Where to Stay in Belo Horizonte, BRA?

Data Analysis based on the Urban Quality of Life index and Foursquare.

The questions

https://maisminas.org/

Where should a visitor stay in a big city like Belo Horizonte?

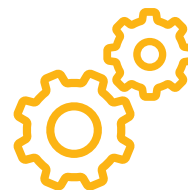What kind of information can help one to choose?

What kind of variables need to be considered?

Data

Foursquare API

The Foursquare API provides data about the venues located in that neighbourhood, the access to restaurants, bars, nightlife and other meaningful information on locations.

IQVU Index

The Belo Horizonte Urban Quality of Life index is an index composed of several variables – such as, for example, urban infrastructure, security and education – that seeks to quantify the availability of public and private goods.

IQVU index and neighborhoods data

	ID	CODIGO	NOME	latitude	longitude
0	264	1257	Corumbiara	-20.0093	-44.0135
1	507	1674	Vila Betânia	-19.977	-44.0185
2	510	1668	Ambrosina	-19.9313	-43.9828
3	619	1976	Antônio Ribeiro de Abreu	-19.8291	-43.8985
4	194	819	Vista Alegre	-19.955	-43.999

	NOME	IQVU
0	Barro Preto	0,856586868
1	Santa Lúcia	0,824468066
2	São Bento	0,824468066
3	Savassi	0,804586698
4	Centro	0,798798365
5	Lagoa da Pampulha	0,798016108
6	Santa Inês	0,794606199
7	Santa Tereza	0,785570033
8	Floresta	0,785570033
9	Mangabeiras	0,783575181
10	Serra	0,775935589
11	Santo Antônio	0,775673299
12	Pompéia	0,775655666
13	Belvedere	0,769292717
14	Barroca	0,765196443

● Data frame of all the neighborhoods and all their locations

● Top 15 neighborhoods with highest values of IQVU score.

