

# Capstone Project – A Restaurant Guide for Dubai (Week 2)

## Final Report

### Introduction

Dubai is one of the best tourist destinations around the world, best known for its shopping spots as well as for its magnificent attractions. Its main goal and development towards tourism started back in 2013 when the emirate decided to bring in cash flow from outside the country. Considering this it wouldn't be a surprise if the food industry didn't boom as well as of course when tourists enter the country to visit various sites an appetite would be showing itself. For this very reason the restaurants and its various cuisines are being taken into account for and to finally provide with a short guide of the various restaurants based on cuisine or the surrounding area and its minor attractions. This would definitely be of use to tourists and even new residents who are unaware of what is in this huge city.

### Business Problem

This project aims to provide with details regarding to what cuisines are available and their locations. A further analysis can be done to give the number of restaurants per area or cuisine or grouping based on both. It also provides with an analysis of the surrounding available ventures for each or any preferred restaurant.

### Data

For this project the data needed is:

- Dubai dataset containing list of restaurants and other venues along with its name, address, latitude, longitude taken from Kaggle.  
<http://tour-pedia.org/download/dubai-restaurant.csv>
- Geopy to get latitudes and longitudes of each venue.
- Foursquare API to get all venues in each area.

```
In [64]: df = pd.read_csv("dubai-restaurant.csv")

In [65]: df.head()
```

Out[65]:

	address	category	id	lat	lng	location	name	originalId	polarity	subCategory	details
0	Sheikh Zayed Road	restaurant	114414	25.223014891762	55.285799503326	Dubai	Ibis - World Trade Centre Dubai	4b0587eef964a5209ea622e3	0	Hotel	http://tour-pedia.org/api/getPlaceDetails?id=1... pedia.org/api/getReview
1	Jumeirah Beach Hotel	restaurant	114528	25.141867	55.190518	Dubai	Palm Court	4b0587eef964a5205aa722e3	0	Coffee Shop	http://tour-pedia.org/api/getPlaceDetails?id=1... pedia.org/api/getReview
2	Near the Dubai Creek Golf and Yatch Club	restaurant	114560	25.243644	55.332521	Dubai	Cafe Arabesque	4b0587eef964a52098a722e3	0	Café	http://tour-pedia.org/api/getPlaceDetails?id=1... pedia.org/api/getReview
3	Opp Bur Juman	restaurant	114561	25.248801798183	55.313509366234	Dubai	Mirchi Indian Restaurant	4b0587eef964a5209aa722e3	0	Bar	http://tour-pedia.org/api/getPlaceDetails?id=1... pedia.org/api/getReview
4	Al Qasr Hotel, Madinat Jumeirah	restaurant	114564	25.131259534087	55.184154510498	Dubai	Al Fayrooz Lounge	4b0587eef964a520a3a722e3	0	Coffee Shop	http://tour-pedia.org/api/getPlaceDetails?id=1... pedia.org/api/getReview

## Methodology

First extract data from the Kaggle link "<http://tour-pedia.org/download/dubai-restaurant.csv>" into a file with extension '.csv' (Comma Separated Values) for ex: "dubai-restaurant.csv" as seen below. The csv file is then read into a dataframe with the following attributes:

1. address – address of venue
2. category – subdivision of venue based on activity
3. id – venue id
4. lat – latitude of venue
5. lng – longitude of venue
6. location – location of venue (Dubai since it is our city of concern)
7. name – name of venue
8. originalId – string id of venue
9. subCategory – subdivision of category (restaurant divided into café, hotel, ice cream shop, etc)
10. details – further details of venue (accessed through a link with no specific information)
11. reviews – review given by other customers for that venue (accessed through a link with no specific ratings)

The data is then cleaned ie rid of unnecessary rows and columns which may also have empty values.

