

# 605 FINAL PROJECT: RECOMMENDATION OF AIRBNB HOUSING

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## Motivation and Method

- Airbnb is a widely used online marketplace for housestays and tourism experiences.
- It is easy to approach Airbnb dataset.
- Visualize renting records using packages like ggplot2,ggmap, leaflet, grid.
- Selected variables and put weights on each variable to make a recommendation for housing in different cities.

## Dataset

NAME	VARIABLE	TYPE
Listings	id, name, description, neighbor_overview, price, number_of_reviews, host_is_superhost	Numerical, text, categorical
Reviews	review_scores_rating, review_scores_cleanliness, review_scores_checkin, review_scores_communication, review_scores_location	Numerical
Calendar	last_scraped, minimum_nights, maximum_nights, calendar_updated, instant_bookable	Datetime, numerical, text, categorical

Fig. 1: Airbnb Dataset

- Airbnb Dataset: Paris, Amsterdam, New York City, Barcelona, London.
- Categorize "price" into four levels: Not Expensive, Moderate, Expensive, Deluxy.
- Categorize "Size" into three levels: Small, Moderate, Large.

## How to Become a Superhost

- We use "host response time", "description" and "host response rate" as inputs and is or isn't superhost as outputs.
- Model One has high accuracy in predicting is superhost. Model Two has high accuracy in predicting isn't superhost.

