Capstone Project

The Battle of Neighborhoods

Introduction

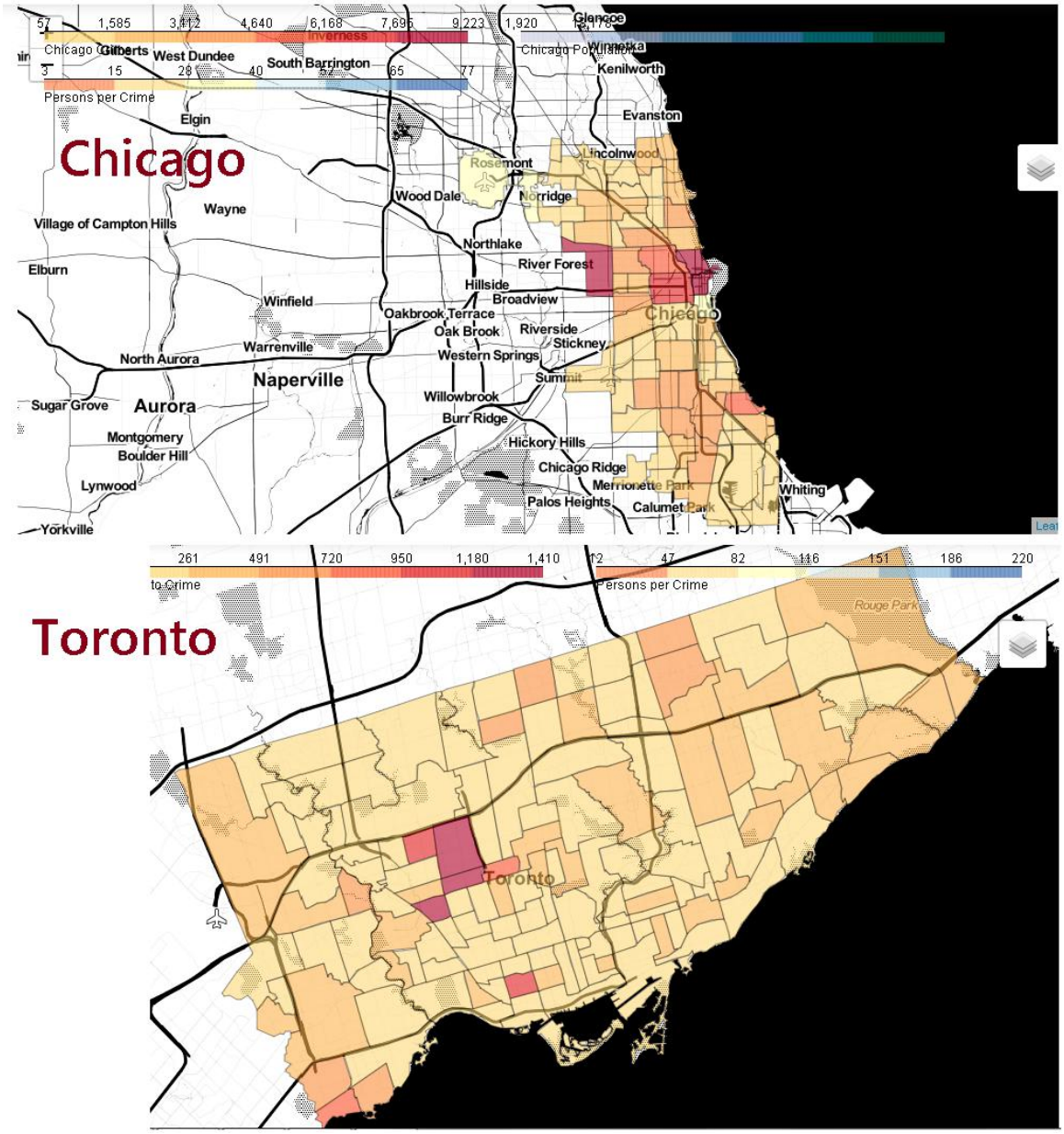
Planning to open a restaurant and you don't know where to start? Well, you're not alone! To fall back on the old cliche, "Location! Location! Location!"

