

# Seattle Coffee Shop Locations

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# Objective

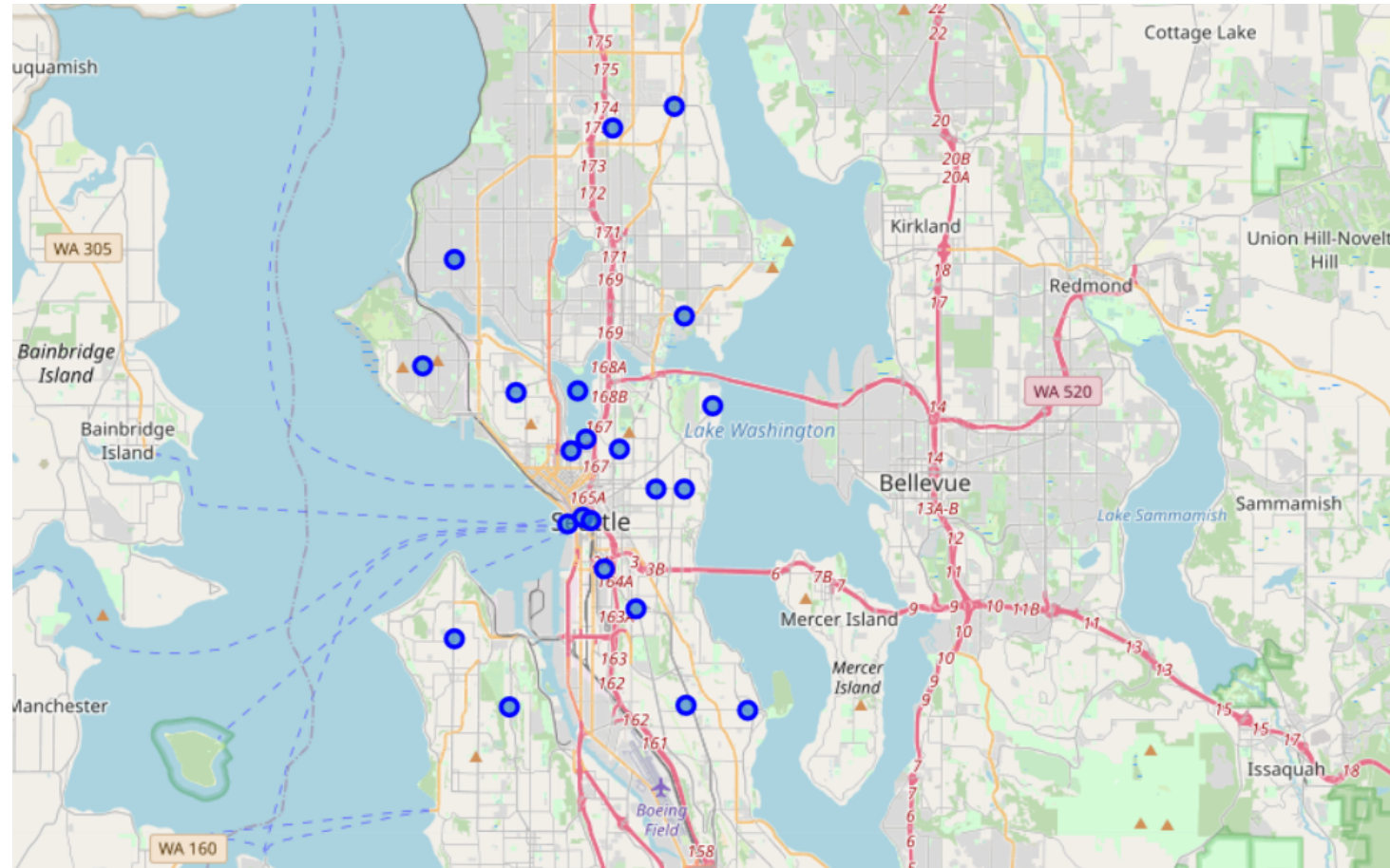
- To provide a suggestion on the location to open a new coffee shop based solely on location data and queried results on venues from Foursquare

