

The Battle of Neighborhoods



Source image: <https://it.wikivoyage.org/wiki/Roma>

Visit to Rome

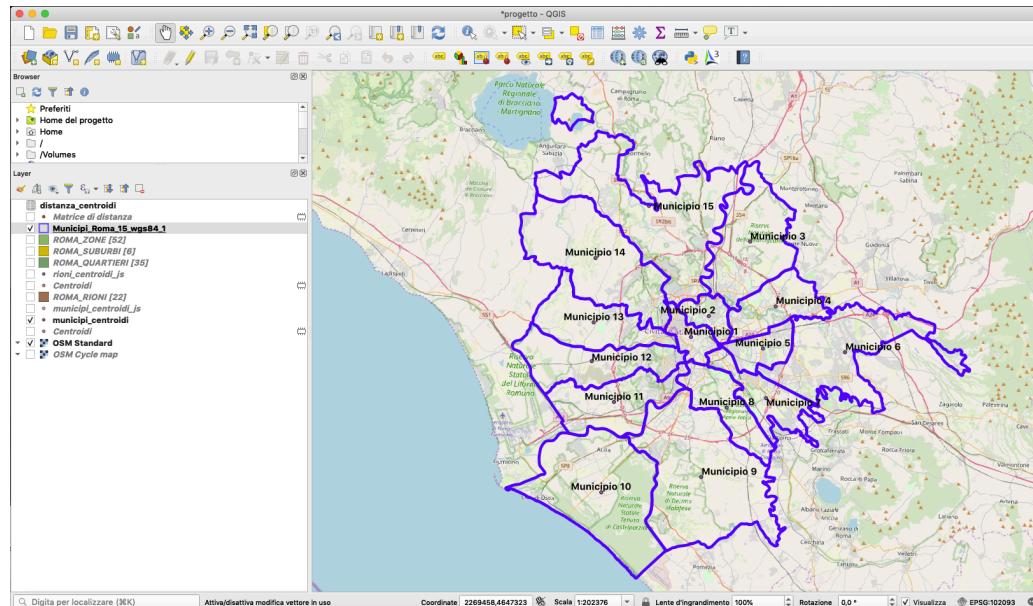
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Introduction

- Rome is one of the most interesting tourist destinations in the world, due to its immense artistic and cultural heritage
- In order plan a travel in Rome, and to decide where it is better to reserve a hotel, it is important to evaluate where different interesting venues are located
- Beside a global analysis about venues, I would like to focus my analysis on both main monuments and Italian restaurants