## Clean the data

```
In [69]: df[~df.name.str.contains(r'\d')]
df = df[~df.name.str.contains(r'\d')]
```

```
In [70]: df.shape
```

```
Out[70]: (4258, 12)
```

```
In [71]: dfs[~dfs.name.str.contains(r'\d')]
dfs = dfs[~dfs.name.str.contains(r'\d')]
newdf = dfs[['name', 'address', 'location', 'subCategory', 'lat', 'lng', 'reviews']]
```

```
In [72]: print("Shape :", newdf.shape)
          newdf.head()
```

Shape : (568, 7)

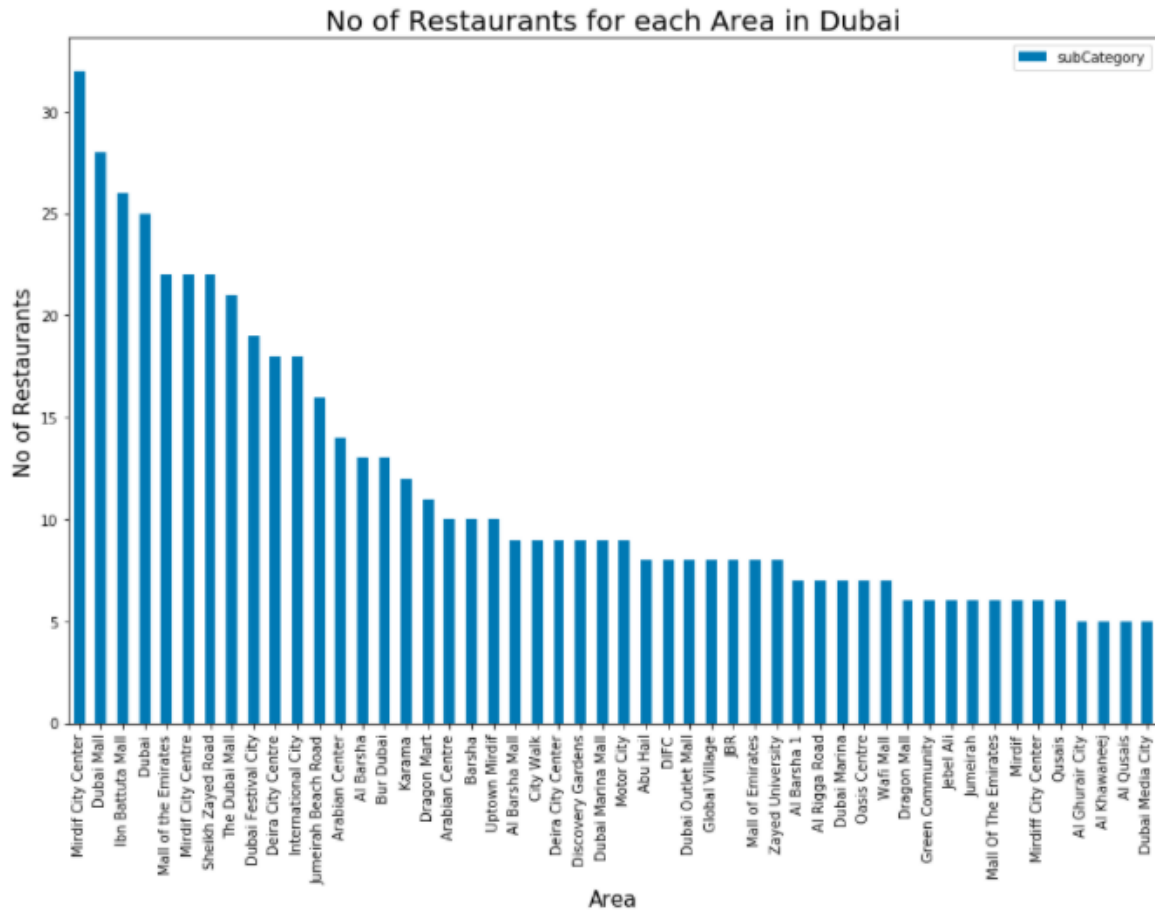
Out[72]:

	name	address	location	subCategory	lat	lng	reviews
0	Ibis - World Trade Centre Dubai	Sheikh Zayed Road	Dubai	Hotel	25.223014891762	55.285799503326	<a href="http://tour-pedia.org/api/getReviewsByPlaceId?...">http://tour-pedia.org/api/getReviewsByPlaceId?...&gt;</a>
1	Palm Court	Jumeirah Beach Hotel	Dubai	Coffee Shop	25.141867	55.190518	<a href="http://tour-pedia.org/api/getReviewsByPlaceId?...">http://tour-pedia.org/api/getReviewsByPlaceId?...&gt;</a>
2	Cafe Arabesque	Near the Dubai Creek Golf and Yatch Club	Dubai	Café	25.243644	55.332521	<a href="http://tour-pedia.org/api/getReviewsByPlaceId?...">http://tour-pedia.org/api/getReviewsByPlaceId?...&gt;</a>
3	Mirchi Indian Restaurant	Opp Bur Juman	Dubai	Bar	25.248801798183	55.313509366234	<a href="http://tour-pedia.org/api/getReviewsByPlaceId?...">http://tour-pedia.org/api/getReviewsByPlaceId?...&gt;</a>
4	Al Fayroz Lounge	Al Qasr Hotel, Madinat Jumeirah	Dubai	Coffee Shop	25.131259534087	55.184154510498	<a href="http://tour-pedia.org/api/getReviewsByPlaceId?...">http://tour-pedia.org/api/getReviewsByPlaceId?...&gt;</a>

Using geopy we then obtain the coordinates of Dubai to generate a K-Means cluster map depicting the clusters of venues in different areas.



From the above map we can notice that the restaurants are more crowded in a certain area. We can find out the area name by plotting a bar graph as obtained below.



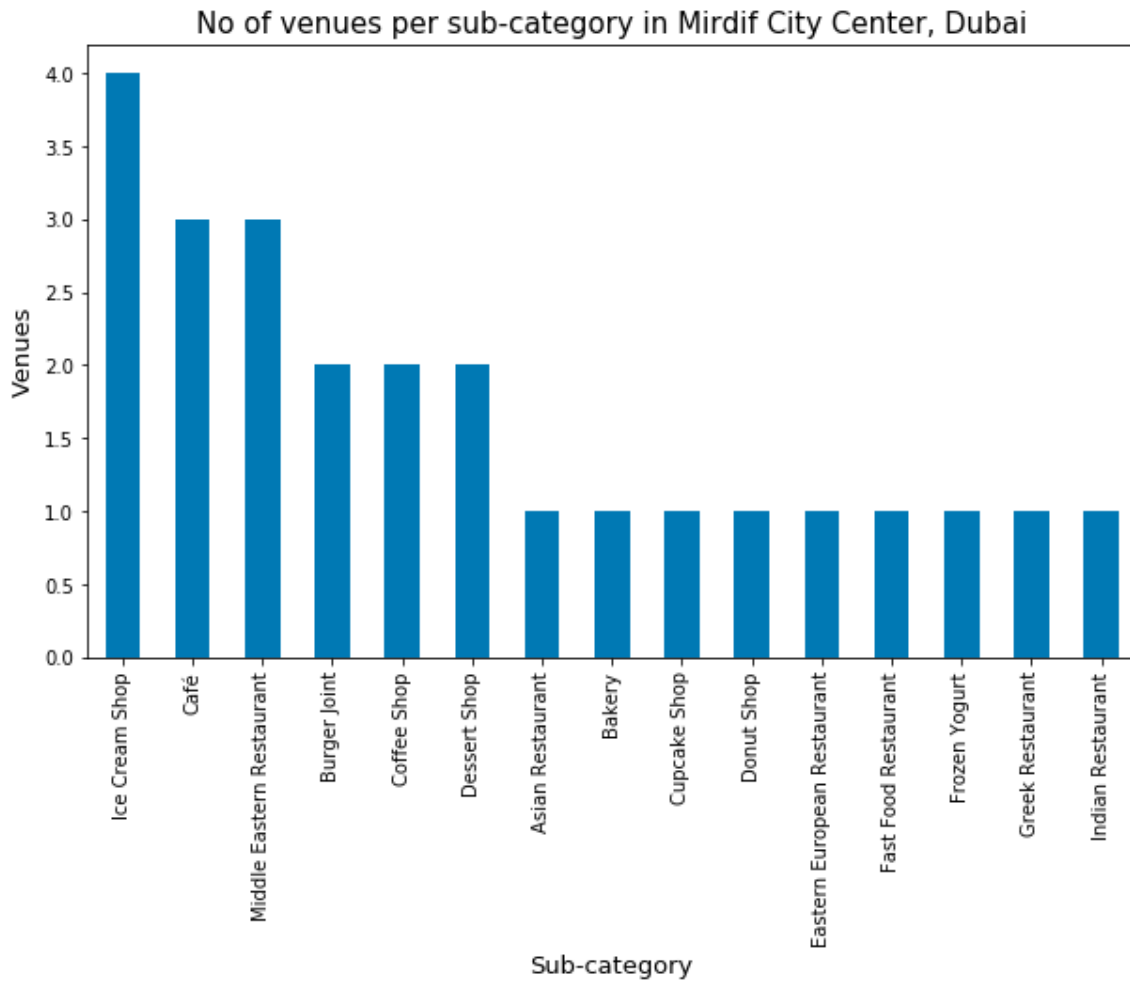
It can be seen that Mirdif City Center has the greatest number of restaurants so we can create a new dataframe for the restaurants in Mirdif City Center with their respective details for further analysis.

