Comparisons of Health, Wellness and Food Accessibility in the United States

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Goals of This Project

- Compare local rates of obesity with access to recreational centers
- Compare the local rates of food insecurity and low access to food with the number of grocery stores by state

About the Food Environment Atlas

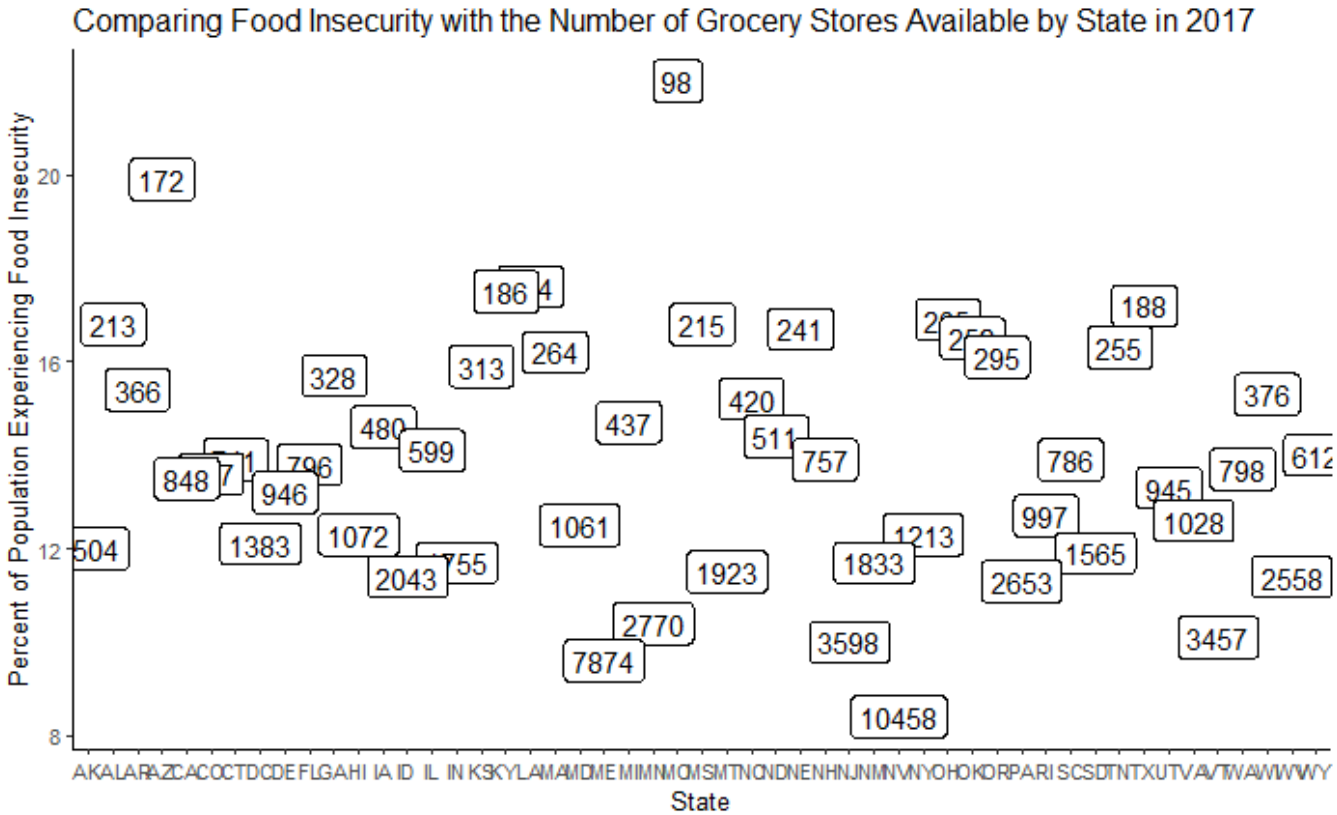
- Track store and restaurant proximity, food prices, and assistance programs
- Assemble statistics on food environment indicators
- Stimulate research on the determinants of food choices and diet quality
- Provide a spatial overview of a community's ability to access healthy food
- Track a community's success in accessing healthy food

