

# Comparative Analysis of Venues in Makati and Cebu City in the Philippines

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## I. Introduction: Business Problem

### Problem Statement

This capstone project aims to explore in what ways are the venues in the neighbourhood-areas of Makati City and Metropolitan Cebu similar or dissimilar.

After working overseas for over 10 years, in countries such as Thailand and Singapore, a usual question I get from friends and colleagues would be about what to see and where to go outside the capital of Metro Manila or an alternative to Makati?

This Capstone project aims to study the landscape of venues available in the two metropolitan areas, Makati City and Metropolitan Cebu. Both locations have business establishments, industrial sites, and a destination for local and foreign talent. It will be interesting to see what common venues comprise each locale, particularly Metro Cebu.

### Background

In the Philippines, Makati City is known as the financial capital wherein a large number of local and multinational businesses are established. Situated in the country's National Capital Region (NCR), Makati was founded on November 4, 1670 and has a total land area of 21.57 sq.km (8.33 sq mi)[4]. It has a population of 582,602 based on the 2015 Census. An assortment of banking and financial institutions, commercial shopping spaces and entertainment hubs can be found here. The wide availability and developed modes of transportation such as the Metro Rail System (MRT), buses and jeepneys help promote trading and the bustling business-centric environment.

South of NCR is Metropolitan Cebu or Metro Cebu for short. A metropolitan area located at the central eastern portion of Cebu island in the Central Visayas Region of Philippines. It has an area of 1,062.88 sq.km (410.38 sq mi) and a population of 2,849,213 according to the 2015 Census. In 2005 and 2007, the region was host to the Southeast Asian Games and ASEAN Summit and 2nd East Asia Summit, respectively[1]. Having a strategic location in the center of the Philippines, Metro Cebu has seen growth in various industries, such as trade, manufacturing, Business Process Outsourcing (BPO), and real estate. The other surrounding islands provides an assortment of leisure spots, picturesque beaches and dive sites outside the business-centric metro.

## Target Audience

The study is applicable to investors and traders who plan to visit the country for business. Having an idea of the popular establishments accessible to the local population of Makati and Metro Cebu. Another perspective is that, would Cebu City be an alternative to Makati, for individuals who plan to bring business over or just simply to visit as tourists and experience what each location has to offer.

## II. Data

### 1. Online/Wikipedia Scraping

- Makati and Metro Cebu Postal Codes, Area, and Location Names. Philippine-based datasets will have different column naming and arrangement compared to the Toronto datasets in the course and will need to be standardized.
- HTML table location of Postal Codes and figures are ordered differently within the webpage. As such, some changes in BeautifulSoup API parameters and Pandas are needed to create and clean the dataframes.

### 2. Geographical Coordinates

- Philippines Geo-coordinates. After researching, a consolidated csv will be created from [www.aggdata.com](http://www.aggdata.com) and [www.geonames.org](http://www.geonames.org), which will have the Postal/ZIP code for each area.
- Latitude and longitude coordinates will be merged with Makati and Metro Cebu Postal Codes.

### 3. Venue data

- The Foursquare API will be used to collect venues based on the geo-coordinates of each Postal code or area.

### 4. Other methods will be mentioned as the study progresses, applying Coursera-learned material on different set of data.

- Charts to describe statistics of Makati and Metro Cebu
- Folium library to visualize location data
- Data wrangling, filtering dataframes and cleaning the data.

## III. Methodology

### 1. Generate the starting raw data for the areas in the Philippines and their corresponding Zip or Postal codes.

- Source: [https://en.wikipedia.org/wiki/List\\_of\\_ZIP\\_codes\\_in\\_the\\_Philippines](https://en.wikipedia.org/wiki/List_of_ZIP_codes_in_the_Philippines).
- Use the function request.get with HTML text option to create the raw object data.
- BeautifulSoup API was used to pull HTML data and save in a soup object.

### 2. From researching online ([www.aggdata.com](http://www.aggdata.com) and [www.geonames.org](http://www.geonames.org)), a consolidated zip code csv file (PHZIP.csv) was generated and converted into a Pandas dataframe (df\_PH\_geo) by pd.read\_csv.