# The Data

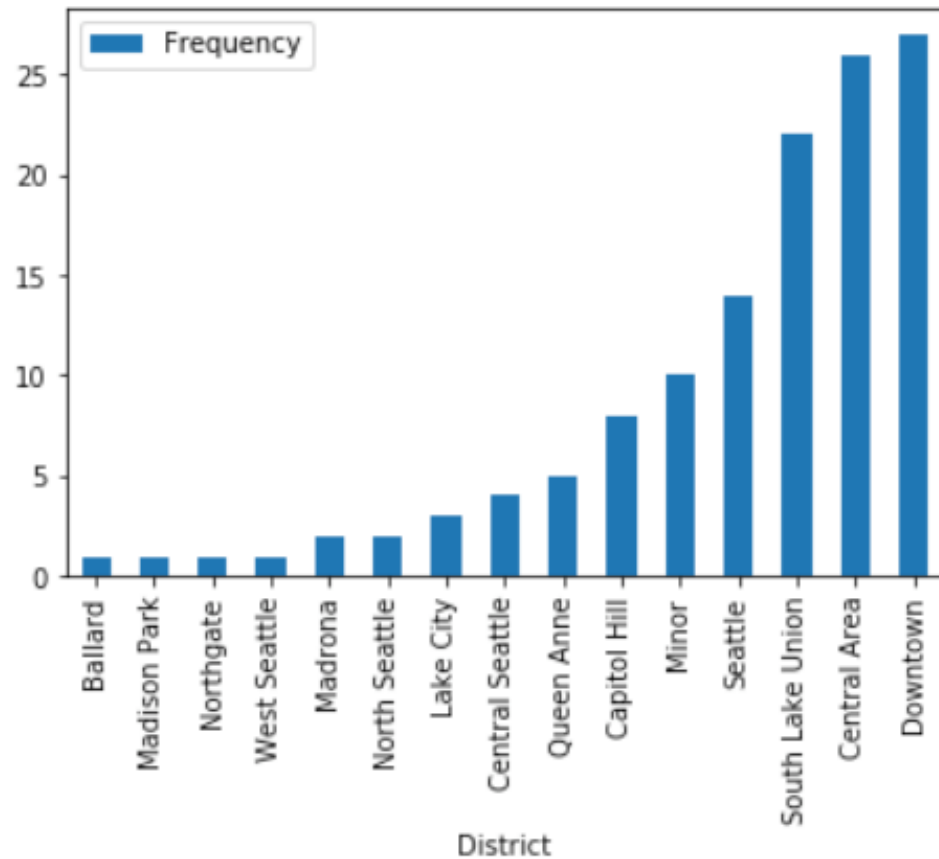
- A list of Seattle neighborhoods (District) and districts were scraped and preprocessed from [https://en.wikipedia.org/wiki/List\\_of\\_neighborhoods\\_in\\_Seattle](https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Seattle)
- Latitude and longitude data were obtained using the *Nominatim* package

	District	Latitude	Longitude
0	Seattle	47.602896	-122.339841
1	North Seattle	47.660773	-122.291497
2	Northgate	47.713153	-122.321231
3	Lake City	47.719162	-122.295494
4	Ballard	47.676507	-122.386223
5	Central Seattle	47.612694	-122.303205
6	Magnolia	47.646811	-122.399489
7	Queen Anne	47.639480	-122.360745
8	Capitol Hill	47.623831	-122.318369
9	Madison Park	47.635930	-122.280196
10	Lake Union	47.639919	-122.335558
11	South Lake Union	47.623161	-122.338382
12	Downtown	47.604872	-122.333458
13	Central Area	47.603832	-122.330062
14	Minor	47.626594	-122.332267
15	Atlantic	47.590493	-122.324313
16	Madrona	47.612792	-122.291226
17	Rainier Valley	47.552544	-122.290889
18	Seward Park	47.551216	-122.265800
19	Beacon Hill	47.579258	-122.311598
20	West Seattle	47.570932	-122.386517
21	Delridge	47.552123	-122.363874

