case Coordination	**Patient** • Mortality • Morbidity • Well-Being • Functioning **Population** • Mortality • Morbidity • Well-Being • Functioning • Equity

Source: Modified from Institute of Medicine. Committee on Monitoring Access to Personal Health Care Services. Access to health care in America / Committee on Monitoring Access to Personal Health Care Services, Institute of Medicine ; Michael Millman, editor.

Organizations working together can ensure that all Oklahomans have access to appropriate and cost-effective healthcare focused on promoting healthy behaviors, wellness, prevention and reducing risk factors for chronic disease. Overall health improvement is grounded in improving community and environmental conditions that support healthy lifestyles and behaviors and improving the social conditions that impact communities and individuals.

Healthcare is often accessed for the treatment of chronic disease conditions. These chronic diseases are not self-limiting but are ongoing over a long period of time. Negative consequences of chronic disease are more common when regular medical care is absent. Chronic conditions, disease, functional impairment, co-occurrence of other chronic conditions and prolonged disease course, span across a continuum (Figure 2). Biology, environment, and social factors, interact during an entire lifetime to influence health and disease in later life. Interventions focused on preventing or delaying chronic diseases across the continuum must be implemented with a long-term perspective and sustained effort. Also, actionable data must be presented for decision-making that covers the continuum of chronic disease.

Figure 2. Chronic Disease Continuum



Source: Remington PI, Brownson RC, and Wegner MV, Chronic Disease Epidemiology and Control, 3rd Edition, 2010, P. 5.

It is clear that improving the health of the population will take a comprehensive and systematic approach.

DATA FOR DECISION MAKING

Not every component of access to care will be addressed by the data book. Different goals require different approaches to data collection – tradeoffs are necessary between timeliness of reporting and level of detail and between achieving representativeness of an entire population and reporting sentinel cases. The data presented focuses on population health measures of chronic disease. Excluded are data or indicators that are best measured or assessed at the local level; for example, data on transportation barriers.

Data for chronic disease prevalence, related risk behaviors, hospitalizations, hospitalization costs and related deaths are presented along with other indicators of access to care. Several Oklahoma State Department of Health (OSDH) data sources were used to develop the *Data Book*, including Vital Statistics (death certificates), Hospital Discharge Data, Oklahoma Central Cancer Registry, Behavioral Risk Factor Surveillance System (BRFSS) and Youth Risk Behavior Survey (YRBS) available on Oklahoma Statistics on Health Available for Everyone (OK2SHARE) at http://www.health.ok.gov/ok2share. Additionally, the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) Data Warehouse at http://datawarehouse.hrsa.gov/ and Centers for Disease Control and Prevention (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) at http://wonder.cdc.gov/.

The *MONAHRQ® Data Guide for Preventable Hospitalizations Focusing on Chronic Disease Conditions* and *Evidence-Based Strategies and Preventive Services to Reduce the Burden of Chronic Disease* are additional publications that are available to utilize with the *Chronic Disease in Oklahoma Data Book*. The MONAHRQ® data guide provides instructions to use the MONAHRQ® interactive web-based system to generate county and state rates of potentially avoidable hospital stays, indicators of potential problems with access to quality care. Data maps and tables for chronic diseases are included in the MONAHRQ® Data Guide. The *Evidence-Based Strategies and Preventive Services to Reduce the Burden of Chronic Disease* is a guide that contains highly researched community-based strategies, clinical practice guidelines, and innovative practices proven to improve population health. The evidence-based strategies guide can assists communities and health systems with their decision-making to improve population health through evidence-based action using effective programs. Both publications are available by contacting the Chronic Disease Service at 405-271-4072.

BARRIERS

Known barriers make gaining access to the healthcare system and community care difficult. These barriers can create inequitable health outcomes and often impact certain populations (ex: rural, minority, lower income) more frequently than others. Three major types of barriers to the access to care (structural, financial, and personal/cultural) interact in complicated ways.

Structural barriers impede access to care. These barriers relate to the number, type, concentration, location, or organizational structure of healthcare providers. People who do not have a personal physician or healthcare provider most often rely upon local emergency rooms (ER) and hospital outpatient clinics for their care. Preventive care and continuity of care for a medical problem most often is missing from care delivered in the ER or outpatient setting. Reliable, affordable transportation may be a barrier to accessing care. This barrier can be best understood at the local level, however, and therefore is not included in this publication.

Financial barriers restrict access to care. These barriers may inhibit the ability of an individual or group of individuals to pay for needed medical services. Individuals may delay seeking care because of the costs of services. The rise in the cost of healthcare has far outpaced the rise in income. The result is that it is virtually infeasible for most people to pay directly for any sizable portion of their medical bills. Co-payments, eligibility, benefits limits, and underinsurance can be barriers for those who have insurance coverage. Financial barriers may discourage healthcare providers from providing certain services because the cost of providing a service is more than the reimbursement.

BARRIERS

Structural
- Availability
- Transportation
- Accessibility

Financial
- Insurance Coverage
- Reimbursement
- Out-of-Pocket

Personal
- Acceptability
- Cultural
- Language/Health Literacy
- Attitudes
- Education/Income

Personal barriers may be related to culture or ability and may inhibit people from seeking needed care. These barriers may also inhibit people from following recommended actions after needed treatment is obtained. Spoken and written language may present a barrier to obtaining good health outcomes. Health literacy barriers can affect ability to locate health care providers, complete medical forms, follow treatment, and self-manage chronic diseases. The ability to pay for medical care and ongoing treatment for chronic disease is a barrier for many. Modification to structural and/or financial barriers can compensate for some personal barriers. However, cultural barriers may stem from the healthcare providers beliefs and behaviors or from the community. The culture of socially accepted behaviors creates an environment that influences the population's health. Some community cultural barriers, such as tobacco use and obesity, will continue to increase the need for more health care. Without addressing the population's health, the ever-growing need for care will negatively impact our ability to remove barriers to care.

STRUCTURAL BARRIERS

The statewide data available on structural barriers to care access focus on the availability of primary health care.

The availability of primary care providers is important to improve the population's health. The Health Resources and Services Administration (HRSA) is the primary federal agency for improving access to health care services for people who are uninsured, isolated, or medically vulnerable. HRSA provides leadership, financial support, and training to health care providers who in turn provide health care to uninsured people, people living with HIV/AIDS, and pregnant women, mothers, and children. HRSA identifies and designates medically underserved areas and health professional shortage areas which are used for the following programs: National Health Service Corps, federally qualified health center, rural health clinic, Medicare rural provider enhanced payment, National Health Service Corps Scholarship and loan repayment programs.

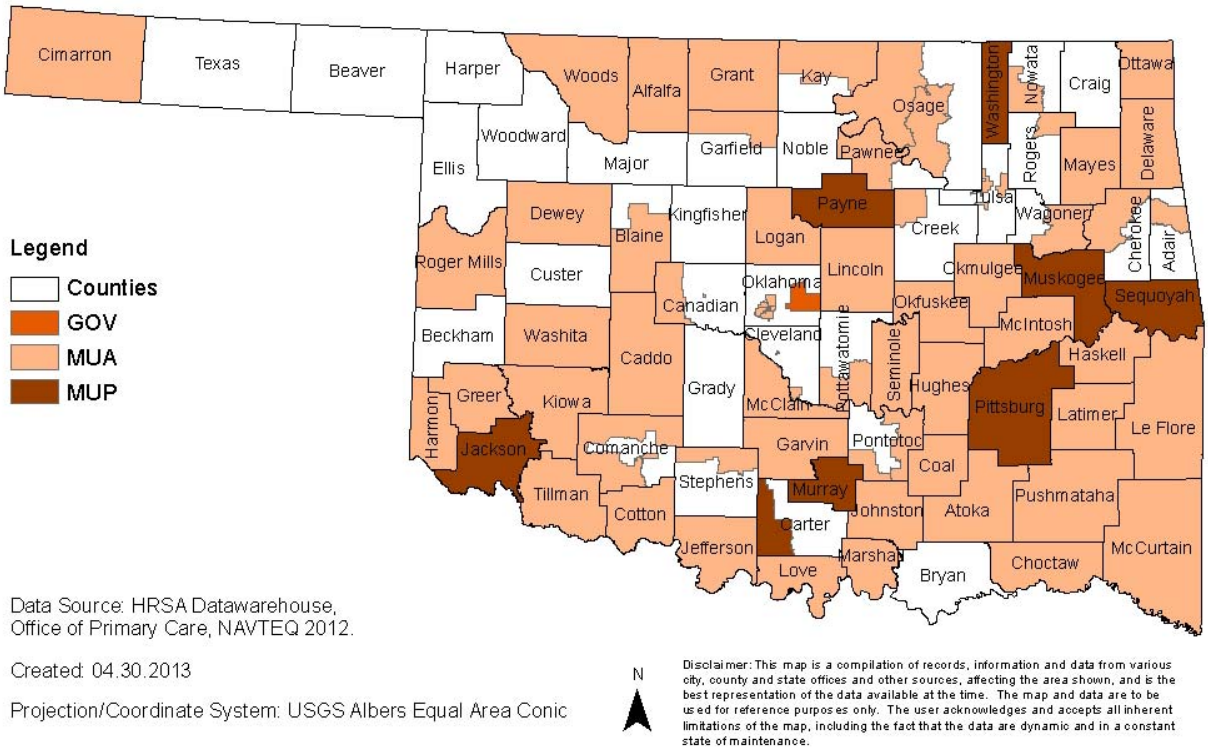
The Office of Primary Care, OSDH, administers the HRSA surveys with the results used for provider shortage area designations, which in turn are used to prioritize programming and resources.

- Areas where healthcare is hard to find are known as Health Professional Shortage Areas (HPSAs). This designation is a prerequisite for participate in a number of federal programs.

- HPSAs may be geographic (a county or service area), demographic (low income population), or institutional (comprehensive health center, federally qualified health center or other public facility). Members of federally recognized American Indian tribes are automatically designated as population group level HPSAs.

The following maps and bullets provide information on shortages of personal health services in Oklahoma.

Medically Underserved Areas and Populations by Type



Data Source: HRSA Datawarehouse, Office of Primary Care, NAVTEQ 2012.

Created: 04.30.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

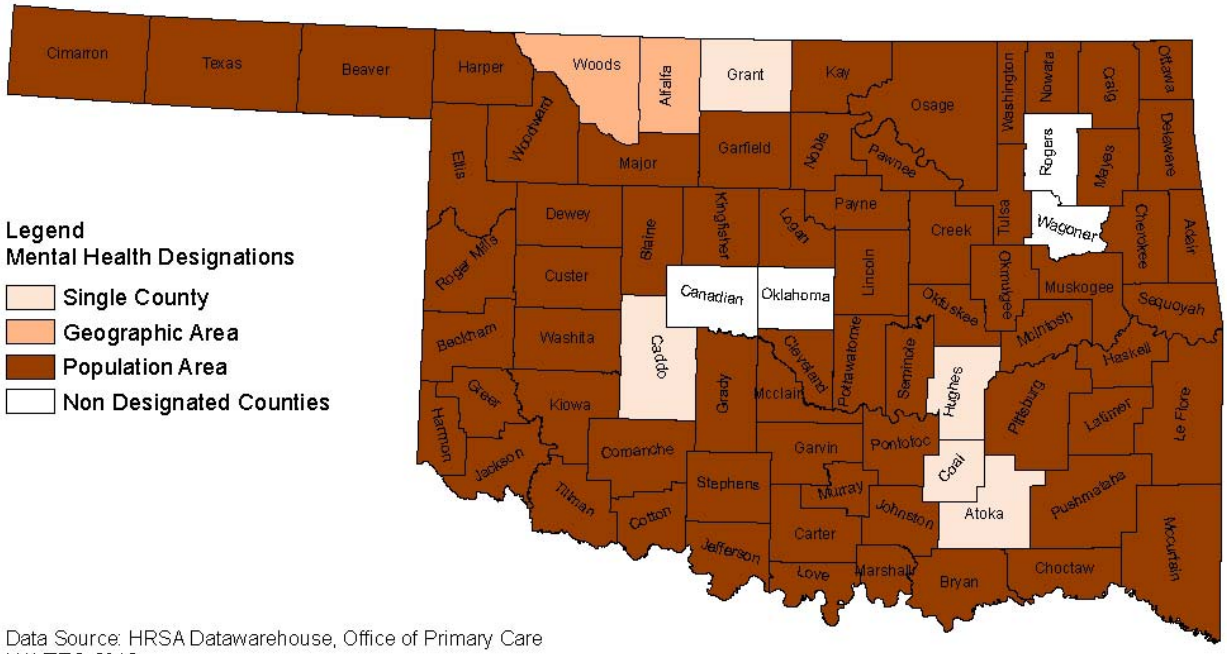
- Medically Underserved Areas and Populations (MUA/MUP) are designated as having too few primary care providers, high infant mortality, high poverty and/or high elderly population.

- Oklahoma has 67 MUAs that include a county or a group of adjoining counties, a group of county or civil divisions, or a group of urban census tracts in which residents have a shortage of personal health services.

- Oklahoma has 8 MUPs that include groups of persons who face economic, cultural, or language barriers to health care.

- Oklahoma has one Governor designated MUA (GOV) that is a special area because of unusual local conditions, such as language or poverty issues, that are barriers to access to or availability of personal health services. This designation is a way to identify extreme local issues that may not show up at a larger, county-level scale.

Primary Care Health Professional Shortage Areas by Type



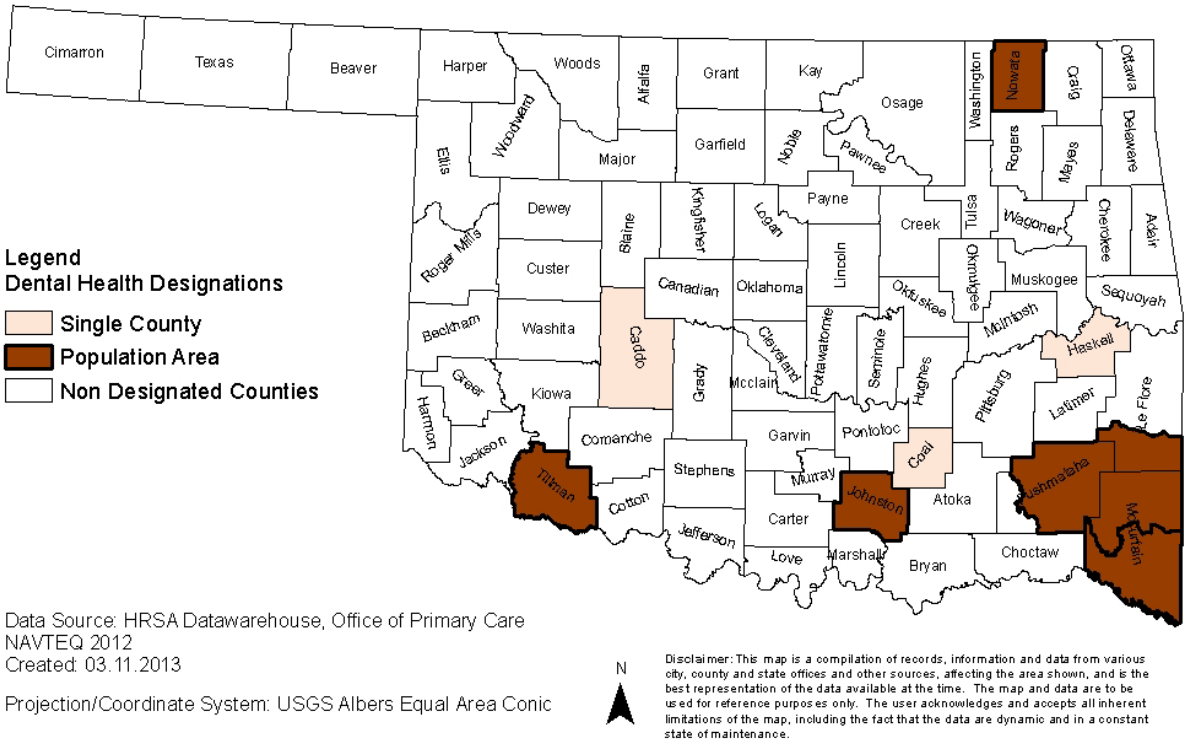
Data Source: HRSA Datawarehouse, Office of Primary Care
NAVTEQ 2012
Created: 03.11.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Primary Care Healthcare Professional Service Areas (HPSAs) are designated using several criteria, including population-to-clinician ratios. This ratio is usually 3,500 residents to every 1 primary care health professional.
- These designations indicate a shortage of primary care health professionals.
- Primary care clinicians are: non-Federal doctors of medicine (M.D.) and doctors of osteopathy (D.O.) providing direct patient care that practice principally in one of the four primary care specialties (general or family practice, general internal medicine, pediatrics, or obstetrics and gynecology).
- Only 4 counties in Oklahoma are not designated as Primary Care HPSAs.

Dental Health Professional Shortage Areas by Type



- Dental Health Professional Shortage Areas (HPSAs) signify a shortage of oral health professionals. Oklahoma has 3 single county areas and 5 population groups designated as Dental HPSAs.

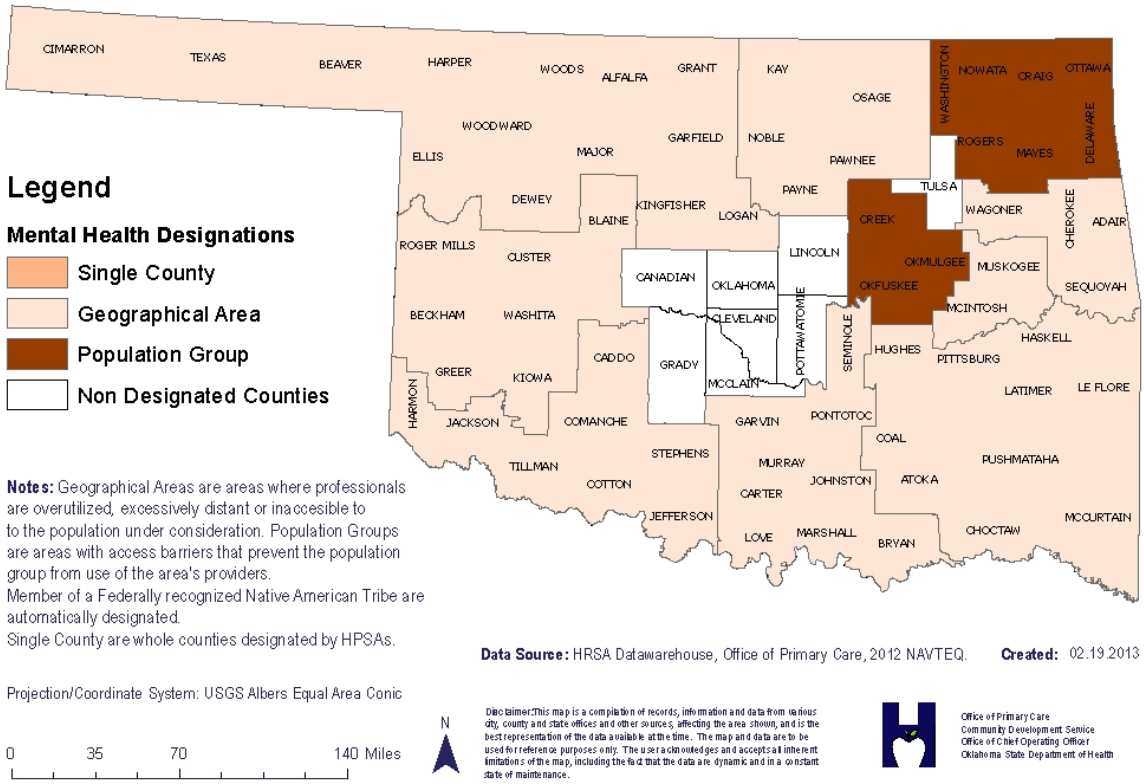
- Dental HPSAs are designated using several criteria, including population-to-clinician ratios. This ratio is usually 5,000 residents to 1 dental professional.
    - Dental professionals are: all non-Federal dentists providing patient care, except in those areas where it is shown that specialists (those dentists not in general practice or periodontics) are serving a larger area and are not addressing the general dental care needs of the area under consideration.

- 2 out of 5 (58%) adult Oklahomans did not have their teeth cleaned in the past year.[1]

- 1 out of 4 (27%) Oklahomans over 64 years of age have complete tooth loss.[1]

1. CDC BRFSS, 2008, Chronic Disease Indicators. Accessed at http://apps.nccd.cdc.gov/cdi/ on 4/16/2013.

Mental Health Professional Shortage Areas



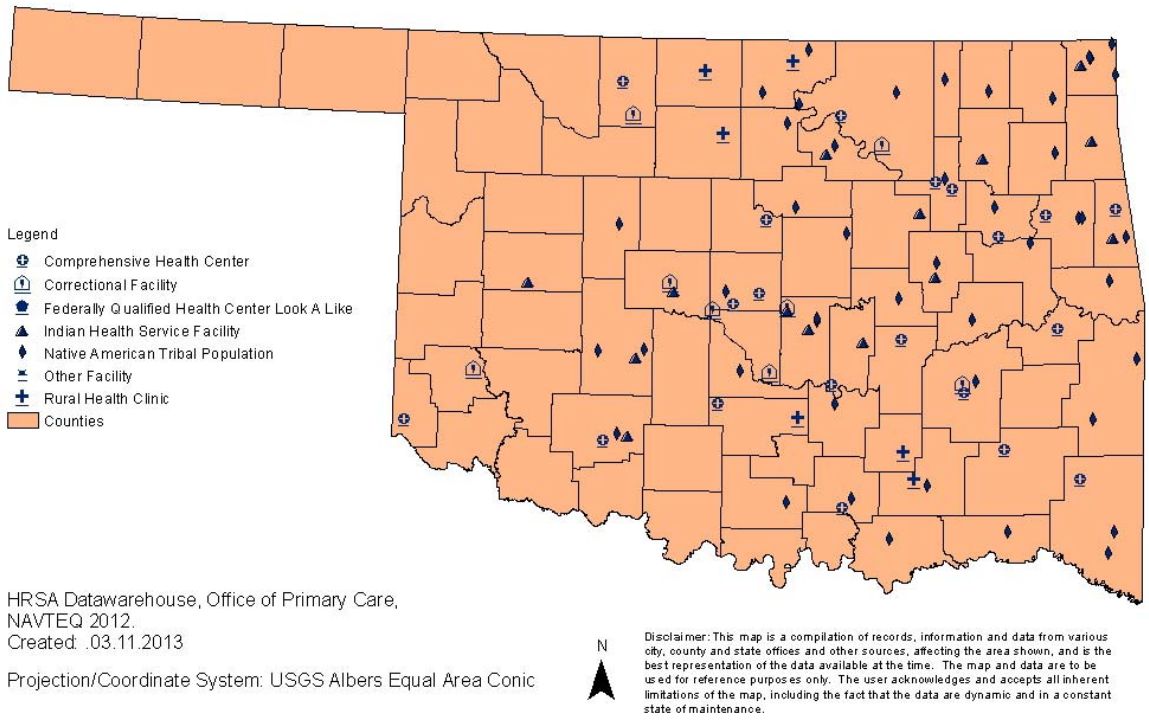
- Mental Health Professional Shortage Areas are another form of HPSA representing a shortage of mental health professionals.

- Mental Health HPSAs are designated using several criteria, including population-to-clinician ratios. This ratio is usually 30,000 residents to 1 mental health professional.
    - Mental health professionals are: non-Federal mental health professionals providing mental health patient care (direct or other, including consultation and supervision) in ambulatory or other short-term care settings to residents of the area. Mental health professionals include psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.

- Oklahoma has 59 counties designated as geographic area HPSAs and 10 population group HPSAs for mental health professionals, but no single county designations.

- Only 8 counties in Oklahoma are not federally designated Mental Health HPSAs.

Federally Funded Primary Care Providers by Type and Location



- The purpose of the Primary Care Health Professional Shortage Area (HPSA) designation is to:
    - Assure that services are available and accessible to underserved populations.
    - Assist in the retention and recruitment of healthcare providers in designated areas.
    - Assist in the determination of unusually high health needs.

- Communities and organizations across Oklahoma have brought healthcare services into underserved areas and to underserved populations.

- About 1 out of 5 Oklahomans (22%) reported not having a healthcare provider.[1]
    - Nearly 2 out of 5 Oklahomans (39%) between 18 and 34 year olds did not have a healthcare provider.

1. OSDH, BRFSS, 2008 and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/2013.

FINANCIAL BARRIERS

Financial barriers to access to care include insurance coverage, provider reimbursement rates, out-of-pocket expense for those who are insured, and cost of some treatments and care.

In the United States

- Among Medicare patients, nearly one-third (32%) spent more than $100 per month out-of-pocket for prescription medications.[1]

- Among Medicare patients with three or more chronic conditions, one out of three (35%) took less medication than directed due to the cost of the prescriptions.[1]

In Oklahoma

- More than one out of four (27%) Oklahomans aged 18-64 years do not have any kind of healthcare coverage.[2]
    - 1 out of 2 (50%) Oklahomans 18-64 years of age with incomes of less than $25,000 do not have any kind of healthcare coverage.
    - For those Oklahomans 18-64 years of age with incomes of $50,000 or more, only 8% do not have any kind of healthcare coverage.

- The cost of care is a barrier to seeing a healthcare professional.[3]
    - 1 out of 4 Oklahomans (25%) aged 18-34 years did not get needed medical care because of the cost.
    - Nearly 1 out of 5 Oklahomans (19%) aged 35-64 years did not get needed medical care because of the cost.

- 2 out of 10 Oklahomans (20%) rated their health status as fair or poor health.[2]
    - Fewer than 5 out of 10 Oklahomans (47%) with an income of less than $15,000 rated their health as fair or poor.
    - Fewer than 3 out of 10 Oklahomans (30%) with an income of $15,000 - $24,999 rated their health as fair or poor.
    - Fewer than 1 out of 10 Oklahomans (8%) with an income of $50,000 or more had a self-rated health status as fair or poor.

- 2 out of 5 Oklahomans (40%) who rated their health as fair or poor and had income of less than $25,000 delayed seeing a healthcare professional during the past year because of the cost.[4]

1. IB Wilson, C Schoen, P Neuman, et al. Physician-Patient Communication about Prescription Medication Nonadherence. A 50-state Study of America's Seniors. J Gen Intern Med. 2007 January; 22(1): 6–12. Available online at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1824770/ .
2. OSDH, BRFSS, 2008 and 2009. Accessed at http://www.health.ok.gov/ok2share on 04/11/2013.
3. CDC BRFSS, 2011, Prevalence and Trends Data, Accessed at http://apps.nccd.cdc.gov/brfss/ on 4/16/2013.
4. OSDH, BRFSS, 2005-2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/2013.

PERSONAL BARRIERS

There are systematic differences in the occurrence of chronic disease, the use of healthcare, and disease outcome among groups within the population. Population characteristics can be useful in determining the best fit for campaigns, outreach, and other engagement efforts. Another essential element to improve population health and to increase access to care is the decrease or delay in the need for chronic care to reduce the demand for care. The culture of socially accepted behaviors creates an environment that influences the population's health. Oklahoma's culture includes tobacco use, limited physical activity, and poor nutrition. Patterns for health behaviors start early in life.

In Oklahoma

- More than 1 out of 5 (22%) adults in Oklahoma have been told that they have a form of depression. [1]
    - More than 1 out of 4 (28%) Oklahoman adults with less than a high-school education have been told they have a form of depression.

