

# Coursera Applied Data Science Capstone

⟨Analyze Starbucks in Toronto⟩

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# Introduction

- Starbucks Corporation is an American coffee company and coffeehouse chain.
- As of early 2019, Starbucks operates over 30,000 locations worldwide.
- Because of its popularity, well-developed business districts can be developed after Starbucks coffee shops were created.
- Storekeepers and house hunters in Toronto can consider locations of Starbucks coffee shops when they find commercial districts.



# Data Preparation

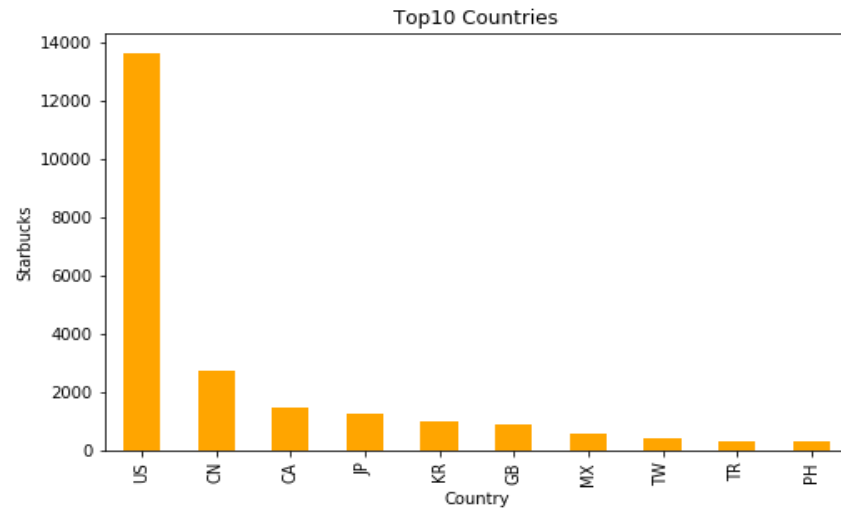
## Data Information

- Three datasets are used for data analysis.
- 'Starbucks.csv' includes a record for every Starbucks or subsidiary store location currently in operation as of February 2017. This data was scraped from the Starbucks store locator webpage by Github user Chrismeller.
- Two data sets relevant to 'Neighborhoods in Toronto' are scraped from Wikipedia page and downloaded from 'https://cocl.us/Geospatial\_data.'

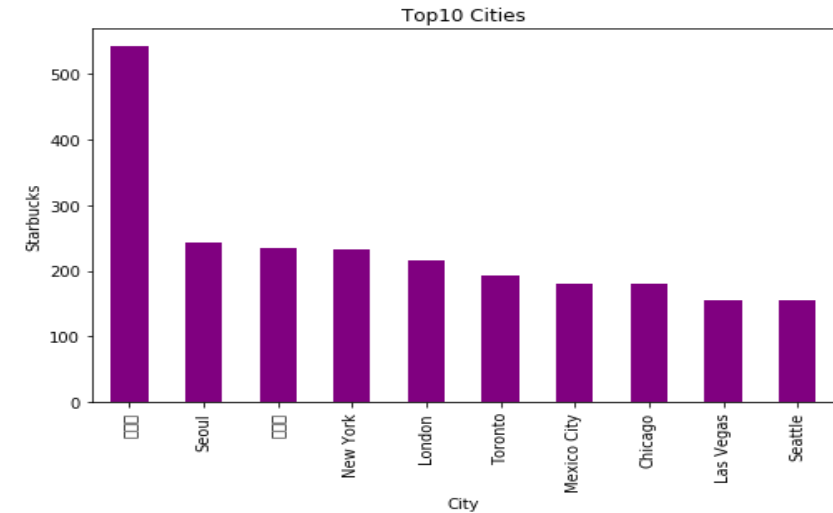
# Data Preparation

Starbucks.csv

## Top10 Countries



## Top10 Cities



# Data Preparation

## Cleaning Data

### Starbucks

- Drop unnecessary columns
- Convert NaN to the blank
- Add country name and country code

