

# THE BATTLE OF NEIGHBOURHOODS

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8 October 2018

# Introduction and Business Problem

- Background:
  - An investor wants to set up a modern mid-priced Chinese restaurant within the downtown area in Toronto
- Target Customers :
  1. People who work in the area (for weekday lunch and dinner)
  2. People who live within the vicinity (for weekday dinner and weekend meals)
- Key Concerns:
  1. Competition from other Chinese restaurants
  2. Customer traffic based on venue mix
- Business Problem:
  - Recommend most suitable neighbourhood to set up restaurant

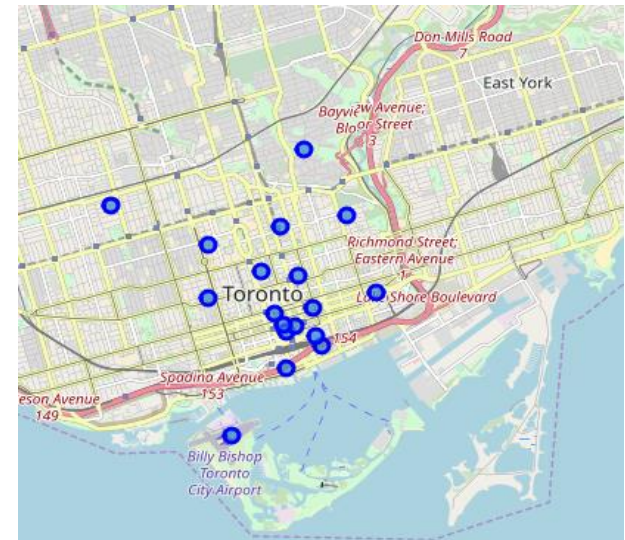
# Data

- Location Data for Toronto
  - From previous assignment.
- FourSquare Data
  - To understand the top venues in each neighbourhood, determine their mix and characteristics, as well as the presence of Chinese restaurants
  - To perform search queries to get the overall rating for specific Chinese restaurants to determine competition strength (if needed).

# Methodology

- Load Location Data for Toronto and Subset to “Downtown Toronto”

	Postcode	Borough	Neighborhood	Latitude	Longitude
0	M5A	Downtown Toronto	Harbourfront, Regent Park	43.654260	-79.360636
1	M5B	Downtown Toronto	Ryerson, Garden District	43.657162	-79.378937
2	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418
3	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306
4	M5G	Downtown Toronto	Central Bay Street	43.657952	-79.387383
5	M6G	Downtown Toronto	Christie	43.669542	-79.422564
6	M5H	Downtown Toronto	Adelaide, King, Richmond	43.650571	-79.384568
7	M5J	Downtown Toronto	Harbourfront East, Toronto Islands, Union Station	43.640816	-79.381752
8	M5K	Downtown Toronto	Design Exchange, Toronto Dominion Centre	43.647177	-79.381576
9	M5L	Downtown Toronto	Commerce Court, Victoria Hotel	43.648198	-79.379817
10	M5S	Downtown Toronto	Harbord, University of Toronto	43.662696	-79.400049
11	M5T	Downtown Toronto	Chinatown, Grange Park, Kensington Market	43.653206	-79.400049
12	M5V	Downtown Toronto	CN Tower, Bathurst Quay, Island airport, Harbo...	43.628947	-79.394420
13	M4W	Downtown Toronto	Rosedale	43.679563	-79.377529
14	M5W	Downtown Toronto	Stn A PO Boxes 25 The Esplanade	43.646435	-79.374846
15	M4X	Downtown Toronto	Cabbagetown, St. James Town	43.667967	-79.367675
16	M5X	Downtown Toronto	First Canadian Place, Underground city	43.648429	-79.382280
17	M4Y	Downtown Toronto	Church and Wellesley	43.665860	-79.383160



# Methodology

- Use FourSquare API to Get Top Venues in Each Neighbourhood in “Downtown Toronto”
  - Retrieve top 100 venues within 1km radius in each of the 18 neighbourhoods.
- Eliminate Neighbourhoods Based on Filters
  1. Less than 100 venues retrieved – Suggests neighbourhoods may be too quiet with insufficient potential customer base for the restaurant.
  2. Presence of Chinese restaurants – Addresses the competition concern of the investor. With only several neighbourhoods having a Chinese restaurant, we can exclude them.
  3. Presence of hotels – Neighbourhood with higher number of hotels preferred as they would be a good potential customer base. Hotels are a proxy for people who live in the area.
- Shortlist Final 3 Neighbourhoods
  - Explore mix of the top 100 venues within each neighbourhood to determine the diversity of activities, paying attention to venue categories that could boost customer traffic.
- Recommend 1 Neighbourhood
  - Additionally, perform cluster analysis to determine if there was any particular location within the neighbourhood that may stand out in terms of density of venues.

