

Natal Bars's

Introduction

This work uses exploratory analysis techniques with a language python and several libraries, associated with the Foursquare API to analyze the location of bars in the city of Natal-RN located in Brazil. Also, you will learn how to use the visualization library, Folium, to visualize the results

Business Problem

We all know that here in Brazil we like parties and bars, in the capital of the state of Rio Grande do Norte called Natal is no different. However, as in all of Brazil, Natal has no growth plan and there are several parts of the city that can be good or bad to open a business, since this neighborhood or region may be saturated with a certain type of business. Returning to the subject of bar, we can see what is the best region or neighborhood to open a new establishment of this type, and in this context we can reach our question for the Data Science journey, "Where can I open a new bar in Natal-RN ? " The idea here is to look for the neighborhood where there are fewer bars installed, using the aforementioned techniques.

Data

The data for this project are based on the addresses of the city that are already mentioned, in the case of Natal / RN. The addresses in Brazil, generally, consist of State, City, Neighborhood and finally street address that can be street or avenue, each street address of these may have one or more zip codes. But how do you create those addresses in the city that will mine the data? There is a website that calls a guide but that website contains most of these addresses, because those addresses are on that website in HTML tables. To be able to use this database, we will use scraping techniques on the web in python and save all the content in csv, to have a base with all the hometown parks. Below is the code that is used to consolidate this base.

In []:

```

import urllib.request
from bs4 import BeautifulSoup
import pandas as pd

# import geocoder # import geocoder
A=[]
B=[]
C=[]
D=[]
E=[]

i=1

while i < 305:
    url = "https://cep.guiamais.com.br/busca/natal-rn?page=" + str(i)
    page = urllib.request.urlopen(url)

    soup = BeautifulSoup(page, "lxml")
    all_tables=soup.find_all("table")
    right_table=soup.find('tbody')

    for row in right_table.findAll('tr'):
        cells=row.findAll('td')
        B.append(cells[1].find(text=True))
        aux = str(cells[2].find(text=True))
        aux2 = aux.split(",")
        C.append(aux2[0])
        D.append(aux2[1])
        E.append(cells[4].find(text=True))

    for row2 in right_table.findAll('tr'):
        cells2=row2.findAll('a')
        #print(len(cells2))
        A.append((cells2[0].find(text=True)))

    i = i+1

df=pd.DataFrame(A,columns=[ 'LOGRADOURO' ])
df[ 'BAIRRO' ]=B
df[ 'CIDADE' ]=C
df[ 'ESTADO' ]=D
df[ 'CEP' ]=E

df.to_csv(r'/root/endereco_natal.csv', index = False, header=True)

```

The code above was used to download all content from the site regarding Natal and save it in a csv that we will use in the following steps of our Final project. With the name of the neighborhoods and zip codes in hand we have a perfect base to start mining using the foursquare api to get the locations of the bars and the geop library trims with the names of the neighborhoods to get latitude and longitude and then move on to foursquare. With that we have enough tools to answer the question in question of our data project, “Where can I open a new bar in Natal-RN?”.

Methodology

Nessa seção vamos discutir o que fizemos com os dados que adquirimos no obtidos da forma citada na seção anterior.

To begin, we will load the data and extract all the neighborhoods in the city of birth so we will have a sense of how many neighborhoods we are dealing with, of course, first of all we will load the relevant libraries.

In [2]:

```
import pandas as pd
import numpy as np

df = pd.read_csv("/root/endereco_natal.csv")

df.head()
```

Out[2]:

	LOGRADOURO	BAIRRO	CIDADE	ESTADO	CEP
0	Rua 15 de Maio	Pajuçara	Natal	RN	59123-029
1	Travessa 1º de Janeiro	Rocas	Natal	RN	59010-322
2	Rua 25 de Outubro	Pajuçara	Natal	RN	59123-027
3	Vila ABC	Nordeste	Natal	RN	59042-570
4	Vila ABC	Quintas	Natal	RN	59035-218

In [3]:

```
df_barrios = pd.DataFrame(df['BAIRRO'].unique() , columns=['BARRIOS'])  
df_barrios
```

Out[3]:

BARRIOS

0	Pajuçara
1	Rocas
2	Nordeste
3	Quintas
4	Nova Descoberta
5	Neópolis
6	Capim Macio
7	Potengi
8	Nossa Senhora da Apresentação
9	Redinha
10	Felipe Camarão
11	Pitimbu
12	Cidade Nova
13	Planalto
14	Nossa Senhora de Nazaré
15	Igapó
16	Lagoa Seca
17	Lagoa Nova
18	Dix-Sept Rosado
19	Ponta Negra
20	Barro Vermelho
21	Cidade Alta
22	Praia do Meio
23	Candelária
24	Guarapes
25	Cidade da Esperança
26	Bom Pastor
27	Petrópolis
28	Tirol
29	Alecrim
30	Lagoa Azul
31	Ribeira
32	Mãe Luiza
33	Areia Preta
34	Salinas
35	Santos Reis
36	Área Rural de Natal

BARRIOS

37

Parque das Dunas

Now that we have the list of all the neighborhoods, we have to get their geolocation. This geolocation will be passed to the foursquare API, so we will have the information we will need from that neighborhood. For this task we will need the geopy library.

In [20]:

```
from geopy.geocoders import Nominatim

geolocator = Nominatim(user_agent="natal_explorer")

def get_lat_log(loc):
    address = loc
    location = geolocator.geocode(address)
    return location
```

In [21]:

```
l = []
lo = []
bar = []

for index, row in df_barrios.iterrows():
    lc = get_lat_log("Brasil, Rio Grande do Norte, Natal, " + row['BARRIOS'])
    if lc is not None:
        l.append(lc.latitude)
        lo.append(lc.longitude)
        bar.append(row['BARRIOS'])
```

In [22]:

```
df2=pd.DataFrame(bar,columns=[ 'BAIRRO' ])
df2[ 'LATITUDE' ]=l
df2[ 'LONGITUDE' ]=lo
df2
```

Out[22]:

	BAIRRO	LATITUDE	LONGITUDE
0	Pajuçara	-5.737235	-35.236043
1	Rocas	-5.773724	-35.199791
2	Nordeste	-5.793003	-35.244401
3	Quintas	-5.797218	-35.231670
4	Nova Descoberta	-5.826920	-35.198547
5	Neópolis	-5.866608	-35.208806
6	Capim Macio	-5.857640	-35.201449
7	Potengi	-5.750582	-35.253447
8	Nossa Senhora da Apresentação	-5.746524	-35.278780
9	Redinha	-5.750459	-35.202890
10	Felipe Camarão	-5.825700	-35.254722
11	Pitimbu	-5.863309	-35.232432
12	Cidade Nova	-5.837229	-35.238961
13	Planalto	-5.852176	-35.256887
14	Nossa Senhora de Nazaré	-5.817436	-35.231396
15	Igapó	-5.769000	-35.261889
16	Lagoa Seca	-5.807333	-35.210671
17	Lagoa Nova	-5.822694	-35.212640
18	Dix-Sept Rosado	-5.808983	-35.227251
19	Ponta Negra	-5.884647	-35.177512
20	Barro Vermelho	-5.797849	-35.209221
21	Cidade Alta	-5.785639	-35.209260
22	Praia do Meio	-5.778982	-35.194817
23	Candelária	-5.843724	-35.221448
24	Guarapes	-5.836611	-35.271913
25	Cidade da Esperança	-5.825065	-35.235023
26	Bom Pastor	-5.809498	-35.246214
27	Petrópolis	-5.784549	-35.198444
28	Tirol	-5.803210	-35.200205
29	Alecrim	-5.798880	-35.218858
30	Lagoa Azul	-5.723325	-35.261475
31	Ribeira	-5.776714	-35.206216
32	Mãe Luiza	-5.795065	-35.186216
33	Areia Preta	-5.786901	-35.190263
34	Salinas	-5.775602	-35.229354
35	Santos Reis	-5.760837	-35.200309
36	Parque das Dunas	-5.734009	-35.236444

Now we have a dataset with all the locations of the neighborhoods

Next step is to use the foursquare api, we will search all possible information about the neighborhoods we have and thus we will filter what is relevant for our exploratory analysis, which are the bars that are in our neighborhoods.

In [23]:

```

import requests # library to handle requests
from pandas.io.json import json_normalize # transform JSON file into a pandas dataframe

CLIENT_ID = 'R04BGUJEVL02E52FMRX0NGFU2NFIYKETP3WXMTCHMS3G4SY' # your Foursquare ID
CLIENT_SECRET = 'VC51ASWZ20WRPXMAITB2SSSU0U5YJQS1I2QHZHT1LHPV1QC' # your Foursquare Secret
VERSION = '20180605' # Foursquare API version
LIMIT = 100 # Limit of number of venues returned by Foursquare API
radius = 10000 # define radius
venues_list=[]

for index, row in df2.iterrows():
    url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
        CLIENT_ID,
        CLIENT_SECRET,
        VERSION,
        row["LATITUDE"],
        row["LONGITUDE"],
        radius,
        LIMIT)

    results = requests.get(url).json()["response"]["groups"][0]["items"]
    venues_list.append([(row["BAIRRO"],
                         row["LATITUDE"],
                         row["LONGITUDE"],
                         v['venue']['name'],
                         v['venue']['location']['lat'],
                         v['venue']['location']['lng'],
                         v['venue']['categories'][0]['name']) for v in results])

nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
nearby_venues.columns = ['Neighborhood',
                        'Neighborhood_Latitude',
                        'Neighborhood_Longitude',
                        'Venue',
                        'Venue_Latitude',
                        'Venue_Longitude',
                        'Venue_Category']

nearby_venues.head()

```

Out[23]:

	Neighborhood	Neighborhood_Latitude	Neighborhood_Longitude	Venue	Venue_Latitude
0	Pajuçara	-5.737235	-35.236043	Praça de Alimentação	-5.7584
1	Pajuçara	-5.737235	-35.236043	Seis E Ponto	-5.7475
2	Pajuçara	-5.737235	-35.236043	Cinépolis	-5.7577
3	Pajuçara	-5.737235	-35.236043	HM Fitness	-5.7483
4	Pajuçara	-5.737235	-35.236043	Chiquinho Sorvetes	-5.7507



Now we can filter only the neighborhoods in the city with their proper location.

In [24]:

```
nearby_venues_bar = nearby_venues.query('Venue_Category.str.contains("Bar") and not Venue_Category.str.contains("Salon / Barbershop")', engine='python').drop_duplicates()
nearby_venues_bar
```

Out[24]:

	Neighborhood	Neighborhood_Latitude	Neighborhood_Longitude	Venue	Venue_Latitude
1	Pajuçara	-5.737235	-35.236043	Seis E Ponto	-5.7475
9	Pajuçara	-5.737235	-35.236043	Barcana's Petiscaria	-5.7441
17	Pajuçara	-5.737235	-35.236043	Barreto's Bar	-5.7521
36	Pajuçara	-5.737235	-35.236043	BAR DA JOSY	-5.7261
38	Pajuçara	-5.737235	-35.236043	Bar do Feijao	-5.7651
...
3617	Parque das Dunas	-5.734009	-35.236444	Barreto's Bar	-5.7521
3632	Parque das Dunas	-5.734009	-35.236444	BAR DA JOSY	-5.7261
3639	Parque das Dunas	-5.734009	-35.236444	Bar do Feijao	-5.7651
3643	Parque das Dunas	-5.734009	-35.236444	Delícias do Mate	-5.7861
3692	Parque das Dunas	-5.734009	-35.236444	Bar da Língua	-5.8001

234 rows × 7 columns



An important observation to make is that we do not want only the category “Bar” but any type of bar that the foursquare API brought me, however if we filter only by the word “Bar” we will still have the category “Salon / Barbershop” that we do not want , so we have to exclude it from the dataset.

In [25]:

```
nearby_venues_bar[ 'Neighborhood' ].value_counts()
```

Out[25]:

Igapó	10
Felipe Camarão	10
Planalto	10
Bom Pastor	10
Guarapes	10
Dix-Sept Rosado	9
Nossa Senhora da Apresentação	9
Nossa Senhora de Nazaré	9
Cidade da Esperança	9
Cidade Nova	8
Nordeste	8
Lagoa Azul	8
Candelária	7
Potengi	7
Quintas	7
Parque das Dunas	7
Lagoa Nova	7
Nova Descoberta	7
Pajuçara	7
Lagoa Seca	6
Alecrim	6
Ponta Negra	6
Salinas	5
Barro Vermelho	5
Neópolis	5
Redinha	5
Petrópolis	5
Capim Macio	4
Tirol	4
Pitimbu	4
Mãe Luiza	4
Areia Preta	3
Praia do Meio	3
Santos Reis	3
Ribeira	3
Cidade Alta	2
Rocas	2

Name: Neighborhood, dtype: int64

In [26]:

```
# one hot encoding
natal_onehot = pd.get_dummies(nearby_venues[['Venue_Category']], prefix="", prefix_sep="")

# add neighborhood column back to dataframe
natal_onehot['Neighborhood'] = nearby_venues['Neighborhood']

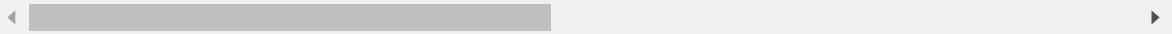
# move neighborhood column to the first column
fixed_columns = [natal_onehot.columns[-1]] + list(natal_onehot.columns[:-1])
natal_onehot = natal_onehot[fixed_columns]

natal_onehot.head()
```

Out[26]:

	Neighborhood	Acai House	Aquarium	Arcade	Art Gallery	Athletics & Sports	BBQ Joint	Bakery	Bar	Beach
0	Pajuçara	0	0	0	0	0	0	0	0	0
1	Pajuçara	0	0	0	0	0	0	0	0	0
2	Pajuçara	0	0	0	0	0	0	0	0	0
3	Pajuçara	0	0	0	0	0	0	0	0	0
4	Pajuçara	0	0	0	0	0	0	0	0	0

5 rows × 117 columns



In [27]:

```
# use the inline backend to generate the plots within the browser
%matplotlib inline

import matplotlib as mpl
import matplotlib.pyplot as plt

mpl.style.use('ggplot') # optional: for ggplot-like style

# check for latest version of Matplotlib
print ('Matplotlib version: ', mpl.__version__) # >= 2.0.0
```

Matplotlib version: 3.1.3

In [28]:

```
def return_most_common_venues(row, num_top_venues):
    row_categories = row.iloc[1:]
    row_categories_sorted = row_categories.sort_values(ascending=False)

    return row_categories_sorted.index.values[0:num_top_venues]
#use the grouped results Neighborhood_Latitude  Neighborhood_Longitude  Venue  Venue_L
atitute Venue_Longitude
#nearby_venues.dropna()
#nearby_venues['Venue_Category' , 'Neighborhood' ].value_counts()
#nearby_venues.groupby(['Neighborhood', 'Venue_Category']).count()
#grouped_pivot = nearby_venues.pivot(index='Venue_Category' ,columns= 'Neighborhood')
#grouped_pivot
```

In [31]:

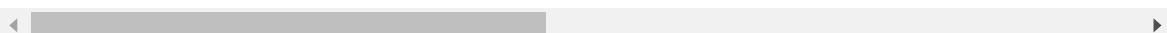
```
natal_grouped = natal_onehot.groupby('Neighborhood').mean().reset_index()  
natal_grouped
```

Out[31]:

