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# Regulating Airbnb: how cities deal with perceived negative externalities of short-term rentals

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## ABSTRACT

In recent years, home-sharing platform Airbnb has developed into a major player in the tourism sector. It allows tourists to have authentic, off-the-beaten-track experiences in neighbourhoods previously unvisited. Although neighbourhoods can profit from increased attention and income, Airbnb and other short-term rentals (STRs) can also be disruptive to the traditional lodging industry and trigger gentrification processes; housing affordability and availability are jeopardized when housing units are turned into vacation rentals. Local governments worldwide are struggling to regulate STRs and their negative externalities. This paper focuses on key challenges cities face when dealing with STR platforms and the rationale behind different regulatory approaches. It first compares policies of 11 European and American cities and then zooms in on Denver to see how it regulates the impact of Airbnb. Most cities are relatively lenient towards STRs, with little to no (complete) prohibition. Instead, they limit the number of guests, nights and times a property can be rented, demand certain safety precautions and information provision, or require primary residency. Regulations are mostly directed to mitigate neighbourhood impacts, rather than creating a level playing field for the traditional lodging industry. Enforcement remains difficult due to the STR market's dynamic nature and online practice.

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## Introduction

Cities all over the world are struggling with the consequences of increased tourism, even causing anti-tourism marches in for example Venice and Barcelona (Coldwell, 2017). Local citizens raise their concerns about overcrowded city centres and rising rents (Gravari-Barbas & Guinand, 2017), caused amongst others by the rise of online short-term rental (STR) platforms – with Airbnb as a prime example. Since its inception in 2008, the home-sharing platform has been growing rapidly from a small start-up of three students to a \$30 billion company (Gallagher, 2017), with over 3 million listings in 190 countries and 65,000 cities (<https://www.airbnb.com>), and more rooms available than major hotel chains like Hilton, Intercontinental and Marriott (Mudallal, 2015). As such, some regard it as a disruptive innovation for the traditional lodging industry (Guttentag, 2015; Zervas, Proserpio, & Byers, 2017).

Yet, Airbnb's rise does not only affect the hospitality industry, it also influences residential neighbourhoods in both positive and negative ways (Ioannides, Röslmaier, & Van der Zee, 2018). It offers

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residents the opportunity to earn extra income by renting out (part of their) homes (Holm, 2016), while giving tourists authentic and ‘off-the-beaten-track’ experiences of staying with locals (Gutiérrez, García-Palomares, Romanillos, & Salas-Olmedo, 2017). Airbnb (<https://www.airbnb.com>) also claims to have benefits for the larger community, such as the generation of tourism-related jobs and the revitalization of neighbourhoods previously left aside by tourists (a.o. Fang, Ye, & Law, 2016; Holm, 2016). However, complaints about increasing rents, neighbourhood changes and nuisance are widespread (Espinosa, 2016; Oskam & Boswijk, 2016); for example concerning the liveability and housing availability in Barcelona (Cócola Gant, 2016) and Berlin (Füller & Michel, 2014).

As a result, many cities worldwide are currently struggling to find ways to regulate Airbnb (Guttentag, 2015). In general, three regulatory approaches have been identified in the existing literature: (1) prohibition, (2) laissez-faire, and (3) allowing it with certain restrictions (Jefferson-Jones, 2014; Miller, 2014). So far, most regulations are failing to achieve their goal, as they approach Airbnb as a traditional industry player, not taking much of its innovative aspects into account (Espinosa, 2016). Some even question the feasibility of regulating and enforcing such an online platform (Edelman & Geradin, 2016). Moreover, regulations are expected to vary from one city to another (Guttentag, 2015; Oskam & Boswijk, 2016), as local circumstances – and hence Airbnb’s impact on the city – differ. However, a clear overview of these approaches with a deeper analysis of mutual differences is still mostly lacking (with exception of e.g. Gottlieb, 2013; Miller, 2014).

Therefore, this research looks at several different aspects of the policy-making process surrounding Airbnb in cities, by answering the following research question: *how do different cities regulate the impacts of Airbnb?* The selected cities are all located in Europe or the United States, where Airbnb is most present (Gutiérrez et al., 2017). These include Amsterdam, Anaheim, Barcelona, Berlin, Denver, London, New Orleans, New York, Paris, San Francisco and Santa Monica. Using qualitative content analysis of their main STR policies, we have investigated how they deal with STRs. Subsequently, we have selected Denver to conduct a case study for a deeper understanding of what challenges local governments face dealing with Airbnb. Interviews were held with stakeholders who were involved in drafting a new STR ordinance. More information on the data collection can be found in the methodology section, but we first present the theoretical basis of our research.

## Regulating the impact of Airbnb

### *Airbnb and its impact on the city*

Being a quickly emerging and ‘hot’ topic in both policy and research, Airbnb is under increased investigation. Researched aspects range from motivations of hosts and guests to use Airbnb (Guttentag, Smith, Potwarka, & Havitz, 2017; Ikkala & Lampinen, 2015; Stors & Kagermeier, 2015; Varma, Jukic, Pestek, Shultz, & Nestorov, 2016) and the economic impact for the wider community (Fang et al., 2016; Holm, 2016) to the spatial pattern of Airbnb in cities (Arias-Sans & Quaglieri, 2016; Cócola Gant, 2016; Gutiérrez et al., 2017). Airbnb’s quick development can be placed within the context of postmodern tourism. Over the last decades, tourism is ‘de-differentiated’ (Urry & Larsen, 2011) and increasingly intertwined with, rather than opposed to daily practices and the mundane, everyday life. The ‘post-tourist’ (Feifer, 1985) wants to be regarded as traveller rather than tourist, looking for an authentic experience ‘off-the-beaten-track’ (Maitland, 2010). This so-called new urban tourism (Füller & Michel, 2014) does not imply that people have diverged from touristic highlights altogether; rather they mix visiting these highlights with performing leisure activities in more local areas (Maitland, 2010). In cities, this implies that an increasing share of visitors is moving away from tourist enclaves to find accommodation in residential neighbourhoods located close to the historic centre, but not planned for tourism (Maitland, 2010; Ioannides et al., 2018).

