

## Final Assignment

### Capstone Project - Restaurant equipment supplier

#### Description of the problem and a discussion of the background

A multinational Company that manufactures home appliances and mechanical/electronic products like refrigerators, microwaves, ovens and stoves wants to diversify its market with new complementary line of products in a specific market niche and in a promising location

The restaurant industry has offered a consistent growth of 2.1% for the last 20 years in North America (<https://aaronallen.com/blog/restaurant-industry-growth>).

So, the company has shown interest in start a new business specialized in supplying restaurants tools and equipment to any kind of restaurant. They chose North America to begin, and it will be a big investment, so it must be a wise decision in which city is going to be located the main warehouse-store.

That means that has to be a really promising city, with a large number of Restaurants that would be the possible clients for the new Supplying shop that the company is going to start.

Another research team select one city from each country in North America (USA and Canada) to be compared with the other. My first task would be to decide which city is the best to make the investment and start the first store there.

Chicago-based foodservice database, marketing, and analytics firm, CHD Expert has new data indicating that independent restaurant operators are making an impact in Toronto's foodservice market landscape. The new data reveals that 69.3 percent of restaurants in Toronto are independent restaurants (1 to 9 units), whereas only 63.4 percent of nationwide restaurants are considered independent. This release will focus on the Canadian restaurant landscape, specifically focusing on Toronto's independent restaurant operator growth, and popular menu types. [https://www.chd-expert.com/blog/press\\_release/the-canadian-restaurant-industry-landscape-why-is-toronto-unique/](https://www.chd-expert.com/blog/press_release/the-canadian-restaurant-industry-landscape-why-is-toronto-unique/)

So the city was the chosen one in Canada because its nature with the growing share of the market for independent restaurants could make the city really promising.

Now, for New York City a writer in forbes said:

The restaurant business in New York City is like no other business in the world. The rent structure, the volume of business, minimum wage pay scale, spotlight and notoriety, 3rd party online order, celeb chefs, and delivery platforms, as well as the ever-increasing regulation set forth by NYC, make operating a restaurant in NYC exciting, exhausting, and sometimes as nerve-wracking as bungee jumping. As a result, national organizations established to support restaurant operators in other parts of the country very often do not connect with restaurant issues in New York City. The unique rewards and challenges facing restaurateurs are often more complicated, misunderstood, or not embraced at all. As a franchise consultant in the restaurant development space, my experience has been that when it comes to addressing and assisting restaurateurs in New York, one size does not

fit all. <https://www.forbes.com/sites/garyocchiogrosso/2019/12/20/the-new-york-city-restaurant-business-is-so-much-more-than-just-the-center-of-the-plate/#3d705859639c>

This excellent perspective makes New York a perfect option to begin the business.

The stake holders of the project are the company owners and managers, they already decide that they want to go all in with the project, they are going to invest what is necessary because their idea is to begin really big, that's why they want to start in the city with the best profile and the larger number of possible clients for the business, they need an exhaustive analysis to have the best foundation for the decision, and is there where the analytics team is going to solve the business problem.

### Data

For these tasks is going to be used Foursquare to retrieve the necessary data through the API that this page offers.

We will be using geographical data from both cities; the idea is to have a table for each city that contains the restaurants in the city detailing the restaurant category and locating each restaurant in a neighborhood.

If needed, the library geocoder will be used to get the latitude and longitude of the cities and neighborhoods.

Having this data would allow to know the number of restaurants in each city and also in each neighbor and analyzing its categories can be determined in some way the diversity of clients that could be impacted. At the moment that's all the data that is going to be needed for the scope of the project.

- Toronto data will be taken from wikipedia, the list of Neighborhoods with its Postal Code ([https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M))

- Toronto locations (latitude and longitude) are going to be taken from provided csv in the following link: [https://cocl.us/Geospatial\\_data](https://cocl.us/Geospatial_data)

- New York City data will be taken from the provided link: [https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)

- New York City locations (latitude and longitude) are going to be found with geopy

### Methodology

- 1) Define the business problem and understand what the stake holders want.
- 2) Be clear with the tasks that the analytics team must accomplish.
- 3) Define what data is going to be used to respond to the tasks.
- 4) Select the data sources

- 5) Extract the data from the data sources.
- 6) Clean and prepare the data, in this case the data are tables that are going to be defined as DataFrames.
- 7) Enrich the Neighborhoods tables to get the latitude and longitude.
- 8) Map the Neighborhoods.
- 9) Get the venues within a 500m radius from the center of each neighborhood for both cities.
- 10) Extract just the restaurants from the venues by Venue Category for each city.
- 11) Compute metrics to define the best city to start the store. Metrics are number of restaurants, categories and categories per restaurant.
- 12) Conclude which is the best city.

## Results

Toronto has 1% more categories per restaurant than NY, but the difference is extremely big in number of restaurant and number of categories, that we defined as diversity.

**This is why NY is the definitive city to start the store.**

The decision is taken aligned with the stakeholders requirements based on the defined metrics.

## Discussion

Scrapping isn't the best path to extract data, even more if the data is a table that can be extract with other methods. Is a difficult way and is not the more optimal, so after learning from that is a recommendation that I give after this project. But, if there is web data that you need, even if is not the best way, web scrapping is a great resource.

Other metrics to compare cities for the restaurant industry can be used.