# A Comparison of Short-Term and Long-Term Rental Market in an Italian City

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**Abstract.** The increasing trend of the amount of properties entering in the short-term rental market has been involving most of global and European capitals. Latest innovative computer technologies, especially digital platforms, the availability of a housing stock until now underutilized or unused and changing styles of travel, concurrently, are the factors that have determined the success of Airbnb. The opportunity to obtain an extra income makes housing owners behaving as businesspeople, and therefore, entering their properties in the short-term rental market, when the latter is particularly profitable compared to the long-term rental market. However, the extent of this profit, and how it is distributed spatially between different hosts, requires some analysis considering specific conditions about the local real estate market. This research present compares the profitability of the two rental market segments in the city of Bologna. This study integrates in a research field, both at international and at national sphere, currently.

**Keywords:** Airbnb · Real estate market · Short-term rent · Long-term rent · GIS

## 1 Introduction

In general, the success of the sharing economy in real estate field is a consequence of many factors. On the one hand, there is the dynamic of existing housing stock, which had sized and designed specifically for lifestyle, needs and family size outdated, at this point, and that instead now is very often underutilized or unused. On the other hand, there is a new style of travel, based, not only, on the deep knowing of the physical place but also on interests which could be defined of anthropological nature. Latest innovative computer technologies, especially digital platforms have allowed these factors to meet according to the law of supply and demand.

In the last decade, it has been observed an increasing trend of the amount of listing available on different digital platforms. Currently, Airbnb is one of the leader companies in the sphere of economic sharing. It is one of the largest digital marketplaces in

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the world offering about 7 millions of accommodations, 40,000 handcrafted activities, available in over 220 countries and over 100,000 cities. The real estate offer is particularly diversified, including not only flats and tiny-houses, but also castles and tree house.

A study aimed to identify the macroeconomic factors that have contributed to the growth of the listings, has observed a positive correlation with the part GDP resulting from the tourism and trade industry, with the nominal exchange rate and with the technological development index [1].

The phenomenon of functional conversion of housing into hotel "hotelization" so-called [2], b&b for short term rent, alter the balances of the urban zones scheme guaranteed from the rules of urban planning. This has raised the attention of local governments, worried about the potential consequences in terms of environmental and economic impact and social equity, not only in the central areas but also in the others neighbourhoods of the city.

Even though the centrality remains one of the most decisive in the choice to convert the house use, as demonstrated by listings location, some studies have observed, at an international level, a greater dispersion of the same, which have spread over time also to the peripheral residential neighbourhoods, close to the central areas [3–5]. There are some cases, such as the European cities of Berlin, London, and Milan, where the spatial distribution of Airbnb listings is more scattered and it was developed, early, in residential neighbourhoods, often located in suburban area, that turn out to be very attractive and highly recognizable [6, 7].

A study carried out for the main tourism-orientated Italian cities has highlighted that in the inner cities the percentage related to the 'entire apartment' typology is greater than the 'single room' and 'share room' typologies [6]. The same research has shown that this phenomenon is growing and, in some cities, has reached high values, such as 18% in Florence, 25% in Matera, 8% in Rome. This could lead to progressive gentrification process.

About the possible property externalities due to short-term rent in residential neighbourhoods, conflicting views appear from researches. Some researchers assert that the economic affect local companies due to the growing demand for goods and services, increase market prices of properties caused by increasing of demand for retail spaces [8]. The latter dynamic could produce a phenomenon of informal regeneration of the suburbs [9]. Other authors [3] instead, showed that the flow of tourism and thus the presence of strangers inside a building and neighbourhoods, and the consequent reduction of perceived degree of safety, the increasing of noises, the decline of social cohesion of neighbourhood relationships, caused the decrease of the property market values.

A research work carried out for European cities to estimate the effect of Airbnb on hotels highlighted a dual effect. On the one hand a decrease of hotel occupancy rates, and on the other hand an increasing of the average daily rates and the consequence positive effect on total hotel revenue. However, the latter condition has greater likely to be reached by high-end hotels that meet a demand less elastic to price changes [10]. Therefore, the low-cost hotels are the most disadvantaged class. The same findings have been confirmed by a research carried out on the city of Venice, highlighting that

Airbnb accommodations are a business rivals of hotels of intermediate price category rather than luxury and cheaper hotels [11].

This research provides a comparison between the profitability the Short-Term and Long-Term rental market. For this aim, we used Short-Term rent data extracted directly from Airbnb platform by Inside Airbnb, while the Long-term rent data has been extracted from Italian Real Estate Market Observatory.

