



South Dakota State University
 College of Nursing

Use of Data in Public Health

6th Annual Demographic Conference

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OBJECTIVES



- Discuss the use of data in public health
- Present examples of health statistics in population health (U.S. and SD)
- Provide examples of data sources publicly available

Data and Health Statistics:

- **Individuals:** understand risks, conditions, and health status in a broader context
- **Researchers and physicians:** study causes and solutions of health problems.
- **Health resource planners:** understand allocation of health resources
- **Policy makers and the public:** monitor progress
- **Legislators** consult them when enacting laws

Data reveals the factors that influence health

Data in Public Health:

- **Measure impact** of public health programs
- **Monitor changes** when prevention programs
 - promote better health practices
 - reduce risky behaviors
 - change life styles
- **Help design** effective programs (incidence /prevalence of health conditions and behaviors)



Real world



(Collection, coding)

Data

Data analysis



(Processing, interpretation, presentation)

Information

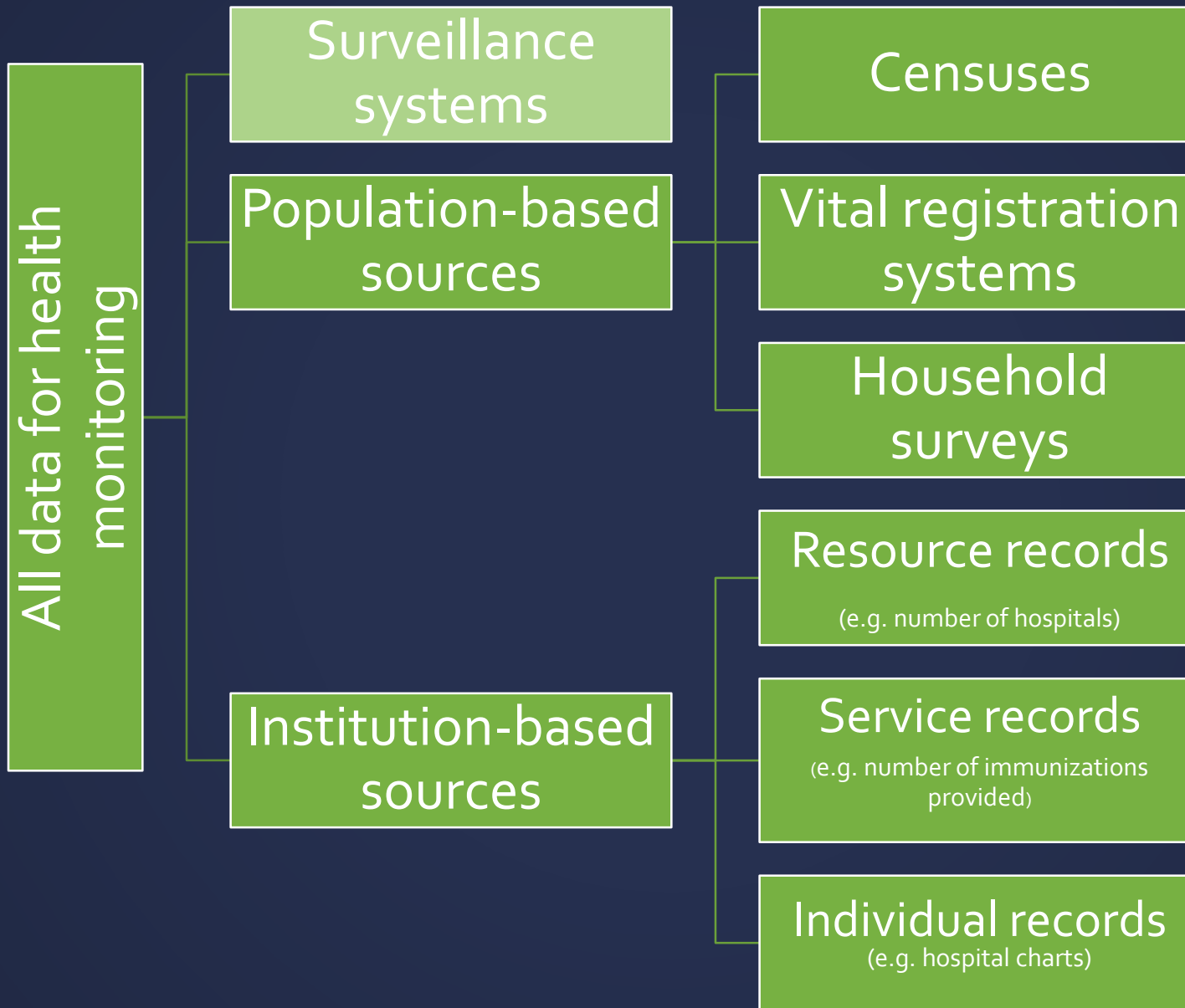
Health Indicators



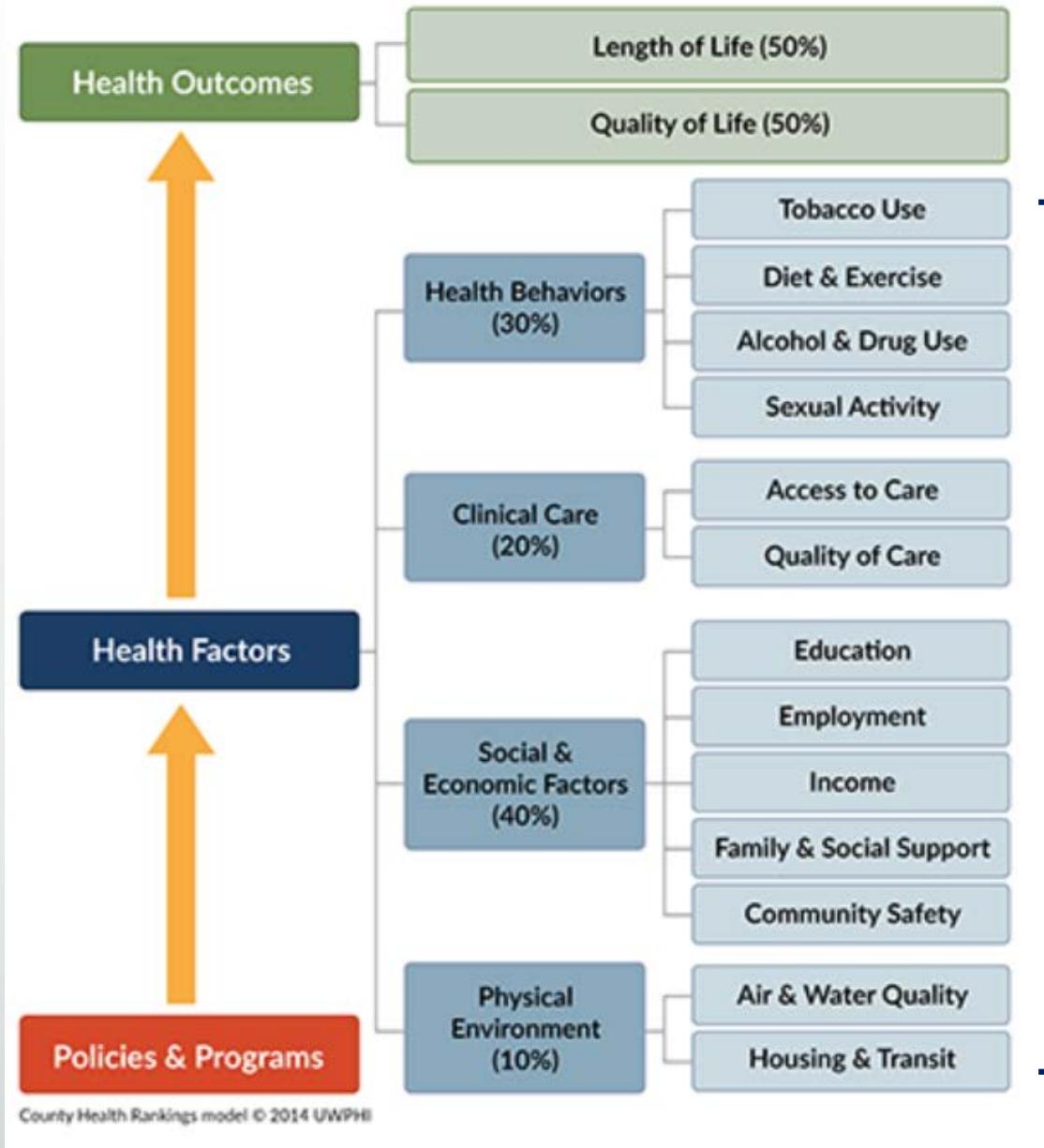
(Politics, commitment)

Action

Source: Oxford Handbook of Public Health Practice



The choices we make are based on the choices we have.



Factors that impact health outcomes

Health Indicators in South Dakota

[Rural Health](#) > [Data Visualizations](#)

Rural Data Explorer

Select from a wide range of data on health disparities, health workforce, demographics, and more. Explore how metropolitan and nonmetro counties compare, nationwide and by state. Learn more about [how to use the Data Explorer](#).

Select Indicator

Select State

Select Data Year

Life Expectancy at Birth ▾

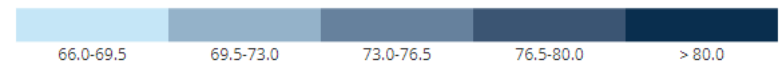
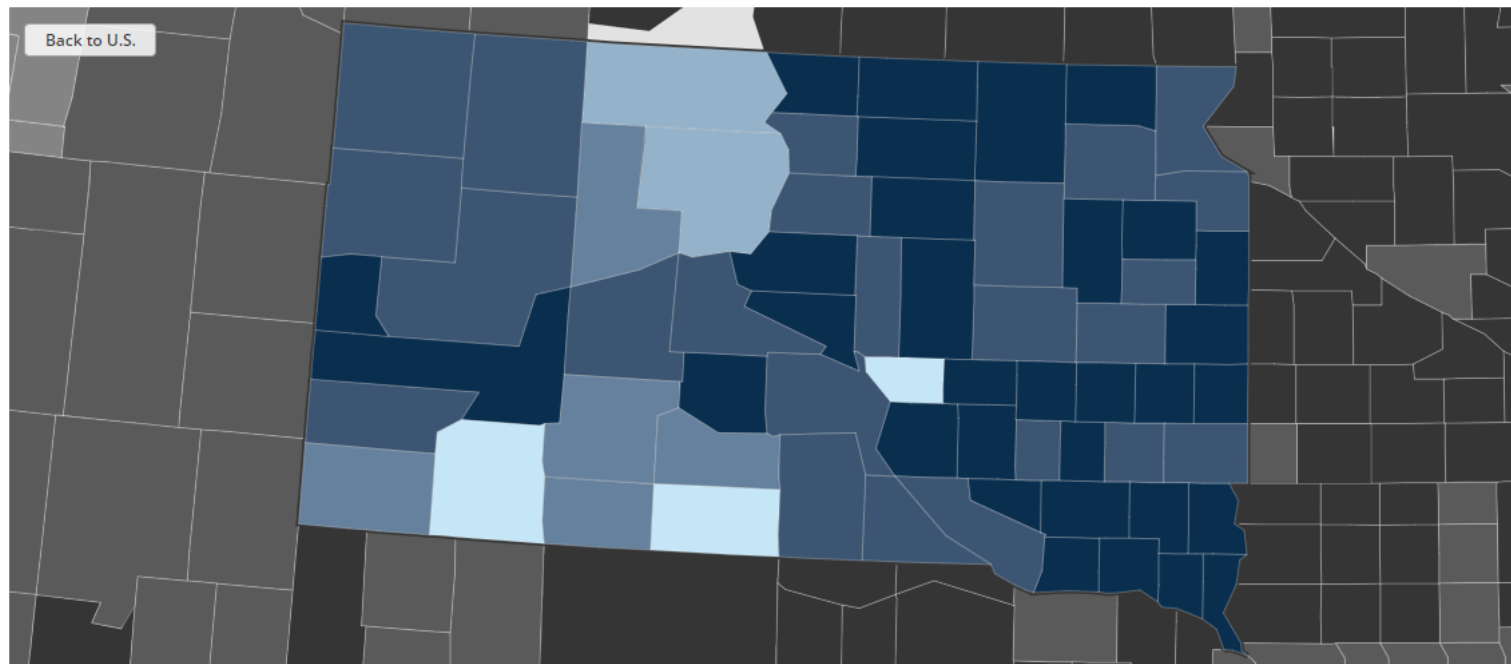
South Dakota ▾