With Airbnb promoting itself as providing unique and authentic accommodations and travel experiences while connecting people with each other, the platform perfectly fulfils the demands of the new urban tourist. By staying with a local and having conversations with the host (Belardino,

Whalen, Kohl, & Bowen, 2017), the destination can be experienced as if the tourist is a temporary resident (Russo & Quaglieri, 2016), in contrast to staying in a traditional, often more expensive hotel or 'tourist bubbles' (Ioannides et al., 2018). Next to these social factors, the lower prices (Guttentag, 2015; Gutiérrez et al., 2017; Stors & Kagermeier, 2015) are an important economic factor explaining the success of Airbnb (Oskam & Boswijk, 2016; Tussyadiah & Pesonen, 2016). Especially the growing number of commercial STRs, operating as traditional vacation apartments, seem to cater to tourists who are interested in finding a low-budget accommodation and not so much an authentic, local experience (for more information on different types of tourists and their motivations for using Airbnb, see Guttentag et al., 2017; Stors & Kagermeier, 2015).

However, local residents worldwide have started to complain about negative impacts of Airbnb-rentals in their neighbourhood. Nuisance complaints range from noise caused by visitors (e.g. loud parties and drunken behaviour), to issues with traffic, parking and waste management, and safety concerns when strangers enter the neighbourhood and buildings (Gallagher, 2017; Gurran & Phibbs, 2017). In addition, Cocola Gant (2016) described how residents in Barcelona experienced a loss of local culture and cohesion in their neighbourhood, which is a concern voiced in many cities across the world (Gallagher, 2017).

What is more, tourism in general and STRs like Airbnb, in particular, are said to contribute to gentrification (Cocola Gant, 2015; Füller & Michel, 2014). This is increasingly the case with STRs since commercial investors are buying up residential properties, turning them into permanent (and often illegal) Airbnb accommodations (Gurran & Phibbs, 2017). As residences are taken off the market and rented out to tourists, housing availability and affordability for local residents become an issue (Jefferson-Jones, 2014; Lines, 2015). Research in New York, for example, has shown that a doubling of Airbnb locations has led to a rise in property values of 6–11% (Sheppard & Udell, 2016). Although beneficial to homeowners, the rising values are detrimental to residents who can no longer afford to pay rent and are driven out of the neighbourhood. In addition to this direct displacement, exclusionary displacement may take place when housing and rental prices have increased to such an extent that the neighbourhood becomes unaffordable to newcomers (Cocola Gant, 2016). At the same time, Holm (2016) described that Airbnb is a way to make ends meet, by generating extra income for residents to pay for the increasing rent; paradoxically triggering a vicious cycle in which renting out is required to pay for increased rents, which further increases rents and requires more renting out.

Of course, Airbnb is not the only factor contributing to (tourism) gentrification; neighbourhood changes are often intermingled with already existing problems related to tourism and/or gentrification (Stors & Kagermeier, 2017). According to Ioannides et al. (2018), it is difficult to evaluate Airbnb's effects amidst broader processes of touristification, as STR impacts are similar to the general impacts of urban tourism. The main issues with STRs come from the fact that they are more often located in residential areas thus shifting the impacts to quieter areas of the city. In already touristified areas, STRs are intensifying negative externalities of urban tourism since they are operating alongside the traditional tourism industry.

For the economic sector, the impact of Airbnb appears more diffuse, with both positive and negative impacts being reported. Empirical evidence is mostly limited to data provided by Airbnb itself (<https://www.airbnb.com>), claiming that Airbnb travellers stay longer at their destination (benefitting the entire tourist industry) and spending more money near the accommodation (resulting in neighbourhood revitalization). Fang et al. (2016) confirmed that the presence of Airbnb in US cities indeed generates more jobs in general, yet at the expense of jobs in low-end hotels (Zervas et al., 2017). Guttentag (2015) described Airbnb as a disruptive innovation for the traditional lodging industry. In this respect, Suciu (2016) also shows that wages of hotel workers in cities with Airbnb presence are lower. As compared to traditional businesses in tourism, Airbnb hosts can offer lower prices since they have their fixed costs (rent and electricity) already covered and do not have to pay staff thus providing Airbnb with a competitive advantage. In addition to this unfair competition with traditional hospitality businesses (Oskam & Boswijk, 2016), Airbnb hosts generally have no standardized health and

safety nor insurance requirements. Moreover, as they are not regarded as traditional businesses, they are usually not taxed, further deepening the unequal competition with other accommodations (Guttentag, 2015). In contrast, however, Varma and others (2016) did not yet find any evidence of a large impact of Airbnb on either big hotel chains or smaller hotels in the US, but nevertheless they advised the hotel industry to 'shake itself out of its stupor' (p. 236) to prepare for coming changes induced by the rise of STRs.

