**Business Proposal:**

As diverse as Toronto is, there is no shortage of restaurants to choose from. However, at a glance, there seems to be more Italian and French cuisine compared to the others. Chinese cuisine also comes close to the former two. Vietnamese cuisine also exists but there are few. This should be a good proposal to open a Vietnamese restaurant in Toronto. Partly due to two reasons. First, there would be less competition for the cuisine. Second, Vietnamese food has become more popular on a global scale. It would be even more fantastic to open a Vietnamese restaurant that has good services due to the COVID-19.

Problems to solve:

* Sorting out the majority of restaurants
* Narrow down the locations that ideal for opening a restaurant

**The Data:**

Foursquare location data: this will help provide a glance into where the restaurants are and which ones are more popular compared to others. Foursquare location data will also help narrow the ideal location to open a restaurant.

Data from canadapopulation.org: this will help provide the population of Toronto and the diversity (percentage of ethnicity) of the city

Libraries to assist:

* Pandas: turning data into dataframes and cleaning data.
* Folium: Python visualization library for geographical data
* Scikit Learn: for k-means clustering.
* JSON: library to handle JSON files.
* Matplotblib: Python plotting module for the data
* BeautifulSoup and Requests: scraping and handling data from http

**Methodology:**

In this project, the goal is to explore and find the ideal locations to open a Vietnamese restaurant in Toronto. The first step is to cluster the neighborhoods together based on their location using Kmeans. The second step is to explore their venues (i.e finding the top-10 most common venues) based on Foursquare location data. Finally, with the diversity of Toronto in mind, we will narrow down to the possible locations for the restaurant.

Ideal locations include aspects such as their locations, how familiar the neighborhood is to Asian cuisine, sourcing for ingredients, etc. Most importantly, it depends on the stakeholders to decide which type of restaurant they want to open (dine-in only, carry-out/delivery only, etc.)

**Analysis:**

As stated in the methodology, the first step is to segment and cluster the neighborhoods together based on their location. There are 5 possible clusters using Kmeans. They are as followed: Downtown Toronto, West Toronto, area shared between Downtown and West Toronto, East Toronto and finally Central Toronto. The map below shows how these different areas are clustered together.

A picture containing text, map

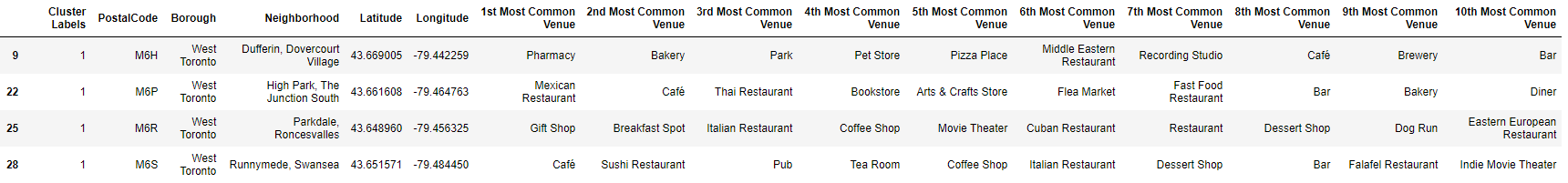
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Next is to explore the venues of these 5 areas and from there, narrowing down the ideal locations. The first one is Downtown Toronto. As expected from the Downtown location, these neighborhoods have a bit of everything. All of these neighborhoods are good places to start a Vietnamese restaurant, especially in St. James Town if the owner wants to find some familiar cuisine because they have Japanese restaurant as second most venues. The table below shows a more detailed the venues in the Downtown area.

**A screenshot of a computer

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The second area is West Toronto. This area has a variety of venues, from pet store and park to restaurants and coffee shops. There are also Japanese and Thai restaurants. The neighborhood of High Park and the Junction South could be a good spot with Thai restaurant as the most 3rd common venue. Thai cuisine and Vietnamese cuisines share some similarities so people in this neighborhoods would be more likely to try Vietnamese food. More details about this area are in the table below.



The third area is Central Toronto. This area includes venues such as workplaces, fitness centers and stores as the most common venues. There are quite a few coffee shops and some restaurants. This area is suitable for quick bites and healthy food. If the main goal is to opening a restaurant with carry-out/delivery only then any of the neighborhoods in this area would suffice. More details are as followed.

A screenshot of a computer

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The fourth area is the area shared between West and Downtown Toronto. This area has almost all the major cuisines. Neighborhoods such as Little Portugal, Trinity, Kensington Market, Chinatown and Grange Park have Vietnamese restaurants as their 2nd most common venue. This area is probably the most suitable for opening Vietnamese restaurants. More details are in the table below.

A screenshot of a computer

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The final area is East Toronto. This area has more stores and quick bites style restaurant. I would not recommend any of these neighborhoods in this area because there is no common ground. If the stakeholders want to introduce something new into this area, then any of the neighborhoods in this area would be ideal. Here are the details for this area.

A screenshot of a computer

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To ensure the diversity of Toronto, I will also include the table of ethnicities of the population of Toronto. The table is from the website canadapopulation.org. This provides more insight to the population of Toronto and helps assist in making the decision whether opening a Vietnamese restaurants is a good idea or not.

A screenshot of a cell phone

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From the table above, Toronto is indeed a diverse place and opening a Vietnamese restaurants would add more to the variety of Toronto and make it more unique. Also, it helps boost the satisfaction of people living in Toronto because they do not have to travel to enjoy the distinct and unique cuisine.

**Result and Discussion:**

My analysis showed that Toronto is a very diverse place and has almost every major cuisines around the world. The data suggests that opening a Vietnamese restaurant is entirely possible. The neighborhoods I would recommend are as followed. St. James Town is a good candidate with the convenient location in downtown Toronto, a Vietnamese would add to the location more interesting choices be it for carry-out or delivery, even dine-in. The neighborhoods of Kensington Market, Chinatown and Grange Park are more fit to open the restaurant. The reasons are we already have familiarity with Asian cuisines, and with the familiarity, I believe these neighborhoods are also where markets and sources for ingredients are.

**Conclusion:**

The purpose of this project is to find ideal locations for opening a Vietnamese restaurant. Using Foursquare data and running Kmeans analysis, the objectives are fulfilled. However, the neighborhoods listed in the Result section are only suggestions. Stakeholders might need to review some more about these choices, especially which type of restaurant they want to open (dine-in, carry-out/delivery only, etc.) There are also other factors to be included in such as prices, social and economic dynamics in these neighborhoods.