- Among Oklahoma adults making less than $15,000 a year, about 1 out of 2 (51%) are limited in some activities because of physical, mental, or emotional problems. [1]

- More than 1 out of 5 (21%) Oklahomans aged 65 and over have a health problem that requires the use of special equipment.[1]

- Nearly 9 out of 10 (86%) Oklahomans 25 years and older) graduated from high school.[2]

- 1 out of 6 (16%) Oklahomans live below the poverty level.[2]

- About 1 out of 10 (9%) Oklahomans speak a language other than English at home.[2]

- 1 out of 20 (5%) Oklahomans are born outside of the US.[2]

- 1 out of 6 (16%) Oklahomans are 62 years and older. The percentage is higher in some counties:[3]
    - McIntosh 27%, Cimarron 25%, Delaware 25%, Grant 25%, Alfalfa 24%, Dewey 24%, Marshall 24%, Pushmataha 24%, Ellis 23%,Jefferson 23%, Major 23%, Choctaw 22%, Coal 22%, Kiowa 22%, Murray 22%, Nowata 22%, and Roger Mills 22%

- More than 7 out of 10 (72%) Oklahomans report their race as White. The percentage is higher in some counties:[3]
    - Ellis 94%, Grant 93%, Major 91%, Roger Mills 90%, Alfalfa 89%, Dewey 89%, Woods 88%, Washita 88%, Harper 87%, Woodward 87%, Grady 86%,

Lincoln 86%, Cimarron 85%, Kingfisher 85%, McClain 85%, and Stephens 85%

- 1 out of 15 (7%) Oklahomans report their race as Black. The percentage is higher in some counties:[3]
    - Comanche County 18%, Oklahoma 15%, Choctaw 11%, Muskogee 11%, Osage 11%, Tulsa 11%, Logan 9%, McCurtain 9%, Okmulgee 9%, Jackson 8%, Carter 7%, Greer 7%, and Harmon 7%

- 1 out of 10 (9%) Oklahomans report their race as American Indian/Alaska Native. The percentage is higher in some counties:[3]
    - Adair 43%, Cherokee 34%, Caddo 25%, Delaware 22%, Mayes 21%, Sequoyah 21%, Craig 20%, Latimer 20%, Okfuskee 20%, McIntosh 19%, Nowata 19%, and Ottawa 19%

- 1 out of 50 (2%) of Oklahomans report their race as Asian. The percentage is higher in some counties:[3]
    - Cleveland 4%, Payne 4%, Oklahoma 3%, Comanche 2%, Texas 2%, and Tulsa 2%

- 1 out of 10 (9%) Oklahomans report their ethnicity as Hispanic or Latino. The percentage is higher in some counties:[3]
    - Harmon 26%, Blaine 24%, Tillman 22%, Cimarron 21%, Jackson 21%, and Beaver 20%

- Nearly 1 out of 15 (6%) of Oklahoma report being of two or more races. The percentage is higher in some counties:[3]
    - Adair 11%, Cherokee 9%, Craig 9%, Nowata 9%, and Sequoyah 9%

- Nearly 1 in 4 (24%) of adults in Oklahoma are smokers.
    - The percent of smokers has decreased in Oklahoma since 2001.[4]
    - Oklahoma is among a group of 7 states that have the highest percent of adults who are smokers.[5]

1. CDC, BRFSS, Prevalence and Trends Data, Oklahoma, 2011. Accessed at http://apps.nccd.cdc.gov/brfss/index.asp on 4/19/2013.
2. US Census, State & County QuickFact. Accessed at http://quickfacts.census.gov/qfd/states/40000.html on 04/19/2013.
3. http://factfinder2.census.gov
4. CDC, BRFSS, Prevalence and Trends Data, Oklahoma, Accessed at http://apps.nccd.cdc.gov/brfss/index.asp on 4/19/2013.
5. http://www.cdc.gov/VitalSigns/AdultSmoking/index.html#StateInfo

OBESITY

Obesity is a major preventable cause of death in the United States. Individuals with a body mass index (BMI) of 30 or higher are considered obese. Obesity-related conditions include heart disease, stroke, type 2 diabetes, and some types of cancer.[1]

In the United States

- Medical care costs of obesity totaled about $147 billion, in 2008 dollars.[2]
- Blacks are the most likely to be obese (50%) as compared Hispanics (40%) and Whites (34%).[3]
- About 12.5 million children (17%) aged 2 – 19 years are obese.[4]

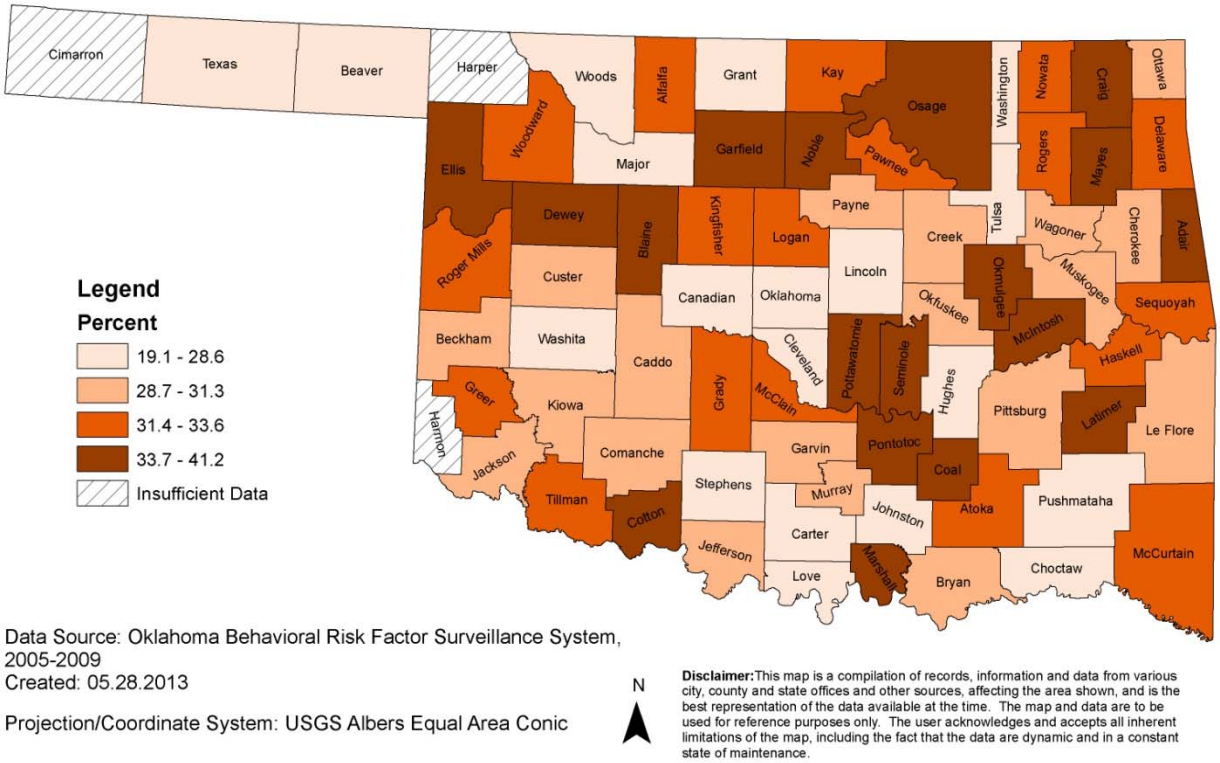
In Oklahoma

- Percent of adult obesity by educational level: less than high school (30%), high school (31%), some college (31%), and college (25%).[5]
- Percent of the population who are obese by race and ethnicity are: American Indian/Alaska Native (38%), Black (35%), Multi-racial (33%), Hispanics (29%), and White (28%).[5]
- Percent of obesity among adults by income level are: less than $15,000 (34%), $15,000-$24,999 (32%), $25,000-$49,999 (31%), $50,000-$74,999 (30%), and $75,000 or more (26%).[5]
- Percent of adults who are obese varies by region:[5]

27.6%	Central Cleveland and Oklahoma
27.5%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
31.6%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
32.1%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
30.3%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
26.8%	Tulsa Tulsa

1. NIH, NHLBI Obesity Education Initiative. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Available online: http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf (Accessed 05.31.2013)
2. Finkelstein, EA, Trogdon, JG, Cohen, JW, and Dietz, W. Annual medical spending attributable to obesity: Payer- and service-specific estimates. *Health Affairs* 2009; 28(5): w822-w831.
3. Flegal, KM, Carroll, MD, Kit, BK, and Ogden, CL. Prevalence of Obesity and Trends in the Distribution of Body Mass Index Among US Adults, 1999-2010. *JAMA* 2012; 307(5):491-497.
4. Ogden, C, and Carroll, M. Prevalence of Obesity Among Children and Adolescents: United States, Trends 1963-1965 Through 2007-2008. National Center for Health Statistics Health E-Stats, June 2010. Available online: http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.pdf (Accessed 05.31.2013)
5. OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 05/28/2013.

Percent of Adults who are Obese by County



- Darker colors represent a higher percent of adults are obese.
    - There are 45 counties with sufficient data that had a higher percent of obese adults as compared to the state (30%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Counties in the southwest region of the state with sufficient data, with the exception of Cotton County, have lower rates of obesity as compared to the rest of the state.

Percent of Adults who are Obese by County

County	% Obese	County	% Obese
Adair	37.2	Le Flore	29.6
Alfalfa	33.3	Lincoln	28.4
Atoka	33.4	Logan	31.7
Beaver	28.3	Love	28.3
Beckham	29.4	McClain	32.6
Blaine	33.9	McCurtain	33.6
Bryan	30.2	McIntosh	37.8
Caddo	28.8	Major	25.7
Canadian	26.8	Marshall	35.8
Carter	27.8	Mayes	37.5
Cherokee	30.0	Murray	29.5
Choctaw	28.5	Muskogee	28.7
Cimarron	*	Noble	40.5
Cleveland	26.3	Nowata	31.5
Coal	36.0	Okfuskee	29.5
Comanche	31.2	Oklahoma	28.0
Cotton	41.2	Okmulgee	35.6
Craig	37.2	Osage	33.7
Creek	31.1	Ottawa	31.3
Custer	29.1	Pawnee	32.6
Delaware	31.9	Payne	28.9
Dewey	35.0	Pittsburg	28.7
Ellis	35.0	Pontotoc	35.7
Garfield	34.2	Pottawatomie	34.4
Garvin	28.7	Pushmataha	25.8
Grady	33.1	Roger Mills	33.4
Grant	21.7	Rogers	31.4
Greer	32.6	Seminole	36.5
Harmon	*	Sequoyah	33.1
Harper	*	Stephens	28.6
Haskell	32.2	Texas	27.9
Hughes	22.4	Tillman	32.5
Jackson	30.7	Tulsa	26.8
Jefferson	30.6	Wagoner	30.0
Johnston	25.5	Washington	27.1
Kay	31.7	Washita	19.1
Kingfisher	32.3	Woods	22.4
Kiowa	29.1	Woodward	32.1
Latimer	38.8	STATE:	**29.5**

*Insufficient Data (denominator <50)
OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/13.

NUTRITION

Eating fruits and vegetables lowers the risk of many chronic diseases and helps manage weight at a healthy level. Greater accessibility to quality, affordable fruits and vegetables in schools, child care facilities, and early education programs can help increase consumption.[1]

In the United States

- About 75% of adults consumed less than 5 servings of fruits and vegetables per day.[2]

- Multi-racial adults (81%) are the least likely to eat at least 5 servings of fruits and vegetables each day as compared to Whites (76%), Hispanics (79%), and Blacks (79%).[2]

In Oklahoma

- Percent of adults who consumed less than 5 fruits and vegetables per day by educational level: less than high school (87%), high school (87%), some college (85%), and college (80%).[3]

- Adults who consumed less than 5 fruits and vegetables per day race and ethnicity: Multi-racial (82%), American Indian/Alaska Native (84%), Black (83%), Hispanics (85%), and White (85%).[3]

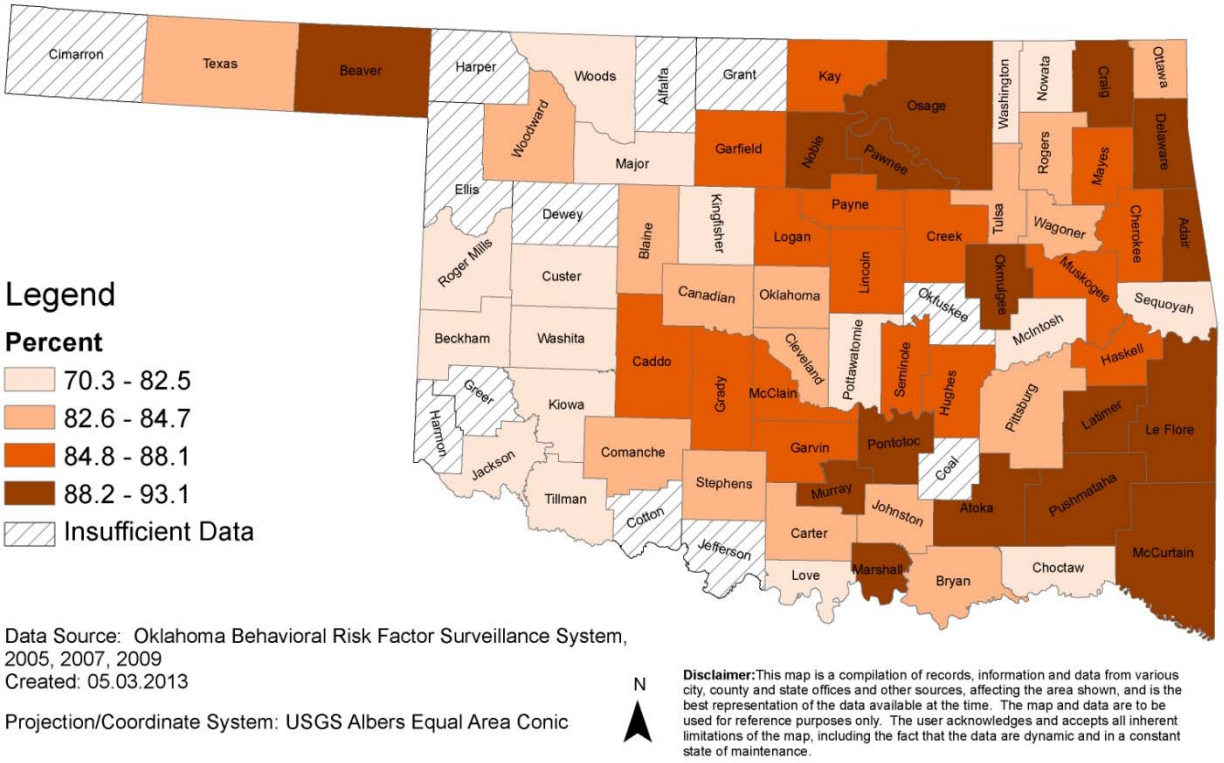
- Percent of adults who consume 5 fruits and vegetables per day by income level by income: less than $15,000 (85%), $15,000-$24,999 (86%), $25,000-$49,999 (85%), $50,000-$74,999 (84%), and $75,000 or more (83%).[3]

- Percent of adults who consume less than 5 fruits and vegetables per day by region:[3]

83.5%	Central Cleveland and Oklahoma
85.8%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
84.3%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
85.4%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
84.4%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
83.5%	Tulsa Tulsa

1. State Indicator Report on Fruits and Vegetables 2013, National Center for Chronic Disease Prevention and Health Promotion: Division of Nutrition, Physical Activity, and Obesity. Accessed at http://www.cdc.gov/nutrition/downloads/State-Indicator-Report-Fruits-Vegetables-2013.pdf on 5/31/2013.
2. Nationwide (States and DC), BRFSS 2009 on CDC Prevalence and Trends Data. Accessed at http://apps.nccd.cdc.gov/brfss/race.asp?cat=FV&yr=2009&qkey=4415&state=UB on 5/31/2013.
3. OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 05/28/2013.

Percent of Adults who Consume Less Than 5 Fruits and Vegetables per Day by County



- Darker colors represent a higher percent of adults who consume less than 5 fruits and vegetables per day.
    - There are 45 counties with sufficient data that had a higher percent of adults who consume less than 5 fruits and vegetables per day as compared to the state (85%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.

- Counties in the northeast and southeast regions of state had higher percentages of consuming less than 5 fruits and vegetables per day.

Percent of Adults who Consume Less than 5 Fruits and Vegetables per Day by County

County	% <5 Fruits/Veggies	County	% <5 Fruits/Veggies
Adair	93.1	Le Flore	88.3
Alfalfa	0	Lincoln	84.8
Atoka	91.2	Logan	88.1
Beaver	90.8	Love	82.0
Beckham	82.5	McClain	85.2
Blaine	84.2	McCurtain	89.8
Bryan	83.7	McIntosh	81.3
Caddo	86.9	Major	77.1
Canadian	84.2	Marshall	92.3
Carter	83.1	Mayes	86.0
Cherokee	86.4	Murray	90.8
Choctaw	70.3	Muskogee	85.4
Cimarron	*	Noble	91.7
Cleveland	83.9	Nowata	79.2
Coal	*	Okfuskee	*
Comanche	84.7	Oklahoma	83.3
Cotton	*	Okmulgee	88.2
Craig	89.9	Osage	89.3
Creek	87.7	Ottawa	83.9
Custer	81.1	Pawnee	88.2
Delaware	88.4	Payne	85.1
Dewey	*	Pittsburg	83.1
Ellis	*	Pontotoc	88.6
Garfield	87.4	Pottawatomie	81.8
Garvin	87.9	Pushmataha	89.2
Grady	87.1	Roger Mills	79.2
Grant	*	Rogers	84.6
Greer	*	Seminole	87.1
Harmon	*	Sequoyah	81.3
Harper	*	Stephens	84.2
Haskell	84.9	Texas	83.0
Hughes	87.7	Tillman	76.7
Jackson	82.5	Tulsa	83.5
Jefferson	*	Wagoner	84.5
Johnston	82.8	Washington	78.2
Kay	86.3	Washita	76.5
Kingfisher	78.9	Woods	78.6
Kiowa	79.1	Woodward	83.1
Latimer	91.0	STATE	**84.5**

*Insufficient Data (denominator <50)
Source: OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/13.

PHYSICAL ACTIVITY

Regular physical activity can help with weight control, strengthen bones and muscles, improve mental health, and reduce risks of heart disease, type 2 diabetes, and some types of cancers.[1]

In the United States

- Less than half (48%) of adults meet the recommended 150 minutes of physical activity each week.[1]

- White adults (23%) are more likely to meet the recommended guidelines for aerobic and muscle-strengthening activity than are Blacks (17%) or Hispanic adults (14%).[1]

In Oklahoma

- Percent of adults who did not meet the recommended levels of physical activity by educational level: less than high school (63%), high school (57%), some college (56%), and college (49%).[2]

- Percent of the population who did not meet the recommended levels of physical activity by race and ethnicity: Multi-racial (53%), White (54%), American Indian/Alaska Native (56%), Black (57%), and Hispanics (62%).[2]

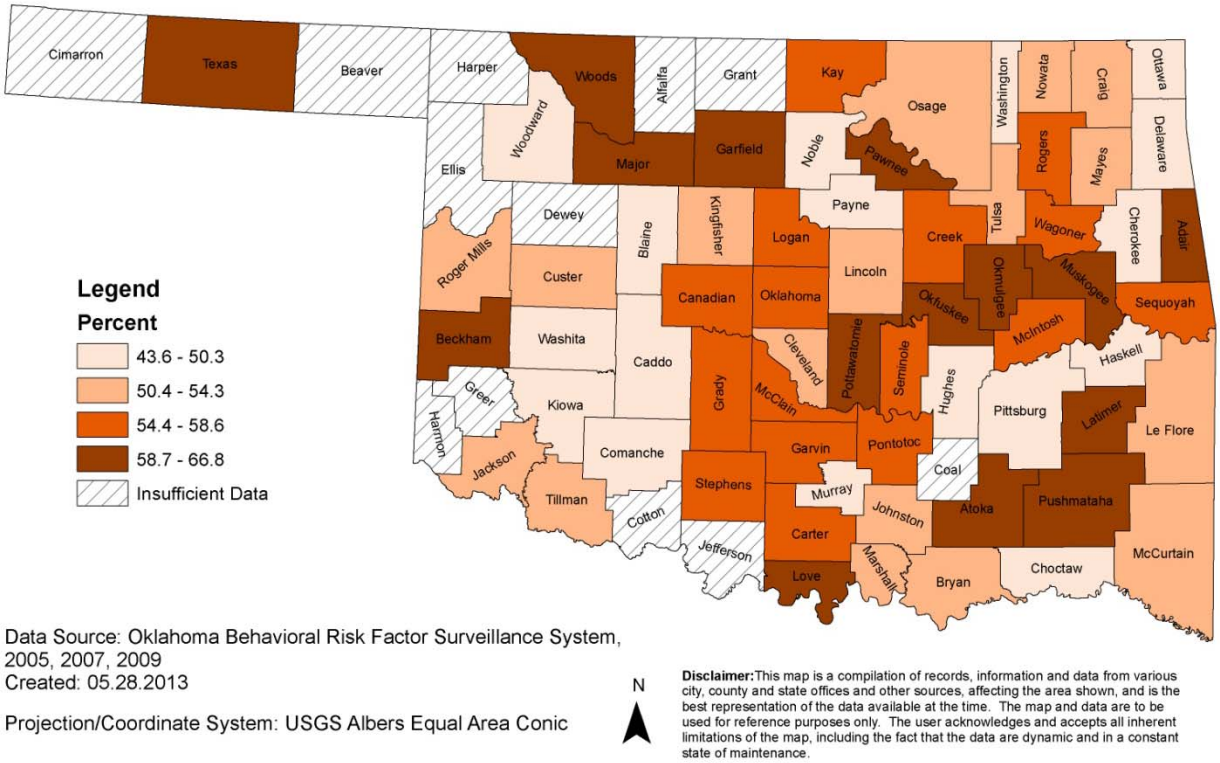
- As level of income increase the percent of adults who did not meet recommended levels of physical activity decreases – less than $15,000 (63%), $15,000-24,999 (59%), $25,000-49,999 (55%), $50,000-74,999 (52%), and $75,000 or more (47%).[2]

- Percent of adults who did not meet the recommended levels of physical activity by region.[2]

27.6%	Central Cleveland and Oklahoma
27.5%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
31.6%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
32.1%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
30.3%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
26.8%	Tulsa Tulsa

1. Division of Nutrition, Physical Activity and Obesity, National Center for Chronic Disease Prevention and Health Promotion. Accessed at http://www.cdc.gov.physicalactivity/data/facts.html on 6/3/2013.
2. OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 05/28/2013.

Percent of Adults who Did NOT Meet the Recommended Levels of Physical Activity by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2005, 2007, 2009
Created: 05.28.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of adults who Did Not meet recommended levels of physical activity.

- More than half (54%) of Oklahomans do not get the recommended levels of physical activity.

- In some counties (28) more people do not meet the recommended level of physical activity:
    - Atoka 61%, Beckham 62%, Canadian 58%, Creek 58%, Garfield 60%, Grady 59%, Kay 56%, Latimer 67%, Logan 57%, Love 61%, Major 59%, McClain 56%, McIntosh 55%, Muskogee 61%, Okfuskee 65%, Oklahoma 57%, Okmulgee 59%, Pawnee 64%, Pottawatomie 61%, Pushmataha 60%, Rogers 55%, Seminole 58%, Sequoyah 56%, Stephens 55%, Texas 65%, Wagoner 56%,and Woods 66%

    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.

Percent of Adults NOT Meeting Recommended Level of Physical Activity by County

County	% Activity Level NOT Met	County	% Activity Level NOT Met
Adair	60.3	Le Flore	54.1
Alfalfa	*	Lincoln	52.8
Atoka	61.2	Logan	56.8
Beaver	*	Love	61.1
Beckham	62.2	McClain	55.5
Blaine	47.8	McCurtain	52.3
Bryan	54.3	McIntosh	55.2
Caddo	49.9	Major	59.3
Canadian	57.5	Marshall	52.5
Carter	54.8	Mayes	51.7
Cherokee	50.2	Murray	49.8
Choctaw	50.3	Muskogee	61.4
Cimarron	*	Noble	43.6
Cleveland	53.0	Nowata	53.5
Coal	*	Okfuskee	64.6
Comanche	49.7	Oklahoma	56.7
Cotton	*	Okmulgee	58.7
Craig	54.0	Osage	52.3
Creek	57.6	Ottawa	50.1
Custer	50.8	Pawnee	63.8
Delaware	47.6	Payne	49.8
Dewey	*	Pittsburg	46.8
Ellis	*	Pontotoc	54.6
Garfield	60.4	Pottawatomie	60.9
Garvin	54.5	Pushmataha	59.8
Grady	58.6	Roger Mills	53.6
Grant	*	Rogers	55.0
Greer	*	Seminole	57.9
Harmon	*	Sequoyah	56.1
Harper	*	Stephens	55.1
Haskell	49.9	Texas	64.8
Hughes	50.2	Tillman	54.2
Jackson	52.6	Tulsa	54.1
Jefferson	*	Wagoner	56.4
Johnston	54.3	Washington	47.3
Kay	55.8	Washita	48.5
Kingfisher	52.7	Woods	65.9
Kiowa	49.1	Woodward	47.8
Latimer	66.8	STATE	**54.9**

*Insufficient Data (denominator <50)

OSDH, BRFSS, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/13.

