|  |  |
| --- | --- |
| A close up of a map  Description automatically generated  Applied Data Science Capstone - “Battle of the Neighborhoods”  Where to open a restautrant in New York City? | Abstract  This report presents a data science project to provide assistance to a decision maker to decide where to open a restaurant in New York City.  Stefan Lemm  IBM Dat Science Professional Certificate |

1. **Introduction/Business Problem**

The problem to be discussed in this report is: In what neighborhood of New York City should a restaurant be opened?

Several criteria have to be taken into account in case your’re iterested in opening a restaurant. As you will be starting a business, you need to

* prepare a business plan
* consider legal requirements, e.g. the type of business (LLC, partnership or cooperation)
* define a logo, cards, stationary
* get tax ID numbers, licenses and permits
* think of insurance
* prepare accounts
* get a business line of credit
* ready the workspace
* leace an office space and equipment.

A well-known saying regarding property is “location, location, loction”. This definitely goes for where to open a business, too. All of these above activities are dependant on the location of your business. Only when you have decided on the state, town and neighborhood of your business, you will be able to start working on the other requirements / steps towards the actual opening.

Important factors of identifying the right location (in. thuis case neighborhood) for your restaurant include

1. Who are the potential customers and how many are may be available at a given location?

Depending on the type of business you want to attract fifferent types of customers. For an high class restaurant with very high prices with reservation policy, you want to attract welthier customers, than if you want to open a Chinese low cost restaurant with walk-in customers.

1. How important is proximity?

If you're a retail store that relies on the local community, this is vital. For other business models, it might not be. If you need people to come into your store, make sure that store is easy to find. Remember: even the best retail areas have dead spots.

1. For your employees, schools, recreational activities, cultural opportunities might be very important.
2. How many competing restaurants of what types are in a specific neighborhood? Sometimes having competitors nearby is a good thing. Other times, it's not. You've done the market research, so you know which is best for your business.
3. For a business idea that isn’t completely new, it might make sense to think about the current offerings and focus on how to create something better, cheaper or faster.

**Who would be interested in this project?**

This project could provide support for a decision maker where to prioritise in investing time and ressources to find a location for a new restaurant. Even after determining a potential neighborhood, an actual object has gto be found, but restricting the area where to look for it could make a difference.

A more generic approach could find potential areas for any kinf of business.

1. **Data**

The analytical approach for the problem, “finding the best neighborhood for a new restaurant”, includes following steps:

1. Choose the country, state and town for the restaurant

Based on own interest, the project will start with New York City

1. Determine possible neighborhoods

New York City is split up into five boroughs, which are the Bronx, Brooklyn, Manhattan, Queens, and Staten Island. Each borough has the same boundaries as a county of the state. The county governments were dissolved when the city consolidated in 1898, along with all city, town, and village governments within each county. The term *borough* was adopted to describe a unique form of governmental administration for each of the five fundamental constituent parts of the newly consolidated city.

To be more detailed, a level lower should be selected for the research.

The **community boards** of the New York City government are the appointed advisory groups of the community districts of the five boroughs. There are currently 59 community districts: twelve in Manhattan, twelve in the Bronx, eighteen in Broklyn, fourteen in Queens, and three in Staten Island.

The given dataset from following web site provided central locations in neighborhoods of New York City:

<https://geo.nyu.edu/catalog/nyu_2451_34572>

1. Collect data for each neighborhood for Number of potential customers

NYC neighborhoods were defined in terms of Public Use Microdata Areas (PUMAs). PUMAs approximate NYC Community Districts (CDs)

Following web site has population data on PUMA level:

<https://www.health.ny.gov/statistics/cancer/registry/appendix/neighborhoodpop.htm>

Another source of population data on a more detailed level can be found on Wikipedia:

<https://en.wikipedia.org/wiki/Neighborhoods_in_New_York_City>

1. The number of other restaurants in a neighborhood by type

Foursquare will be used to collect the data

1. The number of other employee supporting venues, e.g. schools, recreational activities, cultural opportunities

Foursquare will be used to collect the data

1. Based on the collected data, a model will be build to then use clustering to compare the neighborhoods and identify the ranking of neighborhoods.