	Neighborhood	Acai House	Aquarium	Arcade	Art Gallery	Athletics & Sports	BBQ Joint	Bakery	Bar	Beach
0	Alecrim	0.01	0.00	0.01	0.01	0.00	0.00	0.03	0.05	0.00
1	Areia Preta	0.01	0.00	0.01	0.01	0.00	0.00	0.04	0.02	0.03
2	Barro Vermelho	0.01	0.00	0.01	0.01	0.00	0.00	0.03	0.04	0.01
3	Bom Pastor	0.02	0.00	0.01	0.00	0.01	0.00	0.05	0.09	0.00
4	Candelária	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.07	0.00
5	Capim Macio	0.03	0.00	0.01	0.00	0.00	0.00	0.03	0.03	0.01
6	Cidade Alta	0.01	0.00	0.01	0.01	0.00	0.00	0.04	0.01	0.03
7	Cidade Nova	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.08	0.00
8	Cidade da Esperança	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.08	0.00
9	Dix-Sept Rosado	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.08	0.00
10	Felipe Camarão	0.02	0.00	0.01	0.00	0.01	0.00	0.05	0.10	0.00
11	Guarapes	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.10	0.00
12	Igapó	0.03	0.00	0.00	0.01	0.00	0.01	0.03	0.08	0.02
13	Lagoa Azul	0.03	0.01	0.00	0.01	0.00	0.01	0.03	0.05	0.10
14	Lagoa Nova	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.06	0.00
15	Lagoa Seca	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.05	0.01
16	Mãe Luiza	0.01	0.00	0.01	0.01	0.00	0.00	0.03	0.03	0.02
17	Neópolis	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.01
18	Nordeste	0.02	0.00	0.01	0.01	0.01	0.00	0.03	0.07	0.00
19	Nossa Senhora da Apresentação	0.04	0.00	0.00	0.01	0.00	0.01	0.03	0.07	0.04
20	Nossa Senhora de Nazaré	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.08	0.00
21	Nova Descoberta	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.07	0.00
22	Pajuçara	0.04	0.00	0.00	0.01	0.00	0.01	0.03	0.05	0.07
23	Parque das Dunas	0.04	0.00	0.00	0.01	0.00	0.01	0.04	0.05	0.07
24	Petrópolis	0.01	0.00	0.01	0.01	0.00	0.00	0.03	0.04	0.03
25	Pitimbu	0.04	0.00	0.01	0.00	0.01	0.00	0.03	0.04	0.00
26	Planalto	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.10	0.00
27	Ponta Negra	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.02
28	Potengi	0.04	0.00	0.00	0.01	0.00	0.01	0.03	0.05	0.03
29	Praia do Meio	0.01	0.00	0.01	0.01	0.00	0.00	0.04	0.02	0.03

	Neighborhood	Acai House	Aquarium	Arcade	Art Gallery	Athletics & Sports	BBQ Joint	Bakery	Bar	Beach
30	Quintas	0.01	0.00	0.01	0.01	0.01	0.00	0.02	0.06	0.00
31	Redinha	0.02	0.00	0.00	0.01	0.00	0.00	0.04	0.03	0.05
32	Ribeira	0.01	0.00	0.01	0.01	0.00	0.00	0.04	0.02	0.03
33	Rocas	0.01	0.00	0.01	0.01	0.00	0.00	0.04	0.01	0.03
34	Salinas	0.02	0.00	0.00	0.01	0.00	0.00	0.04	0.03	0.02
35	Santos Reis	0.02	0.00	0.01	0.01	0.00	0.00	0.04	0.01	0.04
36	Tirol	0.01	0.00	0.01	0.01	0.00	0.00	0.03	0.03	0.01

37 rows × 117 columns



In []:

In [32]:

```

num_top_venues = 10

indicators = ['st', 'nd', 'rd']

# create columns according to number of top venues
columns = ['Neighborhood']
for ind in np.arange(num_top_venues):
    try:
        columns.append('_{}{}_Most_Common_Venue'.format(ind+1, indicators[ind]))
    except:
        columns.append('_{}th_Most_Common_Venue'.format(ind+1))

# create a new dataframe
neighborhoods_venues_sorted = pd.DataFrame(columns=columns)
neighborhoods_venues_sorted['Neighborhood'] = natal_grouped['Neighborhood']

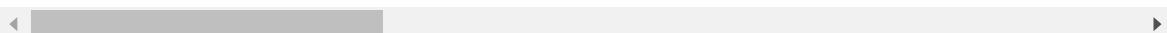
for ind in np.arange(natal_grouped.shape[0]):
    neighborhoods_venues_sorted.iloc[ind, 1:] = return_most_common_venues(natal_grouped
.iloc[ind, :], num_top_venues)

neighborhoods_venues_sorted.head()

```

Out[32]:

	Neighborhood	_1st_Most_Common_Venue	_2nd_Most_Common_Venue	_3rd_Most_Common_Venue	
0	Alecrim	Gym / Fitness Center		Bar	Brazilian Restauran
1	Areia Preta	Gym / Fitness Center		Bakery	Pizza Place
2	Barro Vermelho	Gym / Fitness Center		Pizza Place	
3	Bom Pastor		Bar	Pizza Place	Brazilian Restaurant
4	Candelária		Bar	Pizza Place	Gym / Fitness Center



Above I have a statistics of neighborhoods and their raking of categories of places, this information will be very useful to get where we want, let's go ahead.

In [33]:

```
bar_venues_sorted_best = neighborhoods_venues_sorted.query('_1st_Most_Common_Venue.str.contains("Bar") and not _1st_Most_Common_Venue.str.contains("Salon / Barbershop")', engine='python').drop_duplicates()
```

In [34]:

```
bar_venues_sorted_best = bar_venues_sorted_best.drop(bar_venues_sorted_best.columns[[3, 4, 5, 6, 7, 8, 9, 10]], axis=1)
```

In [35]:

```
bar_venues_sorted_best
```

Out[35]:

	Neighborhood	_1st_Most_Common_Venue	_2nd_Most_Common_Venue
3	Bom Pastor	Bar	Pizza Place
4	Candelária	Bar	Pizza Place
7	Cidade Nova	Bar	Pizza Place
8	Cidade da Esperança	Bar	Gym
9	Dix-Sept Rosado	Bar	Gym / Fitness Center
10	Felipe Camarão	Bar	Pizza Place
11	Guarapes	Bar	Gym
12	Igapó	Bar	Pizza Place
19	Nossa Senhora da Apresentação	Bar	Gym / Fitness Center
20	Nossa Senhora de Nazaré	Bar	Gym / Fitness Center
21	Nova Descoberta	Bar	Gym / Fitness Center
26	Planalto	Bar	Gym

In [36]:

```
print(bar_venues_sorted_best['_2nd_Most_Common_Venue'].value_counts())
```

```
Pizza Place      5
Gym / Fitness Center  4
Gym            3
Name: _2nd_Most_Common_Venue, dtype: int64
```

By working with various channels of information, we can reach that information, where is there a bar which other establishment has? So we can choose the best place to install a bar not only for the simple reason of having a bar or not, but also associated with another establishment that has a relationship, based on the information already mentioned above.

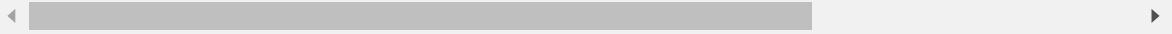
In [37]:

```
nearby_venues_gim = nearby_venues.query('Venue_Category.str.contains("Gym")', engine='python').drop_duplicates()
nearby_venues_gim
```

Out[37]:

	Neighborhood	Neighborhood_Latitude	Neighborhood_Longitude	Venue	Venue_Latitude
3	Pajuçara	-5.737235	-35.236043	HM Fitness	-5.748
16	Pajuçara	-5.737235	-35.236043	Academia Natural Fitness	-5.749
31	Pajuçara	-5.737235	-35.236043	Attila Fitness	-5.743
55	Pajuçara	-5.737235	-35.236043	Academia Fibra	-5.781
68	Pajuçara	-5.737235	-35.236043	Bodytech	-5.793
...
3670	Parque das Dunas	-5.734009	-35.236444	Bodytech	-5.793
3678	Parque das Dunas	-5.734009	-35.236444	Smart Fit	-5.790
3681	Parque das Dunas	-5.734009	-35.236444	Musfi Academia	-5.786
3690	Parque das Dunas	-5.734009	-35.236444	AABB Fitness	-5.796
3698	Parque das Dunas	-5.734009	-35.236444	Academia clube sport fitness	-5.799

411 rows × 7 columns



In [38]:

```
nearby_venues_gim_count = nearby_venues_gim  
nearby_venues_gim_count.drop(nearby_venues_gim.columns[[1,2,3,4,5]], axis=1)
```

Out[38]:

	Neighborhood	Venue_Category
3	Pajuçara	Gym / Fitness Center
16	Pajuçara	Gym
31	Pajuçara	Gym / Fitness Center
55	Pajuçara	Gym
68	Pajuçara	Gym / Fitness Center
...
3670	Parque das Dunas	Gym / Fitness Center
3678	Parque das Dunas	Gym / Fitness Center
3681	Parque das Dunas	Gym / Fitness Center
3690	Parque das Dunas	Gym
3698	Parque das Dunas	Gym / Fitness Center

411 rows × 2 columns

In [39]:

```
#nearby_venues_gim_count = nearby_venues_gim_count.groupby(['Neighborhood']).count().sort_values(by=['Venue_Category'], inplace=True)
print(nearby_venues_gim_count['Neighborhood'].value_counts())
```

Pitimbu	16
Guarapes	15
Cidade da Esperança	15
Nossa Senhora de Nazaré	15
Felipe Camarão	14
Candelária	14
Cidade Nova	14
Planalto	14
Lagoa Nova	13
Bom Pastor	13
Nordeste	12
Nova Descoberta	12
Dix-Sept Rosado	12
Capim Macio	11
Quintas	11
Igapó	11
Salinas	11
Alecrim	11
Neópolis	11
Potengi	10
Barro Vermelho	10
Santos Reis	10
Tirol	10
Ribeira	10
Areia Preta	9
Praia do Meio	9
Cidade Alta	9
Parque das Dunas	9
Nossa Senhora da Apresentação	9
Redinha	9
Ponta Negra	9
Rocas	9
Mãe Luiza	9
Lagoa Seca	9
Petrópolis	9
Pajuçara	9
Lagoa Azul	8
Name: Neighborhood, dtype: int64	

In [40]:

```
print(nearby_venues_bar['Neighborhood'].value_counts())
```

Igapó	10
Felipe Camarão	10
Planalto	10
Bom Pastor	10
Guarapes	10
Dix-Sept Rosado	9
Nossa Senhora da Apresentação	9
Nossa Senhora de Nazaré	9
Cidade da Esperança	9
Cidade Nova	8
Nordeste	8
Lagoa Azul	8
Candelária	7
Potengi	7
Quintas	7
Parque das Dunas	7
Lagoa Nova	7
Nova Descoberta	7
Pajuçara	7
Lagoa Seca	6
Alecrim	6
Ponta Negra	6
Salinas	5
Barro Vermelho	5
Neópolis	5
Redinha	5
Petrópolis	5
Capim Macio	4
Tirol	4
Pitimbu	4
Mãe Luiza	4
Areia Preta	3
Praia do Meio	3
Santos Reis	3
Ribeira	3
Cidade Alta	2
Rocas	2

Name: Neighborhood, dtype: int64

One of the main points of our exploratory analysis is now. We have already seen that where there are bars there is a gym, so we have to ask ourselves where there is a gym and there is no bar? these two tables answer that question. We will see in the next steps this plotted on a map.

In [41]:

```
bar_and_gym_locator = nearby_venues.query(' (Venue_Category.str.contains("Bar") ) or  
                                         (Venue_Category.str.contains("Gym")) ) and not Venue_Category.str.contains("Salon / Ba  
rbershop")', engine='python').drop_duplicates()
```

In [42]:

```
bar_and_gym_locator.drop_duplicates()
```

Out[42]:

	Neighborhood	Neighborhood_Latitude	Neighborhood_Longitude	Venue	Venue_Latitude
1	Pajuçara	-5.737235	-35.236043	Seis E Ponto	-5.747
3	Pajuçara	-5.737235	-35.236043	HM Fitness	-5.748
9	Pajuçara	-5.737235	-35.236043	Barcana's Petiscaria	-5.744
16	Pajuçara	-5.737235	-35.236043	Academia Natural Fitness	-5.749
17	Pajuçara	-5.737235	-35.236043	Barreto's Bar	-5.752
...
3678	Parque das Dunas	-5.734009	-35.236444	Smart Fit	-5.790
3681	Parque das Dunas	-5.734009	-35.236444	Musfi Academia	-5.786
3690	Parque das Dunas	-5.734009	-35.236444	AABB Fitness	-5.796
3692	Parque das Dunas	-5.734009	-35.236444	Bar da Língua	-5.800
3698	Parque das Dunas	-5.734009	-35.236444	Academia clube sport fitness	-5.799

645 rows × 7 columns

In [43]:

```
for i, row in bar_and_gym_locator.iterrows():
    ifor_val = str(row['Venue_Category'])
    if "Gym" in ifor_val:
        ifor_val = "Gym"
    else:
        ifor_val = "Bar"
    #bar_and_gym_locator.set_value(i, 'Venue_Category', ifor_val)
    bar_and_gym_locator.at[i, 'Venue_Category'] = ifor_val
```

In [44]:

```
pd.set_option('display.max_rows', nearby_venues.shape[0]+1)
print(bar_and_gym_locator)
```

	Neighborhood	Neighborhood_Latitude	\
1	Pajuçara	-5.737235	
3	Pajuçara	-5.737235	
9	Pajuçara	-5.737235	
16	Pajuçara	-5.737235	
17	Pajuçara	-5.737235	
31	Pajuçara	-5.737235	
36	Pajuçara	-5.737235	
38	Pajuçara	-5.737235	
40	Pajuçara	-5.737235	
55	Pajuçara	-5.737235	
68	Pajuçara	-5.737235	
73	Pajuçara	-5.737235	
76	Pajuçara	-5.737235	
87	Pajuçara	-5.737235	
88	Pajuçara	-5.737235	
95	Pajuçara	-5.737235	
109	Rocas	-5.773724	
110	Rocas	-5.773724	
127	Rocas	-5.773724	
136	Rocas	-5.773724	
138	Rocas	-5.773724	
139	Rocas	-5.773724	
164	Rocas	-5.773724	
167	Rocas	-5.773724	
169	Rocas	-5.773724	
170	Rocas	-5.773724	
177	Rocas	-5.773724	
201	Nordeste	-5.793003	
202	Nordeste	-5.793003	
214	Nordeste	-5.793003	
215	Nordeste	-5.793003	
221	Nordeste	-5.793003	
222	Nordeste	-5.793003	
228	Nordeste	-5.793003	
230	Nordeste	-5.793003	
233	Nordeste	-5.793003	
237	Nordeste	-5.793003	
240	Nordeste	-5.793003	
241	Nordeste	-5.793003	
250	Nordeste	-5.793003	
251	Nordeste	-5.793003	
261	Nordeste	-5.793003	
268	Nordeste	-5.793003	
269	Nordeste	-5.793003	
292	Nordeste	-5.793003	
294	Nordeste	-5.793003	
298	Nordeste	-5.793003	
302	Quintas	-5.797218	
304	Quintas	-5.797218	
309	Quintas	-5.797218	
318	Quintas	-5.797218	
321	Quintas	-5.797218	
325	Quintas	-5.797218	
326	Quintas	-5.797218	
327	Quintas	-5.797218	
330	Quintas	-5.797218	
334	Quintas	-5.797218	
337	Quintas	-5.797218	
342	Quintas	-5.797218	
346	Quintas	-5.797218	

349	Quintas	-5.797218
350	Quintas	-5.797218
368	Quintas	-5.797218
371	Quintas	-5.797218
378	Quintas	-5.797218
401	Nova Descoberta	-5.826920
405	Nova Descoberta	-5.826920
408	Nova Descoberta	-5.826920
416	Nova Descoberta	-5.826920
428	Nova Descoberta	-5.826920
455	Nova Descoberta	-5.826920
457	Nova Descoberta	-5.826920
458	Nova Descoberta	-5.826920
460	Nova Descoberta	-5.826920
468	Nova Descoberta	-5.826920
471	Nova Descoberta	-5.826920
472	Nova Descoberta	-5.826920
473	Nova Descoberta	-5.826920
474	Nova Descoberta	-5.826920
476	Nova Descoberta	-5.826920
478	Nova Descoberta	-5.826920
487	Nova Descoberta	-5.826920
488	Nova Descoberta	-5.826920
497	Nova Descoberta	-5.826920
501	Neópolis	-5.866608
505	Neópolis	-5.866608
531	Neópolis	-5.866608
533	Neópolis	-5.866608
541	Neópolis	-5.866608
547	Neópolis	-5.866608
552	Neópolis	-5.866608
553	Neópolis	-5.866608
559	Neópolis	-5.866608
560	Neópolis	-5.866608
571	Neópolis	-5.866608
575	Neópolis	-5.866608
580	Neópolis	-5.866608
589	Neópolis	-5.866608
595	Neópolis	-5.866608
598	Neópolis	-5.866608
600	Capim Macio	-5.857640
602	Capim Macio	-5.857640
618	Capim Macio	-5.857640
638	Capim Macio	-5.857640
642	Capim Macio	-5.857640
650	Capim Macio	-5.857640
656	Capim Macio	-5.857640
661	Capim Macio	-5.857640
664	Capim Macio	-5.857640
669	Capim Macio	-5.857640
677	Capim Macio	-5.857640
679	Capim Macio	-5.857640
683	Capim Macio	-5.857640
692	Capim Macio	-5.857640
699	Capim Macio	-5.857640
704	Potengi	-5.750582
708	Potengi	-5.750582
709	Potengi	-5.750582
713	Potengi	-5.750582
719	Potengi	-5.750582
729	Potengi	-5.750582