2014 ▾

Nonmetro

Metro

All



[Download the data \(CSV\)](#)

Source: [Institute for Health Metrics and Evaluation, 2014.](#)

Ten Leading Causes of Death in SD



National Center for Health Statistics

SD Leading Causes of Death, 2016	Deaths	Rate***	State Rank*	U.S. Rate**
1. Heart Disease	1,729	153.4	31st	165.5
2. Cancer	1,694	156.7	28th	155.8
3. Accidents	505	53.4	23rd	47.4
4. Alzheimer's disease	449	37.1	12th	30.3
5. Chronic Lower Respiratory Diseases	426	38.3	33rd (tie)	40.6
6. Stroke	420	35.8	30th (tie)	37.3
7. Diabetes	253	23.7	15th	21.0
8. Flu/Pneumonia	195	16.7	10th	13.5
9. Suicide	163	20.2	10th	13.5
10. Chronic Liver Disease/Cirrhosis	158	16.4	2nd	10.7

2016 State of the State of South Dakota

South Dakota Mortality Data	Deaths	Rate**	U.S. Deaths	U.S. Rate***
Firearm Deaths	108	13.4	38,658	11.8
Homicide	38	4.7	19,362	6.2
Drug Overdose Deaths	69	8.4	63,632	19.8

10 Leading causes of death by age group, South Dakota, 2011-2015

Rank	Age Groups											
	<1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
	Total 422	Total 83	Total 117	Total 492	Total 605	Total 933	Total 2,162	Total 4,050	Total 5,529	Total 8,687	Total 13,771	Total 36,851
1	Conditions originating perinatal per. 174	Accidents 30	Accidents 46	Accidents 214	Accidents 226	Accidents 200	Cancer 567	Cancer 1,403	Cancer 1,924	Cancer 2,360	Heart disease 3,792	Heart disease 8,291
2	Congenital abnormalities 103	Homicide 13	Cancer 14	Suicide 153	Suicide 124	Cancer 127	Heart disease 361	Heart disease 882	Heart disease 1,207	Heart disease 1,867	Cancer 1,714	Cancer 8,164
3	Accidents 40	Congenital abnormalities 10	Suicide 14	Homicide 28	Liver disease 38	Heart disease 126	Accidents 256	Accidents 234	Chron. low resp. disease 467	Chron. low resp. disease 743	Alzheimer's disease 1,594	Chron. low resp. disease 2,317
4	SIDS 39	Cancer 7	Influenza & pneumonia 5	Cancer 26	Heart disease 35	Liver disease 116	Liver disease 161	Chron. low resp. disease 201	Diabetes 247	Stroke 570	Stroke 1,119	Accidents 2,176
5	Unknown causes 17	Unknown causes 6	Congenital abnormalities 5	Heart disease 14	Cancer 22	Suicide 112	Suicide 140	Diabetes 193	Stroke 212	Alzheimer's disease 457	Chron. low resp. disease 847	Alzheimer's disease 2,159
6	Influenza & pneumonia 9	Influenza & pneumonia 3	Homicide 4	Diabetes 7	Homicide 19	Diabetes 35	Diabetes 85	Liver disease 145	Accidents 158	Accidents 300	Influenza & pneumonia 561	Stroke 2,086
7	Homicide 8	Bronchitis 2	Septicemia 3	Undetermined intent 5	Diabetes 14	Stroke 17	Chron. low resp. disease 55	Stroke 110	Alzheimer's disease 88	Diabetes 289	Accidents 472	Diabetes 1,230
8	Other metabolic disorders 6	Undetermined intent 2	Heart disease 3	Cerebral palsy 5	Pregnancy & childbirth 11	Homicide 17	Stroke 50	Suicide 110	Liver disease 83	Influenza & pneumonia 181	Unspecified dementia 412	Influenza & pneumonia 945
9	Other viral diseases 3		Cerebral palsy 3	Paroxysmal disorders 4	Undetermined intent 10	Septicemia 16	Alcohol use 50	Septicemia 58	Influenza & pneumonia 81	Parkinson's disease 158	Diabetes 359	Suicide 721
10	Heart disease 3		Other viral diseases 2	Influenza & pneumonia 4	Influenza & pneumonia 9	Undetermined intent 13	Septicemia 32	Influenza & pneumonia 49	Kidney disease 58	Unspecified dementia 126	Hypertension 288	Liver disease 597
	All other 20	All other 10	All other 18	All other 32	All other 97	All other 154	All other 405	All other 665	All other 1,004	All other 1,636	All other 2,613	All other 8,165

Top 5 causes of death are highlighted.

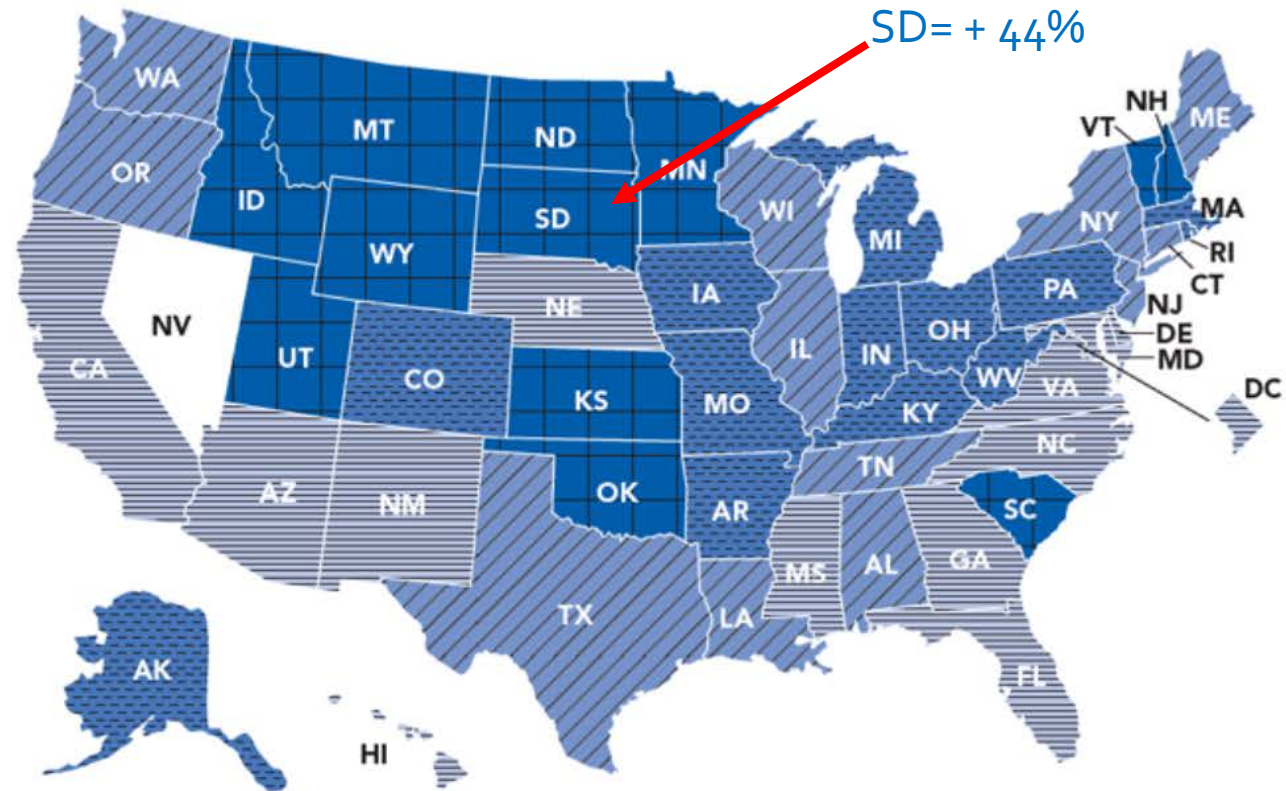
Source: South Dakota Vital Statistics Reports, 2011-2015.

Suicide Rising across the US-CDC 1999-2016

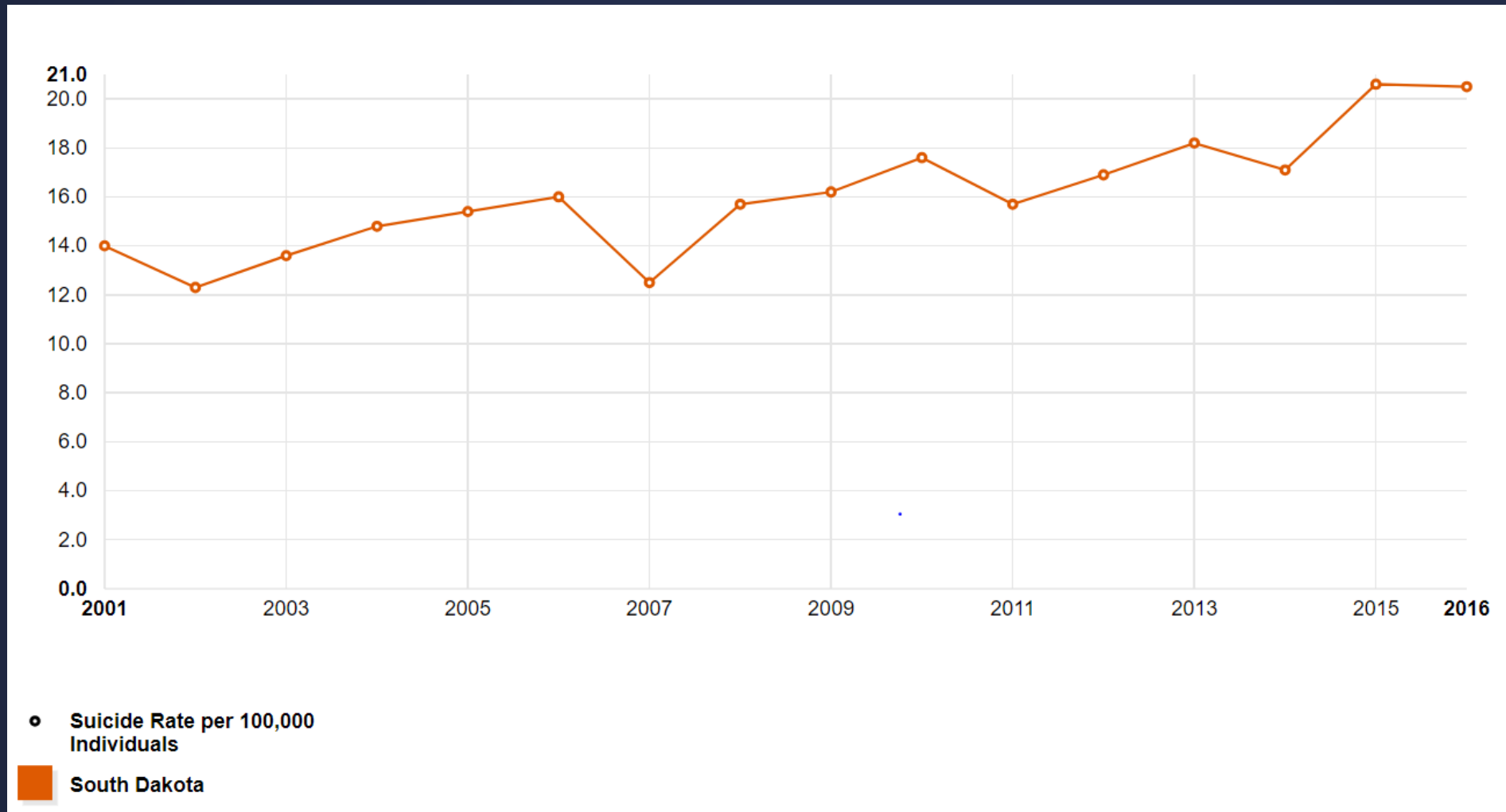
Suicide rates rose across the US from 1999 to 2016.



