

The best city to export coffee from Guatemala

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1. Introduction

The quality of coffee in Guatemala is recognized worldwide, many communities in the country are responsible for producing coffee by hand and then it is sold to large companies that are responsible for processing and subsequent distribution to all parts of the world.

From this situation an idea is born to support all these small producers and that they can take their product as a community abroad without having to work with another individual, by doing this they can earn much more money than by selling it to large companies .

Therefore, this project is an idea of how small producers will be able to find their market through an analysis of large cities, such as Toronto Canada, to investigate the coffee market in the city and if it is possible to introduce their product into the market, to so that through international initiatives they can take their product to places where they can have greater impact and thus improve the country's economy.

2. Data acquisition and cleaning

For this project we will use the information from the Forsquare API to explore the information of the city of Toronto, with this we can analyze the availability of coffee shops and the option of whether it is an option to open new coffee shops since the demand for coffee in the city is high.

We will also use the data that wikipedia provides about each neighborhood of both cities which can be accessed from:
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M.

It's necessary to know the most important food markets of the city that we are going to analyze, in this case Toronto Canada. Knowing the information of the city we will be able to determine the feasibility of coffee businesses and with this to be able to present to the producers who use this tool the feasibility of exporting their product to these cities, the high demand for coffee for coffee shops or restaurants.

3. Methodology

First we obtain the respective data for the city of Toronto and New York, with this information we will build a dataframe that will be used to store the information of the points to be analyzed later.

