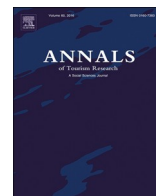


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A review of research into paid online peer-to-peer accommodation Launching the *Annals of Tourism Research* curated collection on peer-to-peer accommodation



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ABSTRACT

This review article (1) creates a knowledge map reflecting key areas of academic insight into the phenomenon of paid online peer-to-peer accommodation, (2) synthesizes these insights, and (3) points to regions on the knowledge map which require our attention in the future. This article also launches the *Annals of Tourism Research* Curated Collection on peer-to-peer accommodation networks, which contains past and hot off the press work on the topic and will continue to grow as new articles on the topic appear in *Annals*

Introduction

When we say “Kleenex” we think “tissue”. When we say “Post-It” we think “sticky paper note”. When we say “Vaseline” we do not even think “petroleum jelly-based product”, we just think “Vaseline”. These brands have become synonymous with their product categories. Although Airbnb was not the first facilitator of accommodation exchange among peers, the wide-reaching social, economic and policy implications of its success elevated Airbnb to become “the iconic business model for the ... peer-to-peer ... economy”, “the prototypical exemplar” (Mikhalkina & Cabantous, 2015, p.62) of *online trading of paid peer-to-peer accommodation*, the construct at the centre of this investigation. This review article focuses on paid online trading because unpaid trading of accommodation (using platforms such as Couchsurfing) and offline trading (using word of mouth or classifieds in print media) are distinctly different and have not had the same disruptive effects on the tourism industry and society as a whole.

Prototypes are useful to illustrate concepts, but they do not replace definitions. The systematic development of knowledge requires agreement on the definition of a construct (Rossiter, 2001, 2002). I propose a definition of **paid online peer-to-peer accommodation** containing – in addition to the paid and online nature – three key building blocks, which are highlighted in *italic* in the definition and discussed in more detail below. It should be noted, however, that peer-to-peer accommodation network platforms do not trade paid online peer-to-peer accommodation exclusively; they also serve as a distribution channel for professional tourism accommodation businesses.

Paid online peer-to-peer accommodation is *space* suitable for overnight stays sold by a *non-commercial provider* (the host) to an end user (the guest) for short-term use through *direct interaction* between host and guest.

The object at the centre of this definition is *space*. Peer-to-peer accommodation (Dolnicar, 2018a) is fundamentally about trading access to a specific type of space: space which is suitable for overnight accommodation. This expression is deliberately vague because a unique feature of paid online peer-to-peer accommodation is the wide range of different kinds of spaces being offered. Spaces range

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from a shared room in very poor condition to a luxury mansion, and attract a range of different market segments (Lutz & Newlands, 2018). Variation replaces standardization in tourist accommodation. Paid online peer-to-peer accommodation networks “do not apologise for imperfection ... they celebrate variation” (Dolnicar, 2018b, p. 4). While space stands at the centre of paid online peer-to-peer accommodation, some platform facilitators already offer a wider range of travel-related services (Gardiner & Dolnicar, 2018), paving the way for paid online peer-to-peer travel services.

Paid online peer-to-peer accommodation platforms facilitate the interaction of *non-commercial* providers of space (hosts) with end users (guests). The non-commercial nature of hosts is a necessary attribute to define the concept. Many paid online peer-to-peer accommodation facilitators allow commercial providers – providers formally registered as businesses – to use their platform as a distribution channel. In China, commercial facilitators own and proactively develop real estate for trading (Xiang & Dolnicar, 2018). This is not paid online peer-to-peer accommodation. In such instances, the platform serves as an online distribution channel only, and the facilitator as an online travel agent (Reinhold & Dolnicar, 2018a). Commercial accommodation providers have the sole aim of maximizing profit and return on investment. Hosts rarely use those terms. Instead, they indicate wanting to subsidise their income, speed up paying off a mortgage, cover expenses, earn a bit of extra pocket money, or meet new people and share the beauty of their home town (Hardy & Dolnicar, 2018; Ikkala & Lampinen, 2015; Karlsson & Dolnicar, 2016). Sometimes the “human relationship, rather than a house, is ... the primary shared asset” (Jung et al., 2016). The proposed definition of paid online peer-to-peer accommodation does not exclude the possibility of hosts charging a fee and making a profit as long as they are not a registered business.

A final defining attribute of paid online peer-to-peer accommodation is that the exchange of space has to result from a *direct interaction between host and guest*. If a host hires an intermediary to interact with guests, trading no longer occurs between two peers. The requirement of direct interaction differentiates between genuine paid online peer-to-peer accommodation and situations where businesses or property investors merely use peer-to-peer network platforms as a point of sale. Such arrangements fall outside of the definition, but they are likely to increase into the future with substantial numbers of co-hosting businesses – such as Airagents, Pass the Keys, BnB Buddy, hometime and Airsorted – emerging. These co-hosting service providers offer complete management of spaces on behalf of the person making it available for short-term rental. Some are endorsed by paid online peer-to-peer accommodation platform facilitators such as Airbnb (Airbnb, 2018a), others operate independently of the platform on which the trading of space occurs. The proposed definition also excludes trading of space using conventional media such as newspapers, staying with friends and family and using a resident manager to operate the short term rental business. The latter case is not uncommon in the traditional accommodation sector where complexes of units owned by individuals are managed as a resort by a licenced accommodation provider.

Narrowing down the construct from peer-to-peer accommodation to *paid online* peer-to-peer accommodation was a deliberate decision because it was the paid nature of trading space between peers along with the efficiency of trading on online platforms (Palos-Sanchez & Correia, 2018, p. 95) that led to Airbnb causing disruption to the hospitality industry and society more broadly. Making space available for free or swapping space has always been, and will remain, a marginal phenomenon with little impact on the tourism industry, the housing market and residential neighbourhoods, thus requiring no regulatory action.

The terms *sharing economy* or *collaborative consumption* are commonly used to describe peer-to-peer trading. Both terms blur the clarity of the concept definition. Sharing is not a necessary attribute of peer-to-peer accommodation. Many authors have offered analyses of the concept of *sharing* (e.g. Belk, 2014; Habibi, Kim & Laroche, 2016; Breidbach & Brodie, 2017; for a review, see Reinhold & Dolnicar, 2018a). But the *Oxford Dictionary* (2018a) best captures our common understanding of the verb *sharing* as having or giving a portion of (something) with another or others; or using, occupying, or enjoying (something) jointly with another or others. Peer-to-peer accommodation does not align well with this definition of sharing. Similarly, the term *collaborative consumption* is not helpful. The *Oxford Dictionary* (2018b) defines the verb *collaborate* as “work[ing] jointly on an activity or project”. People involved in trading space do not work jointly on anything. Throughout this article, therefore, I refrain from using the terms *sharing economy* or *collaborative consumption* as they are not helpful for knowledge creation on paid online peer-to-peer accommodation; the lack of scientific precision of these terms leaves room for different researchers to study entirely different phenomena.

This articles aim at synthesizing knowledge about the paid online peer-to-peer accommodation phenomenon. The number of studies is overwhelming and an extraordinarily wide range of academic disciplines investigate Airbnb (see Fig. 1). Even among articles on Web of Science – which suffer from a time delay due to lengthy journal review processes – the number of publications mentioning Airbnb has increased exponentially from 1 in 2010, 2011 and 2012, to 46 in 2016, 119 in 2017 and 91 from January to October 2018. The approach taken in this review was to include as much work as possible, identified through both Google Scholar and Web of Science. It was impossible to include all those references; priority was therefore given to studies providing the most critical new insights. As such, this article offers structure to asynchronous, disparate research efforts around one common construct, and identifies areas of investigation that require attention in future.

The first section of this article presents a knowledge map of paid online peer-to-peer accommodation research. The map is a result of a conceptual analysis of the phenomenon (top down) and the review of published research (bottom up). It positions work along two dimensions: the topic of investigation and the form of knowledge generated (discussed in detail in the next section). The knowledge map then serves as the structure for review of prior work and the identification of research problems that require more attention in the future.

