Comparing Toronto and New York

1. Introduction

New York City and the city of Toronto are very diverse and are the financial capitals of their respective countries, both cities are multi-cultural cities .The objective of this project is to compare both cities to find how similar or dissimilar they are and provide insights for a person who is looking forward to move to either of these cities

2. Data

Data that might contribute to compare different attributes of the cities, data like average income and data which provide information on infrastructure and facilities like hospitals, schools, parks, etc. Here we can use Foursquare API and other data which are available online on different websites. To compare different aspects of both cities I scraped data from www.numbeo.com and www.wikipedia.org. I also used Google Sheets and it's API to handle the data and easily download the data into the notebook.
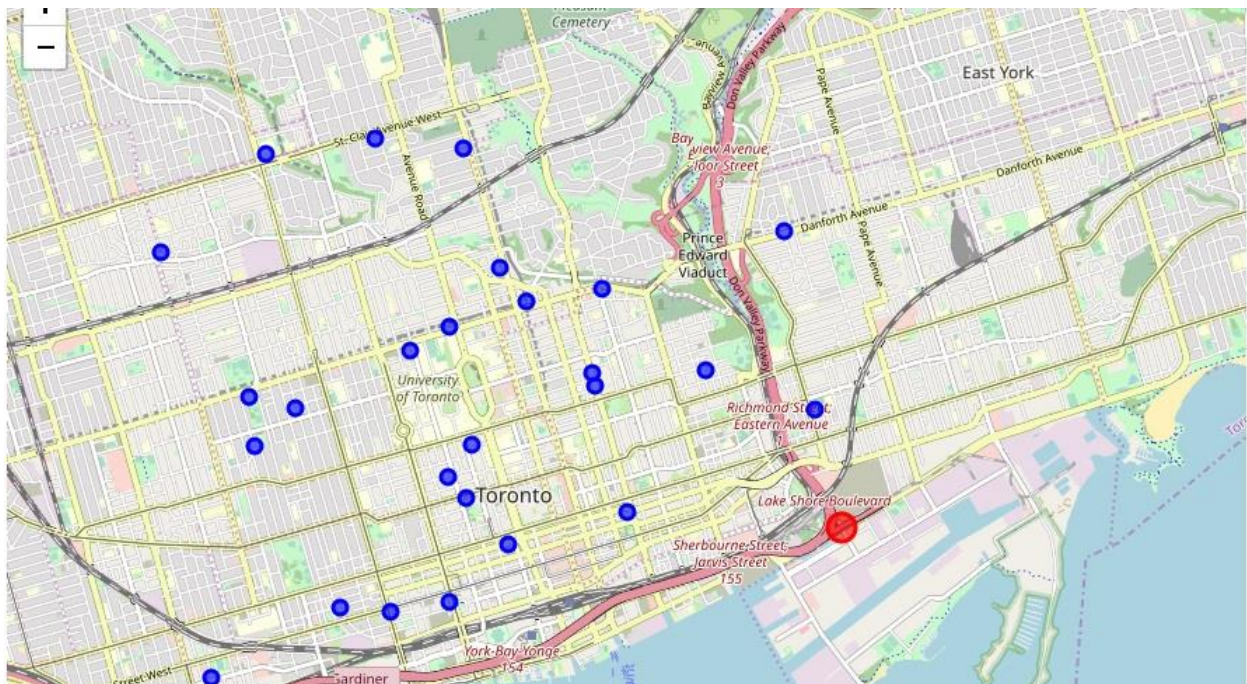
 The data downloaded from different websites were copied into Google Sheets and a prelimnary cleaning was done. These data were the loaded on to the Jupyter notebook using Google API then necessary transformation was done to the dataframe for visualizing

