

AIRBNB IN BUDAPEST: ANALYSING SPATIAL PATTERNS AND ROOM RATES OF HOTELS AND PEER-TO-PEER ACCOMMODATIONS

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Abstract: The aim of the paper is to reveal how the proliferation of Airbnb is shaping hotel room and short-term accommodation rates in Budapest, which areas are most affected and whether there is any spatial concentration. We performed a manually made internet data query and applied GIS-based mapping methods to visualise the spatiality of Airbnb in Budapest and highlight the differences in room rates. Our results show that both the hotel and Airbnb supply concentrates mainly in the centre of the city, causing fierce competition between hotels and Airbnb hosts. Furthermore, Airbnb also has a strong impact on the rental market through the increasing rental prices.

Keywords: sharing economy, Airbnb, Budapest, collaborative consumption, short-term accommodation

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INTRODUCTION

In recent years, the development and diffusion of ICT worldwide alongside the growth of Web 2.0 have facilitated and enabled the emergence of peer-to-peer (P2P) online platforms that promote user-generated content, sharing, and collaboration

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(Hamari et al., 2015; Kaplan & Haenlein, 2010). These platforms and marketplaces are byproducts of a larger economic-technological phenomenon called the sharing economy¹ (Hamari et al., 2015; Pizam, 2014). The phenomenon itself is not new, but the internet is accelerating its proliferation into everyday life, opens up new opportunities in the relationship between consumers and service providers, fosters the exploitation of resources, and its recent impact on various industries is significant (Olson & Kemp, 2015). The sharing economy is changing consumer habits and facilitates the formation of companies with huge revenues like for example, Airbnb, Uber, or Lyft. According to PricewaterhouseCoopers research conducted in 2014, the five main sharing economy sectors – P2P lending and crowdfunding, online staffing, P2P accommodation, car sharing, music and video sharing - generated \$15bn in global revenues in 2013, and according to the forecasts these five sectors will generate \$335bn in 2025 (PWC, 2014).

Consumption based on sharing is considered a new trend, which radically transforms consumer behaviour in relation to resources (Bálint & Trócsányi, 2016; Chen, 2009; Leismann et al., 2013). In the resulting collaborative consumption, social relations and market coordination are becoming more important (Cusumano, 2015). This is because over possession the role of renting and swapping is growing, which is motivated by environmental concerns, the need of conserving resources, or the lack of space to store various tools. Moreover, the ever cheaper and faster communication enables consumers to transact directly and share their idle capacities by eliminating the traditional intermediaries thus shortening the duration of the transactions (PWC, 2015b; Zervas et al., 2016). In addition, economic downturns also facilitate the spread of sharing economy as in crisis periods consumers are seeking for more economical solutions to meet their needs (Tussyadiah & Pesonen, 2015). Some studies have shown that the desire for community experience also strengthens sharing economy: through consumption people became a part of a community, establish new contacts or strengthen the already existing ones (Botsman & Rogers, 2011). In the operation of the sharing economy, trust has a pivotal role as consumers do not make their decision based on trusted brand names but in general, they rely on other users' feedbacks and ratings (Ikkala & Lampinen, 2014). Accordingly, some research stresses that this could assist discrimination as during the search process the photo of the accommodation seeker and provider is displayed (Edelman & Luca, 2014). However, it is important to note that short-term accommodation rental and the sharing economy, usually raises many other issues regarding the avoidance of tax payment, quality assurance, and consumer protection (PWC, 2015b).

In this milieu, the proliferation and diffusion of sharing economy are unbroken and several companies became global players like Uber or Airbnb. However, due to the rapid changes, so far, relatively few studies have dealt with the operation, spread, and effects of these sharing economy companies. Some of these studies focus on car sharing (e.g. Lyft, Uber) highlighting that these companies contribute to the reduction of emissions and fuel consumption (Cervero et al., 2007; Martin et al., 2010). Other studies investigated restaurant and accommodation ratings appearing in social media in the context of gentrification; as these do not only provide information for future customers but affect investments by creating a positive or negative image. However, Zukin, Lindeman, and Hurson (2015) analysed the restaurant rating site Yelp. They found that ratings were influenced by ethnic and racial prejudices forming a “discursive redlining”, which meant that restaurants located at neighbourhoods inhabited by minorities received more and

¹ It is extremely challenging to offer a definition of what is the “sharing economy” and which platforms are included in, as platforms position themselves as part of the sharing economy (Oskam & Boswijk, 2016) – to gain advantage of the positive symbolic meaning of the concept – so usually “self-definition of the platforms defines who is in and who is out” (Schor, 2014, 2). For sharing economy definitions see studies of Botsman, 2015; Frenken et al., 2015; Oskam & Boswijk, 2016.

stronger criticism. Thus, they appeared on the social media as less attractive to consumers or investors. Nevertheless, during the analysis of the reviews, it should be taken into account that not all of them are based on real consumer experience; they could be written by the owners, competitors, or even by paid commenters (Luca & Zervas, 2016).

