

Capstone Project - The Battle of Neighborhoods (Week 2) Traveling tips

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Introduction

According to surveys conducted in 2019, Brazilian tourism has grown significantly. Currently, Brazil is a popular destination for its culture, food, paradisiacal beaches and especially the carnival festival full of samba music, great costumes and a lot of fun. So, let's suppose we have a travel company and want to make a sales promotion on trip packages to certain tourist towns. But you are new in the business and you do not know what are the best places to go in each tourist town.

The first promotion package that you want to promote, is to the capital of Rio de Janeiro, located in Brazil. So, in this project we will try to figure it out the best and popular venues that you must go when you are visiting Rio. Here, we are interested not only in restaurants but parks, attractions and trending spots in order to generate a few interesting spots for you to visit when you are traveling to Rio de Janeiro.

This report contain various venues tips and will be target for both travel agencies and travelers. Notice that you can easily alter the city and discover new venues whatever the stakeholder wants. I only chose Rio de Janeiro because I think it is a wonderful destination with a lot of interesting things to do.

Data

Doing some research about neighborhoods in the stated location, I found that, according to Culture Trip, the 10 Coolest Neighbourhoods in Rio de Janeiro are:

- Copacabana
- Santa Teresa
- Ipanema
- Lapa
- Leblon
- Urca
- Lagoa
- Jardim Botânico
- Centro
- Botafogo

So, using a list composed of the top 10 coolest neighbourhoods in Rio, we will use the Foursquare API to look for the trending venues in the above mentioned neighbourhoods. After the request, this data set will comprise a diversity of venues classified by categories and their ratings.

We will also use geopy to get the latitude and longitude for the above neighbourhoods and the visualize it with folium.

The map below, Figure 1, was generated with folium using geolocator to find the geographical coordinates of the city Rio de Janeiro .

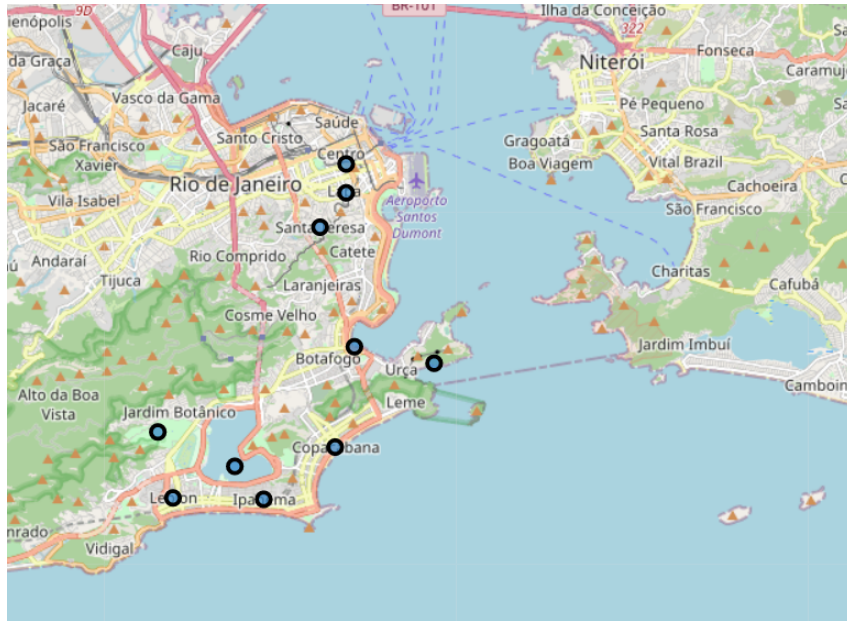


Figure 1: Map of Rio de Janeiro and its neighbourhoods

The data frame composed of all coordinates of all neighbourhoods chosen is shown in figure 2.

	Neighbourhood	latitude	longitude
0	Copacabana	-22.971964	-43.184343
1	Santa Teresa	-22.921399	-43.188214
2	Ipanema	-22.983956	-43.202216
3	Lapa	-22.913600	-43.181700
4	Leblon	-22.983556	-43.224938
5	Jardim Botânico	-22.968385	-43.228694
6	Botafogo	-22.948845	-43.179829
7	Urca	-22.952858	-43.159934
8	Lagoa	-22.976330	-43.209660
9	Centro	-22.907000	-43.181900

Figure 2: Data frame of geographical coordinates of Rio de Janeiro.

