**IS 603**
**Capstone Project**

# Fast Food Franchises: Which and Where?

**By**

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## 1. Introduction

Creating a successful restaurant of any kind requires careful planning and hard work. Few decisions have more of an impact on a restaurant's success or failure than determining what sort of restaurant to open and where to do so. Here, we set out to determine the optimal location for a new fast-food franchise in the state of Maryland, as well as the best type of franchise to open. To this end we have examined the locations of current franchises along with demographic data to identify locations likely to have high unmet demand and low competition, giving our franchise the best chance of success.

## 2. Justification:

We have identified a few key variables which influence the demand for fast food particularly powerfully. First and foremost, the more direct competition in an area, the lower demand is likely to be. Research indicates that young adults and adolescents are consuming greater quantities of fast food (Nielsen, J., Siega Riz, A., & Popkin, B., 2001). This makes franchise locations situated in areas with a higher proportion of the population under the age of 18 particularly likely to see higher traffic. Additionally, proximity to fast food as measured by the number of residences in the same zip code is correlated with greater quantities of fast food purchases (Athens,J., Duncan, D., & Elbel, B., 2016). To facilitate our analysis, we are leveraging Tableau visualizations, Google Studio, and the query function of MongoDB to interrogate the issues detailed in the paragraph above both visually and programmatically. Notably, we will be using Tableau to identify the particular areas with the correct demographic makeup, while we use MongoDB to ascertain the franchises already operating in a given area. Before delving into analysis, we will turn to discuss the context and various significant factors involved with any further analysis.

## 3. Background:

There are several factors involved in the success or failure of a business. Therefore, care should be given to isolating the most significant and relevant among them. After some research, identified evidence of two factors that predicted traffic to fast food restaurants.

In the *Journal of Preventive Medicine*, it was indicated that “Both adolescents and young adults are obtaining less of their energy intake at home and more at restaurants and fast food places.” (Nielsen, J., et al., 2001) This indicates that not only would a higher concentration of people under 18 in an area indicate a higher demand, but also that this demand is likely to grow as time goes on. Because this variable has the potential to let us move in on a burgeoning market that our competitors may be unaware of, we selected this as one of the primary criteria for our decision.

Furthermore, in a study by Athens, et al. in 2016, Proximity to a “fast food outlet... ...was an independent predictor of more fast food meals among point-of-purchase respondents.” To ensure that our bolder and more forward thinking age related metric does not lead us too far astray, we decided to also include this simpler and more intuitive metric as a safeguard against failure.

Finally, we know that too much competition will split prospective buyers multiple ways, decreasing sales. For this reason, we will also be looking at the number of fast food restaurants in a given area, eventually increasing the granularity and attempting to select a franchise not specifically represented in a good area (as defined by the previous two metrics) but one that still has a good amount of name recognition.

To summarize, we are looking for an area with a high number of households, a high percentage of the population under 18, and few nearby fast food franchises. With these variables isolated, we will select the franchise with the lowest local density and the highest name recognition.

## 4. Risk Factors:

Bankruptcy: This cash-intensive business requires enough liquidity to cover employee paychecks, supplies, and other operating costs. Generally, the pool of traditional institutions that lend to restaurants is slim. Even though the statistics show that restaurants are no more inclined to failure than other services-based businesses, banks still tend to stay away. Procuring sufficient startup capital is only the beginning, if the wrong location leads to lower sales, cash flow could still be a very real problem.

Inexperience: New businesses that don’t have much experience or knowledge tend to fail as new business owners make more mistakes. Sometimes these mistakes will affect the business in disastrous ways. Risk can be inevitable, thus business owners should be smart and perform significant market and risk analyses before making decisions..

Location: To those starting out in the restaurant business, the location might appear to be one of the most important ingredients to success. While the location is important, it can also work against you. Choosing a location that is very popular for restaurants means the rent will likely be higher and the competition stiffer. You should select your location based upon the type of restaurant you wish to run and price the menu accordingly. For example, a Taco Bell franchise restaurant may not fare as well in an area populated with high-end restaurants.

Demanding Workload: From development to opening, you will likely be required to invest many more hours to get a new restaurant off the ground. One eatery proprietor and his co-workers worked well over 100 hours a week working during the time-consuming opening of his restaurant. This sort of workload can be depleting particularly if the work is not what your passionate about, such as administrative work, rather than cooking. Many failures can be ascribed to not being able to keep up with the demands of the industry.

