

Communicating with Maps



Learning objectives

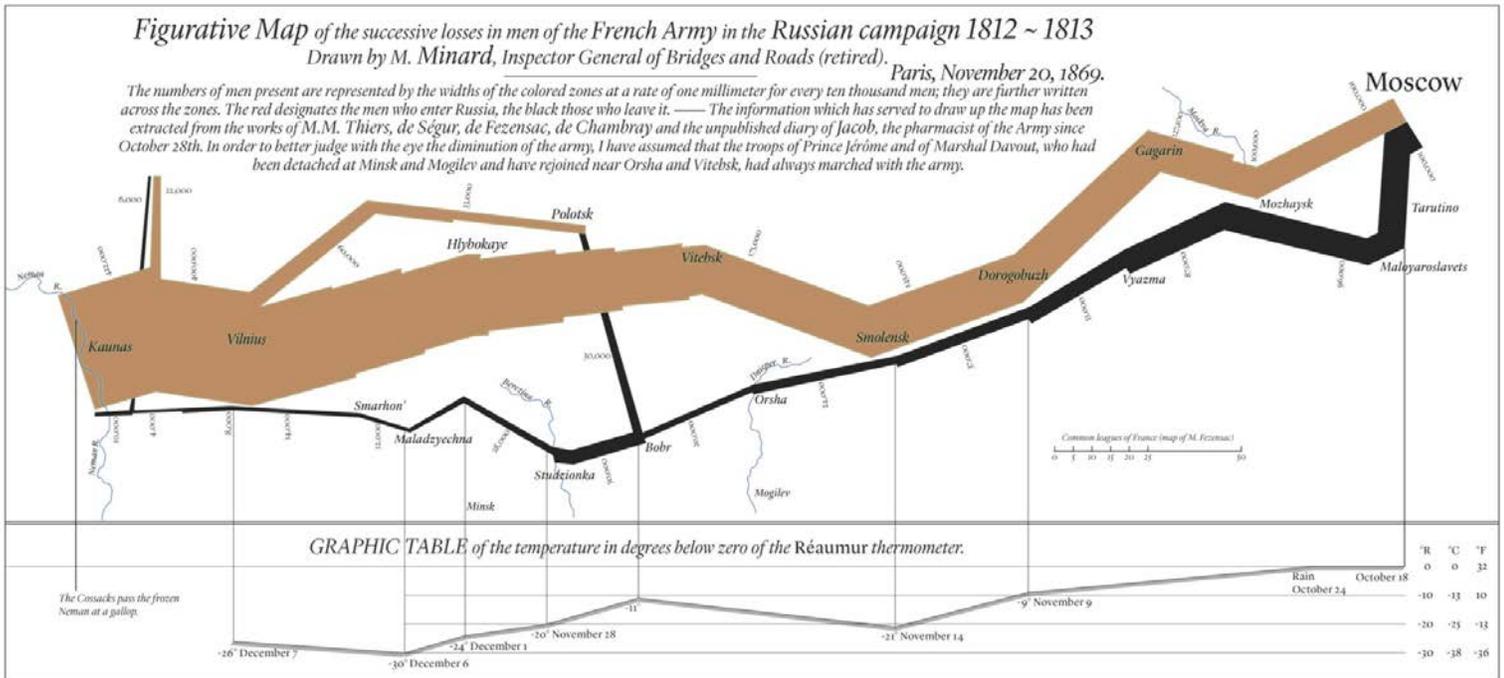


- Explore the map as a communication tool
- Introduce a map design process
- Develop an approach to critically reading maps



- Why use maps to communicate?
- Objective, Medium, Audience message
- Evaluate maps with a critical eye

Why use maps for communication?



A map is worth many words

“Humans are pattern-seeking story-telling animals, and we are quite adept at telling stories about patterns, whether they exist or not.”

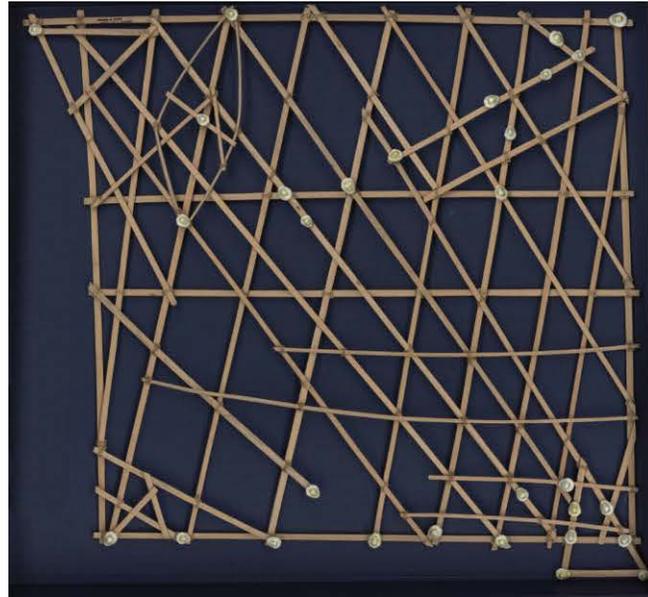
— Michael Shermer

The Map design process helps to ensure that our maps say what we want them to...

Let's use the elements of: Objective(s); Audience; and Medium to critically review a series of maps now...

Why map?

- **Identify problems**
- **Monitor**
- **Forecast**
- **Respond**
- **Prioritize**



- Objectives Beyond wayfinding ... motivations and applications cross multiple fields.... Retail, transportation, natural resources, real estate, public safety and of course public health
- Map objectives: GIS processes end with the communication of results- telling a story

