

Predicting Location to Open New French Restaurant in Edmonton

(Coursera Capstone Project – The
Battle of Neighborhoods)

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1. Introduction

1.1. Background

I am a resident of Edmonton, so I decided to use Edmonton as the research city in my project. Due to cultural diversity that has been fueled by Canada's generous immigration policies, Edmonton is highly multicultural; more so because Edmonton is the major economic centre for the oil and gas industry. These provide favorable grounds for business opportunities, thus a highly competitive market.

1.2. Problem

In this very competitive market, a potential new French restaurant, ABC Ltd is faced with this problem: Which neighborhood will be the best location for a new French restaurant?

1.3. Interest

The target audience for this analysis is an investor seeking to start a French restaurant business in Edmonton.

1.4. Success Criteria

The success criteria of the project will be a good recommendation of neighborhood choice to ABC Company Ltd based on lack of such restaurants in that location, nearness to suppliers of ingredients, and nearness to offices for customers.

2. Data

Based on the problem, the following data was used to solve the problem:

- List of all neighborhoods in Edmonton. This was retrieved from Canada's geonames data available online on [geonames.org](https://www.geonames.org/postalcode-search.html?q=Edmonton&country=CA&adminCode1=AB). <https://www.geonames.org/postalcode-search.html?q=Edmonton&country=CA&adminCode1=AB>. This data was useful in this analysis in that it will give a big picture of all neighborhoods available to explore.
- The coordinates of the neighborhoods and venues which were retrieved from the same geonames data. This was used to map the location of the venues.
- The top 10 Venues of all Edmonton neighborhoods. This was retrieved from the FourSquare location data. This data was used to cluster neighborhoods into groups.

3. Methodology

- The strategy to find the answer and the tools used:

In order to establish the targeted neighborhood(s), I explored the demographics of the neighborhoods in the city of Edmonton by segmenting the data and grouping them into clusters to find similar neighborhoods. For clustering the data, I used K-means clustering algorithm which is a form of unsupervised machine learning

I then conducted descriptive analysis using Pandas.

Additional data was gleaned by web scraping.

Using credentials of Foursquare API, near-by venues of the neighborhoods were mined. Due to http request limitations the number of places per neighborhood parameter was reasonably be set to 100 and the radius parameter was be set to 500.

