

Edmontonian: A Preliminary Data Analysis of Urban Sprawl and Venues

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Introduction

- The City of Edmonton is the capital of the Canadian province of Alberta and is home to about 1 million residents. Covering an area of approximately 767 square kilometres across 400 neighbourhoods, the population density is 1215 per square kilometre [1][2]. As a new resident of Edmonton, I choose to study Edmonton for this project.
- The population density of Edmonton is one of the lowest of Canada's major cities. This seems to continue decreasing, where the city recently acquired 82.6 sq-km in low populace towns of Leduc County and the City of Beaumont in 2019 [1]. This low population density is a strong indicator of urban sprawl. This term is synonymous with many, many urban issues, such as increasing commuting time, increasing social isolation, decreasing farmland availability, increasing distance to access social venues, and an overall stress on sustainability. Not only does this put a large financial strain for the city, the costs will be shared with the residents in increasing property taxes, utility fees, road maintenance, infrastructure upgrades and social services. However, it is difficult to obtain the information to guide city planners, investors, and prospective residents towards a sustainable solution.
- In consideration of these problems and to guide city planners and investors toward city densification, this project will use maps and charts to investigate the unique venue types and age groups clustered by neighbourhoods in Edmonton.

Data

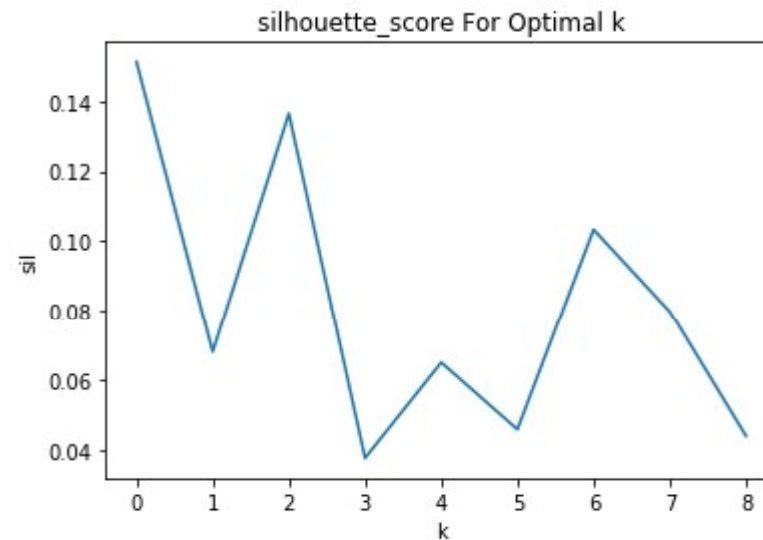
- To process the data, IBM Watson Studio platform is used to express the Python language to process the data.
- For data of the most common venues per neighbourhood, Foursquare API is used.
- For Edmonton data, the city has published publicly available datasets using JSON format. <https://data.edmonton.ca/browse>
 - used for data on age groups
 - used for latitude/longitude of the centroid of neighbourhoods

Results

Preliminary analysis shows:

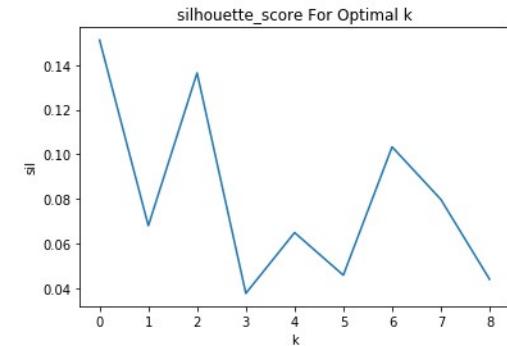
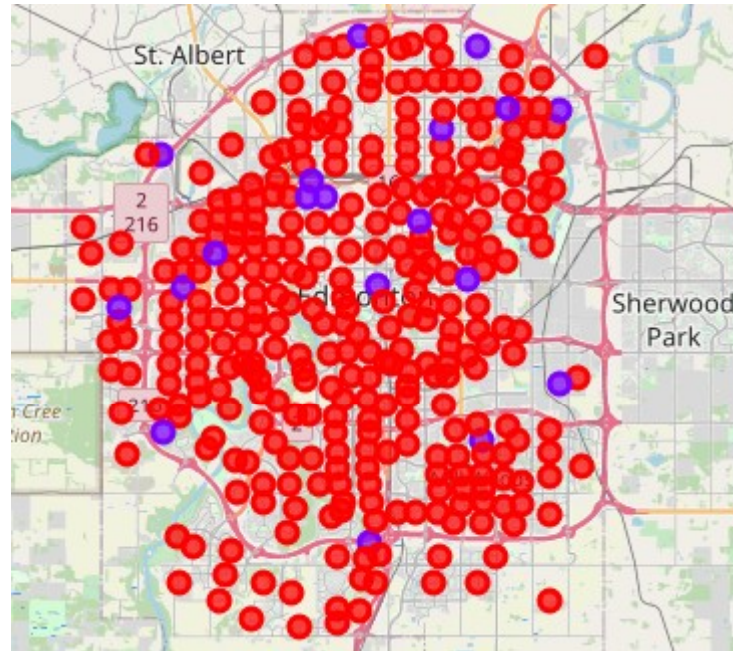
- based on population of 0, about 20% (81 of 400) of Edmonton is made up of Industrial Parks.
- Based on population density < 500 per sq.km, about 24% (92 of 400) of Edmonton is considered “low density”.

Results: Clustering



Based on evaluating clusters of Venues, the choices are either 0 (no clusters), but we wish to investigate the next best at 2 clusters.

Conclusion



Two clusters as above, with the 19 clusters showing similar venue options (purple). Only 6 of 19 (32%) were of the 81 areas with zero population.

Purple cluster curiously has similar attributes, indicating venues of Fried Chicken, Filipino Restaurants, and Flower Shops.

Further Study

As this was a preliminary analysis (and a practice of coding), investigation into additional urban sprawl indicators and consequences can be incorporated in better understanding the City of Edmonton and its residents.