



# Rent and Venues Data Analysis of Vancouver Presentation

# Project Introduction

---

- Vancouver is a coastal seaport city on the mainland of British Columbia, Canada. It has a diverse, metropolitan area, yet you are always close to nature. Vancouver is a diverse population with nearly 40 percent of people living in the city are immigrants.
- I chose Vancouver to do my project because I recently moved into this city and I have never been here before which gave me a really hard time to find a place to rent. I think this problem is not just me but many other people also faced it before.
- After considering all the data that needed, we can create a map and information chart showing the average rent in Vancouver and each area is clustered according to the venue density.

## Data acquisition

---

For this project, we will focus on the rent for **1 bedroom apartment**:

- Rent and neighborhood data in 2021, data scraped from <https://www.zumper.com/rent-research/vancouver-bc>
- Coordinates for each neighborhood using **Google Maps API Geocoding**
- The most common venues for each neighborhood **using Foursquare API**

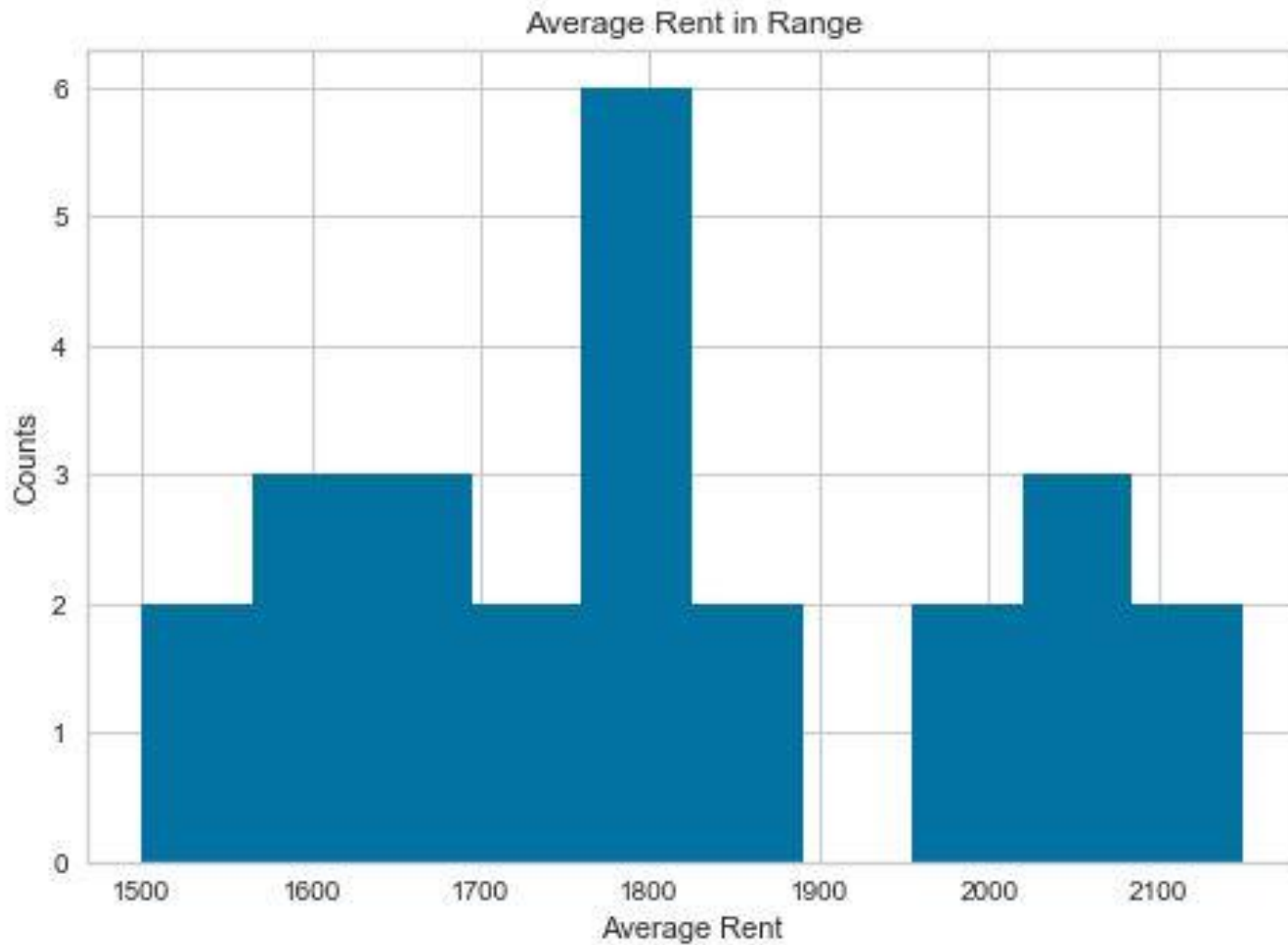
# Data Analysis

	Neighborhood	Rent
0	Downtown Vancouver	\$2,150
1	West End	\$1,870
2	Mt. Pleasant	\$2,030
3	Kitsilano	\$1,875
4	Marpole	\$1,800
5	Fairview	\$1,823
6	University Endowment Lands	\$1,980
7	Riley Park - Little Mountain	\$2,050
8	Renfrew-Collingwood	\$1,690
9	Hastings-Sunrise	\$1,750
10	Kensington-Cedar Cottage	\$1,650
11	West Point Grey	\$1,990
12	Victoria-Fraserview	\$1,500
13	Strathcona	\$1,795
14	Grandview-Woodland	\$1,500
15	Oakridge	\$1,780
16	Cambie	\$2,100
17	Killarney	\$1,750
18	Dunbar	\$1,795
19	Kerrisdale	\$1,620
20	Sunset	\$1,680
21	South Granville	\$1,575
22	Quilchena	\$2,080
23	Arbutus	\$1,600
24	Shaughnessy	\$1800

Dataframe of all neighborhood including rent and coordinates after scraping data from Zumper and using Google Maps API Geocoding

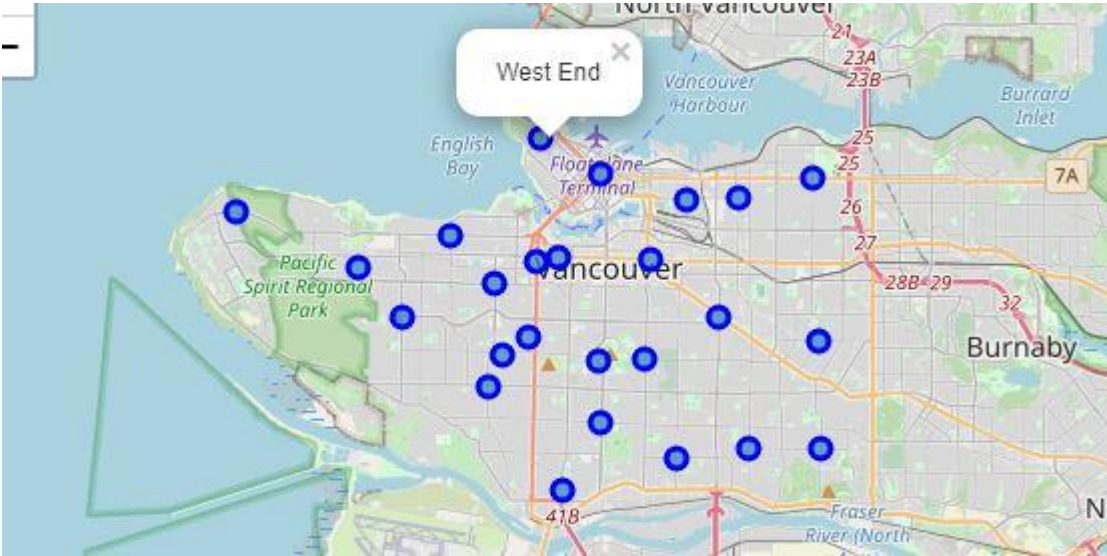
	Neighborhood	Rent	Latitude	Longitude
0	Downtown Vancouver	2150	49.281954	-123.117074
1	West End	1870	49.290054	-123.137604
2	Mt. Pleasant	2030	49.262848	-123.099476
3	Kitsilano	1875	49.268371	-123.168330
4	Marpole	1800	49.210720	-123.130202

