

# Project Proposal

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## Background and Motivation

Our project aims to map obesity rates in the United States to the prevalence of major US fast food chains (McDonalds, Burger King, Dairy Queen, Starbucks etc.). Obesity and weight issues are some of the biggest health problems currently facing the United States. Roughly 30% of the US population is overweight ( $25 < \text{BMI} < 29.9$ ) and another 35% of the US population is obese ( $\text{BMI} > 30$ ) according to the Center for Disease Control. These conditions significantly increase the likelihood of major medical conditions, such as stroke, cancer and diabetes, which cost the United States about \$190 billion in 2014 according to [a recent Cornell study](#).

Fast food consumption has often been linked to obesity, and is commonly accepted as unhealthy. The United States has a very high per capita intake of fast foods, amounting to [11.3% of daily caloric intake](#). A visualization that allows users to explore a possible positive correlation between the geographic locations of fast food restaurants and measures of poor health will allow those users to have a deeper understanding of the potential negative effects of fast food on health.

Although none of us have worked with population data on health measures and fast food consumption before, we all feel highly prepared for this project given our lifelong personal consumption of fast food. Additionally, we chose to focus on this topic for the following reasons:

- It is easy to understand and highly accessible to most users
- It is interesting and relates to a topic with which we are all well acquainted
- Easily available data exists through the Kaiser Family Foundation and the Real World Data Series (see section on Data for more information)
- Visualizing the impact of fast food consumption on health can help policy makers make smart decisions.

## Project Objectives

The primary questions we hope to answer with our project are:

- Does the quantity of fast food restaurants in a state correlate with measures of poor health in that state?
- Are there geographical trends in the measures of poor health (e.g. North vs South)?
- Are there geographical trends in the quantity of certain fast food chains?

We hope to learn the answers to these questions by means of an interactive, fun, and clear visualization. Ideally this visualization would accomplish the following:

- Get people thinking about the impact of fast food on their lives and the United States as a whole.
- Make a fun visualization with which people enjoy interacting
- Allow policy makers to easily visualize the prevalence of fast food consumption and poor health in the United States.
- Learn some D3 and visualization in the process!

## Data and Data Processing

We specifically conceived our project in a way that requires relatively little data collection, manipulating and cleaning. Data on health and obesity is collected regularly by the Kaiser Family Foundation. The data is readily available in many formats, and we have found [csv files](#) for the year 2013, which we plan on using. We will be able to get the percentage of overweight and obese people for each state from this dataset fairly easily.

The [Real World Data Series](#) has comprehensive lists of all franchise locations for multiple major American fast food chains and is updated regularly. These csv files consist of latitude/longitude values and an address for each franchise restaurant. We hope to parse the state from this address using Microsoft Excel. Ultimately, we hope to get the number of fast food restaurants and their location from this dataset.

The United States Census Bureau regularly collects [population estimates](#). We will be using their population data to get per capita fast food restaurants for each state (a more accurate reflection of fast food consumption than absolute quantities of franchises). This data will require a small amount of cleaning and filtering.

## Visualization

At heart our visualization will consist of a map of all fifty states. We will allow users to toggle multiple views of this map and will generate smooth, non-distracting transitions between views.

## Must-Have Features

The must-have features of our project are the following:

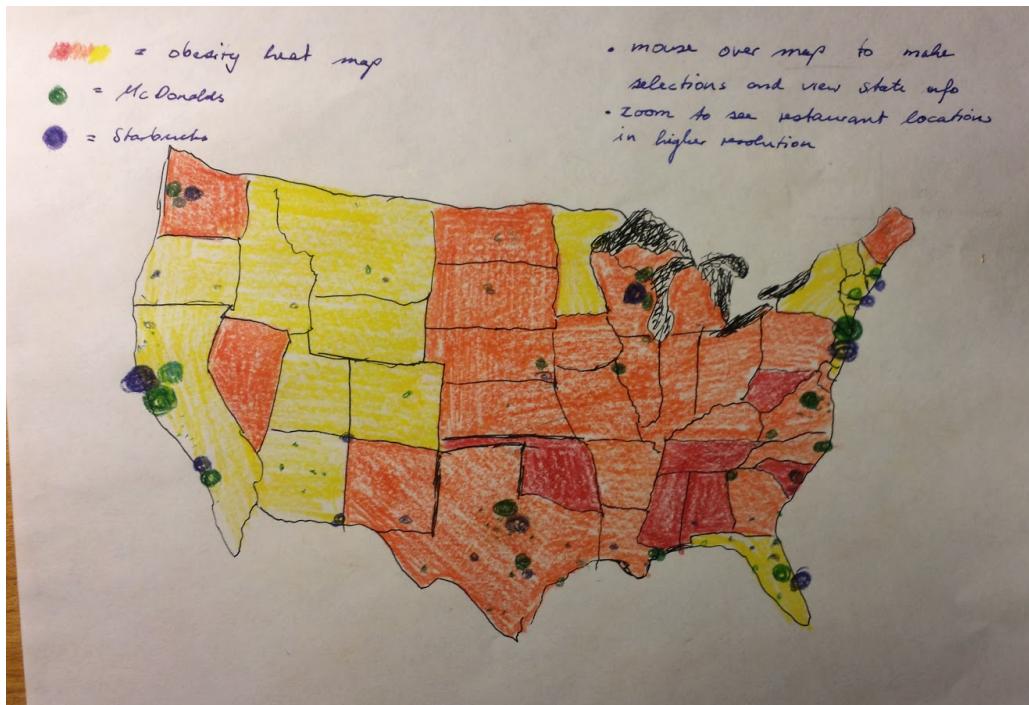
- A map showing the location of all continental states
- A heat map of health measures (selected by a radio button) across the US by state
- Bar charts that are updated on selection to display franchise information
- A text popup will appear with more detailed information for a state on hover
- A scatterplot showing all locations of a given franchise on the US map
- Filtering options to filter by restaurant
- Radio buttons that will allow users to select health measures to display