# Results (1/4)

- Applying the set of filters to the top 100 venues within 1km in each neighbourhood in “Downtown Toronto”, we progressively dropped neighbourhoods from the initial list of 18 neighbourhoods
  - 3 of the 18 neighbourhoods had fewer than 100 venues retrieved

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue
Adelaide, King, Richmond	100	100	100
Berczy Park	100	100	100
CN Tower, Bathurst Quay, Island airport, Harbourfront West, King and Spadina, Railway Lands, South Niagara	16	16	16
Cabbagetown, St. James Town	42	42	42
Central Bay Street	100	100	100
Chinatown, Grange Park, Kensington Market	100	100	100
Christie	100	100	100
Church and Wellesley	100	100	100
Commerce Court, Victoria Hotel	100	100	100
Design Exchange, Toronto Dominion Centre	100	100	100
First Canadian Place, Underground city	100	100	100
Harbord, University of Toronto	100	100	100
Harbourfront East, Toronto Islands, Union Station	100	100	100
Harbourfront, Regent Park	100	100	100
Rosedale	22	22	22
Ryerson, Garden District	100	100	100
St. James Town	100	100	100
Stn A PO Boxes 25 The Esplanade	100	100	100

# Results (2/4)

- 6 of remaining 15 neighbourhoods had at least one Chinese restaurant

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue
Central Bay Street	2	2	2
Chinatown, Grange Park, Kensington Market	3	3	3
Christie	1	1	1
Church and Wellesley	1	1	1
Harbourfront East, Toronto Islands, Union Station	1	1	1
Ryerson, Garden District	1	1	1

- 2 of remaining 9 neighbourhoods did not have a hotel
- On the other hand, 3 neighbourhoods had 8 or more hotels

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue
Adelaide, King, Richmond	5	5	5
Berczy Park	6	6	6
Commerce Court, Victoria Hotel	8	8	8
Design Exchange, Toronto Dominion Centre	10	10	10
First Canadian Place, Underground city	8	8	8
St. James Town	5	5	5
Stn A PO Boxes 25 The Esplanade	5	5	5

# Results (3/4)

- Remaining 3 Neighbourhoods for Consideration
  1. Commerce Court, Victoria Hotel
  2. Design Exchange, Toronto Dominion Centre
  3. First Canadian Place, Underground city
- No Distinct Differences in Venue Mix in Each Remaining Neighbourhood

## ----Commerce Court, Victoria Hotel----

	venue	freq
0	Hotel	0.08
1	Coffee Shop	0.08
2	Café	0.06
3	Restaurant	0.05
4	Italian Restaurant	0.04
5	Gastropub	0.04
6	Steakhouse	0.03
7	American Restaurant	0.03
8	Deli / Bodega	0.03
9	Concert Hall	0.03
10	Cocktail Bar	0.02
11	Thai Restaurant	0.02
12	Japanese Restaurant	0.02
13	Gym	0.02
14	Farmers Market	0.02
15	Theater	0.02
16	Bakery	0.02
17	Bar	0.02
18	Pub	0.01
19	Lounge	0.01

## ----Design Exchange, Toronto Dominion Centre----

	venue	freq
0	Hotel	0.10
1	Café	0.06
2	Coffee Shop	0.06
3	Steakhouse	0.04
4	Italian Restaurant	0.04
5	Restaurant	0.03
6	Concert Hall	0.03
7	American Restaurant	0.03
8	Deli / Bodega	0.03
9	Sports Bar	0.02
10	Plaza	0.02
11	Park	0.02
12	Monument / Landmark	0.02
13	Japanese Restaurant	0.02
14	Gym	0.02
15	Thai Restaurant	0.02
16	Gastropub	0.02
17	Lounge	0.02
18	Theater	0.02
19	Bakery	0.02

## ----First Canadian Place, Underground city----

	venue	freq
0	Hotel	0.08
1	Café	0.07
2	Coffee Shop	0.07
3	Steakhouse	0.04
4	Restaurant	0.04
5	American Restaurant	0.04
6	Italian Restaurant	0.03
7	Deli / Bodega	0.03
8	Theater	0.03
9	Japanese Restaurant	0.02
10	Concert Hall	0.02
11	Bar	0.02
12	Gym	0.02
13	Gastropub	0.02
14	Bakery	0.02
15	Thai Restaurant	0.02
16	Sushi Restaurant	0.02
17	Sports Bar	0.01
18	Noodle House	0.01
19	Lounge	0.01



# Results (4/4)

- Recommend “Design Exchange, Toronto Dominion Centre” Neighbourhood
  - Highest concentration of hotels, which is a key source of customer traffic for the restaurant.

# Discussion

- Our step-by-step elimination process based on an interpretation of the investor's criteria reduced the initial 18 neighbourhoods to a final 3 shortlisted neighbourhoods.
- Among these 3 remaining neighbourhoods, there was no distinct difference in terms of venue mix. Summary of the key venue categories is shown below.
  - Commerce Court, Victoria Hotel -- Hotel (8), Concert Hall (3), Gym(2), Farmer's Market (2), Theatre (2)
  - Design Exchange, Toronto Dominion Centre -- Hotel (10), Concert Hall (3), Park (2), Gym (2), Theatre (2)
  - First Canadian Place, Underground city -- Hotel (8), Theatre (3), Concert Hall (2), Gym (2)
- If we were limited to just one neighbourhood, our neighbourhood pick would be “Design Exchange, Toronto Dominion Centre”, which had the highest number of hotels.
  - We further applied cluster analysis based on the top 100 venues within this neighbourhood, but did not find clear distinction between clusters. Hence, we recommend an on-site visit to scout for suitable premises for the restaurant.

# Conclusion

- Starting from 18 neighbourhoods in Downtown Toronto borough, we methodically narrowed the list down to a final 3 neighbourhoods using the investor's requirements and concerns as a guide.
- Eventually, the recommended choice of “Design Exchange, Toronto Dominion Centre” for setting up the restaurant came down to the higher concentration of hotels in this neighbourhood compared to the other 2 choices.
- Cluster analysis did not reveal any discerning patterns within the recommended neighbourhood, so an on-site visit to identify potential premises for the restaurant is the next suggested step, along with further due diligence work.