# Data Analysis

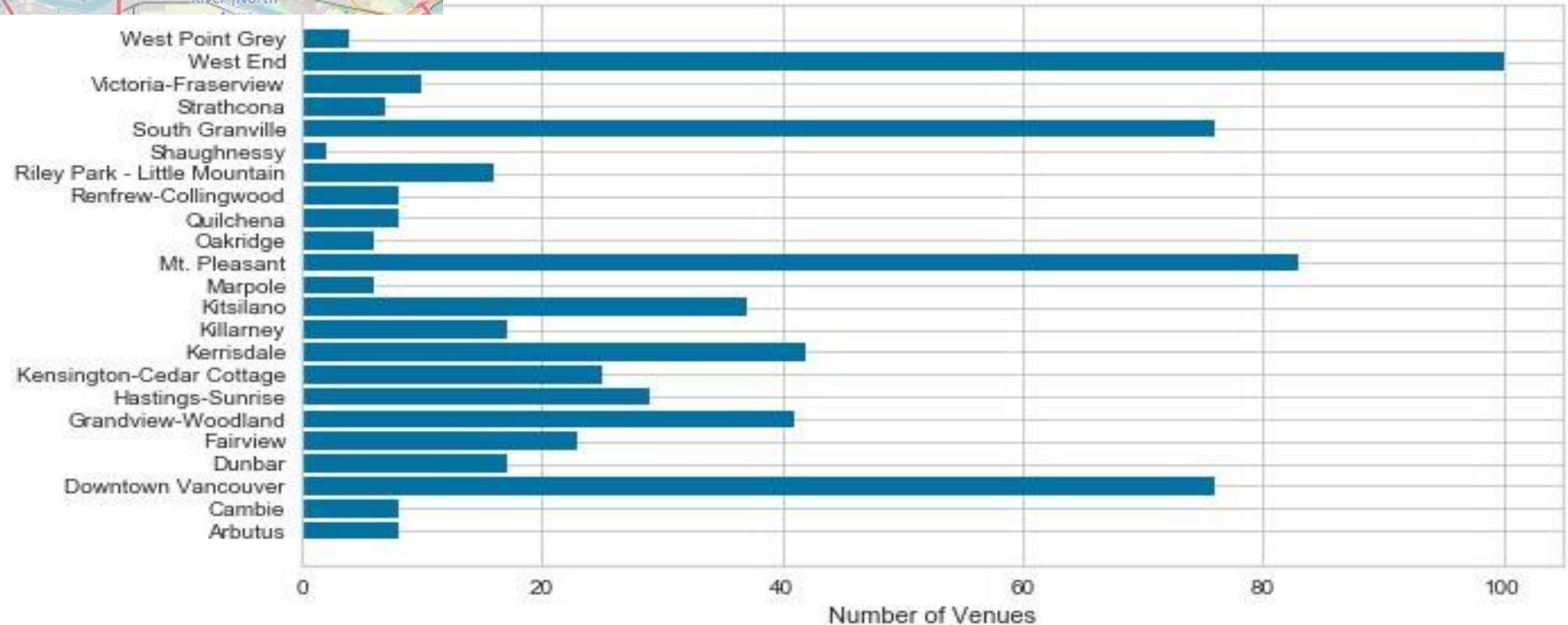


The average rent for a 1-bedroom apartment in Vancouver, BC is currently \$1,980. This is a 5% decrease compared to the previous year.

