The best place to open a japanese restaurant in Rio de Janeiro

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1. Introduction

The purpose of this report is to answer the question: “Which is the best neighborhood to open a japanese restaurant in Rio? Rio de Janeiro is one of Brazil’s most famous cities, being the second destination in the country by tourist visitation rank. Clearly, this research will be useful for entrepreneurs and stakeholders who seek a profitable investment in the wonderful city’s real economy.

2. Data

The list of Rio’s neighborhoods as well as theirs per capita income was obtained from Wikipedia. This data is not recent, but for our purposes, it’s suitable (see methodology section). Income was used as a feature for two main reasons. First, it implicitly restrains the location of the restaurant, and second, different incomes require different types of japanese restaurants, usually an expensive category.

Foursquare API was used to gain information about the neighborhoods quantity of restaurants, and the japanese ones specifically. Obviously, it’s very helpful to know how hard competition will be in each potential place.

Finally, Rio’s neighborhoods geographical coordinates were acquired from Google Maps, and placed into a table, loaded into the notebook.

3. Methodology

Initially, there were 126 neighbourhoods to be explored. Because we are interested in a particularly expensive category of venue, it was selected the ones with income per capita above the median, R$ 432.54. This value is not updated, however, what matters here is the difference between each neighbourhood, not the absolute number. After that, there were 63 potencial locations, see image 1.

The Foursquare API was applied to obtain the venues in a 1600m radius of each blue point. Subsequently, it was verified if the venues were restaurants in general, and asian restaurants specifically. We used asian restaurants instead of japanese, because there are many places classified as “asian” even though they focus on japanese cuisine. Once this was done, the percentile of asian restaurants in each neighbourhood was calculated. Neighborhoods with less than 10 restaurants found by Foursquare were removed, since it would wrongly affect the rate.

