# Explore NYC data

Data from boroughs in NYC available to work with is from IBM developer Skill Network database and looks like this:

| | Borough | Neighborhood | Latitude | Longitude |
|---|---|---|---|---|
| 0 | Bronx | Wakefield | 40.894705 | -73.847201 |
| 1 | Bronx | Co-op City | 40.874294 | -73.829939 |
| 2 | Bronx | Eastchester | 40.887556 | -73.827806 |
| 3 | Bronx | Fieldston | 40.895437 | -73.905643 |
| 4 | Bronx | Riverdale | 40.890834 | -73.912585 |

For the purposes of this Project, we selected Manhattan as location to develop a restaurant. So now, we need to analyze the data and generate valuable insights.

| | Borough | Neighborhood | Latitude | Longitude |
|---|---|---|---|---|
| 0 | Manhattan | Marble Hill | 40.876551 | -73.910660 |
| 1 | Manhattan | Chinatown | 40.715618 | -73.994279 |
| 2 | Manhattan | Washington Heights | 40.851903 | -73.936900 |
| 3 | Manhattan | Inwood | 40.867684 | -73.921210 |
| 4 | Manhattan | Hamilton Heights | 40.823604 | -73.949688 |



*Map of neighborhoods in Manhattan by Folium*

# Foursquare API

Using Foursquare API this is the available information to work with in this project.

| | Neighborhood | Neighborhood Latitude | Neighborhood Longitude | Venue | Venue Latitude | Venue Longitude | Venue Category |
|---|---|---|---|---|---|---|---|
| 0 | Marble Hill | 40.876551 | -73.91066 | Arturo's | 40.874412 | -73.910271 | Pizza Place |
| 1 | Marble Hill | 40.876551 | -73.91066 | Bikram Yoga | 40.876844 | -73.906204 | Yoga Studio |
| 2 | Marble Hill | 40.876551 | -73.91066 | Tibbett Diner | 40.880404 | -73.908937 | Diner |
| 3 | Marble Hill | 40.876551 | -73.91066 | Rite Aid | 40.875467 | -73.908906 | Pharmacy |
| 4 | Marble Hill | 40.876551 | -73.91066 | Subway | 40.874667 | -73.909586 | Sandwich Place |
| 5 | Marble Hill | 40.876551 | -73.91066 | Vitamin Shoppe | 40.877160 | -73.905632 | Supplement Shop |
| 6 | Marble Hill | 40.876551 | -73.91066 | Baskin-Robbins | 40.877132 | -73.906678 | Ice Cream Shop |
| 7 | Marble Hill | 40.876551 | -73.91066 | Starbucks | 40.877531 | -73.905582 | Coffee Shop |
| 8 | Marble Hill | 40.876551 | -73.91066 | America's Best Contacts & Eyeglasses | 40.874001 | -73.909693 | Optical Shop |
| 9 | Marble Hill | 40.876551 | -73.91066 | The Children's Place | 40.873672 | -73.908156 | Kids Store |

# Exploratory Data Analysis

Given the dataset we observed:

- **3244** business in Manhattan.
- **Coffee shops, Italian restaurants and Pizza places** represent the larger number of venues.
- **Circus, Cooking School, and many others** represent the smallest number of venues.

Then, how do we find the **best neighborhood** for opening a restaurant?

We organized the data in 4 topics in order to lead us to a good recommendation, based on the data collected and another source that provides population information.

*1 - Number and type of restaurants in Manhattan - First insight*

*2 - Clustering and analysis of restaurants - Second insight*

*3 - Population of each neighborhood - Third insight*

*4 - Complementary businesses - Fourth Insight*