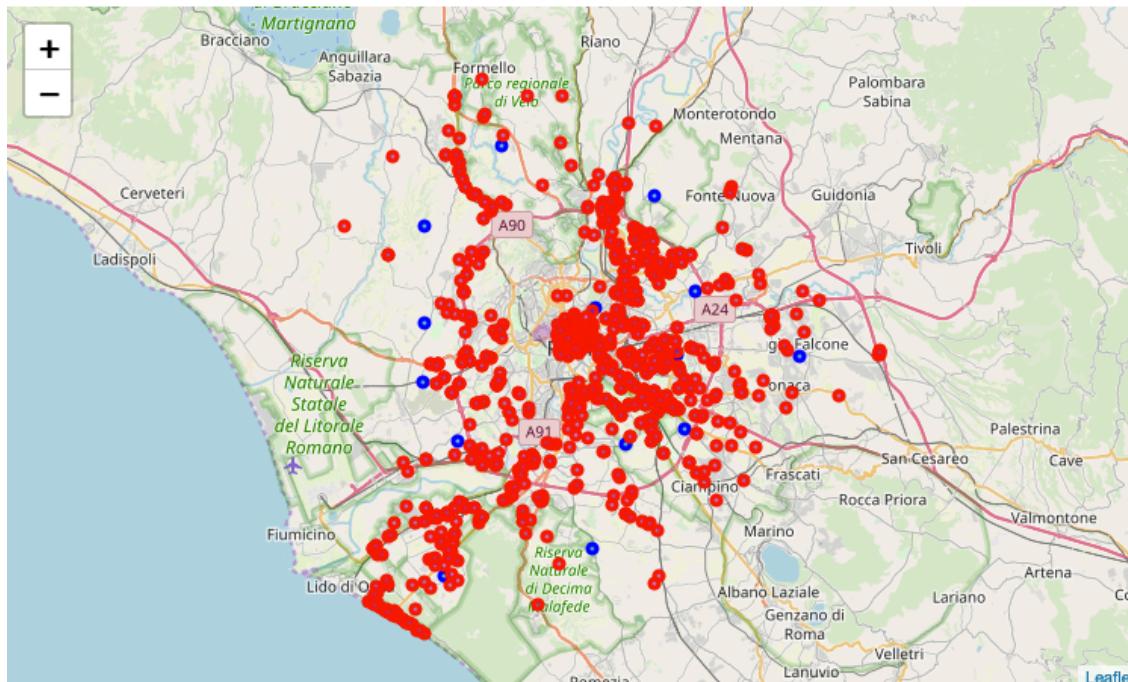
Data - Rome's neighborhoods

- Data from the Italian [web portal of Open Data](#): "Municipi di Roma"
- I downloaded the shape file elaborated it using [QGIS](#)
- The resulting data is available in a [json file](#)



Data - Rome's venues

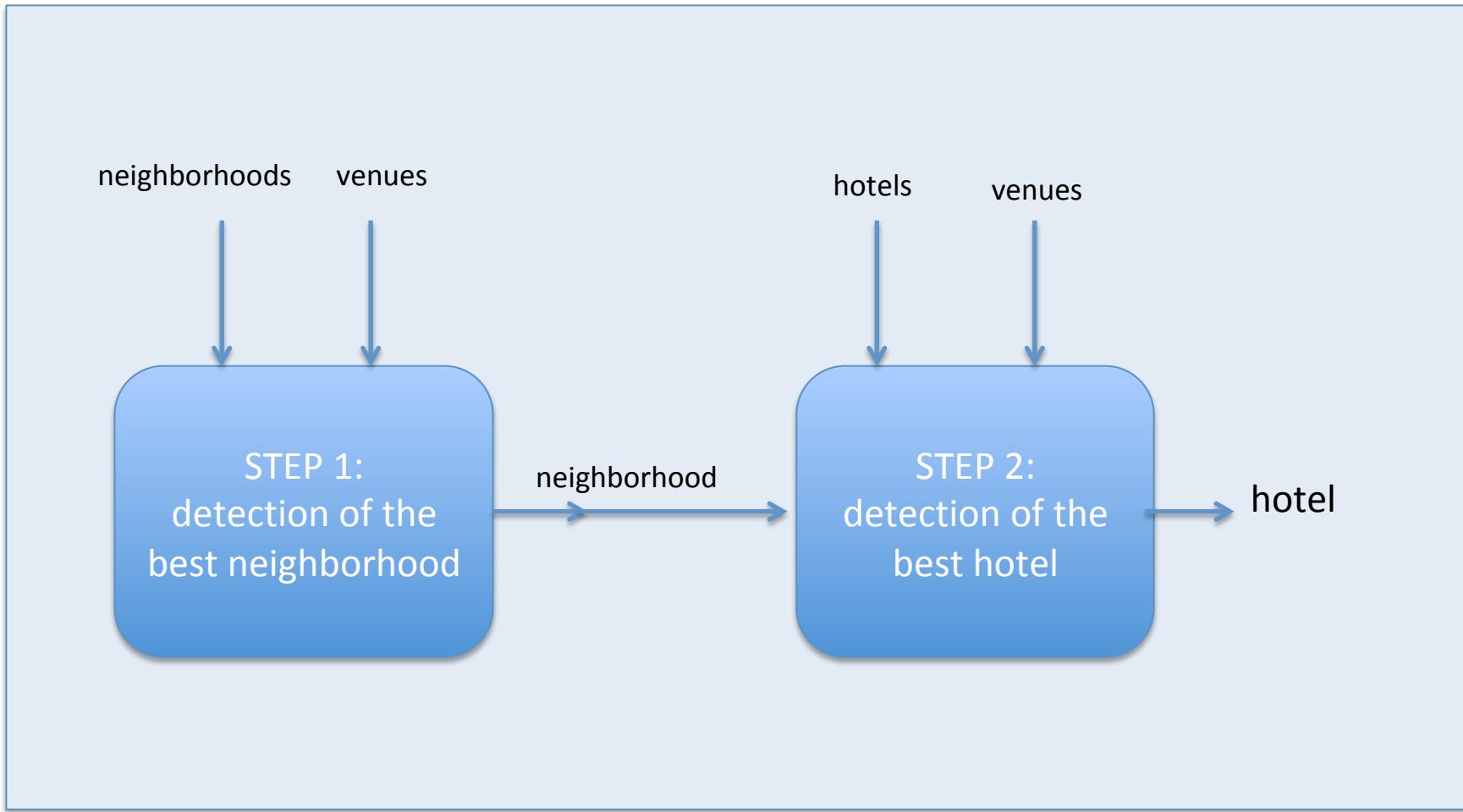
- Data from Foursquare, available through the Foursquare API



