coursera

CAPSTONE PROJECT
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IBM

1. Introduction:

- The problem to be solved.

2. Data Section:

- Data requirements and Sources.

3. Methodology section:

- Data processing, data analysis and/or inferential statistical testing performed, and/or machine learnings used.

4. Results section:

- Presentation of the results/finding.

5. Discussion section:

- Observations & recommendations

6. Conclusion section:

- Answers & conclusions.

Hello everyone,

My name is Filipe! Welcome to Oporto, my sweet hometown.

Oporto is a historic place.

It is a charismatic city, with proud residents.

Filled with beautiful monuments and breathtaking landscapes, as well as home of one of the most famous football clubs in the world (FC Porto), it is not surprising that the "undefeated city " is a popular destination for tourists worldwide.

- The problem to be solved:
Given the growing wave of tourism in Oporto, a hotel building group is interested in opening a hotel in the city. They want to know what would be the best place in the city to open a hotel.

- **About Oporto:**
Oporto is made up of 15 locations:

Aldoar	**Massarelos**
Bonfim	**Miragaia**
Campanhã	**Nevogilde**
Cedofeita	**Paranhos**
Foz do Douro	**Ramalde**
Lordelo do Ouro	**Santo Ildefonso**
São Nicolau	**Sé**
Vitória	

- **What do we need?**
We need to choose the best Locality in Oporto to
Build a hotel.

- **The ideal place to open a city hotel should take into account the following characteristics:**
  - Low amount of competition (other hotels)
  - Presence of several nearby restaurants
  - Near nightlife establishments
  - Near the city's monuments and other art and leisure sources
  - Easy subway access for tourists to move around the city in peace

- **Who would be interested in this project (Target Audience):**
  - Hotel investors
  - Tourists
  - Traders.
  - Residents

- The data we need:
The localities of Oporto and their coordinates (latitude, longitude).

- Venues of the localities we need from Foursquare:
- Hotels
- Restaurants
- Nightlife establishments
- Art and Leisure Sources
- Subway stations

1) I collected, for each locality, all hotels, restaurants, night establishments, art and leisure places and subway stations venues data from Foursquare.

2) Then, i computed, for each locality, the sums of the hotels, restaurants, night establishments, art and leisure places and subway stations

3) For each category, a weight (or penalty) has been defined according to what we think is important for a hotel to be successful:

Category	Weight
Hotels	-1.0
Restaurants	1.0
Night Establishments	1.0
Sybway stations	1.5
Art and leisure	1.5