While there is no way around the work required to start a restaurant, having trusted and well trained staff can mitigate many of the issues that arise.

## 5. Decision confidence

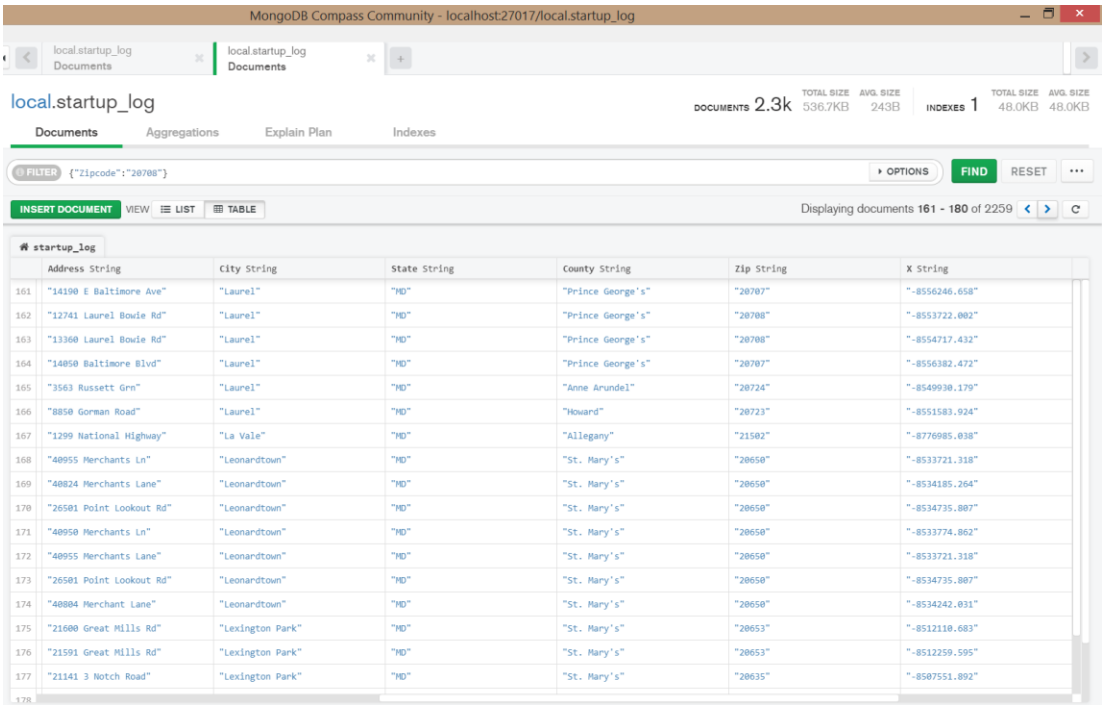
The U.S. Department of Commerce and other franchise data researchers have shown that franchise income accounts for more than one-third of all U.S. retail sales. According to research on the economic impact of franchises, franchise companies in the United States generate more than 3% of non-farm private production and when the overall contribution of franchise business. Over the years, government research has shown that the success rate of franchise-owned enterprises is significantly higher than that of non-franchise-owned small businesses. In short, the good news is that franchising is an important part of the national economy and a statistically better chance of success than other business options.

With this in mind, we can turn more specifically to how accurate our own selection methods are likely to be. We have balanced riskier, more forward thinking metrics (in this case, percentage of population under 18) with more tried and true factors (proximity to residences and presence of competing franchises) in an effort to both protect against failure while still positioning ourselves to expand into a burgeoning market ahead of the curve. Of course, an analysis of a greater number of factors would mitigate that risk further as such issues as local culture, traffic, and the wealth of the local population can also have a large impact on demand. However, because we are operating in an industry which is already situated for success and we have additionally offset our more experimental measures with tried and true standards, I believe our recommendations can be considered reasonably robust.

## 6. Decision Method Approach

### 6.1 Data Classification Zip Code Wise using Mongo DB.

Using Mongo DB data is filtered out on the basis of zip code to understand the number of fast food restaurants that are opening in a particular area of maryland. These zip codes are mapped with population data to understand the age of population who are more inclined towards fast food.




### 6.2 Fast food restaurant open chain and its analysis using Tableau and Google Studio:

Using Tableau and Google Studio, we are able to visualize the map of Maryland where fast food restaurant is open and the population-wise distribution of food chain available in the area. The graphs are represented as shown in the data set and visualized the population of age under 18 and over who are inclined to fast food. This helps to make sure that depending on the population of the area the food chain is growing up.

