

# Exploring the Restaurants in Toronto

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## 1. Introduction

The city of Toronto is Canada's largest city, the provincial capital of Ontario, and the fourth largest city in North America [1] with a population of 2,731,571 in 2016 [2]. Toronto is also very diverse. It is one of the most multicultural cities in the world [3] with more than 50% of residents belong to a visible minority population groups [4]. In 2016, 16.7% of immigrants were born in Americas, 23.6% in Europe, 6.1% in Africa, 53.3% in Asia, and 0.3% in Oceania [5]. Toronto is the financial capital of Canada, home to the Toronto Stock exchange, and the headquarters of many large corporations. It is also one of Canada's leading tourism cities. 43 Million people visited Toronto in 2017[6].

As such a dynamic metropolis, Toronto is very attractive to various investors. In this report, the restaurants (café and fast food exclude) in Toronto will be explored. The potential clients are the people who are interested to invest a restaurant in Toronto. The findings in this report will help them to decide where and what type of restaurants they should invest in Toronto by answering a few questions: (1) which neighborhood is the most popular one (with the most venues) in Toronto? (2) which neighborhood has the most restaurants? (3) what are the relation between the number of venues and the number of restaurants in each neighborhood? (4) due to its diverse population what are the most popular cuisine in Toronto? and (5) any other recommendations to the types of restaurants should be invested?

## 2. Data

### 2.1 Data Sources

The location data of the venues in Toronto and the details of Toronto restaurants can be acquired from Foursquare API. In order to fetch the location data via Foursquare, the geographical coordinates of each neighbourhood in Toronto are required. The coordinates

can be obtained by using the Geocoder package or a cvs file (Geospatial\_Coordinates.csv from [http://cocl.us/Geospatial\\_data](http://cocl.us/Geospatial_data)). In this project, the cvs file was used because the Geocoder package can be very unreliable. In this file, the latitude and longitude coordinates of each postal code are provided. However, there is lack of neighbourhood names in this file. This information can be found from Wikipedia page ([https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)), which has a list of postal codes with borough name and neighborhood name in Canada.

## 2.2 Data Preparation

A notebook was created to scrape the Wikipedia page ([https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)) to obtain the data in the table of postal codes and load it into a Python pandas dataframe called “neighborhoods”. The dataframe has three columns: Postcode, Borough, and Neighbourhood. To wrangle the data, the cells with a borough that is “Not assigned” were removed. If a cell has a borough but the neighbourhood is “Not assigned”, the neighbourhood was assigned the same value as the borough. For the postal code has more than one neighbourhood, the neighbourhoods were combined into one cell and the names of the neighbourhoods were separated with a comma. The result was save in a dataframe called “toronto\_df” with the columns of Postcode, Borough, and Neighbourhood.

The Geospatial\_Coordinates.csv was loaded into a dataframe called “geo\_coor”. It has three columns: Postal Code, Latitude, and Longitude. By inner joining the dataframe “toronto\_df” with the dataframe “geo\_coor” and dropping the column of Postal Code, two new columns (Latitude and Longitude) were added to toronto\_df. Since this project focuses on Toronto area, only the Boroughs that contain the word “Toronto” in the name were considered and saved in dataframe “toronto\_df2”.

For each neighbourhood, the latitude and longitude coordinates were used the acquire venues within a radius of 500 meters via Foursquare. The venue information was saved in the dataframe “toronto\_venues”, which has 8 columns (Neighbourhood, Neighbourhood Latitude, Neighbourhood Longitude, Venue, Venue ID, Venue Latitude, Venue

Longitude, and Venue category). For the venues of interested (such as the restaurants in the area), the Venue ID can be used to request the details of venues by Foursquare, such as price tier, rating, number of likes, number of oles, and number of dislikes for the Toronto restaurants.

## References

- [1] [www.toronto.ca](http://www.toronto.ca), Accessed on 12/14/2019
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- [4] "Focus on Geography Series, 2016 Census: Toronto, City (CSD) – Ontario: Immigration and Ethnocultural diversity". Statistics Canada. Archived from the original on November 8, 2017, Accessed on 12/14/2019
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- [6] Toronto welcomed a record 43 million visitors in 2017, <https://www.cbc.ca/news/canada/toronto/toronto-welcomed-a-record-43-million-visitors-in-2017-1.4501626>, Posted 01/24/2018, Accessed on 12/14/19