Identify problems



Medicare Part D Opioid Prescribing Mapping Tool

Centers for Medicare & Medicaid Services

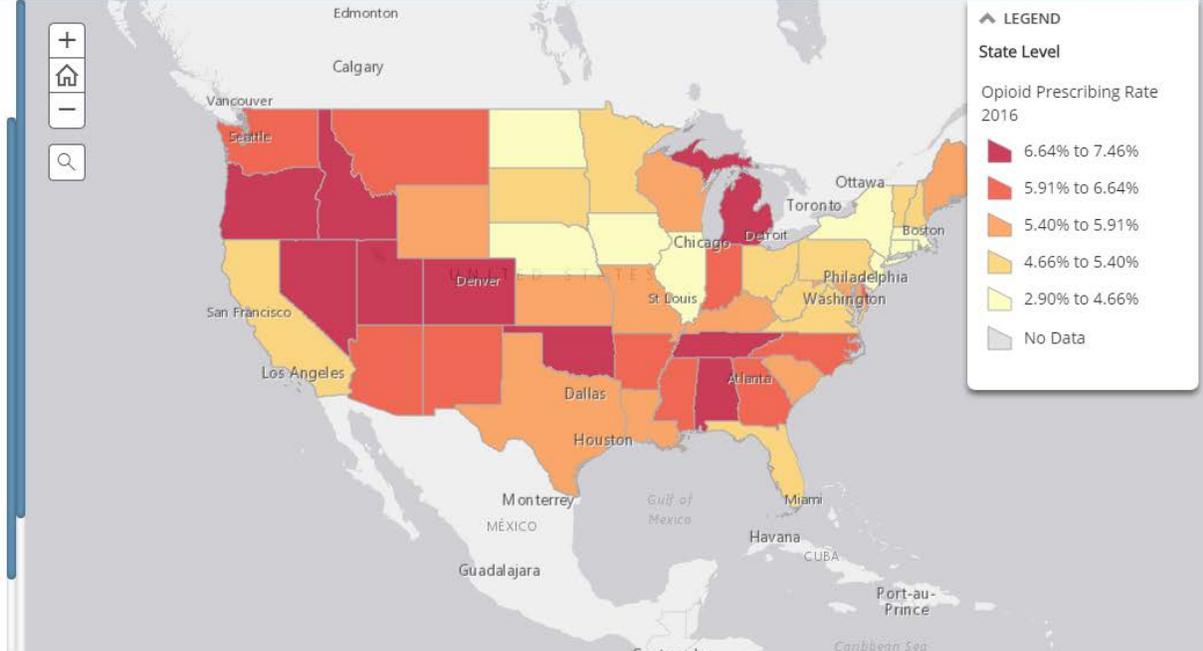


Opioid Prescribing Rate

This map displays the Medicare Part D opioid prescribing rate for 2016. The Part D opioid prescribing rate reflects the percentage of a prescriber's total Part D claims that are opioid prescriptions.

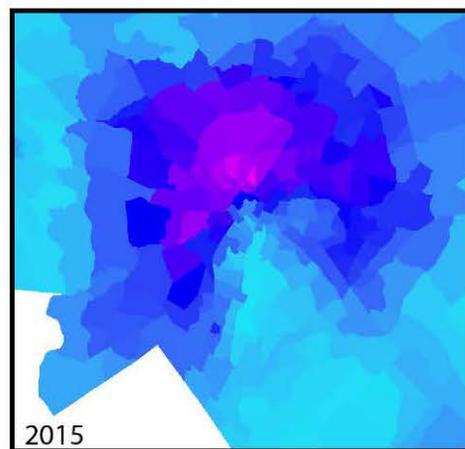
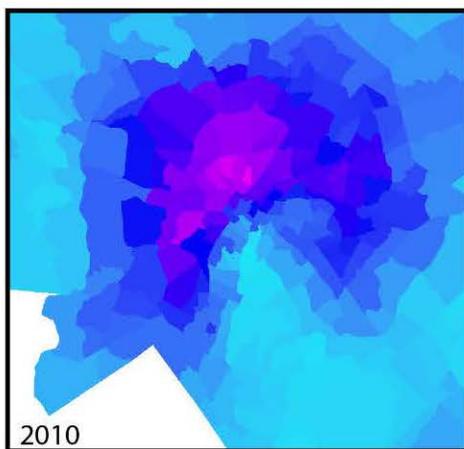
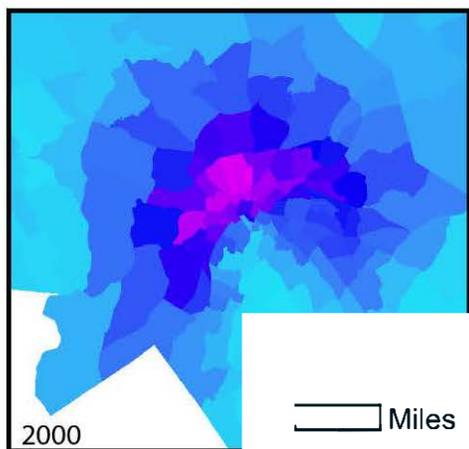
The map can be used to explore geographic comparisons of the Part D opioid prescribing rate at the state, county, and ZIP code-levels. At each geographic level, the opioid prescribing rate is displayed in quintiles, with darker areas representing higher opioid prescribing rates and lighter areas representing lower prescribing rates.

Users can select specific geographic areas and additional information is displayed, including the national opioid prescribing rate, the number of claims, and the number of prescribers.



Monitor change

US Census Tract Level Non-Hispanic Black Racial Isolation



■

Forecast



Rice University, Main St, Houston x +

https://www.google.com/maps/dir/Rice+University,+Main+St,+Houston,+TX/George+Bush+Intercontinen...

Rice University

George Bush Intercontinental Airport

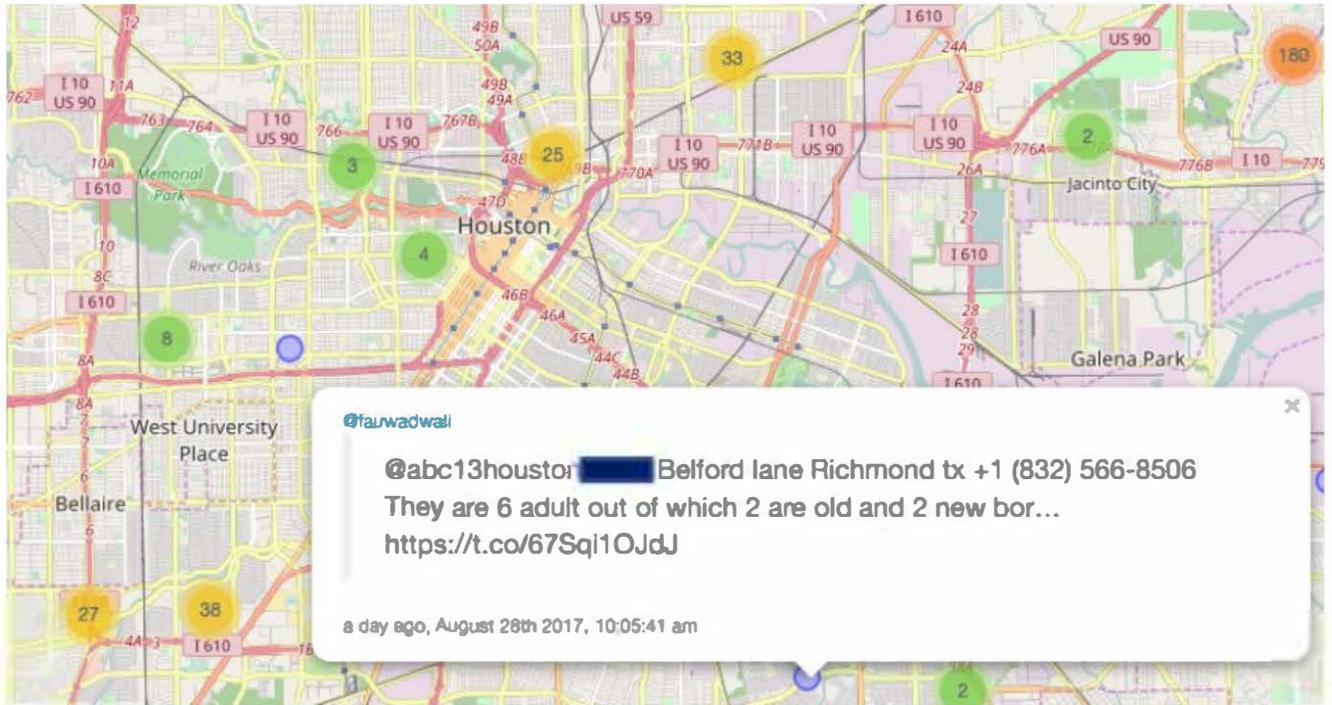
Depart at 4:05 PM Fri, Feb 8

Send directions to your phone

- via I-69 and Hardy Toll Rd typically 40 min - 1 h 10 min Arrive around 5:15 PM 25.4 miles
- via I-69 typically 40 min - 1 h 20 min Arrive around 5:25 PM 23.8 miles
- via Hardy Toll Rd typically 40 min - 1 h 15 min Arrive around 5:20 PM 26.0 miles

