Real Estate Prices Analysis in Roma

Urban Context

- Largest City in EU by land area
- Wide range of neighborhood types (historical center, business districts, commerce districts, beaches)
- Monuments and touristic attractions spread throughout the city, not only in historical center
- Poor fast public transport lines (subway)

Data Sources

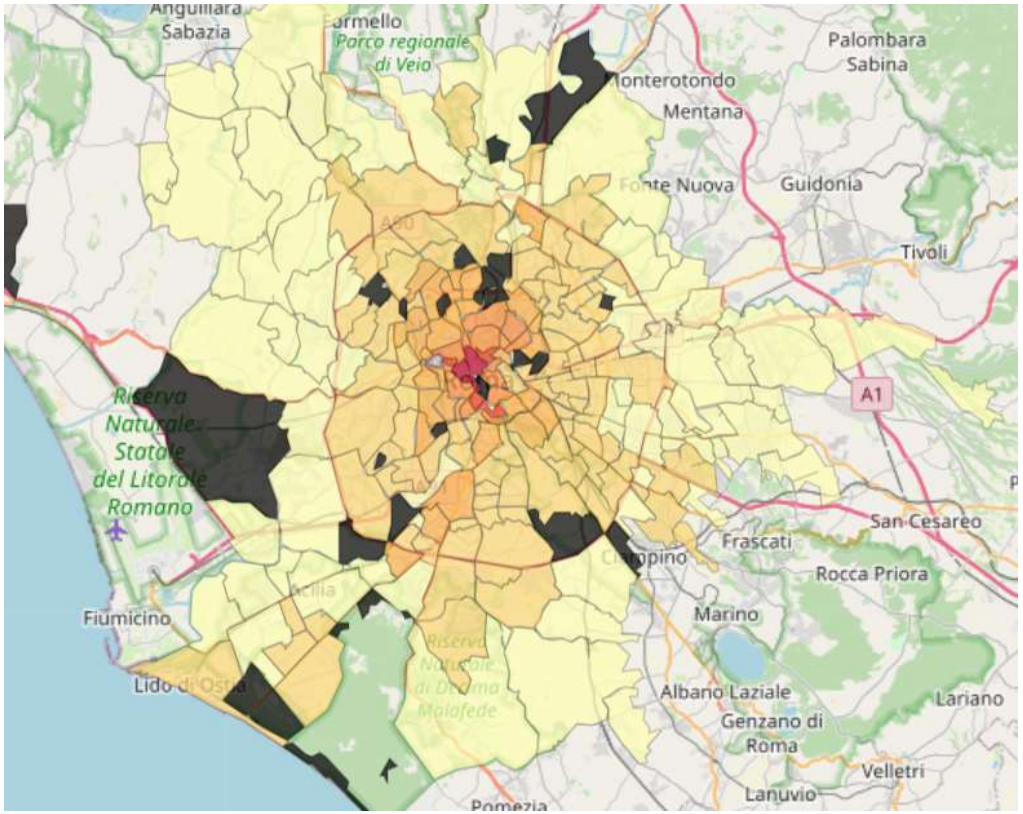
- Real Estate Market Observatory from Agenzia delle Entrate provides observed prices in the second half of 2019, consisting of:
  - List of 234 neighborhoods (code, description, most common type of property) in .csv format
  - Purchase and rental prices (minimum and maximum observed for squared mt) by property type and state of maintenance for each neighborhood in .csv format
  - Neighborhoods borders in .kml format
- List of top 100 venues for each neighborhood obtained by Foursquare API

Data Cleaning and Other Assumptions

- Discarded 23 neighborhoods with no price data
- Prices for **residential** houses in **normal** state of maintenance are available for all neighborhoods. Other combinations are far less common and have been discarded.
- Neighborhoods area can be significantly different. Calculated **centroid** and **approximate radius** for each neighborhood.
- Only 87 neighborhoods with **more than 20 venues** found have been considered for analysis.
- The number of venues found is added to dataset as a feature itself