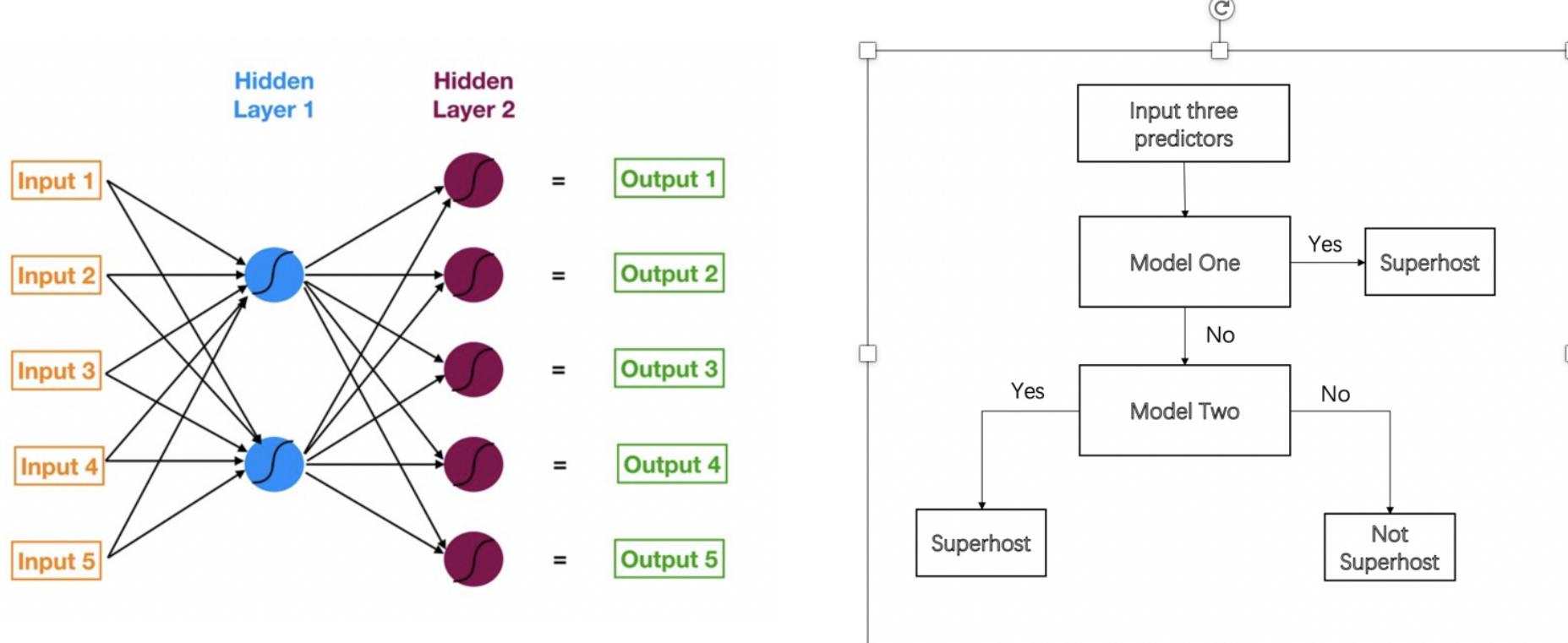


Fig. 2: Airbnb Dataset

## Visualization



Fig. 3: Amsterdam Price Map

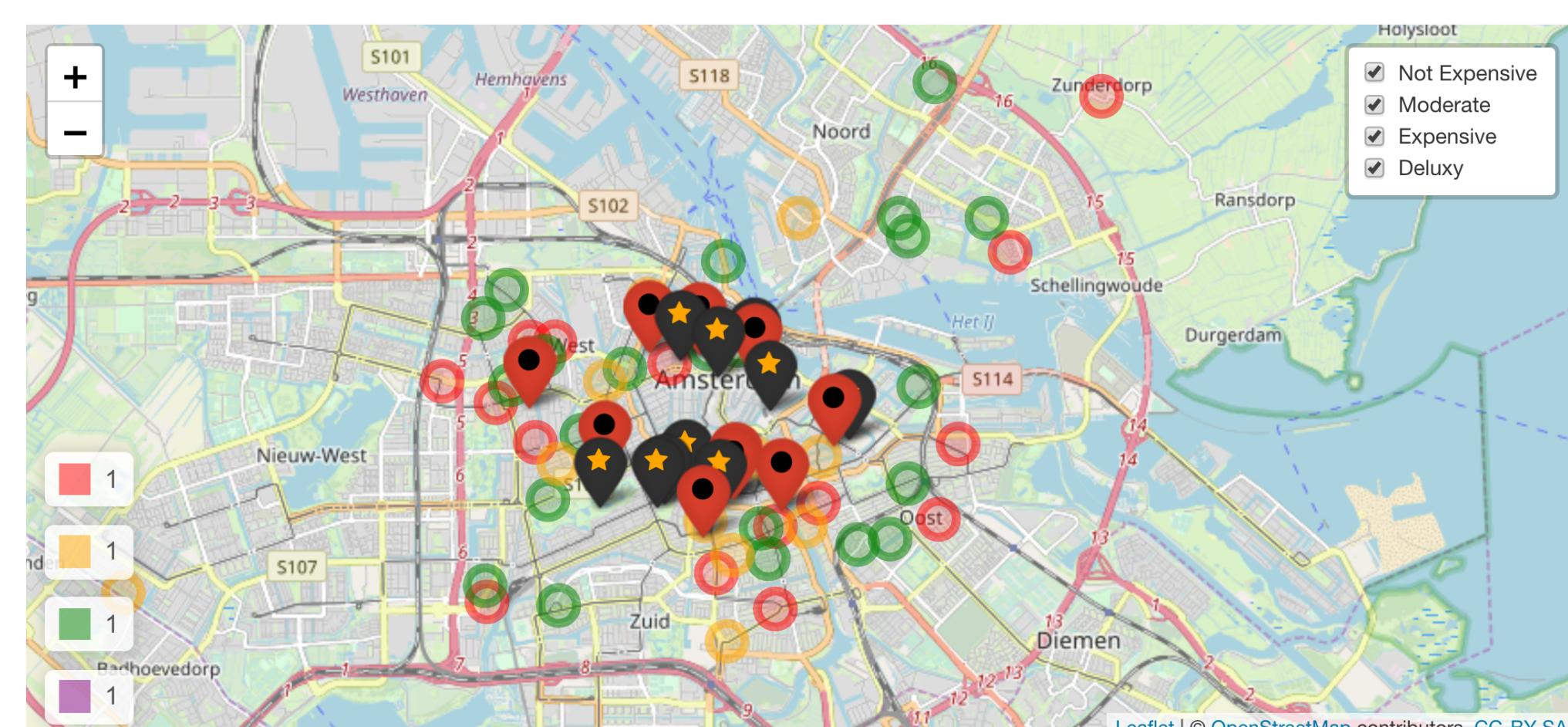


Fig. 4: Amsterdam Price Map

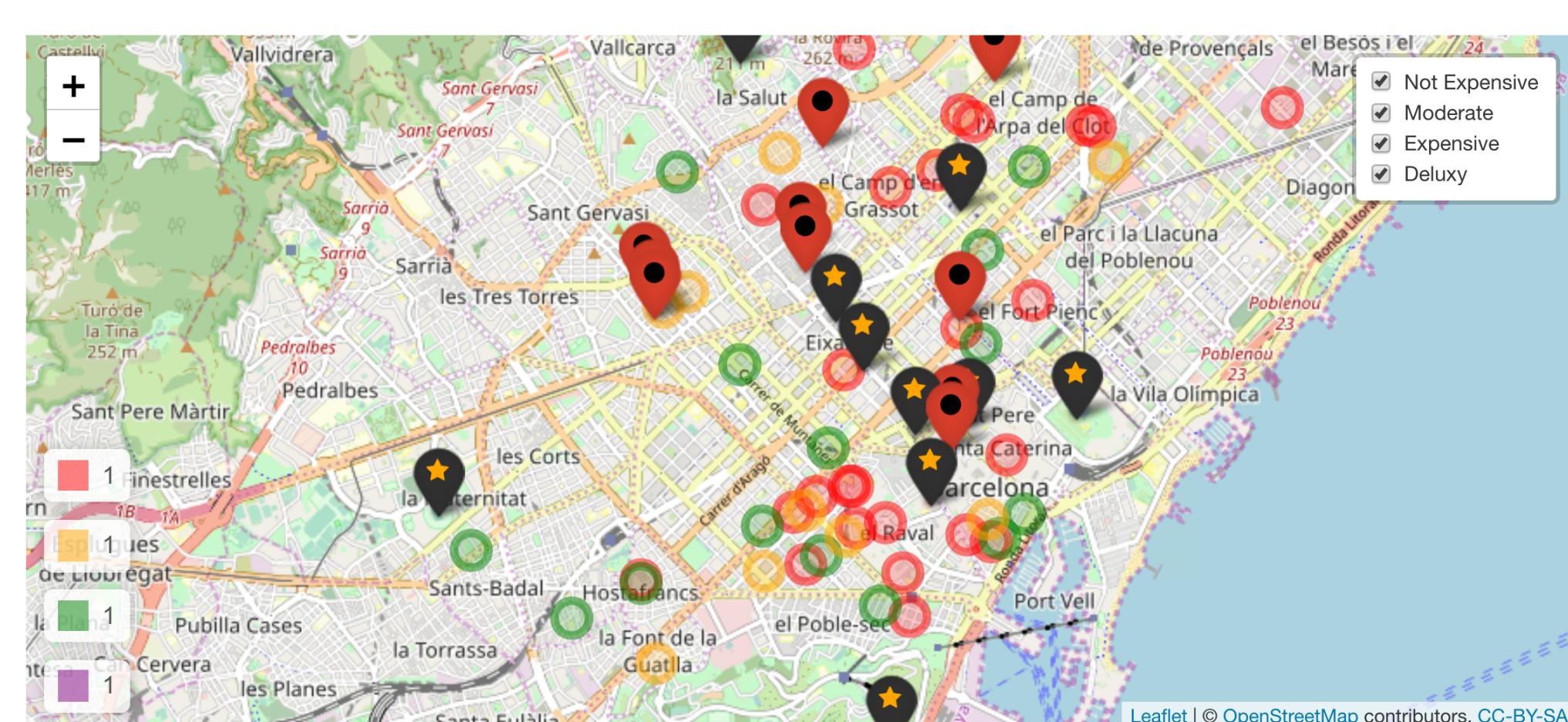


Fig. 5: Barcelona Price Map

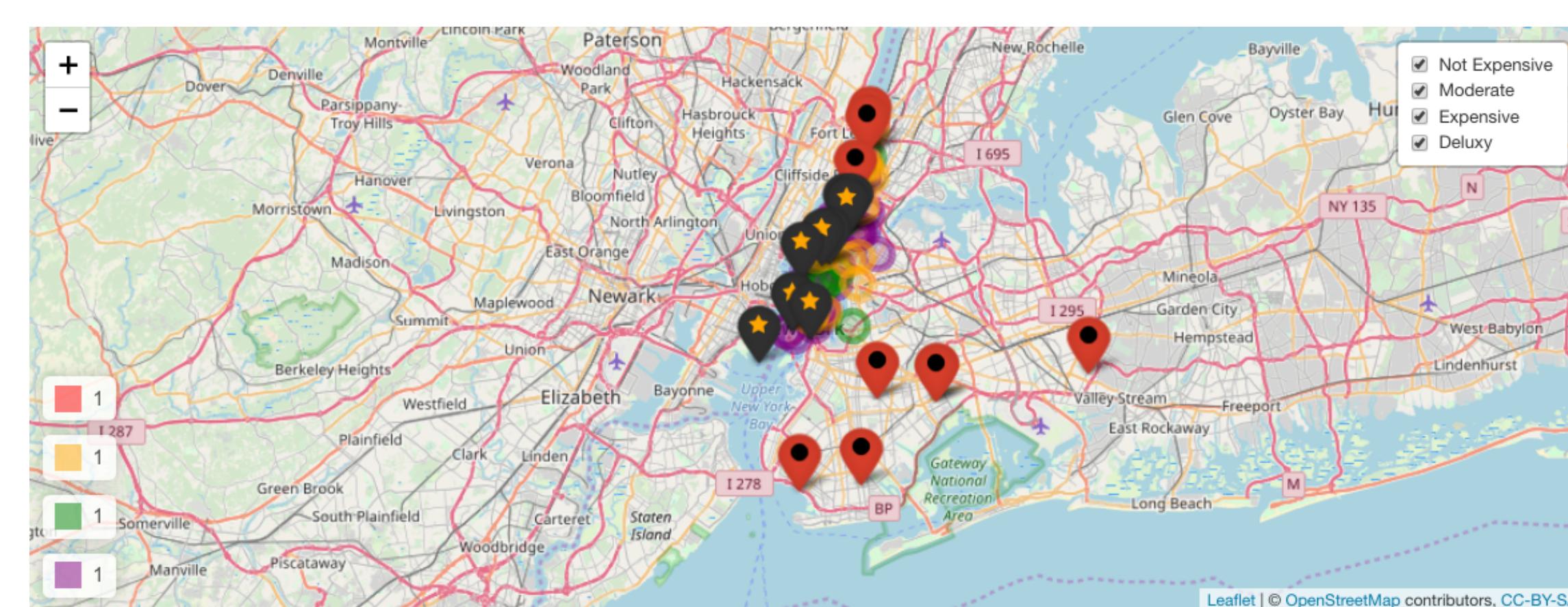


Fig. 6: NYC Price Map

## Recommendations

- In Amsterdam, the lowest given weight is 0.88(Penthouse Studio with Roof terrace and city view) and the highest given weight is 0.91(Trendy apartment in Oud-West).
- In Paris, the lowest given weight is 0.84(50 m in the heart of the capital SPA) and the highest given weight is 0.89(Avenue Montaigne Apartment in the Luxury Heart of Paris).
- In London, the lowest given weight is 0.85(Great apartment, central location, stunning views) and the highest given weight is 0.90(Explore Borough Markets from a Room in an Award Winning Loft).