730	Potengi	-5.750582
733	Potengi	-5.750582
739	Potengi	-5.750582
750	Potengi	-5.750582
756	Potengi	-5.750582
762	Potengi	-5.750582
769	Potengi	-5.750582
777	Potengi	-5.750582
783	Potengi	-5.750582
784	Potengi	-5.750582
795	Potengi	-5.750582
812	Nossa Senhora da Apresentação	-5.746524
814	Nossa Senhora da Apresentação	-5.746524
815	Nossa Senhora da Apresentação	-5.746524
820	Nossa Senhora da Apresentação	-5.746524
822	Nossa Senhora da Apresentação	-5.746524
829	Nossa Senhora da Apresentação	-5.746524
837	Nossa Senhora da Apresentação	-5.746524
840	Nossa Senhora da Apresentação	-5.746524
841	Nossa Senhora da Apresentação	-5.746524
863	Nossa Senhora da Apresentação	-5.746524
865	Nossa Senhora da Apresentação	-5.746524
867	Nossa Senhora da Apresentação	-5.746524
872	Nossa Senhora da Apresentação	-5.746524
875	Nossa Senhora da Apresentação	-5.746524
881	Nossa Senhora da Apresentação	-5.746524
885	Nossa Senhora da Apresentação	-5.746524
895	Nossa Senhora da Apresentação	-5.746524
897	Nossa Senhora da Apresentação	-5.746524
909	Redinha	-5.750459
910	Redinha	-5.750459
931	Redinha	-5.750459
940	Redinha	-5.750459
942	Redinha	-5.750459
943	Redinha	-5.750459
949	Redinha	-5.750459
957	Redinha	-5.750459
984	Redinha	-5.750459
986	Redinha	-5.750459
992	Redinha	-5.750459
995	Redinha	-5.750459
996	Redinha	-5.750459
997	Redinha	-5.750459
1000	Felipe Camarão	-5.825700
1001	Felipe Camarão	-5.825700
1003	Felipe Camarão	-5.825700
1007	Felipe Camarão	-5.825700
1011	Felipe Camarão	-5.825700
1013	Felipe Camarão	-5.825700
1014	Felipe Camarão	-5.825700
1024	Felipe Camarão	-5.825700
1025	Felipe Camarão	-5.825700
1029	Felipe Camarão	-5.825700
1037	Felipe Camarão	-5.825700
1038	Felipe Camarão	-5.825700
1044	Felipe Camarão	-5.825700
1046	Felipe Camarão	-5.825700
1050	Felipe Camarão	-5.825700
1051	Felipe Camarão	-5.825700
1052	Felipe Camarão	-5.825700
1065	Felipe Camarão	-5.825700

1067	Felipe Camarão	-5.825700
1076	Felipe Camarão	-5.825700
1080	Felipe Camarão	-5.825700
1082	Felipe Camarão	-5.825700
1085	Felipe Camarão	-5.825700
1092	Felipe Camarão	-5.825700
1100	Pitimbu	-5.863309
1102	Pitimbu	-5.863309
1113	Pitimbu	-5.863309
1115	Pitimbu	-5.863309
1130	Pitimbu	-5.863309
1139	Pitimbu	-5.863309
1140	Pitimbu	-5.863309
1142	Pitimbu	-5.863309
1144	Pitimbu	-5.863309
1146	Pitimbu	-5.863309
1155	Pitimbu	-5.863309
1164	Pitimbu	-5.863309
1165	Pitimbu	-5.863309
1167	Pitimbu	-5.863309
1169	Pitimbu	-5.863309
1184	Pitimbu	-5.863309
1186	Pitimbu	-5.863309
1187	Pitimbu	-5.863309
1189	Pitimbu	-5.863309
1199	Pitimbu	-5.863309
1200	Cidade Nova	-5.837229
1201	Cidade Nova	-5.837229
1202	Cidade Nova	-5.837229
1204	Cidade Nova	-5.837229
1205	Cidade Nova	-5.837229
1211	Cidade Nova	-5.837229
1214	Cidade Nova	-5.837229
1218	Cidade Nova	-5.837229
1224	Cidade Nova	-5.837229
1240	Cidade Nova	-5.837229
1253	Cidade Nova	-5.837229
1254	Cidade Nova	-5.837229
1255	Cidade Nova	-5.837229
1258	Cidade Nova	-5.837229
1260	Cidade Nova	-5.837229
1263	Cidade Nova	-5.837229
1265	Cidade Nova	-5.837229
1268	Cidade Nova	-5.837229
1269	Cidade Nova	-5.837229
1284	Cidade Nova	-5.837229
1286	Cidade Nova	-5.837229
1292	Cidade Nova	-5.837229
1302	Planalto	-5.852176
1303	Planalto	-5.852176
1304	Planalto	-5.852176
1308	Planalto	-5.852176
1309	Planalto	-5.852176
1310	Planalto	-5.852176
1315	Planalto	-5.852176
1324	Planalto	-5.852176
1330	Planalto	-5.852176
1331	Planalto	-5.852176
1347	Planalto	-5.852176
1348	Planalto	-5.852176
1349	Planalto	-5.852176

1357	Planalto	-5.852176
1371	Planalto	-5.852176
1372	Planalto	-5.852176
1375	Planalto	-5.852176
1376	Planalto	-5.852176
1380	Planalto	-5.852176
1381	Planalto	-5.852176
1386	Planalto	-5.852176
1390	Planalto	-5.852176
1392	Planalto	-5.852176
1398	Planalto	-5.852176
1401	Nossa Senhora de Nazaré	-5.817436
1405	Nossa Senhora de Nazaré	-5.817436
1408	Nossa Senhora de Nazaré	-5.817436
1409	Nossa Senhora de Nazaré	-5.817436
1417	Nossa Senhora de Nazaré	-5.817436
1418	Nossa Senhora de Nazaré	-5.817436
1422	Nossa Senhora de Nazaré	-5.817436
1426	Nossa Senhora de Nazaré	-5.817436
1429	Nossa Senhora de Nazaré	-5.817436
1434	Nossa Senhora de Nazaré	-5.817436
1436	Nossa Senhora de Nazaré	-5.817436
1450	Nossa Senhora de Nazaré	-5.817436
1451	Nossa Senhora de Nazaré	-5.817436
1459	Nossa Senhora de Nazaré	-5.817436
1463	Nossa Senhora de Nazaré	-5.817436
1465	Nossa Senhora de Nazaré	-5.817436
1468	Nossa Senhora de Nazaré	-5.817436
1481	Nossa Senhora de Nazaré	-5.817436
1483	Nossa Senhora de Nazaré	-5.817436
1486	Nossa Senhora de Nazaré	-5.817436
1487	Nossa Senhora de Nazaré	-5.817436
1488	Nossa Senhora de Nazaré	-5.817436
1492	Nossa Senhora de Nazaré	-5.817436
1495	Nossa Senhora de Nazaré	-5.817436
1509	Igapó	-5.769000
1516	Igapó	-5.769000
1518	Igapó	-5.769000
1522	Igapó	-5.769000
1529	Igapó	-5.769000
1531	Igapó	-5.769000
1533	Igapó	-5.769000
1536	Igapó	-5.769000
1537	Igapó	-5.769000
1551	Igapó	-5.769000
1552	Igapó	-5.769000
1554	Igapó	-5.769000
1563	Igapó	-5.769000
1566	Igapó	-5.769000
1579	Igapó	-5.769000
1583	Igapó	-5.769000
1587	Igapó	-5.769000
1590	Igapó	-5.769000
1591	Igapó	-5.769000
1596	Igapó	-5.769000
1598	Igapó	-5.769000
1606	Lagoa Seca	-5.807333
1607	Lagoa Seca	-5.807333
1608	Lagoa Seca	-5.807333
1612	Lagoa Seca	-5.807333
1615	Lagoa Seca	-5.807333

1634	Lagoa Seca	-5.807333
1635	Lagoa Seca	-5.807333
1637	Lagoa Seca	-5.807333
1648	Lagoa Seca	-5.807333
1653	Lagoa Seca	-5.807333
1665	Lagoa Seca	-5.807333
1667	Lagoa Seca	-5.807333
1673	Lagoa Seca	-5.807333
1678	Lagoa Seca	-5.807333
1697	Lagoa Seca	-5.807333
1705	Lagoa Nova	-5.822694
1707	Lagoa Nova	-5.822694
1720	Lagoa Nova	-5.822694
1725	Lagoa Nova	-5.822694
1726	Lagoa Nova	-5.822694
1738	Lagoa Nova	-5.822694
1742	Lagoa Nova	-5.822694
1746	Lagoa Nova	-5.822694
1756	Lagoa Nova	-5.822694
1759	Lagoa Nova	-5.822694
1764	Lagoa Nova	-5.822694
1768	Lagoa Nova	-5.822694
1769	Lagoa Nova	-5.822694
1771	Lagoa Nova	-5.822694
1775	Lagoa Nova	-5.822694
1779	Lagoa Nova	-5.822694
1781	Lagoa Nova	-5.822694
1782	Lagoa Nova	-5.822694
1792	Lagoa Nova	-5.822694
1798	Lagoa Nova	-5.822694
1804	Dix-Sept Rosado	-5.808983
1807	Dix-Sept Rosado	-5.808983
1813	Dix-Sept Rosado	-5.808983
1816	Dix-Sept Rosado	-5.808983
1817	Dix-Sept Rosado	-5.808983
1821	Dix-Sept Rosado	-5.808983
1824	Dix-Sept Rosado	-5.808983
1826	Dix-Sept Rosado	-5.808983
1832	Dix-Sept Rosado	-5.808983
1834	Dix-Sept Rosado	-5.808983
1839	Dix-Sept Rosado	-5.808983
1840	Dix-Sept Rosado	-5.808983
1844	Dix-Sept Rosado	-5.808983
1848	Dix-Sept Rosado	-5.808983
1861	Dix-Sept Rosado	-5.808983
1866	Dix-Sept Rosado	-5.808983
1868	Dix-Sept Rosado	-5.808983
1871	Dix-Sept Rosado	-5.808983
1876	Dix-Sept Rosado	-5.808983
1892	Dix-Sept Rosado	-5.808983
1899	Dix-Sept Rosado	-5.808983
1900	Ponta Negra	-5.884647
1915	Ponta Negra	-5.884647
1934	Ponta Negra	-5.884647
1937	Ponta Negra	-5.884647
1943	Ponta Negra	-5.884647
1944	Ponta Negra	-5.884647
1945	Ponta Negra	-5.884647
1952	Ponta Negra	-5.884647
1954	Ponta Negra	-5.884647
1970	Ponta Negra	-5.884647

1980	Ponta Negra	-5.884647
1986	Ponta Negra	-5.884647
1991	Ponta Negra	-5.884647
1992	Ponta Negra	-5.884647
1998	Ponta Negra	-5.884647
2007	Barro Vermelho	-5.797849
2009	Barro Vermelho	-5.797849
2014	Barro Vermelho	-5.797849
2017	Barro Vermelho	-5.797849
2023	Barro Vermelho	-5.797849
2027	Barro Vermelho	-5.797849
2030	Barro Vermelho	-5.797849
2031	Barro Vermelho	-5.797849
2040	Barro Vermelho	-5.797849
2064	Barro Vermelho	-5.797849
2069	Barro Vermelho	-5.797849
2082	Barro Vermelho	-5.797849
2090	Barro Vermelho	-5.797849
2095	Barro Vermelho	-5.797849
2098	Barro Vermelho	-5.797849
2100	Cidade Alta	-5.785639
2116	Cidade Alta	-5.785639
2122	Cidade Alta	-5.785639
2124	Cidade Alta	-5.785639
2126	Cidade Alta	-5.785639
2133	Cidade Alta	-5.785639
2156	Cidade Alta	-5.785639
2157	Cidade Alta	-5.785639
2159	Cidade Alta	-5.785639
2161	Cidade Alta	-5.785639
2163	Cidade Alta	-5.785639
2213	Praia do Meio	-5.778982
2215	Praia do Meio	-5.778982
2225	Praia do Meio	-5.778982
2235	Praia do Meio	-5.778982
2236	Praia do Meio	-5.778982
2245	Praia do Meio	-5.778982
2259	Praia do Meio	-5.778982
2263	Praia do Meio	-5.778982
2264	Praia do Meio	-5.778982
2266	Praia do Meio	-5.778982
2278	Praia do Meio	-5.778982
2299	Praia do Meio	-5.778982
2312	Candelária	-5.843724
2316	Candelária	-5.843724
2317	Candelária	-5.843724
2323	Candelária	-5.843724
2325	Candelária	-5.843724
2327	Candelária	-5.843724
2329	Candelária	-5.843724
2332	Candelária	-5.843724
2334	Candelária	-5.843724
2341	Candelária	-5.843724
2342	Candelária	-5.843724
2348	Candelária	-5.843724
2351	Candelária	-5.843724
2355	Candelária	-5.843724
2363	Candelária	-5.843724
2365	Candelária	-5.843724
2367	Candelária	-5.843724
2368	Candelária	-5.843724

2373	Candelária	-5.843724
2390	Candelária	-5.843724
2393	Candelária	-5.843724
2404	Guarapes	-5.836611
2405	Guarapes	-5.836611
2406	Guarapes	-5.836611
2407	Guarapes	-5.836611
2408	Guarapes	-5.836611
2409	Guarapes	-5.836611
2412	Guarapes	-5.836611
2425	Guarapes	-5.836611
2434	Guarapes	-5.836611
2437	Guarapes	-5.836611
2438	Guarapes	-5.836611
2443	Guarapes	-5.836611
2456	Guarapes	-5.836611
2457	Guarapes	-5.836611
2459	Guarapes	-5.836611
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2465	Guarapes	-5.836611
2467	Guarapes	-5.836611
2470	Guarapes	-5.836611
2477	Guarapes	-5.836611
2480	Guarapes	-5.836611
2481	Guarapes	-5.836611
2487	Guarapes	-5.836611
2492	Guarapes	-5.836611
2493	Guarapes	-5.836611
2500	Cidade da Esperança	-5.825065
2501	Cidade da Esperança	-5.825065
2503	Cidade da Esperança	-5.825065
2510	Cidade da Esperança	-5.825065
2514	Cidade da Esperança	-5.825065
2515	Cidade da Esperança	-5.825065
2531	Cidade da Esperança	-5.825065
2534	Cidade da Esperança	-5.825065
2535	Cidade da Esperança	-5.825065
2536	Cidade da Esperança	-5.825065
2539	Cidade da Esperança	-5.825065
2543	Cidade da Esperança	-5.825065
2551	Cidade da Esperança	-5.825065
2552	Cidade da Esperança	-5.825065
2558	Cidade da Esperança	-5.825065
2567	Cidade da Esperança	-5.825065
2570	Cidade da Esperança	-5.825065
2571	Cidade da Esperança	-5.825065
2577	Cidade da Esperança	-5.825065
2578	Cidade da Esperança	-5.825065
2587	Cidade da Esperança	-5.825065
2595	Cidade da Esperança	-5.825065
2597	Cidade da Esperança	-5.825065
2598	Cidade da Esperança	-5.825065
2602	Bom Pastor	-5.809498
2603	Bom Pastor	-5.809498
2605	Bom Pastor	-5.809498
2606	Bom Pastor	-5.809498
2612	Bom Pastor	-5.809498
2614	Bom Pastor	-5.809498
2615	Bom Pastor	-5.809498
2623	Bom Pastor	-5.809498
2624	Bom Pastor	-5.809498