### 3. Generate the working dataframes for the Makati City and Metro Cebu. DF column names were standardized and cleaned.

- Main groups under study, Makati and Metro Cebu, had column names of "Province or city", are renamed to "Area".
- Postal code column name was renamed to ZIP Code.

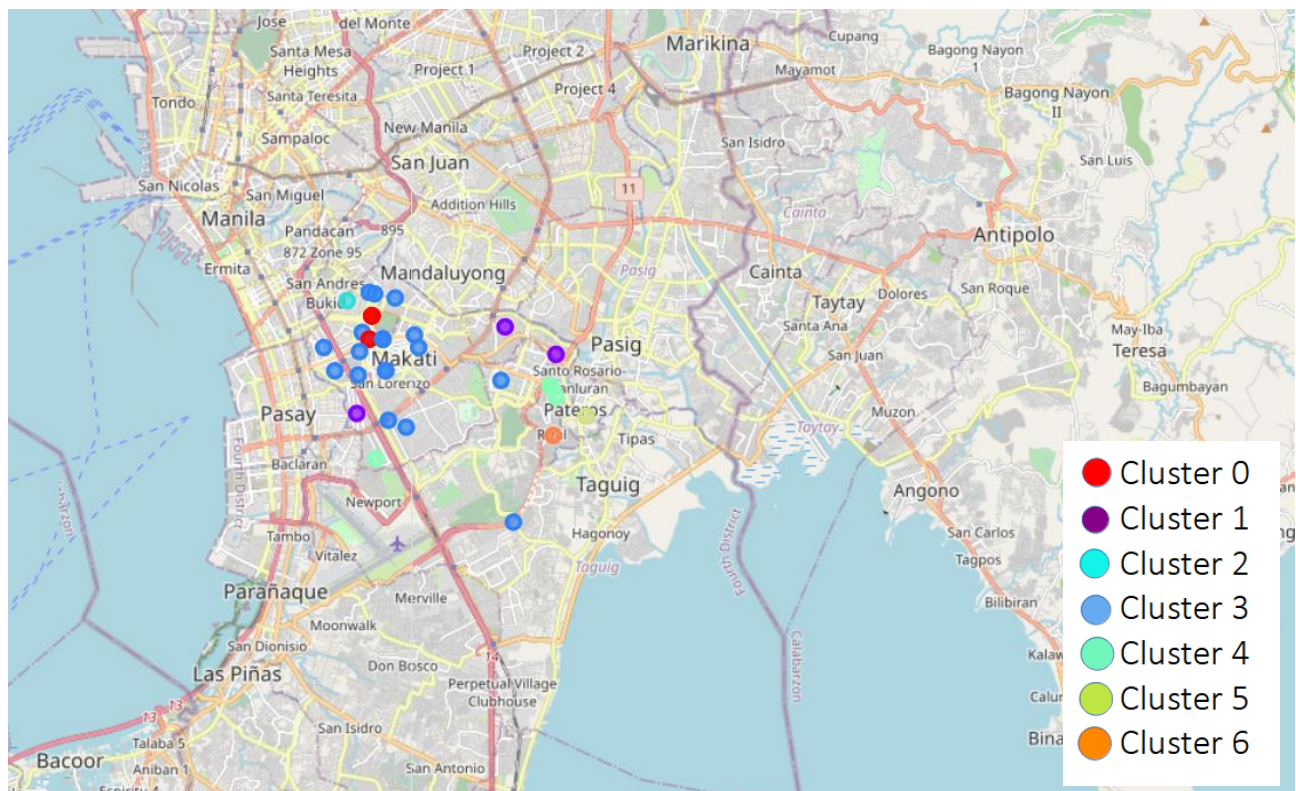
- From the raw data, ZIP codes can be used to refer to a neighbourhood or commercial establishments. "Area" was used as the column name.
4. Create the Makati dataframe by filtering Area = 'Makati' and applying merging with df\_PH\_geo. Zip code was referenced as the join parameter.
  5. For the Metro Cebu dataframe, an intermediate step was needed. Metropolitan Cebu is the collection of cities and smaller municipalities in Cebu province [1]. A list was created for the member locations (mtro\_cbu = ['Carcar', 'Cebu City', 'Danao', 'Lapu-Lapu', 'Mandaue', 'Naga', 'Talisay', 'Compostela', 'Consolacion', 'Cordova', 'Liloan', 'Minglanilla', 'San Fernando']). The working dataframe was made by filtering based on this list [df\_cebu['Area'].isin(mtro\_cbu)] . Applied the same filtering and merging operations from step 4, but using 'Cebu'.
  6. Folium map object creation for Makati and Metro Cebu.
    - Geopy was used for geocode coordinate data
    - Labelling points with Area labels
  7. Utilizing the Foursquare API to explore the areas in Makati and Metro Cebu.
    - Provide Foursquare credentials and other client details.
    - Preview venue information on selected locations. Greenbelt, for Makati City and Cebu City, for Metro Cebu.
  8. Use getNearbyVenues function for each area in Makati and Metro Cebu to create a new dataframes.
  9. Perform one\_hot encoding function to get the frequency of venue occurrence in each area. Then group rows (using groupby method) by area and by taking the mean of the frequency of occurrence of each venue category. Rank by top 10.
  10. Apply K-means clustering.
  11. Consolidate by merging cluster data and the top 10 venues for each area.
  12. Visualization of resulting clusters of venues observed in the Makati and Metro Cebu locations.
    - Latitude and longitude geodata were used for the Folium map.
    - Marker definitions, colors and label data are based on kcluster data derived from the previous steps.
    - Kcluster coordinates are then overlayed on the respective maps.
  13. Examine and analyze each cluster for Makati and Metro Cebu and observed similarities and differences.