When it comes to succeeding as a small business, however, there is nothing more true than this.

Consider the city of Chicago, high in crime, and also population. Compared to Toronto, Chicago is quite extreme, yet, I believe that the two cities may not be that different at all.

My plan to explore the way the rate of crime for specific neighborhoods involves using maps, foursquare and graphs to explore, cluster and identify the areas that seem most favorable for starting a business.

The following maps show the crimes rates of Chicago and Toronto. Observe the index, notice how much higher the numbers for Chicago are, compared to Toronto.

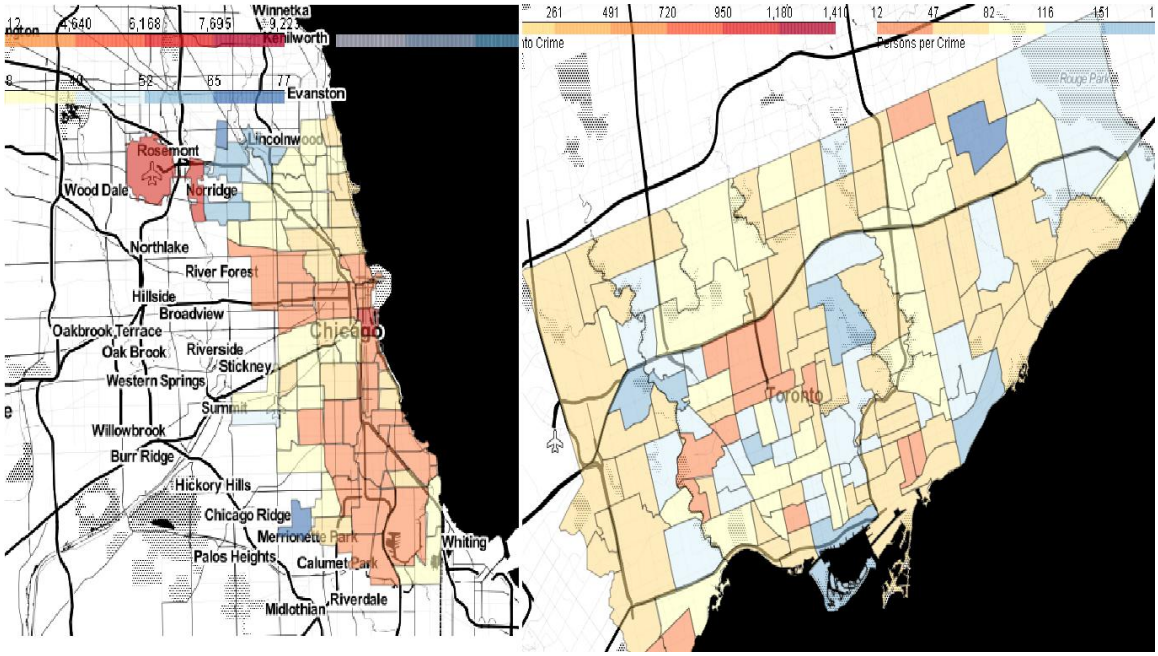


As you can see, its a fact. My theory, however, is that people of both cities, react to areas of relatively high crime, within their respective cities in the same manner. This means that the locations where business flourish, will be affected by these areas, and thus, should affect your decision when selecting a location.

For this investigation, I have acquired major crime records from the official websites of the police departments in Toronto and Chicago. this was made simple by the fact that these sites provide their databases freely in a few formats.
Population data was acquired through Census websites for Toronto and Chicago
Four-Square was used to acquire locations of a wide range of venues for the cities of Toronto and Chicago.