2631	Bom Pastor	-5.809498
2632	Bom Pastor	-5.809498
2637	Bom Pastor	-5.809498
2638	Bom Pastor	-5.809498
2641	Bom Pastor	-5.809498
2645	Bom Pastor	-5.809498
2665	Bom Pastor	-5.809498
2672	Bom Pastor	-5.809498
2674	Bom Pastor	-5.809498
2676	Bom Pastor	-5.809498
2679	Bom Pastor	-5.809498
2685	Bom Pastor	-5.809498
2693	Bom Pastor	-5.809498
2697	Bom Pastor	-5.809498
2711	Petrópolis	-5.784549
2719	Petrópolis	-5.784549
2720	Petrópolis	-5.784549
2729	Petrópolis	-5.784549
2732	Petrópolis	-5.784549
2742	Petrópolis	-5.784549
2758	Petrópolis	-5.784549
2762	Petrópolis	-5.784549
2763	Petrópolis	-5.784549
2764	Petrópolis	-5.784549
2774	Petrópolis	-5.784549
2794	Petrópolis	-5.784549
2795	Petrópolis	-5.784549
2799	Petrópolis	-5.784549
2806	Tirol	-5.803210
2808	Tirol	-5.803210
2811	Tirol	-5.803210
2813	Tirol	-5.803210
2816	Tirol	-5.803210
2817	Tirol	-5.803210
2838	Tirol	-5.803210
2845	Tirol	-5.803210
2848	Tirol	-5.803210
2876	Tirol	-5.803210
2881	Tirol	-5.803210
2882	Tirol	-5.803210
2884	Tirol	-5.803210
2896	Tirol	-5.803210
2908	Alecrim	-5.798880
2911	Alecrim	-5.798880
2912	Alecrim	-5.798880
2914	Alecrim	-5.798880
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2941	Alecrim	-5.798880
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2954	Alecrim	-5.798880
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2970	Alecrim	-5.798880
2990	Alecrim	-5.798880
2993	Alecrim	-5.798880
3002	Lagoa Azul	-5.723325
3012	Lagoa Azul	-5.723325

3014	Lagoa Azul	-5.723325
3015	Lagoa Azul	-5.723325
3016	Lagoa Azul	-5.723325
3026	Lagoa Azul	-5.723325
3043	Lagoa Azul	-5.723325
3061	Lagoa Azul	-5.723325
3062	Lagoa Azul	-5.723325
3063	Lagoa Azul	-5.723325
3065	Lagoa Azul	-5.723325
3067	Lagoa Azul	-5.723325
3080	Lagoa Azul	-5.723325
3086	Lagoa Azul	-5.723325
3090	Lagoa Azul	-5.723325
3096	Lagoa Azul	-5.723325
3104	Ribeira	-5.776714
3109	Ribeira	-5.776714
3124	Ribeira	-5.776714
3131	Ribeira	-5.776714
3134	Ribeira	-5.776714
3139	Ribeira	-5.776714
3161	Ribeira	-5.776714
3163	Ribeira	-5.776714
3165	Ribeira	-5.776714
3166	Ribeira	-5.776714
3172	Ribeira	-5.776714
3191	Ribeira	-5.776714
3196	Ribeira	-5.776714
3212	Mãe Luiza	-5.795065
3215	Mãe Luiza	-5.795065
3227	Mãe Luiza	-5.795065
3236	Mãe Luiza	-5.795065
3243	Mãe Luiza	-5.795065
3246	Mãe Luiza	-5.795065
3248	Mãe Luiza	-5.795065
3250	Mãe Luiza	-5.795065
3254	Mãe Luiza	-5.795065
3264	Mãe Luiza	-5.795065
3277	Mãe Luiza	-5.795065
3282	Mãe Luiza	-5.795065
3294	Mãe Luiza	-5.795065
3317	Areia Preta	-5.786901
3322	Areia Preta	-5.786901
3324	Areia Preta	-5.786901
3333	Areia Preta	-5.786901
3335	Areia Preta	-5.786901
3351	Areia Preta	-5.786901
3360	Areia Preta	-5.786901
3364	Areia Preta	-5.786901
3366	Areia Preta	-5.786901
3367	Areia Preta	-5.786901
3382	Areia Preta	-5.786901
3398	Areia Preta	-5.786901
3402	Salinas	-5.775602
3428	Salinas	-5.775602
3431	Salinas	-5.775602
3432	Salinas	-5.775602
3436	Salinas	-5.775602
3444	Salinas	-5.775602
3447	Salinas	-5.775602
3448	Salinas	-5.775602
3453	Salinas	-5.775602

3456	Salinas	-5.775602
3470	Salinas	-5.775602
3473	Salinas	-5.775602
3478	Salinas	-5.775602
3479	Salinas	-5.775602
3495	Salinas	-5.775602
3498	Salinas	-5.775602
3509	Santos Reis	-5.760837
3510	Santos Reis	-5.760837
3529	Santos Reis	-5.760837
3536	Santos Reis	-5.760837
3538	Santos Reis	-5.760837
3540	Santos Reis	-5.760837
3570	Santos Reis	-5.760837
3574	Santos Reis	-5.760837
3575	Santos Reis	-5.760837
3576	Santos Reis	-5.760837
3579	Santos Reis	-5.760837
3584	Santos Reis	-5.760837
3594	Santos Reis	-5.760837
3600	Parque das Dunas	-5.734009
3603	Parque das Dunas	-5.734009
3608	Parque das Dunas	-5.734009
3616	Parque das Dunas	-5.734009
3617	Parque das Dunas	-5.734009
3632	Parque das Dunas	-5.734009
3633	Parque das Dunas	-5.734009
3639	Parque das Dunas	-5.734009
3643	Parque das Dunas	-5.734009
3657	Parque das Dunas	-5.734009
3670	Parque das Dunas	-5.734009
3678	Parque das Dunas	-5.734009
3681	Parque das Dunas	-5.734009
3690	Parque das Dunas	-5.734009
3692	Parque das Dunas	-5.734009
3698	Parque das Dunas	-5.734009

Neighborhood	Longitude	Venue	Venue_Latitude
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1	-35.236043	Seis E Ponto	-5.747582
3	-35.236043	HM Fitness	-5.748366
9	-35.236043	Barcana's Petiscaria	-5.744520
16	-35.236043	Academia Natural Fitness	-5.749302
17	-35.236043	Barreto's Bar	-5.752689
31	-35.236043	Attila Fitness	-5.743233
36	-35.236043	BAR DA JOSY	-5.726890
38	-35.236043	Bar do Feijao	-5.765055
40	-35.236043	Delícias do Mate	-5.786409
55	-35.236043	Academia Fibra	-5.781371
68	-35.236043	Bodytech	-5.793428
73	-35.236043	Smart Fit	-5.790584
76	-35.236043	Musfi Academia	-5.786313
87	-35.236043	AABB Fitness	-5.796621
88	-35.236043	Bar da Língua	-5.800942
95	-35.236043	Academia clube sport fitness	-5.799145
109	-35.199791	Delícias do Mate	-5.786409
110	-35.199791	Academia Fibra	-5.781371
127	-35.199791	Bodytech	-5.793428
136	-35.199791	Smart Fit	-5.790584
138	-35.199791	Musfi Academia	-5.786313
139	-35.199791	AABB Fitness	-5.796621

164	-35.199791	Selfit Academias	-5.815627
167	-35.199791	Espetinho do Teco	-5.813164
169	-35.199791	Smart Fit	-5.811253
170	-35.199791	Pulse Health&Fitness	-5.816016
177	-35.199791	Platinum Prime	-5.810915
201	-35.244401	Bar da Língua	-5.800942
202	-35.244401	Academia clube sport fitness	-5.799145
214	-35.244401	Bodega do Mané	-5.820274
215	-35.244401	Platinum Prime	-5.810915
221	-35.244401	Maxxfit Academia	-5.827138
222	-35.244401	Body Shape Fitness	-5.828037
228	-35.244401	Academia Matrix	-5.817862
230	-35.244401	Delícias do Mate	-5.786409
233	-35.244401	Selfit Academias	-5.815627
237	-35.244401	Meu Barraco Boteco Bistrô	-5.815081
240	-35.244401	Espetinho do Teco	-5.813164
241	-35.244401	Pulse Health&Fitness	-5.816016
250	-35.244401	MPBar	-5.803101
251	-35.244401	Pai D'égua - Boteco Regional	-5.817968
261	-35.244401	Bodytech	-5.793428
268	-35.244401	Potiguares Bar e Restaurante	-5.817919
269	-35.244401	Smart Fit	-5.811253
292	-35.244401	Academia Msl Vitaly	-5.834211
294	-35.244401	AABB Fitness	-5.796621
298	-35.244401	Smart Fit	-5.790584
302	-35.231670	Academia clube sport fitness	-5.799145
304	-35.231670	Bar da Língua	-5.800942
309	-35.231670	Platinum Prime	-5.810915
318	-35.231670	Bodega do Mané	-5.820274
321	-35.231670	Selfit Academias	-5.815627
325	-35.231670	Espetinho do Teco	-5.813164
326	-35.231670	Delícias do Mate	-5.786409
327	-35.231670	Pulse Health&Fitness	-5.816016
330	-35.231670	Academia Matrix	-5.817862
334	-35.231670	Meu Barraco Boteco Bistrô	-5.815081
337	-35.231670	Pai D'égua - Boteco Regional	-5.817968
342	-35.231670	Maxxfit Academia	-5.827138
346	-35.231670	Bodytech	-5.793428
349	-35.231670	Smart Fit	-5.811253
350	-35.231670	Body Shape Fitness	-5.828037
368	-35.231670	AABB Fitness	-5.796621
371	-35.231670	Potiguares Bar e Restaurante	-5.817919
378	-35.231670	Smart Fit	-5.790584
401	-35.198547	Bar da Dobradinha	-5.829669
405	-35.198547	Selfit Academias	-5.815627
408	-35.198547	Pulse Health&Fitness	-5.816016
416	-35.198547	Espetinho do Teco	-5.813164
428	-35.198547	Smart Fit	-5.811253
455	-35.198547	Academia Ápice	-5.855883
457	-35.198547	Smart Fit	-5.845844
458	-35.198547	Pai D'égua - Boteco Regional	-5.817968
460	-35.198547	Platinum Prime	-5.810915
468	-35.198547	Academia Matrix	-5.817862
471	-35.198547	Academia Extreme Fitness	-5.830404
472	-35.198547	AABB Fitness	-5.796621
473	-35.198547	Bar do Val	-5.837386
474	-35.198547	Bodega do Mané	-5.820274
476	-35.198547	Energy Fitness	-5.858893
478	-35.198547	Bodytech	-5.793428
487	-35.198547	Zumbi	-5.838826
488	-35.198547	Maxxfit Academia	-5.827138

497	-35.198547	Meu Barraco Boteco Bistrô	-5.815081
501	-35.208806	Academia Ápice	-5.855883
505	-35.208806	Energy Fitness	-5.858893
531	-35.208806	Smart Fit	-5.845844
533	-35.208806	Rei da Gela	-5.856360
541	-35.208806	Mega Vita Academia	-5.888158
547	-35.208806	Ponta Negra Fitness	-5.876881
552	-35.208806	Aliance Academia	-5.892199
553	-35.208806	Academia Olympia 2.0	-5.887021
559	-35.208806	HP Fitness Academia	-5.852166
560	-35.208806	BurnFit	-5.899515
571	-35.208806	Bar da Dobradinha	-5.829669
575	-35.208806	Ki Coco	-5.868535
580	-35.208806	Bar do Val	-5.837386
589	-35.208806	Estação do Malte	-5.881489
595	-35.208806	Academia Extreme Fitness	-5.830404
598	-35.208806	Selfit Academias	-5.815627
600	-35.201449	Academia Ápice	-5.855883
602	-35.201449	Energy Fitness	-5.858893
618	-35.201449	Smart Fit	-5.845844
638	-35.201449	Ponta Negra Fitness	-5.876881
642	-35.201449	Bar da Dobradinha	-5.829669
650	-35.201449	Rei da Gela	-5.856360
656	-35.201449	Ki Coco	-5.868535
661	-35.201449	Mega Vita Academia	-5.888158
664	-35.201449	Bar do Val	-5.837386
669	-35.201449	Selfit Academias	-5.815627
677	-35.201449	Aliance Academia	-5.892199
679	-35.201449	Pulse Health&Fitness	-5.816016
683	-35.201449	HP Fitness Academia	-5.852166
692	-35.201449	Academia Extreme Fitness	-5.830404
699	-35.201449	Academia Olympia 2.0	-5.887021
704	-35.253447	Seis E Ponto	-5.747582
708	-35.253447	Barreto's Bar	-5.752689
709	-35.253447	Academia Natural Fitness	-5.749302
713	-35.253447	HM Fitness	-5.748366
719	-35.253447	Barcana's Petiscaria	-5.744520
729	-35.253447	Bar do Feijao	-5.765055
730	-35.253447	Attila Fitness	-5.743233
733	-35.253447	BAR DA JOSY	-5.726890
739	-35.253447	Delícias do Mate	-5.786409
750	-35.253447	Bar da Língua	-5.800942
756	-35.253447	Academia clube sport fitness	-5.799145
762	-35.253447	Academia Fibra	-5.781371
769	-35.253447	Bodytech	-5.793428
777	-35.253447	Smart Fit	-5.790584
783	-35.253447	Platinum Prime	-5.810915
784	-35.253447	Musfi Academia	-5.786313
795	-35.253447	AABB Fitness	-5.796621
812	-35.278780	Seis E Ponto	-5.747582
814	-35.278780	Academia Natural Fitness	-5.749302
815	-35.278780	Barreto's Bar	-5.752689
820	-35.278780	HM Fitness	-5.748366
822	-35.278780	Barcana's Petiscaria	-5.744520
829	-35.278780	Attila Fitness	-5.743233
837	-35.278780	Bar da Língua	-5.800942
840	-35.278780	Academia clube sport fitness	-5.799145
841	-35.278780	Delícias do Mate	-5.786409
863	-35.278780	Platinum Prime	-5.810915
865	-35.278780	Bodega do Mané	-5.820274
867	-35.278780	Academia Fibra	-5.781371

