



The Battle of Neighborhoods

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Introduction

The goal of this project is to help BC residents find neighborhoods that are convenient to live without having a car. Car insurance in BC is very expensive, which makes it challenging for many BC residents to own a car. It's also challenging for people to rely on public transit in BC because of the long wait for buses and the limited coverage of Skytrain. A convenient neighborhood to live in without a car needs to have enough venues within walking distance. We can get venue data near a neighborhood by using FourSquare's API.





Target Audience

1

Current or future residents in BC who don't have a car: the result of this study can help them choose a convenient area to purchase or rent a property

2

Realtors who help clients without a car: this study can help inform realtors to make better suggestions to their clients who enjoy the lifestyle without a car

3

Residential building developers who want to develop transit-oriented residential buildings: there are many residential buildings target at buyers who are transit-oriented in metro-Vancouver. The model and outcome of this study can help residential building developers choose better locations for their transit-oriented projects.



Data

Wikipedia

List of neighborhoods in
Metro Vancouver, BC, Canada

Geocoder

Latitude and Longitude of
these neighborhoods

Foursquare

Venue data near
neighborhoods from
FourSquare



Methodology - Questions

- 01 | Which neighborhood has the most venus to live?
- 02 | Which neighborhood has the most venus to live?
- 03 | Are there tradeoffs between size and price and location?



Methodology - Exploratory Analysis

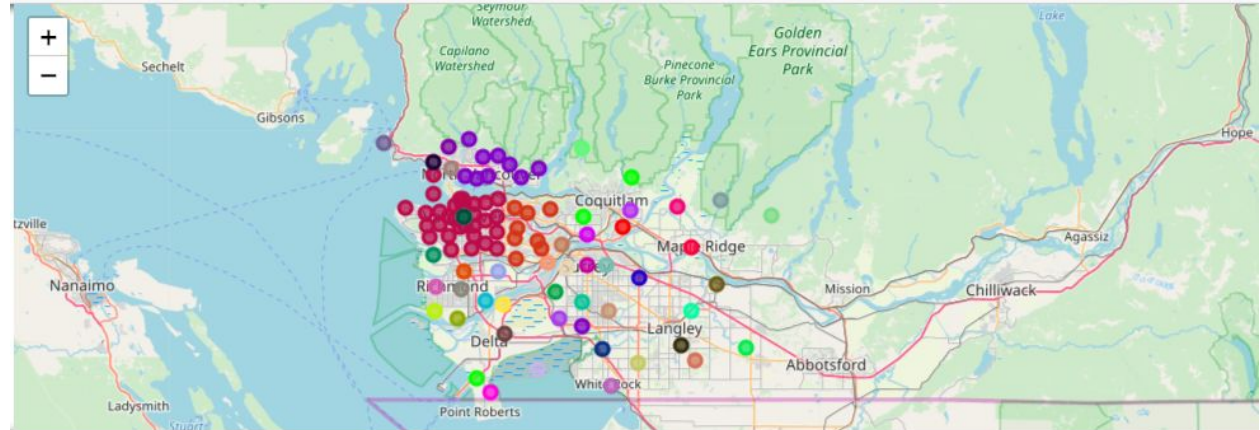
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Analysis - Vancouver Geographical Data

87 neighborhoods in Vancouver are collected

179 communities





Analysis - Vancouver Venues

597 nearby venues are returned by Foursquare API for the 179 communities. These venues are distributed among 104 venue categories.

The top 3 venue categories are:

- Chinese Restaurant, 91 venues
- Liquor Store, 89 venues
- Bubble Tea Shop, 87 venues

The 3 communities with the most venues within 200 meters are:

- Vancouver, Waterfront / Coal Harbour / Canada Place - 27 venues
- Vancouver, West Kensington-Cedar Cottage / NE Riley Park-Little Mountain - 21 venues
- North Vancouver, district municipality - 20 venues

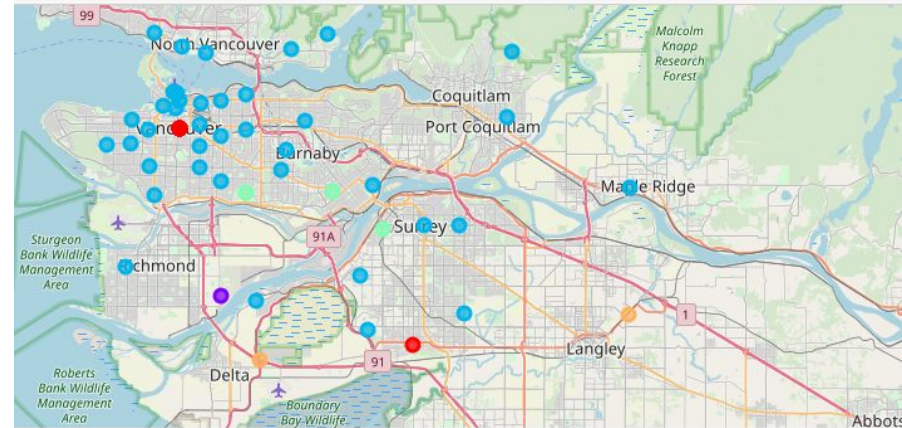


Analysis - Machine Learning

K-means clustering is used to cluster the 179 communities based on their number of venues in each venue category. Each community can be considered as having 104 attributes, which are the number of venues per category. 5 clusters are generated and visualized. The results are discussed in the next section.

