



HAVING AN ICE CREAM IN LISBON!

Applied Data Science Capstone (Coursera)

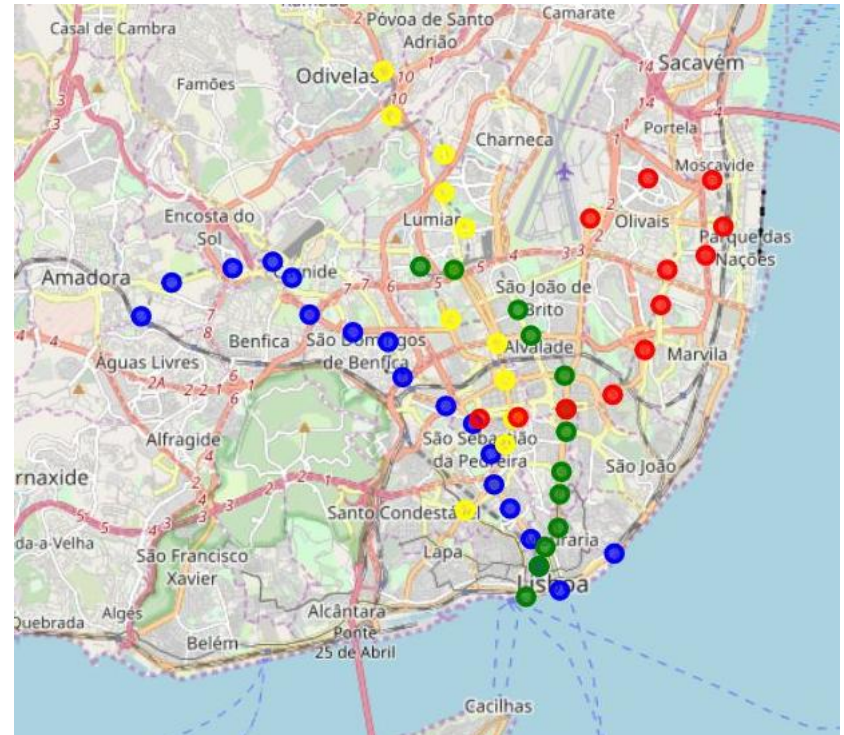
INTRODUCTION/BUSINESS PROBLEM

- In this project I tried to find what is the **best metro station** to stop if I want to go for an **ice cream** and then either enjoy the sun in a nice **outdoor space** or a instead go to a **museum**, in **Lisbon, Portugal**.
- Because I was limited in terms of FourSquare quota, I only checked the **red** and **green** lines.
- This would be of interest to any potential tourist that uses the metro in Lisbon or even a local that just wants to have a nice time!
- The best spot is chosen based on the variety and quantity of options available in each station.



DATA – LISBON METRO STATIONS

- Lisbon Metro has 4 lines (Green, Blue, Yellow and Red) and 50 stations, 6 of them being double stations for two lines:
 - Alameda (Red and Green Line)
 - Marques de Pombal (Blue and Yellow Line)
 - Campo Grande (Green and Yellow Line)
 - Baixa-Chiado (Blue and Green Line)
 - Sao Sebastiao (Blue and Red Line)
 - Saldanha (Red And Yellow Line)
- Because I may be limited in terms of FourSquare quota, I just looked at the **Red** and **Green** lines.