P2P marketplaces associated with sharing economy operate particularly within the field of travel and tourism (Ert et al., 2016). As the rapid rise of the sharing economy is still too recent academic literature could not reflect thoroughly, although Airbnb is the best-documented case in P2P accommodation (Oskam & Boswijk, 2016). Papers studying on Airbnb focus on some key issues such as trust or the reliability of online reviews (Ert et al., 2016; Ikkala & Lampinen, 2014; Guttentag, 2015; Zervas et al., 2015), address legal issues surrounding Airbnb (Guttentag, 2015; Kaplan & Nadler, 2015; McNamara, 2015), or there are studies quantifying the impact of Airbnb on the hotel industry (Choi et al., 2015; Zervas et al., 2016). However, there is also rising interest in the spatial distribution of hotels and Airbnb listings (Dudás et al., 2017b; Gutiérrez et al., 2016; Quattrone et al., 2016) within major cities to locate those parts of the city, which have seen the greatest pressure from tourism or “touristification” and its negative impacts on cities and residents diagnosed in a few studies (Blickhan et al., 2014; Dudás et al., 2017a; Oskam & Boswijk, 2016; Zarrilli & Brito, 2017). Based on the previous paragraphs the aim of our study is to contribute to the academic discourses about the spatiality of Airbnb, thus our research is focusing on the Hungarian capital as the rapid rise of Airbnb creates competition with the traditional accommodation sector and transforms the real estate market as well (Dudás et al., 2016a). We seek to understand how the proliferation of Airbnb is shaping hotel room and Airbnb accommodation rates in Budapest, which areas are most affected and whether there is any spatial concentration. In the first half of the study, we briefly summarize the main characteristics of the short-term rental site Airbnb and present the applied methods used in this research. In the second part, we analyse the spatiality of Airbnb in Budapest and present our findings using charts and thematic maps.

AIRBNB, THE MONETIZED FLAT SHARING SITE

The most popular P2P rental site is Airbnb (Gutiérrez et al., 2016; Pizam, 2014) a travel accommodation provider that describes itself as a “trusted community marketplace for people to list, discover, and book unique accommodations around the world – online or from a mobile phone or tablet” (Airbnb, 2017a). Since its foundation, Airbnb has grown extremely rapidly and now surpasses the major hotel chains in accommodation offered and market valuation (Guttentag, 2015; Oskam, 2016; Oskam & Boswijk, 2016). Airbnb is present in more than 65 000 cities and 191 countries, has more than 3 million global listings (Airbnb, 2017a) and was valued more than \$24 billion in 2015 and the company’s revenue is expected to grow to \$10 billion until 2020 (Winkler & MacMillan, 2015). Essentially, Airbnb is an online platform through which ordinary people can lease their unused spaces/properties as accommodation. Therefore, this short-term rental site provides the opportunity to lease entire apartments but also to advertise only a single room, so it offers more flexible and wider supply than hotel chains. However, it is important to note that on the site of Airbnb not only individuals but the traditional Bed & Breakfasts can list their accommodations (PWC, 2015a) but the blocks of identical rooms are barred (Guttentag, 2015; The Economist, 2012). Accommodations vary on a broad spectrum starting from a living room mattress, we can even rent out entire islands by using the application (Wortham, 2011). However, the majority of the listings offer private rooms, entire places, and houses for the tourists (Guttentag, 2015).

The Airbnb’s user interface is easy to use and operates in a similar way as the major travel search sites (e.g. Expedia, booking.com, or Orbitz). The traveller sets the primary

search parameters (e.g. destination, travel dates, number of guests), the website then displays the available accommodations matching the search criteria, which can be further refined by adding additional parameters (e.g. price, location within the city, ancillary services, availability, etc.). If the accommodation meets the tourists' requirements, a reservation request (only registered Airbnb users are allowed to book) or an inquiring message could be sent to the host. Then, the host responds to the question or accepts or rejects the booking request. The booking is made via the system of Airbnb, thus the host and the guest do not receive each other's contact details. This guarantees that the company would not be bypassed and the fees charged by Airbnb will be paid. In the case of successful reservation, the payment is also made via Airbnb and after the transaction took place, Airbnb charges 3 percent host service fee for the host and 5-15 percent guest service fee – depending on the booking price – for the guest (Airbnb, 2017 b, c).