## Optional Features

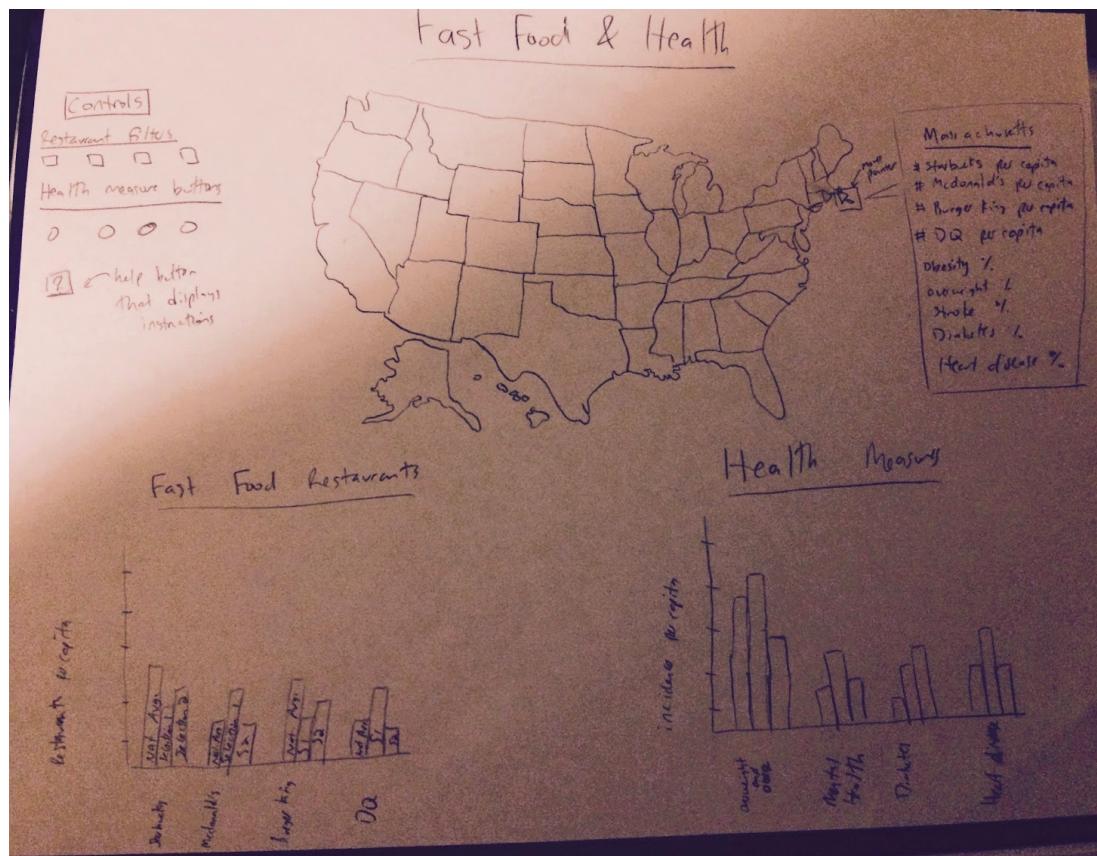
Some features we consider nice to have, but not critical to our project are the following:

- A way to select regions and see aggregated information (via brushing)
- The possibility to select two regions with a brush, followed by a comparison of those two regions with the national averages
- A zoom feature to zoom in on the map
- A nice webpage to put our visualization on

## Sketches



This sketch shows our design for the map that will be the main focus point for our visualization. The color driven heat map corresponds to obesity (or any of the other health measures as selected). The dots on the map correspond to the locations of different fast food restaurants. We hope that this visualization will be able to show a possible correlation between fast food restaurant locations and certain measures of poor health.



This sketch shows the entire layout of our page. The map will be the focus point in the center. We anticipate having controls on the left of the map and bar graphs underneath the map. The bar graphs will dynamically update based on the user's selection so a user can get more detailed information about a certain region or state or compare information between two selections and national averages.

## Project Schedule

We plan to divide our work up as follows:

Week	Date	Target
0	04/02/2015	Finish Project Proposal, Submit Project Form and Project Proposal (Andre and Martin)
	04/03/2015	Project Proposal due
1	04/06/2015 – 04/10/2015	Meet with TF (Andre and Martin)
	04/12/2015	Individual work on Project Milestone done (Andre - Filters, map restaurants as dots on map) (Martin - Get map hover/click working, hover information)
	04/13/2015	Meet to consolidate work on Project Milestone and submit
2	04/17/2015	Project Milestone Due
3	04/18/2015 – 04/26/2015	Individual Project Review (preferably early in the week) (Andre and Martin) (Website - both Andre and Martin)
4	05/02/2015	Finish Individual Work on Final Submission (Martin - Brush selections and Finish bar graphs) (Andre - Heat map)
5	05/03/2015	Consolidate work and submit Final Project (Andre and Martin)
	Project Due	Project Due

We will make sure to plan our work so that we can avoid a big rush right before the final project deadline, and delegate different modules and responsibilities among ourselves.