SOURCE: CDC's National Vital Statistics System;
CDC Vital Signs, June 2018.



Trends in Suicide Rate in South Dakota



Age-adjusted rate:
White: 65.1
A.I.: 227.7

Age-adjusted rate:
Males: 109.61
Females: 48.8

<https://www.kff.org/>

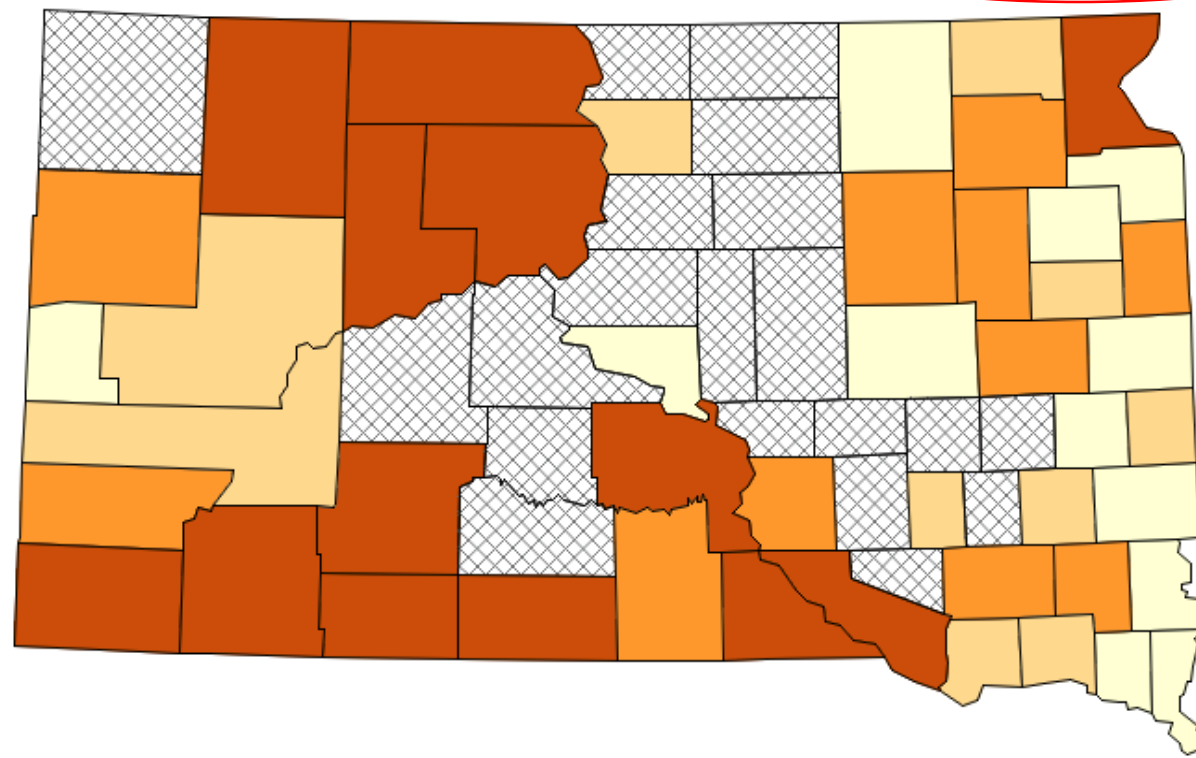
Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) (2017). Accessed June 7, 2018. Available from URL: www.cdc.gov/injury/wisqars.

2008-2014, South Dakota Death Rates per 100,000 Population

All Injury, All Intents, All Races, All Ethnicities, Both Sexes, All Ages

Annualized Crude Rate for South Dakota: 70.25

South Dakota Estimated Average Annual Medical Costs of \$5,697,011 and Work Loss Costs of \$350,291,652



Suppressed/Unstable/Undefined

75.03-98.06

34.62-60.83

98.07-227.07

60.84-75.02

Reports for All Ages include those of unknown age.

* Rates based on 20 or fewer deaths may be unstable. These rates are suppressed for counties (see legend above); such rates in the title have an asterisk.

Medical and work loss cost estimates are expressed in year 2005 dollars.

Cost estimates are not comparable across states; county-level cost estimates should only be used for comparisons within this state.

Produced by: the Statistics, Programming & Economics Branch, National Center for Injury Prevention & Control, CDC

Data Sources: NCHS National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates.

<https://wisqars.cdc.gov:8443/cdcMapFramework/mapModuleInterface.jsp>

Prevalence of Mental Health- Sioux Falls



CDC > Division of Population Health > 500 Cities

Interactive Map



Start with a location, then choose a measure.

Location Type

- City data by State
- Census tract data by City

State

South Dakota

City

Sioux Falls

Category

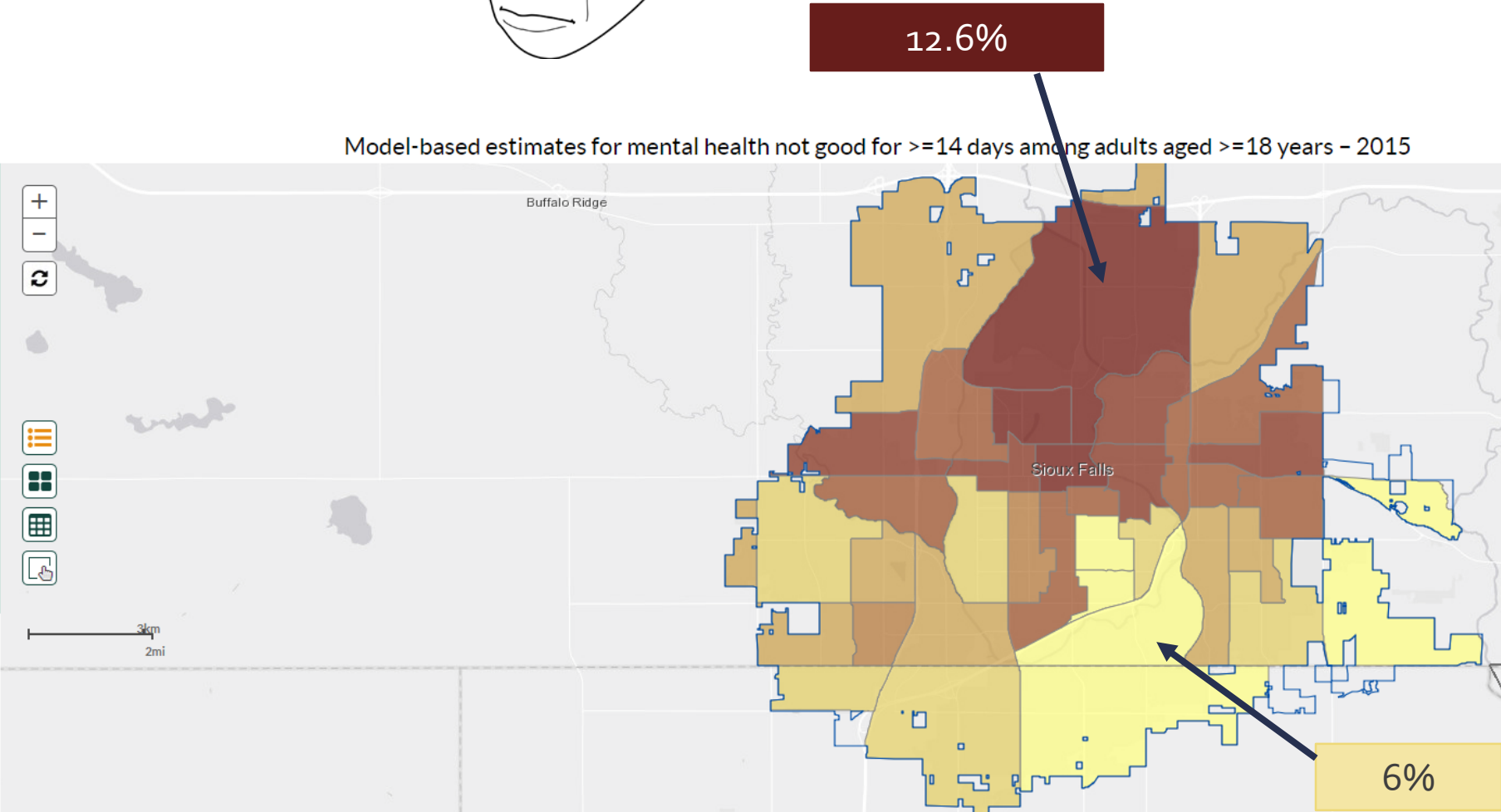
Health Outcomes

Measure

Mental Health

[Measure definitions](#)

