

Capstone Project Report

Introduction and Business Problem

- A customer, Carol, wants to open a new burger joint in Bogotá, Colombia.
- Due to Bogotá's high diversity and very large size, she asked me for help in order to find the best spot to place the burger joint.
- Bogotá has 20 different Localities (Districts) and we aim to find the best one.
- We need to choose a Locality that has good number of customers and low amount of competition.

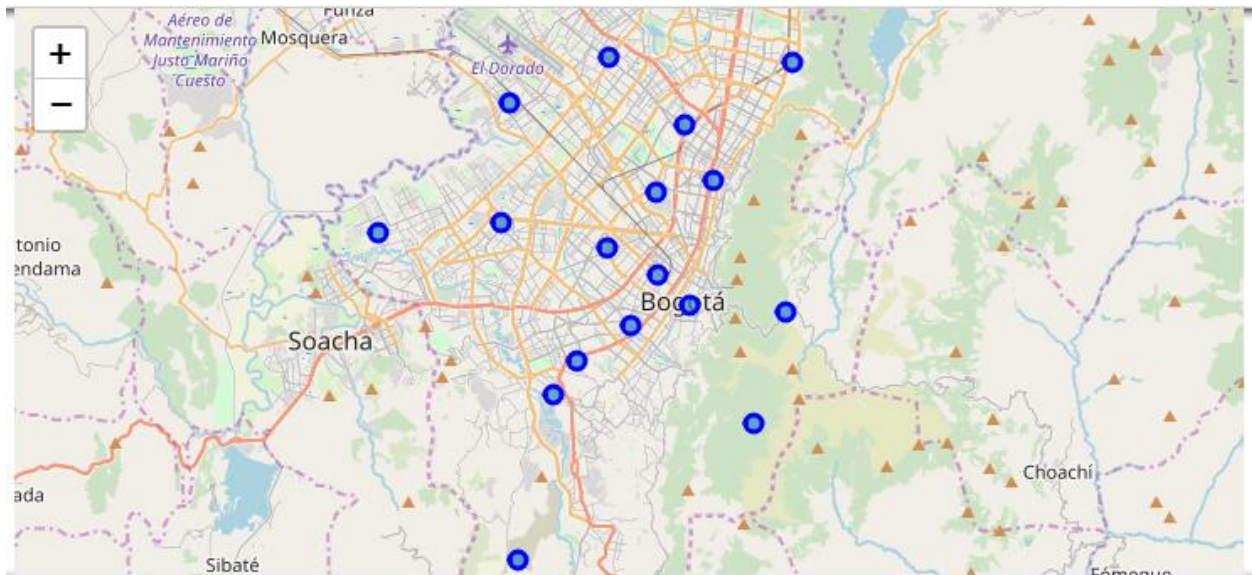
Data

- To help Carol in her search we will need to access following data
 - The Localities of Bogotá, Colombia from Wikipedia:
https://es.wikipedia.org/wiki/Anexo:Localidades_de_Bogot%C3%A1
 - The coordinates (latitude, longitude) of these Localities of Bogotá from Open Street Map APIs
 - From Foursquare we will need following venues data:
 - the burger joint venues of the Localities
 - the offices venues of the Localities
 - the high schools venues of the Localities
 - the universities venues of the Localities
- We will then leverage the data in order to determine which locality is the most appropriate in order to locate the burger joint.

Methodology

- For each locality, all office, school, university and burger joints venues data have been collected from Foursquare.
- Then for each locality, the sums of the office, school, university and burger joints were computed.
- For each of these 4 categories, a weight (or penalty) has been defined according to what Carol considers the most important.
 - Burger Joints have been weighted with -1, since Carol wants to avoid concurrence.
 - Schools have been weighted with 1, since student are good customers.
 - Universities have been weighted with 1.5, since students are good customers.
 - Offices have been weighted with 2, since employees are even better customers.
- Note that the weights can be modified according to the importance of each category.
- Lastly, a score was computed for each locality as the weighted sum of the number of venues in each of the 4 categories (school, university, office, burger joints).