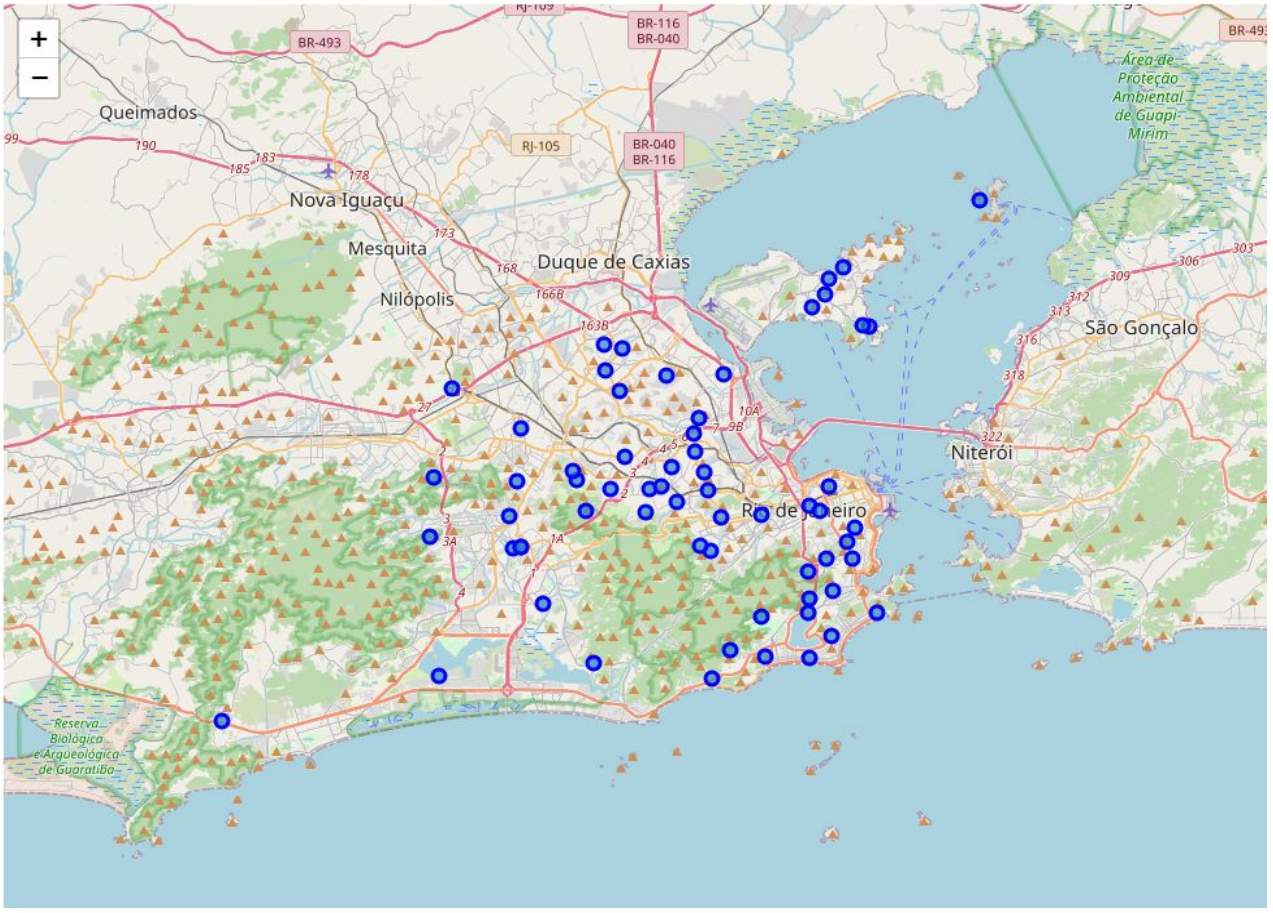
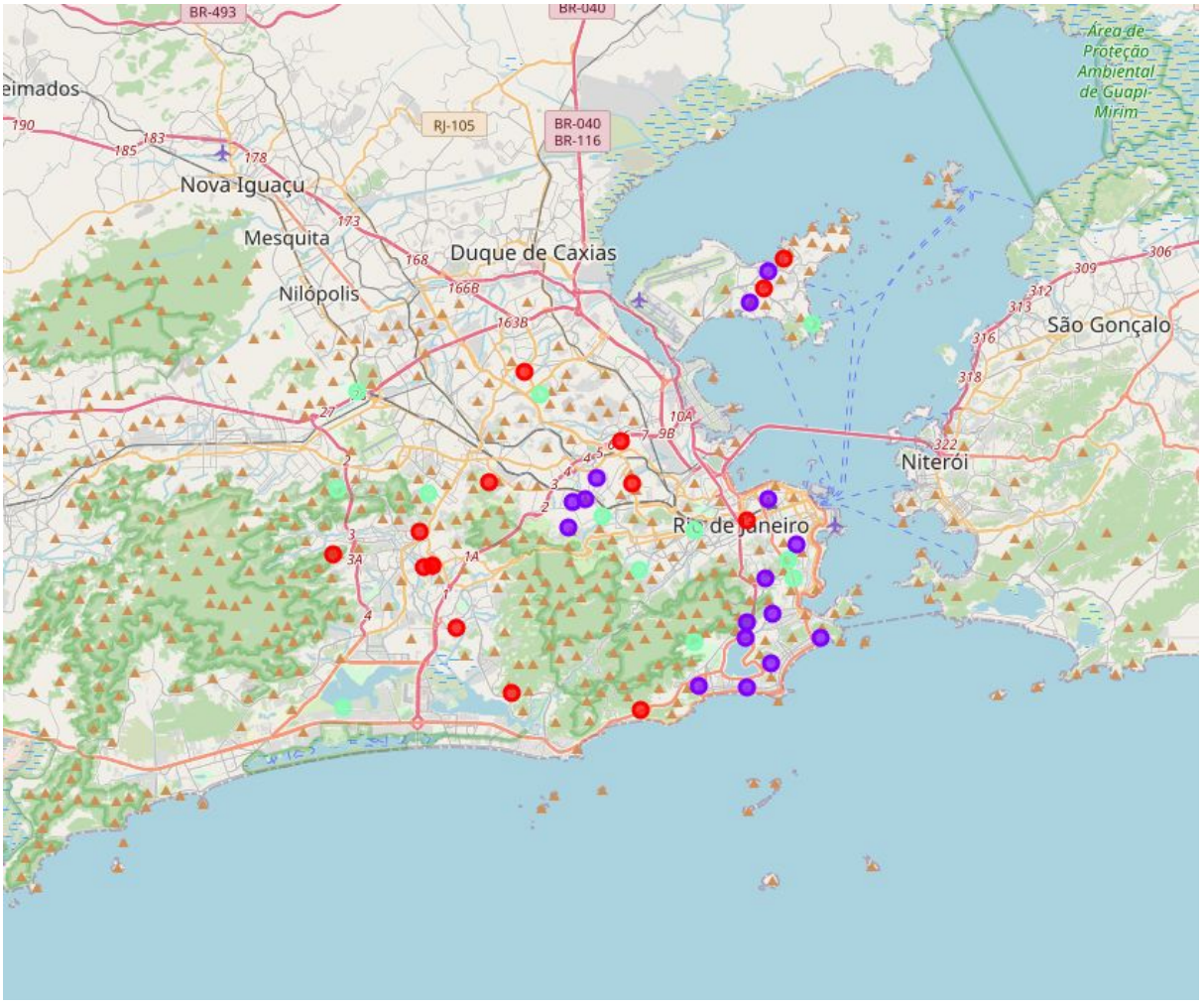