GO



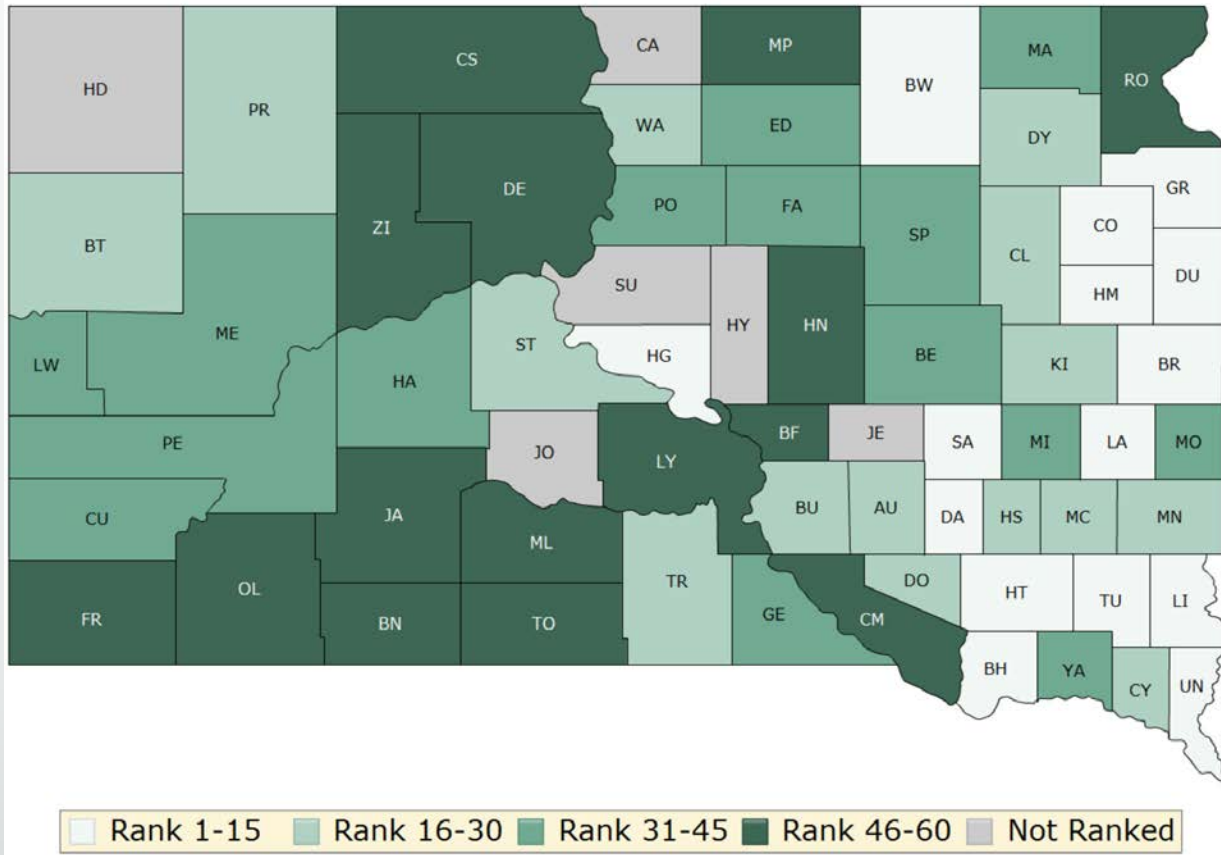
Health Outcomes and Factors

Health Ranking for US and SD

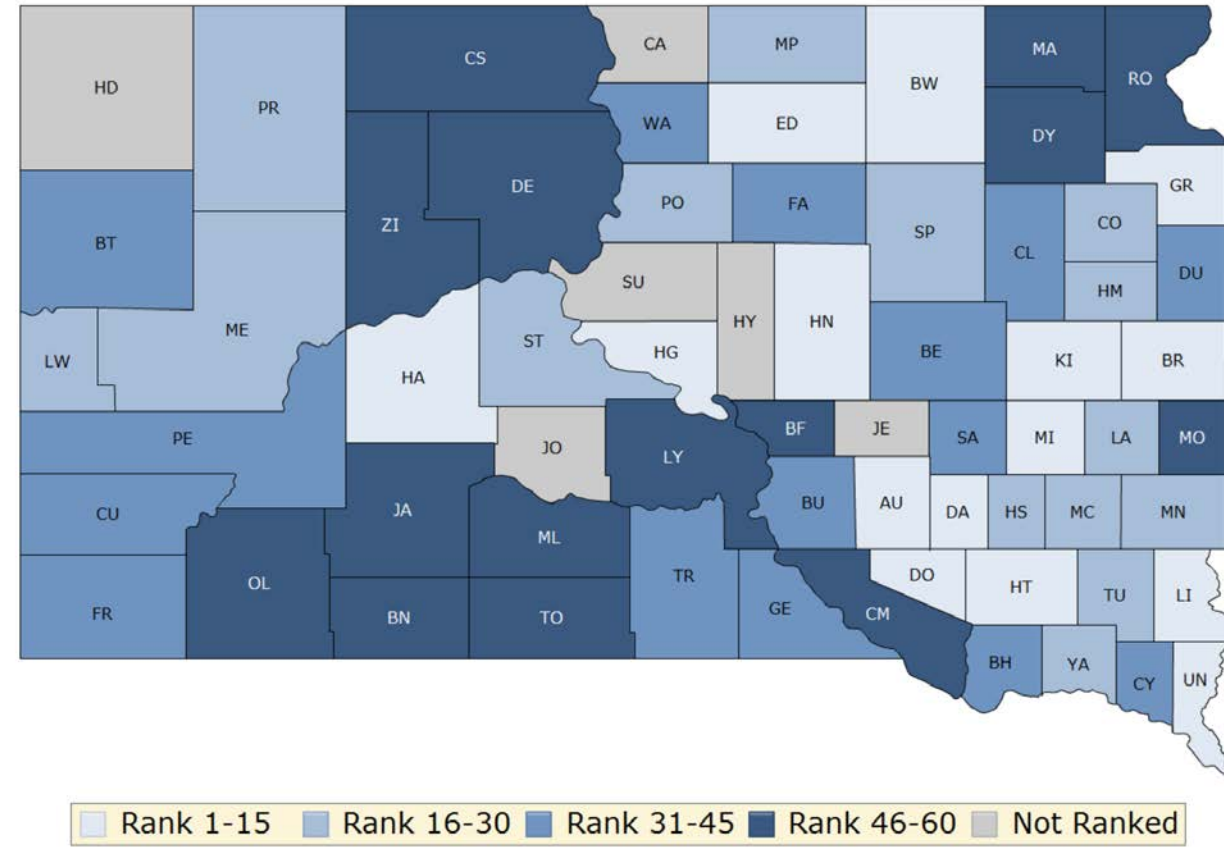
2018 County health Ranking for SD and US

Measure	Description	US	SD	SD Minimum	SD Maximum
Adult smoking	% of adults who are current smokers	17%	18%	13%	41%
Adult obesity	% of adults that report a BMI \geq 30	28%	31%	27%	45%
Food environment index	Index of factors that contribute to a healthy food environment, (0-10)	7.7	6.6	0.0	9.2
Physical inactivity	% of adults aged 20 and over reporting no leisure-time physical activity	23%	22%	17%	30%
Access to exercise opportunities	% of population with adequate access to locations for physical activity	83%	72%	0%	93%
Excessive drinking	% of adults reporting binge or heavy drinking	18%	20%	14%	23%
Alcohol-impaired driving deaths	% of driving deaths with alcohol involvement	29%	37%	0%	100%
Sexually transmitted infections	# of newly diagnosed chlamydia cases per 100,000 population	478.8	462.9	83.3	2,447.6
Teen births	# of births per 1,000 female population ages 15-19	27	30	8	113