4) At last, i computed a score for each locality as the weighted sum of the number of venues in each of the categories above.
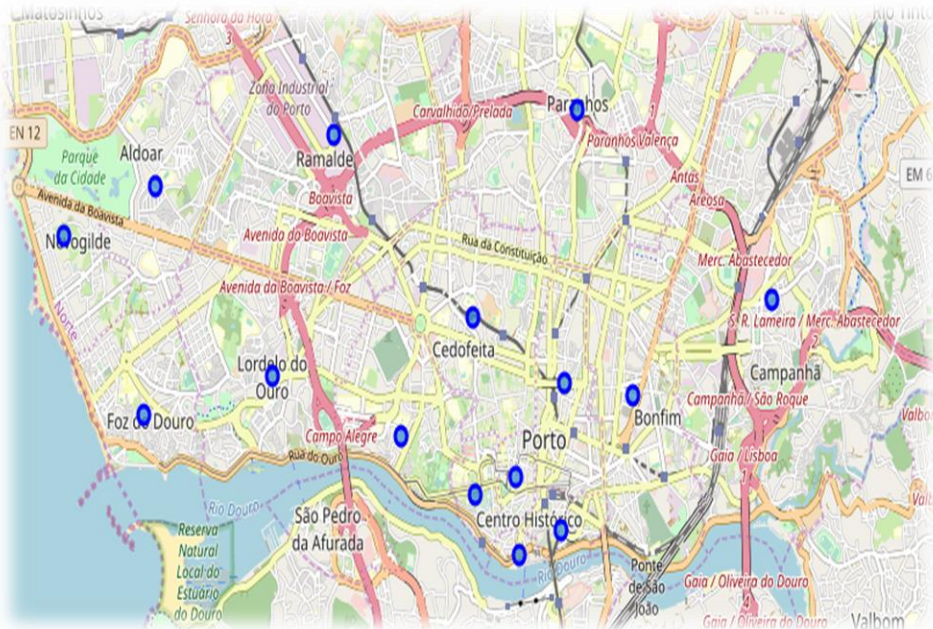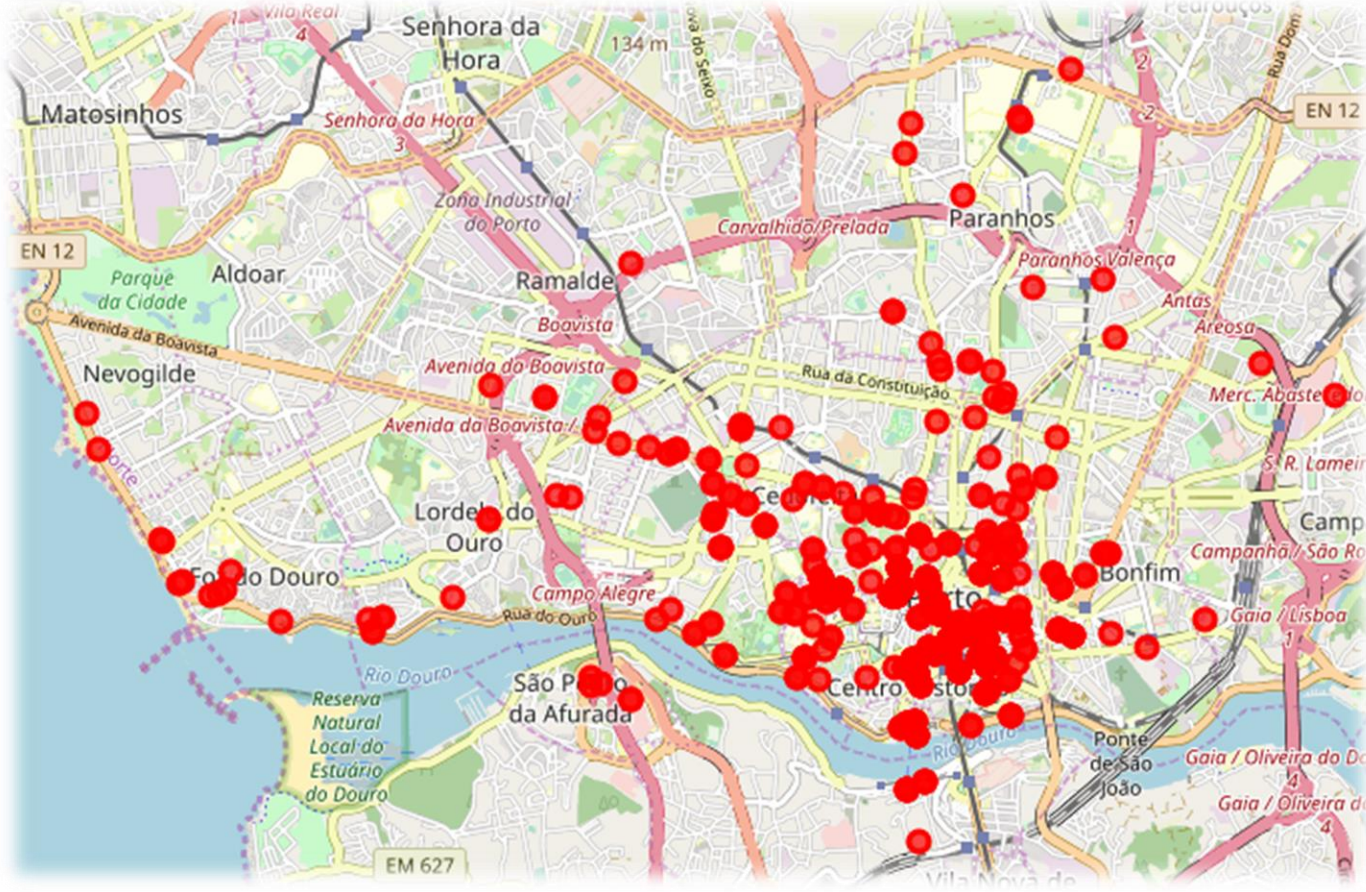
	Localidade	Latitude	Longitude
0	Aldoar	41.167935	-8.668306
1	Bonfim	41.152711	-8.597608
2	Campanhã	41.159674	-8.576985
3	Cedofeita	41.158350	-8.621314
4	Foz do Douro	41.151305	-8.670185
5	Lordelo do Ouro	41.154044	-8.651083