3. Data Analysis

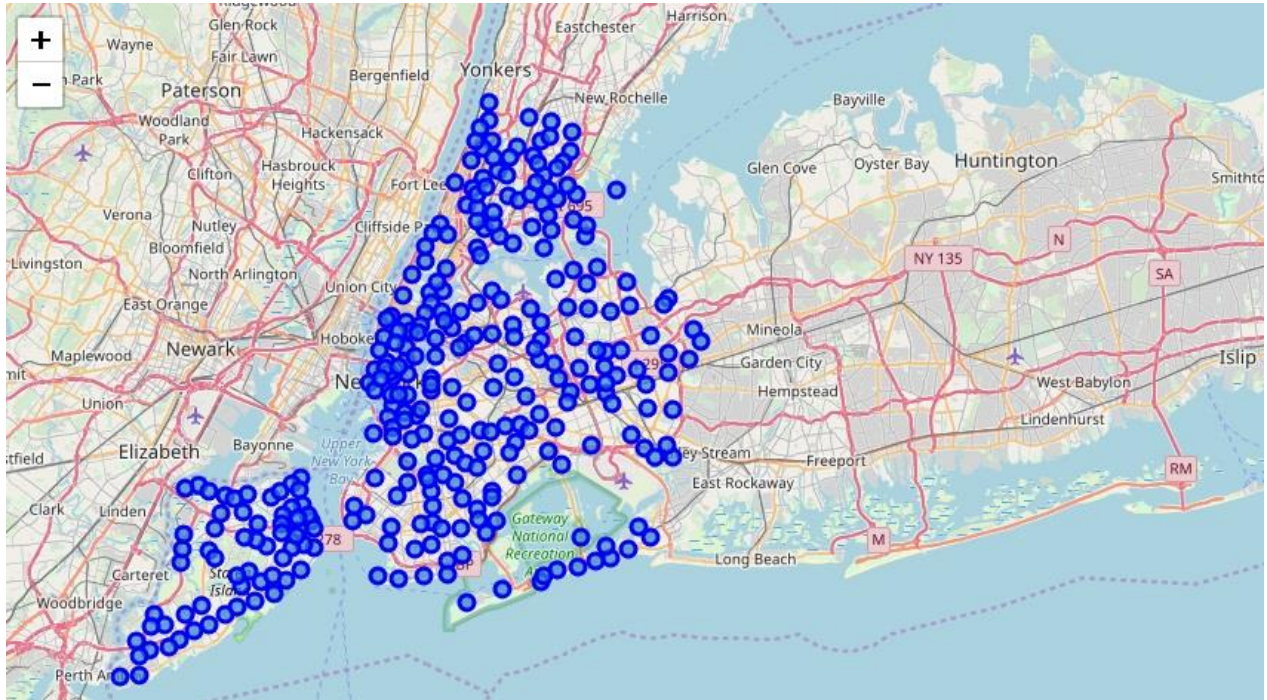## 3.1 Neighborhoods

Toronto

Data of different neighborhoods in Toronto with postal code and geographical locations were obtained. The strength and vitality of the many neighborhoods that make up Toronto, Ontario, Canada has earned the city its unofficial nickname of "the city of neighborhoods. There are 140 neighborhoods officially recognized by the City of Toronto and upwards of 240 official and unofficial neighborhoods within the city's boundaries. Before 1998, Toronto was a much smaller municipality and formed part of Metropolitan Toronto. When the city amalgamated that year, Toronto grew to encompass the former municipalities of York, East York, North York, Etobicoke, and Scarborough. Each of these former municipalities still maintains, to a certain degree, its own distinct identity, and the names of these municipalities are still used by their residents, sometimes for disambiguation purposes as amalgamation resulted in duplicated street names. The area known as Toronto before the amalgamation is sometimes called the "old" City of Toronto, the Central District or simply "Downtown". The obtained data was used to visualize on to a map

Toronto Neighborhoods

NYC

New York City is split up into five boroughs: the Bronx, Brooklyn, Manhattan, Queens, and Staten Island. Each borough has the same boundaries as a county of the state. The county governments were dissolved when the city consolidated in 1898, along with all city, town, and village governments within each county. The term *borough* was adopted to describe a unique form of governmental administration for each of the five fundamental constituent parts of the newly consolidated city.

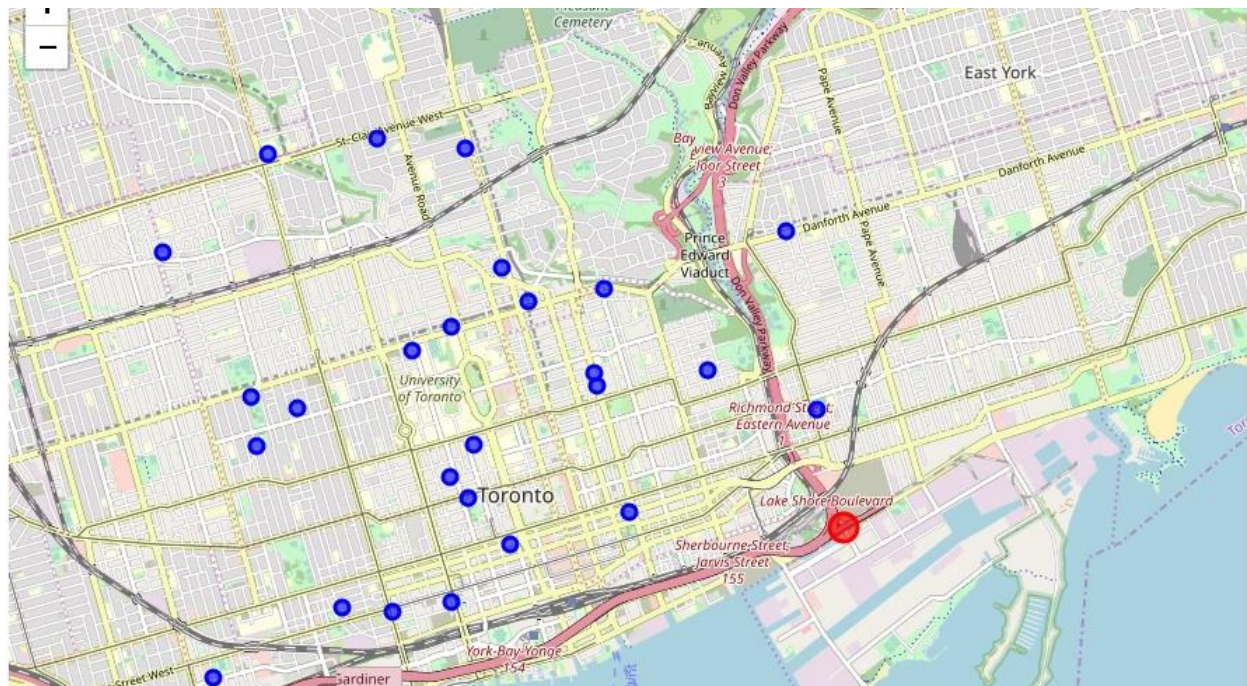NYC Neighborhoods

3.2 Education

Toronto

Toronto is the most populous city in Canada and the provincial capital of Ontario. The city is home to a number of elementary, secondary, and post-secondary institutions. In addition to those institutions, the city is also home several specialty and supplementary schools, which provide schooling for specific crafts, or are intended to provide additional educational support.

Four publicly funded school boards provide elementary and secondary schooling to residents of the city, from Junior Kindergarten to Grade 12. The four school boards operate as either English or French first language school boards, and as either secular or separate school boards. In addition to publicly funded schools, elementary and secondary education is also provided by private religious school boards, independent religious schools, or independent secular institutions, such as college-preparatory schools.

