# Introduction and Business Problem

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

#### Data

- To help Jeronimo in his search we will need to access following data:
- https://es.wikipedia.org/wiki/Anexo:Localidades de Bogot%C3%A1 The Localities of Bogotá, Colombia from Wikipedia:
- The coordinates (latitude, longitude) ot 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

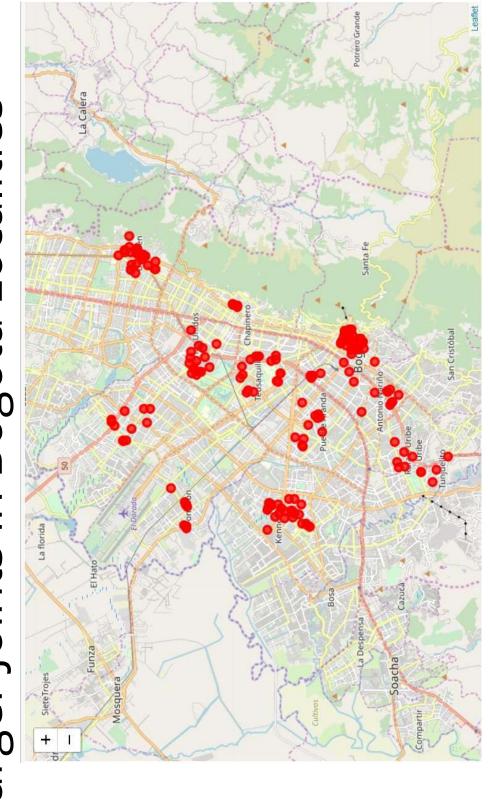
- For each locality, all office, school, university and burger joints venues data have been collected from Foursquare.
- Then for each locality, the sums of the office, school, university and burger joints were computed.
- For each of this 4 categories, a weight (or penalty) has been defined according to what Jeronimo considers the most important.
- Burger Joints have been weighted with -1, since Paolo 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 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). category.