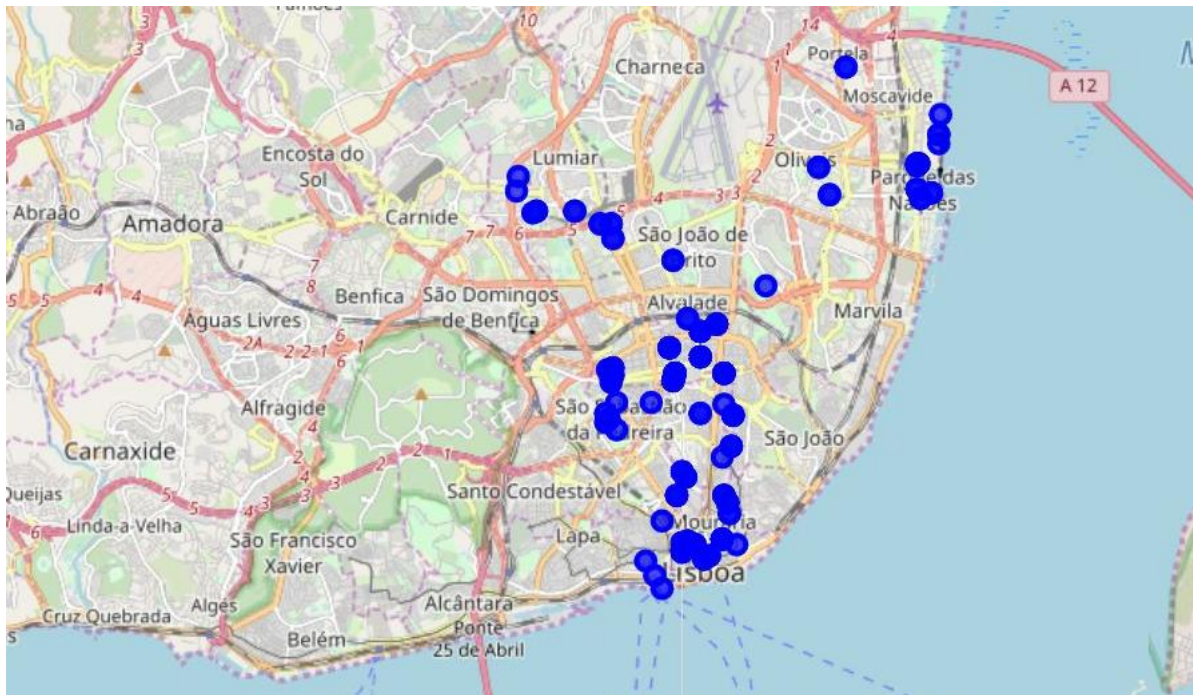
DATA - FINDING VENUES IN FOURSQUARE

- I was only interested in specific categories (from <https://developer.foursquare.com/docs/resources/categories>):
 - '4bf58dd8d48988d1c9941735' # **Ice Cream Shop**
 - '4bf58dd8d48988d165941735' # **Scenic Lookout**
 - '4bf58dd8d48988d15a941735' # **Garden**
 - '4bf58dd8d48988d163941735' # **Park**
 - '4bf58dd8d48988d1e2931735' # **Art Gallery**
 - '4bf58dd8d48988d190941735' # **History Museum**
 - '4bf58dd8d48988d18f941735' # **Art Museum**
 - '4fcee171983d5d06c3e9823' # **Aquarium**
 - '50aaa49e4b90af0d42d5de11' # **Castle**
 - '4bf58dd8d48988d191941735' # **Science Museum**
 - '4bf58dd8d48988d15b941735' # **Farm**
 - '4bf58dd8d48988d166941735' # **Sculpture Garden**
 - '56aa371be4b08b9a8d5734db' # **Amphitheater**
 - '4bf58dd8d48988d1e2941735' # **Beach**
 - '4bf58dd8d48988d181941735' # **Museum**



DATA - FINDING VENUES IN FOURSQUARE

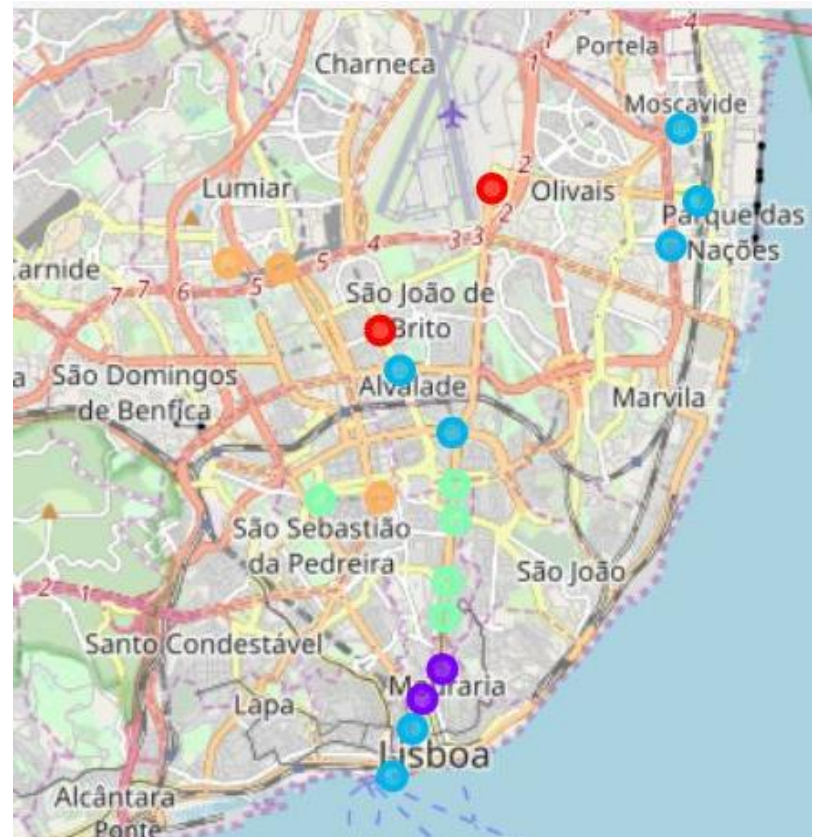
- I've found 138 venues within these categories that are within 1km of distance of the metro stations.