Localities of Bogotá, Colombia

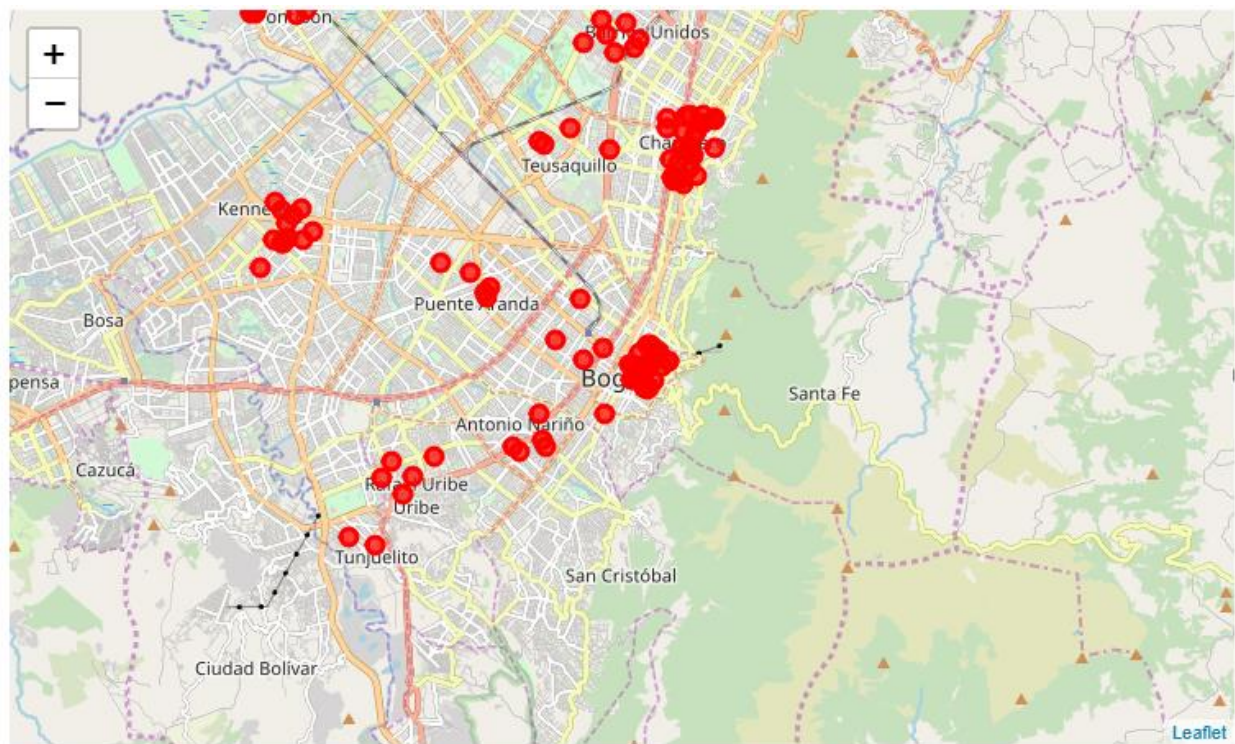


	Localidades	Latitude	Longitude
0	Usaquén	4.695047	-74.031493
1	Chapinero	4.647120	-74.063458
2	Santa Fe (Bogotá)	4.593766	-74.034314
3	San Cristóbal (Bogotá)	4.548658	-74.047473
4	Usme	4.411136	-74.129108
5	Tunjuelito	4.560148	-74.128922
6	Bosa (Bogotá)	4.625492	-74.200280
7	Kennedy (Bogotá)	4.629682	-74.149935
8	Fontibón	4.678737	-74.146988
9	Engativá	4.696628	-74.106120
10	Suba	4.761197	-74.082518
11	Barrios Unidos (Bogotá)	4.669679	-74.075483
12	Teusaquillo	4.642343	-74.087217
13	Los Mártires	4.608375	-74.086538
14	Antonio Nariño (Bogotá)	4.588253	-74.097455
15	Puente Aranda	4.619234	-74.106763
16	La Candelaria	4.596515	-74.073492
17	Rafael Uribe Uribe (Bogotá)	4.573490	-74.119208
18	Ciudad Bolívar (Bogotá)	4.492632	-74.143119
19	Sumapaz (Bogotá)	4.097379	-74.342307

In the map and table above, we can see the different localities of Bogotá, once we have these, we are going to look at different scenarios to get the best results.