IQVU per neighborhood

IQVU per Neighborhood

Lagoa da Pampulha, Barro Preto, Floresta, Santa Lúcia, São Bento, Mangabeiras, Santo Antônio, Belvedere, Barroca, Santa Tereza, Centro, Serra, Savassi, Pompéia, Santa Inês
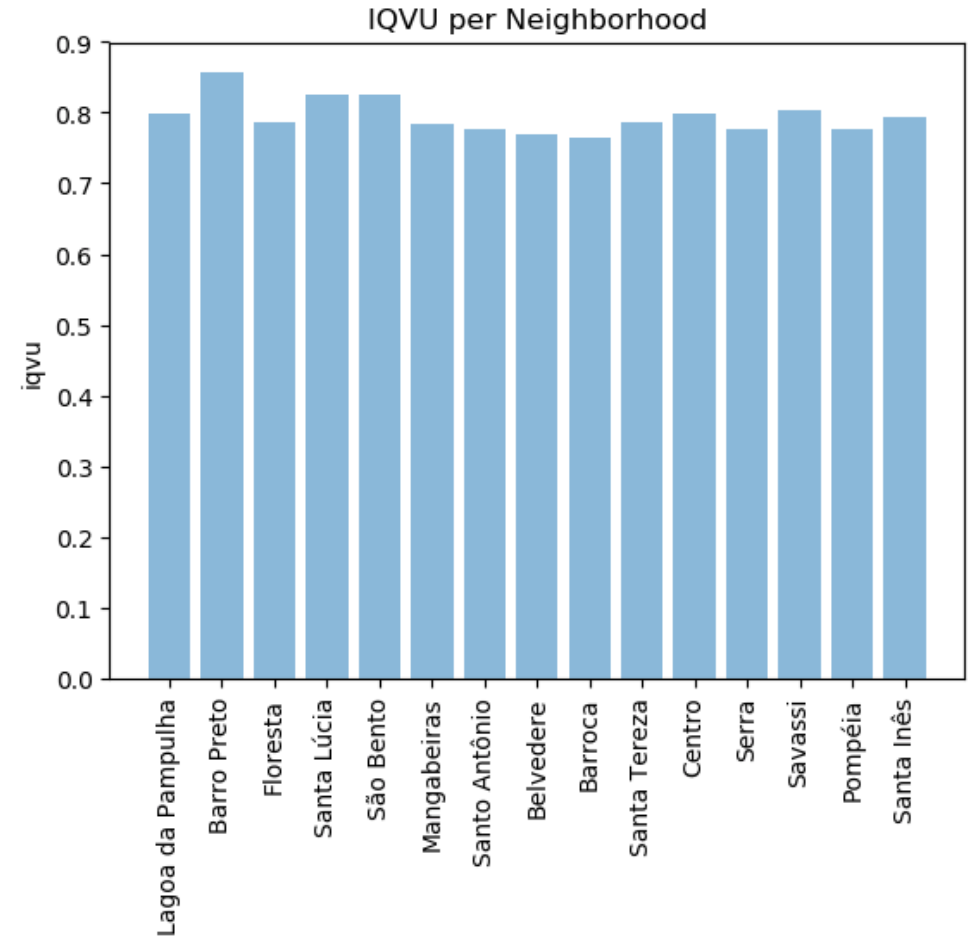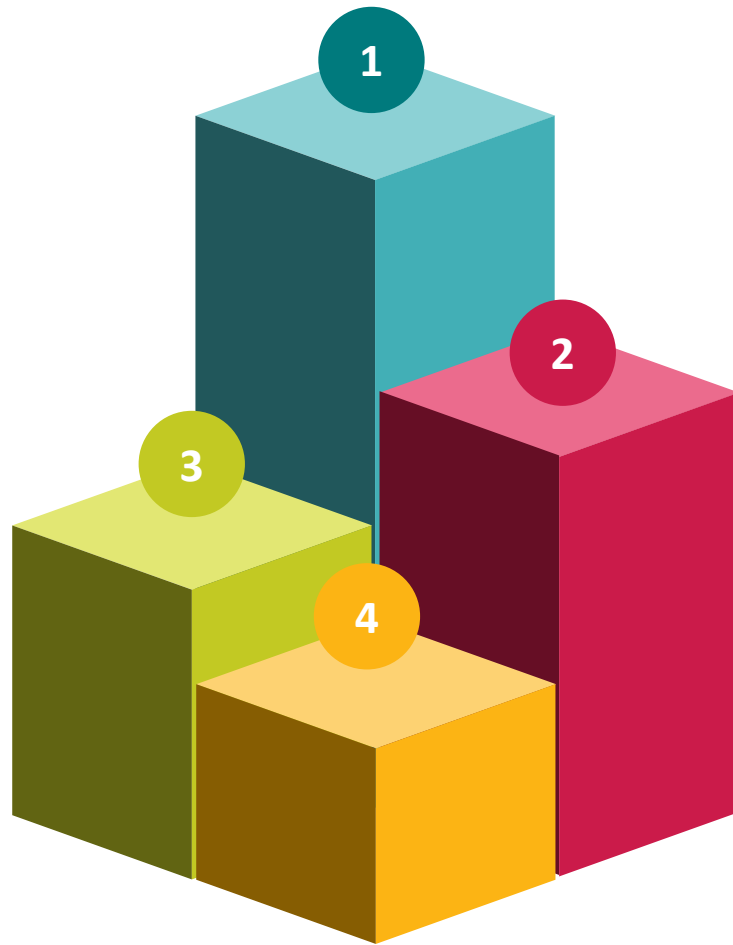
Map of the top 15 neighborhoods by IQVU
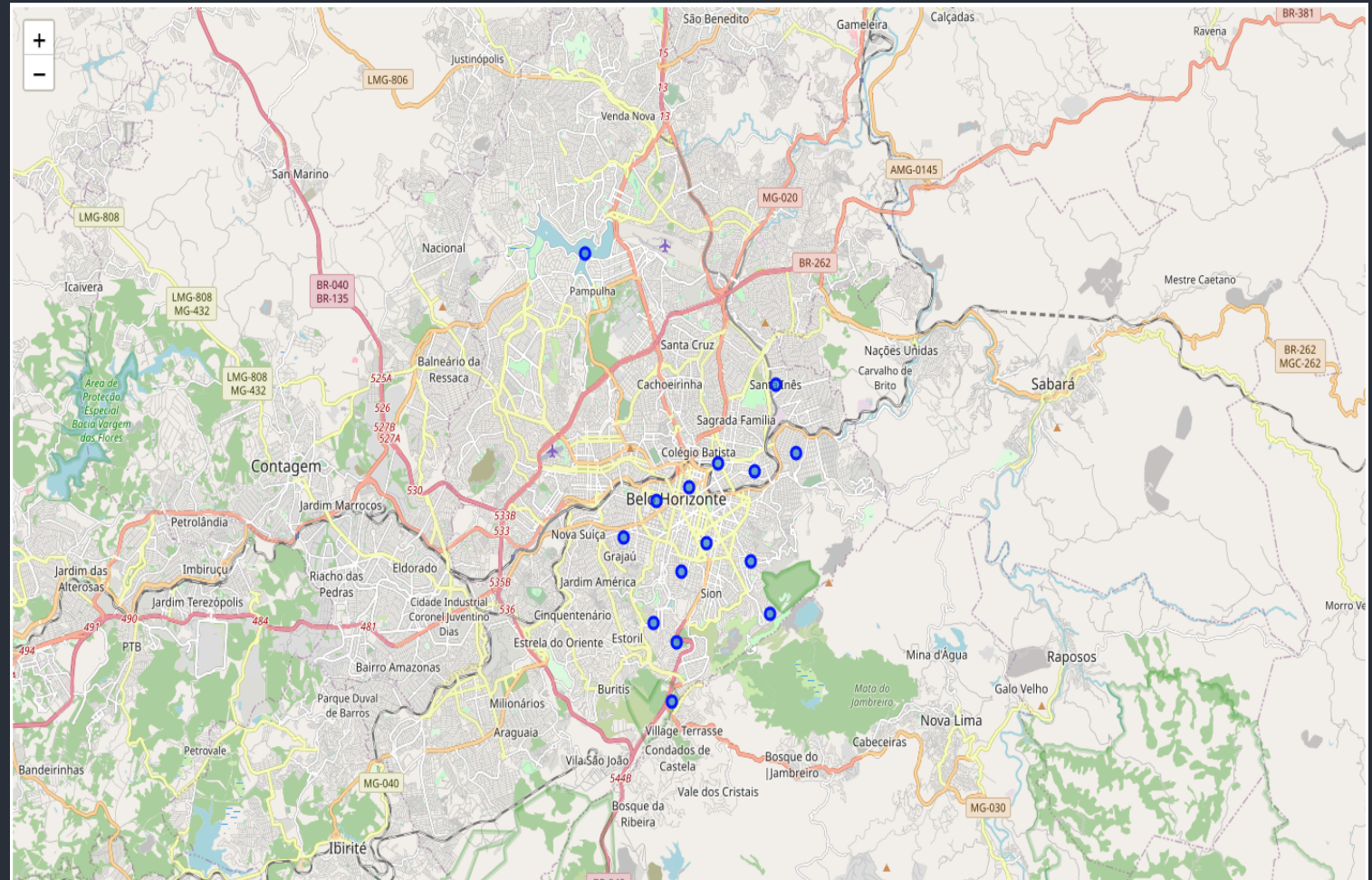
Foursquare API data

