Data Capstone Project

Introduction

A dog groomer in interested in opening a new dog grooming business in Toronto.

She wants to open her business that is in a neighborhood with a high density of parks, restaurants, and dog walks.

Which neighborhood should she choose for her new business venture?
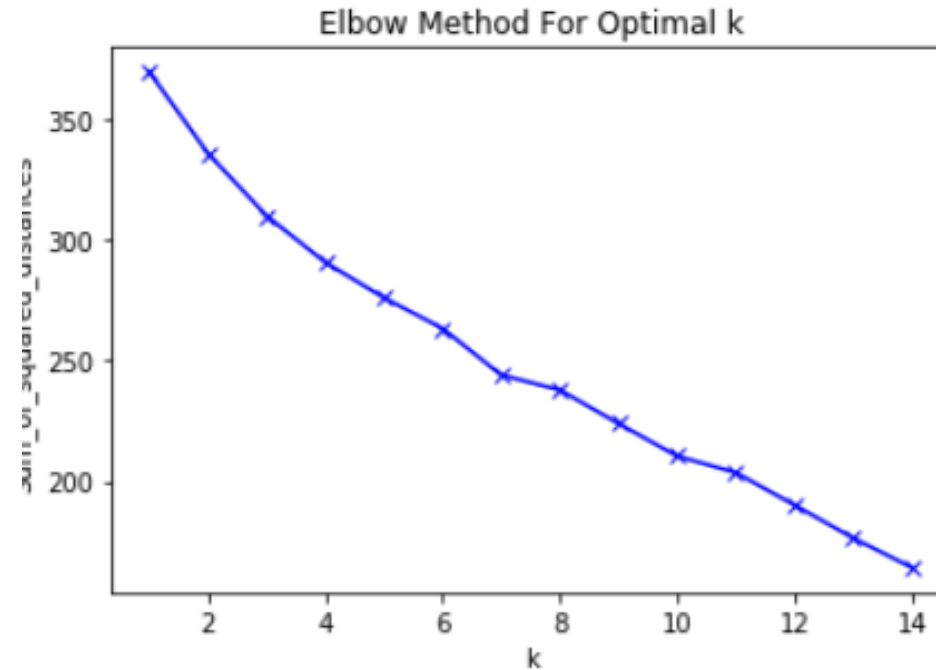
Data Description

- Toronto neighborhoods and postal codes, scraped from https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

- Csv of latttude and longitude data for Toronto Postal Codes

- FourSquare API for location data of nearby venues

- Cleaned data contains 101 rows with 60 features

- The rows represent the neighborhoods, and the features represent venue categories