TOBACCO USE - CIGARETTE SMOKING

Smoking is the leading preventable cause of death in the United States. About 443,000 adults die each year from smoking-related illnesses and costs the U.S. about $96 billion each year in medical costs and $97 billion in productivity costs.[1] There are 20 people who have a serious illness from smoking for every person who dies from a smoking related illness.[2]

In the United States

- More men (22%) are current cigarette smokers than women (17%).[1]

- Adults who live below the poverty level (29%) are more likely to be current cigarette smokers than adults who live at or above the poverty level (18%).[1]

In Oklahoma

- Percent of current smokers by level of education: less than high school (37%), high school (31%), some college (26%), and college (11%).[3]

- Percent of population who currently smoke: American Indian/Alaska Native (32%), Multiracial (32%), Black (30%), White (24%), and Hispanics (22%).[3]

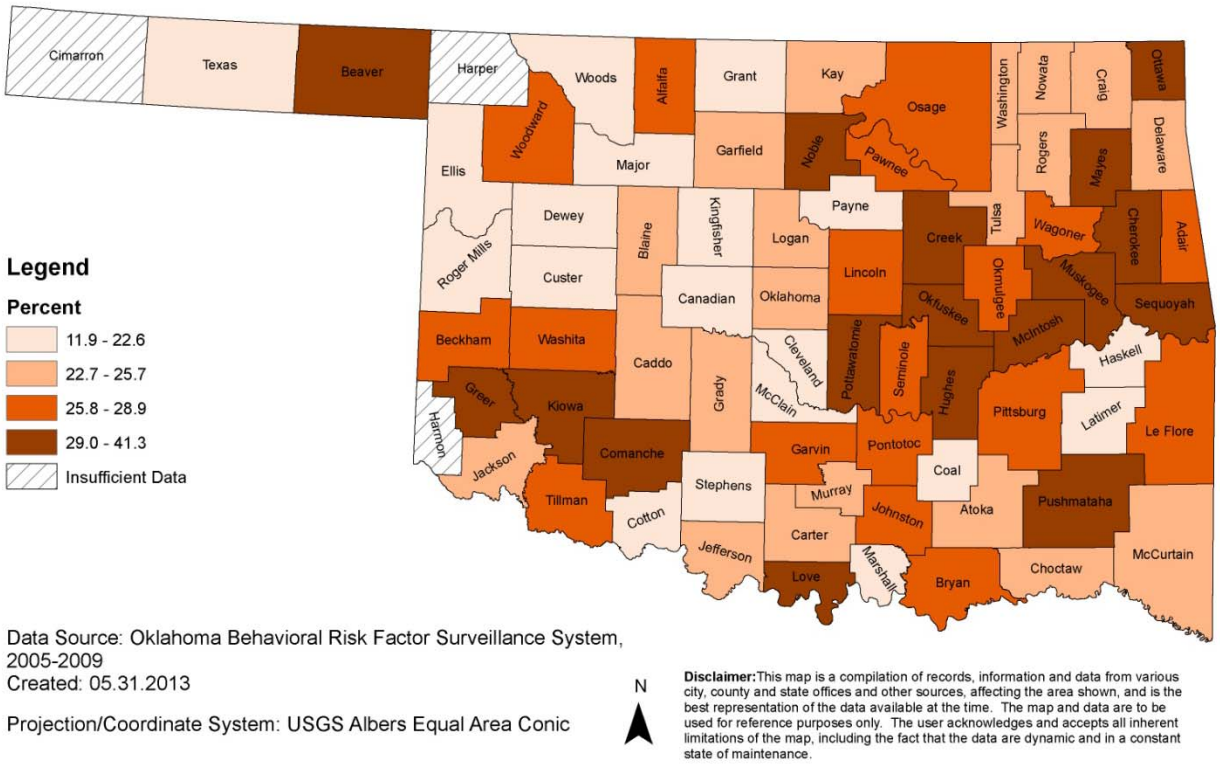
- As level of income increases, the percent of current smokers decreases: less than $15,000 (40%), $15,000-$24,999 (34%), $25,000-$49,999 (26%), $50,000-$74,999 (19%), and $75,000 or more (14%).[3]

- Percent of adults who currently smoke cigarettes by region.[3]

23.4%	Central Cleveland and Oklahoma
27.5%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
22.4%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods ,and Woodward
27.9%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
26.5%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
23.7%	Tulsa Tulsa

1. Centers for Disease Control and Prevention (CDC). Current Cigarette Smoking Among Adults—United States, 2011. Morbidity and Mortality Weekly Report 2012;61(44):889–94 [accessed 5/28/2013]
2. CDC. Fast Facts. Accessed at http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm on 5/28/2013.
3. OSDH, BRFSS 2005-2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 05/28/2013.

Percent of Adults 18 Years and Over who Currently Smoke Cigarettes by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2005-2009
Created: 05.31.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

- Darker colors represent a higher percent of adults who currently smoke cigarettes.
    - There are 34 counties with sufficient data that had a higher percent of adults 18 years and over who currently smoke cigarettes as compared to the state (25%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- There were 7 counties with sufficient data that had a lower percent of adults aged 18 years or older who currently smoke cigarettes as compared to the nation (19%).
- Counties in the northeast and southeast regions of state had higher percentages of current cigarette smoking.

Percent of Adults 18 Years and Over who Are Current Smokers by County

County	% Adults Smoke Cigarettes	County	% Adults Smoke Cigarettes
Adair	28.6	Le Flore	27.8
Alfalfa	28.0	Lincoln	26.5
Atoka	23.4	Logan	23.1
Beaver	30.5	Love	34.4
Beckham	28.8	Major	11.9
Blaine	22.8	Marshall	22.6
Bryan	27.6	Mayes	31.5
Caddo	25.3	McClain	18.7
Canadian	21.8	McCurtain	23.7
Carter	25.3	McIntosh	30.7
Cherokee	31.0	Murray	25.2
Choctaw	25.1	Muskogee	32.7
Cimarron	*	Noble	30.6
Cleveland	20.9	Nowata	25.0
Coal	19.8	Okfuskee	33.2
Comanche	33.1	Oklahoma	24.2
Cotton	13.8	Okmulgee	28.3
Craig	24.9	Osage	26.3
Creek	29.1	Ottawa	32.7
Custer	20.7	Pawnee	28.7
Delaware	24.9	Payne	17.5
Dewey	22.3	Pittsburg	27.8
Ellis	18.4	Pontotoc	27.6
Garfield	24.9	Pottawatomie	30.6
Garvin	26.4	Pushmataha	41.3
Grady	25.7	Roger Mills	19.9
Grant	22.0	Rogers	25.7
Greer	32.2	Seminole	27.7
Harmon	*	Sequoyah	31.3
Harper	*	Stephens	20.8
Haskell	22.0	Texas	19.9
Hughes	35.4	Tillman	28.9
Jackson	23.3	Tulsa	23.7
Jefferson	24.7	Wagoner	27.7
Johnston	27.1	Washington	23.2
Kay	25.0	Washita	28.1
Kingfisher	18.6	Woods	17.1
Kiowa	29.0	Woodward	28.3
Latimer	21.6	STATE	**25.2**

* Insufficient Data (denominator <50)
Source: OSDH, BRFSS, 2005, 2006, 2007, 2008, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/10/13

SERIOUS QUIT ATTEMPTS

Tobacco or nicotine dependence is a chronic condition and is the most common chemical dependence in the United States. Cessation is difficult and may require a number of attempts. Stress, weight gain, and withdrawal symptoms often cause relapse. However, there are effective treatments and smokers do quit. Effective treatments include brief clinical interventions, counseling (group, individual or telephone), and behavioral therapies. Combining medication with counseling increases the effectiveness than either used alone.[1]

In the United States

- Since 2002, there have been more former smokers than current smokers.[1] In 2011, 25% of adults were former smokers and 21% were current smokers.[2]

- Half (51%) of all high school students have stopped smoking for at least one day in the past year because they were trying to quit.[3]

In Oklahoma

- More than half of smokers quit smoking for at least one day because they were trying to quit. This varies little by level of education: less than high school (57%), high school (58%), some college (56%), and college (54%).[2]

- Percent of the smokers who quit or made quit attempts for at least 1 day by race and ethnicity are: White (54%), American Indian/Alaska Native (58%), Other (62%), Hispanics (65%), and Black (69%).[2]

- Females (58%) are more likely to make a serious quit attempt than are males (55%).[2]

- Smokers with annual incomes of $75,000 or greater were the least likely to have made a serious quit attempt (48%), followed by $50,000-$74,999 (54%), $35,000-$49,999 (59%), $25,000-$34,999 (55%), $20,000-$24,999 (61%), $15,000-$19,999 (57%), $10,000-$14,999 (60%), and less than $10,000 (61%).[2]

- Two-thirds (66%) of middle school smokers tried to quit at least once during the past year. Almost two-thirds (61%) of these students stayed off cigarettes for at least 30 days.[3]

- Half (55%) of high school smokers tried to quit at least once during the past year. Two-thirds (34%) of these smokers stayed off cigarettes for at least 30 days.[3]

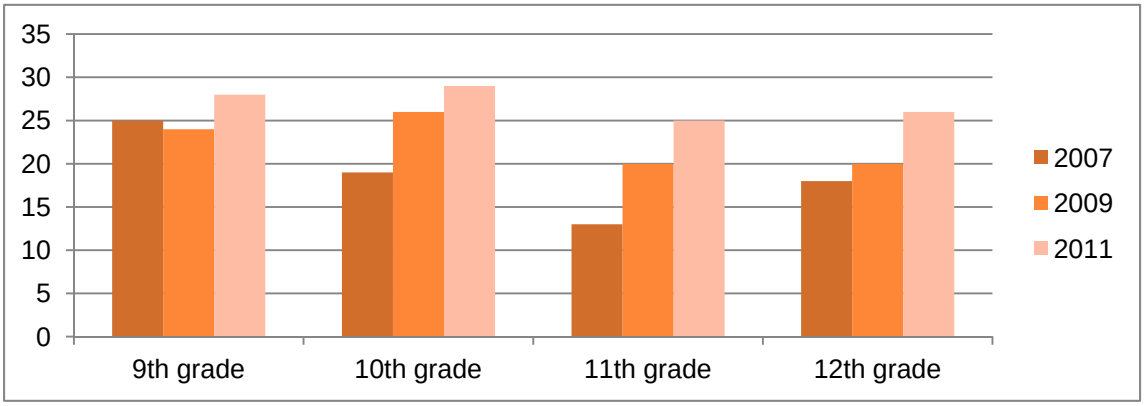
1. Centers for Disease Control and Prevention. Smoking Cessation. Accessed at http://www.cdc.gov/tobacco/data_statistics/fact_sheets/cessation/quitting/index.htm on 5/28/2013.
2. Oklahoma State Department of Health. Center for the Advancement of Wellness.
3. Oklahoma State Department of Health. Oklahoma Youth Tobacco Survey, 2011.

CHILDREN'S HEALTH HABITS

Risk Behaviors Among Oklahoma High School Students (9th – 12th grade)

- 1 out of 3 (33%) were obese (17%) or overweight (16%).
- 6 out of 7 (86%) ate vegetables two or fewer times per day during the 7 days before the survey.
- 36% drank a can, bottle, or glass of soda or pop at least one time per day during the 7 days before the survey (not including diet soda or diet pop).
- More than 1 in 10 (12%) did not participate in at least 60 minutes of physical activity on any day during the 7 days before the survey.
- Nearly 1 in 4 (23%) smoked cigarettes on at least 1 day during the 30 days before the survey.
- 1 out of 5 (20%) had been told by a doctor they had asthma while 12% currently had asthma.
- 3 out of 10 (29%) experienced sadness for at least 2 weeks.
- 3 out of 10 (30%) watched television 3 or more hours per day on an average school day.
- Nearly 3 out of 10 (27%) used computers 3 or more hours per day on an average school day for reasons other than school work.

Percent of Students Playing Video Games 3 or More Hours per Day



Source: OSDH, Maternal and Child Health Service (MCH), MCH Assessment, Youth Risk Behavior Survey (YRBS), 2007 to 2011, on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 4/18/2013.

Exposure to Secondhand Smoke Among Middle School and High School Students

Middle School Students (6th – 8th grade)

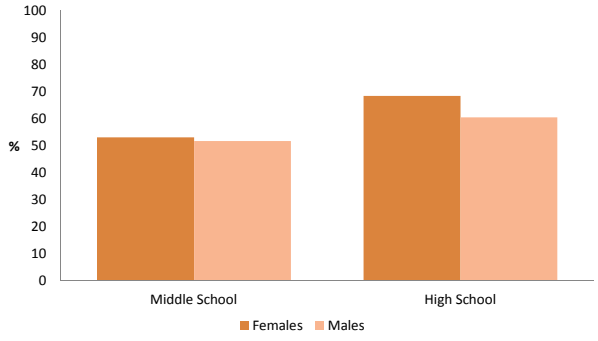
- About half (52%) of middle school students reported that they were in the same room or a car with someone who was smoking cigarettes.
- Among middle school students who have never smoked, less than half (41%) have been in the same room and almost one-third (33%) rode in a car during the past week with someone who was smoking cigarettes.
- About 7 out of 10 students who currently smoke have been in the same room (74%) or ridden in a car (74%) during the past week with someone who was smoking.
- Hispanic or Latino students the least likely to be exposed to secondhand tobacco smoke (Native American – 56%, White – 52%, Black – 52%, Hispanic – 46%).

High School Students (9th – 12th grade)

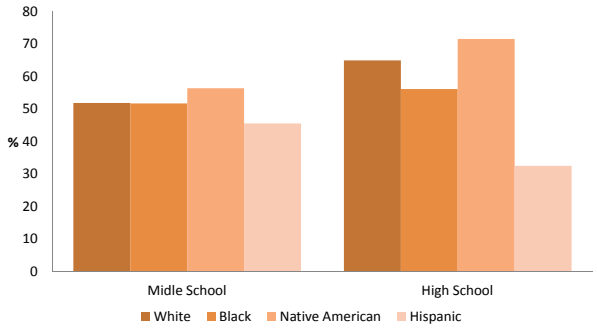
- Almost two-thirds (64%) reported that during the past week they were in the same room or a car with someone who was smoking cigarettes.
- Among those who have never smoked, almost half (44%) have been in the same room and more than one-fourth (27%) have ridden in a car with someone who was smoking cigarettes during the past week.
- Among those who currently smoke, most have been in the same room (90%) and rode in a car (88%) with someone who was smoking cigarettes during the past week.
- Native American high school students are most likely to be exposed to secondhand tobacco smoke. (Native American – 72%, White – 65%, Black – 56%, Hispanic – 33%).

Percent of Students In a Room or Car with Someone who was Smoking

By gender and school level



By race/ethnicity and school level



Source: OSDH, Center for the Advancement of Wellness, Oklahoma Youth Tobacco Survey, 2011.

USE OF SERVICES

Limited access to health services impacts individual's health status. Barriers to accessing health services, such as lack of availability, cost of care, and limited language access, lead to other barriers, such as inability to get preventive services, delays in receiving appropriate care, and hospitalizations that might have been prevented. For more information on hospitalizations that could have been avoided, please refer to the *MONAHRQ® Data Guide for Preventable Hospitalizations Focusing on Chronic Disease Conditions*. For more information on preventive services, please refer to the *Evidence-Based Strategies and Preventive Services to Reduce the Burden of Chronic* Disease. Both publications are available from the Chronic Disease Service.

USE OF SERVICES

Visits/Procedures

- Telehealth & Telemedicine
- Community/Rural Health Clinics

Population Based

- Screenings
- Preventive Services
- Referrals

Improving health care services includes increasing access to and use of evidence-based preventive services. The Primary Care Advisory Taskforce, affiliated with the Oklahoma Health Improvement Plan, studied various efforts to increase assess to health services. The taskforce recognized the value of telehealth and telemedicine to provide specialty care. However, more research is needed on if and how telehealth and telemedicine could enhance primary care utilization and education efforts. The Primary Care Advisory Taskforce recommeded the continued exploration to expand residency programs, community health center development, medical program loan repayment, and other opportunities to increase primary care providers in Oklahoma, especially rural areas.

The use of evidence-based preventive health services, including screenings, is valuable for maintaining the quality of life and wellness, especially among older adults. Clinical preventive services:

- Prevent illness by detecting early signs or symptoms before disease develops or
- Detect a disease at an earlier, and often more treatable, stage.

However, preventive services are underused, especially among certain population groups

Proportion of Males and Females aged 65 years and older who are Up-to-Date on a Core Set of Clinical Preventive Services.

	Males	Females
All	49%	49%
White	51%	52%
2 or more races	49%	39%
American Indian/Alaska Native	46%	36%
Black	34%	33%
Hispanic/Latino	31%	32%

Source: Healthy People 2020, DATA 2020, Older Adults Indicator 2.1 and 2.2. Available at http://www.healthypeople.gov/2020/Data/searchData.aspx. Accessed on 5-20-2013.

MEDIATORS

Older adults are among the fastest growing age groups, and the first "baby boomers" (adults born between 1946 and 1964) turned 65 in 2011. More than 37 million people in this group (60%) will manage more than one chronic condition by 2030 (Healthy People 2020). Older adults are at high risk for developing chronic illnesses and related disabilities.
Older adults use many health care services, have complex conditions, and require professional expertise that meets their needs. Many experience hospitalizations, nursing home admissions, and low-quality care. They also may lose the ability to live independently.

The quality of the health and social services available to older adults affects their ability to manage chronic conditions and long-term care needs effectively. Emerging issues for improving health include: care coordination, assistance for older adults to manage their own care, identification of evidence-based models for those who assist with coordinating care for specific populations, and systems analysis to equip providers with the tools they need to meet the needs of adults with chronic conditions.

Addressing the mediators to improve health outcomes will increase the number of Oklahomans who receive appropriate services. The case for improvement is illustrated by the following BRFSS results:

- Less than 2 out of 3 diabetics reported receiving essential annual exams (2006, 2008, 2010):
  - Eye exam: 63%
  - Foot exam: 67%
  - Influenza vaccination: 61%
  - Pneumococcal vaccination: 56%

- 1 out of 5 (20%) of adults with known history of high blood pressure are NOT taking blood pressure medication (2011).

- Less than half (48%) of adults at risk for heart attack and for whom it is safe to take aspirin are taking aspirin daily or every other day (2009).

- Less than half (47%) of adults at risk for a heart attack and for whom it is safe to take aspirin report that their health care provider advised aspirin to prevent a heart attack or stroke (2009).

MEDIATORS

Decision Supports

- Appropriateness
- Cost Effectiveness
- Efficacy of Treatment
- Clinical Guidelines and Standards of Care
- Team-Based Care

Quality of Care

- Electronic Health Record/Electronic Medical Record
- Sytems: Patient-Centered Medical Homes, Health Access Networks, Accountable Care & Coordinated Care Organizations

Patient Adherence

- Patient Education
- Self-Management
- Care/Case Coordination

Participation in physical activity, self-management of chronic diseases, or use of preventive health services can improve health outcomes.

BREAST CANCER SCREENING

Breast cancer screening looks for pre-symptomatic breast cancer. Regular mammograms, considered the best screening tool, can sometimes detect breast cancer up to three years before it can be felt .[1]

In the United States

- 22% of women aged 50 years and older reported NOT having a mammogram in the past two years.[2]

- Percent of the population screened by race and ethnicity: Multi-racial (76%), Other (76%), White (78%), Hispanics (81%), and Black (83%).[2]

- Time trends indicate a 2% decrease in breast screening rates in the U.S. between 2002 and 2010.[2]

In Oklahoma

- 3 out of 10 (30%) women aged 50 years and over reported NOT having a mammogram in the past two years – a larger percentage than reported in the U.S.[2]

- Percent of the population screened by race and ethnicity from lowest to highest are Hispanics (61%), Multi-racial (65%), Black (66%), White (69%), and American Indian/Alaska Native (74%).[3]

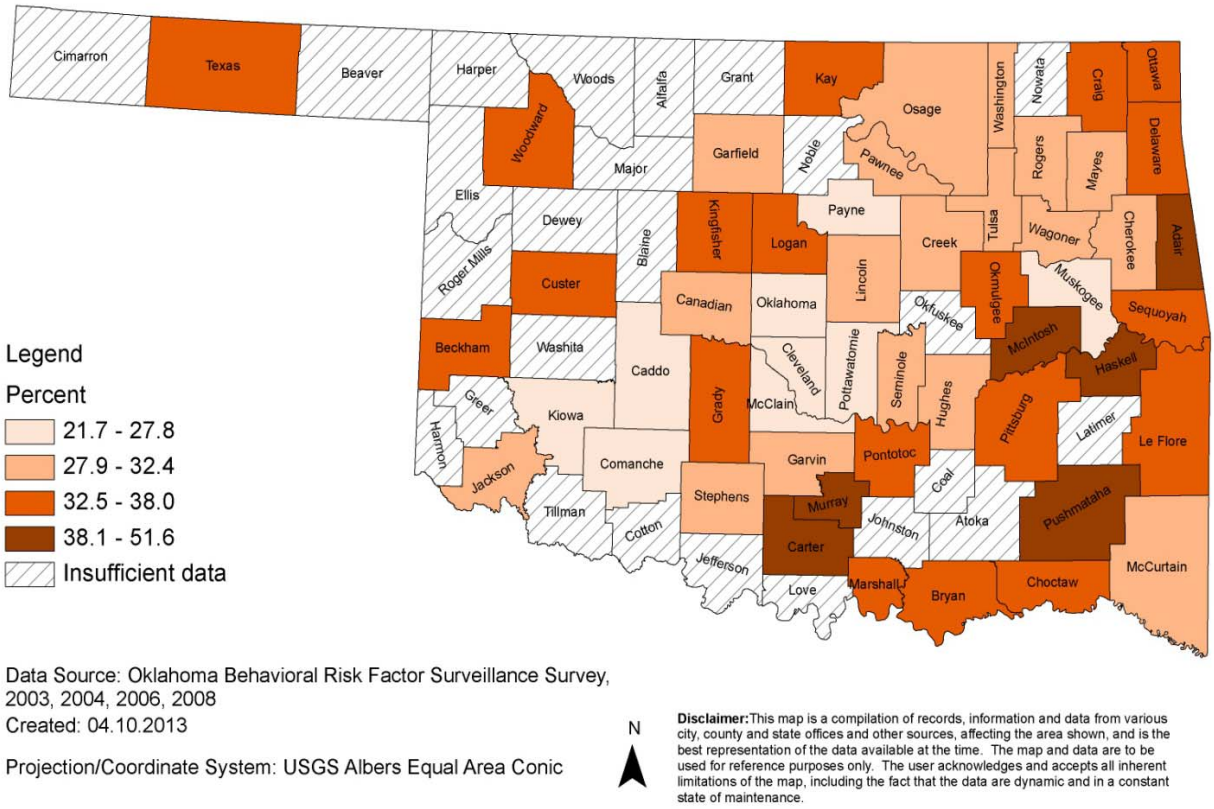
- Time trends indicate a 2% decrease in Oklahoma from 2002 to 2010.[2]

- Percent of women who have NOT had a mammogram in past two years by region.[4]

27.2%	Central Cleveland and Oklahoma
31.8%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
33.8%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
34.3%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
31.8%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
28.5%	Tulsa Tulsa

1. CDC, Understanding Mammograms. Accessed at http://www.cdc.gov/cancer/breast/basic_info/mammograms.htm on 04/11/2013.
2. CDC, BRFSS. Prevalence and Trends Data. Accessed at http://apps.nccd.cdc.gov/BRFSS/ on 04/11/2013.
3. OSDH, BRFSS, 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/2013.
4. OSDH, BRFSS, 2003, 2004, 2006, and 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/18/13.

Percent of Women Aged 50 Years and Over who have NOT had a Mammogram Within the Past Two Years by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance Survey, 2003, 2004, 2006, 2008
Created: 04.10.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of women aged 50 years and over who have NOT had a mammogram within the past two years.
    - There were 34 counties with sufficient data that had a higher percent of women aged 50 years and over who have NOT had a mammogram within the past two years as compared to the state (30%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- All counties (with sufficient data), except for Caddo County, had a higher percent of women aged 50 years and over who did NOT have a mammogram within the past two years as compared to the nation (22%).
- Counties in the southeast region of state had higher percentages of not being screened for breast cancer.

Percent of Women Aged 50 Years and Over who Have NOT had a Mammogram Within the Past Two Years by County

County	Percent	County	Percent
Adair	48.0	Le Flore	34.3
Alfalfa	*	Lincoln	31.9
Atoka	*	Logan	33.9
Beaver	*	Love	*
Beckham	33.2	Major	*
Blaine	*	Marshall	38.0
Bryan	33.3	Mayes	29.8
Caddo	21.7	McClain	27.6
Canadian	28.8	McCurtain	29.7
Carter	40.2	McIntosh	41.0
Cherokee	31.1	Murray	41.3
Choctaw	35.6	Muskogee	27.3
Cimarron	*	Noble	*
Cleveland	26.2	Nowata	*
Coal	*	Okfuskee	*
Comanche	27.8	Oklahoma	27.4
Cotton	*	Okmulgee	34.2
Craig	35.1	Osage	31.9
Creek	30.8	Ottawa	34.5
Custer	36.2	Pawnee	29.2
Delaware	35.1	Payne	24.6
Dewey	*	Pittsburg	33.9
Ellis	*	Pontotoc	34.6
Garfield	32.4	Pottawatomie	27.3
Garvin	32.2	Pushmataha	45.3
Grady	35.3	Roger Mills	*
Grant	*	Rogers	29.3
Greer	*	Seminole	31.3
Harmon	*	Sequoyah	37.3
Harper	*	Stephens	30.2
Haskell	51.6	Texas	36.3
Hughes	32.3	Tillman	*
Jackson	30.1	Tulsa	28.5
Jefferson	*	Wagoner	30.7
Johnston	*	Washington	29.8
Kay	34.9	Washita	*
Kingfisher	37.6	Woods	*
Kiowa	24.1	Woodward	37.1
Latimer	*	STATE	**30.3**

* Insufficient Data (denominator <50)
Source: OSDH, BRFSS, 2003, 2004, 2006, and 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/13.

CERVICAL CANCER SCREENING

Regular screening tests and follow-up can detect cervical cancer at early stages. The Papanicolaou test identifies cellular changes on the cervix that can develop into cervical cancer. The Human Papillomavirus (HPV) test looks for the virus that can cause these cellular changes in cervical cells.[1]

In the United States

- 19% of women aged 18 years and older did NOT have a Pap test within the past three years.[2]

- Percent of the population screened by race and ethnicity: Other (79%), Multi-racial (81%), White (82%), Hispanics (84%), and Black (86%).[2]

In Oklahoma

- 23% of women aged 18 years and older did NOT have a Pap test within the past three years. A larger percentage of the population in Oklahoma has never had a screening for cervical cancer than the U.S.[2]

- Percent of the population that have had a screening for cervical cancer by race and ethnicity: Multi-racial (72%), White (81%), American Indian/Alaska Native (84%), Black (85%), and Hispanics (86%).[3]

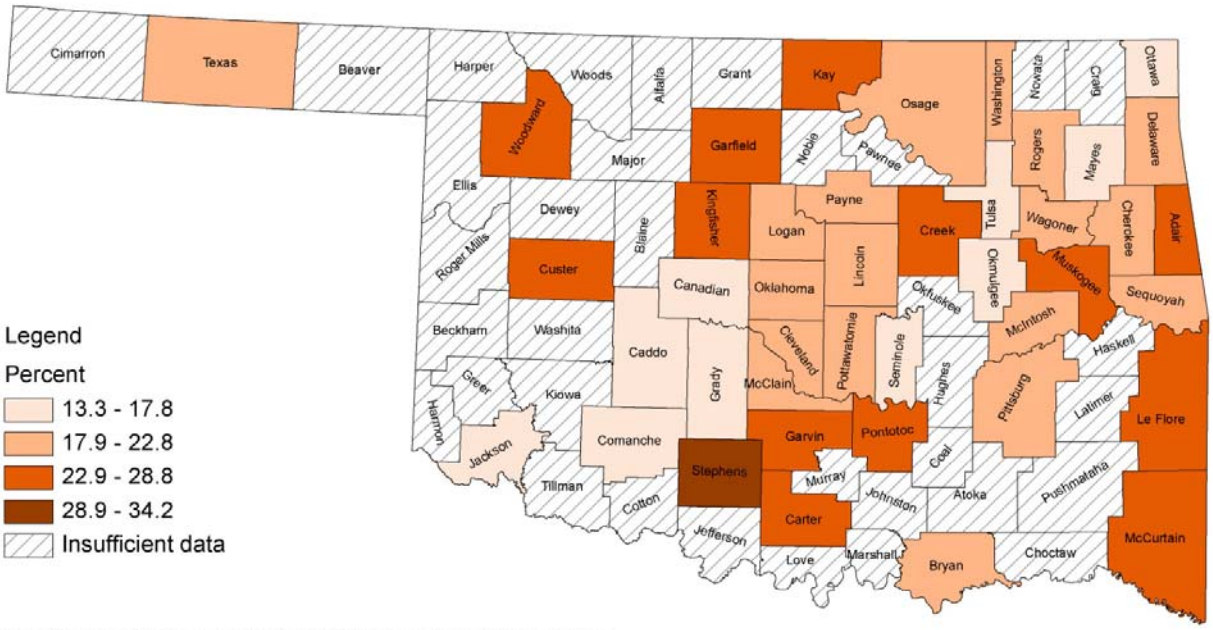
- Time trends indicate a 6% decrease in cervical screening rates in U.S. whereas 7% decrease in Oklahoma from 2004 to 2010.[3]

- Percent of women who have NOT had a Pap test in past three years by region.[4]

19.1%	Central Cleveland and Oklahoma
21.2%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
20.9%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
24.0%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
21.6%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
17.6%	Tulsa Tulsa

1. Centers for Disease Control and Prevention. Cervical Cancer Screening. Accessed at http://www.cdc.gov/cancer/cervical/basic_info/screening.htm on 04/11/2013.
2. CDC, BRFSS, Prevalence and Trends Data. Accessed at http://apps.nccd.cdc.gov/BRFSS/ on 04/11/2013
3. OSDH, BRFSS, 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/11/2013.
4. OSDH, BRFSS, 2003,2004, 2006, 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/18/13.

