

APPENDIX



TECHNICAL NOTES

Purpose of Report

The purpose of the *State of the State's Health Report* is to provide readers with information regarding the health status of Oklahoma residents. The report presents data on overall deaths, infant deaths, and leading causes of death; rates of some chronic diseases; and rates of several health behaviors and risk factors for chronic diseases. Grades are assigned to data for each demographic and geographic group to enable readers to view patterns that occur for each indicator. Differences between groups are not statistically tested, and assumptions regarding statistically significant differences should not be made.

Selection of Health Indicators

Health indicators for the *State of the State's Health Report* were chosen based on practical considerations regarding certain qualities of the indicators. In general terms, health indicators were selected for the report when one or more of the following conditions were evident: 1) there was a perceived ability to effect change in the health indicator through health program or policy interventions; 2) the health indicator reflected an emerging issue in public health; 3) there was evidence that an increase in prevalence or incidence in the indicator is deemed negative to the public's health; 4) the health indicator could be meaningfully measured; 5) the health indicator was acceptable as a measure of the underlying characteristic; and 6) data to measure the health indicator were available and considered timely.

Sources of Data

Data for each health indicator included in the *State of the State's Health Report* were gathered from the best available sources. Mortality data for the demographic variables and county level estimates were acquired from OK2SHARE, the web-based data query system of the Oklahoma State Department of Health. Current demographic data represent deaths for calendar year 2012, while county level data reflect the three-year period 2010-2012. Demographic data are compared to deaths that occurred

in 2010 and 2007. County-level data are compared to the three-year period 2005-2007 (titled "previous"). County-level infant mortality rates reflect the five-year period from 2008-2012 and are compared to data from 2003-2007. National and state-level mortality data were taken from the Centers for Disease Control and Prevention (CDC) WONDER web-based data query system, representing 2010 deaths. Age-adjusted rates using the 2000 US Standard Population were reported (exception: infant mortality).

Prevalence data for diabetes and current asthma were drawn from the Oklahoma Behavioral Risk Factor Surveillance System (BRFSS). The current demographic data reflect BRFSS data for collection year 2012 and are compared to data from 2011. It is important to note the BRFSS implemented two methodological changes beginning in data collection year 2011. To adjust to the rapid rise of cellular telephone households and to maintain survey coverage and validity, the BRFSS incorporated cellular telephones to their samples. In addition, the CDC incorporated a new weighting method called "raking" in order to account for declining response rates and differences between the demographic characteristics of respondents and the target population.

County-level data representing 2011 and 2012 were estimated using a generalized linear mixed effects regression model with binomial outcome and a logit link function. This model was based on work by Serbotnjak et al., Zhang, X. et al., and Akcin, H. Individual fixed effects included: age group (15 groups), sex, race/ethnicity (5 groups). Random effects included: county of residence and year. County level data by educational attainment and marital status were also included as fixed effects. Modeled county level estimates were adjusted proportionally using state level modeled estimates and direct state wide estimates.

The BRFSS is the source for data documenting behavioral risk patterns. National and state-level data were queried from the CDC BRFSS data system and represent data collected during 2011 and 2012. This includes data for fruit and vegetable

consumption; physical activity; current smoking prevalence; obesity; influenza and pneumonia vaccinations among seniors (ages 65 and older); days of limited activity and poor mental and physical health days; self-health rating; dental visitation; usual source of care; and lack of health care coverage. Demographic, historic, and county-level data were calculated using SAS. Current demographic data were for year 2012 for most indicators and are compared to data from 2011. Fruit and Vegetable Consumption data is only available for the year 2011. Similarly adult dental visits data are only available for the year 2012. Current county-level data was calculated using the generalized linear mixed effects regression model discussed above. National data and comparative state-level data reflect BRFSS data for 2012 and 2011, queried from the CDC BRFSS data system.

The Oklahoma Cancer Registry provided incidence data for all cancer sites. Current demographic data represent 2010 and are compared to data from 2006, and current county-level data reflect years 2008-2010 and are compared to data from years 2004-2006. Data for the United States and the 50 states were acquired through CDC WONDER. These data reflect incidence data for 2010.