872	-35.278780	Smart Fit	-5.790584
875	-35.278780	Musfi Academia	-5.786313
881	-35.278780	Meu Barraco Boteco Bistrô	-5.815081
885	-35.278780	Potiguares Bar e Restaurante	-5.817919
895	-35.278780	Beto's Bar	-5.767313
897	-35.278780	Rocks Fit	-5.767487
909	-35.202890	Delícias do Mate	-5.786409
910	-35.202890	Academia Fibra	-5.781371
931	-35.202890	Bodytech	-5.793428
940	-35.202890	Smart Fit	-5.790584
942	-35.202890	Musfi Academia	-5.786313
943	-35.202890	AABB Fitness	-5.796621
949	-35.202890	Seis E Ponto	-5.747582
957	-35.202890	HM Fitness	-5.748366
984	-35.202890	Barcana's Petiscaria	-5.744520
986	-35.202890	Selfit Academias	-5.815627
992	-35.202890	Espetinho do Teco	-5.813164
995	-35.202890	Pulse Health&Fitness	-5.816016
996	-35.202890	Smart Fit	-5.811253
997	-35.202890	Barreto's Bar	-5.752689
1000	-35.254722	Body Shape Fitness	-5.828037
1001	-35.254722	Maxxfit Academia	-5.827138
1003	-35.254722	Academia Msl Vitality	-5.834211
1007	-35.254722	Bodega do Mané	-5.820274
1011	-35.254722	K Fitness	-5.847600
1013	-35.254722	Rei da Gela	-5.856360
1014	-35.254722	HP Fitness Academia	-5.852166
1024	-35.254722	Academia Extreme Fitness	-5.830404
1025	-35.254722	Academia Matrix	-5.817862
1029	-35.254722	Bar da Língua	-5.800942
1037	-35.254722	Meu Barraco Boteco Bistrô	-5.815081
1038	-35.254722	Platinum Prime	-5.810915
1044	-35.254722	Pai D'égua - Boteco Regional	-5.817968
1046	-35.254722	Bar do Val	-5.837386
1050	-35.254722	Selfit Academias	-5.815627
1051	-35.254722	Potiguares Bar e Restaurante	-5.817919
1052	-35.254722	Pulse Health&Fitness	-5.816016
1065	-35.254722	Academia clube sport fitness	-5.799145
1067	-35.254722	Espetinho do Teco	-5.813164
1076	-35.254722	Zumbi	-5.838826
1080	-35.254722	Bar da Dobradinha	-5.829669
1082	-35.254722	Smart Fit	-5.845844
1085	-35.254722	Smart Fit	-5.811253
1092	-35.254722	Academia Ápice	-5.855883
1100	-35.232432	Rei da Gela	-5.856360
1102	-35.232432	HP Fitness Academia	-5.852166
1113	-35.232432	Academia Ápice	-5.855883
1115	-35.232432	K Fitness	-5.847600
1130	-35.232432	Smart Fit	-5.845844
1139	-35.232432	Bar do Val	-5.837386
1140	-35.232432	Energy Fitness	-5.858893
1142	-35.232432	Body Shape Fitness	-5.828037
1144	-35.232432	Academia Msl Vitality	-5.834211
1146	-35.232432	Maxxfit Academia	-5.827138
1155	-35.232432	Academia Extreme Fitness	-5.830404
1164	-35.232432	Bar da Dobradinha	-5.829669
1165	-35.232432	Bodega do Mané	-5.820274
1167	-35.232432	Academia Olympia 2.0	-5.887021
1169	-35.232432	Mega Vita Academia	-5.888158
1184	-35.232432	Selfit Academias	-5.815627
1186	-35.232432	Aliance Academia	-5.892199

1187	-35.232432	BurnFit	-5.899515
1189	-35.232432	Pulse Health&Fitness	-5.816016
1199	-35.232432	Academia Matrix	-5.817862
1200	-35.238961	Body Shape Fitness	-5.828037
1201	-35.238961	Academia Msl Vitality	-5.834211
1202	-35.238961	Maxxfit Academia	-5.827138
1204	-35.238961	Rei da Gela	-5.856360
1205	-35.238961	HP Fitness Academia	-5.852166
1211	-35.238961	K Fitness	-5.847600
1214	-35.238961	Bodega do Mané	-5.820274
1218	-35.238961	Academia Extreme Fitness	-5.830404
1224	-35.238961	Bar do Val	-5.837386
1240	-35.238961	Academia Matrix	-5.817862
1253	-35.238961	Smart Fit	-5.845844
1254	-35.238961	Selfit Academias	-5.815627
1255	-35.238961	Pai D'égua - Boteco Regional	-5.817968
1258	-35.238961	Pulse Health&Fitness	-5.816016
1260	-35.238961	Platinum Prime	-5.810915
1263	-35.238961	Meu Barraco Boteco Bistrô	-5.815081
1265	-35.238961	Bar da Dobradinha	-5.829669
1268	-35.238961	Espetinho do Teco	-5.813164
1269	-35.238961	Academia Ápice	-5.855883
1284	-35.238961	Smart Fit	-5.811253
1286	-35.238961	Bar da Língua	-5.800942
1292	-35.238961	Energy Fitness	-5.858893
1302	-35.256887	Rei da Gela	-5.856360
1303	-35.256887	HP Fitness Academia	-5.852166
1304	-35.256887	K Fitness	-5.847600
1308	-35.256887	Academia Msl Vitality	-5.834211
1309	-35.256887	Body Shape Fitness	-5.828037
1310	-35.256887	Maxxfit Academia	-5.827138
1315	-35.256887	Academia Movimento Livre	-5.878656
1324	-35.256887	Bodega do Mané	-5.820274
1330	-35.256887	Bar do Val	-5.837386
1331	-35.256887	Academia Extreme Fitness	-5.830404
1347	-35.256887	Smart Fit	-5.845844
1348	-35.256887	Academia Ápice	-5.855883
1349	-35.256887	Zumbi	-5.838826
1357	-35.256887	Academia Matrix	-5.817862
1371	-35.256887	Selfit Academias	-5.815627
1372	-35.256887	Pai D'égua - Boteco Regional	-5.817968
1375	-35.256887	Pulse Health&Fitness	-5.816016
1376	-35.256887	Bar da Dobradinha	-5.829669
1380	-35.256887	Platinum Prime	-5.810915
1381	-35.256887	Meu Barraco Boteco Bistrô	-5.815081
1386	-35.256887	Potiguares Bar e Restaurante	-5.817919
1390	-35.256887	Energy Fitness	-5.858893
1392	-35.256887	Espetinho do Teco	-5.813164
1398	-35.256887	Bar da Língua	-5.800942
1401	-35.231396	Bodega do Mané	-5.820274
1405	-35.231396	Maxxfit Academia	-5.827138
1408	-35.231396	Body Shape Fitness	-5.828037
1409	-35.231396	Academia Matrix	-5.817862
1417	-35.231396	Meu Barraco Boteco Bistrô	-5.815081
1418	-35.231396	Platinum Prime	-5.810915
1422	-35.231396	Pai D'égua - Boteco Regional	-5.817968
1426	-35.231396	Selfit Academias	-5.815627
1429	-35.231396	Pulse Health&Fitness	-5.816016
1434	-35.231396	Academia Extreme Fitness	-5.830404
1436	-35.231396	Espetinho do Teco	-5.813164
1450	-35.231396	Academia Msl Vitality	-5.834211

1451	-35.231396	Bar da Língua	-5.800942
1459	-35.231396	Smart Fit	-5.811253
1463	-35.231396	Bar do Val	-5.837386
1465	-35.231396	Academia clube sport fitness	-5.799145
1468	-35.231396	Bar da Dobradinha	-5.829669
1481	-35.231396	Rei da Gela	-5.856360
1483	-35.231396	HP Fitness Academia	-5.852166
1486	-35.231396	Smart Fit	-5.845844
1487	-35.231396	Delícias do Mate	-5.786409
1488	-35.231396	Bodytech	-5.793428
1492	-35.231396	AABB Fitness	-5.796621
1495	-35.231396	K Fitness	-5.847600
1509	-35.261889	Bar do Feijao	-5.765055
1516	-35.261889	Seis E Ponto	-5.747582
1518	-35.261889	Barreto's Bar	-5.752689
1522	-35.261889	Academia Natural Fitness	-5.749302
1529	-35.261889	HM Fitness	-5.748366
1531	-35.261889	Barcana's Petiscaria	-5.744520
1533	-35.261889	Bar da Língua	-5.800942
1536	-35.261889	Academia clube sport fitness	-5.799145
1537	-35.261889	Delícias do Mate	-5.786409
1551	-35.261889	Platinum Prime	-5.810915
1552	-35.261889	Bodega do Mané	-5.820274
1554	-35.261889	BAR DA JOSY	-5.726890
1563	-35.261889	Body Shape Fitness	-5.828037
1566	-35.261889	Maxxfit Academia	-5.827138
1579	-35.261889	Bodytech	-5.793428
1583	-35.261889	Selfit Academias	-5.815627
1587	-35.261889	Academia Matrix	-5.817862
1590	-35.261889	Academia Fibra	-5.781371
1591	-35.261889	Espetinho do Teco	-5.813164
1596	-35.261889	Pulse Health&Fitness	-5.816016
1598	-35.261889	Meu Barraco Boteco Bistrô	-5.815081
1606	-35.210671	Selfit Academias	-5.815627
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1608	-35.210671	Pulse Health&Fitness	-5.816016
1612	-35.210671	Smart Fit	-5.811253
1615	-35.210671	Platinum Prime	-5.810915
1634	-35.210671	Bodytech	-5.793428
1635	-35.210671	AABB Fitness	-5.796621
1637	-35.210671	Pai D'égua - Boteco Regional	-5.817968
1648	-35.210671	Delícias do Mate	-5.786409
1653	-35.210671	Academia Matrix	-5.817862
1665	-35.210671	Bar da Dobradinha	-5.829669
1667	-35.210671	Bodega do Mané	-5.820274
1673	-35.210671	Smart Fit	-5.790584
1678	-35.210671	Meu Barraco Boteco Bistrô	-5.815081
1697	-35.210671	Maxxfit Academia	-5.827138
1705	-35.212640	Selfit Academias	-5.815627
1707	-35.212640	Pulse Health&Fitness	-5.816016
1720	-35.212640	Espetinho do Teco	-5.813164
1725	-35.212640	Bar da Dobradinha	-5.829669
1726	-35.212640	Pai D'égua - Boteco Regional	-5.817968
1738	-35.212640	Platinum Prime	-5.810915
1742	-35.212640	Smart Fit	-5.811253
1746	-35.212640	Academia Matrix	-5.817862
1756	-35.212640	Bodega do Mané	-5.820274
1759	-35.212640	Academia Extreme Fitness	-5.830404
1764	-35.212640	Maxxfit Academia	-5.827138
1768	-35.212640	Meu Barraco Boteco Bistrô	-5.815081
1769	-35.212640	Bar do Val	-5.837386

1771	-35.212640	Body Shape Fitness	-5.828037
1775	-35.212640	Smart Fit	-5.845844
1779	-35.212640	AABB Fitness	-5.796621
1781	-35.212640	Academia Ápice	-5.855883
1782	-35.212640	Bodytech	-5.793428
1792	-35.212640	Delícias do Mate	-5.786409
1798	-35.212640	Academia Msl Vitaly	-5.834211
1804	-35.227251	Platinum Prime	-5.810915
1807	-35.227251	Bodega do Mané	-5.820274
1813	-35.227251	Academia Matrix	-5.817862
1816	-35.227251	Selfit Academias	-5.815627
1817	-35.227251	Meu Barraco Boteco Bistrô	-5.815081
1821	-35.227251	Pulse Health&Fitness	-5.816016
1824	-35.227251	Espetinho do Teco	-5.813164
1826	-35.227251	Pai D'égua - Boteco Regional	-5.817968
1832	-35.227251	Maxxfit Academia	-5.827138
1834	-35.227251	Bar da Língua	-5.800942
1839	-35.227251	Potiguares Bar e Restaurante	-5.817919
1840	-35.227251	Body Shape Fitness	-5.828037
1844	-35.227251	Academia clube sport fitness	-5.799145
1848	-35.227251	Smart Fit	-5.811253
1861	-35.227251	Academia Extreme Fitness	-5.830404
1866	-35.227251	Delícias do Mate	-5.786409
1868	-35.227251	Bodytech	-5.793428
1871	-35.227251	Bar da Dobradinha	-5.829669
1876	-35.227251	AABB Fitness	-5.796621
1892	-35.227251	Academia Msl Vitaly	-5.834211
1899	-35.227251	Bar do Val	-5.837386
1900	-35.177512	Ponta Negra Fitness	-5.876881
1915	-35.177512	Estação do Malte	-5.881489
1934	-35.177512	Old Five	-5.884044
1937	-35.177512	Aliance Academia	-5.892199
1943	-35.177512	BurnFit	-5.899515
1944	-35.177512	Mega Vita Academia	-5.888158
1945	-35.177512	Ki Coco	-5.868535
1952	-35.177512	Energy Fitness	-5.858893
1954	-35.177512	Academia Ápice	-5.855883
1970	-35.177512	Academia Olympia 2.0	-5.887021
1980	-35.177512	Smart Fit	-5.845844
1986	-35.177512	K1 Academia	-5.877092
1991	-35.177512	Bar da Dobradinha	-5.829669
1992	-35.177512	Rei da Gela	-5.856360
1998	-35.177512	Marco Zero Bar	-5.876919
2007	-35.209221	Bodytech	-5.793428
2009	-35.209221	Delícias do Mate	-5.786409
2014	-35.209221	AABB Fitness	-5.796621
2017	-35.209221	Selfit Academias	-5.815627
2023	-35.209221	Espetinho do Teco	-5.813164
2027	-35.209221	Pulse Health&Fitness	-5.816016
2030	-35.209221	Smart Fit	-5.811253
2031	-35.209221	Smart Fit	-5.790584
2040	-35.209221	Platinum Prime	-5.810915
2064	-35.209221	Musfi Academia	-5.786313
2069	-35.209221	Academia Fibra	-5.781371
2082	-35.209221	Pai D'égua - Boteco Regional	-5.817968
2090	-35.209221	Academia Matrix	-5.817862
2095	-35.209221	Bodega do Mané	-5.820274
2098	-35.209221	Bar da Dobradinha	-5.829669
2100	-35.209260	Delícias do Mate	-5.786409
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2122	-35.209260	Smart Fit	-5.790584

2124	-35.209260	Academia Fibra	-5.781371
2126	-35.209260	Musfi Academia	-5.786313
2133	-35.209260	AABB Fitness	-5.796621
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2159	-35.209260	Pulse Health&Fitness	-5.816016
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2215	-35.194817	Academia Fibra	-5.781371
2225	-35.194817	Bodytech	-5.793428
2235	-35.194817	Smart Fit	-5.790584
2236	-35.194817	AABB Fitness	-5.796621
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2263	-35.194817	Espetinho do Teco	-5.813164
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2266	-35.194817	Pulse Health&Fitness	-5.816016
2278	-35.194817	Platinum Prime	-5.810915
2299	-35.194817	Bar do Pastel	-5.806133
2312	-35.221448	Bar do Val	-5.837386
2316	-35.221448	Smart Fit	-5.845844
2317	-35.221448	Rei da Gela	-5.856360
2323	-35.221448	Academia Ápice	-5.855883
2325	-35.221448	Academia Extreme Fitness	-5.830404
2327	-35.221448	HP Fitness Academia	-5.852166
2329	-35.221448	Maxxfit Academia	-5.827138
2332	-35.221448	Bar da Dobradinha	-5.829669
2334	-35.221448	Body Shape Fitness	-5.828037
2341	-35.221448	Bodega do Mané	-5.820274
2342	-35.221448	Selfit Academias	-5.815627
2348	-35.221448	Pulse Health&Fitness	-5.816016
2351	-35.221448	Academia Msl Vitaly	-5.834211
2355	-35.221448	Energy Fitness	-5.858893
2363	-35.221448	Pai D'égua - Boteco Regional	-5.817968
2365	-35.221448	Academia Matrix	-5.817862
2367	-35.221448	Espetinho do Teco	-5.813164
2368	-35.221448	K Fitness	-5.847600
2373	-35.221448	Platinum Prime	-5.810915
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2393	-35.221448	Meu Barraco Boteco Bistrô	-5.815081
2404	-35.271913	Body Shape Fitness	-5.828037
2405	-35.271913	Academia Msl Vitaly	-5.834211
2406	-35.271913	Rei da Gela	-5.856360
2407	-35.271913	K Fitness	-5.847600
2408	-35.271913	HP Fitness Academia	-5.852166
2409	-35.271913	Maxxfit Academia	-5.827138
2412	-35.271913	Bodega do Mané	-5.820274
2425	-35.271913	Academia Extreme Fitness	-5.830404
2434	-35.271913	Academia Matrix	-5.817862
2437	-35.271913	Bar do Val	-5.837386
2438	-35.271913	Bar da Língua	-5.800942
2443	-35.271913	Academia Movimento Livre	-5.878656
2456	-35.271913	Meu Barraco Boteco Bistrô	-5.815081
2457	-35.271913	Platinum Prime	-5.810915
2459	-35.271913	Pai D'égua - Boteco Regional	-5.817968
2462	-35.271913	Selfit Academias	-5.815627
2465	-35.271913	Potiguares Bar e Restaurante	-5.817919
2467	-35.271913	Pulse Health&Fitness	-5.816016
2470	-35.271913	Zumbi	-5.838826
2477	-35.271913	Smart Fit	-5.845844