Toronto is also home to a number of post-secondary institutions. There are five universities in Toronto with degree-granting authority, four of which are public university, while the other is a private seminary. In addition there are four degree- and diploma-granting colleges based in the city. Other post-secondary institutions based in Ontario have also established satellite campuses in Toronto. Other forms of post-secondary institutions in Toronto consist of private vocational schools.
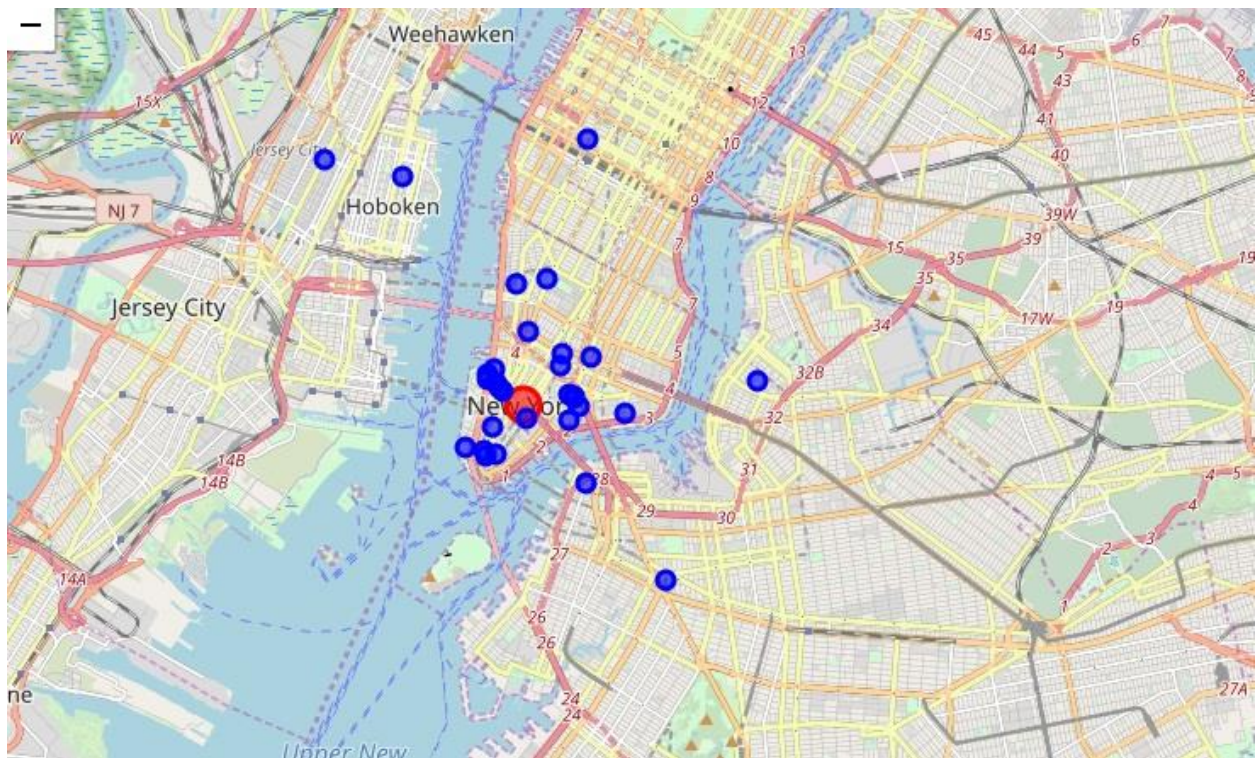
Using FourSquare API I was able to obtain list of different schools in Toronto with geographical location .This data was used to visualize different schools on a map

Schools in Toronto

NYC

Education in New York City is provided by a vast number of public and private institutions. New York City is home to some of the most important libraries, universities, and research centers in the world. In 2006, New York had the most post-graduate life sciences degrees awarded annually in the United States, 40,000 licensed physicians, and 127 Nobel laureates with roots in local institutions. The city receives the second-highest amount of annual funding from the National Institutes of Health among all U.S. cities. It also struggles with disparity in its public school system, with some of the best-performing public schools in the United States as well as some of the worst-performing. Under Mayor Michael Bloomberg, the city embarked on a major school reform effort.
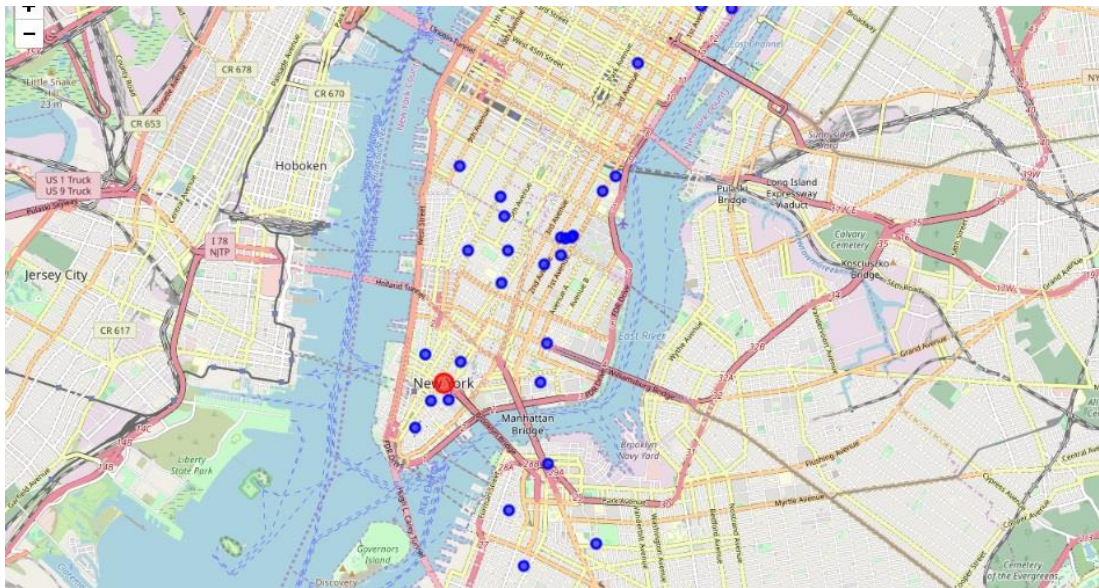