The second section reports a short review of researches aimed to evaluate possible interactions between Short-Term rental market and the Long-Term rental market. The third section explains the case study, the data, the data analysis methodology and the results. Finally, in the fourth section the conclusions and the future research developments are reported.

## 2 Airbnb Effects on the Local Long-Term Rental Market

On the supply side, Short-Term rent can be an alternative to the Long-Term rent. Usually, expected profits related to the two rental market segments are different each other. The measure of this difference could make owners move from one to the other, and in special conditions, choose to invest through acquisition of new real estate properties, to be included in the short-term rental market.

In Italy, these conditions could be produced by incipient introduction of fiscal incentives aimed to reduce the costs of refurbishment able to upgrade seismic and energy performances, not only for first residential houses but also for second residential houses. The reduction of these refurbishment's costs would make the entire real estate investment process, refurbishment and subsequent rent more economic and financial convenient. As result, a probable increase of house demands as investment, usually not influenced by the possibility to obtain a profit into long term rental market [12]. However, the validity of this hypothesis requires further investigations about eventual sale prices fluctuations, these being linked not only to the refurbishment and maintenance costs, but also to other factors, intrinsic and extrinsic to the asset [13, 14]. Furthermore, permanence of the above conditions, intended as the time frame in which the fiscal incentives are effective, will can influence on the size of phenomenon, thus it should be considered.

The relationship between the two market segments has been examined in several national and international research works. Moreover, at national level, researches did not explore the issue of regulations, impact of the phenomenon on traditional local tourism companies, prices development, and correlation with macroeconomics factors. A short review of international researches about interaction between two segments has reported, below.

The study carried out by Ayouba K. et al. (2019) [15] on eight French cities has shown that the density of Airbnb rentals puts upward pressure on rents in Lyon, Montpellier, and Paris, respectively 0.3851%, 0.3982% and 0.5242%, whereas it has no significant effects in the other cities (Nantes, Marseille, Nice, Toulouse and Bayonne). An increasing of density of professional Airbnb rentals, by host with at least two lodgings and/or more than 120 days of reservations per years has a greater effect on rents in Paris with 1.2372%, while it no longer affects Lyon and Montpellier.

Analogously, Segù M. (2018) for Barcelona found that presence of Airbnb is responsible for 4% increase in Long-Term rents [16]. Horn et al. (2017) showed that, in Boston, a one standard deviation increase in Airbnb listing is associated with an increase in asking rents of 0.4% [17].

While in other cities, such as Prague the quantification of the percentage attributable to Airbnb rents, is difficult due to numerous factors influencing prices in local rental market. One of these is growing of demand linked to an increasing demographic trend. This latter and the lack of housing, even with a low number of Airbnb listings, could reduce housing supply in the long-term rental market, significantly, and a consequent price increasing [18].

In New York, Coles et al. [3] determined the Break-even Nights, intended as the number of nights that allow reaching in short-term rent market the same revenue of the long-term market, assume lower value in lower-income and middle-income neighborhoods, and in neighbourhoods outside of Manhattan, such as Brooklyn and Queens. On contrary, it assumes higher value in Manhattan. This because the premium that long-term renters are willing to pay to live in the city's most central and highest rent neighborhoods exceeds the premium that short-term renters are willing to pay to live in those same neighbourhoods. Moreover, the most spread Airbnb property typology in less-central neighbourhoods is 'single room' suggesting that most hosts are residents rather than investors or professional hosts. The same study highlighted that over the analysis period, 2011–2016, short-term rentals have become less profitable compared to those of long-term rentals. The risk of conversion of long-term rental property into Airbnb is relatively low, consequently.

Based on the mentioned researches, the profitable of Short-term rental market and effects in terms of prices of long-term rents, are localized: these change from one city to another, and in the same city from one neighbourhood to another. Moreover, it is no simple to evaluate the impact of Airbnb platform on long-term rental market due to several macroeconomic variables that condition it simultaneously, for examples: employment rate, GDP, demographic trend, availability of housing property in the rental market.

Therefore, governments, to control the growing of the Airbnb phenomenon, should consider of the above aspects; hence select the best kind of regulations, such as restriction of nights rental, fiscal measures, authorizations or permits.

## 3 Case Study

### 3.1 Bologna and the Touristic Flow

Bologna is the city chosen as the case study. It has been selected because it represents one of Italian art cities with greater tourist vocation. From the report "*Tourism in the metropolitan city of Bologna*" dated November 2019 [19], appears that 2,372,172 tourist arrivals and 4,729,192 tourist presences were recorded over 2018, respectively 8.19% and 2.64% increasing compared to 2017. In comparative terms, the arrivals have

increased since 2014 by 44%, against 20.2% of the Italian average. The 'average length of stay' of tourists in accommodations of town is about 2 nights, against 3.35 nights of Italian one (Table 1).