The paid online peer-to-peer accommodation knowledge map

Any study on paid online peer-to-peer accommodation can be classified along two dimensions: the topic investigated, and the form of knowledge generated. Fig. 2 uses these two dimensions to create a knowledge map. The topics along the y-axis emerged from

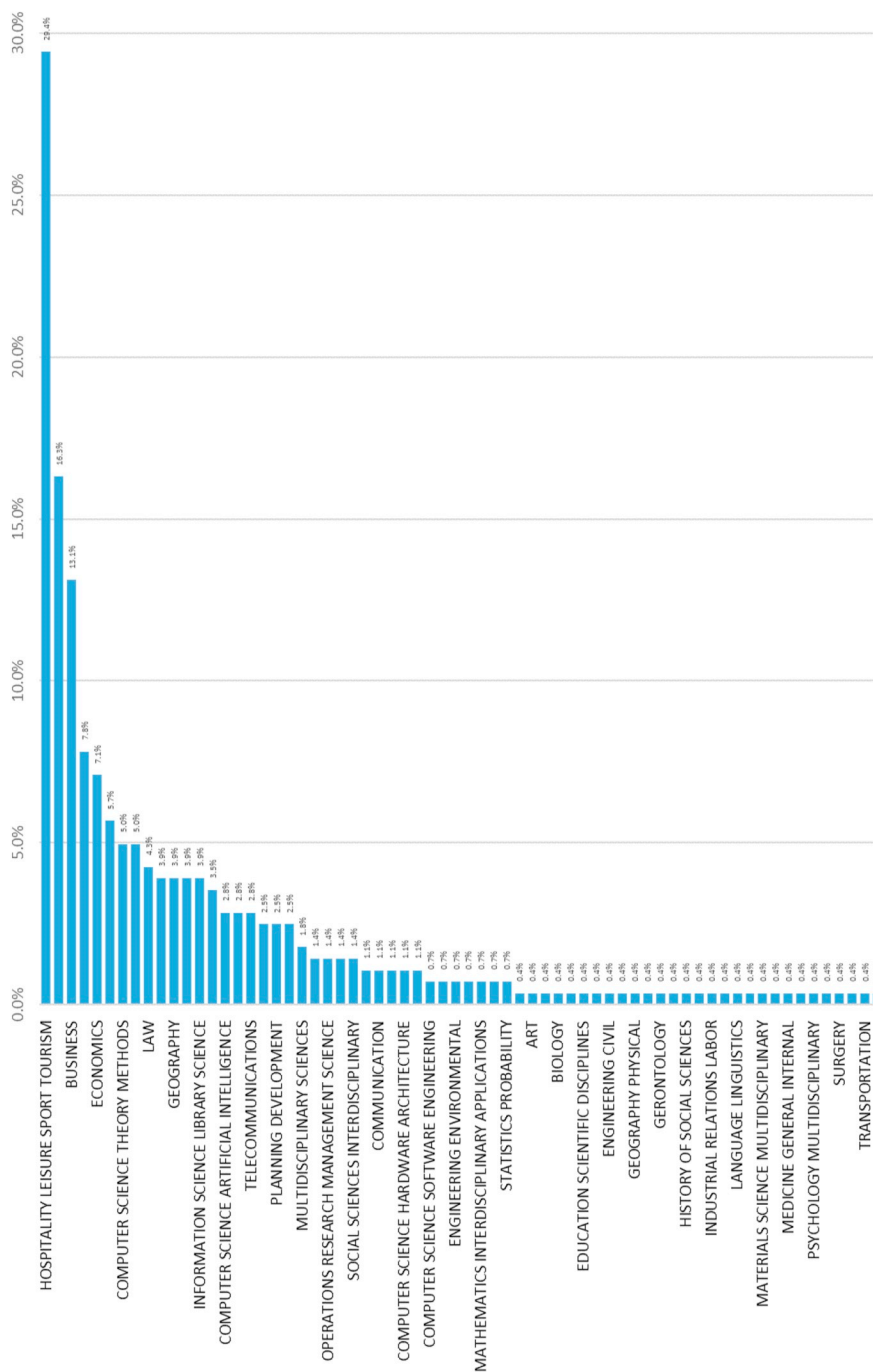


Fig. 1. Distribution of studies listing the keyword “Airbnb” across Web of Science categories. (Source: Web of Science, last accessed 24.10.2018).

		Concepts (1st order knowledge)	Associations (2nd order knowledge)	Causes-and-effects (3rd order knowledge)
Peer-to-peer accommodation networks and the tourism industry	Paid online peer-to-peer accommodation as context	4%	24%	0%
	Business Model	5%	9%	0%
	Competition	4%	4%	1%
	Filling infrastructure gaps	0%	0%	0%
	Supporting regional and remote areas	0%	0%	0%
	Facilitating events	0%	0%	1%
	Serving niche markets	0%	1%	0%
Peer-to-peer accommodation networks and society	A one stop travel shop	0%	0%	0%
	Unequal access	1%	2%	2%
	Changing neighbourhoods and real estate markets	5%	7%	0%
	Changing employment structures	3%	0%	0%
	Emergency assistance	0%	0%	0%
Peer-to-peer accommodation networks and public policy	Political activism	0%	0%	0%
	Fairness of competition	1%	2%	0%
	Safety	2%	2%	0%
	Labour market	4%	0%	0%
	Urban planning	5%	5%	0%
Peer-to-peer accommodation networks and the environment	Taxation	5%	2%	0%
	Using idle resources	1%	1%	0%
	Net carbon emissions	0%	0%	0%
	Construction	0%	0%	0%
	Servicing and maintenance	0%	0%	0%

Fig. 2. Knowledge map (green = at least 5% of insights, yellow = up to 5% of insights, red = no insights; illustration by Josh Hartmann). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

a conceptual analysis and the review of published work. The forms of knowledge along the x-axis are based on [Rossiter's \(2001, 2002\)](#) categories of marketing knowledge. Concepts (first order knowledge) are the foundation of knowledge, the building blocks of knowledge creation. First order knowledge results from descriptions of concepts in isolation, without the investigation of interactions with other concepts. Structural frameworks and empirical generalisations (second order knowledge) are non-causal models, offering insights into associations of concepts. Studies that use correlation-based analyses typically generate second order knowledge. Principles (third order knowledge) allow conclusions about cause-and-effect relationships; they result from experimental or quasi-experimental research designs allowing changes in the concept of interest (dependent variable) to be traced back to the change in another concept (independent variable, experimental intervention). Third order knowledge is the most powerful form of knowledge because it can reliably explain observations, thus developing theory. These explanations lead to tangible recommendations for practitioners.

The cells in [Fig. 2](#) represent possible combinations of forms of knowledge and topics. The colours in the cells reflect the frequency of insights derived from 122 relevant and accessible peer reviewed articles listed on Web of Science under the keyword “Airbnb”. Red cells indicate that not one single study among those reviewed generated insights of this kind. Yellow cells indicate that some – but fewer than 5% of the total – insights gained fall into this cell. Green cells indicate that at least 5% of insights gained from the reviewed body of work contribute to knowledge in this particular cell. I use the term “insight” because most studies on paid online peer-to-peer accommodation discuss a range of issue and, consequently, fall into multiple cells in the knowledge map.

[Fig. 2](#) points to an asymmetry in research attention across topics and forms of knowledge. The striking lack of third order knowledge (far right column of [Fig. 2](#)) supports conclusions drawn in other review studies (e.g. [Dolnicar & Ring, 2014](#)) revealing an urgent need for knowledge creators to replace association studies (creating second order knowledge) with studies investigating cause-and-effect relationships (creating third order knowledge). The relatively large amount of first order knowledge generated is not surprising given that paid online peer-to-peer accommodation is still a relatively new concept, warranting descriptive studies and work aimed at definition and operationalisation.