NYC Schools

3.3 Healthcare

Toronto

There are over forty hospitals located in Toronto, Ontario, Canada. Many of them are also medical research facilities and teaching schools affiliated with the University of Toronto. Most hospitals are grouped under administrative networks that serve particular neighborhoods and communities and share a number of medical services. The largest of the networks is University Health Network, which governs four of Canada's largest research hospitals located across Downtown Toronto. Some hospitals in Toronto operate independently, attracting large funding and public donation due to historic brand value and overall clinical standards.
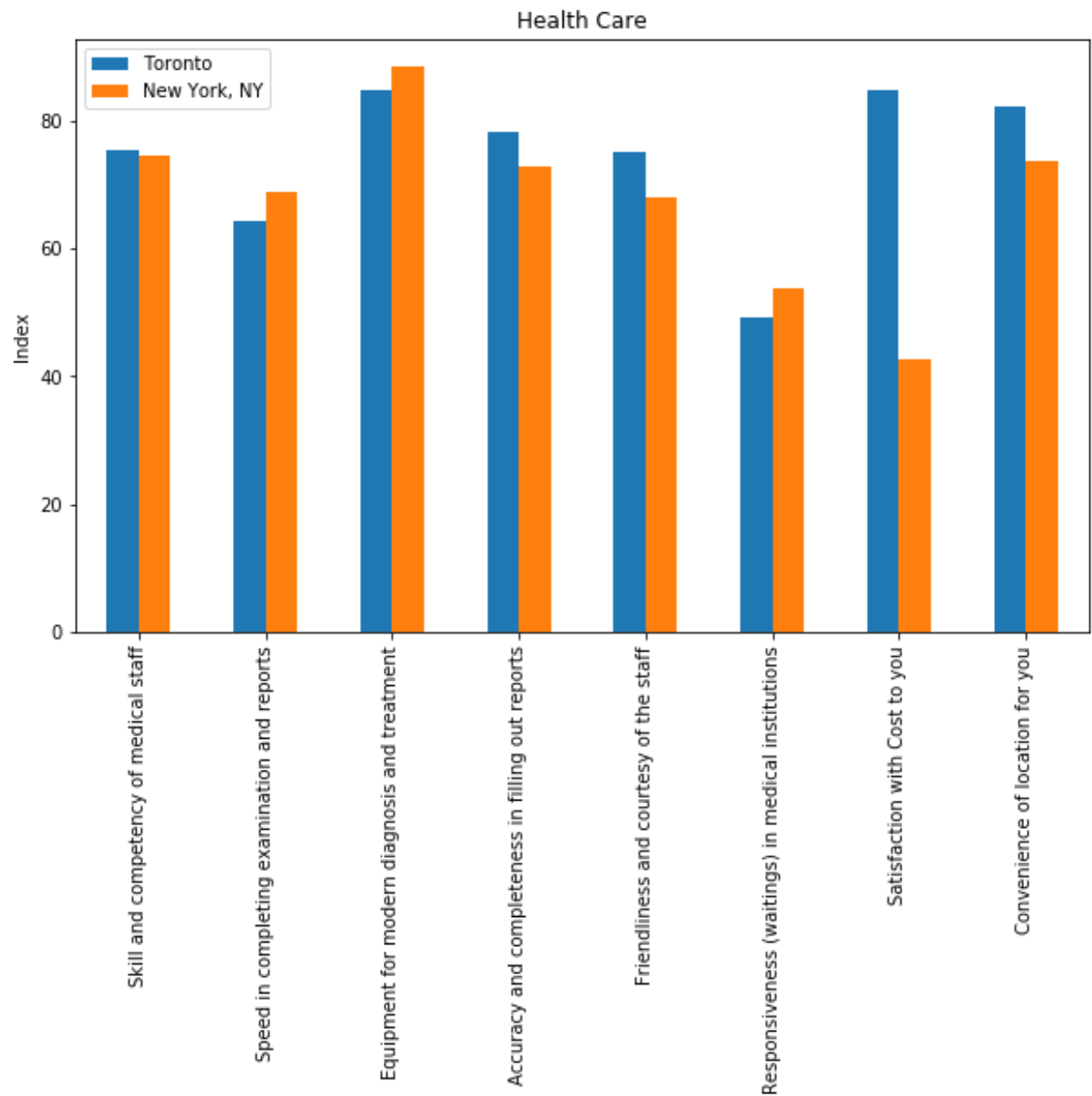

Hospitals Toronto

NYC

There are over forty hospitals located in New York City. There are many organizations which are dedicated to research in medical science and introduce advanced treatment and diagnosis . Most hospitals are grouped under administrative networks that serve particular neighborhoods and communities and share a number of medical services. Some hospitals in NYC operate independently, attracting large funding and public donation due to historic brand value and overall clinical standards.