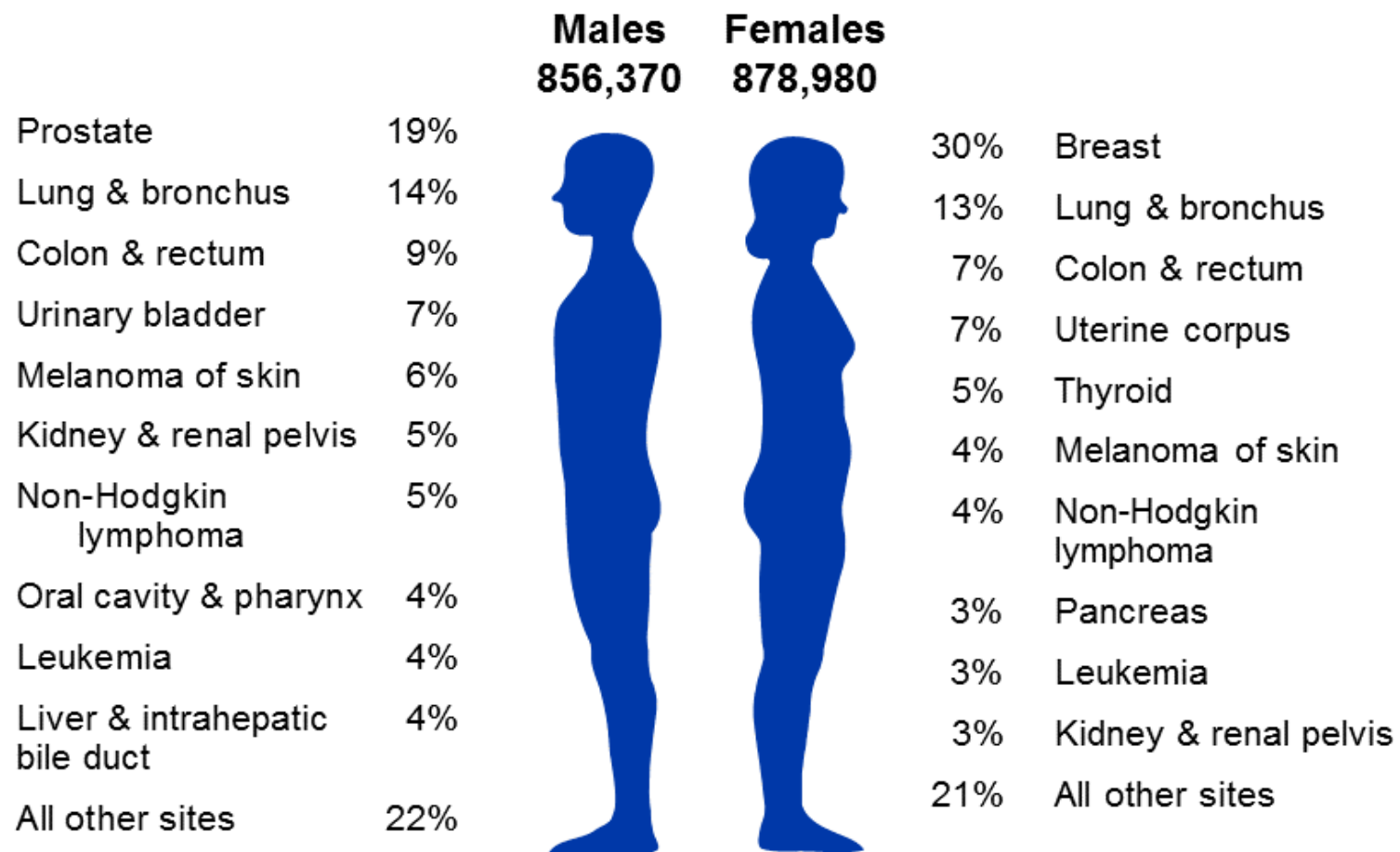
Overall Rankings in Health Outcomes



Overall Rankings in Health Factors

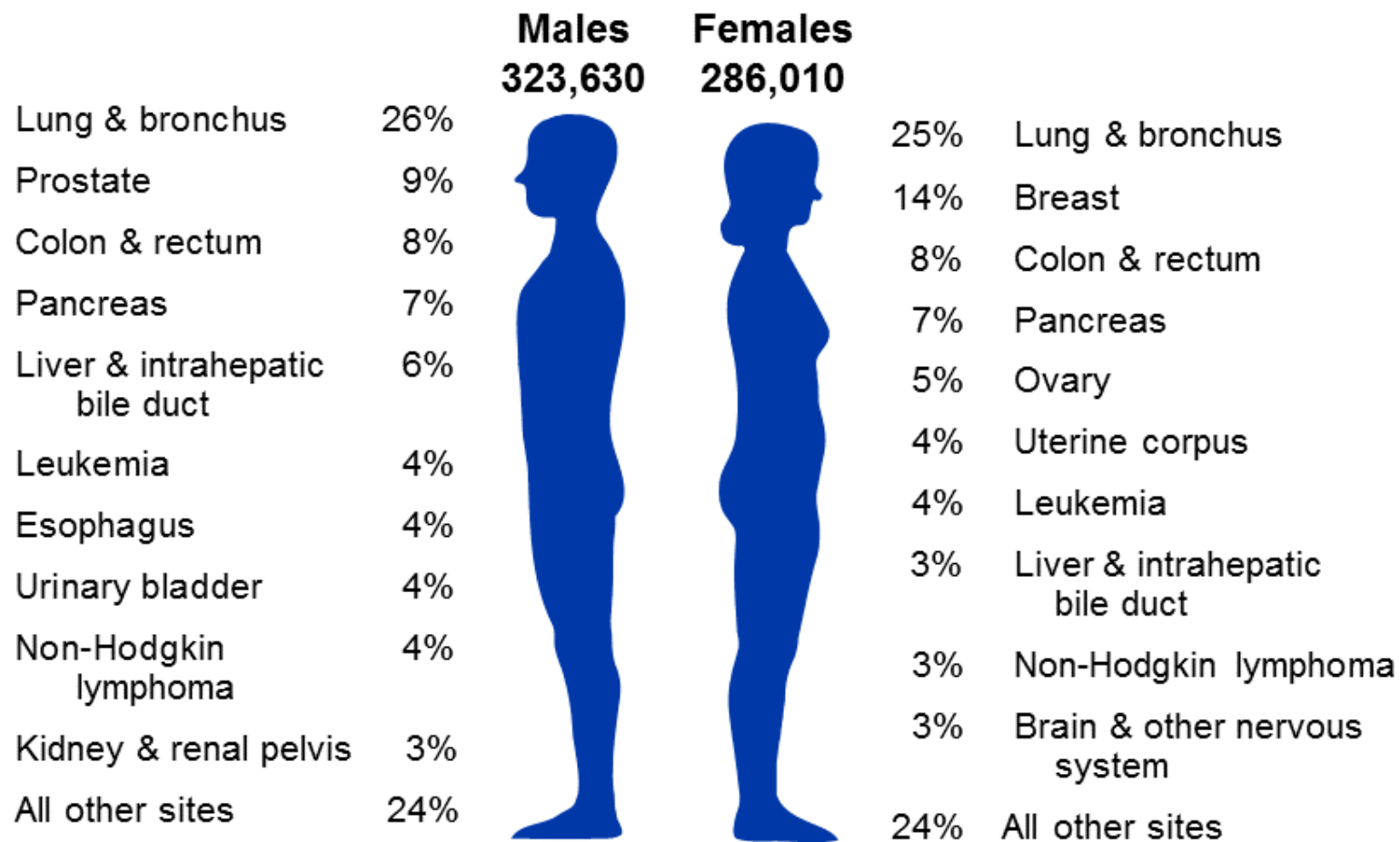


Estimated New Cancer Cases* in the US in 2018

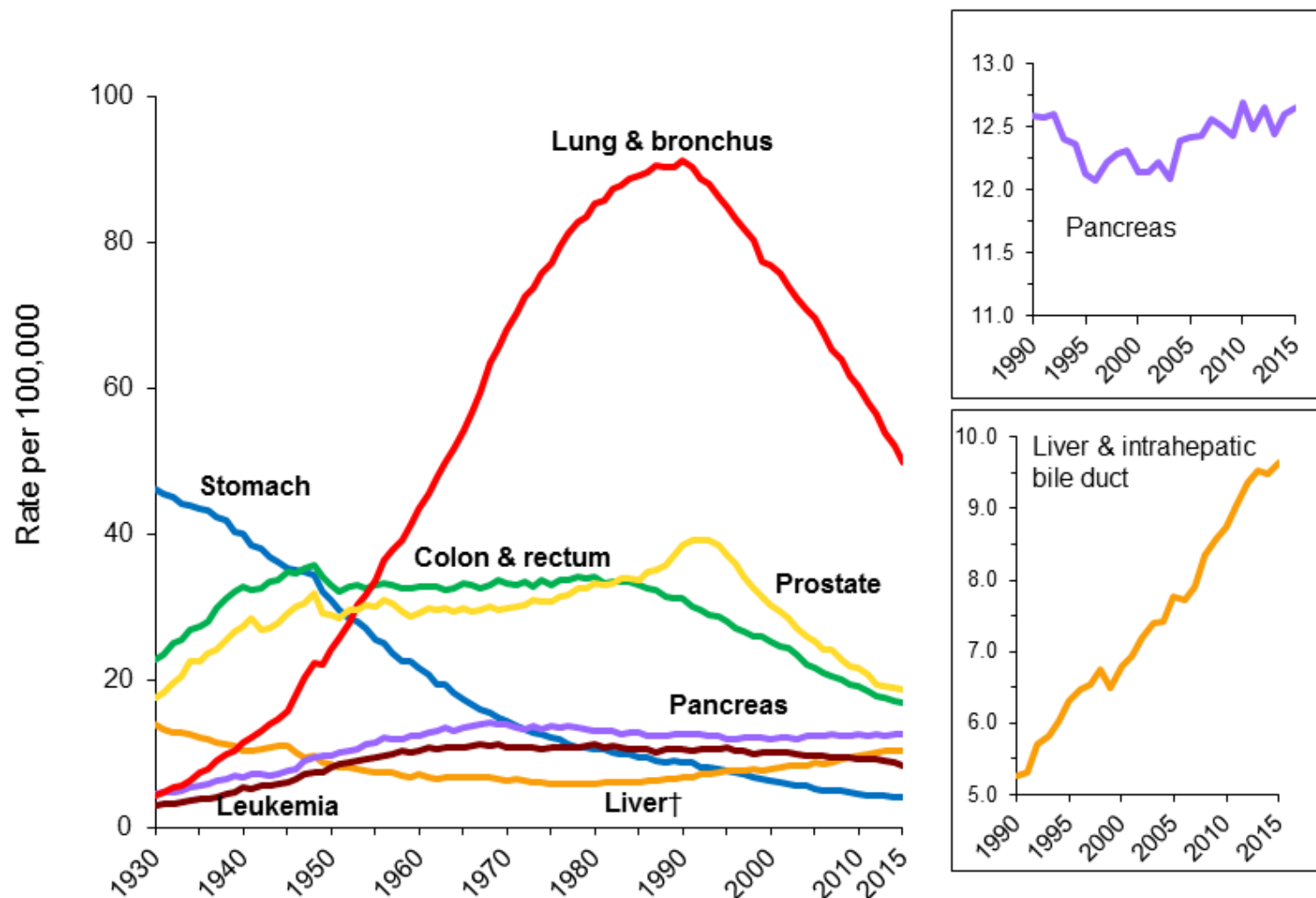


*Excludes basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.

Estimated Cancer Deaths in the US in 2018



Trends in Cancer Death Rates* Among Males, US, 1930-2015

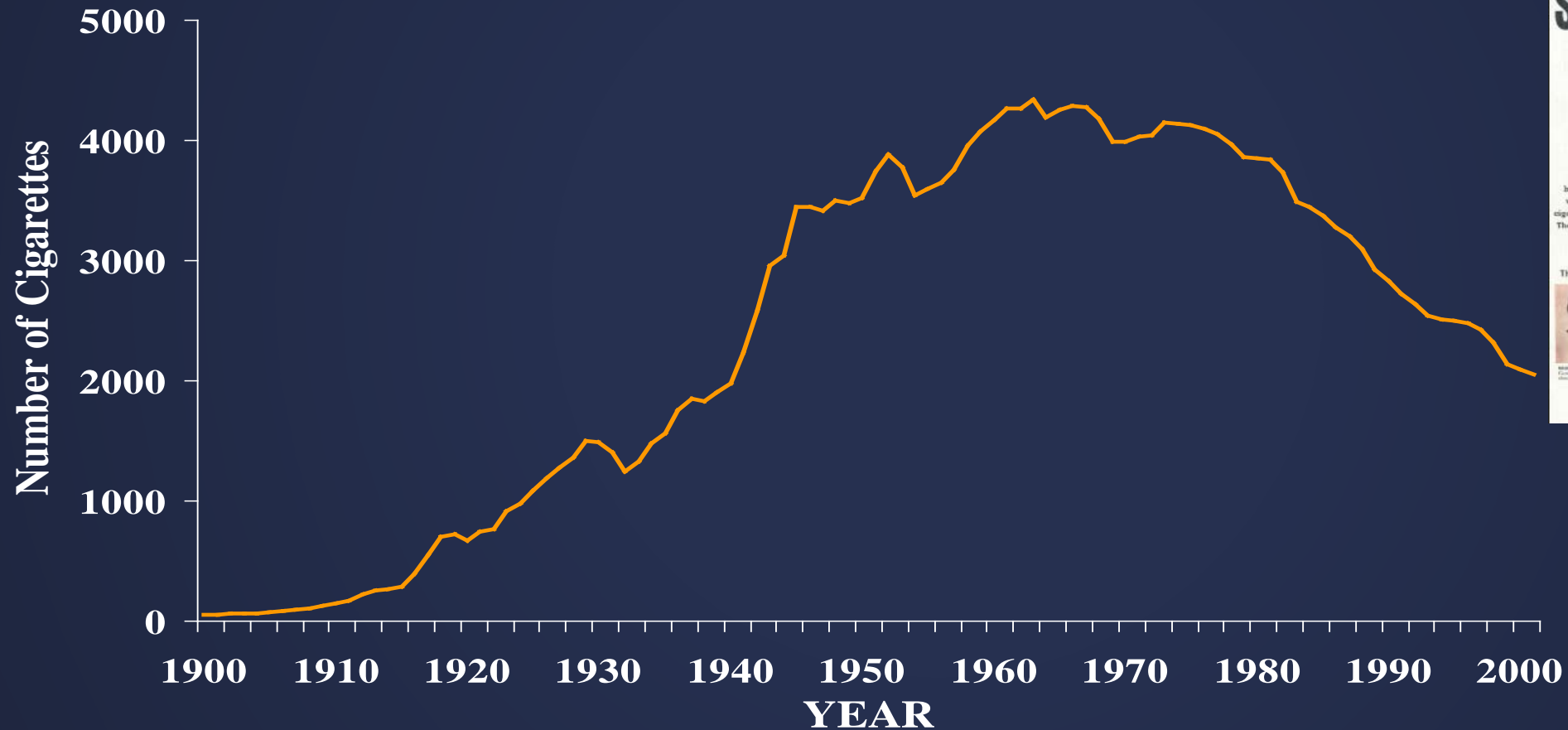


*Age-adjusted to the 2000 US standard population. †Includes intrahepatic bile duct, gallbladder, and other biliary.

NOTE: Due to International Classification of Diseases coding changes, numerator information for colorectal, liver, and lung cancers has changed over time
 Source: National Center for Health Statistics, Centers for Disease Control and Prevention, 2017.



Adult Per Capita Cigarette Consumption and Major Smoking and Health Events – United States, 1900-2001



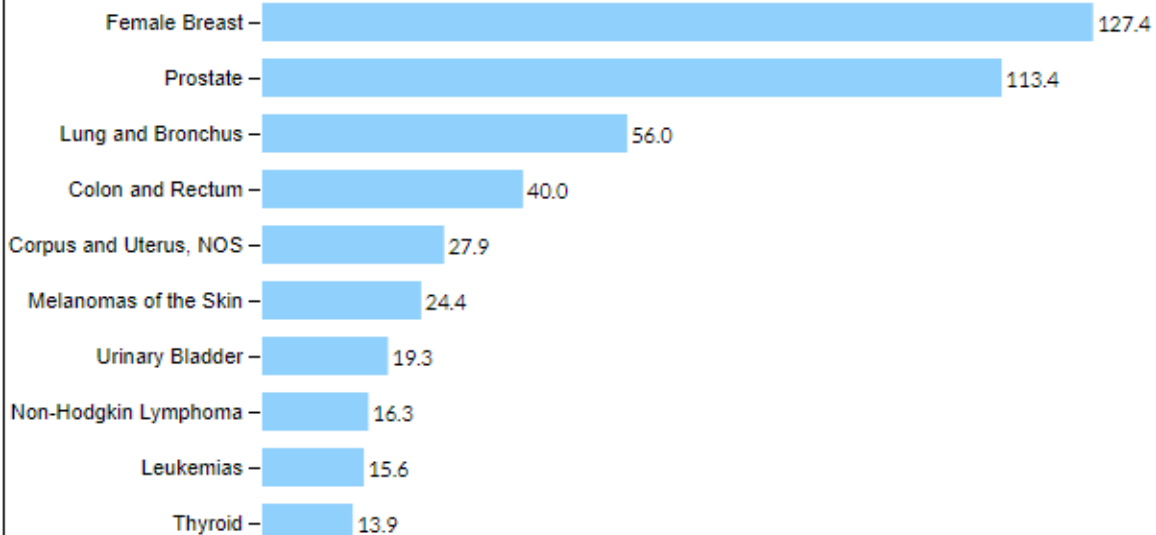
Cancer Incidence and Mortality in South Dakota