## IV. Results

### Makati City

1. Overall, the west region of Makati shows the highest density of venue clusters. Notably, majority is comprised of cluster 2 coffee shop establishments and various forms of restaurants. It is shown to be a densely commercialized area bordered by Palanan, Bel-Air, Makati-Ayala Commercial Center and Dasmarinas Village.
2. At the middle of cluster 2, interestingly cluster 0 is comprised of Karaoke spots and Beer Gardens, followed by hotel residential areas.
3. Clusters 1, 4, 5 and 6 are situated farther apart however similarly they are also restaurant and convenience store venues.
4. Cluster 3, made up of La Paz, Singkamas, and Tejeros areas is where the market place is located, north-west of the hotel areas. The placement provides convenience and accessibility to both restaurant and hotel venues.

Folium Map of Makati Venue Clusters



A higher concentration of clusters (majority cluster 2) are more prominent on the west side of Makati.

	City	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	Makati	0	Karaoke Bar	Hotel	Grocery Store	Beer Garden	Bar	Yoga Studio	Building	Restaurant	Residential Building (Apartment / Condo)	Office
5	Makati	0	Beer Garden	Hotel	Grocery Store	Dessert Shop	Karaoke Bar	Szechuan Restaurant	Filipino Restaurant	Restaurant	Bubble Tea Shop	Donut Shop
8	Makati	0	Karaoke Bar	Hotel	Grocery Store	Beer Garden	Bar	Yoga Studio	Building	Restaurant	Residential Building (Apartment / Condo)	Office
20	Makati	0	Beer Garden	Hotel	Grocery Store	Dessert Shop	Karaoke Bar	Szechuan Restaurant	Filipino Restaurant	Restaurant	Bubble Tea Shop	Donut Shop
21	Makati	0	Beer Garden	Hotel	Grocery Store	Dessert Shop	Karaoke Bar	Szechuan Restaurant	Filipino Restaurant	Restaurant	Bubble Tea Shop	Donut Shop

14	Makati	1	Fast Food Restaurant	Convenience Store	Motel	Basketball Court	Bus Line	Market	Bakery	Breakfast Spot	Pharmacy	Electronics Store
15	Makati	1	Convenience Store	Intersection	Fast Food Restaurant	Karaoke Bar	Bus Station	Bed & Breakfast	Yoga Studio	Dumpling Restaurant	Flea Market	Filipino Restaurant
33	Makati	1	Convenience Store	Fast Food Restaurant	Food	Resort	Chinese Restaurant	Diner	Tapas Restaurant	Bar	BBQ Joint	Grocery Store