### **Regulatory approaches**

Airbnb thus has many different effects on individual cities. Whether it is experienced in a positive or negative way depends on a multitude of factors such as the size of the city, established tourism industry and the amount, location and concentration of Airbnb listings (Oskam & Boswijk, 2016). That said, most cities feel the urge to regulate Airbnb and other STR platforms to balance the interests of visitors and local residents/businesses.

However, regulating Airbnb turns out to be quite challenging. Most attempts have been based on traditional B2B (business to business) or B2C (business to consumer) models (Espinosa, 2016). However, Airbnb is a P2P (peer to peer) platform and therefore outpaces these traditional regulatory models (Guttentag, 2015). By targeting the 'producers', hosts are being held responsible rather than Airbnb itself (Lines, 2015). Yet, it is hard to trace if hosts are complying with the rules (Edelman & Geradin, 2016; Espinosa, 2016; Gottlieb, 2013). Moreover, existing regulations miss the ability to mitigate negative externalities (Gurran & Phibbs, 2017), for example, to spatially cluster Airbnb accommodations.

As discussed above, there are three main options to regulate Airbnb: a *full prohibition*, the *laissez-faire approach*, and the *limitation of Airbnb with certain restrictions* (Guttentag, 2015; Jefferson-Jones, 2014; Miller, 2014). Laissez-faire can hardly be regarded as regulation since no concrete measures are taken, but in some cases, local governments have been able to make a deal with Airbnb in order to receive taxes over transactions made on the platform (Lines, 2015). Prohibition implies banning STRs altogether, in the entire community or in a certain district. Although this potentially counters negative externalities, local governments would be missing out on tax revenues and risk the creation of an underground market for STRs (Jefferson-Jones, 2014).

Therefore, the limitation of Airbnb is most common, with four types of restrictions. *Quantitative restrictions* include limiting the amount of STR accommodations (Jefferson-Jones, 2014), the amount of allowed visitors or days rented (Guttentag, 2015; Gottlieb, 2013; Miller, 2014), and the amount of times an Airbnb can be rented out per year (Jefferson-Jones, 2014). *Locational restrictions* confine STRs to specific locations (Gurran & Phibbs, 2017), while *density restrictions* limit the number of STRs in certain neighbourhoods (Jefferson-Jones, 2014). Lastly, *qualitative restrictions* define the type of accommodation, for example, a complete apartment versus a room or commercial-style Airbnb (Jefferson-Jones, 2014). Specific requirements for safety such as the installation of a smoke detector also fit this category. These restrictions are often combined with the obligation for hosts to get a permit or license for renting out (parts) of their house (Guttentag, 2015; Miller, 2014).

Several researchers have emphasized that not all cities should adopt the same strategy to regulate Airbnb, because its impacts can be different (Gurran & Phibbs, 2017; Guttentag, 2015), depending on geographic location and the type of property rented out (Edelman & Geradin, 2016) or the popularity of the destination (Oskam & Boswijk, 2016). Some cities want to embrace Airbnb to stimulate tourism, while others would like to ban it completely or experiment with regulations based on taxation or security issues (Oskam & Boswijk, 2016).

### **Research design**

To understand how different cities have been dealing with Airbnb and other STRs, we have used two types of qualitative methods. In order to have a broad outline of STR ordinances, we first conducted a

qualitative content analysis of relevant policy documents of five European and six American cities. Second, we focussed at the City of Denver as case study to gain deeper understanding of its STR ordinance. This mixed method approach allowed us to obtain an overview of STR policies worldwide without missing out on the detailed stories ‘behind the scene’ of such policy formation. While the policy analyses mostly show the diverse outcomes of deliberations amongst a variety of stakeholders, the case study illustrates the underlying process of policy formation, including conflicting interests and enforcement issues.

To study which regulations have been implemented and for what reasons, we investigated policy documents of 11 cities in Europe and the United States, the continents where Airbnb is most active (Gutiérrez et al., 2017). We used two selection criteria: (1) perceived problems due to STRs and (2) a formulated STR policy. The perception of problems is normative and relative; some cities might have many Airbnb listings, but few reported problems negative externalities, and vice versa. Therefore, we decided not to select cities based on a high absolute number of STRs, but on reported problems. We conducted a newspaper search using LexisNexis as search engine, and ‘Airbnb problems cities’ and ‘Airbnb regulations cities’ as keywords. We analysed the first 25 results per keyword, resulting in 50 articles on cities dealing with Airbnb. The most cited cities where New York (12), San Francisco (12), Barcelona (6), Santa Monica (6), Berlin (5), London (5), Los Angeles (4), Anaheim (4), Paris (4), Amsterdam (3), and New Orleans (3). When investigating their STR ordinances, it appeared that Los Angeles (at the time of investigation, winter 2017) did not have one in place and was hence excluded from further analysis. Instead, we added Denver to the selected cases (see below). Table 1 gives an overview of the amount of STRs per investigated city. All their STR policies have been found online through municipal websites using (translated) terms such as short-term or vacation rentals (in German, Spanish, Dutch and French). We subsequently analysed their content by using the following coding scheme: rationale for regulations, type of approach and restrictions, taxation, specific STR ordinance, level of regulations, responsibility, and permit requirement.

