Opening a New Hotel in Taipei City

Angela L

Why is this project valuable?

- This project will help develops decide where to open a hotel in Taipei, Taiwan based on the present competition in the different districts in the city.
- The understanding of the hotel industry can also infer other related industries such as tourism, food chains, and department stores
- Taipei, as the capital city, relies heavily on tourism and prominent substitutes of hotels such as hostels and AirBnB are not as popular here. The hotel business is, therefore, a great business opportunity in Taipei if done correctly.

Data gathering

1) Raw wikipedia data on districts and their coordinates

https://en.wikipedia.org/wiki/Category:Districts_of_Taipei

2) Foursquare data on venues in the city

url="https://api.foursquare.com/v2/venues/explore?client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}".format

3) Geographic coordinates for precise locations

Method Step 1-3) Dataframes with District and Frequency of Venues

	Neighborhoods	American Restaurant	Arcade	Arepa Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	BBQ Joint	...
0	Beitou District	0.000000	0.00	0.014925	0.00	0.00	0.00	0.029851	0.014925	0.000000	...
1	Daan District, Taipei City	0.000000	0.00	0.000000	0.00	0.01	0.01	0.000000	0.000000	0.000000	...
2	Datong District, Taipei	0.000000	0.00	0.000000	0.00	0.01	0.01	0.040000	0.000000	0.000000	...
3	Eastern District of Taipei	0.000000	0.00	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	...
4	Guting District	0.000000	0.00	0.000000	0.00	0.01	0.01	0.000000	0.000000	0.000000	...
5	Jingmei District	0.011494	0.00	0.000000	0.00	0.00	0.00	0.045977	0.000000	0.000000	...
6	Muzha District	0.000000	0.00	0.000000	0.00	0.00	0.00	0.017241	0.000000	0.000000	...
7	Nangang District, Taipei	0.000000	0.00	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.012195	...
8	Neihu District	0.020000	0.00	0.000000	0.00	0.00	0.00	0.030000	0.010000	0.010000	...
9	Shilin District	0.010000	0.00	0.000000	0.00	0.00	0.00	0.010000	0.000000	0.010000	...
10	Songshan District, Taipei	0.020000	0.00	0.000000	0.00	0.00	0.00	0.020000	0.000000	0.030000	...
11	Wanhua District	0.010000	0.01	0.000000	0.00	0.00	0.00	0.010000	0.000000	0.000000	...
12	Wenshan District	0.000000	0.00	0.000000	0.00	0.00	0.00	0.012987	0.000000	0.000000	...
13	Xinyi District, Taipei	0.020000	0.00	0.000000	0.00	0.00	0.00	0.010000	0.000000	0.010000	...
14	Zhongshan District, Taipei	0.000000	0.00	0.000000	0.01	0.01	0.02	0.040000	0.000000	0.000000	...
15	Zhongzheng District	0.000000	0.00	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	...

Method 4) Clustering based on mean of Hotel frequency by Districts

	Neighborhood	Hotel	Cluster Labels	Latitude	Longitude
3	Eastern District of Taipei	0.000000	0	25.26553	121.52270
5	Jingmei District	0.000000	0	24.99311	121.54135
6	Muzha District	0.000000	0	24.98879	121.56373
8	Neihu District	0.020000	0	25.06909	121.58847
12	Wenshan District	0.000000	0	24.98974	121.56963
15	Zhongzheng District	0.010000	0	25.03247	121.51856
0	Beitou District	0.149254	1	25.13289	121.50253
2	Datong District, Taipei	0.100000	1	25.06589	121.51670
14	Zhongshan District, Taipei	0.110000	1	25.05229	121.52269
1	Daan District, Taipei City	0.040000	2	25.02138	121.54434
4	Guting District	0.040000	2	25.02147	121.55399
7	Nangang District, Taipei	0.036585	2	25.05438	121.60673
9	Shilin District	0.030000	2	25.09313	121.51976
10	Songshan District, Taipei	0.050000	2	25.05165	121.54774
11	Wanhua District	0.060000	2	25.03535	121.49948
13	Xinyi District, Taipei	0.060000	2	25.03361	121.57002

