

# **Predicting to Open a New Chinese Restaurant in St. Louis**

## **Capstone Project - The Battle of the Neighborhoods**

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### **1. Introduction**

St. Louis locates in the Mid-west of the Unites States, which is the largest metropolitan area in the state of Missouri. Due to the city history, it has a great many traditional American-style restaurants. However, with the city development, multi-cultured people are attracted to St. Louis, which increases the demand for the diversity of its food culture. Among the different styles of dishes, Asian food, especially Chinese food, is one of the popular options. Panda Express is a famous American-style Chinese fast food, which has over 20 stores in St. Louis. American-style Chinese food is the major Chinese restaurant in St. Louis area. Presently, more and more people would like to try authentic Chinese food, which leads to a good potential market in this area.

In this project, we will try to find optimal location candidates in St. Louis for the stakeholders that interest in opening an Authentic Chinese restaurant. To ensure the profit of the stakeholders, the selection of location prefers in a prospective area with few competitors.

### **2. Data**

There are total 79 neighborhoods in St. Louis. Based on the target, the location selection should consider the following factors:

- i. The population of the neighborhood;
- ii. The existing restaurants in the neighborhood;
- iii. The shops near the neighborhood.

Based on the factors, the data that will be used in this analysis are listed below:

- i. The list of neighborhoods in St. Louis from Wikipedia;
- ii. The address of the neighborhoods will be obtained by using St. Louis Coordinate Datasheet;
- iii. The number and types of restaurants will be obtained by using Foursquare API
- iv. The number of shops will be obtained by using Foursquare API.

### 3. Methodology

Firstly, import the list of neighborhoods of St. Louis from Wikipedia.

	Neighborhood	Population	White	Black	Hispanic/Latino2	AIAN1	Asian	Mixed Race	Corridor
0	Academy	3006	16.9	54.7	20.5	1.52	4.3	3.5	North
1	Baden	7268	6.3	91.8	0.5	0.10	0.0	1.3	North
2	Benton Park	3532	68.2	25.1	3.2	0.30	1.2	3.8	South
3	Benton Park West	4404	28.0	59.6	10.5	0.00	1.9	5.1	South
4	Bevo Mill	12654	74.2	13.8	7.5	0.40	4.6	3.9	South

Since only the neighborhood and the population are the factors we care in the study, the other unnecessary columns need to be deleted.

	Neighborhood	Population
0	Academy	3006
1	Baden	7268
2	Benton Park	3532
3	Benton Park West	4404
4	Bevo Mill	12654

Derive the coordinate data of St. Louis neighborhood from datasheet.

	Neighborhood	Population	Latitude	Longitude
0	Academy	3006	38.6553	-90.2690
1	Baden	7268	38.7183	-90.2315
2	Benton Park	3532	38.6001	-90.2205
3	Benton Park West	4404	38.5990	-90.2303
4	Bevo Mill	12654	38.5845	-90.2667

As we get the neighborhoods and coordinates, the visualization of the neighborhoods is shown in the Figure 1.

