Open A New Restaurant in Auckland(NZ)

The Battle of Neighbourhoods Part 2

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Open A New Restaurant in Auckland(NZ)

- Open a restaurant is hard, especially for the first time.

- Where the restaurant should be located?

- What kind of restaurant is popular in the area?

- How to conduct an initial investigation to answer the question above.

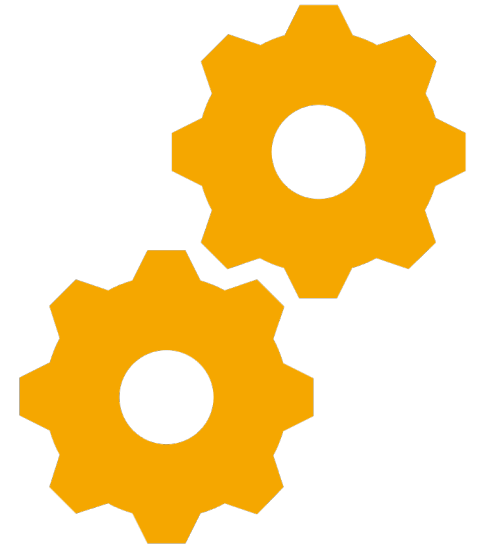- All above is import for a new catering business investor.

The purpose of this project

- Use the data science methodology and its tools to help the invest to over the the issues mentioned in previously section.

- Build up a model or recommendation system to provide a suggestion on the type of restaurant shall be open in any given suburb of Auckland(NZ).

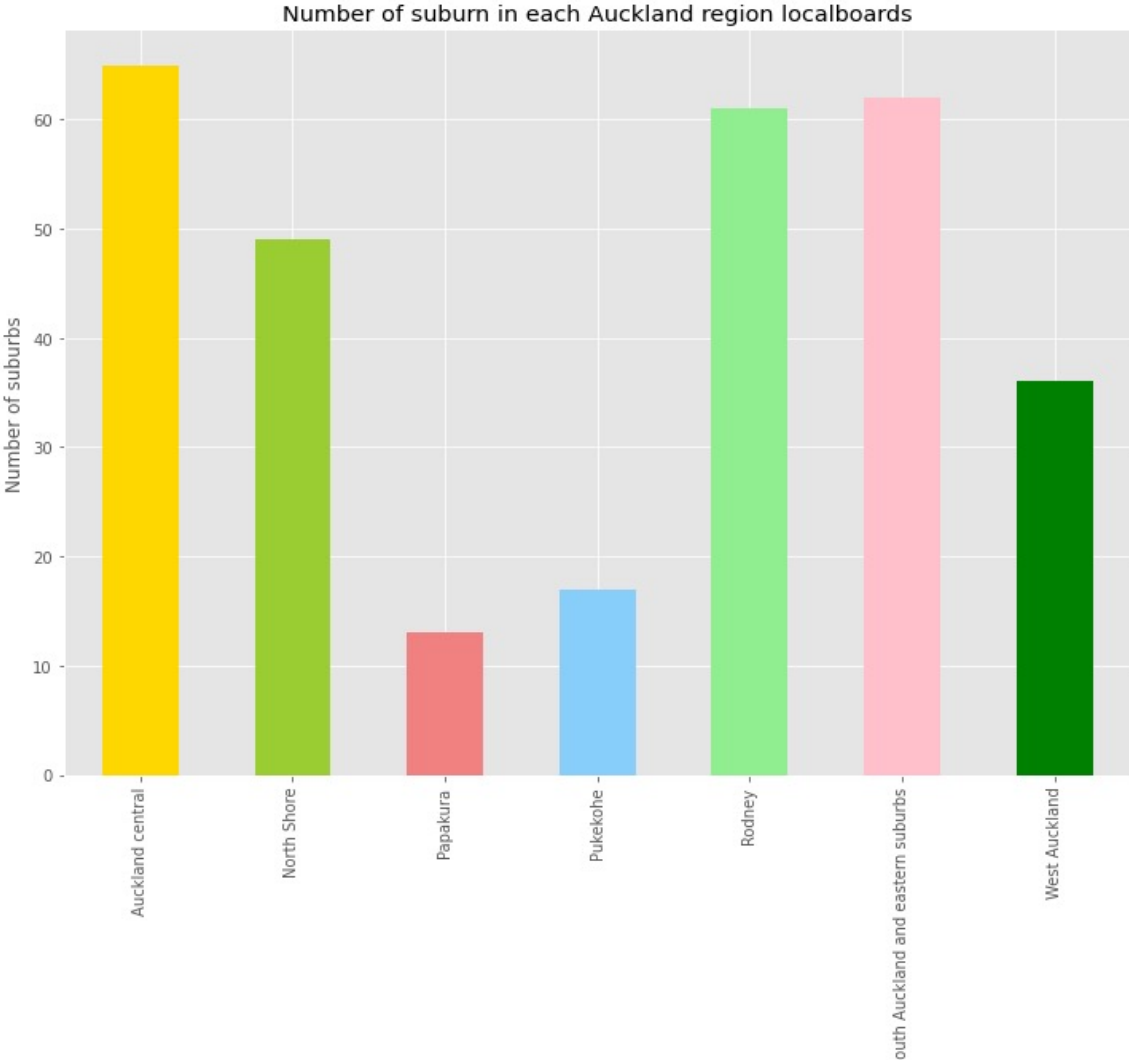- Provided a recommendation list for the suburb which used as example.

