

The background is a deep blue gradient with a subtle pattern of white dots. Overlaid on the left side are several concentric circles and a large circular scale with degree markings from 140 to 260. Some circles have arrows indicating a clockwise direction.

THE BATTLE OF NEIGHBORHOODS

RECOMMENDATION OF A NEW OFFICE LOCATION FOR FOOD DELIVERY
INDUSTRY IN SEATTLE

IDEAL LOCATION FOR THE NEW OFFICE LOCATION

- Food Delivery Industry is very competitive these days
- Fast delivery of the food is crucial to the business and customers satisfaction
- The new office need to be close to most of the popular restaurants to cut down the operational time costs

DATA ACQUISITION AND CLEANING

- Postal codes of different neighborhoods from <http://seattlearea.com/zip-codes/>
- Location coordinates of different neighborhoods retrieved from Goggle API
- Popular venues in different neighborhoods retrieved from **FourSquare API** Exploration function
- In total, 1860 venues and 258 unique categories

METHODOLOGY

- **After getting the location coordinates for each neighborhood, I explored all neighborhoods by using FourSquare API, and get the top 5 venues with a radius of 1000 meters**
- **1000 meters is a reasonable service area for food delivery boy and drivers.**

BEST AREA FOR THE NEW OFFICES

Mount Baker	Park	Bus Station	Mexican Restaurant	Convenience Store	Playground
Northgate	Pizza Place	Sandwich Place	Coffee Shop	Sushi Restaurant	Thai Restaurant
Pioneer Square	Coffee Shop	Hotel	Cocktail Bar	Café	Donut Shop

- Northgate is probably the best area to start the business, because this is the only neighborhood which the top 5 most common venues are food or drink related

K-MEANS CLUSTERING

- K-means clustering is applied to form 10 clusters of different venues categories for all the neighborhoods.

