1. Introduction

Travel to a big country like Brazil and understand the best places to stay if you are a food or gourmet lover is difficult given the size and the variety of the different venues and restaurants located in Brazil Cities. In this report we will perform an analysis base on data and ranking of different users and give you some recommendations bases on this anlaysis.

Business Problem

Brazil officially the Federative Republic of Brazil is the largest country in both South America and Latin America. At 8.5 million square kilometers and with over 211 million people, Brazil is the world's fifth-largest country by area and the sixth most populous. Its capital is Brasília, and its most populous city is São Paulo. The federation is composed of the union of the 26 states and the Federal District. It is the largest country to have Portuguese as an official language and the only one in the Americas it is also one of the most multicultural and ethnically diverse nations, due to over a century of mass immigration from around the world.

Bounded by the Atlantic Ocean on the east, Brazil has a coastline of 7,491 kilometers (4,655 mi). It borders all other countries in South America except Ecuador and Chile and covers 47.3% of the continent's land area. Its Amazon River basin includes a vast tropical forest, home to diverse wildlife, a variety of ecological systems, and extensive natural resources spanning numerous protected habitats.[This unique environmental heritage makes Brazil one of 17 megadiverse countries, and is the subject of significant global interest and debate regarding deforestation and environmental protection.

With it's diverse culture , comes diverse food items. There are many restaurants in their Cities, each belonging to different categories like Chinese , Italian , French etc.

So as part of this project , we will list and visualize major cities of Brazil   and look for answers of the following questions:

-What places are have best restaurant in Brazil?
- What is best City in Brazil for Italian Cuisine ?
- Which City have large number of Italian Restaurant Market ?
- Which is the best place to stay if I prefer a more variety of different cuisines ?

2. Data to be Used

To find, gather an consolidate relevant data about the problem it's an important step to begin with the path to answers the relevant questions we just done. In this case we found two sources Zomato Kaggel and foursquare

Zomato Kaggel

Zomato is an API Analysis and one of the most useful analysis for foodies who want to taste the best cuisines of every part of the world. Additionally, this analysis caters the needs of people who are striving to get the best cuisine of the country and which locality of that country serves that cuisines with maximum number of restaurants.

The collected data has been stored in the Comma Separated Value file Zomato.csv. Each restaurant in the dataset is uniquely identified by its Restaurant Id. Every Restaurant contains the following variables:

We will use Zomato Brazil to gather Resturants data that contains list City, Resturant Name, Rating along with their latitude and longitude.

Data source : Zomato Kaggel dataset : https://www.kaggle.com/shrutimehta/zomato-restaurants-data/data?select=zomato.csv

Foursquare

Foursquare is a technology company that built a massive dataset of location data. Foursquare crowd-sourced their data and had people use their app to build their dataset and add venues and complete any missing information they had in their dataset. Currently its location data is the most comprehensive out there, and quite accurate that it powers location data for many popular services like Apple Maps, Uber, Snapchat, Twitter and many others, and is currently being used by over 100,000 developers, and this number is only growing.

We will use Foursquare to find Nearby places in each City of Brazil. By using this api we will get all the venues in each neighborhood.

Data source : Fousquare API : "https://developer.foursquare.com/"

3. Methodology

Approach

In summary we perform the following approach.

- Collect the Brazil Cities data from Zomato kaggel dataset
- Using FourSquare API we will find all venues for each neighborhood.
- Filter out all venues that are nearby by locality.
- Using aggregative rating for each resturant to find the best places.
- Visualize the Ranking of neighborhoods using folium library(python)

