PREDICTING BEST INVESESTMENT IN BUENOS AIRES

Capstone Project – The Battle of Neighborhoods

1 Introduction

1.1 Background

Buenos Aires (officialy known as Ciudad Autónoma de Buenos Aires), is the capital and most populate city of the República Argentina.

It is divided in a total of 48 neighborhoods, and it has a total of 3,075,646 habitants.

Buenos Aires is a cosmopolitan and turistic city, due to the story and multiple turistic atractions and gastronomy.

1.2 Problem

Investing in a gastronomic store in a big city can lead to problems of lack of costumers due to competitiveness. Depending on each neighborhood we can determine what kind of stores are more common.

According to Baires Magazine (www.bairesmagazine.com.ar) there are over 8,000 food stores in Buenos Aires. And, of course, we can distinguish some neighborhoods as gastronomic over others, such as Puerto Madero, for example.

A journalist research from La Nación (www.lanacion.com.ar) indicates that only seven Buenos Aires neighborhoods gather 58% of the officially registered stores.

We have been hired by a group of investors, who want to invest in a new store. They want us to give them advice about two points:

- What kind of sotre is convenient, in terms of oportunity of clients

- Where is the optimum place

In order to give answers, we have made a research and we propose the following analysis:

- We will study the different types of stores (e.g. cafe, restaurants, tea room, bar.... etc) and the frecuency of appearence in the differents neighborhoods according to the number of habitants. For that, we have to get the 10 most common venues for heach neighborhood.

- Then, we will sort the different results according to the total habitants of each neighborhood. In the case, we will pondarate a neighborhood with more habitants than other in case they had the same density of the same gastronomic type store.

2 Data acquisition

2.1 Sources

For the analysis we will use the following dataset:

- Wikipedia with the different neighborhoods and habitants:
  https://es.wikipedia.org/wiki/Anexo:Barrios_de_la_ciudad_de_Buenos_Aires

- Buenos Aires´s location dataset (government website):
  https://data.buenosaires.gob.ar/dataset/barrios

- Foursquare API to obtein the information for each neighborhood

2.2 Data conditioning

In Wikipedia we found a table with the initial information:

- Neighborhood
- Surface
- Number of inhabitants
- Inhabitants density
- Comune or group that each neighborhood belongs

Anyway, we had to work with the data to be usable. So, we had to check the data types, and change the argentinian punctuation in numbers in order to use the data correctly.

Moreover, we had a government website with different datasets, from where we downloaded different information and combined in one table to have the different coordinates for each neighborhood.

	Barrio	Superficie (km2)	Habitantes	Densidad de habitantes	Comuna	latitude	longitude
0	Agronomía	2.1	34580.0	8645.0	Comuna 15	-34.600000	-58.483330
1	Almagro	4.1	139262.0	33960.0	Comuna 5	-34.600000	-58.416670
2	Balvanera	4.4	152198.0	34950.0	Comuna 3	-34.610180	-58.406540
3	Barracas	7.6	77474.0	10194.0	Comuna 4	-34.650000	-58.366670
4	Belgrano	6.8	138942.0	20433.0	Comuna 13	-34.566670	-58.466670

Tabla 1: First five rows of the dataset acconditioned

3 Methodology

In order to get the information about the different stores in Buenos Aires for each neighborhood, we used the Foursquare API. We explored each neighborhood and got the following number of venues.

Neighborhood					
Núñez	77	La Boca	15	Palermo	5
San Nicolás	71	Vélez Sarsfield	15	Villa Soldati	4
Mataderos	57	Villa Urquiza	13	Liniers	4
Almagro	57	Balvanera	13	Montserrat	4
Flores	57	Parque Avellaneda	12	Villa Lugano	4
Nueva Pompeya	51	Villa Santa Rita	12	Villa Riachuelo	4
Recoleta	48	Parque Patricios	11	Boedo	3
Puerto Madero	43	La Paternal	10	Monte Castro	2
Saavedra	36	Versalles	10	Barracas	1
Belgrano	35	Villa Luro	10		
Constitución	35	Parque Chas	9		
Colegiales	35	Caballito	9		
Villa Devoto	35	Villa Crespo	9		
Coghlan	35	San Cristóbal	9		
San Telmo	29	Agronomía	7		
Chacarita	21	Villa del Parque	7		
Floresta	20	Villa Gral. Mitre	6		
Villa Pueyrredón	18	Villa Real	6		
Parque Chacabuco	18	Retiro	6		
		Villa Ortúzar	6		

