

Capstone Project – The Battle of Neighborhoods

Similar Neighborhoods in two Cities

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Introduction

- Moving from one city to another can be a very tedious and time-consuming task.
- People usually prefer to find areas that are similar to their previous areas of residence.
- Hence, it could be very beneficial for people planning to move between cities to gain valuable information about the neighborhoods in the new city that are somewhat identical to their current city.

- In this project, data related to the neighborhoods of the two cities of Adelaide and Melbourne will be used.
- The aim of this project is to find the similar groups of neighborhoods in the two cities and cluster them based on their location data, i.e. data about the types of venues present in the vicinity of the neighborhood.
- The similarity of neighborhoods in different cities is of interest to people who have to move from one city to another (specifically, in this case, from Adelaide to Melbourne or vice-versa). It may also be useful for travel agencies and consultancies that advice people on the suitability of neighborhoods.

Data

- The list of neighborhoods/suburbs, their postal codes and local government areas for Adelaide and Melbourne were obtained from the Wikipedia.
- The latitude and longitude values were obtained using the python library **geopy**.
- The location data for the neighborhoods was obtained using the **Foursquare API**.

	PostalCode	Neighborhood	Local government area
0	5000	Adelaide	City of Adelaide
1	5006	North Adelaide	City of Adelaide
2	5072	Auldana	City of Burnside
3	5066	Beaumont	City of Burnside
4	5067	Beulah Park	City of Burnside

Adelaide data after cleaning

	PostalCode	Neighborhood	Local government area
0	3081	Bellfield	City of Banyule
1	3088	Briar Hill	City of Banyule
2	3083	Bundoora	City of Banyule; City of Darebin; City of Whit...
3	3084	Eaglemont	City of Banyule
4	3095	Eltham	City of Banyule; Shire of Nillumbik

Melbourne data after cleaning

	Neighborhood PostalCode	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	3781	-37.677827	145.136993	OZ Tree Services	-37.676120	145.139290	Tree
1	3781	-37.677827	145.136993	Heritage House Garden Centre	-37.678831	145.132984	Garden Center
2	3139	-37.920040	145.016265	The Good Guys	-37.916573	145.018905	Furniture / Home Store
3	3139	-37.920040	145.016265	Bus Stop 15656	-37.922322	145.018311	Bus Stop
4	3139	-37.920040	145.016265	Brighton Golf Course	-37.923769	145.016880	Golf Course

Venue data

	Neighborhood PostalCode	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	3000	Café	Dessert Shop	Coffee Shop	Bar	Italian Restaurant
1	3002	Hotel	Café	Wine Bar	Park	Convenience Store
2	3003	Flea Market	Asian Restaurant	Fish Market	Flower Shop	Food
3	3004	Café	Cocktail Bar	Dessert Shop	Bar	Italian Restaurant
4	3006	Café	Bar	Hotel	Grocery Store	Bakery

Most common Venues

Methodology

- K-means clustering was used for clustering the neighborhoods according to the most common venues around them.
- Overall, we were able to group the neighborhoods into 5 distinct clusters for both Adelaide and Melbourne.
- Cluster labels from 0 to 4 were assigned to these neighborhood clusters.

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Results

We obtained 5 clusters and on examining them we can characterize them as follows :

- Cluster 0 – Many cafes, restaurants and bars
- Cluster 1 – Many supermarkets, groceries, furniture and departmental stores

- Cluster 2 – Sports/athletics venues and stadiums
- Cluster 3 – Many parks and playgrounds
- Cluster 4 – Sparsely populated areas on the outskirts/countryside

To view the neighborhoods in each cluster, view the corresponding notebook on Github.

Conclusion

- By using **k-means clustering**, we were able to divide the neighborhoods in Adelaide and Melbourne into 5 different clusters based on the **types of venues around them**, using **location data obtained from Foursquare**.
- Also, by closely examining the clusters, we were able to find the most common venues around the neighborhoods in each of these clusters.

- This may also be useful to people as they may be looking to move to neighborhoods of a particular type based on their personal preferences.
- Ultimately, this information can be helpful to guide people moving between these two cities and looking for suitable localities.
- It could help them make further inquiries about these areas and save precious time by narrowing down possible neighborhoods where they might want to stay.