**Table 1.** Average period of stay

| Stay Index (Nights) | | | | | |
|---|---|---|---|---|---|
| Area | 2014 | 2015 | 2016 | 2017 | 2018 |
| Bologna | 1.96 | 1.89 | 2.01 | 2.12 | 1.98 |
| The rest of the metropolitan city | 2.02 | 1.93 | 2.03 | 2.07 | 2.01 |
| Metropolitan city | 1,98 | 1.90 | 2.02 | 2.10 | 1.99 |

In Bologna, since May to September, arrivals of foreign visitors exceed those of Italian, while over autumn and winter trends are switch. In fact, foreign tourists do not prefer Bologna as destination to Christmas holidays. The graph (Fig. 1) shows that alternation of the two tourist flows over year, guarantees an almost constant number of attendees during the different seasons.

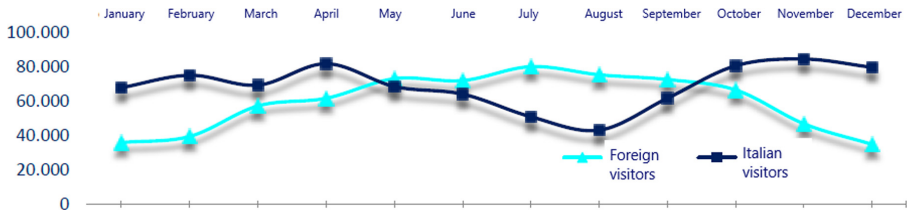



**Fig. 1.** Attendees per month-2018

The same report highlighted another event: Bologna has involved by a real outbreak of other tourist accommodations than hotels, over 2018, that represents a 20% increasing compared to 2017 (Fig. 2). Simultaneously a stagnation of traditional tourist accommodations, such as hotels, has observed. The growing of other tourist accommodations reached about 70% since 2013 to 2018, greater than 48% Italian average growing. In Bologna, 64.11% of other tourist accommodations are rental housing. The above increasing is likely due to the n. 50/2017 Legislative Decree [20], which had introduced a tax for short-term rental contracts, related to a length of stay less than 30 days, stipulated by natural persons or intermediaries.

The attendees rate, approximately constant over the entire year is a favorable factor to development of Airbnb phenomenon, as an alternative to long-term rents, certainly.

However, the way in which the increasing has spread over neighbourhoods, and possible effects, in terms of spatial spread and development of listings trend caused by introduction of a different kind of rules, such as the restriction of nights rental, have not been investigated yet.

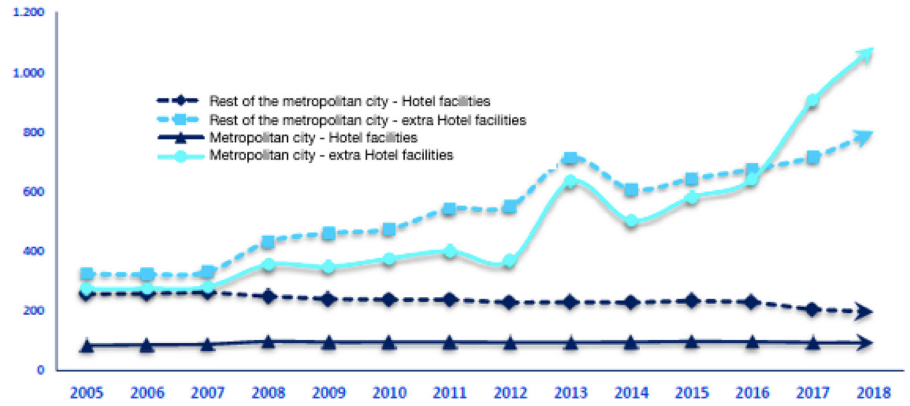



**Fig. 2.** Time series of the number of accommodation, hotel and non-hotel structures in the city (Bologna) and in the rest of the metropolitan city

### 3.2 Housing Stock in Bologna

A large percentage of available housing stock, which has been resulting unused, is a decisive factor to spread of short-term rents, as already mentioned.

From a report [21] about the development of housing stock, published in 2005, appears that, in 2001, no inhabitants occupied 21,500 housing. Two-thirds (2/3) of these (14,500 units or 7% of the entire housing real estate) accommodated university students. The remaining one-thirds (1/3), about 7,000 units, were unused in a systematic or occasional way, for example vacant houses or available to owners, or in a bad state of conservation. These latter represent 3–4% of existing real estate.