Tabla 2: Venues found for each Neighborhood

Then, we grouped the different venues with their venue category, and analyzed the most common venues for each neighborhood. Getting the following table as an example for the first five 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	Agronomía	Grocery Store	Design Studio	Photography Studio	Snack Place	Athletics & Sports	Coffee Shop	Bus Stop	Falafel Restaurant	Food Court	Food & Drink Shop
1	Almagro	Café	Theater	Argentinian Restaurant	Bakery	Gym / Fitness Center	Empanada Restaurant	Martial Arts Dojo	Coffee Shop	Pizza Place	Public Art
2	Balvanera	Café	Hotel	Fast Food Restaurant	Bus Station	Bus Stop	Pharmacy	Restaurant	Electronics Store	Gym	Peruvian Restaurant
3	Barracas	Music Venue	Ice Cream Shop	Event Space	Food Stand	Food Service	Food Court	Food & Drink Shop	Fish Market	Fast Food Restaurant	Farmers Market
4	Belgrano	Coffee Shop	Pharmacy	Deli / Bodega	Café	Supermarket	Plaza	Bookstore	Ice Cream Shop	Argentinian Restaurant	Pastry Shop
5	Boedo	Performing Arts Venue	Pier	Lounge	Women's Store	Food Service	Food Court	Food & Drink Shop	Fish Market	Fast Food Restaurant	Farmers Market

Tabla 3: Most Common Venue for each Neighborhood (First 5)

Proceeding, we analyzed the different type of venue appearances.

We preponderate as follows:

- 10 points: 1st Most Common Venue
- 9 points: 2nd Most Common Venue
  ...
- 1 point: 10th Most Common Venue

Getting the top venue categories in Buenos Aires:

	Total
Café	167.0
Pizza Place	146.0
Ice Cream Shop	131.0
Argentinian Restaurant	124.0
Coffee Shop	117.0
Bus Stop	102.0
Pharmacy	82.0
Plaza	72.0
Restaurant	67.0
Hotel	64.0

Tabla 4: Top 10 venues category in Buenos Aires

With that results, we could see the 10th most common Venues in Buenos Aires, showing us two things:

- Where are the most common places for people to go
- What kind of store are the most likely for us to attract customers

Then, we continued the análisis for the top 5 venue categories:

- Café (red)
- Pizza Place (blue)
- Ice Cream Shop (green)
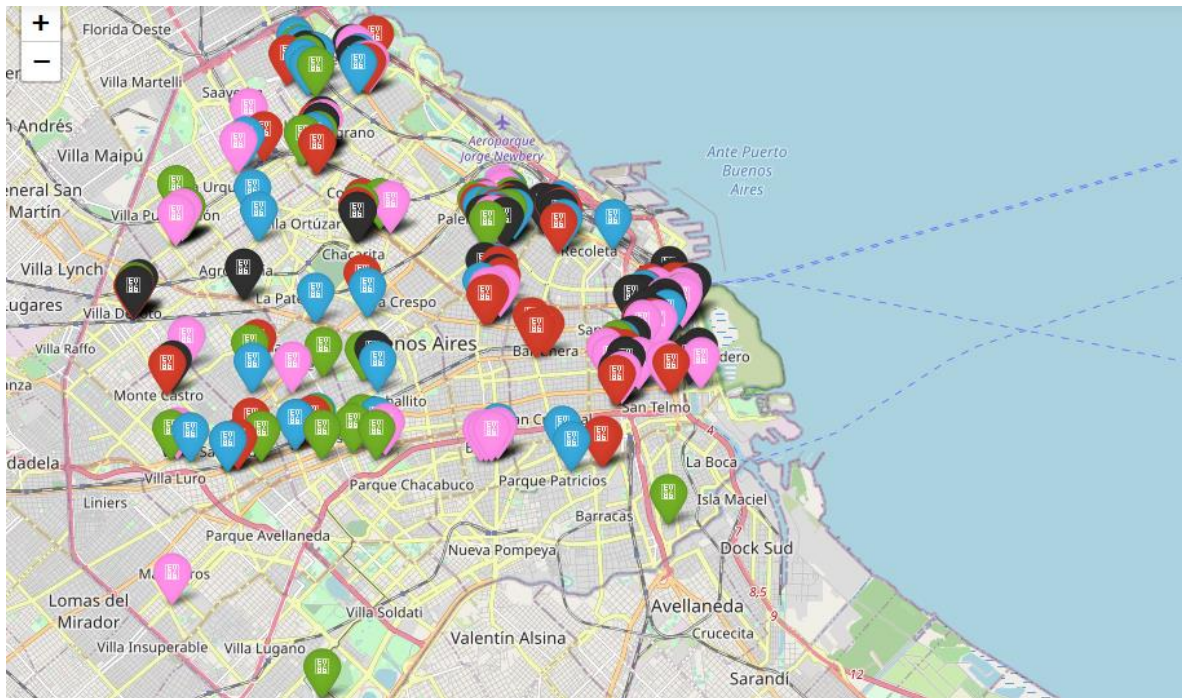