Selecting the best location for a specialized coffee shop

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1. Introduction

1.1. Background

Colombian coffee production is now focused on excelso coffee instead of producing high volumes of standard coffee. One of the main goals of Colombian Growers Federation (FNC) is improving the profitability of producers [1], it includes increasing the internal coffee consumption of specialized varieties of coffee.

1.2. Problem

A group of coffee growers in the department of Nariño[1] is interested in establishing a specialized coffee shop in Bogota City. They do not produce big quantities of coffee, then, they want to offer a great experience around the excelso coffee, taking advantage of its special sensorial attributes[2]. Specifically, they want to know the best suitable location for the coffee shop.

2. Data acquisition

2.1 Data sources

- ***Neighborhoods:*** Bogotá is divided in neighborhoods and localities. It was required to have a dataframe describing this relationship. After searching in different web sites, it was decided to use a pdf file which come from the "Secretaria de Salud Distrital" [4], it was required to translate the file into CSV format.
- ***Localities venues:*** the locality boundaries from the Laboratorio Urbano de Bogota [5].
- ***Neighborhoods venues:*** I used the Forsquare API for getting the most common venues of each neighborhood in Bogotá city.
- **Localities socioeconomic aspects:** from the Laboratorio Urbano de Bogota [5].

3. Methodology

First of all, I used iteratively the Nominatim geolocator of geopy Python library in order to get the spatial coordinates of each neighborhood, by means of this procedure I get the following dataframe:

Neighborhood	Locality	Latitude	longitude
CARACAS	ANTONIO NARINO	4.591831	-74.088903
CIUDAD BERNA	ANTONIO NARINO	4.582115	-74.090310
CIUDAD JARDIN SUR	ANTONIO NARINO	4.580311	-74.096289
LA FRAGUA	ANTONIO NARINO	4.594836	-74.137119

Table 1: Neighborhood spatial coordinates dataframe

Afterwards, in order to visualize geographic distribution of the neighborhoods I created a map by using the folium Python library, as it is shown in next figure. I also added the localities boundaries, it is really important due to, the majority of local open data is grouped by localities

1Nariño is a department of Colombia located in the west of the country, bordering Ecuador and the Pacific Ocean, please refer to [2]
2A description of sensorial attributes of Café de Nariño is found in [3]

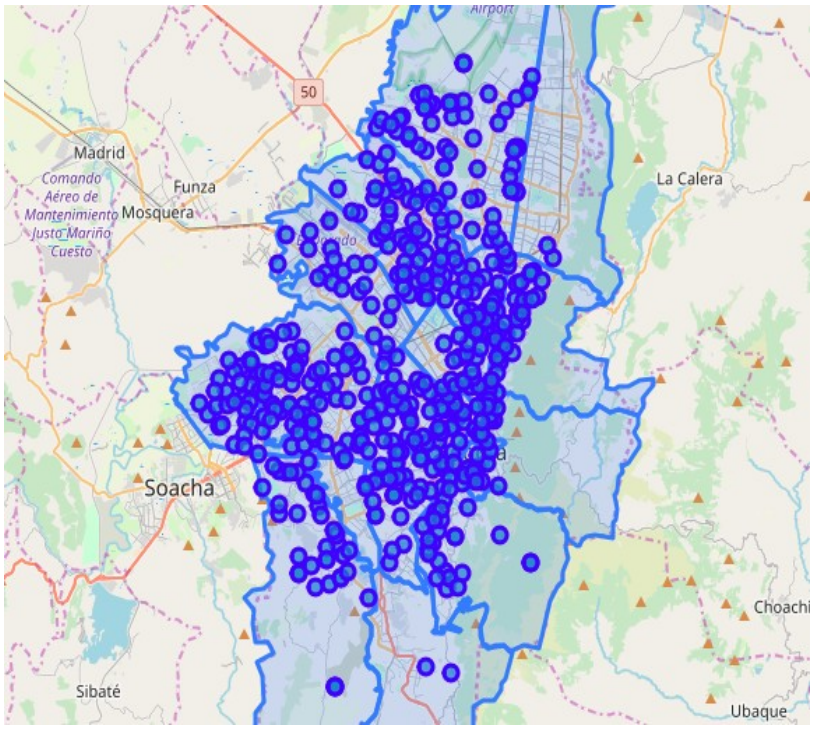

Figure 1: Bogota neighborhood location

Now, the Foursquare API is used to explore the neighborhoods and segment them. Afterwards the rows where grouped by neighborhood and by taking the mean of the frequency of occurrence of each category. In particular the "Coffee shop" is used to determine the coffee shop density of each neighborhood, is is going to be the main indicator of density of coffee lovers. It was important to consider this aspect due to, the coffee experiences tends to be much more expensive than a traditional coffee shop, then it was required to find the places where there is already a stronger culture for coffee consumption. The resuls are shown in next figure, where It is possible to identify a big density of coffee shops in Four Localities: Santa Fé, Mártires, Chapinero and La Candelaria