METHODOLOGY

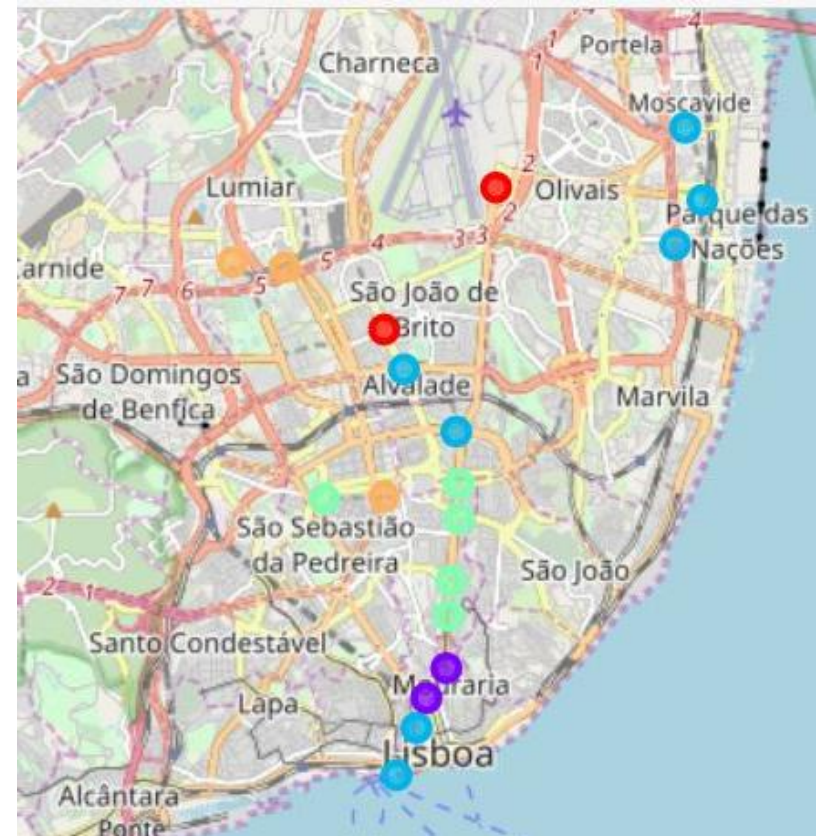
ANALYZING EACH METRO STATION/ /CREATING CLUSTERS OF METRO STATIONS

- I have used one hot encoding to create variables for each venue category, created subtotals for Ice Cream Shops, Museums and Outdoors and also the total of venues per station.
- I have considered only Metro Stations that have at least one ice cream shop in their area – this limited the dataset to 19 stations.
- I have used k -means to cluster the Metro Stations into 5 clusters.



