Where to Find Ethnic Cuisines in Toronto: An IBM Data Science Capstone Project

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Introduction and Business Problem

Toronto is one of the most multicultural cities in North America. There is a vast selection of cuisine available to you wherever you are in the city.

If you're craving Italian food, where should you go? Where should you go if you want Chinese food?

This analysis aims to cluster restaurants based on the type of cuisine so you know where to go if you're looking for a specific type of food.

Data Requirements

This project will use the Foursquare API to pull data like:

- Venue Name
- Venue Location
- Venue Category
- Venue Rating

Cuisine was derived from the Venue Category data, with focus on ethnicity. Venues categorized into generic food categories like "Burgers" or "Coffee Shop" are excluded.

It will also leverage data from Wikipedia on Toronto's Boroughs (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada: M) and location data (longitude and latitude) from http://cocl.us/Geospatial_data

Methodology

1. Use Wikipedia and Geospatial data to pull location details of of the city - ie: Latitude, Longitude
2. Use Foursquare data to pull Venue data
3. Use k-means to cluster restaurants based on type of cuisine

Results

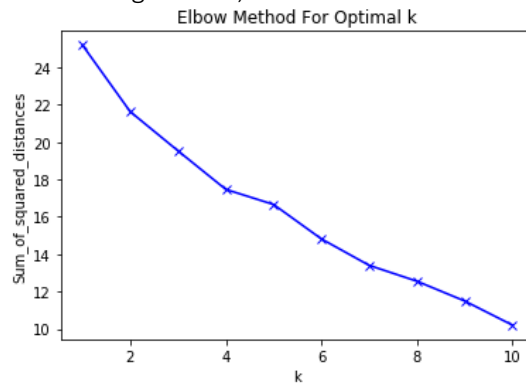To determine the number of clusters to generate, the Elbow Method was used:

Figure 1

While there is no clear elbow like one would expect, we can see that the sum of squared distances has the flattest slope at k = 5. Thus, 5 clusters were generated using the k-means algorithm.

There are 103 neighborhoods in the Toronto dataset from Wikipedia.

Figure 2

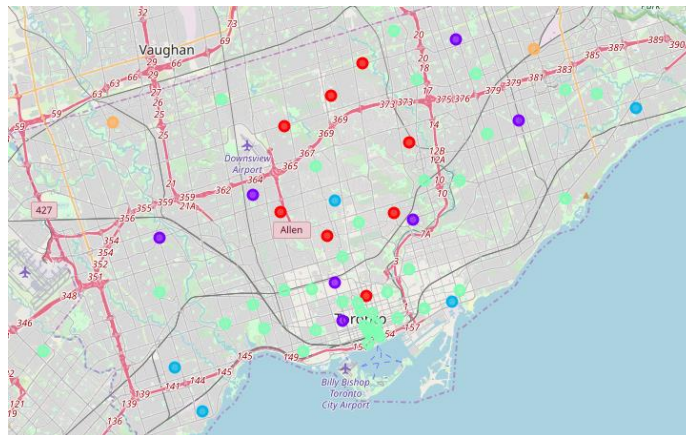After selecting neighborhoods that were near ethnic restaurants, 60 neighborhoods remained and were clustered:

Figure 3

Discussion

Based on the clusters generated by the k-means algorithm, these are the cuisines and what neighborhood to find them.

Cluster 1: Japanese Restaurants North of the Downtown Core

Borough	Neighbourhood	Restaurants
Central Toronto	Forest Hill North,Forest Hill West	Nikko Sushi Japenese Restaurant
Downtown Toronto	Church and Wellesley	Kawa Sushi, Onnki Donburi, Okonomi House, Kokoni Izakaya, Sansotei Ramen, Tokyo Sushi, Wow! Sushi, Sushi Box, Rolltation, Asahi Sushi
East York	Leaside	Kintako Japanese Restaurant
North York	Bathurst Manor,Downsview North,Wilson Heights	Wakame Sushi
North York	Bayview Village	Kaga Sushi
North York	Don Mills North	Gonoe Sushi
North York	Glencairn	Miyako Sushi Restaurant
North York	Willowdale South	Wako Sushi + Bar, Konjiki Ramen, KINTON RAMEN, Ajisen Ramen, Aburi Room, Ichiban Sushi House, PROJECT:FISH

These neighborhoods are the red in Figure 3.

Cluster 2: Chinese Restaurants

Borough	Neighbourhood	Restaurants
Downtown Toronto	Chinatown,Grange Park,Kensington Market	Swatow Restaurant, New Sky Restaurant, Rosewood Chinese Cuisine, House of Gourmet, Asian Legend, Dim Sum King Seafood Restaurant, Dumpling House, Juicy Dumpling, Yummy Yummy Dumpling, Mother's Dumplings
Etobicoke	Westmount	Mayflower Chinese Food
Scarborough	Dorset Park,Scarborough Town Centre,Wexford Heights	Kim Kim restaurant
Scarborough	L'Amoreaux West	Mr Congee Chinese Cuisine, Phoenix Restaurant

These neighborhoods are the purple in Figure 3.

Cluster 3: Mexican Restaurants

Borough	Neighbourhood	Restaurants
Central Toronto	North Toronto West	Tio's Urban Mexican
East Toronto	Business Reply Mail Processing Centre 969 Eastern	Chino Locos
Etobicoke	Humber Bay Shores,Mimico South,New Toronto	Hex-Mex
Etobicoke	Kingsway Park South West,Mimico NW,The Queensway West,Royal York South West,South of Bloor	Burrito Boyz
Scarborough	Guildwood,Morningside,West Hil	Big Bite Burrito

These neighborhoods are the light blue in Figure 3.