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	id	Venue Latitude	Venue Longitude	Venue Category
0	Lagoa da Pampulha	-19.853209	-43.977749	Lagoa da Pampulha	4b69f01cf964a52025bd2be3	-19.854620	-43.979804	Lake
1	Lagoa da Pampulha	-19.853209	-43.977749	Pista de Corrida da Lagoa	4ec6edaf8b81dcfdc2cf5500	-19.855051	-43.976300	Racecourse
2	Lagoa da Pampulha	-19.853209	-43.977749	Casa Kubitschek	523b344a498e9f8caa6bf037	-19.854963	-43.980136	Museum
3	Lagoa da Pampulha	-19.853209	-43.977749	Guana Trainer - Lagoa da Pampulha	4e845b2a77c8a32bced089b0	-19.854170	-43.980451	Athletics & Sports
4	Lagoa da Pampulha	-19.853209	-43.977749	Iate Tênis Clube	4bcda17c937ca59309fdac92	-19.854157	-43.976040	Water Park

All the venues for each of the 15 nighborhoods

500 meters ratio of the neighborhood center.

Number of venues per neighborhood
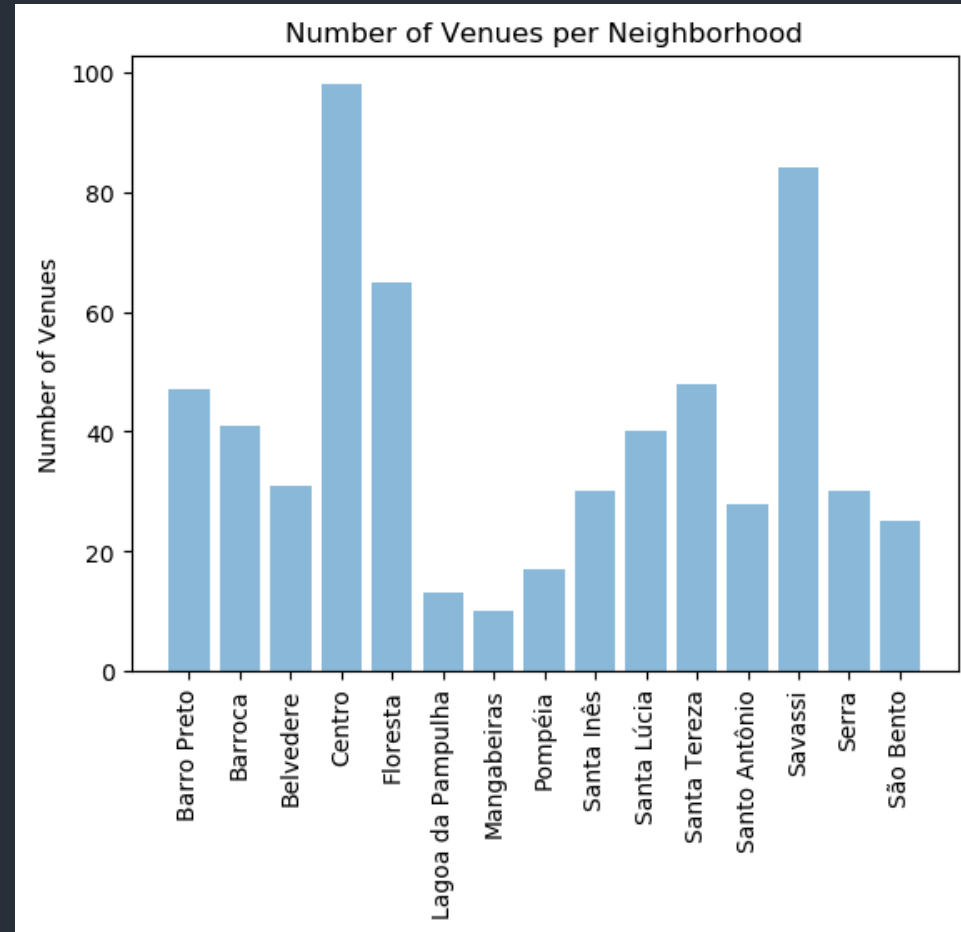
Number of venues per category

Neighborhood	Venue Category	Neighborhood Latitude	Neighborhood Longitude	Venue	id	Venue Latitude	Venue Longitude
Barro Preto	ATM	1	1	1	1	1	1
	BBQ Joint	1	1	1	1	1	1
	Bakery	1	1	1	1	1	1
	Bar	1	1	1	1	1	1
	Brazilian Restaurant	6	6	6	6	6	6
	Buffet	1	1	1	1	1	1
	Burger Joint	1	1	1	1	1	1
	Café	2	2	2	2	2	2
	Chinese Restaurant	1	1	1	1	1	1
	Chocolate Shop	1	1	1	1	1	1