We start our process reading the csv file containing the Zomato information about restaurants and handling with a Pandas Data Frame, then filtering only the Brazil Information for further analysis.
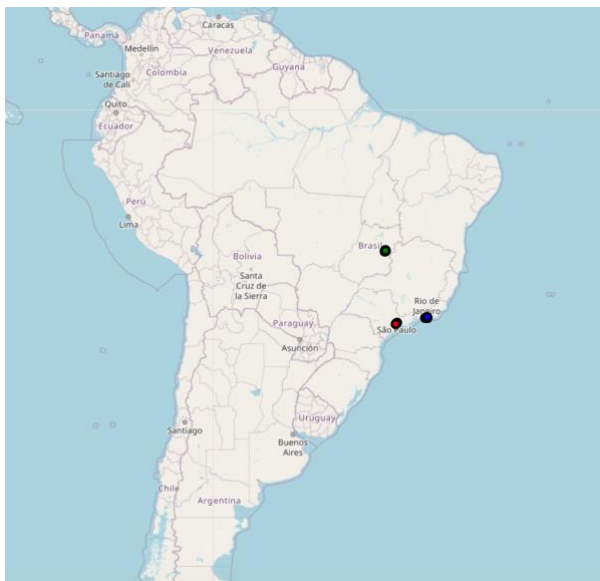
```
df_brazil = df[df['Country Code'] == 30]
df_sp = df_brazil[df_brazil['City'] == 'São Paulo']
df_rio = df_brazil[df_brazil['City'] == 'Rio de Janeiro']
df_brasilia = df_brazil[df_brazil['City'] == 'Brasília']

#df_NDLS.reset_index(drop=True, inplace=True)
df_brazil.head()
```

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Currency	Has Table booking	Has Online delivery	Is delivering now	Switch to order menu	Price range	Aggregate rating	Rating color	Rating text	Votes
22	6600681	Chez Michou	30	Brasília	SCLN, 208, Bloco A, Loja 30, Asa Norte, Brasília	Asa Norte	Asa Norte, Brasília	-47.881789	-15.764142	Fast Food, French	...	Brazilian Real(R$)	No	No	No	No	2	3.0	Orange	Average	6
23	6601005	Café Daniel Briand	30	Brasília	SCLN 104, Bloco A, Loja 26, Asa Norte, Brasília	Asa Norte	Asa Norte, Brasília	-47.882667	-15.777500	Cafe	...	Brazilian Real(R$)	No	No	No	No	1	3.8	Yellow	Good	9
24	6600292	Casa do Biscoito Mineiro	30	Brasília	SCLN 210, Bloco D, Loja 36/48, Asa Norte, Bras...	Asa Norte	Asa Norte, Brasília	-47.882136	-15.757472	Bakery	...	Brazilian Real(R$)	No	No	No	No	2	3.7	Yellow	Good	11
25	6600441	Maori	30	Brasília	CLN 110, Bloco D, Loja 28, Asa Norte, Brasília	Asa Norte	Asa Norte, Brasília	-47.888167	-15.758833	Brazilian	...	Brazilian Real(R$)	No	No	No	No	3	3.8	Yellow	Good	11
26	6600970	Pizza íae Bessa	30	Brasília	SCS 214, Bloco C, Loja 40, Asa Sul, Brasília	Asa Sul	Asa Sul, Brasília	-47.915667	-15.831167	Pizza	...	Brazilian Real(R$)	No	No	No	No	2	3.2	Orange	Average	11

5 rows × 21 columns

After some cleaning of the information we show the results in the map start to see there are three main cities to focus on, Rio de Janairo, Brazilia and Sao Paulo.
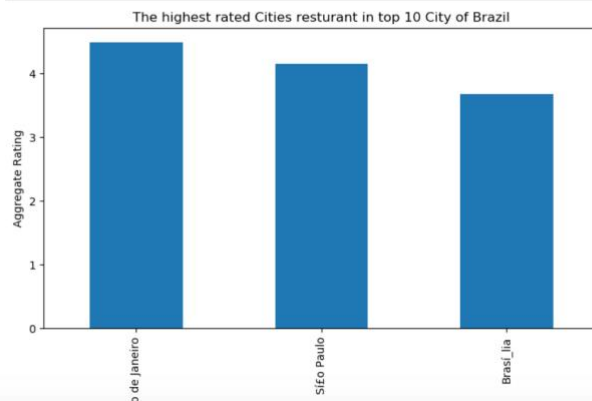
Then we start the Analitic process, we first start to answer the question about Where are located the best restaurant in Brazil according to the aggregate ratings, and we found Rio de Janeiro as the First one.
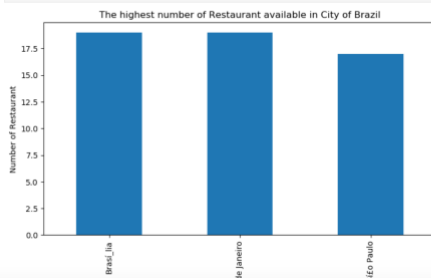

But if we move the analysis to the Citi with the higher number of restaurants is Brasilia de City with more restaurants' per city.