In 2011 [22] the preliminary data of housing units is about 206,582 in Bologna, and 88.4% of these was occupied by resident families. These data are in line with those provided by a study [23] carried out on Italian art cities, particularly for city of Bologna it provides that the ratio between number of Airbnb listings and available residential asset is 2.7%.

In 2018, the real estate registry consists of 225,000 residential units. The residential asset has grown by over 4,200 units (+2%) over 9 years, and 630 of those over the last year. New units become, not only by new constructions, but also very often by split of property, merger of existing properties, or amendment related to new units entering in the real estate asset registry [24].

All these phenomena are probably linked not only to a decrease of housing space consequently to those of number of members in the household, but also to conversion of housing into studios or mini-apartments to be rented in the short-term rent market.

### 3.3 Data

#### Airbnb Data

The data have been extracted from Inside Airbnb, a no commercial web site that collect data related to listings from web site of Airbnb directly. The city of Bologna shows the

same trend of other Italian cities (Fig. 3) characterized by a prevalence of listings related to entire apartments compared to private rooms and shared rooms. Only a part of provided information for each listing have been useful to the present research, as following:

- ID codes, associated to each listing and to each host;
- Spatial information: geographical coordinates (latitude, longitude) and neighbour hoods;
- Property typology: single room, share room, entire apartment; number of bathrooms, number of bedrooms, number of guests, description of property provided by hosts;
- Number of reviews in last twelve months;
- Minimum length of stay;
- Availability over year;
- Price per night.

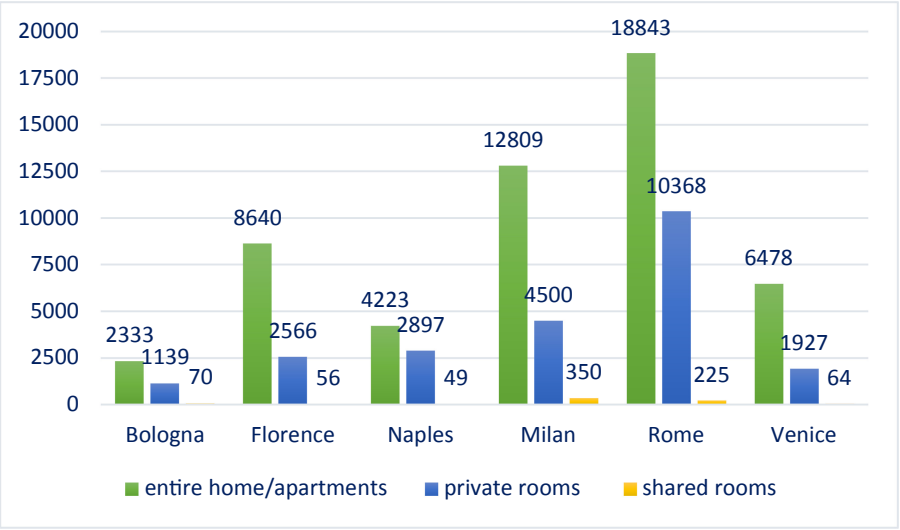



**Fig. 3.** Number of Airbnb listings of main Italian cities (Source: http://www.insideairbnb.com/, last accessed on 10th June 2020)

In order to compare the profitability of the two segments of market, short-term rent and long-term rent, twelve months, from December 2018 to November 2019, have been chosen as analysis period. Only listings related to property typology of entire apartment and at least one review have been taking into account (Fig. 4). The analyzed sample consist of 830 properties.

The description of property provided by hosts have been undergone text analysis aimed to extract information about the apartment surface area, where host had declared it. Using observed surfaces data related to 384 apartments, a multivariate regression