# Data Analysis

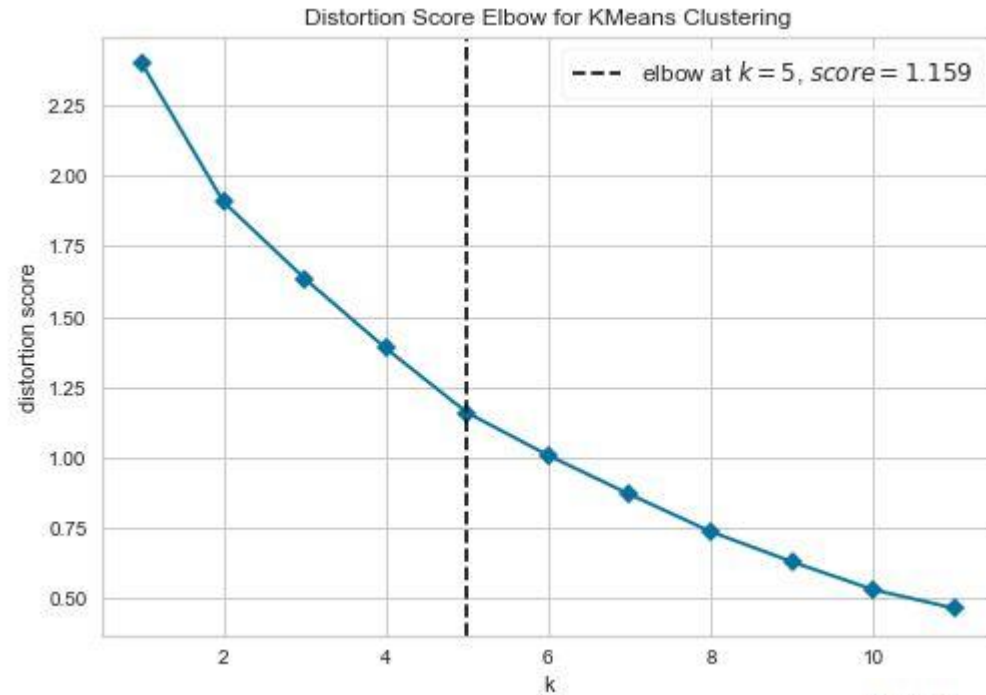


We can see that West End, Mount Pleasant, South Granville and Downtown have the signification number of venues comparing to other neighborhood.





