



Open Vietnamese Restaurant In Amsterdam

Assignment Project Week 2



Background

Nowadays, there is a trend about Vietnamese food in some big cities in Europe. Vietnamese food has many interesting aspects: various cooking methods, various ingredients and good health. I think that 's why many European people love Vietnamese food. Besides that, many Vietnamese people live and develop their career in Europe so they want to find real Vietnamese food. It 's both a chance and a challenge. One of the European cities which many Vietnamese people live is Amsterdam - a beautiful city of Netherlands. We plan to open a Vietnamese restaurant in Amsterdam.



Problem

As I said, there is a large proportion of Vietnamese population in Amsterdam. It means there are many Vietnamese restaurants. To challenge them, there are 2 key points: choosing location and delivering good quality. Many high rating restaurants are located in the same area of Amsterdam. I want to find a location which is suitable for opening Vietnamese restaurant but it 's better if there are less good restaurants in that location.



Data

- Boroughs in Amsterdam: https://en.wikipedia.org/wiki/Boroughs_of_Amsterdam
- Latitude and Longitude values are obtained by using "geocoder"
- All restaurants data related to locations are obtained by using Foursquare API:
 - Find areas which have many Asian restaurants that were rated from 1 - 3 stars



Methodology

- Master data which includes “Neighbourhoods”, “Latitude” and “Longitude” information of Amsterdam.
- Python Folium library was used to visualize map of Amsterdam and its neighbourhoods. In order to get Latitude and Longitudes of Amsterdam, geopy and geocoder are used. The map below was obtained.
- In order to explore places Foursquare API was used. Limit was set to 100 and Radius was set to 500.
- Using Foursquare API to explore venues in category “Asian Restaturant” then sort top 50 neighbourhoods which has most Asian Restaurants



Step 1

Use Beautiful Soup to get all of neighbourhoods in Amsterdam from Wiki:
https://en.wikipedia.org/wiki/Boroughs_of_Amsterdam

	Borough	Neighbourhoods
0	Centrum (Centre)	Binnenstad
1	Centrum (Centre)	Grachtengordel
2	Centrum (Centre)	Haarlemmerbuurt
3	Centrum (Centre)	Jodenbuurt
4	Centrum (Centre)	Jordaan
...
64	Zuid (South)	Zuidas
65	Zuidoost(Southeast)	Bijlmermeer
66	Zuidoost(Southeast)	Venserpolder
67	Zuidoost(Southeast)	Gaasperdam
68	Zuidoost(Southeast)	Driemond



Step 2

Use Geocoder to get Lat, Long per each Neighbourhood

	Borough	Neighbourhoods	Latitude	Longitude
0	Centrum (Centre)	Binnenstad	52.372160	4.904370
1	Centrum (Centre)	Grachtengordel	52.369930	4.907880
2	Centrum (Centre)	Haarlemmerbuurt	52.385031	4.852415
3	Centrum (Centre)	Jodenbuurt	52.363000	4.884360
4	Centrum (Centre)	Jordaan	52.369520	4.880910
...
64	Zuid (South)	Zuidas	52.336690	4.875920
65	Zuidoost(Southeast)	Bijlmermeer	52.307341	4.969019
66	Zuidoost(Southeast)	Venserpolder	52.326730	4.945590
67	Zuidoost(Southeast)	Gaasperdam	52.296770	4.978260
68	Zuidoost(Southeast)	Driemond	52.305720	5.016550

Step 3

Use Foursquare API
to get Venues in
category “Asian
Restaurant” in each
Neighbourhoods

```
In [13]: LIMIT = 100
radius = 500
CLIENT_ID = "LSI4RRKORY0L2TML0HSP0HUX0J02TYR1EU35LSC0NAVGEH"
CLIENT_SECRET = "4323HSGCVOP13DKTE443XT5GBLGZUHAUMGSXJTNLHTSC3V3G"
VERSION = "20210725"
for y in range(0, df_a.shape[0]):
    neighborhood_latitude = df_a.loc[y, "Latitude"]
    neighborhood_longitude = df_a.loc[y, "Longitude"]
    url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}&query=asian&categoryId=4bf58dd8d48988d142941735'.format(
        CLIENT_ID,
        CLIENT_SECRET,
        VERSION,
        neighborhood_latitude,
        neighborhood_longitude,
        radius,
        LIMIT)
    results = requests.get(url).json()
    nearby_venues = json_normalize(results['response']['groups'][0]['items'])
    df_a3 = df_a3.append(pd.Series([nearby_venues.shape[0]], index=["No Venues"]), ignore_index = True)
df_a3
```

Out[13]:

No Venues	
0	43
1	7
2	7
3	24
4	17
...	...
64	10
65	0
66	0
67	2
68	0

Step 4

Sort by No of Venues then get top 50

	Borough	Neighbourhoods	Latitude	Longitude	No Venues
0	Centrum (Centre)	Binnenstad	52.372160	4.904370	43
57	Zuid (South)	De Pijp	52.356250	4.890570	41
13	Centrum (Centre)	Weteringschans	52.361751	4.885341	27
62	Zuid (South)	Vondelpark	52.361800	4.881720	27
3	Centrum (Centre)	Jodenbuurt	52.363000	4.884360	24
11	Centrum (Centre)	Uilenburg	52.369363	4.902743	18
4	Centrum (Centre)	Jordaan	52.369520	4.880910	17
55	Zuid (South)	Hoofddorppleinbuurt	52.351597	4.850200	17
60	Zuid (South)	Schinkelbuurt	52.351657	4.852859	16
39	West	Frederik Hendrikbuurt	52.378645	4.877720	14
45	West	Kinkerbuurt	52.364695	4.859795	11
64	Zuid (South)	Zuidas	52.336690	4.875920	10
54	Zuid (South)	Buitenveldert	52.334285	4.868680	9
47	West	De Baarsjes	52.368390	4.856780	9
46	West	Overtoombuurt	52.359110	4.861340	9
37	Oost (East)	Oud-Oost	52.360130	4.925320	7
61	Zuid (South)	Stadionbuurt	52.349524	4.884692	7
17	Noord (North)	Floradorp	52.369930	4.907880	7
1	Centrum (Centre)	Grachtengordel	52.369930	4.907880	7
15	Noord (North)	Buiksloot	52.369930	4.907880	7
7	Centrum (Centre)	Oosterdokseiland	52.369930	4.907880	7
6	Centrum (Centre)	Lastage	52.369200	4.905620	7
5	Centrum (Centre)	Kadijken	52.369930	4.907880	7
2	Centrum (Centre)	Haarlemmerbuurt	52.385031	4.852415	7
48	West	Bos en Lommer	52.379190	4.851740	6
56	Zuid (South)	Museumkwartier	52.362240	4.923940	6
10	Centrum (Centre)	Raanenburg	52.371107	4.908953	5

Step 5

Sort by No of Venues then get top 50

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Step 6

There are common venues in neighbourhoods, so unsupervised K-means algorithm was used to cluster districts. K-Means cluster was set to 5 clusters, to reach optimum accuracy.

- Cluster 0: < 6 venues
- Cluster 1: > 41 venues
- Cluster 2: 14 - 18 venues
- Cluster 3: 6 - 11 venues
- Cluster 4: 24 - 27 venues



Results

We decide to choose Neighbourhoods in Cluster 3:

- There are about >5 venues so customers are quite familiar to Asian foods
- There are the second in total neighbourhoods of each Cluster