Next, we zoomed in on Denver as case study, one of the first cities where Airbnb launched its platform (Gallagher, 2017). Denver does not score high on our first criterion; it has a lower number of Airbnb listings compared to the other cities and reported problems are less intense. However, Denver’s recent STR policy is worthwhile studying due to its innovative licensing system and relatively high compliance rates (Arellano, 2017). Moreover, the case of Denver illustrates how mid-sized cities might not suffer from over-touristification to the same extent as major cities do, but nonetheless are trying to deal with Airbnb (see also Ioannides et al. (2018) who advocate for Airbnb studies in mid-sized cities). Hence, Denver represents a large number of mid-sized cities that feel the need to formulate an STR policy despite not being associated with heavy tourist flows.

**Table 1.** Amount of STR listings per investigated city.

City	Amount of Airbnb or STR listings
Amsterdam	15,674
Barcelona	17,930
Berlin	20,583
London	53,902
Paris	58,158
Anaheim*	1293
Denver*	3540
New Orleans	5233
New York	40,767
San Francisco	8770
Santa Monica*	1325

Source: [insideairbnb.com](https://www.insideairbnb.com) (all cities except Anaheim, Denver and Santa Monica\* – measured between March and June 2017); Host Compliance (Santa Monica, Anaheim and Denver 2017). The former includes only Airbnb listings, the latter includes all STR platforms.

We have held 10 in-depth, semi-structured interviews with two Airbnb hosts, two (non-host) residents, a representative of tourist board Visit Denver, a city planner, three representatives of the municipal Department of Excise and Licenses, and one member of Denver City Council. All interviewees have contributed to drafting Denver’s recent STR Ordinance, either as member of Denver’s City Council or the Short-Term Rental Advisory Committee (STRAC). Consequently, they were all well-informed about Denver’s STR policy, but possibly also (positively) biased about it. However, since the STRAC consists of multiple stakeholders with quite conflicting interests, we believe that the interviews still revealed different perspectives on STRs. All interviews were audiotaped, transcribed, coded and analysed. The topic list included questions on similar topics as the above-mentioned coding scheme. The interviews were held in the spring of 2017. To respect the respondents’ anonymity, we refer to their professions instead of using names.

### Airbnb regulation in European and American cities

When comparing the cities’ receptiveness towards Airbnb, London, Denver and Paris have the most lenient approaches (Figure 1). Denver has no quantitative restrictions, while Paris and London only cap the maximum amount of nights rented per year (to respectively 4 months and 90 nights a year) and no permit registration is necessary. Amsterdam also limits the number of rented nights (to 60) and requires the host to be on site for at least six months a year to avoid commercial investors turning residences into STRs, similar to Denver’s primary residency requirement.

Anaheim is the most restrictive city with a full ban of STRs from 2018 onwards, followed by Barcelona and New Orleans with partial bans in the form of locational restrictions (e.g. no STR in New Orleans’ *Vieux Carré*). Other cities, such as New York and Berlin, are often portrayed in the media as being relatively strict towards Airbnb (Hawkins, 2016; Oltermann, 2016), but do not have a complete ban.

All cities but Denver and Berlin have quantitative restrictions, often in combination with qualitative regulations. These include primary residency requirements or more practical requirements such as a smoke detector, fire extinguisher and emergency contact information. Those practical measures are more common in the US than in European cities, with Amsterdam as exception. Density restrictions have not been found.

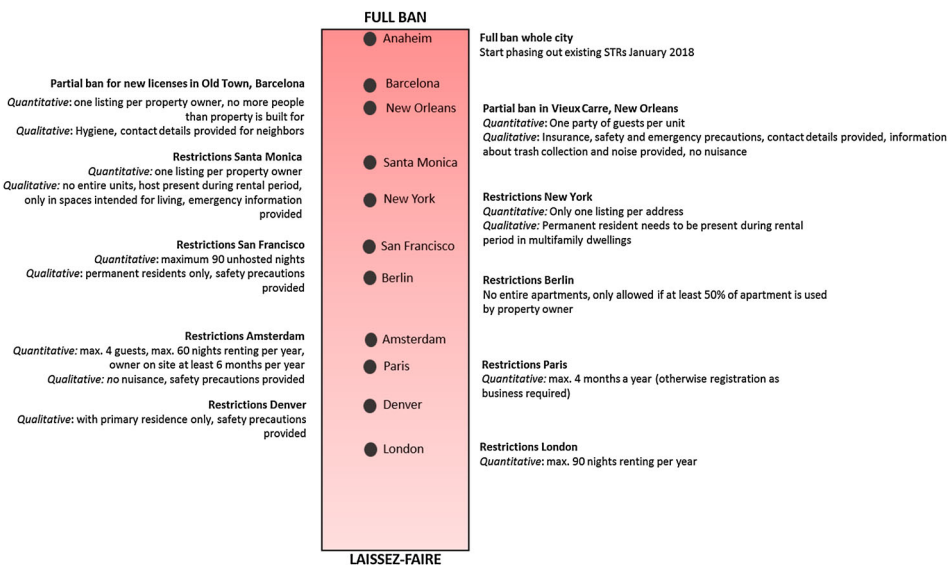


Figure 1. Regulatory approaches in 11 European and American cities.