In tourism, the significance of trust is crucial and trust is strongly related to the experiences and satisfaction of costumers (Bar et al., 2016; Maghsoodi Tilaki et al., 2017; Wendt et al., 2016). The operation of this P2P rental site is also largely based on trust. To reinforce trust between strangers, Airbnb makes the profile of the host visible in addition to the accommodation features, however, some research highlights that this provides an opportunity for discrimination (Edelman & Luca, 2014). The profile of the host contains a photo, a brief description of the host, and a user-generated rating system. This additional information may help for future guests to establish a picture of the host based on former reviews and to facilitate the final decision.

The idea of Airbnb was formulated in the minds of Brian Chesky and Joe Gebbia in San Francisco in 2007. Later on, Nathan Blecharczyk joined the team, so the three of them founded the company AirBed & Breakfast in August 2008, which was shortened to airbnb.com in March 2009. In the beginning, the services provided by the company had limited popularity, and it took 2,5 years to reach 1 million booking nights in February 2011 (Airbnb, 2011; Gallagher, 2017). Since then, the number of booked room nights have shown rapid growth: until June 2011 the numbers doubled, in early 2012 reached 5 million, while in June 2012 has exceeded the number of 10 million (Taylor, 2012; Thomas, 2012), accordingly, in the first five months of 2012 the number of booked room nights increased with 5 million. This growth was continuous, and bookings were about 37 million room nights per year, which is approximately 20 percent of InterContinental Hotel Group's 177 million booked room nights in 2014 (Baker, 2015; Mudallal, 2015). In parallel with the growth of room nights, both the number of guests and the number of accommodations listed on Airbnb show dynamic growth (Figure 1). In mid-2012, around 38 thousand people booked on a daily basis, while until the end of 2012, a total of 4 million people used to stay in an Airbnb accommodation of which 3 million was in 2012 (GSV Capital, 2014; Guttentag, 2015). According to the forecast of GSV Capital (2014) (Figure 1), further continuous growth can be expected regarding annual guest numbers. They estimate that by 2018 51 million people will use accommodations offered by Airbnb. The supply is also keeping up with the increased number of guests, thus at the beginning of 2012, there were already 120 thousand listed accommodations on Airbnb. Figure 1 also clearly highlights the dynamics of this growth; nowadays the number of listed accommodations exceed 1,8 million and future growth is expected. The dynamic growth of the sharing economy and Airbnb can be likely traced back to the unregulated market environment. The current market regulations in most cases could not be applied to these novel sharing economy companies having complex operation models, and in most countries, the legislation is also not prepared to regulate these companies (PWC, 2015a). Consequently, the key to the success of Airbnb mainly lies in the fact that in most countries a major part of the accommodations operates illegally or semi-legally. The

renting of rooms happens through the platform of Airbnb, however, mostly in the informal sector, thus both the guests and the hosts avoid paying the taxes, which is one of the greatest competitive advantage of Airbnb over the traditional accommodation sector.

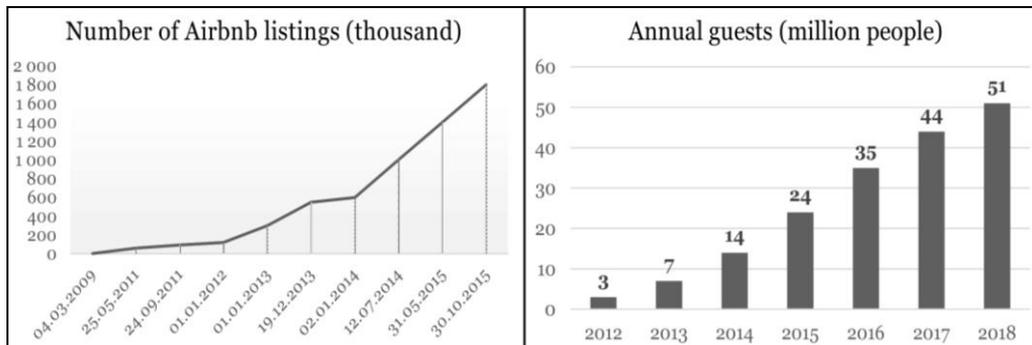


Figure 1: Number of Airbnb listings and annual guests (Source: based on Cherney, 2015; GSV Capital, 2014; Lawler, 2013; Mandell, 2013; Mudallal, 2015; Rao, 2009; Winkler, 2015; Winkler & MacMillan, 2015; edited by the authors)

