

Coursera Capstone

An IBM Applied Data Science Course

Analysing Crime Rate in Toronto Neighbourhoods

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→ Introduction

- Low crime rates are desired by every neighbourhood and essential for peaceful co-existence among its members.
- Objective: Identify neighbourhoods in Toronto with low crime rates.

DATA

- Major Crime Indicators(MCI) of neighbourhoods in Toronto, from the years 2014-2019 from Kaggle (<https://www.kaggle.com/kapastor/toronto-police-data-crime-rates-by-neighbourhood/data%22>).
- Geographical coordinates data of the neighbourhoods in Toronto
- Toronto 2016 census population data <https://open.toronto.ca/dataset/neighbourhood-profiles/>
- Foursquare API

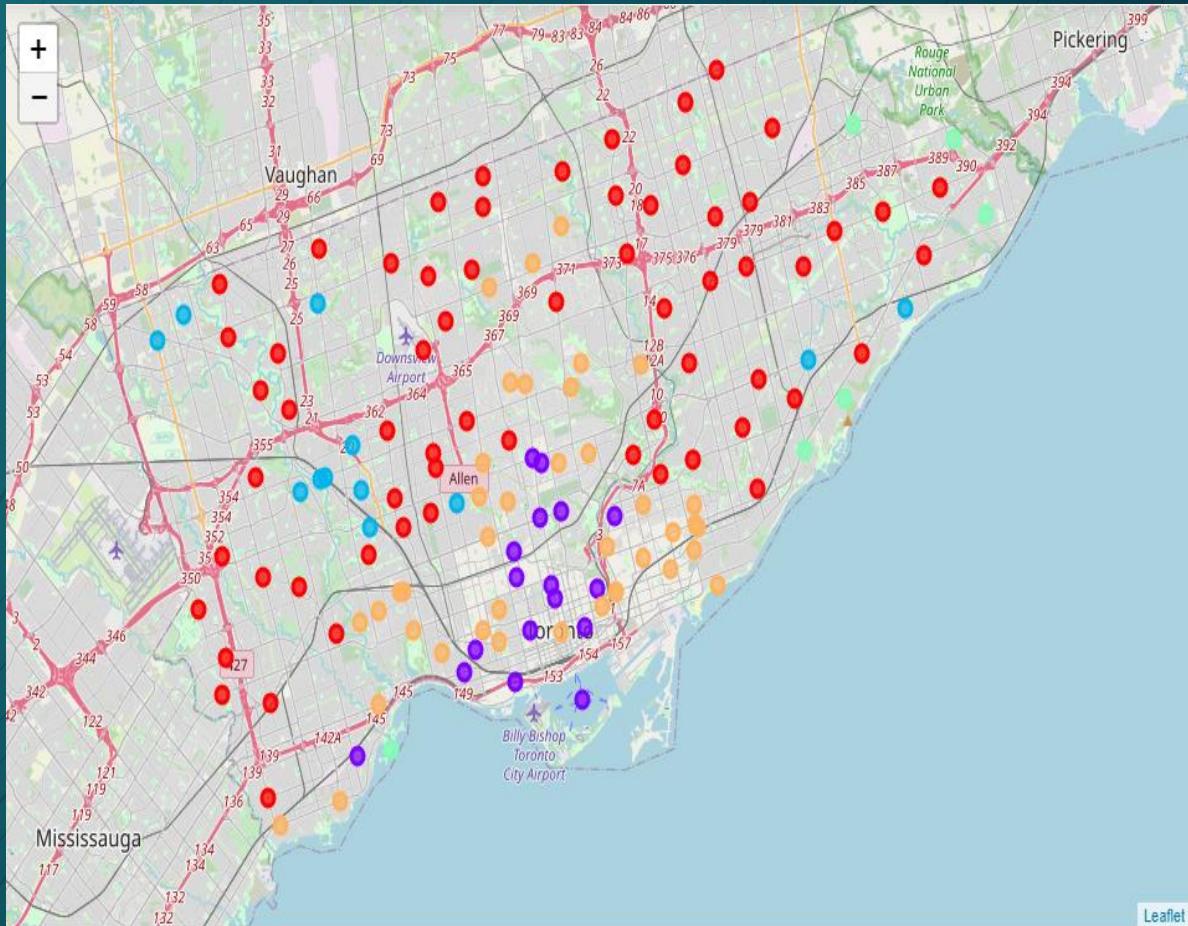
→ METHODOLOGY

- Data cleaning and pre-processing (merging all required data)
- Get venue data from Foursquare API calls
- Use one hot encoding to prepare the data for analysis
- Group data by neighbourhood, taking the mean of the frequency of occurrence of each category
- Perform clustering using k-means algorithm
- Visualize the clusters using the Folium package