Overall, with the exception of Barcelona, European cities have a more receptive approach to Airbnb than American cities, which – except for Denver – are stricter and make it more difficult for STRs to operate. All American cities require STRs to have a permit, while Amsterdam and London do not require one at all, and Paris only demands one for the second unit. In addition to cultural differences, an explanation could be that Airbnb has been active longer in the US, possibly having bigger impacts on cities by now, requiring stricter regulations. It has to be noted, however, that even though some cities require permits, it is not known how easy those permits can be obtained and if there are differences in strictness between European and American cities.

Following this analysis, the rationale behind STR policies has also been studied (Figure 2).<sup>1</sup> The main objectives of the investigated cities are to protect affordable housing and residential living. Amsterdam and Denver also have an interest in creating a level playing field for the traditional lodging industry, while Barcelona has a strong focus on spreading tourists over the entire city to ease tourism pressures. All studied cities have a structure to collect taxes from Airbnb hosts.

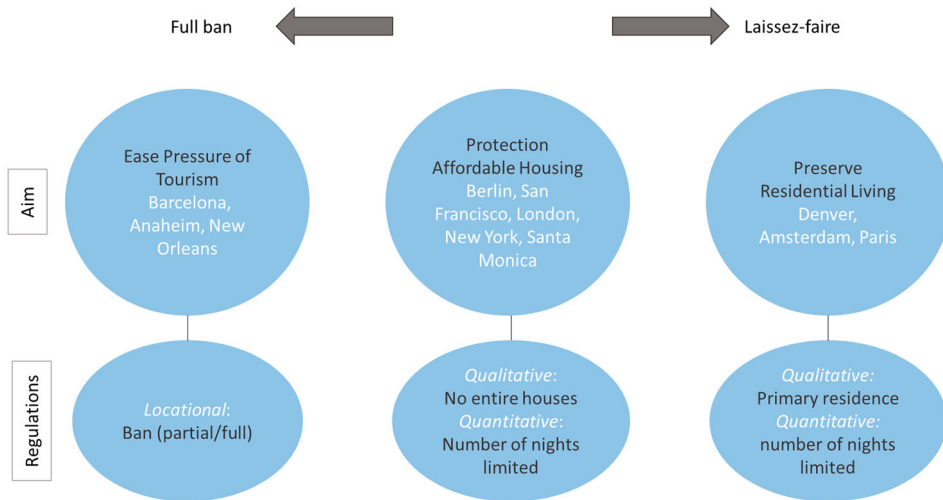
Combining both analyses have led to the identification of a typology of STR regulations (Figure 3). The first type of cities (Barcelona, Anaheim and New Orleans) is mainly trying to ease the pressure of tourism, by implementing a full or partial ban of Airbnb. The second type (Berlin, San Francisco, London, New York and Santa Monica) does not allow entire houses to be listed on the platform and has restricted the numbers of nights a property can be rented out. These cities are mostly concerned with protecting affordable housing. The final type concerns the most lenient cities when it comes to regulating STRs (Amsterdam, Denver and Paris), who mainly want to preserve residential living by restricting the amount of rented nights an STR or by requiring primary residence.

Although we have typified the investigated cities, reality is that most do not fit perfectly in one category. Many cities have a combination of different objectives they want to achieve, resulting in mixed policy measures. At the same time, it has to be noticed that there might not always be a clear and direct relation between the objectives of the ordinance and the implemented regulations

		Anaheim	Barcelona	New Orleans	Santa Monica	New York	San Francisco	Berlin	Amsterdam	Paris	Denver	London
Housing	Protect Affordable Housing						✓	✓			✓	
	Protect Housing Supply		✓				✓					✓
	Prevent Commercial STRs							✓				✓
Neighborhood	Preserve Residential Living & Neighborhoods						✓		✓	✓	✓	
	Protect Public Health & Welfare	✓										
	Address Nuisance Issues	✓							✓			
	Ease Pressure of Tourism	✓	✓									
	Preserve Quality of Life	✓	✓									
	Preserve Balanced Mix of Uses		✓							✓		
Other	Economic Interest / Taxation								✓			
	Safety	✓							✓			
	Create Level playing Field Hotel Industry								✓		✓	
	Enforcement								✓			

Figure 2. Rationale behind STR policies of the investigated cities.





**Figure 3.** Typology of STR policies.

since up till now there is little empirical-based evidence of the impact of STRs or the effect of policies. Nevertheless, we believe that this classification provides us with some insights on the main concerns of cities when it comes to dealing with the negative externalities of STRs.

Overall, we were surprised by the relative receptiveness of all cities towards Airbnb, as the consulted media (see research design) reported on intensive impacts and rather strict STR ordinances. Most probably, local governments prefer regulation over prohibition to not miss out on the economic benefits of tourism (cf. Jefferson-Jones, 2014). Another explanation could be the legal power of Airbnb and other STR platforms that do not hesitate to sue cities that work against them as happened in San Francisco and New York (Benner, 2016), possibly making them hesitant to draft strict regulations.

All cities hold hosts responsible when rules are violated. Additionally, Barcelona, New York, San Francisco, Santa Monica and Anaheim also fine the STR platform when violation occurs (cf. Lines, 2015), while only Anaheim also penalizes guests. Fines range from \$200 per day for hosts in Anaheim to €600.000 for the STR platform in Barcelona. Although fines are generally given per violated day or m<sup>2</sup>, there is also a tendency in European cities to give one big fine that can be as high as €100.000. Holding hosts responsible seems logical from the perspective of traditional B2B models, as they are running the STR. Yet, it makes regulation more complex because hosts do not behave as traditional businesses and are often hard to trace due to privacy constraints of STR platforms. In traditional circumstances, the construction of new hotels can be restricted in residential areas through zoning, but hosts operating STRs are already located in those residential areas and cannot easily be stopped from running their businesses. Hence, the reality in most cities is that although – relatively mild – regulations are in place, enforcement is problematic and STR-related problems remain. The case of Denver further illustrates the challenges that cities face in drafting and enforcing regulatory frameworks.