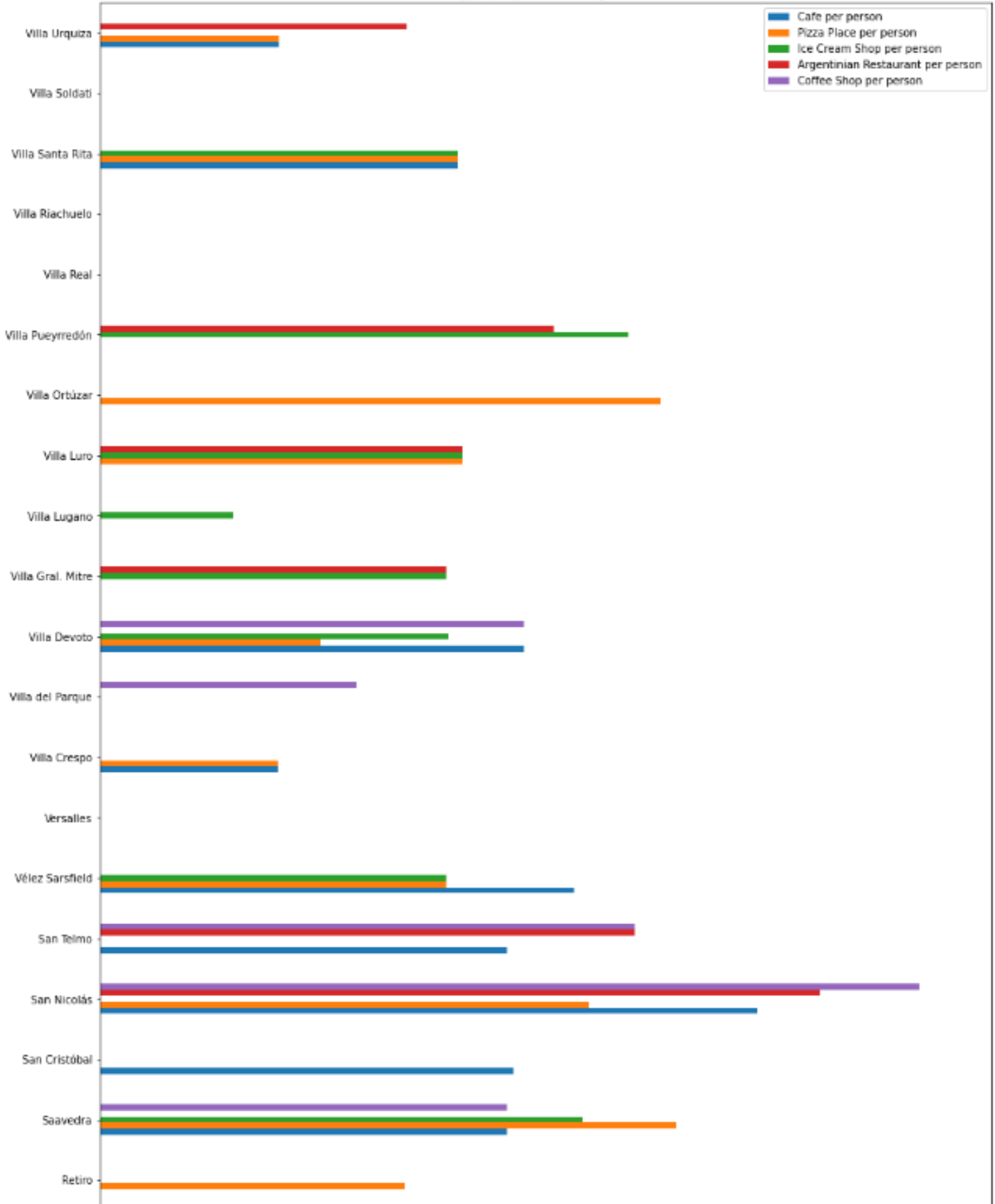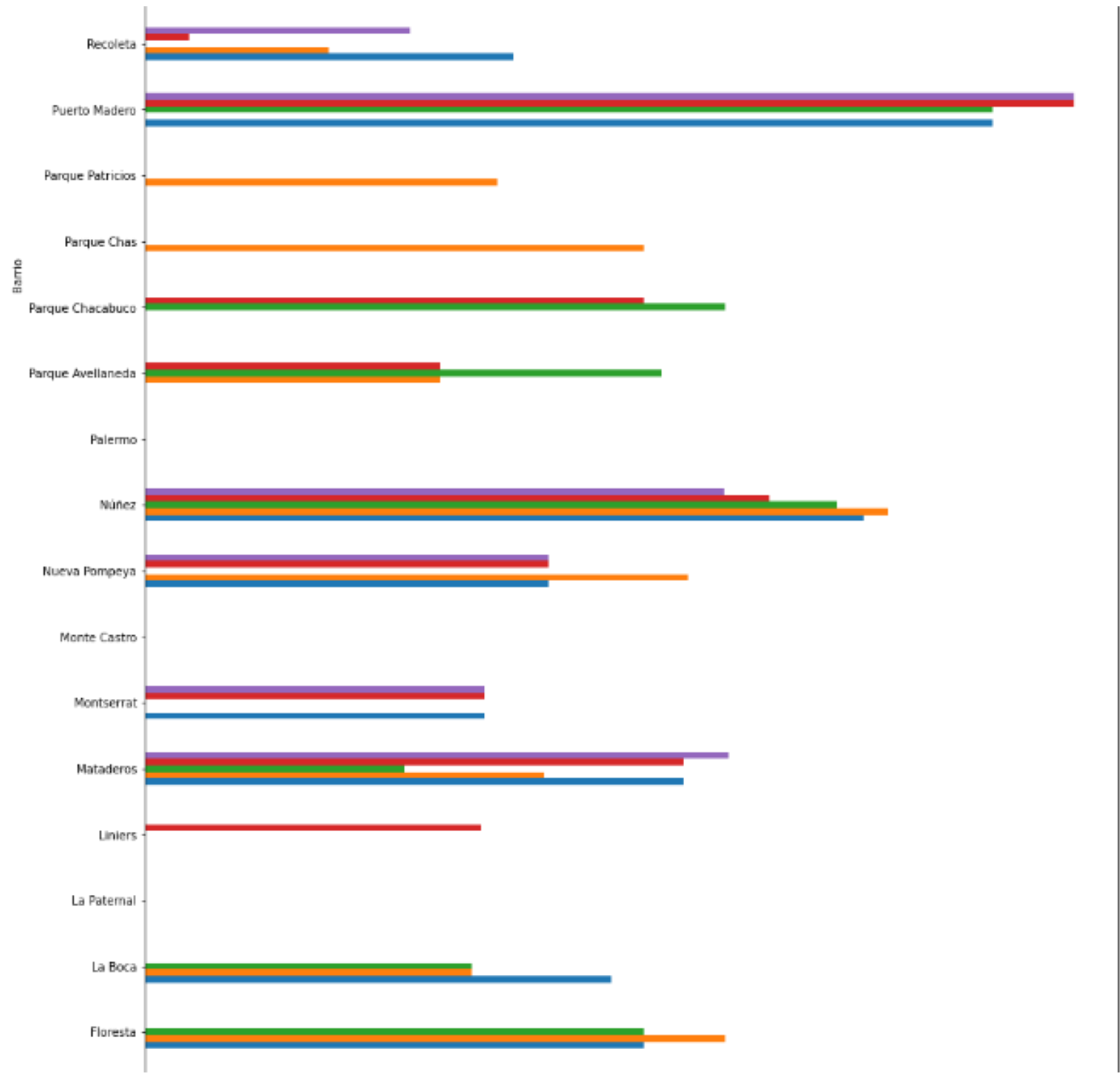- Argentinian Restaurant (pink)
- Coffee Shop (black)

