Hospitals in Italy

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1 Introduction

During the Covid-19 epidemic an important aspect that many people might consider when choosing a city to live in is the number of hospitals. In the event of a major worsening of the epidemic, a better equipped city as a number of places in intensive care could prove essential to better manage the situation and ensure short lockdown periods.
In this project, I am going to take five Italian cities of more or less the same size and check which is the best in case of a worsening of the epidemic.
All data regarding the number and location of hospitals in the city will be taken from the Foursquare API

2 Data Section

I will use the FourSquare API to collect data about locations of Pizza stores in five Italian cities which are: Bologna, Brescia, Palermo, Parma, Modena.

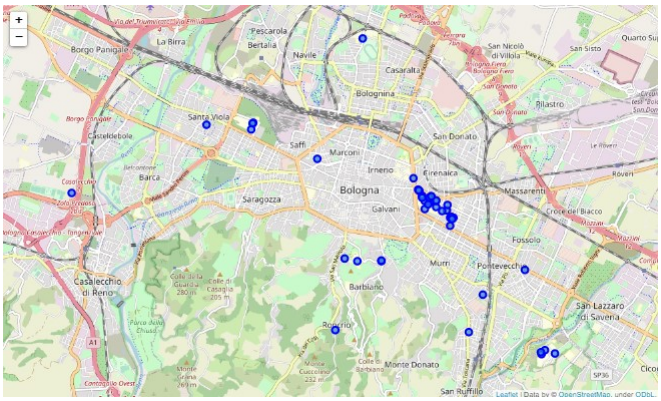
3 Methodology

In the first part of this project I will download from Foursquare API the data about the hospitals in the selected cities and put them on a map. Afterwards I will rank the number of hospitals per city, but this will not be the final goal since what really interests me is not the number of hospitals in a city but the density of hospitals in the city. So, in the second part, I am going to study this density, removing one outlier per city to be sure of the result.

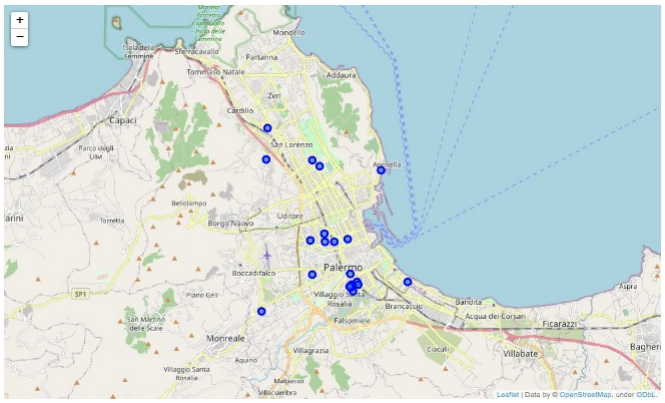
4 Project: Step 1

Number of hospitals per city according to Foursquare:

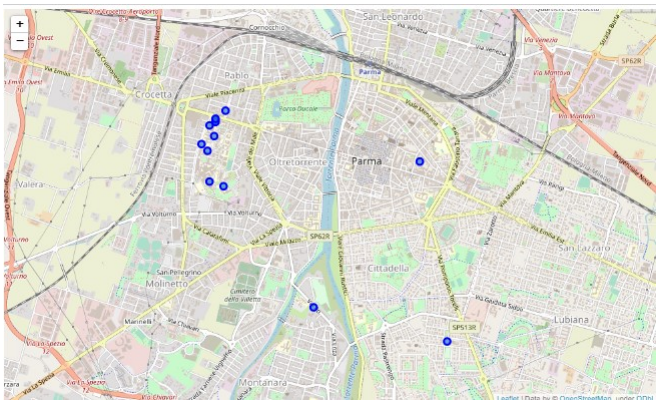
1. Bologna: 49



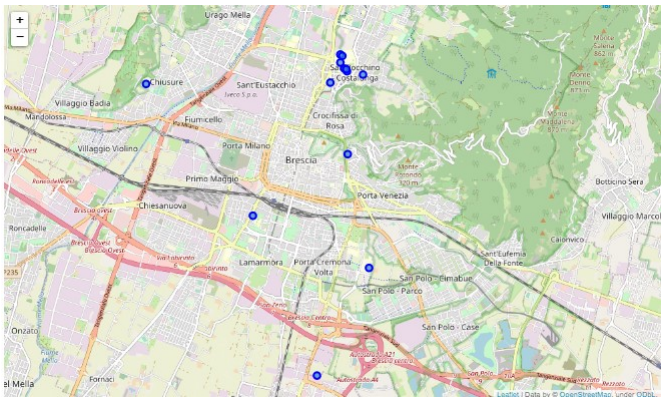
2. Palermo: 21



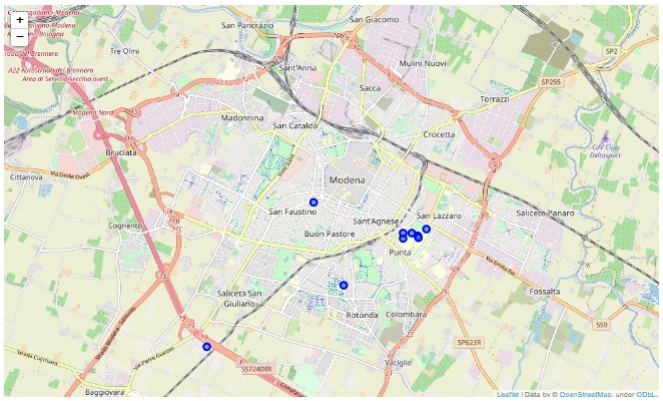
3. Parma: 14



4. Brescia: 13



5. Modena: 9



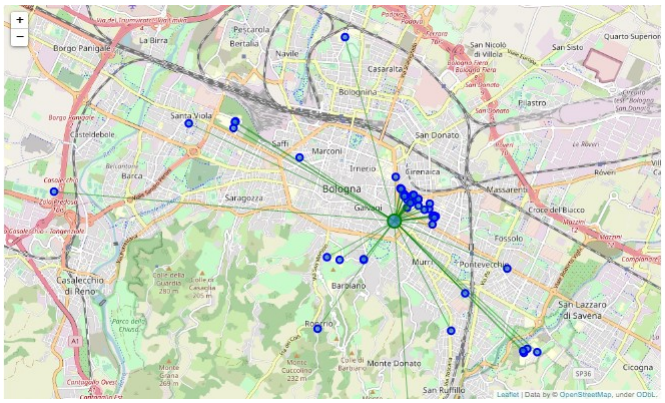
5 Calculate the density of hospitals per city

Since the absolute number of hospitals could be misleading as a given, since a larger city will certainly have a higher number of hospitals, I will try to analyse which city is the most densely "inhabited" of hospitals.
For this I will use some basic statistics. I will get the mean location of the hospitals which should be near to most of them if they are really dense or far if not. Next I will take the average of the distance of the venues to the mean coordinates
So, in the next phase we calculate the mean coordinate and the mean distance to mean coordinate (MDMC). We represent the mean coordinate with a big green circle and distances with green lines

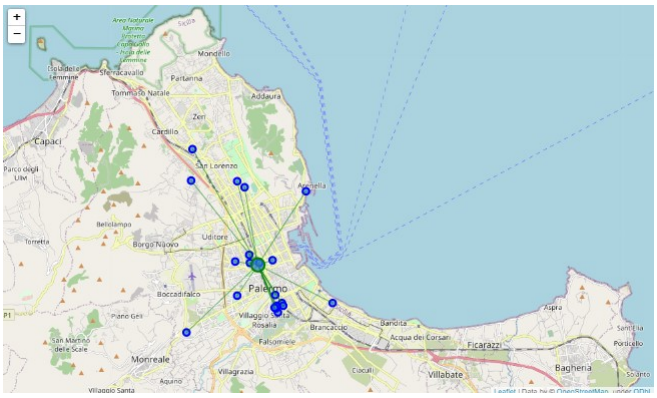
6 Project: Step 1

Number of hospitals per city according to Foursquare:

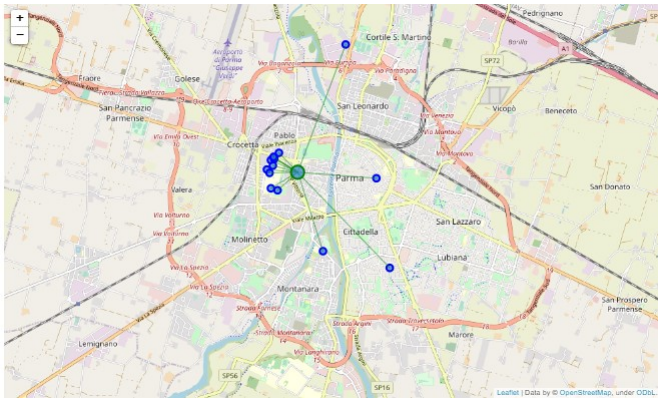
1. Bologna: 0.0188



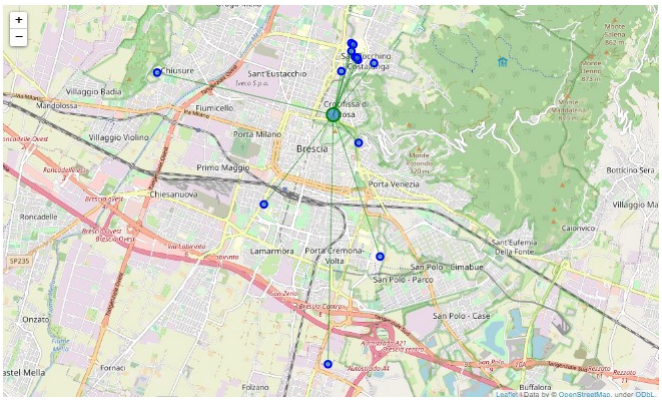
2. Palermo: 0.0238



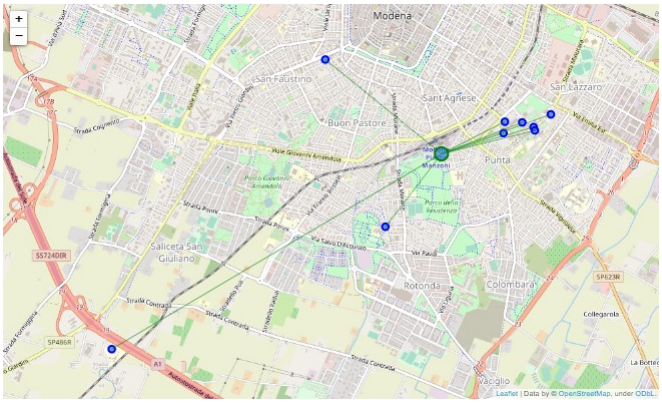
3. Parma: 0.0114



4. Brescia: 0.0191



5. Modena: 0.0155



7 Discussion

One thing that can be noticed is the presence of hospitals on the farthest outskirts of the city. This could alter the results. So let's try to remove this possible outlier.

At the moment, from the results obtained we can see that the most "densely populated" city in terms of hospitals is Parma.
The new standing says:

1. **Parma**: 0.0100
2. Modena: 0.0117
3. Brescia: 0.0168
4. Bologna: 0.0173
5. Palermo: 0.222

8 Conclusions

We can note that, despite the removal of a possible outlier from the results and despite the fact that the ranking has changed slightly, the city that can still be relied on for the presence of hospitals is still **Parma**.