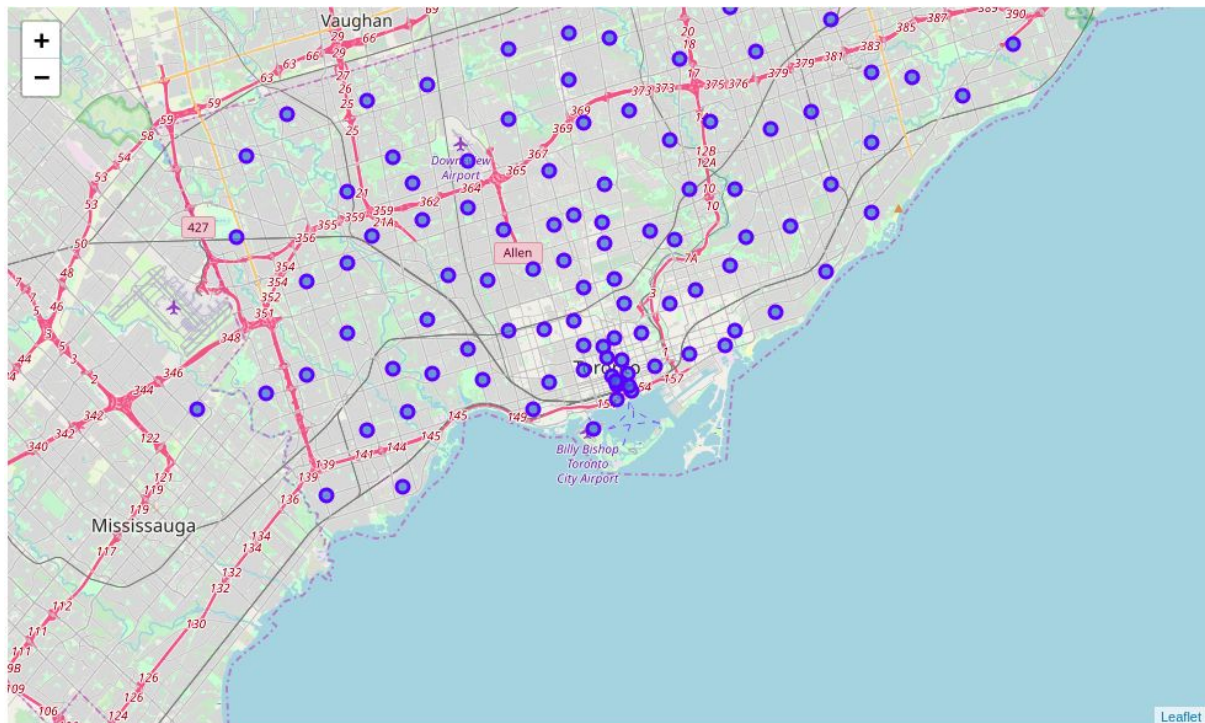


Fig. 1 - Toronto city with the neighborhood marks

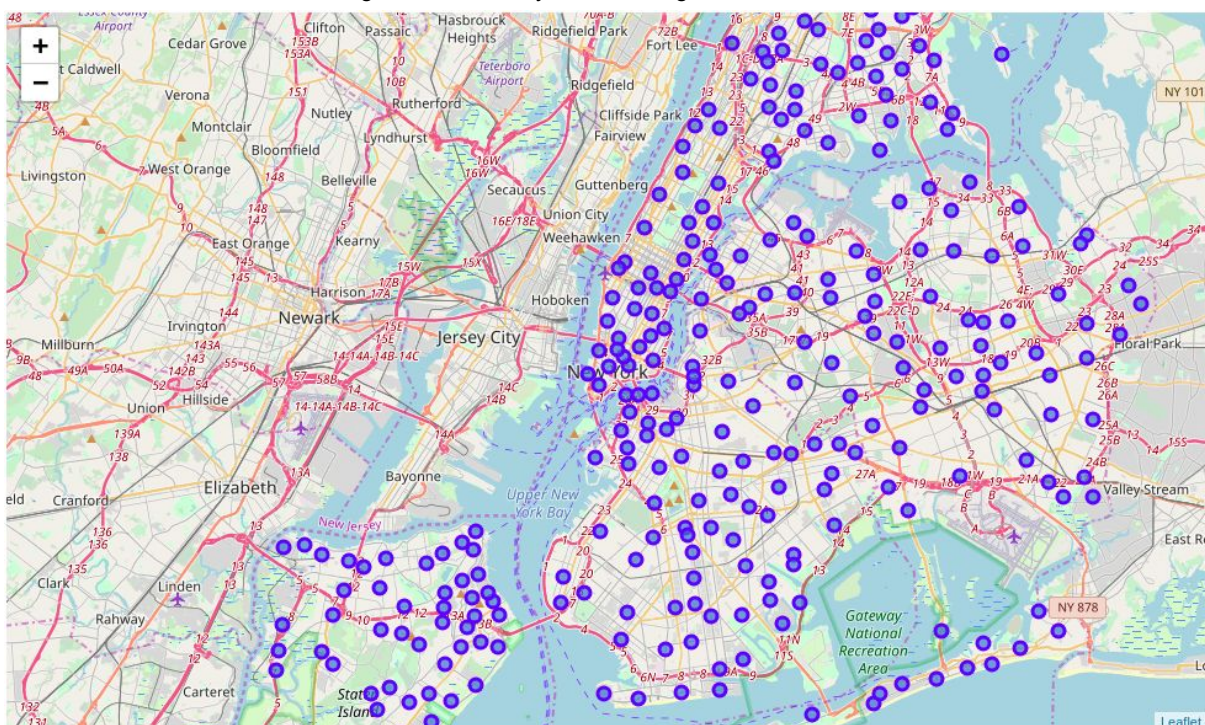


Fig. 2 - New York city with the neighborhood marks

Now with the data collected from both cities we proceeded to connect to a Forsquare account, using the API available for free we use a GET to the Forsquare search method with our selected points, this search was specifically targeted to establishments that were food (categoryId = '4d4b7105d754a06374d81259')

This is because what is sought with this study is to know the feasibility of exporting coffee beans produced in Guatemala abroad, so establishments that were not related to food products were excluded.

After that, the data was curated to be able to account for what was obtained from Forsquare in an easier way, in this way and through a simple analysis the 3 most important points of each city were obtained and at the same time at these points the five establishments that were most they were within a specific radius given during the search on Forsquare.

