

LOCATIONS FOR OPENING CHINESE RESTAURANT IN TORONTO

Capstone
Fanrui Yan

ANALYZE DATA BEFORE OPEN RESTAURANT

- There are multiple factor to determine if a restaurant going to make profit for not
- Location if one of the most important factor
- Research and data analyzing is essential to make decisions
- In this project, we will try to find locations that are good for Chinese restaurant in Toronto



DATA

- Based on definition of our problem, factors that will influence our decision are:
 - Number of existing restaurants
 - Number of existing Chinese restaurants
 - Population of neighborhood
 - Distance of neighborhood from downtown



DATA

- Centers of initial candidate areas will be found from [Wiki page](#) and geographical information can be found from this [File](#)
- Population of Toronto can be gathered from this [webpage](#), this is population information for the year 2016. With the limitation of data online, we will use it as a reference even though it's not the most recent data
- Number of Chinese restaurants in every neighborhood will be obtained using Foursquare API
- Coordinate of Toronto downtown has been found through a simple Google search (43.6548, -79.3883)

DATA CLEANING

- With all the data gathered, we generated a table that contains Postcode, Latitude, Longitude, and Population:

	Area	Area Latitude	Area Longitude	Venue Name	Venue Latitude	Venue Longitude	Venue Category	Venue Id
0	M1B	43.806686	-79.194353	Wendy's	43.807448	-79.199056	Fast Food Restaurant	4bf58dd8d48988d16e941735
1	M1T	43.781638	-79.304302	KFC	43.780400	-79.300700	Fast Food Restaurant	4bf58dd8d48988d16e941735
2	M1W	43.799525	-79.318389	KFC	43.798938	-79.318854	Fast Food Restaurant	4bf58dd8d48988d16e941735
3	M1W	43.799525	-79.318389	McDonald's	43.798249	-79.318167	Fast Food Restaurant	4bf58dd8d48988d16e941735
4	M2J	43.778517	-79.346556	KFC	43.777600	-79.344200	Fast Food Restaurant	4bf58dd8d48988d16e941735

METHODOLOGY

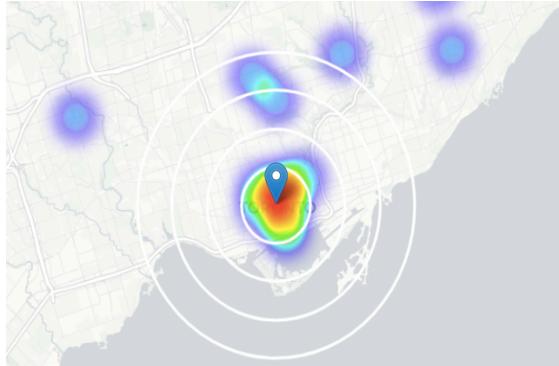
- Collect data: location & category of all restaurant in Toronto
- Explore restaurant density and population to identify narrower & promising areas
- Create clusters of candidate locations that met following requirements:
 - No more than two restaurants in radius of 500 meters
 - No Chinese restaurants in radius of 800 meters



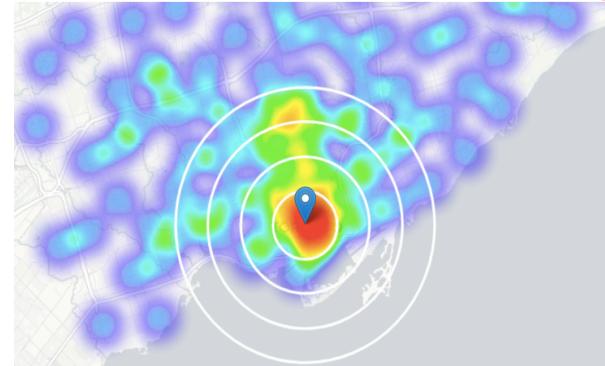
ANALYSIS



All Restaurants



Chinese Restaurants

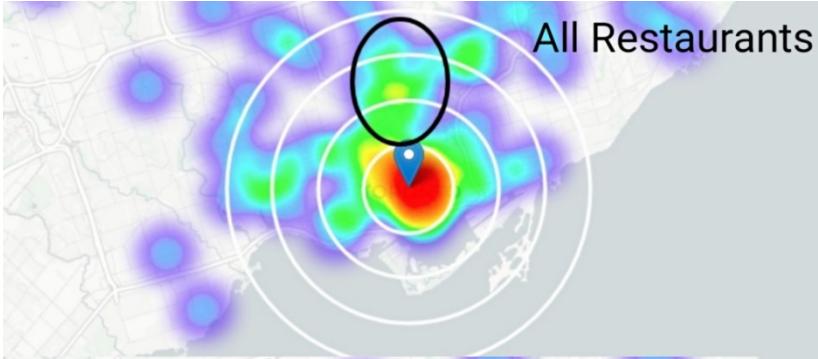


Population

Per Heatmaps above, we can tell that at about 2~6km north from downtown, there is an area (black circles) that:

- the Chinese restaurants density is very low (no color on Heatmap for Chinese Restaurants)
- it's quite populated (yellow color in population Heatmap)
- the restaurants density is low (green color in All Restaurants Heatmap)

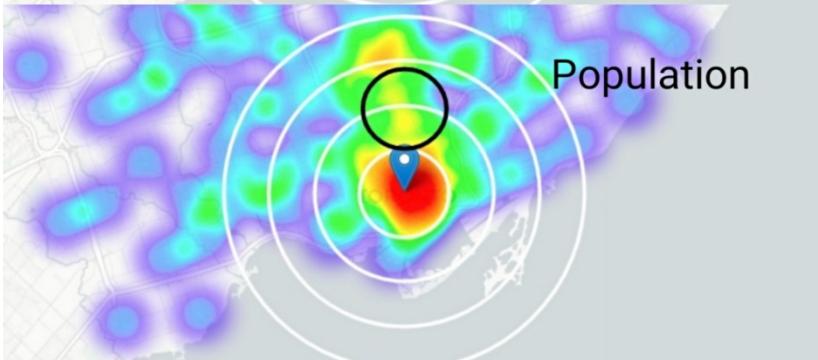
All Restaurants



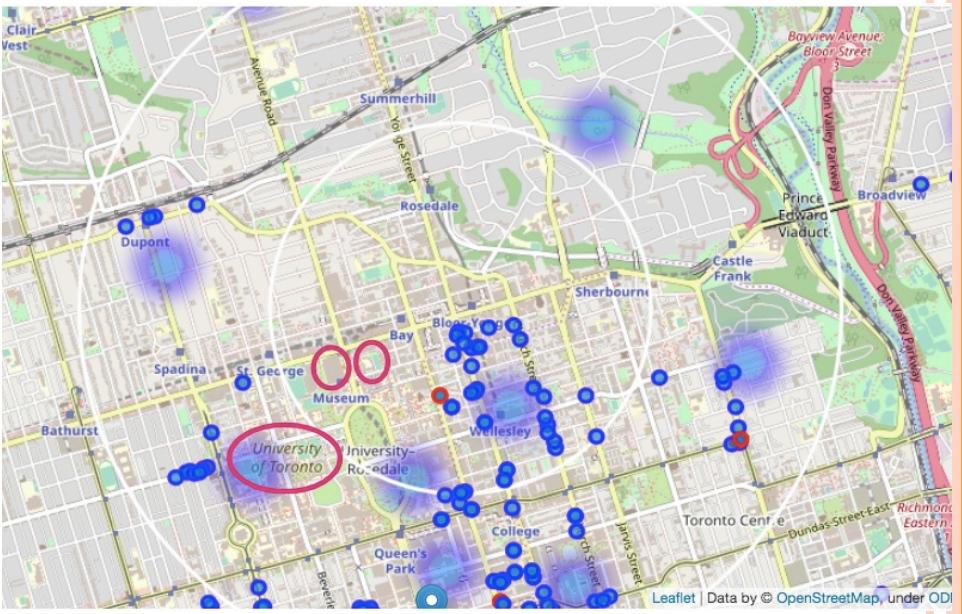
Chinese Restaurants



