



**A beautiful city
for a good
investment**

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Introduction

Naples is a city of:

- sea
- art
- history
- culture
- good food
- very kind people
- tourism



**Naples is a wonderful city
for a good investment**

Analysis of the city

Economy of the city

Unnamed: 0	Public services	Manufacturing	Commerce	Construction	Transportation	Financial services	Agriculture	Hotel trade	Other activities	
0	Percentage	30.7%	18%	14%	9.5%	8.2%	7.4%	5.1%	3.7%	3.4%

City divided in municipality and neighborhoods

Municipality	Surface_km2	Population	Density_per_km2	Neighborhood
Municipalità_I	8.80	82673.0	9394.66	Chiaia, Posillipo, San Ferdinando
Municipalità_II	4.56	91536.0	20073.68	Avvocata, Montecalvario, Pendino, Porto, Merca...
Municipalità_III	9.51	103633.0	10897.27	Stella, San Carlo all'Arena
Municipalità_IV	9.27	96078.0	10364.40	San Lorenzo, Vicaria, Poggioreale, Zona Indust...
Municipalità_V	7.42	119978.0	16169.54	Vomero, Arenella
Municipalità_VI	19.28	138641.0	7190.92	Ponticelli, Barra, San Giovanni a Teduccio

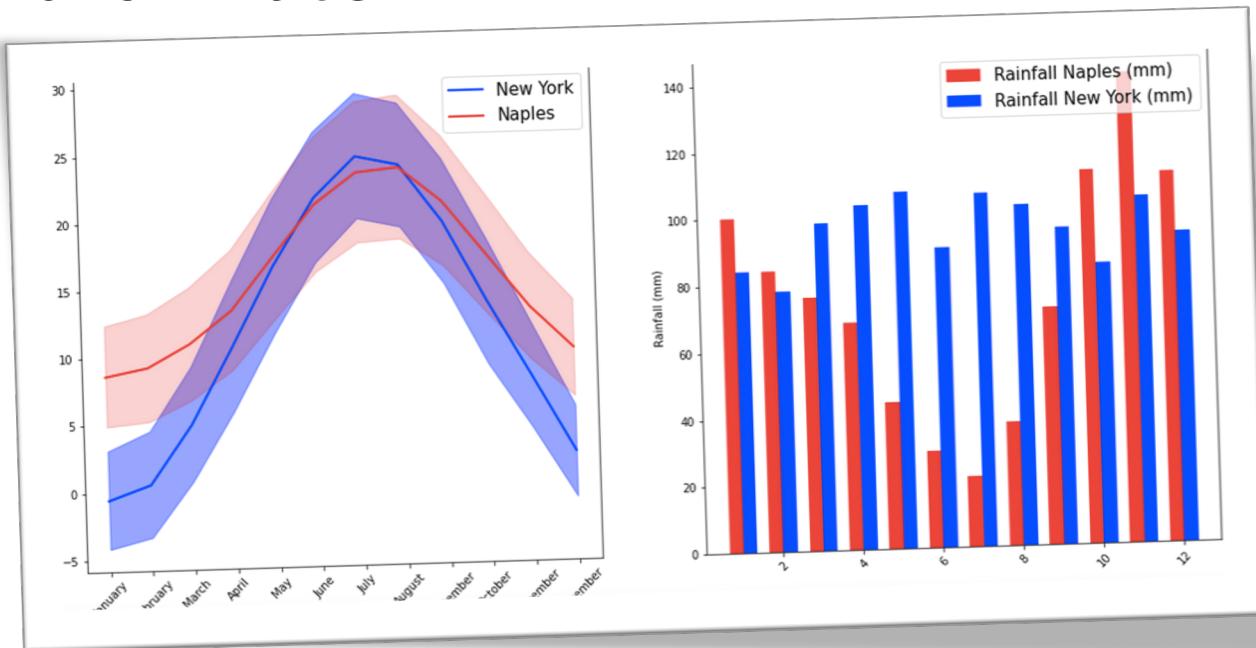
A good investment in:

- hotels
- restaurants
- pizza places
- coffee shops

Short Area but very high density of population --> venues are always full!

