

Capstone - Battle of the Cities

For IBM Capstone Course
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The Problem

Restaurants go out of business early and often. This proposal looks to reduce the risks for a new Ethiopian restaurant in Toronto, Ontario, Canada.

A number of similar restaurants exist. Choosing a site where there are a lot of potential patrons (restaurant dense areas) while avoiding proximity to existing Ethiopian restaurants will be our approach to reduce risk.



The Data

Foursquare provides an API to a large database of venues of all types, including restaurants, but there is an absolute limitation that each query of that database can retrieve at maximum 50 records.

So, to get all the restaurants in Toronto we will need to do multiple fetches and combine the data.

To figure out where to do the fetches, we will use the geographical location of the neighborhoods in Toronto, per Wikipedia.



The Data

To be certain, there will be a lot of overlap. In fact, there were over 2800 restaurants in the combined dataset.

Next we eliminated duplicates and restricted entries to Toronto

The same process was performed to find all of the Ethiopian restaurants in Toronto (14).

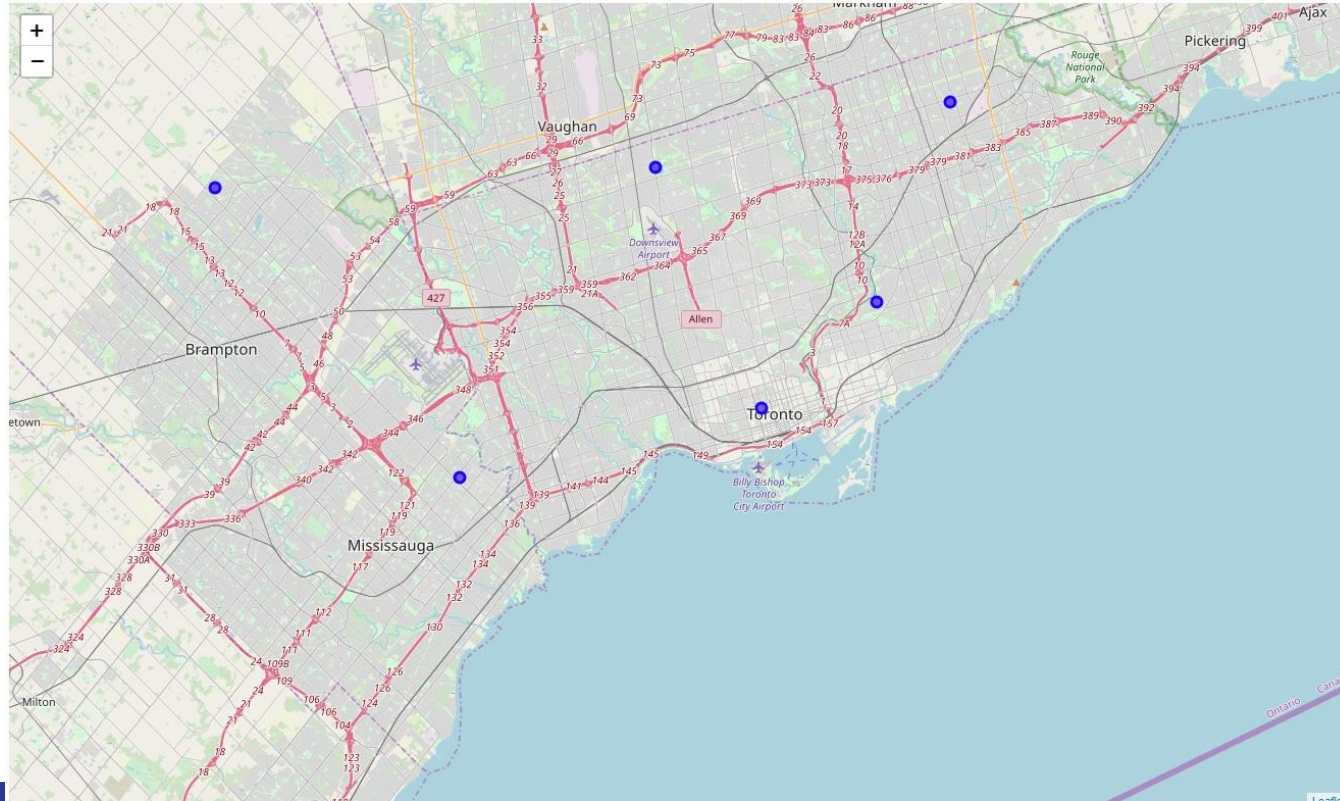


The Analysis

K-Means clustering was performed to find the highest density of restaurants. From this a half dozen potential sites were obtained.