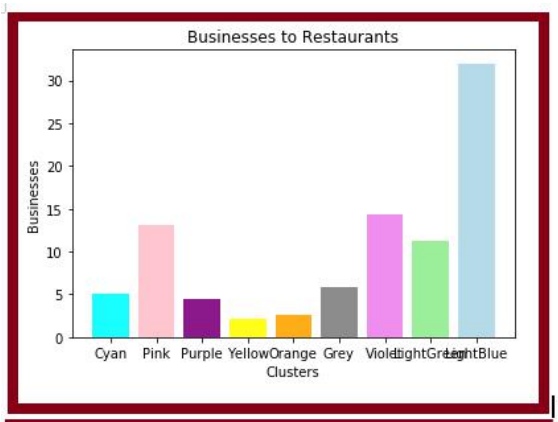
Hypothesis

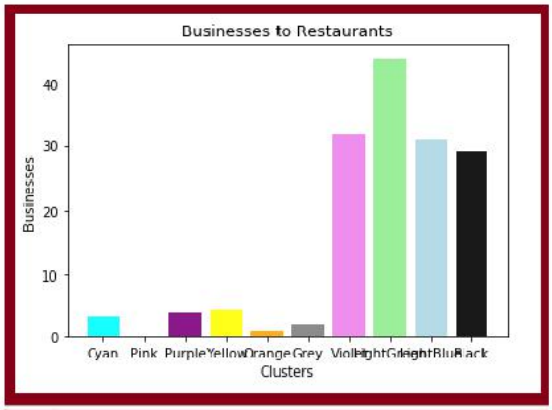
Because individuals interact more closely within a city, the level of crime in different areas will also affect their behavior, which in turn, affects businesses. For this, I used Folium and Choropleth maps to highlight areas of low to high crime, as would be perceived by the population.

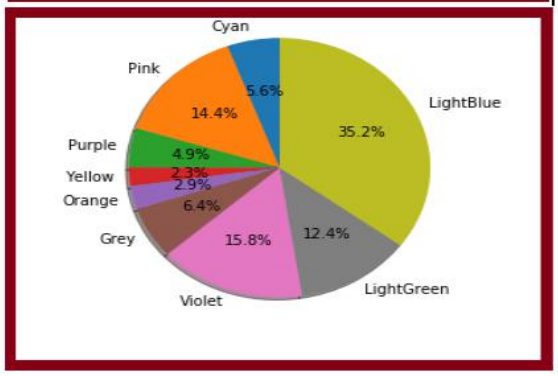


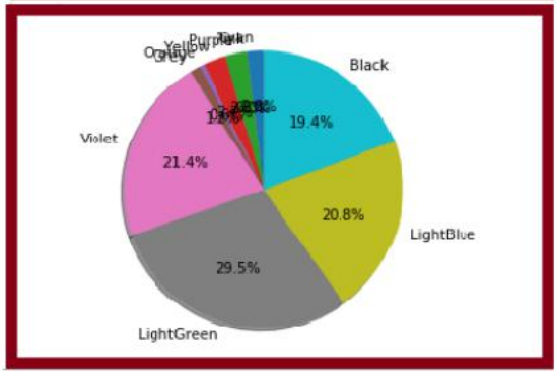
Businesses and clustering

Using DBSCAN , I can group the main business areas and the main restaurant areas, then combine them. I will then plot each cluster on a bar or pie chart and see which of them has the lowest restaurant to general business ratio. I believe these areas will be good selections for opening a new business. This last choice will also be influenced by the local crime rate.









