



Capstone Project

IBM PROJECT

Changing is Hard...

- ▶ Changing from your City is Harder...
- ▶ São Paulo is the Bigger City in Brazil
- ▶ Rio de Janeiro is the most famous city in Brazil
- ▶ If one is moving to São Paulo and is used to his/her neighbourhood, where should he/she look places in Rio de Janeiro?

Problem:

One is moving from the neighborhood "Moema", in São Paulo and never been in Rio de Janeiro before, this person works and study "Home Office" so he/she doesn't care for work/university distance. Which neighborhoods he/she should search in Rio de Janeiro? Which are the most looks like neighborhoods? So We will separate neighborhood by Cluster and compare which cluster has more "Common Venues" to Moema, São Paulo. With this one will have a leaner list of neighborhoods to look.

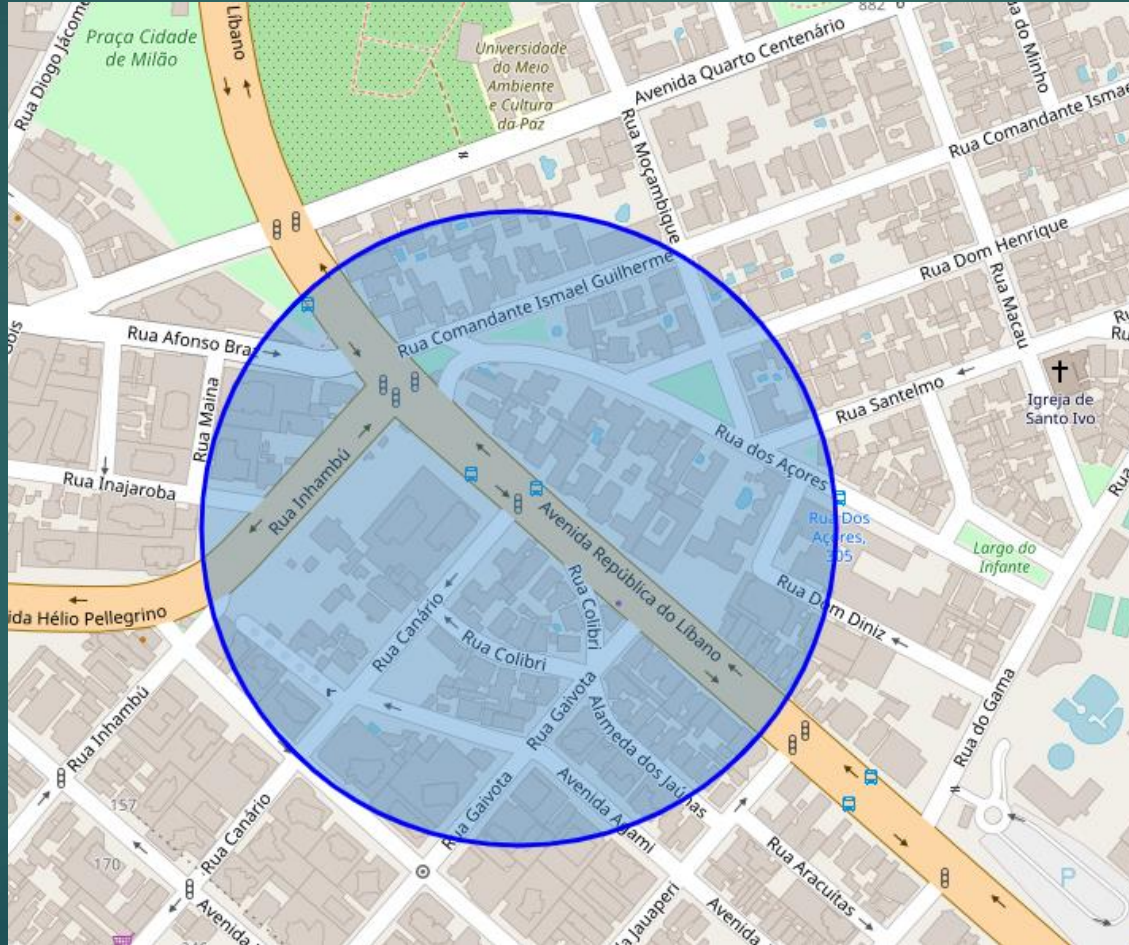
Data Acquisition and Cleaning

- ▶ Latitude and Longitude from ones Origin Neighbourhood: “Geolocator”