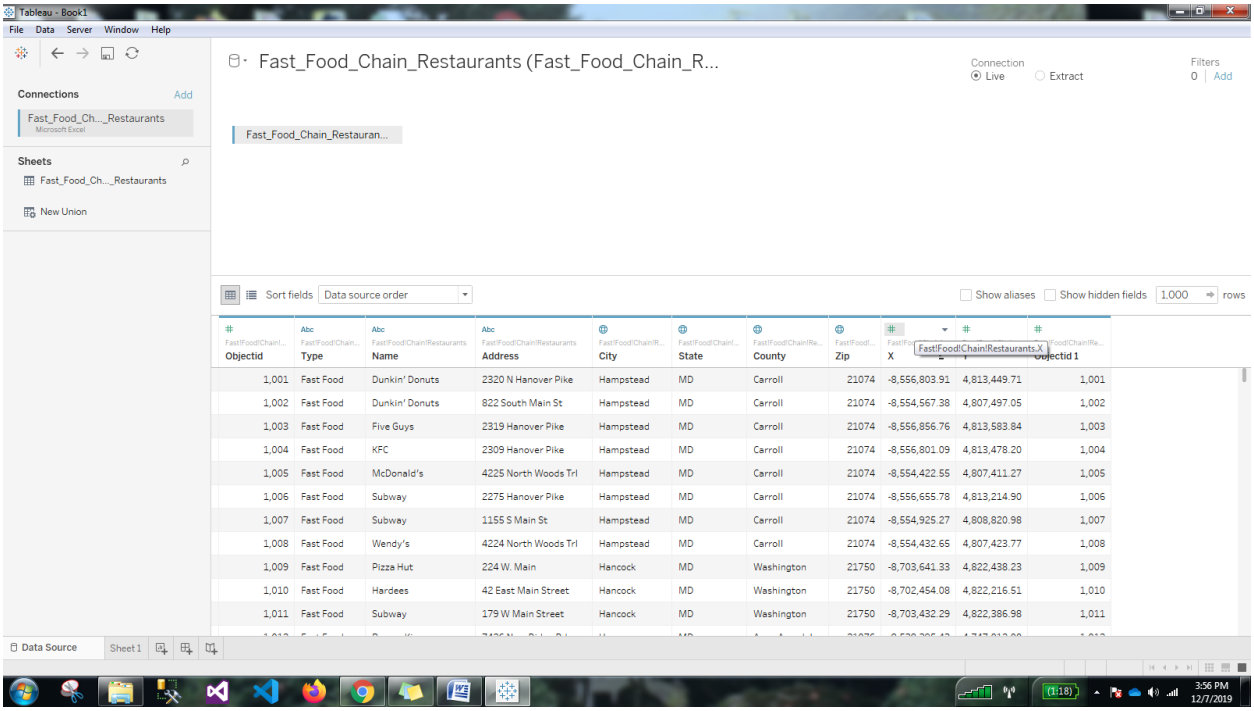



Fig. 1 This gives a data set of Fast Food and their location.