In terms of topics, the vast majority of studies uses paid online peer-to-peer accommodation as context only (top row in the knowledge map). For example, tourist motivations – which have been studied many times before – are now investigated in the context of Airbnb. Overwhelmingly, findings reveal similar motives, including value for money, enjoyment and features of the property (e.g. [Böcker & Meelen, 2017](#); [So, Oh, & Min, 2018](#)). The same holds for barriers preventing tourists from using paid online peer-to-peer accommodation, including concerns about security and confidence in service provision ([So et al., 2018](#)). Another frequently investigated research question in tourism is the association between satisfaction and behavioural intentions, especially intentions to recommend and intention to revisit ([Dolnicar, Coltman & Sharma, 2015](#)). This and other research questions are being reinvestigated in the paid online peer-to-peer accommodation context, without or with inclusion of additional constructs such as trust

(e.g. Chen, 2018; Liang, Choi, & Joppe, 2018a; Yang, Lee, Lee, & Koo, 2018), perceived risk (e.g. Chen, 2018; Liang, Choi, & Joppe, 2018b), and the nature and quantity of reviews (Chen & Chang, 2018). Other, less common research questions have also been studied in the Airbnb context, for example how pictures convey ambiance of places (Nguyen, Ruiz-Correa, Mast, & Gatica-Perez, 2018); how verbal comments provided by users of paid online peer-to-peer accommodation platforms can be extracted and analysed to extract recommendations for service improvement (von Hoffen, Hagge, Betzing & Chasin, 2017); and how to best design a sampling method for web scraping (Oses Fernández, Kepa Gerrikagoitia, & Alzua-Sorzabal, 2018). Studies which use Airbnb primarily as a context are not discussed in detail below.

Among the studies focusing specifically on the investigation of paid online peer-to-peer accommodation, academic researchers dedicate most effort to the investigation of the business model, changes to neighbourhoods, including increases in rental and real estate prices, and issues of urban planning and taxation. Interestingly some of the main topics of public discourse (unfair competition for hotels, discrimination, and lack of safety for guests) have not been studied extensively in the academic literature. Many aspects relating to societal impacts, such as the potential contribution paid online peer-to-peer accommodation can make to emergency assistance, the issue of data privacy, and the potential power they can have in affecting societal change in areas unrelated to accommodation provision (such as marriage equality), are largely ignored. Also strikingly under-researched is the environmental sustainability of paid online peer-to-peer accommodation.

The following four sections focus on work falling in four categories (tourism industry, society, public policy and environment) and offer selected research questions for the future.

Peer-to-peer accommodation and the tourism industry

The business model

Airbnb is arguably the most successful facilitator of paid online peer-to-peer accommodation trading. Its business model describes how it creates and captures value (Kavadias, Ladas, & Loch, 2016). The *value proposition* (Oskam & Boswijk, 2016; Reinhold & Dolnicar, 2018b, 2018c) of Airbnb to hosts includes: identifying suitable guests, mitigating risks, managing payments, marketing, managing visitation schedules, and offering opportunities to socialise and exchange experiences with other hosts. Airbnb's value proposition to guest includes: identifying and providing access to suitable spaces, mitigating risk, and offering a value-added accommodation experience. Airbnb *creates value* (Guttentag, 2015; Reinhold & Dolnicar, 2018b, 2018c) by attracting to its network large numbers of guests and hosts, keeping them in the network, protecting their local specialization advantages, monopolizing local hosts, building network confidence, matching guests and hosts, keeping costs to a minimum, and mining platform data to the benefit of all stakeholders. Airbnb *captures value* (Reinhold & Dolnicar, 2018b) by charging both host and guests a commission on each transaction. Airbnb charges the guest at the time of booking, and pays the host at the time of space use. Between booking and use, Airbnb can work with this money without paying interest (Reinhold & Dolnicar, 2018d).

Most paid online peer-to-peer accommodation platform facilitators are multi-sided platform businesses (Reinhold & Dolnicar, 2018b). This means that hosts and guests cannot trade space without the platform, typically an online platform such as [airbnb.com](https://www.airbnb.com) or [homeaway.com](https://www.homeaway.com). The platform is developed and maintained by a facilitator. This facilitator is not acting like a traditional travel intermediary. Rather, trading occurs directly between host and guest, facilitated by the online platform. The attractiveness of a multi-sided platform business depends on the design quality of the platform, and on a critical mass of buyers and sellers: guests want a large number of spaces to choose from; hosts want access to many potential buyers. If one platform fails to offer that, both host and guest are likely to move to a different platform. Growing a network quickly enough to ensure critical mass is difficult. If it can be achieved, it serves as powerful protection from new market entrants.

Paid online peer-to-peer accommodation offerings on trading platforms are characterised by variation. Yet, conventional tourist accommodation features remain the primary drivers of bookings and price (Chen & Xie, 2017; Gibbs, Guttentag, Gretzel, Morton, and Goodwill, 2018; Gunter & Önder, 2018; Hrobath, Leisch, & Dolnicar, 2018; Martin-Fuentes, Fernandez, Mateu, & Marine-Roig, 2018; Qiu, Fan, & Liu, 2018; Wang & Nicolau, 2017). Newly developed quality indicators, such as the Superhost badge on Airbnb (Goodfellow, Hardy & Dolnicar, 2018), function similarly to brands in the commercial accommodation sector; Ert and Fleischer (2019) estimate the price premium of the Superhost badge to be between four and 9%. Social interaction plays only a small role in the context of paid compared to free peer-to-peer space trading on platforms such as Couchsurfing (Jung et al., 2016). Utilitarian content dominates Airbnb reviews (Quattrone, Nicolazzo, Nocera, Quercia, & Capra, 2018) and price emerges as the most promising indicator to what could be a general accommodation rating system similar to the hotel star grading system (Martin-Fuentes et al., 2018). The consistent finding of reviews on peer-to-peer platforms being more positive is explained by the empathy which develops through the personal relationship between host and guest (Pera, Viglia, Grazzini, & Dalli, 2019), making the reviewing process in the paid online peer-to-peer accommodation context distinctly different from that of other online review settings.

Most research on paid online peer-to-peer accommodation focuses on the operations of successful facilitators, most notably Airbnb. The stories of the many failed attempts at establishing a trading platform – along with the reasons for failure – largely remain untold. One exception is the study by Chasin, von Hoffen, Hoffmeister, and Becker (2018) which identifies seven factors leading to the failure of new peer-to-peer trading platforms. The first reason is a shortage of suppliers who make their services available on the platform. This reason is directly linked to the multi-platform nature of the business model of trading platform facilitators. Other reasons for failure include lack of market insight (especially in relation to consumer needs and competition); suboptimal platform implementation (failing to give users a sense of safety and instilling in them confidence that the risk associated with trading on this platform is low); inaccurate assessment of resource needs for business activities to establish the platform in the marketplace; technical

setups which do not cope with rapid increases in listings and trades; the uncertainty of legislation about peer-to-peer trading globally; and the illusion that being taken over by one of the large, successful platform facilitators is a success, when in reality – more often than not – takeover leads to the abolishment of the brand and the company taken over.

Competition

With the emergence of paid online peer-to-peer accommodation, the established short-term accommodation sector faces *more* and a *different kind* of competition. Paid online peer-to-peer accommodation has the potential to substitute some types of established commercial accommodation (Zervas, Proserpio, & Byers, 2017). In Texas, for example, Airbnb reduced hotel revenues by up to 10%. For every 10% increase in Airbnb listings, monthly hotel revenues in Texas dropped by 0.39%. At other destinations, the competitive landscape is quite different. In Paris, hotel occupancy rates are not associated with Airbnb listings and hotels have different seasonal patterns of demand than Airbnb spaces, suggesting no direct substitution (Heo, Blal, & Choi, 2019). The complexity of the substitution effect is supported by the case of San Francisco where hotel revenue was found to be independent of Airbnb supply, but sales performance was affected by guest reviews on Airbnb (Blal, Singal, & Templin, 2018). Generally, however, hotels at the lower end of the price range are affected most, especially if they cater to the leisure (rather than the business) market and offer no meeting facilities (Zervas et al., 2017).

Tourists perceive paid online peer-to-peer accommodation as superior to budget hotels, and inferior to luxury hotels in terms of traditional hotel quality criteria such as comfort and cleanliness (Guttentag & Smith, 2017). They view paid online peer-to-peer accommodation as offering a higher level of experience than all types of hotels (Modu, Suess, & Lehto, 2017). When asked how likely it is that paid online peer-to-peer accommodation will replace hotels, tourists feel that luxury hotels are least at risk, and hotels at the bottom of the star ranking most (Hajibaba & Dolnicar, 2018a).

It is important to note, however, that the nature of competition created by paid online peer-to-peer accommodation trading is structurally different from conventional competition: hosts are motivated by factors other than the profit margin (Deale & Crawford, 2016; Hardy & Dolnicar, 2018; Karlsson & Dolnicar, 2016); have lower expenses relating to compliance with regulations and tourist-specific taxation; frequently offer more than only a bed to sleep in, including local knowledge, travel tips and a social experience; trading platforms have close to no marginal cost of adding another listing (Zervas et al., 2017), enabling them to increase supply to meet demand very quickly; and they offer variation, not standardization (Dolnicar, 2018b). A difference in the location of paid online peer-to-peer accommodation spaces as opposed to hotel spaces has also been revealed, giving them a slight advantage in proximity to tourist attractions (Gutiérrez, García-Palomares, Romanillos & Salas-Olmedo, 2017).