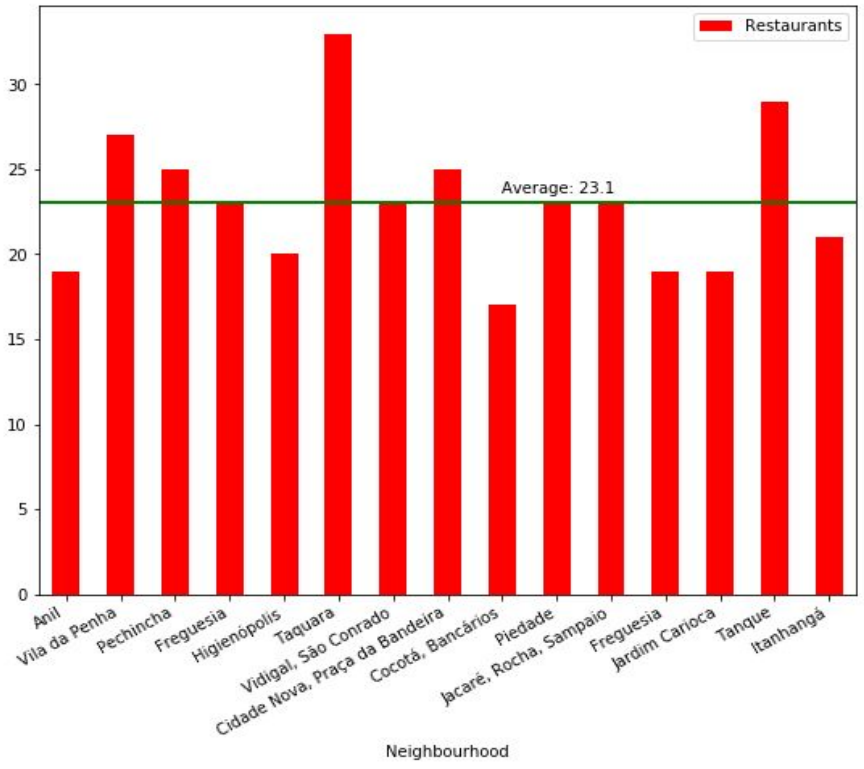
Image1

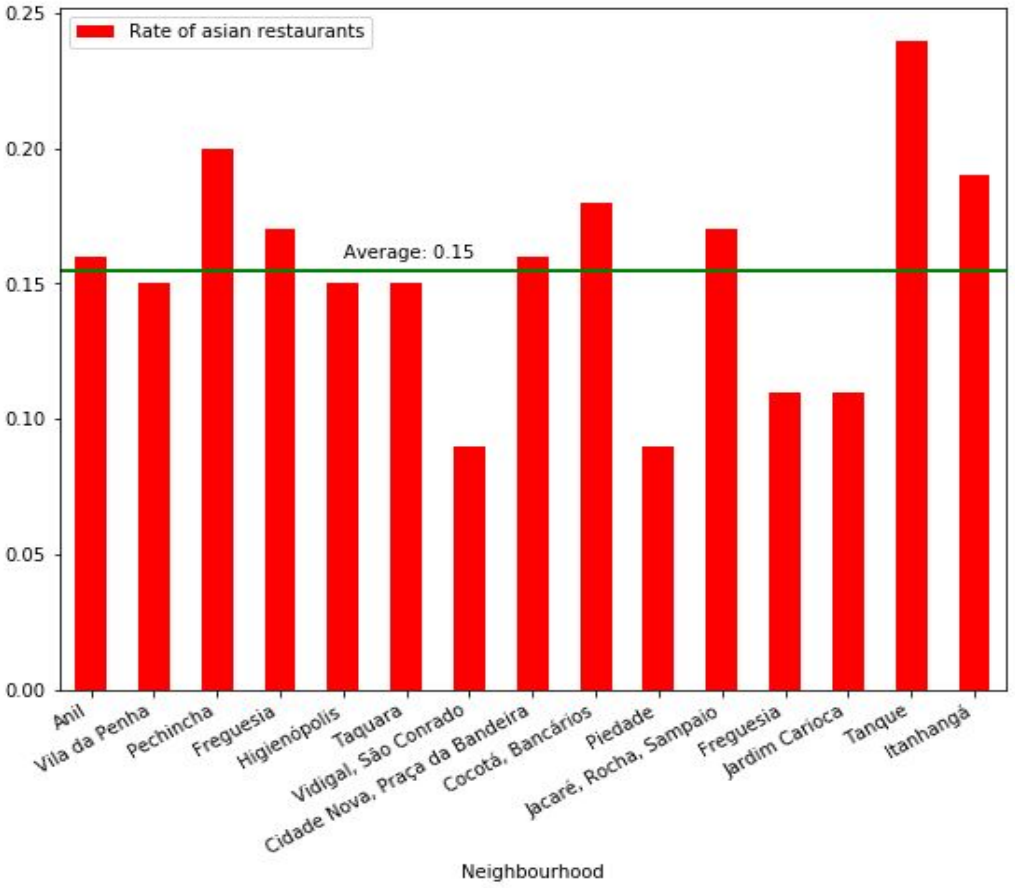
Finally, with a table containing, for each neighbourhood, it's income per capita, number of restaurants and rate of asian restaurants, K-means clustering was applied. This unsupervised machine learning algorithm formed 3 cluster of neighborhoods, and was used for the reason that places with similar characteristics would hopefully be put into the same clusters, facilitating the analysis and providing unique insight of which locations have the higher potential of a lucrative japanese restaurant.

