Counteracting Disruption:

Hotel Strategies to Deter Short-Term Lease Market Entry

Abstract

The emergence of short-term lease platforms has disrupted the global tourism and hospitality sector, with implications not only for traditional hotels, but entire destinations. Despite numerous studies on the effects of short-term leases on hotel performance, limited research has sought to advance the conceptual understanding of local-level countermeasures employed by hotels. Consequently, this research critically examines the competitive entry barriers employed by incumbent hotels to deter short-term leases, with an emphasis on preemption and brand loyalty strategies. Using a panel analysis and zero-inflated multilevel Negative Binomial Regression, findings reveal that increasing the proportion of branded hotels effectively deters short-term lease entries, while quality concentration also reduces market entry rates. Findings articulate effective strategies for hotels and policymakers to protect market share and maintain community stability in the face of evolving sector dynamics. Future research should examine the diverse strategies traditional hospitality providers can leverage to counteract short-term lease market entry. Also available in Chinese. See supplemental material for details.

Keywords: Hotel; Sharing Economy; Market; Disruption; Deterrence

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1 Introduction

The meteoric rise of short-term leases has revolutionized the global tourism and hospitality sectors, presenting challenges for traditional hotels. Platforms like Airbnb and VRBO have undoubtably disrupted the market (Dolnicar & Zare, 2020; Guttentag & Smith, 2017), enabling hosts to offer diverse accommodation tailored to the diverse interests of consumers. Indeed, empirical work contends this shift in the 'sharing economy' has affected not only hotel performance (Dogru et al., 2020; Dogru et al., 2019) but entire tourist destinations, influencing local economies, housing markets, and community structures (Cheung & Yiu, 2022).

Despite the emergence of studies which assess the effect of short-term leases on hotel performance, there has been limited research focus on the countermoves employed hotels to combat the pervasive impacts of short-term leases, especially at the local level. Previous research identified, categorized and quantified countermoves by hotel companies, with a contemporary example including Marriott creating the Homes and Villas brand (Zach et al., 2020). However, countermoves by individual hotels to mitigate the impact of the exponential growth of short-term leases remain largely unexplored and conceptually underdeveloped. Research on countermeasures is both timely and novel, considering the impacts of short-term leases on destinations is intricately intertwined with the dynamics of competition with the hotel sector (Yeon et al., 2020), which are forced to respond when market share becomes threatened by the rapid growth of a new form of accommodation.

Consequently, the aim of this research is to examine the competitive entry barriers employed by hotels to deter short-term leases from entering the market. Specifically, this research focuses on articulating preemptive actions designed to consolidate market position and actions designed to foster brand loyalty among existing customers, investigating how these have been used as a reaction to short-term leases entering the market. Hence, this research seeks to examine how preemption and brand loyalty act deter the entry of short-term leases.

Findings advance the conceptual understanding of competitive dynamics and the efficacy of competitive entry barriers in the hospitality sector, specifically in deterring short-term lease entrants from entering the market. Insights gained inform hotel practitioners and policymakers about the most effective strategies for protecting market share and destination's

ecosystem in the rapidly transforming global hospitality landscape through the introduction of an integrated market deterrence strategy. Analysis highlights fertile ground for further research into the diverse factors influencing short-term lease market entry and the responses of traditional hospitality providers.

2 Literature Review

2.1 Competitive Dynamics

Research on competitive dynamics examines into the patterns of competitive actions and responses among firms (Smith et al., 2005; Wang et al., 2022). Embedded within, competitive interactions are typically framed as a dyadic phenomenon involving one focal firm or group pitted against each other (Chen, 1996). Firms, however, do not compete uniformly, as heterogeneous differences result in varying levels of awareness, motivation, and capability when initiating or responding to competitive moves (Chen et al., 2007).

This notion is encapsulated in the Awareness, Motivation, and Capability (AMC) framework which demonstrates how different firms compete based on three key factors, which broadly represent both knowledge and interpretation of the competitive market, and ultimately provides an indication of the level of rationality (Stadtler & Lin, 2017) and decision-making agency (Chen, 2021). Empirical work proposes these factors are influenced by the level of market commonality and resource similarity between focal firms and their competitors (Bianco et al., 2022; Chen, 1996). For instance, if a competitive firm shares many similarities with a focal firm or operates within the same market space, the likelihood and the extent of direct competition between the two increases.

Understanding the dynamics of competition is essential to comprehending firms' behavior (Crouch, 2011; Smith et al., 2005). In the tourism literature, studies have explored competitive dynamics in areas such as pricing competition (Kim et al., 2018; Lee & Jang, 2013), development pipeline speed (Wang et al., 2022), and the interplay between competition and cooperation in tourist destinations (Czakon & Czernek-Marszałek, 2021; Webb et al., 2021). The latter supports the concept of agglomeration, which studies the impact of firms co-locating within the same market, which has been identified as a critical factor for influencing hotels' market entry (Fang et al., 2019; Woo & Mun, 2020). By focusing on competition between hotels and short-term leases, this research is distinctive and innovative as the two types of accommodation differ in resources (Bianco, Zach, & Singal, 2024), resulting in unique competitive behaviors and limited scope for cooperation.

2.2 The Effect of Short-Term Leases

Hotels emphasize quality and standards of the services offered (Mody et al., 2019), short-term leases, in contrast, focus less on the service offered, and more on the accommodation commodity itself (Gibbs et al., 2018). This substantial difference is what led hotel firms to initially dismiss Airbnb (the first successful short-term lease platform) as a real competitor, resulting in a lack of awareness and motivation to swiftly respond (Bianco, Zach, & Singal, 2024). This sentiment was encapsulated by Hilton's CEO, Chris Nassetta who was quoted as stating *"I do not believe — strongly do not believe — that they are a major threat to the core value proposition we have."* (Nassetta, 2015).

Despite initial sentiments to the contrary, empirical evidence contends entrants such as AirBnB undeniably disrupted the lodging market and impacted their market share (Dolnicar & Zare, 2020; Guttentag, 2015; Guttentag & Smith, 2017). Although some studies found minimal impact on specific markets (Blal et al., 2018; Destefanis et al., 2022), a raft of academic studies indicate short-term leases negatively affecting hotels' market share. For instance, Zervas et al. (2017) observed that an increase short-term lease supply reduced hotel revenue by 8% to 10%, while Dogru et al. (2019) found that the impact extended to various hotel metrics in ten key U.S. markets.

The negative impact was not confined to the United States alone. Dogru et al. (2020) observed similar adverse effects on hotels' RevPAR and occupancy in London, Paris, Sydney, and Tokyo. Yang et al. (2022) conducted a meta-analysis on 466 estimated from 33 studies revealing moderate yet negative impact globally. However, the influence of short-term leases was not limited to hotel performance alone; it also had significant effects on local communities. Indeed, short-term leases negatively affect rental market prices (Vinogradov et al., 2020) contributing to tourism-induced gentrification , or 'touristification' (Cheung & Yiu, 2022), as well increased noise and issues associated with overcrowding or overtourism (Lambea Llop, 2017) in numerous cities worldwide.

In response to the adverse effects brought about by the short-term lease competitors, and the resulting increase in awareness and motivation to compete with this emerging form of accommodation, incumbent hotels adopted various measures to align with evolving consumer demands. For instance, Accor acquired One Fine Stay, which is a luxury short-term lease brand, while Marriott introduced Homes & Villas (Zach et al., 2020). Hotel corporations launched several new hotel brands, such as soft brands or extended stay accommodations, directly

reflecting the new dynamics introduced by short-term leases (Mody et al., 2019). However, research that specifically investigates the strategic entry barriers that incumbent hotels established to prevent short-term leases from entering the market is notably absent from existing scholarship.

2.3 Entry Deterrence

Entry deterrence strategies are a mix of tools and competitive behaviors designed to prevent a competitor from entering the market (Das Varma & De Stefano, 2022; Salop, 1979). These tools are crucial for incumbents, as an increase in competitors amid an inelastic demand typically results in market share erosion (Yu & Cannella Jr, 2007). Previous research found that entry deterrence techniques are applied strategically by tourism firms to prevent competitors from entering the market. For instance, Lado-Sestayo et al. (2017) and Conlin and Kadiyali (2006) discovered that hotels invest in idle capacity, such as building more rooms than necessary, in order to protect their market share from future entrants. Similarly, Cookson (2018) discovered that casinos expand their floor space when threatened by potential competition to discourage the competitor from finalizing market entry.

Subsequently, in the context of hotels deterring short-term leases, the need to restrict market entry for new competitors becomes even more critical. Differences in resources (Bianco, Zach, & Singal, 2024), loyalty-building strategies (Mody et al., 2019), and a focus on distinct service attributes (Gibbs et al., 2018), make it exceptionally challenging for hotels to compete with short-term leases in the same way they do with other hotels. These factors likely underpin the pervasive impact of short-term leases on hotels and highlight the importance of restricting the market *ex ante*.

There is a fundamental difference between deterring new entrants in hotels or casinos (Conlin & Kadiyali, 2006; Cookson, 2018) compared to short-term lease entrants, due to disparities in development speed and information asymmetry. Indeed, building a hotel or a casino is a complex process requiring the owner to acquire a license to operate, obtain permission to build, and secure local community council approval (Wang et al., 2022). This process is generally public, giving incumbents the time to take countermeasures during the planning phase. Cookson's (2018) investigation demonstrates this, as incumbents increased their capacity during new entrants' planning stages to deter the entry.

In the short-term lease context, incumbents often lack essential information on the establishment of short-term leases in their market. Unlike large-scale real estate developments

that undergo public planning phases, short-term leases generally do not require public disclosures and often only need a permit in certain cities (Bei & Celata, 2023). Consequently, their market entry process is quicker and more sudden, leaving incumbent hotels unaware of most short-term lease openings in their area. This requires incumbents to engage in continuous entry deterrence efforts, unlike the existing approaches used to deter new hotels or casinos.

2.3.1 Deterring short-term leases

Given the effect of short-term leases on tourist destinations, local governments have implemented policies to regulate and deter them from entering the market (Vinogradov et al., 2020). These policies include licensing and registration requirements, city tax obligations, and regulations on when, how, and where short-term leases can operate (Von Briel & Dolnicar, 2021). While enforcing these policies can be challenging (Bei & Celata, 2023) they have been found effective in reducing the number of short-term leases (Bei & Celata, 2023) and had a positive ripple effect on low-level hotels' performance (Yeon et al., 2020). These policies, however, represent legal barriers as they are created by government entities (Shapiro, 1989) with existing approaches at deterrence not directly involving incumbents' competitive behavior, which is the focus of this study.