Analysis of the city

A very mild climate

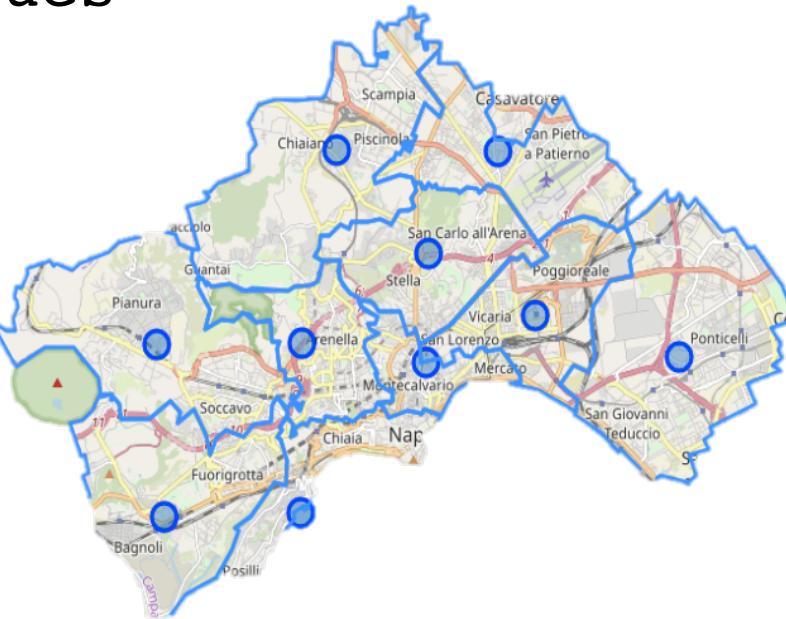


Temperature over **10 °C** all the year and **few rainfall**. Very **good for tourism!**

Data Collection

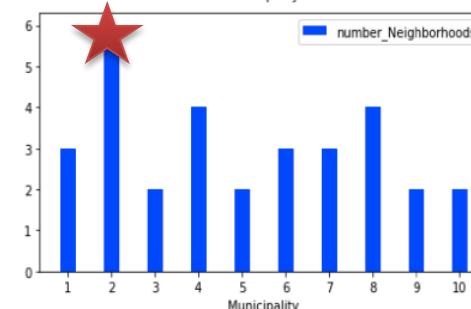
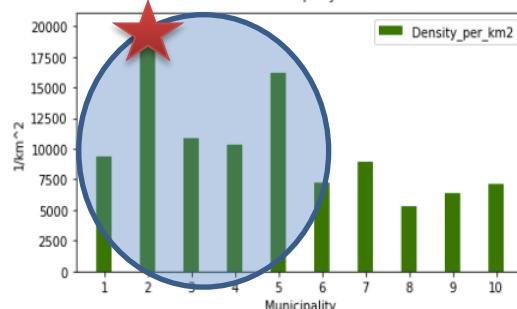
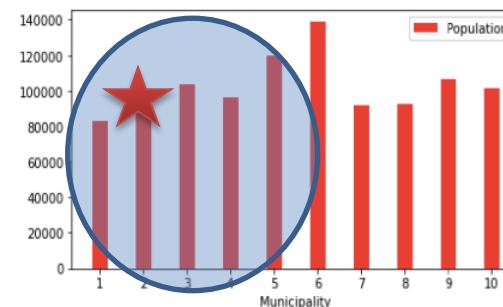
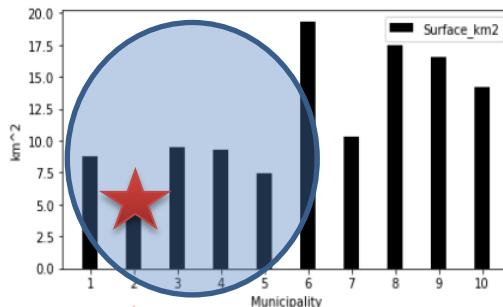
- ✓ Locations and boundaries Municipalities
- ✓ Foursquare API to get venues