Population



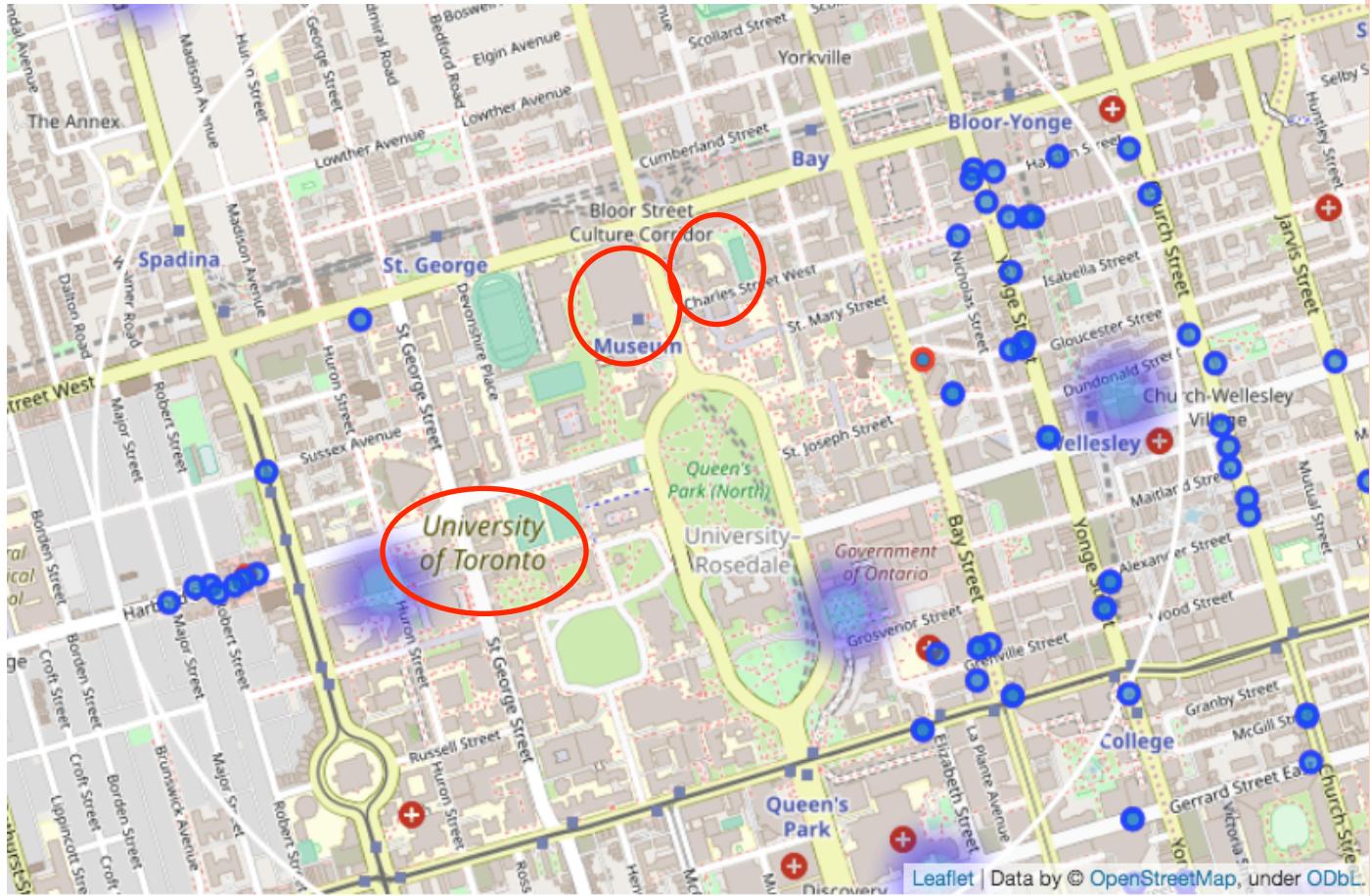
Let's zoom in to this area:



Special locations:

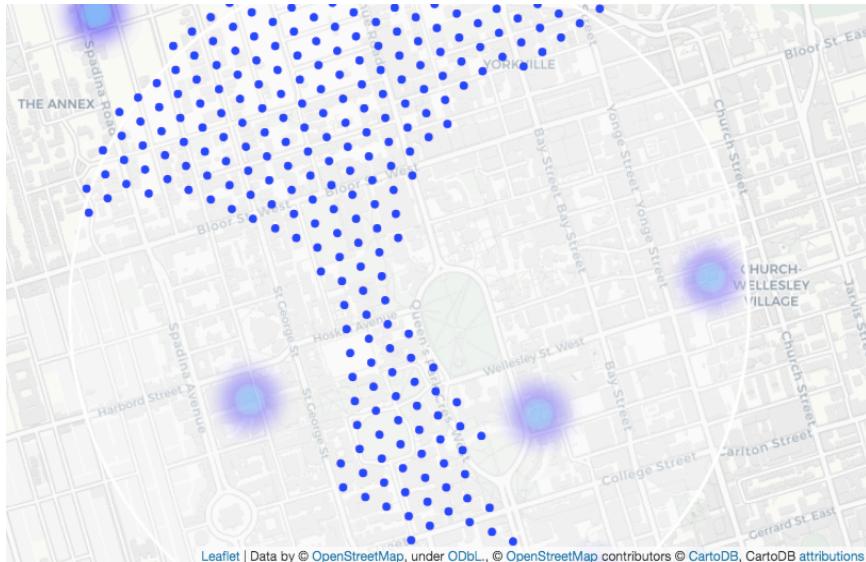
- University of Toronto
- Royal Ontario Museum
- Gardiner Museum

Means high population of students and tourisms



LOCATIONS

- Less than 2 restaurants in 500 meters
- No Chinese restaurant within 800 meters



