Analysis of Food Businesses In Chicago, IL

By:
Ryan Rymarczyk

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1.) Introduction

A group of investors would like to start a food business in Chicago, IL. The investors are agnostic to the location of the new business, but they have pre-selected 8 general locations. They would prefer for the business to be within a 0.5 mile radios of one of these locations:

1. Bucktown
2. Boystown
3. Roscoe Village
4. Logan Square
5. Wicker Park
6. Lincoln Park
7. Uptown
8. Near North Side

The goal of this report is to provide market research on all of the existing food businesses surrounding these 8 locations. The foursquare API will be used to collect information of all food businesses in the selected areas and present information regarding market saturation and popularity.

Using this information, the investors will be able to make a more educated decision on which type of food business to start and in what location.

2.) Data

All of the data used for this report will be sourced from the Foursquare API. The general business information that will be pulled from the API using the "Explore" endpoint, is the following:

1. Business Name
2. Business Food Category
3. Business Latitude
4. Business Longitude
5. Unique Business ID

In addition to the basic information provided by the "Explore" endpoint, using each businesses unique ID, the "Likes" endpoint will be utilized. This will provide a basic datapoint regrading the popularity or success of each business.

3.) Methodology

The location list is fully populated with a list of both hard coded and requested locations.

Using each location from the location list, a function will request all of the "food" related businesses from the Foursquare API in a 0.5 mile radius of each location. The function will request a maximum of 150 seperate businesses for each neighborhood.

The results will be returned as a pandas dataframe object for futher analysis.

The Foursquare API returned a total of 686 business in the 8 different neighborhoods. Next, a check was done to see if any businesses were being registered in more than one location. .

It was confirmed that we have 686 unique businesses. This means that we are not counting any specific business more than once and our neighborhoods have adequate seperation.

Next, "Like" data was requested for each business from the Foursquare API. A function requests the count of likes for each business in our list and returns the results as a pandas dataframe object for futher analysis.

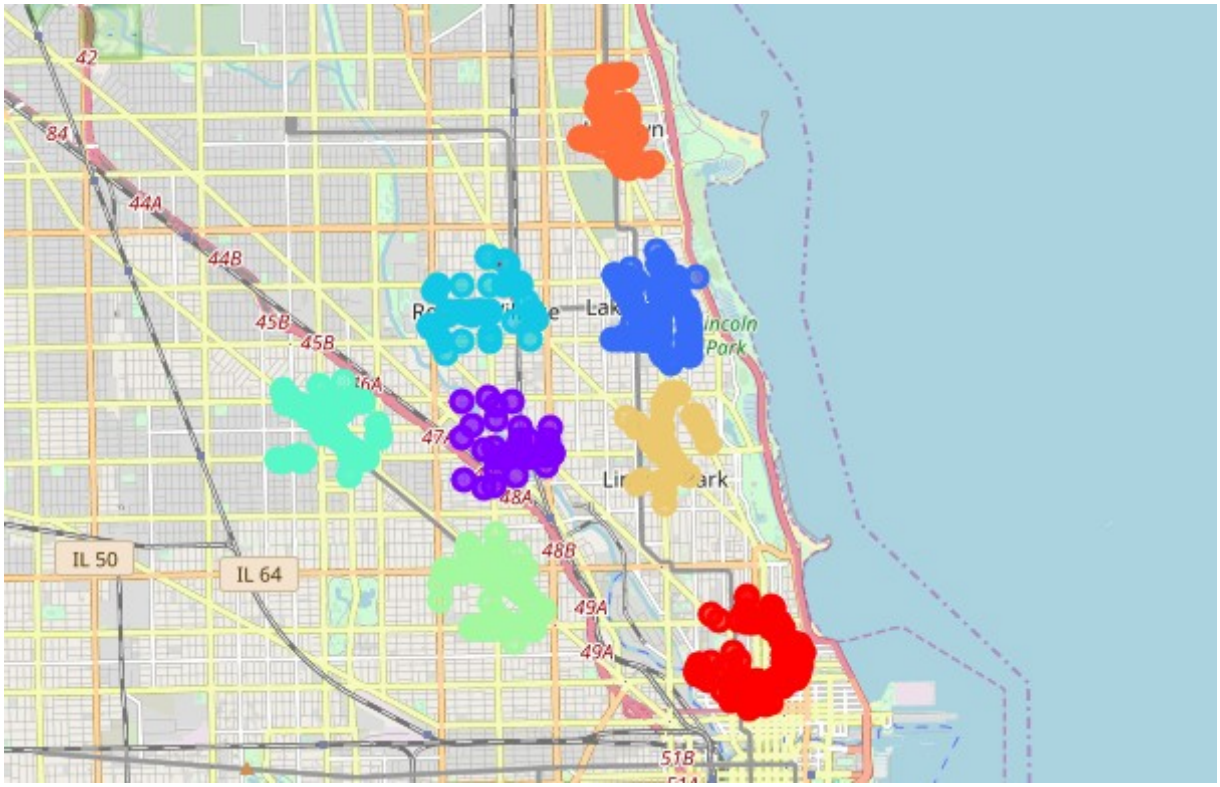
Finally, all of the data is combined into a single dataframe object. Requesting the "Like" data is very time consuming using the Foursquare API. For this reason we will save our combined dataframe object as a CSV file. Now, anyone else trying to confirm the data, can simply import the csv data without having to make time consuming calls to the Foursquare API.