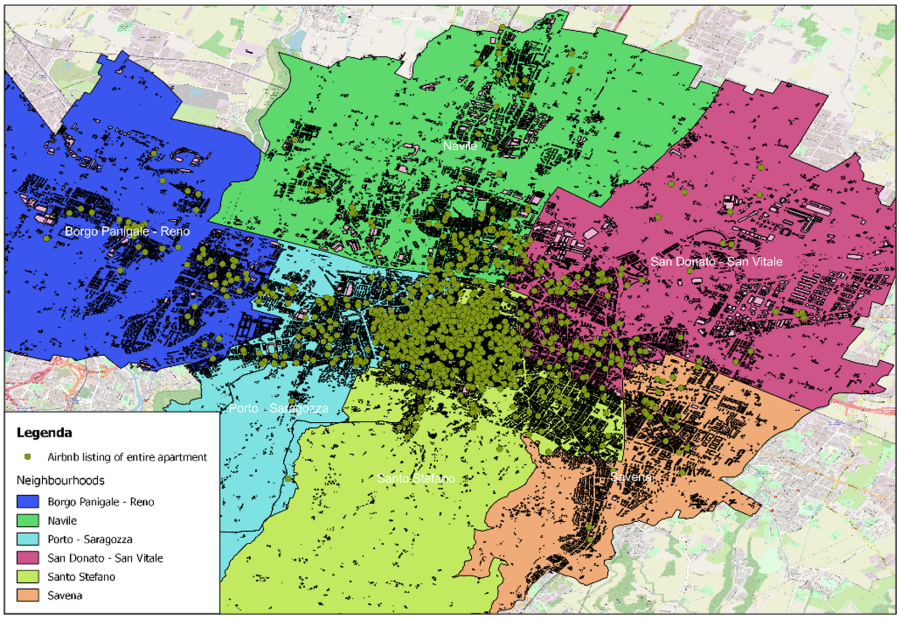



**Fig. 4.** Listings of Entire apartments

analysis allowed to determinate surface (independent variable) as a function of following dependent variables: number of guests, number of bathrooms and number bedrooms.

The regression Eq. (1) and check parameters of analysis are showed in Tables 2 and 3.

$$\text{sqm} = -8.7187 + 4.3192 * \text{guests} + 28.4993 * \text{bathrooms} + 18.4445 * \text{bedrooms} \quad (1)$$

**Table 2.** Regression statistics

| | | | | | |
|---|---|---|---|---|---|
| R | 0.7820 | **R-Squared** | **0.6115** | Adjusted R-Squared | 0.6084 |
| MSE | 539.727 | S | 23.2320 | MAPE | 24.7245 |
| Durbin-Watson | 2.0573 | | | | |
| PRESS | 210314.8713 | PRESS RMSE | 23.4028 | Predicted R-Squared | 0.6016 |

**Table 3.** Regression parameters

| | Coefficients | Standard error | t Stat | p-value | H0 (5%) |
|---|---|---|---|---|---|
| Intercept | −8.7186985 | 3.8043726 | −2.2917573 | .0224659 | Rejected |
| Guests | 4.3191848 | 1.1196786 | 3.8575220 | .0001345 | Rejected |
| Bathrooms | 28.4992876 | 3.5281220 | 8.0777501 | .00000 | Rejected |
| Bedrooms | 18.4444509 | 2.2048502 | 8.3653987 | .00000 | Rejected |

Gross revenues have been calculated based on the occupancy rate, which has been estimated trough the methodology suggested by Inside Airbnb, therefore using a 50% review rate to convert reviews to estimated bookings[1] and then, multiply these latter by the minimum length of stay and by average price. At the end the ratio of gross revenue per month and surface area, has been calculated. This ratio represents a parameter useful to the comparison with the revenues of long-term rental market.

**Data of Long-Term Rental Market**

The data about the profitability of long-term rental market have been extracted from the database of Real Estate Market Observatory[2]. Based on market values and rental prices, local real estate market is shared into homogeneous areas and for each of these a price range is provided as a function of the state of conservation and building typology. The real estate asset of Bologna consists of 28 areas with a residential destination. An indicator of profitability as the average value of the range's rental prices, with reference to the consultation of first six months 2019, related to the more spread building typology in the area (Fig. 5), has been considered.

### 3.4 The Comparison Between Long-Term and Short-Term Rental Market

Bringing together as a function of the above-mentioned areas, larger part of Airbnb listings are located in inner neighbourhoods city or those adjacent to these. Particularly, 18% of the sample is in central areas, 43% in those adjacent to these, 37% in peripheral areas, and at the end 2% in suburban areas. The number of Airbnb listings to each area is reported in Fig. 6.

The ratio (Q) of the gross revenues per month and surface area, respectively, of short-term rent and long-term rent allowed for a comparison between the profitability of the two rental market segments. The ratio has been calculated to each individual listing. The obtained values have formed two main classes $Q < 1$; $Q >= 1$. Then, each main class has been divided in subclasses. The cases with a greater Q ratio than one, which have shown economic advantage in the short-term rental market, and the corresponding secondary classification, are reported in Fig. 7. While the cases with a less Q ratio than one, with an economic advantage in the long-term rental market are reported in Fig. 8.

[1] http://insideairbnb.com/about.html.

[2] https://wwwt.agenziaentrate.gov.it/geopoi_omi/index.php.

