

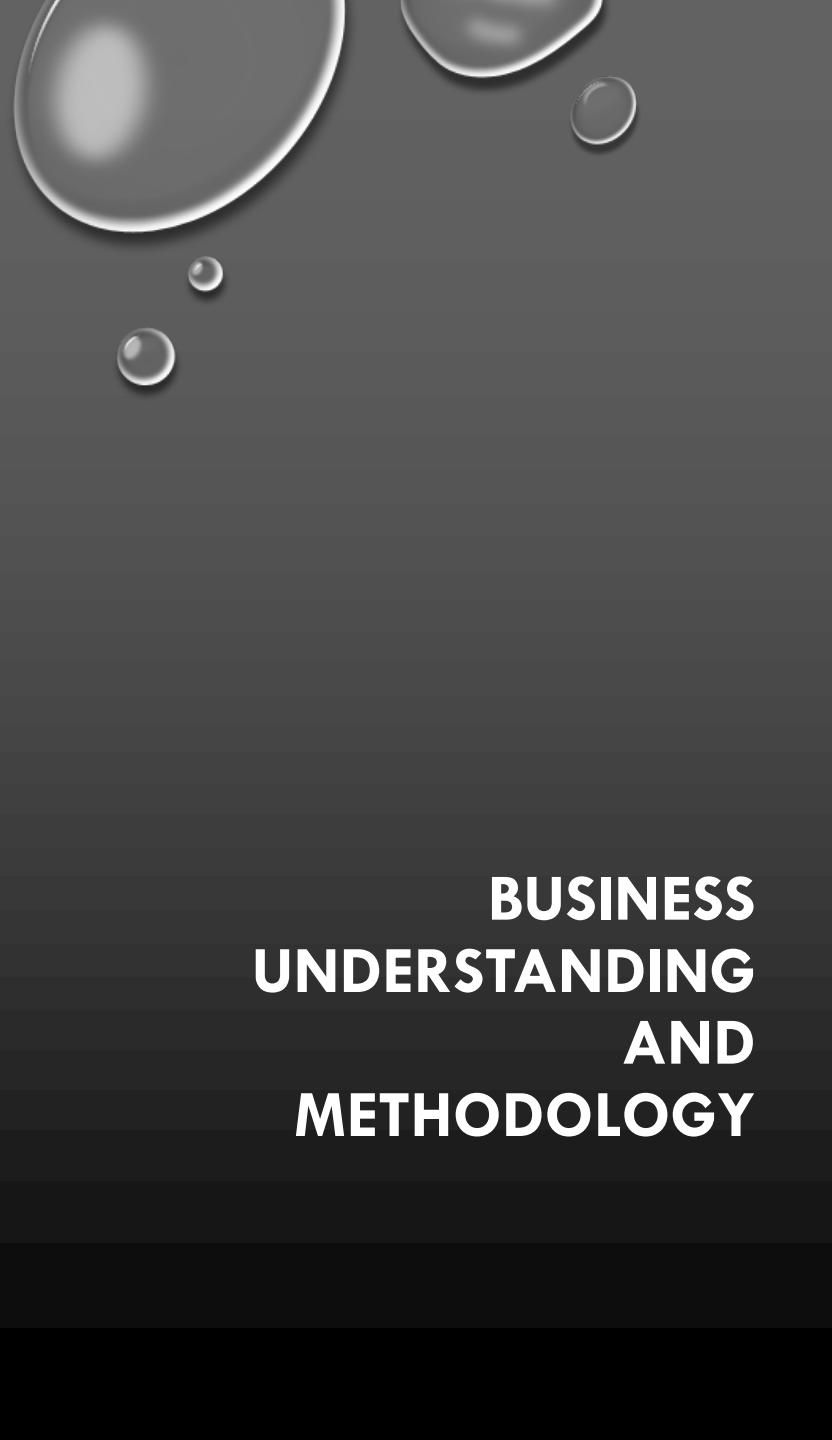
**Finding the most suitable location in Seattle, WA  
for UNO Pizzeria**

**IBM - Coursera Final Capstone Project  
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# BUSINESS CASE

- UNO PIZZERIA & GRILL (FORMERLY PIZZERIA UNO AND UNO CHICAGO GRILL), OR MORE INFORMALLY AS UNO'S, IS A FRANCHISED PIZZERIA RESTAURANT CHAIN UNDER THE PARENT COMPANY UNO RESTAURANT HOLDINGS CORPORATION. CURRENTLY, UNO HAS MORE THAN 100 LOCATIONS COVERING 20 STATES IN THE USA.
- THIS CASE STUDY IS TO FIND A SUITABLE LOCATION IN SEATTLE, WA AREA TO OPEN A NEW BRANCH OF UNO PIZZERIA.