Food Access by State vs. Grocery Store Availability

- Fewer grocery stores by state result in lower rates of food access

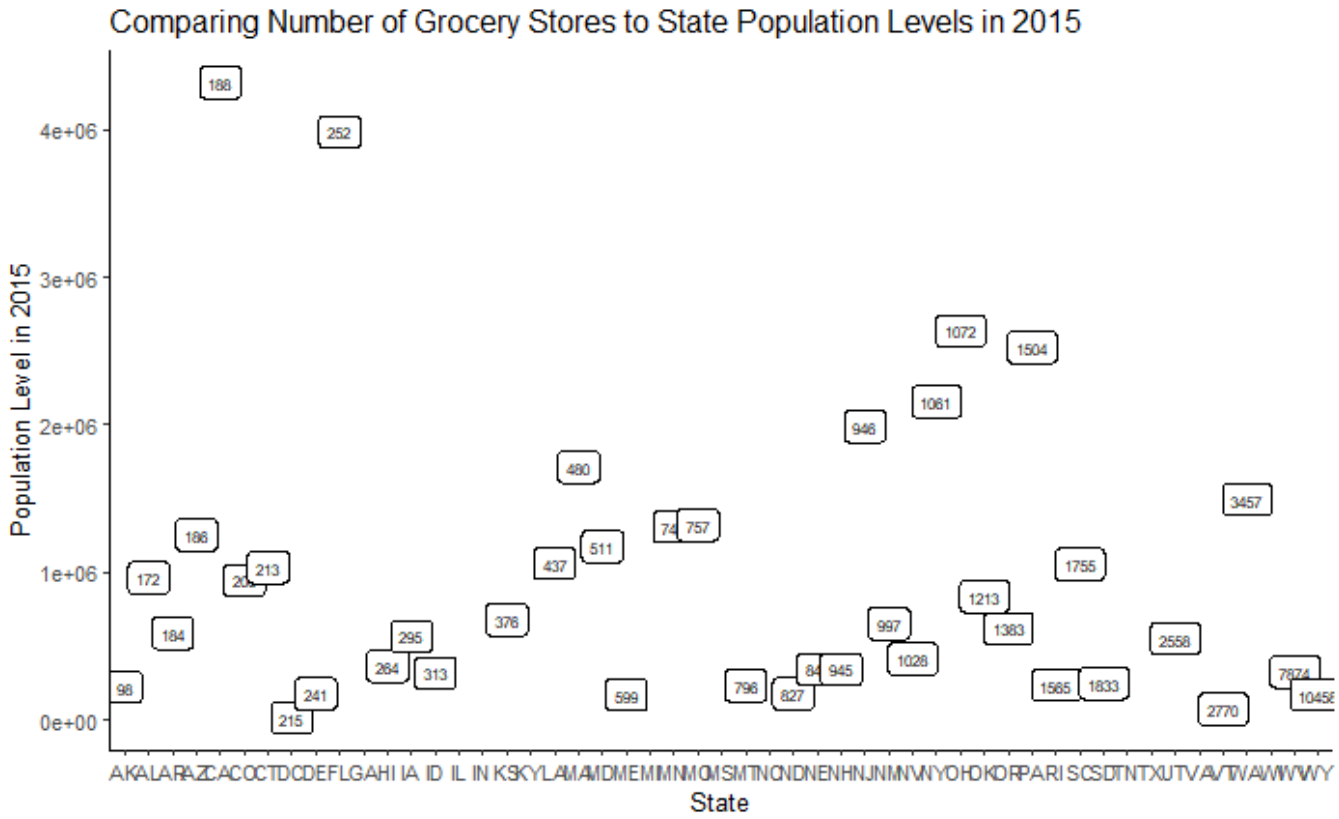
Food Insecurity to Grocery Store Availability

