Opening a Restaurant or Bar in New Orleans

Data Analysis via the Foursquare API

The Problem:

- New Orleans: small city (population 390,845 in 2019) located at the mouth of the Mississipi river on the central gulf coast.
- Tourism-heavy: ~20 million visitors, spending $10 billion in 2019
- The French Quarter is the most popular tourism destination in the city.
- Recent restaurant and bar closures due to COVID-19 present a unique investment opportunity.

Purpose: Identify neighborhoods similar to the French Quarter with an apparent lack of bars and/or restaurants.

Data

- A list of neighborhoods of New Orleans, along with their latitudes and longitudes, from Wikipedia: https://en.wikipedia.org/wiki/Neighborhoods_in_New_Orleans

- Calls to the Foursquare API to retrieve a list of venues close to the center of a given neighborhood.

- A call to the OpenStreetMap Nominatim geocoding service to find the central coordinates of the city of New Orleans.
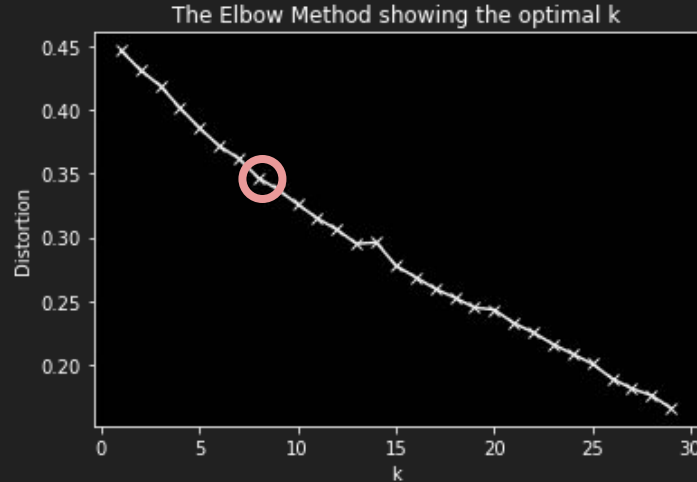
Data Snapshot

A snapshot of the raw data collected is below:

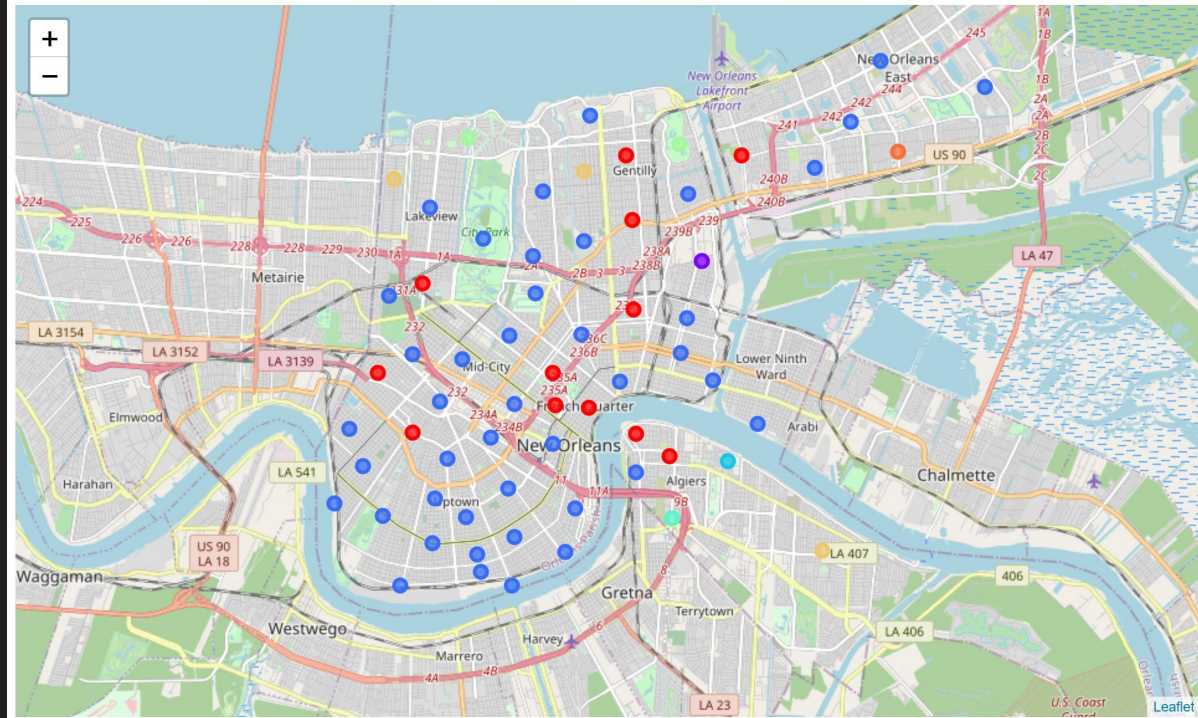|	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	U.S. NAVAL BASE	29.946085	-90.026093	The Mighty Missisippi	29.949695	-90.023710	Boat or Ferry
1	ALGIERS POINT	29.952462	-90.051606	Tout de Suite Café	29.952121	-90.051090	Café
2	ALGIERS POINT	29.952462	-90.051606	Congregation Coffee Roasters	29.951918	-90.053395	Coffee Shop
3	ALGIERS POINT	29.952462	-90.051606	The Crown & Anchor	29.951416	-90.054220	Bar
4	ALGIERS POINT	29.952462	-90.051606	Old Point Bar	29.954940	-90.050226	Bar

