

Predicting the Ideal Location for a New Restaurant in Baton Rouge, Louisiana

Olevia Sharbaugh

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1. Introduction

Baton Rouge is one of the most culturally diverse cities in the United States. It has influences from France, Spain, and even local ethnic groups. It is an up and coming financial powerhouse with many new business opportunities developing every day. This city has made a name for itself and is slowly transforming into what can only be called a global hub of business and commerce.

Though these are all great aspects of the city, they can also pose issues for those who are trying to enter into the restaurant market in Baton Rouge. Due to this difficulty, it is of utmost importance that all new businesses analyze the environment in which they are entering carefully. This analysis should help to mitigate risk and increase return in the long run.

Baton Rouge, and Louisiana as a whole, is known for its Cajun cuisine and it is a big part of their culture as a whole. Food tourism is a very large industry in this state. Keeping this in mind, it becomes clear that entering into this competitive market in Louisiana will not be easy, and further analysis should take place.

For example, those interested in opening a restaurant in Baton Rouge must consider the population breakdown of the city, the presence of any Farmers Markets or anything of the like to obtain ingredients, the presence of population drawing venues such as bars, movie theatres, or parks, the presence and identity of competitors in that location as well as their cuisine, and the presence of any untapped or saturated markets.

2. Data Acquisition and Cleaning

This analysis will use data on Baton Rouge and its many neighborhoods as well as Foursquare data to determine the best location to open a brand new restaurant. The neighborhood data includes the name of the neighborhood, the community in which it resides, the population of people in each neighborhood, and the latitude and longitude coordinates of the neighborhood. This data was obtained from an official Baton Rouge website and the latitude and longitude coordinates of each neighborhood were added manually. In total, there are 9 communities and 45 neighborhoods. The use of Foursquare data will help to determine other venues in Baton Rouge, details about them, and their location. The use of these two datasets should provide adequate information to determine the best place to open a new restaurant which is vital to the longevity of a new business.

3. Methodology

This analysis was completed using many python libraries including; numpy, pandas, json, nominatim, requests, matplotlib, KMeans, and folium. These libraries made it possible to run the code necessary to solve this problem. The first step in this analysis was to confirm the amount of communities and neighborhoods, and plot them on a map using folium. After executing this code, I was able to use my Foursquare credentials to create a function that returned all nearby venues for the neighborhoods in Baton Rouge, Louisiana. I found that there were a total of 119 unique venues located in Baton Rouge and created a dummy variable for each of these. I was then able to find the ten most common venues in each neighborhood and put this information into a pandas dataframe.

After finding this information, I began to cluster the neighborhoods into five different clusters. I was then able to examine those clusters in more detail by looking at the most common

venues of each cluster and determine the neighborhoods with the most promise when considering opening a new restaurant.

4. Results

I found that there were 3 neighborhoods in cluster 1, 45 neighborhoods in cluster 2, 1 neighborhood in cluster 3, 2 neighborhoods in cluster 4, and 3 neighborhoods in cluster 5. The neighborhoods and their subsequent information is located in tables 1 through 5 below.

Table 1: Cluster 1

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
5	GLEN OAKS / ZION CITY	-91.136591	0	Park	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
19	FAIRWOOD	-91.039823	0	Park	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
32	EDEN PARK	-91.155091	0	Park	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop

Cluster one demonstrates surprising homogeneity among the neighborhoods that belong to it. Their first five most common venues in descending order are a park, a women's store, a flower shop, a cosmetics shop, and a dance studio. None of these top five include a restaurant, and in fact, there is not a legitimate restaurant listed in their top 10 most common venues, but rather a deli, dessert shop, and donut shop.