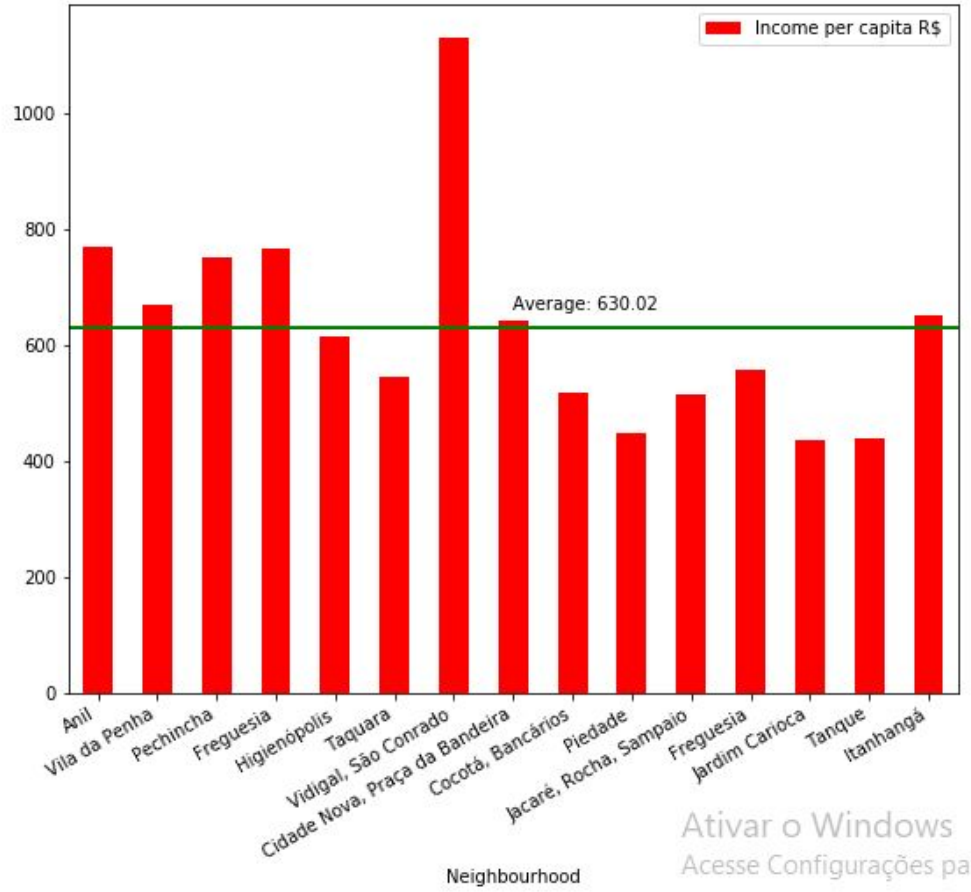
4. Results

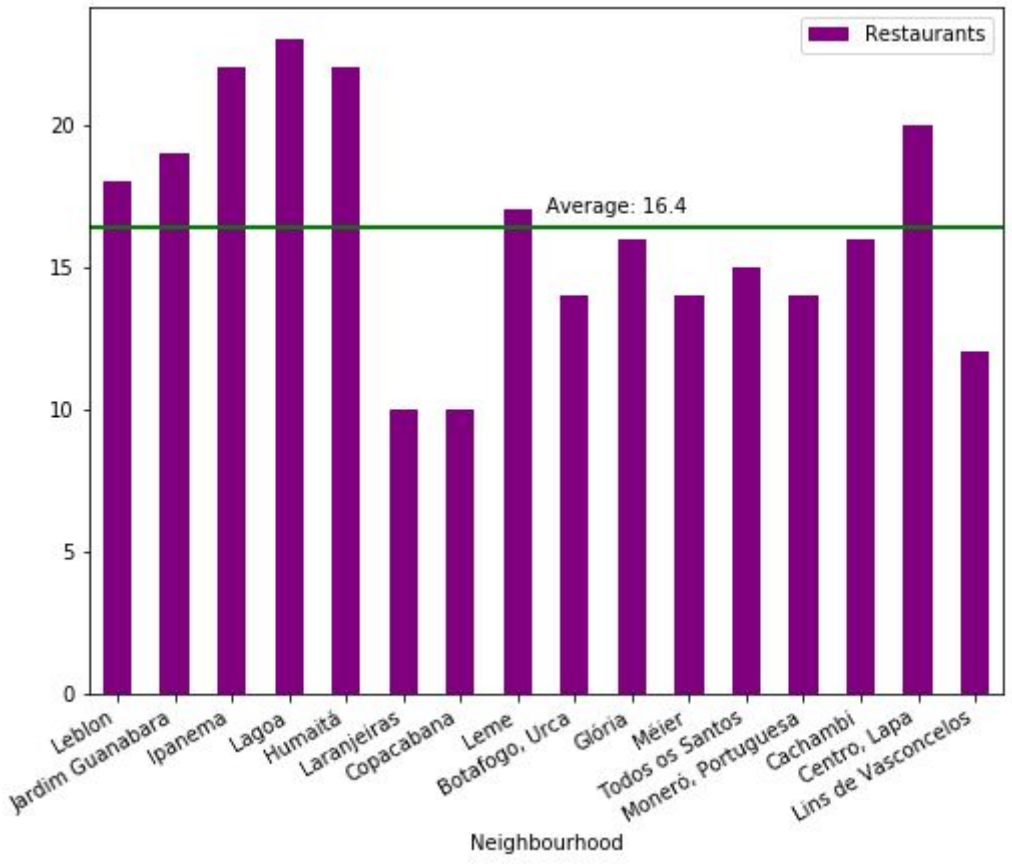
Once each neighborhood was placed into a cluster, it were made graphs to better visualize the clusters. This will help us understand their characteristics and whether they are interesting to this research main objective.

