Battle of the Neighbourhoods in the Island of the Gods

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IBM DATA SCIENCE CAPSTONE PROJECT

Background

- Investor intends to open a bar and restaurant in Bali
- Business problems
- Requirements and criterias
- Target Audience

References

- Google Map to visually locate each of the beach site in Bali
- Foursquare Developer toolkit:
  - CLIENT_ID
  - CLIENT_SECRET
  - VERSION = '20190821'
- Wikipedia:
  - (https://en.wikipedia.org/wiki/Tourism_in_Indonesia)

Criterias for selection:

- Near to beach front (within walking distance) as the investor is fond of swimming/surfing
- Location must have diversity of businesses
- Location must be in prime area
- Choose the location that has least competition

Methodology

- Pre-processing:
  - Pull venues from Foursquare on each of the beach in Bali
  - Set 100 venues on each site with 2 km radius

Pull Kuta beach neighbourhood datas from foursquare

In [6]:
```
LIMIT = 100 # limit of number of venues returned by Foursquare API
radius = 2000 # define radius

# create URL
url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
    CLIENT_ID,
    CLIENT_SECRET,
    VERSION,
    neighborhood_latitude,
    neighborhood_longitude,
    radius,
    LIMIT)
url # display URL
```

Pre-processing (Continued)

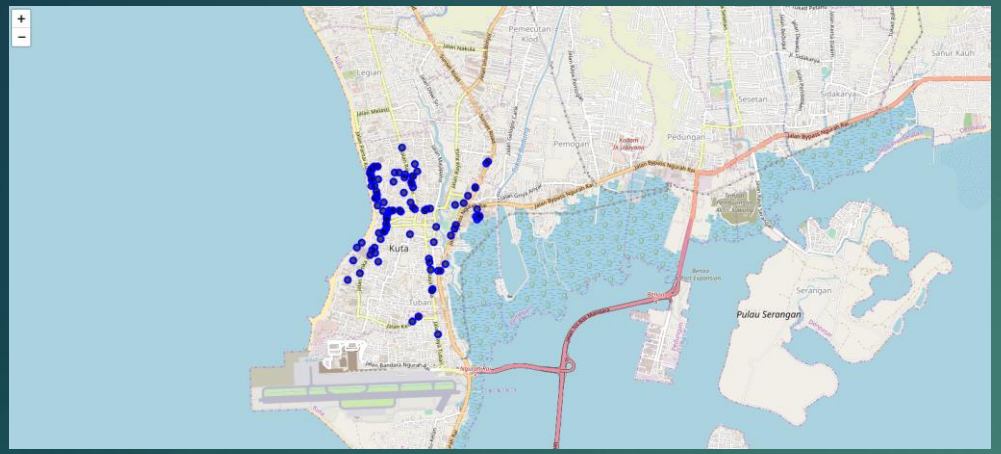
- Cleaning the datas, only capture: name, categories, latitude, and longitude

	name	categories	lat	lng
0	Private Beach, Novotel Benoa Bali	Beach	-8.764399	115.223250
1	Uluwatu Restaurant Novotel Bali Benoa	Restaurant	-8.764289	115.222924
2	Novotel Benoa Bali	Resort	-8.764350	115.221999
3	Mantra Sakala, Bali	Resort	-8.759433	115.221325
4	Sakala Bali	French Restaurant	-8.759408	115.222353
5	Mantra Sakala Resort And Beach Club	Resort	-8.759459	115.220045
6	Home Spa Bali	Spa	-8.765838	115.221561
7	Coco's Beach Restaurant	Indonesian Restaurant	-8.764101	115.223284
8	Grand Mirage Resort & Thalasso Bali	Resort	-8.767243	115.222270
9	Tanjung Benoa Dive & Water Sports	Surf Spot	-8.761520	115.223168
10	Tanjung Benoa Beach (Pantai Tanjung Benoa)	Beach	-8.760537	115.223041
11	Taman Bhagawan	Park	-8.774698	115.223494
12	Sadara Boutique Beach Resort	Resort	-8.769936	115.222931
13	The Whacko Beach Club	Beach Bar	-8.758052	115.221994
14	Pandawa Dive and Water Sport	Water Park	-8.756398	115.221686
15	Starbucks	Coffee Shop	-8.769052	115.222102
16	Bali Cardamon	Indonesian Restaurant	-8.765685	115.221797
17	Nirwana Beach Corner (NBC) Dive & water sport	Water Park	-8.755256	115.221528
18	Bayu Suta Dive & Water Sports	Surf Spot	-8.759558	115.222585
19	The Tree International Bar & Restaurant	Restaurant	-8.771001	115.222201