2480	-35.271913	Academia clube sport fitness	-5.799145
2481	-35.271913	Espetinho do Teco	-5.813164
2487	-35.271913	Arena Academia Natal	-5.823678
2492	-35.271913	Academia Ápice	-5.855883
2493	-35.271913	Bar da Dobradinha	-5.829669
2500	-35.235023	Maxxfit Academia	-5.827138
2501	-35.235023	Body Shape Fitness	-5.828037
2503	-35.235023	Bodega do Mané	-5.820274
2510	-35.235023	Academia Msl Vitality	-5.834211
2514	-35.235023	Academia Extreme Fitness	-5.830404
2515	-35.235023	Academia Matrix	-5.817862
2531	-35.235023	Pai D'égua - Boteco Regional	-5.817968
2534	-35.235023	Platinum Prime	-5.810915
2535	-35.235023	Meu Barraco Boteco Bistrô	-5.815081
2536	-35.235023	Selfit Academias	-5.815627
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2543	-35.235023	Bar do Val	-5.837386
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2552	-35.235023	Rei da Gela	-5.856360
2558	-35.235023	HP Fitness Academia	-5.852166
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2577	-35.235023	Smart Fit	-5.811253
2578	-35.235023	Smart Fit	-5.845844
2587	-35.235023	Academia Ápice	-5.855883
2595	-35.235023	Bodytech	-5.793428
2597	-35.235023	Delícias do Mate	-5.786409
2598	-35.235023	AABB Fitness	-5.796621
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2606	-35.246214	Bodega do Mané	-5.820274
2612	-35.246214	Academia clube sport fitness	-5.799145
2614	-35.246214	Academia Matrix	-5.817862
2615	-35.246214	Platinum Prime	-5.810915
2623	-35.246214	Academia Msl Vitality	-5.834211
2624	-35.246214	Meu Barraco Boteco Bistrô	-5.815081
2631	-35.246214	Pai D'égua - Boteco Regional	-5.817968
2632	-35.246214	Selfit Academias	-5.815627
2637	-35.246214	Pulse Health&Fitness	-5.816016
2638	-35.246214	Potiguares Bar e Restaurante	-5.817919
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2645	-35.246214	Academia Extreme Fitness	-5.830404
2665	-35.246214	Smart Fit	-5.811253
2672	-35.246214	Rei da Gela	-5.856360
2674	-35.246214	Bar do Val	-5.837386
2676	-35.246214	HP Fitness Academia	-5.852166
2679	-35.246214	Delícias do Mate	-5.786409
2685	-35.246214	K Fitness	-5.847600
2693	-35.246214	Bar da Dobradinha	-5.829669
2697	-35.246214	Bodytech	-5.793428
2711	-35.198444	Delícias do Mate	-5.786409
2719	-35.198444	Bodytech	-5.793428
2720	-35.198444	Academia Fibra	-5.781371
2729	-35.198444	Smart Fit	-5.790584
2732	-35.198444	AABB Fitness	-5.796621
2742	-35.198444	Musfi Academia	-5.786313
2758	-35.198444	Selfit Academias	-5.815627
2762	-35.198444	Espetinho do Teco	-5.813164
2763	-35.198444	Smart Fit	-5.811253

2764	-35.198444	Pulse Health&Fitness	-5.816016
2774	-35.198444	Platinum Prime	-5.810915
2794	-35.198444	Bar do Pastel	-5.806133
2795	-35.198444	Pai D'égua - Boteco Regional	-5.817968
2799	-35.198444	Bar da Dobradinha	-5.829669
2806	-35.200205	AABB Fitness	-5.796621
2808	-35.200205	Selfit Academias	-5.815627
2811	-35.200205	Bodytech	-5.793428
2813	-35.200205	Smart Fit	-5.811253
2816	-35.200205	Pulse Health&Fitness	-5.816016
2817	-35.200205	Espetinho do Teco	-5.813164
2838	-35.200205	Delícias do Mate	-5.786409
2845	-35.200205	Smart Fit	-5.790584
2848	-35.200205	Platinum Prime	-5.810915
2876	-35.200205	Bar da Dobradinha	-5.829669
2881	-35.200205	Academia Fibra	-5.781371
2882	-35.200205	Pai D'égua - Boteco Regional	-5.817968
2884	-35.200205	Musfi Academia	-5.786313
2896	-35.200205	Academia Matrix	-5.817862
2908	-35.218858	Platinum Prime	-5.810915
2911	-35.218858	Selfit Academias	-5.815627
2912	-35.218858	Espetinho do Teco	-5.813164
2914	-35.218858	Delícias do Mate	-5.786409
2915	-35.218858	Pulse Health&Fitness	-5.816016
2924	-35.218858	Bodytech	-5.793428
2931	-35.218858	Smart Fit	-5.811253
2941	-35.218858	AABB Fitness	-5.796621
2953	-35.218858	Pai D'égua - Boteco Regional	-5.817968
2954	-35.218858	Smart Fit	-5.790584
2957	-35.218858	Academia Matrix	-5.817862
2961	-35.218858	Bodega do Mané	-5.820274
2963	-35.218858	Academia clube sport fitness	-5.799145
2968	-35.218858	Bar da Língua	-5.800942
2970	-35.218858	Meu Barraco Boteco Bistrô	-5.815081
2990	-35.218858	Musfi Academia	-5.786313
2993	-35.218858	Academia Fibra	-5.781371
3002	-35.261475	Seis E Ponto	-5.747582
3012	-35.261475	Academia Natural Fitness	-5.749302
3014	-35.261475	Barcana's Petiscaria	-5.744520
3015	-35.261475	HM Fitness	-5.748366
3016	-35.261475	Barreto's Bar	-5.752689
3026	-35.261475	Attila Fitness	-5.743233
3043	-35.261475	Delícias do Mate	-5.786409
3061	-35.261475	Academia Fibra	-5.781371
3062	-35.261475	Bar da Língua	-5.800942
3063	-35.261475	Academia clube sport fitness	-5.799145
3065	-35.261475	Smart Fit	-5.790584
3067	-35.261475	Musfi Academia	-5.786313
3080	-35.261475	Bar da Lagoa	-5.648871
3086	-35.261475	Barraca Nogueirão	-5.703036
3090	-35.261475	Beto's Bar	-5.767313
3096	-35.261475	Rocks Fit	-5.767487
3104	-35.206216	Delícias do Mate	-5.786409
3109	-35.206216	Academia Fibra	-5.781371
3124	-35.206216	Bodytech	-5.793428
3131	-35.206216	Smart Fit	-5.790584
3134	-35.206216	Musfi Academia	-5.786313
3139	-35.206216	AABB Fitness	-5.796621
3161	-35.206216	Selfit Academias	-5.815627
3163	-35.206216	Espetinho do Teco	-5.813164
3165	-35.206216	Pulse Health&Fitness	-5.816016

3166	-35.206216	Smart Fit	-5.811253
3172	-35.206216	Platinum Prime	-5.810915
3191	-35.206216	Bar do Pastel	-5.806133
3196	-35.206216	Academia clube sport fitness	-5.799145
3212	-35.186216	AABB Fitness	-5.796621
3215	-35.186216	Bodytech	-5.793428
3227	-35.186216	Delícias do Mate	-5.786409
3236	-35.186216	Smart Fit	-5.790584
3243	-35.186216	Selfit Academias	-5.815627
3246	-35.186216	Academia Fibra	-5.781371
3248	-35.186216	Smart Fit	-5.811253
3250	-35.186216	Pulse Health&Fitness	-5.816016
3254	-35.186216	Espetinho do Teco	-5.813164
3264	-35.186216	Musfi Academia	-5.786313
3277	-35.186216	Platinum Prime	-5.810915
3282	-35.186216	Bar da Dobradinha	-5.829669
3294	-35.186216	Pai D'égua - Boteco Regional	-5.817968
3317	-35.190263	Bodytech	-5.793428
3322	-35.190263	AABB Fitness	-5.796621
3324	-35.190263	Delícias do Mate	-5.786409
3333	-35.190263	Academia Fibra	-5.781371
3335	-35.190263	Smart Fit	-5.790584
3351	-35.190263	Musfi Academia	-5.786313
3360	-35.190263	Selfit Academias	-5.815627
3364	-35.190263	Smart Fit	-5.811253
3366	-35.190263	Espetinho do Teco	-5.813164
3367	-35.190263	Pulse Health&Fitness	-5.816016
3382	-35.190263	Platinum Prime	-5.810915
3398	-35.190263	Bar da Dobradinha	-5.829669
3402	-35.229354	Delícias do Mate	-5.786409
3428	-35.229354	Bodytech	-5.793428
3431	-35.229354	Academia Fibra	-5.781371
3432	-35.229354	Bar da Língua	-5.800942
3436	-35.229354	Academia clube sport fitness	-5.799145
3444	-35.229354	Smart Fit	-5.790584
3447	-35.229354	Seis E Ponto	-5.747582
3448	-35.229354	Musfi Academia	-5.786313
3453	-35.229354	Platinum Prime	-5.810915
3456	-35.229354	AABB Fitness	-5.796621
3470	-35.229354	Selfit Academias	-5.815627
3473	-35.229354	Espetinho do Teco	-5.813164
3478	-35.229354	HM Fitness	-5.748366
3479	-35.229354	Pulse Health&Fitness	-5.816016
3495	-35.229354	Smart Fit	-5.811253
3498	-35.229354	Barreto's Bar	-5.752689
3509	-35.200309	Delícias do Mate	-5.786409
3510	-35.200309	Academia Fibra	-5.781371
3529	-35.200309	Bodytech	-5.793428
3536	-35.200309	Smart Fit	-5.790584
3538	-35.200309	Musfi Academia	-5.786313
3540	-35.200309	AABB Fitness	-5.796621
3570	-35.200309	Selfit Academias	-5.815627
3574	-35.200309	Espetinho do Teco	-5.813164
3575	-35.200309	Smart Fit	-5.811253
3576	-35.200309	Pulse Health&Fitness	-5.816016
3579	-35.200309	Seis E Ponto	-5.747582
3584	-35.200309	Platinum Prime	-5.810915
3594	-35.200309	HM Fitness	-5.748366
3600	-35.236444	Seis E Ponto	-5.747582
3603	-35.236444	HM Fitness	-5.748366
3608	-35.236444	Barcana's Petiscaria	-5.744520

3616	-35.236444	Academia Natural Fitness	-5.749302
3617	-35.236444	Barreto's Bar	-5.752689
3632	-35.236444	BAR DA JOSY	-5.726890
3633	-35.236444	Attila Fitness	-5.743233
3639	-35.236444	Bar do Feijao	-5.765055
3643	-35.236444	Delícias do Mate	-5.786409
3657	-35.236444	Academia Fibra	-5.781371
3670	-35.236444	Bodytech	-5.793428
3678	-35.236444	Smart Fit	-5.790584
3681	-35.236444	Musfi Academia	-5.786313
3690	-35.236444	AABB Fitness	-5.796621
3692	-35.236444	Bar da Língua	-5.800942
3698	-35.236444	Academia clube sport fitness	-5.799145

Venue_Longitude Venue_Category

1	-35.247780	Bar
3	-35.245207	Gym
9	-35.247437	Bar
16	-35.254818	Gym
17	-35.253757	Bar
31	-35.257147	Gym
36	-35.268477	Bar
38	-35.262661	Bar
40	-35.205993	Bar
55	-35.201094	Gym
68	-35.200917	Gym
73	-35.202242	Gym
76	-35.204348	Gym
87	-35.198616	Gym
88	-35.237112	Bar
95	-35.232712	Gym
109	-35.205993	Bar
110	-35.201094	Gym
127	-35.200917	Gym
136	-35.202242	Gym
138	-35.204348	Gym
139	-35.198616	Gym
164	-35.207123	Gym
167	-35.208581	Bar
169	-35.205135	Gym
170	-35.207796	Gym
177	-35.217676	Gym
201	-35.237112	Bar
202	-35.232712	Gym
214	-35.229238	Bar
215	-35.217676	Gym
221	-35.234952	Gym
222	-35.238179	Gym
228	-35.223413	Gym
230	-35.205993	Bar
233	-35.207123	Gym
237	-35.224948	Bar
240	-35.208581	Bar
241	-35.207796	Gym
250	-35.223490	Bar
251	-35.217945	Bar
261	-35.200917	Gym
268	-35.225019	Bar
269	-35.205135	Gym
292	-35.241829	Gym
294	-35.198616	Gym

298	-35.202242	Gym
302	-35.232712	Gym
304	-35.237112	Bar
309	-35.217676	Gym
318	-35.229238	Bar
321	-35.207123	Gym
325	-35.208581	Bar
326	-35.205993	Bar
327	-35.207796	Gym
330	-35.223413	Gym
334	-35.224948	Bar
337	-35.217945	Bar
342	-35.234952	Gym
346	-35.200917	Gym
349	-35.205135	Gym
350	-35.238179	Gym
368	-35.198616	Gym
371	-35.225019	Bar
378	-35.202242	Gym
401	-35.203456	Bar
405	-35.207123	Gym
408	-35.207796	Gym
416	-35.208581	Bar
428	-35.205135	Gym
455	-35.202497	Gym
457	-35.210581	Gym
458	-35.217945	Bar
460	-35.217676	Gym
468	-35.223413	Gym
471	-35.223972	Gym
472	-35.198616	Gym
473	-35.221245	Bar
474	-35.229238	Bar
476	-35.197717	Gym
478	-35.200917	Gym
487	-35.219843	Bar
488	-35.234952	Gym
497	-35.224948	Bar
501	-35.202497	Gym
505	-35.197717	Gym
531	-35.210581	Gym
533	-35.236825	Bar
541	-35.199956	Gym
547	-35.178576	Gym
552	-35.196344	Gym
553	-35.209531	Gym
559	-35.239006	Gym
560	-35.198917	Gym
571	-35.203456	Bar
575	-35.182107	Bar
580	-35.221245	Bar
589	-35.175189	Bar
595	-35.223972	Gym
598	-35.207123	Gym
600	-35.202497	Gym
602	-35.197717	Gym
618	-35.210581	Gym
638	-35.178576	Gym
642	-35.203456	Bar
650	-35.236825	Bar
656	-35.182107	Bar

661	-35.199956	Gym
664	-35.221245	Bar
669	-35.207123	Gym
677	-35.196344	Gym
679	-35.207796	Gym
683	-35.239006	Gym
692	-35.223972	Gym
699	-35.209531	Gym
704	-35.247780	Bar
708	-35.253757	Bar
709	-35.254818	Gym
713	-35.245207	Gym
719	-35.247437	Bar
729	-35.262661	Bar
730	-35.257147	Gym
733	-35.268477	Bar
739	-35.205993	Bar
750	-35.237112	Bar
756	-35.232712	Gym
762	-35.201094	Gym
769	-35.200917	Gym
777	-35.202242	Gym
783	-35.217676	Gym
784	-35.204348	Gym
795	-35.198616	Gym
812	-35.247780	Bar
814	-35.254818	Gym
815	-35.253757	Bar
820	-35.245207	Gym
822	-35.247437	Bar
829	-35.257147	Gym
837	-35.237112	Bar
840	-35.232712	Gym
841	-35.205993	Bar
863	-35.217676	Gym
865	-35.229238	Bar
867	-35.201094	Gym
872	-35.202242	Gym
875	-35.204348	Gym
881	-35.224948	Bar
885	-35.225019	Bar
895	-35.202287	Bar
897	-35.202202	Gym
909	-35.205993	Bar
910	-35.201094	Gym
931	-35.200917	Gym
940	-35.202242	Gym
942	-35.204348	Gym
943	-35.198616	Gym
949	-35.247780	Bar
957	-35.245207	Gym
984	-35.247437	Bar
986	-35.207123	Gym
992	-35.208581	Bar
995	-35.207796	Gym
996	-35.205135	Gym
997	-35.253757	Bar
1000	-35.238179	Gym
1001	-35.234952	Gym
1003	-35.241829	Gym
1007	-35.229238	Bar