Firms, including hotels, often adopt strategies with multiple and potentially overlapping objectives aimed at remaining competitive in dynamic markets (O'Reilly & Tushman, 2013). These strategies are rarely driven by a singular intent but instead are designed to address a variety of organizational goals, such as improving operational efficiency, enhancing brand positioning, responding to evolving customer preferences, or adapting to broader market dynamics (Obloj & Sengul, 2020). This multifaceted nature of competitive behavior has been well-documented in the management literature, emphasizing that actions undertaken by firms frequently serve simultaneous purposes (Porter, 1980).

In the context of this study, strategic behavior may not be exclusively enacted to deter short-term leases but may also be motivated by broader operational and market considerations. However, as previous research has demonstrated, short-term leases significantly impact hotel performance (Yang et al., 2022), leading hotels to recognize them as direct competitors and to enact costly countermoves (Bianco, Zach, & Singal, 2024). Such as strategic repositioning (Chang & Sokol, 2022) or creating and acquiring a short-term lease company (Zach et al., 2020). Subsequently, it is reasonable to assume that often hotels' strategic actions are made, at least in part, to counter a now-established competitor such as short-term leases.

Recognizing this complexity, our analysis investigates the extent to which these strategies influence market dynamics and competitive interactions between hotels and short-term lease providers. Specifically, we focus on the roles of competitive preemptive deterrence and brand loyalty as mechanisms shaping these dynamics.

2.3.2 Preemptive Deterrence

Preemptive deterrence involves incumbents positioning themselves strategically to discourage competitors from entering (Cookson, 2017). Previous cases documented in empirical research involving casinos (Cookson, 2018) and hotels (Canina et al., 2005; Lado-Sestayo et al., 2017) exemplify preemption, as these firms increase their capacity to occupy market share *ex ante*. In this study, the focus is on ownership and quality concentration.

Ownership concentration refers to the extent of control the incumbent has over the market. The more hotels an entity owns in the area, the greater the ownership concentration. A high level of ownership concentration can deter short-term leases from entering the market as hotels that are owned by the same entity can exert greater market control, particularly over pricing strategies (Koh & Rojas, 2022; Porter, 1980). This allows them to influence market prices and directly compete with short-term leases, which rely heavily on pricing as a competitive tool (Guttentag & Smith, 2017; Xie & Kwok, 2017). An owner with significant market presence is also able to exert more political power on local governments, which establish restrictive rules on short-term leases in most countries (Von Briel & Dolnicar, 2021). Concentrated ownership grants incumbents a more direct, and perhaps exclusive, access to local external service providers (Almeida & Campos, 2022). Since the local experience is crucial to the success of short-term leases (Mody et al., 2019), limited access to these local services may deter short-term lease owners from entering such markets.

Quality concentration is another factor that would deter short-term leases. In markets where hotels maintain similar service quality, competition increases, leading to competitive pricing (Balaguer & Pernías, 2013) as a consequence of the heightened competition (Mazzeo, 2002). This pricing competition can deter short-term leases that aim to compete primarily on price, with a high concentration of quality signifying that the market caters to a specific segment (Xia et al., 2010). This situation can discourage short-term leases, as they may struggle to offer comparable services to those already provided by incumbents and saturate the market for the existing demand. Hence:

H1a: The level of ownership concentration increased after short-term leases entered the market

H1b: The level of quality concentration increased after short-term leases entered the market

H2a: The higher the ownership concentration in the market, the lower the number of short-term leases' market entries.

H2b: The higher the quality concentration in the market, the lower the number of short-term leases' market entries.

2.3.3 Brand Loyalty

Building brand loyalty has been shown to be an effective deterrent for market entry in conceptually related contexts (Avgeropoulos & McGee, 2015; McAfee, Mialon & Williams, 2004). In the hotel sector, brand loyalty are reported to serve as a barrier to entry against short-term rental platforms as strong hotel brands signal consistent service quality, reliability, and professionalism, all features short-term rentals often cannot guarantee (Oskam & Boswijk, 2016). This could explain why branded hotels are often less affected by short-term rentals compared to independent hotels (Yeon et al., 2020). Moreover, hotels have historically resorted to branding in times of highly competitive pressures or unfavorable economic conditions (O'Neill & Mattila, 2010). Therefore, the heightened competition and unfavorable effects brought about by the emergence in prominence of short-term leases (Dogru et al., 2020; Zervas et al., 2017) could have led hotels to intensify their branding efforts.

Loyalty is crucial in the hotel industry, where it serves as a competitive tool by creating switching costs for customers (Koo et al., 2020). Empirical work argues hotels and short-term leases build brand loyalty in different ways (Mody & Hanks, 2020; Mody et al., 2019), While hotels leverage brand authenticity to foster customer loyalty, short-term leases add existential and interpersonal authenticity, providing them with a broader range of loyalty-building tools (Mody & Hanks, 2020). It is critical to emphasize this research does not focus on building loyalty from scratch. Instead, the evaluation of brand loyalty as an entry deterrent reduces the potential for short-term leases to acquire guests that are already loyal to hotels. This study hypothesizes that this switch is unlikely, suggesting that a high level of established loyalty among consumers will deter short-term leases from market entry.

Branded hotels create important switching costs to retain customer loyalty and market power (Koh & Rojas, 2022). They do so by offering points, free stays, or upgrades based on the number of stays made across their brand portfolio. These costs serve as barriers for customers to switch to other hotels or alternative accommodation types, such as short-term leases, due to the perceived high monetary and psychological costs of leaving a trusted brand (Baloglu et al., 2017; Xie et al., 2015). This, in turn, creates an entry barrier for short-term leases, as they struggle to attract customers who perceive substantial switching costs.

Prior customers may become loyal primarily due to inertia (Wu, 2011), a type of loyalty which is based on habit formation and a preference of familiarity over novelty, stemming from convenience and sticking with the *status-quo* (Henderson et al., 2021). Long-time customers may be familiar with hotel procedures and brand standards, creating a comfort zone that is difficult to abandon (Guttentag & Smith, 2017; Wu, 2011). This natural resistance to change poses a formidable challenge for short-term lease providers, as overcoming inertia requires substantially exceeding the value proposition of hotels.

The concentration of loyalty programs is another key factor that may deter short-term leases from entering the market. Loyalty programs are closely tied to their parent companies, and their influence shapes hotel operations (Hua et al., 2018). When a particular loyalty program is dominant in a market, hotels associated with that program can collaborate more effectively to share insights and enhance efficiency (Bianco, Singal, & Zach, 2024). This dominance allows hotels to create a consistent experience and strong loyalty incentives, making it challenging for short-term leases to attract guests who are deeply embedded in the loyalty network. The influence of a single, dominant loyalty program can effectively monopolize customer loyalty, making it less attractive for guests to switch to short-term leases and thus posing a significant barrier to market entry (Baloglu et al., 2017; Xie et al., 2015).

Branded hotels are regarded as having more and better resources compared to independent hotels (Yang & Mao, 2017). This often results in the ability to scout and acquire prime locations (Carvell et al., 2016). Given that location represents one of the most important factors in short-term lease success (Deboosere et al., 2019), a market with a high proportion of branded hotels or a high concentration of hotels that are part of the same loyalty program may translate into a preemptive occupation of prime locations, constituting an entry barrier for short-term leases. Hence:

H1c: The proportion of branded hotels increased after short-term leases entered the market

H1d: The level of loyalty program concentration increased after short-term leases entered the market

H3a: The higher the proportion of branded hotels in the market, the lower the number of short-term leases' market entries.

H3b: The higher the loyalty program concentration in the market, the lower the number of short-term leases' market entries.

2.4 Market Knowledge and Competitiveness among entrants

The number of professional hosts, which are short-term hosts that manage multiple listings, has increased exponentially (Xie & Mao, 2019). Although non-professional hosts still constitute the majority (Xie et al., 2021), the rise of professional hosts marks a decisive shift from the early days of short-term rentals, when most hosts were individuals looking to supplement their income by sharing their homes (Guttentag, 2015). In analyzing competition, short-term leases' behavior is expected to differ based on host type.

Xie et al. (2020) found that professional hosts benefit more from agglomeration, while Abrate et al. (2022) noted that they are more likely to use dynamic pricing. These strategic practices, which mirror those used by hotels (Fang et al., 2019; Kim et al., 2018; Woo & Mun, 2020), suggest a higher level of market knowledge and interpretation (Chen et al., 2021). These factors likely explain why professional hosts generally achieve better overall performance compared to non-professional ones (Deboosere et al., 2019; Xie et al., 2021).

Market knowledge and interpretation relate to awareness, motivation, and capabilities (Chen, 1996; Chen et al., 2021). Despite the rise of online communities (Hardy et al., 2021), professional management companies (Reinhold & Dolnicar, 2018), and platform suggestions via centralized guidelines (Sundararajan, 2014) that enhance operational knowledge (Bianco, Singal, & Zach, 2024), non-professional hosts are expected to respond differently to strategic entry barriers due to differences in market knowledge, interpretation, and resource availability.

Professional hosts operate short-term leases as an investment (Xie et al., 2021), following common business practices such as gathering information about several target markets and selecting the best option. Non-professional hosts, on the other hand, already possess the property and decide whether to list the property or use it differently (e.g. long-term

rentals or sell it). Thus, non-professional hosts are less likely to invest in industry reports, relying instead on platform information and informal personal search. Consequently, professional hosts have access to higher-quality information, thereby increasing their market awareness (Chen et al., 2021).

The scale of operations of professional hosts provides them with capabilities similar to hotels, potentially resulting in heightened motivation to monitor and respond to competitive dynamics (Bianco et al., 2022; Chen et al., 2021). As such, they may be more attentive to incumbent hotels' behavior, while non-professional hosts, with their smaller-scale operations, may not view hotels as primary competitors due to resource differences (Chen, 1996). Furthermore, professional hosts have a higher level of experience compared to non-professional hosts (Xie et al., 2020), who are often individual homeowners seeking to monetize unused rooms or apartments (Guttentag, 2015). This experience translates to greater responsiveness when analyzing opportunities and threats from incumbent hotel competition (Stadtler & Lin, 2017), hence:

H4a: Ownership concentration will be more effective in deterring professional hosts compared to non-professional hosts.

