

Battle of Neighborhoods



Coursera Capstone Project | Thiago Pires



Introduction

Rio de Janeiro is recognized as a wonderful city and there are several attractions for tourists. The metropolitan area is usually selected as a major travel destination, however outside the capital there are interesting places to visit.

The purpose of this study is to select a location in the state of Rio de Janeiro in order to rent a vacation home. The main selected locations are not in the state capital, but include the region of the lakes (*Lagos*), mountains (*Serrana*) and *Bahia da Ilha Grande*.

Data

Brazilian Institute of Geography and Statistics (IBGE in Portuguese) data were used to **identify spatial coordinates**. Foursquare data will also be used to **identify the main resources of cities**.

Methodology

In order to segment the locations, **Kmeans** was used. An **unsupervised machine learning technique** that can help us verify what **similarities** exist between locations. The variables used to analyze the similarities of these regions were the **venues** extracted from the proximity with the spatial coordinates provided for each region.

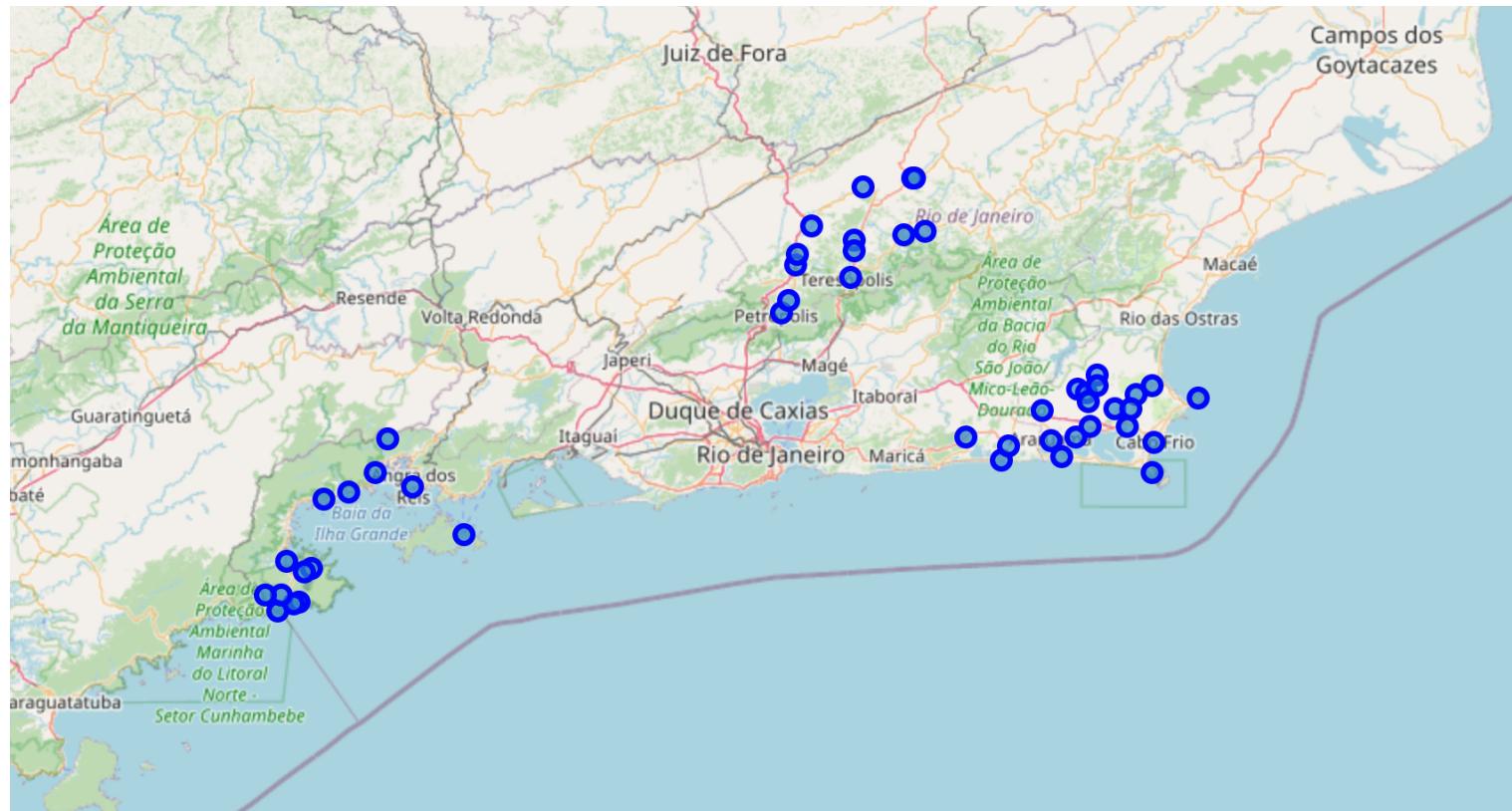
Results

The full list from regions to analysis is below

NM_MUNICIP	NM_MICRO
ANGRA DOS REIS	BAÍA DA ILHA GRANDE
ARARUAMA	LAGOS
ARMAÇÃO DOS BÚZIOS	LAGOS
ARRAIAL DO CABO	LAGOS
CABO FRIO	LAGOS
IGUABA GRANDE	LAGOS
PARATY	BAÍA DA ILHA GRANDE
PETRÓPOLIS	SERRANA
SÃO JOSÉ DO VALE DO RIO PRETO	SERRANA
SÃO PEDRO DA ALDEIA	LAGOS
SAQUAREMA	LAGOS
TERESÓPOLIS	SERRANA

