

# **The Battle of the Neighborhoods**

IBM Capstone Project

## **Introduction and Business Problem**

### **Introduction**

Barcelona is due to its geographic location and culture one of Europe's best cities to live in. It has cuisines from all over the world but in this project we will search for the best place in Barcelona to open a Peruvian restaurant. While Peru is best known for ceviche, the marinated raw seafood dish, Peru's food is remarkable for the diversity of its ingredients, from wonderful fresh fish to astounding varieties of potatoes, corn and chilies. But it's still a undiscovered cuisine, and a multicultural city like Barcelona is the perfect place to show people from all over the world how amazing Peruvian food is.

### **Business Problem**

This report focusses on the issue of where to open a new Peruvian restaurant in Barcelona. There are many factors which can contribute in finding the perfect location but we will mainly focus on location and the proximity of other Peruvian restaurants.

## **Data Acquisition and Cleaning**

### **Data Acquisition**

This project works with two sets of data. The first dataset consists of Barcelona's different neighborhoods which we will get from a wikipedia page. The second will be the geometric coordinates of each district in Barcelona which I found online. After we have obtained them we will merge them together so we will have a clear overview of the latitudes and longitudes of each district in Barcelona.

### **Data cleaning**

We will prepare the dataframe so that we just have the 3 most important columns: District, Size km<sup>2</sup> and Population. We than make a seperate dataframe for the latitudes and longitudes and at last we merge both dataframes together so we will end up with a dataframe like this.

## Methodology

### Scraping Barcelona Districts Table from Wikipedia

I started by scraping the Wikipedia page for the districts of Barcelona so that in the end we will have a dataframe with all the districts of Barcelona and their size and population like the dataframe shown below.

	District	Size km <sup>2</sup>	Population
0	Ciutat Vella	4.49	111,290
1	Eixample	7.46	262,485
2	Sants-Montjuïc	21.35	177,636
3	Les Corts	6.08	82,588
4	Sarrià-Sant Gervasi	20.09	140,461
5	Gràcia	4.19	120,087
6	Horta-Guinardó	11.96	169,920
7	Nou Barris	8.04	164,981
8	Sant Andreu	6.56	142,598
9	Sant Martí	10.80	221,029

### Calculating Latitude and Longitude per District and merge both dataframes together

The next step in the process was to get the latitude and longitude per district so later we can put the Peruvian restaurants we find using Foursquare in the correct district. The final dataframe will look like this.

	District	Size km <sup>2</sup>	Population	Latitude	Longitude
0	Ciutat Vella	4.49	111,290	41.380218	2.17319
1	Eixample	7.46	262,485	41.388960	2.16179
2	Sants-Montjuïc	21.35	177,636	41.372631	2.15460
3	Les Corts	6.08	82,588	41.383500	2.11680
4	Sarrià-Sant Gervasi	20.09	140,461	41.401039	2.13940
5	Gràcia	4.19	120,087	41.402371	2.13940
6	Horta-Guinardó	11.96	169,920	41.418491	2.16770
7	Nou Barris	8.04	164,981	41.441631	2.17727
8	Sant Andreu	6.56	142,598	41.435409	2.18982
9	Sant Martí	10.80	221,029	41.418140	2.19933

## Search for Peruvian restaurants using Foursquare API

Next we will use the Foursquare API to search for all the Peruvian restaurants inside a 2 km radius from the city centre of Barcelona. The Foursquare Places API provides location based experiences with diverse information about venues, users, photos, and check-ins. The API supports real time access to places, Snap-to-Place that assigns users to specific locations, and Geo-tag.

	District	District Latitude	District Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Ciutat Vella	41.380218	2.17319	Lascar 74	41.371930	2.165749	Peruvian Restaurant
1	Ciutat Vella	41.380218	2.17319	Mancora	41.380112	2.155734	Peruvian Restaurant
2	Ciutat Vella	41.380218	2.17319	Pakta	41.374366	2.154374	Peruvian Restaurant
3	Ciutat Vella	41.380218	2.17319	Yakumanka	41.390258	2.159950	Peruvian Restaurant
4	Ciutat Vella	41.380218	2.17319	Inka Wasi	41.381698	2.177838	Peruvian Restaurant
...	...	...	...	...	...	...	...
72	Sant Andreu	41.435409	2.18982	El Demonio De Los Andes	41.419854	2.183166	Peruvian Restaurant
73	Sant Martí	41.418140	2.19933	Kenko II	41.408231	2.180656	Peruvian Restaurant
74	Sant Martí	41.418140	2.19933	Restaurante Inka BCN	41.407377	2.184177	Peruvian Restaurant
75	Sant Martí	41.418140	2.19933	Bar-Celona	41.415551	2.177887	Peruvian Restaurant
76	Sant Martí	41.418140	2.19933	Lúcuma Restaurant	41.400548	2.196538	Peruvian Restaurant