Legend:

- neighborhood
- venue

Results: 1st step analysis



Two-step methodology

- **STEP 1. Detection of the best neighbourhood**
 - for each neighbourhood's centroid, by Foursquare, a venue "explore" allows us to obtain the venues
 - after a look to data, a clustering of neighbours allows one to detect the neighbours that better satisfy specific requests
- **STEP 2. Detection of the best hotel(s)**
 - for the selected neighbourhood, by Foursquare, a venue "explore" allows one to obtain the hotels (categoryId='4bf58dd8d48988d1fa931735')
 - for each hotel, by Foursquare, a venue "explore" allows us to obtain the venues
 - after a look to data, a clustering of hotels allows one to detect one or more hotels that satisfy specific requests

Results: 1st step analysis - 1

- Each neighborhood has different kind of venues
- Most frequent and interesting are Italian restaurants, pizza places, historical places, and monuments

	Neighborhood	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	Municipio 1	Plaza	Ice Cream Shop	Historic Site	Italian Restaurant	Sandwich Place	Wine Bar	Church	Fountain	Monument / Landmark	Pizza Place
1	Municipio 10	Italian Restaurant	Beach	Seafood Restaurant	Ice Cream Shop	Fast Food Restaurant	Historic Site	Park	Pizza Place	Restaurant	Campground
2	Municipio 11	Italian Restaurant	Pizza Place	Hotel	Café	Park	Pool	Ice Cream Shop	Fast Food Restaurant	Gym / Fitness Center	Steakhouse
3	Municipio 12	Italian Restaurant	Hotel	Supermarket	Electronics Store	American Restaurant	Event Space	Sandwich Place	Pizza Place	Park	Department Store
4	Municipio 13	Italian Restaurant	Café	Department Store	Hotel	Sandwich Place	Furniture / Home Store	Steakhouse	Supermarket	Cafeteria	Gym / Fitness Center
5	Municipio 14	Italian Restaurant	Hotel	Pub	Asian Restaurant	Pool	Supermarket	Deli / Bodega	Restaurant	Clothing Store	Electronics Store
6	Municipio 15	Italian Restaurant	Gym / Fitness Center	Hotel	Café	Supermarket	Restaurant	Pub	Asian Restaurant	BBQ Joint	Pool
7	Municipio 2	Plaza	Ice Cream Shop	Hotel	Historic Site	Monument / Landmark	Sandwich Place	Art Museum	Italian Restaurant	Pizza Place	History Museum
8	Municipio 3	Italian Restaurant	Pizza Place	Café	Steakhouse	Gym / Fitness Center	Hotel	Grocery Store	Supermarket	Electronics Store	Clothing Store
9	Municipio 4	Italian Restaurant	Pizza Place	Café	Ice Cream Shop	Gastropub	Restaurant	Nightclub	Park	Gym / Fitness Center	Beer Garden
10	Municipio 5	Pizza Place	Ice Cream Shop	Park	Italian Restaurant	Hotel	Cocktail Bar	Café	Dessert Shop	Gastropub	Gym / Fitness Center
11	Municipio 6	Clothing Store	Italian Restaurant	Fast Food Restaurant	Café	Rest Area	Electronics Store	Shopping Mall	Discount Store	Restaurant	Ice Cream Shop
12	Municipio 7	Italian Restaurant	Pizza Place	Park	Café	Ice Cream Shop	Historic Site	Wine Bar	Hotel	Burger Joint	Gym
13	Municipio 8	Pizza Place	Park	Café	Historic Site	Italian Restaurant	Ice Cream Shop	Pub	Bakery	Hotel	Kebab Restaurant
14	Municipio 9	Italian Restaurant	Hotel	Soccer Field	Farm	Café	Pizza Place	Rock Club	Fast Food Restaurant	Food	Food Court