4.) Results

All of the required data has been extracted from the Foursquare API. We can now begin reviewing the results of the data to extract actionable market insights.

Let's begin by mapping all of the individual businesses. We will map each location with a different color indicating it's neighborhood.

- Red - Near North Side
- Gold - Lincoln Park
- Blue - Boystown
- Orange - Uptown
- Pale Blue - Roscoe Village
- Purple - Bucktown
- Green - Wicker Park
- Aqua - Logan Square



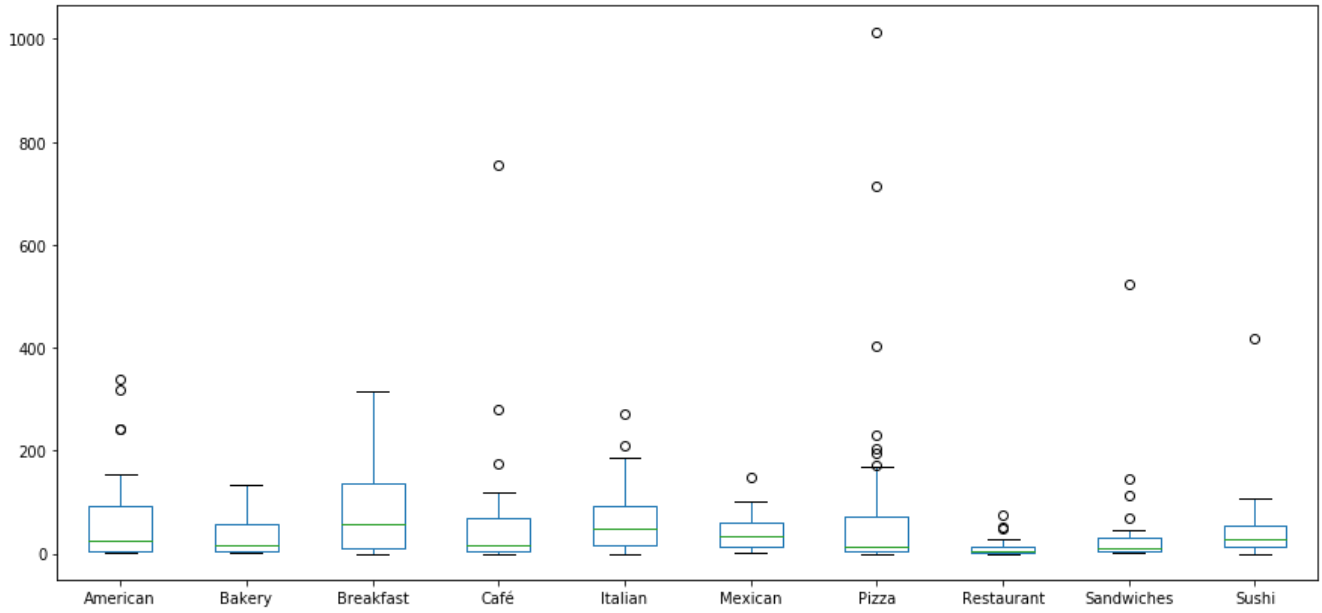
Below is the number of businesses we have identified in each location:

- Boystown 114
- Bucktown 35
- Lincoln Park 45
- Logan Square 84
- Near North Side 141
- Roscoe Village 55
- Uptown 78
- Wicker Park 134

The 10 most popular food business catagories are listed below:

1. Pizza 52
2. Mexican 41
3. Sandwiches 35
4. Bakery 28
5. Italian 28
6. American 27
7. Sushi 27
8. Café 25
9. Breakfast 23
10. Restaurant 23

