Mapping Heart Disease, Stroke and Other Chronic Diseases: A Program to Enhance GIS Capacity within Health Departments

Map Highlights from State Health Departments: Alaska, Arizona, New Jersey, North Dakota, and West Virginia; and Local Health Departments: California Counties- Merced and Stanislaus; Kansas Counties- Douglas, Johnson, and Wyandotte.

Acknowledgements

INTRODUCTION

Geographic Information Systems (GIS) offer powerful tools for enhancing the ability of health departments to address the public health burden of heart disease, stroke, and other chronic diseases. In order to build the capacity of health departments to utilize GIS for the surveillance and prevention of chronic diseases, the Division for Heart Disease and Stroke Prevention at the National Centers for Disease Control and Prevention (CDC) funds a collaborative training project with the National Association of Chronic Disease Directors (NACDD), and The Children's Environmental Health Initiative (CEHI). The central objective of this GIS Surveillance Training Project is to enhance the ability of health departments to integrate the use of GIS into daily operations that support existing priorities for surveillance and prevention of heart disease, stroke, and other chronic diseases. Staff members from health departments receive training regarding the use of GIS surveillance and mapping to address four major purposes:

- Documenting geographic disparities
- Informing policy and program decisions
- Enhancing partnerships with external agencies
- Facilitating collaboration within agencies

In 2016, the following state health departments were competitively selected to participate in this GIS Surveillance Training Project: State Health Departments: Alaska, Arizona, New Jersey, North Dakota, and West Virginia; and Local Health Departments: California Counties - Merced and Stanislaus; Kansas Counties - Douglas, Johnson, and Wyandotte.

The project is intentionally designed to develop a GIS infrastructure that can serve a vast array of chronic disease areas, yet with a focus on heart disease and stroke. The maps displayed in this document highlight examples of how each participating health department produced maps to support their chronic disease priorities by documenting the burden, informing program and policy development, and enhancing partnerships. The extent of collaboration among chronic disease units within each health department is evident in the diversity of the teams that participated in the training and have continued to work to strengthen GIS infrastructure within their respective health departments.

ALASKA

Heart Disease Death Rates in Alaska by Gender & Public Health Region, 2008-2012

Total Population Death Rate*

- 140.8
- 140.9 - 149.5
- 149.6 - 156.8
- 156.9 - 163.3
- 163.4 - 205.5
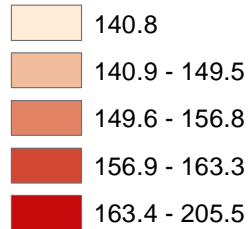
State: 149.9

- Federally Qualified Health Center
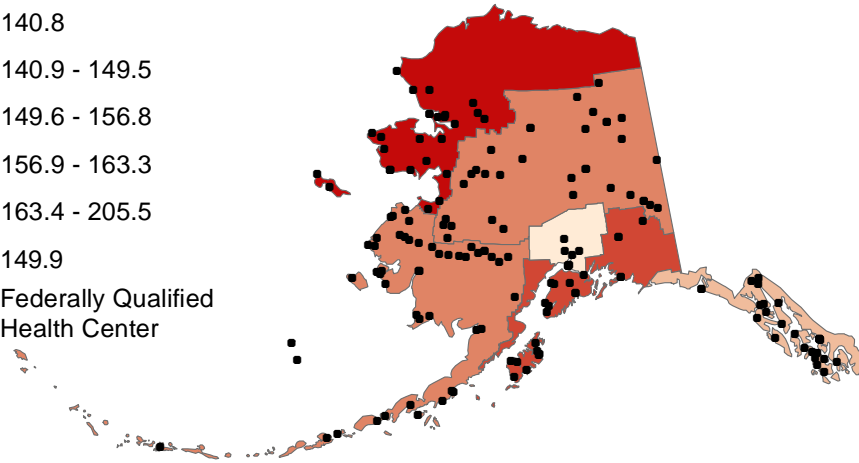
Key Points

☐ Heart disease is the second leading cause of death in Alaska from 2000 - 2013, behind cancer.

☐ Heart Disease most commonly affects adults after middle age. Though the population in Alaska has historically been younger, an increasing elderly population in Alaska puts health programs across the state in a unique position to address heart disease.

☐ The purpose of this map is to display heart disease mortality rates by gender and public health region, in relation to the location of Federally Qualified Health Centers(FQHCs). FQHCs provide services to undersrved areas or populations, offering a sliding fee scale, and are critical to rural areas receiving healthcare.

Men

- 173.0
- 173.1 - 178.9
- 179.0 - 203.6
- 203.7 - 209.0
- 209.1 - 269.4

State: 193.4

Women

- 102.4
- 102.5 - 108.2
- 108.3 - 109.2
- 109.3 - 133.5
- 133.6 - 143.6

State: 102.4

0   235   470   940 Miles
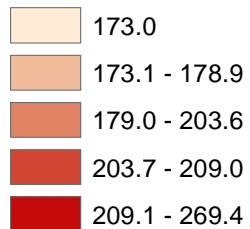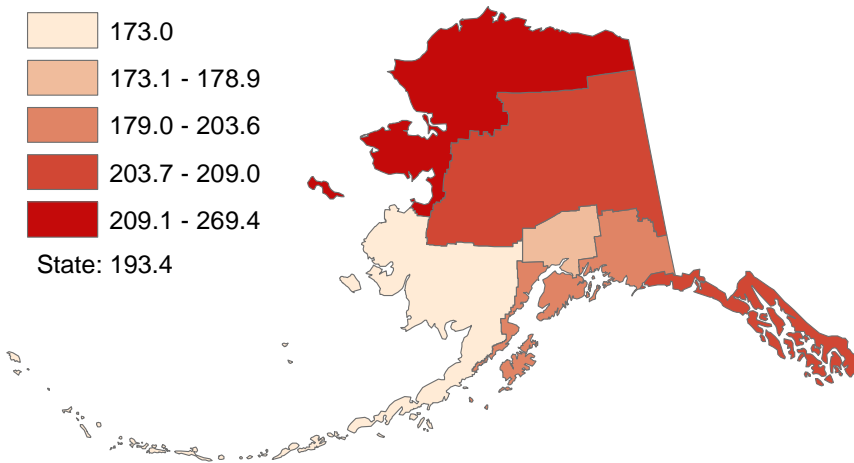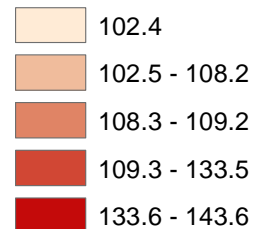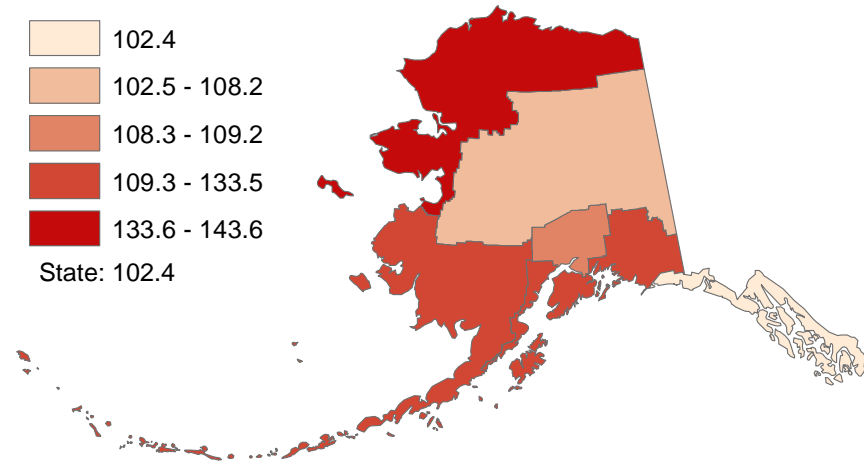
*All rates are per 100,000 & age-adjusted to the 2000 US Standard Population
Source: CDC/National Center for Health Statistics National
Mortality Database accessed with SEER*Stat statistical software,
HRSA Data Warehouse
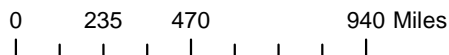
ALASKA

Language as a Potential Barrier to Obtaining Parental Permission to Participate in the Alaska Youth Risk Behavior Survey (YRBS) by School District in Anchorage, 2015

CHUGIAK HIGH
4

EAGLE RIVER HIGH
2

Elmendorf Air Force Base

Fort Richardson

Chugach State Park

WEST HIGH
29

BARTLETT HIGH
28

EAST HIGH
32

DIMOND HIGH
12

SERVICE HIGH
17

SOUTH HIGH
10

SOUTH HIGH
10

0 2.5 5 10 Miles

N

ANCHORAGE SCHOOL DISTRICT

0 375 750 Miles
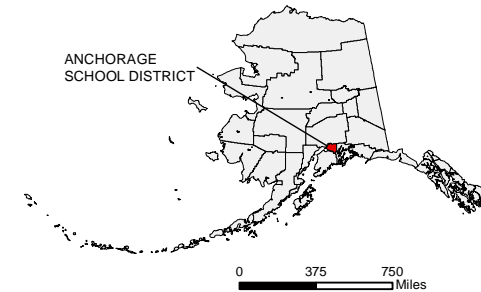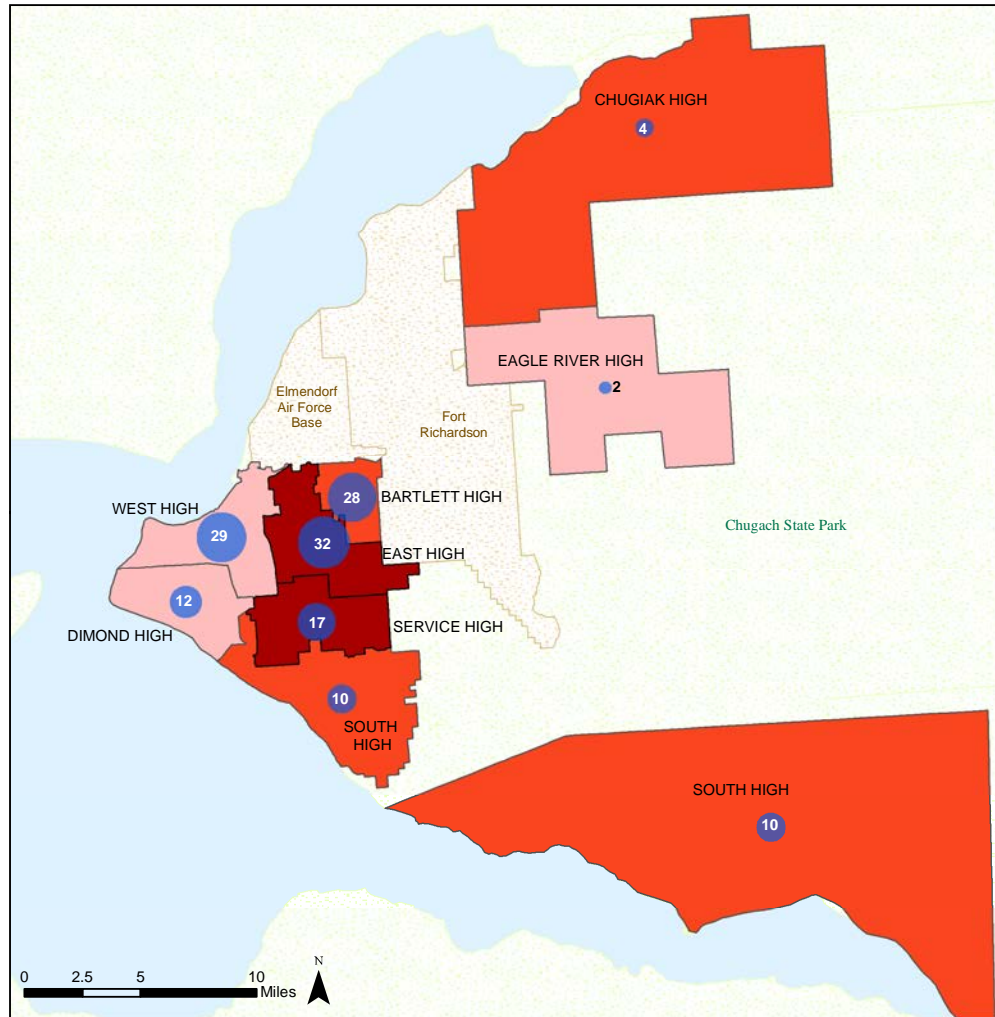
Parental Permission to Participate in the YRBS