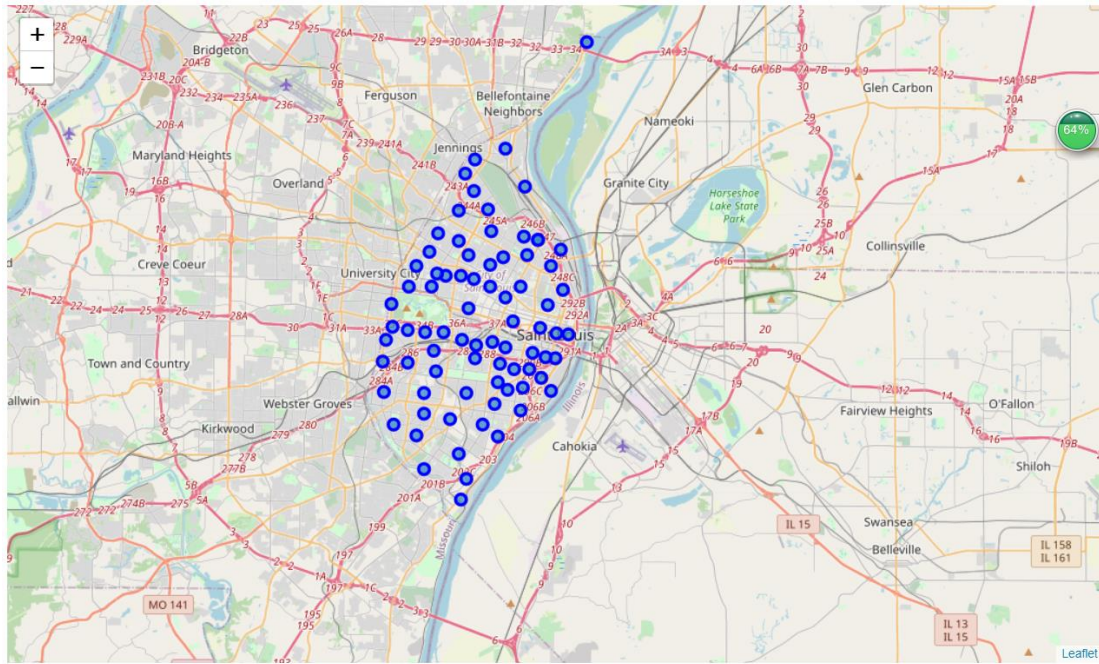


Figure 1. Neighborhoods in St. Louis

#### 4. Results and Discussion

##### 4.1 Explore the neighborhoods in St. Louis

The objective of this study is selected the optimum location for the stockholders to open a new Chinese restaurant. The factors may influence the selection of location is 1) the population of neighborhoods, which is fixed population; 2) the shopping malls in the neighborhoods, which affects the floating population; 3) the present restaurants, especially Chinese restaurants. In this section, we will explore the 79 neighborhood communities of St. Louis based on the above three parameters.

	Neighborhood	Population	Latitude	Longitude
19	Dutchtown	15770	38.5819	-90.2456
9	Central West End	14473	38.6396	-90.2550
70	Tower Grove South	13333	38.5975	-90.2561
4	Bevo Mill	12654	38.5845	-90.2667
43	Lindenwood Park	9486	38.5983	-90.3085

The histogram (Figure 2) clearly shows that population in the range of 2000 to 4000 people has the most communities (27 communities). Only four communities have the population larger than 10,000. The mean population is around 4000. Since the objective is

open a Chinese restaurant in a certain neighborhood community, the population needs to reach a minimum value to ensure that the potential customer is reasonable. Based on this rule, we neglect the communities that have population less than 2000.

