IBM Applied Data Science Capstone

Opening a New Shopping Mall in Auckland , New Zealand

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April 2020

Business Problem

- Location of the shopping mall is one of the most important decisions that will determine whether the mall will be a success or a failure

- Objective: To analyse and select the best locations in the city of Auckland, New Zealand to open a new shopping mall

- This project is timely as the city is currently suffering from oversupply of shopping malls

- Business question
  In the city of Auckland, New Zealand, if a property developer is looking to open a new shopping mall, where would you recommend that they open it?

Data

- Data required

  ➢ List of neighborhoods in Auckland
  ➢ Latitude and longitude coordinates of the neighborhoods
  ➢ Venue data, particularly data related to shopping malls

- Sources of data

  ➢ Wikipedia page for neighborhoods
  (https://en.wikipedia.org/wiki/List_of_suburbs_of_Auckland)
  ➢ Geocoder package for latitude and longitude coordinates
 ➢ Foursquare API for venue data

Methodology

- Web scraping Wikipedia page for neighborhoods list

- Get latitude and longitude coordinates using Geocoder

- Use Foursquare API to get venue data

- Group data by neighborhood and taking the mean of the frequency of occurrence of each venue category

- Filter venue category by Shopping Mall

- Perform clustering on the data by using k-means clustering

- Visualize the clusters in a map using Folium

Results

Categorized the neighborhoods into 3 clusters :

➢ Cluster 0: neighborhoods with high concentration of shopping malls

➢ Cluster 1: neighborhoods with moderate number of shopping malls

➢ Cluster 2: neighborhoods with low number to no existence of shopping malls
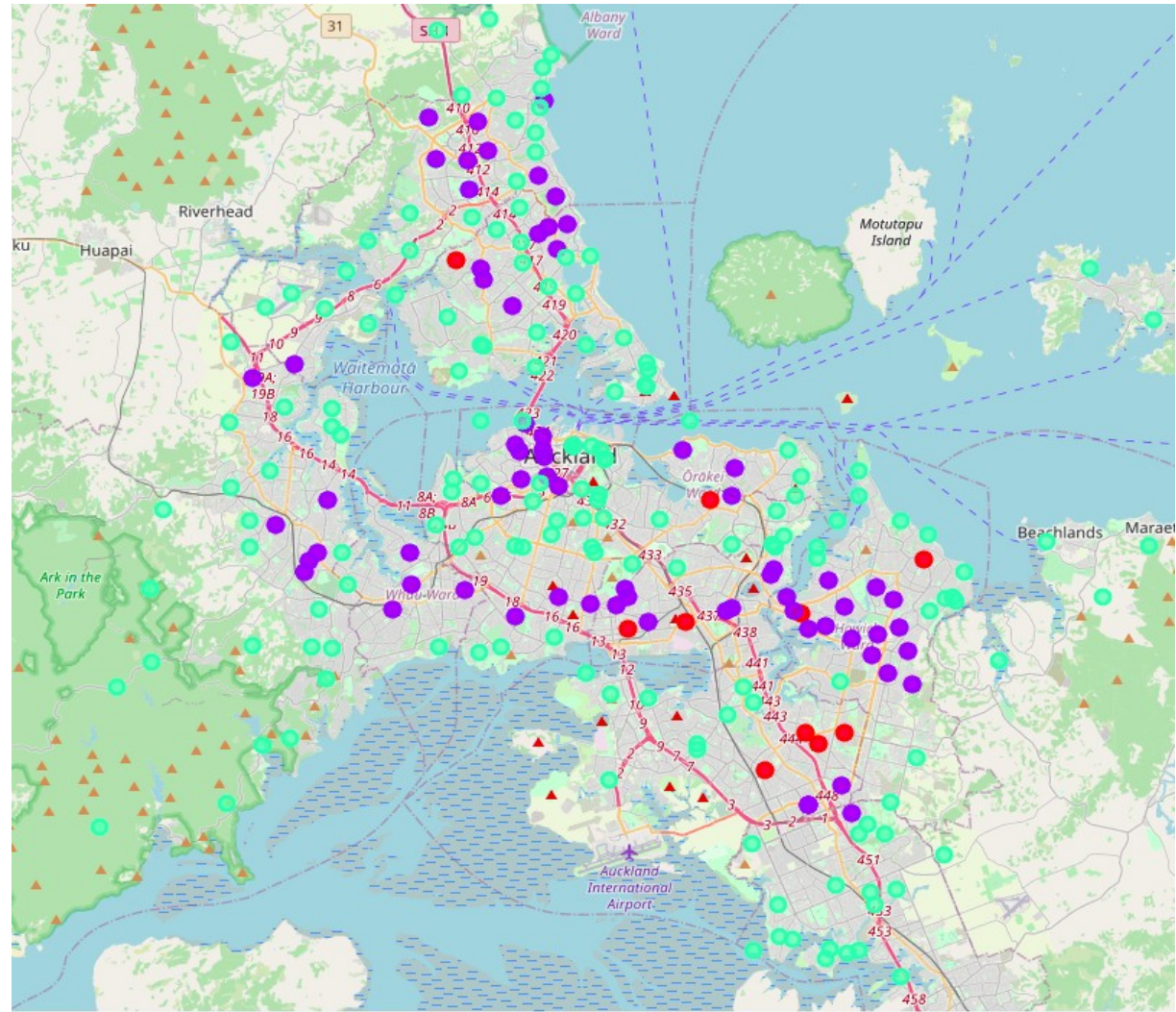
Discussion

- Most of the shopping malls are concentrated in the central area of the city

- Highest number in cluster 0 and moderate number in cluster 1

- Cluster 2 has very low number to no shopping mall in the neighborhoods

- Oversupply of shopping malls mostly happened in the central area of the city, with the suburb area still have very few shopping malls

Recommendations

- Open new shopping malls in neighborhoods in cluster 2 with little to no competition

- Can also open in neighborhoods in cluster 1 with moderate competition if have unique selling propositions to stand out from the competition

- Avoid neighborhoods in cluster 0, already high concentration of shopping malls and intense competition

Conclusion

- Answer to business question: The neighborhoods in cluster 2 are the most preferred locations to open a new shopping mall

- Findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potential locations while avoiding overcrowded areas in their decisions to open a new shopping mall