- < 60%
- 60% - 64%
- 65% - 68%
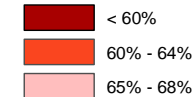
% Percentage of Students Speaking a Non-English Primary Language*

Key Points

☐ The Youth Risk Behavior Survey (YRBS) is a biennial survey of adolescent health-risk behaviors established by the Centers for Disease Control and Prevention (CDC) and first implemented in Alaska in 1995.

☐ Due to a state statute requiring written parental permission to survey, Alaska struggles to meet the 60% overall participation rate required for weighted, or representative, data. In the Anchorage School District (ASD), Alaska's largest and most racially and ethnically diverse district, language is thought to be one potential barrier to obtaining parental permission.

☐ This map displays YRBS parental permission rates and the percentage of students who speak a primary language other than English, as a proxy for the percentage of non-English speaking parents, by ASD high school. This map has been used in discussions with ASD about student registration processes and parent outreach, and it continues to inform 2017 YRBS planning.

*Data from the 2015-2016 school year
Sources: Anchorage School District: Assessment and Evaluation Department, English Language Learners Program, Demographics-GIS Services

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ARIZONA

Female Late Stage Breast Cancer Diagnosis, Percent of Uninsured Women and Mammography Facilities by County

MOHAVE

COCONINO

APACHE

NAVAJO

YAVAPAI

LA PAZ

GILA

GREENLEE

MARICOPA

GRAHAM

PINAL

YUMA

COCHISE

PIMA

SANTA CRUZ

Percent of Diagnoses at Late Stage

- 22.2% - 23.9%
- 24.0% - 25.0%
- 25.1% - 27.7%
- 27.8% - 29.5%
- 29.6% - 37.5%

Percent of Uninsured Women

- 10.1% - 14.6%
- 14.7% - 18.4%
- 18.5% - 22.0%

Mammography Facilities

- Active Facility

N

0 15 30   60   90   120
Miles
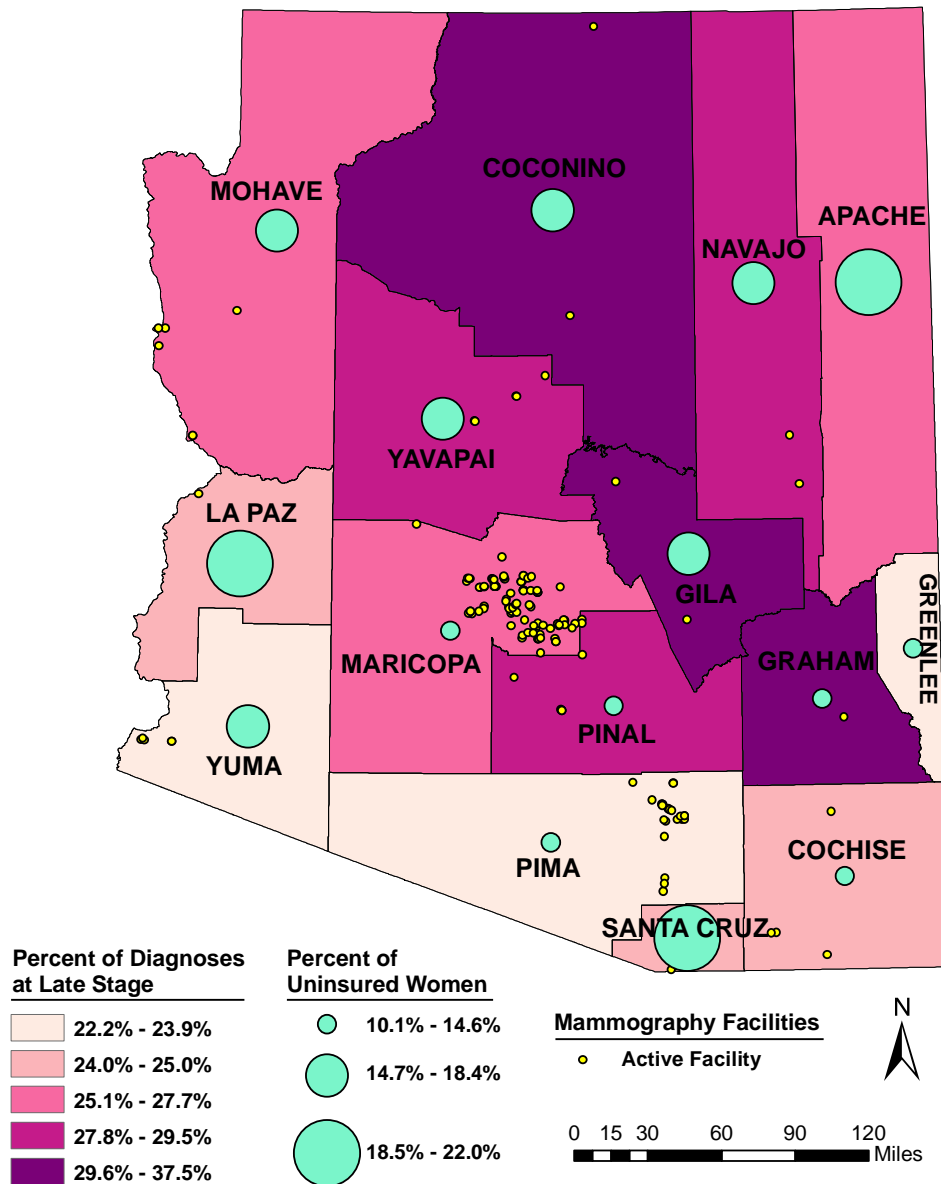
Key Points

□ Several factors that could influence delayed diagnosis include a lack of insurance and the lack of proximate screening locations; the purpose of this map is to show how these factors intersect in Arizona.

□ Interestingly, the three counties with the highest percentage of late stage diagnoses (Graham, Gila, and Coconino) are not in the highest category of uninsured women but they do have very few mammography facilities.

□ Some counties have a high percentage of late stage diagnoses even though they have multiple licensed mammography facilities as well as a small percentage of uninsured women while other counties have a low percentage of late stage diagnoses with limited to no mammography facilities and varying levels of uninsured women.

□ This map provides a visual representation of where there is room for improvement diagnosis of breast cancer at an earlier stage and increasing access to insurance, and the locations of mammography units in relationship to towns and other populated areas.

Source: Arizona Cancer Registry, 2010-2013; U.S. Census- Small Area Health Insurance Estimates, 2013; Arizona Radiation Regulatory Agency, Data current as of 6/29/2016

Stroke Death Rates and 60 Minute Drive Time Areas to an Accredited Stroke Center, Arizona, 2011-2013

Legend:

Stroke Centers

60 minute Drive Time from Stroke Centers

Age-Adjusted Stroke Death Rates 65+ per 100,000

- 180.1 - 193.0
- 193.1 - 206.4
- 206.5 - 212.2
- 212.3 - 214.0
- 214.1 - 237.0

N

0 10 20   40   60   80 Miles
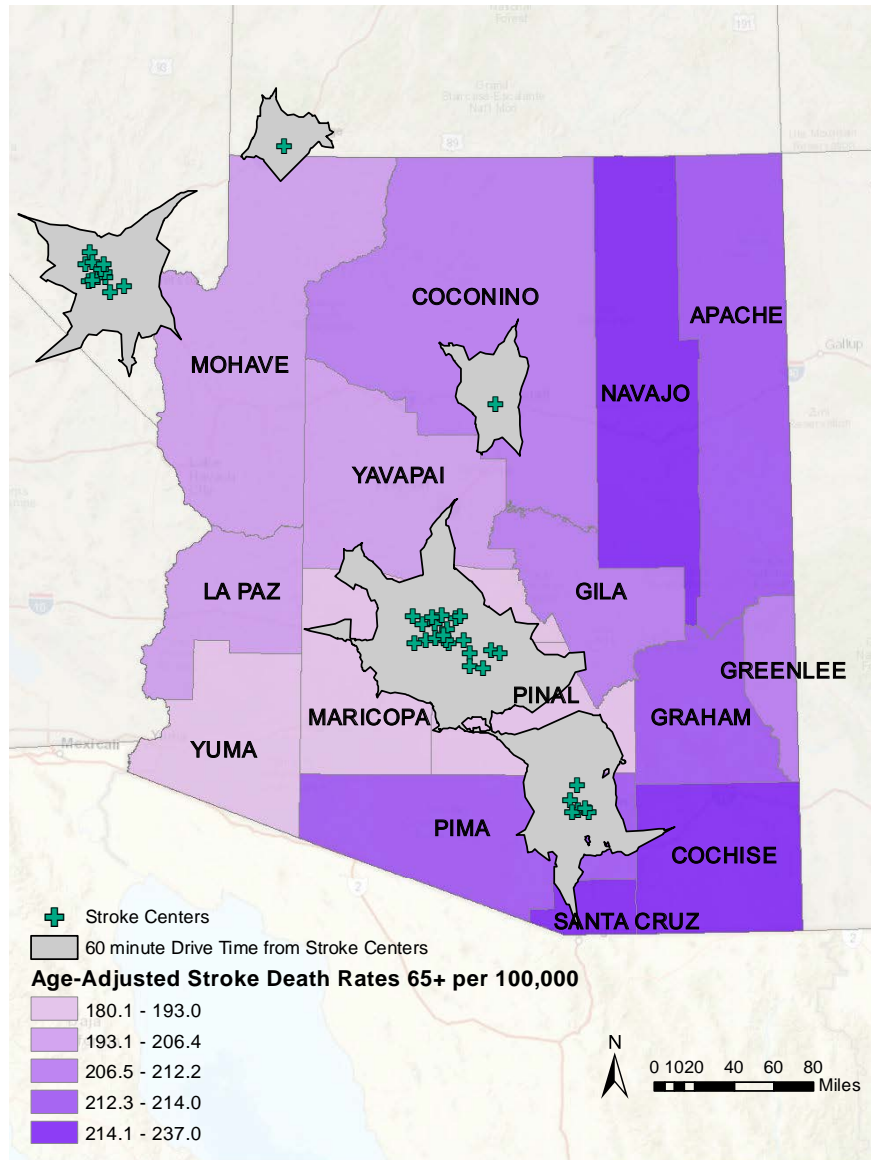
Key Points

☐ This map displays stroke death rates for ages 65 year and older along with 60 minutes' drive time to any accredited stroke center located in Arizona, and neighboring counties in Nevada and Utah.