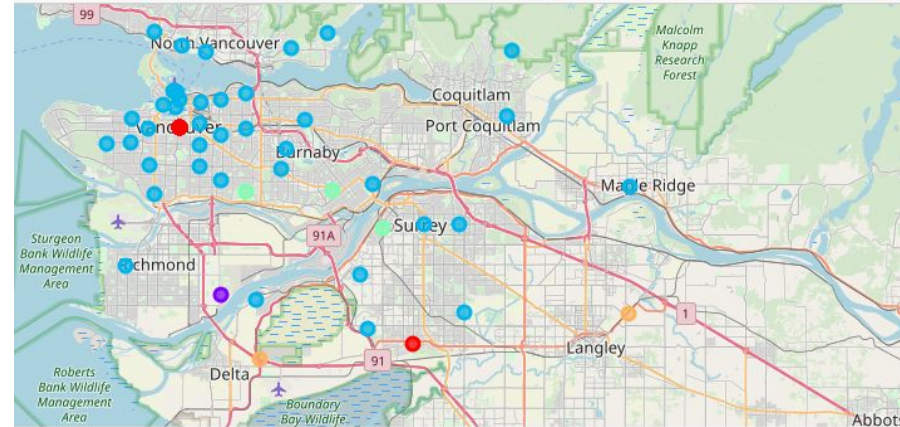
Results

The map below shows the clustering result. Most of the communities are clustered into one cluster. We will examine each cluster in detail.



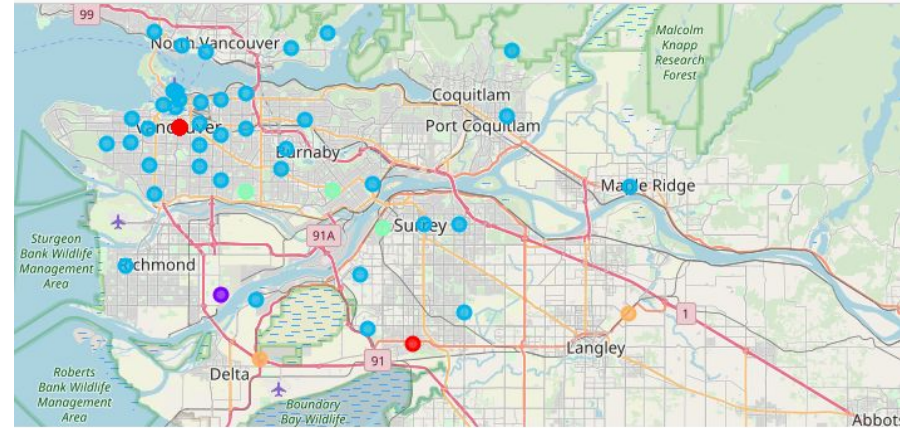
Results - Cluster 1

Cluster 1 has 86 communities, which are represented by the red dots on the map above. Because these places are fairly scattered on the map, they are not all included in the map screenshot. These are rural areas that have very few venues nearby and need to be navigated around by car.



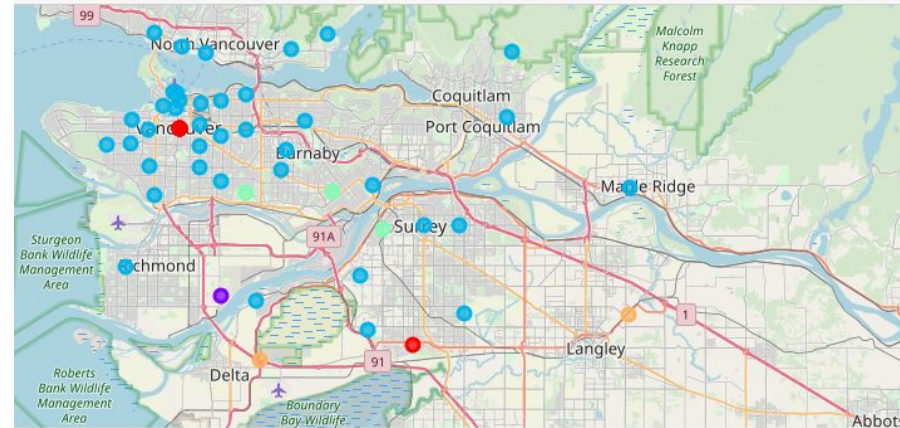
Results - Cluster 2

Cluster 2 only has one community in it, which is Richmond
Southeast represented by the purple dot on the map. The
venues returned for this area is only a Garden centre. It's not
a convenient place to live without a car.