# Map of Seattle Districts

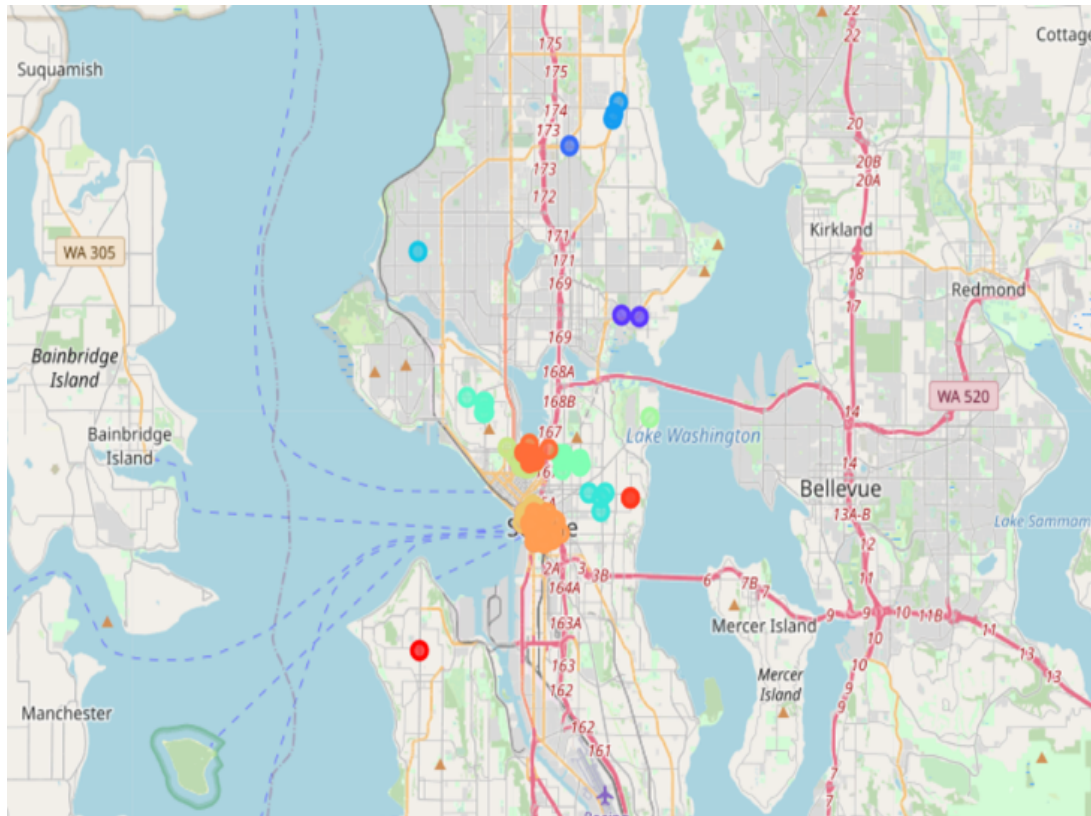


# Distribution of Number of Coffee Shops



- Queried "coffee" from Foursquare using a radius of 500m relative to the latitude and longitude of each district and a limit of 200
- South Lake Union, Central Area, and Downtown have the most coffee shops