:

	name	address	location	subCategory	lat	lng	reviews
253	Caffe' NERO كافييه نيرو	Mirdif City Center	Dubai	Café	25.214725766164	55.407357215881	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
272	Marble Slab	Mirdif City Center	Dubai	Ice Cream Shop	25.21275071504	55.412709282748	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
339	Mango Tree	Mirdif City Center	Dubai	Thai Restaurant	25.160166850722	55.409260239051	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
383	Chili's	Mirdif City Center	Dubai	Eastern European Restaurant	25.214305594185	55.388444540159	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
404	Caribou Coffee   منهي كاريبو	Mirdif City Center	Dubai	Coffee Shop	25.215748943292	55.408795331383	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
414	Costa @ Mirdif City Center	Mirdif City Center	Dubai	Coffee Shop	25.215657593001	55.407485961914	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
473	Pinkberry	Mirdif City Center	Dubai	Frozen Yogurt	25.216045852077	55.408515930176	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
605	Sugar Daddy's	Mirdif City Center	Dubai	Cupcake Shop	25.217745979378	55.408168250554	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
708	Zafran	Mirdif City Center	Dubai	Indian Restaurant	25.253131205621	55.417201893998	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
804	Suki-yaki	Mirdif City Center	Dubai	Japanese Restaurant	25.217832630232	55.408189873956	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
815	Cold Stone Creamery	Mirdif City Center	Dubai	Ice Cream Shop	25.214837488608	55.408281773473	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
838	Paul Cafe	Mirdif City Center	Dubai	Bakery	25.21619367696	55.409227803552	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
932	Pars	Mirdif City Center	Dubai	Restaurant	25.216274	55.40917	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1015	Jimmy The Greek	Mirdif City Center	Dubai	Greek Restaurant	25.214908563565	55.407276289914	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1167	Haagen Dazs هاجن داز	Mirdif City Center	Dubai	Ice Cream Shop	25.217792082653	55.406692466079	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1262	GBK	Mirdif City Center	Dubai	Burger Joint	25.214819	55.406838	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1433	Chocolate Bar شوكلت بار	Mirdif City Center	Dubai	Café	25.216279247572	55.40791958182	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1503	Love Life Boost	Mirdif City Center	Dubai	Juice Bar	25.21542278321	55.408254744193	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1571	McDonald's	Mirdif City Center	Dubai	Fast Food Restaurant	25.16299429968	55.414293293724	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
1797	Pars Restaurant مطعم بارس	Mirdif City Center	Dubai	Middle Eastern Restaurant	25.216303	55.409112	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>
4005	Suki-yaki	Mirdif City Center	Dubai	Japanese Restaurant	25.214754476140	55.408281773473	<a href="http://tour-pedia.org/api/getReviewsByPlaceld?...">http://tour-pedia.org/api/getReviewsByPlaceld?...</a>

