Pablo de la Fuente Aguilera

The Battle of Neighborhoods

WEEK 1

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Initial Questions

Initial Prologue

Who is carrying out this study?

A friend of us who wants to start a new and successful business in the area of food and restaurants. He needs to choose a location in order to maximize the incomes of this business.

Where is he thinking about starting his project?

He considers that a good location could be a place surrounded by offices and business people. He should consider also to build the business in a country or city where the life cost and salaries are high in comparison to the average.

Our friend lives in the USA and according to this conditions, New York could be a right city due to all its economic activity.

Taking this considerations, Manhattan is famous all over the world for having a big density of offices, business men and expensive companies.

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Initial Questions

Initial Prologue

Who are the stakeholders?

The main customers would be the businessmen of Manhattan. This people is characterized for having a lot of money, not a lot of free time and to have to look usually for a place where they could continue their meetings while eating with the customers.

Which kind of restaurant?

We need to find something that matches the next prerequisites:

- It hast to be a fast food
- But must be elegant and appropriate for a business meal
- It must be a light food, where the people could eat and speak comfortably at the same time
- There´s no problem in being expensive, the company will pay normally the bill
- Another point would be to let the customers to take away the food to the office so they don´t have to stop their work

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Initial Questions

Initial Prologue

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Who´s the winner?

We consider that a Sushi restaurant could be a good opportunity to math those requirements.

They can eat it during a meeting, take away to the offices and is a food that does not carry a high risk of making the suit dirty.

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Initial Questions

Initial Prologue

Advantages

- It can be made quickly and it can be stored for some time before being sold
- It´s a light food which contains vegetables, fish and rice. The perfect match to meet your feeding requirements in the meal and the dinner
- It doesn´t need to be heated in the microwave and can be eaten while working with almost no risk of having an accident with your papers
- It´s easy to package and transport
- It´s a fashion food and it´s not cheap, so there´s a considerable margin of benefits

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Presentation of the Problem

Initial Presentation

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To sum up the Problem

We can suppose that we are thinking about opening a exotic restaurant in Manhattan, more specifically a Japanese or Asiatic one. This could be a good business opportunity but we need to carry out a market research in order to establish a long-term success.

To start with, we will analyse the existing restaurants of this category in Manhattan. And we will sort them by neighborhood, in order to identify the best possible location.

At the end, we will identify, based on a clustering, the best possible location in Manhattan.

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Presentation of the Problem

Analysis of the New York Perspective and concentrate the focus on Manhattan

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We take data from all Boroughs

We create a Dataframe with the downloaded data

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```
neighborhoods_data = newyork_data['features']
# We define the columns of the dataframe
column_names = ['Borough', 'Neighborhood', 'Latitude', 'Longitude']

# We start and initialize the dataframe
neighborhoods = pd.DataFrame(columns=column_names)

for data in neighborhoods_data:
    borough = neighborhood_name = data['properties']['borough']
    neighborhood_name = data['properties']['name']

    neighborhood_latlon = data['geometry']['coordinates']
    neighborhood_lat = neighborhood_latlon[1]
    neighborhood_lon = neighborhood_latlon[0]

    neighborhoods = neighborhoods.append({'Borough': borough, 'Neighborhood': neighborhood_name,
                                          'Latitude': neighborhood_lat, 'Longitude': neighborhood_lon}, ignore_index=True)
# We show the Dataframe
neighborhoods.head()
```

	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

And then concentrate on Manhattan

We analyze of the neighborhoods in Manhattan

[46]