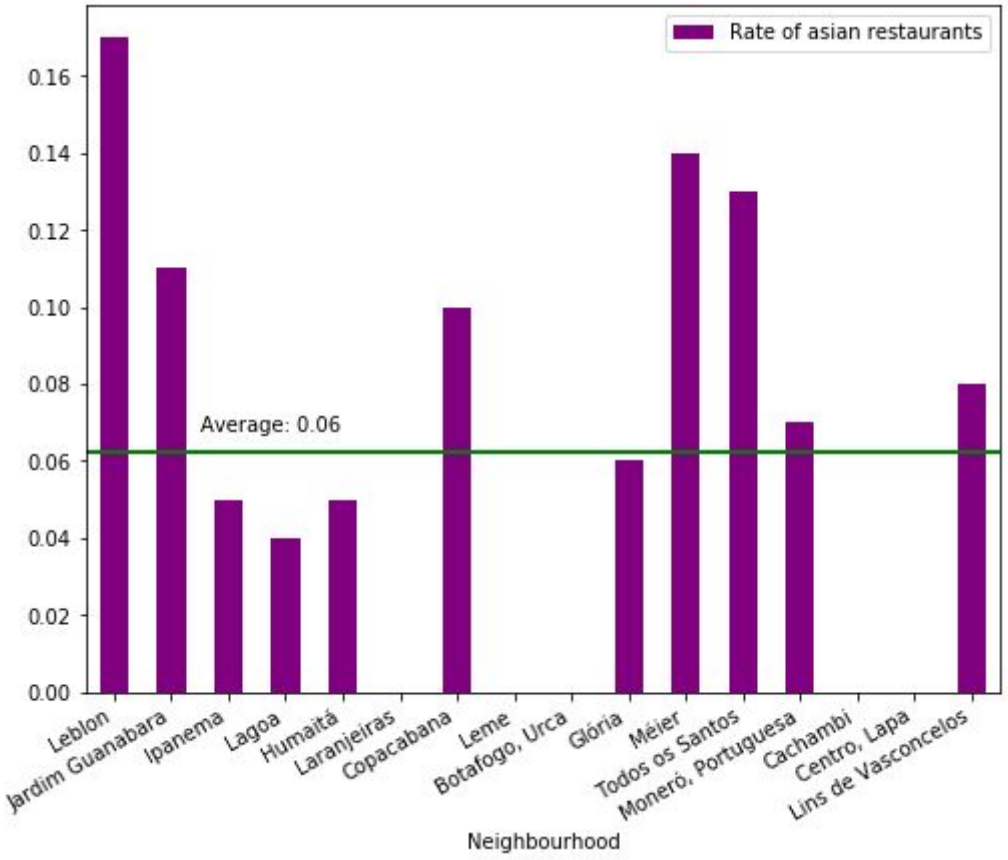

BR-493
BR-040
RJ-105
BR-040
BR-116
Área de Proteção Ambiental de Guapi-Mirim
Nova Iguaçu
Mesquita
Nilópolis
Duque de Caxias
São Gonçalo
Niterói
Rio de Janeiro