1	Makati	2	Coffee Shop	Japanese Restaurant	Sporting Goods Shop	Bar	Plaza	Spanish Restaurant	Dessert Shop	Park	Mediterranean Restaurant	Hotel
2	Makati	2	Airport Terminal	Park	Fast Food Restaurant	Food Truck	Market	Sculpture Garden	Bakery	Chinese Restaurant	Soup Place	Asian Restaurant
3	Makati	2	Coffee Shop	Filipino Restaurant	BBQ Joint	Donut Shop	Convenience Store	Restaurant	Bar	Bakery	Pizza Place	Asian Restaurant
6	Makati	2	Donut Shop	Coffee Shop	Pastry Shop	Spa	Soup Place	Shopping Mall	Sandwich Place	Clothing Store	Cosmetics Shop	Dim Sum Restaurant
7	Makati	2	Café	Convenience Store	Coffee Shop	Fast Food Restaurant	Soccer Field	Filipino Restaurant	Clothing Store	Gym / Fitness Center	Snack Place	Shopping Mall
9	Makati	2	Coffee Shop	Café	Spa	Hotel	Cocktail Bar	Dessert Shop	Bakery	Steakhouse	Filipino Restaurant	Burger Joint
19	Makati	2	Art Gallery	Filipino Restaurant	Coffee Shop	Donut Shop	Gym	Japanese Restaurant	Furniture / Home Store	Fast Food Restaurant	Bubble Tea Shop	Diner
22	Makati	2	Soccer Field	Basketball Court	Ice Cream Shop	Theater	Furniture / Home Store	Diner	Coffee Shop	Bus Line	Hotel	Art Gallery
23	Makati	2	Coffee Shop	Spa	Park	Spanish Restaurant	Sandwich Place	Korean Restaurant	Burrito Place	Café	Pizza Place	Donut Shop
24	Makati	2	Coffee Shop	Fast Food Restaurant	Donut Shop	Climbing Gym	Breakfast Spot	Shopping Plaza	Shopping Mall	Seafood Restaurant	Burrito Place	Restaurant
25	Makati	2	Yoga Studio	Coffee Shop	Japanese Restaurant	Filipino Restaurant	Salad Place	Building	Buffet	Shopping Mall	Mediterranean Restaurant	Spanish Restaurant
26	Makati	2	Yoga Studio	Coffee Shop	Japanese Restaurant	Filipino Restaurant	Salad Place	Building	Buffet	Shopping Mall	Mediterranean Restaurant	Spanish Restaurant
27	Makati	2	Yoga Studio	Coffee Shop	Japanese Restaurant	Filipino Restaurant	Salad Place	Building	Buffet	Shopping Mall	Mediterranean Restaurant	Spanish Restaurant
28	Makati	2	Café	Shopping Mall	Coffee Shop	Japanese Restaurant	Italian Restaurant	Clothing Store	Filipino Restaurant	Spa	Gym	Boutique
29	Makati	2	Café	Shopping Mall	Coffee Shop	Japanese Restaurant	Italian Restaurant	Clothing Store	Filipino Restaurant	Spa	Gym	Boutique
30	Makati	2	Japanese Restaurant	Convenience Store	Pizza Place	Bar	Spa	Coffee Shop	Fast Food Restaurant	Donut Shop	Music Venue	Diner
31	Makati	2	Convenience Store	Bar	Tea Room	Pizza Place	BBQ Joint	German Restaurant	Dumpling Restaurant	Steakhouse	Donut Shop	Chinese Restaurant
34	Makati	2	Fast Food Restaurant	Chinese Restaurant	Filipino Restaurant	Convenience Store	Bookstore	Pharmacy	Ramen Restaurant	Restaurant	Clothing Store	Donut Shop
35	Makati	2	Pharmacy	Pizza Place	Fast Food Restaurant	Filipino Restaurant	Bakery	Garden	Cupcake Shop	Coffee Shop	Dessert Shop	Restaurant