### Neighborhoods

- Delete incomplete data and merge cells
- Rename specific columns
- Merge two dataframes

# Data Analysis

## Toronto Datasets

	Brand	Store Name	Ownership Type	Street Address	City	State/Province	Postcode	Longitude	Latitude	CountryName	CountryCode
563	Starbucks	Church & Gerrard	Company Owned	66 Gerrard Street East	Toronto	ON	M5B 1G3	-79.38	43.66	Canada	CAN
564	Starbucks	Dundas & Roncesvalles	Company Owned	2201 Dundas Street West	Toronto	ON	M6R 1X5	-79.45	43.65	Canada	CAN
565	Starbucks	Dundas & Aukland	Company Owned	5251 Dundas Street West	Toronto	ON	M9B 1B2	-79.54	43.64	Canada	CAN
566	Starbucks	University of Toronto/Toronto/Medic	Licensed	1 King's College Circle	Toronto	ON	M5S 1A8	-79.4	43.66	Canada	CAN
567	Starbucks	250 Queen St. W.	Company Owned	250 Queen Street West	Toronto	ON	M5V 1Z7	-79.39	43.65	Canada	CAN

	Postcode	Borough	Neighbourhood	Latitude	Longitude
37	M4E	East Toronto	The Beaches	43.676357	-79.293031
41	M4K	East Toronto	The Danforth West, Riverdale	43.679557	-79.352188
42	M4L	East Toronto	The Beaches West, India Bazaar	43.668999	-79.315572
43	M4M	East Toronto	Studio District	43.659526	-79.340923
44	M4N	Central Toronto	Lawrence Park	43.728020	-79.388790

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# Data Analysis

## Maps

- Three maps are used for data analysis.
  - a. 'Location of Starbucks in Toronto'
  - b. 'Location of Neighborhoods in Toronto'
  - c. 'Location of Clusters of Neighborhoods in Toronto'

# Data Analysis

## Venues

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
The Beaches	43.676357	-79.293031	Glen Manor Ravine	43.676821	-79.293942	Trail
The Beaches	43.676357	-79.293031	The Big Carrot Natural Food Market	43.678879	-79.297734	Health Food Store
The Beaches	43.676357	-79.293031	Grover Pub and Grub	43.679181	-79.297215	Pub
The Beaches	43.676357	-79.293031	Upper Beaches	43.680563	-79.292869	Neighborhood
The Danforth West, Riverdale	43.679557	-79.352188	Pantheon	43.677621	-79.351434	Greek Restaurant

	Neighbourhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Adelaide, King, Richmond	Coffee Shop	Restaurant	Café	Bar	Bakery	Office	Pizza Place	Clothing Store	Hotel	Sushi Restaurant
1	Berczy Park	Coffee Shop	Cocktail Bar	Cheese Shop	Café	Bakery	Restaurant	Beer Bar	Farmers Market	Seafood Restaurant	Shopping Mall
2	Brookton, Exhibition Place, Parkdale Village	Café	Breakfast Spot	Coffee Shop	Yoga Studio	Grocery Store	Pet Store	Performing Arts Venue	Nightclub	Italian Restaurant	Intersection
3	Business Reply Mail Processing Centre 969 Eastern	Light Rail Station	Auto Workshop	Comic Shop	Pizza Place	Recording Studio	Restaurant	Burrito Place	Brewery	Skate Park	Spa
4	CN Tower, Bathurst Quay, Island airport, Harbo...	Airport Lounge	Airport Terminal	Boat or Ferry	Sculpture Garden	Airport	Airport Food Court	Airport Gate	Airport Service	Coffee Shop	Rental Car Location

# Data Analysis

## Graphs

- Four graphs are used for data analysis.
  - a. 'Graph of 1<sup>st</sup> Most Common Venues in Toronto'
  - b. 'Graph of 2<sup>nd</sup> Most Common Venues in Toronto',
  - c. 'Graph of 3<sup>rd</sup> Most Common Venues in Toronto'
  - d. 'Graph of top 10 postcodes of Starbucks in Toronto.'

