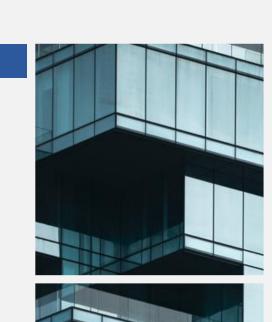


Introduction

- I plan on moving to Canada to start a life with my fiancé and future family
- This study focuses on using location data to evaluate some good candidates for Towns and Cities for us to consider moving to!
- Towns must be:
 - Within 70km of Smiths Falls, Ontario, Canada
 - Not in Quebec or the United States
 - Contain more than 2,500, and less than 50,000 residents
- Towns will then be ranked by:
 - The number of restaurants & bars
 - The number of fitness, entertainment, shopping venues and outdoor spaces
 - The distance from Smiths Falls.



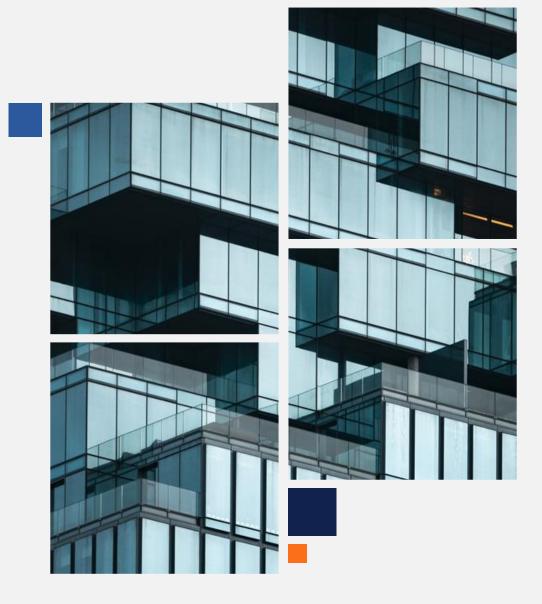






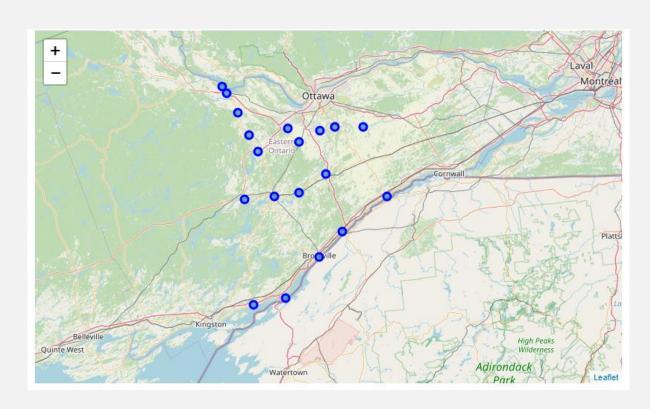
Data Aquisition

- The source data for this problem was acquired from Distantias's location proximity tool
- This was used to obtain data for all Towns with a population greater than 5 people, within a radius of 100km centered on Smiths Falls, Ontario, Canada.
- It was then filtered to remove Towns that did not meet the minimum criteria of the study.
- The Foursquare API service was then used for feature extraction and evaluation of each Town





Data Exploration



In total, 19 Towns were found for further investigation

Out[278]:

| | Town Name | Population | Distance KM | Latitude | Longitude |
|----|-------------------|------------|-------------|----------|-----------|
| 0 | Almonte | 4752 | 38.028704 | 45.2167 | -76.2000 |
| 1 | Arnprior | 10099 | 65.290924 | 45.4333 | -76.3667 |
| 2 | Braeside | 7178 | 69.748796 | 45.4667 | -76.4000 |
| 3 | Brockville | 23354 | 44.015449 | 44.5833 | -75.6833 |
| 4 | Carleton Place | 10013 | 27.503621 | 45.1333 | -76.1333 |
| 5 | Gananoque | 5194 | 64.132199 | 44.3333 | -76.1667 |
| 6 | Greely | 9049 | 53.156500 | 45.2600 | -75.5700 |
| 7 | Kemptville | 3532 | 32.814443 | 45.0167 | -75.6333 |
| 8 | Manotick | 4486 | 46.091498 | 45.2400 | -75.6800 |
| 9 | Merrickville | 3067 | 14.564527 | 44.9167 | -75.8333 |
| 10 | Mississippi Mills | 13163 | 52.496671 | 45.3333 | -76.2833 |
| 11 | Morrisburg | 2756 | 65.644979 | 44.9000 | -75.1833 |
| 12 | Perth | 6211 | 17.171658 | 44.8833 | -76.2333 |
| 13 | Prescott | 4284 | 44.466064 | 44.7167 | -75.5167 |
| 14 | Richmond | 3797 | 34.632997 | 45.1833 | -75.8333 |
| 15 | Rockport | 2689 | 59.674327 | 44.3667 | -75.9333 |
| 16 | Russell | 3759 | 65.162177 | 45.2600 | -75.3600 |
| 17 | Smiths Falls | 9403 | 0.000000 | 44.9000 | -76.0167 |
| 18 | Stittsville | 41350 | 39.702418 | 45.2500 | -75.9167 |
| | | | | | |

Foursquare Evaluation

- Foursquare returned 302 venue results for all 19 Towns
- These consisted of 82 unique venue categories.
- These specific venue category types were then converted into general classifications for further analysis:

| | Town Latitude | Town Longitude | Venue | Venue Latitude | Venue Longitude | Venue Category |
|-------------------|---------------|-------------------|-------|----------------|-----------------|----------------|
| Town | | | | | | |
| Almonte | 7 | 7 | 7 | 7 | 7 | 7 |
| Arnprior | 20 | 20 | 20 | 20 | 20 | 20 |
| Braeside | 4 | 4 | 4 | 4 | 4 | 4 |
| Brockville | 48 | 48 | 48 | 48 | 48 | 48 |
| Carleton Place | 30 | 30 | 30 | 30 | 30 | 30 |
| Gananoque | 20 | 20 | 20 | 20 | 20 | 20 |
| Greely | 5 | 5 | 5 | 5 | 5 | 5 |
| Kemptville | 23 | 23 | 23 | 23 | 23 | 23 |
| Manotick | 16 | 16 | 16 | 16 | 16 | 16 |
| Merrickville | 6 | 6 | 6 | 6 | 6 | 6 |
| Mississippi Mills | 4 | 4 | 4 | 4 | 4 | 4 |
| Morrisburg | 8 | 8 | 8 | 8 | 8 | 8 |
| Perth | 12 | 12 | 12 | 12 | 12 | 12 |
| Prescott | 19 | 19 | 19 | 19 | 19 | 19 |
| Richmond | 4 | 4 | 4 | 4 | 4 | 4 |
| Rockport | 17 | 17 | 17 | 17 | 17 | 17 |
| Russell | 6 | 6 | 6 | 6 | 6 | 6 |
| Smiths Falls | 26 | 26 | 26 | 26 | 26 | 26 |
| Stittsville | 27 | 27 | 27 | 27 | 27 | 27 |
| | | ries can be curat | | | venues | |

Data Analysis

- The counts for each venue type were computed and place into a dataframe
- These counts were then converted into a points score for each Town.
- Finally, an appropriate 'weighting value' was applied to each score to give final scorings for each attribute across all 19 Towns.
- The weighting factors that were used to multiply the scores by were as follows:
 - High priority: Weighting of 2
 - Medium priority: Weighting of 1.5
 - Low priority: Weighting of 1 (i.e. no change)