1011	-35.245234	Gym
1013	-35.236825	Bar
1014	-35.239006	Gym
1024	-35.223972	Gym
1025	-35.223413	Gym
1029	-35.237112	Bar
1037	-35.224948	Bar
1038	-35.217676	Gym
1044	-35.217945	Bar
1046	-35.221245	Bar
1050	-35.207123	Gym
1051	-35.225019	Bar
1052	-35.207796	Gym
1065	-35.232712	Gym
1067	-35.208581	Bar
1076	-35.219843	Bar
1080	-35.203456	Bar
1082	-35.210581	Gym
1085	-35.205135	Gym
1092	-35.202497	Gym
1100	-35.236825	Bar
1102	-35.239006	Gym
1113	-35.202497	Gym
1115	-35.245234	Gym
1130	-35.210581	Gym
1139	-35.221245	Bar
1140	-35.197717	Gym
1142	-35.238179	Gym
1144	-35.241829	Gym
1146	-35.234952	Gym
1155	-35.223972	Gym
1164	-35.203456	Bar
1165	-35.229238	Bar
1167	-35.209531	Gym
1169	-35.199956	Gym
1184	-35.207123	Gym
1186	-35.196344	Gym
1187	-35.198917	Gym
1189	-35.207796	Gym
1199	-35.223413	Gym
1200	-35.238179	Gym
1201	-35.241829	Gym
1202	-35.234952	Gym
1204	-35.236825	Bar
1205	-35.239006	Gym
1211	-35.245234	Gym
1214	-35.229238	Bar
1218	-35.223972	Gym
1224	-35.221245	Bar
1240	-35.223413	Gym
1253	-35.210581	Gym
1254	-35.207123	Gym
1255	-35.217945	Bar
1258	-35.207796	Gym
1260	-35.217676	Gym
1263	-35.224948	Bar
1265	-35.203456	Bar
1268	-35.208581	Bar
1269	-35.202497	Gym
1284	-35.205135	Gym
1286	-35.237112	Bar

1292	-35.197717	Gym
1302	-35.236825	Bar
1303	-35.239006	Gym
1304	-35.245234	Gym
1308	-35.241829	Gym
1309	-35.238179	Gym
1310	-35.234952	Gym
1315	-35.254523	Gym
1324	-35.229238	Bar
1330	-35.221245	Bar
1331	-35.223972	Gym
1347	-35.210581	Gym
1348	-35.202497	Gym
1349	-35.219843	Bar
1357	-35.223413	Gym
1371	-35.207123	Gym
1372	-35.217945	Bar
1375	-35.207796	Gym
1376	-35.203456	Bar
1380	-35.217676	Gym
1381	-35.224948	Bar
1386	-35.225019	Bar
1390	-35.197717	Gym
1392	-35.208581	Bar
1398	-35.237112	Bar
1401	-35.229238	Bar
1405	-35.234952	Gym
1408	-35.238179	Gym
1409	-35.223413	Gym
1417	-35.224948	Bar
1418	-35.217676	Gym
1422	-35.217945	Bar
1426	-35.207123	Gym
1429	-35.207796	Gym
1434	-35.223972	Gym
1436	-35.208581	Bar
1450	-35.241829	Gym
1451	-35.237112	Bar
1459	-35.205135	Gym
1463	-35.221245	Bar
1465	-35.232712	Gym
1468	-35.203456	Bar
1481	-35.236825	Bar
1483	-35.239006	Gym
1486	-35.210581	Gym
1487	-35.205993	Bar
1488	-35.200917	Gym
1492	-35.198616	Gym
1495	-35.245234	Gym
1509	-35.262661	Bar
1516	-35.247780	Bar
1518	-35.253757	Bar
1522	-35.254818	Gym
1529	-35.245207	Gym
1531	-35.247437	Bar
1533	-35.237112	Bar
1536	-35.232712	Gym
1537	-35.205993	Bar
1551	-35.217676	Gym
1552	-35.229238	Bar
1554	-35.268477	Bar

1563	-35.238179	Gym
1566	-35.234952	Gym
1579	-35.200917	Gym
1583	-35.207123	Gym
1587	-35.223413	Gym
1590	-35.201094	Gym
1591	-35.208581	Bar
1596	-35.207796	Gym
1598	-35.224948	Bar
1606	-35.207123	Gym
1607	-35.208581	Bar
1608	-35.207796	Gym
1612	-35.205135	Gym
1615	-35.217676	Gym
1634	-35.200917	Gym
1635	-35.198616	Gym
1637	-35.217945	Bar
1648	-35.205993	Bar
1653	-35.223413	Gym
1665	-35.203456	Bar
1667	-35.229238	Bar
1673	-35.202242	Gym
1678	-35.224948	Bar
1697	-35.234952	Gym
1705	-35.207123	Gym
1707	-35.207796	Gym
1720	-35.208581	Bar
1725	-35.203456	Bar
1726	-35.217945	Bar
1738	-35.217676	Gym
1742	-35.205135	Gym
1746	-35.223413	Gym
1756	-35.229238	Bar
1759	-35.223972	Gym
1764	-35.234952	Gym
1768	-35.224948	Bar
1769	-35.221245	Bar
1771	-35.238179	Gym
1775	-35.210581	Gym
1779	-35.198616	Gym
1781	-35.202497	Gym
1782	-35.200917	Gym
1792	-35.205993	Bar
1798	-35.241829	Gym
1804	-35.217676	Gym
1807	-35.229238	Bar
1813	-35.223413	Gym
1816	-35.207123	Gym
1817	-35.224948	Bar
1821	-35.207796	Gym
1824	-35.208581	Bar
1826	-35.217945	Bar
1832	-35.234952	Gym
1834	-35.237112	Bar
1839	-35.225019	Bar
1840	-35.238179	Gym
1844	-35.232712	Gym
1848	-35.205135	Gym
1861	-35.223972	Gym
1866	-35.205993	Bar
1868	-35.200917	Gym

1871	-35.203456	Bar
1876	-35.198616	Gym
1892	-35.241829	Gym
1899	-35.221245	Bar
1900	-35.178576	Gym
1915	-35.175189	Bar
1934	-35.165434	Bar
1937	-35.196344	Gym
1943	-35.198917	Gym
1944	-35.199956	Gym
1945	-35.182107	Bar
1952	-35.197717	Gym
1954	-35.202497	Gym
1970	-35.209531	Gym
1980	-35.210581	Gym
1986	-35.219223	Gym
1991	-35.203456	Bar
1992	-35.236825	Bar
1998	-35.218449	Bar
2007	-35.200917	Gym
2009	-35.205993	Bar
2014	-35.198616	Gym
2017	-35.207123	Gym
2023	-35.208581	Bar
2027	-35.207796	Gym
2030	-35.205135	Gym
2031	-35.202242	Gym
2040	-35.217676	Gym
2064	-35.204348	Gym
2069	-35.201094	Gym
2082	-35.217945	Bar
2090	-35.223413	Gym
2095	-35.229238	Bar
2098	-35.203456	Bar
2100	-35.205993	Bar
2116	-35.200917	Gym
2122	-35.202242	Gym
2124	-35.201094	Gym
2126	-35.204348	Gym
2133	-35.198616	Gym
2156	-35.207123	Gym
2157	-35.208581	Bar
2159	-35.207796	Gym
2161	-35.205135	Gym
2163	-35.217676	Gym
2213	-35.205993	Bar
2215	-35.201094	Gym
2225	-35.200917	Gym
2235	-35.202242	Gym
2236	-35.198616	Gym
2245	-35.204348	Gym
2259	-35.207123	Gym
2263	-35.208581	Bar
2264	-35.205135	Gym
2266	-35.207796	Gym
2278	-35.217676	Gym
2299	-35.223299	Bar
2312	-35.221245	Bar
2316	-35.210581	Gym
2317	-35.236825	Bar
2323	-35.202497	Gym

2325	-35.223972	Gym
2327	-35.239006	Gym
2329	-35.234952	Gym
2332	-35.203456	Bar
2334	-35.238179	Gym
2341	-35.229238	Bar
2342	-35.207123	Gym
2348	-35.207796	Gym
2351	-35.241829	Gym
2355	-35.197717	Gym
2363	-35.217945	Bar
2365	-35.223413	Gym
2367	-35.208581	Bar
2368	-35.245234	Gym
2373	-35.217676	Gym
2390	-35.205135	Gym
2393	-35.224948	Bar
2404	-35.238179	Gym
2405	-35.241829	Gym
2406	-35.236825	Bar
2407	-35.245234	Gym
2408	-35.239006	Gym
2409	-35.234952	Gym
2412	-35.229238	Bar
2425	-35.223972	Gym
2434	-35.223413	Gym
2437	-35.221245	Bar
2438	-35.237112	Bar
2443	-35.254523	Gym
2456	-35.224948	Bar
2457	-35.217676	Gym
2459	-35.217945	Bar
2462	-35.207123	Gym
2465	-35.225019	Bar
2467	-35.207796	Gym
2470	-35.219843	Bar
2477	-35.210581	Gym
2480	-35.232712	Gym
2481	-35.208581	Bar
2487	-35.208553	Gym
2492	-35.202497	Gym
2493	-35.203456	Bar
2500	-35.234952	Gym
2501	-35.238179	Gym
2503	-35.229238	Bar
2510	-35.241829	Gym
2514	-35.223972	Gym
2515	-35.223413	Gym
2531	-35.217945	Bar
2534	-35.217676	Gym
2535	-35.224948	Bar
2536	-35.207123	Gym
2539	-35.207796	Gym
2543	-35.221245	Bar
2551	-35.208581	Bar
2552	-35.236825	Bar
2558	-35.239006	Gym
2567	-35.203456	Bar
2570	-35.237112	Bar
2571	-35.245234	Gym
2577	-35.205135	Gym

2578	-35.210581	Gym
2587	-35.202497	Gym
2595	-35.200917	Gym
2597	-35.205993	Bar
2598	-35.198616	Gym
2602	-35.238179	Gym
2603	-35.237112	Bar
2605	-35.234952	Gym
2606	-35.229238	Bar
2612	-35.232712	Gym
2614	-35.223413	Gym
2615	-35.217676	Gym
2623	-35.241829	Gym
2624	-35.224948	Bar
2631	-35.217945	Bar
2632	-35.207123	Gym
2637	-35.207796	Gym
2638	-35.225019	Bar
2641	-35.208581	Bar
2645	-35.223972	Gym
2665	-35.205135	Gym
2672	-35.236825	Bar
2674	-35.221245	Bar
2676	-35.239006	Gym
2679	-35.205993	Bar
2685	-35.245234	Gym
2693	-35.203456	Bar
2697	-35.200917	Gym
2711	-35.205993	Bar
2719	-35.200917	Gym
2720	-35.201094	Gym
2729	-35.202242	Gym
2732	-35.198616	Gym
2742	-35.204348	Gym
2758	-35.207123	Gym
2762	-35.208581	Bar
2763	-35.205135	Gym
2764	-35.207796	Gym
2774	-35.217676	Gym
2794	-35.223299	Bar
2795	-35.217945	Bar
2799	-35.203456	Bar
2806	-35.198616	Gym
2808	-35.207123	Gym
2811	-35.200917	Gym
2813	-35.205135	Gym
2816	-35.207796	Gym
2817	-35.208581	Bar
2838	-35.205993	Bar
2845	-35.202242	Gym
2848	-35.217676	Gym
2876	-35.203456	Bar
2881	-35.201094	Gym
2882	-35.217945	Bar
2884	-35.204348	Gym
2896	-35.223413	Gym
2908	-35.217676	Gym
2911	-35.207123	Gym
2912	-35.208581	Bar
2914	-35.205993	Bar
2915	-35.207796	Gym

2924	-35.200917	Gym
2931	-35.205135	Gym
2941	-35.198616	Gym
2953	-35.217945	Bar
2954	-35.202242	Gym
2957	-35.223413	Gym
2961	-35.229238	Bar
2963	-35.232712	Gym
2968	-35.237112	Bar
2970	-35.224948	Bar
2990	-35.204348	Gym
2993	-35.201094	Gym
3002	-35.247780	Bar
3012	-35.254818	Gym
3014	-35.247437	Bar
3015	-35.245207	Gym
3016	-35.253757	Bar
3026	-35.257147	Gym
3043	-35.205993	Bar
3061	-35.201094	Gym
3062	-35.237112	Bar
3063	-35.232712	Gym
3065	-35.202242	Gym
3067	-35.204348	Gym
3080	-35.226707	Bar
3086	-35.194443	Bar
3090	-35.202287	Bar
3096	-35.202202	Gym
3104	-35.205993	Bar
3109	-35.201094	Gym
3124	-35.200917	Gym
3131	-35.202242	Gym
3134	-35.204348	Gym
3139	-35.198616	Gym
3161	-35.207123	Gym
3163	-35.208581	Bar
3165	-35.207796	Gym
3166	-35.205135	Gym
3172	-35.217676	Gym
3191	-35.223299	Bar
3196	-35.232712	Gym
3212	-35.198616	Gym
3215	-35.200917	Gym
3227	-35.205993	Bar
3236	-35.202242	Gym
3243	-35.207123	Gym
3246	-35.201094	Gym
3248	-35.205135	Gym
3250	-35.207796	Gym
3254	-35.208581	Bar
3264	-35.204348	Gym
3277	-35.217676	Gym
3282	-35.203456	Bar
3294	-35.217945	Bar
3317	-35.200917	Gym
3322	-35.198616	Gym
3324	-35.205993	Bar
3333	-35.201094	Gym
3335	-35.202242	Gym
3351	-35.204348	Gym
3360	-35.207123	Gym

3364	-35.205135	Gym
3366	-35.208581	Bar
3367	-35.207796	Gym
3382	-35.217676	Gym
3398	-35.203456	Bar
3402	-35.205993	Bar
3428	-35.200917	Gym
3431	-35.201094	Gym
3432	-35.237112	Bar
3436	-35.232712	Gym
3444	-35.202242	Gym
3447	-35.247780	Bar
3448	-35.204348	Gym
3453	-35.217676	Gym
3456	-35.198616	Gym
3470	-35.207123	Gym
3473	-35.208581	Bar
3478	-35.245207	Gym
3479	-35.207796	Gym
3495	-35.205135	Gym
3498	-35.253757	Bar
3509	-35.205993	Bar
3510	-35.201094	Gym
3529	-35.200917	Gym
3536	-35.202242	Gym
3538	-35.204348	Gym
3540	-35.198616	Gym
3570	-35.207123	Gym
3574	-35.208581	Bar
3575	-35.205135	Gym
3576	-35.207796	Gym
3579	-35.247780	Bar
3584	-35.217676	Gym
3594	-35.245207	Gym
3600	-35.247780	Bar
3603	-35.245207	Gym
3608	-35.247437	Bar
3616	-35.254818	Gym
3617	-35.253757	Bar
3632	-35.268477	Bar
3633	-35.257147	Gym
3639	-35.262661	Bar
3643	-35.205993	Bar
3657	-35.201094	Gym
3670	-35.200917	Gym
3678	-35.202242	Gym
3681	-35.204348	Gym
3690	-35.198616	Gym
3692	-35.237112	Bar
3698	-35.232712	Gym

In [45]:

```
import folium # map rendering Library
import matplotlib.cm as cm
import matplotlib.colors as colors
```