```
manhattan_data = neighborhoods[neighborhoods['Borough'] == 'Manhattan'].reset_index(drop=True)
manhattan_data.head()
```

	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

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Presentation of the Problem

Analysis of the Venues in Manhattan

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Week 1

We take data from Foursquare about all the Venues in Manhattan, filtering by Category

We take the venues in Manhattan of Japanese and Sushi Restaurants

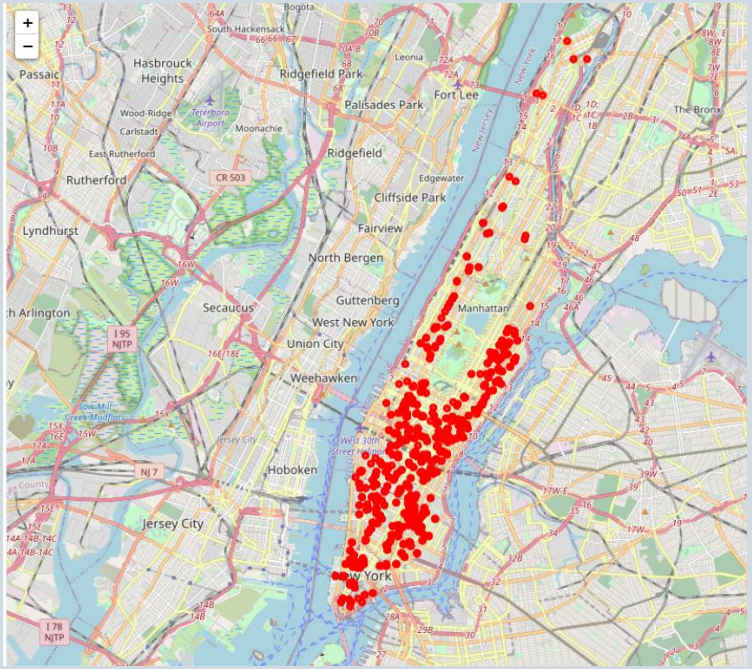
[50]
```
neighborhoods = neighborhoods[neighborhoods['Borough'] == 'Manhattan'].reset_index(drop=True)
newyork_venues_sushi = getNearbyVenues(names=neighborhoods['Neighborhood'], latitudes=neighborhoods['Latitude'], longitudes=neighborhoods['Longitude'], radius=1000,
categoryIds='4bf58dd8d48988d1d2941735')
newyork_venues_sushi.head()
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.910660	Planet Tokyo	40.886233	-73.909479	Sushi Restaurant
1	Chinatown	40.715618	-73.994279	Nakaji	40.715912	-73.996597	Sushi Restaurant
2	Chinatown	40.715618	-73.994279	Shinsen	40.715608	-73.996611	Japanese Restaurant
3	Chinatown	40.715618	-73.994279	Sushumai Asian Fusion	40.721155	-73.987337	Sushi Restaurant
4	Chinatown	40.715618	-73.994279	Bondi Bar	40.721247	-73.996264	Sushi Restaurant

[51]
```
print("To answer the question How many Sushi Restaurants are there in Manhattan?")
newyork_venues_sushi.shape
```

```
To answer the question How many Sushi Restaurants are there in Manhattan?
(1100, 7)
```

And show them in a map



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Presentation of the Problem

Analysis of the Venues in Manhattan

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We analyze the different neighborhoods in Manhattan by frequencies, according to the venues

	Neighborhood	Asian Restaurant	Bakery	Chinese Restaurant	Cocktail Bar	Deli / Bodega	Fish Market	Grocery Store	Hawaiian Restaurant	Indian Chinese Restaurant	Japanese Restaurant	Noodle House	R Restau
0	Battery Park City	0.000000	0.000000	0.000000	0.000000	0.000	0.000000	0.000000	0.000000	0.000000	0.090909	0.045455	0.00
1	Carnegie Hill	0.041667	0.000000	0.000000	0.000000	0.000	0.000000	0.000000	0.000000	0.041667	0.125000	0.000000	0.00
2	Central Harlem	0.000000	0.000000	0.000000	0.000000	0.000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.00
3	Chelsea	0.045455	0.000000	0.000000	0.000000	0.000	0.022727	0.000000	0.000000	0.000000	0.113636	0.000000	0.00
4	Chinatown	0.000000	0.000000	0.000000	0.000000	0.000	0.000000	0.000000	0.000000	0.000000	0.125000	0.000000	0.00
5	Civic Center	0.000000	0.000000	0.000000	0.000000	0.000	0.000000	0.000000	0.000000	0.000000	0.062500	0.031250	0.00