| | Town | Final Restaurant Score | Final Bar Score | Final Fitness Score | Final Entertainment Score | Final Outdoor Score | Final Shopping Score | Final Distance Deduction |
|----|----------------------|------------------------------|--------------------|------------------------|---------------------------------|------------------------|-------------------------|-----------------------------|
| 0 | Almonte | 0.571429 | 1.0 | 0.00 | 0.000 | 0.000000 | 0.083333 | -1.090448 |
| 1 | Arnprior | 0.714286 | 0.0 | 0.75 | 0.375 | 0.000000 | 0.500000 | -1.872174 |
| 2 | Braeside | 0.142857 | 0.0 | 0.00 | 0.000 | 0.000000 | 0.250000 | -2.000000 |
| 3 | Brockville | 2.000000 | 2.0 | 1.50 | 1.500 | 0.642857 | 1.000000 | -1.262114 |
| 4 | Carleton Place | 1.714286 | 2.0 | 0.00 | 0.000 | 0.000000 | 0.750000 | -0.788648 |
| 5 | Gananoque | 1.000000 | 2.0 | 0.00 | 1.125 | 0.428571 | 0.333333 | -1.838948 |
| 6 | Greely | 0.142857 | 0.0 | 0.00 | 0.000 | 0.214286 | 0.250000 | -1.524227 |
| 7 | Kemptville | 1.428571 | 1.0 | 0.00 | 0.000 | 0.000000 | 0.416667 | -0.940932 |
| 8 | Manotick | 0.571429 | 2.0 | 0.00 | 0.375 | 0.428571 | 0.250000 | -1.321643 |
| 9 | Merrickville | 0.428571 | 1.0 | 0.00 | 0.000 | 0.214286 | 0.083333 | -0.417628 |
| 10 | Mississippi Mills | 0.000000 | 0.0 | 0.75 | 0.000 | 0.000000 | 0.083333 | -1.505307 |
| 11 | Morrisburg | 0.428571 | 0.0 | 0.00 | 0.000 | 0.000000 | 0.166667 | -1.882326 |
| 12 | Perth | 0.857143 | 1.0 | 0.00 | 0.000 | 0.214286 | 0.166667 | -0.492386 |
| 13 | Prescott | 0.714286 | 1.0 | 0.00 | 0.375 | 0.000000 | 0.416667 | -1.275035 |
| 14 | Richmond | 0.285714 | 0.0 | 0.00 | 0.000 | 0.214286 | 0.083333 | -0.993078 |
| 15 | Rockport | 0.142857 | 1.0 | 0.75 | 0.375 | 1.500000 | 0.083333 | -1.711121 |
| 16 | Russell | 0.142857 | 0.0 | 0.75 | 0.000 | 0.000000 | 0.250000 | -1.868482 |
| 17 | Smiths Falls | 0.714286 | 1.0 | 0.75 | 0.000 | 0.000000 | 0.916667 | -0.000000 |
| 18 | Stittsville | 1.714286 | 0.0 | 1.50 | 0.375 | 0.000000 | 0.416667 | -1.138440 |



Final Results

- A 'Total Score' column was added and the values summed for each Town.
- They were then sorted in descending order to see the topranked Towns.
- The top three towns for us to consider moving to when I immigrate were found to be as follows:
- 1. Brockville
- 2. Carleton Place
- 3. Smiths Falls