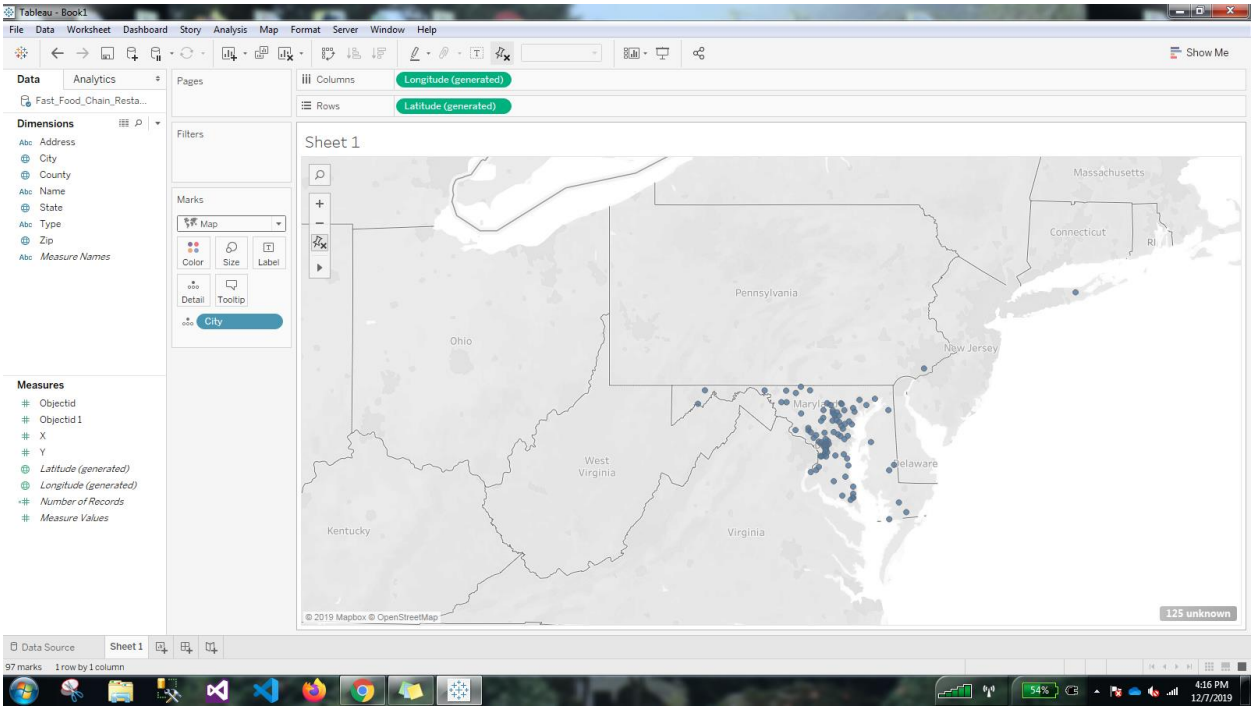



Fig. 2. This shows the locations of the fast-food chain present in Maryland State.

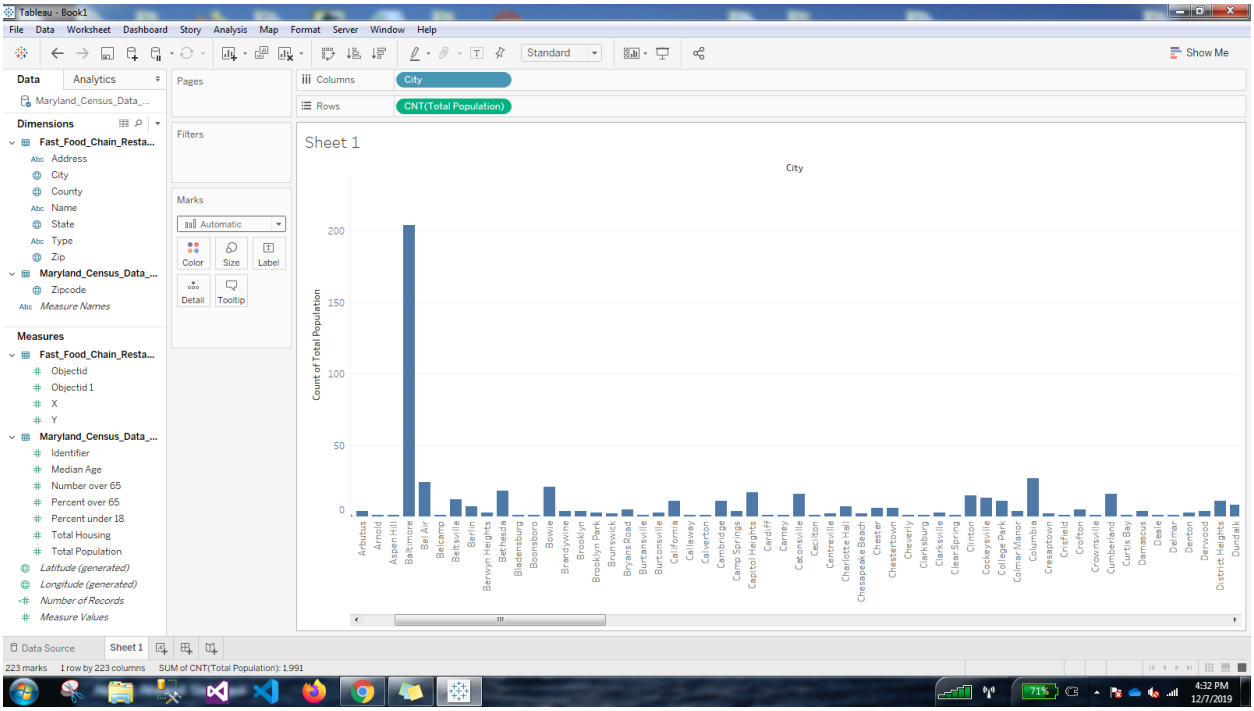



Fig. 3. This Bar Graph shows the population count present in Maryland Cities.