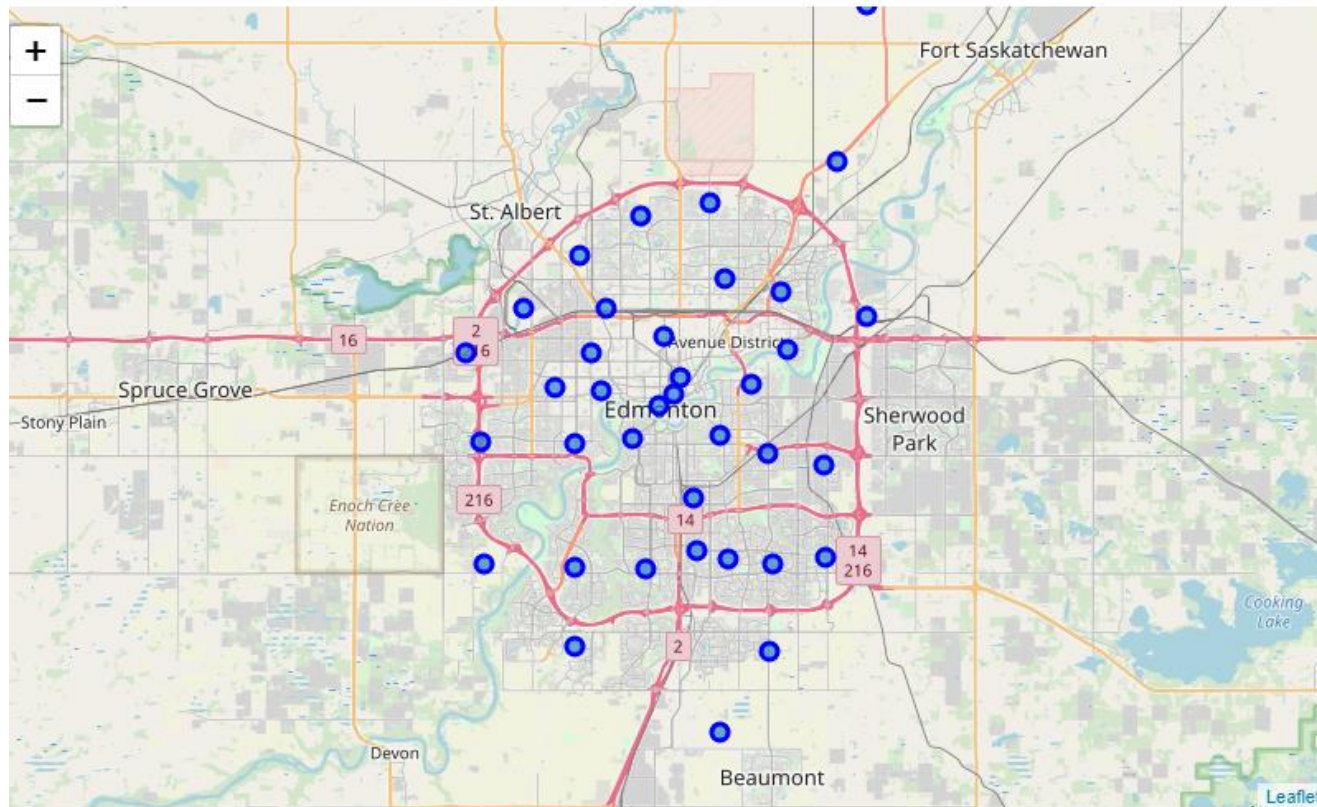
4. Results

6] :

	Neighborhood	Code	Latitude	Longitude
0	Edmonton (Kaskitayo)	T6J	53.456	-113.521
1	Edmonton Southwest	T6M	53.459	-113.655
2	Edmonton (Riverbend)	T6R	53.457	-113.58
3	Edmonton (Meadows)	T6T	53.462	-113.371
4	Edmonton (Ellerslie)	T6X	53.415	-113.418
5	Edmonton (Central Londonderry)	T5C	53.6	-113.455
6	Edmonton (North Downtown)	T5J	53.543	-113.497
7	Edmonton (Glenora / SW Downtown Fringe)	T5N	53.544	-113.557
8	Edmonton (North Jasper Place)	T5P	53.546	-113.596
9	Edmonton (West Northwest Industrial / Winterburn)	T5S	53.563	-113.67
10	Edmonton (Central Mistatim)	T5V	53.585	-113.622
11	Edmonton (Central Beverly)	T5W	53.565	-113.402

All
neighborho
ods in
Edmonton

map_edmonton



Map of
Edmonton with
neighborhoods
superimposed


```
edmonton_venues.head()
```

```
(270, 7)
```

	Neighborhood	Latitude	Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Edmonton (Kaskitayo)	53.456	-113.521	Bistecca Italian Steakhouse Wine Bar	53.454474	-113.514847	Steakhouse
1	Edmonton (Kaskitayo)	53.456	-113.521	Sicilian Pasta Kitchen South	53.453466	-113.525314	Italian Restaurant
2	Edmonton (Kaskitayo)	53.456	-113.521	Spring Roll Kitchen	53.455403	-113.514724	Vietnamese Restaurant
3	Edmonton (Kaskitayo)	53.456	-113.521	Vinny's Pub	53.453520	-113.524898	Pub
4	Edmonton (Kaskitayo)	53.456	-113.521	Brewsters Century Park	53.454629	-113.515185	Brewery

