CHOOSING A SUITABLE LOCATION FOR AN ACAI´RESTAURANT
IBM Data Science – Capstone Project

Have you ever tried an açai bowl?

Introduction

Açai is about 1 to 2 centimeters in diameter and a deep purple color. The seed constitutes about 80 percent of the fruit. The taste of acai berries has been described as a blend of chocolate and berries, with a slight metallic aftertaste. Açai berries have been called a superfood, with benefits ranging from improved skin appearance to weight loss.

Thanks to the multiple health benefits that come with making açai part of the diet, it is a fruit whose demand has been growing exponentially, it can be found from ice cream to bowls as you can see in the image. Therefore, the idea was born to give people the opportunity to eat healthily and cheaply.

Research problem

In the project I have focused on a business idea where I am deciding to open an açai restaurant in Toronto, Canada. But I am uncertain about the location that I will choose to open the restaurant. Based on the outcome of using data science methodology and machine learning techniques learned in the capstone data science course, I will be able to choose the best location to open the açai restaurant.

Data

As we need to explore, segment, and cluster the neighborhoods in the city of Toronto, the neighborhood data is the key for this project. I extracted the data form Wikipedia website, I used pandas to transform the data into data frameset that I could use for machine learning methods. Then I used the foursquare API to gather the coordinates and venue data that will be relevant. Also, I could acquire latitude and longitude for each neighborhood by using python library Geopy and run through all neighborhood.

	PostalCode	Borough	Neighborhood	Latitude	Longitude
2	M5A	Downtown Toronto	Regent Park, Harbourfront	43.654260	-79.360636
9	M5B	Downtown Toronto	Garden District, Ryerson	43.657162	-79.378937
15	M5C	Downtown Toronto	St. James Town	43.651494	-79.375418
19	M4E	East Toronto	The Beaches	43.676357	-79.293031
20	M5E	Downtown Toronto	Berczy Park	43.644771	-79.373306
24	M5G	Downtown Toronto	Central Bay Street	43.657952	-79.387383
25	M6G	Downtown Toronto	Christie	43.669542	-79.422564
30	M5H	Downtown Toronto	Richmond, Adelaide, King	43.650571	-79.384568
31	M6H	West Toronto	Dufferin, Dovercourt Village	43.669005	-79.442259
35	M4J	East YorkEast Toronto	The Danforth East	43.685347	-79.338106
36	M5J	Downtown Toronto	Harbourfront East, Union Station, Toronto Islands	43.640816	-79.381752
37	M6J	West Toronto	Little Portugal, Trinity	43.647927	-79.419750
41	M4K	East Toronto	The Danforth West, Riverdale	43.679557	-79.352188

Table 1

Data features:

I leveraged our features using reliable information from FourSquare API that let us explore various venues in each neighborhood. The information is:

1. Neighborhood
2. Neighborhood Latitude
3. Neighborhood Longitude
4. Venue
5. Venue Latitude
6. Venue Longitude

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Berczy Park	48	48	48	48	48	48
Brockton, Parkdale Village, Exhibition Place	23	23	23	23	23	23
CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport	17	17	17	17	17	17
Central Bay Street	62	62	62	62	62	62
Christie	14	14	14	14	14	14
Church and Wellesley	69	69	69	69	69	69
Commerce Court, Victoria Hotel	100	100	100	100	100	100
Davisville	26	26	26	26	26	26
Davisville North	10	10	10	10	10	10
Dufferin, Dovercourt Village	13	13	13	13	13	13

Table 2.

I clustered these Neighborhood into similarities and found our which region and place is the best for Acai Restaurant.

Result:

From K-Means Clustering technique, we segmented neighborhood into 5 cluster. These clusters were based on similarities of top venues. This cluster were used to find the best place for Acai Restaurant according to the most common venue of neighborhoods.

	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
2	Downtown Toronto	0	Coffee Shop	Park	Café	Pub	Bakery	Performing Arts Venue	Restaurant
9	Downtown Toronto	0	Coffee Shop	Sandwich Place	Clothing Store	Café	Bank	Pizza Place	Japanese Restaurant
15	Downtown Toronto	0	Coffee Shop	Café	Cocktail Bar	Italian Restaurant	Beer Bar	Clothing Store	Restaurant
19	East Toronto	0	Asian Restaurant	Health Food Store	Pub	Wine Shop	Eastern European Restaurant	Donut Shop	Doner Restaurant
20	Downtown Toronto	0	Coffee Shop	Cocktail Bar	Sandwich Place	Bakery	Vegetarian / Vegan Restaurant	Seafood Restaurant	Beer Bar
24	Downtown Toronto	0	Coffee Shop	Sandwich Place	Sushi Restaurant	Café	Italian Restaurant	Japanese Restaurant	Salad Place
25	Downtown Toronto	0	Grocery Store	Café	Park	Baby Store	Coffee Shop	Restaurant	Nightclub
30	Downtown Toronto	0	Coffee Shop	Café	Sandwich Place	Clothing Store	Gym	Restaurant	Sushi Restaurant
31	West Toronto	0	Wine Shop	Supermarket	Liquor Store	Middle Eastern Restaurant	Music Venue	Pharmacy	Pool
36	Downtown Toronto	0	Coffee Shop	Café	Hotel	Aquarium	Restaurant	Scenic Lookout	Pizza Place
37	West Toronto	0	Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	New American Restaurant	Coffee Shop	Asian Restaurant	Café
41	East Toronto	0	Greek Restaurant	Coffee Shop	Italian Restaurant	Sushi Restaurant	Ice Cream Shop	Yoga Studio	Lounge
42	Downtown Toronto	0	Coffee Shop	Café	Hotel	Sandwich Place	Asian Restaurant	Deli / Bodega	Restaurant
43	West Toronto	0	Café	Nightclub	Breakfast Spot	Coffee Shop	Sandwich Place	Gym	Intersection
47	East Toronto	0	Park	Fast Food Restaurant	Board Shop	Brewery	Pub	Steakhouse	Burrito Place
48	Downtown Toronto	0	Coffee Shop	Sandwich Place	Café	Hotel	Restaurant	Japanese Restaurant	Gym
54	East Toronto	0	Coffee Shop	Café	Gastropub	Bakery	American Restaurant	Fish Market	Ice Cream Shop
62	Central Toronto	0	Home Service	Music Venue	Garden	Wine Shop	Dance Studio	Eastern European Restaurant	Donut Shop
67	Central Toronto	0	Gym / Fitness Center	Hotel	Sandwich Place	Breakfast Spot	Department Store	Food & Drink Shop	Dance Studio

Table 3.

As we can see, the first cluster offers a wide variety of restaurants and venues, but with a predominance of walk-in places, healthy food, not too processed food and even low-priced restaurants, so it would allow the acai restaurant to gain markets shares of due to similar neighborhoods.

Due to the value offer of the Acai restaurant, healthy, delicious and low-cost food, it would be recommended to choose Central Toronto´s neighborhood to place the restaurant. Also, Within the most common locations in Central Toronto, we can observe Gym / Fitness Centre, Breakfast Spot and Sandwich Place, which means that the people who regularly walk through this neighborhood meet the basic characteristics of the average acai restaurant customer.