- Fewer grocery stores by state result in lower rates of food insecurity



Comparing State Population to Grocery Stores

- Higher populations correlate with a greater number of grocery stores



Drawing Conclusions

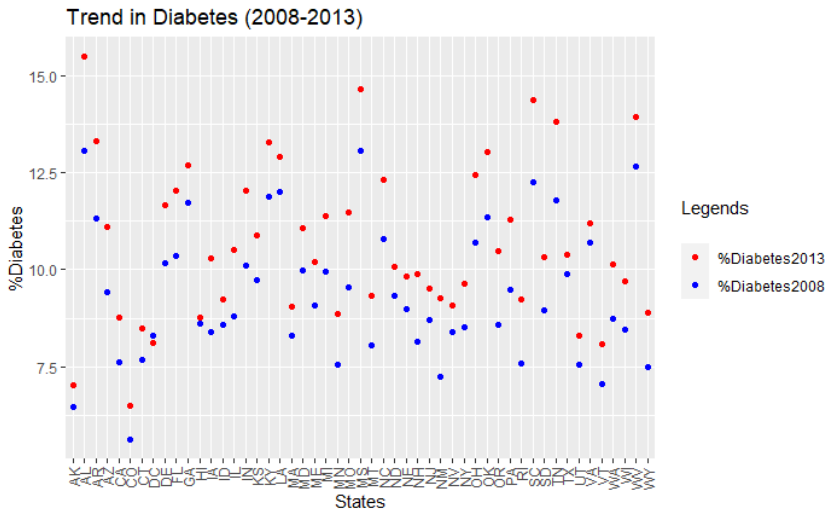
- States with high rates of food insecurity correlate with low rates of food access
- These states correlate with lower numbers of grocery stores available to the local population

Looking at Obesity, Diabetes and Recreation Facilities Data

- Question 1: What are the general trends of Diabetes?
- Question 2: How is US doing at Obesity?
- Question 3: How does the obesity change in context to the availability of Recreation facilities?

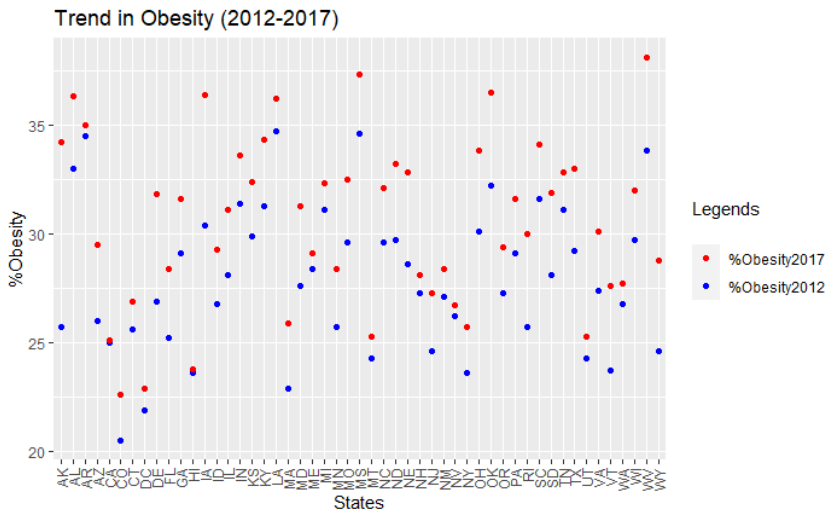
General trends of Diabetes (2008-2013)

- Majority of the states got increasing Diabetes problem!
- Interesting fact about Washington D.C.



