

# Capstone Project – II

## Segmentation and Clustering Toronto Area for Caribana Festival

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### 1. Introduction

#### 1.1. Background

Toronto is the provincial capital of Ontario province in Canada. Greater Toronto Area (GTA) is the most populous region in Canada and Toronto is one of the major metropolitan cities in the world. The city of Toronto has over 10 thousand years of history with multicultural diverse community that includes white European, black Canadian (mostly Caribbean), Asians and south American descents. Majority of the city is composed of minority groups. As in most north America cities those who have other cultural background usually tend to eat foods, drinks, wear clothes, and practice religion that is originally from their heritage.

Toronto hosted several types of sport activities like football, hockey, basketball, soccer, baseball, and box lacrosse. In addition to these activities there are different cultural celebrations and one of the major city-wide annual cultural celebration is The Toronto Caribbean Carnival (TCC) or formerly known as Caribana. The Caribana established in 1967 as a non-profit foundation to celebrate Caribbean population in Toronto, Ontario.

#### 1.2. Business Problem

The Caribana is considered to be the largest carnival festive in north America and generate an estimated of half a billion dollars economy to Ontario region annually. However, in the black immigrant community of these cities there is a shortage of cultural foods, drinks, and other necessities. Opening a black cultural bars, restaurants, and coffee shops is vital for those communities. These businesses benefit from the carnival event as it is the biggest event for food and drink. In addition to food and drink the Caribbean communities have been used cannabis as a traditional

healer of sort. During the carnival cultural food truck business is a greater addition to the event by following all legal requirements.

## 2. Data

Toronto area has around thirty-three (33) postcodes with several neighborhoods within it. The neighborhood data was extracted from a Wikipedia page of Canada postcodes: [https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada): M. Canada postcodes data was downloaded, scrapped, and cleaned using different python library packages including Pandas, Requests, BeautifulSoup, and Geopy.

To scrap the data initially the Wikipedia was downloaded using WGET and then cleaned. After cleaning the data for Toronto area geopy and geocoder were used to plot Foursquare events in these neighborhoods. Using the above-mentioned methodology, it is possible to suggest for Caribbean cultural food and drink business owners where to run a food truck during Caribana festivities.

### 2.1. Data Scrapping Method

The data consists of three columns namely postcode, borough, and neighborhood. The column with postcode is a complete set of data. Whereas borough and neighborhood columns have data cell which says, "Not Assigned". Based on the instruction if both borough and neighborhood are not assigned then that row of Postcode will be removed. However, if there is borough but there is not neighborhood assigned to it, we can name the neighborhood similar to the corresponding borough. After we are done with cleaning those postcodes with not assigned borough and neighborhood the next step is group neighborhoods with similar postcode.

From these datasets then we select only boroughs that consists a word Toronto in it to make our study area more concentrated to the largest metropolitan area in Canada. The Foursquare method come in handy to allocate the geographical location by assigning latitude and longitude to the area. Using these latitude and longitude it is possible to generate different event locations throughout Toronto city.

The Foursquare credential were used to obtain venue locations in Greater Toronto area. For this study I choose neighborhoods with postcode M6K that includes Brockton, Exhibition Place, and Parkdale Village neighborhoods. After the neighborhood selection around 19 nearby venues were selected. There are approximately 1700 unique venues in Toronto area. From 236 neighborhood in

Toronto Adelaide, China town, Commerce Court, Design exchange, First Canadian place, Harbourfront East, Ryerson, and St. James town has each 100 unique venue categories. In most neighborhood the dominant venues are coffee shops, cafes, and breakfast spots.

## 2.2. What kind of food and drink?

As mentioned in the business problem section that running a food truck for annual caribana festival is profitable since it is the largest Caribbean themed carnival in North America. By following local rules and regulations some of the foods that can be served on the truck includes rotis, plantain, pepperpot, jerk chicken, callaloo, goat head soup, flying fish and Cou Cou, potato pudding, pelau, cow foot, rum cakes and others. In addition to these foods it is possible to sell beverages and juices like Bushwalker, sorrell, mauby, ginger beer, water, and other soft drinks.

## 3. Business Route, Possible Area of Parking, and Rules

The Caribana parade stretches over 3km distance starting from Exhibition place to Ontario place near lakeshore boulevard. Based on the grouping and clustering of venues there is no any Caribbean themed restaurant or grocery shop in that vicinity of Toronto. Since the Caribana is a big event each year conducting business in the route of parade is essential for attendees and to business owners as well. Owning or renting a food truck to serve the aforementioned foods and drinks at the event should be done ahead of time. In addition to that fulfilling all legal requirement is necessary. Clustering of the venues were done using five K-means clusters and from these five clusters the Caribana event lies within cluster 1 of Brockton but the nearest Harbourfront East cluster also serves as best nearby venues. Brockton cluster has health food store, pubs, music venue, Ethiopian restaurant, wings joint, department store, electronics store, and Eastern European restaurant but Caribbean restaurant and grocery.

That is why having a food truck for the Caribana is profitable business. The food truck can be parking on lots that are opened for public and should not block any passage of the event as well other public way of transportations. The truck also should have a well-structured cooling system and qualify for all health and safety inspections based on the city regulation. The best way to promote the food truck is to use a sound system that is minimal for sound pollution and also using different advertisement stickers on its body work is good.