# Map of Coffee Shops



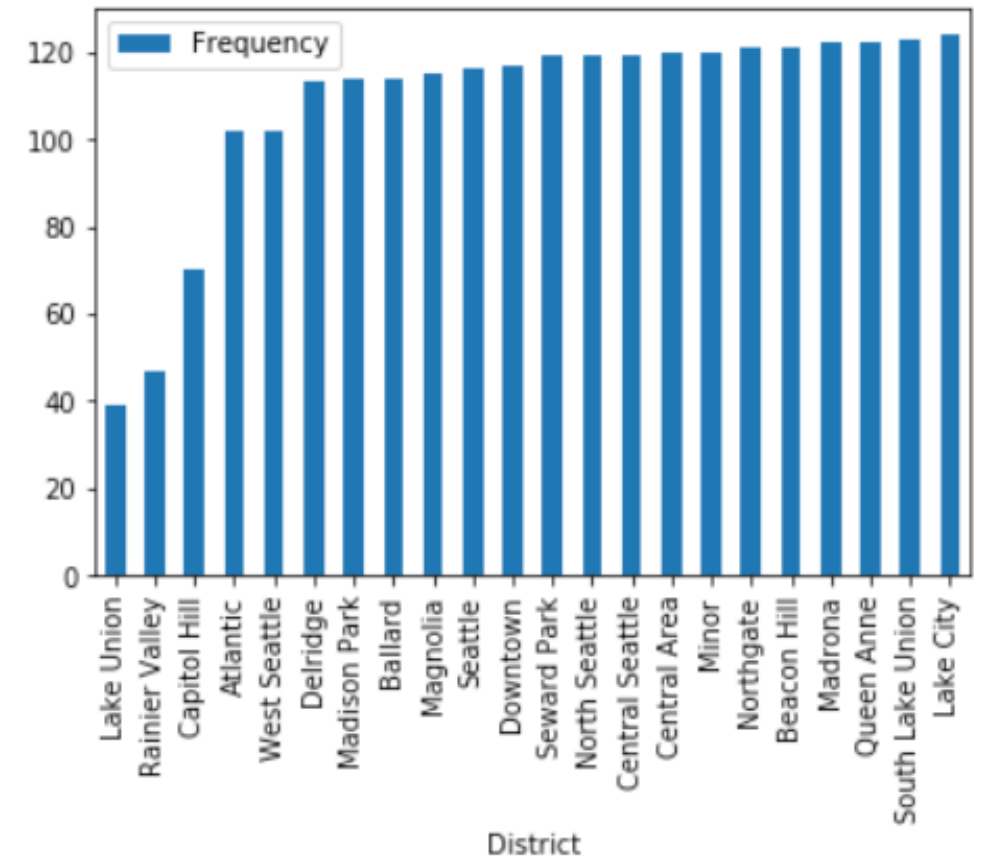
- Each coffee shop is colored by district
- Similar to what was seen in the previous bar plot, a dense cloud of points can be seen in orange (Downtown)

# Query of All Venues within a 500m radius and a limit of 200 (Foursquare)

Example of Top 5 venues with frequency for the Atlantic and Central Seattle Districts

District: Atlantic		District: Central Seattle	
Venue	Frequency	Venue	Frequency
Bus Line	9	Food Truck	9
Automotive Shop	8	Coffee Shop	5
Government Building	6	Building	4
Bus Stop	6	Bus Stop	4
Building	4	Salon / Barbershop	4

The distribution of the number of venues returned by Foursquare



# Most Common Types of Venues

	District	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	Atlantic	Bus Line	Automotive Shop	Government Building	Bus Stop	Building	Office	Bus Station	Meeting Room	Parking	Light Rail Station
1	Ballard	Office	Bus Line	Church	Residential Building (Apartment / Condo)	Spiritual Center	School	Art Gallery	Playground	Professional & Other Places	Auditorium
2	Beacon Hill	Food Truck	Residential Building (Apartment / Condo)	Salon / Barbershop	Mexican Restaurant	Church	Acupuncturist	Bus Station	Bank	Dentist's Office	Gas Station
3	Capitol Hill	Residential Building (Apartment / Condo)	Dog Run	Bank	Gym / Fitness Center	Bed & Breakfast	Spa	General Entertainment	Gas Station	BBQ Joint	Housing Development
4	Central Area	Office	Lawyer	Art Gallery	Courthouse	Bus Stop	City Hall	Government Building	Police Station	Sandwich Place	Bus Line
5	Central Seattle	Food Truck	Coffee Shop	Salon / Barbershop	Building	Bus Stop	Laundry Service	General Entertainment	Church	Marijuana Dispensary	Ethiopian Restaurant
6	Delridge	Bus Line	Park	Garden	Bus Station	Playground	Speakeasy	Pizza Place	Gym	Building	Food Truck
7	Downtown	Office	Bus Stop	Tech Startup	Building	Lawyer	Bus Line	Coffee Shop	Conference Room	Sandwich Place	Bank
8	Lake City	Bus Station	Salon / Barbershop	Residential Building (Apartment / Condo)	Bank	Asian Restaurant	Thai Restaurant	Dentist's Office	Mobile Phone Shop	Pet Store	Shipping Store
9	Lake Union	Boat or Ferry	Harbor / Marina	Bus Stop	Lake	Deli / Bodega	Mexican Restaurant	Bookstore	Massage Studio	Scenic Lookout	Sandwich Place
10	Madison Park	Salon / Barbershop	Bus Stop	Office	Residential Building (Apartment / Condo)	Dentist's Office	Bank	Park	Bar	Playground	Preschool