In contrast to staff in the traditional hospitality sector, paid online peer-to-peer accommodation hosts are not professionally trained (Forgacs & Dolnicar, 2018). Possibly as a consequence, they make less use of dynamic pricing (Gibbs, Guttentag, Gretzel, Morton, et al., 2018; Gibbs, Guttentag, Gretzel, Yao, and Morton, 2018), they vary prices by season, but not across the week (Aznar et al., 2016), and they typically conduct case-by-case risk assessments of booking inquiries (Karlsson, Kemperman, & Dolnicar, 2017). Making such risk assessments before accepting to use a space as a guest or rent out a space as a host (Karlsson, Kemperman, et al., 2017) relies heavily on communication. Good communication and the facilitation of good communication is a key to success, and poor communication leads to negative experiences (Sthapit & Jiménez-Barreto, 2018).

In terms of competition among peer-to-peer accommodation platforms, Booking.com, Homeaway and Airbnb dominate the global market (Hajibaba & Dolnicar, 2018b) with more than two million listings each. They differ primarily with respect to their origin: Booking.com is a traditional online distribution channel, which has expanded into facilitating paid online peer-to-peer accommodation trading. Homeaway has its origins in the trading of holiday homes. Airbnb started off with trading space in people's homes, but has since expanded its portfolio to include a much wider range of accommodation types and tourist services. The competitive landscape is different in China where local platform facilitators have developed peer-to-peer accommodation trading faster than the main global players, and, to this date, maintain their leading position (Xiang & Dolnicar, 2018). Globally, many smaller platforms have emerged, often focusing on niche markets; examples include misterb&b, which describes itself as the largest gay travel community (Hajibaba & Dolnicar, 2018b). The survival and commercial success of such niche providers depends on a range of factors (Chasin et al., 2018), most critically their uniqueness and ability to quickly increase the pool of hosts and guests.

Quick capacity increase

A key feature of large paid online peer-to-peer accommodation networks is that the platform facilitators – once they have successfully attracted enough hosts onto their platform – can increase short-term rental capacity relatively quickly at a minimal marginal cost to them (Zervas et al., 2017). This is helpful at a number of levels: (1) destinations enjoying high tourist demand, but lacking accommodation capacity can use peer-hosted spaces to increase the tourism industry's contribution to GDP (Knežević Cvelbar & Dolnicar, 2018). (2) Regional and rural areas in desperate need of local employment opportunities, but not attractive enough as hotel locations, can offer peer-hosted spaces to welcome tourists. Tourists will spend money in the region, and disperse away from tourist hotspots (Fairley & Dolnicar, 2018; Volgger, Pforr, & Reiser, 2018). (3) Peer-hosted spaces can assist in managing temporary peaks in demand around events and festivals, or even make events feasible where usually they were not due to accommodation shortages in the host city (Fairley & Dolnicar, 2018; Volgger, Pforr, & Reiser, 2018).

Serving niche markets

Offering more variation is one of the features driving the success of peer-to-peer accommodation networks (Dolnicar, 2018b; Kavadias et al., 2016), making them particularly suitable to satisfy the needs of niche markets neglected by traditional accommodation sector. Multi-family, multi-generational and family reunion travel are niche markets displaying rapid growth (Expedia, 2016; Kleeman, 2014) – partly because of demographic changes in the population, and partly because of the availability of efficient online trading platforms allowing large groups to find spaces suitable for a joint holiday (Hajibaba & Dolnicar, 2018d).

Multi-family travel is not the only niche that could benefit from more customized space provision, from micro-segmentation. Guests from very different cultural backgrounds could better be served by local hosts with the same cultural background. This may represent a key competitive advantage given the potential for misunderstandings and disappointments due to differences in expectations stemming from cultural differences (Cheng & Zhang, 2019). People with impairments could rent spaces owned by people with similar impairments. Such spaces are likely to be vastly superior to generic regulation-compliant hotel rooms for people with impairments (Randle & Dolnicar, 2018). Similarly, people who genuinely want accommodation with the smallest possible environmental footprint could rent the homes of people who have an equally strong commitment to environmental protection and have equipped their home with all available sustainability measures, which can be described in detail in the listing (Juvan, Hajibaba, & Dolnicar, 2018). Such information is likely to give an environmentally conscious guest more confidence than eco-certifications of questionable credibility. Another niche are smokers and pet owners. Hosts know that they can increase bookings of less attractive spaces by allowing pets or smoking, which is why non-smoking spaces are more expensive (Kennedy, Douglas, Stehouwer, & Dawson, 2018; Kennedy, Jones, & Gielen, 2018). As a side-effect of hosts of less attractive spaces permitting pets and smoking, those segments of the market – now largely excluded from the traditional accommodation market – may find an increase in available accommodation options.

Research question for the future

What are the business models of paid online peer-to-peer accommodation stakeholders other than facilitators? Much work investigates the business model of paid online peer-to-peer accommodation network facilitators, specifically Airbnb. The business models of the many businesses that cater to paid online peer-to-peer accommodation hosts and the business model of the hosts themselves do not attract much research attention. What are their business models?

Is genuine paid online peer-to-peer accommodation on the decline? As paid online peer-to-peer accommodation becomes more common around the world, the sector is becoming professionalized, attracting more and more private and commercial investors. Such hosts are increasingly making use of professional listing managers and co-hosts to handle hosting and maximize returns, making them non-compliant with the proposed definition of paid online peer-to-peer accommodation in this article because of the lack of direct interaction between host and guest. This raises a number of questions: what is the proportion of listings with delegated hosting? Is this proportion increasing? Is genuine paid online peer-to-peer accommodation trading already on the decline, only a decade after it became viable on a large scale? If so, what are the implications for the tourism accommodation sector, and for real estate markets in popular tourism destinations?

Will paid online peer-to-peer accommodation platforms become one-stop travel shops? Already, Airbnb is trading more than only space, with some predicting it will develop into a one-stop travel shop (Gardiner & Dolnicar, 2018), a full-scale online travel agency (Garun, 2017). The US landing page of Airbnb offers homes, experiences and restaurants. Experiences offered by locals range from simple walking tours to specialized adventure sports (Gardiner & Dolnicar, 2018). Unlike experiences, restaurants listed on Airbnb are predominantly traditional eateries, which can be booked via the Airbnb platform. If the price is fixed, payment including tip can be made on the Airbnb platform (Garun, 2017). Airbnb (2017) argues that restaurant offerings on the Airbnb platform facilitate even more spending by tourists, benefitting local communities and businesses. Over time, more and more travel and leisure offers can be channelled via the Airbnb platform, until loyal Airbnb users will be able to organize all aspects of their travel – travel, accommodation, insurance, vaccinations, activities, equipment rental – via Airbnb. Will peer-to-peer platforms become full-service online travel agents? If so, will they integrate commercial services, or expand the portfolio of peer-to-peer tradeable services? If an “ordinary” person can provide accommodation and guide a walking tour, why could they not cook you a meal and pick you up from the airport?

Will paid online peer-to-peer accommodation network facilitators become the tourism insight brokers of the future? Airbnb views data sciences as a key drivers of its success (Bion, Chang, & Goodman, 2018). Large peer-to-peer accommodation platform facilitators are likely to already own more powerful databases than urban planners at local authorities. With the number of services being expanded, the nature and amount of data available for mining by data scientists (Bion et al., 2018) will grow exponentially, potentially making them the most powerful knowledge brokers in tourism and urban planning (Reinhold & Dolnicar, 2018b). Will a small number of businesses, including leading peer-to-peer trading platforms, have an oligopoly on travel-related data in the future? Will they deal with this power responsibly? Should urban planners and public policy makers use this data source to inform their decisions or should they develop independent databases using approaches such as web scraping (Oses Fernández et al., 2018; Wegmann & Jiao, 2017) to avoid dependence on data-providers that have inherent conflicts of interest with the policy decisions being made?