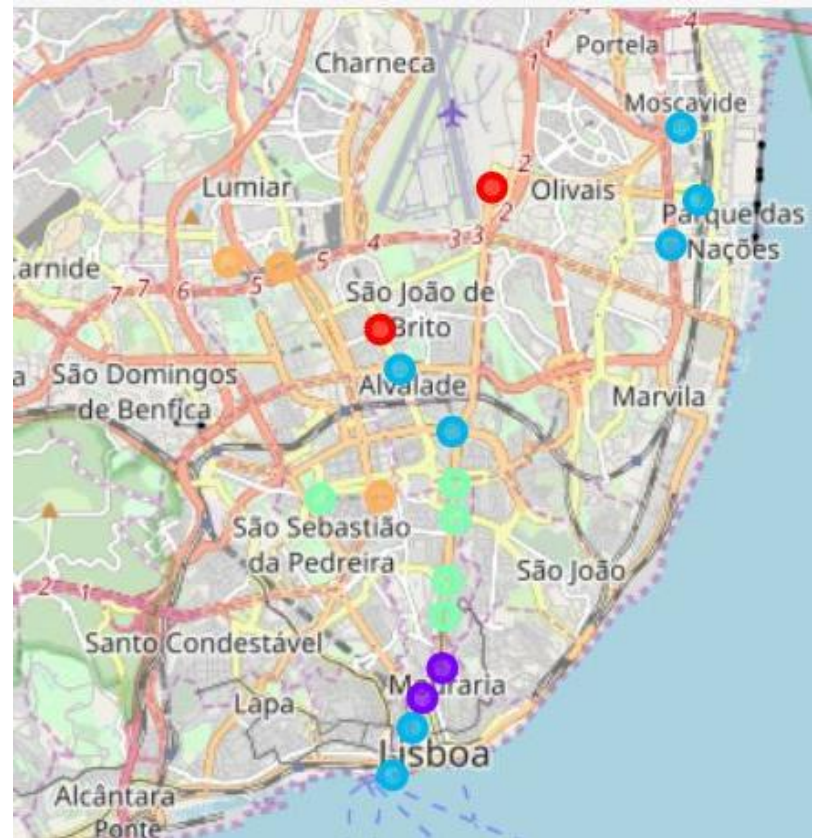
CLUSTER 1 - NOT A LOT TO DO... (RED)

- This cluster has two metro stations, **Aeroporto** and **Alvalade**, each with only 1 **Ice Cream Shop**. There are not a lot of venues around these metro stations. This is not a good choice.



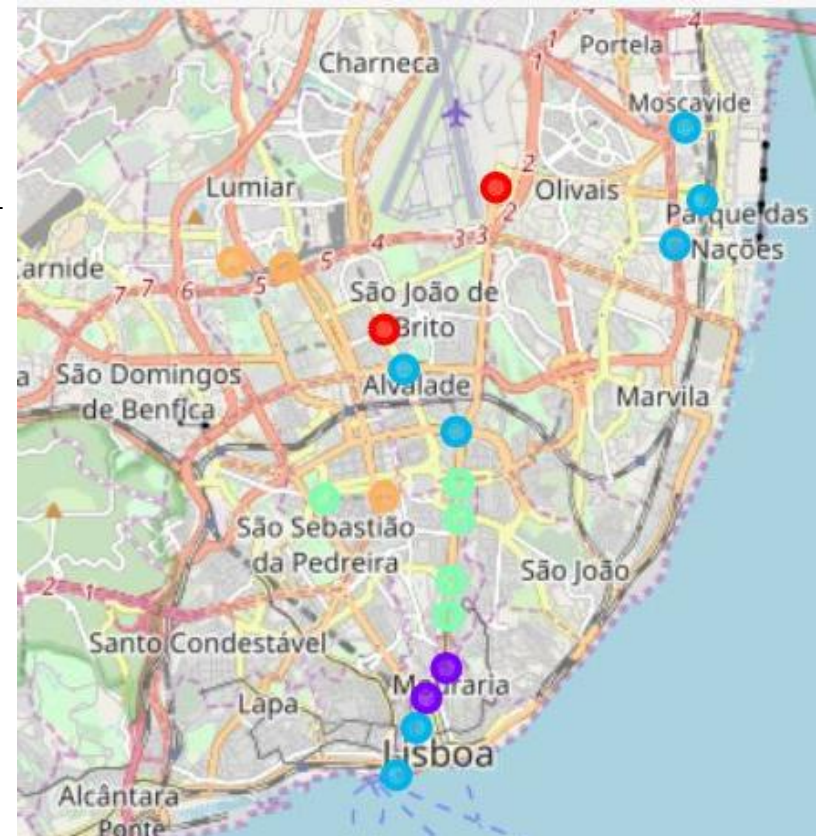
CLUSTER 2 - ICE CREAM AND THE CASTLE (PURPLE)

- This cluster has two metro stations, **Martim Moniz** and **Rossio**, each with at least 3 **Ice Cream Shops** and they are both close to the **Castle**. These two stations are the ones that have the **higher number of venues** closeby (12 and 11).
- Rossio has a bit more variety in terms of ice cream shops, and actually two of the shops are the same (these two metro stations are very close to each other).
- Other than the Castle, there are many Scenic Lookouts and Gardens in the area. Perfect for a sunny day!