If an appropriate regulation could be developed in cities where Airbnb is present, it would have a positive impact on the local economy as it boosts tourism resulting in extra revenue for both the local governments and the hosts. Airbnb data shows that average Airbnb users are educated professionals above the age of 30, who spend more time in a city than hotel stayers and they more likely will return. Nevertheless, Airbnb tourists want to get acquainted with local customs and local cuisine, thus in almost all cases, they purchase local products having a significant positive impact on local communities and businesses. In addition, it has other positive elements as it brings additional income for hosts, thus, helps people paying the bills and the mortgages and preventing them from evictions (BBJ, 2015). As the previous researches revealed, the majority of Airbnb listings are outside the areas where hotels are concentrated (Guttentag, 2015), so Airbnb involves new areas into tourism and deconcentrates accommodation supply within the city. However, we have to note that this effect depends on the cities' historical development path and structure, so especially it appears at those places, where the residential function is weak in the inner city so there are few properties for rent.

APPLIED METHODS

The examination of short-term rentals in the sharing economy sector is very difficult due to the deficiencies of official databases and as Airbnb operates mostly in the illegal, semi-illegal sector (Guttentag, 2015). Therefore, in the absence of appropriate databases, we had to perform our own data collection based on researches (Dudás et al., 2016bc; Edelman & Luca, 2014; Law et al., 2011; Zervas et al., 2016) facing similar problems. We selected Budapest as our study area and collected data about hotel room prices and Airbnb accommodation prices within the administrative boundaries of Budapest. The accommodation prices of Airbnb were queried from www.airbnb.com, while the source page for hotel room rates was a travel metasearch site www.trivago.com. It is important to note, that Trivago is not the only online search site for hotel room rates. There are other relevant online travel agencies (e.g. Expedia, Orbitz, etc.), travel metasearch sites (e.g. Kayak, Skyscanner, etc.) or online accommodation booking sites (e.g. booking.com, etc.) as well.

However, during the test queries, Trivago displayed the most applicable information and had the most user-friendly interface, moreover, it lists also room

rates of online travel agencies and online accommodation booking sites as well. Due to our limited resources and constraints of the data source page (www.airbnb.com) we performed one manual query to obtain the necessary data, thus, it should be noted that by the interpretation of the results it should be taken into account that increasing the volume of the data query may result in slightly different spatial patterns, but the main characteristics of the Airbnb and Hotel supply are outlined in this study. The query was on 1 June 2016 for checking in on 19 August 2016 (Friday) and checking out on 20 August 2016 (Saturday). The data collection concerned Airbnb listings and hotel rooms in Budapest at the given time and contained the accommodation prices for one person for a one night stay. Finally, after querying and organising the data, the geomarketing software (Regiograph) and GIS software (ESRI ArcGIS 10) was used to map the spatiality of Airbnb in Budapest.

PEER TO PEER ACCOMMODATION IN BUDAPEST

Recently, peer to accommodation has acquired significant market share compared to the traditional accommodation sector, not only abroad but also in Hungary as well. According to Airbnb, the number of listed properties has grown 70 percent in 2015, so approximately there were 6700 listings in Hungary on the site – approx. 3800 in Budapest - and the number of bookings increased 145 percent (BBJ, 2015).

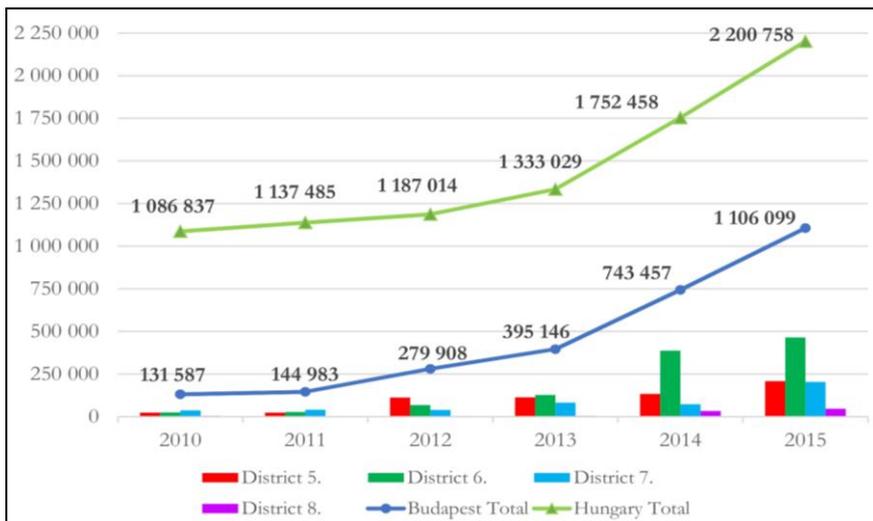


Figure 2. Number of foreign tourist nights in other business type accommodation establishments (2010-2015), (Source: based on Dudás et al., 2016a, and Statistical Yearbook of Budapest, 2016, edited by the authors)