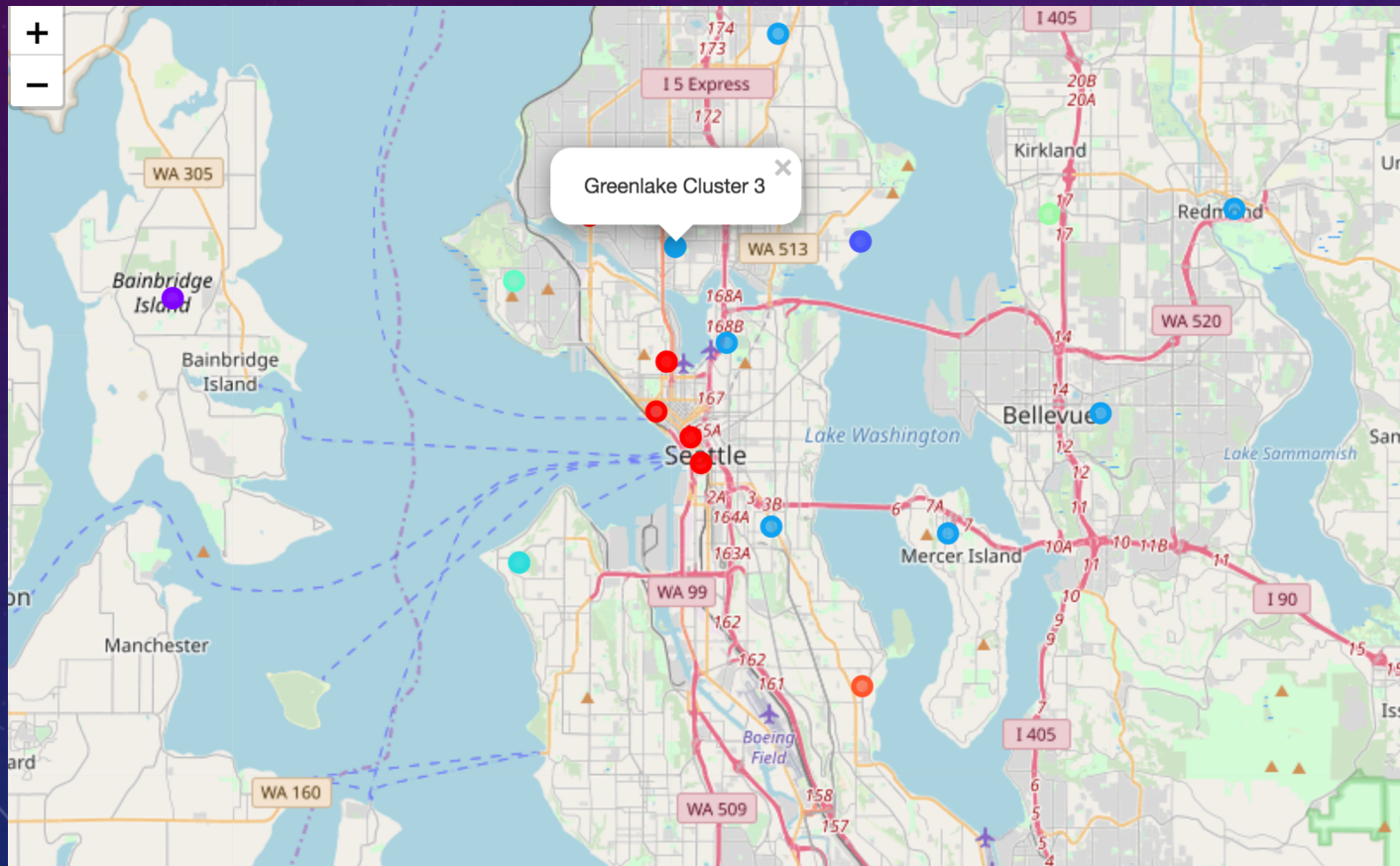
K-MEANS CLUSTERING – RESULT I

PostalCode	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
98003	Federal Way	47.316504	-122.322398	3	Japanese Restaurant	Korean Restaurant	Shoe Store	Mexican Restaurant	Miscellaneous Shop
98005	Bellevue	47.615044	-122.171758	3	Spa	Rental Car Location	Automotive Shop	Coffee Shop	Furniture / Home Store
98033	Kirkland	47.668830	-122.192387	6	Asian Restaurant	Sandwich Place	Convenience Store	Grocery Store	Gas Station
98037	Lynnwood	47.841953	-122.288181	8	Fast Food Restaurant	Pizza Place	Coffee Shop	Pharmacy	Park
98040	Mercer Island	47.582423	-122.233123	3	Coffee Shop	Pizza Place	Park	Sandwich Place	Pharmacy
98052	Redmond	47.670119	-122.118237	3	Bakery	Sandwich Place	Coffee Shop	Gym / Fitness Center	Mexican Restaurant
98055	Renton	47.462337	-122.205506	7	Residential Building (Apartment / Condo)	Coffee Shop	Supermarket	Optical Shop	Bar
98101	Seattle	47.608492	-122.336407	0	Coffee Shop	Hotel	American Restaurant	Spa	Cocktail Bar
98101	Downtown	47.608492	-122.336407	0	Coffee Shop	Hotel	American Restaurant	Spa	Cocktail Bar
98102	Capital Hill	47.633822	-122.321545	3	Coffee Shop	Sandwich Place	Bus Stop	Italian Restaurant	Garden
98103	Greenwood	47.660009	-122.342557	3	Coffee Shop	Japanese Restaurant	Zoo Exhibit	Thai Restaurant	Bar
98103	Freemont	47.660009	-122.342557	3	Coffee Shop	Japanese Restaurant	Zoo Exhibit	Thai Restaurant	Bar
98103	Greenlake	47.660009	-122.342557	3	Coffee Shop	Japanese Restaurant	Zoo Exhibit	Thai Restaurant	Bar
98104	International District	47.601557	-122.332335	0	Coffee Shop	Hotel	Cocktail Bar	Café	Donut Shop

Support

98104	Pioneer Square	47.601557	-122.332335	0	Coffee Shop	Hotel	Cocktail Bar	Café	Donut Shop
98105	University District	47.661424	-122.268374	2	Beach	Pharmacy	Park	Café	Massage Studio
98105	Laurelhurst	47.661424	-122.268374	2	Beach	Pharmacy	Park	Café	Massage Studio
98107	Ballard	47.668360	-122.376958	0	Brewery	Coffee Shop	Ice Cream Shop	Sandwich Place	New American Restaurant
98109	South	47.628859	-122.345692	0	Coffee Shop	Exhibit	Museum	Gym / Fitness Center	Pizza Place
98109	Queen Anne	47.628859	-122.345692	0	Coffee Shop	Exhibit	Museum	Gym / Fitness Center	Pizza Place
98110	Bainbridge Island	47.645833	-122.543441	1	Skate Park	Yoga Studio	French Restaurant	Food Truck	Food Stand
98110	Madrona	47.645833	-122.543441	1	Skate Park	Yoga Studio	French Restaurant	Food Truck	Food Stand
98116	West Seattle	47.574580	-122.404784	4	Park	Beach	Coffee Shop	Ice Cream Shop	Trail
98116	Alki Beach	47.574580	-122.404784	4	Park	Beach	Coffee Shop	Ice Cream Shop	Trail
98118	Columbia City	47.541202	-122.267563	9	Mexican Restaurant	Park	Bus Line	Video Store	Medical Center
98121	Belltown	47.615247	-122.349745	0	Sushi Restaurant	Bar	Breakfast Spot	Sculpture Garden	Pizza Place
98125	Northgate	47.717020	-122.300934	3	Pizza Place	Sandwich Place	Coffee Shop	Sushi Restaurant	Thai Restaurant
98144	Mount Baker	47.584576	-122.303649	3	Park	Bus Station	Mexican Restaurant	Convenience Store	Playground
98199	Magnolia	47.650708	-122.406786	5	Park	Trail	Bus Stop	Athletics & Sports	Chinese Restaurant

K-MEANS CLUSTERING –FOLIUM



Folium Library is applied to visualize the k-means clustering result

DISCUSSION OF THE RESULT K-MEANS CLUSTERING

- the three neighborhood with the same cluster (red color in the map), Pioneer Square, Downtown and Belltown are very close to each other geographically.
- The most common venues categories in this condensed areas are Coffee shop, Sushi Restaurant, and American Restaurant, etc.
- Hence, this special condensed area is definitely a good alternative for the new office location other than Northgate.

CONCLUSION

- It is no doubt that Seattle is a coffee-saturated city, the coffee shop venue category is always the most common venue in different neighborhoods
- Northgate is the probably the best neighborhood to start a food delivery business.
- Any area within the 3 neighborhoods Pioneer Square, Downtown and Belltown, is a good options too
- However, this analysis may not reflect the real behavior of customer in each neighbor. The popular restaurant does not mean customer like the food delivered from there.
- The rental cost in each neighborhood is not take into consideration.