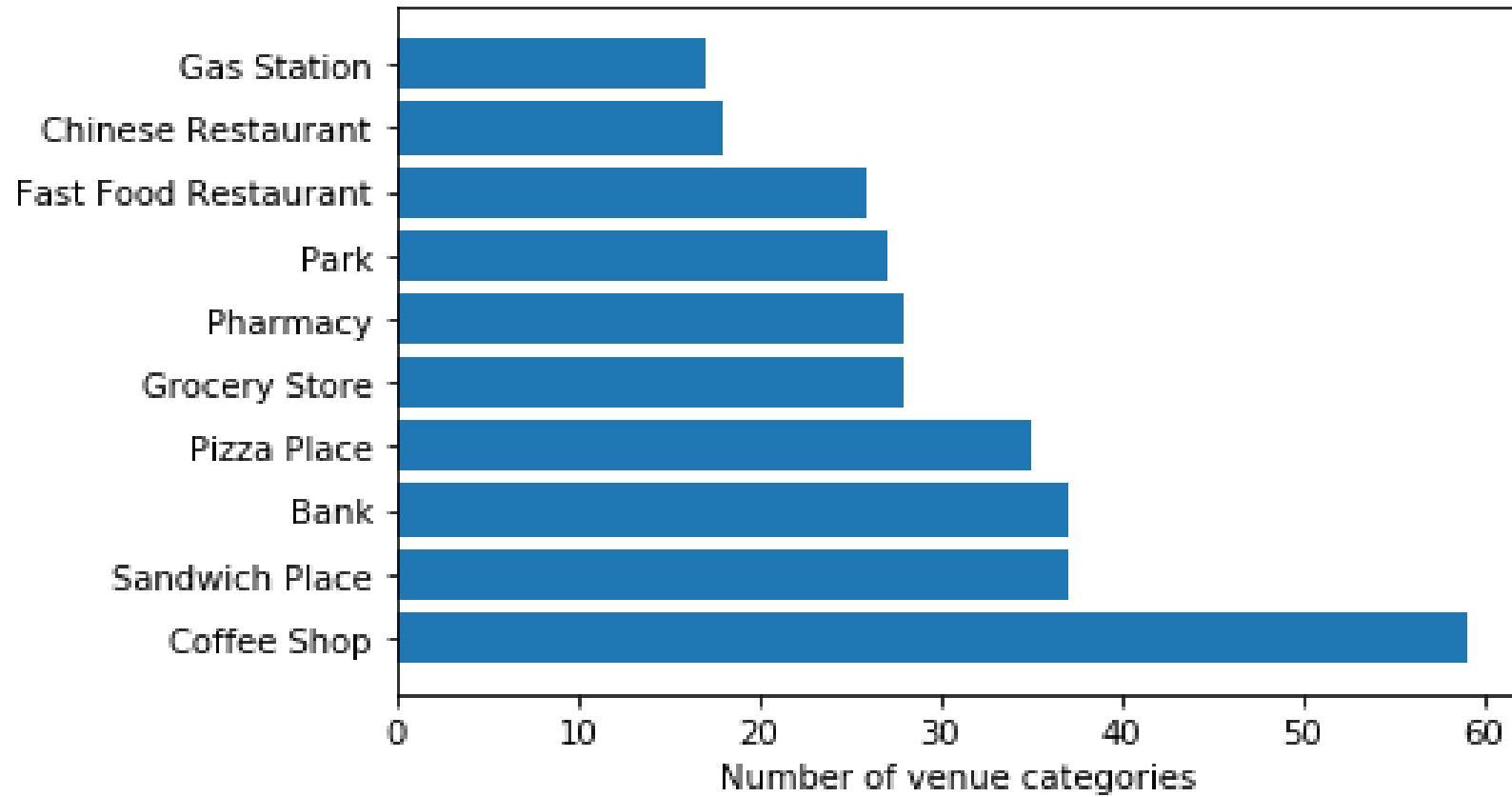
RESULTS

The 5 clusters are represented by the colour codes:

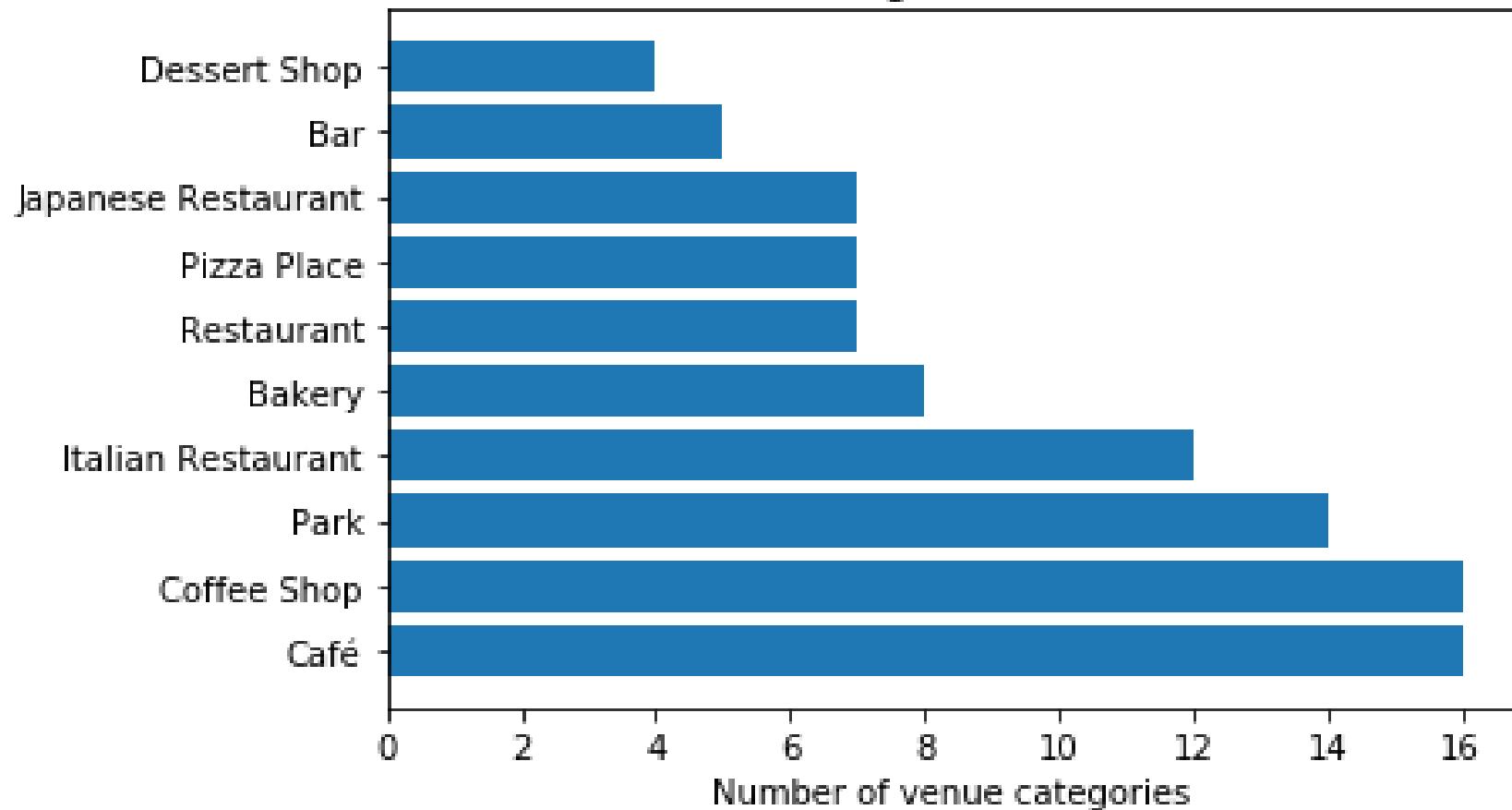
- ❖ Cluster 0: red
- ❖ Cluster 1: purple
- ❖ Cluster 2: blue
- ❖ Cluster 3: mint green
- ❖ Cluster 4: orange