## Denver and its approach to regulate Airbnb

### *Positive versus negative externalities*

The City of Denver, capital of Colorado, is one of the first cities where Airbnb became popular, because of the Democratic National Convention that took place there in 2008. To make some extra money, many residents decided to rent out their houses and bedrooms via Airbnb to the

convention's visitors. However, subletting under thirty days was considered illegal at the time. As STRs became more popular, the government realized around 2014 that it needed to determine whether it wanted to keep them illegal and go after violators, or that it would need to legalize them. After contemplating for two years, a new STR zoning ordinance was passed in June 2016, deciding STRs would be allowed under certain conditions (see [Figure 1](#)). In June 2017, there were 3540 STR listings in Denver and 2774 unique STR properties, mostly located in neighbourhoods in or around Downtown Denver.

Denver is a popular tourist destination due to the nearby Rocky Mountains. In 2016, more than 17 million overnight visitors came to the city, 6% more than in 2015 (Visit Denver, 2017). Moreover, visitor spending increased 5% to \$5.3 billion in 2016. Although impact studies are lacking, the general consensus amongst our respondents is that STRs contribute to the growth of the tourist sector. Eight out of 10 interviewees described how STRs are offering a new alternative for tourists, enabling people to come visit that otherwise might not have. Two reasons are mentioned: the flexibility of the type and location of housing (e.g. offering a kitchen or separate bedroom, in any desired neighbourhood) and cheaper prices compared to traditional lodging options (cf. Guttentag, 2015; Stors & Kagermeier, 2015). The representative of Visit Denver also described the increased desire to 'live-like-a-local' (cf. Füller & Michel, 2014; Maitland, 2010), echoed by Airbnb host 2, whose guests are usually looking for a way 'to experience Denver differently than what is a downtown experience'. One respondent confirmed that STRs in Denver are seen as a way to spread tourism income over the city:

It [Airbnb] is bringing people into neighbourhoods they would not have been in otherwise, and that is helping the commercial parts of those neighbourhoods (...) It spreads out tourist dollars to other parts of the city (City planner).

Interestingly, however, most STR listings are still located in or around the city centre; hence, the spreading effect is perhaps more hope rather than reality or at least restricted to only those residential areas closely located to the city centre.

In addition to its contribution to the tourist sector, STRs can economically benefit the local community (Arias-Sans & Quaglieri, 2016) by generating money to pay for mortgage or rent (Holm, 2016) or to just have some extra income. Five respondents draw attention to these positive impacts, like Airbnb host 1: 'When I started doing it, it was largely for supplemental income that I could save (...) Now it allows me to stay in my home without going too deep into my retirement savings'. In line with Ikkala and Lampinen's (2015) research on the motivation of Airbnb hosts, she also mentioned that next to this financial benefit, she enjoys getting to know new people. Overall, all interviewees see substantial benefits Airbnb can bring to the city, except for one non-host. He even stressed the negative impact on housing prices of having an STR next door, 'because they [prospective buyers] do not want to live next to a motel' (non-Airbnb resident 2). Non-Airbnb resident 1 preferred to have no STRs in her neighbourhood, but nonetheless recognized some of their positive externalities, concluding that Airbnb 'can be integrated in the neighbourhoods as long as it does not overwhelm'.

Despite overall consensus on Airbnb's positive externalities, there is also shared concern about housing affordability and availability. Median property values in Denver have increased 20% between 2013 and 2015 (to \$316,700) and are higher than the US average (Data USA, 2015). According to the respondents, Denver is suffering from an affordable housing shortage and STRs might be contributing to the problem, especially commercial-style rentals (cf. Gurran & Phibbs, 2017):

We were concerned that somebody might purchase a five or ten unit apartment or condo building, and then rent out all those units as STRs, which would effectively take those units off the housing stock in general, and affordable housing in specific. (member Denver City Council)

However, the size of the impact is debatable and opinions vary. Municipal representative 2 agreed that every rental unit taken off the housing market in favour of an STR is one too many in 'such a crazy housing market'. Denver's city planner instead indicated that STRs now only make up 1% of

the total housing stock and hence questioned how big this impact can really be. However, there is a consensus amongst all interviewees that the future development of STRs and their effect on Denver's housing stock needs close monitoring.

Additionally, noise, trash and parking were mentioned as a concern by all but one of the respondents. Problems, however, differ per neighbourhood and depend on the type of housing being rented out, with larger, commercially operated STRs generally causing more problems. The two residents claimed STRs 'deteriorate' and 'disrupt' residential neighbourhoods. Five interviewees talked about a 'loss of culture' (cf. Cocola Gant, 2016; Gallagher, 2017):

Residents are saying, 'it is eroding the character of the neighbourhood. We moved here because it is a peaceful place where we know our neighbours, and we all say hi to each other. We know the names of each other's dogs. Now that is changing because there all these different people and we do not know what is going on with that. (City planner)

Interestingly, it is not just the absolute number of STRs in the neighbourhood that matter, but also their perceived impact on local life. As municipal representative 1 explained:

You can have a three block stretch in West Wash Park (...) [with] 15 STRs, but you do not have any issues or hear concerns (...) At the same time in far Southwest Denver, you could have the same three block stretch, but you only have one STR and that one is all you hear about.