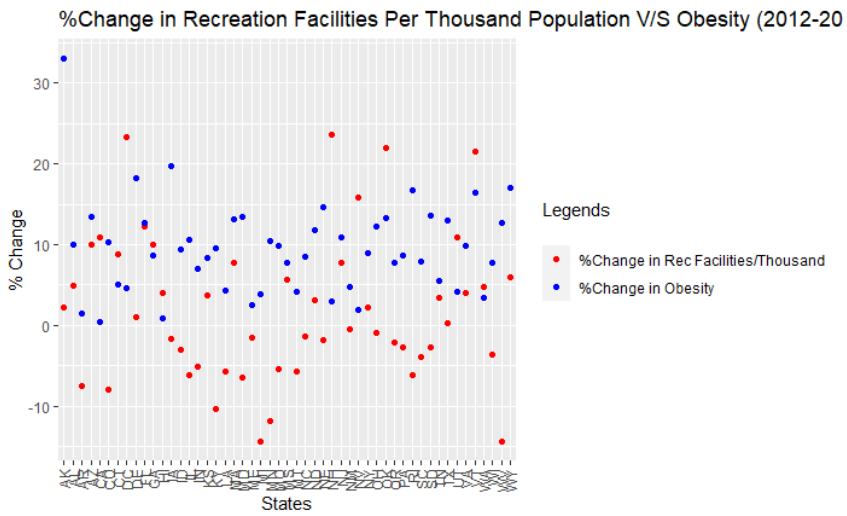
General trends of Obesity (2012-2017)

- Highlighted States: Alaska and California

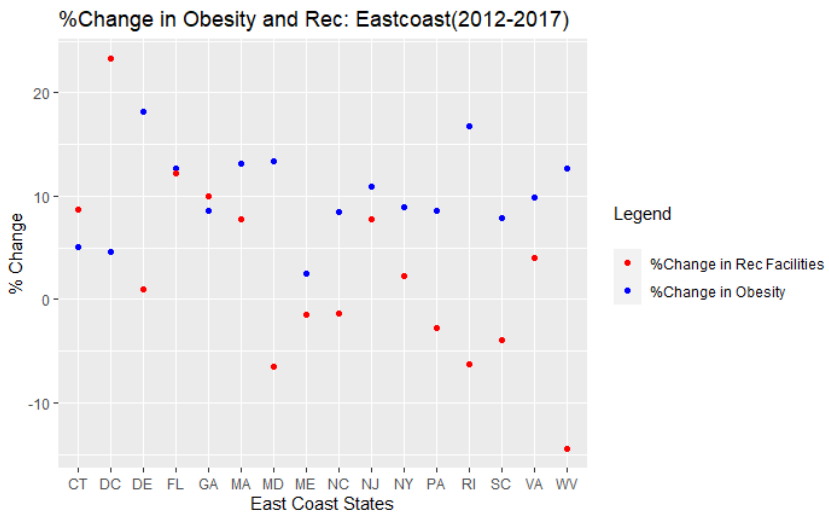


Looking at change in Recreation facilities and Obesity on same page

- Highlight States:
  - Good: Alaska, Colorado, Nebraska, Illinois, Kentucky, Delaware
  - Bad: Washington D.C.



Looking at plots of East Coast and West Coast



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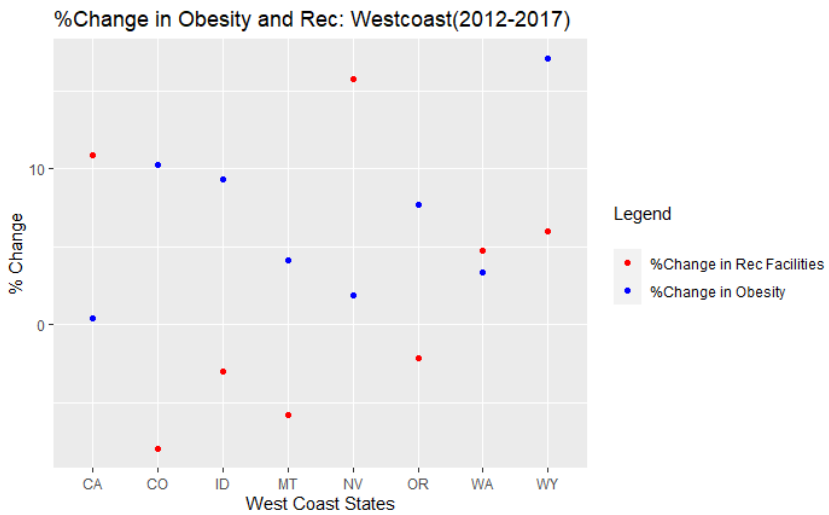


Spatial Analysis: Introduction

- Question 1: Does obesity correlate to areas with easy access to food?
- Question 2: Is access to food effected by if the region is urban or rural?