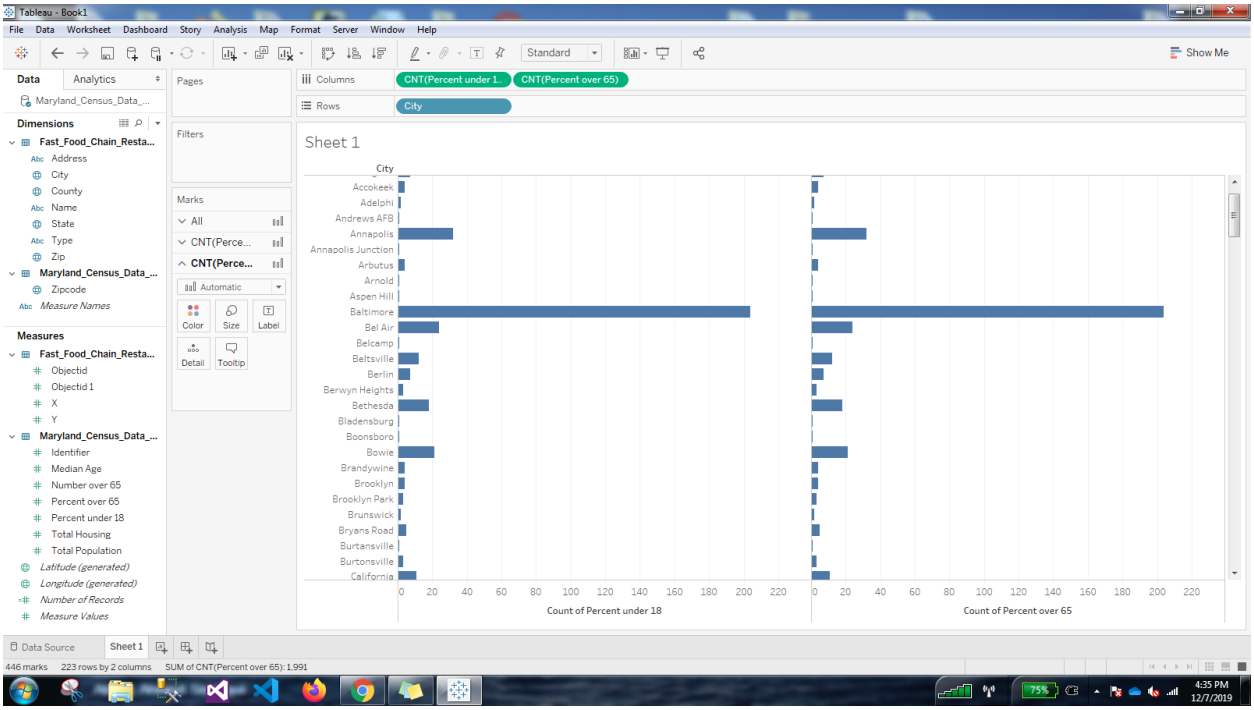
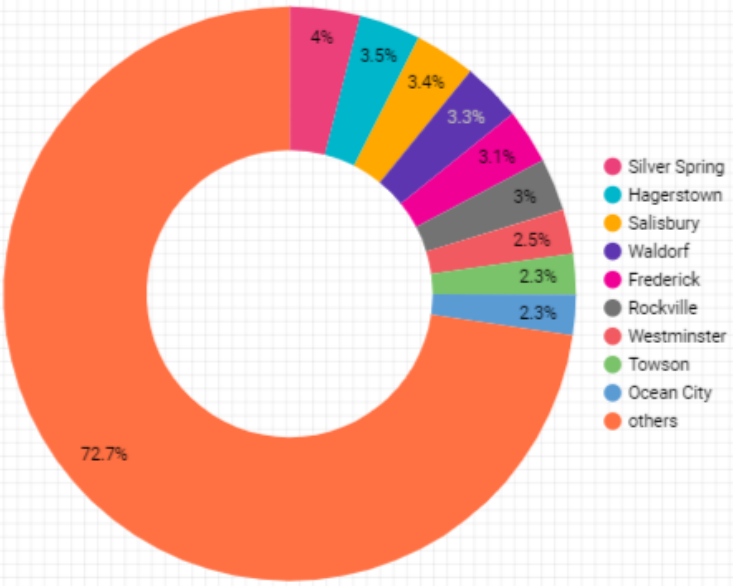
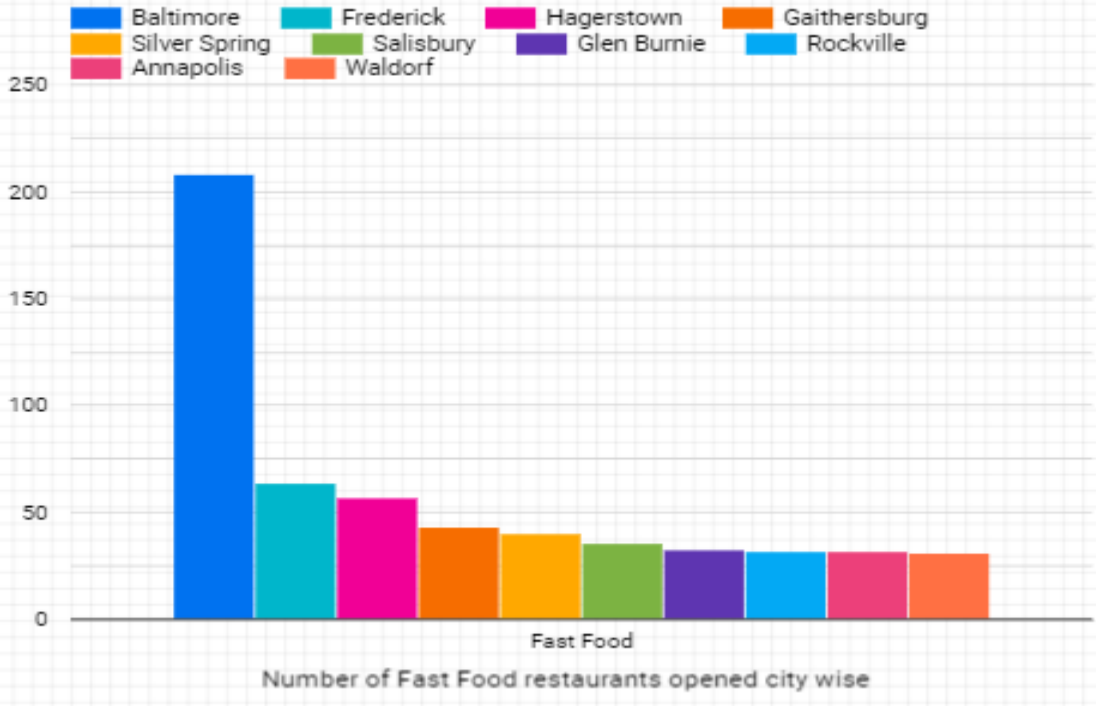