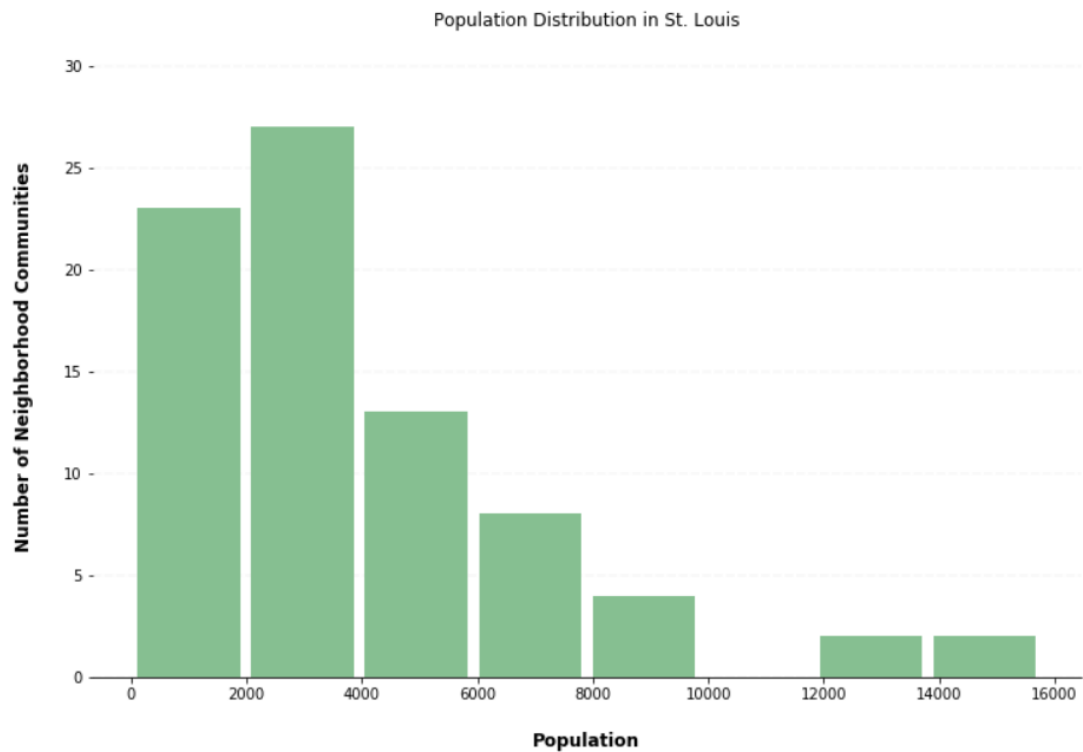


Figure 2. Relation between population and Number of Neighborhood Communities

To clear show the population of each neighborhood, we use the bar chart to visualize the population in each neighborhood.

