

# **Capstone Project: Ideal Places for an Asian Foodie in Toronto**

**Yongya Li**

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## **1. Introduction**

### **1.1 Background**

Most people have their own preference for food. Diet as an important component of lifestyle can affect personal behaviours, decisions or even settlement. Canada as one of the world's most ethnically diverse and multicultural nations accepts many immigrations from other countries. Especially for Toronto, the provincial capital of Ontario and the most populous city in Canada, is an international centre of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world. Immigrations may prefer their ethnic cuisine than others due to their personal preference, habituation and familiarity. Thus, studying the locations, density and quality of specific kind of cuisine is a crucial influence factor for people that can result in economic, social and cultural effect in Toronto neighborhood.

### **1.2 Objective**

In this project, we will try to find an optimal location for a immigration who prefers Asian food. Specifically, the report will be targeted to citizens interested in living closed to

various Asian restaurants in Toronto, Ontario, Canada. The result of this project can be used as a guidance for Asian citizens when they are looking for a residential location, planning for a restaurant business or taking meals with their families.

## **2. Data**

### **2.1 Data Collection**

Based on definition of our problem, factors that will influence our decision are:

1. Number of existing restaurants in the neighborhood (all restaurants)
2. Number of Asian restaurants in the neighborhood
3. Density of Asian restaurants in the neighborhood
4. Distance of neighborhood from city center

### **2.2 Data Source**

Following data sources will be needed to extract/generate the required information:

1. Centers of candidate areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using folium. Map
2. number of restaurants and their type and location in every neighborhood will be obtained using Foursquare API
3. coordinate of Toronto center will be obtained using folium

### **3. Methodology**

In this project we will focus on the density of Asian restaurants in Toronto neighborhood.

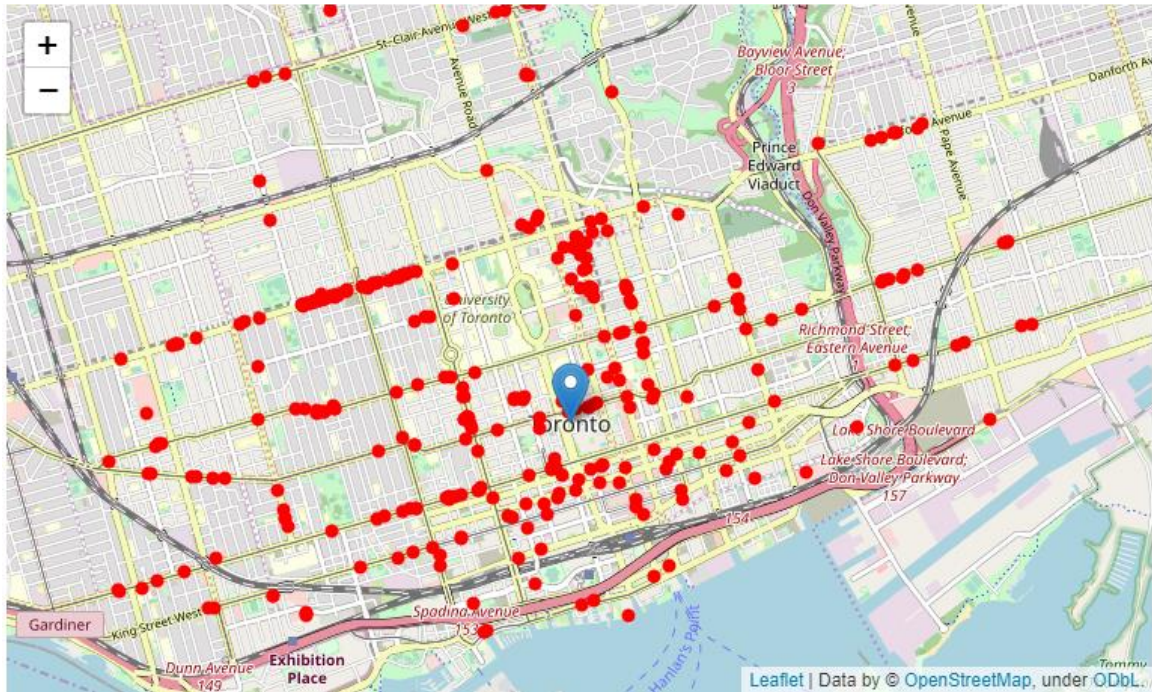
First step - Data Collection and Cleaning: Collected the required data (location and type) of every restaurant in Toronto.

Second step - Data Analysis and Visualization: Our analysis will be calculation and exploration of 'restaurant location' across different areas of Toronto - we will use red marker to indicate their specific locations

Third step - Data Analysis and Visualization: Our analysis will be calculation and exploration of 'restaurant density' across different areas of Toronto - we will use heatmaps to indicate a few promising areas close to center with much number of Asian restaurants.

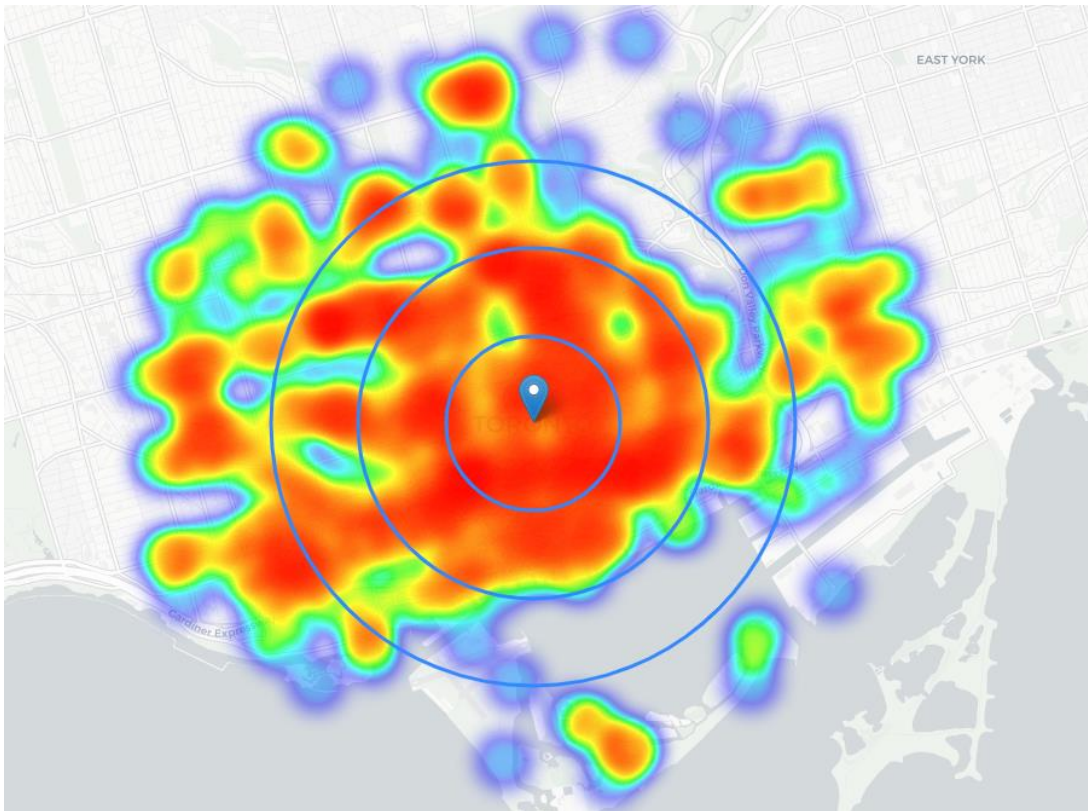
## 4. Analysis

Let's now see all the collected restaurants in our area of interest on map, and let's also show Asian restaurants in red color.

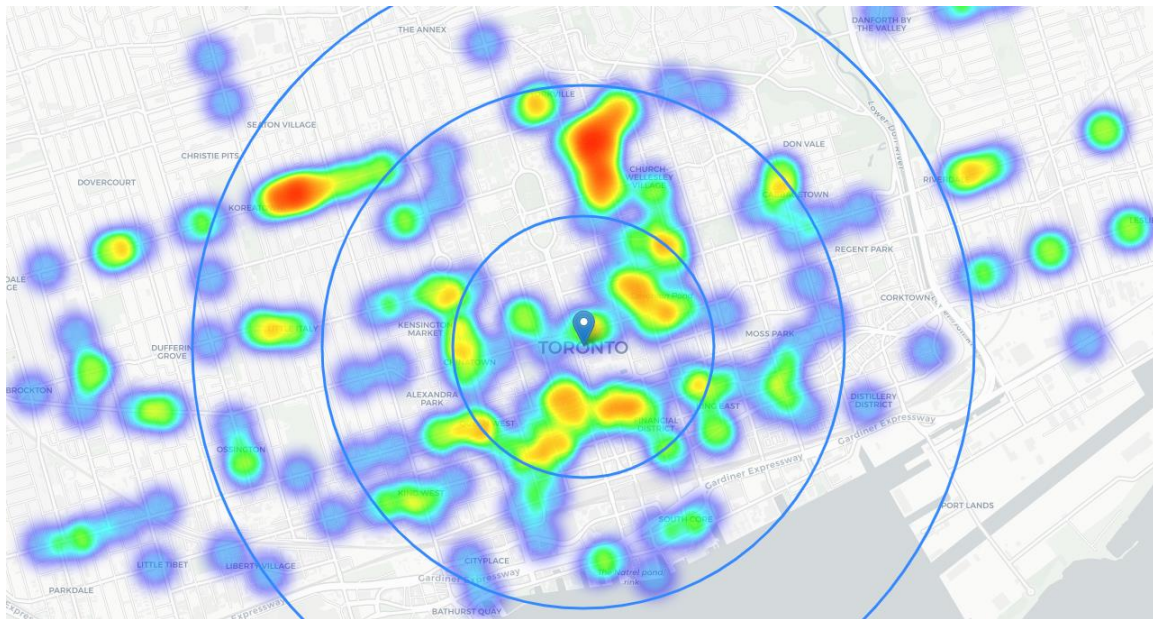


Let's create a map showing heatmap / density of restaurants and try to extract some meaningful info from that. Also, let's show borders of Toronto boroughs on our map and a few circles indicating distance of 1km, 2km and 3km.

This heatmap shows all restaurants in Toronto. In this map, restaurants are almost distributed evenly in the center of Toronto.



This heatmap indicates the density of Asian restaurants in Toronto. Even restaurants are located evenly in Toronto center, two specific areas show higher Asian restaurants density (red color) than others which are east-north and west-north, corresponding to Bloor-young and Bloor Street West of central Toronto.



## **5. Results and Discussion**

Our analysis shows that although there is a great number of restaurants in Toronto (~2000 in our initial area of interest which was 12x12km), there are high restaurant density closed to city center. Highest concentration of Asian restaurants was detected from Toronto center, so we focused our attention to areas east-north, west-north, corresponding to Bloor-young and Bloor Street West of central Toronto.

Result indicates that two zones containing largest number of Asian restaurants. This, of course, does not imply that those zones are optimal locations for taking Asian cuisines! Purpose of this analysis was to only provide information on Asian restaurants density and their distant close to city center. Other considerations, such as quality of service, prices, and rating, can be added into this project to further improve this project.

## **6. Conclusion**

Purpose of this project was to identify Toronto areas close to center with large number of restaurants (particularly Asian restaurants) in order to provide suggestions for an Asian citizen in Toronto who prefers national cuisines. By calculating restaurant density distribution from Foursquare data, we have first identified general boroughs that justify further analysis, and then generated extensive collection of locations which satisfy some basic requirements regarding existing nearby restaurants. Clustering of those locations was

then performed in order to create major zones of interest (containing greatest number of potential locations) and addresses of those zone centers met relevant conditions.