Open a Chinese Restaurant in Toronto

1. Introduction

Toronto is the capital city of the Canadian province of Ontario. With a recorded population of 2,731,571 in 2016, it is the most populous city in Canada and the fourth most populous city in North America. The city is the anchor of the Golden Horseshoe, an urban agglomeration of 9,245,438 people (as of 2016) surrounding the western end of Lake Ontario, while the Greater Toronto Area (GTA) proper had a 2016 population of 6,417,516. Toronto is an international center of business, finance, arts, and culture, and is recognized as one of the most multicultural and cosmopolitan cities in the world.

In 2016, Toronto's city proper had a population of 2,731,571; the urban area had a population of 5,429,524; the census metropolitan area had a population of 5,928,040; and the Greater Toronto Area metropolitan area had a population of 6,417,516. The city's foreign-born persons made up 47 per cent of the population, compared to 49.9 per cent in 2006. According to the United Nations Development Program, Toronto has the second-highest percentage of constant foreign-born population among world cities, after Miami, Florida. While Miami's foreign-born population has traditionally consisted primarily of Cubans and other Latin Americans, no single nationality or culture dominates Toronto's immigrant population, placing it among the most diverse cities in the world. In 2010, it was estimated over 100,000 immigrants arrive in the Greater Toronto Area each year.

1.1 Project Background

Toronto has a very strong restaurant industry. There are more than 8,100 restaurants, caterers, and bars and they generate $5.8 billion in revenues, which represents 6.5% of all businesses in Toronto. Torontonians also love to dine out. They dine out at an average of 3.1 times per week putting the city in the same rank as Chicago (2.8), New York City (3.0), and Las Vegas (3.3). The large population of immigrants from all over the globe has also made Toronto one of the most multicultural cities in the world. According to the 2016 census,51.5% of Toronto’s population is composed of visible minorities, compared to 49.1% in 2011, and 13.6% in 1981. In 2016, the

most commonly reported ethnic origins of immigrants in Toronto overall were Chinese (332,830 or 12.5 percent).

1.2 Business Problem

With the information given in the project background, one promising business opportunity is to open a Chinese restaurant in Toronto. Thus, the aim of this report is to find ideal neighborhoods in Toronto to open a Chinese restaurant. There are many important factors when choosing a location to open a restaurant. This report has considered location, population, popularity of Chinese restaurant, income, proportion of Chinese, competitor, crime rate of each neighborhood.

