

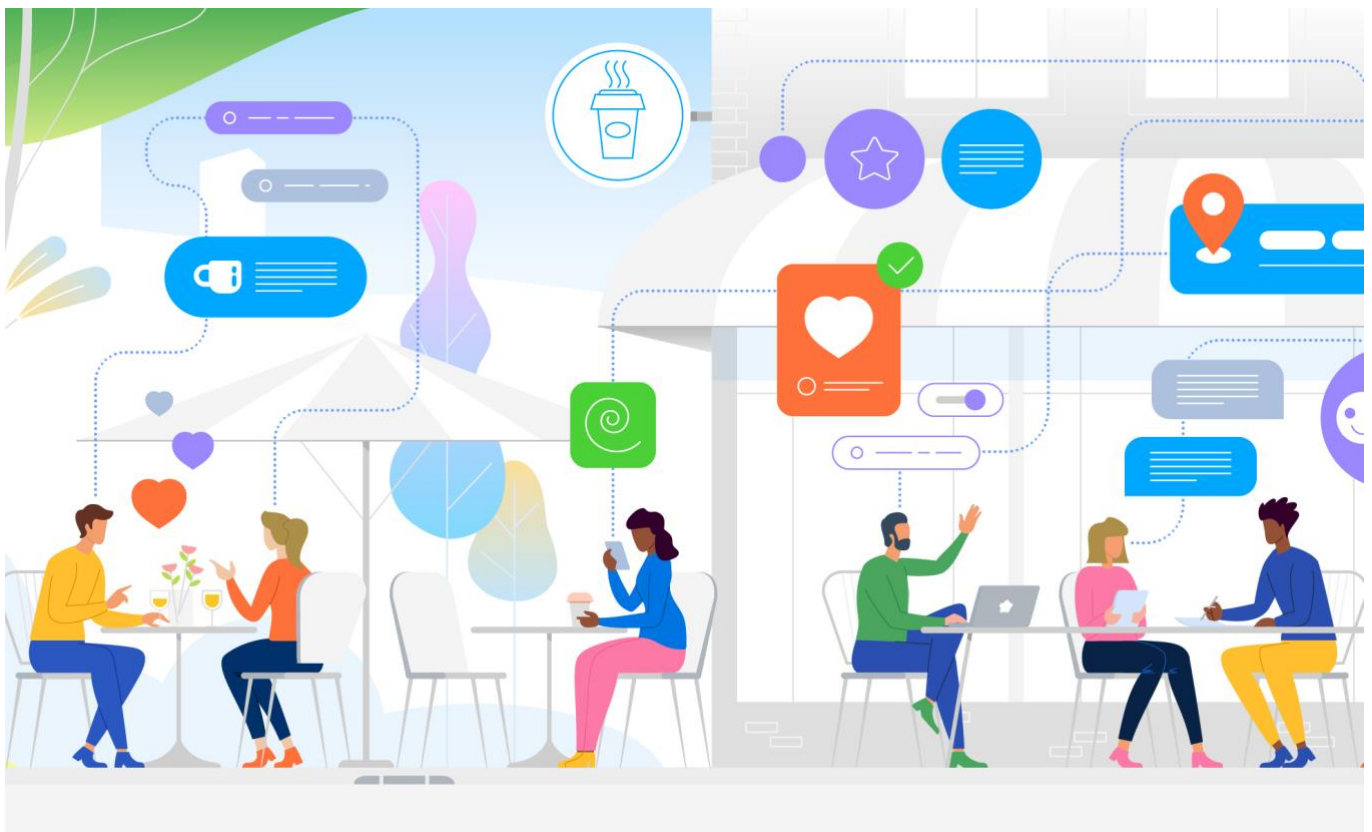
Find a well-located coffee shop to meet in a BIG city

1.Introduction

Big cities are indeed beautiful places with a lot of attractions. People living there have a quite big variety for choosing where to hold a meeting with a friend(s). However, having this variety and time spent on reaching that place is a big problem.

That is why this project intends to collect locations of 2 people and provide a data-driven recommendation for an attractive place, which will be more or less equally distanced for both of them.