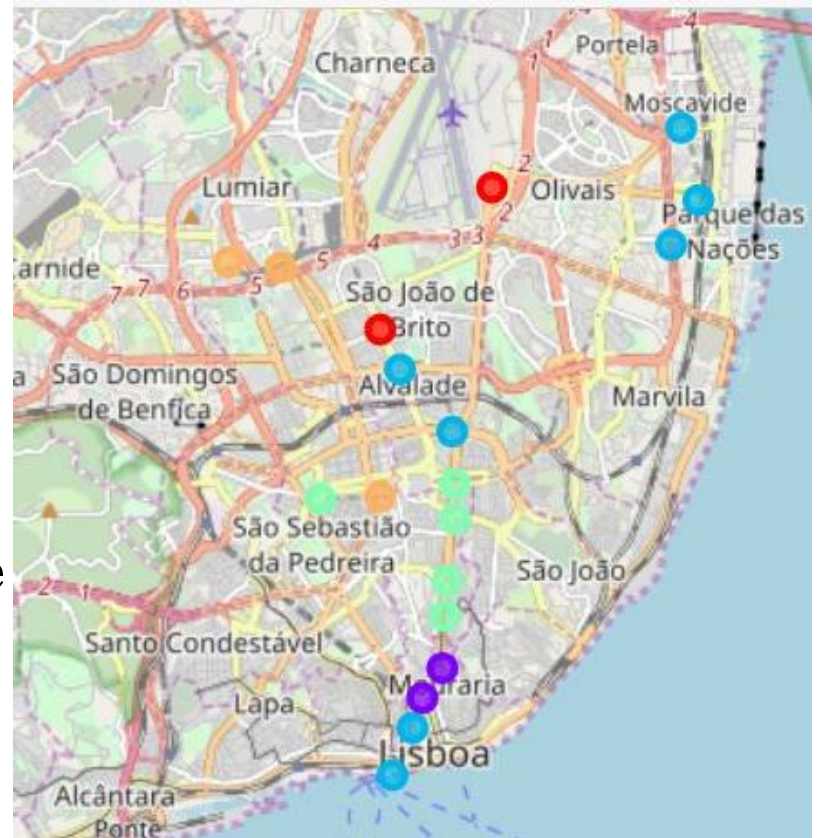
CLUSTER 3 - ICE CREAM (BLUE)

- Cluster three has 7 metro stations, **Areeiro**, **Baixa-Chiado**, **Cabo Ruivo**, **Cais do Sodre**, **Moscavide**, **Oriente** and **Roma**. There is a good variety of Ice Cream Shops, and a good mix of **Outdoors** and **Museums**.
- There are a few ice cream shops shared between Baixa-Chiado and Cais do Sodre. The same happens with Oriente, Moscavide and Cabo Ruivo.
- There is a mix of Gardens, Parks, Scenic Lookouts and also a Farm.
- We can visit History, Art or Science Museums and also the Aquarium.



CLUSTER 4 - OUTDOORS (GREEN)

- Cluster four has 5 metro stations, **Alameda**, **Anjos**, **Arroios**, **Intendente** and **Sao Sebastiao**. There is not a big variety in terms of Ice Cream Shops, but there is a **concentration of Outdoors**.
- Alameda and Arroios have a bit more variety in terms of Ice Cream Shops and two of the shops are the same (Arroios and Alameda are very close).
- There is a mix of Gardens and Parks, but also a beach and an amphitheatre!



CLUSTER 5 - MUSEUMS (ORANGE)

- Cluster five has 3 metro stations, **Campo Grande**, **Saldanha** and **Telheiras**. There is not a lot of variety in terms of Ice Cream Shops, but there is a **concentration of Museums** and some **Outdoor venues**.
- There is only one **ice cream shop** nearby.
- We can visit History or Art Museums.
- There is a mix of Gardens and Parks.

