

# CAPSTONE PROJECT: THE BATTLE OF NEIGHBORHOODS

IBM DATA SCIENCE PROFESSIONAL  
CERTIFICATE  
WEEK 1





# INTRODUCTION

- New York is the largest city of United States. The city itself has a population of 8.398.748 in 2018 and the metropole region even more with about 19.979.477.
- More or less every big company is also based in New York. On the other hand quite a lot of small companies are also trying to establish themselves in this area.
- Somehow NY can be understood as the bridge between Europe and the more western American area.
- Also with it's diverse culture , comes diverse food items. There are many restaurants in New York, each belonging to different categories like Chinese , Italian , French etc.



# BUSINESS PROBLEM

- If you want to start your business in a city, the location is one of the most important factors contributing to the success of the company
- Therefore several factors are relevant in order to find the best location:
  - Infrastructure
  - Demographics
  - Office spaces
  - etc.
- Use Case:
  - Setting up an office



# RESEARCH QUESTION

- Questions that can be asked using the above mentioned datasets
- Which factors are beneficial, if you want to set up an office ?
- What is best location in New York City for setting up an office?
- Which areas have a high concentration of office spaces ?
- Which areas are less characterized by a lot of office spaces ?
- Which is the best place to set up an office, if you want to work in tech ?
- Which area encloses the most successfull companies in New York ?

# APPROACH

- Collect the New York City data from NYU dataset
- Using FourSquare API in order to find all venues for each neighborhood.
- Filtering out all venues that are nearby by locality.
- Using aggregative ratings for each office space in order to find most appropriate place.
- Focusing on the initial business problem: setting up an office
- Visualizing the Ranking of neighborhoods using folium library (python)
- Based on the ranking a decision can be made where in NY you should set up an office

# DATA FOUNDATION

- Publisher: New York (City). Department of City Planning
- Collection: Bytes of the Big Apple
- Place(s): New York, New York, United States
- Subject(s): Neighborhoods, Neighborhood planning, and Communities
- Format(s): Shapefile
- Year(s): 2014
- Link: [https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)
- Additionally: Nearby places in each locality of New York City.
- Data source : Fousquare API
- Description : By using this api we will get all the venues in each neighborhood