Top 10 Cancers by Rates of New Cancer Cases

South Dakota, 2015, Male and Female

Rate per 100,000 people

[Chart](#) [Table](#) [Export](#)

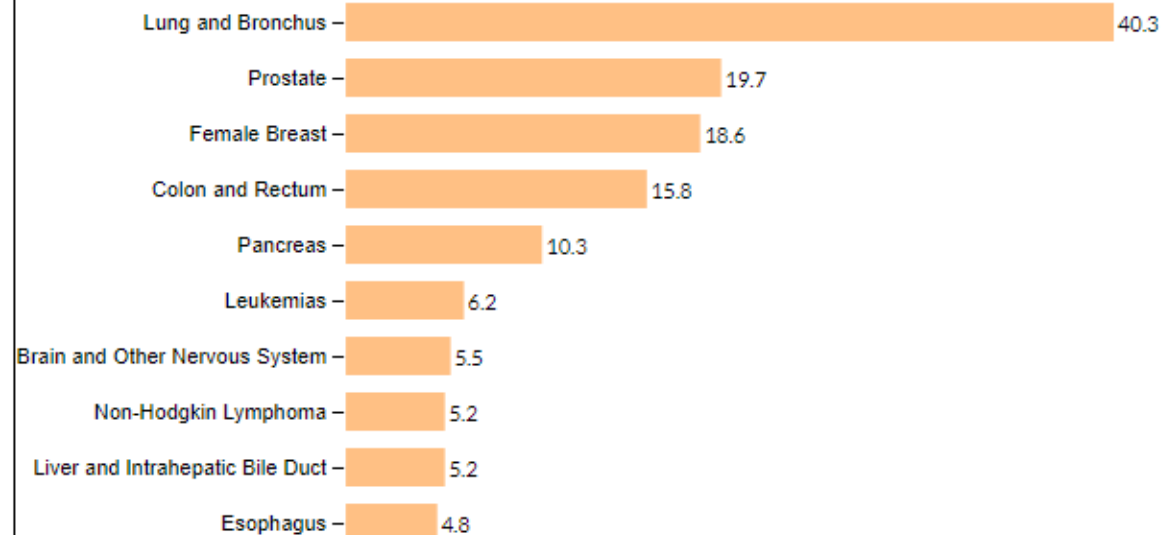


Top 10 Cancers by Rates of Cancer Deaths

South Dakota, 2015, Male and Female

Rate per 100,000 people

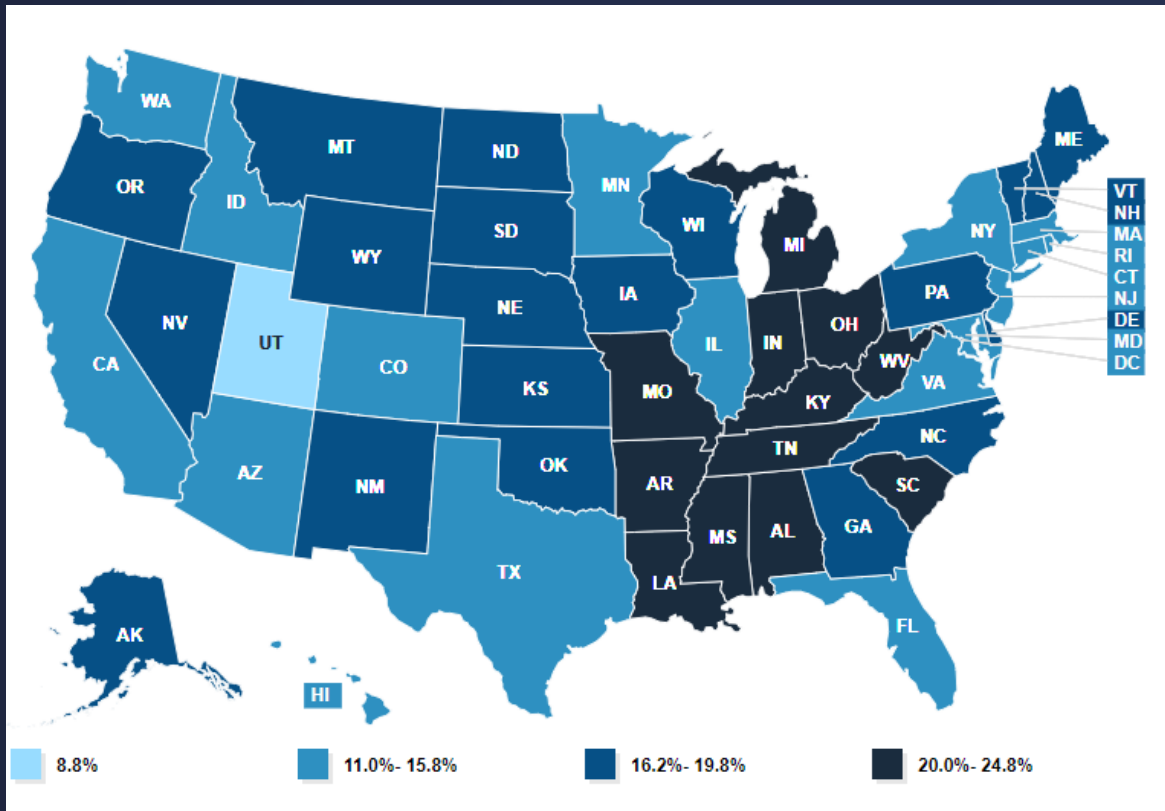
[Chart](#) [Table](#) [Export](#)



Footnotes

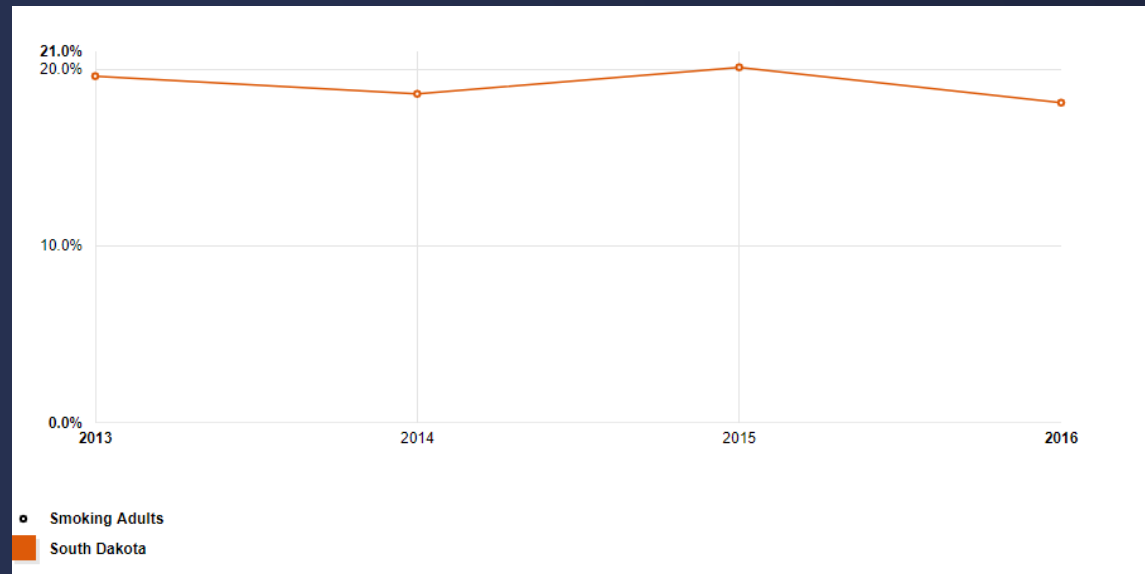
Incidence data are compiled from cancer registries meeting U.S. Cancer Statistics data quality criteria covering 100% of the U.S. population.

Percent of Adults Who Currently Smoke 2016



Location	Smoking Adults
United States ¹	16.4%
South Dakota	18.1%

Percent of Adults who Currently Smoke in SD, 2013-2016

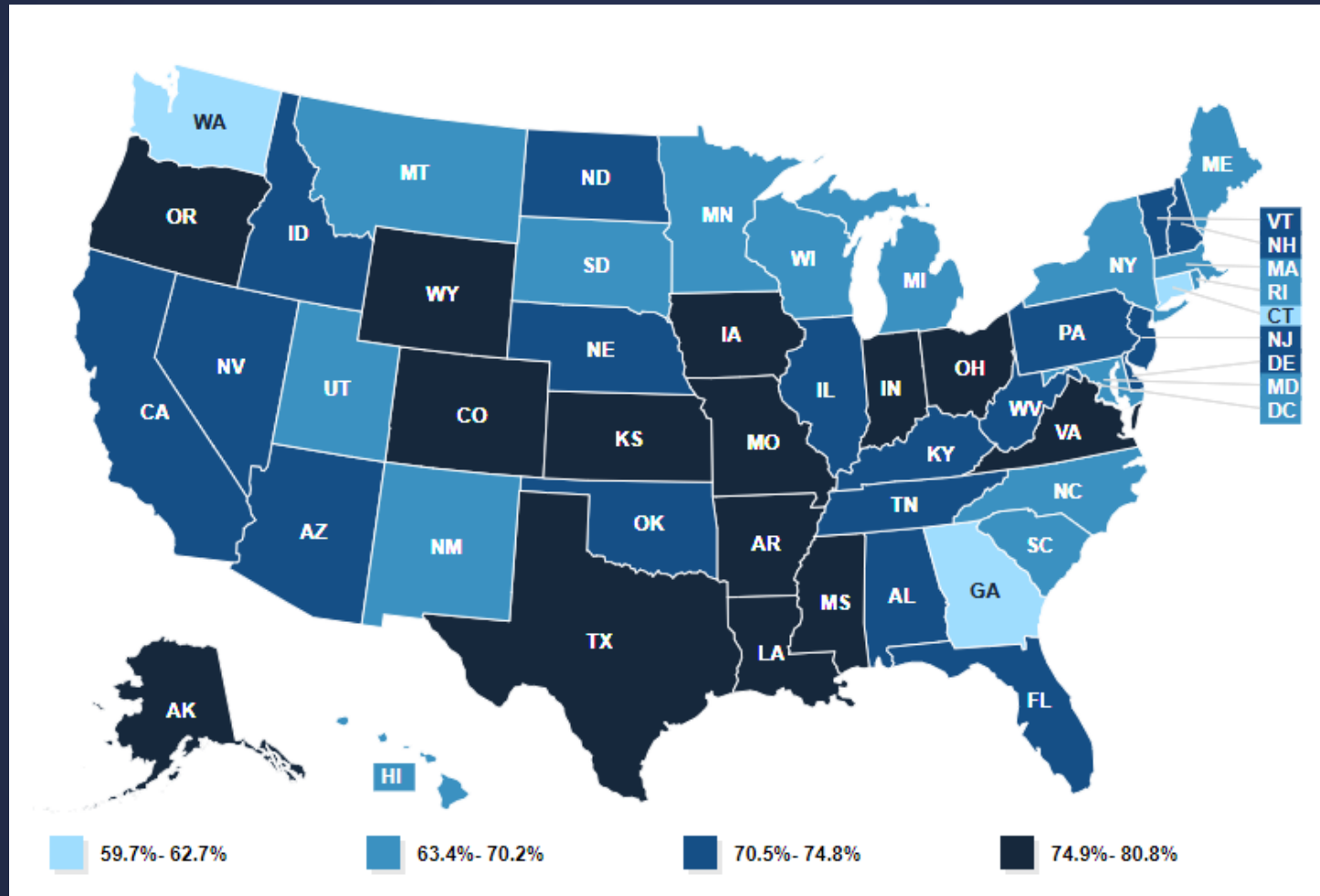


Kaiser Family Foundation analysis of the Centers for Disease Control and Prevention (CDC)'s Behavioral Risk Factor Surveillance System (BRFSS) 2013-2016 Survey Results.

