# Data Analysis Report

Business distribution LA vs NYC

## 1. Introduction

In this project, I will focus on analysis the distribution of business location in LA vs NY. Both cities are popular cities in the US. But one locates on west coast and one on east coast. In addition, although both cities are huge, the lifestyle are different for the people in these two cities. Thus, I want to analysis how businesses locate in both cities and what type of business are popular in these two cities. Some people may want to know which city fit their lifestyle best and this report will give you a better understanding of both city's personality.

## 2. Data

The data in this report are Districts/ Neighborhood list for LA and NYC, geolocation data for LA and NYC, Business types and locations in LA and NYC.

For Districts/ Neighborhood list, we get data from [LA Neighborhood Info](#), and [NYC Neighborhood Info](#). The geolocation data we retrieved are from [LA Geodata](#) and [NYC Geodata](#). (Due to the difference of data resource for geolocation data and districts/ neighborhood list data, some neighborhood name may not appear in one or the another, but I have rename the key neighborhoods to have them matched in both resources.)

For Business location and types, we acquire them through foursquare API with each coordinates of neighborhood.

## 3. Methodology

For each city, I will generate a full dataframe contains neighborhood, business types, number of business types in each neighborhood. Then we make bar charts for different requirements in the report and conclude the personality of the city.

In addition, Kmean clustering technique is the method being used in this research to generalize different clusters of each neighborhood based on the combination of different business in the area. The reason why is Kmean clustering, is that it works well in this report to have similar combination of business for a neighborhood being clustered in the same type of neighborhood.

## 4. Result

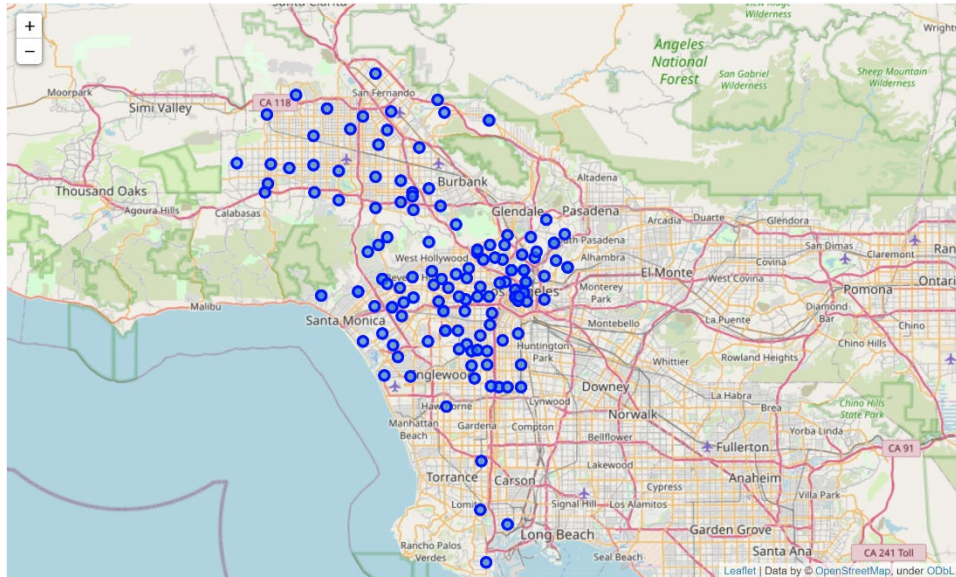After we implement the analysis in the model, here are some results we find out:



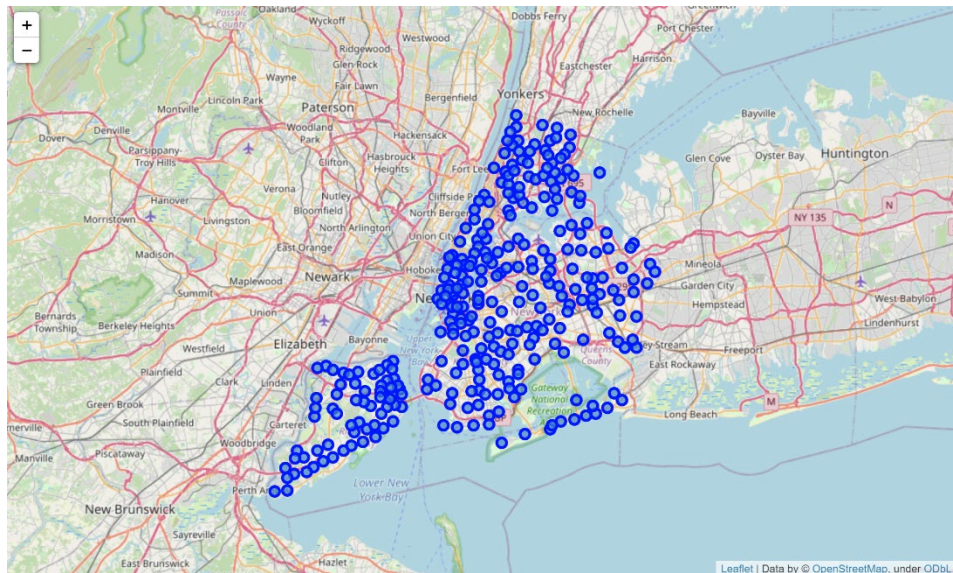*Figure 1 Neighborhood in LA*



*Figure 2 Neighborhoods in NYC*

Based on the neighborhoods map LA vs NYC, it is obvious to tell that NYC contains more

neighborhoods than LA although the neighborhoods in LA are more spaced spread all

around the city. Thus, there are more businesses exists in New York City then the businesses in Los Angeles.
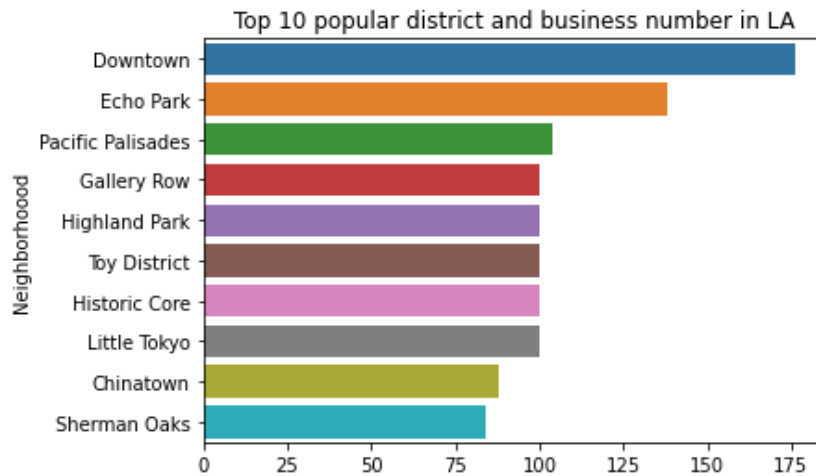
**Top 10 popular district and business number in LA**



*Figure 3 LA Business vs. Neighborhood LA*

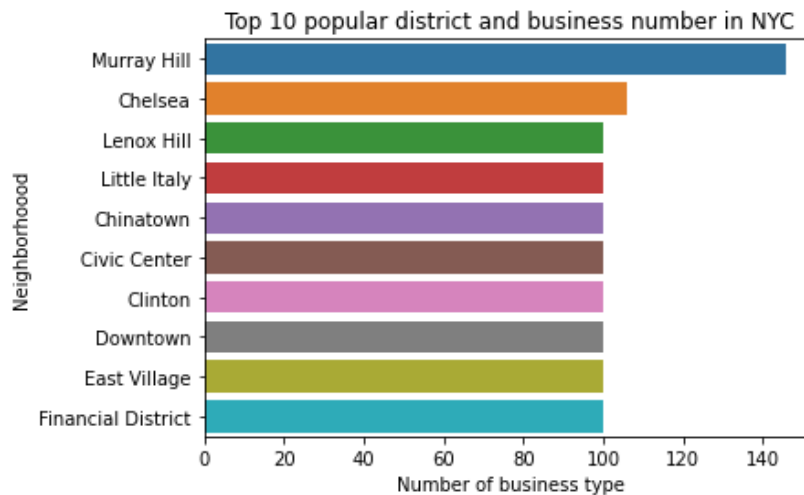**Top 10 popular district and business number in NYC**