H4b: Quality concentration will be more effective in deterring professional hosts compared to non-professional hosts.

H4c: Branded proportion will be more effective in deterring professional hosts compared to non-professional hosts.

H4d: Loyalty program concentration will be more effective in deterring professional hosts compared to non-professional hosts.

Insights gained through the investigation of these hypotheses will advance the conceptual understanding of the most effective strategies hotel managers can implement to protect their market share in the rapidly transforming global hospitality landscape. For policymakers, the analysis provides valuable information on fostering a balanced and competitive market environment.

3 Methodology

This research seeks to investigate forms of deterrence that incumbent hotels may use to deter short-term leases from entering the market, focusing on whether hotels employ these strategies, their effectiveness, and if the effect differs between professional and non-

professional hosts. By leveraging large-scale secondary data from Texas, this study provides an extensive empirical analysis to uncover the competitive dynamics within the hospitality sector.

3.1 Data

The study draws on a panel database comprising data from 4,249 hotels and 432,056 short-term leases, operating in Texas between January 2008 and December 2023. Data on short-term leases, covering properties listed on Airbnb and VRBO, was acquired from AirDNA, a leading data provider focused on short-term leases, offering information such as location and opening dates. However, given the perplexities raised by previous studies such as Agarwal et al. (2019) regarding the performance measures estimated by AirDNA (e.g., Occupancy and Revenue Per Available Night), as well as our observation that many listings, particularly in rural areas, were scraped only a few times per month, we limit the use of this database to the objective measures of geographical location, opening date, and ownership.

Hotel data was obtained from Smith Travel Research (STR), a widely used database that provides comprehensive, reliable, and publicly available information on hotel characteristics, such as location, room count, and brands. This dataset was supplemented with financial information from the Texas Comptroller of Public Accounts, which provides detailed tax data for hotel businesses in the state. Following previous research (Bianco, Singal, & Zach, 2024), this financial data offers insights into the economic performance of hotels, enriching the analysis of competitive dynamics.

Texas was selected as a representative case study for three reasons: First, it is frequently used as a representative sample in top tourism and general management journals for papers investigating the relationship between hotels and short-term leases (Bianco, Singal, & Zach, 2024; Xie & Kwok, 2017; Zervas et al., 2017; Zhang et al., 2024). Secondly, Texas offers a diverse range of hotels and short-term leases across various market types, including urban, suburban, and smaller cities. Thirdly, the unique availability of hotel-specific data through the Texas Comptroller of public accounts allows us to track the chain of ownership for each establishment, which is fundamental to testing our hypotheses.

3.2 Variables

This research focuses on two major objectives: (1) testing whether hotels take deterrence actions in response to the presence of STLs (H1), and (2) assessing the effectiveness of these deterrence actions in preventing subsequent entries of STLs (H2, H3, & H4). These

two groups of hypotheses are tested through separate empirical studies, each with different dependent variables, independent variables, and regression models.

The analysis is conducted at the market level, where markets are defined as geographic regions with a concentration of hotels and short-term leases. These markets are identified using HDBSCAN, a geographically-weighted machine learning algorithm that clusters markets based on the density of geographical points (Campello et al., 2013). This clustering method, used in previous research (Bianco, Singal, & Zach, 2024), surpasses traditional methods with fixed boundaries, such as zip codes or MSAs, and uniform radii, as market sizes differ in urban and rural areas. This clustering method enables us to create dynamic competitive clusters that adjust their width based on the specific dispersion of points characteristic of each geographic location (Campello et al., 2013). That is, it allows for geographically larger clusters in rural areas, where hotels are fewer and potential competitors are more dispersed, compared to more numerous, geographically smaller clusters in urban areas, where hotel concentration is higher and competitive clusters are confined to specific parts of the city. For this study, markets are formed based on hotel locations, while short-term leases are added to existing clusters according to their geographical locations. This resulted in the identification of a total of 629 unique competitive clusters.

Adoption of deterrence strategies (H1a, H1b, H1c, & H1d)

To investigate whether incumbent hotels use deterrence actions in response to the presence of short-term leases, the following dependent variables are analyzed: *HHIOwnership*, *HHIQuality*, *BrandedProportion*, and *HHILoyaltyProgram*. *HHIOwnership* measures ownership concentration using Herfindahl-Hirschman Index (HHI), which calculates the squared share of hotel rooms owned by different entities. *HHIQuality* assesses quality concentration using a similar HHI calculation, based on the distribution of star ratings among hotels in the market. *BrandedProportion* represents the ratio of branded hotel rooms to the total number of hotel rooms, reflecting the extent of market dominance by branded hotels. *HHILoyaltyProgram* evaluates the concentration of loyalty programs in the market, also using the HHI method.

The independent variable for these hypotheses is MonthfromCutoff, which measures the time elapsed since short-term leases entered the market. This type of time-indexed measurement is common in the conceptually related field of strategy and entrepreneurship to investigate long-term effects of a treatment (e.g., Barnett, 1997; Mitchell, 1989; Seamans &

Zhu, 2014). This approach is thus quite applicable to our study as incumbent hotels initially did not perceive short-term leases as a major threat (Bianco et al., 2022; Zach et al., 2020), making the immediate effects insignificant. Moreover, the competitive deterrence strategies are measured at the market level, reflecting structural changes among numerous hotels that materialize in the long term.

The use of MonthfromCutoff was chosen over to the number of short-term leases in each cluster as the use of this variable may cause issues of endogeneity through reverse causality (Asaf & Tsionas,2020). This is predominantly due to the implementation of hotels' deterrence strategies, which may also affect the number of short-term leases in each cluster. Moreover, the number of short-term listings at a given time may reflect short-term fluctuations and might not fully represent the strategic, structural changes which are the explicit phenomenon of the manuscript investigating. The MonthfromCutoff variable effectively captures the time it takes for hotels to recognize the threat and implement strategic measures, which is essential for analyzing these gradual adjustments.

Effectiveness of deterrence strategies (H2, H3, & H4)

To examine the effectiveness of competitive deterrence on short-term lease market entry, the independent variables used in these hypotheses are *HHIOwnership*, *HHIQuality*, *BrandedProportion*, and *HHILoyaltyProgram*. These variables represent deterrence strategies employed by incumbent hotels to limit the entry of new short-term leases.

H2 & H3 focus on the effectiveness of deterrence strategies regardless of host type. Therefore, the dependent variable analyzed for these hypotheses is *NewEntry_STL*, which represents the number of new short-term lease rooms entering the market each month. This captures the level of competition as it is closely tied to room numbers. Using the number of short-term lease rooms, rather than the number of leases, allows for a more accurate assessment of the competitive pressure exerted by new entries, as suggested by previous research (Destefanis et al., 2022).

For H4, which examines the differential effect of competitive deterrence depending on whether hosts are professionals or non-professionals, the dependent variables are *NewEntry_Professional* and *NewEntry_NonProfessional*. *NewEntry_Professional* denotes the number of short-term lease rooms owned by professional hosts entering the market each month,

while *NewEntry_NonProfessional* indicates those owned by non-professional hosts. The distinction between professional and non-professional hosts is based on existing literature, which concur that hosts are considered professionals when they manage more than one listing (Abrate et al., 2022; Miguel et al., 2024; Xie & Mao, 2019). If a host manages one listing (previously a non-professional) and then subsequently opens a second listing, we consider this host to have become a professional host, because it now manages multiple listings at the time of market entry. All listings managed by this host, are then categorized under professional hosts. Our dataset tracks host over time, allowing us to capture these transitions and reflect the dynamic nature of host activities.

Control Variables

All models include control variables to account for other factors influencing hotels' strategies and short-term lease entry, such as the average quality of incumbent hotels (Avg_Quality), as previous research found that short-term leases' effect on hotels is strongly affected by the quality of those hotels (Yang et. al., 2022). Moreover, we control for the total number of hotel rooms and hotel units in the market (TotalRooms and HotelCount), the number of short-term leases already present (STLCount), and incumbent hotels' inflation-adjusted RevPAR (Avg_RevPAR). All variables selected represent the current state of the market as well and hence, signify an influential factor in the market-entry decisions of short-term leases. Furthermore, to control for time-specific effects that could influence both hotels' strategies and the entry of short-term leases, we include Year and Month fixed effects in our models. This accounts for temporal trends, seasonal patterns, and any other time-related factors that might affect our variables of interest.

Finally, as recommended by Bianco et al. (2023) we employ a nested model structure to control for unobservable characteristics specific to each cluster, such as local regulations against short-term leases, economic conditions, or cluster preferences. By nesting our data within competitive clusters, we control for unobserved heterogeneity that could bias our results if left unaccounted for. This advantage of a nested mixed methods approach is it allows us to isolate the effects of our key variables while accounting for cluster-specific unobserved factors that may influence both the dependent and independent variables Gelman (2007).

Table 1 presents descriptive statistics for the variables. Due to size differences among the independent variables, all numeric controls have been scaled to improve interpretability.

[Please insert Table 1 here]

3.3 Model specification

To test the adoption of deterrence strategies (H1), this study uses random effect models, which capture unobserved heterogeneity across markets (clusters) and over time with apposite fixed-effects, capturing the variability in market characteristics that influence the adoption of deterrence strategies. The decision to apply a random effect model over a fixed-effect model, which was another possibility giving the panel nature of our data, was taken after computing the Hausman test of residuals (Appendix A). Finally, given that we recorded Heteroskedasticity and Autocorrelation in the data by performing the Breush-Pagan and the Breush-Godfrey test (Appendix A), the results were corrected using the Newey-West Heteroskedasticity and Autocorrelation robust standard errors (HAC). The model specification for these hypotheses is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 C_{it} + u_i + v_t + \varepsilon_{it} \tag{1}$$

Where Y_{it} represents the dependent variables, X_{it} is the main independent variable *MonthfromCutoff*, C_{it} is a vector of all control variables, u_i and v_t represent random effects. ε_{it} is the idiosyncratic error term, while β_0 is the intercept, β_1 is the coefficient for the independent variable, and β_2 is a vector of coefficients for the control variables.

To evaluate the effectiveness of deterrence strategies (H2, H3, & H4), models including a Poisson regression and a Negative Binomial Regression are considered, given the count nature of the dependent variables related to short-term leases' market entry (Wang & Jia, 2024). Based on the high discrepancy between mean and variance among the dependent variables, as shown in Table 1, indicating over dispersion, Negative Binomial Regression was chosen.

