

Capstone Project

Rome Caput Mundi...

Rome! That's a wonderful city with a lot of... air pollution

Introduction

- ▶ The main goal is to select the neighborhood with the less concentration of air pollution in Rome where to do an "aperitivo" and share a nice talk with friends.



Problem

- ▶ **Air pollution varies day-by-day and zone-by-zone** depending of:
 - ▶ The period of the year;
 - ▶ The number of automobiles;
 - ▶ Houses heating;
 - ▶ Farm animals;
 - ▶ So on.



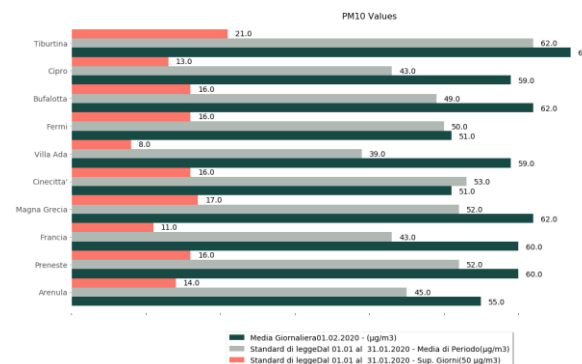
People don't know where is the cleanest air in the city, so they prefer to remain home because the don't know where to go.

Data acquisition

- ▶ **PM10 values**: Real-time experimental measures of the PM10 particles scraped from the official ARPALAZIO website
- ▶ **Latitude and Longitude values 1**: Geographical coordinates (lat and lon) of the control units extracted from an official pdf document on the ARPALAZIO website
- ▶ **Neighborhoods**: Getting the main neighborhoods of Rome scraping a wikipedia page
- ▶ **Latitude and Longitude values 2**: Geographical coordinates of neighborhoods obtained through geocoder
- ▶ **Venues**: Names and statistical data of bar and activities obtained from Foursquare services

Methodology

- Collecting informations and data
- Cleaning data
- Processing data
- Display results

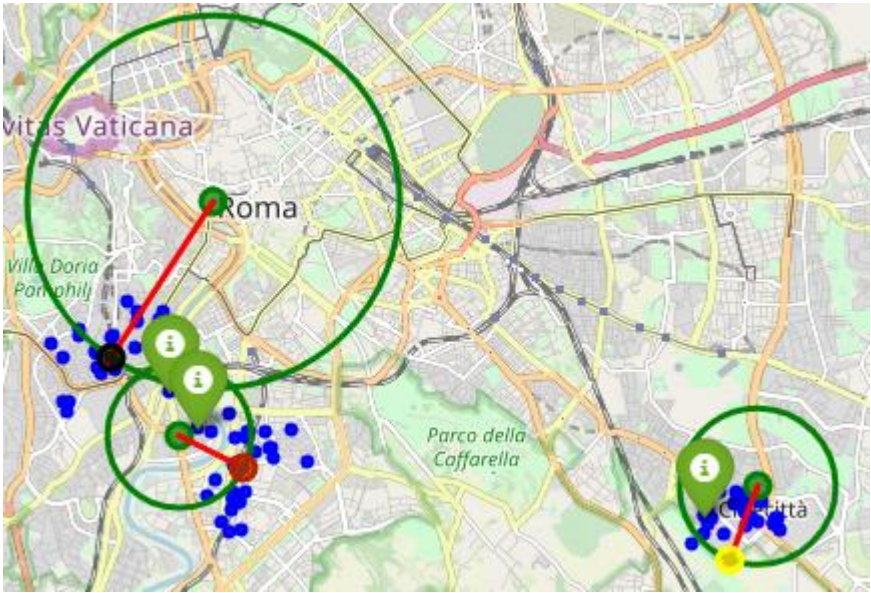


	Provincia	Stazione	Media Giornaliera 02.02.2020 - (µg/m3)	Standard di legge Dal 01.01 al 01.02.2020 - Media di Periodo (µg/m3)	Standard di legge Dal 01.01 al 01.02.2020 - Sup. Giorni (50 µg/m3)
0	Frosinone	Alatri	29.0	52.0	21.0
1	Frosinone	Anagni	13.0	28.0	1.0
2	Frosinone	Cassino	76.0	99.0	27.0
3	Frosinone	Ceccano	NaN	110.0	29.0
4	Frosinone	Ferentino	30.0	58.0	22.0

Results

From the map it is possible to see that the cluster position corresponds to the exact position of the chosen neighborhoods (the less polluted).

This means that when Foursquare returns those commercial venues, it does using a cluster logic maybe based on a less/mean distance from the specified point of interest.



	index	Quartiere	Latitudine quartiere	Longitudine quartiere	Attivita'	Latitudine attiv.	Longitudine attiv.	Categoria	Distance:0 (Arenula)	Distance:1 (Cinecittà')	Distance:2 (Fermi)
0	59	Appio Claudio	41.84835	12.56391	La Dolce Vita	41.853951	12.559284	Lounge	8253.855618	882.775751	7519.797217
1	22	Gianicolense	41.87422	12.45766	Tiger	41.869838	12.467817	Furniture / Home Store	2760.663606	8459.307621	643.404463
2	80	Ostiense	41.86001	12.48047	Osteria Mavi	41.865330	12.472500	Italian Restaurant	3199.010922	8008.602520	276.412515