# Data Analysis

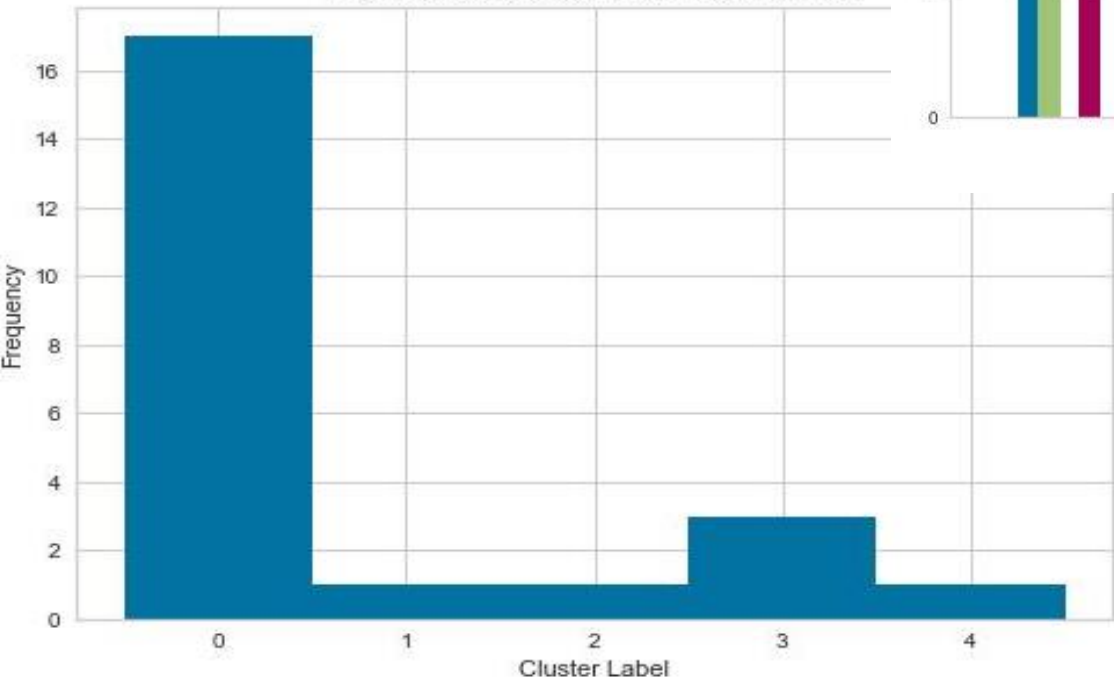


- We can see now top 10 most common venue for each neighborhood. Depend on this, we can use unsupervised learning **K-Means algorithm** to cluster the neighborhoods.
- Using Elbow method, we can specify the optimum  $k=5$  for K-Means algorithm.

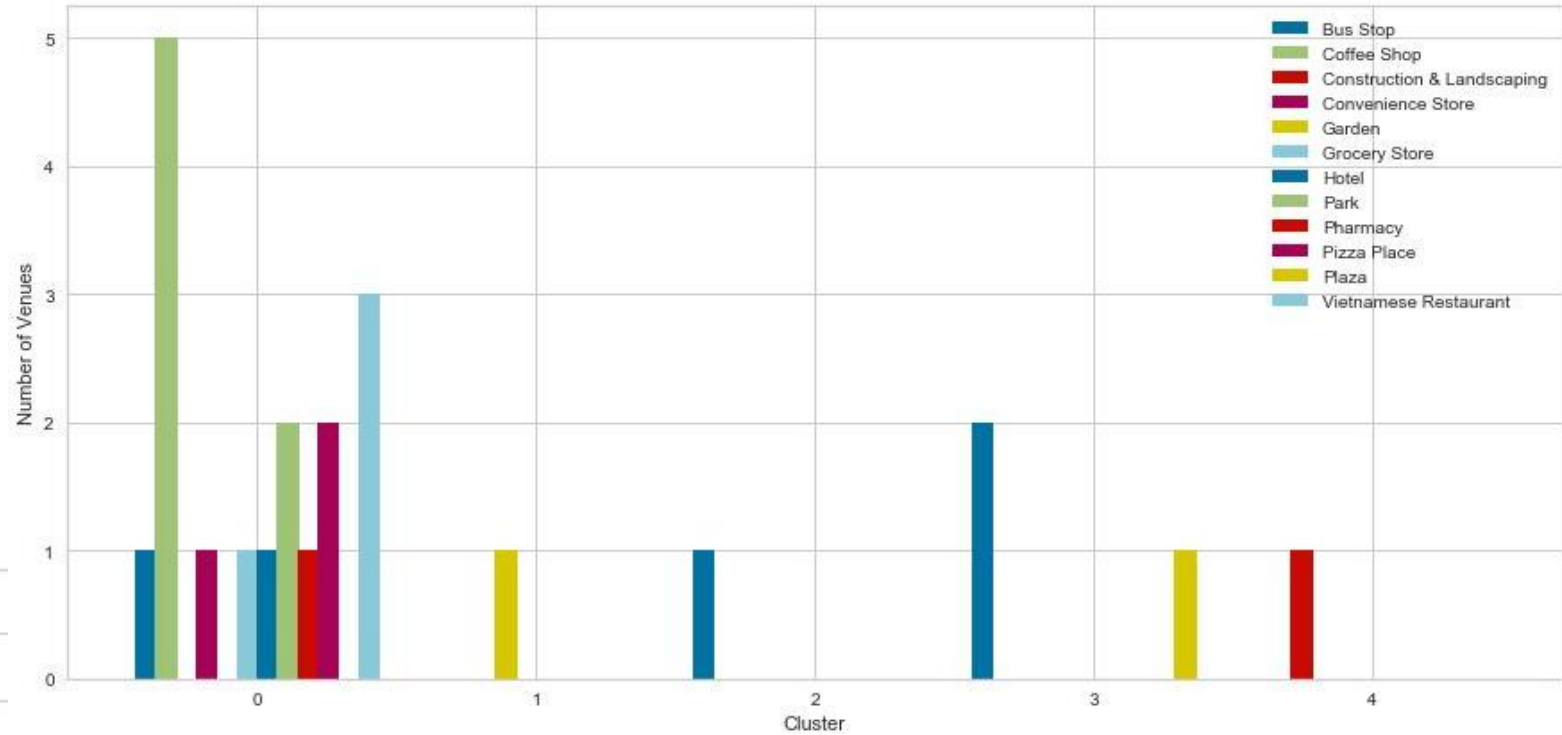
	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Arbutus	Grocery Store	Chinese Restaurant	Ice Cream Shop	Pet Store	Business Service	Café	Gym	Yoga Studio	Fish & Chips Shop	Fast Food Restaurant
1	Cambie	Garden	Park	Plaza	Tennis Court	Seafood Restaurant	Ethiopian Restaurant	Fish & Chips Shop	Fast Food Restaurant	Farmers Market	Farm
2	Downtown Vancouver	Hotel	Café	Seafood Restaurant	Restaurant	Coffee Shop	Concert Hall	Electronics Store	Clothing Store	Taco Place	New American Restaurant
3	Dunbar	Pharmacy	Sushi Restaurant	Bank	Grocery Store	Diner	Park	Pub	Coffee Shop	Sandwich Place	Café
4	Fairview	Coffee Shop	Park	Paper / Office Supplies Store	Sandwich Place	Korean Restaurant	Nail Salon	Japanese Restaurant	Camera Store	Restaurant	BBQ Joint