The presence of an excess of zeroes in the dependent variables, indicating many months with no new entries, prompted the use of a zero-inflated model. This model separately examines zero and non-zero observations, addressing potential heterogeneity issues (Wang & Jia, 2024). To enhance the robustness of the model, observations have been aggregated quarterly, and 'Year' and 'Quarter' fixed effects were introduced.

Recognizing the hierarchical structure of our data—where quarterly observations are nested within geographic clusters—we employed a nested multilevel modeling approach. This approach allows us to control for unobserved market-specific factors, such as market saturation, local economic conditions, and regulatory environments, by incorporating random effects at the cluster level (Gelman, 2007). By accounting for both within-cluster and between-cluster variations, the nested model reduces potential biases in our estimates and improves statistical

accuracy. According to Bianco et al. (2023) this methodology effectively captures variations across different markets, ensuring that the relationships observed are not driven by unobserved cluster-level factors.

The general models are as follows:

$$Logit\left(\pi_{i(t+1)}\right) = \beta_0 + \beta_1 X_{it} + \mu_j + \phi_{Year(t)} + \psi_{Qtr(t)} + \varepsilon_{jt}^{\pi} \qquad (2)$$

$$Logit\left(\lambda_{i(t+1)}\right) = \beta_0 + \beta_1 X_{it} + \beta_2 C_{it} + \mu_j + \phi_{Year(t)} + \psi_{Qtr(t)} + \varepsilon_{jt}^{\lambda} \qquad (3)$$

Notably, we used lagged dependent variables to better capture the temporal dynamics of market entry and the delayed impact of deterrence strategies. Here, $\pi_{i(t+1)}$ represents the probability of having zero entries for the dependent variables in market i during quarter $t+1$, and $\lambda_{i(t+1)}$ is the expected short-term lease entries in the negative binomial part of the model. X_{it}, is a vector indicating the main independent variables (*HHIOwnership*, *HHIQuality*, *BrandedProportion*, and *HHILoyaltyprogram*) while C_{it} is a vector indicating control variables (*Avg_Quality, TotalRooms, HotelCount, STLCount* and *Avg_RevPAR*). β_0 is the intercept, while β_1 and β_2 are the intercept for the independent and control variables respectively. Finally, μ_j represents the nested effect of clusters, $\phi_{Year(t)}$ and $\psi_{Qtr(t)}$ are the year and quarter effects, while ε_{jt}^{π} and $\varepsilon_{jt}^{\lambda}$ are the error terms. Multicollinearity was assessed using Variance Inflation Factors (VIFs) for both models. All IVs across models had VIF values below 10, suggesting no severe multicollinearity (see Appendix B for details).

4 Results

Table 2 shows the results for hypotheses 1a, 1b, 1c, and 1d, which investigate the progressive development of competitive deterrence after short-term leases entered the market. Contrary to expectations, results show that the concentration of Quality, Ownership, and Loyalty programs in incumbent markets progressively (albeit slightly) decreased after short-term leases entered the market, leading to the rejection of hypotheses 1a, 1b, and 1d. However, the proportion of branded hotels increased, albeit slightly, supporting hypothesis 1c.

[Please insert Table 2 here]

Tables 3 and 4 present the results of the zero-inflated negative binomial models. The zero-inflated part of the model represents the probability that an increase in a predictor variable may lead to an "always zero" group (i.e., structural zeros where entry is not possible). Thus, a positive coefficient indicates that the probability of having zero short-term lease market entries increases. The negative binomial (count) part of the model, on the other hand, represents the expected change in the log count of entries for a one-unit increase in the predictor variable, where entry is possible, thereby affecting the magnitude of entries. In this case, a positive coefficient indicates that as the predictor variable increases, the expected count of short-term leases in the market also increases. Therefore, the most efficient entry barrier would register as having a positive value in the zero-inflated part of the model (i.e., more likely to completely deter entries) and negative values in the negative binomial part of the model (i.e., when entries occur, it is more likely to have fewer entries). Additionally, a result infographic can be found in Appendix C.

Table 3 presents the results for hypotheses 2a and 2b, exploring the effectiveness of Ownership and Quality concentration in deterring short-term leases from entering the market. The results show that increased ownership concentration has a significant influence on STL entries, although only in the zero-inflated part of the model. Hence, hypothesis 2a is partially supported. In contrast, an increased level of quality concentration significantly reduces the magnitude of entry. Interestingly, despite the overall reduction in new entrants, the probability of having no entrants at all (zero entry) also decreases, thereby partially supporting hypothesis 2b.

Table 3 also assesses the impact of an increased proportion of branded hotels (H3a) and an increased concentration of loyalty programs (H3b) on short-term leases' market entry. Findings reveal that a higher proportion of branded hotels in the market decreases the likelihood of short-term leases entering while also reducing the magnitude of entry for those that do enter, thus fully supporting hypothesis 3a. A higher concentration of loyalty programs does not significantly affect the likelihood or magnitude of short-term leases entries. Therefore, hypothesis 3b is not supported.

[Please insert Table 3 here]

Table 4 shows the results regarding the effectiveness of competitive deterrence on professional and non-professional hosts, thereby addressing hypotheses 4a, 4b, 4c, and 4d. Regarding ownership concentration, the results surprisingly show that it is more effective on non-professional hosts than on professional ones, refuting hypothesis 4a. On the other hand, the level of quality concentration similarly deters professional and non-professional hosts from entering the market, although the effect size is higher for professional hosts (-0.49*** vs. -0.10**), thereby supporting hypothesis 4b.

The deterrence strategy of increasing the proportion of branded hotels in the market proves effective for both professional and non-professional hosts. The effect is stronger on professional hosts with a higher probability in zero entries (0.84*** and 0.81***), and a lower entry size (-0.92*** vs. -0.54***). Hence, hypothesis 4c is supported. Finally, the concentration of loyalty programs in the incumbent market does not significantly affect STL entries for either host type. Thus, hypothesis 4d is not supported.

[Please insert Table 4 here]

4.1 Robustness Check

To address issues associated with the timing of when hotels began to recognize short-term leases as a significant competitive threat, thereby considering enactment of countermoves, we conducted an additional analysis using an alternative time variable. Prior research indicates that 2014 marked a pivotal moment when hotels recognized the threat posed by short-term leases, specifically Airbnb (Bianco, Zach, & Singal, 2024; Zach et al., 2020). Indeed, during 2014, hotels started to receive pressures from investors and financial analysts to respond to the threat posed by the sharing economy (Bianco, Zach, & Singal, 2024). Moreover, direct responses to short-term leases were first recorded between 2014 and 2015 (Zach et al., 2020). Subsequently instead of only using MonthfromCutoff, which captures the progressive growth of the threat since the first short-term lease entered each market, we introduced a new variable, Timesince2014, which is based on the year 2014 as cutoff point.

Hence, this robustness check allows us to more precisely model the period when hotels likely perceived short-term leases as a substantial threat, and began the process of implementing countermoves. The results obtained using Timesince2014, displayed in Table 5 below, are consistent with our main findings that use MonthfromCutoff, reinforcing the

validity of our methodology in capturing the long-term strategic adjustments made by hotels in response to short-term leases disrupting the market.

[Please insert Table 5 here]

5 Discussion

This research examines the existence and efficacy of competitive deterrence employed by hotels to prevent short-term leases from entering the market, which can negatively affect hotel performance (Dogru et al., 2020; Dogru et al., 2019) and tourism destinations (Cheung & Yiu, 2022). Table 6 summarizes the findings and conveniently shows what hypotheses have been supported, partially supported or not supported. As displayed in Table 6, hypotheses 1c, 2a, 2b, 3a, 4b and 4c were supported, while 1a, 1b, 1d, 3b, 4a and 4d did not receive empirical backing. Regarding the adoption of strategic entry barriers, the study found that all reactions were significant over time, although effect sizes were minimal. The only positive change was in the proportion of branded hotels. After the entry of short-term leases into the market, hotels progressively increased the proportion of branded hotels, emphasizing consistent and standardized service levels as a competitive tool against short-term leases (Zhang et al, 2024).

[Please insert Table 6 here]

However, contrary to expectations, the levels of Ownership, Quality, and Loyalty program concentration exhibited a downward trend following the entry of short-term leases. This suggests a heterogeneous response among incumbent hotels facing a market disruption, which fragmented the market and generated a slightly decentralized competitive landscape. According to Kim and Tang (2023), hotels may have diversified their offerings and resources across various market segments rather than concentrating on consolidating ownership, quality, or brand presence in specific markets. For instance, while some hotels increased their service quality (Chang & Sokol, 2022) others opted for lower service levels but relied on the standards provided by branded hotels. Owners may also diversify their investments (DeFranco et al., 2022) across different markets and accommodation types rather than consolidating their position in the market.

Giustiziero et al., (2019) offers another possible explanation for the decrease in the concentration of ownership, quality, and loyalty programs, noting that hotels might be diversifying their offerings to better compete with short-term leases, leading to a more varied market. This trend reflect incumbents' tendency of exploring new markets which may serve as

a substitute for the entrant to limit their growth (Giustiziero et al., 2019; Saouma et al., 2024), such as Homes and Villas by Marriott.

Results indicate that ownership concentration among incumbents effectively deters short-term leases from entering the market, but ultimately does not impact the number of entries once the initial entry occurs. Indeed, increased ownership control may grant hoteliers political power over local governments, with potential to influence legal barriers that prevent short-term leases from entering the market (Park, 2020). Conversely, heightened quality concentration did not prevent short-term leases from entering the market, though they helped limit the scale of entries. These findings suggest purely competitive reasons are critical for reducing short-term leases' entries. A market highly concentrated on quality may signal saturation and lead to lower prices (Balaguer & Pernías, 2013; Mazzeo, 2002). These factors may deter short-term leases from entering if their competitive strategy revolves around attracting existing hotel customers through price undercutting.

This research found the proportion of branded hotels in the market is the most effective competitive deterrence strategy overall. Not only was it adopted by hotels after short-term leases entered the market, but it was also effective in both preventing short-term leases from entering and reducing the scale of entries. This can be attributed to the ability of branded hotels to create switching costs that discourage customers from switching to short-term leases (Koh & Rojas, 2022), the ability to tap on inertia loyalty (Wu, 2011), and the possibility to occupy best locations given ample resources at their disposal (Carvell et al., 2016).