Map of the venues in the neighborhoods
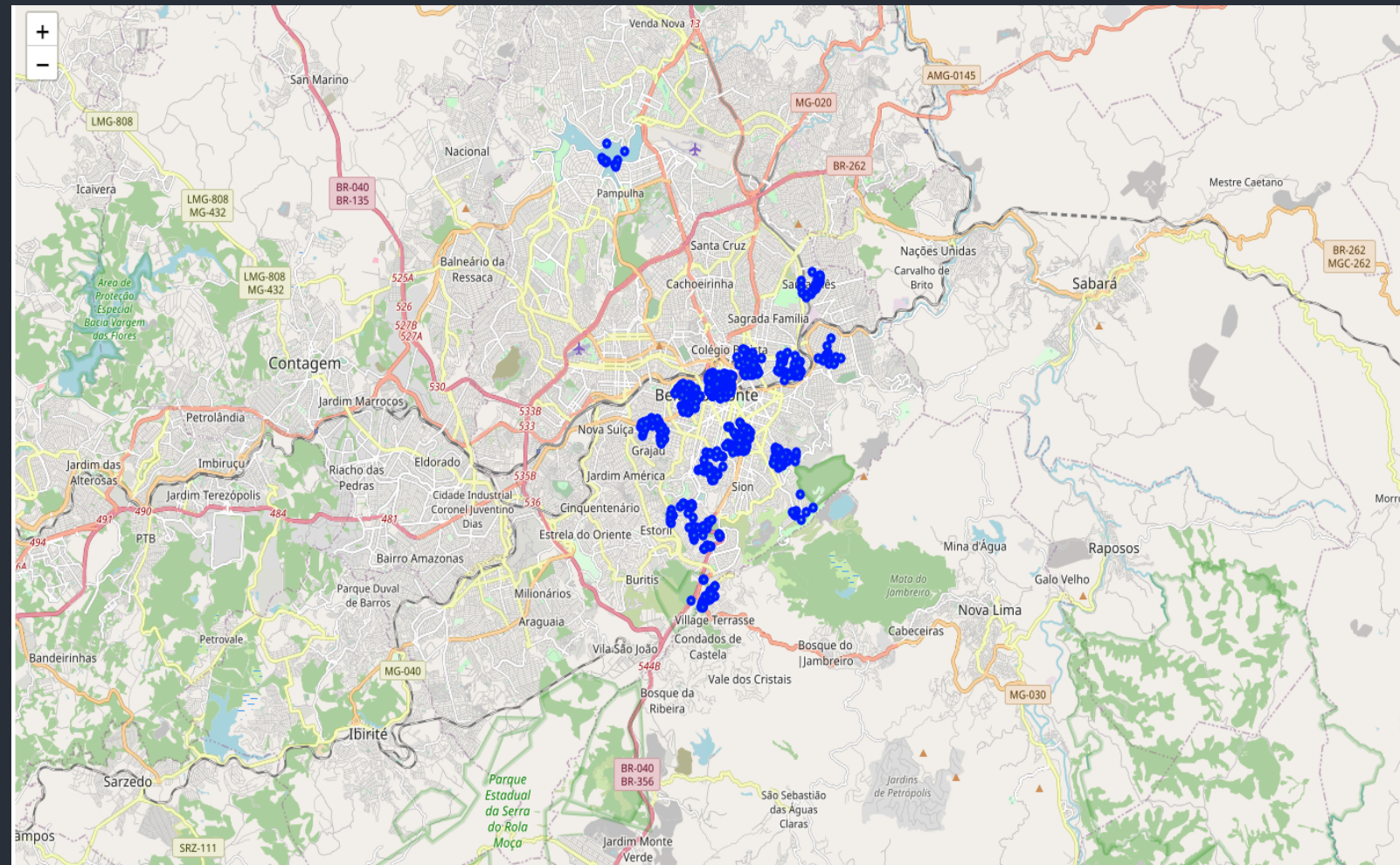
Clustering of neighborhoods by IQVU Score
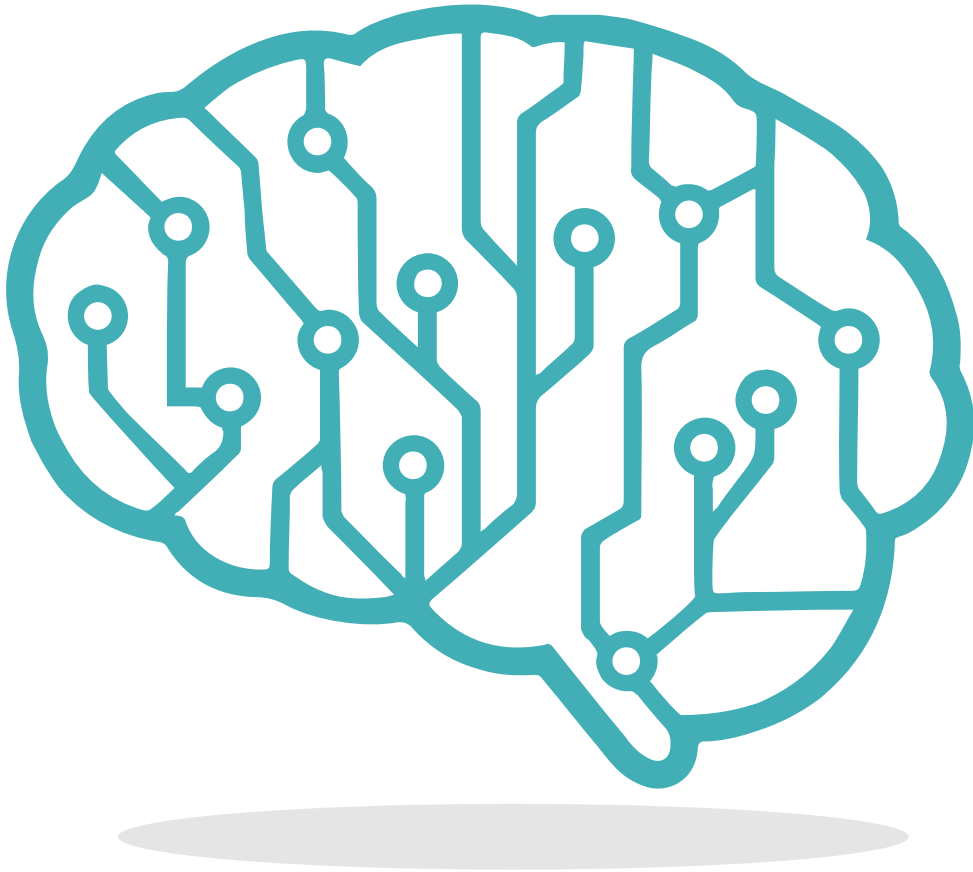
1 Kmeans – unsupervised clustering algorithm