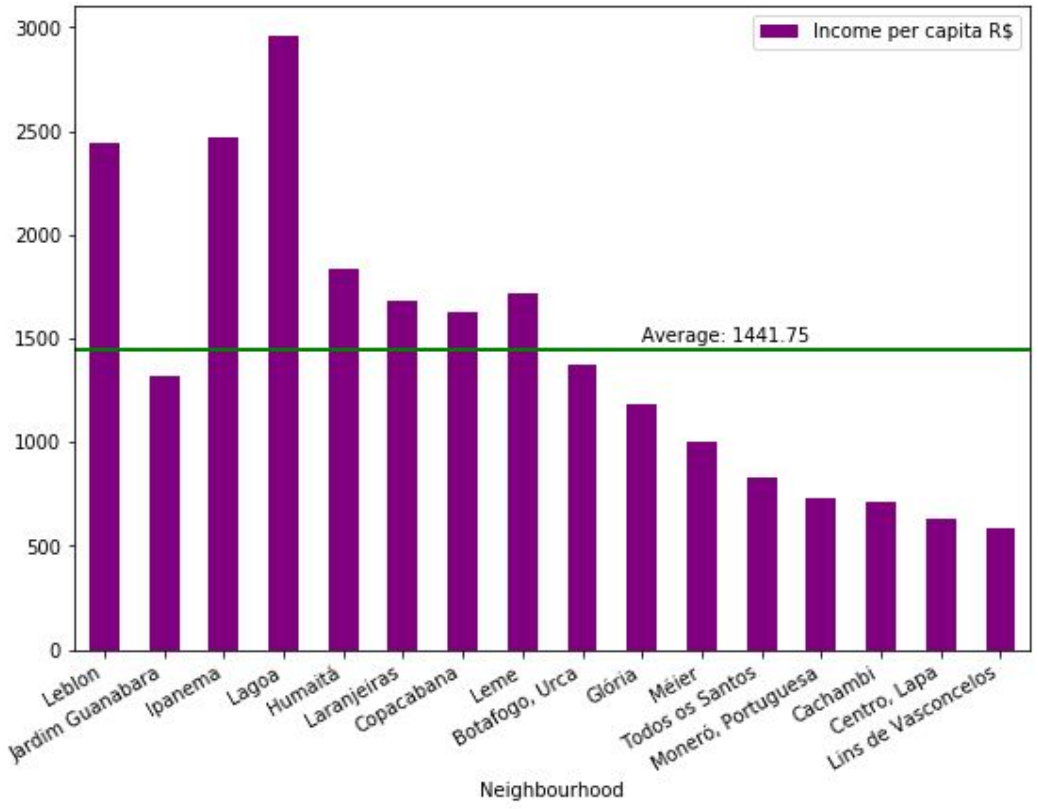

Restaurants
Average: 23.1
0
5
10
15
20
25
30
Anil
Vila da Penha
Pechincha
Freguesia
Higienópolis
Taquara
Vidigal, São Conrado
Cidade Nova, Praça da Bandeira
Cocotá, Bancários
Piedade
Jacarè, Rocha, Sampaio
Freguesia
Jardim Carioca
Tanque
Itanhangá
Neighbourhood