Percent of Women Aged 18 Years and Over who Have NOT had a Pap Test Within the Past Three Years by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance Survey, 2003, 2004, 2006, 2008
Created: 04.10.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of women aged 18 years and older who have NOT had a Pap test within the past three years.
    - There were 16 counties with sufficient data that had a higher percent of women 18 years and older who have NOT has a Pap test within the past three years as compared to the state (23%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- There are 31 counties with sufficient data that had a higher percent of women who have not had a Pap test within the past three years as compared to the nation (19%).

Percent of Women Aged 18 Years and Over who have NOT had a Pap Test Within the Past Three Years by County

County	Percent	County	Percent
Adair	24.9	Le Flore	23.9
Alfalfa	*	Lincoln	20.2
Atoka	*	Logan	22.7
Beaver	*	Love	*
Beckham	*	Major	*
Blaine	*	Marshall	*
Bryan	20.4	Mayes	16.2
Caddo	15.0	McClain	21.6
Canadian	13.3	McCurtain	24.2
Carter	26.3	McIntosh	21.0
Cherokee	22.0	Murray	*
Choctaw	*	Muskogee	26.8
Cimarron	*	Noble	*
Cleveland	19.5	Nowata	*
Coal	*	Okfuskee	*
Comanche	15.8	Oklahoma	18.9
Cotton	*	Okmulgee	16.3
Craig	*	Osage	20.0
Creek	24.8	Ottawa	13.4
Custer	27.6	Pawnee	*
Delaware	21.6	Payne	19.9
Dewey	*	Pittsburg	22.8
Ellis	*	Pontotoc	24.0
Garfield	26.2	Pottawatomie	20.6
Garvin	25.8	Pushmataha	*
Grady	17.3	Roger Mills	*
Grant	*	Rogers	19.2
Greer	*	Seminole	16.4
Harmon	*	Sequoyah	19.2
Harper	*	Stephens	34.2
Haskell	*	Texas	21.0
Hughes	*	Tillman	*
Jackson	17.8	Tulsa	17.6
Jefferson	*	Wagoner	20.8
Johnston	*	Washington	21.5
Kay	26.3	Washita	*
Kingfisher	25.2	Woods	*
Kiowa	*	Woodward	28.8
Latimer	*	STATE	**22.5**

* Insufficient Data (denominator <50)

Source: OSDH, BRFSS, 2003, 2004, 2006, and 2008 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 03/04/13.

CHOLESTEROL SCREENING

According to the Third Report of the Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults, in all adults 20 and older, a fasting lipoprotein profile (total cholesterol, low density lipoprotein (LDL) cholesterol, high density lipoprotein (HDL) cholesterol and triglyceride) should be obtained once every 5 years.[2]

In the United States

- In 2011, less than 1 in 4 adults in the U.S., had NOT had their cholesterol checked in the previous 5 years.[3]

In Oklahoma

- In 2011, 34% of males and 26% of females had NOT had their cholesterol checked in the past 5 years.[3]

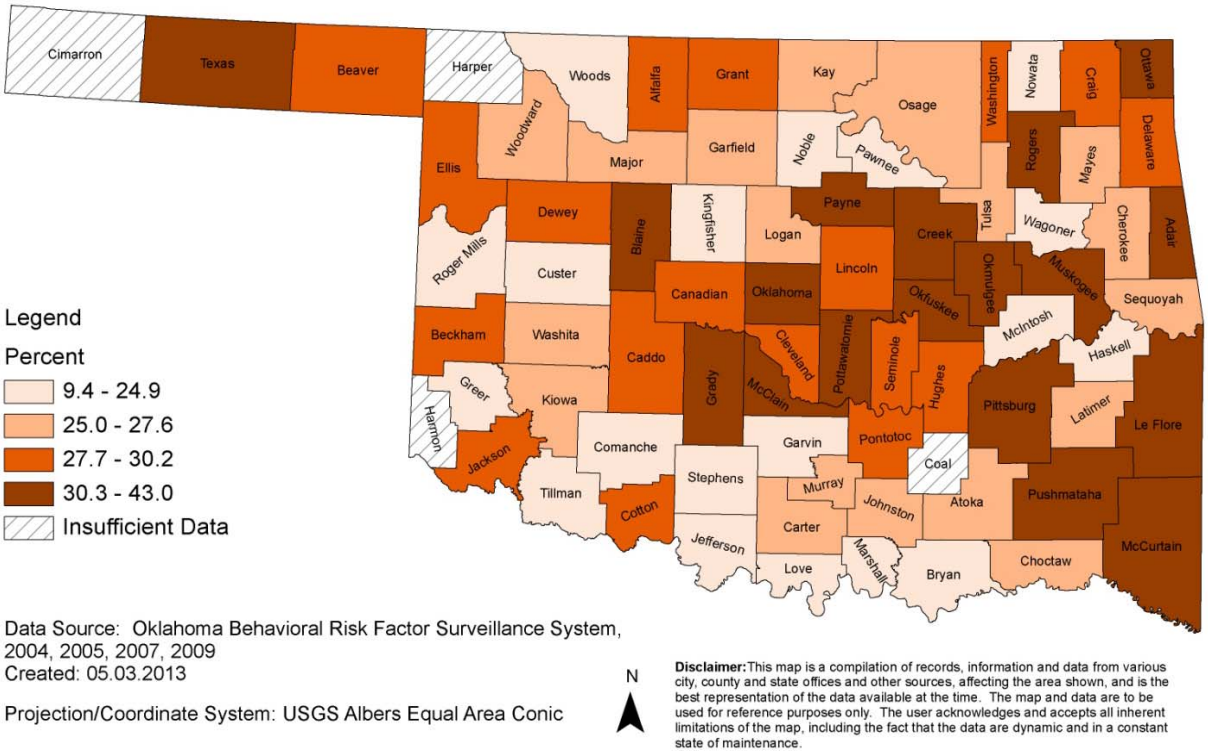
- Screening rates by race and ethnicity in 2011 indicated over half (50%) of Hispanics and 35% of Blacks had NOT had their cholesterol checked in the past 5 years.[3]

- Percent of adults who have NOT had their cholesterol checked in the past 5 years by region.[4]

30.4%	Central Cleveland and Oklahoma
29.1%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
28.3%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
28.4%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
26.9%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
26.4%	Tulsa Tulsa

1. Third Report of the National Cholesterol Education Panel (NCEP) on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III), Final Report. National Heart, Lung, and Blood Institute, National Institutes of Health, 2002. Accessed at http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3_rpt.htm on 04/02/13.
2. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, et al. on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. *Circulation*. 2013;127:e6-e245.
3. OSDH, BRFSS, 2011 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 02/28/2013.
4. OSDH, BRFSS, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 02/28/13.

Percent of Adults who Have NOT had their Cholesterol Checked in the Past Five Years by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2004, 2005, 2007, 2009
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent more adults who have NOT had their cholesterol checked in the past 5 years.
    - There are 34 counties with sufficient data that had a higher percent of adults who have NOT had their cholesterol checked in the past 5 years as compared to the state (29%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Overall, counties in the eastern part of the state tended to have higher percent of adults who have NOT had their cholesterol checked in the past 5 years.
- About one-third of the counties with the highest percentages of adults NOT having their cholesterol checked in the past five years also had the highest percentages of adults WITHOUT health care coverage.

Percent of Adults who Have NOT had their Cholesterol Checked in the Past Five Years by County

County	Percent	County	Percent
Adair	37.2	Le Flore	31.1
Alfalfa	29.6	Lincoln	29.4
Atoka	25.4	Logan	25.9
Beaver	29.9	Love	19.9
Beckham	29.5	Major	25.3
Blaine	43.0	Marshall	23.2
Bryan	21.5	Mayes	25.0
Caddo	28.7	McClain	33.4
Canadian	29.5	McCurtain	31.3
Carter	27.5	McIntosh	21.5
Cherokee	27.0	Murray	25.7
Choctaw	27.1	Muskogee	30.9
Cimarron	*	Noble	15.5
Cleveland	29.8	Nowata	19.5
Coal	*	Okfuskee	34.4
Comanche	24.5	Oklahoma	30.5
Cotton	29.1	Okmulgee	33.7
Craig	29.7	Osage	27.6
Creek	31.6	Ottawa	37.5
Custer	19.8	Pawnee	18.2
Delaware	29.5	Payne	32.3
Dewey	29.5	Pittsburg	30.4
Ellis	29.3	Pontotoc	30.2
Garfield	26.6	Pottawatomie	31.6
Garvin	22.5	Pushmataha	32.3
Grady	33.6	Roger Mills	17.3
Grant	28.4	Rogers	30.6
Greer	22.9	Seminole	28.8
Harmon	*	Sequoyah	26.4
Harper	*	Stephens	24.3
Haskell	23.6	Texas	40.1
Hughes	30.2	Tillman	9.4
Jackson	28.5	Tulsa	26.4
Jefferson	22.1	Wagoner	21.7
Johnston	25.2	Washington	29.6
Kay	26.3	Washita	25.9
Kingfisher	24.9	Woods	17.8
Kiowa	25.0	Woodward	26.8
Latimer	26.4	STATE	**28.6**

* Insufficient Data (denominator <50)
Source: OSDH, BRFSS, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 02/28/13.

COLORECTAL CANCER SCREENING

Colorectal cancer develops from precancerous polyps in the colon and rectum.[1] Regular screening tests can help identify polyps that can be removed before developing into cancer. Screening tests also help diagnose colorectal cancer at an early stage.

In the United States

- Among adults aged 50 years and older, 36% reported NEVER having had a sigmoidoscopy or colonoscopy. There was almost no gender difference in screening rates (males=37%; females= 35%).[2]

- Screening rates by race and ethnicity: Hispanics (54%), Other (57%), Multi-racial (61%), Black (63%), and White (67%).[2]

- Time trends indicated a 34% increase in colorectal screening rates in the U.S. between 2004 and 2009.[2]

In Oklahoma

- Among adults aged 50 years and older, 42% reported NEVER having had a sigmoidoscopy or colonoscopy.[2] Men (45%) were more likely than women (39%) to report NEVER having had a sigmoidoscopy or colonoscopy.[2]

- Screening rates by race and ethnicity: Hispanics (40%), American Indian/Alaska Native (51%), Multi-racial (53%), Black (57%), and White (59%).[3]

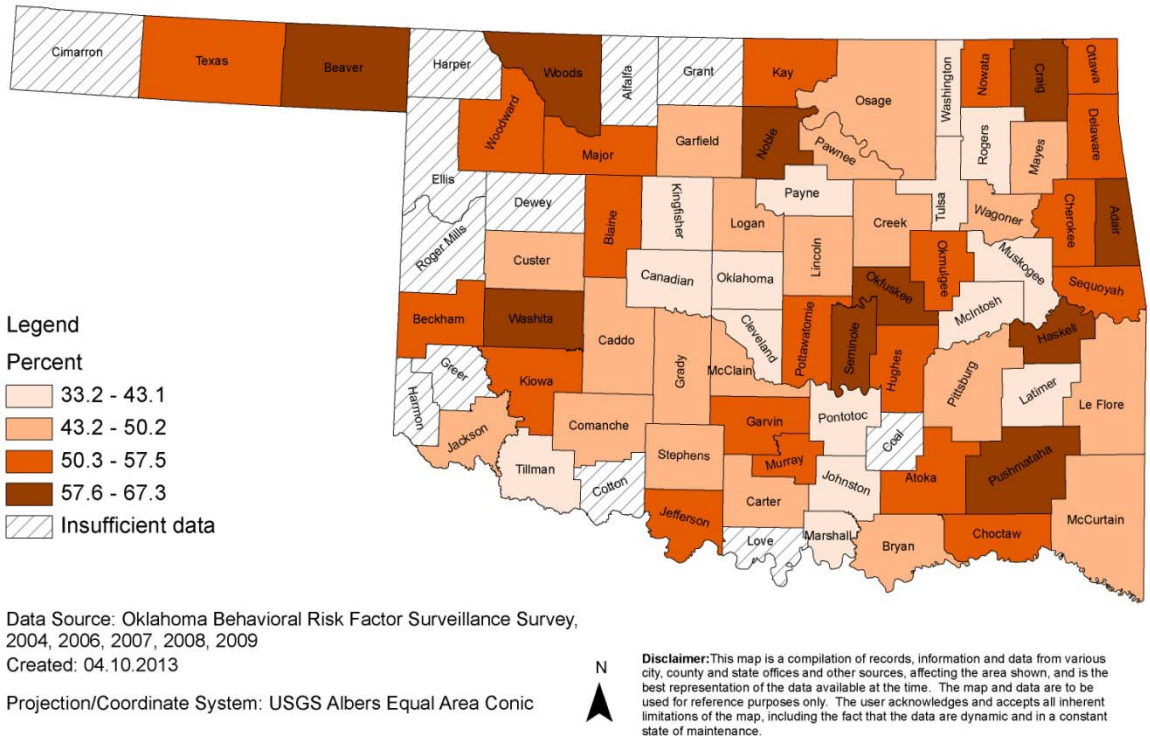
- Time trends indicate a 43% increase in Oklahoma between 2002 and 2010.[2]

- Percent of adults who have NEVER had a sigmoidoscopy or colonoscopy by region.[4]

41.9%	Central Cleveland and Oklahoma
48.8%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
48.6%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
49.0%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
47.7%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
41.2%	Tulsa Tulsa

1. CDC, Colorectal Cancer Screening. Accessed at http://www.cdc.gov/cancer/colorectal/basic_info/screening/index.htm on 03/06/2013.
2. CDC, BRFSS, Prevalence and Trends Data, Accessed at http://apps.nccd.cdc.gov/BRFSS/ on 03/06/2013.
3. OSDH, BRFSS, 2008- 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 03/06/2013
4. OSDH, BRFSS, 2004, 2006, 2007, 2008, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/18/13.

Percent of Adults Aged 50 Years and Older who have NEVER had a Sigmoidoscopy or Colonoscopy by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance Survey, 2004, 2006, 2007, 2008, 2009
Created: 04.10.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

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- Darker colors represent a higher percent of adults who Never had a sigmoidoscopy or colonoscopy.
    - There were 51 counties with sufficient data that have a higher percent of adults aged 50 years and older who have Never had a sigmoidoscopy or colonoscopy as compared to the state (42%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- All counties (with sufficient data), except for Kingfisher County, had a higher percent of adults that Never had a sigmoidoscopy or colonoscopy as compared to the U.S. (36%).
- There appears to be a grouping of counties in the northeastern part of the state where a high percent of adults are not being screened for colorectal cancer.

Percent of Adults Aged 50 Years and Over who have NEVER had a Sigmoidoscopy or Colonoscopy by County

County	Percent	County	Percent
Adair	67.3	Le Flore	46.8
Alfalfa	*	Lincoln	44.4
Atoka	53.8	Logan	48.0
Beaver	60.9	Love	*
Beckham	55.8	Major	54.4
Blaine	56.9	Marshall	40.7
Bryan	45.4	Mayes	46.3
Caddo	45.6	McClain	44.4
Canadian	42.3	McCurtain	48.7
Carter	48.7	McIntosh	41.9
Cherokee	52.7	Murray	50.7
Choctaw	56.2	Muskogee	43.1
Cimarron	*	Noble	58.2
Cleveland	40.0	Nowata	51.3
Coal	*	Okfuskee	58.6
Comanche	44.4	Oklahoma	42.5
Cotton	*	Okmulgee	51.3
Craig	59.9	Osage	48.0
Creek	45.9	Ottawa	54.4
Custer	44.9	Pawnee	50.2
Delaware	56.2	Payne	38.2
Dewey	*	Pittsburg	47.9
Ellis	*	Pontotoc	41.8
Garfield	48.8	Pottawatomie	50.5
Garvin	50.7	Pushmataha	63.5
Grady	45.9	Roger Mills	*
Grant	*	Rogers	42.0
Greer	*	Seminole	58.8
Harmon	*	Sequoyah	55.3
Harper	*	Stephens	47.7
Haskell	60.5	Texas	53.1
Hughes	51.8	Tillman	42.6
Jackson	47.0	Tulsa	41.2
Jefferson	55.1	Wagoner	46.8
Johnston	39.4	Washington	40.5
Kay	57.5	Washita	65.4
Kingfisher	33.2	Woods	65.4
Kiowa	56.1	Woodward	51.9
Latimer	39.6	STATE	**42.0**

* Insufficient Data (denominator <50)
Source: OSDH,BRFSS, 2004, 2006, 2007, 2008, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 03/04/13.

POPULATION HEALTH OUTCOMES

Access to care is not the ultimate outcome. The purpose of accessing consistent, quality care is to achieve one or more improved health outcomes, which include indicators such as long-term functioning, healthy sense of well-being, prevention of chronic disease, and delayed morbidity.

HEALTH OUTCOMES

Patient
- Mortality
- Morbidity
- Well-Being
- Functioning

Population
- Mortality
- Morbidity
- Well-Being
- Functioning
- Equity

The use of health care services as an indicator of access to care has limitations. Some people are prone to overuse care, many may underuse care, and others use more services because they need more. Diabetes, asthma, heart disease, and hypertension are some chronic diseases that, without regular management, can result in hospitalization, premature disability, and death.

Outcome indicators such as death rates, chronic disease occurrence, and screening provide clues about access barriers that may limit appropriate care. For example, Pap tests allow early diagnosis of cervical cancer, which leads to better chances of survival. Discovery of late-stage cancers may indicate the underuse of an effective screening test. Or late-stage cancer may also reflect inappropriate medical follow-up of a diagnosed disease or progression of the cancer in some cases. For others, not undergoing a recommended screening test may reflect a lack of knowledge about the test's benefits or insufficient communication with the health care provider. Thus, cervical cancer screening and late stage diagnosis of cervical cancer are good indicators of access to primary care services.

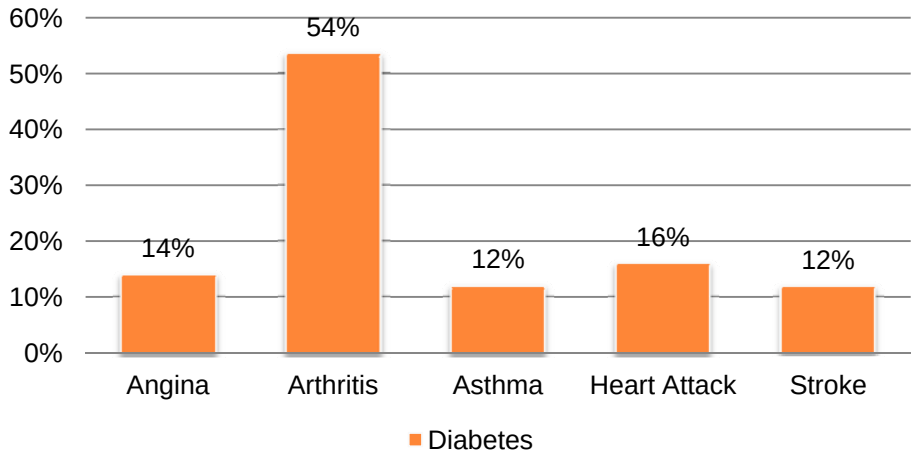
The best possible health outcome is the ideal goal; however, it may be unattainable for every patient. Adverse consequences of chronic conditions can occur with or without regular medical care, but deteriorating conditions are more common when regular care is absent. Health care and self-management together can contribute to improved function and well-being. Preventable hospitalizations are those that might not have occurred had the patient with chronic disease conditions received effective, timely, and continuous outpatient medical care. See the MONAHRQ® Data Guide for more information.

The test of equity of access involves determining whether there are systematic differences in use, quality, and outcome among groups in society and whether these differences are the result of barriers to care.

CHRONIC DISEASES AND CONDITIONS

The Behavioral Risk Factor Surveillance System provides insight to the burden of chronic diseases that Oklahomans carry in their everyday lives. In 2009, many of the 2.7 million adults in Oklahoma reported having been diagnosed with chronic disease: diabetes (11%), asthma (10%), angina (5%), heart attack (5%), and stroke (4%). Many times persons will have more than one chronic disease or condition. While some of the co-existence of chronic diseases is based in either heredity or in disease process, much can be attributable to the presence of common risk factors. Additionally, chronic diseases can cause serious health complications, such as vision loss, kidney failure and amputations of legs or feet associated with diabetes. BRFSS also provides insight to the distribution of chronic disease in the population. The chart below provides an example that compares the presence of other chronic diseases among those ever diagnosed with diabetes and those who have never been diagnosed with diabetes.

Percentage of Co-occurrence of Other Chronic Diseases Among Those With Diabetes



Source: OSDH, CHS, HCI, Behavioral Risk Factor Surveillance System, 2005-2009, on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 2-25-2013.

While causing major limitations in daily living and leading to high costs of health care, the majority of chronic diseases are preventable. Reducing or preventing tobacco use, improving poor diet, and increasing physical activity can prevent or delay disease onset or disease complications. Modifiable risk factors for some chronic diseases are not known; however, early detection through screening can promote treatment and lessen complications, disability and risk of death. Intervention strategies focused on common risk factors can prevent or delay multiple chronic diseases, but must be implemented with a long-term perspective and sustained effort.

The Racial and Ethnic Approaches to Community Health across the U.S. (REACH US) Risk Factor Survey Year 4 Data reports American Indian/Native men experience a higher prevalence of high blood pressure (45%) than White men. Diabetes is more prevalent among the American Indian/Native population (18%) for both men and women than among White men and women.

According to 2005, 2007 and 2009 BRFSS data screening by race and ethnicity, Blacks (38%), American Indian/Alaska Natives (37%), and Multi-racial (34%) individuals reported significantly higher age-adjusted prevalence rates of ever having been told by a health care provider that they had high blood pressure compared to Whites (30%).

Just five chronic diseases, heart disease, cancer, stroke, diabetes and asthma accounted for more than 82,000 inpatient stays accumulating in more than 375,000 days of inpatient hospital stay at a cost of nearly $3.4 billion.

Hospital Inpatient Discharges, Length of Stay (Days) and Charges for Selected Chronic Diseases

Primary Diagnosis	Number of Discharges	Total Days of Stay	Total Charges
Heart disease	46,774	194,147	$2,129,471,681
Stroke	12,226	55,592	$391,586,111
Cancer	11,957	79,145	$638,881,297
Diabetes	6,616	32,143	$164,840,264
Asthma	4,618	15,756	$74,414,820

Source: OSDH, CHS, HCI, Oklahoma Inpatient Discharge Data 2010, on OK2SHARE. Accessed at www.health.ok.gov/ok2share on 2/26/2013.

The cost for in-patient heart disease discharges alone totaled a staggering $2 billion. While a number of individuals are hospitalized each year, even more individuals spent years of diminished healthy life because of the severity and duration of chronic diseases.

HIGH BLOOD PRESSURE

Blood pressure is the term used to describe the force of blood pushing against the walls of the arteries as the heart pumps blood. High blood pressure is a serious disease that can lead to coronary heart disease, heart failure, stroke, and kidney failure.[1]

In the United States

- High blood pressure costs $131 billion annually in health-care expenditures.[2]
- Less than half of those with high blood pressure had it under control or were managing it.[2]
- Approximately 39% of adults with uncontrolled high blood pressure were not aware of their condition.[2]

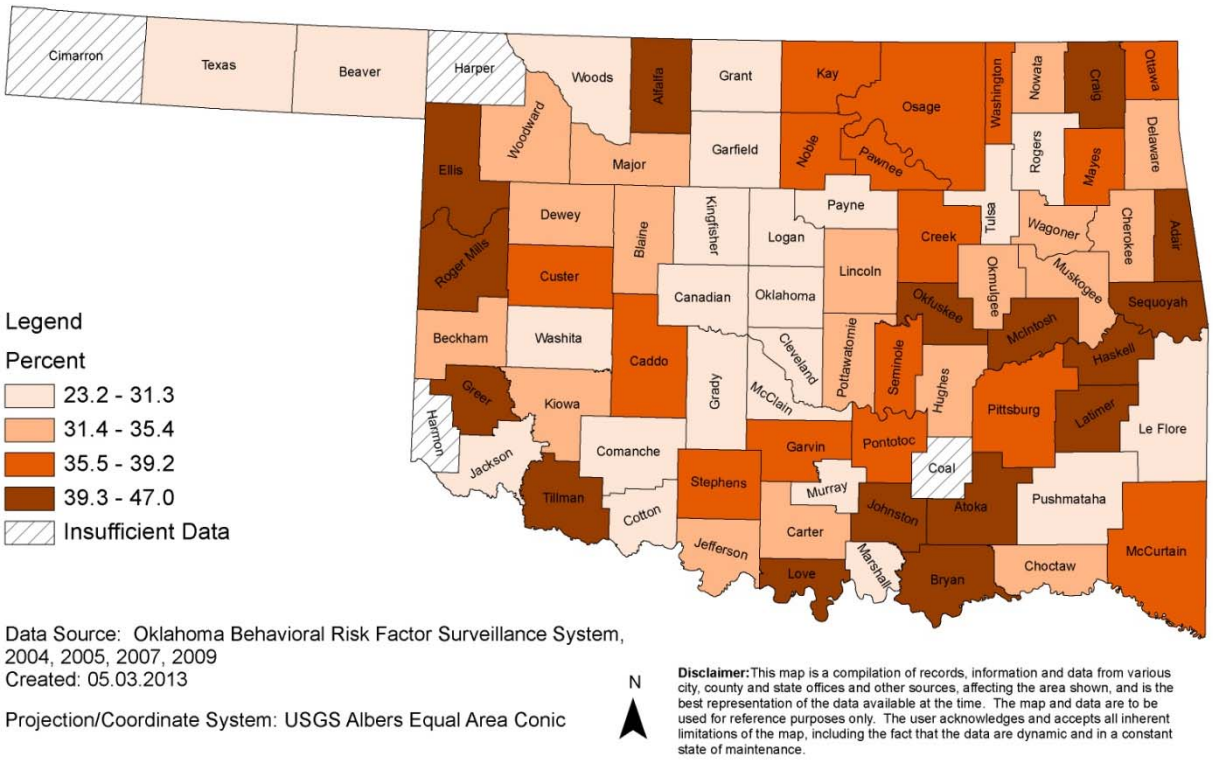
In Oklahoma

- 36% of Oklahoma adults had been told by a health care provider that they had high blood pressure (36% of males and 35% of females).[3]
- Percent of adults told they had high blood pressure: Blacks (42%), American Indians/Alaskan Natives (41%), Whites (36%), Asians (15%), and Hispanics (21%).[3]
- Percent of adults who have been told their blood pressure was high by region.[4]

28.3%	Central Cleveland and Oklahoma
34.9%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
28.7%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
35.7%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
33.1%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
29.8%	Tulsa Tulsa

1. National Heart, Lung, and Blood Institute. What is high blood pressure? 2012. Accessed at http://www.nhlbi.nih.gov/health/health-topics/topics/hbp/ on 03/08/ 13.
2. CDC. Vital signs: awareness and treatment of uncontrolled hypertension among adults—United States, 2003-2010. MMWR 2012;61:1-7.
3. OSDH, BRFSS, 2011 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/17/13.
4. OSDH, BRFSS, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/17/13.

