

# Python Capstone Project: New Businesses in Seattle

# Introduction/Business Problem

- Two new business are looking to locate in Seattle, Washington
  - Restaurants
  - Cinemas
- Can we examine the city's neighbourhoods and suggest areas for these new business to locate?
- Our clients could be new start-ups or expansions of existing chains from other locations.

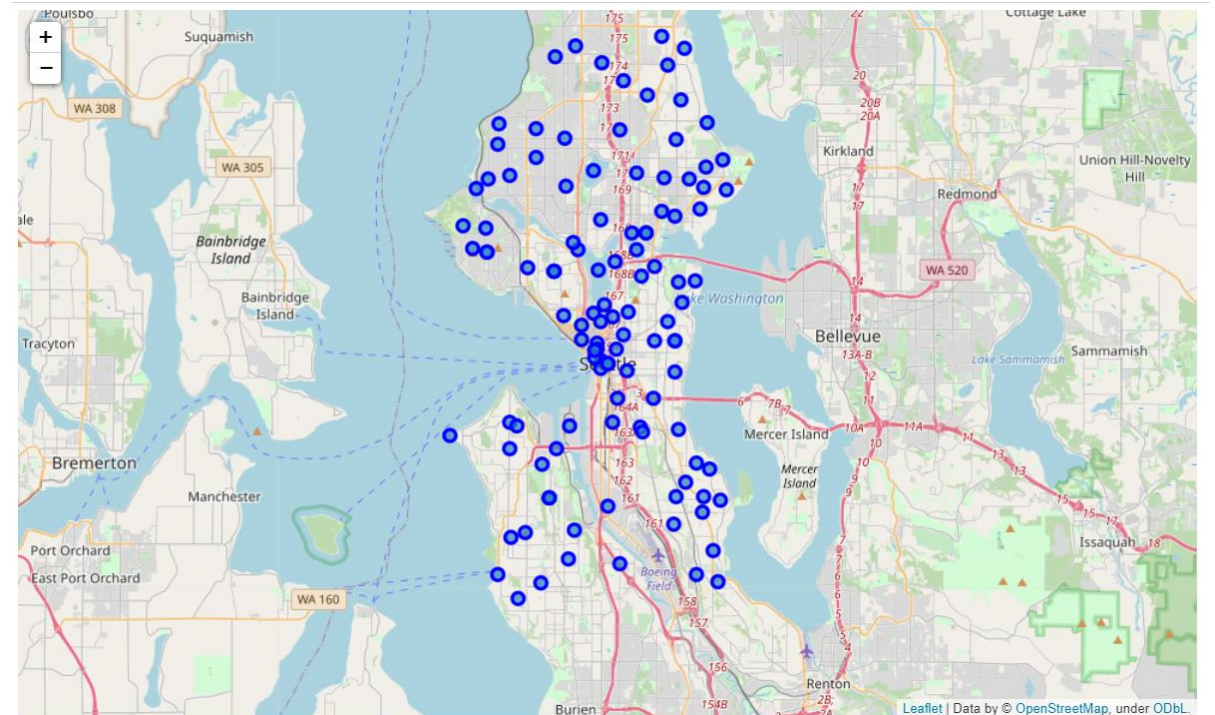
# Data

- List of neighbourhoods of the city of Seattle
  - [https://en.wikipedia.org/wiki/List\\_of\\_neighborhoods\\_in\\_Seattle](https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Seattle)
- Geographic coordinates of neighbourhoods
  - Geopy.geolocator package
- Data on existing venues/businesses in each neighbourhood
  - Foursquare API
    - [www.foursquare.com](http://www.foursquare.com)

# Methodology

- Neighbourhood list imported from Wikipedia and formatting tidied up
- Pass each neighbourhood to geolocator and get the latitude and longitude.