How do peer-to-peer trading services interact? Most research to date is focusing on the study of peer-to-peer trading platforms, such as Airbnb or UBER, in isolation. But already there is evidence of interaction effects, where the combined effect of multiple peer-to-peer trading platforms is more than the effect of each platform individually. Uber and Lyft being unavailable at a destination, for example, reduces Airbnb demand significantly (by 10% in the case of Austin, Texas) and increases the concentration of Airbnb

bookings in areas with good public transport coverage (Zhang, Lee, Singh, & Mukhopadhyay, 2018). How do peer-to-peer trading platforms affect each other's business? With more services likely to be peer-to-peer traded in the future, will a market segment of tourists develop that will shop exclusively in the peer-to-peer world?

How can people's homes be used for commercial activities other than tourist accommodation? Paid online peer-to-peer accommodation network facilitators have changed people's mind-sets in terms of how their homes can be used. A decade ago, one's home was one's castle. Only family and friends were welcome to share this space for short periods of time. Today it is perceived as normal that one's home becomes tourist accommodation. What else could it become? A home in Venice, for example, doubles up as an art gallery during the day (Ferrando & Munteanu, 2016). How else can people use their homes to generate additional income and strengthen the economy?

Why do peer-to-peer trading platforms fail? The focus of academic research and public discourse is on successful peer-to-peer trading platforms. But success is the exception, not the norm, because of the multi-sided platform nature of the business model, which requires supply and demand to be built very fast after the launch of the business. To date, only few studies have investigated reasons for failure (e.g. Hoffmeister & Becker, 2018). More such work is required to prevent failure by promising start-ups inspired by a small number of successful trading platforms.

Peer-to-peer accommodation and society

Unequal access

Unequal access to paid online peer-to-peer accommodation can occur both on the supply and the demand side. On the supply side, empirical evidence suggests that hosts who are part of a minority group pre-emptively offer their spaces at a lower price – in anticipation of potential discrimination (Kakar, Voelz, Wu, & Franco, 2018). In terms of the type of people who hosts paid online peer-to-peer accommodation, overwhelming evidence shows that hosts are not representative of the overall population (Gurran & Phibbs, 2017; Schor & Attwood-Charles, 2017); they are more frequently highly educated, creative people (Quattrone, Greatorex, Quercia, Capra, & Musolesi, 2018) with well-paid jobs (Schor, 2017) in the top deciles of the socio-demographic indices, leading to the conclusion that “hosting is an affluent phenomenon with minimal impact on the lowest end of the socio-economic spectrum” (Alizadeh, Farid, & Sarkar, 2018, p. 16). Paid online peer-to-peer accommodation, it could be argued, makes the rich richer.

On the demand side, the single most debated issue is that of the potential for taste-based discrimination, discrimination resulting from “some sort of animus towards members of an out-group that takes the form of a willingness to pay a price to avoid interaction with members of that group” (Guryan & Charles, 2013, p. F418). The law community goes as far as expressing concerns about Airbnb having the potential to jeopardize “the integrity and efficacy of our civil rights laws” (Todisco, 2014), with others pointing out that systematic discrimination occurs already due to unequal access to the internet (Weidmann, Benitez-Baleato, Hunziker, Glatz, & Dimitropoulos, 2016). The public debate around discrimination on Airbnb across both established media outlets (Cheng & Foley, 2018) and social media (for example, #AirbnbWhileBlack, McLaughlin, 2018) was fuelled by an experimental study (Edelman, Luca, & Svirsky, 2017) claiming substantial race-based discrimination based on host responses to artificially generated guest inquiries from non-existent guests without a profile photo or a review, both known to be critically important in peer-to-peer trading (Dolnicar, 2018b; Ert, Fleischer, & Magen, 2016; Karlsson, Kemperman, et al., 2017). For guests with at least one positive review, no systematic discrimination effects can be detected (Cui, Li, & Zhang, 2016), pointing to any asymmetric booking request responses being due to hosts attempting to make risk assessments based on insufficient information (Hajibaba & Dolnicar, 2018e). Recommendations of how to reduce the potential of discrimination on peer-to-peer trading platforms include collecting and analysing trading data to understand whether discrimination is occurring; not providing socio-demographic information about hosts and guests, which may attract taste-based discrimination, such as race and gender; and increasing the proportion of listings that can be booked without the host making a case-by-case risk assessment (Fisman & Luca, 2016). An experimental study shows that hosts' natural tendency to trust people similar to themselves (and with it potential bias in accepting guest requests) can be overcome by building platform-level reputation systems (Abrahamo, Parigi, Gupta, & Cook, 2017). Critically, indicators of how trustworthy a potential trading partner is change, and with it their impact on bookings and prices (Ert & Fleischer, 2019).

The key role of the online review points to another form of discrimination: discrimination against new members of peer-to-peer networks. Hosts are reluctant to accept bookings by new members because they have no reviews and, as such, are untested and perceived as risky by hosts (Dolnicar, 2018c). This type of discrimination is not taste-based and only temporary in nature. As soon as a guest secures their first positive review, hosts have much less reason for concern (Cui et al., 2016).

Also on the demand side, inequality of short term accommodation opportunities may occur in the context of catering to people with impairments. Most commercial accommodation providers are required to ensure minimum provisions for guests with special needs. Peer-to-peer accommodation networks are accused of excluding people with special needs because they are not bound by regulation. Some call for more state intervention to secure suitable accommodation provision for everybody (Boxall, Nyanjom, & Slaven, 2018), suggesting the same minimum provision requirements that apply to hotels, or establishing designated providers and taxing peer-to-peer networks to fund them (Edelman & Geradin, 2015). The reality of travelling with special needs, however, does not mirror in content of the public debate, which centres on regulations, rather than the nature of the special needs, and how these can best be met. Interviews with travellers with special needs reveal that finding suitable accommodation is very challenging, both in the regulated and in the unregulated accommodation sector (Randle & Dolnicar, 2018), because impairments vary substantially. The minimal legal requirements are often insufficient to ensure genuine provision of suitable accommodation options. The primary recommendation emerging from discussion fora is to provide extremely detailed information about the exact setup of the

accommodation. Examples include: how high is the bed, do the doors have knobs or handles, are there any rugs which are a tripping hazard, is there too much furniture for people using a wheelchair or walker to move around, are there grab rails (how high are they, are they vertical or horizontal), etc. People making available their own homes are in the unique position to provide this kind of detailed description. People with special space requirements may have spaces which are perfectly suitable for other people with special space requirements. The potential for peer-to-peer trading to improve accommodation options for people with impairments needs more investigation, and offers opportunities for improving information provision on peer-to-peer trading platforms.

Changes to residential neighbourhoods and effects on house and rental prices

Paid online peer-to-peer accommodation trading can affect the everyday life of residents in two ways: (1) at the micro-level in one's own home, which becomes a performed authentic tourist space quite different from the same space if it would not be used for hosting (Roelofsen, 2018; the micro-level is discussed at the end of this section); and (2) at the macro level in residential areas with many listings (areas particularly attractive to tourists) where the nature of those residential neighbourhoods can be substantially altered. Potential changes range from negligible to substantial. Negligible changes include higher use of public facilities able to absorb additional use, such as public parks and the public transportation system. Substantial changes include (1) unruly behaviour by tourists in usually quiet residential areas (e.g. Gurran, 2018), the increased presence and visibility to residents of tourists (e.g. Gurran, 2018), and residents in apartment complexes feeling less safe because of strangers having access to the premises (e.g. Gurran & Phibbs, 2017); (2) house price increases (e.g. Barron, Kung, & Proserpio, 2018), and (3) rent increases (e.g. Barron et al., 2018; Gurran & Phibbs, 2017; Horn & Merante, 2017; Lomas, 2016; Schäfer & Braun, 2016), with some suggesting the emergence of “a new form of rent gap in culturally desirable and internationally recognizable neighborhoods. This rent gap ... requires minimal new capital to be exploited by a range of different housing actors, from developers to landlords, tenants, and homeowners” (Wachsmuth & Weisler, 2018, p. 1147).