When revisiting the effectiveness of and incumbents' willingness to adopt deterrence strategies, we found branded hotels leverage effective strategies particularly when located in markets with a high volume of short term lease entries. The insignificant deterrence effects of ownership consolidation and loyalty program concentration might explain why the reversed reactions are taken by incumbent hotels. Notably, an increased quality concentration was identified to boost the probability of new STLs entry the market in the following month, which could explain why lower quality concentration reactions are observed among incumbents. However, this strategy demonstrates a negative impact on the number of entrants. Thus, hotels should increase quality concentration to sustain their long-term market position.

Due to the increased professionalization among short-term leases, seen as one of the current trends destined to shape interplays between short-term leases and hotels (Yang et al., 2022), another aspect we investigated in this study was the efficacy of competitive deterrence

on professional and non-professional hosts. As demonstrated in Table 6, we hypothesized that competitive deterrence would be more effective on professional hosts due to their higher level of market knowledge, interpretation, and access to resources compared to non-professional hosts. Our findings provide partial support for these hypotheses. Professional hosts, equipped with greater market knowledge and resources, are more responsive to certain competitive deterrence tactics employed by incumbent hotels. Non-professional hosts, while generally less responsive, are still influenced by market factors, particularly those related to branding and ownership concentration.

Our analysis indicates that competitive deterrence strategies, especially those involving quality concentration and the proportion of branded hotels, have a more pronounced effect on professional hosts. Specifically, these strategies reduce the expected number of entries by professional hosts when market entry is possible. This suggests that professional hosts are more attuned to competitive dynamics more typically associated with existing studies on hotel quality and branding. Since they operate short-term rentals as investments (Xie et al., 2021) and follow standard business practices, professional hosts are likely more vigilant regarding the strategies of established hotels. Professional hosts might view a high concentration of quality offerings and a strong presence of branded hotels as indicators of intense competition, prompting them to adjust their entry decisions accordingly.

Non-professional hosts are also affected by competitive deterrence strategies, though to a lesser degree than their professional counterparts. Our results show that the proportion of branded hotels acts as a deterrent to non-professional hosts, indicating that a strong branded presence influences their decisions about entering the market. This finding aligns with research suggesting that platform-provided knowledge and guidelines can enhance individual hosts' market awareness (Bianco et al., 2024; Cheng & Foley, 2019; Hardy et al., 2021; Sundararajan, 2014). While non-professional hosts may have less access to resources and market information than professional hosts (Xie et al., 2021), they are still not entirely unaffected by competitive forces.

An interesting observation is that ownership concentration serves as an entry barrier for non-professional hosts but does not significantly affect professional hosts. This may be because non-professional hosts perceive markets with high ownership concentration as less accessible or more challenging to penetrate, possibly due to the dominance of incumbent hotels. In contrast, professional hosts might be better equipped to navigate markets with high ownership

concentration. The rise of management companies specializing in short-term rentals (DeFranco et al., 2022) and the ongoing professionalization of the short-term leasing sector could enable professional hosts to compete more effectively in these environments. Additionally, professional hosts may be more adept at handling regulatory challenges and competing against established hotels, even when those hotels wield considerable market power (Von Briel & Dolnicar, 2021).

Analysis and interpretation of the control variables revealed the number of short-term leases already in the market consistently drives other short-term leases to enter, regardless of host type. This trend demonstrates after the first few short-term leases enter the market, others are likely to follow, behavior which is articulated in Sundararajan (2014) and Hardy et. al (2021) which investigated how knowledge and incentives instilled by platforms and online communities, respectively, can affect the behavior of single hosts.

Findings indicate that markets with higher-quality hotels act as catalysts for short-term leases. This may not be detrimental to incumbent hotels, as previous research shows that higher-level hotels suffer less from the presence of short-term leases (Yang et al., 2022), and the quality increase is used as a strategy to achieve that result (Chang & Sokol, 2022). However, this demonstrates that short-term leases consistently prefer markets that allow to undercut incumbent hotels on price, which is likely why they avoid markets where incumbents' strategic positioning prevents them from doing so effectively.

Furthermore, our results showed that the number of hotel rooms and the number of hotels in the market each have different deterrent effects on STL. Specifically, while an increased number of hotel rooms is less likely to completely block STLs from entering, the negative coefficient in the count part implies that once STL entry is possible, having more total hotel rooms reduces the expected number of STL entries. In contrast, a higher number of hotels is more likely to completely deter STLs from entering, depicted by the positive coefficient in the zero-inflation part. However, in markets where entry does occur, a greater number of hotels increases the likelihood of observing a greater number of STL entries, as seen by the positive coefficient in the count part.

These findings emphasize the critical importance of considering both market capacity and the competitive landscape when analyzing STL entry dynamics. Markets with a large number of hotel rooms may seem accessible to STL providers due to their size. However, the high level of competition in such markets can lead incumbent hotels to focus on capacity

utilization and competitive pricing strategies, which may limit the number of viable STL entries, as it diminishes the impact on hotels' performance (Dogru et al., 2019). Alternately, a greater number of hotel entities in the market may result in a stronger push for regulations to hinder STLs altogether, as hotel associations may lobby for stricter regulations against STLs (Bei & Celata, 2023). Nevertheless, in markets where entry is permitted, the high number of hotels indicates strong demand, allowing STLs to capitalize on market opportunities (Tussyadiah & Pesonen, 2016).

7 Conclusions, Implications and Future Research

This research investigates the presence and effectiveness of competitive entry deterrence to prevent short-term leases from entering the market. Applying a random effect model and a zero-inflated multilevel Negative Binomial Regression, this study found that incumbent hotels responded to short-term leases by increasing the proportion of branded hotels, which serves as an effective deterrent against short-term leases. However, the entry of short-term leases led to a fragmented response in terms of ownership, quality, and loyalty program concentration. This was recorded despite ownership concentration guaranteed *ex ante* entry barriers, while quality and loyalty program concentration resulted in lower entry rates. Competitive deterrence was found to be more effective in deterring professional hosts compared to non-professional hosts.

This study contributes to the literature on competitive dynamics and is innovative and novel as the manuscript explicitly examine hotels strategic responses to short-term leases at the local level. While prior research focused on hotel corporations' responses to short-term leases at the multinational level (Zach et al., 2020), this study investigates local responses at the property level. This study advances literature on short-term leases in two key ways. First, while previous research focused on legal barriers (e.g., policies) to prevent short-term leases from entering the market, this study is the first to test competitive deterrence. It does so by examining short-term leases' responses to specific competitive entry barriers and finding that ownership concentration effectively prevents entry, quality concentration reduces the scale of entry, and an increased proportion of branded hotels prevents and reduces short-term lease entry.

Second, this manuscript examines the distinctions between professional and non-professional hosts before market entry, rather than after, advancing the conceptual understanding of entry deterrence. While professional hosts tend to be more responsive to hotels' competitive strategies, similar to established hotels, non-professional hosts adjust their

market-entry decisions in response to the competitive environment. Extending the findings of Hardy, Dolnicar, and Vorobjovas-Pinta (2021), this adjustment suggests that non-professional hosts may be influenced by the knowledge shared through platforms and online host communities during the market-entry stage. Subsequently, as the professionalization of short-term lease hosts evolves market competition dynamics shift, researchers should recognize that non-professional hosts are also adapting to market conditions, and subsequent approaches may become more sophisticated than in the early stages of the sharing economy, which is now entering in a new life cycle as a result. Future scholarship should explicitly examine these evolving dynamics between professional and non-professional hosts to foster a deeper understanding of how these hosts demonstrate increasing sophistication in their actions, including how platforms influence those actions.

This research offers valuable insights for practitioners and policymakers. With the global rise of short-term leases posing a threat to hotel profits and the broader tourism system, this study identifies three key principles for developing an integrated market deterrence strategy to safeguard hotel market share. The strategy centers on the three core elements of Market Control, Market Specialization, and Brand Consolidation. Practitioners are advised to concentrate their investments in acquiring multiple properties, aligning these properties to serve a specific market segment (e.g., upscale or upper-upscale hotels), and ensuring these properties are part of a branded chain.

Policymakers aiming to reduce the prevalence of short-term leases should consider incentivizing strategic investments to protect the hotel industry and the jobs it supports within the community, simultaneously diminishing the issues brought by short-term leases to the local tourism system. Destination Marketing Organizations (DMOs) could focus their efforts on attracting a targeted tourist market segment to reinforce strategies which ensure a healthy balance within the market. These strategies can be viewed as an alternative or complement to regulatory measures, which, although beyond the focus of this study, are becoming increasingly popular among policymakers. Future research could further analyze the role and effectiveness of different types of regulations, as well as quantifying lobbying efforts made by incumbent hotels, specifically as complements to the strategic investments discussed in this study.

Given the quantitative focus, the analysis emphasizes short-term leases' market entry behavior but doesn't fully capture the entire decision-making process of different hosts before they enter the market. Future research can use this study as a foundation to critically examine

the decision-making processes of different short-term lease hosts using inductive, in-depth qualitative approaches designed to create new theory. For instance, while the influence of existing short-term leases on subsequent entries could also be related to ownership patterns, future research could investigate not only the 'what' but 'how' prior market experience and ownership structure influence short-term lease entry.

This research focuses on a large sample of hotels and short-term leases that operate in the state of Texas, USA. The state of Texas guarantees heterogeneous conditions which makes it a representative sample, which have been extensively used in previous research (Bianco et al, 2024; Kalnins & Chung, 2004; Zhang et al, 2024). Future research should investigate barriers to short-term leases in other geographic and cultural contexts.

This study focused on two types of preemptive strategies and two types of brand loyalty strategies. However, other strategies like predation or signaling have proven effective in deterring market entry in other contexts. Future research investigating tourism firms' strategies could investigate these and other strategies to deter short-term leases from entering the market. Furthermore, this study differentiated entrants based on type of hosts, thereby focusing on hosts' ability to interpret competitive markets. Future research could explore how specific characteristics of short-term rental listings, such as property type or platform on which they are listed, influence market-entry decisions and competitive dynamics.

This manuscript serves as an investigation into one of the possible strategies adopted by hotels to diminish the impact of short-term leases on their top- and bottom-line performance. However, due to the critical and timely nature of hotel industry dynamics, current research does not offer a complete overview on the matter, with future scholarship on hoteliers' investments on short-term rentals required to build upon this work. While this research found that hotels have decreased the degree of ownership, quality, and loyalty concentration, these results may be connected to a diversification of investments. Subsequently, future research should further explore this possibility by investigating the direct investments of hotels into the short-term lease market.