In [46]:

```
# create map
l_natal = geolocator.geocode("Natal, RN")

lat_natal = l_natal.latitude
lo_natal = l_natal.longitude

map_clusters = folium.Map(location=[lat_natal, lo_natal], zoom_start=11)

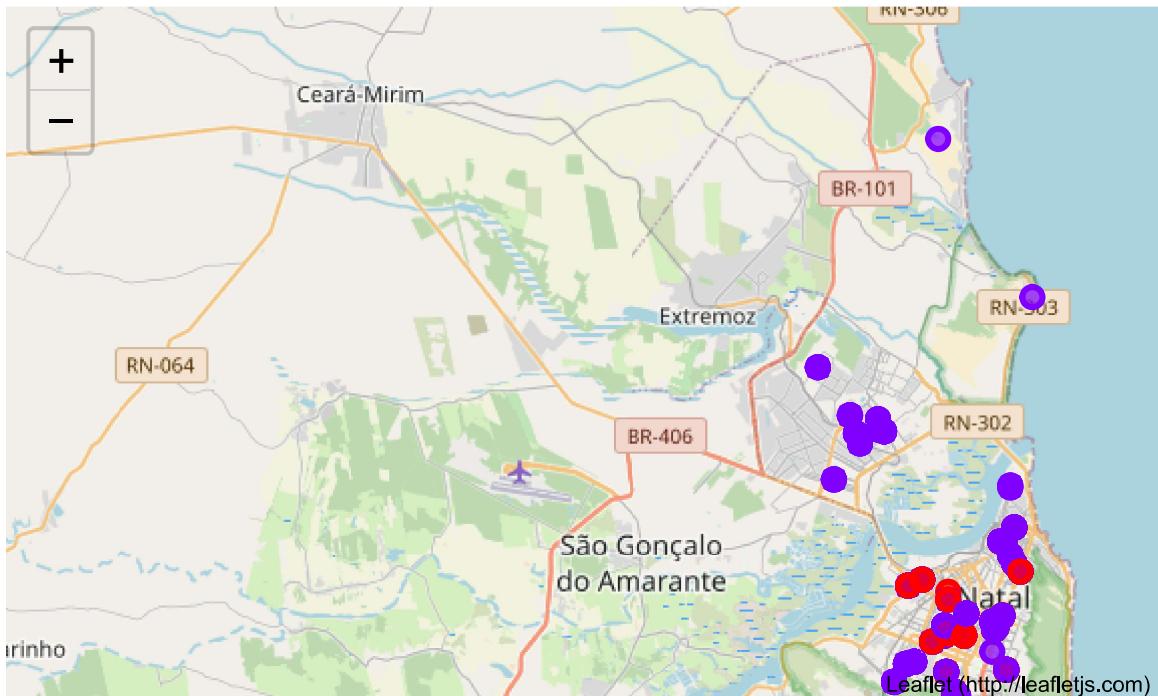
# set color scheme for the clusters
x = np.arange(2)
ys = [i + x + (i*x)**2 for i in range(2)]
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
rainbow = [colors.rgb2hex(i) for i in colors_array]
n = 0

# add markers to the map
markers_colors = []
for lat, lon, poi, cluster in zip(bar_and_gym_locator['Venue_Latitude'], bar_and_gym_locator['Venue_Longitude'], nearby_venues['Venue'], nearby_venues['Venue_Category']):
    label = folium.Popup(str(poi) + ' - ' + str(cluster), parse_html=True)
    if "Bar" in cluster:
        i = "0"
    if "Gym" in cluster:
        i = "1"

    if i == '0' or i == '1':
        z= int(i)
        folium.CircleMarker(
            [lat, lon],
            radius=5,
            popup=label,
            color=rainbow[z -1],
            fill=True,
            fill_color=rainbow[z -1],
            fill_opacity=0.7).add_to(map_clusters)
    n = n + 1

map_clusters
```

Out[46]:



With these data worked on, we already have enough information for the next step, our results session.

In []:

Result Session

After having worked on our data in the methodology section using exploratory analysis techniques, we will now discuss the results of processing this data obtained by api's do foursquare, geopy and the city data explained in the data item.

To start discussing the data itself. The neighborhoods achieved by webscraping are of very good quality, the geopy also did not leave much to be desired, but it would not give a 10 to the foursquare, I do not know if my approach was ideal, but I miss some establishments in the city mainly in what our focus of work Bar, as a native of the city where I am working, I noticed the lack of few establishments and also of repeated establishments in different places totally outside the right location, I am not sure how the foursquare api works so I don't have how to indicate the cause of this anomaly. In spite of everything, the api still fulfills its role and is of great use for the use of Data Science and data exploration for cities and towns.

Regarding the results of the exploratory analysis, Natal is a city that has many bars containing 239 in this foursquare category with this description, remembering that we are not looking only for the name "bar", but for categories of places that contain the name bar . After filtering the locations we want, we will now analyze the neighborhoods that contain less and more bars.

In [51]:

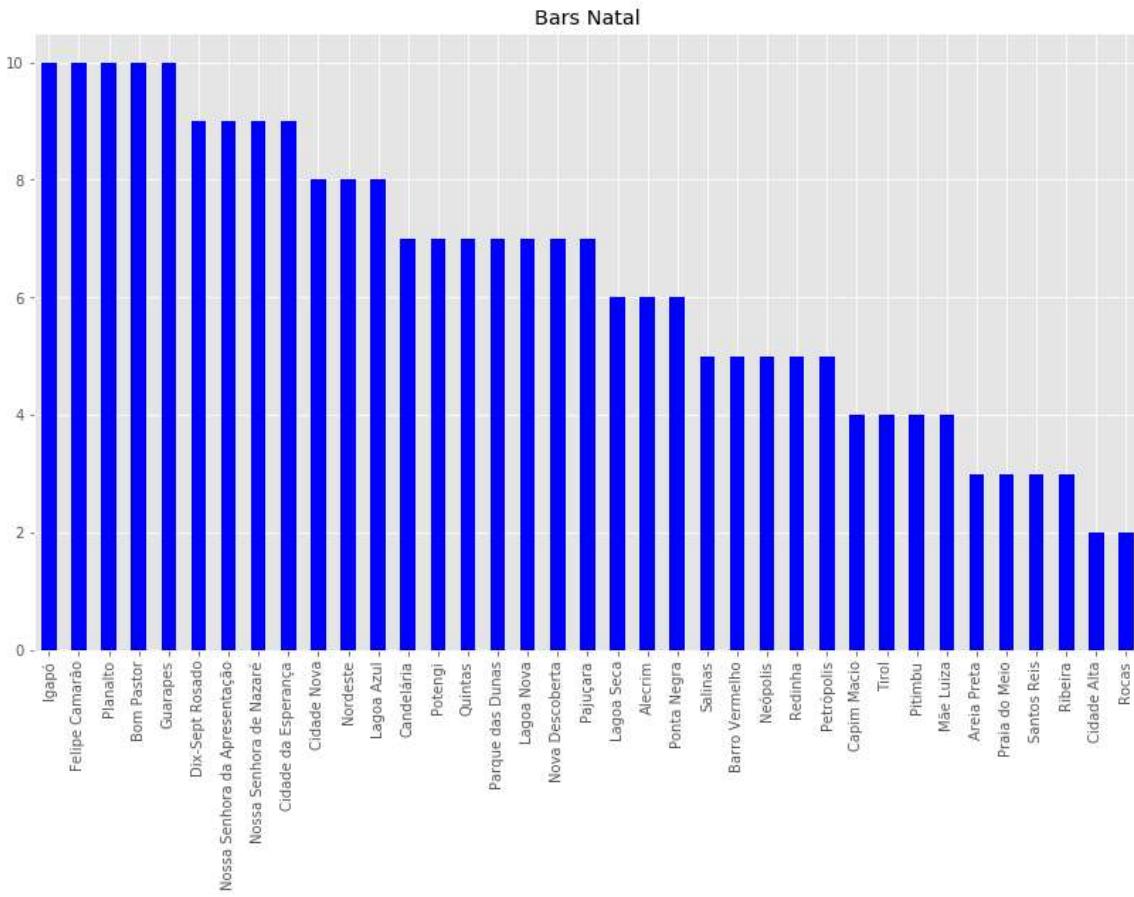
```
nearby_venues_bar['Neighborhood'].value_counts().plot(kind='bar',
                                                       figsize=(14,8),
                                                       title="Bars Natal",
                                                       color="blue")

#CountStatus = pd.value_counts(nearby_venues_bar['Neighborhood'].values, sort=True)

#CountStatus.plot.barh()
```

Out[51]:

<matplotlib.axes._subplots.AxesSubplot at 0x7fedb36b3e10>



We can see that we have 5 neighborhoods that contain the same amounts of bars are they; "Igapó", "Felipe Camarao", "Planalto", "Bom Pator" and "Guarapes", all of them count 10 bars according to Foursquare's API, and the ones that have less bars, which is where our focus is? They are Cidade Alta and Rocas.

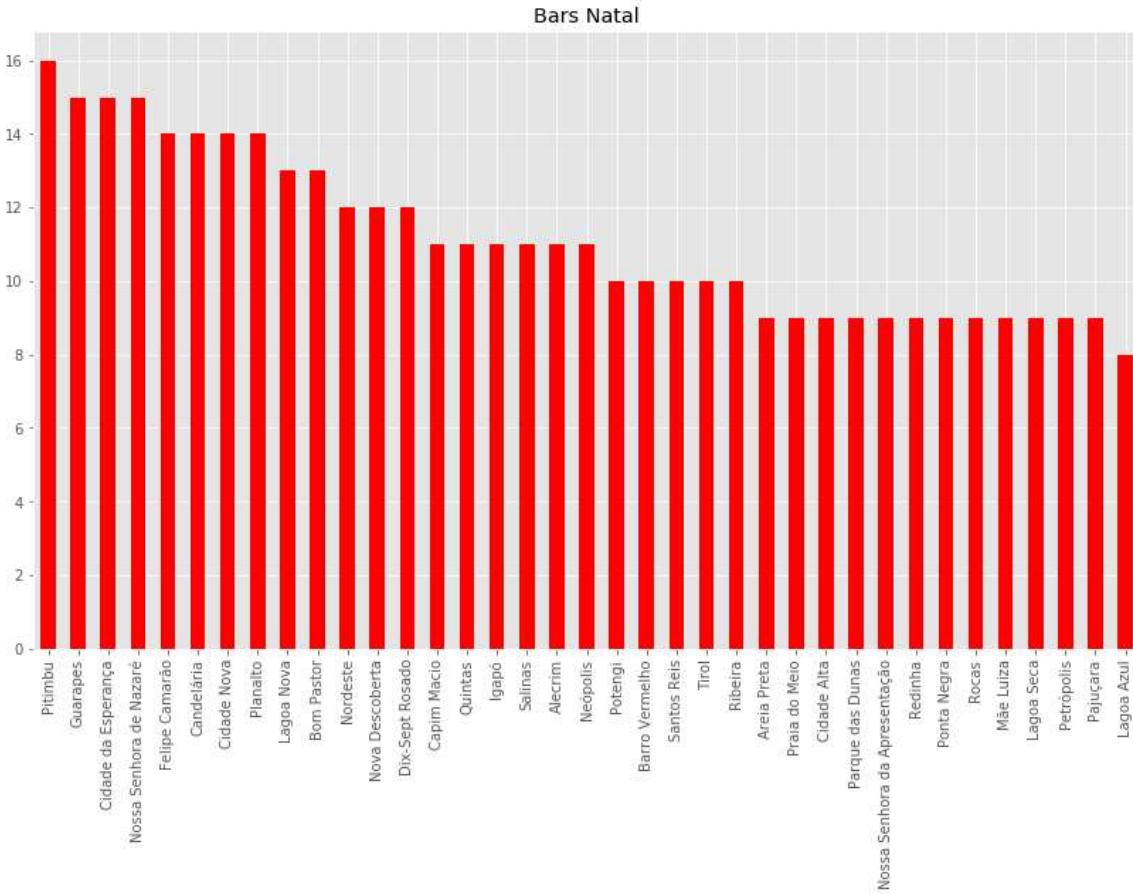
However, we saw that where there is a bar with a lot of gym, then we will see in the figure below which neighborhoods have more gym.

In [52]:

```
nearby_venues_gim_count['Neighborhood'].value_counts().plot(kind='bar',
    figsize=(14,8),
    title="Bars Natal",
    color="Red")
```

Out[52]:

<matplotlib.axes._subplots.AxesSubplot at 0x7fedb87a7d10>



"Pitimbu" It was the neighborhood with the most gymnastics academy, in the next section we will discuss the result of our exploratory analysis.

Discussion

Well, we already worked on all the data, we did an analysis of their results. Now, let's go to a brief discussion of them. We saw the neighborhoods that have more and less bars to be able to indicate the neighborhood that has the best business prospects to open a new neighborhood in the city of "Natal", but we are not only concerned with who has more or less bars, we went to see which the business that has more to do with the bars in the city and as it has been said that where there are bars there is a gym. However, it is not enough just to see who has less gym to open a new bar, but we have to ask who has less gym and more bars? For that we will analyze the data a little more.

In [60]:

```
import random
import numpy
from matplotlib import pyplot

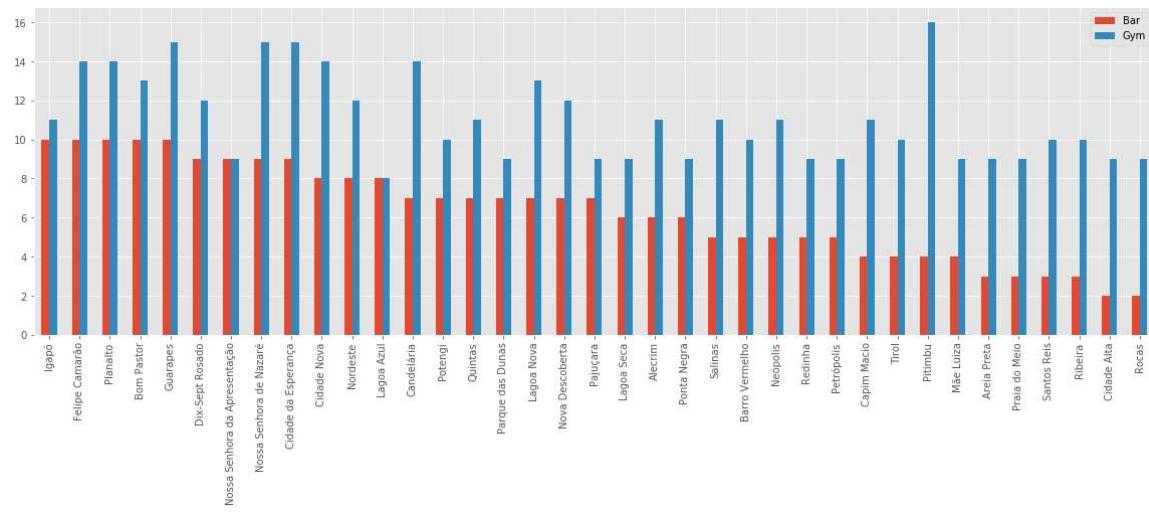
x = [nearby_venues_bar['Neighborhood'].value_counts()]
y = [nearby_venues_gim_count['Neighborhood'].value_counts()]

graph_df = nearby_venues_bar['Neighborhood'].value_counts().rename('Bar').to_frame()\
    .join(nearby_venues_gim_count['Neighborhood'].value_counts().rename('Gym').to_frame())

graph_df.plot(kind='bar', figsize=(20, 6))
```

Out[60]:

<matplotlib.axes._subplots.AxesSubplot at 0x7fedb2de2950>



Analyzing the chart above, we can see that the best neighborhoods with regard to bar and gym in our business perspective, that is, where there is more gym and less bar are the "Cidade alta" and "Rocas" neighborhoods that contain 4.5 gyms per bar, the "Pitimbu" neighborhood is also highlighted, the neighborhood that has the most gyms, but the gym ratio per bar is a little worse with an exact number of 4 gyms per bar. This graph is a good demonstration of what we have said so far, that where there is a bar there is a gym nearby, we can see that there are neighborhoods that contain a 1 to 1 relationship between bars and gyms, as in the neighborhoods of "Lagoa Azul" and "Nossa Senhora da Apresentação". In view of this exhaustive discussion, we can proceed to our conclusion.

Conclusion

After this extensive work with exploratory analysis we can come to some conclusions. First of all, we cannot always conclude that where there is less establishment is not the best corner for you to open your business, as we can see, it is not because the neighborhood that contained the least open bars was the best place to open a new one. Second conclusion is that we should not be in the guess, we have to analyze the data. We could never imagine that opening a bar near a gym would be a good deal, our work confirmed this information with data. Last and not least is the result. The neighborhoods with the best possibilities for opening new bars are "Pitimbu", "Lagoa Azul" and "Nossa Senhora da Presentation". The work could still yield other dicurations such as evaluations of these places, such as checking where there is less bar with the worst evaluations, the extension of each neighborhood to know a bar per square kilometer among other speeches, but we did not have resources and the work would be too extensive. . The data here has already been very enlightening and satisfactory so that we can have a direction for our goal, bringing back the initial question of our work, "Where can I open a new bar in Natal-RN? And we believe that we managed to answer them.

In []: