Coursera Applied Data Science Capstone Project

What Kind of Restaurant Should be Opened

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**Part 1: Problem Description**

There is a theoretical empty space which supports a restaurant in a New York City neighborhood. The owner has decided to open a restaurant that will be profitable and enhance the neighborhood with something that is missing.

To start the process, the owner decides to assess which restaurants are underrepresented in the neighborhood and adjacent to the neighborhood. For example, if a neighborhood has no Mexican restaurants, but has two just outside the neighborhood, there may not actually any deficiency.

**Part 2: Data**

I will need geo-location information about each borough and the neighborhoods in each borough. I chose New York because it has so many diverse neighborhoods that are defined in an existing data file.

I will need data about different restaurants in different neighborhoods of each borough. In order to gain the data I will use Foursquare. I will need precise latitude and longitude and type of restaurant.

**Part 3: Methodology**

After importing the neighborhood data for New York City I pared down the data into a pandas dataframe that just included the borough, neighborhood and location. Then using the Foursquare API I retrieved restaurant venues located in each neighborhood in New York City. The retrieved venues were placed in a pandas dataframe. While the code compiles data for all the neighborhoods in New York City, I chose to only analyze one neighborhood, but for just the cost of a slightly longer processing time, the code could be quickly adapted to a different neighborhood.

I chose to locate my fictional restaurant property in the neighborhood of Concourse in the Bronx. I found this neighborhood to be a good choice because it is where Yankees Stadium is located. This means a large diverse group of people from all over the city also come into this area approximately 80 days a year. This choice allowed me to ignore strong ethnic ties of other neighborhoods (i.e. Chinatown or Little Italy).

I created a table of the most popular restaurant venues in Concourse and compared them to the most popular venues in New York City and identified where the biggest disparities were.

**Part 4: Results and Discussion**

The results indicated many restaurant types in Concourse that were far less common than they were for the whole city of New York as seen in the figure below. What I found most powerful were where there were multiple similar restaurants that were all less popular in Concourse.

Without combining restaurant types, the table would tell you to open a Sushi restaurant since Sushi restaurants in Concourse are 38 spots lower than in New York City. A smarter analysis indicates that Japanese restaurant is also 34 spots lower, indicating a Japanese restaurant that also has a Sushi bar may be extremely successful.

A second recommendation would be to open a Dount/Bagel shop that has quality coffee. A bagel shop was 37 spots lower than the city on whole, while café and donut shop were each 6 spots lower. A wise investment would be to try to capitalize on the three deficiencies in one restaurant. Which also made me think about how this new restaurant would be identified in Foursquare and the follow-on question about how all the venues I based my research on also were identified as one category despite some of them covering multiple categories. For this project I do not plan to take this any further.

A third and final suggestion would be to open an American restaurant. American restaurants were 34 spots less popular in Concourse than New York City. Combine this with Burger joints being 32 spots less popular, there appears to be great opportunity for an American restaurant that has an extensive burger menu.



**Conclusion:**

This research and code has shown the ability to generate suggested restaurants to open in a neighborhood of New York City. The analysis could be repeated for multiple neighborhoods to help answer a different question about where a restaurateur of specific cuisine should seek a site to lease. When considering just the neighborhood of Concourse in the Bronx I would recommend one of the following three types of restaurants be opened:

1. Japanese Restaurant with a Sushi Bar
2. Donut/Bagel shop with quality coffee
3. American Restaurant with an extensive burger menu