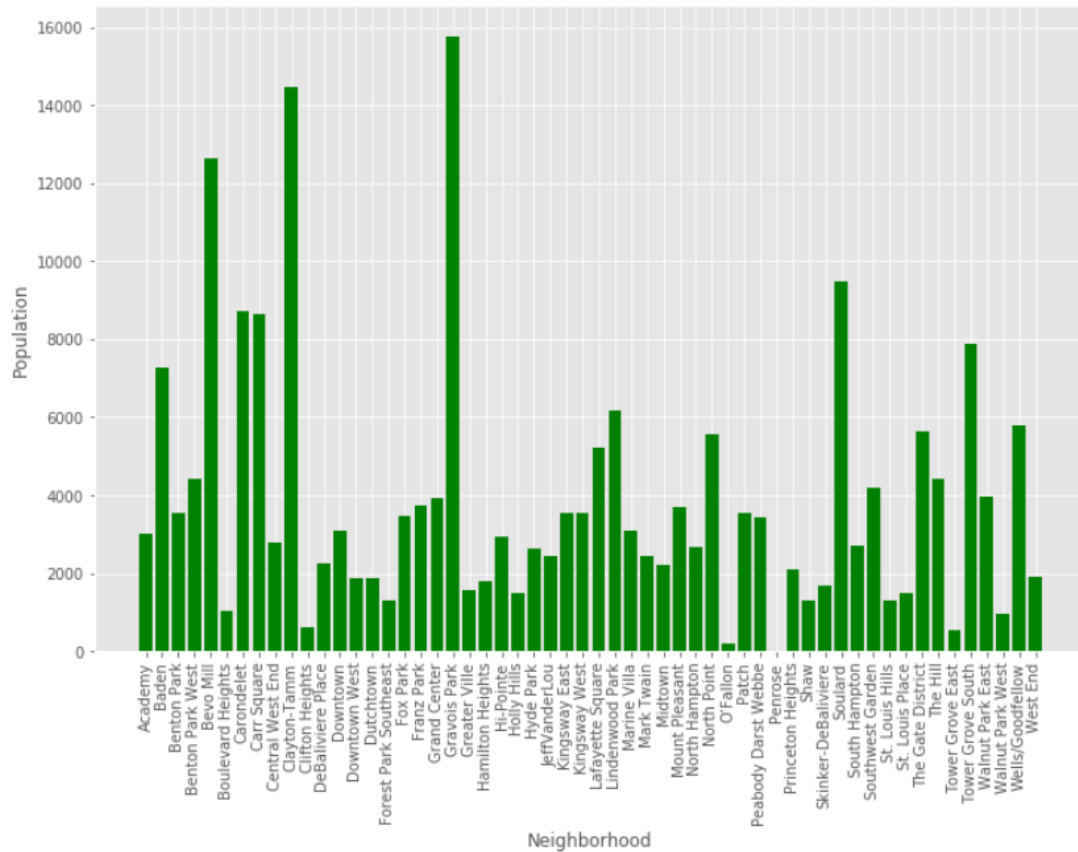


Figure 3. Relation between Population and Neighborhood

#### 4.2 Filter the neighborhoods by shops in St. Louis

In the previous study, we filter the neighborhoods with a certain amount of population (fixed population). The next step is studying on the floating population. Here, we focus on the people influenced by the shopping malls.

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Academy	6	6	6	6	6	6
Baden	4	4	4	4	4	4
Benton Park	22	22	22	22	22	22
Benton Park West	4	4	4	4	4	4
Bevo Mill	11	11	11	11	11	11

In summary, there are total 157 unique categories in the entire neighborhoods.

Group rows by neighborhood and by taking the mean of the frequency of occurrence of each category. Filter the venues with the interested categories. Since we interest in the shops in the neighborhoods, we use "Store" as the keywords. Summation of the shop frequencies of each neighborhoods.

	Neighborhood	Population	Arts & Crafts Store	Candy Store	Clothing Store	Convenience Store	Discount Store	Electronics Store	Fruit & Vegetable Store	Grocery Store	Liquor Store	Men's Store	Music Store	Pet Store	Shoe Store	Thrift / Vintage Store	Toy / Game Store	Video Game Store	Video Store	Sum
0	Academy	3006	0.000000	0.0	0.000000	0.166667	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.333333
1	Baden	7268	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.000000
2	Benton Park	3532	0.000000	0.0	0.045455	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.090909
3	Benton Park West	4404	0.000000	0.0	0.000000	0.250000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.500000
4	Bevo Mill	12654	0.000000	0.0	0.000000	0.000000	0.090909	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.181818
5	Boulevard Heights	1037	0.166667	0.0	0.000000	0.000000	0.166667	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.666667
6	Carondelet	8708	0.000000	0.0	0.000000	0.166667	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.333333
7	Carr Square	8661	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	1.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	2.000000
8	Central West End	2774	0.000000	0.0	0.000000	0.066667	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.066667	0.0	0.0	0.0	0.266667
9	Clayton-Tamm	14473	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.052632	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.105263

