

# **Investment of Properties For Short Rent in Airbnb**

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# Introduction

- Barcelona, Spain, is one of the most popular tourist destinations. According to Inside Airbnb [1], on 19<sup>th</sup> April 2019, there were 17899 properties listed in Airbnb website. If one want to add his/her property on Airbnb, what is the optimized price?
- Target : Maximize property profits by setting the optimized price
- Benefit to investors who want to invest in the properties in Barcelona or the residents who already have properties and want to make a profit from them

# Data and Methodology

## Data

### ❖ Airbnb data

The Barcelona properties listed in Airbnb website (<http://insideairbnb.com/get-the-data.html>).

### ❖ Attraction

The attractions are obtained by web scraping (BeautifulSoup) from Tripadvisor ([https://www.tripadvisor.co.uk/Attractions-g187497-Activities-Barcelona\\_Catalonia.html](https://www.tripadvisor.co.uk/Attractions-g187497-Activities-Barcelona_Catalonia.html))

### ❖ Nearby attractions location

The attraction locations are obtained by using Foursquare API.

## Methodology

### Data preparation:

- Drop unused rows and columns
- Fixed data types
- Fill all NaN
- Refined Data

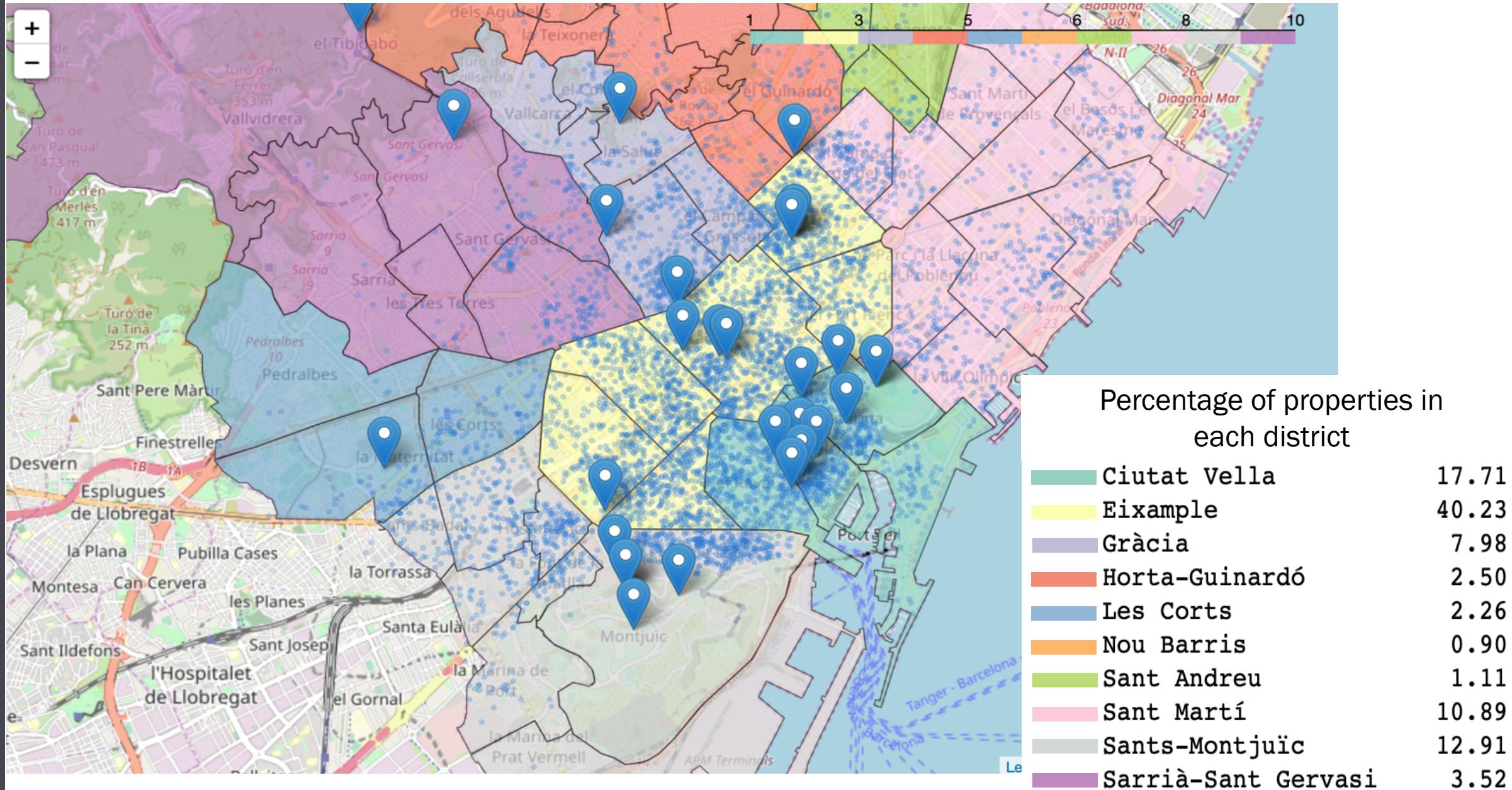
Then, there are 7,330 rows and 25 columns