6	Massarelos	41.149678	-8.631936
7	Miragaia	41.145485	-8.620929
8	Nevogilde	41.164363	-8.681921
9	Paranhos	41.173513	-8.605900
10	Ramalde	41.171649	-8.642028
11	Santo Ildefonso	41.153628	-8.607705
12	São Nicolau	41.141013	-8.614407
13	Sé	41.142854	-8.608236
14	Vitória	41.146769	-8.614988
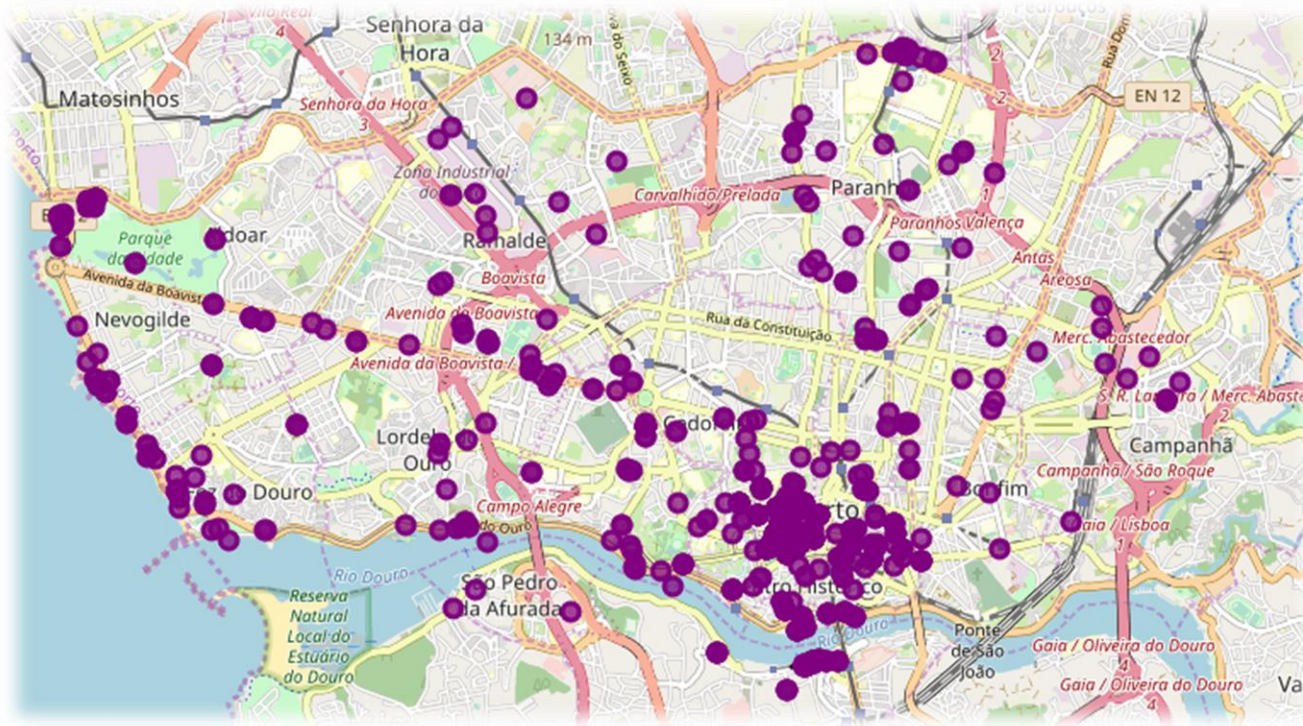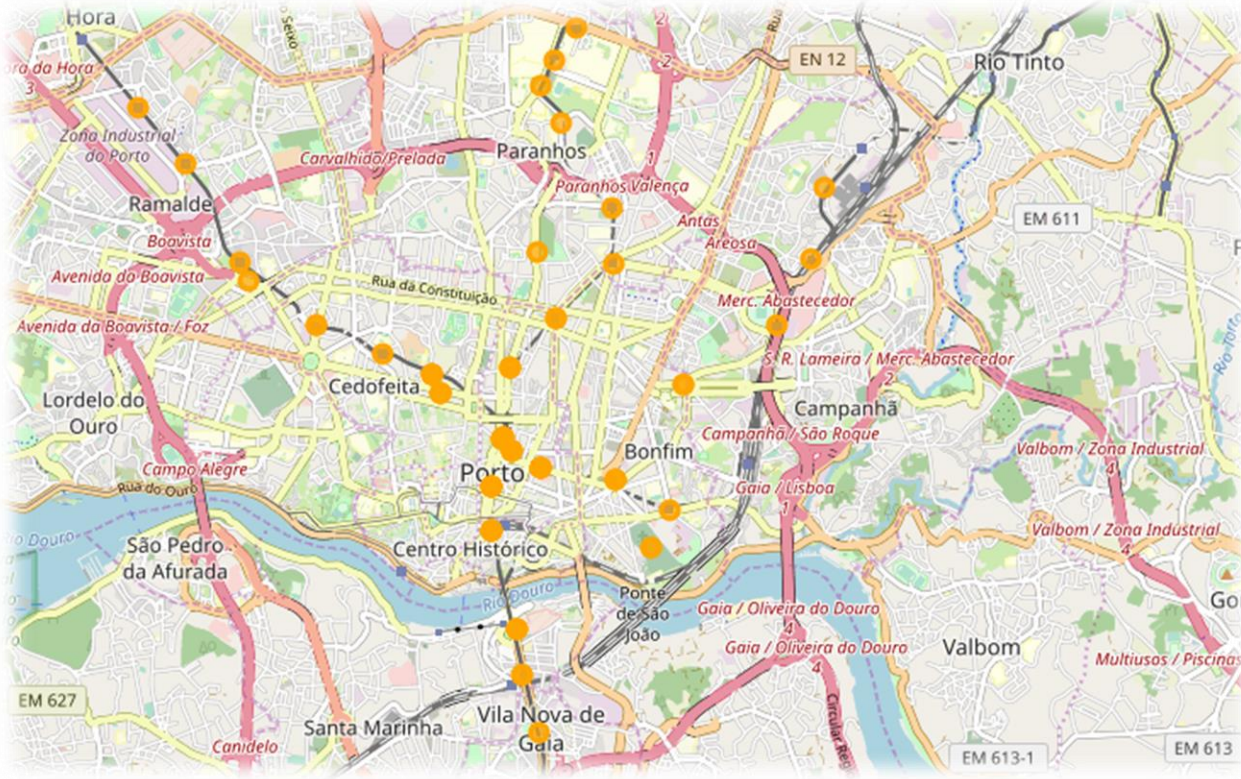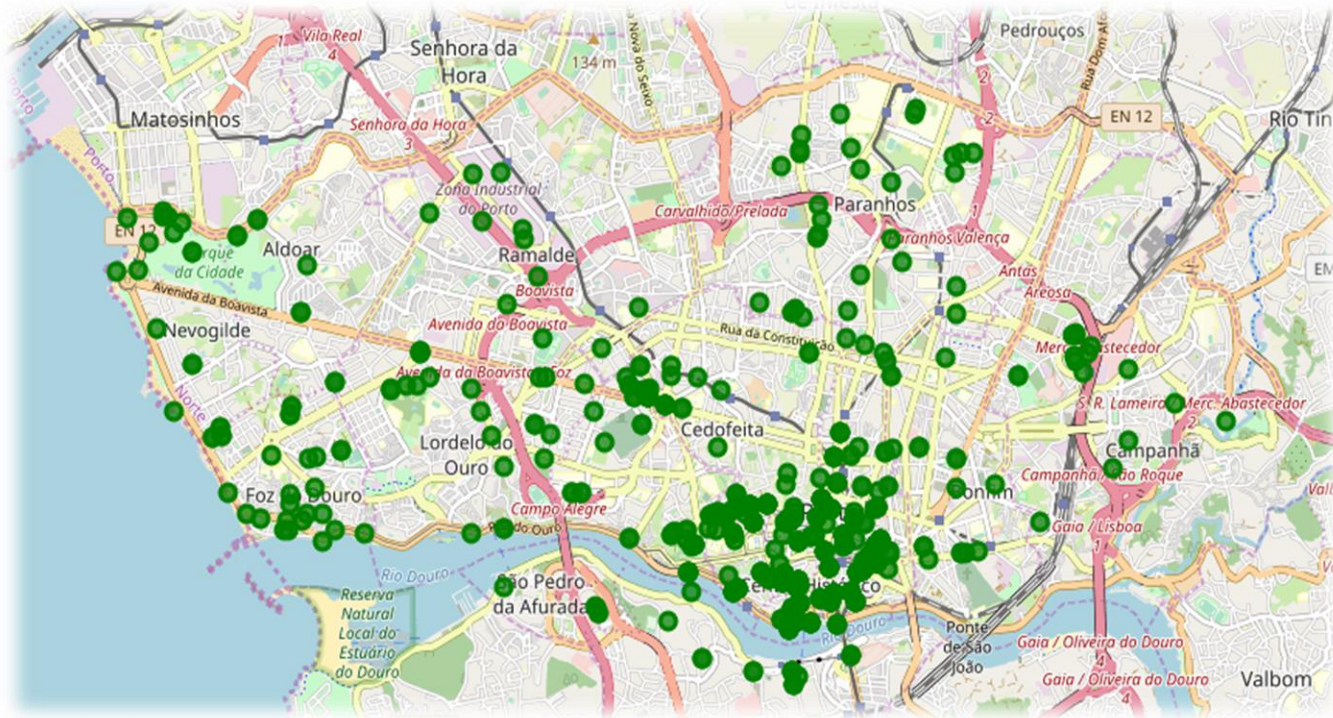