Methodology

- List all the suburb in Auckland

- Pick as much restaurants existed in all suburb as possible.

- Categorize restaurant into different cuisine classes.

- Analysis the ratio for each cuisine in Big Auckland region.

- Use this ratio as baseline.

- Compare the different between ratio of cuisine in desired suburb with the baseline and determine the shortage for a particular cuisine in this suburb.

Auckland Region

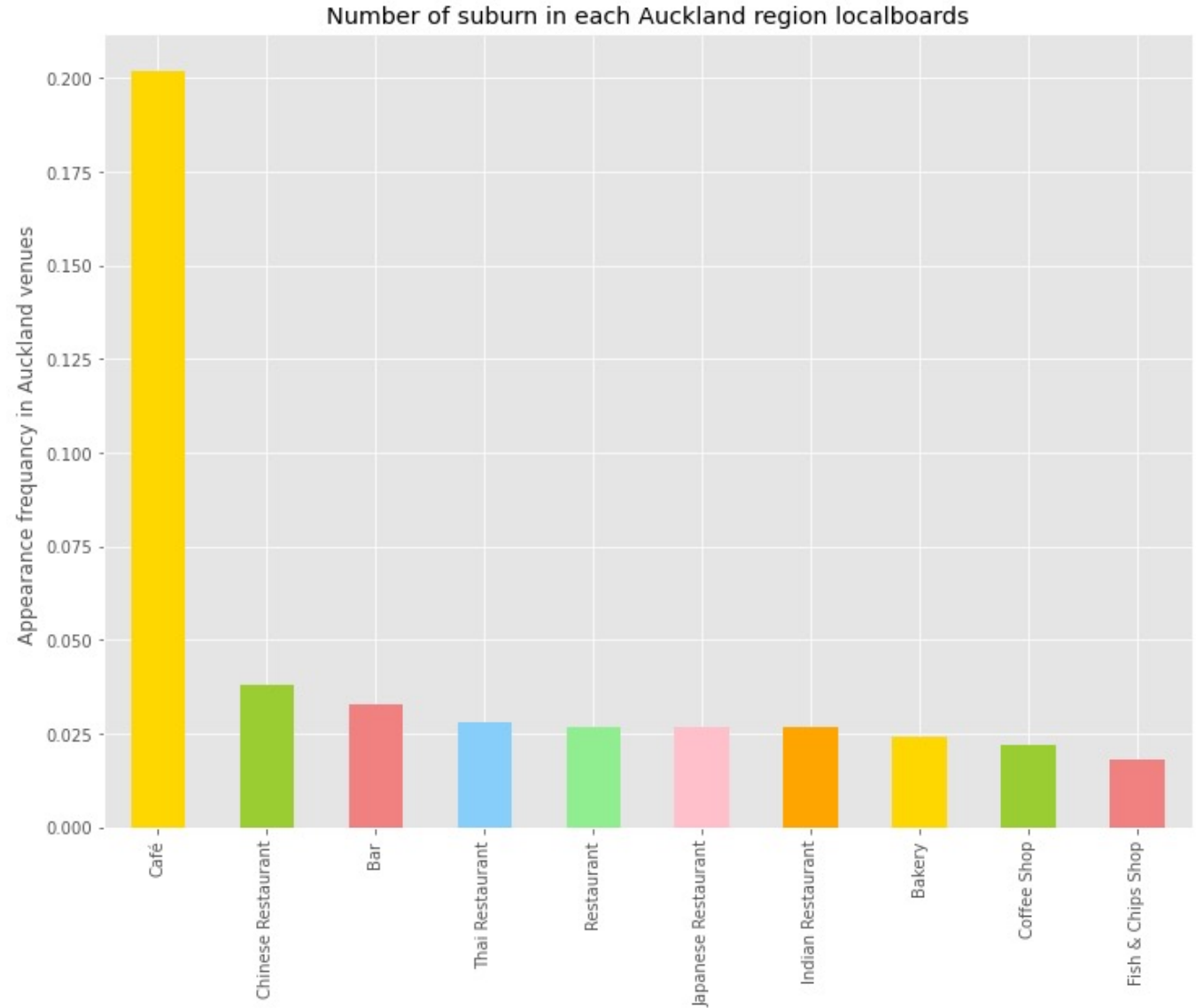Number of suburn in each Auckland region localboards