Burger Joints in Bogotá Localities

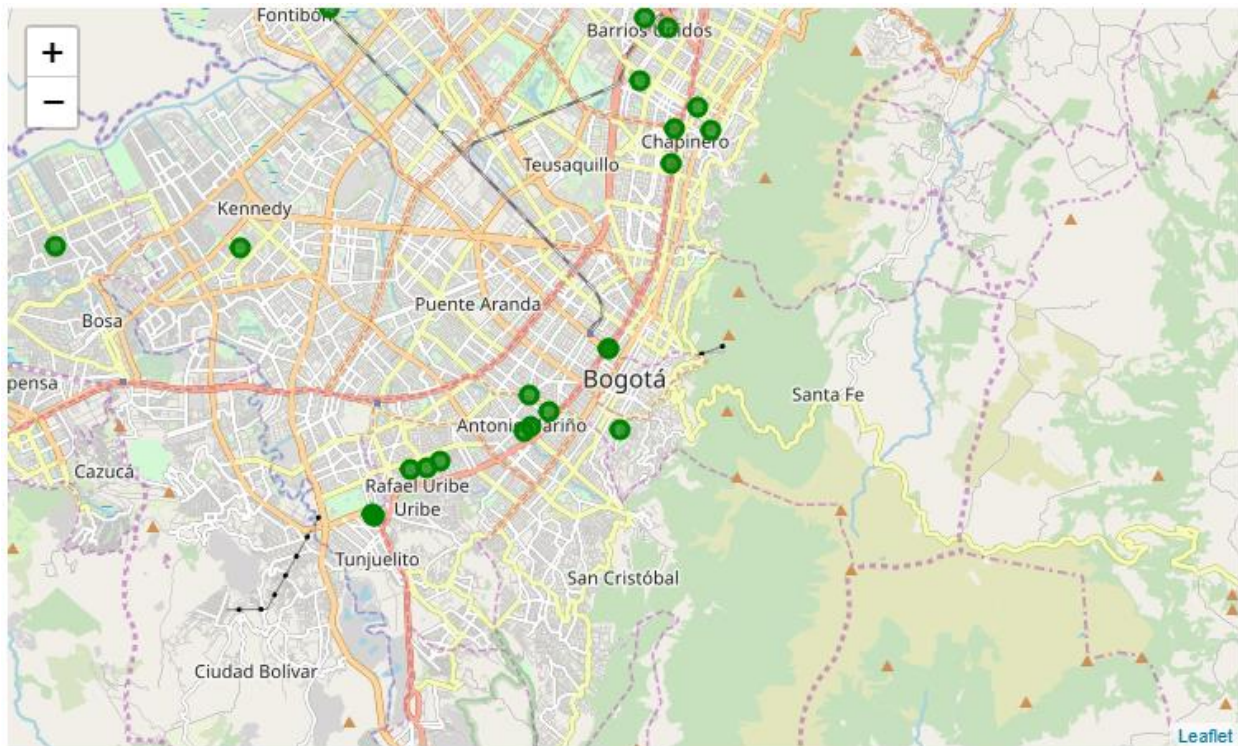
	Localidad	Localidad Latitude	Localidad Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Usaquén	4.695047	-74.031493	La Hamburguesería	4.695310	-74.031716	Burger Joint
1	Usaquén	4.695047	-74.031493	Home Burgers	4.693883	-74.032853	Burger Joint
2	Usaquén	4.695047	-74.031493	Martinica Motos	4.695222	-74.031873	Burger Joint
3	Usaquén	4.695047	-74.031493	Black Burger & Grill	4.693150	-74.032178	Burger Joint
4	Usaquén	4.695047	-74.031493	El corral Gourmet	4.701353	-74.029992	Burger Joint



We created a table with all the 'Burger Joint' venues in Bogota and we moved this information into a map to make clear where are the areas with higher number of these venues to try to avoid them.