Results: 1st step analysis - 2

- Clustering using k-Means with k=5



Results: 1st step analysis - 3

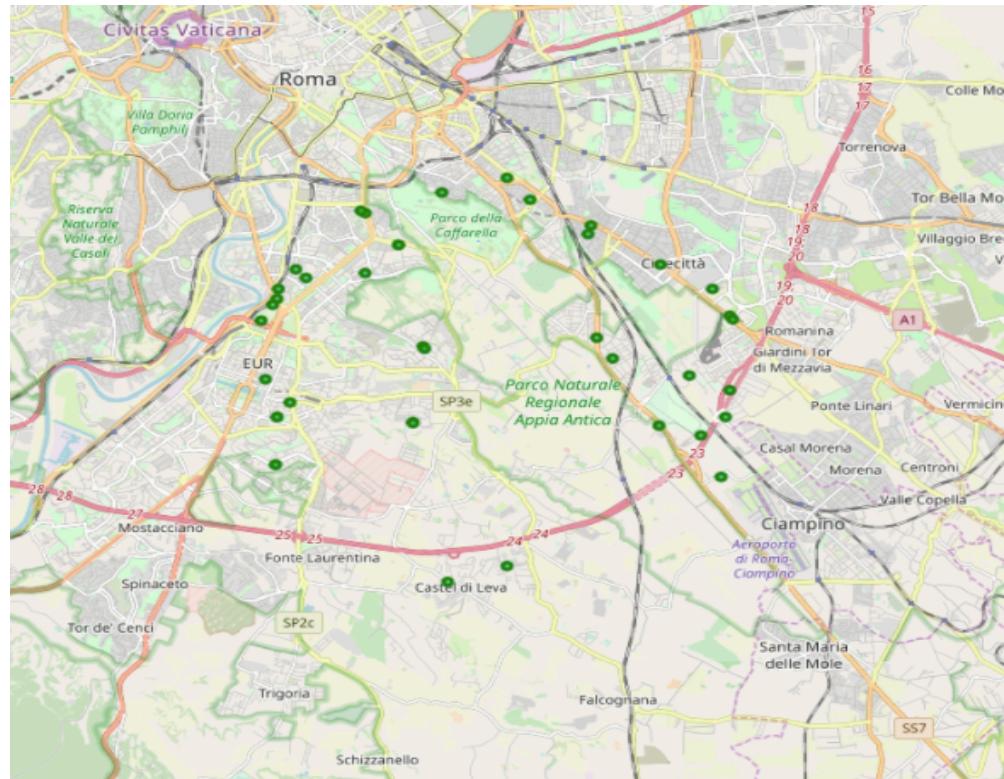
- Clustering using k-Means with k=5
 - **1st cluster** (red on the map): neighbourhoods with Italian restaurants, pizza places and other restaurants, coffee, bars and ice-cream. Only Municipio 8, 7 and 10 includes also historical sites
 - **2nd cluster** (violet on the map): north-west of the center and, besides Italian restaurants and hotels, supermarkets and stores, pools and fitness centers
 - **3rd cluster** (blue on the map): is the center of Rome and it is characterized by plazas, historical sites, monuments/landmarks, churches and fountains, with ice-cream, sandwich and snack places
 - **4th cluster** (green on the map): includes neighborhoods with mainly Italian restaurants and hotels
 - **5th cluster** (orange on the map) includes only one neighbourhood, the neighbourhood of the shopping

