Finding best location to open a Japanese restaurant in Dubai City

Using Machine learning and Geo-spatial technologies

IBM Applied Data Science Capstone project

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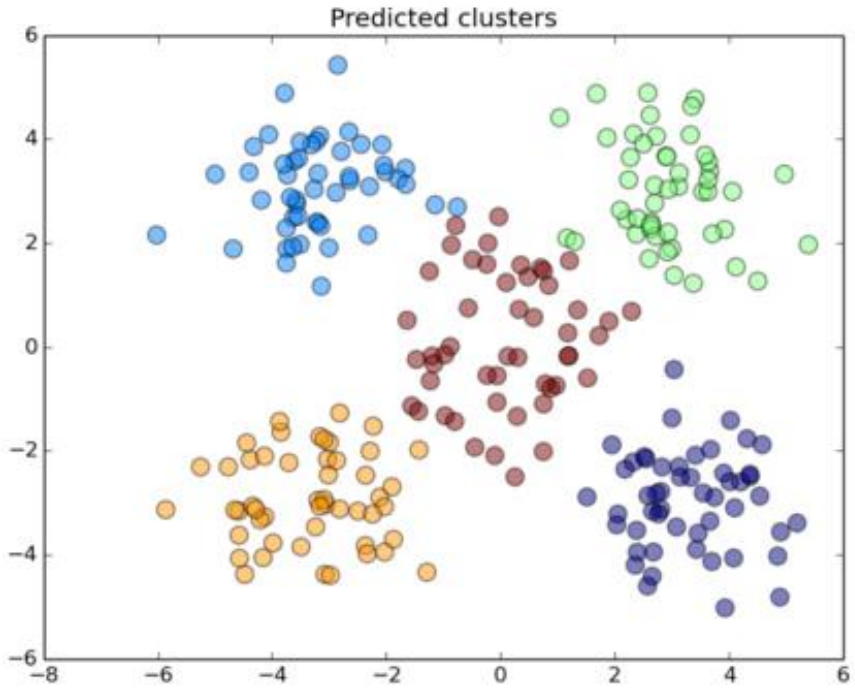
Introduction :

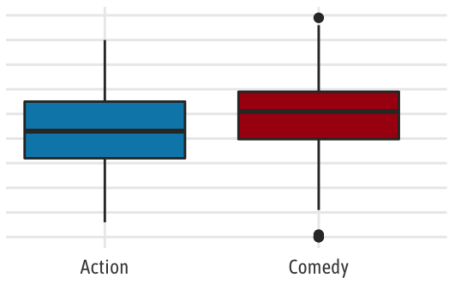
- Dubai city is growing rapidly with influx of working professionals and locals from just 1.3 million in 2005 to approximately **3.2 million** in 2018 and inflow ever increasing tourists.

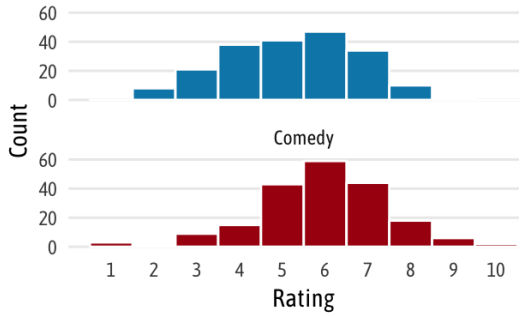
- There is good opportunity for all investors in Food and Beverage (F&B) industry - specially for **Japanese restaurants** serving authentic Japanese Sushi Sashimi

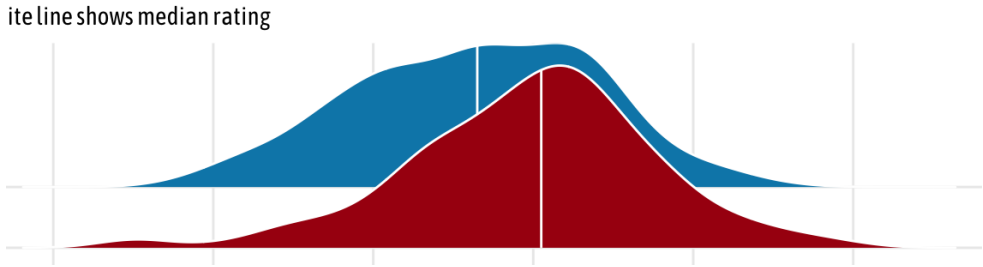
Objectives :

- Use **machine learning** techniques and **spatial analysis** on location data from Foursquare API and other sources.
- Use **data exploration analysis** to discover and statistically describe tourist destinations neighborhoods.
- Recommend sites located within the **high population density**, high commercial activities, with **zero Japanese restaurants** and less competition









Data Sources :