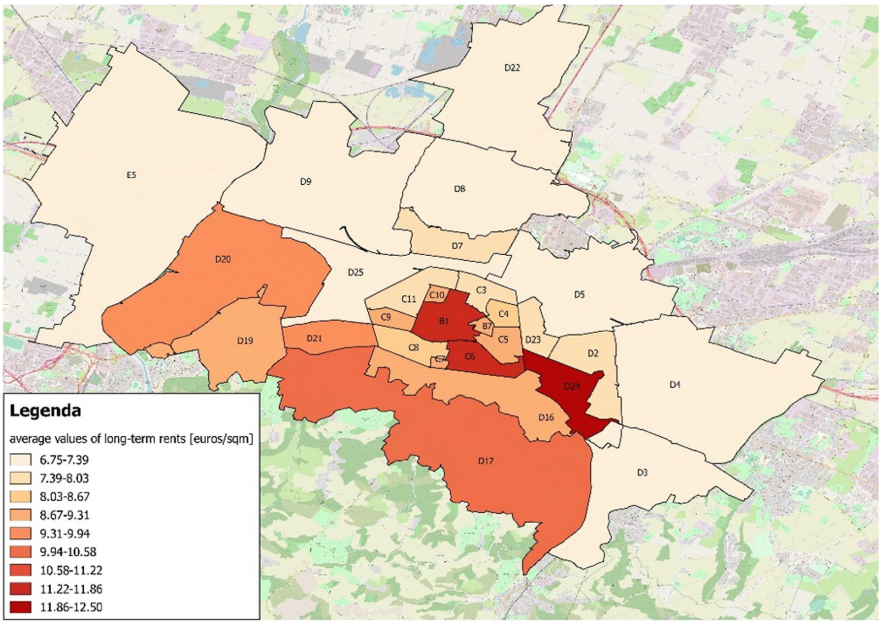



**Fig. 5.** Own depiction of Average long-term rents of areas based on www.agenziaentrate.gov.it/geopoi_omi/index.php

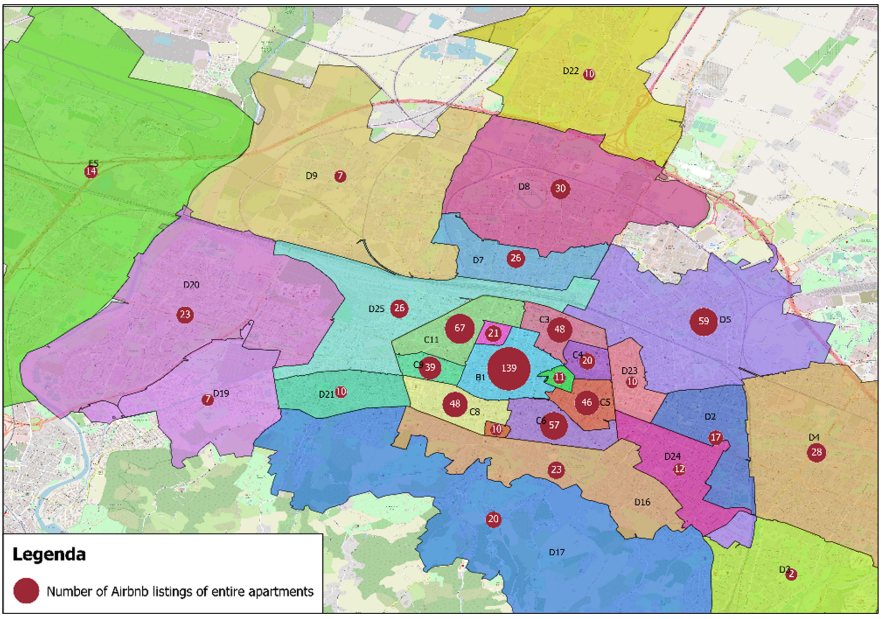



**Fig. 6.** Number of Airbnb listings to each area

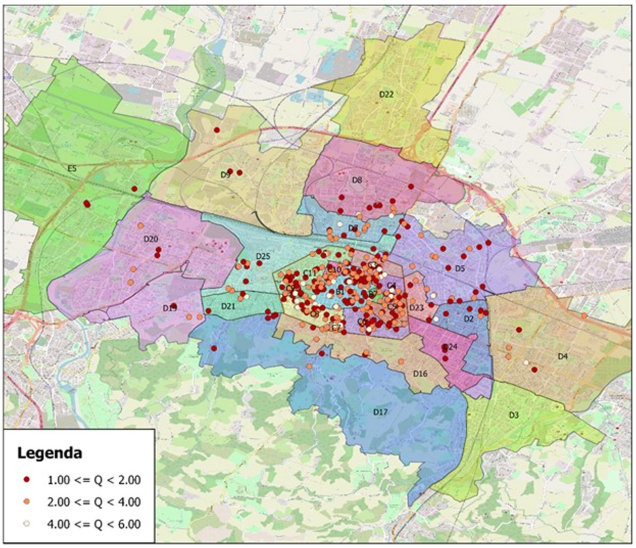



**Fig. 7.** Airbnb bookings with Q >= 1

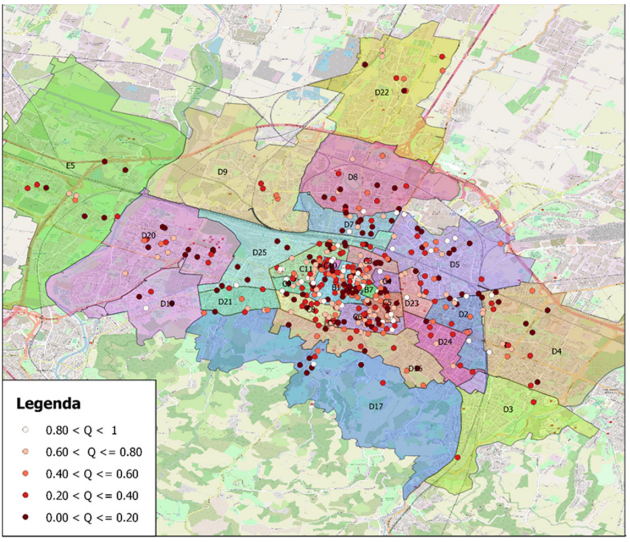



**Fig. 8.** Airbnb bookings with Q < 1

Generally, 49% of the Airbnb properties reach an advantage economic respect to the long-term rental market, and it is noted that moving away from central areas the convenience in long-term rent increases. Figures 8 and 10 show, respectively, the numerical distributions inside the secondary classifications. In the histogram of the

Fig. 9, it is observed that great part of the properties succeeds to obtain a gross revenue in the short term until four times advanced to the correspondent one in the long term.