## Localities of Bogotá, Colombia

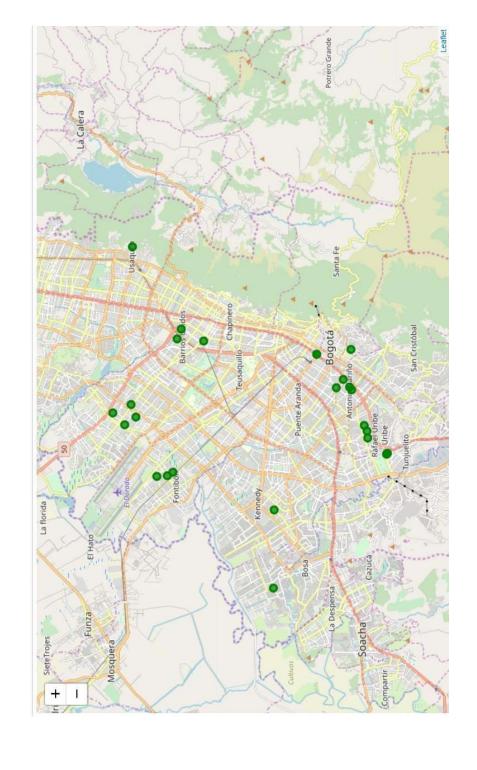


0         Usaquén         4695047         74.0453           1         Chapinero         4.649917         74.0465           2         Santa Fe (Bogotá)         4.593766         74.0454           3         San Cristóbal (Bogotá)         4.593766         74.0473           4         Usme         4.411136         74.128           6         Bosa (Bogotá)         4.625515         74.1468           9         Fontibón         4.625515         74.1468           9         Fontibón         4.639451         74.1468           9         Fontibón         4.639628         74.106           10         Suba         4.761197         74.082           11         Barrios Unidos (Bogotá)         4.696628         74.106           12         Los Mártires         4.698678         74.086           14         Antonio Narriño (Bogotá)         4.69875         74.086           15         Puente Aranda         4.19234         74.1067           16         La Candelaria         4.596515         74.1067           17         Rafael Uribe Uribe (Bogotá)         4.536515         74.1067           18         Ciudad Bolivar (Bogotá)         4.573490         74.113		Localidades	Latitude	Longitude
Chapinero         4.649917           Santa Fe (Bogotá)         4.593766           San Cristóbal (Bogotá)         4.593768           Usme         4.41136           Tunjuelito         4.560148           Bosa (Bogotá)         4.625515           Kennedy (Bogotá)         4.629451           Fontibón         4.678737           Engativá         4.696628           Suba         4.761197           Barrios Unidos (Bogotá)         4.696579           Teusaquillo         4.641244           Los Mártires         4.608375           Antomio Nariño (Bogotá)         4.598253           Puente Aranda         4.596515           Rafael Uribe Uribe (Bogotá)         4.59632           Ciudad Bolívar (Bogotá)         4.92632           Sumapaz (Bogotá)         4.098800	0	Usaquén	4.695047	-74.031493
Santa Fe (Bogotá) 4.593766  San Cristóbal (Bogotá) 4.548658  Usme 4.411136  Tunjuelito 4.60148  Bosa (Bogotá) 4.625615  Kennedy (Bogotá) 4.629451  Fontibón 4.678737  Engativá 4.696628  Suba 4.761197  Barrios Unidos (Bogotá) 4.641244  Los Mártires 4.608375  Antonio Nariño (Bogotá) 4.588253  Puente Aranda 4.619234  La Candelaria 4.596515  Rafael Uribe Uribe (Bogotá) 4.59832  Ciudad Bolívar (Bogotá) 4.92632  Sumapaz (Bogotá) 4.098800	-	Chapinero	4.649917	-74.046269
San Cristóbal (Bogotá)         4.548658           Usme         4.41136           Tunjuelito         4.625451           Bosa (Bogotá)         4.629451           Fontibón         4.678737           Engativá         4.696628           Suba         4.761197           Barrios Unidos (Bogotá)         4.669679           Teusaquillo         4.641244           Los Mártires         4.608375           Antonio Nariño (Bogotá)         4.588253           Puente Aranda         4.619234           La Candelaria         4.596515           Rafael Uribe Uribe (Bogotá)         4.92632           Ciudad Bolívar (Bogotá)         4.92632           Sumapaz (Bogotá)         4.098800	2	Santa Fe (Bogotá)	4.593766	-74.034314
Usme         4.41136           Tunjuelito         4.560148           Bosa (Bogotá)         4.629451           Kennedy (Bogotá)         4.678737           Fontibón         4.696628           Suba         4.761197           Parrios Unidos (Bogotá)         4.669679           Teusaquillo         4.641244           Los Mártires         4.608375           Antonio Nariño (Bogotá)         4.58253           Puente Aranda         4.19234           La Candelaria         4.596515           Rafael Uribe Uribe (Bogotá)         4.492632           Ciudad Bolívar (Bogotá)         4.492632           Sumapaz (Bogotá)         4.098800	က	San Cristóbal (Bogotá)		-74.047473
Tunjuelito 4.560148  Bosa (Bogotá) 4.625515  Kennedy (Bogotá) 4.629451  Fontibón 4.678737  Engativá 4.696628  Suba 4.761197  Barrios Unidos (Bogotá) 4.669679  Teusaquillo 4.641244  Los Mártires 4.608375  Antonio Nariño (Bogotá) 4.58253  Puente Aranda 4.619234  La Candelaría 4.595615  Rafael Uribe Uribe (Bogotá) 4.573490  Ciudad Bolívar (Bogotá) 4.92632  Sumapaz (Bogotá) 4.098800	4	Usme		-74.129108