Data for childhood immunization rates were drawn from two separate sources. Current demographic and county-level data were acquired from the Oklahoma State Immunization Information System (OSIIS), which included information on children born from January 2009 to May 2011. This data is compared to state data from the 2007 OSIIS Birth Cohort Survey. Immunization rates by gender, age, income, and education are not available for the current Birth Cohort Survey. These data represent the proportion of children 24 months old that are up-to-date for the primary (4:3:1:3:3:1) immunization series. Comparative data at the national and state-level were obtained from the National Immunization Survey (NIS), 2012. These data also reflect the primary (4:3:1:3:3:1) antigen series. The main difference between NIS and OSIIS data is the group of children included in the survey. OSIIS data primarily includes children vaccinated through the Vaccines

for Children Program (which is a subset of the population and is not representative of the entire state's immunization rates), and the NIS includes data collected from all children in Oklahoma including those with private insurance with vaccine coverage.

Natality data reported for the demographics and counties were drawn from the Oklahoma birth certificate registry. These data reflect the teenage birth rate for ages 15-17 years, the percentage of births weighing less than 2,500 grams (low birth weight), and the percentage of births occurring to Oklahoma women receiving prenatal care beginning in the first trimester of pregnancy. Current demographic and regional data were for calendar year 2012 while current county-level data were for years 2010-2012 and are compared to data from 2005-2007 (exception: teen fertility, current years from 2008-2012 and previous years from 2003-2007). Teen fertility comparative data for 2007 and 2011 are from the National Center for Health Statistics (NCHS) National Vital Statics Reports. National and state level comparative data were drawn from CDC Wonder for 2007 and 2010 for low-birth weight and 2010 for first trimester prenatal care. Comparative data were used for first trimester prenatal care in this report, although some state data (17 states for 2010) were not available. It is important to note that Oklahoma implemented a major revision in how PNC data is collected on the Oklahoma Birth Certificate in 2009. Therefore, updated data in this report cannot be directly compared to previous years.

Current demographic data documenting the percent of people living in poverty reflect data obtained from the 2012 American Community Survey (ACS) and are compared to data from 2008. Region and county-level data reflect 2011 data obtained from the Small Area Income and Poverty Estimates Program (SAIPE), ACS and are compared to data from 2008.

Current demographic data and county-level data for preventable hospitalizations were obtained from the Oklahoma State Department of Health, Center for Health Statistics, Health Care Information, Hospital Discharge Data System. The data were calculated using SAS QI programs from the Agency for Healthcare Quality and Research (AHRQ), and represent the

Prevention Quality Indicator for the Overall Rate of Potentially Preventable Hospitalizations (PQI 90). Current data are for the year 2011 and are compared to 2008 data. The national rate and standard error were obtained from AHRQ, but individual state-level data are unavailable. In order to assign grades the standard deviation was estimated using the standard error and assuming an 'n' of 50.

Current demographic data and county-level data for age specific occupational fatalities (ages 15 years and over) were obtained from the Oklahoma State Department of Health, Center for Health Statistics, Health Care Information, Vital Statistics Mortality Data. Current data are for the years 2008-2012 and are compared to 2003-2007 data. National and state rates was obtained from the U.S. Bureau of Labor and Statistics and Department of Labor.

Grading Methodology

To assign grades to each of the health indicators included in the *State of the State's Health Report*, we developed grading scales using the following methods. For each indicator, we examined the U.S. rate and the distribution of rates for the 50 states and the District of Columbia. We calculated the standard deviation for each national rate using the variability of the respective state rates. We assigned cutoff points for each grade level using the standard deviations. Rates ranging between (0.5) standard deviations below the national rate to (0.5) standard deviations above the national rate were assigned the letter grade C (average).

For indicator rates in which higher rates were deemed favorable, rates that were between (0.5) standard deviations and (1.5) standard deviations above the national rate were assigned the letter grade B. Rates that were beyond the (+1.5) standard deviations of the national rate were given the letter grade A. Rates that were (-0.5) and (-1.5) standard deviations below the national rate were given a letter grade of D. A letter grade of F was assigned to grades falling below (-1.5) standard deviations from the national rate. In this situation, the highest (best) rates – those greater than (1.5) standard deviations above the U.S. rate – were

assigned As and the lowest (worst) rates – those greater than (1.5) standard deviations below the U.S. rate – were assigned Fs.

For indicator rates in which higher rates were deemed negative, the grading was reversed. That is, rates that were between (0.5) standard deviations and (1.5) standard deviations below the national rate were assigned the letter grade B. Rates that were beyond (-1.5) standard deviations of the national rate were given the letter grade A. Rates above the national rate were given a letter grade of D if the rate was between (+0.5) and (+1.5) standard deviations of the national rate. A letter grade of F was assigned to grades beyond (+1.5) standard deviations of the national rate. Thus, the highest (worst) rates – those greater than (+1.5) standard deviations above the U.S. rate – were assigned Fs and the lowest (best) rates – those greater than 1.5 standard deviations below the U.S. rate – were assigned As.

The grading scheme yields a single distinct scale for each health indicator in the report. Letter grade cutoff points are determined by variability in state-level data for each indicator. The grading scales are used to assign grades to select population demographics (e.g., age group, racial/ethnic group, income and education levels), geographic units (e.g., Oklahoma regions and counties, best and worst state rates), and historical trend data.

Limitations of Data

When fewer than 5 events occur in a given county or among a demographic group, the resulting rate is considered unstable or unreliable due to its large relative standard error. This is also the case when making estimates about the population using sample sizes smaller than 50 (as is the case with the BRFSS data). Thus, data for each indicator may not be available for every demographic and county.

Differences in grading occur among groups (i.e., the 18-24 age group may receive a letter grade of A, while the 25-34 age group may receive a letter grade of B on a selected health indicator). This finding does not necessarily indicate a statistically

significant difference between the two age groups. No significance testing was done in the completion of this report. Letter grades were assigned, as described above, for the purposes of making relative comparisons for select population subgroups and domains. A difference in assigned letter grade does not denote a significantly worse or better statistical finding, though the finding may suggest a difference of practical importance.

Grades are assigned and comparisons are made among groups using a single distinct grading scale for each indicator. These scales were determined using state-level data and are not specific to a group. For example, the same scale is used to assign a grade for males' total mortality rate, females' total mortality rate, Hispanics' total mortality rate, and the mortality rate among those aged 45-54 years. Males' total mortality is not being compared to the mortality of males only across the United States, but rather to all mortality in the nation.

The source for a number of health indicators was a surveillance system in which data were collected as part of a survey (e.g., BRFSS). Survey data are subject to sampling error. As a result, responses obtained from the selected sample may differ from the targeted population from which the sample is drawn. It is worthwhile to recognize that a margin of error in sample estimates exists and may impact the distribution of survey responses. This will in turn affect the relative grades of population subgroups. Year-on-year differences may also occur. Rather than representing real changes in the population, yearly fluctuation may indicate sampling error.

Registry data was the source for some health indicators. While these data are not subject to sampling error, health indicator values may fluctuate year-to-year due to small differences in the number of events (i.e., the number of infant deaths per year). This variability may be due to small yearly changes in the number of the underlying events rather than an indication of any meaningful trend.

Mortality-specific Data Concerns

Age. There is a worsening trend related to advancing age given the natural risk of dying as age increases.

Race/Mortality. Race is not self-reported on Death Certificates, and as such is subject to racial misclassification. Oklahoma linkage studies with Indian Health Services indicate one-third of Native American (NA) deaths in Oklahoma are classified as white. Consequently, often NA mortality rates are based on numerators that have been undercounted. Certain Causes of Death that typically are included in NA studies, such as diabetes, tend to have more accurate coding, but will still be under represented.

Hispanics Death Rates. There may be a cultural effect resulting in uncharacteristically low Cause of Death rates. This may be due to the immigrant population returning to their country of birth prior to death. This will underestimate the overall rate of death generally, but particularly among that migrant population group.

Srebotnjak et al.: A novel framework for validating and applying standardized small area measurement strategies, *Population Health Metrics* 2010 8:26. <http://www.pophealthmetrics.com/content/8/1/26>

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Akcin, H., Small Area Estimation (SAE) Project, BRFSS Conference, March 27, 2013.

Martin JA, Hamilton BE, Ventura SJ, Osterman MJK, Matthews, TJ. (2013) Births: Final Data for 2011. *National Center for Health Statistics*, vol. 62, no. 1.

OKLAHOMANS BY THE NUMBERS

TOTAL POPULATION

3,814,820

GENDER

49.5% male
50.5% female

AGE

24.5% < 18 years of age (936,284)
61.4% 18-64 (2,342,529)
14.1% 65 or older (536,007)

RACE

73.5% white (2,805,612)
7.2% black (272,820)
7.3% American Indian (278,028)
1.8% Asian (70,527)
7.7% two or more races (294,500)

ETHNICITY

9.3% Hispanic (356,299); of those:
83% Mexican
4% Puerto Rican or Cuban
3% other Hispanic or Latino

INCOME

\$44,312 median household income
\$19,351 average retirement income
\$16,383 average Social Security Income
\$ 2,187 average cash public assistance income
\$ 8,866 average Supplemental Security Income (SSI)