# DATA ANALYSIS

	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

→ The Pandas dataframe includes

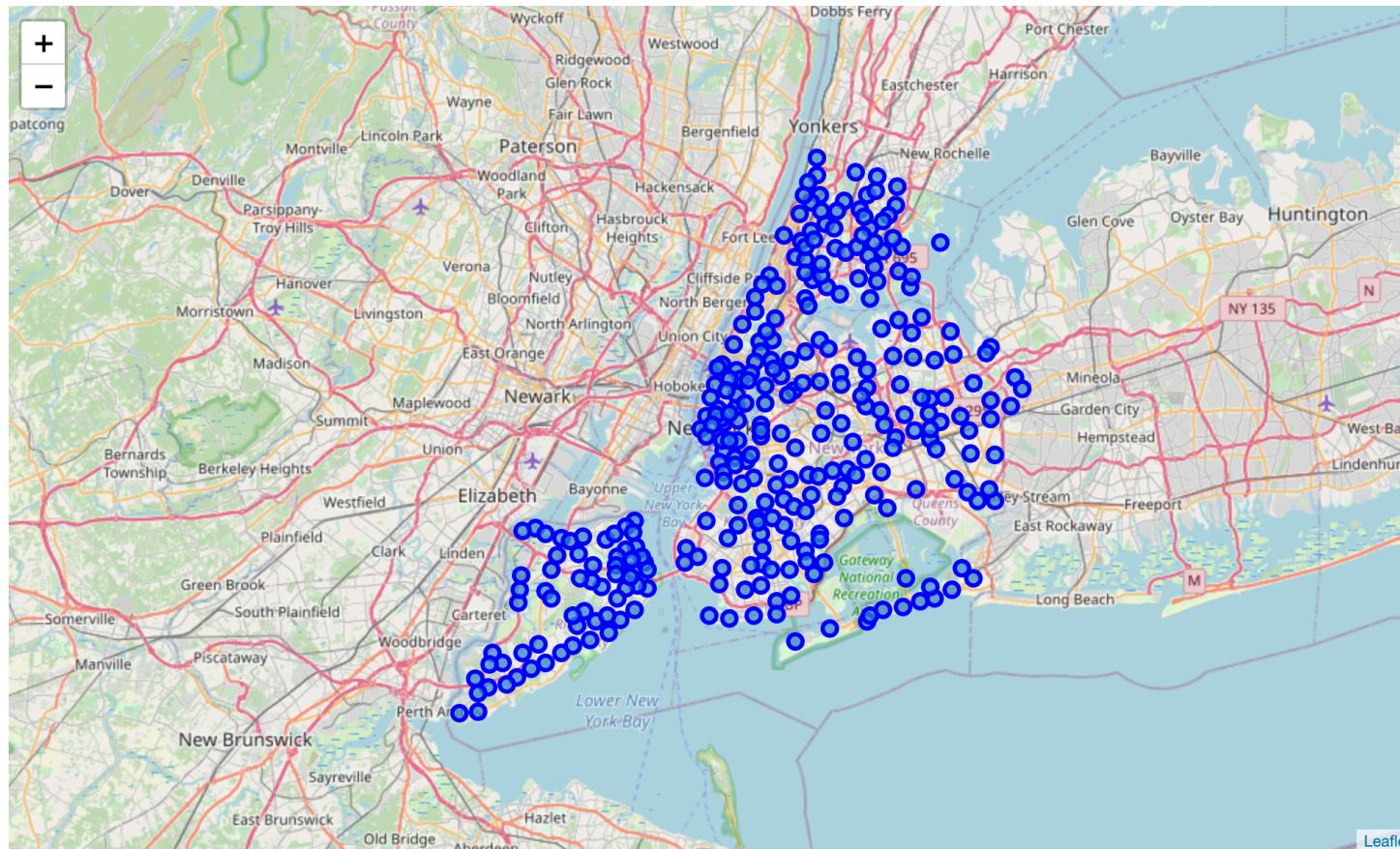
- 5 boroughs and 306 neighborhoods.