Percent of Adults who Have Been Told Their Blood Pressure was High by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2004, 2005, 2007, 2009
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of adults who have been told their blood pressure was high.
    - There were 49 counties with sufficient data that had a higher percent of adults who had been told by a health care professional that their blood pressure was high as compared to the state (32%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Urban counties had lower percentages of adults who had been told by a healthcare professional that their blood pressure was high. It is not known if lower percentages of this indicator represent a lower percentage of persons with high blood pressure; or if it indicates a higher percentage of persons who have never been screened or who have never been told that their blood pressure was high when it actually was.
- Among those Oklahoma adults who have been told by a health care professional that their blood pressure was high, approximately 80% reported they are taking blood pressure medication.

Percent of Adults who have been Told Their Blood Pressure was High by County

County	Percent	County	Percent
Adair	39.4	Le Flore	31.3
Alfalfa	45.6	Lincoln	34.1
Atoka	43.8	Logan	26.3
Beaver	30.9	Love	40.6
Beckham	34.9	Major	32.6
Blaine	32.6	Marshall	31.3
Bryan	42.9	Mayes	35.5
Caddo	38.6	McClain	31.3
Canadian	24.5	McCurtain	37.9
Carter	35.4	McIntosh	39.9
Cherokee	33.6	Murray	28.5
Choctaw	34.1	Muskogee	35.4
Cimarron	*	Noble	37.4
Cleveland	28.5	Nowata	32.6
Coal	*	Okfuskee	47.0
Comanche	31.3	Oklahoma	28.3
Cotton	31.2	Okmulgee	34.1
Craig	42.7	Osage	35.9
Creek	36.2	Ottawa	35.7
Custer	36.5	Pawnee	36.7
Delaware	35.0	Payne	26.5
Dewey	33.1	Pittsburg	36.0
Ellis	39.8	Pontotoc	37.9
Garfield	29.5	Pottawatomie	31.7
Garvin	37.0	Pushmataha	30.8
Grady	27.9	Roger Mills	42.8
Grant	30.7	Rogers	31.3
Greer	46.7	Seminole	39.2
Harmon	*	Sequoyah	40.7
Harper	*	Stephens	35.7
Haskell	40.7	Texas	23.2
Hughes	31.7	Tillman	41.7
Jackson	30.2	Tulsa	29.8
Jefferson	31.6	Wagoner	35.2
Johnston	41.7	Washington	36.2
Kay	35.5	Washita	25.6
Kingfisher	29.7	Woods	24.1
Kiowa	33.1	Woodward	33.7
Latimer	39.7	STATE	**31.6**

* Insufficient data (denominator <50)
Source: OSDH, BRFSS, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 02/28/13.

HIGH CHOLESTEROL

Studies have demonstrated that high cholesterol is associated with atherosclerosis and coronary heart disease (CHD) and that low density lipoprotein (LDL) cholesterol plays a major role in this process. Other studies have demonstrated that low levels of high density lipoprotein (HDL) are associated with an increased risk of CHD.[1]

In the United States

- Between 1999 to 2006, trends for elevated LDL cholesterol levels in adults 20 and older decreased by about 33%[2].

- Less than 40% of adults in the U.S. have been told by a health care professional that they have high cholesterol.[3]

In Oklahoma

- Over 40% of adults have been told by a health care professional that they have high cholesterol.[3]

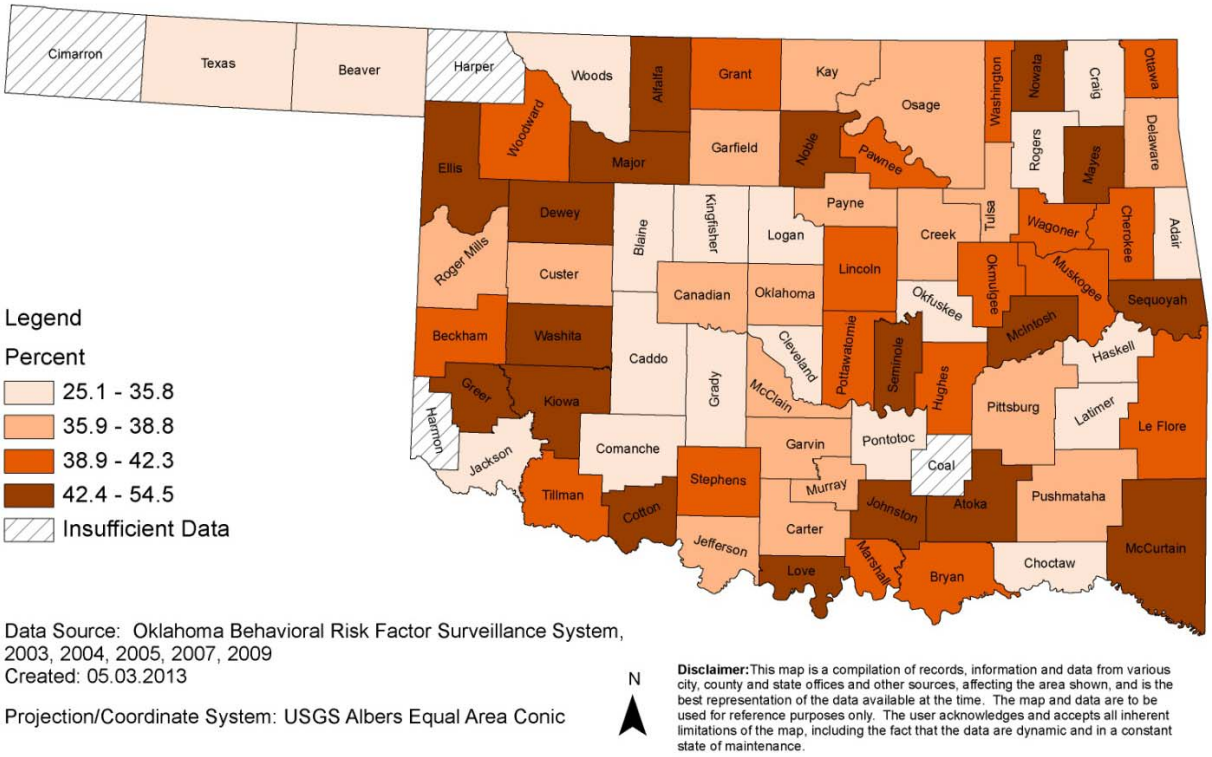
- 25.7% of Hispanics have been told they had high cholesterol; however, this may be because a lower percentage of this group reported being screened in the past 5 years compared to other racial/ethnic groups.[3]

- Percent of adults who have been told their cholesterol was high by region.[4]

35.7%	Central Cleveland and Oklahoma
39.2%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
37.0%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
40.6%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
37.0%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
37.0%	Tulsa Tulsa

1. Third Report of the National Cholesterol Education Panel (NCEP) on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III), Final Report. National Heart, Lung, and Blood Institute, National Institutes of Health, 2002. Available at: **http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3_rpt.htm**
2. Go AS, Mozaffarian D, Roger VL, et al.; on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. Circulation. 2013;127:e6-e245.
3. OSDH, BRFSS, 2011 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/16/13.
4. OSDH, BRFSS, 2003, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/16/13.

Percent of Adults who Have Been Told Their Cholesterol was High



- Darker colors represent a higher percent of adults who have high cholesterol.
    - There were 46 counties with sufficient data that had a higher percent of adults who had been told by a health professional that their cholesterol was high as compared to the state (38%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.

- Counties in the west/central area of the state tended to have lower percentages of adults who have been told by a health care professional that they have high cholesterol.

- 7 of the 18 (39%) counties with the highest percent of adults who have been told their cholesterol was high also had the highest percent of adults who had a history of CHD, angina, or heart attack. (Alfalfa, Cotton, Ellis, Greer, Johnston, Kiowa, and Nowata).

Percent of Adults who Have Been Told Their Cholesterol was High by County

County	Percent	County	Percent
Adair	32.9	Le Flore	40.8
Alfalfa	49.5	Lincoln	40.2
Atoka	54.5	Logan	35.7
Beaver	29.9	Love	48.1
Beckham	39.6	Major	45.1
Blaine	31.4	Marshall	42.3
Bryan	40.5	Mayes	47.1
Caddo	35.1	McClain	38.8
Canadian	37.7	McCurtain	48.3
Carter	38.1	McIntosh	45.9
Cherokee	40.9	Murray	38.4
Choctaw	28.9	Muskogee	40.2
Cimarron	*	Noble	45.9
Cleveland	33.0	Nowata	42.5
Coal	*	Okfuskee	28.2
Comanche	35.4	Oklahoma	36.6
Cotton	44.4	Okmulgee	41.8
Craig	34.6	Osage	38.0
Creek	36.9	Ottawa	41.6
Custer	38.1	Pawnee	39.5
Delaware	36.9	Payne	37.4
Dewey	43.4	Pittsburg	37.0
Ellis	50.1	Pontotoc	35.8
Garfield	38.8	Pottawatomie	40.0
Garvin	36.9	Pushmataha	36.1
Grady	32.0	Roger Mills	37.8
Grant	39.3	Rogers	35.6
Greer	53.0	Seminole	47.1
Harmon	*	Sequoyah	43.4
Harper	*	Stephens	40.6
Haskell	34.0	Texas	26.7
Hughes	40.5	Tillman	39.7
Jackson	29.0	Tulsa	37.0
Jefferson	38.1	Wagoner	39.6
Johnston	46.2	Washington	39.2
Kay	38.7	Washita	42.9
Kingfisher	34.3	Woods	25.1
Kiowa	42.9	Woodward	41.7
Latimer	35.0	STATE	**37.6**

* Insufficient data (denominator <50)
Source: OSDH, BRFSS, 2003, 2004, 2005, 2007, and 2009 on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 02/28/13.

ASTHMA

Asthma is a serious chronic lung disease caused by continual airway inflammation punctuated by episodes or attacks of increased inflammation, often in response to specific triggers. After 1999, mortality and hospitalizations due to asthma decreased; however, in recent years those numbers have been on the rise. [1]

In the United States

- 1 in every 12 adults has asthma in the U.S.
- Nine (9) people die from asthma every day.
- There were 1.9 million asthma related emergency room visits in 2009.
- The costs associated with asthma are about 56 million dollars each year.

In Oklahoma

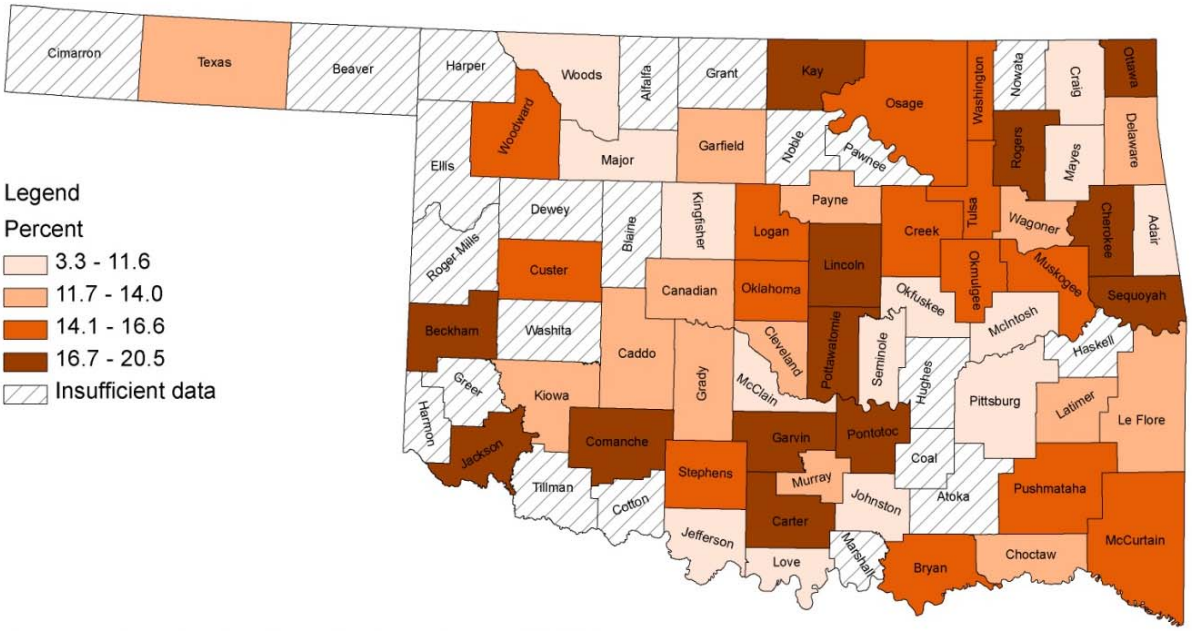
- In Oklahoma, the prevalence of life time asthma has increased since the year 2000, and is slightly higher than the U.S.
- Oklahoma women are more commonly diagnosed with asthma than Oklahoma men..
- American Indians and Alaska Natives reported higher prevalence of lifetime asthma than white adults when reported by race and ethnicity.
- Oklahoma adults with household incomes less than $25,000 reported much higher prevalence of current asthma than those with higher income levels.
- Percent of lifetime asthma among adults by region.[2]

13.9%	Central Cleveland and Oklahoma
15.3%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
13.7%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
14.8%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
15.2%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
14.1%	Tulsa Tulsa

1.American Lung Association, Epidemiology and Statistics Unit, Research and Health Education Division. Trends in Asthma Morbidity and Mortality. 2012

2. OSDH, BRFSS, 2008-2010, on OK2Share. Accessed at http://www.health.ok.gov/ok2share on 02/18/13.

Percent of Lifetime Asthma Among Adults



Data Source: Behavioral Risk Factor Surveillance System 2008-2010.
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

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- Darker colors represent a higher percent of lifetime asthma.
    - There were 27 counties with sufficient data that had a higher percent of lifetime asthma as compared to the state (15%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- The people who reported that they have ever received a diagnosis of asthma from a health professional may no longer have the condition.
- Nearly 1 in 3 adults with asthma report missing at least one day of work each year because of asthma.
- Adults younger than 35 years old reported significantly higher prevalence of lifetime asthma than those older than 55 years.
- Adults with annual household incomes lower than $25,000 reported much higher prevalence of current asthma than those in other incomes levels did.

Percent of Lifetime Asthma Among Adults by County

County	Percent	County	Percent
Adair	11.6	Le Flore	12.4
Alfalfa	N/A*	Lincoln	19.8
Atoka	N/A*	Logan	16.6
Beaver	N/A*	Love	9.5
Beckham	17.5	McClain	10.7
Blaine	N/A*	McCurtain	15.0
Bryan	15.4	McIntosh	7.6
Caddo	13.3	Major	7.8
Canadian	14.0	Marshall	N/A*
Carter	17.2	Mayes	8.8
Cherokee	16.8	Murray	13.8
Choctaw	11.7	Muskogee	14.0
Cimarron	N/A*	Noble	N/A*
Cleveland	13.0	Nowata	N/A*
Coal	N/A*	Okfuskee	6.7
Comanche	19.1	Oklahoma	14.3
Cotton	N/A*	Okmulgee	15.0
Craig	9.1	Osage	15.0
Creek	16.4	Ottawa	20.4
Custer	14.8	Pawnee	N/A*
Delaware	12.9	Payne	12.4
Dewey	N/A*	Pittsburg	11.1
Ellis	N/A*	Pontotoc	17.0
Garfield	12.9	Pottawatomie	20.4
Garvin	16.6	Pushmataha	16.1
Grady	13.9	Roger Mills	N/A*
Grant	N/A*	Rogers	18.9
Greer	N/A*	Seminole	11.6
Harmon	N/A*	Sequoyah	17.2
Harper	N/A*	Stephens	14.0
Haskell	N/A*	Texas	13.1
Hughes	N/A*	Tillman	N/A*
Jackson	16.7	Tulsa	14.1
Jefferson	6.5	Wagoner	12.3
Johnston	3.3	Washington	14.9
Kay	20.5	Washita	N/A*
Kingfisher	8.0	Woods	3.3
Kiowa	12.7	Woodward	14.9
Latimer	11.9	STATE	**14.5**

* Insufficient data (denominator <50 or the half of the 95% Confidence Interval >10)
Source: OSDH, BRFSS, 2008-2010, on OK2Share. Accessed at http://www.health.ok.gov/ok2share on 02/18/13.

CURRENT ASTHMA

The definition of current asthma is the percentage of people who reported that they have ever received a diagnosis of asthma and still have the disease. Although asthma is one of the most common long-term diseases of children, adults can be diagnosed as well.

In the United States

- In 2010, 9% of the adult population was told by a health care professional they had asthma.

- A greater percent of females (11%) were told they had asthma than males (7%) in 2010.

In Oklahoma

- The percent of current asthma diagnosed in Oklahomans (10%) has increased since the year 2000 and continues to be slightly higher than in the U.S.

- Female adults have significantly higher prevalence of current asthma than males.

- There is no statistically significant difference in prevalence of current asthma by age groups, although the 18-24 years old age groups reported slightly higher prevalence.

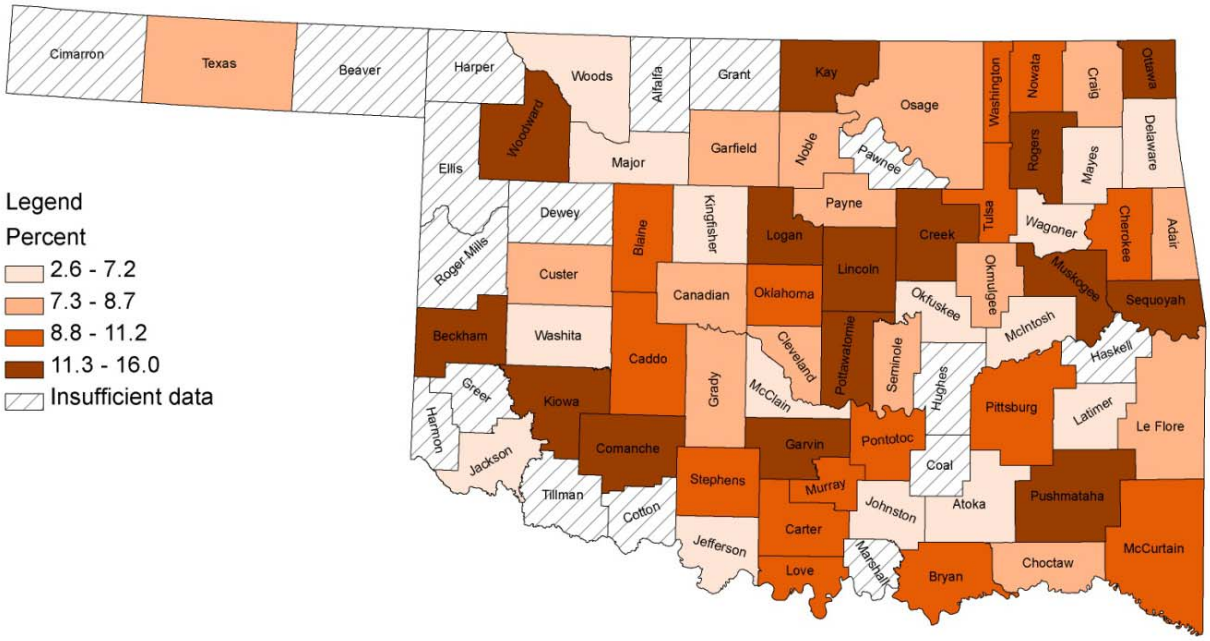
- Adults with annual household incomes lower than $25,000 reported much higher prevalence of current asthma than those in other incomes levels.

- Percent of Adults who have asthma by region.

8.8%	Central Cleveland and Oklahoma
10.2%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
9.0%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
10.0%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
9.5%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
9.1%	Tulsa Tulsa

Source: OSDH, BRFSS, 2008-2010, on OK2Share. Accessed at http://www.health.ok.gov/ok2share on 02/28/13.

Percent of Current Asthma Diagnosis in Adults in Oklahoma



Data Source: Behavioral Risk Factor Surveillance System 2008-2010.
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

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- Darker colors represent a higher percent of adults currently diagnosed with asthma.
    - There were 30 counties with sufficient data that had a higher percent of adults currently diagnosed with asthma as compared to the state (9%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- American Indian/Alaska Native adults reported a higher percent of current asthma diagnosis in the adult population than White adults did.
- Asthma attacks can be triggered by certain substances which include (but are not limited to): tobacco smoke, dust mites, outdoor air pollution, cockroach allergen, pets, mold, and smoke from burning wood or grass.

Percent of Current Asthma among Adults by County

County	Percent	County	Percent
Adair	8.4	Le Flore	8.5
Alfalfa	*	Lincoln	13.3
Atoka	6.8	Logan	13.2
Beaver	*	Love	9.5
Beckham	14.6	McClain	6.5
Blaine	9.4	McCurtain	8.7
Bryan	9.0	McIntosh	4.5
Caddo	9.6	Major	6.4
Canadian	8.3	Marshall	*
Carter	8.9	Mayes	7.2
Cherokee	10.4	Murray	10.7
Choctaw	7.3	Muskogee	11.5
Cimarron	*	Noble	7.8
Cleveland	8.0	Nowata	9.5
Coal	*	Okfuskee	6.2
Comanche	12.4	Oklahoma	9.1
Cotton	*	Okmulgee	8.1
Craig	8.2	Osage	8.1
Creek	11.6	Ottawa	15.5
Custer	7.4	Pawnee	*
Delaware	7.1	Payne	7.3
Dewey	*	Pittsburg	9.2
Ellis	*	Pontotoc	11.2
Garfield	8.4	Pottawatomie	12.3
Garvin	11.8	Pushmataha	15.2
Grady	8.5	Roger Mills	*
Grant	*	Rogers	12.9
Greer	*	Seminole	8.7
Harmon	*	Sequoyah	11.4
Harper	*	Stephens	8.7
Haskell	*	Texas	8.3
Hughes	*	Tillman	*
Jackson	7.1	Tulsa	9.1
Jefferson	5.1	Wagoner	5.8
Johnston	3.3	Washington	9.5
Kay	16.0	Washita	3.6
Kingfisher	4.0	Woods	2.6
Kiowa	11.2	Woodward	13.7
Latimer	6.3	STATE	**9.4**

* Insufficient data (denominator < 50 or the half of the 95% Confidence Interval >10)
Source: OSDH, BRFSS, 2008-2010, on OK2Share. Accessed at http://www/health.ok.gov/ok2share on 02/18/13.

BREAST CANCER

Breast cancer forms in the tissues of the breast, milk ducts and milk glands. Breast cancer can occur in women and men; however, breast cancer in men is rare.

In the United States

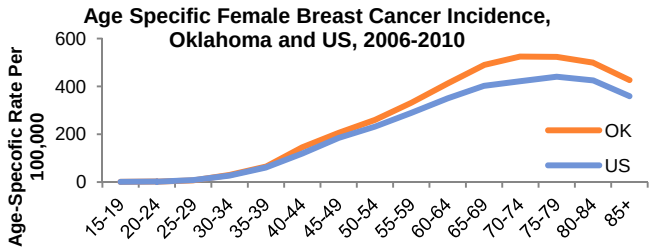
- Breast cancer is the most frequently diagnosed cancer among women in the U.S. and represents approximately one third of all cancers diagnosed among women.

- The lifetime risk of being diagnosed with breast cancer has increased in the past 40 years from 1 in 11 women to 1 in 8.[1]

In Oklahoma

- Just under one-third (30%) of breast cancers in Oklahoma females are diagnosed at late stage, which is a larger percentage of cases than the U.S. (23%).

- Black females in Oklahoma had the highest incidence (158.7 cases / 100,000 females) followed by American Indian/Alaska Native females (153.1 cases / 100,000 females) and White females (141.3 cases / 100,000 females).

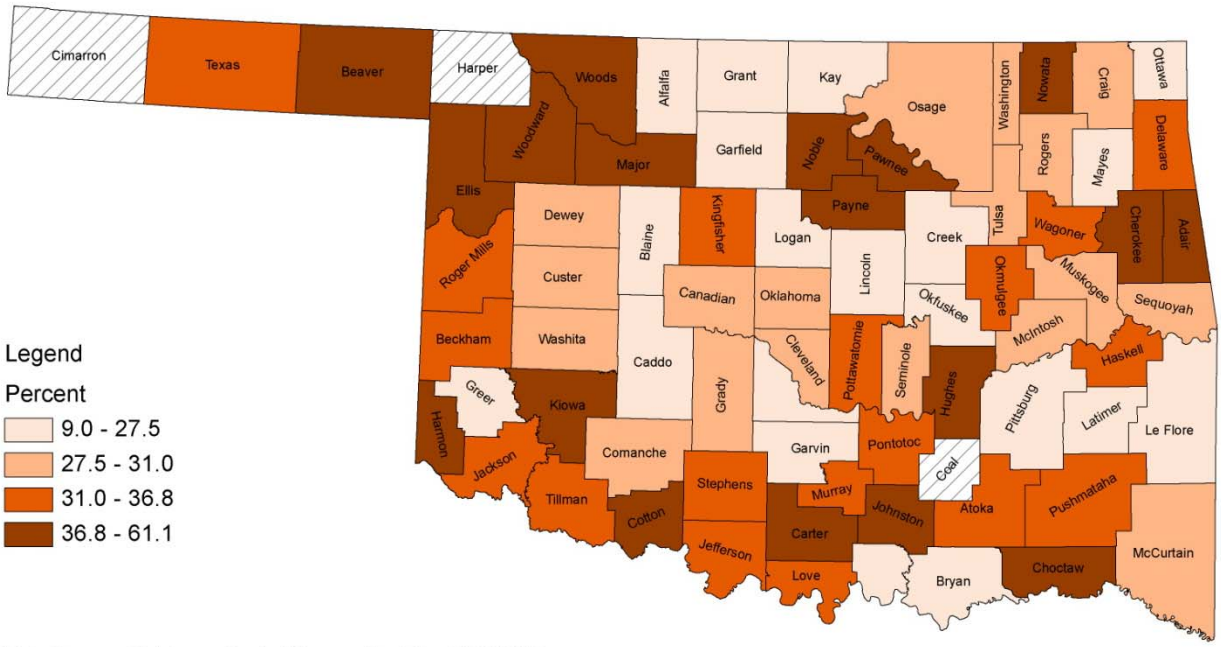


- Percent of breast cancer cases diagnosed at late state by region.[2]

29.5%	Central Cleveland and Oklahoma
30.8%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
28.5%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
29.3%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
32.2%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
29.7%	Tulsa Tulsa

1. American Cancer Society. *Breast Cancer Facts & Figures 2011-2012*. Atlanta: American Cancer Society, Inc.
2. 2008-2010 Oklahoma Central Cancer Registry

Percent of Breast Cancer Cases Diagnosed at Late Stage by County



Data Source: Oklahoma Central Cancer Registry, 2008-2010
Created: 03.06.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of breast cancer cases diagnosed at late stage.
    - There were 40 counties with sufficient data that had a higher percent of late stage breast cancer diagnosed as compared to the state (30%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- It is estimated that 232,340 new cases will be diagnosed and 39,620 deaths from breast cancer will occur in Females in the U.S. in 2013.
- Breast cancer occurring in men accounts for approximately 1% of the cases diagnosed in the U.S. each year.
- Five year survival for breast cancer is directly related to the stage at diagnosis. The more advanced the stage at diagnosis, the lower the chance of survival.