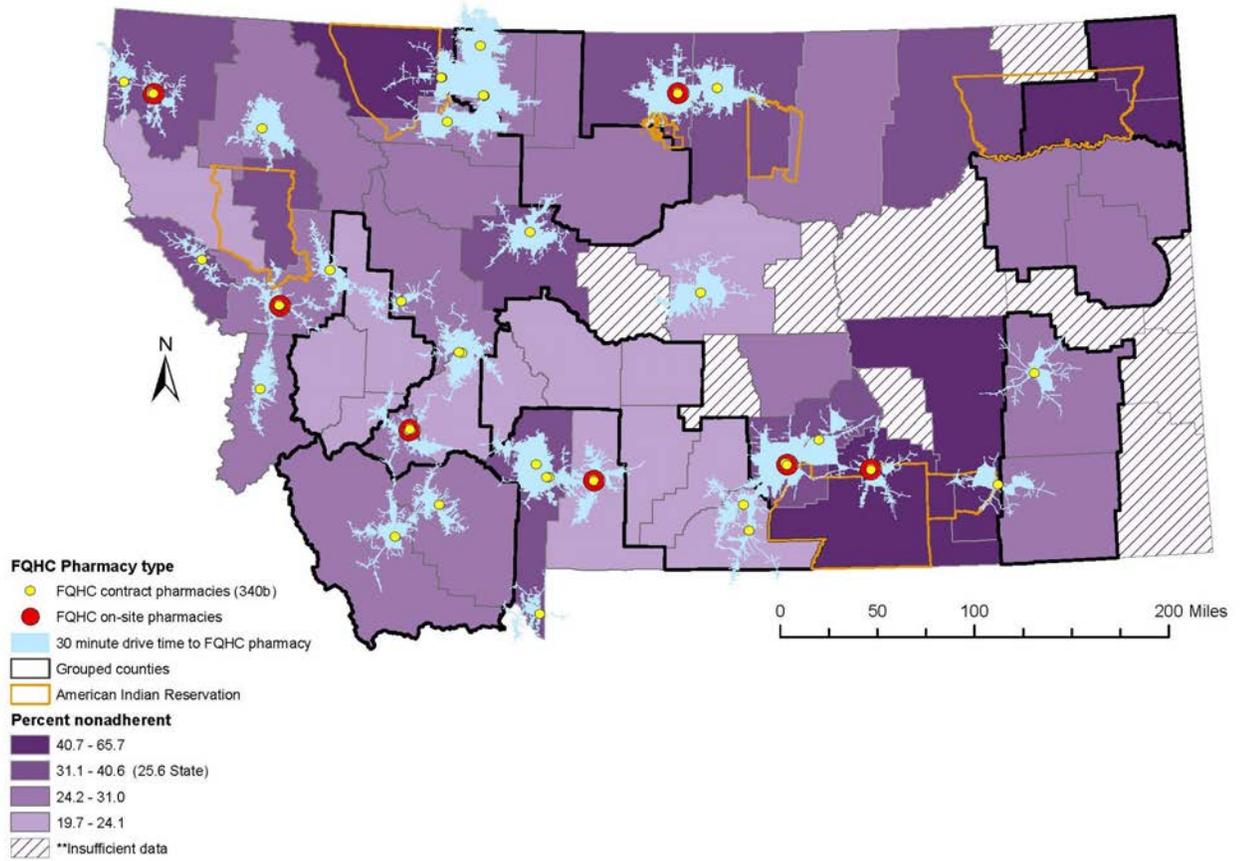
Map data ©2019 Google United States Terms Send feedback 2 mi

Respond



Prioritize

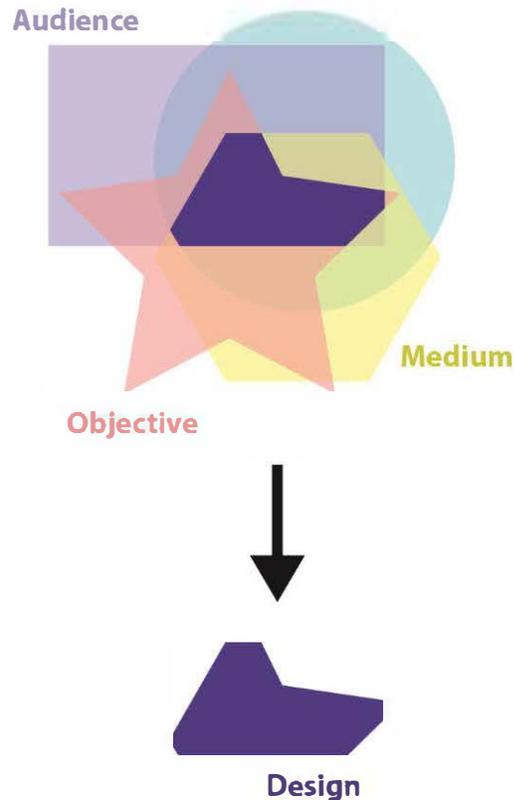
Medicaid Beneficiaries Aged 18-64 years



- **Identify:** County patterns of blood pressure medication adherence among Medicaid members, Ages 18-64
- **Assess:** 30 minute drive times to FQHC pharmacies
- **Act:** Share with decision makers regarding locations of FQHC pharmacies

Map design process

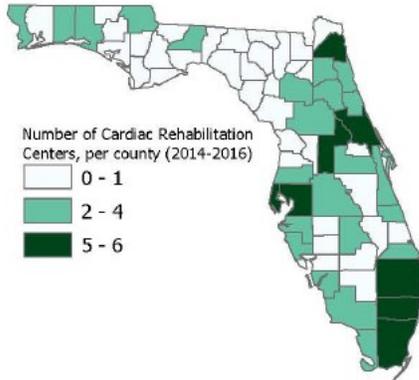
- Design is shaped by multiple factors
- This process is a means of coordinating all elements of your map work to effectively convey information
- Goal is to help the map reader make proper use of the map to capture the message(s)



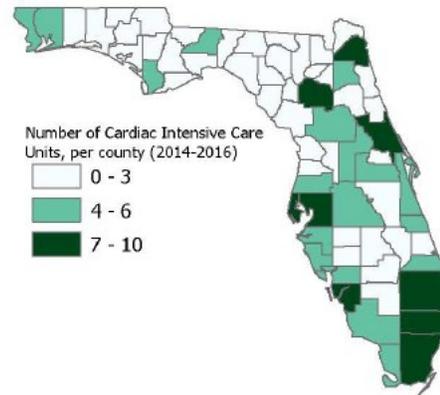
- Map objectives: GIS processes end with the communication of results
- The Map design process helps to ensure that our maps say what we want them to...
- Let's use the elements of: Objective(s); Audience; and Medium to critically review a series of maps now...