## BUSINESS UNDERSTANDING AND METHODOLOGY

- IN GENERAL, RESTAURANTS ARE LOCATED IN HIGH TRAFFIC AREAS IN ORDER TO ATTRACT MORE CUSTOMERS AND PROVIDE CONVENIENT SERVICE TO THE PEOPLE. AMONG MOST OF THE VENUES, UNO MANAGEMENT HAS IDENTIFIED BOSTON, MA HAS BEEN ONE OF THE HIGH REVENUE LOCATION DURING THE PAST FEW YEARS. THEREFORE THIS STUDY WILL TRY TO FIND A SIMILAR LOCATION AS BOSTON, MA.
- AS THE FIRST STAGE OF THE ANALYSIS, THE STUDY WILL BE FOCUSED ON THE BOSTON VENUE TO IDENTIFY THE KEY ATTRIBUTES IN THAT LOCATION. THE STUDY WILL USE FOOURSQUARE, TO GATHER 100 NEARBY VENUES WITH IN 500 METERS RADIUS AND IDENTIFY THE TOP 10 CUSTOMER ATTRACTION VENUES.



# ANALYZING EXISTING UNO STORE SURROUNDING

- DATA : FOURSQUARE LOCATION DATA
- TASK : USED THE AVAILABLE LOCATION DATA TO IDENTIFY THE TOP 10 VENUES AROUND THE UNO PIZZERIA IN BOSTON, MA.
- METHOD :
  1. FOUND THE LONGITUDE AND LATITUDE OF UNO PIZZERIA.
  2. FOUND VENUES AROUND THE PIZZERIA WITHIN 500 METERS RADIUS.
  3. USED ONE-HOT ENCODING AND SORTED THE VENUES TO IDENTIFY THE TOP 10 VENUES.

# ANALYZING EXISTING UNO STORE SURROUNDING

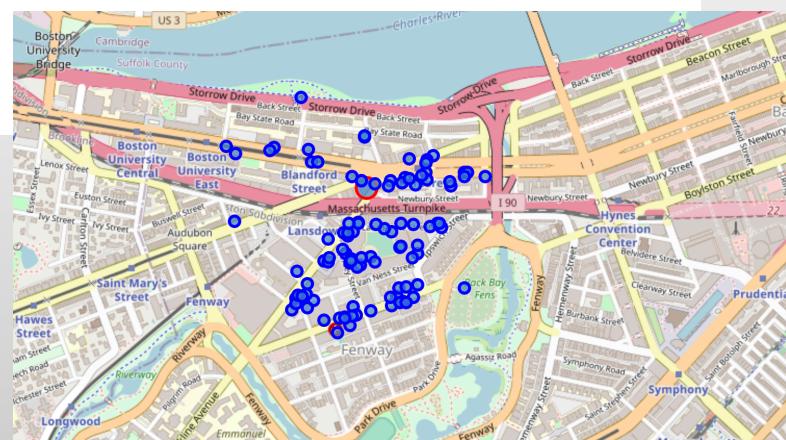
## RESULT :

```
In [17]: num_top_venues = 10

for hood in uno_grouped['Neighborhood']:
    print("----"+hood+"----")
    temp = uno_grouped[uno_grouped['Neighborhood'] == hood].T.reset_index()
    temp.columns = ['venue','freq']
    temp = temp.iloc[1:]
    temp['freq'] = temp['freq'].astype(float)
    temp = temp.round({'freq': 2})
    print(temp.sort_values('freq', ascending=False).reset_index(drop=True).head(num_top_venues))
    print('\n')
```