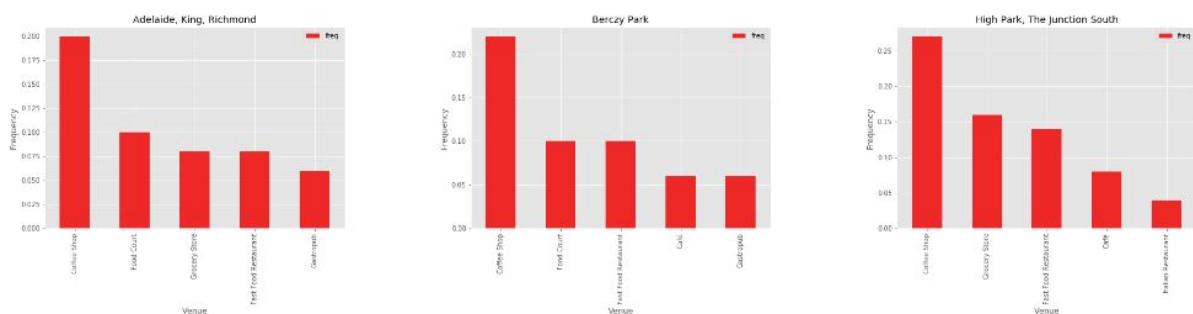


Fig. 3 - Top 3 Toronto neighborhood along with the top 5 most common venues

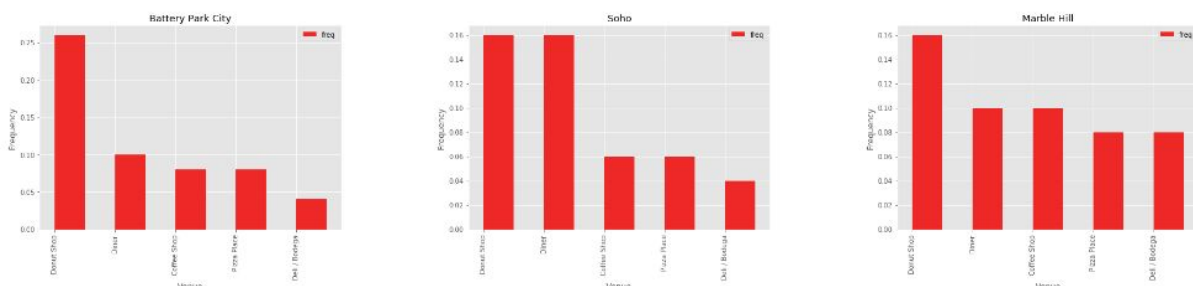


Fig. 4 - Top 3 Manhattan neighborhood along with the top 5 most common venues

Knowing the points to analyze and the results returned by Forsquare, we proceeded to perform a small analysis of the data obtaining in this way the results for both cities of the establishments that were most in both cities, in this way we can analyze the weight that It can generate the product of Guatemala in these cities because if there is a high demand we can find a market in which we can compete and it is easier for small producers.

Clustering neighborhoods for both cities.