	Localidade	Latitude	Longitude	Hotel	Restaurants	Nocturn Life	Art and Leisure	Subway
0	Aldoar	41.167935	-8.668306	0.0	50.0	10.0	12.0	0.0
1	Bonfim	41.152711	-8.597608	50.0	50.0	50.0	47.0	10.0
2	Campanhã	41.159674	-8.576985	2.0	50.0	12.0	14.0	4.0
3	Cedofeita	41.158350	-8.621314	50.0	50.0	49.0	47.0	5.0
4	Foz do Douro	41.151305	-8.670185	12.0	50.0	26.0	25.0	0.0
5	Lordelo do Ouro	41.154044	-8.651083	12.0	50.0	33.0	22.0	0.0
6	Massarelos	41.149678	-8.631936	49.0	50.0	50.0	48.0	1.0
7	Miragaia	41.145485	-8.620929	50.0	50.0	50.0	48.0	3.0
8	Nevogilde	41.164363	-8.681921	2.0	50.0	39.0	19.0	0.0
9	Paranhos	41.173513	-8.605900	18.0	50.0	48.0	28.0	7.0
10	Ramalde	41.171649	-8.642028	3.0	50.0	19.0	10.0	4.0
11	Santo Ildefonso	41.153628	-8.607705	50.0	50.0	50.0	48.0	11.0
12	São Nicolau	41.141013	-8.614407	50.0	50.0	50.0	48.0	5.0
13	Sé	41.142854	-8.608236	50.0	50.0	50.0	48.0	8.0
14	Vitória	41.146769	-8.614988	50.0	50.0	50.0	48.0	9.0