Percent of Breast Cancer Cases Diagnosed at Late Stage by County

County	Percent Late Stage	County	Percent Late Stage
Adair	44.7	Le Flore	18.9
Alfalfa	9.1	Lincoln	24.4
Atoka	36.8	Logan	27.5
Beaver	40.0	Love	36.0
Beckham	34.0	McClain	26.9
Blaine	20.0	McCurtain	30.5
Bryan	27.5	McIntosh	28.8
Caddo	18.5	Major	39.3
Canadian	28.0	Marshall	25.0
Carter	45.0	Mayes	26.9
Cherokee	39.3	Murray	32.3
Choctaw	40.5	Muskogee	29.2
Cimarron	*	Noble	39.1
Cleveland	30.9	Nowata	61.1
Coal	*	Okfuskee	27.5
Comanche	31.0	Oklahoma	29.2
Cotton	38.1	Okmulgee	32.2
Craig	29.7	Osage	27.8
Creek	25.7	Ottawa	23.6
Custer	28.3	Pawnee	42.5
Delaware	31.3	Payne	41.8
Dewey	28.6	Pittsburg	24.0
Ellis	40.0	Pontotoc	31.9
Garfield	22.2	Pottawatomie	31.2
Garvin	25.0	Pushmataha	33.3
Grady	29.2	Roger Mills	33.3
Grant	22.2	Rogers	29.4
Greer	25.0	Seminole	29.2
Harmon	40.0	Sequoyah	28.3
Harper	*	Stephens	34.5
Haskell	31.0	Texas	31.8
Hughes	40.4	Tillman	31.0
Jackson	34.8	Tulsa	29.7
Jefferson	33.3	Wagoner	32.2
Johnston	38.7	Washington	30.7
Kay	27.3	Washita	30.6
Kingfisher	33.3	Woods	45.8
Kiowa	43.8	Woodward	37.8
Latimer	23.5	STATE	**30.0**

* Insufficient data
Source: Oklahoma Central Cancer Registry, Oklahoma State Department of Health, 2008-2010

CERVICAL CANCER

Cervical cancer forms in the cells lining the uterine cervix. These cells do not suddenly change into cancer but first develop from normal cells to precancerous cells which later turn into cancerous cells.

In the United States

- It is estimated that 12,340 new cases of invasive cervical cancers will be diagnosed and 4,030 deaths from cervical cancer will occur in the U.S. for 2013.[1]

- Increased cervical screening resulted in declining death rates in past decades by almost 70%, however the impact has begun to taper off in recent years.[1]

- Cervical cancer usually occurs in midlife, most of the incidence occurs in women less than 50 years of age. [1]

In Oklahoma

- It is estimated that 170 new cervical cancer cases will occur in Oklahoma in 2013.[1]

- Incidence in Oklahoma is highest among Blacks (5.6 cases per 100,000) followed by Whites (5.3 cases per 100,000 people) and American Indian/Alaska Natives (4.5 cases per 100,000 people). [2]

- Percent of cervical cancer cases diagnosed at late stage by region.[3]

47.2%	Central Cleveland and Oklahoma
44.3%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner and Washington
43.1%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods and Woodward
51.2%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha and Seminole
57.5%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman and Washita
55.7%	Tulsa Tulsa

1. American Cancer Society. Cancer Facts & Figures 2013. Atlanta: American Cancer Society; 2013.
2. Oklahoma Central Cancer Registry, Oklahoma State Department of Health.
3. Data source: 2008-2010 Oklahoma Central Cancer Registry.

Percent of Cervical Cancer Cases Diagnosed at Late Stage by County

County	Percent Late Stage	County	Percent Late Stage
Adair	*	Le Flore	*
Alfalfa	*	Lincoln	*
Atoka	*	Logan	*
Beaver	*	Love	*
Beckham	*	McClain	*
Blaine	*	McCurtain	*
Bryan	*	McIntosh	*
Caddo	*	Major	*
Canadian	52.9	Marshall	*
Carter	*	Mayes	*
Cherokee	*	Murray	*
Choctaw	*	Muskogee	57.9
Cimarron	*	Noble	*
Cleveland	42.9	Nowata	*
Coal	*	Okfuskee	*
Comanche	38.5	Oklahoma	48.2
Cotton	*	Okmulgee	*
Craig	*	Osage	30.0
Creek	33.3	Ottawa	46.2
Custer	*	Pawnee	*
Delaware	*	Payne	*
Dewey	*	Pittsburg	*
Ellis	*	Pontotoc	*
Garfield	*	Pottawatomie	27.8
Garvin	*	Pushmataha	*
Grady	*	Roger Mills	*
Grant	*	Rogers	*
Greer	*	Seminole	*
Harmon	*	Sequoyah	42.9
Harper	*	Stephens	*
Haskell	*	Texas	*
Hughes	*	Tillman	*
Jackson	*	Tulsa	55.7
Jefferson	*	Wagoner	*
Johnston	*	Washington	*
Kay	*	Washita	*
Kingfisher	*	Woods	*
Kiowa	*	Woodward	*
Latimer	*	STATE	**48.9**

* Insufficient data

Source: Oklahoma Central Cancer Registry, Oklahoma State Department of Health, 2008-2010.

Please note: No map included due to the number of counties with suppressed data cells.

COLORECTAL CANCER

Colorectal cancer forms in the colon or rectum. Colorectal cancer is one of the 5 most frequently diagnosed cancers in men and women.

In the United States

- It is estimated that 142,820 new colorectal cancers will be diagnosed and 50,830 deaths from colorectal cancer will occur in the U.S. for 2013.[1]
- The lifetime risk of getting colorectal cancer is about 1 in 20.[1]
- Risk of colorectal cancer increases with age, especially after 50 years of age.

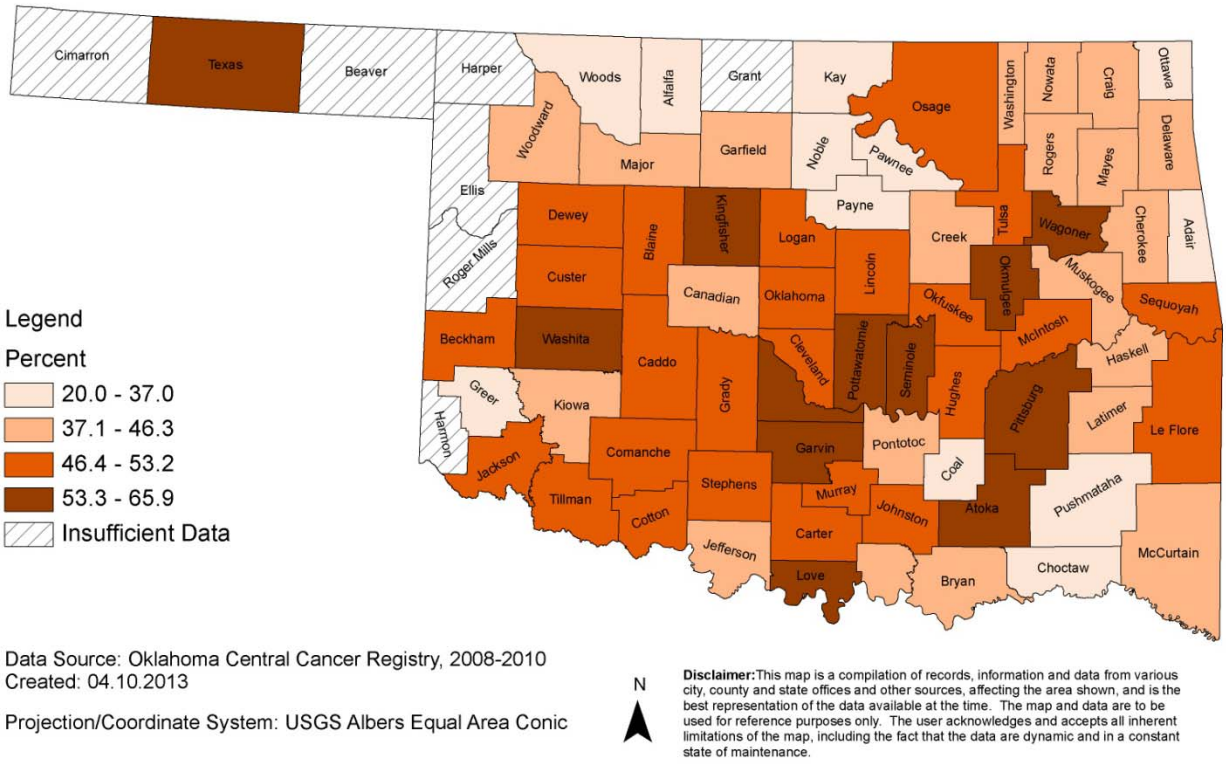
In Oklahoma

- It is estimated that 1,780 new colorectal cancer cases and 720 deaths from colorectal cancer will occur in Oklahoma in 2013.[2]
- Age-adjusted incidence in Oklahoma was higher among males (56.3 cases per 100,000 males) than females (41.4 cases per 100,000 females).[2]
- Incidence by race and ethnicity in Oklahoma is highest among Blacks (56.5 cases per 100,000) followed by Whites (46.8 cases per 100,000 people) and American Indian/Alaska Natives (45.1 cases per 100,000 people).[2]
- Percent of colorectal cancer cases diagnosed at late stage by region:[3]

49.3%	Central Cleveland and Oklahoma
43.1%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
44.8%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
48.6%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
50.6%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
49.6%	Tulsa Tulsa

1. American Cancer Society. Cancer Facts & Figures 2013. Atlanta: American Cancer Society; 2013
2. Oklahoma Central Cancer Registry, Oklahoma State Department of Health.
3. Data source: 2008-2010 Oklahoma Central Cancer Registry.

Percent of Colorectal Cancer Cases Diagnosed at Late Stage by County



- Darker colors represent a higher percent of colorectal cancer diagnosed at late stage.
    - There were 37 counties with sufficient data that had a higher percent of colorectal cancer diagnosed at late stage as compared to the state (47%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- There appeared to be lower percent of the cases diagnosed at late stage in the northeastern counties.
- It is estimated that 142,820 new cases will be diagnosed and 50,830 deaths from colorectal cancer will occur in males and females combined in the U.S. in 2013.[2]
- Five year survival for colorectal cancer is directly related to the stage it is diagnosed at. The more advanced the stage is at diagnosis, the lower the survival.
- Colorectal cancer is one of the few sites that can be prevented with the use of appropriate screening tests.

Percent of Colorectal Cancer Cases Diagnosed at Late Stage by County

County	Percent Late Stage	County	Percent Late Stage
Adair	34.6	Le Flore	47.9
Alfalfa	30.8	Lincoln	46.8
Atoka	54.5	Logan	50.0
Beaver	*	Love	55.6
Beckham	51.9	McClain	65.2
Blaine	48.0	McCurtain	46.0
Bryan	44.4	McIntosh	47.6
Caddo	47.5	Major	46.2
Canadian	42.9	Marshall	40.0
Carter	47.6	Mayes	43.8
Cherokee	42.1	Murray	46.7
Choctaw	34.1	Muskogee	45.3
Cimarron	*	Noble	35.5
Cleveland	53.2	Nowata	44.0
Coal	20.0	Okfuskee	51.6
Comanche	51.8	Oklahoma	48.2
Cotton	50.0	Okmulgee	57.4
Craig	45.8	Osage	52.6
Creek	41.5	Ottawa	34.8
Custer	48.4	Pawnee	34.4
Delaware	43.9	Payne	36.7
Dewey	50.0	Pittsburg	65.9
Ellis	*	Pontotoc	45.6
Garfield	41.8	Pottawatomie	55.4
Garvin	55.8	Pushmataha	37.0
Grady	46.8	Roger Mills	*
Grant		Rogers	43.2
Greer	33.3	Seminole	54.9
Harmon	*	Sequoyah	50.0
Harper	*	Stephens	52.6
Haskell	45.5	Texas	60.9
Hughes	47.8	Tillman	46.7
Jackson	47.5	Tulsa	49.6
Jefferson	40.0	Wagoner	57.
Johnston	47.8	Washington	45.6
Kay	24.7	Washita	54.5
Kingfisher	55.0	Woods	30.0
Kiowa	44.4	Woodward	46.3
Latimer	38.7	STATE	**47.4**

* Insufficient data
Source: Oklahoma Central Cancer Registry, Oklahoma State Department of Health, 2008-2010

HEART DISEASE

Coronary heart disease (CHD), also known by coronary artery disease or ischemic heart disease, is the narrowing of the small blood vessels caused by a buildup of plaque that supply blood and oxygen to the heart. This can cause blood flow to the heart to slow down or stop, resulting in angina (chest pain) or a heart attack.[1,2]

In the United States

- Approximately every 44 seconds, an American will have a heart attack.[3]

- Projections show that by 2030, the prevalence of CHD will increase by approximately 18%.[3]

In Oklahoma

- The percentage of adults who have a history of having had a heart attack was 5.3% in 2011, tying with one other state for having the 9th highest percentage among all states.[4]

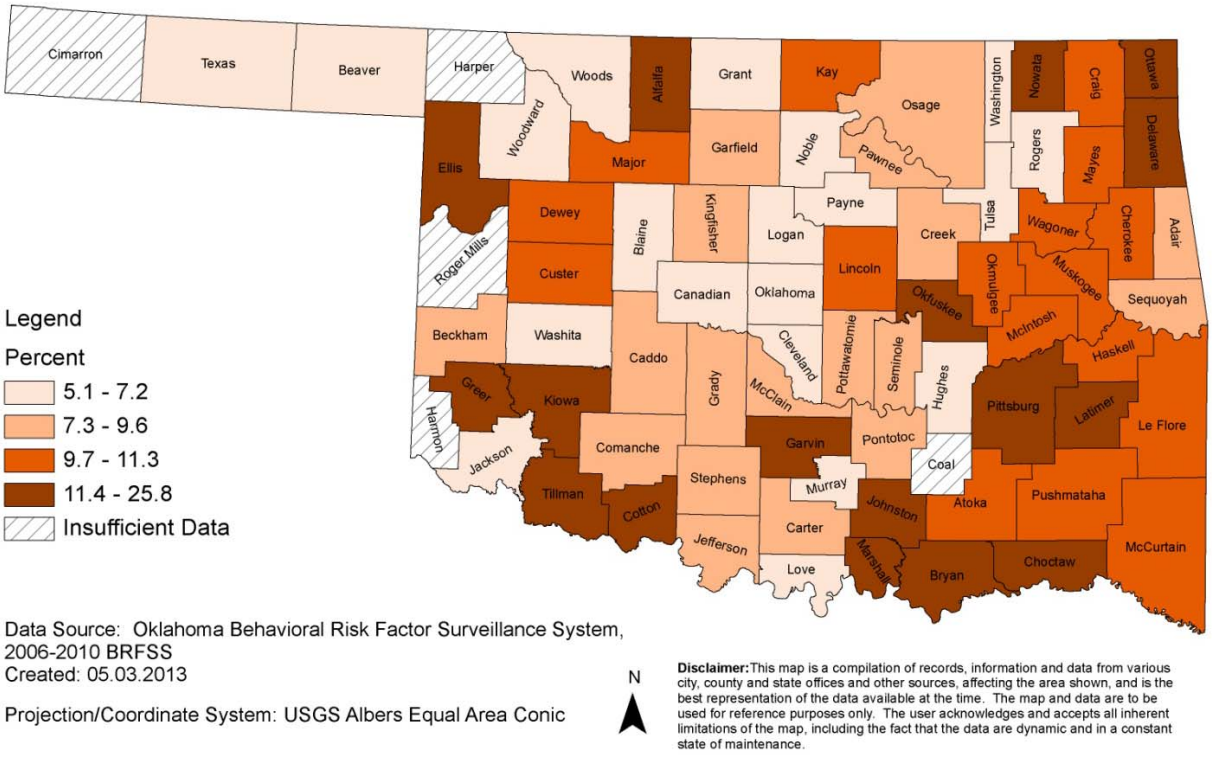
- In 2008-2010, the age-adjusted percentage of history of heart attack or CHD was significantly higher among American Indian/Alaska Natives than the percentage among Whites, Blacks, or Hispanics.

- Percent of adults who have a history of coronary heart disease, heart attack, or angina by region.[5]

6.9%	Central Cleveland and Oklahoma
9.5%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
7.2%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
10.2%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
9.0%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
6.9%	Tulsa Tulsa

1. American Heart Association. Coronary Artery Disease – Coronary Heart Disease. Accessed at http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/Coronary-Artery-Disease---The-ABCs-of-CAD_UCM_436416_Article.jsp on 04/10/13.
2. Coronary heart disease. Accessed at http://www.nlm.nih.gov/medlineplus/ency/article/007115.htm on 04/10/13.
3. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, et al. on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. Circulation. 2013;127:e6-e245.
4. CDC. Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.
5. OSDH, BRFSS, 2006-2010 on OK2SHARE, Accessed at http://www.health.ok.gov/ok2share on 02/18/13.

Percent of Adults with a History of Coronary Heart Disease, Angina, or Heart Attack by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2006-2010 BRFSS
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of adults with a history CHD, angina, or heart attack.
    - There were 34 counties with sufficient data that had a higher percent of adults who have a history of CHD, angina, or heart attack as compared to the state (8%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Counties in the southwestern and eastern parts of the state tended to have higher percentages of adults who have had a history of CHD, angina, or heart attack.
- 4% of adults in the U.S. reported a history of angina or CHD as compared to 5.4% of adult Oklahomans and 4% of adults in the U.S. reported a history of heart attack as compared to 6% of adult Oklahomans.
- CHD costs the U.S. 10-8.9 billion dollars each year in health care services, medications and lost productivity.

Percent of Adults with a History of Coronary Heart Disease, Heart Attack, or Angina by County

County	Percent	County	Percent
Adair	9.0	Le Flore	10.4
Alfalfa	11.5	Lincoln	11.3
Atoka	10.0	Logan	6.6
Beaver	5.2	Love	5.4
Beckham	8.3	Major	8.0
Blaine	6.4	Marshall	9.8
Bryan	12.1	Mayes	9.9
Caddo	7.3	McClain	10.2
Canadian	6.3	McCurtain	14.7
Carter	8.8	McIntosh	9.7
Cherokee	10.6	Murray	6.8
Choctaw	11.9	Muskogee	10.4
Cimarron	*	Noble	6.1
Cleveland	6.4	Nowata	14.2
Coal	*	Okfuskee	11.7
Comanche	9.6	Oklahoma	7.1
Cotton	11.9	Okmulgee	9.7
Craig	11.0	Osage	7.9
Creek	7.7	Ottawa	14.8
Custer	10.6	Pawnee	8.3
Delaware	13.5	Payne	6.9
Dewey	10.5	Pittsburg	12.1
Ellis	11.5	Pontotoc	9.2
Garfield	7.6	Pottawatomie	8.1
Garvin	12.2	Pushmataha	9.8
Grady	8.6	Roger Mills	*
Grant	7.2	Rogers	7.2
Greer	20.8	Seminole	8.7
Harmon	*	Sequoyah	9.4
Harper	*	Stephens	9.1
Haskell	9.8	Texas	5.1
Hughes	6.0	Tillman	16.1
Jackson	6.1	Tulsa	6.9
Jefferson	9.1	Wagoner	10.6
Johnston	25.8	Washington	7.0
Kay	9.9	Washita	7.2
Kingfisher	8.0	Woods	6.8
Kiowa	14.3	Woodward	5.4
Latimer	11.6	STATE	**8.2**

*Insufficient data
Source: Oklahoma Behavioral Risk Factor Surveillance System, 2006-2010

DIABETES

Diabetes is a disease in which blood glucose levels are above normal. With diabetes the body either doesn't make enough insulin or can't use its own insulin as well as it should. This results in a dangerous build up of sugar in the blood which can lead to heart disease, blindness, kidney failure, and amputations.

In the United States

- Diabetes affects 25.8 million people, including 18.8 million diagnosed with diabetes and 7.0 million undiagnosed.
- Among persons aged 65 years and older, 10.9 million, or 26.9%, had diabetes in 2010.
- About 215,000 people younger than 20 years had diabetes (type 1 or type 2) in 2010.
- About 1.9 million people aged 20 years or older were diagnosed with diabetes in 2010.
- Diabetes is the seventh leading cause of death.

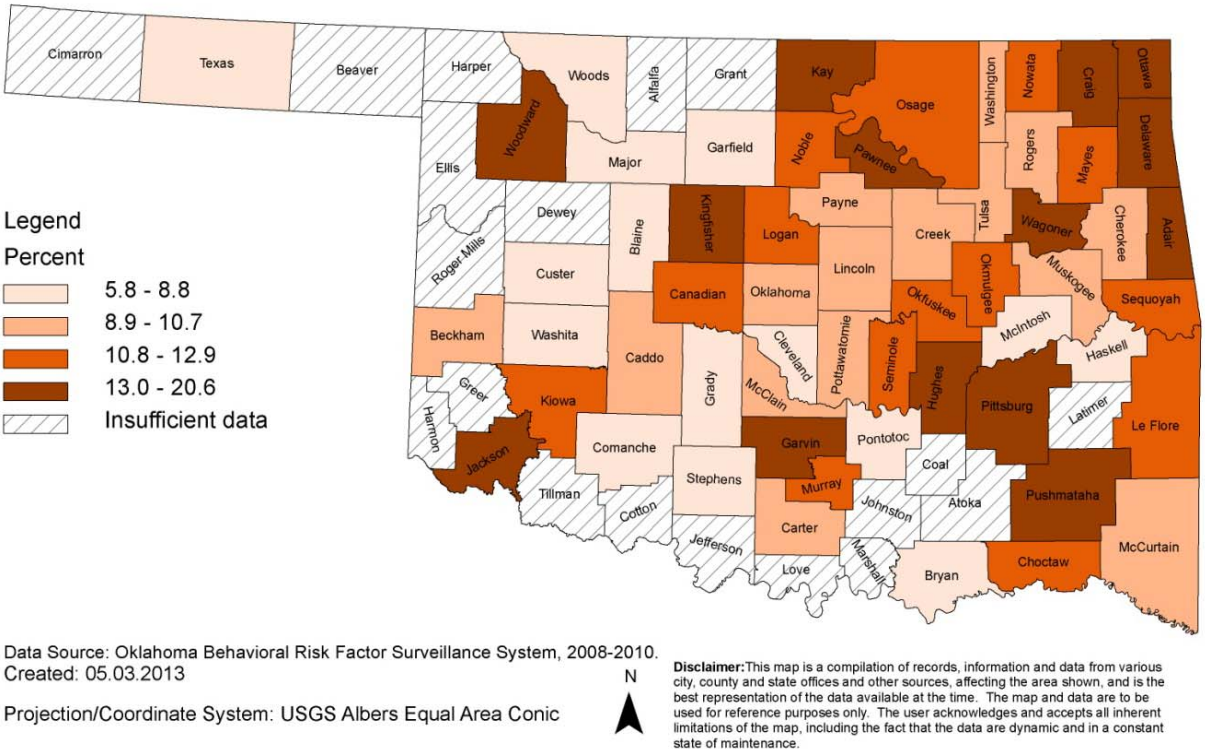
In Oklahoma

- Among adults (18 years and over), approximately 295,500 people (10.4%) reported being diagnosed with diabetes by health professionals in 2010.
- Including those who may be undiagnosed, the total number of adults who have diabetes is about 416,200 (15%) in Oklahoma.
- American Indian/Alaska Natives and Black adults reported significantly higher prevalence of diabetes than Whites.
- Percent of adults with diabetes by region.

9.6%	Central Cleveland and Oklahoma
11.9%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
10.6%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
11.2%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
9.7%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
9.8	Tulsa Tulsa

Data source: Oklahoma BRFSS 2008-2010.

Percent of Adults with Diabetes by County



Data Source: Oklahoma Behavioral Risk Factor Surveillance System, 2008-2010.
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

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- Darker colors represent a higher percent of adults with diabetes.
    - There were 28 counties with sufficient data that had a higher percent of adults with diabetes as compared to the state (11%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- The percent of adults with diabetes was higher in the northeastern counties of the state.
- Many other parts of the state had insufficient data making it difficult to assess geographic trends.
- The percent of the adult population who have been diagnosed with diabetes has been steadily increasing during the past 10 years.
- About one in every five Oklahoma seniors (65 years and over) have been diagnosed with diabetes.

Percent of Adults with Diabetes by County

County	Percent	County	Percent
Adair	20.6	Le Flore	11.6
Alfalfa	*	Lincoln	9.0
Atoka	*	Logan	12.8
Beaver	*	Love	*
Beckham	10.4	McClain	8.9
Blaine	7.5	McCurtain	10.5
Bryan	6.9	McIntosh	6.9
Caddo	9.4	Major	7.3
Canadian	11.6	Marshall	*
Carter	9.7	Mayes	12.7
Cherokee	9.7	Murray	12.0
Choctaw	11.5	Muskogee	10.7
Cimarron	*	Noble	12.8
Cleveland	8.7	Nowata	10.9
Coal	*	Okfuskee	12.1
Comanche	8.3	Oklahoma	10.0
Cotton	*	Okmulgee	12.9
Craig	15.0	Osage	12.1
Creek	10.3	Ottawa	13.9
Custer	8.8	Pawnee	16.4
Delaware	15.4	Payne	10.2
Dewey	*	Pittsburg	14.0
Ellis	*	Pontotoc	7.9
Garfield	7.9	Pottawatomie	10.0
Garvin	14.0	Pushmataha	15.4
Grady	5.8	Roger Mills	*
Grant	*	Rogers	8.9
Greer	*	Seminole	11.2
Harmon	*	Sequoyah	12.0
Harper	*	Stephens	8.8
Haskell	6.8	Texas	5.9
Hughes	16.9	Tillman	*
Jackson	14.6	Tulsa	9.8
Jefferson	*	Wagoner	13.2
Johnston	*	Washington	9.5
Kay	15.1	Washita	7.3
Kingfisher	14.0	Woods	7.3
Kiowa	12.7	Woodward	14.1
Latimer	*	STATE	**10.5**

* Insufficient data (denominator < 50 or the half of the 95% Confidence Interval >10)
Source: OSDH, BRFSS 2008-2010 on OK2share Accessed at http://www/health.ok.gov/ok2share on 02/18/13.

MELANOMA

Melanoma, also known as malignant melanoma and cutaneous melanoma, is a cancer that originates in the melanocytes, typically in the skin. Melanoma is less common than other types of skin cancer but far more dangerous. It is almost always curable in its early stages.

In the United States

- It is estimated that 76,690 new melanomas will be diagnosed and 9,480 deaths from melanoma will occur in the U.S. for 2013.[1]

- Five year survival for melanoma cancer is directly related to the stage it is diagnosed at. The more advanced the stage is at diagnosis, the lower the survival.

- Even though risk of melanoma cancer increases with age, it is one of the more common cancers among young adults, especially young women.

In Oklahoma

- On average, 54% of malignant melanomas in Oklahoma are diagnosed at early stages. This is much lower than the U.S., where 84% of cases are diagnosed at early stages.[2]

- Age adjusted incidence in Oklahoma between 2008 and 2010 was higher among males (26 cases per 100,000 males) than females (14 cases per 100,000 females).

