Project 2 Description

A. About the Data

For our visualization “Obesity & poverty prevalence, 2014”, we sourced the data from-
1. Rate of obesity(2014) per State in United States-
http://www.cdc.gov/obesity/data/table-adults.html

About the data: This data is collected through CDC’s Behavioral Risk Factor Surveillance System (BRFSS). Each year, state health departments use standard procedures to collect data through a series of telephone interviews with U.S. adults. Height and weight data are self-reported.

Of the given variables in the data, we have selected 2 variables-

- State Names
- % of Obesity rate- The % rate of obesity is calculated by converting self-reported height and weight data into Body Mass Index (BMI). A BMI over 30 is considered as obese. This variable shows the percentage of people considered obese per state.

2. Food Environment Atlas for United States-
http://www.ers.usda.gov/data-products/food-environment-atlas/data-access-and-documentation-downloads.aspx

About the data: This data is sourced from USDA ERS (United States Department of Agriculture, Economic Research Service). The Food Environment Atlas has 211 variables sourced from different data sources, covering varying years and geographical levels. For our visualization, we have selected the following variables-

- FIPS Code
- State ID
- POVRATE10 (Poverty Rate) - This variable falls under Socioeconomic Characteristics represented by ‘SOCIOECONOMIC’ code. The data is from year 2010 and is measured per county. Units of measurement- Percentage (%)
- PCH_FFRPTH_07_12 (Fast-food restaurants) - This variable falls under Restaurant Availability and Expenditures represented by ‘RESTAURANTS’ code with a sub category of Fast-food. The variable represents Fast-food restaurants/1,000 population. The data is from year 2007-2012 and is measured per county. Units of measurement- % change.
- PCH_FMRKTPTH_09_13 (Farmers' markets) - This variable falls under Local Foods
- represented by ‘LOCAL’ code with a sub category of Farmers' Markets. The variable represents Farmer’s markets/1,000 population. The data is from year 2009-2013 and is measured per county. Units of measurement- % change.
- PCH_GROCPTH_07_12 (Grocery Stores) - This variable falls under Store Availability represented by ‘STORES’ code with a sub category of Grocery. The variable represents

Grocery stores/1,000 population. The data is from year 2007-2012 and is measured per county. Units of measurement- % change.

On the right side of this visualization, we have created buttons with variables, that allows users to interact with the it. By clicking on the variables, the user selects which variable (1. fast food growth, 2. farmer's market growth and 3. grocery growth) they want to focus. The filtered information can be seen in the map (when user clicks on a state). Additionally, when a user interacts (i.e hover and click) with the map visualization, information about obesity & poverty % per state appears, as well as growth % per state of the 3 variables is displayed on the right side. After choosing the variable, the user is asked to click the state again to see the per county % growth of the selected variable.

For our visualization "Obesity vs Poverty" histogram, we have coalesced data from above sources to create a comparison visualization.

Editing the data

From the above data sources, we sourced the above mentioned variables on a new excel sheet called 'CleanData'. While inputting the data, we realized that some of our data representated state, while other represented county. Thus, we converted all the county data into state data by averaging the values from each county within a state. This step ensured that we data for all variables across all 56 states. During this time, we realized some of the territories from the 56, had 'null' values. These territories are- Guam & Puerto Rico. While no data set is available for Guam, some data is available for Puerto Rico.

Also, in our data, FIPS code of states was available, however we also wanted to represent state wise data. Thus we embedded another variable- StateID_Wiki into our 'CleanedData'.
We noted down state wise FIPS code, sourced from Wikipedia[1], in order to get State Codes.

Latitude and Longitude coordinates were used to plot the circles on the map for obesity and poverty. The values for poverty and obesity were all within a range of approximately 10-35. Due to this, initially all the circles looked to be similar sizes and it was hard to visually see differences. We then applied a scale to the size of the circle so the differences would be more apparent.

Also, when a user hovers over a state, we are showing state level fast food, farm market, and grocery growth on the bar chart on the right.

Criteria for Data Selection

We were interested in identifying how access to different foods affects obesity and poverty. Our assumption was that states with higher obesity and poverty might have more number of fast-food restaurants as compared to farmer's markets or grocery stores. In order to do so, our

[1] https://en.wikipedia.org/wiki/Federal_Information_Processing_Standard_state_code

data first had to represent information (obesity & poverty) at a state level, followed by zooming into county level to understand better the accessibility of food.

Thus, our criterias were-

- Should represent State and county level
- Should come from a trustworthy source
- Should be integratable

B. Description of the mapping from data to visual elements.

For our first visualization, we have converted the obesity rate per state and poverty rate per state into circles of varying sizes and colors. The circles are positioned using the FIPS state code each representing a state.
Each data set was converted using a scale to increase the differences between the variables. We were able to do this by taking the original value and applying this formula: (size/15)^4

The right interactive bar shows 3 different variables, hence have are represented by 3 different colors. The % of their growth is represented by hues of colors, wherein lower % growth is depicted by lighter hue, while higher % growth is depicted by darker hue.

For our second visualization, we want to show relationship between obesity and poverty across all states. We decided to create a double histogram, with obesity on one side (facing upward), and poverty on its flipped side (facing downward).

C. The story.

“Do Fast Food Restaurants Contribute to Obesity” has often been in debate. While some research[2] does not find a positive correlation, others[3] do.

Building on the above assumptions, we wanted to understand the relationship between obesity, poverty and access to food. We classified 3 different types of sources for accessing food- fast-food, farmers markets and grocery stores. According to our assumption, areas with higher obesity and poverty % should see increased growth in fast-food restaurants as compared to other variables. However, this was not the case. From our visualization, the % growth of farmer’s market was consistently higher across most of the states other than Kentucky and Vermont. Maybe, this must be a result of already saturated fast-food market, fueled by increased awareness of organic food that we see a consistent upward trend of farmers markets and grocery stores in the United States.

[2] http://fortune.com/2015/11/06/fast-food-obesity/
[3] http://www.nber.org/bah/2009no1/w14721.html

We were also surprised to note that, despite the higher growth of farmers markets and grocery stores in many states, there was no direct correlation to obesity. This can probably mean that despite higher accessibility of natural/ organic food, obese people may not be buying produce from these stores. One of the reasons for this can be higher costs of food produce as compared to fast-food restaurants.