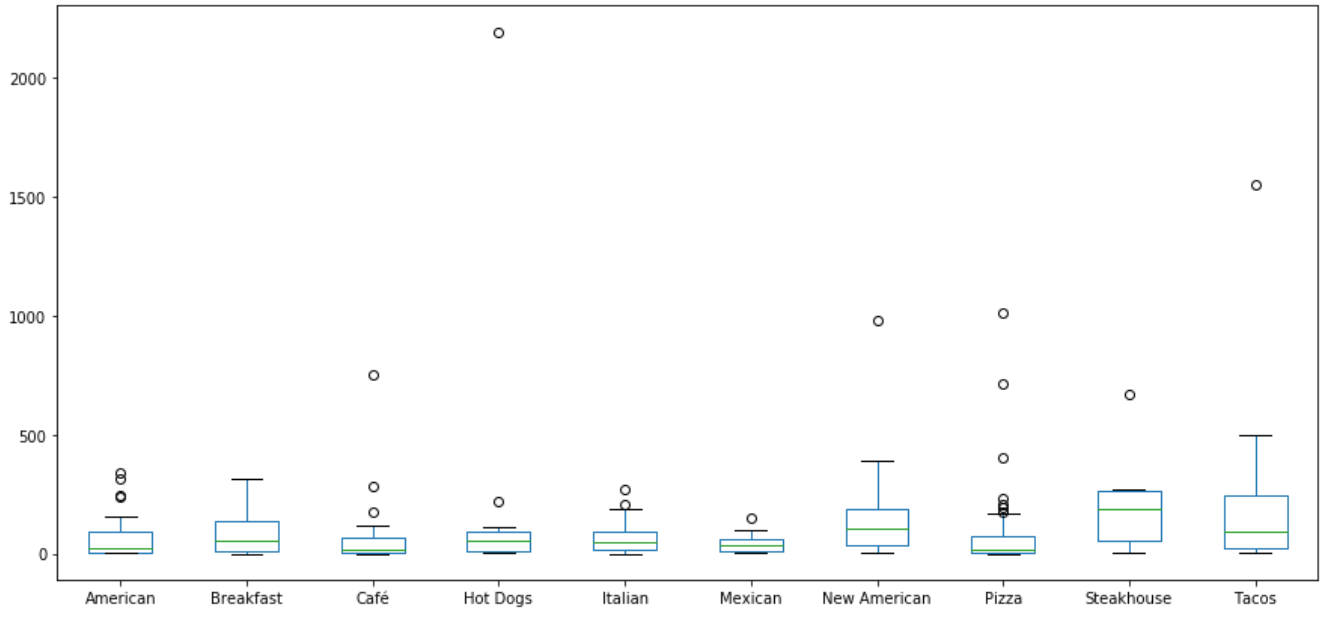
Using the ten most popular business categories, we will graph the distribution of likes. A box plot graph has been chosen to represnt the distribution of likes for each category.



As you can see, Breakfast and Italian restaurants have the highest mean like count. (Represented by the green line in each box).

Now we will sum the total amount of likes for each restaurant category.