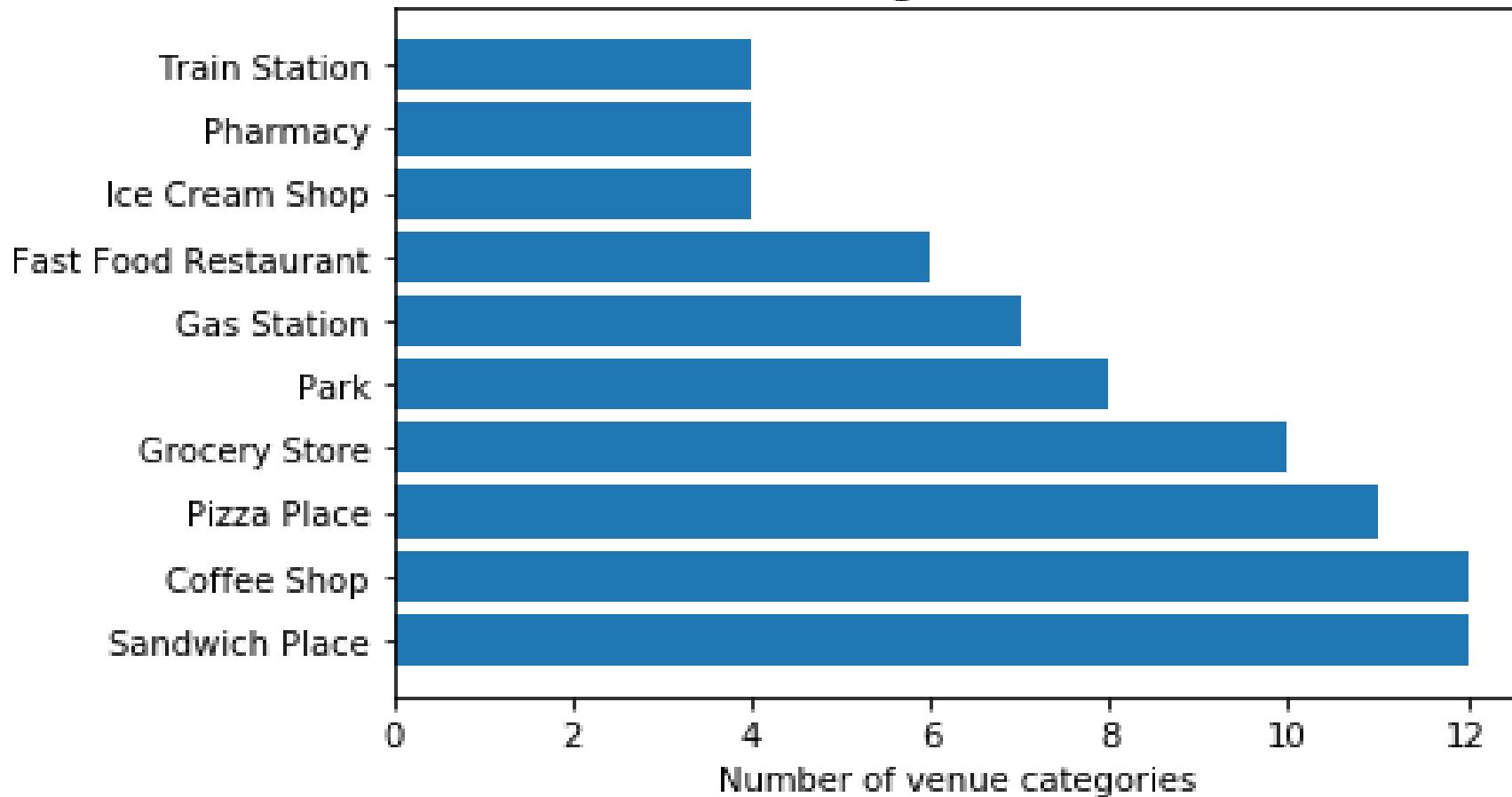
Venue categories in cluster 0



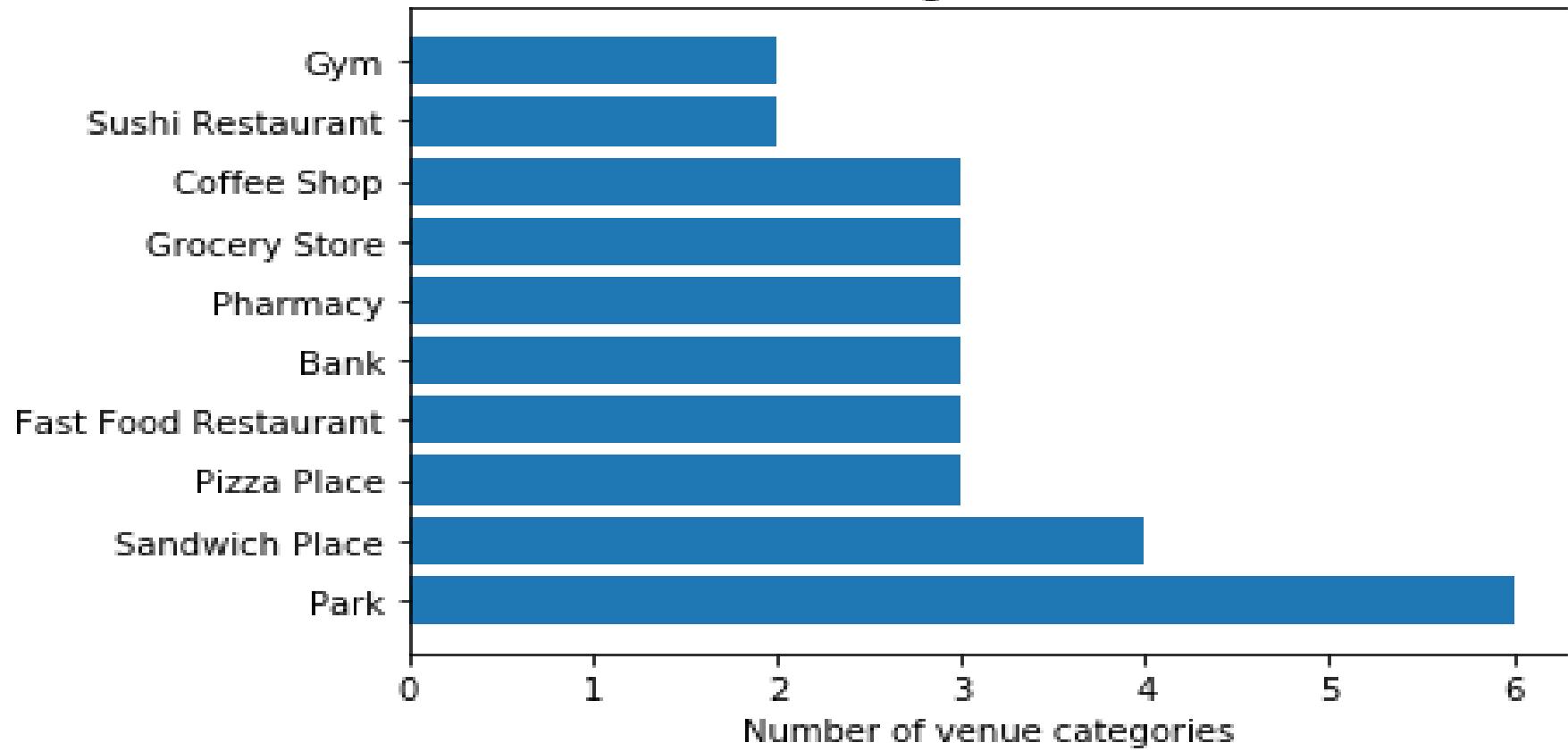
Venue categories in cluster 1



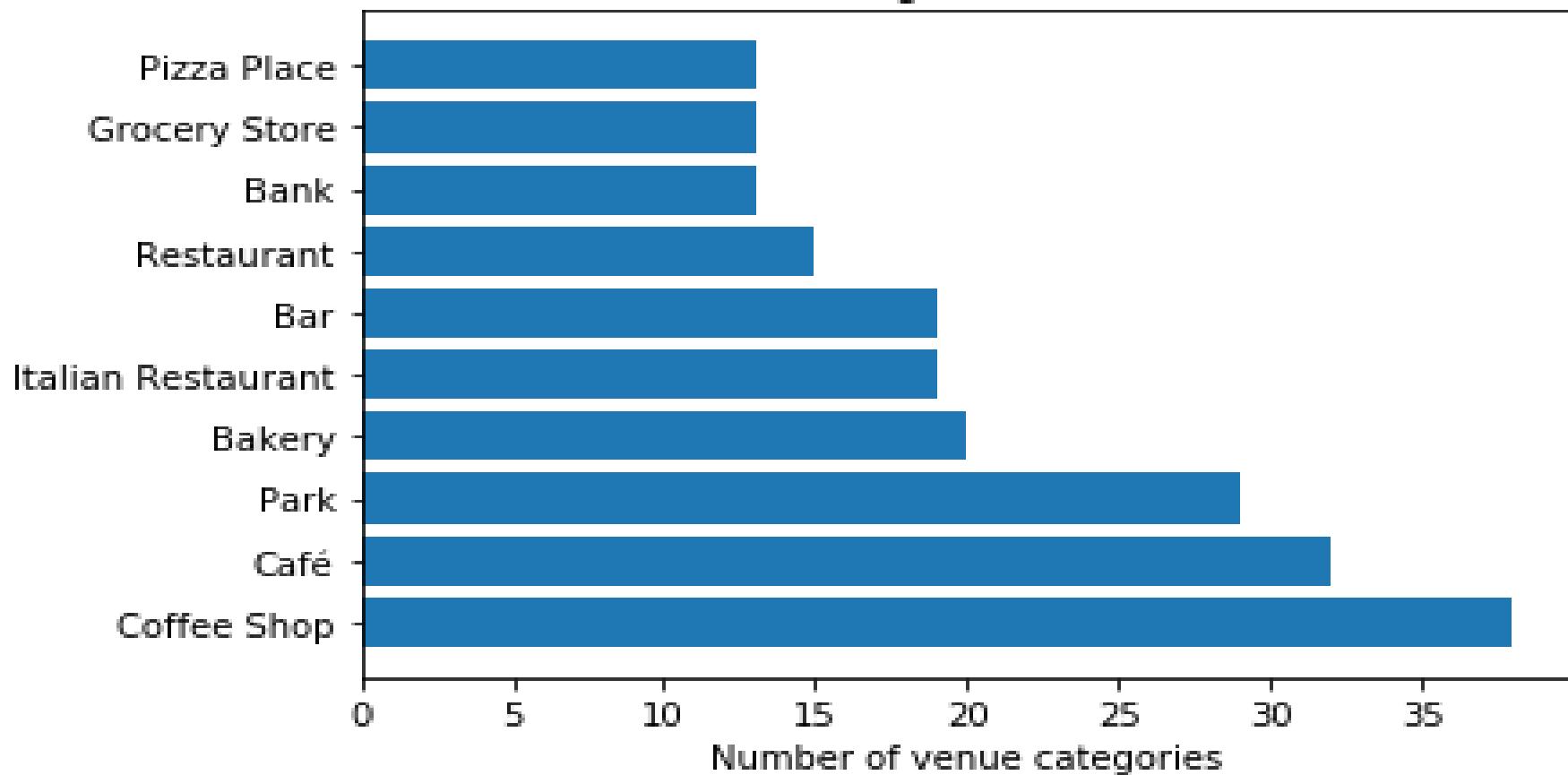
Venue categories in cluster 2



Venue categories in cluster 3