Data

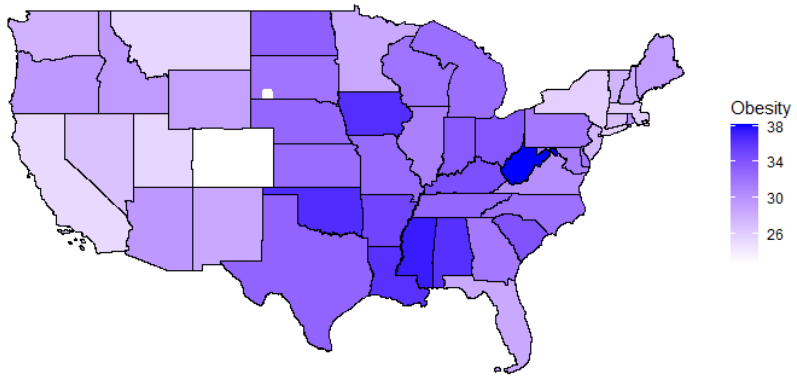
- Food Access Data
  - Percent of population that is obese (2017)
  - Percent of population with low access to food (2015)
- Census Data
  - Shape-files: State, County, Urban Clusters

Looking at data Spatially

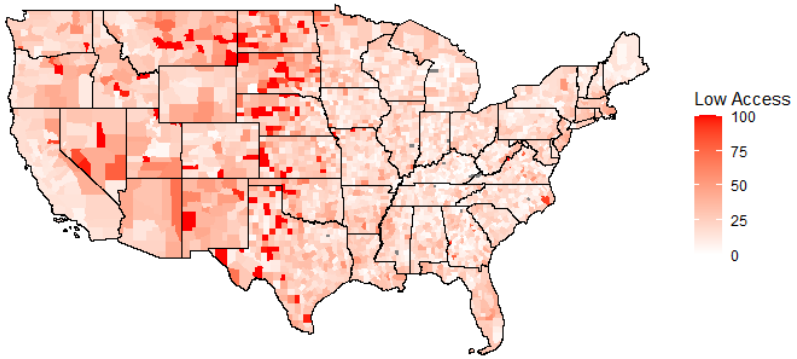
- Constructing Maps
  - Packages: ggplot2, sf
  - Overlaid geometry of the 2-3 spatial scales
  - centered the map on the US or state by adjusting coordinates
- Urban vs. Rural
  - According to the US Census Bureau: "There are two types of urban areas: urbanized areas (UAs) that contain 50,000 or more people and urban clusters (UCs) that contain at least 2,500 people, but fewer than 50,000 people"