4	Makati	3	Market	Hostel	Antique Shop	Filipino Restaurant	Fried Chicken Joint	Yoga Studio	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant
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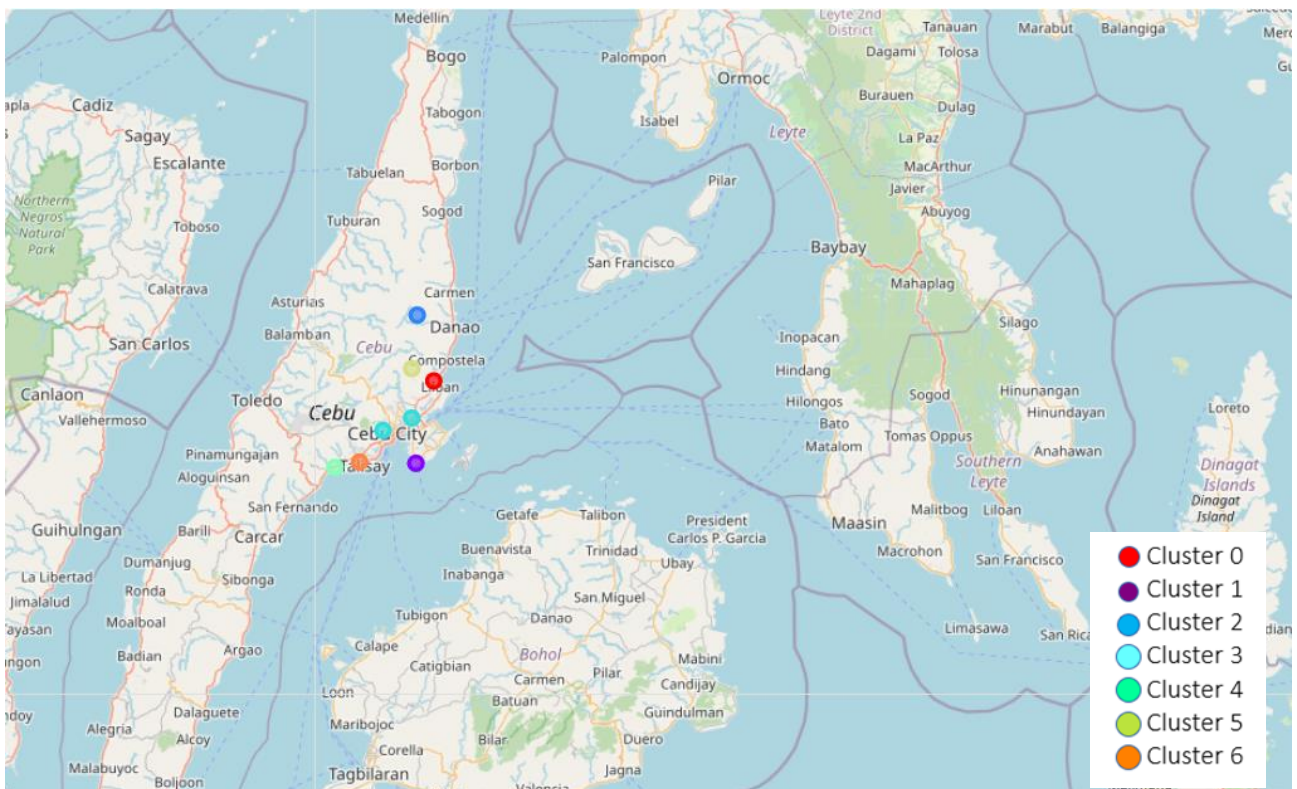
11	Makati	4	Convenience Store	Diner	Fast Food Restaurant	Breakfast Spot	Gym / Fitness Center	Nail Salon	Optical Shop	Donut Shop	Chinese Restaurant	Café
12	Makati	4	Convenience Store	Diner	Fast Food Restaurant	Breakfast Spot	Gym / Fitness Center	Nail Salon	Optical Shop	Donut Shop	Chinese Restaurant	Café
13	Makati	4	Convenience Store	Diner	Fast Food Restaurant	Breakfast Spot	Gym / Fitness Center	Nail Salon	Optical Shop	Donut Shop	Chinese Restaurant	Café
16	Makati	4	Convenience Store	Diner	Fast Food Restaurant	Breakfast Spot	Gym / Fitness Center	Nail Salon	Optical Shop	Donut Shop	Chinese Restaurant	Café
17	Makati	4	Convenience Store	Diner	Fast Food Restaurant	Food Truck	Bakery	Breakfast Spot	Tapas Restaurant	Café	Cosmetics Shop	Spa
32	Makati	4	Diner	Ice Cream Shop	Supermarket	Fried Chicken Joint	Mattress Store	Donut Shop	Food & Drink Shop	Coffee Shop	Eastern European Restaurant	Flea Market
10	Makati	5	Fast Food Restaurant	Ice Cream Shop	Asian Restaurant	Filipino Restaurant	Cafeteria	Chinese Restaurant	Grocery Store	Laundromat	Soup Place	Intersection
18	Makati	6	Ramen Restaurant	Gym	Fast Food Restaurant	Breakfast Spot	Campground	Intersection	Cycle Studio	Drugstore	Flea Market	Filipino Restaurant



