Comparing Neighborhoods of Houston & Chicago

Which neighborhoods in Houston are similar to Chicago?

- Chicago is the 3rd largest city in the United States while Houston is the 4th largest city.

- Before moving to Houston, I would like to determine if there are similar neighborhoods to that of Chicago. Specifically, the North Side of Chicago.

- Chicago Neighborhoods -
  https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Chicago
- Houston Neighborhoods -
  https://www.houston.org/living-in-houston/neighborhoods-communities

Data Acquisition & Cleaning

➔ Used Python's BeautifulSoup package to scrape the websites for the list of Neighborhoods and placed those into a data frame.

➔ Used Geocoder to get the Longitude and Latitude coordinates for each neighborhood.

➔ Added a column for Area and Zone that organized the data into the region of either Houston or Chicago.

◆ Chicago Areas: North, South, West, Downtown

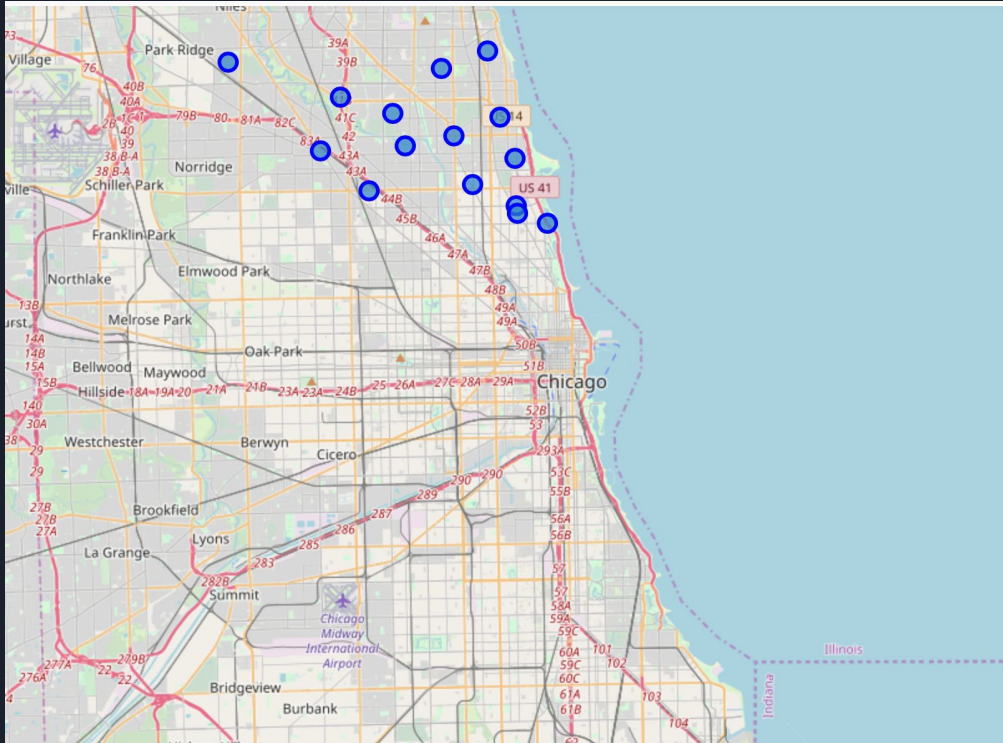◆ Houston Areas: North, South, West, East, Downtown, Inner Loop