CLUSTERING

- Cluster those locations to 15 clusters



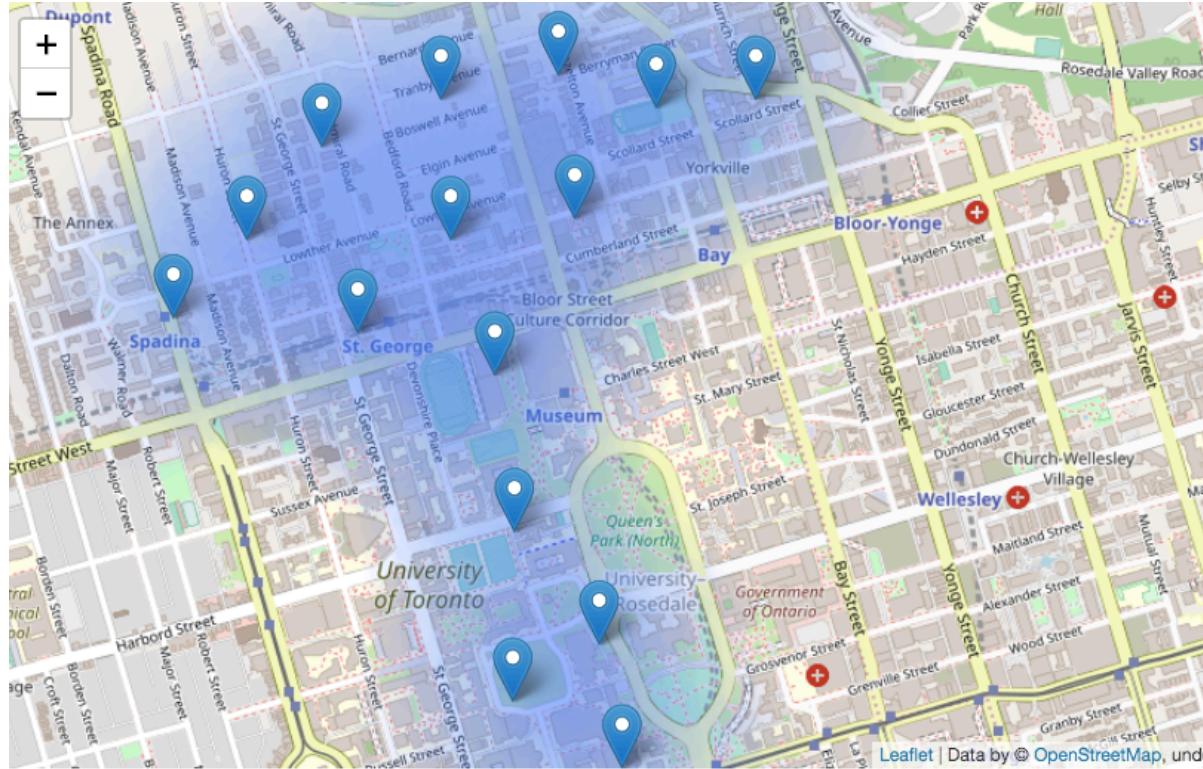
RESULTS

Addresses of centers of areas recommended for further analysis:

565 Huron St, Toronto, Ontario, M5R 2R6	=> 2.9km from Downtown, Toronto
13 Hoskin Ave, Toronto, Ontario, M5S	=> 1.8km from Downtown, Toronto
76 Hazelton Ave, Toronto, Ontario, M5R 2E2	=> 3.0km from Downtown, Toronto
160 College St, Toronto, Ontario, M5S 3E1	=> 1.0km from Downtown, Toronto
139 St George St, Toronto, Ontario, M5R 2L8	=> 2.5km from Downtown, Toronto
Amaya Express	=> 2.9km from Downtown, Toronto
34 Boswell Ave, Toronto, Ontario, M5R 1M4	=> 3.0km from Downtown, Toronto
23 Bedford Rd, Toronto, Ontario, M5R 2J9	=> 2.6km from Downtown, Toronto
58-98 King's College Cir, Toronto, Ontario, M5S	=> 1.3km from Downtown, Toronto
273 Bloor St W, Toronto, Ontario, M5S 1W2	=> 2.2km from Downtown, Toronto
135 Yorkville Ave, Toronto, Ontario, M5R 0C7	=> 2.6km from Downtown, Toronto
Queen's Park Cres W, Toronto, Ontario, M5S	=> 1.3km from Downtown, Toronto
38 Admiral Rd, Toronto, Ontario, M5R 2L5	=> 3.1km from Downtown, Toronto
39 Spadina Rd, Toronto, Ontario, M5R 2S9	=> 2.9km from Downtown, Toronto
88 Scollard St, Toronto, Ontario, M5R 1G2	=> 2.9km from Downtown, Toronto



MAP OF RESULTS



CONCLUSION

- These 15 locations are just the start for further research.
- Additional factors like attractiveness of each location (proximity to park or water), levels of noise / proximity to major roads, real estate availability, prices, social and economic dynamics of every neighborhood, also need to be considered when making final decision.