Municipality	Surface_km2	Population	Density_per_km2	Neighborhood	number_Neighborhoods	Latitude	Longitude
Municipalità_I	8.80	82673.0	9394.66	Chiaia, Posillipo, San Ferdinando	3	40.820982	14.216484
Municipalità_II	4.56	91536.0	20073.68	Avvocata, Montecalvario, Pendino, Porto, Merca...	6	40.849405	14.251298
Municipalità_III	9.51	103633.0	10897.27	Stella, San Carlo all'Arena	2	40.870012	14.252006
Municipalità_IV	9.27	96078.0	10364.40	San Lorenzo, Vicaria, Poggioreale, Zona Indust...	4	40.858170	14.281485
Municipalità_V	7.42	119978.0	16169.54	Vomero, Arenella	2	40.853001	14.216932
Municipalità_VI	19.28	138641.0	7190.92	Ponticelli, Barra, San Giovanni a Teduccio	3	40.850560	14.321321
Municipalità_VII	10.26	91460.0	8914.23	Miano, Secondigliano, San Pietro a Patierno	3	40.889037	14.271280
Municipalità_VIII	17.45	92616.0	5307.51	Piscinola, Marianella, Scampia, Chiaiano	4	40.889362	14.226583
Municipalità_IX	16.56	106299.0	6419.02	Soccavo, Planura	2	40.852707	14.176829
Municipalità_X	14.16	101192.0	7146.33	Bagnoli, Fuorigrotta	2	40.820315	14.177886



Descriptive analysis

Population concentrated in shortest municipalities

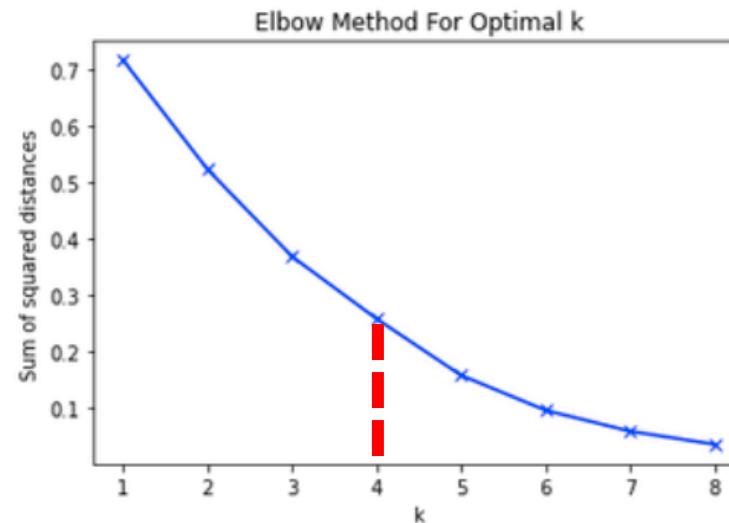


Municipality 2 could be a good candidate for an investment:
4 km^2 and 20000 population per km^2 and 6 neighborhoods