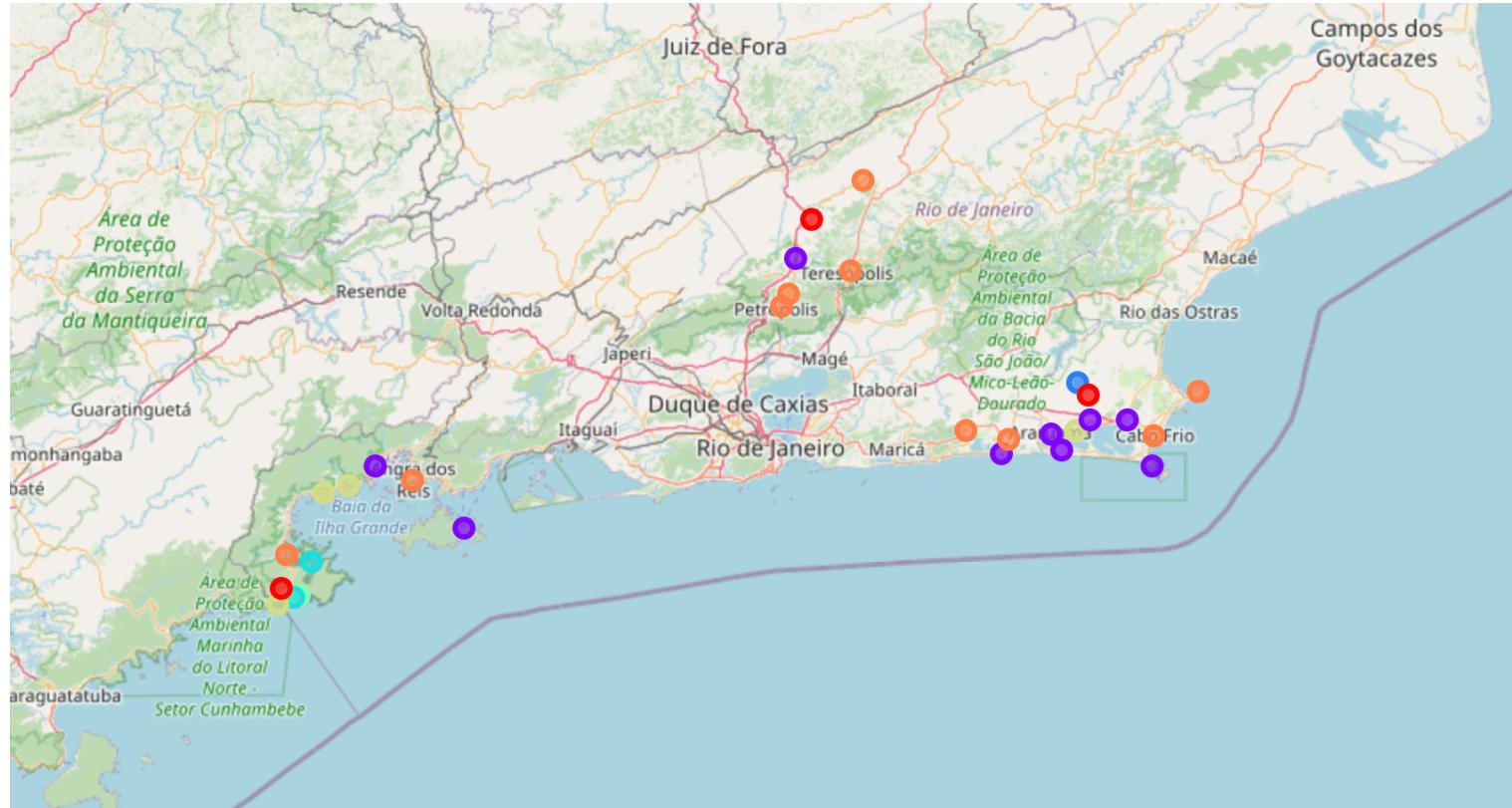
Results

Following is the map with all locations



Cluster neighborhoods

The map with all locations aggregated in clusters *pos kmeans*



Examine clusters

Cluster 0

Neighborhood	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
POSSE	0	Mountain	Bed & Breakfast	Wine Bar	Fast Food Restaurant	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm
PATRIMÔNIO	0	Restaurant	Bed & Breakfast	Wine Bar	Fast Food Restaurant	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant
POSSE	0	Mountain	Bed & Breakfast	Wine Bar	Fast Food Restaurant	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm

Examine clusters

Cluster 1

Neighborhood	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
ABRAÃO	1	Hostel	Hotel	Beach	Bed & Breakfast	Restaurant	BBQ Joint	Italian Restaurant	Resort	Fish & Chips Shop	Wine Bar
CUNHAMBEBE	1	Pizza Place	Playground	Market	Beach	Restaurant	Snack Place	Fast Food Restaurant	Dive Bar	Creperie	Deli / Bodega
ARARUAMA	1	Department Store	Ice Cream Shop	Pizza Place	Sandwich Place	Clothing Store	Market	Italian Restaurant	Restaurant	Hotel	Convenience Store
PRAIA SECA	1	Pizza Place	Shopping Mall	Diner	Italian Restaurant	Ice Cream Shop	Café	Hotel	Seafood Restaurant	Beach	Food