Cardiovascular Rehabilitation Centers, Intensive Care Units and Heart Disease Death Rates, by County, Florida

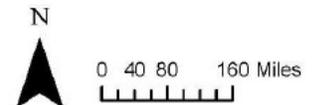
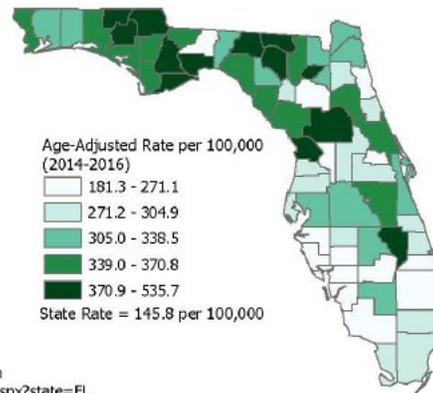
Hospitals with Cardiac Rehabilitation



Hospitals with Cardiac Intensive Care



Heart Disease Death Rates

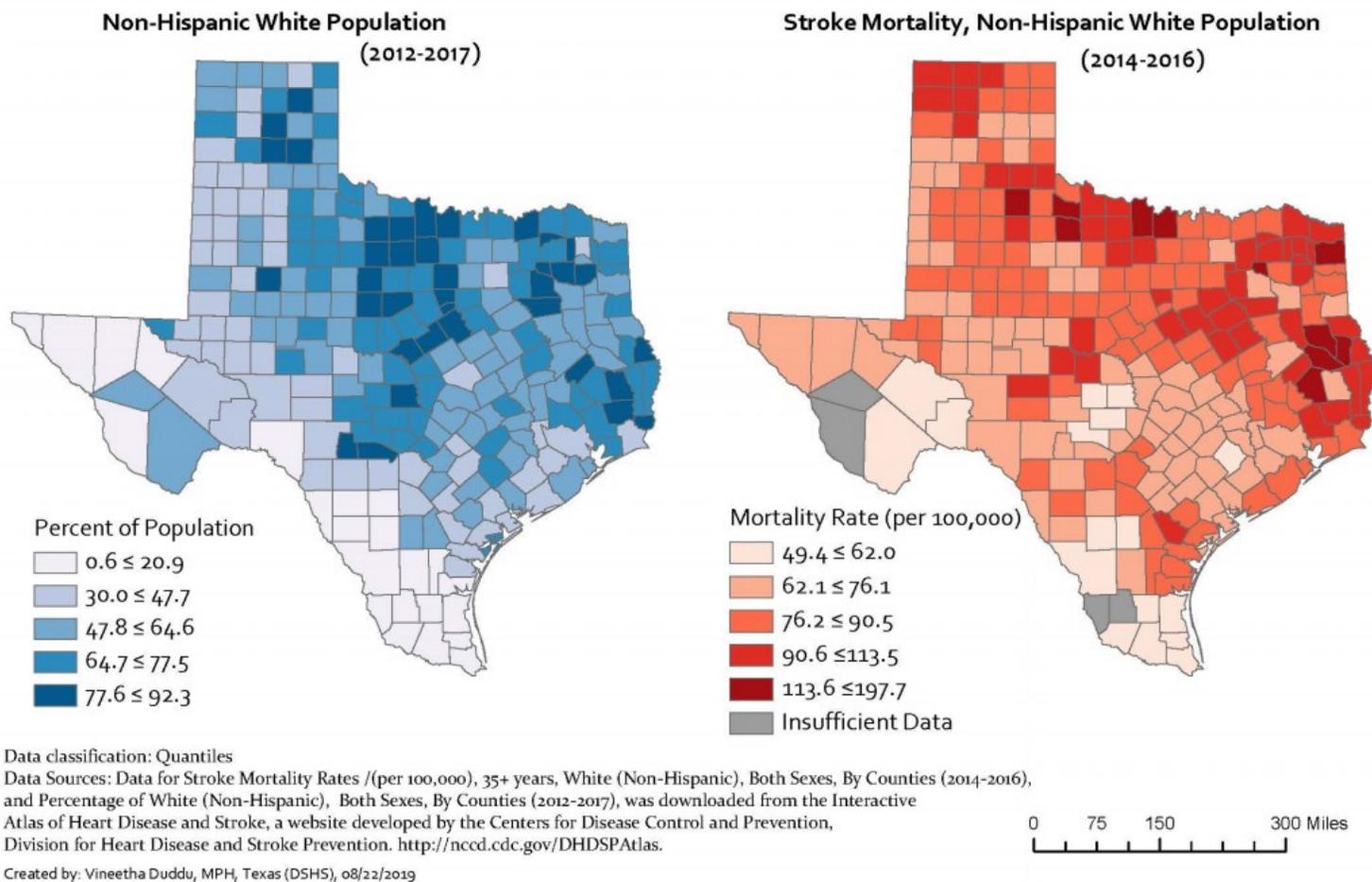


Created By: Rashida A. Marshall
 October 1, 2019
 Data Source
 Deaths: National Vital Statistics System. Bridged-Race Postcensal Population Estimates from National Center for Health Statistics. Available at: www.nccd.cdc.gov/DHDSPTAtlas/Default.aspx?state=FL. Accessed on June 10, 2019.
 Hospitals: The American Hospital Association Survey of Hospitals, 2017. Available at: www.nccd.cdc.gov/DHDSPTAtlas/Default.aspx?state=FL. Accessed on June 10, 2019.



These 3 maps highlight the discrepancies between the locations of cardiac rehabilitation centers and cardiac intensive care units versus the magnitude of heart disease death rates in Florida for the period 2014-2016. Counties in the top quintile of heart disease death rates are located primarily in the northern regions of Florida. However, among the northern counties in the top quintile, only Jackson and Marion Counties have facilities with cardiac rehabilitation or cardiac intensive care. The lowest rates of heart disease death were seen in counties located mostly in the southern regions of the state. These southern counties have the highest numbers of hospitals with cardiac rehabilitation or cardiac intensive care.

