Weather and Trends

A data science study to better understand trends and weather shifts in the Toronto Harbourfront Area

November 2019

Introduction

Background[1]

Toronto is a major cosmopolitan city in the province of Ontario in Canada. Like the rest of Canada, Toronto experiences dynamic weather shifts depicted by, for example, large temperature drops in the Winter, increased rainfall in the Spring and a higher humidity index in the Summer.

Businesses in the city of Toronto are many; from retail to services, from cafes to restaurants, from bars to children activity areas. Ideally, businesses would continue to innovate to consistently deliver the same products and services irrespective of weather changes and season shifts. In reality, businesses often experience losses during weather shifts, i.e. greater revenues in the summer versus winter or vice versa. As a consequence, businesses often accept that losses are part of doing business in a city that experiences what is considered extreme weather shifts.

Project Aim

This project aims to explore trends and other interesting data from Foursquare against weather shifts in the city of Toronto from January 2016 until December 2018. More specifically, this project explores relative data within a10 km[2] radius from Union subway / train / bus station, i.e. considered a point of reference in the downtown Toronto core. What insights can be gained from such analysis that businesses can use to improve their performance during weather shifts, if any.

Data

Overview

Focused on data covering January 1, 2014 until December 31, 2018, there are two sources of data for this project:

- Foursquare data
- Weather data from Environment Canada

Foursquare Data

Foursquare data captures location and other information related to where, when and how users visit or spend in various venues in major cities around the world. Data on Foursquare is detailed and can be called on either in raw format or in analysed format, for example, trends. Data from Foursquare will be used, capturing pertinent information related to the radius determined for this project via latitude and longitude.

Weather Data from Environment Canada

Environment Canada monitors and maintains a historical record of data on various weather data indicators. Environment Canada specifies where, using longitude and latitude, indicators are measured. Data can be downloaded in csv format and will be used for this project.

More specific information on data and methodology will be covered once data is downloaded and explored.

[1] Source: Wikipedia page on Toronto, https://en.wikipedia.org/wiki/Toronto#Climate, accessed November 24, 2019
[2] Approximate average maximum walking distance