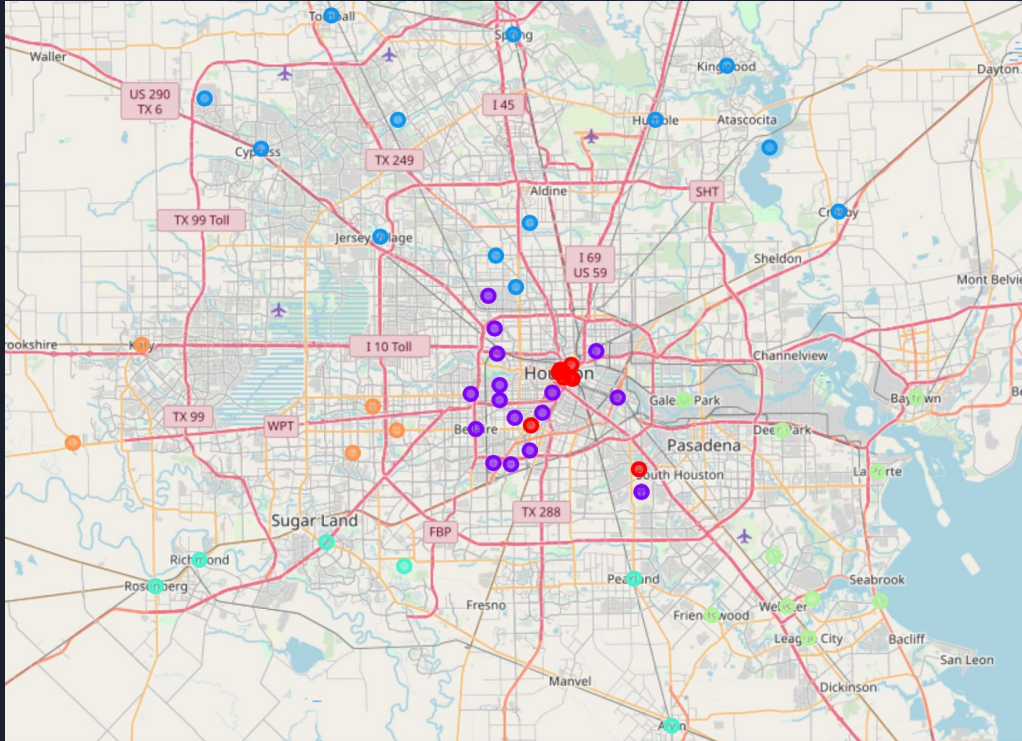|	Borough	Neighborhood	Latitude	Longitude	Area	Zone
0	Albany Park	Albany Park, Mayfair, North Mayfair, Ravenswoo...	41.971937	-87.716174	0	North
1	Archer Heights	Archer Heights	41.811422	-87.726165	2	South
2	Armour Square	Armour Square, Chinatown, Wentworth Gardens	41.840033	-87.633107	2	South
3	Ashburn	Ashburn, Ashburn Estates, Beverly View, Crestl...	41.747533	-87.711163	2	South
4	Auburn Gresham	Auburn Gresham, Gresham	41.743387	-87.656042	2	South

Chicago Data Frame (above)

Houston Data Frame (right)

	Neighborhood	Latitude	Longitude	Area	Zone
0	Ballpark District	29.7542	-95.3533	0	Downtown
1	Civic Center District	29.7597	-95.3680	0	Downtown
2	Convention District	29.7549	-95.3562	0	Downtown
3	Historic District	29.6681	-95.2802	0	Downtown
4	Medical District	29.7095	-95.3982	0	Downtown

Map of Neighborhoods Chicago

Clusters in blue represent the Neighborhoods located on the North Side of Chicago

Map of Houston Neighborhoods

- Dots represent Neighborhoods in Houston based on location
  - Blue - North
  - Green - East
  - Aqua - South
  - Orange - West
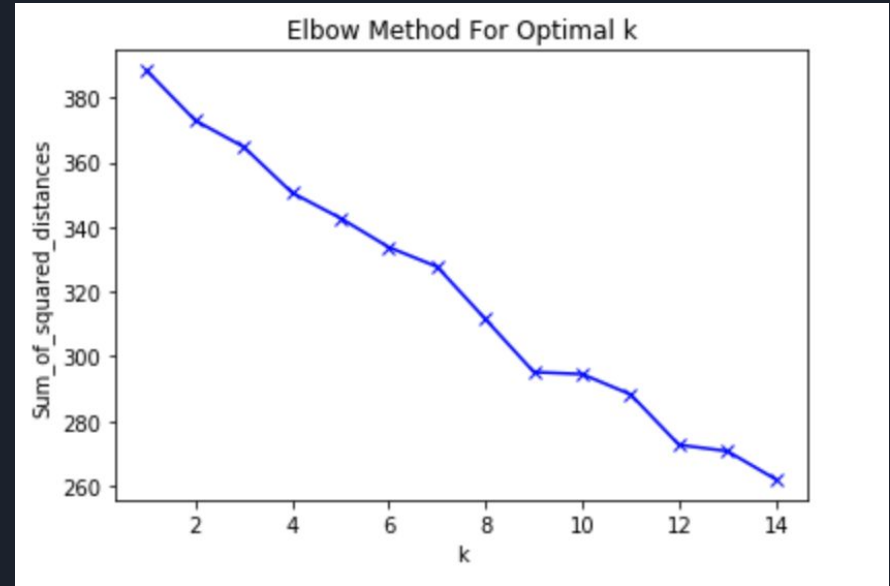 - Purple - Inner Loop
  - Red - Downtown

Using Foursquare to Generate Top 10 Venues

➔ Combined neighborhoods on the North Side of Chicago with Houston neighborhoods into one data frame.

➔ Using the location coordinates, I ran a Foursquare API to get list of venues nearby each neighborhood.

◆ Radius was set to 500 meters, Limit results to 100

➔ Used pandas dummies to generate numbered variables for analysis

➔ Grouped by neighborhood and displayed the Top 10 venues in each neighborhood.