Results: 1st step analysis - 4

- Goal of this first step: to determine the neighbourhood where I want to reserve a hotel
- Considering Italian restaurants, which should be close to the hotel for good Italian dinners, I select the 1st cluster
- The 1st cluster has 7 neighborhood but, due to the historical sites (and monuments), I can focus my selection on 3 of them Municipio 7, 8, 10
- The Municipio 10 is far from the center of Rome and I exclude it
- Between 7 and 8, I choose **Municipio 8** because the historical sites are the 4th most common

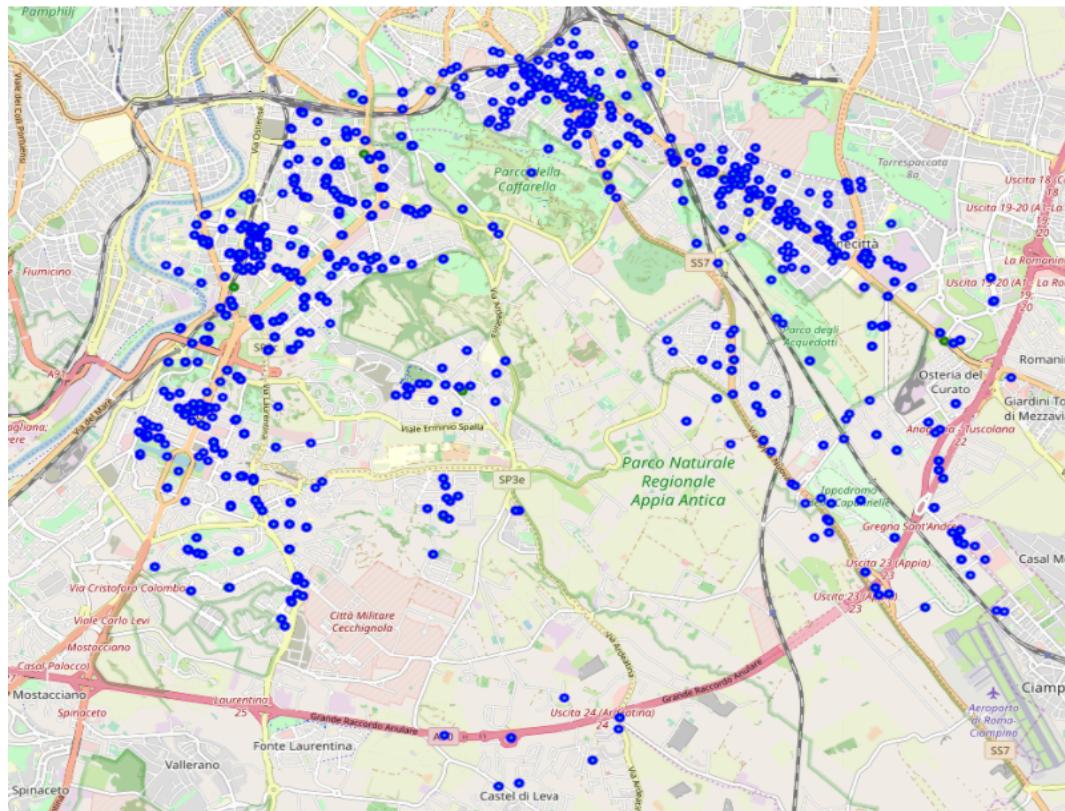
Results: 2nd step analysis - 1

- Starting from Municipio 8, data concerns hotels are retrievable by explore in Foursquare focusing my request on the category
- Result: 40



