

Business Problem

Restaurants are the most failed small business in North America. If someone wants to be successful at running a restaurant they must consider key factors like market, location, style of food, etc. If a restaurateur wanted to open a new vegetarian restaurant in Toronto, where should they open it. What key factors should they consider?

Audience

The audience will be restaurateurs; people who are interested in opening a restaurant as an investment. They are looking for actionable advice that will help them net a profit. They are not necessarily a highly technical audience, so it will be important that the findings are explained to them in a way that it is easily interpretable. More specifically, this investor is looking to open a vegetarian restaurant in Toronto so the analysis should be specific to that demographic and not simply broad generalizations.

Data

I will be revisiting the Toronto neighborhood data scraped from Wikipedia using BeautifulSoup in the week three lesson about segmenting and clustering. I will also be utilizing FourSquare API to pull in additional data about the existing establishments in the city of Toronto. The data will be processed to tell us which neighborhoods have the most vegan restaurants and identifies ideal locations to start a new one.

Methodology

My approach to begin this process was to gather information on Toronto-based restaurants by utilizing the FourSquare API. Once that data was pulled there was a fair amount of post-processing and evaluation that was necessary to explore the results. Once the results were properly cleaned and assessed, I looked to implement **k-means clustering** to generate deeper analysis.

Results

Explore Result

In [123]: merged.loc[merged['Category'] == 0]

Out[123]:

	Neighbourhood	Vegetarian / Vegan Restaurant	Category
56	Northwest	0.0	0
67	Rouge Hill / Port Union / Highland Creek	0.0	0
66	Roselawn	0.0	0
65	Rosedale	0.0	0
53	New Toronto / Mimico South / Humber Bay Shores	0.0	0
...
31	Garden District, Ryerson	0.0	0
30	Forest Hill North & West	0.0	0
28	Fairview / Henry Farm / Oriole	0.0	0
27	Eringate / Bloordale Gardens / Old Burnhamthor...	0.0	0
93	York Mills West	0.0	0

81 rows x 3 columns

In [124]: merged.loc[merged['Category'] == 1]

Out[124]:

	Neighbourhood	Vegetarian / Vegan Restaurant	Category
78	The Annex / North Midtown / Yorkville	0.045455	1
48	Little Portugal / Trinity	0.046512	1
43	Kensington Market / Chinatown / Grange Park	0.048387	1

In [125]: merged.loc[merged['Category'] == 2]

Out[125]:

	Neighbourhood	Vegetarian / Vegan Restaurant	Category
13	Central Bay Street	0.015625	2
5	Berczy Park	0.018182	2
18	Commerce Court / Victoria Hotel	0.020000	2

In [126]: merged.loc[merged['Category'] == 3]

Out[126]:

	Neighbourhood	Vegetarian / Vegan Restaurant	Category
72	St. James Town	0.011765	3
83	Toronto Dominion Centre / Design Exchange	0.010000	3
75	Stn A PO Boxes	0.010526	3
64	Richmond / Adelaide / King	0.010309	3
35	Harbourfront East / Union Station / Toronto Is...	0.010000	3
29	First Canadian Place / Underground city	0.010000	3

In [127]: merged.loc[merged['Category'] == 4]

Out[127]:

	Neighbourhood	Vegetarian / Vegan Restaurant	Category
68	Runnymede / Swansea	0.025	4

By using clustering I was able to categorize neighborhoods to show the demand for in those locations for vegetarian restaurants. I could see that there were lots of areas with no vegetarian restaurants, and one particular area that had a high saturation of vegetarian options. Leveraging this data allowed me to use generate some meaningful analysis in the next section.

Discussion

In visualizing these results, we can notice an interesting trend -



As we can see above, the categories 2 & 3 (green and teal on the map) are all located close to the downtown waterfront area in Toronto, and likely is able to capitalize on foot traffic and downtown commuters for business. These areas have a proven demand for vegetarian options, but not the potential over- saturation present in Runnymede neighborhood . In assessing a location to start a new vegetarian restaurant, I would suggest making sure that is in close proximity to the downtown area.

Conclusion

The takeaway here is that there are clearly certain areas where a vegetarian restaurant can flourish and others where they will likely do poorly. As I outlined above, it is clearly beneficial to be located in the downtown area. K- means clustering identified some neighborhoods that are show strong demand for vegetarian products. Going a step further, I recommend looking at neighborhoods that are near downtown but do not currently have vegetarian options.

On our map, we can see a few neighborhoods with red dot that fall into our category 0 which means they don't have vegetarian options. Garden District and Queen's Park are two

potential neighborhoods close enough to downtown to capitalize on the increased foot traffic. Similarly, they are close to neighborhoods with proven demand for vegetarian food, so we can infer that demographic will likely carry over. To conclude, neighborhoods near to downtown like Garden District or Queen's Park would be great locations to open a vegetarian restaurant.