☐ Additional analyses indicate that in Arizona, 74% of the population aged 65+ live within 60 minutes of an accredited stroke center.

☐ Of the 15 counties in Arizona, Navajo, Cochise, and Santa Cruz counties have the highest stroke death rates. The majority of the people living in Cochise and Santa Cruz counties are not within a 60-minute drive time of an accredited stroke center.

☐ The counties with the lowest stroke death rates include Yuma, Maricopa, and Pinal. Maricopa and Pinal counties have more accredited stroke centers than any other county, and the largest percentage of people living within a 60 minute drive time to an accredited stroke center.

Data Source: CDC Interactive Atlas for Heart Disease and Stroke, 2011-2013. Age standardized to 2000 US Standard Population per 100,000 population. Accredited stroke centers were compiled from Joint Commission, DNV GL, and Health Facilities Accreditation Program (HFAP).

NORTH DAKOTA

Demand vs. Capacity for Colorectal Cancer Screening

Key Points

☐ Colorectal cancer screening is recommended for all adults beginning at age 50 and continuing until age 75.

☐ The U.S. Preventative Services Task Force recommends screening for colorectal cancer using colonoscopy, sigmoidoscopy, or fecal occult blood testing.

☐ This maps shows that while a number of facilities in high demand settings are meeting their full capacity for colonoscopy screening, many are not. This map will help to identify opportunities to build capacity for colorectal screening, and guide strategic planning to address caps in services.

Total Population Age 50-75 By County, 2014

- 291 - 850
- 850 - 1500
- 1500 - 3500
- 3500 - 37882
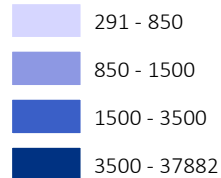
Maximum Annual Colonoscopy Capacity By Facility, 2016

Used Capacity   Unused Capacity

3001 - 13000

501 - 3000

0 - 500
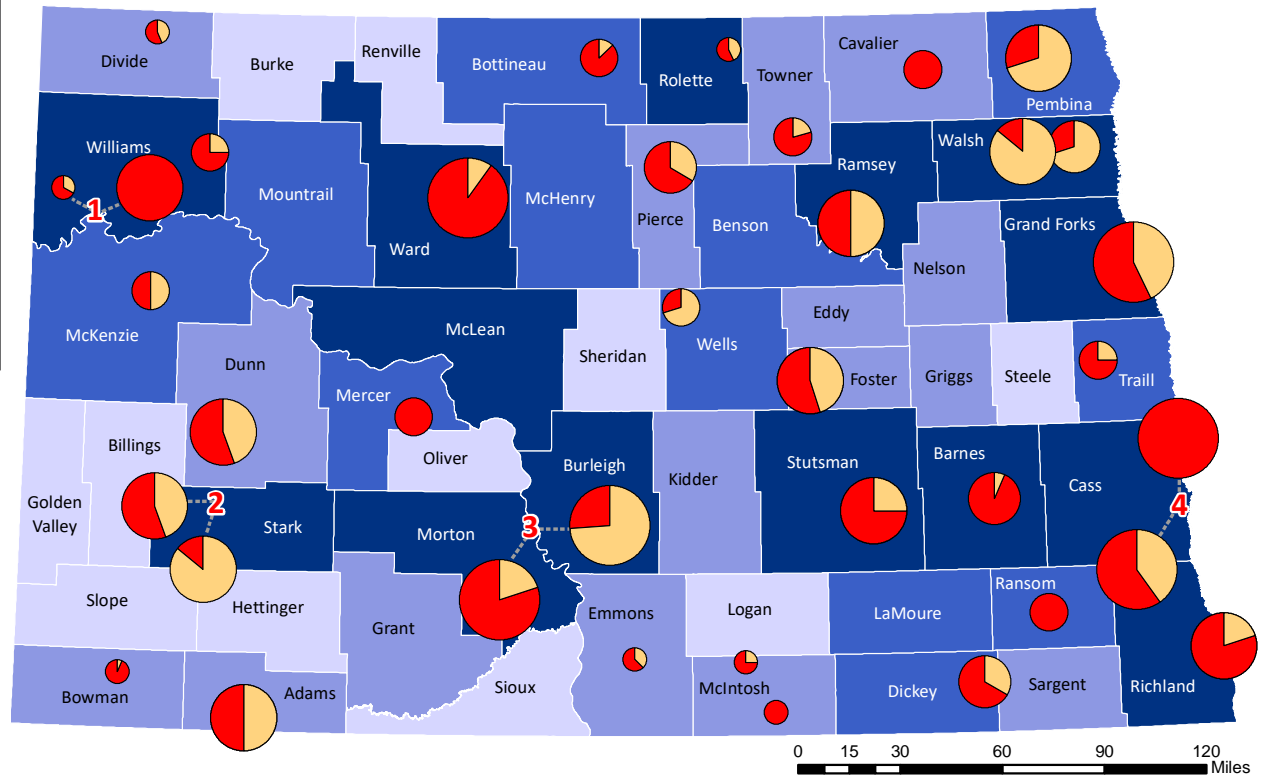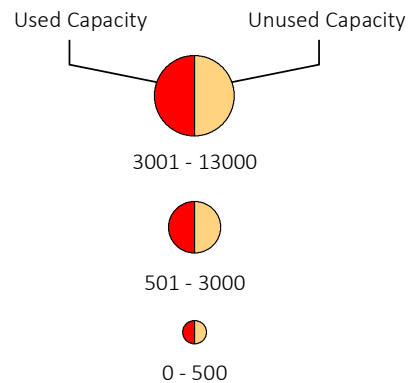
Insets of Metropolitan Areas

Williams County: Williston
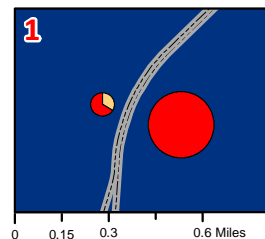
Stark County: Dickinson
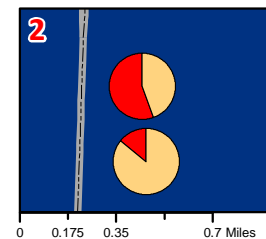
Burleigh County: Bismarck
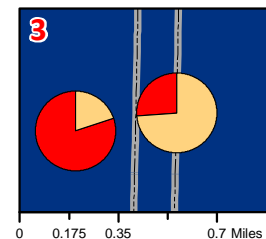
Cass County: Fargo
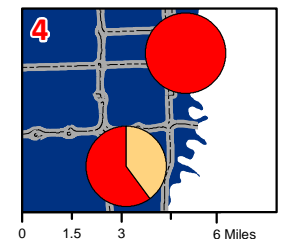
Data Sources: 2014 American Community Survey 5-year; North Dakota Department of Health; U.S. Preventive Services Task Force

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Heart Disease Mortality and Risk Factors in North Dakota

Prevalence Obesity

Obesity Prevalence, 2013

25.9% - 29.8% | 29.9% - 31.4% | 31.5% - 32.8% | 32.9% - 33.3% | 33.4% - 41%

Key Points

☐ Heart disease was the leading cause of death in North Dakota from 2012 to 2014.

☐ Obesity is a risk factor for cardiovascular disease and has been strongly associated with diabetes. The prevalence of obesity in North Dakota in 2013 was 31.0%.

☐ According to the National Institute of Diabetes and Digestive and Kidney Diseases, people with diabetes are at least twice as likely as people without diabetes to have heart disease or a stroke. Diabetes prevalence in North Dakota in 2013 was 8.9%.