## Metropolitan Cebu

1. Metro Cebu venue clusters are isolated to each other, as compared to Makati City, however are strategically located lined-up along the eastern-region of Cebu island.
2. Cluster 3 has more commercial establishments in the region. Like Makati City, top venues are Cafe shops and Fast Food restaurants found in Cebu City capital and Mandaue.
3. A unique difference with Metro Cebu is the variety venue types offered in each cluster.
4. The top venue in cluster 0 at Liloan is it's mountain region and veterinary establishments. An area for outdoor nature and animal sight-seeing enthusiasts.
5. Cordova in cluster 1 has an assortment of recreational venues for enjoyment. A basketball stadium being the top, followed by beach and resorts.
6. Cluster 2 (Danao) and cluster 4 (Minglanilla) are comprised of restaurants and BBQ venues.
7. Cluster 5 (Consolacion) and cluster 6 (Talisay) have parks and beaches.

Folium Map of Metro Cebu Venue Clusters



	City	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
2	Cebu	0	Mountain	Veterinarian	Fishing Store	Bakery	Basketball Stadium	Beach	Bed & Breakfast	Burger Joint	Cafeteria	Café
6	Cebu	1	Basketball Stadium	Beach	Resort	Plaza	Convenience Store	Veterinarian	Chinese Restaurant	Fast Food Restaurant	English Restaurant	Donut Shop
4	Cebu	2	Restaurant	Fast Food Restaurant	Veterinarian	Fishing Store	Bakery	Basketball Stadium	Beach	Bed & Breakfast	Burger Joint	Cafeteria
0	Cebu	3	Café	Fast Food Restaurant	Hotel	Burger Joint	Filipino Restaurant	Vegetarian / Vegan Restaurant	Veterinarian	Japanese Restaurant	Bakery	Chinese Restaurant
5	Cebu	3	Fast Food Restaurant	Restaurant	Resort	Donut Shop	Convenience Store	Veterinarian	Café	English Restaurant	Chinese Restaurant	Burger Joint
11	Cebu	4	BBQ Joint	Bakery	Shopping Mall	Gas Station	Chinese Restaurant	Fast Food Restaurant	English Restaurant	Donut Shop	Convenience Store	Cafeteria
1	Cebu	5	Cafeteria	Park	Playground	Fishing Store	Fast Food Restaurant	English Restaurant	Donut Shop	Convenience Store	Chinese Restaurant	Veterinarian
10	Cebu	6	Bakery	Beach	Bed & Breakfast	Pharmacy	Veterinarian	Fishing Store	Basketball Stadium	Burger Joint	Cafeteria	Café

## V. Discussion

Based on the venue classification types observed, Makati City has long been well known for the upscale nature of businesses and establishments in its locality. It is shown to be densely commercialized with food-based, lifestyle and shopping venues evident from cluster 2 that surround the hotel areas of Dasmarias and Valenzuela.

