Capstone Project - The Battle of Neighborhoods

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Background

Amsterdam is the capital city of the Netherlands. Amsterdam is colloquially referred to as the "Venice of the North", attributed by the large number of canals which form a UNESCO World Heritage Site.
Amsterdam is one of the most popular tourist destinations in Europe, receiving about 5 million international visitors annually. The number of visitors has been growing steadily over the past decade.

Interest:

Visitors/Tourists to the city will be interested in locating the venues which caters to Arts and entertainments, Food, nightlife, shops and services and events happening in the city during their stay.

Data acquisition:

The city of Amsterdam has eight boroughs:
- Centrum (Centre)
- Noord (North)
- West
- Nieuw-West (New West)
- Zuid (South)
- Oost (East)
- Zuidoost (Southeast)
- Westpoort (West Gateway)

Using Nominatim() function from the geopy.geocoders python library client, use the address of each Borough to get corresponding Latitudes and Longitudes and build a pandas DataFrame which have the Borough Name , Latitude and Longitude as columns headers. A python function called *createDataframefromAddress(addresslist)* was developed to build the DataFrame.

	Borough	Latitude	Longitude
0	Centrum	52.373730	4.895691
1	Noord	52.372760	4.893604
2	West	52.372760	4.893604
3	Nieuw-West	52.363777	4.813812
4	Zuid	52.344470	4.878664
5	Oost	52.356608	4.930577
6	Zuidoost	52.310514	4.960695
7	Westpoort	52.411468	4.800573

Methodology:

Using the foursquare api's, explore endpoint, data for venues which corresponds to the categories (arts and entertainment, Event, food, nightlife, shops and service) were obtained. The category id's needed to be passed as a parameter in the foursquare api call were obtained from the foursquare documentation here.
Then group the retrieved venues by each Borough and count how many venues before filter top 10 most common venue types of each Boroughs.

Results

- Noord (North) and West Boroughs have most number of desired venues (82) within walking distance (500 meters)
- Centrum (Centre) Borough has the second most (78)
- Westpoort (West Gateway) Borough has the least number of desired venues (1, which is a Heliport)
- Cafes, Hotels and Bars are very common in the boroughs Noord, West and Centrum
- If you want to camp near Marina, then Nieuw-West is desirable (there are hardly any hotels)

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18]: amsterdam_venues.groupby('Borough').count()
```

18]:

Borough	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Centrum	78	78	78	78	78	78
Nieuw-West	5	5	5	5	5	5
Noord	82	82	82	82	82	82
Oost	44	44	44	44	44	44
West	82	82	82	82	82	82
Westpoort	1	1	1	1	1	1
Zuid	23	23	23	23	23	23
Zuidoost	9	9	9	9	9	9

----Noord----

	venue	freq
0	Hotel	0.07
1	Bar	0.06
2	Coffee Shop	0.06
3	Clothing Store	0.04
4	Cocktail Bar	0.04
5	Argentinian Restaurant	0.02
6	Museum	0.02
7	Plaza	0.02
8	Café	0.02
9	Restaurant	0.02

----West----

	venue	freq
0	Hotel	0.07
1	Bar	0.06
2	Coffee Shop	0.06
3	Clothing Store	0.04
4	Cocktail Bar	0.04
5	Argentinian Restaurant	0.02
6	Museum	0.02
7	Plaza	0.02
8	Café	0.02
9	Restaurant	0.02

----Centrum----

	venue	freq
0	Café	0.08
1	Hotel	0.06
2	Bar	0.06
3	Coffee Shop	0.05
4	Deli / Bodega	0.04
5	French Restaurant	0.04
6	Cocktail Bar	0.04
7	Clothing Store	0.04
8	Argentinian Restaurant	0.04
9	Church	0.03

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----Nieuw-West----
              venue  freq
0  Harbor / Marina   0.2
1             Lake   0.2
2     Beer Garden    0.2
3      Campground    0.2
4        Bus Stop    0.2
5          Arcade    0.0
6    Music School    0.0
7           Plaza    0.0
8            Park    0.0
9          Palace    0.0
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Discussion

We could extend the analysis by getting data for hotels in the top three boroughs and their ratings to recommend suitable hotels to stay.

Conclusion

For tourists, the boroughs Noord, West and Centrum are desirable locations to look for hotels/accommodation to stay as most of the desirable venues are within walking distance.