Heart Disease Mortality

Heart Disease Death Rate
Per 100,000, 2012-2014

191.5 - 280.5 | 280.6 - 301.8 | 301.9 - 321.3 | 321.4 - 345.9 | 346.0 - 566.6

Prevalence of Diabetes

Diabetes Prevalence, 2013

6.5% - 7.1% | 7.2% - 7.5% | 7.6% - 7.9% | 8% - 8.5% | 8.6% - 13.6%
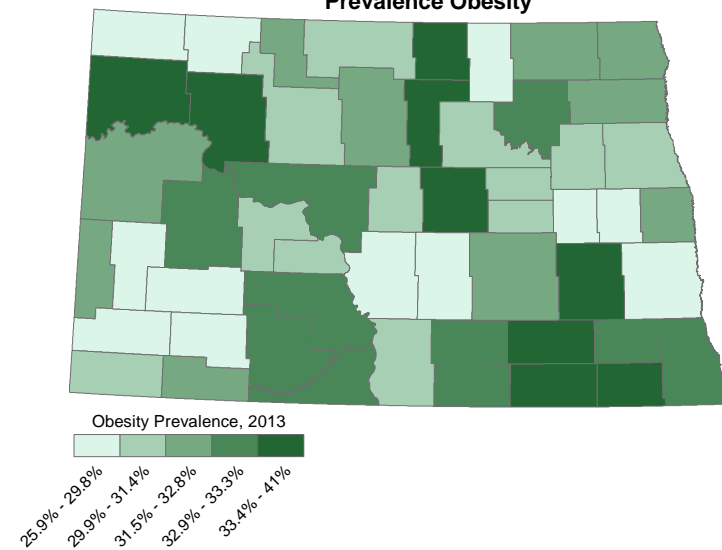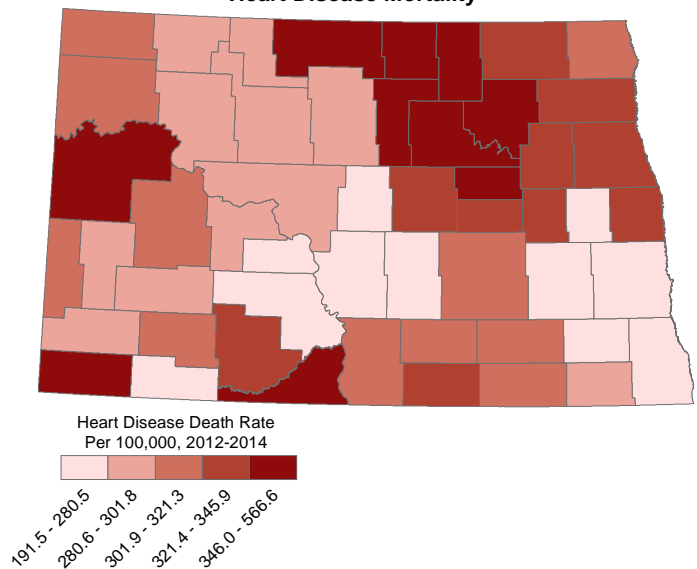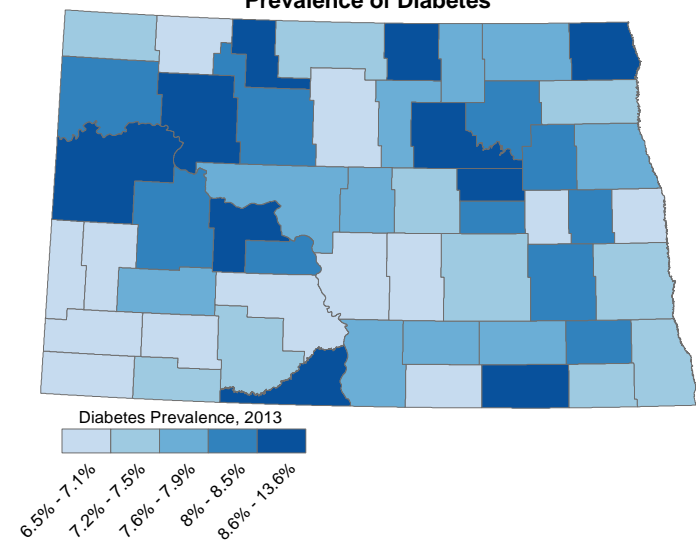
Sources: CDC Interactive Atlas of Heart Disease and Stroke; CDC Diabetes Interactive Atlas.
All data are by county.

Heart Disease Mortality Rate by Municipality of Residence, Cumberland County, New Jersey 2008-2012

Mortality Rate
per 100,000, All Ages

	73 - 206
	207 - 328
	329 - 557
	558 - 1,152
	Suppressed

Statewide heart disease mortality rate for 2008 - 2012 was 210
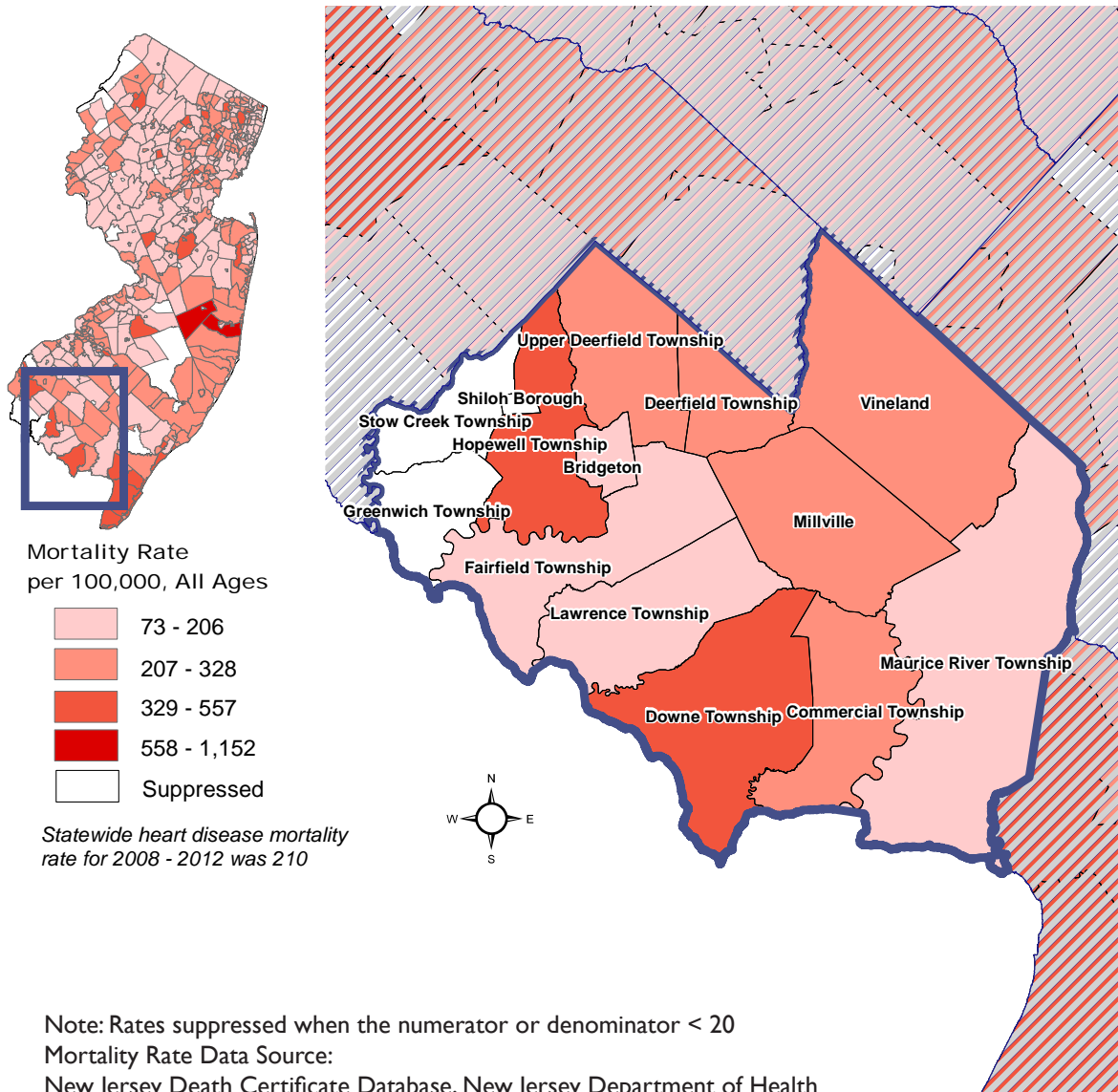
Key Points

☐ Cumberland County ranks last for health outcomes and health factors in New Jersey according to the 2016 County Health Rankings.

☐ This map displays the 2008-2012 heart disease mortality rates by municipality of residence within the county.

☐ Since these mortality rates are not age-adjusted, the higher heart disease death rates in some municipalities may be a reflection of older populations – for instance the percentage of residents aged 65+ years was 22.2% in Hopewell Township and 21.7% in Downe Township, compared to 13.0% for Cumberland County overall.

Note: Rates suppressed when the numerator or denominator < 20
Mortality Rate Data Source:
New Jersey Death Certificate Database, New Jersey Department of Health

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Colorectal Cancer Incidence in New Jersey

Annual Percent Change of Colorectal Cancer Incidence Ages 20+, by County, New Jersey, 2004-2013

Average Annual Percent Change

- -4.8 - -4.4
- -4.3 - -3.9
- -3.8 - -2.9
- -2.8 - -2.0
- -1.9 - -1.5

Statistically Significant Decline

*2013 data are preliminary.
**Rates are per 100,000 and age-adjusted to the 2000 US population standard.
Data source: New Jersey State Cancer Registry January 2016 file, New Jersey Department of Health.
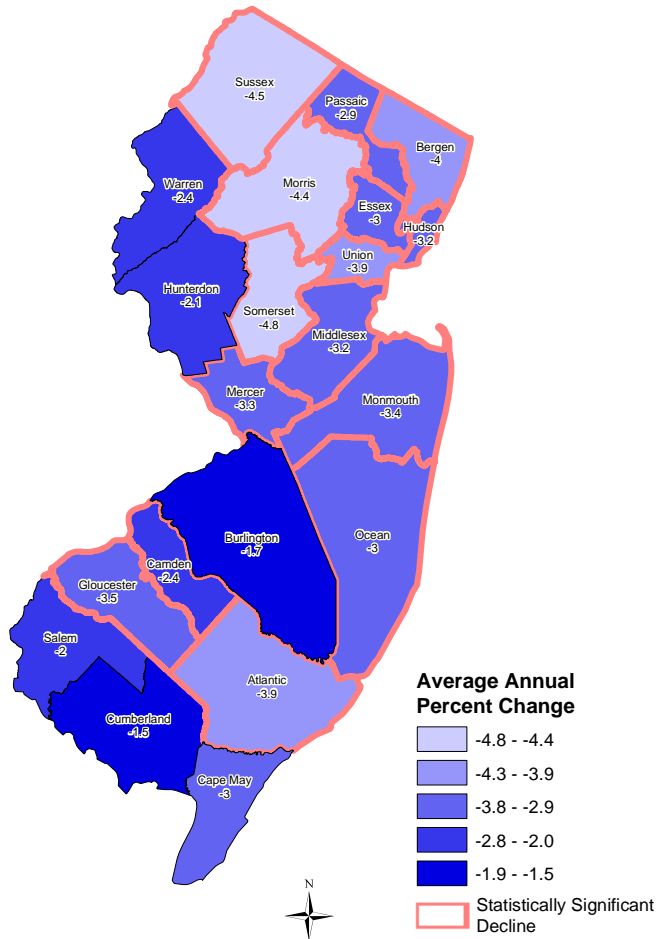
Colorectal Cancer Incidence Rates 2011-2013, Ages 20+, by County, New Jersey

2011   2012   2013*

Age-adjusted Rate per 100,000**

- 43.5 - 55.2
- 55.3 - 59.0
- 59.1 - 62.7
- 62.8 - 66.6
- 66.7 - 80.0
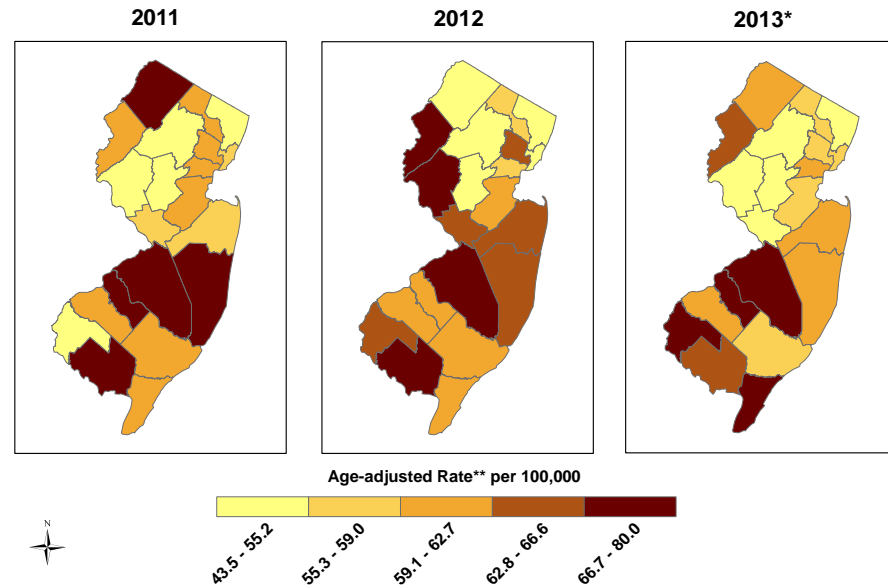
Key Points

☐ From 2011-2013, counties had age-adjusted colorectal cancer incidence rates ranging from 43.5 to 80 per 100,000.