Final Clusters

```
# Cluster 0
tpe_merged.loc[tpe_merged['Cluster Labels'] == 0]
```

	Neighborhood	Hotel	Cluster Labels	Latitude	Longitude
3	Eastern District of Taipei	0.00	0	25.26553	121.52270
5	Jingmei District	0.00	0	24.99311	121.54135
6	Muzha District	0.00	0	24.98879	121.56373
8	Neihu District	0.02	0	25.06909	121.58847
12	Wenshan District	0.00	0	24.98974	121.56963
15	Zhongzheng District	0.01	0	25.03247	121.51856

```
# Cluster 1
tpe_merged.loc[tpe_merged['Cluster Labels'] == 1]
```

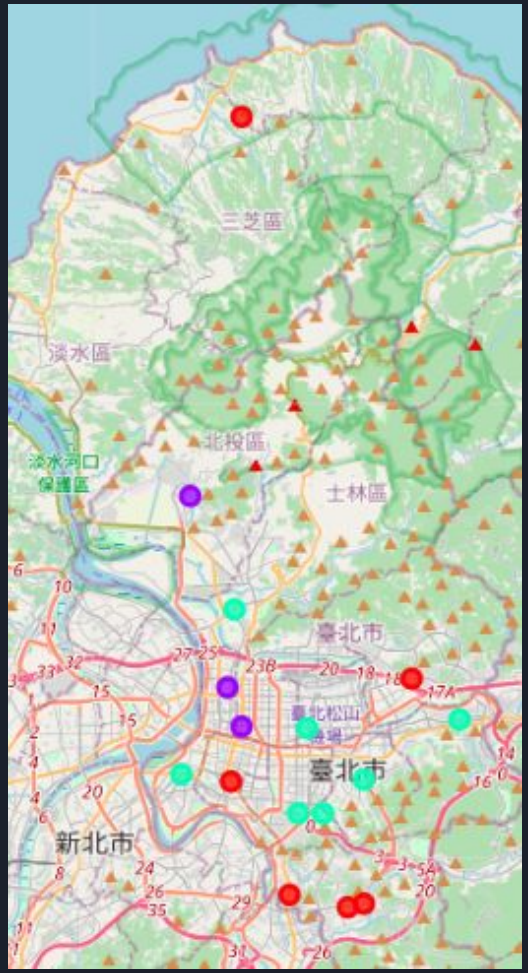
	Neighborhood	Hotel	Cluster Labels	Latitude	Longitude
0	Beitou District	0.149254	1	25.13289	121.50253
2	Datong District, Taipei	0.100000	1	25.06589	121.51670
14	Zhongshan District, Taipei	0.110000	1	25.05229	121.52269

```
# Cluster 2
tpe_merged.loc[tpe_merged['Cluster Labels'] == 2]
```

	Neighborhood	Hotel	Cluster Labels	Latitude	Longitude
1	Daan District, Taipei City	0.040000	2	25.02138	121.54434
4	Guting District	0.040000	2	25.02147	121.55399
7	Nangang District, Taipei	0.036585	2	25.05438	121.60673
9	Shilin District	0.030000	2	25.09313	121.51976
10	Songshan District, Taipei	0.050000	2	25.05165	121.54774
11	Wanhua District	0.060000	2	25.03535	121.49948
13	Xinyi District, Taipei	0.060000	2	25.03361	121.57002

Final Visualization

Cluster 0: Red
Cluster 1: Purple
Cluster 2: Green



Conclusion

Cluster 0 is the best locations to open up new hotel.

- Concentrated not necessarily in the city center
- On the side-lines of Taipei and the neighboring New Taipei city.

There is a risk of opening new hotel businesses in these locations because they are not the most touristy locations and are mostly residential areas or business parks.

- Possible reason why there is the least existing hotel competition here.

Cluster 0 (red) can be very suitable for a well-established developer such as a big hotel chain seeking to expand.

- Developers that are trying to open one new hotel might look into locations that are more in the city center from Cluster 1 (purple) such as Zhongshan District or the lower competition locations within Cluster 2 (red) such as Shilin District.

Further analyzation on the either the scale of the hotels or related venues such as metro stations or tourist attractions can help paint a better hotel market picture of Taipei.