Stroke Mortality And Population Distribution, Non-Hispanic Whites, by County, Texas

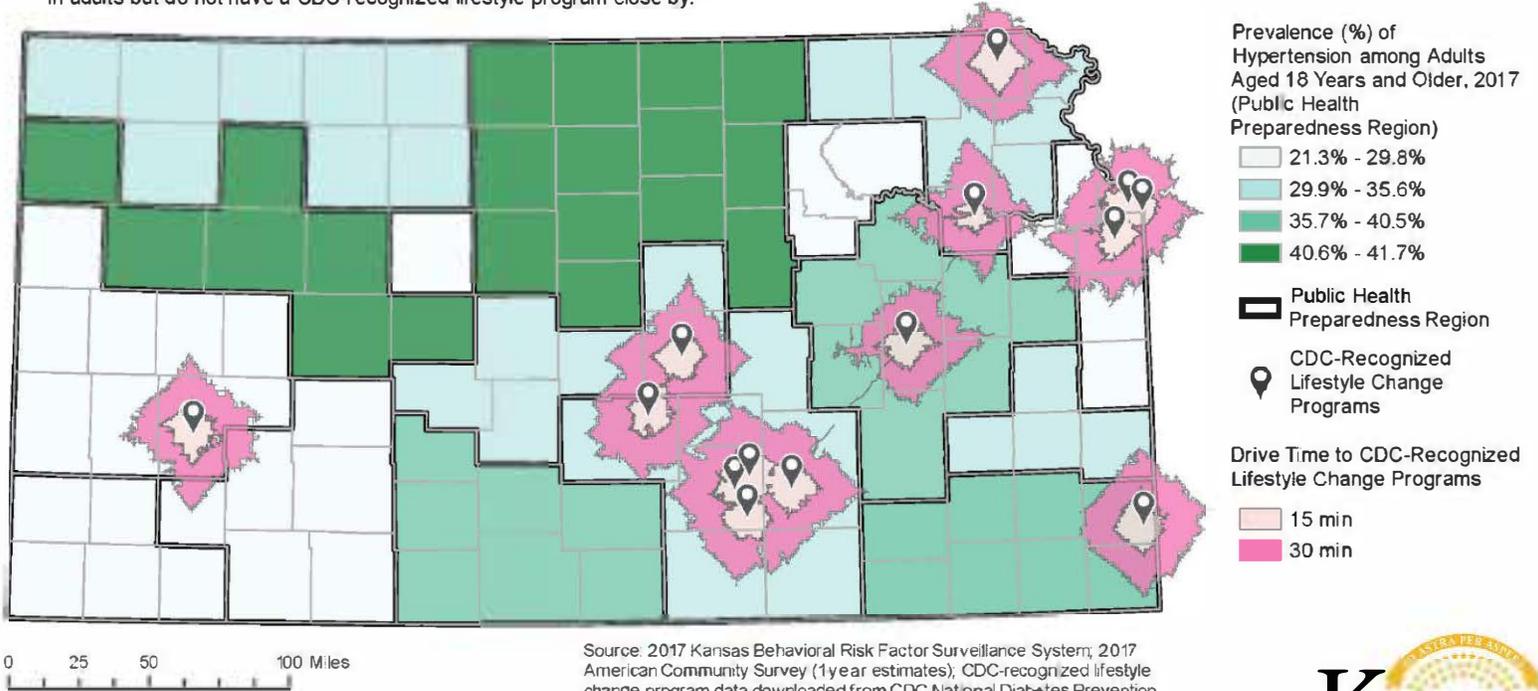


This map allows the readers to see a pattern in the dispersion of Non-Hispanic White populations and stroke mortality rates in the state of Texas: there is a denser population of Non-Hispanic whites and higher stroke mortality rates among Non-Hispanic whites in the northern, central, and eastern parts of Texas. Additionally, counties in the western and southern parts of Texas generally have smaller percentages of Non-Hispanic whites and lower stroke mortality rates among non-Hispanic whites.

Prevalence of Hypertension and Drive Time to CDC-Recognized Lifestyle Change Programs, Kansas



Approximately 61.5% of Kansas adults aged 18 years and older live within a 30-minute drive time to a CDC-recognized lifestyle change program. The northcentral and northwest regions of the state have the highest prevalence of hypertension in adults but do not have a CDC-recognized lifestyle program close by.

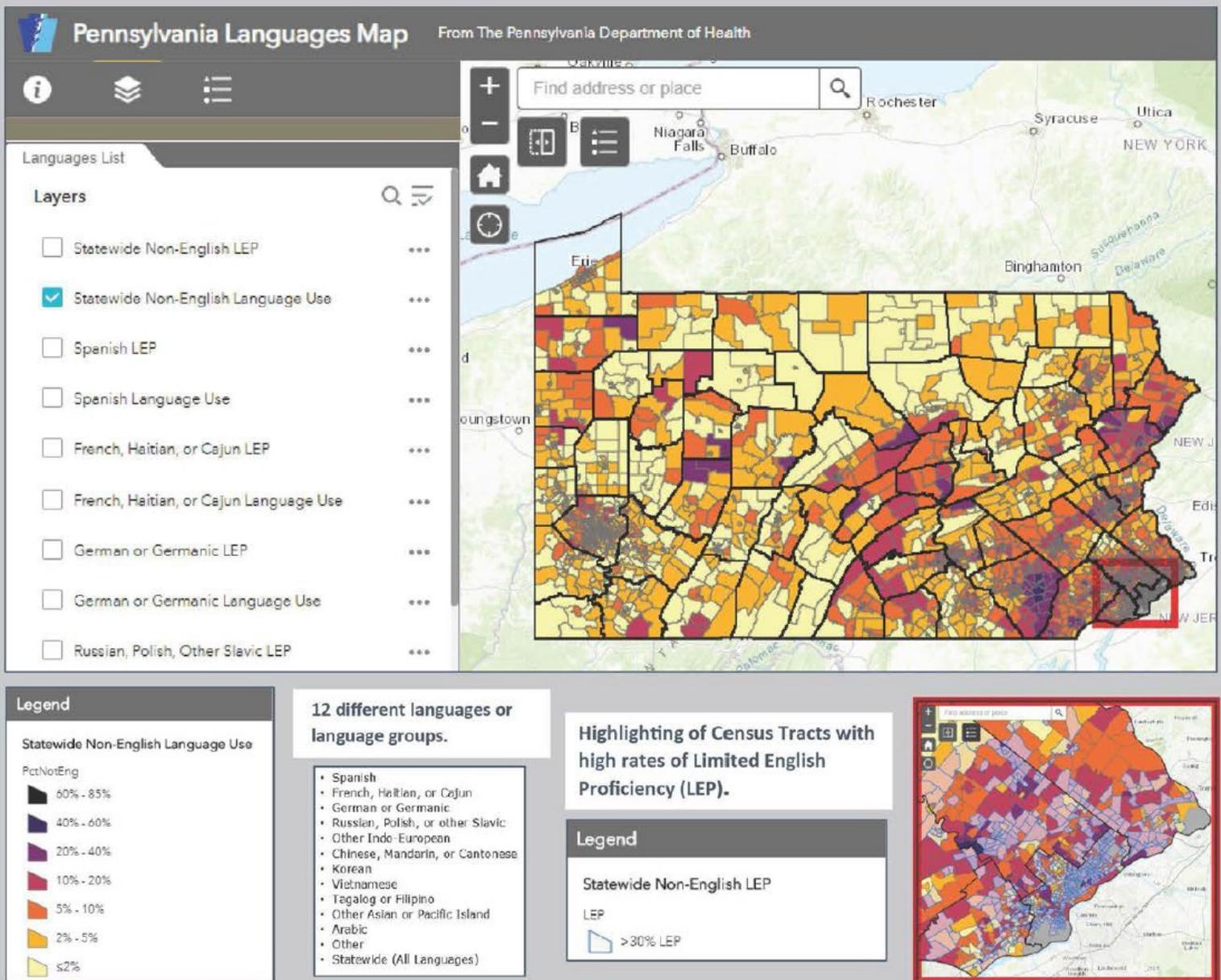


Source: 2017 Kansas Behavioral Risk Factor Surveillance System; 2017 American Community Survey (1 year estimates); CDC-recognized lifestyle change program data downloaded from CDC National Diabetes Prevention website http://ncdd.cdc.gov/DDT_DPRP/Registry.aspx (Accessed 4/15/19). Updated October 23, 2019 Created by: Mengyi Li, MPH