ARRAIAL DO CABO	1	Restaurant	Grocery Store	Seafood Restaurant	Japanese Restaurant	Churrascaria	Hotel	Burger Joint	Brazilian Restaurant	Scenic Lookout	Creperie
IGUABA GRANDE	1	Pizza Place	Beach	Ice Cream Shop	Grocery Store	Burger Joint	Steakhouse	Snack Place	Dive Bar	Convenience Store	Deli / Bodega
ITAIPAVA	1	Pizza Place	Falafel Restaurant	Resort	Italian Restaurant	Grocery Store	Seafood Restaurant	French Restaurant	Diner	Convenience Store	Creperie
SÃO PEDRO DA ALDEIA	1	Pizza Place	Bed & Breakfast	Historic Site	Plaza	Sandwich Place	Gym / Fitness Center	Shopping Mall	Fast Food Restaurant	Fish Market	Bakery
SAQUAREMA	1	Pizza Place	Juice Bar	Dive Bar	Arts & Crafts Store	Food & Drink Shop	Steakhouse	Soup Place	Bakery	Soccer Field	Beach

Examine clusters

Cluster 2 and 3

Neighborhood	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
SÃO VICENTE DE PAULA	2	Campground	Wine Bar	Convenience Store	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm
Neighborhood	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
PARATI MIRIM	3	Beach	Wine Bar	Fast Food Restaurant	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm
CONDOMÍNIO RESIDENCIAL LARANJEIRAS	3	Beach	Wine Bar	Fast Food Restaurant	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm

Examine clusters

Cluster 4 and 5

Neighborhood	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
VILA DOS MORADORES DAS LARANJEIRAS	4	Brazilian Restaurant	Wine Bar	Convenience Store	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm

Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common	5th Most Common Venue	6th Most Common	7th Most Common	8th Most Common	9th Most Common	10th Most Common
MAMBUCABA	5	Bar	Beach	Surf Spot	Wine Bar	Fish & Chips Shop	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant
IGUABINHA	5	Brazilian Restaurant	Beach	Wine Bar	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm	Fast Food Restaurant
PONTA DA TRINDADE	5	Beach	Juice Bar	Burger Joint	Wine Bar	Fast Food Restaurant	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant
TARITUBA	5	Beach	Seafood Restaurant	Hotel	Restaurant	Deli / Bodega	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant

Examine clusters

Cluster 6

Neighborhood	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
ANGRA DOS REIS	6	Plaza	Acai House	Brazilian Restaurant	Gym / Fitness Center	Fast Food Restaurant	Diner	Italian Restaurant	Department Store	Noodle House	Café
ARMAÇÃO DOS BÚZIOS	6	Café	Hotel	Brazilian Restaurant	French Restaurant	Boutique	Pedestrian Plaza	Chocolate Shop	Rock Club	Salad Place	Sandwich Place
CABO FRIO	6	Café	Dessert Shop	Brazilian Restaurant	Vegetarian / Vegan Restaurant	Arts & Crafts Store	Italian Restaurant	Ice Cream Shop	Gym	Plaza	Bookstore
PARATY	6	Church	Bookstore	Historic Site	Brazilian Restaurant	History Museum	Food & Drink Shop	Plaza	Pub	Bed & Breakfast	Restaurant
PETRÓPOLIS	6	Chocolate Shop	Wine Bar	Sandwich Place	German Restaurant	History Museum	Hotel	Dessert Shop	Pastry Shop	Restaurant	Garden
CASCATINHA	6	Gym	Supermarket	Market	Bus Station	Wine Bar	Farm	Department Store	Dessert Shop	Diner	Dive Bar
SÃO JOSÉ DO VALE DO RIO PRETO	6	Boutique	Gym	Bus Station	Fish & Chips Shop	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant	Farm

Cluster 6 (continue)

BACAXÁ	6	Brazilian Restaurant	Fast Food Restaurant	Health Food Store	Pizza Place	Plaza	Café	Burger Joint	Acai House	Soccer Stadium	Bakery
SAMPAIO CORREIA	6	Bus Station	Farm	Brazilian Restaurant	Wine Bar	Creperie	Department Store	Dessert Shop	Diner	Dive Bar	Falafel Restaurant
TERESÓPOLIS	6	Café	Restaurant	Brazilian Restaurant	Gym / Fitness Center	Chocolate Shop	Seafood Restaurant	Gymnastics Gym	Deli / Bodega	Gym	Bakery

Discussion

Seven clusters were selected. Clusters 1 and 6 are the ones that added more localities. They are clusters that concentrate the most visited cities in these selected regions.

Cluster 1

- In Abraão there are a lot of options of **hotels ans hostels**, you can stay there by **little money**. There are also good beach options.
- Arraial do Cabo is a great place. There is wonderful beaches and there may be more cheaper than Cabo Frio and Búzios (nearby places).

Cluster 1 there are more locations near a beach and can be more cheaper than locations in cluster 6

Discussion

Cluster 6

- Paraty was interesting because it contains diverse places, such as: beach, historic places, bookstores.
- To get a european experience in Brazil, Petrópolis is a nice place to go. Chocolate shop and German Restaurante as main options.
- Cabo Frio and Búzios are great places, but they are very expensive.

Cluster 6 has higher cost locations, such as restaurants specializing in international dishes.

The other places, by my experience look less interesting to visit.

Conclusion

Really, Rio de Janeiro is an excellent place, with several options: from the beach or the mountains. There are places for all tastes. Even very interesting places you can spend a lot less money.

github.com/th1460/Coursera_Capstone