**2** The neighborhoods were grouped based on their IQVU scores

3 4 clusters

Clusters

	ID	CODIGO	NOME	latitude	longitude	iqvu	Clus_km
0	617	1972	Lagoa da Pampulha	-19.853209	-43.977749	0.798016	2
1	12	617	Barro Preto	-19.923382	-43.952011	0.856587	3
2	68	679	Floresta	-19.912746	-43.930201	0.785570	0
3	144	768	Santa Lúcia	-19.963226	-43.945101	0.824468	1
4	155	779	São Bento	-19.957709	-43.953242	0.824468	1
5	101	718	Mangabeiras	-19.955434	-43.911609	0.783575	0
6	154	778	Santo Antônio	-19.943329	-43.943420	0.775673	0
7	13	618	Belvedere	-19.980275	-43.946570	0.769293	0
8	11	616	Barroca	-19.933743	-43.963996	0.765196	0
9	150	774	Santa Tereza	-19.914892	-43.917046	0.785570	0
10	37	642	Centro	-19.919331	-43.940349	0.798798	2
11	172	797	Serra	-19.940556	-43.918423	0.775936	0
12	217	1133	Savassi	-19.935220	-43.934446	0.804587	2
13	131	751	Pompéia	-19.909648	-43.902428	0.775656	0
14	143	767	Santa Inês	-19.890331	-43.909681	0.794606	2