# Data Analysis

Number of Neighborhoods in each Cluster



Number of 1st most common venue in each cluster



We can see that **Cluster 0** has the most number of Venues so we can say that it represents the **Multiple Social Venues**.

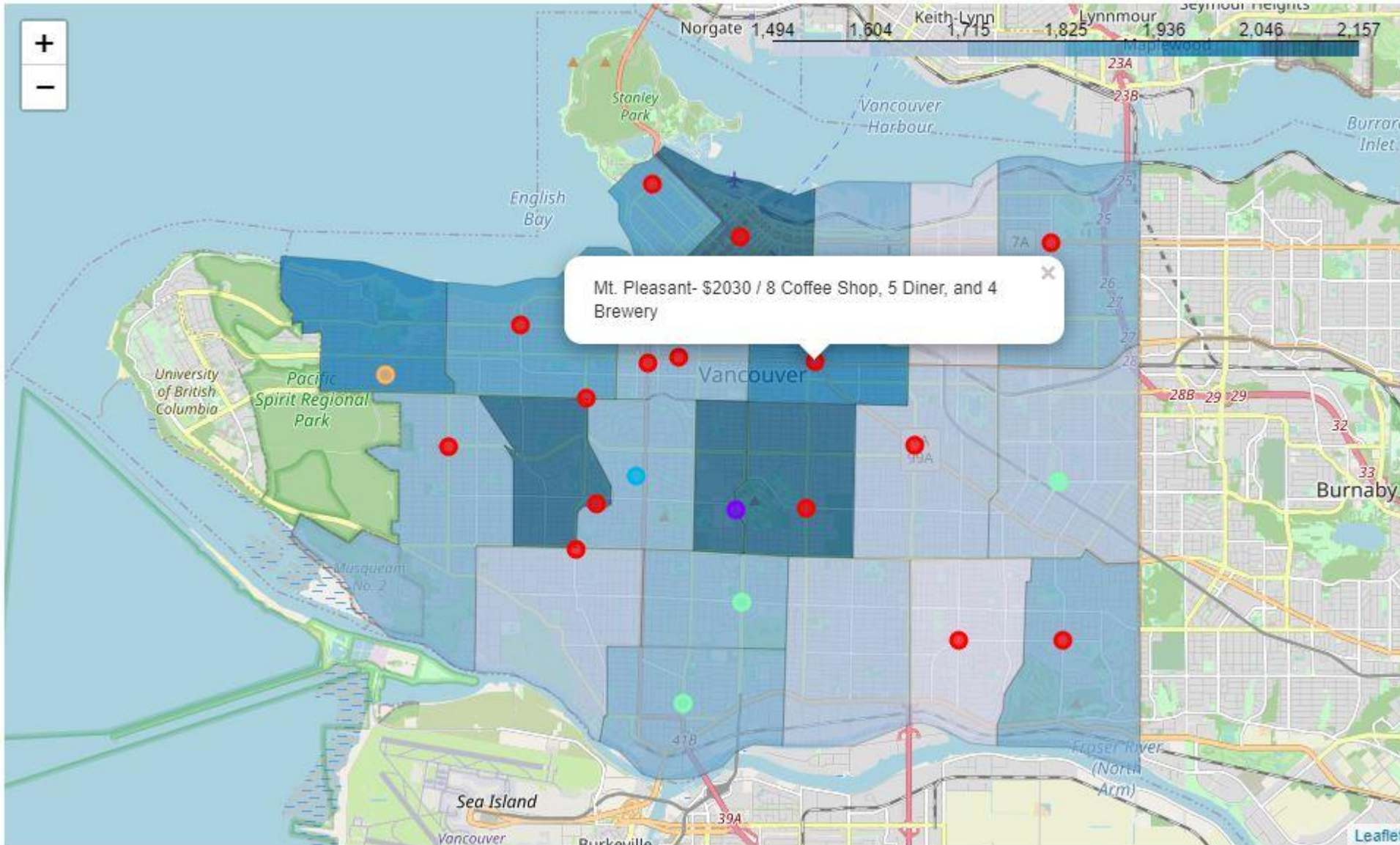


# Data Analysis

	Neighborhood	Top3
0	Arbutus	2 Grocery Store, 1 Ice Cream Shop, and 1 Busin...
1	Cambie	3 Garden, 2 Park, and 1 Seafood Restaurant
2	Downtown Vancouver	7 Hotel, 4 Café, and 3 Coffee Shop
3	Dunbar	2 Bank, 2 Sushi Restaurant, and 2 Pharmacy
4	Fairview	4 Coffee Shop, 2 Park, and 1 Vietnamese Restau...
5	Grandview-Woodland	4 Pizza Place, 4 Coffee Shop, and 3 Brewery
6	Hastings-Sunrise	3 Vietnamese Restaurant, 2 Event Space, and 2 ...
7	Kensington-Cedar Cottage	3 Vietnamese Restaurant, 2 Vegetarian / Vegan ...
8	Kerrisdale	4 Coffee Shop, 3 Chinese Restaurant, and 2 Sus...
9	Killarney	2 Bus Stop, 1 Liquor Store, and 1 Sandwich Place
10	Kitsilano	4 Park, 3 Café, and 3 Coffee Shop
11	Marpole	1 Plaza, 1 Bus Station, and 1 Bus Stop
12	Mt. Pleasant	8 Coffee Shop, 5 Diner, and 4 Brewery
13	Oakridge	2 Bus Stop, 2 Park, and 1 Golf Course
14	Quilchena	1 Sandwich Place, 1 Bubble Tea Shop, and 1 Park
15	Renfrew-Collingwood	2 Bus Stop, 2 Park, and 1 Locksmith
16	Riley Park - Little Mountain	3 Vietnamese Restaurant, 3 Farmers Market, and...
17	Shaughnessy	1 Bus Stop, 1 New American Restaurant
18	South Granville	10 Coffee Shop, 8 Furniture / Home Store, and ...
19	Strathcona	2 Park, 1 Deli / Bodega, and 1 Sandwich Place
20	Victoria-Fraserview	2 Pizza Place, 1 Fish Market, and 1 Park
21	West End	7 Coffee Shop, 6 Dessert Shop, and 6 Japanese ...
22	West Point Grey	1 Sandwich Place, 1 Soccer Field, and 1 Constr...

For more details, we can include top 3 common venues within 500 meters radius for each neighborhoods.

# Conclusion



- This map includes the range of rent and top 3 common venues for each neighborhood and clustering information in Vancouver.
- With these information, it is easier for us to minimize the options in choosing neighborhood to look for more details and help us to gain some basic information and what to expect for each areas when we are newcomers



**Thank You**