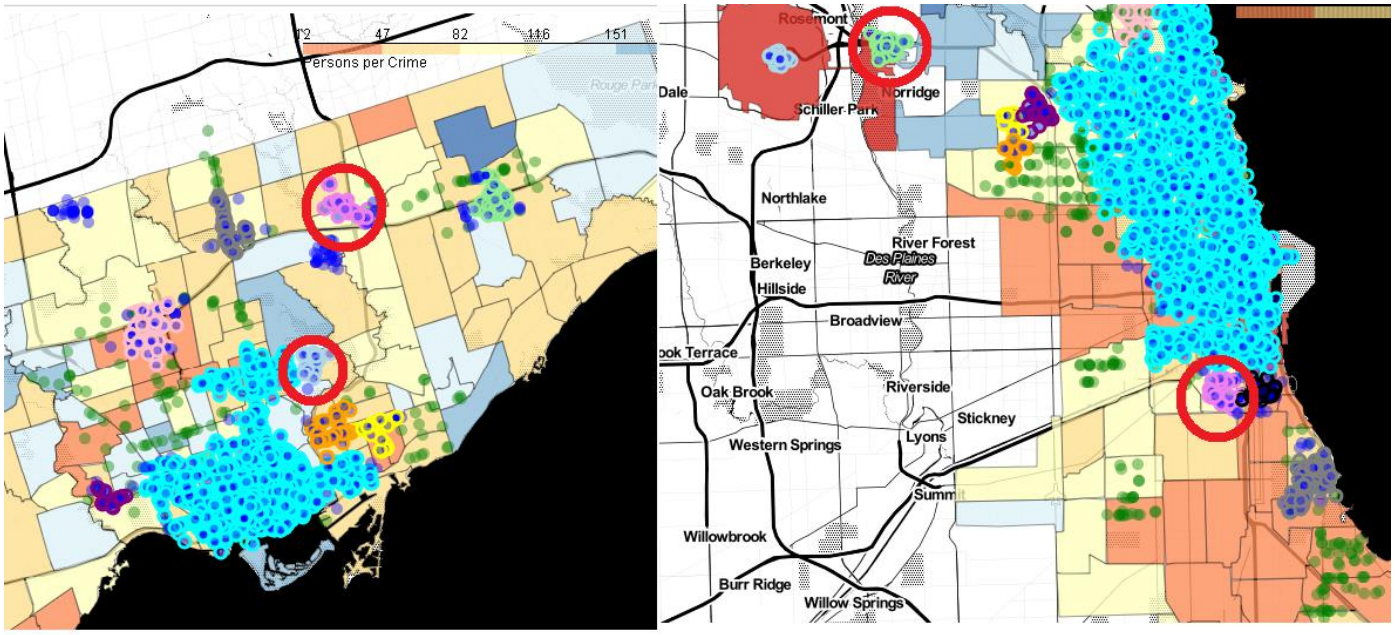
Toronto

Chicago

Looking at these charts, we see that for Toronto, the clusters with the best restaurant to business ratio is Violet and Light Blue.

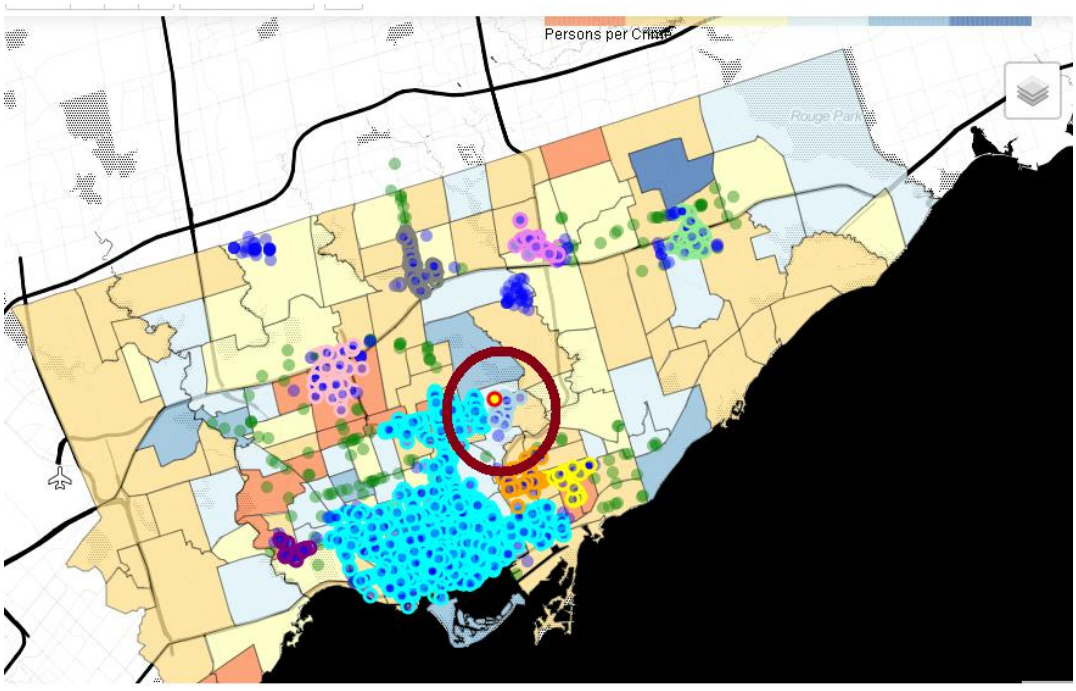
From the charts of Chicago, we see that the clusters shown by the colors Light-Green and Violet are best.