Fig. 4 This shows the population present in Maryland cities under 18 and over 65.




City Wise Restaurants opened in Maryland Area




Number of Fast Food restaurants opened city wise

With the above graphs, we can conclude that the fast-food restaurants are opened depending on the population of the area the food chain is growing up. The above graphs will help the business owners to understand the location and type of restaurants to be opened area wise.

## 7. Executive Summary

To answer the question: 'Which franchise should be created where in Maryland to minimize potential risk and maximizing profit?' we use two datasets (one pulled from census information on the official Maryland government website, and the other from a Johns Hopkins 'Food and Nutrition' database. We removed data points with too little information as well as one or two locations from outside the state. With this done, we used MongoDB and Tableau to isolate two variables we found research indicating were strongly correlated with fast food consumption: nearby households (as a safeguard against failure) and percentage of population under 18 (a more experimental measure predicting both current demand. and hopefully a significant increase thereof in the future). We isolated these and compared them against current restaurants in the area to find the zip codes with the most demand and the least competition. We then executed further queries to determine which high-profile franchises were not already represented in these areas. This of course leads us to a simple recommendation: in order to minimize risk and maximize profit both current and future, we recommend building a McDonalds (to maximize name recognition) in 20708, as it has a not insignificant number of local residences, a high percentage of the population under 18, a low number of current fast food franchises, and indeed no existing McDonalds.

## 8. References: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