# RESULTS

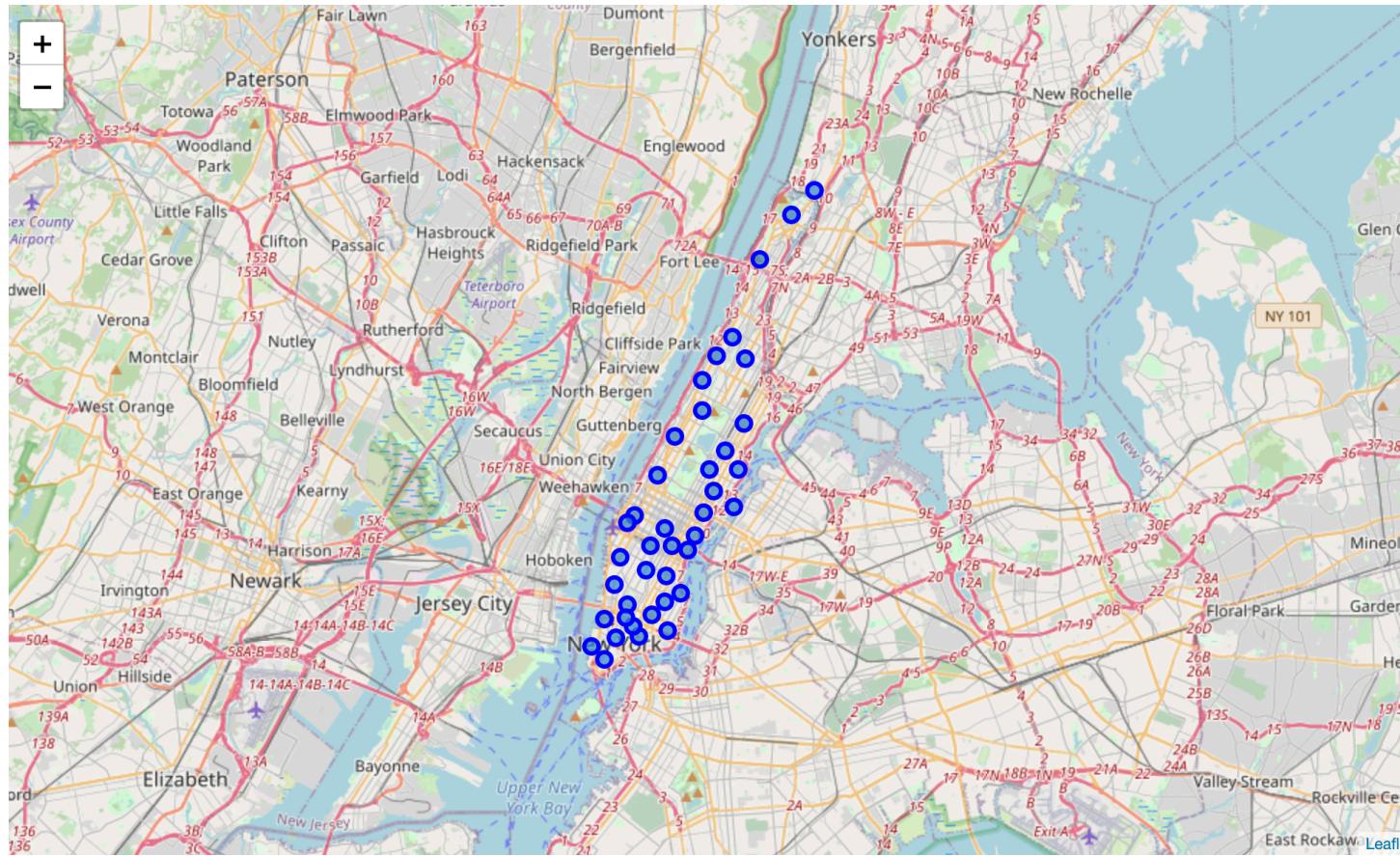
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# THE CREATED MAP OF NEW YORK WITH NEIGHBORHOODS SUPERIMPOSED ON TOP