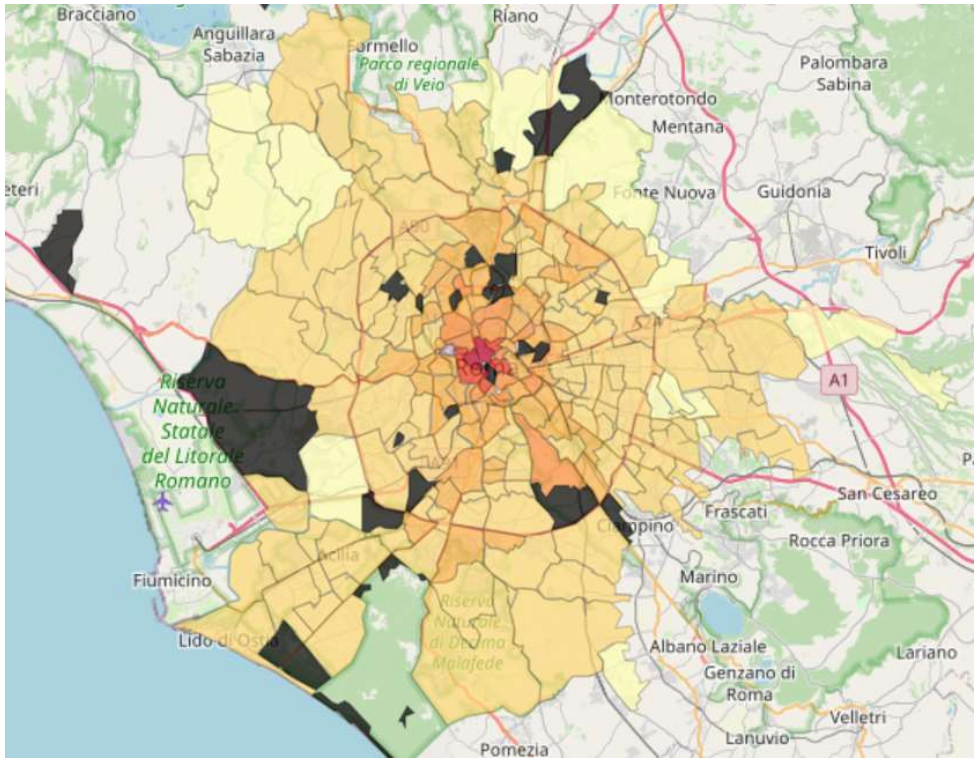
Average purchase price per squared meter

- Prices are inversely proportional to the distance from the city center
- An exception is the seaside neighborhood of Ostia



Average rental prices per squared meter

- Rental prices are much more omogeneous
- No big differences between neighborhoods outside the historical centre



Foursquare APIs data

- 5425 venues found
- 299 unique categories, most common are:

Italian Restaurant	647
Café	427
Pizza Place	385
Hotel	357

- Maximum number of venues (100) reached only in historical centre
- Average number of venues found = **50** (excluding neighborhoods with less than 20 venues)