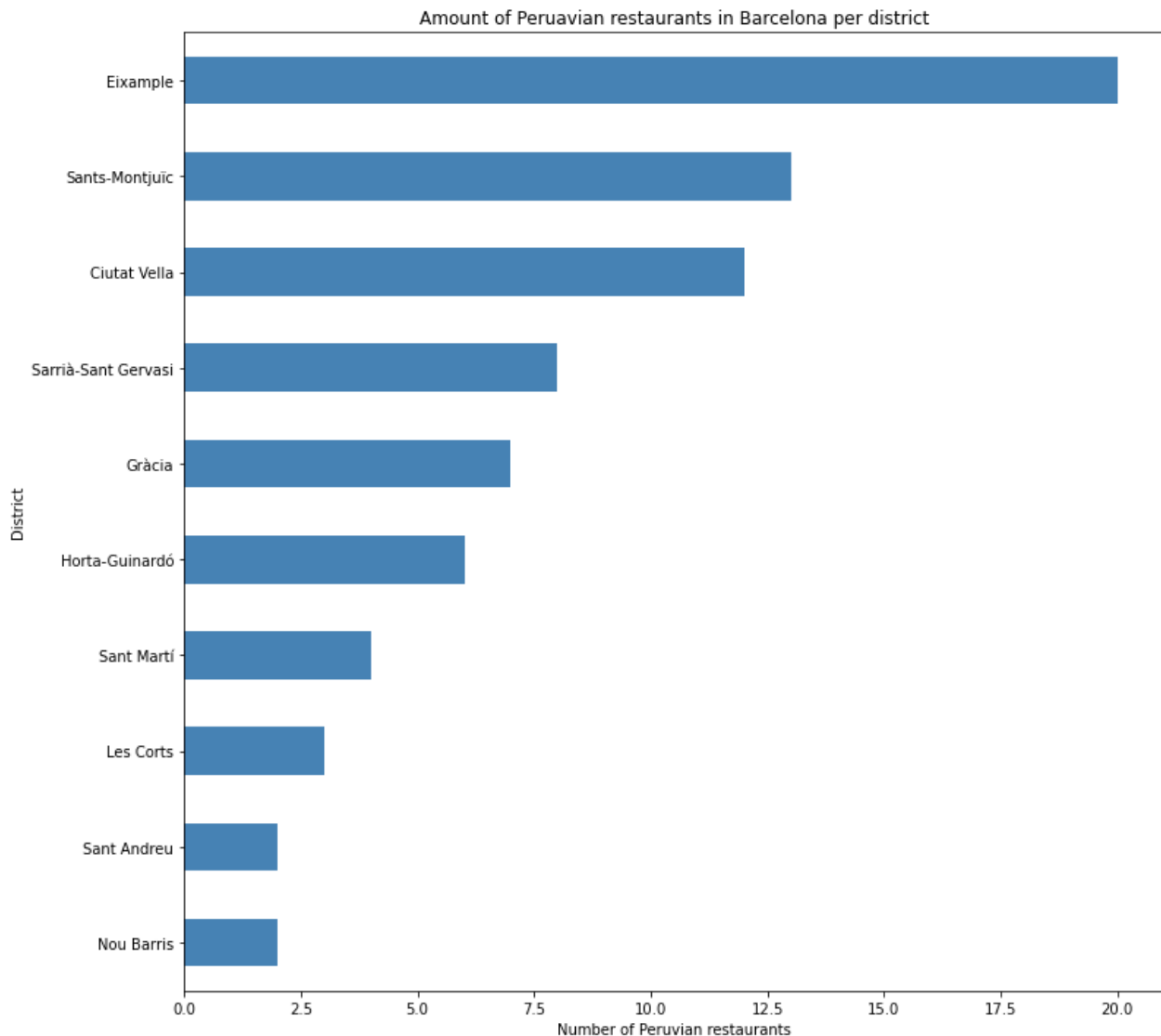
77 rows × 7 columns

## Count the amount of Peruvian restaurants per district and merge into the existing Dataframe

As you can see there are 76 different Peruvian restaurants in a radius of 2 km from the centre of Barcelona. The next step is to count the amount of Peruvian restaurant per district so we have an idea in which area there are already a lot of restaurants and in which districts there are not that many yet.

## Visualize The amount of Peruvian restaurants per district

The final part of our project is to visualize our results so we have a clear understanding which districts in Barcelona has a lot of Peruvian restaurants and in which district opening a Peruvian restaurant could be a great idea.



## Results

The most Peruvian restaurants are located in the Eixample district, as this make sense because it's the most central district in Barcelona. There is a big difference between the amount of Peruvian restaurants in the Eixample district and the other districts. The 3 districts with the least amount of Peruvian restaurants are Les Corts, Sant Andreu and Nou Barris. These are also the outskirts of Barcelona so it makes a lot of sense that in these districts not too many Peruvian restaurants are located.

## **Discussion**

Numerous factors can still influence the choice of the location where to open a Peruvian restaurant in Barcelona. For some people it can be more important to be very centrally located while others prefer to be closer to hotels or tourist attractions. Whatever the personal taste is, it's very important to know what districts already have a lot of Peruvian restaurants and which one don't.

## **Conclusion**

Using Foursquare to find out the total amount of Peruvian restaurants per district helped me a lot to find the perfect place to open a new Peruvian restaurant. What noticed me the most was that the district Sant Marti, which is a very popular district and covers the entire beachside of Barcelona and has beside of Eixample the highest population, has only the 4th less amount of Peruvian restaurants in Barcelona. Due the fact this is such a popular district and Peruvian food has a great connection with the sea I would highly recommend someone opening a Peruvian restaurant in Barcelona to open it in the Sant Marti district.