- Generalized data by calculating price per person
- Calculating minimum distance to the nearest attraction

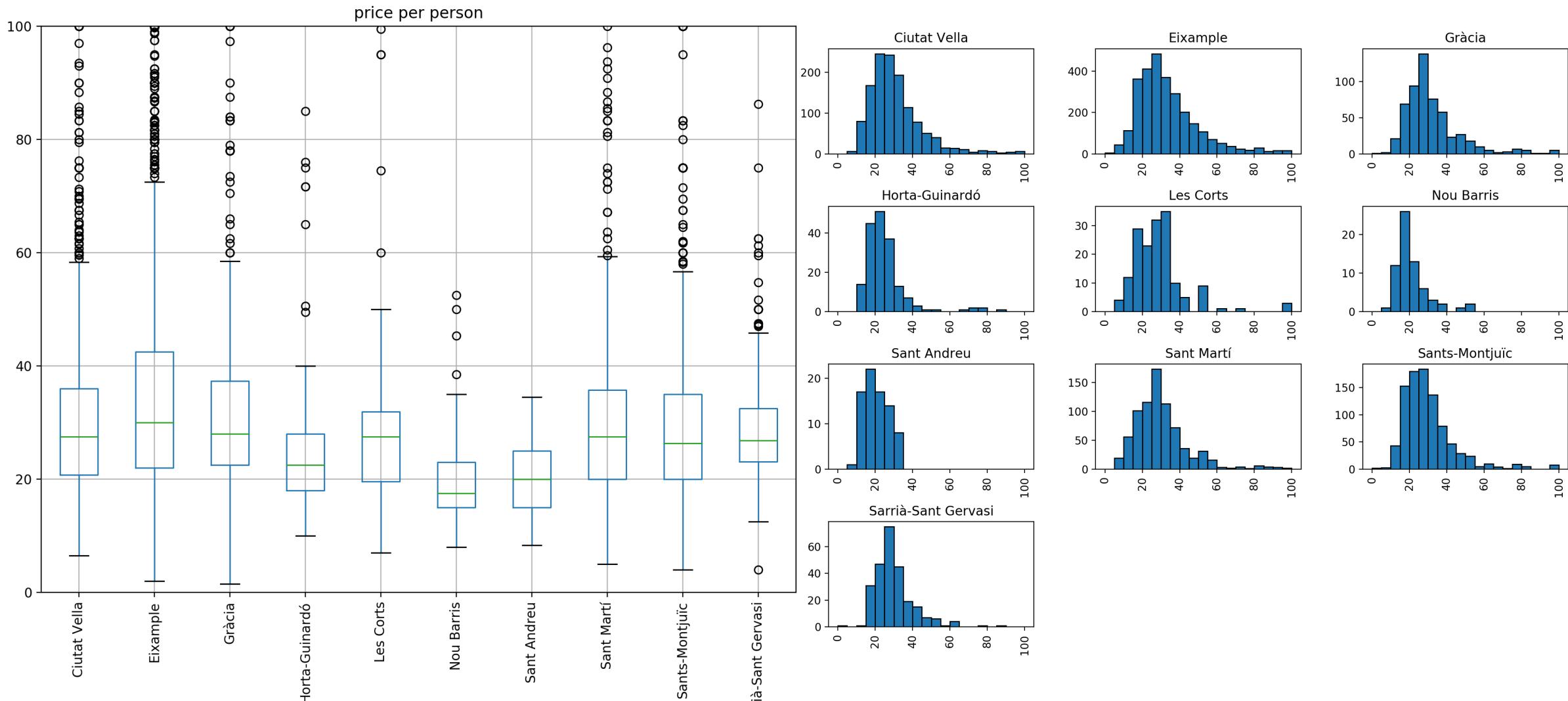
### To get inside :