Clustering K-Means

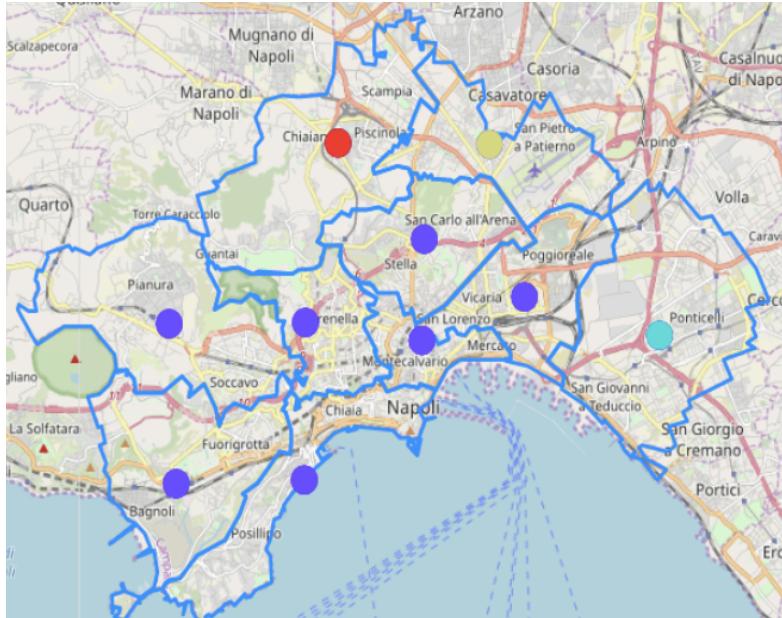
Cluster K-Means to get similar clusters of municipalities by venues

Determine optimal k
with Elbow method



Best K = 4

Cluster K-Means

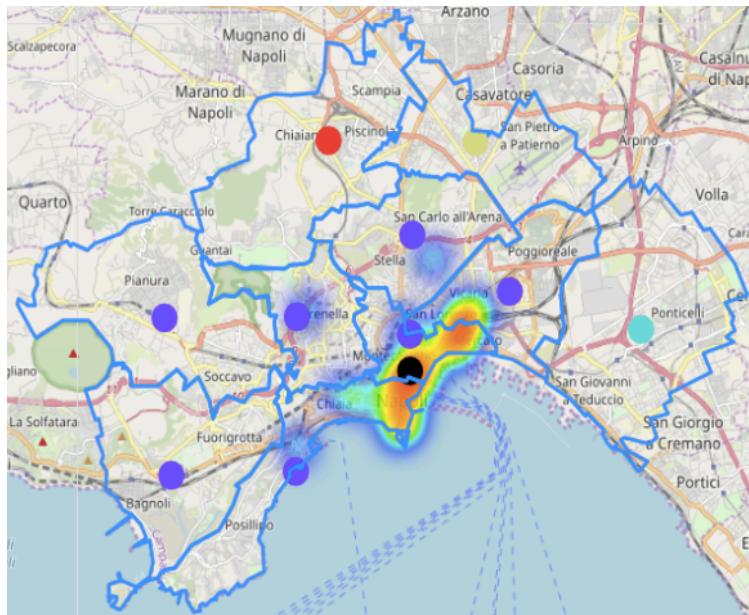


3 cluster in periphery, characterized by train station, parks, supermarkets

1 cluster near the sea, characterized by hotels, restaurants, pizza places, bar, museums

Model evaluation

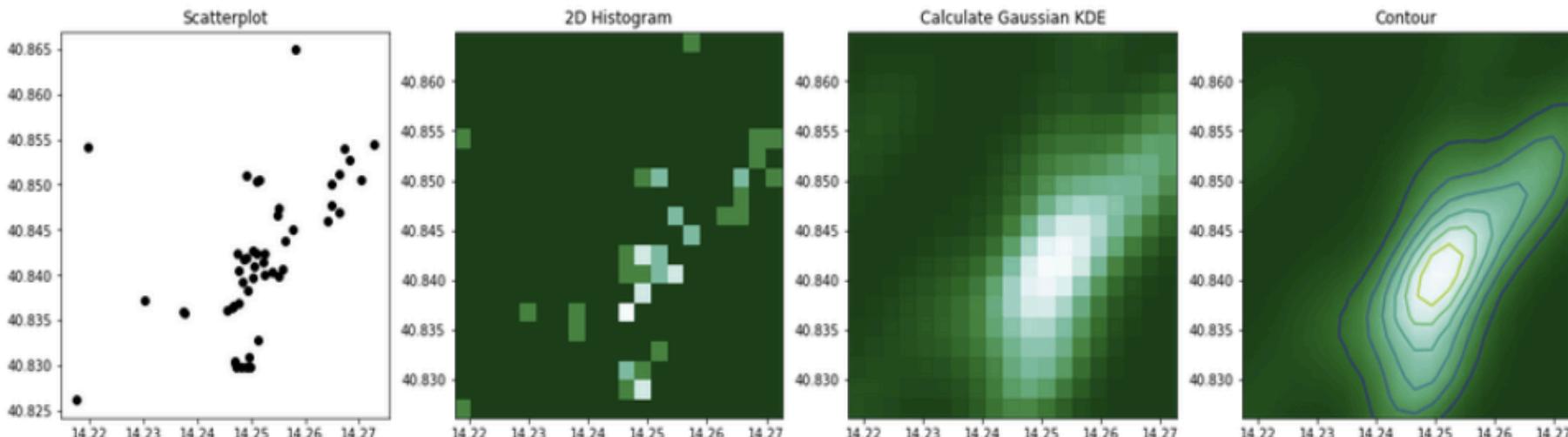
Heatmap by categories as «Hotel»