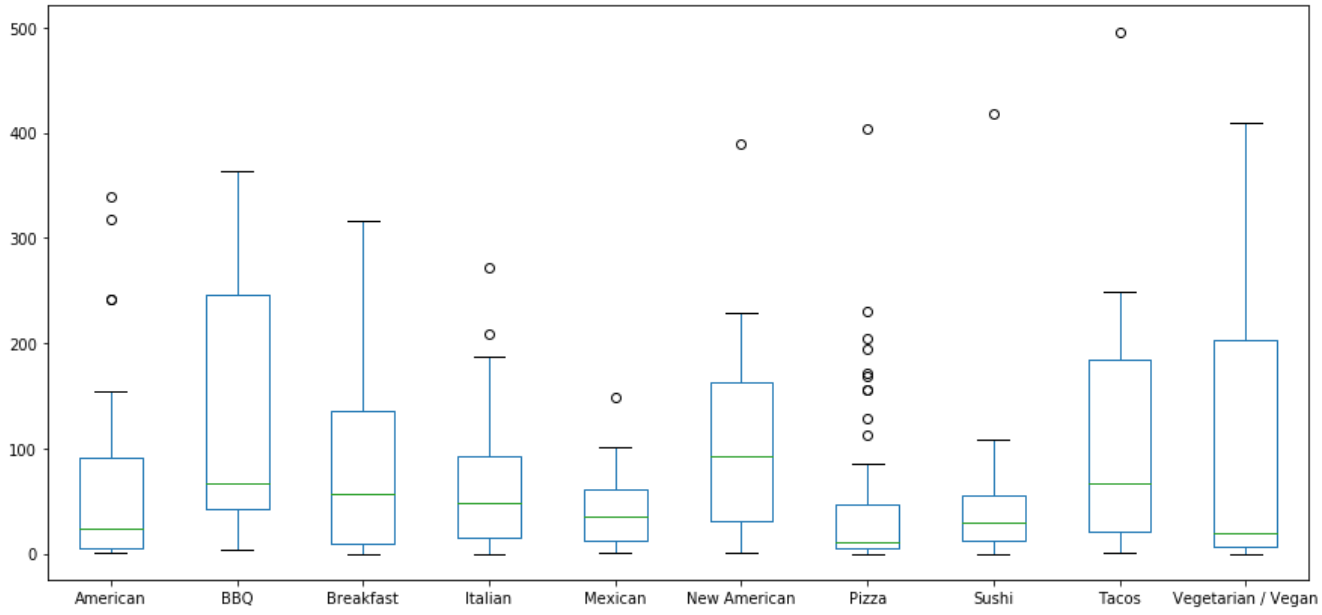
1. Pizza 4314
2. Tacos 2928
3. Hot Dogs 2833
4. New American 2262
5. Breakfast 2006
6. American 1963
7. Italian 1903
8. Café 1828
9. Steakhouse 1817
10. Mexican 1680



The box plot of the restaurant types with the largest total amount of likes is shown above. All of the boxes on this chart appear realatively collapsed. This is because there are a small number of outlier businesses that are skewing results for the dataset.

Next we will reproduce the same data for likes, but impose of maximum of limit of 500 likes to remove the outlier datapoints.

1. Pizza 2587
2. Breakfast 2006
3. American 1963
4. Italian 1903
5. Mexican 1680
6. BBQ 1442
7. Tacos 1375
8. Sushi 1305
9. New American 1283
10. Vegetarian / Vegan 1261

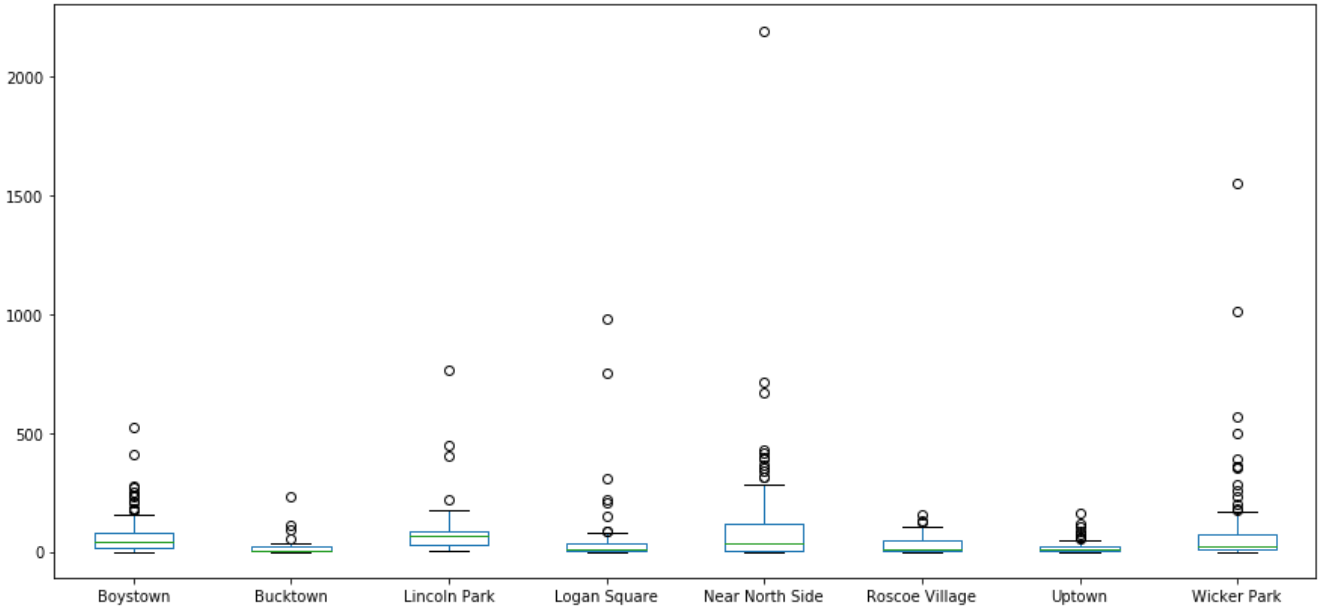


That looks much better! After removing the outlier data points the box chart shows a much clearer picture. According to this data, the following restuarant types have the higest mean amount of likes:

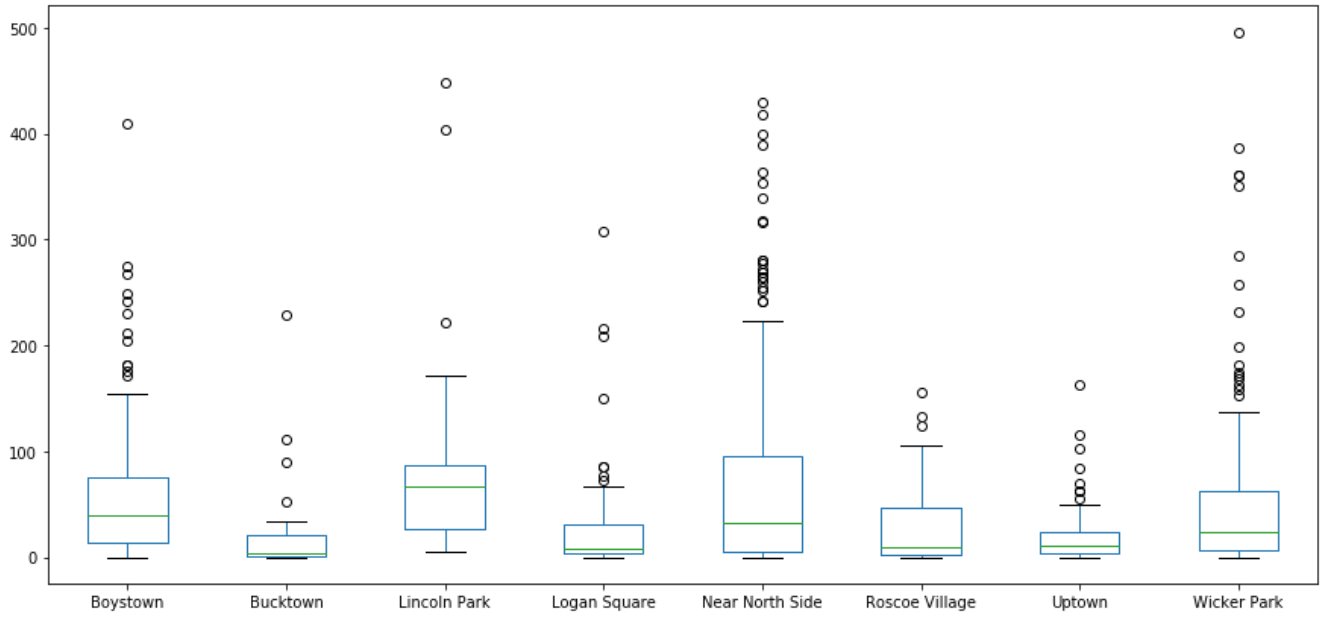
1. New American
2. BBQ
3. Tacos
4. Breakfast

Knowing this information, these specific types of restaurants would be a good recomendation to our stakeholders.

Now lets look at similar data, but group the likes by differnt Locations. This will help us in selecting an ideal Location to reccomend.



Again it looks like we have some outlier data points skewing are data. Let's set another maximum limit for likes at 500.



It appears as if the Near North Side, Boystown and Lincoln Park may be the best locations to open a new restaurant. Wicker Park would also not be far behind.

5.) Discussion

Based on the results presented above, specific areas appear to be better suited for opening a food or restaurant business. The top 4 areas are:

1. Near North Side
2. Boystown
3. Lincoln Park
4. Wicker Park

Of these top options, Lincoln Park has be far the smallest number of current food or restaurant businesses at 45.
According to the "Likes" information, the most liked food types are the following:

1. New American
2. BBQ
3. Tacos
4. Breakfast

These types of food locations are likely to be the most successful in the locations discussed.

6.) Conclusion

Chicago currently has a strong market for food and restuarant businesses. This report reviewed 8 seperate locations and 686 indvidual existing businesses.

Based on the currently available data from the Foursqaure API, it is recomended that a BBQ, Taco or Breakfast food business be opened in the Lincoln Park area, in order to maximize the possiblity of success.