

Airbnb properties in the District of Porto, Portugal

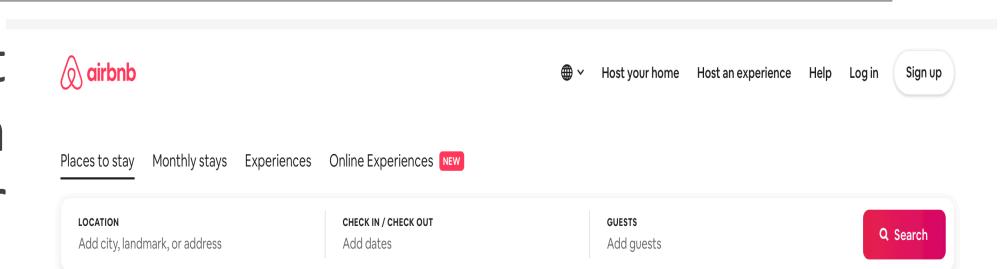
CAPSTONE PROJECT – BATTLE OF THE NEIGHBORHOODS

Introduction

Airbnb is an online-based company that connects people looking for accommodation (Airbnb guests) to people looking to rent their properties (Airbnb hosts).

The rentals properties include apartments (dominant), homes, boats, and whole lot more.

Tourists are mostly motivated to book Airbnb accommodations because of their low cost, convenient location, and household amenities.



We may be apart, but we'll get through this together.



Business Problem

I am planning to spend a month or two in the District of Porto (Portugal) and I am looking for a reasonable accommodation from Airbnb.

There are a lot of properties (approximately 12,000) and analyze each one available will spend many time.

Exploratory analysis could help determine the best places (cities around, neighborhood) to stay, minimizing the options of properties.

This project aims to conduct some exploratory data analysis using the Foursquare API and the Airbnb list of properties to produce a small list of properties to be analyzed based on the requirements.

Dataset

The dataset used for this project comes from Inside Airbnb: <http://insideairbnb.com/get-the-data.html>.

The dataset that was employed was named *listings.csv*; it is a detailed data set with 106 attributes, a few of the attributes being: price per day, number of beds, property type, neighborhood, cleaning fee, security deposit, host's ratings score, etc.

	id	listing_url	scrape_id	last_scraped	name	summary	space	description	experiences_offered	neighborhood_group
0	41339	https://www.airbnb.com/rooms/41339	20200321155050	2020-03-21	Porto city flat near the sea	Here you'll find all you need for your holiday...	Apartment facing Southeast, with a big bedroom...	Here you'll find all you need for your holiday...	none	In the have Serr
1	55111	https://www.airbnb.com/rooms/55111	20200321155050	2020-03-21	Fontielas Houses Floor1 in House with shared ...	First Floor in House with shared Swimmingpool a...	The first floor in house with shared pool. I...	First Floor in House with shared Swimmingpool a...	none	
2	70925	https://www.airbnb.com/rooms/70925	20200321155050	2020-03-21	APARTMENT WITH THE BEST CITY VIEW	Two separate bedrooms are an undeniable advan...	Apartment with the best view of the Porto city...	Two separate bedrooms are an undeniable advan...	none	The house supermarket
3	73828	https://www.airbnb.com/rooms/73828	20200321155050	2020-03-21	Fontielas Houses Floor0 in House with shared ...	Piso no rés-do-chão em moradia com piscina par...	The first floor in house with shared pool. Ou...	Piso no rés-do-chão em moradia com piscina par...	none	
4	76436	https://www.airbnb.com/rooms/76436	20200321155050	2020-03-21	Go2porto @ River Side	Elegant and modern apartment, facing south in ...	Comfortable space, in one of the most beautiful...	Elegant and modern apartment, facing south in ...	none	In this enjoy b

5 rows × 106 columns

Dataset

Many of the features is not necessary for our analysis, so a selection of the 26 principal features was realized.

```
Data columns (total 26 columns):
id                           12005 non-null int64
neighbourhood_cleansed       12005 non-null object
neighbourhood_group_cleansed 12005 non-null object
city                          11899 non-null object
zipcode                       11634 non-null object
latitude                      12005 non-null float64
longitude                     12005 non-null float64
property_type                 12005 non-null object
room_type                      12005 non-null object
accommodates                   12005 non-null int64
bathrooms                      12001 non-null float64
bedrooms                       12000 non-null float64
beds                            11948 non-null float64
price                           12005 non-null object
guests_included                12005 non-null int64
extra_people                    12005 non-null object
minimum_nights                  12005 non-null int64
maximum_nights                  12005 non-null int64
review_scores_rating             10053 non-null float64
review_scores_accuracy           10046 non-null float64
review_scores_cleanliness          10048 non-null float64
review_scores_checkin              10042 non-null float64
review_scores_communication          10045 non-null float64
review_scores_location              10043 non-null float64
review_scores_value                  10042 non-null float64
cancellation_policy                12005 non-null object
dtypes: float64(12), int64(5), object(9)
memory usage: 2.4+ MB
```

Requirements

Entire home/apt

Neighborhood with mean price by night bellow \$100

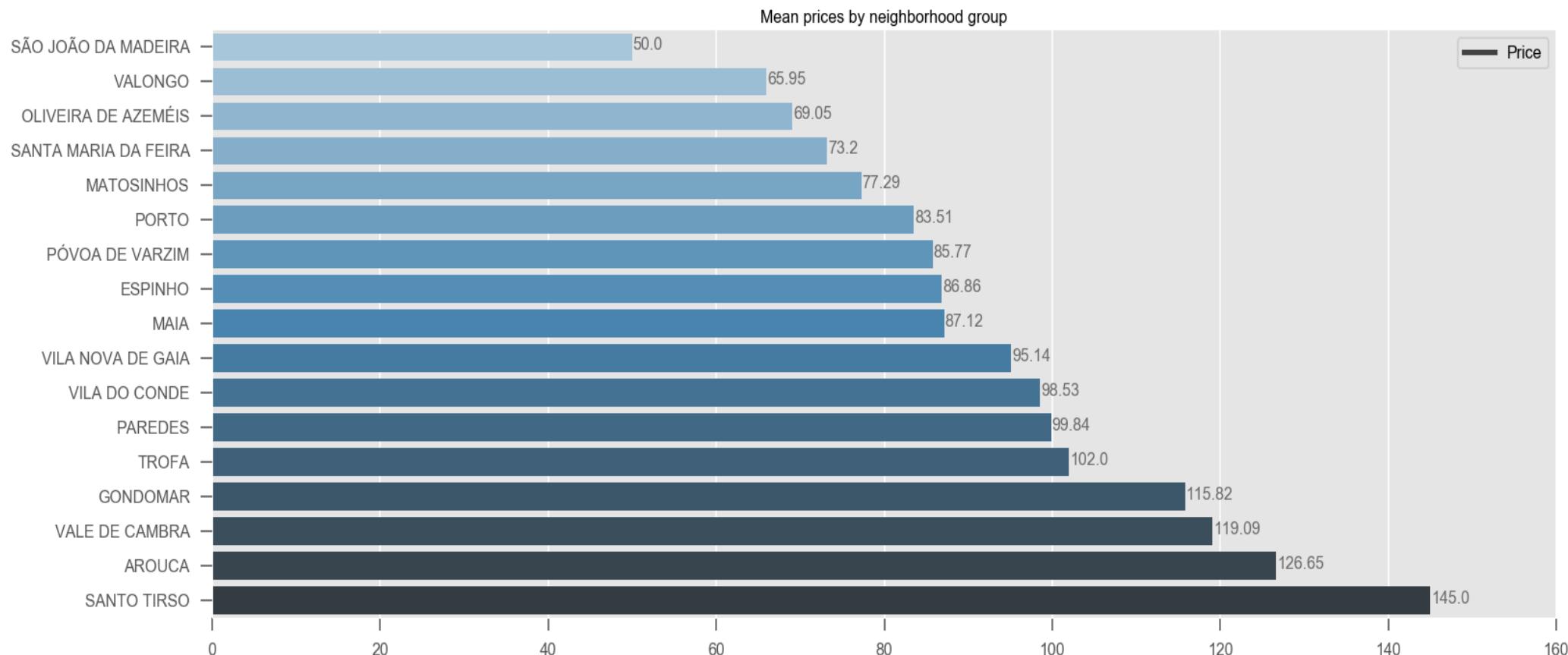
Properties in neighborhoods that presents a good offer of Café, Bakery and Restaurant

The most common type of properties in the selected neighborhoods

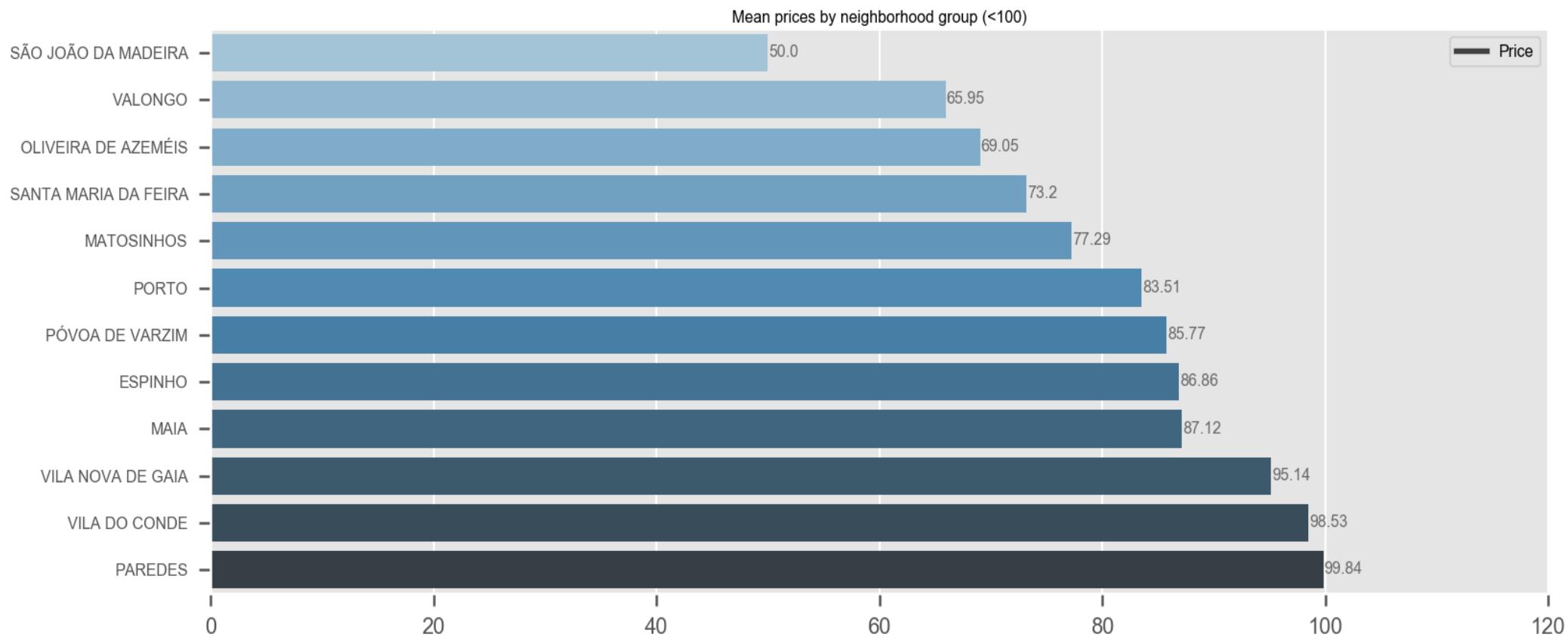
Only properties with review score rating equal 100

Properties that accommodate 3 persons with 2 bedrooms

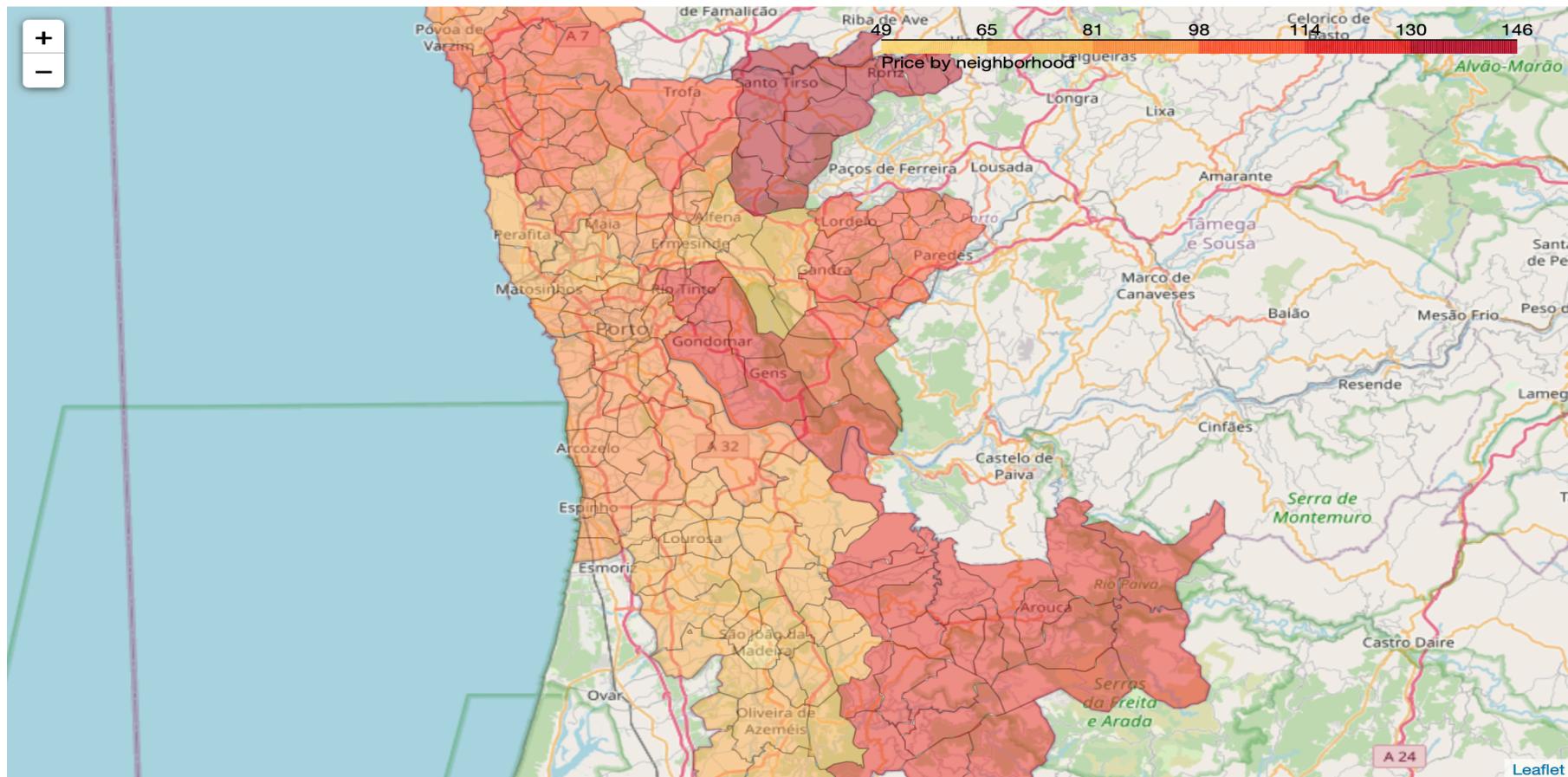
Prices by neighborhood



Prices by neighborhood



Prices by neighborhood



Foursquare exploration

Using the location of each neighborhood, we explore the top venues of them through the Foursquare API.

We retrieved information about venues and analyzed the venue category frequency.

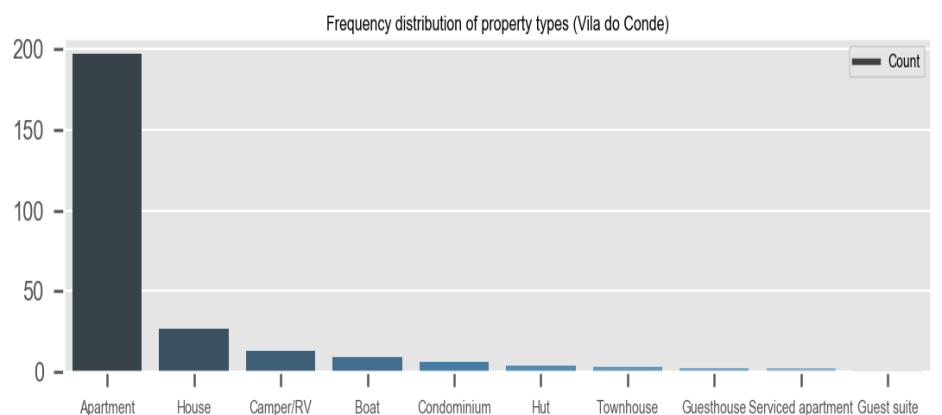
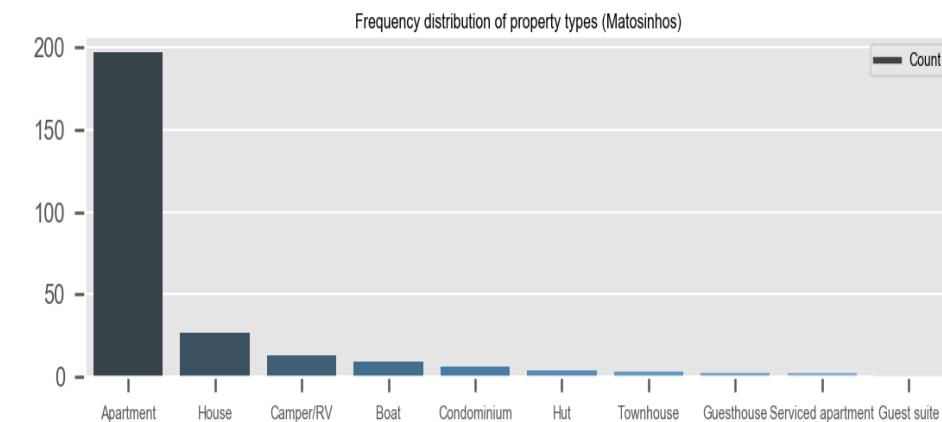
Analyzing the requirements about the amenities, we select the two neighborhoods that better satisfy the conditions: Matosinhos and Vila do Conde. From now, only these two neighborhoods will be considered in the analysis.

	Café	Bakery	Restaurant	Vegan Restaurant	Portuguese Restaurant
Espinho	0.25	0.14	0.11	0	0
Maia	0	0.10	0.15	0	0
Matosinhos	0.25	0.25	0	0	0
Paredes	0	0	0	1	0
Porto	0.04	0.03	0.07	0	0.12
Póvoa de Varzim	0.12	0	0.25	0	0
São João da Madeira	0.14	0.14	0.07	0	0.14
Vila do Conde	0.17	0.17	0.17	0	0
Vila Nova de Gaia	0	0	0	0	0

Property types

Analyzing the property types of all neighborhoods, Matosinhos and Vila do Conde, mostly of the properties available for rent by Airbnb in the District of Porto consists of apartments.

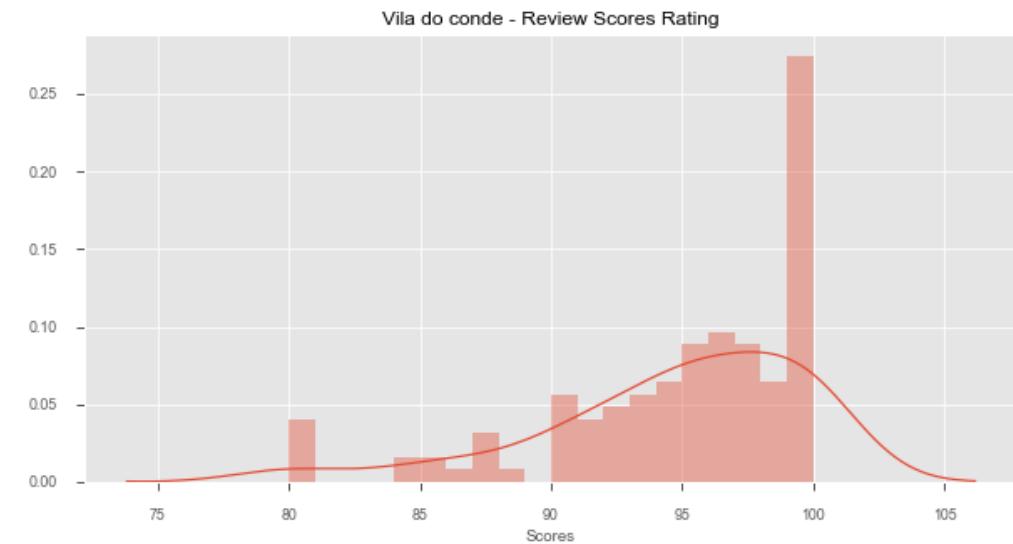
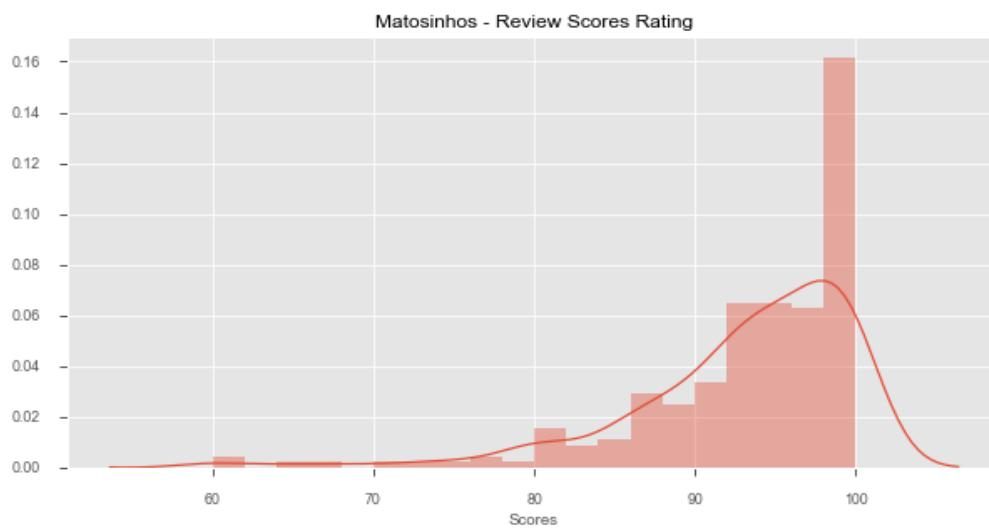
Considering this, we selected only the apartments in the Matosinhos and Vila do Conde neighborhood.



Review Score

Mostly of the apartments received scores between 90 and 100.

Considering the requirement, only apartments that received score equal 100 were selected.



Selection of properties

The requirements were applied to the final data frame.

As a result, a list of five properties was defined, being 3 in Matosinhos and 2 in Vila do Conde neighborhood.

```
#Cancellation policy = flexible or moderate
#Maximum_nights > 30
#Bedrooms >=2
#Price/guest <= 30

df_matosinhos_final = df_matosinhos[((df_matosinhos['cancellation_policy'] == 'flexible') |
                                         (df_matosinhos['cancellation_policy'] == 'moderate')) &
                                         (df_matosinhos['maximum_nights'] > 30) &
                                         (df_matosinhos['bedrooms'] >= 2) &
                                         (df_matosinhos['prices/guest'] <= 30)]

df_matosinhos_final
```

	b	accommodates	bathrooms	city	longitude	latitude	property_type	room_type	neighbourhood_group	neighbourhood_cleansed	id
0	2.0	5	5.0	São Mamede de Infesta e Senhora da Hora	-8.62918	41.18306	Apartment	Entire home/apt	MATOSINHOS	São Mamede de Infesta	36166471
1	3.0	4	4.0	Leça da Palmeira	-8.69144	41.19487	Apartment	Entire home/apt	MATOSINHOS	Matosinhos e Leça da Palmeira	36525996
2	2.0	7	7.0	Matosinhos	-8.68333	41.17981	Apartment	Entire home/apt	MATOSINHOS	Matosinhos e Leça da Palmeira	39226932
3	2.0	5	5.0	Árvore, Vila do Conde	-8.72321	41.33326	Apartment	Entire home/apt	VILA DO CONDE	Árvore	12560419
4	1.5	5	5.0	Vila do Conde	-8.75744	41.36160	Apartment	Entire home/apt	VILA DO CONDE	Vila do Conde	20710821

Conclusions

The purpose of this project was to identify Porto properties and neighborhoods to spend a month or two in the District of Porto.

By calculating amenities density distribution from Foursquare data, we have selected 2 neighborhoods that satisfy the requirements. Combining this result with Airbnb dataset, a list of five properties was produced to be analyzed:

<https://www.airbnb.com/rooms/12560419>

<https://www.airbnb.com/rooms/20710821>

<https://www.airbnb.com/rooms/36166471>

<https://www.airbnb.com/rooms/36525996>

<https://www.airbnb.com/rooms/39226932>

Conclusions

Analyzing the five properties resulted from the exploratory analysis of Airbnb and Foursquare data, I selected a property to stay during my travel to the District of Porto, showed bellow.