8 References

Abrate, G., Sainaghi, R., & Mauri, A. G. (2022). Dynamic pricing in Airbnb: Individual versus professional hosts. *Journal of Business Research*, *141*, 191-199. https://doi.org/10.1016/j.jbusres.2021.12.012

Agarwal, V., Koch, J. V., & McNab, R. M. (2019). Differing views of lodging reality: Airdna, STR, and Airbnb. *Cornell Hospitality Quarterly*, *60*(3), 193-199. https://doi.org/10.1177/1938965518777218

Almeida, S., & Campos, A. C. (2022). New avenues for business competitiveness: the case of a community of practice in the hotel sector. *International Journal of Culture, Tourism and Hospitality Research*, *16*(1), 20-34. https://doi.org/10.1108/IJCTHR-12-2020-0285

Assaf, A. G., & Tsionas, M. (2020). Correcting for endogeneity in hospitality and tourism research. *International Journal of Contemporary Hospitality Management*, *32*(8), 2657-2675. https://doi.org/10.1108/IJCHM-02-2020-0153

Avgeropoulos, S., & McGee, J. (2015). Barriers to entry and exit. *Wiley Encyclopedia of Management*, 1-3. https://doi.org/10.1002/9781118785317.weom120050

Balaguer, J., & Pernías, J. C. (2013). Relationship between spatial agglomeration and hotel prices. Evidence from business and tourism consumers. *Tourism Management*, *36*, 391-400. https://doi.org/10.1016/j.tourman.2012.10.004

Baloglu, S., Zhong, Y. Y., & Tanford, S. (2017). Casino loyalty: The influence of loyalty program, switching costs, and trust. *Journal of Hospitality & Tourism Research*, *41*(7), 846-868. https://doi.org/10.1177/1096348014550922

Barnett, W. P. (1997). The dynamics of competitive intensity. *Administrative Science Quarterly*, 128-160. https://doi.org/10.2307/2393811

Bei, G., & Celata, F. (2023). Challenges and effects of short-term rentals regulation: A counterfactual assessment of European cities. *Annals of Tourism Research*, *101*, 103605. https://doi.org/10.1016/j.annals.2023.103605

Bianco, S., Singal, M., & Zach, F. J. (2024). Leveraging knowledge via location proximity among hotels and short-term leases. *International Journal of Hospitality Management*, *119*, 103719. https://doi.org/10.1016/j.ijhm.2024.103719

Bianco, S., Singal, M., Zach, F. J., & Nicolau, J. L. (2023). Dual-branded hotels: Resource-based entry strategies in agglomerated markets. Tourism Management, 95, 104663. https://doi.org/10.1016/j.tourman.2022.104663

Bianco, S., Zach, F. J., & Liu, A. (2022). Early and late-stage startup funding in hospitality: Effects on incumbents' market value. *Annals of Tourism Research*, *95*, 103436. https://doi.org/10.1016/j.annals.2022.103436

Bianco, S., Zach, F. J., & Singal, M. (2024). Disruptor recognition and market value of incumbent firms: Airbnb and the lodging industry. *Journal of Hospitality & Tourism Research*, *48*(1), 84-104. https://doi.org/10.1177/10963480221085215

Blal, I., Singal, M., & Templin, J. (2018). Airbnb's effect on hotel sales growth. *International Journal of Hospitality Management*, *73*, 85-92. https://doi.org/10.1016/j.ijhm.2018.02.006

Campello, R. J. G. B., Moulavi, D., & Sander, J. (2013). Density-Based Clustering Based on Hierarchical Density Estimates. In (pp. 160-172). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-37456-2_14

Canina, L., Enz, C. A., & Harrison, J. S. (2005). Agglomeration efects and strategic orientations: Evidence from the US lodging industry. *Academy of management journal*, *48*(4), 565-581. https://doi.org/10.5465/amj.2005.17843938

Carvell, S. A., Canina, L., & Sturman, M. C. (2016). A Comparison of the Performance of Brand-Affiliated and Unaffiliated Hotel Properties. *Cornell Hospitality Quarterly*, *57*(2), 193-201. https://doi.org/10.1177/1938965516631014

Chang, H. H., & Sokol, D. D. (2022). How incumbents respond to competition from innovative disruptors in the sharing economy—The impact of Airbnb on hotel performance. *Strategic Management Journal*, *43*(3), 425-446. https://doi.org/10.1002/smj.3201

Chen, M.-J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of management review*, *21*(1), 100-134. https://doi.org/10.5465/amr.1996.9602161567

Chen, M.-J., Michel, J. G., & Lin, W. (2021). Worlds Apart? Connecting Competitive Dynamics and the Resource-Based View of the Firm. *Journal of Management*, *47*(7), 1820-1840. https://doi.org/10.1177/01492063211000422

Chen, M.-J., Su, K.-H., & Tsai, W. (2007). Competitive tension: The awareness-motivation-capability perspective. *Academy of management journal*, *50*(1), 101-118. https://doi.org/10.5465/amj.2007.24162081

Cheung, K. S., & Yiu, C. Y. (2022). Touristification, Airbnb and the tourism-led rent gap: Evidence from a revealed preference approach. *Tourism Management*, *92*, 104567. https://doi.org/10.1016/j.tourman.2022.104567

Conlin, M., & Kadiyali, V. (2006). Entry‐deterring capacity in the Texas lodging industry. *Journal of Economics & Management Strategy*, *15*(1), 167-185. https://doi.org/10.1111/j.1530-9134.2006.00096.x

Cookson, J. A. (2017). Leverage and strategic preemption: Lessons from entry plans and incumbent investments. *Journal of Financial Economics*, *123*(2), 292-312. https://doi.org/10.1016/j.jfineco.2016.11.005

Cookson, J. A. (2018). Anticipated entry and entry deterrence: Evidence from the American casino industry. *Management Science*, *64*(5), 2325-2344. https://doi.org/10.1287/mnsc.2017.2730

Crouch, G. I. (2011). Destination competitiveness: An analysis of determinant attributes. *Journal of Travel Research*, *50*(1), 27-45. https://doi.org/10.1177/0047287510362776

Czakon, W., & Czernek-Marszałek, K. (2021). Competitor perceptions in tourism coopetition. *Journal of Travel Research*, *60*(2), 312-335. https://doi.org/10.1177/0047287519896011

Das Varma, G., & De Stefano, M. (2022). Entry Deterrence, Concentration, and Merger Policy. *Review of Industrial Organization*. https://doi.org/10.1007/s11151-022-09865-y

Deboosere, R., Kerrigan, D. J., Wachsmuth, D., & El-Geneidy, A. (2019). Location, location and professionalization: a multilevel hedonic analysis of Airbnb listing prices and revenue. *Regional Studies, Regional Science*, *6*(1), 143-156. https://doi.org/10.1080/21681376.2019.1592699

DeFranco, A., Koh, Y., Prem, P., & Love, B. (2022). Inclusion of condominium units in luxury hotels as a diversification strategy: Property performance perspective. *Cornell Hospitality Quarterly*, *63*(1), 108-118. https://doi.org/10.1177/19389655211050398

Destefanis, A., Neirotti, P., Paolucci, E., & Raguseo, E. (2022). The impact of Airbnb on the economic performance of independent hotels: an empirical investigation of the moderating effects. *Current Issues in Tourism*, *25*(21), 3534-3564. https://doi.org/10.1080/13683500.2020.1846501

Dogru, T., Hanks, L., Mody, M., Suess, C., & Sirakaya-Turk, E. (2020). The effects of Airbnb on hotel performance: Evidence from cities beyond the United States. *Tourism Management*, *79*, 104090. https://doi.org/10.1016/j.tourman.2020.104090

Dogru, T., Mody, M., & Suess, C. (2019). Adding evidence to the debate: Quantifying Airbnb's disruptive impact on ten key hotel markets. *Tourism Management*, *72*, 27-38. https://doi.org/10.1016/j.tourman.2018.11.008

Dolnicar, S., & Zare, S. (2020). COVID19 and Airbnb–Disrupting the disruptor. *Annals of Tourism Research*, *83*, 102961. https://doi.org/10.1016/j.annals.2020.102961

Fang, L., Li, H., & Li, M. (2019). Does hotel location tell a true story? Evidence from geographically weighted regression analysis of hotels in Hong Kong. *Tourism Management*, *72*, 78-91. https://doi.org/10.1016/j.tourman.2018.11.010

Gelman, A. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge university press.

Gibbs, C. H., Guttentag, D., Gretzel, U., Yao, L., & Morton, J. (2018). Use of Dynamic Pricing Strategies by Airbnb Hosts. *International Journal of Contemporary Hospitality Management*. https://doi.org/10.1108/ijchm-09-2016-0540

Giustiziero, G., Kaul, A., & Wu, B. (2019). The dynamics of learning and competition in Schumpeterian environments. *Organization science*, *30*(4), 668-693. https://doi.org/10.1287/orsc.2018.1264

Guttentag, D. (2015). Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector. *Current Issues in Tourism*, *18*(12), 1192-1217. https://doi.org/10.1080/13683500.2013.827159

Guttentag, D., & Smith, S. L. J. (2017). Assessing Airbnb as a disruptive innovation relative to hotels: Substitution and comparative performance expectations. *International Journal of Hospitality Management*, *64*, 1-10. https://doi.org/10.1016/j.ijhm.2017.02.003

Hardy, A., Dolnicar, S., & Vorobjovas-Pinta, O. (2021). The formation and functioning of the Airbnb neo-tribe. Exploring peer-to-peer accommodation host groups. *Tourism Management Perspectives*, *37*, 100760. https://doi.org/10.1016/j.tmp.2020.100760

Henderson, C. M., Steinhoff, L., Harmeling, C. M., & Palmatier, R. W. (2021). Customer inertia marketing. *Journal of the Academy of Marketing Science*, *49*(2), 350-373. https://doi.org/10.1007/s11747-020-00744-0

Hua, N., Wei, W., L. Defranco, A., & Wang, D. (2018). Do loyalty programs really matter for hotel operational and financial performance? *International Journal of Contemporary Hospitality Management*, *30*(5), 2195-2213. https://doi.org/10.1108/ijchm-12-2016-0643

Kim, M., Lee, S. K., & Roehl, W. S. (2018). Competitive price interactions and strategic responses in the lodging market. *Tourism Management*, *68*, 210-219. https://doi.org/10.1016/j.tourman.2018.03.013