The Hungarian Central Statistical Office (HCSO) categorize Airbnb as other business type accommodation establishments. Figure 2. highlights that the number of foreign tourist nights in this accommodation category shows moderate increase in 2013 on a national level, but in 2014 a sharp increase can be observed, which continued in 2015. Accordingly, in 2014 the number of foreign tourist nights increased by more than 30 percent (419 429 nights), while in 2015 by more than 25 percent (448 300 nights), so people have spent a total of 2 200 758 nights in this type of accommodation establishments in 2015. More than 80 percent of this growth is concentrated in Budapest since in 2014 there were 348 311, while in 2015, 362 642 more nights were spent than in the previous year. However, it is important to note that the statistics of the HCSO include

only the hosts, who are registered by the local government, so this growth could be even greater, as Airbnb operates mostly in the informal sector and hosts do not register in order to avoid paying the taxes. At the time of the study, according to data provided by AIRDNA, there were 4574 listings in the Hungarian capital in June 2016. The vast majority of these accommodations were entire places (88%) with an average daily price of 46 EUR, while the share and average price of private rooms (11%; 21 EUR) and shared rooms (1%; 12 EUR) were much lower (AIRDNA, 2016).

The main characteristics of hotel and airbnb supply in Budapest

Based on our data about listings offered by Airbnb and hotels in Budapest, Table 1 shows that there were 1630 accommodations offered by Airbnb compared with that of 482 of the city's hotels. However, this should be put into context as hotel offerings cover 365 days of the year and offer more rooms in one location until then Airbnb accommodations are available for fewer days and if the place is booked for date than it does not appear on the website for that time. The average hotel room rate was 78,6 EUR, while in the case of Airbnb offerings, 71 percent were entire places with an average price of 102,5 EUR, 25 percent were private rooms (54,4 EUR) and only 4 percent were shared rooms (38,6 EUR).

Table 1. Basic data on listings offered by hotels and Airbnb in Budapest

		Room type			Total Airbnb	Hotel
		Entire place	Private room	Shared room		
Listings		1150	411	69	1630	482
Price	Mean	102,5	54,4	38,6	87,7	76,8
	SD	84,4	35,4	37,3	77	66,8
Number of beds	Mean	2,9	2	4,2	2,8	-
	SD	2,4	1,9	4	2,4	-
Number of reviews	Mean	26,1	18,2	16,6	24,1	1042
	SD	35,4	25	27,1	33,4	1534,7
Ratings*	Mean	4,67-	4,56	4,48	4,64	81,1
	SD	,359	,487	,460	,395	6,8

* Airbnb ratings use a scale ranging from 1-5, while hotel ratings range from 1-100

The spatial distribution of the accommodations shows a clear concentration in the inner districts of Budapest regarding both Airbnb and hotel supply (Figure 3). The results highlight that Airbnb listings in the 5th, 6th, and 7th district exceed the number of 250, while hotels the number of 70. Within these three districts, the hotel supply is evenly distributed in district 5, while in district 6 and 7 higher density can be observed in the inner parts of the districts within the boulevard of Teréz and Erzsébet (Figure 4). In the spatial distribution of hotel rates, there is no clear geographical concentration, however, the more expensive hotels are rather located at the intersection of these three districts, while the cheaper ones in the vicinity of boulevard Teréz and Erzsébet.

The Airbnb supply shows similar patterns as the hotel supply except that Airbnb accommodations are denser located resulting from the higher item numbers (Figure 5). In the spatial distribution of hotel rates, there is no clear geographical concentration, however, the more expensive hotels are rather located at the intersection of these three districts, while the cheaper ones in the vicinity of boulevard Teréz and Erzsébet. The spatial pattern of hotels and Airbnb presumably influence by the radial road network, the prestige of certain neighbourhoods and the location (and density) of attractions. The case of the formerly stigmatized 8th district illustrates the importance of these factors. The inner part of the district is a gentrifying area with growing Airbnb activity, while outer parts are still deprived and stigmatized (Czifusz et al., 2015; Fabula et al., 2017; Kovács, 2009; Rátz et al., 2008). In these outer parts, the presence of Airbnb is significantly lower. The same applies for the prices of hotel rooms and Airbnb

accommodations within the district: the prices are higher in the gentrifying neighbourhoods than in the peripheral areas of 8th district (Figure 4, 5).