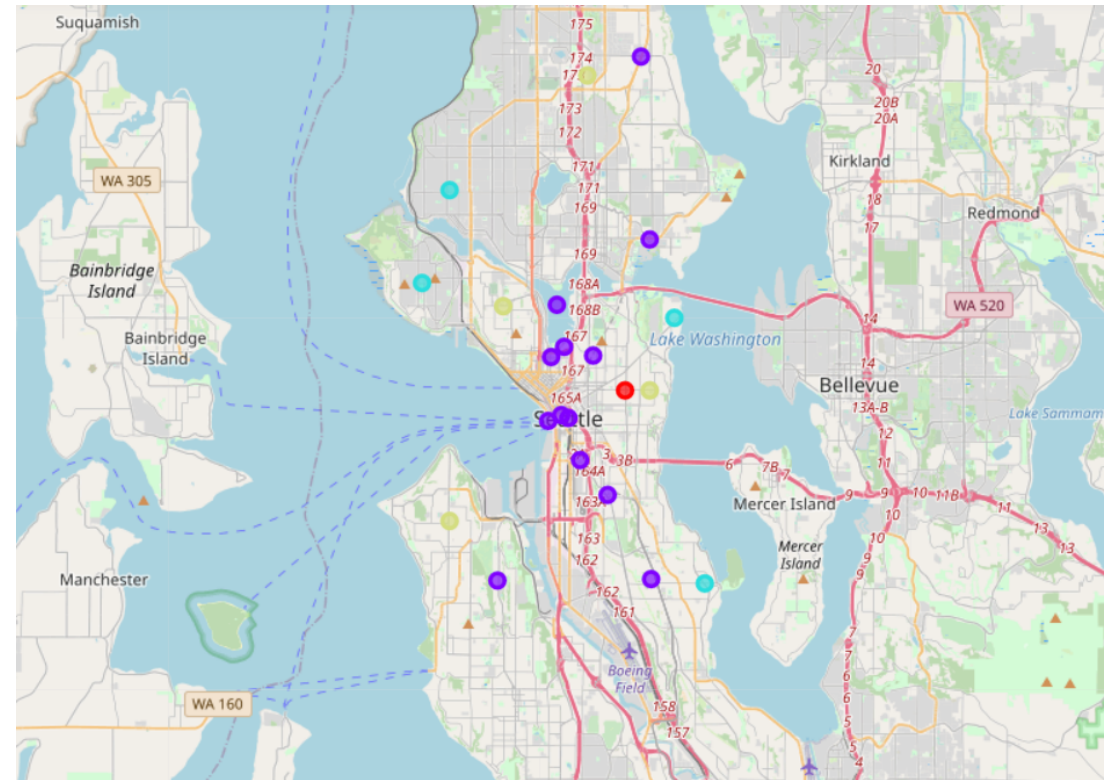
# Most Common Types of Venues (continued)

11	Madrona	Bus Stop	Office	Gift Shop	Boutique	Furniture / Home Store	Salon / Barbershop	Farmers Market	Art Gallery	Food & Drink Shop	Building
12	Magnolia	Bus Stop	Building	Bank	Church	Playground	Office	Dentist's Office	Bus Station	Bookstore	Coffee Shop
13	Minor	Office	Building	Café	Boat or Ferry	Parking	Doctor's Office	Medical Center	Coffee Shop	Event Space	Restaurant
14	North Seattle	Doctor's Office	Dentist's Office	Salon / Barbershop	Medical Center	School	Office	Food Truck	Bus Stop	Kids Store	Bank
15	Northgate	Dentist's Office	Office	Building	Doctor's Office	Assisted Living	Residential Building (Apartment / Condo)	Bus Line	Arts & Crafts Store	Chiropractor	Bus Station
16	Queen Anne	Bus Stop	Office	Dentist's Office	Yoga Studio	Nail Salon	Spa	Doctor's Office	Coffee Shop	Laundry Service	Mexican Restaurant
17	Rainier Valley	Automotive Shop	Farm	Pawn Shop	Convenience Store	Light Rail Station	Food & Drink Shop	Sports Club	School	Residential Building (Apartment / Condo)	Pizza Place
18	Seattle	Office	Boat or Ferry	Tech Startup	Pier	Gift Shop	Harbor / Marina	Building	Clothing Store	Burger Joint	Sandwich Place
19	Seward Park	Salon / Barbershop	Church	Building	Synagogue	Park	Harbor / Marina	Ethiopian Restaurant	Trail	Nail Salon	Playground
20	South Lake Union	Office	Food Truck	Coffee Shop	Hot Dog Joint	Rental Car Location	Parking	Café	Event Space	Art Gallery	Pizza Place
21	West Seattle	Doctor's Office	Church	Salon / Barbershop	Office	Cosmetics Shop	Spa	Bar	Medical Center	Miscellaneous Shop	Gas Station