Proposed Sites



Competition

Next we found the distance between each proposed site and its competition

	lat	lng	dist
2	43.764236	-79.764357	29.374670602096646 km
3	43.623328	-79.599579	14.417703937180798 km
4	43.805587	-79.268834	13.813751817280755 km
0	43.774113	-79.467688	12.890256482271624 km
1	43.708641	-79.318823	2.593037042626966 km
5	43.656702	-79.395816	0.8882498230859057 km



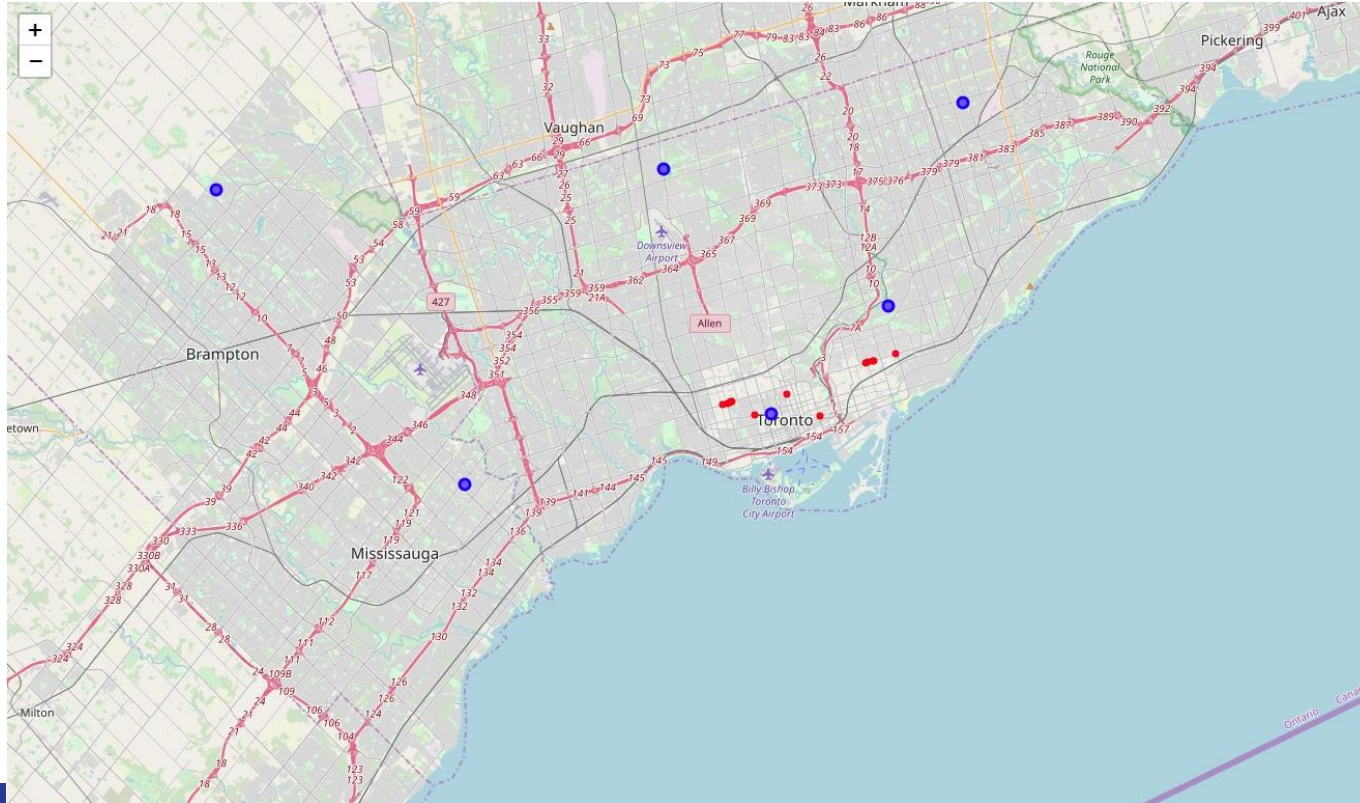
Choosing the Sites

The temptation would be to pick the sites farthest from the competition.

But, there is one site very far away. Perhaps looking at the competition on the map would help with the decision process



Map of Proposed sites (blue) and existing (red)



Choice

Best selection would likely not include the site far out, but rather the three sites that are more in the middle of the metropolitan area but remain distant from the competition.



Conclusion

Best sites for developing a new Ethiopian restaurant will also depend on availability of real estate, rental rates, and other factors not included here. For that reason we give 3 sites to consider:

1. Etobicoke, near the East Mall
2. North York, near the intersection of Finch Ave. and Yonge St.
3. Scarborough, near the Kennedy Commons