- Data mining
- K-means clustering

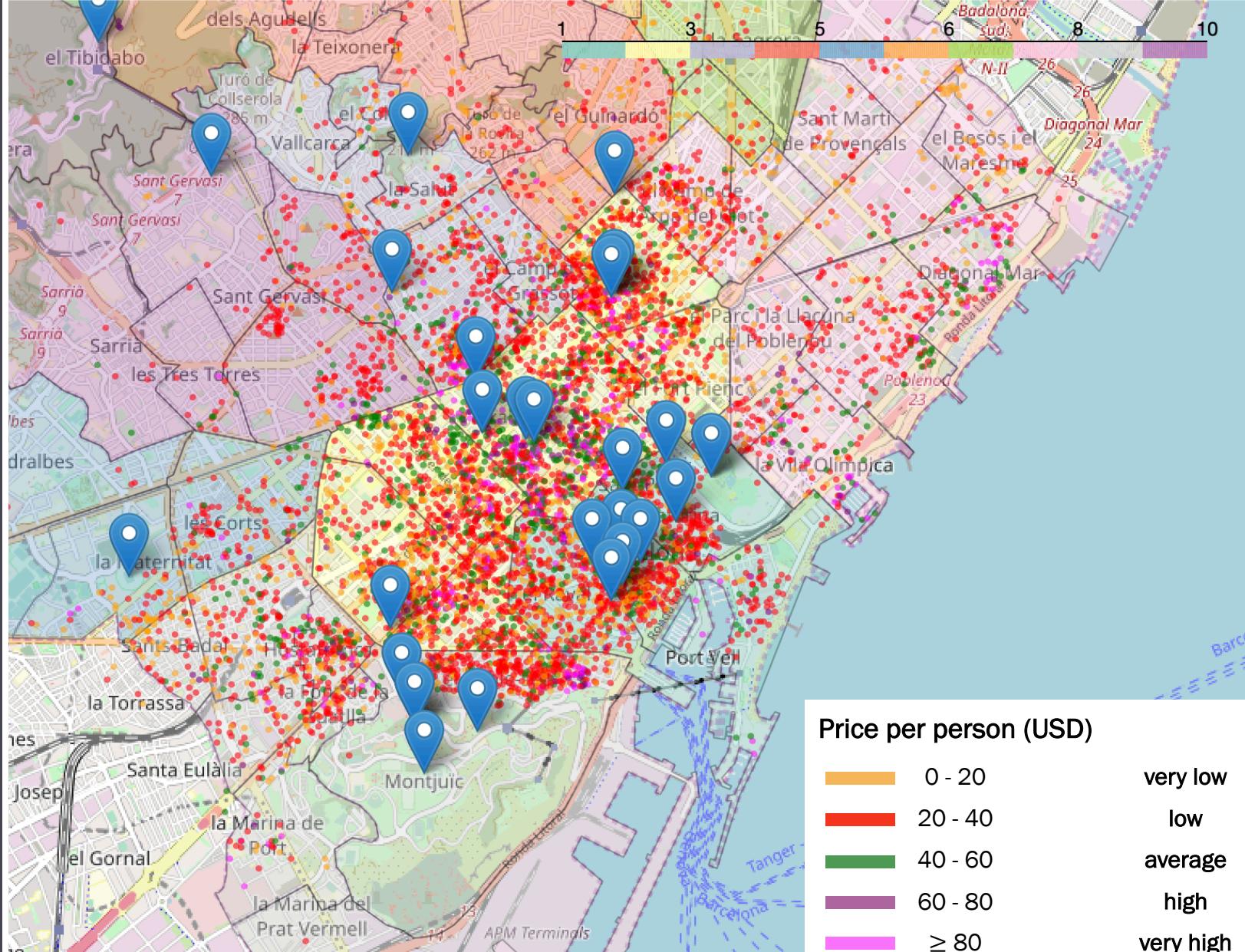
# Properties and attractions in Barcelona



# Price per person for each property

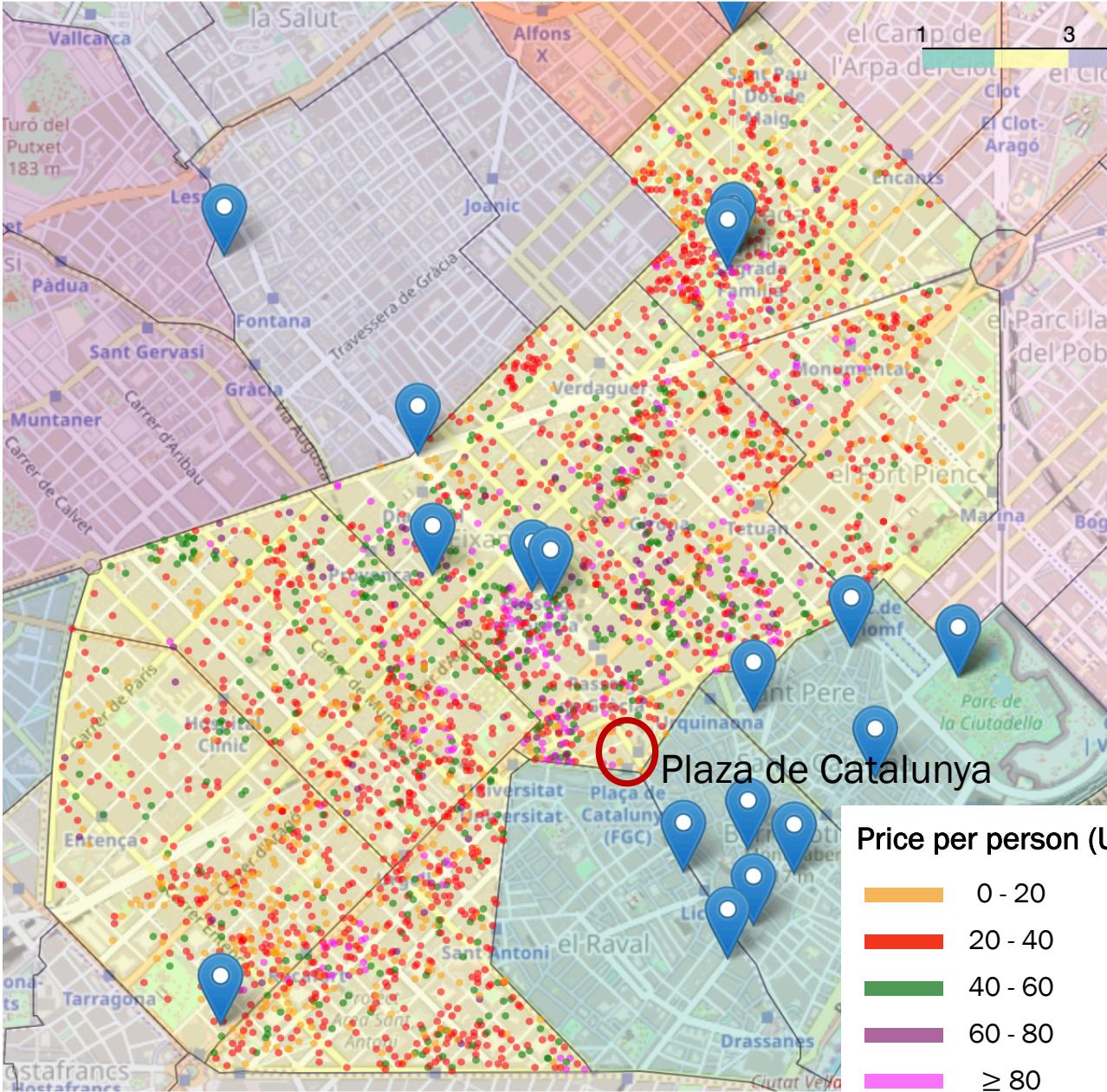


# Properties and attractions in Barcelona

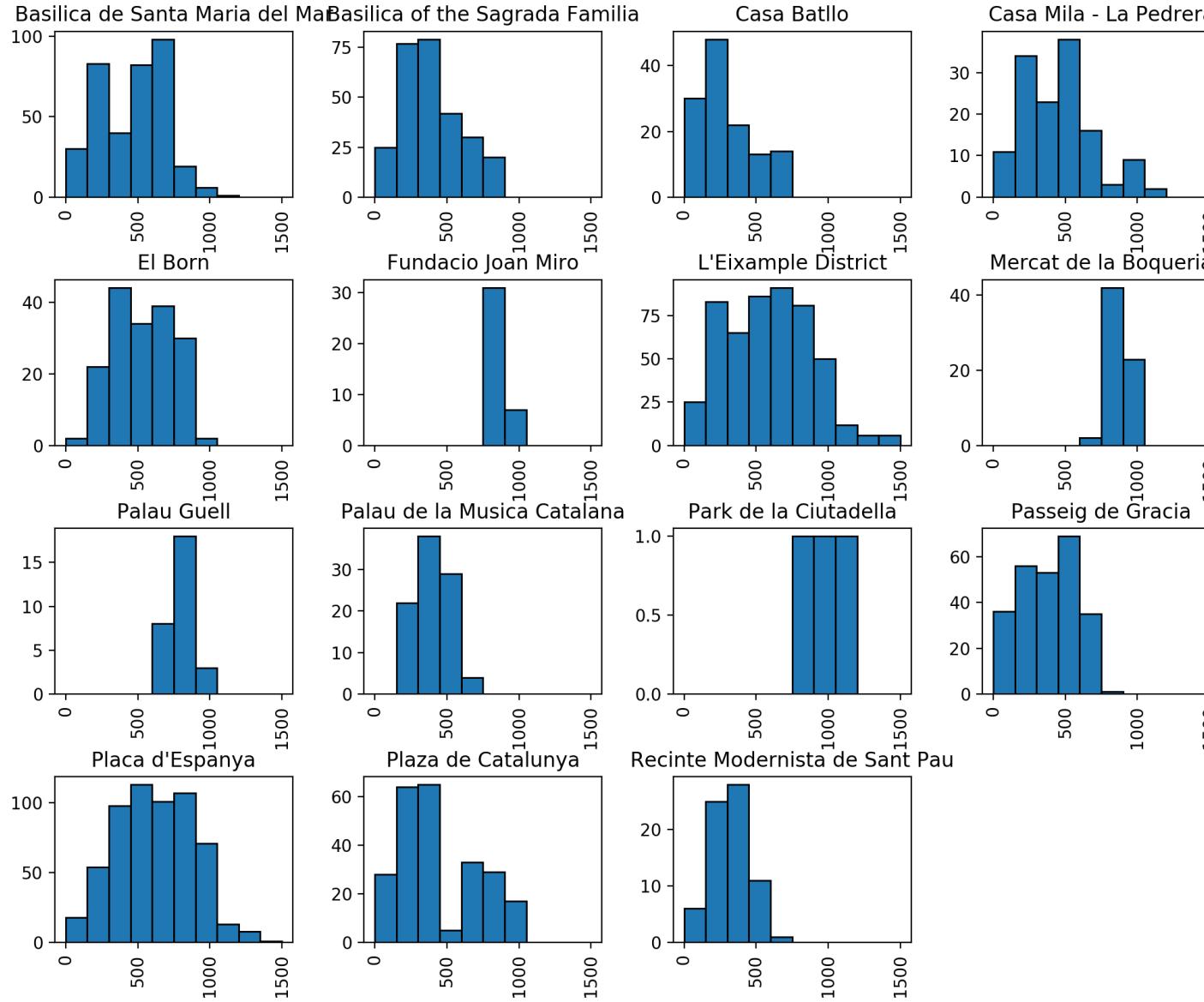


Colored by price per person

# Properties and attractions in Eixample



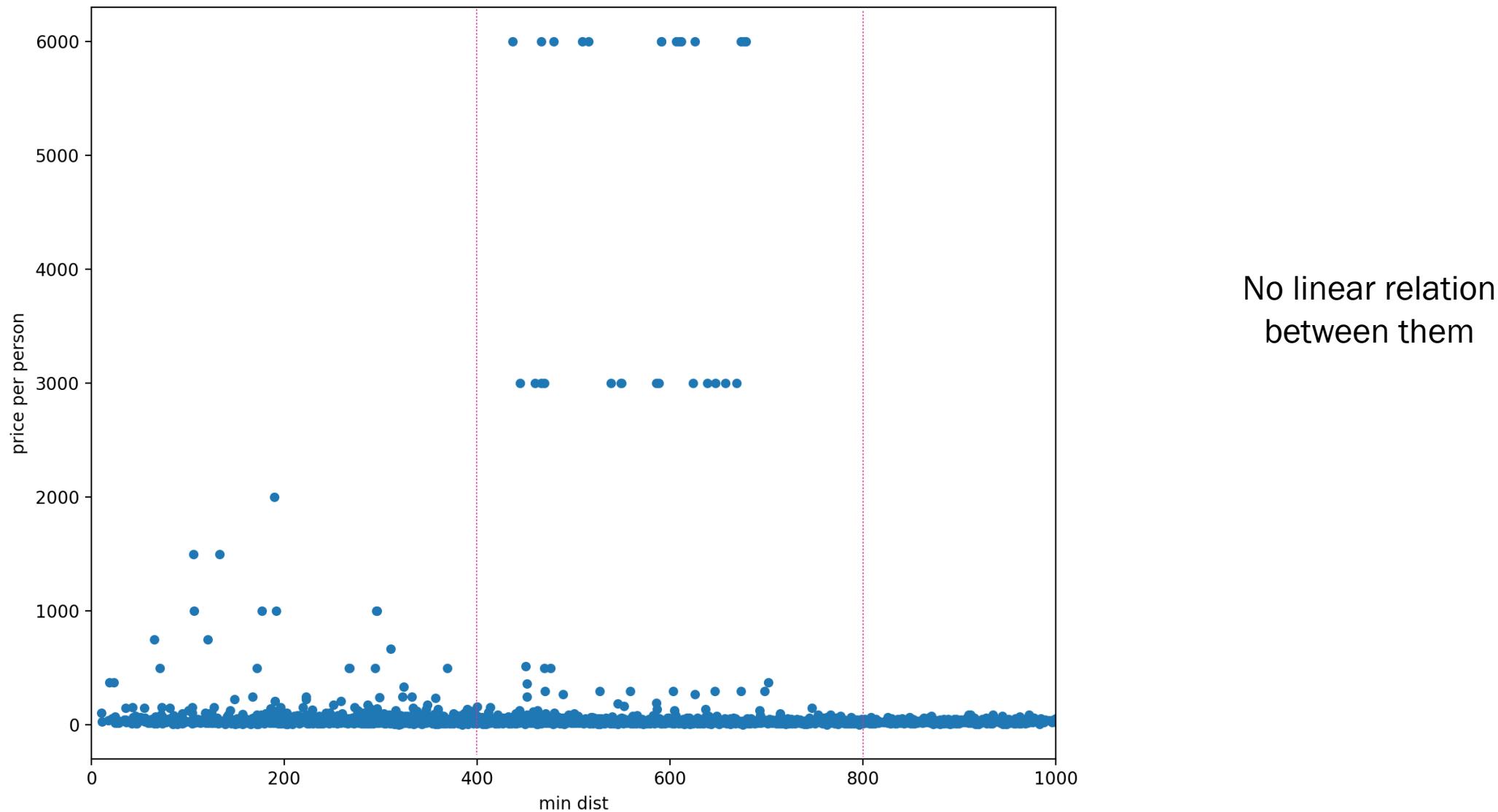
# Distribution of nearby properties



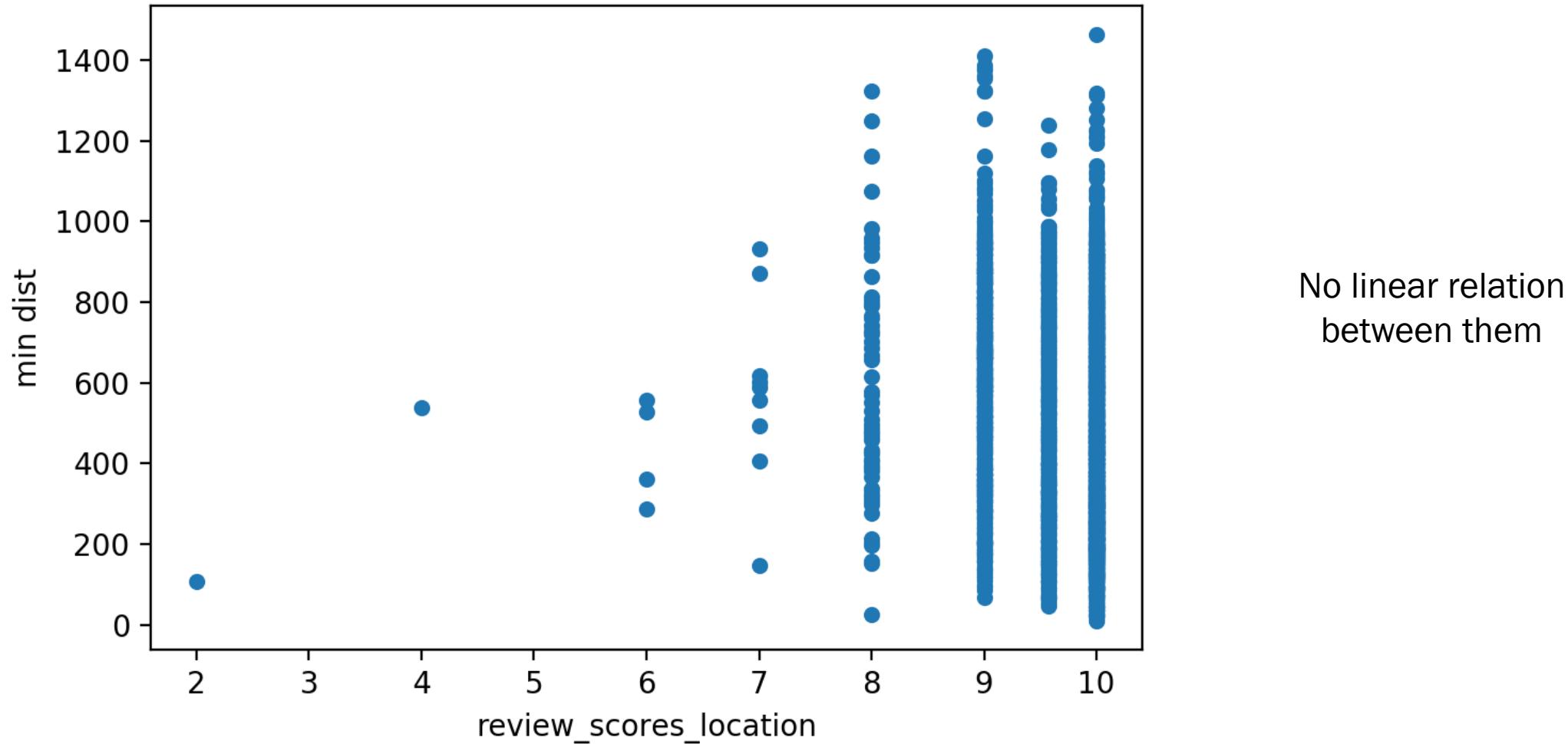
Attraction name

Basilica de Santa Maria del Mar	181
Basilica of the Sagrada Familia	208
Casa Batllo	106
Casa Mila - La Pedrera	80
El Born	84
L'Eixample District	201
Palau de la Musica Catalana	71
Passeig de Gracia	178
Placa d'Espanya	201
Plaza de Catalunya	159
Recinte Modernista de Sant Pau	65
Name: id, dtype: int64	

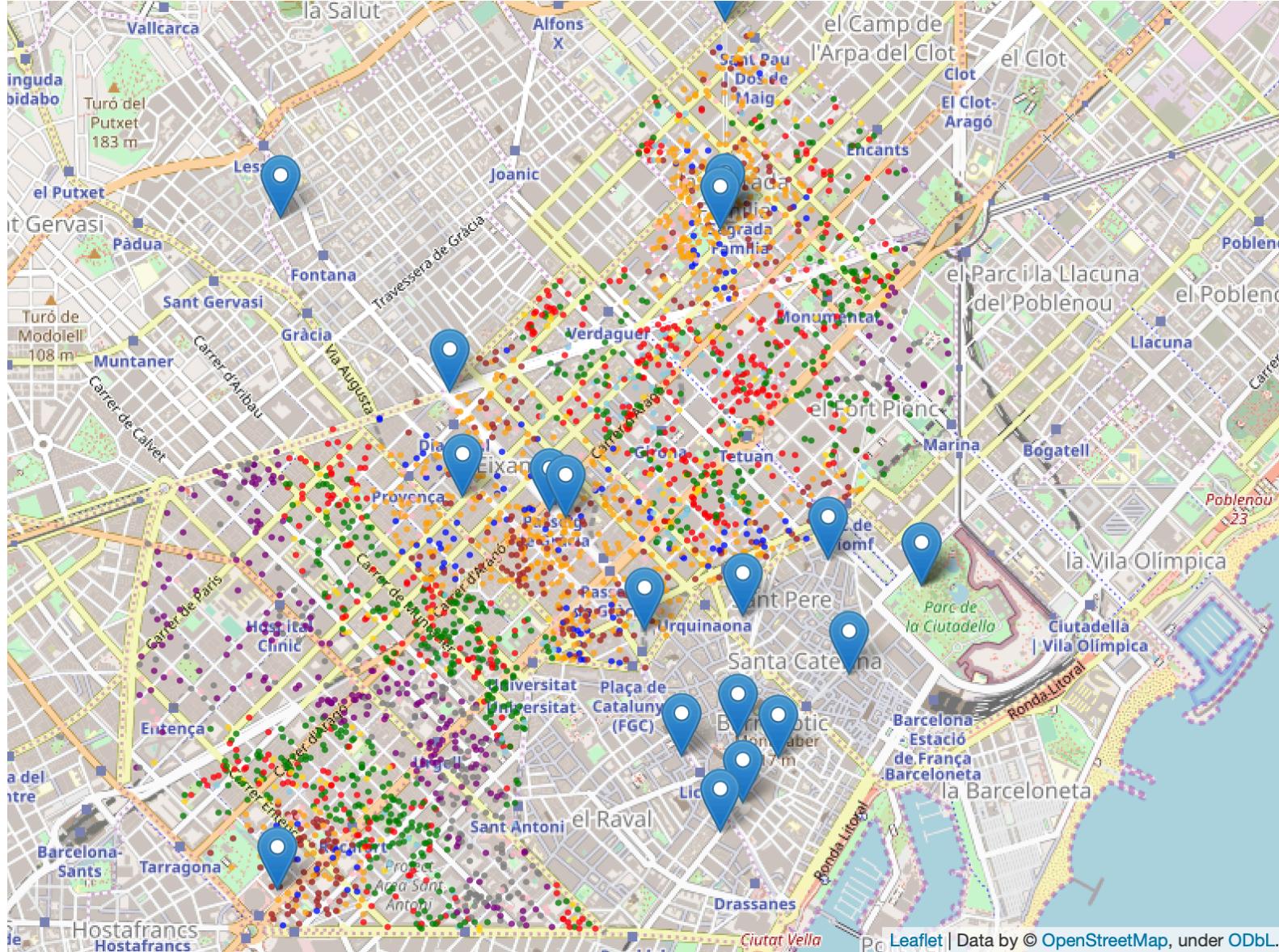
# Minimum distance vs. Price per person



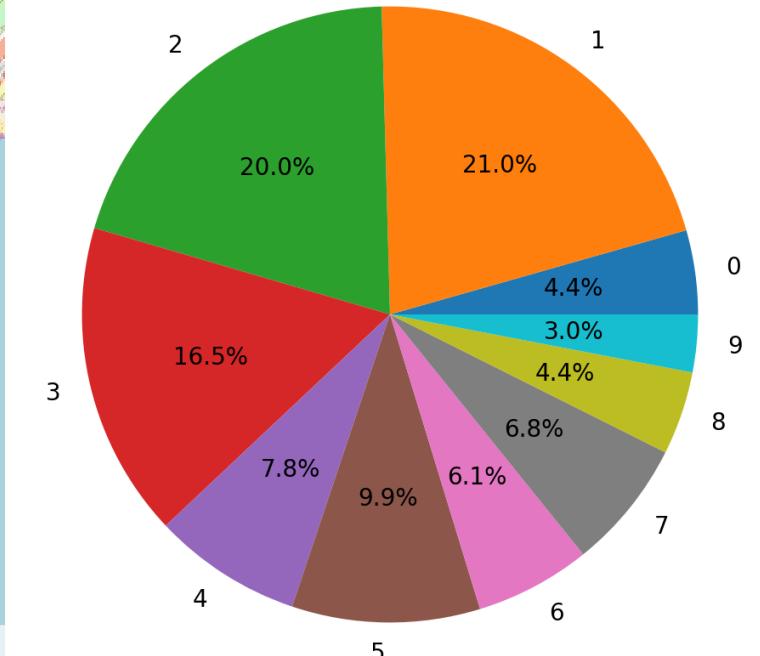
# Review location scores vs. minimum distance



# K-means Clustering



K-means Group



# Profiling

GROUP	%	PROPERTY TYPE	ROOM TYPE	LOCATION	PRICE	REVIEW
1	4.4	Mix	Private	Very close	Mix (Mostly V. low)	Excellent
2	21.0	Apartment/Service apartment	Entire home/apt	Very close	Mix (Mostly V. low)	Excellent
3	20.0	Mix	Private	Near	Mix (Mostly V. low)	Excellent/Good
4	16.5	Mix	Entire home/apt	Near	Very low	Excellent
5	7.8	Mix	Private	Far	Very low	Excellent
6	9.9	Apartment	Private	Very close	Very low	Excellent
7	6.1	Mix	Entire home/apt	Very close /Far	Very low	Good
8	6.8	Mix	Entire home/apt	Far	Very low	Excellent
9	4.4	Apartment/Service apartment and Condominium,	Entire home/apt	Near	Very low	Good
10	3.0	Serviced apartment	Entire home/apt	Near	Very low	Excellent

# Conclusion

- Properties clustered about the attractions
- To set relatively high rental cost. Property(s) in Ciutat Vella, Eixample, Sant Martí, and Sants-Montjuïc is good choice.
- The properties near the attractions have an opportunity to receive high income but there is very less opportunity for the others.

## In case of Eixample district,

- The property does not need to be close to the attraction, locating near the attraction (400-800 meters) has the same effect.
- Private room and hotel seem to have high profit

## Next :

- Add transportation
- Decision tree classifier