	Localidade	Score
11	Santo Ildefonso	138.5
1	Bonfim	135.5
14	Vitória	135.5
13	Sé	134.0
9	Paranhos	132.5
12	São Nicolau	129.5
3	Cedofeita	127.0
7	Miragaia	126.5
6	Massarelos	124.5
8	Nevogilde	115.5
5	Lordelo do Ouro	104.0
4	Foz do Douro	101.5
2	Campanhã	87.0
10	Ramalde	87.0
0	Aldoar	78.0

The locality with best score is "Santo Ildefonso" with 138.5 pts.

With this result we maximize the number of potential tourists who will visit the hotels.
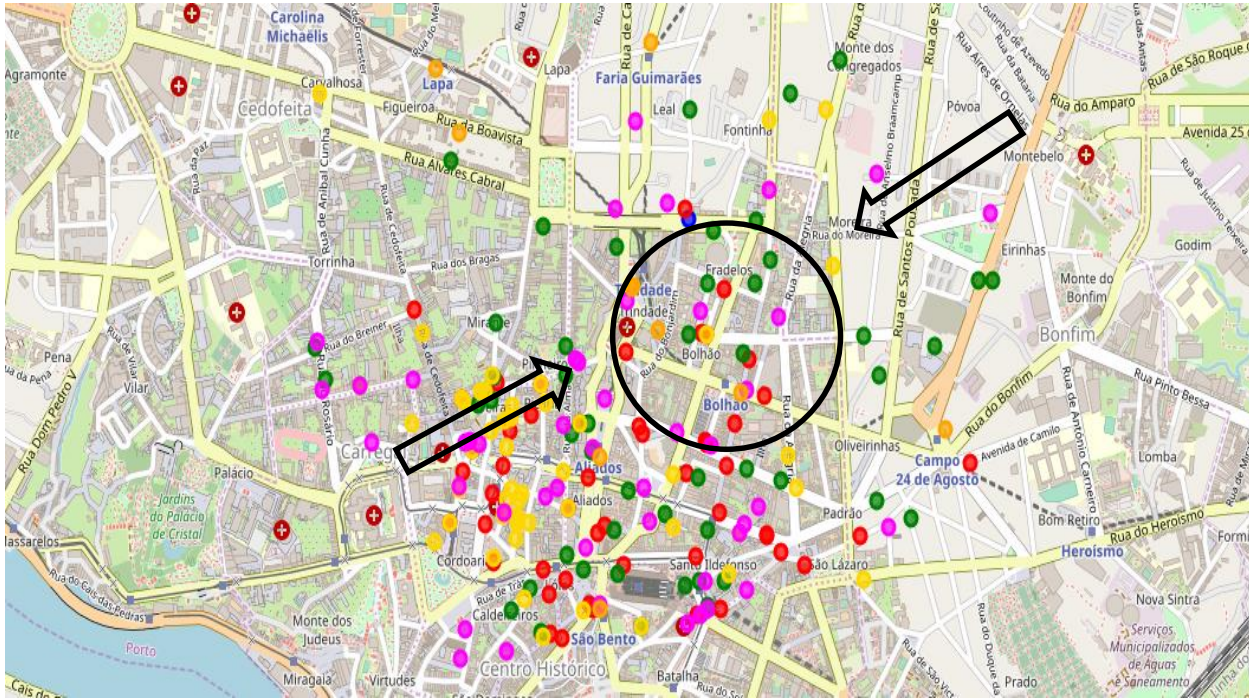
Red - Restaurants
Green - Hotels
Gold - Night Establishments
Fuchsia - Art and Leisure
Orange - Subway stations

The new hotel should be located inside the circle.

THANK YOU FOR YOUR ATTENTION.