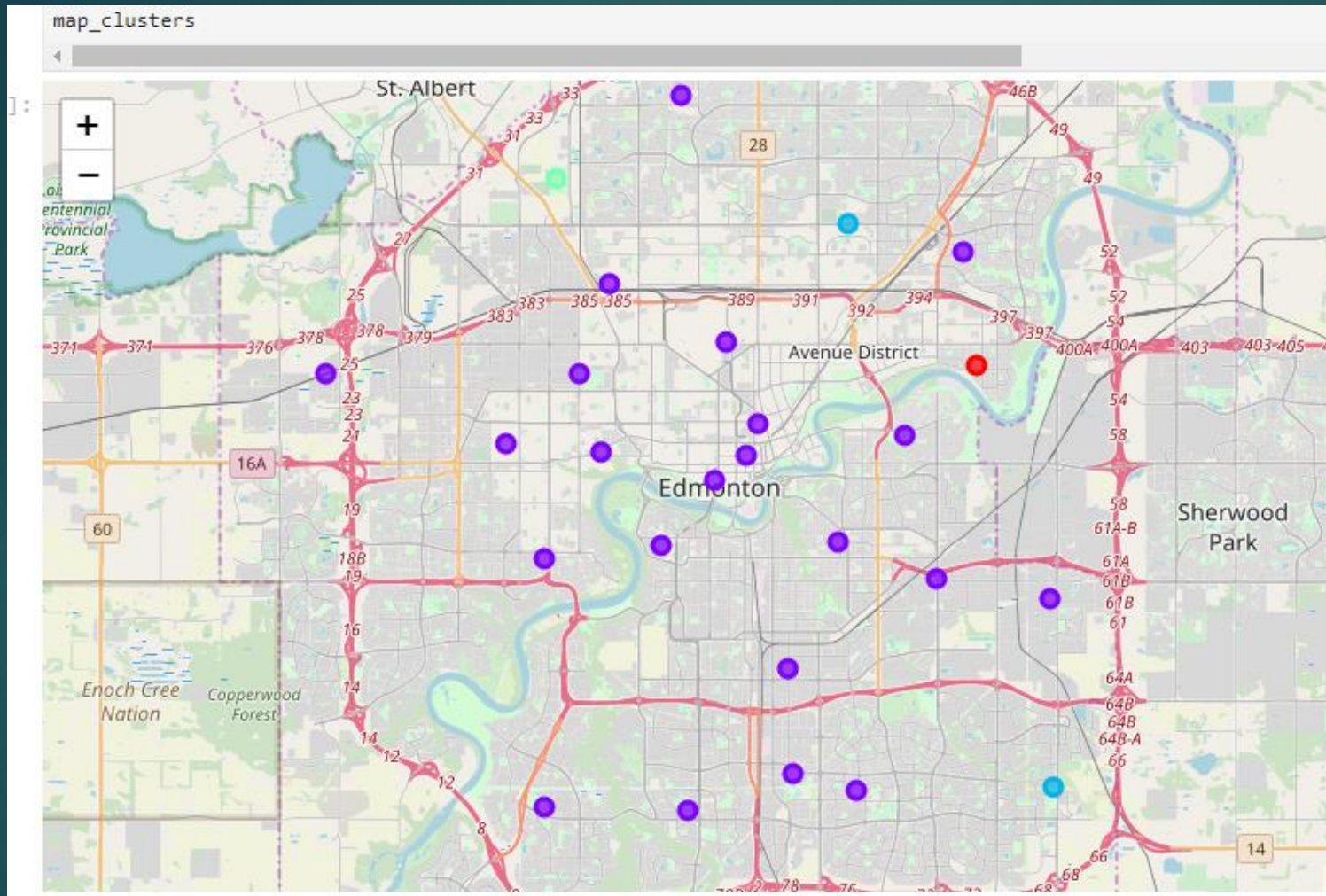
Venues around neighborhoods in Edmonton

```
neighborhoods_venues_sorted
```

```
40]:
```

Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Edmonton (Central Beverly)	Park	Wine Shop	Hotpot Restaurant	Creperie	Dance Studio	Diner	Discount Store	Eastern European Restaurant	Electronics Store	Farmers Market
Edmonton (Central Bonnie Doon)	American Restaurant	Breakfast Spot	Fast Food Restaurant	Coffee Shop	Clothing Store	Dance Studio	Grocery Store	Liquor Store	Pharmacy	Bank
Edmonton (Central Jasper Place / Buena Vista)	Pizza Place	Bakery	Sandwich Place	Liquor Store	Sushi Restaurant	Food & Drink Shop	Creperie	Dance Studio	Diner	Discount Store

10 most common venues in each neighborhood



Edmonton Map

Neighborhoods and cluster venues

Possible neighborhoods for location of a new French restaurant

```
offices_grouped
```

```
[82] :
```

Number of offices

Neighborhood

Edmonton (Central Londonderry)

44

Edmonton (East Castledowns)

16

Edmonton (Meadows)

15

Edmonton (North Capilano)

31

Edmonton (Riverbend)

20

Edmonton (SE Capilano / West Southeast Industrial / East Bonnie Doon)

43

Edmonton (South Bonnie Doon / East University)