High Schools in Bogotá Localities

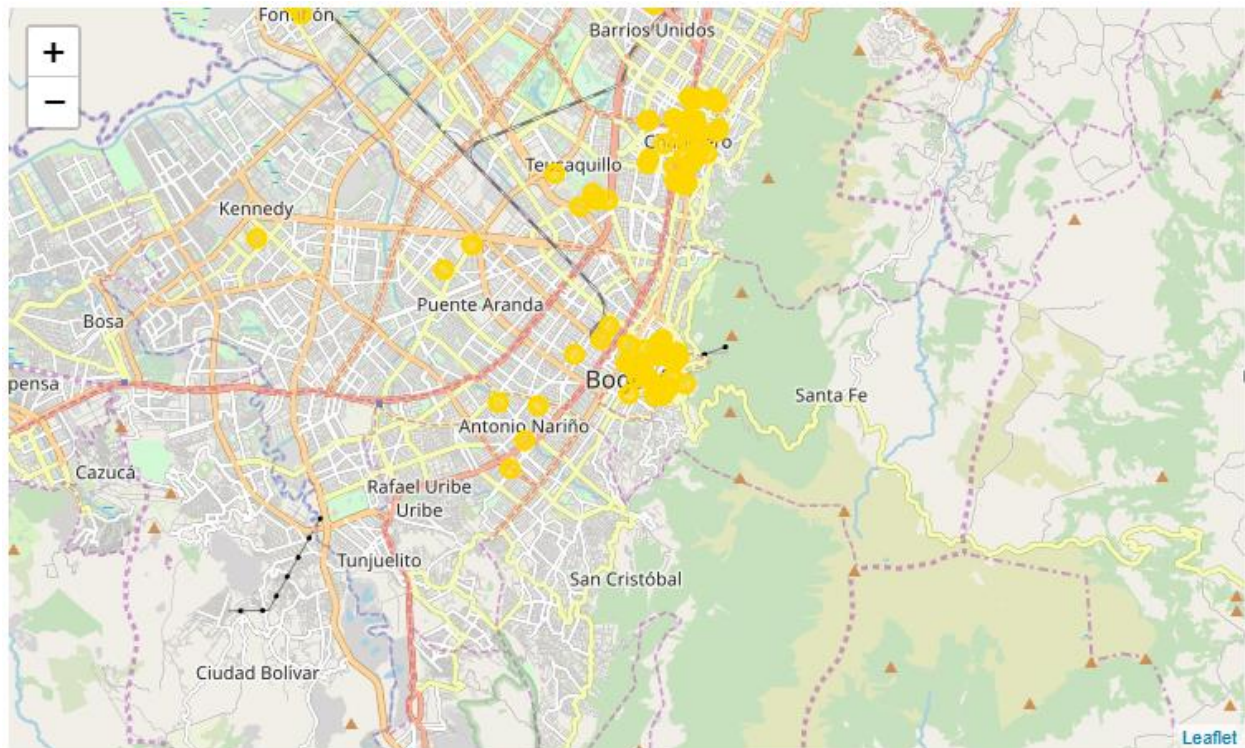
	Localidad	Localidad Latitude	Localidad Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Usaquén	4.695047	-74.031493	Gimnasio Los Cerros	4.694464	-74.026556	School
1	Chapinero	4.647120	-74.063458	Colegio Nuestra Señora de Chiquinquirá	4.649800	-74.065643	High School
2	Chapinero	4.647120	-74.063458	Colegio Distrital Simón Rodríguez	4.653948	-74.060732	High School
3	Chapinero	4.647120	-74.063458	Colegio del Sagrado Corazón de Jesús Bethlemitas	4.649182	-74.058036	High School
4	Chapinero	4.647120	-74.063458	Colegio Ervit	4.642634	-74.066469	High School



We created a table with all the High Schools in Bogotá, and we moved this information into a map to make clear where are the areas with higher number of young students.