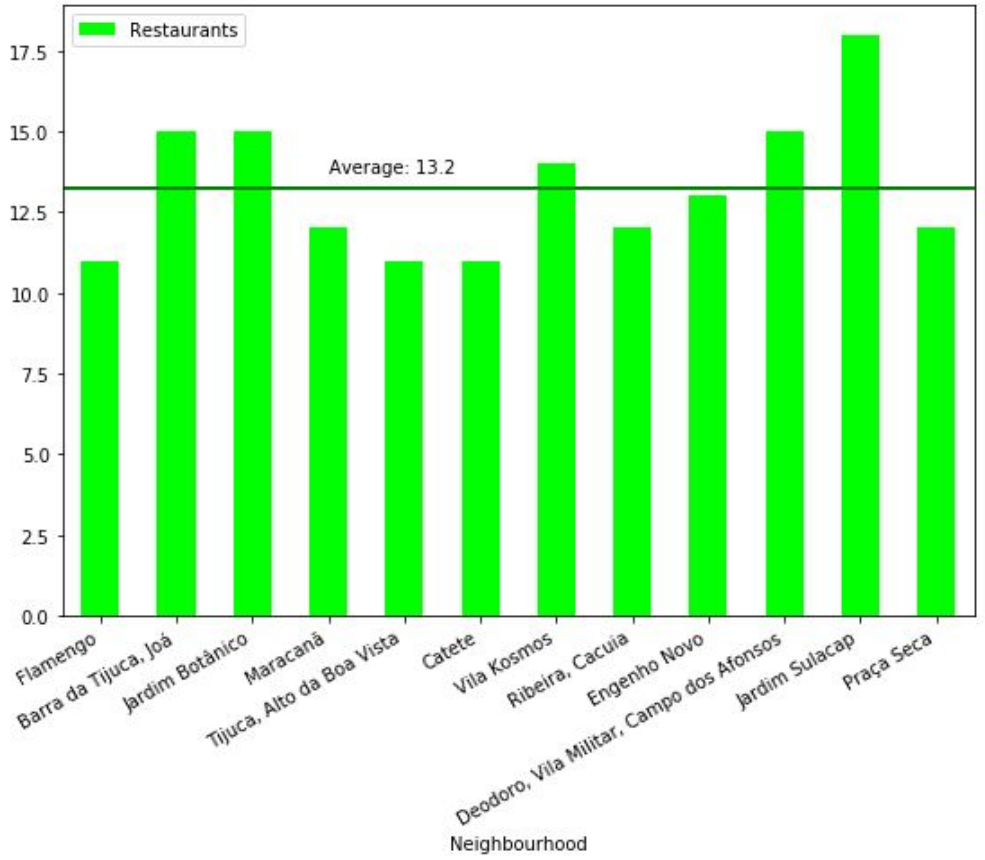


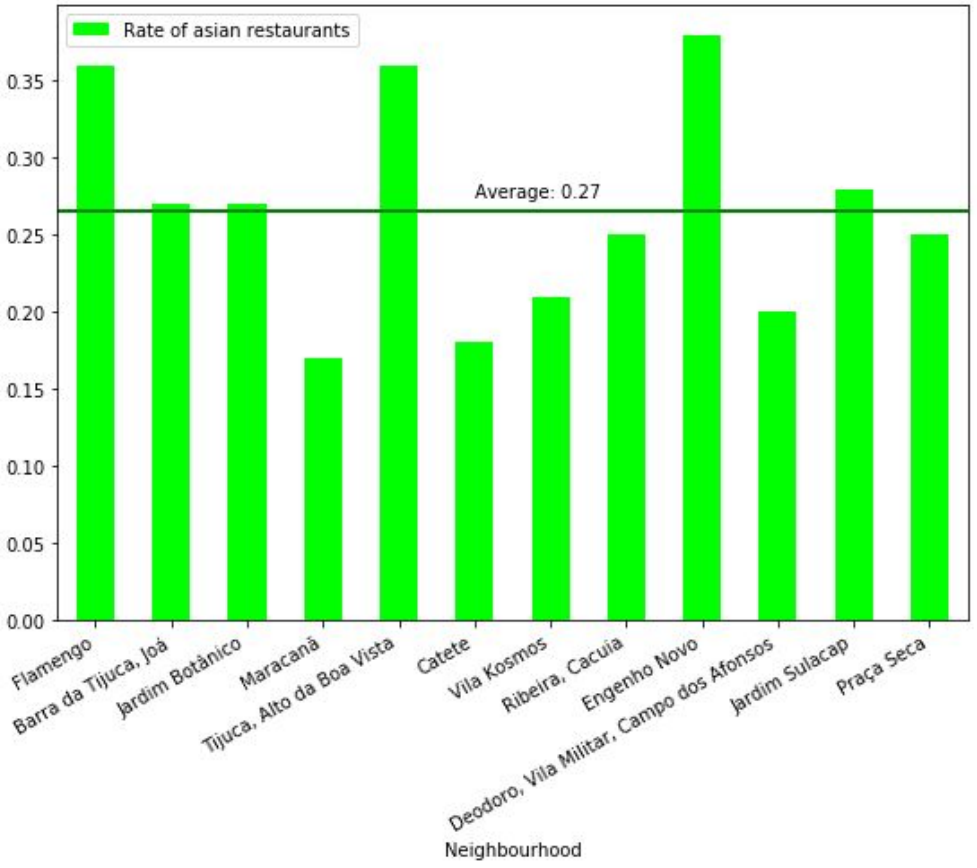


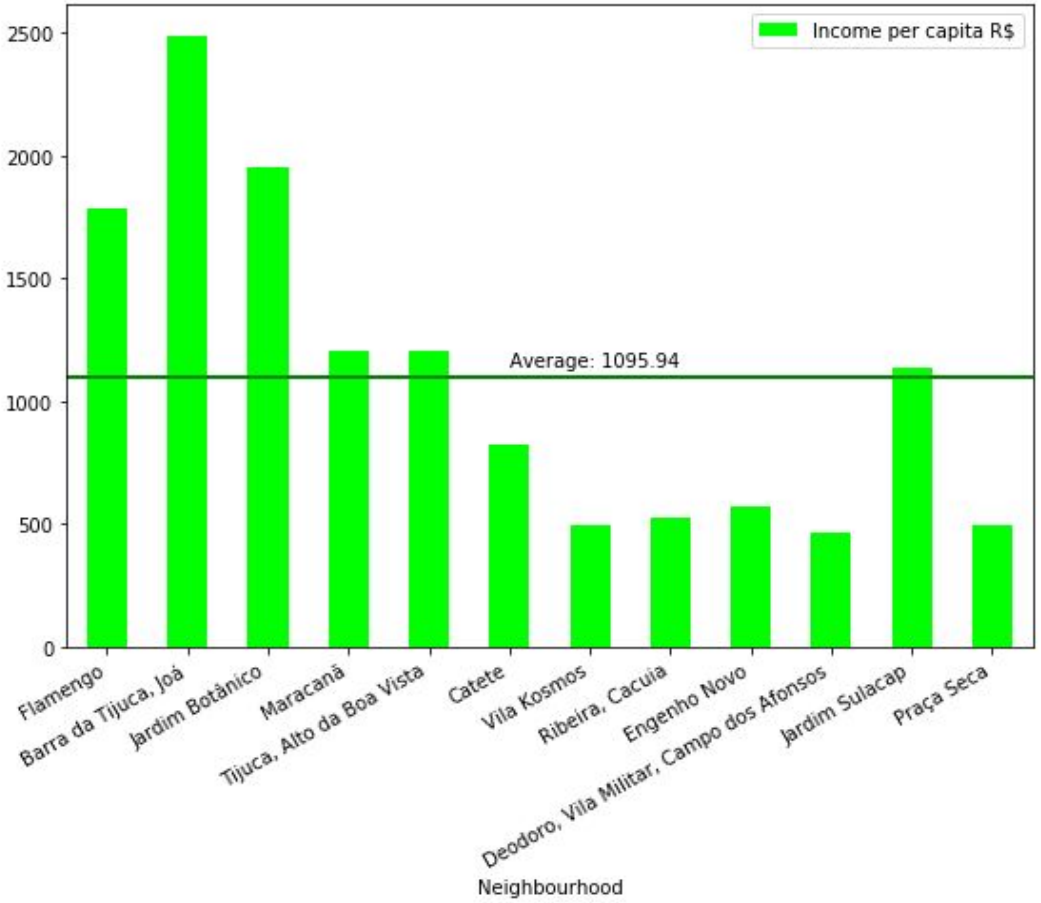

Restaurants
Average: 16.4
20
15
10
5
0
Leblon
Jardim Guanabara
Ipanema
Lagoa
Humaitá
Laranjeiras
Copacabana
Leme
Botafogo, Urca
Glória
Méier
Todos os Santos
Monerò, Portuguesa
Cachambi
Centro, Lapa
Lins de Vasconcelos
Neighbourhood


Rate of asian restaurants
Average: 0.06
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Leblon
Jardim Guanabara
Ipanema
Lagoa
Humaitá
Laranjeiras
Copacabana
Leme
Botafogo, Urca
Glória
Méier
Todos os Santos
Monerò, Portuguesa
Cachambi
Centro, Lapa
Lins de Vasconcelos
Neighbourhood


Income per capita R$
Average: 1441.75
3000
2500
2000
1500
1000
500
0
Leblon
Jardim Guanabara
Ipanema
Lagoa
Humaitá
Laranjeiras
Copacabana
Leme
Botafogo, Urca
Glória
Méier
Todos os Santos
Moneró, Portuguesa
Cachambi
Centro, Lapa
Lins de Vasconcelos
Neighbourhood


Restaurants
Average: 13.2
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Flamengo
Barra da Tijuca, Joá
Jardim Botânico
Maracanã
Tijuca, Alto da Boa Vista
Catete
Vila Kosmos
Ribeira, Cacuia
Engenho Novo
Deodoro, Vila Militar, Campo dos Afonsos
Jardim Sulacap
Praça Seca
Neighbourhood


Rate of asian restaurants
Average: 0.27
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Flamengo
Barra da Tijuca, Joá
Jardim Botânico
Maracanã
Tijuca, Alto da Boa Vista
Catete
Vila Kosmos
Ribeira, Cacuia
Engenho Novo
Deodoro, Vila Militar, Campo dos Afonsos
Jardim Sulacap
Praça Seca
Neighbourhood


Income per capita R$
Average: 1095.94
2500
2000
1500
1000
500
0
Flamengo
Barra da Tijuca, Joá
Jardim Botânico
Maracanã
Tijuca, Alto da Boa Vista
Catete
Vila Kosmos
Ribeira, Cacuia
Engenho Novo
Deodoro, Vila Militar, Campo dos Afonsos
Jardim Sulacap
Praça Seca
Neighbourhood