NYC Hospitals

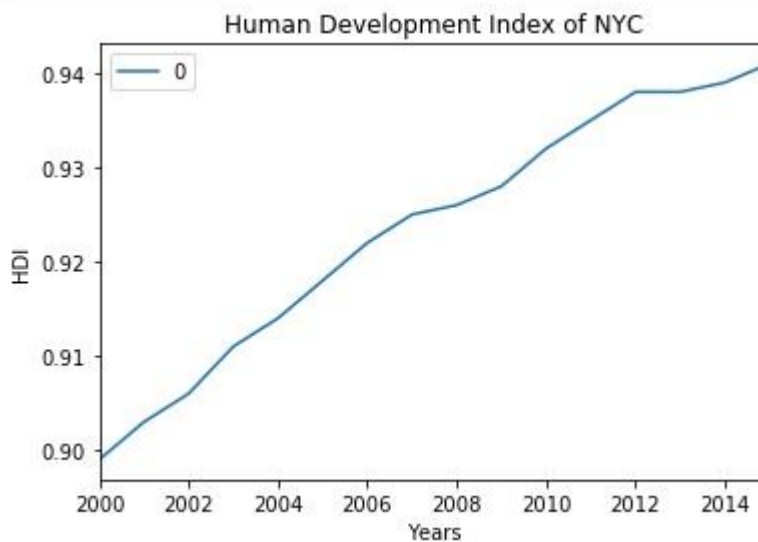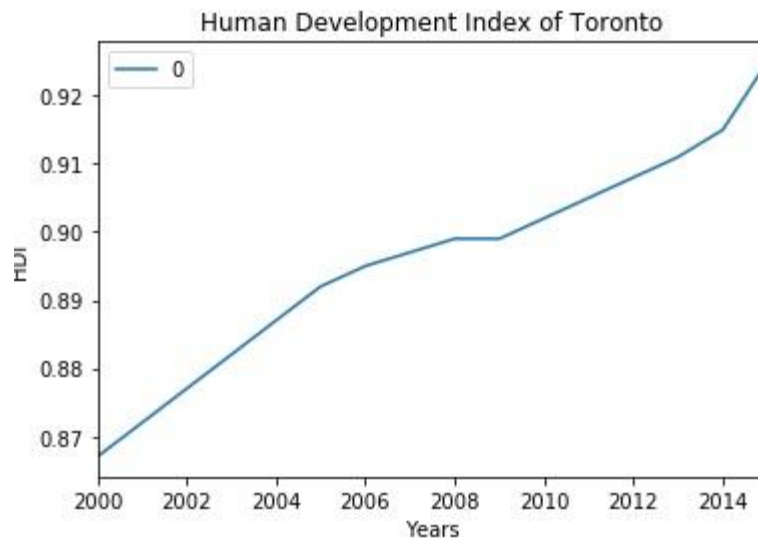**Comparison of healthcare between Toronto and NYC**

This comparison reflects that healthcare facilities in both cities are almost the same; there are some differences which are very small and can be neglected. The only main difference is the cost of healthcare. Cost is a major factor while considering healthcare and will affect the overall comparison.
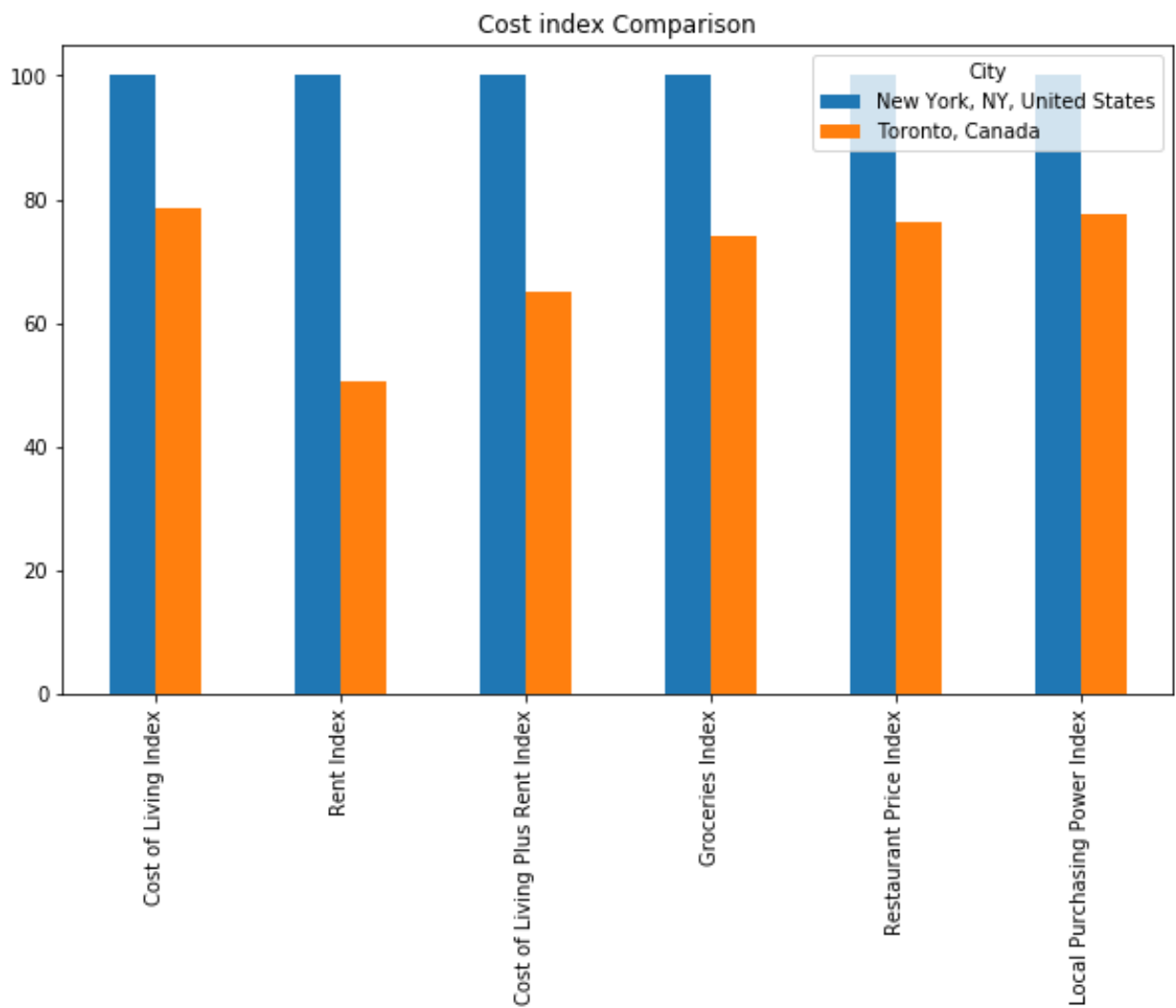
3.4 Human Development index