Obesity and Food Access Maps

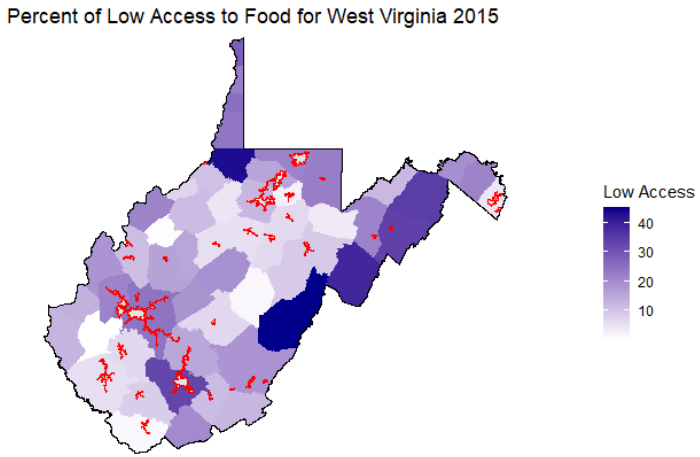
Percent of Obesity 2017

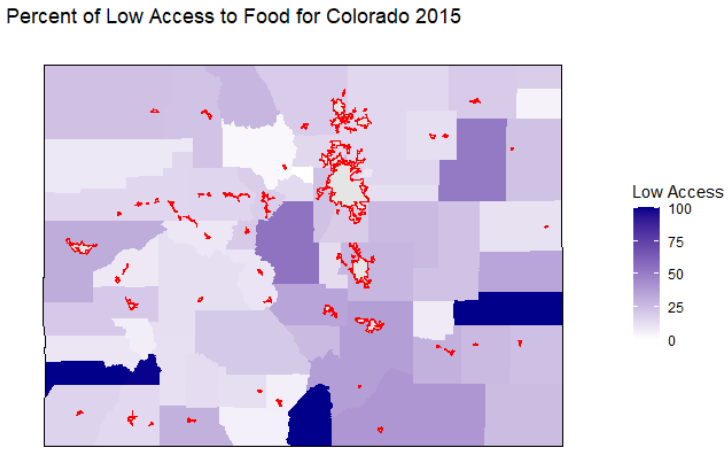


Percent of Low Access to Food by County 2015

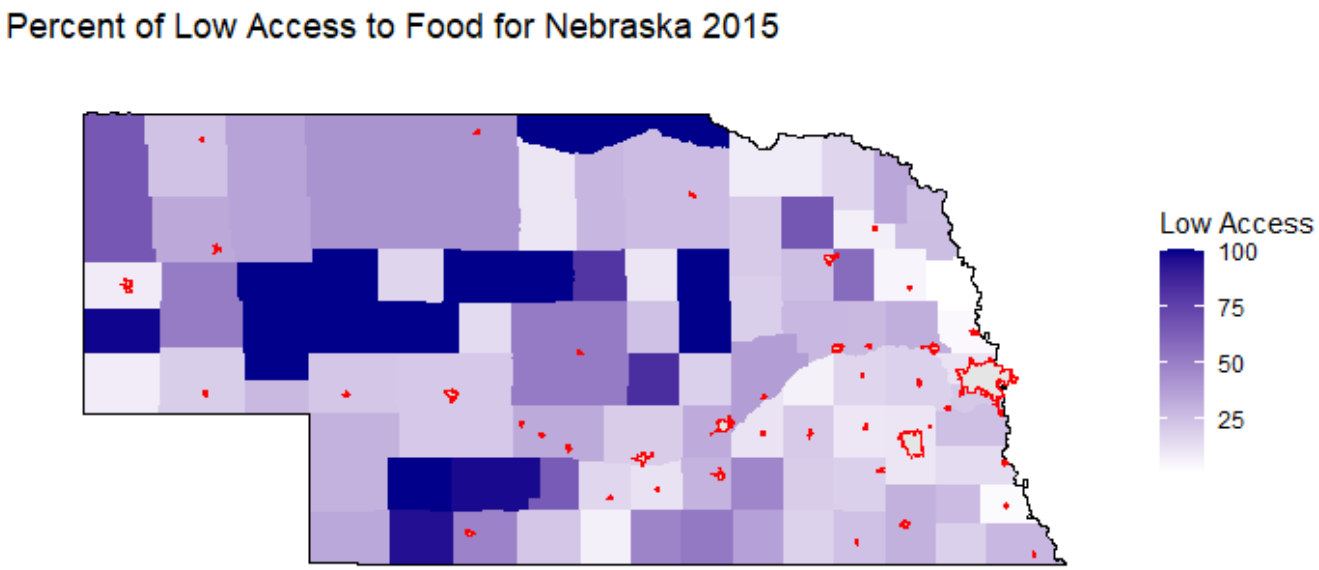


Comparing Urban and Rural





Continuation



Resources

- Food Atlas: https://www.ers.usda.gov/data-products/food-environment-atlas/data-access-and-documentation-downloads/
- US Census Bureau: tiger line files