*Figure 4 NYC Business vs. Neighborhood NYC*

From these two Business vs. Neighborhood bar chats, the downtown area of LA and NYC are really different. Downtown, LA has more type of business over downtown, NYC. Both Chinatowns in LA and NYC has large number of businesses regardless in LA or NYC. Also, Little Tokyo is a large businesses area in LA and Little Italy is a large one in NYC.
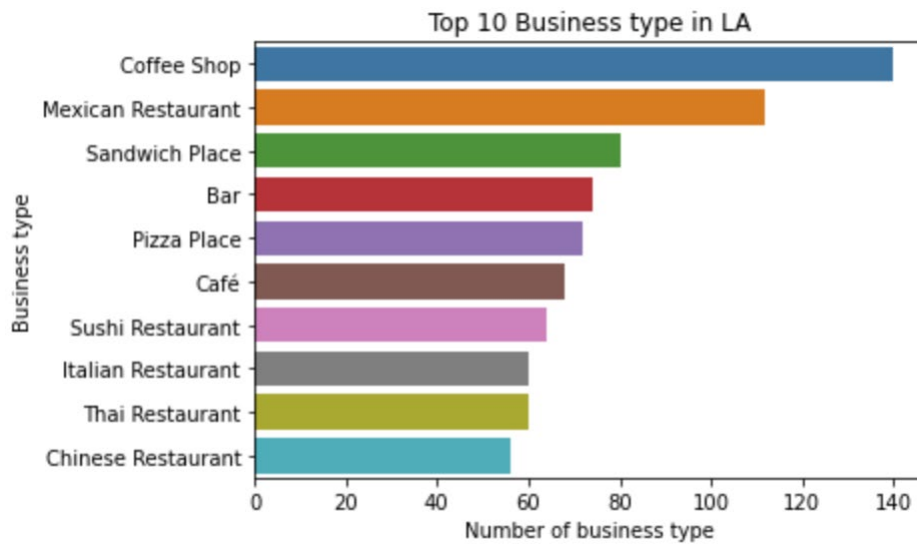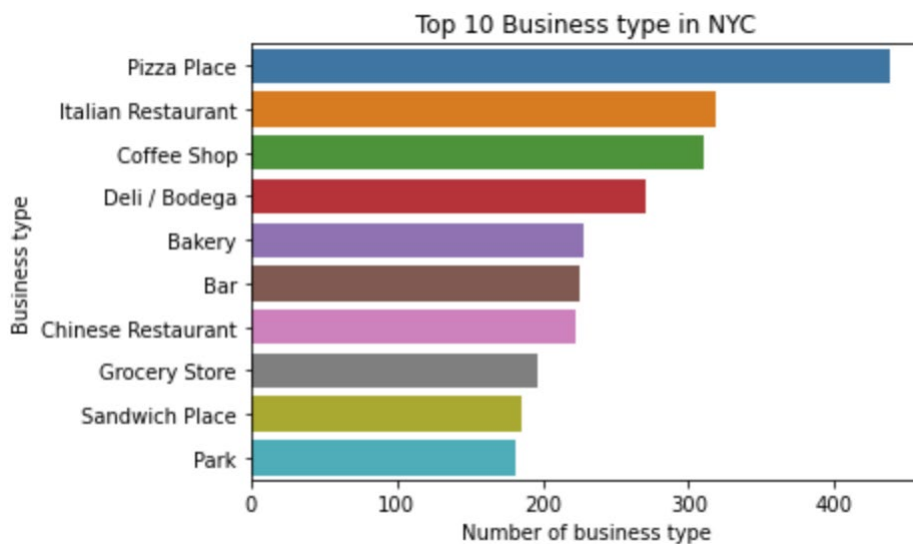
*Figure 5 Number vs. Business Type LA*



*Figure 6 Number vs. Business Type NYC*

From top 10 business category bar charts for LA and NYC, the information reveal the fact that LA has more restaurants in different kind compare to NYC. In LA top 10 list, there are Mecican Restaurant, Sushi Restaurant, Italian Resaurant, Thai Restaurant, and Chinese Restaurant. In comparison, in NYC top 10 list, there are only Italian Restaurant and Chinese

restaurant as the type of restaurant. On the other hand, Coffee shop take the first place in LA top 10 list when Pizza Place is the top 1 in NYC list. More importantly, since there are more neighborhood in NYC, the number of total businesses type for NYC is almost 4 times more than the number in LA.