The extent to which communities experience these challenges depends on the level of demand for peer-to-peer accommodation in the area. Higher demand leads to more listings (Adamiak, 2018; Crommelin, Troy, Martin, & Pettit, 2018; Gurran & Phibbs, 2017; Schäfer & Braun, 2016) unless regulations limit paid online peer-to-peer accommodation letting. Some network facilitators have proactively tried to manage potential negative side effects, acknowledging that one single irresponsible host can significantly reduce the quality of life of neighbours. Collective challenges for local and regional communities, however, are concentrated in destinations with a high density of peer-to-peer listings (Crommelin et al., 2018; Gurran & Phibbs, 2017; Schäfer & Braun, 2016). Regulatory measures must account for geographic variation to ensure a good balance between protecting local communities and harvesting the economics benefits of peer-to-peer trading (Hajibaba & Dolnicar, 2018c; Miller, 2016).

At the micro-level, the personal level, paid online peer-to-peer accommodation can change the homes of people, transform them into “spaces of domestic entrepreneurialism” (Stabrowski, 2017, p. 327), and alter the way hosts use and decorate them. Some hosts – while hosting – appear to *perform* an authentic local home, rather than actually living the way they would if they would be alone (Roelofsen, 2018). Key features of performing one's home include modifying habits to not disturb the guest, but also displaying otherwise non-existent or trivial artefacts around the house for the benefit of guests (Roelofsen, 2018).

Changing employment structures

Paid online peer-to-peer accommodation networks are offering micro-entrepreneurship opportunities for hosts and to suppliers of products and services to hosts (Sigala, 2018; Sigala & Dolnicar, 2018). These micro-entrepreneurs may rely entirely on hosting as their income stream, or subsidise their income. The fact that micro-entrepreneurs provide the core services in peer-to-peer accommodation networks implies lower market entry barriers (Drahokoupil & Fabo, 2016). New entrants do not need to build a hotel, they can simply unlock the spare room. And new platform facilitators can attract hosts with unused space, rather than developing large resorts from scratch. Micro-entrepreneur hosts also put pressure on prices, forcing established accommodation providers to reduce overheads. With personnel representing the largest overhead cost category, the accommodation sector is likely to move towards more short-term demand-driven contractual arrangements, and reduce long-term permanent employment commitments (Forgacs & Dolnicar, 2018).

Initial empirical evidence supports these expectations: in Idaho the entry of Airbnb initially strengthened the tourism sector because more tourists arrived and more people were employed in hospitality. The contribution to employment decreased over time, as peer-hosted spaces substituted established tourist accommodation options at the low-price end of the market (Fang, Ye, & Law, 2016). In Germany, Airbnb's market entry in 2012 did not affect hotel employment or employment type, but did have a small negative effect on daily wages (Suciu, 2016). Indirectly, tourists using peer-to-peer accommodation created 9.8 jobs per 100 beds, whereas the traditional accommodation sector created some 53 jobs per 100 beds (EY España, 2015, cited in Oskam & Boswijk, 2016). In addition to the indirect impact paid online peer-to-peer accommodation may have on employment in the accommodation sector, a direct and immediate effect is also observed: highly qualified white collar workers (hosts) now perform tasks, such as cleaning, which are typically performed by less educated people in the established commercial tourism accommodation sector (Schor, 2017).

From a legal point of view the shift from permanent employment to micro-entrepreneurship means that the increased freedom and flexibility comes at the cost of technically being a contractor, rather than an employee (Acevedo, 2016). Platform facilitators can change conditions at any time. Contractors must accept changed conditions or stop working for the facilitator. This led to calls for increased regulation (e.g. Drahokoupil & Fabo, 2016) arguing that “labor and employment regulation is meant to protect values or

public goods that the market can't always protect by itself" (Acevedo, 2016, p. 14). Such values include avoiding the potential for discrimination and protecting hosts from harm to their health. Ravenelle (2017, p. 281) concludes from her qualitative interviews with 78 workers across a range of peer-to-peer trading services that the "sharing ... economy claims to bring the romance of entrepreneurialism to the masses", but what "is marketed as an empowering business opportunity is laden with difficulties and contradictions. Sudden changes to platform design, service offerings and algorithms leave workers feeling vulnerable, not independent ... most workers describe themselves as simply seeking money".

Drahokoupil and Fabo (2016) identify a number of ways of how platform facilitators can affect the labour market on the long term: they can reorganise work in industries where self-employment is already dominant; they can cause work typically done by employees to be provided through self-employment instead; they can increase offshoring of work – which is less likely in the case of the tourism industry because services are provided at a specific location; and they can encourage tasks to be broken up, making low-skilled workers vulnerable. While there is no immediate evidence of dramatic impacts on the labour market as a consequence of the rise of platform businesses, changes are likely in the future, requiring policymakers to be protective of people that may become vulnerable as a consequence.

Emergency assistance

Platform facilitators such as Airbnb can quickly open accommodation capacity at certain locations. Quick access to unused space is critically important when a region experiences an unforeseen natural disaster, such as a cyclone, flood or a bushfire. Airbnb has a separate platform (<https://www.airbnb.com.au/welcome/evacuees>) that allows people to register spaces available for temporarily housing people in need; more than 11,000 have benefitted to date (<https://www.airbnb.com.au/openhomes>). Regulators have been slow to realise the benefit of collaborating with peer-to-peer accommodation platforms on providing emergency shelter, despite the known potential of online communities to assist (Griswold, 2013), and the overwhelming willingness of residents to open their homes to displaced people (Hajibaba & Dolnicar, 2018f). The state of Victoria in Australia partners on emergency assistance with Airbnb: "In the event of an emergency or natural disaster, Airbnb will connect local residents who have been displaced – as well as emergency management personnel and volunteers who are coming in to assist – with local Airbnb hosts who are opening their homes free of charge" (Emergency Management Victoria, 2017). Peer-to-peer accommodation network facilitators can do more than open houses. They can help distribute information (Frew & Griswold, 2016), including educational materials about emergency preparedness, and can notify and update locals and visitors on the status of an emergency (Emergency Management Victoria, 2017; Hajibaba & Dolnicar, 2018f).

Political activism

Successful peer-to-peer accommodation network platform facilitators, those with millions of members, can have impact beyond disrupting industry sectors. They can lobby for societal change, and they can engage in political activism within and across national borders (Hajibaba & Dolnicar, 2018g). They can do that because they have access to millions of members who either genuinely feel part of their community, or benefit in some other way from their network membership. Airbnb has engaged in activism aiming at societal change on numerous occasions: they partnered with a number of businesses in selling, for the price of the postage, the Belong Ring in Australia, encouraging Australian Airbnb members to wear the ring until marriage equality became law. Airbnb advertised making available free space for people displaced as a consequence of President Trump's changes to US immigration legislation, and ran an advertising campaign on accepting people irrespective of their gender, age or ethnicity. The response to the latter initiative was positive, increasing Airbnb's brand image (Karlsson, Kljako, & Pauldén, 2017). The reaction to more polarising initiatives, such as lobbying for marriage equality, is not well understood.

Research question for the future

How can the ability of paid online peer-to-peer accommodation trading platforms to quickly access vacant accommodation capacity be leveraged to the benefit of society? The unique ability of paid online peer-to-peer accommodation platforms to quickly activate unused space (which is already listed on the platform) has not received much attention by researchers in the past. This is despite the substantial potential of leveraging this ability for the good of residents. Already, paid online peer-to-peer accommodation platforms collaborate with disaster management agencies to assist displaced people after natural disasters (Emergency Management Victoria, 2017; Hajibaba & Dolnicar, 2018f). Many other ways of leveraging unused space listed on online trading platforms exist, but remain largely unexploited. The OTIS Foundation, for example, allows hosts to donate stays at their property for women with breast cancer and their families (<https://www.otisfoundation.org.au/>). Hosts do not earn money with these bookings, but they are also not expected to pay for associated expenses. Another way of putting unused spaces to good use would be to make them available to victims of domestic violence who need to be removed from a dangerous home situation without delay.

How can we ensure that hosting benefits are accessible to all sections of the population? Paid online peer-to-peer accommodation trading offers many entrepreneurial opportunities that can direct business to local small and medium enterprises, and provide a flexible way of earning additional income. Yet, the primary beneficiaries are highly educated, well-off people, pointing to missed opportunities to assist those more in need of subsidising their income (Alizadeh et al., 2018). With respect to service provision to hosts, there may also be a risk of small local entrepreneurs not increasing their business as large professional property management businesses have entered the market and are likely to grow as fast as the number of listings on peer-to-peer accommodation platforms.