Bosa (Bogotá)         4.625515           Kennedy (Bogotá)         4.629451           Fontibón         4.629451           Suba         4.761197           Barrios Unidos (Bogotá)         4.669679           Teusaquillo         4.641244           Los Mártires         4.608375           Antonio Nariño (Bogotá)         4.588253           Puente Aranda         4.619234           La Candelaria         4.596515           Rafael Uribe Uribe (Bogotá)         4.92632           Ciudad Bolívar (Bogotá)         4.92632           Sumapaz (Bogotá)         4.098800	5	Tunjuelito	4.560148	-74.128922
Kennedy (Bogotá)         4.629451           Fontibón         4.678737           Engativá         4.696628           Suba         4.761197           Barrios Unidos (Bogotá)         4.669679           Teusaquillo         4.641244           Los Mártires         4.608375           Antonio Nariño (Bogotá)         4.588253           Puente Aranda         4.619234           La Candelaria         4.506515           Rafael Uribe Uribe (Bogotá)         4.492632           Ciudad Bolívar (Bogotá)         4.492632           Sumapaz (Bogotá)         4.098800	9	Bosa (Bogotá)	4.625515	-74.200328
Fontibón         4.678737           Engativá         4.696628           Suba         4.761197           Barrios Unidos (Bogotá)         4.69679           Teusaquillo         4.641244           Los Mártires         4.608375           Antonio Nariño (Bogotá)         4.58253           Puente Aranda         4.619234           La Candelaria         4.595415           Rafael Uribe Uribe (Bogotá)         4.492632           Ciudad Bolívar (Bogotá)         4.92632           Sumapaz (Bogotá)         4.098800	7	Kennedy (Bogotá)	4.629451	-74.149927
Engativá 4.696628 Suba 4.761197 Barrios Unidos (Bogotá) 4.669679 Teusaquillo 4.641244 Los Mártires 4.608375 Antonio Nariño (Bogotá) 4.588253 Puente Aranda 4.619234 La Candelaria 4.596515 Rafael Uribe Uribe (Bogotá) 4.573490 Ciudad Bolívar (Bogotá) 4.492632 Sumapaz (Bogotá) 4.098800	8	Fontibón	4.678737	-74.146988
Suba 4.761197  Barrios Unidos (Bogotá) 4.669679  Teusaquillo 4.641244  Los Mártires 4.608375  Antonio Nariño (Bogotá) 4.588253  Puente Aranda 4.619234  La Candelaria 4.596515  Rafael Uribe Uribe (Bogotá) 4.573490  Ciudad Bolívar (Bogotá) 4.492632  Sumapaz (Bogotá) 4.098800	6	Engativá		-74.106120
Barrios Unidos (Bogotá) 4,669679  Teusaquillo 4,641244  Los Mártires 4,608375  Antonio Nariño (Bogotá) 4,588253  Puente Aranda 4,619234  La Candelaria 4,596515  Rafael Uribe Uribe (Bogotá) 4,573490  Ciudad Bolivar (Bogotá) 4,492632  Sumapaz (Bogotá) 4,098800	9	Suba		-74.082518
Teusaquillo 4.641244  Los Mártires 4.608375  Antonio Nariño (Bogotá) 4.58253  Puente Aranda 4.619234  La Candelaria 4.596515  Rafael Uribe Uribe (Bogotá) 4.573490  Ciudad Bolívar (Bogotá) 4.492632  Sumapaz (Bogotá) 4.098800	7	Barrios Unidos (Bogotá)	4.669679	-74.075483
Los Mártires 4,608375 Antonio Nariño (Bogotá) 4,588253 Puente Aranda 4,619234 La Candelaria 4,596515 Rafael Uribe Uribe (Bogotá) 4,573490 Ciudad Bolívar (Bogotá) 4,492632 Sumapaz (Bogotá) 4,098800	12	Teusaquillo	4.641244	-74.086336
Antonio Nariño (Bogotá) 4.588253 Puente Aranda 4.619234 La Candelaria 4.596515 Rafael Uribe Uribe (Bogotá) 4.573490 Ciudad Bolivar (Bogotá) 4.492632 Sumapaz (Bogotá) 4.098800	13	Los Mártires	4.608375	-74.086538
Puente Aranda 4.619234 La Candelaria 4.596515 Rafael Uribe Uribe (Bogotá) 4.573490 Ciudad Bolívar (Bogotá) 4.492632 Sumapaz (Bogotá) 4.098800	14	Antonio Nariño (Bogotá)	4.588253	-74.097455
La Candelaria 4,596515 Rafael Uribe Uribe (Bogotá) 4,573490 Ciudad Bolívar (Bogotá) 4,492632 Sumapaz (Bogotá) 4,098800	15	Puente Aranda		-74.106763
Rafael Uribe Uribe (Bogotá) 4.573490 Ciudad Bolívar (Bogotá) 4.492632 Sumapaz (Bogotá) 4.098800	16	La Candelaria	4.596515	-74.073492
Ciudad Bolívar (Bogotá) 4.492632 Sumapaz (Bogotá) 4.098800	11	Rafael Uribe Uribe (Bogotá)	4.573490	-74.119208
Sumapaz (Bogotá) 4.098800	18	Ciudad Bolívar (Bogotá)	4,492632	-74.143119
	19	Sumapaz (Bogotá)		-74.341530