Cluster 4: Japanese & Italian Restaurants in Downtown Toronto

Italian

Borough	Neighbourhood	Restaurants
Downtown Toronto	Adelaide,King,Richmond	Mercatto
North York	Bedford Park,Lawrence Manor East	Francobollo,Il Fornaro
Downtown Toronto	Berczy Park	The Old Spaghetti Factory
West Toronto	Brockton,Exhibition Place,Parkdale Village	Caffino
Downtown Toronto	Cabbagetown,St. James Town	F'Amelia, Hey Lucy
Downtown Toronto	Central Bay Street	Mercatto, Scaddabush Italian Kitchen & Bar, Sambuca Grill, Tosto
Downtown Toronto	Christie	Vinny's Panini
Scarborough	Clarks Corners,Sullivan,Tam O'Shanter	Remezzo Italian Bistro
Downtown Toronto	Commerce Court,Victoria Hotel	Mercatto, Terroni, Carisma
Central Toronto	Davisville	Florentia Ristorante, Positano
Downtown Toronto	Design Exchange,Toronto Dominion Centre	Amano Pasta, Scaddabush Italian Kitchen & Bar, TOCA, Mercatto
Downtown Toronto	First Canadian Place,Underground city	Mercatto
North York	Flemingdon Park,Don Mills South	Sorento Restaurant
Downtown Toronto	Harbord,University of Toronto	Piano Piano, Daddyo's
Downtown Toronto	Harbourfront	Archeo
Downtown Toronto	Harbourfront East,Toronto Islands,Union Station	Taverna Mercatto, Amano Pasta, Piazza Manna, Aria Ristorante
West Toronto	High Park,The Junction South	nodo
West Toronto	Little Portugal,Trinity	Ufficio
West Toronto	Parkdale,Roncesvalles	Domani Restaurant & Wine Bar
Downtown Toronto	Queen's Park	Mercatto
West Toronto	Runnymede,Swansea	Campo, Goodfellas Wood Oven Pizza
Downtown Toronto	Ryerson,Garden District	Trattoria Mercatto, Scaddabush Italian Kitchen & Bar
Downtown Toronto	St. James Town	Terroni, La Bettola Di Terroni, Mercatto
Downtown Toronto	Stn A PO Boxes 25 The Esplanade	Carisma, The Old Spaghetti Factory, Mirto
East Toronto	Studio District	Baldini, Lil' Baci
East Toronto	The Beaches West,India Bazaar	Casa di Giorgio
East Toronto	The Danforth West,Riverdale	Cafe Fiorentina, 7 Numbers

These neighborhoods are the green in Figure 3.

Japanese

Borough	Neighbourhood	Restaurants
Downtown Toronto	Adelaide,King,Richmond	Fune Japanese Restaurant,Hakata Ikkousha Ramen, JaBistro, Tachi, Yuzu No Hana
North York	Bedford Park,Lawrence Manor East	Sakura Garden
Downtown Toronto	Berczy Park	Chotto Matte
Downtown Toronto	Cabbagetown,St. James Town	Kingyo Toronto
Downtown Toronto	Central Bay Street	Rolltation, Gyubee Japanese Grill, Omai, Sansotei Ramen, Japango
Downtown Toronto	Commerce Court,Victoria Hotel	Ki Modern Japanese + Bar, Chotto Matte
Central Toronto	Davisville	Sakae Sushi, Hokkaido Sushi
Central Toronto	Deer Park,Forest Hill SE,Rathnelly,South Hill,Summerhill West	Daeco Sushi
Downtown Toronto	Design Exchange,Toronto Dominion Centre	Ki Modern Japanese + Bar, Chotto Matte
North York	Fairview,Henry Farm,Oriole	Heart Sushi, Yoi
Downtown Toronto	First Canadian Place,Underground city	Ki Modern Japanese + Bar, Chotto Matte, Fune Japanese Restaurant, Tachi
North York	Flemingdon Park,Don Mills South	Memories of Japan
Downtown Toronto	Harbord,University of Toronto	Yasu, Gyubee, Akai Sushi
Downtown Toronto	Harbourfront East,Toronto Islands,Union Station	Miku, Gonoe Sushi Japanese Restaurant
Downtown Toronto	Queen's Park	Sushi Box, Tokyo Sushi
West Toronto	Runnymede,Swansea	Asa Sushi, Yumi Sushi
Downtown Toronto	Ryerson,Garden District	Kinka Izakaya Original, Hokkaido Ramen Santouka, Kinton Ramen, Spring Sushi
Downtown Toronto	St. James Town	Gyu-Kaku Japanese BBQ, NAMI
Downtown Toronto	Stn A PO Boxes 25 The Esplanade	Chotto Matte, Ki Modern Japanese + Bar, NAMI
East Toronto	The Beaches West,India Bazaar	O Sushi

These neighborhoods are the green in Figure 3.

Cluster 5: Latin American Restaurants

Borough	Neighbourhood	Restaurants
North York	Agincourt	El Pulgarcito
Scarborough	Humber Summit	The Famous Mama Mia

These neighborhoods are the orange in Figure 3.

Conclusion

The clusters defined above give some guideline as to where you need to go if you're looking for a specific type of ethnic cuisine. These are only a small sample of the kinds of food the city has to offer!