Capstone Project (IBM/Coursera) Applied Data Science Capstone

Spatial Location of Restaurants in Toronto and Possible Location for a New Site

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June 28, 2021

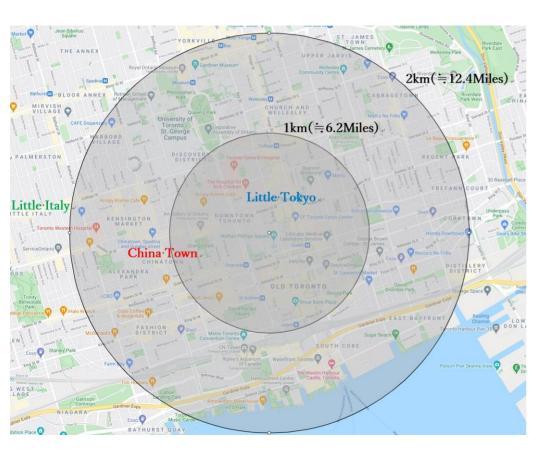
Introduction

This project focused on several types of ethnic restaurants in Toronto downtown area.

This project is for a business owner or a company who is just started to consider opening a ethnic restaurant in the target area.

For detailed discussion, Italian restaurants in the area were focused.

Setting the Target Area

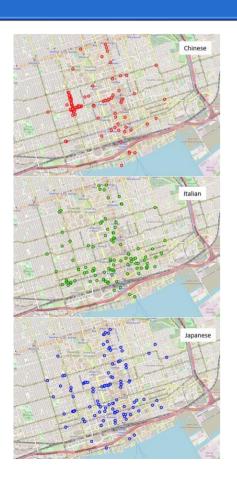


- Considered physical location, such as Lake Ontario, and ethnic enclaves
- The maximum number of venues



Target Area: Circular area from the point of "Toronto, ON" with radius of 2km

Comparison of 3 Groups (1/2)



Chinese (Red Circles)

Restaurants are densely located around the area of Chinatown.

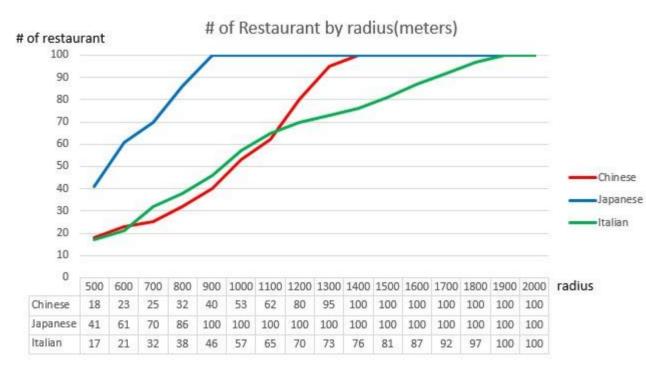
Italian (Green Circles)

 There are many restaurants in the Southern part of the target area but the effect of Little Italy seems to be limited.

Japanese (Blue Circles)

 Many restaurants are located close to its center of target area close to Little Tokyo.

Comparison of 3 Groups (2/2)



The number of restaurants were plotted by changing the radius of the target area.

The number of Italian restaurants gradually increases and does not reach to the upper limit.

Volonoi Diagram

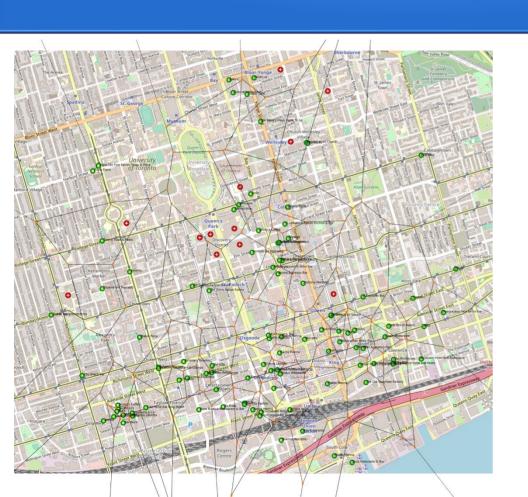


By using Volonoi diagram, theoretical trade area of each shop/restaurant can be shown.

Although it is based on very strong assumptions, the area is indicated as a polygon around a shop/restaurant.

If this polygon is large, the shop can collect large number of customers from surrounding area.

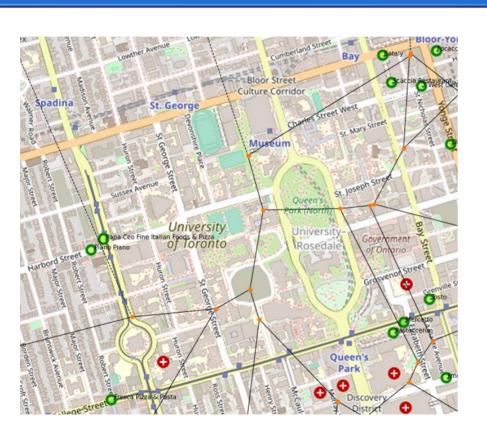
Result



The Volonoi diagram using the geographical data of all Italian restaurants in the target area.

By using this result, we can find several possible areas that may be suitable for further investigation for opening a new restaurant.

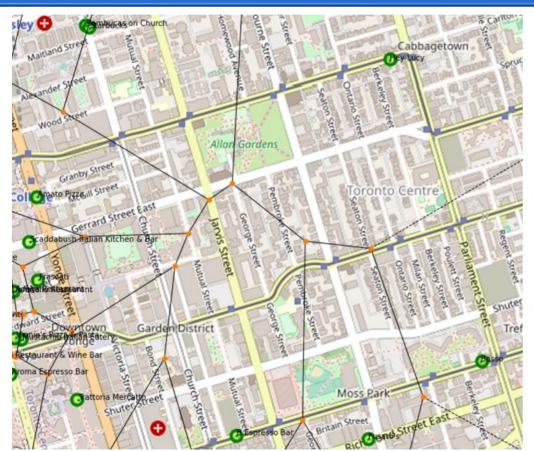
Discussion (1/2)



The area close to University of Toronto seems to be a possible location for a new site. (Especially the points shown as orange circles on the map are preferable.)

However, these points are not suitable for opening an Italian restaurant because the area is surrounded by university buildings and little room for a commercial site.

Discussion (2/2)



The areas close to Allan Gardens is another possible area based on the Volonoi diagram.

There are some other types of shops and business offices in this area. Stakeholders may proceed to further examination of feasibility study for opening a new restaurants in this area.

Conclusion

- The geographical distribution of Chinese, Italian, and Japanese restaurants in downtown Toronoto shows very different tendency.
- Volonoi diagram can be used for filtering the location that stakeholders may want to examine other aspects other than geographical location.
- However, Volonoi diagram is based on very strong assumptions, so it would be necessary to consider other aspects of a possible target location such as demographic distribution or transportation environment in surrounding area.