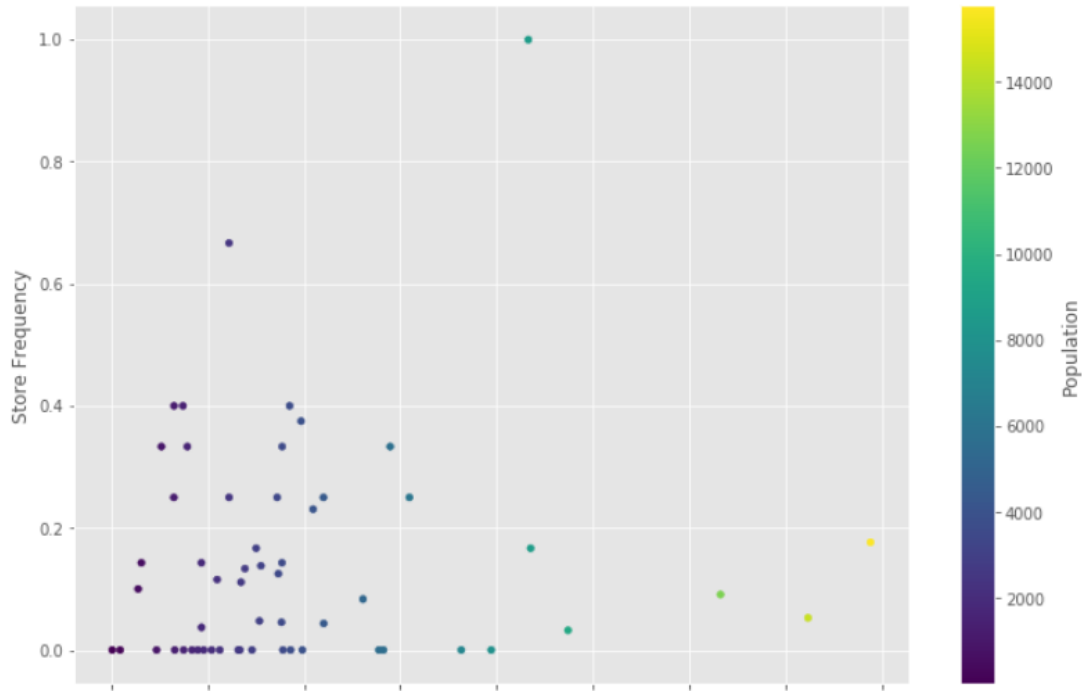


Figure 4. Relation between population and store frequency

The relation between store frequency and community population is shown in the scatter plot below. There is no evidence to show that more people indicate more store. The population of some neighborhoods is not large but corresponds a high store frequency, which means that it provides the potential to attractive nearby neighborhoods to shop in these areas and so may indicate more opportunity for eating in a restaurant. Based on the overall consideration, we will keep the current 55 neighborhoods to study the restaurant information of each neighborhood in the following study.

#### 4.3 Explore the restaurant in St. Louis

We use the Foursquare API to study the current restaurants and their types in St. Louis neighborhoods. In the previous section, we have already analyzed the occurrence of each venue in the neighborhoods. Here, we need to filter the restaurants.

	Neighborhood	Population	American Restaurant	Asian Restaurant	Brazil Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	...	Mexican Restaurant	Middle Eastern Restaurant	New American Restaurant	Restaurant	Seafood Restaurant	Southern / Soul Food Restaurant	Sushi Restaurant	Vegetarian / Vegan Restaurant	Vietnamese Restaurant	Sum
0	Academy	3006	0.000000	0.0	0.000000	0.0	0.333333	0.000000	0.0	0.000000	..	0.000000		0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.333333
1	Baden	7268	0.000000	0.0	0.000000	0.0	0.000000	0.000000	0.0	0.250000	..	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.250000
2	Benton Park	3532	0.045455		0.045455	0.0	0.000000	0.000000		0.045455	..	0.000000		0.045455	0.000000	0.000000	0.0	0.0	0.0	0.0	0.227273
3	Benton Park West	4404	0.000000	0.0	0.000000	0.0	0.000000	0.000000	0.0	0.000000	..	0.000000		0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.000000
4	Bevo Mill	12654	0.000000	0.0	0.000000	0.0	0.000000	0.090909	0.0	0.000000	..	0.090909	0.0	0.000000	0.181818	0.000000	0.0	0.0	0.0	0.0	0.545455
5	Boulevard Heights	1037	0.000000	0.0	0.000000	0.0	0.000000	0.000000	0.0	0.000000	..	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.000000
6	Carondelet	8708	0.000000	0.0	0.000000	0.0	0.000000	0.000000	0.0	0.166667	..	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.166667
7	Carr Square	8661	0.000000	0.0	0.000000	0.0	0.000000	0.000000	0.0	0.000000	..	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.000000
8	Central West End	2774	0.000000	0.0	0.000000	0.0	0.066667	0.000000	0.0	0.000000	..	0.000000	0.0	0.066667	0.000000	0.066667	0.0	0.0	0.0	0.0	0.200000
9	Clayton-Tamm	14473	0.052632	0.0	0.000000	0.0	0.052632	0.000000	0.0	0.000000	..	0.000000	0.0	0.000000	0.000000	0.000000	0.0	0.0	0.0	0.0	0.105263