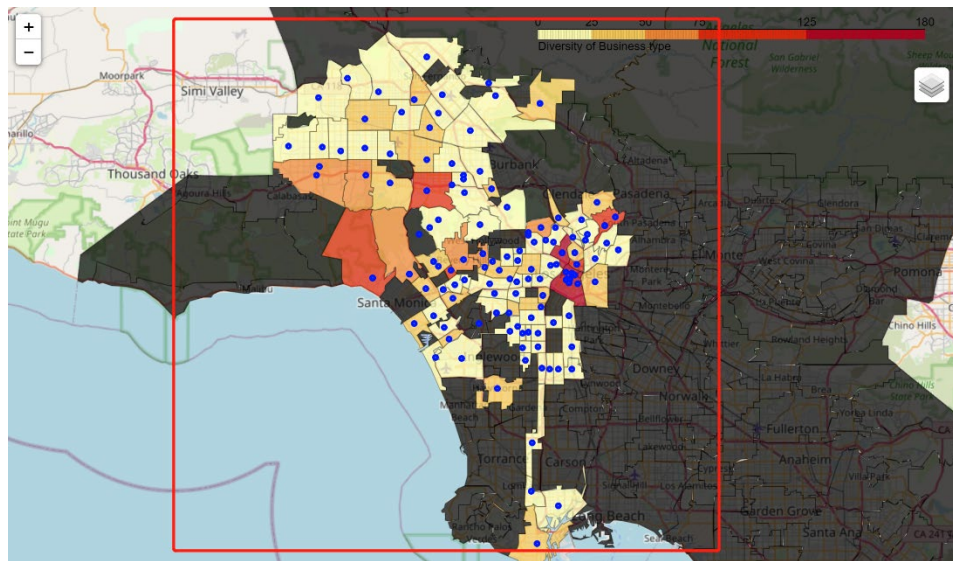Based on the two comparisons above, it's easy to conclude that LA got more race diversity then NYC.
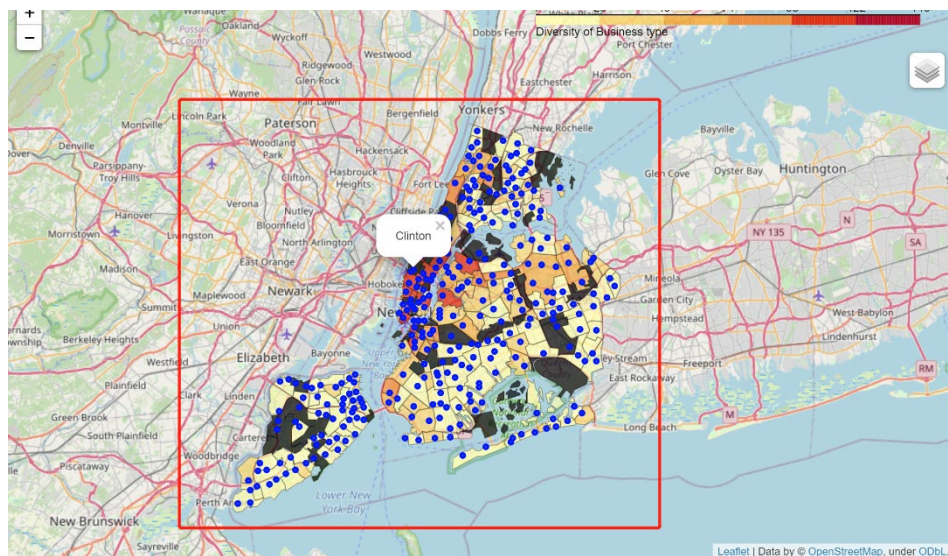