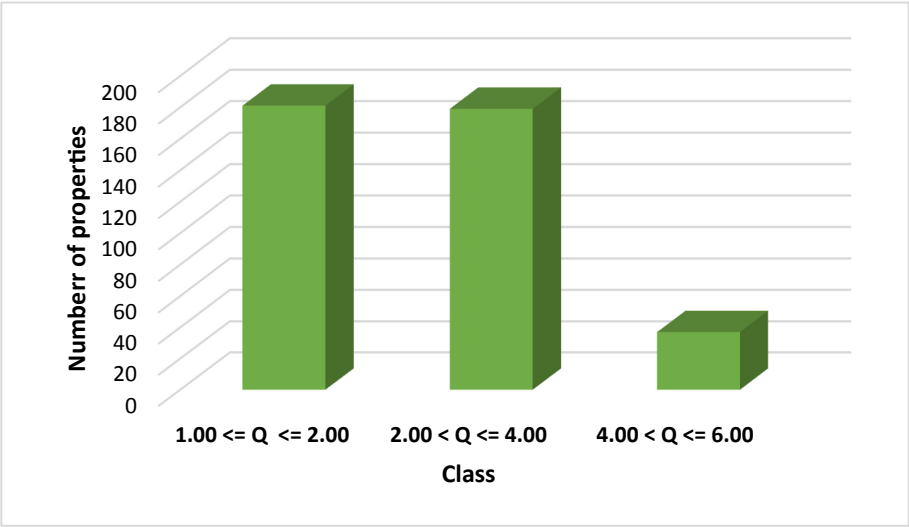



**Fig. 9.** Subclasses Q >= 1

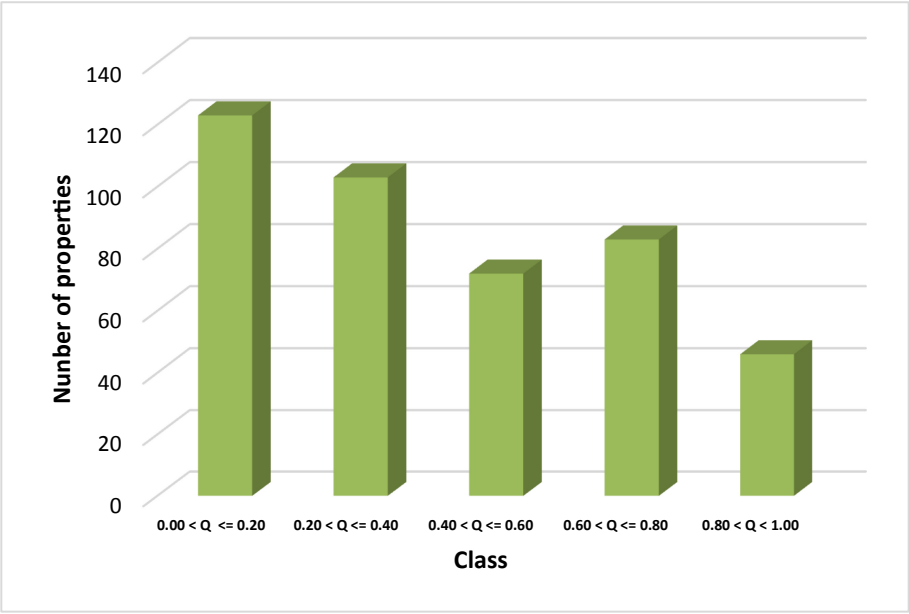



**Fig. 10.** Subclasses Q < 1

Moreover, the comparison (Fig. 11) reveals that inside the central areas and adjacent to those the properties with an advantage in short term is more numerous than those for which the same advantage does not occur. Meanwhile the opposite situation has been realized in peripheral areas, except for the D25 area.

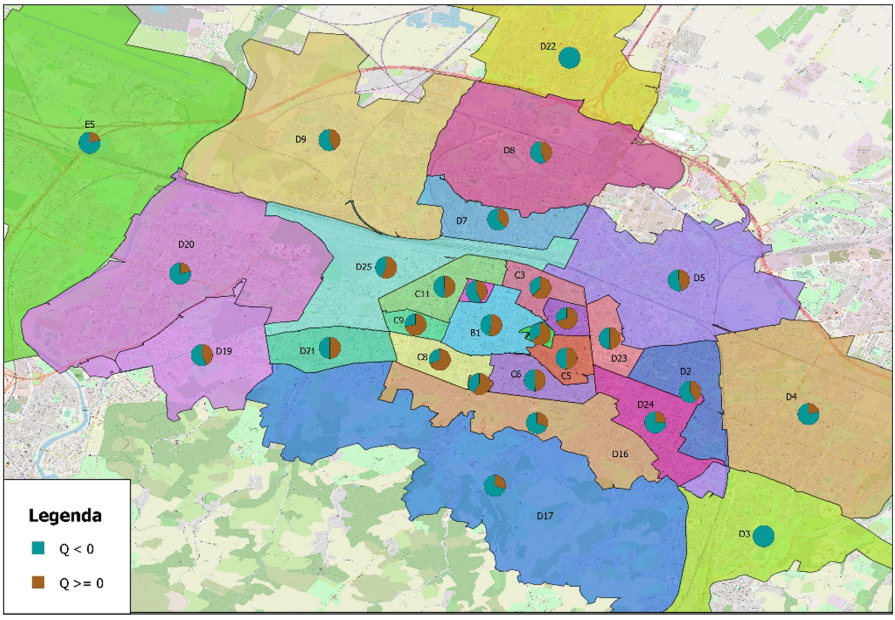



**Fig. 11.** Comparison of economic vantage in short-term rent and long-term rent

The revenues of short-term rental market have been determined only based on the estimated bookings of the Airbnb platform. However, most hosts, usually, promote their properties simultaneously on different digital platforms. Therefore, the percentage of owners that achieve economic advantage to rent their properties in short-term, is likely higher than the one reported here.

## 4 Conclusions and Future Developments

The Airbnb platform allows to housing owners to put easily and flexibly their apartments in the short-term rental market, over time. Owners consider this option as a convenient alternative, in terms of profitability, as compared to traditional long-term rental market.

The present contribute provides the comparison of the profitability of the two options in the city of Bologna. The comparison has been carried out through an indicator as ratio (Q) of the gross revenues per month and surface area, respectively, of short-term rent and long-term rent. For 49% properties, listed on Airbnb platform now,

this condition is more profitable than the long-term one. However, this data is underestimated. In fact, most hosts, usually, promote their properties simultaneously on different digital platforms, intercepting a larger demand than one observed here that is limited to Airbnb platform, and thus they can reach greater revenue. The results also showed that properties that reach a larger profitability through short-term lease are mostly concentrated in central neighbourhoods, Instead in peripheral neighbourhoods long-term rental obtain economic advantages. Based on these results, next future researches are going to investigate the spatial heterogeneity of the profitability indicator. Starting from these results future researches will investigate spatial heterogeneity of the indicator of profitability, considering potential factors linked to it, such as: socio-economic factors, capital and income availability, social composition of the inhabitants of neighbourhoods, housing stock of areas.

This could highlight phenomena of informal regeneration or of gentrification occurred in some neighbourhoods, and then, provide useful suggestions to define rules capable to adjust and to control the development those phenomena.

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