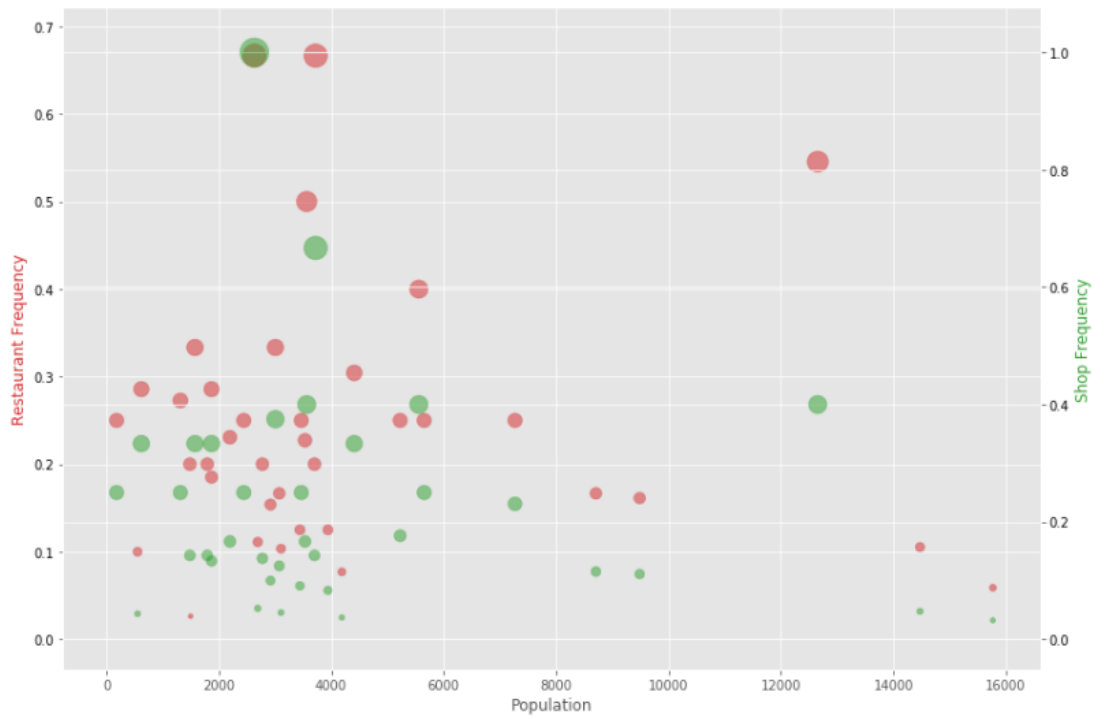


Figure 5. Bubble chart for restaurant frequency, shop frequency and population

Get the total frequency of restaurants in each neighborhood. Descending order the restaurant frequencies. Visualizing the relation between the neighborhood population, the restaurant frequency and the shop frequency using bubble chart in Figure 5. The plot shows that in some neighborhoods with many populations can corresponds to a high frequency of restaurants and shops. However, there is no linear tendency to show the increase of population leading to a rise of frequency of shops and restaurants. Therefore, the shop frequency will work as a reference parameter for the selection of location to open a Chinese restaurant.

As we have the information of restaurants and shops, the next step is clustering the neighborhoods. Firstly, we visualize the 10 most common venues of the restaurants and cluster them into 5 groups. The cluster details are shown in Figure 6.