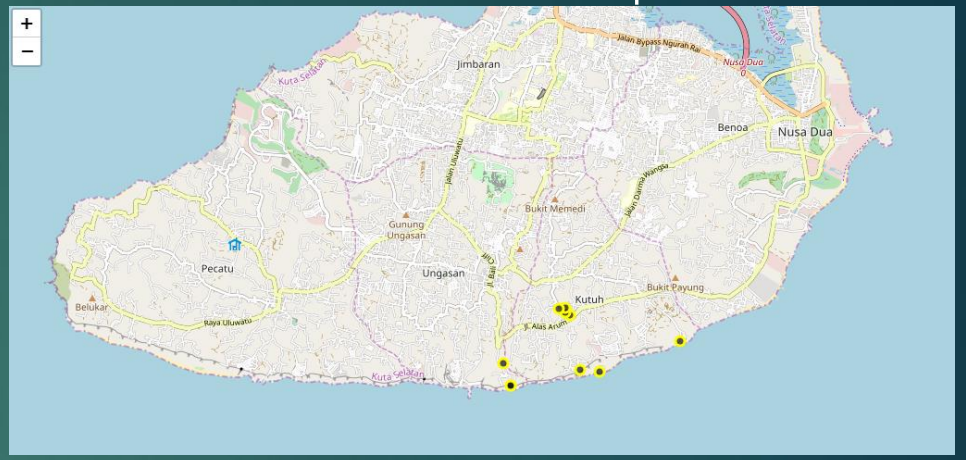
- Proceed to clean all the data frames…..DONE!!!