- Top tourist Destinations in Dubai

https://www.globalmediainsight.com/blog/dubai-tourism-statistics/

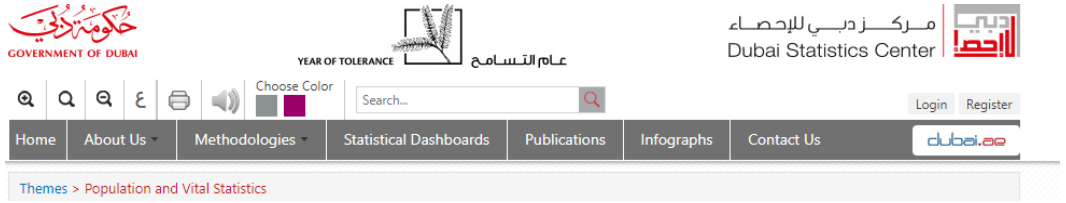
https://www.planetware.com/tourist-attractions-/dubai-uae-dub-dubai.html

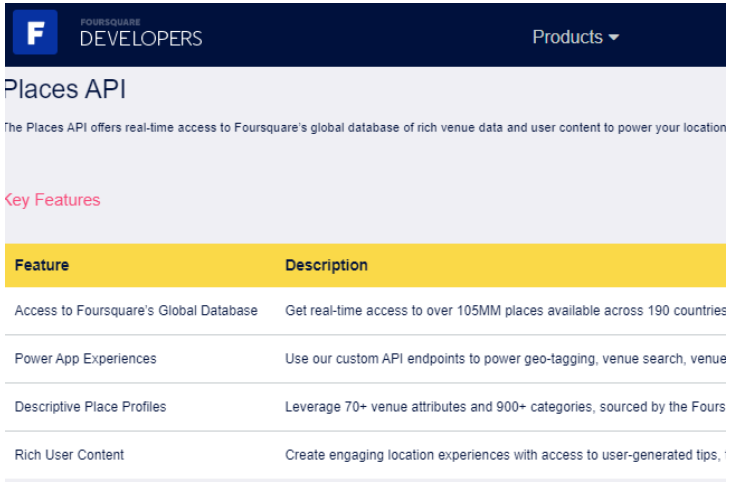
- Dubai population counts / densities

https://www.dsc.gov.ae/

- Number of Venues
- Existing restaurants (competition) .

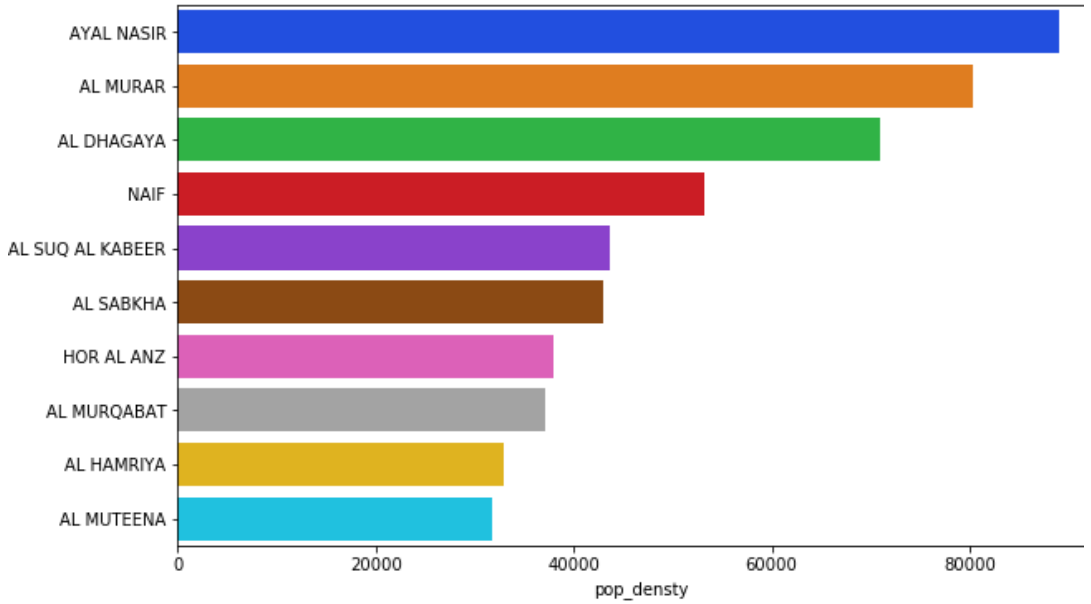
https://developer.foursquare.com/





Data Analysis :

- Dubai communities population ranges from **0 to 197,838**. so the picking the tourist destinations with in the high density areas is the key.
- **Not all** tourist destinations have **high population density** and **venue counts**
- Tourist destinations with less than **700 people per Sq km** or with venues count is less than **70 were eliminated**.