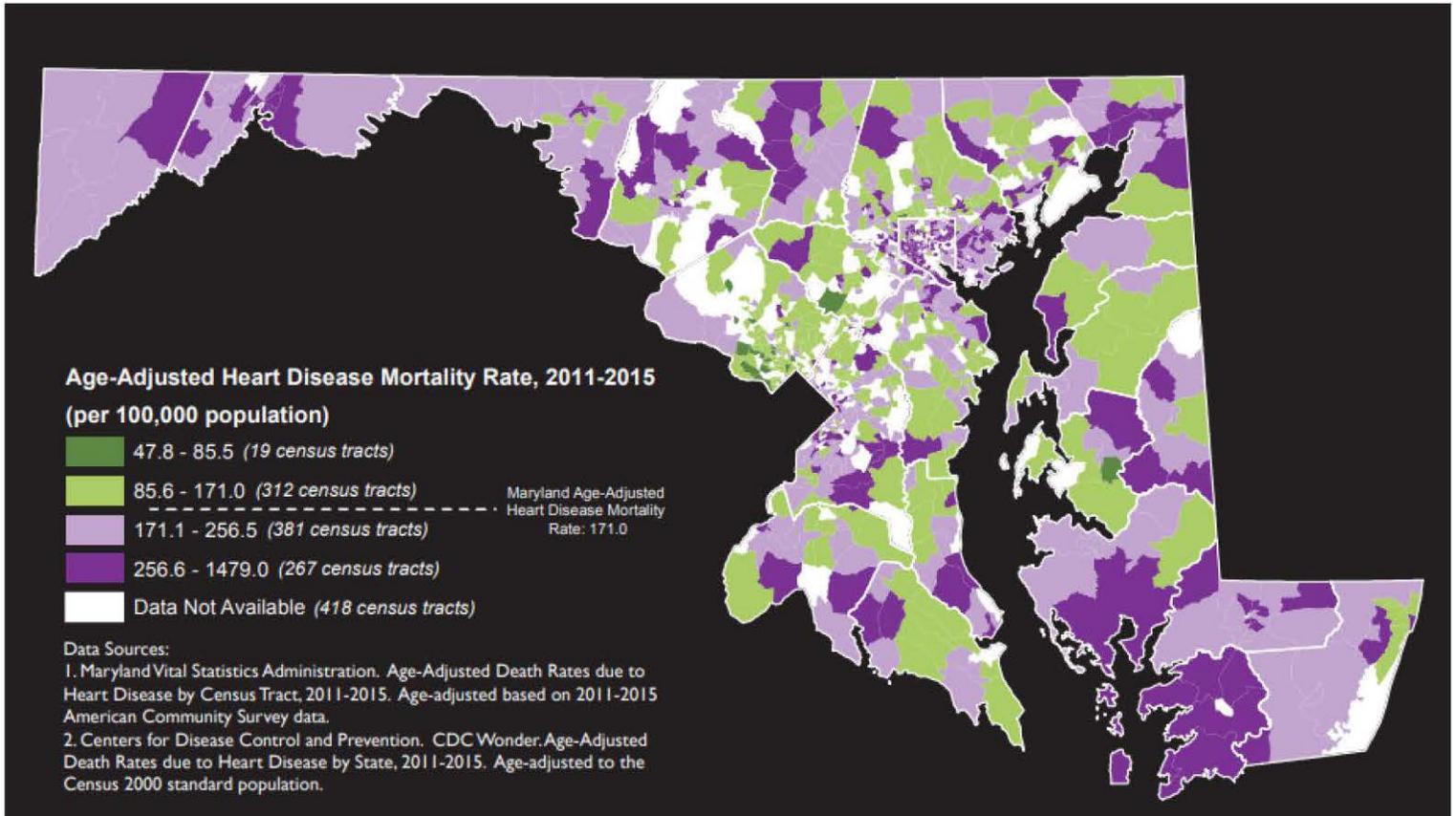
The map allows readers to understand the geographical distribution of the burden of hypertension in Kansas. The map demonstrates the need to expand CDC-recognized lifestyle change programs in the northcentral and northwest regions of the state. These regions have high prevalence rates of hypertension in adults, but do not have a CDC-recognized lifestyle program close by.

The Pennsylvania Languages Map: A Proactive Approach To Health Equity



The Pennsylvania Languages Map provides the ability to identify foreign language speaking populations in a specific geographic area before providing services. This allows staff from the Pennsylvania Department of Health and other state agencies to assess the need for translated materials and translation services and proactively mitigate the obstacles that can occur when the population in a particular community speak primarily languages other than English.