----UNO Pizza----

	venue	freq
0	Sports Bar	0.07
1	American Restaurant	0.06
2	Pizza Place	0.05
3	Coffee Shop	0.05
4	Lounge	0.04
5	Hotel	0.03
6	Café	0.03
7	Burger Joint	0.03
8	Japanese Restaurant	0.03
9	Sushi Restaurant	0.02

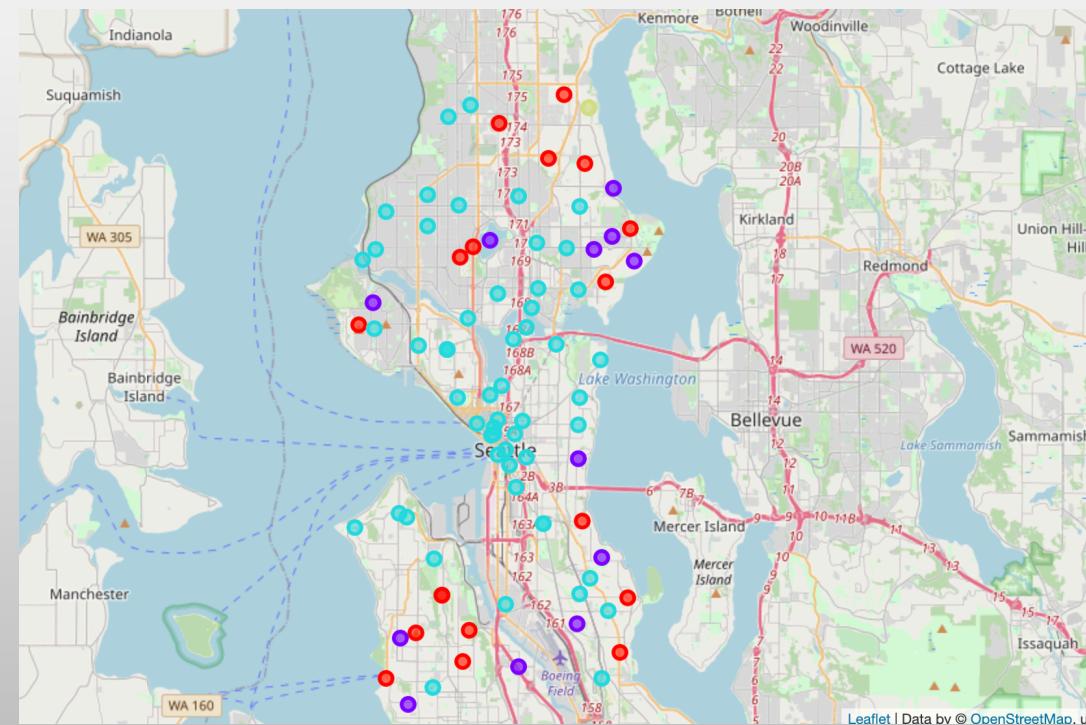


# ANALYZING AREAS IN SEATTLE FOR THE NEW BRANCH

- DATA : FOURSQUARE LOCATION DATA, NEIGHBORHOOD AND DISTRICT DATA FROM WIKIPEDIA.
- TASK : USED THE AVAILABLE LOCATION DATA TO IDENTIFY THE DIFFERENT NEIGHBORHOODS AND THEIR SURROUNDINGS.
- METHOD :
  1. FOUND THE LONGITUDE AND LATITUDE OF EACH NEIGHBORHOODS IN SEATTLE, WA.
  2. FOUND VENUES AROUND EACH NEIGHBORHOOD.
  3. USED ONE-HOT ENCODING TO ANALYZE EACH NEIGHBORHOODS AND THE VENUES.
  4. FOUND VENUES IN EACH NEIGHBORHOOD AND SORTED TO IDENTIFY THE TOP 10 VENUES.

# CLUSTERING NEIGHBORHOODS

- ONCE IDENTIFIED THE TOP 10 VENUES IN EACH NEIGHBORHOOD, I USED K-MEANS CLUSTERING TO GROUP THE NEIGHBORHOOD BASED ON THE LOCATION AND THE SURROUNDED VENUES.
- AFTER A COUPLE OF ATTEMPTS, IT IS IDENTIFIED 4 CLUSTERS ARE ENOUGH FOR THIS DATA SET.