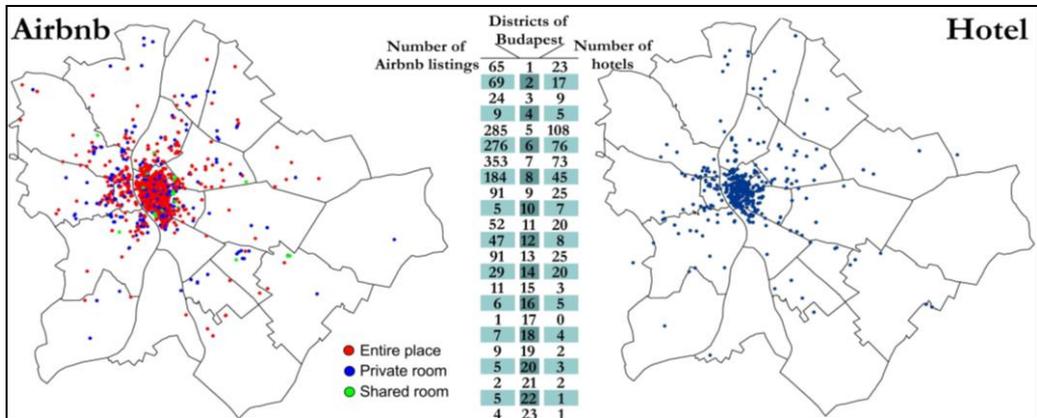


Figure 3. The spatial distribution and the number of hotels and Airbnb listings in Budapest

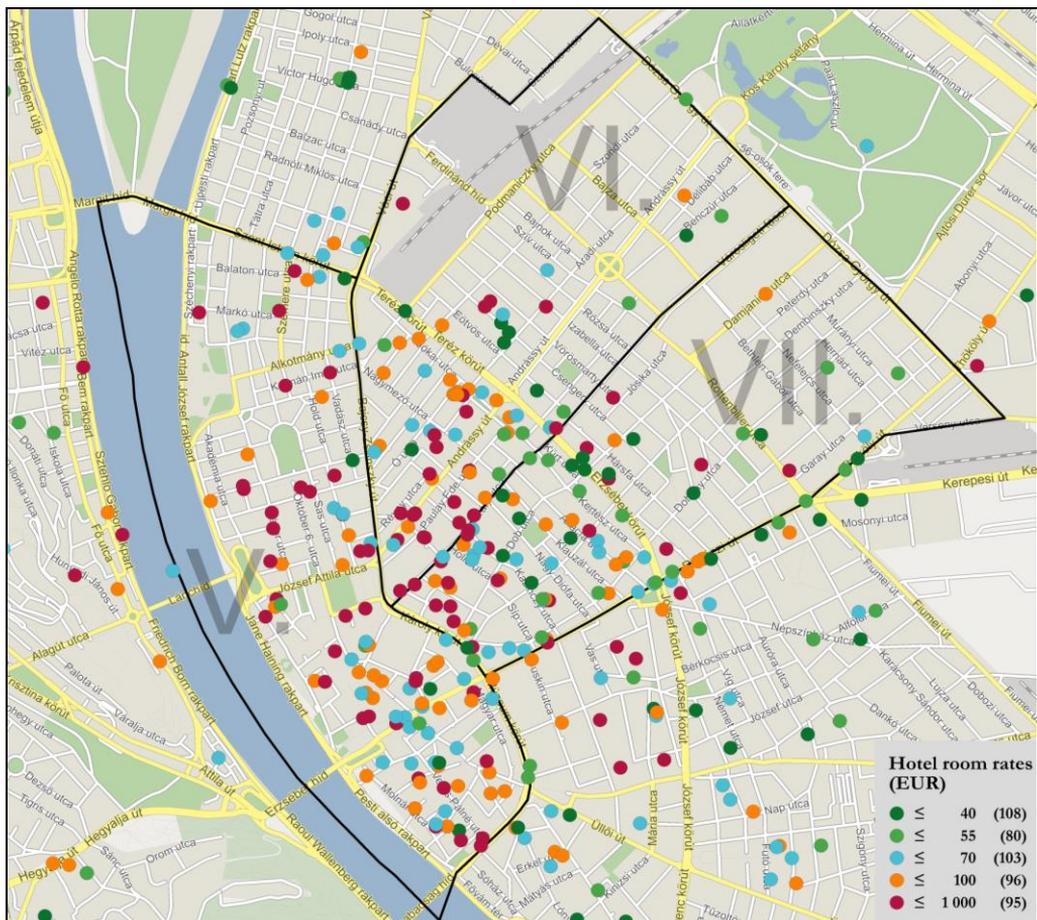


Figure 4. The spatial distribution and rates of hotel rooms in district 5, 6, and 7 (01.06.2016)