Map with clusters of neighborhoods
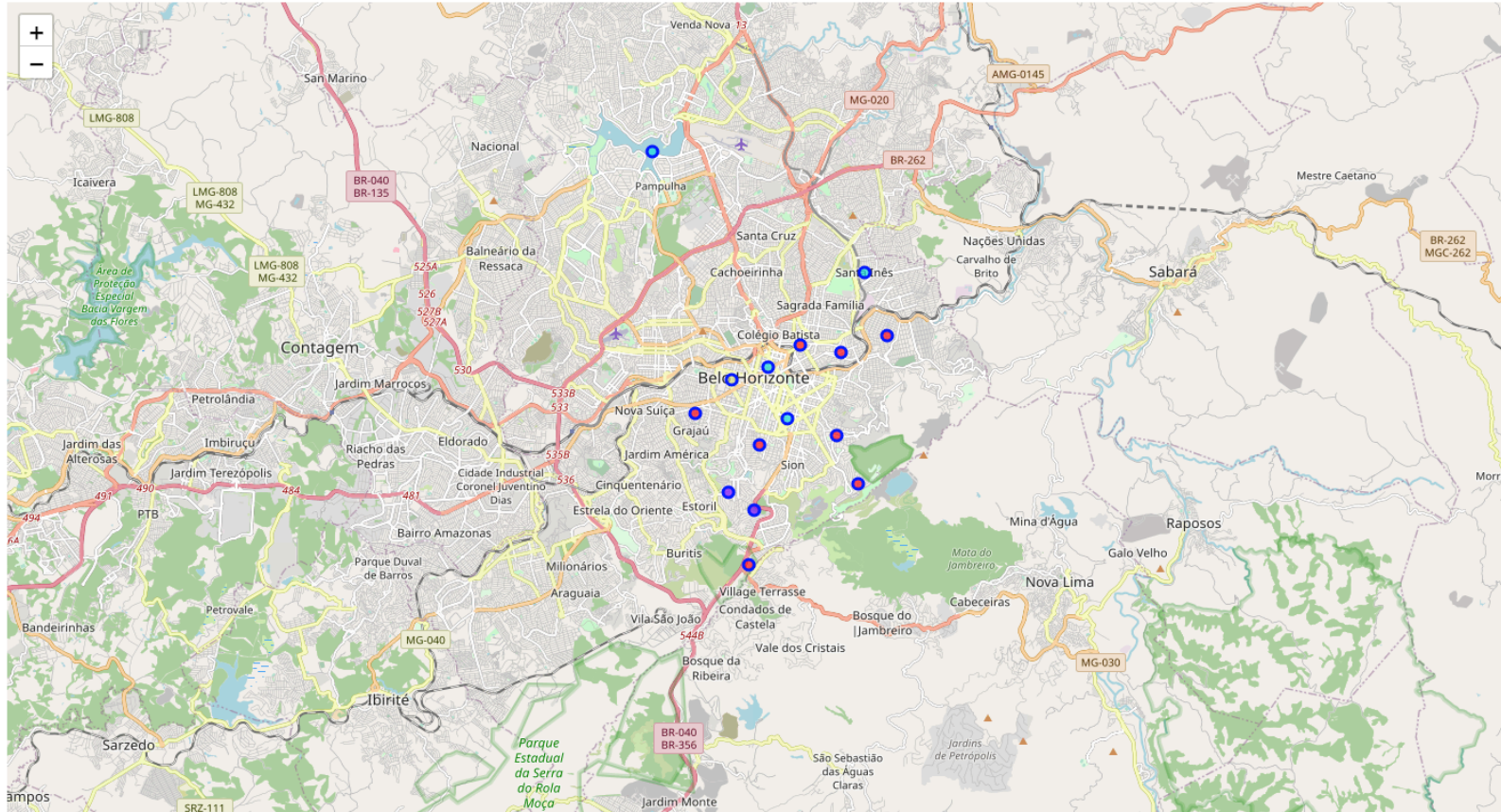
Building an index based on IQVU scores and number of venues in a neighborhood

1. Creation of an index based on the IQVU scores and number of venues of a neighbourhood.

2. Utilizes the standardized values of both these features.

3. Calculated by the mean of the values.

4. Show the relation between good infrastructure, services and the availability of venues.

Conclusion

IQVU and the index build out of the IQVU and the number of venues per neighborhood showed the 2 neighborhoods that stand out: **Centro e Savassi.**

Foursquare data

Foursquare data provided good information about the quantity and types of venues in each neighbourhood. **One valuable and decisive information was the number of hotels in Savassi neighbourhood, indicating that it is more touristic.**

Savassi

Clustering showed more clearly the different distribution of IQVU values and how the neighborhoods can be grouped

Clustering

The maps, charts and tables provided a more clear view of the neighborhoods and the data associated with them.

Maps, charts and tables

Thank you!