- 904 Venues found, with 201 unique Venue Categories.

Data Analysis

- Perform unsupervised k-means clustering algorithm on the feature "Venue Category", after OneHot encoding, grouped by Neighborhood.
- Chose to use 8 clusters based on the elbow method and the following plot of distortions:

Clustering Results

A map of New Orleans neighborhoods, colored by cluster. Red clusters are similar to the French Quarter.

Clustering Results, cont'd.

	Neighborhood	Longitude	Latitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
1	ALGIERS POINT	-90.051606	29.952462	0	Boat or Ferry	Bar	Historic Site
2	WHITNEY	-90.042357	29.947200	0	Nightclub	Clothing Store	Yoga Studio
10	MARLYVILLE - FONTAINEBLEAU	-90.113468	29.953001	0	Bar	Campground	Nightclub
15	FRENCH QUARTER	-90.064373	29.958839	0	Cajun / Creole Restaurant	Bar	Gay Bar
36	HOLLYGROVE	-90.122995	29.967278	0	Plaza	Bar	Paper / Office Supplies Store
38	TREME - LAFITTE	-90.074415	29.967278	0	Southern / Soul Food Restaurant	Trail	Music Venue
41	ST. ROCH	-90.052099	29.982149	0	Hardware Store	Bar	Sandwich Place
44	NAVARRE	-90.110378	29.988468	0	Café	New American Restaurant	Coffee Shop
54	MILNEBURG	-90.054245	30.019165	0	Cosmetics Shop	Pool Hall	Clothing Store
57	GENTILLY TERRACE	-90.052357	30.003706	0	Food Truck	Pool	Bar
64	PINES VILLAGE	-90.022144	30.019165	0	Seafood Restaurant	Nightlife Spot	Discount Store
71	IBERVILLE	-90.073686	29.959499	0	Bar	Hotel	Performing Arts Venue

The complete cluster of neighborhoods similar to the French Quarter.

Results

- The Milneburg neighborhood was clustered with the French Quarter, despite having neither bars nor restaurants among its top venues.

- The elbow chart indicates one should proceed with caution; this model may not be exceptionally predictive.

- This may be a result of a large number of unique venue categories coming from the Foursquare API.