# Results

Starbucks.csv

- The number of Starbucks coffee shops in the world is 25600.
- Some columns(such as 'Post code', 'Phone Number', 'City' and so on) have incomplete data.
- Starbucks coffee shops are located in 73 countries and 5470 cities.
- '上海市' city and 'US' country have the greatest number of Starbucks coffee shops.
- Ownership of the most Starbucks coffee shops is 'Company Owned.'

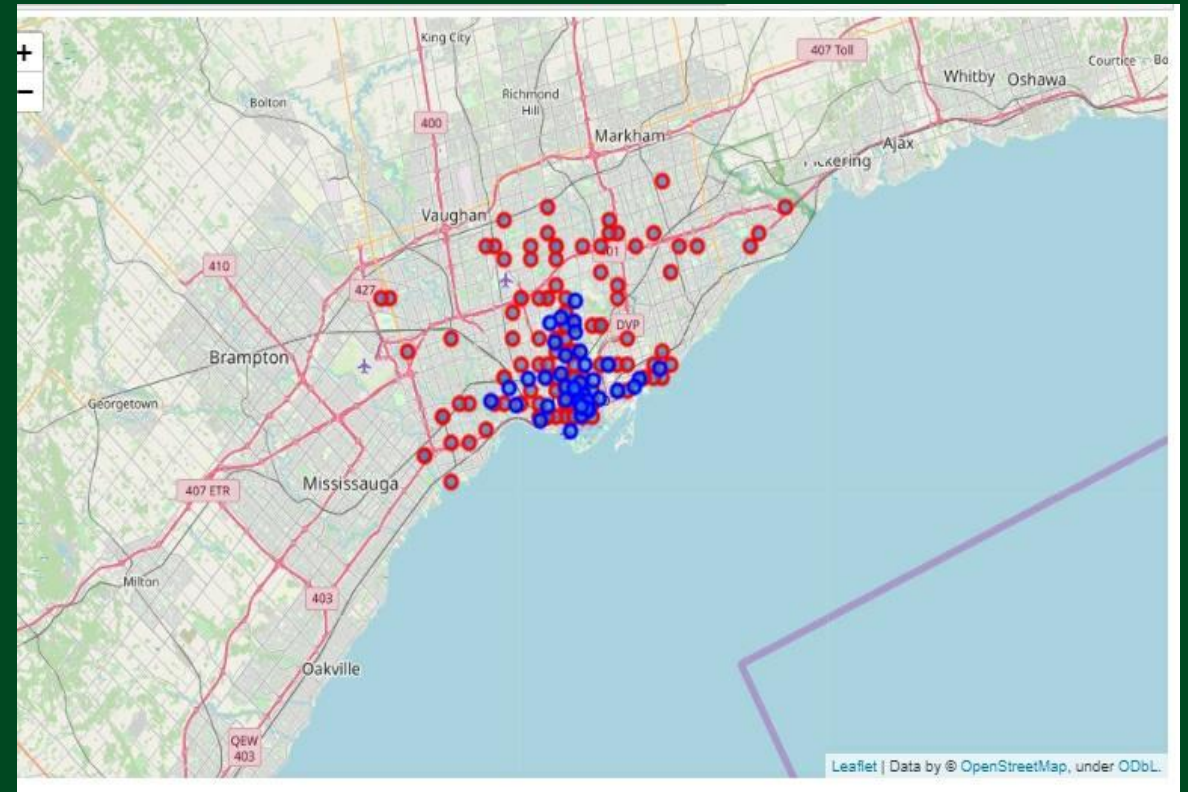
# Results

Location

## Starbucks and Clustered Neighborhoods



## Starbucks and Neighborhoods

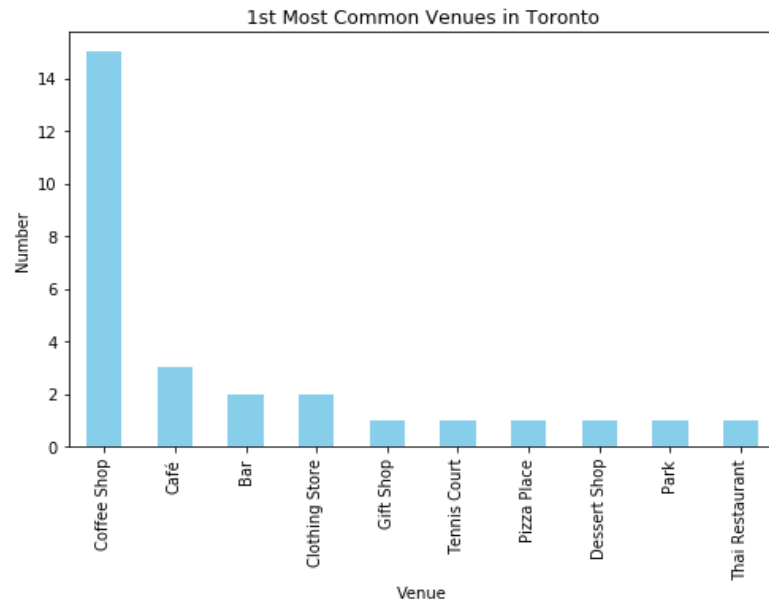




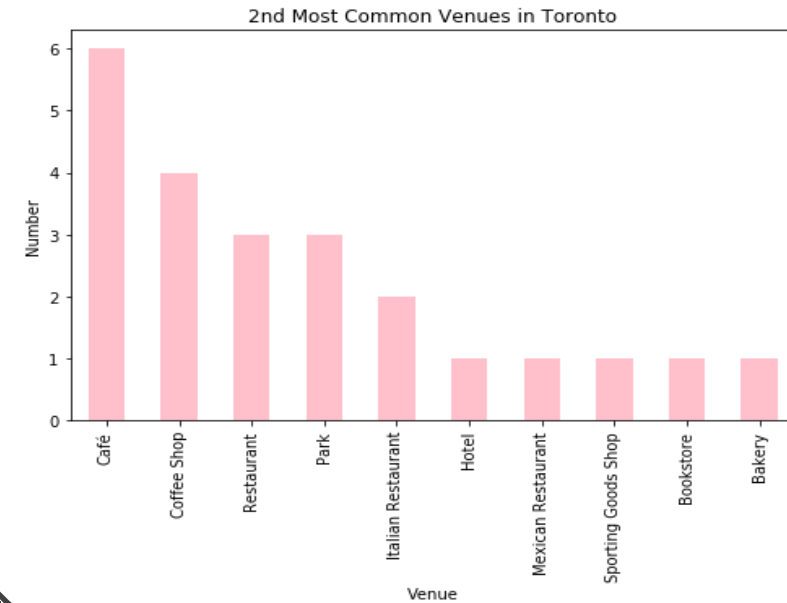
# Results

## Graphs

### 1<sup>st</sup> Most Common Venues



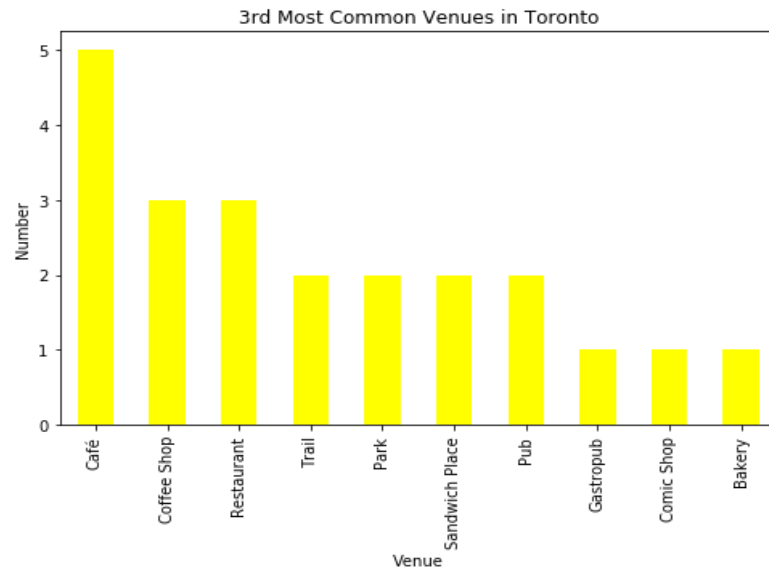
### 2<sup>nd</sup> Most Common Venues



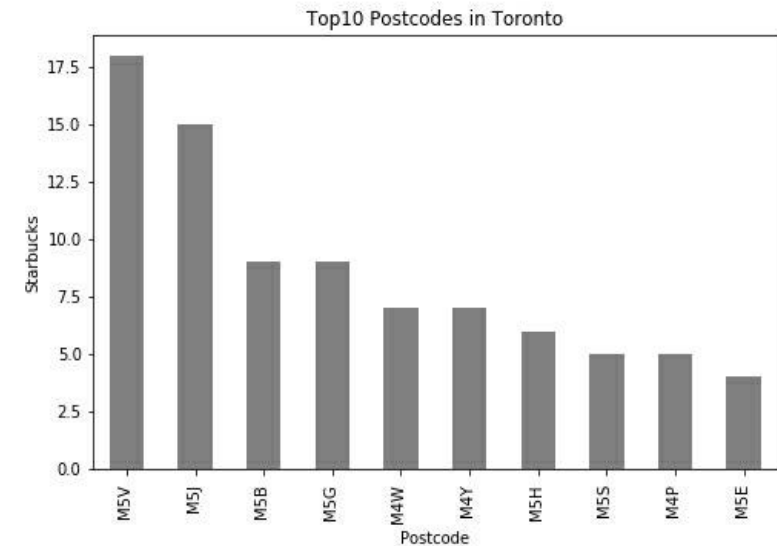