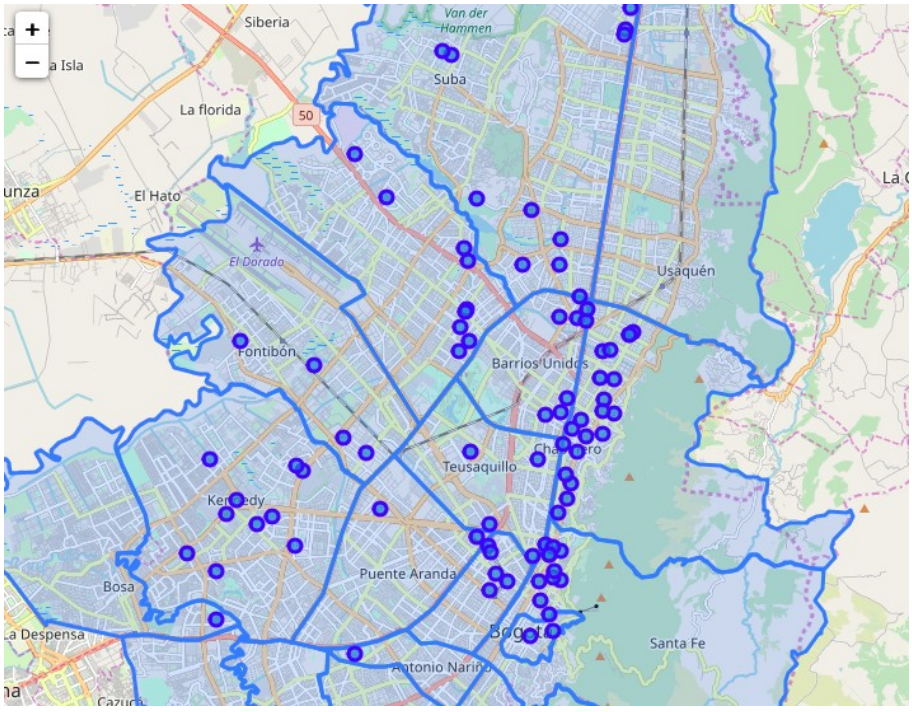

Figure 2: Coffee shops density for different localities in Bogota City

Now, additional aspects are considered to select the best suitable locality. The open socioeconomic data from the Laboratorio Urbano de Bogota[5] was used for this purpose

Localidad	People	Life conditions index
Chapinero	137281	96,9
Los Mártires	98637	91,9
la Candelaria	24140	91,1
Santa Fe	109974	89,1

Table 2: Main socioeconomic aspects of Bogota city localities in 2015

According to these aspects, the Chapinero Locality is the best location for the coffee shop, because the total market is higher (much more people) and the quality of life is better, it means the are better conditions for expensive goods consumption.

4. Results

By means of the geospatial data, it was possible to identify the coffee shops density in Bogota city. By adding additional aspects to the model, such as general socioeconomic aspects, It was possible to identify that the most suitable location for a specialized coffee shop is the locality of Chapinero, this locality provides a high density of coffee lovers and a big market with high capacity for the consumption of these kind of products and services.

5. Conclusion

Colombian coffee production is changing its focus, now the excelso coffee and the experiences around this kind of coffee tends to be more profitable for small coffee growers. The geolocated information of a city is essential for providing a good location for placing new shops and the right conditions for the offer increases the probability to have success.

6. References

[1] Web resource, please refer to: https://www.federaciondecafeteros.org/

[2] Web resource, please refer to: https://en.wikipedia.org/wiki/Nariño_Department

[3] Web resource, please refer to: http://narino.cafedecolombia.com/en/narino/el_cafe_de_narino/por_que_es_diferente/

[4] Web resource, please refer to: http://www.saludcapital.gov.co/DPYS/Tablas%20de%20Referencia/Codificación%20de%20Barrios%20por%20localidad.pdf

[5] Web resource, please refer to: https://bogota-laburbano.opendatasoft.com/explore/dataset/poligonos-localidades/