Universities in Bogotá Localities

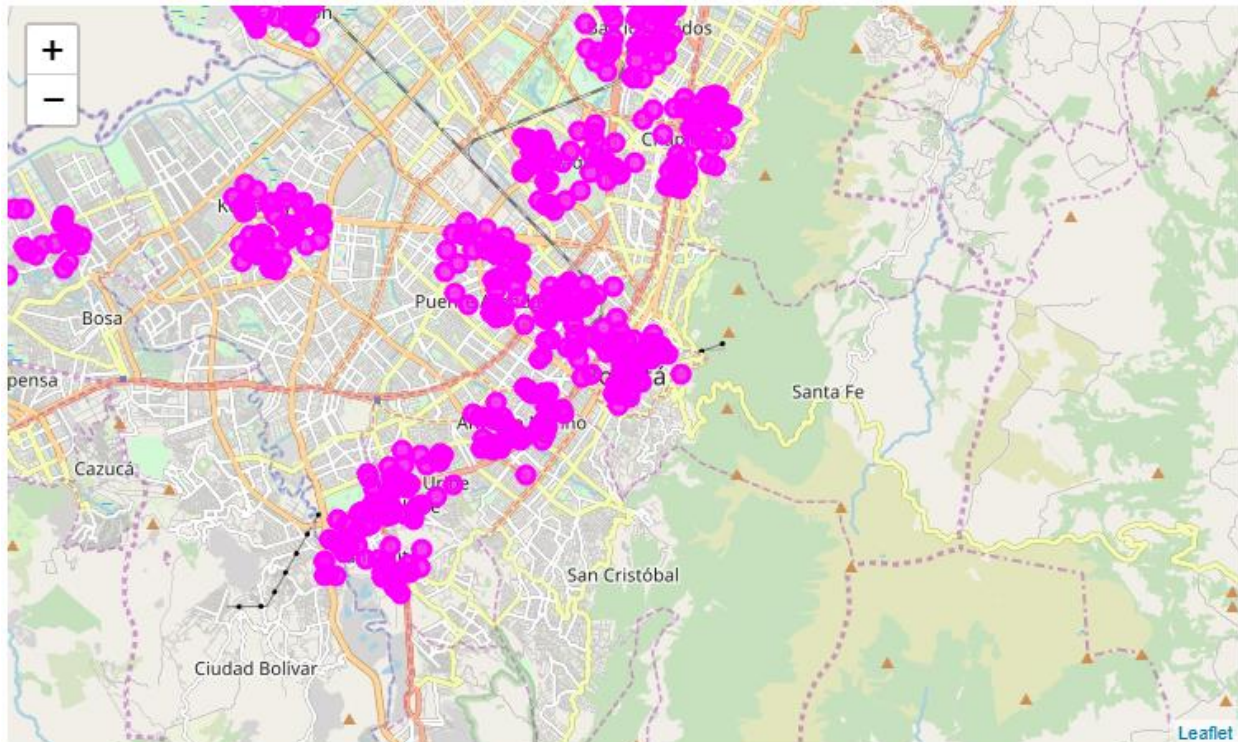
	Localidad	Localidad Latitude	Localidad Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Usaquén	4.695047	-74.031493	Tecnologico de Monterry	4.692100	-74.034916	University
1	Usaquén	4.695047	-74.031493	Centrum Católica	4.690426	-74.038657	University
2	Usaquén	4.695047	-74.031493	UTadeo M7a	4.705390	-74.032827	University
3	Chapinero	4.647120	-74.063458	CIDCA	4.647201	-74.063729	University
4	Chapinero	4.647120	-74.063458	Universidad Konrad Lorenz	4.648584	-74.061586	University



We created a table with all the Universities in Bogota, and we moved this information into a map to make clear where are the areas with higher number of students.

Offices in Bogotá Localities

	Localidad	Localidad Latitude	Localidad Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Usaquén	4.695047	-74.031493	Parroquia Santa Bárbara	4.694884	-74.030599	Church
1	Usaquén	4.695047	-74.031493	Centro Médico de la Sabana	4.696026	-74.031596	Doctor's Office
2	Usaquén	4.695047	-74.031493	WeWork Usaquén	4.694039	-74.032702	Coworking Space
3	Usaquén	4.695047	-74.031493	Fundacion Santa Fe de Bogota	4.695136	-74.033211	Hospital
4	Usaquén	4.695047	-74.031493	Santa Ana Medical Center	4.696085	-74.032065	Doctor's Office



We created a table with all the Offices in Bogota, and we moved this information into a map to make clear where are the areas with higher number of employees.

