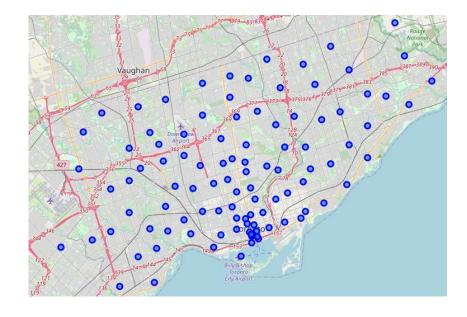
Toronto Venue Clusters

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Identifying Commercial Trends

- Understanding where people go and where existing stores are can help with furthering commercial operations and expansions.
- By taking a glimpse into existing venue data and applying Machine Learning practices, we can extract insight from public venue data.
- With further analysis, more data points can be provided to make better decisions

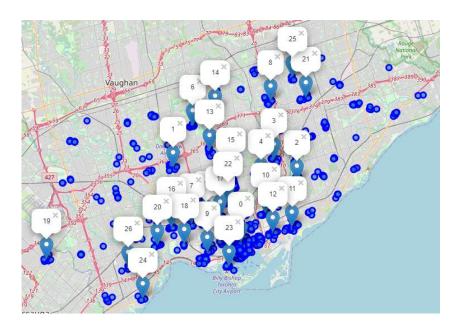


Data Sources and Data Wrangling

- ► General location information to gather meaningful naming such as borough and neighborhood was scraped from Wikipedia.
- General location sourced longitude and latitude was sourced from Coursera documentation
- Venue spatial information and venue categorization was queried using Foursquare's public API.
- All records with no values or duplicates were removed to not pollute the data set.
- One hot encoding was utilized to count and evaluate venue categorizations.

General Clustered Results

Spatial Clusters



Cluster Top Venues

(Provided in Appendix)

5th Most Common Venue	4th Most Common Venue	3rd Most Common Venue	2nd Most Common Venue	1st Most Common Venue	Clus_Db
Japanese Restaurant	Restaurant	Hotel	Café	Coffee Shop	
Miscellaneous Shop	Coffee Shop	Accessories Store	Furniture / Home Store	Clothing Store	
Intersection	Bank	Flea Market	Gym / Fitness Center	Pizza Place	
Art Gallery	Coffee Shop	Beer Store	Restaurant	Gym	
Restaurant	Bank	Burger Joint	Sporting Goods Shop	Coffee Shop	
Coffee Shop	Baby Store	Park	Café	Grocery Store	
Middle Eastern Restaurant	Restaurant	Pet Store	Coffee Shop	Bank	
Bar	Furniture / Home Store	Coffee Shop	Pharmacy	Bakery	
Japanese Restaurant	Restaurant	Fast Food Restaurant	Coffee Shop	Clothing Store	
Vegetarian / Vegan Restaurant	Restaurant	Coffee Shop	Café	Bar	
Furniture / Home Store	Restaurant	Italian Restaurant	Coffee Shop	Greek Restaurant	
Light Rail Station	Restaurant	Park	Pizza Place	Fast Food Restaurant	
American Restaurant	Gastropub	Bakery	Brewery	Coffee Shop	
Comfort Food Restaurant	Spa	Sandwich Place	Coffee Shop	Italian Restaurant	
Coffee Shop	Café	Sandwich Place	Shopping Mall	Ramen Restaurant	
Dessert Shop	Café	Sandwich Place	Coffee Shop	Pizza Place	
Flea Market	Restaurant	Thai Restaurant	Café	Mexican Restaurant	
BBQ Joint	History Museum	Coffee Shop	Café	Sandwich Place	
Movie Theater	Eastern European Restaurant	Coffee Shop	Gift Shop	Breakfast Spot	
Fried Chicken Joint	Gas Station	Burrito Place	Hotel	Coffee Shop	
Italian Restaurant	Pizza Place	Sushi Restaurant	Coffee Shop	Café	
Noodle House	Gas Station	Fast Food Restaurant	Pizza Place	Pharmacy	
Bagel Shop	Pizza Place	Bank	Sushi Restaurant	Coffee Shop	
Bar	Harbor / Marina	Boutique	Airport Lounge	Airport Service	
Fried Chicken Joint	Liquor Store	Mexican Restaurant	Coffee Shop	Pizza Place	24
Electronics Store	Supermarket	Fast Food Restaurant	Coffee Shop	Pizza Place	
Supplement Shop	Burger Joint	Fast Food Restaurant	Thrift / Vintage Store	Hardware Store	