### Sample Top Venues in Greenbelt, Makati

	name	categories	lat	lng
0	Wildflour Café + Bakery	Café	14.555582	121.018130
1	The Curator, Coffee & Cocktails	Café	14.554463	121.017994
2	Makati Diamond Residences	Residential Building (Apartment / Condo)	14.553794	121.020856
3	Bistro Pamana	Filipino Restaurant	14.554566	121.020456
4	The Spa	Spa	14.553137	121.019539
5	Cyma	Greek Restaurant	14.552276	121.020243
6	Touch and Heal	Massage Studio	14.555641	121.017668
7	ALFRED at Makati Diamond Residences	Restaurant	14.553763	121.020776
8	The Coffee Bean & Tea Leaf	Coffee Shop	14.555795	121.018240
9	Salad Stop!	Salad Place	14.555944	121.019502
10	Toby's Estate Coffee Roasters	Coffee Shop	14.554619	121.016679
11	8Cuts Burger Blends	Burger Joint	14.552257	121.020389

### Sample Top Venues in Metro Cebu, Cebu

	name	categories	lat	lng
0	Pan de Manila	Bakery	10.316184	123.886306
1	The Original AA BBQ	BBQ Joint	10.317470	123.887487
2	Lola Eat's Food House	Fast Food Restaurant	10.316504	123.886989
3	Nonki Japanese Restaurant	Japanese Restaurant	10.315338	123.884309
4	Little India - One Pavilion Mall, Banawa, Cebu...	Vegetarian / Vegan Restaurant	10.314893	123.884137
5	Kelli Olé Kaffe	Café	10.317164	123.885223
6	Orange Brutus	Burger Joint	10.315199	123.884080
7	Cebu's Original Lechon Belly - One Pavilion	Filipino Restaurant	10.315387	123.884272
8	Canberry Hotel	Hotel	10.317573	123.885077
9	Dong Juan	Burger Joint	10.318635	123.886361
10	Cebu R Hotel	Hotel	10.315380	123.889962
11	Dunkin' Donuts	Donut Shop	10.315274	123.884575

Filipinos do like their food, as the top establishments are an assortment of restaurants from the 2 sample locations.



## Top 10 Venue Categories in Makati and Metro Cebu

### Makati City (First 10 Areas)

	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	Ayala Avenue–Paseo de Roxas	Yoga Studio	Coffee Shop	Japanese Restaurant	Filipino Restaurant	Salad Place	Building	Buffet	Shopping Mall	Mediterranean Restaurant	Spanish Restaurant
1	Bangkal	Convenience Store	Fast Food Restaurant	Food	Resort	Chinese Restaurant	Diner	Tapas Restaurant	Bar	BBQ Joint	Grocery Store
2	Bel-Air	Coffee Shop	Café	Spa	Hotel	Cocktail Bar	Dessert Shop	Bakery	Steakhouse	Filipino Restaurant	Burger Joint
3	Carmona–Olympia	Café	Convenience Store	Coffee Shop	Fast Food Restaurant	Soccer Field	Filipino Restaurant	Clothing Store	Gym / Fitness Center	Snack Place	Shopping Mall
4	Cembo and South Cembo	Fast Food Restaurant	Convenience Store	Motel	Basketball Court	Bus Line	Market	Bakery	Breakfast Spot	Pharmacy	Electronics Store
5	Chino Roces,Pasong Tamo–Ecology Village	Convenience Store	Bar	Tea Room	Pizza Place	BBQ Joint	German Restaurant	Dumpling Restaurant	Steakhouse	Donut Shop	Chinese Restaurant
6	Comembo	Convenience Store	Diner	Fast Food Restaurant	Food Truck	Bakery	Breakfast Spot	Tapas Restaurant	Café	Cosmetics Shop	Spa
7	Dasmarina's Village North	Beer Garden	Hotel	Grocery Store	Dessert Shop	Karaoke Bar	Szechuan Restaurant	Filipino Restaurant	Restaurant	Bubble Tea Shop	Donut Shop
8	Dasmarina's Village South	Soccer Field	Basketball Court	Ice Cream Shop	Theater	Furniture / Home Store	Diner	Coffee Shop	Bus Line	Hotel	Art Gallery
9	East Rembo–Malapad na Bato	Convenience Store	Diner	Fast Food Restaurant	Breakfast Spot	Gym / Fitness Center	Nail Salon	Optical Shop	Donut Shop	Chinese Restaurant	Café

Frequent occurrence of fast food establishments, convenience stores and coffee shops as top categories.

