Capstone Project – Battle of the Neighborhoods (Week 1)

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Introduction / Business Problem:

My Client wishes to open a specific type of tea shop in New Orleans that will provide traditional teas in a space which promotes and supports social communities interested in mind and body wellness. He believes that there are synergies between these types of tea houses and places like yoga studios. In this regard, he would like to know which areas in New Orleans have yoga studios, and in particular which of these areas have the fewest number of tea houses. This information is important to my Client as he would like to know which area in New Orleans would potentially be suitable for a successful tea house.

Description of the Data and how it will be used to solve the Business Problem:

Locations of the neighborhoods in New Orleans as defined by their respective latitudes and longitudes are shown on the following Wikipedia page:

https://en.wikipedia.org/wiki/Neighborhoods_in_New_Orleans

Using a python based Jupyter notebook, this information was extracted and transformed into a Pandas DataFrame, for example here are the first 5 rows of this data:

	Neighborhood	Longitude	Latitude
0	U.S. NAVAL BASE	-90.026093	29.946085
1	ALGIERS POINT	-90.051606	29.952462
2	WHITNEY	-90.042357	29.947200
3	AUDUBON	-90.121450	29.932994
4	OLD AURORA	-90.000000	29.924440

The following general steps were then applied, and they show how the New Orleans neighborhood location data was used to solve the Problem.

1. Create a map of New Orleans that shows each neighborhood.
2. Use Foursquare to find the top 100 venues and associated venue categories in each neighborhood. Following are the first 5 rows of this Foursquare data for the New Orleans neighborhoods:

	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	Levee @ Algiers Point	29.951760	-90.048747	Scenic Lookout

3. Use 'one hot encoding' on the venue categories of the venues in each neighborhood, e.g.:

	Neighborhood	ATM	Accessories Store	American Restaurant	Antique Shop	Art Gallery	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	Auto Garage	...	Vehicle Inspection Station	Video Game Store	Vietnamese Restaurant	Warehouse Store	Wine Bar	Wine Shop	Winery	Wings Joint	Women's Store	Yoga Studio
0	U.S. NAVAL BASE	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
1	ALGIERS POINT	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
2	ALGIERS POINT	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
3	ALGIERS POINT	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
4	ALGIERS POINT	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0

4. Determine a frequency grouping of the venue categories in each neighborhood, e.g.:

	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	ALGIERS POINT	Bar	Boat or Ferry	Coffee Shop	New American Restaurant	Café	Park	Gift Shop	Scenic Lookout	Grocery Store	Music Venue
1	AUDUBON	Park	Light Rail Station	College Arts Building	Outdoors & Recreation	Scenic Lookout	Sandwich Place	Smoothie Shop	Coffee Shop	Playground	Plaza
2	B. W. COOPER	Recreation Center	Gym / Fitness Center	Food Truck	Moving Target	Home Service	Boxing Gym	French Restaurant	Food Service	Food Court	Food & Drink Shop
3	BAYOU ST. JOHN	Convenience Store	Sandwich Place	Furniture / Home Store	Gas Station	Other Great Outdoors	Park	Playground	Lounge	Home Service	Donut Shop
4	BLACK PEARL	Farmers Market	Food Truck	Grocery Store	Plaza	Fast Food Restaurant	Food Service	Food Court	Food & Drink Shop	Food	Flower Shop

5. Cluster the neighborhoods using the K-Means method.
6. Show where the clusters are on a map of New Orleans.
7. Present plots that show which neighborhoods have both yoga studios and tea or coffee shops.
8. Using these plots determine which neighborhoods have the lowest number of coffee shops.