Now, let's take a look at what the map shows us!



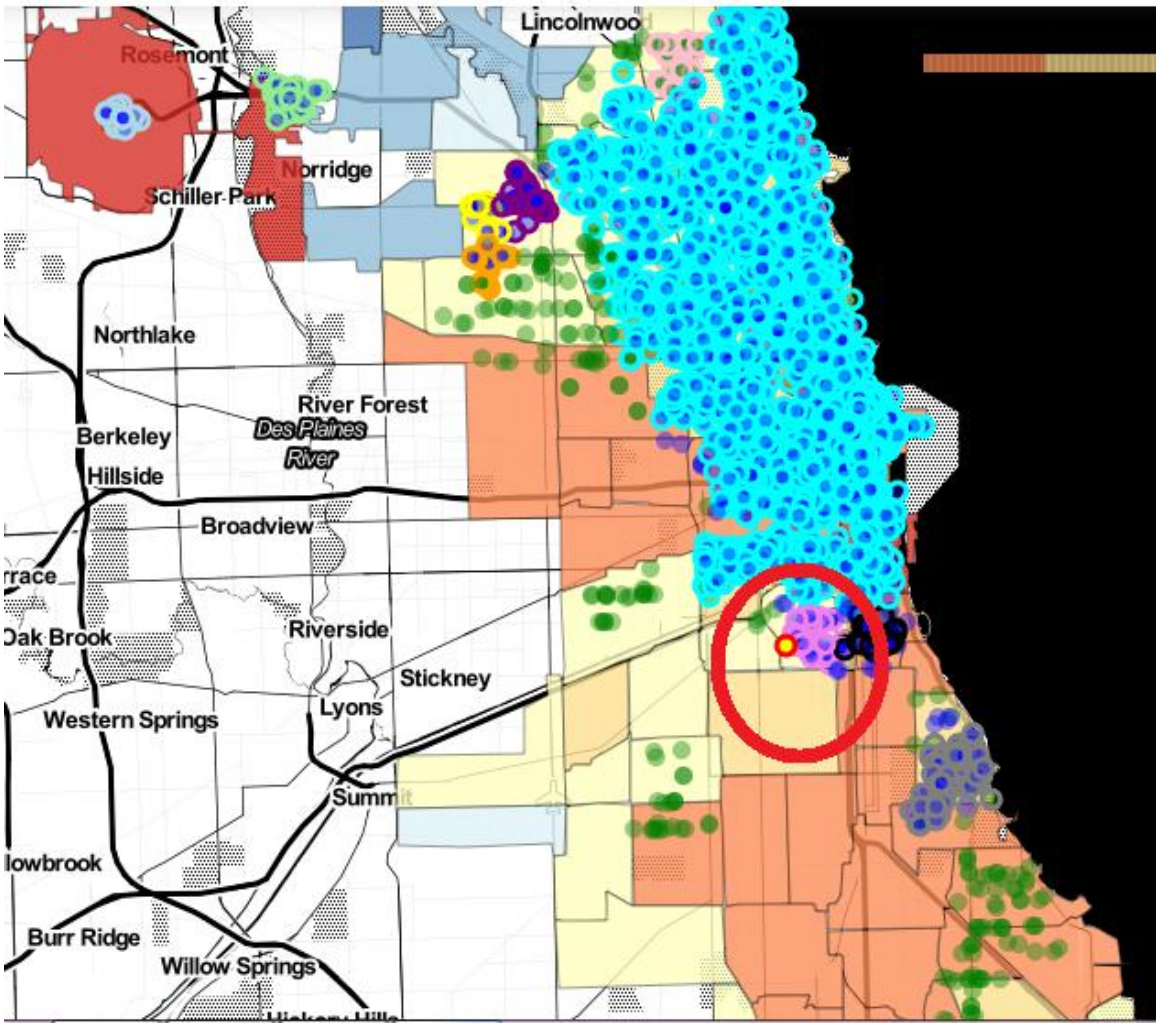
Toronto

Upon investigating the cluster options we can see that for Toronto on the left, the violet area is to the outskirts of town, away from the main city center. It also falls in an area with a higher crime rate. This makes the light-blue cluster, *circled in red*, the better option.



Chicago

For Chicago, we can see that the area with the best rate, light green, is way on the outskirts of town, and also