Data mining with Foursquare API

- Find the Venues in each suburbs with the help of Foursquare API

- Deleted venues which are not belong to food and service industries.

- Deleted all the duplicated the venues.

- Sorted all venues according their type of cuisine.

- List the top10 cuisine in Auckland, and this list is the baseline for our analysis.

Top 10 Venues in Auckland

- There are 2986 venues in 303 suburbs

- There are 248 different type of restaurant in total.

- The café is the most common cuisine among 303 suburbs.

Number of suburn in each Auckland region localboards

Auckland vs Ponsonby

```
----Auckland----                          ----Ponsonby----
                  venue   freq                              venue   freq
0                  Café  0.204            0                  Café  0.214
1     Chinese Restaurant  0.038            1     Italian Restaurant  0.071
2                   Bar  0.035            2            Restaurant  0.071
3    Japanese Restaurant  0.028            3              Wine Bar  0.048
4                Bakery  0.026            4         Shopping Mall  0.048
5      Indian Restaurant  0.026            5          Burger Joint  0.048
6            Restaurant  0.025            6      French Restaurant  0.048
7        Thai Restaurant  0.025            7   Japanese Restaurant  0.048
8            Coffee Shop  0.024            8           Pizza Place  0.048
9        Asian Restaurant  0.017            9  Vietnamese Restaurant  0.024
```

- This process created a content-based recommendation model.

- The system will compare all existing catering classes already have with the top 10 in the Auckland region.

- Find which cuisine classes have been missing.

- Work out the degree of shortage.

$$\Delta C = \frac{(N_t - N_{baseline})}{N_{baseline}}$$

Conclusion

- The list is worked out from comparing the same cuisine between Auckland and Ponsonby. Dif is $\{\Delta C\}$ from the model.
- {-1} mean no same cuisine in the given area, open this kind of cuisine will be facing less competition.
- $\{\Delta C$ = > 0\} there are too many restaurant for this catering type and it has got too many competitors.

	rec_venue	dif
0	Chinese Restaurant	-1.000000
1	Indian Restaurant	-1.000000
2	Bakery	-1.000000
3	Coffee Shop	-1.000000
4	Bar	-0.314286
5	Thai Restaurant	-0.040000
6	Café	0.049020
7	Japanese Restaurant	0.714286
8	Pizza Place	1.823529
9	Restaurant	1.840000

Thank you!