Balancing the positive and negative externalities and making sure that the city benefits from tourism as an economic sector, while remaining liveable and affordable for its residents was the main reason for the City of Denver to draft a new ordinance specifically targeting STRs.

### ***Short-term rental ordinance Denver***

The STR ordinance passed in June 2016 (and implemented six months later) after two years of contemplating by the STRAC, consisting of a mix of stakeholders, including most of our respondents. All interviewees are positive about the committee and how it stimulates dialogue and 'brings us together in a good environment, as opposed to having us never getting together face to face' (Airbnb host 1). However, getting everyone to agree on the new ordinance proved difficult due to opposing interests:

Just trying to get people to agree on it [was a major challenge] because everyone had such conflicting perspectives and it is fairly controversial. I mean, most people are either for or against it. There is not a lot of people that are kind of neutral and easily swayed. (municipal representative 2)

Another challenge was to draft an enforceable ordinance. Learning from other US cities with an STR ordinance, like Nashville, Portland and San Francisco, Denver realized it needed to keep the ordinance and associated licensing system as simple as possible. Drafting too many requirements would lead to complicated and hence infeasible on-site inspections and unnecessary or costly lawsuits from Airbnb (cf. Benner, 2016). Consequently, the STR Ordinance in Denver is concise; its main aspect being the primary resident requirement:

We did primary residence so the people who are actually conducting it in their home (...) could still rent out their home and be away for a month at a time or however long they travel for. We felt like it probably would take a big toll on the rental market and the housing market if we did a tiered system where you can have an investment property licence as well. (municipal representative 2)

Additionally, the ordinance requires all hosts to have smoke and carbon monoxide detectors and a fire extinguisher to ensure guests' safety. To mitigate nuisance in the neighbourhood, it also demands hosts to provide guests with contact and emergency information, as well as information about parking, noise restrictions, and trash collection. Lastly, STR operators are required to pay 10.75% lodging tax. While the latter is aimed at creating a level playing field for the traditional lodging industry and generating income for the municipality, the primary residency requirement and required information contribute to alleviating negative neighbourhood impacts.

The ordinance's conciseness is seen as one of its positive aspects, as it is easy to communicate and understand for everyone. At the same time, some interviewees felt too many compromises had to be made in drafting the ordinance. As a result, they feel it is quite vague and too flexible. Particularly the primary residence requirement turned out to cause much controversy in the STRAC, especially by homeowners feeling constrained in their property rights.

### ***Licensing and enforcement***

Once the ordinance was formulated, the main challenge was to communicate it to STR hosts and to persuade them to comply with the new regulations. This has resulted in an entirely online licensing system in which hosts self-certify to be complying. Denver is the first city worldwide to have such an online licensing system for STRs. The STRAC argued that online registration was the most logical option for an industry that also happens completely online. Also, communication about the new ordinance was done by using different online channels such as social media and Spotify. This way, Denver tried to target the desired population at the level it was operating on.

Additionally, enforcement is also done online. Rather than going door-to-door to find out who is actually renting out, enforcement officers look at online advertisements, which are required to indicate a licence number. Hence, not only operating but also advertising an STR without a licence is a violation. The main argument is that if people are advertising, they are most likely also operating. Although this seems an easy way to track down illegal hosts, enforcement is still difficult in practice. Online platforms often do not show exact rental addresses, and hosts show pictures of the interior rather than exterior to avoid being found. Moreover, some hosts take down listings during office hours (when enforcers are working) and put them back up again in the evening (when tourists are generally booking their holiday). On top of that, the STR market is very dynamic, with hosts starting and quitting each month, making it hard to keep up. Violators that are caught first get a notification that non-compliance can lead to steep fines from \$150 to \$999 a day, or a complete withdrawal of the license if non-compliance continues after the notification.

Through the online licensing system, Denver is treating individual STR hosts as responsible businesses, rather than the STR platform. According to most interviewees, this is the most reasonable and practical solution, because 'Airbnb does not really exist, except as a platform' (Resident 1) and it is 'just an internet service matching buyers and sellers' (City planner). Moreover, fining guests is infeasible, because they usually visit only a few days. Meanwhile, 2774 STRs – around half of all hosts – have a licence, which is a high compliance rate compared to other American cities like San Francisco and Portland with compliance around 20% (Arellano, 2017). Looking at the number of STRs before and after the implementation of STRs also shows that the total number of listings has decreased. In December 2016, there were 4103 listings while already in January 2017, right after the ordinance was implemented, the amount of listings dropped to 3768. In June 2017, this number went down to 3540, showing a total decrease of almost 600 listings, most likely because they did not fit the new requirement of primary residence:

I think that is probably a big change that either people have gone away, have gone to 30 days or longer of have just gotten out altogether. I think that (...) the people that remain are serious about wanting to have their homes be available to people to stay. (Airbnb host 2)

A high compliance rate does not tell much about the effects of the ordinance, as both licensed hosts and their guest can still behave in disruptive ways. The City of Denver is still looking at ways to measure and improve this:

We have more than half of Denver licensed, that is one criteria, but it is just quantitative (...) Another metric would be quality of life, right? Have the issues that have been forwarded to us about general disruptive behaviour, disruptive activities, has that been able to be addressed? (...) I do not think anyone has really been able to measure just that. (municipal representative 1)

Consequently, finding better ways to measure the success of the ordinance as well as further increasing the compliance rate are major challenges for the future.