Table 2: Cluster 2

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
0	MID CITY	-91.122524	1	Financial or Legal Service	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
1	SOUTH BURBANK	-91.148290	1	Food & Drink Shop	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop	Electronics Store
2	GOODWOOD	-91.110950	1	Park	Tennis Court	Garden	Cafeteria	Women's Store	Financial or Legal Service	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop
3	NORTH BATON ROUGE	-91.134331	1	Golf Course	Park	Seafood Restaurant	Women's Store	Financial or Legal Service	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store
4	DELMONT PLACE	-91.159107	1	Gym / Fitness Center	Bank	American Restaurant	Convenience Store	Post Office	Fried Chicken Joint	Bar	Spa	Fast Food Restaurant	Exhibit
6	NORTH SHERWOOD FOREST	-91.053428	1	Thrift / Vintage Store	Discount Store	Bar	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Dog Run
7	SCOTLANDVILLE	-91.164168	1	Rental Car Location	Airport Terminal	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
8	BROWNSFIELD	-91.120714	1	Other Repair Shop	Construction & Landscaping	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
9	CENTRAL	-91.036971	1	Convenience Store	Sandwich Place	Bank	Football Stadium	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store
10	ZACHARY	-91.156736	1	Pizza Place	Frozen Yogurt Shop	Donut Shop	Sandwich Place	Restaurant	Pet Store	Asian Restaurant	Cosmetics Shop	Dance Studio	Deli / Bodega
11	CORTANA / VILLA DEL REY	-91.080679	1	Convenience Store	Construction & Landscaping	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
12	BROOKSTOWN	-91.128483	1	Furniture / Home Store	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
13	VICTORIA FARMS	-91.107263	1	Construction & Landscaping	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
14	JEFFERSON TERRACE / INNISWOLD	-91.070432	1	Construction & Landscaping	Pool	Park	Women's Store	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
15	KLEINPETER	-91.025907	1	Convenience Store	Fried Chicken Joint	Breakfast Spot	Fast Food Restaurant	Cajun / Creole Restaurant	Mediterranean Restaurant	Smoothie Shop	Mexican Restaurant	Market	Coffee Shop
17	MONTICELLO	-91.048873	1	Dance Studio	Clothing Store	Women's Store	Construction & Landscaping	Cosmetics Shop	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
20	EAST FAIRFIELDS / MELROSE PLACE	-91.134846	1	Bookstore	American Restaurant	Other Repair Shop	Seafood Restaurant	Food	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
22	THE AVENUES / SOUTHERN UNIV	-91.196168	1	Athletics & Sports	Scenic Lookout	Women's Store	Flower Shop	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
23	KENILWORTH	-91.124481	1	Pool	Deli / Bodega	Women's Store	College Library	Convenience Store	Cosmetics Shop	Dance Studio	Dessert Shop	Discount Store	Dog Run
25	WESTMINSTER / PINE PARK	-91.091646	1	Breakfast Spot	Women's Store	Construction & Landscaping	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
26	DOWNTOWN EAST	-91.173320	1	Construction & Landscaping	Automotive Shop	Music Venue	Bus Station	Convenience Store	Financial or Legal Service	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop
27	DOWNTOWN	-91.185750	1	American Restaurant	Sandwich Place	Convenience Store	Restaurant	Park	Food	Salad Place	Lounge	Museum	Office