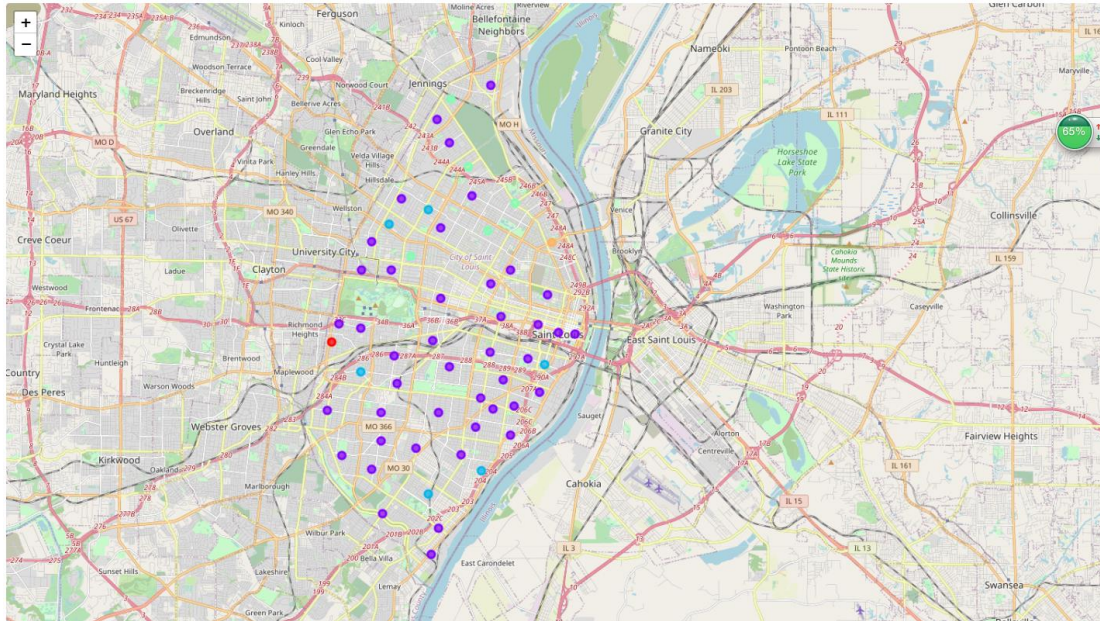


Figure 6. Five clusters by restaurant types in St. Louis

4.4 Comprehensively analyze the restaurant information with the shop as reference in each cluster.

Now, we have cluster the neighborhoods in 5 groups based on the restaurant. The next step is including the influences of the shop. Filter the shop information for each cluster.

#### Cluster 1

In Cluster\_1, there is only one neighborhood, Franz Park. Chinese restaurant is the 7th most common venue of total restaurants, which means that open a new Chinese restaurant is still possible. However, the decision needs to include the shop frequency and population. The population of this neighborhood is 2442. Compared to other neighborhoods, the population is small. Besides, there is no shop in this neighborhood, which indicates that floating population is at low potential. Therefore, it is not a good opinion to open a new Chinese restaurant in Cluster\_1.

Neighborhood	Shop Frequency	Population	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
17 Franz Park	0.0	2442	Greek Restaurant	Mediterranean Restaurant	Vietnamese Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Felafel Restaurant	Fast Food Restaurant

#### Cluster 2

There are total 43 neighborhoods. To help quicker filter the possible options for opening a new Chinese restaurant, we first exclude the regions that has a population lower than average and the shop frequency lower than average.

Firstly, considering the neighborhoods that have a population larger than 10,000.



Dutchtown has the largest population and a good shop frequency. Chinese restaurant is the 7th common venue. It is a good choice to be selected as the candidate. Through Central West End has the 2nd largest population and a relatively good shop frequency, the present Chinese restaurant is the 3rd most common venue. The neighborhood is not considered as a good choice due to high possibility of competition. The 3rd and 4th largest population communities have similar case with Dutchtown; however, it is not as good as Dutchtown. Therefore, with population larger than 10,000, Dutchtown is considered as a good candidate to open a restaurant.

For population less than 10,000, considering the shop frequency larger than average shop frequency in St. Louis. Lindenwood Park and Boulevard Heights have close population and shop frequency. They also can be considered as candidates. Benton Park West and St. Louis Hills have the same shop frequency with Lindenwood Park, however, the population of them are less than Lindenwood Park. Hence Benton Park West and St. Louis Hills are excluded from the candidates. Carondelet has less population and shop frequency than Lindenwood Park, thus excludes it. Wells/Goodfellow and JeffVanderLou have similar population, but JeffVanderLou has twice higher shop frequency. Therefore, JeffVanderLou is selected as candidates. Shaw has a relative higher shop frequency but smaller population, can only be listed as a candidate.