very close to an area of high crime. This makes me favor the light blue cluster, *circled in red*, since it is closer o the main business center, as well as being located in a low-crime area.



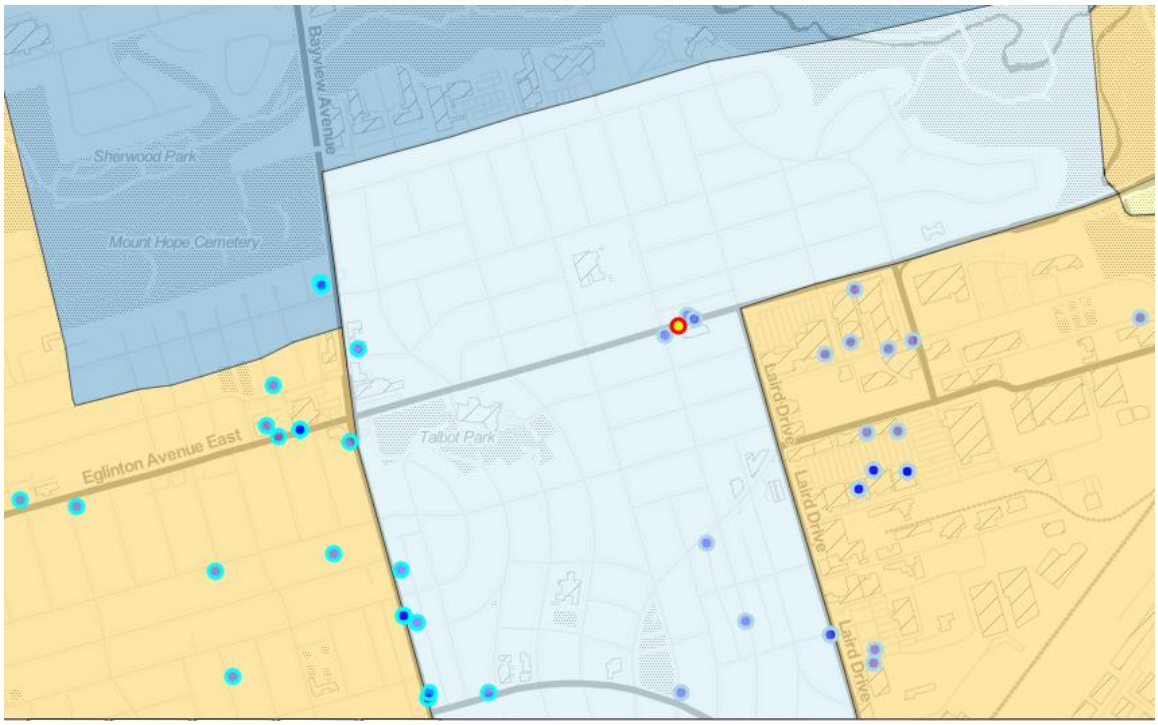
It can be inferred from the results that that areas of ***low crime*** *and* ***high business activity*** are associated with the success of restaurants. Using both forms of machine learning revealed strong relationships between restaurant locations and the two features.