The **Human Development Index** (**HDI**) is a statistic composite index of life expectancy, education, and per capita income indicators, which are used to rank countries into four tiers of human development. A country scores a higher HDI when the lifespan is higher, the education level is higher, and the gross national income GNI (PPP) per capita is higher. It was developed by Pakistani economist Mahbub ul Haq and Indian Economist Amartya Sen and was further used to measure a country's development by the United Nations Development Programme (UNDP)'s Human Development Report Office.
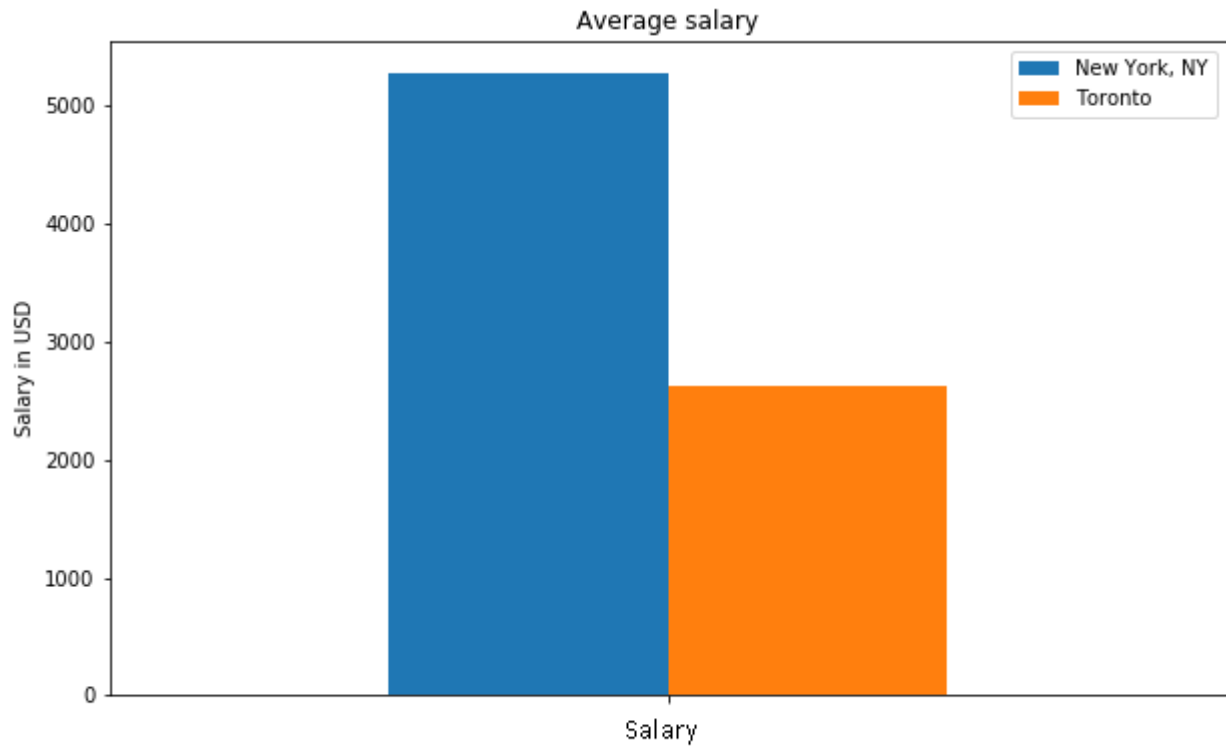

Both New York and Toronto are among the cities which has highest HDI in the world. While comparing New York and Toronto, New York has a slight upper hand in HDI.