## Conclusions and discussion

Cities worldwide are facing challenges how to deal with increased tourism and the rise of online STR platforms such as Airbnb. By providing a structured typology of STR regulations in different European and American cities, we contribute to existing knowledge on regulating STRs and to the current debate on the question if and how local governments should regulate them. Our research has shown that European cities are more lenient towards STRs than their American counterparts, who require permits, certain safety precautions, and information provision. In general, however, most of the investigated ordinances are not as strict as expected beforehand based on Airbnb's media coverage. Except for Anaheim, no city is banning STRs altogether. Instead, they wish to stimulate Airbnb's positive economic effects for the tourism industry, local entrepreneurs and Airbnb hosts while mitigating its negative effects. Most cities are focussing on two negative externalities in particular: (1) the shortage of affordable housing and (2) neighbourhood changes, both representing the residents' interests. The disruptive character of Airbnb for the traditional lodging industry (Guttentag, 2015) is regarded as less problematic.

This is interesting since the hotel industry in North America itself has started a big lobby against Airbnb (Benner, 2017). Possibly the maturity of the city as a tourist destination might play a role when it comes to the competition between hotels and Airbnb. In cities like Denver, where tourism is still in its growth phase, Airbnb might be seen as complementary to the current offer of hotel rooms whereas in cities with a more saturated tourism industry, Airbnb could be considered as direct competition. In those cities, we can also expect the traditional lodging industry to keep on pressuring local policy making. That said, there are also signs that hotels are changing their strategies due to the competition from Airbnb and respond to current tourism trends (Varma et al., 2016). Looking at the way how the traditional lodging industries respond to current regulations and the growing competition from Airbnb could be a further research avenue.

What seems to be the biggest concern for cities is not the original idea of home-sharing, but the development of commercial-style Airbnb's. Investors increasingly buy up houses and apartments to permanently rent out on platforms like Airbnb. Consequently, entire apartment blocks or even neighbourhoods turn into vacation rentals that operate in a similar way as hotels. According to Varma et al. (2016, p. 235):

innovative ideas like Airbnb have the potential to change the very way any industry operates, and the success of Airbnb confirms that once the change is initiated, it is highly unlikely that the industry would revert to the old model

Although we do not question Airbnb's innovativeness, it does, however, seem that – victim of its own success – the STR industry is reverting back to a more traditional and commercial form of tourism, in which financial motivations prevail over social aspects of living with/as a local.

Although all cities are experiencing the same phenomenon of STR platforms, we concur there is no one-size-fits-all solution (cf. Gurran & Phibbs, 2017; Lines, 2015). The rationale for regulation might be quite similar (mainly limiting the influx of tourists and commercial-style STRs), but the underlying processes and consequences differ per city. For Barcelona and Anaheim, which are already flooded by tourists, emphasis is mainly put on aspects such as overcrowding and housing availability. In other cities, like Denver, the focus is mainly on the positive impacts of STRs and mitigating negative externalities. Hence, the impact of STRs can differ from one neighbourhood or city to another; a similar absolute increase in STRs might be perceived as much more problematic in a residential neighbourhood ('far Southwest Denver') than in mixed neighbourhoods closer to Downtown ('West Wash Park') that are more familiar with tourists and tourist accommodations. Thus, the perceived impact is more important than the actual, absolute impact. Consequently, not only big cities with many STRs, but also

smaller tourism destinations with relatively few STRs should be thinking about how to deal with these platforms, making our research relevant to many more places than those investigated. We therefore also recommend future research to not only investigate large cities known for facing STR challenges, but also these smaller destinations.

The importance of perceived impact adds to the difficulty of finding an appropriate metric to measure the impact of STRs and STR ordinances. Isolating the effect of Airbnb is also problematic. As indicated before, neighbourhood changes are often intermingled with already existing problems related to tourism and/or gentrification (Stors & Kagermeier, 2017). Hence, attributing both positive and negative externalities to STRs alone would be ignoring other processes occurring in the neighbourhood. Measuring policy effects is equally difficult, as quantitative metrics like compliance rates tell little about the actual compliance or the perception of STRs on the ground. It is time-consuming to monitor an increasing number of listings in a very dynamic STR market that is almost completely operating online. Additionally, there is the issue of responsibility that lies with the host who does not operate as a traditional business and thus cannot be regulated in this manner. It would be interesting, however, to have at least some insights on what the outcomes have been of different regulatory approaches. We thus recommend future research in this direction as well.

The above-mentioned issues raise questions to what extent regulating Airbnb and other STR platforms are actually realistic, since it seems that no matter if cities decide to prohibit or restrict, enforcement is difficult and could possibly stimulate the illegal operation of STRs. Yet, not responding to the rise of STRs and their externalities is no option either. Cities experiment with drafting regulatory frameworks, but regulations tend to be slow in adapting to new types of technology, something that is also seen with other sharing economy platforms such as Uber (Edelman & Geradin, 2016). What is clear, is that many cities are far from figuring out how to handle this new player in the tourism field.

## Note

1. For some cities (Santa Monica, New Orleans and New York) this rationale could not be literally found in the available data. However, we could deduct their rationale on the basis of the type of regulations that have been implemented.

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