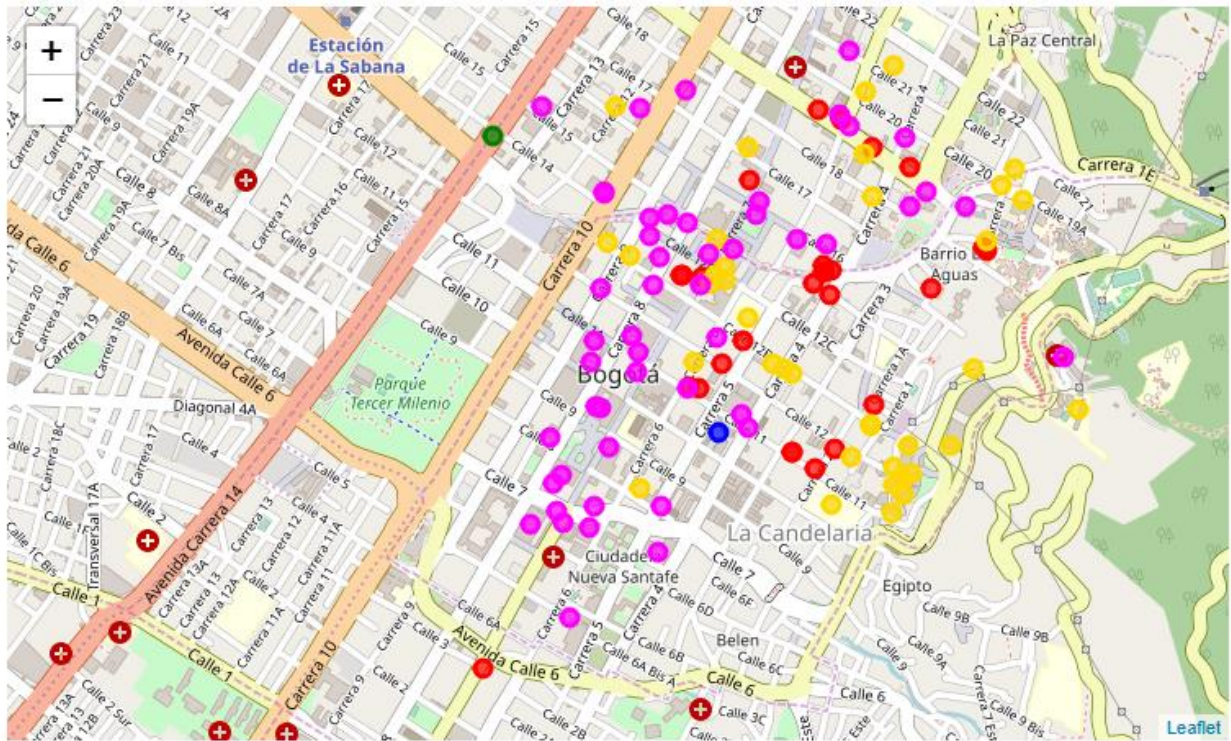
Results

	Localidad	Score
16	La Candelaria	130.5
1	Chapinero	120.0
12	Teusaquillo	103.5
13	Los Mártires	97.5
9	Engativá	96.5
11	Barrios Unidos (Bogotá)	95.5
14	Antonio Nariño (Bogotá)	95.0
8	Fontibón	93.0
15	Puente Aranda	92.0
17	Rafael Uribe Uribe (Bogotá)	90.0
5	Tunjuelito	88.0
0	Usaquén	83.5
7	Kennedy (Bogotá)	83.5
10	Suba	52.0
6	Bosa (Bogotá)	45.0
4	Usme	0.0
3	San Cristóbal (Bogotá)	0.0
2	Santa Fe (Bogotá)	0.0
18	Ciudad Bolívar (Bogotá)	0.0
19	Sumapaz (Bogotá)	0.0

- The Locality with the best score is “La Candelaria” with 130.5, being the best option.
- Follows closely “Chapinero” with 120.

These options maximize the number of potential customers from offices and universities and at the same time have not too large competence.

Best Place for the Burger Joint in Bogotá is “La Candelaria”



The blue point is the best place to allocate our Burger Joint from the methodology that we used in our study case.

Recommendation

The following analysis can be improved with following extensions:

- Consider more categories. For example, like "Night life" which is also a good source for customers. But also like "Restaurants", which even if not burger joints may be some concurrence if too many.
- In the Locality itself, it can also be computed the distance between all the venues in order to find a place with the greatest number of potential customers.
- Using smaller geographical areas like Neighborhoods could improve the accuracy for the scores.