Breast Cancer Screening

US and SD

Mammogram within the Past Two Years (40 and Older), 2016

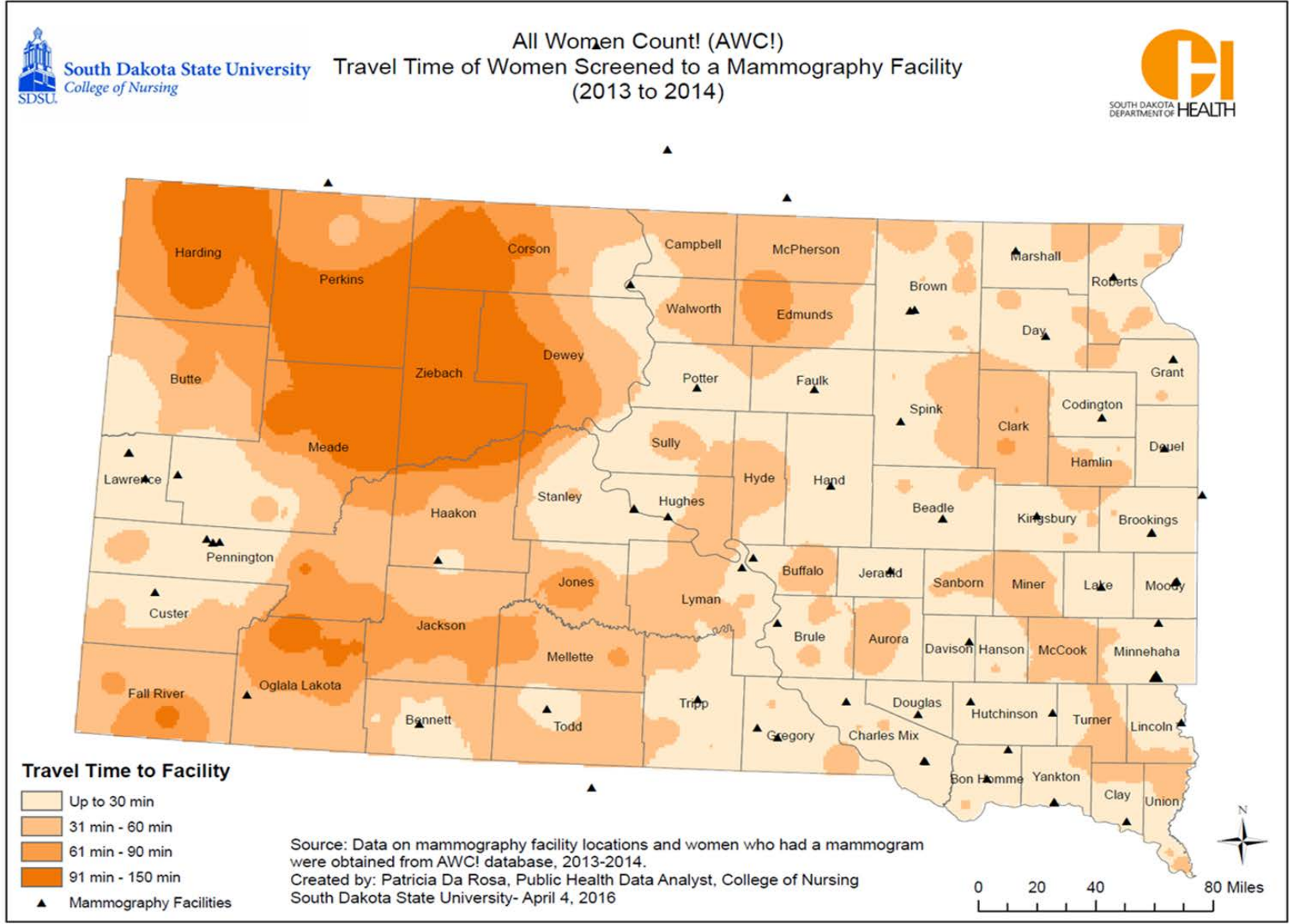




Early Detection of Breast and Cervical Cancer in South Dakota

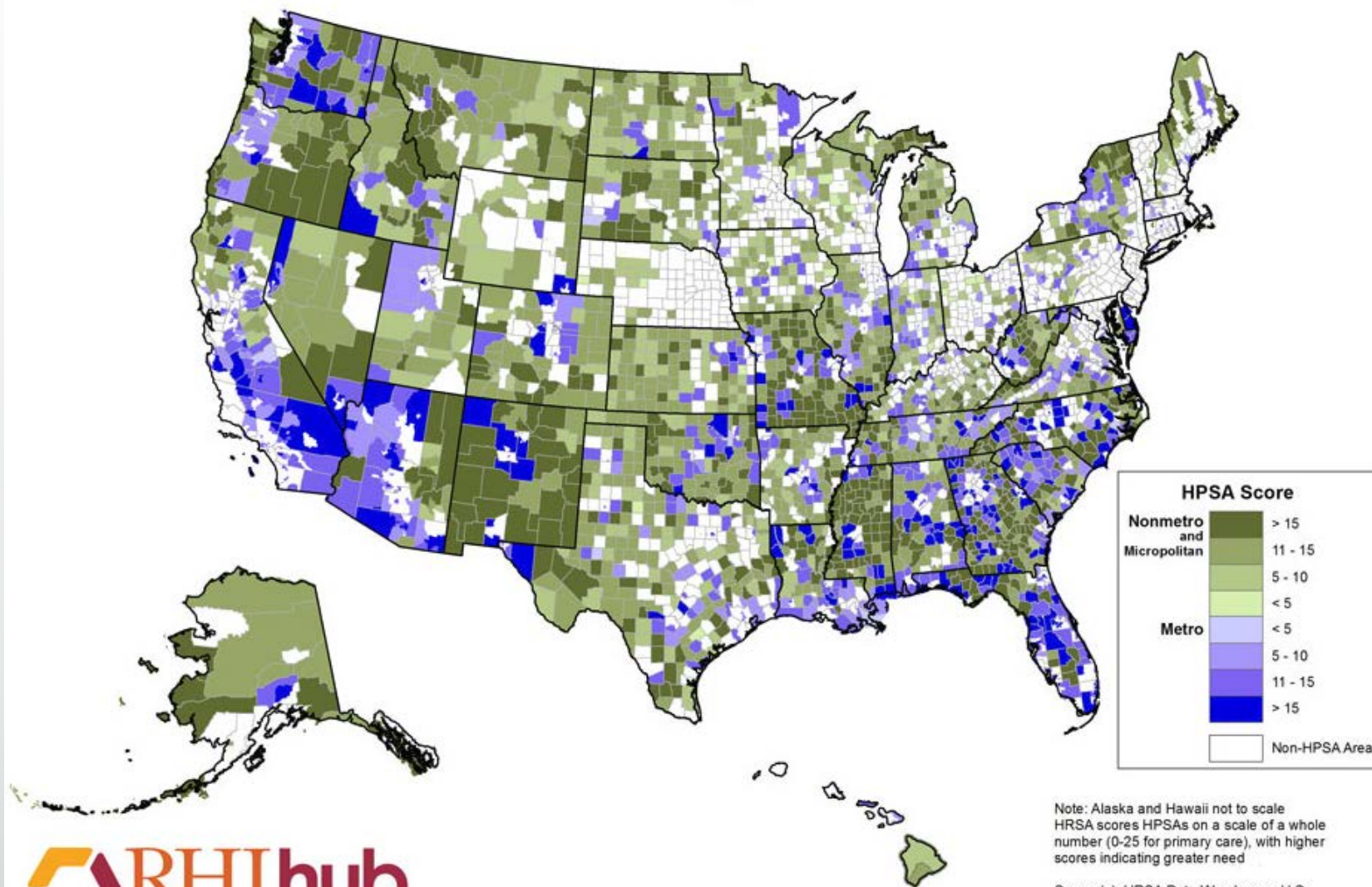
All Women Count!

Travel Time to a Mammography Facility- All Women Count Program!



Health Care Access

Health Professional Shortage Areas Primary Care



Note: Alaska and Hawaii not to scale
HRSA scores HPSAs on a scale of a whole number (0-25 for primary care), with higher scores indicating greater need

Source(s): HRSA Data Warehouse, U.S. Department of Health and Human Services, November 2017

Health Professional Shortage Area- Dental Health

U. S. Department of Health & Human Services



Topic Areas Tools Data FAQs & Resources About HDW HRSA.gov

Home > Tools > Map Tool

Map Tool

HRSA Data **HRSA Grants** **Demographics** **Other Data** **Upload Custom Data** **Layer Controls and Legend**

Show Legend Show Labels

- Families with Income Below 2.00 Times the U.S. Federal Poverty Level Percent of Total by County
- Families with Income Below 2.00 Times the U.S. Federal Poverty Level Percent of Total by County
- HPSA - Mental Health
- HPSA Points - Dental Health
- HPSA - Dental Health

Note: Labels are not visible unless the map is zoomed to at least 1in = 30mi scale.

Base Map and Boundaries

500 Cities Project- Local Data for Better Health



Lack of Insurance- Sioux Falls

Interactive Map



Start with a location, then choose a measure.

Location Type

- City data by State
- Census tract data by City

State

South Dakota ▼

City

Sioux Falls ▼

Category

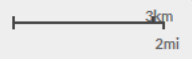
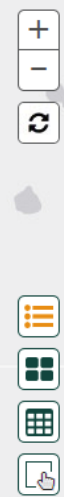
Prevention ▼

Measure

Health Insurance ▼

[Measure definitions](#)

GO



Legend X

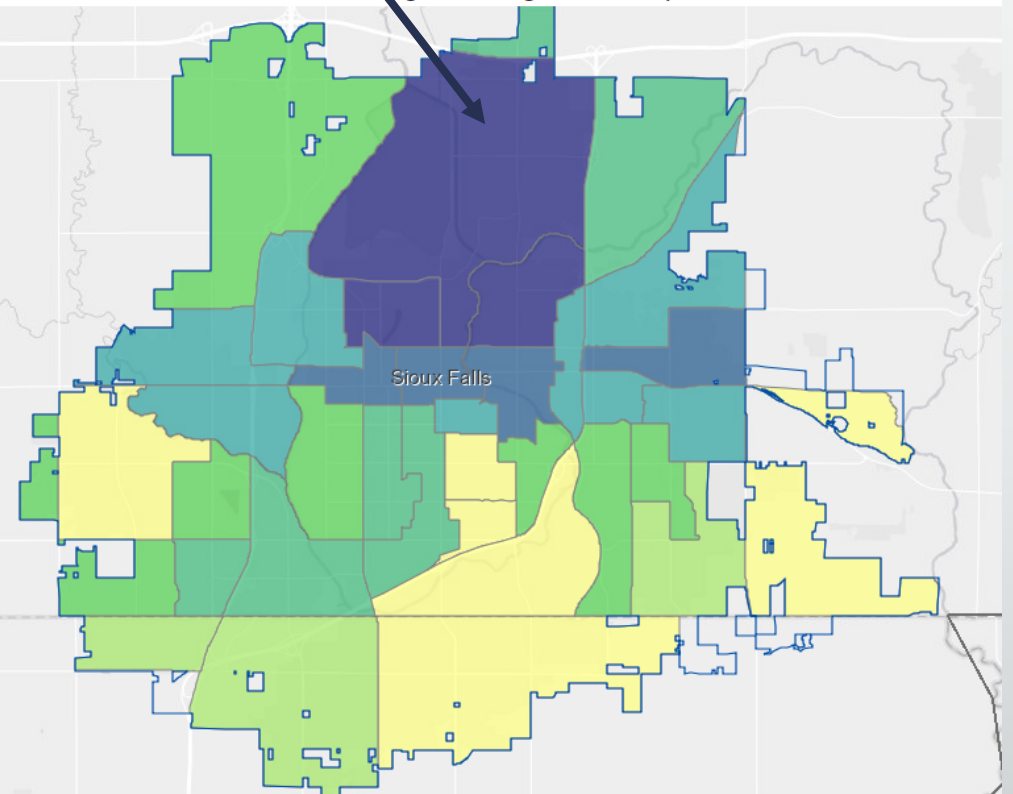
Crude Prevalence %

- 4.9 - 6.8
- 6.9 - 8.1
- 8.2 - 9.6
- 9.7 - 11.7
- 11.8 - 14.0
- 14.1 - 16.5
- 16.6 - 18.8
- Population < 50

Natural Breaks

[Legend Settings](#)

Model-based estimates for current lack of health insurance among adults aged 18-64 years - 2015



19%

5%

Data Sources

Primary Federal Health Statistics Agencies

- National Center for Health Statistics (NCHS)
<http://www.cdc.gov/nchs/>
- Agency for Healthcare Research and Quality (AHRQ)
<http://www.ahrq.gov/>



SEER IS AN AUTHORITATIVE SOURCE FOR CANCER STATISTICS IN THE UNITED STATES.