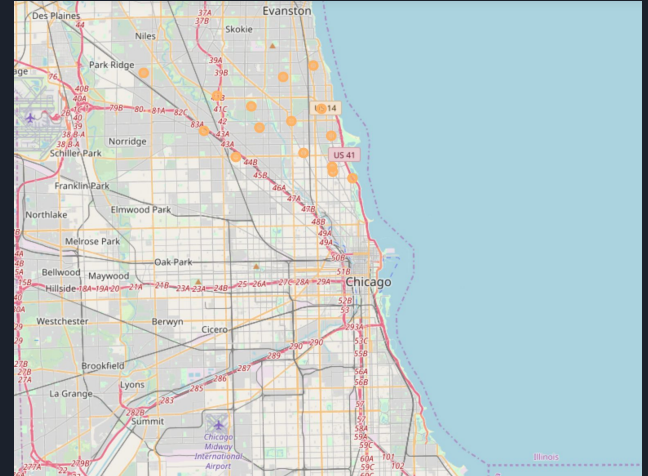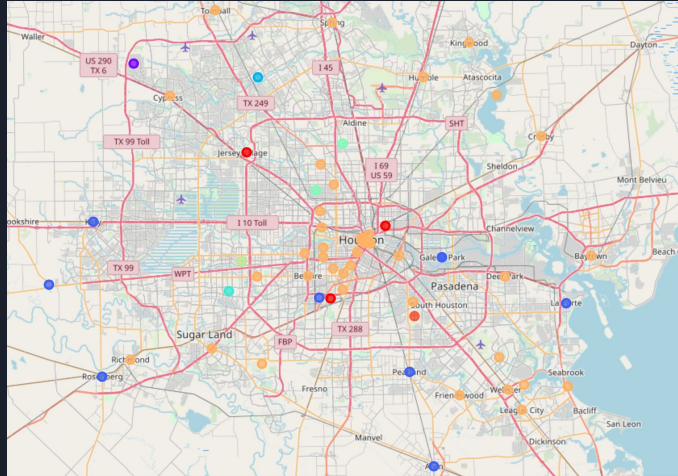|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Albany Park	Cocktail Bar	Fried Chicken Joint	Bakery	Grocery Store	Korean Restaurant	Sandwich Place	Karaoke Bar	Chinese Restaurant	Bus Station	Donut Shop
1	Aldine	Food Truck	Convenience Store	Fast Food Restaurant	Event Service	Event Space	Exhibit	Fabric Shop	Farm	Farmers Market	Filipino Restaurant
2	Alief	Construction & Landscaping	Yoga Studio	Fast Food Restaurant	Event Service	Event Space	Exhibit	Fabric Shop	Farm	Farmers Market	Filipino Restaurant
3	Alvin	American Restaurant	Mexican Restaurant	Bank	Seafood Restaurant	Italian Restaurant	BBQ Joint	Sushi Restaurant	Bowling Alley	Food & Drink Shop	Flower Shop
4	Ballpark District	Bar	Baseball Stadium	Soccer Stadium	Sports Bar	Italian Restaurant	Coffee Shop	BBQ Joint	Music Venue	Gym	Light Rail Station
5	Baytown	Fast Food Restaurant	Taco Place	Gym	Health & Beauty Service	American Restaurant	Bakery	Flower Shop	Flea Market	Filipino Restaurant	Ethiopian Restaurant
6	Bellaire	Boat or Ferry	Business Service	Pharmacy	Yoga Studio	Farm	Event Service	Event Space	Exhibit	Fabric Shop	Farmers Market
7	Braeburn	Athletics & Sports	Restaurant	Mexican Restaurant	Soccer Field	Yoga Studio	Farm	Event Service	Event Space	Exhibit	Fabric Shop
8	Champions	Gaming Cafe	Yoga Studio	Empanada Restaurant	Food Court	Food & Drink Shop	Flower Shop	Flea Market	Filipino Restaurant	Fast Food Restaurant	Farmers Market
9	Chinatown	Chinese Restaurant	Vietnamese Restaurant	Bubble Tea Shop	Bakery	Dessert Shop	Sushi Restaurant	Asian Restaurant	Supermarket	Vegetarian / Vegan Restaurant	Noodle House

K-Means Clustering

➔ Ran K-Means Clustering to cluster the neighborhoods into similar areas.
➔ Before running, I used the Elbow Method to determine the optimal number of clusters which was found to be nine.
➔ The cluster containing the Chicago neighborhoods and Houston neighborhoods would be used to recommend which Houston neighborhoods to live in that are similar to Chicago.

Elbow Method For Optimal k

Map of Houston & Chicago Clusters

Cluster Colors:
1 - Red
2 - Purple
3 - Blue
4 - Aqua
5 - Green
6 - Light Blue
7 - Orange
8 - None
9 - None

Results/Recommendations

➔ 43 neighborhoods in Houston that were similar to Chicago
➔ Majority of those neighborhoods were within the Metropolitan region of Houston
➔ While venues are similar, there is more to consider before moving to one of those neighborhoods.
   ◆ Cost of Living (rent/own)
   ◆ Demographics
   ◆ Etc.
➔ Further analysis can be done on the neighborhoods to determine where to live, this list gives us a good starting point by narrowing down the neighborhoods to those similar to Chicago