☐ From 2004 to 2013, all counties showed a decline in colorectal cancer incidence rates; 15 out of 21 counties showed a statistically significant decline.

☐ As a next step, analysis could be performed to examine county-level screening rates and colorectal cancer incidence by stage. Higher screening could result in lower colorectal cancer incidence by the detection and removal of polyps. Higher screening could also result in a higher proportion of colorectal cancers diagnosed at early stage.

Stroke Death Rates, 2011-2013

Key Points

☐ Stroke was the third leading cause of death in West Virginia in 2014.

☐ The total cost of stroke—health care services, treatment medications, and missed days of work—in the United States is roughly $34 billion each year (Mozaffarian et al, 2016).

☐ Counties with the highest stroke death rates in West Virginia were concentrated primarily in the southern region of the state.

Age-Adjusted Rate per 100,000

- 34.20 - 39.40
- 39.41 - 43.30
- 43.31 - 45.50
- 45.51 - 47.00
- 47.01 - 50.80

N

0 10 20   40   60   80
Miles

2011-2013, 3 years combined
Age-standardized to 2000 U.S. standard population, rate per 100,000 population.
Rate for adults ages 35 and older
Deaths National Vital Statistics System. Bridged-Race Postcensal Population Estimates from National Center for Health Statistics.

WEST VIRGINIA

Heart Disease Mortality and Risk Factors in West Virginia

Heart Disease Death Rates, 2011-2013

Age-Adjusted Rate per 100,000
- 165.7 - 183.0
- 183.1 - 197.9
- 198.0 - 208.4
- 208.5 - 219.1
- 219.2 - 264.3
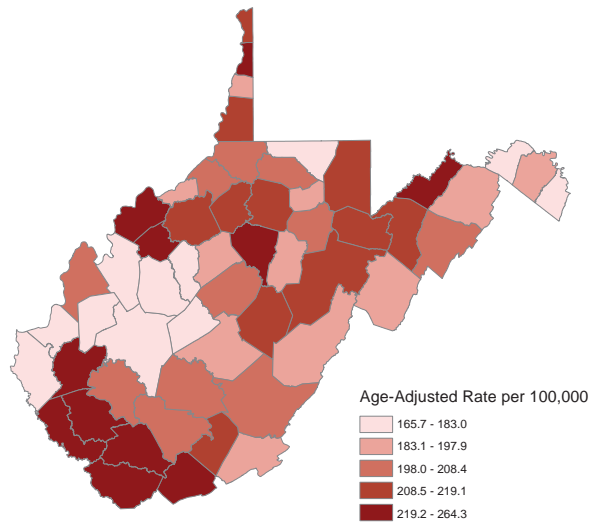
Data from the National Vital Statistics System for Mortality. 2011-2013
3 years combined Rate Age-standardized to 2000 U.S. standard population.
Spatially smoothed rate per 100,000 population. Rate for all ages.
CDC Interactive Atlas of Heart Disease and Stroke.

Prevalence of Obesity, 2012

Percentage of Obesity
in West Virginia Counties
- 27.5 - 32.3
- 32.4 - 34.7
- 34.8 - 37.4
- 37.5 - 41.5
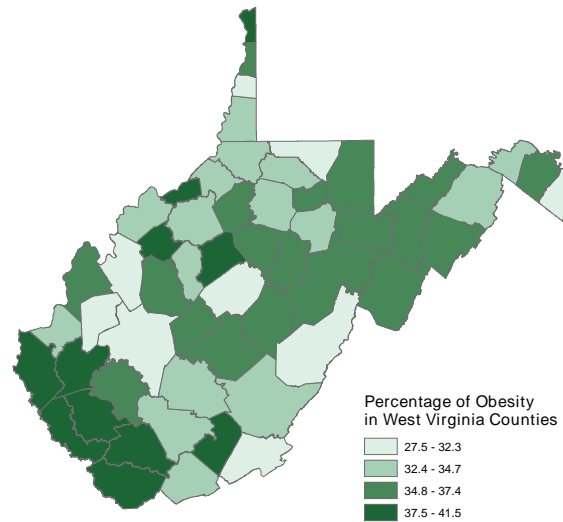
Obesity data from the CDC Diabetes Atlas of Interactive Data.
County data from United States Census Bureau, 2010.

Percent of Population in Poverty, 2014

Percentage of Poverty
in West Virginia Counties
- 24.5 - 34.9
- 18.6 - 24.4
- 14.0 - 18.5
- 10.0 - 13.9

0 10 20   40   60   80
Miles
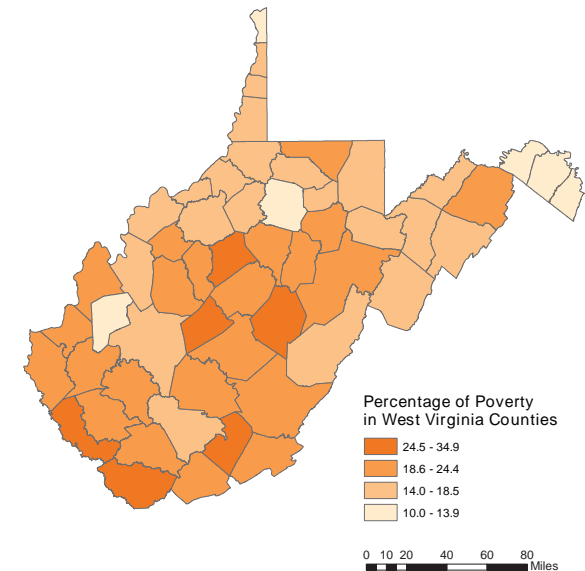
Data from US Department of Agriculture, Economic Research Service Database,
County Level Data, United States Census Bureau 2010

Key Points

☐ Heart disease was the second leading cause of death in West Virginia in 2014.

☐ According to the American Heart Association, obesity is a major risk factor for cardiovascular disease; obesity prevalence in West Virginia in 2015 was 35.6%. Social Economic Status (SES) accounts for disparity in mortality rates for major diseases including cardiovascular disease (Cohen, Farley, and Mason, 2003). In 2013, 18.5 % of West Virginians had incomes below the poverty line ($23,834 for a family of four).

☐ A number of counties with high heart disease death rates, particularly in the southwestern portion of the state, also show high prevalences of obesity and high percentages of population in poverty.

Geographic Accessibility to STEMI Centers:
Existing and with the Addition of Mercy Medical Center

2016 Service Area Coverage

Projected Service Area Coverage

Drive Times (minutes)

15
30
60

✚ Current STEMI Center Location

✚ Proposed STEMI Center Location

☐ Merced County block groups

Source: US Census, population weighted block group centroids
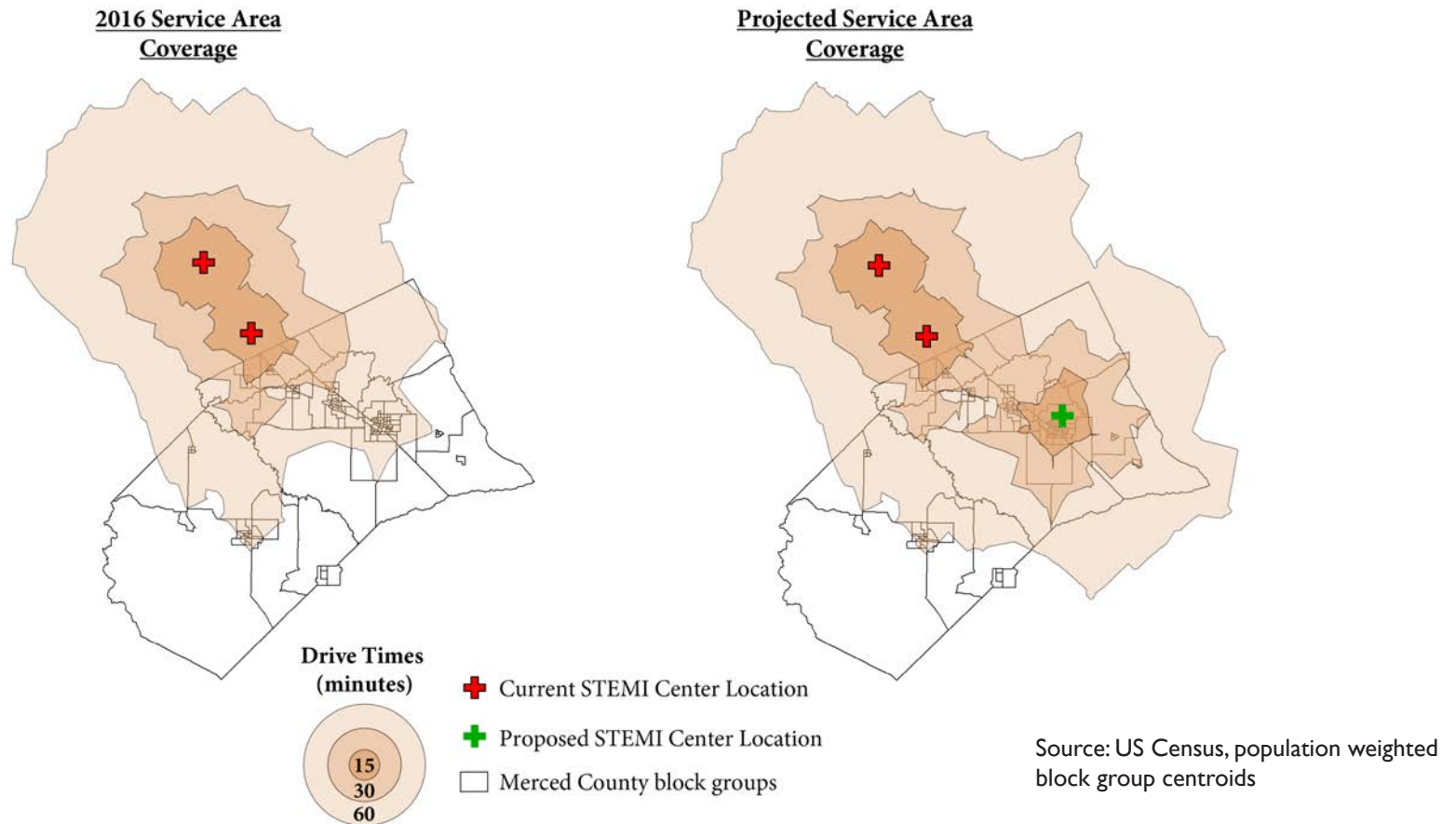
Key Points

☐ As of July 2016, there were not STEMI centers within Merced County. The closest STEMI centers were in neighboring Stanislaus County.