And the most common venues

	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 Comm Ven
0	Battery Park City	Sushi Restaurant	Japanese Restaurant	Noodle House	Theme Restaurant	Indian Chinese Restaurant	Bakery	Chine Restaura
1	Carnegie Hill	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Indian Chinese Restaurant	Asian Restaurant	Seafood Restaurant	Sandwich Pla
2	Central Harlem	Sushi Restaurant	Vegetarian / Vegan Restaurant	Japanese Restaurant	Bakery	Chinese Restaurant	Cocktail Bar	Deli / Bode
3	Chelsea	Sushi Restaurant	Japanese Restaurant	Asian Restaurant	Fish Market	Vegetarian / Vegan Restaurant	Seafood Restaurant	Sandwich Pla
4	Chinatown	Sushi Restaurant	Japanese Restaurant	Vegetarian / Vegan Restaurant	Bakery	Chinese Restaurant	Cocktail Bar	Deli / Bode

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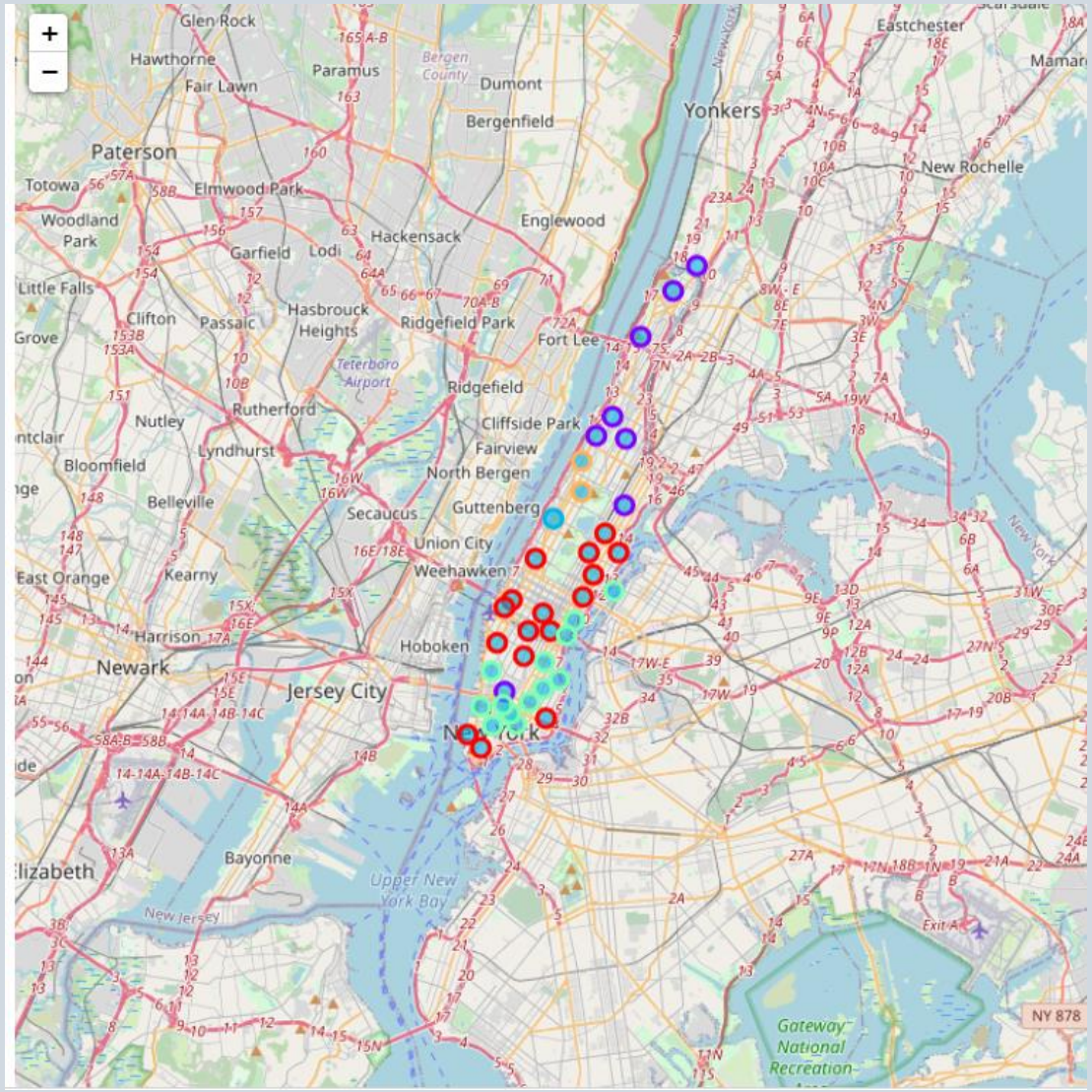
Presentation of the Problem

