# Capstone Project - The Battle of Neighborhoods

## Introduction: Business Problem

New York City is known as one the most priciest real estate in the world. NYC is the most populous city in the United States. New York City has been described as the cultural, financial, and media capital of the world, significantly influencing commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports. New York City is divided into five administrative boroughs, each of which is a separate county of the State of New York. The five boroughs – Brooklyn, Queens, Manhattan, The Bronx, and Staten Island.


As of 2019, the New York metropolitan area is estimated to produce a gross metropolitan product of $2.0 trillion. If greater New York City were a sovereign state, it would have the 12th highest GDP in the world. New York is home to the highest number of billionaires of any city in the world.

## Problem Statement

In this project I will try to solve a problem for a real estate developer who would like to chose a neighborhood for a new construction.

For a new residential real estate development in Manhattan, NYC, the developer is considering two neighborhoods. One is the Upper West Side (**UWS**) and the other is the Upper East Side (**UES**).

To make an intelligent decision on where to build, the real estate developer needs to compare these
two neighborhoods in terms of their population, area size, median income, average sale price of the real estate, and quality life that would include such factors as the number of public schools, restaurants, coffee shops, proximity to parks and convenience of the public transportation.

The Upper West Side and Upper East Side, as the name indicates, are two neighborhoods in the upper part of the borough of Manhattan. The two neighborhoods are divided by Central Park. They both begin from 59th Street and stretch northward, the Upper West Side goes up to 110th street, and the Upper East Side till 96th street. In terms of the area size both neighborhoods are approximately close to each other. The difference between **UWS** and **UES** is that **UWS** is longer, 51 streets, but more narrower than **UES**, there are five avenues running through **UWS** from south to north. As for **UES**, it is shorter, 37 streets, but wider than **UWS**, there are eight avenues running through **UES**. The following some facts concerning UWS and UES:

- Area of **UWS**: **5** $km^2$ (**1.9** sq mi)
- Population on **UWS**: **214,744**
- Median income on **UWS**: **$121,032**
- Area of **UES**: **4.6** $km^2$ (**1.76** sq mi)
- Population on **UES**: **124,231**
- Median income on **UES**: **$131,492**

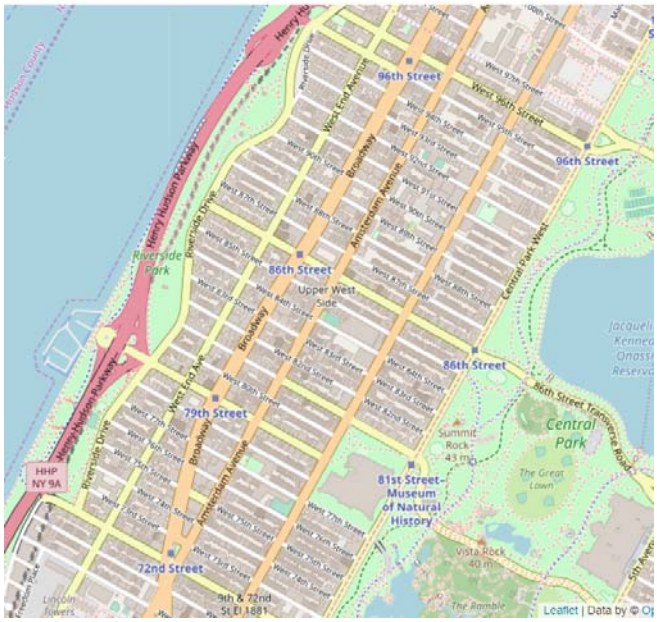
## Data and Tools

New York data and New York school data will be obtained from the sources listed below. Foursquare API will be used to collect details about local venues and locality to evaluate quality of the neighborhoods. In general, the data used for this project will be obtained from the following sources:

- https://cocl.us/new_york_dataset
- https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm
- https://data.cityofnewyork.us/Education/2017-2018-School-Locations/p6h4-mpyy
  2017_-_2018_School_Locations.csv