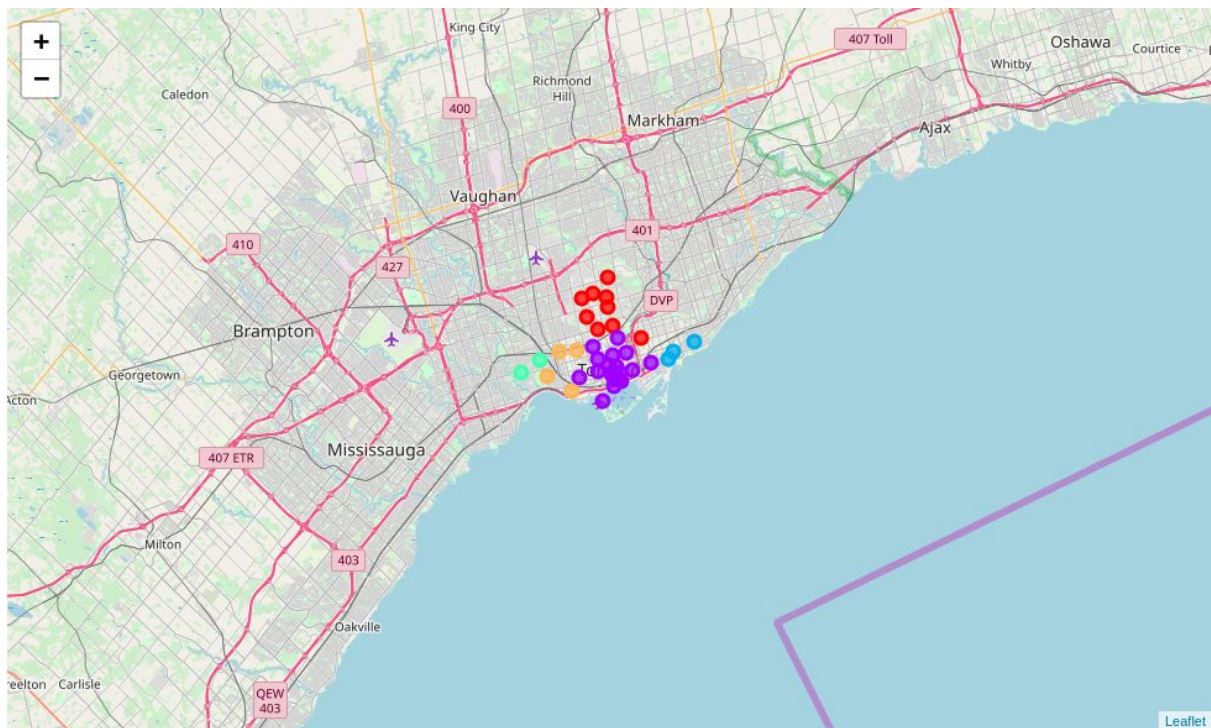


Fig. 5 - Cluster for Toronto city

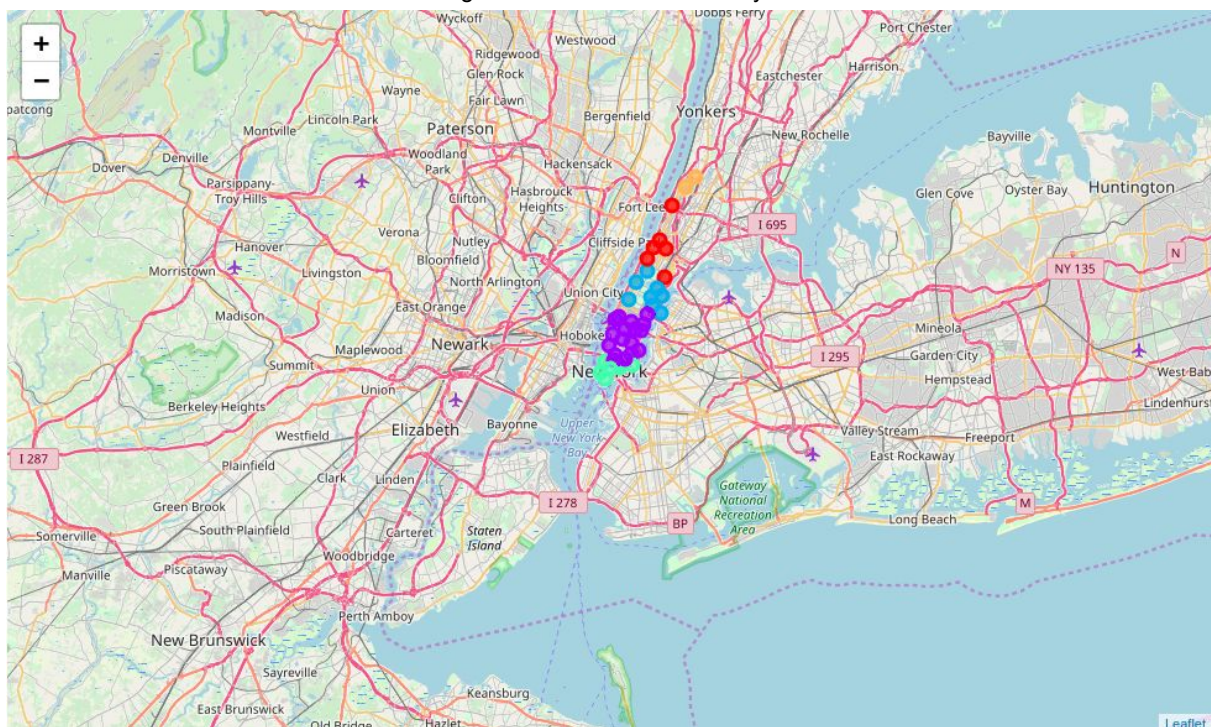


Fig. 6 - Cluster for New York city

After clustering we can see how in each of the 5 groups analyzed in Toronto, coffee shops have a great weight and can be a turning point that encourages Guatemalan coffee producers to be a city where they can To enter, with this information we can also see that the city of New York does not have such solid data when analyzing coffee shops in the city, leaving this city for a second raid but thanks to the analysis

we can find the points that are similar to the city of Toronto where you work and look for similar points in the city of New York in the future.

	Neighborhood	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	Adelaide, King, Richmond	Coffee Shop	Food Court	Fast Food Restaurant	Grocery Store	Gastropub	Café	American Restaurant	Mexican Restaurant	Bar	Restaurant
1	Berczy Park	Coffee Shop	Food Court	Fast Food Restaurant	Café	Gastropub	Grocery Store	American Restaurant	Mexican Restaurant	Bar	Restaurant
2	Brockton, Exhibition Place, Parkdale Village	Coffee Shop	Grocery Store	Fast Food Restaurant	Café	Restaurant	Dumpling Restaurant	Bar	Beer Bar	Mexican Restaurant	Irish Pub
3	Business Reply Mail Processing Centre 969 Eastern	Coffee Shop	Café	Bakery	Fast Food Restaurant	Gastropub	Caribbean Restaurant	Grocery Store	Middle Eastern Restaurant	Mexican Restaurant	Mediterranean Restaurant
4	CN Tower, Bathurst Quay, Island airport, Harbo...	Coffee Shop	Food Court	Fast Food Restaurant	Café	American Restaurant	Grocery Store	Gastropub	Mexican Restaurant	Restaurant	Bar