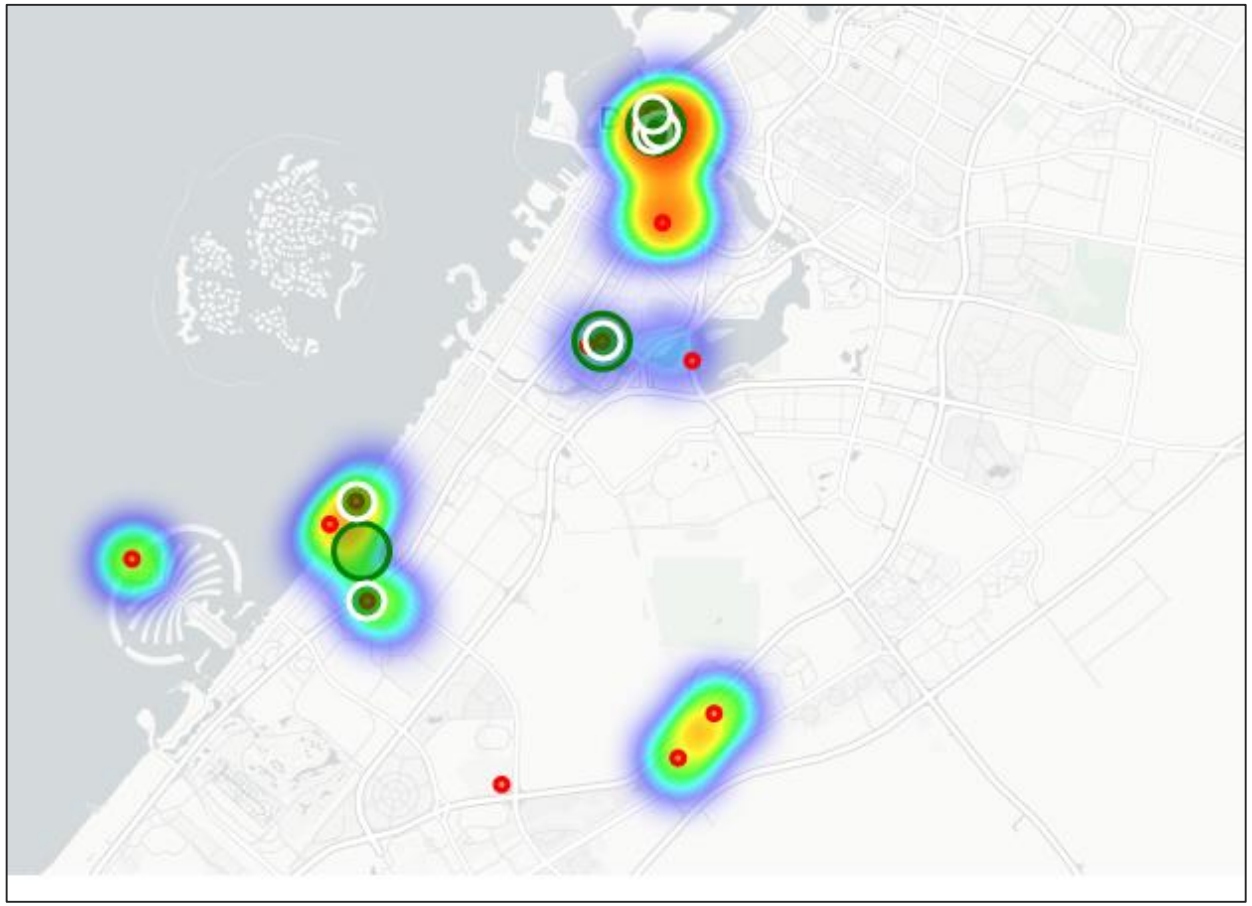
	Destination	Venue_count
11	Mircale Garden	5
12	Ras Al Khor Wildlife Sanctuary	6
9	IMG world	33
7	Global Village	36
1	Atlantis	56
10	Jumeirah Beach	75
2	Burj Al Arab	82
8	Gold Souq	89
0	Al Fahidi Historic District	100
3	Burj Khalifa	100
4	Dubai Frame	100
5	Dubai Mall	100
6	Dubai Museum	100
13	SKI Dubai	100

K-means clustering :

- Shortlisted tourist destinations which have Japanese restaurants in their neighborhoods were discarded completely.
- **K-means clustering** algorithm was applied on final 6 shortlisted tourist destinations which are in high population density, with high commercial activities and with no Japanese restaurants nearby

[43]:

	Destination	japan_restaurant_count
0	Atlantis	1
1	Burj Al Arab	1
2	Burj Khalifa	3
3	Dubai Frame	1



Results & Conclusions :

- It was observed that, clusters near **Dubai mall** and **SKI Dubai** have less competition (existing restaurants density) compared with cluster near Dubai museum..
- finally two prospective locations, **Dubai Mall** and **SKI Dubai** were identified for opening new Japanese restaurant.
- These locations are very popular with tourists, with population, good commercial activities and