Folium

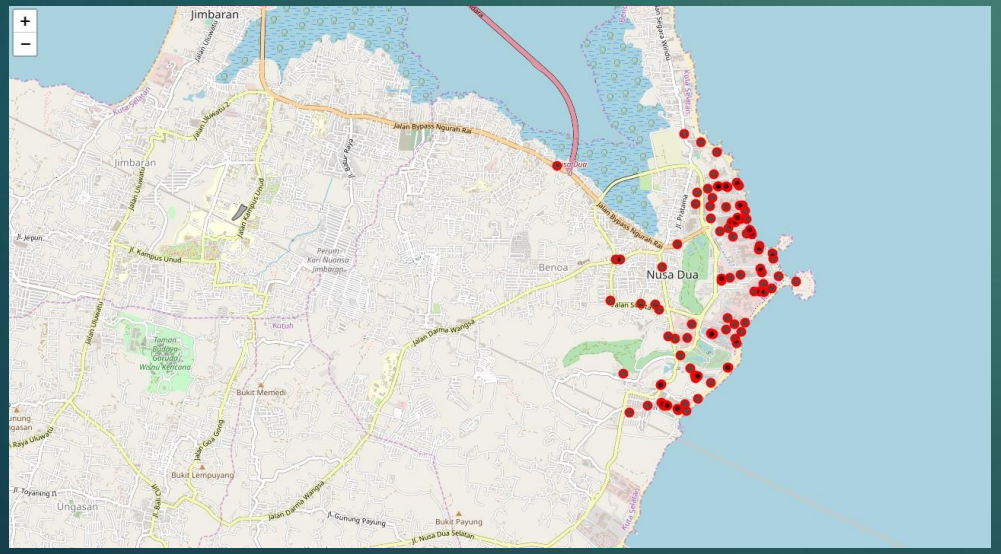
- Kuta beach venues plotted



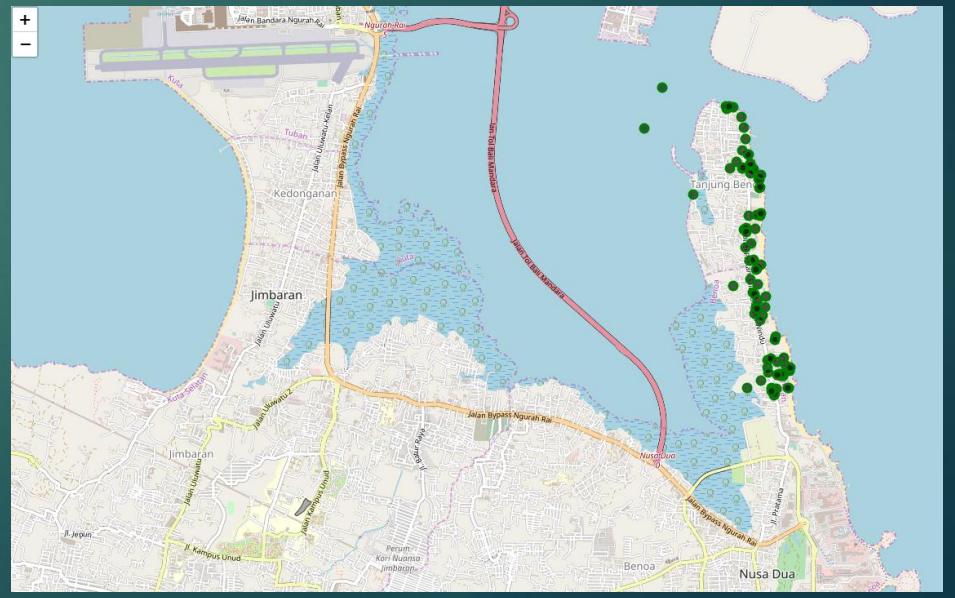
- Pandawa beach venues plotted



- Nusa Dua beach venues plotted



- Tanjung Benoa beach venues plotted



Data Processing

- Merge all the dataframe
- Count all the occurances of each and every category
- Find the means of every field values
- Finally, use .loc to select only food and bar related datapoints into a single new data frame (will be used for analysis later)

```
In [50]: # Picked only food related datas
         merge_all_food = merge_all.loc[[36,17,8,11,41,6,28,18,45,72,16,73,15,12,48,31,46,53,75,76,52,77,25,7,13,9,79,80,26,64,4,14,20,22,66,67,42,68]]
         merge_all_food
```

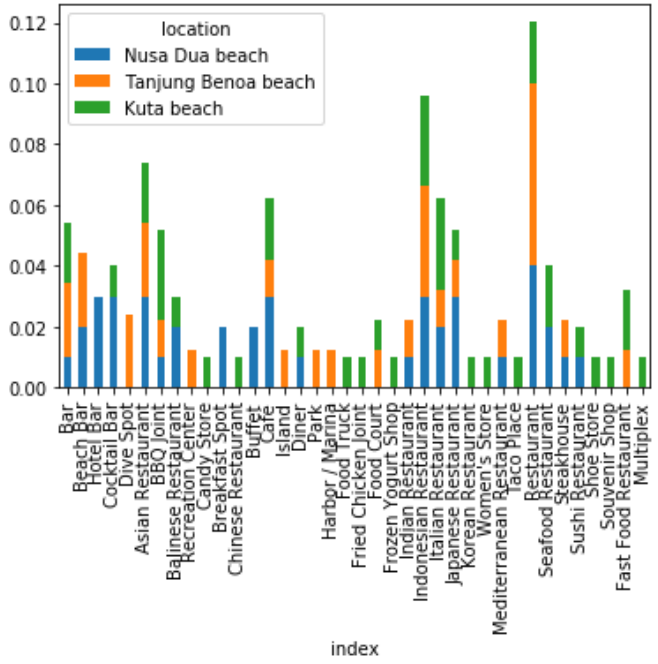
Out[50]:

location	index	Nusa Dua beach	Tanjung Benoa beach	Kuta beach
36	Bar	0.01	0.024096	0.02
17	Beach Bar	0.02	0.024096	NaN
8	Hotel Bar	0.03	NaN	NaN
11	Cocktail Bar	0.03	NaN	0.01
41	Dive Spot	NaN	0.024096	NaN
6	Asian Restaurant	0.03	0.024096	0.02
28	BBQ Joint	0.01	0.012048	0.03
18	Balinese Restaurant	0.02	NaN	0.01

A Stacked bar graph to rule them all

```
In [53]: merge_all_food.plot.bar(x='index', stacked=True)
```

```
Out[53]: <matplotlib.axes._subplots.AxesSubplot at 0x7fb6c0fd9ac8>
```



Notice: Kuta beach does not have a beach bar yet

More Data Analysis

- Find unique values in each of the beach site:
  - There are 51 uniques categories in Kuta beach.
  - There are 38 uniques categories in Nusa Dua beach.
  - There are 35 uniques categories in Tanjung Benoa beach.
- Kuta beach has the most diverse food industry as it has high count but low mean

```
In [51]: # Find the most diverse type of food business in each sites
         merge_all_food.describe()
```

Out[51]:

location	Nusa Dua beach	Tanjung Benoa beach	Kuta beach
count	20.000000	19.000000	26.000000
mean	0.020500	0.018389	0.014615
std	0.009445	0.012292	0.007060
min	0.010000	0.012048	0.010000
25%	0.010000	0.012048	0.010000
50%	0.020000	0.012048	0.010000
75%	0.030000	0.024096	0.020000
max	0.040000	0.060241	0.030000

More Data Analysis

- In Kuta beach: 38% of the total businesses are related to food and beverages. Which mean lower competition compared to Nusa Dua beach.

```
In [52]: # Sum the total value
         merge_all_food.sum()

Out[52]: location
         index                 BarBeach BarHotel BarCocktail BarDive SpotAsia...
         Nusa Dua beach                                                    0.41
         Tanjung Benoa beach                                           0.349398
         Kuta beach                                                        0.38
         dtype: object
```

Conclusions

- Kuta beach is within walking distance from the beach front
- More diverse and more vibrant for opening bar and restaurant
- Generally lower competition compared to other areas
- Fulfills all the requirements by the investor

Winner: Kuta beach

Thank you