Koh, J. H., & Rojas, C. (2022). Multi-unit ownership and market power: A study of the lodging industry in Texas. *Managerial and Decision Economics*, *43*(8), 4087-4105. https://doi.org/10.1002/mde.3657

Koo, B., Yu, J., & Han, H. (2020). The role of loyalty programs in boosting hotel guest loyalty: Impact of switching barriers. *International Journal of Hospitality Management*, *84*, 102328. https://doi.org/10.1016/j.ijhm.2019.102328

Lado-Sestayo, R., Vivel-Búa, M., & Otero-González, L. (2017). Drivers and barriers to entry for new hotel start-ups. *Tourism Management Perspectives*, *23*, 87-96. https://doi.org/10.1016/j.tmp.2017.05.004

Lambea Llop, N. (2017). A policy approach to the impact of tourist dwellings in condominiums and neighbourhoods in Barcelona. *Urban Research & Practice*, *10*(1), 120-129. https://doi.org/10.1080/17535069.2017.1250522

Lee, S. K., & Jang, S. (2013). Asymmetry of price competition in the lodging market. *Journal of Travel Research*, *52*(1), 56-67. https://doi.org/10.1177/0047287512457268

Mazzeo, M. J. (2002). Competitive Outcomes in Product-Differentiated Oligopoly. *Review of Economics and Statistics*, *84*(4), 716-728. https://doi.org/10.1162/003465302760556521

McAfee, R. P., Mialon, H. M., & Williams, M. A. (2004). What is a Barrier to Entry?. American Economic Review, 94(2), 461-465. https://doi.org/10.1257/0002828041302235

Miguel, C., Braje, I. N., Drotarova, M. H., Dumančić, K., Kirkulak-Uludag, B., & Giglio, C. (2024). The effects of the professionalization of hosting on service quality: Towards quality standards and certifications within the short-term rental market. *International Journal of Hospitality Management*, *122*, 103796. https://doi.org/10.1016/j.ijhm.2024.103796

Mitchell, W. (1989). Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly*, 208-230. https://doi.org/10.2307/2989896

Mody, M., & Hanks, L. (2020). Consumption Authenticity in the Accommodations Industry: The Keys to Brand Love and Brand Loyalty for Hotels and Airbnb. *Journal of Travel Research*, *59*(1), 173-189. https://doi.org/10.1177/0047287519826233

Mody, M., Hanks, L., & Dogru, T. (2019). Parallel pathways to brand loyalty: Mapping the consequences of authentic consumption experiences for hotels and Airbnb. *Tourism Management*, *74*, 65-80. https://doi.org/10.1016/j.tourman.2019.02.013

Nassetta, C. (2015). *Hilton Worldwide Q3 2015 earnings call* [Earnings call]. https://seekingalpha.com/article/3616746-hilton-worldwides-hlt-ceo-chris-nassetta-on-q3-2015-results-earnings-call-transcript

Obloj, T., & Sengul, M. (2020). What do multiple objectives really mean for performance? Empirical evidence from the French manufacturing sector. Strategic Management Journal, 41(13), 2518-2547. https://doi.org/10.1002/smj.3198

Oskam, J., & Boswijk, A. (2016). Airbnb: the future of networked hospitality businesses. *Journal of Tourism Futures*, *2*(1), 22-42. https://doi.org/10.1108/jtf-11-2015-0048

Porter, M. E. (1980). *Competitive strategy*. Free Press.

Reinhold, S., & Dolnicar, S. (2018). How Airbnb creates value. *Peer-to-Peer Accommodation Networks; Dolnicar, S., Ed*, 39-53. https://dx.doi.org/10.23912/9781911396512–3602

Salop, S. C. (1979). Strategic entry deterrence. *The American Economic Review*, *69*(2), 335-338. http://www.jstor.org/stable/1801669

Saouma, R., Shelef, O., Wuebker, R., & McGahan, A. (2024). Incumbent Incentives in Response to Entry. *Strategy Science*. https://doi.org/10.1287/stsc.2022.0060

Seamans, R., & Zhu, F. (2014). Responses to entry in multi-sided markets: The impact of Craigslist on local newspapers. *Management Science*, *60*(2), 476-493. https://doi.org/10.1287/mnsc.2013.1785

Shapiro, C. (1989). The theory of business strategy. *The RAND Journal of Economics*, *20*(1), 125-137. https://doi.org/10.2307/2555656

Smith, K. G., Ferrier, W. J., & Ndofor, H. (2005). Competitive dynamics research: Critique and future directions. *The Blackwell handbook of strategic management*, 309-354. https://doi.org/10.1111/b.9780631218616.2006.00012.x

Stadtler, L., & Lin, H. (2017). Moving to the next strategy stage: Examining firms' awareness, motivation and capability drivers in environmental alliances. *Business Strategy and the Environment*, *26*(6), 709-730. https://doi.org/10.1002/bse.1937

Sundararajan, A. (2014). What Airbnb gets about culture that Uber doesn't. *Harvard Business Review*, *11*. https://oz.stern.nyu.edu/PlatformCultureHBR.pdf

Tussyadiah, I. P., & Pesonen, J. (2016). Impacts of peer-to-peer accommodation use on travel patterns. *Journal of Travel Research*, *55*(8), 1022-1040. https://doi.org/10.1177/0047287515608505

Vinogradov, E., Leick, B., & Kivedal, B. K. (2020). An agent-based modelling approach to housing market regulations and Airbnb-induced tourism. *Tourism Management*, *77*, 104004. https://doi.org/10.1016/j.tourman.2019.104004

Von Briel, D., & Dolnicar, S. (2021). The evolution of Airbnb regulation - An international longitudinal investigation 2008–2020. *Annals of Tourism Research*, *87*, 102983. https://doi.org/10.1016/j.annals.2020.102983

Wang, B., & Jia, T. (2024). Seize the favorable impression: how hosts should manage positive online reviews. *International Journal of Contemporary Hospitality Management*, *36*(4), 1375-1392. https://doi.org/10.1108/IJCHM-08-2022-0930

Wang, Y.-C., Tsai, Y.-L., & Fu, R. J. (2022). Pipeline speed of chain-branded hotels in the US: A competitive dynamics perspective. *International Journal of Hospitality Management*, *104*, 103226. https://doi.org/10.1016/j.ijhm.2022.103226

Webb, T., Beldona, S., Schwartz, Z., & Bianco, S. (2021). Growing the pie: an examination of coopetition benefits in the US lodging industry. *International Journal of Contemporary Hospitality Management*. https://doi.org/10.1108/IJCHM-03-2021-0340

Woo, L., & Mun, S. G. (2020). Types of agglomeration effects and location choices of international hotels in an emerging market. *Tourism Management*, *77*, 104034. https://doi.org/10.1016/j.tourman.2019.104034

Wu, L. W. (2011). Satisfaction, inertia, and customer loyalty in the varying levels of the zone of tolerance and alternative attractiveness. *Journal of Services Marketing*, *25*(5), 310-322. https://doi.org/10.1108/08876041111149676

Xia, J. C., Evans, F. H., Spilsbury, K., Ciesielski, V., Arrowsmith, C., & Wright, G. (2010). Market segments based on the dominant movement patterns of tourists. *Tourism Management*, *31*(4), 464-469. https://doi.org/10.1016/j.tourman.2009.04.013

Xie, K., Heo, C. Y., & Mao, Z. E. (2021). Do professional hosts matter? Evidence from multi-listing and full-time hosts in Airbnb. *Journal of Hospitality and Tourism Management*, *47*, 413-421. https://doi.org/10.1016/j.jhtm.2021.04.016

Xie, K., & Kwok, L. (2017). The effects of Airbnb's price positioning on hotel performance. *International Journal of Hospitality Management*, *67*, 174-184. https://doi.org/10.1016/j.ijhm.2017.08.011

Xie, K., Kwok, L., & Heo, C. Y. (2020). Are Neighbors Friends or Foes? Assessing Airbnb Listings' Agglomeration Effect in New York City. *Cornell Hospitality Quarterly*, *61*(2), 128-141. https://doi.org/10.1177/1938965519890578

Xie, K., & Mao, Z. (2019). Locational strategy of professional hosts: Effect on perceived quality and revenue performance of Airbnb listings. *Journal of Hospitality & Tourism Research*, *43*(6), 919-929. https://doi.org/10.1177/1096348019836277

Xie, K. L., Xiong, L., Chen, C.-C., & Hu, C. (2015). Understanding active loyalty behavior in hotel reward programs through customers' switching costs and perceived program value. *Journal of Travel & Tourism Marketing*, *32*(3), 308-324. https://doi.org/10.1080/10548408.2014.896767

Yang, Y., & Mao, Z. E. (2017). Do independent hotels benefit from the presence of branded ones? *Journal of Business Research*, *76*, 108-117. https://doi.org/10.1016/j.jbusres.2017.03.014

Yang, Y., Nieto García, M., Viglia, G., & Nicolau, J. L. (2022). Competitors or Complements: A Meta-analysis of the Effect of Airbnb on Hotel Performance. *Journal of Travel Research*, *61*(7), 1508-1527. https://doi.org/10.1177/00472875211042670

Yeon, J., Song, H. J., & Lee, S. (2020). Impact of short-term rental regulation on hotel industry: a difference-in-differences approach. *Annals of Tourism Research*, *83*, 102939. https://doi.org/10.1016/j.annals.2020.102939

Yu, T., & Cannella Jr, A. A. (2007). Rivalry between multinational enterprises: An event history approach. *Academy of management journal*, *50*(3), 665-686. https://doi.org/10.5465/amj.2007.25527425

Zach, F. J., Nicolau, J. L., & Sharma, A. (2020). Disruptive innovation, innovation adoption and incumbent market value: The case of Airbnb. *Annals of Tourism Research*, *80*, 102818. https://doi.org/10.1016/j.annals.2019.102818

Zervas, G., Proserpio, D., & Byers, J. W. (2017). The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry. *Journal of Marketing Research*, *54*(5), 687-705. https://doi.org/10.1509/jmr.15.0204

Zhang, H., Zach, F. J., & Xiang, Z. (2024). Multi-level differentiation of short-term rental properties: A deep learning-based analysis of aesthetic design. *Tourism Management*, *100*, 104832. https://doi.org/10.1016/j.tourman.2023.104832