☐ Only 3.2% of the population in Merced County is within a 15-minute drive to a STEMI center; 12.5% of the population is within a 30-minute drive; and the majority of the population (89.2%) are within a 60-minute drive time.

☐ If a STEMI Center was added to the Mercy Medical Center, 42.6% of the population would be within a 15-minute drive to a STEMI facility; 72.8% would be within a 30-minute drive time; and 93.3% would still be within an hour drive time

Prevalence of Unhealthy Food Locations within a Walkable Distance of a School or Head Start Facility in Stanislaus County, 2013

City of Modesto

0 1 2 Miles
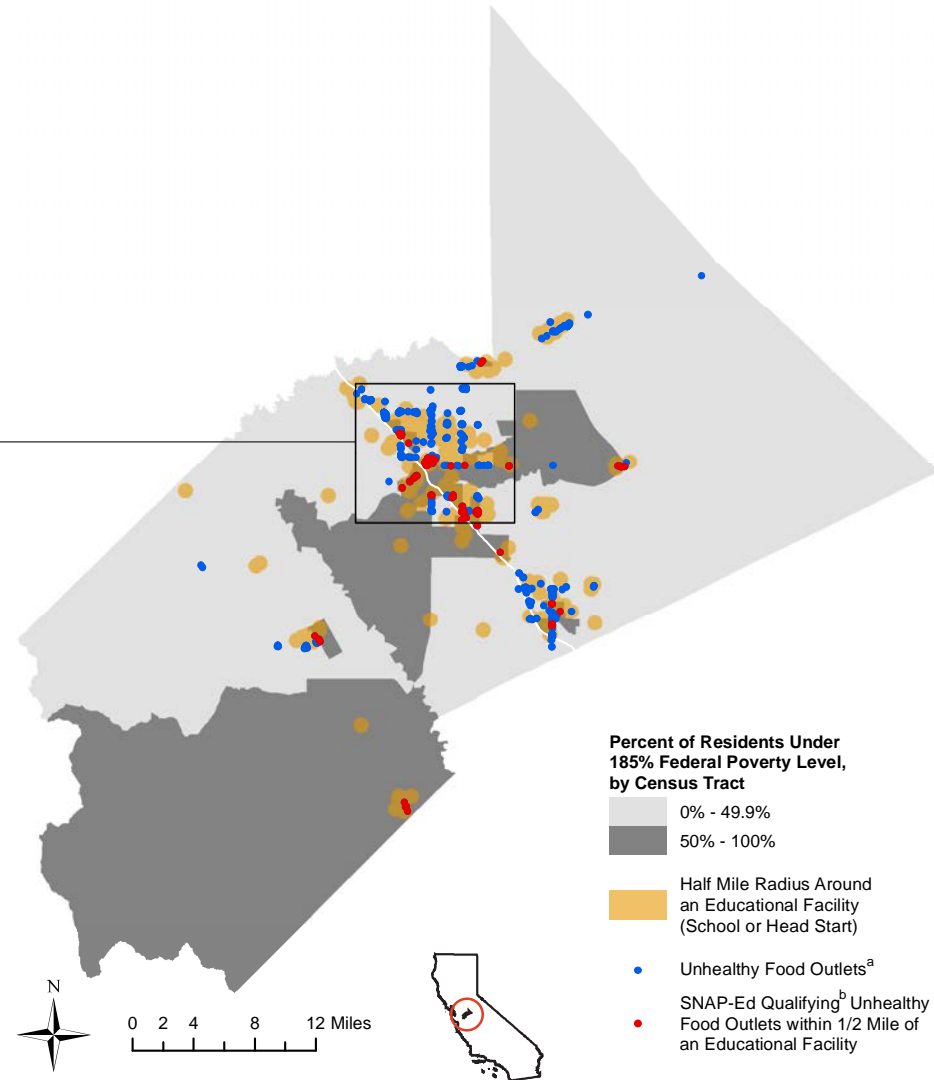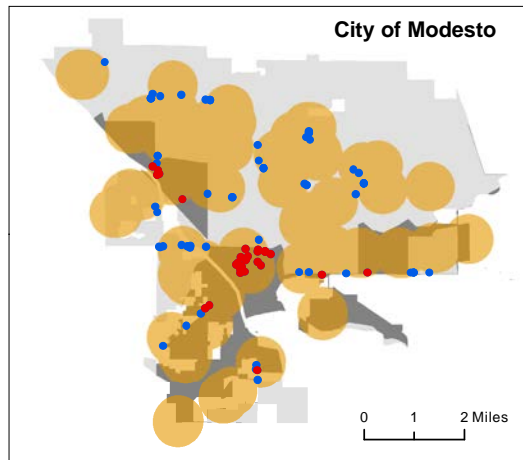
Key Points

☐ This map represents the density of unhealthy food outlets in relation to school and Head Start facilities, as well as identifying the number of locations that qualify for SNAP-Ed retail interventions.

☐ Surveys and observations indicate that students with greater access to stores selling unhealthy foods are more likely to purchase unhealthy food items in their travel to and from school, considered in this map as a half mile walkable distance.

☐ Based on this analysis, roughly 60 percent of unhealthy food outlets in Stanislaus County are within a half mile of an educational facility, and approximately 35 percent of those near schools qualify for SNAP-Ed programming[b].

Percent of Residents Under 185% Federal Poverty Level, by Census Tract

◻ 0% - 49.9%
■ 50% - 100%

■ Half Mile Radius Around an Educational Facility (School or Head Start)

• Unhealthy Food Outlets[a]

• SNAP-Ed Qualifying[b] Unhealthy Food Outlets within 1/2 Mile of an Educational Facility

N

0 2 4 8 12 Miles

[a]Unhealthy Food Outlets were determined using 2013 NAICS data and consist of locations for Unhealthy Food Retail Outlets and Fast Food Outlets. NAICS codes contributing to the locations are: Unhealthy Food Retail Outlets: 445120, 445310, 446110, 447190; Fast Food Outlets: 722511, 722513

[b]SNAP-Ed Qualifying food outlets are defined as retail locations contained within a census tract with greater than 50 percent of residents under 185% of the Federal Poverty Level, based on 2010-2014 ACS estimates.

Data Source: California Department of Public Health Nutrition Education & Obesity Prevention Branch, US Census Bureau ACS Estimates, NAICS

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Where are the 2016 Food Deserts in Lawrence, Kansas?

Low Access Areas + **Low Income Areas** = **Food Desert Areas**

Low Access Area :   Not a Low Access Area :

Percent of People Living Below Poverty : <= 20%   21% - 35%   36% - 55%   56% - 84%

Food Desert Area: Not a Food Desert Area :
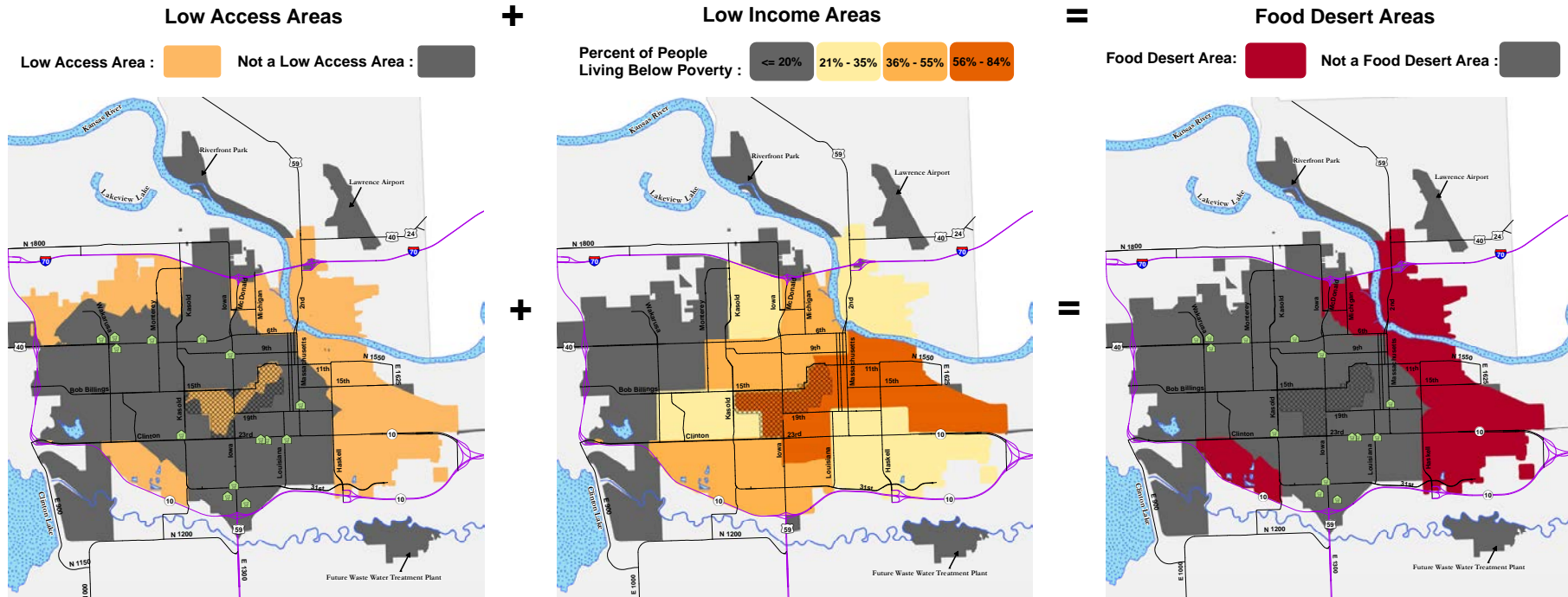
Areas with low access to healthy food are areas where the majority of population lives more than 1 mile away from a supermarket, supercenter or grocery store.

A low income area is an area where more than 20% of people live below 200% poverty. A family of four living below 200% poverty earns less than $48,600 in 2016. People living at or below 200% poverty level may qualify for government assistant programs (i.e. SNAP, WIC).

A food desert is an area with both low access to healthy food and low income.