Target for this report is citizens and visitors of big cities looking for a meeting point



The sample recommender provided in this notebook will use the following case scenario:

- 2 people plan to meet each other and choose a suitable place for it
- They mark each other's location, and by using the Foursquare API program will explore places between these 2 points
- After measuring distances and collecting ratings and reviews, it will return a sorted list of suitable venues for that meeting

2. Data acquisition

This demonstration will make use of the following data sources:

1. New York City dataset downloaded from https://geo.nyu.edu/catalog/nyu_2451_34572, which contains all necessary information like borough, neighbourhood, latitude and longitude:

```
{'type': 'Feature',
 'id': 'nyu_2451_34572.1',
 'geometry': {'type': 'Point',
  'coordinates': [-73.84720052054902, 40.89470517661]},
 'geometry_name': 'geom',
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  'stacked': 1,
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  'annoline2': None,
  'annoline3': None,
  'annoangle': 0.0,
  'borough': 'Bronx',
  'bbox': [-73.84720052054902,
  40.89470517661,
  -73.84720052054902,
  40.89470517661]}}
```

	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

2. Venue Recommendations from FourSquare API (www.foursquare.com)

I will be using the FourSquare API explore function to get the most common venue categories in the specified region and the following information will be retrieved:

- Venue ID and Name
- Coordinates: Latitude and Longitude
- Category Name

Venue	Venue Latitude	Venue Longitude	Venue Category
Arturo's	40.874412	-73.910271	Pizza Place
Bikram Yoga	40.876844	-73.906204	Yoga Studio
Tibbett Diner	40.880404	-73.908937	Diner
Dunkin'	40.877136	-73.906666	Donut Shop
Starbucks	40.877531	-73.905582	Coffee Shop

Other venue queries will be performed to retrieve venue ratings for each location. However, some of them are paid services and we are limited to 50 queries per day.

3. Methodology

1. Data cleaning and regrouping. The scratched data needs to be cleaned and necessary information should be extracted to the new data frame. The following tasks will be performed:

- Opening and normalizing json format.
- Extracting coffee shops with related information for all Boroughs.
- Drop/ignore cells with missing data.

	Venue	Venue category	Venue Latitude	Venue Longitude	id	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	rating
0	Romeo and Juliet Coffee	Coffee Shop	40.760726	-73.997724	526d9114498ec8efda93fcce	Hudson Yards	40.756658	-74.000111	7.5
1	Oslo Coffee Roasters	Coffee Shop	40.760512	-73.998985	5c683caaf96b2c00397a8609	Hudson Yards	40.756658	-74.000111	8.3
2	Clovelly Coffee	Coffee Shop	40.753292	-73.996745	5d6165d5716af50008cde370	Hudson Yards	40.756658	-74.000111	7.7
3	R/GA Coffee Bar	Café	40.755948	-73.993659	4b9fe9eef964a520f84937e3	Hudson Yards	40.756658	-74.000111	0.0
4	Blue Bottle Coffee	Coffee Shop	40.753846	-74.002250	5c8d246c492822003a5a5a6e	Hudson Yards	40.756658	-74.000111	7.4
5	Think Coffee	Coffee Shop	40.752244	-74.001707	55fc450a498ed76a0b227750	Hudson Yards	40.756658	-74.000111	7.8
6	Old Country Coffee	Café	40.754371	-73.998727	5758771d498ecbe6c8cc39c5	Hudson Yards	40.756658	-74.000111	7.7
7	Champion Coffee	Coffee Shop	40.754853	-73.993904	5b576a7b625a66002c930db5	Hudson Yards	40.756658	-74.000111	0.0

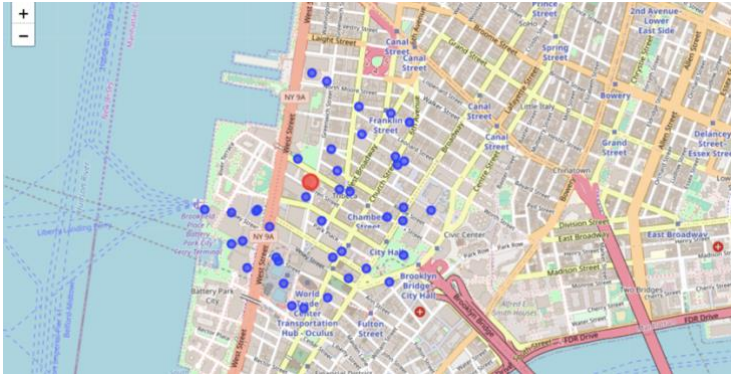
- Cluster regions with coffee shops and discuss possible segmentation