The Surveillance, Epidemiology, and End Results (SEER) Program provides information on cancer statistics in an effort to reduce the cancer burden among the U.S. population. SEER is supported by the Surveillance Research Program (SRP) in NCI's Division of Cancer Control and Population Sciences (DCCPS).

Cancer Stat Facts



Statistical summaries for a number of common cancer types:

All Cancers ▾

[View Stat Facts](#) ▶

SEER*Explorer



A new way of exploring cancer statistics in the U.S. [Read More...](#)

[Start Exploring](#) ▶

Did You Know? Video Series



Did You Know? videos give a snapshot of cancer impact in the U.S.

[Watch Latest Video](#) ▶



National Center for Health Statistics



Data Collection Systems

Programs

Topics

Data and Tools

Publications

News and Events

Data Access

- Public Use Data Files and Documentation
- Restricted Data
- Data Linkage
- National Death Index

Data Tools

- CDC WONDER
- WISQARS

Data Analysis Aids

- Injury Tools and Frameworks
- NCHS Survey Measures Catalog
- SPACE program
- Urban/Rural Classification scheme for Counties

Data Visualizations

- NCHS Data Visualization Gallery
- Stats of the States

NCHS **Data Visualization Gallery**

Drug Poisoning Mortality in the United States, 1999–2016



Explore Health Rankings

The annual Rankings provide a revealing snapshot of how health is influenced by where we live, learn, work, and play. They provide a starting point for change in communities.

Read Our Reports

Review key findings from our annual County Health Rankings, along with other state and national reports.

[Learn More](#)

Find County Rankings

[Search](#)

Use the Data

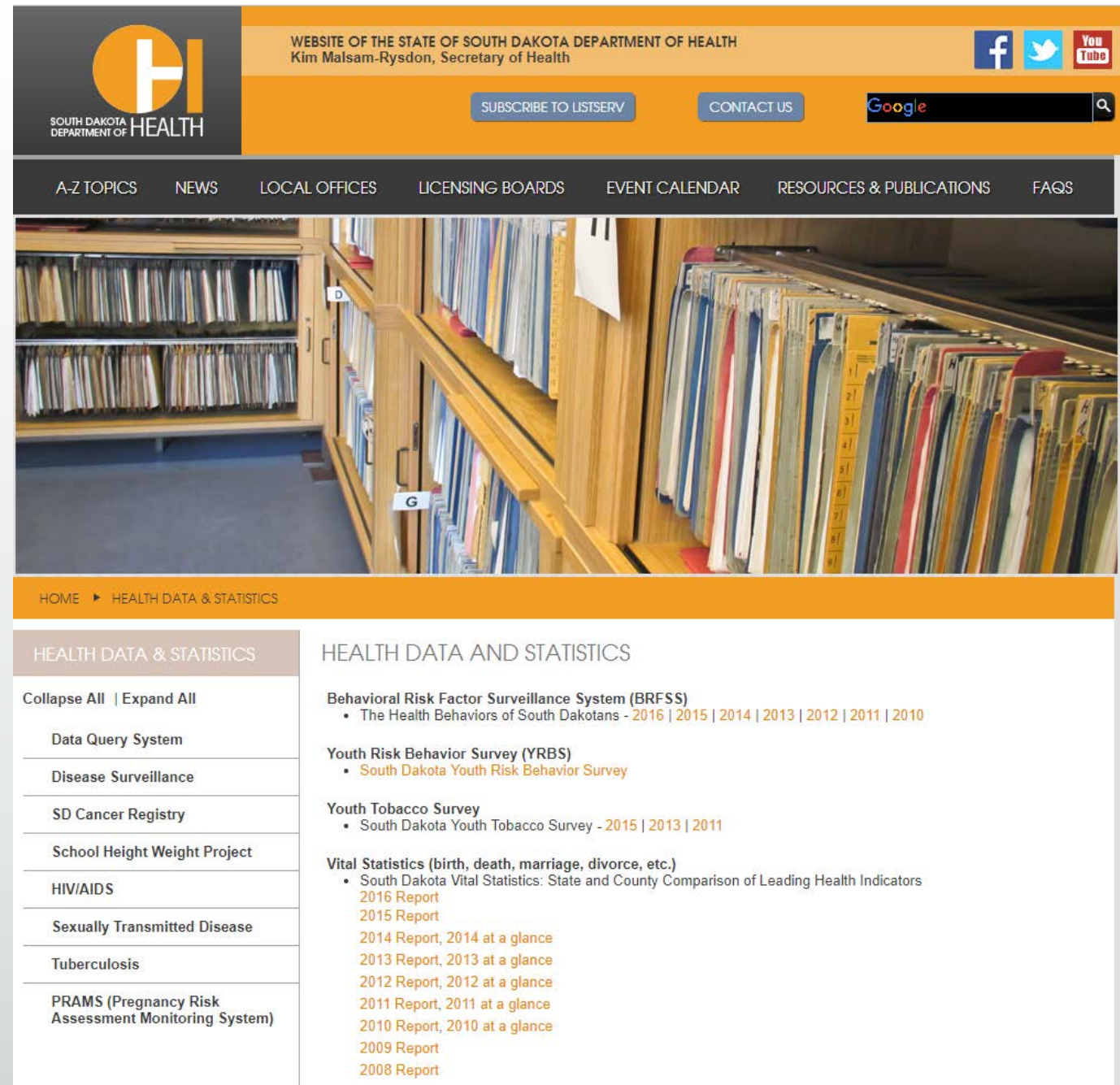
Find and understand the data you need - in this site and beyond - to move to action.

[Learn More](#)

SD DOH Health Data and Statistics

- Behavioral Risk Factor Surveillance System
- Youth Risk Behavior Survey
- Vital Statistics
- Infant Death Review
- Healthcare Workforce
- Hospital

<https://doh.sd.gov/statistics/2016BRFSS/default.aspx>



WEBSITE OF THE STATE OF SOUTH DAKOTA DEPARTMENT OF HEALTH
Kim Malsam-Rysdon, Secretary of Health

SOUTH DAKOTA DEPARTMENT OF HEALTH

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HOME ► HEALTH DATA & STATISTICS

HEALTH DATA & STATISTICS

Collapse All | Expand All

- Data Query System
- Disease Surveillance
- SD Cancer Registry
- School Height Weight Project
- HIV/AIDS
- Sexually Transmitted Disease
- Tuberculosis
- PRAMS (Pregnancy Risk Assessment Monitoring System)

HEALTH DATA AND STATISTICS

Behavioral Risk Factor Surveillance System (BRFSS)

- The Health Behaviors of South Dakotans - [2016](#) | [2015](#) | [2014](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#)

Youth Risk Behavior Survey (YRBS)

- [South Dakota Youth Risk Behavior Survey](#)

Youth Tobacco Survey

- South Dakota Youth Tobacco Survey - [2015](#) | [2013](#) | [2011](#)

Vital Statistics (birth, death, marriage, divorce, etc.)

- South Dakota Vital Statistics: State and County Comparison of Leading Health Indicators
[2016 Report](#)
[2015 Report](#)
[2014 Report, 2014 at a glance](#)
[2013 Report, 2013 at a glance](#)
[2012 Report, 2012 at a glance](#)
[2011 Report, 2011 at a glance](#)
[2010 Report, 2010 at a glance](#)
[2009 Report](#)
[2008 Report](#)

South Dakota Data Sources

Name	Description	Breakdown
South Dakota Department of Education - Statistical Digest	The South Dakota Department of Education Statistical Digest provides education data by school district for South Dakota.	Sub-County
South Dakota Department of Health - Data and Statistics	The South Dakota Department of Health provides health data and statistics for topics such as infectious diseases, hospital discharges, vital statistics, Behavioral Risk Factor Surveillance System, Youth Risk Behavior Survey, and the South Dakota cancer registry.	Demographic
South Dakota Department of Health - Data and Statistics - Immunizations	This report provides statistics on adults 65 and older who have not had the influenza vaccination within the past 12 months.	Demographic
South Dakota Department of Public Safety - Crash Reports	The South Dakota Office of Accident Records maintains a database of motor vehicle traffic crash information for public roadways. Search by county or city to obtain data on vehicle crashes over a specified period.	Sub-County
South Dakota Department of Social Services - Medicaid	The South Dakota Department of Social Services provides Medicaid eligibility information for South Dakota. Additional reports can be found at this page: Reports .	Demographic
South Dakota Division of Criminal Investigation - Statistical Analysis Center	The Criminal Statistical Analysis Center's primary function is to serve as the clearinghouse in South Dakota for criminal justice statistical data.	Demographic

Conclusions

- Data in public health is imperative to monitor and promote health
- Importance of taking other statistics into account (e.g., SES, insurance status)
- Several data sources available to explore

References and sources

- American Cancer Society. Cancer Statistics. https://cancerstatisticscenter.cancer.org/?_ga=2.214343575.1258362017.1528781693-1582849768.1522030276#!/
- CDC. Behavioral Risk Factor Surveillance System. https://www.cdc.gov/brfss/annual_data/annual_data.htm
- CDC. Data Statistics. <https://www.cdc.gov/DataStatistics/>
- CDC 500 Cities project. https://nccd.cdc.gov/500_Cities/rdPage.aspx?rdReport=DPH_500_Cities.InteractiveMap&islCategories=HLTHOUT&islMeasures=ARTHRITIS&islStates=59&rdRnd=81950
- County Health Rankings. <http://www.countyhealthrankings.org/>
- Health Resources and Service Administration (HRSA). Data Warehouse. <https://datawarehouse.hrsa.gov/Tools/MapTool.aspx?tl=HPSA>=State&cd=46&dp=PC,DC,MH>
- Rural Health Information Hub (RHInhub). <https://www.ruralhealthinfo.org/visualizations>
- SEER Cancer Statistics. <https://seer.cancer.gov/statistics/>
- South Dakota Department of Health. <http://doh.sd.gov/statistics/>
- U.S. Census. Health Insurance. https://www.census.gov/dataviz/visualizations/health_insurance/

Thank you

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