Conclusion and Future Analysis

- ▶ It is clear that restaurants, pizza places, and coffee shops thrive in Toronto. Desire to open any of these shows general success. Perhaps identifying clusters that do not contain these as top 5 venues would generate more revenue due to lack of spatial competition.
- Nightlife, art and entertainment is generally missing. An untapped market that could potentially need evolution to thrive.
- Bars, retail stores, parks, and bakeries generally do well. Seems to be a market that could be disrupted.
- Additional analysis with customer data, travel data, revenue, and ratings could drastically increase the value of this report.

Thank you

Appendix A

Clus_Db	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Coffee Shop	Café	Hotel	Restaurant	Japanese Restaurant
1	Clothing Store	Furniture / Home Store	Accessories Store	Coffee Shop	Miscellaneous Shop
2	Pizza Place	Gym / Fitness Center	Flea Market	Bank	Intersection
3	Gym	Restaurant	Beer Store	Coffee Shop	Art Gallery
4	Coffee Shop	Sporting Goods Shop	Burger Joint	Bank	Restaurant
5	Grocery Store	Café	Park	Baby Store	Coffee Shop
6	Bank	Coffee Shop	Pet Store	Restaurant	Middle Eastern Restaurant
7	Bakery	Pharmacy	Coffee Shop	Furniture / Home Store	Bar
8	Clothing Store	Coffee Shop	Fast Food Restaurant	Restaurant	Japanese Restaurant
9	Bar	Café	Coffee Shop	Restaurant	Vegetarian / Vegan Restaurant
10	Greek Restaurant	Coffee Shop	Italian Restaurant	Restaurant	Furniture / Home Store
11	Fast Food Restaurant	Pizza Place	Park	Restaurant	Light Rail Station
12	Coffee Shop	Brewery	Bakery	Gastropub	American Restaurant
13	Italian Restaurant	Coffee Shop	Sandwich Place	Spa	Comfort Food Restaurant
14	Ramen Restaurant	Shopping Mall	Sandwich Place	Café	Coffee Shop
15	Pizza Place	Coffee Shop	Sandwich Place	Café	Dessert Shop
16	Mexican Restaurant	Café	Thai Restaurant	Restaurant	Flea Market
17	Sandwich Place	Café	Coffee Shop	History Museum	BBQ Joint
18	Breakfast Spot	Gift Shop	Coffee Shop	Eastern European Restaurant	Movie Theater
19	Coffee Shop	Hotel	Burrito Place	Gas Station	Fried Chicken Joint
20	Café	Coffee Shop	Sushi Restaurant	Pizza Place	Italian Restaurant
21	Pharmacy	Pizza Place	Fast Food Restaurant	Gas Station	Noodle House
22	Coffee Shop	Sushi Restaurant	Bank	Pizza Place	Bagel Shop
23	Airport Service	Airport Lounge	Boutique	Harbor / Marina	Bar
24	Pizza Place	Coffee Shop	Mexican Restaurant	Liquor Store	Fried Chicken Joint
25	Pizza Place	Coffee Shop	Fast Food Restaurant	Supermarket	Electronics Store
26	Hardware Store	Thrift / Vintage Store	Fast Food Restaurant	Burger Joint	Supplement Shop