3.5 Cost of living index

A **cost-of-living index** is a theoretical price index that measures relative cost of living over time or regions. It is an index that measures differences in the price of goods and services, and allows for substitutions with other items as prices vary.
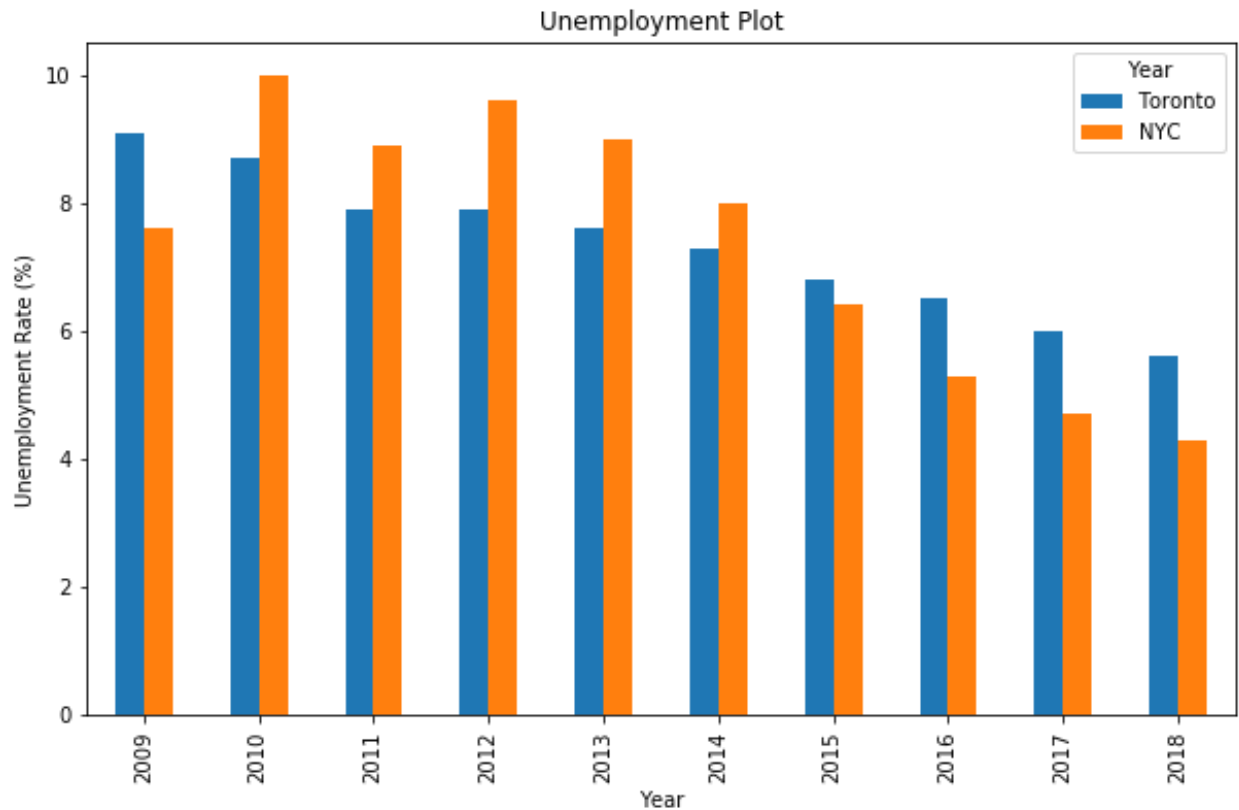
Average salary

From this plot it is clear that cost of living in Toronto less comparing to New York. While comparing cost of living average income in the city should also be considered. The plot also shows that purchasing power of a New Yorker is higher than Toronto.
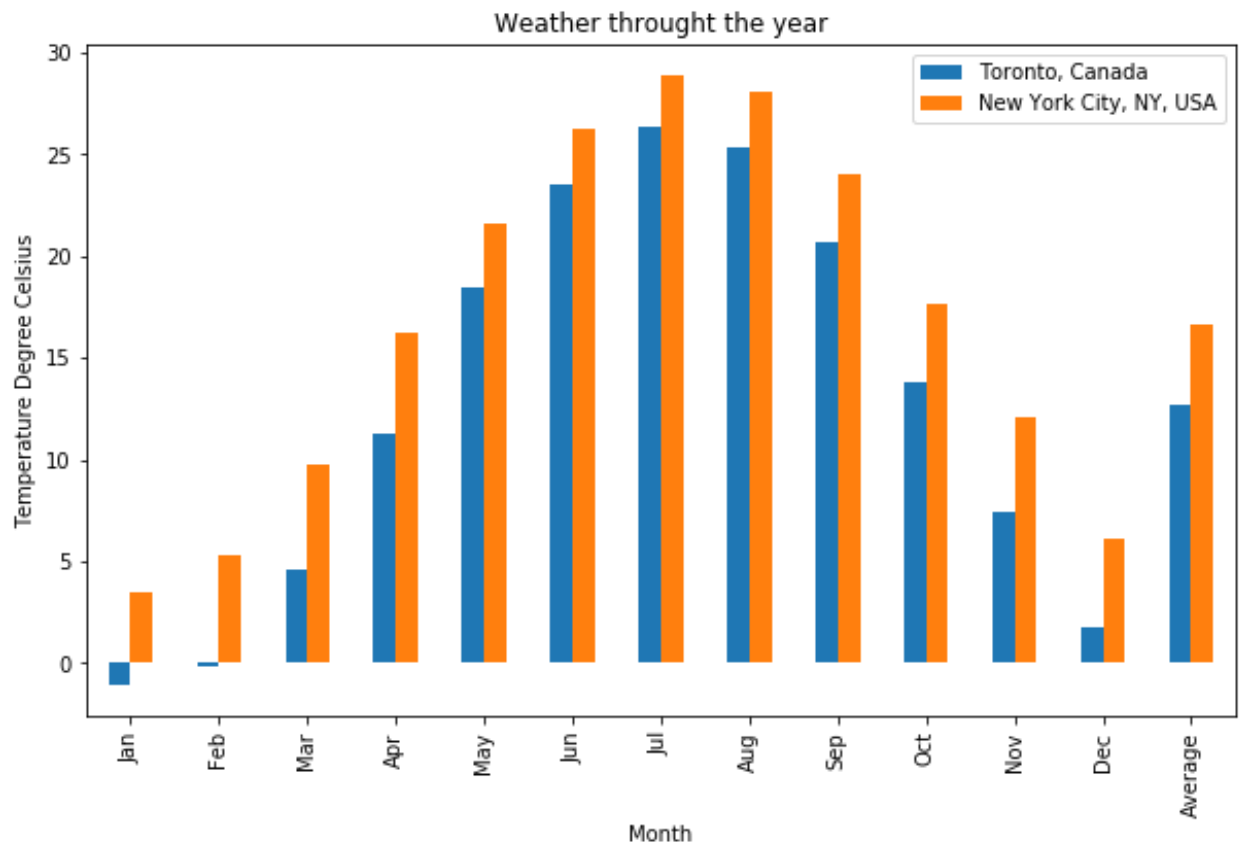
3.6 Unemployment

Unemployment, according to the Organization for Economic Co-operation and Development (OECD), is when persons above a specified age (usually above 15) are not in paid employment or self-employment and are currently available for work during the reference period.