- In New York, the lowest given weight is 0.61(Master Bedroom in Spacious Washington Heights Apt.) and the highest given weight is 0.63(Bright quiet and Comfortable).
- In Barcelona, the lowest given weight is 0.88(Estudio en Gracia /Studio flat) and the highest given weight is 0.92(Business Apartment Diagonal Francesc Macia).

## Comparison

- Barcelona: According to the plot, recommended houses and tourist attractions gathered together in the center of Barcelona.
- Amsterdam: There is no "Not Expensive" house show up on the map, houses with "Moderate", "Expensive", and "Deluxy" spread out on the map. Apparently, it has most redpoints on the map, which are houses with price level labeled as "Deluxy".
- New York: All top ten iconic sites locate at Manhattan area, however, according to our recommendation criterion, houses in other boroughs such as Brooklyn are also recommended. Those houses stand out because their cheaper rents and dynamic neighbourhoods.

## Conclusion

- Based on our "good houses" criteria, we highly recommend Airbnb users to travel in Paris, Barcelona and Amsterdam among five top travel cities, where our recommended houses surround around tourist attractions. Reasonable price with great lively and dynamic neighborhoods would provide a better traveling experience.
- In terms of traveling expense, New York and Barcelona would be the top two recommendations.
- From the recommendation index we calculated, all index of home-stay in New York city is relatively low. Since all home-stays are kind of far from the most popular attraction and the price in New York is very high. Compare with other cities, New York is not quite much recommended.
- In Paris, London, Amsterdam and Barcelona, our recommended home-stays are all close to the attractions.
- Almost all the home-stays we recommend are super-host except for one hotel in Paris.