Focusing on the prices of different Airbnb accommodations in district 5, 6, and 7 it was outlined (Figure 6) that similar to the spatial distribution it shows great diversity. Studio and one bedroom Airbnb accommodation are at a similar price level moving around 75-80 EUR, while accommodations with two and more bedrooms are much higher priced in all three districts.

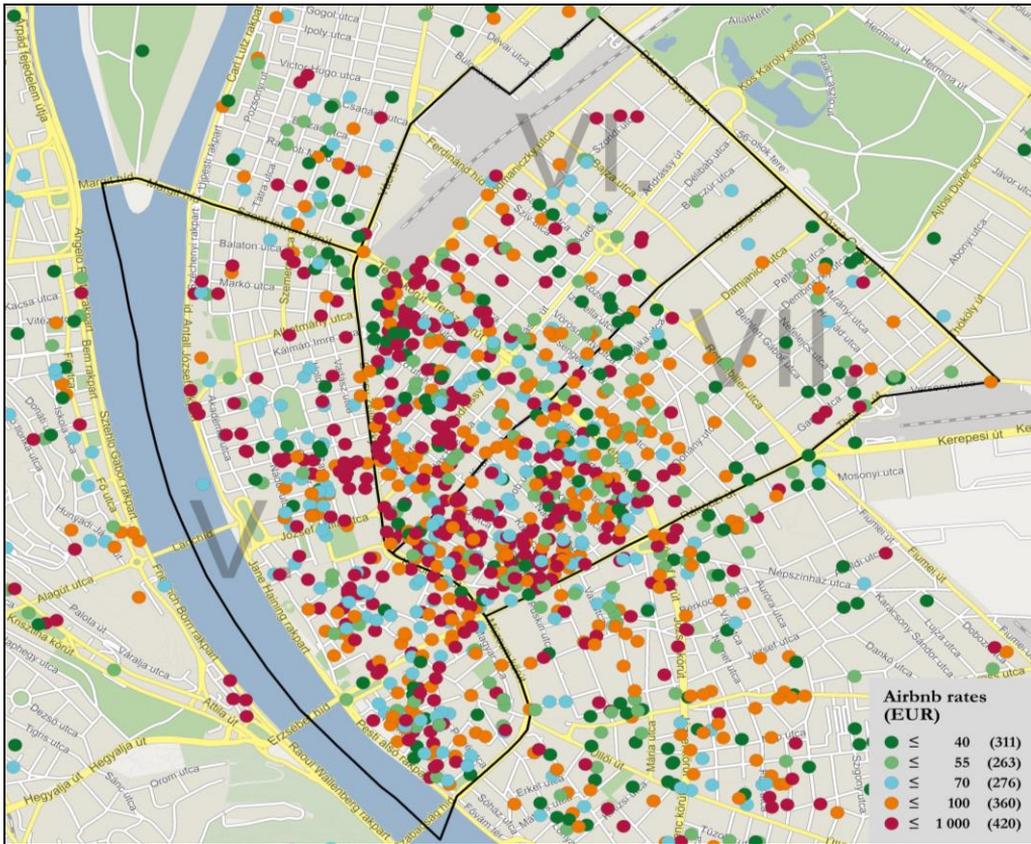


Figure 5. The spatial distribution and rates of Airbnb accommodations in district 5, 6, and 7

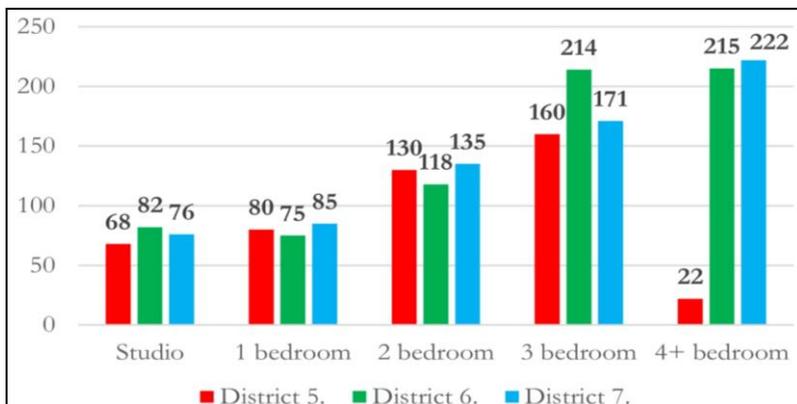


Figure 6. Average Airbnb accommodation rates/night based on room type (EUR)

Comparing these prices with average hotel room rates by comfort level (Figure 7), we can conclude that studio and 1 bedroom Airbnb locations may attract guest from 4 and 5-star hotels as they offer lower prices but offer similar comfort level. Nevertheless, lower comfort level hotels face serious competition, as studio and one bedroom Airbnb rentals are a slightly more expensive but offer higher comfort level.