38

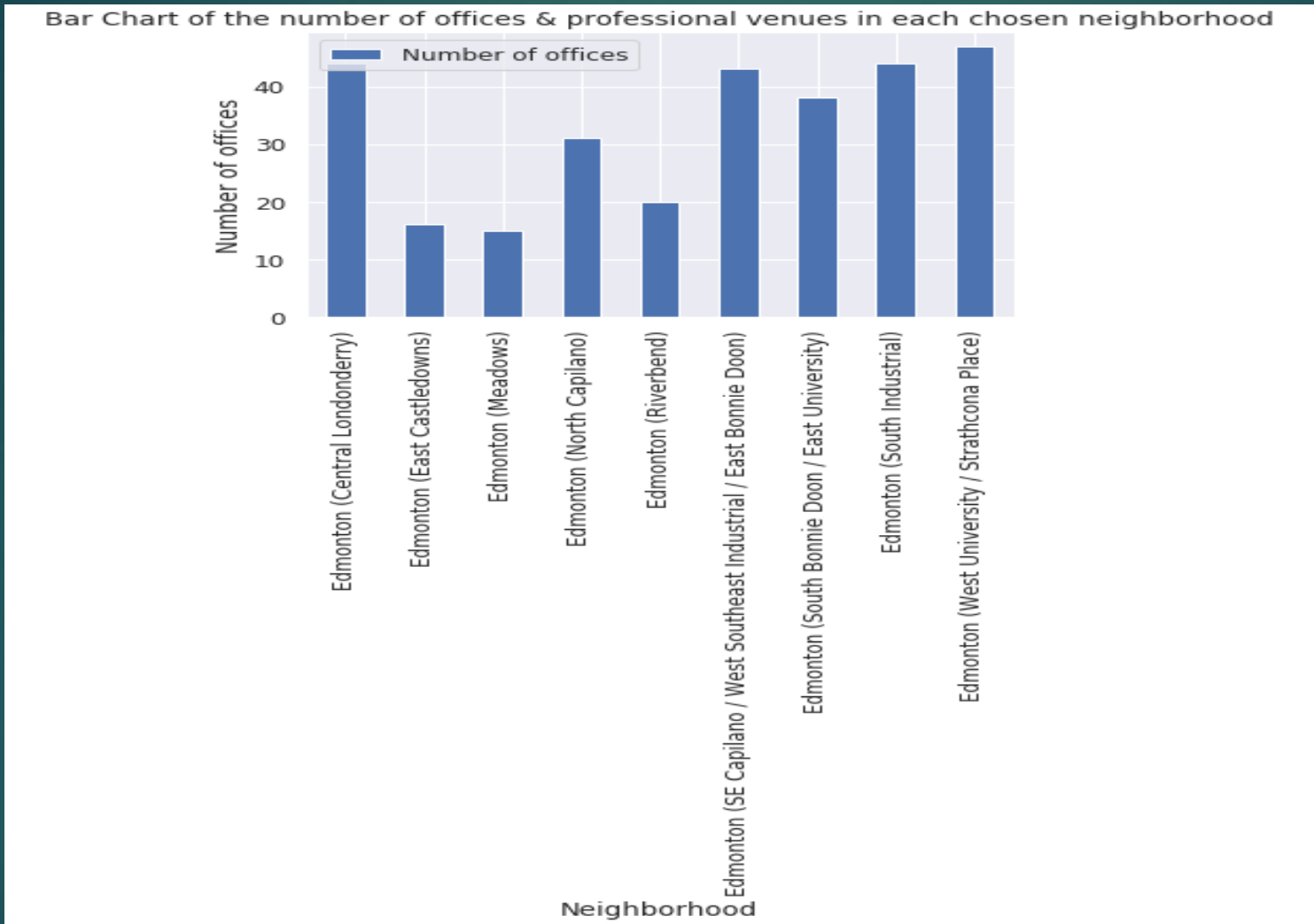
Edmonton (South Industrial)

44

Edmonton (West University / Strathcona Place)

47

Visualization to reveal the best location



5. Discussions

- ▶ According to this analysis, West University / Strathcona Place area will provide least competition for an upcoming French restaurant as college gym is the most common venue in this area and, it has the highest number of potential customers compared to other comparable neighborhoods.
- ▶ Limitations:
 - ▶ The clustering is completely based on the most common venues obtained from Foursquare data. Since land price, distance of the venues from closest stations, could all play a major role and thus, this analysis is definitely far from being conclusory.
 - ▶ these results also could potentially vary if we use some other clustering techniques like DBSCAN.
 - ▶ While it was not included in the research and analysis, commercial square footage rental rates tend to reduce as you move away from the city's centre. This should also be considered when choosing a location to open a new restaurant.

6. Conclusions

- ▶ In conclusion, the scope of this of the analysis is somewhat limited, as not all factors that could influence a location decision of a new French restaurant were examined.
- ▶ Demographics are ever changing, and the information afforded us may be outdated due to relying on FourSquare information.
- ▶ Overall though, the model created can easily be replicated with monitored data through the Foursquare API.
- ▶ All the same, with the data analyzed, I stand by the recommendations made.