'Hottest' zone in Municipality 2!

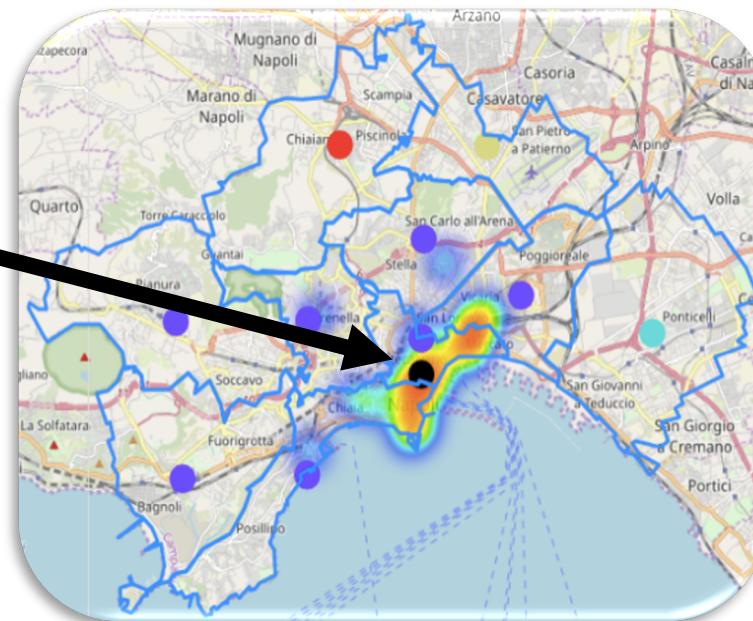
Model evaluation

- Map latitude and longitude in a plane (true for short area)
- Do 2d histogram, kde density plot and contour plot
- Find most likely point as max of distribution in latitude, longitude



Model evaluation

The **most likely point** is
in black on the map



Results

- Iterate the procedure for categories:
'hotel', 'restaurants', 'pizza', 'coffee', 'cocktails'
- Get the most likely points

The points build a polygon

This could be a very reasonable area for an investment

As expected it is located in Municipality 2



Conclusion

- In this project I analyzed Naples, a beautiful city, rich of culture, with a good climate and high density of population;
- The city is structured in municipalities and neighborhoods;
- I used Foursquare API to get data about venues;
- I found 4 clusters. One of that is full of hotels, restaurants, pizza places and is the historic part of the city;
- I plotted on heat-map these activities and found the best location, more reasonable, using histo 2d plot;

Conclusion

- I plotted all the best places on a map. These constitute a polygon. That could be a very reasonable area for a good investment.
- The area is located in Municipality 2, the shortest with 4 km² and a very very high density of population, ~20000 people/km².
- The analysis can be further extended going to consider other categories as food, gym or deepen those already considered as doing a research for a better location of Italian restaurant, Chinese restaurant and so on.