But what happened if you love of Italian food ? this is the question we analyze with te follow graphics and again Brasilia it's the choice.
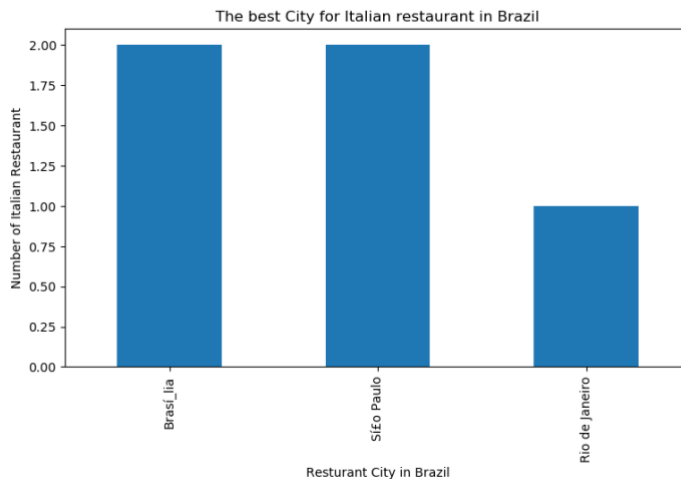
What are the best places for Italian restaurant in Brazil

```python
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The best City for Italian restaurant in Brazil')
#On x-axis

#giving a bar plot
df_Res[df_Res['Cuisines'].str.startswith('Italian')].groupby('City')['Restaurant Name'].count().nlargest(5).plot(ki

plt.xlabel('Resturant City in Brazil')
#On y-axis
plt.ylabel('Number of Italian Restaurant')

#displays the plot
plt.show()
```


The best City for Italian restaurant in Brazil

After perform this analysis its time to use Foursquare to look and explore different venues on this cities.

```python
brazil_venues.groupby('city').count()
```

city	City Latitude	City Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Brasí_lia	5	5	5	5	5	5
Rio de Janeiro	22	22	22	22	22	22
Sí£o Paulo	100	100	100	100	100	100

```
----Brasí_lia----
                venue  freq
0                Pool   0.2
1  Athletics & Sports   0.2
2                 Bar   0.2
3              Forest   0.2
4               Plaza   0.2
```

```
----Rio de Janeiro----
                   venue  freq
0               Heliport  0.14
1         Farmers Market  0.09
2    Japanese Restaurant  0.05
3          Ice Cream Shop  0.05
4            Soccer Field  0.05
```

```
----Sí£o Paulo----
                venue  freq
0   Italian Restaurant  0.09
1                Hotel  0.07
2         Burger Joint  0.05
3           Restaurant  0.04
4  Gym / Fitness Center  0.04
```

We consolidate all information in a new Dataset and group them by more commond venues in each City.

	city	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Brasi_lia	Forest	Pool	Athletics & Sports	Plaza	Bar	Gym	French Restaurant	Gift Shop	Gourmet Shop	Greek Restaurant
1	Rio de Janeiro	Heliport	Farmers Market	Stables	Gym	Hotel	Ice Cream Shop	Indian Restaurant	Japanese Restaurant	Lake	Pizza Place
2	Sí£o Paulo	Italian Restaurant	Hotel	Burger Joint	Art Gallery	Gym / Fitness Center	Restaurant	Ice Cream Shop	Bar	Pizza Place	Salon / Barbershop