Venue categories in cluster 4

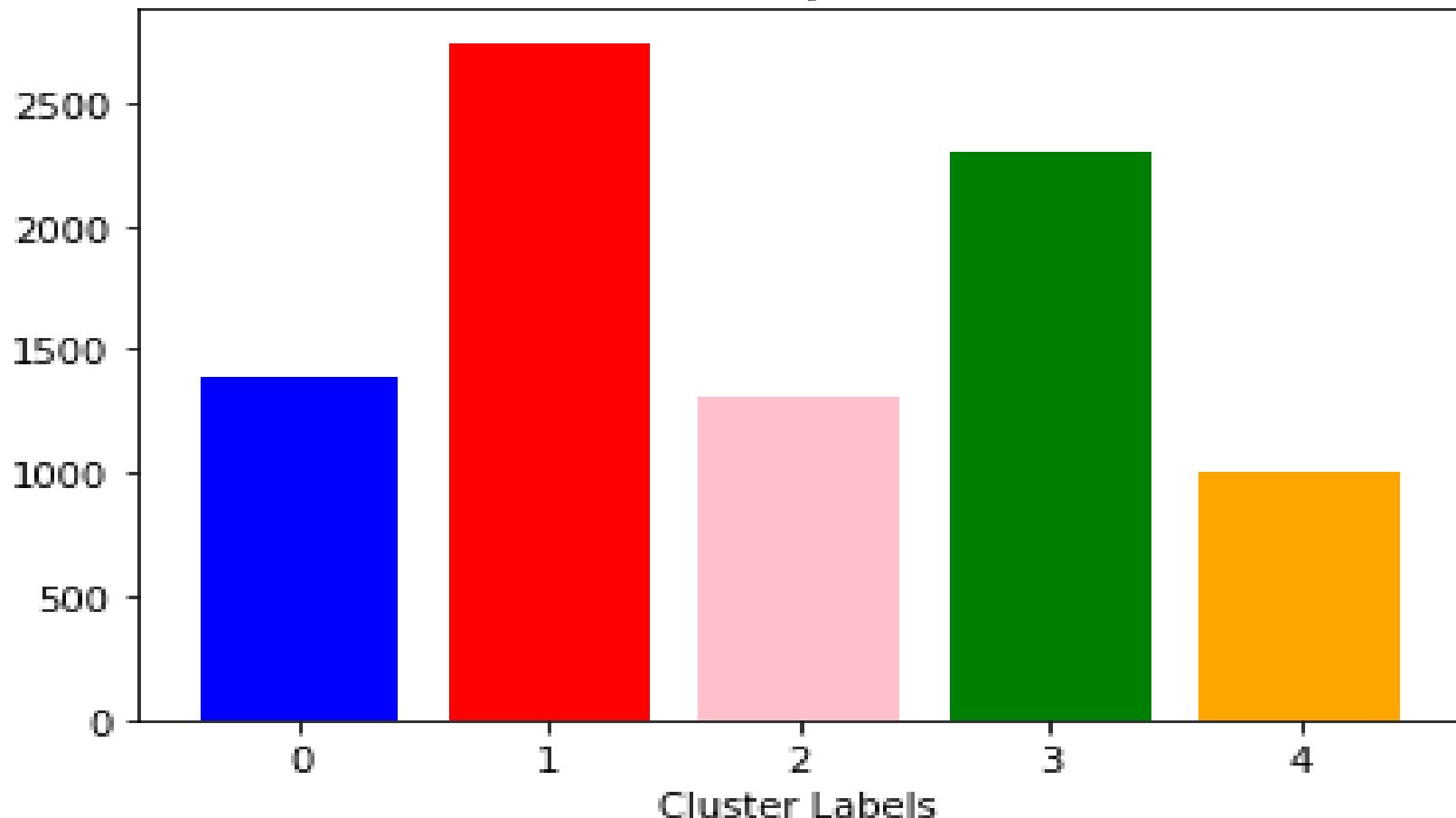


→ DISCUSSION

- cluster 0 consists mainly of coffee shops
- cluster 1 consists mainly of cafes and coffee shops
- cluster 2 mainly consists of restaurants and eateries
- cluster 3 is made up of a large number of parks
- cluster 4 constitutes mainly coffee shops as well as other basic amenities required in residential areas

After comparing the data with the crime count in each cluster, clusters 4, 2, and 0 have the lowest crime rates as seen in the bar chart below.

Crime rate per cluster



→ CONCLUSION

As shown by the analysis, neighbourhoods in clusters 4, 2, and 0 have the lowest crime rates and would be suitable for those looking for peaceful and safe neighbourhoods.



Thank You!!!