	Venue category	Venue Longitude	id	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	rating	Cluster Labels	1st Most Common Venue
0	Coffee Shop	-73.997724	526d9114498ec8efda93fcce	Hudson Yards	40.756658	-74.000111	7.5	1	Coffee Shop
1	Coffee Shop	-73.998985	5c683caaf96b2c00397a8609	Hudson Yards	40.756658	-74.000111	8.3	1	Coffee Shop
2	Coffee Shop	-73.996745	5d6165d5716af50008cde370	Hudson Yards	40.756658	-74.000111	7.7	1	Coffee Shop
3	Café	-73.993659	4b9fe9eef964a520f84937e3	Hudson Yards	40.756658	-74.000111	0.0	1	Coffee Shop
4	Coffee Shop	-74.002250	5c8d246c492822003a5a5a6e	Hudson Yards	40.756658	-74.000111	7.4	1	Coffee Shop
5	Coffee Shop	-74.001707	55fc450a498ed76a0b227750	Hudson Yards	40.756658	-74.000111	7.8	1	Coffee Shop

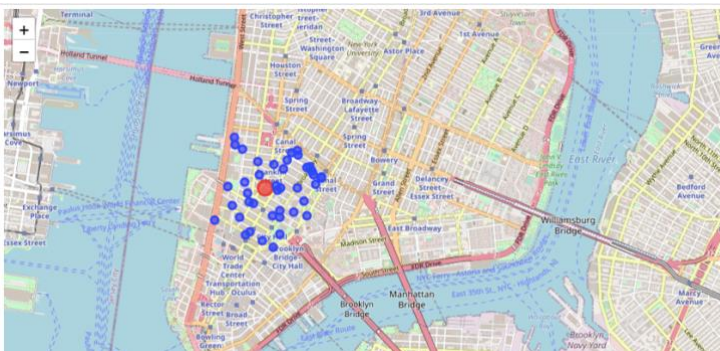
2. Testing a function for finding conveniently located coffee shops for 2 partners

- Take short distance between 2 endpoints
- Explore coffee shops near to each of them

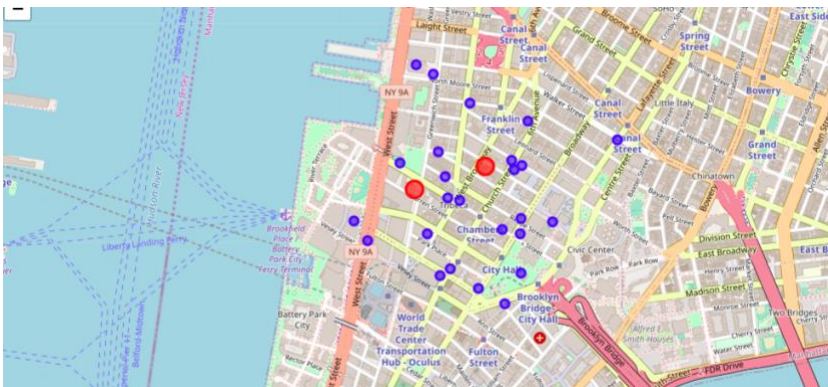
1st Person's location (red)



2nd Person's location



- Find common venues



3. Upgrade function to all distances

- Calculate distance between 2 points
- Adjust radius to any distance
- Find better located places



4. Discussion and Conclusion

The purpose of this project was to explore the coffee shops that a person living or visiting New York could explore and enjoy time with his/her friend, and that both of them will not lose too much time in the road. The venues have been identified using Foursquare API and have been plotted on the map.

The map reveals that there are **4 major areas** a person can go for a coffee. Based on the visitors' location and venue rating people will be able to choose where to meet.

Here is example of output:

Venue	Venue category	Venue Latitude	Venue Longitude	Address	id	rating
Laughing Man Coffee & Tea	Coffee Shop	40.717394	-74.010103	184 Duane St	4ea0afbf9adf1e334e4cc0e6	8.8
Jack's Stir Brew Coffee	Coffee Shop	40.716450	-74.009755	139 Reade St	597a11ccb2958f056b27c60d	7.5
Starbucks	Coffee Shop	40.715534	-74.009030	125 Chambers St	4a718a5af964a52041d91fe3	6.5
Hudson/Chambers Coffee Cart	Food Truck	40.715638	-74.009613	Chambers St	50a38463e4b0d1371722335f	0.0