*Figure 7 LA business heatmap*


*Figure 8 NYC business Heatmap*

To demostrate better visualization of the conclusion above, here are the two heatmaps of business distribution for LA and NYC. From these two maps, we can see that businesses are thoughtfully distributed in LA from west to east, and mainly locate in Santa Monica area and Downtown area. However, the NYC map tells us that most businesses are locate in Manhattan area. Altought both downtown area has large amout of businesses, NYC got them more centrallized in one area.
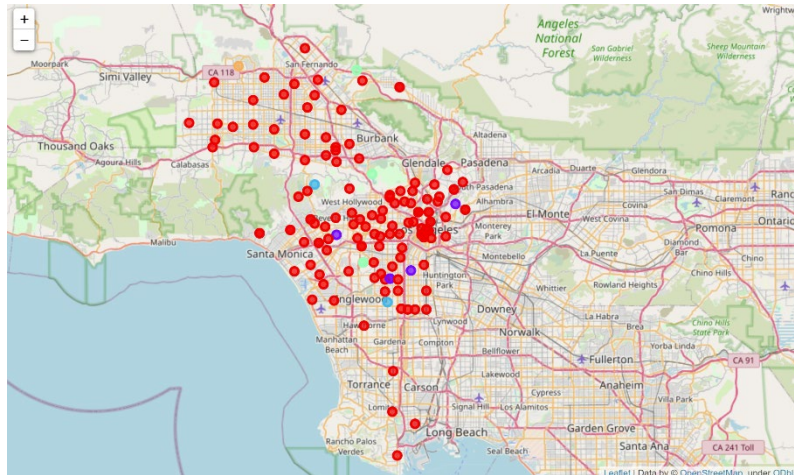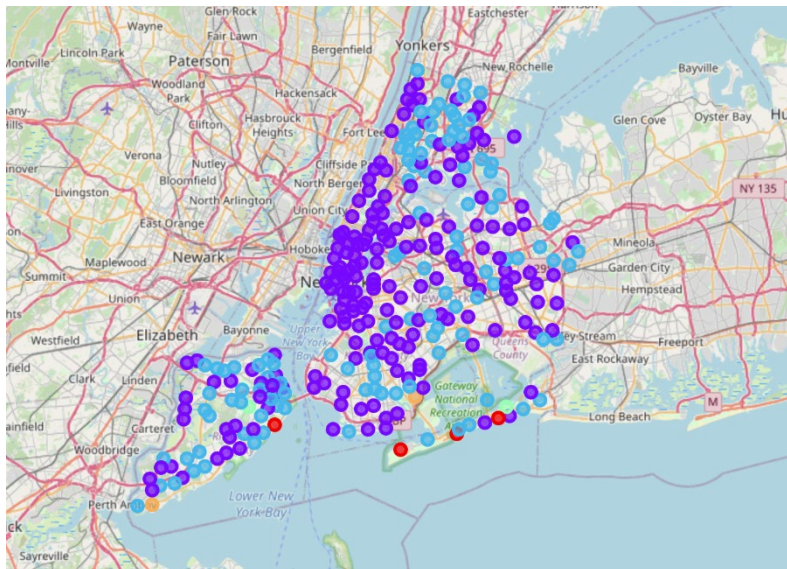


Figure 9 Pattern in LA



Figure 10 Pattern in NYC

In this comparison, We can see that there are two major business distribution patterns in NYC but only one pattern in LA. Given such demostration in these two maps, we can tell that there are no specific distribution patterns in LA, but NYC got some similar patterns around the city.

## 5. Discussion

Based on the observation of these data, I would say that LA is a city for those people who loves diversity. In LA, different businesses distributed throughout the whole city randomly without over concentrated in one specific area. Also, people can find more types of cuisine in LA.

On the other hand, NYC is for those people who likes to stick with one specific area to have everything done in one area. If someone does not like to spend much time on road from point A to point B, then NYC is the right choice for you. Also, with many different Italian cuisine and crowd here, it would be a great place for someone who loves traditional western culture.

## 6. Conclusion

The information included in this report is only serve as an initial thought on some general ideas about Los Angeles and New York City. To give a better picture of what these distributions stands for, other data is needed (population data, weather data). In addition, due to the discrepancy of neighborhood names in geo data and neighborhood list data, some of the neighborhoods are missing from the heatmap so the visualization does not provide

complete information from original data.  The recommendations in discussion section are

solely concluded from the data in this report.