Fig. 7 - Toronto top venues for the first neighborhoods

	Neighborhood	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	Battery Park City	Coffee Shop	Food Court	Pizza Place	French Restaurant	Dim Sum Restaurant	Italian Restaurant	Cafeteria	Cantonese Restaurant	Club House	Cocktail Bar
1	Carnegie Hill	Coffee Shop	Bakery	American Restaurant	Burger Joint	Food Court	Steakhouse	Noodle House	Gastropub	Udon Restaurant	Halal Restaurant
2	Central Harlem	Coffee Shop	Sandwich Place	Burger Joint	American Restaurant	Bagel Shop	Supermarket	Café	Italian Restaurant	Southern / Soul Food Restaurant	Pizza Place
3	Chelsea	Food Court	Coffee Shop	Korean Restaurant	French Restaurant	Pizza Place	Gourmet Shop	American Restaurant	Burger Joint	Bakery	Dessert Shop
4	Chinatown	Coffee Shop	Food Court	French Restaurant	Bakery	New American Restaurant	Gourmet Shop	Café	Pizza Place	Ukrainian Restaurant	Fast Food Restaurant

Fig. 8 - Manhattan top venues for the first neighborhoods

In the jupyter notebook you can see in detail the information collected from the 5 clusters that were analyzed, you can see how in the city of Toronto coffee shops dominate the top 2 places in all the points analyzed while in New York city we have a more difficult fight since many convenience stores or American food enter to compete.

4. Results

The study was directed directly to food establishments, at work the values obtained from the two cities are presented, based on the previously obtained locations.

- A. We can see how the primary establishment in both cities is a coffee shop followed by a food court and in a third place you can see fast food restaurants.
- B. With the data presented we can observe the strong weight that coffee exerts in the selected cities, Toronto and New York, this product being the focus of the investigation to determine if the market of these two cities is prepared for an export incursion of said grain from Guatemala.
- C. At the time of carrying out the cluster process we can observe the great presence of coffee shops in Toronto, being the first option in all of them except for the room where a grocery store in Dovercourt Village, Dufferin.
- D. The cluster process in New York gave us more varied results, in the first iteration we can observe how the coffee shop dominates the market while in the second and third iteration we can observe how other markets such as food court and American restaurants enter fight, for the last one we can see that the heaviest are the donut shops and coffee shops fall to a third place, thanks to the varied market that the stores handle, this also allows us to have a presence in donut shops, so it follows being results that allow the Guatemalan trade to enter New York City.
- E. By clustering it is possible to visualize the similarities that exist between both cities, starting from that point we could use well-known stores, user and supplier experiences to take it to the other city and start to enter the market with the product knowledge Guatemalan and what customers look for in each city and that can be useful in the other city for customer satisfaction.

5. Discussion

We can observe the similarities that exist between the two cities, as well as the establishments with the highest demand in each of them, based on this we can observe the importance of this information to determine what type of product can impact more in the market knowing how the market moves specific environment, by address within the city.

With this in mind it is of the utmost importance to know that our flagship product can have a potential market if we export to the city of Toronto, so it is also feasible to export to New York contemplating a little the difficulty in certain neighborhoods of the city. It's necessary to help this investigation with a more detailed analysis of the different companies that make up this list of coffee shops to determine the product they use, it is different if it is a fast chain to a small store.

6. Conclusion

Using the machine learning and clusterizing methodologies we can learn too much from the cities to know what the market is demanding at the moment and thus support the communities of Guatemala so that they know what type of product is greater demand for export and thus promote the growth of these communities.

It is also important that with these data and a more thorough investigation to know the type of product that coffee shops are buying at this time and thus the small coffee producers in the country will know what regulations and standards to adhere to for export.

The best city to start venturing into the Guatemalan coffee export market would initially be Toronto because of its high demand and ease of finding coffee shops throughout the city, if another study to determine the type of Coffee shops may allow this to negotiate with these stores and encourage coffee exports to Toronto and then see the feasibility of bringing this product to New York following the similarities that exist after the clustering.