28	SOUTHSIDE	-91.159588	1	Bar	Sandwich Place	Gym / Fitness Center	Gas Station	Hot Dog Joint	Italian Restaurant	Juice Bar	Mexican Restaurant	Pizza Place	Café
29	CITY PARK	-91.168523	1	Art Gallery	Clothing Store	Golf Course	Park	Playground	Tennis Court	Dog Run	Dessert Shop	Electronics Store	Donut Shop
30	VALLEY PARK	-91.145900	1	Convenience Store	Grocery Store	Hotel	Mexican Restaurant	BBQ Joint	Dessert Shop	Deli / Bodega	Discount Store	Flower Shop	Dog Run
31	BOCAGE / CITIPLACE / CONCORD ESTATES	-91.111758	1	Pizza Place	Mediterranean Restaurant	Burger Joint	Cajun / Creole Restaurant	Grocery Store	Shoe Store	Chinese Restaurant	Italian Restaurant	Mexican Restaurant	Pharmacy
35	JEFFERSON / DRUSILLA	-91.083891	1	Coffee Shop	Gift Shop	Clothing Store	Cajun / Creole Restaurant	Women's Store	Flower Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store
36	TARA	-91.094010	1	Food Truck	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
37	GOODWOOD HOMESITES	-91.105105	1	Rental Car Location	Furniture / Home Store	Mexican Restaurant	Breakfast Spot	Women's Store	Financial or Legal Service	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop
38	MILLERVILLE	-91.024395	1	Mattress Store	Fast Food Restaurant	Electronics Store	Buffet	Cosmetics Shop	Café	Big Box Store	Mediterranean Restaurant	Intersection	Paper / Office Supplies Store
39	STEVENDALE	-91.018467	1	RV Park	Massage Studio	Women's Store	Construction & Landscaping	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
40	PERKINS / HIGHLAND	-91.031125	1	Convenience Store	Shipping Store	Construction & Landscaping	Sandwich Place	Spa	Fried Chicken Joint	Insurance Office	Gift Shop	Breakfast Spot	Discount Store
41	L S U	-91.180022	1	Coffee Shop	Fast Food Restaurant	Sandwich Place	Basketball Court	Ice Cream Shop	Exhibit	Music Venue	College Library	Performing Arts Venue	College Football Field
42	OLD SOUTH BATON ROUGE	-91.174357	1	Food Truck	Massage Studio	American Restaurant	Intersection	Women's Store	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
43	JEFFERSON / TIGER BEND	-91.033925	1	Grocery Store	Southern / Soul Food Restaurant	Juice Bar	Gas Station	Dog Run	Fast Food Restaurant	Exhibit	Electronics Store	Donut Shop	Discount Store
44	SHERWOOD FOREST	-91.051032	1	Bowling Alley	Women's Store	Construction & Landscaping	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop

Cluster 2 shows much more diversity than cluster 1. This is no surprise as it is also much larger than cluster 1. Only six of the 44 neighborhoods located in this cluster have a restaurant listed as their number 1 most common venue, but a large majority include a restaurant of some capacity in their top five most common venues.

Table 3: Cluster 3

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
24	POLLARD / WOODCHASE	-91.141731	2	Home Service	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop

Cluster 3 is the smallest cluster and includes home service, women's store, food, cosmetics shop, and dance studio as its most popular venues.

Table 4: Cluster 4

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
18	PARK FOREST / OAKCREST	-91.094276	3	Pizza Place	Women's Store	Flower Shop	Convenience Store	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
33	ISTROUMA / DIXIE	-91.159844	3	Grocery Store	Pizza Place	Construction & Landscaping	Convenience Store	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run

Cluster 4 has only two neighborhoods located within it, but their top five most common venues include a pizza place which could provide competition to any restaurants interested in opening in this area.

Table 5: Cluster 5

	Neighborhood	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	9th Most Common Venue	10th Most Common Venue
16	BROADMOOR	-91.067779	4	Home Service	Intersection	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run
21	SMILEY HEIGHTS / MELROSE EAST	-91.130368	4	Intersection	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop
34	LEGION VILLAGE	-91.160420	4	Intersection	Women's Store	Food	Cosmetics Shop	Dance Studio	Deli / Bodega	Dessert Shop	Discount Store	Dog Run	Donut Shop

The final cluster includes only 3 neighborhoods whose top five most common venues include a “food” venue. This cluster also lists the most common venue for two out of the three neighborhoods as an intersection.

5. Discussion

Individuals who are interested in opening a restaurant in Baton Rouge have to consider certain factors before deciding where to open their restaurant. These factors include: the population breakdown of the neighborhoods in the city, the presence of any Farmers Markets or anything of the like to obtain ingredients, the presence of population drawing venues such as bars, movie theatres, or parks, the presence and identity of competitors in that location as well as their cuisine, and the presence of any untapped or saturated markets.

Unfortunately, farmers markets are not common in Baton Rouge and do not appear on any neighborhoods top ten most common venues. Due to this finding, the presences of farmers markets in Baton Rouge neighborhoods cannot be considered. I will now start to analyze the other factors by cluster to determine which neighborhood would be the best for a new restaurant business venture.