Dataset Representation

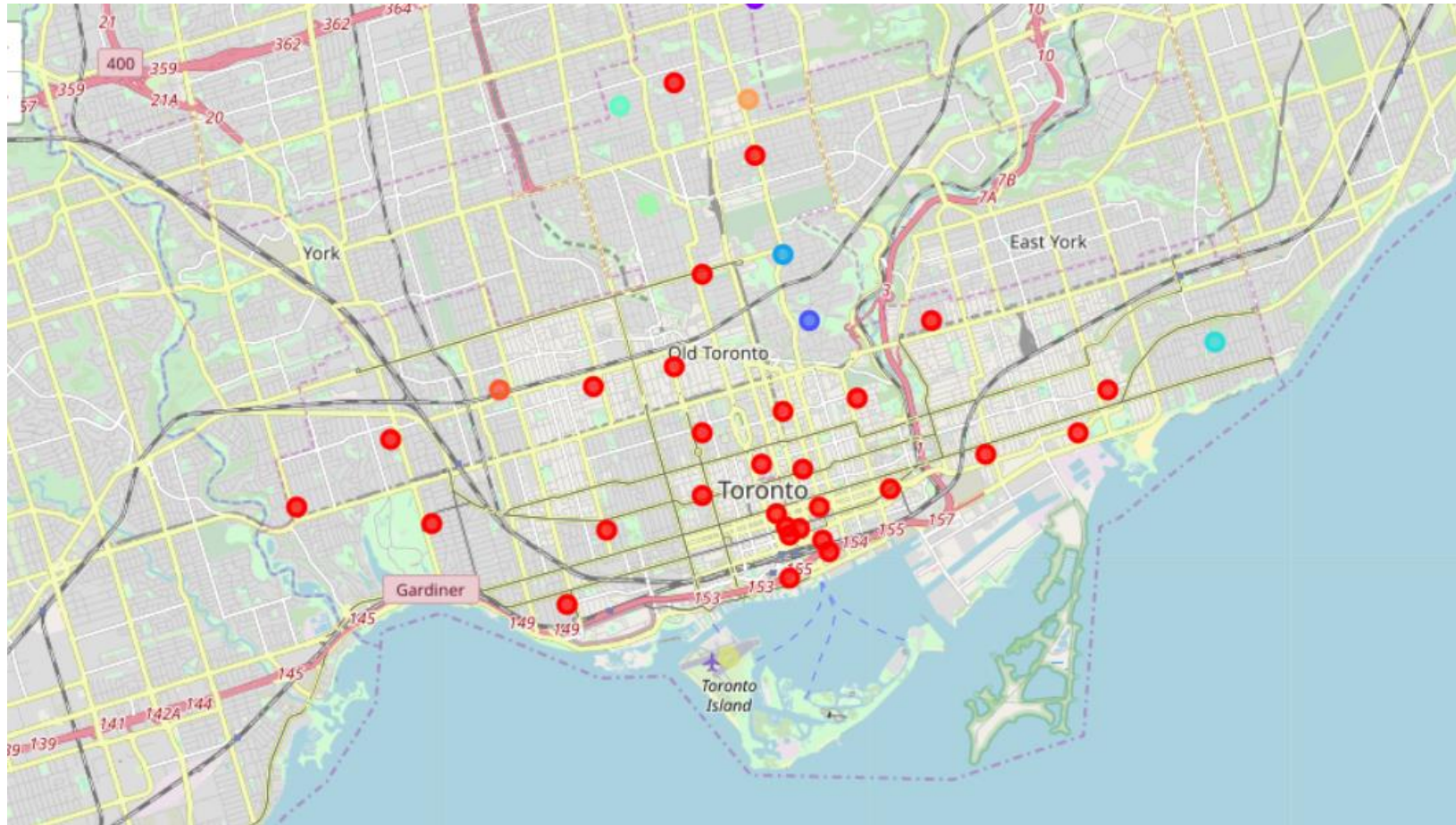|	Neighborhood	American Restaurant	Art Gallery	Asian Restaurant	Bakery	Bar	Bookstore	Boutique	Breakfast Spot	Brewery	...	Spa	Steakhouse	Supermarket	Sushi Restaurant	Tea Room	Thai Restaurant	Toy / Game Store	Trail	Vegetarian / Vegan Restaurant
0	The Beaches	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	1	0
1	Davisville	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0
2	Davisville	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0
3	Davisville	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0
4	Davisville	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0

Methodology

- Using K-means clustering, cluster the neighborhoods to determine where the business will be nearest parks, restaurants, and venues

- Use the elbow method to determine the best number clusters

- Use the Folium library to map the clusters

Elbow method for cluster number

Elbow Method For Optimal k

The best number of clusters to use is 7

Cluster Mapping

Results

- After cluster analysis, identify the neighborhoods that are closest to restaurants, parks and dog walks

- Create a new dataframe to list them

Neighborhoods closest to parks

	PostalCode	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	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
2	M4L	East Toronto	The Beaches West, India Bazaar	43.668999	-79.315572	0	Park	Sandwich Place	Sushi Restaurant	Pet Store	Pizza Place	Movie Theater	Pub	Burrito Place	Burger Joint	Brewery
4	M4N	Central Toronto	Lawrence Park	43.728020	-79.388790	1	Park	Swim School	Bus Line	Yoga Studio	Dog Run	Fast Food Restaurant	Farmers Market	Falafel Restaurant	Event Space	Ethiopian Restaurant
10	M4W	Downtown Toronto	Rosedale	43.679563	-79.377529	2	Park	Playground	Trail	Building	Discount Store	Fast Food Restaurant	Farmers Market	Falafel Restaurant	Event Space	Ethiopian Restaurant
11	M4X	Downtown Toronto	Cabbagetown, St. James Town	43.667967	-79.367675	0	Park	Restaurant	Coffee Shop	Bakery	Pub	Italian Restaurant	Pizza Place	Café	American Restaurant	Grocery Store
23	M5P	Central Toronto	Forest Hill North, Forest Hill West	43.696948	-79.411307	6	Park	Trail	Jewelry Store	Sushi Restaurant	Yoga Studio	Dog Run	Fast Food Restaurant	Farmers Market	Falafel Restaurant	Event Space
28	M5W	Downtown Toronto	Stn A PO Boxes 25 The Esplanade	43.646435	-79.374846	0	Coffee Shop	Restaurant	Café	Hotel	Beer Bar	Cocktail Bar	Italian Restaurant	Seafood Restaurant	Cheese Shop	Japanese Restaurant

Discussion

- The neighborhoods that are closest to parks, restaurants and dog runs are Forest Hill, Lawrence Park, and Rosedale

- These are venues that would attract dog owners, and would be an excellent place for a new dog grooming business venture to open

Conclusion

- Build a clustering model to determine which neighborhoods would be closest to recommended venues

- Identified the areas, and gave recommendations to new business owner