



# PEER-GRADED ASSIGNMENT: CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS

Frankfurt visitors venue  
recommendation

# Problem description

! Find neighborhood with cheaper hotels as in the main city centre, but still in nearness of our firm Headquarter and good opportunities to go out



## Segmenting and Clustering Neighborhoods in Frankfurt am Main:

- Frankfurt am Main is segmented into 12 boroughs
- Take one borough (we take Innenstadt II) near the firm headquarter and explore neighborhoods there
- Examine the venues of neighborhoods which come into consideration for the our problem purpose

# FIND VENUES FOR INNENSTADT II VIA FOURSQUARE

Foursquare found 100  
venues in different  
categories in borough  
Innenstadt II

	name	categories	lat	lng
0	M-Steakhouse	Steakhouse	50.114782	8.662611
1	Westendplatz	Plaza	50.112916	8.661763
2	Das Nudel Ding	Chinese Restaurant	50.115797	8.663362
3	La Scuderia	Italian Restaurant	50.115464	8.662881
4	Ramen Jun	Ramen Restaurant	50.113201	8.655861
5	Saverio's Florian	Italian Restaurant	50.115767	8.664076
6	l'unico	Italian Restaurant	50.118159	8.659280
7	Moriki	Japanese Restaurant	50.113863	8.669530
8	The Ivory Club	Indian Restaurant	50.114309	8.669109
9	Prime Time Fitness	Gym	50.117589	8.666662

Quantity of venues were returned by Foursquare

```
print('{} venues were returned by Foursquare.'.format(nearby_venues.shape[0]))
```

```
100 venues were returned by Foursquare.
```

----Bockenheim----

	venue	freq
0	Café	0.12
1	Asian Restaurant	0.08
2	Ice Cream Shop	0.08
3	Greek Restaurant	0.04
4	Turkish Restaurant	0.04

----Westend-Nord----

	venue	freq
0	Hotel	0.27
1	Park	0.05
2	Japanese Restaurant	0.05
3	Steakhouse	0.05
4	Café	0.05

----Westend-Süd----

	venue	freq
0	Italian Restaurant	0.19
1	Hotel	0.12
2	Steakhouse	0.11
3	Japanese Restaurant	0.04
4	Café	0.04

GROUP NEIGHBORHOODS  
BY TAKING THE MEAN OF  
THE FREQUENCY OF  
OCCURRENCE OF EACH  
CATEGORY

	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	Bockenheim	Café	Asian Restaurant	Ice Cream Shop	Platform	Bar	Bus Stop	Cocktail Bar	Convenience Store	Department Store	Greek Restaurant
1	Westend-Nord	Hotel	Park	Japanese Restaurant	Café	Steakhouse	Coffee Shop	Mexican Restaurant	Italian Restaurant	Gym	Ice Cream Shop
2	Westend-Süd	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store

DISPLAY THE TOP 10 VENUES FOR EACH  
NEIGHBORHOOD

[81]:

	Borough	Neighbourhood	Latitude	Longitude	Cluster Labels	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	Innenstadt II	Westend-Süd	50.115245	8.662270	1	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
1	Innenstadt II	Westend-Süd	50.111432	8.647591	1	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
2	Innenstadt II	Westend-Nord	50.111432	8.647591	2	Hotel	Park	Japanese Restaurant	Café	Steakhouse	Coffee Shop	Mexican Restaurant	Italian Restaurant	Gym	Ice Cream Shop
3	Innenstadt II	Westend-Süd	50.115245	8.662270	1	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
4	Innenstadt II	Bockenheim	50.122361	8.637532	0	Café	Asian Restaurant	Ice Cream Shop	Platform	Bar	Bus Stop	Cocktail Bar	Convenience Store	Department Store	Greek Restaurant

# CLUSTER NEIGHBORHOODS VIA K-MEANS

# Results

## Cluster 1:

Cluster 1 shows that in neighbourhood Bockenheim most common venues are Caffes, Restaurants and Bars. There are also some stores.

## Cluster 2:

Here we can see that in all Westend-Süd neighbourhood different kitchens restaurants are most common venues. But Hotel is also common venue. There is also supermarket and gym.

## Cluster 3:

Here we see that Westend-Nord is like Westend-Süd, but here is also park listed as 2<sup>nd</sup> common venue, but not a supermarket.

Cluster 1											
Frankfurt_merged.loc[Frankfurt_merged['Cluster Labels'] == 0, Frankfurt_merged.columns[[1] + list(range(5, Frankfurt_merged.shape[1]))]]											
	Neighbourhood	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
4	Bockenheim	Café	Asian Restaurant	Ice Cream Shop	Platform	Bar	Bus Stop	Cocktail Bar	Convenience Store	Department Store	Greek Restaurant
Cluster 2											
Frankfurt_merged.loc[Frankfurt_merged['Cluster Labels'] == 1, Frankfurt_merged.columns[[1] + list(range(5, Frankfurt_merged.shape[1]))]]											
	Neighbourhood	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	Westend-Süd	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
1	Westend-Süd	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
3	Westend-Süd	Italian Restaurant	Hotel	Steakhouse	Japanese Restaurant	Café	Bakery	Supermarket	Gym	French Restaurant	Convenience Store
Cluster 3											
Frankfurt_merged.loc[Frankfurt_merged['Cluster Labels'] == 2, Frankfurt_merged.columns[[1] + list(range(5, Frankfurt_merged.shape[1]))]]											
	Neighbourhood	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
2	Westend-Nord	Hotel	Park	Japanese Restaurant	Café	Steakhouse	Coffee Shop	Mexican Restaurant	Italian Restaurant	Gym	Ice Cream Shop



# Conclusion

- Bockenheim is probably the best neighbourhood to go out, but there are not so many good Hotels and it's also furthest located from our firm headquarter.
- I would recommend our colleagues to stay in hotels in Westend-Süd or Westend-Nord neighbourhood, because there is a wide range of hotels to choose and these both neighbourhoods are closer to our firm headquarter.
- There are also possibilities to choose between different kitchens: like Japanese or Italian restaurant.
- We can also find there other activities expect of eating, like Parks and Gym.
- In my opinion Westend-Süd and Westend-Nord offer better opportunities to go out.