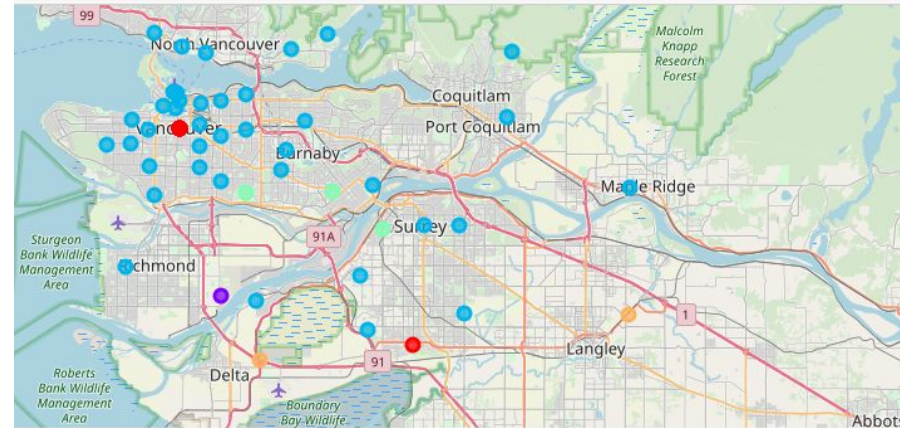
Results - Cluster 3

Cluster 3 returned 40 communities. These communities are represented by the blue dots on the map. They are near the city centre and have relatively more venues than other communities. These places are convenient places to live with car.



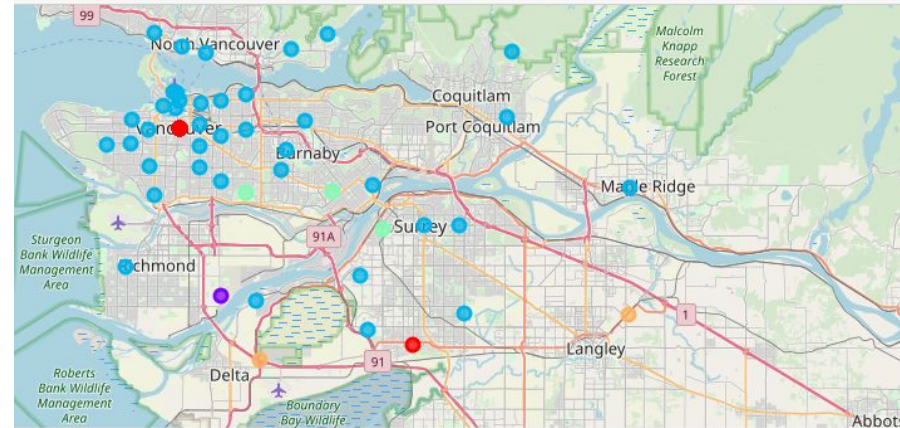
Results - Cluster 4

Cluster 4 returned 3 communities. They are represented by the green dots on the map. These three places are near bus stops and bus stations. However, there are not any other venues near walking distance.



Results - Cluster 5

Cluster 5 returned 2 communities. These two areas are in the same clusters because the only venue categories returned for them are construction & landscaping. These two areas are not convenient to live.





Discussion

Communities in Cluster 3 have the most venues near walking distance. However, because there are 40 venues returned in this cluster, we need to take a closer look into them to narrow down the options.

Among the venues in Cluster 3, the top 5 communities that have the most venues are:

- Vancouver, Waterfront / Coal Harbour / Canada Place - 27 venues
- Vancouver, West Kensington-Cedar Cottage / NE Riley Park-Little Mountain - 21 venues
- North Vancouver, district municipality - 20 venues
- Vancouver, SE Kerrisdale/SW Oakridge/West Marpole - 18 venues
- Vancouver, Bentall Centre - 17 venues

The above 5 communities are the most recommended for people to live without a car based on this analysis.



Conclusion

The analysis recommended five areas in Metro-Vancouver for people to live without a car. The result of the analysis is consistent with my knowledge of Metro-Vancouver. There are a few enhancements we can do to make better recommendations for people.

The first improvement is only considering the venue categories that the users are interested in to cluster the neighbourhoods. For example, some people care about Chinese Restaurants, whereas some other people want to live near Greek Restaurants. It would be helpful if we can first collect the venue categories that the users are interested in and then only cluster the neighbourhoods based on their needs.

The second improvement is to take price factors in as housing and rental cost in Vancouver are very high. Even though some places are convenient to live in, it's not affordable for many people.



Thank you.