	District	Latitude	Longitude
0	North Seattle	47.660773	-122.291497
1	Broadview	47.722320	-122.360407
2	Bitter Lake	47.726236	-122.348764
3	North Beach	47.696210	-122.392362
4	Crown Hill	47.694715	-122.371459
5	Greenwood	47.690981	-122.354877
6	Northgate	47.713153	-122.321231
7	Haller Lake	47.719748	-122.333751



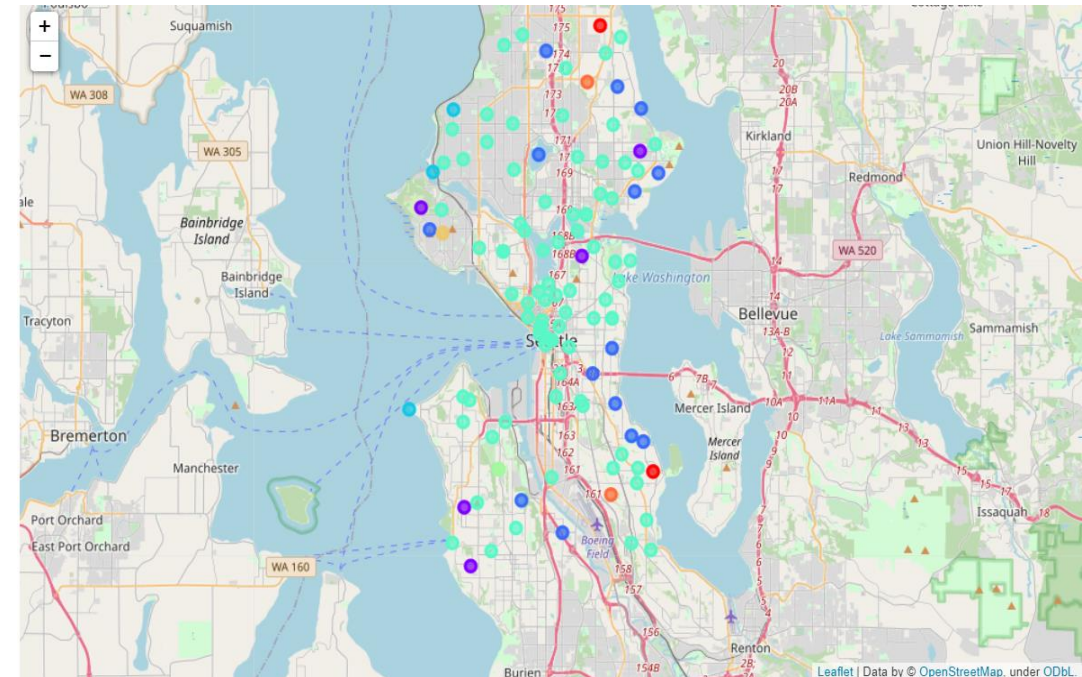
# Methodology

- Pass each neighbourhood and coordinates to the Fourquare API to get the top 10 venues in each area.
- Implement one-hot encoding and k-means clustering to identify similar neighbourhoods.

	Neighborhood	Latitude	Longitude	Cluster Labels	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
0	North Seattle	47.660773	-122.291497	4	Burger Joint	Donut Shop	Salon / Barbershop	Golf Driving Range	Park	Coffee Shop	Chinese Restaurant
1	Broadview	47.722320	-122.360407	4	Thai Restaurant	Sushi Restaurant	Convenience Store	Pizza Place	Antique Shop	Food Truck	Video Store
2	Bitter Lake	47.726236	-122.348764	4	Fast Food Restaurant	Hotpot Restaurant	Thrift / Vintage Store	Thai Restaurant	Bank	Szechuan Restaurant	Mobile Phone Shop

# Results and Discussion

- 8 clusters.
- Cluster 5 contains the most neighbourhoods.
- Some clusters have just one neighbourhood.
- Clusters examined and selected for possible new businesses.



# Conclusion

- Suggestion that clusters 2,3,4,7 and 8 could be good locations for new restaurants
- Suggestion that clusters 4,7 and 8 could be good locations for new cinema businesses.