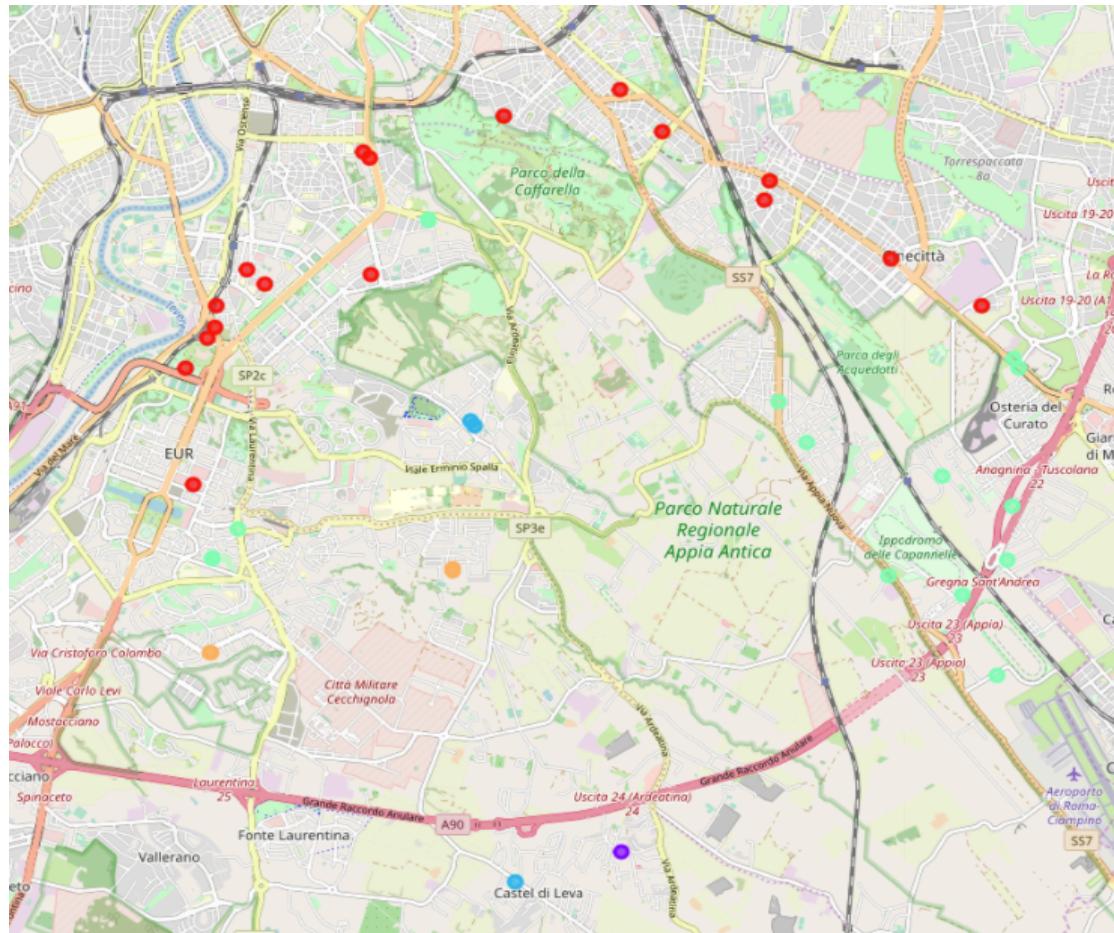
Results: 2nd step analysis - 2

- Starting from each hotel, by Foursquare all venues around them are available
- Result: 1433 venues, from 5 to 96 for each hotel