Such large providers may be perceived as the safer option. A key research challenge is to find ways to redirect hosting benefits from peer-to-peer trading to people and small businesses most in need.

How can we ensure inclusion of people with impairments who have special space requirements? The current consensus is that government regulation is necessary to ensure inclusion because “hosts have no incentive” (Edelman & Geradin, 2015, p. 320) to ensure the suitability of their spaces for guests with impairments. This assumption is worth challenging. At least two market-based drivers may offer hosts such an incentive. Firstly, people with impairments may want to be hosts. Their homes are perfect for travellers with similar impairments. Secondly, paid online peer-to-peer accommodation platforms catering to travellers with special needs may be able to co-exist (rather than compete) with the large, established platforms. Accomable, one such platform, was a success. It was acquired by Airbnb in 2017. Despite some modifications of the Airbnb booking platform as a consequence of the acquisition of Accomable, the information provided on Airbnb.com is insufficient for most travellers with impairments, potentially opening a niche business opportunity for a new platform facilitator.

How can we ensure the power of peer-to-peer accommodation networks platform facilitators is used for good? Airbnb has pioneered large-scale corporate political activism globally by lobbying against restrictive immigration laws and for marriage equality. These initiatives have demonstrated the power of large virtual networks of people. Such power could also be abused. Work into how the use of this power can be monitored and abuse prevented is needed.

How can we ensure protection of privacy on paid online peer-to-peer accommodation platforms? Privacy stands at the centre of public debate in relation to social media, but privacy issues on accommodation trading platforms have not attracted much attention. This is an urgent area of future investigation as privacy breaches have major implications, most critically locating people's residential addresses.

How is the nature of our homes changing? A small number of studies have raised the issue that paid online peer-to-peer accommodation has a significant effect on how we conceptualise our homes (Roelofsen, 2018; Stabrowski, 2017). This notion is worthy of further academic inquiry. We are now increasingly willing to use our most private spaces to generate income. In which other ways are we going to commercialise our homes in the future? What is the effect on our well-being and family life?

Peer-to-peer accommodation and policy

Policymakers deal with peer-to-peer accommodation in many different ways: they “regulate it out of existence, don't regulate it at all ... wait-and-see” (Acevedo, 2016, p. 15) or attempt to regulate minimally with the aim of reducing negative consequences while still maximally harvesting economic benefits. As a consequence, regulatory frameworks vary greatly across countries and destinations, with many local authorities revising and refining their regulations on a continuous basis. In some cases regulators have even introduced strict regulations, only to abandon them shortly thereafter (Grimmer, Vorobjovas-Pinta, & Massey, 2019). Some convergence has developed: regulations are generally not imposed on hosting at one's main place of residence while the host is present. Cases where the host is not present are typically regulated by requiring hosts to register the space, by setting an upper limit for hosting activity to be classified as non-commercial, and by taxing hosting income (Hajibaba & Dolnicar, 2018c).

Public discourse on regulation of peer-to-peer accommodation networks centres around price increases of local real estate, negative effects on neighbours and neighbourhoods, unregulated peer-to-peer trading causing challenges for local authorities because infrastructure demand is unknown, peer-to-peer trading leading to unfair competition for established accommodation providers, danger to the safety of hosts and guests, transformations of labour markets (as discussed earlier), and tax evasion.

Fairness of competition

The earlier discussion of competition focused on other accommodation providers. This section takes the perspective of regulation. The regulatory challenge is to ensure a level playing field between providers operating within the traditional accommodation sector and peer-to-peer accommodation hosts and platforms. The hotel sector argues that peer-hosted space is competing without being bound by regulations and without being charged tourism-specific taxes (Gurran, 2018), thus enabling hosts to price their spaces more competitively. Regulatory responses vary, with some countries and regions simply declaring short-term rental as falling within the scope of residential zoning (the state of South Australia is one such example), and others putting in place substantial regulatory measures, including the need to register listed properties, compliance checks of those properties with safety regulations, and taxing (for an overview and examples see Hajibaba & Dolnicar, 2018a; Kaplan & Nadler, 2015; Lambea Llop, 2017; Lazarow, 2015). In some instances taxes need to be paid directly to local authorities, in other instances peer-to-peer accommodation platforms collect taxes and pass them on to local authorities. Regulations are typically imposed on unhosted rentals – spaces used by guests without the host being present. Hosted rentals, typically spare rooms in people's primary residences, are generally not regulated.

Safety

The fact that many peer-to-peer listings are unregulated raises the question of guest safety. “In dormitory-style or heavily occupied accommodation, unlicensed providers are likely to breach fire and sanitation regulations, while travellers staying in close proximity may spread infectious disease. Consumer protection laws are unlikely or difficult to apply” (Gurran, 2018, p. 300). In a study of 120,691 Airbnb listings across 16 US cities, most reported having smoke alarms, about half had carbon monoxide alarms, and less than half had first aid kits and fire extinguishers (Kennedy, Jones, et al., 2018). Such reports imply negligence on the side of the host. But hosts and residents in apartment units containing peer-to-peer traded spaces also express a lack of safety-conscious

behaviour on the side of guests, including guests ignoring safety protocols, security procedures, and fire-specific instructions (Gurran & Phibbs, 2017). Some hosts try to be creative and trick guests into increased safety awareness, for example by sticking the password for the wireless network on fire extinguishers (Kennedy, Jones, et al., 2018). It should be noted that guests ignoring safety procedures is probably not more prevalent in peer-to-peer spaces than it is in regulated accommodation, but it could be argued that in regulated accommodation guests benefit from professional assistance in the case of an emergency; in peer-to-peer traded spaces they may not.

Urban planning

The urban planning challenges for regulators are closely related to the issue of changing residential neighbourhoods and effects on house and rental prices. The discussion of these issues above centred on the implications for residents and concluded that, ultimately, regulations are needed to protect residents at attractive tourism destinations from permanent residences being converted into short-term rentals. While paid online peer-to-peer accommodation network facilitators can assist by, for example, enforcing the maximum number of days certain types of peer-hosted spaces can be rented out, Gurran and Phibbs (2017, p. 91) suggest that local “planners need to evaluate the potential impact of online housesharing on the potential housing market as well as the neighborhood impacts (noise, congestion, safety) and revise zoning and residential development controls accordingly.”

But the challenge for urban planners is not merely to protect residents. Urban planners also need to ensure the provision of facilities and services to cater for the actual use of spaces. The dispersion of tourists beyond tourism clusters is undermining urban planning attempts to focus the provision of tourism-specific facilities and services in tourism areas (Gurran, 2018). One example is parking. Parking may have been planned to adequately cater to residents. When significant numbers of tourists also require parking, the availability of parking spaces may be inadequate, reducing the quality of life for residents. For urban planners to be able to account for changes in use, they need to have an understanding of the locations of peer-to-peer traded spaces. This is one of the reasons policymakers demand that peer-to-peer network facilitators provide them with listing details, or require hosts to register directly.

Lee (2016), based on a detailed analysis of the situation in Los Angeles – which has already faced a housing crisis long before peer-to-peer trading of space emerged – makes the following policy recommendations specifically to protect Los Angeles: ban year-round listing, set a 75-day limit, ban listing of subsidized homes for a certain period of time, limit the overall number of listings per person/business per year, limit the number of units per apartment block, and offer higher unit quotas for newly developed apartment complexes to incentivise increasing housing stock. These suggested recommendations illustrate how regulators and urban planners may be able to harvest the benefits of peer-to-peer accommodation not at the expense, but to the benefit of local residents.

From their analysis of four US cities, Wegmann and Jiao (2017) derive four tangible recommendations for policy makers facing the challenge of paid online peer-to-peer accommodation encroaching on residential precinct: they point to the value of web scraping to learn about changes in land use; urge regulators to take micro-geographic regulatory approaches to account for substantial differences in paid online peer-to-peer accommodation across immediately adjacent areas; argue that dedicated enforcement of regulations is needed, suggesting that fees from permits could be used to fund such enforcement; and recommend a distinction be made between what they refer to as mom-and-pop hosts and larger scale commercial operators.