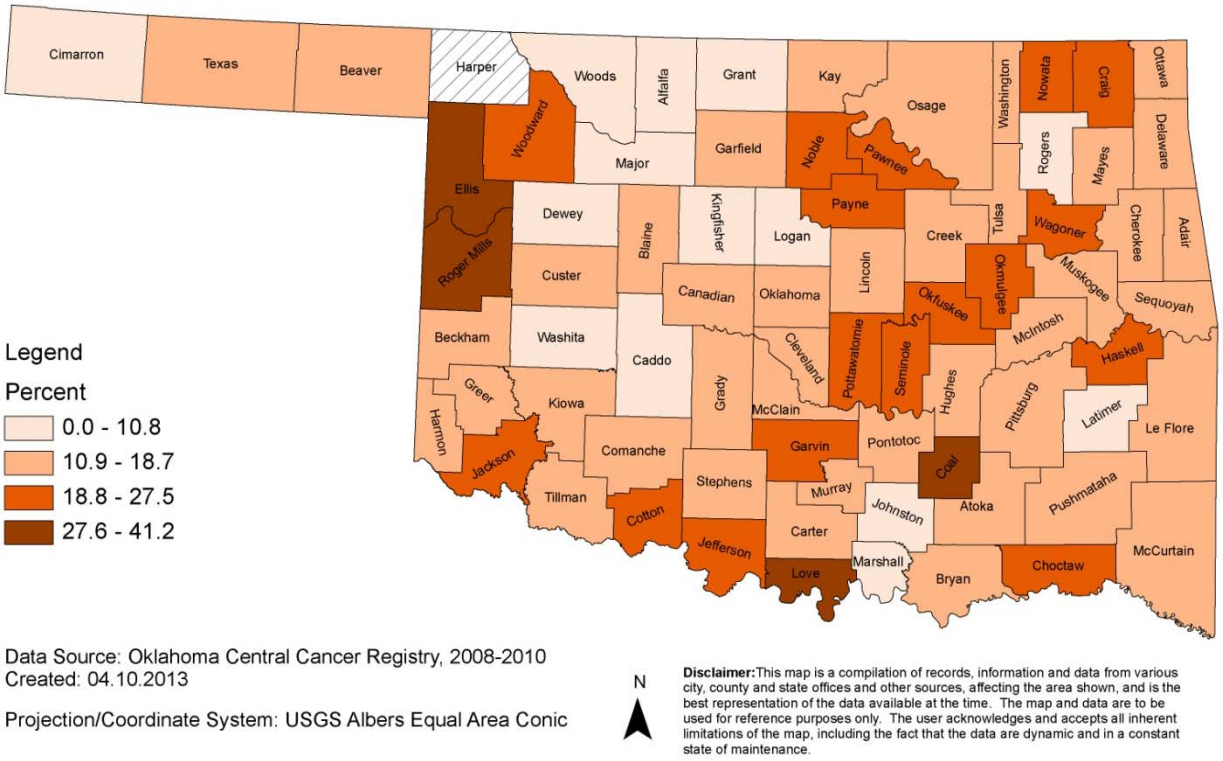
- Incidence in Oklahoma is highest among Whites (20 cases per 100,000 people), followed by American/Alaska Natives (13 cases per 100,000 people) and Blacks (3 cases per 100,000).

- Percent of malignant melanoma cases diagnosed at late stage by region.[3]

15.1%	Central Cleveland and Oklahoma
17.6%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
14.5%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
17.2%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
16.7%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
13.0%	Tulsa Tulsa

1. American Cancer Society. Cancer Facts & Figures 2013. Atlanta: American Cancer Society; 2013.
2. American Cancer Society. Cancer Facts & Figures 2013. Atlanta: American Cancer Society; 2013.
3. Data source: 2008-2010 Oklahoma Central Cancer Registry.

Percent of Malignant Melanoma Cases Diagnosed at Late Stage by County



Data Source: Oklahoma Central Cancer Registry, 2008-2010
Created: 04.10.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Darker colors represent a higher percent of malignant melanoma cases diagnosed at late stage.
    - There were 47 counties with sufficient data that had a higher percent of malignant melanoma cases diseases at late stage as compared to the state (15%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- The counties with the greatest percent diagnosed at late stage are located in the western part of the state.
- It is estimated that 770 new cases will occur in Oklahoma in 2013.[1]
- The lifetime risk of getting melanoma is about 1 in 50 for Whites, 1 in 1,000 for Blacks and 1 in 200 for Hispanics. [1]
- Development of malignant melanoma is associated with sun or other forms of UV exposure (ex: tanning beds).

Percent of Melanoma Cancer Cases Diagnosed at Late Stage by County

County	Percent Late State	County	Percent Late Stage
Adair	13.5	Le Flore	18.2
Alfalfa	0.0	Lincoln	17.8
Atoka	11.5	Logan	9.5
Beaver	12.5	Love	32.4
Beckham	16.9	McClain	12.4
Blaine	18.8	McCurtain	11.5
Bryan	17.8	McIntosh	13.0
Caddo	9.8	Major	4.2
Canadian	15.5	Marshall	7.1
Carter	14.5	Mayes	17.1
Cherokee	18.0	Murray	14.0
Choctaw	27.6	Muskogee	16.9
Cimarron	0.0	Noble	26.9
Cleveland	16.9	Nowata	23.1
Coal	41.2	Okfuskee	25.8
Comanche	16.4	Oklahoma	14.6
Cotton	21.1	Okmulgee	22.3
Craig	22.6	Osage	16.2
Creek	16.3	Ottawa	17.6
Custer	14.9	Pawnee	26.4
Delaware	15.2	Payne	24.4
Dewey	4.8	Pittsburg	15.0
Ellis	28.6	Pontotoc	17.5
Garfield	16.5	Pottawatomie	21.3
Garvin	21.1	Pushmataha	16.7
Grady	16.3	Roger Mills	29.4
Grant	6.7	Rogers	10.8
Greer	18.2	Seminole	20.0
Harmon	13.3	Sequoyah	17.4
Harper	12.5	Stephens	18.6
Haskell	23.7	Texas	18.8
Hughes	16.7	Tillman	15.8
Jackson	22.8	Tulsa	13.0
Jefferson	21.1	Wagoner	22.0
Johnston	7.7	Washington	15.2
Kay	11.7	Washita	7.7
Kingfisher	10.4	Woods	8.3
Kiowa	15.4	Woodward	22.4
Latimer	4.5	STATE	**15**

* Insufficient Data (numerator < 10)
Source: Oklahoma Central Cancer Registry, Oklahoma State Department of Health, 2008-2010

STROKE

Stroke is a time-sensitive, medical emergency. A stroke occurs when a blood clot blocks the blood supply to part of the brain or when a blood vessel in or around the brain bursts. Two million brain cells die every minute during a stroke, increasing the risk of permanent brain damage, disability, or death.[1]

In the United States

- Blacks have nearly twice the risk of first-ever stroke compared with Whites. [1]

- The prevalence of transient ischemic attacks (TIAs) increases with age. Up to 40 percent of all people who suffer a TIA will go on to experience a stroke. [1]

In Oklahoma

- The percentage of adults who have a history of having had a stroke was 3.4% in 2011, tying with two other states for having the 12th highest percentage among all states.[2] This represents enough adults who have survived a stroke to fill to seating capacity the Gaylord Memorial Stadium, in Norman, nearly 1 ¼ times or Boone Pickens Stadium, in Stillwater, over 1 ½ times.

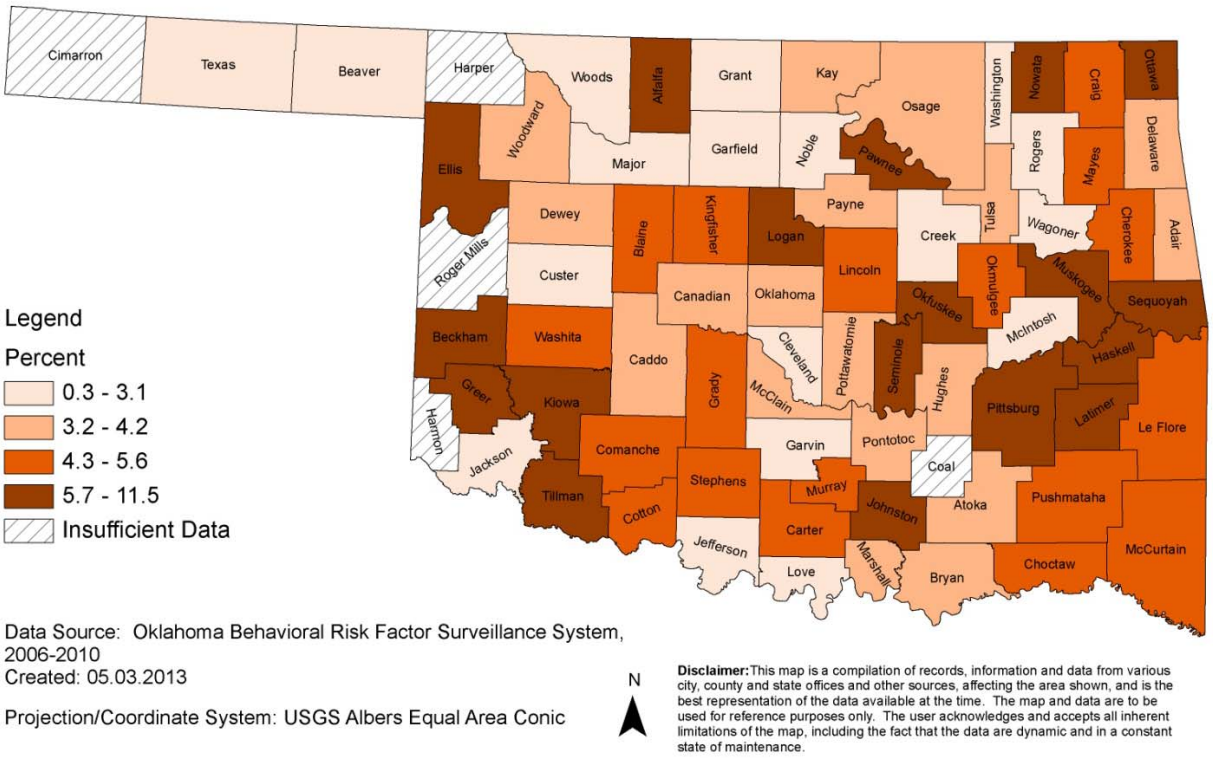
- In 2008-2010, with screening by race and ethnicity, the age-adjusted percentages of history of stroke was significantly higher among Blacks, American Indian/Alaska Native and Multiracial Oklahoma adults than the percentage among White adults.[3]

- Percent of adults with a history of a stroke by region.[4]

3.3%	Central Cleveland and Oklahoma
4.3%	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
4.0%	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
4.6%	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
4.3%	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
3.3%	Tulsa Tulsa

1. National Stroke Association. Stroke 101 Fact Sheet. Accessed at http://www.stroke.org/site/PageServer?pagename=factsheets on 04/08/13.
2. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.
3. Oklahoma State Department of Health (OSDH), Chronic Disease Service. Stroke in Oklahoma. Accessed at http://www.ok.gov/health2/documents/Stroke_Fact_Sheet_Oklahoma_October_2011.pdf on 04/08/13.
4. Oklahoma BRFSS 2006-2010 on OK2SHARE, Accessed at http://www/health.ok.gov/ok2share on 02/18/13.

Percent of Adults with a History of Stroke by County



- Darker colors represent a higher percent of adults are obese.
    - There were 46 counties (more than half) with sufficient data that had a higher percent of adults who have had a history of a stroke than the state percent of 3.9%
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Counties in the southwestern and eastern parts of the state tended to have higher percent of adults who had a history of a stroke.
- Stroke is a leading cause of serious, long-term disability among adults.
- There were 12,226 hospital discharges with stroke as the primary diagnosis in 2010, accounting for over $390 million in hospital charges in Oklahoma.[3]
- The estimated direct and indirect cost of stroke in the U.S. in 2010 was $73.7 billion.

Percent of Adults with a History of Stroke by County

County	Percent	County	Percent
Adair	3.3	Le Flore	5.3
Alfalfa	8.6	Lincoln	4.8
Atoka	4.0	Logan	6.5
Beaver	0.8	Love	2.4
Beckham	6.0	Major	3.7
Blaine	4.8	Marshall	5.3
Bryan	3.8	Mayes	3.0
Caddo	3.3	McClain	2.2
Canadian	3.6	McCurtain	3.4
Carter	4.6	McIntosh	4.3
Cherokee	5.1	Murray	5.3
Choctaw	4.4	Muskogee	7.3
Cimarron	*	Noble	2.5
Cleveland	2.2	Nowata	8.0
Coal	*	Okfuskee	8.4
Comanche	4.8	Oklahoma	3.7
Cotton	5.5	Okmulgee	5.6
Craig	4.7	Osage	3.6
Creek	3.1	Ottawa	7.1
Custer	3.1	Pawnee	7.0
Delaware	3.3	Payne	3.2
Dewey	4.2	Pittsburg	6.3
Ellis	6.3	Pontotoc	4.1
Garfield	2.9	Pottawatomie	4.2
Garvin	2.6	Pushmataha	4.6
Grady	5.0	Roger Mills	*
Grant	2.0	Rogers	2.4
Greer	9.1	Seminole	5.7
Harmon	*	Sequoyah	6.1
Harper	*	Stephens	4.5
Haskell	7.0	Texas	0.3
Hughes	4.0	Tillman	6.9
Jackson	2.6	Tulsa	3.4
Jefferson	2.3	Wagoner	2.4
Johnston	8.0	Washington	2.9
Kay	4.1	Washita	4.5
Kingfisher	4.3	Woods	1.2
Kiowa	5.8	Woodward	3.7
Latimer	11.5	STATE	**3.9**

* Insufficient data (denominator <50)
Source: Oklahoma Behavioral Risk Factor Surveillance System, 2006-2010

CHRONIC DISEASE RELATED DEATHS

The impact of chronic disease is readily apparent in this most extreme realm of burden – mortality. According to the U.S. Centers for Disease Control and Prevention (CDC), approximately 70% of deaths among Americans are attributable to chronic diseases with heart disease, cancer and stroke accounting for more than half of all deaths each year. (http://www.cdc.gov/chronicdisease/index.htm)

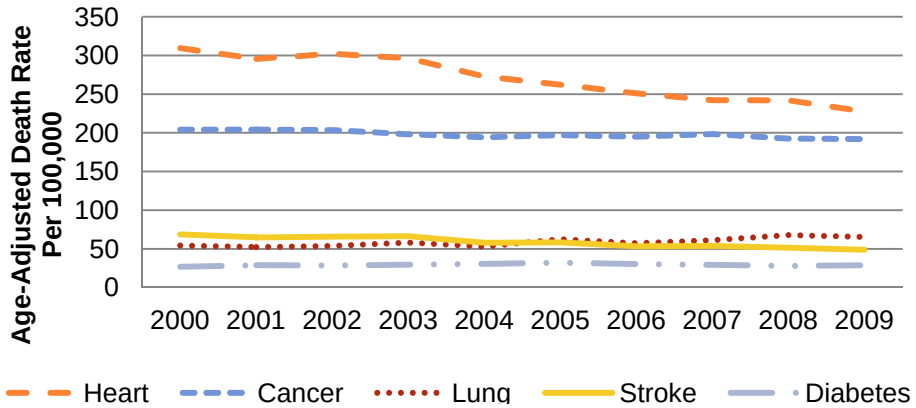
More than 35,000 Oklahomans die each year. Seven of the 10 leading causes of death are chronic conditions. Nearly 3 of every 4 Oklahomans die from one of the five leading chronic diseases.

1. Diseases of the heart (Heart disease) - 30% of all deaths
2. Malignant neoplasms (Cancer) - 25% of all deaths
3. Chronic lower respiratory disease (Chronic lung disease) - 9% of all deaths
4. Accidents - 6% of all deaths
5. Cerebrovascular diseases (Stroke) - 6% of all deaths
6. Diabetes mellitus (Diabetes) - 3% of all deaths
7. Alzheimer's disease - 3% of all deaths
8. Influenza and pneumonia - 2% of all deaths
9. Suicide - 2% of all deaths
10. Nephritis, nephritic syndrome and nephrosis (Kidney disease) - 2% of all deaths

Source: OSDH, Center for Health Statistics (CHS), Health Care Information (HCI),Vital Statistics 2010, on OK2SHARE. Accessed at www.health.ok.gov/ok2share on 2-25-2013.

Heart disease, cancer, chronic lung disease, stroke and diabetes have been among the leading causes of death for more than four decades (1980-2011). There have been notable changes in the leading causes of death over the past decade. Heart disease-related death rate continues to decrease at a faster pace than the rates for other leading chronic diseases. Cancer- and stroke-related death rates are also on the decline. The diabetes-related death rate is holding steady while the death rate for chronic lung disease is on the rise.

Chronic Disease Death Rates



The leading causes of chronic disease-related deaths differ slightly between men and women and between racial and ethnic populations. The table below presents the percentages of all deaths caused by the top five chronic diseases among various populations.

Percent of All Deaths for Top Five Leading Chronic Diseases by Race, Ethnicity, and Sex.

	American Indian/Alaska Native Female	American Indian/Alaska Native Male	Asian Female	Asian Male	Black Female	Black Male	Hispanic Female	Hispanic Male	White Female	White Male
Heart disease	26%	27%	24%	21%	31%	29%	17%	18%	32%	31%
Cancer	24%	22%	30%	30%	23%	23%	23%	18%	23%	26%
Chronic lung disease	7%	6%	3%	-	4%	4%	3%	2%	8%	8%
Stroke	5%	4%	13%	6%	9%	6%	7%	6%	9%	5%
Diabetes	7%	5%	6%	4%	7%	5%	7%	3%	3%	3%

Source: OSDH, Vital Statistics, 2006 to 2008, on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 2-25-2013. Revised IHS race categories and bridged racial categories.

CANCER

All forms of cancer combined are the second leading cause of death. Breast cancer is the leading cause of cancer death among females. Colorectal is the third leading cause of cancer death among both males and females. Cervical cancer is not a leading cause of cancer death among females, however due to advanced detection and treatment, there is no longer reason anyone should die from it anymore. Malignant melanoma is typically in the top ten causes of cancer death and in Oklahoma is ranked higher than in most other states.

Melanoma

- Mortality from malignant melanoma in Oklahoma is higher among males (4.8 deaths / 100,000 males) than females (2.0 deaths / 100,000 females). Both are higher than the U.S. mortality rate for males (4.1 deaths / 100,000 males) and females (1.7 deaths / 100,000 females).
- In seven of the past ten years, Oklahoma has ranked among the top ten states for malignant melanoma deaths.

Cervical

- Mortality from cervical cancer is higher among Oklahoma females (2.8 deaths per 100,000 females) than in the U.S. (2.3 deaths per 100,000 females).
- American Indian/Alaska Natives (AI/AN) in Oklahoma had the highest mortality (2.7 deaths per 100,000 people) followed by Whites (1.5 deaths per 100,000 people). Blacks have unreliable death rate due to the very small number of death counts.

Breast

- After adjusting for racial misclassification, Black females in Oklahoma also have the highest mortality (34.8 deaths per 100,000 females) followed by AI/AN females (26.6 deaths per 100,000 females) and White females (23.7 deaths per 100,000 females).
- It is estimated that 2,690 new cases will be diagnosed and 490 deaths from breast cancer will occur in females in Oklahoma in 2013.[1]
- Breast cancer is the most frequently diagnosed cancer among women in Oklahoma and represents approximately one third of all cancers diagnosed among women.[2]

Colorectal

- Colorectal cancer is the third leading cause of cancer-related deaths in the U.S. when gender is separate and the second leading cause when gender is combined.
- Mortality from colorectal cancer in Oklahoma is higher among males (22.0 deaths per 100,000 males) than females (14.4 deaths per 100,000 females). Both are higher than the U.S. mortality rates: males (19.1 deaths per 100,000 males) and females (13.4 deaths per 100,000 females).[3]

1. American Cancer Society. *Cancer Facts & Figures 2013*. Atlanta: American Cancer Society; 2013.
2. Oklahoma Central Cancer Registry, Oklahoma State Department of Health
3. Centers for Disease Control and Prevention. Wide –ranging Online data for Epidemiologic Research. Accessed 04/22/2013.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic obstructive pulmonary disease (COPD) includes chronic bronchitis and emphysema, which both make emptying air from the lungs progressively more difficult and can be associated with cough, mucus production, wheezing and breathlessness.[1] COPD causes substantial morbidity and mortality[1] and may be unrecognized in its early stages. Risk factors include primarily cigarette smoking, but also exposure to noxious particles or gases, recurrent infection, diet and genetic factors.[1] COPD is often preventable, but there is no cure. Treatment can control symptoms and slow disease progression.[2]

In the United States

- COPD combined with asthma was the third leading cause of death in the U.S. in 2010.

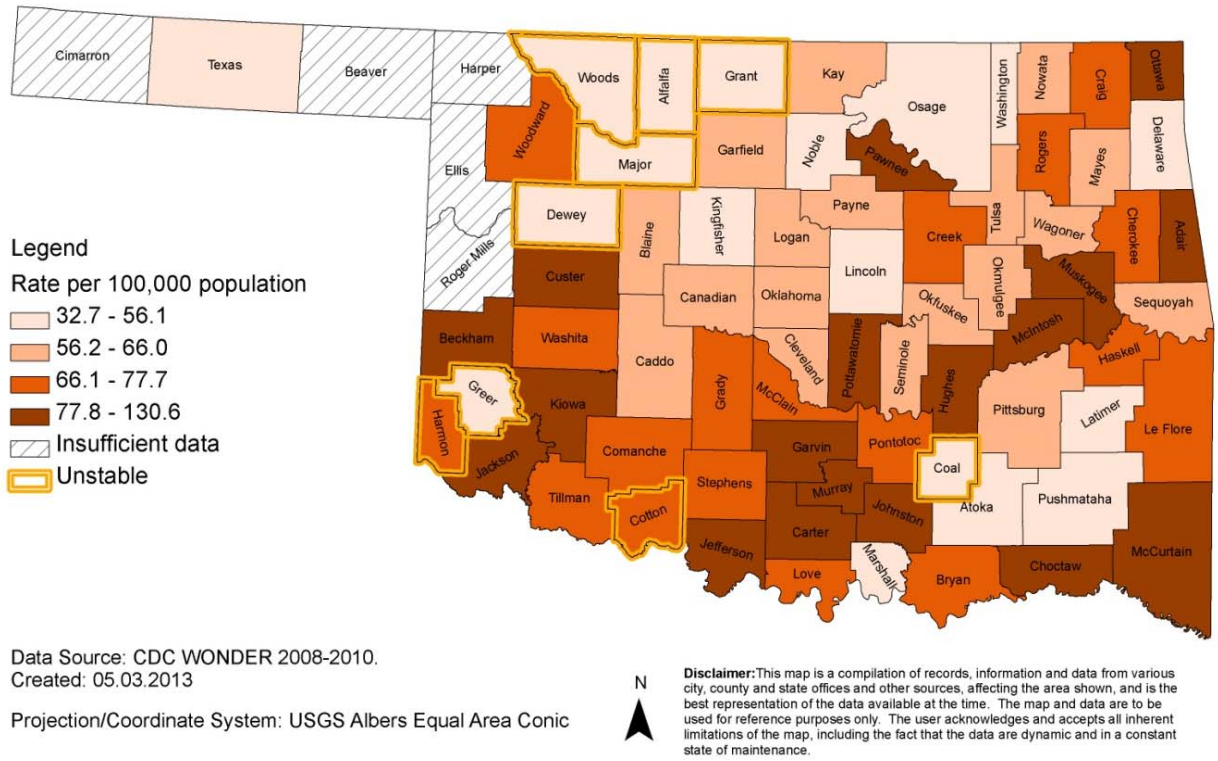
In Oklahoma

- COPD is responsible for 98 percent of deaths from respiratory diseases in Oklahoma.
- Men have much higher death rates due to COPD than women.
- The COPD death rates are higher among Whites than other racial/ethnic groups.
- COPD deaths per 100,000 population (age-adjusted rate) by region.[3]

59.5	Central Cleveland and Oklahoma
65.4	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner and Washington
58.4	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods and Woodward
73.1	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha and Seminole
68.2	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman and Washita
59.2	Tulsa Tulsa

1. American Thoracic Society/European Respiratory Society Task Force. Standards for the diagnosis and management of patients with COPD [online]. Version 1.2. New York: American Thoracic Society. 2004.
2. Miniño AM, Xu JQ, Kochanek KD. Deaths: Preliminary data for 2008. National Vital Statistics Reports; vol 59 no 2. Hyattsville, MD: National Center for Health Statistics. 2010.
Mannino DM, Homa DM, Akinbami LJ, Ford ES, Redd SC. Chronic obstructive pulmonary disease surveillance—United States, 1971–2000. In: Surveillance Summaries, August 2, 2002. MMWR 51(SS–6):1–16. 2002.
3. OSDH, Vital Records, 2007-2009 on OK2SHARE. Accessed at http://www.ok.gov/health/pub/wrapper/ok2share.html.

Chronic Obstructive Pulmonary Disease Age-Adjusted Death Rate by County



- Darker colors represent a higher rate of deaths due to COPD.
    - There were 36 counties with sufficient data that had a higher rate of deaths due to COPD as compared to the state (66%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Counties in southern Oklahoma had higher death rates of COPD.
- All the counties in Oklahoma had age-adjusted death rates of COPD higher than the national level.
- COPD is a major cause of disability. People with COPD over the age of 50 years are more likely to be considered disabled.
- Cigarette smoking is the leading cause of COPD and secondhand smoke is associated with a 10-43 percent increase in risk of developing COPD in adults.

Chronic Obstructive Pulmonary Disease Age-Adjusted Death Rate per 100,000 Population by County

County	Rate	County	Rate
Adair	82.7	Le Flore	66.8
Alfalfa	52.4~	Lincoln	55.8
Atoka	51.2	Logan	56.6
Beaver	*	Love	69.6
Beckham	84.9	McClain	77.7
Blaine	59.4	McCurtain	85.8
Bryan	69.1	McIntosh	98
Caddo	62.5	Major	32.7~
Canadian	57.3	Marshall	45.7
Carter	96.2	Mayes	60.5
Cherokee	68.9	Murray	130.6
Choctaw	80.1	Muskogee	102.7
Cimarron	*	Noble	44.9
Cleveland	63.7	Nowata	57.8
Coal	41.1~	Okfuskee	57.7
Comanche	68.7	Oklahoma	64
Cotton	66.9~	Okmulgee	65
Craig	68.8	Osage	46.7
Creek	70	Ottawa	87.6
Custer	90.3	Pawnee	84.1
Delaware	56.1	Payne	60.5
Dewey	50.3~	Pittsburg	63.3
Ellis	*	Pontotoc	74.7
Garfield	58.9	Pottawatomie	88.9
Garvin	80	Pushmataha	51.9
Grady	69	Roger Mills	*
Grant	53.3~	Rogers	68.4
Greer	42.8~	Seminole	66
Harmon	77.5~	Sequoyah	63.4
Harper	*	Stephens	67.3
Haskell	68.3	Texas	46
Hughes	87.4	Tillman	72
Jackson	81.4	Tulsa	60.2
Jefferson	96.3	Wagoner	63.2
Johnston	99.4	Washington	50.8
Kay	59.6	Washita	67.6
Kingfisher	54.3	Woods	33.3
Kiowa	91.5	Woodward	74.3
Latimer	52.8	STATE	**66.0**

~ Unstable data indicated that there were less than 20 deaths in the county.
* Insufficient data indicated that there were less than 10 deaths in the county.
Source: CDC WONDER 2008-2010. Accessed at http://wonder.cdc.gov

ASTHMA

Many Americans are afflicted by asthma, a serious chronic lung disease caused by continual airway inflammation punctuated by episodes or attacks of increased inflammation, often in response to specific triggers. These attacks are characterized by difficulty in breathing, which occasionally are extreme and can constitute a medical emergency. While asthma has the potential to result in death, this is a rare endpoint, particularly as knowledge increases about how to manage the symptoms.

In the United States

- Between 2007-2009, asthma death rates in the U.S. were higher among Blacks than Whites overall.[1]

- Asthma death rates increased with age in the U.S. with the highest death rates occurring in those 75 years and older.