POVERTY

Families Living Below Poverty
13.1% of all families
25.0% families with children under 5 years of age
7.2% female headed households (no husband present)

EDUCATION

Age 25+
4.6% < 9th grade (113,362)
8.8% 9-12th grade no diploma (218,198)
31.6% high school graduate or equivalency (786,275)
24.0% some college, no degree (597,927)
7.3% associate's degree (180,387)
15.8% bachelor's degree (393,930)
7.9% graduate or professional degree (197,377)

Currently Enrolled in School
6.5% nursery school (68,848)
5.7% kindergarten (56,527)
42.6% elementary, grades 1-8 (419,653)
19.8% high school (194,611)
25.4% college or graduate school (250,610)

DISABILITIES (among non-institutionalized)

15.3% are disabled (569,999)
5.0% of those < 18 years of age (46,313)
13.7% of those age 18-64 (312,480)
40.8% of those age 65+ (211,206)

GRANDPARENTS

43,023 Oklahoma grandparents responsible for their grandchildren
1 in 4 have been responsible for 5+ years (16,179)

VETERANS (adults)

11.2% civilian veterans (served on active duty) (320,177)

PLACE OF BIRTH

5.6% were foreign born (213,284); of those:
10.7% entered the U.S. 2010 or later (22,856)
59.1% born in Latin America (126,071)
26.4% born in Asia (56,324)

LANGUAGE (spoken at home)

90.3% English only (3,207,801)
6.6% Spanish (235,272)
1.4% Asian/Pac Islander (48,126)

EMPLOYMENT (age 16+)

61.8% in civilian work force (1,818,434)
6.8% unemployed

WORK COMMUTES

21.1 min average travel time to work
82.3% drive alone (1,384,248)
10.4% carpool (174,714)
3.3% work at home
2.0% walk (34,486)

HOUSEHOLD CHARACTERISTICS

1,446,667 occupied housing units
66.4% owner occupied (960,369)
33.6% renter occupied (486,298)
2.5 persons average household size
68.9% moved into unit in 2000 or later (996,019)
5.8% have no vehicles available (83,371)
33.7% have 1 vehicle available (488,141)
2.3% have no telephone service available (32,833)
0.9% lack complete kitchen (12,386)
0.4% lack complete plumbing (5,912)
\$114,300 median value of the unit
57.8% units with a mortgage (554,903)
\$1,111 median mortgage (per month)
\$686 median rent (per month)

Source: U.S. Census Bureau, 2012 American Community Survey

OKLAHOMA TURNING POINT PARTNERS

Local Turning Point partnerships focus on community health improvement initiatives such as tobacco use prevention, obesity reduction and child health.

Adair County Turning Point	Interagency & Community Coalition (ICC) <i>Grady County</i>
Atoka/Coal Partnership for Change	Red River Tobacco Education Consortium <i>Greer/Harmon/Tillman Counties</i>
Partners in Progress <i>Beaver County</i>	Harper County Turning Point
Oklahoma Unified Resources (OUR) Turning Point <i>Beckham/Roger Mills County</i>	Haskell County Coalition
Blaine County Community Health Action Team (BCCHAT)	Hughes County Turning Point Coalition
Bryan County Turning Point Coalition	Jackson County Community Health Action Team (JCCHAT)
Caddo County Interagency Coalition (CCIC)	Tishomingo Development Team <i>Johnston County</i>
Canadian County Coalition for Children and Families	Kay County Early Childhood Planning Council
Mustang Prevention and Coalition Team (MPACT) <i>Canadian County</i>	Kingfisher Community Collaborative (KCC) – <i>Kingfisher County</i>
Carter County Turning Point Coalition	Kiowa County Community Coalition
Cherokee County Community Health Coalition	Living In Latimer County Coalition
Choctaw County Coalition	Health in the Valley – A Turning Point Partnership <i>Latimer/LeFlore/Pushmataha Counties</i>
Believers in Boswell Coalition <i>Choctaw County</i>	LeFlore County Coalition for Healthy Living
Cleveland County Turning Point	Prague Turning Point Coalition
Atoka/Coal Partnership for Change Coal County	Logan County Partnership
Fit Kids of Southwest Oklahoma <i>Comanche County</i>	Love County Community Coalition
Lawton Ft. Sill Community Coalition <i>Comanche County</i>	Major County Coalition
Craig County Community Partnership	Marshall County Partners in Progress
Creek County Community Partnership	Mayes County Hope Coalition
Community Health Improvement Project (C.H.I.P) <i>Creek County</i>	Blanchard Community Coalition (BCC-TP) – A Turning Point Partner <i>McClain County</i>
Custer Health Action Team (CHAT) <i>Custer County</i>	C.A.R.E. Coalition (Community Alliance of Resources for Everyone) <i>McClain County</i>
Delaware County Community Partnership	McCurtain County Coalition for Change
Garfield County Coalition Health Planning Committee	McIntosh County Community Health Coalition
Garvin County Health Coalition	Muskogee Turning Point
	Okfuskee County Community Partnership Board – OCCY/Turning Point