Ilustración 1: Venues in Buenos Aires

Then, we focused in the amount of venues in each neighborhood and calculate for each neighborhood the density of each category in relation to the number of inhabitants.

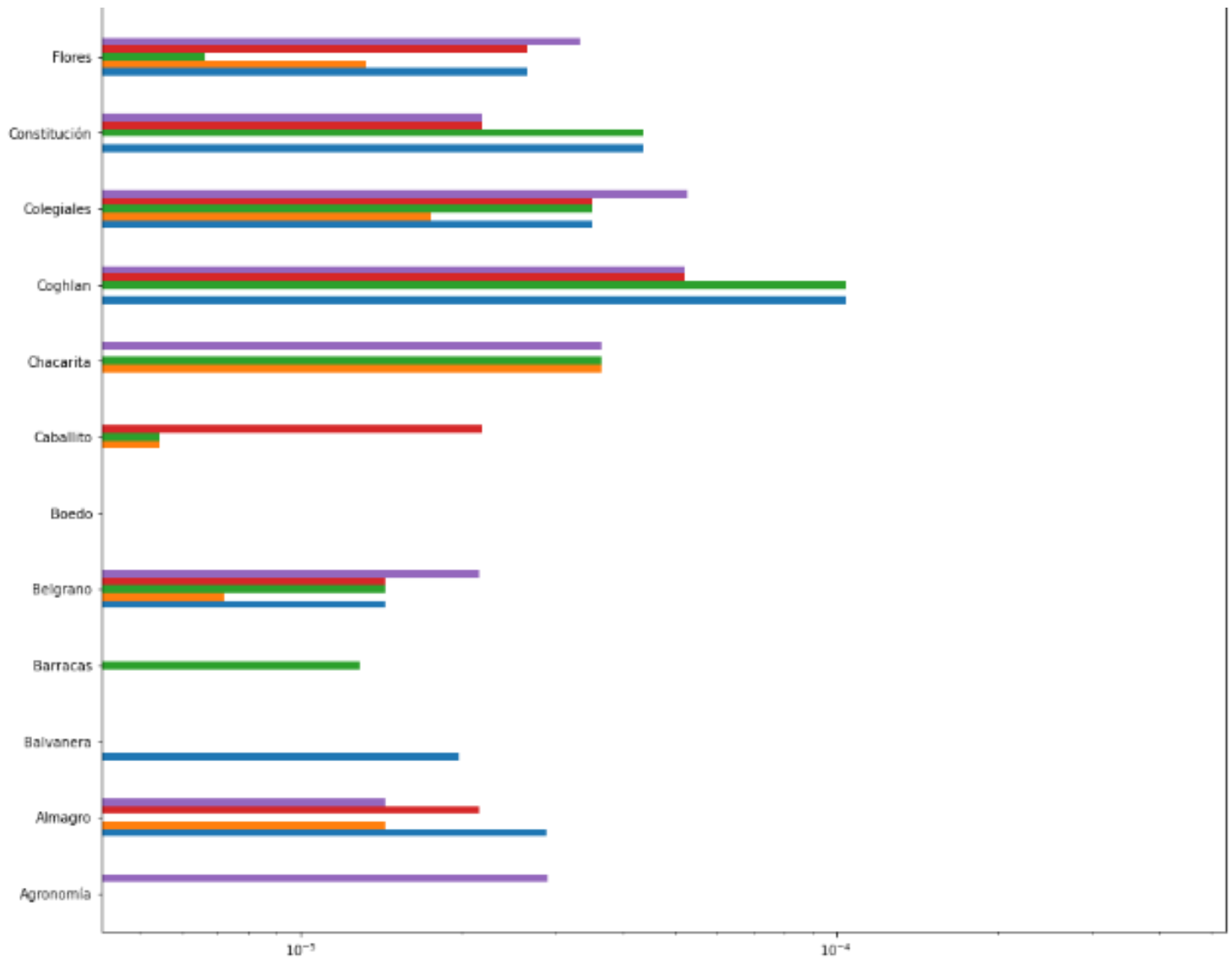Store type per person in neighborhoods

Tabla 5: Density of stores for each neighborhood

Finally, in order to see where to place the investment, we searched for the neighborhoods with more inhabitants but least store density.

We got that Palermo is the neighborhood with the largest number of inhabitants but with none of the venues categories we were looking for.

4 Results

As a summary of the results obteined:

- The top 5 venue category in Buenos Aires city are:

	Total
Café	167.0
Pizza Place	146.0
Ice Cream Shop	131.0
Argentinian Restaurant	124.0
Coffee Shop	117.0

- The neighborhood with largest number of inhabitants but least store density:

Barrio	Cafe per person	Habitantes
Palermo	NaN	252312.0
Caballito	NaN	183396.0
Villa Lugano	NaN	114253.0
Barracas	NaN	77474.0
Villa del Parque	NaN	58573.0

Barrio	Pizza Place per person	Habitantes
Palermo	NaN	252312.0
Balvanera	NaN	152198.0
Villa Lugano	NaN	114253.0
Barracas	NaN	77474.0
Villa del Parque	NaN	58573.0

Barrio	Ice Cream Shop per person	Habitantes
Palermo	NaN	252312.0
Recoleta	NaN	188780.0
Balvanera	NaN	152198.0
Almagro	NaN	139262.0
Villa Crespo	NaN	89859.0

Barrio	Argentinian Restaurant per person	Habitantes
Palermo	NaN	252312.0
Balvanera	NaN	152198.0
Villa Lugano	NaN	114253.0