Table 1 – Descriptive Statistics

	Mean	Std. Dev	Variance	Skeweness	Range Min	Max
NewEntry_STL	5.01	21.78	474.30	11.08	0	708
NewEntry_Professional	3.56	17.15	294.08	12.33	0	586
NewEntry_NonProfessional	1.09	4.59	21.04	14.16	0	246
HHIOwnership	0.27	0.18	0.03	2.15	0.03	1
HHIQuality	0.51	0.21	0.04	1.17	0.18	1
BrandedProportion	0.70	0.29	0.08	-0.88	0	1
HHILoyaltyprogram	0.39	0.23	0.05	1.59	0.11	1
TotalRooms	677.43	858.49	737008.8	7.83	84	14154
HotelCount	7.86	4.94	24.44	5.36	4	82
Avg_Quality	2.20	0.83	0.69	1.04	1	5.6
Avg_RevPAR	1546.52	2111.72	4459381	84.29	19.54	293355.8
STLCount	23.93	93.74	8787.88	7.96	0	2039

Table 2 – Post Short-term lease entrance

	HHIOwnership		HHIQuality		BrandedProportion		HHILoyaltyprogram	
	Estimates	**Std.dev**	**Estimates**	**Std.dev**	**Estimates**	**Std.dev**	**Estimates**	**Std.dev**
(Intercept)	0.9182***	0.10	0.6424***	0.07	0.4125***	0.10	0.9081***	0.09
MonthfromCutoff	-0.0004***	0.01	-0.0003***	0.01	0.0004***	0.01	-0.0005***	0.01
TotalRooms	0.0001**	0.01	0.0489***	0.04	0.0001***	0.01	0.0001**	0.01
HotelCount	-0.0663***	0.01	-0.1952***	0.03	0.0074***	0.01	-0.0605***	0.01
Avg_Quality	-0.0459***	0.0	-0.0088***	0.02	0.0667***	0.02	-0.0314***	0.02
Avg_RevPAR	0.0001***	0.01	0.0056***	0.01	0.0001*	0.01	0.0001***	0.01
STLCount	0.0002***	0.01	0.0029*	0.01	-0.0001*	0.01	0.0003***	0.01
R-Squared	0.24		0.35		0.08		0.31	
Adj R-Squared	0.24		0.35		0.07		0.31	

*= p-value <0.1 **= p-value <0.05 ***= p-value <0.01

Table 3 –Competitive Deterrence on Short-term lease Market Entry

| | Negative Binomial Part | | Zero-Inflation Part | |
	Estimates	Std.dev	Estimates	Std.dev
(Intercept)	-1.7487*	0.90	-5.5733***	1.10
HHIOwnership	0.0649	0.26	0.8109**	0.34
HHIQuality	-0.3675**	0.16	-0.1625**	0.21
BrandedProportion	-0.7677***	0.18	0.4760***	0.19
HHILoyaltyprogram	-0.0339	0.21	-0.4598	0.29
TotalRooms	-0.2106***	0.07	-0.2384**	0.08
HotelCount	0.3112***	0.07	0.1044***	0.07
Avg_Quality	0.2798***	0.05	-0.1190***	0.06
Avg_RevPAR	-0.015	0.02	-0.0775	0.06
STLCount	0.1677***	0.01	-39.522***	1.77
Year Fixed-Effects	Yes		Yes	
Quarter Fixed-Effects	Yes		Yes	
Cluster Nested Effect	Yes		Yes	
AIC	55403.7			
BIC	55836.3			

*= p-value <0.1 **= p-value <0.05 ***= p-value <0.01

Table 4 – Competitive Deterrence on Professional and Non-Professional Hosts

| | Professional Hosts | | | | Non-Professional Hosts | | | |
| | Negative Binomial | | Zero-Inflation | | Negative Binomial | | Zero-Inflation | |
	Estimates	Std.dev	Estimates	Std.dev	Estimates	Std.dev	Estimates	Std.dev
(Intercept)	-1.1840	0.95	-0.8852	1.08	-0.1017	0.42	-1.8940***	0.54
HHIOwnership	0.0255	0.28	0.3576	0.33	-0.2024	0.30	1.1014**	0.42
HHIQuality	-0.4882***	0.18	-0.2311	0.20	-0.1034*	0.20	0.0416	0.24
BrandedProportion	-0.9203***	0.17	0.8382***	0.18	-0.5414***	0.18	0.8068***	0.23
HHILoyaltyprogram	-0.1547	0.23	-0.2237	0.28	-0.2761	0.25	-0.2975	0.34
TotalRooms	-0.1500**	0.07	-0.2274**	0.07	-0.1596***	0.06	-0.3435***	0.09
HotelCount	0.2556***	0.07	-0.0330	0.07	0.2270***	0.06	0.2103**	0.08
Avg_Quality	0.2706***	0.05	-0.1368**	0.05	0.1006**	0.05	-0.2119***	0.06
Avg_RevPAR	-0.0363	0.02	-0.1445**	0.07	0.0404	0.03	-0.0810	0.07
STLCount	0.1802***	0.01	-21.2833***	0.98	0.1733***	0.01	-20.3712***	1.14
Year Fixed-Effects	Yes		Yes		Yes		Yes	
Quarter Fixed-Effects	Yes		Yes		Yes		Yes	
Cluster Nested Effect	Yes		Yes		Yes		Yes	
AIC			45875.1				31805.6	
BIC			46288.4				32218.9	

*= p-value <0.1 **= p-value <0.05 ***= p-value <0.01

Table 5 –Post short-term leases entrance (Robustness check)

	HHIOwnership		HHIQuality		BrandedProportion		HHILoyaltyprogram	
	Estimates	Std.dev	Estimates	Std.dev	Estimates	Std.dev	Estimates	Std.dev
(Intercept)	0.6403***	0.07	0.9181***	0.09	0.4141***	0.09	0.9122***	0.09
TimeSince2014	-0.0004**	0.01	-0.0004**	0.01	0.0004*	0.01	-0.0005***	0.01
TotalRooms	0.0542	0.05	0.001*	0.01	0.0001	0.01	0.0001*	0.01
HotelCount	-0.1937***	0.04	-0.0651***	0.01	0.0082	0.01	-0.0588***	0.01
Avg_Quality	-0.0170	0.02	-0.0517*	0.02	0.0645**	0.02	-0.0400	0.02
Avg_RevPAR	0.0070	0.01	0.0001	0.01	-0.0001	0.01	-0.0001	0.01
STLCount	0.0026	0.01	0.0002	0.01	-0.0002	0.01	0.0003*	0.01
R-Squared	0.25		0.35		0.08		0.32	
Adj R-Squared	0.25		0.35		0.08		0.3	

*= p-value <0.1 **= p-value <0.05 ***= p-value <0.01

Table 6 –Hypotheses results

Hypothesis	Support
H1a: The level of ownership concentration increased after short-term leases entered the market	*Not Supported*
H1b: The level of quality concentration increased after short-term leases entered the market	*Not Supported*
H1c: The proportion of branded hotels increased after short-term leases entered the market	*Supported*
H1d: The level of loyalty program concentration increased after short-term leases entered the market	*Not Supported*
H2a: The higher the ownership concentration in the market, the lower the number of short-term leases' market entries.	*Partially Supported*
H2b: The higher the quality concentration in the market, the lower the number of short-term leases' market entries	*Partially Supported*
H3a: The higher the proportion of branded hotels in the market, the lower the number of short-term leases' market entries.	*Supported*
H3b: The higher the loyalty program concentration in the market, the lower the number of short-term leases' market entries.	*Not Supported*
H4a: Ownership concentration will be more effective in deterring professional hosts compared to non-professional hosts.	*Not Supported*
H4b: Quality concentration will be more effective in deterring professional hosts compared to non-professional hosts.	*Supported*
H4c: Branded proportion will be more effective in deterring professional hosts compared to non-professional hosts.	*Supported*
H4d: Loyalty program concentration will be more effective in deterring professional hosts compared to non-professional hosts	*Not Supported*

Appendix A – Hausmann Test of Residuals

Subset(Model)	Hausman Test	Breush-Pagan Test	Breush-Godfrey Test
HHIOwnership	chisq = 0.074358, df = 5, p-value = 0.9999	BP = 5943.8, df = 6, p-value < 2.2e-16	LM test = 65017, df = 1, p-value < 2.2e-16
HHIQuality	chisq = 0.072287, df = 5, p-value = 0.9999	BP = 3294.7, df = 6, p-value < 2.2e-16	LM test = 65032, df = 1, p-value < 2.2e-16
Branded Proportion	chisq = 0.027582, df = 5, p-value = 1	BP = 165.89, df = 6, p-value < 2.2e-16	LM test = 72807, df = 1, p-value < 2.2e-16
HHILoyaltyProgram	chisq = 0.056217, df = 5, p-value = 1	BP = 5938.2, df = 6, p-value < 2.2e-16	LM test = 65008, df = 1, p-value < 2.2e-16

Appendix B – Variance Inflation Factors (VIF)

	Random Effect (Table 2)	Negative Binomial (Table 3 and 4)
HHIOwnership		1.61
HHIQuality		1.30
BrandedProportion		1.46
HHILoyaltyprogram		1.81
TotalRooms	4.51	2.41
HotelCount	4.69	2.40
Avg_Quality	1.06	1.56
Avg_RevPAR	1.01	1.23
STLCount	1.14	1.21
Factor (Year)		1.00
Factor (Month)		1.00
MonthfromCutoff	1.37	-

Appendix C – Result Infographic

Hotel Market Factors	All Short-term Leases		Short-term Leases' Deterrence Professional Hosts		Non-Professional Hosts	
	Entry (Deterrence/ Attraction)	Volume (High/ Low)	Entry (Deterrence/ Attraction)	Volume (High/ Low)	Entry (Deterrence/ Attraction)	Volume (High/ Low)
Ownership Concentration	Deterrence	-	-	-	Deterrence	
Quality Concentration	Attraction	Low	-	Low	-	Low
Branded Hotels' Proportion	Deterrence	Low	Deterrence	Low	Deterrence	Low
Loyalty Programs Concentration	-	-	-	-	-	-
Number of Hotels	Deterrence	High	-	High	Deterrence	High
Number of Hotel Rooms	Attraction	Low	Attraction	Low	Attraction	Low
Average Hotel Quality	Attraction	High	Attraction	High	Attraction	High
Average Hotel RevPAR	-	-	Attraction	-	-	-
Other Short-term leases	Attraction	High	Attraction	High	Attraction	High