Legend

- 2016 Grocery/Supermarket
- Major Street
- Highway
- Water Bodies
- Majority of Population Living in Student Housing
- Rural Area

0   1   2   4 Miles

Key Points

☐ Research shows that living closer to healthy food retail is among the factors associated with better eating habits and decreased risk for obesity and diet-related diseases.

☐ This food desert map incorporates new information available after publication of the USDA 2010 food desert map (e.g. new grocery store locations and current 2014 census data).

☐ Within Douglas County, the majority (75.5%) of residents live in the city of Lawrence, KS. Within Lawrence, 28% of the population lives in a food desert (n=24,385).

Data source: American Community Survey 2014 5-year Estimates Modified by Margaret Gathunguri; Douglas County GIS 2016; ReferenceUSA, US Business Database 2015 Modified by Douglas County Food Policy Council and Margaret Gathunguri

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JOHNSON COUNTY, KANSAS

Life Expectancy at Birth in Johnson County, 2009-2013
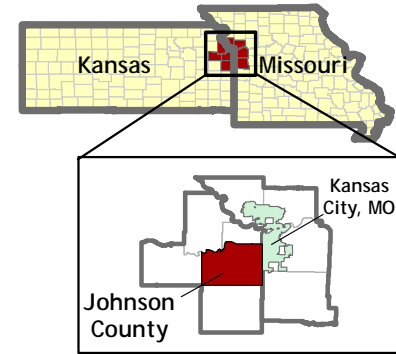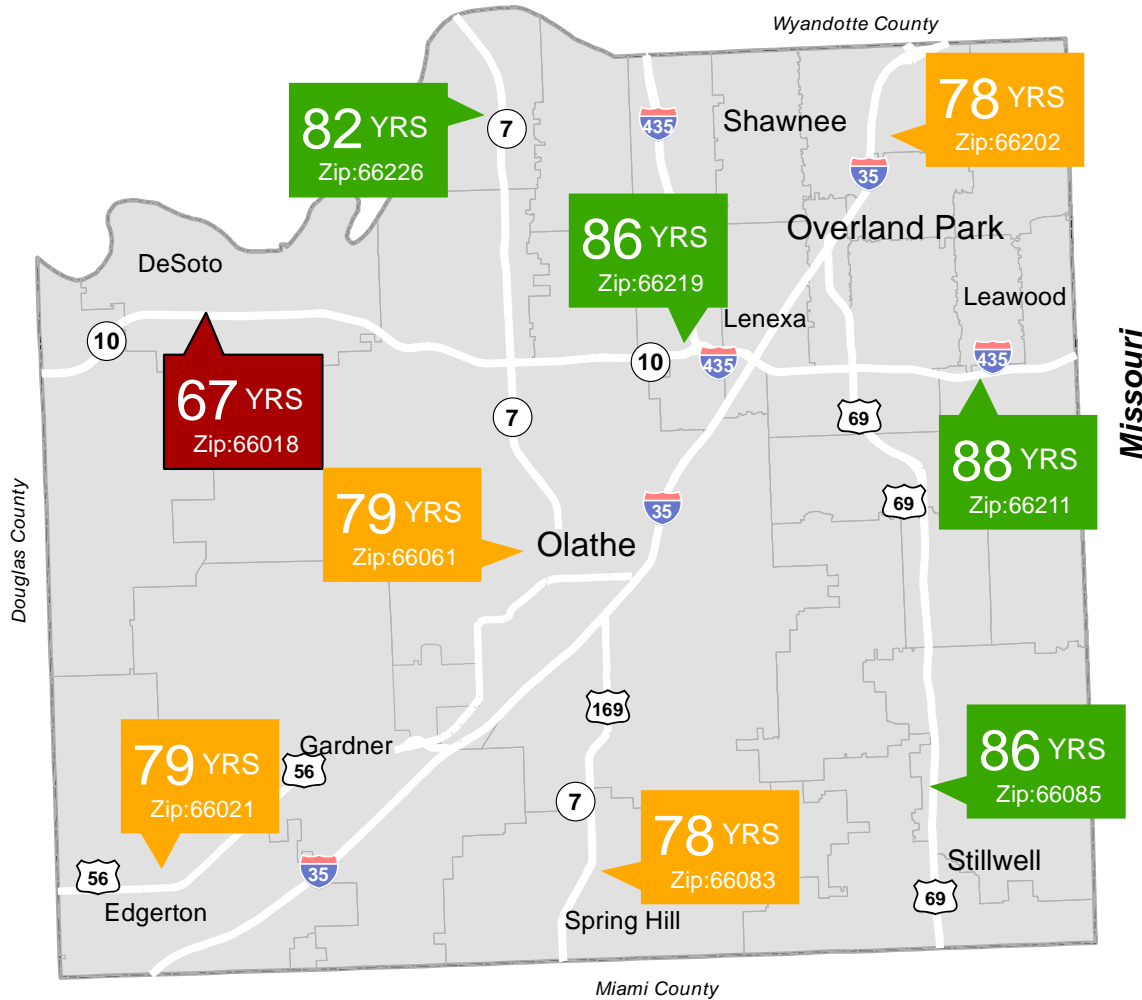
Wyandotte County

82 YRS
Zip:66226

78 YRS
Zip:66202

Shawnee

Overland Park

86 YRS
Zip:66219

DeSoto

Leawood

Lenexa

67 YRS
Zip:66018

88 YRS
Zip:66211

Missouri

79 YRS
Zip:66061

Olathe

79 YRS
Zip:66021

Gardner

Douglas County

86 YRS
Zip:66085

78 YRS
Zip:66083

Stillwell

Edgerton

Spring Hill

Miami County

N

10 Miles
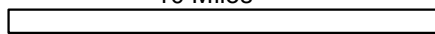
Johnson County Life Expectancy: 81 years

Kansas | Missouri

Kansas City, MO

Johnson County

Key Points

☐ Life expectancy at birth is defined as the estimated number of years a newborn can expect to live if current age-specific death rates in that population remained the same over time.

☐ This measure is particularly useful for examining community-level disparities because it reflects the impact of major illnesses and injuries and their underlying causes, enables direct comparisons across geographies and time, and is simpler and more intuitive to the public and policy makers than are other measures of death.

☐ Life expectancy in Johnson County ranges from 67 years in DeSoto to 88 years in Leawood – a distance of 19 miles.

Data Source: Kansas Department of Health and Environment Vital Statistics

Stores Selling Tobacco near Middle, High, and Post-Secondary Schools and Rec Centers in Wyandotte County, Kansas (2016)
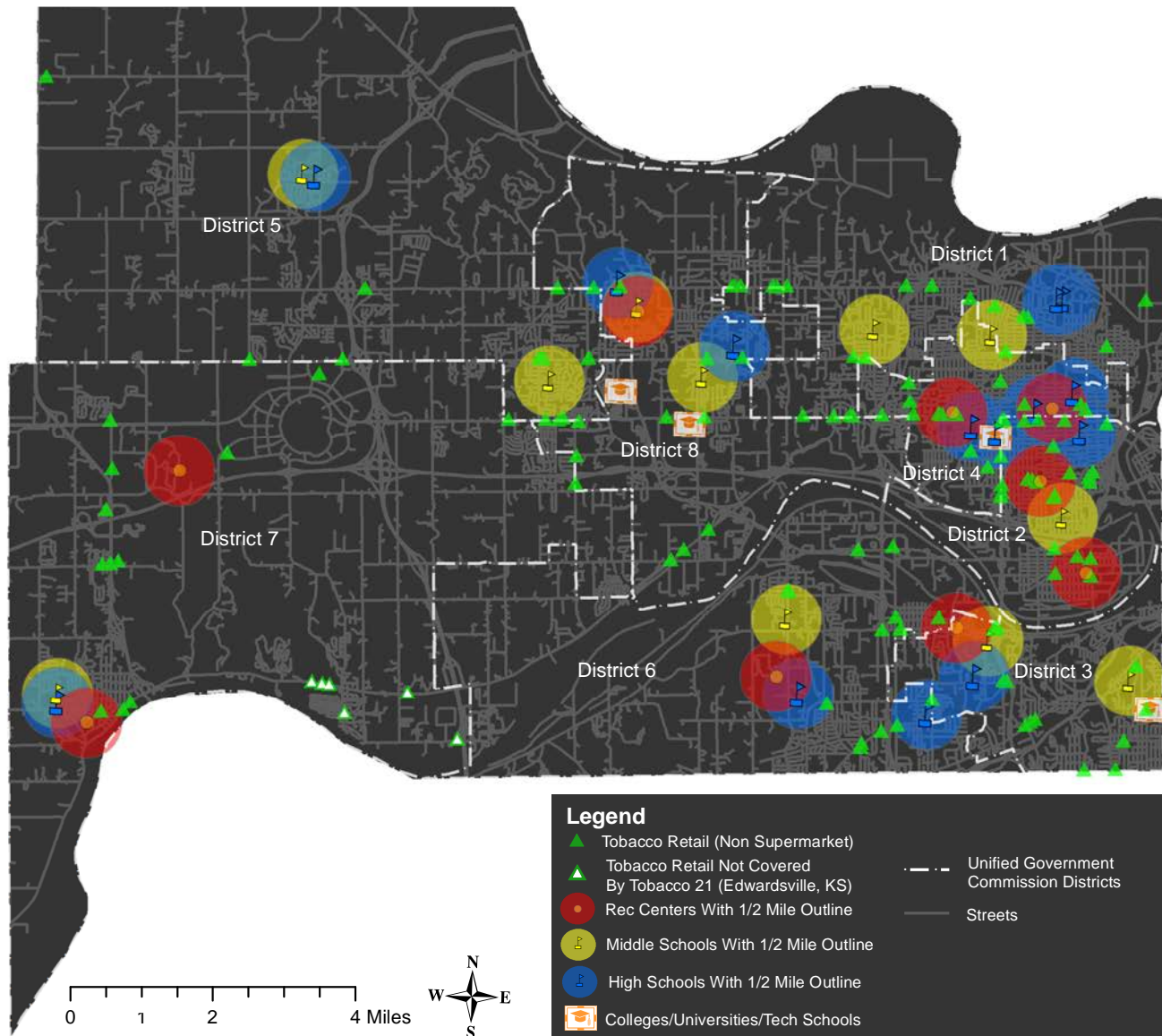
Key Points

☐ In late 2015 and early 2016, the cities of Kansas City, Kansas and Bonner Springs passed laws raising the legal purchase age of tobacco products from 18 years to 21 years of age.

☐ Raising the legal purchasing age has been shown to reduce smoking by teens by up to 15%.

☐ This map shows where tobacco can be purchased within a walking distance of a half mile from places where teens spend a substantial amount of time.

☐ Of the locations where children spend time (rec centers, high and middle schools) 9 do not have any tobacco retail within 1/2 mile. 6 sites have 6 or more tobacco retail stores within a 1/2 mile, 8 have 3 to 4 within 1/2 mile and 13 have either 1 or 2 sites within 1/2 mile.