Conclusion

Based on my findings, these locations are ideal for starting a restaurant or fast food outlet:

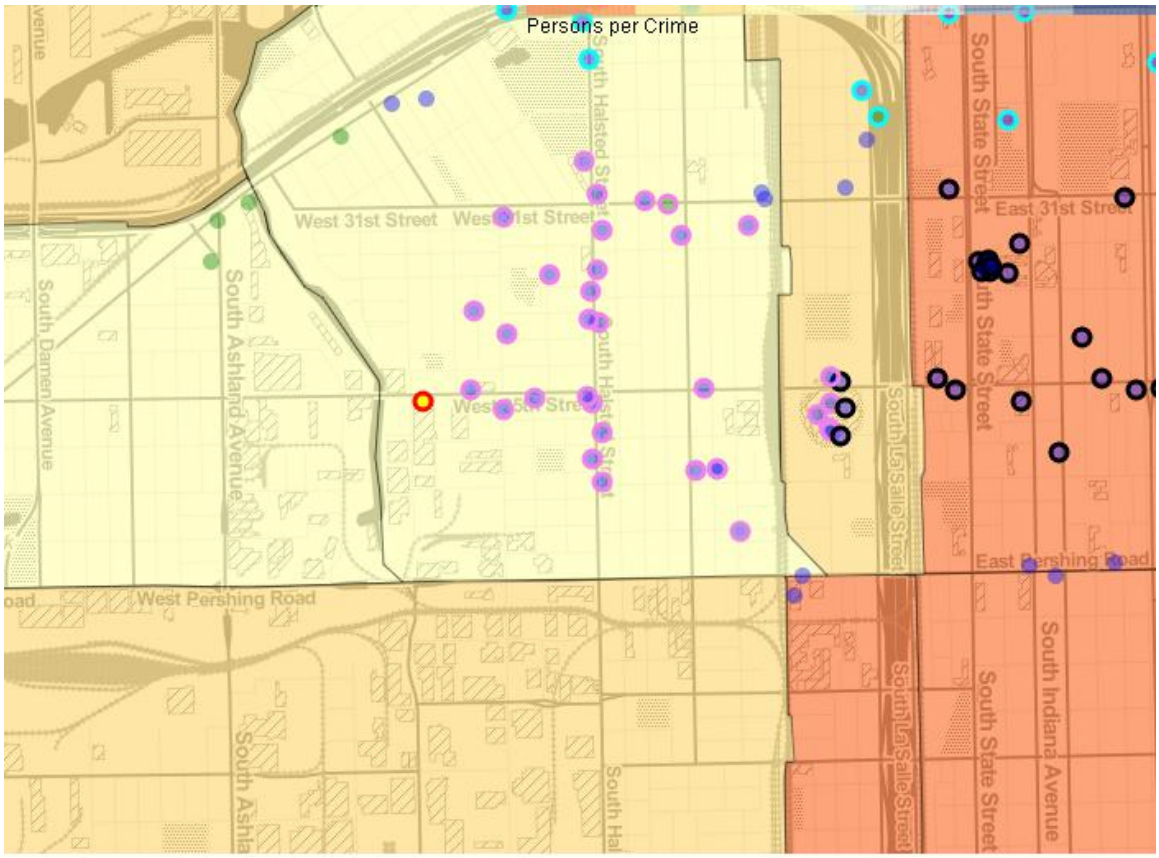
1. TORONTO: Along the corners of Eglinton Avenue East and Bayview Avenue , is my suggestions for opening a fast food outlet or Restaurant.

Coordinates : (Lat : 43.7111887, Long : -79.3766768)



CHICAGO: West 35th Street, between South Ashland Avenue and South Halsted Street, are my suggestions for opening a restaurant or fast food outlet.

Coordinates: (Lat. = 41.830389,Long. = −87.6550883),



Thanks for viewing!