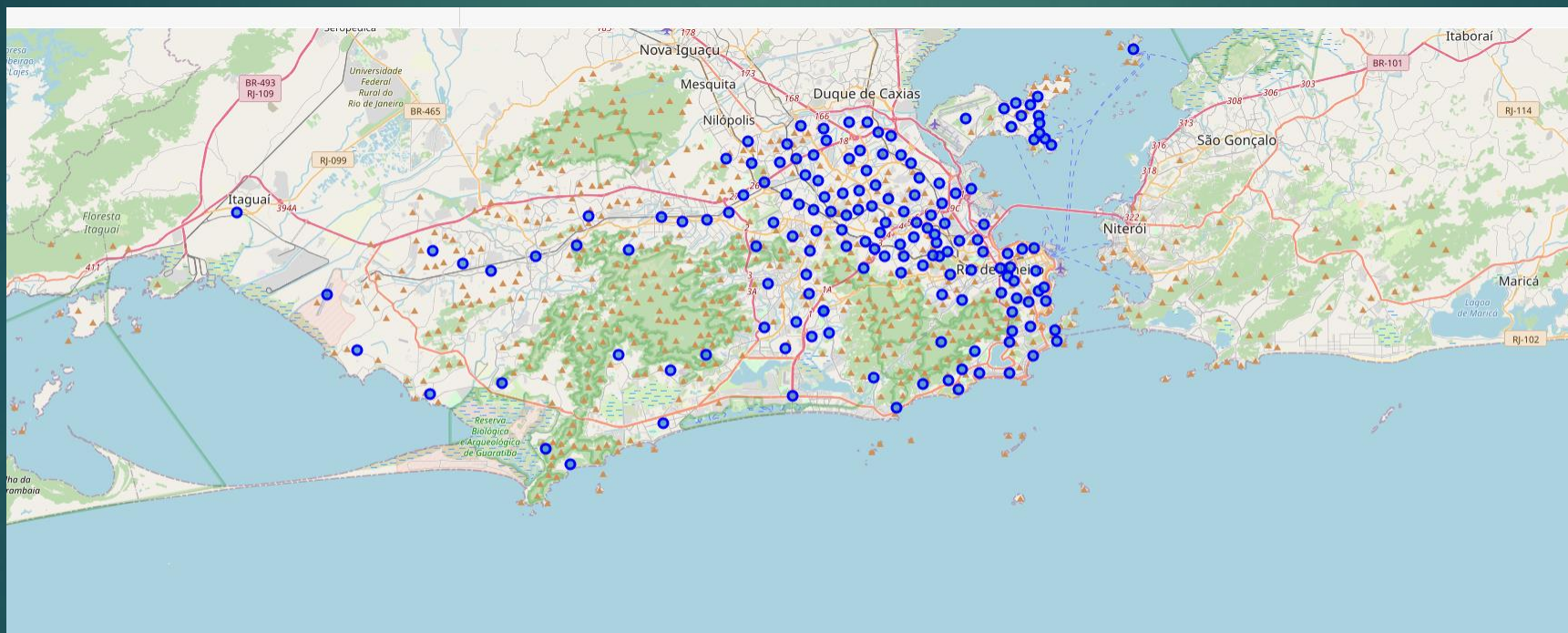
	Neighbourhood	Latitude	Longitude
0	Moema	-23.597085	-46.662888

- ▶ Rio de Janeiro's Neighbourhoods name from Wikipedia:
https://pt.wikipedia.org/wiki/Lista_de_bairros_do_Rio_de_Janeiro_por_IDH
- ▶ Latitude and Longitude of its Neighbourhood: Geolocator
- ▶ Most Famous Venues of each Neighbourhood: Foursquare API.

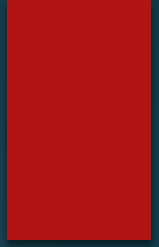
Moema Area:



Rio de Janeiro Neighbourhoods:



Most Commons Venue in Moema:



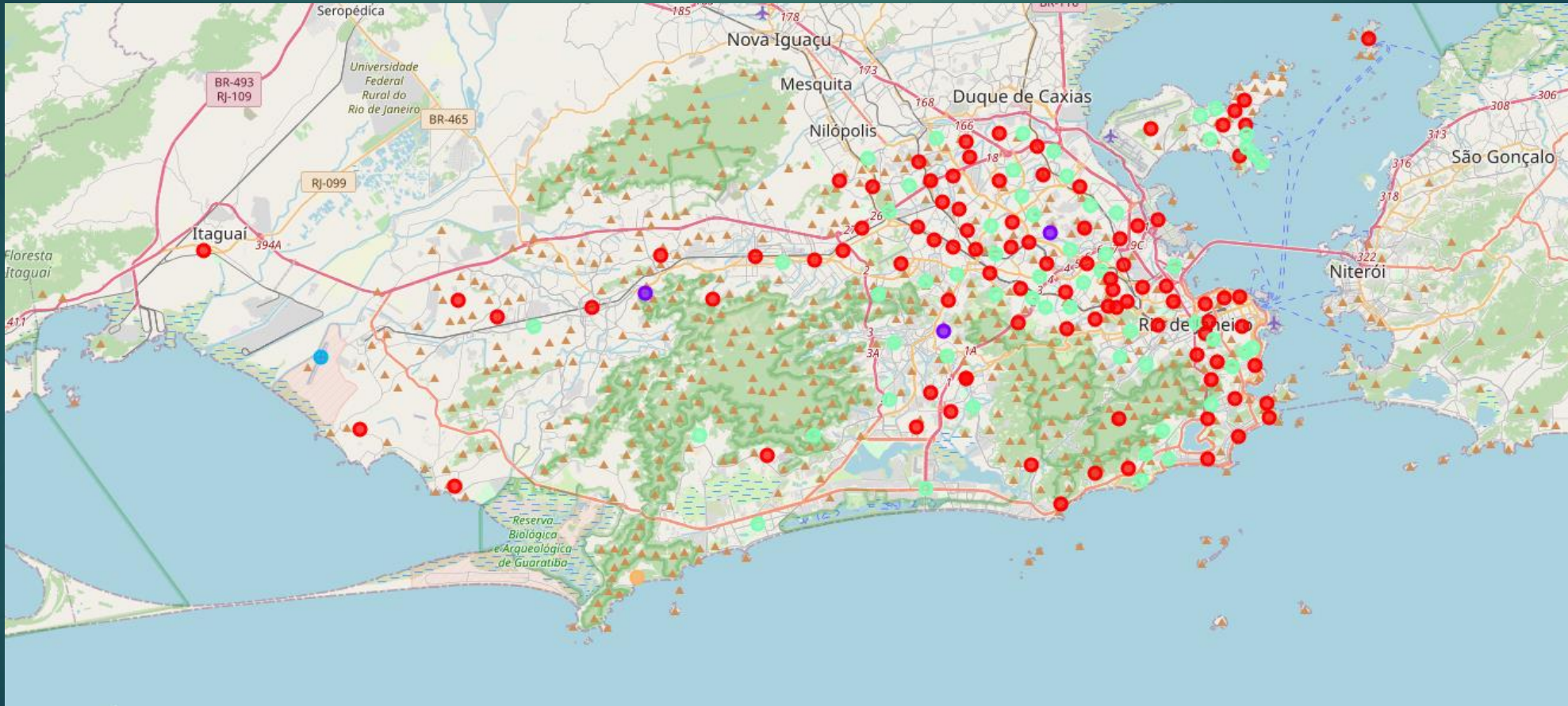
	Neighbourhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Moema	Furniture / Home Store	Dessert Shop	Japanese Restaurant	Snack Place	Pharmacy	Pizza Place	Plaza	Middle Eastern Restaurant	Restaurant	Burger Joint

Clustering Rio de Janeiro's Neighbourhoods:

- For this we Used K-Means
- Over 150 Neighbourhoods were divided in 5 Different Clusters

	Neighbourhood	Latitude	Longitude	Cluster Labels
0	Barra da Tijuca	-22.999740	-43.365993	3
1	Joá	-23.007780	-43.287234	0
2	Gávea	-22.981424	-43.238324	3
3	Leblon	-22.983556	-43.224938	3
4	Jardim Guanabara	-22.812836	-43.200779	3
5	Ipanema	-22.983956	-43.202216	0
6	Lagoa	-22.962466	-43.202488	0
7	Flamengo	-22.933984	-43.174574	0
8	Humaitá	-22.954641	-43.200480	3
9	Laranjeiras	-22.934317	-43.187816	3
10	Jardim Botânico	-22.968385	-43.228694	3
11	Copacabana	-22.971964	-43.184343	0
12	Leme	-22.961704	-43.166904	0
13	Botafogo	-22.951510	-43.186297	0
14	Urca	-22.954074	-43.167973	0
15	Maracanã	-22.912092	-43.231145	0
16	Campo Grande	-22.902953	-43.559129	0
18	Méier	-22.902642	-43.281726	3
19	Tijuca	-22.933216	-43.238145	3
20	Alto da Boa Vista	-22.962113	-43.253582	0
21	Todos os Santos	-22.894563	-43.285060	0

Clustering Rio de Janeiro's Neighbourhoods:

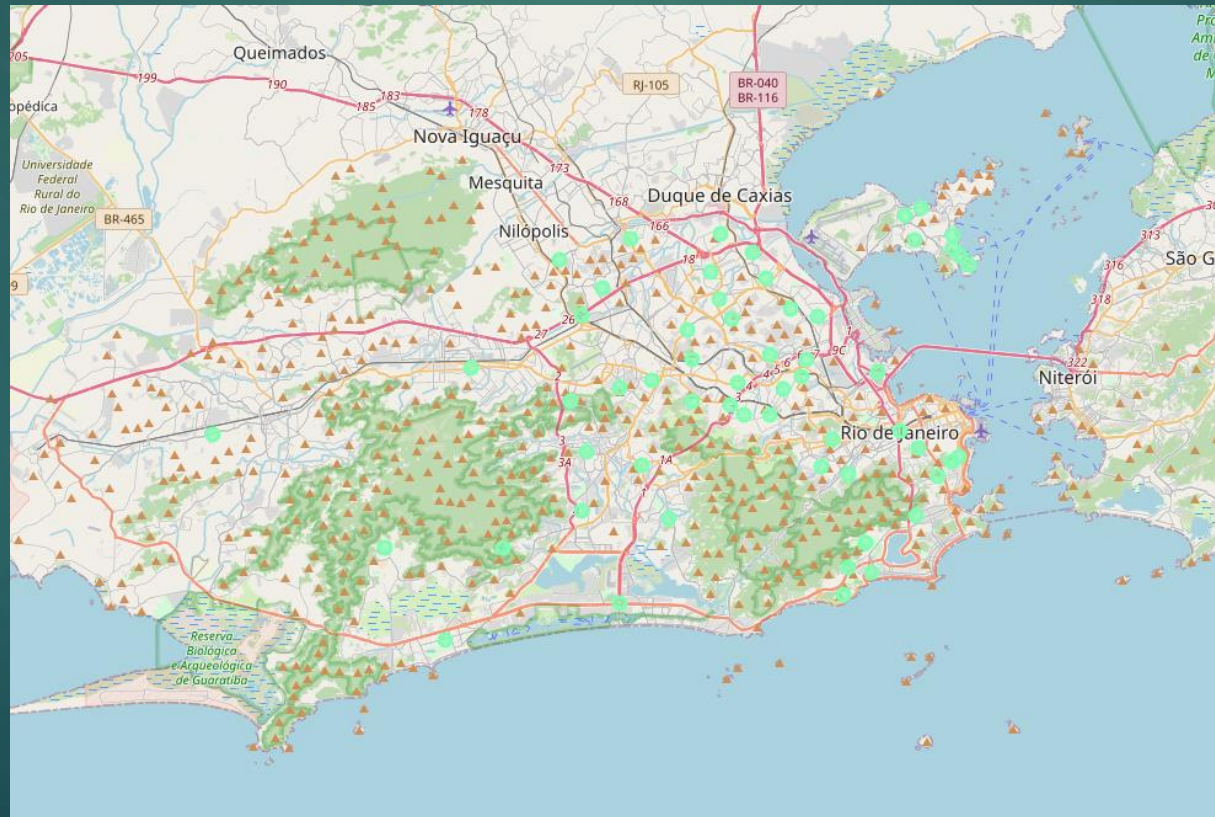


Checking Most Commons Venues in each Cluster:

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	0	Brazilian Restaurant	Restaurant	Pizza Place	Sandwich Place	Snack Place	Gym / Fitness Center	Gym	Food Truck	Burger Joint	Plaza
1	1	Bakery	Pizza Place	Beer Garden	Music Venue	Yoga Studio	Fast Food Restaurant	Film Studio	Fish & Chips Shop	Fish Market	Flea Market
2	2	Gym	Yoga Studio	Fried Chicken Joint	Farmers Market	Fast Food Restaurant	Film Studio	Fish & Chips Shop	Fish Market	Flea Market	Flower Shop
3	3	Bar	Bakery	Plaza	Burger Joint	Pizza Place	Brazilian Restaurant	Gym	Restaurant	Gym / Fitness Center	Snack Place
4	4	Beach	Yoga Studio	Farm	Fast Food Restaurant	Film Studio	Fish & Chips Shop	Fish Market	Flea Market	Flower Shop	Food

Results:

- We Checked that Neighbourhoods from Cluster 3 has more Columns equal to ones Origin Neighbourhood



Results:

Therefore, we were able to decrease the original Dataset from approximately 160 Neighbourhoods to just 55...

Well... Our cliente will have some trouble deciding were to live, but we were able to facilitate his life... Like we said... Changing is hard...