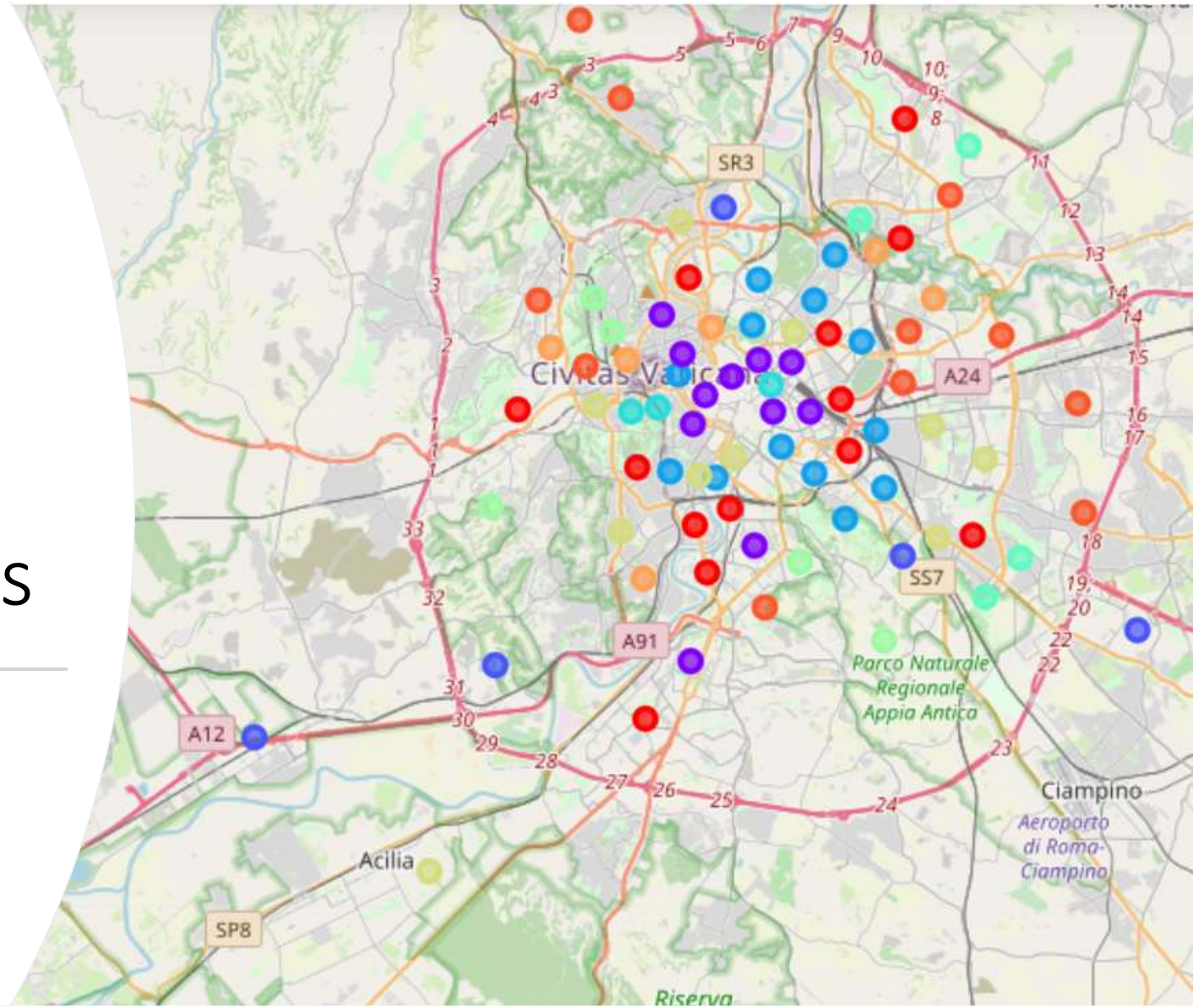
Clustering

K-means algorithm

Features: distribution of venue categories + venue density

Number of clusters: 10

Map of clustered neighborhoods



Clusters vs Prices: outliers

Cluster 4

	Purchase_avg (mq)	Purchase_avg_cluster (other neighborhoods)	saving
C30 (PIGNETO)	2.875,00	4.336,00	33,69%

Cluster 3

	Purchase_avg (mq)	Purchase_avg_cluster (other neighborhoods)	saving
B18 ESQUILINO (PIAZZA VITTORIO)	3.250,00	4.897,00	33,63%
C10 GARBATELLA	3.450,00	4.875,00	29,23%
E34 OSTIA (VIA DELLE BALENIERE)	2.275,00	5.011,00	54,60%
D29 EUR (VIALE EUROPA)	3.600,00	4.858,00	25,90%

Cluster 7

	Purchase_avg (mq)	Purchase_avg_cluster (other neighborhoods)	saving
D14 (CENTOCELLE)	2.350,00	3.433,00	31,54%
E33 (ACILIA SUD)	2.150,00	3.450,00	37,68%

Conclusions

- Some quite central neighborhoods as B18 (Esquilino) and C30 (Pigneto) offer good prices in central zones. Buying a house to resell could be a good investment there.

- Some peripheral neighborhoods as E33 (Acilia Sud) offer a good rental/purchase ratio. They're quite cheap but can be rent for a good price. Buying a house to rent could be a good investment there.