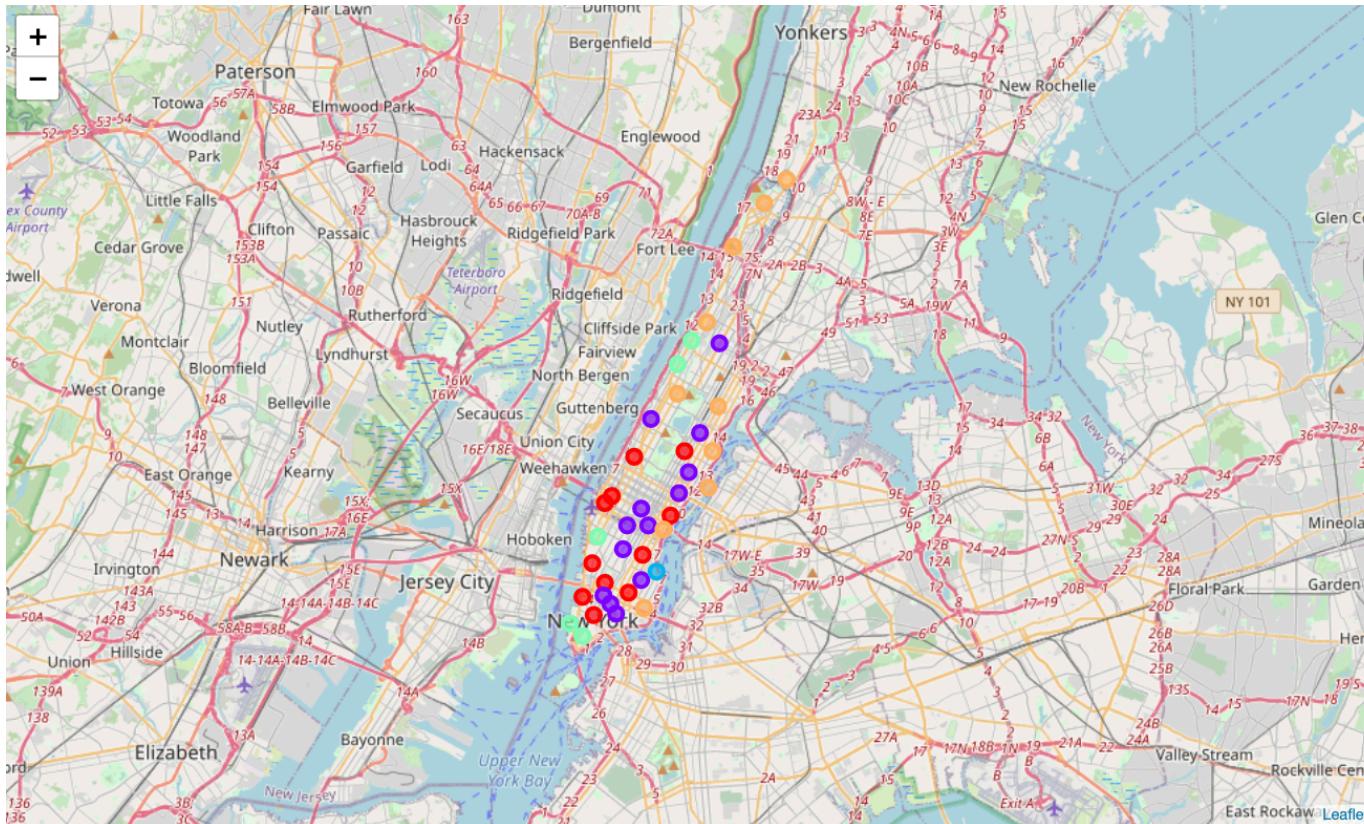
# THE CREATED MAP OF MANHATTAN WITH NEIGHBORHOODS SUPERIMPOSED ON TOP



# TOP 10 VENUES FOR EACH NEIGHBORHOOD

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Battery Park City	Park	Coffee Shop	Hotel	Gym	Wine Shop	Italian Restaurant	Clothing Store	Plaza	Memorial Site	Burger Joint
1	Carnegie Hill	Pizza Place	Coffee Shop	Café	Cosmetics Shop	Grocery Store	Bar	Spa	French Restaurant	Japanese Restaurant	Yoga Studio
2	Central Harlem	African Restaurant	Public Art	Cosmetics Shop	French Restaurant	Chinese Restaurant	Seafood Restaurant	Gym / Fitness Center	American Restaurant	Park	Southern / Soul Food Restaurant
3	Chelsea	Coffee Shop	Italian Restaurant	Ice Cream Shop	Nightclub	Bakery	American Restaurant	Hotel	Seafood Restaurant	Theater	Cupcake Shop
4	Chinatown	Chinese Restaurant	Cocktail Bar	American Restaurant	Vietnamese Restaurant	Bubble Tea Shop	Noodle House	Bar	Dumpling Restaurant	Ice Cream Shop	Hotpot Restaurant

# TOP 10 VENUES FOR EACH NEIGHBORHOOD





# DISCUSSION

- Based on the existing criteria from the data set and in order to set up a new office, it is important to have ...
  - Restaurants
  - Coffee shops
  - Parks
  - Hotels
  - Gyms
- ...around the office



# CONCLUSION

- This leads us to the following insights:
  - Battery Park, Chelsea, and Midtown are some of the best neighborhoods for setting up an office.
  - Morningseight Heights has the highest density of coffee shops.
  - Yorkville has the highest density of gyms.