Once again, we use geopy to obtain the coordinates for Mirdif City Center specifically and generate a K-Means cluster map to observe the cluster of restaurants in this area specifically.





Next, we use the Foursquare API to get a list of unique venues surrounding those in Mirdif City Center. Then produce a one hot encoding of the areas within Mirdif City Center. Among these surrounding venues the top ones are displayed for each area in a final dataframe.

### Abdelwahab عبدالوهاب

	venue	freq
0	Coffee Shop	0.13
1	Movie Theater	0.10
2	Theme Park Ride / Attraction	0.03
3	Chinese Restaurant	0.03
4	Lebanese Restaurant	0.03

### Arabesq - أرابيسك

	venue	freq
0	Coffee Shop	0.10
1	Movie Theater	0.07
2	Clothing Store	0.07
3	Chinese Restaurant	0.03
4	Restaurant	0.03

### Caffe' NERO كافيه نيرو

	venue	freq
0	Coffee Shop	0.13
1	Movie Theater	0.10
2	Theme Park Ride / Attraction	0.03
3	Chinese Restaurant	0.03
4	Lebanese Restaurant	0.03

	Area	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	Abdelwahab عبدالوهاب	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bookstore	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Indian Restaurant
1	Arabesq - أرابيسك	Coffee Shop	Movie Theater	Clothing Store	Restaurant	Record Shop	Chinese Restaurant	Lebanese Restaurant	Café	Burger Joint	Multiplex
2	Caffe' NERO كافيه نيرو	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Chinese Restaurant
3	Caribou Coffee   ملهى كاريبو	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Chinese Restaurant	Indian Restaurant
4	Chili's	Accessories Store	Badminton Court	Hotel	Furniture / Home Store	Department Store	Sandwich Place	Burger Joint	Airport	Bakery	Beach
5	Chinese Palace Restaurant	Coffee Shop	Indian Restaurant	Movie Theater	Theme Park Ride / Attraction	Burger Joint	Frozen Yogurt Shop	Furniture / Home Store	Gift Shop	Gym	Cosmetics Shop
6	Chocolate Bar شوكلت بار	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Chinese Restaurant
7	Cold Stone Creamery	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bookstore	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Indian Restaurant
8	Costa @ Mirdif City Center	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Chinese Restaurant
9	GBK	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Chinese Restaurant
10	Haagen Dazs هاجن داز	Coffee Shop	Movie Theater	Clothing Store	Bookstore	Ice Cream Shop	Lebanese Restaurant	Burger Joint	Bowling Alley	Multiplex	Chinese Restaurant
11	Jimmy The Greek	Coffee Shop	Movie Theater	Theme Park Ride / Attraction	Bakery	Gift Shop	Gym	Cosmetics Shop	Clothing Store	Ice Cream Shop	Chinese Restaurant

## **Result**

From this we can see that:

1. Mirdif City Center has the greatest number of restaurants.
2. Ice cream shops have potential in Mirdif City Center area.
3. The area of Abdelwahab is quite popular and has a high frequency of surrounding venues.
4. Japanese cuisine is not as available and has low frequency of surrounding venues.

## **Conclusion**

In this project the various venues were discussed and analyzed based on their address, category under which each are placed. The relationship is observed and is narrowed down to one populated area – Mirdif City Center, upon which further analysis being done has given its breakdown and frequency. Using this information, it is easier to provide customers – whether residents or tourists – with quick and efficient identification of required restaurant or venue.