# EVALUATING THE CLUSTERS

- EACH CLUSTER HAS BEEN CLOSELY EVALUATED AND IT IS IDENTIFIED THIRD CLUSTER CONTAINS MOST OF THE MATCHING VENUES AS IT IS WITH BOSTON NEIGHBORHOOD. HENCE, THE THIRD CLUSTER WAS SELECTED FOR FURTHER ANALYZING.

District	Neighbourhood	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	8th Most Common Venue
Ballard	Loyal Heights	47.688709	-122.392907	2.0	Pizza Place	General College & University	Fish Market	Music Store	Convenience Store	Bakery	Middle Eastern Restaurant	Mexican Restaurant
Ballard	Sunset Hill	47.675217	-122.398448	2.0	Bakery	Ice Cream Shop	Weight Loss Center	Cocktail Bar	Italian Restaurant	Fair	Eastern European Restaurant	Electronics Store
Ballard	Whittier Heights	47.683297	-122.371449	2.0	Bar	Breakfast Spot	Bus Stop	Furniture / Home Store	Bakery	Karaoke Bar	Park	Cocktail Bar
Beacon Hill	North Beacon Hill	47.577586	-122.309960	2.0	Mexican Restaurant	Pub	Coffee Shop	Café	Trail	Pizza Place	Dance Studio	Peking Duck Restaurant
Beacon Hill	South Beacon Hill	47.577586	-122.309960	2.0	Mexican Restaurant	Pub	Coffee Shop	Café	Trail	Pizza Place	Dance Studio	Peking Duck Restaurant

```
51: Cluster 4 = seattle_merged.loc[seattle_merged['Cluster Labels'] == 3].seattle_merged.columns[[1] + list(range(0, seatt
```