Villa Crespo	NaN	89859.0
Barracas	NaN	77474.0

Barrio	Coffee Shop per person	Habitantes
Palermo	NaN	252312.0
Caballito	NaN	183396.0
Balvanera	NaN	152198.0
Villa Lugano	NaN	114253.0
Villa Crespo	NaN	89859.0

5   Discussion

As an observation, we can say that the thing that in Palermo doesn´t appears any venue for the top 5 venue category in some way doesn´t seems real. Thinking of that, this could be because in Argentina the most used location platform it isn´t Foursqueare but Google Maps, so it can be usefull to permform the same análisis with Google API and contrast results.

6 Conclusion

In this study we analyze the most common gastronomic places to go in Buenos Aires, with the aim of knowing which are the most profitable businesses when obtaining clients. Then, we look for where is the optimal place to locate the investment, based on the number of inhabitants of each neighborhood and the density according to inhabitants of the gastronomic places previously obtained.

With that said, we can determine that the optimal investment is to put a Cafe in Palermo. Because the Cafe is the best way to attract customers but in Palermo, according to information from Foursquare, it is where it is most likely due to its high number of inhabitants but few Cafes in that neighborhood.

7 Sources

http://www.bairesmagazine.com.ar/datos/gastronomia.html

https://www.lanacion.com.ar/buenos-aires/casi-el-60-de-los-locales-gastronomicos-se-concentran-en-siete-barrios-portenos-nid2095107