Coursera Capstone

IBM Applied Data Science Capstone

Opening a New Vegetarian/Vegan Restaurant in Singapore

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Introduction

Long gone are the days where you'll get a confused look accompanied by "huh?" or "what?" when you talk about the vegan lifestyle. Vegans abstain from any animal products whereas vegetarians still consume dairy and eggs. While some people give up animal products for moral or environmental reasons, many do so to adopt a healthier lifestyle. Scientific research has shown that vegetarians are generally less prone to 4 major ailments: Cancer, Diabetes, Meat-based illnesses and Cardiovascular diseases. Over the last few years, climate change has been a hot topic and the push towards veganism has been sprouting alongside it.

Veganism is gaining ground in Singapore. Singapore was named sixth most vegan-friendly city in the world by HappyCow. There are currently over 500 restaurants offering vegan and vegetarian dining options in Singapore, according to the HappyCow app, which lists vegan and vegetarian restaurants and health food stores around the world.

With PETA Asia declaring Singapore the second most vegan-friendly city in the region, just losing out to Taiwan's capital Taipei in the top spot, and beating Bangalore, Bangkok and Bali, which all made the top 10. In addition to a growing appetite for plant-based innovations on the island, the boom in vegan, alternative and inclusive eateries in the city-state makes it a natural pathway for those wishing to enter the Asia market. We believe there is room for opportunity to start a new vegetarian / vegan restaurant in Singapore.

Business Problem

The objective of this capstone project is to analyse and select the best districts in Singapore to open a new vegetarian/vegan restaurant.

Using data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question:

In Singapore, if entrepreneurs are looking to open a new vegetarian/vegan restaurant, where would you recommend that they open it?

Target Audience of this project

This project is particularly useful to entrepreneurs looking to open a new vegetarian / vegan restaurant in Singapore.

Data

To solve the problem, we will need the following data:

• List of districts in Singapore.

• Latitude and longitude coordinates of those districts. This is required in order to plot the map and to get the venue data.

• Venue data, particularly data related to vegetarian/vegan restaurants. We will use this data to perform clustering on the districts.

Sources of data and methods to extract them

This keylocations page (https://keylocation.sg/singapore/districts-map) contains a list of districts in Singapore, with a total of 27 districts. We will use web scraping techniques to extract the data from the keylocations page, with the help of Python requests and beautifulsoup packages. Then we will get the geographical coordinates of the districts using Python Geocoder package which will give us the latitude and longitude coordinates of the districts.

After that, we will use Foursquare API to get the venue data for those districts. Foursquare has one of the largest database of 105+ million places and is used by over 125,000 developers. Foursquare API will provide many categories of the venue data, we are particularly interested in the vegetarian/vegan restaurant category in order to help us to solve the business problem put forward.

This is a project that will make use of many data science skills, from web scraping (keylocations page), working with API (Foursquare), data cleaning, data wrangling, to machine learning (K-means clustering) and map visualization (Folium).

References:

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