Clustering the Venues

We cluster them into 5 groups and present it in a map with different colours



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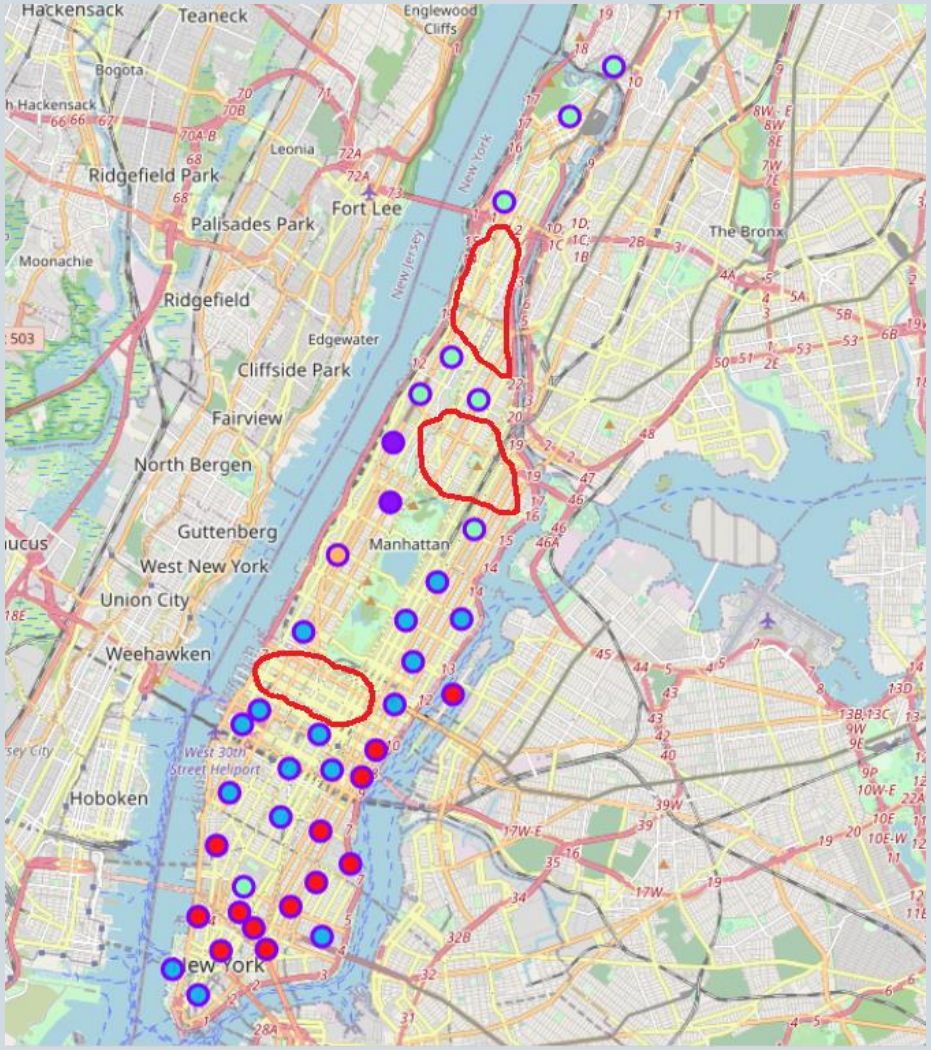
Presentation of the Problem

Finding the best location

We find the best zones to open our restaurant and highlight them in red



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