<u>Applied Datascience Capstone Project</u>

<u>Question 1 - The Battle of Neighbourhoods</u>

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<u>Criteria:</u> This capstone project is worth **70%** of your total grade. The project will be completed over the course of **2 weeks**. Week 1 submissions will be worth **30%** whereas week 2 submissions will be worth **40% of your total grade**.

For this week, you will be required to submit the following:
1. A description of the problem and a discussion of the background. (**15 marks**)
2. A description of the data and how it will be used to solve the problem. (**15 marks)**

Clearly define a problem or an idea of your choice, where you would need to leverage the Foursquare location data to solve or execute. Remember that data science problems always target an audience and are meant to help a group of stakeholders solve a problem, so make sure that you explicitly describe your audience and why they would care about your problem.
*This submission will eventually become your **Introduction/Business Problem** section in your final report. So I recommend that you push the report (having your Introduction/ Business Problem section only for now) to your Github repository and submit a link to it.*

1. Introduction

1.1 Background

We are a company that provides Software as a Service (SaaS) to small and medium sized enterprises (SMEs) in the Greater Toronto Area (GTA). One of our key client groups are restaurant and cafe owners (RCO) in the Food and Beverage (F&B) sector. They come to us for business consultancy services that leverage off our Big Data and Machine Learning capabilities.

They want our advice on (i) where to locate their restaurant or cafe and (ii) how to promote it to ensure success.

In this case, we have a client (Client V) who was a sous-chef working at a famous restaurant in Manhattan, New York. She is returning to Toronto where she grew up and wants to open up her own restaurant or cafe in the GTA. We interviewed her and she has certain requirements she wants us to fulfil:

(1) Client V wants to open a vegan restaurant that serves organic food for breakfast and lunch, but not dinner.
(2) her menu price point is CAD15 to 30 per customer per meal.
(3) she wants to appeal to health conscious customers who go to yoga studios or fitness centres nearby and are choosing to try vegan for health reasons.
(4) she wants to appeal to environmentally conscious customers who care about excessive carbon emissions generated by the meat industry and are choosing to try vegan for environmental reasons.

(5) she believes that repeat clients from the neighbourhood are stickier customers than clients who have to travel a long distance to her restaurant.

For each neighbourhood in the GTA, we provide basic data on the different types of restaurants and cafes that operate there, including but not limited to, addresses, contact details, hours of operation, types of cuisine and menus, which are provided to our RCO clients for free. Using this data, we assess
(1) what competition there is for our clients in the same type of cuisine
(2) what are the price points of competing restaurants
(3) what are the operating hours of competitors

In addition to the basic data, we provide a paid version for our services where we also
(1) analyse the average spending power of local residents in the neighbourhood, which are often the first customers to try out a new restaurant or cafe in their locale.
(2) identify surrounding venues of interest, like yoga studios or fitness centres where digital and traditional forms of advertising for our client can be arranged to maximise the impact for their advertising dollars.
(3) monitor the different ratings and reviews from Key Opinion Leaders (KOL) active in that neighbourhood and identify KOLs with large followings.
(4) we follow the trends set by these KOLs and invite them to promotional events for our clients, like tastings and cocktails, when launching a restaurant or cafe.

1.2 The Problem

Location: Traditionally, RCO clients relied on local knowledge and word of mouth to decide where to open a new restaurant or cafe. Many RCOs open up a new restaurant in a neighbourhood they are familiar with or where they know enough customers who will jump with them to their new restaurant. They do not explore outside familiar neighbourhoods and they do not have the resources to do market research, customer segmentation and wallet analysis. For example, if a bubble tea cafe opens at a specific locale and does well, many copy-cat bubble tea cafes quickly follow, driving up competition and driving down profits. The failure rate for starting a new restaurant or cafe business is high and profit margins are low.

With the power of crowd-sourced data on platforms like Foursquare and combining that with other compiled data like average spending power of residents in the neighbourhood, we can apply data analytics to help our clients make better business decisions where to locate their restaurant. For example, if an upscale supermarket opens in a neighbourhood with above average spending power, opening a boutique cafe next door may better capture spill-over customers from the supermarket than opening a Tim Horton's fast-food restaurant.

Promotion: Traditional advertising was centred on a local columnist visiting the restaurant or cafe and writing a good review in the local newspaper or magazine. Some restaurants would even pay popular actors/local celebrities to dine at their restaurant and take photographs with them for advertising. With the crowd-sourced platforms like Foursquare and social media, good reviews by KOLs which have built up large followings of "foodies" can matter more than traditional advertising. Passing out fliers at the corner of the block can be replaced by email advertising sent straight to the Inbox of customers or by location-based messaging sent straight to smartphones of passer-byes. Working on joint promotions with surrounding venues of interest which attract customers with a similar profile can be more effective than billboard advertising to the general public.

1.3 The Solution

The preparation and serving of good food hasn't changed much, but choosing a Location and Promotion of a good restaurant or cafe has changed greatly. Our RCOs clients have an enormous need for data analytics but few have the resources to dedicate to these functions. Our company can fulfil this need and provide RCOs with SaaS that improves their chances of launching a successful F&B business. In this particular case, we will help Client V identify two to three Locations for her vegan restaurant/cafe in the GTA and come up with a Promotion Plan using Data Analytics.