## Methodology

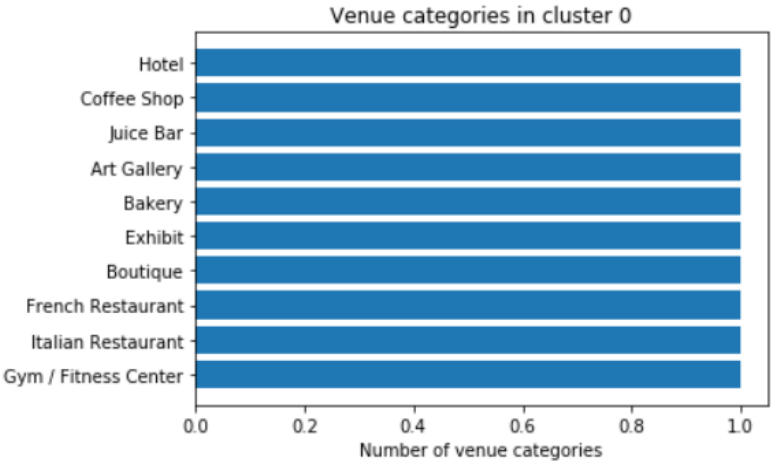
For this project New York Data will be collected from https://cocl.us/new_york_dataset ,The data will be cleaned and processed into a dataframe. The objective is to extract data related to





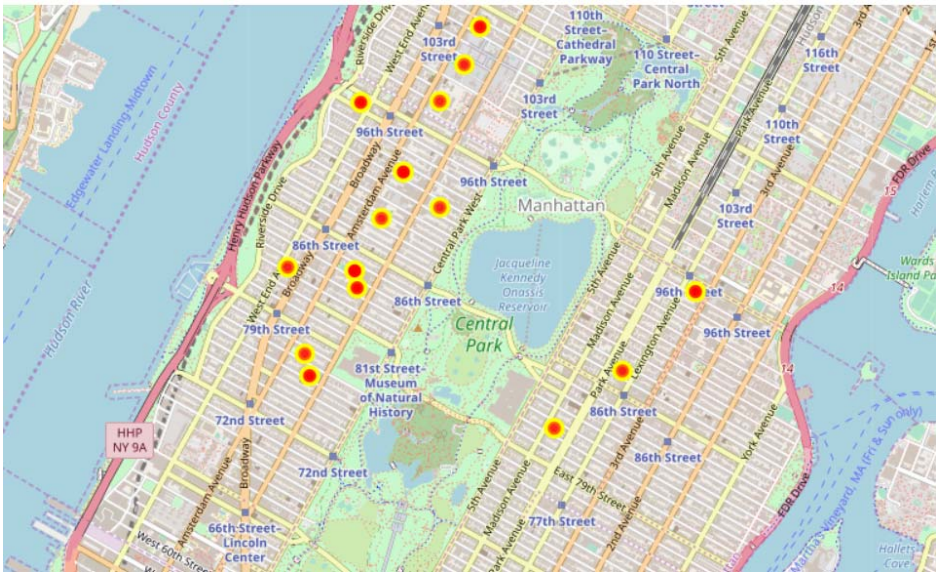
the two neighborhoods **UWS** and **UES**. Using folium.Map() to show each neighborhood.

Next, FourSquare will be used to locate all available venues for each neighborhood. Using matplotlib will be plot charts for different clusters.




The school data will be downloaded from https://data.cityofnewyork.us/Education/2017-2018-School-Locations/p6h4-mpyy in the csv forma. The data will be, processed, cleaned and filtered to present only information related to only two neighborhoods that are in this project.

Finally, the data be will be visually assessed and plotted using  folium.map.FeautureGroup().




## Work flow:

Please see the notebook for the detailed step-by-step process.

## Results and Conclusion

This project presents an unlimited opportunity for creativity, research and analysis. Unfortunately any project should be finalized at some point. In summary, two neighborhoods we were trying to compare, the Upper West Side and Upper East Side, are very close in their characteristics. And this is not a surprise, as they are located near each other.

After analyzing these two neighborhood, our advice to a real estate developer would be that either of these neighborhoods are equally desirable for a new construction, and the real estate developer should base his/her decision on the fact if he/she would be lucky enough to acquire the land on either of these neighborhoods for a competitively reasonable price.