Starting with cluster 5, we see that there are some immediate red flags. There are only three neighborhoods located in this cluster and two of those three have an intersection listed as their most common venue. As far as population drawing venues are concerned, an intersection is not ideal. They also have a “food” venue listed in their top five most common so this cluster may already be saturated with restaurants and pose competition issues. The neighborhoods also have below average population counts at 5966, 4430, and 1624. The average population for neighborhoods in Baton Rouge City is around 7,065. Due to these factors, opening a restaurant in the neighborhoods located in cluster 5 is not ideal.

In cluster 4, we see that there are also red flags. Again, there are only two neighborhoods located in this cluster and the top venue for one of these is a pizza place and it is the second most common venue for the other. There are no population drawing venues located in the top ten most common venues of this cluster. They also have a various food service venues located in their top ten so this cluster may also be saturated with restaurants and pose competition issues. The neighborhoods also have below average population counts at 6857, and 4152. Due to these factors, opening a restaurant in the neighborhoods located in cluster 4 is also not ideal.

Cluster 3 has only one neighborhood whose top venues include “food” and no population drawing venues. It also has a very small population of only 3916. Due to these factors, opening a restaurant in the Pollard neighborhood located in cluster 3 is not ideal.

Cluster 2 is the largest cluster with a total of 44 neighborhoods located within it. Though only six of these neighborhoods located in this cluster have a restaurant listed as their number 1 most common venue, a large majority include a restaurant of some capacity in their top five most common venues. This could indicate that the market for restaurants in the neighborhoods located in cluster 2 are already saturated and would be difficult to enter. After examining the presence of

population drawing venues, it is easy to see why this cluster has a large amount of restaurants. Many of the neighborhoods located in this cluster include population drawing venues like bars, parks, scenic lookouts, art galleries, and many more. The population of many of these neighborhoods is also way above the average, though there is much variation. When considering all of these factors together it is difficult to say with certainty if any of the neighborhoods in cluster 2 are viable to the opening of a new restaurant.

Cluster 1 contains three neighborhoods who all contain the same top ten most common venues. Their first most common venue is a park which could certainly draw populations to these neighborhoods. As stated earlier, none of the top five most common venues of these neighborhoods include a restaurant, and in fact, there is not a legitimate restaurant listed in their top 10 most common venues, but rather a deli, dessert shop, and donut shop. Therefore, opening a Cajun restaurant in this area, for example, would make it the first of its kind. Lastly, the average population of all of the neighborhoods located in cluster 1 is 600 above the average population of Baton Rouge. Due to these factors, opening a restaurant in the neighborhoods located in cluster 1 seems to be the most ideal of any other neighborhoods in the other clusters.

6. Conclusion

Louisiana is a beautiful and culturally diverse state. It's capital, Baton Rouge, is an up and coming financial powerhouse with many new business opportunities developing every day. This city has made a name for itself and is slowly transforming into what can only be called a global hub of business and commerce.

Baton Rouge, and Louisiana as well, is known for its flavorful and spicy Cajun cuisine and it is a big part of their culture as a whole. Food tourism is also a very large industry in this state and draws many travelers each year. Due to these facts, it is clear that entering into this competitive

market in Louisiana will not be easy, and further analysis should take place in order to ensure not only success, but profit maximization. It is of utmost importance that all new businesses analyze the environment in which they are entering carefully. This analysis should help to mitigate risk and increase return in the long run. For example, those interested in opening a restaurant in Baton Rouge must consider the population breakdown of the city, the presence of population drawing venues such as bars, movie theatres, or parks, the presence and identity of competitors in that location as well as their cuisine, and the presence of any untapped or saturated markets.

After thorough analysis, I conclude that Cluster 1 which includes Glen Oaks / Zion City, Fairwood, and Eden Park would be the best place to open an new restaurant in Baton Rouge. These neighborhoods have population drawing venues located among their top ten most common venues, no legitimate restaurants in their top ten, and a population that could sustain a business in the long run. Though Cluster 2 also showed promise in its large population and many population drawing venues, it had a relatively saturated restaurant market that could present problems at the beginning of the business venture. Therefore, my analysis provides evidence that opening a restaurant in Glen Oaks / Zion City, Fairwood, or Eden Park would prove most successful.