Heart Disease Mortality by Census Tract



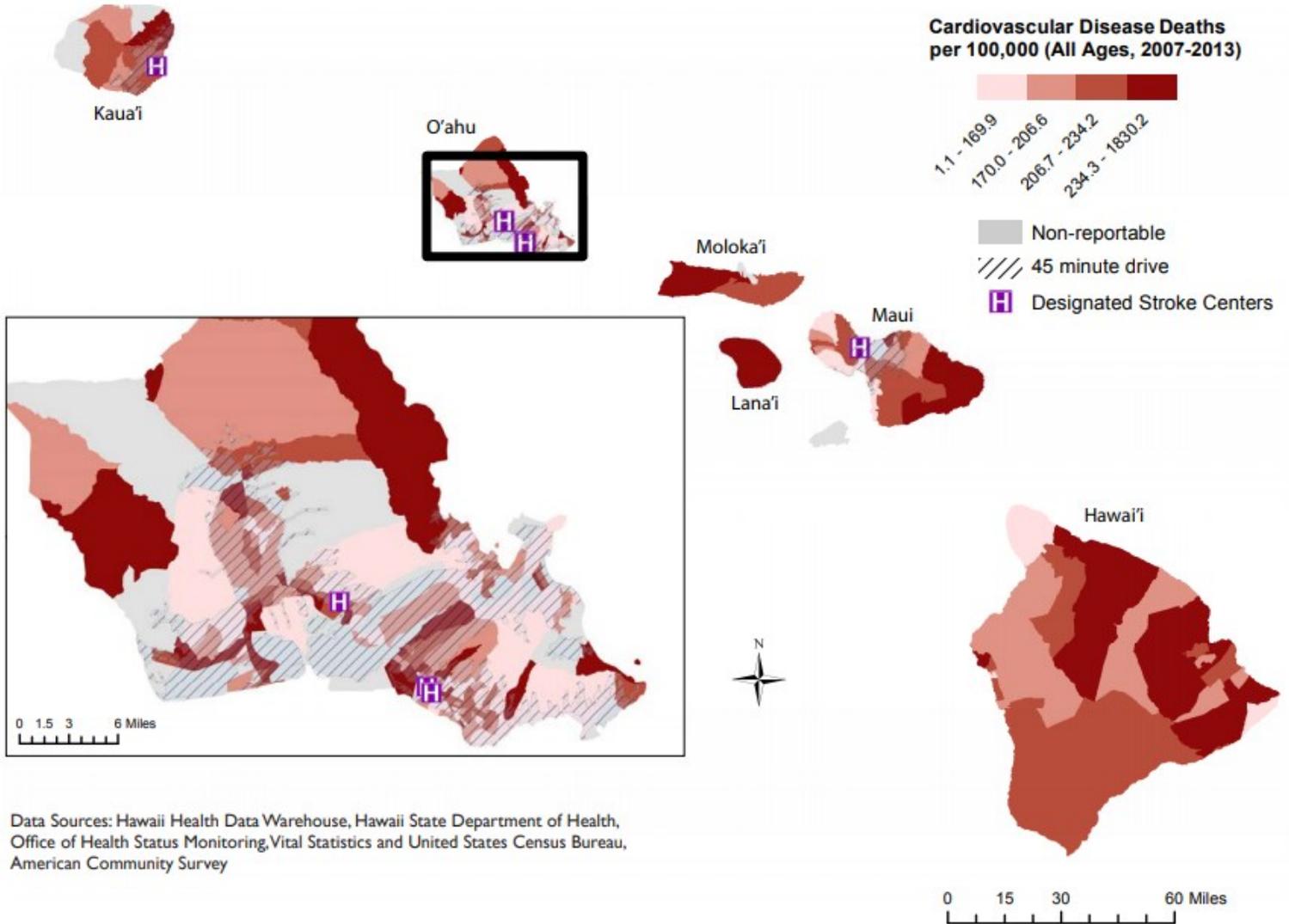
Major Findings

More than 19% of Maryland census tracts (267 out of 1,397 census tracts) had an age-adjusted heart disease mortality rate at least one and a half times the rate for the state of Maryland (171.0 per 100,000).

How the map will be used, or has been used

By displaying the burden of heart disease across the state, this map identifies priority areas for local public health programs that address heart disease and associated risk factors such as hypertension, cholesterol, diabetes, and obesity.

Cardiovascular Disease Mortality Rates and 45-minute Drive Times to Stroke Center Hospitals



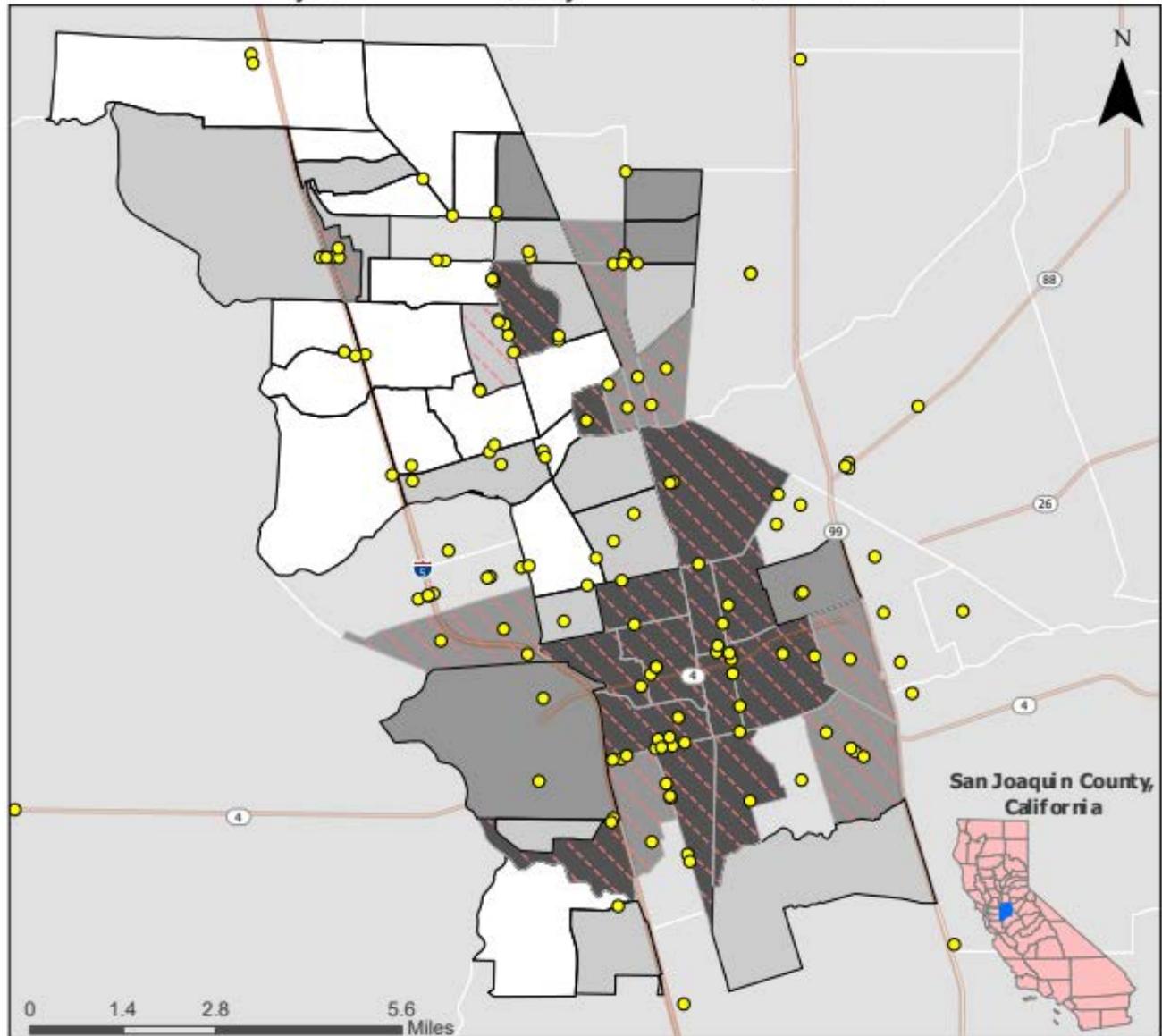
Major Findings

Several census tracts in the highest quartile of cardiovascular disease mortality rates are located on islands (Hawaii [Big Island], Moloka'i, and Lana'i) with no access to a stroke center. Even on O'ahu, with three designated stroke centers, there are several census tracts with high mortality rates that fall outside the 45-minute drive time range.