Results: 2nd step analysis - 3

- Clustering using k-Means with k=5

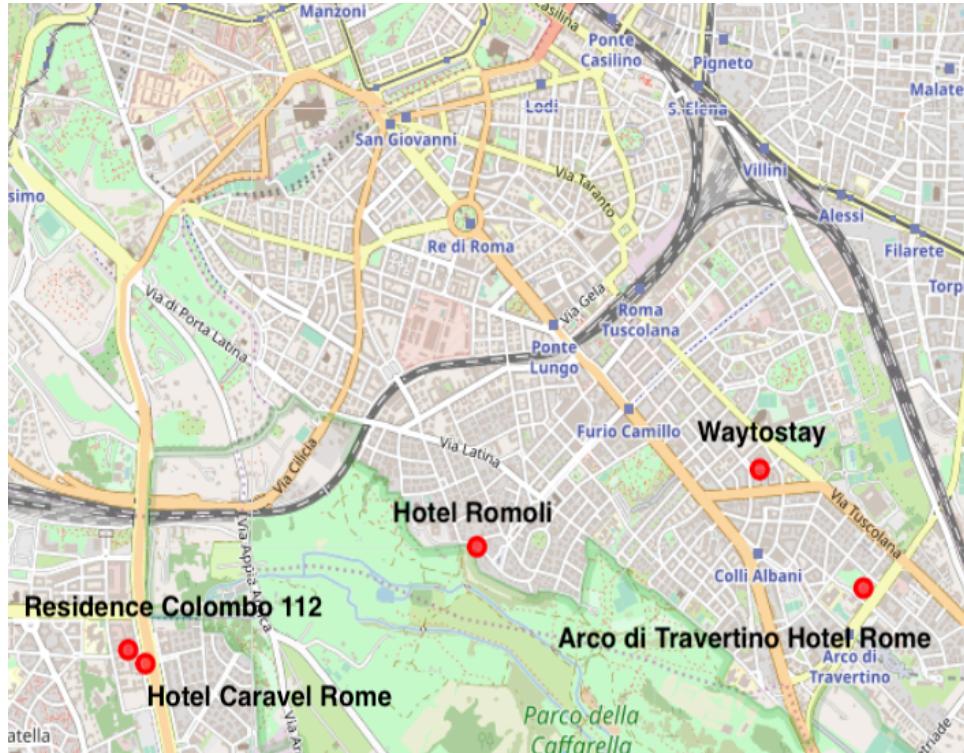


Results: 2nd step analysis - 4

- 5 clusters:
 - **1st cluster** (red on the map): with 17 hotels, It is characterized mainly by Italian restaurants, pizza places, café and ice-cream shops, that are in the first 4 most common venues
 - **2nd cluster** (violet on the map): includes only 1 hotel, beside Italian restaurants and steakhouses, the markets/shops are very frequent
 - **3rd cluster** (blue on the map): a generic cluster, it includes also: parks, gas stations, and in one case film studios
 - **4th cluster** (green on the map): with 15 hotels, the most common venue is the hotels
 - **5th cluster** (orange on the map): beside pizza place coffee and hotels, “active” venues: gym/fitness centers, outdoors & recreation, and cultural centers

Results: 2nd step analysis - 5

- Focus on my goal, I need to analysis deeper the hotels of the first cluster



- I focus my choice on hotels close to the center and to main streets
 - My choice will be on one of these hotels:
 - **Arco di Travertino Hotel Rome**
 - **Hotel Caravel Rome**
 - **Residence Colombo 112**
 - **Waytostay**
 - I will check the web sites of each hotel to be able to evaluate each feature and service of the hotel.

Conclusion

- Using python, Foursquare data and data analysis, you can retrieve a lot of interesting information
- I supported my choice of one or more hotels that satisfy my requests if I want to visit Rome
- I performed a two steps analysis that allows me:
 1. to define which neighborhood satisfy better my requests → **Municipio 8**
 2. focusing on this neighbourhood and their hotels and all venues, to define which hotels better satisfy my requests → **4 possible hotels**
- The analysis could be improved extending it with a detailed analysis of the selected hotels on base of descriptions, ratings and tips