Taxation

Depending on the country in which a host is offering space for trading, they may need to pay a number of different taxes, including income tax, VAT or GST, and some kind of tourism tax. Estimates based on Airbnb data from the US indicate that hosts pay taxes on – at most – 23% of Airbnb transactions (Bibler, Teltser & Tremblay, 2018). When forced to pay tax, often through arrangements where the peer-to-peer platform facilitator collects the tax, about three quarters of the tax amount is added to the price, the rest is reduced revenue; a 10% tax reduces demand by 4% (Bibler et al., 2018). Such empirical findings fuel concerns of those calling for regulation of peer-to-peer accommodation that hosts evade tax.

But who is to blame for tax evasion? Interestingly, in the early days of Airbnb's operations in New York, Airbnb was lobbying to be allowed to collect and pass on to New York City's Department of Finance hosting-related taxes on behalf of their network members. These attempts were initially unsuccessful, suggesting that the hotel industry may have been motivated by protectionism rather than a genuine interest to level the playing field (Kaplan & Nadler, 2015). Today, Airbnb collects and remits occupancy tax (not income tax which remains the sole responsibility of hosts) in ten countries (Brazil, Canada, France, Germany, India, Italy, Mexico, Netherlands, Portugal, Switzerland) and most States in the US, including New York (Airbnb, 2018a, 2018b). In many other countries, hosts pay tourism-related taxes directly to the regulator.

Miller (2016) proposes ten principles to guide regulatory responses to paid online peer-to-peer accommodation and other peer-to-peer trading activities: acceptance of the fact that peer-to-peer trading is here to stay; and that peer-to-peer trading disrupts existing sectors of the economy and may require their re-imagining; acknowledgement that peer-to-peer trading creates new markets; that peer-to-peer trading requires a new approach to regulation; and that consequences of peer-to-peer trading are not always easy to determine; obtaining reliable information to inform regulation development; prevention of illegal trading; differentiation of regulatory responses; and inclusion of all stakeholders in regulation development.

Research question for the future

How can urban planners regain control of how neighbourhoods are designed? Urban planners increasingly find themselves in the

position of being reactive to changing neighbourhoods because they lack the data required to make proactive decisions. How can we put the urban planners back in charge of our residential spaces? How can we equip them with methods – such as web scraping tools (Wegmann & Jiao, 2017) – that will allow them to collect data on paid online peer-to-peer accommodation activity without being at the mercy of network facilitators? Are there new, more efficient, decentralised ways to allow urban development, which would leverage opportunities from paid online peer-to-peer accommodation, while minimising negative side effects? Can decentralised systems – such as neighborhood watch in Berlin (Hajibaba & Dolnicar, 2018c) – be set in place to help with monitoring of illegitimate accommodation trading activities?

How can safety be increased in peer-to-peer trading? The academic literature has not investigated the issue of actual safety, as opposed to perceived safety, of paid online peer-to-peer accommodation extensively to date. Yet this is one of the heavily discussed issues in public discourse around peer-to-peer trading. As peer-to-peer trading becomes the new normal and extends to a range of services other than local transport and accommodation, the issue of how to ensure customer and provider safety will become increasingly important. Already, high-risk activities, such as paragliding, are offered on peer-to-peer trading platforms. Whose responsibility is it to keep customers safe? Who identifies illegitimate offers which fail to ensure customer safety?

How can micro-geographic regulation best be implemented? There is now general agreement that regulation of paid online peer-to-peer accommodation activity needs to be specific and account for the likely effects on any given location. This is an unusual situation for regulators who tend to prefer implementing undifferentiated regulatory action. Can we develop a diagnostic tool that advises public policymakers of the category in which any given geographic region falls? Can we then develop a set of regulations which are specific to each of those categories? Such a system would help destinations around the world to set up suitable regulation quickly, instead of risking the need for multiple iterations of regulation and deregulation (Grimmer et al., 2019) before arriving at an optimal solution that is tailored to the micro-geographic region in question.

Peer-to-peer accommodation and the environment

Although the so-called sharing economy has been hailed by many as a “new pathway to sustainable development” (Heinrichs, 2013, p.231), and a game-changer in terms of environmental sustainability (Lahti & Selosmaa, 2013), academic research offers few insights into the actual level of environmental sustainability of paid online peer-to-peer accommodation, with work largely limited to hypothesis-generating conceptual discussions (Juvan et al., 2018; Midgett, Bendickson, Muldoon, & Solomon, 2018) and reporting of tourists perceptions about the sustainability of paid online peer-to-peer accommodation (Juvan et al., 2018; Sung, Kim, & Lee, 2018; Wang & Ho, 2017). These discussions suggest that, theoretically, peer-to-peer accommodation should be more environmentally friendly than traditional tourist accommodation because it (1) activates existing, underutilised resources, removing the need for resource-intensive construction, (2) lacks facilities requiring ongoing resource-intensive maintenance (such as swimming pools, landscaped gardens), (3) is equipped with infrastructure residents use to keep their environmental footprint low, such as separate waste bins for recycling, water- and energy saving appliances, solar panels, and (4) may reward guests who behave in an environmentally friendly manner through positive online reviews.

Some authors argue, in addition, that guests who stay in peer-to-peer accommodation are more aware of their environmental footprint and wish to keep it low (Midgett et al., 2018). Initial empirical evidence contradicts this suggestion, revealing that peer-to-peer accommodation exchanges are least motivated by environmental aspects, instead being primarily driven by economic and social factors (Böcker & Meelen, 2017).

Before Airbnb's market success, Chenoweth (2009) compared accommodation options on their net carbon dioxide emissions (reduction of emissions at home minus additional emissions at the destination). Chenoweth estimates that a UK resident generates, on average, about 7.4 kg of carbon dioxide per night. Going away from home reduces this amount to 1.8 kg, allowing 5.6 kg to be offset against emissions generated in tourist accommodation. Given the different levels of emissions generated by different accommodation types, hotel stays cause 15.1 kg–28.3 kg of net carbon dioxide emissions, and backpacker hostel stays 0.6 kg. Camping reduces emissions by 1.6 kg and couch surfing is emission-neutral. The net emissions of couchsurfing are likely to be lower than when guests use a peer-to-peer space which is not the host's primary residence.

The key argument against peer-to-peer accommodation being more environmentally sustainable is that the increased affordability of tourists accommodation may increase travel activity and, with it, all negative environmental impacts of travel. Survey results provide empirical evidence to the contrary: 95% of guests indicate they would have travelled to the same destination, even if peer-to-peer accommodation had not been available, suggesting that paid online peer-to-peer accommodation may serve as lower CO₂ emission substitute for hotels (Zvolaska, 2015). Overall, Zvolaska (2015, p. 32) concludes that “very little is known about environmental impacts in the hospitality sector of the sharing economy and how it contributes to combating overconsumption”.

Research question for the future

How environmentally friendly is paid online peer-to-peer accommodation compared to other tourist accommodation options? What is urgently needed is a comparison of the environmental impact of different types listed properties and different types of traditional tourist accommodation. Chenoweth's (2009) study is a good starting point, but neglects the impact of constructing tourist accommodation, an impact that is avoided by using existing housing stock.

How can we make paid online peer-to-peer accommodation as environmentally sustainable as possible? The decentralised nature of peer-to-peer trading is very powerful, allowing platform facilitators to interact with millions of network members. This avenue of communication has been successfully used to lobby for societal change, such as marriage equality. Can it also be used to raise awareness

for tourism practises that cause the smallest possible environmental footprint? Can hosts be motivated to set up their spaces in a way that is most environmentally sustainable? Can guests be educated in terms of pro-environmental behaviour?

Conclusions

Opening one's home to travellers is not a new phenomenon. A note of the City Council of Varna in Bulgaria dated June 1896 invites homeowners to make available furnished rooms to tourists by declaring details and the approximate price to the Council (Varna Municipality, 1896), making Varna Council one of the first peer-to-peer accommodation facilitators. The internet has since improved the efficiency of peer-to-peer trading, making it accessible to anyone globally, and transforming certain industries, including the tourism industry. With the concept of paid online peer-to-peer accommodation now well-defined and extensively explored, it is time for researchers to turn to cause-and-effect research designs – typically of experimental and quasi-experimental nature – to find optimal solutions for future challenges resulting from peer-to-peer trading of travel-related products and services. The aim of such research should be to maximally harvest the opportunities generated by peer-to-peer trading (especially for people and business sectors most in need), while protecting essential existing structures, such as sufficient space for residents to continue living a good life in their cities.

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Appendix A. Supplementary data

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