Central Oklahoma Turning Point
Oklahoma County

Wellness Now
Oklahoma County

Okmulgee County Wellness Coalition

Osage County Community Partnership Board

Ottawa County Health Coalition

Payne County Breathe Easy Coalition

Local Service Coalition
Pittsburg County

SE Tobacco-Free OK Coalition
Pittsburg County

Pontotoc County Turning Point/SOC

Pottawatomie County – PATCH Coalition

Pushmataha County Turning Point Coalition

Health in the Valley – A Turning Point
Partnership
Pushmataha/LeFlore/Latimer Counties

Healthy Community Partnership
Rogers County

Seminole County Community Alliance

Sequoyah Wellness Partnership
Sequoyah County

Pathways to a Healthy Stephens County

Texas County Coalition

Tillman County Youth & Family Community
Coalition

Red River Tobacco Education Consortium
Tillman/Greer/Harmon Counties

Family Health Coalition
Tulsa County

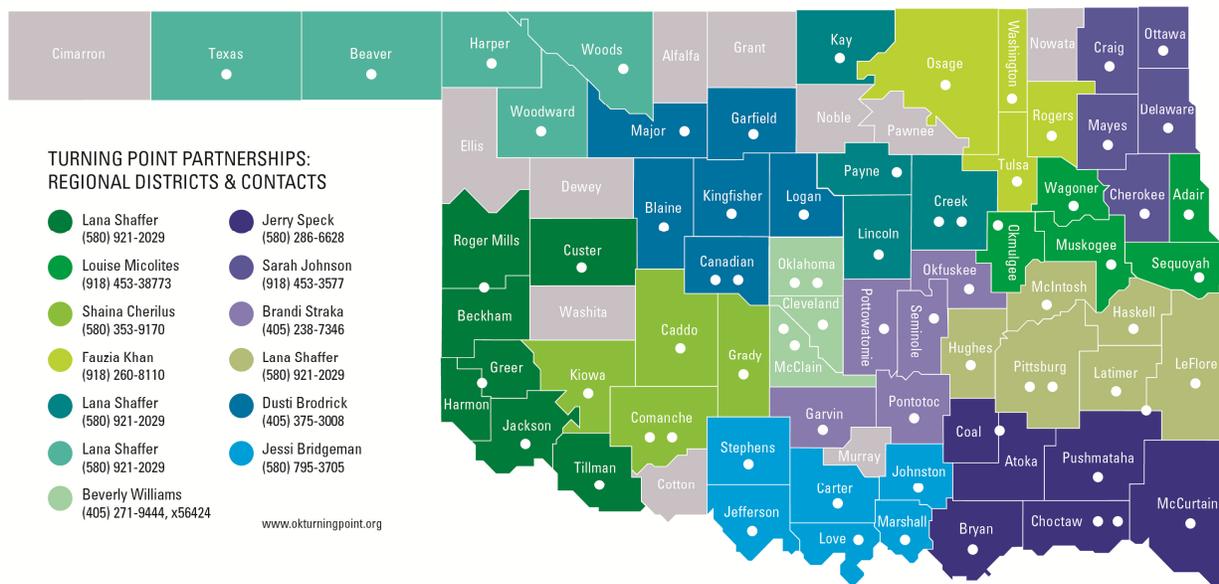
Wagoner Family Service Council
Wagoner County

Washington County Wellness Initiative

Woods Country Coalition

Woodward Area Coalition
Woodward County

For copies of Community Partner annual reports,
contact information, meeting agendas and more,
please visit: [www.ok.gov/health/Community_Health/
Community_Development_Service/Turning_Point](http://www.ok.gov/health/Community_Health/Community_Development_Service/Turning_Point)



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For full report, including individual indicator and county report cards, visit www.ok.gov/health/pub/boh/state/index.html

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