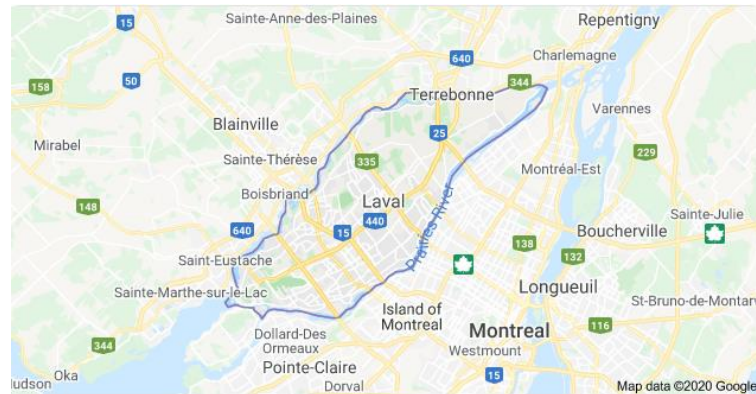


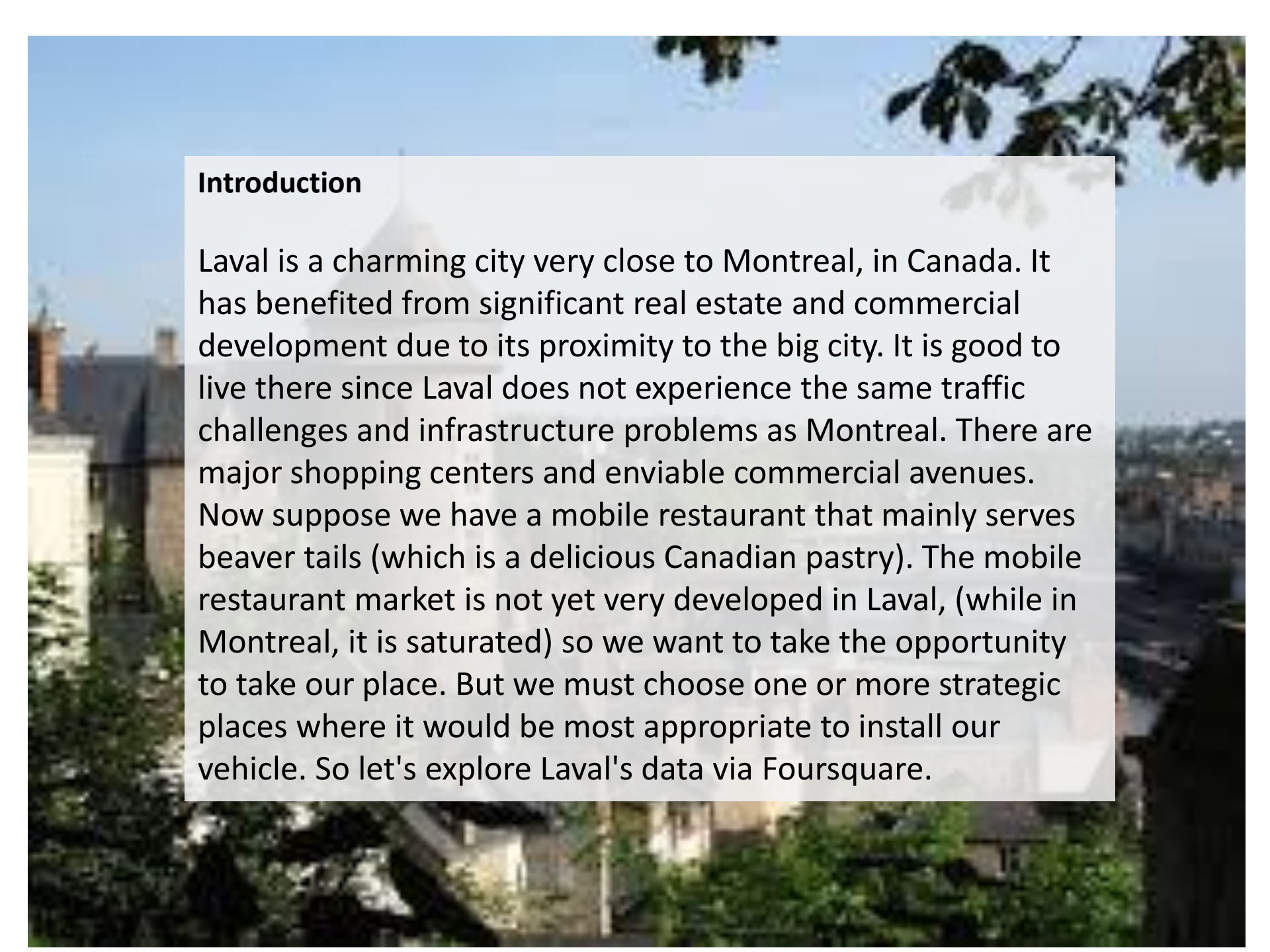
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Applied Data Science Capstone with IBM

