

## IBM - Applied Data Science Capstone

### 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) on a short-term or long-term basis. The rentals properties include apartments (dominant), homes, boats, and whole lot more. Renters are presented with a good selection of listings and can filter by criteria like price, number of bedrooms, room type, and more.

A person is planning to spend a month in the District of Porto (Portugal) and is looking for a reasonable accommodation from Airbnb. In addition, the accommodation must be in a great location, considering the proximity to bakeries, restaurants and cafes.

This project aims to solve this problem, by conducting some exploratory data analysis using the Foursquare API and the Airbnb list of properties.

The criteria of the person are:

- Entire home/apt
- 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

#### 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* (which will hereafter be simply referred to as *price*), *number of beds*, *property type*, *neighborhood*, *cleaning fee*, *security deposit*, *host's ratings score*, etc.

The data contains a total of 12,005. Each row in the data set is a listing available for rental in Airbnb's site. The columns describe different characteristics of each listing (features).

Some of the more important features this project will look into are the following:

- accommodates: the number of guests the rental can accommodate
- bedrooms: number of bedrooms included in the rental
- bathrooms: number of bathrooms included in the rental

- beds: number of beds included in the rental
- price: nightly price for the rental
- minimum\_nights: minimum number of nights a guest can stay for the rental
- maximum\_nights: maximum number of nights a guest can stay for the rental
- review\_scores\_rating: score of reviews that previous guests have left

The geographic dataset named neighborhood.geoson (available in Inside Airbnb) was used to create exploratory maps of the location.

I've used the Foursquare API to explore neighborhoods in the District of Porto. The Foursquare explore function will be used to get the most common venue categories in each neighborhood. The following information are retrieved:

- Venue ID
- Venue Name
- Coordinates
- Categories Name

	id	listing_url	scrape_id	last_scraped	name	summary	space	description	experiences_offered	neighborhood
0	41339	<a href="https://www.airbnb.com/rooms/41339">https://www.airbnb.com/rooms/41339</a>	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	<a href="https://www.airbnb.com/rooms/55111">https://www.airbnb.com/rooms/55111</a>	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. l...	First Floor in House with shared Swimmingpool a...	none	
2	70925	<a href="https://www.airbnb.com/rooms/70925">https://www.airbnb.com/rooms/70925</a>	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 hous supermark
3	73828	<a href="https://www.airbnb.com/rooms/73828">https://www.airbnb.com/rooms/73828</a>	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	<a href="https://www.airbnb.com/rooms/76436">https://www.airbnb.com/rooms/76436</a>	20200321155050	2020-03-21	Go2oport@ River Side	Elegant and modern apartment, facing south in ...	Comfortable space, in one of the most beautifu...	Elegant and modern apartment, facing south in ...	none	In this enjoy b

5 rows × 106 columns

Figure 1: Data frame created from 'listings.csv'.