Then we use K-Mean to Cluster the Cities

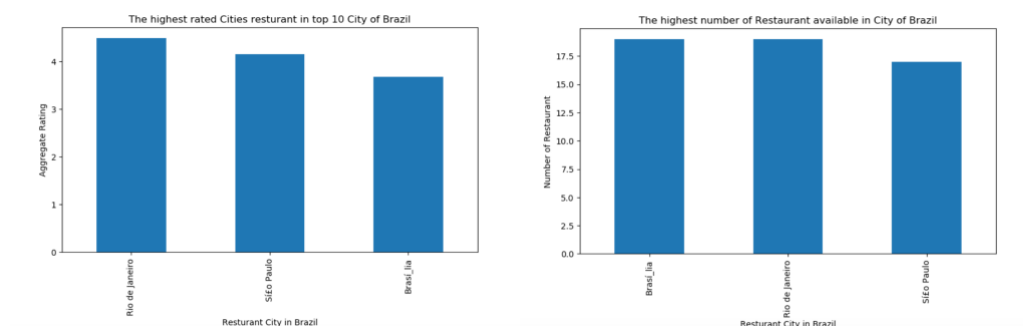|	city	Lat	Lng	No_of_Restaurant	Cusines	Agg_Rating	Comments	No_of_Votes	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Brasi_lia	-15.808132	-47.917263	19	Fast Food, French, Cafe, Bakery, Brazilian, Pi...	3.678947	Average, Good, Very Good, Excellent	215	0	Forest	Pool	Athletics & Sports	Plaza	Bar	Gym	French Restaurant	Gift Shop	Gourmet Shop	Greek Restaurant
1	Rio de Janeiro	-22.967471	-43.213824	19	Seafood, Bar Food, Brazilian, Desserts, Cafe, ...	4.489474	Very Good, Excellent	400	2	Heliport	Farmers Market	Stables	Gym	Hotel	Ice Cream Shop	Indian Restaurant	Japanese Restaurant	Lake	Pizza Place
2	Sí£o Paulo	-23.564722	-46.660518	17	Italian, Pizza, Steak, BBQ, Indian, Brazilian,...	4.152941	Excellent, Very Good, Average, Good	555	1	Italian Restaurant	Hotel	Burger Joint	Art Gallery	Gym / Fitness Center	Restaurant	Ice Cream Shop	Bar	Pizza Place	Salon / Barbershop

4. Conclusions

Lets answer all the questions

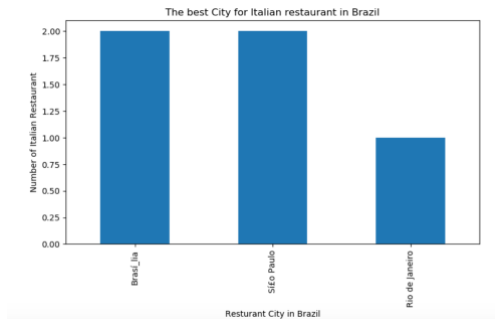**What places are have best restaurant in Brasil?**

First in terms of Rating and average Rio de Janeiro shows the best results.

But in tems of availability and number of restaurants is Brasilia where we can find more alternatives.
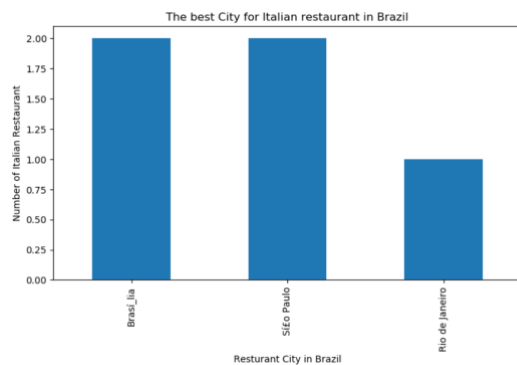
What is best City in Brazil for Italian Cuisine ?

Brasilia is the best city for Italian Cuisine is Brasilia

3 - Which City have large number of Italian Resturant Market ?

Now if we narrow the focus to Italian Restaurante Market is Brasilia where we can find the mayority of Italian Restaurants.

4 - Which is the best place to stay if I prefer a more variety of different cuisines ?

Rio de Janeiro or Cluster #1 if you look a more variety like Indian, Japanese and Pizza.