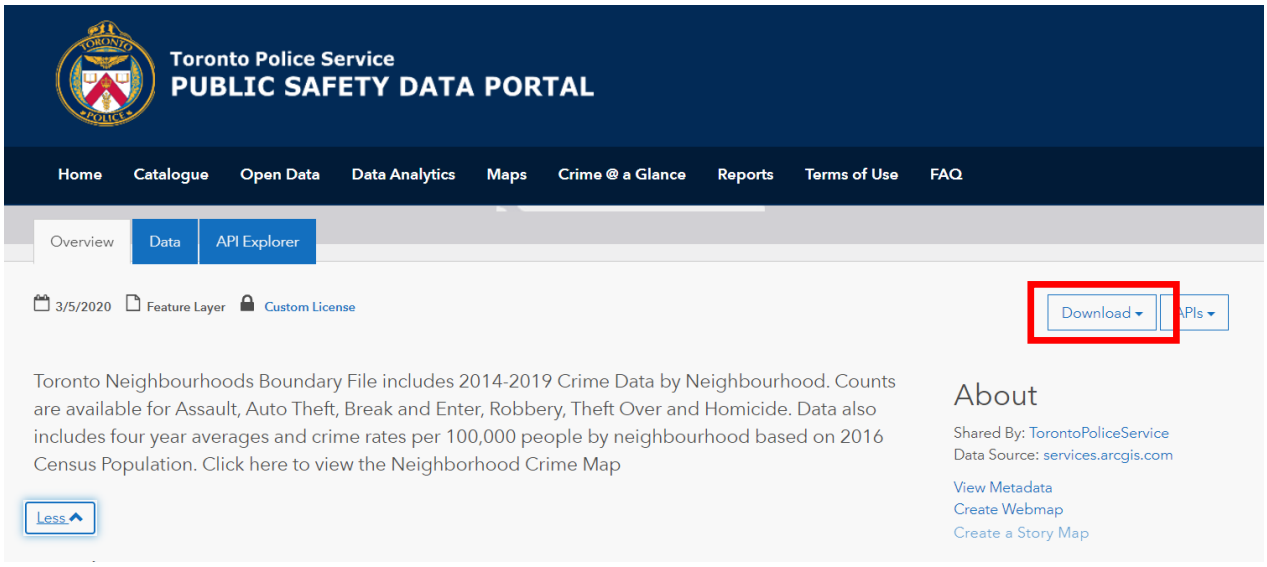
2. Data Sources

This report used five following data sets. The first two data sets are extremely large and cover almost all demographic information required for this report. The third data source provides information for nearby competitive restaurants. The fourth data set provides the coordinates of each neighborhood in Toronto. The fifth data set provides the neighborhood list of Toronto.

2.1 Neighborhood Crime Rate, Toronto Police Service

Toronto neighborhood crime rate data can be downloaded in Toronto police service website.

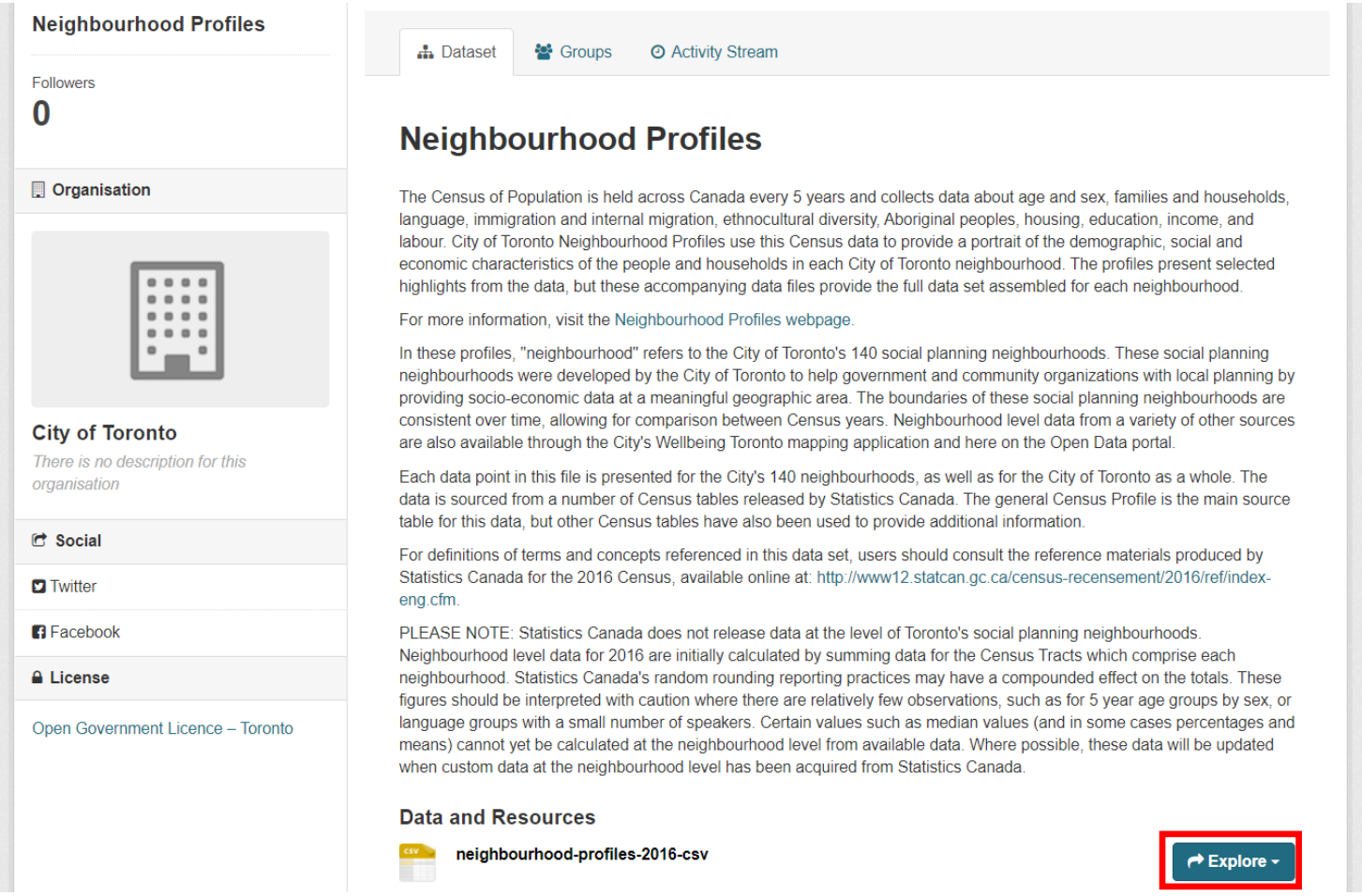
[Neighborhood Crime Rates (Boundary File) | Toronto Police Service Public Safety Data Portal]



2.2 2016 Neighborhood Profiles, Statistics Canada

Toronto 2016 Neighborhood Profiles data can be downloaded in CKAN Prod Toronto website.

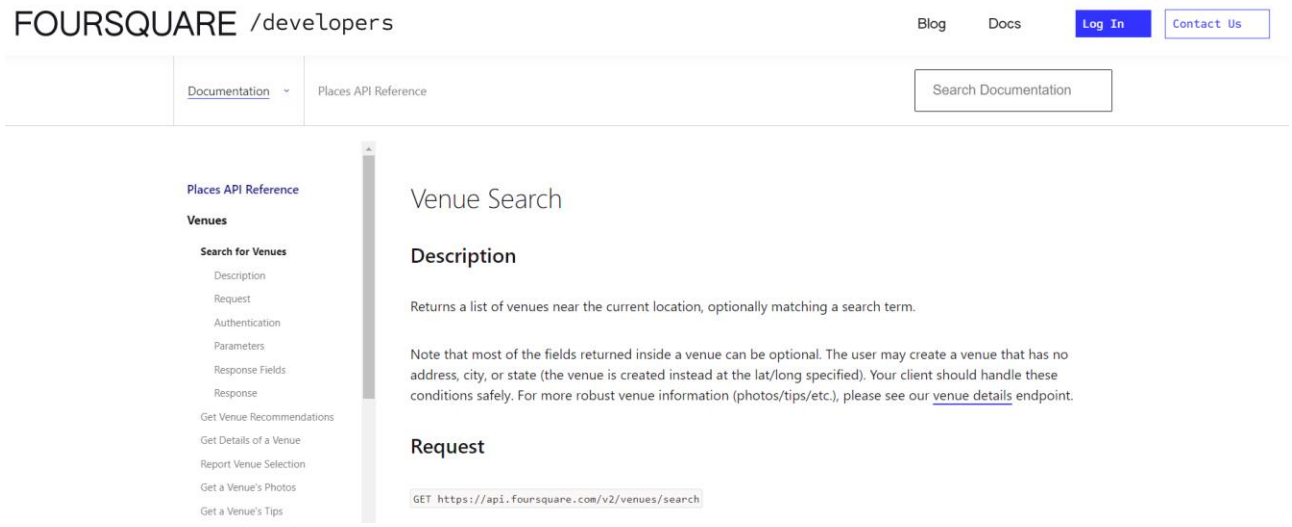
[Neighborhood Profiles - Datasets - CKAN (prod-toronto.ca)]



2.3 Foursquare Developer API

I used Foursquare developer API to search nearby venues. Below is the document for Foursquare developer.

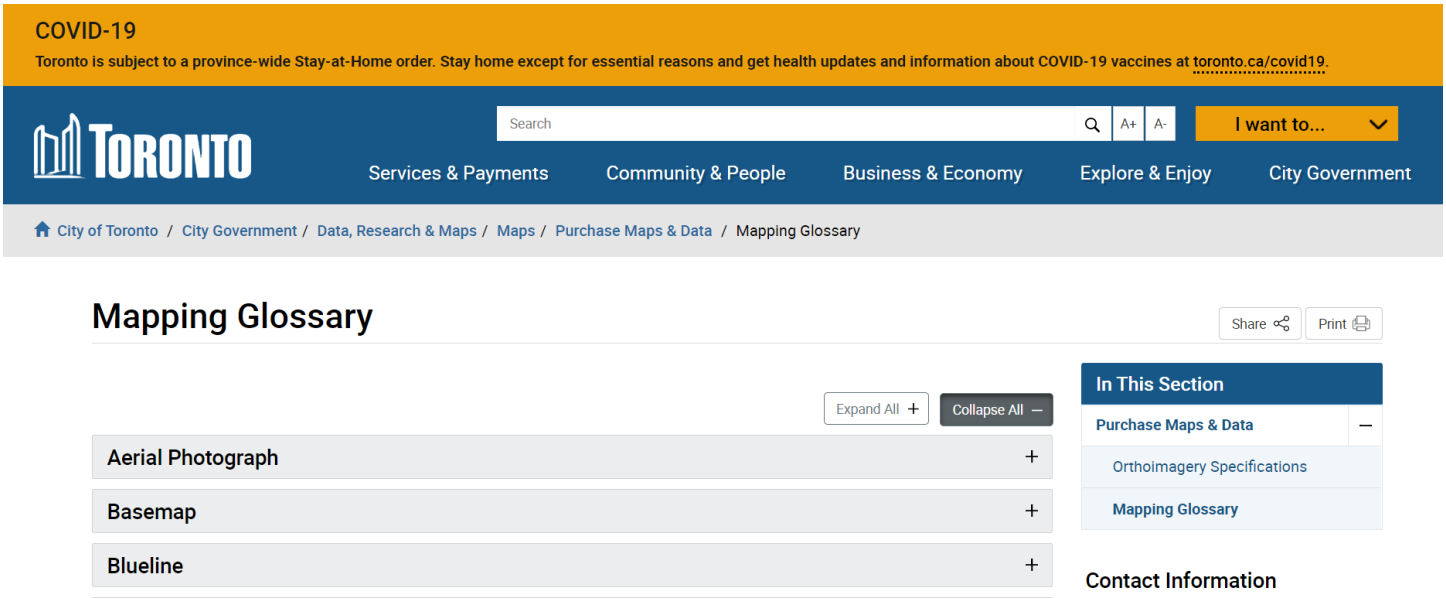
[Search for Venues | Places API Reference (foursquare.com)]



2.4 Geo-spatial coordinates of neighborhoods in Toronto

Geo-spatial coordinates of neighborhoods in Toronto can be downloaded in Mapping Glossary – City of Toronto website or Coursera Peer-graded Assignment: Segmenting and Clustering Neighborhoods in Toronto.

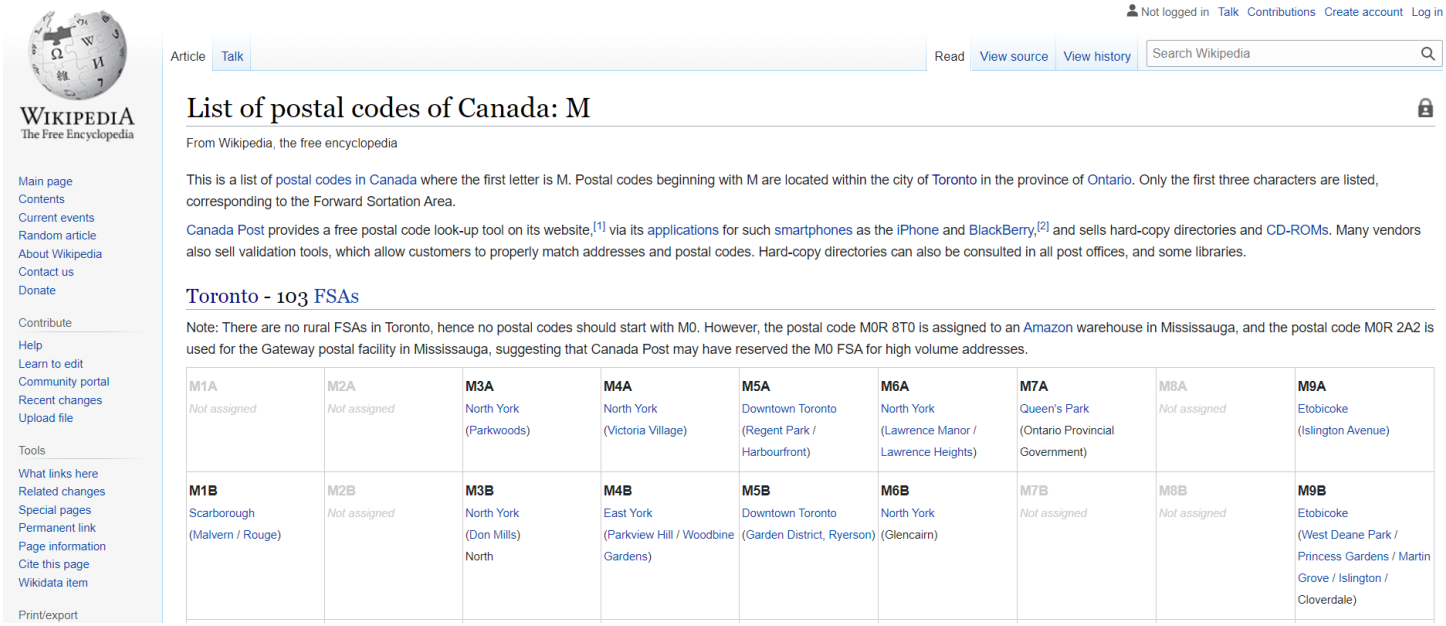
[Mapping Glossary – City of Toronto]



2.5 Wikipedia-List of postal codes of Canada: M

Toronto neighborhood data can be crawled in Wikipedia-List of postal codes of Canada: M.

[List of postal codes of Canada: M - Wikipedia]



3. Feature Engineering

3.1 Data Collection and Cleaning

Toronto neighborhood crime rate data, Toronto 2016 Neighborhood Profiles data and Geo-spatial coordinates of neighborhoods in Toronto are downloaded from csv files. Nearby venues data are acquired through Foursquare developer API and Toronto neighborhood data are crawled in Wikipedia-List of postal codes of Canada: M. All data mentioned above are well present in Python Pandas Data Frames.

1. Toronto 2016 Neighborhood Profiles contains massive amount of detailed information for each neighborhood in respect of population, families, language, labor, housing, income, ethnic origin, education, and mobility. However, this report only requires information in respect of population, income, ethnic, and ethnic origin. Thus, certain data are extracted by Python Pandas to pull out useful information.
2. Neighborhood Crime Rate data also contains massive amount of detailed information for each neighborhood. Similarly, only crime types that frequently happen in restaurants are considered. These crimes types are assault, auto theft, break and enter, robbery and theft over. These data are extracted and calculated by Python Pandas.
3. Foursquare API also return massive unique categories of nearby venues. However, not all these categories can be considered. As the objective is to open a Chinese restaurant, only categories related to Chinese restaurant and similar competitors are considered. Python Pandas are used to extract these certain data.

3.2 Feature Selection

In this report, below features are considered to decide where to open a restaurant in Toronto.

1. Population
2. Income
3. Crime rate
4. Proportion of Chinese
5. Competitor
6. Popularity of Chinese restaurant