# Results

## Graphs

### 3<sup>rd</sup> Most Common Venues



### Top10 Postcodes



# Discussion

What is the most common venue in Toronto?

- In the '1<sup>st</sup> Most Common Venues in Toronto', the number of 'Coffee Shop' is 15, and the number of 'Café' is 3. In the 'Graph of 2<sup>nd</sup> Most Common Venues in Toronto', the number of 'Café' is 6, and the number of 'Coffee Shop' is 4. In the 'Graph of 3<sup>rd</sup> Most Common Venues in Toronto', the number of 'Café' is 5, and the number of 'Coffee Shop' is 3.

As a result, Coffee shop is the most common venue in Toronto, and second one is Café.



# Discussion

What are similarities and differences between these locations?

- Starbucks coffee shops are located in Toronto more extensively comparing to locations of neighborhoods. Locations of Starbucks coffee shops are concentrated in that area where most of neighborhoods are located in.

Starbucks coffee shops are generally located in the area where most of neighborhoods are located in.

# Conclusion

Coffee shops and Cafés, including Starbucks coffee shops may be located in downtown or crowded district of Toronto. Therefore, house hunters and storekeepers can consider locations of Starbucks coffee shops when they want to get information about all the neighborhoods and commercial districts in Toronto. However, some of Starbucks coffee shops in Toronto are not located in the crowded districts.

For these reasons, we should use other figures, such as 'neighborhoods in Toronto', as a reference to get more precise information.