**Plan a route for a mobile restaurant,
Laval, Canada**



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Introduction

Laval is a charming city very close to Montreal, in Canada. It has benefited from significant real estate and commercial development due to its proximity to the big city. It is good to live there since Laval does not experience the same traffic challenges and infrastructure problems as Montreal. There are major shopping centers and enviable commercial avenues. Now suppose we have a mobile restaurant that mainly serves beaver tails (which is a delicious Canadian pastry). The mobile restaurant market is not yet very developed in Laval, (while in Montreal, it is saturated) so we want to take the opportunity to take our place. But we must choose one or more strategic places where it would be most appropriate to install our vehicle. So let's explore Laval's data via Foursquare.




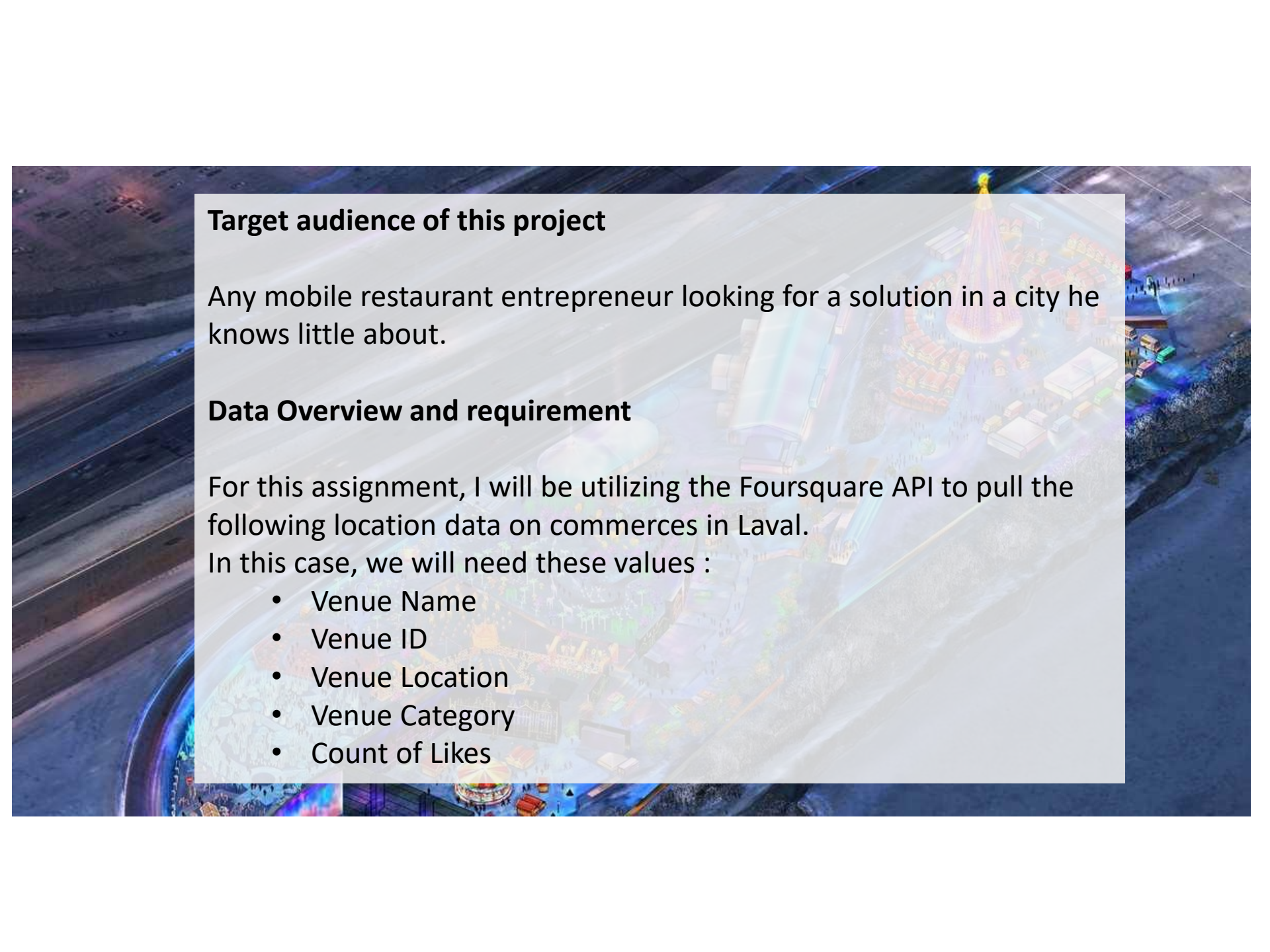
Business Problem

All populous places are generally well surrounded by restaurants. Shopping centers already have food courts and competition is very important. Travel can be laborious. I would like to maximize my stops to reach the maximum number of customers. Currently, we do not know where we are focusing and we do not have an overview of the shops in the city.

It's not about running away from other restaurants. Beaver tails can be a great addition to a tedious meal. So we would like to stick close to certain restaurants, but not those that would compete with us (such as cafes or dessert places). Likewise, we are not looking to stick close to a health center (gym).

In short, we are trying to reach as many people as possible. To do this, visibility must be excellent. In addition, children will love these pastries.





Target audience of this project

Any mobile restaurant entrepreneur looking for a solution in a city he knows little about.

Data Overview and requirement

For this assignment, I will be utilizing the Foursquare API to pull the following location data on commerces in Laval.

In this case, we will need these values :

- Venue Name
- Venue ID
- Venue Location
- Venue Category
- Count of Likes




Methodology and data acquisition approach

To obtain the necessary data, here are the steps that will be taken:

- Get geolocator latitude and longitude coordinates for Laval, Canada ;
- Use Foursquare API to get a list of all venues in Laval ;
- Venue data, particularly data related to shopping malls. We will use this data to perform clustering on the neighbourhoods, venue.name, venue.id, venue.categories, venue.location.lat, venue.location.lng ;
- Pull menu and count of likes for each venue ;
- I'm going to mix all of this and probably filter out a few businesses and group together a few to make it easier to read.

I will take the data collected and create a dynamic of k-means which groups businesses in 3 clusters. That way, I should be able to illustrate my results in a table and under a map and so the results will be easier to read and hopefully the solution more obvious.