In Oklahoma

- Deaths directly caused by asthma are not frequent; on average there are fewer than 50 deaths (out of 36,000 total) due to asthma in Oklahoma each year.

- Due to small numbers, rates are very unstable and unreliable at the county level and therefore are not included in this publication.

- Asthma deaths per 100,000 population (age-adjusted rates) by region.[2]

1.2	Central	Cleveland and Oklahoma
1.0	Northeast	Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
0.9	Northwest	Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
1.5	Southeast	Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
1.0	Southwest	Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
1.2	Tulsa	Tulsa

1. National Center for Health Statistics (NCHS), National Vital Statistics System
2. OSDH, Vital Records, 2007-2009 on OK2SHARE. Available at http://www.ok.gov/health/pub/wrapper/ok2share.html.

HEART DISEASE

Heart disease is a term that encompasses several heart problems, including coronary heart diseases, arrhythmias, heart failure and heart valve problems.

In the United States

- A 2007 study concluded that approximately half of the decline in coronary heart disease deaths from 1980 to 2000 may be attributable to reductions in major risk factors (including reductions in total cholesterol, systolic blood pressure, smoking prevalence and physical inactivity) and approximately half to evidence-based medical therapies.[1]

- From 1999 to 2010, the heart disease death rate decreased by 32.8% in the U.S.[2]

In Oklahoma

- In 2010, Oklahoma had the third highest age-adjusted death rate for heart disease in the nation.[2]

- In 2010, just over 1 in 4 (25.8%) of deaths among Oklahoma residents were caused by heart disease.[3]

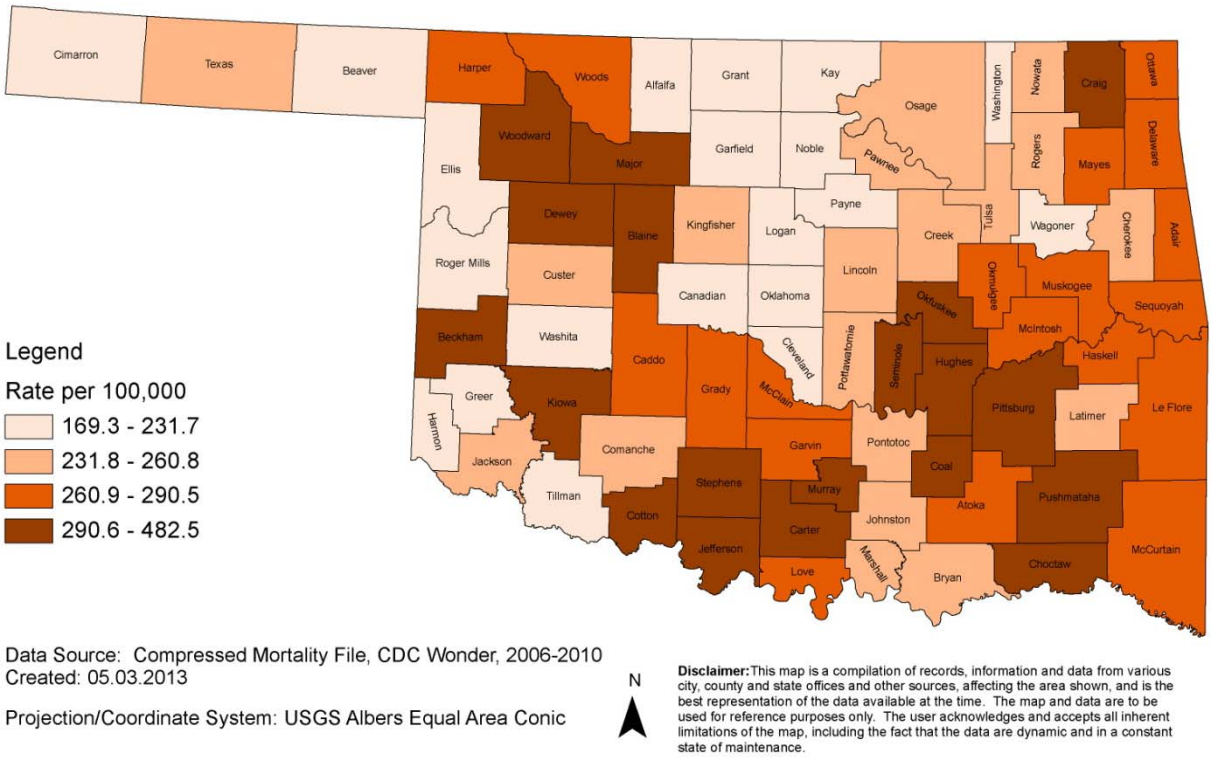
- From 1999 to 2010, the heart disease death rates decreased by 25.6%.[2]

- Heart disease deaths per 100,000 population (age-adjusted rates) by region.[4]

223.1	Central Cleveland and Oklahoma
245.2	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
235.4	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
275.4	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
267.1	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
235.1	Tulsa Tulsa

1. Ford ES, Ajani UA, Croft JB, et al. Explaining the decrease in U.S. deaths from coronary disease, 1980-2000. *N Engl J Med* 2007;356:2388-98.
2. Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2010 on CDC WONDER Online Database, released January 2013. Accessed on March 6, 2013.
3. Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Oklahoma Vital Statistics, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at http://www.health.ok.gov/ok2share on 3-6- 2013. Revised IHS race categories and bridged racial categories.
4. OSDH, Vital Statistics, 2005 to 2009, on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/16/13.

Heart Disease Age-Adjusted Death Rate by County



- Heart disease death rates in 49 counties in Oklahoma were higher than the state rate of 246.0/100,000.
- Heart disease death rates in 74 Oklahoma counties were higher than the national rate of 190.9/100,000.
- The heart disease death rates are high in the southeastern region, following a similar trend as other chronic diseases and risk factors.
- 13 of the 19 counties with the highest rates are categorized as urban populations but have small populations. Half of these are counties that are adjacent to a metropolitan area.
- 5 of the 19 counties with the highest rates are classified as completely rural.

Heart Disease Age-Adjusted Death Rate per 100,000 Population by County

County	Rate	County	Rate
Adair	262.3	Le Flore	274.7
Alfalfa	231.2	Lincoln	260.8
Atoka	273.8	Logan	223.0
Beaver	186.7	Love	274.8
Beckham	308.0	Major	314.6
Blaine	295.1	Marshall	246.5
Bryan	248.1	Mayes	275.3
Caddo	270.7	McClain	266.7
Canadian	206.1	McCurtain	265.5
Carter	318.0	McIntosh	290.5
Cherokee	244.8	Murray	302.5
Choctaw	357.9	Muskogee	271.8
Cimarron	169.3	Noble	211.1
Cleveland	215.2	Nowata	248.0
Coal	482.5	Okfuskee	305.7
Comanche	248.4	Oklahoma	223.5
Cotton	375.4	Okmulgee	284.3
Craig	331.0	Osage	234.8
Creek	258.3	Ottawa	266.6
Custer	256.2	Pawnee	256.0
Delaware	264.5	Payne	225.0
Dewey	302.7	Pittsburg	308.6
Ellis	219.2	Pontotoc	237.5
Garfield	231.7	Pottawatomie	236.2
Garvin	261.9	Pushmataha	319.5
Grady	268.9	Roger Mills	180.1
Grant	206.3	Rogers	231.9
Greer	225.9	Seminole	306.3
Harmon	228.9	Sequoyah	261.3
Harper	265.9	Stephens	301.0
Haskell	272.9	Texas	232.3
Hughes	344.3	Tillman	217.4
Jackson	250.4	Tulsa	232.8
Jefferson	329.6	Wagoner	216.2
Johnston	258.6	Washington	212.4
Kay	228.4	Washita	230.9
Kingfisher	243.3	Woods	279.8
Kiowa	348.0	Woodward	301.1
Latimer	260.5	STATE	**246.0**

Source: Compressed Mortality File, CDC Wonder, 2006-2010. Accessed at http://wonder.cdc.gov on 03/01/13.

STROKE

A stroke is a sudden interruption of blood flow to the brain by a blocked or burst blood vessel. An ischemic stroke occurs when there is a blockage in the blood vessels to the brain. A hemorrhagic stroke is one in which there are burst or leaking blood vessels in the brain. Approximately 85% of strokes are ischemic.

In the United States

- On average, someone dies of a stroke every 4 minutes in the U.S.[1]
- Approximately 56% of stroke deaths in 2009 in the U.S. occurred outside of the hospital.[1]

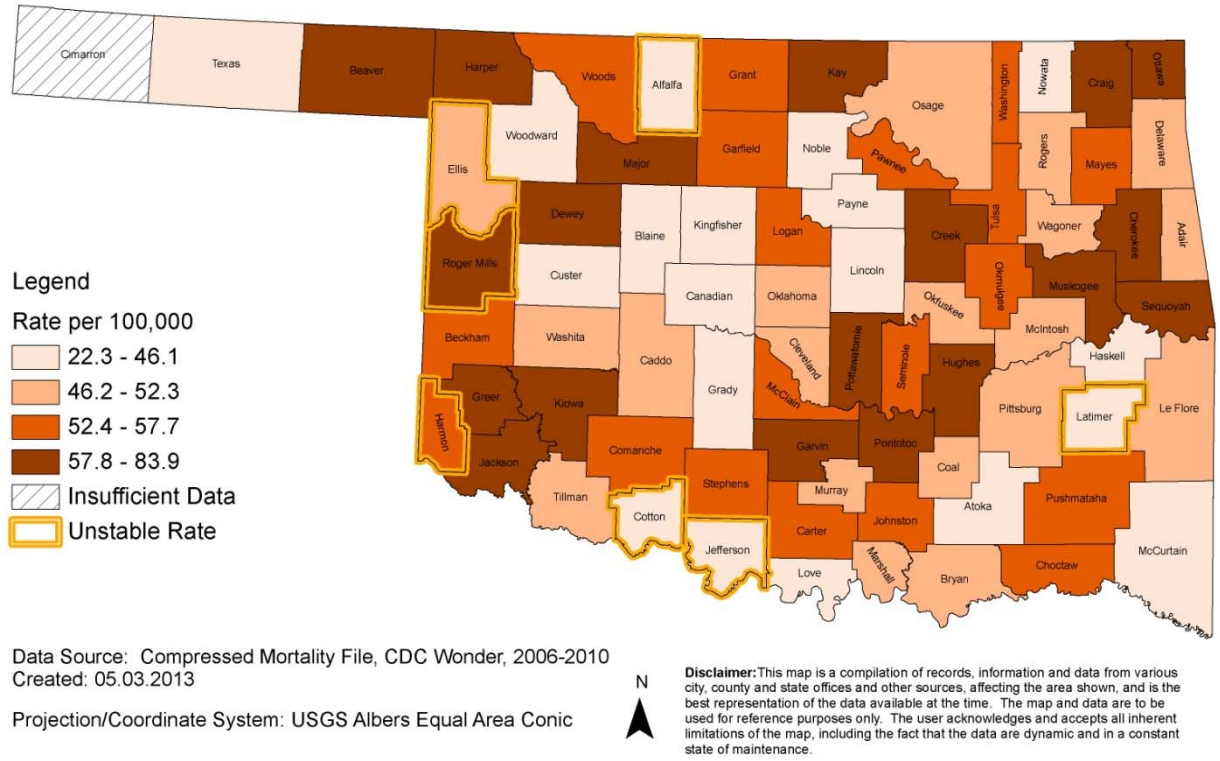
In Oklahoma

- In 2010, there were nearly 2,000 (average of 5 per day) deaths from stroke in Oklahoma.[2]
- In 2010, Oklahoma had the fourth highest age-adjusted death rate from stroke in the nation.[2]
- From 1999 to 2010, stroke death rates decreased by 28.2% in Oklahoma and by 36.5% in the U.S.[2]
- Stroke deaths per 100,000 population (age-adjusted rates) by region.[3]

50.6	Central Cleveland and Oklahoma
52.3	Northeast Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner, and Washington
51.3	Northwest Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods, and Woodward
51.5	Southeast Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, and Seminole
55.1	Southwest Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman, and Washita
58.7	Tulsa Tulsa

1. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, , et al.; on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. *Circulation*. 2013;127:e6-e245.
2. Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2010 on CDC WONDER Online Database, released January 2013. Accessed on March 6, 2013.
3. OSDH, Vital Statistics, 2005 -2009, on OK2SHARE. Accessed at http://www.health.ok.gov/ok2share on 04/16/13.

Stroke Age-Adjusted Death Rate by County



Data Source: Compressed Mortality File, CDC Wonder, 2006-2010
Created: 05.03.2013

Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

- Stroke death rates among 33 of the 69 counties with reliable rates were higher than the age-adjusted state death rate of 53.1 per 100,000 people.
- 62 of the 69 counties with reliable rates had higher stroke death rates than the national age-adjusted death rate of 41.8 per 100,000 people.
- There were no clear county level geographic patterns for stroke death rates across the state.
- On average, the southwest region had a higher rate than what is seen in the state as a whole. (see Table on previous page)
- 9 of the 19 counties with the highest rates are categorized as urban with small populations (2,500 to 19,999). five of these counties are adjacent to a metro area.
- 5 of the 19 counties with the highest rates are classified as completely rural.

Stroke Age-Adjusted Death Rate per 100,000 Population by County

County	Rate	County	Rate
Adair	52.3	Le Flore	46.5
Alfalfa	28.9*	Lincoln	40.4
Atoka	45.4	Logan	53.8
Beaver	65.7	Love	44.8
Beckham	55.2	Major	63.4
Blaine	43.7	Marshall	49.8
Bryan	48.8	Mayes	52.4
Caddo	49.3	McClain	52.5
Canadian	46.1	McCurtain	39.4
Carter	54.8	McIntosh	47.2
Cherokee	63.7	Murray	50.9
Choctaw	54.5	Muskogee	61.8
Cimarron	*	Noble	37.9
Cleveland	49.8	Nowata	40.6
Coal	49.7	Okfuskee	49.6
Comanche	54.6	Oklahoma	51.9
Cotton	33.0~	Okmulgee	54.5
Craig	66.0	Osage	51.6
Creek	62.5	Ottawa	60.9
Custer	38.0	Pawnee	53.8
Delaware	51.6	Payne	38.0
Dewey	66.4	Pittsburg	46.8
Ellis	47.9~	Pontotoc	71.1
Garfield	54.4	Pottawatomie	65.0
Garvin	69.0	Pushmataha	55.4
Grady	42.5	Roger Mills	60.0~
Grant	55.7	Rogers	50.5
Greer	66.8	Seminole	55.2
Harmon	52.9~	Sequoyah	59.7
Harper	73.5	Stephens	52.8
Haskell	37.2	Texas	42.3
Hughes	58.6	Tillman	48.2
Jackson	62.9	Tulsa	57.7
Jefferson	36.4~	Wagoner	48.3
Johnston	53.5	Washington	55.5
Kay	58.4	Washita	49.6
Kingfisher	43.9	Woods	56.8
Kiowa	83.9	Woodward	42.3
Latimer	22.3~	STATE	**53.1**

* Insufficient data (<10 deaths)
~ Unstable rate (<20 deaths)
Source:Compressed Mortality File, CDC Wonder, 2006-2010. Accessed at http://wonder.cdc.govon 03/01/13.

DIABETES

Diabetes is a disease in which blood glucose levels are above normal. With diabetes the body either doesn't make enough insulin or can't use its own insulin as well as it should. This results in a dangerous build up of sugar in the blood which can lead to heart disease, blindness, kidney failure, and amputations. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications[1].

In the United States

- Diabetes was the 6th highest cause of death in the U.S. between 2007-2010.[2]
- Diabetes impacted 25.8 million people in the U.S. in 2011.
- More than one quarter (26.9%) of U.S. residents older than 65 years had diabetes in 2010.

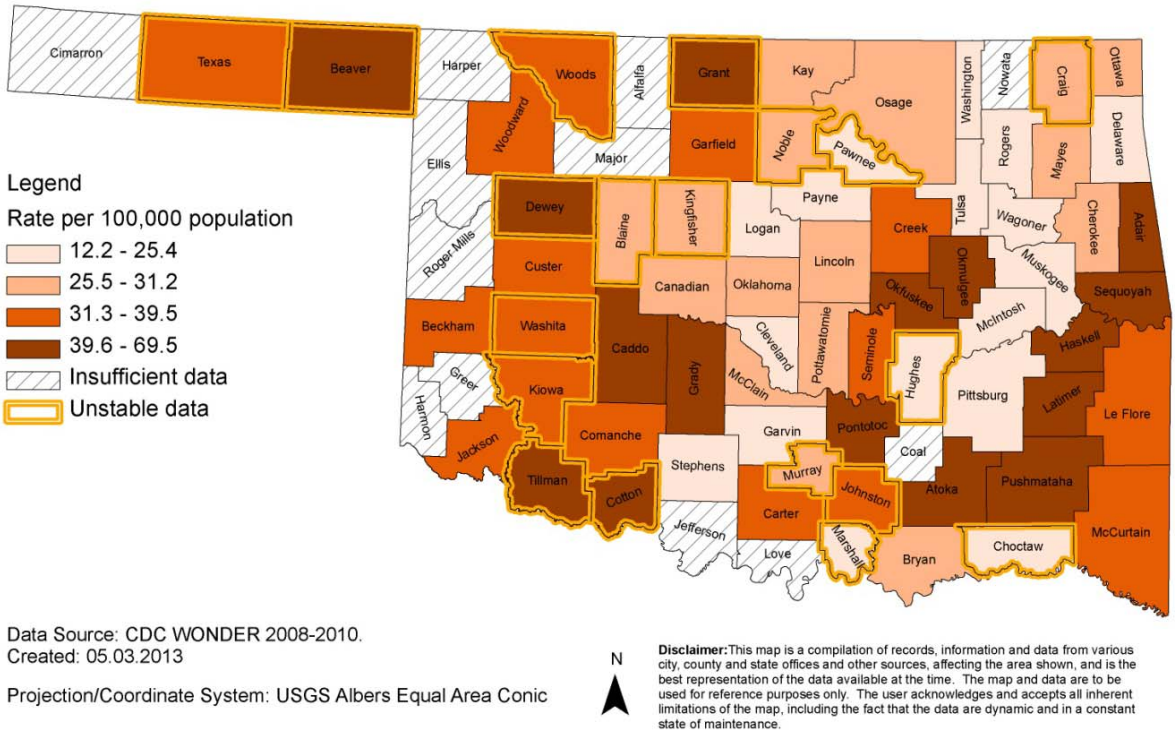
In Oklahoma

- Oklahoma ranked 4th highest for deaths due to diabetes in the U.S. for the year 2010.
- Deaths due to diabetes in males increased during recent years but have not changed among females.
- American Indian/Alaska Natives and Blacks had higher rates of deaths due to diabetes than Whites.
- Diabetes death rates were much higher among older individuals.
- Diabetes-related deaths per 100,000 population (age-adjusted rates) by region.[3]

27.2	Central	Cleveland and Oklahoma
29.4	Northeast	Adair, Cherokee, Craig, Creek, Delaware, Kay, Lincoln, Mayes, Muskogee, Noble, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Payne, Rogers, Sequoyah, Wagoner and Washington
33.2	Northwest	Alfalfa, Beaver, Blaine, Canadian, Cimarron, Custer, Dewey, Ellis, Garfield, Grant, Harper, Kingfisher, Logan, Major, Roger Mills, Texas, Woods and Woodward
30.1	Southeast	Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Johnston, Latimer, Le Flore, McCurtain, McIntosh, Marshall, Murray, Pittsburg, Pontotoc, Pottawatomie, Pushmataha and Seminole
33.3	Southwest	Beckham, Caddo, Carter, Comanche, Cotton, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, McClain, Stephens, Tillman and Washita
21.8	Tulsa	Tulsa

1. American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care. Vol 34: (Supplement 1): S62-S69, 2011;
2. Data source: 2007-2009 CDC WONDER, *Accessed at* http://wonder.cdc.gov
3. Data source: 2007-2009 Oklahoma Vital Records. Ok2SHARE, *Accessed at* http://www.ok.gov/health/pub/wrapper/ok2share.html.

Diabetes Age-Adjusted Death Rate by County



- Darker colors represent a higher death rate due to diabetes.
    - There were 40 counties with sufficient data that had a higher death rate due to diabetes as compared to the state (28%).
    - Diagonal hash marks indicate not enough (insufficient) data to report a county representative result.
- Diabetes death rates were higher in southwestern and southeastern Oklahoma.
- 75% of the counties with the highest death rates were classified as non-metro (i.e. rural) by the United States Department of Agriculture.
- The death rates are high in counties that do not have high numbers of people diagnosed. This suggests there may be disparities in access to care after diagnosis or lack of self-management, resulting in high death rates among these populations as seen on the map above.

Diabetes Age-Adjusted Death Rate per 100,000 Population by County

County	Rate	County	Rate
Adair	60.6	Le Flore	34.4
Alfalfa	*	Lincoln	28
Atoka	41.3	Logan	23
Beaver	48.8~	Love	*
Beckham	35.3	McClain	27.9
Blaine	28.8~	McCurtain	35.6
Bryan	27.4	McIntosh	23.3
Caddo	50.1	Major	*
Canadian	28.3	Marshall	15.3~
Carter	33.7	Mayes	27.7
Cherokee	27.2	Murray	31.1~
Choctaw	20.5~	Muskogee	23.9
Cimarron	*	Noble	31.2~
Cleveland	24.4	Nowata	*
Coal	*	Okfuskee	44.8
Comanche	32.6	Oklahoma	29.1
Cotton	69.5~	Okmulgee	42
Craig	27.6~	Osage	28.3
Creek	35.8	Ottawa	27
Custer	39.5	Pawnee	25.1~
Delaware	23.5	Payne	19.4
Dewey	46.6~	Pittsburg	20.9
Ellis	*	Pontotoc	42.2
Garfield	37.4	Pottawatomie	27.4
Garvin	21.6	Pushmataha	40.8
Grady	40.4	Roger Mills	*
Grant	44.3~	Rogers	19.6
Greer	*	Seminole	39.4
Harmon	*	Sequoyah	41.8
Harper	*	Stephens	18.8
Haskell	46.1	Texas	35.5~
Hughes	25.2~	Tillman	43.3~
Jackson	33.4	Tulsa	20.5
Jefferson	*	Wagoner	25.4
Johnston	37.4~	Washington	12.2
Kay	29.5	Washita	37.2~
Kingfisher	30.4~	Woods	34.9~
Kiowa	35.5~	Woodward	37.1
Latimer	51.4	STATE	**28.0**

* Insufficient data indicated that there were less than 10 deaths in the county.
~ Unstable data indicated that there were less than 20 deaths in the county.
Source: CDC WONDER 2008-2010. Accessed at http://wonder.cdc.gov

RESOURCES

Making Data Talk – Communicating Public Health Data to the Public, Policy Makers and the Press Workbook at http://cancer.gov/cancertopics/cancerlibrary/MDT-Workbook.pdf.

U.S. Department of Agriculture, Food Atlas – food environments, health and well-being, and community characteristics at http://www.ers.usda.gov/FoodAtlas/ (County data pop-up from clicking on map).

U.S. Department of Commerce, U.S. Census Bureau - American Community Survey, Population Finder, Interactive Map, and Economic Census at http://www.census.gov and Insurance at http://www.census.gov/hhes/www/hlthins/hlthins.html.

U.S. Department of Health and Human Services, Health Data at http://healthdata.gov/, Community Health Indicators (Compares to peer counties from other states) at http://www.communityhealth.hhs.gov/homepage.aspx?j=1, and Centers for Disease Control and Prevention (CDC) – FastStats A – Z at http://www.cdc.gov/nchs/fastats/default.htm.

County Health Rankings and Roadmaps – County level rankings based on health outcomes, health factors, and community characteristics at http://www.countyhealthrankings.org.

Partners in Information Access for the Public Health Workforce – County and local health data, national health data, statistical reports, tools for data collection and planning, etc. at http://phpartners.org/health_stats.html.

Oklahoma Department of Commerce - people, places and businesses data at http://www.okcommerce.gov/Data-And-Research/Downloads/2010-Census.

Oklahoma State Department of Health, OK2SHARE - state, regional, and county surveillance, surveys, and registries at http://www.ok.gov/health/pub/wrapper/ok2share.html.

- OK2SHARE tutorial available in web video or PDF versions at http://ophtc.ouhsc.edu/training.asp.

DATA SOURCES AND LIMITATIONS

Oklahoma Vital Statistics

The Oklahoma Vital Statistics data include birth, mortality and fetal death data. Oklahoma began collecting information related to births and deaths in 1917. Mortality data from 1980 are available for analysis. These data contain various demographics, including age, gender, county of residence, Hispanic origin, education level and cause of death (standard and rankable groupings for both ICD-9 [1991-1998] and ICD-10 [1999+] mortality codes). There are approximately 35,000 deaths in Oklahoma per year.

Oklahoma Inpatient Hospital Discharge Data

In response to a state statute, the Health Care Information Division at the Oklahoma State Department of Health collects patient-level data for Hospital Inpatient Discharges, Hospital Outpatient Surgeries and Free-Standing Ambulatory Surgery Center (ASC) procedures. Hospital Inpatient Discharge and Outpatient Surgery data are collected from all state licensed acute care hospitals in Oklahoma. This data is limited in that it reports encounter rather than individuals and it does not include Indian Health Service, Tribal, or Veterans Affairs hospitals. In addition, hospitalizations for Oklahoma residents who are hospitalized in another state would not be captured in this database.

OK2SHARE

Oklahoma Vital Records is the official registration point and repository for all birth and death certificates for those events that occur in Oklahoma. The Oklahoma State Department of Health's web-based query system, **Ok**lahoma **S**tatistics on **H**ealth **A**vailable for **E**veryone (OK2SHARE) is a system that allows users to access public health datasets directly. Death certificate data and Hospital Inpatient Discharge data are two types of data available on OK2SHARE. Death data in OK2SHARE can be queried by year, gender, age group, county of residence, race, Hispanic origin and Indian Health Service (IHS) linked race. IHS linked race categories help attenuates the problem of misclassification of American Indian/Alaska Native race on death certificates. IHS linked race is available for the years 1999 through 2008.

CDC Wonder Compressed Mortality File

The Compressed Mortality File is produced by the National Center for Health Statistics (NCHS) at CDC. The database is a county-level national mortality and population database. Number of deaths, crude death rates, age-adjusted death rates and corresponding 95% confidence intervals can be obtained by underlying cause of death, gender, age group, race, Hispanic origin, Census region, Census division, state, county and urbanization level of residence.

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is the largest ongoing telephone survey of the nation's health. It was established by the Centers for Disease Control and Prevention (CDC) in 1984 and is implemented by the state health departments every year. BRFSS is administered using computer-assisted telephone interviewing software (CATI) to a

stratified random sample of non-institutionalized residents aged 18 years and older. All states and US territories have active BRFSS surveys. The survey consists of questions regarding health status, access to healthcare, chronic disease prevalence and health behaviors. Participation in the survey is anonymous and voluntary. Therefore, although basic demographics are collected, there is no personal identifying information in the dataset. Statistical sample weights are applied to make the data more representative of the state's population; however, errors encountered because of lack of phone coverage and non-response cannot be eliminated.

Vintage 2011 Bridged-Race Postcensal Population Estimates

The Vintage 2011 bridged-race postcensal estimates were produced by the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics (NCHS). The files contain estimates of the resident population of the U.S. as of July 1, 2010 and July 1, 2011 by state, county, ages 0 to 85 and older, bridged-race-sex and Hispanic origin.

NOTES

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Creating a State of Health

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