	Neighborhood	Shop Frequency	Population	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
29	Lindenwood Park	0.250000	9486	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
5	Boulevard Heights	0.333333	8708	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
6	Carondelet	0.166667	8661	Fast Food Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Filipino Restaurant
46	St. Louis Hills	0.250000	7373	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
41	Shaw	0.400000	6811	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
54	Wells/Goodfellow	0.333333	5859	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
35	JeffVanderLou	0.666667	5557	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
19	Gravois Park	0.176471	5225	Southern / Soul Food Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant
45	Southwest Garden	0.230769	4885	Italian Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant
3	Benton Park West	0.250000	4404	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Faiafe Restaurant	Fast Food Restaurant	Filipino Restaurant

### Cluster 3

There are six neighborhoods in Cluster 3. The most three popular restaurants are American Restaurant, Greek Restaurant, and Asian Restaurant in this Cluster 4. The population of neighborhoods is less than 5000, which is less than the average population of St. Louis. Additionally, the shop frequencies of three neighborhoods are larger than average shop frequency in St. Louis. In this cluster, Mount Pleasant may be considered as candidates to open a new Chinese restaurant.

	Neighborhood	Shop Frequency	Population	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
33	Mount Pleasant	0.400000	4408	American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
23	Holly Hills	0.400000	3701	American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
27	Kingway West	0.000000	3441	American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
21	Hamilton Heights	0.000000	3105	American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
10	Clifton Heights	0.142857	3074	Italian Restaurant	American Restaurant	Sushi Restaurant	German Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant
38	Peabody Darst Webbe	0.250000	2378	American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant

## Cluster 4

There are total five neighborhood in this cluster. Chinese restaurants are the most common venue in this cluster. It means that open a new Chinese restaurant in the neighborhoods of this cluster is not a sensible choice due to the high potential of competition. Therefore, the neighborhoods in Cluster\_4 are not considered as optimum choices of open a new Chinese restaurant.

	Neighborhood	Shop Frequency	Population	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
20	Greater Ville	0.333333	6189	Chinese Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
36	O'Fallon	0.000000	5791	Chinese Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
31	Mark Twain	0.250000	4188	Chinese Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
35	North Point	0.000000	3966	Chinese Restaurant	Fast Food Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Eastern European Restaurant	Falafel Restaurant	Filipino Restaurant
0	Academy	0.166667	3006	Chinese Restaurant	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant

## Cluster 5

There is only one neighborhood in Cluster 5. American restaurants are more popular in this neighborhood. Like the case in Cluster 1, even there is still potential to open a Chinese restaurant in this region, however, the population and shop frequency is not as expected. Therefore, Hyde Park is not considered as the prospective neighborhood.

	Neighborhood	Shop Frequency	Population	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	Hyde Park	0.0	2668	American Restaurant	New American Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant

List the candidates in a table to do the final decision. Since Mount Pleasant has the same shop frequency with Shaw, but less population, thus we drop Mount Pleasant from candidates. The final five options to open a new Chinese restaurant is shown below.

	Neighborhood	Shop Frequency	Population	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	Duluthtown	0.142857	15770	Vietnamese Restaurant	Cajun / Creole Restaurant	German Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant
1	Lindenwood Park	0.250000	9486	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
2	Boulevard Heights	0.333333	8708	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
3	Shaw	0.400000	6811	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant
4	JeffVanderLou	0.666667	5557	Vietnamese Restaurant	Greek Restaurant	Asian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant	Chinese Restaurant	Eastern European Restaurant	Falafel Restaurant	Fast Food Restaurant	Filipino Restaurant

## 5. Conclusions

The objective of this project is providing the stockholders candidates for opening a new Chinese restaurant in St. Louis. Based on the above study and analysis, five candidate neighborhoods were finally selected based on the consideration of population and shop frequency. The five candidate neighborhoods are Dutchtown, Lindenwood Park, Boulevard Heights, Shaw, JeffVanderLou. The population works as the most important factor for the selection of the neighborhoods to open a new Chinese restaurant, since population represents the fixed the possibility of the potential customers. At the same time, the shop frequency is considered as the secondary factor for the selection of neighborhoods to open a new Chinese restaurant, as shops can attract floating population which are possible customers. Therefore, the five neighborhoods are chosen for the stockholders as the candidates to open a new Chinese restaurant.