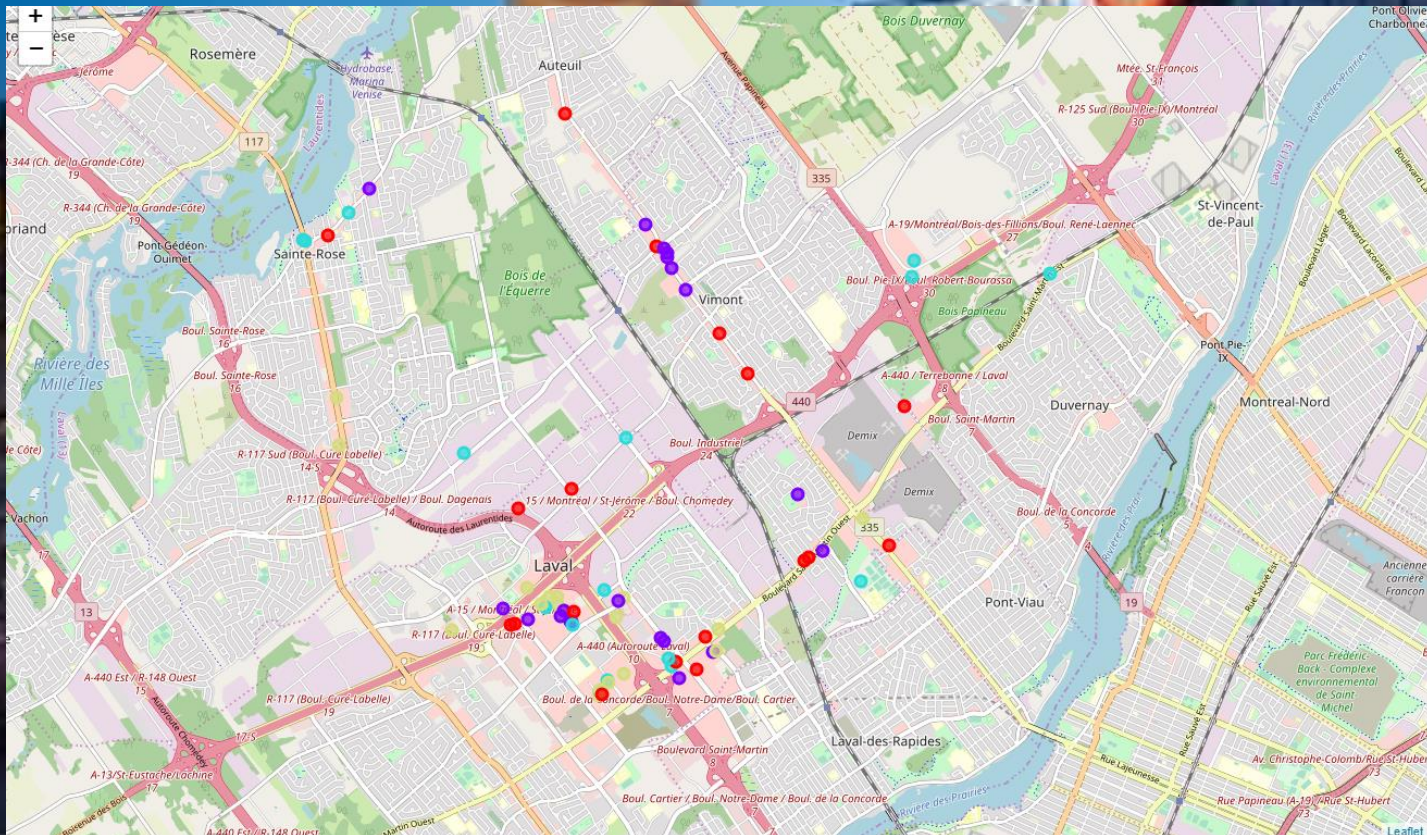
Sources of data and methods to extract them

If you want to know a little more about this attractive city, here is the Wikipedia site on Laval ([https://en.wikipedia.org/wiki/Laval, Quebec](https://en.wikipedia.org/wiki/Laval,_Quebec)). I have in mind to make a list of neighborhoods using Webscrapping techniques by Python queries and beautifulsoup packages. Then we will get the geographic coordinates of the neighborhoods using the Python Geocoder package which will give us the latitude and longitude coordinates of the neighborhoods. Well, I have to say it: Laval is not a mega-city. A priori, I believe that for several districts, there are no significant commercial activities. So I'm going to use the Foursquare API to get the location data for these most popular businesses. In this way, I will be able to determine where they are thanks to a geolocation system and to recommend suitable places according to my research (other restaurants, nerve centers). Foursquare will provide many categories of data on the sites. This is a project that will use many skills in data science, from web scraping (Wikipedia), to working with Foursquare, to data cleaning, to data manipulation, to machine learning (clustering K- means) and visualization of maps (Folium). In the next section, we will present the Methodology section where we will discuss the steps followed in this project, the data analysis we made and the machine learning technique that was used.

Results

We obtained a top 20 of addresses of the most appreciated addresses in Laval in categories of places corresponding to the searched field.

To support our results, we complete them with the addresses having obtained an average score and a score below the average, for the same number





Discussion

Obviously, there is a lot of attraction around Laval's busiest shopping center and movie theater and that is reflected a lot around its two locations which are also nearby.

Conclusion

I remind you: Laval is (relatively) a small city and that limited the range of results. Obviously, the excitement is concentrated on a region which is still quite specific, which facilitated reading and influenced the results in a fairly clear direction, thus limiting the possibility of inaccuracy. However, even if I had my doubts, the exercise achieved its ultimate goal, which is to enlighten a restaurant contractor on the road on the places to frequent to enjoy the best possible visibility.