# DATA TUNING

- AFTER SELECTING THE MOST SUITABLE CLUSTER, IT IS IMPORTANT TO FILTER THE NEIGHBORHOODS TO INCLUDE ONLY THE URBAN AREAS. THAT WILL HELP WITH MORE FOOT TRAFFIC AND IT WILL BE EASIER FOR DELIVERIES, TRANSPORTATION AND ADVERTISING.

```
: Cluster_3_Central = Cluster_3[Cluster_3.District == 'Central Area']
Cluster_3_downtown = Cluster_3[Cluster_3.District == 'Downtown']

Cluster_3_filtered = Cluster_3_Central.append(Cluster_3_downtown)

Cluster_3_filtered = Cluster_3_filtered[['Neighbourhood', 'District', 'Latitude', 'Longitude']].copy()
Cluster_3_filtered = Cluster_3_filtered.loc[:,~Cluster_3_filtered.columns.duplicated()]
Cluster_3_filtered.shape

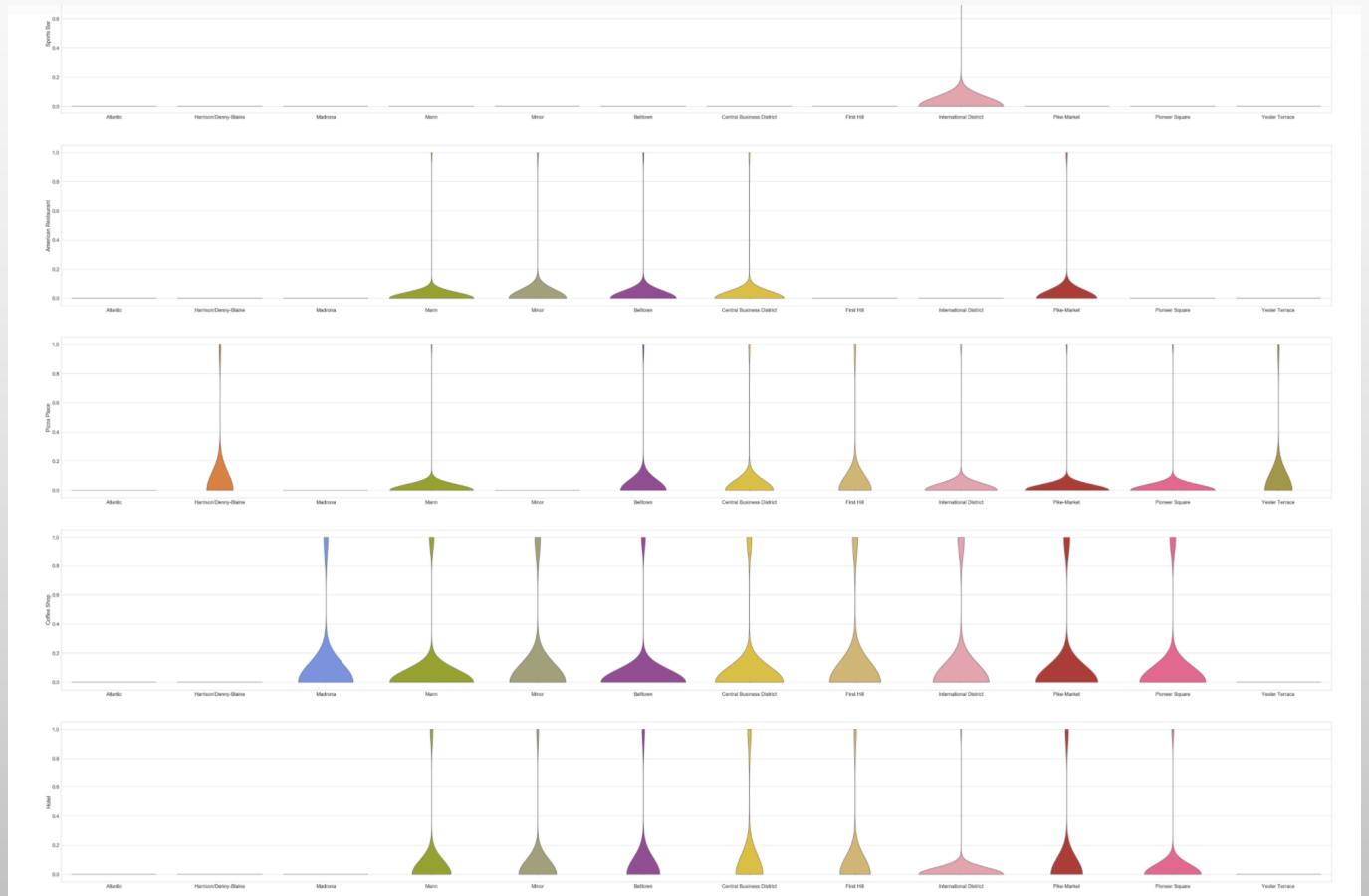
]: (12, 4)

]: downtown_venues = getNearbyVenues(names=Cluster_3_filtered['Neighbourhood'],
                                     latitudes=Cluster_3_filtered['Latitude'],
                                     longitudes=Cluster_3_filtered['Longitude'])

)
Atlantic
Harrison/Denny-Blaine
Madrona
Mann
Minor
Belltown
Central Business District
First Hill
International District
Pike-Market
Pioneer Square
Yesler Terrace
```

# FINDING THE “NEIGHBORHOOD”

- ONCE I HAVE FILTERED THE URBAN NEIGHBORHOODS, THE NEXT STEP IS FINDING THE MOST SUITABLE NEIGHBORHOOD. IN ORDER TO DO THAT, I USED CATEGORIAL PLOT TO VISUALIZE TOP 5 VENUES IN EACH NEIGHBORHOOD.



# CONCLUSION

- AFTER LOOKING AT THE CATEGORICAL PLOT, MOST OF THE NEIGHBORHOODS HAVE CONSIDERABLE AMOUNT OF VENUES WHICH ARE MATCHING TO BOSTON NEIGHBORHOOD. HOWEVER, WE WILL SELECT THE "INTERNATIONAL DISTRICT" AMONG THE OTHER NEIGHBORHOODS. IT CONTAINS SPORTS BARS WHICH IS THE TOP VENUE IN BOSTON, AND IT HAS FOUR OUT OF FIVE OF OTHER VENUES AS WELL.