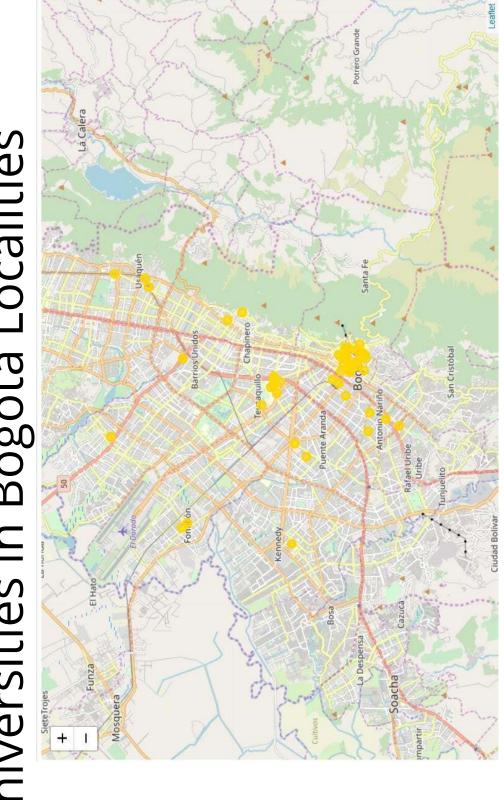
Burger Joints in Bogotá Localities

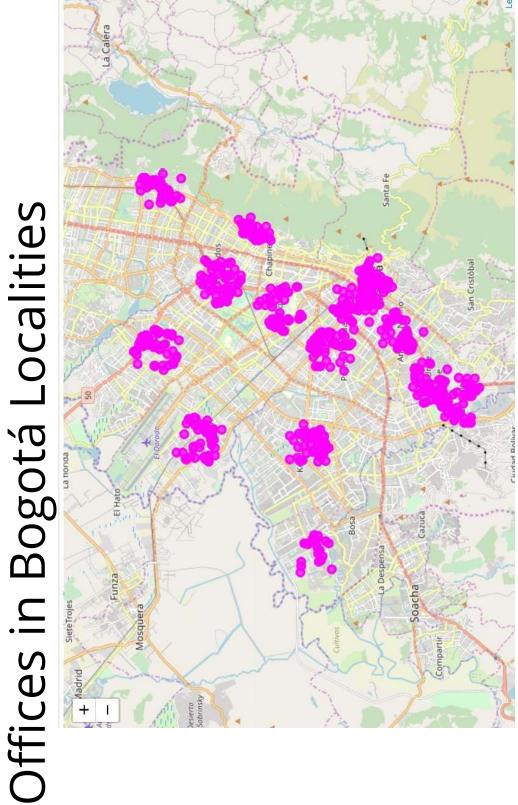


# High Schools in Bogotá Localities



Universities in Bogotá Localities





### Results

16	La Candelaria	109.5
14	Antonio Nariño (Bogotá)	101.0
œ	Fontibón	0.66
17	Rafael Uribe Uribe (Bogotá)	98.0
9	Tunjuelito	98.0
-	Chapinero	97.0
o	Engativá	94.5
12	Teusaquillo	94.0
13	Los Mártires	93.5
15	Puente Aranda	92.0
7	Barrios Unidos (Bogotá)	87.5
7	Kennedy (Bogotá)	75.5
0	Usaquén	74.5
10	Suba	54.0
9	Bosa (Bogotá)	49.0
4	Usme	0.0
က	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 109.5, being the best option.
- Follows closely "Antonio Nariño" with 101.
- These options maximizes
  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"

## Recommendation

- The following analysis can be improved with following extensions:
- which is also a good source for customers. But also like Consider more categories. For example like "Night life" "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 most number of potential customers.
- Using smaller geographical areas like Neighborhoods could improve the accuracy for the scores.