5. Discussion

Analysing the results, we can give an overview of each cluster.

The read cluster sends mixed messages. It has a large number of restaurants, but few of them are direct competitors of ours potential japanese restaurant. Since it is the cluster with the smallest income per capita, it would be interesting considering a low cost approach of japanese cuisine. Import to note that all neighborhoods analysed are above the median in terms of income.

The purple cluster is the one with the better opportunities. It has the highest income, and very few asian restaurants. A fancy japanese restaurant in some of these neighborhoods would probably find great demand.

The green cluster is the worst one for our purposes. Although it has middle-high income, it's already crowded with asian restaurants. One would likely find very hard competition to a new japanese restaurant in these neighborhoods.

It is worth highlighting the limitations of this analysis. The venues were searched in a 1600m radius from a point in each neighborhood. It clearly doesn't find all restaurants in these locations. The places where Foursquare did not return any asian restaurants, got the rate at 0, and they especially concentrate on the purple cluster. Therefore, it might be more wise to select as best a place where this didn't occur, such as Lagoa.

6. Conclusion

In this report, it was analysed the neighborhoods of Rio de Janeiro, with the objective of discovering the ones that are suitable for a profitable investment in a japanese restaurant. The results revealed that such neighborhoods are in our purple cluster. Considering the last observation from the discussion section, a good answer to this project main question is that Lagoa is certainly one of the best neighborhoods for the investment.