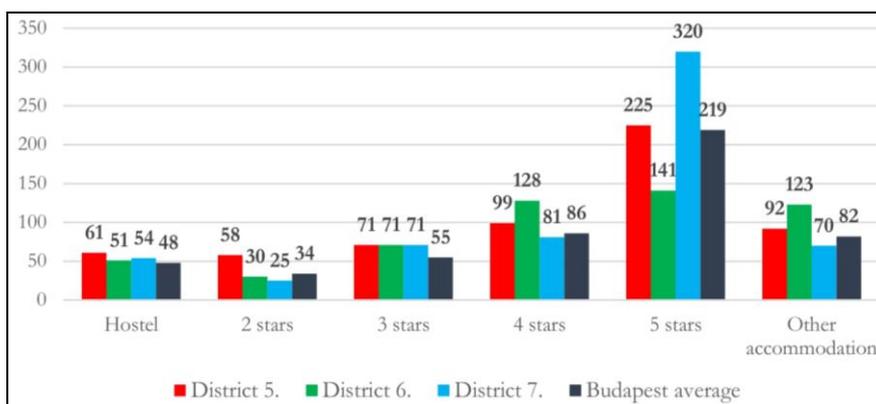


Figure 7. Average hotel room rates/night based on comfort level (EUR) (01.06.2016)

CONCLUSION

In this work, we presented a case study about the hotel and Airbnb supply of Budapest and studied the spatiality of hotels and Airbnb accommodations in the Hungarian capital. We adopted data collection methods utilised in previous studies (Dudás et al., 2016 a, b, c; Law et al., 2011; Liang et al., 2017) and have built a large database containing data about Airbnb and hotel listings. It is important to highlight, that the data collection and analysis have certain difficulties and limitations due to the availability of data and the transparency of Airbnb activity. Our results highlight that the proliferation of P2P accommodation in Budapest is apparent. Furthermore, Airbnb listings tend to be concentrated in city centre and in the vicinity of popular tourist locations creating fierce competition with hotels – mainly in the inner districts of Budapest (5., 6., 7., districts), which probably derives from the history and urban structure of the city. This revealed spatial concentration shows great similarity with the results of other European studies as for example, highlighted in the case of London (Quattrone et al., 2016) and Barcelona (Gutiérrez et al., 2016), and shows different spatial pattern than that of the North American cities. This spatial proximity strengthens the competition between business and P2P accommodations. However, the spread of short-term rentals is not only challenging for hotels but for the local government and for the Hungarian state, since P2P accommodation providers pay significantly less tax than traditional hotels. At the same time, Airbnb still contributes significantly to the local economy through the increased tourist arrivals and tourist spending despite the tax avoidance of hosts. Last, but not least, the proliferation of Airbnb seems to be interconnected with gentrification processes; gentrification enhances the reputation of particular neighbourhoods thus makes them more attractive for tourists – enhancing the demand side. At the same time, Airbnb can foster gentrification, since it offers better investment opportunities and boosts real estate market.

In this study, we present a snapshot of the P2P accommodation sector of Budapest reflecting the situation of 01 June 2016. Although, we have to note that due to rapid changes in the sharing economy sector and in legislation this picture can change quickly – for example, the government regulations regarding Uber in 2016 – which have led to the

pulling out of the company from the Hungarian market. Accordingly, this study provides a meaningful contribution to the P2P accommodation literature, although it has certain limitations. First, the analysis is limited to one destination, Budapest. Therefore, the generalization of results might be challenging, so further studies should expand the number of cities included in this kind of research. The second limitation is that we utilized only cross-sectional data for one day, therefore, a time-series analysis is needed to conduct a deeper analysis and to draw generalized conclusions. In addition, the study could be expanded in qualitative direction as well, with interviews with hosts, guests, and local residents to reveal the effects of Airbnb on destinations. Thus, the effects on local communities and the rental market can be explored – which has a special significance for decisionmakers to develop appropriate urban policies.

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