Methodology

The main idea of this project was to get all trending venues around the coolest neighbourhoods of Rio de Janeiro city, but as the foursquare API seems not work for this endpoint, now, in this project we will explore some venues around these neighbourhoods and segment them into clusters, we are also going to recommend two venues categories. It's a common knowledge that Brazilian food has a very special spice, so we are also going to focus on explore Brazilian restaurants to recommend the local food for our clients. Another good thing about Brazil is the coffee, they are good producers of this commodity, so we will explore some of them.

The first step was to collect the necessary data from geolocator and from foursquare API, we now have a data frame called '*rio_venues*' composed of all venues from the ten neighbourhoods we chose to explore. This data frame also contains the respective latitude and longitude from each neighbourhood and each venue together with their category. We also created a map using folium to show all the neighbourhoods.

Then, we are going to analyze each venue category to see which are the most common venues in Rio, plot them and then apply k-means algorithm to segment the neighbourhoods that were chosen. A map generated by folium will be also created in order to illustrate all the clusters that were created.

In the next step we will search for specific venues categories using the search endpoint from foursquare API in order to recommend restaurants with local food and coffee shops.

Analyzing the data

There are 153 unique venues categories and the most common are: bars, Brazilian restaurants, hotels, hostels and coffee shops, as one can see in the bar plot of Figure 3, all of them with a frequency greater than 25.

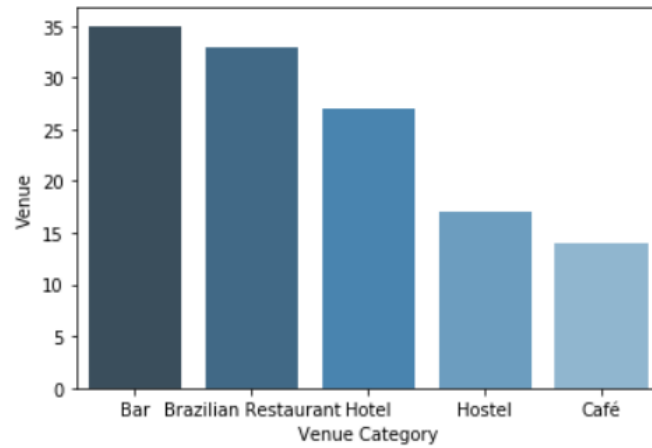


Figure 3: Most frequent venues in Rio de Janeiro.

As can be seen in Figure 4, the neighbourhoods with most venues are in Copacabana, Ipanema and Leblon.

	Neighbourhood	Venue
0	Botafogo	45
1	Centro	92
2	Copacabana	100
3	Ipanema	100
4	Jardim Botânico	23
5	Lagoa	4
6	Lapa	70
7	Leblon	100
8	Santa Teresa	49
9	Urca	14

Figure 4: Amount of venues per neighbourhoods

The resulting of applying algorithm k-means to cluster the neighbourhoods with 5 k 's is



Figure 6: Rio de Janeiro map marked with restaurants (red markers) and coffee shops (blue markers)

Results and discussion

Our analysis showed that bars, Brazilian restaurants and Hotels are the most common venues in those neighbourhoods.

Our analysis also shown that if the focus of the promotion is to promote the night life and good food they could suggest that the clients could stay in Copacabana, Santa Teresinha, Ipanema, Lapa, Leblon or Botafogo, because they are composed of a lot of bars, hotels and restaurants. The down town neighbourhood (Centro) is also good for that. Although, if is preferred more nature contact one can stay in Lagoa or Jardim Botânico. One can also stay in Urca, that is near to the trail so it can be anywhere during the trip.

We also show some of the best Brazilian restaurants and coffee shops around the neighbourhoods chosen according to the users of foursquare API using the explore endpoint. These venues can be seen in the map above.

Conclusion

The main idea of this project was to get as a result more touristic spots as the Cristo redentor and the famous Copacabana beach using the trending endpoint, I am still not sure why it not worked, so if anyone could help me with that during the feedback I would appreciate. So, in order to conclude this capstone I chose explore the recommend and more frequent venues in the most coolest neighbourhoods in Rio.

Foursquare is a good API to explore some cool stuff in new towns, or visit trending places, but I think Brazil has too little data register on. The use it was not very popular as in north america I guess. Probably with the pay account one could discover more cool things to do, as more beaches, and ratings of each venue.