From the figure it is visible that for the past four years New York has lower unemployment rate than Toronto but When we consider past ten years we can see that Toronto has a steady decrease in the unemployment rate while New York has an unsteady unemployment rate.
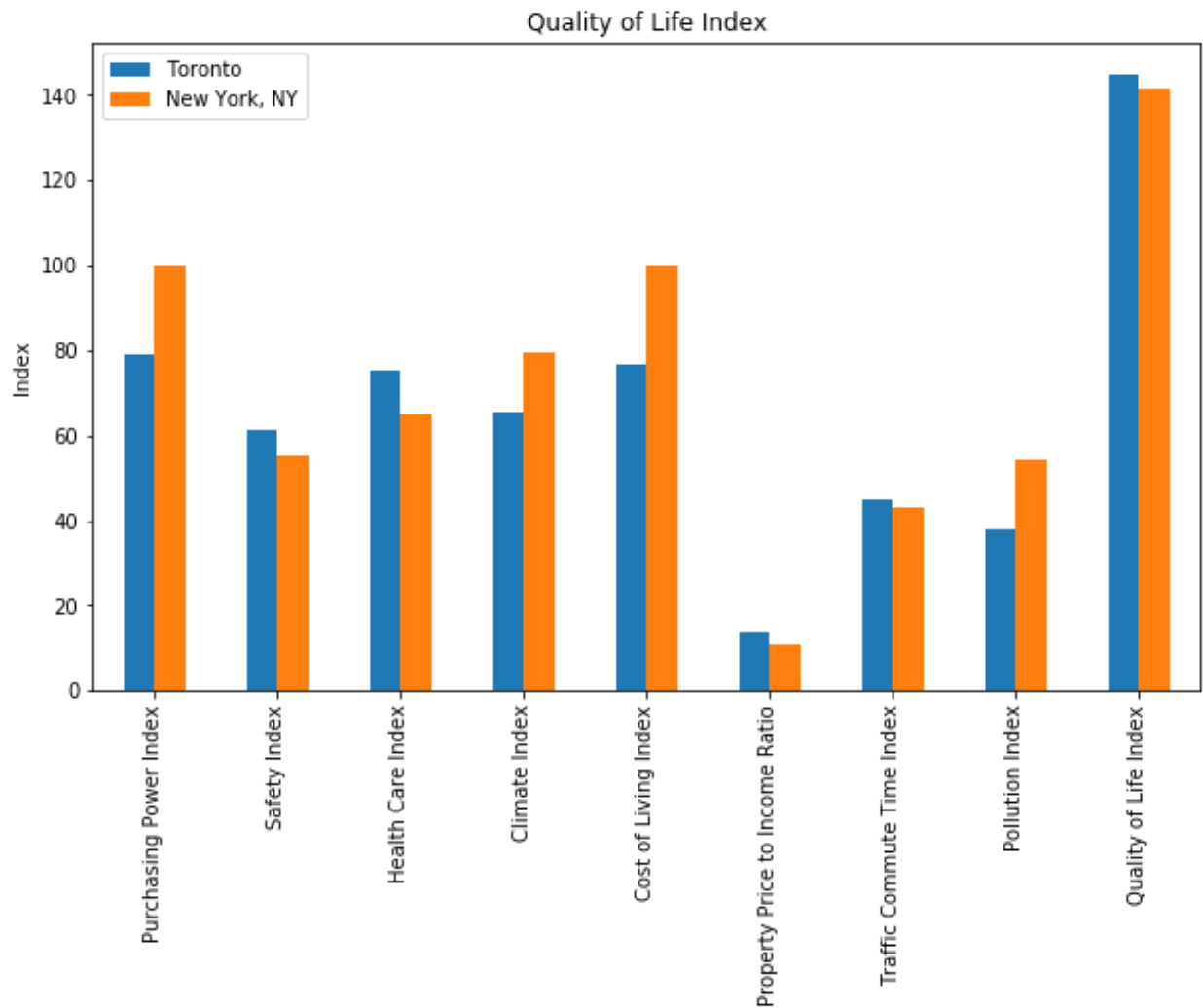
3.7 Weather

While comparing two cities to move in; weather is an important factor to consider. If the weather is extremely hot or cold it will affect the quality of living.

Weather throught the year

From the figure it is clear that both cities have cold weather but New York has comparatively warmer weather.

3.8 Quality of Life Index

The Economist Intelligence Unit's the **quality-of-life index**, abbreviated **QLI** attempts to measure which country will provide the best opportunities for a healthy, safe and prosperous life in the years ahead. It is based on a method that links the results of subjective life-satisfaction surveys to the objective determinants of quality of life across countries along with a forward-looking element

Both the cities are among the cities which has world's best quality of life but from the Quality of life chart it is visible that Toronto has a slight upper-hand.

4. Conclusion

Toronto and New York are among the world's best cities; both the cities have great economy, infrastructure and quality of life. When we compare these cities it is very hard to determine which city is the best to live in. Taking various factors into consideration we can conclude that Toronto is slightly better than New York to live in.