| | Town | Final Restaurant Score | Final Bar Score | Fitness Score | Final Entertainment Score | Final Outdoor Score | Final Shopping Score | Final Distance Deduction | Total Score |
|----|----------------------|------------------------------|--------------------|------------------|---------------------------------|---------------------------|----------------------------|-----------------------------|----------------|
| 0 | Brockville | 2.000000 | 2.0 | 1.50 | 1.500 | 0.642857 | 1.000000 | -1.262114 | 7.380744 |
| 1 | Carleton Place | 1.714286 | 2.0 | 0.00 | 0.000 | 0.000000 | 0.750000 | -0.788648 | 3.675638 |
| 2 | Smiths Falls | 0.714286 | 1.0 | 0.75 | 0.000 | 0.000000 | 0.916667 | -0.000000 | 3.380952 |
| 3 | Gananoque | 1.000000 | 2.0 | 0.00 | 1.125 | 0.428571 | 0.333333 | -1.838948 | 3.047957 |
| 4 | Stittsville | 1.714286 | 0.0 | 1.50 | 0.375 | 0.000000 | 0.416667 | -1.138440 | 2.867512 |
| 5 | Manotick | 0.571429 | 2.0 | 0.00 | 0.375 | 0.428571 | 0.250000 | -1.321643 | 2.303357 |
| 6 | Rockport | 0.142857 | 1.0 | 0.75 | 0.375 | 1.500000 | 0.083333 | -1.711121 | 2.140069 |
| 7 | Kemptville | 1.428571 | 1.0 | 0.00 | 0.000 | 0.000000 | 0.416667 | -0.940932 | 1.904306 |
| 8 | Perth | 0.857143 | 1.0 | 0.00 | 0.000 | 0.214286 | 0.166667 | -0.492386 | 1.745709 |
| 9 | Merrickville | 0.428571 | 1.0 | 0.00 | 0.000 | 0.214286 | 0.083333 | -0.417628 | 1.308562 |
| 10 | Prescott | 0.714286 | 1.0 | 0.00 | 0.375 | 0.000000 | 0.416667 | -1.275035 | 1.230918 |
| 11 | Almonte | 0.571429 | 1.0 | 0.00 | 0.000 | 0.000000 | 0.083333 | -1.090448 | 0.564314 |
| 12 | Arnprior | 0.714286 | 0.0 | 0.75 | 0.375 | 0.000000 | 0.500000 | -1.872174 | 0.467112 |
| 13 | Richmond | 0.285714 | 0.0 | 0.00 | 0.000 | 0.214286 | 0.083333 | -0.993078 | -0.409745 |
| 14 | Mississippi Mills | 0.000000 | 0.0 | 0.75 | 0.000 | 0.000000 | 0.083333 | -1.505307 | -0.671974 |
| 15 | Russell | 0.142857 | 0.0 | 0.75 | 0.000 | 0.000000 | 0.250000 | -1.868482 | -0.725625 |
| 16 | Greely | 0.142857 | 0.0 | 0.00 | 0.000 | 0.214286 | 0.250000 | -1.524227 | -0.917084 |
| 17 | Morrisburg | 0.428571 | 0.0 | 0.00 | 0.000 | 0.000000 | 0.166667 | -1.882326 | -1.287088 |
| 18 | Braeside | 0.142857 | 0.0 | 0.00 | 0.000 | 0.000000 | 0.250000 | -2.000000 | -1.607143 |

Discussion

Brockville is the best candidate

With an overall score of 7.38, Brockville has double the number of points as the next best candidate Town.

Is the population data valid?

This data is dated from 2011, meaning it is now possibly out-of-date and not very reliable.

Is the Foursquare data reliable?

Some restaurants and amneties which I have personally visited were not present in the Foursquare data

Considerations for the next study:

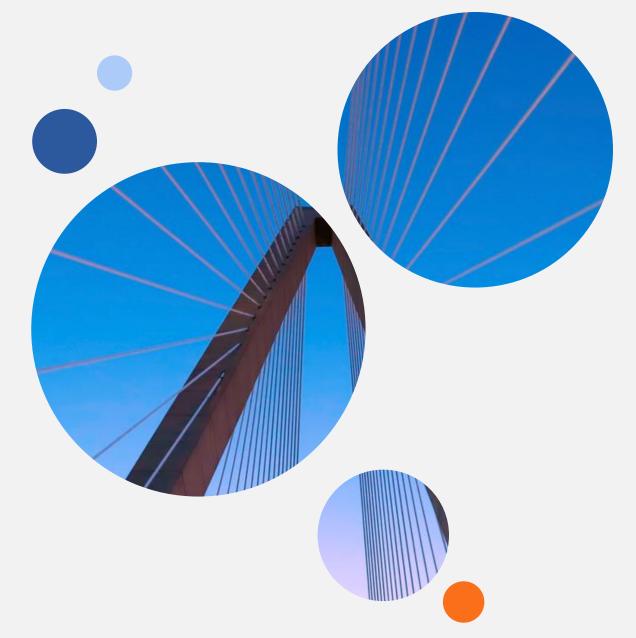
- -House Prices
- -Venue Ratings
- -Proximity to government services
- -Socio-economic factors

4/3/2021 10

Conclusion

In this study I evaluated some good candidates to consider moving to when I immigrate to Canada. I obtained the source data from the Distantias location proximity search tool and analyzed the applicable towns in this dataset using the Foursquare API service.

The three top rated Towns for us to consider moving to are **Brockville**, **Carleton Place** and **Smiths Falls**, however more research will be needed on these specific areas to give a better overall 'human' assessment of the suitability of each area.



Shaun Diplock