- Minor and South Lake Union show Café or Coffee Shop as third most

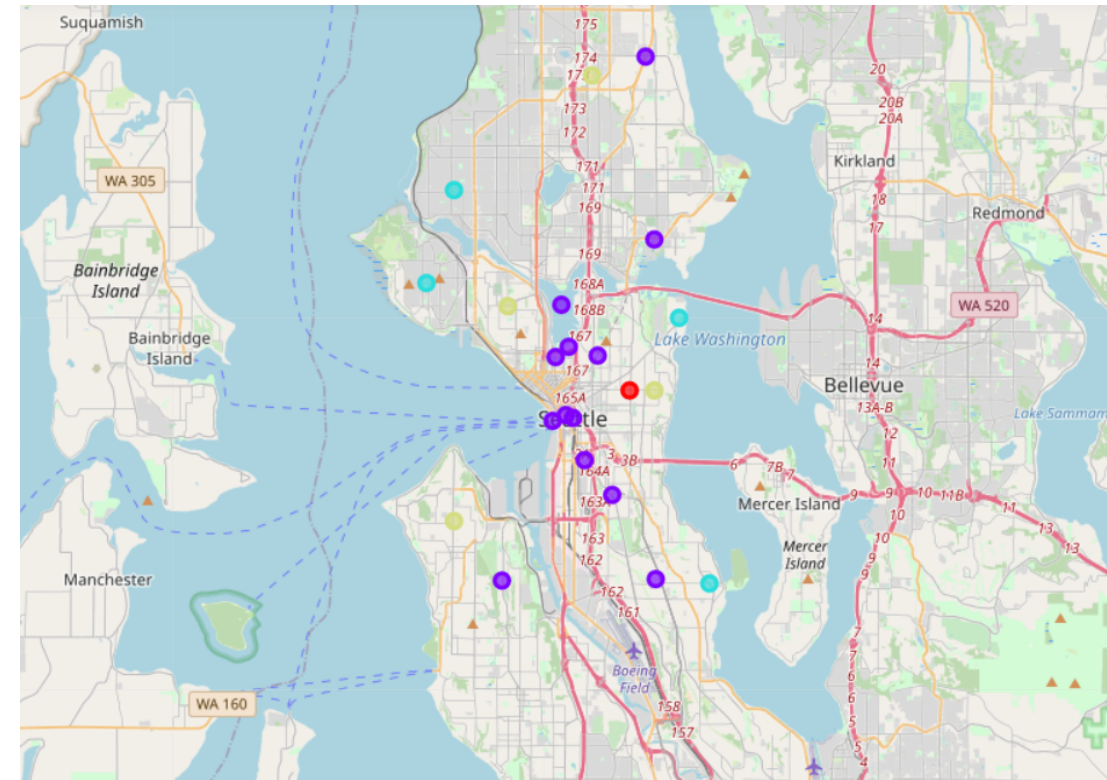
# K-Means Clustering of District By Venue

- K-Means clustering with 4 clusters
- Data was one-hot encoded
- Data was scaled using StandardScaler()
- Points are district and colored by the results of the clustering analysis



# Distinguishing Factors For Each Cluster

Cluster	Number of Districts	Distinguishing Factor
1 (red)	1	More Food Trucks and Coffee Shops
2 (purple)	14	More offices and housing
3 (cyan)	4	More Bus Stops and Salon / Barbershops
4 (yellow)	4	Dentist's offices, Doctor's offices



# Discussion and Conclusion

- Given the clustering analysis, Central Seattle is not the best location since it has more coffee shops relative to other venues
- If we only used the raw numbers, Central Seattle only had 5 coffee shops, according to the barplot on slide 5
- Any district in Cluster 2, except for Minor and South Lake Union, are suggested places
- Office workers need their coffee in the morning and perhaps even in the afternoon