How the map will be used, or has been used

This map will be useful to identify areas that are lacking resources to properly treat persons who have had a stroke.

Tobacco Use, Tobacco Retailers, and Poverty Level by Census Tract, City of Stockton, CA 2016



Current Smoker*

- 10.5 - 16.8%
- 16.9 - 19.4%
- 19.5 - 21.7%
- 21.8 - 25.3%

Out of City Limits

Tobacco Retailers**

Families Below 100% FPL***

- 1.9 - 24.7%
- 24.8 - 58.5%

- Concentrations of tobacco retailers are observed in census tracts with high percentages of current smokers.

- Census tracts with high percentages of current smokers also have high percentages of families living in poverty.



Source: *California Healthy Places Index (October, 2018), from <https://map.healthypacesindex.org/>
 **California Dept. of Tax and Fee Administration, (Sept. 2018). List of licensed tobacco retailers.
 ***US Census ACS 2016 5 Year Estimate - All Families Federal Poverty Level (FPL) estimate variable.
 Note: Current smokers are adults ≥18

Authors: Theresa Fournier, Yohani Ramos & Kelly Rose
 Date: 02.05.2019
 Contact Information: PHSEpidemiologist@sjcphs.org

Impact Statement

Tobacco use and access to tobacco products disproportionately affects people in impoverished neighborhoods. Limiting the availability of tobacco retail licenses can help decrease accessibility and potentially bolster cessation and prevention efforts.

Pharmacy Locations, Medication Adherence Project Pharmacies and County-Level Rates of Blood Pressure Medication Adherence (RASA) in Maine

Pharmacy Contact Information

(2 of 2)

MOOSEHEAD DRUG INCORPORATED
located at 10 PRITHAM AVE, GREENVILLE, ME

Contact Name:
E-mail:
Phone Number: +1 (207)

Zoom to

Medication Adherence Project Pharmacy Name

(1 of 1)

This Medication Adherence Project Pharmacy
located at ...

Each community pharmacist was tasked with identifying at least 20 patients who have been using antihypertensive medication for more than a year. Over the course of the project (one month), the pharmacist would work with the patients extensively to increase adherence rates using tools and resources provided (including name, name, oil tools, etc.)

Zoom to

Population Density

(1 of 2)

The population density for Oxford County is 28 people per square mile using 2017 U.S. Census population and land area estimates.

County Name: Oxford
Population Density: 28
Resident Population in 2017: 57,438
Land area in square miles: 2,076.64

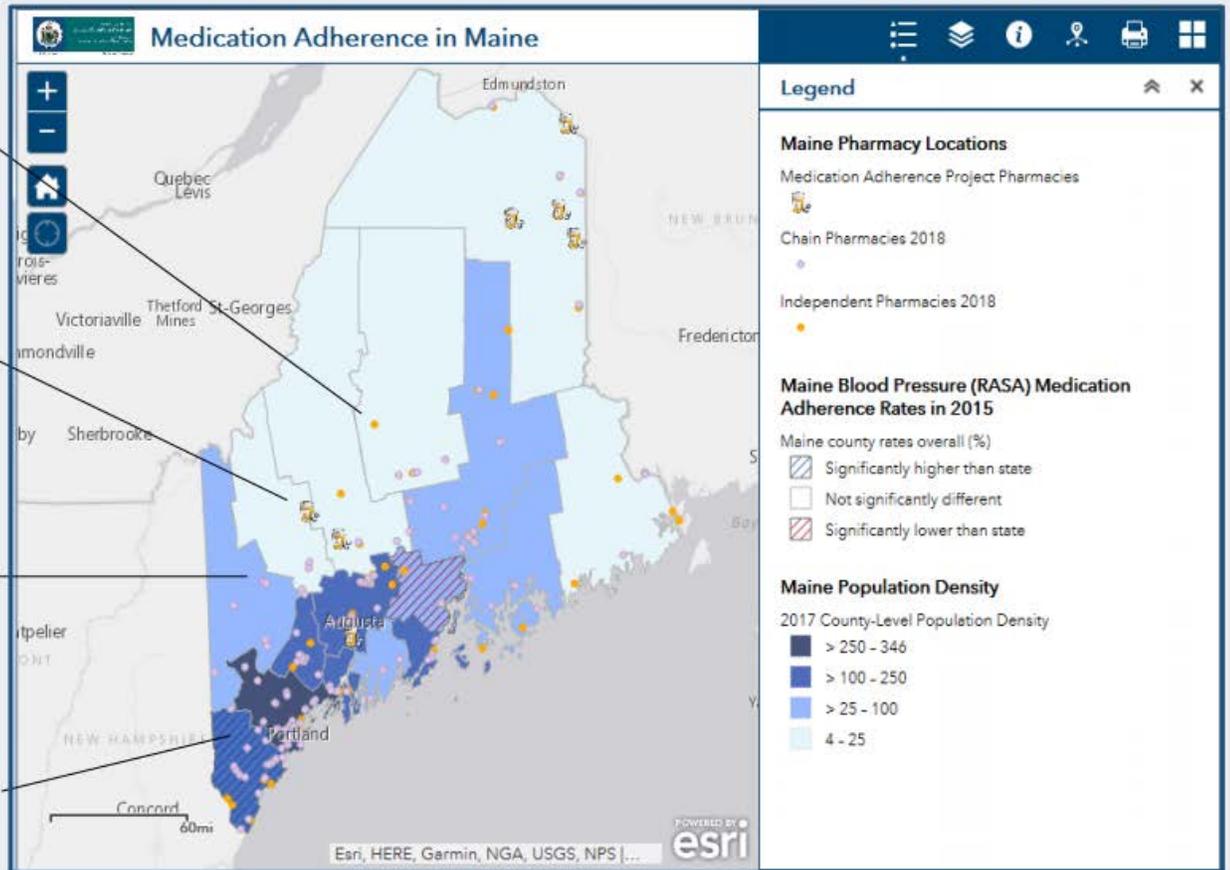
Zoom to

Blood Pressure Medication Adherence Rate

(2 of 3)

The blood pressure medication adherence rate for RASA medications in York County is 85.30% using the PDC method. This is based on 13,414 out of 15,537 Maine adults.

Zoom to



Major Findings

Identify: Counties with significantly lower rates of blood pressure medication adherence among all Maine counties.

Assess: Locations of all chain and independent pharmacies, Medication Adherence Project pharmacies, and county-level population density.

How the map will be used, or has been used

Act 1: Determine if county-level blood pressure medication adherence rates were higher or lower in counties with Medication Adherence Pharmacies.

Act 2: Determine counties to target for future program interventions with pharmacies. Future interventions may include partnering for self-measured blood pressure (SMBP), lifestyle change programs, or telehealth, and may be tailored based on population density. For instance, SMBP and telehealth may be more beneficial in counties with lower population density, as in-person lifestyle change programs may be less effective if the patient needs to drive more frequently to the retail pharmacy. Using a combined approach in counties with medium to high population density may see a high proportion of Mainers with improved health outcomes.