Legend
- ▲ Tobacco Retail (Non Supermarket)
- ▲ Tobacco Retail Not Covered By Tobacco 21 (Edwardsville, KS)
- ● Rec Centers With 1/2 Mile Outline
- ● Middle Schools With 1/2 Mile Outline
- ● High Schools With 1/2 Mile Outline
- Colleges/Universities/Tech Schools
- ▪–▪– Unified Government Commission Districts
- Streets

Data Sources: 2016 Kansas Department of Revenue Cigarette/Tobacco Active Licensees and Unified Government of Wyandotte County school data

Facilitating Collaboration Within State Health Departments

The GIS Surveillance Training Program was intentionally designed to develop a GIS infrastructure that would facilitate collaboration among an array of chronic disease units within each health department, yet with a focus on heart disease and stroke. To that end, the staff members from each health department that participated in the training represented different chronic disease units. Each health department was led by a member of the heart disease and stroke unit (**bold**). The following lists the chronic disease units that were represented in each of the participating health departments:

Alaska Department of Health and Social Services

Name	Chronic Disease Unit
Jessie Doherty	Women's Children's and Family Health
Tazlina Mannix	Chronic Disease Prevention and Health Promotion
David O'Brien	Alaska Cancer Registry
Marie Jackman	Department of Health and Social Services
Cheley Grigsby	Women's Children's and Family Health
Rochelle Greenley	Department of Health and Social Services
Janice Gray	**Heart Disease and Stroke Prevention**
Ray Troche	Surveillance and Evaluation Team
Ann Lovejoy	Mountain-Pacific Quality Health
Lauren Kelsey	Obesity Prevention and Control
Amy Shaw	Department of Health and Social Services
Charles Utermohle	Surveillance and Evaluation Team
Jopeel Quimpo	Emergency Programs: Health Emergency Response
Deborah Hull-Jilly	Injury Surveillance Program
MJ Danison	Finance & Management Services
Todd McDowell	Emergency Programs: Health Emergency Response
Jeff May	Tobacco Prevention and Control
Abigail Newby-Kew	Maternal & Child Health
Jared Parrish	Maternal & Child Health
Nelly Ayala (not pictured)	

Arizona Department of Health Services

Name	Chronic Disease Unit
Alexandria Drake	Bureau of Health Systems Development
Amanda White	Bureau of Nutrition and Physical Activity
Jillian Papa	Bureau of Nutrition and Physical Activity
Omar Contreras	Chronic Disease

Facilitating Collaboration Within State Health Departments

New Jersey Department of Health

Name	Chronic Disease Unit
Melita Jordan	**Chronic Disease Prevention & Control Services Unit**
Pamela Agovino	Consumer, Environmental, and Occupational Health Service
Lisa A. Asare	Public Health Services Branch
Jie Li	Cancer Epidemiology Services

North Dakota Department of Health

Name	Chronic Disease Unit
Jesse Tran	Cancer Prevention and Control Division
Cheri Kiefer	Chronic Disease Division
Grace Njau	Family Health Division
Clint Boots	**Chronic Disease Division**
Milan Vu (not pictured)	Cancer Prevention and Control Division

West Virginia Department of Health and Human Resources

Name	Chronic Disease Unit
Tony Leach	Division of Health Promotion and Chronic Disease
Keaton Hughes	**Division of Health Promotion and Chronic Disease**
Lora Lipscomb	Division of Health Promotion and Chronic Disease
Scott Eubank	Division of Health Promotion and Chronic Disease

Facilitating Collaboration Within Local Health Departments

Douglas County, KS

Margaret Gathunguri
Dee Vernberg
Vince Romero
Charlie Bryan

Johnson County, KS

Ashley Follett
Elizabeth Holzschuh
Caitlin Walls

Wyandotte County, KS

Wesley McKain
Kari Neill
Joanna Sabally

Merced County, CA

Ileisha Sanders
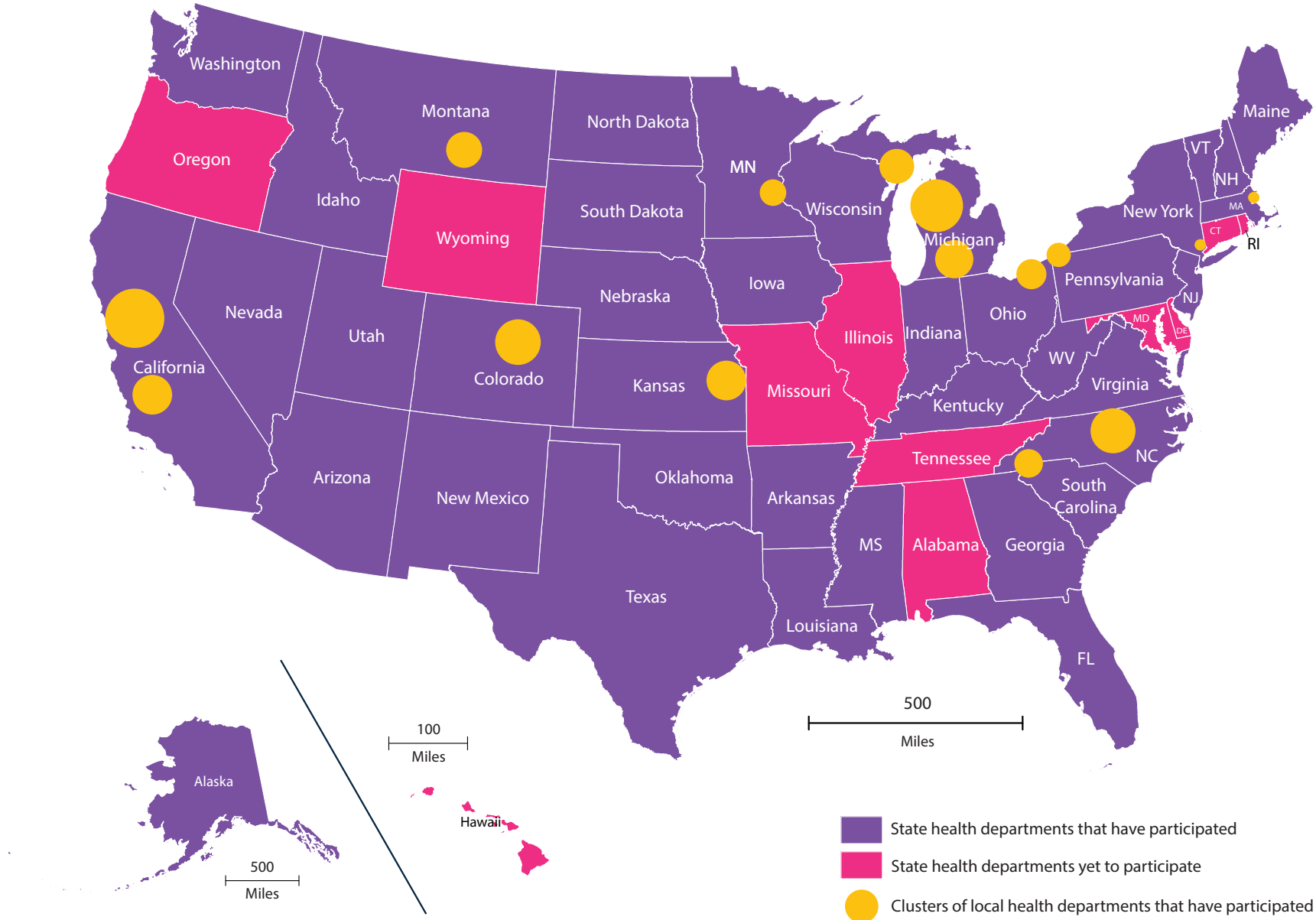Kristynn Sullivan
Kathryn Jeanfreau
Katy Oestman

Stanislaus County, CA

Aaron Wilson
Kyle Fliflet
Greg Shuping
Kathryn Norman

PARTICIPATING HEALTH DEPARTMENTS TO DATE

Washington
Montana
North Dakota
Maine
Oregon
Idaho
MN
VT
NH
Wisconsin
New York
Wyoming
South Dakota
Michigan
MA
CT
RI
Nevada
Utah
Iowa
Nebraska
Pennsylvania
NJ
California
Colorado
Kansas
Missouri
Illinois
Indiana
Ohio
MD
DE
Arizona
New Mexico
Oklahoma
Arkansas
Kentucky
WV
Virginia
Tennessee
NC
South Carolina
MS
Alabama
Georgia
Texas
Louisiana
FL

500 Miles
100 Miles
Alaska
500 Miles
Hawaii

State health departments that have participated

State health departments yet to participate

Clusters of local health departments that have participated

19

NOTES

NOTES

USING GIS AND MAPS FOR HEART DISEASE AND STROKE SURVEILLANCE

The CDC Division for Heart Disease and Stroke Prevention provides a number of useful tools and resources for using maps and GIS to address geographic disparities in heart disease and stroke. Learn more about this work here: https://www.cdc.gov/dhdsp/maps/.
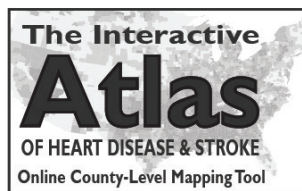
BUILDING GIS CAPACITY FOR CHRONIC DISEASES

This project builds GIS capacity within state and local health departments for the surveillance and prevention of heart disease, stroke and other chronic diseases.

https://www.cdc.gov/dhdsp/programs/gis_training/

THE INTERACTIVE ATLAS OF HEART DISEASE & STROKE

An online mapping tool that allows users to create and customize county-level maps of heart disease and stroke, along social and economic factors and health services.
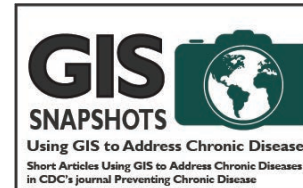
https://www.cdc.gov/dhdsp/maps/atlas

CHRONIC DISEASE GIS EXCHANGE

An online community forum for public health professionals and community leaders to learn and share techniques for using GIS to enhance chronic disease prevention and treatment.
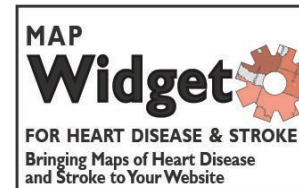
https://www.cdc.gov/dhdsp/maps/gisx/

GIS SNAPSHOTS

Maps from many participants have been published as GIS Snapshots in CDC's Preventing Chronic Disease Journal. Several one page fact sheets were also disseminated.

https://www.cdc.gov/dhdsp/programs/gis_training/gis_snapshots.htm

MAP WIDGET FOR HEART DISEASE & STROKE

The new Map Widget allows state and local health departments and other organizations to easily display state- and county-level maps of heart disease and stroke mortality on their web sites.

https://www.cdc.gov/dhdsp/maps/hds-widget.htm