

IBM Data Science Capstone Project: Opening a Coffee shop in Toronto



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TABLE OF CONTENTS

1. Introduction
2. Data Requirement
3. Methodology
4. Results
5. Conclusion
6. References

Introduction

For this project, I consider a hypothetical scenario in which an entrepreneur wishes to open a coffee shop in Toronto. This entrepreneur is new to Canada and does not know anything about its customers. As a consequence, he would like to know which is the best place in Toronto in order to put his coffee shop, considering the amount and locations of other similar shops

Data Requirement

The data needed is the following

- a. List of neighborhoods in Toronto, Canada
- b. Latitude and longitude of the neighborhoods
- c. Clusters in which the frequency of coffee shops is the highest

Methodology

The data is obtained from the following Wikipedia page

https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M

The methodology used for scrapping this data is to use pandas html table method. Next, using Foursquare the coordinates of each neighborhoods are obtained, using Geocoder. Using the Folium package, a map of Toronto will be displayed

Next, we divide the neighborhoods regarding the nearby shops surrounding them, paying close attention to coffee shops, using the K-means clustering algorithm.

Finally, we identify the locations in which the frequency of coffee shops is the highest and those will be the places in which to locate the coffee shop of the entrepreneur

Results

Cluster 1

80]: toronto_denc_merged.loc[toronto_denc_merged['Cluster Labels'] == 0, toronto_denc_merged.columns[[1] + list(range(5, toronto_denc_merged.shape[1]))]]

	Borough	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
0	Downtown Toronto	0	Coffee Shop	Bakery	Park	Pub	Café	Theater	Breakfast Spot	Restaurant	Event Space	Shoe Store
1	Downtown Toronto	0	Coffee Shop	Sushi Restaurant	Yoga Studio	Arts & Crafts Store	Juice Bar	Japanese Restaurant	Italian Restaurant	Distribution Center	Burrito Place	Beer Bar
2	Downtown Toronto	0	Clothing Store	Coffee Shop	Café	Restaurant	Middle Eastern Restaurant	Bubble Tea Shop	Japanese Restaurant	Italian Restaurant	Cosmetics Shop	Hotel
3	Downtown Toronto	0	Coffee Shop	Café	Cocktail Bar	Gastropub	American Restaurant	Art Gallery	Clothing Store	Lingerie Store	Creperie	Seafood Restaurant
4	East Toronto	0	Pub	Trail	Health Food Store	Women's Store	Diner	Dance Studio	Deli / Bodega	Department Store	Dessert Shop	Discount Store
5	Downtown Toronto	0	Coffee Shop	Cocktail Bar	Cheese Shop	Beer Bar	Seafood Restaurant	Bakery	Restaurant	Café	Gourmet Shop	Diner
6	Downtown Toronto	0	Coffee Shop	Italian Restaurant	Café	Sandwich Place	Burger Joint	Department Store	Middle Eastern Restaurant	Thai Restaurant	Japanese Restaurant	Salad Place
7	Downtown Toronto	0	Grocery Store	Café	Park	Athletics & Sports	Diner	Restaurant	Candy Store	Italian Restaurant	Nightclub	Coffee Shop
8	Downtown Toronto	0	Coffee Shop	Café	Restaurant	Hotel	Deli / Bodega	Gym	Clothing Store	Thai Restaurant	Cosmetics Shop	Steakhouse
9	West Toronto	0	Pharmacy	Bakery	Park	Café	Bar	Bank	Supermarket	Brewery	Middle Eastern Restaurant	Athletics & Sports
10	Downtown Toronto	0	Coffee Shop	Aquarium	Hotel	Café	Scenic Lookout	Restaurant	Italian Restaurant	Fried Chicken Joint	Brewery	Sporting Goods Shop

Cluster 2

toronto_denc_merged.loc[toronto_denc_merged['Cluster Labels'] == 1, toronto_denc_merged.columns[[1] + list(range(5, toronto_denc_merged.shape[1]))]]

	Borough	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
29	Central Toronto	1	Playground	Tennis Court	Women's Store	Cuban Restaurant	Eastern European Restaurant	Donut Shop	Doner Restaurant	Dog Run	Distribution Center	Discount Store

Cluster 3

toronto_denc_merged.loc[toronto_denc_merged['Cluster Labels'] == 2, toronto_denc_merged.columns[[1] + list(range(5, toronto_denc_merged.shape[1]))]]

	Borough	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
19	Central Toronto	2	Health & Beauty Service	Garden	Women's Store	Cupcake Shop	Electronics Store	Eastern European Restaurant	Donut Shop	Doner Restaurant	Dog Run	Distribution Center

Cluster 4

toronto_denc_merged.loc[toronto_denc_merged['Cluster Labels'] == 3, toronto_denc_merged.columns[[1] + list(range(5, toronto_denc_merged.shape[1]))]]

	Borough	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
21	Central Toronto	3	Sushi Restaurant	Jewelry Store	Home Service	Trail	Diner	Dance Studio	Deli / Bodega	Department Store	Dessert Shop	Women's Store

Cluster 5

toronto_denc_merged.loc[toronto_denc_merged['Cluster Labels'] == 4, toronto_denc_merged.columns[[1] + list(range(5, toronto_denc_merged.shape[1]))]]

	Borough	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
18	Central Toronto	4	Park	Bus Line	Swim School	Lake	Dance Studio	Electronics Store	Eastern European Restaurant	Donut Shop	Doner Restaurant	Dog Run
33	Downtown Toronto	4	Park	Playground	Trail	Cuban Restaurant	Eastern European Restaurant	Donut Shop	Doner Restaurant	Dog Run	Distribution Center	Discount Store

Conclusions

It is concluded that the best place in which to place a coffee shop is Downtown Toronto

References

Wikipedia. (2020). List of Postal Codes in Canada. May 13th, 2020, de Wikipedia
Sitio web: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M