### Metro Cebu (All 8 Areas)

	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	Cebu City	Café	Fast Food Restaurant	Hotel	Burger Joint	Filipino Restaurant	Vegetarian / Vegan Restaurant	Veterinarian	Japanese Restaurant	Bakery	Chinese Restaurant
1	Consolacion	Cafeteria	Park	Playground	Fishing Store	Fast Food Restaurant	English Restaurant	Donut Shop	Convenience Store	Chinese Restaurant	Veterinarian
2	Cordova	Basketball Stadium	Beach	Resort	Plaza	Convenience Store	Veterinarian	Chinese Restaurant	Fast Food Restaurant	English Restaurant	Donut Shop
3	Danao	Restaurant	Fast Food Restaurant	Veterinarian	Fishing Store	Bakery	Basketball Stadium	Beach	Bed & Breakfast	Burger Joint	Cafeteria
4	Liloan	Mountain	Veterinarian	Fishing Store	Bakery	Basketball Stadium	Beach	Bed & Breakfast	Burger Joint	Cafeteria	Café
5	Mandaue	Fast Food Restaurant	Restaurant	Resort	Donut Shop	Convenience Store	Veterinarian	Café	English Restaurant	Chinese Restaurant	Burger Joint
6	Minglanilla	BBQ Joint	Bakery	Shopping Mall	Gas Station	Chinese Restaurant	Fast Food Restaurant	English Restaurant	Donut Shop	Convenience Store	Cafeteria
7	Talisay	Bakery	Beach	Bed & Breakfast	Pharmacy	Veterinarian	Fishing Store	Basketball Stadium	Burger Joint	Cafeteria	Café

Metro Cebu top 2 categories are diverse, covering not just food establishments but outdoor and recreational venues as well. The study also gave light to the limited Foursquare and other user review site availability that can be aggregated for the study.

Hopefully with more exposure for the Cebu region overall, more people from other parts of the globe can discover the venues it offers or even open new business in the future.

Area	Area Latitude	Area Longitude	Venue
Cebu City	28	28	28
Consolacion	4	4	4
Cordova	5	5	5
Danao	2	2	2
Liloan	1	1	1
Mandaue	5	5	5
Minglanilla	5	5	5
Talisay	4	4	4

Metropolitan Cebu has low density of venue groups that are isolated across the island. This allows more potential for commercial growth in the future and given the strategic location. Surrounded by shipping trade-routes and neighbouring islands. It is evident that the Cebu City capital is the most commercialized with top venue-classifications like Makati City such as fast-food restaurants and hotels. The strength and unique attribute of Metro Cebu lies in the diversity of what each other venue cluster has to offer. Outside of the bustling city-scapes of the capital, you have a mountain range in one location and on the other end of the spectrum, you have beaches and resorts.

## VI. Conclusion

The Data Science Capstone goal was to compare the venue similarities and differences between Makati City and Metropolitan Cebu locations in the Philippines. Folium maps representing Makati City and Metro Cebu locales were successfully generated, combined with cluster info from Foursquare statistics are overlaid in order to represent the clustering of venues/establishments present in each area under study.

For stakeholders, Metro Cebu is an ideal location to visit to experience nature and the outdoors, with the option to satisfy the upscale commercial life as provided by Cebu City. Visualization data in this study also help to show the spread of clusters with the help of geo-positions in Metro Cebu. Makati benefits from accessibility and modern transportation, while Metro Cebu clusters are separated such that additional transportation and travel planning may be required. Whichever location you choose, there is something for you in the Philippines.

## References

- [1] [https://en.wikipedia.org/wiki/Metro\\_Cebu](https://en.wikipedia.org/wiki/Metro_Cebu)
- [2] <https://www.aggdata.com/>
- [3] <https://geonames.org/>
- [4] <https://psa.gov.ph>